



# Canadian Natural Gas Initiative A Shared Interest

Mike Cleland  
Canadian Gas Association  
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# What is “Canadian Natural Gas”?

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- A nation-wide advocacy & communications initiative supported by the natural gas value chain in Canada to:
  - develop objective, fact-based educational materials on natural gas;
  - raise understanding among decision makers of the role that natural gas should play in achieving Canada’s energy, environmental, and economic objectives; and
  - demonstrate that natural gas is a smart foundation for Canada’s evolving energy mix and encourage supportive policy.
- Sponsored by the Canadian Gas Association (CGA), the Canadian Association of Petroleum Producers (CAPP) and the Canadian Energy Pipeline Association (CEPA), with support from the Canadian Society for Unconventional Gas (CSUG) and the Canadian Natural Gas Vehicle Alliance (CNGVA).

# Key Attributes of Natural Gas

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- **Canadian** natural gas is a significant contributor to Canada's well-being – it's a job creator, a source of revenue for provinces and the federal government, and produces over \$29.2 billion in exports.
- Canada has an **abundant** , growing supply of natural gas – estimates indicate greater than 100 years worth - in conventional, unconventional, frontier, and LNG resources - a key part of an even bigger continental resource.
- Natural Gas is **clean** – it is an efficient and low-emission end use energy choice. And, environmental responsibility is a foremost priority in its production, transportation, and distribution – on water use, surface impact, emission control, and waste management.
- Canadian natural gas is a **versatile** energy solution – gas and related technologies can improve end use efficiency, contribute to lower emissions, and provide the flexible partner needed in power generation for intermittent technologies like wind and solar, and in transportation.
- Natural gas is the **affordable** choice - used by over 6 million Canadian customers – over 3.2 trillion cubic feet yearly to meet 30% of our energy needs in homes, businesses, and industry;
- Natural gas is **reliable and safe** in its production, storage, transportation, delivery and use by customers in every region of Canada.

# At the national level, we are...

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## **(1) Developing an objective fact base**

## **(2) Improving the understanding of Natural Gas in terms of:**

- (1) the growing robustness of the commercial resource in Canada, and
- (2) the significance of the current and future gas market to Canada's well-being

## **§ Establishing sound policy foundations for natural gas policy in:**

- (1) economic policy
- (2) social policy
- (3) environmental policy

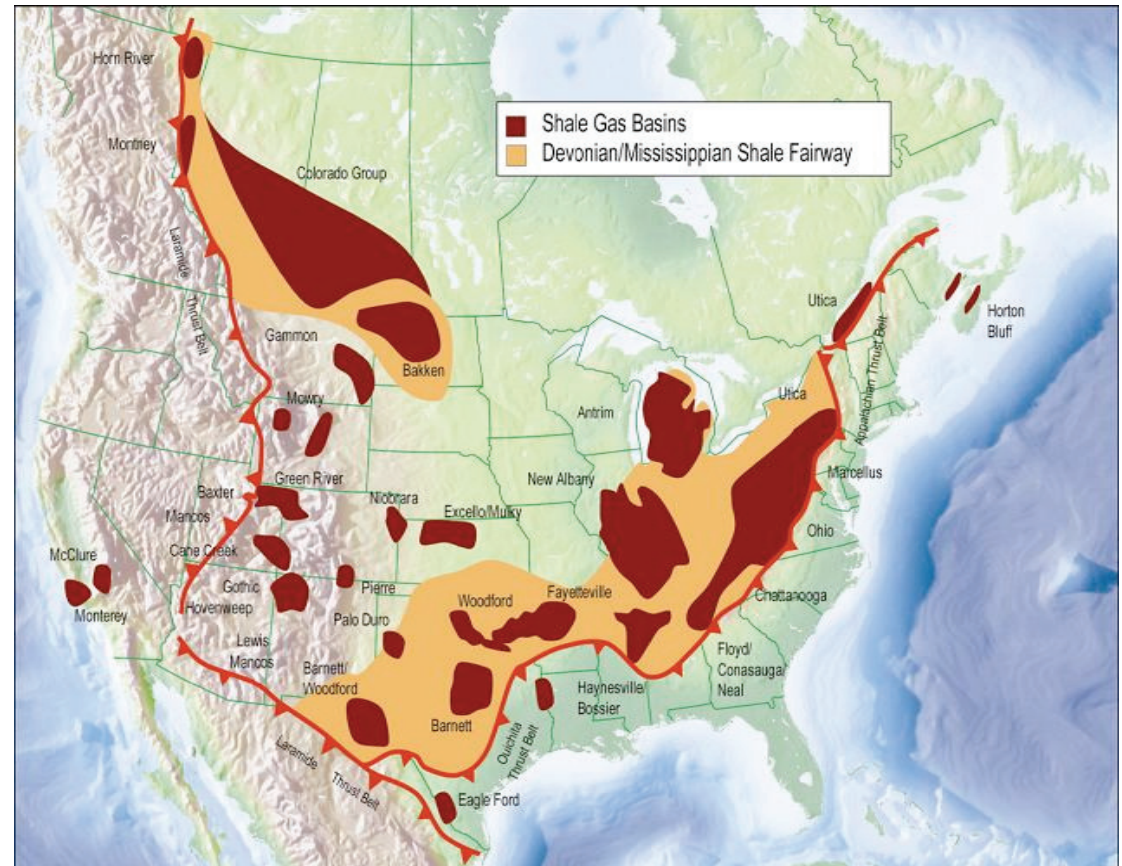
## **(1) Developing specific federal policy options pertaining to:**

