

CRS Report for Congress

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Climate Change: Senate Proposals to Reduce Greenhouse Gas Emissions

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Summary

A number of congressional proposals to advance programs that reduce greenhouse gases have been introduced in the 108th Congress. Proposals receiving particular attention would create a market-oriented greenhouse gas reduction program along the lines of the trading provisions of the current acid rain reduction program established by the 1990 Clean Air Act Amendments. One bill (S. 139) focuses directly on reducing greenhouse gas emissions, while two others (S. 366 and S. 843) incorporate carbon dioxide reduction schemes into an overall framework to reduce pollution from power plants. This paper includes a side-by-side comparison of the major provisions of those bills.

Under an agreement reached between S. 139's sponsors and the Senate leadership, S. 139 will be brought to the Senate floor this fall for debate and a vote. The sponsors have the right to introduce an amendment to S. 139 (the only amendment allowed under the agreement). The sponsors have announced that they will propose an amendment to their bill to strike the second phase of the reduction program. This report will be updated if events warrant.

Introduction

Climate change is generally viewed as a global issue, but proposed responses generally require action at the national level. In 1992, the United States ratified the United Nations' Framework Convention on Climate Change (UNFCCC) which called on industrialized countries to take the lead in reducing greenhouse gases.¹ Over the past

¹ Under the United Nations Framework Convention on Climate Change (FCCC) those gases are: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆). Other greenhouse gases are controlled under the Montreal Protocol on Substances that Deplete the Ozone Layer, and not covered under proposed legislation or other international agreements.

(continued...)

decade, a variety of voluntary and regulatory actions have been proposed or undertaken in the United States, including monitoring of utility carbon dioxide emissions, improved appliance efficiency, and incentives for developing renewable energy sources.

In 2001, President George W. Bush rejected the Kyoto Protocol, which called for legally binding commitments by developed countries to reduce their greenhouse gas emissions.² He also rejected the concept of mandatory emissions reductions. Since then, the Administration has focused U.S. climate change policy on voluntary initiatives to reduce the growth in greenhouse gas emissions. This focus is particularly evident in the Administration's 2002 Climate Action Report (CAR) submitted under the provisions of the UNFCCC. Of the over 50 programs summarized in the 2002 CAR, only six are described as "regulatory."³ These regulatory programs were generally implemented to achieve energy or environmental goals other than the reduction of greenhouse gas emissions, but produced a concomitant emissions reduction. In this sense, they could be considered the results of a "no regrets"⁴ policy where climate change effects resulting from related air quality and energy policies are included in the decision-making process on new or modified rules.

A number of congressional proposals to advance programs that reduce greenhouse gases have been introduced in the 108th Congress. These efforts have generally followed one of three tracks. The first is to improve the monitoring of greenhouse gas emissions—as a basis for research and development and for any future reduction scheme. The second is to enact a market-oriented greenhouse gas reduction program along the lines of the trading provisions of the current acid rain reduction program established by the 1990 Clean Air Act Amendments. The third is to enact energy and related programs that would also have the added effect of reducing greenhouse gases. An example would be a requirement that electricity producers generate a portion of their electricity from renewable resources (a renewable portfolio standard). This report focuses on the second category of bills, specifically comparing the major provisions of bills introduced in the Senate.

Proposed Senate Legislation

In the 108th Congress, three bills have been introduced that would impose controls on emissions of greenhouse gases. A comparison of major provisions is provided in Appendix 1.

¹ (...continued)

² For further information see CRS Report RL30692, *Global Climate Change: The Kyoto Protocol*.

³ Most of the programs outlined in the report involve research, technical assistance, information gathering, or technical assistance programs initiated by the federal government, or voluntary emissions reduction programs coordinated by the government.

⁴ The "no regrets" policy was one of establishing programs for other purposes, that would have concomitant greenhouse gas reductions. Therefore, only those policies that reduced greenhouse gas emissions at no cost were considered.

