Donald F. Santa, Jr.
President

March 19, 2007

The Honorable John D. Dingell
Chairman
Committee on Energy and Commerce
U.S. House of Representatives
Washington, DC 20515-6115

The Honorable Rick Boucher
Chairman
Subcommittee on Energy and
Air Quality
U.S. House of Representatives
Washington, DC 20515-6115

Dear Chairman Dingell and Chairman Boucher:

On behalf of the Interstate Natural Gas Association of America (INGAA), I want to thank you for giving us the opportunity to comment on federal climate change legislation. INGAA represents virtually all of the interstate natural gas transmission pipeline companies in the U.S., as well as comparable companies in Canada and Mexico. Our member companies transport over 90 percent of the nation's natural gas through a network of approximately 200,000 miles of pipelines.

The natural gas pipeline industry supports a cleaner environment and a reduction in greenhouse gas emissions. Our goal is to achieve these objectives while at the same time transporting the natural gas the nation will need in order to meet the energy and environmental challenges of the future. Since natural gas is a relatively clean fossil fuel, it will play a key transitional role over the next several decades as new energy technologies are developed and deployed. We support the development of these new energy technologies, such as new nuclear generation and carbon sequestration from coal, but urge that the Congress not artificially restrict natural gas usage for power generation in the interim. In short, the U.S. needs all options on the table as it undertakes the difficult task of reducing greenhouse gas emissions.

As you work on legislation this spring, we would appreciate the opportunity to testify before the Committee (or Subcommittee) on climate change and the issues associated with the natural gas sector. Please let us know if you have any questions.

Respectfully,

Donald F. Santa, Jr.
President

cc: The Honorable Joe Barton
The Honorable Dennis Hastert

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Executive Summary to INGAA Response to Dingell/Boucher Letter on Climate Change

The Interstate Natural Gas Association of America (INGAA), the trade association representing the interstate natural gas pipeline industry, appreciates the opportunity to share our views on climate change legislation with the House Energy and Commerce Committee.

The interstate natural gas pipeline industry supports efforts to promote a cleaner environment and a reduction in carbon dioxide (CO_2) emissions. Our goal is to contribute to achieving these objectives while at the same time transporting the natural gas that our nation will need to meet current and future energy and environmental challenges.

As lawmakers examine climate change policy, it is important to fully consider the unique characteristics of natural gas and the industry that transports this valuable energy source to consumers. The carbon footprint of the natural gas industry, and the transmission industry in particular, is minimal. The natural gas industry accounts for approximately 3.1 percent of total U.S. greenhouse gas (GHG) emissions, with less than 1 percent stemming from natural gas pipelines.

As the cleanest fossil fuel, natural gas will be an important bridge fuel in a carbon-constrained environment. The carbon content of natural gas is 44 percent less than that of coal. And given the relative efficiency of currently-deployed natural gas combustion technologies, the carbon advantages of natural gas are even greater in terms of CO_2 emissions per unit of useful energy. Using currently deployed technology, the CO_2 emission rate for generating electricity from natural gas is less than half the rate for generating electricity from coal. In addition, other natural gas end-use technologies (i.e., appliances) are highly efficient and should be promoted as part of a strategy for limiting greenhouse gas (GHG) emissions.

Climate change legislation should recognize that natural gas will have an important role to play during the transition to emerging technologies such as renewables, the next generation of nuclear power and low-emission coal facilities.

Equally important, natural gas end-use efficiency should be encouraged in order to achieve the most widespread benefits from this valuable fuel. Congress must not artificially restrict the use of natural gas for power generation or for other purposes. In fact, natural gas will be critical to the power sector in meeting its emission reduction targets during the first decades of a mandatory greenhouse gas program as advanced coal and new nuclear facilities are developed and deployed.

Approximately 97 percent of current U.S. natural gas demand is met with natural gas produced in North America. Given the increasingly important role the commodity will play, the U.S. will need additional domestic and foreign supplies of natural gas to keep pace with demand for this low carbon intensity fuel. Finally, it is that essential policies support the timely and efficient construction of necessary infrastructure to deliver natural gas supplies to consuming markets.

The highlights of INGAA's response to the Committee's questions follow:

