

Graham Diedrich, MPP

M.S. Data Science Candidate,
Michigan State University

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Education

Master of Science in Data Science

Aug 2023 – May 2025

Department of Statistics and Probability,
Michigan State University, East Lansing, MI

- > Capstone: *Optimizing Brownfield Solar Redevelopment in Michigan*—created an interactive dashboard allowing users to weight variables influencing solar siting on brownfields, including zoning ordinances and distance to existing energy infrastructure
- > Graduate Certificate: Environmental and Social Systems Modeling
- > Graduate Certificate: Community Engagement

Master of Public Policy

Aug 2021 – May 2023

Department of Political Science & Department of Economics,
Michigan State University, East Lansing, MI

- > Capstone: *Who's Paying the Price? The Effects of Loosening Environmental Cleanup in Michigan*—evaluated 1990–2018 statutory changes to Michigan's cleanup program, finding 67% of components restricted and hindering remediation efforts
- > Graduate Specialization: Environmental Science and Policy
- > Graduate Certificate: College Teaching

Bachelor of Arts in International Relations

Aug 2019 – Aug 2021

James Madison College,
Michigan State University, East Lansing, MI

- > Focus Area: International Environmental Law

Research Experience

Margaret A. Davidson Graduate Fellow

Aug 2024 – Present

Wells National Estuarine Research Reserve,
National Oceanic and Atmospheric Administration, Wells, ME

- > **Project:** Developing an information flow and prioritization model to analyze how 11 local governments, state and federal agencies, and non-profits in southern Maine integrate reserve science to enhance coastal resilience decision-making
 - Creating a stakeholder engagement database of 340 contacts to support upcoming focus groups, and semi-structured interviews, and surveys
 - Planning participatory modeling sessions to facilitate collaborative decision-making and incorporate diverse stakeholder perspectives into the prioritization process
 - Analyzing data from stakeholder engagement to refine the model, ensuring it aligns with local needs and scientific recommendations for coastal resilience

Environmental Justice Fellow

Apr 2024 - Present

Virginia Working Landscapes,
Smithsonian Conservation Biology Institute, Washington, DC

- > **Project:** Designing and distributing a statewide representative mail survey to 3,050 Virginia farmers
 - Met with 10-15 organizations, including state agencies, nonprofits, and farming interest groups, to iteratively develop the questionnaire
 - Conducted an initial pilot survey online to inform the full survey, achieving a strong 54% response rate
 - Planning to develop reports for partners and a peer-reviewed publication based on survey findings
- > **Project:** Creating a first-of-its-kind underserved farmers index (UFI), consisting of 7 variables from the Census of Agriculture, to document underserved farming communities nationwide
 - Utilizing data from the 2022 Census of Agriculture (COA), which includes detailed information on farm operators, land use, operator demographics, and financial conditions
 - Applied PCA to reduce dimensionality and extract dominant patterns from the data, with loadings used to calculate normalized weights for each variable to creating the composite index
 - Pursuing USDA collaboration and launching a publicly available data repository and web map viewer alongside a peer-reviewed publication in early 2025
- > **Project:** Determining whether underserved farming communities are predictive of restrictive renewable energy ordinances, with a focus on identifying equity implications
 - Using the UFI as a key independent variable, assessed the relationship between county-level renewable energy ordinances (controlling for demographic and political factors at local and state levels)
 - Developed time-lagged logistic regression models, with two specialized to focus on wind and solar restrictions to capture differences
 - Preliminary results indicate that counties with a higher presence of underserved farmers are less likely to impose restrictions, particularly for wind energy (peer-reviewed paper incoming)
- > **Project:** Conducting a geospatial analysis in ArcGIS with Landsat and Sentinel imagery to assess land-use and biodiversity impacts associated with utility-scale solar projects
 - Planning to use spatial joins and regression analyses to examine the relationships between land use and biodiversity for solar projects across the U.S. and in Virginia
 - Collaborating with staff biologists on a joint publication

