

# Climate Policy and the Industrial Energy Consumer

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President

Industrial Energy Consumers of America  
September 10, 2007

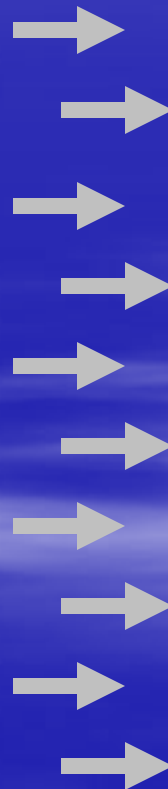
IECA's objective is to work with Congress to implement policies that reduce greenhouse gas emissions without loss of manufacturing competitiveness

# Who Are Energy Price Sensitive Industries?

## Building Block Industries

- Chemicals
- Plastics
- Fertilizer
- Glass / ceramics
- Brick
- Steel
- Aluminum
- Pulp and Paper
- Cement
- Food Processing

Convert  
to



## Commercial & Consumer Products

- Food Production
- Detergents
- Automobiles
- Computers
- Construction
- Medical Supplies
- Paint
- Pharmaceuticals
- Cosmetics
- Telecommunication

# Why Did These Industries Locate In The United States?

- Access to the customers, quality of workforce, stability of government, reliable and globally competitive energy
- Resulted in long-term investment in the U.S.

*Only one has changed significantly  
...natural gas and electricity costs.*

# 3.1 Million Manufacturing Jobs

## Lost

(Millions)

2000	2001	2002	2003	2004	2005	2006	Difference
17.2	16.4	15.2	14.5	14.3	14.2	14.1	-18%

Source: U.S. Dept. of Labor

# KEY POINT

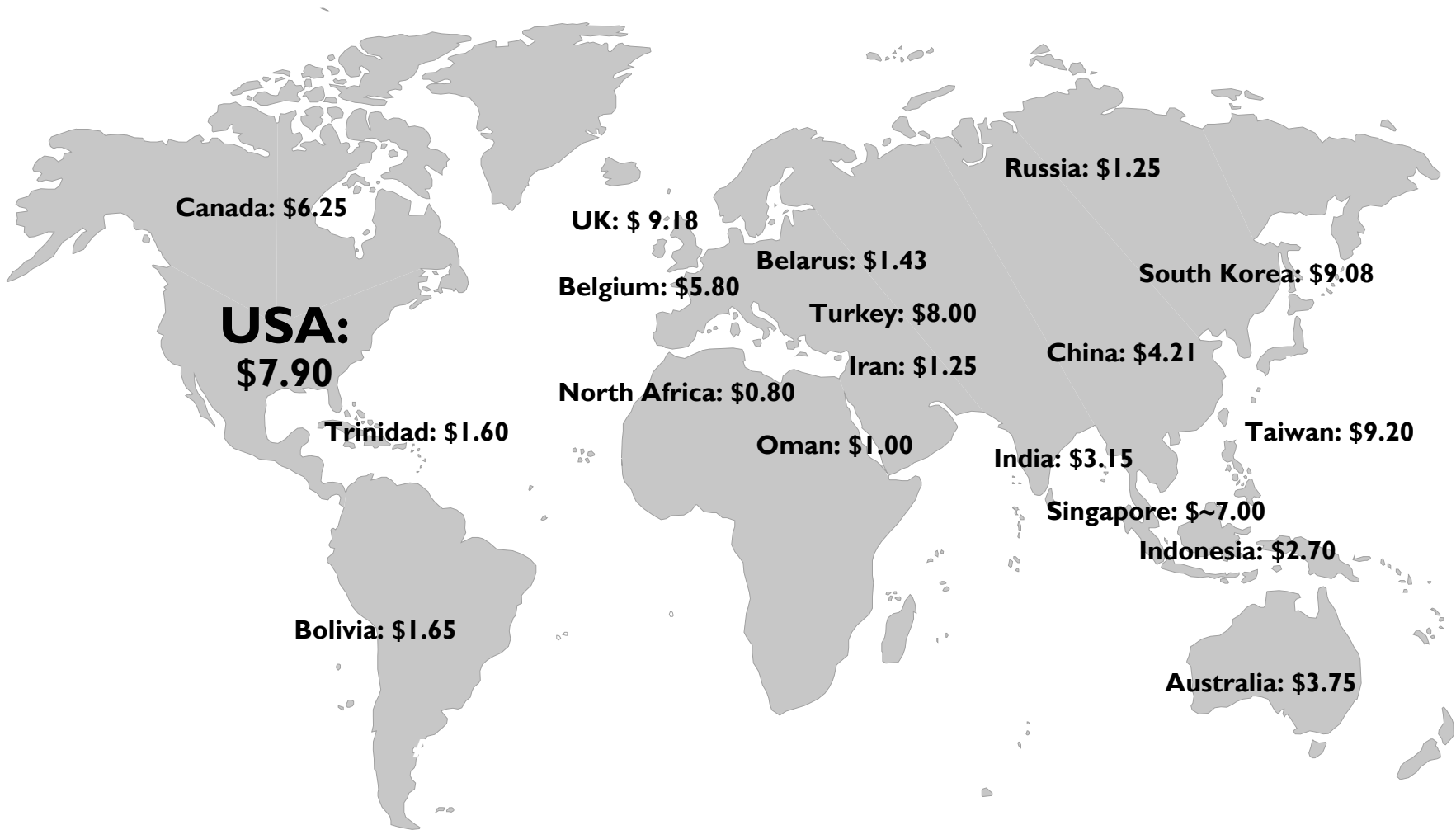
The EIA model that is used to determine the cost of climate legislation...would not have forecasted the lost of any of the 3.1 million manufacturing jobs!

