



An Energy-Efficiency Workshop and Exposition

Orlando, Florida

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**



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**



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



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 UNIVERITY



FEMAC MEMBERS

- **MITCH ROSEN**
LIBERTY TOTAL COMFORT SYSTEMS

- **CYNTHIA VALLINA**
OFFICE OF MANAGEMENT & BUDGET

- **MARY PALOMINO CEM**
SALT RIVER PROJECT (SRP)



FEMAC MEMBERS

Newly Appointed

- **ANNE MARIE MCSHEA**
**GREEN-e 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



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



EXECUTIVE ORDER 13123

Sec. 204-RENEWABLE ENERGY

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



EXECUTIVE ORDER

13123

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



RENEWABLE ENERGY SYSTEMS NREL

**National Wind Technology Center
Site Entrance Building
Golden, Colorado**

SAVES

SUPPLEMENTS

IMPROVES



WIND POWER

DYESS AIR FORCE BASE

TEXAS

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



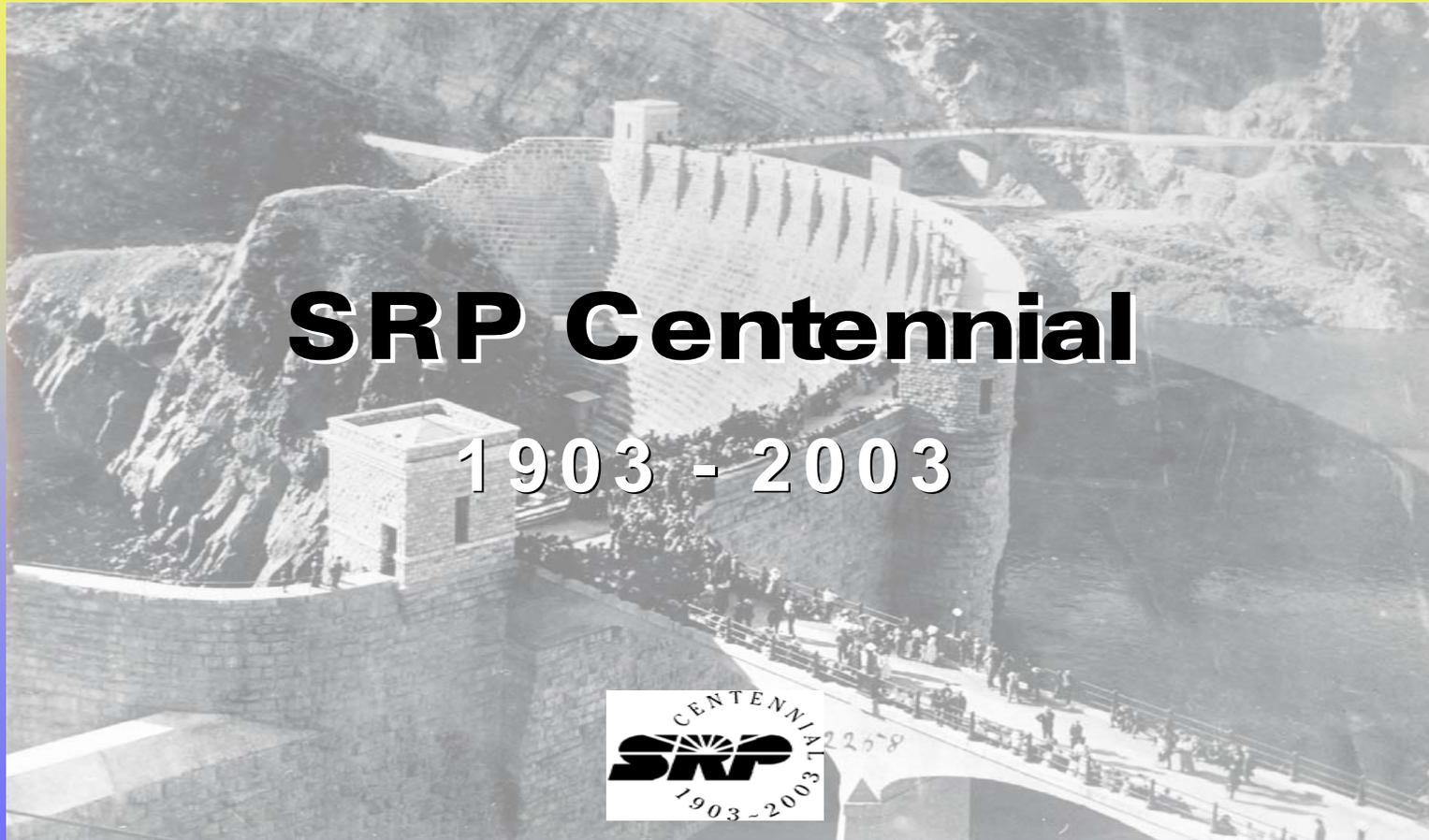
WIND POWER

PNNL

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



SRP Renewable Energy PORTFOLIO



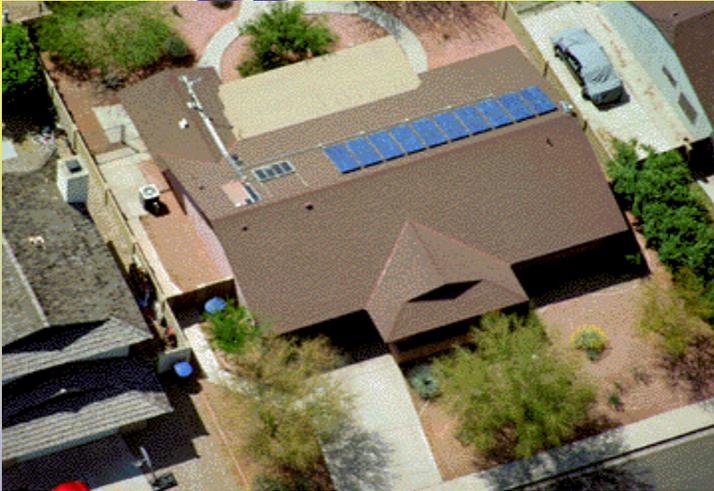
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Renewable Energy Program

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**

Renewable Energy Program



R, D & D

Residential Fuel Cell DEMO

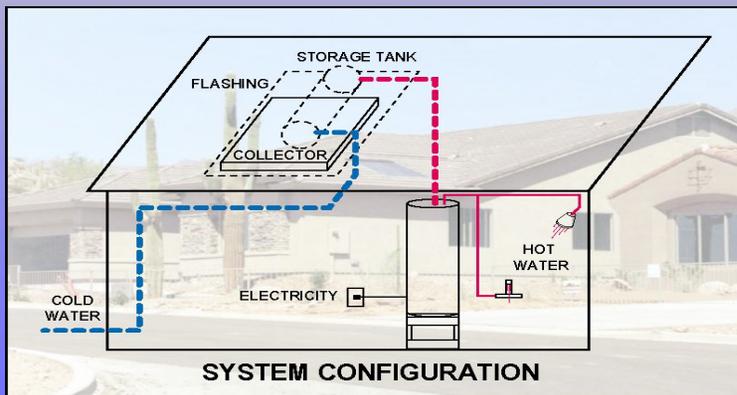


- **First Utility Demonstration in Arizona**
- **Plug Power Pre-commercial 5 Kw System**
- **Collaboration With EPRI and ASU**
- **1-year Test Begins March 2003**

