

Zhongyang He

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Research Interests

Data Science, Innovation Policy, Scientometrics, Applied Economics, Energy Policy, Energy Transition and Public Health, Energy System in Agriculture

Education

- 2013-2019 **Ph.D. in Energy and Mineral Engineering with the Energy Management and Policy option**
The Pennsylvania State University, University Park, USA
- 2010-2013 **M.Sc. in Power Engineering**
Tsinghua University, Beijing, China
- 2006-2010 **B.Sc. in Mechanical Engineering**
Tsinghua University, Beijing, China

Professional Appointments

- 2022-Now **Assistant Teaching Professor**, *Department of Energy and Mineral Engineering, The Pennsylvania State University*
- 2019-2022 **Postdoctoral Scholar**, *Department of Energy and Mineral Engineering, The Pennsylvania State University*
- 2018-2019 **Visiting Predoctoral Fellow**, *Kellogg School of Management, Northwestern University*
- 2015-2019 **Research/Teaching Assistant**, *Department of Energy and Mineral Engineering, The Pennsylvania State University*
- 2012-2013 **Research Assistant**, *Tsinghua University*

Grants

- Opioid and Drug Misuse and Overdose in Rural Coal Communities in the Post-COVID Era of Energy Transition. Supported by USDA/NIFA. 2023-2026. Co-PI. \$642,936.
- Characterize and Identify Risk Factors for Opioid Overdose Deaths of Concomitant Drugs for Patients With Hospital and ED Visit. Supported by NCHS RDC. 2023-2024. Co-PI. \$17,000.

Publications

- Travis Young, Jennifer Baka, Zhongyang He, Sekhar Bhattacharyya, and Zhen Lei. “Mining, loss, and despair: Exploring energy transitions and opioid use in an Appalachian coal community” *Energy Research & Social Science* 99: 103046, 2023.
- Zhongyang He, Zhen Lei, and Dashun Wang. “Modeling citation dynamics of atypical papers”. *Journal of Association for Information Science and Technology*, 69(9):1148–1160, 2018.
- Kai Chen, Xing Zhang, Mengxuan Song, Zhongyang He. “Anemometer Positioning Optimization for Flow Field Calculation in Wind Farm”. *Journal of Energy Engineering* 143 (5), 04017038, 2017
- Zhiguang He, Zhongyang He, Xing Zhang, Zhen Li. “Study of hot air recirculation and thermal management in data centers by using temperature rise distribution”. *Building Simulation* 9 (5), 541-550, 2016
- Mengxuan Song, Kai Chen, Zhongyang He, Xing Zhang. “Optimization of wind farm micro-siting for complex terrain using greedy algorithm”. *Energy* 67, 454-459, 2014
- Mengxuan Song, Kai Chen, Zhongyang He, Xing Zhang. “Wind resource assessment on complex terrain based on observations of a single anemometer”. *Journal of Wind Engineering and Industrial Aerodynamics* 125, 22-29, 2014.
- Bingheng Wu, Mengxuan Song, Kai Chen, Zhongyang He, Xing Zhang. “Wind power prediction system for wind farm based on auto regressive statistical model and physical model”. *Journal of Renewable and Sustainable Energy* 6 (1), 013101, 2014.
- Kai Chen, Mengxuan Song, Zhongyang He, Xing Zhang. “Wind turbine positioning optimization of wind farm using greedy algorithm”. *Journal of Renewable and Sustainable Energy* 5 (2), 2013.
- Mengxuan Song, Kai Chen, Zhongyang He, Xing Zhang. “Bionic optimization for micro-siting of wind farm on complex terrain”. *Renewable energy* 50, 551-557, 2013.
- Zhongyang He, Xiaodong Qian, Hong Zhou, Zhen Li, Xing Zhang. “Optimization of Thermal Loads of Servers Using Temperature Rise Matrix”. *Journal of Engineering Thermophysics* 3, 038, 2013.
- Mengxuan Song, Kai Chen, Zhongyang He, Xing Zhang. “Wake flow model of wind turbine using particle simulation”. *Renewable energy* 41, 185-190, 2012.

- Zhongyang He, Mengxuan Song, Xing Zhang. “Influence of terrain surface temperature on wind farm simulation”. CIESC Journal, 2012.
- Zhongyang He, Mengxuan Song, Xing Zhang, Jun Wang. “Numerical Simulation of Wind Flow over Complex Terrain in Curvilinear Grid System”, EAEP, Shanghai, China, 2010.

