Industrial Energy Consumers of America
The Voice of the Industrial Energy Consumers

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March 3, 2008

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

The Honorable Rick Boucher
Chairman
Subcommittee on Energy and Air Quality,
Committee on Energy and Commerce
Washington, DC 20515

Subject: Competitiveness Concerns/Engaging Developing Countries

Dear Chairman Dingell and Chairman Boucher:

In behalf of the Industrial Energy Consumers of America (IECA), we are grateful for the thoughtful January 31, 2008 white paper that addresses the subject of manufacturing competitiveness concerns and engaging developing countries. It is apparent that you understand there is much at stake and we look forward to working with you to craft policy solutions that reduce ghg emissions while protecting if not enhancing the competitiveness of the manufacturing sector.

First and foremost, it is important for the Congress to distinguish the industrial sector from others. Our ghg emissions are below 1990 levels while the other four sector's emissions average 30.7 percent above 1990. We have two price signals while the other sectors do not. We have proven our ability to reduce energy consumption and the associated ghg emissions. Requiring the manufacturing sector to deal differently with their energy reductions through, for example, cap and trade regimes, could lead to a disastrous loss of our valuable manufacturing sector in short order.

We compete in the unforgiving competitive global market place where business is lost or won on pennies, not dollars. The industrial sector can absorb higher costs so long as our competitors around the world absorb the same costs. It is only when our costs go up and our competitors in other countries do not that we are negatively impacted. When crude oil prices go up, everyone around the

world is impacted equally. But when natural gas or electricity prices go up in the U.S., only U.S. industry is impacted.

It is vitally important that the Congress not create our demise. Good intentions by Congress will not appease our stockholders or employees whose stock values are impacted or jobs lost.

In this regard, we draw your attention to the below information that illustrates what happens when the industrial sector's energy costs go up relative to the rest of the world. Between 2000 and 2006 natural gas prices rose 76 percent which significantly contributed to manufacturing plant shutdowns across the country and the loss of 18 percent of all manufacturing jobs. Not coincidentally, industrial natural gas demand dropped by 19 percent, an almost identical correlation.

Government's role in this story is an important one. For some time, government has maintained or increased barriers to growing our supply of natural gas and passed laws that simultaneously either directly or indirectly increased demand. The December 2007 renewable fuels mandate is the latest action that according to the Congressional Research Service will significantly increase demand for natural gas despite the fact that production is flat to declining. Increasing demand without a comparable increase in supply is a formula for failure. Manufacturing is price sensitive and when energy prices like natural gas go up – we shut plants down. Given that the U.S. price of natural gas has, on average, been the highest in the world since 2000, costs of this level are a serious concern.

	2000	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**%**
Employment (MM)	17.2	16.4	15.2	14.5	14.3	14.2	14.1	-18
Natural Gas Consumption (TCF)	8.1	7.3	7.5	7.2	7.2	6.7	6.6	-19
Natural Gas Wholesale Price ($ per MCF)	4.50	5.20	4.00	5.90	6.50	8.60	7.90	+76

To further illustrate our concern about costs and our future under a carbon constrained economy, the Environmental Protection Agency (EPA) recently modeled the Low Carbon Economy Act of 2007, S. 1766, championed by Senators Bingaman and Specter, a cap and trade legislation. According to the EPA, without a safety value provision, prices of carbon allowances would range between $57 - $61 per ton in 2030. According to the Energy Information Administration, a $60 per ton allowance cost would increase in the price of natural gas by about $3.42 per thousand cubic foot (mcf) or about 50% above 2007 levels.

Allowance Costs Impact on Natural Gas							
Allowance Cost (cost per ton)	$10	$20	$30	$40	$50	$60	$75
Natural Gas Cost Increase per MCF	$0.55	$1.09	$1.64	$2.19	$2.74	$3.42	$4.10

Besides conservation and improving energy efficiency, the only thing that reduces GHG emissions here and abroad is an increased supply of reliable and affordable low carbon intensive energy. It is just that simple. In our opinion any cap and trade program with targets for emission reductions before this supply is available will only shift our manufacturing offshore.

There is no effective or guaranteed solution to the leakage problem through imposition of U.S. regulation. The only policy solution that has promise is a global agreement for the energy intensive sectors that is based on ghg intensity improvements, elimination of subsidies and transparent government enforcement.

The only thing that will entice countries like China to significantly reduce its GHG emissions is low-cost low-ghg intensive solutions. Anything short of that means potentially sacrificing their economic growth and political stability, something they will not do for the sole purpose of reducing ghg emissions. To the Chinese, this is not a luxury, it is a necessity.

