



Renewable Energy and Innovation

- US Government Policies and Programs
 - Budgetary
 - Regulatory
 - Research, Development, and Deployment
 - Partnerships (States, International, Interagency)
 - Direction and Commitment



New Fuel Efficiency Policy

5% improvement per year 2012-2016

No longer will we accept anything less than a common effort, made in good faith, to solve our toughest problems

– U.S. President Barack Obama, [May 19, 2009](#)



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- Department of Transportation
- Environmental Protection Agency
- State of California
- 13 Additional States + District of Columbia
- Automobile Companies (Leadership and Workers)
- Environmental Advocacy Groups



Stimulus Package

One Hundred Eleventh Congress of the United States of America

AT THE FIRST SESSION

*Began and held at the City of Washington on Tuesday,
the sixth day of January, two thousand and nine*

An Act

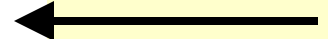
Making supplemental appropriations for job preservation and creation, infrastructure investment, energy efficiency and science, assistance to the unemployed, and State and local fiscal stabilization, for the fiscal year ending September 30, 2009, and for other purposes.

*Be it enacted by the Senate and House of Representatives of
the United States of America in Congress assembled,*

SECTION 1. SHORT TITLE.

This Act may be cited as the "American Recovery and Reinvestment Act of 2009".

SEC. 2. TABLE OF CONTENTS.





American Recovery and Reinvestment Act

More than \$60 billion in clean energy investment

- \$11B smarter grid
- \$5B low-income home weatherization
- \$4.5B build or renovate federal buildings
- \$6.3B state & local renewable energy & efficiency
- \$2B competitive grants for battery technology
- 0.8B advanced biofuels R&D
- 0.4B geothermal technology



American Recovery and Reinvestment Act

\$25 Million for Wind Technology Testing Center

– May 12, 2009

DOE's intent to award Massachusetts \$25 million in funding from the American Recovery and Reinvestment Act to accelerate development of the state's **Wind Technology Testing Center**

In addition ... Massachusetts-based companies have been selected to receive approximately \$1 million in additional wind funding under a competitive funding opportunity announcement to address **market and deployment challenges** identified in DOE's 2008 report: "20% Wind Energy by 2030."

http://apps1.eere.energy.gov/news/daily.cfm/hp_news_id=166



Department of Energy

Office of Energy Efficiency and Renewable Energy

Power Generation

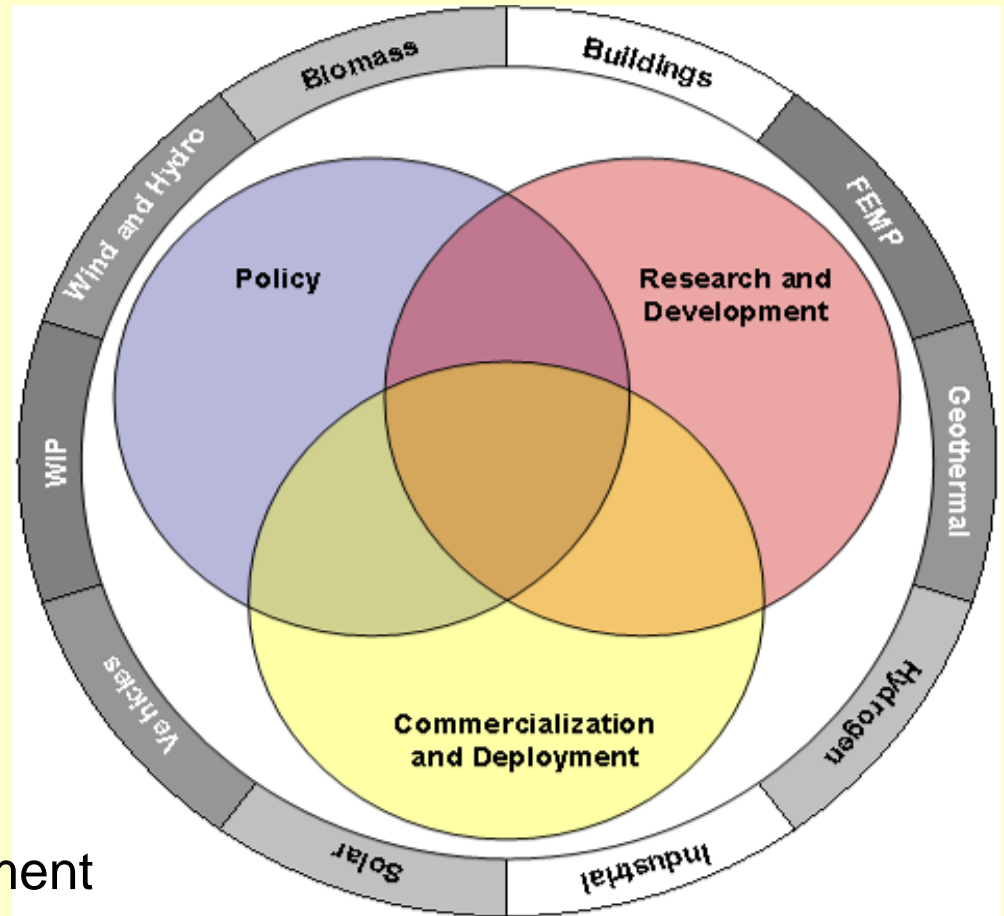
- Geothermal
- Wind & Water Power
- Solar

