



# Market-Based Greenhouse Gas Control: Selected Proposals in the 111<sup>th</sup> Congress

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## Summary

As of the date of this report, Members in the 111<sup>th</sup> Congress have introduced seven stand-alone proposals that would control greenhouse gas (GHG) emissions. The proposals offered to date would employ market-based approaches—either a cap-and-trade or carbon tax system, or some combination thereof—to reduce GHG emissions. The legislative proposals are varied in their overall approaches in controlling GHG emissions. Some control emissions by setting a quantity (or cap); others control emissions by setting a price (or tax/fee). In addition, the proposals differ in their inclusion of particular design elements, such as whether or not to allow offsets (emission reduction opportunities from economic sectors not directly addressed by the primary approach).

H.R. 2454 (Waxman/Markey) has been the primary energy and climate change legislative proposal in the 111<sup>th</sup> Congress. It was introduced May 15, 2009, and subsequently modified and offered as a “Manager’s Amendment” (May 18, 2009) for markup in the House Committee on Energy and Commerce. After making several amendments to the bill (most relating to the bill’s energy provisions), the committee ordered the bill reported May 21, 2009.

H.R. 2454 (Waxman/Markey) and H.R. 1862 (Van Hollen) would establish cap-and-trade programs, but they would differ in their implementation. For example, the latter would not allow offsets to be used for compliance purposes, while the former would allow covered entities to satisfy an increasing percentage (approximately 30% in 2012) of their compliance obligation with offsets. H.R. 1666 (Doggett) would also create a cap-and-trade system, but in the early years of the program, the number of emission allowances distributed would be based on achieving a specified allowance price.

Three of the proposals—H.R. 594 (Stark), H.R. 1337 (Larson), and H.R. 2380 (Inglis)—would use a carbon tax approach to address carbon dioxide (CO<sub>2</sub>) emissions from fossil fuel combustion. H.R. 1683 (McDermott) would establish a program that may be described as a dynamic carbon tax: its tax rate would be linked with annual emission allocations (or caps).

A key element in GHG emission reduction bills is how, to whom, and for what purpose the value of emission allowances or carbon tax revenue would be distributed. The distribution strategy is a critical policy decision, because it would affect (1) the overall cost of the program and (2) how program costs are distributed throughout the economy. In the early years of the program, H.R. 2454 would distribute allowances at no cost to both covered and non-covered entities to support various policy objectives. In addition, an increasing percentage (approximately 18% in 2016) of the allowances would be sold through auction. As with the distribution of no-cost allowances, auction revenues would be used to further various policy objectives.

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## Introduction

There is a growing interest in developing a federal program that would address concerns over global climate change by directly controlling greenhouse gas (GHG)<sup>1</sup> emissions. Legislative proposals have generally focused on market-based approaches, but some proposals have included a mix of market and non-market strategies.<sup>2</sup>

Market-based mechanisms that limit GHG emissions can be divided into two types: quantity control (e.g., cap-and-trade) and price control (e.g., carbon tax or fee). To some extent, a carbon tax and a cap-and-trade program would produce similar effects. For example, both are estimated to increase the price of fossil fuels, which would ultimately be borne by consumers, particularly households. Preference for a carbon tax or a cap-and-trade program ultimately depends on which variable one wants to directly control—emissions or costs.<sup>3</sup>

Although Members have introduced and debated GHG emission control proposals—both cap-and-trade and carbon tax programs—in previous Congresses,<sup>4</sup> the Obama administration’s stated commitment to GHG emission reduction has raised interest in developing a workable program. The President has stated that he would like a program that would reduce U.S. GHG emissions 14% below 2005 levels by 2020 and 83% below 2005 levels by 2050.<sup>5</sup> He has also stated that auctioning emission allowances is his preferred allocation strategy.<sup>6</sup> This position contrasts starkly with the previous Administration, which had rejected the concept of mandatory emissions reductions, instead focusing on voluntary initiatives to reduce the growth in GHG emissions (i.e., emissions intensity targets).

