

Carbon Market North America

PointCarbon
NEWS

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Canadian election campaign heats up over climate change

With less than one week to go before general elections, leaders of Canada's opposition parties have sharpened their attacks on Canadian Prime Minister Stephen Harper's environmental policy, bringing climate change to the forefront of the political debate.

During televised debates on 1-2 October, leaders of all four opposition parties in Canada – the Liberal party, New Democratic Party of Canada (NDP), the Green party and the Bloc Quebecois – criticised Harper's climate change plan, noting that the intensity-based emissions reduction targets it sets would actually raise greenhouse gas (GHG) emissions.

"Your plan is a type of fraud," Elizabeth May, leader of the Green party, told Harper during the French language debate on 1 October, referring to his Conservative party's policy that requires regulated industries to reduce their GHG emissions intensity instead of their absolute emissions.

May called Harper's intensity-based targets for reducing GHG emissions dangerous, warning that they would take the country down the path to "destruction".

Harper defended his plan, saying his intensity targets would lead to an absolute emissions reduction of 20 per cent below 2006 levels by 2010.

"Our plan is one of the most aggressive in the world," Harper said.

Harper called early elections last month to try to boost his party's narrow majority in the 308-seat Parliament. While the Conservatives held a healthy lead over their closest rival, the Liberals, support for the ruling party has been weakening in recent days.

A national poll released 8 October showed support for Conservatives at 31 per cent, the Liberals at 27 per cent and the National Democratic Party at 20 per cent.

The Conservative party released its election campaign platform on 7 October. As part of its climate change action plan,

it said it would work with provinces and territories as well as the US and Mexico to implement a North American-wide cap-and-trade system, which it expects to implement between 2012 and 2015.

Canadian environmental group Pembina Institute criticised the proposal, saying the Conservative government's intensity-based targets are incompatible with more aggressive absolute emission reduction targets being considered by both presidential candidates in the US.

"The Conservatives' national emissions target for 2020, which is equivalent to just 3 per cent below the 1990 level, falls far short of both the targets adopted by leading countries and of what the science tells us we need," said Marlo Reynolds, executive director of Pembina Institute.

Canada's greenhouse gas emissions in 2006 were 22 per cent above 1990 levels. The country is required under the Kyoto protocol to reduce its emissions 6 per cent below 1990 levels by 2012.

Stephane Dion, leader of the main opposition Liberal party, said during the televised French debate that no expert has taken Harper's climate change plan seriously, and even went as far as accusing Harper of not believing in the phenomenon of climate change.

The Conservative party leader hit back at the Liberal party's environmental record, blaming it for allowing emissions to increase while it led the government.

In an English debate on 2 October, Harper criticised the Liberals' carbon tax proposal, claiming it would raise C\$40 billion (\$37 billion) in taxes while creating only C\$26 billion in tax cuts.

The Liberals' carbon tax would set an initial C\$10 charge on each tonne of CO₂ emitted through the burning of fossil fuel. This tax would increase to C\$40 per tonne within four years.

Canada emitted 721 million tonnes of carbon dioxide equivalent in 2006, according to recent government data.

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US House releases draft cap-and-trade bill for debate in 2009

The House of Representatives' energy committee on 7 October released text of a bill that aims to cut the nation's greenhouse gas emissions 80 per cent below 2005 levels by mid-century through a wide-ranging cap-and-trade system.

The bill, released as a "discussion draft," proposes that a future US cap-and-trade programme should cover 88 per cent of current emissions, including power plants, large factories, and producers and importers of petroleum and other fossil fuels such as coal and natural gas.

The draft, which was proposed by Democratic Congressmen Rick Boucher and John Dingell, seeks feedback from lawmakers to help them draft future legislation that "can be enacted quickly" and with "a minimum of administrative or legal impediments" in 2009.

This bill also intends to avoid some of the perceived shortcomings in the Lieberman-Warner bill, which failed to garner enough votes on the Senate floor in June.

The discussion draft proposes four possible options for the distribution of emissions allowances in a future cap-and-trade programme.

One alternative outlined in the plan envisions 100 per cent auctioning for the power sector and factories.