Fuels & Vehicles

- Biomass/Biofuels
- Hydrogen
- Vehicle Technologies

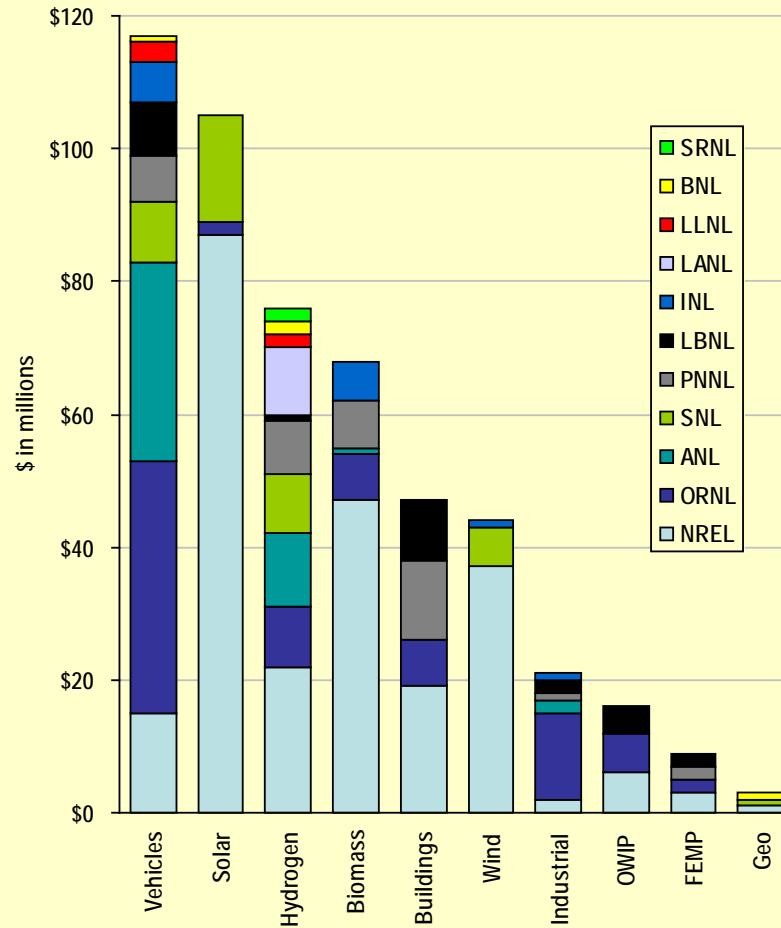
Energy Efficiency

- Buildings Technologies
- Industrial Technologies
- Weatherization
- Federal Energy Management





EERE FY07 National Lab Funding





Energy Efficiency

- Fast, low risk, economical way to address climate and security concerns
- Enormous unexploited potential
 - McKinsey Global Institute identified energy saving sufficient to cut consumption growth in half using only existing technologies that offer *at least* a 10% Internal Rate of Return (McKinsey, May 2007)
- Investments in energy not consumed, mitigating risks associated with future price uncertainties.
- Robust and evolving pipeline of efficiency technologies.



