1. Please outline which issues should be addressed in the Committee's legislation, how you think they should be resolved, and your recommended timetable for Congressional consideration and enactment.

The American Chemistry Council (ACC) and its members welcome this opportunity to respond to the Committee on Energy and Commerce's thoughtful questions on climate policy. We look forward to working with the Committee to develop policy that serves the Nation's best interests.

We start by taking note of the strong historic linkage between energy use and greenhouse gas emissions. The trend lines are closely parallel. That linkage gives the US chemical industry a unique perspective on these issues. The industry is a major user of energy inputs – we use more natural gas than the state of California and more electricity than the state of New York – and, we are a major producer of products and materials (including insulation, caulking, sealants, packaging, light-weight auto body parts, and much more) that make the US economy more energy efficient. Simply put, we use energy to save energy. That makes America's chemical industry a major contributor to climate protection solutions.

Solving the nation's energy challenges will go a very long way toward meeting our climate objectives. There is a wide range of enabling energy policies that would, if implemented, allow the United States to continue to reduce its GHG "footprint":

- Open access to new sources of low carbon natural gas supply
- Accelerate commercial development of carbon capture and storage (CCS) technologies
- Promote advanced nuclear generating capacity
- Implement aggressive energy efficiency and renewable energy programs
- Do not force unsustainable fuel switching in the absence of adequate natural gas supplies
- Invest in highly efficient, commercially ready Combined Heat and Power technology
- Fund research, development and deployment into breakthrough technologies.

More to the point, ACC believes there are 5 key elements to consider in enabling a sound response to climate policy:

A. Learn from the Natural Gas Crisis

Today, and for the foreseeable future, the US does not have a national energy policy in place to permit a sound response to climate change without triggering economic dislocations, especially in sectors of the economy that compete in global markets. Unless new policies are put in place soon, the economy will continue to move to meet emissions reductions targets by switching from coal to natural gas. The industrial sector, with its limited ability to pass through higher input costs, could be pitted against less price sensitive sectors for a limited supply of natural gas and potentially priced out of the market.

We have already seen how this zero sum game plays out. Over the past decade, utility demand for natural gas increased by 2.1 trillion cubic feet (TCF); demand destruction (economic contraction) caused industrial demand to fall by 1.9 TCF, a decrease of nearly 20 percent. Increasing competition for a scarce supply of natural gas drove the price of natural gas to record levels in the first half of this decade, imposing $425 billion in added costs to consumers and contributing to the loss of 3 million jobs in the manufacturing economy. Climate policies that have the effect of creating even more demand for natural gas, absent adequate supplies, will result in additional industrial demand destruction and job loss.

B. Assure Fuel Diversity in the Power Sector

Lower carbon power generating technologies now account for less than 50 percent of electricity production. The country will have to make major investments in new nuclear power, renewables, combined heat and power and energy efficiency just to keep pace with demand growth, let alone replace higher carbon sources of power generation. A recent study by the Electric Power Research Institute, *Electricity Technology in a Carbon-Constrained Future* (www.epri.com) illustrates what needs to happen. Simply stated, coal must be a major part of the solution.

According to a new report issued by Massachusetts Institute of Technology, *"The Future of Coal: Options for a Carbon-Constrained World"* (March 2007), coal "will continue to play a large and indispensable role in a greenhouse gas constrained world." The MIT report concludes that "CO2 capture and sequestration (CCS) is the critical enabling technology that would reduce CO2 emissions significantly while also allowing coal to meet the world's pressing energy needs."

According to Wood Mackenzie, a respected international energy consulting firm, 80 percent of utility CO2 emissions comes from the nation's 650 coal-fired power plants, but CCS technologies are not readily available. The government should make progress towards commercial deployment of CCS technology a top research, development and demonstration priority in the next decade. If commercial technology can be delivered economically to capture and store carbon emissions at those coal-fired power plants, the nation will have taken a giant step to reduce its carbon footprint.

C. Recognize and Reward Industries that have reduced their GHG Footprint and Promote Energy Efficiency.

Energy intensive US industries, like the business of chemistry, compete every day in the global economy. These businesses succeed by operating as efficiently as possible. "Industrials" is the one major emitting sector of the US economy that has reduced its GHG footprint since 1990. Some segments of the sector have exceeded the emissions reductions targets set out in the Kyoto Protocol.

The US chemical industry, for example, has improved its GHG intensity (emissions per unit of output) by 30.6 percent since 1990 and has achieved a 10 percent reduction in absolute GHG emissions in that period of time**.** The chemical industry is well ahead of its ClimateVISION commitment to reduce GHG intensity by 18 percent, and is ahead of the 7 percent GHG emissions reduction target proposed for the US under the Kyoto Protocol.

Policy makers should avoid making choices that disadvantage and drive out the industries that have already reduced GHG emissions. The industrial sector, for instance, invests more money in combined heat and power (CHP) technology than any other. CHP makes steam and electrons from the same fuel input and can be up to 80 percent efficient in the process (that is, it delivers up to 80 percent of the BTU value of the fuel input) twice as efficient as typical central station power production. Climate policy should encourage all participants to use energy inputs more efficiently.

