

Background

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The Lieberman–Warner Climate Change Act: A Solution Worse Than the Problem

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Major policy decisions require weighing of trade-offs, and that is especially true with regard to global warming. Clearly, the American people would not benefit from measures designed to address global warming that do more economic harm than environmental good. For this reason, it is important to weigh the consequences of any proposed climate legislation: both the costs to the American people and the benefits in the form of reduced adverse impacts from global warming.

This *Background* is a companion to the Center for Data Analysis (CDA) report titled “The Economic Costs of the Lieberman–Warner Climate Change Legislation.”¹ It concludes that the leading bill—S. 2191, America’s Climate Security Act of 2007, sponsored by Senators Joe Lieberman (I–CT) and John Warner (R–VA)—would likely impose costs out of proportion to any benefits.

Introduction

Concern that emissions from fossil fuels and other sources are gradually warming the planet has emerged as the major environmental issue of the day. Though the science is not settled, as some claim, many in Congress consider it settled enough that they have moved on to manufacturing fixed solutions.

Chief among the legislative proposals is America’s Climate Security Act of 2007.² This bill would set a limit on the emissions of greenhouse gases, mainly carbon dioxide from the combustion of coal, oil, and natural gas. The bill starts with a mandated emissions freeze at

Talking Points

- America’s Climate Security Act of 2007, sponsored by Senators Joe Lieberman (I–CT) and John Warner (R–VA), would set a strict limit on greenhouse gas emissions. Because energy is the lifeblood of the American economy and 85 percent of it comes from fossil fuels, the bill represents an unprecedented level of federal interference in the economy.
- Lieberman–Warner mandates an emissions freeze in 2012—at 2005 levels—and a 70 percent reduction of the 2005 levels by 2050.
- Because the technologies to reach the Lieberman–Warner goals affordably are decades away, the bill’s mandates can be met only in ways that will drive up energy costs significantly—functioning like a massive energy tax.
- Lieberman–Warner’s compliance costs are likely to be far out of proportion to its benefits. It is crucial for Congress to weigh the likely consequences of any proposed climate legislation.

This paper, in its entirety, can be found at:
www.heritage.org/Research/EnergyandEnvironment/bg2140.cfm

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2005 levels in 2012 and ends with a 70 percent reduction of 2005 levels by 2050. (See Chart 1.)

Because energy is the lifeblood of the American economy and 85 percent of it comes from fossil fuels, S. 2191 represents an unprecedented level of interference by the federal government in the economy. It is therefore crucial that policymakers have a sense of the economic burdens of the Climate Security Act that would accompany any environmental benefits.

How the Bill Works

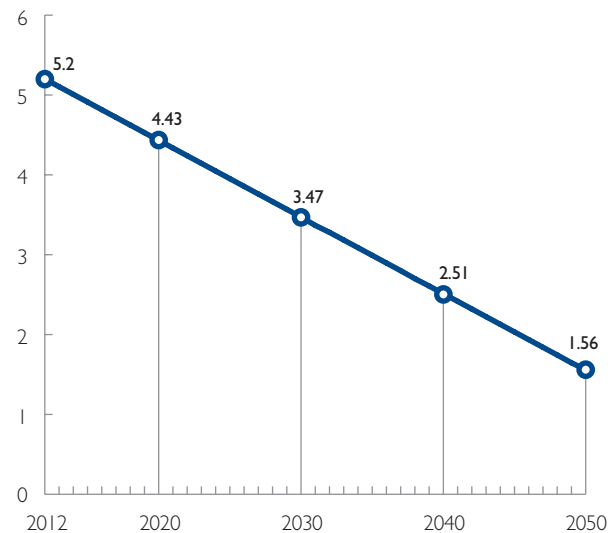
The climate-change legislation sponsored by Senators Lieberman and Warner is a “cap and trade” bill. Greenhouse gas emissions from regulated entities will be capped beginning in 2012. Each power plant, factory, refinery, and other regulated entity will be allocated rights to emit limited amounts of six greenhouse gases, called allowances. Some of these allowances are given away, while others are auctioned off.

The primary greenhouse gas is carbon dioxide and was the main focus of our study. Those entities that reduce their emissions below their annual allotment can sell their excess allowances to those who do not—the trade part of “cap and trade.” Over time the cap is ratcheted down from the 2012 freeze to a 70 percent reduction below 2005 levels by 2050. Our economic analysis, however, does not look beyond 2030, as doing so was deemed too speculative.

