

**ENNEC 484W**  
**Energy Economics**  
**Fall 2008**

**Instructor:** Professor Andrew N. Kleit  
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Office Hours: Tuesdays and Thursdays, 3-4PM.

**Course Description**

Application of models to understand markets for oil, gas, coal, and electricity. Models, modeling techniques, and issues included are supply and demand, market structure, transportation models, game theory, futures markets, environmental issues, energy policy, energy regulation, and dynamic optimization. The emphasis in the course is on the development of appropriate models and their application to current issues in energy markets.

**Course Objectives**

Students who successfully complete the course will acquire economic fundamentals and the institutional knowledge needed to implement sound economic decisions relating to energy industries. In addition, the modeling, information acquisition, critical thinking and communication skills will allow the students to read the literature and to continue to grow and learn beyond the course.

**Readings**

***Textbook:***

International Energy Markets: Understanding Pricing, Policies, and Profits, Carol A. Dahl, PennWell (2004).

**Prerequisites**

This writing intensive course is open to all majors and is designed specifically for upper-division undergraduates in Energy Business Finance. Introductory microeconomics (ECON 002 or ENNEC 100) and calculus (MATH 110 or equivalent) are required.

**Academic Integrity**

This course adopts the College's academic integrity policy, which can be found at <http://www.ems.psu.edu/students/integrity/statement.html>.

## Assignments and Grading

Your grade will be determined by your performance on assignments with the following weighting scheme:

Assignment	Grade Percentage
Homeworks (3 or 4)	14%
Mid-Term (October 16)	23%
Final Exam (date TBD)	38%
Paper Assignment, Part 1 (TBD, after mid-term)	10%
Paper Assignment, Part 2 (Due December 12, 4pm, 507 Walker)	15%

There will be no class on September 30 or October 9.

The paper assignments will deal with electricity restructuring and will be described later in the term.

All homework assignments need to be typed, stapled, and show your work extensively.

## Course Outline

### I. Introduction

Where energy comes from. You can read this yourself.

Chapter 1 Introduction

Chapter 2 Energy Lessons from the past

### II. Static Market Models

Supply, demand, and all that jazz.

Chapter 3: (Here is where the lectures start) Perfect Competition and the Coal Industry  
Supply, Demand, and Taxes applied to the Coal Industry.

Chapter 4: Natural Monopoly and Electricity Generation

What does it mean to be a natural monopoly? And is electricity generation a monopoly? And if it is a monopoly, what do you do about it?

Chapter 7: Market Structure, Transactions Costs, and the Natural Gas Industry

When do you buy something, and when do you make it yourself?

Kleit, "The Economics of Gasoline Retailing: Petroleum Distribution and Retailing Issues in the U.S.," Energy Studies Review 14:2 (Spring 2005).

Chapter 15: Energy Futures and Options Markets for Managing Risks

Mabro, Robert (2005) "The International Oil Price Regime: Origins, Rationale and Assessment", Journal of Energy Literature 11(1): 3-20.

### **III. Electricity Restructuring**

The brave new era of competition in the electricity sector. Sometimes it works... and sometimes it doesn't.

Chapter 5: Deregulation and Privatization of Electricity Generation

Thomas, Steve (2005) "The Economics of Nuclear Power: Analysis of Recent Studies," Public Service International Research Unit, 31 pgs.

Considine and Kleit, "Can Electricity Restructuring Survive? Lessons from California and Pennsylvania," pages 39-62 in Electric Choices: Deregulation and the Future of Electric Power (Andrew N. Kleit, editor) Rowman and Littlefield, London (2006).

Peter Van Doren and Jerry Taylor. 2004. "Rethinking Electricity Restructuring" Cato Institute Policy Analysis No. 530. <http://www.cato.org/pubs/pas/pa530.pdf>

### **IV. Some Energy Markets That Don't Work All That Well**

Chapter 6: Monopoly, Dominant Firm Model, and OPEC  
How much does OPEC harm us?

Kaufman, Bradford, Belander, McLaughlin, and Miki, "Determinants of OPEC Production: Implications for OPEC Behavior," Energy Economics, 30(2): 333-51 (2008).

Chapter 10: Monopsony  
Is Monopsony the opposite of Monopoly?

Kleit, "Monopsony" entry in Encyclopedia of Business Ethics and Society (Robert W. Kolb, general editor) Sage Publishing (London) November 2007.

Chapter 11: Game Theory and the European Natural Gas Market  
Pipelines and game theory in the same chapter!

### **IV. Climate Change**

Should we do something about Global Warming, and if so, what and when?

Chapter 8: Public Goods and Global Climate Change

Arrow, Kenneth J. (2007) "Global Climate Change: A Challenge to Policy," Economists' Voice, [www.bepress.com/er](http://www.bepress.com/er), June.

Schelling, Thomas C. (2007) "Climate Change: The Uncertainties, the Certainties, and What They Imply About Action," Economists' Voice, [www.bepress.com/er](http://www.bepress.com/er), June.

Robert O. Mendelsohn, "A Critique of the Stern Report," *Regulation*, Winter 2006-2007 at <http://www.cato.org/pubs/regulation/regv29n4/v29n4-5.pdf>.)

William Nordhaus "The Challenge of Global Warming: Economic Models and Environmental Policy," Yale, September 11, 2007 at [http://nordhaus.econ.yale.edu/dice\\_mss\\_091107\\_public.pdf](http://nordhaus.econ.yale.edu/dice_mss_091107_public.pdf).

