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Legislating Carbon Caps: Five Unresolved Issues for the New Administration

by Gregory C. Staple

Gregory C. Staple, a partner in the Washington, D.C., office of Vinson & Elkins, specializes in climate change matters. The opinions expressed here are solely those of the author and do not necessarily reflect the views of Vinson & Elkins or its clients.

Editors' Summary:

Federal cap-and-trade legislation is essential if the United States is to reduce greenhouse gas emissions. Five stumbling blocks that the incoming administration and Congress must address in order to get legislation are: the economic rationale for reducing greenhouse gas emissions as part of a clean energy-led economic recovery program; why reductions are best achieved by issuing a capped number of tradable emission permits; how permits will be allocated by the government and any associated revenues disbursed; which government agencies will administer the program; and how America's new plan will move the country toward the promised environmental goals.

[T]he nature of the challenges that we're going to face are immense and one of the things that we know about the presidency is that it's never the challenges that you expect.[1]

— Barack Obama

It has been clear for some time that adopting a comprehensive federal program to curb America's greenhouse gas (GHG) emissions would present President George W. Bush's successor with a key test on Capitol Hill. In the last few months, however, it has become apparent that President-elect Barack Obama plans to simultaneously propose new measures to remedy two market failures of unprecedented scope, one environmental and the other financial. Together, these challenges offer the president a once-in-a-generation chance to transform the country's energy sector.

This two-part Article starts by discussing the importance of squaring America's carbon accounts as part of the new Administration's program to rebalance the country's economic priorities after the 2008 financial crisis. The second part suggests that the president's ability to do so via an economywide cap-and-trade program may depend largely on the resolution of five open issues raised by legislation that was stalemated in the 2007-2008 congressional session.

I. Carbon Regulation and the Financial Crisis

While some may see scant similarity between the financial crisis that swept across the world in 2008 and the unchecked build up of GHGs in the atmosphere, each stem in large measure from the failure of the market properly to account for the systemic risk arising from millions of seemingly rational individual decisions. In the financial sector, so long as the risk of borrowing and insurance, no matter how reckless or thinly secured, could be profitably traded to someone else, somewhere in the global market—then, a seemingly unbounded universe of banks, private equity groups, and hedge funds—it was business as usual. Until it wasn't. Then the whole unregulated house of cards came tumbling down, burdening the world's economies with trillions of dollars in deferred costs that will take years to amortize with innumerable hardships along the way—many still unknown.

So too with global warming. Because no charge generally has been made for venting GHGs into the atmosphere, despite the rising costs this imposes on the public, for the most part, it is business as usual. But the bill also will come due. As Nicholas Stern, perhaps the leading authority on the economics of climate change, has bluntly told us, global warming is

1. Statement from Nashville Presidential Debate (Oct. 8, 2008).

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"the biggest market failure the world has seen."[2] Absent regulatory intervention, the impact from temperature increase above 3 degrees Celsius (°C) will be "disastrous" with an economic loss of 5% to 20% of global gross domestic product (GDP) by 2200.[3]

Against this backdrop, the financial crisis presents a singular opportunity to learn from past mistakes, an opportunity to acknowledge the endemic market failure that unlimited GHG emissions reflects and to adopt the type of scheme for carbon regulation that will underpin and complement a massive shift in the way America produces and uses energy.[4]

The necessary measures have been mooted for years. They involve government action to encourage tens of billions of dollars of new investment in low and zero carbon electricity projects—a full portfolio of technologies, including wind, solar, geothermal, tidal, and nuclear—coupled with a new power transmission grid that is smart and decentralized. Parallel efforts are required to phase out the transportation sector's near total reliance on fossil fuels and to accelerate energy conservation measures in both residential and commercial buildings. Together, we are talking about a program that would help to restart the economy by creating millions of new jobs in energy production, transport, and conservation, so that the country becomes increasingly self-sufficient, relying on domestic ingenuity and energy resources rather than imported fuels and foreign debt.

In 2008, this type of low-carbon energy independence program became a political staple of both presidential campaigns. Variants of this program have also been advanced by others, notably Tom Friedman, former Vice President Al Gore, and T. Boone Pickens.

Friedman has drawn particular attention to the importance of creating a strong price signal to trigger and sustain the energy sector transformation that is required. "The market will give us what we want," writes Friedman, in his most recent book, *Hot, Flat, and Crowded*.[5] But only "if we give the market the signal it needs: a carbon tax, a gasoline tax increase, a renewable energy mandate, or a cap-and-trade system that indirectly taxes carbon emitters—or some combination of all these."[6]

Before the 2008 stock market crash, getting our carbon prices right may have seemed like a good idea but of questionable priority. That is no longer the case. Doing so is now central to a sustainable recovery. As Friedman, among others, has stressed, if America wants to hold its own in today's carbon-constrained economic world, it must out-green the competition. In a 21st-century global economy, says Friedman, America will continually cede jobs and capital to China, Europe, India, and other newly industrializing countries unless it is "the world's leader in conceptualizing, designing, manufacturing, deploying, and inspiring clean power solutions. Period. Full stop. Over and out."[7]

What has been missing to date is a popular rationale for translating this vision into action, that is, for squaring America's climate accounts. The recent financial shock has arguably provided that and given the new president a strong public mandate to address climate and the economy in tandem so that the country's energy sector is placed on a sound and fiscally responsible long-term growth path. The crisis-born Energy Economic Stabilization Act (EESA) of 2008 may have already shown the way.

While originally conceived as a stand-alone plan for the U.S. Treasury to acquire distressed assets from financial institutions, it is most unlikely that the bill would have won congressional assent without the addition of over $17 billion in pro-American energy tax credits. These include renewed credits for constructing wind, geothermal, and biomass facilities, as well as a significant expansion of the credits for residential and utility-scale solar power. There are over $3.2 billion in credits as well for advanced coal plants with carbon capture and sequestration (CCS), and projects to capture industrial carbon dioxide (CO_2). A large block of credits was also provided to wean consumers away from energy-inefficient large homes and home appliances, an indirect comment, perhaps, on the runaway real estate boom that prompted the rescue package.

Beyond that, in the same week the EESA was adopted, Congress approved $25 billion in low interest loans to encourage the nation's automobile plants to produce more fuel-efficient vehicles. Billions more dollars were voted for mass transit facilities.

