

Offshore Oil & Gas Development

A Few Economic Considerations

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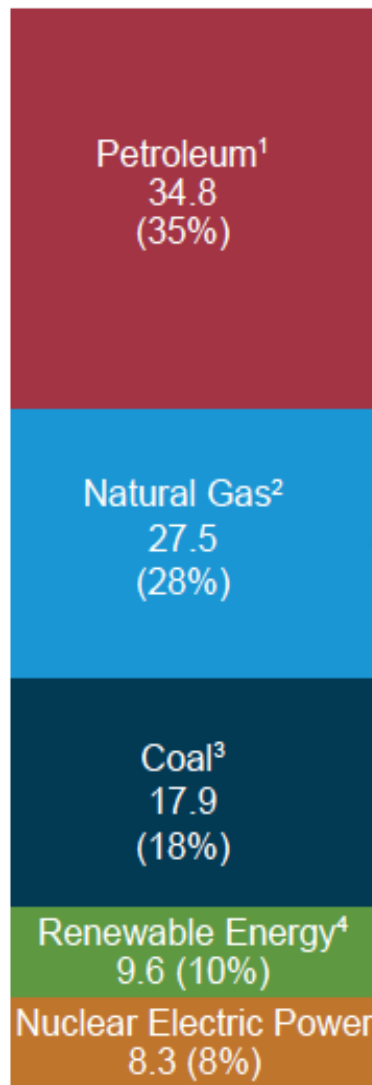
Economic Benefits

- Enhance our energy independence
 - National benefit
- Lower energy prices
 - Local/regional/national benefit
- Create jobs
 - Local/regional benefit

A Few Statistics to Start...

Primary Energy Consumption by Source and Sector, 2014

(Quadrillion Btu)



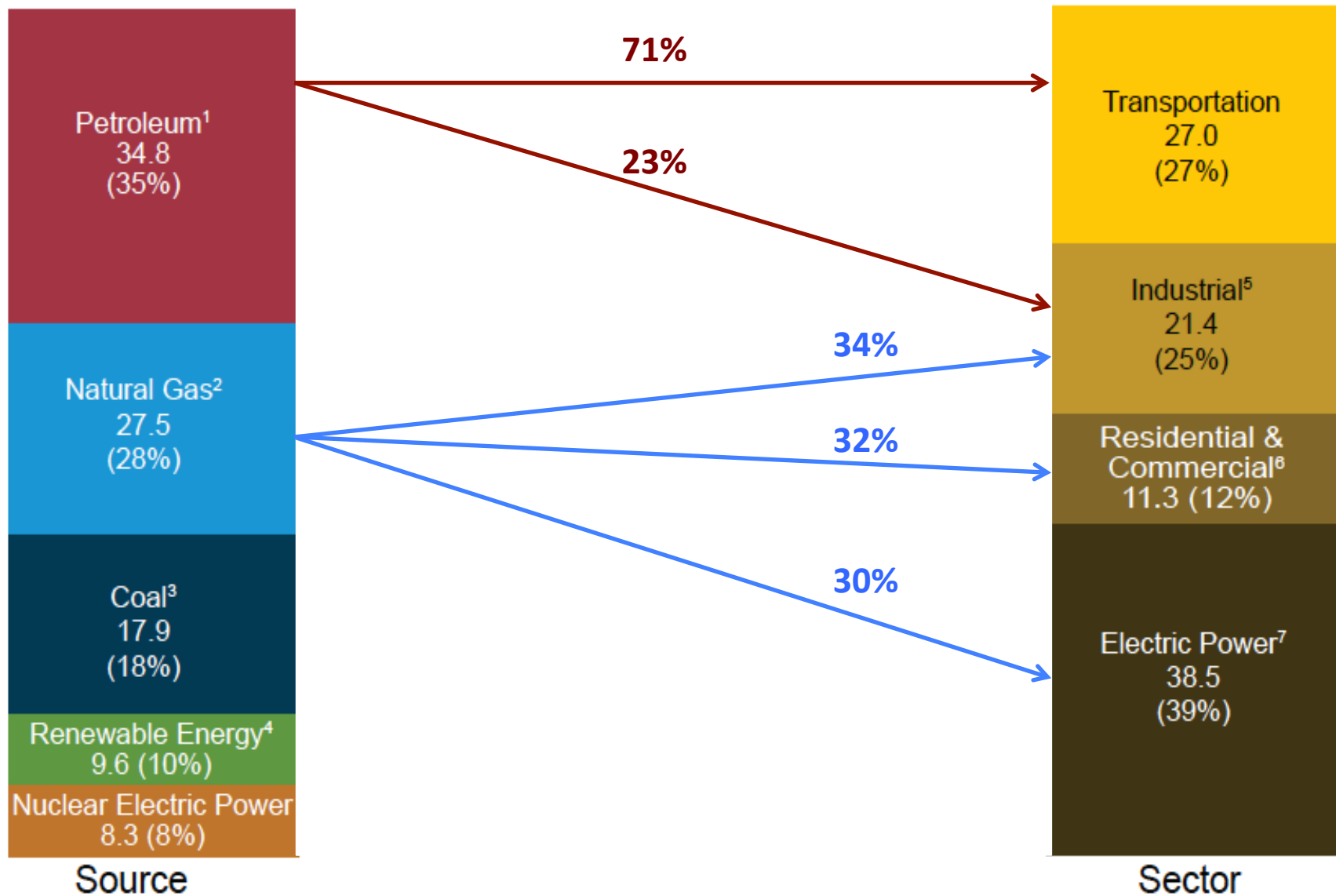
Source



Sector

Primary Energy Consumption by Source and Sector, 2014

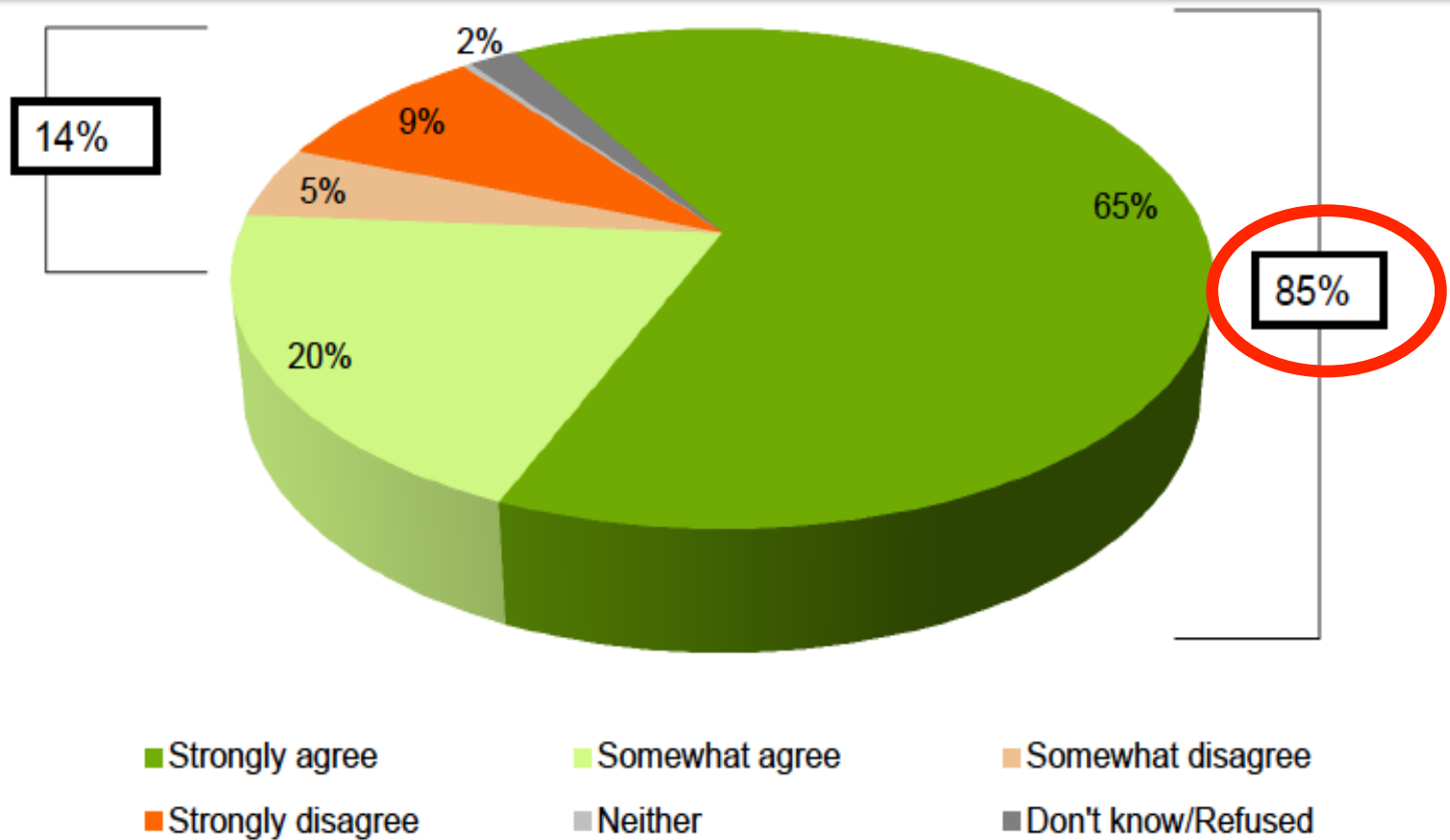
(Quadrillion Btu)



Energy Security / Independence

Agree/Disagree: Increased production of domestic oil and natural gas could help strengthen America's energy security.

