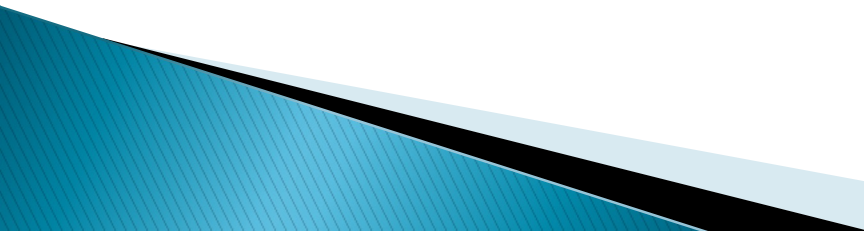


Oil and Gas policy issues

Energy Policy and Law
Guest speaker: Ken Alfred

Fall Semester, 2013
Maxine Goodman Levin College of Urban Affairs
Cleveland State University

Which topic does not involve oil and gas policy issues?

- ▶ Palestinian – Israeli relations
 - ▶ NE Ohio economic development options
 - ▶ Iran
 - ▶ 2016 Presidential election
 - ▶ Wind capacity additions
 - ▶ Keystone XL
 - ▶ Federal land leasing programs
 - ▶ Mortgage interest deduction
 - ▶ School district finances
- 

Oil and gas industry characteristics

- ▶ Effects pervasive throughout economy
- ▶ Highly capital intensive, high risk, BIG \$\$
- ▶ Long lead times from discovery to use
- ▶ Highly technical, complex & sophisticated
 - Manufacturing
 - Logistics
 - Finance
- ▶ Oil is international commodity, gas is regional
- ▶ Subject to political influences due to critical nature of products, control of resources, environmental impacts
- ▶ Many “financial” players

How big is Big? ExxonMobil is big.

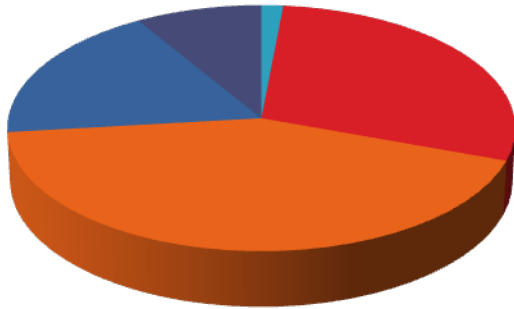
- ▶ Market cap \$404 Bn
 - Google & Verizon combined
- ▶ Revenue \$453 Bn
 - = GNP of Argentina
- ▶ Earnings \$44.9Bn
- ▶ Net profit margin 9.9%
- ▶ Capital and exploration expenditures \$39.8 Bn

ExxonMobil

- ▶ Cash flow from operations \$64 Bn.
- ▶ \$30.1 Bn to shareholders through dividends and share repurchases
- ▶ Liquids production of 2.2 Mbd
- ▶ Natural gas production of 12.3 Tcfd
- ▶ 76,000 employees

*2012

Who owns “Big Oil”?



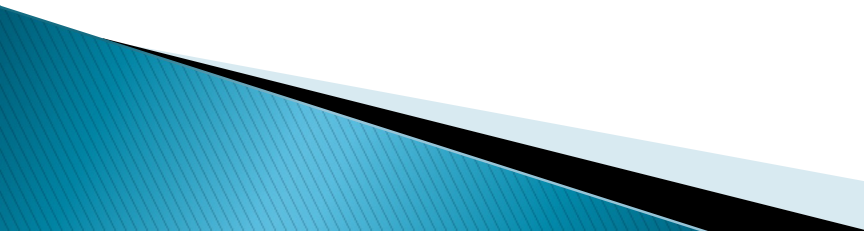
- 1.5% – officers and board members of those companies (“insiders”)
- 29% – individual investors who manage their own holdings and who are not insiders
- 42.7% – mutual funds and other asset management companies that have mutual funds
- 18.1 % – asset management companies that do not have mutual funds
- 8.7 % – pension funds, insurance companies, endowments and foundations, banks and other financial institutions.

Source: The Distribution of Ownership of U.S. Oil and Natural Gas Companies, Robert J. Shapiro and Nam D. Pham
September 2007