- INGAA supports an economy-wide program that recognizes and accommodates the unique features of different sectors in the U.S. energy economy (i.e., differences in fuels and their end-use applications). An appropriate policy may involve different thresholds, regulatory mechanisms and, possibly, schedules for each sector based on its unique attributes.
- Given the global nature of the climate issue, and interstate commerce considerations, INGAA – which represents companies with linear, interstate pipeline assets – strongly prefers a consistent national GHG reduction program over the competing, potentially conflicting and inefficient state and regional initiatives currently taking form.
- INGAA urges lawmakers to design a program that will slow, stop, and then reduce GHG emissions gradually. This would allow time for the economy to develop and deploy efficient, cost-effective climate change mitigation technologies and replace capital intensive energy infrastructure and equipment in an orderly manner.
- CO_2 from fossil fuel combustion accounts for approximately 81 percent of total U.S. GHG emissions. INGAA advocates, as a starting point, the regulation of CO_2 from fossil fuels at the point of combustion. The reduction of emissions from other greenhouse gases should be managed through an offset program. Other sectors and gases could be brought into the program as it matures.
- The need for a safety valve will be dependent on key program design features, most notably timing, targets, banking and borrowing of allowances and the availability of low-cost offsets. The effective design of these features could mitigate the need for a safety valve.
- Congress should determine the need and basis for allowance allocation in a cap and trade program. INGAA supports 100 percent free allocation to sectors that are subject to comprehensive economic regulation. Still, if such regulated sectors must pay for allowances, they also must have a guaranteed ability to pass through costs to the end user (consumer).
- Offsets are an important tool to encourage emission reductions not otherwise covered under a conventional cap and trade system. Such reductions would provide immediate, low-cost options that would help control program compliance costs. There should be no limit to the amount of offsets one can generate so long as they are real, quantified, verified, surplus, and have clear ownership.
- Early reduction credits should be available to industries, like the natural gas pipeline industry, that already have made significant GHG reductions.
- The U.S. can promote international participation in GHG reductions by taking a leadership role in developing an efficient, achievable and cost-effective GHG reduction program. U.S. innovation and the development of advanced technologies will not only contribute to global emissions reduction but will also help to create business opportunities for U.S. firms.
- Cap and trade alone is not enough to develop new technology. Funds raised through a regulatory GHG program should support R&D for a variety of new and advanced technologies to provide low carbon energy services, increase efficiency of end-use consumption and sequester CO_2. Such a program should not pick winners based on current expectations but should fund the development of all feasible approaches to low carbon infrastructure, including natural gas supply and production technologies,

efficient natural gas-fired electric generation, mechanical drive and gas compression technologies, and efficient end-use gas technologies.

INGAA Dingell/Boucher Response
3/19/2007

Introduction

The Interstate Natural Gas Association of America (INGAA) appreciates the opportunity to comment on global climate change issues as the Committee examines this complex policy area. INGAA is a non-profit trade association representing virtually all interstate natural gas transmission pipeline companies operating in the United States and interprovincial pipelines operating in Canada. INGAA's United States members operate over 200,000 miles of pipeline and related facilities that account for over 90 percent of all natural gas transported and sold in interstate commerce.

The interstate natural gas pipeline industry supports a cleaner environment and a reduction in carbon emissions. Our goal is to contribute to achieving these objectives while at the same time transporting the natural gas the United States will need to meet current and future energy and environmental challenges.

INGAA member companies recognize increasing concerns about the risk of global climate change and the likelihood of eventual federal legislative action to address the issue. Natural gas will serve as a critical bridge to our nation's lower-carbon future. Even in the absence of Greenhouse Gas (GHG) legislation, the North American interstate pipeline industry will invest more than $60 billion (in constant 2004 dollars)[1] in infrastructure expansion through 2020 to ensure the availability of this clean-burning fuel. Because natural gas will be a critical component in any strategy to achieve lower GHG emissions, additional investment on the part of the natural gas industry will be required.

Climate Policy Should Recognize That Natural Gas is a Low-Carbon Fuel Compared to its Primary Alternatives.

Natural gas has the lowest carbon content of any fossil fuel. The carbon content of natural gas (measured in carbon dioxide (CO_2) emissions per unit of energy) is 44 percent less than the carbon content of coal. Because of the relative efficiency of currently-deployed natural gas combustion technologies, the carbon advantages of natural gas are even greater in terms of CO_2 emissions per unit of useful energy. Using currently deployed electric generators, the CO_2 emission rate for generating electricity from natural gas is less than half the rate for generating electricity from coal.[2] In addition, other natural gas end-use technologies are highly efficient and should be promoted as part of a strategy for limiting GHG emissions.

Finally, Congress should not artificially restrict the use of natural gas for power generation or

[1] The INGAA Foundation, *An Updated Assessment of Pipeline and Storage Infrastructure for the North American Gas Market: Adverse Consequences of Delays in the Construction of Natural Gas Infrastructure*, F-2004-01, July 2004.

[2] Energy Information Administration, *Documentation for Emissions of Greenhouse Gas in the United States 2006*, Table 6-1, and Energy Information Administration, *Annual Energy Review*, 2005, Tables 8.2b, 2.1f.

other purposes. Natural gas will play a critical role in the transition to newer, less carbon-intensive alternatives. This transition will likely take several decades to achieve. In the meantime, natural gas must be a part of the nation's power generation mix if we are to begin reducing greenhouse gas emissions.

Natural Gas is a Critical Element of any United States Strategy to Manage Greenhouse Gas Emissions.

Strategies relying on currently available technologies, including increased energy efficiency, renewable electricity generation and renewable transportation fuels, and continued growth in using clean-burning natural gas will be crucial to mitigating GHG emissions. Indeed, natural gas assets will reduce our dependence on foreign energy, support environmental objectives and sustain economic growth.

