The Potential U.S. Manufacturing Renaissance and its Implication for Reducing Energy Intensity

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Industrial Energy Consumers of America

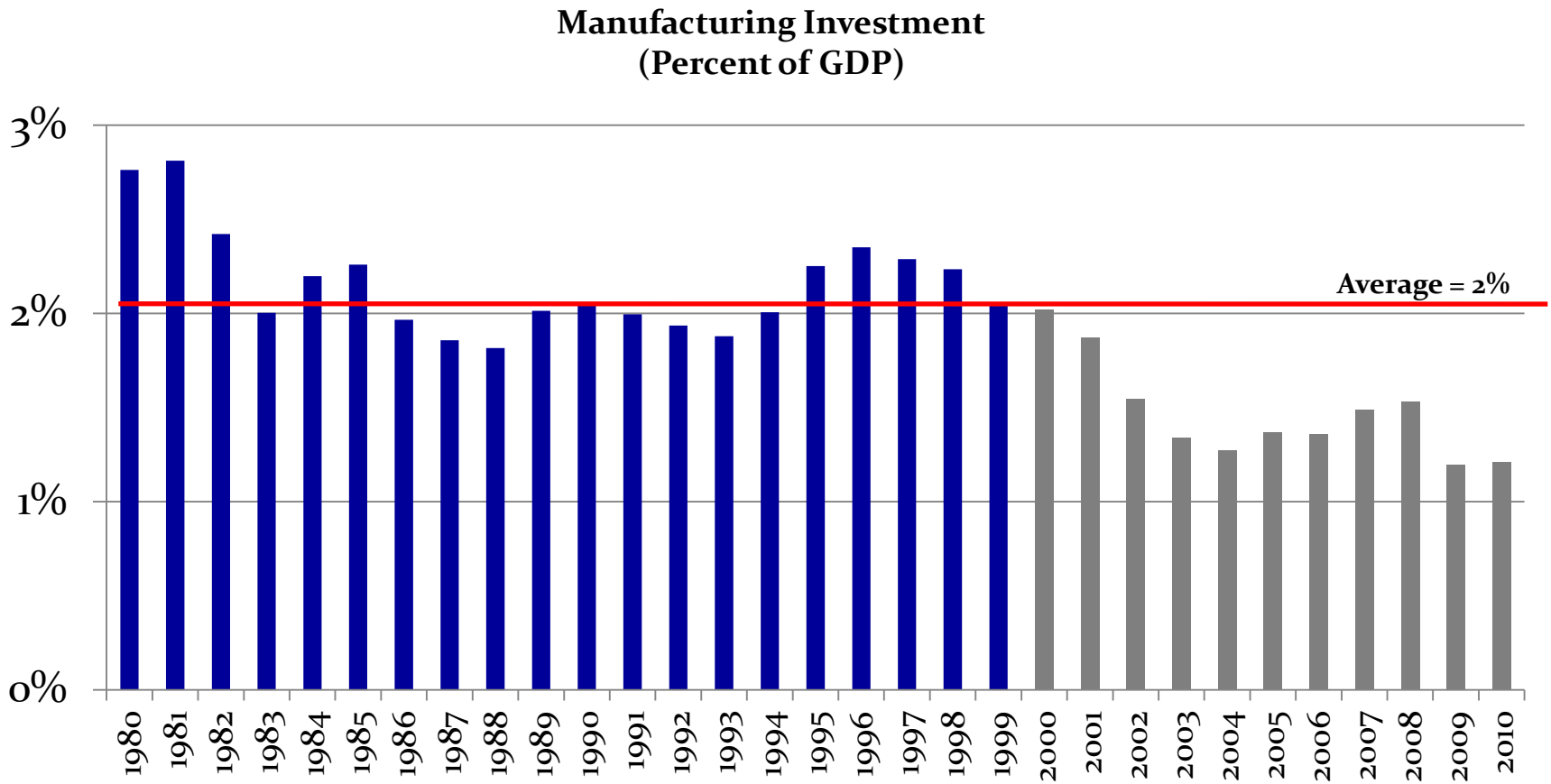
- The Industrial Energy Consumers of America is an association of leading non-partisan manufacturing companies with $710 billion in annual sales and with more than 930,000 employees nationwide.
- It is an organization created to promote the interests of manufacturing companies for which the availability, use and cost of energy, power or feedstock play a significant role in their ability to compete in domestic and world markets.
- IECA membership represents a diverse set of industries including: steel, aluminum, commodity and specialty chemicals, fertilizer, paper, food processing, glass, plastics, pharmaceutical.

Outline

- A decade of manufacturing decline
- Shale natural gas production jump starts the potential manufacturing renaissance
- Relationship of capital investment and energy cost to industrial intensity
- IECA Energy Efficiency Survey results
- ENERGY STAR for Industry: A solid foundation of service

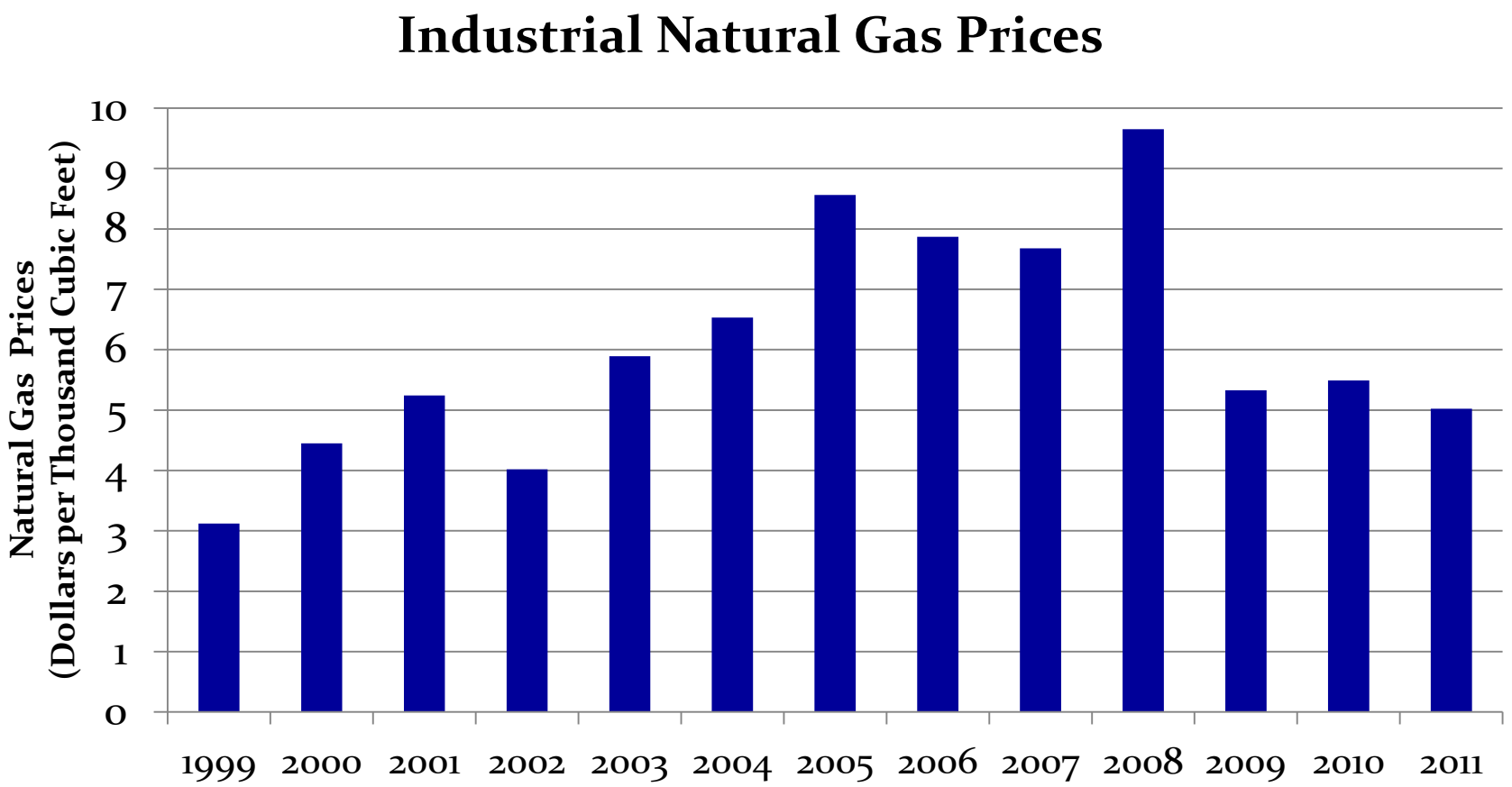
Manufacturing -A Decade of Decline

The U.S. manufacturing sector has suffered from almost a decade of persistently low investment.



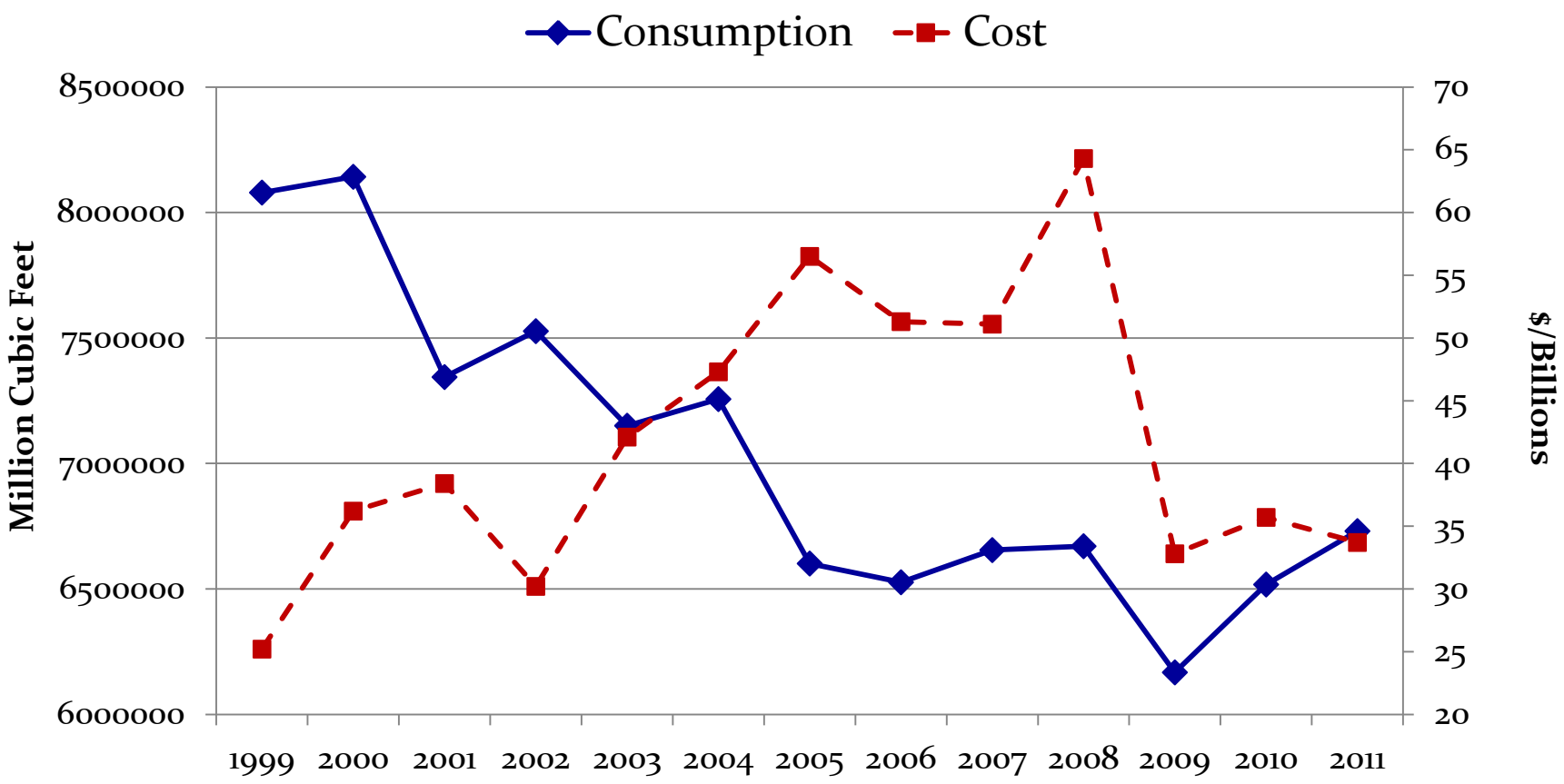
Source: Bureau of Economic Analysis

Natural Gas Prices Increased 210% from 1999 to 2008 (23% per year percent *increase)*



