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Executive Summary:

- To prevent dangerous global warming and avoid an expensive "slow start/crash finish," legislation needs to include a long-term declining cap to cut U.S. emissions by 50 percent or more by mid-century. A long-term declining cap opens the door to a new cost-control option – borrowing – that has significant advantages over the safety valve. (additional comments)

- An economy-wide approach should put all significant emitting sectors under a long-term declining cap. Because of the urgency of action, sectoral and state-level approaches should be implemented where progress can be achieved more quickly. The point of regulation should be located midstream, closest to the capital and operating decisions that affect emissions, e.g., power generators, other large energy-consuming and GHG-emitting industries, and refineries. (response to Q1).

- At least half of the allowances should be allocated to reduce program costs for consumers (especially low-income consumers) by incentivizing end-use energy efficiency measures, and other means. Large wealth transfers from consumers to mid- and upstream entities must be avoided. At least one fourth of the allowances should be allocated to incentivize investments in the "big change" technologies needed to significantly reduce emissions. (Q2)

- Five percent of the allowances should be allocated to adaptation assistance and to incentivizing emissions reductions outside the cap, especially by farmers. (Q2)

- We propose allocating allowances for the electric sector and gas sector to distribution entities on behalf of their customers, with requirements to invest in end-use efficiency and provide consumer rebates, especially for low income consumers. (Q2)

- The safety valve is a serious impediment to U.S. participation in international trading systems. The safety valve would lead to flooding the world market with newly-minted U.S. allowances, leading to far less emission reduction than anticipated even under the NCEP recommendations. (Q3)

- U.S. leadership is critical. Other countries are unlikely to act on the necessary scale if the U.S. does not lead. We should also recognize that key developing countries are *already* taking actions to reduce their global warming emissions growth. There is much to learn and work out as other countries react to a reassertion of American participation and leadership. These factors call for retaining flexibility to flesh out the concept of "comparable action" based on experience as it unfolds between now and the first review of the U.S. program. (Q4)

*Who is regulated and where?*

**Clarifying Question 1a:**

- Is the objective of building a fair, simple, and rational greenhouse gas program best served by an economy-wide approach, or by limiting the program to a few sectors of the economy?

NRDC agrees that all sectors and activities that contribute substantially to emissions of global warming pollution need to be subject to mandatory emission limits to slow, stop, and reverse U.S. emissions growth. We favor an economy-wide approach that puts the major emitting sectors and activities under a declining cap.

The cap should cover $CO_2$ emissions from electricity, transportation, and fossil fuel use in industry and buildings. It should also cover industrial and other sources (such as landfills) of the global warming pollutants other than carbon dioxide (including methane, nitrous oxide, HFCs, PFCs, and sulfur hexafluoride) rated in carbon equivalent terms.

Our priority is on achieving the earliest possible action. So while we support an economy-wide approach, we also support sectoral – and state-level – approaches to the extent that progress can be achieved more quickly.

- For example, since the power sector represents 40 percent of total U.S. $CO_2$ emissions, we have supported legislation to reduce power sector $CO_2$ emissions while enhancing and strengthening current Clean Air Act requirements for other pollutants.

- Since passenger vehicles represent nearly 20 percent of total U.S. global warming emissions, NRDC supports California's clean car standards, which have been adopted to date by California and 10 other states covering 1/3$^{rd}$ of the nation's vehicle sales.

- NRDC supports federal oil savings legislation (e.g., S.2025, sponsored by Sens. Bayh, Brownback, and others) because it would significantly reduce oil-related global warming pollution as it reduces our nation's dangerous oil dependence.

- NRDC has helped in the development of the Regional Greenhouse Gas Initiative (which currently includes seven northeastern states) and we are engaged in the state-wide programs to limit global warming pollution under development in California and other western and southwestern states.

- NRDC supports other complimentary state and federal programs, such as renewable portfolio standards and energy efficiency programs operating under public benefit funds.

Sectoral and state-level cap-and-trade programs can be designed with workable linkages to facilitate inter-sectoral trading. For instance, trading should be easily workable between sectoral programs that denominate allowances in tons. (As explained in answer to question 3, however, the presence of a safety valve seriously distorts inter-system trading, whether between countries or between sectors or states in the same country.)

Sectoral and state initiatives other than cap-and-trade programs can complement a national cap-and-trade program. For example, sectoral and state energy efficiency programs are extremely effective in bringing down energy demand (more accurately, satisfying energy service demand with less energy), which allows carbon emission caps to be met at lower permit prices and lower overall economic cost.

**Clarifying Question 1b:**

- What is the most effective place in the chain of activities to regulate greenhouse gas emissions, both from the perspective of administrative simplicity and program effectiveness?

As an initial observation, we emphatically agree that the point of regulation and the point of allocation are two separate decisions.

The legislative proposal put forth by Sen. Bingaman last summer proposed to place the point of regulation for coal and natural gas far upstream, at the coal mine and the wellhead. For petroleum, it proposed to put the point of regulation at a "midstream" point, covering refineries and imports of refined product, rather than going fully upstream.

While an upstream system would work, we believe that the objective should be to locate the point of regulation as much as possible in or near the hands of those closest to the capital and operating decisions that affect emissions.

In the power sector, for example, generators manage most of the decisions that affect emissions: what fuel to use, what sources to dispatch, what technology to employ in new plants or in upgrading or replacing existing plants, and often what programs and incentives to offer for energy efficiency investments further downstream. $CO_2$ emissions from power plants are already comprehensively monitored and reported as part of the acid rain monitoring requirements. Similar reasoning supports a midstream point of regulation for other large energy-consuming and GHG-emitting industries (cement, chemicals, steel, aluminum, etc.).

Coal or natural gas providers, by contrast, are far removed from direct emissions-management decisions. Locating the point of regulation fully upstream would turn the program into purely a price signal for generators and other downstream actors who are more responsible for emissions management.

On the transport side, oil refineries have a role in emissions-management decisions, although a limited one. For example, either directly as investors or as fuel distributors, refineries can play a role in decisions to reduce emissions by expanding biofuels production and distribution.

On the other hand, vehicle manufacturers have a bigger role in emissions-management decisions related to passenger vehicles, trucks, etc. As vehicle designers and marketers, they are in the best position to choose among technologies that can reduce vehicular global warming emissions. As a result, there is great value in setting GHG emissions performance standards for vehicles (the present example being the California standards) or oil savings requirements.

As mentioned above, it is important to adopt complementary energy efficiency and emission reduction policies to deliver energy services with less energy and thereby lower the cost of meeting emission caps.

*Should the costs of regulation be mitigated for any sector of the economy, through the allocation of allowances without cost? Or, should allowances be distributed by means of an auction? If allowances are allocated, what is the criteria for and method of such allocation?*

A global warming cap-and-trade program will run on "emissions allowances" that are worth hundreds of billions of dollars over the life of the program. Thus, how allowances are allocated is a major public policy decision. The methodology for distributing them is one of the most important design decisions that Congress will make.