The industrial sector does more than operate efficiently, however. Many in the sector also manufacture materials that make the rest of the economy more energy efficient. As noted above, the chemical industry uses energy to save energy. Every BTU of energy used to make polystyrene building insulation, for example, saves that building as much as 40 BTUs of energy over the life of the material. Better plastics and insulating materials have helped to improve the energy efficiency of refrigerators and air conditioning equipment by 30 to 50 percent since the early 1970s. Compact fluorescent light bulbs, made with chemicals that "fluoresce" (gives off light), use 70 percent less energy than conventional bulbs and last 10 to 20 times longer. Every pound of plastic used in an automobile produces two to three pounds of weight savings in that vehicle. Chemistry is a key enabler of climate protection solutions. Policy should recognize and reward participants who have made themselves more efficient and help make other sectors more efficient as well.

Policy makers should also recognize the fundamental difference between using hydrocarbons as a feedstock and using them as a fuel source. Nearly half of the hydrocarbons used by the chemical industry are feedstocks, the raw materials used to make chemical products that are found in 96 percent of the goods manufactured in the United States. Converting hydrocarbon feedstocks into durable goods – tires, carpets, bottles, computers, hospital equipment, auto parts – the list is practically endless – does not release greenhouse gases to the environment. Feedstock use of hydrocarbons must be expressly exempted from any mandatory greenhouse gas control program.

D. Make Any US Requirements Part of a Truly Global Initiative

Any mandatory US controls on carbon should take into account the global nature of the issue, incorporate an expectation of appropriate actions in all other countries that are significant sources of GHG emissions, and be flexible enough to accommodate future changes in international agreements under the UN Framework Convention on Climate Change as the international basis of action after the Kyoto Protocol's first commitment period ends (post-2012). The system should be designed in a way that permits the United States to make an appropriate contribution in reducing GHG emissions – but that also keeps American jobs at home in America.

E. Allow Time to Commercialize Enabling Technologies

The US energy market is not equipped to move quickly towards a lower carbon footprint without major fuel switching, additional demand destruction and job loss. If we move too abruptly, without means to "keep whole" disadvantaged actors, more efficient energy users will be pushed out of the market by less efficient users, thus undermining the goals of climate policy. In addition, capital cycle time should be considered in setting any climate policy. It will be a challenge to integrate and finance lower carbon technologies throughout the economy in the very short term.

In our view, US policy should pursue a path that addresses six important factors: 1) Seek near term low cost emissions reductions across all sectors through appropriate policies, 2) Provide sufficient time to bring enabling technology to market, including renewables, nuclear, clean coal, carbon capture and storage, and energy efficiency (including appropriate energy efficiency standards), 3) Include provisions to ameliorate disproportionate impacts that may occur in economic sectors, geographic regions or income groups, 4)Require the government to accelerate development and adoption of lower carbon technologies, 5) Condition, in some fashion, US implementation of a compulsory climate program on the actions taken by other major-emitting economies, and, 6) Rely primarily upon market-based mechanisms that allow the market to determine how the nation's GHG emissions reduction targets will be achieved. A key objective for policymakers should be to ensure that American industries can continue to successfully compete in global markets, and create and keep American jobs.

Question 1, continued:

For any policy recommendations, please address the impacts you believe the relevant policy would have on:

(a) emissions of greenhouse gases and the rate and consequences of climate change; and,

Because mandatory carbon controls can be either a blunt instrument or a program with more precise impacts, an effective policy will reduce GHG emissions while minimizing the adverse effects on the US economy. Mandatory controls could reduce the rate at which US emissions of GHGs, primarily CO2, are growing. Reduced emissions, however, could also occur because of much lower economic output, at both an economic and social cost. Global emissions of these GHGs could continue to expand, despite the presence of a domestic control program in the United States.

(b) The effects on the US economy, consumer prices, and jobs.

Measures to mitigate greenhouse gas emissions invariably involve trade-offs. ACC strongly recommends that the Congress broadly consider the economic, consumer and employment effects of all carbon management options (e.g., voluntary actions, cap-and-trade, cap, intensity targets, tax mechanisms, subsidies and incentives, regulations and standards, energy efficiency programs, and research, development and demonstration (R&D&D) programs, among others).

ACC believes that such an assessment of the broad economic effects of a carbon control program is a critical element in Congressional review and decisions on climate and energy policy. Congress should address the full range of potential options to limit GHG emissions including the range of options for cap and trade systems (upstream, downstream, with and without a safety valve), carbon (GHG) taxes and standards. A goal should be to achieve emissions results cost effectively at the minimum cost to the US economy. At a minimum, the following elements need to be considered:

- If a tax, at what level, for what period, with what economic and social impacts, and how would revenue be used?
- If a cap, where should the cap be placed and how are allowances to be distributed, for what periods, and to what sector(s) of the economy?
- The economic impact, if any, caused by higher fuel costs generally, particularly on households (especially low- and fixed-income households that use heating oil and/or electricity).
- What capital investments will be required by industry and consumers if fuel switching is encouraged by climate policy?

- What is the capacity of the capital cycle to finance the necessary investments in new and emerging technologies?
- Will there be differences in economic impacts for various states and/or regions due to the energy mix or type of industry presence?
- Will allowance allocations, or auctions, result in a windfall to one sector at the expense of others?
- How will climate policy affect industries and resources in which the US is particularly rich, such as coal?
- What blend of policies will be most effective at achieving the adequate level of cost-effective reductions across the economy?

ACC believes it is critical that we understand the full ramifications of any mandatory carbon control program and its potential ripple effects throughout the economy. For example, if a mandatory greenhouse gas control system is considered to have inflationary price effects, the program will likely increase the cost of key inputs to production, which could in turn reduce disposable income, economic growth and job creation. Lowered economic activity, in turn, could reduce other tax revenues. Government expenditures could increase as a result of higher transfer payments, interest rates and prices for government goods and services, with a consequent impact on the Federal deficit.

