Renewable Energy - Private Interest in the United States

Glenn Hamer, Executive Director
Solar Energy Industries Association
ghamer@seia.org (202) 628-7745
http://www.seia.org

Solar Energy Industries Association
SEIA
Representing Solar in DC

ACRE
AMERICAN COUNCIL FOR RENEWABLE ENERGY

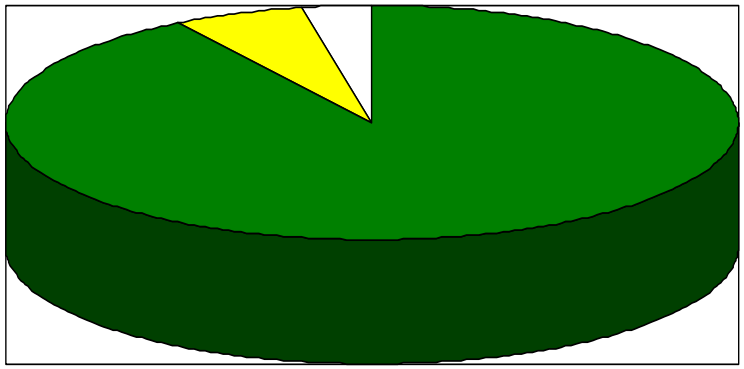
SEIA

Private Sector Interest Motivators

91% of Americans support "investments in new sources of energy such as solar, wind, and fuel cells." Only 6% oppose.

"Developing more solar and wind power" polled as the #1 choice for what respondents thought is the Federal government's "highest priority" for energy development.

USA Today / CNN / Gallup poll – May 2001



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Purchasing Motivators – United States

- Economics (esp. with credit schemes and net metering)
- Security / Reliability
  - Y2K, California energy crisis
  - Mission-critical applications (banking, high-tech manufacturing)
- Price Hedge / System Operation Benefits
  - http://www.smallisprofitable.org
  - Natural gas supply concerns
- Fulfill Regulatory Obligations
- Environmental and Altruistic Motivators
  - Made easier via availability of “green tags”
  - Can trump financial concerns – housing development study

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Major Domestic Manufacturing Interests

A·S·E

AstroPower

bp solar

Evergreen Solar

Shell Solar

POWERLIGHT™

SHARP

KYOCERA

UNI-SOLAR
United Solar Systems Corp.

GE Wind Energy

spire

BERGEY WINDPOWER

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Respected Major Users of Green Power

GM

Johnson & Johnson

kinkos

city of Chicago

TOYOTA

AMD

3M

http://www.epa.gov/greenpower/ for a small list

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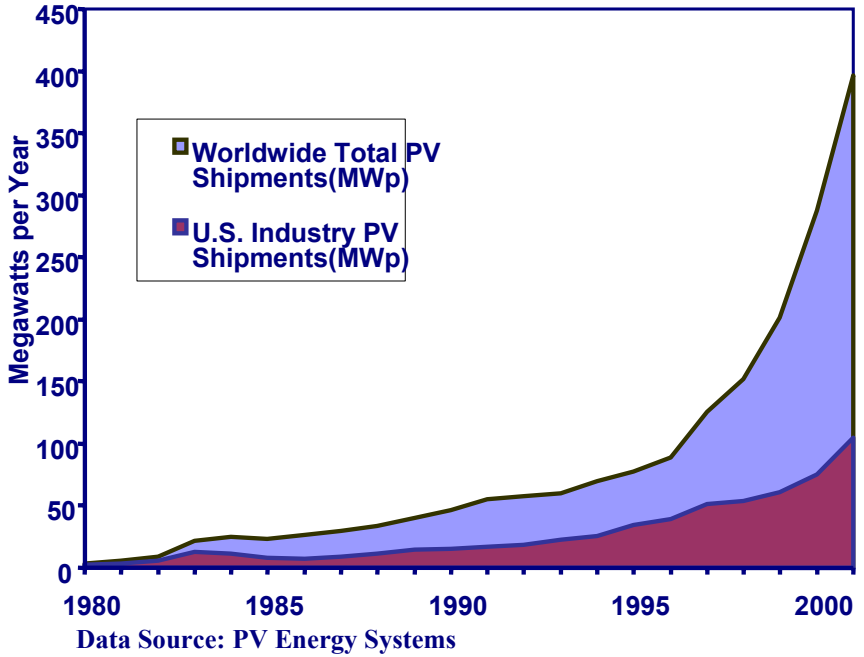
Renewable Energy Production – Size of Markets - PV