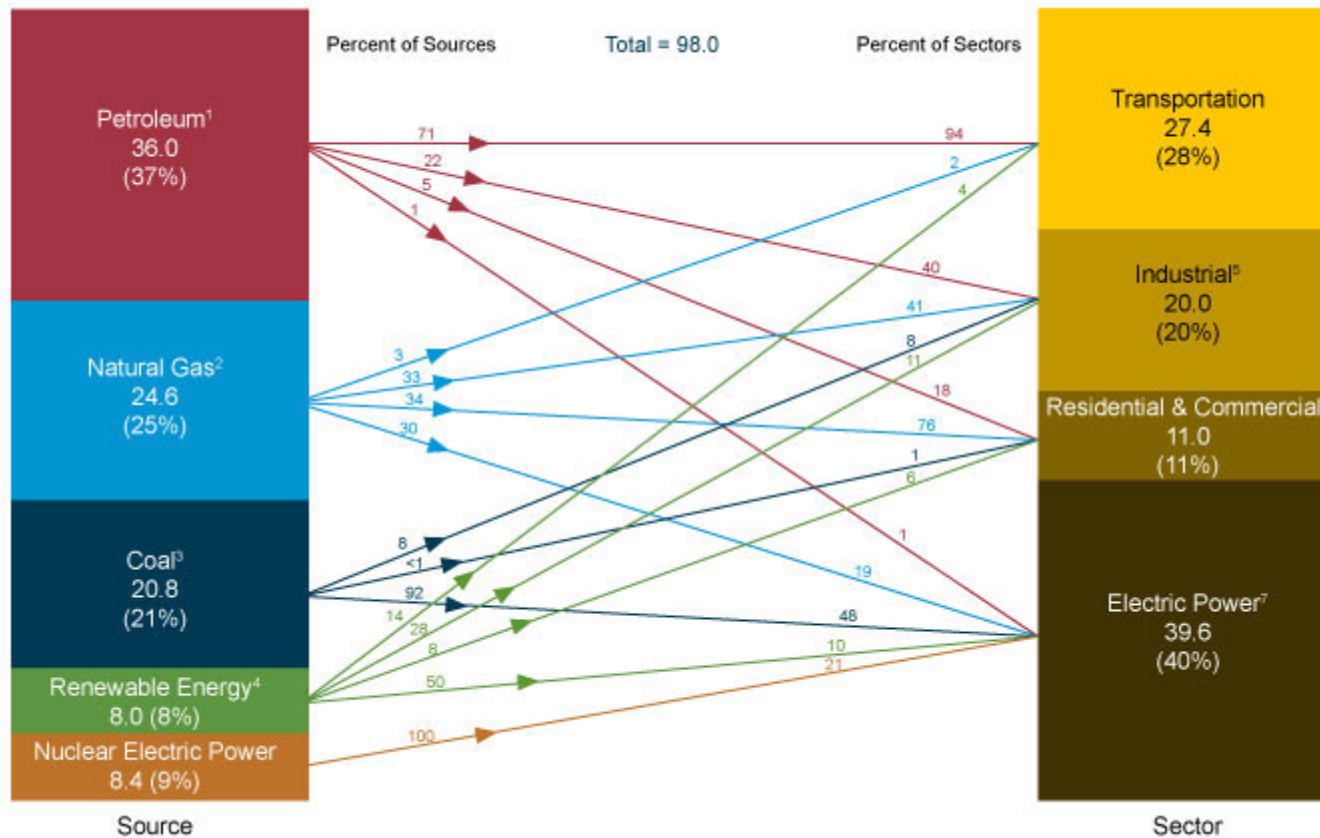
O&G Products

- › Solvents
- › Diesel fuel
- › Motor Oil
- › Bearing Grease
- › Ink
- › Floor Wax
- › Ballpoint Pens
- › Football Cleats
- › Upholstery
- › Sweaters
- › Boats
- › Insecticides
- › Bicycle Tires
- › Sports Car Bodies
- › Nail Polish
- › Fishing lures
- › Dresses
- › Tires
- › Golf Bags
- › Perfumes
- › Cassettes
- › Dishwasher parts
- › Tool Boxes
- › Shoe Polish
- › Motorcycle Helmet
- › Caulking
- › Petroleum Jelly
- › Transparent Tape
- › CD Player
- › Faucet Washers
- › Antiseptics
- › Clothesline
- › Curtains
- › Food Preservatives
- › Basketballs
- › Soap
- › Vitamin Capsules
- › Antihistamines
- › Purses
- › Shoes
- › Dashboards
- › Cortisone
- › Deodorant
- › Footballs
- › Putty
- › Dyes
- › Panty Hose
- › Refrigerant
- › Percolators
- › Life Jackets
- › Rubbing Alcohol
- › Linings
- › Skis
- › TV Cabinets
- › Shag Rugs
- › Electrician's Tape
- › Tool Racks
- › Car Battery Cases
- › Epoxy
- › Paint
- › Mops
- › Slacks
- › Insect Repellent
- › Oil Filters
- › Umbrellas
- › Yarn
- › Fertilizers
- › Hair Coloring
- › Roofing
- › Toilet Seats
- › Fishing Rods
- › Lipstick
- › Denture Adhesive
- › Linoleum
- › Ice Cube Trays
- › Synthetic Rubber
- › Speakers
- › Plastic Wood
- › Electric Blankets
- › Glycerin
- › Tennis Rackets
- › Rubber Cement
- › Fishing Boots
- › Dice
- › Nylon Rope
- › Candles
- › Trash Bags
- › House Paint
- › Water Pipes
- › Hand Lotion
- › Roller Skates
- › Surf Boards
- › Shampoo
- › Wheels
- › Paint Rollers
- › Shower Curtains
- › Guitar Strings
- › Luggage
- › Aspirin
- › Safety Glasses
- › Antifreeze
- › Football Helmets
- › Awnings
- › Eyeglasses
- › Clothes
- › Toothbrushes
- › Ice Chests
- › Footballs
- › Combs
- › CD's & DVD's
- › Paint Brushes
- › Detergents
- › Vaporizers
- › Balloons
- › Sun Glasses
- › Tents
- › Heart Valves
- › Crayons
- › Parachutes
- › Telephones
- › Enamel
- › Pillows
- › Dishes
- › Cameras
- › Anesthetics
- › Artificial Turf
- › Artificial limbs
- › Bandages
- › Dentures
- › Model Cars
- › Folding Doors
- › Hair Curlers
- › Cold cream
- › Movie film
- › Soft Contact lenses
- › Drinking Cups
- › Fan Belts
- › Car Enamel
- › Shaving Cream
- › Ammonia
- › Refrigerators
- › Golf Balls
- › Toothpaste
- › Gasoline

Why are liquid hydrocarbons such a great energy source?


- Accessibility of resource – worldwide availability
 - High power density
 - Ease of use, storage and distribution
 - Safety/handling well known and understood
 - Fungibility
 - ICEs extremely efficient, versatile, durable energy conversion device
 - Ability to efficiently create power where it is needed
 - Affordable
 - Petrochemical feedstock
- 

PRIMARY ENERGY CONSUMPTION BY SOURCE AND SECTOR, 2010 (QUADRILLION BTU)

