



Strengthening American Manufacturing and Investing in the Clean Energy Economy: How Climate and Energy Legislation Can Help America Become the Global Leader in Clean Energy Technologies

For more information, please contact

David Doniger
(202) 289-6868

Comprehensive clean energy and climate legislation will reduce global warming pollution from America's manufacturing sector while strengthening the competitiveness of American industry and preserving and increasing the number of good-paying, high-skilled jobs available to American workers. The vast majority of American manufacturers will see little or no cost increases as a result of well-designed climate legislation, and the most energy-intensive firms will receive extra benefits to ensure their international competitiveness. Now is the time to put American workers—and companies—to work building the next generation of clean energy technologies.



www.nrdc.org/policy

May 2010

© Natural Resources Defense Council

Strengthening American Manufacturing and Investing in the Clean Energy Economy: How Climate and Energy Legislation Can Help America Become the Global Leader in Clean Energy Technologies

Fast Facts on Manufacturing and Emissions

- The manufacturing sector emits 17 percent of U.S. carbon dioxide directly and another 10 percent indirectly due to emissions from purchased electricity.
- For 96 percent of manufacturing firms—employing 93 percent of America's 13 million manufacturing workers—energy costs are a small fraction (averaging less than 2 percent) of the value of the goods they produce.
- About 3 percent of manufacturing firms—accounting for 6 percent of manufacturing jobs—are responsible for 46 percent of the sector's CO₂ emissions. These energy-intensive firms have greater energy costs (more than 5 percent of the value of goods produced) and face significant import competition from countries that do not all have comparable carbon policies.
- Proposed climate bills include specific provisions to address manufacturers' costs, as described in this paper.

Source: "The Effects of H.R. 2454 on International Competitiveness and Emission Leakage in Energy-Intensive Trade-Exposed Industries." (Federal Interagency Report, December 2009, available at: http://www.epa.gov/climatechange/economics/pdfs/InteragencyReport_Competitiveness-EmissionLeakage.pdf).

Strengthening American Manufacturing While Building the Clean Energy Economy

Comprehensive climate and energy legislation can protect and benefit American manufacturers in three ways:

- Climate and energy legislation will help American manufacturers become more efficient, cleaner, and more competitive. It will create new markets and demand for American-made advanced materials and products at the core of our 21st century clean energy economy. It will provide factories with incentives for retooling, improving efficiency, and capturing carbon emissions.
- Climate and energy legislation will assure that American manufacturers will see little or no cost increases. More than 9 out of 10 manufacturing firms will receive rebates and other benefits delivered through their electricity and natural gas utilities.
- Climate and energy legislation will provide extra benefits to manufacturers in the most energy-intensive and internationally-competitive industries to offset their compliance costs and level the playing field.

More Than 9 out of 10 American Manufacturers Will See Little or No Cost Increases

A federal interagency report evaluating the climate and energy legislation passed by the House last year (H.R. 2454) found that the "vast majority of U.S. industry will be largely unaffected by proposed legislation."¹ That's because energy is a small share of overall costs for the vast majority of American manufacturers, and because most energy cost increases will be covered by rebates and other benefits.

- Energy costs average less than 2 percent of the value of goods produced for 96 percent of America's manufacturers. These manufacturing firms employ 93 percent of America's 13 million industrial workers, and their output accounts for

more than 85 percent of the value of all goods manufactured in the United States.²

- To put that in context, the average American manufacturing firm spends less than \$20 on energy for every \$1000 of goods produced. Even using the most carbon-intensive energy source (coal-fired electricity), the firm would still see costs per \$1000 of production increase by only \$2 if carbon allowance prices are \$20 per ton.³ That's less than one-quarter of 1 percent—much less than the cost variability associated with labor, exchange rates, and fuel price fluctuations.
- Climate legislation will defray most of even this small cost. For example, under most proposals, electricity and natural gas utilities will receive free allowances to cover most of their compliance needs, and they will be required under penalty of law to pass on the savings from these free allowances to their customers, including industrial customers. The interagency report suggests that these passed-through savings will reduce manufacturers' electricity-related carbon costs by up to 80 percent,⁴ leaving more than 9 out of 10 manufacturers' net cost increase from climate legislation well below one-quarter of 1 percent.

Climate Legislation Will Cover Nearly All Carbon Costs for More Energy-Intensive, Trade-Exposed Manufacturers

An important subset (about 3 percent) of American manufacturers—producers of commodities such as steel, aluminum, cement, and some chemicals—use much more energy. According to the federal interagency report, these industries employ about 780,000 workers (nearly 6 percent of all industrial workers) in 46 sectors and produce roughly half of all industrial carbon emissions.

