



China-U.S. Renewable Energy Forum

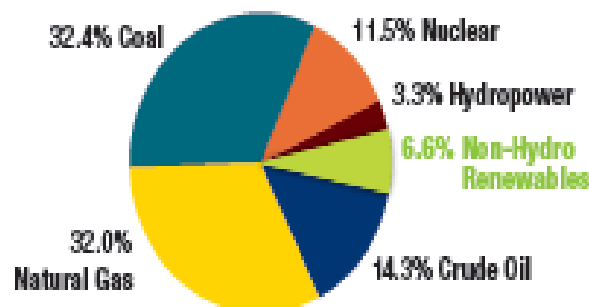
**Bobi Garrett
National Renewable Energy
Laboratory
May 26, 2010**

- U.S. Clean Energy in Context
- The U.S. Recovery Act: Opportunity from Crisis
- The U.S. Congress and Clean Energy: Getting to 60
- China-U.S. Collaboration on Clean Energy²

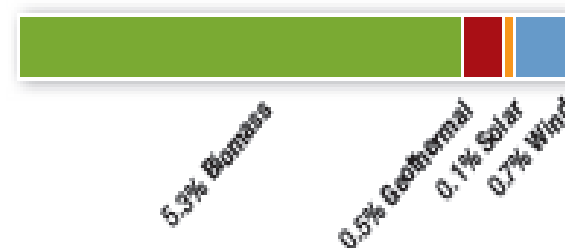
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U.S. Energy Production and Consumption

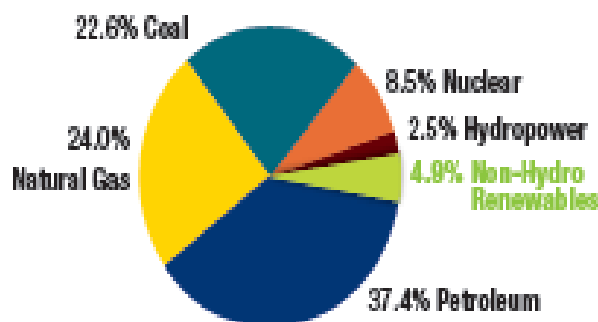
U.S. Energy Production (2008): 73.7 Quadrillion Btu



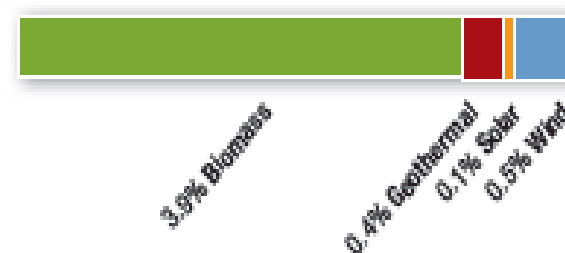
**U.S. Non-Hydro Renewable Energy Production:
4.9 Quadrillion Btu**



