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Executive Summary of Responses by Duke Energy Corp. to Questions Posed in the February 2006 White Paper Entitled "Design Elements of a Mandatory Market-Based Greenhouse Gas Regulatory System"

The key points in Duke Energy's responses to the White Paper are summarized below:

Question 1 – Who is Regulated and Where?

- A GHG regulatory program should be *economy-wide*. A "comprehensive and effective national program" on climate change, as endorsed by the Sense of the Senate resolution, must have economy-wide coverage. Exclusion of sectors or GHGs from a program would be unfair and economically inefficient, and would reduce program effectiveness.

- For CO_2 emissions, the point of regulation should be *upstream*. An upstream approach allows maximum coverage of a GHG policy. Downstream and other approaches would likely result in more limited coverage, fragmented program approaches, economic inefficiency and greater administrative complexity and costs.

Question 2 – What Should Be Done with Allowances?

- Some allowances should be allocated as necessary to mitigate significant economic dislocations resulting from GHG policy. The critical inquiry is determining which entities incur significant costs as a result of the climate policy, not which ones are directly subject to the regulatory requirements.

- Point of regulation and receipt of allowances should be delinked. Decisions on who receives allocation of allowances can and should be independent of decisions on the point of regulation. For instance, with an upstream system, certain downstream fuel consumers, although not directly regulated, may bear significant burdens without judicious allocation of allowances.

- Some allowances should be auctioned, with revenues used, for instance, to support research, development and demonstration of new, innovative technologies.

- Offset projects should earn credits from outside the allowance pool.

Additional Topics – Safety Valve and Sustained Gradual Emission Limits are Essential; Carbon Tax Should Also be Considered as a "Mandatory Market-Based System.".

- A U.S. policy should reduce emissions *gradually* over a long time horizon, beginning the effort in the near term.

- A GHG program should provide price certainty, *e.g.*, through a *safety valve* mechanism.

- The Committee also should consider a *carbon tax* approach. A well-designed carbon tax policy is a sound market-based climate change policy, providing economy-wide coverage, price certainty, gradual timing and administrative simplicity. Most economists believe a carbon tax approach is more economically efficient and less administratively complex than a cap-and-trade program.

March 13, 2006

John W. Rowe/Exelon Corporation
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Executive Summary

Question 1

An economy-wide program is the best approach to reducing U.S. GHG emissions. This approach would avoid economic distortions across fuels and within domestic sectors. While some may argue that limiting the programs to select downstream sectors would be more expedient, it would likely displace or shift emissions rather than reduce overall U.S. or worldwide emissions. An economy-wide program will reduce GHG emissions from the lowest cost sources within the economy, causing the least economic disruption.

Upstream point of regulation for GHG emission reductions best assures administrative simplicity and program effectiveness. Upstream point of regulation assures that carbon from all fossil fuel sources is included, and lessens the administrative burden by limiting the number of regulated entities. While seemingly attractive in certain sectors, downstream or hybrid point of regulation is inherently more complicated from an administrative perspective and increases the potential for economic distortions among fuel sources and among economic sectors.

Question 2

To assure that the sudden adoption of a mandatory greenhouse gas program would not impose an undue economic burden on energy end users, policy makers should design a program that gradually transitions from free emission allowances to an auction. An example would be a program that begins by distributing 90% of allowances for free to mitigate fossil fuel price increases and un-reimbursed program costs during a defined transition period. The remaining 10% of allowances would be sold at auction, with the auction proceeds used to fund other public policy objectives, such as research and development, low income assistance, adaptation development, etc. Over time (say 40 years), free allowances would be phased out, and the percentage of auctioned allowances would grow to 100%.

There is no single set of criteria or method that would satisfactorily allocate free allowances across the entire economy. Allocations would have to be performed by an administrative agency that had the authority and resources to consider a wide variety of regional, industry and company specific factors. There nonetheless are a number of common principles that the agency should apply in performing allocations, suggestions for which are enumerated in our response.

In the electricity and natural gas sectors, allowances should be allocated to state regulated electric and gas distribution companies, rather than electrical generators, to assure that end users and consumers, who will see the price of greenhouse gas regulation in their energy bills, get the benefit of the free allowances. As a general principle, free allowances should not be given to other entities to further other public policy objectives. Limiting the distribution of free allowances in this way would protect against both windfalls and undue economic burdens.

Questions 3 and 4 – See the attached documents for responses to these questions.

Submitter's Name/Affiliation: Stephen Ramsey/David Slump/General Electric Company
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1. **Point of regulation:** Ultimately, an economy-wide system that would include all sources, sectors and GHGs would be most equitable, but in reality, the complexities of implementing an economy-wide system initially could create substantial disruption to the US economy and an overwhelming administrative burden for the government, while not optimizing the outcome for any sector of the economy.

2. **Allowance allocation:** Assuming a cap and trade system is adopted: The cost of regulation should be mitigated to minimize impacts on economy, and allowances are an appropriate mechanism for achieving this result. Most allocations should be provided free in the early stages. An appropriate percentage of allowances should be reserved for R&D and to stimulate early adopters that deploy newer, cleaner technologies in the electricity generating sector, including new nuclear, IGCC and renewables and cleaner, more efficient transportation technologies.

3. Linkage: By connecting with other GHG trading systems around the world, the US can achieve the greatest emissions reductions at the lowest cost.

4. **Encouraging Comparable Action:** It is important for major developing countries to participate in GHG reductions, and the NCEP plan represents one approach to achieving that objective. The most useful metrics in comparing programs would be the countries' percentage change in GHG emissions – both in absolute terms and relative to their change in GDP. There are a number of steps the US could take to encourage participation by developing countries.

Additional Topics: 1. GE supports development of market-based programs to slow, eventually stop, and ultimately reverse the growth of emissions of greenhouse gases (GHGs). The program should not unreasonably inhibit growth, as growth coupled with incentives will provide the resources necessary for industries to modernize with cleaner, more efficient technologies. The design of a market-based program needs to carefully consider the impact on the national goal of energy security and our need to expand our utilization of abundant, indigenous coal. The most critical element for any program, whether economy-wide or sector-based, is inclusion of a mechanism that assures that carbon is priced in the energy equation. 2. Climate change can most effectively be addressed by technology. Technology-forcing incentives and requirements are a necessary element of any program. If the program's objective is to slow, eventually stop, and ultimately reverse the growth in emissions, public policy should encourage parallel efforts (a) to accelerate deployment of existing, proven lower emitting technologies to slow emissions, and (b) to encourage development of next generation, break-through technologies to stop and reverse emissions. GE has a range of technologies in both the electricity generating and transportation sectors and in consumer and industrial applications that are cleaner and more efficient. These technologies could help to slow the growth in GHG emissions. 3. We recommend that the Committee consider an independent evaluation of the benefit of implementing a comprehensive program of GHG reductions on the one hand versus the impact on our economy of implementing such a program on the other hand. The evaluation should be completed as soon as possible.

Submitter's Name/Affiliation: Jeff Sterba, PNM Resources
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Executive Summary

1. *Point of Regulation*
   - Given the magnitude of the issue of climate change, PNM Resources (PNM) believes that, in order to be comprehensive and effective, a greenhouse gas (GHG) regulatory program should cover all sectors of the economy.

   - On point of regulation of fossil fuels, it is our view that a GHG program should take a hybrid approach: an "upstream" regulatory approach for fuels with millions of users - petroleum and natural gas, and a "downstream" approach for coal which has fewer users. Regarding the upstream point of regulation for natural gas and petroleum, PNM does not have a specific recommendation but urges the Committee to take into consideration administrative simplicity and economic efficiency. For coal, we recommend downstream regulation for coal users with an exception for *de minimis* users.

2. *Allocation*
   - In PNM's view, the great majority of allowances (e.g., 95%) should be allocated without cost in order to transitionally manage the costs associated with regulation. The remaining 5% could be auctioned with the revenues funding important climate change policy objectives through a dedicated Technology Fund to promote new emission-free technologies, and, to a lessor extent, measures for mitigation and adaptation such as low-income residential consumers and vulnerable segments of the manufacturing sector.

   - PNM also believes it is important to provide credits for early reduction and offsets, so long as they meet standards for environmental integrity.

3. International Trading
   - PNM believes there could be significant economic value and substantial potential emission reductions in allowing U.S. companies to invest outside the U.S. to achieve verifiable offsets. We would also support participating in international trading to the extent reasonably feasible.

4. Comparable International Action Requirement
   - PNM Resources believes it is appropriate for the U.S. to take the lead in addressing climate change; however, the nature, scope, and economic impact of climate change requires the U.S. to pursue mechanisms, such as the Asia-Pacific Partnership, to bring in other major nations.

5. Safety Valve
   - We urge the Committee to include a safety valve in any mandatory program in order to provide greater compliance cost certainty and mitigate the distorting effects allowance market price spikes would have in encouraging substantial and undesirable investments in natural gas generation, particularly at the early stages of the program.

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Executive Summary

Sempra Energy appreciates this opportunity to comment on your proposed Design Elements of a Mandatory Market-Based Greenhouse Gas Regulatory System, dated February 2006. Sempra Energy (NYSE: SRE), based in San Diego, is a Fortune 500 energy services holding company whose subsidiaries provide electricity, natural gas and value-added products and services. The Sempra Energy companies' more than 14,000 employees serve more than 29 million consumers in the United States, Europe, Canada, Mexico, South America and Asia.

Sempra Energy found the Climate Proposal of the National Commission on Energy Policy to be well thought-out and contain a number of ideas worthy of serious consideration. The broadly represented Commission proposal suggests that their ideas could find support from both the business and the environmental community. We believe the questions raised in your Design Elements document are going to be the crux of serious debate at the national level on the regulation of greenhouse gasses (GHG), and we would like to provide our thoughts on these issues.

Sempra Energy believe that a national cap & trade program designed to reduce GHG emissions needs to include a hybrid auction of allowances in a national GHG cap & trade program that allocates some allowances to downstream electric generators. This Cap & Trade program should also allow for banking and the use of offsets to minimize costs. Sempra Energy also believes that a provision for a financial safety valve, as originally proposed as part of the amendment to the Energy Bill, is very important. Lastly, Sempra believes that any national program of this nature must provide for a direct linkage to international cap & trade programs. It is important that the primary goal of such a national GHG program be to encourage the development of innovative new technologies not only for electric generation, but also for GHG sequestration and environmental adaptation.

