

JEFFREY M. BIELICKI, PH.D.

<p>CONTACT INFORMATION</p>	<p>Assistant Professor The Ohio State University Columbus, Ohio 43210</p> <p>Department of Civil, Environmental, and Geodetic Engineering 483b Hitchcock Hall, 2070 Neil Avenue V: (614) 688-2131</p> <p>The John Glenn College of Public Affairs 310c Page Hall, 1810 College Road V: (614) 688-2113</p> <p>bielicki.2@osu.edu u.osu.edu/bielicki.2</p>
<p>RESEARCH INTERESTS</p>	<p>Interactions between Energy and Environmental Systems and Policy; Integrated Assessment; Climate Change Adaptation, Mitigation, and Governance; Risks of Emerging Subsurface Technologies; Energy-Water Nexus; Sustainability Science; Decision Analysis</p>
<p>PRESENT AFFILIATION</p>	<p>The Ohio State University: Columbus, OH</p> <p><i>Assistant Professor</i> 07/13 – present Joint: Department of Civil, Environmental, and Geodetic Engineering; The John Glenn College of Public Affairs</p> <p>Affiliated Faculty: Environmental Science Graduate Program Courtesy Faculty: City and Regional Planning, Knowlton School of Architecture 02/15 - present</p> <p><i>Associate Director</i> Subsurface Energy Resources Center 03/15 – 01/17</p> <p><i>Courses Taught:</i></p> <ul style="list-style-type: none"> • PUBAFRS/ENVENG 5600 Science, Engineering, and Public Policy (PUBAFRS 5800 in SP14) SP14, SP15, SP16, SP17 • CIVILENG 3080 Economic Evaluation and Optimization in Civil and Environmental Engineering SP15, SP16, SP17 <p><i>Curriculum Development:</i></p> <ul style="list-style-type: none"> • PUBAFRS/ENVENG 5600 Science, Engineering, and Public Policy (SP14 co-developed with Caroline Wagner; SP15 and SP16 solo) SP14, SP15, SP16, SP17 • Undergraduate Minor in Science, Engineering and Public Policy – Administered through the John Glenn College of Public Affairs. Approved by the university in October 2015 (co-developed with Caroline Wagner, Joshua Hawley, Chris Adams, and Ed McCaul) 10/15 <p><i>Service:</i></p> <p>Department of Civil, Environmental, and Geodetic Engineering:</p> <ul style="list-style-type: none"> • Infrastructure Faculty Search Committee 10/14 – 04/16 • Mentoring Committee 01/16 – present • Smart Buildings Faculty Search Committee 08/16 – 02/17 • Sustainable Agriculture Faculty Search Committee 02/17 - present <p>John Glenn College of Public Affairs:</p> <ul style="list-style-type: none"> • Doctoral Committee 08/13 – present <p>Environmental Science Graduate Program</p> <ul style="list-style-type: none"> • Graduate Studies Committee 09/14 – 05/17 <p>The Ohio State University</p> <ul style="list-style-type: none"> • Subsurface Energy Research Center Faculty Advisory Committee 01/14 – 01/17
<p>EDUCATION</p>	<p>Harvard University: Cambridge, MA</p> <ul style="list-style-type: none"> • <i>Ph.D.</i> Public Policy June 2009

Dissertation: *Integrated Systems Analysis and Technological Findings for Carbon Capture and Storage Deployment* | Committee: William C. Clark (Chair after Jan. 20, 2009), William W. Hogan, John P. Holdren (Chair until Jan. 20, 2009), Richard J. Zeckhauser

- *M.P.A.* | Systems Analysis, Science and Technology Policy, Game Theory, Decision-Making June 2003
- University of Chicago:** Chicago, IL March 2000
M.B.A. | Economics, Strategy, Organizational Behavior
- Valparaiso University:** Valparaiso, IN May 1996
B.S. | Mechanical Engineering *Summa Cum Laude* | Minor: Computer Science

GRANTS AND FUNDING

- \$2,431,141 for “INFEWS/TI: Impacts of Deglobalization on the Sustainability of Regional Food, Energy, Water Systems” Co-PI. (Elena Irwin, PI). U.S. National Science Foundation, Innovations at the Nexus of Food, Energy, and Water Systems (INFEWS). August, 2017 – July 2022.
- \$375,099 for “Mineralizing Carbon Dioxide using Stabilized Flue Gas Desulfurization Material in the Presence of Acid Mine Drainage.” Co-PI. (Chin-Min Cheng, PI). Ohio Coal Development Office. August, 2017 – July, 2019.
- \$6,159 for “Community Perceptions of and Resilience to Shale Energy Development in Eastern Ohio” PI. OSU Subsurface Energy Resources Center. Seed Grant. October, 2016 – September, 2017.
- \$22,960 for “Energy Storage in Sedimentary Basins Incubator Workshop. PI. NSF SedHeat Research Coordination Network. February, 2016 – January, 2016
- \$31,099 for “Energy Transitions and Bridges: Does What We Emphasize Take Us Where We Want To Be?” PI. OSU Sustainable and Resilient Economy Discovery Theme / OSU Office of Energy and Environment. The Ohio State University. October 2016 – September 2017.
- \$42,198 for “Earth Services: Full Accounting of Human Well-Being Derived from the Planet.” PI. OSU Sustainable and Resilient Economy Discovery Theme / OSU Office of Energy and Environment / Battelle Center for Science and Technology. March 2016 – February, 2017.
- \$7,263,677 for “Utica Shale Energy and Environment Laboratory (USEEL).” Co-PI (Jeffrey Daniels, PI). U.S. Department of Energy. October 2014 - September, 2018
- \$27,305 for “Co-Optimizing Enhanced Water Recovery and CO₂ Sequestration in Ohio.” PI. Ohio Water Resources Center, U.S.G.S., and OSU Office of Energy and Environment. March 2016 – February 2017.
- \$37,723 for “Developing Integrated Assessment of Energy and Water in Ohio.” PI. (Gajan Sivandran, co-I). Ohio Water Resources Center, U.S.G.S., and OSU Office of Energy and Environment. March 2015 – February 2016.
- \$2,500 for “Update the Definition of Heating and Cooling Degree Days for Assessment of Climate Change Impacts on Energy Systems” to Yapoing Wang (advisee). OSU Office of Energy and Environment. Awarded December 2014.
- International Social Science Council, Transformations to Sustainability: “The Politics of Global Energy Transformations.” 2015. Core Partner.
- \$39,511 of \$444,000 for “Hydrogeologic Windows: Regional Signature Detection for Blind and Traditional Geothermal Play Fairways” co-PI (OSU Institutional PI). (PI: Richard Middleton, Los Alamos National Laboratory). Department of Energy. DE-FOA-0000841. October 2014 – September 2015.
- \$585,514 of \$1,900,000 for “A Novel Method Using CO₂ and Geothermal Resources For Sustainable Energy Production and Storage”, co-PI (OSU Institutional PI). (PI: Martin Saar). National Science Foundation, Sustainable Energy Pathways (1230691). September 2012 – August 2016.
- \$41,667 of \$250,000 for “Defining and Mitigating Against Environmental Impacts of Oil and Gas Fracking.” Co-PI. (PI: Larry Wackett). MN Futures Grant. July 2012 –

- June 2014.
- \$33,000 of \$1,065,500 for “Geospatial Analysis for Hybrid Geothermal Systems.” PI. Sub-contract from Ormat Technologies as cost-share for “Active Management of Integrated Geothermal-CO₂-Storage Reservoirs in Sedimentary Formations: An Approach to Improve Energy Recovery and Mitigate Risk” (PI: Thomas Buscheck). Department of Energy. Energy Production with Innovative Methods of Geothermal Heat Recovery.
1. **Bielicki, J., Langenfeld, J., Tao, Z., Middleton, R., Menefee, A., and Clarens, A.** (2017). "The Geospatial and Economic Viability of CO₂ Storage in Hydrocarbon Depleted Fractured Shale Formations." *International Journal of Greenhouse Gas Control*. Under review.
 2. **Wang, Y., Bielicki, J.** (2017). “Acclimation and the Response of Hourly Electricity Loads to Meteorological Variables.” *Energy*. Under review.
 3. **Wang, Y., Sivandran, G., Bielicki, J.** (2017). “The Stationarity of Two Statistical Downscaling Methods for Precipitation under Different Choices of Cross-Validation Periods.” *International Journal of Climatology*. Revised and Resubmitted.
 4. Deng, H., **Bielicki, J.**, Oppenheimer, M., Fitts, J., and Peters, C. (2017). “Leakage Risks of Geologic CO₂ Sequestration and the Impacts on the Global Energy System and Climate Mitigation.” *Climatic Change*. Available Online 26 July. <http://dx.doi.org/10.1007/s10584-017-2035-8>
 5. Harp, D., Pawar, R., Stauffer, P., O’Malley, D., Jiao, Z., Egenolf, E., Miller, T., Martinez, D., **Hunter, K., Middleton, R., Bielicki, J.** (2017). “Development of Robust Pressure Management Strategies for Geologic CO₂ Sequestration.” *International Journal of Greenhouse Gas Control*, 64, 43-59. <https://doi.org/10.1016/j.ijggc.2017.06.012>
 6. Buscheck, T., **Bielicki, J.**, White, J., Sun, Y., Hao, Y., Bourcier, W., Carroll, S., and Aines, R. (2016) “Pre-Injection Brine Production in CO₂ Storage Reservoirs: An Approach to Augment the Development, Operation, and Performance of CCS while Generating Water.” *International Journal of Greenhouse Gas Control*. 54(2), 499-512. <http://dx.doi.org/10.1016/j.ijggc.2016.04.018>
 7. Buscheck, T., **Bielicki, J.**, Edmunds, T., Hao, T., Sun, Y., Randolph, J., and Saar, M. (2016). "Multi-Fluid Geo-Energy Systems: Using Geologic CO₂ Storage for Geothermal Energy Production and Grid-Scale Energy Storage in Sedimentary Basins." *Geosphere*, 12(3), 1-19. <http://geosphere.gsapubs.org/content/early/2016/05/05/GES01207.1.full.pdf>
 8. **Bielicki, J.**, Pollak, M., Deng, H., Wilson, E., Fitts, J., and Peters, C. (2016) “The Leakage Risk Monetization Model for Geologic CO₂ Storage.” *Environmental Science & Technology*, 50(10), 4923-4931. <http://dx.doi.org/10.1021/acs.est.5b05329>
 9. Buscheck, T., White, J., Carroll, S., **Bielicki, J.**, and Aines, R. (2016) “Managing Geologic Storage with Pre-Injection at Brine Production: A Strategy Evaluated with a Model of CO₂ Injection at Snøhvit.” *Energy & Environmental Science*, 9(1), 1504-1512. <http://dx.doi.org/10.1039/C5EE03648H>
 10. Buscheck, T., and **Bielicki, J.** (2015). “Reducing Energy’s Footprint by Producing Water and Storing CO₂.” *Cornerstone*, 3(3), Autumn 2015. (editor-reviewed). <http://cornerstonemag.net/reducing-energys-footprint-by-producing-water-and-storing-co2/>
 11. Wattenberg, E., **Bielicki, J.**, **Suchomel, A.**, Sweet, J., Vold, E., and Ramachandran, G. (2015). “Assessment of Acute and Chronic Health Hazards of Hydraulic Fracturing Fluids.” *Journal of Occupational and Environmental Hygiene*. <http://dx.doi.org/10.1080/15459624.2015.1029612>
 12. Middleton, R., Levine, J., **Bielicki, J.**, Visanawathan, H., Carey, J.W., and Stauffer, P. (2015). “Jumpstarting Commercial-Scale CO₂ Capture and Storage with Ethylene Production and Enhanced Oil Recovery in the U.S. Gulf.” *Greenhouse Gases: Science and Technology*. <http://dx.doi.org/10.1002/ghg.1490>
 13. **Bielicki, J.**, Peters, C., Fitts, J., and Wilson, E. (2015). “An Examination of Geologic