Proponents describe cap and trade as a flexible and market-based approach that allows the private sector to find the most cost-effective means of reducing greenhouse gas emissions. They expect the program to provide incentives to fossil energy producers and users to reduce their carbon dioxide emissions through improvements in energy efficiency, expanded use of energy sources with fewer or no carbon emissions, or new carbon capture and sequestration (CCS) technologies that allow such emissions to be stored underground rather than released into the atmosphere.

CO₂ Caps Set By S. 2191 Through 2050

In Billions of Metric Tons



Source: America's Climate Security Act of 2007, S. 2191, 110th Congress, 1st Sess. (2007), Sec. 1201 (d).

Chart 1 • B 2140  heritage.org

By contrast, critics of cap and trade fear that many of the necessary advances are decades away from being technologically and economically viable and that, in the interim, the approach in the Lieberman–Warner bill can be met only in ways that will drive up energy costs significantly—for all practical purposes, a massive energy tax. The economic analysis of our study largely confirms these fears.

Proponents of the bill point to the success of a similar cap-and-trade program in the 1990 Clean Air Act amendments to restrict sulfur dioxide emissions from coal-fired power plants. This program led to emissions reductions at a lower cost than initially anticipated. Critics question the relevance of this program to the far more challenging task of regulating greenhouse gases, which would require widespread deployment of costly and unproven technologies.

1. William W. Beach, David W. Kreutzer, Ph.D., Ben Lieberman, and Nicolas D. Loris, “The Economic Costs of the Lieberman–Warner Climate Change Legislation,” Heritage Foundation *Center for Data Analysis Report* No. 08-02, May 12, 2008, at <http://www.heritage.org/Research/EnergyandEnvironment/cda08-02.cfm>.
2. This bill was announced by the Senate Committee on Environment and Public Works last December and awaits consideration by the full Senate.

Critics also point to the substantial difficulties experienced by the European Union since initiating its greenhouse gas program in 2005 in order to comply with the Kyoto Protocol, the multilateral treaty on emissions that the United States declined to ratify.³ Most nations that did sign the treaty are not on track to meet their targets.⁴ Indeed, emissions in many of these countries are rising faster than those in the U.S.⁵

Assumptions in the CDA Report

The CDA report spells out the cap-and-trade specifics of Lieberman–Warner: the overall targets and timetables, the types of emissions and economic sectors covered, the method of allocating allowances, the measures designed to add flexibility, the provisions affecting trade, and many others that will determine the extent and distribution of the costs and, indeed, whether the goals are realistically achievable.⁶

Several assumptions about the future also affect the projected impact of Lieberman–Warner. These include assumptions about:

- The pace of technological advances, especially those regarding the CCS breakthroughs that will be necessary for the continued use of coal, the highest-emitting energy source and the one that currently provides half of the nation's electricity;
- New nuclear power, an electricity source with minimal greenhouse gas emissions but one that continues to face political and public opposition;
- America's economic growth and concomitant energy needs; and

- The effect of previously enacted energy legislation, particularly the Energy Independence and Security Act of 2007 (EISA).⁷

Care was taken not to overstate costs attributable to Lieberman–Warner. For example, EISA contains a number of costly provisions—new fuel economy standards for passenger vehicles, requirements that renewable fuels be mixed into the motor fuel supply, and efficiency standards for certain appliances—that nonetheless will help carry the load toward meeting the emissions reduction targets in Lieberman–Warner. In order to measure solely the costs of Lieberman–Warner, our analysis does not attribute any of the costs of EISA or any other laws to the bill.⁸ We also assume full compliance with EISA, though the substantial costs in meeting its 9 billion-gallon renewable-fuels mandate thus far in 2008 leave reason to doubt that the 36 billion-gallon mandate by 2022 is realistic.⁹

We also assume that the bill will work as designed, although the European experience with cap and trade has been fraught with substantial implementation problems and unintended consequences.¹⁰

Our analysis used two sets of assumptions. One generously assumes that the economic, technological, and legal challenges to full compliance with Lieberman–Warner are all resolved in a timely manner. Specifically, the generous case assumes that CCS is available by 2018, while the more realistic case assumes that it is still not available by 2030, the end date for our analysis.¹¹

3. Open Europe, "Europe's Dirty Secret: Why the EU Emissions Trading Scheme Isn't Working," August 2007, at <http://www.openeurope.org.uk/research/etsp2.pdf> (May 29, 2008).

