

CIRRICULUM VITAE

David J. Murphy

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Associate Professor and Chair, Department of Environmental Studies, St. Lawrence University

Professional Profile: My teaching and research is focused on energy, but is highly interdisciplinary, often addressing the intersection of energy, economics and the environment.

Education:

Doctor of Philosophy in Environmental Science, 2010, State University of New York, College of Environmental Science and Forestry

Master of Science in Environmental Science, 2007, State University of New York, College of Environmental Science and Forestry

Bachelor of Arts in Biology, 2003, The College of the Holy Cross

Professional Experience:

2018 – Present	Associate Professor Department of Environmental Studies St. Lawrence University
2014 – 2018	Assistant Professor Department of Environmental Studies St. Lawrence University
2011 – 2014	Assistant Professor Department of Geography Northern Illinois University
2011 – 2014	Associate Institute for the Study of the Environment, Sustainability, and Energy Northern Illinois University
2011 – 2014	Environmental Systems and Policy Analyst Natural Resource Economics and Systems Analysis Team Environmental Science Division Argonne National Laboratory

Teaching – Current Courses

ENVS 101 – Introduction to Environmental Studies (2014 – Present)

This course is an introduction to environmental studies, covering relevant topics from both the natural and social sciences from a systems perspective, focusing specifically on how human and natural systems interact.

ENVS 275 – Energy and the Environment (2014 – Present)

At its core, this course examines the nexus of energy, environment, and economics from an interdisciplinary perspective, focusing on how the pursuit of economic growth requires energy extraction which can lead to environmental destruction.

ENVS 379 Renewable Energy (2015 – Present)

In this course students discuss the global transition from fossil fuels to renewable energy while simultaneously learning about various renewable energy sources and technologies by engaging with the technologies directly and by engaging in problem-solving activities focused on the technologies.

ENVS 4016 Energy Life Cycle Analysis (2016 – Present)

The main goal of this class is to introduce students to life-cycle thinking and modeling so that they can analyze systematically how energy technologies and their utilization impact the environment.

ENVS 3036 – Experiencing Energy Transition: Copenhagen (Summer Term Course in May 2017 and May 2019)

In this class students immersed themselves in Danish energy culture by visiting state-of-the-art renewable energy production facilities, green building design, listening to lectures on Danish energy policy, and visiting Samsø – a 100% renewable energy island community.

Teaching –Previous Courses

GEOG/ENVS 315 – Geography of Energy (Taught at Northern Illinois University 2011 - 2014)

This course is an interdisciplinary overview of how energy is utilized by society. The course covers all major fossil fuel and renewable energy technologies and requires students to examine energy utilization of one country in depth.

ENVS 304 – Environmental Law, Policy and Economics (Taught at Northern Illinois University 2011- 2014)

This course provides an introduction to U.S. environmental law, environmental policy and environmental economics and an overview of the interaction between those three fields, looking specifically at how they address environmental issues, both collaboratively and uniquely.

ENVS 491 - Readings in Environmental Science (Taught at Northern Illinois University 2011 - 2014)

This course focuses on the interaction between land-cover change and ecosystem services and is run as a graduate-level seminar reading mostly peer-reviewed literature.

Scholarship

Table 1. This is a list of all the journals in which I have published and the corresponding Impact Factor from the Journal Citation Reports, ranked by impact factor. For reference, the impact factor across 105 journals listed within the Environmental Studies area is 2.1. Only two of my publications were in journals lower than this average. Four journals did not have impact factors calculated in the JCR. Biophysical Economics and Resource Quality is a new journal for which I am an editor, and the other three calculate a different impact factor, but to maintain comparability I have excluded those number from the table.

Journal	Number of Publications	Journal Citation Reports Impact Factor
<i>Nature</i>	1	40.1
<i>Annual Review of Environment and Resources</i>	1	6.26
<i>Environmental Science and Technology</i>	1	6.19
<i>Annals of the New York Academy of Sciences</i>	2	4.71
<i>Energy Policy</i>	1	4.14
<i>Energy Technology</i>	1	3.16
<i>Philosophical Transactions of the Royal Society A</i>	1	2.97
<i>Ecological Modeling</i>	1	2.36
<i>Energies</i>	2	2.26
<i>Sustainability</i>	2	1.78
<i>Journal of Renewable and Sustainable Energy</i>	1	1.13
<i>Biophysical Economics and Resource Quality</i>	1	N/A

<i>Ecological Bulletins</i>	1	N/A
<i>Environment, Development and Sustainability</i>	1	N/A
<i>International Journal of Climatology</i>	1	N/A

Peer-Reviewed Articles:

Murphy, T., **Murphy, D.**, Love, T. LeHew, M., and B. McCall. Grappling with Planetary Limits: We Need a PLAN. (in progress).