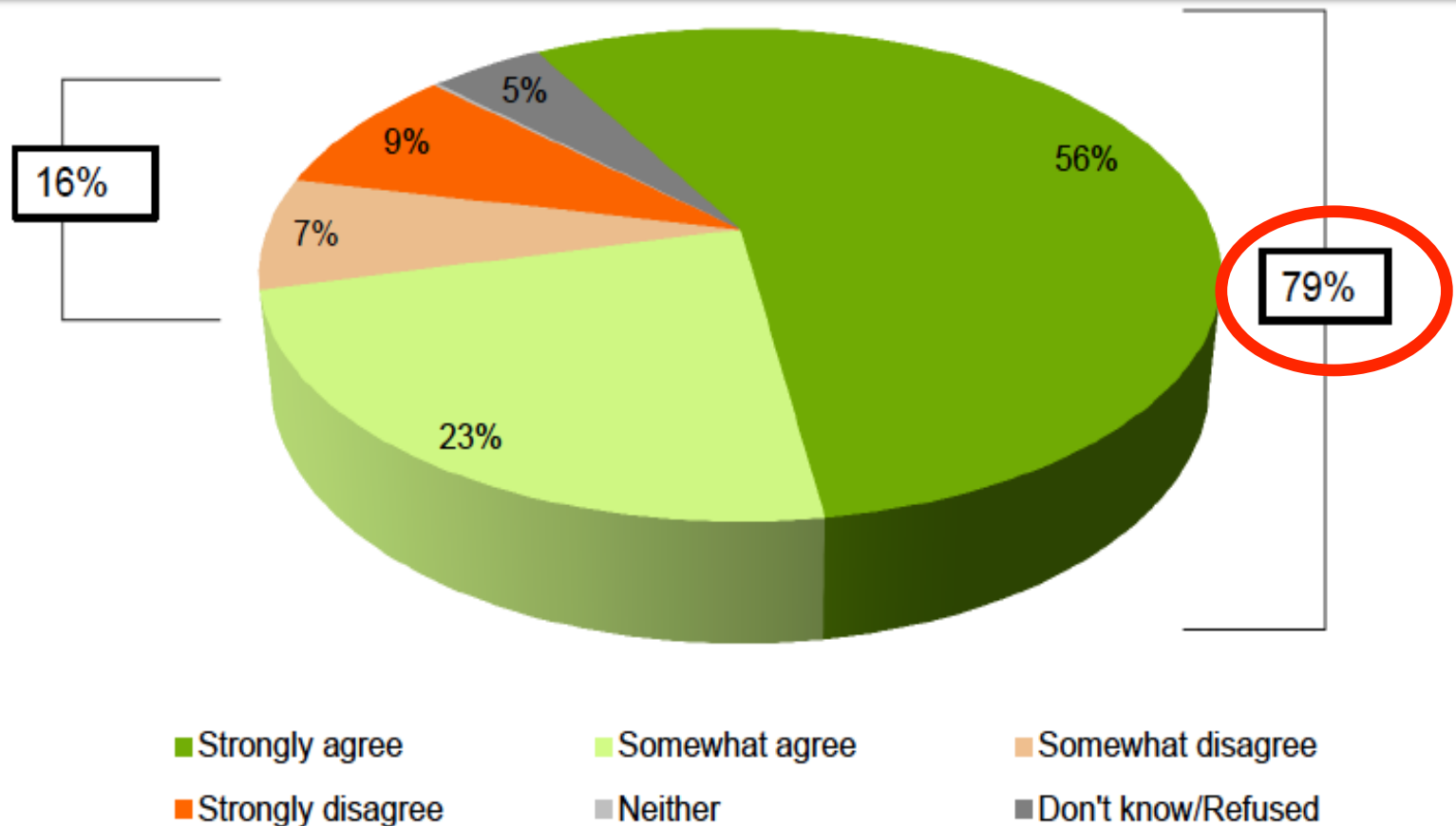
Agree/Disagree: Increased production of domestic oil and natural gas could help strengthen America's energy security.



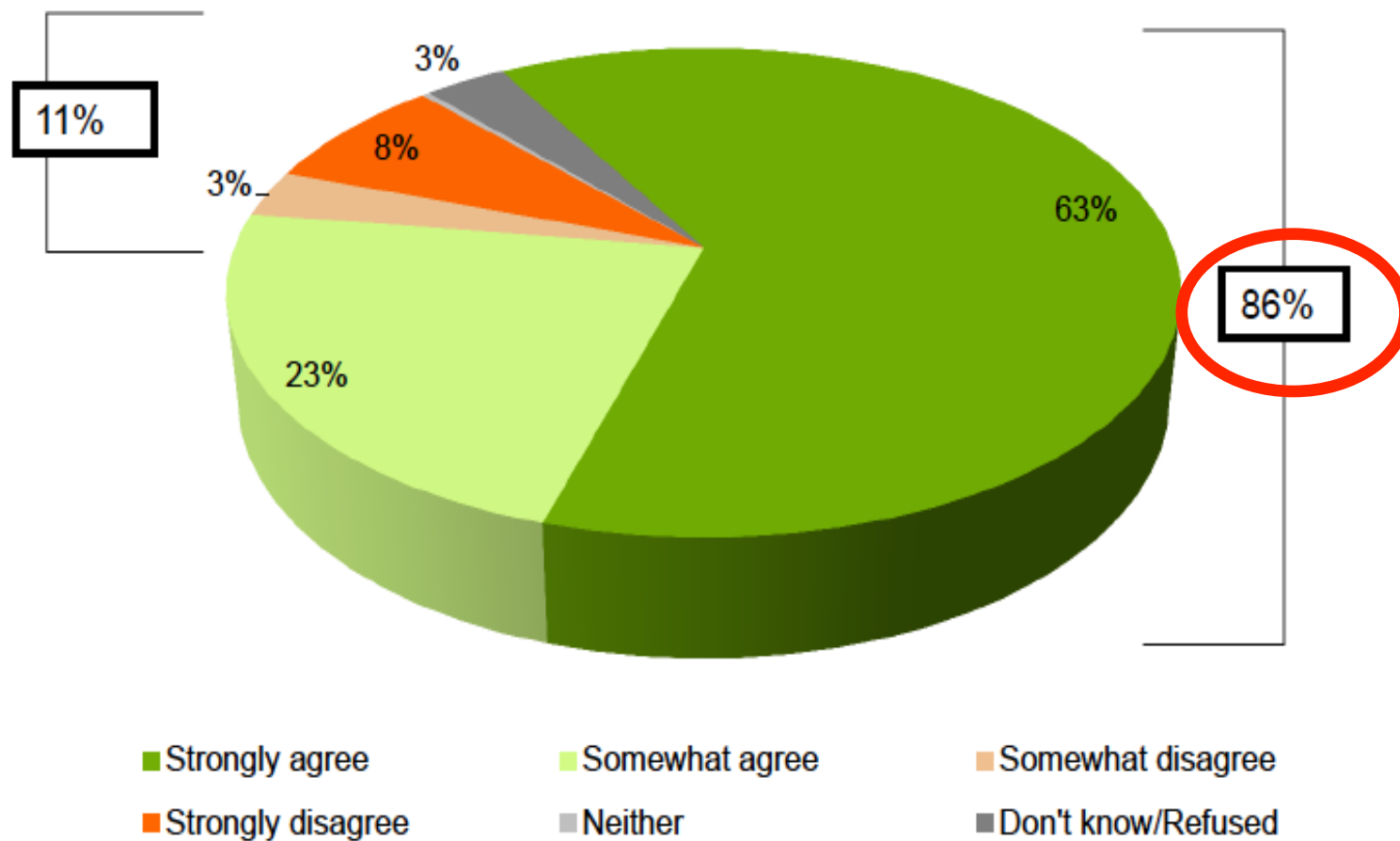
What does security / independence mean?

