Economics 394b: Energy Economics

Spring 2012, Directed Study

Syllabus

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Office hours: M-W 3:00-5:00, and by appointment

Prerequisites: Econ. 201, Econ. 202
Engl. 111 (recommended)


This course examines economic theory, empirical perspectives, and political economy of energy supply and demand. It discusses aspects of local, national, and global markets for oil, natural gas, coal, electricity, nuclear power, and renewable energy; and examines public policies affecting energy markets including taxation, price regulation and deregulation, energy efficiency, and control of emissions.

In this course we will develop and use tools of economic analysis to understand the main contemporary policy issues related to energy. The primary focus is on global and national energy markets and institutions, and on how local and Alaska energy issues are embedded in the context of a national and global political economy. Some of the types of policy issues addressed include:

- Is the world running out of oil, or, put differently, is the physical scarcity of oil leading to a trend of permanently escalating prices, aside from temporary blips due to global economic recessions?
- Should the United States immediately adopt a binding cap on greenhouse gas emissions from burning fossil fuels?
- Did electricity deregulation cause blackouts and skyrocketing prices in California?
- Is investing in nuclear power an efficient strategy for producing clean energy in the long run?

Course Objectives

- Understand basic economic concepts that underly energy production and end use.
- Understand how local, regional, and global institutions affect energy markets and prices.
- Become familiar with historical and contemporary public policy issues related to energy in the U.S. and globally.
- Be able to apply this knowledge to analysis of specific energy industries and policy questions.

Class Format and Assignments

As a directed study course, the class will meet together typically once per week for workshops about core
concepts and class assignments, and hold group discussions of assigned readings. More coursework will be conducted via internet-based assignments than for a normal class, but less than typical for a distance-delivered class. Reading assignments include chapters from a textbook and limited additional readings. Class discussions relate to assigned readings, problem sets, and to field work related to local energy issues. Several problem sets will be assigned on a pass-fail basis that address more analytical aspects of the course material. Students are encouraged to work together on problem sets, so long as each student prepares his or her own written answers. Material drawn from the problem sets may be used in interactive in-class exercises. Examinations consist of a mid-term and a final. The final exam is cumulative. Students will also have a formal debate on a major Alaska energy policy issue and complete a group project that produces a written report, as described below.

Debate

Alaska and the nation face a number of urgent challenges related to energy policy. Economic questions are embedded in each of these policy choices, and opinions differ on the best choice. Working on the assumption that informed debate can stimulate critical thinking on the issues, each student will participate in a group debate that will be held at an assigned time during the semester. Students will collectively choose the topic they would like to debate, and which side they will choose to argue. Potential topics for the debate could be (1) should Alaska state taxes on oil and gas be lowered as proposed by Governor Parnell? or (2) should the State of Alaska support the Susitna hydroelectric project as proposed by the Alaska Energy Authority.

Group Project

Each student will participate in a group research project that critically examines a major policy issue facing Alaska, with potential national or international consequences, and develops a recommended strategy for addressing the issue. The group will write a report that contains the recommendations, along with supporting research and analysis, and summarize it in a class presentation. The emphasis of the analysis in the report will be on the economic issues around the selected energy policy issue (including economic consequences of environmental effects), rather than on the strictly biophysical, engineering, technical, legal, or political issues. Topics could include one of the two debate topics proposed above (but not the one selected for the actual debate), or another major current issue such as support for a liquefied natural gas pipeline from Alaska's North Slope or policy regarding Arctic offshore energy development. Guidelines for length, format and documentation of reports will be distributed and discussed in class.

Grade Determination:

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<td>Midterm exam:</td>
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<td>Final exam</td>
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<td>Problem sets</td>
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<td>In-class and web-based exercises</td>
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<td>Debate participation</td>
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<td>Group project report</td>
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Course Outline
I. Overview of Energy Supply and Demand

Jan. 16-18: Introduction

Readings: Dahl: ch. 1; browse through BP Statistical Review and EIA Energy Basics 101

Topics: energy basics, U.S. and world energy consumption and trade

Jan.23-25: Overview of energy demand

Readings: Dahl: ch. 2

Topics: energy end uses, history of energy use, energy intensity of GDP

II. Fossil Fuel Markets

Jan. 30-Feb. 1: Coal

Readings: Dahl: ch. 3

Feb. 6-8: Oil

Readings: Dahl: ch. 6; Hamilton, Understanding Crude Oil Prices

Feb. 13-15: Natural Gas

Readings: Dahl: ch. 7

III. Externalities and Public Policy

Feb. 20-22: Pollution

Readings: Dahl: ch. 8

Feb. 27-29: Climate change

Readings: Dahl: ch. 9

IV. From Primary Production to End Use

Mar. 5-7: Energy transportation and storage

Readings: Dahl: ch. 14

Midterm exam

Mar. 12-14: Spring Break (no class)

Mar. 19-21: Electricity and regulation

Readings: Dahl: ch. 4; MIT Study on The Future of Nuclear Power, ch. 5

Class debate (tentative)

Mar. 26-28: Deregulation and competition
Readings: Dahl: ch. 5

V. Financing Energy Development

Apr. 2-4: Energy resources and economic rent

Readings: McDonald, *The Leasing of Federal Lands for Fossil Fuel Production*: Ch. 3; McBeath et al., *Political Economy of Oil in Alaska*, Ch. 4

Topics: economic rent, leasing and taxation of energy resources, government revenues

Apr. 9-11: Allocation of resources over time and financing energy development

Readings: Dahl: ch. 12

Topics: discounting, "levelized" costs of renewable resources, depletion of non-renewable resources

Apr. 16-18: Electricity supply

Readings: Dahl: ch. 13

Topics: energy sources, cost of production

Apr. 23-25: Energy futures

Readings: IEA World Energy Outlook, *Executive Summary*

Presentation of case study; written case study report due.

May 2: Final Exam