Sempra Energy is in a position to provide some unique value to your April Climate Conference for a number of reasons. These include our experience in California, which is presently establishing a cap on GHG emissions associated with the electric load served by our utilities, our leadership in national LNG infrastructure, and our international presence in generation, pipelines and LNG. Sempra Energy has been debating this issue with California's environmental policy-makers for a number of years, and has expressed its interest in helping to make the program work, as most recently proposed by the California Public Utilities Commission.

We are also at the cutting edge in pursuing acquisition of renewable energy resources, and understand the need for adequate electric transmission infrastructure to provide access to those resources. We look forward to participating in your Conference.

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We have included answers to all four questions that are summarized below.

A "market-based approach" to climate change is one that creates commodity value for "carbon dioxide emissions" (and other greenhouse gases) through measures such as emission caps (e.g. a particular sector of the economy having a total limit on CO2 emissions placed on it) or performance standards (e.g. new automobiles to target a certain CO2 emissions per mile driven), and then allows the market to trade that commodity in order to optimize its use.

The role of an emissions trading system is to direct capital within the covered sector to the point at which it can be most effectively used to mitigate emissions. Within this, there will be periodic compliance obligations to contend with, effectively driving the system forward. Conversely, the objective is not to withdraw capital from the economy and redistribute it to projects according to some subjective or non-market based set of criteria.

The periodic compliance obligations are derived from a long-term national objective, without which an emissions trading system can function.

Capital is used to invest in facilities and mitigate emissions through certain projects. The projects then deliver the necessary reductions that free up allowances for trading in the market.

This means that the point of regulation, i.e. the holder of allowances, should be both the emitter and the party that can initiate the projects that create the reductions.

At the start of a new emissions trading scheme, grandfathering has much to offer in terms of simplicity and a relatively easy transition from business as usual to carbon managed businesses. However it is not sustainable in the long term. Whilst some industries might be able to use a benchmarking approach for allowance allocation, this is unlikely to be universally applicable. Auctioning offers the necessary transparency of allocation, but withdraws capital from the market. An auction-based approach with transparent "in-built" recycle addresses many of the allocation issues and is illustrated in our Q2 submission.

Some technologies needed to mitigate emissions hardly exist today, with one particular example being geological carbon capture and storage. Yet the scale of change (http://www.wbcsd.org/web/publications/pathways.pdf) required in our energy systems over the next 25 and 50 years to address the climate change issue indicates that these technologies will play an important role. Therefore, development funding needs to be set at a level commensurate with the objective of short to medium term commercialization (e.g. 10 years) through a number of large-scale demonstration facilities. Government needs to play a role in such projects, possibly through the funding of one-off infrastructural developments (e.g. CO2 pipeline network) and a proactive approach to planning and construction permit approval.

Addressing climate change is a global issue that will require action by all countries. An open architecture approach, which encourages a global carbon market through linking with other systems, is the most positive way forward. The incentive offered by a global price for CO2 through accessible commodity instruments will encourage a wider number of participants to seek reductions. This will result in a lower overall cost for a given goal.

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Provide an executive summary of your response(s). ***Do not exceed the remainder of this page.***

Southern Company strongly supports a voluntary approach to the climate change issue that focuses on development and deployment of innovative, cost-effective, lower-emitting technologies. We oppose approaches that impose mandatory regulation of CO_2 and/or greenhouse gas (GHG) emissions – whether they are intensity-based, cap-and-trade-based, or tax-based. Our comments on certain aspects of a mandatory program are made in response to the Committee's request and should not be construed to constitute endorsement of any mandatory program to address GHGs or CO_2. Southern Company is also a member of the Edison Electric Institute (EEI) and hereby supports and endorses EEI's comments on the White Paper.

It is important to note that the Committee's request for comments has left out the most basic elements that define the stringency of any GHG control program – the timing of its imposition, the level of reductions required, and the availability of cost-effective technology with which to comply with the program. The Committee has also left out the important issue of whether there is a safety valve, an important feature that can limit the economic impact of any such program. These omissions make it difficult for interested parties to comment on the other aspects of a mandatory program.

As to the Committee's specific questions, on the point of regulation, we favor approaches that address the GHG emissions of all sectors, not just large emitters like fossil-fuel-fired electricity generation. There are pros and cons to regulation in an "upstream" or a "downstream" manner. The Committee should also consider hybrid systems that include an upstream point of control for some sources, like transportation, and a downstream point of control for others, like the electric utility industry (all within the context of an economy-wide cap and trade system).

Southern Company believes that allowances should be allocated to emitters, with a small set-aside for new sources, and, for utilities, should be based on heat input, using historical data. Southern Company generally opposes allowance set-asides for the many entities listed by the Committee because they increase the cost of the program for the customers of regulated entities.

Southern Company believes that the door should be left open for any domestic program to link to those in other countries. It is especially important that regulated entities be able to purchase and use international offsets for compliance.

As to whether further steps should be included in a mandatory program based on action by other countries, Southern Company believes that any further steps should require affirmative action by the Congress, and should be contingent on many factors, not just real action by other countries. For example, before taking further steps, the Congress should consider the need for such steps (from an environmental standpoint), and an assessment of whether technology is available.

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EXECUTIVE SUMMARY

Wal-Mart Stores, Inc. ("Wal-Mart") appreciates the opportunity to provide input to the Senate Energy and Natural Resources Committee on the "Design Elements of a Mandatory Market-Based Greenhouse Gas Regulatory System." As the largest retail company in the world, the largest private consumer of electricity in the United States and the owner of the largest private heavy-duty truck fleet in the country, Wal-Mart takes keen interest in the work of the Committee on this critical issue. Wal-Mart understands that the scope and scale of its business have significant environmental impact and that its operations lead to significant greenhouse gas ("GHG") emissions. However, the scope and scale of Wal-Mart's business also enable the company to effectuate substantial improvements on a global scale. Wal-Mart recently has adopted a number of strong commitments to sustainability. Our environmental goals at Wal-Mart are simple and straightforward: 1) to be supplied 100 percent by renewable energy; 2) to create zero waste; and 3) to sell products that sustain our resources and environment. A crucial part of reaching the company's environmental goals is reducing the company's GHG emissions and its impact on the world's climate. Wal-Mart already has taken steps to reduce its GHG emissions and is committed to making significant further progress. In the comments attached, the company provides input on each of the four questions posed by the White Paper.

Wal-Mart understands the critical need for action to address climate change and would accept the approach of a mandatory cap-and-trade system to control GHG emissions. Wal-Mart strongly believes that such a system must provide fairness to those companies and entities, like Wal-Mart, that have already taken substantial steps to reduce GHG emissions and that are committed to making further significant progress. Wal-Mart will not wait for a mandatory control system to reduce its GHG impact, but any mandatory system should recognize previous measures taken and should ensure future incentives for such investments and best practices. In addition, Wal-Mart's top priority always has been the well-being of its customers. Any GHG control system must protect the interests of all consumers.

Wal-Mart believes that electric generators, large industrial entities and the transportation sector are the logical sectors to be covered by a mandatory cap-and-trade system. These three sectors account for approximately 70% of the GHG emissions in the United States and represent sectors where emissions trading could most easily be implemented. Regardless of which sectors are regulated or where within those sectors emission limitations are imposed, Congress should set aside a portion of the allowances under emission caps for non-regulated entities that undertake projects to reduce GHG emissions. Such a set-aside must be used to incentivize companies to take beneficial action and reward them for doing so. Wal-Mart also believes that a U.S. cap-and-trade program should leave open the opportunity for integrating with other cap-and-trade programs around the world. In addition, Congress should ensure that trade barriers do not restrict the transfer GHG reduction technology to U.S. trading partners.

Wal-Mart believes that the U.S. should provide strong leadership on climate change, with the help of companies like Wal-Mart, while serving the interests of U.S. consumers. Wal-Mart welcomes the opportunity to participate in this process.

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Executive Summary

Comments by Dr. Margo Thorning, Senior Vice President and Chief Economist, American Council for Capital Formation on "Design Elements of a Mandatory Market Based Greenhouse Gas Regulatory System"

This submission includes responses all four questions included in the White Paper. The American Council for Capital Formation does not know how the Senate can design a mandatory GHG reduction program that is consistent with the Sense of the Senate Resolution -- the program should "not significantly harm the US economy" and should "engage comparable action by other nations that are major trading partners and key contributors to global emissions." Key to addressing climate change is to promote global participation and address climate risks in the context of developing countries -- Fossil fuels provide over 80% of the energy used in the U.S. to maintain our standard of living and promote robust economic growth. That is also the level used globally, which IEA projects will be maintained through 2025. The percentage of global GHG emissions from developed countries continues to decline, while that from developing counties increases with economic growth. There is no credible basis for assuming that major developing countries like China and India would adopt a mandatory program to reduce GHG emissions. Climate policy must address the links between energy use, economic development, international competitiveness and poverty reduction. Technology development and deployment offers the most efficient and effective way to reduce GHG emissions -- There are only two ways to reduce CO2 emissions from fossil fuel use -- use less fossil fuel or develop technologies to use energy more efficiently, to capture emissions or to substitute for fossil energy. There is an abundance of economic literature demonstrating the relationship between energy use and economic growth, as well as the negative impacts of curtailing energy use. Long-term, new technologies offer the most promise for affecting GHG emission rates and atmospheric concentration levels. In the interim, actions to reduce the growth of emissions should focus on the deployment of existing, efficient technologies, particularly in the developing world where current efficiency levels are lower than in the developed world. Use of cap/trade programs to drive GHG emission reductions will have a significant economic impact and creates disincentives for innovation -- Cap/trade systems for greenhouse gas emissions, whether downstream or upstream, would be overly bureaucratic and result in sectoral distortions due to the differential application of caps and/or the selective allocation of credits. These sectoral distortions result in raising the cost of GHG reductions and unfairly favoring or damaging individual business sectors. Cap/trade systems with auctioned credits or 'safety value' government sales of credits are distorted tax systems, incurring the economic damages of a carbon tax without the efficiency of a uniform, economy-wide cost of carbon emissions. Implementation of a carbon tax to drive GHG emission reductions will have a similar economic impact as a cap/trade system -- A carbon tax would raise energy costs significantly and have an economy wide impact. For example, a CO2 price of about $27/MtCO2 (or $100/MtCarbon) is equivalent to about a $10 per barrel increase in oil prices.

