

The Stimulus Package and Other US Clean Energy Policy Topics in the Time of Obama

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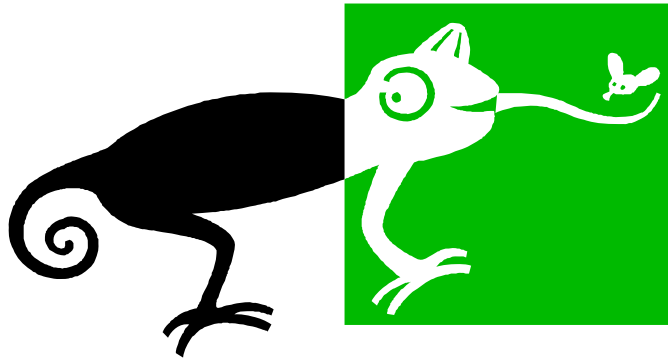
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Two Numbers from the ARRA*

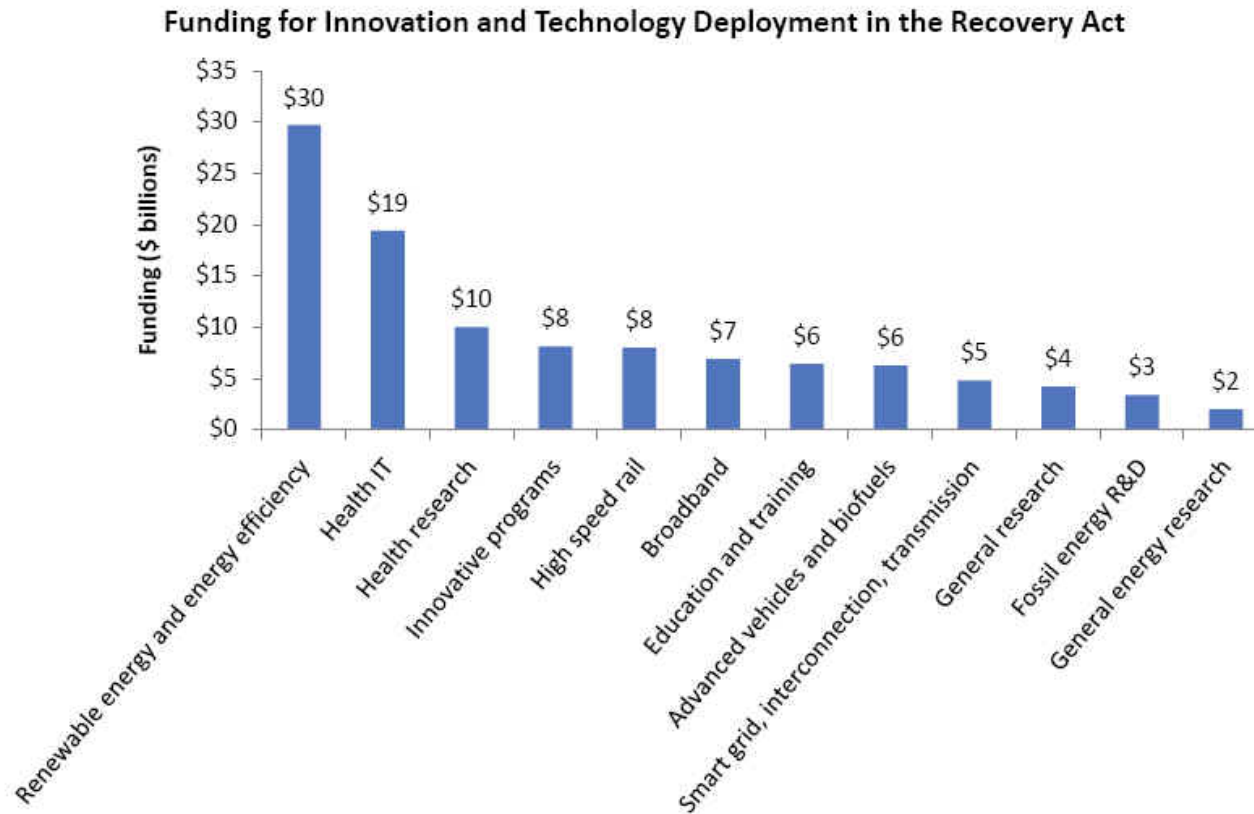
- \$787 billion
- \$94.8 billion
- For comparison, US Federal FY2011 requested budget is \$3,834 billion

