Clean Energy and the Economic Recovery

Summary of economic and environmental benefits of the American Recovery and Reinvestment Act

The American Recovery and Reinvestment Act, passed by the House and Senate on February 13, 2009 and signed by President Barack Obama on February 17, includes more than $78 billion for programs and initiatives that will reduce global warming pollution, move the economy toward renewable energy sources, increase our energy efficiency and reduce oil consumption through our transportation networks. The following table summarizes key provisions and impacts of the bill's clean energy components.

Renewable Energy

	Program	Summary
✔	Production and Investment Tax Credit Fix	Allow renewable energy developers to opt for a grant from the Department of Energy instead of the tax credit. The monetary caps for several lower-cost technologies, such as wind micro-turbines, were removed. *(Estimated cost: $604 million)* **Impact: This will save or create 165,000 jobs in the solar industry and 89,000 jobs in the wind industry[i] and could save up to 17.8 million tons of global warming pollution per year.[ii]**
✔	Renewable Energy on Federal Property	Some funding for renovation of federal buildings may go to solar power or small wind power, but no dedicated funding was included.
✔	Clean Energy Manufacturing Tax Credit	$2 billion in credits for all renewable energy manufacturing was included.
✔	Clean Renewable Energy Bonds	$1.6 billion in bonding authority **Impact: This investment would create 9,040 jobs in the renewable energy industries.[iii]**
✔	Renewable Energy Production Tax Credit Extension	Three-year, full value extension. *(Estimated cost: $13.1 billion)* **Impact: This extension will reduce global warming pollution by 42.7 million tons annually,[iv] and create or sustain 512,210 jobs.[v]**
✔	Green Jobs Act	$500 million. **Impact: This will train 70,000 workers to fill lucrative jobs in the renewable energy and energy efficiency industries.**
✔	Advanced Battery Development and Manufacturing	$2 billion **Impact: This will reduce global warming pollution by 2.6 million tons of global warming pollution annually and create 45,000 jobs.[vi]**
✔	Energy Efficiency and Renewable Energy Research, Development, Demonstration and Deployment	$2.5 billion

✔	Renewable Energy and Transmission Loan Guarantees	$6 billion
✔	Smart Grid Development and Deployment	$4.5 billion
	Renewable Energy Subtotal:	$32,804,000,000 investment; 731,250 jobs, 63,100,000 tons annual reduction of global warming pollution

Energy Efficiency		
	Program	Summary
✔	Energy Efficiency and Conservation Block Grants	$3.2 billion
✔	Weatherization Assistance Program	$5.0 billion **Impact: This would reduce global warming pollution by 2.2 million tons[vii] and create 375,000 jobs[viii] and weatherize over a million homes.**
✔	Home Efficiency Retrofit Program	Creates a new $2.25 billion program to upgrade Housing and Urban Development sponsored housing to make it more energy efficient
✔	State Energy Program	$3.1 billion
✔	Energy Efficiency Tax Credits	One-year extension and expands the credit to increase the amount of the tax credit from ten to thirty percent of the amount paid by the taxpayer. *(Estimated cost: $4.275 billion)*
✔	Federal Buildings Efficiency Improvements	$4.5 billion **Impact: This investment will reduce global warming pollution by 2.46 million tons, and create or sustain 113,850 jobs.[ix]**
✔	Energy Efficient Appliances	$300 million
✔	Native American Housing Block Grants	$510 million
✔	Qualified Energy Conservation Bonds	$3.2 billion in bonding authority

✔	Department of Defense Energy Efficiency Research	$300 million
✔	Department of Defense Energy Conservation Construction	$220 million
	Energy Efficiency Subtotal:	$26,855,000,000 investment; 488,850 jobs; 4,660,000 ton annual reduction in global warming pollution