DOE Scholars Fellow

Jun 2024 - Aug 2024

Office of Clean Energy Demonstrations,
U.S. Department of Energy, Washington, DC

- > **Project:** Plotted locations of schools, businesses, and residences using ArcGIS Pro, layering these with climate and economic justice screening tool (CEJST) data
 - Identified census tracts with disadvantaged status and measured proximity to EPA-regulated facilities to evaluate environmental justice risks and opportunities for mitigation
 - Created maps utilized to supported negotiations for community benefit plans (CBPs) for 33 industrial demonstrations projects across the U.S.
- > **Project:** Designed HTML code to automate an Excel document tracker used across multiple DOE divisions, streamlining and building efficiencies into a \$20 billion negotiations process
 - Developed and tested automation scripts to integrate dynamic updates from Excel into the HTML interface
 - Implemented the system across DOE divisions, reducing manual input and improving transparency in negotiation workflows
- > **Project:** Examined ongoing CBP proposals influencing workforce development and funding allocations to determine diverging trends by industry type.
 - Analyzed key variables, including workforce training initiatives, investment in local infrastructure, and support for disadvantaged communities
 - Results indicated no significant differences across projects or industry types, suggesting a consistent application of CBP principles
 - Authored a report summarizing findings, which informed DOE strategies to standardize CBP expectations and enhance community outcomes

Graduate Research Assistant

Oct 2021 - May 2024

Forest Carbon and Climate Program,
Michigan State University, East Lansing, MI

- > **Project:** Assessed the impact of different forest management and policy scenarios by modeling the carbon sequestration impacts in forest ecosystems and harvested wood products (HWP)
 - Gathered trade data on timber and harvested wood products from USITC to capture imports/exports of HWP across states for emissions analysis
 - Parameterized three base models for California, Wisconsin, Michigan, and Minnesota using data from FIA on commodity production, retirement, and end-use, defining lifecycle flow networks
 - Collaborated with staff from American Forests, the Northern Institute of Applied Climate Science, and the Canadian Forest Service Carbon Accounting Team to write R code integrating ecosystem model results, inputting them into HWP models, and running simulations
- > **Project:** Developed and led a state policy-tracking initiative with \$50,000 in support from the Environmental Defense Fund

- Created the conceptual framework, grouping policies into key areas: GHG emissions and energy, direct financial incentives, forest management and land use, and public procurement
 - Systematically reviewed statutory laws, administrative rulings, regulations, and program websites for 16 state-level policies impacting forests' climate role
 - Utilized STATA and R for comparative legislative analyses
 - Developed an interactive, 70 column database and maps for 50 states
 - Produced 8 white papers and a peer-reviewed publication (in progress)
- > **Project:** Led a \$12,000 funded analysis on the relationship between voluntary carbon markets and preferential tax programs in 9 states
- Conducted 35 qualitative interviews to assess program compatibility, focusing on harvest requirements
 - Delivered a comprehensive 68-page report detailing results from qualitative interviews and policy analysis
 - Led to an advanced understanding of legal, administrative, and operational contexts affecting carbon offset projects and preferential tax treatment programs
 - Invited to join a policy round table discussion and working group at the U.S. Forestry Service

Catalyst Leadership Circle Fellow

May 2023 - Aug 2023

Graham Sustainability Institute,
University of Michigan, Ann Arbor, MI

- > **Project:** Developed 2 community-guided greenhouse gas inventories for Grand Haven, MI, and Rockford, MI
- Led a team consisting of 5 planning staff to gather data on electricity, transportation, water, waste, and other emissions sectors
 - Coordinated with utilities, government departments, water facilities, and waste management companies to collect emissions data across sectors
 - Modeling emissions for calendar year 2022 using ICLEI ClearPath and the EPA GHG Tool in accordance with the Greenhouse Gas Protocol
 - Presented findings on decarbonization and environmental justice to the public and city councils
 - Published 2 individualized emission reports for each city to assist in initial sustainability plan development

Teaching & Advising

Bailey Scholars Program Graduate Fellow

Apr 2024 - Present

College of Agriculture and Natural Resources
Michigan State University, East Lansing, MI

- > Co-facilitating 2 undergraduate courses, ANR 210 and ANR 310, through dialogue and discussion
- > Providing feedback on 4 multimodal assignments to 15 students, instructing them in self-reflection, peer-review practices, and collaborative learning

Graduate Coordinator & Consultant

Jan 2023 – Present

The Writing Center @ MSU, East Lansing, MI

- > Conducting in-person and virtual writing consultations and collaborating with clients to enhance their writing skills and address specific concerns
- > Offering generative feedback, support, and resources aligned with Writing Center pedagogy, fostering an environment that encourages continuous improvement in writing proficiency
- > Offering individualized writing support to 100-200 undergraduate and graduate students, leading to greater confidence in written communication
- > Event planning and advisory support for 15-20 undergraduate consultants, resulting in increased engagement and professional development opportunities for staff