- Carbon Sequestration Policies in the Context of Leakage Potential.” *International Journal of Greenhouse Gas Control*, 37, 61-75.
<http://dx.doi.org/10.1016/j.ijggc.2015.02.023>
14. Adams, B., Kuehn, T., **Bielicki, J.**, Randolph, J., and Saar, M. (2015). “A Comparison of the Electric Power Output of CO₂ Plume Geothermal (CPG) and Brine Geothermal Systems for Varying Reservoir Conditions.” *Applied Energy*, 140, 365-377.
<http://dx.doi.org/10.1016/j.apenergy.2014.11.043>
 15. Middleton, R., Clarens, A., Liu, X., **Bielicki, J.**, and Levine, J. (2014). “CO₂ Deserts: Implications of Existing CO₂ Supply Limitations for Carbon Management.” *Environmental Science & Technology*, 40, 11713-11720.
<http://dx.doi.org/10.1021/es5022685>
 16. Paine, N., Homans, F., Pollak, M., **Bielicki, J.**, and Wilson, E., (2014). “Why Rules Matter: Optimizing Pumped Hydroelectric Storage Under Different ISO Markets.” *Energy Economics*, 46, 10-19. <http://dx.doi.org/10.1016/j.eneco.2014.08.017>
 17. **Bielicki, J.**, Calas, G., Ha-Duong, M., Middleton, R. (2014). “National Corridors for Climate Change Mitigation: Managing Industrial CO₂ Emissions in France.” *Greenhouse Gases: Science and Technology*, 4(3), 262-277.
<http://dx.doi.org/10.1002/ghg.1395>
 18. Adams, B., Kuehn, T., **Bielicki, J.**, Randolph, J., and Saar, M. (2014). “On the Importance of the Thermosiphon Effect in CO₂ Plume Geothermal (CPG) Power Systems”. *Energy*, 69, 409-418. <http://dx.doi.org/10.1016/j.energy.2014.03.032>
 19. **Bielicki, J.**, Pollak, M., Fitts, J., Peters, C., and Wilson, E. (2014). “Causes and Financial Consequences of Geologic CO₂ Storage Reservoir Leakage and Interference with Other Subsurface Resources.” *International Journal of Greenhouse Gas Control*, 20, 272-284. <http://dx.doi.org/10.1016/j.ijggc.2013.10.024>
 20. Haase, R., **Bielicki, J.**, Kuzma, J., and (2013). “Innovation in Emerging Energy Technologies: A Case Study Analysis to Inform the Path Forward for Algal Biofuels.” *Energy Policy*, 61, 1595-1607. <http://dx.doi.org/10.1016/j.enpol.2013.06.029>
 21. Parish, E., Efrogmson, R., Dale, V., Dodder, R., Kline, K., McBride, A., Johnson, T., Hilliard, M., and **Bielicki, J.** (2013). “Comparing Scales of Environmental Effects from Gasoline and Ethanol Production.” *Environmental Management*. 51, 307-338.
<http://dx.doi.org/10.1007/s00267-012-9983-6>
 22. Efrogmson, R., Dale, V., Kline, K., McBride, A., **Bielicki, J.**, Smith, R., Parish, E., Schweizer, P. Kline, K., Shaw, D. (2013). “Environmental Indicators of Biofuel Sustainability: What About Context?” *Environmental Management*. 51, 291-306.
<http://dx.doi.org/10.1007/s00267-012-9907-5>
 23. Johnson, T., **Bielicki, J.**, Dodder, R., Hilliard, M., Kaplan, O., Miller, C.A. (2013). “Advancing Sustainable Bioenergy: Evolving Stakeholder Interests and the Relevance of Research.” *Environmental Management*. 51, 331-353.
<http://dx.doi.org/10.1007/s00267-012-9884-8>
 24. Lilliestam, J., **Bielicki, J.**, and Patt, A. (2012). “Comparing Carbon Capture and Storage (CCS) with Concentrated Solar Power (CSP): Potentials, Costs, Risks, and Barriers.” *Energy Policy*. 47, 447-455. <http://dx.doi.org/10.1016/j.enpol.2012.05.020>
 25. Middleton, R., Kuby, M. and **Bielicki, J.** (2012). “Generating Candidate Networks for Optimization: The CO₂ Capture and Storage Optimization Problem.” *Computers, Environment, and Urban Systems*. 36, 18-29.
<http://dx.doi.org/10.1016/j.compenvurbsys.2011.08.002>
 26. Dammel, J., **Bielicki, J.**, Pollak, M., and Wilson, E. (2011). “A Tale of Two Technologies: Hydraulic Fracturing and Geologic Carbon Sequestration.” *Environmental Science & Technology*, 45, 5075-5076.
<http://pubs.acs.org/doi/pdf/10.1021/es201403c>
 27. Kuby, M., **Bielicki, J.**, and Middleton, R. (2011). “The Optimal Spatial Deployment of CO₂ Capture and Storage with a Price on Carbon.” *International Regional Science Review*, 3, 285-305. <http://dx.doi.org/10.1177/0160017610397191>
 28. Middleton, R., and **Bielicki, J.** (2009). “A Scaleable Infrastructure Model for Carbon Capture and Storage: *SimCCS*.” *Energy Policy*, 37, 1052-1060.

- <http://dx.doi.org/10.1016/j.enpol.2008.09.049>
29. Palumbo, R., Lede, J., Boutin, O., Ricart, E., Steinfeld, A., Moller, S., Weidenkaff, A., Fletcher, E., and **Bielicki, J.** (1998). "The Production of Zn from ZnO in a High Temperature Solar Decomposition Process – The Scientific Framework for the Process." *Chemical Engineering Science*. 53(14), 2503-2517.
[http://dx.doi.org/10.1016/S0009-2509\(98\)00063-33](http://dx.doi.org/10.1016/S0009-2509(98)00063-33)
 1. Hunter, K., **Bielicki, J.**, Middleton, R., Stauffer, P., Harp, D., Pawar, R., and Martinez, D. (2016). "Integrated CO₂ Storage and Brine Production." *13th International Conference on Greenhouse Gas Technologies*. November 14-18, 2016. Lausanne, Switzerland. To appear in *Energy Procedia*. 10.1016/j.egypro.2017.03.1769
 2. Ogland-Hand, J., **Bielicki, J.**, and Buscheck, T. (2016). "The Value of CO₂-Bulk Energy Storage to Reducing CO₂ Emissions." *13th International Conference on Greenhouse Gas Technologies*. November 14-18, 2016. Lausanne, Switzerland. To appear in *Energy Procedia*. 10.1016/j.egypro.2017.03.1830
 3. Langenfeld, J., **Bielicki, J.**, Tao, Z., Middleton, R., Menefee, A., and Clarens, A. "Response of Integrated Carbon Dioxide Capture and Storage Systems in Saline Aquifers and Fractured Shale Formations to Changes in Capture Costs." *13th International Conference on Greenhouse Gas Technologies*. November 14-18, 2016. Lausanne, Switzerland. To appear in *Energy Procedia*. 10.1016/j.egypro.2017.03.1550
 4. Langenfeld, J., and **Bielicki, J.** (2016). "Assessment of Integrated Carbon Dioxide Capture, Utilization and Storage Systems in Geothermal Reservoirs." *13th International Conference on Greenhouse Gas Technologies*. November 14-18, 2016. Lausanne, Switzerland. To appear in *Energy Procedia*. 10.1016/j.egypro.2017.03.1842
 5. **Bielicki, J.**, Deng, H., Fitts, J., Peters, C., and Wilson, E. (2016). "Monetizing Leakage Risk with Secondary Trapping in Intervening Stratigraphic Layers." *13th International Conference on Greenhouse Gas Technologies*. November 14-18, 2016. Lausanne, Switzerland. To appear in *Energy Procedia*. 10.1016/j.egypro.2017.03.1565
 6. Garapati, N., Adams, B., Schaedle, P., **Bielicki, J.**, Randolph, J., Kuehn, T., and Saar, M. (2016). "A Hybrid Geothermal Energy Conversion Technology - A Potential Solution for Shallow Geothermal Resources." *13th International Conference on Greenhouse Gas Technologies*. November 14-18, 2016. Lausanne, Switzerland. To appear in *Energy Procedia*.
 7. Middleton, R., Levine, J., **Bielicki, J.**, and Stauffer, P. (2016). "Industrial CO₂ and Carbon Capture: Near-Term Benefit, Long-Term Necessity." *13th International Conference on Greenhouse Gas Technologies*. November 14-18, 2016. Lausanne, Switzerland. To appear in *Energy Procedia*.
 8. Buscheck, T., **Bielicki, J.**, and Randolph, J. (2016). "CO₂ Earth Storage: Enhanced Geothermal Energy and Water Recovery and Energy Storage." *13th International Conference on Greenhouse Gas Technologies*. November 14-18, 2016. Lausanne, Switzerland. To appear in *Energy Procedia*.
 9. Buscheck, T., **Bielicki, J.**, White, J., Sun, Y., Hao, Y., Bourcier, W., Carroll, S., and Aines, R. (2016). "Managing Geologic CO₂ Storage with Pre-Injection Brine Production in Tandem Reservoirs." *13th International Conference on Greenhouse Gas Technologies*. November 14-18, 2016. Lausanne, Switzerland. To appear in *Energy Procedia*.
 10. **Bielicki, J.**, Adams, B., Choi, H., Jamiyurasuren, B., Saar, M., Taff, S., Buscheck, T., and Ogland-Hand, J., (2016). "Sedimentary Basin Geothermal Resource for Cost-Effective Generation of Renewable Electricity from Sequestered Carbon Dioxide." *Proceedings of the 41st Workshop on Geothermal Reservoir Engineering, Stanford University, Stanford CA, February 22-24, 2016*. SGP-TR-209.
<https://pangea.stanford.edu/ERE/db/GeoConf/papers/SGW/2016/Bielicki2.pdf>
 11. **Bielicki, J.**, Blackwell, D., Harp, D., Karra, S., Kelley, S., Kelley, R., Middleton, R., Person, M., and Sutula, G. (2016). "Hydrogeologic Windows and Estimating the Prospectivity of Geothermal Resources." *Proceedings of the 41st Workshop on Geothermal Reservoir Engineering, Stanford University, Stanford CA, February 22-24,*

