



Lecture 1: Introduction

Energy Law and Policy

Fall, 2013

Energy Law & Policy

UST 693/LAW 703

- **Fall Semester 2013**
- **Course Description: Survey of laws and policies guiding energy generation, distribution, storage and consumption.**
- **UR Room 107**
- **4-5:50 M, W**
- **4.0 Credit Hours**
- **Instructor: Andrew R. Thomas**
 - **Executive in Residence -- Energy Policy Center**
 - **Room UR 132**
 - **Office hours: generally available weekdays – email for an appointment**
 - **Email: a.r.thomas99@csuohio.edu**

Course Requirements

- Reading: *Energy Policy in the U.S.* – Geri & McNabb
- Optional: *Power to the People: How the Coming Energy Revolution Will Transform an Industry, Change Our Lives, and Maybe Even Save the Planet* - -- Vijay Vaitheeswaran
- Assorted readings as assigned each week
- Attendance: Law School rules
- Preparation of a white paper and presentation on energy law or policy
 - Oral presentation – Dec 2-4 – 40 minutes – 30% of grade
 - White paper – 15 pages – November 22 – 70% of grade

First Month Class Schedule

- 8/26: INTRODUCTION AND BACKGROUND
- 8/28: Forces controlling energy policy; Jim Halloran, PNC Bank.
- 9/4: History of energy regulation
- 9/9: Regulation of electricity in Ohio
- 9/11 Wholesale electricity/RTOs/Aggregation
- 9/16 Writing (Laura Ray)/retail electricity
- 9/18 Matt Brakey/Beth Polk – Electricity Markets

Energy Policy Center

- Cleveland State University
 - <http://urban.csuohio.edu/epc/>
- Maxine Goodman Levin College of Urban Affairs
 - Professor Bill Bowen – research director
 - Andrew Thomas – executive in residence
 - Iryna Lendel, Ph.D. – economist
 - Jim Samuel, Senior Research Fellow
 - Dave Fornari, Senior Research Fellow

EPC Mission

- Mission: Help overcome institutional barriers to the implementation of solutions to energy challenges.
- Activities
 - Research
 - Public Dialogue
 - Crain's Ohio Energy Report
 - Media
 - Forums
 - Education
 - Continuing Education
 - Shale Academy

Current Research

- Energy-Water Nexus.
- Effects of electricity regulation on energy intensive manufacturing.
- Distributed generation policy.
- Economic impact of shale formation development.
- Support for Cleveland State University Facilities.

Introduction

- Why is Energy Policy So Important?
 - Fundamental affects on the economy
 - Fundamental affects on the environment

