



Utility-Scale Solar II

*The Solar Challenge, How Utilities are Meeting
Renewable Goals*

SRP Renewable Energy Program

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Renewable Energy & Technologies

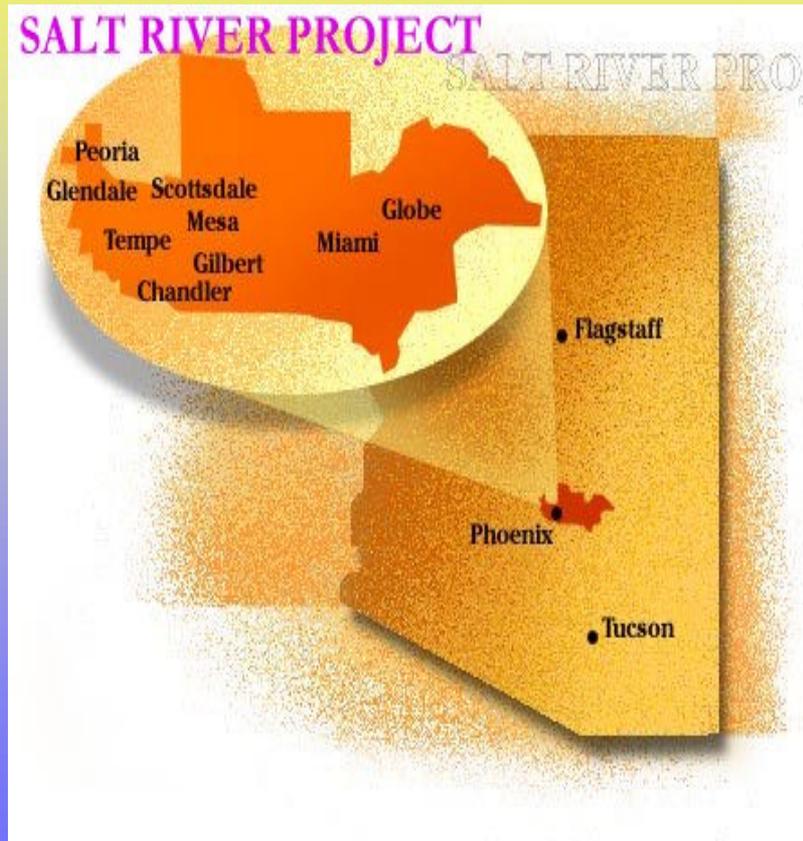
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Outline

- Facts
- Renewable Energy Program
- Solar Technologies Program
- Solar Electric Projects

SRP Facts



- Public Power Utility
 - Electric
 - Water
- 796,000 Customers
- FY03 Peak: 5,296 MW
- Power Sources
 - Coal: 2,057 MW
 - Nuclear: 666 MW
 - Hydroelectric: 239 MW
 - Landfill Gas: 4 MW
 - Small Hydro: 750 kW
 - Solar PV: 525 kW

Renewable Energy Program Overview

- Feb 2000 – SRP Board Approved
- \$29.2 Million for Renewable Energy Program
- 4 Year: Term: May 2000 – April 2004
- Portfolio Approach - Eligible Technologies
 - Biogas-Landfill Gas
 - Solar Electric & Solar Water Heating
 - Microturbines, Fuel Cells
 - Low Impact Hydroelectric, Wind
- Funded by System Benefits Charge

Renewable Energy Program Goals

- Primary
 - Provide Clean kWh to SRP Customers – Green Power
 - Reduce Emissions by Using Clean Technologies
- Secondary
 - Economic Development
 - Reduce Cost of Clean Power Technologies

Portfolio Screen -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	0.60	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	5.10	2.80	9.40	10.10	40.00
Total	4.20	5.50	5.70	10.30	10.40	17.90	40.70

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

Renewable Generation Capacity

- Installed Capacity – October 2003:
 - Landfill Gas Generation: 4 MW
 - Low Impact Hydroelectric: 750 kW
 - Solar Electric – Utility Scale: 525 kW

Renewable Generation Capacity

- Planned – 2003 - 2004:
 - Solar Electric: 500 kW
 - High Temperature Fuel Cell: 250 kW
- Proposed
 - Wind Energy: TBD

Solar Electric Projects

- Focus: Utility Scale PV Power Systems
- SRP Owns, Operates and Maintains
- Capital Projects – RFP Process
- Turnkey Installations
 - SRP Owned Facilities
 - Partnership Sites
- Nominal: 25 kW to 200 KW AC

Solar Electric – SRP Facilities



Rogers PV1_PV2



Agua Fria PV

Solar Electric – Partnership Sites



Phoenix Park & Ride



Mesa Red Mountain Branch
Library

Solar Electric Systems – In Progress

- 200 kW Single-Axis Tracking PV Rogers Solar Park
- 75 kW Roof Mounted PV New SRP Warehouse Building
- Planned 125 kW PV

Summary

- Renewable Energy Program
 - Technology Portfolio Approach
 - Solar Electric Technologies
 - Focus on Photovoltaics
 - SRP owned, operated and maintained
 - Applications:
 - SRP Owned Facilities
 - Community Partnerships