- (1) upstream development
- (2) transmission
- (3) distribution and use

# North American natural gas resources are growing due to new shale gas developments

## North American Shale Gas Basins *Abundant and Widespread*

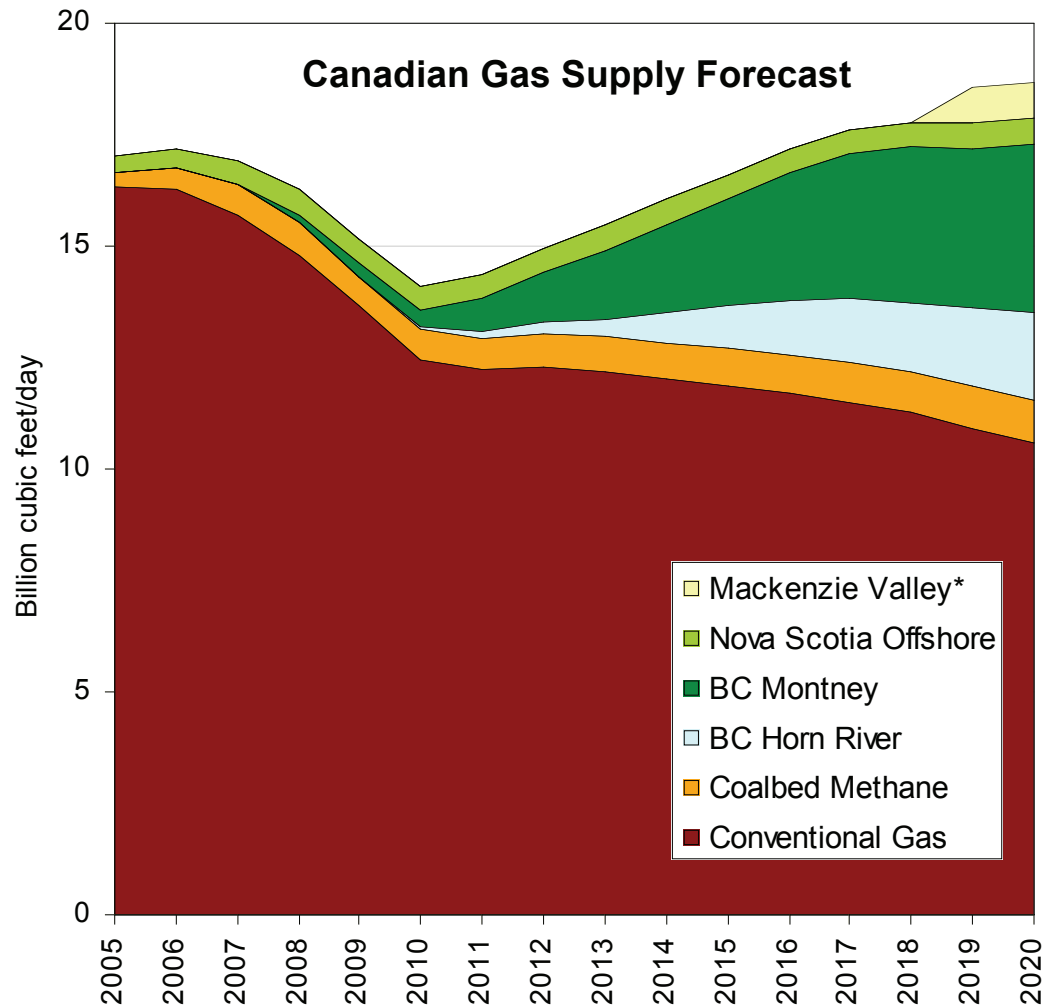
- Advancement of technology has made economic recovery of this resource possible.
- The emergence of shale gas in 2008 was a turning point in the recognition of natural gas as an abundant, secure source of future supply.
- This will have profound implications to the future supply of natural gas in North America.



Sources: EIA and Ziff

# Canada is also seeing new shale gas developments

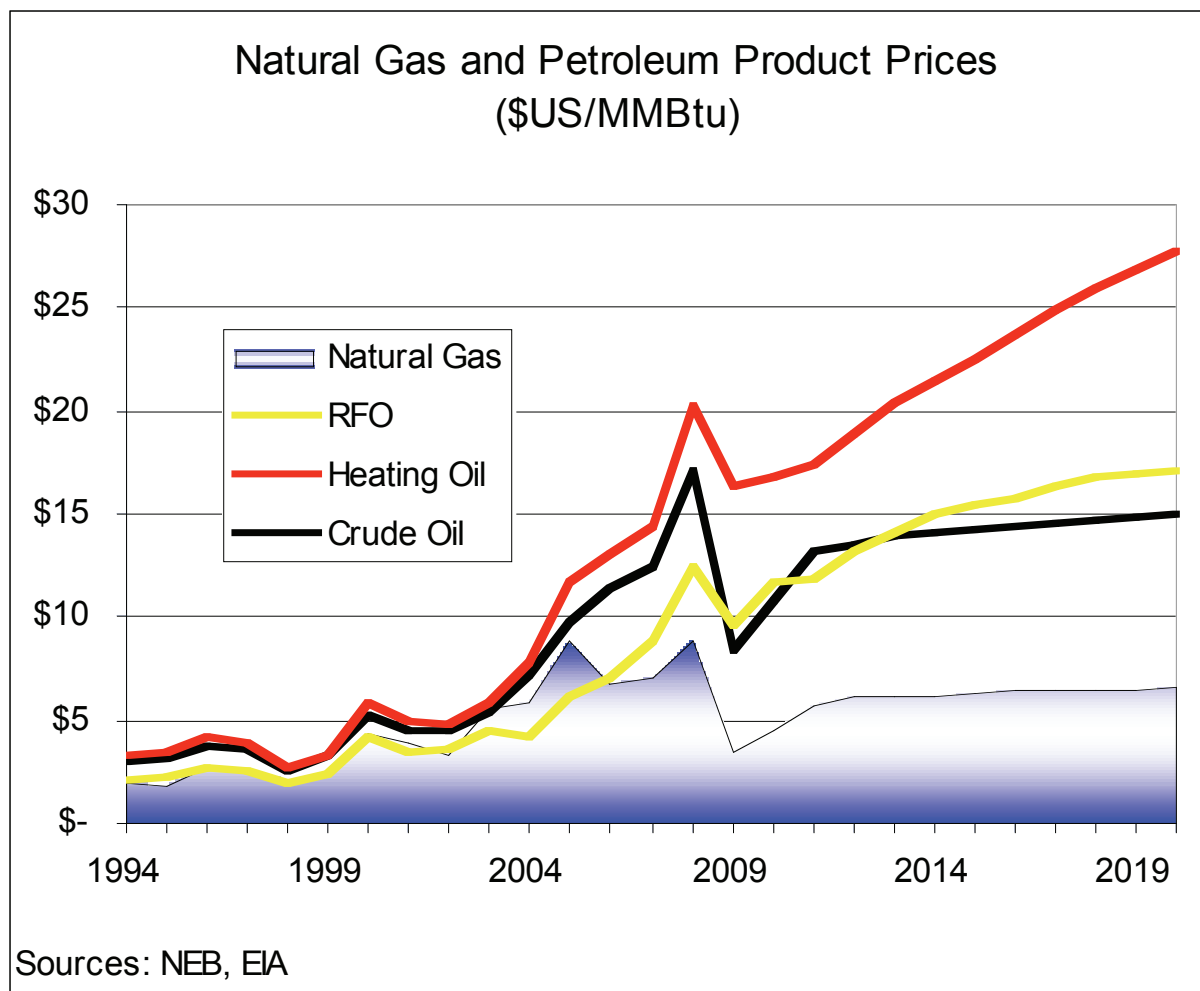
- Canadian shale developers are just at the beginning of this technological breakthrough.
- Recent estimates published by CAPP for Canada show shale gas resource developments leading to an increasing natural gas supply for Canada .