Pathologies of the Rust Belt

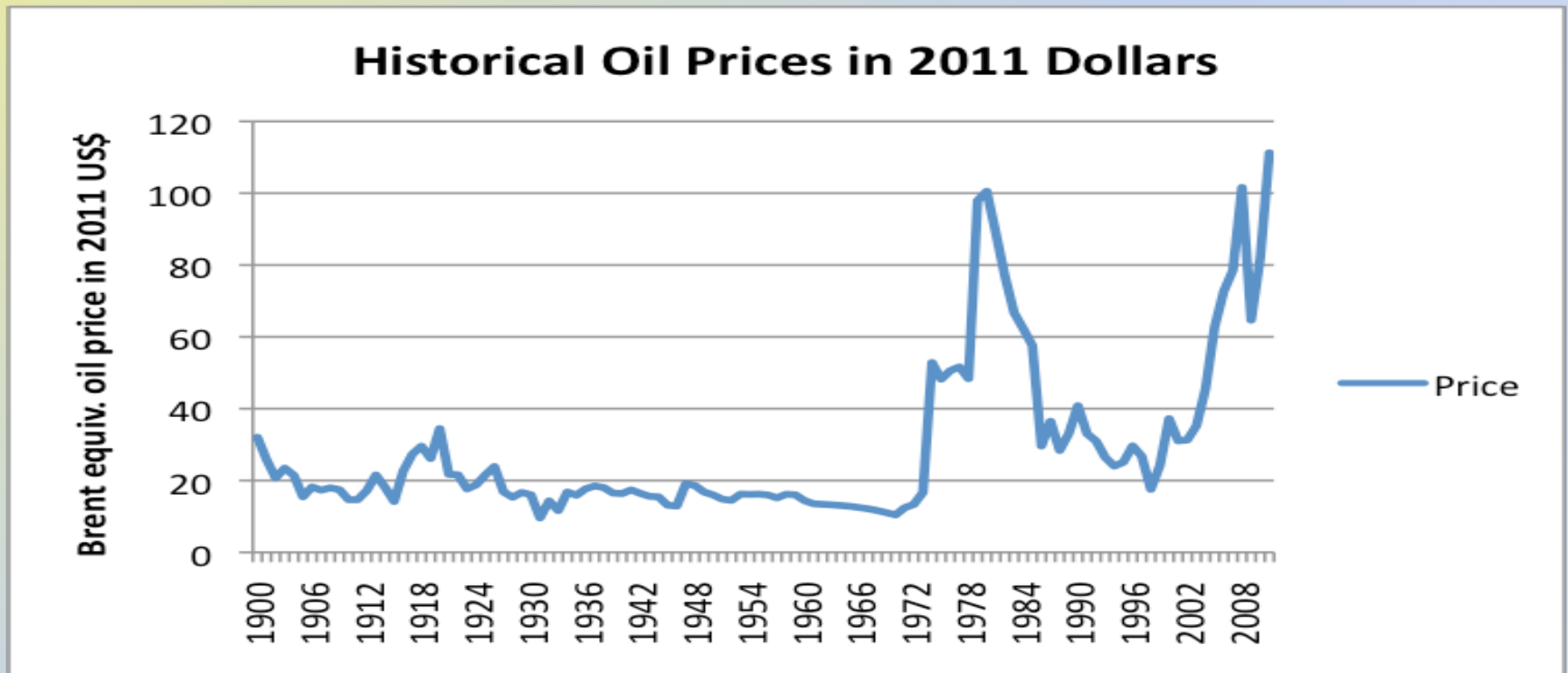
- Old Manufacturing-based Economy
 - Aging infrastructure
 - High Taxes
 - High unemployment and low wages
 - Undereducated workforce
 - Excessive Brown Field Sites, Non-compliance with Air Quality Standards
 - Urban Blight
- Perception of Uncomfortable Climate
 - Long, cold winters
- *All started with Energy Crisis of 1970s!*

Forbes 2010 Ranking of “Most Miserable U.S. Cities”

Great Lakes Cities on the list:

1. Cleveland
4. Detroit, Michigan
5. Flint, Michigan
8. Buffalo, New York
9. Canton
10. Chicago, Illinois
12. Akron
14. Rockford, Illinois
15. Toledo
18. Youngstown
19. Gary, Indiana