Natural gas will be a critical energy source over the coming decades as the United States accelerates efforts to address global climate change. Natural gas, with its low carbon content, relatively lower capital cost infrastructure and efficient combustion technologies, is a natural bridge to our lower-carbon energy future. To achieve a lower-carbon future, the United States must increase its reliance on a variety of advanced clean energy technologies. Still, it likely will take several decades to develop and deploy these technologies before they can be significant contributors to our Nation's energy portfolio.

Today, natural gas-fired units offer great flexibility in generating reliable electricity and also acting as a backup to electricity generated with renewable energy. Furthermore, with appropriate incentives (see INGAA response to 2f) included in climate change legislation, natural gas infrastructure constructed today and in the near future would have the flexibility to be part of a longer-term GHG mitigation strategy. For example, coal gasification with methanation and compression produces pipeline-quality synthetic natural gas (SNG) that could be transported to existing natural gas combined cycle (NGCC) power plants as well as to a multitude of other end-users using the existing natural gas pipeline network. This mine-mouth process would utilize the United States' abundant coal reserves, existing natural gas pipeline infrastructure and NGGC fleet to produce electricity cleanly. This solution would avoid the need for expensive capital investments in new coal-fired power plants and new railroad infrastructure and capacity.

In addition to its role as a crucial power and heating fuel source, natural gas also has a broad range of non-fuel uses that do not produce any greenhouse gas emissions. Natural gas is a vital, value-added feedstock in many industries, such as chemical manufacturing. Policies that would artificially constrain the availability and use of natural gas would be both bad climate policy and detrimental to the segments of the economy that depend on natural gas.

Efficient and effective climate change policies can be expected to result in shifts of usage from

higher-carbon fuels to natural gas. Correspondingly, the United States will need additional supplies of natural gas to keep pace with demand. Today, about 97 percent of United States natural gas demand is met with gas produced in North America. As part of a sound, comprehensive climate policy, the United States must: (1) provide access to currently closed or restricted domestic natural gas supply basins (both onshore and offshore); (2) promote infrastructure projects needed to connect these supply basins -- as well as global natural gas markets -- with consumers: (3) limit unnecessary taxes and fees on natural gas to encourage its use as a bridge fuel; and (4) focus government research and development spending on natural gas and its uses as an imperative part of the energy and environmental solution. These policies will ensure that there is sufficient natural gas supply to meet current and incremental demand and that the cost impact on consumers and the economy is mitigated.

While GHG Emissions From the Natural Gas Industry are Minimal, Our Industry is Doing its Share to Reduce Emissions and Provide Important, Cost-effective Mitigation Options.

As Congress examines climate change policy, it is important to consider the contribution of the natural gas industry to total United States GHG emissions[3]. The carbon footprint of the natural gas industry, and the transmission industry in particular, is minimal. The natural gas industry accounts for approximately 3.1 percent of total United States emissions,[4] (resulting from both the combustion of natural gas and from fugitive[5] methane). Of that, natural gas transmission companies account for less than 1 percent. Nevertheless, the industry is taking steps to reduce emissions and, with the proper incentives, can do even more under a national program. In particular, almost half of GHG emissions from the transmission sector are attributable to fugitive emissions. While fugitive emissions do not fit well within a cap and trade program (this point is explained in greater detail in our response to question 2g and 2j), they can be a valuable source of low-cost offsets that would minimize compliance costs during the early stages of a national program.

The natural gas transmission industry continuously refines the design of pipeline systems to improve efficiency and reduce emissions of regulated pollutants and GHGs. As detailed later in this submission, there are a variety of best management practices that routinely are applied to new and existing facilities, resulting in significant GHG emission reductions. INGAA urges Congress to develop a national program that recognizes these achievements and that encourages additional reductions by not penalizing companies that invest in newer, more efficient infrastructure.

[3] Total U.S. GHG emissions in 2004 were 7,075 million metric tonne (MMT). Of that amount, 5,656.6 MMT (80 percent) was CO_2 emissions from fuel combustion. Combustion of natural gas accounted for 1,191.2 MMT, 21 percent of the CO_2 from combustion and 17 percent of the total GHG emissions.
[4] Energy Information Administration, *Documentation for Emissions of Greenhouse Gas in the United States 2006.*
[5] Fugitive GHG emissions are methane leaks from pipelines and system components such as compressor seals, pump seals, valve packings, and flanges and piping connectors. Fugitive emissions are not unique to the natural gas industry.

Response to Questions

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

a. Which sectors should it cover? Should some sectors be phased-in over time?

Cap-and-trade regulation is only one option that Congress should consider in examining how to address the climate change issue. Other options could include technology development, taxation policy, and energy efficiency improvements.