The EESA and other bills described here might be seen as a small down payment toward a new low-carbon economy. They are no more than that. A much larger economic stimulus program, with significant "green" energy components, now seems sure to follow in early 2009. Yet, that too will fall short without a comprehensive program to address the underlying problem of GHG emissions—and to put a market price on these emissions—our economic accounts will remain dangerously unbalanced.

We turn next, therefore, to the unfinished debate on Capitol Hill about how to accomplish this task. Our focus is on five core legislative issues that may well determine the scope of any new law.

II. Legislating a Carbon Price: Breaking the Cap-and-Trade Impasse on Capitol Hill

During the 110th Congress, a rough consensus began to emerge in favor of using a cap-and-trade program to gradually price GHG emissions into America's economy. Both presiden-

2. *Climate Change: Costs of Inaction: Hearing Before the Subcomm. on Energy and Air Quality of the H. Comm. on Energy and Commerce*, 110th Cong. (2008) (testimony of Lord Nicholas Stern, IG Patel Professor of Economics and Government, London School of Economics and Political Science), *available at* http://energycommerce.house.gov/cmte_mtgs/110-eaq-hrg.062608.Stern-Testimony.pdf [hereinafter *Climate Change Hearing*].
3. *Id.*
4. Others have recognized the "eerily equivalent risks" of inaction on global warming in the face of prior government inaction on the looming financial crisis. *See, e.g.*, Alexandra Kovgentakis, *Don't Forget the Climate Crisis*, Center for Am. Progress, Oct. 9, 2008, *available at* http://www.americanprogress.org/issues/2008/10/climate_crisis.html.
5. Thomas L. Friedman, Hot, Flat, and Crowded: Why We Need a Green Revolution--and How It Can Renew America 251 (2008).
6. *Id.*
7. *Id.* at 340.

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tial campaigns endorsed this approach early on, albeit with significant difference as to the specifics. (For example, Sen. Barack Obama (D-Ill.) favors the sale of all emission allowances from the outset; Sen. John McCain (R-Ariz.) would initially provide a pool of allowance to large emitters to mitigate their compliance costs.)

Despite this emerging regulatory consensus, there was little agreement, even among Democrats, the major proponents of cap-and-trade, on the precise terms of any new program. By and large, the congressional term was marked by scores of newsworthy hearings followed by legislative inaction.

The U.S. House of Representatives did not formally consider any major climate bill. In the waning days of Congress, however, two key committee chairs, Rep. John Dingell (D-Mich.) and Rep. Rick Boucher (D-Va.), released a long awaited discussion draft for a comprehensive cap-and-trade bill. (Despite the subsequent selection of Rep. Henry Waxman (D-Cal.) to succeed Representative Dingell as the head of the House Energy and Commerce Committee, this proposal may still have a considerable impact on any legislation that is formally tabled in 2009.)

In the U.S. Senate, the cap-and-trade bill sponsored by Sen. Joe Lieberman (I-Conn.) and Sen. John Warner (R-Va.) was voted out of committee in December 2007, but was later rebuffed in June 2008, during a rancorous and truncated floor debate. Supporters failed to gain the 60 votes needed to cut off a Republican filibuster. Moreover, 10 of the 41 Democratic senators who did vote for cloture (as did 7 Republicans) said they would not support final action unless a compromise bill, (crafted by Sen. Barbara Boxer (D-Cal.) with support from Senators Lieberman and Warner) was further modified.

As a result, the 110th Congress adjourned for the fall elections without providing anything like the trial run once envisioned for climate action, instead leaving substantial divides on key elements of any new cap-and-trade plan. As discussed below, one of the main points in dispute concerns the rate at which the United States can and should ratchet down its carbon footprint over the next few decades. Although there is considerable agreement regarding the long-term goals of reducing emissions 80% below 2005 levels by 2050, there is great concern that the technologies necessary to do the job cannot be rolled out as quickly as some cap-and-trade advocates might wish. That concern was underscored by the Dingell-Boucher cap-and-trade plan, which would phase in a carbon cap for industry and posits a net reduction in emissions of only 6% (from 2005 levels) by 2020, although an 80% reduction is still envisioned by 2050.

While this type of slow start may seem pragmatic, it involves a big bet on the accelerated deployment of new technologies downstream. For example, Fred Krupp, President of Environmental Defense, and David Hawkins of the Natural Resources Defense Council, Inc. (NRDC), testified to Congress in 2008 that pushing back the start date for a carbon cap from 2012 to 2014 would require that the annual rate of reduction be increased from approximately 2% to 4.3% in order to meet the 2020 target set by Senator Lieberman's bill. A decade-long delay would force the United States to reduce emissions by 8% annually to meet the 2050 target. That target is designed to keep global temperature increases to 3°C or 5 degrees Fahrenheit (°F) (with at least a 1-2°C increase now largely assured from prior emissions).

Worse still, some climate researchers, including James Hansen, the National Aeronautics and Space Administration (NASA) scientist who first warned Congress about global warming in 1988, have now concluded that to avoid catastrophic temperature increases, the level of atmospheric GHGs must be kept nearer to 350 parts per million (ppm), measured in CO_2 equivalents (CO_2e). (This common standard aggregates CO_2 with other GHGs, such as methane and heat-trapping hydrofluorocarbons (HFCs)). Most climate bills in the 110th Congress contemplate stabilizing emissions at 450-550 ppm. If the 350 ppm target becomes more widely accepted, a far steeper ramp-down of emissions would be required by the United States and other major emitters such as China, the European Union, and India.

In Washington, however, sound economics and the dictates of science frequently diverge from daily politics. Thus, as Hansen told Congress in June 2008, 20 years after his original testimony: "Now as then, frank assessment of scientific data yields conclusions that are shocking to the body politic." "Now, as then," however, "I can assert that these conclusions have a certainty exceeding 99 percent. The difference is that now we have used up all [our] slack . . . ."[8]

To make up for lost time, the Obama Administration will need to quickly tackle the main climate issues which have bedeviled Capitol Hill to date. These include explaining: (1) the economic rationale for reducing GHG emissions as part of a clean energy-led economic recovery program; (2) why reductions are best achieved by issuing a capped number of tradable emission permits; (3) how permits will be allocated by the government and any associated revenues disbursed; (4) which government agencies will administer the program; and (5) how America's new plan will move the country toward the promised environmental goals.