Three other scenarios would be less tough on both the power and industrial sectors, however, allowing the electricity sector to get over 43 per cent of allowances for free in the first year of a future scheme – from 2012 to 2013.

Free allocation would then decline gradually until 2026, when 100 per cent auctioning would enter into force.

Industrial users, meanwhile, would in three scenarios get free allowances in the programme's second phase, from 2014-2026, receiving between 15 per cent and 27 per cent of allowances for free.

The draft bill lists a small number of programmes that would receive bundles of allowances free of charge, such as those that promote energy efficiency, while states that have taken early action to cut emissions would also be rewarded.

Low-income consumers would also be favoured in the draft bill through rebates on their electricity charges.

Opponents of the Lieberman-Warner bill, which sought to slash greenhouse gas emissions 70 per cent below 2005 levels by mid-century, complained that its proposals would have created too complex a bureaucracy and too random a system to award bonus allowances to multitude of different groups and organisations.

While lawmakers and environmental groups praised the

congressmen for drafting the legislation, they complained that the short-term targets in the bill are too weak.

The Dingell-Boucher draft sets weaker short-term carbon caps to allow a transition period so that companies can gradually get used to emission limits.

"In the early years of the programme, caps would be set at a level that is realistically achievable to ensure that firms are able to adjust gradually," Dingell and Boucher said in a memo.

Eileen Claussen, president of the Pew Center on Global Climate Change, issued a statement reflecting concerns of environmental groups: "I recommend that the final bill include tighter caps requiring that GHG emissions be reduced to 1990 levels by 2020."

Senator Barbara Boxer, the chair of the Senate environment committee, who pushed the Lieberman-Warner bill to the Senate floor this year, issued a statement late Tuesday.

"I am pleased that Chairman Dingell and Chairman Boucher have decided to write a comprehensive global warming bill. I am not going to comment on the details of the draft plan today, except to say that it is a very good sign of the commitment in the House to tackle global warming legislation in the next Congress," she said.

Growing support

Boucher and Dingell's proposal reflects some of the key principles for future climate change legislation supported by 152 Congressmen in a recent letter sent to Congressional leadership on 2 October.

The principles were first laid out in April by Democratic Congressmen Henry Waxman, Ed Markey and Jay Inslee – all members of the House's energy committee – in an attempt to push the House of Representatives to draft comprehensive climate change legislation.

They pushed for more aggressive targets than those set by Boucher and Dingell in their bill. Emissions must be reduced 15-20 per cent below current levels by 2020, and to 80 per cent below 1990 levels by 2050, the letter says.

The members say that can best be achieved through a national cap-and-trade programme, which would sell a high – but yet unidentified – percentage of its emissions allowances to raise revenue.

Markey, a member of the House energy committee, said the Boucher-Dingell draft reflects some of the principles and gets momentum going for climate change debate in 2009.

"The draft legislation lays out a range of options for structuring a cap and trade system that are likely to trigger a vigorous and healthy debate about how best to reduce global warming pollution," he said, noting he looks forward to pushing forward cap-and-trade legislation in the next Congress under a "climate-friendly" administration.

Bush signs bailout bill with renewable energy tax credit extension

US President George W. Bush on 3 October signed a \$700 billion bailout plan for the financial sector, which includes \$18 billion worth of renewable energy tax credits.

The House passed the bill 263 to 171 after numerous tax provisions were tacked on to the legislation that the Senate had passed on 1 October.

This attracted more than enough members who had voted against the bill on 29 September for it to pass on its first attempt.

The bill extends a one-year tax credit for wind energy producers, which provides wind producers with a credit worth about 2 cents per kilowatt-hour. The tax credits were due to expire at the end of the year, and passage of the bill was a relief to wind energy representatives.

But the wind industry still hopes for a longer-term extension of these tax credits.

"We look forward to working next year with a new Congress and administration to fashion a serious long-term clean energy policy that increases domestic energy, increases our reliance on clean renewable energy, and creates jobs for Americans," said Greg Wetstone, senior director of governmental and public affairs at the American Wind Energy Association.