The overarching goals of the allocation methodology must be:

(i) to keep the cost of the program as low as possible for residential, commercial and industrial consumers (especially low-income consumers), by encouraging investment in end-use energy efficiency measures and by avoiding wealth transfers from consumers to upstream entities; and

(ii) to mitigate costs for firms investing in the technologies needed to significantly reduce emissions in key sectors (e.g., mainstreaming coal gasification and carbon capture in the electric sector; retooling the auto industry to produce hybrids and other low-emitting vehicles; accelerating deployment of renewables (wind, biofuels, solar).

Congress should not use allowances to compensate owners of power plants or other industrial facilities that lose market share to better performing competitors, and Congress absolutely should not use them to provide windfall profits to firms that will increase market share or profitability under a cap-and-trade program or that will pass allowance costs (beyond actual compliance costs) onto their customers, or both.

*1. The atmosphere is a public resource.*

Emissions allowances represent permission to use the atmosphere for disposal of carbon pollution. The capacity of the atmosphere to absorb carbon is extremely limited. This limited carrying capacity is not a private resource owned by historical emitters. Rather, it is quintessentially a public resource or public trust. Private entities should not have a right to dump harmful pollution in the public's atmosphere for free.

We have framed this discussion in these terms in order to focus on underlying principles, not only means of implementation. Economists generally agree that an auction is the most economically efficient allocation method.[1] A direct government auction of allowances is only one institutional method of implementing the underlying concept that the allowances are a public resource. Another method is to

[1] *See e.g.*, Terry Dinan, "Shifting the Cost Burden of a Carbon Cap-and-Trade Program," (Congressional Budget Office, July 2003); CBO, "Issues in the Design of a Cap-and-Trade Program for Carbon Emissions," (Nov. 25, 2003).

distribute allowances themselves for specifically designated public purposes according to statutorily specified criteria.[2]

2. *Using emissions allowances to promote investment in energy efficiency critical to achieving ambitious carbon reductions with the least impact on energy prices.*

Analysis and modeling conducted in connection with the northeast states' Regional Greenhouse Gas Initiative (RGGI) indicates that increasing end-use efficiency for customers is the most effective means of reducing the impact of a carbon cap on electricity rates.[3] Indeed, this analysis demonstrated that by using a portion of the allowance proceeds to promote efficiency, the states could reduce power sector carbon dioxide emissions by 10% from current levels and at the same time save average customers over $100 per year on their energy bills.[4] Reducing demand growth for electricity saves consumers money and lowers the price of allowances, as reducing total fossil generation reduces the size of the allowance price signal needed to achieve compliance with the emissions cap.

A landmark study by the American Council for an Energy Efficiency Economy demonstrated even more dramatic results in the natural gas sector – increasing energy efficiency by 5% could reduce natural gas prices by 20%.[5] Since natural gas-fired electricity generation is at the margin in many regions, increasing the efficiency of natural gas use in non-electric applications will reduce the impact of a carbon cap on both gas prices and electricity rates.

The California Air Resources Board has demonstrated the same effect in the motor vehicle sector: California's global warming standards for vehicles will provide consumers lower fuel and maintenance costs that more than offset increases in new vehicle costs. Especially if adopted more widely, the result will be to reduce gasoline prices by reducing overall gasoline demand.

3. *Using emissions allowances to promote rapid deployment of "big change" low-emitting technologies is critical to enabling future carbon reductions at reasonable cost.*

In order to prevent dangerous global warming it is essential to begin making meaningful reductions in heat-trapping pollution now and to get on a path toward reducing emissions by 50 percent or more by mid-century. Many analyses demonstrate the need for rapid deployment of clean and low-emitting energy technologies in key sectors such as electricity and transportation, which together make up more than two-thirds of U.S. global warming emissions, in order to achieve the carbon reductions needed under a long-term declining cap at reasonable cost. Although not an exclusive list, the prime candidate "big change" technologies include coal gasification and carbon capture in the electric sector; a range of

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[2] One mechanism is the Climate Change Credit Corporation proposed in the Climate Stewardship Act. Another example is the public trustee designated to receive allowances under the proposed Clean Power Act.

[3] ICF Consulting "RGGI Electricity Sector Modeling Results, Updated Reference, RGGI Package and Sensitivities," September 21, 2005, available at http://www.rggi.org/docs/ipm_modeling_results_9_21_05.ppt; Economic Development Research Group, "Economic Impacts of RGGI Under Proposed SWG Package Scenarios," September 21, 2005 available at http://www.rggi.org/docs/remi_stakeholder_presentation_11_17_05-final.ppt#492,1,.

[4] Economic Development Research Group, "Economic Impacts of RGGI Under Proposed SWG Package Scenarios," September 21, 2005.

[5] ,Elliott, Neal R, Anna Monis Shipley, Steve Nadel and Elizabeth Brown, "Impacts of Energy Efficiency and Renewable Energy on Natural Gas Markets," American Council for an Energy Efficient Economy, September 12, 2003.

drive-train and related technologies (including hybrid gas-electric engines) in the auto industry; and renewable energy resources such as wind and solar in the electricity sector, and biomass for both electricity and transportation sectors.

But we face a serious dilemma. We need to start rapid deployment of these "big change" technologies *now* in order to hold down the long-term costs of sharply cutting U.S. emissions, yet it is generally agreed that the initial price signals from feasible cap-and-trade programs will not be sufficient alone to jump-start that deployment. The allowance distribution formula can solve this problem, by incentivizing firms to invest in rapid deployment of these key technologies.

Wherever possible these incentives should be stated in performance terms (such as emissions per megawatt/hour) and implemented through efficient mechanisms (such as a reverse-auction based on energy savings or energy production per allowance awarded or dollar invested).

It is important to note that most of the allowances distributed in this way would go without cost to the same industries that typically seek other forms of "free" allocation, but in proportion to their investments in energy efficiency and low-emitting technologies. Distributing allowances this way is far preferable, for example, to allocating allowances on the basis of historical emissions or energy usage.[6] But there is no reason to limit support for clean energy investments to incumbents only. Rather, Congress should ensure the allowance value is available to *any* firm – incumbent or new entrant – that can efficiently and effectively carry out investments in energy efficiency and clean energy technology.

We also note that under a long-term declining cap (recommended in our introductory comments and in answer to question 5), these technology incentives would have a much larger and more stable long-term source of funding than will come from the authorizations and tax incentives in the Energy Policy Act of 2005. Technology incentives under this proposal would also be larger and more stable than under the NCEP recommendations or the proposed legislation put forward by Senator Bingaman last year. Furthermore, these incentives could be accomplished without any budgetary impact.

