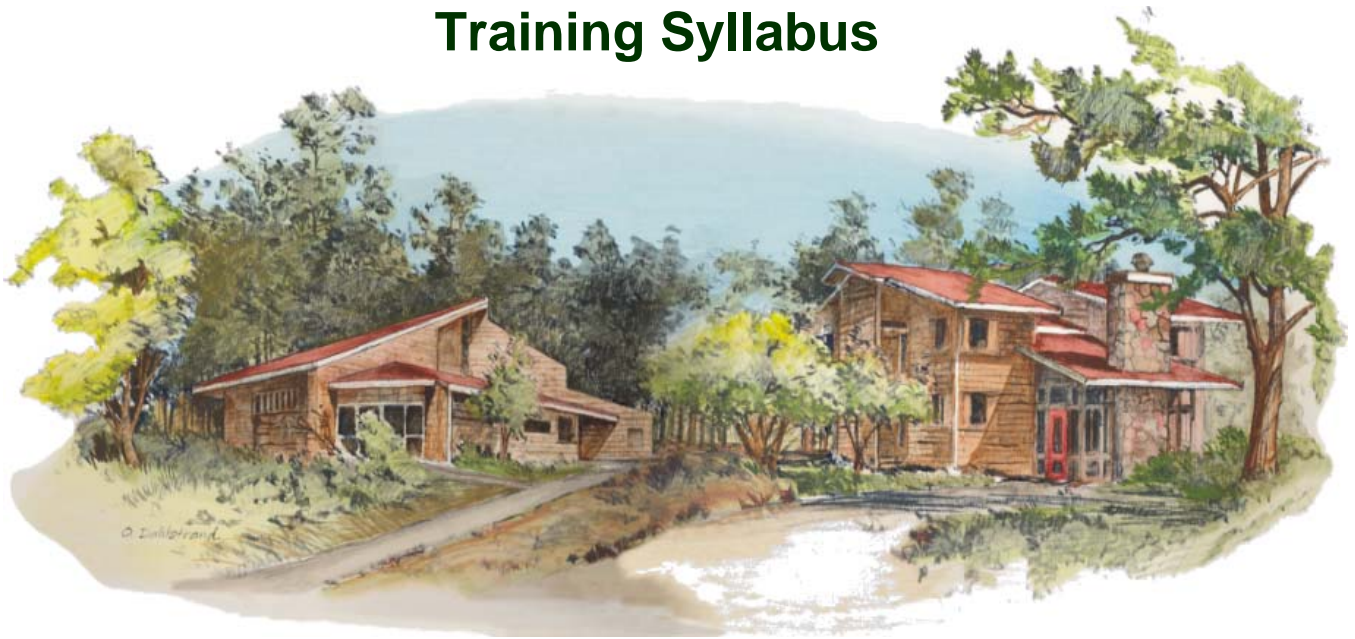


# Advanced Electrical Skills-North: Focus on Photovoltaic

June 11-14, 2012

Training Syllabus



William Penn Mott Jr. Training Center



# Memorandum

**Date:** June 4, 2012  
**To:** Supervisor  
**From:** Department of Parks and Recreation  
William Penn Mott Jr. Training Center  
**Subject:** Employee Attendance at Formal Training  
Advanced Carpentry Skills: Focus on Photovoltaic

An employee from your office will soon be attending the formal training program described in the attached. Please insure that the employee is fully prepared to attend the session and that the groundwork is laid for the employee's implementation of the training upon returning to work.

You can assist with capturing the full value of the training by taking the following steps:

### Prior to Training

1. Make sure that **specific** employee needs are identified and, if necessary, called immediately to the attention of the Training Coordinator.
2. Review with the employee the reason for the employee's attendance.
3. Review objectives and agenda with the employee.
4. Discuss objectives and performance expected after the training.

### Immediately Following Attendance

1. Discuss what was learned and intended uses of the training.
2. Review the employee's assessment of the training program for its impact at the workplace and review the due date of the Post-Training Evaluation form.
3. Support the employee's use of the training at the work place.