In addition to the policy shift in the executive branch, a number of states have taken actions in recent years that directly address GHG emissions. For example, 23 states have joined one of the three regional partnerships that would require GHG (or just carbon dioxide) emission reductions. One of these partnerships—the Regional Greenhouse Gas Initiative (RGGI)—took effect January 2009.<sup>7</sup> Industry stakeholders are especially concerned that the states will create a patchwork of climate change regulations across the nation. This prospect is causing some industry leaders to call for a federal climate change program. Some have stated a preference for a cap-and-trade system; others have indicated a preference for a carbon tax approach.

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<sup>1</sup> Under the United Nations Framework Convention on Climate Change (UNFCCC), GHGs are carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF<sub>6</sub>). Some greenhouse gases are controlled under the Montreal Protocol on Substances that Deplete the Ozone Layer, and are not covered under UNFCCC.

<sup>2</sup> For a comprehensive discussion of different approaches to climate change, see CRS Report RL34513, *Climate Change: Current Issues and Policy Tools*, by Jane A. Leggett.

<sup>3</sup> For a further discussion, see CRS Report R40242, *Carbon Tax and Greenhouse Gas Control: Options and Considerations for Congress*, by Jonathan L. Ramseur and Larry Parker.

<sup>4</sup> CRS Report RL33846, *Greenhouse Gas Reduction: Cap-and-Trade Bills in the 110<sup>th</sup> Congress*, by Larry Parker, Brent D. Yacobucci, and Jonathan L. Ramseur; and CRS Report RL34067, *Climate Change Legislation in the 110<sup>th</sup> Congress*, by Jonathan L. Ramseur and Brent D. Yacobucci.

<sup>5</sup> This target is roughly equivalent to reducing to 1990 levels by 2020 and 80% below 1990 levels by 2050.

<sup>6</sup> See CRS Report RL34502, *Emission Allowance Allocation in a Cap-and-Trade Program: Options and Considerations*, by Jonathan L. Ramseur.

<sup>7</sup> CRS Report RL33812, *Climate Change: Action by States to Address Greenhouse Gas Emissions*, by Jonathan L. Ramseur.

Another potential driver of market-based federal legislation is the possibility that EPA is seeking to control GHG emission under existing Clean Air Act authority. On April 17, 2009, the agency proposed an “endangerment finding” under Section 202 of the Clean Air Act, which would permit it, for the first time, to regulate pollutants for their effect as greenhouse gases.<sup>8</sup> Further, on May 19, 2009, President Obama announced a plan to integrate federal fuel economy standards (under the Energy Policy and Conservation Act) with federal vehicle emissions standards (under the Clean Air Act) and state standards (driven by California’s rulemaking action).<sup>9</sup> In general, industry stakeholders are opposed to broad regulatory action on greenhouse gases, because the method of control would likely be performance or technology-based standards, instead of a market-based approach.

The timetable for ongoing international negotiations on climate change may provide further stimulation for U.S. legislative action. In December 2007, the Conference of the Parties (COP) to the UNFCCC agreed to a “Bali Action Plan” to negotiate (parallel to a process under the Kyoto Protocol) new GHG mitigation actions and other commitments for the post-2012 period. The negotiators are due to reach agreement by the end of 2009 (at their 15<sup>th</sup> meeting, in Copenhagen, Denmark).<sup>10</sup> Many observers have highlighted the importance of having U.S. legislation passed before the December 2009 Copenhagen meetings.

In the context of these events and efforts, Members in the 111<sup>th</sup> Congress have introduced several proposals that would use market-based approaches to reduce GHG emissions. This report focuses on these legislative proposals.

## Legislative Proposals

In the 111<sup>th</sup> Congress, Members have introduced seven bills that include provisions to impose or permit some form of market-based controls on GHG emissions. General descriptions of these bills follow. The major provisions of the bills are compared in **Table 1**.