Strategic Priorities for Energy Efficiency

- **Utility Efficiency**
- **Advanced Model Building Codes**
- **Appliance Standards, ENERGY STAR**
- **Industrial Efficiency**
- **Vehicle Efficiency**
- **International Partnerships**



Weatherization and Intergovernmental

- Provide free weatherization services to about 100,000 low income citizens/yr, permanently lowering their utility bills
- Accelerate the adoption of clean energy technologies and practices by state and local governments, tribes, and international partners
- Transform markets using innovative policies and integrated delivery of EERE tools and technologies

Weatherization (FY06-\$243M, FY07 - \$205M)

- 5.6 million homes have been weatherized with DOE and leveraged funds since 1976
- Weatherization saves residents \$358 in first year

State Energy Program (FY06-\$36M, FY07 - \$49M)

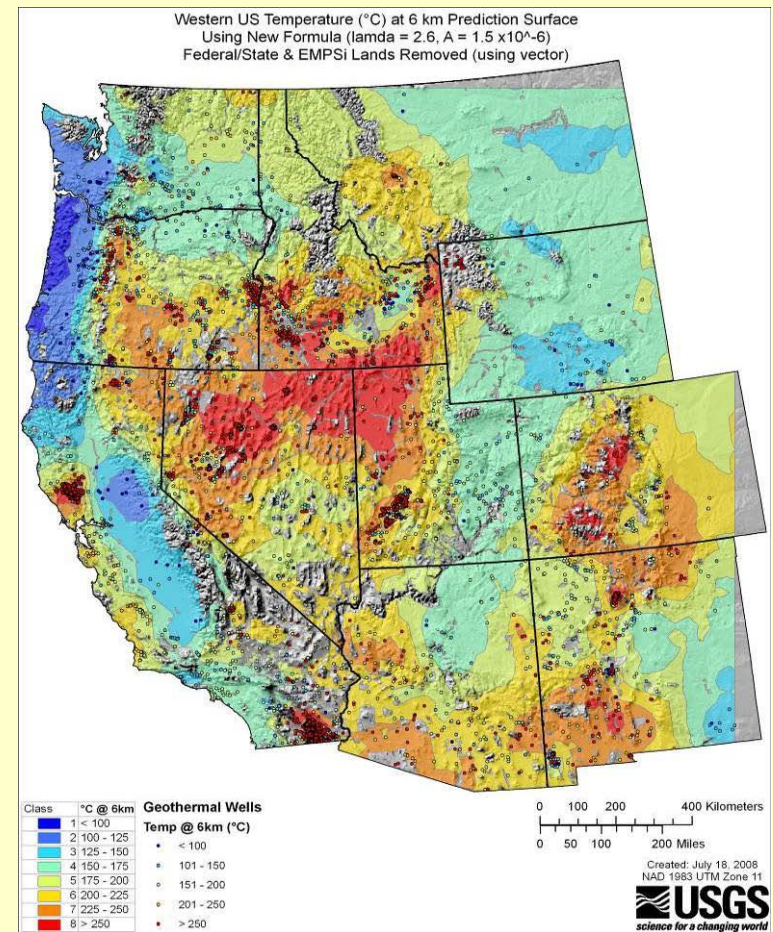
- \$45 Million Yields \$256 Million in Annual Savings (2002)
- Deploys all clean energy technologies across all sectors

Cost Savings from the State Energy Program



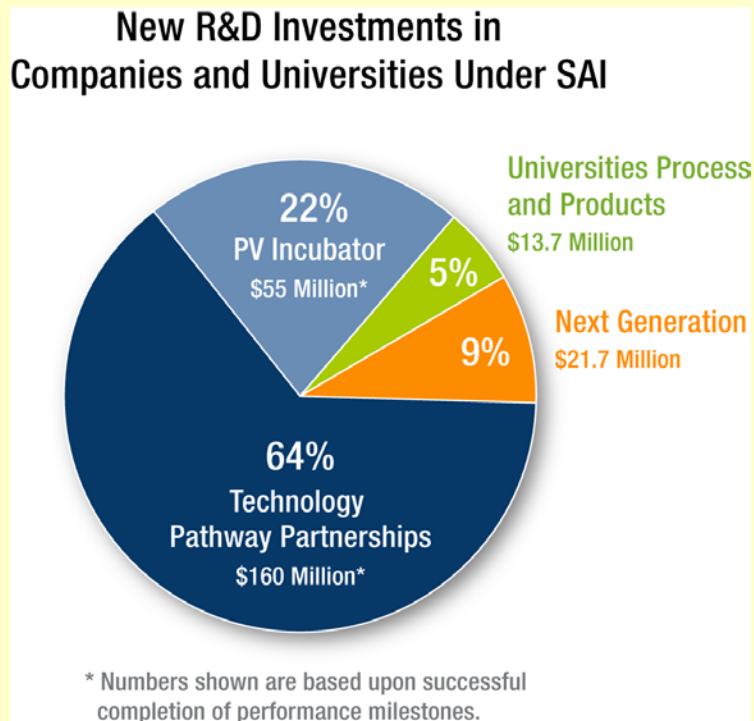
Geothermal Program: Up to 20% of U.S. Electricity Could be Generated Through Enhanced Geothermal Systems (EGS)

