

Political Science 340  
Energy Policy  
Fall 2010

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**Office Hours:** M, W 1:00 -2:00, T, Th 1:00 to 2:00 and by appointment

Human history can be divided into three distinct successive phases. The first, comprising all history prior to about 1800, was characterized by a small human population, a low level of energy consumption per capita, and very slow rates of change. The second, based upon the exploitation of fossil fuels and the industrial metals, has been a period of continuous and spectacular exponential growth. However, because of finite resources of the earth's fossil fuels and metallic ores, the second phase can only be transitory. Most of the ores of the industrial metals will have been mined within the next century. The third phase, therefore, must again become one of the low rates of growth, but initially with a large population and a high rate of energy consumption. Perhaps the foremost problem facing mankind at present is that of how to make the transition from the present exponential growth phase to the near steady state of the future by as noncatastrophic a progression as possible.

- - M. King Hubbert

## **Introduction and Goals of the Course**

Societies use energy to do work, produce goods and meet the basic needs and demands of their members. Social choices in this regard have profound implications for patterns of human settlement, the structure of social life, the distribution of income, and allocations of political power. Energy choices also have implications for the viability of the environment and conditions of human health. Choices of energy technologies can also affect levels of personal freedom and the possibilities of democratic government.

These issues came into clear relief during the "energy crises" of the 1970s when significant short-term disruptions of energy supplies prompted public debate focused on making rational energy choices for the long term. Over the past three decades, market ideology, periods of robust economic growth, globalization of the economy, new telecommunications technologies and the end of the Cold War obscured that debate. A combination of environmental concerns, wars in the Middle East, the spread of terrorism, escalating military activity around access to oil and rising energy prices have thrust these issues back before a too often complacent American population.

As these issues deserve serious attention, the course objects are as follows:

- Students will understand the concepts that structure debates about energy use and policy choice regarding the sources and end-uses of energy in the U.S. and globally
- Students will develop a sense of the interrelationships between the choices of energy technologies and the social, economic and political characteristics of a society.

- Students will understand the key physical, economic and political dimensions of the choices that societies have available to them.
- Students will understand the current position of energy issues on the public policy agenda and the significant domestic and international conflicts connected to the use of energy.
- Students will consider the best path for future energy development and use, including normative and ethical questions in that regard.

## Attendance

Students are expected to attend all classes. Absences due to extracurricular activities, a doctor's excuse or notification by the Dean of Students Office will allow a student to be excused. All other excuses are subject to the instructor's judgment.

## Texts

Kenneth Deffeyes, **Beyond Oil**, (New York: Hill and Wang, 2005)

Michael Klare, **Rising Powers, Shrinking Planet: The New Geopolitics of Energy**, (New York: Henry Holt & Company, 2008)

Paul Komor, **Renewable Energy Policy**, (Lincoln, NE: iUniverse, Inc., 2004)

David Nye, **Consuming Power**, (Cambridge, MA: MIT Press, 1998)

## Evaluation of Student Work

The final grade will be based on a 300 point system. Final grades will be assigned according to the following scoring:

GRADE	POINTS	GRADE	POINTS
A	285	C	225
A-	270	C-	210
B+	264	D+	204
B	255	D	195
B-	240	D-	180
C+	234	F	<180

## Essays

Students will complete five of the following seven essays. All students will do essay number 7. From the remaining essays, students will need to choose two of the 50 point essays (numbers 2, 3, and 5) and two of the 25 point essays (numbers 1, 4, and 6).

Evaluation of these essays will be based on the following criteria:

- Clarity and directness in answering the question
- Concreteness in development of arguments or essential principles
- Evidence of understanding of key concepts
- Evidence of use of reading and class materials
- Use of additional research beyond materials assigned for class

Because good writing requires multiple drafts and revisions, students will be allowed to do multiple drafts of one of the following essays: 2, 3, 4, or 5. The student should submit the paper at least one class periods *before* the due date of the paper and will have one week *after* the paper has been returned to revise it. The original paper must be resubmitted with the revised.