Given that global energy demand and population will increase substantially in coming years, all governments should focus on reducing barriers to low carbon intensive energy supplies, increasing incentives and technology development and deployment to meet these challenges.

Who is the Industrial Energy Consumers of America (IECA)
IECA is a 501 (C) (6) national non-profit non-partisan cross-industry trade association whose membership is exclusively from the manufacturing sector and is dedicated exclusively to energy and environmental issues. Corporate board members are top energy and environmental managers who are leaders in their industry, technical experts and strongly committed to energy efficiency and environmental progress. Member companies are from diverse industries that include: paper, steel, chemicals, glass, plastics, aluminum, cement, fertilizer, brick, food processing, industrial gases, brewing, construction products, rubber, brick, automotive products and pharmaceutical.

Addressing the availability and price of natural gas is even more important
While the white paper addresses the important issues of climate policy options for regulating the industrial sector and the ability of such policy to require ghg

reductions of importers of energy intensive products, neither compare in importance to the subject of the availability and price of natural gas. Failure to successfully address this single issue and the impending significant demand for natural gas by all sectors of the economy, the spiking growth for power generation and the prospects of their fuel switching from coal to natural gas, will all by itself dismantle the industrial sector. (See attachments)

While the residential, commercial and industrial sectors reduced their natural gas demand from 2000 to 2006 by 12%; 9%; and 19% respectively, the power sector's demand increased a 19%. The astonishing demand by the power sector eliminated all of the benefits of potentially lower prices that would have been derived from conservation and energy efficiency by the residential, commercial and industrial sectors.

This has become even more important now that natural gas fired power generation is setting the marginal price of electricity across the country which means, as natural gas prices go up, so does the price of electricity. We urge you to act on this issue as you address climate change policy.

A significant number of job loses have already occurred at energy intensive industries that shut plants down as natural gas and electricity prices rose. Given the alarming recent rise in natural gas prices, the potential for new job losses has increased.

For example, the NYMEX (New York Mercantile Exchange) natural gas wholesale price rose 76% from 2000 to 2007. Using the closing forward NYMEX prices of February 29, 2008, the average price for natural gas in 2008 will average about $9.22 mm Btu or 35% higher than 2007. These higher prices are largely driven by greater demand by the power sector coupled with a fragile supply situation.

US manufacturing is already under siege by imports

Analyzing only sixteen of the energy intensive product categories under the "Industrial Supplies and Materials" category of the U.S. Census Bureau provides a chilling story that illustrates how quickly U.S. manufacturing can lose competitiveness largely because of higher natural gas and electricity prices that started to rise quickly in 2000.

From 2000 to 2007 total accumulated imports in constant dollars were $898 billion. Worse yet, imports are accelerating. Imports from 2000 to 2003 were about unchanged while imports from 2003 to 2007 rose a staggering 78.3%. Specifically, imports rose from $87.3 billion in 2003 to $155.7 billion in 2007.

Consistent with these imports numbers, the U.S. manufacturing sector lost 3.3 million jobs or 19.2% since 2000. These are jobs that on average pay 23 % higher than the national average.

Importance of the manufacturing sector; its contributions to the US economy and its ghg reductions

U.S. manufacturing is vital to the health of the economy. It accounts for 15 percent of GDP growth, more than any other sector and has the highest rate of productivity growth. It pays the highest wages, 23 percent higher than the national average and creates far more business activity and jobs in other sectors than any other industry. U.S. manufacturing performs 71 percent of U.S. business R&D and sells nearly two-thirds of all U.S. exports.

The industrial sector's total direct and indirect carbon dioxide emissions in 2005 are below their 1990 level while GHG emissions from the residential sector increased 31.4%; commercial +34.6%; transportation +25% and electricity +31.7%.

The products we produce are required for economic growth – capping industrial ghg emissions is counter productive to achieving national ghg reduction objectives

Major energy intensive products are cement, steel, aluminum, chemicals, plastics, fertilizer, glass, pulp and paper. It is counter productive to cap these products because they are the building blocks of economic growth for our country. It is difficult to provide for the needs of a growing population while maintaining living standards without consuming more, not less of these products. These products also create efficiencies in consumer products and ultimately save resources. There are no substitutes.

An absolute ghg cap on these sectors places an absolute limit on the physical ability to produce more volume of these products. This stands in comparison to a ghg intensity mandate that would allow increases in production so long as there are reduced levels of ghgs per unit of output.