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Provide an executive summary of your response(s). ***Do not exceed the remainder of this page.***

Overall Trading System Design: We recommend for consideration use of a hybrid approach in which a downstream system for power plants and large industrial sources is combined with upstream caps on oil refiners, natural gas processing plants and fuel distribution companies. Such a system combines the political advantages of a downstream approach (for example, a downstream program is more familiar and it is easier to require reductions from large sources than from small ones) with fairly broad coverage via an upstream cap for small sources in the residential, commercial and transportation sectors. For details on this hybrid approach, please see, "An Upstream/Downstream Hybrid Approach to Greenhouse Gas Emissions Trading" located at http://www.ccap.org/publications_climate.htm#AIRLIEPUB .

Allowance Allocation: From a purely economic standpoint, the preferred allocation method is an auction in which revenues are recycled to lower taxes. This method minimizes the overall costs to the economy. However, an auction with revenue recycling is criticized by many in industry as requiring them to pay twice—once for the greenhouse gas mitigation or other compliance activities and once for the purchase of allowances. Also, use of all auction revenues to lower taxes removes a powerful opportunity to simultaneously advance the technologies needed to move to a less carbon-intensive economy, and later, to adapt to future climate conditions. Therefore, while we would encourage the use of an auction and tax rebates to account for a portion of the overall allocation, we believe that the development of winning legislation and effective climate strategy will include allocations to industry and consumers as well as a sizeable dedicated allocation for the advancement of climate-friendly technologies.

Linkages with Other Systems: Climate change is a global problem that requires a global solution. Linkages across systems are needed to encourage the most cost-effective control strategies. There is the potential for such linkages to benefit the US to the extent that lower cost opportunities are available elsewhere. Advantages to US industry from linkages may include greater liquidity and greater certainty in the availability of allowances at a prevailing international market price.

Maintaining Competitiveness: Finally, in response to concerns that a mandatory control program will place US industry at a competitive disadvantage to industries in developing countries while failing to achieve climate goals, we suggest use of an active approach in which the US works with developing countries to develop equivalent targets for major energy and heavy industry sectors (e.g., electricity, cement, steel, oil refining, pulp and paper, metals) using a sector-based approach (see www.ccap.org/international/Sector%20Proposal~4-pager.pdf for details on this concept). This approach establishes a process for setting sector targets that use consistent, bottom-up technology based assessments at the start to achieve consistent levels of effort for the industrial sector in developed and developing countries.

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If policymakers decide to limit emissions of carbon dioxide, the primary greenhouse gas, through a cap-and-trade program, they face a choice about where in the production process to implement the regulation. An "upstream" cap would offer two significant advantages and one potential disadvantage over a "downstream" cap:

- An upstream cap would create economywide incentives for households and businesses to reduce their consumption of carbon-intensive goods and services. As a result, it would reduce emissions at a lower cost than if the cap (and resulting incentives for reduction) had been restricted to one downstream sector, such as the electricity sector.
- The costs and complexity of implementing an upstream cap, which would require regulating a limited number of suppliers of fossil fuels, would be significantly less than that of a comprehensive downstream system, which could potentially entail regulating millions of emitters.
- An upstream cap may not provide an incentive to adopt post-combustion technologies that facilitate the capture and sequestration of carbon emissions. Such an incentive could be created by a downstream system that determined allowance requirements on the basis of monitored emissions. An upstream system could provide incentives for sequestration if firms were allowed to meet their allowance requirements by paying for downstream sequestration.

Capping greenhouse gas emissions would impose costs throughout the economy: entities would pay for those costs in the form of higher prices, reduced profits, and lower wages. At the same time, the pool of allowances would have substantial value to those who hold them. Policymakers would need to decide whether to sell the allowances to regulated firms, to give them away, or to implement a combination of the two.

Selling allowances rather than giving them away would not increase the overall economic costs of the cap-and-trade program but would provide an opportunity to use the allowance revenue to reduce other economic distortions. For example, policymakers could use the new source of revenue to reduce existing taxes that tend to slow economic growth (that is, taxes on productive inputs such as capital and labor); to decrease the federal debt; or to fund other government objectives (which otherwise would rely on taxes on productive inputs). As a result, the level of economic activity could be higher if policymakers sold some of the allowances than if they allocated them all at no cost.

Alternatively, policymakers could give some allowances (at no cost) to select firms or individuals to offset the costs that they would incur under the new regulations. Decisions about compensation are complicated by several factors:

- Determining who bears the costs of the cap is difficult. Regardless of whether allowances are sold or given away, the costs of the cap are distributed throughout the economy based on underlying supply and demand conditions.
- Decisions about allocating allowances can increase the overall costs of achieving the cap if they are linked to decisions that influence current emissions. Basing decisions about allowance allocations on historic amounts of production, consumption, or emissions would avoid that problem.
- The costs of the cap would extend beyond firms and consumers to the federal government. Provided that policymakers wanted the government to at least break even under the cap, they would need to reserve a share of the allowances to offset the government's program-induced costs.
- Workers in carbon-intensive industries, such as coal, cement, or aluminum, would be adversely affected if the cap reduced production of those goods. Allocating allowances (at no cost) to firms in affected industries would be likely to benefit the firms' shareholders but not the firms' workers.

Finally, the inclusion of a safety valve in the cap-and-trade program could help keep the economic costs of the program in line with the expected benefits of reducing emissions.

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The Electric Power Research Institute (EPRI) has been actively engaged in climate policy research for almost 20 years. Our role is not to advocate specific policies, but to examine the implications of alternative policy choices so that we can inform public debate and private decision making. Two key perspectives guide our comments, the first being the critical importance of economic efficiency – achieving an environmental goal at least cost. Allowing emission reductions to be made when and where they are most economic along with inclusion of all greenhouse gases are fundamental tenets of economic efficiency.[1] The second key perspective is the realization that current policy proposals are an early step in addressing the issue of climate change. The ultimate effectiveness of a climate policy will be determined by its ability to provide the technologies necessary for making the transition to a low greenhouse gas emitting economy and how it evolves over the coming decades into a coordinated, international effort.

Question #1: Who is regulated and where? Economic analyses suggest that a cap-and-trade system should have as broad coverage as possible for at least three reasons: 1) to achieve any specified near-term greenhouse gas emissions target at lowest cost, 2) to make stabilization of greenhouse gases feasible, and 3) to allow the longer-term fundamental transformation of the energy system that is required to stabilize concentrations of greenhouse gases in the atmosphere. The point of regulation is: 1) not important from the perspective of environmental effectiveness, 2) not particularly important from the standpoint of economic efficiency (as long as coverage is the same), 3) very important in determining administrative feasibility, complexity and cost, and 4) independent from the decision about permit allocation.

Question #2 relates to allocation of permits without cost. Allocation of allowances without cost: 1) is unlikely to impact significantly the cost of the policy, 2) can partially or wholly offset large redistributions of income created by the policy but will likely require a significant fraction of permits,[2] and 3) should likely be revisited over time. While economic literature provides many insights into choices that affect cost-effectiveness, it provides little guidance about how costs should be allocated.

Question #3 relates to the importance of linkage with other trading systems. Climate change is a global issue. The potential benefits of integrating a U.S. trading system with other climate policies being implemented around the world are huge – it fosters engagement and cooperation with other countries, it can potentially provide substantial savings in policy cost, and it does not weaken the environmental integrity of a program.

Question #4 asks whether legislation should condition U.S. actions on comparable actions by others. The sequencing of country participation is both a strategic decision and one of equity. However, it is clear that stabilization of emissions, much less atmospheric concentrations, cannot occur without substantial participation by developing countries.

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[1] See Appendix A for a description of when, where, and what flexibility.

[2] There are a few published studies that suggest that companies' lost profits can be compensated by allocation without cost of a small fraction (e.g., 5-10%) of total permits. These theoretical findings depend on a number of idealized assumptions that are not likely to hold. Implementing such an approach is problematic.

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Appendix A

Economic analyses have shown that, whereas sizable emission reductions may entail substantial economic costs, the size of the costs can be reduced by measures designed to ensure economic efficiency. Specifically, providing flexibility as to "when", "where", and "what" gases are reduced can lower the costs of meeting stabilization goals.

When: Since climate change is a century-scale, cumulative emissions issue, flexibility in the timing of emissions reductions is critical for economic efficiency. Figure A-1[3] shows how an atmospheric CO2 concentration target may be achieved through either a rapid or a gradual transition to lower-emitting technology. An approach that permits gradual reductions initially with steeper reductions later has the smallest economic impact because a smooth transition minimizes the premature retirement of capital and allows time for the development and deployment of more advanced technologies that hold the promise of providing large, relatively inexpensive reductions by mid-century. To ensure that these options are available, however, public and private investment in energy technology development and deployment must be increased substantially over current levels in the very near term.

Where: Since the atmosphere is a commons, it does not matter where emissions are reduced. Policies offering flexibility in where emissions reductions occur yield significant economic benefit. Many of the lowest-cost potential emissions reductions are in developing nations like China, where substantial growth in generation capacity is planned, much of the current energy technology is dated and inefficient, and coal plays a large role both in direct use and in the generation of electricity. Policies employing "where" flexibility would enable the United States and other developed countries to obtain some credit for assisting developing nations in reducing emissions, helping achieve an agreed-upon international environmental goal at lower cost. See Figure A-2.

What: There are six categories of greenhouse gases (GHGs). While there is an understandable focus on CO2, reducing emissions of methane (CH4), nitrous oxide (N2O), sulfur hexafluoride (SF6), hydrofluorocarbons (HFCs), and perfluorocarbons (PFCs) is also important. Methane, for example, leaks from natural gas pipelines, landfills, and coal mines. The economics of capturing this wasted gas can be attractive. Figure A-3 highlights the economic advantages of including other GHGs in climate policymaking.[4]

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[3] Studies typically present quantities of CO2 in either "tons of CO2" or in "tonnes (metric tons) of carbon". Our responses present results in the same units as the source material from which they are drawn. To convert from tonnes of carbon to tons of CO2, multiply by about four (e.g., global emissions of 6 billion tonnes of carbon are equivalent to 24 billion tons of CO2). Conversely, to convert $/tonne of C to $/ton of CO2, you divide by four (e.g., $240/tonne C is roughly equivalent to $60/ton of CO2).