**Essay 1** – David Nye presents a particular understanding of the way that technologies shape social relations, structure and culture. What is that perspective and how do the choices of human beings fit into that perspective? **{2 to 3 typewritten pages} (25 points) DUE DATE: 9/7**

**Essay 2** - A major premise of the course is that energy is of great importance because of its connection to work both as physical and economic activity. Discuss what you have learned from class and the readings scheduled between 1/27 and 2/5 to demonstrate that you understand how energy represents work and the types of work for which energy is used. Make sure to include a discussion of the significant physical and mathematical principles discussed in the course that govern the availability of energy used to perform work. **{4 to 7 typewritten pages} (50 points) DUE DATE: 2/10**

**Essay 3** – David Nye's history of energy in America describes how energy use impacted numerous social and cultural conditions including:

- settlement patterns
- industrial organization
- domestic life and lifestyle
- popular culture and entertainment

Using the material in **Consuming Power**, discuss one example of each of these conditions (for a total of four different examples) and show how energy was a key variable in the historic development of such conditions in the United States. Each of the four examples to be discussed should be chosen from a different chapter in Nye's book. **{5 to 7 typewritten pages} (50 points) DUE DATE: 2/24**

**Essay 4** – What are market failures? Give examples. Identify and describe four possible policy options that government can use to respond to them? **{3 to 5 typewritten pages} (25 points) DUE DATE: 3/10**

**Essay 5** – Discuss the geopolitical context of energy in the 21<sup>st</sup> century and how both past and current U.S. foreign policy have shaped current conditions **{5 to 7 typewritten pages} (50 points) DUE DATE: 3/26**

**Essay 6 – Identify and discuss three major issues concerning the use of electricity in the U.S. {3 to 4 typewritten pages} (25 Points) DUE DATE: 4/21**

**Essay 7 –** Imagine yourself to be a time traveler who goes back in time to 1950. Upon arriving, you decide to write a letter to the White House Chief of Staff describing the energy problems that face 21<sup>st</sup> century America. The intent of the letter is to alert the United States to the problems that are coming, how they came to be and possible actions that could be implemented to avoid or rectify the problems at hand today. **{8 to 15 typewritten pages} (100 points) DUE DATE: Final Exam Date**

### **Optional Essay and Climate Change Exercise (50 points)**

Six students from **POSC 340** will participate in the “**Congressional hearing simulation**” that is scheduled as part of **POSC 225: Congress and Presidency**. In this activity, students from **POSC 340** will assume specific roles as witnesses giving testimony before a congressional committee regarding legislation addressing problems of global warming. The roles, format and process for this exercise are presented in the attachment at the end of the syllabus.

Participation in this exercise will be worth **50** points (40 points for a written essay and 10 points for an oral presentation as part of the simulation). Participation in this exercise will substitute for one of the written 50 point essays (Essays 2, 3 or 5). The congressional hearing simulation will take place on October 14.

{**A note on sources:** Students are strongly urged to consult with the reference librarians regarding sources for this paper but two useful sources here are the **Congressional Quarterly Weekly Report** (<http://library.cqpress.com/cqweekly/>) and the **CQ Researcher** (<http://0-library.cqpress.com.webpac.lvlspace.org/cqresearcher/>). }

### **Instructor Evaluation (30 points)**

Thirty points towards the final grade will be determined by instructor evaluation. This evaluation will be based on participation in class **including answering or asking questions on the readings**. Attendance, completing assignments on time and other indications of effort and commitment to the course will also be part of the evaluation.

### **Energy Journals (20 points) - DUE DATE 3/23**

Students will submit a typewritten report on how they used energy during the course of a week during this semester. The week in question will be the week of March 15 through March 21. These journals will have eight entries. Seven of these entries will be a record of the ways that the student consumed energy during a given day and **an identification of the energy resource that was consumed in that activity**. The eighth entry will be a student commentary reflecting on the record established in the journal. This commentary could focus on any of the topics in the course. The commentary could include normative judgments on lifestyle, implications for public policy or government action, lessons learned by the individual about energy use, or a discussion of a

particular event or activity that yielded to the student a noteworthy insight about the issues raised by the course.