Hard absolute caps encourage U.S. companies to leave the country for places that will allow them to grow and prosper. GHG caps limit the amount of energy that can be used inside the country so the result is that more energy must be imported by bringing in the products currently being manufactured here. This is commonly referred to as leakage. Sector specific ghg intensity incentives or mandates alternatively may help companies to invest in energy efficiency and stay put.

Some will argue that allowing the purchase of carbon allowances will permit these companies to increase their production and stay in the U.S. Our answer to that is 1) because of the cap, energy will not be available for some existing

manufacturers and 2) “at what cost?” The purchase of carbon allowances is an additional cost on top of the anticipated higher cost of energy that will be passed on to all consumers from the electric utilities and the natural gas and oil industries. Higher costs make those who remain less competitive which in turn encourages movement to countries that do not impose such costs.

Because the U.S. will consume more of these products as the economy grows, absolute ghg limits means additional demand will be supplied by imports. These imports may be produced using less energy efficient processes than that of the US, particularly if they are from the developing or countries in transition. Obviously this increases ghg emissions.

Examples: Industrial products are essential for economic growth

- The aerospace/defense industry uses steel, aluminum, plastics and chemicals.
- The air transport industry uses steel, aluminum, plastics and chemicals.
- The auto and truck industries use steel, aluminum, plastics, chemicals.
- The beverage industry uses aluminum, steel, paper, glass and plastic.
- The biotechnology industry uses chemicals.
- The commercial and home building construction industry uses brick, steel, aluminum, wood, cement and glass.
- The oil and gas industry uses steel, chemicals, cement.
- The chemical industry uses chemicals, steel, cement and glass.
- The computer industry uses plastics, chemicals, and glass.
- The electrical equipment industry uses steel.
- The electric and gas utility sector uses steel and cement.
- The food industry uses fertilizer, chemicals, plastics and paper.
- The home furnishing industry uses wood, glass, chemicals.
- The heavy construction industry uses steel and rubber.
- The home appliance industry uses steel, aluminum, glass and wood.
- The household products industry uses chemicals, plastic; paper, glass.
- The machinery industry uses steel, chemicals and plastics.
- The maritime industry uses steel.
- The packaging industry uses plastics, paper, aluminum and steel.
- The paper / forest products industry uses steel and chemicals.
- The refining industry uses steel, chemicals and cement.
- The pharmaceutical industry uses chemicals, glass and steel.
- Railroads use steel.
- The toiletries/cosmetics industry uses chemicals, plastics, paper, and glass.

The products we produce are a solution to meeting the climate change challenge and given the life cycle performance of our products, often save more energy than is consumed in production of the product

We strongly urge the Congress to consider the life cycle impact of our products. While these energy intensive products use energy as either a fuel or feedstock, when used by our customers, they often save much more energy than is consumed in the manufacturing of the product. The competitive market in this country continually evaluates how resources are used and creates improvements in efficiencies. Generally energy intensive products are demanded by the marketplace and specifically produced to satisfy that need. If the demand is not there they are not produced. Advertising and other promotions do little to change the demand for these commodities.

Glass is used to produce fiberglass insulation. Improving the energy efficiency of our residential and commercial buildings is one of the significant opportunities this country has to reduce energy usage and lower GHG emissions. Limiting insulation production or raising the cost is not how to capitalize on this opportunity. The same is true of many of our products. Double pane glass windows save energy. Brick is an excellent insulator for homes and buildings. Using cement for commercial building insulates better than alternatives. Plastics, aluminum and higher grades of steel are used to lightweight motor vehicles. Composite plastics and aluminum are light weighting the air transportation industry. Paper and plastics are more light weight than alternatives in packaging end uses. Fertilizer increases yield per acre and saves energy. Engineering plastics are used for new low emission energy sources like wind turbine blades. Silicon is energy intensive but in LED lamps and photovoltaics save energy. The stories are endless.

Six types of costs under absolute ghg reduction policies - no other sector has this entire list

There are at least six categories of costs that manufacturers incur under cap and trade:

1. The cost of reducing energy consumption within our facilities - ROI falls rapidly

These are capital expenditures to improve energy efficiency and reduce costs. The capital for these projects compete with other company demands such as advertising campaigns, R&D, employee wages and benefits, new product lines, or building new manufacturing facilities. Energy efficiency projects normally occur during annual plant shutdowns to do maintenance or when production capacity is increased.

Under a cap, capital expenditures will be under pressure to meet the timing of the annual ghg reduction requirements. Projects that achieve the greatest return on investment (ROI) are usually completed first. However, given the nature of a cap and the constant reduction of the cap, it will not take long for such projects to no longer carry a sufficient ROI to compete with alternative demands. We know companies that have already reached this point. This means that companies will

be fully subjected to the price and volatility of the carbon market for their purchases of allowances.

