

**Testimony of David L. Sokol, Chairman and CEO
MidAmerican Energy Holdings Company
Subcommittee on Energy and Air Quality, Committee on Energy and Commerce
U.S. House of Representatives
March 16, 2007**

No one should underestimate the challenge of de-carbonizing an economy that has relied on carbon-based fuels for two centuries. Adopting arbitrary reduction requirements and timelines with unknown impacts will place the largest unfunded mandate in U.S. history on every American. Technology development is the key.

How can we move forward? We recommend a phased-in, technology and policy-driven approach to reduce long-term global greenhouse gas emissions while minimizing the costs and risks to our economy. Transitioning to a low-carbon economy cannot take place overnight, but there are measures we should undertake now:

Phase 1 - technology development, sector-specific reductions and policy reform.

Phase 2 - a hybrid system of phased-in emissions reductions based on carbon intensity

Phase 3 – Goal of 1990 emissions levels by 2030 with dramatic reductions thereafter.

Any mandatory domestic program must include flexibility measures allowing future Congresses and presidents to adjust requirements based on periodic reviews of science, technology, economic impacts and international cooperation. Legislation should not pick winners and losers. It must avoid undesirable emissions reductions such as fuel-switching to natural gas or emissions shifting overseas. It must protect consumers who will ultimately pay the costs of any program. This legislation requires careful analysis, attention to detail and willingness to address tough policy issues.

Testimony of David L. Sokol, Chairman and CEO
MidAmerican Energy Holdings Company
Subcommittee on Energy and Air Quality, Committee on Energy and Commerce
U.S. House of Representatives
March 20, 2007

Thank you, Mr. Chairman. My name is David Sokol. I am chairman and CEO of MidAmerican Energy Holdings Company, an electric and gas utility company with energy assets in twenty states and around the world. Our generating mix is highly diverse, with one of the largest renewable energy portfolios in the country, including hydroelectric, geothermal, wind, biogas and biomass. In addition, we own or operate coal, nuclear and natural gas-fired assets.

At MidAmerican, one of our core principles is environmental respect. As part of our commitment to the environment, we have worked to reduce our carbon intensity by nine percent since 2000. We have done this through a combination of operational improvements, efficiency upgrades and investments in renewable energy. In the last five years, we have added almost 1,000 megawatts of new renewables to the combined systems of our two utility affiliates, and we expect to add as much as 2000 megawatts more by 2015.

I commend you for holding the series of vigorous hearings that you and Chairman Dingell have scheduled. At MidAmerican, we believe it is our responsibility to work with policymakers and regulators to ensure that you – and they – have the best information available regarding climate change.

No one should underestimate the challenge of developing a plan to transition away from the carbon emissions-intensive industrial economy that has fueled more than two centuries of economic growth and development. Responding to arbitrary timelines with ill-conceived solutions will produce either political gridlock or bad public policy – which our country cannot afford. Consumers, particularly lower income Americans who spend a disproportionately large percentage of their incomes on energy, will ultimately bear the costs of making this dramatic transformation. These costs include paying higher energy prices as well as potential job losses if carbon-intensive industry relocates overseas. The timelines you adopt for implementing changes will be the most important factors determining the economic and social costs of any climate policy.

The Science of Climate Change

There is a great challenge in attempting to discuss the scientific basis of climate change and its potential impact on the planet. The topic is too big and too complex for anyone to claim perfect information, particularly at this point in time. It seems to me that some general findings are becoming more clear, most specifically that the climate is warming and that human beings are contributing to this warming through the burning of fossil fuels.

However, as we attempt to move beyond this level of information to forecasting future impacts, there is far more uncertainty than certainty. We simply don't know how much warming there will be or how much sea levels are likely to increase.

A tremendous amount depends on factors that scientists have admitted we do not have reliable modeling tools to predict at this time, such as how clouds react under different scenarios and the role of aerosols. In general, the range of scientific opinion on the impacts of climate change has narrowed significantly in the last five years. Nonetheless, that range still stretches from relatively modest impacts to long-term, fundamental alterations.

We also need to be careful to separate scientific consensus from speculation as we attempt to form public policy. I do not believe the best climate science supports the notion that every isolated weather event is an unprecedented manifestation of human-induced climate change. The climate has always been dynamic, and mankind has always suffered from the extreme forces of nature. However, human beings also survive and thrive in an incredibly diverse range of climates. Given that every dollar spent on reducing greenhouse gas emissions and avoiding potential impacts of future climate change is one less dollar that can be invested in education or disease eradication or even other environmental programs that directly protect human health, we must weigh risks and benefits carefully and spend our resources prudently.

