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 Argriculture

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

Employment

2022-Now **Instructor,** *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 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.

- Collaborative Research: Conservation Tillage for Sustainable Food, Energy and Water Systems: Linked Econometric and Process-based Models. Supported by NSF. 2021-2024. Co-PI. $500,000.

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, Yang Wang, Zhen Lei, and Dashun Wang. "Diamonds in the rough: Quantifying failed innovative endeavors".

- Zhongyang He, Jonathan Heess, Travis Young, and Zhen Lei. "A Phone Survey with Treatment Service Providers in Pennsylvania Reveals Temporal Evolution and Rural-urban Variations in COVID-19's Impacts on Opioid Treatment: Implications for Future Pandemics".

- Dezhu Ye, Yunjue Huang, Zhongyang He, and Zhen Lei. "The effect of culture on COVID-19 policy responses: Individualism vs. collectivism".

- Mengjun Ge, Zhongyang He, and Zhen Lei. "Telemedicine, Broadband, and Opioid Overdose Deaths During COVID-19"

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. Summer 2022, Summer 2023.

- EBF 301: Global Finance for the Earth, Energy, and Materials Industries,. Summer 2022, Fall 2023, Summer 2023.

- EBF 304W: Global Management for the Earth, Energy, and Materials Industries. Fall 2023.

- EME 460: Geo-Resources Evaluation and Investment Analysis. Summer 2023.

- EBF 483: Introduction to Electricity Markets. The Penn State University. Summer 2021, Fall 2022.

Review

- Scientometrics.
- College of Engineering Research Symposium 2017. Penn State.

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.