4. European Environment Agency, "Greenhouse Gas Emissions Trends and Projections in Europe 2007," November 2007, p. 24, at http://reports.eea.europa.eu/eea_report_2007_5/en (May 29, 2008).

5. U.S. Energy Information Administration, *International Energy Outlook*, 2007.

6. Beach *et al.*, "The Economic Costs of the Lieberman–Warner Climate Change Legislation," pp. 10–13.

7. *Ibid.*, pp. 7–10.

8. *Ibid.*, pp. 8–9.

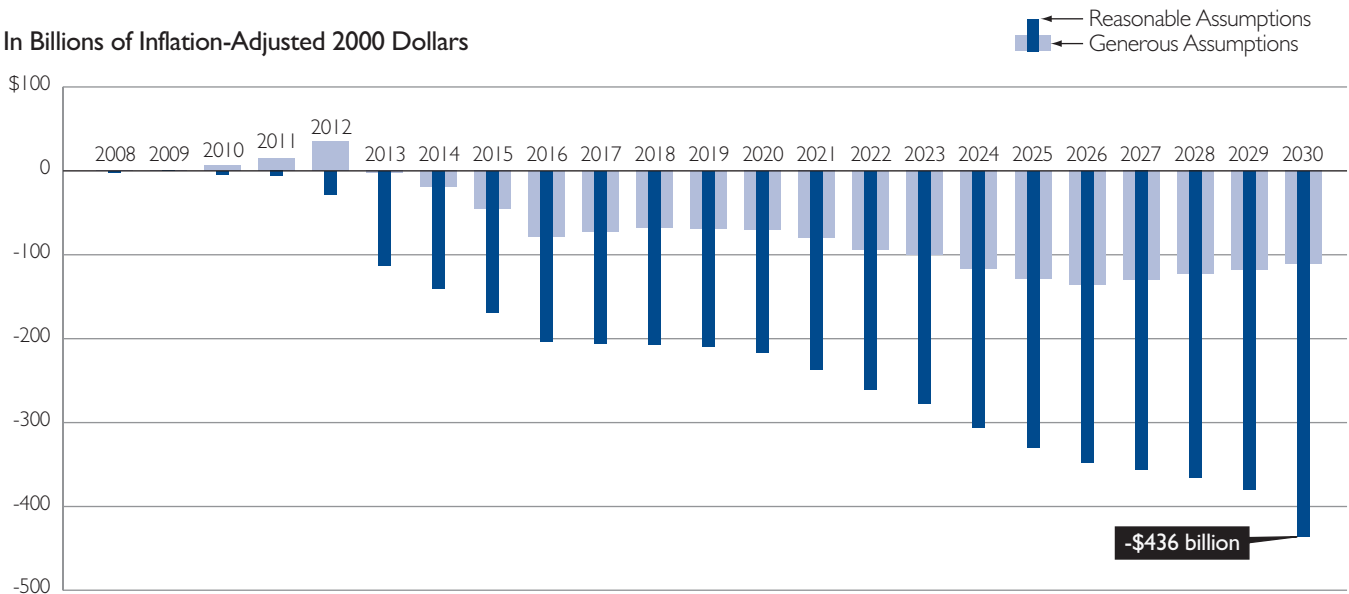
9. Ben Lieberman and Nicolas Loris, "Time to Repeal the Ethanol Mandate," Heritage Foundation *WebMemo* No. 1925, May 15, 2008, at <http://www.heritage.org/Research/EnergyandEnvironment/wm1925.cfm>.

10. Open Europe, "Europe's Dirty Secret," pp. 16–18.

11. Beach *et al.*, "The Economic Costs of the Lieberman–Warner Climate Change Legislation," p. 11.

Annual Change in Gross Domestic Product Due to S. 2191

In Billions of Inflation-Adjusted 2000 Dollars



Source: Heritage Foundation calculations using Global Insight's U.S. Macro Model.