Looking at the range of potential climate changes we are facing, the balance of evidence supports the need for actions to minimize the risk of worst-case scenarios. Recognizing that there are broad ranges of opinion among the public, on this committee, and in the Congress on the risks of climate change, I would suggest that everyone may be able to

agree on the prudence of developing a long-term plan to minimize the potential of extreme climate disruptions over the next century. The primary focus should be on achieving sustainable global emissions levels in the longer term, rather than immediate and dramatic U.S. reductions. Put another way, the level of U.S. greenhouse gas emissions in 2012 is less important than the level of global greenhouse gas emissions in 2050.

The Importance of Developing a Template for Developing Countries

Recognizing the role of developing countries in curbing greenhouse gas emissions is not a justification for inaction. The United States' share of global emissions will decline rapidly over the next several decades. For example, according to the International Energy Agency's World Energy Outlook 2006, China and India will account for almost four-fifths of the incremental increase in coal consumption worldwide through 2030.¹ In a recent column in the New York Times, Gregg Easterbrook of the Brookings Institute noted that by 2050 under current trends developing countries will emit twice as much carbon as the United States and Western Europe combined.² Noting this is not intended as a criticism of China, India and the other developing nations. Overall, their recent economic development successes have lifted hundreds of millions of people out of dire poverty. In many ways we should hope their success is replicated in other developing nations throughout the world. We must recognize, however, that if we hope to some day look back on a 21st century African economic miracle or see Latin America reach its full

¹ World Energy Outlook 2006, International Energy Agency, Summary and Conclusions, p.2.

² "Al Gore's Outsourcing Solution," by Gregg Easterbrook, New York Times op-ed contributor, March 9, 2007.

potential, the developing nation challenge will become even more acute. In crafting climate change policy for the United States, these facts must be at the forefront of our thinking. We should strive to develop a policy that does not economically disadvantage American workers and businesses in the near term while creating a template that can be integrated into a long-term global system and replicated in the developing world.

Avoid Picking Economic Winners and Losers

You must also seek to impose this new system in a way that does not disproportionately burden any sector of the economy or consumers in any region of the country. I believe that the greatest potential for success lies in developing legislation that does not attempt to pick winners or losers. The decisions made over many decades that determined fuel mix were economically rational and in virtually all cases approved by regulatory authorities. We've made tremendous environmental progress in this country over the last half-century, but greenhouse gases have not been recognized as an environmental priority until recently. Since 1970, Gross Domestic Product (GDP) has increased 165 percent while cumulative emissions of the six primary criteria pollutants have declined by more than 53 percent.³

Many do not know that this historic progress in improving public health and the environment has required modest increases in CO₂ emissions because of the energy lost by running our emissions control systems. This is just one example, but I believe it

³ "Air Emissions Trends – Continued Progress Through 2005," The United States Environmental Protection Agency, October 3, 2006.

demonstrates that the utility sector has done the work necessary to meet the challenges asked of it. It's simply not constructive to attempt to retroactively punish or unjustly reward companies for the carbon intensity of their fuel mixes. Passing climate change legislation will be an enormous challenge, and the most likely path to consensus lies in avoiding punitive or unfair legislation.

Applying the Tools of Business Management to the Climate Debate

In general, we have been disappointed by the debate to date in Congress. There has been far too much focus on the enforcement system and far too little attention paid to developing the tools necessary to actually achieve reductions. At MidAmerican, we approach our key challenges through a multi-stage process whose primary components are – assess, plan, execute, measure and adjust. Applying these same tools to the challenge of dealing with greenhouse gas emissions and climate change, we recommend a multi-phased, economy-wide approach that matches emissions reduction goals to reasonable expectations of technology development.

Our recommendation is based primarily on concepts developed by the Electric Power Research Institute (EPRI) in their recently released presentation “Electricity Technology in a Carbon-Constrained Future.” In that document, which I strongly recommend that every member of Congress review before voting on global climate change legislation, EPRI lays out a technology path for the electricity sector to return to 1990 emissions

levels by 2030.⁴ This will require the long-term commitment of billions of dollars in energy research, development and deployment in every aspect of electric generation, transmission and consumption.

