




Adam Brandt

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

 Curriculum Vitae available Online

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

- Associate Professor, Energy Resources Engineering
- Senior Fellow, Precourt Institute for Energy
- Affiliate, Precourt Institute for Energy

ADMINISTRATIVE APPOINTMENTS

- Acting Assistant Professor, Department of Energy Resources Engineering, Stanford University, (2009-2012)
- Assistant Professor, Department of Energy Resources Engineering, Stanford University, (2012- present)

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

- Personal web page: <http://pangea.stanford.edu/~abrandt/>
- Brandt Research: <https://earth.stanford.edu/ere/about/energy-resources-engineering-faculty#gs.xjctvs>
- Environmental Assessment and Optimization (EAO) Group: <https://pangea.stanford.edu/researchgroups/eao>
- 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.

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:

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Teaching

COURSES

2021-22

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

2020-21

- ERE Master's Graduate Seminar: ENERGY 351 (Spr)
- ERE PhD Graduate Seminar: ENERGY 352 (Spr)
- Fundamentals of Energy Processes: EE 293B, ENERGY 293B (Win)
- Fundamentals of Petroleum Engineering: ENERGY 120, ENGR 120 (Aut)
- Optimization of Energy Systems: ENERGY 191, ENERGY 291 (Spr)
- Sustainable Energy Interdisciplinary Graduate Seminar: ENERGY 309 (Aut, Win)

2018-19

- ERE Master's Graduate Seminar: ENERGY 351 (Win)
- ERE PhD Graduate Seminar: ENERGY 352 (Win)
- Fundamentals of Energy Processes: EE 293B, ENERGY 293B (Win)
- Optimization of Energy Systems: ENERGY 191, ENERGY 291 (Win)
- Sustainable Energy for 9 Billion: ENERGY 104 (Spr)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Bennet Meyers-Im, Ryan Triolo

Postdoctoral Faculty Sponsor

Sahar El Abbadi, Maomao Hu, Mainak Mukherjee, Aqsa Naeem, Evan Sherwin

Doctoral Dissertation Advisor (AC)

Wennan Long, Yuhao Nie, Jeff Rutherford

Master's Program Advisor

Kareena Mehta, Andea Scott

Doctoral Dissertation Co-Advisor (AC)

Ranjitha Shivaram

Doctoral (Program)

Justin Bracci, Rebecca Grekin, Sindhu Sreedhara, Zhan Zhang

Publications

PUBLICATIONS

- **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*
Teichgraber, 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., Durlafsky, 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., Teichgraber, 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 CO₂ 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*
Masnadi, M. S., Perrier, P. R., Wang, J., Rutherford, J., Brandt, A. R.
2020; 194
- **Life cycle assessment of emerging technologies: Evaluation techniques at different stages of market and technical maturity** *JOURNAL OF INDUSTRIAL ECOLOGY*
Bergerson, J. A., Brandt, A., Cresko, J., Carbajales-Dale, M., MacLean, H. L., Matthews, H., McCoy, S., McManus, M., Miller, S. A., Morrow, W. R., Posen, I., Seager, T., Skone, et al
2020; 24 (1)
- **Optimal Design of the Power Generation Network in California: Moving towards 100% Renewable Electricity by 2045** *World Academy of Science*
Long, W., et al
2020: 27-37
- **Machine vision for natural gas methane emissions detection using an infrared camera** *APPLIED ENERGY*

