

Current Appointment:

Clinical Associate Professor

School of Public and Environmental Affairs
1315 E. Tenth Street, Room PV 327
Indiana University
Bloomington, IN 47405

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Specializations:

Energy, Oil and Gas Systems, Subsurface Geology, Unconventional Reservoirs, Carbon Sequestration, Science and Technology in Public Policies

Education:

- 1980 M. S. Geology, Eastern Washington University, Faculty Advisor:
Felix M. Mutschler
Thesis topic: Geochemical exploration for porphyritic Mo systems
- 1978 B. S. Geology, University of Cincinnati
Areas of emphasis: economic and structural geology

Professional Experience:

Administrative:

- 2008-2012 Associate Director for Science, Center for Research in Energy and the Environment School of Public and Environmental Affairs, Indiana University, Bloomington, IN
- 2006-2010 Assistant Director for Research, Indiana Geological Survey, Bloomington, Indiana
- 2004-2010 Head, Subsurface Geology Section, Indiana Geological Survey, Bloomington, Indiana
- 1991-2004 Head, Energy Resources Section, Indiana Geological Survey, Bloomington, Indiana
- 1990-91 Head, Petroleum Section, Indiana Geological Survey, Bloomington, Indiana

Research:

- 2018-present Clinical Associate Professor, School of Public and Environmental Affairs, Bloomington, Indiana
- 2012-2018 Adjunct Faculty, School of Public and Environmental Affairs, Bloomington, Indiana
- 1990-2018 Senior Research Scientist, Indiana Geological Survey, Bloomington, Indiana
- 1982-90 Research Geologist, Indiana Geological Survey, Bloomington, Indiana
- 1980-82 Production Geologist, Exxon Co. USA, Midland, Texas

- 1980 Assistant Geologist, Consolidated Resources of America, Cincinnati, Ohio (summer)
- 1979 Assistant Geologist, Salisbury & Dietz Co., Spokane, Washington (summer)
- 1978-79 Research Assistant, U.S. Bureau of Mines, Eastern Washington University, Cheney, Washington

Awards and Honors:

- 2022 George V. Cohee Public Service Award, Eastern Section of the American Association of Petroleum Geologists
- 2019 Mikesell award in teaching, O'Neill School of Public and Environmental Affairs Indiana University
- 2018 Outstanding Graduate Instructor, O'Neill School of Public and Environmental Affairs, Indiana University
- 2013 Co-Author, Best Poster Presentation, Division of Environmental Geosciences, American Association of Petroleum Geologists, Eastern Section
- 2010 Co-Author, Best Poster Presentation, Division of Environmental Geosciences, American Association of Petroleum Geologists, Eastern Section
- 2008 Co-Author, Best Poster Presentation, Division of Environmental Geosciences, American Association of Petroleum Geologists, Eastern Section
- 2006 Co-Author, Best Oral Presentation, American Association of Petroleum Geologists, Eastern Section
- 2003 Best Poster, American Association of Petroleum Geologists, Eastern Section
- 2001 Best Paper, American Association of Petroleum Geologists, Eastern Section
- 1987 Grant in Aid, Indiana Academy of Sciences
- 1985 Outstanding Employee of the Year, Indiana Geological Survey
- 1985 Best Paper, Indiana Academy of Sciences
- 1981 Highest Initial Potential Well, Midland District, Exxon Company, USA
- 1978 Dean's List, University of Cincinnati

Professional Societies:

American Association of Petroleum Geologists
Indiana Professional Geologist License #2027

Service Appointments:

Governors' Task Force, Carbon Sequestration
Indiana University Strategic Planning Committee for Energy Research
Indiana Interagency Council on Energy
Technology and Production Committee, Interstate Oil and Gas Compact Commission
American Association of Petroleum Geologists, Eastern Section Membership Chairman
Indiana Petroleum Industry Advisory Committee
Technical Editor, Journal of Applied Radiation and Isotopes

Current Research Topics:

- 1) Carbon sequestration reservoir and seal characterization, storage resource assessment, and operations development in the deep subsurface of the midcontinent.

- 2) Evaluation of coal bed methane and gas shale enhanced production using CO₂ injection.
- 3) Hydrogeological and hydrochemical assessment of the lower Paleozoic sediments for liquid waste storage in Indiana.
- 4) Geophysical and tectonic properties of the lower Paleozoic sediments in the Illinois Basin.
- 5) Public Perceptions and Reactions to Unconventional Gas Development
- 6) Informed Consumer Behavior for Energy Choices

Graduate Student Advisement:

- 1) Purdue University, Department of Earth and Atmospheric Sciences. (Nicholas Fischietto, M.S., 2010; Raul Ochoa, M.S., 2010; Ryan Neufelder, M.S., 2011; Thomas Lovell, Ph.D., current)
- 2) Indiana University Purdue University Indianapolis. Department of Earth Sciences. (Richard Thomas, M.S., 2015)
- 3) Indiana University, Department of Geological Sciences. (Zalmei Yahwar, M.S., 2010; Dan Mizsei, M.S., 2013; Robert Murphy, M.S.; 2014; Jingqi Xu, M. S., 2015; Cristian Medina, Ph. D.; current)
- 4) Indiana University, Soon Moon Kim, SJD, 2017 (Mauer School of Law), Connor Cleary, M.A., 2015; Alyssa Meyer, M.A. 2017 (Russian East European Inst.); Jessica Alcorn, Zach Wendling, Yu Zhang, Michelle Lee, PhD. (SPEA)

Classes and Seminars Taught:

2023, Spring Semester, Indiana University, School of Public and Environmental Affairs, V600
 “Comparative Analysis of State Carbon Management Policies: Advantages/Disadvantages of Locating Direct Air Capture and Industrial Carbon Sequestration Facilities” (3 credits, Capstone course)

2023, Spring Semester, Indiana University, School of Public and Environmental Affairs, V600
 “Reducing Methane Emissions in Turkmenistan” (3 credits, Capstone course)

2022, Spring Semester, Indiana University, School of Public and Environmental Affairs, V600
 “Assessment of Alternative Electricity Rate-making Mechanisms in Indiana” (3 credits, Capstone course)

2021, Spring Semester, Indiana University, School of Public and Environmental Affairs, V600
 “Enhanced Renewables in the Heartland: A Scenario Evaluation of the State/RTO Nexus” (3 credits, Capstone course)