### Prior to Three Months Following Training

1. Employee after discussion with the supervisor login to the Employee Training Management System (ETMS) to complete the Post-Training Evaluation form.
2. Supervisor evaluates the effectiveness of the training on the employee's job performance and login to the ETMS to complete the Training Effectiveness Assessment form.

Thank you for your assistance in seeing that the full benefit of training is realized.



Joanne Danielson  
Academy Director, Acting

Attachment

cc: Participant

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### ***Mission Statement Training Section***

*The mission of the Training Section is to improve organizational and individual performance through consulting, collaboration, training, and development.*

### **MOTT TRAINING CENTER STAFF**

David Saxby ..... Department Training Officer, Acting  
Joanne Danielson ..... Academy Director, Acting  
Juventino Ortiz ..... Academy Coordinator  
Pat Bost ..... Office Manager  
Chuck Combs..... Training Specialist  
Dave Galanti ..... Training Specialist  
Karyn Lombard..... Training Specialist  
Sara M. Skinner ..... Training Specialist  
Matt Cardinet..... Cadet Training Officer  
Dan Kraft..... Cadet Training Officer  
Nikki Shannon..... Cadet Training Officer  
Dan Raducanu ..... Cadet Training Officer  
Pamela Yaeger ..... Assistant Program Coordinator  
Edith Alhambra..... Assistant Program Coordinator  
Ellen Dewsnap ..... Assistant Program Coordinator  
Rogers Williams ..... Program Assistant  
Socorro Wallace..... Program Assistant  
Joanne Ciccone ..... Program Assistant  
Ginger Henry..... Program Assistant

## THE MISSION

*of the California Department of Parks and Recreation is to provide for the health, inspiration and education of the people of California by helping to preserve the state's extraordinary biological diversity, protecting its most valued natural and cultural resources, and creating opportunities for high quality outdoor recreation.*



## FORMAL TRAINING GUIDELINES

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Welcome to formal training, an essential component in your career development.

Since 1969, our Department has been providing a continuously changing number of diverse training programs at its main training facility, the William Penn Mott Jr. Training Center, and other locations including Marconi Conference Center and, most recently, the Two Rivers Training Facility in Sacramento. The Department strives to enhance your learning and job performance with formal training of the highest quality.

Our Department's dedication to training is only one aspect of its commitment to you and to the public. This commitment is costly and represents an important investment in you and your career. You and the Department realize a return on that investment by your positive participation in formal training itself and post training follow-through.

The program you will be participating in is described in this training syllabus, which outlines what you can expect from this training and what is expected of you. This syllabus details what you should do before you leave for training; what to do when you arrive; what you will be doing while in training; and, importantly, what you should be able to do when you return to your work site. Specifically:

1. **SYLLABUS:** Your copy of this syllabus is an important part of your training experience and should be brought with you to Training. Read it before you arrive and review it following the program along with material you received at training.
2. **PRE-TRAINING ASSIGNMENTS:** Your completion of pre-training assignments is essential to the success of your training. You are responsible for all reading assignments in preparation for classroom sessions. Time will be provided during working hours to accomplish any assignments which involve either individual or group efforts and resources.
3. **TRAVEL:** Arrange your travel to and from the training site through your District or Office. (No reimbursement for travel expense – including per diem costs – will be approved for travel not specifically authorized in advance by the District Superintendent). Individuals may claim reimbursement for incidental expenses incurred as outlined in DAM 0410.6.

4. **HOUSING:** Housing will be assigned to you and will be available from 3:00 p.m. on the date of arrival to 10:00 a.m. on the date of departure. The Department provides your room and board expenses at the Best Western El Grande Inn only. No per diem allowance will be authorized for living off-grounds. This does not preclude living off-grounds at your own expense. In the event of an emergency, staff must know your room assignment; therefore, you may not switch rooms without staff approval. Overnight guests are not allowed.
5. **HOUSING CANCELLATION POLICY:** If you do not need lodging or must change or cancel your reservation, you must contact the Training Center at least 72 hours prior to your date of arrival. Lodging, registration and associated fees will be charged to the employee's District or Office if a training cancellation is received with less than 72 hours notice.