4. *Free allocation of allowances on the basis of historical emissions, energy generation or use, or other historical factors would result in an enormous transfer of wealth from consumers to energy producers.*

Economists at the Congressional Budget Office, Resources for the Future (RFF) and other institutions have determined that allocating all emissions allowances to fossil-fuel providers without cost would give those providers an asset worth seven times the cost that that sector could not pass on to mid- and downstream entities, and ultimately to energy consumers. For example, Stanford University and RFF economist Larry Goulder has shown that in an economy-wide upstream cap and trade program, it would take free allocation of only 13% of the allowances to offset the lost profits (or reduced asset values) of fossil-fuel providers, i.e., the program costs that could not be passed on.[7] Similarly, looking at a mid-

[6] If granted free allowances on a historical basis – or on any basis unlinked to making these investments – there is no guarantee that the firms will use allowance value for those purposes. They may distribute the allowance value to shareholders, or invest in other ventures deemed more profitable than retooling to reduce emissions.

[7] Morgenstern et al., "The Distributional Impacts of Carbon Mitigation Policies," Issue Brief 02-03 (Resources for the Future, Feb. 2002), http://www.rff.org/Documents/RFF-IB-02-03.pdf.

stream[8] program for the electricity sector, Dallas Burtraw and colleagues have shown that it would take free allocation of only 10% of the allowances to offset lost profits or reduced asset values of electricity producers.[9] The Congressional Budget Office has reached the same conclusion.[10] In the United Kingdom, the government has determined that free allocation of allowances to electric generators has resulted in windfall profits of over $500 billion.[11] Congress should not repeat this mistake.

The claim that industries need to be compensated even for the limited costs they cannot pass on is really quite extraordinary. It is deeply rooted in our legal tradition that when someone – whether an individual or an industry – endangers public health, safety, or the environment by releasing harmful pollution, that individual or industry bears the responsibility for the costs of mitigation. Nearly all of our modern public health, safety, and environmental laws follow this principle: Complying with duly-enacted pollution control laws and regulations is part of the cost of doing business. Some of this cost can be passed on to consumers. But that portion which cannot be passed on is properly absorbed by company shareholders.

The U.S. and other developed countries have uniformly rejected claims from certain OPEC countries that they deserve compensation for lost profits if developed countries curtail their oil use to curb global warming or to enhance energy security. Why should we not take the same view regarding the compensation claims of carbon-intensive fuel providers here at home?

Notably, many of the coal-fired facilities seeking historical allocations have been enormously profitable in recent years due to high gas prices. The government is generally not in the business of ensuring corporate profitability for power plant owners. State and federal regulators do not require coal-fired power plants to return excess profits to customers when high natural gas prices or other factors increase market clearing prices and raise revenues for coal-fired plants; generators get to keep those profits. Similarly, government should not be in the business of requiring consumers to bail out generators who become less profitable under a carbon cap. Such a system would create the worst of both worlds for consumers – they would reap none of the benefits of a competitive market and continue to shoulder the costs of a regulated market. In a competitive world, businesses cover their up and down risks. Regulatory risks are well known, including the risk of carbon regulation, which has been on the horizon for many years.

For these reasons we do not support using allowances to compensate firms for losses in profitability or asset value under a carbon cap. However, should Congress decide to do this in order to reduce political opposition to global warming legislation, it should carefully tailor its efforts in order to avoid providing windfall profits. Based on the work of RFF, CBO, and others, any allocation to address lost profits or reduced asset values should be limited to less than 15 percent of the total number of allowances.

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[8] A program focused on electricity producers is often called a "downstream" program. But a true downstream program would apply to electricity consumers. Similarly, a true downstream program for transportation would apply to vehicle owners and operators. We prefer to refer to programs that apply to electricity producers (or oil refiners) as "midstream" programs.

[9] Morgenstern et al., *supra* note 1.

[10] *See* note 2, *supra.* .

[11] House of Commons, Environmental Audit Committee, "The International Problem of Climate Change: UK Leadership in the G8 and EU," p. 17 (Mar. 16, 2005).

**Clarifying Questions 2a:**

***Technology R&D and Incentives***

- What level of resources should be devoted to stimulating technology innovation and early deployment?
- What portion, if any, of the revenues from permits or the auction of allowances should be reserved for technology development? If some portion is reserved for this purpose, should that set-aside flow to the federal government with funds spent through the traditional appropriation process? Or should the funds be allocated directly to a non-profit research consortium, chartered by the federal government, which would then administer technology development and deployment projects? Or should there be some combination of these two options?
- What criteria should be used to determine how such funds are spent and which projects are chosen?
- What other mechanisms should be used to promote technology deployment? Options include tax credits, cost-sharing for demonstration projects, assistance to state energy programs, etc.

As indicated in our overview response above, we support allocating at least a quarter of the allowances to stimulate rapid deployment of a suite of technologies that are essential to enabling achievement of immediate carbon emission reductions and a long-term declining carbon cap at least cost. These include key investments in energy efficiency, renewable energy, and low-carbon fossil energy production. We also support allocating a percentage of the allowances to R&D on the next generation of breakthrough technologies.

As noted above, we face a serious dilemma. We need to start rapid deployment of these "big change" technologies *now* in order to hold down the long-term costs of sharply cutting U.S. emissions, yet it is generally agreed that the initial price signals from feasible cap-and-trade programs will not be sufficient alone to jump-start that deployment.

For example, IGCC/CCS deployment requires about $2 billion/yr in investment on a levelized cost basis. A University of Michigan study for NCEP estimates that capital investments of $153 million are required for capacity to produce 200,000 hybrids per year (not including engineering costs).[12] This report shows the long-term cost savings, through job retention, of providing incentives to automotive manufacturers and suppliers to re-tool their existing plants to make in the United States hybrid and advanced diesel engines and components that would otherwise be produced offshore.

Funds on this scale for these and other technologies will not be easily found through tax incentives or appropriations. The allowance distribution formula can solve this problem, by incentivizing firms to invest in rapid deployment of these key technologies.

[12] "Fuel-Saving Technologies and Facility Conversion: Costs, Benefits and Incentives," Office for the Study of Automotive Transporation, University of Michigan, November 2004.

We propose to dedicate at least 25 percent of total allowances to incentivize technology deployment and R&D. Although not an exclusive list, the prime candidate "big change" technologies include:

- *Coal gasification and carbon capture in the electric sector.* IGCC with CCS appears to meet every test of technological feasibility. CCS is essential to maintaining a vibrant market for coal under a long-term declining cap. Large-scale implementation of IGCC/CCS in this country would open the door to its application in China and India as well – a key to sustaining development in those nations without unacceptable carbon emissions.
  Despite these factors, investment in IGCC/CCS is currently limited by two factors. First, many electric generators that see the attractiveness of this technology are waiting for others to undertake the first projects. Second, beyond initial applications associated with enhanced oil recovery, there is a cost differential (compared to conventional coal plants) that is unlikely to be covered by initial allowance prices.