A particular concern for ACC is the extent to which carbon controls may disadvantage energy-intensive industries. This is especially the case for the chemical industry, which uses hydrocarbons not only for fuel and power purposes but also for raw materials (or feedstocks). Although the chemical industry has significantly improved its efficiency in its use of energy, energy still represents a significant share of US chemical industry manufacturing costs. For some products, hydrocarbons for both fuel and power needs and for feedstock purposes accounts for up to 85 percent of total production costs. A key characteristic of the chemical industry is its extreme complexity, encompassing thousands of products, largely industrial intermediates that are further processed into industrial and consumer products. Any analysis of the effects of a carbon control program should take these important elements into account.

It is true, of course, that benefits can also accrue from a system that places a monetary value on greenhouse emissions and is linked to a global system that commits all major emitters to reducing GHG concentrations. A chief benefit to setting a price for carbon emissions is that the government could raise significant revenue to invest in the R&D needed to accelerate innovations and breakthroughs in the basic science needed to develop lower carbon energy technologies.

2. One particular policy option that has received a substantial amount of attention is "cap-and-trade." Please answer the following questions regarding the potential enactment of a cap-and-trade policy:

At this stage in the development of US climate policy the full economic impacts of various mandatory carbon control options have not been fully assessed. Therefore, ACC neither supports nor opposes mandatory carbon controls. ACC's position ultimately will depend on the how such a system is designed and implemented. However, we understand the difficult task facing the Committee and we appreciate the Committee's effort to solicit the perspectives of a wide range of interests. In the spirit of assisting the Committee in this challenge, ACC has tried to respond to these questions to the best of our ability, recognizing that we cannot endorse, at this time, a cap-and-trade system.

Cap-and-trade systems are one of many carbon management options that merit attention and analysis. Other approaches worthy of consideration include tax mechanisms, subsidies, intensity-based targets, standards and rulemakings, voluntary programs tied to regulatory triggers, implementing enabling policies like a registry, R&D programs, energy efficiency programs, and increasing access to lower carbon supply, or hybrids that mix and match a variety of mechanisms.

ACC believes that the design of a carbon management system should be guided by certain key principles:

- Provide appropriate baseline protection and credit for early action that recognizes prior efforts to improve energy efficiency and reduce greenhouse gas emissions. Any credit for early action should be based on an accurate GHG emissions registry/inventory for all emission sources.
- Include the six categories of greenhouse gases (CO2, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride) included in the Kyoto Protocol, all emissions sources (with appropriate *de minimus* exceptions for industrial sources). Other gases with global warming potential should be considered, assuming the ramifications can be assessed.
- Recognize the long-term nature of the issue and incorporate a reasonable timeline for action, including rule promulgation, reporting, science reviews, and progress measurement.
- Recognize that investments in equipment and infrastructure with long lifetimes may also have long planning and implementation timeframes.
- Take account of evolving international architectures and seek ways to link with them where feasible, especially in the post-Kyoto (2012) time frame.
- Include implementing mechanisms (including taxes, allowances, credits or offsets) that do not disadvantage any sector over another. The value of flexible market mechanisms, cost transparency measures, and efforts to minimize complexity should be recognized.
- Achieve the lowest possible marginal cost for emissions reductions, and predictability in pricing mechanisms.
- Be linked to energy policies that, among other elements, expand supply, promotes steps to use natural gas more efficiently, and diversifies the fuel mix (such as gasification, building codes and appliance standards, public education, OCS access, tax credits, etc.).

- Not foster industrial demand destruction resulting from wholesale fuel switching from coal to natural gas in the electric power sector.
- Include a nationwide greenhouse gas emissions and intensity registry/inventory system. The accuracy and level of verification need to be balanced against cost, feasibility and intended use of the system, so that efforts are focused on actual reductions rather than recordkeeping and monitoring.
- Establish a mechanism for tracking and adjusting to market changes and economic impacts, such as a "safety valve" or other balancing approach.
- Differentiate and exempt feedstock applications of hydrocarbons which do not result directly in GHG emissions (both fossil and non-fossil) from provisions applicable to fuel applications.
- Assure that federal action preempts carbon controls imposed by state governments.

(a) Which sectors should it cover? Should some sectors be phased in over time?

For the purposes of discussing the design elements of a hypothetical cap and trade program, an aim should be to achieve results cost-effectively with minimum overall impact on the US economy. Costs of GHG mitigation would be minimized to the extent that the system is economy wide and covers the broadest array of emissions sources. In principle, all sectors and sources should be covered, though we do not believe a uniform system is the right solution.

The system should be phased in over time as lower-carbon technologies become available. It is important to note that cost-effective control technologies are not available at this time to begin a mandatory program. Congress must first enable commercial development of technologies to produce power with a lower carbon footprint. Some key technology targets are:

- Carbon capture and storage technologies at coal-fired plants
- Advanced nuclear power generation
- Renewable fuels and feedstocks
- Clean coal technologies
- Geologic carbon sequestration
- Combined heat and power
- Energy efficiency

Decisions on some aspects of a greenhouse control program must also address a few threshold questions:

- Are other high-emitting nations taking similar actions?
- Are lower-carbon technologies available at an affordable price?
- Will implementing the cap and trade trigger major fuel switching out of coal and into gas?
- Does the program design give unfair advantages to one sector at the expense of others?
- Does the system contain enough flexibility and contingency features to change the program, if conditions warrant?
- Does the program enable the lowest possible marginal cost for emissions reductions?

