Stanford



Adam Brandt

Professor of Energy Science Engineering and Senior Fellow at the Precourt Institute for Energy

Energy Science & Engineering

Bio

BIO

Research:

I am interested in reducing the environmental impacts of energy systems. More specifically, I focus on understanding, measuring, and reducing greenhouse gas (GHG) emissions from fossil energy sources. Reducing GHG emissions from fossil fuels is important because fossil energy sources will continue to be key components of our energy system for decades to come.

My research in this area uses the tools of life cycle assessment (LCA) and process optimization to measure and estimate impacts from technologies at broad scales (LCA) and to help reduce these impacts (optimization). Applications include reducing GHG emissions from transportation energy supply and from power systems through CCS.

Teaching:

Through my teaching, I aim to help train the next generation of energy professionals to: optimize energy systems so as to improve their efficiency; rigorously account for the environmental impacts of energy sources; and think critically about systems-scale phenomena in energy production and consumption

ACADEMIC APPOINTMENTS

- Professor, Energy Science & Engineering
- Senior Fellow, Precourt Institute for Energy
- Affiliate, Precourt Institute for Energy

ADMINISTRATIVE APPOINTMENTS

- Associate Professor, Department of Energy Science & Engineering, Stanford University, (2019-2024)
- Assistant Professor, Department of Energy Resources Engineering, Stanford University, (2012-2018)
- Acting Assistant Professor, Department of Energy Resources Engineering, Stanford University, (2009-2012)

HONORS AND AWARDS

- Student paper award, United States Association for Energy Economics (2006)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Science Advisory Panel, Methane Reconciliation Project, National Renewable Energy Laboratory (2015 - present)
- Technical steering committee, Independent Review of Well Stimulation, California Council on Science and Technology. (2013 - present)

- Organizing committee, Connecting the Dots: The Energy, Water, Food, Climate Nexus (2013 - 2014)
- Selection committee, Stanford Interdisciplinary Graduate Fellowship (2012 - 2014)
- Team leader, Technical review of natural gas leakage, NOVIM (2012 - 2013)
- Invited speaker:, CERA Week 2012, Houston TX, March 6th, 2012 (2012 - 2012)
- Invited speaker: EES seminar. November 28th, 2012, University of Calgary, Institute for sustainable energy, environment and economy (ISEEE) (2012 - 2012)
- Technical advisor, California Environmental Protection Agency, Air Resources Board (CARB) - Low Carbon Fuel Standard regulatory proceedings (2011 - present)
- Expert testimony, European Commission, Directorate General - Climate. May 27, 2011. (2011 - 2011)
- Invited speaker, Workshop on Low Carbon Fuel Standards, Victoria, BC, October 12th-13th 2011 (2011 - 2011)
- Invited speaker, CRC Workshop on life cycle analysis of biofuels. Argonne National Laboratory, October 17th, 2011 (2011 - 2011)
- Invited speaker, Center for European Policy Studies, Brussels, Belgium. March 21st, 2011 (2011 - 2011)
- Technical advisor, European Union, DG Climate - Fuel Quality Directive regulatory proceedings (2010 - 2011)
- Invited Speaker, SLAC National Accelerator Laboratory, February 1st, 2010 (2010 - 2010)
- Search committee, GCEP post-doctoral scholars (2010 - 2010)
- Invited Speaker, Energy, Environment and Society Speaker Series, Humboldt State University, CA, April 2009 (2009 - 2009)
- Invited Speaker, Stanford University, Stanford Energy Seminar, September 23rd, 2009 (2009 - 2009)
- Invited Speaker, Department of Energy Resources Engineering, Stanford University, CA, December 2007 (2007 - 2007)

PROFESSIONAL EDUCATION

- Ph.D., University of California, Berkeley , Energy and Resources (2008)
- M.S., University of California, Berkeley , Energy and Resources (2005)
- B.S., University of California, Santa Barbara , Environmental Studies, emphasis Physics (2003)

LINKS

- Environmental Assessment and Optimization (EAO) Group: https://eao.stanford.edu
- Google Scholar: https://scholar.google.com/citations?user=QF3UoDoAAAAJ&hl=en

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Research:

I am interested in reducing the environmental impacts of energy systems. More specifically, I focus on understanding, measuring, and reducing greenhouse gas (GHG) emissions from fossil energy sources. Reducing GHG emissions from fossil fuels is important because fossil energy sources will continue to be key components of our energy system for decades to come.