  During this period, incentives in the form of allowance allocations can accelerate the deployment of these IGCC/CCS plants in meaningful numbers. As indicated above, these incentives should be structured as a performance standard – a low-carbon emissions standard for coal-based energy – in order to allow other potential coal-using technologies to compete with IGCC/CCS on an open basis.

- *Retooling the automobile.* A wide range of improved drive-train (including hybrid gas-electric engines) and related technologies (such as HFC-free air conditioners) are available to dramatically reduce global warming pollution from passenger vehicles and, by extension, many other segments of the transportation sector. The California Air Resources Board's global warming emission standards, for example, will reduce per-vehicle emissions by nearly 30 percent by 2016, making broader use of improved drive-train and other technologies that are already in use in some models. Achieving the California standards does not depend on hybrid gas-electric vehicles, although obviously they count towards compliance. Much greater reductions can be achieved after 2016 if hybrid or other advanced fuel efficient technologies are fully deployed across the fleet.

  Incentivizing domestic production of hybrids and other technologies would assist domestic auto companies in becoming more competitive. An allowance allocation to automakers (and suppliers) tied to the global warming emissions performance of manufacturers' fleets would help incentivize and smooth the transition to building advanced, clean technologies.

- *Renewable energy.* A third "big change" technology is renewable energy. The deployment of cellulosic biofuels has great potential as a replacement for petroleum-derived fuels. Allowance allocations could help mainstream construction of plants to convert cellulosic materials into both transportation fuels and electricity, and could help farmers accelerate the supply of cellulosic feedstocks. In addition to reducing global warming pollution, an allowance allocation for this purpose would help achieve the president's objective of ending our oil addiction. It would also help the farm sector adjust to agricultural subsidy reforms required by our WTO commitments and our budget deficits.

  Other renewable energy resources, such as wind and solar, should also be supported. While wind power is competitive in many markets wind still provides only a tiny fraction of U.S. electricity and the on-again-off-again nature of the production tax credit inhibits the large

scale investment in wind that is needed for it to achieve its potential. A more stable funding incentive would markedly increase wind generation's penetration. Off-shore wind is a particularly promising technology for serving a significant share of the electricity load along the East Coast, yet there are no operating off-shore wind facilities in the United States. The global market for solar power is growing rapidly but large investments are needed in solar panel manufacturing to bring down costs to make this technology competitive in on-grid applications.

As noted above, wherever possible these incentives should be stated in performance terms (such as emissions per megawatt/hour) and implemented through efficient mechanisms (such as a reverse-auction based on energy savings or energy production per allowance awarded or dollar invested). However, there are good reasons to segregate or target certain incentives rather than to have one overall competitive pool of incentives. First, there are key areas where targeting is appropriate – for example, there is a compelling need for low-emitting means of using our coal resources. So legislation should target some of these specific areas for at least an initial period.

Institutionally, as indicated above, we support implementing these incentives partly by allocation formulas written into the statute, and partly by allocating allowances to a publicly chartered entity. The Climate Change Credit Corporation proposed under the Climate Stewardship Act is one example. The entity would allocate allowances according to specific criteria provided by statute, through a mix of performance based allocations, reverse auctions, and other means. The entity would have to have a balanced board of directors representing public voices as well as private sector voices. The entity would have to operate transparently according to rulemaking procedures. But because it would be vested with allowances by law, it would not be subject to annual appropriations.

A portion of these technology-advancement allowances – perhaps five percent of total allowances – should be dedicated to RD&D into breakthrough technologies that are not yet ready for broad deployment assistance. This amount would be sufficient to reverse the dangerous decline in RD&D budgets that has occurred over the past decade and a half. A high priority should be given to joint ventures with the private sector putting up half of the research funds. This will help assure that the research is well targeted. In order to replenish the funding for further RD&D, the statute should provide that the publicly chartered entity will receive an equal share in the patent rights for successful technologies developed with these public funds.

**Clarifying Questions 2b:**

***Adaptation Assistance***

- What portion of the overall allowance pool should be dedicated to adaptation research or adaptation-related activities?
- How should these allowances or funds be administered?
- What is the appropriate division between federal vs. regional, state, and local initiatives?

We support allocating five percent of total allowances for helping communities heavily affected by climate impacts. Examples activities include (but are not limited to) Gulf Coast wetland restoration and Alaskan village relocation). Adaptation allowances also could be used to assist workers and communities that are disproportionately impacted by mitigation measures (e.g., coal-miners and coal-mining communities).

**Clarifying Questions 2c:**

***Consumer Protections***

- What portion of the overall allocation pool should be reserved to assist consumers?
- Should funds from the sale of permits or allowances be targeted primarily to low-income consumers, or should they be more widely distributed to benefit all consumers?

At least half of total allowances should be allocated for the benefit of consumers.

In response to question 2f we offer a specific proposal to assist electricity consumers by giving allowances to distribution companies with directions to use the value of those allowances to support end-use efficiency investments and as rebates to assist consumers (especially low-income consumers) adjust to energy price impacts.

The same proposal can be applied to the natural gas sector (other than gas consumed in electric power generation) by giving the allowances to regulated distribution companies with the same conditions for supporting end-use efficiency investments and consumer rebates.

In the oil sector, there is no rate-regulated distribution sector. The solution here is to allocate at least half the allowances related to oil to the public entity (e.g., the CCCC) that serves as the public's trustee, with instructions to use the value of those allowances to support consumer incentives to purchase lower-emitting vehicles, to support other emission-reducing strategies (e.g., public transportation, "smart growth" development patterns), and to assist low-income oil consumers.

Similarly, we recommend allocating at least half the allowances related to the industrial greenhouse gases (such as HFCs) to the public trustee entity with similar instructions. As an example, one opportunity would be to help pay for measures to reduce HFC leakage in key end uses, such as automobile air conditioners.

**Clarifying Questions 2d:**

***Set-Aside Programs***

- What portion of the allocation pool should be reserved for the early reduction credit program and the offset pilot program?
- Are other set-aside programs needed?

Five percent of total allowances should be set aside to encourage emission reduction and sequestration activities by sources that are not covered by the cap, such as soil carbon sequestration by farmers and methane capture at small landfills not covered by EPA regulations. NRDC strongly supports the proposal in the White Paper to use allowances from within the programs overall emissions budget for this purpose rather than to create additional "offset" allowances based on these activities. Establishing appropriate emissions baselines for non-covered sources is an inherently uncertain exercise because it is impossible to observe the emissions that would occur from these sources in the absence of the program. Using allowances from within the cap is a good way to create incentives for beneficial activities without risking the environmental integrity of the emissions cap.