A. Balancing America's Energy Accounts

To close the economic case for climate action, the Administration should be as forthright about the latest climate science and its dire implications as the last one was reticent. At the same time, the president should give equal billing to the critical role a clean energy policy can play in repairing a post-crash economy. The traditional cost-benefit calculation must be reframed to fit the times. The narrow GDP or inflation forecasts that have often put off carbon regulators before must be re-examined because it is now abundantly clear that America's climate policy can no longer be dealt with in isolation.

Former Vice President Gore said it well in a 2008 speech at Washington's Constitution Hall: There is a "common thread running through our seemingly intractable challenges: our

8. *Global Warming Twenty Years Later: Tipping Points Near: Briefing Before the H. Select Comm. on Energy Independence and Global Warming*, 110th Cong. (2008) (statement of Jim Hansen, Director, NASA Goddard Institute for Space Studies), *available at* http://www.columbia.edu/~jeh1/2008/TwentyYearsLater_20080623.pdf.

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dangerous over-reliance on carbon-based fuels is at the core of . . . the economic, environmental and national security crises." Said former Vice President Gore: "We're borrowing money from China to buy oil from the Persian Gulf to burn it in ways that are destroying the planet."[9]

To counter this unsustainable economic cycle, the president should focus firmly on the long-term risks and opportunities that climate issues present for the country. Measured in CO_2e, concentrations of GHGs are now around 430 ppm, and we are adding roughly 2.5 ppm each year. Unchecked, a business as usual scenario will see these annual additions grow to 3-4 ppm by mid-century, with total CO_2e concentration soaring to 750 ppm (or more) by 2100. Concentrations at that level would, according to the United Nations' (U.N.) Intergovernmental Panel on Climate Change (IPCC), pose a 50/50 chance of global temperature increases of at least 5°C (9°F).

No one knows the extent to which a 5°C temperature increase would disrupt the global economy because temperatures have not risen to that level for over 35 million years (albeit then for different reasons). But to quote Stern again, the effect "would be, or at least likely to be, disastrous," due to massive climate driven dislocations of existing populations and resource conflicts on a huge scale.[10] "[W]orld wars seem to involve losses of 15% or more of GDP and the conflicts we are discussing are likely to be on a bigger scale, longer lasting and, of course, affect much more than GDP."[11]

Stern's landmark 2006 report to the United Kingdom's (U.K.) Treasury also drew attention to the fact that the story of global warming will largely be written in water. Global temperature increases, even if limited to around 3°C, will likely lead to dramatic rises in sea level due to melting ice caps (with a 2-3 foot rise by 2100 now almost inevitable); persistent draughts across essential croplands; and the loss of adequate drinking water in some areas while torrential rains and hurricanes become routine in other areas. The harbingers of these new water patterns in the United States are well documented in a comprehensive May 2008 report by the U.S. Climate Change Science Program (CCSP), the first nationwide assessment. Reading the CCSP's report brings to mind William Gibson's aphorism: "The future is here—it's just unevenly distributed."[12]

The CCSP's work informed a recent economic study by two Tufts University economists, Frank Ackerman and Elizabeth Stanton, that looks at the consequences of a 5°C temperature rise just for the United States. By 2100, the authors found the United States would lose as much as 3.6% of its GDP with a few global warming impacts—mainly hurricane damage, real estate losses, and droughts—costing $1.9 trillion annually. These calculations exclude the inevitable impact on the United States from damages and devastation in foreign lands, impacts which led a 2007 panel of high-ranking military officers to call climate change "a threat multiplier" that poses the most severe risks to America's security. It is now an open question whether America's financially decimated insurance companies (or their offshore reinsurers) would be capable of handling such claims today. Their ability to do so over the long term only provides another indication of the interrelated nature of our current challenges.

For these and other reasons, Stern maintains that a compelling economic case can be made for trying to stabilize the concentration of GHGs at around 500 ppm. The U.N. climate panel advises this would provide a 50/50 probability of limiting the temperature rise to 3°C. This effort might reduce global GDP in 2050 by 1-2%, says Stern. These cost estimates for a 3°C strategy are similar to those reported in recent studies by McKinsey & Company and the Paris-based International Energy Agency (IEA). They are also well in line with the costs many people commonly incur to buy health and property insurance or to install safety equipment, even though the risks and possible consequences of a potential claim cannot easily be quantified in advance.

By keeping the public focused on America's long-term strategic economic interests (on the costs of government inaction, that is, on the potential losses arising from type of wholesale regulatory failure we have just seen in the financial markets) the president should be able to put into perspective the parade of studies that will be released on the short- to medium-term costs of government action. The Lieberman-Warner bill and its cousins have already generated dozens of such reports by government agencies and special interest groups, most suggesting that carbon caps would lead to a modest reduction in future GDP and little job loss.

On the other hand, some stakeholders studies (notably by CRA International, which consults for the utility industry, and the American Council for Capital Formation) posit 40%-plus increases in electricity costs by 2030, growing import substitution, and millions of job losses, with the adverse impacts rising as the cost of GHG emissions rights increases.

Studies like these have led long-time opponents of cap-and-trade, such as Sen. James Inhofe (R-Okla.), to charge that the "economic costs of climate actions are likely to be unaffordable." That sentiment has led many in Congress, including some Senate Democrats, to urge that "cost-containment" provisions be added to any climate bill. One approach is to place a ceiling on the price of emission allowances to provide a so-called safety valve, as does an alternative cap-and-trade bill, S.1766, co-sponsored by Sens. Jeff Bingaman (D-N.M.) and Arlen Specter (R-Pa.). Some House bills propose to auction a reserve pool of allowances on a sliding scale if carbon prices exceed a defined price "collar." However, the president may wish to hold all of these options in reserve.

As detailed below, there is considerable support across the political spectrum for containing the economic cost of any new program primarily by recycling the revenues derived from auctioning emission rights via personal tax rebates and research and development funding for industry. Doing so

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9. David Stout, *Gore Asks U.S. to Abandon Fossil Fuels*, INT'L HERALD TRIB., July 17, 2008, *available at* http://www.iht.com/articles/2008/07/17/america/gore.php.
10. *Climate Change Hearing*, *supra* note 2 (testimony of Lord Nicholas Stern, IG Patel Professor of Economics and Government, London School of Economics and Political Science).
11. *Id.*
12. *The Future Catches Up With William Gibson*, GLOBE AND MAIL, Oct. 3, 2007, *available at* http://www.theglobeandmail.com/servlet/story/RTGAM.20071002.wgibson1003/BNStory/Entertainment/home.