Sources: CAPP

# Energy Pricing Outlooks

- Natural gas has become an increasingly affordable energy source.
- This is a trend that experts expect to continue over the next two decades.



# The Natural Gas Market Landscape

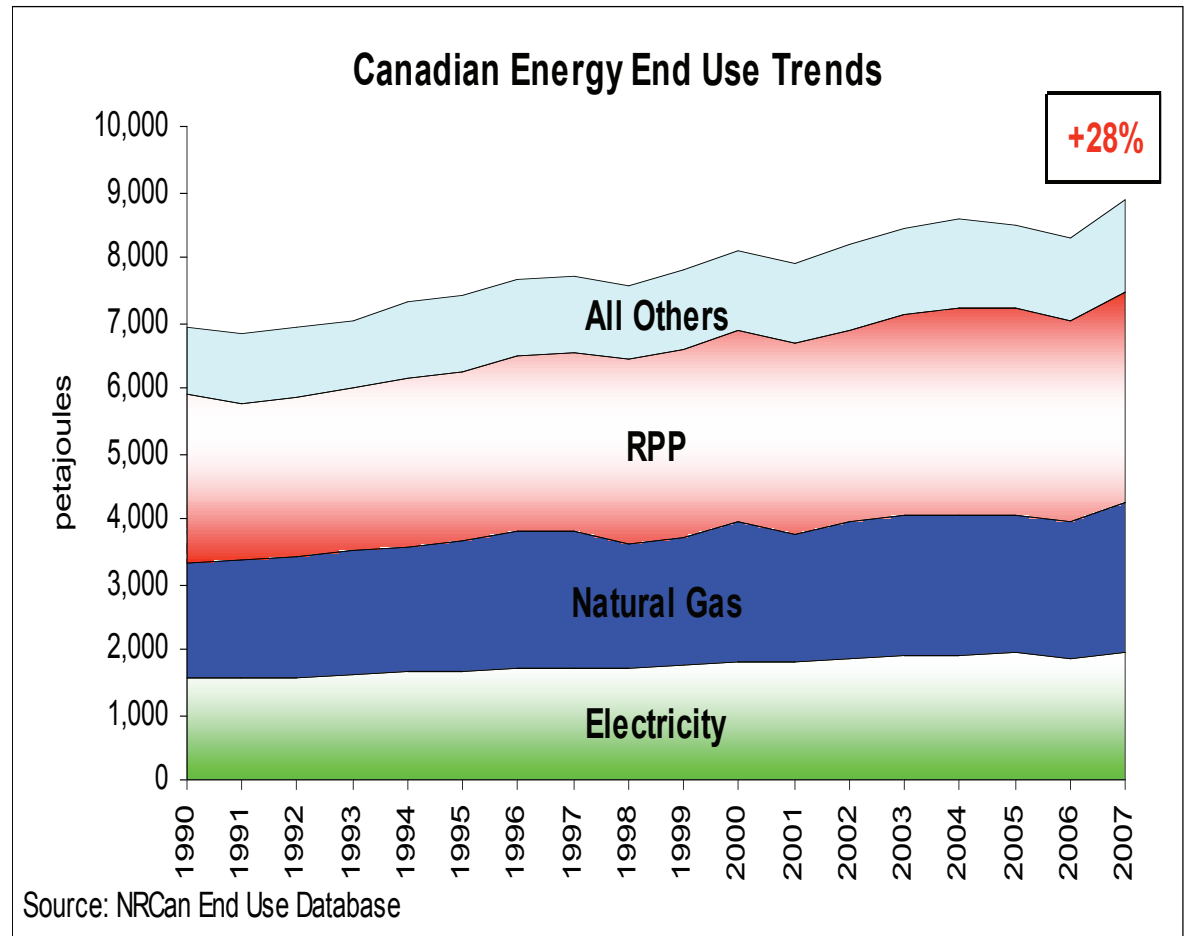
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- Natural Gas Supply
  - Recent discoveries and production techniques have raised the ability of natural gas to be a foundation fuel for North America.
- Natural Gas Demand
  - Improved energy efficiency - reduced demand per customer
  - Shift from heavy manufacturing towards high tech and services
  - More gas for power generation
  - More gas for natural gas vehicles
  - More gas to enable renewable fuels (wind, solar) to penetrate into the market.
- Development of New Energy Technology Packages:
  - Improved competitiveness of renewable sources - solar, geothermal
  - Emerging opportunities: micro-cogen, bio & synthetic gas, hybrid gas-renewable, combined heat and power, district heating, etc

# Canadian Energy Use Trends

- Canada's energy end use has grown by about 28% since 1990, GDP grew by 47% over the same period.
- Natural gas demand is up 30% over the period.
- Shares of all forms have remained virtually unchanged compared to 1990.