NRDC does not support providing allowances as credit for activities solely on the basis of them being reported as emission "reduction" under DOE's 1605b program. Early emission reductions are their own reward because they position firms to comply with the cap at the lowest possible cost. (This would not be true only if allowances were allocated based on historical emissions from a year after the emission reduction activity occurred. NRDC opposes such an allocation system for numerous reasons described above). Comments during the development of the 1605b program reporting guidelines explicitly argued that DOE should not require the rigorous reporting rules that would be needed for a crediting program, in order to encourage "broad participation" the program. Indeed, a careful review of the emission "reductions" reported under the 1605b program clearly shows that most of the reported activities, such as increased output at existing nuclear power plants, were business-as-usual business decisions that had nothing to do with the prospects of greenhouse gas regulations, and thus deserve no rewards now.[13]

[13] See http://www.nrdc.org/globalwarming/fmandatory.asp

**Clarifying Questions 2e:**

***Special considerations for fossil-fuel producers?***

- Would some upstream fossil fuel producers be unable to pass the cost of purchasing permits or allowances through in fuel prices if they are the regulated entity?
- Is there a sufficient policy rationale for addressing these costs to justify the complexity of setting up and administering an allocation system for these entities?
- What other options exist to address the inability of fossil fuel producers to pass through these costs?

See our introductory comments under Question 2 relating to claims for compensation.

**Clarifying Questions 2f:**

***Allocations for downstream electric generators?***

- Should electricity generators be included in the allocation if they are not regulated? (Clarification: We mean to ask if an electric generator should be included in the allocation if the greenhouse gas regulation occurs at a point of regulation that is upstream or downstream from the generator, but not the generator itself.)
- What portion of the total allocation should be granted to the electric power sector? Should it be based on the industry's share of greenhouse gas emissions or some other factor?
- Should generators in competitive and cost-of-service markets be treated differently under an allocation scheme?
- How should permits or allowances be distributed within the electric sector? Should it be based on historic emissions? Electricity output? Heat input?

The decision about allowance allocations is fundamentally a distributional issue and is independent of the point of regulation. The electricity industry merits special consideration in the allocation system both because this industry is responsible for the largest share of U.S. emissions and because of the unique regulatory structures under which it operates. In order to ensure that allowances are used to reduce costs for customers and do not create windfall profits for power plant owners, it is necessary to consider the regulatory treatment of allowances in different regions.

Most of the electricity used in the United States (and an even greater portion of the global warming emissions from the electric sector) is generated by companies operating under cost-of-service regulation, although a significant portion is generated and sold into competitive markets. The allocation system needs to be both workable and equitable regardless of regulatory status, and it needs also to be structured to adapt dynamically to changes in state rate regulatory regimes (i.e., as states transition from regulated to deregulated status, or vice-versa).

Some generators subject to cost-of-service regulation are advocating allowance allocation without cost, arguing that this will hold down rates to their electricity customers. They argue that if allowances are allocated without cost, generators will not be able to reflect the allowances market value in rate increases to customers, because rate regulators will not approve increases for zero-cost allowances. But there is no guarantee that regulators will do this. The allowances still have an opportunity cost (since the generators could sell them) and disallowing pass-through may prompt the utility to make uneconomic decisions regarding whether to generate or purchase power to serve its customers. And the regulators cannot prevent the pass-through of allowance costs for power that utilities purchase from unregulated generators, or power that generators sell into competitive wholesale markets.

In competitive electricity markets, where electricity rates are set by marginal costs, there is no question that customers would see electricity rate increases that reflect the market value of allowances, regardless of whether they were initially paid for or allocated without cost. In that case, allocation without cost leads to a windfall for the generators.

There are a number of problems with developing two sets of allocation rules based on this distinction. First, the distinction is not clean and simple. Even in cost-of-service markets, state rate regulations and practices differ in important details. As a result, regulators can be expected to vary in their treatment of freely-allocated allowances. Second, as already mentioned, state rate regulation continues to be in transition. Some states are moving towards competition; others back towards some forms of regulation. The allowance allocation formula needs to be dynamic in adjusting to these changes. Third, these markets overlap. Vertically integrated utilities that operate under cost-of-service regulation frequently buy and sell power in competitive wholesale markets.

One solution would be to allocate allowances to electricity *distribution* companies on behalf of their customers (load-serving entities), rather than generators. Under this approach, the portion of allowances that are freely allocated to the electricity sector would be allocated in proportion to some combination of the distribution company's number of customers and electricity sales using a methodology designed in a way that would not penalize utilities that have already made substantial investments in energy efficiency. The allocation should also be updated periodically in order to avoid penalizing utilities that operate in areas where the economy is growing or providing windfalls to those operating in areas of economic decline. But the updating methodology should not penalize utilities that successfully reduce demand for electricity by helping their customers improve energy efficiency.

In markets with cost-of-service regulation, the distribution company and the electricity generator are generally the same entity but, for the reasons stated above and in the discussion of windfall profits in the overview response, it makes an enormous difference if the allocation goes to the distribution company on behalf of its customers rather than to the generator on behalf of its shareholders.

Distribution companies are regulated even in markets with competitive generation. In these areas, allocating the no-cost fraction of allowances to the distribution companies instead of the generators helps protect electricity customers. The legislation should direct distribution companies to use the value of the allowances they receive to reduce the cost of the program for customers in the most cost-effective way possible, by supporting energy efficiency programs, providing additional assistance to low income customers, and returning value directly to all customers through lower distribution charges.

Allocating to distribution companies would be effective regardless of the point of regulation. For example, in an upstream system fossil fuel producers would be required to obtain allowances from distribution companies. In this case the cost of these allowances would be rolled into fuel prices, higher fuel prices would raise generation costs, but most of these increased costs would be compensated by the revenue that the distribution company obtained by selling allowances to the fuel producers. The incentive to reduce emissions would be retained because the costs of the most carbon intensive fuels would increase the most, encouraging more efficient generation and a switch to cleaner fuels. Electricity generators should be able to earn allowances by capturing $CO_2$ and permanently disposing of it in geologic reservoirs.

In a midstream system electricity generators would be required to obtain allowances from distribution companies. In many cases this will be the same entity. In other cases the cost of allowances will raise the marginal cost of generation but customers will again be largely compensated by the revenue that the distribution company obtained by selling allowances to the generator. In this case the generators have a direct incentive to reduce emissions to reduce the number of allowances they need to obtain.

**Clarifying Questions 2g:**

***Allocations for energy-intensive industries?***

- Is there a sufficient policy rationale to have an allocation to selected energy-intensive industries? What industries should be included in the allocation?
- What portion of the overall allocation framework should be reserved for these industries?
- What are the appropriate metrics for determining allocations across different industries?

Energy-intensive electricity consumers would benefit from investments in energy efficiency by electricity distribution companies under the proposals made under 2f. Similar arrangements could be developed to support efficiency investments by intensive natural gas users. Energy intensive industries could also benefit from allowance allocations made to support big-change technologies under 2a (remembering that the list of specific technologies set forth there was not intended to be exclusive).

