

Dalton W. Stewart

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EDUCATION

- Ph.D.** Environmental Engineering
2024 Advisor: Jeremy S. Guest
(anticipated) *University of Illinois Urbana-Champaign (UIUC)*
Urbana, IL
- M.S.** Environmental Engineering
2021 Energy and Sustainability Engineering Certificate
University of Illinois Urbana-Champaign
Urbana, IL
- B.S.** Environmental Engineering
2019 *Bucknell University*
Lewisburg, PA
- 2018 Semester Abroad – East Asian Studies Department
Temple University, Japan Campus (TUJ)
Tokyo, Japan

HONORS & AWARDS

- 2022 Policy and Research Legislative Fellowship, UIUC Center for Social & Behavioral Science
- 2019 Interdisciplinary Fellowship, UIUC Department of Civil & Environmental Engineering
- 2018 Barry Goldwater Scholarship Honorable Mention
- 2018 TUJ Education Abroad Scholarship
- 2017 ASCE Central PA Section Student Award
- 2015 Alpha Lambda Delta First-year Honor Society

RESEARCH EXPERIENCE

- Ph.D. Research** Project: Analyzing the Influence of Location on the Financial and Environmental Viability of Biorefineries in the U.S. (PIs: Jeremy Guest and Yalin Li)
supported by DOE Center for Advanced Bioenergy & Bioproducts Innovation (CABBI)
Description: The objective of this research is to elucidate how location-specific contextual factors influence the economic and environmental outcomes of biofuels and bioproducts. This is achieved via agile techno-economic analysis (TEA) and life cycle assessment (LCA) including biorefinery design, simulation, and uncertainty and sensitivity analyses using a model developed in Python. Location-specific factors considered include policy incentives, tax rates, material prices, soil characteristics, and energy sources. Ultimately, this work can inform the design of policy incentives for biorefineries under specific deployment contexts.
- 2021-present

- Graduate Research** Project: A Post-enactment Evaluation of the Climate and Equitable Jobs Act (CEJA) and Electricity Prices in Illinois (with the Office of Illinois State Senator Scott M. Bennett)
supported by Policy and Research Legislative Fellowship Description: The goal of this project is to determine what effect, if any, CEJA is having on current electricity prices in Illinois and how best to aid constituents with high electricity prices. To do so, research explored the specific provisions of CEJA, their potential relationship to electricity prices in Illinois, and other factors influencing electricity prices. CEJA's provisions were compared to other state-level carbon-free power sector legislation and the federal Inflation Reduction Act. During the 2023 legislative session, the project focus will shift toward providing recommendations to Senator Bennett on electricity bill subsidies for low-income residents and the worsening lack of transportation infrastructure funding brought on by the uptake of electric transportation.
 2022-2023
- M.S. Research** Project: Incorporation of Location-specific Parameters and Policy Incentives in the Techno-economic Analysis (TEA) of Biorefineries (PI: Jeremy Guest)
supported by CABBI Description: The objective of this project was to assemble a dataset of location-specific parameters, including tax rates, electricity prices, and tax incentives, and evaluate their effects on the economic viability of a lipidcane biorefinery via TEA.
 2019-2021
- Undergraduate Research** Project: Regional Differences in Municipalities' Flood Policies: Under-Insurance and Community Resilience in Pennsylvania (PI: L. Donald Duke)
supported by Bucknell Center for Sustainability & the Environment Description: The goal of this project was to determine why some municipalities make better use of the National Flood Insurance Program (NFIP) than others. County-level flood statistic data was compared to other factors such as median income and population density to determine relationships to the intensity of flood damage. Findings were included in a report to the Center for Rural Pennsylvania providing recommendations for improvements to the NFIP.
 2017
- Undergraduate Research** Project: Mapping High-density Poultry Operations in Pennsylvania (PI: Deborah Sills)
supported by Bucknell Program for Undergraduate Research Description: The objective of this project was to collect data from local County Conservation Districts on manure production and distribution by high-density poultry farms in southeastern Pennsylvania. Through collaboration with researchers affiliated with the Geisinger Health System, the manure production data was combined with health record data to explore possible effects on human health from residing near such poultry operations.
 2016-2018

****Authored successful proposal – Bucknell Program for Undergraduate Research***

TEACHING & MENTORING EXPERIENCE

Teaching Assistant Course: Introduction to Environmental Engineering, CEEG 340
Bucknell University, Fall 2017 (Instructor: Matthew Higgins)

Undergraduate Advising Research Advisor: Served as a research advisor and mentor to one undergraduate student as part of the CABBI Research Internship in Sustainable Bioenergy (RISE) program. The goal of the RISE program is to provide research experience to students from groups currently underrepresented in STEM fields. The research project focused on a literature review to determine the most accurate method to calculate the emissions associated with *Miscanthus* production for future use to determine the Scope 3 emissions of the bioenergy supply chain. Facilitated mentee's development of research skills including performing a literature review; proper data collection and organization; and preparing technical presentations and writing, including figures. (Summer 2021)

Mentor: Served as a mentor for one undergraduate student in Mexico as part of the Clean Water Science Network. Participated in a monthly webinar and discussion series to gain and share knowledge about current issues in environmental engineering. Assisted in mentee's development of a resume and personal statement for use in graduate school applications. (2020-2021)

Residential Fellow: Served as an on-hall advisor within Bucknell University's Environmental Residential College for 15 first-year students with interests in the environment, sustainability, and public service. Coordinated events for residents including: Susquehanna River clean-up; camping trip at Penn's Creek; volunteering at the Bucknell Center for Sustainability & the Environment; and a trip to the People's Climate March in Washington D.C. (2016-2017)

PUBLICATIONS

Peer-Reviewed Journal Articles (in preparation and in progress)

Stewart, D.W.; Kent, J.J.; Lin, E.P.; Hudiburg, T.W.; Li, Y.; Guest, J.S. Assessing the sustainability potential of novel bioenergy crops: spatial variation and research prioritization. *Work in progress*.