High Priced Fuel Syndrome

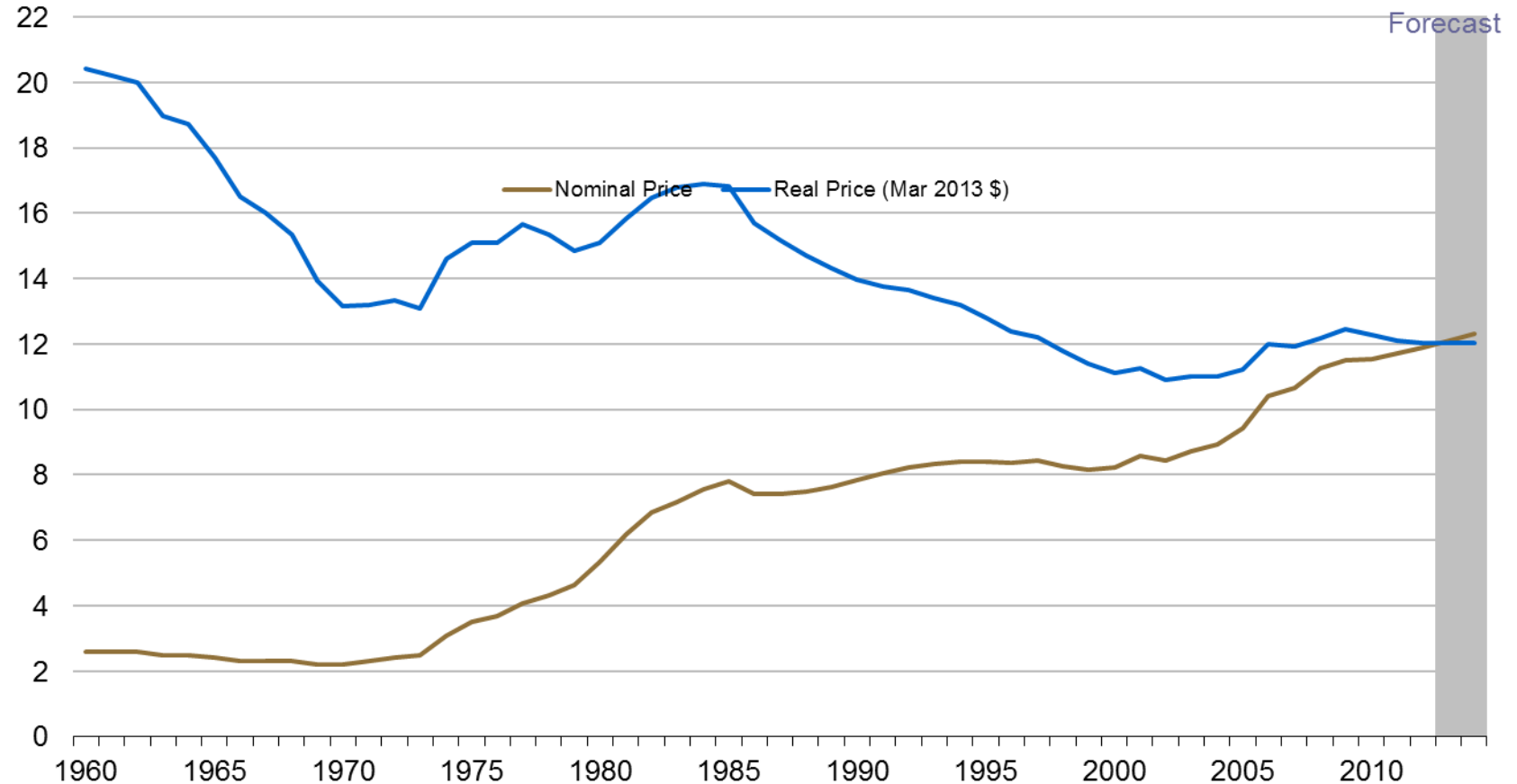


High Priced Fuel Syndrome

- Consumers pay more for necessities.
 - Oil, natural gas, electricity
 - Food, transportation
- Consumers cut back on discretionary goods and services.
 - Businesses fail
 - Jobs are lost
 - Energy intensive industries struggle
- Tax revenues decrease
 - Property value and income decline; job loss
 - Loss of government jobs and services
 - Tax increases to offset losses
- Spiraling inflation.

Annual Residential Electricity Price

cents per kilowatthour (kwh)



Economic Development in NE Ohio

“[T]he Cleveland metro area is a high-cost place to do business. Cleveland ranks 31st ... in total business cost.”

“The primary reason for Cleveland’s high business cost ranking is energy. Energy costs in Cleveland are 25 percent above the U.S. average.”

Electricity and Economic Development

- Best Jobs are found within Energy Intensive Industries.
 - High capital projects tend to require more skilled workers.
 - Energy intensive projects and processes tend to be capital intensive.
 - » Lord & Ruble, 2010
- Electricity Costs are the Third Most Important Issue in Site Selection for Industry.
 - Deloitte, 2009

2008 IEA Report

- The world's energy system is at a crossroads. Current global trends in energy supply and consumption are patently unsustainable.
- Oil is the world's vital source of energy, and will remain so for many years to come.
- Preventing catastrophic and irreversible damage to the world's climate requires a major decarbonization of the world's energy sources.
- Rapid transition to low carbon energy requires radical action by governments.