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would cushion the economic impact of any new caps without blunting the market-driven transformation of economic activity that the caps are designed to stimulate. Additional cost containment can be provided by letting regulated parties substitute carbon offset rights and foreign emission permits for a portion of the domestic emission allowances that would otherwise be required.

It also bears emphasis that cost containment is likely to be much less of an issue while the economy is in recession and the prices of fossil fuels, especially oil, remain well below their 2008 peaks. Indeed, because falling oil prices constitute an independent *de facto* stimulus package (each $.10 per decrease in a gallon of gasoline is estimated to save U.S. consumers $14-$17 billion annually), the recent collapse in the price of fossil fuels arguably offers the new Administration a window of opportunity for pricing carbon that was not previously open. At the same time, a weak economy is also likely to provide industry with additional breathing room under any initial cap because the fall off in production should also reduce the historic growth in emissions, as happened during the 2001-2002 economic downturn.[13]

Finally, carbon caps also need not harm America's ability to compete in the global economy. On the contrary, by providing a sustained incentive for the country to break its historic reliance on foreign oil, climate action should enable the United States to repatriate hundreds of billions of dollars annually, funds which are sorely needed at home. The Brattle Group has advised that the transformation of the electric power sector alone will require $1.5 trillion between now and 2030, with a large portion of that needed for new transmission facilities, e.g., to tie new renewable energy sources to the grid. Worldwide, the IEA has estimated that the energy sector will require up to $45 trillion by 2050 if it is to halve GHG emissions from 1990 levels. A good part of that capital could ultimately benefit U.S. exports of low-carbon power and other clean energy technologies.

At the same time, the Administration should assure the public that American manufacturers will not be handicapped vis-à-vis foreign companies by new domestic carbon caps. This might be done, as several pending cap-and-trade bills suggest, by requiring importers of energy intensive goods sourced in any country that does not have a comparable carbon regime to buy emission permits reflecting the foreign emissions associated with the product's manufacture. This kind of "carbon tariff" should be a last resort, applied only if a new post-Kyoto treaty comes up short. Nevertheless, the president should be clear that he will not permit countries that shirk their environmental responsibilities to profit at America's expense.

B. Explaining the Plan: Carbon Prices

Second, the new Administration will need to make its global warming plan simple enough to be widely understood and endorsed by the American people. To date, Congress has struggled to do that with cap and trade. To almost anyone who isn't a "green" policy wonk, the term cap and trade still elicits a blank stare. That won't do for a "bet the planet" program that will not succeed without widespread popular support.

One answer is to go back to first principles. To reduce global warming, the United States needs to reduce the amount of GHGs emitted every year. Economics teaches that, by and large, the higher the price for something, the less people consume. The problem today is that global warming pollution is priced at zero despite the massive costs it imposes worldwide. So the idea is to make GHG emissions more costly. Any activity that leads to unwanted emissions will then more closely reflect its true environmental impact. The goal, in other words, is to put a price on carbon—on emitting CO_2 and other major GHGs— to repoint our use and production of energy.

Cap and trade is simply one way to get there, and it is probably the only politically feasible way, if not the best. It is also designed to make everyone who directly or indirectly emits GHGs by burning oil, coal, or natural gas pay for doing so in proportion to the quantity of CO_2 equivalents involved. That helps to make it fair.

In theory, there are two major approaches to putting a price on carbon. The government can levy a new tax on all fossil fuels, a favorite of many economists, but a non-starter in Congress. Or one can require parties that sell or burn fossil fuels to have emission permits and let the market set the price. That is still the default choice on Capitol Hill largely because the volume of permitted emissions is fixed in advance. (A carbon tax, by comparison, does not preordain any given level of reduction in emissions, only the price for any new increment of pollution.) Caps also appear to be favored over taxes by the public, even though this approach is still little understood and, in theory, may lead to a similar (or even identical) increase in the price of hydrocarbon-based fuels as a carbon tax. Moreover, the higher the price for carbon permits, the greater will be the demand for alternative low (or zero) carbon fuels, and the investment in technologies and supply chains to deliver them.

The new Administration should be frank about these two facts from the outset. The plan is to put a price on carbon and to let it rise so that the future use of carbon-based fuels begins to reflect the estimated environmental cost of doing so and we start transitioning the country to a lower-carbon future. Our economic and environmental security depends upon it.

The president should tell the public that the price for carbon will be set as fairly and efficiently as possible through the marketplace. Energy consumers should only pay for the cost of emission-permits based on the carbon-intensity of the energy supplies and other carbon-related products that they use. In addition, the great majority of the money raised by selling emission permits should be rebated to consumers.

The new Administration should also explain that its cap-and-trade plan will be fair to energy producers and major emitters because it will not play favorites. Permits will be distributed in an equitable manner, e.g., for the most part, by auction, and companies required to have permits will be

13. Recent data suggests this decline may already be happening, although new residential conservation measures may also have had an impact. *See* Rebecca Smith, *Surprise Drop in Power Use Delivers Jolt to Utilities*, WALL ST. J., Nov. 25, 2008, at B1.

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legally authorized (and expected) to pass through associated costs to end users of their products. (Pending cap-and-trade bills have often fallen down on this crucial point.) The market for permits will also be closely regulated to prevent fraud, reduce price volatility, and prevent unreasonable speculation.

Again, the plan is to grow America's own clean energy industry, not to penalize the fossil fuels energy industries. The plan is to spur a historic shift in energy consumption and to trigger tens of billions of dollars of new investment in low-carbon fuels and technologies for generating electricity. Any plan should also recycle funds to energy producers and the vendors which serve them in order to accelerate this transition.

As David J. Hayes, a former Deputy Interior Secretary and now part of President-elect Obama's transition team, stressed in 2007, the international cap-and-trade systems implemented following the Kyoto Protocol led to a "flurry of economic activities."[14] "Rather than drag down economic activity," said Hayes, "the international carbon market is demonstrating that when a mandatory cap is combined with trading opportunities, the market responds quickly and vigorously, providing significant opportunities for innovative companies and investors."

This brings us to what may be the largest unresolved set of issues before Congress: how to apportion the huge sums of money associated with a comprehensive cap-and-trade plan.

C. Crafting a Fair Deal: Dividing Up $7 Trillion

To understand the size of the financial benefits in play, some basic U.S. environmental data is helpful.