Regardless of the specific method, INGAA supports an economy-wide climate change regulation. No sector should be exempted from contributing to the solution in some way. Still, economy-wide regulation does not mean that all parts of the economy must be regulated under the same structure or in the same way. INGAA believes that a sector-specific, phased approach is most appropriate, with thresholds, regulatory mechanisms and, possibly, schedules tailored to the unique circumstances of each sector. Initial regulatory efforts should focus on the sectors that can provide the greatest emission reductions most reliably, at the lowest cost, and with the least economic disruption. GHG emission programs should be developed and implemented sector-by-sector and include the most appropriate combination of market-based programs, mandates, technology development and voluntary programs.

Each sector's capabilities and challenges differ and should be considered when designing a mandatory program. Sources will need flexibility in the time and place for reducing emissions to deliver the optimal environmental benefits at least cost. This is especially true for sectors with long-lived capital stock where retirement or replacement cannot be easily or inexpensively accelerated and where new technologies take time to develop, mature, and find broad acceptance in the market. A mandatory GHG program, no matter how well-designed, will have an immediate impact on the value of existing energy-related capital stock.

While no single sector of the economy makes a predominant contribution to overall United States greenhouse gas emissions, some sectors and source categories clearly are larger contributors. A GHG program should begin by focusing on the sectors and sources with the largest emissions. According to the United States Environmental Protection Agency (EPA), CO_2 from combustion constitutes almost 81 percent of total United States GHG emissions.

INGAA suggests focusing initially on CO_2 from combustion and on specific sectors that offer large potential reductions, fewer regulated sources and easier program design and implementation, with other sectors to be addressed as the available reductions, regulatory systems and compliance costs are better demonstrated and understood.

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

If mandatory GHG regulation is deemed necessary, INGAA prefers a consistent national approach, that covers the field, over potentially redundant and conflicting state-specific or regional initiatives. INGAA believes that it is the responsibility of Congress to provide the critical details, through specific statutory language, that clearly define the key provisions of a mandatory climate change program. Specifically**,** legislation should establish the initial allocations of emissions credits, if needed. Congress should commit itself to reviewing the program periodically and should retain the ability to adjust the program in response to changing market conditions and the associated impacts to the economy.

Many companies operate across numerous regional, state, local, and tribal jurisdictions. This is certainly true for interstate natural gas pipelines, which by definition cross many states and regions. In the absence of federal leadership, states have adopted climate mitigation strategies, including GHG reporting, setting targets for reducing GHG emissions, adopting policies to promote renewable energy and energy efficiency, and developing statewide climate action plans. At the regional level, states are launching emissions trading programs. This will create a patchwork of state or regional approaches that will be difficult to reconcile and that will affect the competitiveness of entities operating in those regions. These disparate approaches are unlikely to be efficient or effective in solving a problem that is not limited to a single state or region. The cost of this inefficiency will be borne by consumers and the United States economy.

There are several reasons why Congress should legislate a uniform federal program that defines the key elements of a climate change policy. First, climate change policy will affect multiple issues that can be addressed only at the national level. Second, a program will, of necessity, regulate interstate commerce, a function that the Constitution places exclusively in the hands of the United States Congress. (Federal courts have held that a national emission-trading program is a form of interstate commerce that can be established and operated only by the Federal government.[6])

To mitigate risk and provide a basis for making both short and long-term investment decisions, industry needs certainty about allowance distribution, the timing and levels of prescribed emissions reductions, economic limiters (such as safety valves), coverage and the point of regulation. This can be achieved only with a comprehensive national program that applies uniformly across states and regions.

[6] Clean Air Markets Group v. Pataki, 338 F3d 82 (2003)

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

Downstream cap and trade programs implemented for other pollutants have proven effective for the large stationary sources that account for a large component of United States CO_2 emissions. A downstream cap-and-trade program, if adopted, should cover the largest CO_2 emission sources from the major contributing sectors. For example, the historical size threshold for the electric generation industry has been a capacity of 25 megawatts per unit. These are the largest CO_2 emitters and are the easiest to identify and monitor. They generally will be in the best position to invest in new technologies, switch fuels, or make efficiency improvements to reduce emissions in response to direct GHG regulation.

Different approaches will be needed for smaller emission sources and for sectors of the economy that are less significant GHG emitters. For example, there are hundreds of millions of small gas-fired emission sources in the United States, such as home furnaces, water heaters and ranges. A conventional cap and trade program for these small sources would be too complex and unwieldy for regulators and consumers alike. For these small sources, a combination of increased minimum efficiency standards, EnergyStar labeling, and utility rate and tax incentives for purchasing very high efficiency products will be far more effective in reducing emissions than regulating emissions through either downstream or upstream cap-and-trade approaches.

Some have suggested using an upstream system to regulate GHG emissions from smaller, more diverse sources that cannot feasibly be controlled through a downstream cap and trade program. The theory is that an upstream price signal will be passed through all sectors of the economy efficiently and that this will promote the most appropriate and cost-effective reductions. Experience with other upstream costs does not support this theory, and there are a number of reasons why this approach might not work.