2. The increased cost of expanding production

Cap & trade is anti-growth. If a company wants to expand production in the U.S. they will need to purchase the carbon allowances necessary to cover their increased emissions. There is a very real possibility that the added cost of the carbon allowance price will make building the new production facility in the U.S. cost prohibitive. Given the global nature of manufacturing, companies will evaluate the cost of alternative sites around the world.

3. The increased cost of producing more product from existing production facilities

A manufacturer of widgets produced 100 widgets in 2007. Because of their better quality, a new customer wants to purchase 10 widgets. To do so, the company will need to purchase carbon allowances to cover the increased ghg emissions. The increased cost would lower their profit margin. If they try to raise the price to cover the cost increase, the customer may decide to purchase from a foreign supplier who is not subject to cap and trade.

4. The cost of losing a manufacturing plant (a productive asset)

When relative costs go up and a company is no longer competitive, it shuts the plant down. This is exactly what has happened since 2000 with the rising price of natural gas. When this happens, companies lose an asset and its book value. Worse yet, it no longer has a productive asset that can generate income and contribute to its future.

5. The societal cost of plant shutdowns

When manufacturing facilities shutdown, employees lose their jobs. Families lose a relatively high paying income that usually has medical and retirement benefits. Local, state and federal tax incomes are lost.

6. Imports, trade imbalance, and ghg emissions increase

Because of economic growth, the consumption of the products we produce will continue to grow in the U.S. If U.S. manufacturing plants do not produce them, off-shore producers will. These industries say with confidence that on average, they produce these products with less ghg emissions than from developing or countries in transition.

Questions for Further Discussion

1. Do any of the three alternatives discussed in this White Paper – border adjustments, performance standards, or carbon market design – offer clear cut advantages as a legislative policy in terms of encouraging developing countries to limit their GHG emissions and simultaneously protecting U.S. industry in global trade markets? Are there other approaches Congress should consider and, if so, what are their advantages and disadvantages?

Answer:
1. There is no effective solution. There are only imperfect solutions that carry significant and varying unintended consequences. Many of which could not reveal themselves till much later and when it is too late to save the manufacturing industries.

2. U.S. climate legislation that require importers of energy intensive products to reduce ghg emissions sends a false hope that such legislation will actually force ghg reductions. The nature of global manufacturing is such that there are ways around such requirements and the prospects for establishment of reciprocal barriers to trade is a likely outcome. Many foreign countries subsidize their manufacturing sector and will find ways to compensate them for the cost of climate compliance with U.S. laws.

3. The industrial sector is unique among the five major U.S. sectors of the economy. It is the only sector that always has had and always will have two market signals that consistently result in the reduction of energy consumption and ghg emissions. These market signals are global competition and profit motive. Because we are energy intensive and because we face tough and often subsidized global competition, we must reduce our energy consumption or cease to exist. It is for this reason that manufacturing does not need an additional carbon price signal.

To prove our point, the industrial sector's total direct and indirect carbon dioxide emissions in 2005 are below their 1990 level while GHG emissions from the residential sector increased 31.4%; commercial +34.6%; transportation +25% and electricity +31.7%.

4. Each energy intensive manufacturing sector is very different which makes the sincere effort to simultaneously force ghg reductions here and abroad very complex. A global agreement that requires each industrial sector to reduce its ghg intensity appears to have the broadest support. But even in this case, agreements are only as good as the enforcement commitment by each country. And, countries who do enforcement may subsidize their manufacturers making trade agreements complicated and difficult to enforce.

5. Policy solution #1.

Given the fact that the industrial sector ghg emissions are below that of 1990 levels, it stands to reason that the majority of manufacturers support an approach for this sector that would hold it harmless and to provide incentives if the Congress wishes to further accelerate ghg emissions above the current rate. If Congress imposed caps upstream, full allowances to cover imposed energy costs would be required. Full allowances could provide a level playing field with imported products.

Tailored incentives that speed capital stock turnover are very cost effective in accelerating energy efficiency and ghg reductions as demonstrated during the 1970-80's. Congress provided tax incentives that, in hind sight, probably saved the U.S. manufacturing sector from being dismantled by the high price of energy during the embargo periods.

Capital stock turnover means replacing or upgrading existing manufacturing processes and equipment or building new capacity so that more energy efficient equipment processes and technology will be installed at a faster rate than would otherwise occur. Most manufacturing equipment will last 20 to 30 years. There are some processes that last up to 50 years.