2020, Spring Semester, Indiana University, School of Public and Environmental Affairs, V600
 “Renewable Energy Policy Recommendations for the Indiana Utility Regulatory Commission: A Scenario Evaluation Approach” (3 credits, Capstone course)

2019, Fall Semester, Indiana University, School of Public and Environmental Affairs, V600. “Hoosier Energy – Fully Charged: An Outlook of Influential Policies and Technologies for Energy Storage” (3 credits, Capstone course)

2019, Spring Semester, Indiana University, School of Public and Environmental Affairs, V600 “Electrical Charging Infrastructure for Fleet Applications: Analysis of Policy Landscape” (3 credits, Capstone course)

2018, Spring Semester, Indiana University, School of Public and Environmental Affairs, V600 “Emerging Policy and Technology Advances on the Resiliency of Hoosier Energy: Assessment of Potential Impacts” (3 credits, Capstone course)

2018-21, Both Semesters, Indiana University, School of Public and Environmental Affairs, E272. “Introduction to Environmental Science” (3 credits)

2017-21, Spring Semester, Indiana University, School of Public and Environmental Affairs, “Renewable and Nuclear Energy Systems” (3 credits)

2017, Spring Semester, Indiana University, School of Global and International Studies, “Energy and the Environment in Vietnam”, Team taught with Michael Hamburger, (2 credits, Department of State Diplomacy Lab)

2016, Spring Semester, Indiana University, School of Public and Environmental Affairs, V600 “Clean Power Plan Compliance Options for Hoosier Energy REMC”, Team-taught with Sanya Carley, (3 credits, Capstone course)

2014-22, Fall Semester, Indiana University, School of Public and Environmental Affairs, E574, “Energy Systems and Analysis” (3 credits)

2014-20, Fall Semester, Indiana University, School of Public and Environmental Affairs, E555 “Global Energy Issues from an International Relations Perspective”, team-taught with John Graham (3 credits)

2013 Spring Semester, Indiana University, School of Public and Environmental Affairs, V600 “Challenges from Natural Gas Supply and Demand Growth: Transportation and Electrical Generation”, Team-taught with John W. Clark (3 credits, Capstone course)

2012-20, Spring Semester, Indiana University, School of Public and Environmental Affairs, E503 “Natural Gas: Technical and Policy Challenges” (3 credits)

2011-13 Fall Semester, Indiana University, School of Public and Environmental Affairs, E555 “Coal Utilization and Carbon Sequestration” (3 credits)

2011, Spring Semester, Indiana University, School of Public and Environmental Affairs, V600 “Transitions to New Energy Technologies: The Case of In-Situ Coal Gasification with Carbon Capture and Storage”, Team-taught with Kenneth Richards (3 credits, capstone course)

2005 Indiana University, Department of Geological Sciences, G690, Graduate Seminar in Carbon Sequestration”, Team-taught with Mark Person, New Mexico Tech University, (3 credits)

2000-2005, Indiana University, School of Education, W505, “Workshop on Indiana’s Limestone Geology for Teachers”
(3 credits)

2002-2007, 2012-2014 Indiana University, Department of Geological Sciences, G188,
“Volcanoes of the Eastern Sierra Nevada: Geology and Natural Heritage of the Long Valley Caldera” Team taught with Michael Hamburger, (4 credits)

1991, 1995, 1999, 2001, 2013 Indiana University, Department of Geological Sciences, G690
“Graduate Seminar in Tectonics”, co-led with Douglas, B and Hamburger, M. W. (2 credits)

Synergistic Activities – Carbon Sequestration

Serve on the Technology and Production Committee, Interstate Oil and Gas Compact Commission, Advisory Board for Membership of the American Association of Petroleum Geologists, Eastern Section, and Governor’s Interagency Council on Energy.

Serve as project director for Indiana on two of the DOE’s Regional Carbon Sequestration Partnerships: the seven-state Midwest Regional Carbon Sequestration Partnership (MRCSP) and the three-state Midwestern Geological Sequestration Consortium (MGSC) for assessing the geological carbon sequestration of the state within these regions

Co-chaired the Indiana Carbon Capture and Storage Summit, Fall, 2008.

Served on external review panel for research activities of the National Technical Energy Laboratory (NETL), Spring, 2008, Fall 2012.

Serving on the technical review panel Advanced Research Projects Agency – Energy (ARPA-E).

Serving on the Capacity and Fairway Subgroup of the Geological Working Group of the DOE Regional Carbon Sequestration Partnerships, (formulation of national capacity calculation methodologies).

Serving on the external review of the USGS methodologies for geological sequestration capacity estimates.

Serving on the Indiana Governor’s Task Force for evaluation of policy for geological sequestration. Continual interactivity with Duke Energy Indiana on their IGCC carbon capture and geological sequestration assessment and evaluation as well as other industries within the state and region.

Carbon Sequestration:

Involved in the assessment of geological options for carbon sequestration beginning in 2000 with participation in the MIDCARB project and have continued that involvement up to the present with participation in two of the DOE-sponsored Regional Partnerships and other industry-related investigations. Additional contributions have been with social feasibility of geological sequestration. Involvement with these projects has spanned the gamut from conceptual planning and proposal writing to managing teams and building the technical assessments and reports. The publications listed on the selected publication list are examples of the type of research products and evaluation results. The primary projects have been:

1) Midcontinent Interactive Digital Carbon Atlas and Relational dataBase (MIDCARB) is a research consortium composed of the State Geological Surveys of Illinois, Indiana, Kansas, Kentucky, and Ohio, with funding from the Department of Energy through the National Energy Technology Laboratory. The main objective of MIDCARB was to evaluate the potential capacity for geologic sequestration of carbon dioxide in the member states. The principle tool developed was a distributed database that accessed subsurface geological data within the region and processed it through a geographic information system (GIS).

2) National interactive Carbon Atlas and Relational database (NatCARB) is a continuation of the MIDCARB work but on a national level covering all of the seven Regional Partnerships. NATCARB is a project to explore geological sequestration of carbon through linking geological and emission databases from several regional centers into a single interactive mapping system. More extensive geological data is being added as well as utilities that process this information online.