Reason: The EIA model does not have the ability to determine the profitability break-even point for manufacturers. It cannot tell at what level energy prices make companies unprofitable!

# Natural Gas Prices Around the World

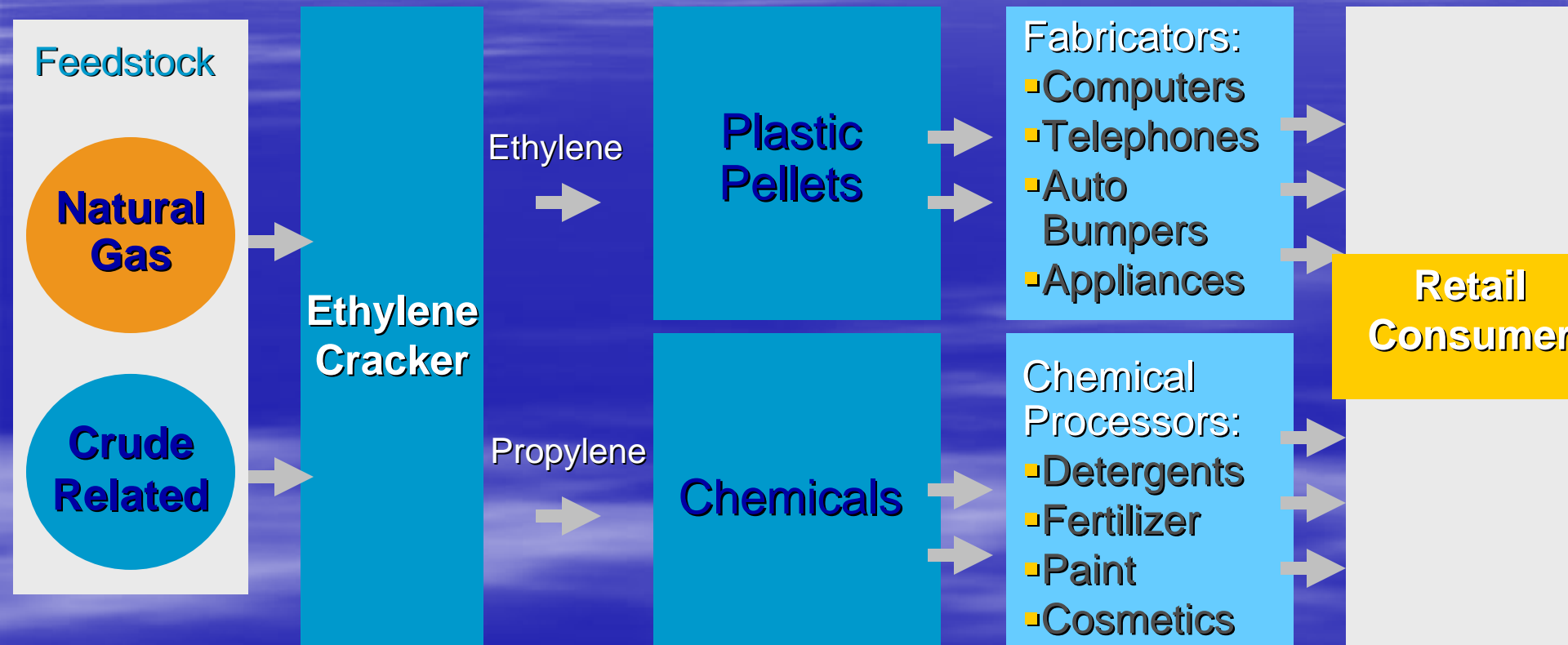
## 2006 Average

(\$US per million BTUs)



# When Plants Move Over Seas, They Often Take Their Customers With Them

## Example



Moving the Ethylene Cracker offshore increases the potential for all downstream industries to move also.

# The Industrial Sector is Unique

- Our products are part of the solution: glass windows; insulation; lighter vehicles; energy efficient appliances
- Already has a price signal- its called global competition. The only sector that requires globally competitive energy
- Compete globally and in an environment of unfair competition // Other countries subsidize energy and manufacturing
- Unlike other sectors...we re-locate plants to be competitive

# The Industrial Sector is Unique

- Energy is a significant cost of production and has resulted in continuous energy efficiency improvements
- Outstanding energy efficiency success story- total energy consumption since 1973 is .015% less and total production has more than doubled!

(Key Point: Competition works: achieved without regulation)

- Mostly natural gas dependent as a fuel and feedstock
- Some processes (aluminum, steel, some chemicals) are very electricity intensive

# The Industrial Sector is Unique

- Absolute GHG reductions are an exception...not a norm. Serving world markets means increased product production and increased energy use...thus the need for lower carbon energy supply
- Their products compete with one another for markets (i.e. plastic, steel, paper, aluminum)
- Significant energy efficient co-generators of electricity and steam