*American Recovery and Reinvestment Act of 2009 aka "Obama Stimulus Package" or "New Green Deal"

The ARRA Is Two Things



\$30 Bil. for Renewable Energy/Energy Efficiency



Note: EERE and Smart Grid figures estimate impact of Title 17 rescission. Source: OMB analysis

(Source: Executive Office of the President of the United States)

\$19.9 Billion Already Spent

Table 10. Public Investment by Category

	Appropriations ^a	Through the end of 2010:Q2	
		Obligations ^b	Outlays ^b
Billions of Dollars			
→ Clean Energy	94.8	51.3	19.9
Human Capital	52.8	49.7	25.3
Construction of Transportation Infrastructure	30.0	27.7	10.9
Health and Health IT	32.0	5.5	1.4
Construction of Buildings	31.2	23.6	8.3
Environmental Cleanup and Preservation	23.4	21.0	7.4
Scientific Research	18.3	14.9	4.4
Economic Development	14.4	2.1	1.7
Public Safety and Defense	7.6	6.4	2.5
Broadband	7.2	2.1	0.1
Other	6.8	6.8	4.4
Total^c	318.6	211.2	86.3

Sources: CEA analysis of appropriations estimates from the Office of Management and Budget (OMB); agency Financial and Activity Reports to OMB through June 30, 2010; simulations from the Department of the Treasury (Office of Tax Analysis) based on the FY2011 Mid-Session Review.

Notes: a. Appropriations include estimated cost of tax provisions through 2020:Q3.

b. Include estimated costs of tax provisions through June 30, 2010.

c. Items may not add to total due to rounding.

(Source: Council of Economic Advisors)

Funding Mechanisms

- Tax Grant Programs – Provide cash up front instead of tax credits later
- Loan Guarantee Program – Loan guarantees for renewable energy projects and manufacturing facilities.
- Manufacturing Tax Credits – Tax credits for manufacturing facilities

Solar Energy Results*

Tax Grant Program Recipients

	Number of Projects	Sum of Awards
Solar Electric	830	\$327,781,902
Solar Thermal	82	\$2,310,937
Total	912	\$330,092,839

Loan Grant Program Recipients

Company	Location	LGP Amount	Product/Project	Capacity
Abengoa	Phoenix, AZ	\$1.45 billion	Solana Project	250 MW
Abound Solar	Tipton, IN and Longmont, CO	\$400 million	CdTe manufacturing	~1 GW
Brightsource	Mojave, CA	\$1.37 billion	Ivanpah Solar Complex	400 MW
Solyndra	Fremont, CA	\$535 million	PV manufacturing	500 MW