U.S. Energy Consumption (2008): 99.3 Quadrillion Btu



**U.S. Non-Hydro Renewable Energy Consumption:
4.8 Quadrillion Btu**

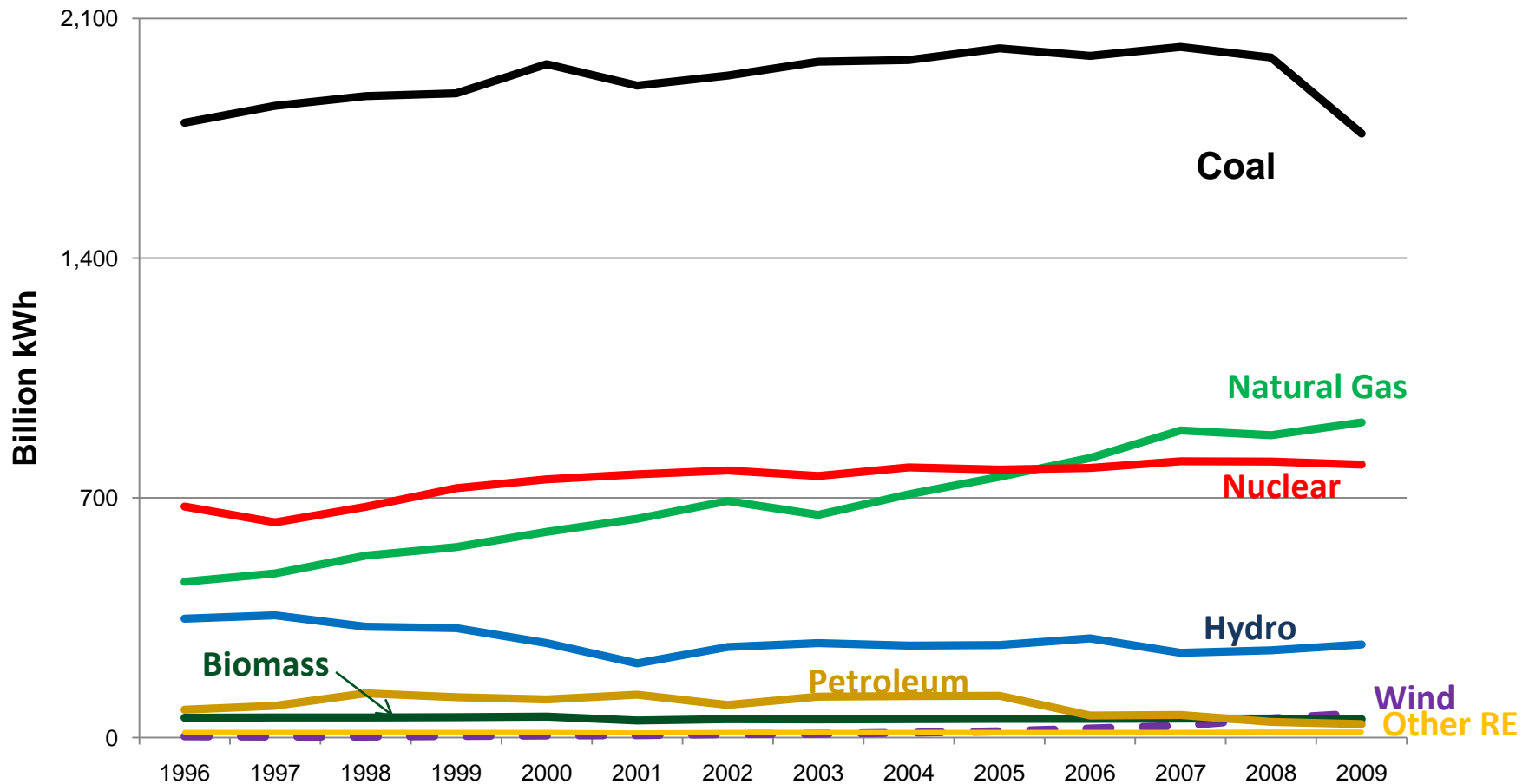


Sources: EIA; full references are provided starting on p. 122.

Note: Because hydropower is considered a conventional source of energy, it is accounted for separately from other new renewable sources of energy. Energy consumption is higher than energy production due to oil imports.

U.S. Clean Energy in Context

U.S. Net Power Generation by Source



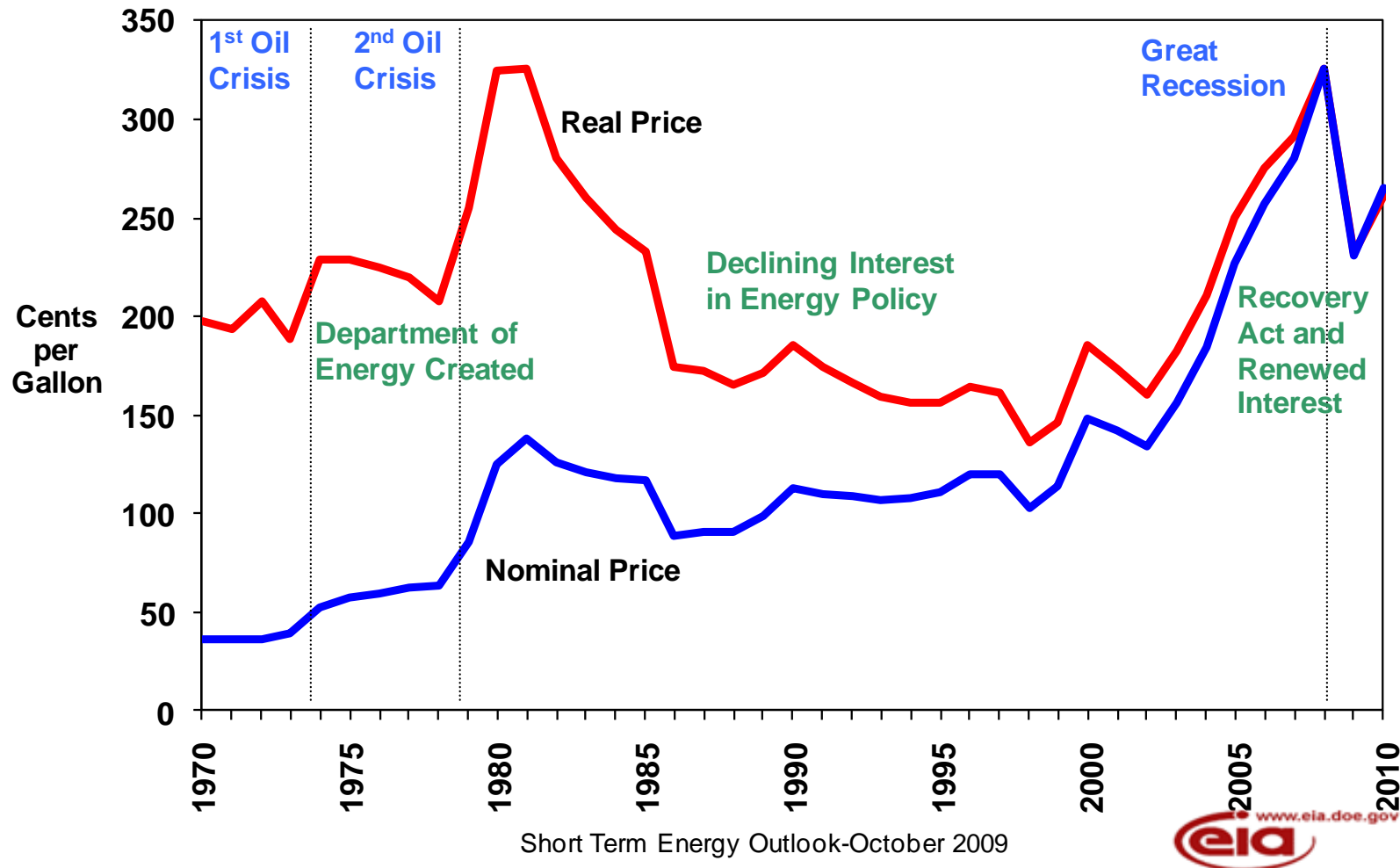
Wind, Biomass, Geothermal, and Solar Provided 3.6% of U.S. Power in 2009

Source: Energy Information Administration, "Electric Power Monthly, March 2010." Petroleum generation includes liquid petroleum and petroleum coke.