EPRI establishes specific technology deployment targets in seven areas: efficiency, renewables, nuclear generation, advanced coal generation, carbon capture and storage (CCS), plug-in hybrid electric vehicles (PHEV) and distributed energy resources. While one could argue that CO₂ reductions from some of these targets could be slightly higher or somewhat lower, the overall picture is clear – we can get from here to a low carbon future, but only with substantial and consistent investment, the right policy choices and a realistic timeline. The most encouraging aspect of the study is that, as we move toward 2030, emissions levels can begin falling fairly dramatically and the potential of some of the more dire predictions of climate change can be minimized.

Socially Desirable and Undesirable Climate Costs

What this emphasizes in my opinion is that there will be a hierarchy of value in the dollars we spend attempting to address climate change. The best use of our national resources is in technology research and development, particularly in the areas of advanced coal development and carbon capture (which yield the greatest benefits in the out years), but opportunities for emissions reduction and avoidance exist across the sector. The next best use and the one that offers immediate opportunities for slowing

⁴ Electricity Technology in a Carbon-Constrained Future, Electric Power Research Institute, February 2007.

carbon emissions growth and diversifying our fuel mix comes from government and private investments in energy efficiency, renewable energy, and increasing the efficiency of our existing fossil generation. What we should seek to avoid, however, is passing legislation that will force our customers, your constituents, to spend money on short-term emissions reductions that do not provide a long-term path to a low carbon future.

Funding technology research and development is critical. John F. Kennedy told a joint session of Congress in May of 1961 that America should commit itself to the goal, before the decade is out, of landing a man on the moon. Does this analogy apply to our global climate change challenge? Well, in 1961, President Kennedy had a space program, rockets, and a Congress committed to fund the necessary technology. We have neither. Federal spending on energy R&D has decreased 85% since the early 1980s.

Failing to take technology development timelines into account could well result in unintended consequences, such as large-scale fuel-switching to natural gas, which already is in tight supply and faces serious infrastructure constraints, and emissions shifting to countries without carbon controls. Large-scale fuel-switching to natural gas for electric generation will also require increased dependence on imported liquefied natural gas (LNG), exacerbating our balance of trade issues and reducing, not increasing, our energy security. During the 1990s, many mistakenly believed that a wholesale switch to natural gas-fired electric generation offered a painless path toward eliminating coal from the fuel mix. As our friends in the agriculture, chemical and fertilizer industries can attest, this was a dead end, and it continues to reverberate negatively throughout our economy.

MidAmerican's Climate Proposal – Phase I

In the first phase of our legislative outline, we suggest focusing on technology development and sector-specific reductions from existing technologies that may have incremental costs that are slowing deployment. In the electricity sector, for example, we propose six priorities:

1. Adoption of flexible renewable and clean technology portfolio goals.
2. More stringent energy efficiency mandates.
3. Policies to encourage efficiency improvements at existing facilities.
4. A ten-year, multi-billion dollar research and development program for emission reduction, funded equally by the private sector and the government
5. Removing the legal and regulatory barriers to the development of low-emissions technologies such as carbon sequestration and new nuclear development.
6. Tax policies to support these programs, such as a long-term extension of the renewable energy tax credit and clean coal initiatives.

While we are not experts on other economic sectors and the emissions reductions opportunities that exist in these areas, we have provided in our model “Global Climate Response Act of 2007” a listing of other sectors that must be addressed and some potential policy options for reducing emissions that are under discussion. Working on both the electricity policy recommendations and the options for other economic sectors

first will allow Congress to benefit from years of debate that has already taken place. The cause and effect relationships of new proposals in these defined policy areas are fairly well-understood. It will also allow you to spend more time focusing on how to integrate climate programs across these sectors and develop policies that support new technology development.

One excellent example of how this could work successfully is the long-discussed issue of establishing goals for the generation of electricity from renewable resources. As you know, these proposals were subject to extensive consideration in the conferences on the comprehensive energy bills of 2002, 2003 and the Energy Policy Act of 2005.

Nonetheless, they have never been enacted. As long as renewable energy legislation recognizes (1) that achievement of the goals must be cost effective for customers; (2) that a **uniform** national renewable credit trading market is essential; and (3) that some reasonable flexibility must be included in these proposals to accommodate the concerns of regions with low levels of indigenous renewables by giving credit for efficiency and demand-side spending as well as investments in breakthrough zero emissions technologies, then I expect there would be broad bipartisan support for a national clean energy portfolio requirement. Developing this program as part of a comprehensive climate response program rather than just as narrow measure to mandate renewables would also address some philosophical concerns about the mandate both in Congress and the private sector. Our colleagues at Xcel Energy have further developed a very thoughtful proposal, initially proposed by then-Chairman Barton during the EPAAct 2005 conference, on a Clean Energy Portfolio Standard that would achieve far greater carbon

emissions reductions than most Renewable Portfolio Standard (RPS) proposals. I would commend their proposal to the Committee's attention. Similarly, Congress should take another look at more stringent energy efficiency requirements across-the-board from small appliances to large buildings and adopt the most robust standards possible.