- What is the goal?
 - Insulate U.S. from certain trading partners
 - Protect U.S. from price shocks

Agree/Disagree: Producing more domestic oil and natural gas could help strengthen America's national security by lessening the negative impacts of political instability occurring in other parts of the world.



Agree/Disagree: Producing more domestic oil and natural gas could help lower energy costs for consumers.

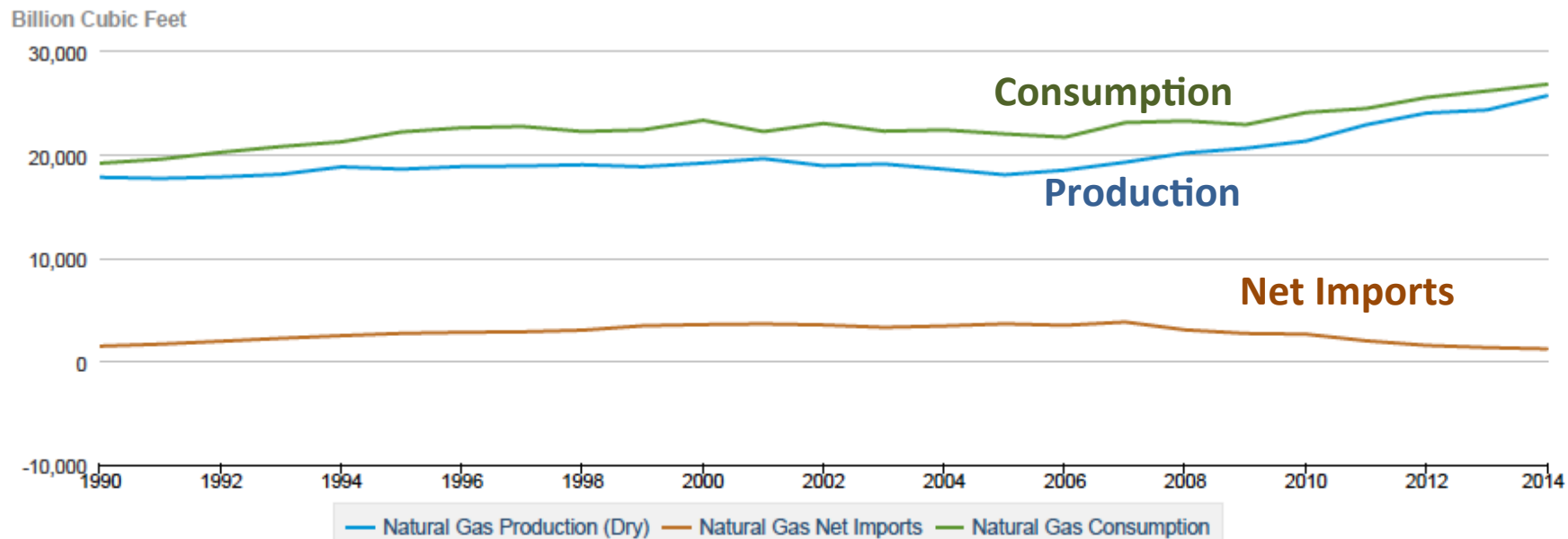


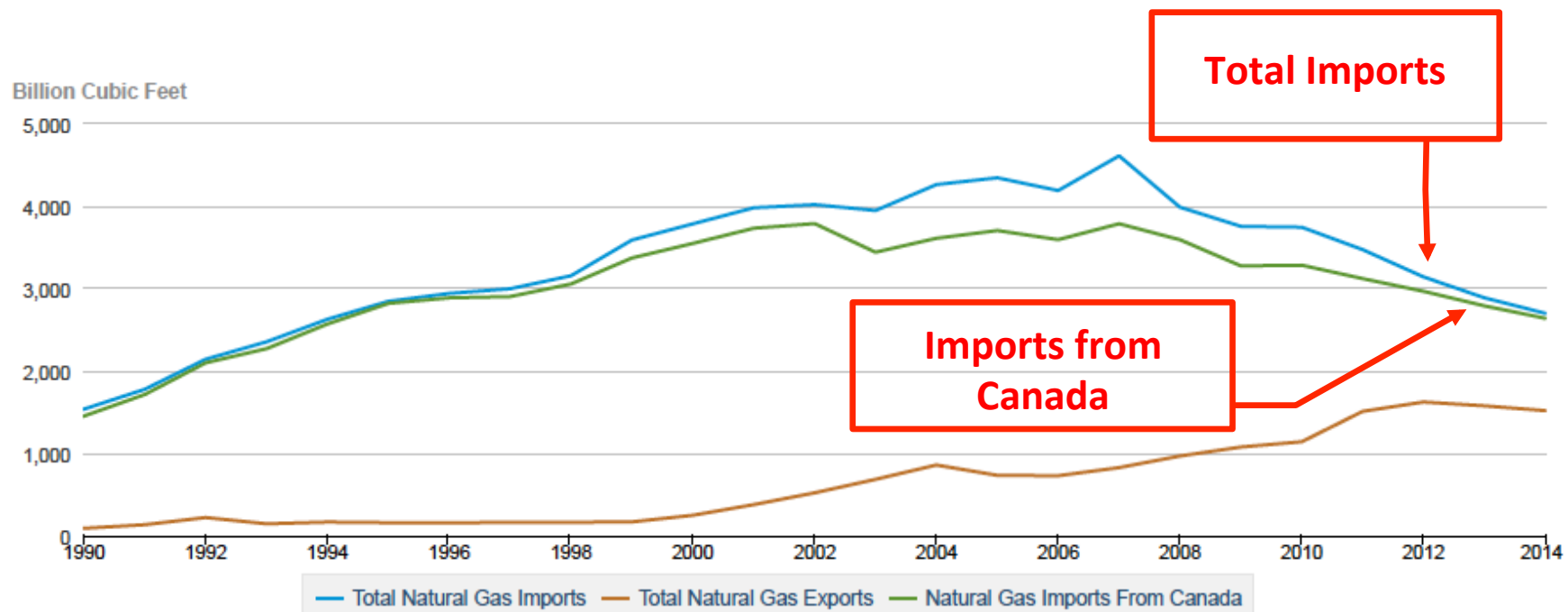
What does independence mean?

- What is the goal?
 - Insulate U.S. from certain trading partners
 - Protection U.S. from price shocks
- Let's consider each source (*sector*)
 - Natural Gas (*Electricity/Residential/Industrial*)
 - Petroleum (*Transportation/Industrial*)