» IEA World Energy Outlook 2008

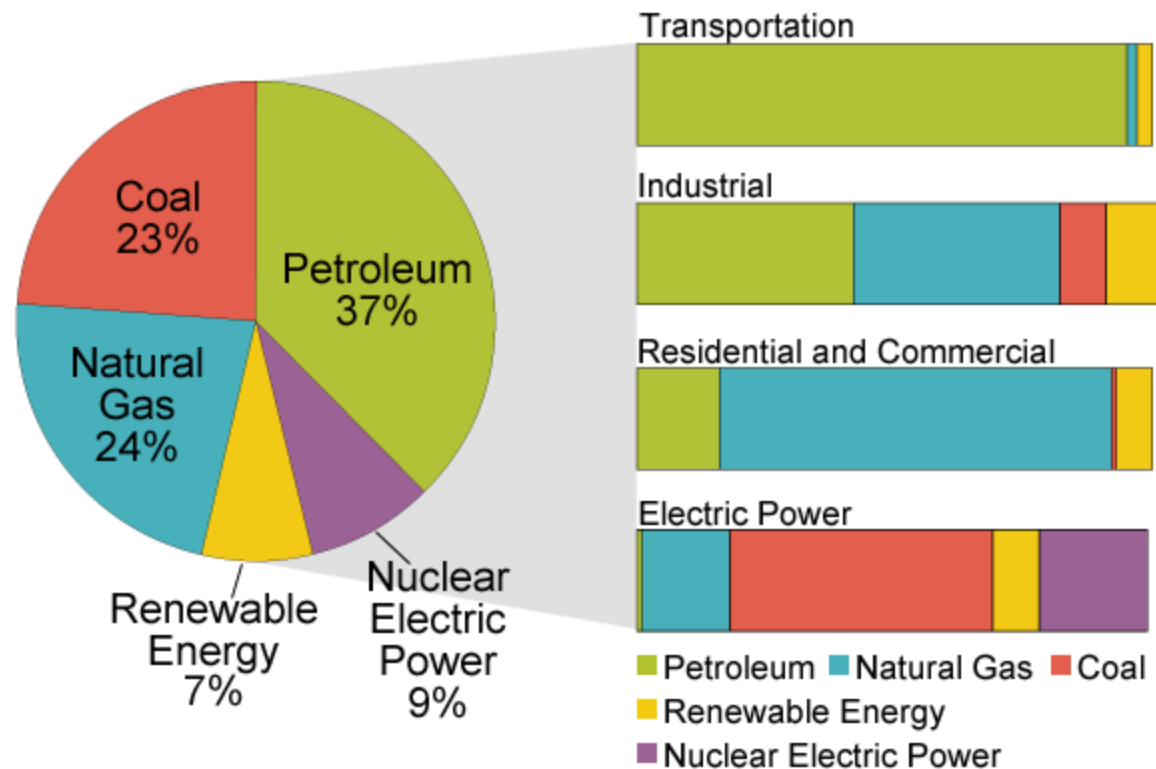
Size of Energy Business

- Estimated worldwide investment into energy generation and transmission between 1990 and 2020: \$30 Trillion – World Energy Council
 - Number is probably low – TNR estimates it at \$1 Trillion a year in the US alone
- Easily the largest industry in the world.
- Many entrenched interests, diverse agendas

Understanding the Scale of Energy

- Electricity
 - Household – kw level
 - Typical power station – MW to GW
 - US consumption 4 terawatt hours/year
 - Global – 16 terawatt/hrs – US consumes 25%
- Natural Gas
 - 7.2 TCF/yr for electricity
 - 5.3 TCF/yr for space heating
 - 7.2 TCF/yr industrial
 - Geri & McNabb at 8.

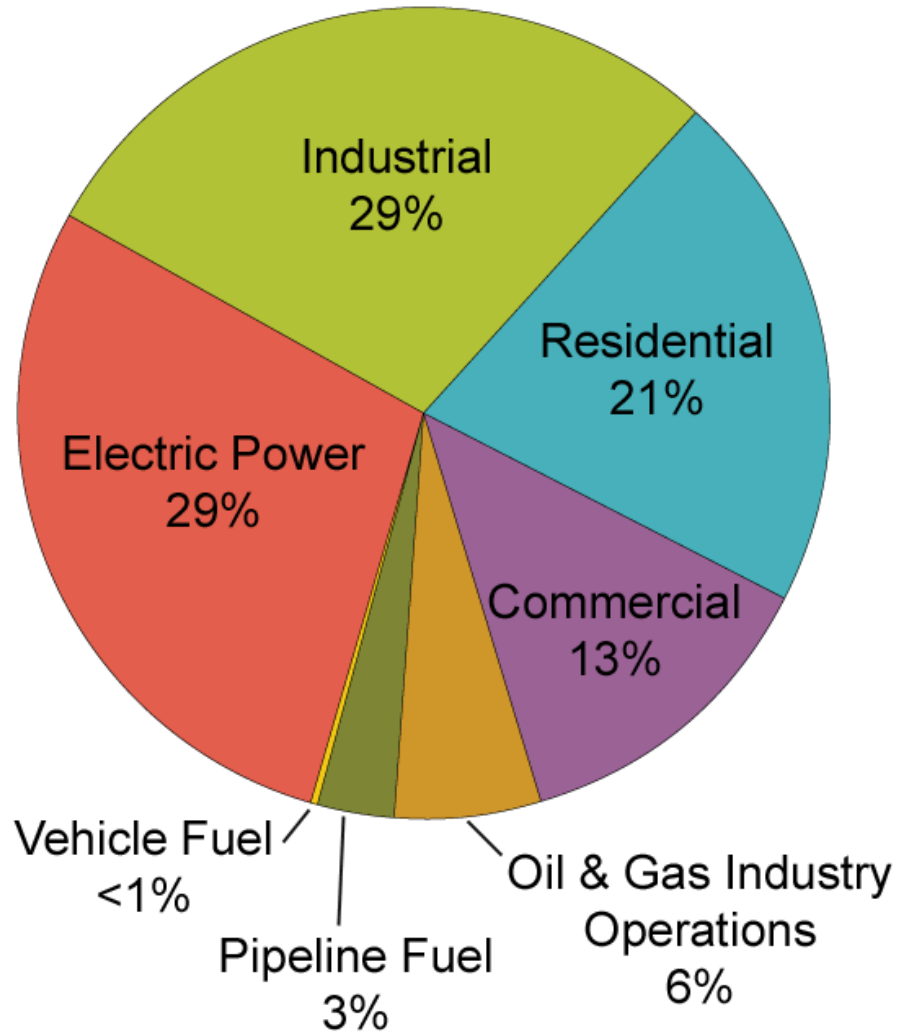
U.S. Primary Energy Consumption by Source and Sector, 2008