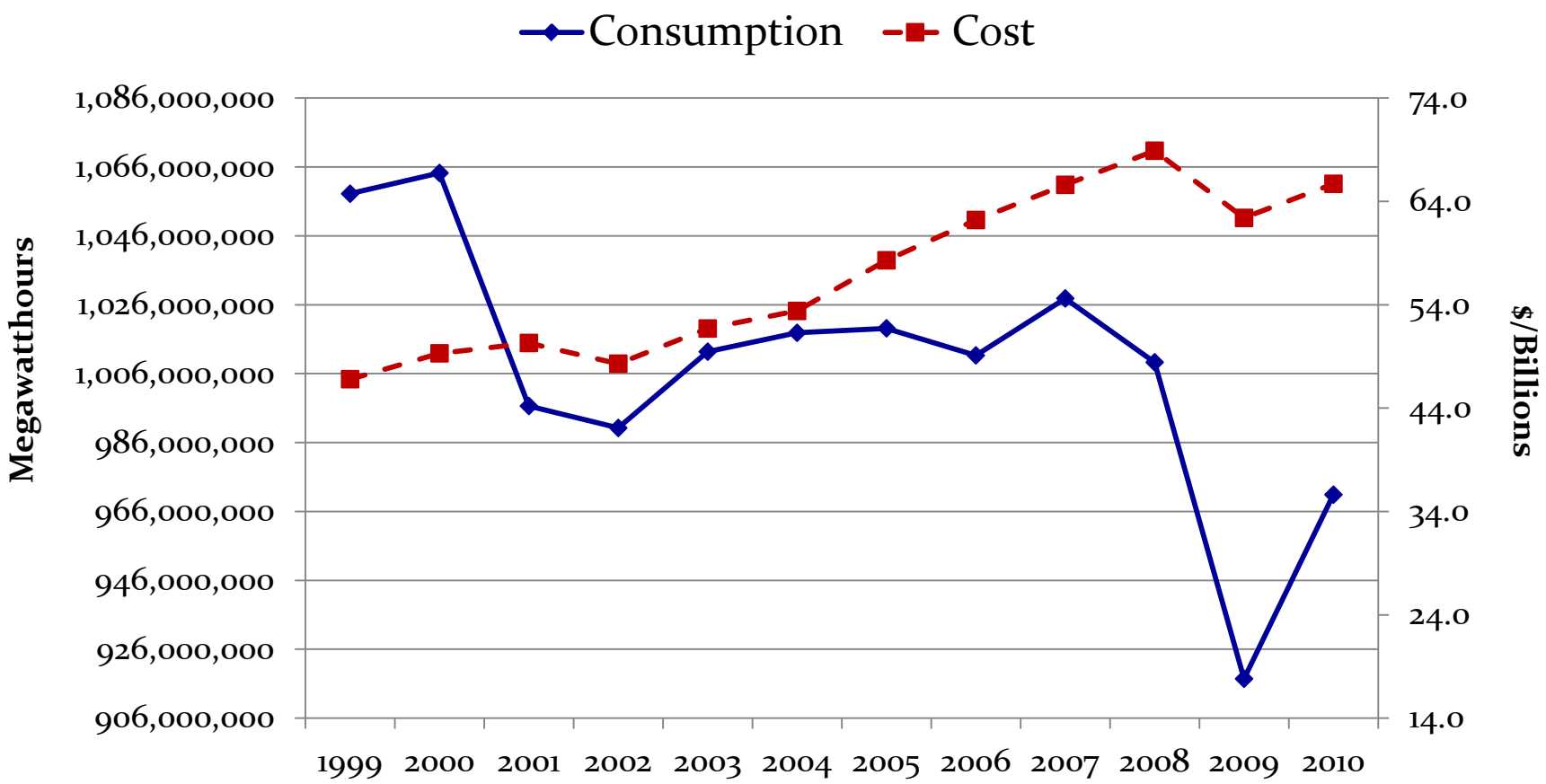
Source: EIA , Bureau of Labor Statistics