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- Wang, J., Tchapmi, L. P., Ravikumar, A. P., McGuire, M., Bell, C. S., Zimmerle, D., Savarese, S., Brandt, A. R.
2020; 257
- **Short-term solar PV forecasting using computer vision: The search for optimal CNN architectures for incorporating sky images and PV generation history** *JOURNAL OF RENEWABLE AND SUSTAINABLE ENERGY*
Venugopal, V., Sun, Y., Brandt, A. R.
2019; 11 (6)
 - **Macro-Energy Systems: Toward a New Discipline** *JOULE*
Levi, P. J., Kurland, S., Carbajales-Dale, M., Weyant, J. P., Brandt, A. R., Benson, S. M.
2019; 3 (10): 2282–86
 - **Single-blind inter-comparison of methane detection technologies - results from the Stanford/EDF Mobile Monitoring Challenge** *ELEMENTA-SCIENCE OF THE ANTHROPOCENE*
Ravikumar, A. R., Sreedhara, S., Wang, J., Englander, J., Roda-Stuart, D., Bell, C., Zimmerle, D., Lyon, D., Mogstad, I., Ratner, B., Brandt, A. R.
2019; 7
 - **Short-term solar power forecast with deep learning: Exploring optimal input and output configuration** *SOLAR ENERGY*
Sun, Y., Venugopal, V., Brandt, A. R.
2019; 188: 730–41
 - **Clustering methods to find representative periods for the optimization of energy systems: An initial framework and comparison** *APPLIED ENERGY*
Teichgraber, H., Brandt, A. R.
2019; 239: 1283–93
 - **Biomethane addition to California transmission pipelines: Regional simulation of the impact of regulations** *Applied Energy*
Von Wald, G. A., et al
2019: 292-301
 - **Design and operations optimization of membrane-based flexible carbon capture** *International Journal of Greenhouse Gas Control*
Yuan, M.
2019; 84: 154-163
 - **Three considerations for modeling natural gas system methane emissions in life cycle assessment** *Journal of Cleaner Production*
Grubert, E. A., et al
2019; 222: 760-767
 - **Short-term solar power forecast with deep learning: Exploring optimal input and output configuration** *Short-term solar power forecast with deep learning: Exploring optimal input and output configuration*
Sun, Y.
2019; 188: 730-741
 - **Optimal design and operation of integrated solar combined cycles under emissions intensity constraints** *APPLIED ENERGY*
Brodrick, P. G., Brandt, A. R., Durlafsky, L. J.
2018; 226: 979–90
 - **Global carbon intensity of crude oil production.** *Science (New York, N.Y.)*
Masnadi, M. S., El-Houjeiri, H. M., Schunack, D., Li, Y., Englander, J. G., Badahdah, A., Monfort, J., Anderson, J. E., Wallington, T. J., Bergerson, J. A., Gordon, D., Koomey, J., Przesmitzki, et al
2018; 361 (6405): 851–53
 - **Assessment of methane emissions from the U.S. oil and gas supply chain.** *Science (New York, N.Y.)*
Alvarez, R. A., Zavala-Araiza, D., Lyon, D. R., Allen, D. T., Barkley, Z. R., Brandt, A. R., Davis, K. J., Herndon, S. C., Jacob, D. J., Karion, A., Kort, E. A., Lamb, B. K., Lauvaux, et al
2018; 361 (6398): 186-188
 - **Climate-wise choices in a world of oil abundance** *ENVIRONMENTAL RESEARCH LETTERS*
Brandt, A. R., Masnadi, M. S., Englander, J. G., Koomey, J., Gordon, D.
2018; 13 (4)
 - **Analysis of the energy return on investment (EROI) of existing fields**
-

Masnadi, M., Brandt, A.
AMER CHEMICAL SOC.2018

- **Well-to-refinery emissions and net-energy analysis of China's crude-oil supply** *NATURE ENERGY*
Masnadi, M. S., El-Houjeiri, H. M., Schunack, D., Li, Y., Roberts, S. O., Przesmitzki, S., Brandt, A. R., Wang, M.
2018; 3 (3): 220–26
- **"Good versus Good Enough?" Empirical Tests of Methane Leak Detection Sensitivity of a Commercial Infrared Camera** *ENVIRONMENTAL SCIENCE & TECHNOLOGY*
Ravikumar, A. P., Wang, J., McGuire, M., Bell, C. S., Zimmerle, D., Brandt, A. R.
2018; 52 (4): 2368–74
- **Solar PV output prediction from video streams using convolutional neural networks** *Energy & Environmental Science*
Sun, Y.
2018: 8
- **Aerial Interyear Comparison and Quantification of Methane Emissions Persistence in the Bakken Formation of North Dakota, USA** *Environmental Science and Technology*
Englander, J. G., Brandt, A. R., Conley, S., Lyon, D. R., Jackson, R. B.
2018; 52: 8947–8953
- **Convolutional Neural Network for Short-term Solar Panel Output Prediction**
Sun, Y., Venugopal, V., Brandt, A. R., IEEE
IEEE.2018: 2357–61
- **Aerial inter-year comparison and quantification of methane emissions persistence in the Bakken formation of North Dakota, USA.** *Environmental science & technology*
Englander, J. G., Brandt, A. R., Conley, S. n., Lyon, D. R., Jackson, R. B.
2018
- **Optimal design and operation of integrated solar combined cycles under emissions intensity constraints** *Applied Energy*
Brodrick, P. G.
2018; 226 (0306-2619): 979-990
- **Assessment of methane emissions from the U.S. oil and gas supply chain** *Science*
Alvarez, R. A.
2018: 186–88
- **Improved characterization of methane emissions from the U.S. oil and gas supply chain** *Science*
Alvarez, R. A.
2018; 361 (6398): 186-188
- **Operational optimization of an integrated solar combined cycle under practical time-dependent constraints** *ENERGY*
Brodrick, P. G., Brandt, A. R., Durlafsky, L. J.
2017; 141: 1569–84
- **Evaluation of a proposal for reliable low-cost grid power with 100% wind, water, and solar** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Clack, C. M., Qvist, S. A., Apt, J., Bazilian, M., Brandt, A. R., Caldeira, K., Davis, S. J., Diakov, V., Handschy, M. A., Hines, P. H., Jaramillo, P., Kammen, D. M., Long, et al
2017; 114 (26): 6722–27
- **Methane, Black Carbon, and Ethane Emissions from Natural Gas Flares in the Bakken Shale, North Dakota** *ENVIRONMENTAL SCIENCE & TECHNOLOGY*
Gvakharia, A., Kort, E. A., Brandt, A., Peischl, J., Ryerson, T. B., Schwarz, J. P., Smith, M. L., Sweeney, C.
2017; 51 (9): 5317-5325
- **When Comparing Alternative Fuel-Vehicle Systems, Life Cycle Assessment Studies Should Consider Trends in Oil Production** *JOURNAL OF INDUSTRIAL ECOLOGY*
Wallington, T. J., Anderson, J. E., De Kleine, R. D., Kim, H. C., Maas, H., Brandt, A. R., Keoleian, G. A.
2017; 21 (2): 244-248