Total U.S. Energy = 99.3 Quadrillion Btu

Source: Energy Information Administration, *Annual Energy Review 2008*, Tables 1.3, 2.1b-2.1f.

Natural Gas Use, 2008



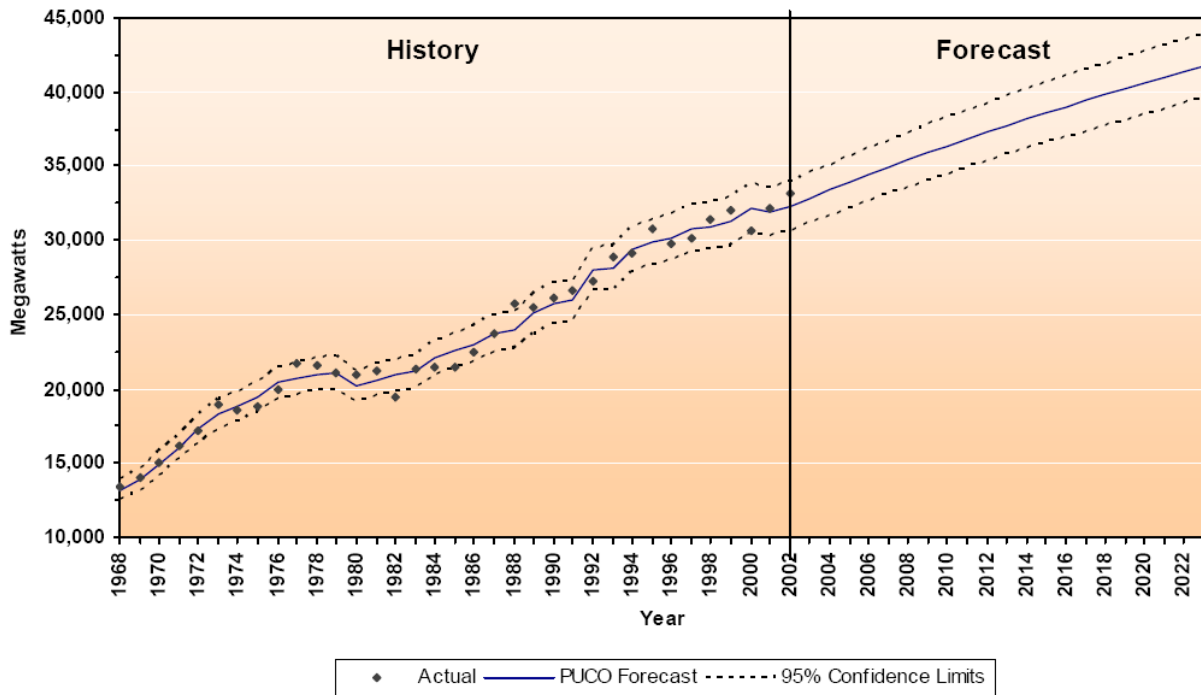
Source: Energy Information Administration, *Natural Gas Annual 2008* (August 2009).

US Energy Trends

- Consumes $\frac{1}{4}$ of world energy.
 - Historically energy independent (still true for coal, gas)
 - Fueled economy, created superpower
- Americans do not think about energy unless there is crisis
 - Blackout; gasoline shortage
- After 1970' s US increasingly dependent on oil imports.
 - Debilitating effect on economy

Anticipated peak load growth - Ohio

Figure 3.3.8. State of Ohio Non-Coincident Internal Annual Peak Load (1968-2023)



**~10,000MW
growth over 20
years – 500MW per
year!**

Source: PUCO, Division of Policy & Market Analysis.