H.R. 2454, introduced May 15, 2009, by Representatives Waxman and Markey, includes numerous energy policy provisions as well as cap-and-trade provisions (Titles III and IV). As ordered reported, H.R. 2454 would set up a cap-and-trade system that would reduce GHG emissions from covered sources to 17% below 2005 levels by 2020 and 83% below 2005 levels by 2050. Covered entities in the draft account for approximately 85% of U.S. total GHG emissions. The proposal would allow covered entities to submit offsets to cover an increasing percentage (approximately 30% in 2012) of compliance obligations, but the types of eligible offset projects would be determined by EPA through a rulemaking process. Unlike previous cap-and-trade proposals (from previous Congresses), the draft creates a rolling two-year compliance period. H.R. 2454 would distribute allowances to both covered and non-covered entities at no cost to support various policy objectives. In addition, an increasing percentage (approximately

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<sup>8</sup> The proposal appeared in the *Federal Register* April 24, 2009 (74 FR 18886). See also, CRS Report R40145, *Clean Air Issues in the 111<sup>th</sup> Congress*, by James E. McCarthy.

<sup>9</sup> The White House, Office of the Press Secretary, *President Obama Announces National Fuel Efficiency Policy*, Washington, DC, May 19, 2009, [http://www.whitehouse.gov/the\\_press\\_office/President-Obama-Announces-National-Fuel-Efficiency-Policy/](http://www.whitehouse.gov/the_press_office/President-Obama-Announces-National-Fuel-Efficiency-Policy/).

<sup>10</sup> CRS Report R40001, *A U.S.-centric Chronology of the International Climate Change Negotiations*, by Jane A. Leggett.

18% in 2016) of the allowances would be sold through auction. As with the distribution of no-cost allowances, auction revenues would be used to further various policy objectives (**Table 1**).

H.R. 594, introduced January 15, 2009, by Representative Stark, would impose a carbon-content tax on fossil fuels starting at \$10/ton<sup>11</sup> and increasing by \$10 every year. The tax would apply to fossil fuels as they enter the U.S. economy (i.e., at the production or importation level). The bill does not specify how the tax revenues would be applied.

H.R. 1337, introduced March 5, 2009, by Representative Larson, would impose a carbon-content tax on fossil fuels starting at \$15/ton. The tax would increase by \$10 each year, but if identified emission targets (established by EPA, based on reaching 80% below 2005 emissions by 2050) are not met, the tax would increase by \$15 in that year. The tax revenues would be used to support (1) a payroll tax rebate (2) affected industry transition assistance; and (3) clean energy technology. The vast majority of the revenue would support the payroll tax rebate. The proposal also would impose a carbon equivalency fee on imported carbon-intensive goods.

H.R. 1666, introduced March 23, 2009, by Representative Doggett, would establish a cap-and-trade program to reduce greenhouse gas emissions from covered sources from 6.153 billion metric tons in 2012 to 253 million in 2050. The program would be administered through the Department of the Treasury and 100% of the allowances would be auctioned. In order to mitigate price volatility in the early years of the program, the bill would establish a Climate Program Oversight and Coordination Board to set targets for allowance prices and manage quarterly auctions to maintain a smooth allowance price path. The managed price program would run from 2012 through 2019, and, depending on a review, revisions would be made for 2020 and beyond. If the price path resulted in excess emissions from the expectations set out in the bill, those emissions would be made up through additional reduction in the years 2020 through 2030. Auction revenues would be put in an Auction Revenue Trust Fund at Treasury, but no specific purpose is delineated in the bill for them.

H.R. 1683, introduced March 24, 2009, by Representative McDermott, would establish a hybrid approach to GHG emission control. The approach may be described as a dynamic carbon-content tax. Producers and importers of GHG emission substances—fossil fuels and other GHG emission inputs—would be required to purchase emission permits for each ton of emissions that would occur from the combustion or use of the GHG emission substance. Permits may not be traded or exchanged, thus the purchase requirement would effectively act as a carbon-content tax (or fee). The Department of the Treasury would determine the (annual) price for emission permits based on annual emission allocations (or caps) identified in the bill. Treasury would publish price schedules every five years, but the sale price may be modified (under certain conditions and to a limited extent) within the five-year periods. If the permits sold exceed allocations allotted in a particular year, subsequent year allocations would be reduced, thus imposing an overall cap.

H.R. 1862, introduced April 1, 2009, by Representative Van Hollen, would cap emissions associated with the combustion of CO<sub>2</sub>. Fossil fuel producers and importers would be required to surrender carbon permits in relation to the carbon dioxide emissions generated through the combustion of fossil fuels the entities sold during the previous year. The cap would decline annually, leading to an 85% reduction below 2005 CO<sub>2</sub> emissions from covered entities by 2050.

