

April 20, 2010

Honorable Christopher H. Smith  
U.S. House of Representatives  
Washington, DC 20515

Dear Congressman:

This letter responds to your request for additional information on the costs that H.R. 2454, the American Clean Energy and Security Act of 2009 (as passed by the House of Representatives), would impose on households. Previously, the Congressional Budget Office (CBO) estimated the average loss in purchasing power that households would experience between 2012 and 2050 as a result of the legislation's primary cap-and-trade program, which covers emissions of carbon dioxide and five other greenhouse gases; CBO also examined how that loss would vary across households with different levels of income in 2020 and 2050.<sup>1</sup> This letter supplements CBO's previous work by providing estimates of the loss in purchasing power that households would experience in each year between 2012 and 2050.<sup>2</sup>

### **Overview of the Proposed Cap-and-Trade Program in H.R. 2454**

Global climate change poses one of the nation's most significant long-term policy challenges. Human activities are producing increasingly large quantities of greenhouse gases, especially carbon dioxide. A strong consensus has developed in the expert community that if the accumulation of greenhouse gases in the atmosphere is allowed to continue unabated, it will have extensive, highly uncertain, but potentially serious and costly impacts on regional climates throughout the world.<sup>3</sup> Reducing greenhouse gas emissions in the United States and around the globe would moderate those impacts, but policies to achieve a reduction in emissions would also impose costs on U.S. households.

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1. See Congressional Budget Office, *The Economic Effects of Legislation to Reduce Greenhouse-Gas Emissions* (September 2009).
  2. For information about the projected budgetary impact of the bill, see Congressional Budget Office, cost estimate for H.R. 2454, the American Clean Energy and Security Act of 2009 (June 5, 2009).
  3. See Congressional Budget Office, *Potential Impacts of Climate Change in the United States* (May 2009).

To reduce greenhouse gas emissions, H.R. 2454 would create two cap-and-trade programs for such emissions; the main one would apply to carbon dioxide, which accounts for more than 80 percent of greenhouse gas emissions in the United States, and five other greenhouse gases. (The other cap-and-trade program would cover hydrofluorocarbons. The effect of that program on households' purchasing power is expected to be much smaller and is not included in the estimates reported here.) The legislation would set annual limits, or caps, on total emissions between 2012 and 2050 and would require regulated entities—including producers and importers of petroleum-based liquids, natural gas distributors, and large electricity generators—to hold rights, or allowances, to emit greenhouse gases. After allowances were initially distributed, entities would be free to buy and sell them (the trade part of the program). Regulated entities could comply with the policy in some combination of three ways:

- Reduce their emissions by, for example, producing electricity from wind or nuclear power rather than from coal,
- Hold allowances for greenhouse gases that they emitted, and
- Acquire “offset credits” (referred to here as offsets) for greenhouse gases that they emitted.

Offsets would be generated by entities that were not covered by the cap but that reduced their emissions or undertook actions to store emissions in trees and soil using methods approved by the Environmental Protection Agency and the Department of Agriculture.<sup>4</sup> For example, domestic offsets might be issued for the carbon dioxide emissions that would be avoided if farmers in the United States altered their tillage practices in a manner that reduced emissions released from the soil. Similarly, international offsets might be issued for the carbon dioxide that would remain sequestered in trees (rather than being released into the atmosphere) if countries agreed to reduce the extent of deforestation that took place within their borders. The act would limit the number of domestic and international offsets that firms could use to meet their compliance obligations.

### **Estimating Households' Burden Through Their Loss in Purchasing Power**

A rough indication of the direct effect on households of the primary cap-and-trade program that would be established under H.R. 2454 is the resulting loss in their purchasing power.<sup>5</sup> That loss equals the costs of complying with the policy minus the

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4. See Congressional Budget Office, *The Use of Offsets to Reduce Greenhouse Gases* (August 3, 2009).

5. The loss in purchasing power ignores some channels of influence on economic activity and households' well-being that cannot be readily quantified. For further discussion, see Congressional Budget Office, *The Economic Effects of Legislation to Reduce Greenhouse-Gas Emissions*.

compensation that would be received as a result of the policy. Households would bear compliance costs and receive compensation in their various roles as consumers, workers, shareholders, taxpayers, and recipients of government services, so accounting for the net effect of the act on purchasing power is not straightforward.

Compliance costs include the cost of purchasing allowances and offsets and the cost of reducing emissions. Although those costs would initially be borne by businesses, they would generally pass them along to households in the form of higher prices for goods and services.

Compensation comprises the receipt of allowances at no cost, the receipt of proceeds from the sale of allowances (including the benefits received from government programs funded by the sale of allowances), and the profits earned from producing offsets. Much of that compensation would initially be received by businesses or governments but would be passed along to households.