With regard to the public-private energy research and development partnership, this concept is receiving serious consideration by many who would normally be averse to new service adders. We simply cannot meet overly aggressive mandates and continue to provide our customers reliable, affordable electricity without technology breakthroughs. The investments necessary far exceed the ability of any utility company alone to finance the development of such technology given our regulated nature and the significant "first-mover" costs involved in making investments in new technology.

We also know that we cannot rely on Congress to provide an adequate funding stream for energy technology investment through annual discretionary appropriations. Making this public-private partnership a reality will require the industry to step forward and self-finance part of the program, but Congress must work with us to identify a way to ensure a consistent funding stream for this initiative that is insulated from the rest of the federal budget. Our industry has had a bad experience in this regard with the spent nuclear fuel program, and neither we nor our customers will support moving forward without this protection.

Another area that must be addressed is providing more predictable incentives for deployment of renewable energy and energy efficiency technologies. The Energy Policy Act of 2005 has led to an unprecedented boom in renewable development, particularly wind power. Unfortunately, though the two and one-half year extension of the Section 45 renewable production tax credits (PTCs) provided in EPACT did a great deal of good with regard to wind, the extension was still too short to facilitate much new investment in higher capital, base load renewable technologies such as geothermal and incremental hydro. Short-term extensions of the PTC have also created a near perpetual sellers' market for wind turbines that drives up the cost of projects and hampers the development of the domestic wind manufacturing industry. The single most effective step you can take to expand renewable energy production in the United States is a long-term extension of the Section 45 PTC.

The Need to Address Policy Issues on the Front End

The final major element of the first phase of any climate policy must be establishing policy frameworks for dealing with issues such as carbon capture storage, benefit allocations for plug-in hybrids, eliminating regulatory barriers to greater carbon efficiency for existing fossil generation and settling the spent nuclear fuel issue. Science Committee Chairman Gordon has made a constructive contribution to this discussion with his proposal for a geological survey to establish the United States' carbon sequestration capacity. This is exactly the type of forward thinking that we need.

Establishing limitations that have certainty while leaving uncertainty as to future litigation, regulation and implementation is a recipe for disaster.

Any thoughtful approach to climate change must include a return to nuclear development in this country. Unlike carbon sequestration, the main barrier to new nuclear projects in is not technological, but political -- the ongoing failure of the federal government to meet its obligations regarding spent nuclear fuel. For more than two decades, customers have paid these fees, utilities have collected them, and the federal government has failed to meet its obligations. Without regulatory certainty on spent fuel, the financial community will hesitate to provide the capital necessary for these billion dollar plus projects. We are not a large nuclear company, and I don't have a preferred solution, but this is a case where government has failed the private sector and the consumer. If you're serious about addressing global climate change, you must open the door again to nuclear power.

Moving forward on these policy issues will require hard choices on the part of Congress, not just setting targets and sanctions that the private sector must comply with. Make these issues part of the climate consensus now. Don't wait for them to become part of a supply crisis tomorrow.

MidAmerican's Climate Proposal – Phase II

Beginning around 2020, as new baseload zero- and low-emissions technologies become available, we propose moving to the second phase of an emissions reduction program.

We suggest a hybrid system of phased-in emissions reductions based on carbon intensity targets, together with trading and safety valve price mechanisms. While we do not recommend specific targets for carbon intensity reduction or a safety valve price in our proposal, we are generally comfortable with the levels proposed by Chairman Bingaman and Senator Specter in their discussion draft. We understand that Chairman Bingaman has indicated that he may make these provisions more stringent in a future draft of the legislation. We believe there is room in the out-years of the Bingaman proposal for tighter carbon intensity targets, but hope that any changes to the original Bingaman-Specter draft will be subject to rigorous analysis with regard to economic impact and technical feasibility.