1999 to 2008 – Industry Used Less Natural Gas and Paid More



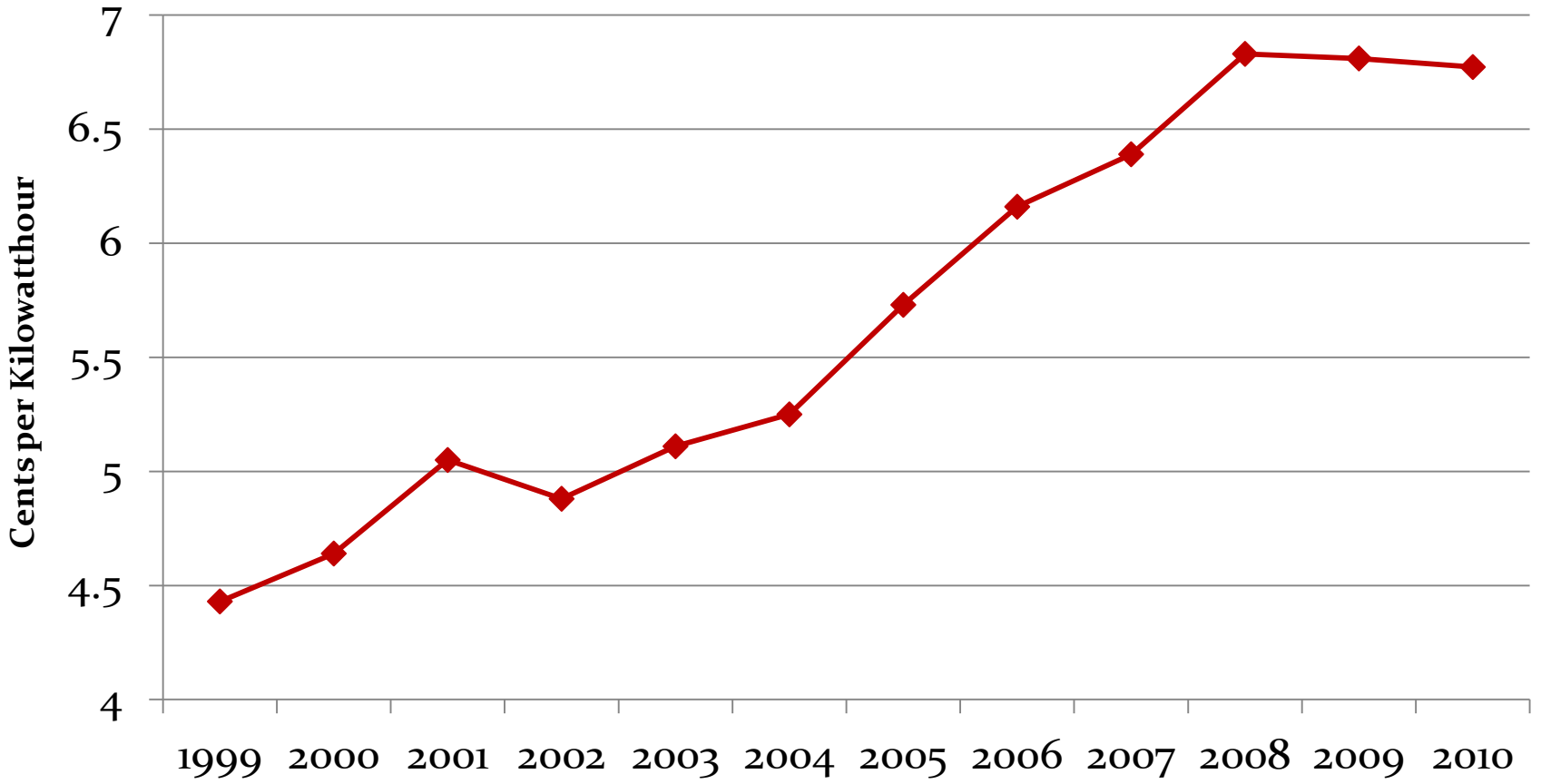
Source: EIA

Industry Used Less Electricity and Paid More



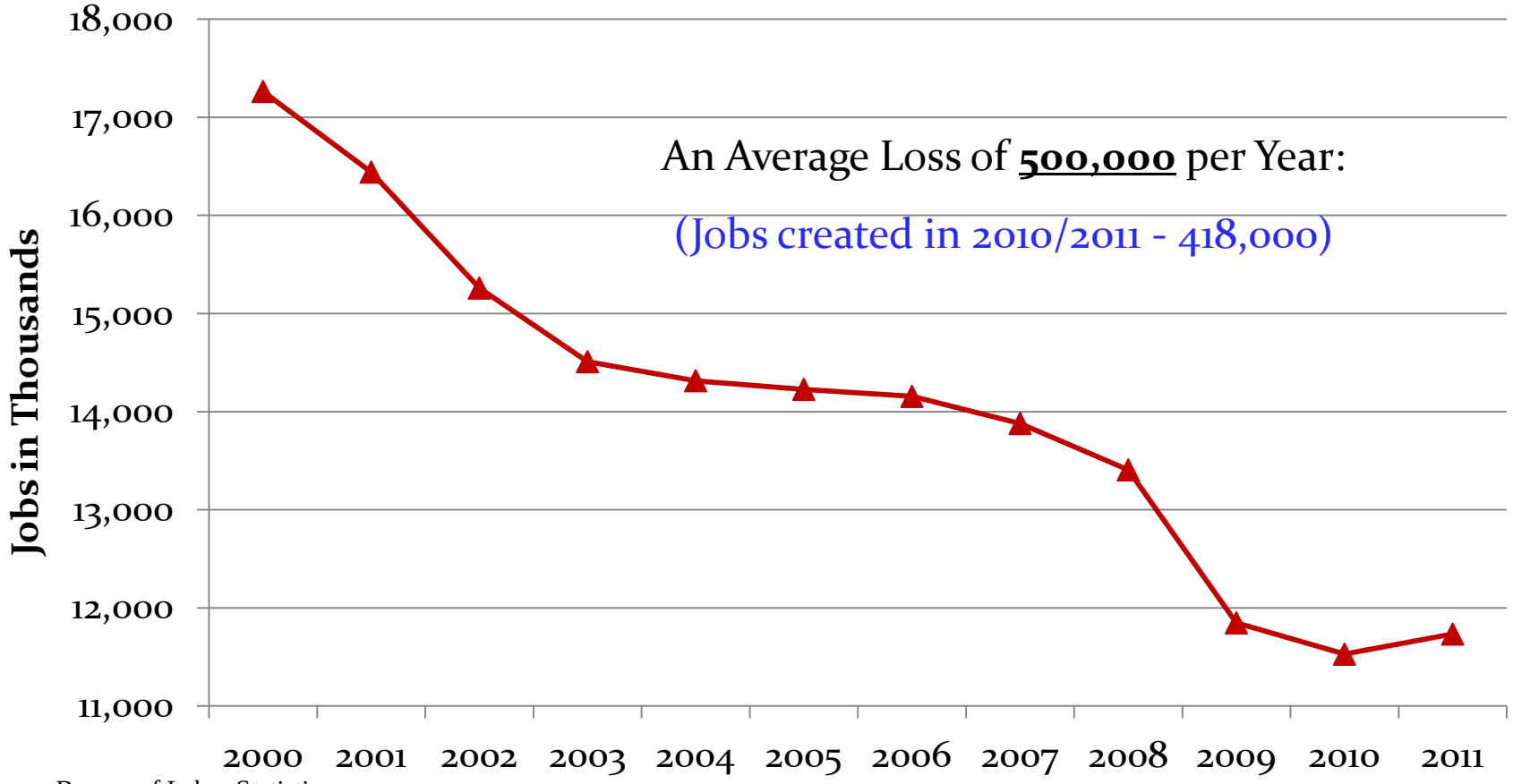
Source: EIA

Industrial Electricity Prices Up 52.8% or 13.9% /year



Source: EIA

U.S. Total: 5.5 Million Manufacturing Jobs (32%) Lost // 54,905 Facilities Lost (Since 2001)



Source: Bureau of Labor Statistics

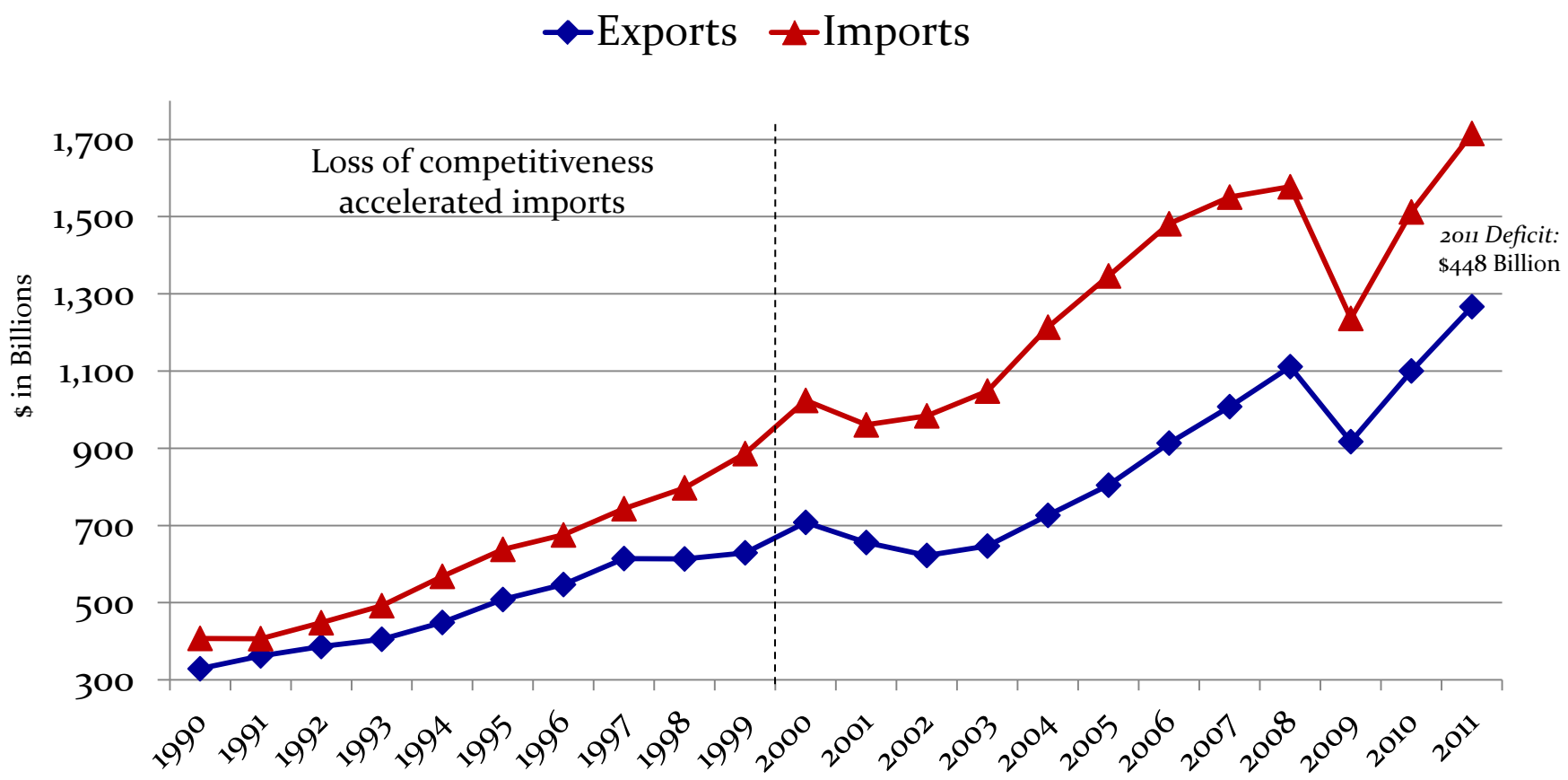
The Hardest Hit - Energy Intensive Industries
(Small Energy Price Increases Have Large Competitive Impacts)

- Fertilizer: 80% (feedstock)
- Chemicals/Plastics: 80% (feedstock)
- Aluminum: 30-35%
- Recycled steel: 25%
- Integrated steel: 85% energy and raw materials
- Chemicals: varies greatly 15-20% (fuel only)
- Paper: 10-20%
- Glass: 20-25%
- Food processing: 30%
- Cement: 25-35%
- Refining: 15-20% (fuel only)

Energy Price Sensitive Industries Provide Essential Raw Materials to all Other Sectors

Building Block Industries	Convert to	Commercial & Consumer Products
Chemicals	→	Food Production
Plastics	→	Defense industries
Fertilizer	→	Automobiles
Glass / ceramics	→	Consumer goods
Steel	→	Construction
Aluminum	→	Medical Supplies
Pulp and Paper	→	Energy Production
Cement	→	Appliances
Food Processing	→	Household products
	→	Telecommunication

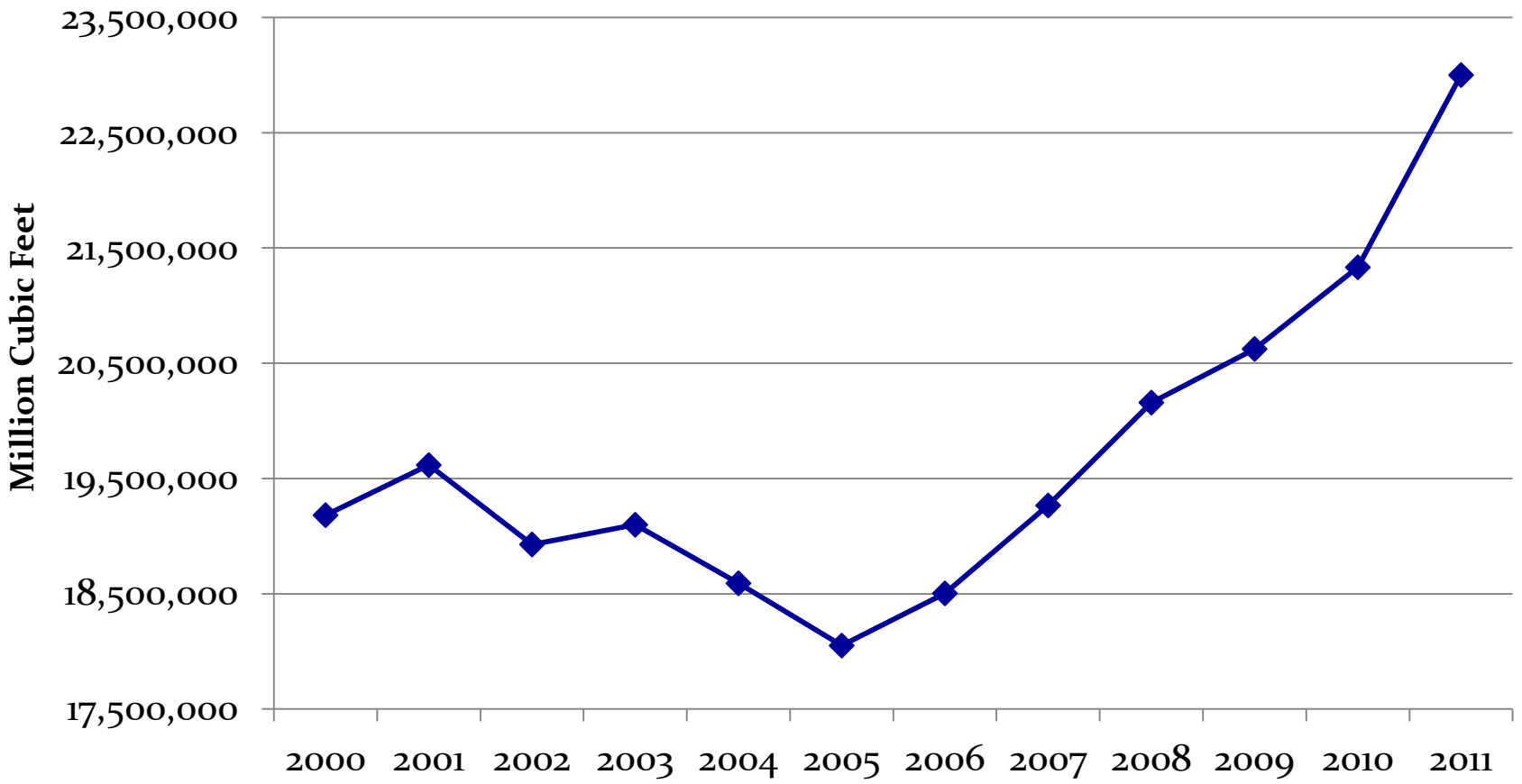
Loss of Competitiveness Accelerated Imports by 51% (2000-2011)