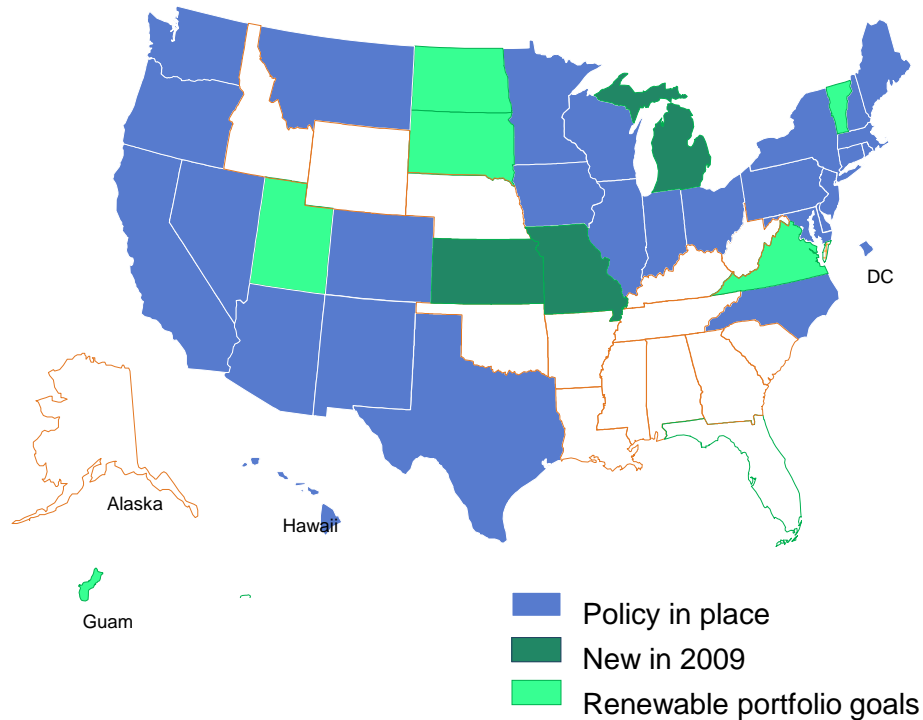
- Limited role of national energy policy:
 - States and local governments largely control power, gas, and transmission investments
- Congress and the Administration must together approve new laws
 - Simple congressional majority is insufficient; Senate now routinely requires 60% support to pass a bill
- Policy action strongly tied to energy prices

Oil Prices Affect Federal Energy Policy

U.S. Average Annual Gasoline Prices, 1970- 2010



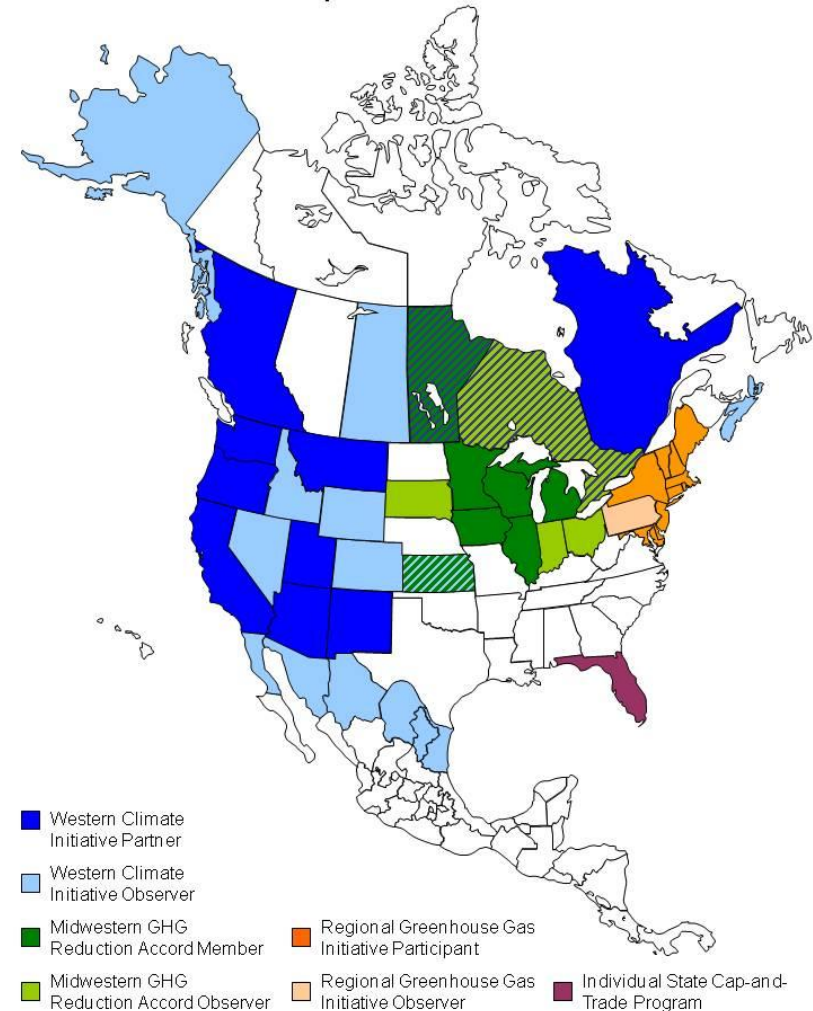
States and Regions Have Led Clean Energy Policy



Source: NREL, July 2009

- 29 States (and Washington, D.C.)
- Additional 6 states have set goals

North American Cap-and-Trade Initiatives



Source: Pew Center on Climate Change 8

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The Recovery Act: Opportunity from Crisis