Incentives that encourage use of combined heat and power (CHP) have a history of tremendous success. CHP can produce electricity comfortably at an efficiency rate of 70% while the average electric utility energy efficiency rate is around 35%.

6. Policy option #2.
If mandates are required, sector specific ghg intensity performance standards are generally a preferred approach. This approach is more consistent with how companies currently operate as to spending capital, planning and pricing products. If upstream carbon caps are imposed on the economy, full allowances equal to the increased cost of energy are necessary to help keep manufacturing competitive. It is most important to set sector flexible ghg intensity mandate targets at a level that encourage cost effective energy efficiency improvements and at a level that does not cause "leakage", that is, jobs leaving the U.S. This approach is not border adjustable but will do more to reduce the potential for loss of competitiveness.

7. Policy option #3.
A carbon tax treats all emitters equal and while it does distort energy markets, it does less to distort the competitiveness between and among competing manufacturing sectors and companies versus a cap & trade approach. To prevent loss of competitiveness, the income from the carbon tax would need recycled to cover manufacturing's increased energy costs that are passed on to us. Arguably, it is border adjustable. Manufacturers need the certainty and transparency that comes with a carbon tax versus a cap & trade approach.

Combined, these characteristics add more certainty in capital expenditure planning and the forward pricing of our products.

8. Policy option #4.
Cap and trade is the worst economy-wide option for the manufacturing sector because it adds unfathomable uncertainties, all of which add to our costs, disrupt capital planning and adds substantial financial risk on forward pricing of our products. Auctioning of carbon makes it much worse and in particularly if non-regulated entities are allowed to buy or sell the allowances.

By design, the ghg cap is reduced annually which makes it anti-growth. As such, cap & trade is the least preferred alternative by most manufacturing companies.

If the Congress implements an economy-wide cap and trade program, the only policy solution that keeps energy intensive manufacturing from losing competitiveness is one that provides full allowances for its emissions and for the significant increased energy costs that will be passed-on to us. An upstream cap will result in energy rationing, distortion of the energy market and higher resulting energy costs. This is particularly the case given our nation's existing limited supply of low carbon intensive energy.

Given this policy approach, Congress can help the competitiveness of U.S. manufacturing by allowing U.S. companies to self certify an unlimited amount of ghg reductions in their own facilities from any where in the world for use as an offset against domestic reduction requirements. U.S. companies are subject to strict reporting and compliance regimes through Sarbanes/Oxley and this will ensure the integrity of these non-U.S. reductions.

9. Border adjustments:
Countries do not play fair when it comes to trade. While our Congress would like to keep us competitive, foreign governments seek to give their manufacturing sector an advantage. They have in the past and they will under any climate regulation that is implemented by Congress.

The IBEW/AEP proposal focuses entirely on imports and does nothing to help U.S. manufacturers export products into these same countries. While important, Congress's goal should be to give U.S. manufacturers an advantage in world markets.

Countries subsidize their manufacturing industries in many different ways for purposes of job creation and trade currency. Energy is high on the list of subsidies but there are many others. There is little doubt that these same countries will provide carbon allowance subsidies. Even EU countries are doing it today by buying carbon offsets through the Clean Development Mechanism and Joint Implementation programs.

As written, there is consensus by the manufacturing sector that the IBEW/AEP proposal will not work. As proposed, it simply does not recognize the realities of the global market place in which manufacturers compete. Even with modifications such as the same starting dates and base lines, no one believes these foreign governments will sacrifice their manufacturing jobs for ghg reductions. If foreign governments do not regulate and enforce air emission reductions, they surely are not going to enforce ghg emission reductions. Our point is that even if on paper a modified IBEW/AEP proposal could pass WTO, U.S. manufacturers would lose competitiveness to such countries. It would be a victory on paper only and at the price of dismantling our industries.

As an example, the IBEW/AEP proposal requires the importing country to implement a comparable ghg reduction program. The problem is that a government like China, could enact a ghg reduction program with comparable ghg reductions to that of the U.S. but include elements that would specifically give their manufacturers competitive advantage. For example, they could establish different country baselines, full allowances for their manufacturing sector, higher cost of energy rebated; exemptions for feedstock; exemptions for process gas; ability to use 100 % of reduction commitments using offsets; or cap the price of carbon at a very low price. Any one of these advantages who be considered a legal subsidy by WTO yet render U.S. manufacturers uncompetitive.

Another practical example is the provision that addresses imports of primary energy intensive products or so-called basic commodities. An easy legal way around the IBEW/AEP proposal is to start importing slightly upgraded or fully finished goods versus the commodity. For example, instead of importing a commodity like plate glass, they could simply import the finished products such as windows. Instead of importing sheets of aluminum, they could import aluminum wheels, etc. Doing so would not require them to purchase allowances. Also the IBEW/AEP proposal only addresses a portion of the energy intensive products. Rightfully, the product list would need expanded.

