

Stanford



Jeffrey Rutherford

Ph.D. Student in Energy Resources Engineering

Bio

BIO

Jeff is an engineer and systems-thinker pursuing research at the intersection of energy, economy, and environment. Previously, Jeff has published on the environmental benefits and costs of large ecosystem restoration projects. Currently, as a PhD student in Dr. Adam Brandt's Energy Assessment and Optimization research group, Jeff is using life cycle assessment tools to better understand impacts and trade-offs of energy technologies.

Jeff is also the Editor-in-Chief and a frequent writer for the Stanford Energy Journal (website: <https://sej.stanford.edu/>)

EDUCATION AND CERTIFICATIONS

- M.S., Louisiana State University , Oceanography and Coastal Science (2017)
- B.S., University of Alberta , Mechanical Engineering (2015)

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

For his PhD research, Jeff is using bottom-up life cycle assessment (LCA) tools to evaluate the climate and energy intensity of energy projects. Specifically, using the Oil Production and Greenhouse-Gas Emissions Estimator (OPGEE, an open source LCA tool), Jeff is estimating the environmental impact of a sample of natural gas projects globally. Necessarily, this requires the rigorous quantification of life cycle energy consumption and fugitive emissions.

Publications

PUBLICATIONS

- **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
- **Assessment of the impacts of process-level energy efficiency improvement on greenhouse gas mitigation potential in the petroleum refining sector** *ENERGY*
Talaie, A., Oni, A., Ahiduzzaman, M., Roychaudhuri, P., Rutherford, J., Kumar, A.
2020; 191
- **Evaluating trade-offs of a large, infrequent sediment diversion for restoration of a forested wetland in the Mississippi delta** *ESTUARINE COASTAL AND SHELF SCIENCE*
Rutherford, J. S., Day, J. W., D'Elia, C. F., Wiegman, A. H., Willson, C. S., Caffey, R. H., Shaffer, G. P., Lane, R. R., Batker, D.
2018; 203: 80–89
- **The Energy Pillars of Society: Perverse Interactions of Human Resource Use, the Economy, and Environmental Degradation** *BioPhysical Economics and Resource Quality*

Day, J. W., D'Elia, C. F., Wiegman, A. R., Rutherford, J. S., Lane, R. R., Dismukes, D. E.
2018; 3 (2)

- **Comparing Carbon Intensity of Unconventional and Asia Pacific Oil Production** *SPE Asia Pacific Oil and Gas Conference and Exhibition*
Meehan, N., El-Houjeiri, H., Rutherford, J. S.
Society of Petroleum Engineers.2018
- **Carbon Intensity: Comparing Carbon Impacts of Middle East and US Shale Oils** *SPE Kingdom of Saudi Arabia Annual Technical Symposium and Exhibition*
Meehan, D. N., El-Houjeiri , H. M., Rutherford, J. S.
2018
- **Energy and Climate – Global Trends and Their Implications for Delta Restoration** *Mississippi Delta Restoration*
Rutherford, J. S., Wiegman, A. R., Day, J. W., Lane, R. R.
edited by Day, J. W.
Springer.2017
- **The Costs and Sustainability of Ongoing Efforts to Restore and Protect Louisiana’s Coast** *Mississippi Delta Restoration*
Wiegman, A. R., Rutherford, J. S., Day, J. W.
edited by Day, J. W.
Springer.2017
- **Large infrequently operated river diversions for Mississippi delta restoration** *ESTUARINE COASTAL AND SHELF SCIENCE*
Day, J. W., Lane, R. R., D'Elia, C. F., Wiegman, A. H., Rutherford, J. S., Shaffer, G. P., Brantley, C. G., Kemp, G.
2016; 183: 292–303