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Teaching:

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Teaching

COURSES

2026-27

- Energy Systems Fundamentals: ENERGY 201A (Aut)
- Fundamentals of Energy Processes: EE 293B, ENERGY 201B (Win)
- Optimization of Energy Systems: ENERGY 191, ENERGY 291 (Spr)

2025-26

- Energy Systems Fundamentals: ENERGY 201A (Aut)
- Fundamentals of Energy Processes: EE 293B, ENERGY 201B (Win)
- Optimization of Energy Systems: ENERGY 191, ENERGY 291 (Spr)

2024-25

- ESE Master's Graduate Seminar: ENERGY 351 (Aut, Win)
- ESE PhD Graduate Seminar: ENERGY 352 (Aut, Win)
- Energy Systems Fundamentals: ENERGY 201A (Aut)
- Fundamentals of Energy Processes: EE 293B, ENERGY 201B (Win)
- Optimization of Energy Systems: ENERGY 191, ENERGY 291 (Spr)

2023-24

- Energy Systems Fundamentals: ENERGY 201A (Aut)
- Fundamentals of Energy Processes: EE 293B, ENERGY 201B (Win)
- Optimization of Energy Systems: ENERGY 191, ENERGY 291 (Spr)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Josh Neutel, Kamran Tehranchi

Postdoctoral Faculty Sponsor

Taylor Adams, Zhiyuan Zong

Doctoral Dissertation Advisor (AC)

Lama El Halabi, Andea Scott

Master's Program Advisor

Emmet Kenney

Doctoral (Program)

Joseph Clampett, Yaqi Fan, Kevin Galvin, Yash Gupta, Mathis Heyer, Audrey McManemin, Frances Reuland, Josh Romo, Yannik Schueler, Spencer Zhang

Publications

PUBLICATIONS

- **Large blind test of methane-detecting satellites lends credibility to emissions data** *NATURE*
  Reuland, F. E., Brandt, A. R.
  2026

- **Evaluating space-based methane detection through a one-year blind test.** *Nature*
  Reuland, F. E., Adams, T., Sherwin, E. D., El Abbadi, S. H., Kort, E. A., Brandt, A. R.
  2026; 658 (8136): 673-681

- **Carbon compensation or fuel displacement? Biomass allocation trade-offs for decarbonizing aviation** *ISCIENCE*
  El-Houjeiri, H., Brandt, A. R., Masnadi, M. S.
  2026; 29 (8)

- **Carbon compensation or fuel displacement? Biomass allocation trade-offs for decarbonizing aviation.** *iScience*
  El-Houjeiri, H., Brandt, A. R., Masnadi, M. S.
  2026; 29 (8): 116848

- **HyperGas 1.0: a python package for analyzing hyperspectral data for greenhouse gases from retrieval to emission rate quantification** *GEOSCIENTIFIC MODEL DEVELOPMENT*
  Zhang, X., Maasakkers, J. D., de Jong, T. A., Tol, P., Reuland, F., Brandt, A. R., Kort, E. A., Adams, T. J., Aben, I.
  2026; 19 (13): 5979-6000

- **Author Correction: US oil and gas system emissions from nearly one million aerial site measurements.** *Nature*
  Sherwin, E. D., Rutherford, J. S., Zhang, Z., Chen, Y., Wetherley, E. B., Yakovlev, P. V., Berman, E. S., Jones, B. B., Cusworth, D. H., Thorpe, A. K., Ayasse, A. K., Duren, R. M., Brandt, et al
  2026