2016. SGP-TR-209.
<https://pangea.stanford.edu/ERE/db/GeoConf/papers/SGW/2016/Bielicki1.pdf>
12. Patel, I., **Bielicki, J.**, and Buscheck, T., (2016). "A Reduced Form Representation of Temperature Drawdown in Sedimentary Basin Geothermal Reservoirs for the Development of Optimal Management Strategies." Proceedings of the 41st Workshop on Geothermal Reservoir Engineering, Stanford University, Stanford CA, February 22-24, 2016. SGP-TR-209.
<https://pangea.stanford.edu/ERE/db/GeoConf/papers/SGW/2016/Patel.pdf>
 13. Ogland-Hand, J., **Bielicki, J.**, and Buscheck, T. (2016). "The Value of Bulk Energy Storage in Sedimentary Basin Geothermal Resources for Reducing CO₂ Emissions." Proceedings of the 41st Workshop on Geothermal Reservoir Engineering, Stanford University, Stanford CA, February 22-24, 2016. SGP-TR-209.
<https://pangea.stanford.edu/ERE/db/GeoConf/papers/SGW/2016/Oglandhand.pdf>
 14. Person, M., Kelley, S., Kelley, R., Karra, S., Harp, D., Witcher, J., **Bielicki, J.**, Sutula, G., Middleton, R., Pepin, J. (2015). "Hydrogeologic Windows: Detection of Blind and Traditional Geothermal Play Fairways in Southwestern New Mexico Using Conservative Element Concentrations and Advective-Diffusive Solute Transport." Geothermal Resources Council, Reno NV. September 20-23. GRC Transactions, 39, 751-759.
 15. Buscheck, T., **Bielicki, J.**, Chen, M., Sun, Y., Hao, Y., Edmunds, T., Saar, M., and Randolph, J. (2015). "Multi-Fluid Sedimentary Geothermal Energy Systems for Dispatchable Renewable Electricity." *Proceedings World Geothermal Congress 2015*. Melbourne Australia, 19-25 April 2015.
<https://pangea.stanford.edu/ERE/db/WGC/papers/WGC/2015/32008.pdf>
 16. Saar, M., Buscheck, T., Jenny, P., Garapti, N., Randolph, J., Karvounis, D., Chen, M., Sun, Y., and **Bielicki, J.** (2015). "Numerical Study of Multi-Fluid and Multi-Level Geothermal Fluid Systems." *Proceedings World Geothermal Congress 2015*. Melbourne Australia, 19-25 April 2015.
<https://pangea.stanford.edu/ERE/db/WGC/papers/WGC/2015/37006.pdf>
 17. **Bielicki, J.**, Middleton, R., Levine, J., and Stauffer, P. (2014). "An Alternative Pathway for Stimulating Regional Deployment of Carbon Dioxide Capture and Storage." *Energy Procedia*, 63, 7215-7224. <http://dx.doi.org/10.1016/j.egypro.2014.11.757>
 18. Deng, H., **Bielicki, J.**, Oppenheimer, M., Fitts, J., and Peters, C. (2014). "Policy Implications of Monetized Leakage Risk from Geologic CO₂ Storage Reservoirs." *Energy Procedia*, 63, 6852-6863. <http://dx.doi.org/10.1016/j.egypro.2014.11.719>
 19. Tao, Z., **Bielicki, J.**, Clarens, A. (2014). "Physiochemical Factors Impacting CO₂ Sequestration in Depleted Shale Formations: The Case of the Utica Shale." *Energy Procedia*, 63, 5153-5163. <http://dx.doi.org/10.1016/j.egypro.2014.11.545>
 20. Buscheck, T., White, J., Chen, M., Sun, Y., Hao, Y., Aines, R., Bourcier, W., and **Bielicki, J.** (2014). "Pre-Injection Brine Production for Managing Reservoir Pressure in Compartmentalized CO₂ Storage Reservoirs." *Energy Procedia*, 63, 5333-5340. <http://dx.doi.org/10.1016/j.egypro.2014.11.565>
 21. **Bielicki, J.**, Clarens, A., Middleton, R., Liu, X., Barbosa de Carvalho, M., Giovanini Junior, N. (2014). "Shifting Sands in a CO₂ Desert: Replacing Extracted CO₂ with Byproduct CO₂ for Use in Enhanced Oil Recovery." *Energy Procedia*, 63, 6567-6564. <http://dx.doi.org/10.1016/j.egypro.2014.11.692>
 22. Buscheck, T., **Bielicki, J.**, Chen, M., Sun, Y., Hao, Y., Edmunds, T., Saar, M., and Randolph, J. (2014). "Integrating CO₂ Storage with Geothermal Resources for Dispatchable Renewable Electricity." *Energy Procedia*, 63, 7619-7630. <http://dx.doi.org/10.1016/j.egypro.2014.11.796>
 23. Edmunds, T., Sotorrio, P., **Bielicki, J.**, and Buscheck, T. (2014). "Geothermal Power for Integration of Intermittent Generation." *38th Geothermal Resources Council*. Annual Meeting. September 28-October 1, 2014. Portland, OR.
 24. Buscheck, T., **Bielicki, J.**, Randolph, J., Chen, M., Hao, Y., Edmunds, T., and Sun, Y. (2014). "Multi-Fluid Geothermal Energy Systems in Stratigraphic Reservoirs: Using Brine, N₂, and CO₂ for Dispatchable Renewable Power Generation and Bulk Energy

- Storage” *Proceedings of the 39th Workshop on Geothermal Reservoir Engineering*, Stanford University, Stanford CA, February 24-26, 2014. SGP-TR-202. <https://pangea.stanford.edu/ERE/pdf/IGAstandard/SGW/2014/Buscheck.pdf>
25. Buscheck, T., Chen, M., Hao, Y., **Bielicki, J.**, Randolph, J., Sun, Y., and Choi, H., (2013). “Multi-Fluid Geothermal Energy Production and Storage in Stratigraphic Reservoirs.” *37th Geothermal Resources Council. Annual Meeting*. September 29 – October 2, 2013. Las Vegas, NV. <https://e-reports-ext.llnl.gov/pdf/755658.pdf>
 26. Pollak, M., **Bielicki, J.**, Dammel, J., Wilson, E., Fitts, J., and Peters, C. (2013). “The Leakage Impact Valuation (LIV) Method for Leakage from Geologic CO₂ Storage Reservoirs.” *Energy Procedia*, (37) 2819-2827. <http://dx.doi.org/10.1016/j.egypro.2013.06.167>
 27. **Bielicki, J.**, Pollak, M., Wilson, E., Fitts, J., and Peters, C. (2013). “A Methodology for Monetizing Basin-Scale Leakage Risk and Stakeholder Impacts.” *Energy Procedia*. (37), 4665-4672. <http://dx.doi.org/10.1016/j.egypro.2013.06.375>
 28. Randolph, J., Saar, M., and **Bielicki, J.** (2013). “Geothermal Energy Production at Geologic CO₂ Sequestration sites: Impact of Thermal Drawdown on Reservoir Pressure.” *Energy Procedia* (37), 6625-6635. <http://dx.doi.org/10.1016/j.egypro.2013.06.595>
 29. Buscheck, T., Chen, M., Lu, C., Sun, Y., Hao, Y., Celia, M. Elliot, T., **Bielicki, J.**, and Choi, H. (2013). “Analysis of Operational Strategies for Utilizing CO₂ for Geothermal Energy Production.” *Proceedings of the 38th Workshop on Geothermal Reservoir Engineering*, Stanford University, Stanford CA, February 11-13, 2013. SGP-TR-198. <https://pangea.stanford.edu/ERE/pdf/IGAstandard/SGW/2013/Buscheck.pdf>
 30. Middleton, R., Keating, G., Pawar, R., Stauffer, P., and **Bielicki, J.** (2011). “Jumpstarting CCS using Oil Refinery CO₂ for Enhanced Oil Recovery.” *Energy Procedia*, 4, 2185-2191. <http://dx.doi.org/10.1016/j.egypro.2011.02.105>
 31. Kuby, M., Middleton, R., Keating, G., and **Bielicki, J.** (2011). “Analysis of Cost Savings from Networking Pipelines in CCS Infrastructure Systems.” *Energy Procedia*, 4, 2393-2400. <http://dx.doi.org/10.1016/j.egypro.2011.02.185>
 32. Middleton, R., and **Bielicki, J.** (2009). “A Comprehensive Carbon Capture and Storage Infrastructure Model.” *Energy Procedia*, 1(1), 1691-1698. <http://dx.doi.org/10.1016/j.egypro.2009.01.211>
 33. **Bielicki, J.** (2009). “Spatial Clustering and Carbon Capture and Storage Deployment.” *Energy Procedia*, 1(1), 1611-1616. <http://dx.doi.org/10.1016/j.egypro.2009.01.221>
 34. Stephens, J., **Bielicki, J.**, and Rand, G. (2009). “Learning about Carbon Capture and Storage: Changing Stakeholder Perception with Expert Information.” *Energy Procedia* 1(1), 4655-4663. <http://dx.doi.org/10.1016/j.egypro.2009.02.288>
 35. **Bielicki, J.** (2008). “Returns to Scale for Carbon Capture and Storage Infrastructure and Deployment,” *DOE-NETL Seventh Annual Conference on Carbon Capture and Sequestration*, Pittsburgh, PA May 5-8. Available at: http://belfercenter.ksg.harvard.edu/files/Bielicki_CCSReturnsToScale.pdf

PAPERS IN PREPARATION

1. Tallis, H., Hawthorne, P., Polasky, S., Reid, J., Beck, M., Brauman, K., **Bielicki, J.**, Binder, S., Burgess, M., Cassidy, E., Clark, A., Costello, C., Fargione, J., Game, E., Gerber, J., Isbell, F., Kisecker, K., McDonald, R., Metian, M., Molnar, J., Mueller, ., O’Connell, C., Ovando, D., Troell, M., Boucher, T., McPeck, B. (2017) “Meeting Economic Growth and Multiple Environmental Elements of Sustainable Development” *Nature*.
2. **Bielicki, J.**, Adams, B., Choi, H., Jamiyson, B., Saar, M., Taff, S., Buscheck, T., and Ogland-Hand, J. (in prep). “Engineering Cost-Competitive Geothermal Electricity from Geologic CO₂ Storage.” *Energy Conversion and Management*.
3. Dai, Z., Zhang, Y., Stauffer, P., **Bielicki, J.**, Zhang, M., Yang, C., Zhou, Y., Ampomah, W., Xiao, T., Soltanian, M. R., Middleton, R. (in prep). "Heterogeneity-Enhanced Gravitational Trapping Opens Vast Resources for CO₂ Sequestration in Offshore Marine Sediments." *Proceedings of the National Academy of Sciences*.
4. Patel, I., **Bielicki, J.**, Ogland-Hand, J. (in prep). “Optimal Heat Mining of Geothermal

	<p>Reservoirs". <i>Environmental Science and Technology</i>.</p> <ol style="list-style-type: none"> 5. <u>DeLuca, M., Bielicki, J., Langenfeld, J.</u> (in prep). "Infrastructure Deployment for CO₂ Capture and Storage that is Robust to Reservoir Leakage Risk." <i>Energy Policy</i> 6. Bielicki, J. (in prep). "Technological Learning and Spillovers in Geologic Carbon Dioxide Injection." <i>Energy Policy</i>. 7. <u>Fleming, M., Adams, B., Kuehn, T., Bielicki, J., Saar, M.</u> (in prep). "Design and Performance of a Large-Scale Energy Storage System using Carbon Dioxide Plume Geothermal Energy." <i>Geothermics</i> 8. <u>Fleming, M., Adams, B., Kuehn, T., Bielicki, J., Saar, M.</u> (in prep). "The Effect of Water-Saturated CO₂ on Wellhead Conditions and Power Production for CO₂ Plume Geothermal Power Plants" <i>Geothermics</i> 9. Adams, B., Kuehn, T., Bielicki, J., Garapati, N., Saar, M. (in prep). "A Characterization of Temperature Depletion in a Sedimentary Basin and its Effect on the Electric Power Output of CO₂ Plume Geothermal Power Systems." <i>Geothermics</i>.
<p>BOOK CHAPTERS</p>	<ol style="list-style-type: none"> 1. Carlarne, C., and Bielicki, J. (forthcoming). "Nature and Human Health: The Role of Environmental Law." Chapter. 10.2 in Bird, W., and Van den Bosch, M. (eds.) <u>Oxford Textbook of Nature and Public Health</u>. 2. Khanal, S., Hochman, G., Shah, A., and Bielicki, J. (2016). "Government Policy and Standards for Bioenergy." in Li, Y. and Khanal, S. (eds.) <u>Bioenergy: Principles and Applications</u>. Wiley Blackwell. ISBN-13: 978-1118568316 3. Bielicki, J., Kalinowski, A., and Zhao, L. (2007). "Getting it Done: Barriers and Incentives to Deploying Carbon Capture and Storage." In <u>Fundamentals of Carbon Capture and Storage Technology</u>. Petroleum Economist: UK.
<p>AUTHORED AND ASSISTED REPORTS</p>	<ol style="list-style-type: none"> 1. World Resources Institute (WRI). (2010). "CCS Guidelines for Community Engagement: Guidelines for Community Engagement in Carbon Dioxide Capture, Transport, and Storage Projects." Washington, DC: WRI. Contributor. 2. Department of Energy, Office of Biological and Environmental Research Grand Challenges Workshop. <i>Washington DC, March 3-4, 2010. Workshop Report Writing Team</i>, authored section entitled "Energy Sustainability." Co-Author, background paper entitled "Systems Sustainability for Energy Options." 3. Department of Energy, Basic Energy Sciences, "Technology and Applied R&D Needs for Carbon Capture: Beyond 2020," <i>February 2010. Co-Author</i>, background factual document. 4. World Resources Institute (WRI). (2008). "CCS Guidelines: Guidelines for Carbon Dioxide Capture, Transport, and Storage." Washington, DC: WRI. Contributor. 5. Bielicki, J. and Stephens, J. (2008). "Public Perception of Carbon Capture and Storage Technology." <i>Workshop Report</i>, from Harvard Workshop on Public Perception of Carbon Capture and Storage Technology, <i>June 2-3, 2008</i>. 6. United Nations Scientific Expert Group on Climate Change (UNSEG). (2007) "Confronting Climate Change: Avoiding the Unmanageable and Managing the Unavoidable." [Bierbaum, R., Holdren, J., MacCracken, M., Moss, R., and Raven, P. (eds.)] <i>Report prepared for the United Nations Commission on Sustainable Development</i>. Sigma Xi, Research Triangle Park, NC, and the United Nations Foundation, Washington DC, 144 pp. Deputy Participant.
<p>CONFERENCE PRESENTATIONS</p>	<ol style="list-style-type: none"> 1. <u>Nelson, E., Bielicki, J., Sioshansi, R., Ogland-Hand, J.</u> (2017). "The Value of Using Carbon Dioxide and Geothermal Resources in Transmission Constrained Electricity Systems." <i>2017 Summer Research Opportunities Program</i>. Columbus, OH. July 27, 2017. Oral Presentation. 2. <u>Nelson, E., Bielicki, J., Sioshansi, R., Ogland-Hand, J.</u> (2017). "The Value of Using Carbon Dioxide and Geothermal Resources in Transmission Constrained Electricity Systems." <i>2017 Summer Research Opportunities Program</i>. Columbus, OH. July 27, 2017. Poster presentation. 3. <u>Hagley, P., Bielicki, J.</u> "Perceptions of Shale Energy Development in Eastern Ohio."