	1990 Share	2007 Share
Electricity	22.3	21.7
Natural Gas	25.6	26.0
RPP	37.0	36.3
All Others	15.0	16.0

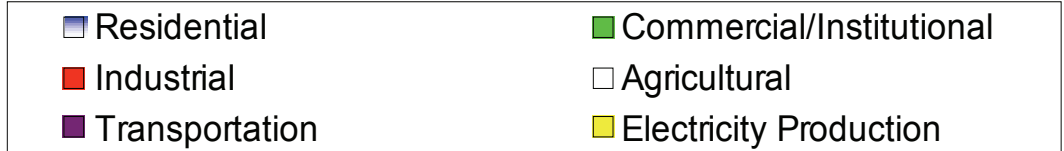
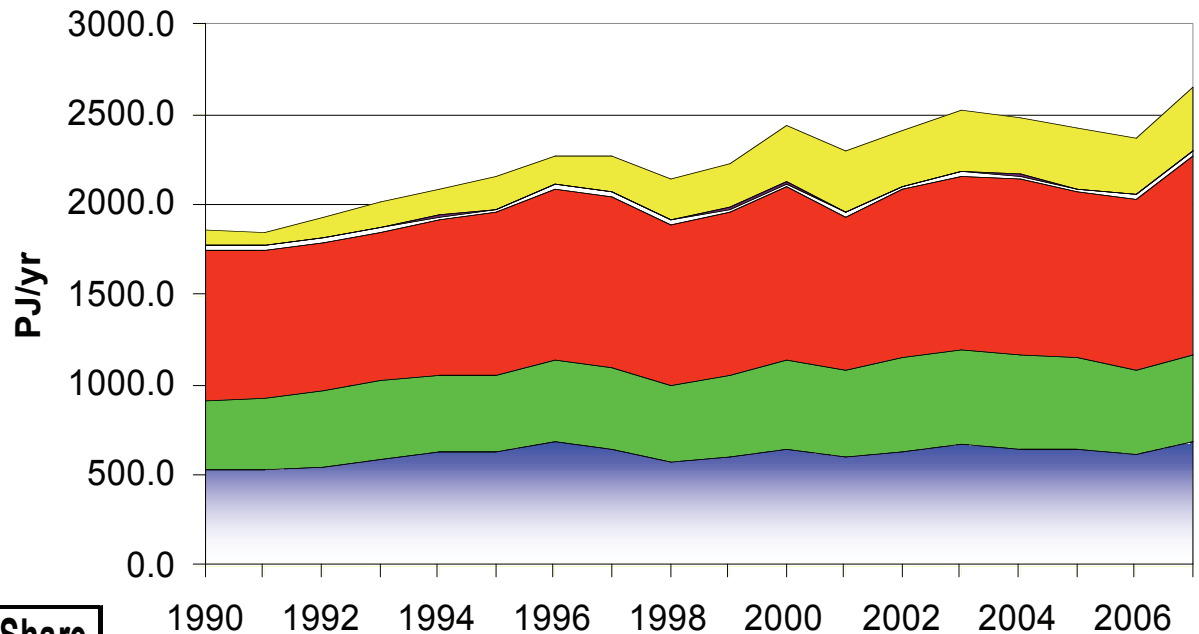


"All Others" includes coal, coke, coke oven gas, LPG and Gas Plant NGL, steam and waste fuels from the cement industry, wood waste, pulping liquor, and residential wood.

# Natural Gas Use in Canada

- The growth in natural gas use has been driven by a 300+% increase in power gen demand.
- This is the only sector with a growing share of natural gas use since 1990.

**Natural Gas Use by Sector 1990-2007**

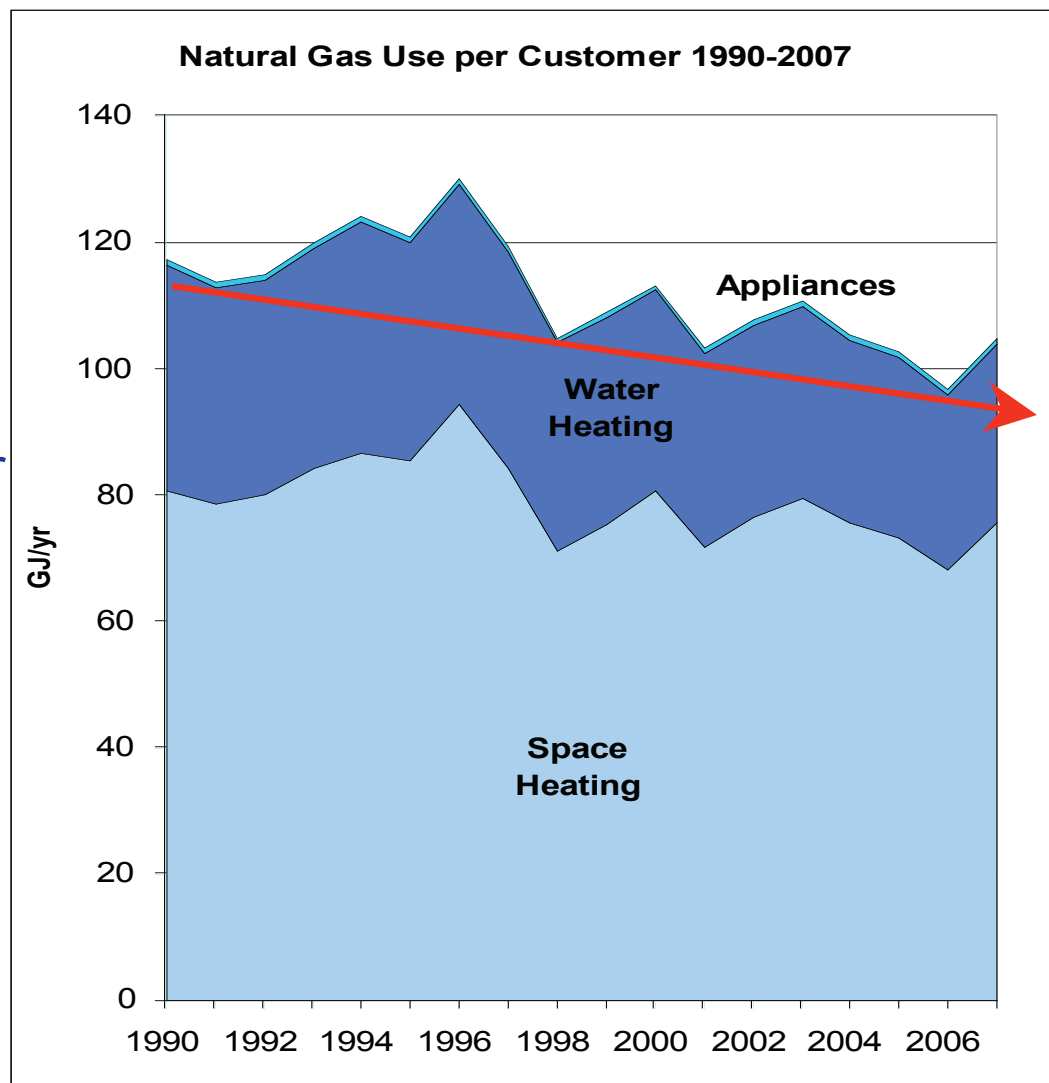


Source: NRCan End Use Database

	1990 Share	2007 Share
Residential	28.4	25.7
Commercial/ Institutional	20.8	18.2
Industrial	45.1	41.8
Agricultural	1.2	0.8
Transportation	0.1	0.1
Electricity Production	4.3	13.4

# Residential Per Customer Trends

- Natural gas meets close to 50% of residential energy demand .
- 70% of residential natural gas use is for space heating, 27% is for water heating.
- Gains in efficiency have led to an 11% decline in per customer residential natural gas use since 1990.

