

Energy Justice, Climate Change and Poverty: Practical Solutions to Achieving Equity Across Income Group in the US Energy System

Contact: Mark Wolfe: Draft 2/14 /25

Synopsis

Energy justice refers to the goal of equalizing access to energy (primarily for home energy users) among different social, economic, and racial groups in our society. A related concern is how to remedy the social, economic, and health impacts on those who have been disproportionately harmed by the inequality in our energy system and who struggle to pay energy bills that have become unaffordable to them. What sets this course apart from other energy justice classes is that it will also address the emerging and practical business solutions that can be used to create more fairness and access to energy for all segments of our society.

This course will be structured as a seminar and include both lectures and engaging group discussion. It will provide students with exposure to the latest thinking in the growing field of energy justice and give students an opportunity to critically think about it. The course will draw from multiple disciplines, including but not limited to regulatory, business, sociology, and economics. It will cover topics relating to energy justice in the areas of policy and regulation, community advocacy, law, public health, and emerging business strategies in the energy field.

Learning Outcomes The course will provide both a quantitative and qualitative understanding of poverty and energy demand in the US, and the interplay between the two. Where possible it will also discuss the use of life-cycle costing to quantify the true cost of decision-making. Lastly, students will have an opportunity to test out various strategies by selecting one state to analyze its approach to addressing energy poverty and propose practical solutions.

Students will:

- Learn about energy poverty in the US, what the term “energy poverty” means and energy consumption patterns based on income and regional differences and how they change by income quintile.
- Discuss the business of providing residential energy. The role of utilities, subsidy models used to increase energy affordability, the virtual power plant concept and the impact of the transition to renewable energy.
- Study household survey and national statistics data on consumption and energy use. The class will also study the limits of the data for understanding the impact on different social, economic, and racial groups in our society. The course will cover basic models for household energy transitions and bill affordability models.
- Review cutting edge research on living standard measures and the role of energy affordability/poverty and new energy saving technologies.
- Learn about government regulatory and management systems and models that are designed to address energy poverty.

- Learn about the connection between rising temperatures, climate change and the need to address appropriate heating and cooling strategies to increase access to affordable cooling for low income families and at the same time stabilizing or reducing their carbon footprint.

Assignments: There will be four written assignments for the course each addressing a particular question or issue. The first three assignments will be 20% each and the last assignment will be 25% of the final course grade. Class participation will count for 15% of the total grade.

The first assignment, prior to the beginning of the third class, will be for each student to select a state, outline the strategy followed by the state to address energy poverty, and provide a list of primary sources of both media and government, that will be used to provide demographic and economic data on the state's low income population, energy pricing, cost of home energy, and state policies and programs to address energy poverty. The paper will be in the form of a memo to a state public service commissioner (5 to 6 pages).

The second assignment, due at the end of the sixth class will be to update the first assignment with new information learned during the first class with a detailed outline of the state's strategy to address energy poverty. The assignment will include a summary of the state's policies and programs to help families pay their home energy bills and a description of the low income population by size, concentration in the state, relative distribution by income, energy use, utility bills and available data on arrearages and shut-offs.

The third assignment, due at the end of the ninth class will be to prepare a final memo to the state public service commissioner providing an analysis of the state's plans to address energy poverty and propose solutions to increase energy affordability for low income families including solar, virtual power plants and comprehensive bill payment assistance. The resulting assignment should be no more than 10 pages. A presentation and discussion of the assignment will be made by each student during session 12.

The fourth assignment, due at the end of the 13th class, will be like the third assignment except it will be written to discuss a national strategy to end energy poverty. The resulting assignment should be no more than 10 pages as a memo to a member of Congress.

A presentation and discussion of the assignment will be made by each student during session 14.

The course will be divided into 14 sessions as follows as follows; reading materials are listed by session at the end of the class summary:

Sessions 1: Providing an Analytical Framework for Understanding Energy Poverty within the context of Energy Justice: The first session will take a deep dive into the analytical sources of data and research that provide context about energy poverty in the US. These sources include examples of the social, economic and survey research data that are essential to understanding energy poverty and developing public policy strategies and solutions to increase the affordability of home energy.

Mark Wolfe

Section 2: Discussion of three state-based models designed to address energy poverty. The first will be based on the percent of income payment plan, the second will be based on tiered-discounts and the third will be based on a straight reduction in payment. Each model will also include different strategies to provide access to weatherization and other energy efficiency and renewable energy measures.

Cass Lovejoy

Session 3: Addressing Energy Poverty through the Lens of Climate Change: Session 3 will address the rapidly changing outlook for energy poverty as summer cooling moves from an option to a necessity in many parts of the nation. What are the implications for housing, energy efficiency and affordability? What are the strengths and limitation of the current federal, state and utility programs to help families adapt to higher temperatures?