**Clarifying Questions 2h:**

***Allocations to other industries/entities?***

- What other industries/entities (e.g. agriculture, small businesses, etc.) should be considered in the allocation pool?
- What should be the basis for their share of the total allocation as well as for the distribution among such industries/entities?

Small businesses, farmers, and others would benefit as energy consumers from the proposals we have made above regarding allocations to support energy efficiency investments, and for certain rate rebates.

*Should a U.S. system be designed to eventually allow for trading with other greenhouse gas cap-and-trade systems being put in place around the world, such as the Canadian Large Final Emitter system or the European Union emissions trading system?*

**Clarifying Question 3a:**

- Do the potential benefits of leaving the door open to linkage outweigh the potential difficulties?

A U.S. cap-and-trade system should be designed to eventually allow for trading with other countries' global warming cap-and-trade systems. The proposed safety valve mechanism, however, poses a serious impediment to U.S. participation in international trading systems.

Economic research shows that linking national cap-and-trade systems improves the overall efficiency of trading because larger markets should be more liquid and more efficient at allocating resources towards cost-effective emissions reductions. Linking markets should lead to macro-economic benefits because participants have a broader range of emission reduction opportunities and that should therefore lower the overall cost of compliance.

If the U.S. system employs a safety valve mechanism, however, linkage with other systems will not be possible. The market price of $CO_2$ in the European Union's emissions trading scheme, for example, is already higher than the proposed U.S. safety valve. If trading were allowed between the EU and the U.S., a major distortion would occur. European firms (acting directly or through brokers) would seek to purchase U.S. lower-priced allowances. Their demand would almost immediately drive the U.S. allowance price to the safety valve level, triggering the "printing" of more American allowances. European demand for newly-minted U.S. safety valve allowances would continue until the EU price dropped to the same level. The net result would be to flood the world market with far more allowances – and far less emission reduction – than anticipated even under the NCEP recommendations.

Much like other forms of trade barriers, a safety valve distorts the free flow of allowances in an international trading system. The distortions described here are similar to those that occur when a country attempts to fix the price of its currency and avoid letting its currency find its appropriate exchange rate based on market forces.

Even if the U.S. law permitted international emissions trading, there is no likelihood that other countries would allow their systems to link with the U.S. if it contained a safety valve that produces an artificially low price for allowances. Thus, markets will remain split and the benefits of international trading will not be achieved.

**Clarifying Question 3b:**

- If linkage is desirable, what would be the process for deciding whether and how to link to systems in other countries?

**Clarifying Question 3c:**

- What sort of institutions or coordination would be required between linked systems?

The national registry system under the Kyoto Protocol was designed for just this purpose. It is, in fact, based directly on the computer-based allowance tracking system developed by the U.S. EPA to facilitate trading in the acid rain program.

Assuming we did not have the distortion of a safety valve, and assuming the U.S. reached agreements with other countries to permit international trading, the U.S. could readily adopt a domestic registry that would interlink with other nation's registries and allow trading on the same seamless basis as under the acid rain program.

*If a key element of the proposed U.S. system is to "encourage comparable action by other nations that are major trading partners and key contributors to global emissions," should the design concepts in the NCEP plan (i.e., to take some action and then make further steps contingent on a review of what these other nations do) be part of a mandatory market-based program? If so, how?*

The Bingaman-Specter resolution was a major step towards resuming of U.S. leadership role on global warming. In the June 2005 resolution, a majority of the Senate dramatically emphasized that the U.S. needs to take a first step on its own in order to *encourage* comparable action by our trading partners and key developing countries. The resolution says that while our subsequent actions should be guided in part by the actions of other countries, we need to take the lead to encourage other countries to take comparable action.

NRDC has proposed, in answer to question 5, that the U.S. adopt a long-term declining cap to cut our emissions in half by 2050. Our answer to question 5 sets forth the basis for the proposed declining cap: it is aimed at keeping $CO_2$ concentrations from exceeding 450 ppm, and it is premised on the U.S. not exceeding a fourth of the cumulative global emissions budget that is compatible with that concentration target.

"Comparable action" should be defined as the actions needed from other countries, in concert with U.S. adoption of the proposed declining cap, to keep the world on the 450 ppm pathway. Staying on the 450 ppm pathway requires other developed countries to reduce emissions at similar rates. It also requires the key developing countries to reduce and ultimately reverse their own emissions growth.

U.S. leadership is critical. Other countries are unlikely to act on the necessary scale if the U.S. does not lead.

Nonetheless, it is important to recognize that other countries are *already* acting in advance of U.S. leadership. Nearly all other developed nations (with the exception of Australia) have ratified the Kyoto Protocol and bound themselves to meeting emissions targets that, considered as a whole, reduce emissions below 1990 levels. The EU, for example, is committed to an 8% reduction below 1990 levels for the years 2008 through 2012. Canada and Japan are committed to reduce emissions 6% below that level. Compliance with these commitments will be achieved by a mix of domestic measures and use of international trading mechanisms (both emissions trading and the Clean Development Mechanism).

We should also recognize that key developing countries are also *already* taking actions to reduce their global warming emissions growth. For example:

- China's GHG emission intensity has improved due to macro economic reforms and energy sector liberalization. China's Eleventh Five-Year Plan, which goes into effect this year, calls for a 20 percent reduction in energy use per unit of GDP by 2010. China's renewables sector

is the world's fastest growing, at more than 25 percent annually. China has enacted a new Renewable Energy Law and vowed to meet 15 percent of its energy needs with renewable energy by 2020.[14]

- China has far surpassed the U.S. fuel efficiency standards for vehicles of all classes. China's new fuel efficiency standards require vehicle classes to achieve on average 34.4 mpg by 2005 and 36.7 mpg by 2008 (normalized for the CAFE test cycle). American fuel efficiency standards are calculated using the average fuel use of the entire fleet sold by an automaker. However, in China, as well as Japan, the standards require that each model sold meet the criteria. China's Standardization Administration finalized fuel economy standards for light-duty vehicles—cars and light trucks, including sport utility vehicles (SUVs)—that are up to twenty percent more stringent than U.S. CAFE standards. The standards will save 60 million tons of carbon in 2030, displacing 517 million barrels of oil in that year—equivalent to removing 35 million cars from the road. China's leaders are serious about enforcing the standards—vehicles that don't meet the standards cannot be certified for sale or operation—and intend to broaden them to include heavy duty trucks.[15]

- Brazil's GHG emission intensity levels have risen in recent years because of increased gas use, which increases emissions relative to hydropower, on which Brazil has traditionally relied. However, in the transportation sector Brazil has saved 574 million tons of $CO_2$ since 1975 through its development of ethanol, which is roughly ten percent of Brazil's $CO_2$ emissions over that period.[16]

Even though they have already begun to act, other countries (both developed and developing) are likely to take U.S. action or inaction heavily into account in deciding on their future actions. Our leadership is fundamental.

