

FLORIDA SOLAR



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Photovoltaic Equipment for Disaster Relief

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Photovoltaic Equipment for Disaster Relief

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1.0 INTRODUCTION

This report represents one of several deliverables for Task 3 of the Southeast Residential Experimental Station contract with Sandia National Laboratories for the U.S. Department of Energy. The purpose of the report is to describe PV-powered equipment that has been ordered and will be used by disaster relief organizations during emergencies.

2.0 PHOTOVOLTAIC EQUIPMENT SELECTED

Research completed during the needs assessment identified energy needs of emergency relief organizations and solar equipment capable of meeting those needs. Some of the equipment had to be tailored to meet the specific needs of the emergency relief organizations.

As a result of the workshop *Energy Needs During Disasters*, twelve organizations expressed a strong interest in participating in - this project (listed in Appendix A). From this group, the following five applications were selected based on cost and time constraints. Both the suppliers of the equipment and the emergency organizations are indicated.

Organization/Vendor	Photovoltaic System	Cost	Qty
Metro/Dade Rescue	Portable generator for communications		
Hutton Communications	150-W PV	\$1900	1
PhotoComm	100-W PV	\$1695	1
National Hurricane Center	Portable weather station		
PacComm	5-W PV	\$1499	1
Catholic Charities	Portable generator for shelters		
SunWize	75-W PV	\$ 999	1
Solar Electric Specialities	50-W PV	\$ 482	1
RACES	Portable generator for communications		
SunWize	75-W PV	\$ 999	1
Sarasota K-9 Search/Rescue	Portable charger for batteries		
United Solar Systems	12-W PV	\$ 425	1

One of each of the above systems is also being purchased for testing at FSEC.

3.0 PHOTOVOLTAIC EQUIPMENT SPECIFICATIONS

The following are specifications for the five photovoltaic-powered systems to be used and evaluated by emergency relief organizations.

Portable Generator for Field Communications

The photovoltaic generator system should meet the following requirements:

- Portable and fully contained in a single, simple package.
- Compact and lightweight to be carried by two people and deployed in 30 minutes with no tools.
- Capable of powering a separate radio repeater, charge at least 6 radios and a weather station, and provide 12-volt operation.
- Designed so that solar panels and batteries can be added to increase capacity.
- Capable of connecting AC power from an auxiliary generator or utility power sources.
- Must have weatherproof enclosure and use non-spill/non-hazardous batteries acceptable for air transport.

Weather and Communications Station

The photovoltaic-powered weather and communications station should meet the following requirements:

- Portable and contained in a single enclosure, except for the antenna.
- Compact and lightweight to be carried by one person and deployed in 30 minutes with simple tools.
- Capable of measuring and collecting weather data consisting of date, time, barometric pressure, temperature, sustained and gust wind speeds, wind direction and precipitation.
- Capable of transmitting data by amateur radio using the automation packet report system on 2-meter band using a 5-watt radio.
- System operation and transmit interval must be controlled remotely.
- Operator must be able to enter the location of the station from a global positioning system into the packet data.
- Designed so that solar panels and batteries can be added to increase load carrying capacity.
- Capable of connecting AC power from auxiliary generator or utility power sources.
- Must have weatherproof enclosure and include lightning protection. Must use non-spill/non-hazardous batteries acceptable for air transport.

Portable Generator for Shelters

The photovoltaic-powered generator system should meet the following requirements:

- Portable and fully contained in a single, simple package.
- Compact and lightweight to be carried by two people and deployed in 30 minutes with simple tools.
- Capable of powering radios, computers, printers, lights and small pumps and provide 12- and 120-volt operation.
- Designed so that solar panels and batteries can be added to increase capacity.
- Capable of connecting AC power from auxiliary generator or utility power source.

Portable Generator for Communications

The photovoltaic-powered generator system should meet the following requirements:

- Portable and contained in a single, simple package.
- Compact and lightweight to be carried by two people and deployed in 30 minutes with no tools.
- Capable of powering radios, weather station, computers, printers and lights and provide 12 and 120-volt operation.
- Designed so that solar panels and batteries can be added to increase capacity.
- Capable of connecting AC power from auxiliary generator or utility power source.

Man-Package Battery Charger

This photovoltaic-powered equipment should meet the following requirements:

- Portable and very lightweight.
- Unit should consist of one or more modules that can be folded and stored in a backpack.
- Installation should take minutes and require no tools.
- Capable of charging 12-volt batteries and powering radios, lights and other personal items.

4.0 EMERGENCY RELIEF AND SOLAR INDUSTRY ORGANIZATION CONTACTS

The projects selected required commitment from a representative of both the disaster organization and the solar industry for that application. These contacts are listed below:

Emergency Organizations

Metro/Dade Fire Rescue
6000 S.W. 87 Ave.
Miami, FL
contact: Justin Wasilkowski
305-596-8730

National Hurricane Center
11691 S.W. 17 Street
Miami, FL
contact: James Lushine
305-229-4520

BEARS
1746 Cedar Street
Rockledge, FL
contact: Ira Bickham
407-453-2309

Catholic Charities
9401 Biscayne Blvd
Miami, FL
contact: Bruce Netter
305-754-2444

K-9 Search/Rescue
4730 Country Meadows Blvd
Sarasota, FL
contact: Pat Abrams
941-377-7915

Solar Industry

Hutton Power System
1775 MacLeod Dr.
Lawrenceville, GA
contact: Roger Locke
770-963-1380

PacConirn
4413 N. Hesperides St.
Tampa, FL
contact: Gwyn Reedy
813-874-2980

SunWize
#1 Sun Street
Stelle, IL
contact: Mark Wilkerson
815-356-2222

Solar Electric Specialties
1 0 1 North Main Street
Willits, CA
contact: Wayne Robertson
1-800-344-2003

Photocomm
P.O. Box 460
Stafford, TX
contact: Gill Bishop
281-933-1578

APPENDIX A

EMERGENCY ORGANIZATIONS AND THEIR INTERESTS IN PHOTOVOLTAIC EQUIPMENT

The following is a list of the twelve organizations that have shown a strong interest in Participating in this project, along with the type of equipment each felt would be most useful.

Note: size and cost are estimates.

<u>Organization</u>	<u>Description, Size and Cost</u>
Metro/Dade Rescue	Portable generator for communications 150 W PV \$ 1500
United Cerebral Palsy	Stationary generator for home-bound 500 W PV \$ 5000
National Hurricane Center	Portable weather station 5WPV \$ 2000
American Red Cross	Mobile power generator for shelters 500 W PV \$ 8000
American Red Cross	Portable generator for communications 200 W PV \$ 2500
Salvation Army	Lighting and fans for comfort stations 500 W PV \$ 5000
Catholic Charities	Portable pumping station 120 W PV \$ 1200
Catholic Charities	Portable generator for shelters 80 W PV \$ 600
Radio Amateur Services	Portable generator for communications 150 WPV \$ 1500
Fla. Dept. of Transportation	Dual use mobile generator for traffic signals 500 W PV \$2500
Sarasota K-9 search and rescue	Portable generator for charging batteries 80 W PV \$ 600
County Emergency Management	Lighting and fans for temporary medical clinic 500 W PV \$ 5000