Another very serious problem is reciprocity. There is nothing to prevent other countries from reciprocating with their own import requirements but do so in a manner to make it more difficult for U.S. manufacturers to export to their country. For example, the AEP proposal calls for imported energy intensive products to purchase CO2 allowances. What is to prevent any country from establishing the price of carbon allowances for imported products that are at a price that is much higher than that of the U.S.? The same applies if we establish a carbon tax and require a border adjustment on imports. China could also establish a carbon tax but at a higher rate than that of the U.S.

2. Are the various policies mutually exclusive, or can they be combined in some fashion to achieve the best balance between reducing global GHG emissions and protecting U.S. industry and jobs?
They can be combined. (see above)

3. In terms of timing, how closely should legislation link commencement of a U.S. domestic cap-and-trade regime with policies to induce developing countries to limit their GHG emissions?
If the Congress implements the IBEW/AEP proposal, both domestic and imports should start at the same time.

4. Should U.S. legislation distinguish between the "least developed" countries and other "developing" countries?
It is clear that some 'developing' countries have sophisticated industries in certain sectors. Although the Chinese remain a developing nation, they have shown dominance in a number of manufacturing sectors.

The LDCs as listed by the United Nations should be given some special consideration. However it would be a mistake to assume that high energy intensity industries be given a pass if they locate in the LDCs. Developed countries should take great care in assuring that LDCs do not become a dumping ground for both high intensity and high polluting industries. Assistance to LDCs should include every effort to deploy low carbon technology.

5. Which approach is most likely to satisfy WTO requirements? Which approach is most likely to result in the prompt resolution of any WTO challenge, and thereby provide more certainty with respect to both global environmental benefits and the long term impact on U.S. industry and jobs?
WTO compliance is not the real issue. The real issue is "if" the WTO says the US regulations satisfy WTO requirements, will actual ghg reductions occur? Will these country governments actually force reductions from their manufacturers or will they subsidize their ghg reduction costs? Global agreements are a better way to go.

6. How can climate legislation that includes both domestic and international components be drafted to align with any post-Kyoto Protocol accord the U.S. agrees to under the UNFCCC? How might U.S. adoption of climate change legislation affect the likelihood that such an agreement is concluded and influence the formulation of a U.S. international negotiating position?
Leading by example may be ok for the other sectors that do not face global competition. It is not appropriate for the industrial sector who will immediately find itself with higher relative costs while our competitors take market share from us.

The industrial sector has lead by example. Manufacturing emissions are below 1990 because we have a price signal and global competition. The other sectors such as electric, transport, residential and commercial do not.

Besides conservation and improving energy efficiency, the only thing that reduces ghg emissions here and abroad is an increased supply of reliable and affordable low carbon intensive energy. GHG caps do not create this supply. Efforts to address energy supply and conservation dating back to the embargoes of the 1970's remind us that cap and trade programs which simply accelerate increases in the cost of energy may not help us increase supply or find alternative supplies of low carbon energy.

Given that global energy demand and population will increase substantially in coming years, all governments should focus on reducing barriers to developing low carbon intensive energy supplies, increasing incentives and technology development and deployment to meet these challenges.

The only thing that will entice developing countries to significantly reduce its GHG emissions is low-cost low-emission intensive energy.

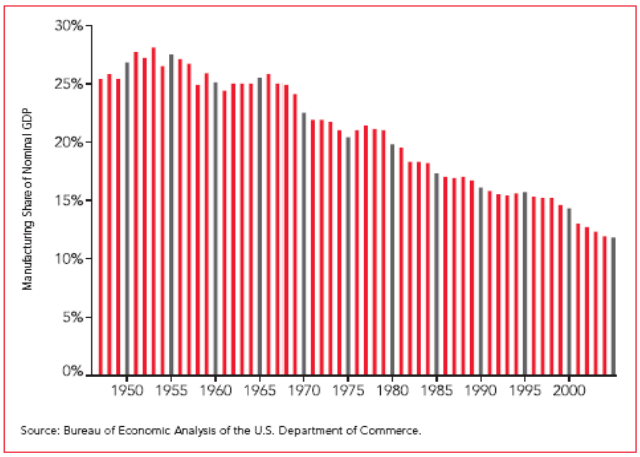
3.3 Million Manufacturing Jobs Lost

(Millions)