[14] "Gov't demands more focus on green energy," *China Daily* (Jan. 13, 2006).
[15] An and Sauer, *Comparison of Passenger Vehicle Fuel Economy and GHG Emisson Standards Around the World*, Prepared for the Pew Center on Global Climate Change, December 2004
[16] Baumert, Herzog, and Pershing, *Navigating the Numbers: Greenhouse Gases and International Climate Change Agreements*, World Resources Institute 2005, ISBN: 1-56973-599-9

**Clarifying Question 4a:**

- What metrics are most valuable for comparison of developed and developing country mitigation efforts to U.S. efforts?

In general, NRDC believes the statutory criteria adopted now for "comparable action" should not be overly prescriptive. There is much to learn and work out as other countries react to a reassertion of American participation and leadership. These factors call for retaining flexibility to flesh out the concept of "comparable action" based on experience as it unfolds between now and the first review of the U.S. program.

Certain fundamentals can be set forth, however. For example, other developed countries should be expected to have emissions caps; these might be embodied in the Kyoto Protocol, a post-2012 world-wide agreement, or other instruments involving a smaller group of nations. Key developing countries – by which we mean those large enough to be significant contributors to global emissions – should be expected to have adopted national or sectoral policies to reduce emissions growth (either directly or through other measures, such as those that China has already undertaken).

NRDC believes that if the U.S. establishes the recommended long-term declining cap, there will be a substantial opportunity to negotiate near-term agreements from key developing countries on so-called "no lose" targets for at least some sectors, with linkages to international emissions trading mechanisms.

For example, a developing country might agree to a benchmark or target for reducing the rate of emissions growth in its electric generating sector. If emissions are below the benchmark or target, the country would have surplus emissions allowances to sell in emissions trading markets. This arrangement would open the door to new capital flows for cleaner energy development, and for attractive means of financing those projects in advance of making the emissions reductions. If the benchmark or target were exceeded, the country would not gain the capital flow from selling emissions allowances.

**Clarifying Question 4b:**

- What process should be used to evaluate the efforts of other nations and how frequently should such an evaluation take place?

See prior answer.

**Clarifying Question 4c:**

- Are there additional incentives that can be adopted to encourage developing country emission reductions?

The primary need is for the U.S. to show leadership in reducing emissions and to re-engage in international fora, ranging from bilateral relationships to the multilateral UNFCCC/Kyoto framework. If the U.S. shows leadership, and if the U.S. structures its program properly (see answer to 4a), then strong market-based incentives will promote developing country emission reductions as a way to access new capital flows for sustainable development.

*If there is an additional topic related to the design of a mandatory market based program that you would like to address, please submit comments on this form.*

While recognizing the value of the White Paper in advancing consideration of global warming legislation, NRDC believes it is critical to look at all relevant aspects of the legislative proposal under development.

The landmark June 2005 Sense of the Senate resolution called for legislation to set mandatory market-based limits to slow, stop, and reverse the growth of global warming pollution. The actual bill under consideration, however, is significantly less ambitious than the Senate resolution. The bill proposes to follow the NCEP's recommendation to take a small first step with emissions limits that address only an initial 15-year period, leaving further reductions until a second political decision a decade from now. Taking into account the impact of the bill's $7/ton "safety valve," the bill will only slow emissions growth, not reverse or even stop it.

The bill is based on the judgment that the political system cannot absorb more than a small first step, and that there is still time to take a second political decision on emission reductions a decade from now. That latter half of that judgment may have been correct if we had taken the first mandatory steps five or 10 years ago. But if the goal is to stop short of truly dangerous $CO_2$ concentrations (staying below 450 ppm), there isn't sufficient time for this "two-step" strategy.

The question is whether there is a more ambitious, but still centrist and bipartisan approach to successful climate legislation – a package with the potential for more effective climate protection while still meeting the needs of business constituencies.

***The "slow start/crash finish" dilemma***

Most serious climate scientists now warn that there is a very short window of time for beginning serious emission reductions if we are to avoid truly dangerous greenhouse gas concentrations without severe economic impact. Delay makes the job harder. The National Academy of Sciences recently stated: "Failure to implement significant reductions in net greenhouse gases will make the job much harder in the future – both in terms of stabilizing their atmospheric abundances and in terms of experiencing more significant impacts."[17]

In short, a slow start means a crash finish – the longer emissions growth continues, the steeper and more disruptive the cuts required later.

If we start soon, we can stay on the 450 ppm path with an annual emission reduction rate that gradually ramps up to about 2.8% per year. But if we delay a serious start by 10 years and continue emission growth at or near the business-as-usual trajectory, the annual emission

[17] National Academy of Sciences, *Understanding and Responding to Climate Change: Highlights of National Academies Reports*, p.16 (October 2005), http://dels.nas.edu/dels/rpt_briefs/climate-change-final.pdf (emphasis added).

reduction rate required to stay on the 450 ppm path jumps two-fold, to 5.7% per year. (See Figure 1.)