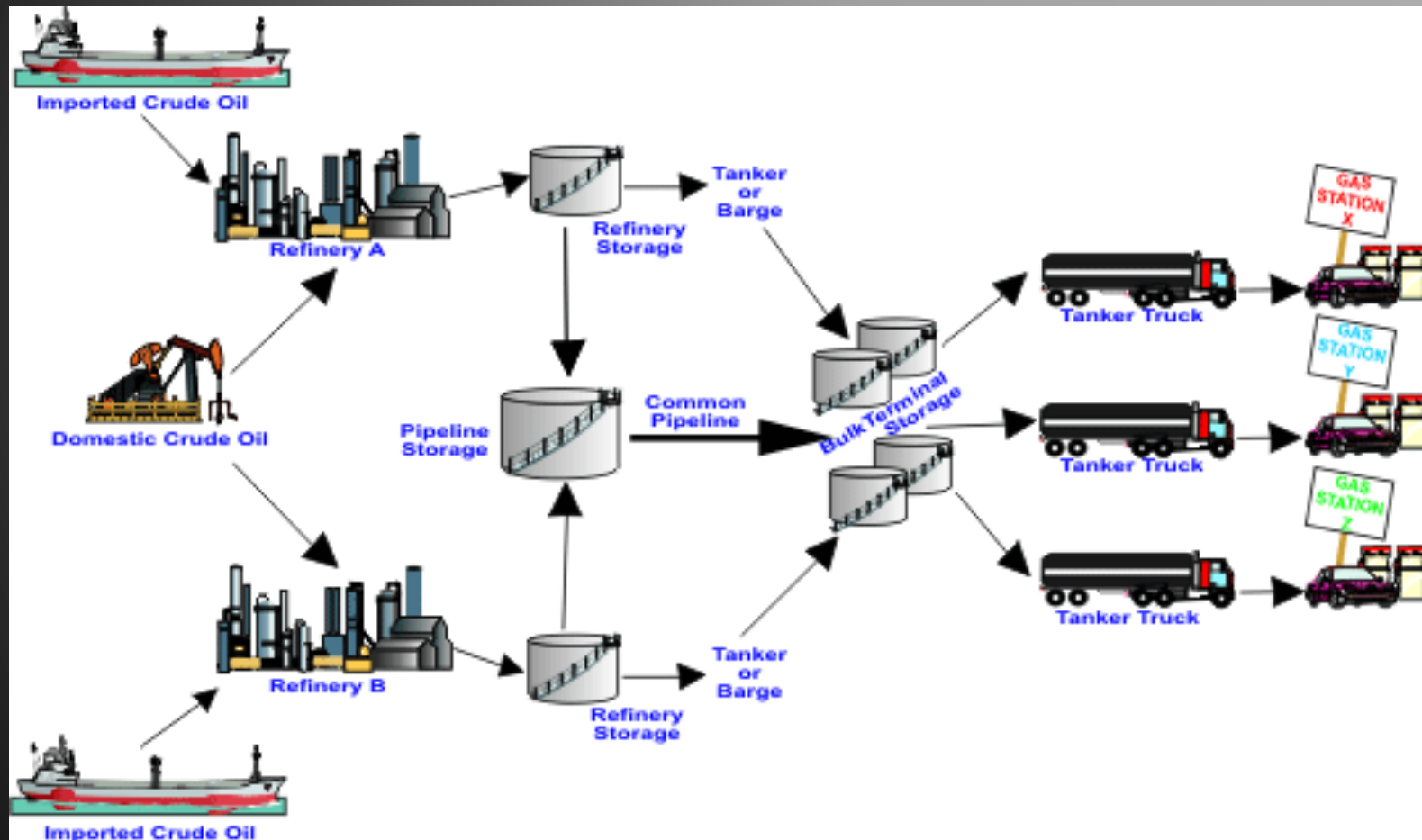


Source: US EIA

Why oil and gas differ

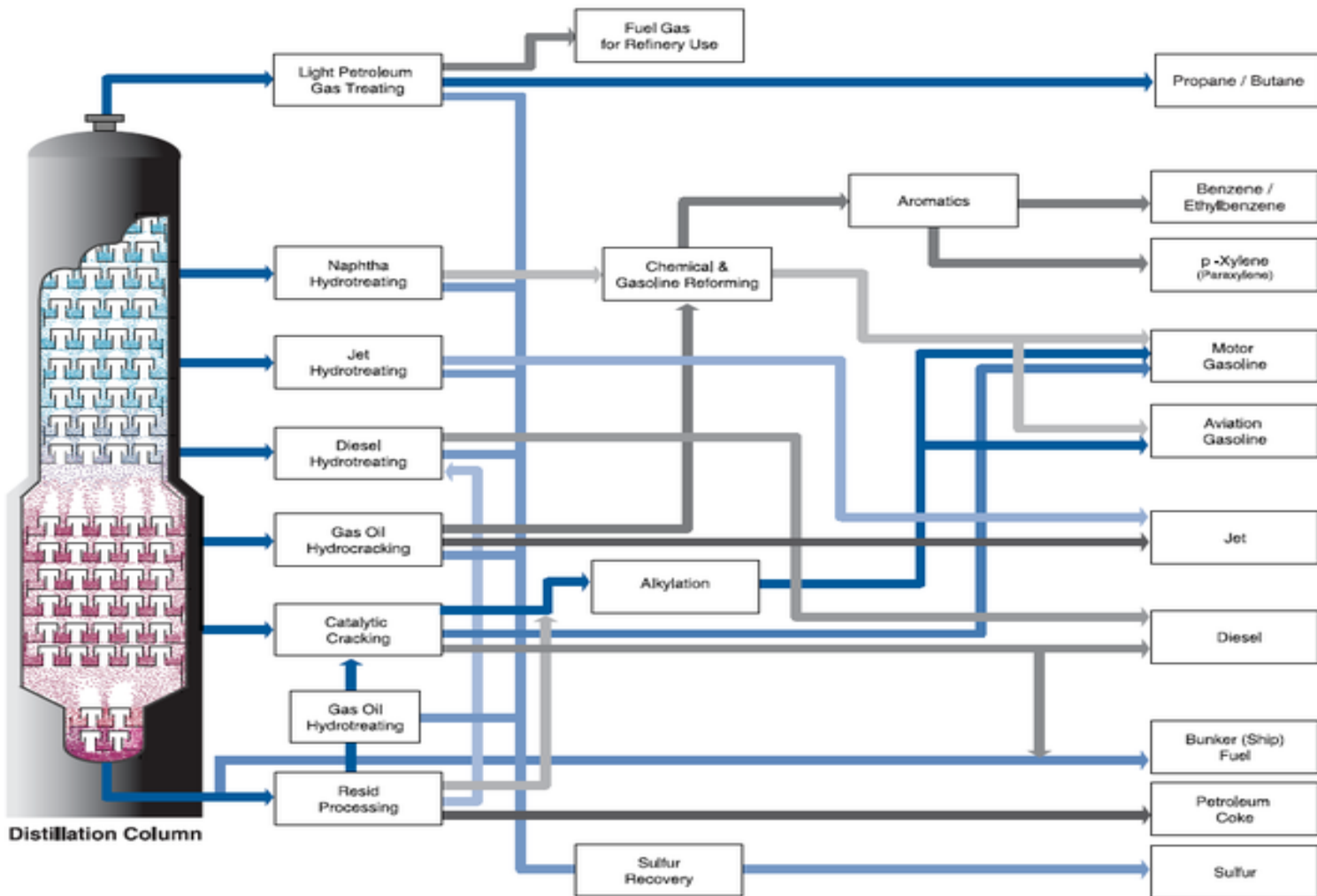
- ▶ Fungibility
 - NG is fully fungible
 - Single chemical composition (CH₄)
 - Crude oil generally fungible (but optimal manufacturing processes differ); products are (mostly) fungible at point of use.
 - ▶ Storage and distribution differences
 - High costs of NG storage, transmission
 - ▶ Mobile vs. stationary use – different customers/different end use markets/different competing technologies
 - ▶ International commodity vs. North American/US market
- 

O&G Industry – simple flowchart



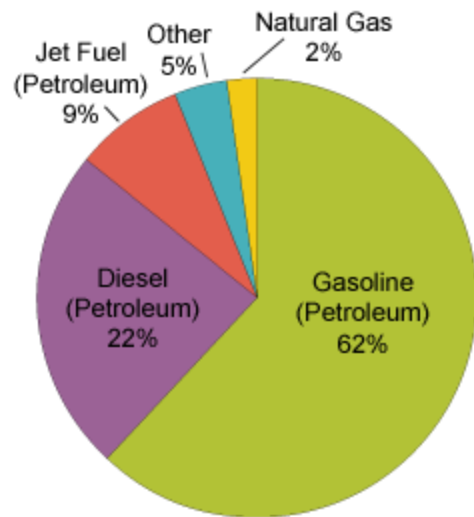
Refinery flow diagram

Pascagoula Refinery Process Flow From Crude Oil to Products



Products Made from a Barrel of Crude Oil (Gallons)

Fuel Used for Transportation, 2007

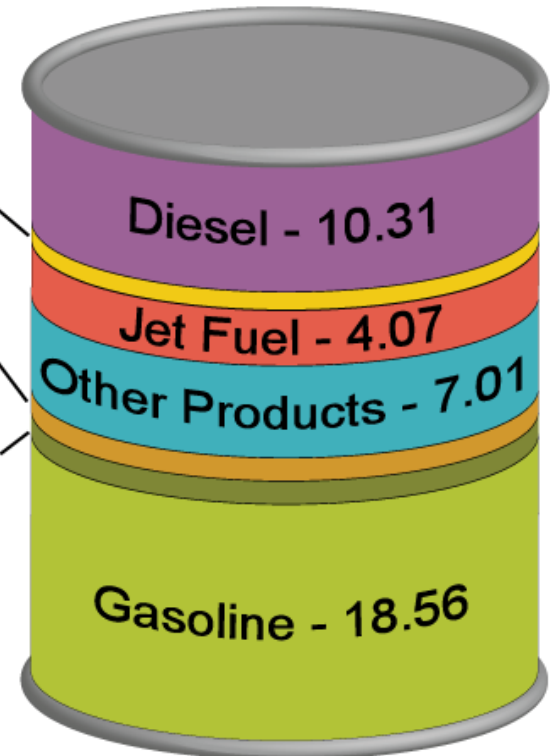


Note: Due to rounding, data may not sum to exactly 100%.
Source: U. S. Department of Energy, *Transportation Energy Data Book Edition 28* (2009).