- Energy Impacts Symposium 2017*. Columbus, OH. July 26, 2017.
4. **Bielicki, J., Langenfeld, J., Tao, Z., Middleton, R., Menefee, A., and Clarens, A.** (2017). "The Geospatial and Economic Viability of CO₂ Storage in Hydrocarbon Depleted Fractured Shale Formations." *Gordon Conference on CO₂ Capture, Utilization, and Storage*. June 11-16, 2017. New London, NH. Poster.
 5. Buscheck, T., **Bielicki, J.,** Ogland-Hand, J., Saar, M., Randolph, J. "CO₂ Earth Battery: Creating a Business Case for Geologic CO₂ Storage". *2017 Carbon Capture, Utilization, and Storage Conference*. April 2017, Chicago IL. Oral.
 6. "Water Withdrawal and Consumption Factors of Thermoelectric Power Plants in the United States" with **Wang, Y.,** (presenter). *American Geophysical Union Fall Meeting*. December 12-16, 2016. San Francisco, CA. Oral.
 7. "The Value of CO₂-Geothermal Bulk Energy Storage to Reducing CO₂ Emissions." With **Ogland-Hand, J.** (presenter) and Buscheck, T. *American Geophysical Union Fall Meeting*. December 12-16, 2016. San Francisco, CA. Poster.
 8. "Earth Storage: An Approach for Reducing the Carbon and Water Intensity of Energy" with Buscheck, T. (presenter), Saar, M., and Randolph, J. *American Geophysical Union Fall Meeting*. December 12-16, 2016. San Francisco, CA. Oral.
 9. "Viability of Integrated CO₂ Capture and Storage Systems in Depleted Shale Formations" with **Langenfeld, J., Tao, Z., Middleton, R., Menefee, A., and Clarens, A.** *13th International Conference on Greenhouse Gas Control Technologies*. November 14-18, 2016, Lausanne, Switzerland. Oral.
 10. "CO₂ Earth Storage: Enhanced Geothermal Energy and Water Recovery and Energy Storage." With Buscheck T., and Randolph, J. *13th International Conference on Greenhouse Gas Control Technologies*. November 14-18, 2016, Lausanne, Switzerland. Oral.
 11. "Integrated CO₂ Storage and Brine Extraction." With **Hunter, K.,** Middleton, R., Stauffer, P., Pawar, R., Harp, D., and Martinez, D. *13th International Conference on Greenhouse Gas Control Technologies*. November 14-18, 2016, Lausanne, Switzerland. Oral.
 12. "The Value of CO₂-Bulk Energy Storage for Reducing CO₂ Emissions" with **Ogland-Hand, J.,** and Buscheck, T. *13th International Conference on Greenhouse Gas Control Technologies*. November 14-18, 2016, Lausanne, Switzerland. Oral.
 13. "Managing Geologic CO₂ Storage with Pre-Injection Brine Production in Tandem Reservoirs." With Buscheck, T., White, J., Sun, Y., Carroll, S., Hao, Y., Bourcier, W., and Aines, R. *13th International Conference on Greenhouse Gas Control Technologies*. November 14-18, 2016, Lausanne, Switzerland. Poster.
 14. "Assessment of Sites for CO₂ Storage and CO₂ Capture, Utilization, and Storage Systems in Geothermal Reservoirs." With **Langenfeld, J.** *13th International Conference on Greenhouse Gas Control Technologies*. November 14-18, 2016, Lausanne, Switzerland. Poster.
 15. "Monetizing Leakage Risk with Secondary Trapping in Intervening Stratigraphic Layers." with Pollak, M., Deng, H., Wilson, E., Fitts, J., and Peters, C. *13th International Conference on Greenhouse Gas Control Technologies*. November 14-18, 2016, Lausanne, Switzerland. Oral.
 16. "Did Tax Credits Fuel Non-Conventional Oil Production? A Quasi-Experiment of Enhanced Oil Recovery in Texas." with **Ziang, J.** (presenter). Association for Public Policy Analysis and Management (APPAM), *38th Fall Research Conference*. November 3-5, 2016. Washington, DC. Oral.
 17. "Optimizing Water Extraction and Carbon Dioxide Storage in Saline Aquifers." With **Hunter, K.** (presenter). *WaterSmart Innovation Conference*. October 5-7, 2016. Poster.
 18. "Optimally Extracting Geothermal Heat Using Carbon Dioxide." With **Patel, I., Ogland-Hand, J.,** Adams, B., and Saar, M. *35th International Geological Congress*. August 27 – September 4, 2016. Cape Town, South Africa. Oral.
 19. "Monetized Leakage Risk of Geologic CO₂ Storage and the Role of Secondary Trapping in Intervening Stratigraphic Layers." With Deng, H., Fitts, J., Peters, C., and Wilson, E. *35th International Geological Congress*. August 27 – September 4, 2016.

- Cape Town, South Africa. Oral.
20. "Energy Storage in Sedimentary Basin Geothermal Resources." *NSF SedHeat Research Coordination Network Incubator Workshop*. August 15-16, 2016. Columbus, Ohio. Oral.
 21. "The Geospatial and Economic Viability of CO₂ Storage in Fractured Shale." With Langenfeld, J., Tao, Z., Clarens, A., Middleton, R., and Menefee, A. *15th Annual Carbon Capture, Utilization, and Storage Conference*. June 14-16, 2016. Washington, DC.
 22. "Monetizing Leakage Risk of Geologic CO₂ Storage." With Deng, H., Pollak, M., Wilson, E., Fitts, J., and Peters, C. *15th Annual Carbon Capture, Utilization, and Storage Conference*. June 14-16, 2016. Washington, DC.
 23. "Optimizing Sustainable Geothermal Heat Extraction." With Patel, I., Buscheck, T., and Saar, M. *European Geophysical Union, General Assembly*, April 17-22, 2016. Oral.
 24. "Hydrogeologic Windows." With Blackwell, D., Harp, D., Karra, S., Kelley, R., Kelley, S., Middleton, R., Person, M. Sutula, G., and Witcher, J. *European Geophysical Union, General Assembly*, April 17-22, 2016. Poster.
 25. "Geospatial and Economic Viability of CO₂ Storage in Fractured Shale and Saline Aquifers." With Langenfeld, J., Tao, Z., Middleton, R., Menefee, A., Clarens, A. *CO₂ Summit II: Technologies and Opportunities*. Santa Anna Pueblo, NM. April 10-14, 2016. Poster.
 26. "The Value of CO₂-Geothermal Bulk Energy Storage for Reducing CO₂ Emissions." With Ogland-Hand, J. (presenter) and Buscheck, T. *CO₂ Summit II: Technologies and Opportunities*. Santa Anna Pueblo, NM. April 10-14, 2016. Oral.
 27. "The Production of Water from Saline Aquifers through Carbon Dioxide Capture and Storage Operations." With Hunter, K. (presenter). *CO₂ Summit II: Technologies and Opportunities*. Santa Anna Pueblo, NM. April 10-14, 2016. Poster. **Best Student Poster Presentation Award.**
 28. "Using Geologic CO₂ Storage for Enhanced Geothermal Energy and Water Recovery and Energy Storage." With Randolph, J., and Buscheck, T. (presenter). *CO₂ Summit II: Technologies and Opportunities*. Santa Anna Pueblo, NM. April 10-14, 2016. Oral.
 29. "Geologic CO₂ Storage with Pre-Injection Brine Production in Tandem Reservoirs: A Strategy for Improved Storage Performance and Enhanced Water Recovery." With Buscheck, T. (presenter), White, J., Sun, Y., Hao, y., Bourcier, W., Carroll, S., and Aines, R.. *CO₂ Summit II: Technologies and Opportunities*. Santa Anna Pueblo, NM. April 10-14, 2016. Oral.
 30. "Optimal Geothermal Heat Extraction Using CO₂." With Patel, I. *CO₂ Summit II: Technologies and Opportunities*. Santa Anna Pueblo, NM. April 10-14, 2016. Poster.
 31. "Infrastructure Deployment for CO₂ Capture and Storage that is Robust to Reservoir Leakage Risk." *Denman Undergraduate Research Forum*. With DeLuca, M. (presenter). March 30, 2016. Poster
 32. "Spatial Association Analysis of Geothermal Tracer Pathways." With Shaheen, N. (presenter). *Spring Undergraduate Research Expo*. The Ohio State University. Columbus, OH. March 30, 2016. Poster
 33. "Hydrogeologic Windows and Estimating the Prospectivity of Geothermal Resources." With Blackwell, D., Harp, D., Karra, S., Kelley, R., Kelley, S., Middleton, R., Person, M. Sutula, G., and Witcher, J. *41st Annual Stanford Geothermal Workshop*, February 22-24, 2016. Oral.
 34. "A Reduced Form Representation of Temperature Drawdown in Sedimentary Basin Geothermal Reservoirs for the Development of Optimal Management Strategies." With Patel, I., Adams, B., and Buscheck, T. *41st Annual Stanford Geothermal Workshop*, February 22-24, 2016. Oral.
 35. "The Value of Bulk Energy Storage in Sedimentary Basin Geothermal Resources for Reducing CO₂ Emissions." With Ogland-Hand, J., and Buscheck, T. *41st Annual Stanford Geothermal Workshop*, February 22-14, 2016. Oral.
 36. "Sedimentary Basin Geothermal Resource for Cost-Effective Generation of Renewable Electricity from Sequestered Carbon Dioxide." With Adams, B. Choi, H.,