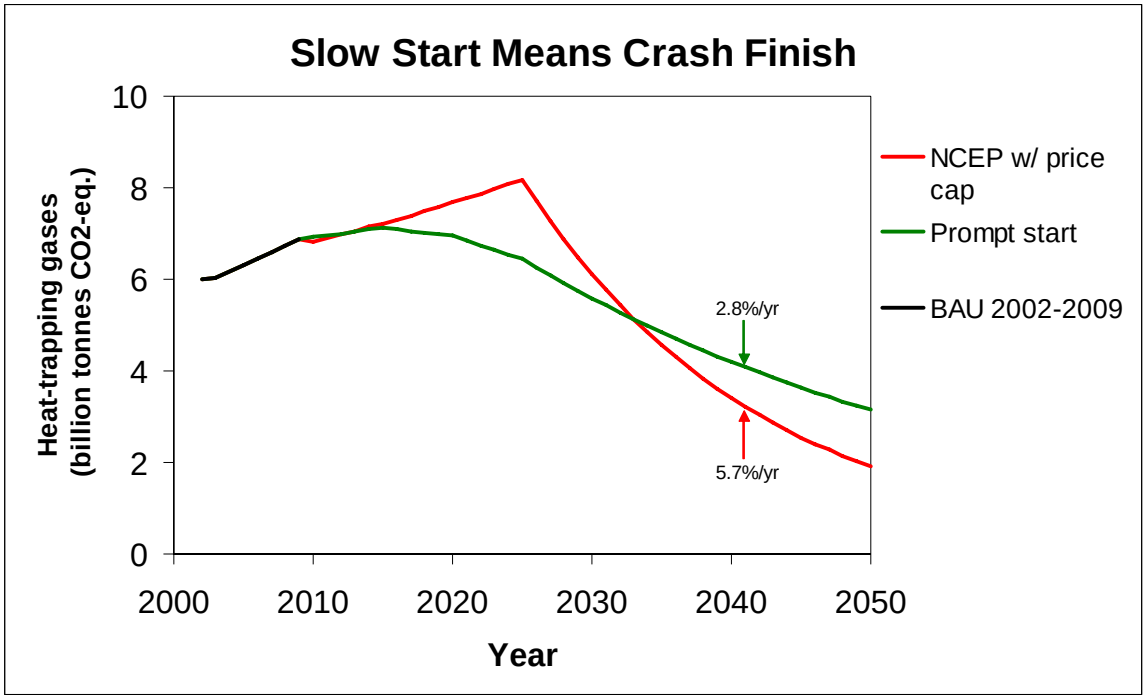


**Figure 1.** Total cumulative emissions (2002-2050) for both scenarios are 75 billion tonnes carbon-equivalent (GtC). This budget is an indicative U.S. share (20%) of the global emissions budget required for stabilizing the concentration of $CO_2$ in the atmosphere at 450 ppm. The "Prompt start" (green) curve follows the emission reduction schedule proposed above. With reductions starting in 2016, emissions need to decline by 2.8%/year from 2026-2050 to result in total cumulative emissions of 75 GtC over the period. The "NCEP w/ price cap" (red) curve follows the emissions path projected by EIA through 2025 for the cap and trade policy proposed by NCEP (including the proposed "safety valve" price cap starting at \$7/ton$CO_2$). To meet the same 75 GtC emissions budget, emissions must decline much more rapidly, by 5.7%/yr, from 2026-2050.

In the past, some analysts have argued that the delay/crash action scenario is actually the cheaper course, because by then (somehow) we will have developed breakthrough technologies. But it should be apparent that the crash reductions scenario is implausible for two reasons. First, reducing emissions by 5.7% per year would require deploying advanced low-emission technologies at least several times faster than *conventional* technologies have been deployed over recent decades. Second, the effort would require prematurely retiring billions of dollars in capital stock – high-emitting power plants, vehicles, etc. – that will built or bought during the next 10-20 years under short-term and lenient targets.

It also goes without saying that U.S. leadership is critical. Staying on the 450 ppm path requires other developed countries to reduce emissions at similar rates, and requires the key developing countries to dramatically reduce and ultimately reverse their emissions growth. Other countries are unlikely to act on the necessary scale if the U.S. does not lead.

***Is there a more ambitious, yet still centrist, approach?***

Under the current proposal, we would take only a small first step to slow emissions growth, but put off decisions on reversing emissions growth to a future political decision a decade down the road.

This approach has shortcomings from both environmental and business perspectives. As noted above, from the climate protection standpoint, it risks locking us into dangerous $CO_2$ concentrations or requiring reductions to be made later on a disruptive crash basis – or both.

From the business standpoint, a small first step does not provide certainty or stability. If the long-term emission reduction pathway is known, companies can determine the optimal pace of technology investments. But if the target is identified no farther out than 10-15 years, and what follows is only a big question mark, markets cannot function efficiently. In addition, if global warming remains an unresolved political issue, businesses will have to continue managing a constant stream of new legislative proposals and other forms of political pressure. Finally, businesses will still run the risk of crash reductions being imposed later.

Thus, a small first step, even though mandatory, may leave both the climate and economic systems as much in limbo as the status quo. Without taking away from the political value of the Bingaman-Domenici initiative, it is important to ask whether there is a way to build a bill that is both sufficient to meet the climate challenge and still centrist enough to pass. We think the answer is "yes."

Toward that end, we want to propose three strategic changes to the bills:

- Adding long-term, declining emission limits,
- Adopting borrowing as a new cost-control device, and
- Refocusing the safety valve price as a trigger for presidential/congressional review.

These three proposals would complement the allowance allocation discussion already launched by this White Paper, namely whether there are strategic uses of valuable allowance allocations to advance needed technologies, protect consumers, and meet the needs of key constituencies. Together, these four elements can be the key to developing centrist, bipartisan support for truly effective climate protection legislation that also protects the economy.

The case for the three proposed strategic changes is explained below.

**1)** ***Long-term declining emission cap.*** An effective bill needs to address the long-term need to slow, stop, and reverse emissions growth by including a progressively declining cap. The cap would hold cumulative U.S. emissions to a fair share of a world-wide emissions budget that keeps $CO_2$ concentrations from rising above 450 ppm. This requires cutting U.S. emissions to roughly half current levels by 2050, as in Figure 1.

Consistent with Figure 1, NRDC recommends setting a declining cap as follows:

- Freeze emissions in 2010, and hold them steady through 2015.
- 0.5%/yr reduction for 2016-2020
- 1.5%/yr reduction for 2021-2025
- 2.8%/yr from 2026 onward

Though set in law at the outset, the declining cap would be subject to periodic presidential or congressional review and adjustment, based on science, economics, and the state of international cooperation.

This longer-term approach would accomplish three goals: Putting the U.S. on a path to meet our real climate protection needs, providing longer-term business certainty, and opening the door to a new and innovative cost-control proposal.

**2)** ***A new approach to controlling costs.*** While the cap-and-trade model has worked well for acid rain control, many observers believe a cap-and-trade program for global warming needs some safeguard against unanticipated costs. That has led to the NCEP-Bingaman proposal for a $7/ton "safety valve."

The fundamental problem with the safety valve – and with offsets in other legislative proposals – is that both options break the cap without ever making up for the excess emissions. Simply put, the cap doesn't decline or, worse, keeps growing. A better approach to cost-control is possible.

Adopting long-term emission limits opens the door to a new cost-control proposal – allowing firms to *borrow* future emissions allowances, repaying them later with interest. This would supplement the more familiar option of *banking* (making reductions in advance) that is already built into current proposal. Together, banking and borrowing can stabilize long-term costs and eliminate the risk of price spikes while preserving the environmental integrity of the long-term caps. The ability to control costs while maintaining the long-term emissions caps is a clear advantage over either the safety valve or offsets, which allow permanent emissions increases.

**3)** ***Repurposing the "safety valve."*** With borrowing as the primary cost-control mechanism, the safety valve should be refocused for a different purpose – as a trigger for presidential/ congressional review. Thus, in addition to regular reviews at prescribed intervals (e.g., every five or 10 years), an earlier review would be triggered if (even after borrowing) the cost-per-ton still rose above a specified price for a sustained period. Based on the current science, economics, and state of international cooperation, Congress would then decide whether or not to modify the cap and schedule.

We would like to explore whether these three ideas, together with strategic use of emissions allowance allocations, have the potential for bridging the gap between environmental and business interests and for building centrist, bi-partisan support for more effective climate legislation.