

Kenneth B. Medlock III, PhD

Rice University, Baker Institute for Public Policy – MS 40, P.O. Box 1892, Houston, TX 77251-1892

Office: 713-348-3757 Mobile: 713-443-5259 E-mail: medlock@rice.edu

Current Positions

James A Baker III and Susan G Baker Fellow in Energy and Resource Economics, and Senior Director, Center for Energy Studies, Baker Institute for Public Policy, Rice University

Director, Masters of Energy Economics, and Adjunct Professor and Lecturer, Department of Economics, Rice University

Adjunct Professor, Department of Civil and Environmental Engineering, Rice University

Fields and Areas of Research

Fields: Energy and environmental economics and policy, resource economics, energy and economic growth, applied microeconomics, applied econometrics, productivity analysis

Areas of Research: Natural gas markets, electricity markets, energy commodity price relationships, transportation, national oil company behavior, economic development and energy demand, energy use and the environment, engineered and nature-based carbon capture, hydrogen, economics of technology adoption

Highest Education

Ph.D. – Economics, Rice University, May 2000

Thesis: “Essays on Economic Development, Energy Consumption, and the Environment”

Awards, Memberships and Affiliations

Lifetime Achievement Award for the Advancement of the Education of Future Energy Leaders, Abdullah Bin Hamad Al-Attiyah Foundation, 2019

Advisory Board, Payne Institute, Colorado School of Mines, 2018-

Distinguished Fellow, Institute Energy Economics Japan (IEEJ), 2016-

Board of Scholars, Center for Policy Research, American Council for Capital Formation, 2015-

Adelman-Frankel Award to Rice University's Baker Institute Center for Energy Studies, United States Association for Energy Economics (USAEE), 2013

Senior Fellow, USAEE, 2012

Vice President, Conferences, USAEE, 2014-2015

Vice President, Academic Affairs, USAEE, 2012-2013

Haydn Williams Fellow, Curtin University, Perth, Australia, 2012-2013

Outstanding Paper in *The Energy Journal* in 2001, joint with Ron Soligo, International Association for Energy Economics (IAEE)

Council Member, IAEE, 2011, 2019

Member, American Association for the Advancement of Science (AAAS)

Member, American Economic Association (AEA)

Member, International Association for Energy Economics (IAEE)

Member, National Association of Business Economists (NABE)

Academic Member, National Petroleum Council (NPC)

Sponsored Research/Grants

- Baker Botts for “Annual Energy Conference and Leadership Engagement” (2021-2025): \$1,000,000
- Lyda Hill Philanthropies, Challenge Grant for “Texas Carbon Market” (2021): \$500,000
- Lyda Hill Philanthropies, Lone Star Prize Finalist for “Texas Carbon Market” (2021): \$40,000
- Energy Futures Initiative for workshops and reports on “The Future of Natural Gas as Energy Transitions” with focus on Sub-Saharan Africa and North America (2020-2021): \$30,000
- Cynthia and George Mitchell Foundation for “Expanding Carbon Capture in Texas” (2019-2021): \$101,605
- Oil and Gas Climate Initiative for “Expanding Carbon Capture in Texas” (2020-2021): \$30,000
- Shell Corporation for “Energy Transitions” (2019-2023): \$2,500,000
- Korea Energy Economics Institute for “Mercantilism’s Groundhog Day: The US-China Trade War and Regional Energy Market Implications” (2019): \$20,000
- Tellurian for “The Evolution of Global Gas Markets” (2018-2019): \$175,000
- Baker Botts for “Annual Energy Conference and Leadership Engagement” (2017-2021): \$1,000,000
- Qatar Leadership Center for “Energy Leadership Roundtable Series” (2016): \$252,896
- U.S. Department of Energy, National Energy Technology Laboratory for “The Macroeconomic Impact of U.S. LNG Exports” (2015): \$186,752
- Subcontract Award from the University of Texas for the Alfred P. Sloan Foundation Grant on “Shale Oil” (2014-2016): \$100,000
- Alfred P. Sloan Foundation Grant on the “The Market Impacts of New Shale Gas-Directed Policies in the United States” (2013-2014): \$275,000
- Subcontract Award from the University of Texas for the Alfred P. Sloan Foundation Grant on the “The Role of Shale Gas in the U.S. Energy Transition: Recoverable Resources, Production Rates, and Implications” (2011-2013): \$100,000
- Qatar Petroleum Award for “International Natural Gas and Policy” (2011-2013): \$725,000
- U.S. Department of Energy, Office of International Policy and Affairs Award for “Shale Gas and US National Security” (2011): \$100,000

