



Sun • Lab

## Sun♦Lab 2001

# Sandia and NREL Cooperation in CSP

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- Our Goals...
  - Enhanced inter-lab working relationships
  - Common vision and unified image
  - Increased efficiency and productivity
  - Expanded opportunities for both labs
- Our Vision...
  - A single business entity, i.e., a "virtual" laboratory
  - A single management team
  - Empowered inter-laboratory teams
  - Optimized internal operations and external interactions
- Our Objectives...
  - Successful CSP technology and industry
  - Healthy and growing DOE CSP program
  - Enhanced DOE and Congressional support

## Sun♦Lab 2001

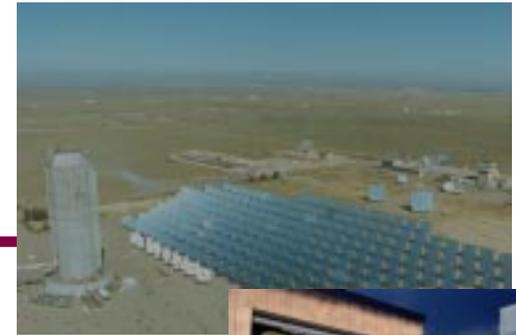
# Operational Guidelines

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- All CSP work conducted under the Sun♦Lab banner
  - Staff and management identify with Sun♦Lab (but also with their individual laboratories when appropriate)
- Emphasis on program management across laboratory lines
  - maintain critical mass and effective utilization of capabilities at each lab
  - right staff to get the job done; right jobs for the staff
- Responsibilities and rewards for management as single organization
- Upper management commitment

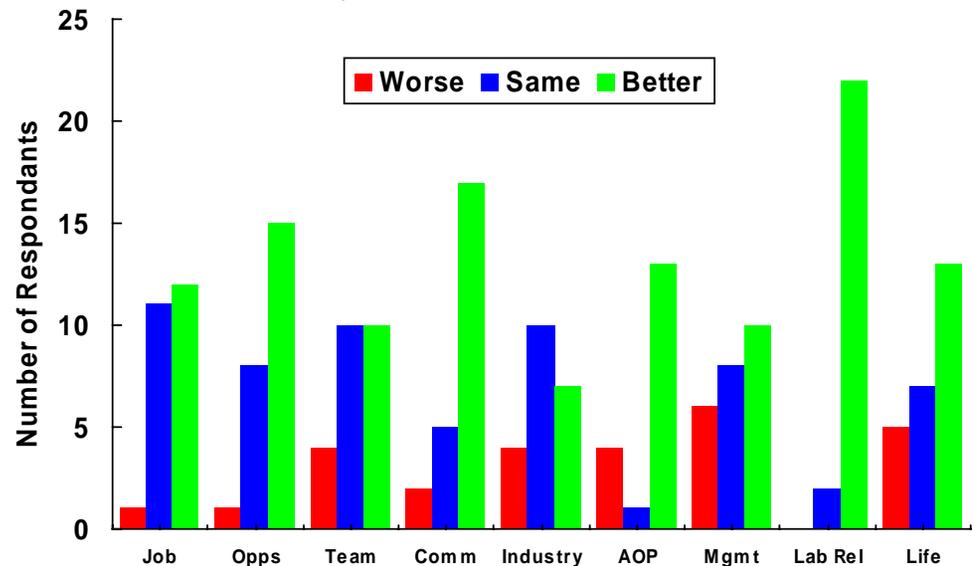
# Sun • Lab 2001

## Some Observations after 6 years ...



- Virtual Laboratory operation has continued to enhance our operations
  - Strategic and tactical planning and implementation improved
  - Inter-lab staff teaming successful
  - Staff survey very positive (with some lessons learned)
  - Cost savings
- Strong DOE and industry acceptance and utilization
- Improvements in process
  - Laboratory planning tied to technology roadmaps
  - Better decision-making processes
  - Rewards tied to our joint success

Staff Survey (1997):



# SolarPACES

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- SolarPACES (Solar Power and Chemical Energy Systems) is the International Energy Agency's (IEA's) working group in concentrating solar power.
  - 14 participating countries include both technology suppliers and potential market countries:
    - Australia, Brazil, Egypt, European Union, France, Germany, Israel, Mexico, Russia, South Africa, Spain, Switzerland, United Kingdom, and United States
  - Specific Tasks include:
    - I. Electric Power Systems
    - II. Solar Chemistry Research
    - III. Technology and Applications
  - Participation in specific activities is voluntary and takes many forms:
    - Information sharing
    - Task sharing
    - Cost sharing
  - U. S. international CSP activities are regulated through SolarPACES
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# SolarPACES