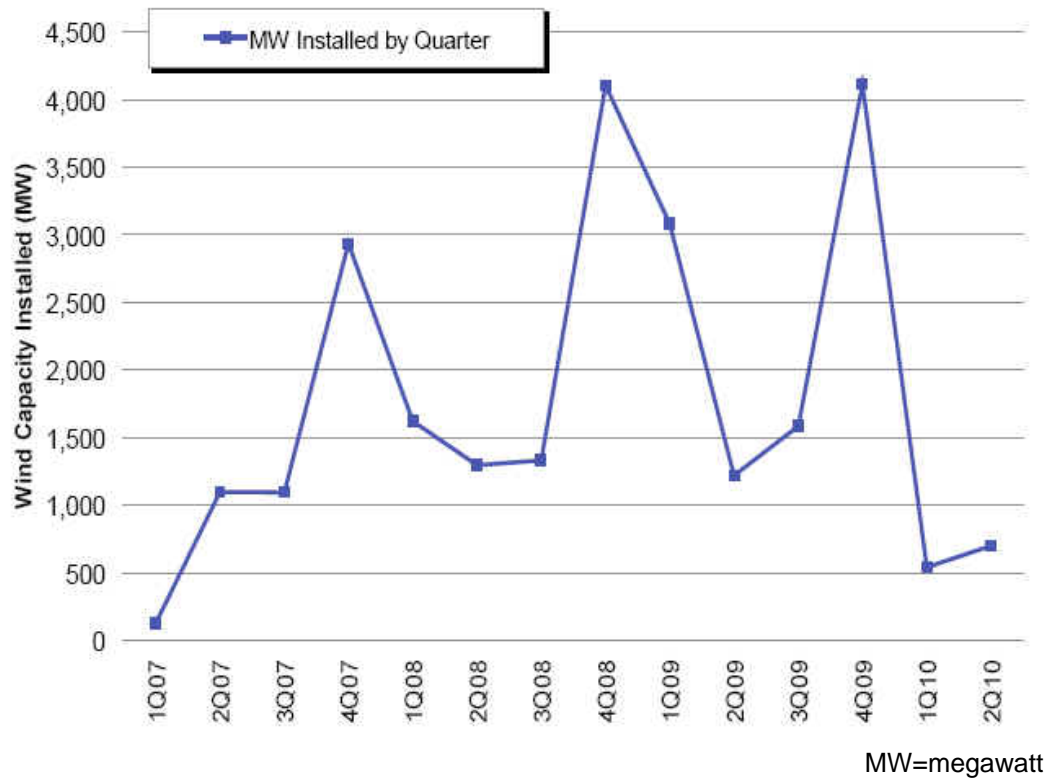
GW=gigawatt MW=megawatt

Manufacturing Tax Credit Recipients

Total \$934 million for 54 projects

*As of September 30th, 2010, source = Solar Energy Industry Association

Wind Energy Results*



12 wind generation machinery manufacturing facilities received ARRA funding through the 1H/2010**

*Source=American Wind Energy Association

**Source=Pike Research

Smart Grid Results

- Total amount of \$4.5 billion for Smart Grid projects given to Department of Energy (DOE)
- \$4.1 billion allocated by DOE for 133 projects as of Fall, 2009
- Market finally beginning to take off

EV/Battery Results

\$2.4 billion allocated by ARRA for EV/battery related areas*

Up to \$7500 tax credit for consumers to buy EVs

EV and advanced battery related projects funded by ARRA through July, 2010**

Type	Qty
Battery Manufacturing	9
Battery Related Parts/Materials Manufacturing	11
EV Related Parts Manufacturing	10
EV Related Pilot Projects	8

\$2.4 billion given to Fiskar, Nissan and Tesla for EV manufacturing from non-ARRA funds

White House claims 20% of world-wide EV battery manufacturing capacity will be in US by 2012

EV=electric vehicle

*source=Pike Research **source=DOE

\$400 Million for ARPA-E



United Technologies Research Center

CO₂ Capture...

Creating the potential to transform how the U.S. generates power & preserves the environment

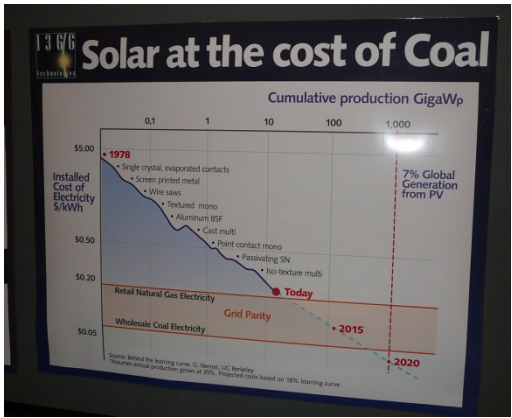
The challenge: cost of electricity with CO₂ capture... high cost traced to limitations in chemistry...

Process	Estimated Capital (\$/kW)	CO ₂ Capture (Mtpa)	Cost of Electricity (\$/MWh)
Pre-combustion (AMG)	\$60-70	1.0-1.5	\$100-120
Pre-combustion (Lurgi)	\$60-70	1.0-1.5	\$100-120
Pre-combustion (Shell)	\$60-70	1.0-1.5	\$100-120
Pre-combustion (Mitsubishi)	\$60-70	1.0-1.5	\$100-120
Pre-combustion (Ugine)	\$60-70	1.0-1.5	\$100-120
Pre-combustion (Mitsubishi)	\$60-70	1.0-1.5	\$100-120
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What's at risk... ~2 billion tons/yr. CO₂ from existing coal-fired power plants

Nature's solution: carbonic anhydrase enzymes... Membranes-based separation...