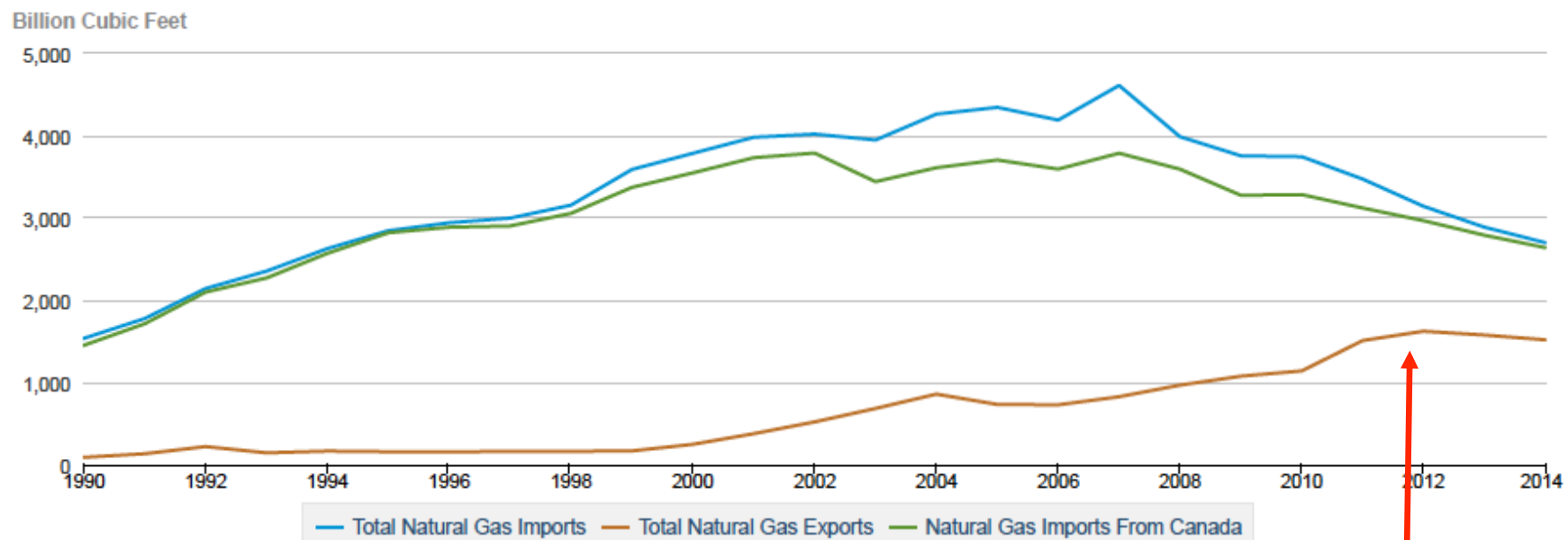
Natural Gas Independence

We are largely independent already





Data source: U.S. Energy Information Administration



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Exports

Natural Gas Prices

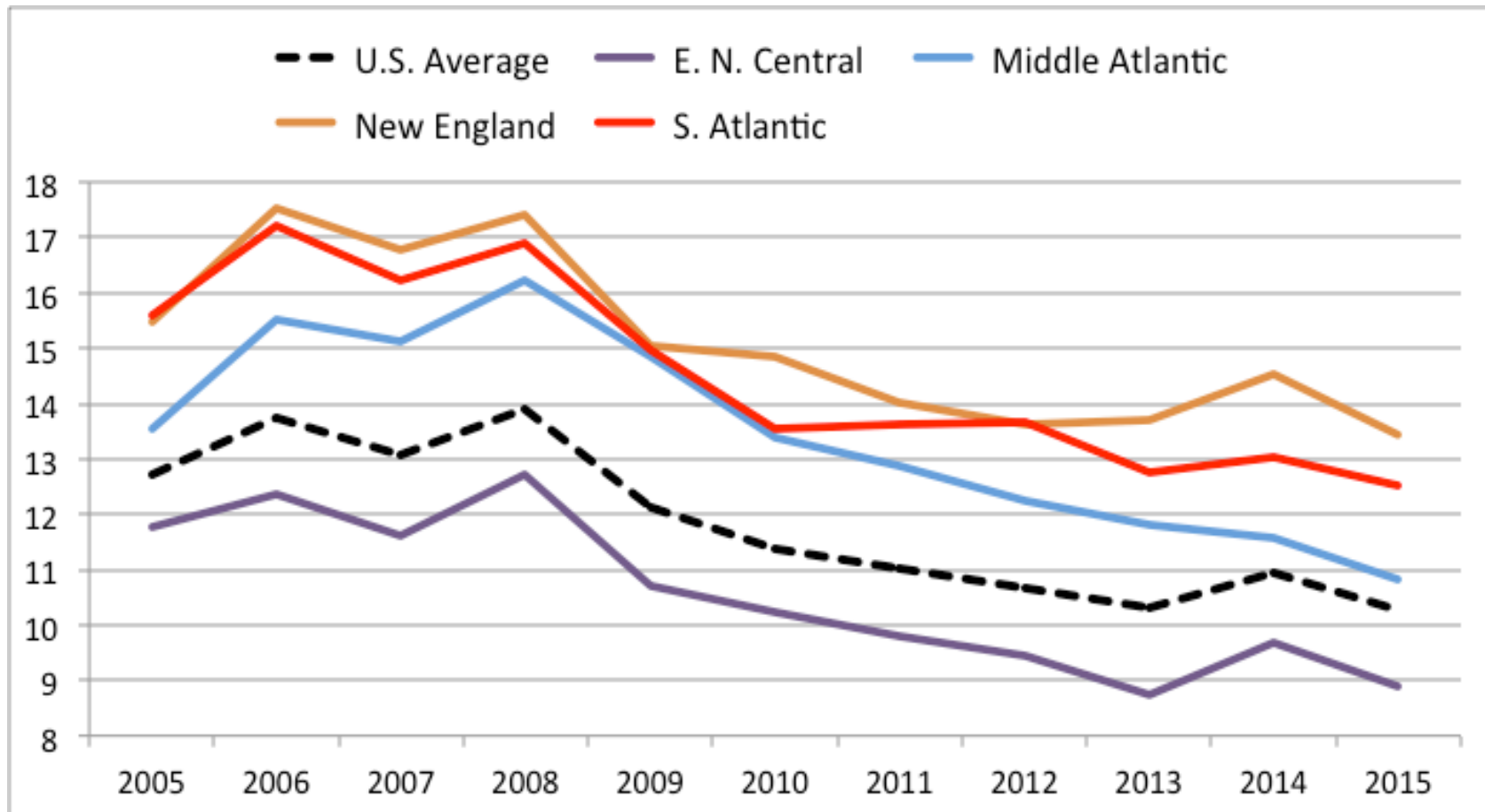
Atlantic offshore is likely to be a relatively small part of market

Technically Recoverable Natural Gas

Lower-48 states, Trillion cubic feet, Jan 2012

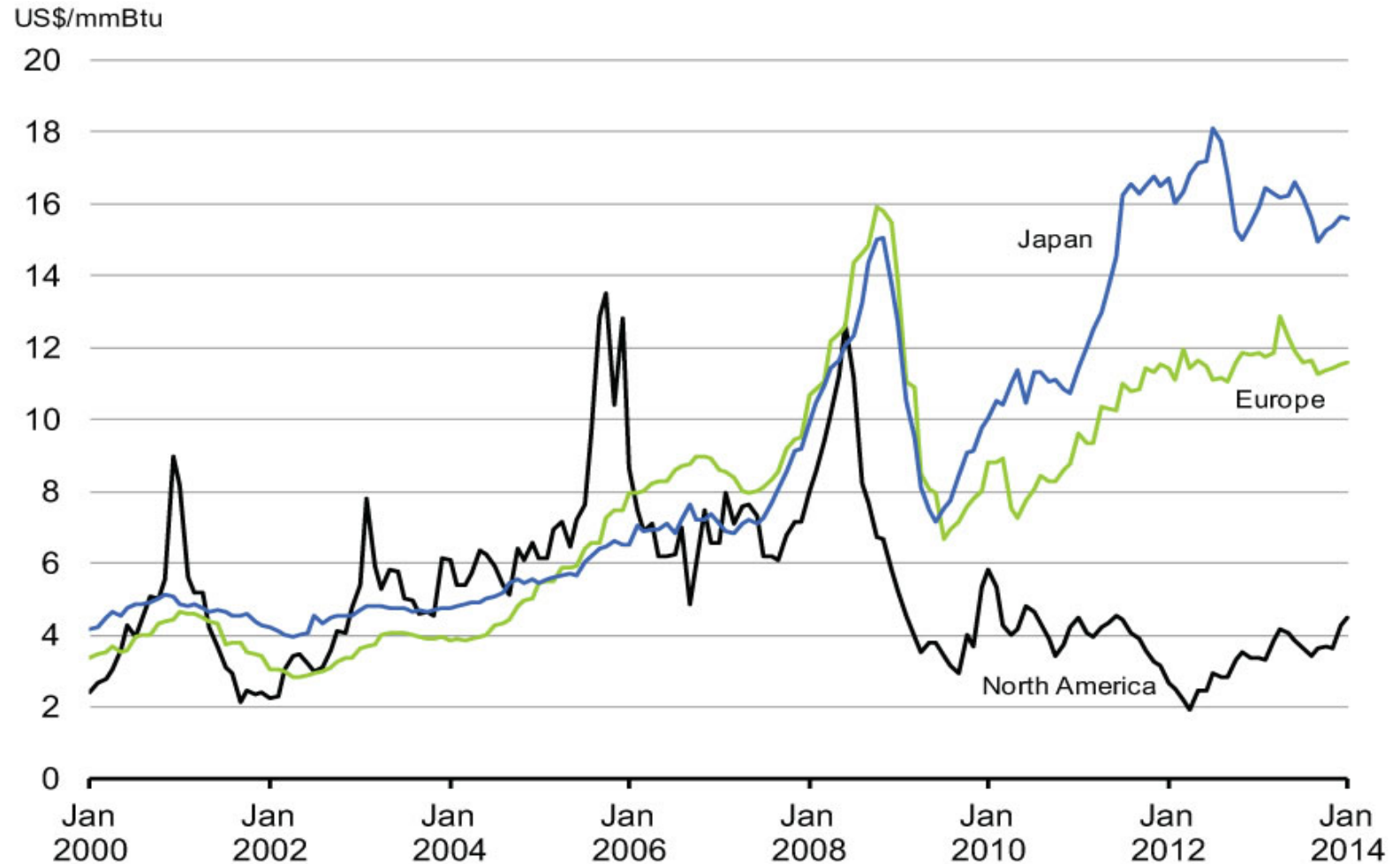
	Proven	Unproven	Total
Onshore	312	1,251	1,663
Offshore	13	309	322
Gulf	12	276	288
Pacific	1	9	10
Atlantic	0	24	24
Total	325	1,660	1,985
Atlantic as % of total	0.00%	1.45%	1.21%