Public Policy Learning Assistant

Jan 2022 – May 2023

Department of Political Science,
Michigan State University, East Lansing, MI

- > Graded assignments and provided lectures on environmental policy for 4 undergraduate sections, PLS 422 and PLS 494, as part of the Michigan Government Semester Program
- > Improved student comprehension of environmental legislation by 14% compared to pre-testing levels

Publications

Diedrich, G. (2024). Evaluating local climate policy: Municipal action plans through the lens of resilience and environmental justice. *PLoS Climate* 3 (1): e0000395. <https://doi.org/10.1371/journal.pclm.0000395>.

Diedrich, G. (2024). Evaluating Community Benefits: Trends in Job Creation and Funding Metrics for the Industrial Demonstrations Program. Office of Clean Energy Demonstrations, U.S. Department of Energy. Washington, D.C.

Diedrich, G. & Clay, K. (2024). Navigating dual enrollment: Assessing compatibility between forest carbon offset projects and preferential property tax programs across nine states. (manuscript in progress)

Diedrich, G. & Clay, K. (2023). Forest Preferential Property Tax Programs and Carbon Project Compatibility: An assessment of program compatibilities across nine states. MSU Forest Carbon and Climate Program. East Lansing, MI. <https://doi.org/10.5281/zenodo.10680874>.

Diedrich, G. (2023). From Data to Action: Harnessing GHG Inventories for Local Sustainability Initiatives. U-M Graham Sustainability Institute. Ann Arbor, MI.

Diedrich, G. (2023). Embodied Carbon Policies. MSU Forest Carbon and Climate Program. East Lansing, MI.

Diedrich, G. (2023). State Forest Certification. MSU Forest Carbon and Climate Program. East Lansing, MI.

Diedrich, G. (2023). State Cap-and-Trade Programs. MSU Forest Carbon and Climate Program. East Lansing, MI.

Diedrich, G. (2023). State-Level Forest BMPs. MSU Forest Carbon and Climate Program. East Lansing, MI.

Kreye, M., Clay, K., Chizmar, S., Cooper, L., **Diedrich, G.**, Gadoth-Goodman, D., Parajuli, R., Sutton, A. (2023). Forest Carbon Market Structures and Mechanism. Forest Owner Carbon and Climate Education Program. East State College, PA.

Diedrich, G. (2023). Who's Paying the Price? The Legacy of the Part 201 Program in Michigan. East Lansing, MI.

Halle, B., **Diedrich, G.**, Lee, S. (2022). Willingness to Pay for Renewable Energy in East Lansing. East Lansing, MI.

Diedrich, G. (2022). An Impact Evaluation Proposal: Oregon's 'Cap-and-Trade' Climate Protection Program. MSU Forest Carbon and Climate Program. East Lansing, MI.

Diedrich, G. (2022). How will the Inflation Reduction Act impact forest and carbon management? MSU Forest Carbon and Climate Program. East Lansing, MI.

Diedrich, G. (2022). How will the 2021 Infrastructure Investment and Jobs Act impact forests and climate? MSU Forest Carbon and Climate Program. East Lansing, MI.

Diedrich, G. (2022). Carbon Pricing: Carbon Markets and Carbon Taxes. MSU Forest Carbon and Climate Program. East Lansing, MI.

[Read all publications by visiting my [website](#).]

Conference Presentations

Diedrich, G. (2024). Mapping the Disparities: A National Index of Historically Underserved Farmers Using PCA. Presentation at the *2024 Data Science Student Conference* (November 15, 2024). East Lansing, MI.

Diedrich, G. (2024). The Race for Renewables: Modeling Renewable Energy Productivity Amid Local Siting Restrictions in Michigan. Presentation at the *Michigan State University Environmental Science and Policy Program Fall Research Symposium* (October 11, 2024). East Lansing, MI.

Diedrich, G. (2024). Charting Climate Confidence through Institutional Trust in European Governments. Presentation at the *5th International European Social Survey Conference* (July 8-10, 2024). Lisbon, Portugal.