- Geothermal power plants are currently operating in seven states
- Based on USGS assessment the mean electric power generation potential from:
 - Identified Geothermal Systems alone is 9,057 MWe
 - Undiscovered Geothermal Resources is 30,033 MWe
 - EGS is 517,800 MWe



Enhanced Geothermal Systems (EGS) are reservoirs engineered where nature has failed to provide adequate permeability or fluid or both.

Solar Program: Solar America Initiative is Accelerating Supply & Adoption of Solar Technologies



DOE is working to make solar energy cost-competitive by 2015 across all U.S. grid-tied markets

SAI Website: http://www1.eere.energy.gov/solar/solar_america/index.html

In addition to the robust solar R&D portfolio, DOE is supporting market transformation activities that break down non-R&D barriers (i.e. codes & standards) to solar technologies



Energy Climate Partnership of the Americas (ECPA)

I'm proposing the creation of a new Energy and Climate Partnership of the Americas that can forge progress to a more secure and sustainable future.

-U.S. President Barack Obama, Fifth Summit of the Americas, Port of Spain, Trinidad and Tobago (2009)



ECPA Intent and U.S. Priorities

Help countries **learn from each other** as we all transition to a lower carbon economy, strengthening our security, our prosperity, and the environment.

To facilitate technology cooperation, encourage investment, and develop public policies, the United States will involve national laboratories, research centers, universities, and its government agencies in collaboration with our hemispheric partners.

Joining the partnership is voluntary and it will reflect the priorities of the participants.

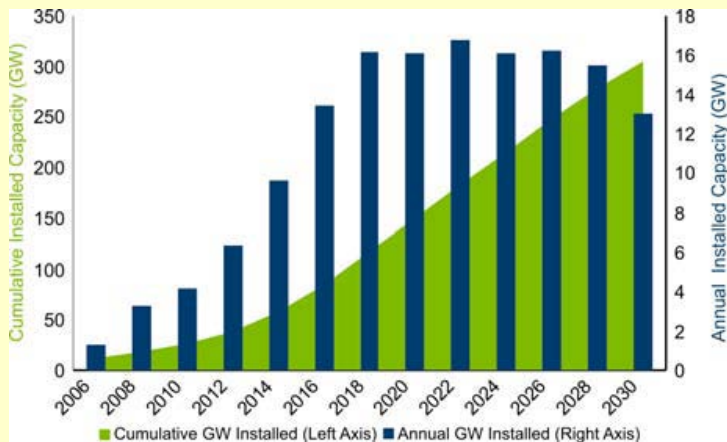
The partnership will harness existing cooperation and new activities to a Hemispheric vision and reflect each participant's unique contributions, capabilities, and interests.

Thank You



Wind Program: 20% Wind in the U.S. is Possible

Annual and Cumulative Wind Installations Needed by 2030 for 20% Wind



BENEFITS:

- Half million jobs for manufacturing, installation and operations
- U.S. natural gas demand reduced by 11% by 2030
- 25% of expected electric sector CO₂ emissions avoided in 2030
- 8% reduction in electricity sector water consumption

20% WIND REQUIRES:

- Changes in transmission systems;
- Improved turbine technology;
- Expanded markets

Access report at: <http://www1.eere.energy.gov/windandhydro/pdfs/41869.pdf>

U.S. DOE released a report in May 2008 that details the possibility of supplying 20% of U.S. electricity from wind energy