One bill focuses directly on reducing greenhouse gas emissions. S. 139, introduced by Senators McCain and Lieberman, would cap emissions of the six greenhouse gases specified in the United Nation's Framework Convention on Climate Change, at reduced levels, from the electric generation, transportation, industrial, and commercial sectors – sectors that account for about 85% of U.S. greenhouse gas emissions. The reductions would be implemented in two phases, with an emissions cap in the year 2010 based on affected facilities' 2000 emissions (for any entity that emits more than 10,000 metric tons of greenhouse gases (carbon dioxide equivalent)), and a further reduction cap imposed in the year 2016, based on affected facilities' 1990 emissions. The program would be implemented through an expansive allowance trading program that would allow cross-sector trading, increases in carbon sequestration, and limited acquisition of allowances from foreign sources.⁵

Under an agreement reached between the bill's sponsors and the Senate leadership, S. 139 will be brought to the Senate floor this fall for debate and a vote. The sponsors have the right to introduce an amendment to S. 139 (the only amendment allowed under the agreement). The sponsors have announced that they will propose an amendment to their bill to strike the second phase of the reduction program.

The other two bills incorporate carbon dioxide reductions into an overall framework to reduce pollution from power plants. These bills reflect an interest in finding mechanisms to achieve public health and environmental goals in simpler, more cost-effective ways. Specifically, these bills use a "multi-pollutant" strategy – a framework based on a consistent set of emissions caps, implemented through emissions trading.⁶ During the 108th Congress, two multi-pollutant bills that have been introduced in the Senate include carbon dioxide among the emissions to be reduced.⁷

S. 366, introduced by Senator Jeffords, is a modified version of the multi-pollutant bill (S. 556) reported out by the Senate Environment and Public Works Committee during the 107th Congress. Placing emission caps on nitrogen oxides, sulfur dioxide, and carbon dioxide, S. 366 would require electric generating facilities 15 MW or greater to meet an aggregate carbon dioxide emissions cap in the year 2009. The national carbon dioxide emissions cap would be set at 1990 emissions levels for electric generating facilities, would be implemented through a tradeable allowance program, and would include significant penalties for non-compliance. In addition to these emission caps, S. 366 would place facility-specific emission limitations on mercury.

S. 843, introduced by Senator Carper, is a modified version of S. 3135, which he introduced in the 107th Congress. Placing emission caps on nitrogen oxides, sulfur dioxide, mercury, and carbon dioxide, S. 843 would require electric generating facilities 25 MW or greater to reduce carbon dioxide emissions in two phases: (1) capping emissions at 2006 levels by 2009, and (2) further reducing emissions to 2001 levels by

⁵ For further discussion of S. 139, see: (name redacted) and (name redacted), *Climate Change: Summary and Analysis of the "Climate Stewardship Act of 2003" (S. 139)*, CRS Report RS21637.

⁶ For a discussion of the issue, see: (name redacted), *Electricity Generation and Air Quality: Multi-Pollutant Strategies*, CRS Report RL30878.

⁷ For a side-by-side comparison of these bills, see: (name redacted), *Air Quality: Multi-Pollutant Legislation in the 108th Congress*, CRS Report RL31779.

2013. The program would be implemented through a tradeable allowance program and would include significant penalties for non-compliance.

Using the 2002 *Climate Action Report*⁸ (CAR) for projections to the year 2010, Table 1 compares estimates of U.S. greenhouse gas emissions for S. 139, S. 366, and S. 843. As indicated in Table 1, although S. 366 only addresses carbon dioxide emissions from electric generating facilities, its reductions would be deeper and occur earlier than those estimated for the other bills. Advocates of the Senate bills described above believe that the failure of voluntary programs to arrest the rise in U.S. greenhouse gas emissions during the 1990s under the previous Bush and Clinton Administrations does not bode well for the future effectiveness of the current Administration's voluntary program.

It should be noted that through 2010/2012, none of the proposals would be sufficient to reduce U.S. emissions to the voluntary level agreed to under the UNFCCC. Phase two of S. 139 has a 2016 reduction requirement for affected sources in line with the emissions target set under the UNFCCC (return to 1990 levels). However, as noted earlier, it is expected that the bill's sponsors will amend S. 139 to eliminate this second phase.