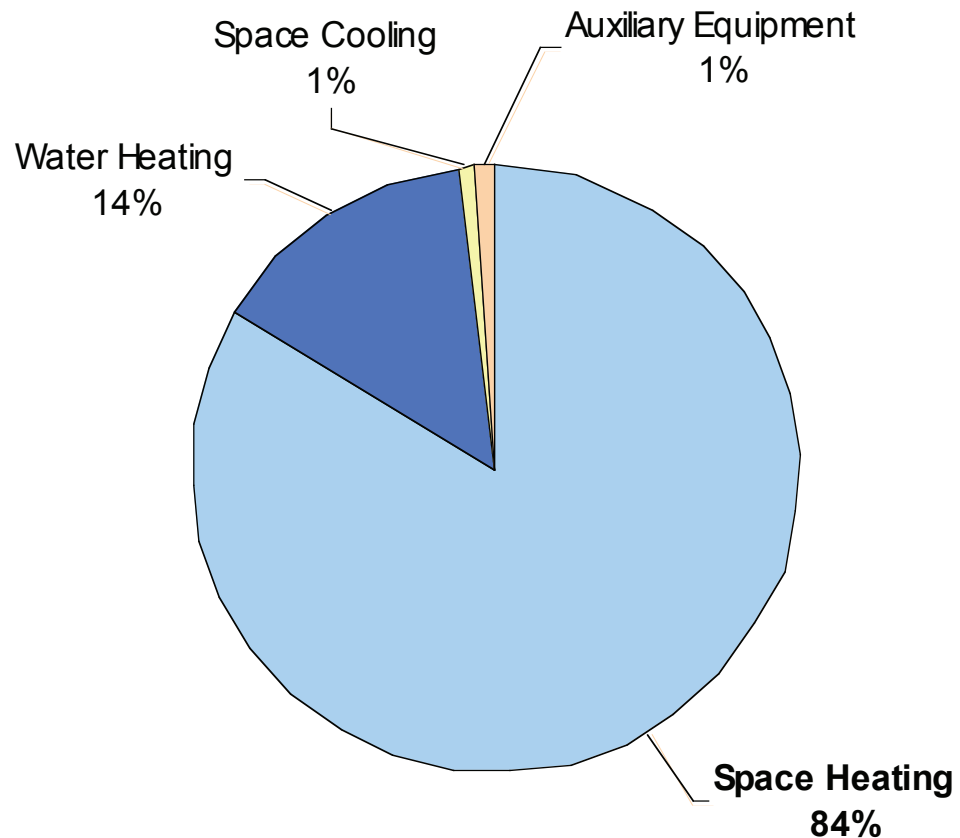


Source: NRCan National Energy Use Database

# Commercial Sector Natural Gas Use

## Commercial Sector Natural Gas Use - 2007

- 84% of natural gas use in commercial and institutional buildings is for space heating.
- New service opportunities with improved efficiencies through CHP and hybrid systems.

