

PLENARY SESSIONS

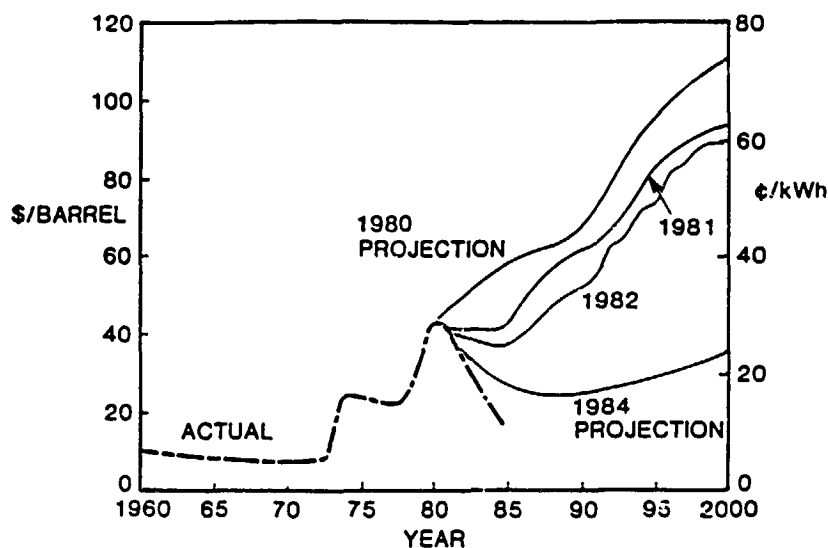
N87-16396

HISTORICAL OVERVIEW, ACCOMPLISHMENTS, AND
VALUE OF THE FSA PROJECT: INDUSTRY

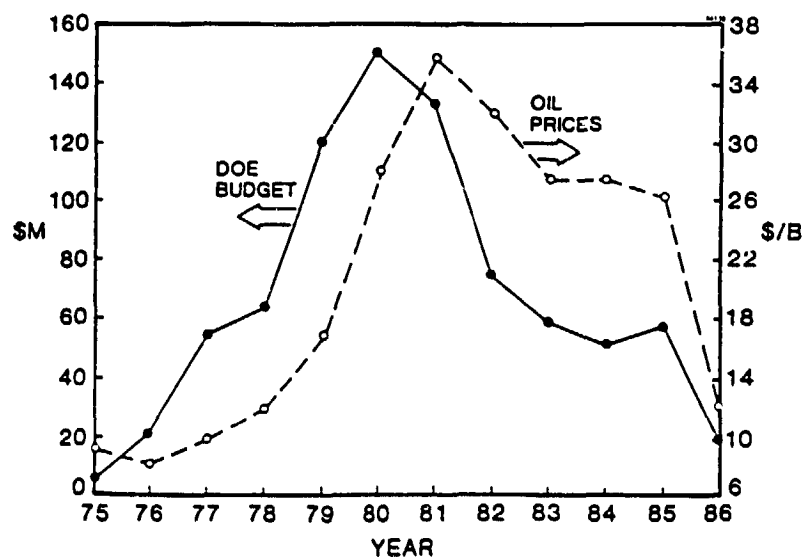
SPIRE CORPORATION

R. Little

Southern California Edison Data



DOE PV Budget Per Annum



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PLENARY SESSIONS

United States

- ARCO SOLAR 4.9 MW
- SOLAREX 2.2 MW
- SOLAVOLT 0.5 MW
- SOLEC INTERNATIONAL 0.4 MW
- CHRONAR
- SOVONICS
- MOBIL SOLAR
- WESTINGHOUSE
- ENTECH

Europe

- PHOTOWATT (FRANCE) 1.0 MW
- AEG (WEST GERMANY) 0.8 MW
- PRAGMA (ITALY) 0.5 MW
- BP SOLAR (AUS, SPAIN, G.B.) 0.4 MW
- ANSALDO (ITALY)
- HELIOS (ITALY)
- SIEMENS (FRG)
- ISOFOTON (SPAIN)

Japan

- SANYO 3.9 MW
- FUJI 2.8 MW
- SHARP 0.5 MW
- KYOCERA
- HOXAN
- KANEKA
- NEC
- HITACHI
- KOMATSU
- MITSUBISHI
- TAIYO YUDEN