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<sup>11</sup> Some proposals (including H.R. 594 and H.R. 1337) measure emissions in short tons; other bills use metric tons (sometimes spelled as tonne). A short ton is 2,000 pounds. A metric ton (or tonne) is approximately 2,205 pounds.

All of the carbon permits would be sold through an auction process. Approximately 100% of the auction proceeds would be redistributed monthly to those with a social security number.

H.R. 2380, introduced May 13, 2009, by Representative Inglis, would impose a carbon-content tax on fossil fuels starting at \$15/ton. The tax rate would increase by an equal percentage each year (approximately 6.5%), until it reached \$100/ton in 2040 (not including cost-of-living rate adjustments). All of the tax revenue would be used to offset reductions in the payroll tax paid by employees, employers, and self-employed persons. The proposal would impose a tax on carbon-intensive imported goods.

One bill has been introduced to address a specific issue surrounding cap-and-trade allowance allocations. H.R. 1759, introduced by Representatives Inslee and Doyle, would set up an allowance distribution scheme to assist energy-intensive industries that are trade-exposed and potentially subject to carbon leakage.<sup>12</sup> The bill would provide free allowances to such industries to compensate them for complying with emission reductions (direct costs) and for increased electricity costs resulting from utilities complying with a reduction program (indirect costs). Compensation would be based on 85% of the specific industry's greenhouse gas intensity per unit of output for direct costs, and 85% of the specific industry's electricity efficiency per unit of output for indirect costs. Phase-out of the free allowance allocation would begin in 2026 and continue over 10 years, unless the EPA determines it appropriate to either delay or accelerate it.

## Legislative Activity

H.R. 2454 (Waxman/Markey, introduced May 15, 2009) was subsequently modified (both technical and substantive changes) and offered as a "Manager's Amendment" May 18, 2009. On that day, the bill began markup in the House Committee on Energy and Commerce. After making several amendments to the bill—most of which did not affect the cap-and-trade program—the committee ordered the bill reported May 21, 2009. The version summarized in **Table 1** reflects the bill as ordered reported by the committee. In addition, H.R. 2454 was referred to multiple House Committees—Foreign Affairs, Financial Services, Education and Labor, Science and Technology, Transportation and Infrastructure, Natural Resources, Agriculture, and Ways and Means—"for a period to be subsequently determined by the Speaker, in each case for consideration of such provisions as fall within the jurisdiction of the committee concerned."<sup>13</sup>

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<sup>12</sup> Concerns have been raised that if the United States adopts a carbon control policy, industries that must control their emissions or that find their feedstock or energy bills rising because of costs passed-through by suppliers may be less competitive and may lose global market share (and jobs) to competitors in countries lacking comparable carbon policies. In addition, this potential shift in production could result in some of the U.S. carbon reductions being diluted by increased production in more carbon-intensive countries (commonly known as "carbon leakage"). See CRS Report R40100, *Carbon Leakage and Trade: Issues and Approaches*, by Larry Parker and John Blodgett.

<sup>13</sup> Introductory text of H.R. 2454.

**Table I. Comparison of Key Provisions in GHG Emission Control Bills**

Topic	H.R. 594 (Stark)	H.R. 1337 (Larson)	H.R. 1666 (Doggett)	H.R. 1683 (McDermott)	H.R. 1862 (Van Hollen)	H.R. 2380 (Inglis)	H.R. 2454 (Waxman- Markey) <sup>a</sup>
<b>Emission reduction/ limitation scheme</b>	Carbon-content tax on fossil fuels, starting at \$10/ton <sup>b</sup> and increasing by \$10/ton each year	Carbon-content tax on fossil fuels, starting at \$15/ton and increasing by \$10/ton each year; annual rate increase is \$15/ton during years in which specified emissions target is not met	Absolute cap on total greenhouse gas emissions from all covered entities	Hybrid cap/tax approach on GHG emissions; covered persons must purchase an emission permit when a GHG emission substance is produced or enters the United States; permits <i>may not</i> be sold or exchanged; Treasury determines (with consultation with EPA and DOE) the (annual) price for emission permits based on achieving annual emission allocations (caps) identified in bill; price schedules are published every 5 years, but may be modified (to a limited extent) within the 5-year periods; if permits sold exceed annual allocations, subsequent year allocations are reduced	Absolute cap on CO <sub>2</sub> emissions associated with fossil fuel inputs from covered entities	Carbon-content tax on fossil fuels, starting at \$15/ton, and increasing by approximately 6.5% each year to reach \$100/ton by 2040; tax rate to be further increased per cost-of-living adjustments	Absolute cap on total greenhouse gas (GHG) emissions from all covered entities