3) Midwest Geological Sequestration Consortium (MGSC) is a consortium formed by the three state geological surveys that lie within the Illinois Basin (Indiana, Kentucky, and Illinois). The propose of the partnership is to assess the potential for geologic sequestration (storage) of carbon dioxide in the deeply buried unminable coal seams, depleting oil or gas reservoirs, and brine-filled rock formations found in the Illinois Basin. This is one of the seven Regional Partnerships formed by the DOE in 2002. Phase I has been completed and the partnership is now completing Phase II in which field demonstration projects including detailed geological assessment, drilling and injection projects will be undertaken. Phase III is beginning with work on characterizing specific petrological aspects of the perspective reservoirs and seals.

4) Midwestern Regional Carbon Sequestration Partnership (MRCSP) is also a consortium of state geological surveys from seven mid-continent states. In a similar manner as the MGSC, the group has finished Phase I, is completing Phase II, and beginning work on Phase III. Indiana is split from northwest to southeast along the Kankakee Arch; the eastern portion lying within the MRCSP and the western part within the MGSC.

5) US- China Clean Energy Research Center (CERC) is an international partnership to jointly evaluate a suite of technical areas relating to energy use and consumption patterns. The areas include Clean Vehicles, Clean Coal Technology and Energy Efficiency. Indiana has been partnering with Lawrence Livermore and Los Alamos National Laboratories, along with the universities of Wyoming and West Virginia to investigate carbon sequestration opportunities in the Illinois Basin in comparison to the Ordos basin of Shanxi China. Additionally, a partnership with Duke Energy, Inc. and Huaneng Power International, Inc. is investigating the potential to store captured CO₂ from the Gibson Station 3100 Mw in the subsurface near the facility.

6) School of Public and Environmental Affairs (SPEA) is a school within Indiana University involved in a diverse portfolio of teaching, service and research in the areas of public policy and environmental science relative to energy. Recent work with this school has included investigations of societal impressions of carbon capture and storage (CCS), land and mineral rights usage options for subsurface CO₂ storage and natural gas development (CO and China), risk governance issues associated with unconventional natural gas development, and public perceptions of sand mining for hydraulic fracturing.

Publications:

Graham, J. D. and **Rupp, J. A.**, 2022, Lithium Mining in South America: The Quest for Sustainable Success: Lithium Triangle Initiative Semiannual Flagship Report, Wilson Center.

Zhang, Y, Clark, A., **Rupp, J. A.**, and Graham, J. D., 2021, A comparative study of Chinese and American public perceptions of shale gas development: *Journal of Risk Research*, v. 24, DOI: 10.1080/13669877.2021.2009900.

Chesnais, P., Brzuzny, L., and **Rupp, J. A.**, 2021, 22 Gigawatts of Offshore Wind by 2030: A Realistic Permitting Goal or an Empty Promise?: *Energy Perceptions*, v. 2, i. 1, 1006.

Graham, J. D., **Rupp, J. A.**, and Brungard, E., 2021, Lithium in the Green Energy Transition: The Quest for Both Sustainability and Security: *Sustainability*, v. 13, 11274.

Graham, J. D., and **Rupp, J. A.**, 2021, Fracking Governance: History, Differences, and Trends: *in* “Environmental Impacts from the Development of Unconventional Oil and Gas Reserves”, J. F. Stolz, W.M. Griffin, and D.J. Bain eds., Cambridge University Press, Cambridge UK.

Medina, C. R., Mastalerz, M., Lahann, R. W., and **Rupp, J. A.**, 2020, A novel multi-technique approach used in the petrophysical characterization of the Maquoketa Group (Ordovician) in the southeastern portion of the Illinois Basin: Implications for seal efficiency for the geologic sequestration of CO₂: *International Journal of Greenhouse Gas Control*, v. 93, 102883.

Belton, K. B. and **Rupp, J. A.**, 2019, Job creation in the U.S. “shale gale”: Insight into Manufacturing Policy, Manufacturing Policy Initiative, O’Neill School of Public and Environmental Affairs, Indiana University, (October).

Lee, M. H. W. Clark, A., **Rupp, J. A.**, Wietelman, D. C., and Graham, J. D., 2019, Public Opinion toward Hydraulic Fracturing: The Effect of Beyond Compliance and Voluntary Third-Party Certification: *Journal of Energy Policy*, v. 128, p. 306-315.

Zhang, Y., Clark, S., **Rupp, J. A.**, and Graham, J. D., 2019, How Do Incentives Influence Local Public Support for the Siting of Shale Gas Projects in China?: *Journal of Risk Research*, v. 23, issue 3, pp. 330-348.

Rupp, J. A., Letsinger, S. L., and Carlson, G, 2018, Fault angle control on potential seismic slip in the Illinois Basin region: *Seismological Research Letters*, v. 89, no. 6, pp. 2461-2472.

Medina, C., Mastalerz, M., and **Rupp, J.**, 2018, Pore system characterization of Cambrian-Ordovician carbonates using a new mercury porosimetry-based petrofacies classification system: Application to carbon sequestration reservoirs: *Greenhouse Gases: Science and Technology*, v. 8, p. 932–953, DOI: 10.1002/ghg

Mastalerz, M. D., Drobniak, A. and **Rupp, J. A.**, 2018, Potential of Illinois Basin coals for underground coal gasification [abs]: Geological Society of America Annual Meeting, Abstracts with Program, v. 50, no. 5, Indianapolis, IN.

Medina, C. R, **Rupp, J. A.**, Mastalerz, M., Lahann, R. and McLaughlin, P. I., 2018, Evaluating the Maquoketa Group (Ordovician) as a seal for the geological sequestration of CO₂: A

lithofacies and petrophysical case study in the Illinois Basin, Midwest, USA [abs]: Geological Society of America Annual Meeting, Abstracts with Program, v. 50, no. 5, Indianapolis, IN.

Andreasen, J., **Rupp, J. A.**, Medina, C. R., and Ellett, K., 2018, Reassessment of the 10,000 mg/l salinity boundary within potential reservoir targets for carbon sequestration in the Illinois basin [abs]: Geological Society of America Annual Meeting, Abstracts with Program, v. 50, no. 5, Indianapolis, IN.

Delucia, M. S., Marshak, S., Guenther, W. R., Murphy, B. S., Egbert, G., Pavlis, G., Gilbert, H., Hamburger, M. W., Chen, C., Yang, X., and **Rupp, J. A.**, 2018, Multidisciplinary approach to characterize tectonic history of the Midcontinent USA cratonic platform: The Ozark Plateau - Illinois basin boundary [abs]: Geological Society of America Annual Meeting, Abstracts with Program, v. 50, no. 5, Indianapolis, IN.