Chart 2 • B 2140 heritage.org

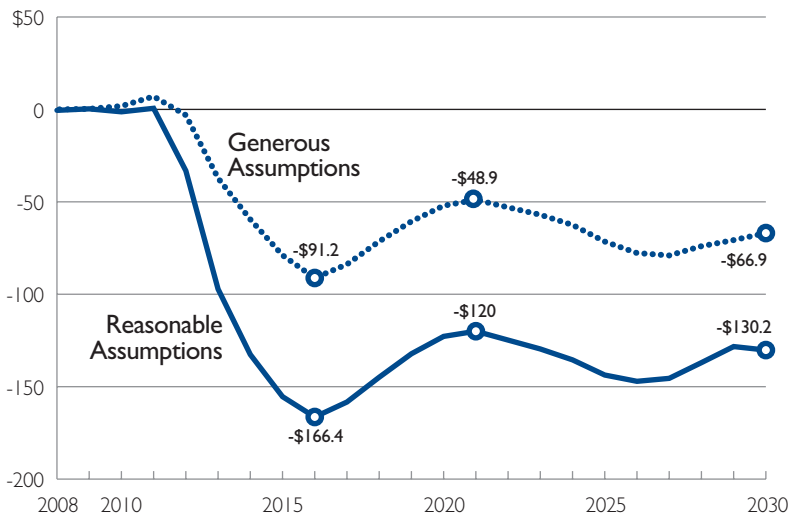
Economic Costs of Lieberman–Warner

It is hard to think of any economic activity that does not involve energy, and there is not one that would not be made more expensive by Lieberman–Warner. No matter how measured, the impacts of the bill on the American economy overall as well as on individuals and households would be substantial and hardly different from a massive energy tax.

The impact on the overall economy is reflected in cumulative gross domestic product (GDP) losses estimated at \$1.7 trillion (with generous assumptions) to \$4.8 trillion (with more realistic assumptions) by 2030. The single-year GDP losses would range from \$111 billion to \$436 billion, or \$949 to \$3,726 per household for each of the nation's 117 million households. (See Chart 2.)

Personal Consumption Expenditures

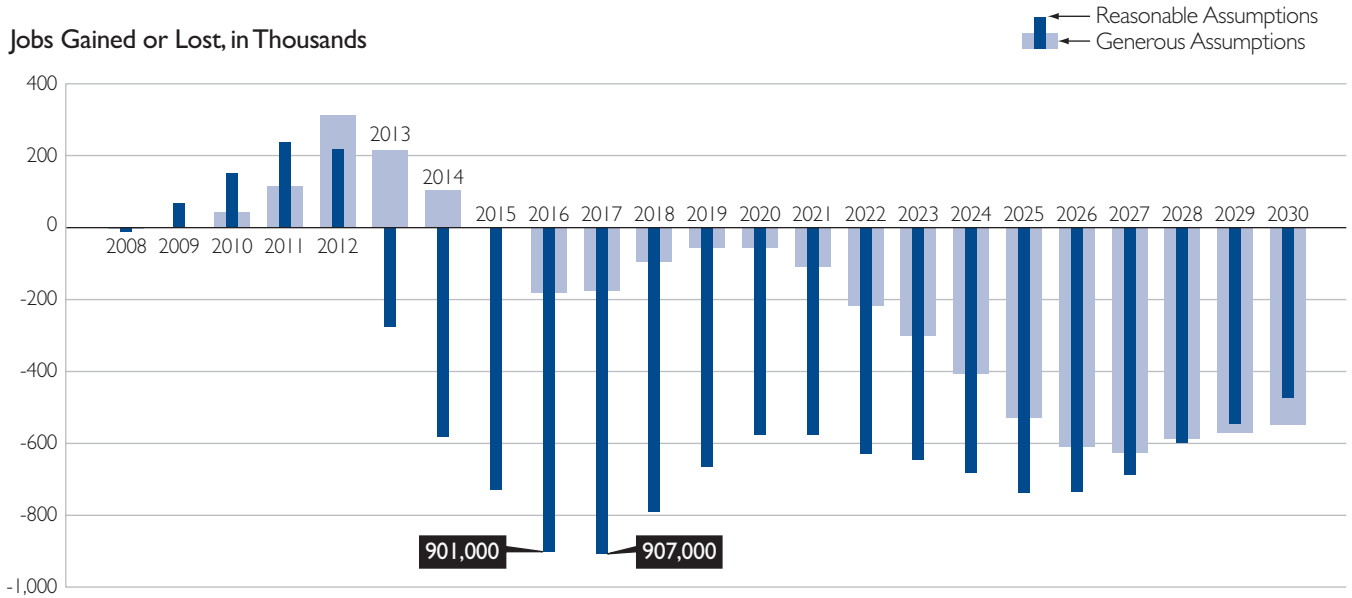
In Billions of Dollars



Source: Heritage Foundation calculations using Global Insight's U.S. Macro Model.