[4] These economic efficiencies are unlikely to be realized if reduction targets are set based upon total GHG emissions, but procedures are in place for counting only CO2 emissions reductions – as is the case for some proposed policies.

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Finally, we note that there is an important distinction between the three flexibility mechanisms and the question of "who" pays. The issues of when, where, and what pertain to cost-effectiveness. Science and economics can contribute considerably to this debate. The issue of who pays is a question of equity and a matter for the political process. Nevertheless, it is essential that all major emitting countries participate. Analyses have consistently shown that developed countries cannot reach stabilization without the help of developing countries. See Figure A-4.

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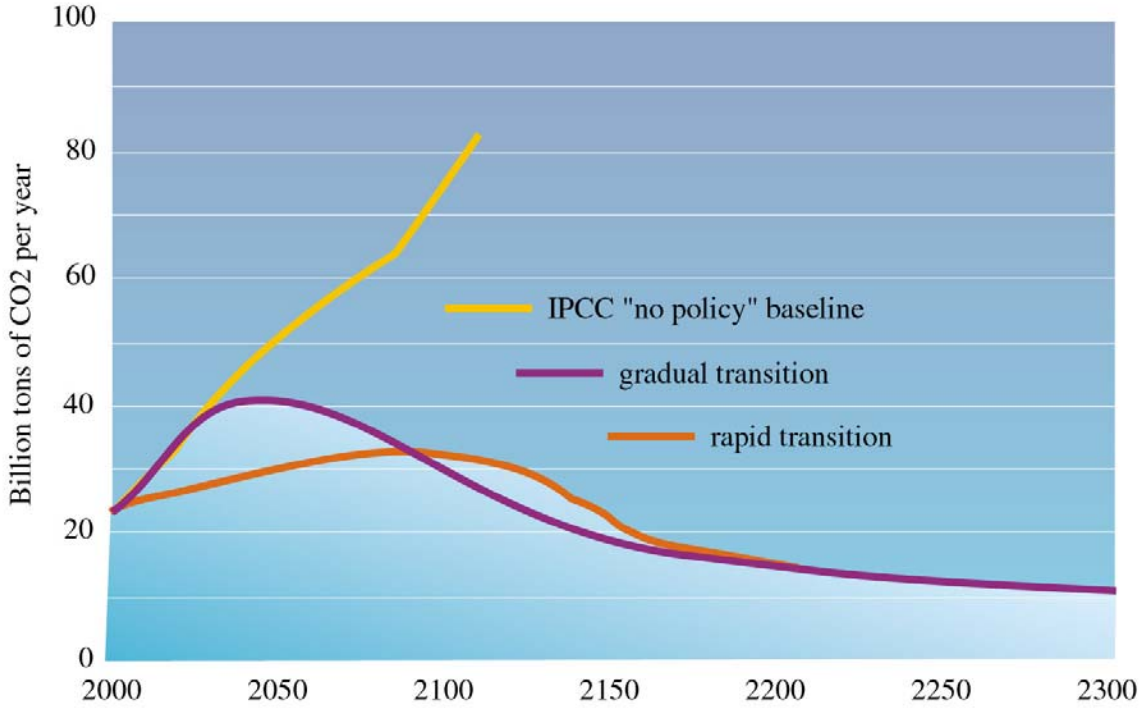
Figure A-1. Alternative emissions profiles for stabilizing atmospheric concentrations at 550 ppm. A concentration target may be achieved via many alternative emissions pathways. The environmental implications of alternative pathways to a concentration target are similar, but flexibility in the pace of the transition may have significant economic benefits. Flexibility in timing reduces premature retirement of capital stock and allows time for improving low- and no-emission technology choices.



Source: Wigley, T., R. Richels and J. Edmonds, 1996: Economic and environmental choices in the stabilization of atmospheric CO2 concentrations. *Nature*, **379**, January 18.

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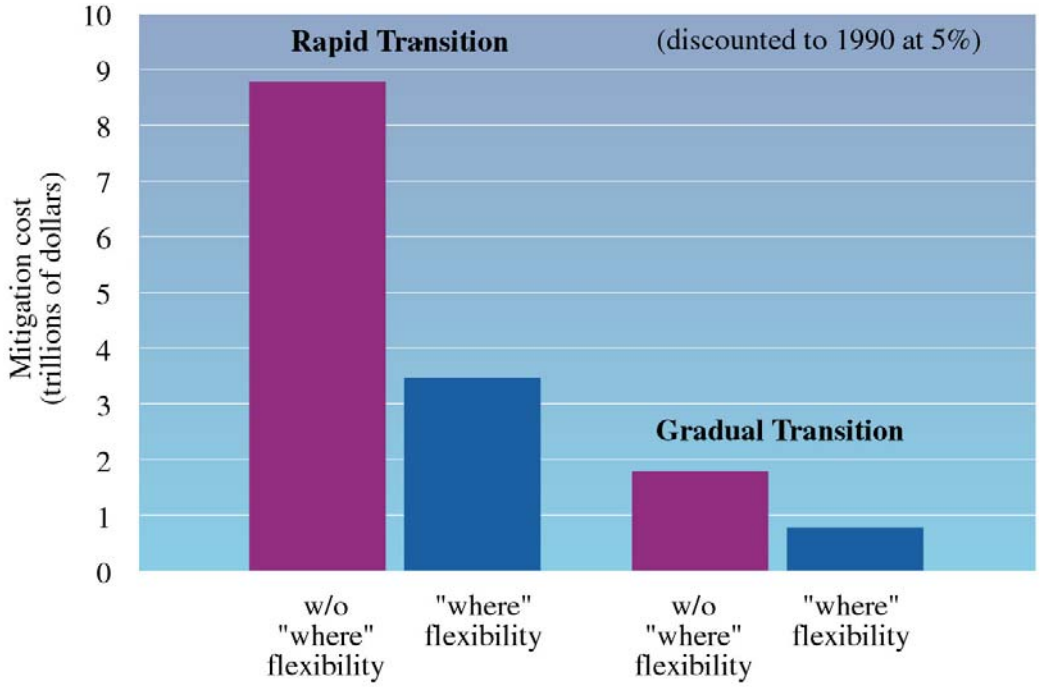
Figure A-2. Global costs of stabilizing concentrations at 550 ppm. While the environmental effects of a rapid transition or a gradual transition to a concentration target are likely to be very similar, the costs of the two pathways differ dramatically – illustrating the benefits of "when" flexibility in climate policy. Policies offering flexibility in "where" emissions are reduced offer additional economic efficiencies.



Source: Manne, A. and R. Richels, 1997: On stabilizing CO2 concentrations – Cost-effective emissions reduction strategies. *Environmental Modeling and Assessment*, **2**, 251-265.

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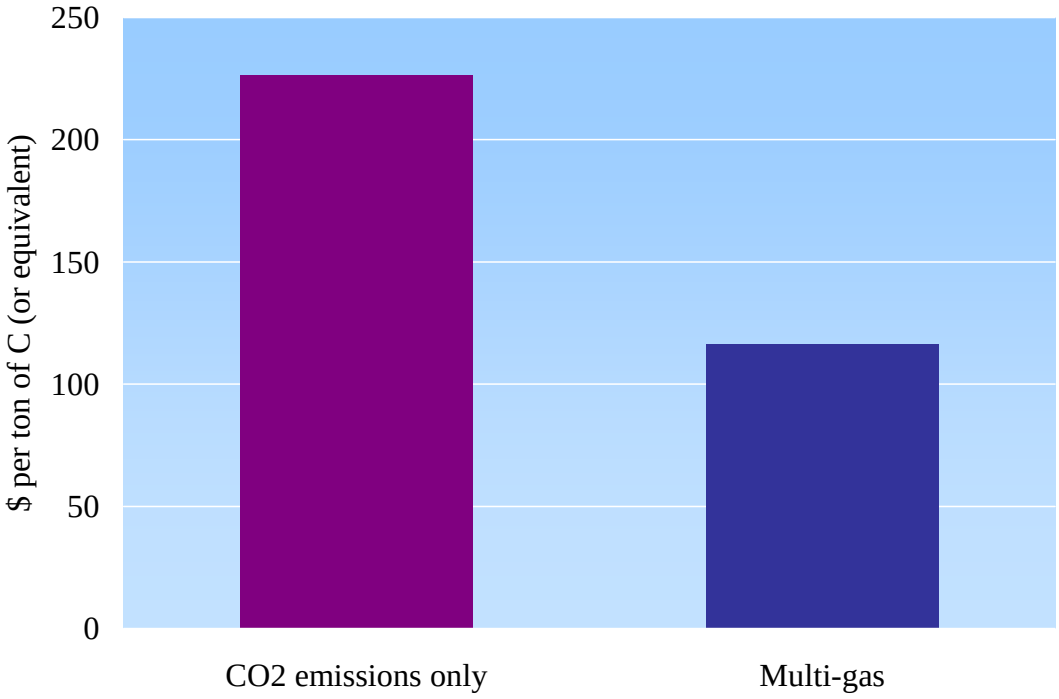
Figure A-3. Global cost of emission rights under a Kyoto policy for a CO2-only approach and a multi-gas approach.



Source: Manne, A. and R. Richels, 2000: A multi-gas approach to climate policy – with and without GWPs. FEEM Working Paper 44.2000, Social Science Research Network.