PLENARY SESSIONS

Developing World

- INDIA
- CHINA
- SAUDI ARABIA
- ALGERIA
- AUSTRALIA
- CANADA
- BRAZIL

Upside

- DOE
- OTA
- STATE
PROGRAMS
- UTILITIES
- DOD

Photovoltaics: More than an Energy Option

- UTILITY GROWTH
- BALANCE OF PAYMENTS
- FOREIGN RELIANCE
- WORLD STANDARD OF LIVING
- MILITARY STRONGER

PV Progress

- $\eta \sim 15\%$
- ENDURANCE > 20 YEARS
- LOW COST FEASIBLE

PLENARY SESSIONS

Utility Interest

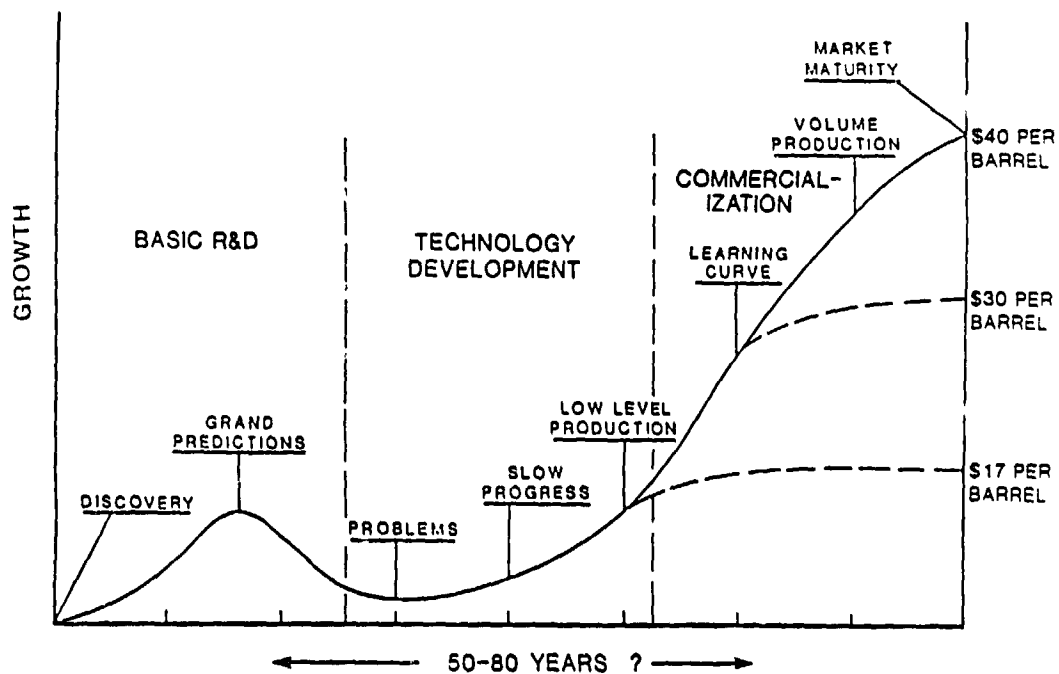
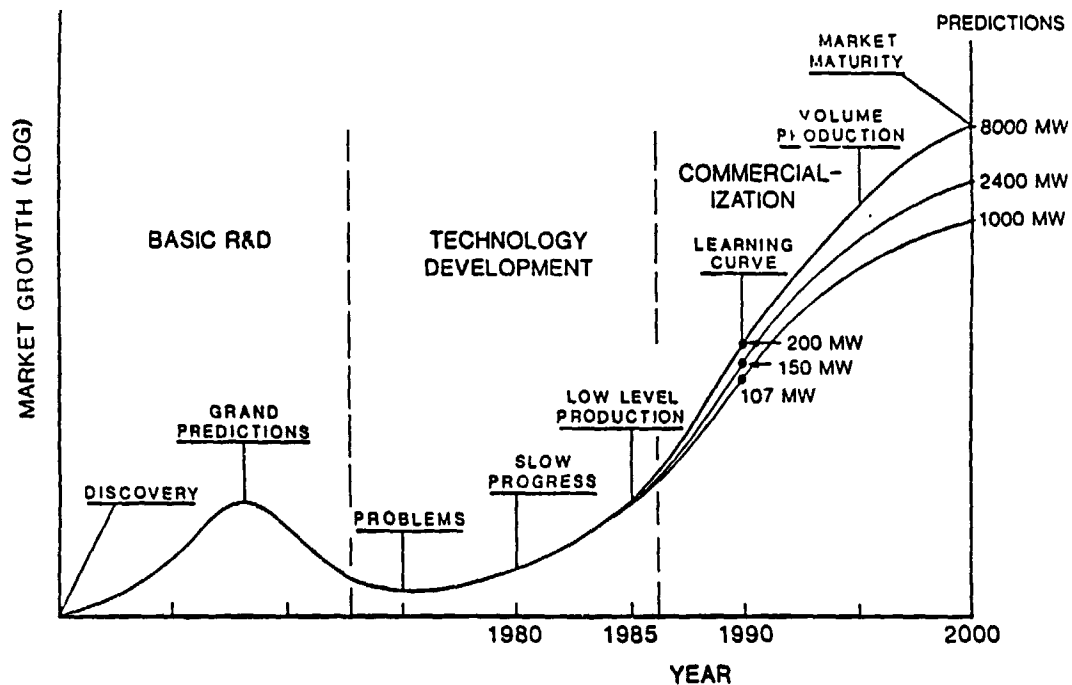
- ALABAMA POWER
- ARIZONA PUBLIC SERVICE CO.
- AUSTIN MUNICIPAL POWER
- BOSTON EDISON
- CON. ED.
- EL PASO ELECTRIC
- EPRI
- FLORIDA P&L
- GEORGIA POWER
- NEW ENGLAND ELECTRIC
(MASS ELECTRIC)
- NEW YORK POWER AUTHORITY
- PG&E
- SAN DIEGO G&E
- SMUD
- SO. CAL. ED.
- TVA
- VIRGINIA ELECTRIC POWER