# Industrial Sector Energy Consumption (Trillion Btus)

<b>Year</b>	<b>Coal</b>	<b>Natural Gas</b>	<b>Renewable</b>
<b>1975</b>	<b>3667</b>	<b>8532</b>	<b>1096</b>
<b>2000</b>	<b>2256</b>	<b>9500</b>	<b>1828</b>
<b>2006</b>	<b>1938</b>	<b>7969</b>	<b>1640</b>
<b>75 vs. 06</b>	<b>-47%</b>	<b>-6.6%</b>	<b>+49.6%</b>

Source: EIA

# “Total” (Direct & Indirect) Carbon Emissions by Sector

(Million metric tons of carbon dioxide)

Sector	1980	2005	Difference	Net Difference
Residential	909	1254	38%	345
Commercial	653	1051	61%	398
<b>Industrial</b>	<b>1788</b>	<b>1682</b>	<b>-6%</b>	<b>-106</b>
Transportation	1386	1959	41%	573
Electric	1529	2375	55%	846

Source: EIA

# #1 Concern: Carbon caps will result in coal to natural gas fuel switching by the power sector

- Increased power sector demand drives up natural gas and electricity prices for ALL consumers.
- Power sector natural gas demand up 19% since 2000 while natural gas production is down 4%: Residential -12%; Commercial – 9%; Industrial -19%
- Proposed 2007 power plants- Natural gas 16,892 MW; Coal 1,589 MW
- Fuel switching happened under the EU ETS and had nothing to do with the over supply of allowances

# 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).”

Electric utilities have alternatives  
such as coal, nuclear and  
renewable energy – consumers  
do not.

Either increase natural gas supply or  
reduce consumption by the power  
sector!

Nothing in any of the proposed  
climate legislation would prevent  
fuel switching

# Planned Nameplate Capacity Additions from New Generation (MW)

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

# Existing Electricity Generation Capacity 2005 (MW)

Full utilization of the 436,991 MWs of natural gas fired power plant capacity would consume about 21 TCF of natural gas, an amount nearly equal to our national consumption.

