

ECON 330T – Fall 2025
Energy and Environmental Economics

Section 36120: TTH 12:30pm – 1:45pm in CAL 100
Section 36125: TTH 3:30pm – 4:45pm in WCH 1.120

Professor: Jackson Dorsey
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Office Hours: Thursdays 2:00pm – 3:00pm, BRB 3.130 (in-person)

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Office Hours: Fridays 10:00am – 11:00am on Zoom ([Link](#))

Point of Contact: All course-related questions should be sent to our course email account: energyecon@austin.utexas.edu. This account is monitored by the entire teaching team to ensure timely responses. Messages sent to personal email addresses may not receive a timely reply, so please always use the course email.

Course Summary: This course will investigate energy and environmental issues from an economic perspective using a quantitative approach. In the first part of the course, students will learn how to think about energy markets and the environment using tools from economics. The remainder of the course will focus on specific energy market issues such as oil and gas markets, electric vehicles, electricity markets, and renewable energy.

Course Outcomes:

1. Use and evaluate scientific and economic information to reach defensible conclusions.
2. Describe the implications of using markets to supply and allocate energy.
3. Identify market failures that justify energy policy interventions.
4. Develop skills to evaluate the benefits and costs of different energy policies.

Prerequisites: ECO 304K

Readings: There is no required textbook. Recommended readings will be posted on Canvas.

Mode of Instruction: This course will be delivered through in-person lectures.

Grading Scale:

A: 94–100; A-: 90–93.9

B+: 88–89.9; B: 83–87.9; B-: 80–82.9

C+: 78–79.9; C: 73–77.9; C-: 70–72.9

D+: 68–69.9; D: 63–67.9; D-: 60–63.9

F: < 60

Grading Structure: At the start of the semester, students will choose between two grading options:

Option A (Default)

Exams (Best 2 of 3): 93%

Electricity Strategy Game: 7%

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Option B – Engagement Track

Exams (Best 2 of 3): 70%

Electricity Strategy Game: 5%

Participation + Problem Sets + Quizzes: 25%

Students must commit to a grading option by the end of the second week of the semester. Those who do not submit a choice via Canvas will automatically be placed in Option A. Students selecting Option B must attend class regularly and complete low-stakes assessments throughout the semester. Participation credit is determined by your response rate to in-class polls, and credit for homework is based on completion only. Students selecting Option B will also take short quizzes that cover problem set content.

Exams: There will be three in-class exams: two midterms and one cumulative final exam. Your *best two out of three* exam scores will each count for half of your total exam grade. The final exam is optional if you complete both midterms. However, if you miss one of the midterms for any reason, the final becomes mandatory and will be used as a replacement. Exams will be held in person and will not be offered remotely. **No makeup exams will be given.** You must complete at least two of the three exams to receive a passing grade.

Electricity Strategy Game: We will play the Electricity Strategy Game to gain hands-on experience with economic concepts and the functioning of electricity markets. The game is played over two-week period. Each student must attend all of their assigned in-class game sessions and complete a short pre-game assignment in order to receive credit. The game is **in-person only** and cannot be made up. If you cannot attend the scheduled game days, you should not enroll in this course. The game is worth 5-7% of your final grade depending on the grading option you choose.

Engagement Bundle (Option B only): If you select Option B, 25% of your final grade will come from a bundled engagement score, comprised of three parts:

- **Participation (10%):** Participation credit will be earned through attendance and responses to in-class Instapoll questions. Any student attending at least 80% of lectures and responding to the associated polls will receive a full points for participation. Partial credit is based on your actual poll response rate.
- **Problem Sets (5%):** There will be 8 problem sets assigned over the semester, each with a mix of conceptual and quantitative questions. Problem sets are designed to help you engage regularly with the material and practice applying key concepts. All problem sets are graded for completion only, meaning you will receive full credit for making a good-faith effort on all questions. Your best 6 of 8 scores will count toward your final grade. **Late submissions will not be accepted.**
- **Concept Quizzes (10%):** You will take 6 short in-class concept quizzes throughout the semester. Each quiz includes two multiple choice questions (graded for correctness). Quizzes will be administered at the beginning of selected lectures and will last approximately 5 minutes. Your best 4 out of 6 quiz scores will count toward your final grade. **Quizzes cannot be made up**, but the drop policy is designed to accommodate occasional absences.