Harris, D. C., Ellett, K., McLaughlin, P. I., **Rupp, J. A.**, and Leetaru, H. E., 2018, Addressing the challenge of Knox interval rocks in the Illinois basin [abs]: Geological Society of America Annual Meeting, Abstracts with Program, v. 50, no. 5, Indianapolis, IN.

Medina, C. R., **Rupp, J. A.**, Ellett, K. M., McLaughlin, P., Greb, S. F., Harrison III, W., Barnes, D., Waid, C., and Dunst, B., 2018, Storage Resource Estimates and Seal Evaluation of Cambrian-Ordovician Units in the MRCSP Region: Eastern Section Meeting of the American Association of Petroleum Geologists, Pittsburgh, PA.

Carlson, G., Johnson, K., Chuang, R., and **Rupp, J.**, 2018, Spatially varying stress state in the central U.S. from Bayesian inversion of focal mechanism and in situ maximum horizontal stress orientation data: *Journal of Geophysical Research: Solid Earth*, 123, p. 3871–3890. doi.org/10.1002/2017JB015158

Gilbert, H., Boshelli, J., Pavlis, G., Hamburger, M., Marshak, S., Chen, C., Yang, X., DeLucia, M., Larson, T., and **Rupp, J.**, 2017, Crustal layering in the Midcontinent of North America- Implications for the formation of the Illinois Basin [abs]: Annual Fall Meeting, American Geophysical Union, New Orleans, LA.

Marshak, S., Pavlis, G., Hamburger, M., Gilbert, H., Yang, X., Chen, C., DeLucia, M., Larson, T., and **Rupp, J.**, 2017, Insights into Midcontinent (USA) Tectonics and Seismicity from the OIINK EarthScope FlexArray Experiment [abs]: Geological Society of America Annual Meeting, Abstracts with Program, v. 49, no. 3. Seattle, WA.

Medina, C. R., Mastalerz, M., and **Rupp, J. A.**, 2017, Petrofacies and residual saturation in a Cambrian-Ordovician carbonate reservoir for geological sequestration using mercury porosimetry [abs]: Geological Society of America Annual Meeting, Abstracts with Program, v. 49, no. 3. Seattle, WA.

Yang, X., G. L. Pavlis, G. L., Hamburger, M. W., Marshak, S., Gilbert, H., **Rupp, J. A.**, Larson, T. H., Chen, C., and Carpenter, N. S., 2017, Detailed crustal thickness variations beneath the Illinois Basin area: Implications for crustal evolution of the midcontinent, *J. Geophysical Research, Solid Earth*, volume 122, p. 1-23, doi:10.1002/2017JB01415

Lahann, R. L., **Rupp, J. A.**, Medina, C. R., Carlson, G., and Johnson, K. M., 2017, State of Stress in the Illinois Basin and Constraints on Inducing Failure: Environmental Geosciences, Volume 24, No 3, p. 123-150.

Medina, C. R., Mastalerz, M., and **Rupp, J. A.**, 2017, Characterization of porosity and pore-size distribution using multiple analytical tools: implications for carbonate reservoir characterization in geologic storage of CO₂: Environmental Geosciences, Volume 24, Number 1, p. 51-72.

Barnes, D. A., Ellett, K. M., and **Rupp, J. A.**, 2017, Geologic Carbon Sequestration Potential of the Ordovician St. Peter Sandstone, Michigan and Illinois Basins, USA: Environmental Geosciences, Volume 24, Number 1, p. 15-49.

Q Zhang, Q., Ellett, K. M., **Rupp, J. A.**, Mastalerz, M., and Karacan, C. Ö., 2017, Regional-to Reservoir-scale Evaluation of CO₂ Storage Resource Estimates of Coal Seams: Energy Procedia, Volume 114, p. 5346-5355.

Ellett, K. M., Middleton, R. S., Stauffer, P. H., and **Rupp, J. A.**, 2017, Facilitating CCS business planning by extending the functionality of the SimCCS integrated system model: Energy Procedia, Volume 114, p. 6526-6535.

Alcorn, J., **Rupp, J. A.**, and Graham, J. D., 2017, Attitudes toward “Fracking”: perceived and actual geographic proximity: Review of Policy Research, Volume 34, Issue 4, p. 504–536.

Rupp, J. A., Dufficy, A., and Hamburger, M. W., 2016, Preliminary investigation of Class II injection well data and the potential for induced seismicity in Indiana: Indiana Geological Survey, Report of Progress 48, 32 p.

Lahann, R. L., **Rupp, J. A.**, Lahann, R. L., and Medina, C. R., 2016, State of Stress in the Illinois Basin and Constraints on Inducing Failure: Eastern Section Meeting of the American Association of Petroleum Geologists, Lexington, KY.

Medina, C. R., **Rupp, J. A.**, Ellett, K. M., Barnes, D. A., Rine, M. J., Erenpreiss, M. S., and Greb, S. F., 2016, Hierarchical Evaluation of Geologic Carbon Storage Resource Estimates: Cambrian-Ordovician Units within the MRCSP Region: Eastern Section Meeting of the American Association of Petroleum Geologists, Lexington, KY.

Medina, C. R., Mastalerz, M., and **Rupp, J. A.**, 2016, Insights on Porosity and Pore Size Distribution Using Multiple Analytical Tools: Implications for Reservoir Characterization in Geologic Storage of CO₂: Eastern Section Meeting of the American Association of Petroleum Geologists, Lexington, KY.

Bahadur, J., Medina, C. R., He, L., Melnichenko, Y. B.†, **Rupp, J. A.**, Blach, T. P., and Mildner D. F. R., 2016, Determination of closed porosity by ultra small-angle and small-angle neutron scattering: a new approach: Journal of Applied Crystallography, 49, Part 6. pp.

Qian Zhang, Q., Ellett, K., **Rupp, J.**, Mastalerz, M., and Korose, C., 2016, Regional- to reservoir-scale evaluation of CO₂ storage resource estimates of coal seams [abs.]: 13th International Conference on Greenhouse Gas Control Technologies, Lusanne, CH.

