API-164
Energy Policy Analysis

Lecture: Tuesdays and Thursdays, 10:10–11:30, L382

Instructor: Joseph E. Aldy
Taubman 382
617-496-7213
joseph_aldy@hks.harvard.edu
Office hours: Tuesdays, 3:00–5:00 and by appointment
Faculty Assistant: Lisa MacPhee, lisa_macphee@hks.harvard.edu

Teaching Fellow: Sabrina Howell
sthowell@fas.harvard.edu

The Course

This course provides an overview of energy policy issues with an emphasis on the analysis necessary to frame, design, and evaluate policy remedies to energy problems. The course is intended for doctoral students interested but not necessarily specializing in energy issues. The course is offered in support of the Harvard University Center for the Environment (HUCE) Graduate Consortium on Energy and Environment http://environment.harvard.edu/student-resources/graduate-consortium.

Prerequisites

Multivariate calculus and permission of the instructor.

Readings

There is no required text for the course. Assigned readings will be available on the course web site or on reserve in the Harvard Kennedy School Library. Note that most readings have direct hyperlinks for online access by Harvard students in the readings list below. Readings should be completed prior to class.
* readings should be given priority.
**Evaluation**

Students will be evaluated on a mix of group and individual projects and participation.

**Energy Policy Paper: 30%**

Each student will define an energy policy problem of interest and provide: (i) a one page précis of the policy issue with identification of the key analytical questions and associated readings; and (ii) a final paper (submitted in both hard-copy and electronic versions) that presents the research question and analysis that addresses this question or describes a research plan, including the tasks going forward in order to address the selected energy policy issue. Students may opt to pair with a fellow student on this project.

**Policy Analyses: 30%**

Two short assignments will be given over the course of the semester. Students may work together in groups in undertaking each analysis, but each student must submit an individual memo summarizing the results of the analysis. Students must also note who they worked with on their submitted memo.

**Debates: 15%**

There will be four policy debates by students over the course of the semester. Each student will be assigned to a team that will participate in one of the debates.

**Participation in classroom discussion: 15%**

Contribution to classroom discussion, with an emphasis on comments reflecting reading and providing value-added to the conversation, will be evaluated. Unexcused absences will adversely affect participation grade.

**OPEC Exercise: 10%**

Students will be assigned to groups that will each play the role of an OPEC producer. Each group will submit daily production decisions over 10 business days and two brief memos (less than one page each) describing their production strategies.

Complete descriptions of these assignments will be provided over the semester. Course grading will follow the Harvard Kennedy School recommended grade distribution.
Schedule of Course Meetings

Rationale for Energy Policy (January 29 – February 21)

1. Imperfect Competition: Oil Markets
2. Imperfect Competition: Electricity Markets
3. Imperfect Competition: Natural Gas Markets
4. Externalities
5. Public Goods
6. International Policy Governance
7. Macroeconomics of Energy Shocks
8. Debate 1: The National Interest

Evaluation of Energy Policy (February 26 – March 26)

10. No-Policy Baseline and Scenario Forecasting
11. Valuing Mortality Risk Reductions
12. Social Cost of Carbon
13. Debate 2: Private Benefits
14. Discounting and Uncertainty
Debate 3: Catastrophic Risks

Design of Energy Policy (March 28 – May 2)

15. Regulatory Mandates
16. Energy Taxes
17. Quantity Instruments
18. Instrument Choice
20. Clean Energy Subsidies
21. Fossil Fuel Subsidies
22. Biofuels Policy
23. Liability and Insurance
24. Information and Defaults
25. Innovation and R&D Policy
January 29: Imperfect Competition: Oil Markets

In-Class Exercise
OPEC role-playing game launched.

Readings: Journal Articles, Working Papers, and Academic Press
Pindyck, R.S. 1978. Gains to Producers from the Cartelization of Exhaustible Resources. Review of Economics and Statistics 60(2).

Readings: Non-Academic Reports

Readings: Policy Briefs, Press, and Non-Technical
January 31: Imperfect Competition: Electricity Markets

Readings: Journal Articles, Working Papers, and Academic Press


Readings: Non-Academic Reports


Readings: Policy Briefs, Press, and Non-Technical


February 5: Imperfect Competition: Natural Gas Markets

Readings: Journal Articles, Working Papers, and Academic Press
World Natural Gas Markets and Trade: A Multi-Modeling Perspective.  2009.  The Energy Journal, Special Issue, sponsored by the Stanford Energy Modeling Forum. In particular, you may refer to these papers in the issue:
Hartley and Medlock. “Potential Futures for Russian Natural Gas Exports.”
Egging et al. “Representing GASPEC with the World Gas Model.”
Holz et al. “Perspectives of the European Natural Gas Markets Until 2025.”