Source: Department of Commerce

Shale Natural Gas Production Jump Starts the Potential Manufacturing Renaissance

Dry Natural Gas Production Rises 20%



Source: EIA

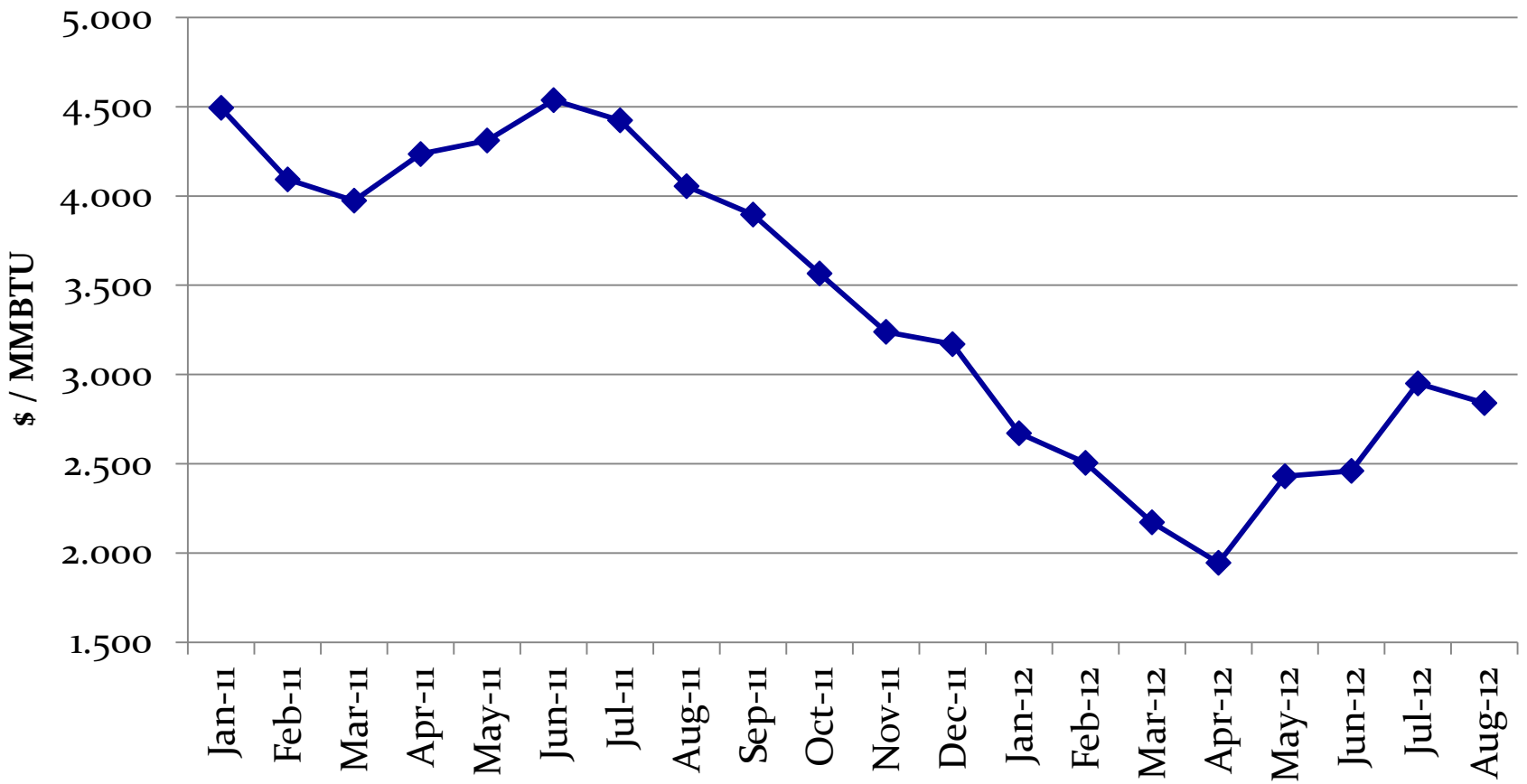
Year over Year Dry Natural Gas Production Increases

(million cubic feet)

Month	2010	2011	% Difference
January	1,749,918	1,880,264	+7.4%
February	1,610,922	1,673,744	+3.9%
March	1,793,710	1,921,032	+7.1%
April	1,723,457	1,883,819	+9.3%
May	1,791,023	1,945,235	+8.6%
June	1,711,600	1,881,173	+9.9%
July	1,817,069	1,944,292	+7.0%
August	1,831,717	1,951,275	+6.5%
September	1,784,561	1,909,958	+7.0%
October	1,849,330	2,008,106	+8.6%
November	1,791,886	1,970,518	+10.0%
December	1,877,226	2,030,761	+8.2%

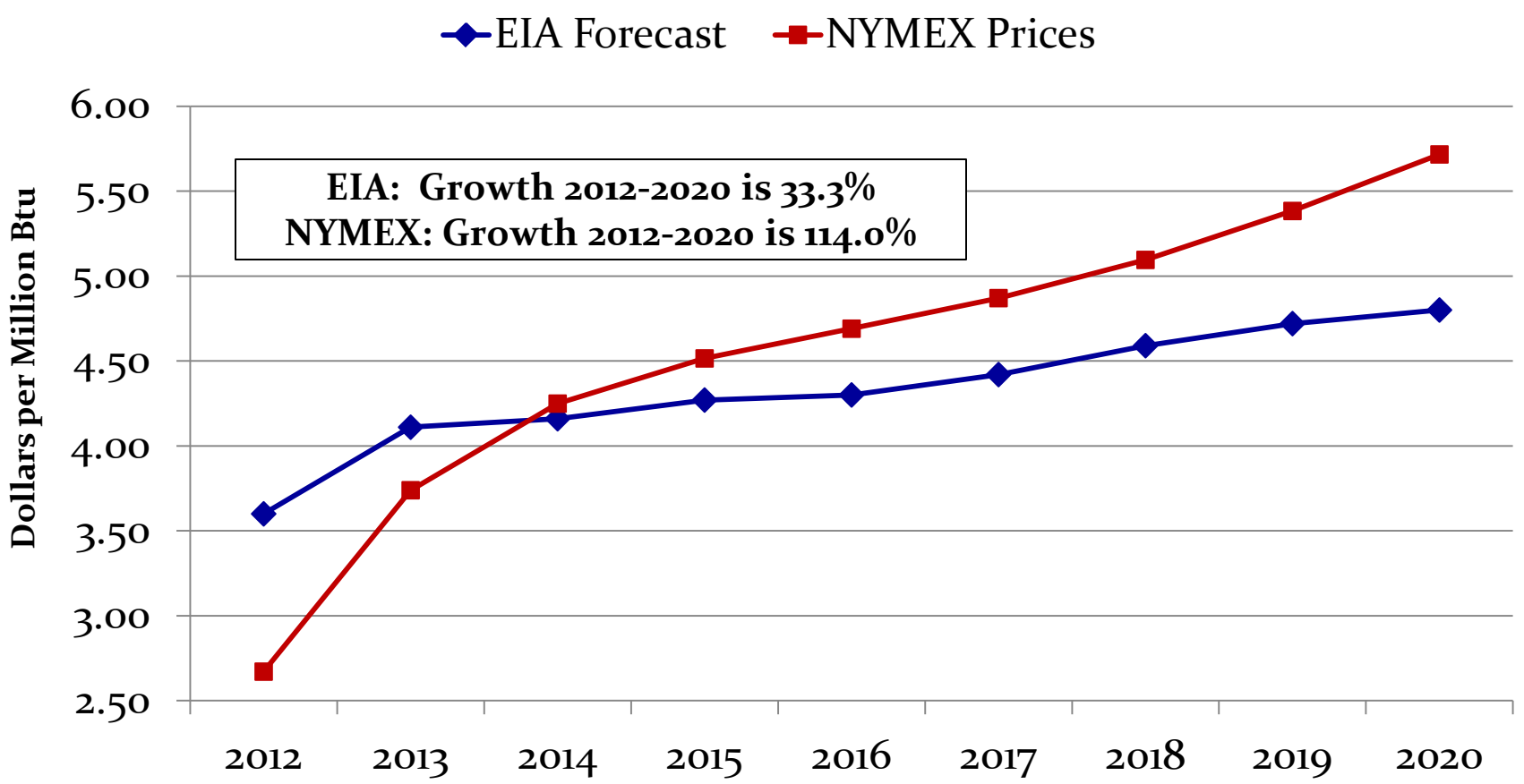
Source: EIA

NYMEX Natural Gas Prices are 36.8% below January 2011



Source: EIA

Natural Gas Forward Price Increases 14% / year



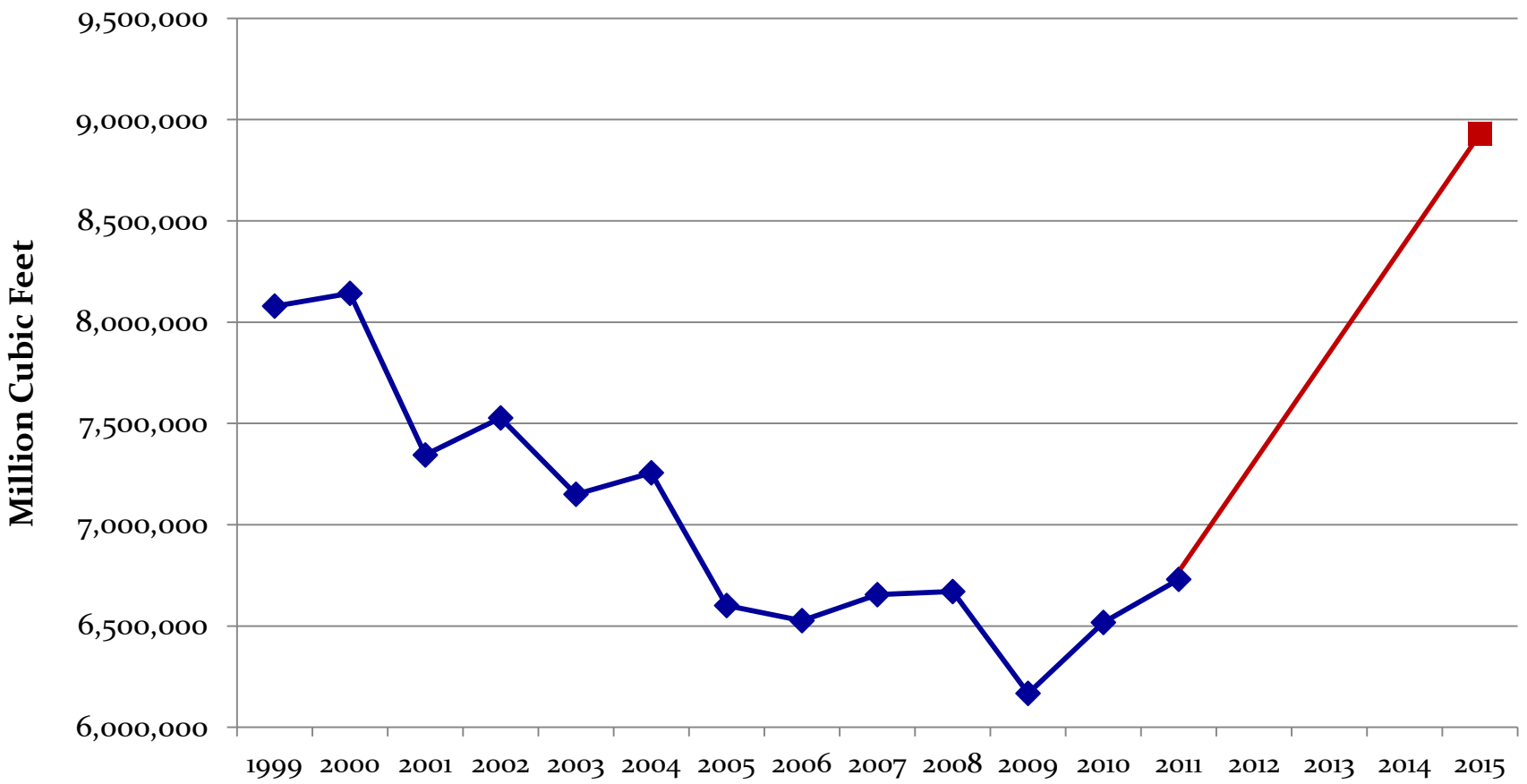
Source: EIA, as of October 8, 2012

The Manufacturing Renaissance Due to Shale Natural Gas

As of September 2012:

- $80 billion in new manufacturing capital investment has been announced
- Almost all energy intensive industries: Chemicals, Fertilizer, Steel, Aluminum, Glass
- Estimated new natural gas demand of over 6 bcfd and accompanying electricity demand
- Second wave of investment – to come!