If you do not opt into the engagement track, these components will not be graded and your exams will carry greater weight (see Option A).

Lecture Recordings: This class is using the Lectures Online recording system. This system records the audio and video material presented in class for you to review after class. Class recordings are reserved only for students in this class for educational purposes and are protected under FERPA. The recordings should not be shared outside the class in any form. Violation of this restriction by a student could lead to Student Misconduct proceedings. Links for the recordings will appear in the Lectures Online tab on the Canvas page for this class. You will find this tab along the left side navigation in Canvas. To review a recording, simply click on the Lectures Online navigation tab and follow the instructions presented to you on the page. You can learn more about how to use the Lectures Online system at <http://sites.la.utexas.edu/lecturesonline/students/how-to-access-recordings/>

Lecture Notes: Lecture notes will be posted on the course site.

Grade Appeals: If you wish to appeal your grade on an assignment you must bring it to our attention, in writing, within 24 hours of when the assignment is returned. I reserve the right to regrade the entire assignment and the new grade will be final.

Classroom Conduct: Electronic devices should only be used in the classroom for class purposes. These devices (laptops, tablets, phones, etc.) are prohibited during exams. If a student's use of an electronic device is disruptive to teaching and/or learning, I will ask

that the student discontinue the use of that device. Please be considerate of those around you.

Academic Integrity: For problem sets (if you choose the engagement track), you are welcome to use any resources that support your learning. This includes lecture notes, textbooks, online materials, generative AI tools (e.g., ChatGPT), and collaboration with classmates. However, you are still expected to make a good-faith effort to understand the material yourself and to write up your own answers.

Quizzes and exams are closed-book and must be completed individually. During quizzes and exams, you may not access notes, the internet, generative AI tools, or communicate with classmates. Any such behavior constitutes a violation of course policy and the University's Code of Academic Integrity.

Students who violate academic integrity rules are subject to the student conduct process and potential disciplinary action. A student found responsible for academic misconduct may be assigned both a status sanction and a grade impact for the course. The grade impact could range from a zero on the assignment in question up to a failing grade in the course. A status sanction can range from probation, deferred suspension, and/or dismissal from the University.

To learn more about academic integrity standards, tips for avoiding a potential violation, and the overall conduct process, please visit the Student Conduct and Academic Integrity website at: <https://deanofstudents.utexas.edu/conduct/standardsofconduct.php>.

Accessibility: The University of Texas is committed to ensuring access to learning opportunities for all students. If you have an access need, please contact me or Student Disability Services.

Acknowledgements: Many of the inspirations and materials for this course come from Todd Gerarden, Arthur van Benthem, Severin Borenstein, Erin Mansur, Blake Shaffer, and Mar Reguant.

Important Dates:

Midterm 1: Tuesday, October 7

Midterm 2: Tuesday, December 2

Final Exam: Saturday, December 13

Electricity Game (Attendance Required): October 23, October 28, October 30, November 4

Course Outline and Readings:

The following is a list of optional readings that support the class content. Underlined readings are more technical – just try to get the gist of what’s in the article, don’t read the whole thing or stress about understanding every last detail.

*Topics and readings are subject to change.

Introduction

August 26: Introduction to Energy and Environmental Economics

- Jack, K. 2022, How much do we know about the development impacts of energy infrastructure?
- Naimoli and Ladislav 2020, Deep Decarbonization Pathways.
- Energy Information Administration, 2022. Annual Energy Outlook 2022.
- International Energy Agency, 2021. World Energy Outlook 2021.

August 28: Market Efficiency and Scarcity Pricing

- Simonetti, I. 2022. Exxon and Chevron Report Record Profits on High Oil and Gas Prices. *NYTimes*.
- ExxonMobil 2Q2022 Earnings Release

September 2: Market Efficiency and Scarcity Pricing (continued)

- [Marketplace: U.S. oil refiners are doing well, even though gasoline prices are down](#)
- DiSavino, 2019. Explainer: Why Are U.S. Natural Gas Prices in Texas Below Zero? *Reuters*.

Pollution, Market Failures, and Policy Solutions

September 4: Market Failures, Fossil Fuel Background

- [Pricing Nature \(Podcast episode 1\)](#)
- [Pricing Nature \(Podcast episode 2\)](#)
- [Investopedia: How the Oil and Gas Industry Works](#)
- [NPR: Breaking down the price of gasoline \(podcast\)](#)
- API, 2014. Understanding Crude Oil and Product Markets.