Other Distillates
(heating oil) - 1.38

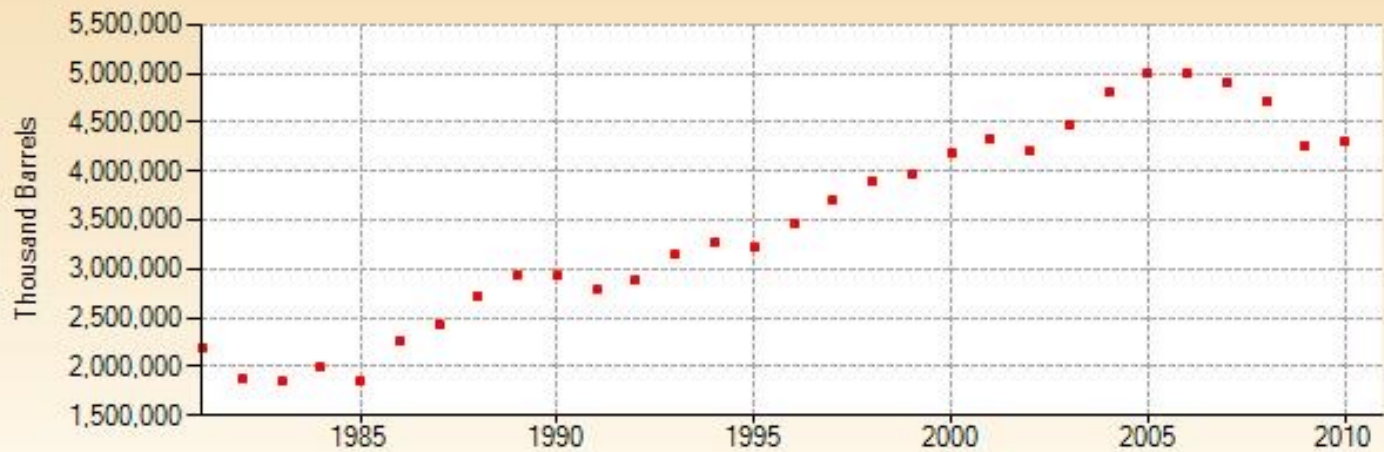
Heavy Fuel Oil
(Residual) - 1.68

Liquefied
Petroleum Gases
(LPG) - 1.72



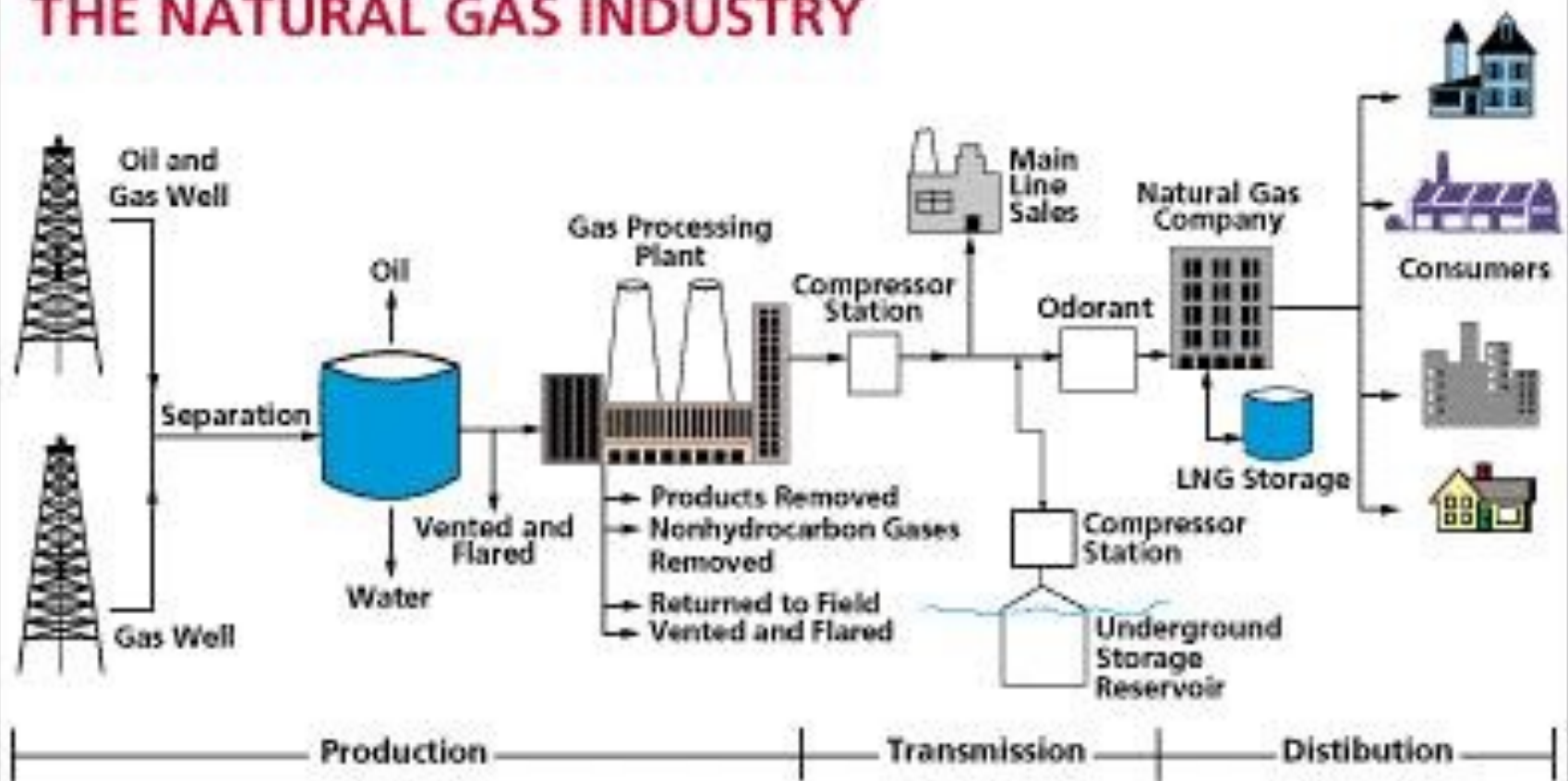
(1 Barrel = 42 Gallons)

