



The McKinsey Report and the Global Warming Solutions Roadmap

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Key Messages



Global warming science is settled, companies are acting, and the US is rapidly moving toward federal policies to contain emissions



New McKinsey study shows we can control global warming at minimal economic cost if we start now



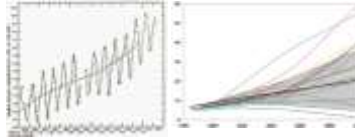
NRDC is working to unleash this abatement potential with policies to cap emissions, scale efficiency, and promote innovation



Cap and trade likely the best option for creating the price signal we need

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Global Warming Debate has Shifted from Science to Economics



1890s

- Arrhenius postulates climate sensitivity of 4-6 °C per CO₂ doubling

1960s-1970s

- Keeling documents steady rise in CO₂ concentration

1980s-1990s

- Models solidify but on-going media controversy over science

2000s

- IPCC 95% sure human activity already causing warming and projects 1-6 °C warming by 2100 based on 2-5 °C climate sensitivity

IPCC wins Nobel Peace Prize

Source: NRDC using www.aip.org/history/climate/xKeeling71-2.htm

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Global Warming Action is Shifting from the Courtroom to the Boardroom



1989

- First global warming law suit brought by NRDC (LA vs. NHTSA)

1990s

- NRDC launches MA v. EPA global warming litigation in 1999

2000-2006

- Global warming litigation against power plants (e.g., CT vs. AEP)

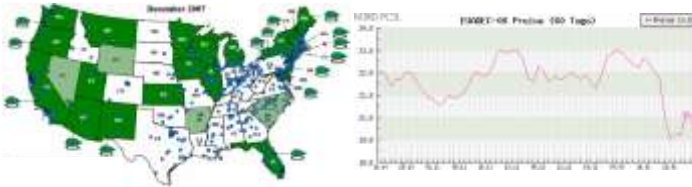
2007

- NRDC helps to negotiate elimination of polluting coal plants in TXU deal

USCAP firms call for 60-80% cuts by 2050

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Global Warming Policy focus is Shifting from State to Federal and International

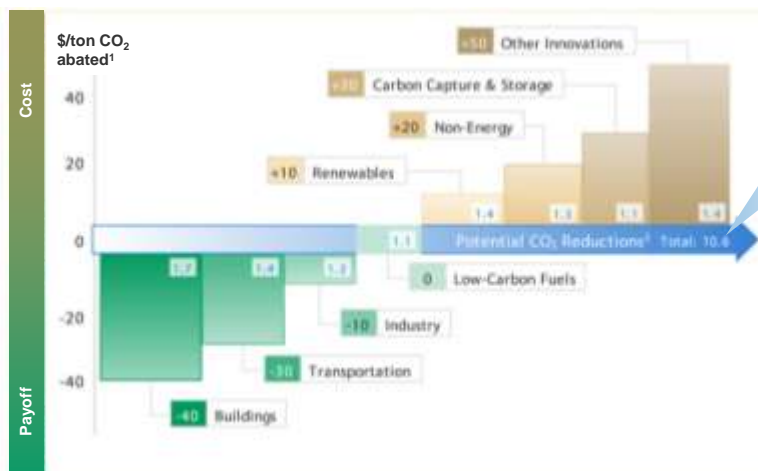


- State energy policies
- State climate policies
- EU-ETS cap and trade launched
- Energy Bill addresses transport
- Lieberman-Warner

Federal climate legislation and global post-2012 system?

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NRDC Strategy to Cut U.S. Global Warming Pollution 80% by 2050