September 9: Markets for Pollution, Cap and Trade

- Goulder, L., 2013. Markets for Pollution Allowances: What Are the (New) Lessons?

- Schmalensee, R. and R. Stavins, 2019. Learning from Thirty Years of Cap and Trade.
- Mesa, N., 2024. Washington's controversial cap- and-trade program, explained. Really. *High Country News*.

Economics of Oil and Gas and the Environment

September 10: Oil and Gas Upstream (The Hotelling Model of Resource Extraction)

- Eaton, C., 2020. Small Oil Drillers Are Turning Off Taps More Quickly Than Anticipated. *Wall Street Journal*.
- [WSJ Explains: The Forces Fueling 2020's Oil Bust \(4 min. video\)](#)

September 16: Environmental Policy in the Oil industry

- Heal, G. and W. Schlenker. 2019. Carbon Taxes and the Oil Market.
- Heal, G. and W. Schlenker. 2020. Coase, Hotelling and Pigou: The Incidence of a Carbon Tax and CO₂ Emissions. NBER Working Paper No. 26086.

September 18: Environmental Policy in the Oil industry II

- Clark, P. 2013. Norwegian's provocative plan to curb climate change wins EU prize. *The Financial Times*.
- Harstad, B. 2012. Buy Coal! A Case for Supply-Side Environmental Policy. *Journal of Political Economy*, 120(1). Only pages 77-80 required.
- Geman, B. 2021. Making Sense of Shell's Exit from the Permian Basin. *Axios*.
- Tabuchi, H. 2022. Oil Giants Sell Dirty Wells to Buyers With Looser Climate Goals, Study Finds. *NYTimes*.

September 23: Forecasting and Financial Markets for Oil and Gas

- [NPR: A Bet, Five Metals And The Future Of The Planet](#)
 - * Longer version: [Planet Money #508: A Bet On The Future Of Humanity](#)
- Worstall, T., 2013. But Why Did Julian Simon Win The Paul Ehrlich Bet? *Forbes*.
- Bailey, J., 2007. Southwest Airlines Gains Advantage By Hedging On Long-Term Oil Contracts. *The New York Times*.
- Hamilton, J., 2009. Understanding Crude Oil Prices. *The Energy Journal* 30(2). Only pages 179-188 required.

September 25: Oil and Gas Downstream: Monopolies and Rate-of-Return Regulation

- Davis, L.W. and Muehlegger, E., 2010. Do Americans consume too little natural gas? An empirical test of marginal cost pricing. *The RAND Journal of Economics*, 41(4), pp.791-810.

- S. Borenstein. [“Reinventing Fixed Charges,”](#) Energy Institute Blog, UC Berkeley, November 16, 2020.
- Borenstein, Fowlie, and Sallee. 2021. Designing Electricity Rates for An Equitable Energy Transition. Energy Institute Working Paper 314.
- Davis and Hausman. 2022. Who will pay for legacy utility costs? *Journal of the Association of Environmental and Resource Economists*.
- Davis, L.W. and Kilian, L., 2011. The allocative cost of price ceilings in the US residential market for natural gas. *Journal of Political Economy*, 119(2), pp.212-241.

September 30: Oil and Gas Downstream: Gasoline Markets, Cars, Policies

- Larrick, R., and J. B. Soll, 2008. The MPG Illusion. *Science*.
- Anderson, S., et al., 2011. Automotive Fuel Economy Standards: Impacts, Efficiency, and Alternatives. *Review of Environmental Economics and Policy* 5(1).

October 2: Electric Vehicles

- Tabuchi, H. and B. Plumer, 2021. How Green are Electric Vehicles? *NYTimes*.
- Holland, S., et al., 2016. Are There Environmental Benefits from Driving Electric Vehicles? The Importance of Local Factors. *American Economic Review* 106(12).
- Should We Ban Gas-Powered Cars? *The Economist*, 2020.

October 6: Midterm 1 Review at 5:30pm (optional)

October 7: **First Midterm Exam**

Economics of Electricity and the Environment

October 9: Electricity Background

- [Burn: How the grid works \(4 min. video\)](#)
- S. Borenstein. [“Pricing for the Short Run,”](#) Energy Institute Blog, UC Berkeley, August 19, 2019.