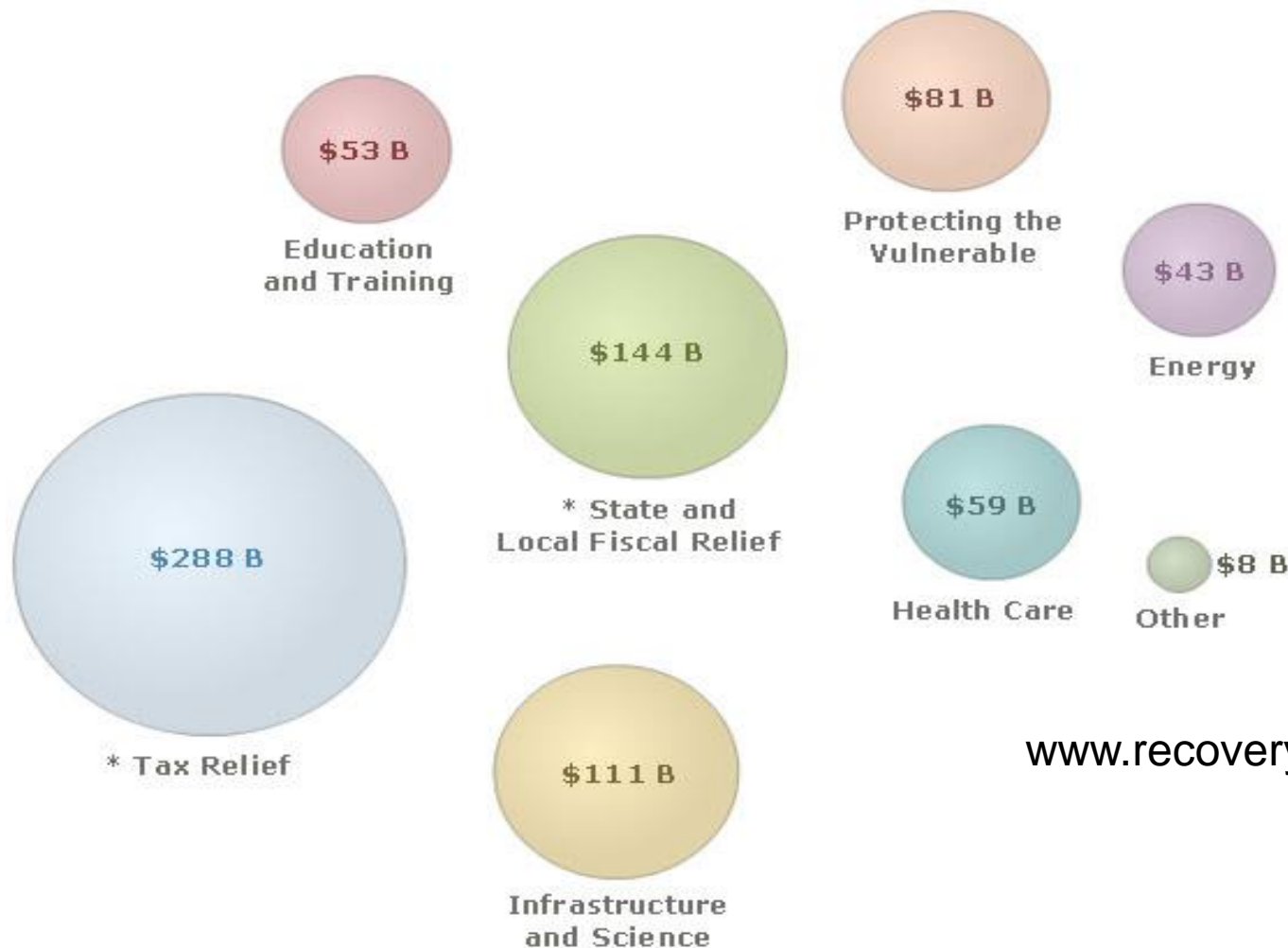
- September 2008: U.S. financial crisis comes into full view.
- October 2008: Emergency Economic Stabilization Act (\$700 billion) signed.
- November 2008: Obama elected. China announces 4-trillion-yuan (\$586 billion) economic stimulus plan.
- February 2009: President Obama signs \$787 billion Recovery Act
 - \$43 billion targeted for clean energy stimulus
 - Most money just beginning to enter system now



U.S. Recovery Act: Where is the Money going?

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Energy Efficiency &
Renewable Energy