Annual U.S. Imports of Crude Oil and Petroleum Products

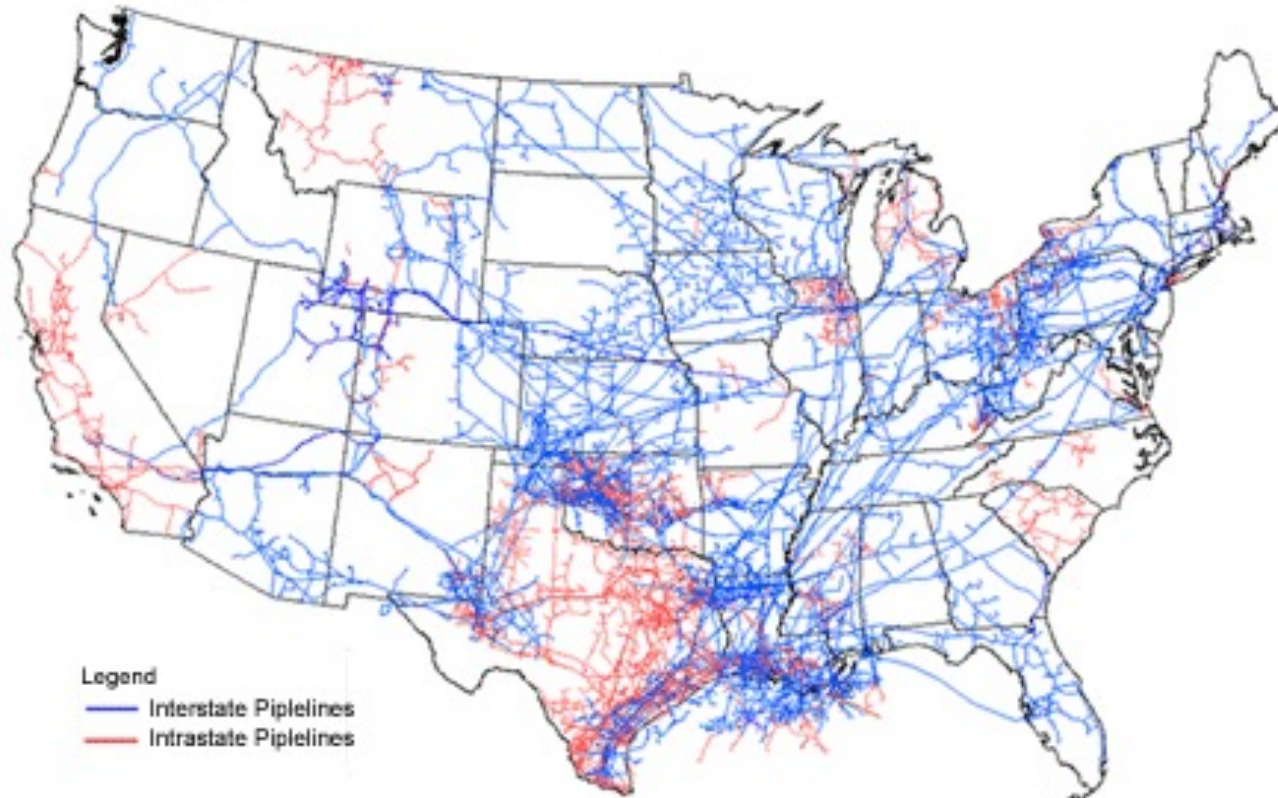


Source: U.S. Energy Information Administration

THE NATURAL GAS INDUSTRY



The national natural gas mainline transmission grid is made up of approximately 217,000 miles of interstate pipelines and 89,000 miles of intrastate pipeline.



Source: Energy Information Administration, Natural Gas Transportation Information System, Natural Gas Pipeline Maps Database (December 2006)

What are key O&G policy issues?

- ▶ Environmental impacts
 - Air, land, water
 - Emissions and climate change
- ▶ Access to resources
- ▶ Security of supply
- ▶ Effect on worldwide economies, growth, Standard of living
- ▶ Pricing/taxation
- ▶ Impact on alternative fuels
 - **Managing the transition to low carbon economy**

Social, political, cultural context

- ▶ Industry originated in USA
- ▶ American car culture. Religious adherence to private mobility; the difficulty of changing the paradigm. Europe, ROW not the same.
- ▶ The "Invisible Constitutional Right"
- ▶ "Big Oil" – angel or devil?
 - From Rockefeller to "Dallas" to T Boone Pickens, part of Americana
- ▶ Big scale always has meant political influence

Key legal/policy milestones

- ▶ Break-up of Standard Oil Trust, 1911
- ▶ Air Pollution Control Act of 1955
- ▶ National Environmental Policy Act (NEPA) 1969
 - *US EPA established*
- ▶ Clean Air Act Amendments 1970
 - *Established National Ambient Air Quality Standards*
 - *Began leaded gasoline phase down*
 - *New Source Review.*
- ▶ Alaska pipeline approval, 1971
- ▶ Water Pollution Control Act amendments, 1972 and Clean Water Act, 1977

Key legal/policy milestones

- ▶ US domestic crude oil price controls, 1973–1981
- ▶ CAFE standards, introduced 1975
- ▶ Dept of Energy established 1977
- ▶ Clean Air Act amendments of 1990
 - *Acid rain controls, leaded gasoline phase-out*
 - *Fuel reformulations to address NAAQS*
- ▶ Energy Policy Act of 2005
- ▶ **All policy debates came down to: what is most effective/efficient to achieve some goal vs. who pays, who benefits**

Key federal legislative and regulatory actions on NG

- ▶ The Public Utility Holding Company Act of 1935
- Natural Gas Act of 1938
- "Phillips Case": Supreme Court Decision Giving FPC Jurisdiction Over Wellhead Prices (1954)
- Natural Gas Policy Act of 1978
- Tax Credits for Unconventional Gas Recovery (1980)
- FERC Order 380: Eliminated Minimum Bills for LDCs (1984)
- FERC Order 436: Open Access Blueprint (1985)
- Canadian Regulatory Reform Leads to Long-Term Increase in Sales to the United States (1985)
- FERC Order 500: Take-or-Pay Cost Recovery (1987)
- Repeal of the Powerplant and Industrial Fuel Use Act (1987)
- Natural Gas Wellhead Decontrol Act of 1989
- Clean Air Act Amendments of 1990
- Moratorium on Offshore Drilling (1990)
- NYMEX Issues First Natural Gas Futures Contract (1990)
- FERC Pipeline Construction Rules Since 1991
- FERC Order 636: The Restructuring Rule (1992)
- Energy Policy Act of 1992
- FERC Policy on Natural Gas Gathering System Ownership Since 1992
- North American Free Trade Agreement (1994)
- Outer Continental Shelf Deep Water Royalty Relief Act of 1995
- FERC Order 637 (2000)
- 2002 Amendments to Deepwater Port Act of 1974
- FERC's Hackberry Decision (2002)
- The Maritime Transportation Security Act of 2002
- The Pipeline Safety Improvement Act of 2002
- The Alaska Natural Gas Pipeline Act (2004)
- American Jobs Creation Act of 2004
- The Energy Policy Act of 2005
- The Gulf of Mexico Energy Security Act (2006)
- The Pipeline Inspection, Protection, Enforcement, and Safety Act of 2006
- The Energy Independence and Security Act of 2007
- Lifting of the Moratorium on Offshore Drilling (2008)
- ▶ Source: US EIA