In 2005, the United States emitted around 7.3 billion tons of CO_2e. Most cap-and-trade plans would require annual emissions permits for approximately 85% of this quantity, covering those GHGs and sources that can be readily identified. This amounts to approximately 5.8 billion tons under the Lieberman-Warner-Boxer compromise bill, excepting a separate cap for HFC emissions. (The Dingell-Boucher proposal would start with a 5 billion ton cap and phase in emissions from local gas utilities in 2017 (allotted another 425 million tons).)

Most plans would also issue permits for almost 40 years (typically 2012-50), using the 2005 data to size the initial pool of permits and then reducing the pool in each succeeding year. Thus, for example, under the Lieberman-Warner bill, only 4.9 billion tons of permits would be issued in 2020, 3.9 billion in 2030, and just over 1.7 billion in 2050. The permits for all 38 years total around 146 billion tons of emission rights.

While no one really knows how the market will price these carbon permits year after year, several government studies suggest that the price of a one-ton GHG permit will start at $20-$30 and rise to $70-$120 or more. Based on these estimates, the total value of the 146 billion permits covered by the compromise bill debated by the Senate in 2008 has been estimated at $7.1 trillion. This vast sum is more than double the total 2008 federal budget. It is hardly surprising therefore that the distribution of emissions permits and the use of any associated revenues (from permits sold at auction) has generated deep divisions on Capitol Hill, divisions which were brought to the fore by the Senate's failed cap-and-trade bills.

For example, the original Lieberman-Warner bill proposed to distribute over 30% of the allowances without charge to fossil fuel power plants and local utilities, and another 10% to carbon intensive manufacturers. The bill also sought to earmark an estimated $1.5 trillion in auction proceeds for clean energy research and development and climate adaption projects as well as numerous state block grant programs. As tier upon tier of new carbon concessions were added, the bill became increasingly politicized and appeared to lose focus. This led to criticism from both right and left.

"Only the Mafia could create an organization that would skim money off the top the way this legislation [does]," Duke Energy CEO James E. Rogers said, according to the *Washington Post*.[15] In a like vein, the *Wall Street Journal* labeled the pending cap-and-trade bill a "giant revenue grab," noting that Congress favored the scheme because it would give politicians "a cut of the action and the ability to pick winners and losers."[16]

This view was echoed by various senators, including Sen. Judd Gregg (R-N.H.), a moderate on climate issues but a long-time opponent of entitlement spending on Capitol Hill: "What doesn't make sense is to raise consumption taxes through cap-and-trade and then spend it to increase the size of government. Use that money to reduce the tax rate on working Americans . . . . That should be our goal . . . ."[17]

The case for "cap-and-dividend" or "tax and rebate" has also been voiced by a number of Democrats. Prof. Robert Reich, of the University of California and an Obama adviser and former Cabinet Secretary under President William J. Clinton, penned an op-ed article cautioning that the revenues from any carbon auction were likely to become "fish bait to industries that might qualify for some of them." "That's why it is important," said Reich, "that all [such] revenues" be cycled back to citizens.[18] And "rather than launch another endless debate over how and to whom . . . it would be well to agree to the simplest possible formula: Every adult citizen should receive an equal share."[19] Thus, Professor Reich continued, "If the carbon auction yields $150 billion, the first year, for example, each of America's 150 million adult citizens should receive a treasury check that year of $1,000."[20]

Professor Reich's cap-and-dividend approach owes much to Peter Barnes, a founder of Working Assets, a socially responsible mutual fund. His capanddividend.org website features the tag line: "raise the price of carbon and give the money back."[21] For Barnes, the give-back is essential to avoid a political backlash, because ordinary working families could face

14. David J. Hayes, Bring the U.S. Into the Global Carbon Market (2007), *available at* http://www.lw.com/upload/pubContent/_pdf/pub1803_1.pdf.

15. Juliet Eilperin & Steven Mufson, *Climate Bill Obstacles to Capping Greenhouse Gases*, Wash. Post, June 1, 2008, at A12.

16. Editorial, *Climate Reality Bites*, Wall St. J., May 27, 2008, at A20.

17. Chris Holly, *Should Climate Bill Revenues Go for Consumer Aid?*, Energy Daily, May 12, 2008, at 1.

18. Robert B. Reich, Op-Ed., *How About a Cap-and-Trade Dividend?*, Wall St. J., June 4, 2008, at A21.

19. *Id.*

20. *Id.*

21. Cap and Dividend, *Homepage*, http://www.capanddividend.org (last visited Nov. 6, 2008).

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hundreds of dollars in new costs annually when serious carbon reductions kick in.

Former Vice President Gore has a similar perspective. He has long supported a sharp reduction in payroll, i.e., income, taxes with the differences made up in CO_2 taxes. "We should tax what we burn, not what we earn," says former Vice President Gore.[22]

This broad criticism of the benefit flows underlying the Lieberman-Warner bill was taken on board, at least in part, by the bill's sponsors. In May 2008, Senator Boxer proposed a major amendment that, among other things, would set aside approximately $800 billion, or almost 15% of the bill's total revenues, for tax relief. The amendment also proposed a small increase in the percentage of emissions permits that would be sold at auction instead of being distributed to existing emitters. In addition, the amendment affirmed that the traditional role of the Senate's budget and finance committees would be preserved; no funds raised by auctioning emissions rights would be allocated or disbursed without their oversight.

These concessions are significant. Yet, much more may be required by a new Administration that will be pressed, on the one hand, to end the entrenched congressional practice of spending earmarks or entitlements and, on the other, to offset high energy costs by returning the lion's share of any new carbon revenues to consumers.

Some idea of the direction the Obama Administration could take is provided by three cap-and-trade bills tabled in the House on the heels of the Senate's debate. The first bill, the Investing in Climate Action and Protection (iCAP) Act (H.R. 6186), introduced by Representative Markey (D-Mass.), Chairman of the House Select Committee on Energy Independence and Global Warming, proposes to auction 94% of available GHG emissions allowances in 2012 and 100% in 2020. The 6% of allowances initially withheld from auction would be distributed as transitional assistance to energy-intensive U.S. industries exposed to competition from international companies that may not face similar carbon costs, e.g., iron and steel, aluminum, glass, paper. Representative Markey's approach is closer to the 100% auction plan supported by President-elect Obama during the campaign.