The US industrial sector, as noted elsewhere, is already controlling GHG emissions. This sector has a strong market signal in the form of the world's highest natural gas prices, resulting in billions of dollars a year in business lost to lower cost of overseas competition. Industrials have and will continue to make great strides to reduce energy intensity in their operations and supplying materials and products that make others more efficient as well. There is room for improvement in this area and we would be happy to discuss how industrials can continue to reduce their carbon footprint.

(b) To what degree should the details be set in statute by Congress or delegated to another entity?

To the extent Congress elects to include the details in the legislation, the designated implementation agency should have clear direction as to Congress' intent. The Acid Rain program is an example of a comprehensive program, developed by the US Congress. The NOx Budget Trading Program (NBP) is an example of a program where the details were left to state implementation. The NOx program is a detailed and challenging program with requirements that vary from state to state. We do not believe a cap and trade program with a system of allocating allowances that could determine winners and losers in the marketplace should be delegated to the states. Federal action should preempt carbon controls imposed by states. As noted elsewhere, Congress should expressly exempt hydrocarbon feedstocks from any legislation it writes.

(c) Should the program's requirements be imposed upstream, downstream, or some combination thereof?

On the plus side, an upstream approach represents a simpler system to administer, would likely be less subject to arbitrary and disproportionate allocation issues and would likely impose costs more comprehensively and uniformly across the economy. However, such a system may not galvanize as much response as a downstream system that applies directly to greenhouse gas emitters.

For the chemical industry, special consideration should be given to applying controls to GHG emissions, not energy inputs. That is because roughly half of the hydrocarbons we use are as feedstocks we convert into products. Those feedstocks do not get released into the environment and should not be covered by a control program.

(d) How should allowances be allocated? By whom? What percentage of the allowances, if any, should be auctioned? Should non-emitting sources, such as nuclear plants, be given allowances?

ACC's membership has not achieved consensus on the design features of a cap and trade system. Allocation or distributions of allowances is certainly a key design feature. In principle, implementing mechanisms should not disadvantage any sector over another, and Congress should recognize the value of flexible market mechanisms, cost transparency measures, and efforts to minimize complexity. Allowances should not be granted to a non-emitting source. Non-emitting sources will be rewarded in the marketplace in a carbon-constrained economy.

The National Commission on Energy Policy has issued a new White Paper called *"Allocating Allowances in a Greenhouse Gas Trading System."* Several points in the paper bear repeating here:

> "Because allocation is a zero-sum game (there are only so many allowances to give away), policy-makers should avoid over-compensating some entities at the expense of others."
>
> "There is no approach to allocation that can hold harmless all stakeholders or render entirely costless a policy for reducing greenhouse gas emissions."
>
> "Recent experience with the Emission Trading System (ETS), now being implemented by the European Union (EU), suggests that the potential for windfall profits, far from being purely hypothetical, is borne out by empirical evidence, with utility companies that received free allocations under the EU program having realized substantial gains."

The allocation question is complex and requires careful scrutiny. ACC believes that Congress should assess these and other aspects of the issue:

- How are allowances to be allocated, and to what sector(s) of the economy?
- How will feedstocks be treated in an allocation system?
- Are allowances tradable?
- Will allowance prices distort energy prices? What will be the effects on energy consumption patterns and the US economy?
- If allowance trading increases the cost of coal, petroleum, and natural gas, what are the impacts on the cost of domestic and imported hydrocarbon energy and electricity?
- If there are added costs resulting from tradable allowances, are those costs internalized or passed on to consumers? For the chemical industry, these costs cannot generally be passed to customers.
- Will carbon allowance costs impact market prices for different grades or types of fuels (e.g., different types of coal with different thermal and carbon contents), and thus disadvantage one type of fuel over another?
- Will allowance allocations, or auctions, result in a windfall to one sector at the expense of others?
- Will carbon allowances promote a significant increase in consumption of one fuel source (e.g., natural gas) over another? What will be the impact on the price of natural gas relative to other fuels and goods and services?
- Will allowances/credits be available to materials/products that reduce greenhouse gases emissions by making users of the materials more energy efficient?

(e) How should the cap be set (e.g., tons of greenhouse gases emitted, CO2 intensity)?

An intensity based metric can provide more flexibility than hard tonnage limits, though the goal should be to achieve absolute reductions Setting caps should take into account the availability of lower carbon enabling technologies, what other high-emitting countries are doing, and whether the cap will trigger a wave of fuel switching.

(f) Where should the cap be set for different years?

The conditions described in (e) also apply in (f). Those conditions should not be viewed as an excuse to take no action. In any system, progress can begin immediately toward curbing emissions through aggressive pursuit of energy efficiency measures, and by providing information and incentives to reduce emissions. Any discussion of setting caps should also take into consideration appropriate future dates to allow 1) project and capital schedules to adequately accommodate the changes and 2) new technologies to be proven and commercially available.

(g) Which greenhouse gases should be covered?

The UN framework seems reasonable to ACC and its members. All six categories of greenhouse gases (CO2, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride) should be included in any domestic system. All emissions sources (with appropriate *de minimis* exceptions for industrial sources). Other gas emissions with global warming potential should be considered in such a system, and the ramifications of any reductions strategies must be explicitly considered.

(h) Should early reductions be credited? If so, what criteria should be used to determine what is an early reduction?

Credit for early reductions of GHG emissions must be available under any domestic system. Appropriate baseline protection and credit for early action will recognize previous efforts to improve energy efficiency and reduce greenhouse gas emissions, but should be based on an accurate GHG emissions registry or inventory for all regulated sectors.