In particular, under H.R. 2454, allowances would be allocated among businesses, households, and governments, and the value of most of those allowances would ultimately be conveyed to households in various ways. The federal government would sell some of the allowances and use the revenue to provide consumer refunds on a per-capita basis as well as to provide energy rebates to low-income households. Other allowances would be given to local distributors of electricity, who would have to use the value of the allowances for the benefit of their customers. Some businesses that are expected to face higher costs as a consequence of the cap-and-trade program would receive free allowances directly from the government. However, U.S. households would not receive all of the value of the allowances, because some of that value would be directed overseas to help developing countries adapt to climate change or to build the institutional structures they need to become providers of international offsets.<sup>6</sup> U.S. households would also ultimately receive the profits associated with producing domestic offsets.

Deducting the compensation received by U.S. households from the compliance costs yields the loss in purchasing power. It equals the sum of the cost of the resources used to reduce emissions from covered sources, the cost of producing domestic offsets, the cost of purchasing international offsets, and the value of the allowances that would be directed overseas.

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6. See Congressional Budget Office, *The Economic Effects of Legislation to Reduce Greenhouse-Gas Emissions*, for a detailed description of how the allowance value would be distributed in 2020 and in 2050.

### **Estimates of the Loss in Purchasing Power per Household for Each Year Between 2012 and 2050**

CBO has estimated the loss in households' purchasing power that would result from the primary cap-and-trade program that would be established by H.R. 2454. The loss would be modest as a share of gross domestic product (GDP) in all years between 2012 and 2050, but it would rise over that period as the cap became more stringent and more resources were dedicated to cutting emissions (see Table 1). The loss would equal about 0.1 percent of GDP in 2012, about 0.5 percent in 2030, and about 0.8 percent in 2050, CBO estimates; the average loss per year over the entire 2012–2050 period would be about 0.4 percent. Measured in terms of the 2010 economy, the average loss per household would be \$90 for 2012, \$550 for 2030, and \$930 for 2050; it would average about \$460 per year over the 2012–2050 period.<sup>7</sup>

Compliance costs would tend to increase faster than GDP over time. In contrast, compensation to households would rise faster than GDP during the next decade, level off as a share of GDP for the following several decades, and then decline relative to GDP in the 2040s. As a result, more than 85 percent of compliance costs would be offset by compensation in 2012, but only 35 percent would be offset by compensation in 2050.

In CBO's estimation, the loss in households' purchasing power under H.R. 2454 would rise steadily between 2012 and 2031, would then fall slightly for a few years, and would begin to rise again in 2035 (see Figure 1). That unusual pattern is explained by the interaction between the constraint that the act would place on the number of international offsets that firms could use to comply with the cap and CBO's expectations regarding the demand for offsets in other countries.

In particular, the act would limit the number of international and domestic offsets that firms could use to meet their compliance obligations to 1 billion of each.<sup>8</sup> CBO estimates that the supply of international offsets would increase over time and that the demand for international offsets from regulated entities in the United States would also rise over time until the use of international offsets reached the cap in 2031; after that time, U.S. demand for those offsets would be constrained by that cap. CBO also expects that other developed countries would establish similar limits on the use of

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7. For example, the loss in 2030 is estimated to be about 0.5 percent of GDP; measured in terms of GDP in 2010 and the number of households in 2010, that loss represents about \$550 per household.

8. After 2018, firms would be required to hold 1.00 domestic offsets or 1.25 international offsets for each ton of greenhouse gases that they emitted without holding an allowance. The act would allow firms to substitute international offsets for domestic offsets provided that no more than 900 million domestic offsets and no more than 1.5 billion international offsets were used.

**Table 1.**

**Estimated Annual Loss in Households' Purchasing Power Under H.R. 2454**

(Percentage of gross domestic product)

Year	Compliance Costs	-	Compensation	=	Loss of Purchasing Power	
					Total	Per Household (In dollars, measured against GDP in 2010)
2012	0.5		0.4		0.1	90
2013	0.5		0.5		0.1	100
2014	0.6		0.5		0.1	110
2015	0.6		0.5		0.1	110
2016	0.7		0.6		0.1	130
2017	0.7		0.6		0.1	140
2018	0.7		0.6		0.1	140
2019	0.7		0.6		0.1	150
2020	0.8		0.6		0.1	160
2021	0.8		0.6		0.2	180
2022	0.8		0.6		0.2	220
2023	0.8		0.6		0.2	240
2024	0.8		0.6		0.2	260
2025	0.9		0.6		0.2	290
2026	0.9		0.6		0.3	310
2027	0.9		0.6		0.3	380
2028	1.0		0.6		0.4	420
2029	1.0		0.6		0.4	470
2030	1.1		0.6		0.5	550
2031	1.1		0.6		0.5	580
2032	1.1		0.6		0.5	540
2033	1.1		0.6		0.4	510
2034	1.1		0.6		0.4	510
2035	1.1		0.6		0.4	520
2036	1.1		0.6		0.4	530
2037	1.1		0.6		0.5	550
2038	1.1		0.6		0.5	570
2039	1.1		0.6		0.5	600
2040	1.2		0.6		0.5	630
2041	1.2		0.6		0.6	660
2042	1.2		0.6		0.6	690
2043	1.2		0.6		0.6	720
2044	1.2		0.6		0.6	740
2045	1.2		0.5		0.6	770
2046	1.2		0.5		0.7	790
2047	1.2		0.5		0.7	820
2048	1.2		0.5		0.7	860
2049	1.2		0.4		0.8	890
2050	1.2		0.4		0.8	930