The bill also extends the 30 per cent tax credit for both residential and commercial solar installations for eight years. The credit is expected to cost about \$2.5 billion.

"It is the most significant federal policy ever enacted for the solar industry," Rhone Resch, president of the Solar Energy Industries Association, said in a statement.

The bill also includes a number of energy efficiency incentives for individuals and businesses.

Failure to extend the tax credits would put at risk 116,000 jobs and nearly \$19 billion in investment in solar and wind projects, industry representatives said.

The bailout plan also includes \$2.5 billion in new tax credits for companies that try to advance capture carbon and sequestration technology, which would enable the capture of carbon dioxide emissions from a facility and store them underground.

The federal government will also provide a \$20 per tonne tax credit for geologic carbon storage, and a \$10 per tonne tax credit for companies that use their carbon emissions to produce new oil through enhanced oil recovery.

The government will also provide tax credits for CCS projects that capture and store 65 per cent of their emissions and gasification projects that capture 75 per cent of their emissions.

RGGI allowances sell at \$3.07 per ton in first auction

The auction clearing price for Regional Greenhouse Gas Initiative (RGGI) allowances is \$3.07, according to the RGGI website.

All 12.6 million allowances that were available for sale were sold at the auction, which was held on 25 September.

Demand for allowances was four times higher than the supply available, with 59 participants from the energy, financial and environmental sectors putting in bids for nearly 52 million allowances.

Six member states – Connecticut, Maine, Maryland, Massachusetts, Rhode Island and Vermont – submitted allowances in the first auction.

The first compliance period for RGGI begins on 1 January 2009. RGGI auctions are being held in 2008 as pre-compliance events to facilitate market price discovery and compliance planning by regulated CO₂ emitters prior to the beginning of the first RGGI compliance period.

The next RGGI auction will be held on 17 December.

Many market observers had expected market participants to bid low for the credits, with several estimating bids would not exceed \$4. Several market participants expected utilities not to bid much above the minimum reserve price of \$1.86.

The nearly \$39 million in proceeds produced from the auction will be distributed to the six participating states. The states are investing those funds in energy efficiency and renewable energy technologies.

In exchange trading, RGGI futures for December 2009 delivery closed last week at \$3.48 after falling to as low as \$3.25 on 29 September, when the clearing price was announced.

Brokers attributed the rebound to bullish sentiment in the market resulting from the high demand for allowances seen at the first auction.

Florida considers RGGI, WCI observer status

Florida, the US's fifth highest-emitting state, may consider joining regional greenhouse gas trading programmes in the northeast and west as an observer, according to preliminary recommendations to Governor Charlie Crist.

The governor-appointed Action Team on Energy and Climate Change will send final recommendations to Crist on 15 October for its state climate change action plan.

The plan will create a strategy for Florida to cut greenhouse gas emissions to 1990 levels by 2025 and by 80 per cent below 1990 levels by 2050, as prescribed in an executive order issued by Crist last year.

According to preliminary draft recommendations being considered by the 27-member action team, Florida would prefer to join a national cap-and-trade programme.

But in the absence of federal legislation to create such a system, the state is seriously considering joining the 10-state Regional Greenhouse Gas Initiative (RGGI) in the northeast, or the Western Climate Initiative in seven US states and four Canadian provinces.

The action team recommended that Florida join RGGI and WCI as an observer "as soon as possible to examine the programme in greater detail, closely monitor progress and prepare for membership if it is desired."

The draft recommendations on the use of a cap-and-trade say Florida would benefit from joining RGGI, which covers the region's electricity sector. If the state were to join RGGI, its covered sources would account for nearly half of the programme's total emissions.

Total emissions covered by RGGI total 188 million short tons (207 million tonnes), counting emissions from all facilities with a capacity greater than 25 MW. Florida's total electricity sector emissions totalled 140 million short tons, according to the most recently available EIA data.

It modelled two allowance price scenarios for RGGI – \$1 and \$7 per ton. Based on these assumptions, the action team found that the state could mitigate between 70 and 76 million tonnes of carbon dioxide equivalent in 2020, with the remaining 75 to 80 million tonnes accounted for by allowance purchases.