Ellett, K. M., Middleton, R. S., Stauffer, P. H., and **Rupp, J. A.**, 2016, Facilitating CCS business planning by extending the functionality of the SimCCS integrated system model [abs.]: 13th International Conference on Greenhouse Gas Control Technologies, Lusanne, CH.

Paydar, N. H., Clark, A., **Rupp, J. A.**, and Graham, J. D., 2017, Fee disbursements and the local acceptance of unconventional gas development: Insights from Pennsylvania: Energy Research & Social Science, Volume 20, p. 31-44.

Paydar, N., Schenk, O., Bowers, A., Carley, S., **Rupp, J.**, and Graham, J. D., 2016, The Effect of Community Reinvestment Funds on Local Acceptance of Unconventional Gas Development: Economics of Energy & Environmental Policy, Volume 5, Number 1, pp. 131-156.

Zirogiannis, N., Alcorn, J., **Rupp, J.**, Carley, S., and Graham, J. 2016. State regulation of unconventional gas development in the U.S.: An empirical evaluation: Energy Research and Social Science, Volume 11, pp. 142-154.

Zirogiannis, N., Alcorn, J., Piepenburg, J., and **Rupp, J.**, 2015, I Want In on That: Community-level Policies for Unconventional Gas Development in New York: Agricultural and Resource Economics Review, 2015, Volume. 44, Issue 2, pp. 164-194.

Alcorn, J., Schenk, O., Graham, J., **Rupp, J.**, Carley, S., Lee, M., Zhang, Y., and Clark, A., 2015, Developing and Testing a Framework for Understanding Public Support of "Fracking" [abs.]: American Association for Public Opinion Research Annual Conference.

Clark-Sutton, K. Siddiki, S., Carley, S., Wanner, C., **Rupp, J. A.**, Graham, J. D., 2016, Plug-in electric vehicle readiness: Rating cities in the United States: The Electricity Journal, Volume 29, Issue 1, pp. 30-40.

Esposito, D., **Rupp, J.**, and Carley, S. 2015. Interaction of risks associated with natural gas and renewable based electricity. The Electricity Journal, Volume 28, Issue 8, pp. 69-84.

Graham, J. D., **Rupp, J. A.**, and Schenk, O., 2015, Unconventional Gas Development in the USA: Exploring the Risk Perception Issues: Risk Analysis, Volume 35, Issue 10, pp. 1770-1788.

Mastalerz, M., Nuttall, B. C., Crockett, J., Drobniak, A., and **Rupp, J. A.**, 2015, Evaluation of Geological Characteristics of the New Albany Shale as a Potential Liquids-from-shale Play in the Illinois Basin [abs]: American Association of Petroleum Geologists, Annual Convention & Exhibition, Denver, CO.

Ellett, K. M., **Rupp, J. A.**, Medina, C. R., Barnes, D. A., Stauffer, P. H., Middleton, R. S., Harris, D. C., Bing, B., Wei, N., Li, J., and Li, X., 2015, A Hierarchical Approach for Evaluating Carbon Storage Resource Estimates in Deep Saline Formations [abs]: American Association of Petroleum Geologist/Society of Exploration Geophysicists International Conference and Exhibition, Melbourne, AU.

Middleton, R. S., Stauffer, P. H., Ellett, K. M., **Rupp, J. A.**, Bing, B., Wei, N., Li, J., and Li., 2015, Understanding Regional-Scale Carbon Capture, Utilization and Storage in the Ordos Basin, China [abs]: American Association of Petroleum Geologist/Society of Exploration Geophysicists International Conference and Exhibition, Melbourne, AU.

Middleton, R. S., Ellett, K. M., Stauffer, P. H., and **Rupp, J. A.**, 2015, Making Carbon Capture, Utilization and Storage a Reality: Integrating Science and Engineering into a Business Plan Framework [abs]: American Association of Petroleum Geologist/Society of Exploration Geophysicists International Conference and Exhibition, Melbourne, AU.

Middleton, R. S., Dai, Z., Ellett, K. M., **Rupp, J. A.**, Langenfeld, J., Bielicki, J., Viswanathan, H., and Stauffer, P. H., 2015, Putting the U in Utilization: Developing a Business Model Framework for CCUS [abs]: 14th Annual Conference on Carbon Capture Utilization & Sequestration, Pittsburgh, PA.

Dumortier, J., Siddiki, S., Carley, S., Cisney, J., Krause, R. M., Lane, B. W., **Rupp, J. A.**, and Graham, J. D., 2015, Effects of providing total cost of ownership information on consumers' intent to purchase a hybrid or plug-in electric vehicle: Transportation Research Part A: Policy and Practice, Volume 72, p. 71–86.

Dumortier, J., Siddiki, S., Carley, S., Cisney, J., Krause, R. M., Lane, B. W., **Rupp, J. A.**, and Graham, J. D., 2014, Effects of life cycle cost information on the purchase decision of hybrid and plug-in vehicles: The Energy Journal, International Association for Energy Economics.

Graham, J. D., **Rupp, J. A.**, and Schenk, O., 2014, Unconventional Gas Development in the USA: Exploring the Risk Perception Issues [abs.]: Risk, Perception, and Response Conference, Harvard University Center for Risk Analysis, Boston, MA.

Schenk, O., Lee, M. H. W., Paydar, N. H., **Rupp J. A.**, and Graham, J. D., 2014 Unconventional Gas Development in the U.S. States: Exploring the Variation: European Journal of Risk Regulation, Volume 4, pp. 436-458.

Graham, J. D., **Rupp, J.**, Cisney, J., and Carley, S., 2014, No Time for Pessimism about Electric Cars: Issues in Science and Technology, Volume 31, Number 1, pp. 33-40.

Graham, J. D., Mitchell, A., and **Rupp, J. A.**, 2014, Risk governance guidelines for unconventional gas development. Lausanne, Switzerland: International Risk and Governance Council, 2013; 95 p.

Warren, D. C., Carley, S. R., Krause, R. M., **Rupp, J. A.**, and Graham, J. D., 2014, Predictors of attitudes toward carbon capture and storage using data on world views and CCS-specific attitudes: Science and Public Policy, Volume 41, Issue 6, pp. 821-834.