Lead: Mark Wolfe

Guest Speaker: Jennifer Bosco, Attorney, National Consumer Law Center

Session 4: Addressing Energy Poverty through the Lens of Public Health: When does energy affordability become a public health concern rather than just another indicator of income? What choices do families make when they face unaffordable energy bills? What do we know about the impact on the public health system when temperatures rise and low income families struggle to pay cooling bills? What are heat islands and how do they disproportionately impact low income families, especially low income minorities?

Lead Cass Lovejoy

Guest Speaker: Dr. Peter Khan, Yale University Medical School

Session 5: State Utility Regulatory Structures: This session will discuss the role of state Public Service Commissions in shutting off customers from power when they cannot pay their utility bills, approving discount and other affordability programs, and setting standards for energy efficiency programs. There will be a particular focus on summer shut-off rules, an increasingly important issue as summer temperatures continue to break national records.

Lead Mark Wolfe

Guest Speaker (s): Fred Hoover, Chair, Maryland Public Service Commission

Session 6: Housing Sector and Energy Poverty: A family's energy bill is a function of the price of energy, weather conditions and the relative degree of their home's energy efficiency. This session will review the nation's energy efficiency of the low income housing stock and opportunities and strategies for upgrading it. It will include a discussion of emerging business models and federal and state subsidies to retrofit the nation's low income housing stock.

Lead Mark Wolfe

Session 7: Federal legislation: The Low Income Home Energy Assistance Program and the Weatherization Assistance Program are the two primary federal programs that help low income families pay their energy bills and increase the energy efficiency of their homes. This session will discuss the structure of these programs, how they help families and their strengths and limitations. It will also discuss several new IRA programs that significantly increase available resources.

Lead Cass Lovejoy

Session 8: Strategies to Reduce/Eliminate Energy Poverty: The cost of home energy is becoming increasingly unaffordable for lower income families. Rising arrearage rates and shut-offs indicate that new strategies are needed to make energy affordable to low income families. This session will discuss the following options being developed:

- Utility bill subsidies: caps on bill payments, discount programs and in some cases, state strategies that essentially “ignore the bill”
- Subsidized solar opportunities– community solar and roof top solar.

Lead Mark Wolfe

Guest Speaker: Scott Sklar, Professor, GW

Session 9: Financing Affordability: Some would argue that because energy retrofits help to save money on energy bills, some of the improvements can be financed through various loan programs. This session will discuss the pros and cons of on-bill repayment, direct loans, and PACE loans to retrofit low income housing.

Lead: Mark Wolfe

Guest Speaker: Elizabeth Bellis, Senior Advisor, Title 17 Loan Program, US DOE

Session 10: Discussion of State Energy Reviews: Each state offers their own programs. Students will make presentations of their selected state review and recommendations.

Lead: Cass Lovejoy

Session 11: Impact Investing in Addressing Energy Poverty: Increasing the energy efficiency of low income buildings will help to address utility emissions contributing to climate change as well as reducing the amount of energy needed to install high energy efficiency systems.

From a public policy perspective, do these improvements all need to be paid for by government agencies or can they be paid for by investors since at least some of the improvement can be structured as investments offering attractive returns to investors? Examples of potential impact investments include investments to replace outmoded energy equipment in public housing, developing community solar programs and providing capital for on-bill finance programs.

Guest Speaker: Dr. John Forrer, Professor, GW Business School

Lead: Cass Lovejoy

Session 12: Energy Poverty Solutions Being Developed in Europe: This session will discuss emerging strategies in Europe and other countries to address energy poverty that could provide policy options for consideration by US policymakers, including rate structures, retrofit strategies and direct subsidy models.

Lead Mark Wolfe

Guest Speaker: Stephan Bouzarouski, Professor, University of Manchester, UK

Session 13: Discussion of proposed state plans by the students: Each student will discuss the current status of the low income population in their selected state and proposed changes to reduce energy poverty.

Mark Wolfe/Cass Lovejoy

Session 14: Discussion of proposed national plans written by the students: Each student will discuss their proposed national plan and how it will address/eliminate at least one aspect of energy poverty.