Energy Source	Nameplate Capacity
Coal	335,892
Petroleum	64,845
<b>Natural Gas</b>	<b>436,991</b>
Other Gases	2,293
Nuclear	105,585
Hydro	77,354
Other Renewable	23,553
Pumped Storage	19,569
Other	928
<b>Total</b>	<b>1,067,010</b>

# 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 Supply is Fragile

- Reserve production capacity is almost non-existent!
- Inventory levels are good. Worry about hot summers / cold winters / hurricanes
- Supply is down 4 % since year 2000 despite record well completions
- Canadian imports – down by 4.9% since 2001
- New Gulf of Mexico leases – no supply impact for next five years or so
- Alaska Pipeline – no progress - 2017 at earliest
- LNG- Unreliable. New cartel is on horizon

# Natural Gas Production

(Volumes in Trillion Cubic Feet)

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

Source: EIA

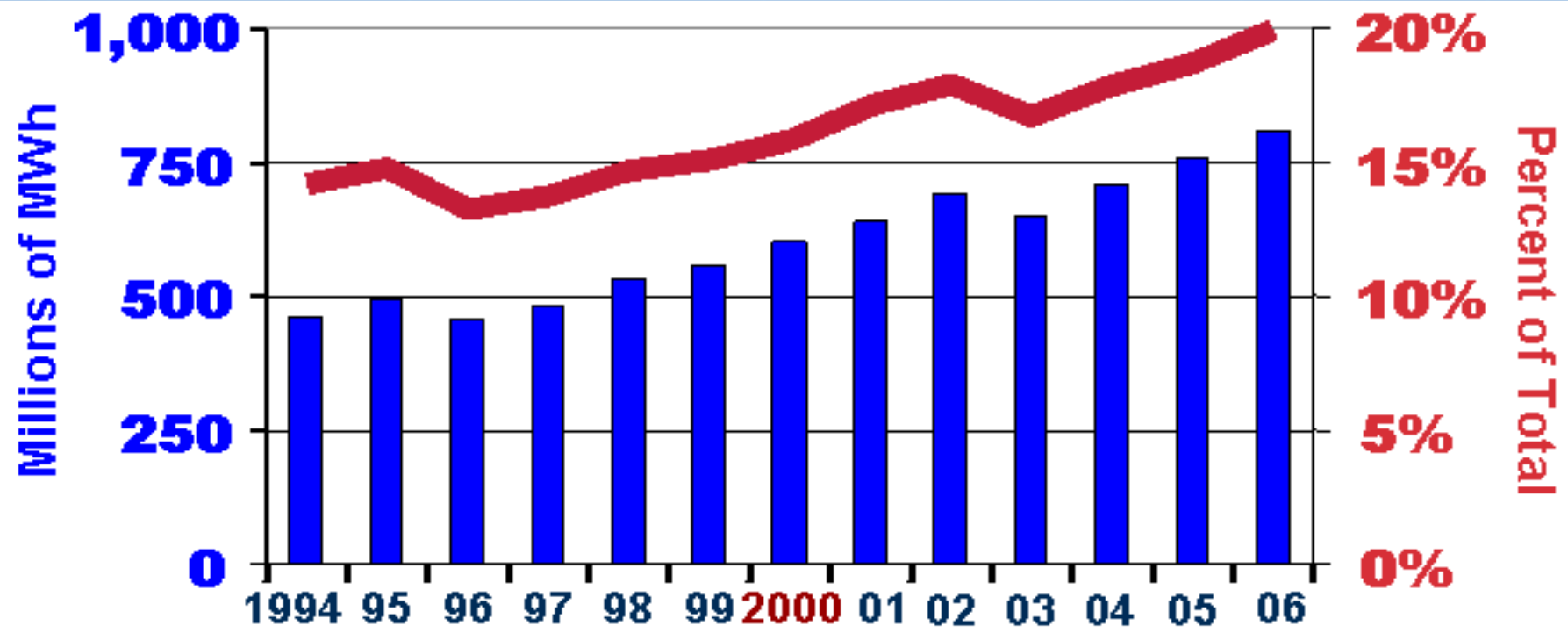
# Natural Gas Consumption by End Use

(Trillion Cubic Feet)