Diedrich, G. (2023). Assessing the Interplay between State Climate Plans and the SDGs: A Case Study in the Great Lakes Region. Presentation at the *Michigan State University Environmental Science and Policy Program Fall Research Symposium* (October 27, 2023). East Lansing, MI.

Diedrich, G. (2023). Who's Paying the Price? The Legacy of the Part 201 Program in Michigan. Presentation at the *2023 Michigan Political Science Association Conference* (October 20, 2023). Flint, MI.

Diedrich, G. (2023). Building Resilient Communities: The Intersection of Climate Change, Local Governance, and Environmental Justice. Presentation at the *2023 Engagement Scholarship Consortium International Conference* (October 4-5, 2023). East Lansing, MI.

Diedrich, G. (2023). Advancing Environmental Justice in Local Government: A Path Towards Justice and Effective Policymaking. Presentation at the *2023 Michigan Environmental Justice Conference* (June 21, 2023). Detroit, MI.

Diedrich, G. (2022). Forests as a Climate Solution: State Policy Tracking Initiative. Presentation at the *Michigan State University Environmental Science and Policy Program Fall Research Symposium* (October 16, 2022). East Lansing, MI.

Certifications

Graduate Certificate in Environmental and Social Systems Modeling May 2025
Michigan State University, East Lansing, MI

- > **Topics:** Environmental modeling, agent-based modeling, system dynamics modeling, participatory model-building, hierarchical linear modeling, and structural equation modeling

Graduate Certificate in Community Engagement May 2025
Michigan State University, East Lansing, MI

- > **Topics:** Foundations of community engaged scholarship, techniques for community engaged research, evaluation of community partnerships, communicating with publics

Graduate Certificate in College Teaching Apr 2023
Michigan State University, East Lansing, MI

- > **Topics:** Developing discipline-related teaching strategies, creating effective learning environments, assessing student success

Inclusive Teaching Certificate Jan 2022
Columbia University, New York, NY

- > **Topics:** Inclusive course climate, setting explicit expectations, promoting diversity and inclusion, course accessibility, cultivating critical self-reflection

Technical Skills

- > **Programming:** Python, R, SQL, C; Libraries/Packages: NumPy, Pandas, Seaborn
- > **Data & Analysis Software:** ArcGIS, Stata, Jupyter Notebook, ICLEI ClearPath, Tableau
- > **Techniques:** Policy analysis and evaluation; qualitative coding (inductive and deductive); survey design and administration (online and mail); GIS and geo-spatial mixed modeling

Fellowships, Grants, & Awards

Margaret A. Davidson Graduate Fellowship Aug 2024
Office for Coastal Management, National Oceanic and Atmospheric Administration

DOE Scholars Program Fellowship Jun 2024
Office of Clean Energy Demonstrations, U.S. Department of Energy

2024 NatSci Awesome Graduate Student Award College of Natural Science, Michigan State University	May 2024
Life on a Sustainable Planet Environmental Justice Fellowship Center for Environmental Justice, Smithsonian Institution	Apr 2024
Bailey Scholars Program Fellowship College of Agriculture and Natural Resources, Michigan State University	Apr 2024
US Fulbright Scholars Research Award Institute of International Education	Mar 2024
Competitive Student Research Grant Environmental Science and Policy Program, Michigan State University	Mar 2024
Student Research Symposium Best Presentation Award (Runner-Up) Environmental Science and Policy Program, Michigan State University	Dec 2023
National Science Foundation STEM Ambassador Program Outreach and Engagement Office, Michigan State University	Sep 2023
MSU Cloud Computing Fellowship Institute for Cyber-Enabled Research, Michigan State University	August 2023
Catalyst Leadership Circle Fellowship Graham Sustainability Institute, University of Michigan	May 2023
Public Policy Learning Assistant Scholarship Department of Political Science, Michigan State University	Jan 2022, Jan 2023
Tom Schneider Peace Award Peace Education Center	May 2019

Community & University Service

Environmental Commissioner Government of Meridian Township	Feb 2023 - Present
<ul style="list-style-type: none"> > Producing a municipal sustainability plan in coordination with other elected broad members and representatives 	
Student Committee Lead ESPP Fall Research Symposium, Michigan State University	Aug 2023 - Oct 2023
Conference Reviewer Engagement Scholarship Consortium	April 2023