Readings: Non-Academic Reports

Readings: Policy Briefs, Press, and Non-Technical
February 7: Externalities

Readings: Journal Articles, Working Papers, and Academic Press


Readings: Non-Academic Reports


Readings: Policy Briefs, Press, and Non-Technical

February 12: Public Goods

Readings: Journal Articles, Working Papers, and Academic Press


Readings: Policy Briefs, Press, and Non-Technical

February 14: International Policy Coordination

In-Class Exercise
OPEC role-playing game debrief.

Readings: Journal Articles, Working Papers, and Academic Press


Readings: Non-Academic Reports

Readings: Policy Briefs, Press, and Non-Technical


February 19: Macroeconomics of Energy Shocks

Policy Memo 1
Strategic Petroleum Reserve analysis and memo assigned. Due March 7.

Readings: Journal Articles, Working Papers, and Academic Press


Readings: Non-Academic Reports


Readings: Policy Briefs, Press, and Non-Technical


February 21: Debate 1: The National Interest

The Keystone XL pipeline decisions rests with a determination of whether the project is in the “national interest.” Pending decisions for approval of LNG export terminals rest with a determination of whether these projects are in the “public interest.” What energy, economic, environmental, ethical, political, and other considerations should be accounted for in determining whether an energy project is in the national or public interest? Based on these considerations, should the United States support the Keystone XL pipeline and LNG export terminals?

Suggested Readings:
Executive Order 1337: Issuance of Permits with Respect to Certain Energy-Related Facilities and Land Transportation Crossings on the International Boundaries of the United States, 2004
Keystone XL project application and review documents
15 USC §717b: Exportation or importation of natural gas; LNG terminals
Department of Energy natural gas exports webpage
February 26: Benefit-Cost Analysis Framework – NOTE, DATE TO BE RESCHEDULED

Readings: Journal Articles, Working Papers, and Academic Press

Mishan, Edward J. Euston Quah (2007), Cost-benefit analysis, New York: Routledge. Part I: Introductory Remarks (pp. 3-8) Part II: Basic concepts of benefits and costs (pp. 21-55)


Readings: Non-Academic Reports

Readings: Policy Briefs, Press, and Non-Technical
February 28: No-Policy Baseline and Scenario Forecasting

Readings: Journal Articles, Working Papers, and Academic Press

Readings: Non-Academic Reports

Readings: Policy Briefs, Press, and Non-Technical
March 5: Valuing Mortality Risk Reductions

Readings: Journal Articles, Working Papers, and Academic Press


Readings: Non-Academic Reports


Readings: Policy Briefs, Press, and Non-Technical

March 7: Social Cost of Carbon

Policy Memo 1
Strategic Petroleum Reserve analysis and memo due.

Readings: Journal Articles, Working Papers, and Academic Press

Readings: Non-Academic Reports

Readings: Policy Briefs, Press, and Non-Technical
March 12: Debate 2: Private Benefits

The economic justification for some regulatory interventions in markets for energy-consuming products has rested primarily on private, not social, benefits. In particular, fuel economy standards for vehicles and appliance efficiency standards, both of which require consideration of benefits and costs, have significant private benefits associated with lowering fuel bills for consumers over the lifetimes of the more efficient products. Should economic benefits that are private in nature, and thus not related to a market failure, be considered in evaluating a government regulation? Is there a public policy justification for intervening in markets to deliver greater private benefits? Are analyses that produce such large private benefits fully characterizing the economic benefits and costs of efficiency standards for new products?

Suggested Readings:
NHTSA Fuel Economy Website
Department of Energy Appliance Efficiency Standards Website
March 14: Discounting and Uncertainty

Energy Policy Analysis Paper
Précis due. Submit a one-page précis of your chosen energy policy issue with identification of the key analytical questions and associated readings. Include links to or copies of proposed readings.

Readings: Journal Articles, Working Papers, and Academic Press


Readings: Non-Academic Reports


Readings: Policy Briefs, Press, and Non-Technical

March 26: Debate 3: Catastrophic Risks

Low- (or unknown but presumed low-) probability, large-magnitude events characterize the production and consumption of energy. Recent examples include the 2010 BP Deepwater Horizon oil spill and the 2011 Fukushima nuclear accident. As atmospheric greenhouse gas concentrations grow at unprecedented rates, more and more scientists have expressed concerns about the prospect of abrupt and/or catastrophic climate change. How should policy evaluation account for potential catastrophic events? In the case where probability distributions are unknown, how could an analyst evaluate a large magnitude outcome? Should benefit-cost analysis be employed for energy policy problems characterized by catastrophic events? If not, what do you recommend as an alternative analytic framework?