Topic	H.R. 594 (Stark)	H.R. 1337 (Larson)	H.R. 1666 (Doggett)	H.R. 1683 (McDermott)	H.R. 1862 (Van Hollen)	H.R. 2380 (Inglis)	H.R. 2454 (Waxman- Markey) <sup>a</sup>
<b>Responsible agency</b>	Treasury	Treasury	Treasury Creates a Climate Program Oversight and Coordination Board (CPOCB) to administer allowance auctions to manage allowance price path	Treasury has primary oversight role; EPA determines amount of carbon dioxide equivalent emissions generated from combustion or GHG-emitting use of a GHG emission substance	Treasury	Treasury	EPA has primary oversight role; administers emission allowance auctions  Federal Energy Regulatory Commission to regulate the cash allowance market  Commodity Futures Trading Commission to oversee derivatives market
<b>Greenhouse gases covered</b>	Carbon dioxide	Carbon dioxide	GHGs not explicitly defined. Definition would be provided in separate legislation	GHGs defined in terms of emission substances, which includes fossil fuels (coal, oil, and natural gas), thus covering carbon dioxide, as well as the specific GHGs: methane, nitrous oxide, sulfur hexafluoride, perfluorocarbon, hydrofluorocarbon and any other substance determined by EPA to contribute to global warming	Carbon dioxide	Carbon dioxide	Carbon dioxide, methane, nitrous oxide, sulfur hexafluoride, hydrofluorocarbons emitted as a byproduct, perfluorocarbon, and nitrogen trifluoride; and any other substance subsequently designated by EPA

Topic	H.R. 594 (Stark)	H.R. 1337 (Larson)	H.R. 1666 (Doggett)	H.R. 1683 (McDermott)	H.R. 1862 (Van Hollen)	H.R. 2380 (Inglis)	H.R. 2454 (Waxman- Markey) <sup>a</sup>
<b>Specific emissions limits</b>	NA; tax rate freeze if CO <sub>2</sub> emissions do not exceed 20% of U.S. 1990 CO <sub>2</sub> emissions	NA; EPA is to establish (five years after enactment) annual CO <sub>2</sub> emission targets in order to reach goal of 80% below 2005 carbon <sup>c</sup> emissions by 2050	In 2012, cap is set at 6.153 billion, declining steadily to 0.253 billion in 2050. If 2012-2019 cumulative emissions exceed expectations by more than 10%, the excess shall be made up through additional reductions in 2020. The remaining excess between 2012-2020 emissions shall be made up with reductions between 2021-2030	In 2011, allocation of emission permits equal to approximately 4% below 2005 GHG emissions; in 2020, allocation equal to 25% below 2005 GHG emissions; in 2050, allocation equal to 81% below 2005 GHG emissions	In 2012, CO <sub>2</sub> emission permits equal to 2005 CO <sub>2</sub> emissions; in 2020, permits equal to 25% below 2005 emissions; in 2030, permits equal to 45% below 2005 emissions; in 2040, permits equal to 65% below 2005 emissions; in 2050, permits equal to 85% below 2005 emissions	NA	In 2012, 3% below 2005 emissions from covered sources; in 2020, 17% below 2005 emissions from covered sources; in 2030, 42% below 2005 emissions from covered sources; in 2050, 83% below 2005 emissions from covered sources  EPA may adjust cap if underlying assumptions (e.g., percentage of covered sources GHG emissions compared to national total) found to be incorrect
<b>Covered entities</b>	Manufacturer, producer, or importer who sells a taxable fuel, which includes: coal, petroleum and petroleum products, and natural gas	Manufacturer, producer, or importer who sells a taxable carbon substance, which includes: coal, petroleum and petroleum products, and natural gas	Not explicitly defined. Definition would be provided in separate legislation	Coal producers, petroleum refineries; producers of other GHG emission substances (including natural gas, among others); importers of GHG emission substances  Coverage generally applies at the point of sale  GHG emission substances used for	Person who makes the first sale in United States of a covered fuel, which includes coal, oil, natural gas, and any product derived therefrom for use as a combustible fuel	Manufacturer, producer, or importer who sells a taxable carbon substance, which includes: coal, petroleum and petroleum products, and natural gas	Electricity generators, various fuel producers and importers, fluorinated gas producers and importers, geological sequestration sites, various industrial sources, and local distribution companies (LDCs) that deliver natural gas; covered entity