Note: Includes investor-owned Ohio electric utility companies plus Buckeye Power Inc., OVEC and the Ohio portion of Monongahela Power Co. from 1968 on. Includes AMP-Ohio from 1992 on.

Ohio Energy Statistics

- **Rank among States:**

- Population: 7 (11.5 mm) (2007)
- Overall Energy Consumption: 6
- Industrial Energy Consumption: 4
- Carbon Dioxide emissions: 4

- **Electricity Production:**

- Coal: 88%
- Nuclear: 10%

- Sources: Ohio Office of Energy Efficiency; Voinovich Center on Public Affairs

Problem with Change in Energy Policy

- How do we address the problems of sustainable energy when:
 - Change has disruptive effects to the biggest business in the world?
 - Change will be resisted by those with interests in maintaining the status quo

Status quo

- Infrastructure advantages are massive.
- Vested interests will resist change.
 - ▶ 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?

No Power to the People

- “An unsuspecting public seldom differentiates between a vested interest and an independent expert.”
 - *Hermann Scheer – German Parliamentarian and author of “Energy Autonomy”*

No Energy Policy

- **This is the classic dilemma of democracy: Too many people benefit from the status quo, but the status quo is not sustainable."** - Robert Samuelson, *Washington Post* (2005)

Political Inertia

- Change in democracy is never easy.
 - Inability to address global warming
- Once changed, policies stay changed.
 - Continuing subsidies to:
 - Oil and gas industry
 - Rural electrification
 - Ethanol industry

Energy Policy California Style

- NIMBY
- BANANAS
- NOPE

Energy Law and Policy

- “[b]uilding a sustainable energy infrastructure depends as much on socioeconomic, political and policy issues as upon science and technology.”
 - » Brookings Institute February 2009, *Energy Discovery-Innovation Institutes: A Step Toward America’s Energy Sustainability,*

Energy Laws to Non-Lawyers

- Energy can be changed from one form to another, but it cannot be created or destroyed. (Conservation)
- In all energy exchanges, if no energy enters or leaves the system, the potential energy of the state will always be less than that of the initial state. (Entropy)

Energy Law to Lawyers

- Allocation of rights and duties concerning the exploitation of all energy resources between individuals, governments, and organizations.
- Sits at the intersection between regulatory law, natural resources law, and environmental law.
- Contract, property law provide background.

Legal Framework for Energy

- Environmental Law
- Natural Resource Law
- Regulatory Law

Environmental Law

- 40 years ago Energy law was a combination of natural resource law and regulatory law.
- Formative Events
 - Santa Barbara Oil Spill 1969
 - Exxon Valdez
 - Three Mile Island
 - Chernobyl
- Framework
 - National Energy Policy Act – 1970' s
 - Clean Air Act
 - Water Pollution Control Act
 - Solid Waste, Hazardous Waste disposal laws

Environmental Law

- British Petroleum – 2010 Deep Water Gulf of Mexico Blowout
 - Worst offshore oil spill ever – over 200 mm gallons
 - Oil flowed freely for over three months
 - Fallout uncertain
 - Tighter regulation of offshore drilling and production?
 - Public trust -- limits of engineering?

Natural Resource Law

- US -- Based on property rights and contract law.
 - Private ownership of minerals - US and Canada
 - Rule of capture
 - Framework based on UK law – dates to middle ages
- Elsewhere – based on common ownership
 - Sovereign ownership
 - Religious law

Regulatory Law

- Fundamental rule: competition is desirable
 - Framework from 1800' s antitrust legislation
 - All industries subjected to some regulation to promote competition
- Exception: concept of “Natural Monopoly”
 - Some industries by nature work better for the public good as monopoly.
 - But must be heavily regulated to ensure no abuse
 - Electric grid first natural monopoly

Tools for Energy Analysis

- Energy Return on Energy Invested.
 - Ration of energy extracted by a process and the energy used in the process.
 - Examples – oil extraction from tar sands uses large volumes of natural gas.
- Life Cycle Analysis.
 - “Cradle to Grave” analysis of cost of energy.
 - » Geri & McNabb at 12.
- Energy Density -- amount of energy stored in volume

Energy Density

- Uranium-235 Higher Density
- Hydrogen
- Gasoline
- Propane
- Natural Gas
- Fat
- Coal
- Wood Lower Density

The Politics of Energy

- Easterbrook, “The First Bogeyman of the 2012 Campaign”
 - What’s maddening about the politics of the environment is that both sides consistently assert things that aren’t even close to true. The right claims that environmental regulations hurt the economy – data show the reverse. The left claims the environment is dying – data show the reverse.

