

# YIFEI LIU

## CONTACT

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**Last Update:** September, 2025

## EDUCATION

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### University of Wisconsin, Madison

Ph.D., Agricultural & Applied Economics

*Expected 2026*

M.S., Agricultural & Applied Economics

*2022*

Affiliation, Center for Culture, History, and Environment

### University of California, Berkeley

*2020*

*(with Highest Distinction and Honors)*

B.S., Environmental Economics & Policy

B.S., Environmental Science

## RESEARCH INTERESTS

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Environmental and Energy Economics, Empirical Industrial Organization, Applied Econometrics

## RESEARCH PROJECTS

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### Job Market Paper

1. Permitting Risks, Litigation Threats, and Energy Infrastructure Investment

### Working Papers

1. An Empirical Analysis of the Interconnection Queue (with Sarah Johnston and Chenyu Yang)

[NBER working paper 31946] Reject and Resubmit at *Econometrica*

Cited by the White House in Chapter 5 of the 2025 Economic Report of the President

2. Market Structure and Transmission Investments in U.S. Electricity Markets

3. Grid Connection Costs as a Barrier to Building New Generation: Evidence and Implications for Transmission Policy (with Sarah Johnston and Chenyu Yang)

### Selected Work in Progress

1. Cluster Designs and Strategic Delay in Interconnection Queues (with Sarah Johnston and Chenyu Yang)
2. Production Network, Wind Penetration and Environmental Impact: The Case of Texas Wholesale Electricity Market (ERCOT) (with Sheldon Du and Qinan Lu)

### Pre-doctoral Publication

1. Identifying high-priority impact areas for electricity service to farmlands in Uganda through geospatial mapping (with Rebekah Shirley, Josephine Kakande, and Mark Kagarura) *Journal of Agriculture and Food Research* 5 (2021): 100172

## RESEARCH EXPERIENCE

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Research Assistant for Sarah Johnston, UW-Madison AAE	2020 - Present
Power For All Researcher, UC-Berkeley Energy and Resources Group	2019 - 2021
Research Assistant for Joseph Shapiro and Katherine Wagner, UC-Berkeley ARE	2019 - 2020

## TEACHING EXPERIENCE

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Global Health: Economics, Natural Systems, and Policy, UW-Madison AAE	Fall 2023
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## HONORS, SCHOLARSHIPS, AND FELLOWSHIPS

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Property and Environment Research Center Graduate Fellowship	2025
Deborah and David Penn Ag and Applied Economics Graduate Student Fund	2025
UW-Madison Thomsen Distinguished Graduate Dissertator Fellowship (nominated)	2025
Barbara Forrest Student Award	2024
JP International Fund Research Presentation Award	2024
UW-Madison Graduate School Conference Presentation Award	2022
Deborah and David Penn Ag and Applied Economics Graduate Student Fund	2022

## CONFERENCES & WORKSHOPS

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2025: Property and Environment Research Center, CU Environmental and Resource Economics Workshop, UW Madison Environmental Seminar, UW Madison Applied Economics Seminar, USAEE/IAEE North American Conference

2024: NBER Environment and Energy Economics Spring\*, MEA Annual Meetings, UW Madison Environmental Seminar, IPWSD Workshop in Sustainable Development, AERE Summer Conference

2023: POWER Conference on Energy Research and Policy\*, NBER Summer Institute IO\*, UW Madison Environmental Seminar

2022: AAEA Annual Meeting, Wisconsin Public Utility Institute Regional Transmission Organization Fundamentals Program, UW Madison Environmental Seminar

2021: UC Berkeley/Sloan Foundation EEE Summer Program

\* presented by co-author

## JOURNAL REFEREE

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*International Journal of Economy Energy and Environment, The Energy Journal*

## OTHER ACTIVITIES

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UW Madison AAE Env/Res Seminar Organizer	2023 - 2024
Graduate Committee Representatives	2023 - 2024
Justice, Equity, Inclusion, and Diversity Delegate Delegate	2022 - 2023
WiSolve Consulting Consultant	2021 - Present

## SKILLS

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<b>Computing</b>	R, Python, MATLAB, Stata, ArcGIS, QGIS, L <sup>A</sup> T <sub>E</sub> X, Microsoft Office
<b>Languages</b>	English (fluent), Mandarin (native), Cantonese (native)

### **Permitting Risks, Litigation Threats, and Energy Infrastructure Investment** [Job Market Paper]

Abstract: Energy infrastructure projects must navigate complex permitting processes that create bottlenecks, particularly for clean energy projects critical to climate goals. This creates a "green versus green" tension where environmental safeguards may impede decarbonization infrastructure. This study addresses the underexplored impact of permitting-related litigation on clean energy development through novel litigation data and empirical analysis. I examine how litigation affects market entry and permitting complexity, and how legal precedents from developer appeals create externalities shaping future development. Key findings reveal litigation reduces project completion likelihood by 28 percent and deters future entry by 3 percent, while precedent-setting litigation increases entry by 8 percent. Permits in litigious counties are 83 percent more likely to exceed review timelines. A structural model shows developers underutilize appeals despite 44 percent success rates. This research quantifies permitting costs, identifies litigation's deterrent effects, and estimates legal externalities, offering actionable insights for policy reform in environmental and energy economics.