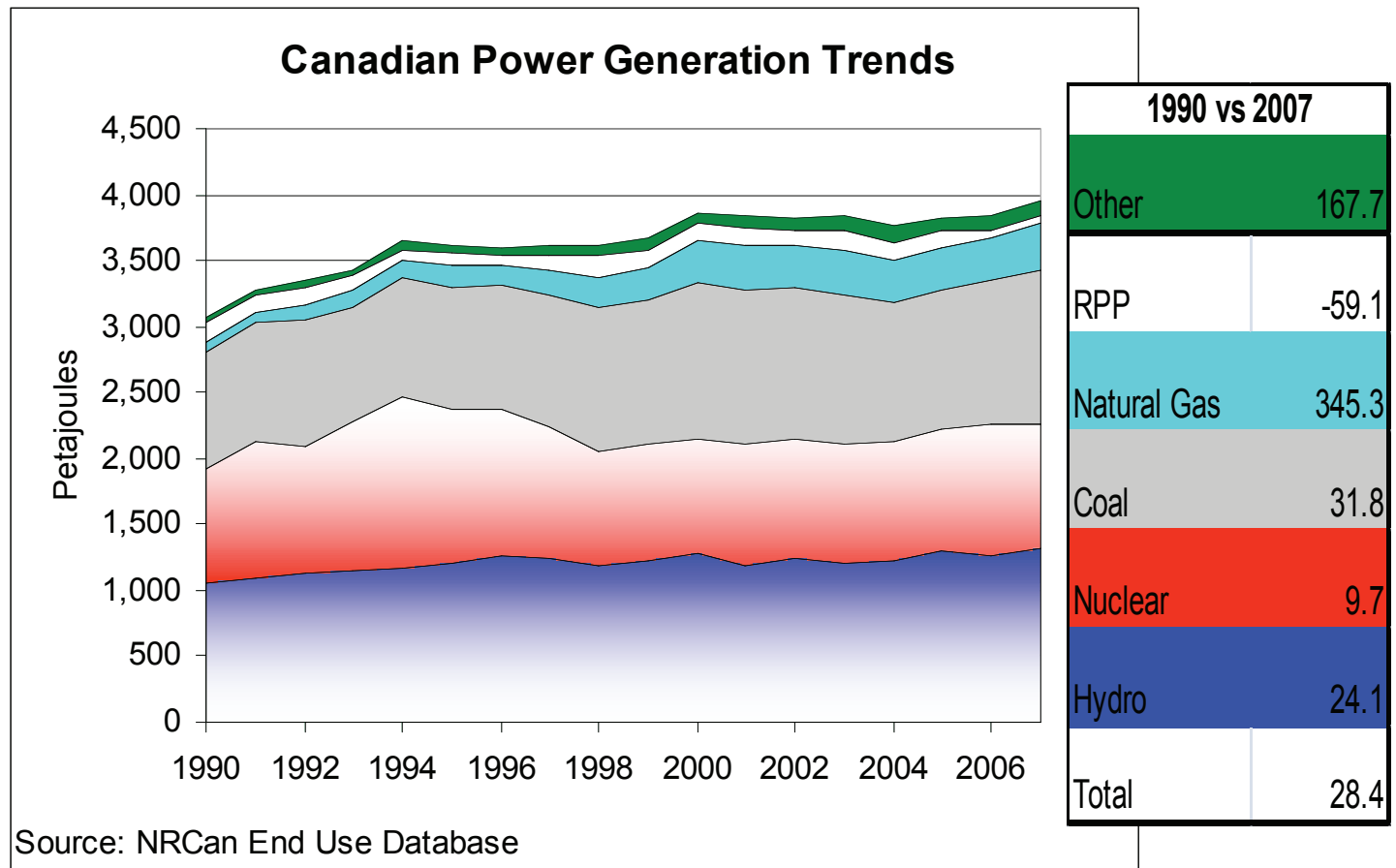


2007 Total Natural Gas Use: 485 PJ

Source: NRCAN National Energy Use Database

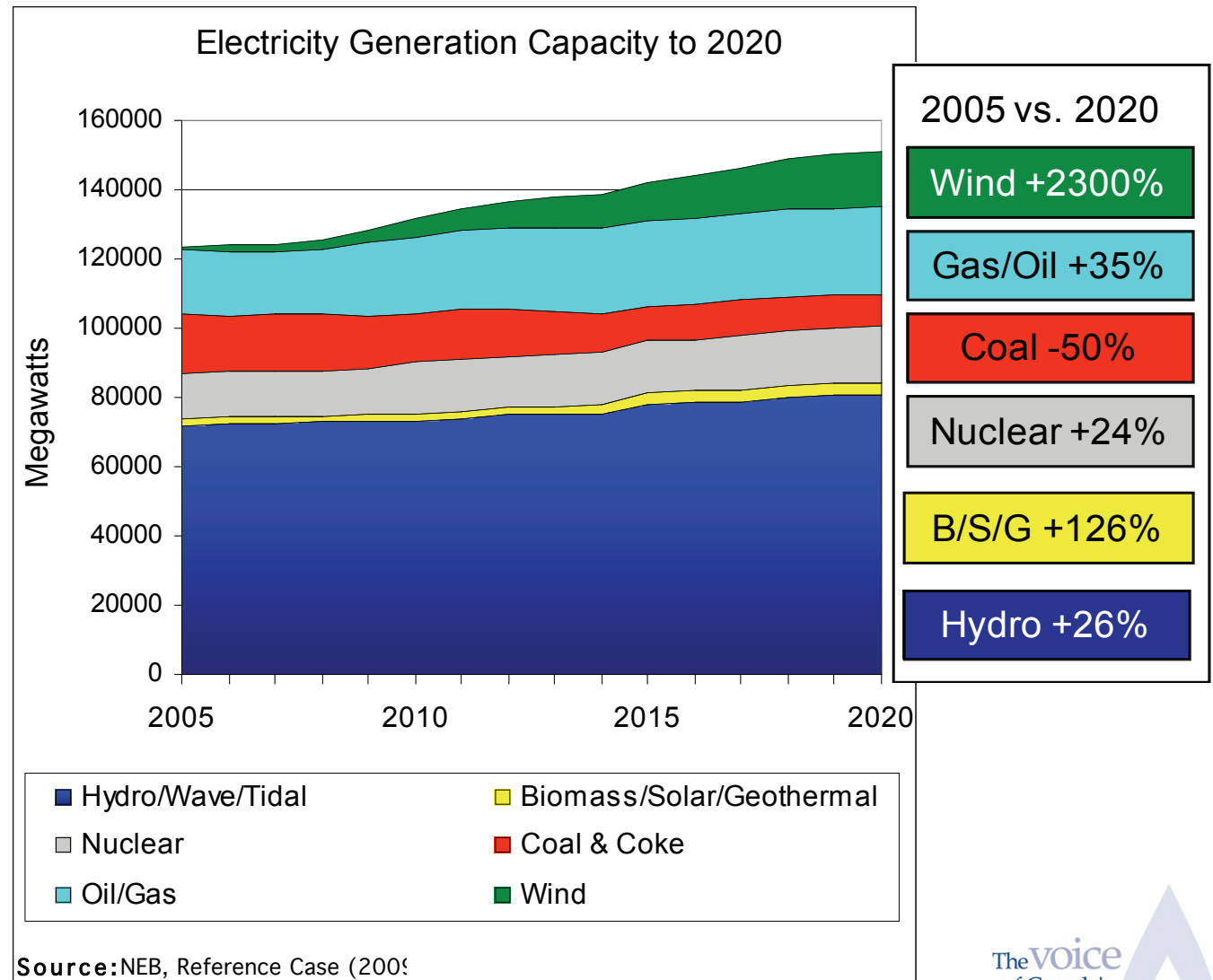
# Power Generation Trends

- Power generation energy demands have increased by 28% since 1990.
- Natural gas use for power generation has increased by 345% since 1990.