Topic	H.R. 594 (Stark)	H.R. 1337 (Larson)	H.R. 1666 (Doggett)	H.R. 1683 (McDermott)	H.R. 1862 (Van Hollen)	H.R. 2380 (Inglis)	H.R. 2454 (Waxman- Markey) <sup>a</sup>
				non-combustion agricultural purposes exempted			coverage is phased- in by category, so that all of the above are under the cap in 2016
<b>Auction of allowances</b>	NA	NA	100% of allowances sold through quarterly auctions. From 2012 through 2019, the CPOCB determines the necessary quantities to be auctioned to maintain a forecasted price path	All emission permits must be purchased, but trading is not allowed	100% of allowances sold through auctions (to be held at least quarterly)  Only covered entities can participate in auction	NA	In 2016 (the conclusion of the emissions coverage phase-in), <sup>d</sup> approximately 18% of the allowances are auctioned; this percentage increases to 72% by 2030 and 75% by 2050  Auction has a reserve price of \$10/allowance <sup>e</sup> that increases by 5% plus inflation each year
<b>Emission allowance value or revenue distribution strategy</b>	No specific provision	Establishes a trust fund to distribute tax revenues to support (1) a payroll tax rebate; (2) affected industry transition assistance; and (3) clean energy technology. The vast majority of the revenue	Establishes an Auction Revenue Trust Fund at Treasury to receive auction revenues. Precise use of trust fund is not specified	Establishes trust fund (within the IRS code, 26 USC Chapter 98) that would receive appropriations equal to revenue received by Treasury from selling emission permits  Precise use of the revenue is not specified, except stating that revenue must be recycled to “facilitate economic growth and clean	100% of auction proceeds (minus no more than 0.5% for administrative purposes) are to be used to fund consumer dividend payments; each month, every person with a social security number would receive an equal payment	Tax revenue used to offset a corresponding reduction in payroll tax rates (employee, employer, and self-employed)	Emission allowance value (which can include auction revenue or free allowances) is distributed in the following manner in 2016: <sup>f</sup>  35% to electricity suppliers (the vast majority to electricity load distribution companies); 9% to local distribution companies of

Topic	H.R. 594 (Stark)	H.R. 1337 (Larson)	H.R. 1666 (Doggett)	H.R. 1683 (McDermott)	H.R. 1862 (Van Hollen)	H.R. 2380 (Inglis)	H.R. 2454 (Waxman- Markey) <sup>a</sup>
		would support the payroll tax rebate		energy production and to protect the economic security of vulnerable families and communities”			natural gas; 1.5 % to states for home-heating oil consumers; 15% directly to low-income consumers  13.5% to energy-intensive, trade-exposed industries; 2% to petroleum refineries  7.5% to states to support renewable energy and energy efficiency efforts  6% to promote technological advances  10.5% to further other objectives
<b>Cost-limiting safety valve</b>	NA	NA	Creates the CPOCB to manage allowance prices, at least from 2012 through 2019	NA	No specific provision	NA	No specific provision, but includes a strategic reserve allowance auction (described below)