### Course Topics and Reading Assignments:

1. Introduction (8/31)
2. Philosophy of Technology: Technological determinism, technological momentum and the social construction of technology (9/2)

**Read:** Nye, "Introduction," pp. 1-14; "History of Energy in the United States: Total Energy" Department of Energy, Energy Information Administration, at <http://www.eia.doe.gov/emeu/aer/eh/frame.html>, and **ON RESERVE**

3. Energy and the Economy: work, demand, end use, and consumption (9/7)

**Read:** Material distributed in class from **Annual Energy Review 2008**, (Washington, D.C.: Department of Energy, 2009) entire report available at, pp. xix, xx, 4, 6, 310, 8, xxi, 37-39, 12, 50, 52, 54, xxvii, 48, 32, 78 at <http://www.eia.doe.gov/emeu/aer/pdf/aer.pdf> ; David Biello, "China's Energy Paradox," **Scientific American Earth 3.0**, December 2008, Vol. 18 Issue 5, pp. 34-41 at <http://0-ehis.ebscohost.com/webpac.lvlspace.org/ehost/detail?vid=1&hid=102&sid=9225cc3e-718a-446a-9f7a-7fd305498020%40sessionmgr114&bdata=JnNpdGU9ZW5vc3QtbGl2ZSZzY29wZT1zaXRl#db=afh&AN=36570720>

4. Supply and the problem of exponential growth (9/9)

**Read:** Deffeyes, Ch. 3; A. Bartlett, "Forgotten Fundamentals of the Energy Crisis," **American Journal of Physics**, September 1978, **ON RESERVE** and at [http://www.npg.org/specialreports/bartlett\\_index.htm](http://www.npg.org/specialreports/bartlett_index.htm).

5. Thermodynamics, entropy and end use (9/14)

**Read:** David Goodstein, "Heat Engines and Entropy," Ch. 4, David Goodstein, **Out of Gas**, pp. 77-98 (New York: W.W. Norton, 2004), **ON RESERVE**

6. Social consequences of energy use: energy use in the 19<sup>th</sup> Century (9/16)

**Read:** Nye, Chapters 1-4

7. Energy and the social consequences of industrialization, urbanization, and suburbanization in the 20<sup>th</sup> Century (9/21)

**Read:** Nye, Chapters 5-6

8. The energy crisis and responses to it. (9/23)

**Read:** Nye, Chapters 7-9

9. The Policy Process: political economy, market failures and public goods (9/28)

**Read:** Neva Goodwin, "The Limitations of Markets," Global Development and Environment Institute, December 2005, **ON RESERVE** and at <http://www.ase.tufts.edu/gdae/Pubs/te/GoodwinMarketFailureFinal2005.pdf>

10. Institutional variables in the policy process: separation of powers, delegation of authority, federalism and interest group liberalism (9/30)

**Read:** Carter A. Wilson, "National Institutions of Policy Making," Ch. 4 in **Public Policy: Continuity and Change** (New York: McGraw Hill, 2006) **ON RESERVE**; Walter Rosenbaum, pp. 27-38 in **Environmental Politics and Policy**, 7<sup>th</sup> edition, (Washington, D.C.: Congressional Quarterly Press, 2008) , **ON RESERVE**; Ari Berman, "The Dirt on Clean Coal," **Nation**, 4/13/2009, Vol. 288 Issue 14, <http://ehis.ebscohost.com/ehost/detail?vid=23&hid=117&sid=67d6a987-8e2f-4914-9b02-beee8c258445%40sessionmgr113&bdata=JnNpdGU9ZWwhvc3QtbGl2ZQ%3d%3d#db=afh&AN=37368383>