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

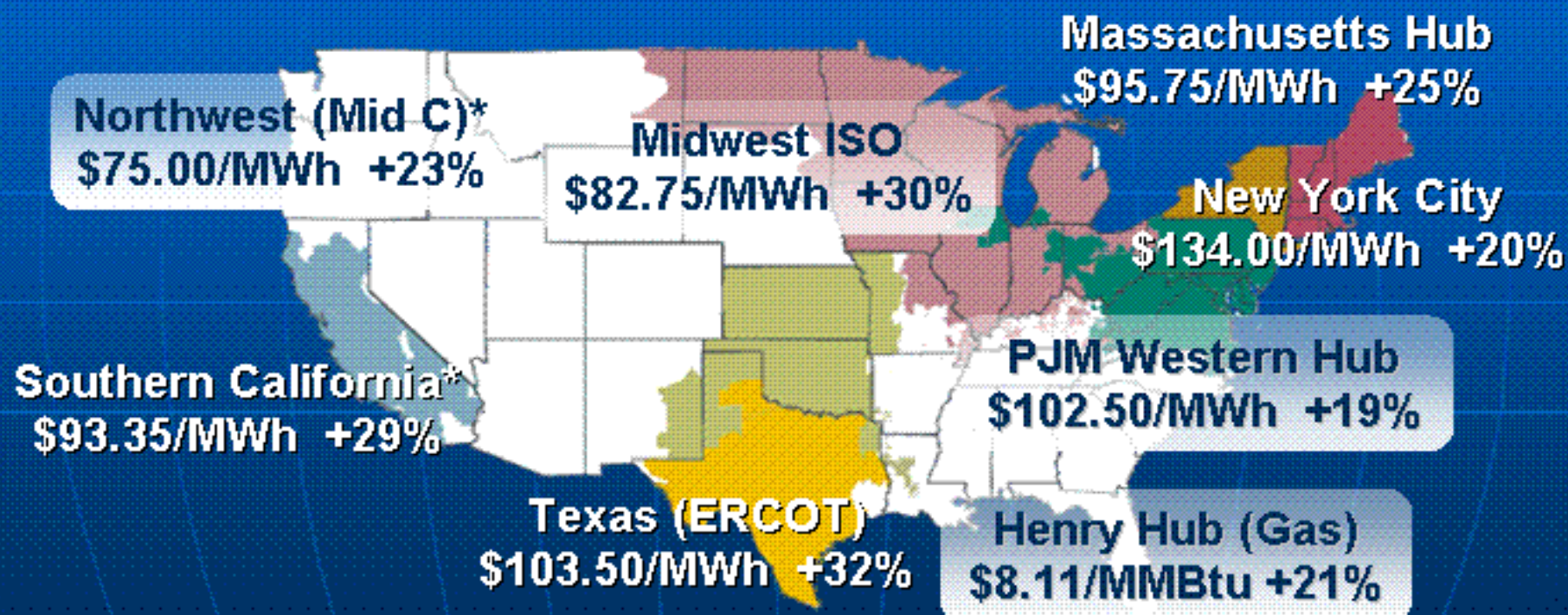
Source: EIA

# Natural Gas Grows as Generation Fuel in Size and Share



Source: Energy Information Administration

# Summer 2007 Forward Prices Now Higher Than 2006 Actual Prices



\* Western prices are for 3rd quarter.

Sources: Platts for forward electricity prices for July and August 2007, NYMEX and ICE for gas. All prices effective 5/11.