Publications

Peer-reviewed

- “COVID-19 and the Value of Safe Transport” with Ted Temzelides and Shih Yu Hung, *in review* (2021).
- “Shale Renders the ‘Obsolescing Bargain’ Obsolete: Political Risk and Foreign Investment in Argentina’s Vaca Muerta” with Gabe Collins, Mark Jones, Jim Krane and Francisco Monaldi, *in review* (2021)
- “Price elasticity of demand for fuels by income level in Mexican households” with Araceli Ortega Diaz, *Energy Policy*, Vol 151 (Apr 2021).
- “A Cost-benefit Analysis of the Jones Act: Petroleum Product Tankers” with Igor Hernandez, Anna Mikulska and Ted Temzelides, *Journal of Transport Economics and Policy*, Vol 55, Issue 1 (Jan 2021), p. 65-84.
- “Water cost savings from soil biochar amendment: A spatial analysis” with Jennifer Kroeger, Ghasideh Pourhashem and Caroline Masiello, *GCB Bioenergy*, Vol 13, Issue 1 (Jan 2021), p. 133-142.
- “Electricity Reform and Retail Pricing in Texas” with Peter Hartley and Olivera Jankovska, *Energy Economics*, Vol 80 (May 2019), p. 1-11.
- “Policy support for biochar: Review and recommendations” with Ghasideh Pourhashem, Shih Yu Hung and Caroline A Masiello, *GCB Bioenergy*, Vol 11, Issue 2 (Feb 2019), p. 364-380.