Murphy, D and Marco Rauegi. 2020. The Energy Transition in New York: A Greenhouse Gas and Net Energy Analysis. *Energy Technologies*. (available on-line).

Rauegi, M., Sgouridis, S., **Murphy, D.**, Fthenakis, V., Frischknecht, R., Breyer, C., Bardi, U., Barnhart, C., Brandt, A., Buckley, A., Carbajales-Dale, M., Csala, D., de Wild-Scholten, M., Heath, G., Jæger-Waldau, A., Jones, C., Keller, A., Leccisi, E., Mancarella, P., Pearsall, N., Siegel, A., Sinke, W., Stolz, P. 2016. Energy Return on Energy Invested (ERoEI) for photovoltaic solar systems in regions of moderate insolation: A comprehensive response. *Energy Policy* 102 pp 377-384.

Murphy, D.J., M. Carbajales-Dale, and D. Moeller. 2016. Comparing Apples to Apples: Why the Net Energy Analysis Community needs to adopt the LCA framework. *Energies* 9(11) pp 917–933.

Moeller, D. and **David Murphy**. 2016. Net Energy Analysis of Gas Production from the Marcellus Shale. *Biophysical Economics and Resource Quality* 1(5) pp 1-15.

Horner, R.M., Harto, C., Jackson, R., Lowry, E., Brandt, A., Yeskoo, T., **Murphy, D.J.**, and C. E. Clark. 2016. Water use and management in the Bakken Shale Oil Play in North Dakota. *Environmental Science and Technology* 50 pp 3275-3282.

Murphy, D.J., Horner, R.M., Clark, C.E. 2015. The Impact of Off-Site Land Use Energy Intensity on the Overall Life Cycle Land Use Energy Intensity for Utility-Scale Solar Electricity Generation Technologies. *Journal of Renewable and Sustainable Energy* 7(033116) DOI: 10.1063/1.4921650

Murphy, D.J. 2014. The implications of the declining energy return on investment of oil production. *Philosophical Transactions of the Royal Society A* 372 pp 1-19.

Waide, R., Comarazamy, D.E., Gonzalez, J.E., Hall, C.A., Lugo, A.E., Luvall, J.C., **Murphy, D.J.**, Ortiz-Zayas, J.R., Ramirez-Beltran, N.D., Scatena, F.N., Silver, W.L. 2013. Factors influencing the changing climate of the Luquillo Mountains, Puerto Rico. *Ecological Bulletins* 54 pp 21-41.

Murphy, D, Nelder, C, Jefferson, M, Hall, C, Laherrere, J, Baldauf, J, Kuperus-Heun, M, Dale, M. 2012. Peak Oil is Affecting the Economy Already. *Nature* 483 (541) pp 541.

Sell B, **Murphy D**, Hall, C. 2011. Energy Return on Energy Invested for Tight Gas Wells in the Appalachian Basin, United States of America. *Sustainability* 3 pp 1986-2008.

Pelletier N, Audsley E, Brodt S, Garnett T, Henriksson P, Kendall A, Kramer K, **Murphy D**, Nemecek T, Troell M. 2011. Energy Intensity of Agriculture and Food Systems. *Annual Review of Environment and Resources* 36 pp 223-246.

Murphy, D.J. and Charles A.S. Hall. 2011. Energy return on investment, peak oil, and the end of economic growth in “Ecological Economics Reviews.” Robert Costanza, Karin Limburg & Ida Kubiszewski, Eds. *Annals of the New York*

Academy of Sciences 1219 pp 52-72.

Murphy, D.J. and Charles A.S. Hall. 2011. Adjusting the economy to the new energy realities of the second half of the age of oil. *Ecological Modeling* 223 pp 67-71.

Murphy, D.J. and Charles A.S. Hall. 2011. Order from Chaos: A Preliminary Protocol for Determining EROI for Fuels. *Sustainability* 3 pp 1888-1907.

Murphy, D.J., C.A.S. Hall, and Bobby Powers. 2011. New Perspectives on the Energy Return on Investment of Corn Based Ethanol. *Environment, Development and Sustainability* 13(1) pp 179-202.