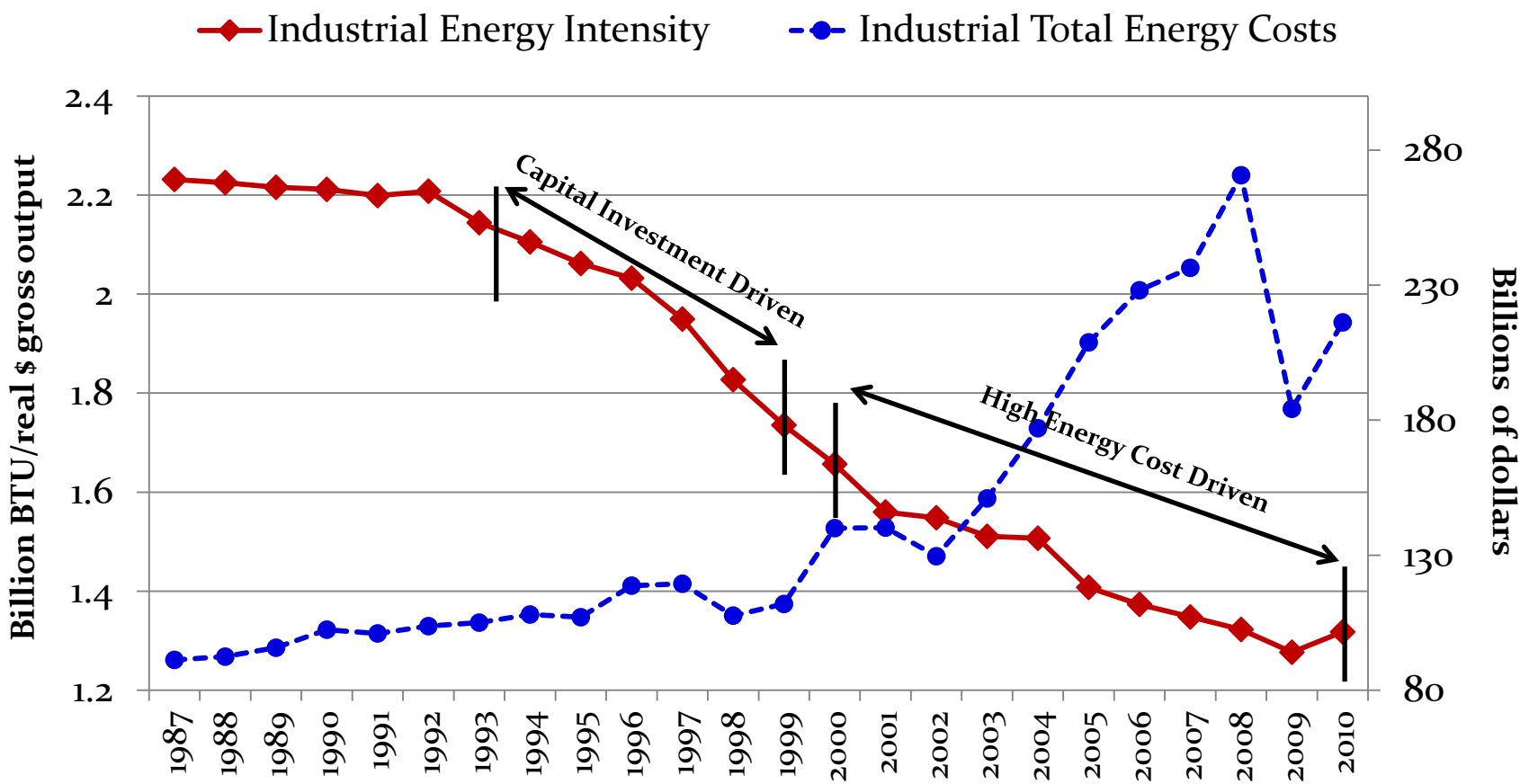
Industrial Natural Gas Consumption to Increase by 32.7%



Source: EIA

Relationship of capital investment and energy cost to industrial intensity

Industrial Energy Intensity vs. Total Energy Costs



Source: EIA

Conclusion: What Drove Reductions in Energy Intensity?

From 1993 to 1999:

- Manufacturing capital investment increased annually and exceeded the long-term average of 2 percent of GDP
- New technology investment reduces energy intensity

Conclusion: What Drove Reductions in Energy Intensity?

From 2000 to 2010:

- High energy costs shut down energy intensive facilities:
  - Facilities ran at lower rates of capacity
  - Capital investment was substantially below the long term average of 2% of GDP

Industrial Sector Out Performs all other Sectors

GHG Emissions – EIA

1990 to 2010

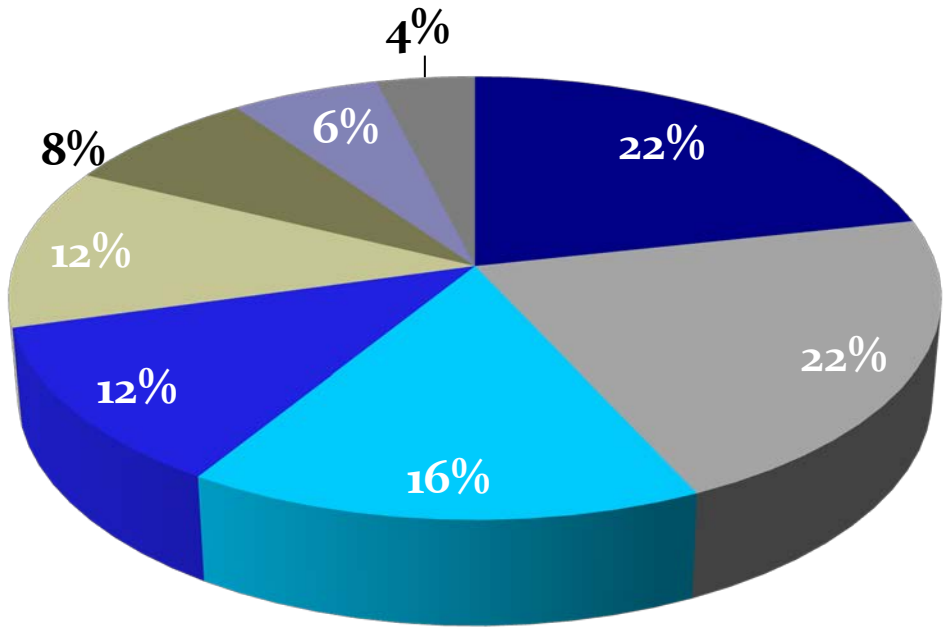
(Million Metric Tons)

	1990	2010	% Change
Industrial	1,695.05	1,489.31	-12.14%
Residential	963.38	1,218.72	26.50%
Commercial	792.65	1,029.13	29.83%
Transportation	1,587.65	1,878.90	18.34%
Electric Power	1,831.05	2,270.32	23.99%
TOTAL	6,869.78	7,886.38	14.80%

Source: EIA

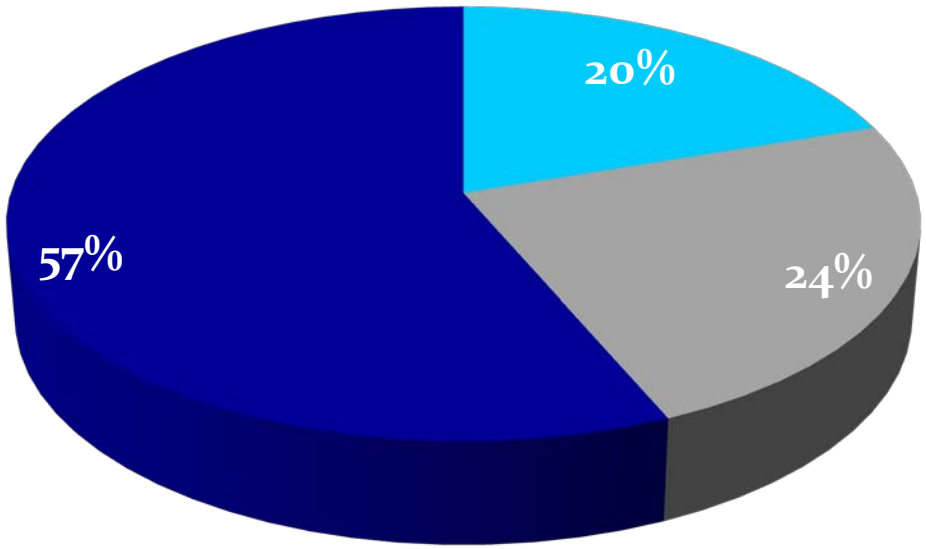
IECA Energy Efficiency Survey Results

With what industry group are you primarily associated?



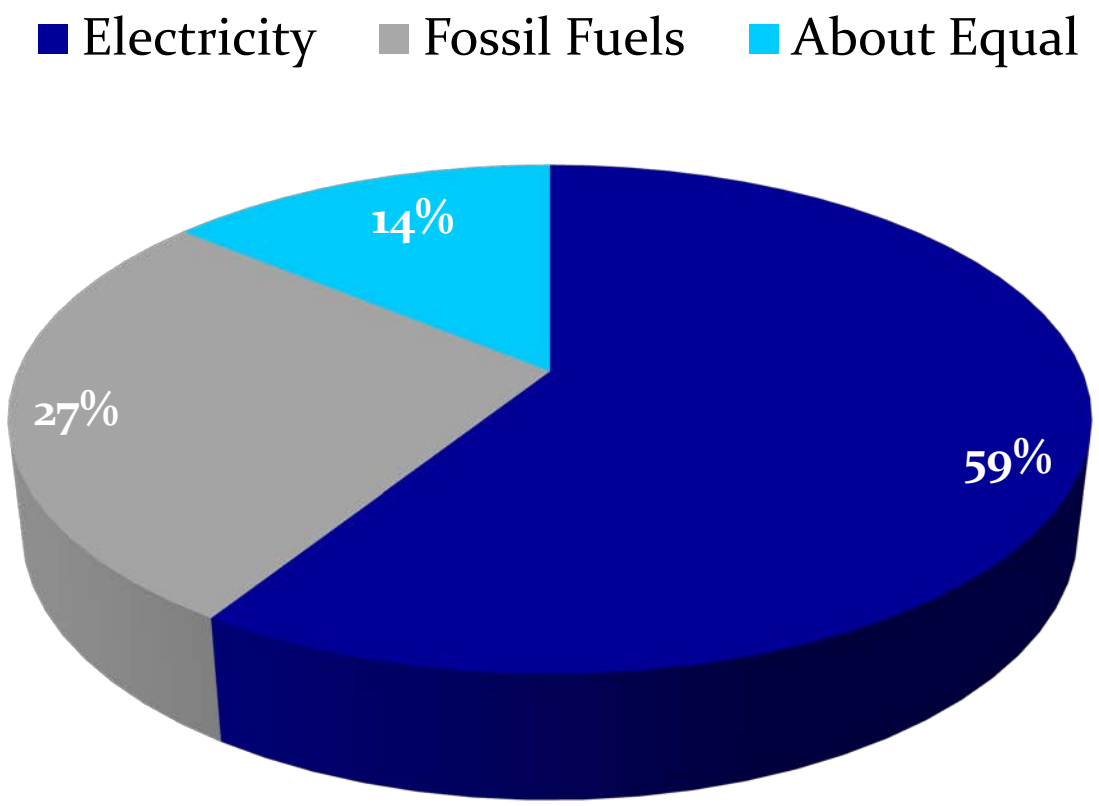
- Chemical/Plastics
- Manufacturing Assembly
- Other
- Food/Beverage
- Paper
- Steel
- Glass
- Cement/Aggregates

What is the relative size of your annual company revenues?

