

## **Oil and gas policy in the United States**

Ford School of Public Policy, University of Michigan PubPol 475

Instructor: Daniel Raimi

Class hours: T/Th 1 – 2:30 PM Weill Hall 1230

Office Hours: T/Th 3 – 5 PM Weill Hall 3236

Winter 2016

# Syllabus

### *Course summary*

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Hydraulic fracturing and horizontal drilling have made the United States the world's largest producer of oil and natural gas. What does that mean for the domestic economy, energy prices, foreign policy, climate change, and local environments? To understand the answers to these questions, this course will begin with an overview of the domestic and global energy system. It will briefly describe the history of oil and gas production in the United States, and how that history has helped shape global energy markets.

With this context in place, we will examine how federal, state, and local policies have affected production and consumption over time. Next, we will look at some of the key energy policy questions facing the country, including: how oil and gas development is regulated, subsidized, and taxed; the environmental risks related to fracking; whether the United States is on track to become "energy independent"; the role of oil and gas production and consumption in climate change; and the potential for increased oil and gas exports from the United States.

Students will be expected to analyze historical and contemporary issues related to the role of public policy in oil and natural gas markets and produce policy papers on a range of topics. The course will begin with a primer on energy systems and markets in the United States, and no previous experience with energy policy is required. A basic understanding of economics will be helpful, but is not required. We will cover in class the key skills needed to use Microsoft Excel and PowerPoint.

### *Key skills to be developed*

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This class will help develop several important and marketable skills for students to apply in the workplace and/or their future education.

- Analytical writing
- Data-driven analysis
- Understanding critical elements of energy and environmental economics
- Understanding oil and natural gas policies and markets
- Learning and applying the Microsoft Office Suite (Excel, PowerPoint)

### *Required materials*

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*The Prize*, by Daniel Yergin.  
Various .pdf documents provided via Canvas  
Various datasets available online

All readings are listed below. Some readings are marked “*SKIM*,” which means you just need to get a general sense of the piece. Others are marked with assigned sections such as “Summary Only.” You are expected to complete all other readings in their entirety by the stated date.

### ***Additional suggested materials***

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*U.S. Energy Information Administration*  
Subscribe to daily emails from *Today in Energy* at <http://www.eia.gov/tools/emailupdates/>

*Twitter:*

@MarkSBrownstein (VP of climate and energy for the Environmental Defense Fund)  
@RobertStavins (Professor of Business and Government, Harvard climate policy expert)  
@levi\_m (Michael Levi, senior fellow for energy and the environment at the Council on Foreign Relations)  
@EnergyFromShale (industry-backed pro-drilling group)  
@GaslandMovie (anti-fracking advocate and filmmaker Josh Fox)

### ***Assignments and grading policies***

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All assignments are to be turned in via Canvas. If an assignment is late (by any amount of time—even one minute), it will be marked down by 10 points immediately, 20 points at the beginning of the second day, 30 points at the beginning of the third day, and so on. Extensions will only be granted under exceptional circumstances, and must be obtained prior to the due date.

Papers will be evaluated based on demonstrated understanding of the topic and the strength of analysis. However, careless mistakes such as spelling errors and typos will also be taken into account. There will be a series of in-class debates near the close of the semester where teams of students will make the strongest possible arguments for or against energy policy issues.

Irregular reading quizzes will be given in class. These quizzes will be short (3 or 4 simple questions) and will be very easy for those who have done the reading. There will be roughly one quiz per week. Students are not expected to demonstrate mastery of the material in class, but they are expected to ask good questions and participate in class discussions. Any student not in attendance for a quiz will receive a “0” without an excused absence. Final grades will be based on the following:

|     |                                |
|-----|--------------------------------|
| 10% | Attendance/class participation |
| 10% | Reading quizzes                |
| 15% | Short Paper 1                  |
| 15% | Short Paper 2                  |
| 15% | Short Paper 3                  |
| 10% | In-class debates               |

|     |             |
|-----|-------------|
| 25% | Final paper |
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***Attendance and technology policies***

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Class attendance is mandatory, and will be incorporated in the class participation portion of student's grades. The instructor will record attendance. Students not able to attend class must notify the instructor at least 24 hours in advance to receive an excused absence. Of course, exceptions will be granted for emergencies.

**Computers and other electronic devices may not be used** in class. No texting or phone use is allowed. Any violation of these policies policy will result in removal from class and a score of "0" for the day's reading quiz and attendance grades.

## ***Topics and assignments***

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### ***Week 1: An introduction to energy systems and markets***

- Major sources of energy: Oil, natural gas, coal, nuclear, renewables
- Major uses of energy: Transportation, residential, commercial, industrial

#### *Prior to class*

- Browse U.S. EIA Annual Energy Outlook projections at <http://www.eia.gov/beta/aeo/>. Look at how oil and natural gas production are projected to change in the coming 25 years. Look at how oil and natural gas production and prices vary between the Reference Case and the High Oil and Gas Resource Case.