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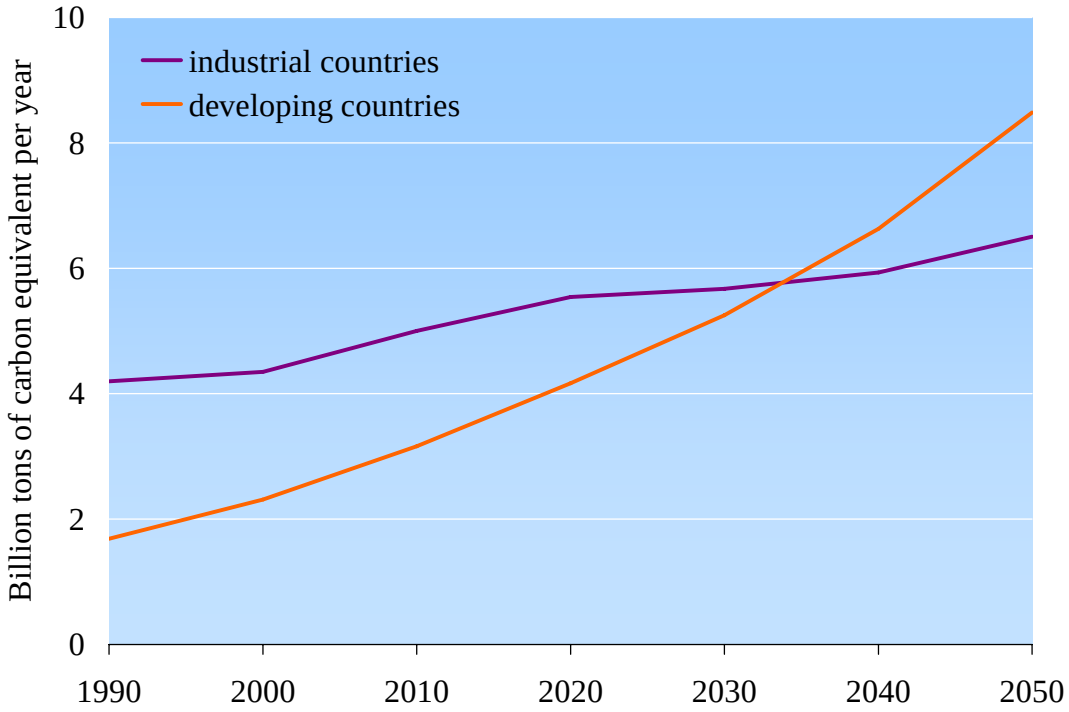
Figure A-4. Growth in carbon emissions by region. If current trends continue, developing world greenhouse gas emissions will surpass those of industrialized countries in the next several decades.



Source: National Commission on Energy Policy: 2004. *Ending the Energy Stalemate: A Bipartisan Strategy to Meet America's Energy Challenges*. Washington, DC. (Figure 2-5 (Global GHG Emissions) from A. Manne and R. Richels, 2004.)

Submitter's Name/Affiliation: Jason Grumet / NCEP
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Provide an executive summary of your response(s). ***Do not exceed the remainder of this page.***

Principles for Allocation

Because overall program costs and effectiveness are largely unaffected by who gets free allowances at the outset, allocation decisions can be used to address equity concerns and (potentially) to advance other policy objectives. A firm that receives free allowances has effectively received an upfront, lump-sum payment. This payment can be used to offset the economic burden of the policy without reducing the firm's motivation to reduce future emissions. As described in our full submission, the real societal costs imposed under a tradable permits program for greenhouse gases such as the Commission has proposed are, by design, quite small in the context of the overall economy. Nevertheless those costs will impose differential burdens on different stakeholders throughout the economy and, as a result of the trade in allowances that will occur under the policy, engender somewhat larger transfers of wealth. In the context of these uneven burdens, how allowances are distributed to different stakeholders in the initial allocation will have important impacts on the perceived fairness of the policy.

Therefore, the Commission continues to recommend, as it did in its 2004 report, that Congress allocate permits in a way that recognizes the disparate burdens created by greenhouse gas regulation. This means that entities should not receive free allowances in excess of the amount required to compensate them for their actual profit losses under the proposed program. It also means that downstream energy users (including energy-intensive industries as well as households), who—according to available economic analyses—can expect to bear a substantial share of the burden of the policy, should not be excluded from the allocation merely because they are not being directly regulated (in the sense of being required to submit allowances).

In fact, economic analyses based on EIA data indicate that the actual burden imposed on upstream fossil fuel producers is small under a policy such as the one proposed by the Commission, regardless of whether they are the entities regulated. Specifically, these analyses suggest that fully compensating fuel producers for their profit losses under the program would require only about 10 percent of available allowances, leaving roughly 90 percent of the allocation available for distribution to energy users further downstream. The White Paper recently issued by Senators Domenici and Bingaman identifies a number of constituencies and purposes that could be included in the allocation. The Commission agrees that all of these should be considered when allocating available allowances and, though not in a position to offer specific recommendations on what share should go to each, urges Congress to maximize the benefits achieved through allocation by avoiding allocation formulae that, by overcompensating some interests (and thereby effectively awarding them windfall profits), diminish the opportunity to advance equity and other important policy goals.

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The New Jersey Board of Public Utilities ("NJBPU") commends the U.S. Senate and this Committee for seeking effective and affordable solutions to global climate change and, specifically, for recognizing that a federal system of mandatory limits aimed at slowing – and then reducing – emissions from fossil fuels is a key step in responding to the dangers of global warming. By leading the nation in examining the international problem of greenhouse gas emissions, the U.S. Senate is recognizing a crucial fact: The problem of greenhouse gas emissions is best addressed at a federal level. This has proven true not only with regard to global warming, but also, for example, with the U.S. Department of Energy's successful mandatory acid rain controls.

The NJBPU thanks the Committee for allowing it to submit these comments. Because of our expertise both as a regulator of the electric industry and as a founding member of the Regional Greenhouse Gas Initiative ("RGGI"), our comments focus on allocation approaches for carbon dioxide allowances in a "cap-and-trade" program for electric generators. Although our comments may overlap with various topics discussed in the clarifying questions, our response is meant as a general response only to Question 2. The NJBPU's comments are summarized below:

- The cost of complying with a carbon constraint will increase the cost of wholesale power, since fossil-fired units are typically the marginal unit. In a market-based structure, this increase in wholesale power prices will increase revenue for all generators, even those that are not subject to the cap-and-trade program.

- Allocating all allowances to generators will not reduce the aggregate cost of complying with a carbon constraint, nor will it save electricity ratepayers money. In a competitive market, generators subject to a cap-and-trade program factor in the cost of grandfathered (free) allowances into their bid price, since these allowances have a value and can be sold in the allowance market. The decision to generate would use up allowances, and therefore imposes an "opportunity cost"; allowances that are expended cannot be sold in the market and therefore potential revenue is lost. As a result, grandfathering of allowances does not result in lower electricity prices relative to other allocation mechanisms.

- Because of the above facts, a public benefits allocation can reduce the aggregate cost of complying with a carbon cap, and increase program effectiveness by providing unprecedented integration of support for end-use energy efficiency into a generator-focused cap-and-trade program. This would facilitate integration of supply-side and demand-side efforts to address the reduction of carbon emissions through a comprehensive, least-cost approach, without requiring utility ratepayers to bear the cost of increased funding for energy efficiency programs. Recycling allowance revenue into programs that reduce electricity load growth will result in greater emissions reduction benefits achieved at lower cost, thereby reducing the impact on electricity customers.

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The eventual design of mandatory, market-based limits and incentives on emissions of greenhouse gases will have consequences for everyone who makes or uses energy – that is, everyone in the economy. Economists typically examine these design questions in two dimensions: efficiency (getting the most environmental benefits at the least cost) and equity (who bears the cost). To a large extent, the underlying choice of an emissions trading program provides assurances of efficiency, leaving one to focus primarily on equity. This focus on equity places a premium on understanding the distribution of economic impacts associated with a particular program configuration – even before thinking about alternate allocation schemes. It is also important to understand that some allocation choices can affect efficiency, as well as that certain practical constraints have efficiency consequences, such as regulation in the electricity sector and the potential for emissions leakage into regions of the world not currently facing any emission limits.

In practical terms, it is possible to make a number of useful observations.

1. Economywide coverage provides greater efficiency and spreads the costs of the policy more broadly.
2. Except for its impact on coverage, the choice of upstream or downstream regulation is unlikely to have any impact on who faces what impact from the policy *assuming* allocation and point of regulation choices are entirely distinct.
3. The distribution of impacts is complex, depending to a large extent on how easily higher fuel prices are passed down the line to end-users and households, as well as on how those changes in prices affect product demand. This is further complicated by both trade in competitive international markets as well as regulation in domestic product markets.
4. Allowance allocations that are regularly updated based on output can be used to attenuate output price changes. While this approach is considered inefficient because it distorts prices and the incentive to mitigate across alternate opportunities, such distortions may have desirable distributional consequences that are difficult to achieve through other means precisely because of the price effects.
5. The value of linking trading programs – that is, gaining access to the cheapest reductions anywhere in the world – depends on the relative importance of current mitigation efforts compared to other policy goals, such as technology development. For example, region with low allowance prices and technology incentives may not want to trade with a region primarily using high allowance prices to spur technology.
6. Successful engagement of developing countries will likely require both decentralized credit incentives for mitigation projects, as well as more centralized, strategic efforts at sectoral reform that recognize a country's development goals. Neither approach is likely to be "efficient".

No mitigation benefits will arise if a policy cannot be enacted. Cost-saving but politically difficult design features need to be viewed on the basis of (a) relative importance, (b) likelihood that politics will change over time, and (c) potential to make policy adjustments over time.

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Executive Summary

The Alliance to Save Energy applauds the Committee on Energy and Natural Resources for its bi-partisan effort to explore development of a *m*andatory market-based greenhouse gas regulatory system in the U.S.. We appreciate the opportunity to provide input, which for the Alliance will center on mechanisms and policies to deploy energy efficiency as the quickest, cleanest, and cheapest means of reducing America's greenhouse gas emissions. We urge the Committee to take full advantage of the cost-effective benefits provided by the energy efficiency policies and measures, outlined in our responses to questions one and two. Development and implementation of a national regulatory system likely will require protracted debate and consideration. While this national dialogue ensues, the Alliance urges Congress also to enact policies and programs that advance energy efficiency which will make measurable progress toward the Committee's stated goal of lowering greenhouse gas emissions in the U.S.