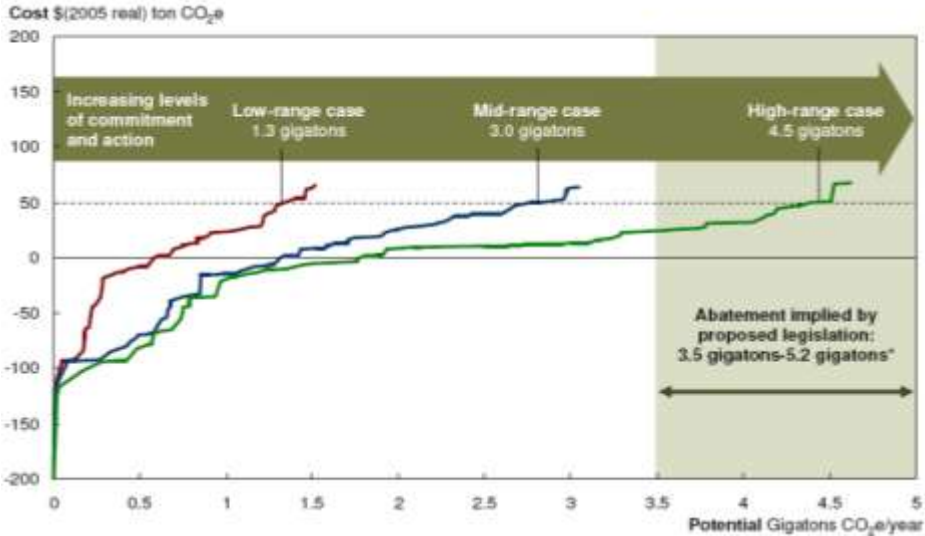


80% reduction from current emissions

1 Constant 2007 dollars
 2 Billions of tons of CO₂ equivalent eliminated per year relative to business as usual projections
 Source: NRDC analysis partially extrapolated from McKinsey report; see www.marketinnovation.org

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Faster Action Means Lower Cost to Reach 2030 Goals



* Targets calculated off the 2030 U.S. GHG emissions of 9.7 GtCO₂e/year (DOE/USDA/EPA reference case)

Source: McKinsey analysis

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Drivers Of GHG Abatement Potential – 2030



	2005	Low-range case	Mid-range case	High-range case
Coal with CCS Gigawatts	• Rebuilds – 0 • New builds – 0	9 13	32 23	50 33
Nuclear Gigawatts	• Nuclear – 100	113	129	153
Renewables Gigawatts	• Wind – 10 • Solar CSP } <1 • Solar PV }	70 10 28	116 30 50	164 80 148
Biofuels Billion gallons	• Starch – 4 • Cellulosic – 0	12 5	16 14	16 51
Light-duty vehicles	• Cars* – 29 mpg • Light trucks* – 22 mpg • Alternatives** – 3%	34 mpg 27 mpg 14%	47 mpg 34 mpg 60%	53 mpg 38 mpg 71%
Buildings energy efficiency**	• Efficient lighting: 6% • Efficient homes: N/A	15% 25 million	70% 37 million	75% 49 million

1.3

3.0

4.5

* Average for new vehicle sales; average across gasoline internal combustion, diesel, hybrid electric and plug-in hybrid electric vehicles; includes opportunities above \$50 per ton

** Alternatives to conventional gasoline propulsion: diesel, hybrid electric and plug-in electric hybrid vehicles; share of new sales

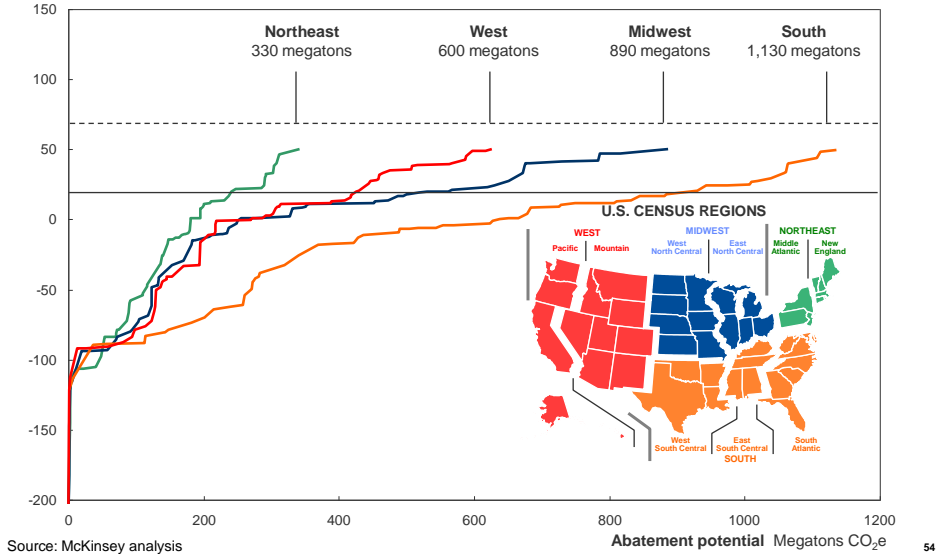
*** Lighting: CFLs and LEDs, share of new residential sales. Homes: incremental total built (or rebuilt) to Energy Star efficiency or higher

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There is substantial abatement potential in all regions, including the Midwest