#### *Assignment 1, due 5PM Tuesday, 1/12 (ungraded)*

- 1) In 300 words or less, what do you hope to get out of this course? This is not to impress the professor—I want to know why you are here.
- 2) List your top 5 questions about oil and gas policies and/or climate policy in the United States.

### ***Week 2: Greenhouse gas emissions in the United States and the world***

- Major energy-related GHG sources
- Global GHG emissions over time
- Major domestic GHG policies including the Clean Power Plan

#### *Readings due Tuesday, 1/12*

- EIA “U.S. Energy-Related Carbon Dioxide Emissions, 2013”
- EPA Clean Power Plan fact sheets

#### *Readings due Thursday, 1/14*

- International Energy Agency, “Energy and Climate Change.” Executive summary only.
- Center for Climate and Energy Solutions (C2ES), “Reducing methane emissions from the oil and gas sector”

### ***Week 3: Oil production and markets; and a primer on Microsoft Excel***

- Discovery of oil and early markets
- The rise of the automobile and other oil-based transportation
- Oil in the Second World War
- The rise of OPEC and the Arab Oil Embargo
- Today’s global oil market
- A primer on using Microsoft Excel

#### *Readings due Tuesday, 1/19*

- The Prize*, chapter 1: Oil on the Brain: The Beginning
- The Prize*, chapter 19: The Allies’ War
- The Prize*, chapter 20: The New Center of Gravity

#### *Readings due Thursday, 1/21*

- The Prize*, chapter 31: OPEC’s Imperium

-U.S. State Department: Arab Oil Embargo 1973-1974

***Week 4: The role of natural gas; and a primer on Microsoft PowerPoint***

- Early production and markets for natural gas
- Global uses of natural gas
- The political and policy implications of pipeline-based natural gas trade
- A primer on using Microsoft PowerPoint

*Readings due Tuesday, 1/26*

- SKIM EIA readings on natural gas distribution and liquefied natural gas (LNG)
- SKIM the following sections of EIA's Natural Gas Annual 2013:
  - Overview
  - Supplies
  - Imports and Exports
  - Consumption

*Readings due Thursday, 1/28*

- Mert Bilgin, "Geopolitics of European natural gas demand: Supplies from Russia, Caspian, and the Middle East."
- International Energy Agency's "Golden Age of Gas," 2011. Summary section only.

***Week 5: The United State as energy consumer***

- How does the United States use oil and natural gas?
- What role does the United States play in global oil and gas markets?
- How does the government regulate, tax, and subsidize oil and gas production and consumption?
- Questions on first short paper

*Short paper 1 due 5PM, Thursday, 2/4*

4 pages maximum, 12-point font, double-spaced, 1" margins

Accompanied by 4 of your own figures created in PowerPoint or another graphical program on separate pages.

Use the following online databases to complete this paper:

- BP Statistical Review of World Energy
- U.S. EIA International Energy Outlook

What are the major uses of oil in the United States and the rest of the world?

Where are the global consumption centers for oil and how have they changed in the past 20 years?

Where does the U.S. EIA's International Energy Outlook project global consumption centers for oil to be in the next 20 years?

What do these future projections tell us about the role of the United States in the global oil market? In other words, how important is the United States to the future of the global oil market?

Your paper should answer the first three questions briefly, then spend the bulk of your analysis on the final question.

***Week 6: U.S. oil and gas policy and “Energy Independence”***

- Policies to promote domestic oil production
- Policies to promote natural gas production
- What does “Energy Independence” mean and is it achievable?

*Readings due Tuesday 2/9*

- Joseph E. Aldy, “Eliminating Fossil Fuel Subsidies”
- Maura Allaire and Stephen Brown, “Eliminating Subsidies for Fossil Fuel Production: Implications for U.S. Oil and Natural Gas Markets”

*Readings due Thursday 2/11*

- Gilbert E. Metcalf, “Taxing Energy in the United States: Which Fuels Does the Tax Code Favor?”
- Jason Bordoff, “Why the U.S. should not want energy independence”

***Week 7: U.S. oil and gas policy and geopolitics***

- U.S. military policy and global commerce
- The Gulf War (1990): Was it all about the oil?
- The Iraq War (2003): Was it all about the oil?

*Readings due Tuesday 2/16*

- Daniel Yergin, *The Prize*, Chapter 37, Crisis in the Gulf
- Toby Craig Jones, “America, Oil, and War in the Middle East.”

*Readings due Thursday 2/18*

- Daniel Yergin, *The Quest*, Chapter 7: War in Iraq

***Week 8: The shale revolution***

- Geological background for shale gas and oil
- History of shale development
- Shale’s effects on domestic and global markets and prices

*Readings due Tuesday 2/23*

- WATCH YouTube video by Marathon Oil:  
<https://www.youtube.com/watch?v=VY34PQUiwOQ>
- Daniel Yergin, *The Quest*, Chapter 16: The Natural Gas Revolution. Stop at the section subtitled “Wounded by a Friend.”

