Political Science 340
Energy Policy
Fall 2012

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Office Hours: M, W and F 10:00 to 11:00 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.
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> - - 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 four 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.

Academic Honesty

All students should be aware of their obligations under the Academic Honesty Policy published in the ***Moravian College Student Handbook 2011-2012***. A copy of that document can be found at http://www.moravian.edu/studentLife/handbook/academic/academic2.html.

Learning Disability accommodations

Students who wish to request accommodations in this class for a disability should contact Elaine Mara, assistant director of learning services for academic and disability support at 1307 Main Street, or by calling 610-861-1510. Accommodations cannot be provided until authorization is received from the Academic Support Center.

Texts

Laurence R. Geri and David E. McNabb, **Energy Policy in the U.S.**, (Boca Raton, FL: CRC Press, 2011)

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

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

Evaluation of Student Work

The final grade will be based on a 300 point system. The points will be determined through set of out of class writing assignments, an energy journal and the instructor's evaluation. The essay questions and descriptions of other assignments, point values and due dates are listed below:

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 4) and two of the 25 point essays (numbers 1, 5, and 6).

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

- Clarity and concreteness in answering the question
- Evidence of understanding of key concepts
- Evidence of use of reading and class materials
- Use of additional research beyond materials assigned for class

Essay 1 – David Nye presents a particular understanding of the way that technologies shape social and economic structures. 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: 9/6**

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 9/4 and 9/11 to demonstrate that you understand how energy represents work, the types of work for which energy is used and the availability of energy to perform the desired work. 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: 9/18**

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

- settlement patters
- 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: 10/11**

Essay 4 – Discuss the geopolitical context of energy in the 21st century and how both past and current U.S. foreign policy have shaped current conditions. **{5 to 7 typewritten pages} (50 points) DUE DATE: 10/30**

Essay 5– What are market failures? Give examples. Identify four general possible policy options that government can use to respond to them? **{3 to 5 typewritten pages} (25 points) DUE DATE: 11/13**

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: 12/4**

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 21st 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**

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 10/4

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 September 23 through September 29. 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:

I Introduction (8/28)

II Energy and Society

A. Culture, values and choice: technological determinism, technological momentum and the social construction of technology (8/30)

   Read: Nye, "Introduction," pp. 1-14; Geri and McNabb, "Introduction," pp. xxvii-xxxvii

B. Energy and the economy: work, demand, end use, and consumption **(9/4)**
   Read: Geri and McNabb, Ch. 1; Material distributed in class from Annual Energy Review 2011 and 2008, (Washington, D.C.: Department of Energy, 2011 and 2009) entire report available at **http://www.eia.doe.gov/emeu/aer/pdf/aer.pdf**

C. Supply and the problem of exponential growth (9/6)

Read: Geri and McNabb, pp. 25-35; Klare, Ch. 2; 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**

D. Thermodynamics, entropy and end use (9/11)

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**

E. Climate change (9/18**)**

Read: Geri and McNabb, pp. 35-43; Marcia Clement, "Energy and Climate: Should Carbon-Based Fuels Be Phased Out?" **CQ Researcher**, 24 July, 2009, Volume 19, Issue 26 **at http://0-library.cqpress.com.webpac.lvlspa.org/cqresearcher/document.php?id=cqresrre2009072400**

III The Social Consequences of Energy Use

A. Transformation of work and social organization in the 19th Century (9/20)

Read: Nye, pp. 15-27, 32-40, 43-68, 71-91, 103-111, and 121-128

B. Industrialization, urbanization and suburbanization (9/25)

Read: Nye, Chapters 5-6

C. World War II to the "energy crisis" (9/27)

Read: Nye, Chapters 7-9

D. After the energy crisis (10/2)

Read: Geri and McNabb, Ch. 4

IV The Global Political Economy of Energy

A. The centrality of oil and the changing geopolitical environment (10/4)

Read: Klare, Ch. 1

B. China, India and Russia (10/11)

Read: Klare, Ch. 3 and 4

C. The Caspian region, the Middle East and Africa (10/16)

Read: Klare, Ch. 5, 6 and 7

D. Resource wars (10/18)

Read: Klare, Ch. 8 and 9

V The Policy Process

A. The Policy Process: political economy, market failures and public goods (10/23)

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**

B. Institutional variables in the policy process: separation of powers, delegation of authority, federalism and interest group liberalism (10/25)

Read: Geri and McNabb, Ch. 5

C. Decision making variables in the policy process (10/30)

Read: Geri and McNabb, Ch. 3

D. Policy options: subsidy and regulation (11/1)

Read: Geri and McNabb, Ch. 7

E. Policy options: taxes and market mechanisms (11/6)

Read: Geri and McNabb, Ch. 8

VI Policy Agenda

A. Coal (11/8)

Read: James Fallows, "Dirty Coal, Clean Future," **The Atlantic**, December 2010 at **http://www.theatlantic.com/magazine/archive/2010/12/dirty-coal-clean-future/8307/** and James Meigs, "The Myth of Clean Coal," **Popular Mechanics**, Feb2010, Vol. 187 Issue 2, at **http://web.ebscohost.com/ehost/detail?sid=b939b3bd-7088-4a5e-86d3-a5b07a47e2e7%40sessionmgr15&vid=1&hid=13&bdata=JnNpdGU9ZWhvc3QtbGl2ZQ%3d%3d#db=afh&AN=47558372**

B. Natural gas (11/13)

Read: Daniel McGlynn, "Fracking Controversy: Are New Natural Gas Drilling Methods Safe," **CQ Researcher,** December 16, 2011, Volume 21, Issue 44 **at http://0-library.cqpress.com.webpac.lvlspa.org/cqresearcher/document.php?id=cqresrre2011121600**

C. Electricity: production, distribution, regulation and restructuring (11/15)

Read: Brennan, et.al., "Understanding the Electric Industry," and "From Regulation to Competition," Ch. 2 and 3 in **Alternating Currents: Electricity Markets and Public Policy**, (Washington, D.C.: Resources for the Future, 2002) **ON RESERVE;** "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**

D. Electricity: modernizing the grid and distributive generation (11/20)

Read: Jennifer Weeks, "Modernizing the Grid: Is the Electric Powers System at risk?" **CQ Researcher, February 19, 2010,** Volume 20, Issue 7 at **http://0-library.cqpress.com.webpac.lvlspa.org/cqresearcher/document.php?id=cqresrre2010021900**

E. Nuclear power: how it works (11/27)

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**

F. Nuclear power: policy challenges (11/29)

Read: Marcia Clement, "Nuclear Power: Can Nuclear Energy Answer Global Power Needs?", CQ Researcher, June 10, 2011, Volume 21, Issue 22 at **http://0-library.cqpress.com.webpac.lvlspa.org/cqresearcher/document.php?id=cqresrre2011061000**

G. Alternatives (12/4)

Read: Geri and McNabb, Ch. 10