www.recovery.gov

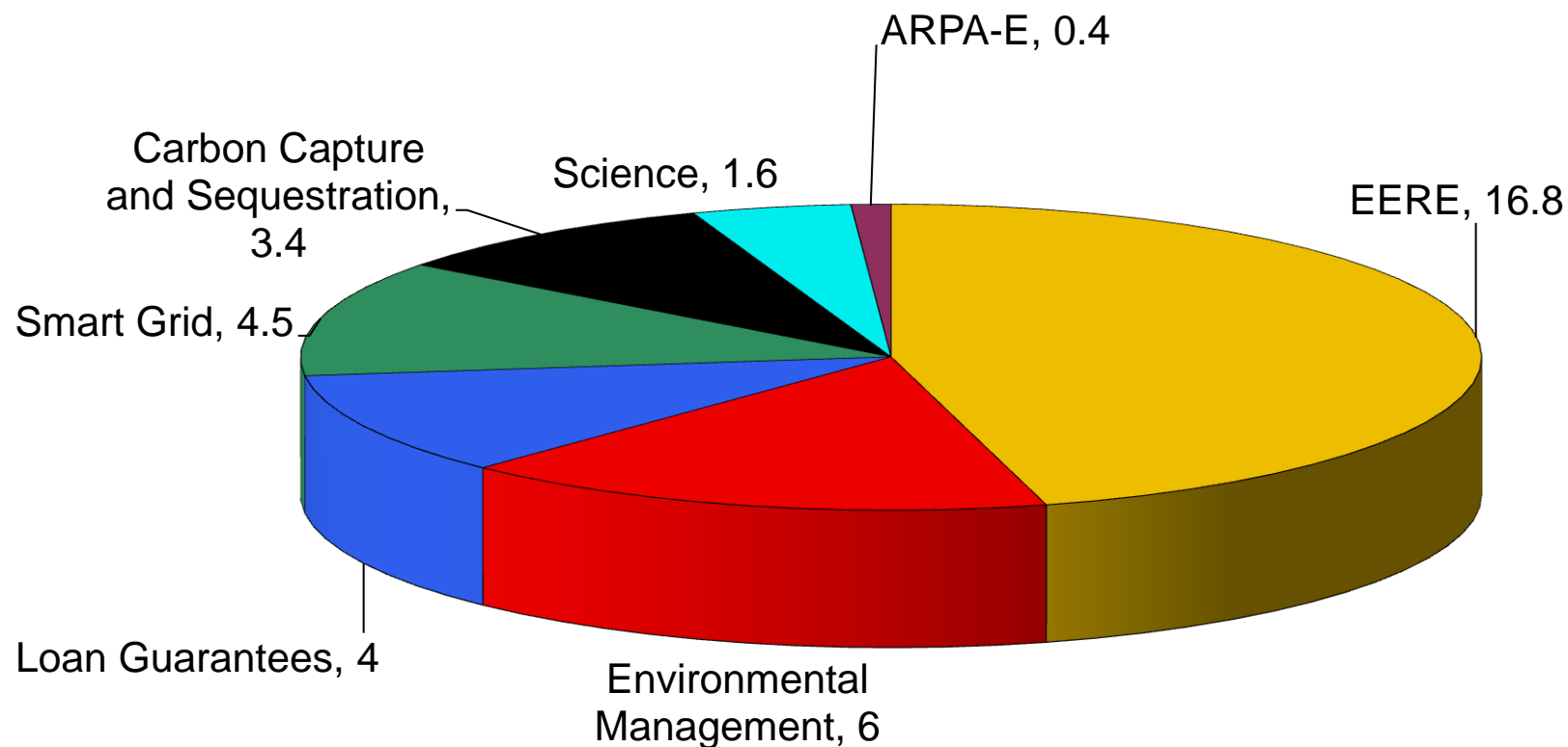
*** Much of the federal relief was provided to local authorities for disbursement**

* **Tax Relief** - includes \$15 B for Infrastructure and Science, \$61 B for Protecting the Vulnerable, \$25 B for Education and Training and \$22 B for Energy, so total funds are \$126 B for Infrastructure and Science, \$142 B for Protecting the Vulnerable, \$78 B for Education and Training, and \$65 B for Energy.

Allocation of ARRA Funding to DOE (in \$billions)

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Energy Efficiency &
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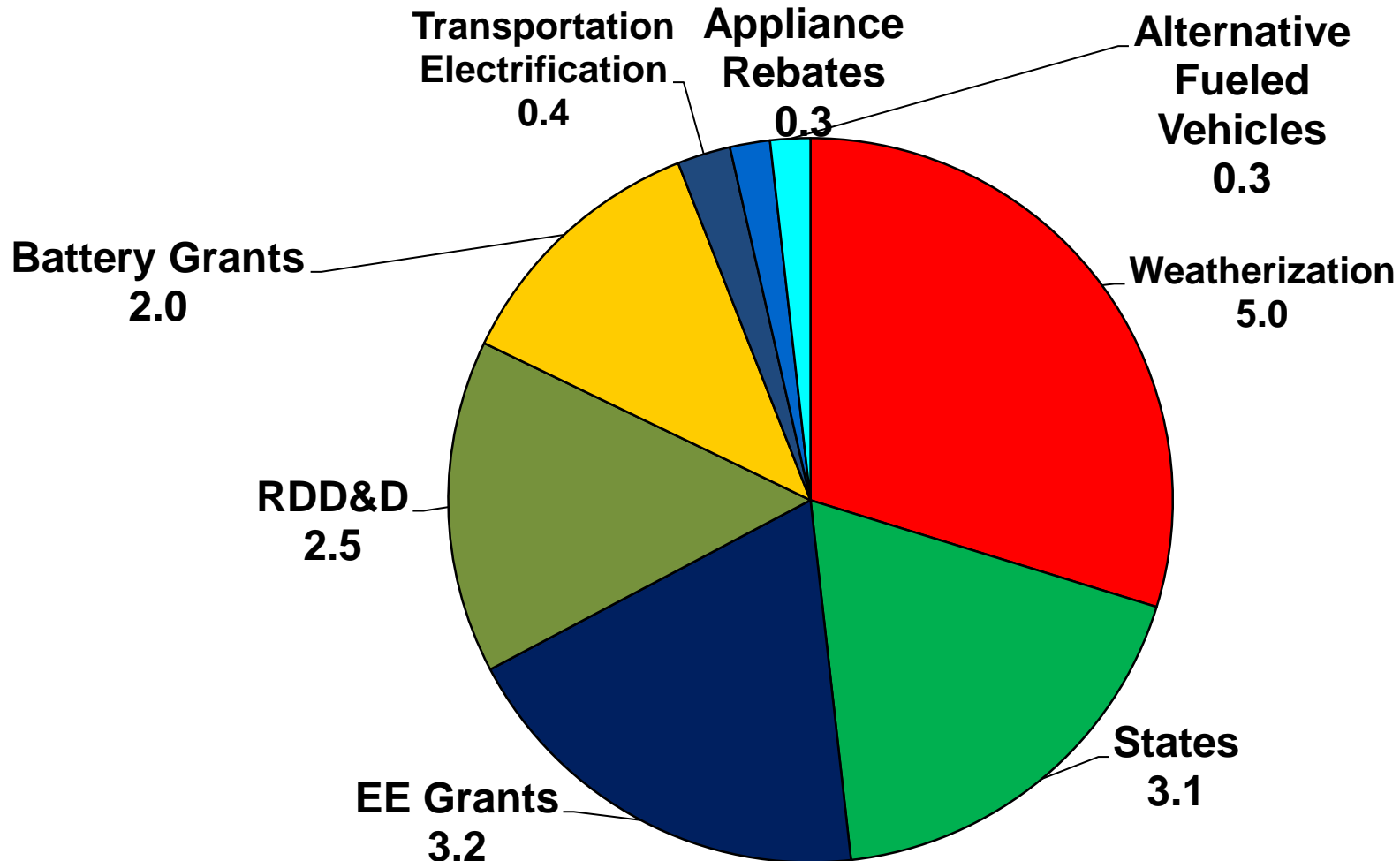
Total Allocated to DOE = \$36.7 billion