The Alliance to Save Energy is a non-governmental organization dedicated to advancing energy efficiency worldwide. Formed as a bipartisan initiative between Senators Charles H. Percy and Hubert H. Humphrey in the wake of the OPEC oil embargo, the Alliance mission attracts leaders in the energy and environmental fields. The current Board of Directors offers valuable leadership and insight into our efforts to incorporate energy efficiency into climate change proposals at the federal, regional and state levels. Board members include sitting Members of the U.S. Congress, principals of leading businesses, consumer and environmental organizations, as well as key state policy makers from two of the states with comprehensive climate change initiatives - New York and California. The Alliance also enjoys support by more than 100 Associate members including Fortune 500 companies, trade associations, public interest groups and small businesses.

Should Congress adopt a so-called "cap and trade" program, the Alliance believes that an upstream, economy-wide approach with a significant allocation for energy efficiency is ideal, however, we recognize that Congress may choose to focus downstream on a single sector. Under either scenario, the Alliance warns against relying on the price of energy to drive efficiency, but rather recommends that Congress create specific mechanisms (through allowance allocation or auction) and policies to ensure market penetration of energy-efficient technologies. The Alliance maintains that the cost of regulation can be mitigated through energy-efficiency standards and incentives and the out-put based allocation of allowances.

The Alliance's responses to the Committee include recommendations to:

- create an allocation (set-aside) or auction of allowances that can be sold to fund energy efficiency programs and other public benefits; and,
- enact complementary energy-efficiency policy measures, in addition to any cap and trade program, that will help to reduce the costs and improve the standards of energy use.

The Alliance urges Congress to use the largely-untapped potential of energy efficiency to mitigate U.S. greenhouse gas emissions, strengthen the economy, enhance national security, and help slow climate change.

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Founded in 1997, The Clean Energy Group is a coalition of electric generating and electric distribution companies that share a commitment to responsible environmental stewardship. Several of the Clean Energy Group companies participate in the Clean Air Policy Initiative, which supports the adoption of national multi-pollutant power plant legislation. The participants in the initiative include Calpine Corporation, Entergy Corporation, Exelon Corporation, Florida Power & Light Company, PG&E Corporation, and Public Service Enterprise Group. Our comments were prepared in consultation with these six companies.

In response to the white paper, we have addressed Question 1, including clarifying questions 1a and 1b, and Question 2, including clarifying questions 2d and 2f.

The members of the Clean Energy Group's Clean Air Policy Initiative support the adoption of a cap-and-trade program for the electric generating sector as a prudent first step in addressing U.S. greenhouse gas emissions assuming a fair and cost-effective program design. We agree that an economy-wide regulatory system would be effective in controlling greenhouse gas emissions; however, it remains unclear whether Congress would support the adoption of such a sweeping program. We believe that a sector-specific cap-and-trade program (with offsets) could serve to demonstrate the merits and viability of a broader economy-wide approach. An electric industry cap-and-trade program with offsets would allow reductions to occur throughout the economy, reducing the overall costs of compliance and spurring innovation. Taking such action would be a prudent first step in light of the long-term capital planning decisions that are being made by electric generating companies today. We would encourage House and Senate members to consider options for designing an economy-wide approach, while continuing to advocate the adoption of a sector-specific cap-and-trade program. A single sector approach could be readily integrated into a broader economy-wide program, and ultimately an economy wide approach will be necessary to stem the rise in greenhouse gas emissions.

In terms of distributing allowances, we advocate an updating output based allocation approach as the most equitable and most rationale basis for apportioning emissions allowances to the electric generating sector because it encourages efficiency and innovation. An updating output based allocation encourages the development of new, innovative technologies by providing a mechanism for new power projects to be integrated into the cap-and-trade program on an equal footing. Also, by calculating the number of allowances that a company receives based on its output or electricity production, it has a financial incentive to improve the operating efficiency of its fleet. This approach is in contrast to a fixed, grandfathering approach in which companies receive a constant stream of allowances without regard to their operating efficiency, and new power projects are forced to purchase their allowances from the market. In the absence of an equitable distribution of allowances, such as an output based allocation, we would support an alternative allocation approach, such as an auction, to ensure a fair distribution of the burden under a national greenhouse gas program.

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Provide an executive summary of your response(s). ***Do not exceed the remainder of this page.***

Under "Additional General Topics," the Edison Electric Institute (EEI) notes our support for voluntary technology- and carbon intensity-based approaches to the global climate change issue, and endorses robust budget support and implementation of the Energy Policy Act of 2005 (EPAct 2005). Our comments also emphasize the critical international dimensions of the climate change issue and the importance of investment overseas in technologies and best practices. We highlight a number of principles that should be used to evaluate proposals addressing the climate issue. While endorsing neither a mandatory cap-and-trade regulatory regime nor any of the specific proposals or concepts in the White Paper, our response raises some key factors that the Committee should bear in mind as it contemplates greenhouse gas (GHG) regulatory schemes, including: the stringency and nature of the targets and timetables; the availability of viable and cost-effective technologies; the incorporation of a safety valve; the availability of offsets; and the fact that a GHG emission trading system would be far more costly, complex and difficult to administer than the Clean Air Act title IV acid rain program.

In our comments in response to Question 1, assuming a cap-and-trade regime were mandated, we would strongly support an economy-wide approach. A sector-based approach would tend to focus costs unnecessarily and unfairly on one or more sectors of the economy. Regarding the most effective place in the chain of activities to regulate GHG emissions, we give two examples of different approaches but do not endorse either. It is important to note that the decision about the point of regulation is independent from the decision about allowance allocations.

In our comments in response to Question 2, EEI would strongly support allocations over auctions in any regulatory scheme. We provide a detailed explanation of our reasoning for supporting this approach. In addition to the set-aside for technology R&D and incentives, a substantial portion of the revenues raised by the safety valve should be segregated and devoted solely to climate technology RDD&D. The program should also contain provisions for credit for early action, baseline protection or both. There will be trade-offs and winners and losers under any cap-and-trade system, and it is important to recognize that the government cannot "compensate" everyone and eliminate all losers under a mandatory GHG regulatory regime.

In our comments in response to Question 3, we note that a safety valve should be instituted, even at the cost of linkage with other systems, since it would yield the far more important benefit of cost certainty. Regardless, the program should include robust offsets provisions. We also highlight a number of issues that need to be addressed for systems to interlink and benefit the partners involved and not lead to adverse impacts, including making the targets harder to reach.

In our comments in response to Question 4, we note that without comparable action by our key competitors – both developed and developing – U.S. mandatory reduction efforts would adversely affect U.S. trade and industrial competitiveness while doing little to address overall GHG emissions. In developing a mandatory U.S. program, it is important to ensure that it not be more stringent than binding actions by key emitting nations. It should also include a review

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mechanism to ensure that U.S. actions would not be undertaken in isolation. Our response also raises a number of issues that should be considered in any evaluation review process, and notes that the timing of such an evaluation should be dependent on the specific targets and timetables of the programs being pursued by major emitting nations In addition, a GHG-intensity metric should be used to compare efforts across nations. We note that technology transfer to developing countries can achieve large near-term emission reductions by closing the gap in emissions intensity between developing and advanced economies, such as through the Asia-Pacific Partnership on Clean Development and Climate.

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Environmental Defense thanks Chairman Domenici and Senator Bingaman for the opportunity to comment on their white paper, *Design Elements of a Mandatory Market-Based Greenhouse Gas Regulatory System.* We applaud the Senators' commitment to establish a mandatory system to limit U.S. releases of greenhouse gases into the atmosphere. As the Senators understand, the time for additional study and exploratory voluntary programs is over. It is time to determine the best policy design to meet the challenge of climate change by unleashing the power of innovation and extending incentives to reduce greenhouse gas emissions throughout the economy.

The Goal. The first principle of effective climate policy is establishing a clear emissions target related to the problem we are trying to solve. That problem is the increasing concentrations of greenhouse gases in the Earth's atmosphere, which are causing an accelerated warming of the planet. Alarmingly, Americans are now learning that this warming is producing effects around the globe far faster than most had expected. Therefore, we need to cap U.S. emissions of greenhouse gases sooner rather than later. A formula that would allow emissions to continue to rise for the next 15 – 20 years (albeit at a slower rate) is inconsistent with the goal of stabilizing the GHG concentrations in the Earth's atmosphere before there are irreversible, dramatic effects. Therefore, Environmental Defense urges the Senators to establish fixed limits on total greenhouse gas emissions, to take effect not later than 2010, so we do not continue to make the task of stabilizing concentrations even harder, more economically disruptive, and possible only at a higher level of concentrations (see response to Feinstein 1).

Innovation. Concerns about the potential cost to the economy from any sort of emission target are understandable – and should be a factor in determining the best overall policy. There are many policy design decisions that can help manage costs while maintaining a firm emission limit (see Additional). Environmental Defense believes the most powerful tool is the ingenuity of the American people responding to incentives from our market economy. A stable and predictable emissions limit creates the demand for emission reduction and offset technologies. Market demand and innovative entrepreneurs will provide a better mix of technologies that any government bureaucrat could choose. Similarly, the fundamental elements of emissions trading and banking in a competitive market serve to grind down cost far better than could any government program.

Agency Action. While it discusses the form of climate policy, Congress should use its oversight role to ensure Federal Agencies take sensible measures to enable emission reduction or adaptation measures such as:

- Establish standards and procedures for calculating and awarding emissions offsets from agricultural and forest practices to sequester carbon;
- Establish standards and safeguards for the geologic sequestration of carbon;
- Conduct regional studies on potential infrastructure impacts of climate change and associated adaptation strategies and costs.

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Generators for Clean Air (GCA) represents nine electric generating companies whose collective generating capacity is 70% coal-fired. GCA does not have a consensus view among its members on mandatory climate change legislation. Some companies believe reasonable mandates are appropriate; others do not support mandatory measures. Nonetheless, we believe it is prudent to offer constructive views on the design of a legislative program, should Congress ever decide to adopt mandatory measures.

GCA offers its response to Questions 1 and 2. Our main points are as follows:

- If Congress enacts mandatory climate change legislation, it should be broad in scope and apply economy-wide.

- Reducing compliance costs and electricity price increases should be one of the criteria for deciding on the appropriate point of regulation. GCA urges Congress to minimize the cost and financial impacts of climate change legislation on both electricity generators and their customers.