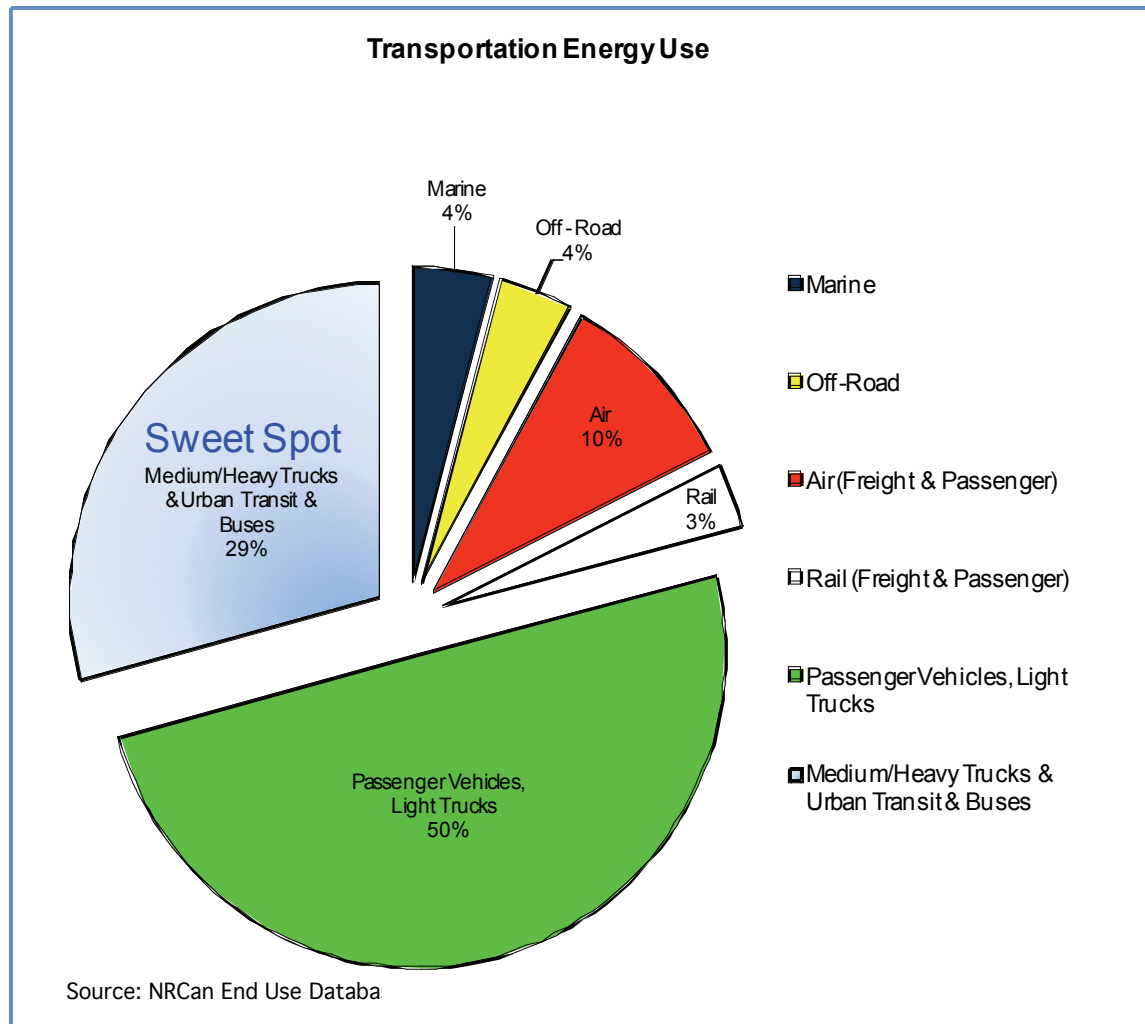
# Power Generation Outlook

- Coal is slowly squeezed out.
- Increased reliance on less controllable sources (wind primarily) .
- Natural gas becomes a key supporting player in most future power gen scenarios.
- In this NEB Outlook, wind generation grows fastest reaching 10% of capacity in 2020.



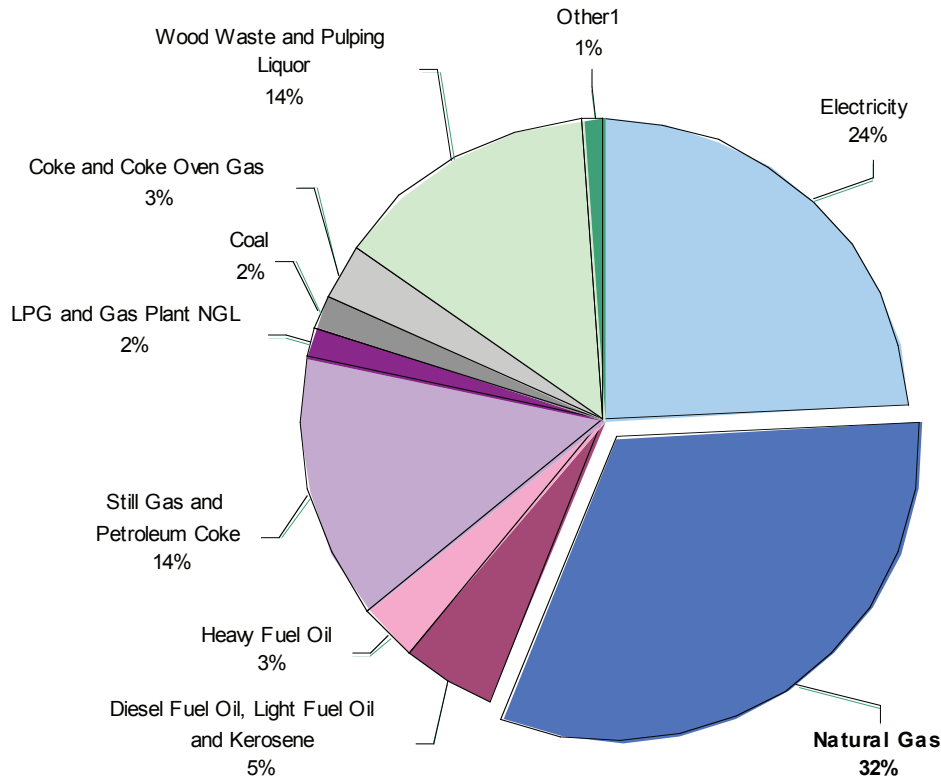
# Transportation Energy

- Natural gas is a marginal transportation fuel at this point in time (0.1%).
- Return to base urban and road freight transportation is the area with most potential for natural gas use.
- Diesel represents over 72% of road freight transportation energy use.