**The Training Center is committed to ensuring that the reservation that has been made for you is accurate and needed.**

6. **MEALS:** Meals will be provided from dinner on the date of arrival through lunch on the date of departure. Meals will be served at 7:30 a.m. for breakfast, 12:00 noon for lunch, and 6:00 p.m. for dinner. Box lunches will be provided on some days. If you require a special diet, notify the Training Specialist no later than one week before your scheduled arrival.
7. **CLOTHING:** Field uniforms as found in "Description of Required Field Uniforms", DOM Chapter 2300, Uniform Handbooks, not including optional items, will be worn daily by all uniformed employees during formal training sessions **unless otherwise specified in the Program Attendance Checklist.** Non-uniformed employees shall wear professional business attire.

The image we project as State Park employees is important not only during working hours but off duty hours as well, your informal sportswear should be appropriate.

8. **COURSE LEADERS:** The formal training you will attend is developed and, for the most part, conducted by experienced State Park employees in field and staff positions. Some courses will be conducted by qualified instructors from other agencies and educational institutions. Your course leaders have proven their ability and knowledge in their profession, and provide a level of expertise difficult to match.
9. **TRAINING SECTION STAFF:** Chuck Combs is your Training Specialist and has been assigned the responsibility for your training group. You may be asked to assist Training Staff in the logistics of your training program, please work with Training Staff to help make your training experience pleasant and meaningful.

10. ATTENDANCE: Regular attendance is a critical course requirement and your participation is important to the success of this training. All absences, except those of an emergency nature, must be approved in advance by the Training Specialist.
11. TRAINING MATERIALS: May be made available to you at both your unit and at the Training Center. Handout materials issued at your unit should be brought to training for possible use. A conference binder or notebook will be issued to you at the training session for note taking and convenience in handling materials. Please bring your own pens and pencils.
12. CELL PHONES: As a courtesy to your fellow participants and course leaders ensure that your cell phone is turned off during classes. Participants should not be receiving or making cell phone calls during class time. Please limit those calls to your breaks.
13. TELEPHONE: Limit phone calls during classroom hours to urgent business or emergencies.
14. POST-TRAINING ASSIGNMENTS: In connection with formal training are to be completed under the direction of your supervisor.

## TRAINING ATTENDANCE CHECKLIST AND PRE-TRAINING ASSIGNMENTS

To assist you in your preparation for this training at Clear Lake State Park the following checklist is provided:

1. Discuss the Advanced Electrical Skills program with your supervisor. What specific changes in your abilities and performance are expected to result from attending this training? Be able to vocalize these expectations along with your own at the Advanced Electrical Skills class orientation.
2. Bring the following items with you to training:
  - Training Syllabus.
  - Personal safety equipment: safety glasses, ear protection, leather work gloves, hard hat, and sunscreen.
  - Appropriate work uniforms, rain gear, and work boots.
  - Pens, pencils, calculator, notebook.
  - Bring the last 12 months of electrical bills from any potential grid-tie solar site you'd like to design or any load specifications for an off-grid project.
  - Coffee cup, reusable water bottle.
3. **Do not** contact the Best Western El Grande Inn, Clear Lake, to make any personal arrangements. All special arrangements must be made via your program coordinator. If you have questions or need help, contact the Program Coordinator Chuck Combs by telephone at (831) 649-7124 or via e-mail at [chuck@parks.ca.gov](mailto:chuck@parks.ca.gov).
4. For general information on the internet about Best Western El Grande Inn, Clearlake or Clear Lake State Park you may visit them at

<http://book.bestwestern.com/bestwestern/US/CA/Clearlake-hotels/BEST-WESTERN-El-Grande-Inn/Hotel-Overview.do?propertyCode=05433&srcPage=SelectHotel&isMapOpen=true&selectedHotels=>

[http://www.parks.ca.gov/?page\\_id=473](http://www.parks.ca.gov/?page_id=473)

If you have questions or need assistance, call the Program Coordinator Chuck Combs at 831-649-7124 or email [chuck@parks.ca.gov](mailto:chuck@parks.ca.gov).