*Readings due Thursday 2/25*

- King et al, “Lessons from the Shale Revolution”

***Short paper 2 due 5PM, Thursday 2/25***

4 pages maximum, 12-point font, double-spaced, 1” margins  
Accompanied by 2 to 4 of your own figures created in PowerPoint or another graphical program on separate pages.

Using data from the U.S. Energy Information Administration, show (with graphs and/or tables) and describe (with text) how increased natural gas production from shale formations in the United States affected domestic natural gas prices in the 2000s.

Have a wonderful winter break!  
2/27 through 3/6

***Week 9: The economic impacts of the shale revolution***

- Local economic effects of shale development
- National economic effects of shale development
- International economic effects of shale development

*Readings due Tuesday 3/8*

- Stephen Brown and Mine Yucel, “The Shale Gas and Tight Oil Boom: U.S. States’ Economic Gains and Vulnerabilities”
- U.S. Congressional Budget Office, “The Economic and Budgetary Effects of Producing Oil and Natural Gas from Shale.”

*Readings due Thursday 3/10*

- Jason Bordoff and James Stock, “The Implications of Lower Oil Prices for the US Economy amid the Shale Boom.”

***Week 10: Fracking controversies***

- Fracking in depth
- Concerns over water contamination and other controversies

*Readings due Tuesday 3/15*

- WATCH “Gasland,” documentary by Josh Fox
- Mike Soraghan in the New York Times: “Groundtruthing Academy Award Nominee ‘Gasland’”

***Week 11: Regulation of oil and gas development***

- Who regulates oil and gas development?
- How do regulations vary from state to state?
- What role do local governments play in regulating oil and gas development?

*Readings due Tuesday 3/22*

- SKIM Richardson et al, “The State of the State of Shale Gas Regulations”
- Jacquelyn Pless, “Natural Gas Development and Hydraulic Fracturing”

***Week 12: Energy exports***

- Abundant energy in the U.S. presents a variety of new policy issues
- Is the U.S. the new swing supplier of oil?
- Should the United States export natural gas and oil?

*Readings due Tuesday 3/29*

- U.S. Energy Information Administration, SUMMARY only of “Effect of Increased Levels of LNG Exports on U.S. Energy Markets”
- U.S. Energy Information Administration, SUMMARY only of “Effects of Removing Restrictions on U.S. Crude Oil Exports.”

*Readings due Thursday 3/31*

- Clifford Krauss, in the New York Times, “New Balance of Power”
- Blake Clayton, “The case for allowing U.S. Crude Oil Exports”
- Oil Change International, “Should It Stay or Should It Go?”

*Short paper 3 due 5PM, Monday 4/4*

4 pages maximum, 12-point font, double-spaced, 1” margins

Accompanied by 2 to 4 of your own figures created in PowerPoint or another graphical program on separate pages.

Should the United States allow increased energy exports? If so, should there be any limits on exports? If not, should the United States rescind the licenses and permits it has already issued? Your argument should address both the economic and environmental issues involved.

***Week 13: Competition between renewables and oil and gas***

- How do renewables compete with oil and gas?
- What policies support renewables?
- What are the cost trends for renewables?

*Readings due Thursday 4/7*

- BROWSE* renewable energy support policies in at [www.dsireusa.org](http://www.dsireusa.org) for three states: Michigan, California, and North Carolina
- U.S. Energy Information Administration, Summary only of “Direct Federal Financial Interventions and Subsidies in Energy in Fiscal Year 2013”

***Week 14: Climate policy and oil and gas***

- Can the United States have strong climate policy while it expands production of oil and gas?
- What is the timeline for action on climate policy, and how does oil and gas play into that timeline?

*Readings due Tuesday 4/12*

- U.S. Department of State, “Final Supplemental Environmental Impact Statement for the Keystone XL Project, Executive Summary”

*Readings due Thursday 4/14*

- Bill McKibben, “Global Warming’s Terrifying New Math.”
- Michael Levi, “Fracking and the Climate Debate.”

***Week 15: In-class debates***



*In-class debate on Tuesday, 4/19*

With your assigned teams, you will argue for or against controversial oil and gas issues. Details of the assignment will be provided closer to the date. The topics will be:

Should the United States ban fracking?

Should the United States give approval for construction of TransCanada's Keystone XL pipeline?

Should the University of Michigan divest from oil and natural gas companies?

*Final paper due 5PM, Tuesday 4/26*

6 pages maximum, 12-point font, double-spaced, 1" margins

Accompanied by 2 to 5 of your own figures created in PowerPoint or another graphical program on separate pages.

Choose one of the following topics. Support your analysis with data and evidence from course readings and your own research.

-Has increased oil and gas production in the United States made it more or less likely that the United States will adopt ambitious climate policies?

-What are the key foreign policy implications of increased oil and gas production in the United States?

-Should the United States move forward with leasing oil and gas properties for drilling off the Atlantic coast?

-Should New York State allow high-volume hydraulic fracturing?

-Should the federal government adjust the Renewable Fuels Standard? If so, how?

-Should the United States federal government make changes to existing subsidies for oil and gas development? If so, how?

-Create your own topic (must be pre-approved by instructor)