In evaluating participation in the WCI, which is designing a multi-sector cap-and-trade programme to cover 90 per cent of emissions, the action team found that Florida would be a "permit seller in the market."

"Florida 'WCI' sources would expect to see a cost savings of \$191 million in 2020 by participating in the cap-and-trade programme as opposed to achieving the same reductions without it," according to the recommendations.

After Crist receives the report on 15 October, he can either decide to take action by order or regulation to move forward with the recommendations he favours, a governor's spokesperson confirmed.

New Jersey wind farm to cut state emissions by 11 million tonnes

A plan approved by regulators to build a wind farm off the coast of New Jersey could cut 11 million tonnes of carbon dioxide in the state over the project's 25-year life span, according to the wind farm developer.

The New Jersey Board of Public Utilities approved on 6 October a \$4 million grant to developer Garden State Offshore Energy to build the 350 MW offshore wind farm, which has a target completion date of 2013.

Garden State Offshore Energy said the project will require

more than \$1 billion in investment.

The project is expected to power 125,000 homes a year by producing more than 1.2 billion kilowatt-hours annually, according to the public utilities board.

The offshore wind farm will help New Jersey reach its goal of generating up to 1,000 MW of offshore wind and up to 200 MW of onshore wind by 2020.

These goals are set forth in the state's draft energy master plan, which requires the state to generate 20 per cent of its electricity from renewable energy sources by 2020.

The US currently has no operational offshore wind farms, but two wind parks are planned off the coasts of Delaware and Rhode Island.

Largest steel industry group to publish global emissions data

The steel industry's largest trade association aims to publish GHG emissions data from three-quarters of its members by year-end, which representatives said 7 October can be used by steel companies in each country to set sectoral targets.

The World Steel Association (WSA), formerly known as the International Iron and Steel Institute represents 85 per cent of the world's steel production. The association held its 42nd annual conference in Washington DC 7-8 October.

A spokesman for the WSA said he hopes that the data will be used by steel companies in each country to set national sectoral reduction targets, but said agreements among steelmakers in different countries, much less a global agreement among steel producers, is still a far off goal.

The WSA has collected data on 32 per cent of global steel production from 60 per cent of its members.

It estimates that the world's annual production of 1.3 billion tonnes of steel results in about 2.2 billion tonnes of carbon dioxide equivalent (CO₂e). The world steel industry accounts for about 5 per cent of global emissions of CO₂e, according to the WSA.

"Overtime, we hope to show real progress by the industry in reducing our carbon dioxide emissions for every tonne of steel we produce," said Ian Christmas, director general of the WSA. "But we don't have any regulatory body at the world level."

One of the biggest challenges to a global agreement on emissions is the surge in steel production from developing countries that resist carbon caps.

Countries such as China, India and Russia represent about half of total global steel production, and production from those countries is expected to grow 8 to 10 per cent annually, according to the WSA.

China is currently the world's largest steel producer.

CANADIAN NEWS

Alberta needs to improve GHG plan: auditor

The Alberta government needs spell out more specific actions in its greenhouse gas (GHG) reduction strategy to prove it can achieve its emissions-reduction targets in a cost-effective way, according to a government auditor.

The auditor general of Alberta said in a report released on 1 October that the government should release a "master implementation plan" that details how it will meet its target of reducing the province's emissions-intensity by 20 per cent below 1990 levels by 2010 and by 50 per cent by 2020.

Alberta facilities that emit more than 100,000 tonnes of GHGs annually are required to cut their emissions intensity. They can buy emissions permits from other firms, buy offsets, or pay into the government's climate change technology fund if they miss their targets.

But the auditor said Alberta has not sufficiently proven that these actions, as well as others outlined in its climate change strategy, would actually help Alberta achieve its emissions-intensity targets, or its target to reduce absolute emissions 14 per cent below 2005 levels by 2050.

For example, Alberta officials are banking on the deployment of wide-scale carbon capture and storage (CCS) technology

to achieve 70 per cent of the province's 2050 target, and have set a deadline for fall 2008 to prepare a plan on how to reach that goal.