### **An Empirical Analysis of the Interconnection Queue** (with Sarah Johnston and Chenyu Yang) Reject and Resubmit at *Econometrica* [NBER working paper 31946]

Abstract: Generators applying to connect to the U.S. power grid go through an interconnection queue. Most wind and solar generators that begin the process do not complete it. Using new data, we find that a long queue increases the average waiting time, and high interconnection costs are a key factor in a generator's decision to withdraw. We develop and estimate a dynamic model of the queue and quantify the effects of policy reforms. Our simulations indicate that reducing waiting times can significantly increase completions. An alternative queuing mechanism can therefore increase completed capacity by removing certain generators to reduce congestion. A flat entry fee has a similar effect. We also quantify the effects of reforming how interconnection costs are assessed. These policy reforms lead to a substantial reduction in carbon emissions.

### **Market Structure and Transmission Investments in U.S. Electricity Markets**

Abstract: A reliable and robust electricity transmission infrastructure is essential for supporting the the power sector. This paper evaluates the impact of a specific market design, known as market dispatch, on transmission infrastructure investment. Traditionally, electricity within a specific region was supplied by a single, regulated utility company. However, in the late 1990s, many regions in the United States began to shift towards a market dispatch system, where electricity generation is supplied by multiple utility companies and each company's quantity is determined by an auction. Despite this change, the transmission operations of these companies continued to be regulated based on a cost-of-service basis. I use a dynamic difference-in-differences design, taking advantage of the staggered roll-out of market dispatch. The findings suggest that the adoption of this system leads to increases in transmission investment by the utilities, nearly doubling the investment levels at the mean. However, there is no robust evidence to suggest that these utilities spend more on high-voltage transmission infrastructures, which are considered pivotal for reducing greenhouse gas emissions.

### **Rising Grid Connection Costs are a Barrier to Expanding Electricity Generation Capacity** (with Sarah Johnston and Chenyu Yang)

Abstract: Meeting projected growth in electricity demand and climate goals will require building new electricity generators. These generators must connect to an increasingly congested electric grid. We collect new data on grid connection costs for the largest regional grid operator in the United States. Network upgrade costs for grid connection have risen over time across fuel types and locations, and planned generators with high network upgrade costs are much more likely to be canceled. We show that recent transmission spending by the grid operator is associated with lower network upgrade costs for connecting generators. These findings emphasize the critical role of transmission capacity in expanding electricity generation capacity.

### **Cluster Designs and Strategic Delay in Interconnection Queues** (with Sarah Johnston and Chenyu Yang)

Abstract: Cluster study designs are increasingly used to manage grid connection requests submitted by new electricity generators. Under this scheme, grid operators group projects together to streamline the interconnection process. We collect new data on this process for SPP, a grid operator that uses cluster studies. We find that this design leads to significant interdependence in connection costs across generators. Moreover, the estimated

connection cost for a given generator tends to fall as other generators leave the queue, leading to a war of attrition. We develop a model of a generator's decision to wait or withdraw and consider the effects of alternative policies.

**Production Network, Wind Penetration and Environmental Impact: The Case of Texas Wholesale Electricity Market** (with Sheldon Du and Qinan Lu)

Abstract: the US government has spent billions subsidizing renewable energy investments every year to aim for the ambitious goal of carbon neutrality. However, the majority of these subsidies are production-based and overlook the locational and network characteristics of the electricity grid. Using detailed data from the Texas wholesale electricity market, we examine how the entry of wind generators alters the production network and affects emissions. We find that wind generation at different locations displaces different sets of fossil fuel generators, leading to varying environmental outcomes. Moreover, policy-driven clustering of wind investments can exacerbate transmission congestion and increase curtailment. By accounting for spatial heterogeneity and interconnection effects, our analysis provides a more accurate estimate of the emissions benefits from wind expansion and highlights the importance of coordinated grid planning.

**Identifying high-priority impact areas for electricity service to farmlands in Uganda through geospatial mapping** (with Rebekah Shirley, Josephine Kakande, and Mark Kagarura) *Journal of Agriculture and Food Research* 5 (2021): 100172

Abstract: This article explores the food-energy nexus in sub-Saharan Africa by studying opportunities for improved agricultural productivity through electricity access. The study fills an acknowledged data gap by using geospatial analysis to identify priority areas where least-cost electricity delivery models intersect with agricultural needs. These findings are validated by community surveys in a key farming district. The analysis finds significant areas of underserved staple and cash crop farmlands can be served through grid and mini-grid electricity access within the next ten years.

## REFERENCES

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**Dr. Sarah Johnston** (*Main Advisor*)  
Associate Professor  
Economics  
University of Calgary  
*sarah.johnston2@ucalgary.ca*

**Dr. Daniel Phaneuf**  
Henry C. Taylor Professor  
Agricultural and Applied Economics  
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**Dr. Chenyu Yang**  
Assistant Professor  
Economics  
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