Prices vary regionally

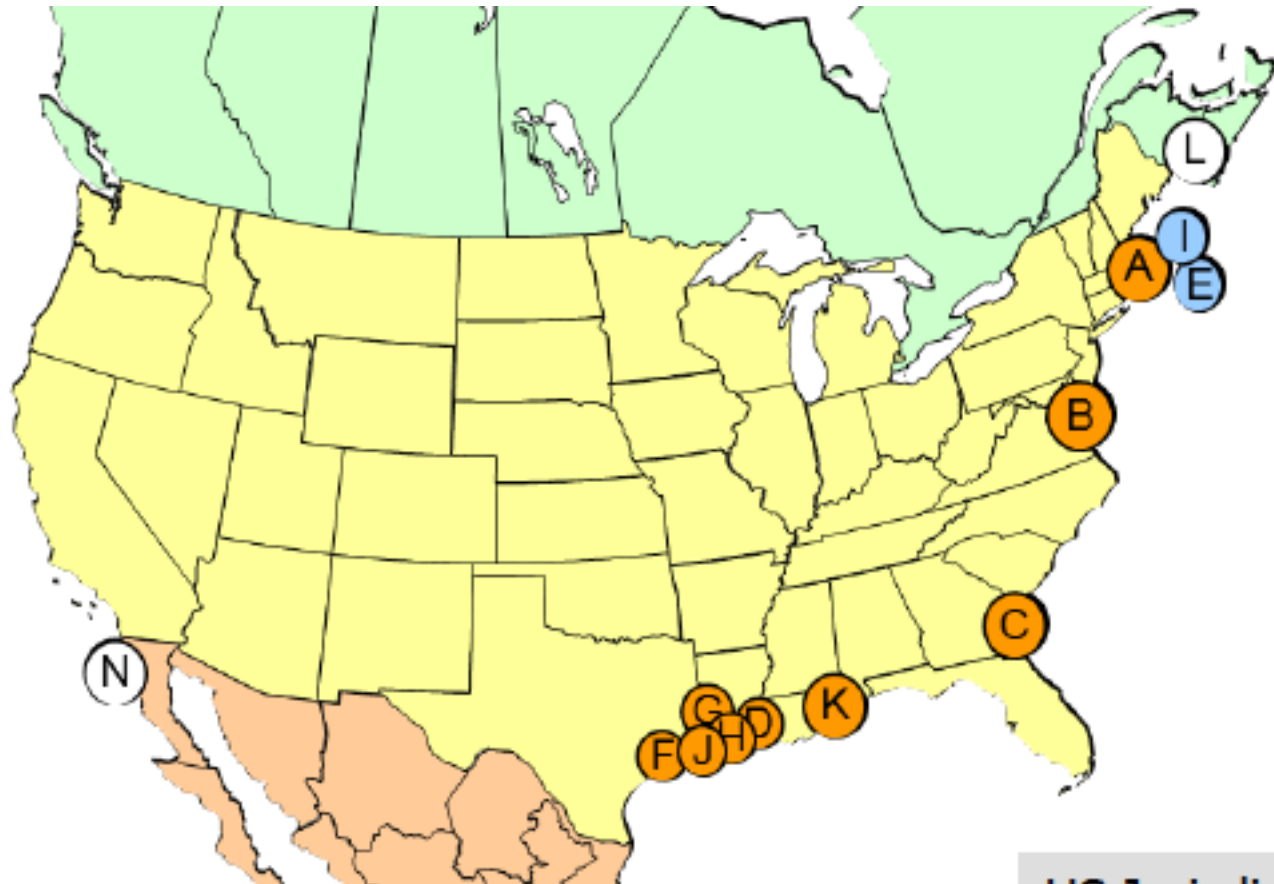


In the broader context...