As of May 2010, 85% "awarded," 11% spent

Recovery Act Funding within EERE (in \$billions)

U.S. DEPARTMENT OF
ENERGY

Energy Efficiency &
Renewable Energy



Total Funding for EERE = \$16.8 billion

Recovery Act Incentives for Clean Energy

- Three Primary Federal Incentives
 - Cash Grants
 - Extends tax credits for renewable power generation with option to receive cash instead of tax credit for up to 30% of capital costs; overcomes “loss of tax appetite”
 - Over \$3 billion awarded
 - Loan Guarantees
 - Provides up to \$6 billion in loan guarantees on commercial renewable energy; can leverage up to \$60 billion in projects
 - Manufacturing Tax Credits
 - Provides \$2.3 billion in tax credit for new or expanded manufacturing facilities of selected clean energy products

Nearly 5,000 Clean Energy Projects Funded Through These Incentives, Helping Counter the Slowdown in RE Investments Caused by the Recession

- Spend money quickly: Create jobs
- Spend money transparently: Be accountable
- Spend money effectively: Make a down payment on a clean energy economy

Doing These Simultaneously Is Challenging

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Selected Energy Priorities of the Obama Administration

U.S. DEPARTMENT OF
ENERGY

Energy Efficiency &
Renewable Energy

- Creating new jobs in the clean energy economy
- Doubling electricity generation from wind, solar, and geothermal technologies by 2012
- Reducing greenhouse gas emissions by 83% by 2050
- Increasing Investments in the next generation of energy technologies
- Reducing dependence on imported oil
- Increasing exports for goods and services



G8Website/ANSA Photo: Alessandro Di Meo

Some Earlier Pre-Recession Goals Have Been Scaled Back

Congressional Issues with Clean Energy Legislation

- Congress has a full agenda
- Quickly passed Recovery Act, but health care reform was debated for one year
- The economy is top priority (Financial market reform, job stimulus, and other near-term priorities)
- Climate and energy are partisan issues and a regional issues
- 2010 election cycle leaves little time to debate legislation

Select Climate/Energy Bills in U.S. Congress

- Waxman-Markey Bill in House
 - Comprehensive energy and climate bill
 - 83% reduction in GHG emissions by 2050 (compared to 2005)
 - Passed House in June 2009
- Kerry-Boxer Bill in Senate
 - Similar cap and trade levels, although 20% in 2020
 - Passed by Committee in November 2009, but now idle
- Kerry-Lieberman Bill in Senate
 - “Last best chance” for climate legislation this Congress, announced May 12, 2010
 - Formed under “tripartisan” group
 - Sectoral approach to carbon mitigation
 - Role of oil spill in Gulf of Mexico uncertain

If Climate Bill Does Not Pass This Year, “Energy-Only” Law is Likely

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New China-U.S. Cooperation on Clean Energy

- Clean Energy Research Center
- Electric Vehicles Initiative
- Renewable Energy Partnership
- Energy Efficiency Action Plan
- 21st Century Coal
- Shale Gas Initiative
- Energy Cooperation Program