11. The policy process: policy options (10/5)

**Read:** Bemelmans-Videc, et. al. "Introduction: Instrument Choice and Evaluation," in **Carrots , Sticks and Sermons**, ( New Brunswick, NJ: Transaction Publishers, 1998) **ON RESERVE**; Howard Geller, "Policy Options," in **Energy Revolution: Policies for a Sustainable Future**, (Washington D.C.: Island Press, 2003), **ON RESERVE**

12. Coal

**Read:** Deffeyes, Ch. 5; James Meigs, "The Myth of Clean Coal," **Popular Mechanics**, Feb2010, Vol. 187 Issue 2, **ON RESERVE** and at <http://ehis.ebscohost.com/ehost/delivery?vid=29&hid=117&sid=67d6a987-8e2f-4914-9b02-beee8c258445%40sessionmgr113> ; Peter Fairley, "China's Coal Future," **Technology Review**, January/February 2007, Vol. 110 Issue 1, p56-61, **ON RESERVE** and at <http://0-ehis.ebscohost.com.webpac.lvlsipa.org/ehost/pdfviewer/pdfviewer?vid=2&hid=117&sid=af70360e-30a3-4739-8eb2-803bd30996b5%40sessionmgr112>

13. Climate change (10/14)

**Read:** Marcia Clement, "Energy and Climate: Should Carbon-Based Fuels Be Phased Out?" **CQ Researcher**, 24 July, 2009, Volume 19, Issue 26 at <http://0library.cqpress.com.webpac.lvlsipa.org/cqresearcher/document.php?id=cqresrre2009072400>

14. Oil: the global political economy and U.S. foreign policy (10/19-10/26)

**Read:** Deffeyes, Ch. 1 and 2; Klare, **entire** by 10/19

15. Alternatives to oil: natural gas and unconventional oils (10/28)

**Read:** Deffeyes, Ch. 4, 6 and 7

16. Electricity: production, distribution, regulation and restructuring (11/2 – 11/9)

A. Production and distribution (11/2)

**Read:** “History of Energy in the United States: Electricity” Department of Energy, Energy Information Administration, at <http://www.eia.doe.gov/emeu/aer/eh/frame.html>, and **ON RESERVE**; Brennan, et.al., “Understanding the Electric Industry,” Ch. 2 in **Alternating Currents: Electricity Markets and Public Policy**, (Washington, D.C.: Resources for the Future, 2002) **ON RESERVE**

B. Regulation (11/4)

**Read:** “Electric Power Industry Overview 2007,” Department of Energy, Energy Information Administration, **ON RESERVE** and at <http://www.eia.doe.gov/cneaf/electricity/page/prim2/toc2.html>

C. Restructuring and change (11/9)

**Read:** Gellings and Yeager, “Transforming the Electric Infrastructure,” **Physics Today**, December 2004, pp. 45-51 **ON RESERVE**; and Komor, Ch. 3

17. Alternative energy sources (11/11-11/23)

A. Conservation and end use efficiency (11/9)

**Read:** Amory Lovins, “Energy End-Use Efficiency,” (Snowmass, CO: Rocky Mountain Institute, 2005) at [http://www.rmi.org/rmi/Library/E05-16\\_EnergyEndUseEfficiency](http://www.rmi.org/rmi/Library/E05-16_EnergyEndUseEfficiency) and **ON RESERVE**

B. Renewable fuels (11/11)

**Read:** Komor, Ch. 1-2

C. Distributive generation and policy options(11/16)

**Read:** Benjamin Sovacool and Richard Hirsh, “Energy Myth Six – The Barriers to New and Innovative Energy Technology are Primarily Technical: The Case of Distributed

Generation (DG)” pp. 145- 170 in Savacool and Brown, **Energy and American Society – Thirteen Myths**, (Dordrecht, The Netherlands: Springer, 2007), **ON RESERVE** and Komor, Ch. 4-11