The iCAP Act would also return over half of the auction proceeds to low and middle income households (the cutoff is $110,000 annually) through rebates and tax credits. The remaining funds would go to the type of clean energy research and development, green jobs, and climate adaption programs that would also receive the bulk of funding under the Lieberman-Warner bill and the Boxer amendment. This type of combined consumer dividend and investment approach may also be in line with the general principles for global warming legislation favored by incoming Committee Chair Rep. Waxman whose views were outlined in a "Dear Colleague" letter in mid-2008 that attracted over 150 other House members and was co-authored by Representative Markey.

The second cap-and-trade bill, the Climate MATTERS Act of 2008, H.R. 6316, sponsored by Rep. Lloyd Doggett (D-Tex.), and over 90 other House members, would auction 85% of GHG emission allowances from the outset with the auction pool gradually increased to 100% by 2020. (Permits not auctioned initially would be given to electric generators and manufacturers.) Under Representative Doggett's bill, 15% of the auction proceeds would be used to reduce the national deficit and 54% would go to a consumer assistance fund, with two-thirds of the latter used to provide affordable health care and one-third rebated to low and moderate income households.

The third bill, still technically a discussion draft, was released by Representatives Dingell and Boucher in October 2008 well after the Markey and Doggett proposals. It squarely joins the allocation debate but does not resolve it, choosing instead to offer four options. These range from a free initial allocation to all large emitters (thus minimizing initial compliance costs) to a full auction proposal, with one-half of the revenues returned directly to consumers. Intermediate options vary the number of allowances for covered entities and for complementary clean tech, forest conservation and climate adaption programs.

Notably, all the options provide a similar pool of allowances to support energy assistance for low income consumers and energy conservation (with money routed primarily via the states) and for clean tech (with funding via grant programs overseen by the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Energy (DOE)). In addition, all the Dingell-Boucher allocation options envisioning a full auction of allowances from 2026 on with the proceeds returned to taxpayers per capita, à la Professor Reich's approach. This last provision, say the draft's authors "is designed to motivate a Congressional reauthorization prior to 2026," given "the impossibility of allocating allowances now for the next four decades."[23]

In sum, while the Dingell-Boucher draft attempts to bracket the main options, it also punts the allocation issue forward to the next Congress and the new Administration. Forging a consensus will not be easy.

A president who is willing largely to take the auction issue off the table (as President-elect Obama proposed during the campaign) may be able to concentrate his efforts on the revenue side of the debate. The fight over who gets the annual pool of emission allowances would then be left to the market.[24] Similarly, the greater the percentage of auction revenue that is rebated directly to taxpayers, the smaller the proportion left to be allocated by the Congress for renewable energy research and development, hybrid vehicles, green collar job programs, etc. The would leave carbon prices as the major driver of America's low-carbon energy transformation, a market-oriented plan that has won favor among some clean tech entrepreneurs but has raised great concern among others.

22. *See* Stout, *supra* note 9.

23. Memorandum from Rick Boucher, Chairman, Subcomm. on Energy and Air Quality and John D. Dingell, Chairman, Comm. on Energy and Commerce, to Comm. on Energy and Commerce 4 (Oct. 7, 2008), *available at* http://energycommerce.house.gov/Climate_Change/Memo-Climate-Change-100708.pdf.

24. Alternatively, Senator Boxer has recently suggested that she favors a streamlined cap-and-trade bill that would delegate the allocation issue largely to EPA rather than leaving this to Congress. It is unclear, however, the extent to which Congress might still determine the proportion of allowances to be auctioned. *See* Katherine Boyle & Darren Samuelsohn, *Boxer to Introduce Cap-and-Trade, Renewable Energy Bills*, E&E NEWS PM, Nov. 20, 2008.

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The latter group believe that sustained federal support for technology research and development is essential, especially for renewable energy, alternative fuels, and the carbon capture and sequestration (CCS) technologies critical for a new generation of clean coal power plants. The power sector currently relies on approximately 1,500 coal-fired plants to generate roughly 50% of the country's electricity, which in turn accounts for some 30% of annual U.S. GHG emissions. Hundreds of utility-scale CCS systems to capture, transport, and permanently sequester CO_2 would need to be deployed to cut these emissions in half or more although, to date, no U.S. power company has managed to implement even one such system on a commercial basis.

Challenges like these have led cap-and-trade skeptics to maintain that carbon prices cannot be given the primary job of creating a robust new low-carbon energy industry. As consultants Ted Nordhaus and Michael Shellenberger have argued, carbon prices should be used to complement a new investment agenda in low- and zero-carbon technologies because, by themselves, rising emissions prices will only direct incremental private investments to the least expensive emission reductions, e.g., burning methane from landfills, retrofitting power plants and buildings, and purchasing forest land to sequester carbon.

Carbon prices per se are unlikely to incentivize breakthrough technologies that require large amounts of capital and long term research and development. "We did not invent the Internet by taxing telegraphs," Nordhaus and Shellenberger assert.[25] Rather, strategic government investments and procurement policies provided the building blocks for the Internet and, accordingly, we should follow a like policy for clean energy.

During the campaign, President-elect Obama placed a foot firmly in both camps. In a widely quoted *Rolling Stone* interview, he acknowledged that while a cap-and-trade plan would generate billions in new federal revenues, it would also "mean higher electricity prices for consumers, so a huge chunk of that has to go back to consumers in the form of rebates, so they don't feel the pinch as badly. That's point number one."[26]

"Point number two," continued President-elect Obama, "is we'll put $15 billion a year into alternative energy. We want to give encouragement to existing utilities, existing energy companies, to invest in solar and wind and biodiesel."[27] In hard economic times, balancing point one (cap-and-dividend) and point two (cap-and-invest) may involve some difficult trade offs.

D. Keeping Bureaucracy in Check

Fourth, to win the public backing for his climate initiative, the president should insist that any new cap-and-trade program be "bureaucracy lite." The new Administration must resist the urge to create new federal bodies where existing organizations can be adapted. Consistent with the program's environmental goals, the watchwords for implementation should be efficiency and conservation; climate action should showcase a better government not a bigger one. If Washington wants the private sector to curb its carbon footprint, it should lead by example and keep its demand for new office blocks and beltway commuters in check.