It will be important to assure that the criteria for credit do not inadvertently preclude legitimate reduction actions taken by the private sector.

(i) **Should the program employ a safety valve? If so, at what level?**

Yes, the program should establish a mechanism for tracking and adjusting to market changes and economic impacts, such as a “safety valve” or other balancing approach. In particular, a safety valve provides an upside limit against anticipated volatility in allowance price.

Several types of approaches to the safety valve concept should be considered. For instance, what should the US do if other major emitting nations do not take action? What should the US do if the lower carbon enabling technologies are not ready to deploy? What should the US do in the event of a steep economic downturn? Job leakage should also be considered as a trigger for sector-specific safety valves or safeguards.

(j) Should offsets be allowed?

Offsets are a legitimate and often cost-effective way to manage GHG emissions, as an additional mechanism that is not limited to a percentage of reductions. Congress should allow both domestic and international offsets. In general, ACC believes that biologic and geologic offsets should be allowed, as well as offsets resulting from technology transfers. In the latter case, the offset should allow a lower-emitting technology to replace a higher-emitting technology in a developing country, and not provide an offset on the simple transfer of the emissions source to a developing country. ACC would be pleased to work with others to develop efficient, transparent and reliable procedures for offsets.

(k) If an auction or a safety valve is used, what should be done with the revenue from those features?

Revenues should be reinvested in lower carbon technologies, energy efficiency programs and government-sponsored inventories of natural gas reserves. Consideration should be given to funding of carbon capture and storage (CCS) technologies if they approach commercial readiness by the middle of the next decade. Current government timelines for deploying this technology are simply unacceptable. Failure to bring commercially-viable CCS technologies to market rapidly will lead to fuel switching from coal to gas in the electric utility sector and cause industrial demand destruction and job loss.

(l) Are there special features that should be added to encourage technological development?

Any federal assistance that is given to a major emissions source (e.g., coal-fired power plant) should be conditioned on the source's agreement to invest in state-of-the art generation technology that does not involve fuel switching. ACC sees a need for a dedicated funding stream to finance the R&D needed to put the economy on a lower carbon pathway. The regulatory barriers that exist to the demonstration and deployment of CCS technologies should also be addressed. ACC also believes that Congress should consider incentives for technologies that provide alternative feedstocks for the chemical industry.

(m) Are there design features that would encourage high-emitting developing countries to agree to limits on their greenhouse gas emissions?

A mandatory domestic system could be designed to encourage high-emitting developing countries to agree to limits on their GHG emissions. The domestic program could send a clear message to developing countries by expressly conditioning the US program on their commitment to and participation in a climate control program. In addition, the United States may wish to consider how access to state-of-the art low carbon generation technology could be provided, through grants or credits that encourage the purchase of those technologies from US interests.

China's installed capital emits four times more emissions than installed US capital and new capital investments in China emit twice the emissions of new US capital investments, according to a CRA report commissioned by the International Council on Capital Formation. Closing the technology gap, especially in power generation, would have a dramatic impact on global greenhouse gas emissions.

3. How well do you believe the existing authorities permitting or compelling voluntary or mandatory actions are functioning? What lessons do you think can be learned from existing voluntary or mandatory programs?

ACC interpreted this question in two ways, one relating to carbon controls, and the other relating to current cap and trade systems.

a) <u>Existing carbon programs</u>

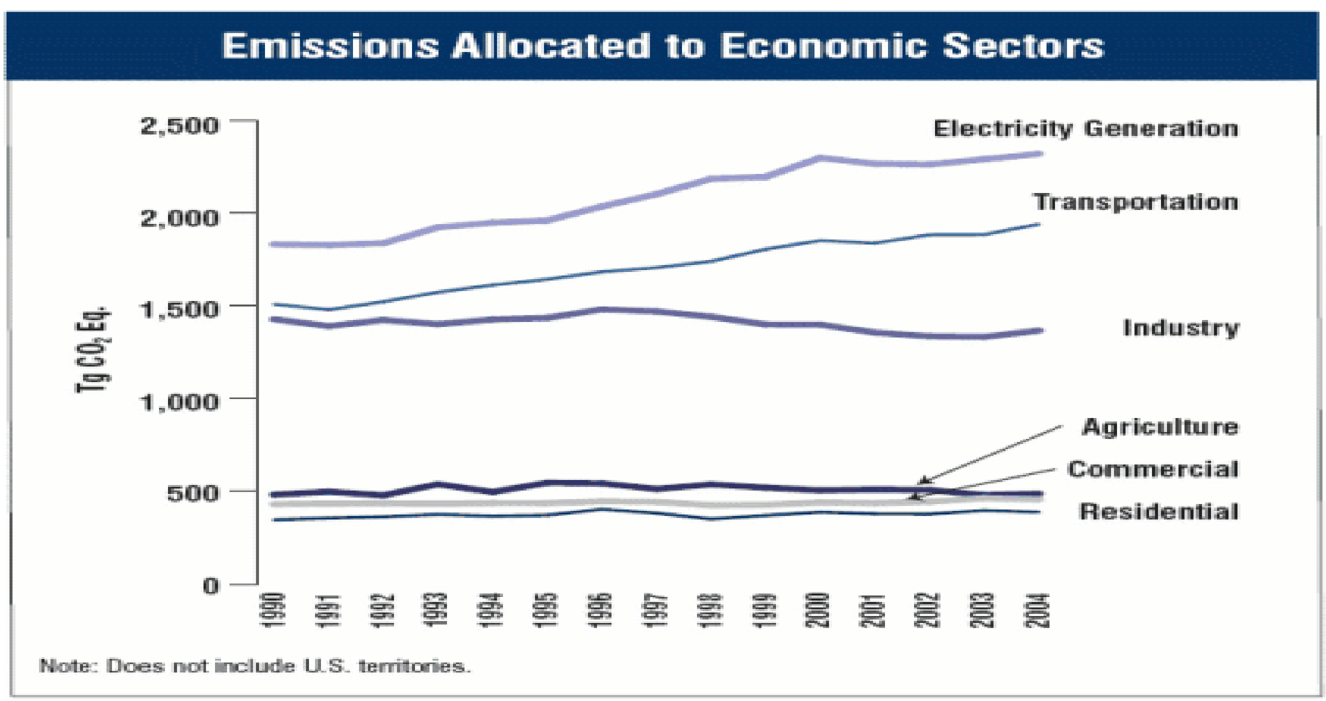
ACC results:

Between 1990 and 2005, the US chemical industry's voluntary actions improved GHG intensity by 30.6 percent, with an outright 10 percent reduction in GHG emissions (30 million metric tons). Since 1970, the US chemical industry has reduced fuel and power energy consumption per unit of output by 46 percent. Much of the energy consumed by the chemical industry is used to make materials that make the rest of the economy more energy efficient.

In 2003, ACC established a greenhouse gas intensity reporting mechanism under its Responsible Care® program to obtain more specificity on GHG intensity reductions by ACC members. Between 2003 and 2005, ACC member companies have reduced their greenhouse gas intensity per pound of production by 5 percent.

Since 1990, the industrial sector as a whole in the US has reduced its overall GHG emissions, while other sectors have continued to increase GHG emissions. It is important that industry's contributions to reducing GHG emissions be recognized.

US Greenhouse Gas Emissions Allocated to Economic Sectors[1]



[1] *Reference: Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2004, usEPA #430-R-06-002*

Comparison to Kyoto:

From 2000-2004, the United States' CO2 emissions growth rate was 2.1 percent, compared to the EU-15's 4.5 percent. The US reductions occurred while the economy was expanding 38 percent faster than the economies of the EU-15 while experiencing population growth at twice the rate of the EU-15.[2]

As of year-end 2006, the United Kingdom and Sweden were the only EU countries on pace to meet their Kyoto emissions commitments by 2010. While UN statistics indicate that, as a group, the 36 Kyoto signatory countries can meet the 5 percent reduction target by 2012, most of the progress in greenhouse gas reduction has come from the stark decline in Eastern European countries' emissions after the fall of communism in the 1990s.

In short, ACC believes that voluntary initiatives have proven their ability to encourage reductions in GHG emissions in some sectors. Further, an expanding economy appears to be an important element to assure that the United States can maximize progress in reducing GHG concentrations, since growth will provide the means to replace equipment and achieve further efficiency gains and emissions reductions.

b) <u>Existing cap-and-trade programs</u>

In the US, EPA has jurisdiction over four cap-and-trade systems: the Acid Rain program, the NO_x Budget Trading Program (NBP), the Clean Air Interstate Rule (CAIR), and the Clean Air Mercury Rule (CAMR). These four programs primarily involve utilities (the NBP also captures large industrial boilers), but allow for industrial units to opt-in the trading programs. The NBP, CAIR and CAMR all delegated the authority to allocate the final trading allowances to the states (with approved programs), while the Acid Rain program had EPA distribute allowances to the affected sources based on historical emissions.

Trading under the Acid Rain program began in 1995, and trading in the NBP began in 2003. As of 2005, the Acid Rain program has reduced SO_2 emissions by over 5.5 million tons from 1990 levels or about 35 percent of total emissions from the power sector. Compared to 1980 levels, SO_2 emissions from power plants have dropped by more than 7 million tons, or about 41 percent. The Acid Rain program also cut NO_x emissions by about 3 million tons from 1990 levels, so that emissions in 2005 were less than half the level anticipated without the program. In 2005, the NBP resulted in ozone season NO_x emissions being 57 percent lower than in 2000 (before the implementation of the NBP), and sources achieved over 99 percent compliance with the NBP. See The US Environmental Protection Agency's (EPA) Clean Air Markets website (www.epa.gov/airmarkets/progress/docs/2005_NBP_Compliance_Report.pdf).

While these programs have generally been successful cap-and-trade programs, their success rested on some fundamental factors that are not present when looking at the potential regulation of carbon. The success of the existing programs can be attributed to:

[2] Wall Street Journal Online: http://users2.wsj.com/lmda/do/checkLogin?mg=wsj-users2&url=http%3A%2F%2Fonline.wsj.com%2Farticle_print%2FSB116606091947649743.html

- The clean air markets are open and respond well to supply and demand.
- The allowances can be easily tracked due to the fairly limited number of participants.
- During the implementation phase of the Acid Rain program (1995 – 2000), natural gas prices were much lower and that allowed utilities to more easily switch fuels to reduce emissions.
- Most important, however, is that the success of the existing trading systems in large part stems from the fact that the limits imposed by EPA were achievable using current control technologies. By installing these control technologies, sources frequently wound up with excess allowances that were then able to be traded.

It is not clear that a mandatory carbon control system would achieve results similar to those under existing trading systems. Existing technologies alone will likely not be enough to substantially lower GHG concentrations. Second, the existing trading programs targeted smaller discrete sectors of the economy. A carbon control system must be applied across the entire economy in order to achieve carbon emission reductions.