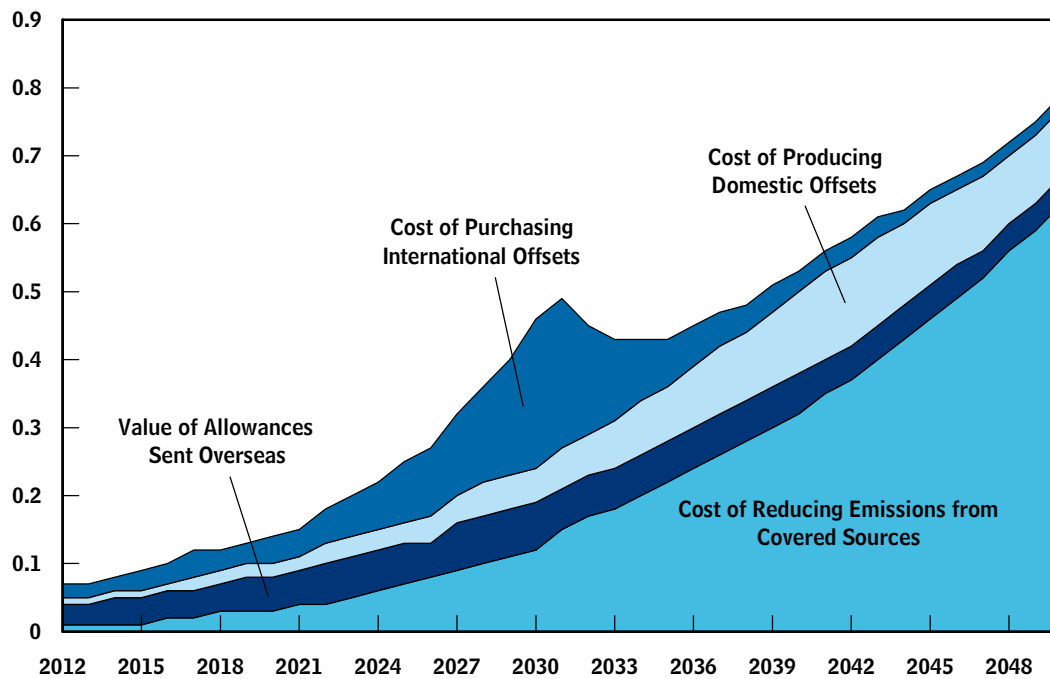
Source: Congressional Budget Office.

Note: Numbers may not add up to totals because of rounding.

**Figure 1.**

## Components of Households' Loss in Purchasing Power Under H.R. 2454, 2012 to 2050

(Percentage of gross domestic product)



Source: Congressional Budget Office.

international offsets, so the demand for international offsets in those countries would similarly flatten out in 2031. With demand stable and supply continuing to increase, the price of international offsets would fall. For a few years, that price decrease would outweigh the rising costs of buying allowances and reducing emissions from covered sources, so firms' overall compliance costs would dip slightly (although that is not visible in the rounded numbers that are shown in the table). Beyond a few years, however, the ongoing increase in those other compliance costs would lead to further increases in total compliance costs.

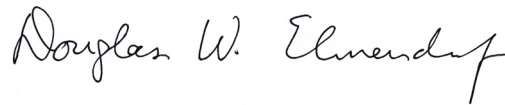
Estimating the loss in purchasing power that households would experience as a result of H.R. 2454 required CBO to project many variables that are quite uncertain, including the cost at which firms and households would be able to reduce their emissions over time; the pace at which the United States would enter into agreements with countries that might be able to provide international offsets; the demand for international offsets by other countries; and the cost of producing domestic offsets. Changes

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in those projections could substantially alter CBO's estimates of the loss in households' purchasing power that would result from the cap-and-trade program.<sup>9</sup>

I hope that this information is helpful to you. The CBO staff contact is Terry Dinan.

Sincerely,



Douglas W. Elmendorf  
Director

cc: Honorable Sander Levin  
Chairman  
House Committee on Ways and Means

Honorable Dave Camp  
Ranking Member

Honorable Henry A. Waxman  
Chairman  
House Committee on Energy and Commerce

Honorable Joe Barton  
Ranking Member

Honorable Barbara Boxer  
Chairman  
Senate Committee on Environment and Public Works

Honorable James Inhofe  
Ranking Member

Honorable Jeff Bingaman  
Chairman  
Senate Committee on Energy and Natural Resources

Honorable Lisa Murkowski  
Ranking Member

Honorable Max Baucus  
Chairman  
Senate Committee on Finance

Honorable Chuck Grassley  
Ranking Member

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9. For a detailed discussion of how changes in CBO's assumptions would affect the price of allowances, see Congressional Budget Office, cost estimate for H.R. 2454, the American Clean Energy and Security Act of 2009.