There is ample experience that relatively small changes in energy prices do not trigger consumer investment in energy efficiency due to a variety of institutional, market and other barriers. Similar barriers will limit the effectiveness of upstream GHG programs on small-scale energy end-users. If anything, there are greater barriers to the efficient transmission of an upstream price signal to consumers in a GHG program due to multiple regulatory layers and systems. For example, the natural gas industry is not vertically integrated and some segments are subject to economic regulation while others are not. This could limit the effectiveness of cost pass through and cause some costs to be absorbed by intermediate segments, thereby blunting the effectiveness of the price signal intended to be transmitted by the allowance cost. Finally, the relatively low allowance price envisioned in many GHG proposals might provide too weak a price signal to affect changes in many end-use markets.

Small residential and commercial consumers are much more likely to invest in efficiency in

response to directly applicable appliance standards, building codes and related incentives than in response to an indirect price signal transmitted through an upstream program. Furthermore, any upstream program would need to exempt consumers that use natural gas as a feedstock (as opposed to a fuel), because their consumption does not result in any GHG emissions. Thus, INGAA believes that a combination of a cap and trade program at the point of combustion for major sources and efficiency standards and incentives for small sources would be the most effective policy approach.

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?

Assuming a cap and trade program is implemented, the basis for allocation of allowances should be determined by Congress as a component of legislation. The allocation should be designed to promote energy efficiency, new technology development, reductions in CO_2 emissions and equity among affected parties.

Congress should determine the need and basis for allowance allocation in a cap and trade program. INGAA supports 100 percent free allocation to sectors that are subject to comprehensive economic regulation. Still, if such regulated sectors must pay for allowances, they also must have the guaranteed ability to pass such costs through to the end user (i.e., the consumer).

e. How should the cap be set (e.g., tons of greenhouse gases emitted, *CO_2* intensity)?

INGAA has not taken a position on the mechanics of how a cap should be set.

f. Where should the cap be set for different years?

Climate change is a long-term problem and its solution needs to be considered over the long term. There is increasing focus on very large, long-term reductions of GHGs that ultimately require new, advanced technology and fundamental changes in energy infrastructure. The timing of these reductions is critical. A too-rapid reduction requirement will cause economic hardship due to the unavailability of required advanced technology and the long lead time necessary to replace energy infrastructure and equipment. Rapid, economically disruptive action will be less effective than measured, appropriately timed action that yields the same results over time. Efficient investment in new energy infrastructure requires the certainty of a long-term, well-defined but gradual emission reduction schedule. This same certainty is required to promote the development of new technology. Therefore, the cap should be designed to slow, stop, and then reduce GHG emissions gradually.

There is widespread expectation that natural gas will be a bridge fuel during the early years of regulation, before new technologies can come on-line. Due to the significant infrastructure

requirements for natural gas production and transmission, the regulatory program must allow time for the natural gas industry (and other capital intensive industries) to invest in the needed energy infrastructure and equipment in an orderly manner. The program should also allow adequate time for industry to recover the cost of investments in energy delivery infrastructure and low-carbon technology before changing the requirements in ways that will undermine the need for such infrastructure and technology. This is a particular concern for segments of the energy industry that are subject to economic regulation (i.e., rate regulation) that is premised on a prescribed depreciation schedule.

g. Which greenhouse gases should be covered?

There are six primary GHGs – CO_2, methane, N_2O, SF_6, HFCs and PFCs. CO_2 from combustion accounts for almost 81 percent[7] of total United States GHG emissions and should be the primary focus of regulation. Control of other GHGs, which may require sophisticated and costly tracking systems under a cap and trade system, should be addressed as fugitives through offset programs. Carbon offsets enable individuals and businesses to reduce CO_2 emissions for which they are responsible by offsetting, reducing or displacing CO_2 (or some other GHG) in another place, typically where it is more economical to do so.

Fugitive GHG emissions from the natural gas pipeline industry are relatively low-level methane leaks from pipeline systems. Fugitive emissions can be controlled through well-established procedures such as reducing leaks or gathering and destroying waste gases. This means that reductions can be achieved quickly and at relatively low cost, without the need to develop and install new control technologies.

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

INGAA believes that climate legislation should provide incentives for emitters to reduce emissions prior to the effective date of a regulatory program. Early reductions are environmentally beneficial, and early action on the part of industry should be recognized and rewarded. Credits should be provided for identifiable actions that produce emission reductions that are surplus, measurable and verifiable. In particular, reduction projects that meet already-established international standards should be able to earn credit under streamlined procedures.

The natural gas pipeline industry has been an early actor on GHG reduction through its work to reduce fugitive methane emissions. Since 1993, interstate natural gas transmission companies have participated in the EPA's Natural Gas STAR program. The STAR Program is a flexible, voluntary partnership between EPA and the oil and natural gas industry. EPA works with

[7] U.S. EPA, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2004*. *(http://www.epa.gov/climatechange/emissions/downloads06/06_Complete_Report.pdf)*

companies that produce, process, and transmit and distribute natural gas to identify and promote the implementation of cost-effective technologies and practices that reduce methane emissions. Through this program, INGAA members reported more than 25 Bcf of reductions in 2005 - and a total of approximately 161 Bcf since 1993.[8] Additional reductions have also occurred outside of the Gas STAR program.

i. Should the program employ a safety valve? If so, at what level?