# 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).”

# Electricity Retail Prices

(cents per kwh, including taxes)

	2000	2001	2002	2003	2004	2005	2006	%
<i>Residential</i>	8.24	8.58	8.44	8.72	8.95	9.45	10.40	+26%
<i>Commercial</i>	7.43	7.92	7.89	8.03	8.17	8.67	9.36	+26%
<i>Industrial</i>	4.64	5.05	4.88	5.11	5.25	5.73	6.09	+31%

# Natural Gas Prices

(Dollars per Thousand Cubic Feet)

	2000	2001	2002	2003	2004	2005	2006	Difference
<i>Residential</i>	7.8	9.6	7.9	9.6	10.8	12.8	13.8	+77%
<i>Commercial</i>	6.6	8.4	6.6	8.4	9.4	11.6	12.0	+82%
<i>Industrial</i>	4.5	5.2	4.0	5.9	6.5	8.6	7.9	+76%
<i>Electric Power</i>	4.4	4.6	3.7	5.6	6.1	8.5	7.1	+61%

Source: EIA

# All energy costs are passed on to the consumer:

- Consumers paid \$76 billion more in 2006 for natural gas and \$65 billion more for electricity ---EIA did not forecast these increases!!
- Rightfully so, we are concerned about the cost implications of climate policy

## #2 Concern: EIA NEMS model under estimates the cost of climate legislation

- Penn State professor's analysis proves EIA model produces systematically flawed data that significantly under estimates the cost of climate legislation
- EIA model – Over estimates natural gas production; under estimates natural gas consumption by the power sector; over estimates LNG imports; and under estimates prices

## #3 Concern: Caps do not remove government or technology barriers to increased supply of affordable low carbon energy

Caps do not:

- Increase supply of domestic natural gas
- Increase LNG import terminals
- Increase the building of nuclear plants
- Resolve the nuclear waste issue
- Build IGCC plants or carbon capture
- Build transmission and distribution lines

Concern #4: Climate policy should not subsidize foreign imports of energy intensive products

1:00 to 1:40 panel will address

In a carbon constrained US and without increased supply of affordable low carbon energy, energy price sensitive manufacturers will relocate

This will free up energy supply for all other consumers but at the price of exporting jobs, GHGs and economic security

# Sound Federal Climate Policy

- Recognizes that each sector is significantly different and needs tailored incentives. Not one size fits all (cap & trade)
- Recognize the efficiency gains/ghg reductions already achieved
- If a mandate, preempts state law

# Policies That Help the Industrial Sector to Reduce GHGs

## Greater use of existing technologies:

- Capital stock turnover- tax incentives; economic growth
- Increased use of co-generation

## New technologies:

- Federal R&D programs

# Five Climate Options

- Global mandatory reporting for entities
- Remove government and technology barriers that increase affordable and reliable supply of low carbon energy
- GHG intensity incentives/mandates by sector
- Carbon taxes
- Cap & Trade

# Mandatory GHG reporting- A first step to a global solution

- “Cannot manage what you do not measure!”
- No one really knows how much is being emitted by developing countries
- If entities will not report, they surely will not reduce ghg emissions
- UNFCCC - top priority should be to first require large ghg emitters to report

# Remove government and technology barriers that increase affordable and reliable supply of low carbon energy

- Neither cap and trade nor carbon taxes remove existing government or technology barriers to increased supply.
- Technology - US gains competitive advantage: results in cost effective ghg emission reductions; cap may not be necessary; reap benefits of supplying the world with technology. A winning solution.

# GHG intensity incentives/mandates by sector

- Tailor incentives for each sector for most cost effective and less disruptive outcome
- Mandates- only a tool if incentives are not successful
- Sector approach avoids upsetting competitiveness between industrial sectors

# Carbon taxes

- Less disruptive (versus cap and trade) in upsetting competitiveness between sectors and the economy- All pay same rate
- Transparent, no gaming, no manipulation.
- Easier to manage for purposes of pricing products and capital planning vs C&T

# Carbon Taxes

- Alternative to carbon taxes - Raise funds for technology development by increased access to the Outer Continental Shelf. Raises federal royalty income and simultaneously increases supply of natural gas

# Cap & Trade

- For manufacturing, creates significant winners and losers.
- Either restricts production or increases energy/compliance costs
- Creates greater uncertainties than alternative policies for pricing products and capital planning
- High potential for job off-shoring

# Cap & Trade

- Largely non-transparent costs of compliance and implications
- Most, unable to compete with regulated utilities for carbon
- Potential for manipulation, fraud
- Gives international companies advantages over domestic-only companies

# Cap & Trade

- CDM viewed by many as subsidizing industrial competitors in developing countries

Thank You