Yang, X., Pavlis, G. L., Hamburger, M. W., Sherrill, E., Gilbert, H., Marshak, S., **Rupp, J.**, Larson, T., 2014, Seismicity of the Ste. Genevieve Seismic Zone based on Observations from the EarthScope OIINK Flexible Array: Seismological Research Letters, Volume 85, pp. 1285-1294.

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Sponsored Research Awards

BATTELLE MEMORIAL INSTITUTE					
99193	202208^M14	Evaluation of the Carbon Sequestration Potential of the Cambro-Ordovician Sequence in the Midwest Regional Carbon Sequestration Partnership (MRCSP).	05/1/2013 - 04/30/2017	\$720,000.00	4143303, 4143410
96955	202208^10	Petrological and Petrophysical Characterization of the Mount Simon Sandstone and Eau Claire Formation in Support of Phase III Sequestration Evaluation	02/23/2009 - 6/30/2016	\$75,000.00	4143410
103238	228858^M1	Simulation Framework for Regional Geologic CO2 Storage Infrastructure along Arches Province of Midwest United States	12/01/2009 - 09/30/2011	\$53,622.00	4143412
107228	228858^M3	Simulation Framework for Regional Geologic CO2 Storage Infrastructure along Arches Province of Midwest United States	10/01/2011 - 09/30/2012	\$45,854.00	4143412
95588	228858^M2	Simulation Framework for Regional Geologic CO2 Storage Infrastructure along Arches Province of Midwest United States	12/01/2009 - 09/30/2011	\$73,205.00	4143412
93513	202208^03	An assessment of Geological Carbon Sequestration Options in the Midwest: Phase II	11/14/2005 - 09/30/2009	\$109,747.00	4143404
93398	202208^07	An assessment of Geological Carbon Sequestration Options in the Midwest: Phase II	12/01/2008 - 04/30/2010	\$10,000.00	4143404
93276	202208^5	Petrological and Petrophysical Characterization of the Mount Simon Sandstone and Eau Claire Formation in Support of Phase III Sequestration	02/23/2009 - 04/30/2010	\$50,000.00	4143410

		Evaluation			
88894	202208	An assessment of Geological Carbon Sequestration Options in the Midwest: Phase II	11/14/2005 - 09/30/2009	\$75,000.00	4143404
83574	202208	An assessment of Geological Carbon Sequestration Options in the Midwest: Phase II	11/14/2005 - 09/30/2009	\$90,000.00	4143404
80326		Midwest Regional Carbon Sequestration Partnership Preliminary Assessment of Potential c92 Storage Reservoirs and Cap Rocks Cincinnati Arch Site	03/01/2006 - 05/31/2006	\$10,000.00	4143404
77396	202208	An assessment of Geological Carbon Sequestration Options in the Midwest: Phase II	11/14/2005 - 09/30/2009	\$30,000.00	4143404
69488	184049	Midwest Regional Carbon Partnership	01/16/2004 - 09/30/2005	\$50,000.00	4042955
CTR FOR COAL TECH RES					
95721	A302-10-CTR-001^1	SITE EVALUATION OF SUBSIDENCE RISK, HYDROLOGY, AND CHARACTERIZATION OF INDIANA COALS FOR UNDERGROUND COAL GASIFICATION (UCG)	07/01/2009 - 12/31/2010	\$89,007.00	4743498
HERITAGE UNDERGROUND GAS					
100380		GEOLOGICAL EVALUATION OF AREAS FOR UNDERGROUND COAL GASIFICATION (UCG) IN INDIANA	06/01/2010 - 08/31/2011	\$120,430.00	4543404
ICI AMERICAS INC					
44856		Geological Assessment of Fracture and Karst Features on Indiana Army Ammunition Plant, Charlestown, Indiana	04/01/1995 - 03/31/1996	\$21,499.00	4342960
ILL STATE GEOL SURV					
46662		Development of Digital Petroleum Well Location	04/11/1996 -	\$6,500.00	4042920

		Maps for a Virtual Regional Resource Center at the Indiana Geological Survey on the WWW (World Wide Web)	12/31/1997		
IND DEPT COMMERCE					
54213		Indiana Energy Report	09/01/1998 - 03/31/2000	\$8,500.00	4742985
42183		Evaluating the Potential for High-Quality Coal Deposits in Southwestern Indiana	10/27/1994 - 12/31/1996	\$100,000.00	4742946
IND DEPT NAT RESOURCE					
57375	3480-131100	Indiana Coal Mine Information System Project	10/06/1999 - 10/05/2001	\$251,044.00	4742990
51672	E23-8-A018	Coal Mine Information System - Phase IV Continuation	10/06/1997 - 10/05/1999	\$291,871.00	4742974
45957		Coal Mine Information System - Phase VI	10/01/1995 - 10/05/1997	\$242,670.00	4742958
40341		Coal Mine Information System--Phase V	01/01/1993 - 12/31/1995	\$8,000.00	4742928
37791		Coal Mine Information System-Phase V	01/01/1993 - 12/31/1995	\$157,037.00	4742928
INDIANA GASIFICATION LLC					
85146		Proposal to Assess Feasibility of CO2 Sequestration Potential in the Area of Indiana Gasification's Facility, Sullivan County, Indiana	03/01/2007 - 05/30/2007	\$20,880.00	4543402
NEW MEXICO TECH					
103651	DDSQ10^A2	Characterization of the Eau Claire Formation and Compilation of Borehole and Fault Information for the Illinois Basin in Support of: Assessment of Hydrologic	10/01/2009 - 09/30/2012	\$48,053.00	4042997

		Consequences of CO2 Sequestration within the Illinois Basin			
95617	DDSQ10	Characterization of the Eau Claire Formation and Compilation of Borehole and Fault Information for the Illinois Basin in Support of: Assessment of Hydrologic Consequences of CO2 Sequestration within the Illinois Basin	10/01/2009 - 09/30/2010	\$54,754.00	4042997
PETROLEUM TECH TRSF COUNCIL					
54420		Development and Maintenance of a PTTC Internet Homepage at the Indiana Geological Survey and Host a Workshop on Unconventional Gas Resources	04/11/1996 - 07/01/1999	\$12,500.00	4042920, 4042929
51766		Development and Maintenance of a PTTC Internet Homepage at the Indiana Geological Survey and Host a Workshop on Unconventional Gas Resources	04/11/1996 - 09/30/1998	\$12,500.00	4042920, 4042929
49832		Development of Digital Petroleum Well Location Maps for A Virtual Regional Resource Center at the Indiana Geological Survey on the WWW (World Wide Web)	04/11/1996 - 12/31/1997	\$7,456.00	4042920
PURDUE UNIVERSITY					
82496	651-1219-01	Factors that Affect the Design and Implementation of Clean Coal Technologies in Indiana: Feasibility studies.	07/01/2006 - 03/31/2007	\$20,000.00	4042976
UNIV ILLINOIS URBANA					
	086735-16431	CarbonSAFE Pre-Feasibility_ - Illinois Eastern Basin Project	3/1/2017 - 9/30/2018	\$100,000.00	
	086735-16430	CarbonSAFE Feasibility_ -	4/1/2017	\$100,000.00	