Mark Wolfe/Cass Lovejoy

Background Readings by Session

Session 1: Background Reading

Residential Energy Consumption Survey Reports

<https://www.eia.gov/consumption/residential/data/2020/>

<https://www.eia.gov/consumption/residential/data/2020/hc/pdf/HC%2011.1.pdf>

Household Energy Insecurity Report

Energy Hardship Report: https://neada.org/wp-content/uploads/2022/11/NEADA-Energy-Hardship-Report_Final.pdf

Winter Fuels Outlook Report

<https://www.eia.gov/outlooks/steo/report/perspectives/2023/10-winterfuels/article.php>

Session 2: Background Reading

<https://www.bls.gov/news.release/pdf/cpi.pdf>

<https://www.census.gov/library/publications/2023/demo/p60-280.html>

<https://www.cbpp.org/topics/poverty-and-income>

<https://www.cbpp.org/research/a-guide-to-statistics-on-historical-trends-in-income-inequality>

<https://www.federalreserve.gov/publications/2023-economic-well-being-of-us-households-in-2022-expenses.htm>

Session 3: Background Reading

<https://thehill.com/opinion/energy-environment/3918051-energy-poverty-in-america-a-never-ending-emergency/>

<https://neada.org/energy-affordability-project/>

<https://www.cmu.edu/cee/news/news-archive/2023/08-2023-examining-inequities-how-rising-temperatures-exacerbate-vulnerability-in-elderly-and-low-income-groups.html>

<https://www.npr.org/2021/07/14/1015983700/extreme-heat-is-getting-worse-for-low-income-non-white-americans-a-new-study-sho>

<https://www.kff.org/racial-equity-and-health-policy/issue-brief/continued-rises-in-extreme-heat-and-implications-for-health-disparities/>

<https://www.washingtonpost.com/climate-environment/2021/05/25/heat-inequality-climate-change/>

Session 4: Background Reading

<https://www.epa.gov/heatlands/heat-islands-and-equity>

<https://libguides.rutgers.edu/c.php?g=336288&p=2265465>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8755748/>

<https://neada.org/program-policy-reports/liheapsurvey/>

Session 5: Background Reading

Residential Energy Consumption Survey Reports

<https://www.eia.gov/consumption/residential/data/2020/>

<https://www.eia.gov/consumption/residential/data/2020/hc/pdf/HC%2011.1.pdf>

Household Energy Insecurity Report

<https://www.epa.gov/statelocalenergy/energy-efficiency-affordable-housing>

<https://www.filesforprogress.org/reports/green-new-deal-public-housing-national.pdf>

Session 6: Background Reading

<https://www.everycrsreport.com/reports/RL31865.html>

<https://www.energy.gov/scep/wap/weatherization-assistance-program>

<https://content.rewiringamerica.org/reports/IRA%20Benefits%20to%20Disadvantaged%20Communities.pdf>

<https://www.hud.gov/GRRP>

Session 7: Background Reading

<https://liob.cpuc.ca.gov/wp-content/uploads/sites/14/2021/12/Item-7-PIPP-Pilot-Presentation-V2.pdf>

<https://www.raponline.org/blog/use-less-save-more-adding-a-conservation-incentive-to-percentage-of-income-payment-programs/>

<https://www.nclc.org/topic/utility-consumer-protections-bill-payment-assistance/>

<https://www.nclc.org/wp-content/uploads/2022/08/report-reversing-energy-system-inequity.pdf>

<https://www.energy.gov/justice/articles/how-energy-justice-presidential-initiatives-and-executive-orders-shape-equity-doe>

<https://www.healthaffairs.org/doi/10.1377/hpb20230518.472953/>

<https://www.energy.gov/scep/articles/bill-financing-energy-efficiency-improvements-toolkit>

<https://www.energy.gov/energysaver/financing-energy-efficient-homes>

Session 8: Background Reading

<https://www.energy.gov/femp/energy-service-companies>

<https://www.energy.gov/articles/biden-harris-administration-launches-new-energy-earthshot-lower-energy-bills-affordable>

<https://www.eia.gov/consumption/residential/data/2020/>

https://www.energystar.gov/partner_resources/residential_new/related_programs/housing_agencies

<https://www.gao.gov/blog/affordable-housing-crisis-grows-while-efforts-increase-supply-fall-short>

<https://www.nrel.gov/docs/fy23osti/86210.pdf>

Session 9: Background Reading

<https://www.c2es.org/content/state-climate-policy/>

<https://www.aceee.org/blog-post/2023/05/leading-energy-efficiency-programs-model-strategies-benefit-underserved>

<https://www.eesi.org/electrification/be>

<https://www.fortnightly.com/fortnightly/2019/05/toward-new-energy-efficiency-world-order?authkey=b6a6e0576969fb020385c86718e998768e4eb169d0bf416c7ac5f595ad7a6b05>

<https://www.raponline.org/toolkit/beneficial-electrification/>

Section 11: Background Reading

<https://thegiin.org/impact-investing/need-to-know/>

<https://www.investopedia.com/terms/i/impact-investing.asp>

<https://www.rockpa.org/guide/impact-investing-introduction/>

Section 12: Background Reading

[https://www.europarl.europa.eu/RegData/etudes/BRIE/2022/733583/EPRS_BRI\(2022\)733583_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2022/733583/EPRS_BRI(2022)733583_EN.pdf)

https://energy.ec.europa.eu/topics/markets-and-consumers/energy-consumer-rights/energy-poverty_en