The need for and level of a safety valve is contingent upon other key GHG program design features, most notably timing, targets and the availability of low-cost offsets. A variety of factors would mitigate the economic costs of a program and thereby reduce or even eliminate the need for a safety valve, including whether the program incorporated a gradual slow-stop-reverse schedule of reductions, well documented baseline estimates and appropriate allowance distribution, extensive use of offsets, and flexibility mechanisms such as banking and borrowing of allowances. In the absence of these features at the needed levels, a GHG program is more likely to require a safety valve to mitigate possible negative economic consequences.

j. Should offsets be allowed? If so, what types of offsets? What criteria should govern the types of offsets that would be allowed?

Offsets should be a key component of any GHG program because many GHG sources cannot be reached easily through a conventional cap and trade program. Offsets can play a key and beneficial role in an effective climate policy, because they can be implemented quickly and at a relatively low cost. Given the societal cost savings that offsets represent, offsets will be an indispensable part of practical climate change solutions.

Fugitive emissions account for almost 20 percent of the total United States GHG inventory. Under a cap and trade program each source must retire allowances equal to their total actual emissions.[9] Therefore, each source must be able to accurately measure its *total* emissions from each source so that allowances can be retired over time to cover the total emissions. Accurate measurement of emissions is critical, because each unit of emissions is associated with a tradable allowance. Accurate measurement of the total emissions of fugitives can be quite difficult, however. For example, it would be quite difficult to measure accurately the *total* methane emissions from a landfill or a coal mine. It is relatively straightforward, however, to measure the amount of methane from either of these sources that is captured and flared or otherwise destroyed. This second quantity could constitute a tradable offset.

In a market-based system, sources under a subject to the cap would be permitted to use offsets to help meet their compliance requirements. Since some offsets will have a lower cost than reductions from combustion sources, the availability of offsets will help reduce the cost of the

[8] USEPA Website (www.epa.gov/gasstar/accomplish.htm#7)
[9] While the total cap may decline, the allowances allocated to a particular source can remain constant.

cap and trade program. At the same time, the value created by this program will promote the voluntary reduction of fugitive emissions that otherwise would be very difficult to regulate directly through a cap and trade program. For example, the offset provisions in the Clean Development Mechanism under the Kyoto Protocol have had a tremendous impact on world wide HFC-23 reduction in a matter of a few years without direct regulation of the gas.

As the largest source of United States GHG emissions, CO_2 from combustion of fossil fuel should be the primary focus of climate change legislation. Reductions of other GHG gases should be addressed primarily through offset provisions in a market based cap and trade scheme. It is imperative that low-cost offsets be readily available to sustain the early years of a market based approach (and therefore success of the entire program).

It is crucial that offsets be based on standardized principles and practices that incentivize reductions, are cost effective for all parties, and create a system that can be accepted by other regulating entities, including international programs. INGAA believes that establishing clear rules and processes for creating offsets is critical to providing certainty that fungible offsets will result from project investments.

Offset programs in some regulatory schemes have bogged down due to overly complex procedural requirements or over-zealous theoretical considerations that have little or no bearing on companies selecting the most appropriate emission reduction or offset strategy. INGAA supports straightforward and standardized offset creation procedures with appropriate safeguards.

In general, projects or performance based standards should follow the principles laid out in the WBCSD/WRI GHG Project Protocol[10] and ISO 14064 guidelines[11]. To generate GHG offsets, the project should be:

1. Real - A discrete reduction of actual greenhouse gas emissions resulting from specific and identifiable actions.
2. Quantified - Calculated using real data and a transparent and replicable methodology.
3. Verified - A third party must authenticate the action and calculations of the Seller and attest to the validity and quantity of reductions.
4. Surplus - Reductions must be in addition to any emissions reductions that may be required of the source by regulations existing at the time (additionality).
5. Unencumbered - Seller must have clear ownership of the emission reductions.

[10] World Business Council for Sustainable Development; World Resources Institute, The Greenhouse Gas Protocol - A corporate accounting and reporting standard (revised edition), 2001
[11] International Standards Organization, Greenhouse gases -- Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions, ISO 14064-3:2006

An offset program should consider only regulatory additionality (i.e., reductions are in addition to any other regulatory reduction requirements). *Financial* additionality (i.e., reductions that would not have occurred without the ability to create an offset) should not be considered. This should not be a criteria, because it would be too difficult to prove definitively and would stifle the implementation and harvesting of low-cost offsets that can yield a real, measurable and beneficial environmental outcome.

A national GHG program should include offsets from any part of the country. An economy-wide GHG program should allow creation of allowances from all sources, given the goal to reduce all sources of emissions. There should be no limit on the creation or use of offsets, since they all serve to reduce the total inventory.