		Illinois Central Basin Project	- 3/31/2019		
101475	2005-05060-27^A03	Petrological and Petrophysical Characterization of the Mount Simon Sandstone and Eau Claire Formation: MGSC Phase III Sequestration Evaluation; Decatur, Illinois	12/18/2007 - 12/17/17	\$412,220.00	4043400
108234	2010-00636-05^A02	Evaluation of the Carbon Sequestration Potential of the Cambro-Ordovician Strata of the Illinois and Michigan Basins	12/08/2009 - 12/07/2013	\$118,830.00	4042999
103622	2010-00636-05^A01	Evaluation of the Carbon Sequestration Potential of the Cambro-Ordovician Strata of the Illinois and Michigan Basins	12/08/2009 - 12/07/2011	\$129,181.00	4042999
101475	2005-05060-27^A03	Petrological and Petrophysical Characterization of the Mount Simon Sandstone and Eau Claire Formation: MGSC Phase III Sequestration Evaluation; Decatur, Illinois	12/18/2007 - 04/30/2014	\$144,889.00	4042987, 4043400
97530	2005-05060-02^A05	An Assessment of Geological Carbon Sequestration Options in the Illinois Basin: Phase II	10/01/2005 - 09/30/2011	\$121,560.00	4042964
96830	2010-00636-05	Evaluation of the Carbon Sequestration Potential of the Cambro-Ordovician Strata of the Illinois and Michigan Basins	12/08/2009 - 12/07/2010	\$113,021.00	4042999
94831	2205-05060-27^A2	Petrological and Petrophysical Characterization of the Mount Simon Sandstone and Eau Claire Formation in Support of Phase III Sequestration Evaluation; Decatur, Illinois Site	12/18/2007 - 02/28/2010	\$151,243.00	4042987
91166	2005-05060-27	Petrological and Petrophysical Characterization of the Mount	12/18/2007 - 12/17/2009	\$148,067.00	4042987

		Simon Sandstone and Eau Claire Formation in Support of Phase III Sequestration Evaluation; Decatur, Illinois Site			
89012	2005-05060-02^A03	An Assessment of Geological Carbon Sequestration Options in the Illinois Basin: Phase II	10/01/2005 - 09/30/2009	\$119,196.00	4042964
88213	2005-05060-02^A02	An Assessment of Geological Carbon Sequestration Options in the Illinois Basin: Phase II	10/01/2005 - 09/30/2007	\$70,212.00	4042964
85060	2005-05060-02^A01	An Assessment of Geological Carbon Sequestration Options in the Illinois Basin: Phase II	10/01/2005 - 09/30/2007	\$70,000.00	4042964
77319	A5507	An Assessment of Geological Carbon Sequestration Options in the Illinois Basin: Phase II	10/01/2005 - 09/30/2007	\$100,000.00	4042964
69489	04-233	An Assessment of Geological Carbon Sequestration Options in the Illinois Basin	10/01/2003 - 09/30/2004	\$99,965.00	4042953
UNIV KY RESEARCH FDN					
69306	4-67408-04-193^A1	Resource Assessment and Production Testing for Coalbed Methane Development in the Illinois Basin	10/01/2003 - 04/30/2005	\$166,437.00	4042954
UNIV OF ILLINOIS					
76028	2003-03689-6^A1	An Assessment of Geological Carbon Sequestration Options in the Illinois Basin	10/01/2003 - 09/30/2005	\$100,530.00	4042953
UNIV OF KANSAS					
78381	FED24167^M10	Midcontinent Interactive Digital Carbon Atlas & Relational Database (MIDCARB)	01/01/2004 - 06/30/2005	\$20,230.00	4042939
77670	FED24167^M9	Midcontinent Interactive digital Carbon Atlas & Relationship Database (MIDCARB)	01/01/2004 - 06/30/2005	\$27,000.00	4042939
73761	FED24167^M8	Midcontinent Interactive Digital Carbon Atlas & Relational Database	01/01/2004 - 06/30/2005	\$41,000.00	4042939

		(MIDCARB)			
72400	FED24167^M6	Midcontinental Interactive Digital Carbon Atlas & Relational Database (MIDCARB)	12/31/2002 - 12/31/2003	\$46,929.00	4042939
71143	FED24167^M5	Midcontinental Interactive Digital Carbon Atlas & Relational Database (MIDCARB)	12/31/2002 - 12/31/2003	\$67,591.00	4042939
70843	FED24167^M7	Midcontinent Interactive Digital Carbon Atlas & Relational Database (MIDCARB)	01/01/2004 - 06/30/2005	\$11,700.00	4042939
68769	FED24167^M4	Midcontinent Interactive Digital Carbon Atlas & Relational Database (MIDCARB)	09/28/2000 - 12/31/2003	\$39,095.00	4042939
66232	FED24167 MOD 3	Midcontinent Interactive Digital Carbon Atlas and Relational Database (MIDCARB)	09/28/2000 - 12/31/2002	\$112,327.00	4042939
64916	FED24167 MOD 2	Midcontinent interactive Digital Carbon Atlas and Relational Database (MIDCARB)	09/28/2000 - 12/31/2002	\$37,443.00	4042939
63879	FED24167 Mod 1	Midcontinent Interactive Digital Carbon Atlas and Relational Database (MIDCARB)	09/28/2000 - 09/27/2001	\$40,173.00	4042939
58947	FED24167	Midcontinent Interactive Digital Carbon Atlas & Relational Database (MIDCARB)	09/28/2000 - 09/27/2003	\$99,285.00	4042939
US ARMY					
40385	DACA39-94-K-0005	Integration of Earth Resource Information for Crane NSWC into a GIS	12/15/1993 - 12/31/1994	\$50,000.00	4342947
US DEPT OF DEFENSE					
36777	N62472-92LT0001	Subsurface sedimentological/stratigraphic study of Pennsylvanian aquifer bodies of NWSC,	05/21/1992 - 09/30/1992	\$65,229.00	4342933