Utility Activities

- | | |
|----------------------|--------------------------------|
| ● PG&E | PVUSA |
| ● EPRI | CONCENTRATOR
MANUFACTURING |
| | THIN FILM RESEARCH
SUPPORT |
| | RIBBON |
| ● SO. CAL. ED. | THIN FILMS |
| | GaAs |
| ● AUSTIN | 300 kW |
| ● ALABAMA | MANUFACTURE
OF α -Si |
| ● NEES | GARDNER PROJECT |
| ● VIRGINIA | TEST PROGRAM |
| ● NUMEROUS UTILITIES | INSOLATION MONITORING |

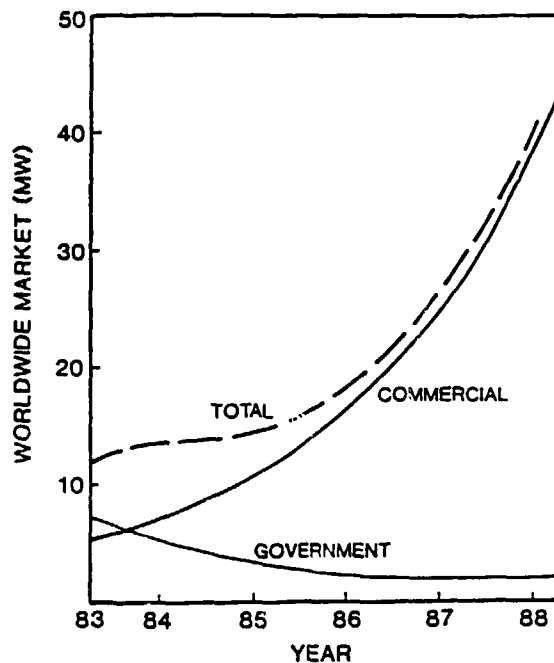
PLENARY SESSIONS

PV Technology Commercialization



FLENARY SESSIONS

PV Market: Government Versus Commercial



Massachusetts

- MASS.PV CENTER
 - ASSIST INDUSTRY
 - TRAIN VISITORS
 - INFORMATION DISSEMINATION
- CENTER FOR EXCELLENCE
 - OPERATE NERES
 - DEFINING GOALS NOW
 - REMOTE APPLICATIONS STRESSED
 - INSULATION ISSUES
 - SANDIA ASSISTED
 - FUNDS IN JEOPARDY
- MASS.PUP PROGRAM