- Improved Manufacturing Techniques
- Decreased Raw Material Usage
- “Leapfrog” & new technologies
- Economies of Scale

1975: ca. $5.30 / kWh
1991: ca. $.55 /kWh
2002: ca. $.20 / kWh

US yearly $430 million
(2.5 billion worldwide)



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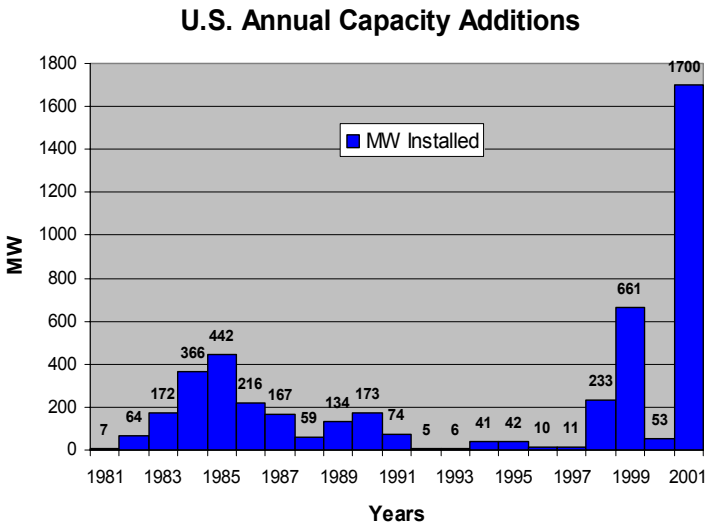
Renewable Energy Production – Size of Markets - Wind

- Increased Turbine Size
- R&D Advances
- Manufacturing Improvements

1979: $.40 / kWh
2002: Ca. $.05 / kWh for large, ideal sites.
2007: Goal is < $.02 / kWh

$1.7 billion US

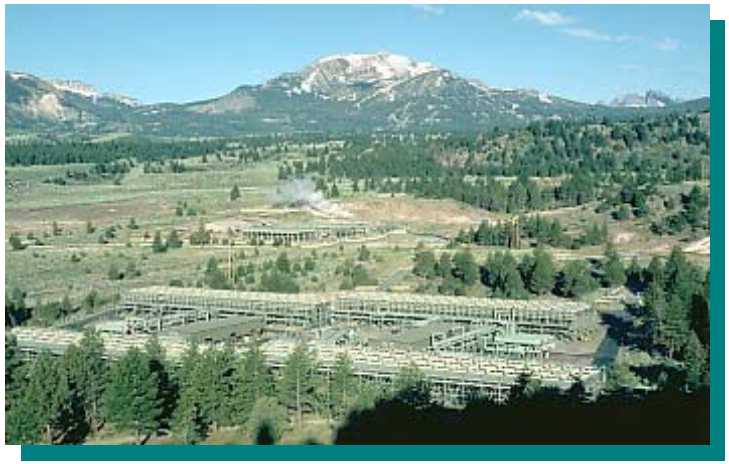


- More industry experience
- Improved drilling technology
- Economies of scale

1985: 15-16 cents/kWh

2000: 5- 8 cents/kWh

2003: 4- 6 cents/kWh



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- Major Environmental Concerns (fisheries, river condition, etc.)
- Most major renewable generation source, little new construction
- “Small” and “incremental” hydropower