- Jamiyansuren, B., Saar, M., Taff, S., Buscheck, T., and Ogland-Hand, J. *41st Annual Stanford Geothermal Workshop*, February 22-14, 2016. Oral.
37. “The Efficacy and Potential of Renewable Energy from Carbon Dioxide that is Sequestered in Sedimentary Basin Geothermal Resources.” With Adams, B. Choi, H., Jamiyansuren, B., Saar, M., Taff, S., Buscheck, T., and Ogland-Hand, J. *American Geophysical Union, Fall Meeting*. December 14-18, 2015. San Francisco, CA. Poster.
 38. “Extracting the Weather Response from Long-Term Hourly Electricity Load Data in an Eastern Region of the United States.” With Wang, Y. (presenter) *American Geophysical Union, Fall Meeting*. December 14-18, 2015. San Francisco, CA. Poster.
 39. “Optimal Operation of Geothermal Heat Extraction.” With Patel, I. (presenter) and Buscheck, T. *American Geophysical Union, Fall Meeting*. December 14-18, 2015. San Francisco, CA. Poster.
 40. “Improving the Physical and Economic Performance of CO₂ Capture, Utilization and Storage in Saline Reservoirs by Producing Brine.” With Buscheck, T. (presenter), White, J., Sun, Y., Hao, Y., Bourcier, W., Carroll, S., and Aines, R. *Carbon Management Technology Conference*. November 17-19, 2015. Sugar Land, TX. Oral.
 41. “Geospatial and Economic Viability of CO₂ Storage in Fractured Shale and Saline Aquifers.” With Langenfeld, J. (presenter). *Graduate Engineering Research Colloquium*. October 2, 2015. The Ohio State University. Poster
 42. “Optimal Operation of Geothermal Heat Extraction.” With Patel, I. (presenter). *Graduate Engineering Research Colloquium*. October 2, 2015. The Ohio State University. Poster.
 43. “Hydrogeologic Windows: Detection of Blind and Traditional Geothermal Play Fairways in Southwestern New Mexico Using Geochemical Tracer Transport.” With Person, M. (presenter), Kelley, S., Pepin, J., Kelley, R., Karra, S., Middleton, R., Harp, D., Witcher, J. and Sutula, G. *39th Geothermal Resources Council* September 20-23, 2015. Reno, NV. Oral.
 44. “Sources of Production in Carbon Dioxide Enhanced Oil Recovery Fields.” With Jiang, Z. (presenter). *Midwest Public Affairs Conference*. July 9-11, 2015. Milwaukee, WI. Oral.
 45. “How Leakage Risk in Geologic CO₂ Storage Might Impact Climate Change Mitigation and Energy Policy Choices.” With Deng, H. (presenter), Oppenheimer, M., Fitts, J., and Peters, C. *AEESP Research and Education Conference*. Yale University. New Haven, CT. June 13-16, 2015. Poster.
 46. “Monetizing Geologic CO₂ Storage Leakage Risk.” With Pollak, M., Deng, H., Wilson, E., Peters, C., and Fitts, J. *Gordon Research Conference: Carbon Capture, Utilization, and Storage*. May 31 – June 5, 2015. Poster.
 47. “Integrating CO₂ Capture, Utilization, and Storage into the Global Change Assessment Model: Using CO₂ to Produce Electricity from Geothermal Resources.” with Deitz, J., Deng, H., Buscheck, T., Langenfeld, J., Volzer, C. *14th Annual Carbon Capture, Utilization, and Storage Conference*. Pittsburgh, PA. April 28 – May 1, 2015. Oral.
 48. “Infrastructure and Supply Curves for CO₂ Storage in Shale.” With Langenfeld, J., Middleton, R., Tao, Z., Clarens, A. *14th Annual Carbon Capture, Utilization, and Storage Conference*. Pittsburgh, PA. April 28 – May 1, 2015. Oral.
 49. “The Cost of Geothermal Electricity Generated by Sequestered Carbon Dioxide.” With Adams, B. Choi, H., Jamiyansuren, B., Saar, M., Taff, S., Buscheck, T., and Ogland-Hand, J. *14th Annual Carbon Capture, Utilization, and Storage Conference*. Pittsburgh, PA. April 28 – May 1, 2015. Oral.
 50. “Multi-Fluid Sedimentary Geothermal Energy Systems for Dispatchable Renewable Electricity.” With Buscheck, T., Chen, M., Sun, Y., Hao, Y., Edmunds, T., Saar, M., and Randolph, J. *World Geothermal Congress 2015*. April 19-25, 2015. Melbourne, Australia. Oral.
 51. “Numerical Study of Multi-Fluid and Multi-Level Geothermal Fluid Systems.” With Saar, M., (presenter) Buscheck, T., Jenny, P., Garapti, N., Randolph, J., Karvounis, D., Chen, M., Sun, Y. *World Geothermal Congress 2015*. Melbourne Australia, April 19-25, 2015. Oral.

52. "Using CO₂ to Produce and Store Energy." *Reducing Emissions: Renewable Energies & Carbon Capture and Storage. European Geosciences Union, General Assembly.* Vienna, Austria. April 13, 2015. Press Conference.
53. "Hybrid Geo-Energy Systems for Energy Storage and Dispatchable Renewable and Low-Carbon Electricity." With Buscheck, T., Ogland-Hand, J. Hao, Y., Sun, Y., Randolph, J., and Saar, M. *European Geosciences Union, General Assembly.* Vienna, Austria. April 12-16, 2015. Vienna, Austria. Oral.
54. "Multi-Fluid Geo-Energy Systems for Bulk and Thermal Energy Storage and Dispatchable Renewable and Low-Carbon Electricity." With Buscheck, T., Randolph, J., Saar, M., Hao, Y., and Sun, Y. *American Geophysical Union Fall Meeting,* December 15-19, 2014. San Francisco, CA. Oral.
55. "How CO₂ Leakage May Impact the Role of Geologic Carbon Storage in Climate Mitigation." With Peters, C., Hang, D. (presenter), Fitts, J., and Oppenheimer, M. *American Geophysical Union Fall Meeting,* December 15-19, 2014. San Francisco, CA. Poster.
56. "Geologic Carbon Sequestration: Leakage Potential and Policy Implications." With Peters, C., Fitts, J., and Wilson, E. *American Geophysical Union Fall Meeting,* December 15-19, 2014. San Francisco, CA. Poster.
57. "An Alternative Pathway for Stimulating Regional Deployment of Carbon Dioxide Capture and Storage." With Middleton, R., Levine, J., and Stauffer, P. *12th International Conference on Greenhouse Gas Control Technologies,* October 5-9, 2014. Poster.
58. "Policy Implications of Monetized Leakage Risk from Geologic CO₂ Storage Reservoirs." With Deng, H. (presenter), Oppenheimer, M., Fitts, J., and Peters, C. "*12th International Conference on Greenhouse Gas Control Technologies,* October 5-9, 2014. Oral.
59. "Physiochemical Factors Impacting CO₂ Sequestration in Depleted Shale Formations: The Case of the Utica Shale." With Tao, Z., and Clarens, A. (presenter). *12th International Conference on Greenhouse Gas Control Technologies,* October 5-9, 2014. Poster.
60. "Pre-Injection Brine Production for Managing Reservoir Pressure in Compartmentalized CO₂ Storage Reservoirs." With Buscheck, T. (presenter), White, J., Chen, M., Sun, Y., Hao, Y., Aines, R. and Bourcier, W. *12th International Conference on Greenhouse Gas Control Technologies,* October 5-9, 2014. Oral.
61. "Shifting Sands in a CO₂ Desert: Replacing Extracted CO₂ with Byproduct CO₂ for Use in Enhanced Oil Recovery." With Clarens, A., Middleton, R., Liu, X., Barbosa de Carvalho, M., Giovanini Junior, N. *12th International Conference on Greenhouse Gas Control Technologies,* October 5-9, 2014. Poster.
62. "Integrating CO₂ Storage with Geothermal Resources for Dispatchable Renewable Electricity." With Buscheck, T. (presenter), Chen, M., Sun, Y., Hao, Y., Edmunds, T., Saar, M., and Randolph, J. (2014). *12th International Conference on Greenhouse Gas Control Technologies,* October 5-9, 2014. Oral.
63. "Hydrogeologic Windows: Regional Signature Detection for Blind and Traditional Geothermal Play Fairways." With Middleton, R., Karra, S., Kelley, S., Kelley, R., Jacobs, E., Person, M., Blackwell, D., Witcher, J. *38th Geothermal Resources Council. Annual Meeting.* September 28-October 1, 2014. Portland, OR. Oral.
64. "Geothermal Power for Integration of Intermittent Generation." With Edmunds, T. (presenter), Sotorrio, P., and Buscheck, T. *38th Geothermal Resources Council. Annual Meeting.* September 28-October 1, 2014. Portland, OR. Oral. **Best Paper Presentation Award.**
65. "Using Carbon Dioxide for Renewable Energy Production from Geothermal, Wind, and Solar Resources." With Buscheck, T., Saar, M., and Ogland-Hand, J. *Ohio Conference on the Sustainable Use of Greenhouse Gases.* August 18, 2014. Columbus, OH. Oral.
66. "Engineering Sedimentary Geothermal Resources for Large-Scale Dispatchable Renewable Electricity" with Buscheck, T., Chen, M., Sun, Y., Hao, Y., Saar, M., and Randolph, J. *European Geosciences Union General Assembly,* April 28-May 2, 2014.

- Vienna Austria. Oral.
67. “Modifications to Cost Curves of Geologic CO₂ Storage Caused by Reservoir Leakage and the Policy Implications.” With Deng, H. (presenter), Oppenheimer, M., Fitts, J., and Peters, C. *NSF Research Coordination Network on CO₂, Capture, Utilization, and Storage Annual Meeting*, Lenfest Center for Sustainable Energy, Columbia University. New York, New York. April 24-26, 2014. Poster.
 68. “The Price Must Be Right: A New Pathway to Jumpstarting CCUS.” With Levine, J. (Presenter), Middleton, R., and Stauffer, P. *13th Annual Carbon Capture, Utilization, and Storage Conference*. April 28 - May 2, 2014. Pittsburgh, PA. Oral.
 69. “Multi-Fluid Geothermal Energy Systems in Stratigraphic Reservoirs: Using Brine, N₂, and CO₂ for Dispatchable Renewable Power Generation and Bulk Energy Storage.” With Buscheck, T. (presenter), Randolph, J., Chen, M., Hao, Y., Edmunds, T., and Sun, Y. *39th Annual Stanford Workshop on Geothermal Energy*, February 24-26, 2014. Stanford, CA.
 70. “Multi-Fluid Geothermal Energy Systems: Using CO₂ for Dispatchable Renewable Power Generation and Grid Stabilization.” (2013). With Buscheck, T. (presenter) , Randolph, J., Chen, M., Hao, Y., Edmunds, T., and Sun, Y. *American Geophysical Union Fall Meeting*, December 9-13, 2013. San Francisco, CA. Oral.
 71. “Summary of Multi-Fluid Geothermal”. (2013). *Penrose Conference: Predicting and Detecting Natural and Induced Flow Paths for Geothermal Fluids in Deep Sedimentary Basins*. October 19-23, 2013. Park City, UT. Oral.
 72. “Geothermal Energy: Enhancing our Future”. (2013). With Gilley, S. Video. *Penrose Conference: Predicting and Detecting Natural and Induced Flow Paths for Geothermal Fluids in Deep Sedimentary Basins*. October 19-23, 2013. Park City, UT. Oral.
 73. “Multi-Fluid Geothermal Energy Production and Storage in Stratigraphic Reservoirs.” (2013). With Buscheck, T., Chen, M., Hao, Y., Randolph, J., Sun, Y., and Choi, H. *Geothermal Research Council. Annual Meeting*. September 29 – October 2, 2013. **Best Paper Presentation Award.**
 74. “The Real Cost of CO₂ Capture and Storage: Variable Electricity Generation for Coal-Fired Power Plants.” *12th Annual Carbon Capture, Utilization, and Storage Conference*. April 2013. Pittsburgh, PA.
 75. “Analysis of Operational Strategies for Utilizing CO₂ for Geothermal Energy Production.” (2013). With Buscheck, T. (presenter), Chen, M., Lu, C., Sun, Y., Hao, Y., Celia, M. Elliot, T., and Choi, H. *38th Annual Stanford Workshop on Geothermal Energy*, February, 11-13, 2013.
 76. “Geothermal Energy Production at Geologic CO₂ Sequestration Sites: Impact of Thermal Drawdown on Reservoir Pressure” (2012). With Randolph, J., and Saar, M. *Eleventh International Conference on Greenhouse Gas Technologies*. Kyoto, Japan. November 18-22, 2012. Accepted Poster Presentation.
 77. “Quantifying Basin Scale Leakage Risk and Stakeholder Impacts.” (2012). With Pollak, M., Wilson, E., Fitts, J, and Peters, C. *Eleventh International Conference on Greenhouse Gas Technologies*. Kyoto, Japan. November 18-22, 2012. Accepted Oral Presentation.
 78. “Potential Cost of Leakage from Geologic Sequestration in the Michigan Basin” (2012). With Pollak, M., Wilson, E., Fitts, J, and Peters, C. *Eleventh International Conference on Greenhouse Gas Technologies*. Kyoto, Japan. November 18-22, 2012. Accepted Oral Presentation.
 79. “CCS in a Hot, Crowded World: Integrating Subsurface Management.” (2012). With Wilson, E. (presenter), Pollak, M., and Peters, C. *American Public Policy Analysis and Management (APPAM), Fall Research Conference*. Baltimore, MD. November 8-10, 2012. Panel.
 80. “Energy Sustainability: Pillars, Values, and Policy” (2012). *Worlds within Reach: From Science to Policy, IASA 40th Anniversary Conference*. October 24-26, 2012. Accepted Poster Presentation.
 81. “Spatially Integrated Assessment of Leakage Risk from CO₂ Storage Reservoirs from Multiple Stakeholder Perspectives”. (2012). With Pollak, M., Wilson, E., Fitts, J., and