- **Designing better methane mitigation policies: the challenge of distributed small sources in the natural gas sector** *ENVIRONMENTAL RESEARCH LETTERS*
Ravikumar, A. P., Brandt, A. R.
2017; 12 (4)
- **Energy Intensity and Greenhouse Gas Emissions from Oil Production in the Eagle Ford Shale** *ENERGY & FUELS*
Yeh, S., Ghandi, A., Scanlon, B. R., Brandt, A. R., Cai, H., Wang, M. Q., Vafi, K., Reedy, R. C.
2017; 31 (2): 1440-1449
- **Updating the US Life Cycle GHG Petroleum Baseline to 2014 with Projections to 2040 Using Open-Source Engineering-Based Models** *ENVIRONMENTAL SCIENCE & TECHNOLOGY*
Cooney, G., Jamieson, M., Marriott, J., Bergerson, J., Brandt, A., Skone, T. J.
2017; 51 (2): 977-987
- **Are Optical Gas Imaging Technologies Effective For Methane Leak Detection?** *ENVIRONMENTAL SCIENCE & TECHNOLOGY*
Ravikumar, A. P., Wang, J., Brandt, A. R.
2017; 51 (1): 718-724
- **Estimating decades-long trends in petroleum field energy return on investment (EROI) with an engineering-based model.** *PloS one*
Tripathi, V. S., Brandt, A. R.
2017; 12 (2)
- **Energetic productivity dynamics of global super-giant oilfields** *Energy & Environmental Science*
Masnadi, M., Brandt, A.
2017; 10 (6): 1493-1504
- **Potential solar energy use in the global petroleum sector** *ENERGY*
Wang, J., O'Donnell, J., Brandt, A. R.
2017; 118: 884-892
- **Methane Leaks from Natural Gas Systems Follow Extreme Distributions** *ENVIRONMENTAL SCIENCE & TECHNOLOGY*
Brandt, A. R., Heath, G. A., Cooley, D.
2016; 50 (22): 12512-12520
- **Energy Intensity and Greenhouse Gas Emissions from Tight Oil Production in the Bakken Formation** *ENERGY & FUELS*
Brandt, A. R., Yeskoo, T., McNally, M. S., Vafi, K., Yeh, S., Cai, H., Wang, M. Q.
2016; 30 (11): 9613-9621
- **Assessment of advanced solvent-based post-combustion CO2 capture processes using a bi-objective optimization technique** *APPLIED ENERGY*
Kang, C. A., Brandt, A. R., Durlofsky, L. J., Jayaweera, I.
2016; 179: 1209-1219
- **Improved exergetic life cycle assessment through matrix reduction technique** *INTERNATIONAL JOURNAL OF LIFE CYCLE ASSESSMENT*
Smith, S. S., Calbry-Muzyka, A., Brandt, A. R.
2016; 21 (10): 1379-1390
- **GHGfrack: An Open-Source Model for Estimating Greenhouse Gas Emissions from Combustion of Fuel during Drilling and Hydraulic Fracturing.** *Environmental science & technology*
Vafi, K., Brandt, A.
2016; 50 (14): 7913-7920
- **Quantifying atmospheric methane emissions from oil and natural gas production in the Bakken shale region of North Dakota** *JOURNAL OF GEOPHYSICAL RESEARCH-ATMOSPHERES*
Peischl, J., Karion, A., Sweeney, C., Kort, E. A., Smith, M. L., Brandt, A. R., Yeskoo, T., Aikin, K. C., Conley, S. A., Gvakharia, A., Trainer, M., Wolter, S., Ryerson, et al
2016; 121 (10): 6101-6111
- **Fugitive emissions from the Bakken shale illustrate role of shale production in global ethane shift** *GEOPHYSICAL RESEARCH LETTERS*
Kort, E. A., Smith, M. L., Murray, L. T., Gvakharia, A., Brandt, A. R., Peischl, J., Ryerson, T. B., Sweeney, C., Travis, K.
2016; 43 (9): 4617-4623