2000	2001	2002	2003	2004	2005	2006	2007	Difference
17.2	16.4	15.2	14.5	14.3	14.2	14.1	13.9	-19.2%

Source: U.S. Dept. of Labor

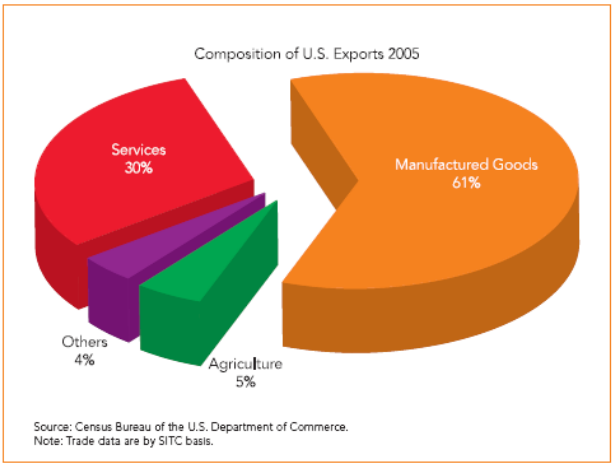
Manufacturing's Share of Economy



Manufacturing's share of the economy declined to 12 percent in 2005.

Source: NAM

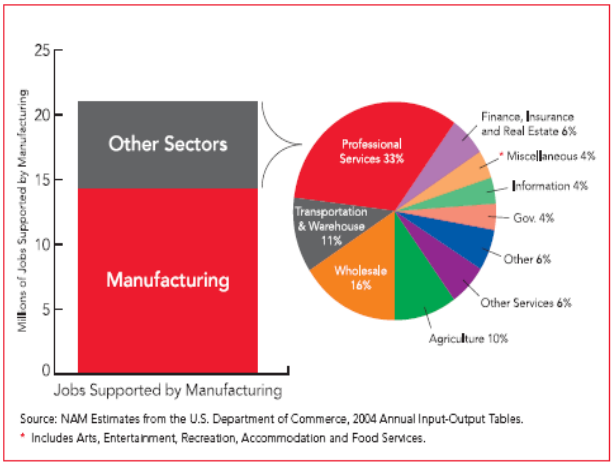
Manufacturing Dominates U.S. Exports



Source: NAM

Manufacturing Supports U.S. Jobs In Other Sectors

More than one in six U.S. private-sector jobs depends on the U.S. manufacturing base.

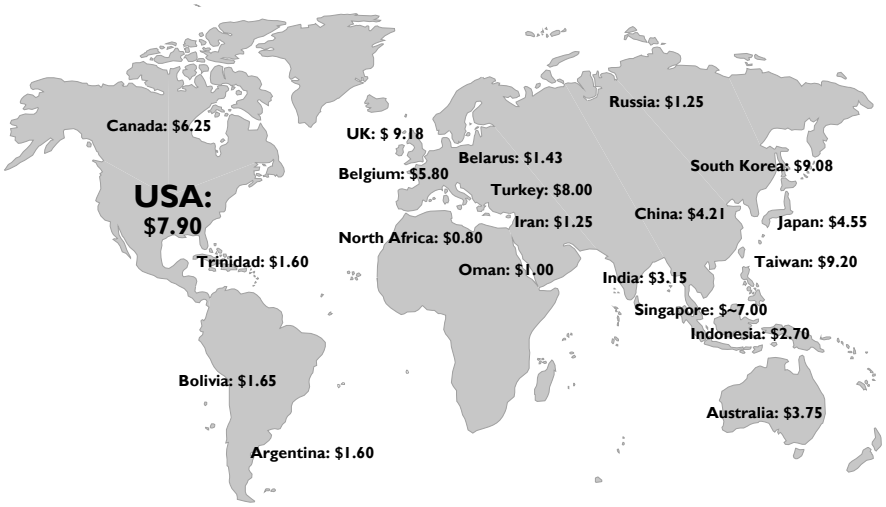


Source: NAM

Natural Gas Prices Around the World

2006 Average

($US per million BTUs)



Industrial Energy Consumers of America

Total Carbon Dioxide Emission

(Million Metric Tons of Carbon Dioxide)

	1990	2006	Difference
Residential	**953.7**	**1253.8**	**+31.4%**
Commercial	**780.7**	**1050.6**	**+34.6%**
Industrial	**1683.6**	**1682.3**	**< 0%**
Transportation	**1566.8**	**1958.6**	**+25%**
Electricity	**1803.1**	**2375**	**+31.7%**

Source: EIA

EU Cap & Trade

March 26, 2007
Senate Committee on Energy & Natural Resources
Hearing on European Union's Emissions Trading Scheme