Easterbrook

- Over last 30 years (advent of EPA regulation):
 - GDP has grown 124% adjusted for inflation
 - Air Pollution down 57%
 - Toxic emissions down 74%
 - Great American success story – led by business!
- From the Right:
 - Do not want to admit federal regulation works.
 - “Ignore success while crying wolf about problems that don’t even exist.”

Easterbrook

- From the Left:
 - Cry “Doomsday” instead of recognizing progress.
 - Diminish role of Republican leadership has played.
 - “Spoils the script” that Republicans want to ruin nature.

Competing Interests

- Clash over public values:
 - Want clean energy.
 - Want cheap energy.
 - Want comfort, convenience, reliability
- Clash over private interests
 - Energy producers, distributors, traders, shareholders, consumers
- Hope for resolution:
 - Science and Technology

The Shale Gale – Bradford Plumer

“Washington has only begun to consider the economic impact of shale gas, and policy circles appear not to have registered the geopolitical ramifications at all.”

“Yet, at once, some of the country’s most intractable problems may become much less so.”

Bradford Plumer -- Shale

- “If federal policy encourages the wholesale shift from coal- to natural gas-fired power plants, the United States could rapidly cut global greenhouse-gas emissions.”
- “Abroad, the United States could face a fundamentally different landscape in the Middle East, in which there is far less cash to foment mischief, and a weakened or even reformed Russia.”

"The Struggle for Arctic Riches" by Richard Galpin

- Collision of Energy Policy and Geopolitics
- Russia proposes to build eight nuclear power plants in Arctic to power oil E&P
- Ownership of sea bottoms in Arctic hotly disputed.
- Ice free arctic from global warming – tankers are able to navigate northeast passage.
 - *No treaties in place to resolve disputes!*

How do we find clean energy sources to support new generation?

- Science
- Engineering
- Policy
 - *Problem to be solved: Cost of Renewable Energy*

Energy Technology Status

- “To save the future, we have everything we need except the political will.”
 - Al Gore - 2009
- To fix our energy problems, we will require “technology that is game-changing, as opposed to merely incremental.”
 - (Then) Secretary of Energy Steven Chu, to US Congress in March 2009

Power Struggle

Bradford Plumer

- Chu was tasked with reshaping the country's trillion-dollar energy economy, to reduce America's reliance on fossil fuels and cut greenhouse-gas emissions 80 percent or more by mid-century.
- Chu believes the only way to achieve it is with multiple Nobel-caliber leaps in energy technology
- Chu sees the challenge of spurring breakthroughs in energy research as an even larger priority than setting a carbon price and promoting existing clean-energy sources.

Power Struggle (continued)

- Investments in energy R&D have become dangerously anemic over the years
- What's the best way to promote innovation?
- Can these vast leaps in scientific understanding arrive in time to fend off rising global temperatures?
- What happens if they don't?
 - *“Counting on radical breakthroughs to save the planet may be a fraught and uncertain venture.”*

Power Struggle (Continued)

- Examples of scientific breakthrough needed:
 - artificial photosynthesis
 - Chemical catalyst to create hydrogen from water
 - Nano-scale manipulation of atoms
- But: Carbon tipping point upon us – 10-20 years
 - Cannot just manufacture new technologies overnight.
 - Historically, "it has taken 25 years after commercial introduction for a primary energy form to obtain a 1 percent share of the global market." Shell Oil Company
 - "The notion that technology that doesn't even *exist* yet could be invented, demonstrated, and then commercialized in that time frame--it's absurd."