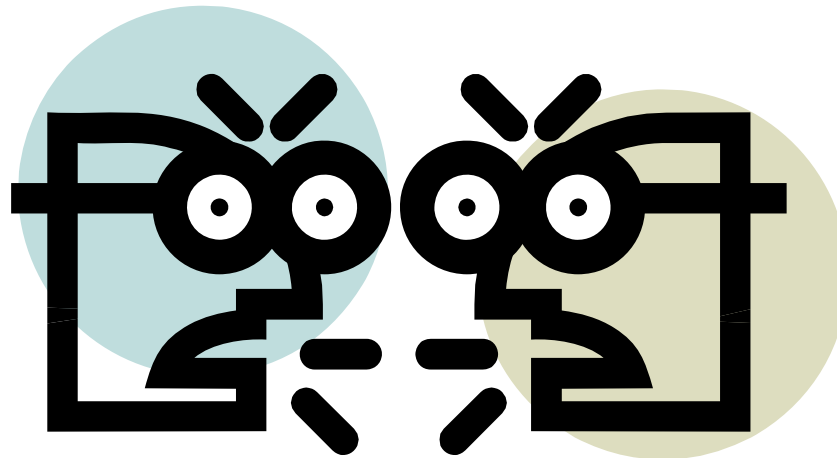
Our approach: robust, "regulated transport" membrane for post-combustion capture...



ARRA Issues

- Large budgets for organizations to handle
- Time needed for determining which projects will be funded affects markets
- “Shovel Ready” provisions put strains on government organizations and companies
- Complaints of excessive reporting measures and other bureaucratic issues
- ARRA unpopular with large segment of American public

Consequences of 2010 Midterm Elections



Large Losses by the Democrats

Senate

Democrats 53 (-6)

Republicans 46 (+6)

House

Democrats 188 (-68)

Republicans 239 (+60)

Governor

Democrats 18 (-8)

Republicans 29 (+5)

“Tea Party” Ideology Is Hostile

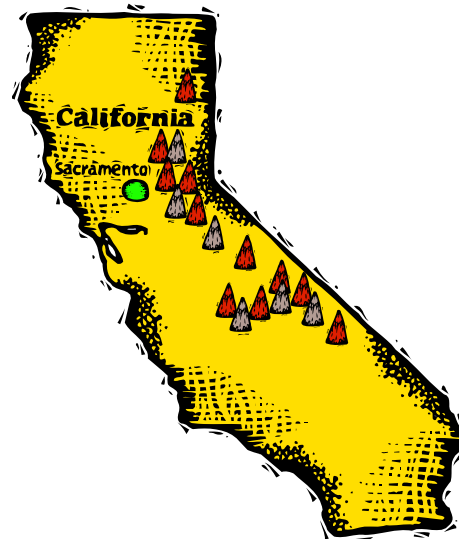
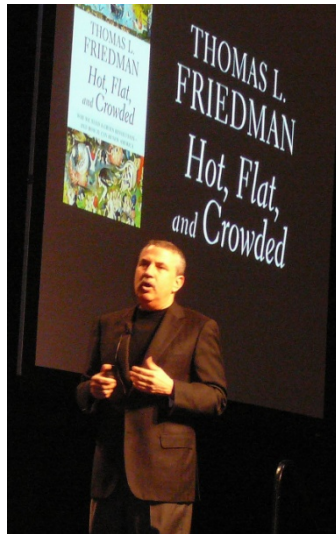
“We are fed up with being overtaxed and overregulated. We are tired of being told how much salt we can put on our food, **what windows we can buy for our house, what kinds of cars we can drive,** what kinds of guns we can own, what kinds of prayers we are allowed to say and where we can say them, what political speech we are allowed to use to elect candidates, **what kind of energy we can use,** what kind of food we can grow, what doctor we can see, and **countless other restrictions on our right to live as we see fit.**”

From “Fed Up” by Rick Perry, Governor of Texas and potential candidate for President in 2012

Worst Case Scenario

- No agreement on energy policy for at least 2 years
- Limited if any government support for renewable energy and other clean energy technologies
- Political attacks on smart grid and other technologies
- US companies with business plans which assume some sort of government support beyond the ARRA may be in trouble

Best Case Scenarios



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John McKeeman > Suedy Ezzatyar: Lay off that 'other stuff' and have the original!
Here is a Coke just for you!
For each one you send, Coca-Cola will donate \$1 to Boys & Girls Club of America. \$250,000. Send your friends.

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