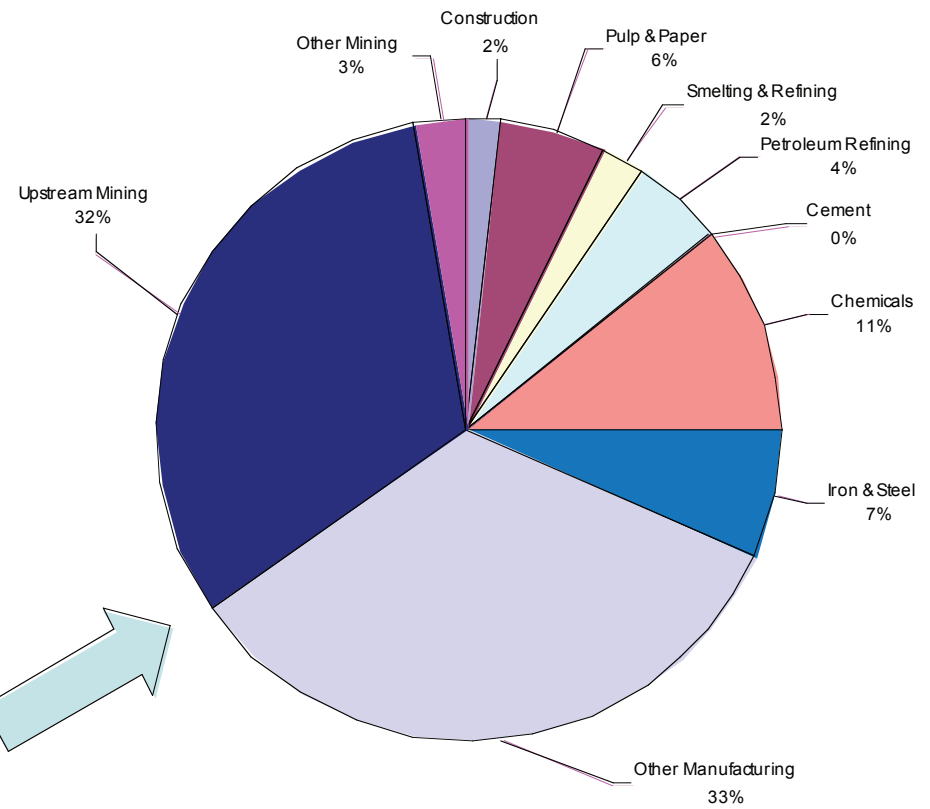
# Industrial Sector Energy

**Industrial Secondary Energy Sources 2007**



**2007 Total Industrial Use: 3472 PJ**

**Industrial Natural Gas Use - 2007**



**2007 Total Natural Gas Use: 1111 PJ**

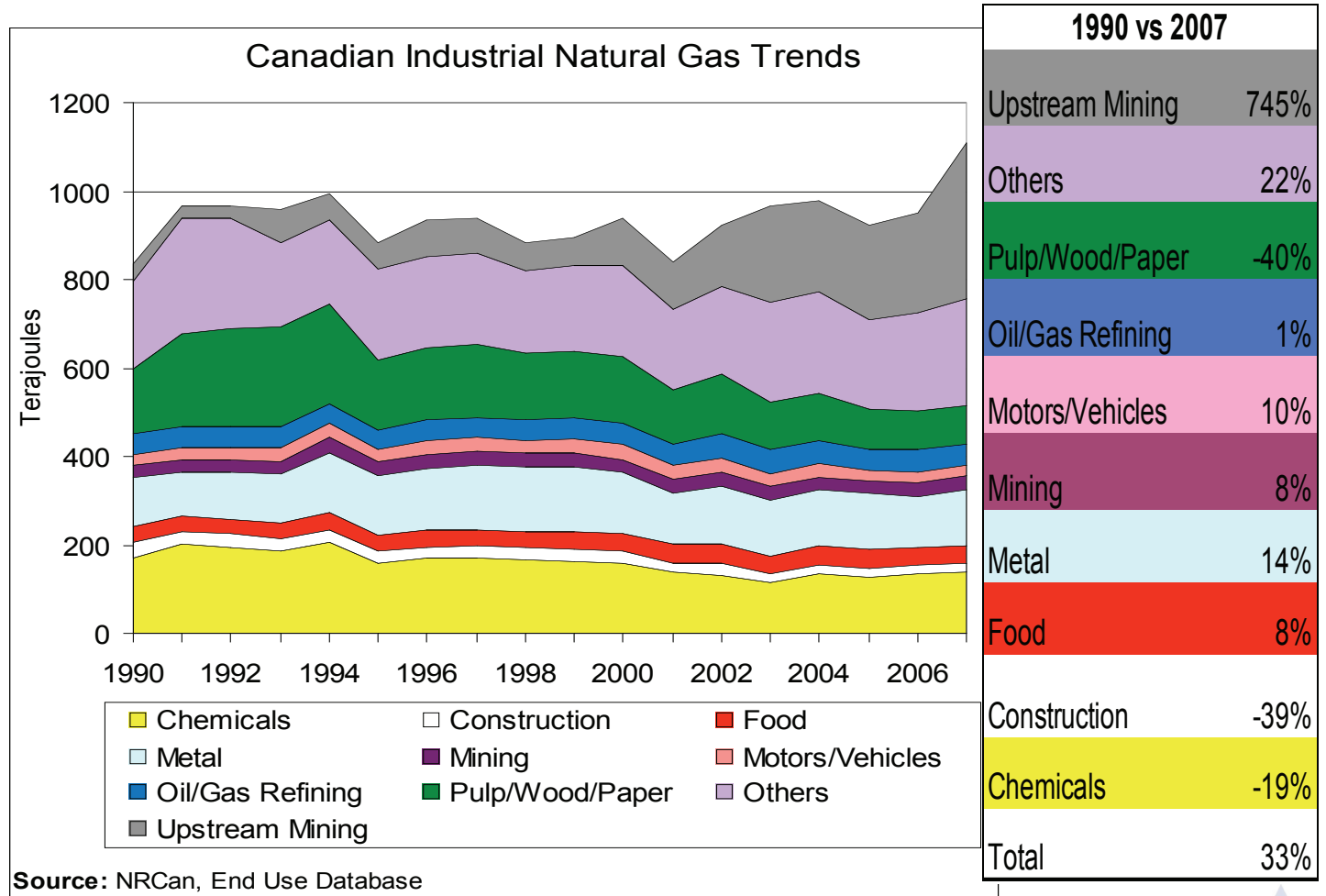
Source: NRCan National Energy Use Database

# Industrial Sector Natural Gas Use

■ Increased industrial gas demand has been driven by increased use in upstream mining (oilsands +745%).

■ There have been significant declines in major end use sectors.

- Pulp/wood/paper (-40%)
- chemical sectors (-19%).



# CNGI - Where We Are Going

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- Tell the robust supply story.
- Looking to secure natural gas' position in the market place.
- Focus on growth areas
  - Power generation – multiple options to reduce GHG's and improve system efficiency.
  - NGV's – mainly in heavy duty & return to base applications, strong GHG reductions possible.
- Focus on retaining market share
  - R/C/I – drive efficiency gains, more integrated systems, gas/electric convergence

# Industrial Markets

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- You are 42% of natural gas use in Canada.
- We are 32% of your energy supply.
- Together we generate significant value for Canada's economy.
- Key Opportunities
  - Efficiency gains
  - GHG and CAC reductions
  - Combined heat and power applications
  - Hybrid applications
- We should think about our shared interest in educating policy makers about Canada's energy realities.