Some in Congress have already said as much. In a widely distributed post-mortem on the Senate debate, Senator Bingaman observed: "There is always an attraction to creating new institutions and boards and trust funds to bypass existing structures. But there is a significant time and opportunity cost" in doing so and "climate change is an urgent matter."[28]

For example, the original Lieberman-Warner bill proposed to create a new quasi-public Climate Change Credit Corporation (CCCC) to auction emission allowances and oversee a score of new grant programs. Later versions of the bill task the EPA with the auction job, but transfer the CCCC's grantmaking role to a new federal agency, the Climate Change Technology Board (CCTB). The bill would also create other new federal bodies, including a Climate Market Efficiency Board (to keep prices for emission rights in check), and an International Climate Change Commission (to review the carbon regimes of America's trading partners and determine the level of emission allowances required for certain imports).

Some House bills, e.g., Representative Doggett's Climate MATTERS Act, would follow suit, although others, notably the Dingell-Boucher draft and Representative Markey's iCAP Act, generally eschew new organizations. Dingell-Boucher, for example, would supplement the responsibilities of existing agencies, e.g., by tasking the Federal Energy Regulatory Commission (FERC) with overseeing the new market for federal carbon rights, and relying on existing agencies or departments (EPA and DOE) to distribute research and development and other grants falling within their expertise.

Most House bills would also make EPA the chief administrator of a new cap-and-trade regime. This is probably wise on the assumption that the new regime will supercede EPA's existing ability to regulate GHG emissions under the 1992 Clean Air Act (CAA). EPA's authority to regulate global warming pollution was confirmed in 2007 by the landmark Supreme Court decision in *Massachusetts v. U.S. Environmental Protection Agency*[29] even though the CAA is ill suited to abate a globally dispersed "pollutant," such as CO_2. The CAA's enforcement regime was designed to address pollutants that can be abated within defined areas subject to EPA and state government oversight. Thus, many parties on both sides of the climate debate argue that Congress must harmonize its approach to dealing with GHG emissions, although some envi-

25. Ted Nordhaus & Michael Shellenberger, *Second Life: A Manifesto for a New Environmentalism*, New Republic, Sept. 24, 2007, at 30, 32.
26. Jann S. Wenner, *A Conversation With Barack Obama*, Rolling Stone, July 10, 2008, *available at* http://www.rollingstone.com/news/coverstory/21472234.
27. *Id.*
28. Press Release, Sen. Jeff Bingaman, S. Comm. on Energy and Natural Resources, Finding the Path Forward on Climate Legislation (July 9, 2008), *available at* http://energy.senate.gov/public/index.cfm?FuseAction=PressReleases.Detail&PressRelease_id=7bd43a6f-f03a-453d-8f4f-1ed6cfc84056&Month=7&Year=2008&Party=0 [hereinafter Bingman Release].
29. 127 S. Ct. 1438, 1459-62 (2007) ("Because greenhouse gases fit well within the Clean Air Act's capacious definition of 'air pollutant,' we hold that EPA has the statutory authority to regulate the emission of such gases from new motor vehicles.").

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ronmental groups argue strongly that this need not strip EPA of its existing authority.

The need for legal clarity on this subject is pressing. EPA is now legally compelled to enforce the CAA as written. That has left all major CO_2 emitters in a legal limbo as EPA has yet to decide how it will regulate GHG emissions from new or existing sources; an advanced rulemaking notice issued by EPA last summer remains pending. In the interim, decisions by court and state regulators have led to inconsistent and unpredictable results, and rising legal costs for industry.

It is especially important that the Congress determine if the EPA will have the discretion to determine whether major facilities that emit CO_2 must use best available control technology (BACT) to satisfy national air quality standards under the CAA. BACT is a site and pollutant-specific requirement for granting construction permits to "major emitting facilities" regulated by the CAA. The EPA has yet to define a BACT for CO_2, however. Hence, although it is commonly assumed that a cap-and-trade regime will be the principal federal program for regulating unwanted GHG emissions, absent a conforming amendment to the CAA, the EPA may still choose to adopt a dual and potentially much more costly regulatory regime for CO_2 that would require facility-by-facility permits for emitters, based on an as yet unknown BACT. The source specific pre-construction review provisions of the CAA, in particular, conflict with the central purpose of a market-driven program to curb the GHG emissions of regulated parties subject to congressionally agreed national emissions caps.[30]

Many stakeholders, particularly major emitters, also believe that the Congress must federalize the issue, e.g., by barring multiple state GHG mitigation programs. As Senator Bingaman put it: "We should not overlay cap-and-trade programs over cap-and-trade programs."[31] States have a legitimate role in promoting clean energy technology, said Bingaman. "But when we are able to enact a Federal cap-and-trade system, in my view it should preempt the field."[32] The Dingell-Boucher draft echoes this view. But many states dissent, especially those which have already set stronger GHG reduction targets of their own.

Administrative economy can only go so far in winning public respect for a new climate program. Successful implementation may depend less on any government organization chart (new agencies or not) than the president's choice of personnel. The caliber of the next EPA Administrator as well as the Secretary of Energy may be decisive and will, in any case, be seen as the first and most visible signals of the president's intentions. The Chairs of FERC and the White House Council on Environmental Quality (CEQ) will also be crucial appointments.

The president's new team will be tasked with an extraordinary challenge in breaking the current impasse on climate legislation and implementing the results, a challenge that will provide an ongoing test of their day-to-day leadership and administrative acumen. These appointees will also be the Administration's public face on a day-to-day basis before the Congress. That may argue for candidates that are already familiar with the current cap-and-trade debate and can quickly win the confidence of Capitol Hill. Technologists with strong industry experience might be equally favored because, as we have seen, any new plan will also involve oversight of a massive new research and development push for clean energy.

E. Setting Climate Targets: Start Early and Adjust

To build a winning coalition on Capitol Hill, the president will need to show that his cap-and-trade plan will, at least in principle, cut U.S. emissions enough to give the rest of the world a fair chance of stabilizing total GHG emissions below the danger zone. What that zone is, how much of the burden the United States should assume, and how fast have already prompted no end of scientific and political debate.

At the July 2008 meeting in Japan, the leaders of the G-8 countries agreed on a 50% cut in current emissions from 1990 levels by 2050, but said nothing on what should be done in the near to mid-term. By comparison, the Lieberman-Warner bill would reduce U.S. GHG emissions roughly 65% by 2050 but only requires reductions of about 18% by 2020 and 32% by 2030 (and all from 2005 levels).

While these targets may seem modest, they would actually require 3% plus year-on-year emissions cuts from a BAU course given the historical 1% + growth in annual U.S. emissions over the last decade. This is something no large industrialized country has yet achieved, absent a sharp fall in economic output. That is why the pragmatists in Congress have balked at the type of goals set by the Lieberman-Warner Bill, contending that the targets are not technologically feasible within the allotted time frame.

