

SIGN UP TODAY (See Enclosed Registration Form)

Solar Liberty offers solar electric system installation courses to increase the number of qualified installers across the Northeast. The market for residential and commercial solar electric installers is growing at an exponential rate. Become a solar electric system installer with Solar Liberty and start profiting immediately by serving your local market.

COURSE LOCATION AND DATES:

- Buffalo, February 5th – 8th, 2007, 8:00 to 5:00
- Buffalo, March 19th – 22nd, 2007, 8:00 to 5:00
- TBA, April 23rd – 26th, 2007
- TBA, May 14th – 17th, 2007



INSTRUCTOR Dr. Gay E. Canough, [PhD, physics, U of Notre Dame, 1988]

Dr. Gay Canough is an ISP* Master Trainer and a NABCEP** certified PV Installer. Dr. Canough has been working in the solar energy field since 1993. In 1998, Dr. Canough worked to develop a PV Installer's Course with other members of the New York Solar Energy Industries Association (NYSEIA). Dr. Canough has taught over 65 installation classes and is considered to be one of the top PV Installers and Trainers in the country.

PREREQUISITES:

- Ability to make simple arithmetic calculations
- Basic understanding of electricity including familiarity with volts, amps, and AC wiring

SPECIALLY PREPARED COURSE NOTES WILL BE GIVEN OUT AT THE COURSE

TOPIC OF COVERAGE:

This course teaches how to site, design, size, and install both grid-connected and off-grid photovoltaic (PV) systems. The course will address the solar resource issues with shading, orientation and tilt for PV arrays, along with basic sizing and design of systems to serve a given electrical load. Safety practices for installers and the electrical code for PV systems will be studied. In addition, various mounting systems for PV arrays and how they affect roofs will be analyzed. An actual installation of a PV system will be completed. *This course can be applied toward your NABCEP prerequisites.*

WHAT TO BRING:

- Calculator
- Volt/Amp meter capable of measuring AC and DC voltage, AC and DC current of at least 20 Amps (Optional).



COST

The course fee is \$250.00 per person. There is a limited number of class space; sign up today to secure your spot. Pre-registration is required five working days before each course date.

Solar Liberty will credit each company \$200.00 off your paid course fee toward the purchase of your first PV system, if purchased within three months from your course date.

*ISP = Institute for Sustainable Power, www.ispq.org

**NABCEP= North American Board of Certified Energy Practitioners, www.nabcep.org

Syllabus

DAY 1

Introduction

Renewable energy overview.
About energy efficiency. **1 hour**

Basic Electrical Concepts In PV Systems

Current, Voltage, Power, Energy,
Basic understanding of PV system parts
The components of a PV system (Module, array,
inverter, balance of system)
The essential miracle of the semiconductor **2 hour**

Sunshine Basics

Path of sun, Finding solar noon,
What is full sun
How much full sun is received?
NREL data bases for estimating system
performance (computers)
Best location for PV
Shading issues
Effects of off south installation
Collector angles. **2.5 hour**

Simple Experiments and Demonstrations on

Using your meters
Series Wiring.
Using the Solar Pathfinder **1.5 hour**

DAY 2

Safety

Electrical
Working on roofs and ladders
Batteries
OSHA **1 hour**

Design of PV systems

System sizing
Choosing modules and inverters
System performance estimating **2 hour**

National Electrical Code as applied to PV Systems,
Article 690 Articles referenced by 690 **4 hours**

DAY 3

Build working 1 kW PV system **5 hour**

Permits

How to deal with town building departments **2 hour**

Day 4

Design practice **1 hour**

Mechanical consideration for mounting PV

Wind loading calculation
Evaluating integrity of roof
Mounting of PV panels on roofs racks **1 hour**

Interconnection Requirements

How to obtain an inter-tie agreement with local utility. **1 hour**

Off-grid system considerations

Battery bank sizing **2 hour**

Trouble Shooting PV systems

Measuring voltages and currents
Looking for problems
Checking performance **1 hour**

Review **1 hour**

Lunch videos:

The Power of the Sun **1 hour**
Off Grid design **1 hour**
Surrette battery factory **10 minutes**



Registration Form

Solar PV Training Courses

Solar Liberty is offering Solar PV Training Courses throughout the year. The course fee is \$250.00 per person. This fee includes course literature and a hands on 1Kw system installation. Pre-registration is required five working days before the course date. There are no refunds on registration fees, however you may be able to reschedule to a future course.

*Solar Liberty will credit each company \$200.00 of your paid workshop fee toward the purchase of your first PV system, if purchased within three months of your course date.

** Please complete the form below and fax it to : 716.689.6357 **

Buffalo, NY:

Buffalo, NY:

February 5th – 8th, 2007

March 19th – 22nd, 2007

Name: _____

Company: _____

Address: _____

Phone: _____ Fax: _____ E-mail: _____

Types of Licenses held by your company: _____

How long in Business: _____ Number of Employees: _____

If more than one business location, please list other locations below:

Payment: Fee \$250.00

My check for \$_____ is attached. Please make check payable to Solar Liberty.
Please mail to: Attn: Nathan Rizzo, Solar Liberty, 6225 Sheridan Dr., Suite 102, Williamsville NY, 14221

Signature _____ Please register me for the date checked above.