4. How should potential mandatory domestic requirements be integrated with future obligations the United States may assume under the 1992 United Nations Framework Convention on Climate Change? In particular, how should any US domestic regime be timed relative to any international obligations? Should adoption of mandatory domestic requirements be conditioned upon assumption of specific obligations by developing nations?

ACC and its member companies believe that any mandatory domestic requirements must be the basis of, and fully integrated into, any future obligations the United States may assume under the 1992 U.N. Framework Convention. That integration could take several forms, including explicit recognition of the US regulatory system in any international agreement, or appropriate credit for absolute and/or intensity reductions achieved under the domestic requirements.

Although there may be few absolute certainties in the global climate issue, it is certain that unilateral action by the United States cannot by itself address the problem. As a problem of global dimension, climate policies necessarily require the participation of other countries, particularly those with significant greenhouse gas emissions. Greenhouse gas emissions in China, for example, are currently projected to exceed those of the United States as early as 2009.

For that reason, any domestic regulatory requirements must include a mandatory review mechanism to assure the appropriate integration of any future obligation arising from an international agreement that becomes law in the United States. The Kyoto Protocol's first commitment period ends in 2012. While it is too soon to determine whether the United States will be a party to any post-Kyoto agreement, any mandatory domestic controls adopted in the meantime should be flexible enough to account for the evolving international architectures and seek ways to link with them where legally, economically, and environmentally feasible and practicable. Further, any domestic requirements should be implemented on a schedule consistent with international obligations, so that US manufacturers and consumers are not disadvantaged compared to their counterparts overseas.

For example, the United States might design a system that gets to work right away on enabling policies (new energy policies, development of an emissions registry/inventory), but does not impose compulsory requirements until the international context is clarified. One approach might link the US domestic requirements to the post-Kyoto timeframe (e.g., post-2012).

Mandatory domestic requirements should be based on an explicit expectation of appropriate action in all other countries that are significant sources of greenhouse gas emissions. In other words, any future domestic requirements should make clear that while the United States is prepared to take action to respond to climate change, that action is predicated on a similar commitment to and action on greenhouse gas emissions in other countries. While the issue of specific commitments from major GHG-emitting countries involves a significant range of policy issues (including a determination of what countries are considered major emitters, and what advantages (if any) "developing" countries should have), as a general matter the United States should condition its mandatory domestic requirements on the assumption of specific obligations by all major GHG-emitting countries, and those countries projected to significantly increase GHG emissions in the future, and include a reliable way to measure and monitor those commitments.

The international dimension of the climate issue also requires that any domestic requirements must include a mechanism to account for, and adjust to, international developments, the results of future scientific research, and future economic analysis. A "safeguard" provision should be considered as an element of any domestic program, to enable the suspension or elimination of domestic requirements that are found to have significant negative economic consequences, or that are not supported by the results of future scientific assessment.

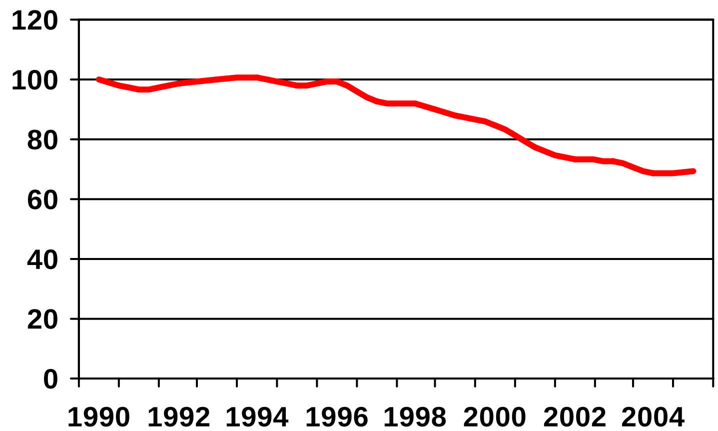
The global dimension of the climate issue requires that any domestic regulatory system recognize the long lead times required for investment in equipment and infrastructure, and adjust implementation schedules to be consistent with those adopted under any international obligations.

5. What, if any, steps have your organization's members or its individual members taken to reduce their greenhouse gas emissions? Which of these have been voluntary in nature? If any actions have been taken in response to mandatory requirements, please explain which authority (State, Federal or international) compelled them?

As a participating sector in the Department of Energy's ClimateVISION program, American Chemistry Council members committed to lowering their collective greenhouse gas intensity 18 percent by 2012, using 1990 as the base-reporting year.

Between 1990 and 2005, the US chemical industry's absolute GHG emissions fell 10.0 percent. At the same time, the industry's production rose 29.6 percent. As a result, GHG intensity improved 30.6 percent. Between 1990 and 2000 greenhouse gas intensity reductions averaged 1.4 percent per year. During the 2000-2005 time frame the rate of reduction in GHG intensity accelerated and improvements averaged 3.9 percent per year. This acceleration can be attributed in part to the chemical industry's focus on improving energy efficiency and reducing greenhouse gas intensity by targeting those processes that could be easily changed.