- As a group, GCA is still evaluating the appropriate point of regulation. However, if Congress enacts climate change legislation, it should allocate a substantial number of allowances to fossil fuel generation, regardless of the point of regulation.

- The electric power sector should receive allowances based on its pro rata share of greenhouse gases. Allocation of allowances within the electric power sector should be based on either historic emissions or heat input.

- Within the electric power sector, fossil generation should receive an allowance allocation that is adequate to significantly mitigate compliance costs and increases in electricity prices. Allocating allowances to nuclear generation penalizes coal-fired generation.

- Allocating 95% of allowances to fossil generation would significantly mitigate compliance costs. By contrast, auctioning allowances would result in compliance costs about 20 times greater than a 95% allocation.

- Congress should consider ways to prevent a patchwork of state requirements that are inconsistent with the objectives of a national program. Also, Congress should consider mechanisms to ensure pass through of compliance costs.

# # #

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A forward-looking energy policy is the foundation upon which the United States must build any strategy for addressing climate change. Indeed, a basic question has emerged in the wake of Hurricane Katrina and other events that have demonstrated the limits of existing U.S. energy production capabilities: how will America meet its energy needs over the next 50 years? Visionary leadership is needed to propel U.S. energy policy beyond the Energy Policy Act of 2005, which was a crucial first step in responding to our growing energy needs. Looking ahead, a coherent climate strategy must incorporate the provisions of the Energy Policy Act and embrace the role of new technology, support the need for energy independence and maintain U.S. economic competitiveness in an increasingly challenging world economy.

The National Mining Association (NMA) has adopted a sustainable development policy and believes that the United States can best develop its climate policies based upon the tenants of sustainable development. This requires that climate polices be developed while considering their effect on the nation's policies involving energy, economic competitiveness, national security, agriculture, labor, transportation, immigration, social security, housing and other environmental and social policies.

Conceptually, the United States can best develop its climate policies based upon the tenants of sustainable development. As such, the ramifications of climate policies cannot be viewed in a vacuum. They must be formulated and evaluated based on their effects on energy supply and costs, economic competitiveness, national security, agriculture, labor, transportation, immigration, social security, housing and other environmental and social policies. Because climate policies can touch on all aspects of the economy, they can only be successful if they are developed using the best elements of democracy - an open and transparent debate, sound facts and careful consideration of the needs of all Americans.

Economic growth will necessarily be accompanied by an increase in energy demand. The International Energy Agency's *World Energy Outlook* projects economic growth to average 3.2 percent annually over the next 25 years, with a much faster growth rate expected in countries such as China and India. The use of fossil fuels and other energy sources will increase apace. However, by advancing more efficient and cleaner technologies to improve coal combustion and conversion of coal to other energy forms, economic advances will occur, fewer scarce energy resources will be consumed, and more secure energy supplies will be available to the United States than would otherwise be the case.

NMA supports policies that embrace innovative measures to reduce greenhouse gas emissions intensity while at the same time promoting a sound economy, job creation and a reliable energy supply. To do otherwise increases our unsustainable reliance on imported oil, overlooks the overwhelming emissions projections of developing nations, and undermines our ability to successfully compete with fast-growing economies in the decades ahead.

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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)

Submitter's Name/Affiliation: Whitman/NRECA
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NRECA appreciates the opportunity to comment on the Domenici-Bingaman White Paper, "Design Elements of a Mandatory Market-Based Greenhouse Gas Regulatory System."

Electric cooperatives are very concerned about proposals that lead to higher energy costs for consumers in the effort to address the climate change issue. As not-for-profit businesses, electric cooperatives must pass through all costs to their consumer members—predominantly families, farms, and small businesses. More than 75 percent of electric cooperatives' generation is coal-based, making cooperatives more dependent on coal than any other segment of the electric power industry. Since coal is the most carbon-intensive fossil fuel, businesses heavily invested in coal will bear a relatively greater burden of increased fuel prices under a mandatory climate policy than those using less carbon-intensive fuels. Cooperatives oppose climate proposals that will increase energy costs for Americans.

NRECA strongly supports the technology-based program included in the Energy Policy Act of 2005, and believes that program must be fully funded and implemented.

If the Congress decides to develop climate change policies that go beyond the provisions included in the Energy Policy Act of 2005, NRECA believes such policies must also be sound energy, security, and economic policies. They must support abundant, reliable, affordable energy for all Americans, including the nation's rural electric consumers. They must be equitable and cost-effective, and not unfairly discriminate against electric cooperatives or electric cooperative consumers. NRECA recommends that any potential future US climate policy must be:

- Flexible and comprehensive, involving all sectors of the economy, all greenhouse gases, sources and sinks. This will lower overall costs compared to a sector-specific program and is necessary if we are to make meaningful contributions to reducing the nation's greenhouse gas emission intensity.

- Equitable and low-cost, balancing the interests of small entities with large ones and equally distributing the burden of any increased fuel costs among all segments of the electric utility industry and the economy. Electric cooperatives, their consumer members, and rural businesses should not pay a disproportionate share for the nation's climate policy.

- Technology-based, with a sustained national commitment to energy and climate technology research, development, demonstration, and deployment. Policies that encourage the acceleration of and investment in the development of new climate technologies and provide incentives for their early deployment should be the basis of US climate policy.

- Global, like the climate change issue itself, lowering mitigation costs and facilitating sustainable international development and technology-based international partnerships. These types of activity will put less developed countries on more environmentally sustainable development paths, ultimately providing the resources necessary to address climate change.

Submitter's Name/Affiliation: American Electric Power Service Corporation
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American Electric Power (AEP) Service Corporation appreciates the opportunity to provide comments on the White Paper. The paper contemplates a mandatory regulatory regime for greenhouse gases. While endorsing neither a mandatory regime nor any of the specific proposals in the White Paper, AEP believes it is important to fully engage and comment on discussions of public policy when requested by the Committee. AEP does not support mandatory greenhouse gas emission caps unless they are part of a binding international agreement that includes both developed and developing countries, such as China and India.

AEP believes that any mandatory U.S. greenhouse gas reduction program should be economy-wide and market-based, and allow for unfettered emissions trading. Emissions trading has been used to achieve significant, cost-effective reductions of sulfur dioxide and nitrogen oxides emissions in the U.S. Part of the success of these programs lies in the inclusion of all major emitting sources. Accordingly, AEP believes that the scope of regulation for greenhouse gases should be economy-wide across all the sectors, lowering the total costs of a greenhouse gas reduction program. Utility CO_2 emissions account for only 35-40% of greenhouse gas emissions in the U.S., so including other significant categories of emitters is very important in minimizing the economic impacts of a mandatory reduction program.

We also believe that "downstream" regulation for electric utilities at the power plant, rather than "upstream" regulation on fossil fuel production, is both more effective and administratively efficient. CO_2 reductions are most likely to occur at power plants, through improved production processes, fuel choices, or control technologies. In addition, electric companies already have continuous emission monitors (CEMs) that report annual CO_2 emissions and are already regulated downstream for SO_2 and NOx emissions, as well as engaging in emissions trading within our sector.

AEP feels strongly that the electric sector should receive emission allowances commensurate with its pro rata share of the emission caps in the legislation, whether emissions are regulated upstream or downstream. There should be no or very limited auctions or set asides of allowances. Because the electric sector is largely cost of service, and more than 80 percent of coal fired generation is currently rate regulated, providing less allowances to electric power companies will simply substantially raise electric rates to consumers.

Non-regulated sources of emissions or offsets should be allowed to opt-in and additional allowances should be created (commensurate with the emissions and/or reduction benefit) in order to capture all cost-effective reductions. AEP also supports providing revenues from the sale of backstop price credits to technology R&D and deployment incentives as well as adaptation assistance.

AEP supports linkage with other systems internationally, both in established markets such as the EU and those emerging in other countries around the world. Linkage will help minimize the costs of greenhouse gas reductions in the U.S. The White Paper appears to contemplate a two-step approach with the U.S. acting first followed by other nations. While not endorsing this approach, and believing a comprehensive binding international agreement is necessary, any alternative approach must include provisions to automatically suspend the program at an early point if other nations do not take similar actions.

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Submitter's Name/Affiliation: **Chicago Climate Exchange**
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Chicago Climate Exchange ("CCX") appreciates the opportunity to provide input on: Question 1 (Point of Regulation); Question 2 (Allocation); Question 3 (International Linkage).

CCX is the world's first, and North America's only operating, active and legally binding greenhouse gas ("GHG") emission reduction and trading system. CCX is the only rules-based, independently audited market for U.S. reductions in all six GHGs, with price transparency, registry and clearing provided through a comprehensive mechanism. Total emissions under management since 2003 makes CCX the world's second largest live GHG market (second only to Germany). CCX's 140 members represent a cross-section of the US economy, including leading companies such as Ford, DuPont, IBM, Baxter, American Electric Power, Tampa Electric, Dow Corning; cities such as Portland, OR, Chicago, IL and Oakland, CA; and the State of New Mexico. CCX is the world's only GHG reduction market incorporating standardized emission offsets for forestry, agriculture and methane. CCX's CEO, Dr. Richard L. Sandor, formerly served as Vice-Chairman of the Chicago Board of Trade and directed the first auctions for USEPA SO_2 emission allowances in 1993. Our input reflects decades of unique, real-world, and workable experience in developing environmental and commodity markets, including our European Climate Exchange and Chicago Climate Futures Exchange subsidiaries.

Use Trading System Designs that Have Repeatedly Proven Successful

CCX experience demonstrates that a GHG cap-and-trade system that allows emitters to manage annual reduction commitments – a design used in other proven trading systems (US SO_2 and NOx, EU CO_2) – gives clear signals that lead to direct internal action and trading responsibility and attendant opportunities. This design:

- Maximizes the benefits of emissions trading, as proven in the SO_2 program, and allows carbon pricing and trading to stimulate financing of capital improvements.
- Maximizes entrepreneurial response and rewards environmental innovation.
- Can cover a major portion of emissions from all six types of greenhouse gases, can be integrated with upstream systems for other emissions, and allows opt-in by small sources.
- Can bring significant benefits to the agriculture and forestry sectors, assuming carefully screened and specified rules with attendant scientific validity and verification.