The auditor said that although Alberta's government set up a council to implement this technology, known as the Carbon Capture and Storage Development Council, it did not spell out how and when other emissions reductions actions will be identified.

"They (the actions) are the ones that will ultimately result in Alberta achieving the remaining 30 per cent of reduction required," said the report.

Alberta's government set up a C\$2 billion (\$1.86 billion) fund to invest in CCS technology, which is the main plank of climate change policy. It expects this technology will reduce emissions by up to 5 million tonnes annually.

The auditor suggested that the government set up a system to measure and report on its climate change spending. Otherwise, it warned the Canadian province runs the risk of spending a lot of money without achieving its emissions targets.

Speaking to a large crowd in Edmonton, Alberta, in September, Prime Minister Stephen Harper said Alberta's economy would be significantly damaged by the Liberal party's proposed C\$40 carbon tax (page 1).

He said it would erase gains the oil-rich province has made in the past two and half years.

RECENT GLOBAL CARBON POLITICS

European lawmakers on 7 October voted on major changes to the **EU emissions trading scheme (ETS)** to take effect from 2013, including using credits to fund carbon capture and storage (CCS) technology, making companies buy credits, and setting new limits on how many UN-backed offsets each company can use to meet 2020 emission targets.

The **EU parliament's environment committee** said it would allow companies to use cheaper UN credits equivalent to 4 per cent of their emissions from 2013 through 2020, provided they use less than 6.5 per cent of offsets compared to 2005 emissions from 2008 through 2012.

Lawmakers also voted to limit the amount of CO₂ a new power plant can emit from 2015 to 500 grammes of CO₂ per kilowatt hour on power plants with installed capacity larger than 300MW. This is likely to put pressure

on the industry to step up investments in **CCS** technology.

The **UK government** on 3 October named Ed Miliband to head a new energy and climate department as part of Prime Minister Gordon Brown's government reshuffle. Miliband, brother of the UK foreign secretary, David, will be responsible for ensuring there is enough energy to meet the **UK's** growing demand, while cutting climate-changing gases in accordance with national and international regulation.

The **New Zealand Treasury** on 6 October pegged the country's Kyoto protocol liability at NZ\$562 million (\$366.9 million), up 17.1 per cent from its previous estimate in May. The Treasury also showed an expected increase in carbon prices. Treasury expects carbon credits to cost in average €12.50 over the five years, up from €11.13 at the last update in May.

Australia's government should increase

the amount of free allowances to be handed out to trade-exposed industries to 25 per cent under its planned **Carbon Pollution Reduction Scheme in 2010**, the Australian Industry Group said on 7 October.

On 30 September, the **Japanese government** announced a package of proposals for a new international framework to succeed the **Kyoto protocol** when first compliance period ends in 2012. It says Kyoto member countries should be divided into three groups: developed countries; emerging nations, or major developing nations, which have seen their economies develop rapidly and are now playing a significant role in global GHG emissions; and other developing nations.

Binding numerical targets should be set for **emerging nations** to enhance energy efficiency in major industrial sectors, as well as in their respective economies as a whole, the plan says.

GUEST COMMENTARY

Implementing policy, anticipating policy

By Dr. Richard Sandor, Chicago Climate Exchange

As Climate Exchange has expanded its family of emissions markets, we are often asked about our long-term strategy. The strategy is simple. Where a public policy is in place to use markets to address a social or environmental problem, Climate Exchange operationalises markets to implement those policies.

Alternatively, where there is need for solutions but the particular policy environment is evolving towards legislation – for example an eventual mandated US carbon cap-and-trade programme – we develop markets in anticipation of that policy environment. Our European Climate Exchange, the market leader for European carbon allowances and CERs, and our Chicago Climate Futures Exchange, which is the market reference for SO₂, NO_x and RGGI allowances, are examples of implementing policy.

Chicago Climate Exchange (CCX), founder of Climate Exchange, operates a voluntary but legally binding US-based GHG reduction market. This programme, now covering more industrial emissions than any existing national or regional cap, is an example of building markets that anticipate policy. By forming a rules-based system driven by independent verification and integration of all economic sectors, CCX members have built the world's first comprehensive approach to implementing global carbon markets.