- Peters, C. *DOE-NETL Tenth Annual Conference on Carbon Capture, Utilization, and Sequestration*. Pittsburgh, PA. April 30-May 3, 2012. Accepted Poster Presentation.
82. "Estimating Financial Consequences of Leakage from Geologic Sequestration". (2012). With Pollak, M. (presenter), Wilson, E., Dammel, J., Fitts, J., and Peters, C.. *DOE-NETL Tenth Annual Conference on Carbon Capture, Utilization, and Sequestration*. Pittsburgh, PA. April 30-May 3, 2012. Accepted Oral Presentation.
 83. "CO₂ Plume Geothermal (CPG) Energy Production at Geologic Sequestration Sites." (2012). With Saar, M., Adams, B., Kuehn, T., Mevissen, A., Paine, N., Pollak, M., Randolph, J., Smale, A., Taff, S., and Wilson, E. *DOE-NETL Tenth Annual Conference on Carbon Capture, Utilization, and Sequestration*. Pittsburgh, PA. April 30-May 3, 2012. Accepted Poster Presentation.
 84. "Your View or Mine: Spatially Quantifying CO₂ Storage Risk from Multiple Stakeholder Perspectives." (2011). With Pollak, M., Wilson, E., Elliot, T., Guo, B., Nogues, J., Peters, C. and Fitts, J (2011). *EOS Transactions, AGU. 90(52)*, Fall Meeting Supplement, Abstract H42C-08. December 5-9, 2011. Accepted oral presentation.
 85. "Semi-analytical estimation of wellbore leakage risk during CO₂ sequestration in Ottawa County, Michigan." (2011). With Guo, B (presenter), Matteo, E., Elliot, T., Nogues, J., Deng, H., Fitts, J., Pollak, M., Bielicki, J., Wilson, E., Celia, M., and Peters, C. *EOS Transactions, AGU. 90(52)*, Fall Meeting Supplement, Abstract GC51A-0948. December 5-9, 2011. Accepted poster presentation.
 86. "RISCS: Risk Interference of Subsurface CO₂ Storage." (2011). with D. Bael,, M. Pollak, M. Rahimi, and E. Wilson. *Sixth Trondheim CCS Conference on CO₂ Capture, Transport, and Storage*. Trondheim, Norway. June 14-16, 2011. Accepted oral presentation.
 87. "Simulated CO₂ Pipeline Networks for CCS in France." With Calas, G., Ha-Dong, M., and Middleton, R. *Sixth Trondheim CCS Conference on CO₂ Capture, Transport, and Storage*. Trondheim, Norway. June 14-16, 2011. Accepted poster presentation.
 88. "Integrating Geologic Carbon Dioxide Storage with Other Subsurface Activities." (2011). With J. Dammel, M. Pollak (presenter), M. Rahimi, M. and E. Wilson. *DOE-NETL Ninth Annual Conference on Carbon Capture and Sequestration*. Pittsburgh PA. May 2-5, 2011. Accepted oral presentation.
 89. "Interference and CO₂ Storage." (2011). With D. Bael, M. Pollak (presenter), M. Rahimi, and E. Wilson. *DOE-NETL Ninth Annual Conference on Carbon Capture and Sequestration*. Pittsburgh PA. May 2-5, 2011. Accepted oral presentation.
 90. "Carbon Dioxide Plume Geothermal Energy: Making Electricity (and Money) from Geologic Sequestration of Carbon Dioxide." (2011). With M. Saar, J. Randolph, M. Pollak (presenter), E. Wilson, T. Keuhn, S. Taff, A. Smale. *DOE-NETL Ninth Annual Conference on Carbon Capture and Sequestration*. Pittsburgh PA. May 2-5, 2011. Accepted poster presentation.
 91. "Benefits of Network Optimization for Planning Carbon Capture and Storage Infrastructure Systems." (2011). with M. Kuby (presenter) and R. Middleton. *Association of American Geographers Annual Meeting*. Seattle, WA. April 12-16, 2011. Accepted oral presentation.
 92. "Analysis of Cost Savings from Networking Pipelines in CCS Infrastructure Systems." (2009). With M. Kuby, R. Middleton (presenter), and G. Keating, G. *Tenth International Greenhouse Gas Technologies Conference*. Amsterdam, The Netherlands. September 19-23, 2010. Accepted poster presentation.
 93. "Jumpstarting CCS using Oil Refinery CO₂ for Enhanced Oil Recovery." (2010). With R. Middleton (presenter), G. Keating, P. Stauffer, and R. Prawar. *Tenth International Greenhouse Gas Technologies Conference*. Amsterdam, The Netherlands. September 19-23, 2010. Accepted oral presentation.
 94. "Evolving Carbon Dioxide Capture and Storage Deployment: Lessons from CO₂ Enhanced Oil Recovery." (2010). *DOE-NETL Eighth Annual Conference on Carbon Capture and Sequestration*, Pittsburgh, PA May 5-8, 2010. Accepted oral presentation.
 95. "The Optimal Spatial Deployment of Wind-Energy and Electricity Transmission Infrastructure." (2009) with R.S. Middleton and B. Phillips (presenter). *EOS*

- Transactions, AGU. 90(52)*, Fall Meeting Supplement, Abstract A31F-0192. December 14-18, 2009. Accepted poster presentation.
96. "The Spatial Deployment of Carbon Capture and Storage with a Price on Carbon Dioxide." (2009) with M. Kuby and R.S. Middleton (presenter). *Geological Science of America Annual Meeting*, Portland OR, October 18-21, 2009. Accepted oral presentation.
 97. "An Empirical Learning Curve for Geologic CO₂ Injection." (2009) *DOE-NETL Eighth Annual Conference on Carbon Capture and Sequestration*, Pittsburgh, PA. May 4-7, 2009. Accepted oral presentation.
 98. "The Spatial Deployment of Carbon Capture and Storage with a Price on Carbon Dioxide." (2009) with M. Kuby and R.S. Middleton. *DOE-NETL Eighth Annual Conference on Carbon Capture and Sequestration*, Pittsburgh, PA. May 4-7, 2009. Accepted oral presentation.
 99. "Spatial Clustering and Carbon Capture and Storage Deployment." (2008) *Ninth International Greenhouse Gas Technologies Conference*, Washington DC. November 17-20, 2008. Accepted oral presentation.
 100. "A Comprehensive Carbon Capture and Storage Model." (2008) with R. Middleton. *Ninth International Greenhouse Gas Technologies Conference*, Washington DC. November 17-20, 2008. Accepted poster presentation.
 101. "Learning about Carbon Capture and Storage: Changing Stakeholder Perception with Expert Information." (2008) With J.C. Stephens (presenter) and G.S. Rand. *Ninth International Greenhouse Gas Technologies Conference*, Washington DC. November 17-20. Accepted oral presentation.
 102. "A Pipeline Network Design Model for Geologic Carbon Sequestration and Carbon Credit Pricing." (2008) with R. Middleton, R. and M. Kuby (presenter) *ISOLDE: International Symposium on Locational Decisions*, Santa Barbara, CA, July, 2008. Accepted oral presentation.
 103. "Returns to Scale for Carbon Capture and Storage Infrastructure and Deployment," (2008) *DOE- NETL Seventh Annual Conference on Carbon Capture and Sequestration*, Pittsburgh, PA. May 5-8. Accepted oral presentation.
 104. "The Viability of Permanent Carbon Capture and Storage in Deep Sea Sediment," (2007) *EOS Transactions, AGU. 88(52)*, Fall Meeting Supplement, Abstract U42A-04.
 105. "The Carbon Capture and Storage Optimization Problem." (2007) with R. Middleton (presenter) *North American Regional Science Conference*. Savannah, GA. November 2007. Accepted oral presentation.
 106. "The Influence of Carbon Capture and Storage on the Location of Electric Power Generation." (2006). with D.P. Schrag. *Eighth International Conference on Greenhouse Gas Technologies*. Trondheim, Norway. June 19-22, 2006. Accepted poster presentation.
 107. "Beam Sweeping System" (1999) with F. Bieniosek (presenter), et al.; *IEEE Particle Accelerator Conference*; New York; May 1999. Accepted oral presentation.
 108. "An Expert System for Design for Manufacturability using the Gold Works III Expert System Shell" (1992) with M. Peterson (presenter), et al.; *Argonne Symposium for Undergraduates in Science, Engineering, and Mathematics*; Argonne National Laboratory; Argonne, IL; November 1992. Accepted poster presentation.

**INVITED
PRESENTATIONS**

1. "Using CO₂ to Produce and Store Energy." *Chalmers University, Institute for Energy and Environment*, Gottenburg, Sweden. June 19, 2017.
2. "Viability of Using in Hydrocarbon Depleted Fractured Shale Formations for Geologic CO₂ Storage." with Langenfeld, J., Tao, Z., Middleton, R., Menefee, A., Clarens, A. *Center for Climate and Decision-Making. Carnegie Mellon University*. March 3, 2017.
3. "Energy Storage: Capturing Opportunity." *Grid Modernization: Understanding Technology Advancements, Midwest Governor's Association Annual Meeting*, October 5, 2016. Panel.
4. "Lessons from Monetizing Leakage Risk for Monetizing Monitoring Costs." With Deng, H., Pollak, M., Wilson, E., Fitts, J., and Peters, C. *IEAGHG 2nd Combined Meeting of the Modeling and Monitoring Networks*. July 6-8, 2016. Edinburgh, Scotland. Oral.
5. "Nitrogen Plume Geothermal and Multi-Fluid Earth Battery Options." With Buscheck, T. (presenter) and Randolph, J. *ARMA-AAPG NSF SedHeat Workshop on Successful Engineering of Sedimentary Geothermal Systems*. June 24-26, 2016. Houston, TX. Oral.
6. "Carbon Dioxide Plume Geothermal: Using CO₂ for Renewable Energy Generation, Integration, and Climate Change Mitigation." With Buscheck, T. and Randolph, J. *ARMA-AAPG NSF SedHeat Workshop on Successful Engineering of Sedimentary Geothermal Systems*. June 24-26, 2016. Houston, TX. Oral.
7. "Using Carbon Dioxide for Renewable Energy Generation, Integration, and Climate Change Mitigation." Bureau de Recherches Ge'ologiques et Minie'res (BRGM, the French Equivalent of the U.S. Geologic Survey). Orleans, France. May 27, 2016. Oral.
8. "The Earth Battery: An Emerging Approach for Energy Storage to Integrate Renewable Energy Sources into the Electricity Grid." With Buscheck, T. *Les Enjeux Technologiques De L'Integration Des Energies Reouvelables au Reseau Electrique*. Public hearing on integrating renewable energy into the electricity grid. *Assemble'e Nationale - French National Assembly (lower house of the French Parliament)*. May 26, 2016. Oral.
9. "Using CO₂ to Produce and Store Renewable Energy." *16th Polish-American Science & Technology Conference*. Warsaw, Poland. May 16-17, 2016. Oral.
10. "Storing CO₂ in the Earth for Enhanced Geothermal Energy and Water Recovery and Utility-Scale Energy Storage." With Buscheck, T. (presenter). *University of Wyoming School of Energy Resources Speaker Series*. Laramie, WY. March 4, 2016. Oral.
11. "Antecedents and Perspectives on the Boom in Hydraulic Fracturing." *EEOB 8896, Hydraulic Fracturing Seminar. The Ohio State University*. March 2, 2016. Columbus, OH. Oral.
12. "Assessments of Risk and Sustainability: Judgement Embedded." *ENR 3900 Sustainability Metrics*. The Ohio State University. November 17, 2016. Oral
13. "CO₂ Plume Geothermal: What About Context?" *Department of Earth Sciences. ETH-Zurich*. November 9, 2016. Oral.
14. "Hydrogeologic Windows: Regional Signature Detection for Blind and Traditional Geothermal Play Fairways. Phase I Report, Phase II Proposal." *Geothermal Technologies Office. U.S. Department of Energy* October 28, 2016. Oral.
15. "Pillars of Energy Sustainability." *Integrated Assessment Modeling Group, Sustainable and Resilient Economy Discovery Theme Program. The Ohio State University*. October 14, 2016. Oral.
16. "Energy Sustainability and (Some Other) Emerging Uses of the Subsurface." The Ohio State University. *Energy MBA Program, Fisher College of Business, The Ohio State University*. July 28, 2015. Oral.
17. "Using CO₂ to Produce and Store Geothermal Energy." With Buscheck, T., and Saar, M. *14th Polish-American Science & Technology Conference*. May 28-29, 2015. Columbus OH.
18. "Engineering and Environmental Economics for Ecological Engineering." *ENVENG 5310 Ecological Engineering and Science, The Ohio State University*. Columbus, OH. February 2, 2015. Oral.