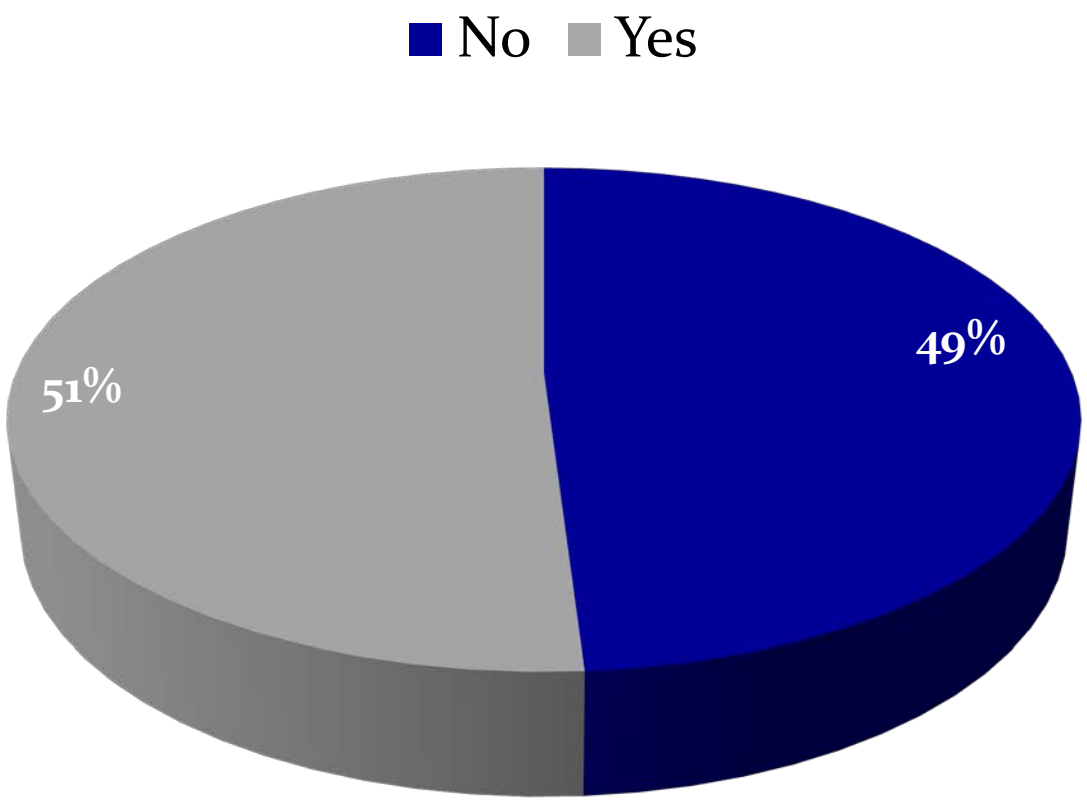


- Under $1 billion
- Greater than $1 billion and under $5 billion
- Greater than $5 billion

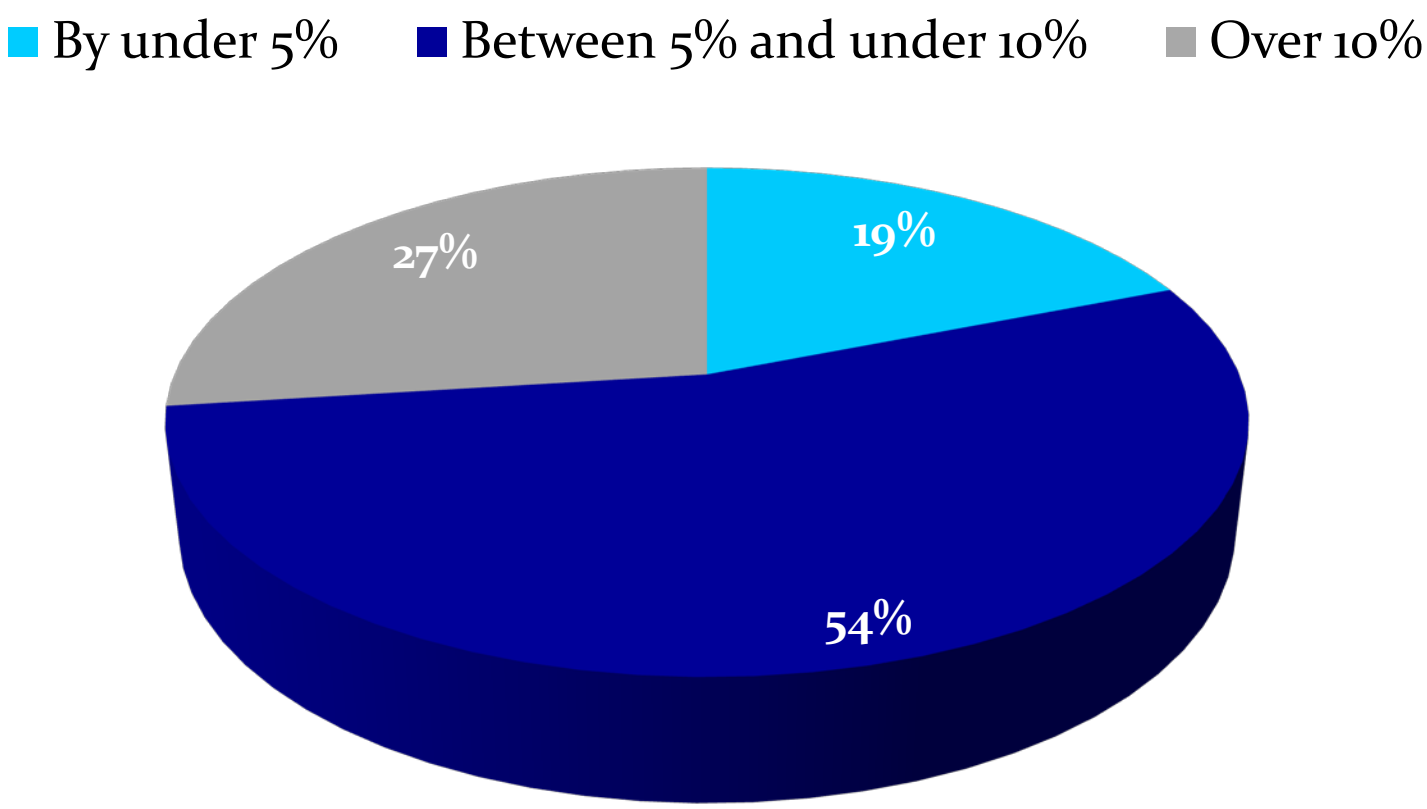
What portion of your energy procurement cost is on fossil fuels versus electricity?



Will your capital spending on energy efficiency-related projects in 2012 exceed 2011 spending?



By what level will your capital spending on energy efficiency-related projects in 2012 exceed 2011 spending?



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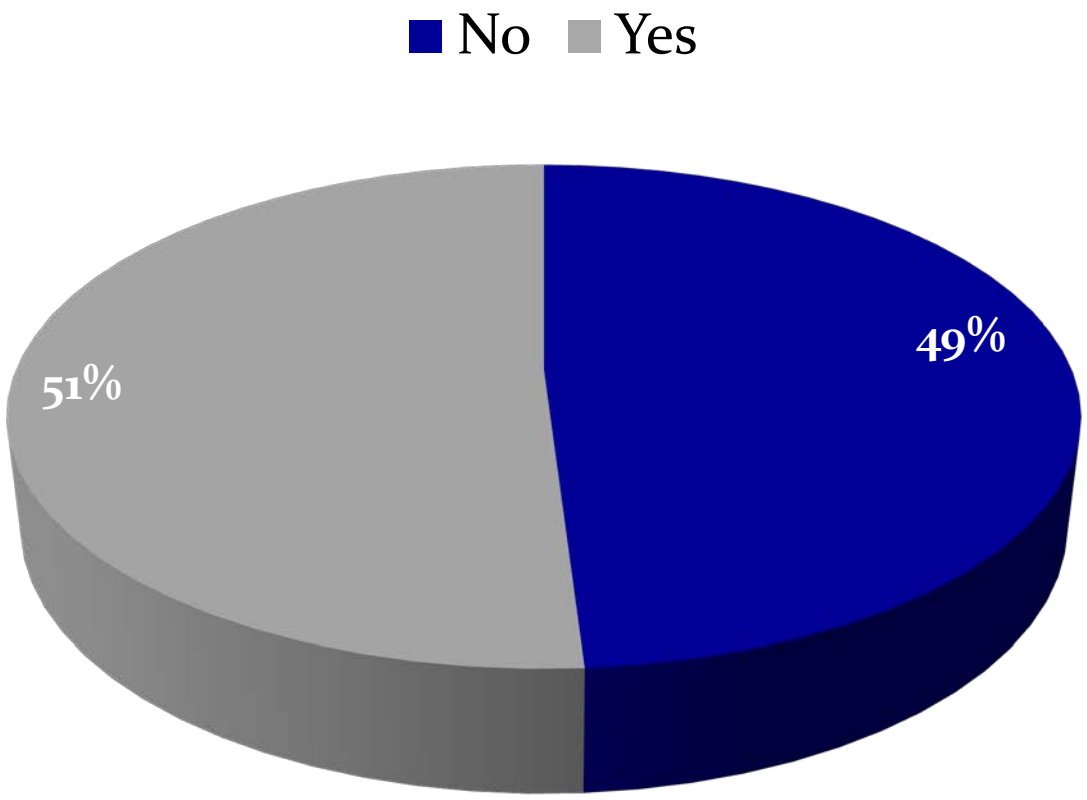