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

Aggressive GHG reductions will require a variety of new and advanced technologies to provide low carbon energy services, increase efficiency of end-use consumption and sequester CO_2. One of the most productive applications for funds raised through a regulatory program would be to support research and development (R&D) for these technologies. R&D programs should be broad-based to cover a wide variety of technologies and applications. The program should not pick winners based on current expectations but should fund the development of all feasible approaches to low carbon infrastructure.

Natural gas initiatives in a broad R&D portfolio should include: natural gas supply and production technologies, efficient gas-fired electric generation, mechanical drive and compression technologies, and efficient end-use gas technologies. R&D should also include refinements in technologies to produce synthetic natural gas technologies from coal. As noted earlier, synthetic gas produced from coal offers the potential to leverage the existing natural gas transmission, distribution and end-use infrastructure to produce low-emissions energy.

l. Are there special features that would encourage technological development?

Technology programs should include all fuels and all options at the outset and then follow the most successful options to create a wide range of solutions. Traditionally, cap-and-trade programs assume that emission reduction technology options are readily available, so market choices can be made to come up with the most economic solution to the goal. Still, aggressive reduction of GHGs will require the development and commercialization of many new technologies. Cap and trade programs alone will not be sufficient to drive the development of these new technologies required to achieve the levels of reductions being discussed. The gestation time for these technology developments can run several decades, and there are practical limits on the role that the price signal transmitted by the cap and trade program can play in accelerating the development and deployment of new technologies.

In many cases, technological change and adoption is a long, arduous process with high levels of risk. Investors involved in the development of new technology are taking a higher risk than those investing in commercially available technology. These risks include the probability of achieving a successful technology, the time for commercialization and eventually the competitiveness of the solution in the marketplace.

Effective policies in lieu of, or in addition to, cap-and-trade solutions can be utilized in segments of the economy that are large contributors to GHG emissions but have market peculiarities, market barriers or long gestation periods that reduce the effectiveness of the economic signals of a cap and trade program. Examples of alternative policies include:

- Financial incentives such as tax credits, research grants and guaranteed recovery of capital can be used in different segments of the economy to expedite the technology development cycle. Examples include public R&D funding, energy credits on personal income taxes to purchase new technology, and federal loan guarantees.
- Efficiency standards and engineering codes are effective in markets where future operating costs are undervalued relative to first cost. Examples include fuel efficiency standards for motor vehicles, building codes and appliance standards.
- Consumer education efforts and creative funding solutions for efficiency investments can expedite the use of commercially available technologies in segments of the economy that do not fully value the future cost of a cap-and-trade program. Examples include energy savings accounts, equipment rebates and vehicle mileage stickers.

Public funding is necessary for R&D, but the government should avoid picking winners and losers based on biased perception. Neither the market nor policymakers can predict which technologies will be most important 10 or 20 years in the future. Technology programs need to include all fuels and all options at the outset and then follow the most successful options to create a wide range of solutions. Industry-based R&D programs can also be highly successful and legislation should allow and promote industries to collect funding to address their own markets.

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

The successful control of GHG emissions will require a global effort, including rapidly growing developing countries. The United States can promote international cooperation by taking a leadership role in designing and implementing an effective, achievable and economically viable program. The United States can also assist through the development of advanced technologies that will be required globally to achieve reductions. Innovation in the United States can also be expected to create international business opportunities for domestic firms providing these technologies.

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?**

With regard to mandatory GHG reduction programs, INGAA is aware of some of the experience implementing the European Union Emissions Trading Scheme (EU ETS). The first phase of that program was marked by significant allowance price volatility and uncertainty, resulting in higher than necessary costs and negative impacts on the economies of the EU Member States. There are several lessons to draw from this experience. Adequate time should be taken to gather meaningful data on GHG emissions, their sources, and their cycles over time given the importance of such baseline data in designing the program and the rules of any trading platform. Unforeseen changes in the database supporting the EU ETS caused much of the volatility and uncertainty. Thus, providing sufficient lead time to collect and verify data in the period before regulatory programs take effect is important. Also, a long-term reduction target with a slow, stop, reverse path would provide greater certainty and market push for the development of new technology.

There is very limited experience with large-scale auctions of emission allowances. Still, if a United States program were to include a large auction component, several suggestions can be made:

- Phase-in the auction gradually.
- Begin auctions well before the first compliance period to ensure that regulated entities have an opportunity to acquire allowances and allow price discovery prior to the beginning of the program.
- Hold frequent auctions to provide transparency and price discovery.
- Allow right of first refusal in the auction to entities directly regulated by the program.

Finally, another area in which the United States can learn from the mistakes made by other mandatory programs is with respect to the Kyoto Protocol's Clean Development Mechanism (CDM) – the mechanism under which credits are made available for "offset" emission reduction projects in developing countries. In a market-based program, providing credit for offset projects is a way to extend the reach of the program to emissions sources not easily incorporated in a cap-and-trade system. The CDM, however, has been unnecessarily bureaucratic and needlessly restrictive, defeating much of its promise. The United States should develop a more transparent and streamlined system for crediting projects that have environmental integrity.