Table 1. Year 2010 Comparison of Proposed Legislation

	Percentage Change relative to Business as Usual (2010)	Percentage Change relative to 1990 levels per UNFCCC
Business as Usual	0	+34.4%
S. 139*	-5%	+27.7%
S. 366	-7.5%	+24.2%
S. 843**	-5.1%	+27.5%

* Phase 1 only. Phase 2 would involve a 2016 reduction down to 1990 levels by affected sources. Depending on S. 139's actual coverage and the implementation strategies employed by affected sources, reductions achieved by S. 139 could be above the 5% estimate presented here. CRS estimates reductions based on 85% coverage and U.S.-only implementation would be about 8.8% in 2010, 22.6% above 1990 levels.

** Assumes requirement of S. 843 is achieved in 2010, rather than 2013

Source: For S. 366, S. 843, CRS calculations based on projections contained in 2002 *Climate Action Report*. For S. 139: 2010 reduction estimate from bill sponsors; 1990 reduction calculated by CRS based on 2010 sponsor estimate and 2002 *Climate Action Report* projections.

⁸ This is the U.S. report to the UNFCCC Secretariat on U.S. emissions and measures taken to reduce them. The *Climate Action Report — 2002*, available at [<http://www.epa.gov/globalwarming/publications/car/index.html>].

Appendix 1: Comparison of Senate Proposals

Provisions	S. 139 (McCain/ Lieberman)	S. 366 (Jeffords)	S. 843 (Carper)
Emissions Cap on CO₂	all six GHGs capped at an estimated 5.7 billion tons in 2010, declining to an estimated 5.1 billion tons by 2016; for electric generators, emissions estimated at 2.4 billion in 2010 declining to 1.93 billion tons in 2016 if reduced proportionally	2.05 billion tons in 2009 (electric generators only)	estimated at 2.6 billion tons in 2009, declining to an estimated 2.3 billion tons in 2013 (electric generators only)
Emissions Cap on other greenhouse gases		not covered	not covered
Emission Caps on other pollutants	not covered	sulfur dioxide, nitrogen oxides, and mercury	sulfur dioxide, nitrogen oxides, and mercury
Scope	50 states and DC	50 states and DC	50 states and DC
Affected Units	in metric tons of carbon dioxide equivalence: any electric power, industrial, or commercial entity that emits over 10,000 metric tons annually; any refiner or importer of petroleum products for transportation use that when combusted will emit over 10,000 metric tons annually; and, any importer or producer of HFCs, PFCs or SF ₆ that when used will emit over 10,000 metric tons	electric generating facilities 15 Mw or greater	fossil fuel-fired electric generating facilities greater than 25 Mw
Penalties for non-compliance	excess emissions penalty equal to three times the market price for allowance on the last day of the year at issue	same as CAA, title IV except excess emission penalty is three times the average market price for allowances	excess emission penalty of \$100 per ton plus one-for-one offset from future emission allocations

Provisions	S. 139 (McCain/ Lieberman)	S. 366 (Jeffords)	S. 843 (Carper)
Special Provisions	<p>international emissions trading, carbon sequestration, and reductions from non-covered entities permitted for 15% of required reductions in 2010, declining to 10% in 2016</p> <p>early action credits permitted for 20% of required reductions through 2015</p> <p>revenue recycling provided via a Climate Change Credit Corporation</p>	<p>within 4 years of enactment, EPA shall submit recommendations for allocating allowances for biologic carbon sequestration</p> <p>allowances allocated for energy efficiency, renewable energy and geologic carbon sequestration</p>	<p>tonnage limitations in effect for 20 years; EPA to reassess after 15 years</p> <p>CO₂ limitations include provisions providing CO₂ allowances for renewable energy, sequestration, and other greenhouse gas emission reduction projects</p>
Implementation Strategy	<p>tradeable allowance system. EPA shall determine allocations based on several economic and equity criteria including efficiency and impact on consumers. Allowances to be allocated upstream to refiners and importers of transportation fuel along with producers of HFCs, PFCs, and SF₆; downstream to electric generation, industrial, and commercial entities</p>	<p>tradeable allowance system. Allowances allocated to various sectors and interests, including households, dislocated workers and communities, electricity intensive industries, affected utilities, energy efficiency and renewable energy activities, and sequestration activities</p>	<p>tradeable allowance system. Allocation formulas based on generating efficiency.</p> <p>Allocations includes a new source reserve to provide allowances to newly constructed sources</p>

Unless otherwise noted, estimates by CRS using Department of Energy and Environmental Protection Agency data.

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