Legislation and regulations 2013

- ▶ 1. Greenhouse gas emissions and corporate average fuel economy standards for 2017 and later model year light-duty vehicles
- ▶ 2. Recent rulings on the Cross-State Air Pollution Rule and the Clean Air Interstate Rule
- ▶ 3. Nuclear waste disposal and the Waste Confidence Rule
- ▶ 4. Maximum Achievable Control Technology for industrial boilers
- ▶ 5. State renewable energy requirements and goals: Update through 2012
- ▶ 6. California Assembly Bill 32: Emissions cap-and-trade as part of the Global Warming Solutions Act of 2006
- ▶ 7. California low carbon fuel standard

- ▶ US EIA, 2013 Annual Energy Outlook

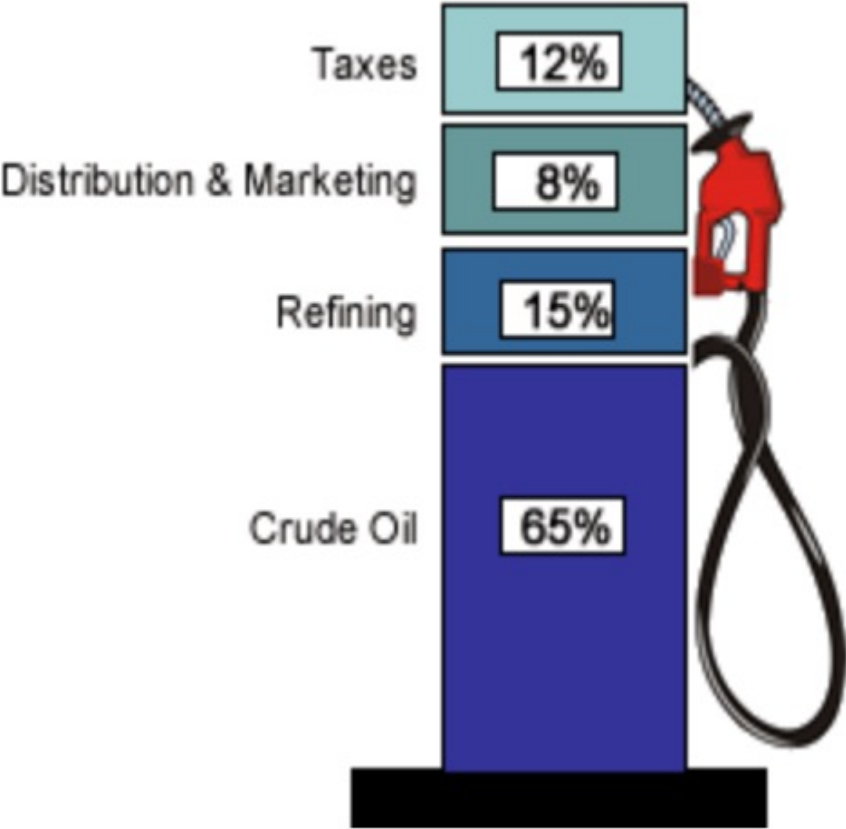


Life's full of trade-offs, isn't it honey!!