Changing International Markets

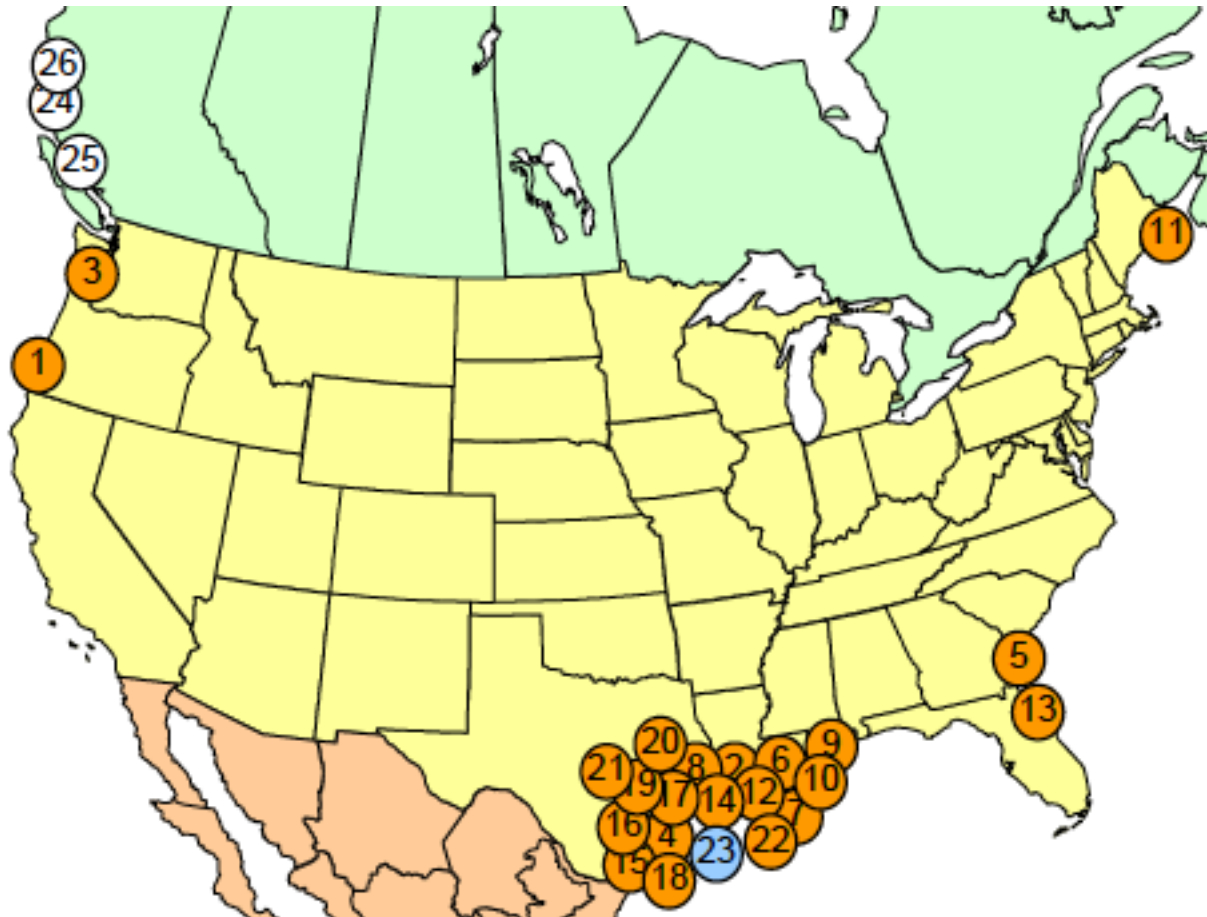


Existing LNG Terminals



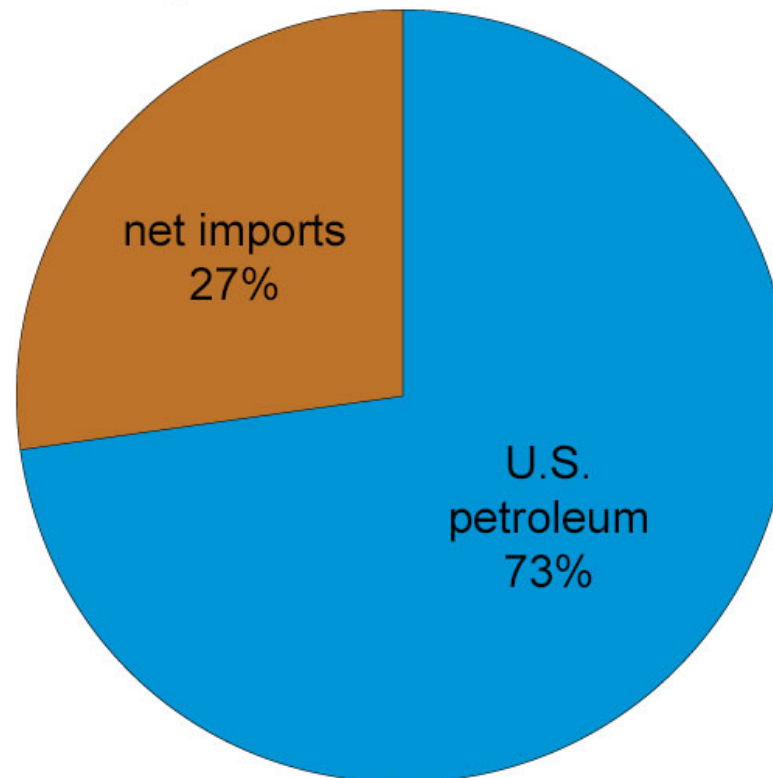


Proposed LNG Terminals



Petroleum Independence

Net imports and domestic petroleum as shares of U.S. demand, 2014



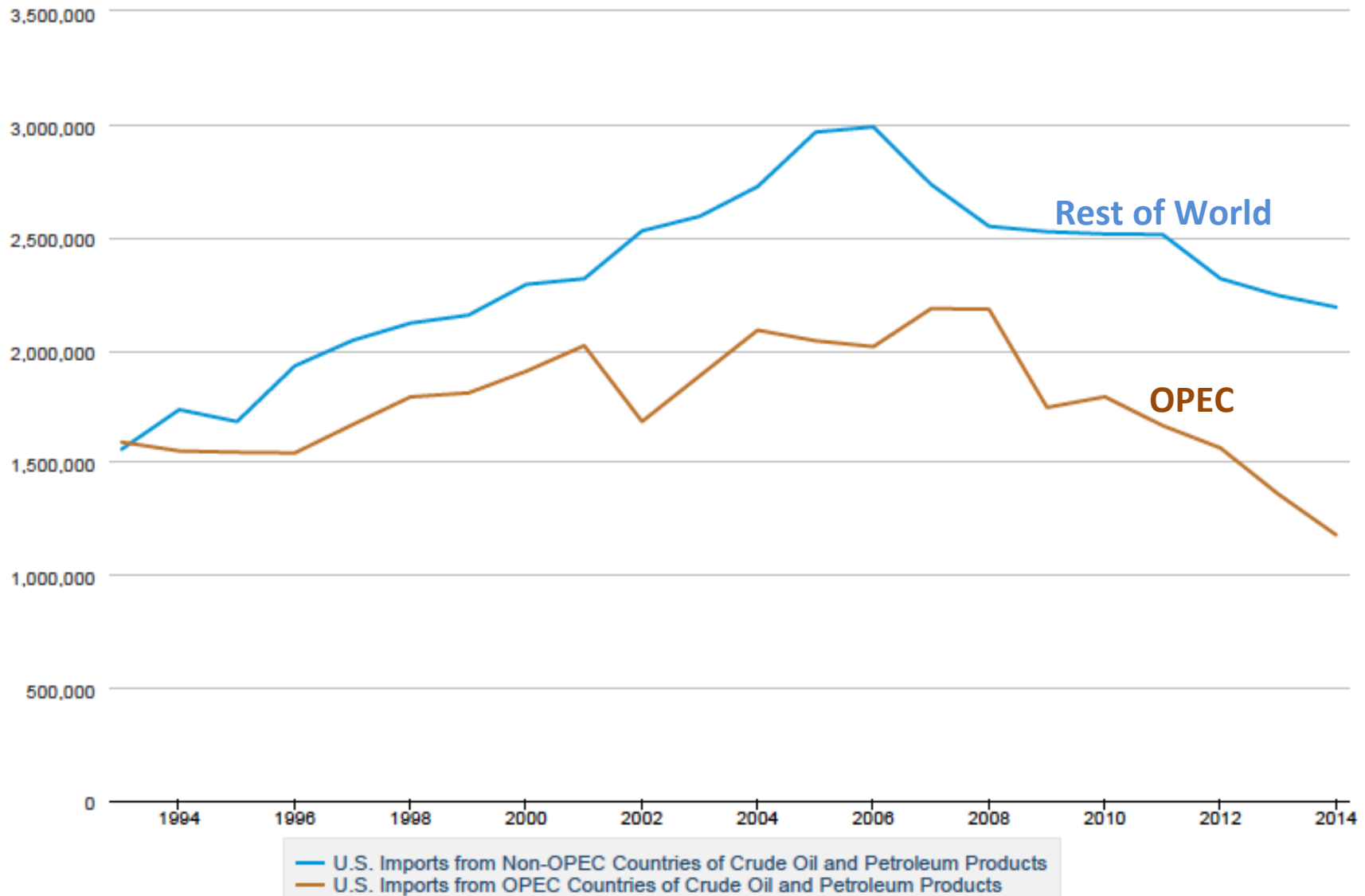
Note: Petroleum includes crude oil, petroleum products, and biofuels.

Source: U.S. Energy Information Administration, *Monthly Energy Review*, Table 3.1 (February 2015), preliminary data



U.S. Imports by Country of Origin

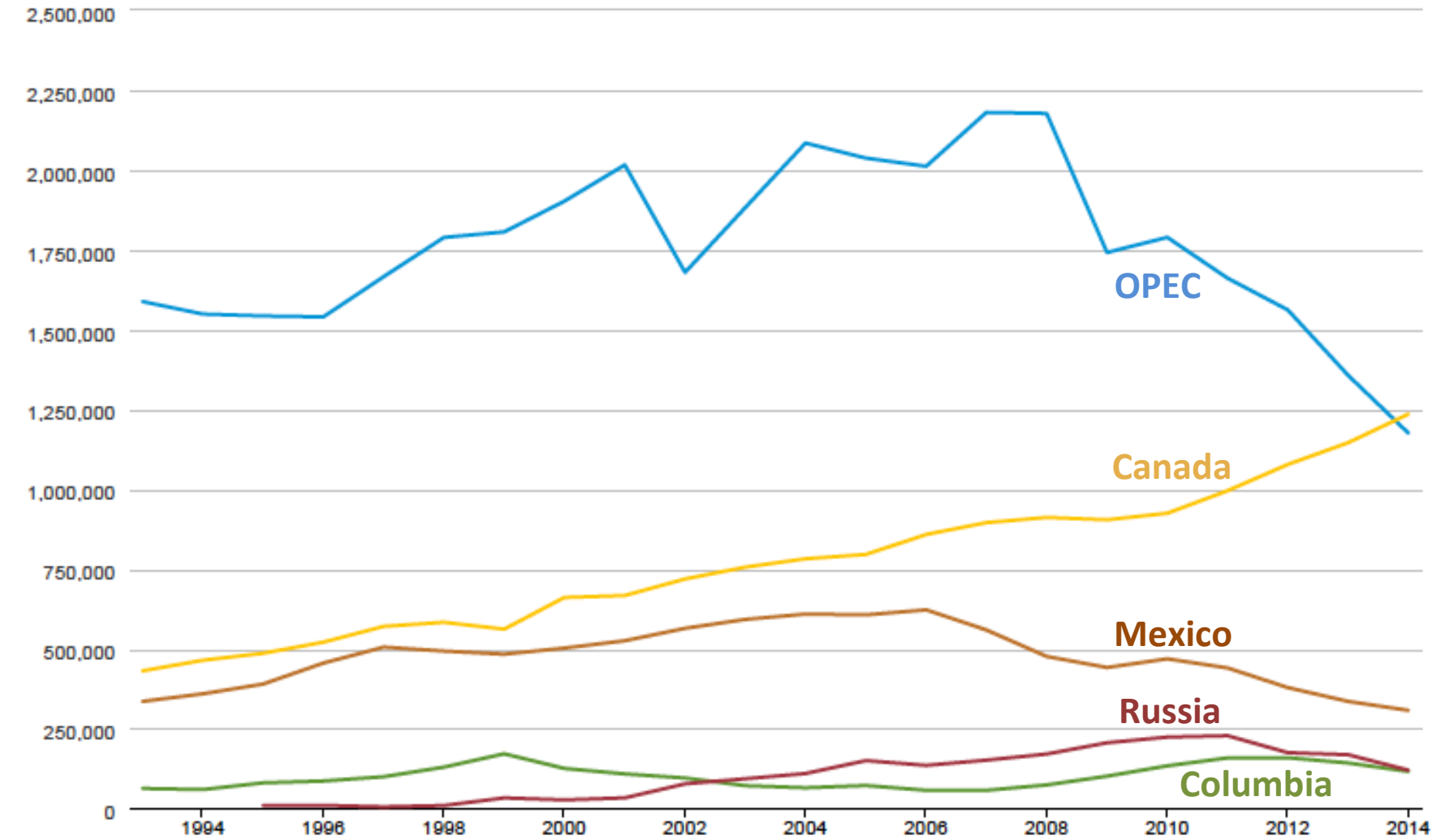
Mbbl



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U.S. Imports by Country of Origin