Using the carbon intensity-based approach with a safety valve price has several advantages. While establishing a market price for carbon emissions, this approach would establish a cost ceiling for this transition should the reduction levels enacted into law years before prove unachievable. If the reduction requirements were not ambitious enough, the safety valve price will be a non-issue. Having a safety valve price in place also provides flexibility in terms of allowance allocations, particularly across economic sectors. Building one mandatory system that integrates all sectors of the economy will be a major challenge. Should Congress misallocate allowances, even based on the best estimates and analysis, the marginal cost of energy for consumers could become staggering. Done mistakenly, this could make the price spikes, capacity shortages and opportunities for market manipulation seen in the west in 2000-2001 appear minor by comparison.

The Need for New Energy Infrastructure

In addition to developing and commercializing low and zero carbon technologies, the American economy will need to build a new energy infrastructure to support hybrid vehicles, renewable fuels, remote sources of renewable electricity, carbon sequestration and interstate transport, and spent nuclear fuel. This will require enormous quantities of steel, cement, specialty alloys, chemicals and other commodities. We have already seen the impact that the rising economies of China and India have had on these markets and global emissions levels. While we support moving aggressively once the technology is there, building this infrastructure will be energy-intensive and there will be global competition for resources. We have suggested a ten-year deployment phase for new technology infrastructure, but this may well prove overly ambitious.

Efficiency Performance Requirements and Improvements

Once technology is in place, and assuming that the industry has been provided greater flexibility and certainty to allow for efficiency upgrades to existing plants, Congress should establish minimum generation performance standards that will phase-out the system's oldest, least fuel efficient fossil plants. Though these plants can serve economically efficient functions in our portfolios because their capital costs have been paid off for years, they operate at substantially lower levels of fuel efficiency than today's technologies. If companies have not taken advantage of the opportunity to

upgrade these existing facilities, they should be required to transition them out of the fuel mix.

On the other hand, those who claim that all pulverized coal plants are inefficient or “dirty”, simply don’t know the facts. Our supercritical Council Bluffs 4 Power Plant completed this year will be fifteen percent more efficient than the last generation of plants built in the late seventies and early eighties and even more so than those built in previous decades. Compared to the performance of the previous generation of plants, that’s the equivalent of the emissions avoided by a 355 megawatt wind farm.⁵

Assuming some form of mandatory carbon regime, every new power plant will be built under the assumption of a carbon price of some form during the overwhelming majority of its useful life. Efforts to block the construction of even state-of-the-art supercritical coal plants throughout the country are extremely misguided. If coal opponents are successful, all that will be achieved at the end of the day is forcing electric generation back to natural gas and requiring older, less efficient plants to run longer and more often, harming both the environment and reliability. As suggested in MIT’s recently released study, coal is an especially crucial fuel in meeting the world’s pressing energy needs, even where constraints on carbon emissions are adopted.⁶

The Need for a Highly Skilled Workforce

⁵ These figures assume a 790 megawatt supercritical coal plant and a 33 percent capacity factor for wind turbines.

⁶ “The Future of Coal: Options for a Carbon-Constrained World” Massachusetts Institute of Technology, March 2007, Executive Summary p. x.

On the issue of technology deployment, one last factor to consider is workforce. In order to accomplish this transition, the United States will need a much larger, better trained skilled labor force than we have today. The congressional science and labor committees should explore how to ensure that the United States has the workforce necessary to not only lead in technology innovation, but also one capable of carrying out an unprecedented infrastructure development program. Today, one of the most serious constraints we face in building projects is the shortage of skilled labor, and without a focused effort in this area the problem will become even worse. In the 2005 Energy Policy Act, Congress authorized the establishment of a National Power Plant Operations and Technology Educational Center, but the Department of Energy has not moved forward with this recommendation.⁷ Last year's House-passed Energy and Water Appropriations bill directed DOE to begin this selection process, but this provision was not included in the year-end appropriations bill.⁸ The House should continue to support that effort.

Allowances and Allocations

With regard to emissions allowances and allocations, any allowance allocation scheme should be based upon a multi-year, historic fuel-adjusted heat input methodology. In the power sector, some consideration can be given to adjustments to these allocations for companies serving relatively fast-growing regions, but providing allowances to non-

⁷ Energy Policy Act of 2005, Section 1106.

⁸ House Report 109-474, Title III.

emitters based on the so-called output-based methodology will simply create large wealth transfers unrelated to the overall goal of emissions reduction. Although I understand the desire of some to profit as a result of global climate legislation, it's unclear what public purpose would be served by distributing allowances to non-emitters. Companies that built hydroelectric dams many decades ago or nuclear plants in the sixties and seventies did not do so to avoid CO2 emissions and there is no reason to provide them with a financial windfall.