Through five years of intensive experience in implementing the CCX as an "anticipatory" market, some interesting observations on the future of US carbon policy have emerged. When CCX was formally activated in September 2003 by conducting the world's first GHG allowance auction, the US policy environment was essentially a vacuum. Fortunately our approach to designing CCX – everyone who asked

was welcomed to the design table – resulted in accumulation of superb input from every sector of the US economy and policy community. It now seems likely that the diverse membership of CCX will in hindsight be seen to have correctly anticipated many of the core elements of the US policy response.

Consider some examples and some ramifications for those who have major value at risk from the emergence of policy. In 2003, when CCX implemented its consensus-based goal to initially cut absolute GHG emissions by 1 per cent per year, this was called insufficient by many of the "experts".

Yet we now see the first government-based GHG programmes in the US requiring a 10 per cent cut over 10 years (in RGGI, with all cuts deferred until after 2014) and 15 per cent over 15 years in the Western Climate Initiative.

With some leading drafts of US legislative proposals calling for 60 per cent cuts over roughly 40 years, perhaps it is not unreasonable to anticipate that the US headline reduction schedule will be in the range of one to one-and-a-half percentage point cuts per year, possibly with some backloading.

What will count? Will cuts outside industrial sectors be included? Consistent with IPCC findings, the draft US regulations are on track to include all of the activities now covered under rules that have been developed and refined through an extended effort by CCX members, including mitigation in methane, forest, farm and industrial gas.

As a general matter, the various rule sets that have emerged that define "offsets" in the US context, whether in CCX, VCS (Voluntary Carbon Standard), RGGI, etc, appear to all be gravitating to very similar "performance standard" eligibility rules

and essentially identical verification protocols.

These project-based activities offer multiple ecological benefits – including the all-important local environmental and economic opportunities that drive US political consensus.

The signals also point clearly to crediting of verified emission cuts generated prior to the legislation, as was seen in other US cap-and-trade systems. This approach reflects a fundamental sense of fairness, paired with a desire to drive further reductions before the first compliance period.

Have we correctly anticipated all elements of the US policy setting? Of course not. It's now been 16 years since the US ratified the UN Framework Convention on Climate Change (UNFCCC). The first mandatory US carbon cap does not require emission cuts until 2015. One might have expected that western governments would have taken action to advance the UNFCCC before two decades passed. Perhaps this delay again highlights the reality that in the US, federal policy is typically formed only after the issue has gained acceptance in private sector.

As Chicago Climate Exchange rolls out new environmental markets in China (the Tianjin Climate Exchange) and the India Climate Exchange, we again are positioning to help key countries learn, test new ideas, and realise local environmental and economic benefits from first-generation programs. This will help develop the human capital needed to drive longer-term action for local and global benefit.

Point Carbon is happy to consider your proposals for commentaries in Carbon Market North America. Please submit ideas to news@pointcarbon.com

LEGISLATION

Bills with cap-and-trade systems for greenhouse gases proposed in 110th US Congress