- **Facility-level estimates of demand for industrial process heat in California** *ENVIRONMENTAL RESEARCH LETTERS*
  Saad, D. M., Brandt, A. R., Azevedo, I. M. L.
  2026; 21 (9)

- **Carbon Intensity of United States Natural Gas Supply.** *Environmental science & technology*
  Zhang, Z., Rutherford, J., Littlefield, J., Ramadan, F., Ali Saafi, M., Ren, B., Jabbar, M. Y., Saad, D. M., Burdeau, P. M., Masnadi, M. S., Brandt, A.
  2026

- **Controlled release testing of commercially available methane emission measurement technologies at the TADI facility** *ATMOSPHERIC MEASUREMENT TECHNIQUES*
  McManemin, A., Juery, C., Blandin, V., France, J. L., Burdeau, P., Brandt, A. R.
  2026; 19 (3): 923-934

- **What will it take to get to net-zero emissions in California?** *ENERGY POLICY*
  Neutel, J., Berson, A., Saltzer, S., Brandt, A., Weyant, J., Orr Jr, F. M., Benson, S. M.
  2026; 208

- **Quantifying CH₄ point source emissions with airborne remote sensing: first results from AVIRIS-4** *ATMOSPHERIC MEASUREMENT TECHNIQUES*
  Meier, S., Vogtli, M., Hueni, A., McManemin, A., Brandt, A. R., Juery, C., Blandin, V., Brunner, D., Kuhlmann, G.
  2026; 19 (1): 333-358

- **The pyxis project: A geospatial data system for emission estimation monitoring in the oil and gas industry** *ENERGY AND AI*
  Fan, Y., Masnadi, M. S., Jing, L., Ren, B., Brandt, A. R.
  2025; 22

- **The Carbon Mapper emissions monitoring system** *ATMOSPHERIC MEASUREMENT TECHNIQUES*
  Duren, R., Cusworth, D., Ayasse, A., Howell, K., Diamond, A., Scarpelli, T., Kim, J., O'neill, K., Lai-Norling, J., Thorpe, A., Zandbergen, S. R., Shaw, L., Keremedjiev, et al
  2025; 18 (22): 6933-6958