PLENARY SESSIONS

Massachusetts PUP

- \$1M
- MULTI-AGENCY
- APPLICATIONS
- COST EFFECTIVE
- CENTRALLY FUNDED
-AGENCY ADMINISTERED

DOD — Marvroules

- MILITARY MUST BUY IF COMPETITIVE
- REPORT (Draft)
 - 200 SYSTEMS
 - 21,000 POTENTIAL APPLICATIONS
- TRI-SERVICE
 - NAVY LEAD
 - ADVISORY GROUP
- EDUCATION

DOE Involvement

- R&D PROGRAM
- SUPPORT TO OTHER AGENCIES
- DOD
- CORECT
- MANAGEMENT STRUCTURE
CONSOLIDATED

PLENARY SESSIONS

Office of Technology Assessment

PV

- GREATER FLEXIBILITY
 - MODULAR NATURE
 - LOWER INSTALLATION COST
 - SHORTER LEAD-TIMES
- CLEAN AND EFFICIENT
- ABUNDANT SOURCE ENERGY
- MAJOR CONTRIBUTIONS BY YEAR 2000
- DEMONSTRATED FEASIBILITY
- ECONOMIES OF SCALE WILL REDUCE COST

NEEDS

- FAVORABLE TAX TREATMENT IMPORTANT
- COOPERATION OF GOVT/IND/UTIL/LABS
- UTILITIES MUST HAVE FULL PURPA BENEFITS

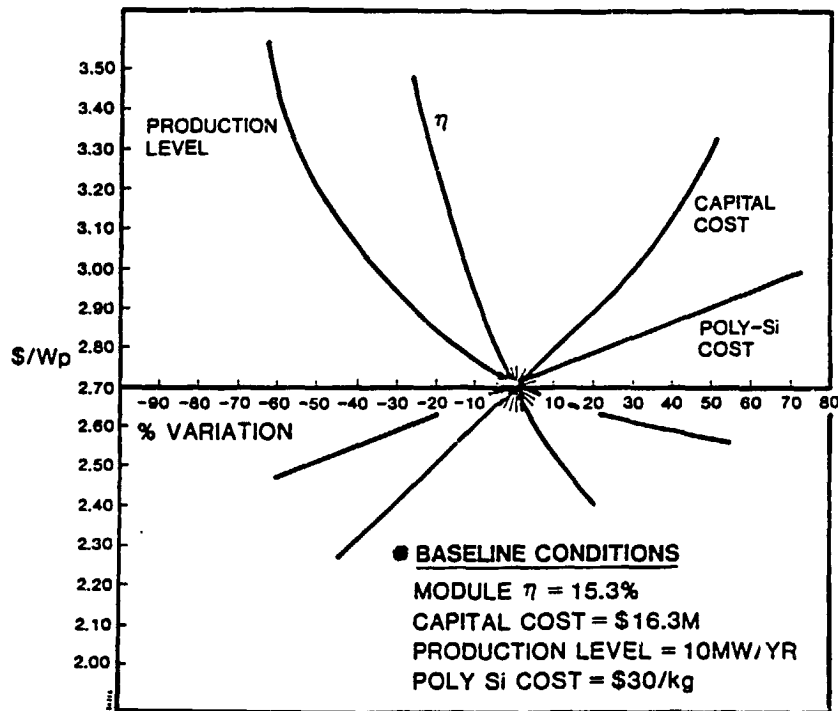
SOURCE: Office of Science and Technology:
"New Electric Power Technologies"
July, 1985 OTA-E-246

"In a policy reversal, New Hampshire's largest utility says that it will buy electricity from small water, solar, wind and cogeneration power producers as an alternative to reviving plans to complete Unit 2 of the Seabrook nuclear power plant."

The Boston Globe - April 21, 1986

PLENARY SESSIONS

Sensitivity Analysis of Module Manufacturing Costs



Cost of Manufacture: EPRI

● 25 MW LEVEL

- X-Si: \$1.90/Wp
- α -Si MODULES: \$1.15/Wp
- CONCENTRATORS: \$1.40/Wp

ALL TECHNOLOGIES LOOK GOOD
WITH SCALE UP