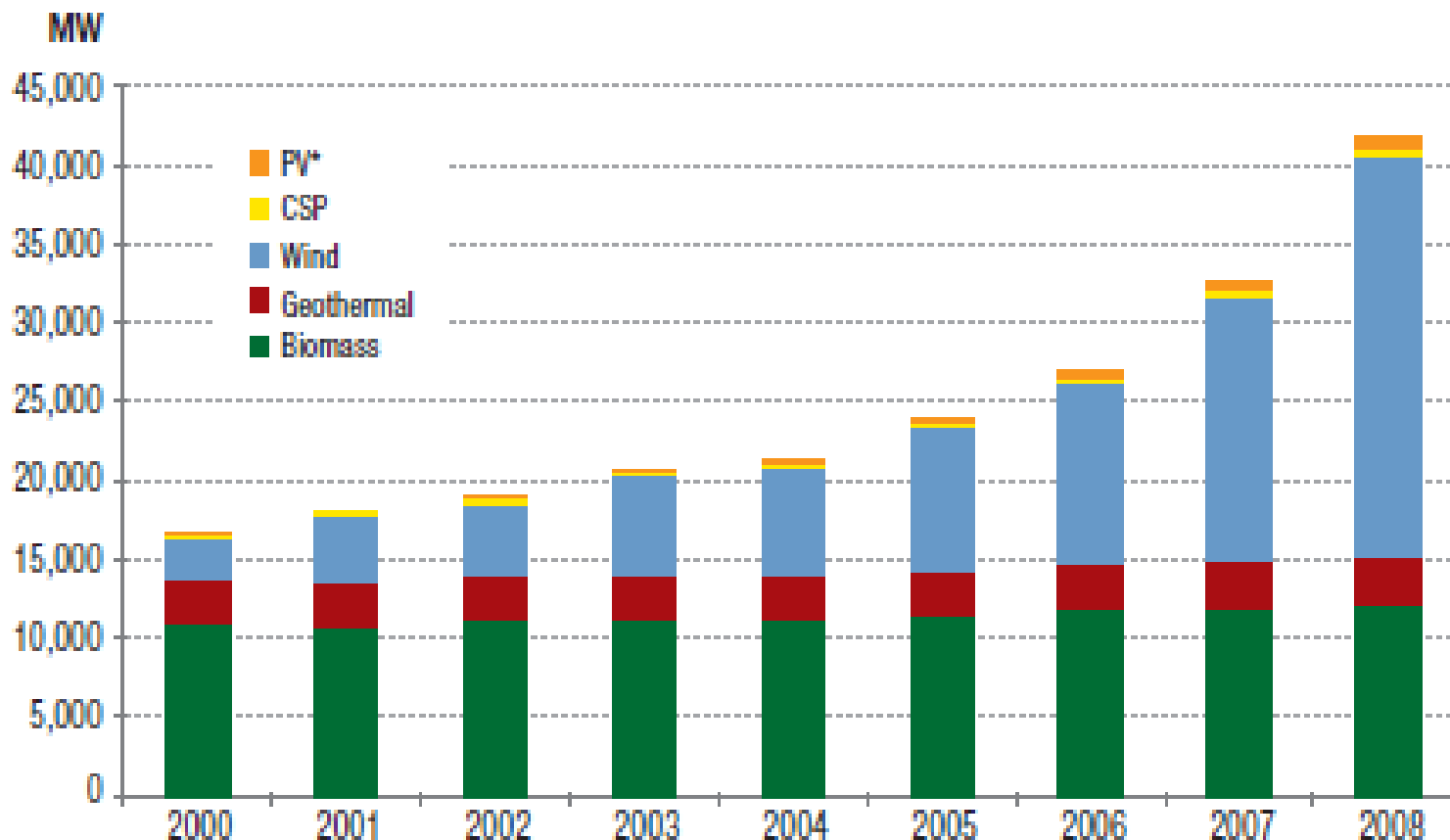
**Important New Collaboration Resulting From
November 2009 Meeting Between Presidents Hu and Obama**

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- Financial crisis temporarily stalled clean energy investments in the U.S., but incentives in the Recovery Act are encouraging new projects
- If Congress is unable to pass a climate bill by July or August, an “energy only” bill is likely
 - Long-term barriers to clean energy remain
- International cooperation is a key element of U.S. clean energy policy
 - Important new efforts under with China

Backup Slides

U.S. Renewable Energy Generating Capacity



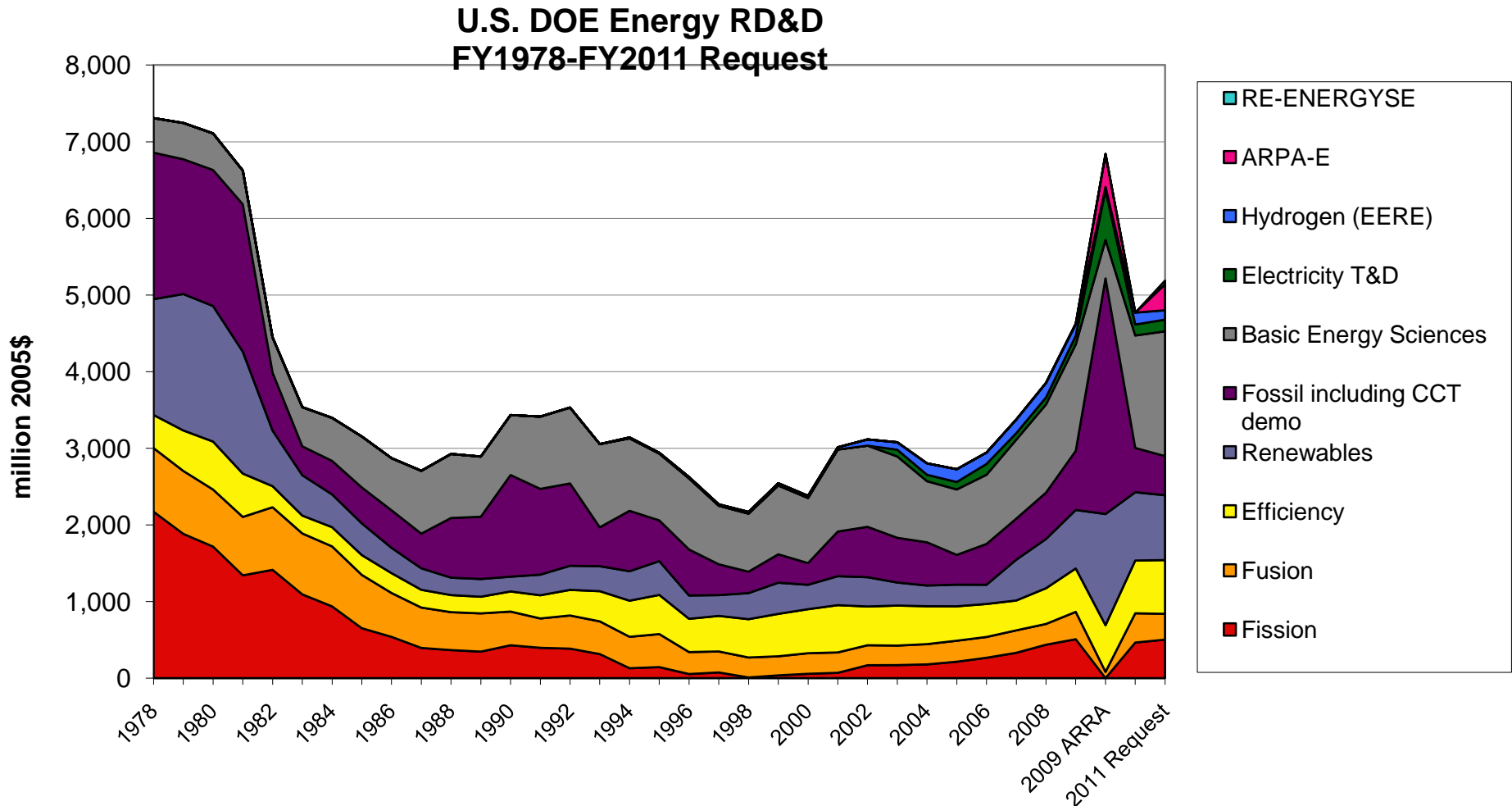
In 2008, renewable energy accounted for more than 43% of all new grid-connected electrical capacity installations in the U.S.