- Answer by Garth Edwards: Shell Oil, Trading Manager – Environmental Products, London, England

- **"The bulk of emission reductions in the EU are made actually by coal to gas (natural gas) fuel switching in power stations. *And* *any price will start to change the dispatch of power* plants…and start change away from coal into gas (natural gas).**

Planned Nameplate Capacity Additions from New Generation (MW)

Energy Source	2006	2007	2008
Coal	602	1589	1056
Petroleum	269	78	168
Natural Gas	10657	16892	15050
Other gases	0	391	1160
Nuclear	0	0	0
Hydro	8	3	4
Other Renewable	3027	2454	695
Total	14573	21407	18133

Source: EIA

Natural Gas Fired Power Generation Impacts on All Consumers

A single 500 MW rankine cycle power plant (10,000 Btu/kwh) will use the equivalent natural gas volume used to fuel 842,308 homes each year.

Natural Gas Production

(Volumes in Trillion Cubic Feet)

	2000	2001	2002	2003	2004	2005	2006	Difference
Dry Production	**19.2**	**19.6**	**18.9**	**19.1**	**18.6**	**18.1**	**18.5**	**- 4%**

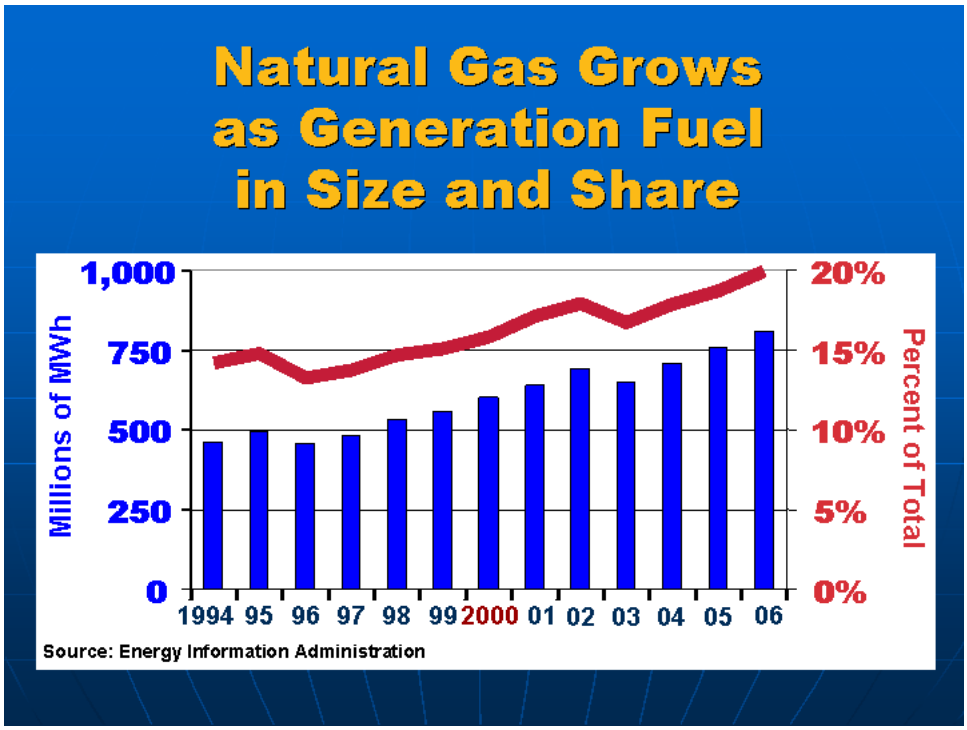
Source: EIA

Natural Gas Consumption by End Use

(Trillion Cubic Feet)

	2000	2001	2002	2003	2004	2005	2006	Difference
Total Consumption	**21.5**	**22.2**	**23.0**	**22.3**	**22.4**	**22.2**	**21.9**	**+1.9%**
Residential	**5.0**	**4.8**	**4.9**	**5.1**	**4.9**	**4.8**	**4.4**	**-12%**
Commercial	**3.2**	**3.0**	**3.1**	**3.2**	**3.1**	**3.1**	**2.9**	**-9%**
Industrial	**8.1**	**7.3**	**7.5**	**7.2**	**7.2**	**6.7**	**6.6**	**-19%**
Electric Power	**5.2**	**5.3**	**5.7**	**5.1**	**5.5**	**5.9**	**6.2**	**+19%**

Source: EIA



Electric Power Research Institute

"Even though natural gas is used to produce only 20 percent of the electricity, it accounts for 55% of the electric industry's entire fuel expense ($50B out of $91B)."