Topic	H.R. 594 (Stark)	H.R. 1337 (Larson)	H.R. 1666 (Doggett)	H.R. 1683 (McDermott)	H.R. 1862 (Van Hollen)	H.R. 2380 (Inglis)	H.R. 2454 (Waxman- Markey) <sup>a</sup>
<b>Penalty for non-compliance</b>	Not specified in legislation, but entities would be subject to the existing penalty framework within Title 26 of the U.S. Code	Not specified in legislation, but entities would be subject to the existing penalty framework within Title 26 of the U.S. Code	Excess emissions penalty equal to the tons of excess emissions times the higher of \$200 or three times the mean market value of an allowance during that year	For each required permit that a covered person fails to purchase, the person will be subject to a penalty (described as a tax) equal to 300% of the cost of the permit	Penalty amount equals the number of allowances a covered entity failed to surrender by its deadline multiplied by three times the fair market price for allowances during the year the allowance was due	Not specified in legislation, but entities would be subject to the existing penalty framework within Title 26 of the U.S. Code	Excess emission penalties are equal to twice the market price for allowances in the relevant calendar year, plus covered entities must submit—in the following calendar year or other time period determined by EPA—allowances to cover the excess emissions from the previous year
<b>Offset treatment</b>	NA	NA	No specific provision	NA	No specific provision	NA	In 2012, approximately 30% of an entity's allowance obligation can be satisfied with offsets; this percentage increases to 67% by 2050; if all entities maximize their use of offsets, the aggregate annual number of submitted offsets would total 2 billion tons  Half of an entity's offsets can come from domestic sources and half from international

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							sources (e.g., 15% domestic and 15% international in 2012); EPA can increase the allowable amount of international offsets (up to 1.5 billion), if the agency determines use of domestic offsets will not be maximized in a particular year
							Eligible domestic offset types to be determined through EPA rulemaking process
<b>Other flexible design elements</b>	No specific provision	Instructs Department of Treasury (in consultation with Department of Energy) to submit a report of qualified offset projects, but does not allow for projects to generate tax credits <sup>8</sup>	No specific provision	No specific provision	Allows Treasury to auction additional allowances (borrowed from future years), if auction price is more than 100% above the average price for preceding two years' auction prices; additional auctioned allowances cannot exceed 8% of allowances otherwise available	No specific provision	Covered entity can submit international allowance from "qualifying programs;" use is unlimited unless otherwise determined by EPA  Auction of allowances from strategic reserve, a pool of allowances borrowed from future years; auction would have reserve price of \$28/allowance in 2012 <sup>h</sup> that would increase annually in

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<b>Banking</b>	NA	NA	Banking allowed, but limited to 5% of a covered entity's emissions after meeting annual emissions limit	NA	Unlimited banking allowed across all vintage years	NA	2013 and 2014. Starting in 2015, the reserve price would be 60% above the 36-month rolling average allowance price.  Unlimited banking allowed across all vintage years
<b>Borrowing</b>	NA	NA	No specific provision	NA	No specific provision	NA	Allows entities to borrow (without interest) emission allowances from the calendar year (vintage) immediately following the compliance year, effectively creating a rolling two-year compliance period  In addition, covered entities may borrow (at 8% interest) allowances from two to five vintage years in the future, to satisfy 15% of it emissions

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<b>Early reduction credits and bonus credits</b>	NA	NA	No specific provision	NA	No specific provision	NA	California or Regional Greenhouse Gas Initiative (RGGI) allowances can be exchanged for an amount of Title III allowances; amount of Title III allowances provided in exchange will be “sufficient to compensate” for the cost of obtaining and holding a RGGI or California allowance  Offsets generated through other programs may be used (under specific conditions and limitations) for compliance purposes
<b>Trade-exposed industries and competitiveness issues</b>	No specific provision	Department of Treasury imposes a carbon equivalency fee on imported carbon-intensive goods, including steel,	No specific provision	Department of Treasury imposes a GHG emission permit equivalency fee on imported carbon-intensive goods, including steel, aluminum, and paper	Department of Treasury imposes a carbon equivalency fee on imported carbon-intensive goods, including steel, aluminum, and paper	Imposes a tax on “imported taxable products” in relation to fossil fuels used or the CO <sub>2</sub> emissions generated during the product’s manufacturing process; the taxable products	Trade-exposed, carbon-intensive industries to receive allowances at no cost, based on a specific formula related to emissions intensity and energy use  Triggered by a determination from