Work in Progress

- Zhongyang He, Travis Young, Jennifer Baka, Sekhar Bhattacharyya, Zhen Lei. “Coal Mining Decline and Opioid Overdose Mortality in Rural Central Appalachia”. Under review.
- Zhongyang He, Jonathan Heess, Travis Young, and Zhen Lei. “Lessons for Future Pandemics: Temporal Evolution and Rural-urban Variations in the Impacts of the COVID-19 on Opioid Use Treatment”. Under review
- Mengjun Ge, Zhongyang He, and Zhen Lei. “Telemedicine, Broadband, and Opioid Overdose Deaths During COVID-19”. Under review.
- Zhongyang He, Yang Wang, Zhen Lei, and Dashun Wang. “Diamonds in the rough: Quantifying failed innovative endeavors”.
- Dezhu Ye, Yunjue Huang, Zhongyang He, and Zhen Lei. “The effect of culture on COVID-19 policy responses: Individualism vs. collectivism”.

Presentations

- “Impacts of Conservation Tillage and Cover Cropping in U.S. Corn Fields”. NC1034 Annual Meeting, Arlington, 2023
- “ ‘Deaths of Despair’ versus ‘Prevalence of Drugs’: Coal Mining and Opioid Overdose in Rural Central Appalachia” & “Survey of Opioid Treatment Facilities During the COVID-19 Pandemic”, Annual Penn State Addiction Symposium, virtual event, 2020&2021.
- “ ‘Deaths of Despair’ versus ‘Prevalence of Drugs’: Coal Mining and Opioid Overdose in Rural Central Appalachia” & “Survey of Opioid Treatment Facilities During the COVID-19 Pandemic”, USAEE, virtual event, 2021.
- “A Rural/Urban Comparison of Opioid Overdose Deaths in Pennsylvania”. American Public Health Association Conference, virtual event, 2020
- “Diamond in the rough: Quantifying failed innovative endeavors”. IC2S2, virtual event, 2020.
- “Opioid Use Disorder in Rural Populations”. Annual Rural Health Conference, virtual event, 2020.
- “Sleeping Beauties in Science”. Science Café, State College, 2019.

- “The puzzle of near misses - a novelty perspective”. NetSci, Indianapolis, 2017.
- “A Patent Citation Growth Model for Assessing Quality of Energy Innovation”, USAEE, Pittsburgh, 2015.
- “Optimization of Thermal Loads of Servers Using Temperature Rise Matrix”. Chinese Engineering Thermophysics Heat and Mass Transfer Conference, Dongguan, China, 2012.
- “Numerical simulation of data center cooling”. Japan-China Joint Workshop on Bio, Material and Flow Dynamics, Sendai, Japan, 2012.
- “Influence of terrain surface temperature on wind farm simulation”. Chinese Engineering Thermophysics Heat and Mass Transfer Conference, Xi’an, China, 2011.
- “Numerical Simulation of Wind Flow over Complex Terrain in Curvilinear Grid System”, EAEP, Shanghai, China, 2010.

Teaching

- EME 200: Introduction to Energy and Earth Sciences Economics.
- EBF 301: Global Finance for the Earth, Energy, and Materials Industries.
- EBF 304W: Global Management for the Earth, Energy, and Materials Industries.
- EME 460: Geo-Resources Evaluation and Investment Analysis.
- EBF 483: Introduction to Electricity Markets.

Review

- Scientometrics.
- The Journal of Behavioral Health Services & Research.

Awards

- 2019 ▪ **Student Merit Award**, *The Pennsylvania State University*.
- 2019 ▪ **Wesley C. Pickard Graduate Scholarship**, *The Pennsylvania State University*.
- 2017 ▪ **Student Travel Award**, *NetSci 2017*, U.S.
- 2015 ▪ **EEEPI Summer Travel Award**, *The Pennsylvania State University*.
- 2012 ▪ **Innovative Thermal Design Competition, 2nd place**, *Ericsson Research*.
- 2008 ▪ **Student union scholarship**, *Tsinghua University*
- 2007 ▪ **Gaotian Scholarship**, *Tsinghua University*

Skills

Programming: Python, MATLAB, SQL, C/C++, VBA.

Statistical: R, STATA.

Others: Microsoft Office, Adobe Illustrator/Photoshop, LaTeX, ArcGIS.