Murphy, D.J. and Charles A.S. Hall. 2010. Year in review: energy return on (energy) investment in “Ecological Economics Reviews.” Robert Costanza & Karin Limburg, Eds. *Annals of the New York Academy of Sciences* 1185 pp 102 – 118.

Murphy, D.J., M.H.P. Hall, C.A.S. Hall, G. Heisler, S. Stehman, and Carlos Anselmi-Molina. 2009: The Relation Between Land-cover and the Urban Heat Island in Northeastern Puerto Rico. *International Journal of Climatology* 31(8) pp 1222-1239.

Hall, Charles A., Stephen Balogh, **David J. Murphy**. 2009. What is the Minimum EROI that a Sustainable Society Must Have? *Energies* 2(1) pp 25 – 47.

Textbooks

Murphy, David. 2019. Renewable Energy in the 21st Century. Trunity Publishing. (url: <http://www.trunity.com/trubook-renewable-energy-21st-century-david-murphy.html>)

Policy Reports:

Murphy, D.J. 2017. Oil Production in the Arctic National Wildlife Refuge: Impacts on Budget and National Energy Security. Alaska Wilderness League.

Press: Interviewed in “Arctic refuge oil bonanza could be bust for GOP budget.” Dlouhy and Nussbaum, WorldOil, October 31st, 2017.

Article Referenced in “GOP Closes In on Opening Arctic Wildlife Refuge to Drilling.” Timothy Puko, the Wall Street Journal, November 28th 2017.

Harto, C.B., Schroeder, J.N., Horner, R.M., Patton, T.L., Durham, L.A., **Murphy, D.J.**, and C. E. Clark. 2014. Water Use in Enhanced Geothermal Systems (EGS): Geology of U.S. Stimulation Projects, Water Costs, and Alternative Water Source Policies. Environmental Science Division, Argonne National Laboratory. Report NO: ANL/EVS-14/14.

Horner, R.M., Harto, C.B. **Murphy, D.J.** Clark, C.E., and J.P. Shupyr. 2014. Water Use and Management in the Bakken Shale Oil Play. U.S. Department of Energy, National Energy Technology Laboratory. DOE Award No: FWP 49462.

Bureau of Land Management. 2014. Solar Regional Mitigation Strategy for the Dry Lake Solar Energy Zone. Tech Note 444. Bureau of Land Management, Southern Nevada District Office, Las Vegas, NV.

Horner, R.M., **Murphy, D.J.**, Clark, C.E. 2013. Life Cycle Land Use Energy Intensity (LUEI) for Utility-Scale Solar Electricity Generation Technologies. Environmental Science Division, Argonne National Laboratory. Report No. ANL/EVS/R-13/1.

White Papers:

Love, T. and **David Murphy**. 2016. Implications of Net Energy for the Food-Energy-Water Nexus. National Science Foundation Report as part of Award Number: 1541988

Book Chapters:

Murphy, D.J. 2012. The Landscape of Energy, in “Energy: Overdevelopment and the Delusion of Endless Growth,” Eds. Tom Butler and George Wuerthner. Post Carbon Institute.

Conference Proceedings:

Murphy, D.J., O’Connor, B.L., Mayhorn, D.T., Almer, L.I., Bowen, E.E., White, E.M., Kim, C. 2014. Alternative Water Resources for Utility-Scale Solar Energy Development. *Energy Procedia*. 49 pp 2501-2511.

Hartmann, H.M., **Murphy, D.J.**, Smith, K.P., Walston, L., Wescott, K.L. 2013. Framing the Mitigation of Environmental Impacts from Solar Energy Development on Public Lands in a Regional Context. Submitted to the Conference of the National Association of Environmental Professionals, April 7th-10th, St. Petersburg, Florida, 2014.

Popular Press:

Murphy, D. J. How Jeff Bezos should spend that \$10 billion if he is serious about Climate Change. *USA Today*, February, 20th, 2020.

Murphy, D.J. Drilling Arctic Refuge oil won’t boost U.S. Energy Security. *The Hill*, November 3rd, 2017.

Murphy, D. J. If Trump really loved coal miners, he’d prepare them for other jobs. *Syracuse Post-Standard*, April 10th, 2017.

Murphy, D. J. Develop ‘renewables first’ energy strategy. *Philadelphia Inquirer*, February 27th, 2017.