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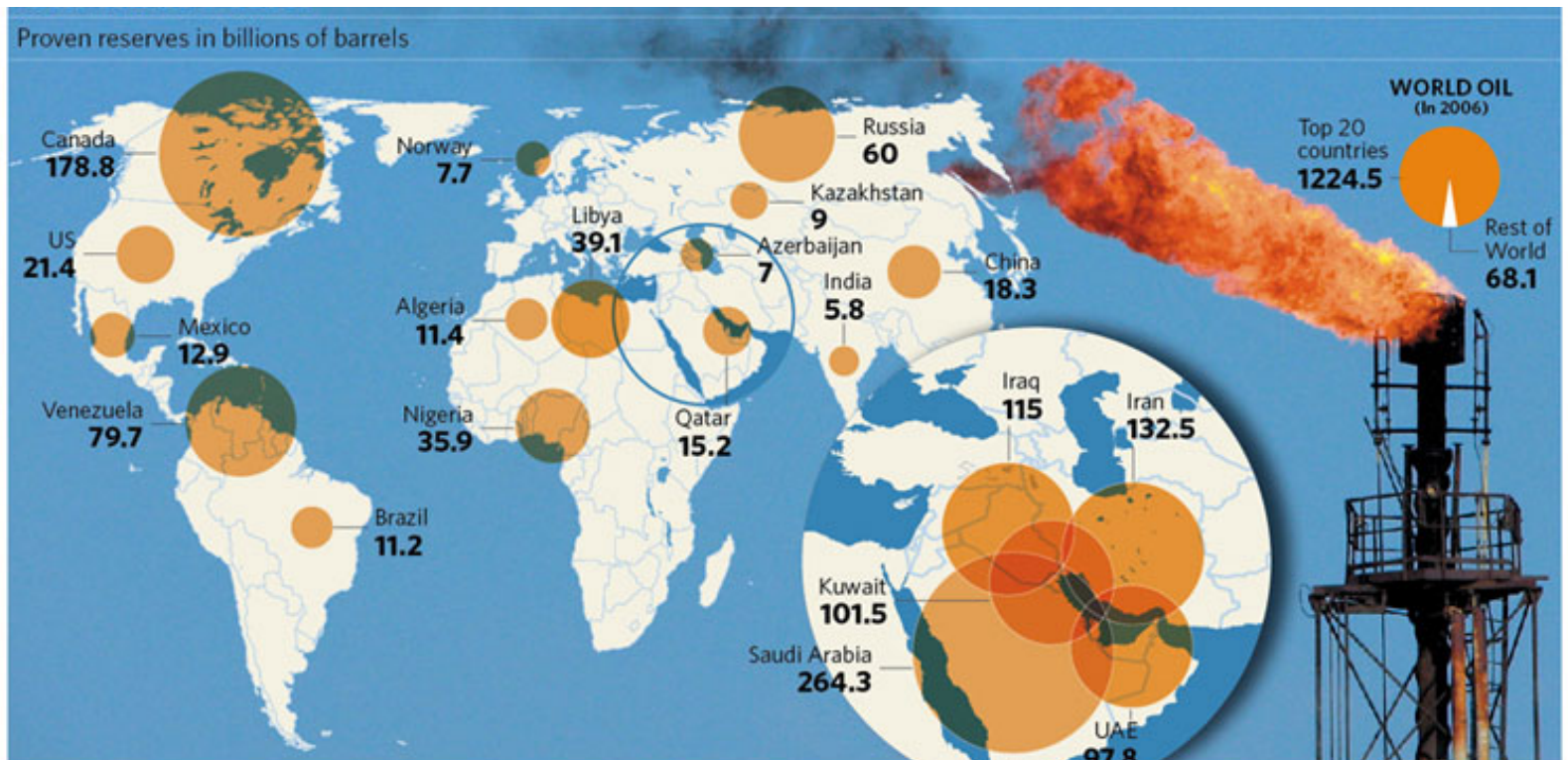


Crude Oil and Products Imports by Country (1,000 barrels)

Total Imports	3,365,489	
<i>Top-Seven Countries</i>		<i>% of total imports</i>
Canada	1,236,486	36.7%
Saudi Arabia	425,485	12.6%
Mexico	307,272	9.1%
Venezuela	287,993	8.6%
Iraq	132,847	3.9%
Russia	119,496	3.6%
Kuwait	113,620	3.4%

Resource in Context

- 2014 Global Crude Oil Proved Reserves = 1,655.5 billion barrels
- 2014 Global Production = 93 million barrels/day (34 billion/year)



Region	Undiscovered Technically Recoverable Oil and Gas Resources (UTRR)								
Planning Area	Oil (Bbo)			Gas (Tcfg)			BOE (Bbo)		
	95%	Mean	5%	95%	Mean	5%	95%	Mean	5%
Atlantic OCS	1.32	4.72	9.23	11.81	37.51	67.69	3.42	11.40	21.27
North Atlantic	0.06	1.75	5.19	1.05	11.94	32.53	0.25	3.88	10.98
Mid-Atlantic	0.06	2.42	5.58	1.01	23.38	48.45	0.24	6.58	14.20
South Atlantic	0.00	0.55	1.16	0.00	2.18	6.31	0.00	0.94	2.29

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**1/2 of 1%
of global reserves**

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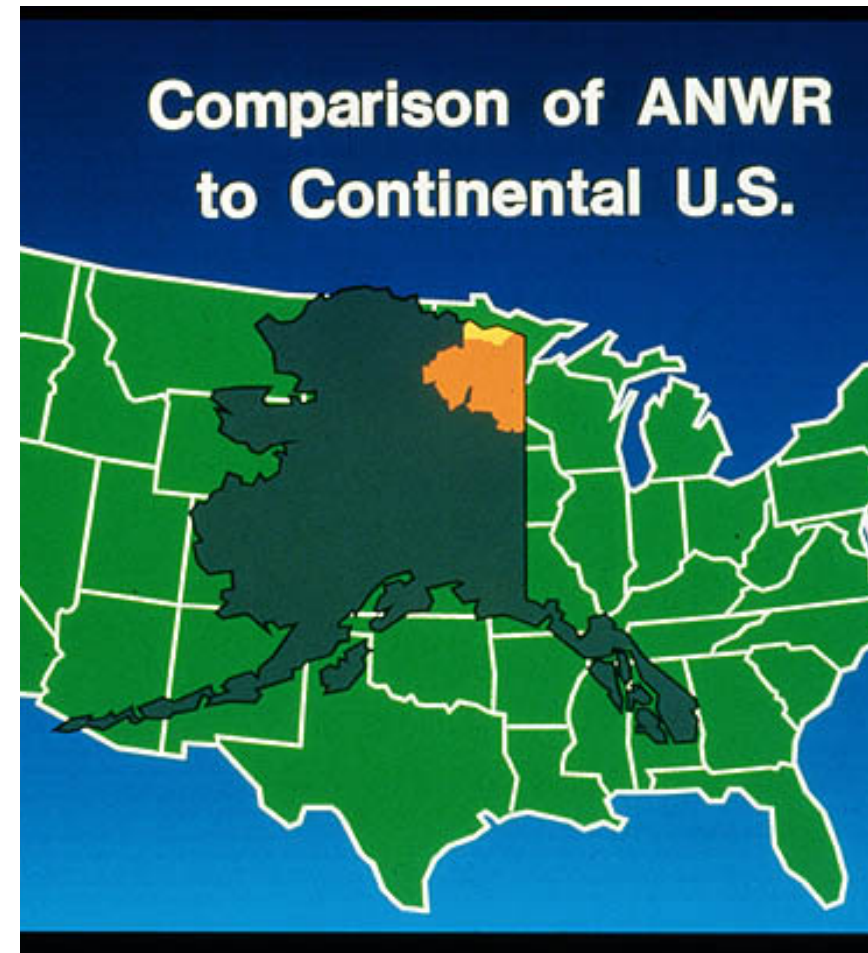
**<1/10th of 1%
of global reserves**

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- Oil is globally traded commodity
 - Prices set on international markets
- U.S. supply is small relative to global production

ANWR Comparison

- 5.7 billion barrels (95% chance)
 - 5% chance of 16 bb
- 5.7 Bb → expected peak production of 0.65 Mb/day
- 2014 U.S. consumption was 19 Mb/day
- 5.7 Bb => 3.4% of daily consumption