Chart 3 • B 2140 heritage.org

Change in Total Private Employment Due to S. 2191



Source: Heritage Foundation calculations using Global Insight's U.S. Macro Model.

Chart 4 • B 2140 heritage.org

Thus, the annual costs of the Climate Security Act would significantly exceed the Department of Homeland Security's 2007 expenditures of \$43 billion and could also exceed the \$155 billion spent on highways at all levels of government in 2005.

After-tax incomes decline by \$47 billion to \$120 billion in 2015, or \$402 to \$1,026 per household. Declines in consumption average \$54 billion to \$113 billion over the forecast period, or \$462 to \$966 per household annually. (See Chart 3.)

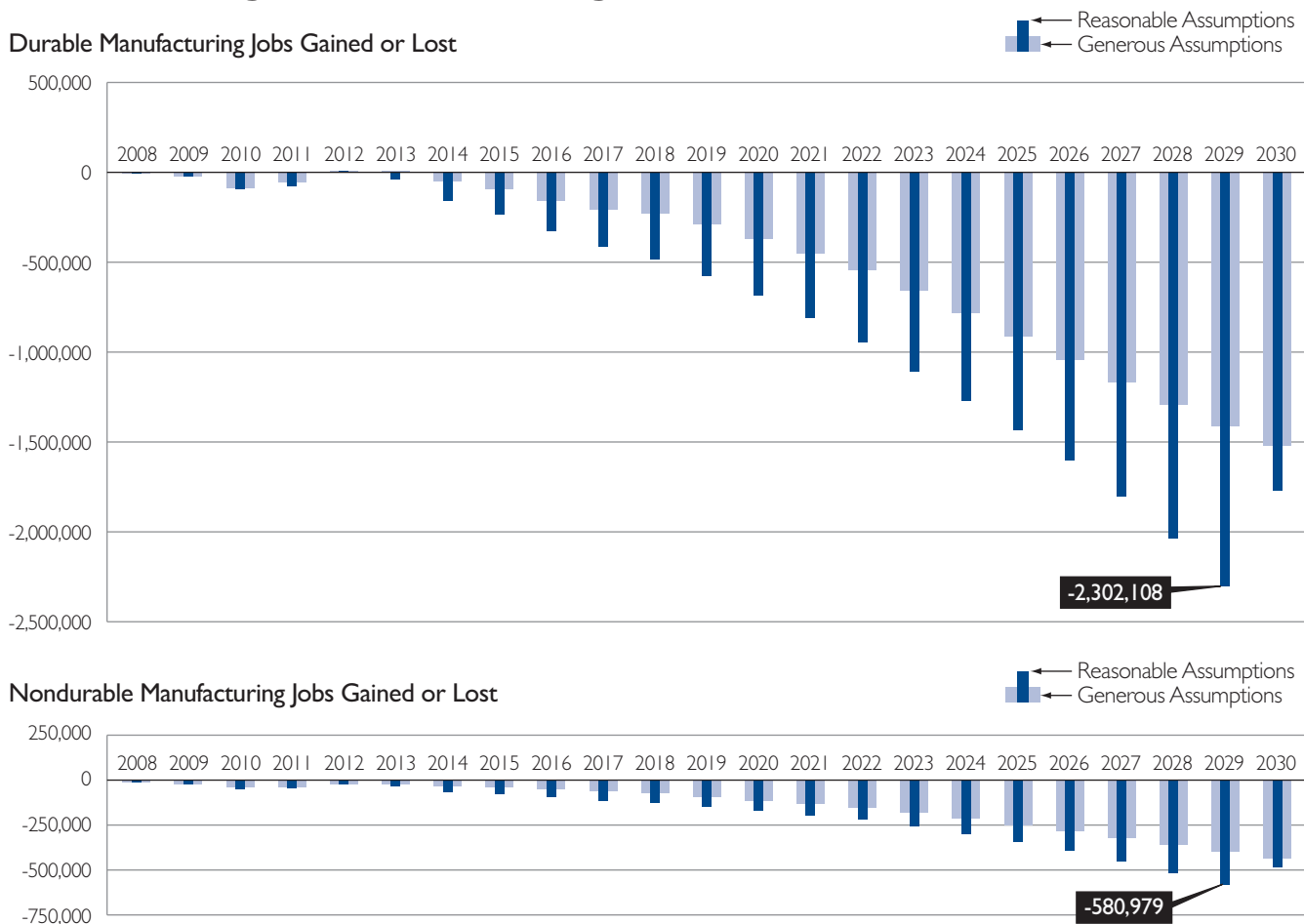
America's Climate Security Act would spark a temporary increase in employment in the first few years as regulated companies invest heavily to comply. After that, however, the bill causes job losses that are expected to exceed 500,000 before 2030 even under the most optimistic assumptions. (See Chart 4.) It should be noted that these are net job losses after the jobs created by the Climate Security Act are taken into account. Particularly hard hit are manufacturing jobs as higher energy costs dampen several energy-intensive sectors. (See Chart 5.) Some of the lost jobs will be destroyed entirely, while others will be outsourced to nations like China that