- **High-resolution national mapping of natural gas composition substantially updates methane leakage impacts.** *Nature communications*
  Burdeau, P. M., Sherwin, E. D., Biraud, S. C., Berman, E. S., Brandt, A. R.
  2025
- **Direct measurement of plume velocity to characterize point source emissions.** *Proceedings of the National Academy of Sciences of the United States of America*
  Eastwood, M. L., Thompson, D. R., Green, R. O., Fahlen, J. E., Adams, T. J., Brandt, A. R., Brodrick, P. G., Chlus, A., Kort, E. A., Reuland, F., Thorpe, A. K.
  2025; 122 (36): e2507350122
- **Appliance decarbonization and its impacts on California's energy transition** *APPLIED ENERGY*
  Sodwatana, M., Saad, D. M., Ahumada-Paras, M., Brandt, A. R.
  2025; 390
- **Oxidant-assisted methane pyrolysis.** *Chemical science*
  Gigantino, M., Moise, H., Haribal, V., Tong, A., Shen, J. P., Saad, D., Fishman, J., Nelson, A., Voorhis, H., Sun, E., Brandt, A., Gupta, R., Majumdar, et al
  2025
- **Technical Validation of Oil Production Greenhouse Gas Emissions Estimator Using Field Data from Thermal Enhanced Oil Recovery Operations** *ENERGY & FUELS*
  Long, W., Brandt, A. R., Demayo, T. N., Verduzco, L. E.
  2025
- **Energy storage in combined gas-electric energy transitions models: The case of California** *APPLIED ENERGY*
  Saad, D. M., Sodwatana, M., Sherwin, E. D., Brandt, A. R.
  2025; 385
- **Advancing oil and gas emissions assessment through large language model data extraction** *ENERGY AND AI*
  Chen, Z., Zhong, R., Long, W., Tanga, H., Wang, A., Liu, Z., Yang, X., Ren, B., Littlefield, J., Koyejo, S., Masnadi, M. S., Brandt, A. R.
  2025; 20
- **The value of enhanced geothermal systems for the energy transition in California** *SUSTAINABLE ENERGY & FUELS*
  Aljubran, M. J., Saad, D. M., Sodwatana, M., Brandt, A. R., Horne, R. N.
  2025
- **Greenhouse gas emissions from the US liquefied natural gas operations and shipping through process model based life cycle assessment** *COMMUNICATIONS EARTH & ENVIRONMENT*
  Mukherjee, M., Littlefield, J., Khutal, H., Kirchner-Ortiz, K. M., Davis, K. G., Jing, L., Ramadan, F., El-Houjeiri, H., Masnadi, M. S., Brandt, A. R.
  2025; 6 (1)
- **Impact of Multi-sector Carbon Tax for Achieving Deep Decarbonization**
  Saad, D. M., Ahumada-Paras, M., Sodwatana, M., Brandt, A. R., IEEE
  IEEE.2025
- **Locational marginal pricing of energy in pipeline transport of natural gas and hydrogen with carbon offset incentives** *INTERNATIONAL JOURNAL OF HYDROGEN ENERGY*
  Sodwatana, M., Kazi, S. R., Sundar, K., Brandt, A., Zlotnik, A.
  2024; 96: 574-588
- **Sky image-based solar forecasting using deep learning with heterogeneous multi-location data: Dataset fusion versus transfer learning** *APPLIED ENERGY*
  Nie, Y., Paletta, Q., Scott, A., Pomares, L., Arbod, G., Sgouridis, S., Lasenby, J., Brandt, A.
  2024; 369
- **SkyGPT: Probabilistic ultra-short-term solar forecasting using synthetic sky images from physics-constrained VideoGPT** *ADVANCES IN APPLIED ENERGY*
  Nie, Y., Zelikman, E., Scott, A., Paletta, Q., Brandt, A.
  2024; 14
- **Measurement-based carbon intensity of US offshore oil and gas production** *ENVIRONMENTAL RESEARCH LETTERS*

Gorchov Negron, A. M., Kort, E. A., Plant, G., Brandt, A. R., Chen, Y., Hausman, C., Smith, M. L.
2024; 19 (6)

