Distributed Energy Program

Debbie Haught
Distributed Energy Program
U.S. Department of Energy

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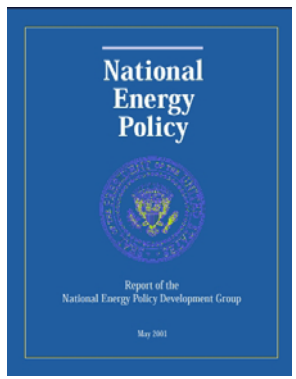
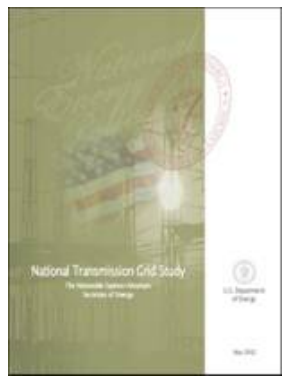
EBC Workshop
U.S. Department of Energy

U.S. Department of Energy

- Distributed Energy Program
  - Office Energy Efficiency and Renewable Energy
  - Small generation/cooling, heating and power technologies
  - State Support
  - Support OETD (limited distribution support)
  - Customer focus
    - C&I
    - Residential
    - Utilities?
  - Budget: House- $64.284 M
  - Senate- $57.534 M

- Office of Electric Transmission and Distribution
  - Direct Report to the UnderSecretary of Energy
  - Focus on Transmission and Distribution
- Policy
  - Lead on Blackout Investigation
  - Grid Technologies (superconductivity, storage, interconnection)
  - Budget: House- $73.616 M
  - Senate-$92.838 M