1985: 15-16 cents/kWh

2000: 5- 8 cents/kWh

2003: 4- 6 cents/kWh

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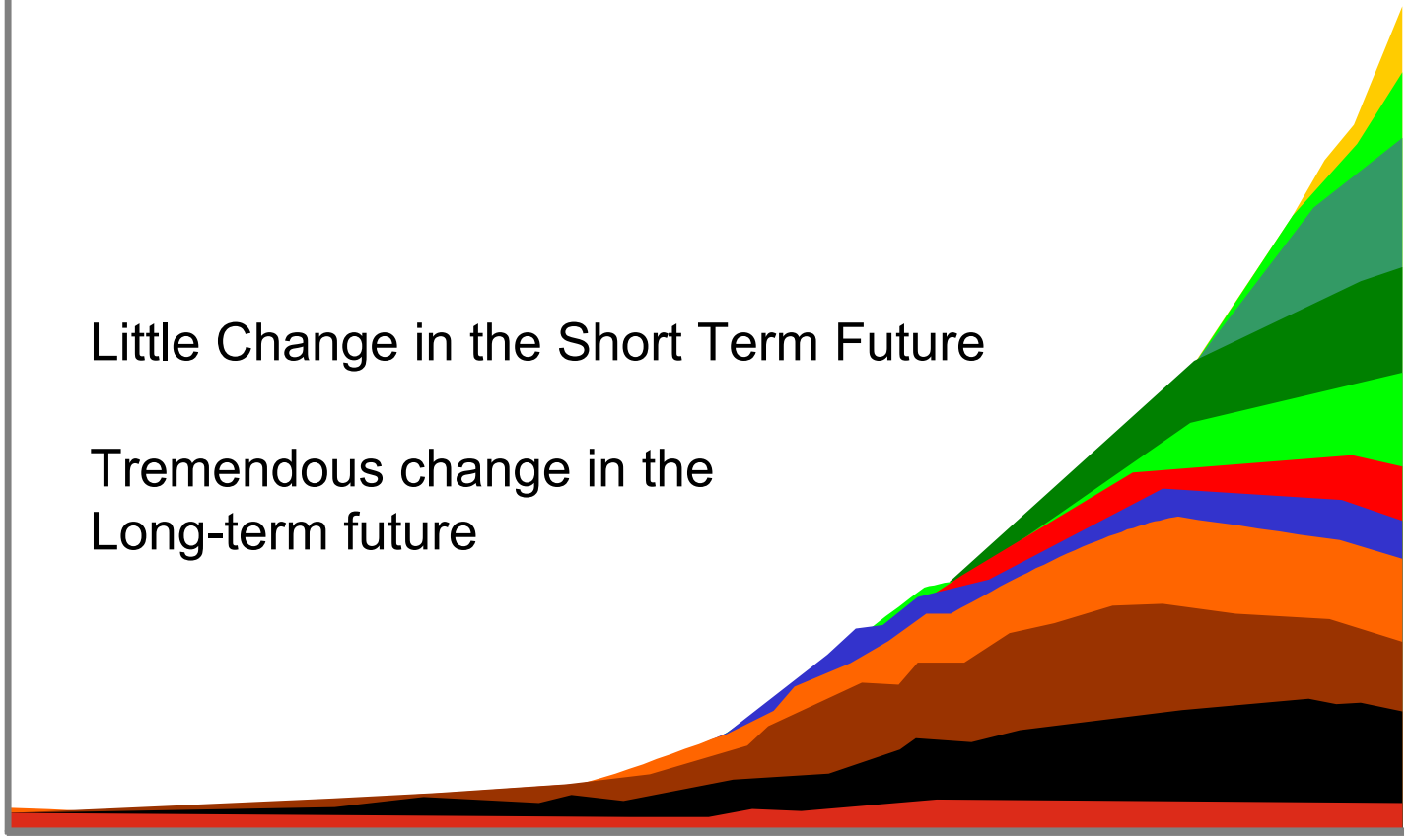
Renewable Energy Production – Projections for Growth



Source: Royal Dutch Shell, 1995.

Major Uses of Renewables in the US

Buildings Market

BP Solar

- Primarily solar and geothermal (heat pumps.) Some small wind.
- Reduces operating costs, may increase reliability (blackouts, government facilities) or power quality (e.g. data centers.).
- Green motivation among many building owners (marketing or personal concern) can trump costs
- Market still largely driven by payback period concerns

Southwest

SEIA

Buildings Market

- USGBC LEED certification is increasing the size of this market, ad favors renewables installation.
- National Association of Homebuilders (NAHB) reports growing interest in green building techniques.

Renewables-powered buildings:

- Attractive price hedge
- Improved employee morale
- Easier permitting and approval.
- Accelerating builder and manager interest.

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Major Uses of Renewables in the US

Grid-Connected Centralized

- All technologies
- “Peak – Shaving”
- Emissions - Free
- Intermittency concerns
- Large-Scale RPS compliance / Popular Green Tag product

None of these statistics include central station Concentrating Solar Power (CSP),

354MW in California

+50 MW in Nevada in 2004 , 25 MW Mexico 2006/

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Major Uses of Renewables in the US

Remote, Off-Grid Applications

- Almost exclusively solar
- New capabilities for farms, etc.
- Rural electrification & Development
- Reduced Infrastructure Cost (even for off-grid homes)
- Military, Security, Pipeline, Communications applications – ultra-high reliability.

Government Policy is Critical

Remote Applications: Cost / Benefit Needs no Support; often the only possible technology.

Grid – Connected: Critical to overcome high upfront costs of technologies and to adapt markets and grids.

- RPS
- Tax Credits
    - PTC, ITC, RTC
    - PTC and Wind, Geothermal
- Net Metering / Interconnection
- Transmission Rights

No Energy Source Has Been Developed in 100 Years without Significant Government Support.

California Experience.