are unlikely to place similar, if any, constraints on their emissions.

While the Lieberman-Warner bill lowers many household incomes, it raises the cost of living, particularly by raising energy prices. To meet the bill's targets, consumer energy demand must be driven down, which is achieved through higher prices. The price per gallon of gasoline is expected to increase by at least 29 percent by 2030: about \$1.10 more per gallon based on current prices. By 2030, average household electricity costs are also expected to increase by \$647 annually, and natural gas is expected to increase by \$303. (See Chart 6.)

As noted, Lieberman-Warner operates like an energy tax, and since low-income households spend a larger percentage of income on energy, the tax is very regressive.¹² Some of the proceeds from the Lieberman-Warner bill are directed toward programs to help energy consumers and low-income households in particular, but it is unclear how well these income-redistribution schemes will work. In any event, it is unlikely that they could make much of a dent in the damage caused by the bill.

Annual Change in Manufacturing Jobs Due to S. 2191



Source: Heritage Foundation calculations using Global Insight's U.S. Macro Model.

Chart 5 • B 2140 heritage.org

Costs vs. Benefits

Lieberman–Warner is expensive, but what are the benefits? This bill is a solution only to the extent that global warming is a problem in the first place and only to the degree to which the bill reduces that problem. There are reasons to question both.

While a full discussion of global warming science is beyond the scope of this analysis, it is worth noting that science is now taking a turn away from alarmism.¹³ The release of carbon dioxide, a natural constituent of the atmosphere and a byproduct of fossil fuel combustion, has at least some warming

12. Peter R. Orszag, Director, Congressional Budget Office, "Approaches to Reducing Carbon Dioxide Emissions," testimony before the Committee on the Budget, U.S. House of Representatives, November 1, 2007, p. 8, at <http://www.cbo.gov/ftpdocs/87xx/doc8769/11-01-CO2Emissions.pdf> (May 29, 2008).
13. See S. Fred Singer, "Nature, Not Human Activity, Rules the Climate," Heartland Institute, Science and Environmental Policy Project, April 2008, at http://www.sepp.org/publications/NIPCC_final.pdf; Roy W. Spencer, *Climate Confusion: How Global Warming Hysteria Leads to Bad Science, Pandering Politicians and Misguided Policies that Hurt the Poor* (New York: Encounter Books, 2008); Bjorn Lomborg, *Cool It: The Skeptical Environmentalist's Guide to Global Warming* (New York: Knopf, 2007).

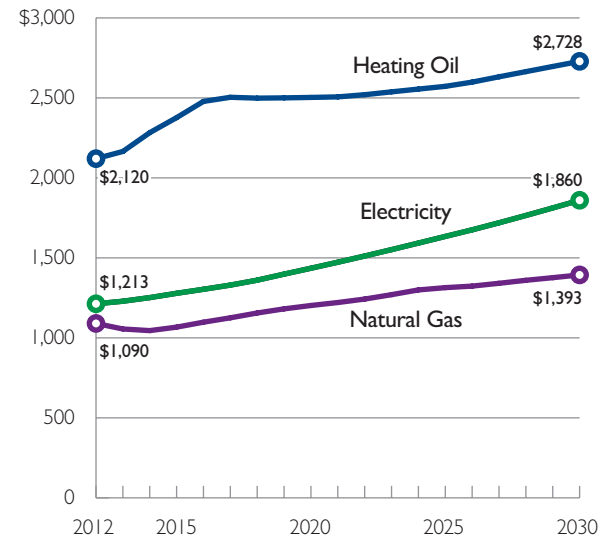
effect on the planet,¹⁴ but the reality of global warming falls well short of being a crisis. Both the seriousness and the imminence of the threat have been overstated by environmentalists and politicians alike.