Topic	H.R. 594 (Stark)	H.R. 1337 (Larson)	H.R. 1666 (Doggett)	H.R. 1683 (McDermott)	H.R. 1862 (Van Hollen)	H.R. 2380 (Inglis)	H.R. 2454 (Waxman- Markey) <sup>a</sup>
		aluminum, and paper; fee based on emissions associated with production of carbon-intensive good				include materials produced from carbon-intensive industries; only products from the most carbon-intensive industries are subject to the tax in the first 3 years of the program; after that time period, the tax is imposed on a wider array of carbon-intensive products	the President, EPA will set up an international reserve allowance program: foreign nations that do not take comparable emission reduction actions would need to submit international reserve allowances (or foreign equivalents) to accompany exports of any covered greenhouse gas intensive goods and primary products to the United States; least developed nations or those that contribute no more than 0.5% of global emissions are excluded
<b>Interaction with existing state or regional GHG control programs</b>	No specific provision	No specific provision	No specific provision	No specific provision	No specific provision	No specific provision	States may not implement or enforce a GHG emission cap that covers any (federally) capped emissions during the years 2012 through 2017; a cap does not include fleet-wide motor vehicle emission

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<b>Other key provisions</b>	Directs Department of Treasury (in consultation with Department of Energy) to prepare—every five years—a study on the environmental, economic, and revenue impacts of the tax	Directs EPA to submit annual report to Congress on total carbon emissions from previous year	The CPOCB is to review the managed price program by October 1, 2017, and make recommendations to Congress on any adjustments for 2020 and beyond	Directs Treasury to submit annual report describing performance of program and providing estimates (or range of estimates) for permit prices for 10-year period following the current 5-year period	Directs Treasury to report to Congress if (after consultation with EPA) it determines emission targets need to be revised to avoid catastrophic climate impacts	In 2010, social security recipients are to receive a payment increase that reflects the average costs (energy price increases) imposed by the carbon tax; <sup>i</sup>  Requires a supermajority (two-thirds) vote in either the House or Senate to pass legislation that would alter the “revenue neutrality”—tax revenues from the carbon tax offsetting the payroll tax reductions—created by this proposal	requirement or life-cycle fuel standards; However, states may implement more stringent standards for GHG emissions at stationary sources  Supplemental reductions from avoided deforestation activities in other countries; projects supported through set-aside allowances (5% in early years); goal is to generate a cumulative reduction of 6 billion tons by 2025  Establishes mandatory GHG emission reporting program, run by EPA; first data submission is in 2011  National Academy of Sciences provides a periodic review of science, technology, and mitigation efforts, and makes recommendations

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							Establishes a separate cap-and-trade program that controls hydro-fluorocarbons

- a. The provisions identified in the table reflect the “Manager’s Amendment” (made available May 18, 2009) and subsequent amendments made during the bill’s markup.
- b. For H.R. 594, H.R. 1337, and H.R. 2380, a ton refers to a short ton (2,000 pounds), rather than a metric ton (or tonne), which is approximately 2,205 pounds.
- c. It is unclear whether “carbon emissions” refers to CO<sub>2</sub> emissions or GHG emissions that contain carbon atoms, which would include methane. It is likely the former, because the annual targets set by EPA are specified as CO<sub>2</sub> emission targets.
- d. The emissions cap coverage is phased-in by entity category. By 2016, all of the covered entity categories are subject to the emissions cap. For this reason, 2016 is arguably the most appropriate year to include in the table for comparison purposes. A greater percentage of allowances are auctioned in 2012 (approximately 30%) than in 2016, when the phase-in is complete. From 2012 to 2016, the auction percentage declines to 20%, because newly covered entities (e.g., natural gas local distribution companies) begin to receive allowances at no cost.
- e. In 2009 dollars.
- f. As mentioned above, 2016 is the first year in which all covered entity categories are subject to the cap. Thus, for comparison purposes, this is the first year described in the table.
- g. Representative Larson’s carbon tax proposal in the 110<sup>th</sup> Congress (H.R. 3416) would have allowed offset projects to generate tax credits.
- h. In 2009 dollars.
- i. The title of this particular subsection—“Increase in Payments to Social Security Recipients for 2010 to Offset Cost of Carbon Tax before Tax Reflected in Cost-of-Living Adjustments”—suggests that the bill drafters expect that after 2010, social security payments would (per adjustments made under pre-existing processes) increase to account for tax-related price increases.

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