19. "Personal, Climatic, and Research Juxtapositions: Using CO₂ for Renewable Energy Generation." *STEAM Exchange*, Ohio State University, January 22, 2015. Columbus, OH.
20. "Can We Turn Unwanted Carbon Dioxide Into Electricity?" *Science Writers 2014: Lunch with a Scientist*, October 19, 2014. Columbus, OH.
21. "Benefits and Concerns with Unconventional Hydrocarbon Development." *Glenn School Leadership Forum*, October 17, 2014. Columbus, OH.
22. "Producing Renewable Energy While Sequestering Carbon Dioxide." *Los Alamos National Laboratory, Earth and Environmental Systems Division Seminar*. September 2, 2014.
23. "Moneyball and the Glenn School." M.P.A. Orientation. *John Glenn School of Public Affairs*. August 20, 2014. The Ohio State University. Columbus, OH.
24. "Benefits and Concerns of Emerging Subsurface Development Activities." *Ohio Energy: Emerging Issues in Law, Finance, and Regulation*. Moritz College of Law, The Ohio State University. April 9, 2014.
25. "To Frack or Not to Frack: Energy Sustainability and Emerging Subsurface Development." *Marion Science Café*. The Ohio State University, Marion. April 1, 2014.
26. "Emerging Options for Engineering Geothermal Resources for Energy Sustainability" *Guest Lecture in EnvEng: Ecological Engineering*. The Ohio State University. March 24, 2014.
27. "Emerging Options for Engineering Geothermal Resources for Energy Sustainability" *Department of Earth and Atmospheric Sciences Seminar*. Cornell University. March 5, 2014.
28. "Interactions Between Energy and Environmental Systems and Policy in Emerging Subsurface Energy Technologies." *John Glenn School of Public Affairs Colloquium*, The Ohio State University. March 3, 2014.
29. "Risks and Opportunities of Emerging Subsurface Technologies." *Lawrence Livermore National Laboratory*, December 16, 2013.
30. "Water and Energy Sustainability and Emerging Uses of the Subsurface." *Guest Lecture in EnvEng 5130: Applied Hydrology*, The Ohio State University. November 25, 2013.
31. "Multi-Fluid Geothermal Energy Production and Storage." With Buscheck, T. (presenter). *U.S. Department of Energy Geothermal Technologies Office Sedimentary Geothermal Workshop*. November 13, 2013. Washington, DC.
32. "Energy Sustainability and Emerging Uses of the Subsurface." *Environmental Science Graduate Program Seminar*, The Ohio State University. November 1, 2013.
33. "Unconventional Hydrocarbon Resources and the Health Hazards of Hydraulic Fracturing Fluids." *Centre International de Recherche sur l'Environnement et le Développement (CIRED)*. Paris, France. July 11, 2013.
34. "A Novel Method Using Carbon Dioxide and Geothermal Resources for Sustainable Energy Production and Storage." With Saar, M., Kuehn, T., Randolph, J., and Taff, S. *NSF Sustainable Energy Pathways Grantees Meeting*. June, 2013. Washington DC.
35. "Energy Sustainability and Emerging Use of the Subsurface" The Ohio State University, Columbus, Ohio. February 7, 2013
36. "Energy Sustainability and Emerging Use of the Subsurface" Center for Advanced Energy Studies, Idaho Falls, Idaho. January 17, 2013
37. "Energy Sustainability and Solar Energy Technology Innovation." Keynote Address. *Solar Energy Workshop, West Central Research and Outreach Center, University of Minnesota at Morris*. June 12, 2012.
38. "Sustainability, Learning, and the Evolution of Energy Technology Deployment." *Arizona State University, School of Sustainability Studies*, March 26, 2012.
39. "Your View or Mine: Spatial CO₂ Storage Risk from Various Stakeholder Perspectives." *Los Alamos National Laboratory, Earth and Environmental Science Seminar*. Mart 12, 2012.
40. "Interdisciplinary and Multiscale Interactions and the Geography of Energy Technology

- Deployment.” *The Pennsylvania State University, Department of Geography*, February 10, 2012.
41. “Your View or Mine: Spatial CO₂ Storage Risk from Various Stakeholder Perspectives.” *Carnegie Mellon University, Carbon Sequestration Workshop*, January 17, 2012.
 42. “Your View or Mine: Spatial CO₂ Storage Risk from Various Stakeholder Perspectives.” *United States Department of Energy, National Energy Technology Laboratory, Project Update Meeting*, January 16, 2012.
 43. “SimCCS: Scaleable infrastructure model for Carbon Capture and Storage” with R. Middleton and M. Kuby. *VTT Technical Research Centre of Finland*, June 20, 2011.
 44. “SimWIND: Scaleable infrastructure model for Wind-Generated Electricity” with R. Middleton and B. Phillips. *VTT Technical Research Centre of Finland*, June 20, 2011.
 45. “Issues and Lessons for Carbon Dioxide Capture and Storage” (2011). *EEB/FR 4126 Science and Policy of Global Environmental Change. University of Minnesota*. St. Paul, MN. February 17, 2011.
 46. “Efficient Climate Change Mitigation: Returns to Scale Lessons for Carbon Dioxide Capture and Storage Technology Deployment.” *Environmental and Natural Resource Economics Seminar, University of Minnesota*. St. Paul, MN. February 14, 2011.
 47. “Mechanisms for Deploying Carbon Dioxide Capture and Storage: Learning, Risk, and Governance.” (2010). *Earth and Energy Seminar Series, National Energy Technology Laboratory*. Pittsburgh, PA. October 21, 2010.
 48. “Data Generated and Needs for Carbon Dioxide Capture and Storage.” (2010). *Earth System Information Partners Summer Meeting, Energy Cluster*. Knoxville, TN. July 22, 2010.
 49. “Mitigating Climate Change at Scale: Case Studies for Carbon Dioxide Capture and Storage and Lessons for Technology Deployment.” *Energy and Environment Luncheon, University of Tennessee and Oak Ridge National Laboratory*. Oak Ridge, TN. April 30, 2010.
 50. “Issues and Lessons for Carbon Dioxide Capture and Storage.” (2010). *Political Economy of Science and Technology, University of Tennessee*. March 23, 2010.
 51. “Energy System Sustainability and Scale: Case Studies for Carbon Dioxide Capture and Storage and Lessons for Technology Deployment.” *School of Natural Resources and Environment, University of Michigan*. February 15, 2010.
 52. “Scaling and Organizing Carbon Dioxide Capture and Storage Deployment.” *Climate Change Research Network, Vanderbilt University*, Nashville, TN. December 4, 2009.
 53. “Issues for Carbon Dioxide Capture and Storage,” *Environmental Policy’s New Horizon: From the Clean Air Act to Greenhouse Gas Regulations, Baker Center for Public Policy, University of Tennessee*, Knoxville, TN. October 29, 2009.
 54. “Climate Change Impacts Science at Oak Ridge National Laboratory.” *Halcrow Visit to Oak Ridge National Laboratory*, Oak Ridge, TN. October 27, 2009.
 55. “The State of Carbon Dioxide Capture and Storage,” *Carbon Capture and Storage Workshop, Oak Ridge National Laboratory*, Oak Ridge, TN. September 9, 2009.
 56. “Organizing Large Scale Deployment of Carbon Dioxide Capture and Storage,” *Research Experience in Carbon Sequestration 2009, University of New Mexico*, Albuquerque, NM. July 27, 2009.
 57. “Organizing Large Scale Deployment of Carbon Dioxide Capture and Storage,” *Earth and Environmental Sciences Division, Los Alamos National Laboratory*, Los Alamos, NM. July 24, 2009.
 58. “Organizing Carbon Capture and Storage Deployment,” *Weinberg Fellowship Committee, Oak Ridge National Laboratory*. Oak Ridge, TN. April 13, 2009.
 59. “CO₂ Pipeline Modeling for the Midwestern United States,” *Midwest Governors Association Renewable Electricity, Advanced Coal and Carbon Capture with Storage Advisory Group Meeting*. Traverse City, MI. March 20, 2009.
 60. “Returns to Scale for Carbon Capture and Storage,” *Energy and Transportation Science Division, Oak Ridge National Laboratory*. Oak Ridge, TN. March 16, 2009.
 61. “Returns to Scale for Carbon Capture and Storage Deployment.” *Princeton*

- Environmental Institute, Princeton University.* Princeton, NJ. March 10, 2009.
62. "Returns to Scale for Carbon Capture and Storage Deployment." *Energy and Resources Group, University of California at Berkeley.* Berkeley, CA. February 4, 2009.
 63. "Returns to Scale for Carbon Capture and Storage Deployment." *Resources for the Future.* Washington, DC. February 2, 2009.
 64. "Infrastructure Deployment for Carbon Capture and Storage," *Department of Energy National Energy Technology Laboratory.* Morgantown, WV. January 23, 2009.
 65. "Returns to Scale for Carbon Capture and Storage." *Department of Engineering and Public Policy, Carnegie Mellon University.* Pittsburgh, PA. January 22, 2009.
 66. "Infrastructure Deployment for Carbon Capture and Storage," *Department of Energy, National Energy Technology Laboratory CO₂ Pipeline Modeling Meeting.* Pittsburgh PA.. January 21, 2009.
 67. "Geospatial Modeling and Organizing Carbon Capture and Storage Deployment," *North American Carbon Capture and Storage Association Annual Meeting.* Washington DC. December 3, 2008.
 68. "Infrastructure Modeling and Organizing Carbon Capture and Storage," *Research Experience in Carbon Sequestration 2008, University of New Mexico, Albuquerque, NM.* July 29, 2008.
 69. "Geospatial Modeling to Organize Carbon Capture and Storage," (2008). *Earth and Environmental Sciences Division, Los Alamos National Laboratory, Los Alamos, NM.* July 23, 2008.
 70. "Princeton's Wedge Game," *Research Experience in Carbon Sequestration 2008, University of New Mexico, Albuquerque, NM.* July 20, 2008.
 71. "Infrastructure Modeling for Carbon Capture and Storage," (2008). *Midwest Governors Association, CO₂ Infrastructure Subcommittee Meeting, Washington DC.* June 19-20, 2008.
 72. "Organizing Carbon Capture and Storage," (2008). *Center for Global Change, Climate Change Partnership, Nicholas Institute for the Environment, Duke University.* May 21, 2008.
 73. "Infrastructure Modeling for Carbon Capture and Storage: Issues for Scale and Viability" (2008). *Workshop on Subseabed Storage of CO₂, Lenfest Center for Sustainable Energy, Columbia University.* April 29, 2008.
 74. "The Viability of Permanent Carbon Dioxide Storage in Deep Sea Sediment," (2008). *Oak Ridge National Laboratory, Computational Sciences and Engineering Division, Oak Ridge, TN.* January 2008.
 75. "Building a World that Buries Climate Change." (2007). *Clark University.* Worcester, MA. October, 2007.
 76. "The Influence of Carbon Capture and Storage on the Location of Industrial Facilities," (2007). *Research Experience in Carbon Sequestration 2007, Montana State University, Bozeman, MT.* August 2007.
 77. "Worldwide Prospectivity for Permanent CO₂ Storage in Deep Sea Sediment," (2007). *Research Experience in Carbon Sequestration 2007, Montana State University, Bozeman, MT.* August 2007. Poster.
 78. "Princeton's Wedge Game," (2007). *Research Experience in Carbon Sequestration 2007, Montana State University, Bozeman, MT.* July 2007.

EXPERT PARTICIPATION AND ROUNDTABLES

1. International Panel on Climate Change. Fifth Assessment Report. Working Group III. Expert Reviewer. Summer-Fall 2013.
2. World Resources Institute (WRI). (2010). "CCS Guidelines for Community Engagement: Guidelines for Community Engagement in Carbon Dioxide Capture, Transport, and Storage Projects." Washington, DC
3. "U.S.-China Cooperation on Low-Emission Coal Technologies: Realities and Opportunities." Sponsored by the *Atlantic Council and the U.S./China Energy and Environment Technology Center at Tsinghua and Tulane Universities, Beijing China.* June 24-26, 2009.
4. National Commission on Energy Policy, Carbon Capture and Storage Working Group.