- **Technological Maturity of Aircraft-Based Methane Sensing for Greenhouse Gas Mitigation.** *Environmental science & technology*
  El Abbadi, S. H., Chen, Z., Burdeau, P. M., Rutherford, J. S., Chen, Y., Zhang, Z., Sherwin, E. D., Brandt, A. R.
  2024
- **US oil and gas system emissions from nearly one million aerial site measurements.** *Nature*
  Sherwin, E. D., Rutherford, J. S., Zhang, Z., Chen, Y., Wetherley, E. B., Yakovlev, P. V., Berman, E. S., Jones, B. B., Cusworth, D. H., Thorpe, A. K., Ayasse, A. K., Duren, R. M., Brandt, et al
  2024; 627 (8003): 328-334
- **Large-Scale Controlled Experiment Demonstrates Effectiveness of Methane Leak Detection and Repair Programs at Oil and Gas Facilities.** *Environmental science & technology*
  Wang, J. L., Barlow, B., Funk, W., Robinson, C., Brandt, A., Ravikumar, A. P.
  2024
- **Single-blind test of nine methane-sensing satellite systems from three continents** *ATMOSPHERIC MEASUREMENT TECHNIQUES*
  Sherwin, E. D., El Abbadi, S. H., Burdeau, P. M., Zhang, Z., Chen, Z., Rutherford, J. S., Chen, Y., Brandt, A. R.
  2024; 17 (2): 765-782
- **Climate impacts of digital use supply chains** *Environmental Research: Climate*
  Shi, L., Brandt, A., Iancu, D., Mach, K. J., Field, C., Cho, M., Ng, M., Chey, K., Ram, N., Robinson, T., Reeves, B.
  2024; 3 (1)
- **Measuring Carbon Dioxide Emissions From Liquefied Natural Gas (LNG) Terminals With Imaging Spectroscopy** *GEOPHYSICAL RESEARCH LETTERS*
  Zhang, Z., Cusworth, D. H., Ayasse, A. K., Sherwin, E. D., Brandt, A. R.
  2023; 50 (23)
- **Methane point source quantification using MethaneAIR: a new airborne imaging spectrometer** *ATMOSPHERIC MEASUREMENT TECHNIQUES*
  Chulakadabba, A., Sargent, M., Lauvaux, T., Benmergui, J. S., Franklin, J. E., Chan Miller, C., Wilzewski, J. S., Roche, S., Conway, E., Souri, A. H., Sun, K., Luo, B., Hawthrone, et al
  2023; 16 (23): 5771-5785
- **A cost comparison of various hourly-reliable and net-zero hydrogen production pathways in the United States.** *Nature communications*
  Bracci, J. M., Sherwin, E. D., Boness, N. L., Brandt, A. R.
  2023; 14 (1): 7391
- **Open-source sky image datasets for solar forecasting with deep learning: A comprehensive survey** *RENEWABLE & SUSTAINABLE ENERGY REVIEWS*
  Nie, Y., Li, X., Paletta, Q., Aragon, M., Scott, A., Brandt, A.
  2024; 189
- **Greenhouse gas intensity of natural hydrogen produced from subsurface geologic accumulations** *JOULE*
  Brandt, A. R.
  2023; 7 (8): 1818-1831
- **Excess methane emissions from shallow water platforms elevate the carbon intensity of US Gulf of Mexico oil and gas production.** *Proceedings of the National Academy of Sciences of the United States of America*
  Gorchov Negron, A. M., Kort, E. A., Chen, Y., Brandt, A. R., Smith, M. L., Plant, G., Ayasse, A. K., Schwietzke, S., Zavala-Araiza, D., Hausman, C., Adames-Corraliza, Á. F.
  2023; 120 (15): e2215275120
- **SKIPP'D: A SKy Images and Photovoltaic Power Generation Dataset for short-term solar forecasting** *SOLAR ENERGY*
  Nie, Y., Li, X., Scott, A., Sun, Y., Venugopal, V., Brandt, A.
  2023; 255: 171-179
- **Single-blind validation of space-based point-source detection and quantification of onshore methane emissions.** *Scientific reports*
  Sherwin, E. D., Rutherford, J. S., Chen, Y., Aminfard, S., Kort, E. A., Jackson, R. B., Brandt, A. R.