## Impact and Directions

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- Technical Accomplishments
  - Cooperative technical advances in all technology areas
  - Successful tests and demonstrations positioning CSP for near-term markets
- Market Impact
  - Gaining acceptance of CSP as viable RE option by WB/GEF, IEA/REWP, and a variety of national efforts
  - Supporting market opportunities for CSP with Egypt, India, Morocco, Mexico, South Africa, Australia, Spain, Italy, etc.
- Future Directions within SolarPACES
  - Maintaining shared access to CSP technology development and markets
    - Subject, of course, to appropriate IP protection
  - Influencing market opportunities for CSP
    - Removing Legislative, Regulatory, and Financial Barriers
    - Encouraging Near-Term Market Incentives to Level the Playing Field
    - Developing Effective Tools to Assess True Value of Renewables
  - Playing a key role in establishing U. S. leadership in future commercial projects

International interaction under the IEA/SolarPACES umbrella is essential to continue this progress

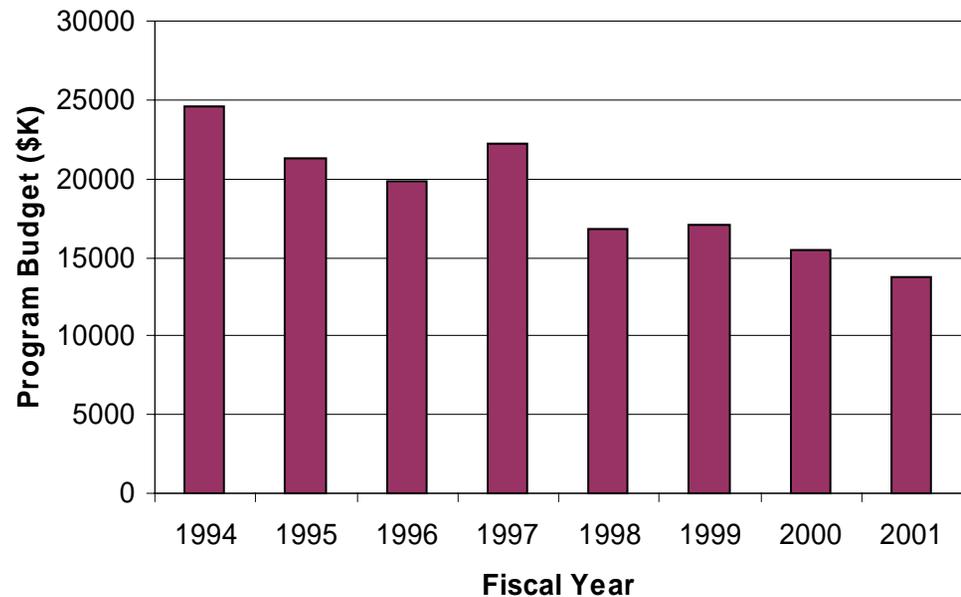
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# CSP Program Challenges

## CSP Budget

- The CSP Program budget has been reduced by more than 40% over the past 8 years.
  - The program is in dire need of visible successes, i.e. near-term commercial projects.
  - In the absence of commercial projects, the program must do a better job measuring and reporting technical progress to key stakeholders.



# CSP Program Challenges

## Competition with Fossil Fuel

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- Current and projected costs of natural gas will continue to be a barrier to achieving sustainable large-scale markets for CSP technologies (general problem for all renewable technologies)
  - cost reductions (parabolic troughs) and validated performance/reliability (dishes and towers) are necessary for sustainable markets
- Approaches are necessary that go beyond simply reducing the cost of CSP technologies.
  - can CSP technologies provide a hedge against fuel supply and price volatility?
  - can CSP technologies support U.S. concerns over energy and national security?
  - can state and federal incentives and portfolio standards be expanded to encourage development of CSP technologies?



Sun Lab

# CSP Program Challenges

## DOE Mission

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- DOE Secretary Abraham on Department Mission and Priorities:
  - long-term: “ideas and innovations that are relatively immature”
  - near-term: “ensure greater application of mature technologies”

## CSP Program Challenges

# Near-Term versus Long-Term

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- Near-term activities driven by:
  - Industry commercialization efforts
  - Response to congressional mandates
  - Need for visible successes
  
- Long-term activities driven by:
  - Need for reduced cost and improved performance of existing technology options
  - Identification of new approaches

# With Challenges Come Opportunities

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→ **1000 MW of Southwest solar capacity by 2006**

- Technology deployment
  - DOE reinvestment in parabolic trough R&D and industry-driven project development
  - 1 MW dish project in Nevada
  - Solar Tres power tower project in Spain
- Directed near- and long-term R&D
  - cross-cutting research and development
  - advanced component and system development
  - systems analysis and resource assessment