US Chemical Greenhouse Gas Intensity (1990=100)



Million metric tons of CO_2 equivalent	1990	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Total GHG Emissions	**300.2**	**324.4**	**320.1**	**323.0**	**315.3**	**309.5**	**276.8**	**278.6**	**275.5**	**269.1**	**270.1**
Indices (1990=100)											
GHG Emissions	100.0	108.0	106.6	107.6	105.0	103.1	92.2	92.8	91.8	89.6	90.0
Chemical Industry Output	100.0	108.8	115.3	117.2	119.6	121.4	119.2	126.4	126.0	130.0	129.6
GHG Emissions Intensity	100.0	99.3	92.5	91.8	87.8	84.9	77.3	73.4	72.8	69.0	69.4

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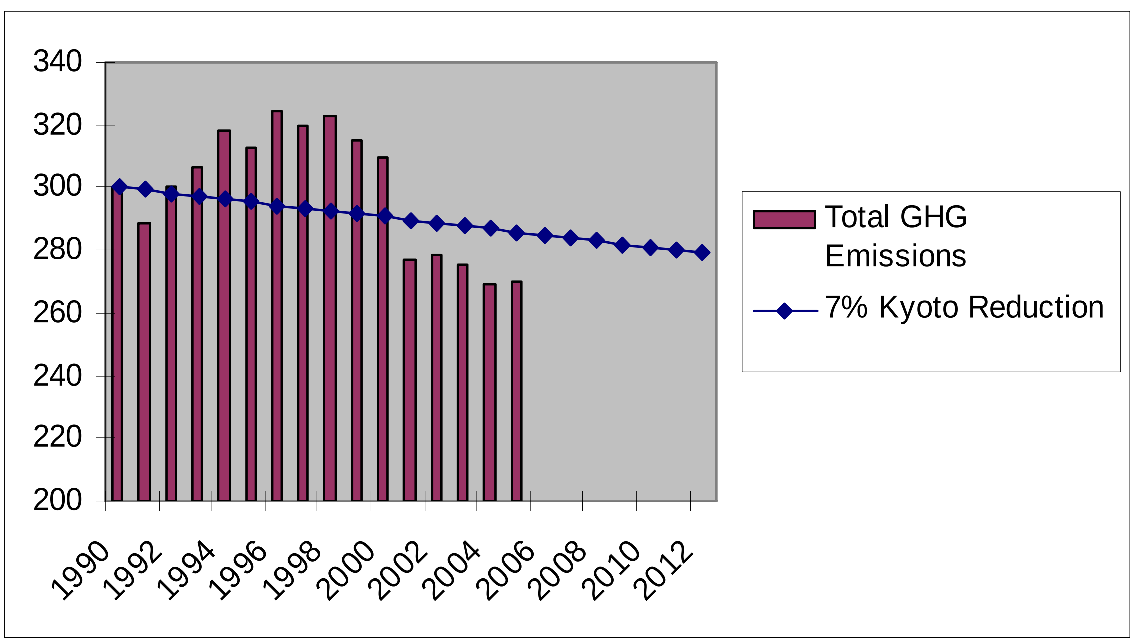
Source: Inventory of US Greenhouse Gas Emissions and Sinks: 1990-2004 (EPA), ACC, ACC analysis

The sources for overall US chemical industry GHG emissions data include: 1) *Emissions of Greenhouse Gases in the United States 2004* prepared by EIA; and 2) *Inventory of US Greenhouse Gas Emissions and Sinks: 1990-2004* prepared by the US Environmental Protection Agency (EPA). All emissions data are measured as carbon dioxide equivalents.

In addition to our participation in ClimateVISION, ACC members began voluntarily reporting GHG emissions in the early 1990s, and mandated member reporting of energy efficiency and GHG emissions in 2003, through its Responsible Care® program. In 2005, ACC began publicly reporting aggregated member results on improving energy efficiency and greenhouse gas intensity.

Between 2003 and 2005, ACC member companies (as a distinct subset of the larger chemical industry) reduced their greenhouse gas intensity by 5.0 percent. In absolute terms, Responsible Care® companies reduced their emissions of greenhouse gases by 17.9 million tons expressed as CO_2 equivalent over the same time period.

These voluntary initiatives mean that the US chemical industry is well ahead of the US reduction goal had the United States agreed to the Kyoto Protocol (a reduction of 7 percent in GHG emissions from 1990 levels). In the graph below, GHG emissions are shown in million metric tons of carbon equivalent.



In addition to voluntarily reducing our GHG emissions, the business of chemistry also makes products that help other sectors of the economy become more energy efficient, which in turn reduces GHG emissions. For example:

- Structural insulated panels (SIPs) made with expanded polystyrene (EPS) can help homeowners save hundreds of dollars annually on heating and cooling bills.
- Roofing systems made with spray polyurethane foam (SPF) offer durability, energy savings and moisture control.
- Vinyl is found in durable, easy-to-clean vinyl wall coverings and requires only half as much energy to manufacture as alternative materials.

The Responsible Care® Energy Efficiency Awards program is a part of ACC's ongoing effort to improve energy efficiency. These projects recognized in the awards have the added benefit of reducing greenhouse gas emissions. Since 2003, the 76 award winners have reduced GHG emissions by over 4 million tons. ACC has honored member companies for energy efficiency improvements in five categories: Environmental Impact, Energy Efficiency Program, Non-Manufacturing Improvement, Public Outreach, and Significant Improvement in Manufacturing.

For example, in 2005, 11 ACC member companies were honored for implementing energy efficiency improvements that together saved enough energy to power a metropolitan area the size of South Bend, Indiana and reduced carbon dioxide emissions equivalent to 475,000 cars. ACC presented a total of 26 awards to these companies for their company-wide or plant-specific progress. For 2005, the total annual energy savings represented by the awards is 22.7 trillion BTUs, while annual carbon dioxide emissions reductions were approximately 2,852,000 tons. The savings from the combined projects represent 0.7 percent of total chemistry energy consumption for fuel and power in 2005.