2023; 13 (1): 3836

- **Understanding variability in petroleum jet fuel life cycle greenhouse gas emissions to inform aviation decarbonization.** *Nature communications*
  Jing, L., El-Houjeiri, H. M., Monfort, J., Littlefield, J., Al-Qahtani, A., Dixit, Y., Speth, R. L., Brandt, A. R., Masnadi, M. S., MacLean, H. L., Peltier, W., Gordon, D., Bergerson, et al
  2022; 13 (1): 7853
- **Detecting and quantifying methane emissions from oil and gas production: algorithm development with ground-truth calibration based on Sentinel-2 satellite imagery** *ATMOSPHERIC MEASUREMENT TECHNIQUES*
  Zhang, Z., Sherwin, E. D., Varon, D. J., Brandt, A. R.
  2022; 15 (23): 7155-7169
- **Low-Cost Representative Sampling for a Natural Gas Distribution System in Transition.** *ACS omega*
  Sherwin, E. D., Lever, E., Brandt, A. R.
  2022; 7 (48): 43973-43980
- **Low-Cost Representative Sampling for a Natural Gas Distribution System in Transition** *ACS OMEGA*
  Sherwin, E. D., Lever, E., Brandt, A. R.
  2022
- **Single-blind determination of methane detection limits and quantification accuracy using aircraft-based LiDAR** *ELEMENTA-SCIENCE OF THE ANTHROPOCENE*
  Bell, C., Rutherford, J., Brandt, A., Sherwin, E., Vaughn, T., Zimmerle, D.
  2022; 10 (1)
- **Methane Emissions from Natural Gas Gathering Pipelines in the Permian Basin.** *Environmental science & technology letters*
  Yu, J., Hmiel, B., Lyon, D. R., Warren, J., Cusworth, D. H., Duren, R. M., Chen, Y., Murphy, E. C., Brandt, A. R.
  2022; 9 (11): 969-974
- **Methane Emissions from Natural Gas Gathering Pipelines in the Permian Basin** *ENVIRONMENTAL SCIENCE & TECHNOLOGY LETTERS*
  Yu, J., Hmiel, B., Lyon, D. R., Warren, J., Cusworth, D. H., Duren, R. M., Chen, Y., Murphy, E. C., Brandt, A. R.
  2022
- **Wind data introduce error in time-series reduction for capacity expansion modelling** *ENERGY*
  Kuepper, L., Teichgraeber, H., Baumgaertner, N., Bardow, A., Brandt, A. R.
  2022; 256
- **Inefficient and unlit natural gas flares both emit large quantities of methane.** *Science (New York, N.Y.)*
  Plant, G., Kort, E. A., Brandt, A. R., Chen, Y., Fordice, G., Gorchov Negron, A. M., Schwietzke, S., Smith, M., Zavala-Araiza, D.
  2022; 377 (6614): 1566-1571
- **Time-series aggregation for the optimization of energy systems: Goals, challenges, approaches, and opportunities** *RENEWABLE & SUSTAINABLE ENERGY REVIEWS*
  Teichgraeber, H., Brandt, A. R.
  2022; 157
- **Functionality-based life cycle assessment framework: An information and communication technologies (ICT) product case study** *JOURNAL OF INDUSTRIAL ECOLOGY*
  Shi, L., Mach, K. J., Suh, S., Brandt, A.
  2022
- **VideoGasNet: Deep learning for natural gas methane leak classification using an infrared camera** *ENERGY*
  Wang, J., Ji, J., Ravikumar, A. P., Savarese, S., Brandt, A. R.
  2022; 238
- **Quantifying Regional Methane Emissions in the New Mexico Permian Basin with a Comprehensive Aerial Survey.** *Environmental science & technology*
  Chen, Y., Sherwin, E. D., Berman, E. S., Jones, B. B., Gordon, M. P., Wetherley, E. B., Kort, E. A., Brandt, A. R.
  2022