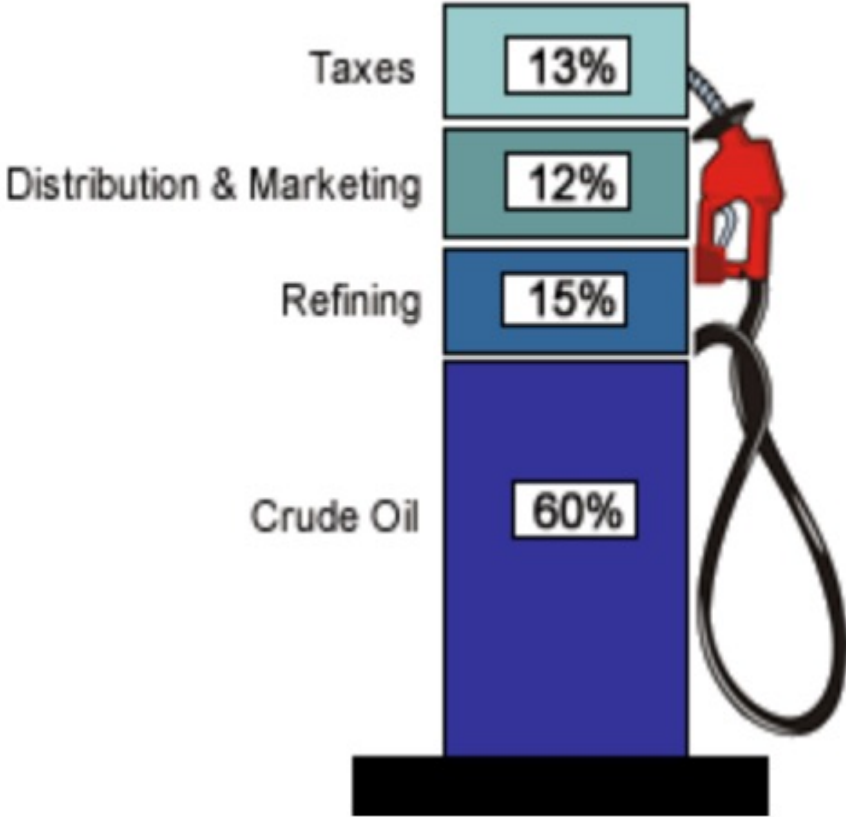
Historical policy tools/ mistakes

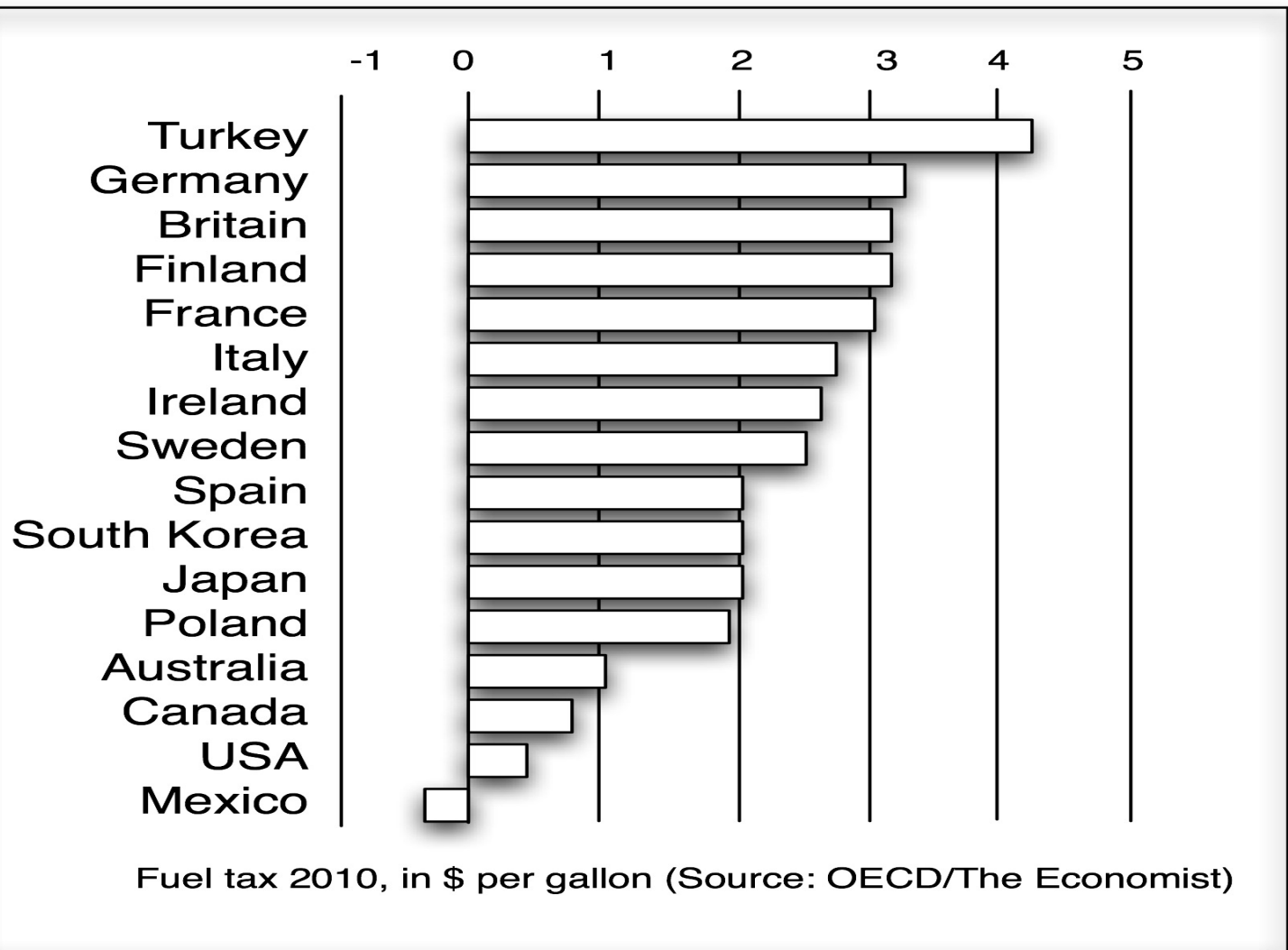
- "Drain America First" policies
 - ▶ 1970s–80s price controls
 - ▶ Fiscal Policy
 - Tax incentives – offshore profit protection, import duties, financing benefits
 - Favorable Tax treatment – depletion allowances, accelerated depreciation, royalty loopholes
 - ▶ Lack of environmental regulations pre–1969
 - ▶ Minimal taxes at consumer level
 - ▶ “Off the books” subsidies
 - ▶ **The Law of Unintended Consequences**

Regular Gasoline (July 2012)
Retail Price: \$3.44/gallon



Diesel (July 2012)
Retail Price: \$3.72/gallon



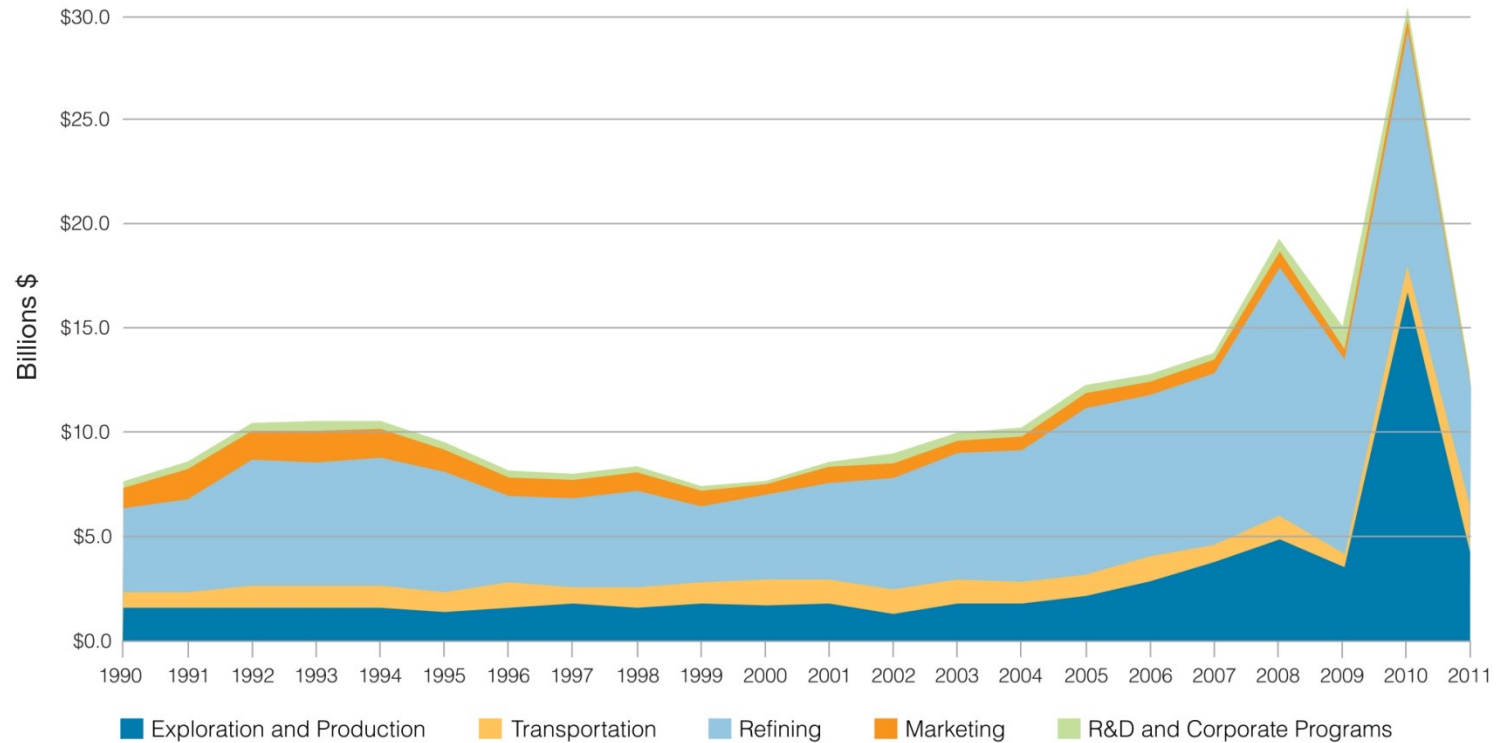


Hidden subsidies for O&G

- ▶ Foreign policy protection to imported oil
- ▶ Housing/home ownership subsidies that encouraged suburban sprawl
- ▶ Industrial, social, fiscal policies that favored auto industry over public transit
- ▶ Alaskan pipeline development
- ▶ Road building
 - Interstate Highway System in 1950's a great achievement but cemented our reliance on cheap fuel
- ▶ Minimal cost to industry for air, water, ground pollution for a long time