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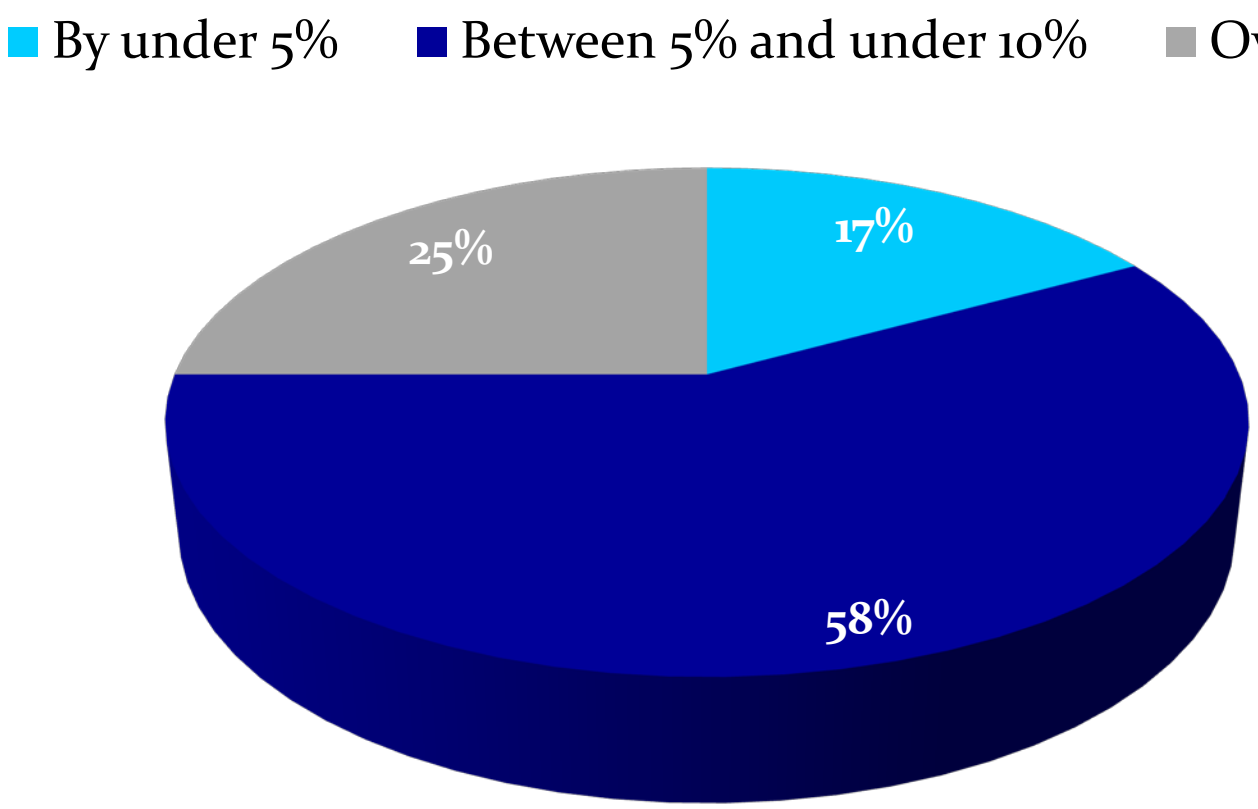
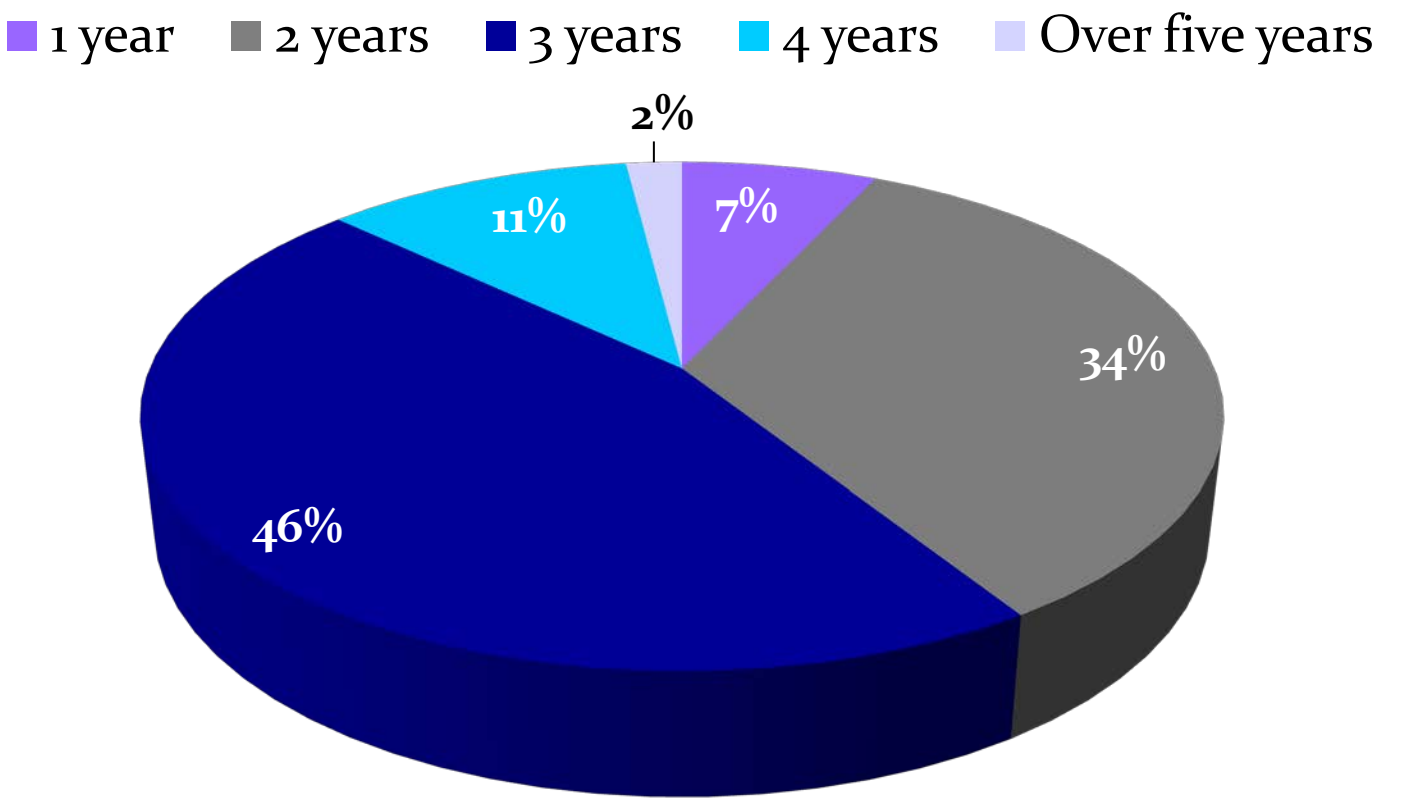
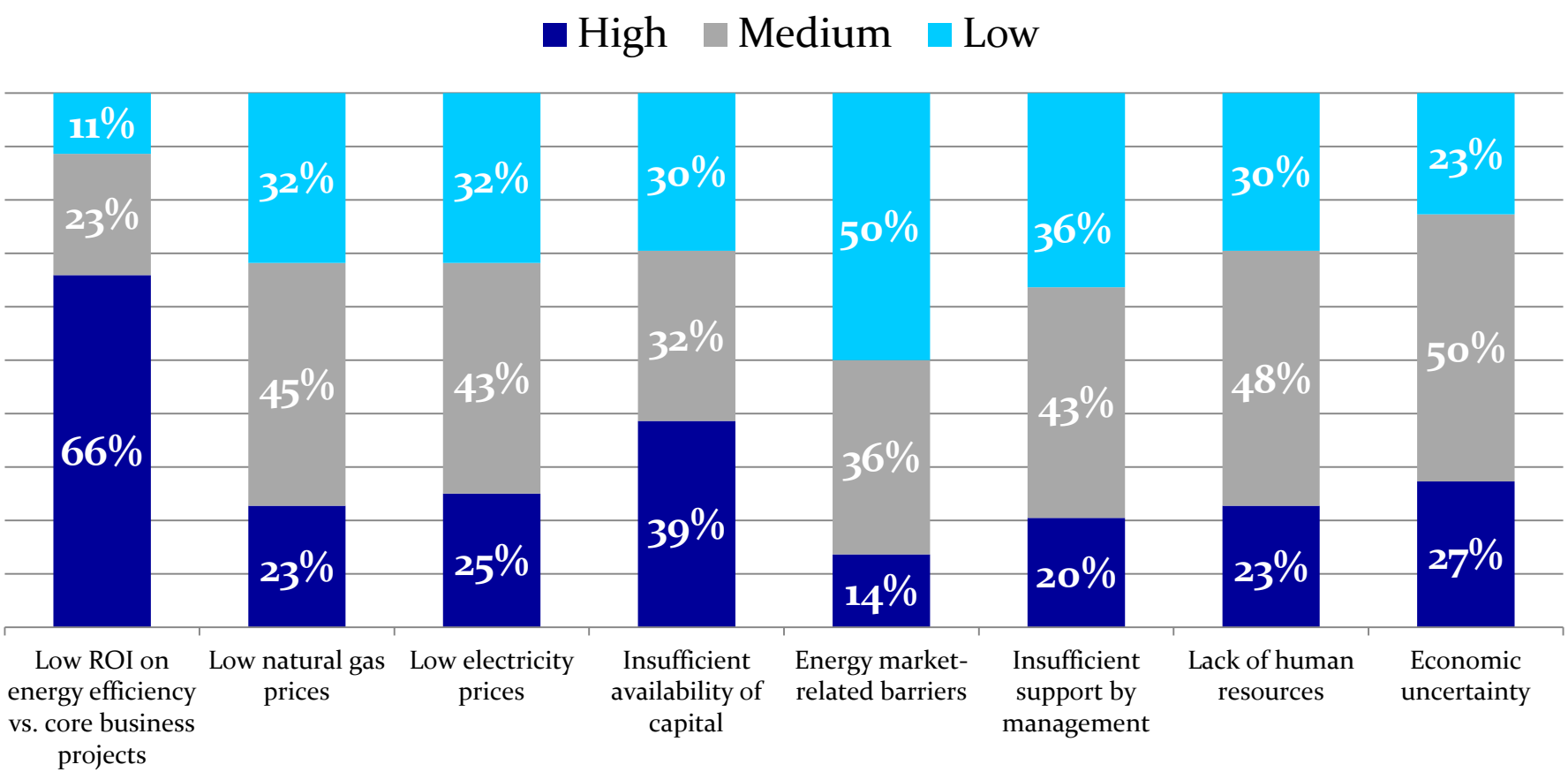