Power Struggle (Continued)

- Result:
 - emphasis on intermediate advances that can scale up in just five to ten years
 - Longer term projects have been cut – e.g. hydrogen fuel cell automobiles (requires too many major breakthroughs)
 - Stick and carrot policies: “you increase the likelihood of getting breakthroughs if you both invest in the underlying science and have policies that signal a limit on emissions”
- What can the government can do to quicken the pace of innovation?
 - Calls for a “Manhattan Project” or “Apollo Program” -- examples where the government faced an intractable scientific problem, opened its checkbook, unleashed the nation's brightest minds, and watched the obstacles melt away.
 - Unclear if this would work – price is an object, too many vested interests in existing energy model

Power Struggle (Continued)

- What else can government do?
 - Support technologies that are already viable but, for whatever reason, face barriers to commercialization.
 - Encourage marketplace learning – enable the “experience learning curve.”
- Evidence suggests that the world can make huge emission cuts in the next few decades without needing to wait for new technologies

Traditional Energy Policy

- Traditionally energy policy has been set based upon information gleaned from the lobbying of competing interests.
- Government law makers and agencies receive incomplete information from such sources.
- Result: decision makers are vulnerable to the lobbying of well financed special interests.
 - *Utilities, Big Coal, and Big Oil*

What has Changed?

- Energy Security has reached crisis stage
 - Aftermath of 9/11
 - But how will the Shale Gale change this?
- Climate change has reached crisis stage
 - World wide consensus.
 - But is the commitment waning?
- Jobs, Jobs, Jobs
 - Bipartisan support finally achieved with the advent of “green collar jobs.”

National Security Energy Drivers

- Dependence on foreign oil
 - Vast majority of reserves controlled by unstable or enemy governments.
 - Oil profits may be used for terrorist activities.
 - Economic security is the new defense – and oil imports threaten national economy.
- Uranium enrichment
 - Proliferation of nuclear power could lead to enemies gaining access to nuclear weapons.

The Ungreening of America

Ed Kilgore

- Four years ago, the debate over global warming was essentially over.
- Now, today, it is back. Pew report – drop from 71 to 57% of Americans who believe in science of global warming.
- Those who think humans involved in global warming dropped from 47 to 36%.

Why is support unraveling?

- 1. Appetite for expensive environmental action is lost during hard economic times.
- 2. Radicalization of the Republican Party.
 - Effective in convincing members that global warming is a hoax.
- 3. Determined effort by right wing party to get their message out.
 - Anti-environmental right has been successful in getting mainstream media to report “statistical lies”.

Responses

- Presumably first problem will be mitigated by recovery.
- Second and third problem are institutional:
 - The politics of polarization.
 - Profits of “truthiness” for media.
- Real Problem for carbon policy: difficult to implement.
 - *Most proposals are just redistribution of wealth from rich to poor nations.*

American Petroleum Institute Position on Climate Change

- While we rely on [oil and gas] for most of our energy and will likely do so for years to come, emissions from their production and use may be helping to warm our planet by enhancing the natural greenhouse effect of the atmosphere. That's why oil and gas companies are also working to reduce their greenhouse emissions.

Energy Policy Decision Making

- Many of the key issues surrounding energy policy are decided without evidence as to what society wants or is willing to do.
- Issues related to human choice and behavior are poorly understood when it comes to setting energy policy.
- Yet in the coming years, our governments will be asked to set energy policy with or without this guidance.

Effects of Decisions

- Decisions we make today will determine our energy future for the next 50 years.
- First Energy has proposed billions of dollars in grid upgrades.
 - But what is the future for the grid?
 - U.S. wasted 61% of energy generated in 2012
 - » Lawrence Livermore Labs

Effects of Decisions

– “Solar is growing so fast it is going to overtake everything.”

» Jon Willinghoff, FERC Chair, Aug 2013

– “We expect regulations for new sources will make it very difficult, if not impossible, to build any new coal plants in the United States. The issue for existing plants is that there is no proven technology for carbon capture.”

» Lynn Good, CEO of Duke Energy

– “I’m working for the day that the grid is diminished”

» David Crane, CEO of NRG Energy, Aug 2013.

Calls for a National Energy Policy

- “The U.S. would benefit from a serious national policy that ensures access to and use of *all* domestic energy sources, rather than policies that ‘prefer’ some energy sources and sideline others.”

» Nemaquin Energy Institute – July 2013

- But how do we ensure “level playing field?”
 - Do coal and natural gas not enjoy any subsidies?

Overcoming Unworkable Patchwork Policies

- “Policy consistency and predictability and regulatory stability are recognized pillars of economic strength.”
- “Patchwork policy makes it very difficult for the energy sector and the market to behave rationally or efficiently.”

– The Nemaquin Energy Institute – July 2013

- So why has the US Chamber and the API opposed federal regulation under a “state’s rights” argument?
- Isn’t this a reason to support a carbon tax?

“Regulatory Leviathon”

- “A unit of energy is a unit of energy.”
 - Nemaocolin Energy Institute, quoting the Wall Street Journal

CSU Energy Policy Center



Thank you!