

FEMAC and FEMP *Federal Facility Operator's Resource for Success*

Mary Palomino
FEMAC Committee Member

AGENDA

- What is FEMAC?
- Introduction of FEMAC Members
- Executive Order 13123 **Renewable Energy**
- Renewable Energy Projects
- SRP'S Renewable Portfolio
- FEMP at Your Service
- Awards
- Q & A

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Federal Energy Management Advisory Committee (FEMAC)

- Federal and State Agency Officials and individuals from the private sector
- Serve as an advisory committee to the Department of Energy
- Chaired by the Director of FEMP
Beth Shearer & Facilitator-Steven Huff

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FEMAC MEMBERS

- **STUART BERJANSKY, CEM**
ADVANCED TRANSFORMER COMPANY
- **JARED O. BLUM, J.D.**
POLYSIOCYANUARATE INSULATION MFG ASSOC
- **ROBERT E. COLLINS, JR. CEM**
TAMPA ELECTRIC CO/PEOPLE GAS CO

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FEMAC MEMBERS

- **RICHARD W. EARL, P.E.**
PB FACILITIES-PARSONS BRINKERHOFF
- **ERBIN B. KEITH, J.D., P.E.**
SEMPRA ENERGY SOLUTIONS, LLC
- **VIVIAN ELLEN LOFTNESS**
CARNEGIE MELLON UNIVERSITY

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FEMAC MEMBERS

- **MITCH ROSEN**
LIBERTY TOTAL COMFORT SYSTEMS
- **CYNTHIA VALLINA**
OFFICE OF MANAGEMENT & BUDGET
- **MARY PALOMINO CEM**
SALT RIVER PROJECT (SRP)

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FEMAC MEMBERS

Newly Appointed

- ANNE MARIE MCSHEA
GREEN RENEWABLE ENERGY
CERTIFICATION PROGRAM
- DR. GET W. MOY
OFC OF DEPUTY UNDER SEC OF DEFENSE
- JAMES A. RISPOLI, P.E.
DOE OFC OF ENGR & CONSTRUC MGMT

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FEMAC MEMBERS

Newly Appointed

- TERREL M. EMMONS
OFFICE OF ARCHITECT OF CAPITOL
- RICHARD L. HAYS
SAN DIEGO ENVIRONMENTAL SVC DEPT
- BRIAN M. HENDERSON- CHAIRPERSON
NY ENERGY R&D AUTHORITY

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EXECUTIVE ORDER 13123

Sec.204- **RENEWABLE ENERGY**

“Each agency shall strive to expand the use of renewable energy within its facilities and activities by...”

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EXECUTIVE ORDER 13123

- Implementing renewable energy projects
- Purchasing electricity from renewable energy sources

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RENEWABLE ENERGY SYSTEMS NREL

National Wind Technology Center
Site Entrance Building
Golden, Colorado

SAVES

SUPPLEMENTS

IMPROVES

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WIND POWER DYESS AIR FORCE BASE TEXAS

- Uses 100% Wind Generated Electricity
- 80 Million kWh = 8,000 homes per year
- Fulfills Executive Order 13123

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WIND POWER PNNL

- Purchased **8.8 million kWh**
- Provided **13%** of the energy needed
- Stimulated “**green energy**” in area

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SRP Renewable Energy PORTFOLIO



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Renewable Energy Program

PV R, D & D



- Chandler Research House
 - 2.5 kW Grid-Connected
 - Installed 1999
 - First SRP PV Power System
- Calex Homes Subdivision
 - 6 Nominal 1 kW Systems
 - New Home Construction
 - Nov 2001 – Nov 2002

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Renewable Energy Program

R, D & D Residential Fuel Cell DEMO



- First Utility Demonstration in Arizona
- Plug Power Pre-commercial 5 Kw System
- Collaboration With EPRI and ASU
- 1-year Test Begins March 2003

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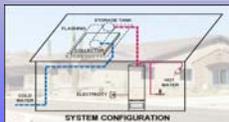
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Renewable Energy Program

R, D & D Solar Hot Water Heating



- Partnership: Sandia National Lab and Energy Laboratories, Inc.
- Developed an Advanced Solar Hot Water Technology for New Homes - Roof-integrated, Stainless Construction, No Moving Parts
- SHW Technology to Be Certified by National Certification Agency
- Commercialization Opportunities to be Investigated

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Renewable Energy Program

PV COMMUNITY COMMERCIAL BUILDINGS



- Cesar Chavez High School
 - 1 kW Grid-connected
 - Operation: 2001
 - Educational Awareness (SMCC, SCC)
- SRP Credit Union
 - 1st PV on AZ Credit Union
 - 3 kW Grid-Connected
 - Demonstrate Building Integrated System

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Renewable Energy Program

2003 Energy

PV GREEN ENERGY
SRP Tempe Warehouse



- 75 KW Fixed System
- Production: 130 MWH/yr
- PV Array Located on Roof of New Warehouse
- In Procurement Phase
- Project Completion March 2004
- First Application of Building Integrated PV on an SRP Facility

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Renewable Energy Program

2003 Energy

PV GREEN ENERGY
AGUA FRIA GENERATING STATION



- 200 kW Single-axis Tracking PV System
- Production: 512 MWH/YR
- Commercial Operation: June 1, 2001
- Distributed Generation

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Renewable Energy Program

2003 Energy

PV GREEN ENERGY
PUBLIC LIBRARY



- Partnership: City of Mesa
- 25 kW PV Covered Parking System Application
- Production: 40 MWH/YR
- Operation: May 2003
- Increase Community Awareness of Renewable Technologies