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**

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



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**



Renewable Energy Program

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**



Renewable Energy Program

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

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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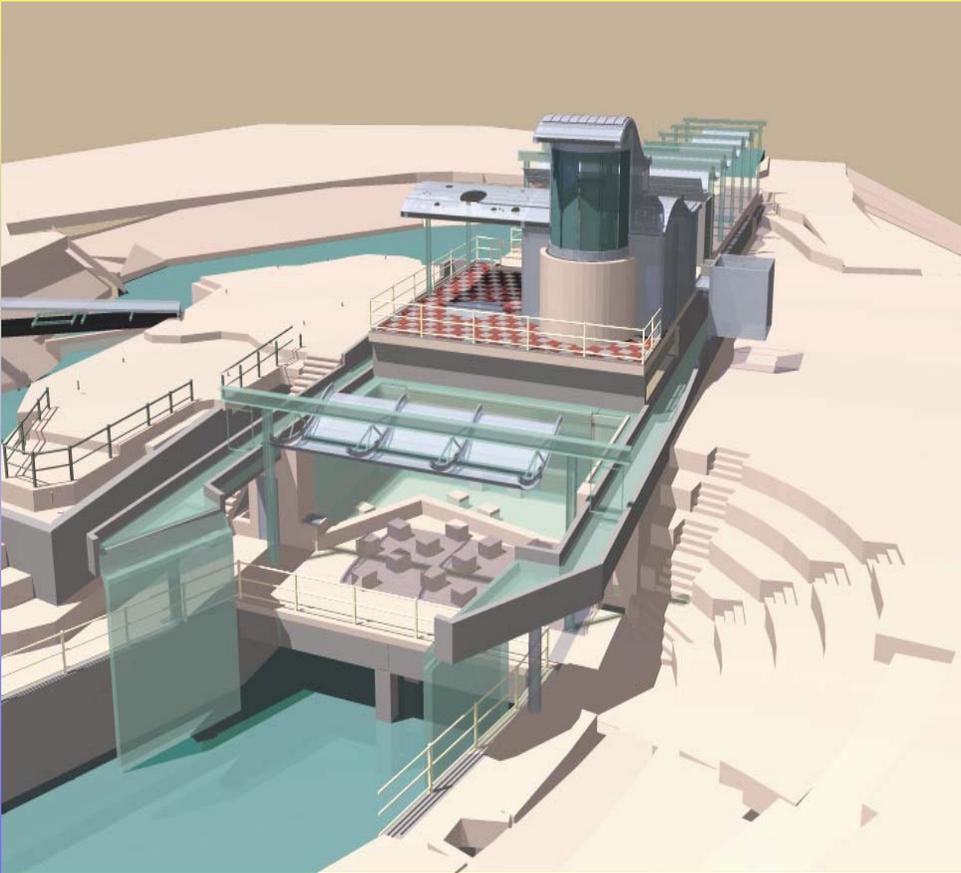
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Renewable Energy Program



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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GREEN ENERGY LANDFILL GAS GENERATION



- Partnership with SRPMIP
- 4 MW Generation

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Renewable Energy Program



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

Renewable Energy Program

Wind Energy

Project Development Opportunity



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

- **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

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Renewable Energy Program



First Year Busbar

Cents per kWh

	<u>Geo Thermal</u>	<u>Landfill Gas</u>	<u>Wind</u>	<u>Wood Chip</u>	<u>Low Head Hydro</u>	<u>Fuel Cell</u>	<u>Solar</u>
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	2.60	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*

EarthWise Energy Program



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

Energy for Future Generations



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FEMP ARRAY OF HELP

Technical & Financing Assistance

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



FEMP RESOURCES

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

Renewable Resources For Federal Agencies

Save With Solar & Wind



www.eere.energy.gov/femp

Energy Efficiency and Renewable Energy Network (EREN) U.S. Department of Energy

FEMP FEDERAL ENERGY MANAGEMENT PROGRAM

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- News and Events**
Events, news, newsletter, and hot topics
- Products, Technologies, and Success Stories**
Energy-saving technologies, product energy-efficiency recommendations, and awards

National Energy Policy

To honor, inspire, and encourage energy leadership

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FEMP CONTACT

ANNIE HASKINS

OUTREACH PROGRAM

U.S. DEPARTMENT OF ENERGY

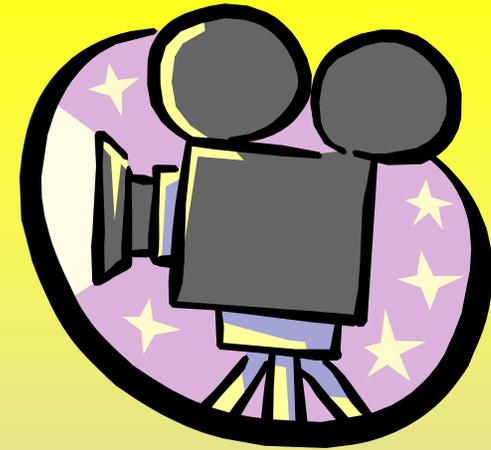
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MANAGEMENT PROGRAM

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AWARDS



**Presented for outstanding contributions to
saving energy at Federal facilities**

by

**Federal Government
with the assistance of
FEMP**



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



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



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



RENEWABLE ENERGY AWARDS TO SMALL GROUPS

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

GREG AUSTIN

MELISSA ENNIS

VIVIAN RICE-SMUIN



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



**INNOVATIVE/NEW
TECHNOLOGY AWARD
ORGANIZATION**

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



**INNOVATIVE/NEW
TECHNOLOGY
AWARD INDIVIDUAL**

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



Q & A



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