- **Designing reliable future energy systems by iteratively including extreme periods in time-series aggregation** *APPLIED ENERGY*
  Teichgraeber, H., Kupper, L., Brandt, A. R.
  2021; 304
- **Estimating global oilfield-specific flaring with uncertainty using a detailed geographic database of oil and gas fields** *ENVIRONMENTAL RESEARCH LETTERS*
  Zhang, Z., Sherwin, E. D., Brandt, A. R.
  2021; 16 (12)
- **Displacing fishmeal with protein derived from stranded methane** *NATURE SUSTAINABILITY*
  El Abbadi, S. H., Sherwin, E. D., Brandt, A. R., Luby, S. P., Criddle, C. S.
  2021
- **Carbon implications of marginal oils from market-derived demand shocks.** *Nature*
  Masnadi, M. S., Benini, G., El-Houjeiri, H. M., Milivinti, A., Anderson, J. E., Wallington, T. J., De Kleine, R., Dotti, V., Jochem, P., Brandt, A. R.
  2021; 599 (7883): 80-84
- **Computational optimization of solar thermal generation with energy storage** *SUSTAINABLE ENERGY TECHNOLOGIES AND ASSESSMENTS*
  Orsini, R. M., Brodrick, P. G., Brandt, A. R., Durlofsky, L. J.
  2021; 47
- **Closing the methane gap in US oil and natural gas production emissions inventories.** *Nature communications*
  Rutherford, J. S., Sherwin, E. D., Ravikumar, A. P., Heath, G. A., Englander, J., Cooley, D., Lyon, D., Omara, M., Langfitt, Q., Brandt, A. R.
  2021; 12 (1): 4715
- **Greenhouse Gas Emissions of Western Canadian Natural Gas: Proposed Emissions Tracking for Life Cycle Modeling.** *Environmental science & technology*
  Liu, R. E., Ravikumar, A. P., Bi, X. T., Zhang, S., Nie, Y., Brandt, A., Bergerson, J. A.
  2021
- **Blow wind blow: Capital deployment in variable energy systems** *ENERGY*
  Brandt, A. R., Teichgraeber, H., Kang, C. A., Barnhart, C. J., Carbajales-Dale, M. A., Sgouridis, S.
  2021; 224
- **Concurrent variation in oil and gas methane emissions and oil price during the COVID-19 pandemic** *ATMOSPHERIC CHEMISTRY AND PHYSICS*
  Lyon, D. R., Hmiel, B., Gautam, R., Omara, M., Roberts, K. A., Barkley, Z. R., Davis, K. J., Miles, N. L., Monteiro, V. C., Richardson, S. J., Conley, S., Smith, M. L., Jacob, et al
  2021; 21 (9): 6605–26
- **Orphaned oil and gas well stimulus-Maximizing economic and environmental benefits** *ELEMENTA-SCIENCE OF THE ANTHROPOCENE*
  Kang, M., Brandt, A. R., Zheng, Z., Boutot, J., Yung, C., Peltz, A. S., Jackson, R. B.
  2021; 9 (1)
- **Improving robustness of LCA results through stakeholder engagement: A case study of emerging oil sands technologies** *JOURNAL OF CLEANER PRODUCTION*
  Sleep, S., Dadashi, Z., Chen, Y., Brandt, A. R., MacLean, H. L., Bergerson, J. A.
  2021; 281
- **Single-blind test of airplane-based hyperspectral methane detection via controlled releases** *ELEMENTA-SCIENCE OF THE ANTHROPOCENE*
  Sherwin, E. D., Chen, Y., Ravikumar, A. P., Brandt, A. R.
  2021; 9 (1)
- **Resampling and data augmentation for short-term PV output prediction based on an imbalanced sky images dataset using convolutional neural networks** *Solar Energy*
  Nie, Y.
  2021; 224

- **Optimal design of an electricity-intensive industrial facility subject to electricity price uncertainty: Stochastic optimization and scenario reduction** *CHEMICAL ENGINEERING RESEARCH & DESIGN*
  Teichgraeber, H., Brandt, A. R.
  2020; 163: 204–16

- **Extreme events in time series aggregation: A case study for optimal residential energy supply systems** *APPLIED ENERGY*
  Teichgraeber, H., Lindenmeyer, C. P., Baumgaertner, N., Kotzur, L., Stolten, D., Robinius, M., Bardow, A., Brandt, A. R.
  2020; 275

- **Optimization-based technoeconomic analysis of molten-media methane pyrolysis for reducing industrial sector CO(2)emissions** *SUSTAINABLE ENERGY & FUELS*
  Von Wald, G. A., Masnadi, M. S., Upham, D., Brandt, A. R.
  2020; 4 (9): 4598–4613