## **POST-TRAINING ASSIGNMENT**

Prior to ninety days after the completion of this program, the employee and his/her supervisor should sit down and discuss the impact and assess the effectiveness this program has had on the employee. Then both the supervisor and employee should login to the Employee Training Management System (ETMS) and complete the Post-Training Evaluation form (an email will be sent to both employee and supervisor notifying them that the evaluation needs to be completed). Once you login to the ETMS, you will need to fill out the evaluation form before you will be able to do anything else.

The post-training evaluation process is intended to provide a bridge between classroom instruction and the on-the-job application of training. The information obtained through this process will assist the training participant, supervisor, and Training Center in providing a return on the investment the Department has on training.



**ADVANCED ELECTRICAL SKILLS GROUP 12 (Hands-On, Photovoltaic-North) - AGENDA**  
**June 11-14, 2012**

Lead Instructor: Lawrence Ross  
Assistant Program Coordinator; Kevin Mathews, Bill Dall, and Rogers Williams

The first session will occur at Clear Lake State Park (CLSP). Lodging and meals will occur at the Best Western, El Grande Inn (BWEGI), 15135 Lakeshore Drive, Clearlake, California, 95422-8106. There will be vans to transport you to and from the training site each day, except the first and last day. The vans will depart at 0800 and return at approximately 1700 hours each of those days. The last day the class will depart from Clear Lake SP at the end of the morning session.

**Monday**

**June 11**

1300-1330	Orientation/Registration	Combs/Ross
1330-1500	Project/Labs Overview and Safety	Ross/Combs
1500-1615	Shop Applications: Workgroups, Tools, and Projects	
1615-1700	Caravan to BWEGI	
1700-	<i>Check in at the BWEGI Clearlake, CA</i>	All on Travel Status
1800-	Dinner at BWEGI	

**Tuesday**

**June 12**

0600-0800	Breakfast at BWEGI	All on Travel Status
0800-0830	Vanpool from BWEGI to CLSP	All
0830-1200	Rotating Labs	All
1200-1300	Box Lunch with Groups	
1300-1630	Rotating Labs	All
1630-1700	Vanpool from CLSP to BWEGI	All
1800-	Dinner at BWEGI	

**Wednesday**

**June 13**

0730-0800	Breakfast at BWEGI	All
0800-0845	Vanpool from BWEGI to CLSP	All
0830-1200	Rotating Labs	All
1200-1300	Box Lunch with Groups	
1300-1630	Rotating Labs	All
1630-1700	Vanpool from CCSHP to AHMV	All
1800-	Dinner at BWEGI	

**Thursday**

**June 14**

0730-0800	Breakfast at BWEGI	All
0800-0830	Vanpool from BWEGI to CLSP	All
0830-1130	Rotating Labs, Wrap Up, Clean Up	Ross
1130-1200	Program Summary and Evaluation	Combs
1200-	<i>Depart</i>	

**PROGRAM: ADVANCED ELECTRICAL SKILLS**

**20 HOURS**

PROGRAM OUTLINE

	<u>Total Hours</u>
<u>PROGRAM ORIENTATION AND OVERVIEW</u> .....	1.0
<u>ELECTRICAL SYSTEMS</u> .....	3.0
Commercial Wiring Codes.....	
Introduction to Poly Phase Circuits .....	
Circuit Design.....	
<u>ELECTRICAL WIRING</u> .....	3.0
Tools .....	
Materials.....	
Commercial Wiring Techniques .....	
Motors, Motor Controls and Transformers.....	
Telephone and DC Circuits .....	
Troubleshooting .....	
Practical Performance Evaluation .....	
<u>RELATED SUBJECTS</u> .....	12.5
Safety .....	
Photovoltaic.....	
Inspections and Preventative Maintenance.....	
Examinations.....	
Material Storage and Clean-up .....	
<u>PROGRAM EVALUATION</u> .....	<u>0.5</u>
	Total Hours 20.0

## ADVANCED ELECTRICAL SKILLS

### PROGRAM ORIENTATION

#### OBJECTIVES FOR HANDS-ON AND ON-LINE SECTIONS

Purpose: Participants will meet one another and the program coordinator and facilitator. The group will share expectations for the training program. In addition, program content will be reviewed and class registration completed.