An alternative reduction path is proposed by the Dingell-Boucher discussion draft. Arguing that the emissions levels and timetables should be both "realistic and scientifically driven," the draft proposes a far more modest 6% decline in emissions below 2005 levels in 2020 but a 40% decline by 2030 and an 80% reduction by 2050. Emission reductions would also be phased in with power generators covered in 2012, large industrial emitters in 2014 and local gas utilities only in 2017.

The slower ramp up of carbon caps in Dingell-Boucher bill seems to reflect a growing legislative *Realpolitik* on what it will take to pass legislation in 2009. At the same time, however, the climate science and environmental community has been converging on a new *Realpolitik* of its own regarding the type of reduction targets that are required to ward off catastrophe, and they are at odds with the revisionist thinking of many on Capitol Hill. For example, activists like environmental writer Bill McKibben (of 350.org), Lester Brown (of the Earth Policy

30. EPA's authority to require a BACT program for new emission permits under the CAA has come to a head in several recent cases. *See, e.g.,* Deseret Power Electric Cooperative, 2008 WL 4921265 (E.A.B. Nov. 13, 2008); Friends of the Chattahoochee, Inc. v. Couch, No. 2008CV146398 (Ga. Super. Ct. June 30, 2008). Absent a cap-and-trade regime, in March 2008, Representatives Waxman and Markey proposed to legislate a BACT standard that includes CCS for granting construction permits for new coal-fired generating units. *See* H.R. 5575, 110th Cong.
31. Bingman Release, *supra* note 28.
32. *Id.*

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Institute), and Hansen now argue for more than 80% cuts in 2005 GHG emission levels by 2050 (and preferably much before) to ensure that the United States does its part to keep GHG concentrations nearer to 350 ppm than 450 ppm.[33] It will thus fall upon President-elect Obama to navigate between these two outlooks.[34]

The president will also need to keep in mind that the headline reduction targets in any bill, though offering a strong political message, will be much less important in practice than the impact that any near-term targets actually have on carbon prices. Research and development investments notwithstanding, carbon prices will have a large impact on the success of any cap-and-trade plan. Reduction targets matter mainly because of the long-term price signal they send to the market about the declining quantity of future GHG emission permits. Scarcity is designed to raise prices, which in turn impact consumption and investment decisions.

Consequently, any effective cap-and-trade bill must provide an ongoing mechanism for monitoring the relationship between GHG targets, carbon prices, and U.S. emissions so that Congress can make mid-course adjustments in the quantity of allowances at agreed intervals to meet the desired emissions targets. All of the cap-and-trade bills now before the Congress contemplate a large divergence between actual U.S. emissions and the stated cap. That is because, to varying degrees, each bill includes cost containment provisions that allow U.S. emissions to exceed the number of annual permits. Most bills let emitters borrow permits from the government, import emission rights from other countries with comparable carbon caps or use GHG "offsets" rights, that is, GHG reductions by non-regulated parties, e.g., through forestry and farming programs that capture CO_2 or trap methane. For example, under the Dingell-Boucher proposal, the nominal yearly cap may be breached by up to 35%.

In theory, granting U.S. emitters the flexibility to use offsets or imports is environmentally sound because any GHG reductions stimulated by new legislation, wherever had, are beneficial given that global warming pollutants are quite rapidly distributed in the atmosphere worldwide. In reality, depending on the scope of legal substitutes, the price for U.S. carbon permits, and hence, the desired price incentive to deploy low-carbon technologies may be significantly skewed. Here too, therefore, mid-course reviews are essential and EPA might be given some latitude in this area in between any mandated Congressional evaluation.

Finally, and perhaps most importantly, no new cap-and-trade measure will be viewed as environmentally defensible unless it encourages other nations to adopt analogous programs and penalizes those that do not. A binding multilateral agreement to address global warming is essential. That is why the forthcoming December 2009 U.N. Conference in Copenhagen is so critical. The goal of the conference is to agree upon a successor to the Kyoto Protocol, which only mandates emission cuts until 2012.

But domestic legislation can also play a role. Thus, as discussed in the economics section of this Article, the president should insist that subject to international agreements and once the United States has a cap-and-trade program in place, imports from other major emitters that do not have a comparable program must acquire emission permits reflecting the GHG emissions associated with their production.

III. Conclusion

On the politics of global warming, David Suzuki, the well known Canadian geneticist and science writer, once said that it is as though "we're in a giant car heading at a brick wall at 100 miles an hour and everybody is arguing about where they want to sit."[35] In many ways, last fall's debate on how to resolve the current financial crisis echoes this analogy.

The stakes could not be higher. As with the high-debt expansion of the economy over the last decade, high carbon growth will eventually undermine growth itself. To quote Stern again, such a course "is not a medium- or long-term growth option." The "answer must be low carbon growth, not low growth."[36]

A properly crafted cap-and-trade program can put America on that growth path. It will not be sufficient, of course. Massive new direct investments in clean energy technology will also be required. But a cap-and-trade plan will begin to steer us away from the wall. One big crash should be enough for any generation.

33. *See, e.g.*, James Hansen et al., Target Atmospheric CO_2: Where Should Humanity Aim? 11 (2008), *available at* http://www.columbia.edu/~jeh1/2008/TargetCO2_20080407.pdf ("An initial CO_2 target of 350 ppm, to be reassessed as the effect on ice sheet mass balance is observed, is suggested.").

34. It should be noted that some President-elect Obama advisers continue to favor more aggressive near-term emissions reductions targets on economic grounds. For example, Robert M. Sussman, a member of President-elect Obama's transition team, recently wrote that

> [a] bigger danger than short-term economic disruption is the risk that an overly modest emission target will encourage business-as-usual-thinking [which] will work to the United States' detriment because we will lose an opportunity to gain a competitive edge in low-carbon technologies that can support economicgrowth and job creation.

Robert M. Sussman, *A Good Start, But Not Good Enough*, Center for Am. Progress, Nov. 7, 2008, *available at* http://www.americanprogress.org/issues/2008/11/dingell_boucher.html/print.html.

35. Interview by George Negus with David Suzuki, Co-founder, David Suzuki Foundation (Oct. 18, 2006), http://news.sbs.com.au/dateline/david_suzuki_interview_130723.

36. *Climate Change Hearing*, *supra* note 2.