



A more detailed discussion can be found in the forthcoming issue paper "The New Energy Economy," which will be available online at <http://www.nrdc.org/globalwarming/energy/contents.asp>

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## The New Energy Economy: Putting America on the path to solving global warming

America and the world face serious and urgent challenges rooted in the way we fuel and power our economies. How we respond to global warming and our growing demand for energy—and whether we respond in time—will determine what kind of planet we have for generations to come. The scale of the challenge will require an unprecedented response, one that transforms U.S. and global energy markets from archaic dirty technologies to newer cleaner solutions. Fortunately, many of the technologies and policy tools we need to make this transformation already exist and we can deploy them without harming the economy. The next step is decisive U.S. government action to facilitate these investments and reduce our global warming pollution the necessary 80 percent, or 10.6 billion tons, by the year 2050.



[www.nrdc.org/globalwarming/energy/contents.asp](http://www.nrdc.org/globalwarming/energy/contents.asp)

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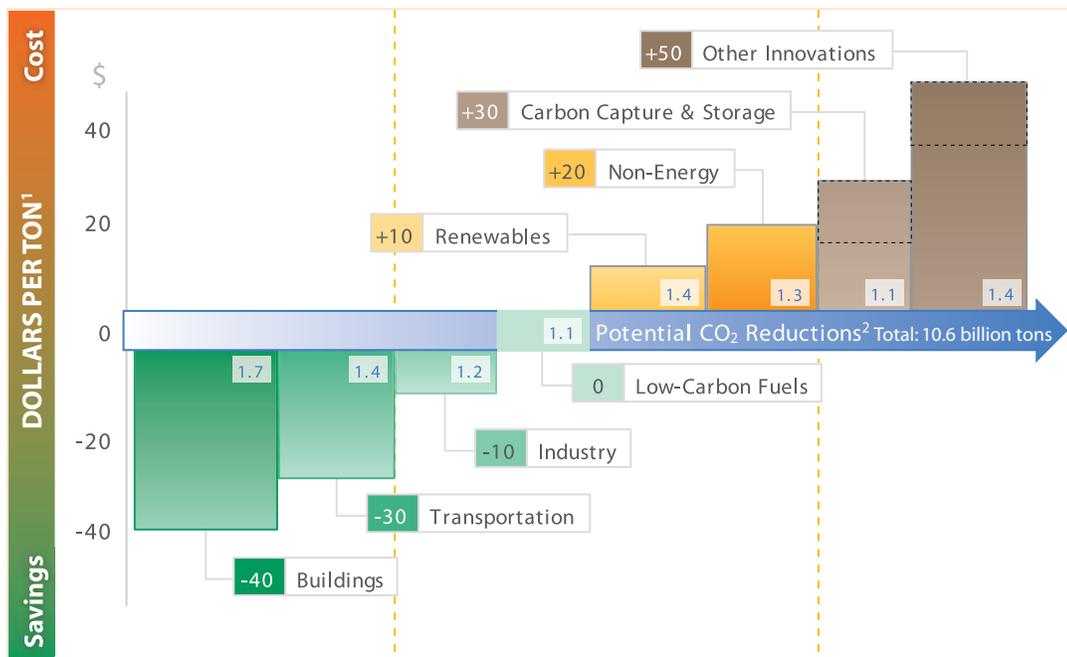
## We Must Act Now to Stop Global Warming

Global warming is happening faster than expected. The Nobel Prize-winning Intergovernmental Panel on Climate Change (IPCC) confirmed in its latest report that “warming of the climate system is unequivocal.”<sup>3</sup> Global average surface temperature has increased by almost 1 degree Celsius since 1906, and scientists who have studied the problem for decades are surprised to see how quickly the ice caps and glaciers are melting, mountain snow pack is shrinking, and natural systems are beginning to break down. We are already seeing significant environmental and economic impacts: severe and persistent droughts; sea-level rise; coral bleaching, infestation and disease; disruptions in the food chain; and more intense heat waves and tropical storms. Scientists are increasingly concerned that if global temperatures rise by more than another

1 degree Celsius, very dangerous impacts may become inevitable, including the irreversible melting of the Greenland ice sheet and dramatic sea level rise.

To avoid locking ourselves and future generations into a dangerously disrupted climate, industrialized nations need to reduce global warming pollution by 80 percent from current levels by mid-century. Major developing economies need to adopt advanced energy technologies that will enable them to grow without following our highly polluting development path. The European Union and a few other countries have already begun to act, but the world will not reach the necessary targets unless the United States quickly enacts mandatory limits and moves aggressively to reduce its pollution by shifting investments to low-carbon, high-efficiency fuels and technologies.