## **V. Issues in the Control of Market Power in Energy Markets**

What – you want to be an antitrust lawyer?

Granitz, Elizabeth and B. Klein (1996) "Monopolization by Raising Rival's Costs: The Standard Oil Case," Journal of Law and Economics, April, 1-48.

Otter Tail Power Co. v. United States, 410 U.S. 366 (1973).

"Antitrust, Rent-Seeking, and Regulation: The Continuing Errors of *Otter Tail*" (with Robert J. Michaels), Antitrust Bulletin 39:3 (Fall 1994) 689-725.

California v. Federal Power Commission, 369 U.S. 482 (1962).

Ass'n v. PacifiCorp, 357 F.3d 1042 (9th Cir. 2004).

FTC. v. Arch Coal, Inc., 329 F. Supp. 2d 109 (D.D.C. 2004).

Bailey, Dick, Salinger, Sterbenz, and Werden, "Coordinated Effects: The *Arch Coal* Decision," [www.abanet.org/antitrust/at-source/05/03/04-mar05-coalbag323.pdf](http://www.abanet.org/antitrust/at-source/05/03/04-mar05-coalbag323.pdf)

Kleit, "Market Monitoring, ERCOT Style," in Electricity Restructuring: The Texas Story, (Kiesling and Kleit, editors) Forthcoming, American Enterprise Institute.

## **VI. The Supply of Energy Over Time**

Did you think we were running out of oil?

Chapter 12 Allocating Fossil Fuel Production Over Time and Oil Leasing

Tom Tietenburg, Environmental and Natural Resource Economics (7<sup>th</sup> edition, 2006), pages 89-93, 102, 128-139.

Cuddington, John T. and D.L. Moss (2001) "Technological Change, Depletion, and the U.S. Petroleum Industry," The American Economic Review, 91, 4, 1135-1148.

Wiggins, Steven N. and Gary D. Libecap (1985) "Oil Field Unitization," The American Economic Review, 75, 3, 368-385.

## **VII. Oil Markets – What Affects Them, and Can We Do Anything about Them?**

EPE-023, "Understanding Crude Oil Prices," James D. Hamilton - University of California, San Diego, June 2008 [http://www.ucei.berkeley.edu/PDF/EPE\\_023.pdf](http://www.ucei.berkeley.edu/PDF/EPE_023.pdf)

Considine, T.J. and K.M. Dowd (2005). "A Superfluous Petroleum Reserve?" Regulation, The Cato Institute, 18-25.

Paul R. Portney, Ian W.H. Parry, Howard K. Gruenspecht, and Winston Harrington, "Policy Watch: The Economics of Fuel Economy Standards." *Journal of Economic Perspectives*, 17, No. 4 (Fall 2003), 203–217.

Kleit, "CAFE Changes: By The Numbers," Regulation 25:3 (Fall 2002) 32-35.

Yergin, "Ensuring Energy Security," *Foreign Affairs*, 85:2 60-82 (2006).

### **Paper Assignment**

Electricity restructuring has taken place, not only in several places around the United States, but also several places around the world. The writing assignment for this class will deal with electricity restructuring and will have two parts.

First, immediately after the mid-term students will be assigned via a random number process to an area that has undergone electricity restructuring. The five areas are: Alberta (Canada), Australia, England and Wales, New Zealand, and Ontario (Canada).

Then students will write a six to eight page paper described restructuring in their selected region. The papers will examine when restructuring occurred, why it occurred, what decisions were made in establishing the restructuring process, and how restructuring has worked out. The instructor will then grade the papers and hopefully come up with helpful comments.

In the second stage students will expand upon their initial paper and create an 11 to 12 page paper reviewing restructuring in their jurisdiction. Please hand in your first paper together with your second paper so your instructor can see if you have followed his directions.

In this assignment finding sources of information, both in the popular press and in academic journals about what has occurred will be very important.

Here are some rules about what to do in the paper:

Use one inch margins, please. (And remember that your instructor does own a ruler and is trained in how to use it.) The preferred font is 12 point Times Roman (CG Times). Please have print on only one side of the paper, and hand in a hard copy. Papers should be word-processed, double-spaced, and spell-checked. Remember to make a back-up electronic and hardcopy version of the paper for yourself. Your paper scores will be marked down 5 points (out of 100 on the paper/presentation) for every weekday that it is late. (Late papers go to the bottom of my priority list and are usually returned late.) Papers handed in early will gain 2 points extra credit for each day early handed in, up to 4 points extra credit. Some instructions for writing style:

- 1) Be sure to refer to ideas discussed in class in your paper. Remember, the purpose of the papers is to show that you have learned something in this class. References to particular arguments in the readings would be especially helpful.
- 2) Revise your initial draft several times before you hand it in.
- 3) Use a title and a title page to help you focus your ideas
- 4) Carefully cite your sources using endnotes and references at the back of the paper. (This does not count against the suggested page lengths.) Do not use wikipedia as a reference
- 5) Use "I", not "We".
- 6) Number your pages (except the title page).
- 7) Avoid casual or chatty writing, be formal. Try to write like an economist, not a journalist.
- 8) Use headings and sub-headings to break up the paper into distinct parts.
- 9) Have a one paragraph summary or conclusion.
- 10) Make sure your printout is readable. Nothing annoys your instructor more than faded printing.
- 11) Do not waste space repeating definitions or using large quotations from the relevant article.
- 12) Do not use contractions.

**MOST OF ALL, FOLLOW INSTRUCTIONS CAREFULLY!!**