- Expected change in retail gasoline prices if ANWR were fully developed?
- 2-3 cents/gallon along West Coast (optimistically)

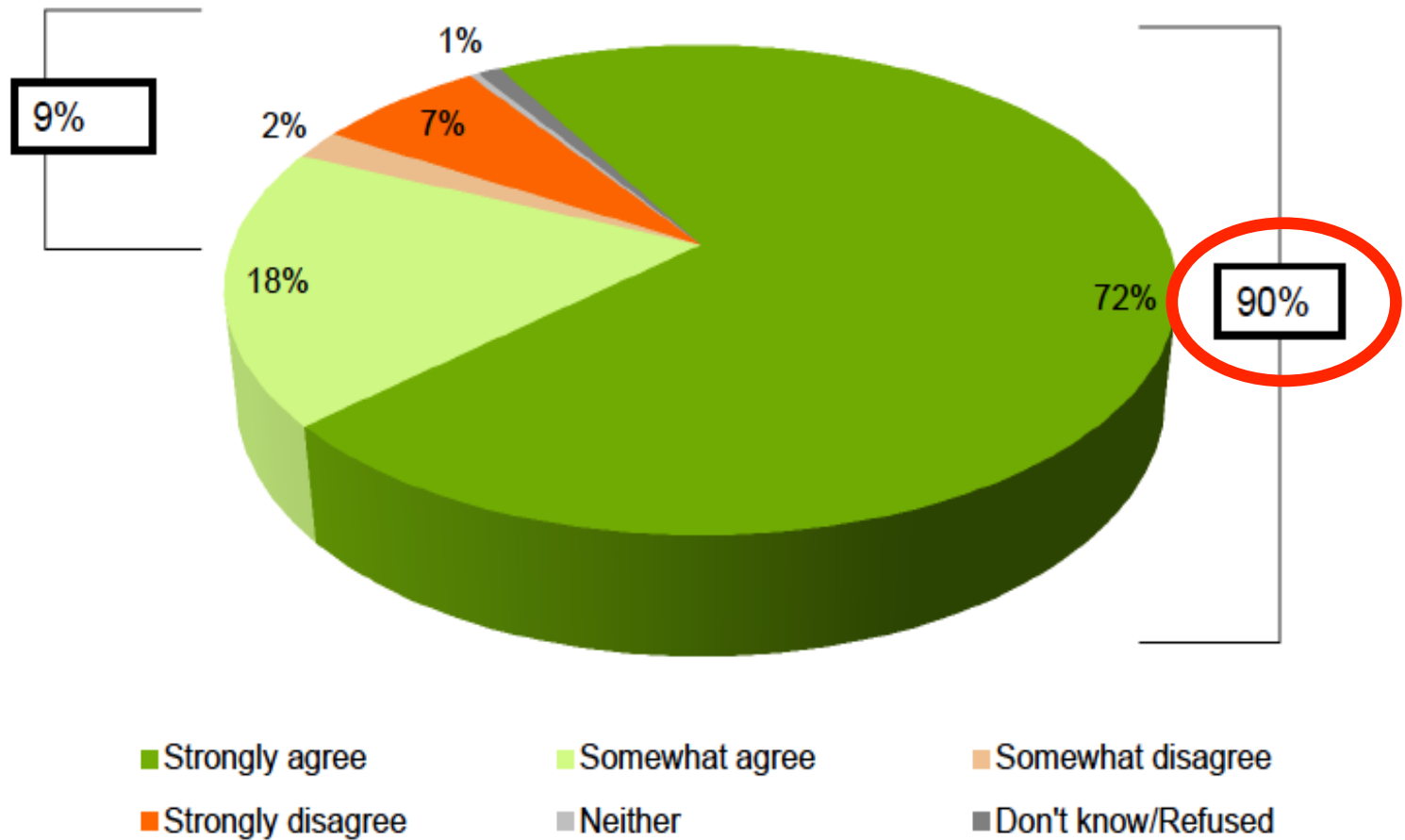
Petroleum Independence

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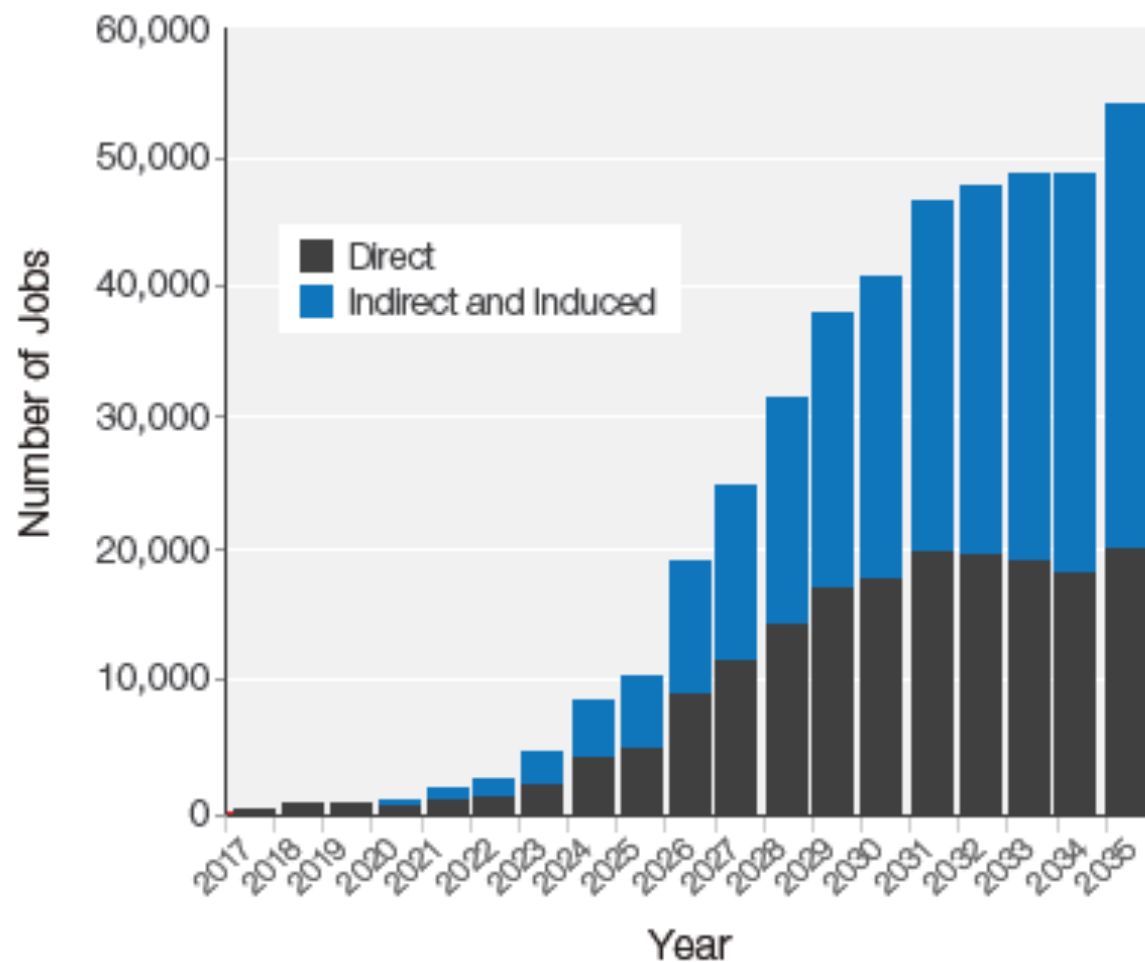
Economic Benefits

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- Create jobs
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Agree/Disagree: Increased production of domestic oil and natural gas could lead to more jobs in the U.S.



Estimated NC jobs: Direct & Indirect



Industry	Employment	Total Wages (Millions)
Health Care	584,811	\$7,107
Retail Trade	495,069	\$3,356
Manufacturing	454,486	\$6,360
Accommodations/Food Services	385,490	\$1,566
Mgmt, Info, Prof & Tech Services	371,368	\$7,406
Construction	183,831	\$2,304
Finance and Insurance	155,397	\$2,997
Arts, Ent., and Recreation	63,169	\$560
Real Estate, Rental, Leasing	52,988	\$654
Ag., Forestry, Fishing & Hunting	29,529	\$264
Utilities	14,990	\$311
Mining	2,940	\$38

Economic Considerations

Moving Forward for NC

- Revenue sharing
 - \$855M/year projected in 2035
 - 3% of tax receipts in 2035
 - (2012 increased by 2% per year \$30.6B)
- Onshore impacts
 - Land use change
 - Water resources
 - Development Tradeoffs
- Energy prices

Thank you.