U.S. Environmental Expenditures since 1990

(by sector*)



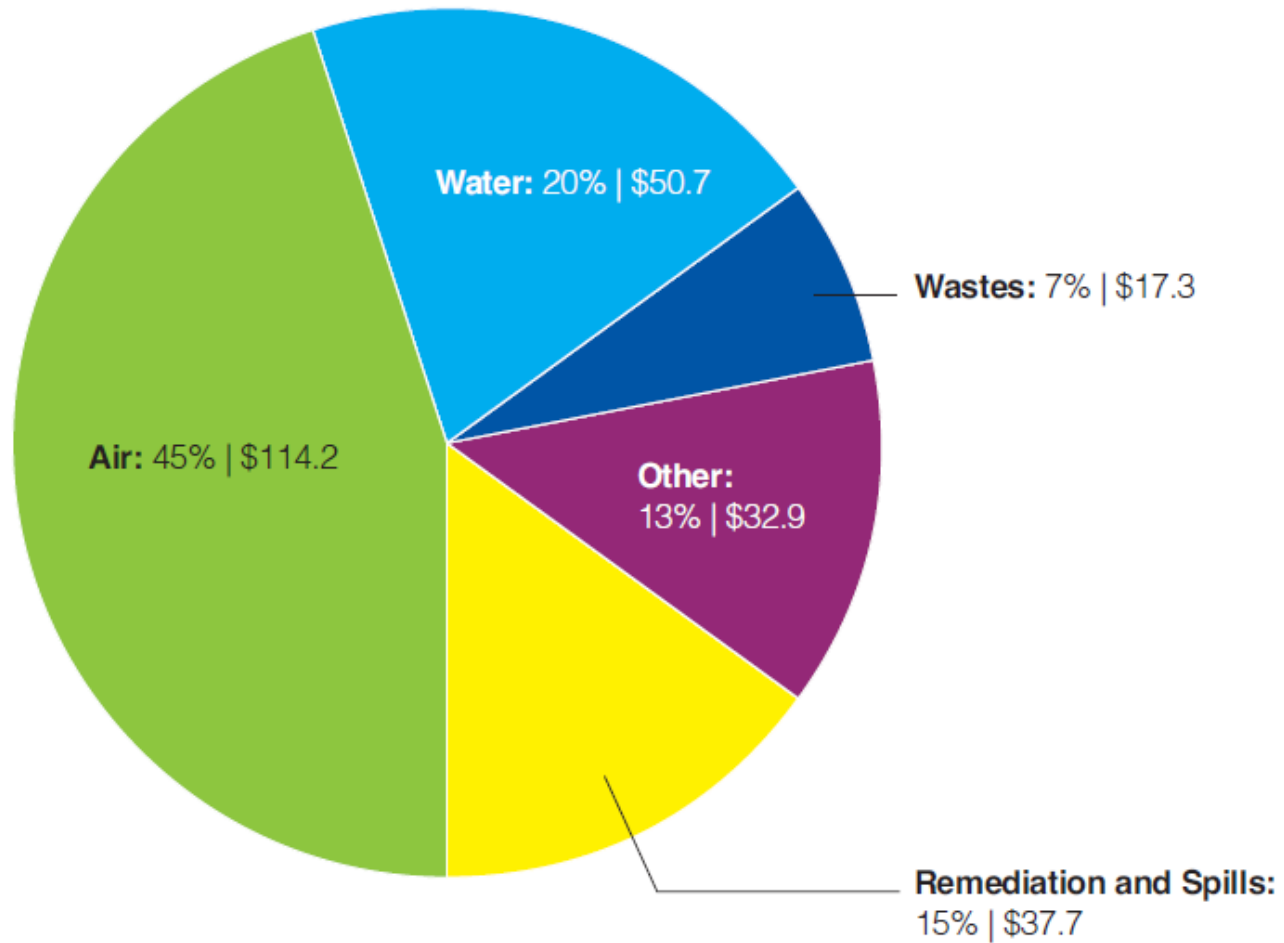
* Remediation & Spills expenditures are included in the sector numbers and are reported data only. 2010 data is unusually high due to an outlier event. The remaining sector expenditures are estimated for the entire industry.

Source: API Statistics, Environmental Expenditures by Oil and Gas Industry, December 2012.

Figure 5

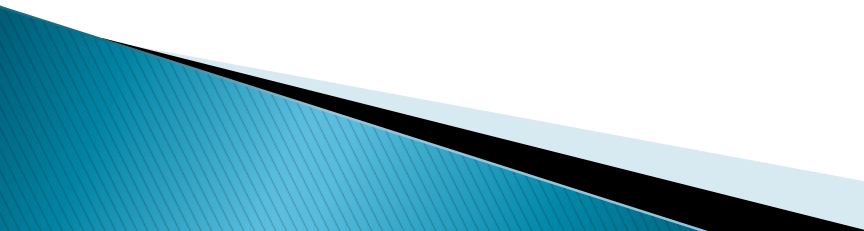
1990-2011 Environmental Expenditures by Medium

(in billions of dollars) Total Expenditures = \$252.8 billion



Remediation and spills expenditures are reported data only.
The remaining expenditures are estimated for the entire industry.

Challenging and changing the status quo

- ▶ Infrastructure advantages are massive
 - ▶ A moving target – improvements in how O&G are used/converted/cleaned up
 - ▶ Technology improvements needed
 - RE infrastructure disadvantages vs. O&G
 - RE challenges in cost, performance, durability, mobility, reliability, intermittent vs. continuous and low cost power availability
 - Integration of wind, solar into power portfolio not trivial; many significant technical, political issues
- 

Challenging and changing the status quo (continued)

- ▶ Political power of O&G industry
 - Established lobbying groups, insiders. “41”, “43”.
 - Jobs, votes
 - Have we completely ceded control to OPEC?
- ▶ NIMBY syndrome for advanced/alt. energy
- ▶ Social, cultural inertia protects incumbent technologies
- ▶ Short memories of Americans
 - First oil crisis (1973), Iranian crisis (1979), 9/11, 2 Gulf wars. Has anything changed?
- ▶ **Ultimately, a values tradeoff**
 - Environmental protection vs. standard of living vs. mobility; who benefits? Who pays?

Conclusions

- ▶ Energy policy involves values trade-offs like no other issue
- ▶ It will take time to transition away from O&G dependence
- ▶ Foreign policy issues key
 - Middle east turmoil, terrorism, rise of China, financial crisis...all impact or are impacted by O&G policy decisions
- ▶ **Science, economics, politics, religion, environment...your generations' challenge.**