Cleaner Transportation		
	Program	Summary
✔	New Starts transit capital projects	$8.4 billion dedicated to mass transit funding is allocated to state and metro transit formula funding; of this total $750M is allocated to rail modification and $750M towards New Starts capacity expansion projects. **Impact: 10.3 million barrels of oil saved per year, 252,000 jobs** [x]
✔	Amtrak rail improvements	$1.3billion **Impact: 131,000 barrels of oil saved per year, 38,650 jobs**[xi]
✔	High speed rail development	$8 billion **Impact: 3.4 million barrels of oil saved per year, 5,120 jobs**[xii]
✔	GSA federal fleet improvements for alternative fuel vehicles	$300 million **Impact: 943,000 barrels of oil saved per year**[xiii]
✔	State grants for transportation electrification	$400 million
✔	Federal grants for plug-in hybrid electrics	$550 million
	Cleaner Transportation Subtotal:	$18,950,000,000 investment; 388,120 jobs; 14,774,000 barrels of oil saved per year
	TOTAL:	$78,609,000,000 investment; 1,515,870 jobs; 67,760,000 tons annual reduction of global warming pollution; 14,774,000 barrels of oil saved per year

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[i] Due to overlap with the PTC extension, the 89,000 jobs from wind development are not included in the total. Numbers come from, respectively: Solar Energy Industries Association (SEIA), Solar Energy Fuels Domestic Job Growth (fact sheet), December 2008; Tom Vinson, Environment Legislative Manager, American Wind Association (AWEA), personal communication, 9 December 2008.

[ii] AWEA, Another Record Year for New Wind Installations (fact sheet), October 28, 2008. The number is taken from the planned installations in the next year that could be cancelled without this program.

[iii] Renewable Energy Policy Project (REPP), The Work that Goes into Renewable Energy, November 2001. According to REPP, for every $1 million spent on wind and/or solar (capital costs and construction), 5.65-5.7 jobs are created.

[iv] To calculate this we used the wind capacity per billion dollars from Trevor Houser, Shashank Mohan, and Robert Heilmayr, World Resources Institute (WRI) and Peterson Institute for International Economics, A Green Global Recovery?, February 2009. We then used 210 tons of carbon per GWh from Michael Milligan, American Solar Energy Society (ASES), Tackling Climate Change in the U.S, January 2007. Converted that into 770 tons of CO_2 per GWh. Finally a capacity factor of .33 was used for wind generation and the total CO_2 reduction was the result.

[v] Trevor Houser, Shashank Mohan, and Robert Heilmayr, World Resources Institute (WRI) and Peterson Institute for International Economics, A Green Global Recovery?, February 2009

[vi] Ibid.

[vii] Ibid.

[viii] The Department of Energy says that there are 52 direct and 23 indirect jobs created for every million dollars that is invested in the Weatherization Assistance Program. Department of Energy, Weatherization Assistance Program Overview, www.waptac.org/sp.asp?mc=what_overview_program, downloaded January 10, 2009.

[ix] See note 5.

[x] Office of Management and Budget, Detailed Information on the Federal Transit Administration New Starts Assessment, 2003. Surface Transportation Policy Project (STPP), Setting the Record Straight Transit, Fixing Roads and Bridges Offer Greatest Job Gains, January 28, 2004. American Public Transportation Association (APTA), Public Transportation Fact Book/58th Edition, May 2007. Factors STPP job estimates for transit projects based on construction cost; fuel savings from passenger car vs. transit fuel reduction estimates; U.S. Department of Energy Alternative Fuels and Advanced Vehicles and Data Center, Natural Gas Vehicle Emissions, September 2008. Factors 25 percent CO2 emissions reduction between diesel and Compressed Natural Gas buses for vehicle upgrades

[xi] Transportation Journal - American Society of Transportation & Logistics, Amtrak revenues, fares, and ridership in the 1990s: trends and passenger revenues forecast errors, Summer 1997. USA Today, Amtrak reports record annual ridership, October 10, 2008. Assumes 11 percent overall annual passenger rail growth consistently achieved will be sustained.

[xii] Center for Clean Air Policy, Center for Neighborhood Technology; High Speed Rail and Greenhouse Gas Emissions in the U.S., Summer 2006

[xiii] Environmental Protection Agency, Average Annual Emissions and Fuel Consumption for Passenger Cars and Light Trucks, November 2007; factors hybrid vehicle emissions savings versus comparable conventional gasoline/diesel engine emissions