Cost Real 2005 dollars per ton CO₂e



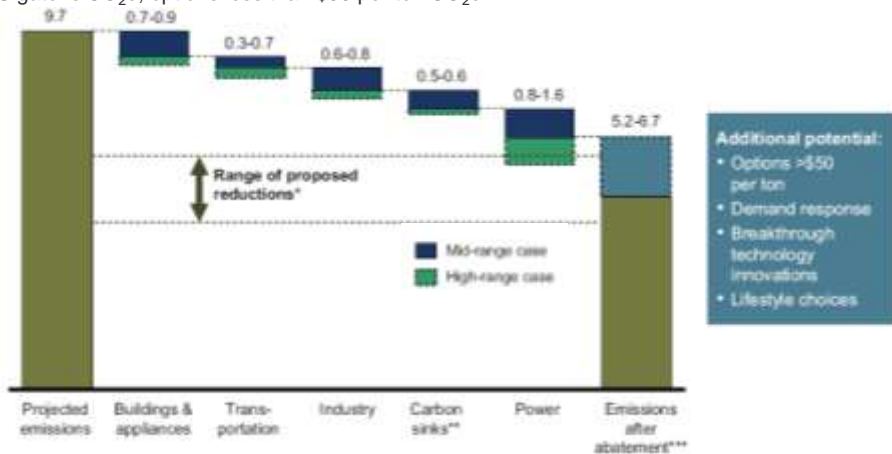
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Every sector of the economy plays a significant role



Clusters of abatement potential – 2030

Gigatons CO₂e, options less than \$50 per ton CO₂e



* Based on bills introduced in Congress that address climate change and/or GHG emissions on an economy-wide basis and have quantifiable targets; targets calculated off the 2030 U.S. GHG emissions of 9.7 gigatons CO₂e/year (reference case)

** Including abatement in the agriculture sector

*** Adjusted for cumulative rounding errors

Source: U.S. IEA; EPA; USDA; McKinsey analysis

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The likely impacts on energy prices are significant but not drastic



Fuel	Cost at \$50/ton CO ₂ e	Percent retail price increase
1 gallon gasoline	\$0.44	15%
1 kilowatt-hour electricity*	\$0.031	30%

- Long-run power price impacts from any given CO₂ price will diminish as we “de-carbonize” the electricity supply
- The study conservatively omitted consumer responses to prices, e.g. sustained \$50/ton CO₂e would likely cut gasoline consumption by at least 10%**

* Based on average carbon intensity of U.S. national power grid in 2005. Note that for electricity, the actual cost would vary according to the carbon content of the marginal generating source, and hence requires market-specific information to calculate

** Assumes some voluntary shifting to smaller or less powerful vehicles plus a 5-10% reduction in miles traveled due to a \$2/gallon retail gasoline based on \$59/barrel crude in the DOE 2030 business as usual forecast and a price elasticity of demand for driving of -0.3.

Source: McKinsey

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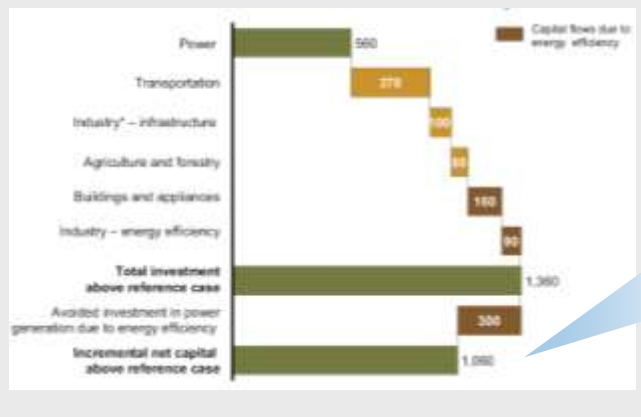
Strong Policy Signals are Needed to Redirect Capital to Clean Solutions



Incremental capital investment

Real 2005 \$ billions, cumulative through 2030

Mid-Range Case – 2030



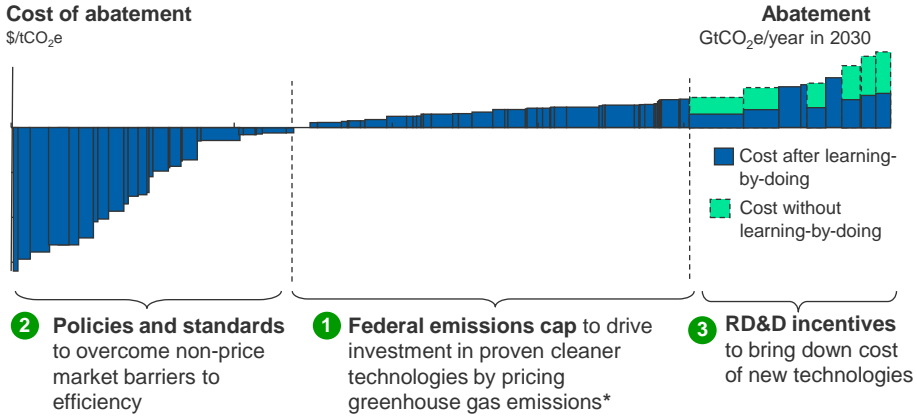
- Redirect \$3 trillion currently expected for conventional supply plus over \$1 trillion in new capital
- Minor relative to \$77 trillion economy-wide investment expected through 2030