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Renewable Energy Program

2003 Energy

PV GREEN ENERGY
City of Phoenix Park & Ride



- Partner: City of Phoenix
- City Buys Green Energy
- SRP Leases Parking Structures for PV
- 100 kW PV Covered Parking System
- Operation: August 2003
- P&R Powered by Green
- Increase Awareness of Renewable Energy

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Renewable Energy Program

2003 Energy

HYDRO-ELECTRIC POWER
Arizona Falls Project



- Collaboration With City of Phoenix
- Canal Multiple Use / Arts Project
- Generates 750 KW
- Roof Mounted Solar Placed on Turbine Building
- Facility to Be Commissioned 3rd Quarter 2003

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Renewable Energy Program

2003 Energy

GREEN ENERGY
LANDFILL GAS GENERATION



- Partnership with SRPMIP
- 4 MW Generation

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Renewable Energy Program

2003 Energy

ADVANCED GREEN ENERGY
SRP ARIZONA STATE UNIVERSITY
FUEL CELL POWER PROJECT



- Partnership with ASU East
- Demonstrate "State-of-the-Art" high temperature molten Carbonate fuel cell technology at ASU east.
- 250 kW of energy to the SRP grid
- Option – Assess opportunity to use waste heat for chilled and hot water production for use on campus
- Operation: 2004 - 2005

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Renewable Energy Program

2003 Energy

Wind Energy
Project Development Opportunity



- Exploratory discussions with Wind Developer
- 30MW Wind Farm in Eastern Arizona
- Conducting Multi-Department Evaluation
 - Financial
 - Transmission Access
 - Environment/Archaeological
 - Community Issues
 - Land/Rights-of-Way

600kW Westinghouse Turbine at the NREL Wind Technology Center Golden, Colorado

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Renewable Energy Program

2003 Energy

First Year Busbar

Cents per kWh

	Geo Thermal	Landfill Gas	Wind	Wood Chip	Low Head Hydro	Fuel Cell	Solar
O&M	1.40	2.50	0.50	4.40	1.00	5.20	0.70
Fuel	0.00	0.50	0.00	3.10	0.00	2.80	0.00
Capital	2.80	2.50	5.50	2.80	9.40	10.10	40.00
Total	4.20	5.50	6.00	10.30	10.40	17.90	40.70

Source: Bob Hess, Generation
 Based on Actual & Estimated Costs

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EarthWise Energy Program

2003 Energy

EDUCATIONAL OUTREACH




- SRP Solar Spectacular - high school solar boat competition
- "Powering our Future" renewable energy education curriculum
 - Middle School low head hydro module
 - High School PV module
 - Interactive Web based upper elementary curriculum
- Installed PV at:
 - Cesar Chavez High School
 - South Mountain Community College
 - Scottsdale Community College
- Installed web-based solar information resource

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EarthWise Energy Program

2003 Energy

Energy for Future Generations



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2003 Energy

FEMP
ARRAY OF HELP

Technical & Financing Assistance

- Evaluate
- Educate & Advise
- Provide
- Review
- Guide

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FEMP RESOURCES

- New Technology Demonstration Program
- FEMP and Western Area Power Administration
- Printed Materials

Renewable Resources For Federal Agencies

Save With Solar & Wind

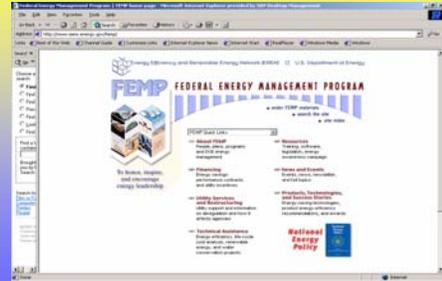
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FEMP CONTACT

**ANNIE HASKINS
OUTREACH PROGRAM
U.S. DEPARTMENT OF ENERGY
FEDERAL ENERGY
MANAGEMENT PROGRAM
202-586-4536**

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AWARDS



Presented for outstanding contributions to saving energy at Federal facilities

by

**Federal Government
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FEMP**

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RENEWABLE ENERGY AWARDS TO ORGANIZATIONS

**Department of the Navy
Navy Public Works Center
San Diego, California**

**U.S. National Park
Mojave National
Preserve
Barstow, California**

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RENEWABLE ENERGY AWARDS TO SMALL GROUPS

**United States Air Force
Renewable Energy Purchase
Edwards Air Force Base, California**

AMY HOFFER

MIKE KEELING

MAJOR JEFFREY A. RENSHAW

MICHAEL J.SANTORO

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RENEWABLE ENERGY AWARDS TO SMALL GROUPS

**U.S. National Park Service
Mount Rainer National Park
Ashford, Washington**

**GENE CHENEY
ZEB DARRAH
JEFF HARMON
JIM ZIOLKOWSKI**

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RENEWABLE ENERGY AWARDS TO SMALL GROUPS

**U.S. Fish and Wildlife Service
Ventura, California**

**GREG AUSTIN
MELISSA ENNIS
VIVIAN RICE-SMUIN**

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RENEWABLE ENERGY AWARDS TO SMALL GROUPS

**U.S. Fish and Wildlife Service
Imperial National Wildlife Refuge
Yuma, Arizona**

**CHARLES CALDWELL
MARY ANNE CRAFTON-WILLIAMS
KEN EDWARDS
MARK ORTON**

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INNOVATIVE/NEW TECHNOLOGY AWARD ORGANIZATION

**Department of the Army
U.S. Army Corp of Engineers
Walla Walla District
Walla Walla, Washington**

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INNOVATIVE/NEW TECHNOLOGY AWARD INDIVIDUAL

**David R Murphy
United States Postal Service
Dallas, Texas**

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Q & A

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