In particular, there is a growing realization that the extreme claims popularized in the media—most notably that a rise in sea level will inundate vast coastal areas and that deadly hurricanes like Katrina are linked to global warming and have become more common—are not well supported. The World Meteorological Organization¹⁵ and many scientists dispute such claims, and the United Nations Intergovernmental Panel on Climate Change (IPCC) projects a sea-level rise of approximately seven to 23 inches over the next century, not the widely publicized 18 to 20 feet in former Vice President Gore's book and documentary *An Inconvenient Truth*.¹⁶

Furthermore, no matter how great a problem global warming may be, the Lieberman–Warner bill, assuming that it works as intended, would alleviate only a small fraction of that problem. America was by far the 20th century's largest greenhouse gas-emitting nation and at one point was responsible for 25 percent of global emissions, but its share is declining. China already has overtaken, or soon will overtake, America as the world's largest emitter, and its emissions growth is several times greater than that of the U.S.¹⁷ Add to that India and other rapidly developing nations, none of which have shown any willingness to risk continued growth by cracking down on carbon dioxide emissions. Also add the upward trends in emissions from most of

Consumer Energy Prices Due to S. 2191 (Generous Assumptions)

Average Annual Household Prices



Source: Heritage Foundation calculations using Global Insight's U.S. Macro Model.

Chart 6 • B 2140 heritage.org

the developed nations that have signed onto Kyoto but have failed to comply.

Thus, the impact of Lieberman–Warner on overall emissions trends is modest, given global emissions growth. By most accounts, even in the unlikely event that America meets the targets of this bill, worldwide emissions would continue to increase, only at a slightly slower rate.¹⁸

14. Intergovernmental Panel on Climate Change, Working Group 1, "Summary for Policymakers," 2007, at http://ipcc-wg1.ucar.edu/wg1/Report/AR4WG1_Print_SPM.pdf (May 29, 2008).

15. World Meteorological Organization, "Statement of Tropical Cyclones and Climate Change," 2006 at http://www.wmo.ch/pages/prog/arep/tmrp/documents/iwtc_statement.pdf (May 29, 2008).

16. Intergovernmental Panel on Climate Change, "Summary for Policymakers," p. 13.

17. Netherlands Environmental Assessment Agency, "China Now No. 1 in CO2 Emissions; USA in Second Position," at <http://www.mnp.nl/en/dossiers/Climatechange/moreinfo/Chinanowno1inCO2emissionsUSAinsecondposition.html> (May 29, 2008). S. 2191 would further accelerate China's emissions growth, as American manufacturing jobs and related emissions would be outsourced there.

18. Anne E. Smith, "Documentation of Scenarios Used in Dr. Anne E. Smith's Testimony of November 8, 2007 before the Senate Environment and Public Works Committee Regarding the Economic Impacts of S. 2191," December 3, 2007, at http://www.craai.com/uploadedFiles/RELATING_MATERIALS/Publications/Consultant_publications/Smith,_A/files/Response%20to%20Lieberman%2012-3-07.pdf (May 20, 2008).

Comparing Simulations of Carbon Dioxide Fees

Six groups conducted eight simulations of projected carbon dioxide fees that would need to be paid under S. 2191.

Carbon Fees Per Ton, Adjusted for Inflation

	The Heritage Foundation		MIT (a) In 2005 Dollars	EPA (b) In 2005 Dollars	CRA (c) In 2007 Dollars	ACCF/ NAM (d)		EIA (e) In 2006 Dollars
	In 2006 Dollars					In 2007 Dollars		
	Generous	Alternative				LW	No Offsets	
2015	\$49	\$49	\$56	\$40	\$55	\$55	–	–
2020	50	65	68	51	69	–	\$55	\$30–76
2025	58	76	83	65	88	–	–	–
2030	68	88	101	83	112	85	227	61–156
Average	56	70	77	60	81	n/a	n/a	–

Sources: (a) Sergey Paltsev, et al., "Appendix D: Analysis of the Cap and Trade Features of the Lieberman-Warner Security Act (S. 2191)," 2008. MIT Joint Program on the Science and Policy of Global Change, Report 146. The LW simulation is without a CCS subsidy or other credits.