When these firms compete with goods imported from countries without comparable carbon controls, they have limited ability to pass on their carbon costs. To keep production and jobs at home, climate and energy legislation has specific provisions to ensure these firms are not disadvantaged.



■ **Free Allowances:** To assure that firms in these energy-intensive and trade-exposed industries stay competitive, climate legislation will give them carbon allowances for free. The federal interagency report concluded that together with the benefits provided through electricity and natural gas utilities, these free allowances “can eliminate almost all—and, in some cases, potentially more than all—of the cost impacts” of the climate bill through 2025.⁵ (see box below)

■ **Border Adjustments:** As an additional safeguard, climate legislation calls for a “border adjustment”—a requirement for importers to buy carbon allowances when bringing in commodities such as steel, aluminum, or cement from countries that fail to adopt their own carbon control programs.

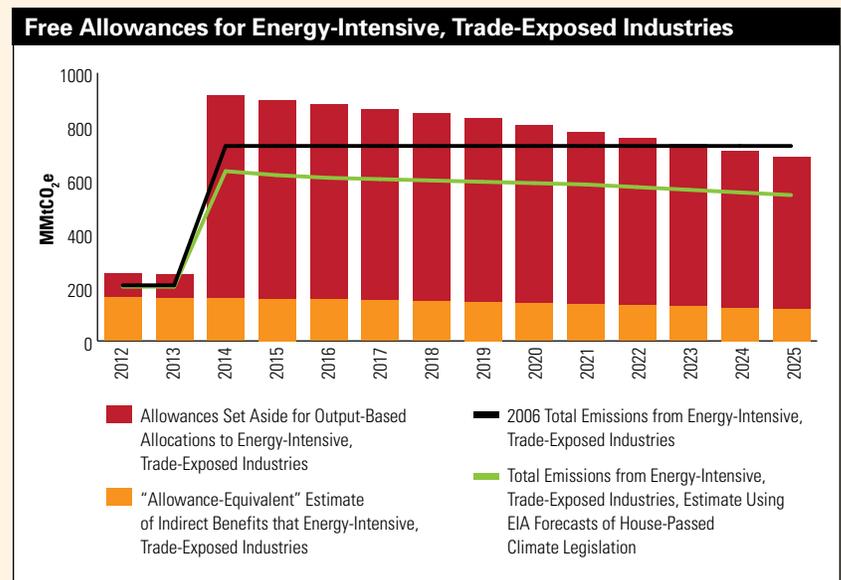
Proposed Climate and Energy Bills Include Incentives for American Manufacturers to Seize Growing Markets and Become More Energy Efficient, Cleaner, and More Competitive

American manufacturers large and small have opportunities for big efficiency gains—through waste heat recovery, computer control technology, and other energy-saving materials and processes—that can improve their global competitiveness. The manufacturing sector could cut primary energy consumption 18 percent by 2020 through efficiency opportunities with a positive payback, according to a 2009 McKinsey & Company report.⁹

Interagency Report Concludes Climate Legislation Safeguards Energy-Intensive, Trade-Exposed Industries

Climate and energy legislation will give free allowances to each energy-intensive, trade-exposed firm at the rate of the average emissions per unit of production in that firm’s industrial sector. This approach will spur energy efficiency investments within each sector while leveling the playing field with competitors from foreign countries that do not have to meet comparable carbon limits. The federal interagency report concluded that the free allowances provided by the House-passed bill (H.R. 2454) will be adequate to cover the compliance obligations of energy-intensive, trade-exposed manufacturers at least through 2025. These industries would receive more allowances under pending Senate legislation.⁶

■ The figure below, adapted from page 36 of the federal interagency report, analyzes the House bill, which covers manufacturing emissions starting in 2014. Free allowances are represented by the vertical bars. The horizontal line represents the allowances needed for compliance if manufacturing emissions remained at 2006 levels. The lower line shows manufacturing emissions declining gradually over time under carbon controls, as projected by the Energy Information Agency. (Both the Energy Information Administration and the Environmental Protection Agency forecast a steady reduction in industrial emissions.⁷)



■ Because unused allowances are “banked” (carried forward) to future years, the federal interagency report found that the total allocated under the bill will cover firms’ compliance needs until at least 2025 if emissions remain at 2006 levels, and for considerably longer if manufacturing emissions decline as expected.

■ Firms’ compliance needs will be covered for even longer if (as proposed Senate legislation) the start date for covering the energy-intensive, trade-exposed manufacturers is moved to 2016.