Title and sponsors	Reduction target and timeframe	Important attributes
Investing in Climate Action and Protection Act Rep. Edward Markey (D-MA)	Reduces emissions 20% below 2005 levels by 2020 and 85% below 2005 levels by 2050	The economy-wide cap-and-trade programme would cover 87 per cent of US greenhouse gas emissions. When the programme begins in 2012, 94% of allowances would be auctioned.
Climate Stewardship and Innovation Act S. 280 Senators Lieberman (I-CT) and McCain (R-AZ)	Bring emissions to 2004 levels by 2012, to 1990 levels by 2020, to 22% below 1990 levels by 2030, and to 60% below 1990 levels by 2050.	Caps electric power, industrial, commercial, and transport sectors (economy-wide). Includes provision for clean development mechanism through which US companies gain credits for emission reductions they sponsor in developing countries. Provisions for expansion of nuclear power.
Global Warming Pollution Reduction Act S.309 Senators Sanders (I-VT) and Leahy (D-VT)	Stabilise global greenhouse gas concentrations below 450 parts per million: US reductions to 1990 levels by 2020 and 80% below that by 2050.	Economy-wide caps. National renewable energy quotas and energy efficiency goals with credit trading programmes.
Electric Utility Cap-and-Trade Act S.317 Senators Feinstein (D-CA) and Carper (D-DE)	Caps current emissions through 2011, then at 2001 levels by 2012, thereafter cap lowers further 1% each year through 2020, subject to EPA review.	Power sector only. Specifies auctioning of credits, use of offsets. Establishes independent scientific panel to make recommendations to the EPA every four years on the reduction rate required.
Climate Stewardship Act H.R. 620 House Reps. Olver (D-MA) and Gilchrest (R-MD)	Emissions stabilise at current levels from 2012 to 2019, then are reduced 15% by 2020, 38% in 2030, 75% by 2050 (which equals 70% below 1990 levels).	Same as Lieberman and McCain's, except offset credits may account for only 15% of emissions reductions, and "early action" credits limited to 20% of cap. Does not contain Senate version's nuclear provisions.
Global Warming Reduction Act S.485 Senators Kerry (D-MA) and Snowe (R-ME)	Reduce emissions to 60 per cent below 1990 levels by 2050, through increasing annual reductions starting at 1.5% a year for the first ten years.	Economy-wide caps. Nationwide renewable fuels standard. National renewable energy quota of 20% by 2020.
Safe Climate Act H.R.1590 Rep. Waxman (D-CA)	Emissions freeze at 2009 level in 2010. Beginning in 2011, emissions cut ~ 2% per year, falling to 1990 levels by 2020. Beginning in 2021, annual cuts of ~ 5%, falling to 80% below 1990 levels by 2050.	National renewable energy quota: 20% by 2020. Energy efficiency targets: increase gradually from 0.25% of electricity sales in 2010 to 1% of sales in 2012 and each following year through 2020.
Clean Air Planning Act S.1177 Senator Carper (D-DE)	Caps power plant CO2 emissions at today's levels in 2012, at 2001 levels in 2015. Thereafter, annual reductions to achieve levels 25% below 1990 by 2050.	Power sector only, offsets allowed, output-based allocation, includes a new entrant reserve (carbon credits reserved for allocation to newly-built installations).
Clean Air/Climate Change Act of 2007 Senators Alexander (R-TN) and Lieberman (I-CT)	Power plant CO2 emissions capped at 2.3 billion tonnes (2006 levels) in 2011, at 2.1 billion in 2015, 1.8 billion in 2020 (1990 levels), and 1.5 billion tonnes in 2025 and beyond (~17% below 1990 level).	Power sector only, allows offsets, includes new entrant reserve of no more than 5% of the year's allowances, includes emissions performance standard for plants built after 2015 (no more than 1100 lbs. CO2/MWh).
Clean Power Act Senator Sanders (I-VT) S.1201	Same as S.1168 for CO2, and specifies that if no economy-wide greenhouse gas bill has been passed by 2012, then CO2 emissions from power plants must be decreased each year by 3%.	Power sector only, CO2 performance standards for new plants, renewable energy quota: 20% by 2020. Energy efficiency targets with credit trading system: gradual reduction of peak demand and overall electricity use.
Low Carbon Economy Act S. 1766 Senators Bingaman (D-NM) and Specter (R-PA)	Calls for a reduction of greenhouse gases to 2006 levels by 2020 and to 1990 levels by 2030 .	Limits cost of allowances to \$12 per tonne CO2e in 2012, rising by 5% above inflation each year after that. Allowance allocation through 2017: 53% free, 24% auctioned, rest reserved certain sectors, projects. Tariffs on goods from high-emitting countries.
Boxer-Lieberman-Warner Climate Security Act S. 3036 Senators Boxer (CA), Lieberman (I-CT) and Warner (R-VA)	Cut US GHG emissions to 1990 levels by 2020, 70% below 2005 levels by 2050	"Carbon Market Efficiency Board" oversees market to prevent volatility, tariffs on goods from high-emitting countries, allowance allocation: 18% auctioned in 2012, increasing to 73% in 2036 and thereafter, 20% of auction proceeds reserved for low-income consumers.

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