(b) Environmental Protection Agency, "EPA Analysis of the Lieberman-Warner Climate Security Act of 2008, S. 2191 in 110th Congress, March 14, 2008," at http://www.epa.gov/climatechange/downloads/s2191_EPA_Analysis.pdf (5-6-2008). Intertemporal general equilibrium model results assuming no subsidies or credits (LW) and no offsets (No Offsets).

(c) Howard W. Pifer III, et al., "Managing the Risks of Greenhouse Gas Policies," CRA International (January 2008), p. 4. CRA provides a ranges of carbon prices: "...we have estimated a wide range in carbon prices from \$35 to \$60 in 2015, from \$65 to \$125 in 2030, and from \$150 to \$280 in 2045."

(d) American Council for Capital Formation and the National Association of Manufacturers, "Analysis of the Lieberman-Warner Climate Security Act (S. 2191) Using the National Energy Modeling System (NEMS/ACCF/NAM)," 2008, at <http://www.accf.org/pdf/NAM/fullstudy031208.pdf> (5-6-2008), p. 9. The values in this column are from the "low-cost" case in ACCF/NAM's study.

(e) Energy Information Administration, "Energy Market and Economic Impacts of S. 2191, the Lieberman-Warner Climate Security Act of 2007," SR/OIAF/2008-01, April 2008.

Table 1 • B 2140  heritage.org

An Environmental Protection Agency analysis of previously proposed less-stringent cap-and-trade bills calculates that the future concentration of carbon dioxide would be modestly reduced from 718 parts per million (ppm) in 2095 to 694 ppm that same year, still much higher than the 354 ppm in 1990.¹⁹ Thus, the most these bills could achieve is to reduce concentrations by about 3 percent by century's end. By one estimate, Lieberman-Warner is about 25 percent more stringent than these previous measures and would result in only a 4 percent decline in atmospheric concentrations of greenhouse gases below what they would otherwise have been in 2095.²⁰

The Kyoto Protocol, assuming full global compliance (which has not been the case), was estimated

to reduce the Earth's temperature by a scant 0.07 degrees celsius by 2050.²¹ This is an amount too small even to verify and one for which any resulting benefits would be inconsequential. It is unlikely that Lieberman-Warner would be much different.

In sum, America's Climate Security Act of 2007 promises significant economic pain for little environmental gain.

The costs are simply out of line with the benefits. Our analysis puts the cost of preventing carbon dioxide emissions at \$49 per ton in 2015 and \$68 to \$88 by 2030, amounts that are generally in line with five other analyses of this bill. (See Table 1.) But according to several prominent resource economists, that is more than the dollar value of the harm

19. U.S. Environmental Protection Agency, "EPA Analysis of Bingaman-Specter Request on Global CO₂ Concentrations," October 1, 2007, at <http://www.epa.gov/climatechange/downloads/s1766analysispart1.pdf> (May 29, 2008).

20. Margo Thorning, American Council for Capital Formation, "The Economics of Climate Change Policy," May 2, 2008, at <http://www.accf.org/PPT/buckeye.ppt> (May 29, 2008).

21. T.M.L. Wigley et al., "The Kyoto Protocol: CO₂, CH₄ and Climate Implications," *Geophysical Research Letters*, Vol. 25, No. 13 (1998), pp. 2285–2288.

that each ton does to the environment in the form of *increased* global warming.²² One analysis puts the cost of damage at \$7.4 per ton of carbon dioxide and rising by about 2.5 percent per year, a fraction of what Lieberman–Warner costs per ton.²³ If true, this bill would prove a textbook example of a solution that is worse than the problem.

Conclusion

Lieberman–Warner puts the cart before the horse by requiring significant emissions reductions

before the technologies capable of achieving them in an affordable manner are available. At the same time, the science points away from a dire need to act precipitously and impose such a dramatic slowing of the American economy in such a tight timeframe. The compliance costs of Lieberman–Warner are likely to be far out of proportion to its benefits.

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22. William Nordhaus, “The Challenge of Global Warming: Economic Models and Environmental Policy,” July 24, 2007, at http://nordhaus.econ.yale.edu/dice_mss_072407_all.pdf (May 29, 2008); Richard Tol, “The Marginal Damage Costs of Carbon Dioxide Emissions: An Assessment of the Uncertainties,” *Energy Policy*, Vol. 33 (2005), pp. 2064–2074, at <http://www.fnu.zmaw.de/fileadmin/fnu-files/publication/tol/enpolmargcost.pdf> (May 29, 2008).

23. Nordhaus, “The Challenge of Global Warming,” p. 23.