October 14: Electricity Pricing and Investment

- “What Went Wrong with Texas’s Main Electric Grid and Could It Have Been Prevented?” *Texas Monthly*, 2/17/21.

October 16: Market Power, Residual Demand and Market Manipulation

- M. Slezak, “Energy Companies Withholding Supply to Blame for July Price Spike, Report Finds,” *The Guardian*, 8/17/16.

- P. Healy and K. Palepu, 2003. "The Fall of Enron," *Journal of Economic Perspectives* 17(2). [read up to p. 12]
- S. Borenstein, 2002. "The Trouble with Electricity Markets: Understanding California's Restructuring Disaster," *Journal of Economic Perspectives* 16(1): pp. 191-211.

October 21: Profit Maximization in Practice (Intro to the Electricity Strategy Game)

- Teams Prepare for the Electricity Strategy Game
- [Energy game manual](#)
- Portfolio Evaluation Guide on canvas

October 23, October 28, October 30, November 6: Electricity Strategy Game

- 1/2 of class will play the Electricity Strategy Game (in class) Tuesdays the other half will play Thursdays

Economics of Renewable Energy

November 6: Renewable Energy Background

- Bloomberg New Energy Finance. Renewable Energy Investment Tracker, 2H 2022. August 2022.
- Lazard. Levelized Cost of Energy Analysis – Version 15.0. October 2021.
- Lazard. Levelized Cost of Storage Analysis – Version 7.0. October 2021.
- S. Borenstein, 2012. "The Private and Public Economics of Renewable Electricity Generation," *Journal of Economic Perspectives* 26(1): pp. 67-92.

November 11: Renewable Energy Policy

- J. Dizard. "Tricky Tax Equity Erodes US Infrastructure Boom," *The Financial Times*, 1/6/2017.
- [Bipartisan Policy Center: IRA Summary - Energy and Climate Provisions](#)
- S. Borenstein. "Can Net Metering Reform Fix the Rooftop Solar Cost Shift?" Energy Institute Blog, UC Berkeley, January 25, 2021.
- J. Leslie. "Nevada's Solar Bait-and-Switch," *The New York Times*, 2/1/2016.
- J. Brady. "Solar Firms Plan To Return To Nevada After New Law Restores Incentives," *NPR*, 6/7/2017.

November 13: Renewable Energy Policy II

- [NPR's Planet Money Episode 616: How Solar Got Cheap](#)

- K. Bullis. "The Solar Panels Are Free, as Long as You Pay for the Power," *MIT Technology Review*, 1/5/2011.
- D. Cardwell. "Bonds Backed by Solar Power Payments Get Nod," *The New York Times*, 11/14/2013.
- C. Flammer, 2020. "Green Bonds: Effectiveness and Implications for Public Policy" *Environmental and Energy Policy and the Economy* 1(1): pp. 95-128.

November 18: Renewable Energy Procurement: Physical and Virtual Contracts

- ["Corporate Clean Energy Buying Grew 18% in 2020, Despite Mountain of Adversity"](#) *Bloomberg New Energy Finance*, 1/26/21.
- [Google: 24/7 by 2030: Realizing a Carbon-free Future](#)
- J. Bartlett, 2019. "Reducing Risk in Merchant Wind and Solar Projects through Financial Hedges" Resources for the Future Working Paper 19-06.

November 20: Energy Storage and Decarbonization

- [Vox: How America can leave fossil fuels behind, in one chart \(7 min. video\)](#)
- [Blackrock Investment Institute: Managing the Net-Zero Transition](#)
- L. Davis. "Electrification? We Are Already On The Way," Energy Institute Blog, UC Berkeley, November 4, 2019.
- Jacobson, Delucchi, Cameron, and Frew. 2015. "Stabilizing grid with 100% renewables 2050." *PNAS*, 112 (49) 15060-15065.
- Clack *et al.* 2017. "Evaluation of 100% wind, water, and solar power." *PNAS*, 114 (26) 6722-6727.

November 25, November 27: **No Class - Thanksgiving Break**

December 1: Midterm 2 Review at 5:30pm (optional)

December 2: **Second Midterm Exam**

December 4: **No Class**

December 13 : **Final Exam (Optional)**