### Cutting U.S. Global Warming Pollution 80% by 2050: Cost and Payoff by Sector



1. Mainly efficiency to be unlocked by **policies and standards** that overcome non-price market barriers such as lack of consumer information and split incentives

2. Mainly relatively mature renewables (e.g., wind, forestry, and industrial efficiency) to be unlocked by a **federal emissions cap** that puts a price on global warming pollution

3. Mainly emerging renewables and carbon capture to be unlocked by **innovation policy**, e.g., R&D and commercialization incentives<sup>3</sup>

<sup>1</sup> Dollars per ton of cuts in emissions of CO<sub>2</sub>e (CO<sub>2</sub> plus other greenhouse gases)

<sup>2</sup> Billions of tons CO<sub>2</sub>e per year, in 2050

<sup>3</sup> Emerging renewables such as solar PVs also require innovation support.

Note: The scenario above is based on NRDC analysis, including extrapolations from 2030 cost estimates done by McKinsey & Company. For information about our methodology, visit <http://www.nrdc.org/global-warming/blueprint/methodology.asp>

## The New Energy Economy: Putting America on the path to solving global warming

### Six Big Opportunities to Transform the U.S. Energy Sector

Reducing global warming pollution 80 percent by mid-century will require the United States to substantially transform its energy sector. NRDC looked at more than a dozen strategies to reduce global warming pollution on both the demand side and the supply side of the equation and pinpointed six major energy sector opportunities that will put America on the path to solving global warming.<sup>4</sup>

### Policy Recommendations for Curbing Global Warming

To move markets to deploy these solutions within the United States, we need comprehensive and effective policy action. Three essential steps will put us on a path to curbing global warming:

**1. Overcome barriers to investment in energy efficiency.** Relying on price signals alone to drive investment is not enough; state and federal policies are also needed to promote building and transportation efficiency at lowest cost, for example by reforming perverse regulations and allowing energy efficiency to compete on a level playing field against electricity and gas supply.

**2. Enact mandatory limits on global warming pollution to stimulate investment.** A mandatory cap will guarantee that we meet emissions targets and a well-designed program can reduce energy bills for consumers and businesses.

**3. Promote emerging low-carbon solutions.** The government must adopt performance standards and other policies to promote “learning by doing” and rapid development and deployment of emerging technologies such as low-carbon fuels, renewable electricity, and carbon capture and disposal.

We must also simultaneously move to adopt a strict international system to control global warming pollution. The cost of inaction—to our health, our environment, and our economy—is a price that we cannot afford to pay. We must act now, and act decisively, to prevent the dangerous impacts of global warming and to drive investment in the next generation of buildings, vehicles, fuels and power production.

Six Energy Sector Opportunities for Solving Global Warming		
	CO <sub>2</sub> emissions avoided in 2050	Percent of 2050 pollution reduction target
Demand Opportunities	<b>1. Building and appliance efficiency</b> to provide the same comfort and services with less energy.	1.7 billion tons
	<b>2. Vehicle efficiency &amp; smart growth communities</b> help cars go farther on less fuel and reduce vehicle travel.	1.4 billion tons
	<b>3. Industrial efficiency</b> such as combined heat and power reduce industrial energy use.	1.2 billion tons
Supply Opportunities	<b>4. Renewable electricity</b> from sources such as wind power and solar power has the potential to supply 40 percent of our energy needs.	1.4 billion tons
	<b>5. Low-carbon transportation fuels</b> such as biofuels made from switchgrass can replace imported oil.	1.1 billion tons
	<b>6. Carbon capture and disposal</b> of CO <sub>2</sub> stores emissions from coal-fired power plants in geologic structures deep in the Earth, where it is gradually absorbed.	1.1 billion tons
<b>TOTAL: 7.9 billion tons of pollution avoided.</b>		<b>TOTAL: 75% of the 10.6 billion tons of needed emissions reductions from business-as-usual forecast.</b>

1 World Energy Outlook 2006, International Energy Agency.

2 *Reducing U.S. Greenhouse Gas Emissions: How Much at What Cost* (December, 2007) sponsored by DTE Energy, Environmental Defense, Honeywell, National Grid, NRDC, PG&E, and Shell and available for download at [www.mckinsey.com/client-service/ccsi/greenhousegas.asp](http://www.mckinsey.com/client-service/ccsi/greenhousegas.asp)

3 IPCC, Synthesis Report, Fourth Assessment, p. 1.

4 These measures achieve three-quarters of the reductions needed by 2050. The remainder would come from non-CO2 gases, forestry measures, and innovations to address thousands of smaller sources.