You may also consider auctioning all allowances, but providing a proportionally lower safety valve price. In other words, rather than providing allowances for ninety percent of historic demand in the first years of a program with a safety valve price of \$10 per ton for the remainder of allowances, you could auction all allowances with a safety valve price of \$1 per ton. This is economically neutral and would save you the inherently political process of determining allocations, helping avoid some of the allocation fiascos that we have seen in the European Union.

MidAmerican's Climate Proposal – Phase III

By using this transitional glide path, the U.S. should be poised for dramatic reductions in the third phase, beginning around 2030. I believe the country would be wise to acquire experience with the second phase's hybrid system before making a final decision on the most appropriate compliance system. A decade's experience with the carbon-intensity based program may demonstrate that a pure cap-and-trade system can work in an

efficient and equitable manner across economic sectors. On the other hand, we could learn that the safety valve mechanism serves a valuable function in discouraging market manipulation and speculation-driven acquisition of allowances. Or, should problems persist in design and oversight of these markets, a straight-forward carbon fee might prove to be the most effective method for reducing emissions.

The Need for Flexibility Measures – “Shock Absorbers” and “Off Ramps”

Any mandatory domestic program must include flexibility measures allowing future Congresses and presidents to adjust requirements based on periodic reviews of climate science, technology development, economic impacts, and international cooperation. We should design a program for reducing carbon emissions with “shock absorbers” that will allow us to learn, reassess and periodically modify our goals based on experience. I don’t believe that anyone has enough knowledge today to accurately predict all the impacts of a comprehensive carbon emissions reduction program decades from now. Having this type of flexibility in legislation should also provide a helpful tool in international negotiations. Our negotiators will need every resource available to them – both carrots and sticks -- to encourage other countries to adopt and enforce comparable emissions reduction programs while ensuring that the United States does not bear a disproportionate share of the climate change burden.

Before moving to mandatory emissions caps, there also must be a mechanism in place to suspend these requirements if other major emitting nations have not adopted comparable

and enforceable programs. I'm not proposing that every developing country in the world adopt the same emissions reductions on the same schedule as the United States. It is essential, though, that everyone is pulling in the same direction and contributing proportionately to global emissions reductions. Suspending the imposition of a mandatory emissions reduction program should not be done unilaterally by the President. We would recommend that such a recommendation be considered by Congress under "Fast Track" legislative procedures, but this "off ramp" would let us move forward with enacting a climate policy program now, but give our international negotiators far greater leverage.

A Cautionary Note on Cap-and-Trade

Finally, I'd like to raise a cautionary note about the cap-and-trade concept. Many are advocating immediate reductions based on a flawed understanding of cap-and-trade. It can be a useful tool, but it is not a panacea.

Cap-and-trade is a regulatory mechanism, a rationing system with a secondary trading market. It does not supply emissions-free power; it does not bring new technologies on-line. Cap-and-trade does not reduce prices for non-emitting technologies. It merely raises prices for carbon-based emissions.

As Chairman Dingell has reminded us, every carbon-consuming action (power generation, driving, manufacturing) will still have an equal and opposite reaction, and we

must identify new ways to manage the reaction side of the equation. While I agree that market signals will accelerate technology development some, we have no idea how much and the laws of physics can have a stubborn resistance to economic theory.

With regard to comparisons with sulfur dioxide, the SO₂ trading system created by the 1990 Clean Air Act amendments is rightly viewed as a great success, but reducing carbon dioxide emissions is much more complex. SO₂ is a byproduct of coal combustion. CO₂ is the product of all combustion. We cannot achieve easy reductions merely by shifting to low sulfur coal, as many did with SO₂. The sulfur program applied only to the utility sector, not economy-wide, and off-the-shelf technology was already available at the time to reduce SO₂ emissions. Lastly, the SO₂ program addressed an immediate, well-understood national and regional problem, not a challenge whose impacts we are only beginning to define that must be dealt with globally on a time frame measured in decades and centuries.

Summary

Given these complexities, we believe that a phased-in, technology and policy-driven approach provides the tools necessary to successfully reduce long-term global greenhouse gas emissions while minimizing the costs and risks to our economy. As MIT's recently-released study suggests, it is not likely that any one path to emissions reduction will emerge; all will play a role in proportions in that are impossible to predict today.

We have attached a detailed legislative outline of our proposal for your review. I hope this will prove useful to you and all members of the Committee. Thank you and I would be pleased to answer any questions you may have.