- **Sensor Placement Optimization Software Applied to Site-Scale Methane-Emissions Monitoring** *JOURNAL OF ENVIRONMENTAL ENGINEERING*
  Klise, K. A., Nicholson, B. L., Laird, C. D., Ravikumar, A. P., Brandt, A. R.
  2020; 146 (7)

- **PV power output prediction from sky images using convolutional neural network: The comparison of sky-condition-specific sub-models and an end-to-end model** *JOURNAL OF RENEWABLE AND SUSTAINABLE ENERGY*
  Nie, Y., Sun, Y., Chen, Y., Orsini, R., Brandt, A.
  2020; 12 (4)

- **Greenhouse-gas emissions of Canadian liquefied natural gas for use in China: Comparison and synthesis of three independent life cycle assessments** *JOURNAL OF CLEANER PRODUCTION*
  Nie, Y., Zhang, S., Liu, R., Roda-Stuart, D., Ravikumar, A. P., Bradley, A., Masnadi, M. S., Brandt, A. R., Bergerson, J., Bi, X.
  2020; 258

- **Carbon intensity of global crude oil refining and mitigation potential** *NATURE CLIMATE CHANGE*
  Jing, L., El-Houjeiri, H. M., Monfort, J., Brandt, A. R., Masnadi, M. S., Gordon, D., Bergerson, J. A.
  2020

- **Accuracy of satellite-derived estimates of flaring volume for offshore oil and gas operations in nine countries** *ENVIRONMENTAL RESEARCH COMMUNICATIONS*
  Brandt, A.
  2020; 2 (5)

- **Repeated leak detection and repair surveys reduce methane emissions over scale of years** *ENVIRONMENTAL RESEARCH LETTERS*
  Ravikumar, A. P., Roda-Stuart, D., Liu, R., Bradley, A., Bergerson, J., Nie, Y., Zhang, S., Bi, X., Brandt, A. R.
  2020; 15 (3)

- **Statistical proxy modeling for life cycle assessment and energetic analysis** *ENERGY*
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- **Research roadmap for greenhouse gas inventory methods** *California Energy Commission Report*
  Farrell, A. E., Kerr, A., Brandt, A. R., Torn, M.
  2005; CEC-500-2005-097

PRESENTATIONS

- Roda-Stuart, D. J. Englander, A.R. Brandt, (2014). Quantifying fugitive methane emissions in the Barnett Shale: Reanalysis of an existing dataset. American Geophysical Union, December 15th, 2014. - American Geophysical Union (12/15/2014)
- Vafi, K., A.R. Brandt, (2014). Validation of GHG estimation models for petroleum production: challenges and promises. LCA XIV, American Center for Life Cycle Assessment. October 7th, 2014. - American Center for Life Cycle Assessment (10/7/2014)
- Hewlett Foundation, Cynthia and George Mitchell Foundation, Funders Meeting on Methane Emissions Strategy (10/2/2014)
- Lockheed Martin STAR Labs, Science Colloquium. Invited lecture on methane leaks from natural gas systems. September 25th, 2014.
- Carnegie Endowment for International Peace. Oil Carbon Index Workshop. Washington, D.C., September 18th, 2014.
- Society of Petroleum Engineers, Low Carbon Intensity Processes for Low Mobility Oil Recovery. Newport Beach, CA, 27th July - 1st August, 2014.
- Carnegie Mellon University, Center for Climate and Energy Decision Making Seminar. Invited lecture on methane leaks from natural gas systems. March 31st 2014, Pittsburg PA.
- University of California Berkeley, Energy and Resources Group Colloquium. Invited lecture on methane leaks from natural gas systems. March 19th 2014, Berkeley, CA.
- University of Texas, Petroleum and Geosystems Engineering Departmental Seminar. Invited lecture on energy efficiency of oil extraction. October 28th 2013, Austin TX