Performance Objectives: By the close of the session the participant will

1. Review program content, procedure, and evaluation processes.
2. Share and record expectations with the group participants.
3. Adhere to all Training Center guidelines.

### DEVELOPING ELECTRICAL SYSTEMS

Purpose: Develop the participant's ability to plan and construct single and poly phase commercial electrical systems.

Performance Objectives: By the close of the session the participant will

1. Demonstrate knowledge and understanding of the National Electric Code, California Administrative Code, and Cal OSHA requirements for public use buildings, shops, and other industrial or commercial electrical installations.
2. Identify single phase, 3 phase WYE, and 3 phase Delta electrical systems.
3. Demonstrate ability to design and construct single and poly phase electrical systems.

### WIRING COMMERCIAL ELECTRICAL SYSTEMS

Purpose: Provide participants with a working knowledge of single, poly phase electrical systems, and system components.

Performance Objectives: By the close of the session the participant will

1. Recognize and maintain phasing in 3 phase systems.

2. Identify panels, breakers, motor starters, and different wire sizes associated with single and poly phase systems.
3. Layout and install feeder and control circuitry.

### ELECTRICAL SYSTEMS INSPECTION

Purpose: Provide the participant with the knowledge and skills required to inspect and perform periodic preventative maintenance on single and poly phase electrical systems and system components.

Performance Objectives: By the close of the session the participant will

1. Identify voltage and amperage of systems and components.
2. Inspect for worn contacts, corrosion, loose connections, and broken components.
3. Manually test control circuits to verify proper operation.
4. Check for power quality in single and 3 phase systems.

### ELECTRICAL SYSTEMS TROUBLESHOOTING

Purpose: The participant will develop the ability to troubleshoot common problems in single, poly phase electrical systems, and system components.

Performance Objectives: By the close of the session the participant will

1. Demonstrate the operation of systems and components to verify order of functions (logical progression).
2. Identify a problem by listening to the operator of the equipment (what the equipment is or is not doing).
3. Review what will occur when various components of a system do not function.

## MOTORS AND MOTOR CONTROLS

Purpose: Upon completion of this course, participants will have a working knowledge of the operation and maintenance of common types of motor control equipment.

Performance Objectives: By the close of the session the participant will

1. Demonstrate how electric motors function and be familiar with the components of electric motors.
2. List the maintenance required for longevity and efficient operation of motors.
3. Restate the function and operation of motor controls.
4. Recognize the skills needed for troubleshooting and maintaining existing equipment and electrical systems.

## RELATED TOPICS

Purpose: To develop an understanding of test equipment, specialty circuits, and devices that the Park Maintenance Worker may be required to use and or repair.

Performance Objectives: By the close of the session the participant will

1. Employ a working knowledge of electrical test equipment commonly used in the electrical trade.
2. Demonstrate a basic understanding of telephone and network wiring systems and alarm systems.

## SAFETY - TASK HAZARD ANALYSIS

Purpose: To familiarize park maintenance workers with Task Hazard Analysis (THA) or Job Hazard Analysis (JHA) and to apply it to safe work practices.

Performance Objectives: By the close of the session the participant will

1. Assist in THA for the lab/shop work they will be performing this week.
2. Identify possible hazards in the project.
3. Demonstrate the ability to work effectively, safely, and harmoniously with other class participants in a simulated work environment.

## Regional Map



## Vicinity Map



## Clear Lake State Park



## Class Meeting Location

The first meeting of the class will be at the Clear Lake State Park, Visitor Center / Sector Office.