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 United States domestic regime be timed relative to any international obligations?

Ultimately, efforts in the United States to reduce GHG emissions will have little impact on atmospheric concentrations of greenhouse gases if they are not coordinated with comparable efforts from other major emitting countries, including developing countries. At some point, a truly global effort will be required; the vehicle for that effort might be the United Nations Framework Convention on Climate Change or some other agreement. In any event, INGAA believes that the United States can and should take a leadership role by accelerating national efforts to reduce emissions, while conditioning any long-term commitments to achieve deep reductions on the adoption of comparable commitments from other major emitting countries. The United States can also lead through innovation by becoming a provider of advanced technologies to other countries.

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$_1$ please explain which authority (State, Federal, or international) compelled them?

Since 1993, interstate natural gas transmission companies have participated in the EPA's Natural Gas STAR program. The STAR Program is a flexible, voluntary partnership between EPA and the oil and natural gas industry. EPA works with companies that produce, process, and transmit and distribute natural gas to identify and promote the implementation of cost-effective technologies and practices to reduce emissions of methane. Through this program, INGAA members have reported more than 25 Bcf of reductions in 2005 - and a total of approximately 161 Bcf since 1993.[12] Additional reductions have also been achieved outside of the Gas STAR program. In addition to reducing methane emissions, the natural gas transmission industry has since 1990 achieved a 27 percent improvement in fuel efficiency per unit of gas delivered that may be attributed to broad equipment modifications, improved engine dispatch practices and general improvements in system hydraulics and operational measures.[13]

In addition to reducing emissions, INGAA has supported new and ongoing efforts to better understand the emissions profile from the natural gas transmission sector. In 2004, INGAA produced the "*INGAA Greenhouse Gas (GHG) Emissions Estimation Guideline for Natural Gas Transmission and Storage Document*" (GHG Estimation Guidelines or Guidelines). The guidelines are a compilation of estimation methods for assessing carbon dioxide, methane, and nitrous oxide emissions from combustion and non-combustion sources at natural gas

[12] USEPA Website (www.epa.gov/gasstar/accomplish.htm#7)
[13] EIA *Natural Gas Annual, 2006*

transmission and storage facilities. The Guidelines are intended to be a living document and are designed as a detailed reference for developing a GHG inventory for use by both practitioners and managers. The methodologies, procedures, and examples outlined are intended to address the majority of the GHG emission sources from the transmission and storage sector. The INGAA guidelines have been considered in several state and regional initiatives, including the Northeast Regional Greenhouse Gas Initiative and in the California Climate Action Registry development of a natural gas transmission and distribution (T&D) reporting and certification protocol.

In partnership with other segments of the natural gas industry, EPA, and other stakeholders, INGAA is engaged in a multi-year research initiative to identify, compare and update as necessary, current emission factors (published and empirical) being used in the oil and gas industry to estimate GHG emissions. INGAA members are also working with state and regional entities, stakeholder groups, and other interested parties to develop a process for generating natural gas offset projects that are real, surplus, quantifiable, and verifiable.

The natural gas industry has continuously improved the design of pipeline systems to make them more efficient and to reduce regulated pollutant and GHG emissions. For example, Alliance Pipeline was constructed in 1999 and 2000 using industry best management practices for GHG reduction. Examples of best management practices and other innovations that Alliance Pipeline has incorporated into its system include:

- Use of low-emission combustion gas turbines for natural gas compression
- Use of feed-forward modeling for efficient turbine combustion at each compressor station
- Compressed air starters (eliminate venting compressed natural gas when starting combustion turbines)
- Instrument air compressors (eliminate use of compressed natural gas for instrument operation)
- Dry gas seals for pipeline compressors (lower rate of natural gas venting during operation than wet seals)
- Use of low-bleed pneumatic controllers where feasible
- Installation of secondary relief valves that close after venting (unlike rupture disks, which will vent gas until replacement)
- Directed inspection and maintenance of leaking valves, fittings, and other components

Individual companies are also undertaking significant projects to reduce other GHG emissions. Recently, the Intergovernmental Panel on Climate Change (IPCC) published a special report on worldwide carbon capture and storage opportunities and technical expertise. The report notes that both sources of carbon and opportunities for its disposal are well aligned in Western Canada and identifies energy companies in that region as world leaders in carbon capture and storage. The Intergovernmental Panel on Climate Change identifies existing projects in Western Canada

as positive examples of effectively managing the injection of carbon dioxide and hydrogen sulphide.

Eleven companies were named in the acid gas re-injection section of the report, including an INGAA member, Spectra Energy Transmission (SET). Two of the three Canadian projects referenced in the report were SET's Kwoen and Jedney projects, which re-inject more than 100,000 tons of acid gas per year into nearby depleted reservoirs. Overall, the report recognizes SET as a leader in acid gas re-injection, carbon capture and storage projects and as an active participant in research, development and execution of this technology.