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Sources: 2008 Renewable Energy Databook. DOE. 2009.

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History of DOE Budget for Energy Research, Development, and Demonstration

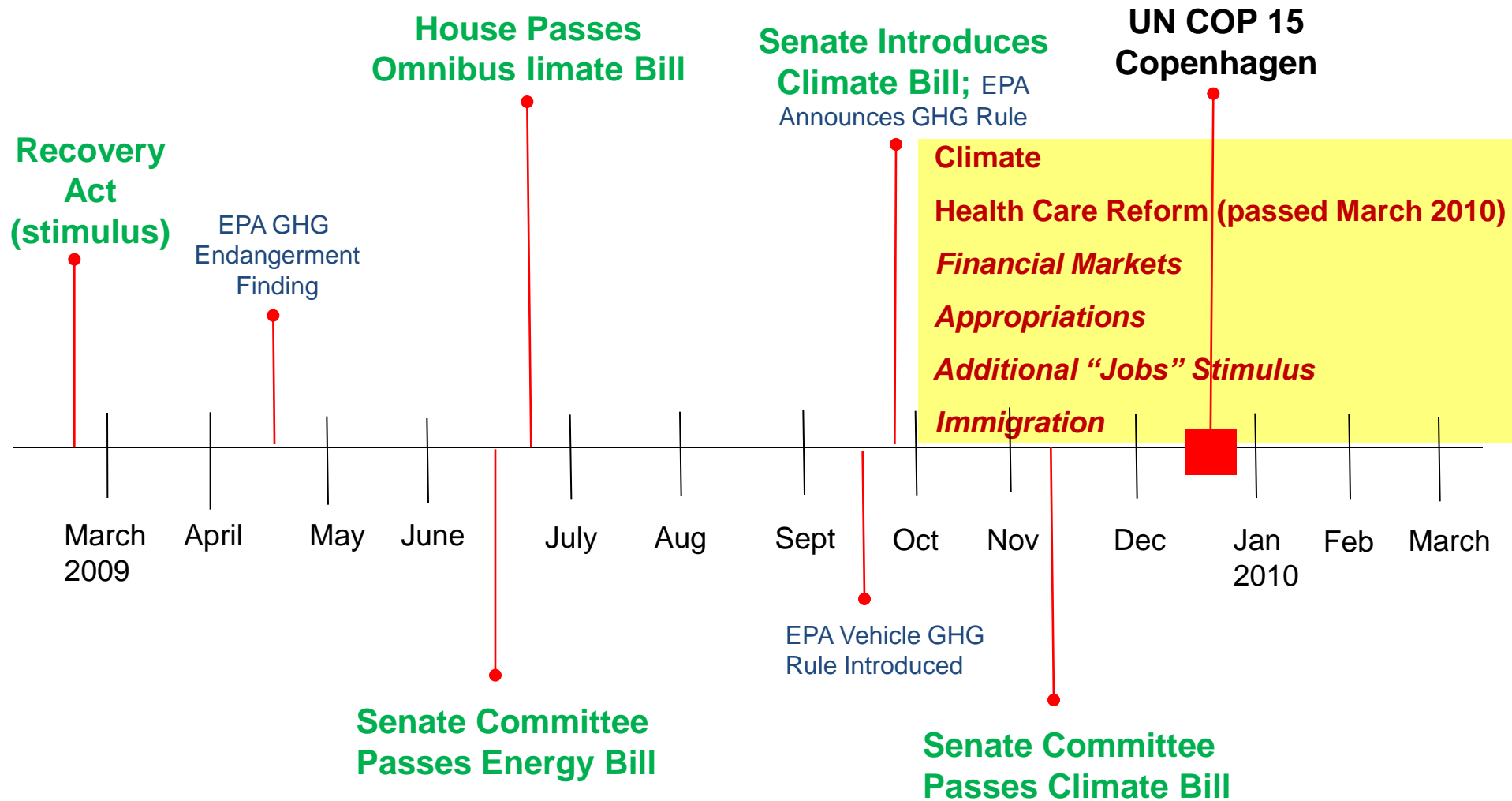


Gallagher, K.S. and L.D. Anadon, "DOE Budget Authority for Energy Research, Development, and Demonstration Database," *Energy Technology Innovation Policy*, John F. Kennedy School of Government, Harvard University, March 22, 2010.

Clean Energy/Climate Legislation in Congress

U.S. DEPARTMENT OF
ENERGY

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A Very Crowded Legislative Calendar

Federal Policy Discussions Explore Renewable Energy Standards