- **Aerial Surveys of Elevated Hydrocarbon Emissions from Oil and Gas Production Sites** *ENVIRONMENTAL SCIENCE & TECHNOLOGY*
Lyon, D. R., Alvarez, R. A., Zavala-Araiza, D., Brandt, A. R., Jackson, R. B., Hamburg, S. P.
2016; 50 (9): 4877-4886
- **A new carbon capture proxy model for optimizing the design and time-varying operation of a coal-natural gas power station** *INTERNATIONAL JOURNAL OF GREENHOUSE GAS CONTROL*
Kang, C. A., Brandt, A. R., Durllofsky, L. J.
2016; 48: 234-252
- **Comparing Natural Gas Leakage Detection Technologies Using an Open-Source "Virtual Gas Field" Simulator** *ENVIRONMENTAL SCIENCE & TECHNOLOGY*
Kemp, C. E., Ravikumar, A. P., Brandt, A. R.
2016; 50 (8): 4546-4553
- **Water Use and Management in the Bakken Shale Oil Play in North Dakota** *ENVIRONMENTAL SCIENCE & TECHNOLOGY*
Horner, R. M., Harto, C. B., Jackson, R. B., Lowry, E. R., Brandt, A. R., Yeskoo, T. W., Murphy, D. J., Clark, C. E.
2016; 50 (6): 3275-3282
- **GHGfrack: An open-source model for estimating greenhouse gas emissions from combustion of fuel in drilling and hydraulic fracturing** *Environ. Sci. Technol.*
Vafi, K., Brandt, A.
2016: 7913-20
- **Energy Return on Investment (EROI) for Forty Global Oilfields Using a Detailed Engineering-Based Model of Oil Production** *PLOS ONE*
Brandt, A. R., Sun, Y., Bharadwaj, S., Livingston, D., Tan, E., Gordon, D.
2015; 10 (12)
- **Net energy analysis of Bakken crude oil production using a well-level engineering-based model** *ENERGY*
Brandt, A. R., Yeskoo, T., Vafi, K.
2015; 93: 2191-2198
- **Embodied Energy and GHG Emissions from Material Use in Conventional and Unconventional Oil and Gas Operations** *ENVIRONMENTAL SCIENCE & TECHNOLOGY*
Brandt, A. R.
2015; 49 (21): 13059-13066
- **The productivity and potential future recovery of the Bakken formation of North Dakota** *JOURNAL OF UNCONVENTIONAL OIL AND GAS RESOURCES*
McNally, M., Brandt, A. R.
2015; 11: 11-18
- **Oil Sands Energy Intensity Assessment Using Facility-Level Data** *ENERGY & FUELS*
Englander, J. G., Brandt, A. R., Elgowainy, A., Cai, H., Han, J., Yeh, S., Wang, M. Q.
2015; 29 (8): 5204-5212
- **Well-to-Wheels Greenhouse Gas Emissions of Canadian Oil Sands Products: Implications for US Petroleum Fuels** *ENVIRONMENTAL SCIENCE & TECHNOLOGY*
Cai, H., Brandt, A. R., Yeh, S., Englander, J. G., Han, J., Elgowainy, A., Wang, M. Q.
2015; 49 (13): 8219-8227
- **Well-to-Wheels Greenhouse Gas Emissions of Canadian Oil Sands Products: Implications for U.S. Petroleum Fuels.** *Environmental science & technology*
Cai, H., Brandt, A. R., Yeh, S., Englander, J. G., Han, J., Elgowainy, A., Wang, M. Q.
2015; 49 (13): 8219-27
- **Uncertainty in Regional-Average Petroleum GHG Intensities: Countering Information Gaps with Targeted Data Gathering.** *Environmental science & technology*
Brandt, A. R., Sun, Y., Vafi, K.
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- 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