		Crane			
US DEPT OF ENERGY					
55649	DE-FC01-99EI35489	Indiana Coal Reserves	02/05/1999 - 01/05/2001	\$35,000.00	4342804
US DEPT OF INTERIOR					
43156	1434-95-A-01320	Data Verification, Editing, and Collection for the National Coal Resource Data System and Utilizing the Data Base to Calculate Coal Resources of Indiana	01/01/1995 - 12/31/1995	\$15,000.00	4342954
41168	1434-94-A-1265	The Availability of Coal Resources in Indiana: Center Point and Santa Claus 7.5-Minute Quadrangles	02/01/1994 - 01/31/1995	\$100,000.00	4342949
38317	1434-93-A-1138	Availablility of coal resources in Indiana	02/01/1993 - 01/31/1994	\$50,000.00	4342939
37565	1434-93-A-1102	National Coal Resources Data System	01/01/1993 - 12/31/1993	\$15,000.00	4342938
35715	US INTER 1434-92-A-1068	Geologic Mapping of French Lick, Rusk, Shoals, Loogootee, Odon, and Scotland 7.5 minute Quadrangles	07/01/1992 - 06/30/1993	\$20,000.00	4342936
US GEOLOGICAL SURVEY					
63056	01ERAG0040	Using GIS to Evaluate the Coalbed Gas Potential of the Seelyville Coal in Indiana	08/15/2001 - 09/30/2002	\$25,000.00	4342827
59807	00HQAG0190	Availability of the Seelyville Coal and Two Unnamed Coals of the Staunton Formation for Mining in Indiana	08/15/2000 - 08/14/2001	\$50,000.00	4342817
59227	99-HQ-AG-0008 MoD #0003	Data Verification, Editing and Collection for the National Coal Resource Data System and the National Coal Assessment Program	01/01/2001 - 12/31/2001	\$15,000.00	4342803
58619	99-HQ-AG-0008	Data Verification, Editing,	01/01/1999	\$15,000.00	4342803

	Mod #2	and Collection for the National Coal Resource Data System and the National Coal Assessment Program	- 12/31/2001		
58582	99-HQ-AG-0008 Mod #2	Data Verification, Editing, and Collection for the National Coal Resources Data System and the National Coal Assessment Program	01/01/1999 - 12/31/2001	\$7,000.00	4342803
56733	99HQAG0008 Mod 1	Data Verification, Editing, and Collection for the National Coal Resource Data System and the National Coal Assessment Program	01/01/1999 - 12/31/1999	\$10,000.00	4342803
56562	99HQAG0083	Availability of Danville Coal Resources for Mining in the Indiana Portion of the Illinois Basin	07/01/1999 - 06/30/2000	\$50,000.00	4342810
55108	99HQAG0008	Data collection, verification, and encoding for the National Coal Resources Data System	01/01/1999 - 12/31/1999	\$30,000.00	4342803
54187	1434-HQ-97-AG-01706	National Coal Resources Data System (NCRDS)	11/01/1998 - 12/31/1998	\$15,000.00	4342801, 4342981, 4342990
53771	1434-HQ-97-AG-01706	Data Verification, Editing, and Collection for the National Coal Resource Data System and the National Coal Assessment Program	01/01/1997 - 12/31/1998	\$20,000.00	4342990
52804	1434-HQ-97-AG-01706 Mod #1	1998 National Coal Resources Data System (NCRDS)	01/01/1997 - 12/31/1998	\$15,000.00	4342981
52363	98HQAG2020	Method to Delineate Available Coal Resources in the Indiana Portion of the Illinois Basin	05/08/1998 - 06/30/1999	\$60,000.00	4342992
49543	1434-HQ-97-AG-01743	The Availability of Coal Resources in Indiana: Princeton and Switz City 7.5-Minute Quadrangles	02/01/1997 - 05/07/1998	\$100,000.00	4342982
48940	1434-HQ-97-AG-01706	Data Verification, Editing & Collection for the National Coal Resource Data System and the National Coal	01/01/1997 - 12/31/1997	\$27,000.00	4342981

		Assessment Project			
47325	1434-96-A-01434	Data Entry and Verification for National Coal Resource Assessment Program	01/01/1996 - 12/31/1996	\$10,000.00	4342972
46058	1434-HQ-96-AG-01458	The Availability of Coal Resources in Indiana: Seelyville & Wheatland 7.5-Minute Quadrangles	02/01/1996 - 01/31/1997	\$100,000.00	4342973
45867	1434-96-A-01434	Data Verification, Editing, and Collection for the National Coal Resource Data System and Utilizing the Data Base to Calculate Coal Resources of Indiana	01/01/1996 - 12/31/1996	\$15,000.00	4342972
43651		The Availability of Coal Resources in Indiana: Dugger and Oakland City 7.5-Minute Quadrangles	02/01/1995 - 01/31/1996	\$100,000.00	4342955
40376		National Coal Resources Data System	01/01/1994 - 12/31/1994	\$15,000.00	4342948
US NAVY					
43652	N6246795MD00209	Characterization of Physical Hydrogeology of the Pennsylvanian Mansfield Formation at Rockeye and other Solid Waste Management Units at NSWC, Crane	11/01/1994 - 09/30/1995	\$81,974.00	4342959
43167	N624795MD00209	Geographic Information System Management of Earth Resource Data, NSWC, Crane Division	11/01/1994 - 09/30/1995	\$59,757.00	4342958
39368	N62467-94-LT-00501	Subsurface sedimentological/stratigraphic study of Pennsylvanian aquifer bodies at NWSC, Crane	01/21/1994 - 09/30/1994	\$61,000.00	4342950
VASTAR RESOURCES INC					
43454		Seismic and Potential Field Studies: Indiana, Illinois, Kentucky	12/12/1994 - 09/30/1995	\$9,350.00	4542963

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106350	10-733-IU^A3	US China Clean Energy Research Center Advanced Coal Technology	10/01/2010 - 09/30/2015	\$475,000.00	4043300
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