D. Hydrogen (11/18)

**Read:** Deffeyes, Ch. 9

18. Nuclear (11/23-12/2)

A. How nuclear power works: nuclear technology and the fuel cycle (11/23)

**Read:** World Nuclear Association, “Nuclear Power Reactors,” available at <http://www.world-nuclear.org/info/inf32.html> and Marshall Brain and Robert Lamb, “How Nuclear Power Works,” at <http://www.howstuffworks.com/nuclear-power.htm/printable>

B. Nuclear power past and future (11/30-12/2)

**Read:** R.L. Worsnop, “Will nuclear power get another chance?” **CQ Researcher**, February 22, 1991, Volume 1, 114-129, at <http://library.cqpress.com/cqresearcher/cqresrre1991022200>; Jennifer Weeks, “Nuclear Energy,” **CQ Researcher**, March 10, 2006 *Volume 16, Issue 10*, 217-240, available at <http://library.cqpress.com/cqresearcher/cqresrre2006031000>

C. Closing 12/7

### **Congressional hearing simulation**

The congressional hearing simulation will take place on October 14. It will involve eight students from **POSC 225: Congress and Presidency** class and 6 students from **POSC 340: Energy Policy**. In this activity, students will assume specific roles manifest in this portion of the legislative process and perform those roles in a simulation of a congressional hearing focusing on legislation addressing problems of global warming. For the purposes of the simulation, the hearings will be conducted in the U.S. House of Representatives.

#### **Student roles –congressional:**

- Five students will assume roles as part of the Democratic majority in the House of Representatives. Four of those students will be elected members of the **House Energy and Commerce Committee**. The fifth student will serve as staff to the majority members of the committee.



- Three students will assume roles as part of the Republican minority. Two students will be elected members of the **House Energy and Commerce Committee**. The third student will serve as staff to the minority members of the committee.

#### **Student roles – witnesses:**

- There will be six witnesses who will be students from **POSC 340:Energy Policy**
- The witnesses will include representatives of:
  - The Environmental Protection Agency
  - The U.S. Chamber of Commerce
  - U.S. Climate Action Partnership
  - Ohio Governor Ted Strickland
  - The Union of Concerned Scientists
  - The Rocky Mountain Institute
  - The Heritage Foundation

#### **Student responsibilities:**

- Congressional members of both parties will research the issues to identify the major elements of proposed legislation. Assistance in this regard will be provided by the instructor.
- A committee chair will be identified who will have responsibility to run the hearings (i.e. open and close session, allocate and monitor time, assign responsibilities for who is to question whom, rule on requests from committee members, consult and direct staff)
- A ranking minority member will be selected and will work with committee chair to allocate time, assign responsibilities for questioning, consult and direct staff.
- Elected members of the committee will prepare a set of questions to be asked of the witnesses that come before the committee.
- Elected members of the committee will be prepared to ask follow up questions of witnesses in response to the statements and answers to questions provided by the witnesses.
- Members of the committees will work with other members of the committee at the direction of the chair or ranking minority member to determine who will ask questions of which witnesses.
- Staff members will help elected members to prepare questions. Included in this responsibility will be an obligation to consult with the witnesses in advance of the hearings to get a sense of the points the witnesses will seek to stress.
- Witnesses will have the responsibility to research the positions of those who they represent, draft statements articulating the position that they will take and meet with staff or members to preview the positions to be taken.

#### **Process:**

- Opening by chair with description of the intent of the hearing and description of the process (1 minute)

- Opening statements about legislative issues (1 minute for chair 1 minute for ranking minority member)
- Witnesses
  - Each witness will be before the committee for 9 minutes
  - Each witness will open with a 1 minute prepared statement articulating their position on legislative efforts to address global warming.
  - Majority will be accorded five minutes to ask questions of witnesses and make statements in accordance to arrangements established in consultations with the chair who will monitor time.
  - Minority will be accorded three minutes to ask questions of witnesses and make statements in accordance to arrangements established in consultations with the chair who will monitor time.
- Closing statements (1 from ranking minority member, 1 from chair)