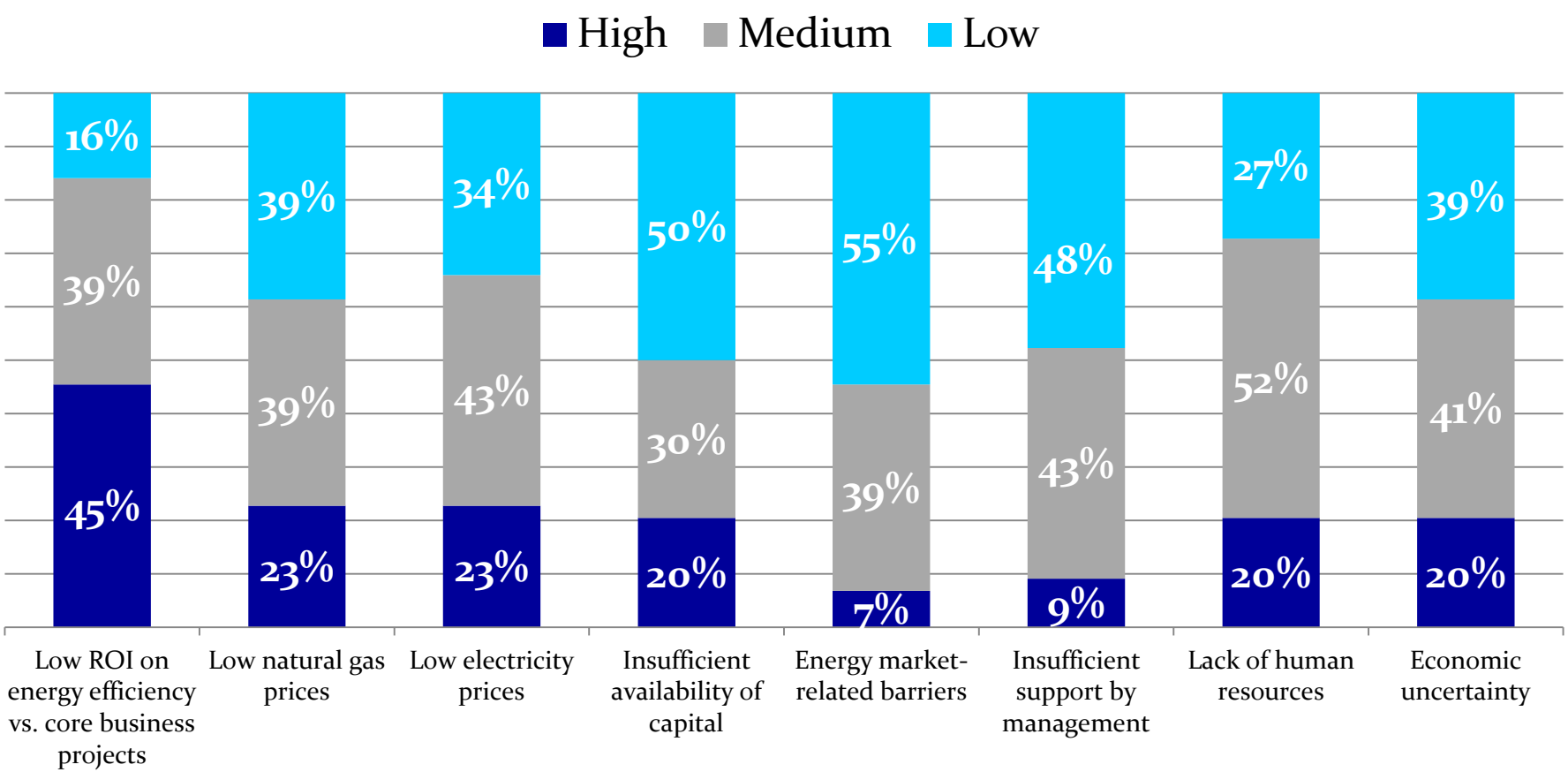
On average, what is the required payback period?



Please rank (low, medium, high) each of the below potential obstacles to increasing energy efficiency spending for relatively "large" capital dependent projects.

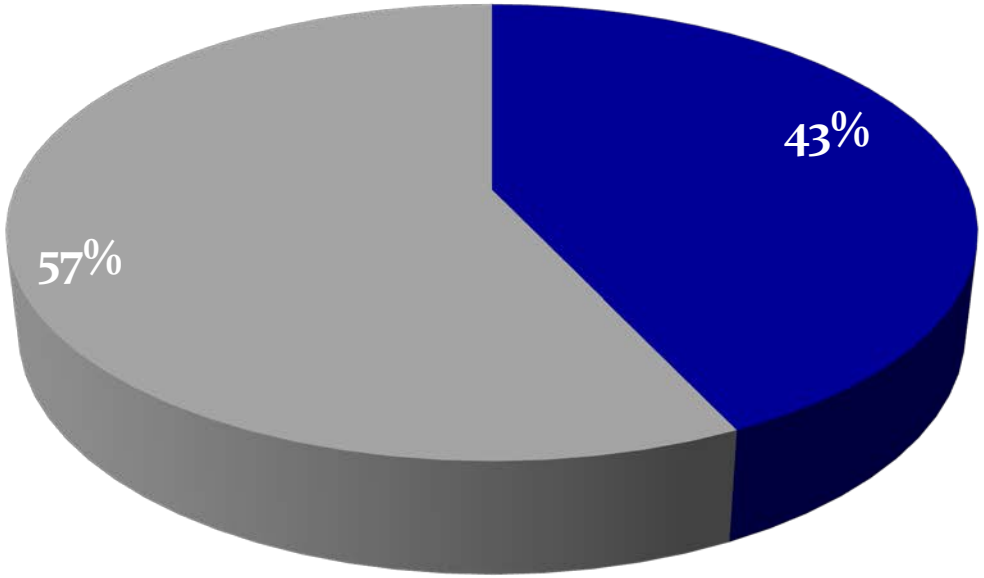


Please rank (low, medium, high) each of the below potential obstacles to increasing energy efficiency spending for relatively "small" capital dependent projects.

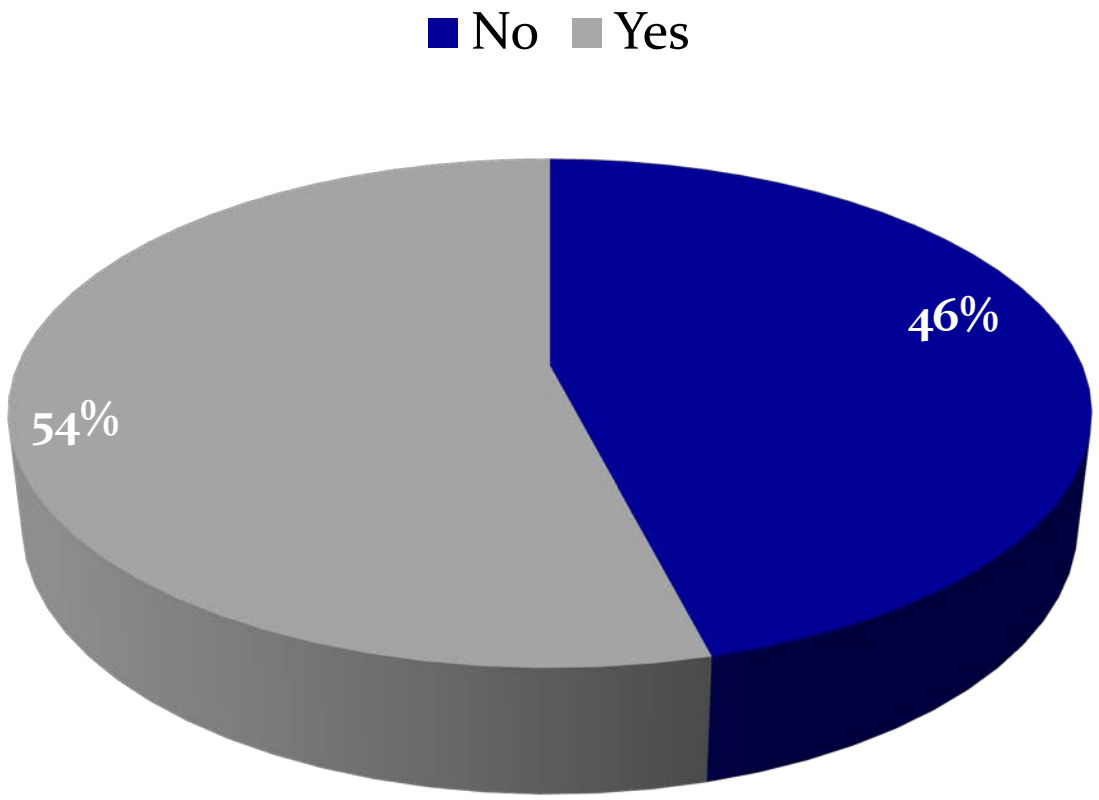


In general, in the next two to three years, is there greater opportunity for energy efficiency gains in reducing electricity or fossil fuel use in your facilities?

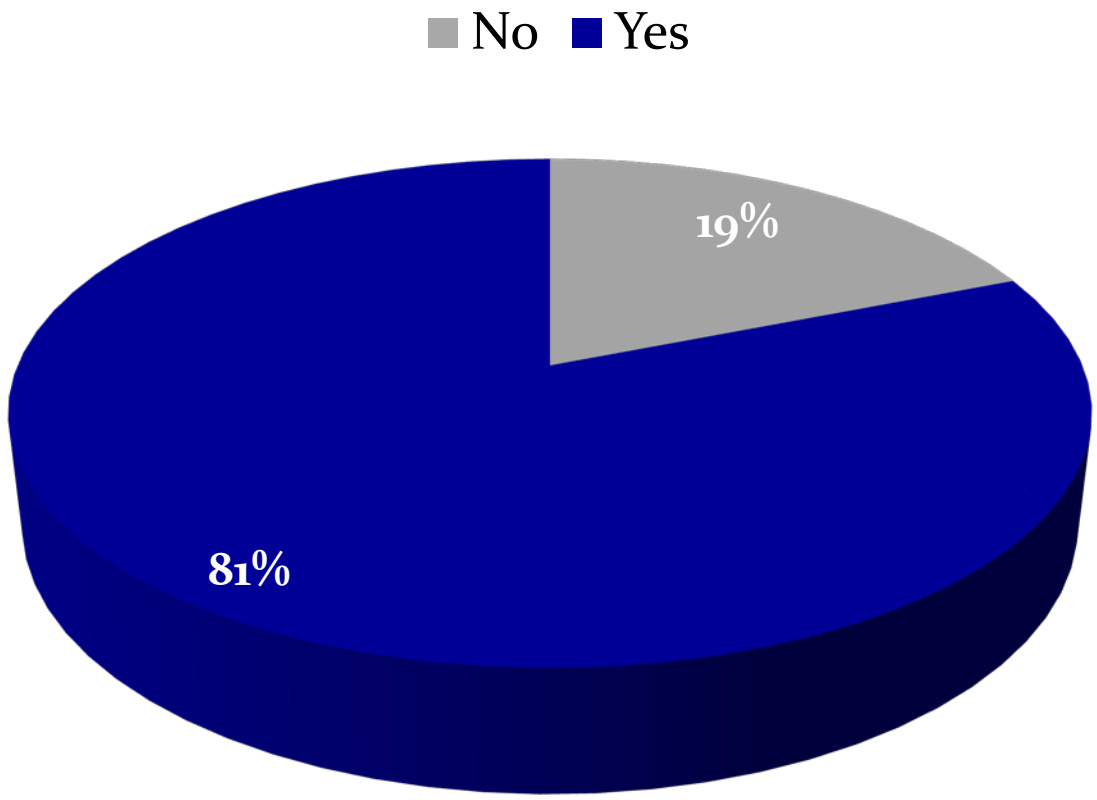
- Greater opportunity for "fossil fuel" energy efficiency
- Greater opportunity for "electricity" energy efficiency



Please answer this question "if" you have the potential to do either a CHP or Waste Heat Recovery project. Do you anticipate doing a CHP or Waste Recovery project in the next three years?



Does your company have energy efficiency goals?



Presentation Conclusions

- Potentially entering new manufacturing era…with significant capital investment and use of more energy efficient equipment
- Although more energy will be used, energy intensity should continue to decline
- Survey indicates positive trend in energy efficiency investment…with emphasis on reducing electricity use

ENERGY STAR Provides Valuable Tools to Help Manufacturers Improve Energy Efficiency

- External resources
  - Partner consultants
  - Networking meetings with Partners
  - Guidelines for "Energy Management" to structure a superior program
- Energy intensity measures
- Monitor and drive performance
- Recognition by ENERGY STAR for improvement

ENERGY STAR for Industry

- Industry participation:
  - Over 700 industrial corporations
  - Over 18 specialized industrial sectors

IECA Congratulates ENERGY STAR

Thank you for your commitment to the manufacturing sector!

Thank you!

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