* Including Waste industry

Source: McKinsey analysis

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NRDC Policy Solutions to Unlock Abatement

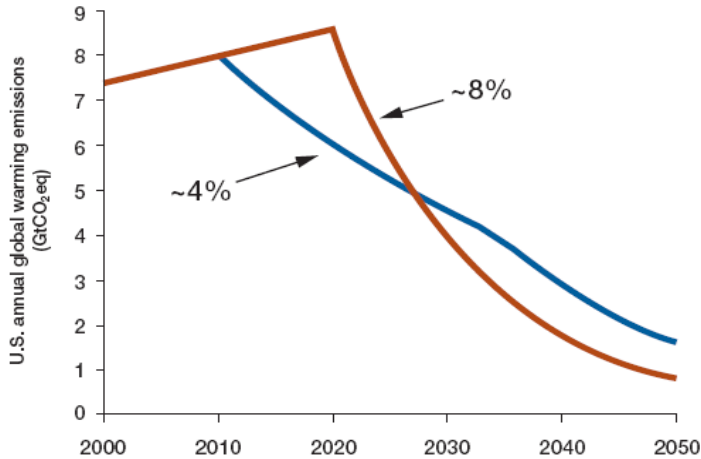



Must also negotiate global post-2012 system to limits fossil CO₂ and provide incentives for reducing forestry, agriculture and industrial emissions

* Putting a price on CO₂ and other greenhouse gas emissions also helps on the margin to encourage energy efficiency and innovation

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Window of Opportunity is Closing

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Lieberman-Warner Climate Security Act of 2007 Overview



- Cap covers 86% of U.S. emissions with the following emissions reduction targets:
 - 5-13% reduction from all 2005 emissions by 2012
 - 18-25% reduction of 2005 levels by 2020
 - 62-66% reduction of 2005 levels by 2050

- Cap and Trade System administered by the EPA
 - 6,065 million allowances in 2012 decreasing annually to 1,822 million in 2050

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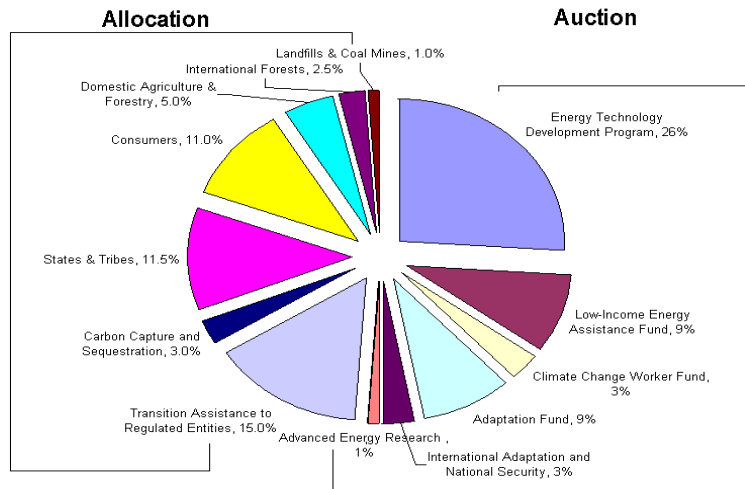
Cost Containment Mechanisms



- Trading
- Banking
- Borrowing
- Offsets
 - 15% of compliance can come from domestic reductions in sources outside the cap.
 - 15% of compliance can come from international credits from other trading systems.
- Carbon Market Efficiency Board manages price volatility and oversees trading

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Lieberman-Warner Climate Security Act: Cumulative Allocation of Allowances



Source: Pew Center on climate Change

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Improving the Bill



- There are several ways we would like to strengthen the bill:
 - Ensure that the emissions reductions targets are in line with scientific recommendations (look back provision)
 - Reduce the amount of free allowances going to industry and utilities and increase the amount going to public purpose
 - Incorporate Vehicle Miles Traveled into allocation
 - Ensure that the low-income compensation provisions are strong enough

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Warming Won't Wait. Will We?