Murphy, D.J. Trump, Clinton offer starkly different energy futures. *Philadelphia Inquirer*, November 4th, 2016.

Murphy, D.J. Republicans should embrace the freedom of renewable energy. *Market Watch*, October 11th, 2016.

Presentations:

Murphy, D.J. How to Design a Culminating Experience in an Environmental Studies/Science Program that Effectively Synthesizes Ideas Across Disciplines. Association for Environmental Studies and Sciences. June 21, 2018. Washington D.C.

Murphy, D.J. What is Biophysical Economics? Presented at the Plenary Session of the 2015 USSEE and CANSEE 2015 Joint Biennial Conference in Vancouver, British Columbia, October 1-4, 2015.

Murphy, D.J. 2015. Teaching Net Energy and Energy Return on Investment. National Energy Education Summit. Washington, D.C., January 26, 2015.

Murphy, D.J. 2013. Measuring Ecosystem Services Across Space: Exploring the Impacts of Shale Gas Extraction in Pennsylvania. Presented at the Biology/Environmental Science Seminar Series at the College of the Holy Cross, Worcester MA, April 9th, 2013.

Murphy, D.J. 2013. The Implications of the Declining Energy Return on Investment of Oil Production. Presented at the 7th Biennial Conference of the United States Society for Ecological Economics, Burlington, Vermont, June 11th, 2013.

Murphy, D.J. 2013. Measuring Ecosystem Services Across Space: Exploring the Impacts of Shale Gas Extraction in Pennsylvania. Presented at the 7th Biennial Conference of the United States Society for Ecological Economics, Burlington, Vermont, June 11th, 2013.

Murphy, D.J. The Change in Ecosystem Services Due to Shale Gas Extraction in Pennsylvania. ACES and Ecosystem Markets, Ft. Lauderdale, FL, USA, December 10th –14th, 2012.

Murphy, D.J. The Change in Ecosystem Services Due to Shale Gas Extraction in Pennsylvania. EcoSummit, Columbus, OH, USA, September 30th – October 5th, 2012

Murphy, D.J. Peak Oil and Energy Return on Investment: The End of Economic Growth. 9th Annual Conference of the International Association for the Study of Peak Oil and Gas, Brussels, Belgium. April 27th-29th 2011.

Murphy, D.J. The Energy Return on Investment Threshold and the Growth of Renewable Energy. Annual Conference of the United States Association for the Study of Peak Oil and Gas, Washington, D.C. November 2-5th 2011.

Murphy, D.J. EROI, Insidious Feedbacks, and the End of Economic Growth. *Sustainable Use of Renewable Energy (SURE) conference*. Syracuse, New York, November 2010.

Additional Scholarship:

Invited participant in 7643 Panel #4 (LCA, Energy Analysis) Panel, a review panel within the Environmental Sustainability section of the Division of Chemical, Bioengineering, Environmental, and Transport Systems of the National Science Foundation. March 15th and 16th, 2016, Stafford I Building, National Science Foundation, Arlington VA.

Invited participant in National Lobbying Day with the Union of Concerned Scientists. Met with Representative Stefanik, as well as staffers from offices of both Senator Gillibrand and Senator Schumer, to discuss energy issues in the North Country of New York and the United States more broadly. April 27th and 28th, 2017.

Funding

Extramural Grants

PI

NSF 1541988. 2015. PIs: Thomas F. Love, David J. Murphy. FEW: Implications of Declining Net Energy for Complex Food/Energy/Water Systems. Workshop Proposal for NSF Dear Colleague Letter NSF-14_040 (\$50,000)

Alaska Wilderness League. 2017. Energy and economic analysis of development of the 1002 area within the Arctic National Wildlife Refuge. (\$15,000)

Collaborator

U.S. Department of Energy, Award No.: FWP 49462

U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy

Intramural Grants

2016 – Bradbury Award (\$2000) – awarded for the purchase of the EcoInvent LCI database

2015 – Instructional Mini-Grant (\$500) – awarded to cover a 6-hour on-line course on Life Cycle Analysis

2015, 2016, 2017 – Pedagogy Funding (\$1400) – awarded to cover costs for academic and pedagogical conferences

Professional Affiliations

Association for Environmental Studies and Sciences

United States Society of Ecological Economics (USSEE)

Awards

First Prize for Best Paper from the journal Sustainability: Murphy et al. 2011, “Order from Chaos: A Preliminary Protocol for Determining the EROI of Fuels”