Stewart, D.W.; Cortés-Peña, Y.R.; Li, Y.; Stillwell, A.S.; Khanna, M.; Guest, J.S. Implications of biorefinery policy incentives and location-specific economic parameters for the financial viability of biofuels. *Environmental Science & Technology*. Submitted October 26, 2022.

Peer-Reviewed Journal Articles (published)

Poulsen, M. N.; Pollak, J.; Sills, D. L.; Casey, J. A.; Nachman, K. E.; Cosgrove, S. E.; **Stewart, D.;** & Schwartz, B. S. (2018). High-density poultry operations and community-acquired pneumonia in Pennsylvania. *Environmental Epidemiology*, 2(2), 1-7.
<https://doi.org/10.1097/EE9.000000000000013>

Poulsen, M. N.; Pollak, J.; Sills, D. L.; Casey, J. A.; Rasmussen, S. G.; Nachman, K. E.; Cosgrove, S. E.; **Stewart, D.;** & Schwartz, B. S. (2018). Residential proximity to high-density poultry operations associated with campylobacteriosis and infectious diarrhea. *International Journal of Hygiene and Environmental Health*, 221(2), 323–333. <https://doi.org/10.1016/j.ijheh.2017.12.005>

CONFERENCE PRESENTATIONS & POSTERS (*presenter underlined*)

Stewart, D.W.; Cortés-Peña, Y.R.; Li, Y.; Stillwell, A.S.; Khanna, M.; Guest, J.S. (Presentation). Elucidating Implications of Policy Incentives and Location-Specific Economic Parameters on the Financial Viability of Biorefineries. Association for Public Policy Analysis & Management (APPAM) Fall Research Conference; APPAM; Washington, D.C.; November 17-19, 2022.

Stewart, D.W.; Cortés-Peña, Y.R.; Li, Y.; Stillwell, A.S.; Khanna, M.; Guest, J.S. (Abstract, Poster). Incorporation of Policy Incentives and Other Location-Specific Parameters into BioSTEAM for the Techno-Economic Analysis of Biorefineries. Association of Environmental Engineering and Science Professors (AEESP) Research and Education Conference; AEESP; St. Louis, MO; June 28-30, 2022.

Stewart, D.W.; Cortés-Peña, Y.R.; Li, Y.; Shi, R.; Stillwell, A.; Guest, J.S. (Abstract, Poster). Incorporation of Locality-Specific Financial Factors and Life Cycle Inventories in BioSTEAM. *Center for Advanced Bioenergy and Bioproducts Innovation (CABBI) Annual Retreat*. Urbana, IL. Virtual (due to COVID-19). June 22-23, 2021.

Stewart, D.W., Duke, L.D. (*Poster*) Regional Differences in Municipalities' Flood Policies: Under-Insurance and Community Resilience in Pennsylvania. *Susquehanna River Symposium*. Bloomsburg, PA, July 28, 2017.

Stewart, D.W., Sills, D.L. (*Poster*) Mapping High-density Poultry Operations in Pennsylvania. *Kalman Research Symposium*. Lewisburg, PA, October 21, 2016.

PROFESSIONAL SERVICE AND ACTIVITIES

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| Membership | National Science Policy Network (NSPN), Association of Environmental Engineering and Science Professors (AEESP), Association for Public Policy Analysis & Management (APPAM), Tau Beta Pi, Chi Epsilon, Order of the Engineer |
| Professional Certificates | Engineer in Training (E.I.T.), Commonwealth of Pennsylvania (2019) |
| Improvement Activities | Allies in STEM, Spring 2021
Inclusive Lab Group Training, Spring 2021 |
| Educational Outreach | <i>Guest Lecture:</i> A Post-Enactment Evaluation of The Climate and Equitable Jobs Act and Electricity Prices in Illinois. For CEE 340: Energy and Global Environment at UIUC. October 3, 2022.
<i>Presentation:</i> What is environmental engineering all about? College, post-secondary paths, career opportunities, and research projects. For Clarion University Educational Talent Search. Virtual (due to COVID-19), September 28, 2021.
<i>Member:</i> Bucknell University "Engenuity" Affinity House, Fall 2018
<i>Counselor:</i> Bucknell University Engineering Camp, Summer 2018 |

UNIVERSITY SERVICE & ACTIVITIES

- Tour Guide** Provided prospective students and their families with a tour of the College of Engineering facilities at Bucknell University. Described the student experience regarding engineering curriculum, extracurricular activities, and research projects. (2018-2019)
- Volunteer** Bucknell Center for Sustainability and the Environment: Created a walking tour of sustainable sites on the Bucknell University campus to educate students, faculty, staff, and visitors about sustainable initiatives undertaken by the University. (Summer 2018)
Bucknell Katrina Recovery Team: Traveled to New Orleans, Louisiana to assist in the ongoing recovery from Hurricane Katrina by contributing to house construction and repairs and volunteering at a food bank. (Fall 2017)

REFERENCES

- Jeremy Guest** *Associate Professor*
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