Use Simple and Broad Emission Reduction Schedules, Credit Early Action and Projects

CCX experience suggests a workable system should:

- Include the maximum diversity of sectors using simple, percentage reduction schedules.
- Employ very small allowance auctions to provide price information. Like the SO_2 auctions, returning auction proceeds *pro rata* to emitters reduces compliance burdens.
- Fully recognize standardized and verified early reductions, as this will maximize ongoing capital investment, avoid undermining prior investment, and boost market liquidity.
- Include project-based mitigation activities, such as methane capture, and carbon sequestration by farms, forests and ranchlands, which produce multiple global and local benefits, help finance sustainable agricultural practices, and have proven workable.

Effectiveness of the above is being demonstrated by CCX members today. The environmental and economic benefits being generated are of national and global significance.

Submitter's Name/Affiliation: LEE LANE
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CPC supports a domestic economy-wide, uniform, upstream cap-and-trade for greenhouse gases (GHGs). The policy must meet the tests posed by the Byrd-Hagel Resolution. It must not significantly harm the US economy. And it must ensure that key less developed countries (LDCs) take comparable action.

Climate-related R&D is the key to achieving both of these conditions. Existing technology cannot significantly reduce GHG emissions at a cost that most nations are willing to pay. The US will not sacrifice economic growth for GHG mitigation. Neither will China and India Hence, radically new, and far less costly, technology is a prerequisite for climate policy success.

Although limiting GHG emissions will not, in itself, produce nearly enough new technology, using emission allowances to fund climate-related R&D might help to do so. This money, however, would be wasted unless federal energy R&D is substantially reorganized and reformed. Therefore, enactment of the PACE Bill, particularly its ARPA-E provision, is an essential precondition for using allowances to augment R&D funding. Ultimately, PACE is as crucial to successful climate policy as cap-and-trade is.

Even with the eventual promise of new technologies, constructing a cost-effective cap-and-trade will be challenging. Next to enacting a carbon tax, the safety valve provision is the best available way to boost the cost-effectiveness of GHG controls.

Moreover, by limiting the program's costs, the safety valve would allow Congress to use most of the emission allowances for maximizing the program's cost-effectiveness. R&D and budget deficit reduction appear to be the most promising strategies. To realize this potential, though, Congress would have to resist the blandishments of the various interests that are seeking to convert cap-and-trade into a cascade of windfall profits.

Linking a US cap-and-trade to the EU ETS or to other Kyoto Protocol-based international emission allowance trading schemes conflicts with using a safety valve. With linkage (and without the safety valve) US allowance prices and economic costs would rise. The temptation to check rising prices with bogus Russian 'hot air' allowances would grow. The choice between the safety valve and Kyoto linkage is, then, the choice between paying the US government for extra allowances and paying the Russian government for them.

The safety valve can also encourage China and India to adopt GHG limits. In the NCEP plan, Congress would consider halting the escalation of the US safety valve price if China and India fail to adopt adequate climate policies. Unfortunately, this NCEP provision is very weak. In the (likely) case of non-cooperation by China and India, Congress may delay or vacillate. This provision should, instead, incorporate the fail safe principle. The escalation of the safety valve price should halt automatically unless the executive branch certifies that China and India have taken comparable actions.

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Provide an executive summary of your response(s)

Natsource has chosen to answer specific clarifying questions relating to three of the four questions incorporated in the White Paper that was released in February. A brief summary of each answer follows.

Question 1: Point of Regulation
Natsource believes that the program that is ultimately developed to address greenhouse gas (GHG) emissions should cover as high a percentage of national emissions as is possible, and should cover personal transport. We believe that such an approach would provide the greatest environmental and economic benefits. This approach reflects the following considerations: (1) personal transport emissions are the quickest growing portion of national emissions, and not covering them will make it difficult to achieve climate policy objectives in the longer-term; (2) industrial and power sector emissions are declining in other nations and will continue to do so as these emissions are covered by existing programs and others under development; and (3) existing policies regulating transport emissions were developed to address other energy and environmental challenges and are not adequate to reduce GHG emissions. Our response also identifies several options as to how personal transport emissions could be covered in a GHG control program.

Question 2: Allocation
d. Set-Aside Programs
Natsource did not answer this answer as asked. We addressed issues related to the development of a domestic GHG offset program. We believe that the development of a domestic offset program could provide significant economic and environmental benefits. In our answer, we identify and discuss the issues that need to be considered in the design of such a program and propose a few options that would enable the program to meet its objectives.

Question 3: International Linkage
Natsource answered all of the clarifying questions relating to this question. In short, we believe there are significant benefits that could be achieved from the linking of trading systems. Ultimately, linkage is dependant upon the key design elements in each program. We identify the key design elements of the EU program and those contemplated by U.S. legislative proposals. We then describe the differences between the EU program and U.S. proposals and the concerns that will likely arise in any discussion on linking.

Question 4: Developing Country Participation
We have undertaken a significant amount of work for the National Commission on Energy Policy (NCEP) in their assessment of the efforts of both developed and developing and countries in addressing the climate issue. Natsource developed a range of metrics to assess the performance of eight developed countries and four developing countries in addressing climate change. The metric focused on: (1) environmental performance; (2) efforts in developing a market based framework to reduce compliance costs; and (3) technological efforts. Natsource scored these nations' efforts through a qualitative and quantitative approach.

Submitter's Name/Affiliation: **Eileen Claussen, Pew Center on Global Climate Change**
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The Pew Center applauds the Senate Energy Committee for its continued efforts to address the critical issue of climate change. The Center is responding to all four main questions, and submitting additional information on cost containment and recent climate science. Responses draw from an extensive body of analysis, conference and workshop proceedings undertaken by the Center with input from the Center's Business Environmental Leadership Council, scholars, policymakers, and stakeholders; as well as opinions expressed to the Center in discussions with over 30 large corporations. Please note that the Center and most companies surveyed believe that, rather than focusing on any one design element in isolation, any bill must be evaluated as a whole, especially in minimizing the costs to covered entities and the economy.

1. Point of Regulation: Ultimately mandatory GHG mitigation measures should cover the economy as a whole, equitably spreading responsibility among large emitters, the transportation sector, and households. For large stationary sources, the submission of allowances would best be required "downstream" at the point of emission, rather than "upstream." For the transportation sector, the Center recommends an approach that would cover vehicle manufacturers through use of tradable vehicle GHG emission standards.

2. Allowance Allocation: To assist with the transition to GHG regulation, a high percentage of allowances (e.g., 90% - 95%) should be allocated at no cost, rather than auctioned, at least in the initial years of a cap-and-trade system. A small initial auction can provide funds for transition assistance and technology deployment. Over time, the amount auctioned could increase. In providing federal funding for technology development, a competitive process, such as a "reverse auction," allocating funding on the basis of emission reduction potential, can minimize costs. In the early years of the program, the highest priorities for allocation should be transition assistance and technology development; over time the priorities should shift toward rewarding low-emitting technologies and practices. Offsets are critical for minimizing program costs. Use of offsets to meet allowance submission requirements should not be restricted, as long as the offsets meet reasonable standards for real, verifiable emission reductions. Early action credit is important and could be provided by allowing emitters who document emission reductions earlier than the default baseline year to use an earlier baseline, resulting in a higher allowance allocation.

3. Linkage: A U.S. GHG program should be integrated with systems around the world. This is both environmentally and economically important. Linkage will minimize costs while expanding GHG mitigation and technology transfer opportunities. Use of a low safety valve will greatly complicate such linkage and minimize the incentive for technology transfer and innovation.

4. Encouraging Comparable Action: Different policies are needed to address two distinct but related objectives: (1) achieving adequate action by all major emitting countries, and (2) protecting U.S. firms in energy-intensive industries whose goods are traded internationally against competitiveness impacts. The first is best achieved through multilateral commitments; the second through overall cost containment and targeted support for the vulnerable sectors.

Additional Topics - Cost Containment: A "safety valve" is just one cost containment method. Costs to regulated entities can also be minimized through offsets, allocation, linkage, etc. Climate Science: The evidence of globally-distributed climate change impacts is mounting.

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EXECUTIVE SUMMARY

The World Resources Institute (WRI) is submitting responses to Questions 1, 2, 3(a)(b)(c), and 4(a)(b)(c).

To mitigate the risk of dangerous climate change and avoid the worst physical and economic impacts, scientific evidence suggests that policies are needed to drive significant near-term reductions in emissions and achieve long-term stabilization of atmospheric greenhouse gas (GHG) concentrations. For the U.S., this challenge implies that economy-wide emissions will need to peak and begin declining on an absolute basis within the next 10 years. In light of the urgency and stringency required in a U.S. program to address climate change, a mandatory market-based system for GHG regulation is a vital option that could serve to reign in emissions quickly and at least cost. While there are additional policy options that are complementary and deserve consideration, market-based systems have proven to be powerful tools and are a key means to making cost-effective emission reductions.

Experience with mandatory market-based systems for GHG emissions implies that political considerations have as much to do with program design as technical or efficiency-based considerations. In all existing or proposed GHG emission trading systems, upstream regulation has been eschewed in favor of downstream regulation. One important reason for this is that an upstream system is effectively a carbon tax for which the value will be variable and unknown in advance. Another is to establish a relatively simple system first rather than cover every economic sector, with all that entails in terms of complexity and interest groups. Downstream systems tend to start with narrow coverage and an explicit aim to become more inclusive over time.

Distribution of allowances too is predominantly political. Auctioning as opposed to free allocation presents considerable practical and theoretical strengths, but in general these have not been sufficient to overcome industry opposition to auctioning. As greater experience is gained with market-based systems, however, the appeal of an auction is increasing. If a free allocation is pursued, several inter-related design variables must be considered simultaneously.

Linking emission trading systems is desirable where possible but can be done successfully only where a number of conditions are satisfied, especially mutual confidence. This makes linking plausible with the European Union and Canada but not with countries such as China and India for the foreseeable future. No overseeing structure is needed to link trading systems.

There is no single metric for evaluating relative efforts of different countries, though there is a range of metrics that can throw light on the subject. The appropriate consideration is whether international partners are taking *appropriate* levels of action rather than *equal* levels. Making U.S. policy formally contingent on specific actions in other nations would be counter-productive, but formal or informal review of relative efforts is a normal part of international negotiations.