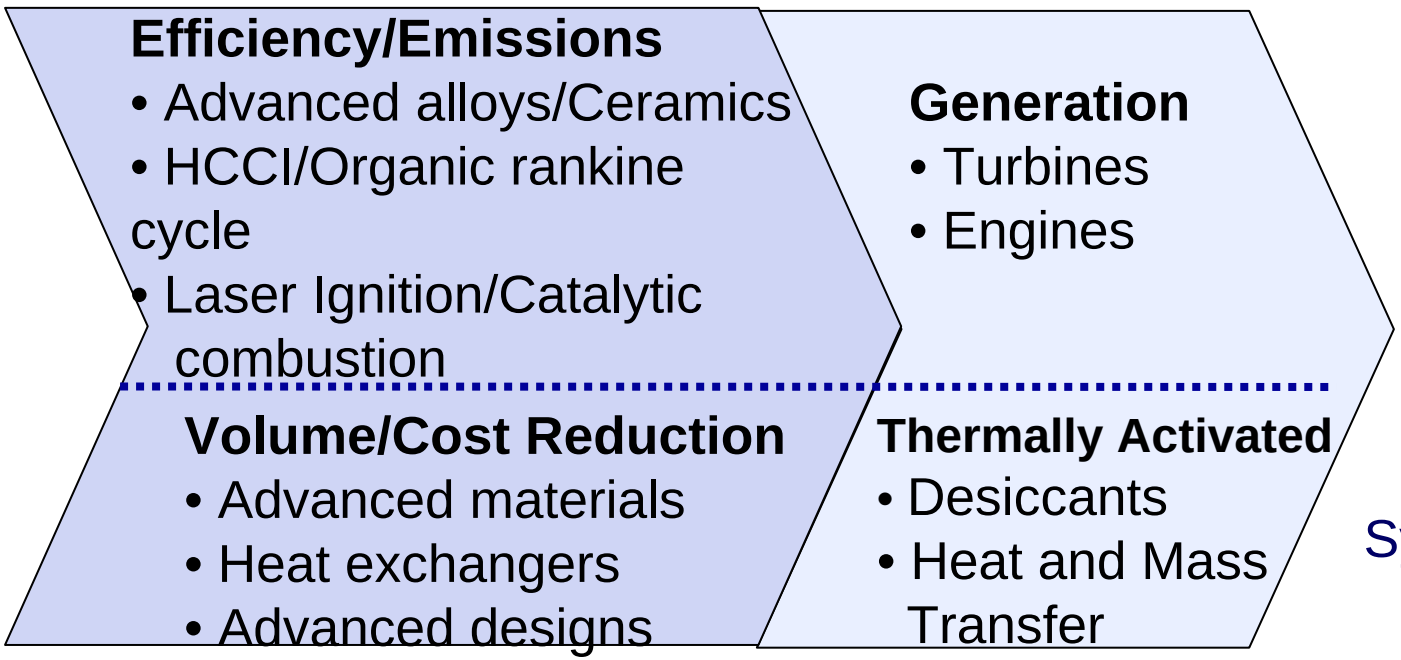
OETD Vision and Roadmap

Office of Distributed Energy

- Pat Hoffman (Acting director)
- Geraldine Harper (Secretary)
- Ron Fiskum
- Debbie Haught
- Merrill Smith

Goal #1

By 2008, DER will complete development and testing of a portfolio of distributed generation and thermally activated technologies that will show an average of **25 percent increase in efficiency** (compared to 2000 baseline) with **NOx emissions of less than 0.15grams/KWh** at an **equivalent of 10% reduction in cost.**



Government
Technology Development

Partnership

Industry
Systems Integration

Distributed Generation Technologies

"Prime Movers"

Microturbines

2000
- $900-$1,200/kW
- 17-30% Efficiency
- .35 lbs/MWh NOx

2007
- Cost competitive with the market
- 40% Efficiency

2010
- .15 lbs/MWh NOx

Gas Turbines

1992
- 29% efficiency
- +2 lbs/MWhr NO_x
- $600/kW

2001
- 38% Efficiency
- 0.15 lbs/MWh NO_x
- $400/kW

2010
- Cost competitive with the market
- <<.15 lbs/ MWh NO_x

Reciprocating Engines

2000
- $300-$400/kW
- 25-40% Efficiency
- 2-3 lbs/MWh NO_x

2007
- Cost competitive with the market
- 50% Efficiency
- 0.15 lbs/MWh NO_x

Goal #2

By 2008, demonstrate the feasibility of **integrated systems in three new customer classes**, which could achieve **70% efficiency** and customer **payback in less than 4 years**, assuming commercial scale production.

Technologies

- CHP packaged Systems
- Sensors, controls and electronics

Applications

- Demand-control Ventilation
- Integrated energy services
  - Heat/Cooling (processing)
  - Electricity
  - Temperature
  - Humidity
- Industrial & Light Industrial, Hotels, Data Centers, Merchant
- Utility ?

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DER Funding Summary
($M)

Program Element	Fiscal Year 2003	Fiscal Year 2004
INTERIOR		
Industrial Gas Turbines	5.0	4.0
Microturbines	7.0	7.0
Reciprocating Engines	12.0	14.0
Technology Base	8.26	8.26
Thermally Activated Technologies	7.66	7.66
Fuel Flexibility (oil)	0.750	(0.500 -move to Bldgs)
Industrial DG/High Tech/Controls	8.34	8.34
Packaged Systems R&D/CHP	12.0	12.0
TOTAL INTERIOR	61.01	61.26
EWD		
Transmission Reliability		
Distribution & Interconnection		
Energy Storage		
Superconductivity		
TOTAL EWD	85.0	82.4

Information Clearinghouse and Networking

www.eere.energy.gov/der

- **Technical publications**
- **Workshops and conferences**
- **Technology planning**
- **Cost-shared RD&D**
- **Solicitation announcements**

Upcoming Events

- **Distributed Energy Peer Review- December 2-4 2003, Washington DC**
- **Environmental Barrier Coatings for Microturbine and Industrial Gas Turbine Ceramics Workshop – November 18-19, 2003, Nashville, TN**
- **4th Annual Microturbine Applications Workshop – January 20 – 22, 2004, Marina del Ray, CA**