Suggested Readings:
March 28: Regulatory Mandates

Readings: Journal Articles, Working Papers, and Academic Press


Joseph Stiglitz. (2000). “Chapter 7: Public Production and Bureaucracy,” Economics of the Public Sector

Readings: Policy Briefs, Press, and Non-Technical

April 2: Energy Taxes

Readings: Journal Articles, Working Papers, and Academic Press

Readings: Non-Academic Reports

Readings: Policy Briefs, Press, and Non-Technical
April 4: Quantity Instruments

Policy Memo 2
Kyoto Protocol negotiations analysis and memo assigned. Due April 18.

Readings: Journal Articles, Working Papers, and Academic Press

Readings: Non-Academic Reports

Readings: Policy Briefs, Press, and Non-Technical
April 9: Instrument Choice

Readings: Journal Articles, Working Papers, and Academic Press


Readings: Non-Academic Reports


Readings: Policy Briefs, Press, and Non-Technical


April 11: Debate 4: A National Clean Energy Standard

In 2010, three Republican Senators proposed a Diverse Energy Standard that would mandate that a share of electricity, nationwide, come from a set of “clean” energy sources, including renewables, nuclear, and fossil fuel with carbon capture and storage technology. In 2011, President Obama proposed a National Clean Energy Standard that would employ a similar mandate, although it would also cover natural gas-fired power generation and set more ambitious goals. These proposals build on the renewable and alternative energy standards currently in place in about 30 states. Should the United States design and implement a national clean energy standard? Is it the most effective way to address important power sector externalities? How does it compare to tax credits and grants for clean energy? How does it compare to greenhouse gas emission cap-and-trade or carbon tax policies? How might the “ideal” national clean energy standard be modified in order to secure passage in Congress, and would this politically viable alternative be preferred to other politically viable options?

Suggested Readings:
April 16: Clean Energy Subsidies

Readings: Journal Articles, Working Papers, and Academic Press


**Goldthau, Andreas and Jan Martin Witte, Global energy governance: the new rules of the game, Brookings Institution, Global Public Policy Institute, 2010.**


Readings: Non-Academic Reports


**Congressional Budget Office. 2011. Federal Loan Guarantees for the Construction of Nuclear Power Plants. August.**

Readings: Policy Briefs, Press, and Non-Technical

**Wind Jammers at the White House. 2010. Wall Street Journal, November 12.**


**Darmstadter, Joel and Joshua Linn. 2011. Loan Guarantees Reconsidered. RFF Policy Commentary, 10/3/11.**
April 18: Fossil Fuel Subsidies

Policy Memo 2
Kyoto Protocol targets and trading analysis and memo due.

Readings: Journal Articles, Working Papers, and Academic Press

Readings: Non-Academic Reports

Readings: Policy Briefs, Press, and Non-Technical
**The U.S. Tax Subsidies for Oil Companies – Posner, Becker-Posner Blog, 5/15/11
**Subsidies to Oil and Other Energy Sources – Becker, Becker-Posner, Blog, 5/15/11
April 23: Biofuels Policy

Readings: Journal Articles, Working Papers, and Academic Press


Readings: Non-Academic Reports


Readings: Policy Briefs, Press, and Non-Technical


April 25: Liability and Insurance

Readings: Journal Articles, Working Papers, and Academic Press


Readings: Non-Academic Reports


Readings: Policy Briefs, Press, and Non-Technical


Richardson, N. 2010. Deepwater Horizon and the Patchwork of Oil Spill Liability Law. RFF Backgrounder, May.
April 30: Information and Defaults

Readings: Journal Articles, Working Papers, and Academic Press

Readings: Non-Academic Reports

Readings: Policy Briefs, Press, and Non-Technical
May 2: Innovation and R&D Policy

Readings: Journal Articles, Working Papers, and Academic Press


Readings: Non-Academic Reports

*President’s Office of Advisors on Science and Technology. 2010. Report to the President on Accelerating the Pace of Change in Energy Technologies through an Integrated Federal Energy Policy. November.


Readings: Policy Briefs, Press, and Non-Technical


Final papers are due 5pm May 10.