■ The interagency report assessed these allowance needs on the assumption energy-intensive, trade-exposed companies cannot pass on any of their carbon costs to their customers. But research by New Energy Finance (a leading analyst of clean energy, low-carbon technologies, and carbon markets for investors, corporations, and governments) suggests that some of these industrial sectors actually can pass on a significant fraction of their carbon costs. For instance, while aluminum manufacturers have little pass-through capability, cement makers can pass on roughly 25 percent of these costs.⁸ Where industries can pass on a part of their compliance costs, fewer allowances are needed to cover the remainder.

Strengthening American Manufacturing and Investing in the Clean Energy Economy: How Climate and Energy Legislation Can Help America Become the Global Leader in Clean Energy Technologies

American manufacturers also have tremendous opportunities to lead in a rapidly growing global clean energy market, making products such as advanced batteries, lightweight alloys, and industrial sensors; advanced windows, insulation, and HVAC equipment; and combined heat and power and wind turbines, to name just a few. The global clean energy market is already larger than the global aerospace and defense markets combined and could grow from \$500 billion now to more than \$2 trillion by 2020, according to HSBC bank. There are also huge opportunities to rebuild American infrastructure, from roads and bridges to buses and high speed trains to pipelines and transmission lines.

To help achieve these efficiency savings and capture market share in the global clean energy economy, climate and energy bills propose investing revenue from the sale of allowances in incentives to manufacturers for re-tooling, improving industrial efficiency, and capturing carbon emissions:

■ **Retooling and Industrial Efficiency Financing Incentives:** Climate bills will provide billions of dollars for R&D, low-cost loans, and other assistance to help manufacturers retool, retrain workers, and become more energy efficient. As examples, this will help automakers

and suppliers build cleaner cars, help glass companies convert to making high-efficiency windows, or help steel manufacturers make components for wind turbines. These incentives will help America lead in the global race to lead the clean energy economy.

■ **Carbon Capture and Storage Incentives:** Climate bills will offer manufacturers billion-dollar incentives to develop and deploy carbon capture and storage (CCS). These incentives will help the steel, fertilizer, refining, and cement industries reduce their carbon emissions by capturing the carbon dioxide emission stemming from fuel combustion and industrial processes.

We Must Strengthen American Industry While Protecting Our Health and Environment

The manufacturing sector can maintain and improve its global competitiveness with a comprehensive clean energy and carbon reduction program in place. Climate and energy legislation can build a cleaner, stronger manufacturing sector to power American economic growth and help American industry take the lead in the fast-growing clean energy economy of the 21st century.



¹ "The Effects of H.R. 2454 on International Competitiveness and Emission Leakage in Energy-Intensive Trade-Exposed Industries," pp. 1-2 (Federal Interagency Report, December 2009, available at: http://www.epa.gov/climatechange/economics/pdfs/InteragencyReport_Competitiveness-EmissionLeakage.pdf).

² Federal Interagency Report, p. 2.

³ Calculation assumes the following: (a) Electricity costs of \$18 per MMBtu, which is the average price to the industrial sector over 2012-2025 as predicted by the Energy Information Agency (EIA) in its core modeling run of H.R. 2454; (b) Coal-fired electricity has an emissions factor of 215 pounds of CO₂ per MMBtu.

⁴ Federal Interagency Report, p. 33.

⁵ Federal Interagency Report, p. 3.

⁶ Federal Interagency Report, p. 36.

⁷ Energy Information Administration, Analysis on Energy Market and Economic Impacts of H.R. 2454, August 2009, available at: [http://www.eia.doe.gov/oiaf/service/rpt/hr2454/pdf/sroiaf\(2009\)05.pdf](http://www.eia.doe.gov/oiaf/service/rpt/hr2454/pdf/sroiaf(2009)05.pdf) (Base Case on Page 17). Environmental Protection Agency, Appendix to the Supplemental Analysis of the American Clean Energy and Security Act of 2009, January 2010, available at: http://www.epa.gov/climatechange/economics/pdfs/HR2454_SupplementalAnalysis_Appendix.pdf (Page 58).

⁸ New Energy Finance, Carbon Markets – North America Research Note, October 6, 2009, copy available upon request from NRDC.

⁹ "Unlocking Energy Efficiency in the U.S. Economy." (McKinsey & Company Report, July 2009, available at: <http://www.mckinsey.com/USenergyefficiency/>). Other estimates place that coverage somewhere between 50 percent (in areas where electricity generation is entirely coal-fired) and 70 percent.

¹⁰ September 2009 HSBC Global Research findings, as reported by Reuters at: <http://www.reuters.com/article/GCA-GreenBusiness/idUSTRE58H2FM20090918?sp=true>.