	<p>Washington, DC. Fall 2008.</p> <ol style="list-style-type: none"> 5. World Resources Institute (WRI). (2008). "CCS Guidelines: Guidelines for Carbon Dioxide Capture, Transport, and Storage." Washington, DC: WRI. 6. McKinsey Consulting Greenhouse Gas Mitigation Cost Curve v2.0. Summer 2008. 7. Chewonki Carbon Capture and Storage Seminar, Wiscasset ME. October 24, 2007. 	
PEER-REVIEW ACTIVITIES	<p><i>NSF Environmental Engineering Program; Energy & Environmental Science; Environmental Science & Technology; Energy Policy; International Journal of Greenhouse Gas Control; Energy Economics; SPE Economics and Management; Greenhouse Gases: Science and Technology; Science and Public Policy</i></p>	
WORKSHOPS AND PROGRAMS	<p>International Institute for Applied Systems Analysis (IIASA) <i>Young Scientists Summer Program</i> Laxenburg Austria Summer 2006</p> <p>Santa Fe Institute <i>Complex Systems Summer School</i> Santa Fe NM Summer 2004</p> <ul style="list-style-type: none"> • Research Experience in Carbon Sequestration (RECS) • <i>Associate Technical Director</i>, Albuquerque NM (July 2008), <i>Alumni Mentor</i>, Montana State University, Bozeman MT (August 2007), <i>Participant</i>, Los Alamos National Laboratory, Los Alamos NM (July 2005) 	
PRIOR ACADEMIC AND RESEARCH POSITIONS	<p>University of Minnesota: Minneapolis, MN Center for Science, Technology, and Public Policy Hubert H. Humphrey School of Public Affairs September 2010 – July 2013</p> <ul style="list-style-type: none"> • <i>Research Associate</i>: September 2011 – July 2013 • <i>Graduate Faculty</i>: December 2010 – July 2013 • <i>Post-Doctoral Scholar</i>: September 2010 – August 2011 <p>Institute on the Environment</p> <ul style="list-style-type: none"> • <i>Instructor</i> Boreas Leadership Program: September 2011 – July 2012 <p>2011 University of Minnesota Outstanding Postdoctoral Scholar Courses Taught: <i>PA 5031-008 Empirical Analysis I</i> (F12), <i>APEC 5076 Environmental and Natural Resource Economics</i> (S13), <i>PA 5022-007 Game Theory and Interdependent Actions</i> (S13, S12, S11) <i>PA 5022-011 Systems Thinking and Modeling</i> (S13), <i>Systems Thinking and Tools</i> (F11, S12, F12, S13)</p> <p>Service: <i>Science, Technology, and Environmental Policy Feedback and Research (STEP-FAR) Seminar</i>, Initiator, Organizer, and Convener, 2010-2013; <i>Humphrey School of Public Affairs Ph.D. Program Development Committee</i>, 2011-2012; <i>Humphrey School of Public Affairs Curriculum Committee</i>, 2012-2013.</p> <p>Oak Ridge National Laboratory: Oak Ridge, TN <i>Weinberg Fellow</i> Energy and Transportation Sciences Division Energy and Engineering Directorate August 2009 – September 2010</p> <p>University of Tennessee: Knoxville, TN <i>Fellow for Energy and Environmental Policy</i> Howard Baker Center for Public Policy August 2009 – September 2010</p> <p>Harvard University: Cambridge, MA</p> <ul style="list-style-type: none"> • <i>Research Fellow</i> Energy Technology Innovation Policy Group Belfer Center for Science and International Affairs Harvard Kennedy School September 2006 – August 2009 • <i>Affiliate</i> Sustainability Science Group; Science, Environment, and Development Group Center for International Development Harvard June 2003 – August 2009 	

<ul style="list-style-type: none"> <p style="margin: 0;">Kennedy School</p> <ul style="list-style-type: none"> <p style="margin: 0;">• <i>Research Fellowships (Graduate)</i>: Department of Earth and Planetary Sciences (Prof. Daniel Schrag) (01/05-06/06); Science, Environment, and Development Group (Prof. William Clark: 06/03-01/05)</p> 	<p style="margin: 0;">June 2003 – June 2006</p>
<p>Los Alamos National Laboratory: Los Alamos, NM</p>	
<ul style="list-style-type: none"> <p style="margin: 0;">• <i>Graduate Research Assistant</i> Environmental and Spatial Analysis Group; Hydrology, Geochemistry, and Geology Group Earth and Environmental Systems Division</p> 	<p style="margin: 0;">Summer 2007</p>
<p>Harvard University: Cambridge, MA</p>	
<ul style="list-style-type: none"> <p style="margin: 0;">• <i>Teaching Fellowships (Graduate)</i> Environmental Science for Policy Analysis (Profs. William Clark and John Holdren: F04); Analytic Frameworks for Policy Analysis (Prof. Richard Zeckhauser: F03, F04; Prof. Edward Parson: F02); Game Theory, Strategic Decisions, and Negotiations (Prof. Richard Zeckhauser: S05); Individual and Collective Decision-Making (Prof. Iris Bohnet: S04)</p> <p style="margin: 0;">• <i>Research Assistance (Graduate)</i> Course development on Decision-Making, for University of Erfuhr (Prof. Iris Bohnet) Harvard Kennedy School</p> <p style="margin: 0;">• <i>Course Assistance (Graduate)</i> Designing Energy Systems (Prof. John Holdren, Lecturer Henry Lee: S05); Individual and Collective Decision-Making (Prof. Iris Bohnet: S03)</p> 	<p style="margin: 0;">August 2003 – June 2005</p> <p style="margin: 0;">January 2003 – June 2003</p> <p style="margin: 0;">Various</p>
<p>New York University: New York, NY</p>	
<ul style="list-style-type: none"> <p style="margin: 0;">• <i>Research Assistant (Graduate, Consultant)</i> Nature of internal pacing preferences and the causes of interpersonal synchronization (Prof. Sally Blount-Lyon)</p> 	<p style="margin: 0;">June 2002 – August 2002</p>
<p>University of Chicago: Chicago, IL</p>	
<ul style="list-style-type: none"> <p style="margin: 0;">• <i>Research Assistant (Graduate)</i> Strategic organizational learning in technical organizations; Individual preferences for interpersonal synchrony (Prof. Sally Blount-Lyon) Graduate School of Business</p> <p style="margin: 0;">• <i>Course Assistant (Graduate)</i> Business Policy – Strategies for Organizations and Individuals (Prof. Harry Davis) Graduate School of Business</p> 	<p style="margin: 0;">June 2001 – August 2001</p> <p style="margin: 0;">Winter 2001, Spring 2001</p>
<p>Stanford University: Palo Alto, CA</p>	
<p style="margin: 0;"><i>Research Assistant (Graduate)</i> Optical diagnostics for detonation wave formation and extinction in Pulse Detonation Engine (Prof. Ronald Hanson) High-Temperature Gas Dynamics Laboratory Department of Mechanical Engineering</p>	<p style="margin: 0;">June 2000 – September 2000</p>
<p>Valparaiso University: Valparaiso, IN</p>	
<p style="margin: 0;"><i>Grader (Undergraduate)</i> Fluid Mechanics (Prof. Michael Doria, S96); Thermodynamics (Prof. Robert Palumbo: S96); Mechanics of Materials (Prof. James Schueler: F94) College of Engineering</p>	<p style="margin: 0;">Various</p>

MEMBERSHIPS

Geothermal Resources Council, 2013-present; American Geophysical Union, 2007-present; European Geophysical Union, 2013-present; Sigma Xi Scientific Research Society, 1996-present; American Mensa, 1997-present; Mortar Board Senior Honor Society, 1995-present; Tau Beta Pi National Engineering Honor Society, 1994-present (President, Indiana Delta Chapter, 1995- 96 school year: Earned Secretary’s Commendation and Chapter Projects Award); American Society of Mechanical Engineers, 1992-present; American Economic Society, 2005-present; Alpha Lambda Delta Freshman Honor Society, 1992-present; Society for Industrial and Applied Mathematics, 2004-2008;

HONORS AND AWARDS	<p>2014 Best Paper Presentation Award, Geothermal Resources Council (Edmunds, lead author); 2013 Best Paper Presentation Award, Geothermal Resources Council (Buscheck, lead author); 2011 University of Minnesota Outstanding Post-Doctoral Scholar Award (University of Minnesota); Alvin Weinberg Fellowship (Oak Ridge National Laboratory), 2009; Joseph G. Crump Fellowship (Harvard University), 2004-2005; Center for Basic Research in the Social Sciences (\$1500), 2003; Valparaiso University Alumni Association Distinguished Student Award Finalist, 1996; Herman C. Hesse Outstanding Freshman Engineering Student Award, 1991- 92; Lutheran Brotherhood Scholarship, 1991-95; Aid Association of Lutherans Scholarship, 1991-95.</p>
WORKSHOPS AND PROGRAMS	<p>International Institute for Applied Systems Analysis (IIASA) <i>Young Scientists Summer Program</i> Laxenburg Austria Summer 2006 Santa Fe Institute <i>Complex Systems Summer School</i> Santa Fe NM Summer 2004 Research Experience in Carbon Sequestration (RECS) <i>Associate Technical Director</i>, Albuquerque NM (July 2008), <i>Alumni Mentor</i>, Montana State University, Bozeman MT (August 2007), <i>Participant</i>, Los Alamos National Laboratory, Los Alamos NM (July 2005)</p>
AVOCATIONS	<p>Reach The Beach, 200 mile Relay Race, 2007 – present; Harvard Taekwondo, September 2005-2009, Blackbelt earned, May 2008. Instructor, September 2008 – May 2009; German International School of Boston. Elementary School Taekwondo Instructor, September 2008 – January 2009; Valparaiso University Mechanical Engineering Technical Advisory Committee, 1999-2006; Class Advisor to the MPA Class of 2004, Harvard University, June 2002 - May 2003; Improvisational Comedy (Long-Form): Improv Olympic, Chicago IL, January - August 2001; Upright Citizen’s Brigade Theatre, New York NY, June - August 2002; Improv Asylum, Boston MA, January - June 2002; Acoustic guitar; Poetry and short-story author; Photographer; Painter; Ongoing restoration of 1969 Ford Mustang 302 Fastback; Student Ambassador Overnight Host and Tourguide, Valparaiso University, 1991-96; Phi Sigma Kappa Fraternity, Phi Upsilon Chapter, 1992-present: Secretary, 1993; Philanthropy Chairman, 1994; Sentinel, 1994; Scholarship Chairman, 1995; Vice-President of Residence Hall Wing: Dau 3N, Valparaiso University, 1991-92 school year</p>
PROFESSIONAL EXPERIENCE	<p>Summary: Over five years professional experience with large-scale fundamental scientific research organizations. Continued growth managing technical projects, infrastructure, and personnel. Expertise in research, design, and development of devices to support scientific research.</p> <p>Fermi National Accelerator Laboratory: Batavia, IL <i>Mechanical Engineer I</i> Beams Division Mechanical Support December 1996 – June 2000 Department: Antiproton Source Engineer managing nine team members (engineers, drafters, technicians, and students) to support high pulse power devices and infrastructure. General mechanical engineering support for Tevatron particle accelerator devices and operations. Coordinated and supervised ten mechanical engineering co-operative education students. Major projects: Beam Sweeping System; Liquid Lithium Lens (with scientists from Budker Institute of Nuclear Physics, Novosibirsk, Russia); TESLA Photoinjector Alignment Hardware (for DESY – Deutsches Elektron Synchrotron – Hamburg Germany); Computerized Data Acquisition System for Helium Leak Detection of Tevatron Particle Accelerator.</p>

Mechanical Engineering Co-operative Education Student | Accelerator Division | Mechanical Support Department: Coordinated and assisted in design, testing, analysis, and documentation of cryogenic particle beam correction spool piece ceramic power lead; Girder Support System to minimize deflection of 30 ton cryogenic magnets adjacent to four-story particle detector; Mobile fixture to transport 14,000 lb lead-lined coffins with highly radioactive contents.

May 1993 – August 1995

Laboratory for Laser Energetics, University of Rochester: Rochester, NY

Laboratory Engineer | Optical Manufacturing Department: Extensive thermal cycle analysis of large optical substrates and redesign of planetary rotation within vapor-deposition thin-film coating machine

July 1996 – December 1996

Eastman Kodak Company: Rochester, NY

Safety Technician | Orsat Safety Department: Documented needs, and performed maintenance on, safety systems for roll-coating machines

June – August 1992

PROFESSIONAL PRESENTATIONS

1. “Anti-proton Target Hall: Fermilab Antiproton Production,” *Beams Division Mechanical Support Department, Fermi National Accelerator Laboratory*. Batavia IL. November 30, 1999
2. “Beam Sweeping System,” *Beams Division Mechanical Support Department, Fermi National Accelerator Laboratory*. Batavia IL. March 31, 1999