- “Geopolitical Dimension of US Oil Security” with Jim Krane, *Energy Policy*, Vol. 114 (Mar 2018).
- “Valuing the air quality effects of biochar reductions in soil NO emissions,” with Ghasideh Pourhashem, Quazi Z. Rasool, Rui Zhang, Daniel S. Cohan, and Caroline A. Masiello, *Environmental Science and Technology*, 51, 17, 9856-9863 (Jul 2017).
- “Employment Impacts of Upstream Oil and Gas Investment in the United States” with Mark Agerton, Peter Hartley and Ted Temzelides, *Energy Economics*, Vol. 62 (Feb 2017).
- “Geospatial, temporal and economic analysis of alternative fuel infrastructure: The case of freight and U.S. natural gas markets,” with Yueyue Fan, Allen Lee, Nathan Parker, Amy Myers Jaffe, Rosa Dominguez-Faus, *Energy Journal*, Vol 38, No 6 (2017).
- “The Valley of Death for New Energy Technologies,” with Peter Hartley, *Energy Journal*, Vol 38, No 3 (2017).
- “A view to the future of natural gas and electricity: An integrated modeling approach,” with Wesley Cole and Aditya Jani. *Energy Economics*, Vol. 60 (Nov 2016).
- “Energy Sector Innovation and Growth: An Optimal Energy Crisis” with Peter Hartley, Ted Temzelides and Xinya Zhang, *Energy Journal*, Vol. 37, No. 1 (Jan 2016).
- “Employment impact from competing energy sources: Shale gas versus wind generation in Texas” with Peter Hartley, Ted Temzelides and Xinya Zhang, *Energy Economics*, Vol. 49 (May 2015).
- “A review of water and greenhouse gas impacts of unconventional natural gas development in the United States” with Douglas Arent, Jeffrey Logan, Jordan Macknick, William Boyd, Francis O’Sullivan, Jae Edmonds, Leon Clarke, Hillard Huntington, Garvin Heath, Patricia Statwick and Morgan Bazilian, *MRS Energy & Sustainability*, Vol. 2 (2015).
- “China’s Energy Hedging Strategy: Less Than Meets the Eye for Russian Gas Pipelines” with Amy M Jaffe and Meghan O’Sullivan, *The National Bureau of Asian Research* (Feb 9, 2015).
- “The Global Gas Market, LNG Exports, and the Shifting U.S. Geopolitical Presence” with Amy M. Jaffe and Meghan O’Sullivan, *Energy Strategies Reviews*, Vol. 5 (Dec 2014).
- “The Relationship between Crude Oil and Natural Gas Prices: The Role of the Exchange Rate” with Peter Hartley, *Energy Journal*, Vol. 35, No. 2 (2014).
- “Environmental, Economic, and Energy Assessment of the Ultimate Analysis and Moisture Content of Municipal Solid Waste in a Parallel Co-Combustion Process” with Ana McPhail, Robert Griffin, Mahmoud El-Halwagi, and Pedro J.J. Alvarez, *Energy and Fuels*, DOI 10.1021/ef401373n (Dec 27, 2013).
- “Shale Gas in China: Prospects, Concerns, and Potential International Collaborations” with Morgan Bazilian, Ascha Lychett Pedersen, Jacquelyn Pless, Jeffrey Logan, Francis O’Sullivan, and Jane Nakano, *International Shale Gas and Oil Journal*, Vol.1, Issue 1 (Sep 2013).
- “Changes in the Operational Efficiency of National Oil Companies,” with Peter Hartley, *Energy Journal*, Vol. 34, No. 2, (2013).
- “Modeling the implications of expanded US shale gas production,” *Energy Strategies Review*, No. 1, (Jan 2012).
- “Potential World-wide Effects of Shale Gas,” in *Energy Studies Institute Bulletin on Energy Trends and Development*, Vol. 4, Issue 2 (July 2011).
- “The Status of World Oil Reserves and Implications for the Gulf” with Ron Soligo and Amy Myers Jaffe, *The Emirates Occasional Papers* 78 (2011): 1.
- “Empirical Evidence of the Efficiency of National Oil Companies” with Stacy Eller and Peter Hartley, *Empirical Economics*, (May 2011)
- “Potential Futures for Russian Natural Gas” with Peter Hartley, *Energy Journal*, Special Issue, “World Natural Gas Markets and Trade: A Multi Modeling Perspective” (2009)

- “A Model of the Operation and Development of a National Oil Company” with Peter Hartley, *Energy Economics*, Vol.30, No.5 (Sep 2008)
- “The Relationship of Natural Gas to Oil Prices” with Peter Hartley and Jennifer Rosthal, *Energy Journal*, Vol. 29, No.3 (2008)
- “Future World Market for Natural Gas Highly Dependent on Interactions” with Peter Hartley, *Natural Gas and Electricity*, Wiley Periodicals, Vol. 22, No. 1 (August 2005)
- “Automobile Ownership and Economic Development – Forecasting Motor Vehicle Stocks to 2015” with Ron Soligo, *The Journal of Transport Economics and Policy*, (Spring 2002)
- “Controlling Carbon Dioxide: An Analysis of Competing Marginal Effects” with Peter Hartley, *IAEE Newsletter* (Fourth Quarter 2001)
- “Economic Development and End-Use Energy Demand” with Ron Soligo, *Energy Journal*, Vol. 22, No. 2 (2001)

Book Chapters

- “China, India, and Asian Energy” with Amy Jaffe, in *Energy and Security: Towards a New Foreign Policy Strategy* (2nd ed), edited by J.H. Kalicki and D.L. Goldwyn. Woodrow Wilson Press (2013).
- “The Future of LNG Trade” in *Handbook of Utility Management*, ed. Andreas Bausch and Burkhard Schwenker (2009)
- “Energy Demand Theory” in *International Handbook on the Economics of Energy*, ed. Joanne Evans and Lester C. Hunt (2009)
- “The Economics of Energy Supply” *International Handbook on the Economics of Energy*, ed. Joanne Evans and Lester C. Hunt (2009)
- “The Baker Institute World Gas Trade Model” with Peter Hartley, in *Natural Gas and Geopolitics: 1970-2040*, ed. David Victor, Amy Jaffe, and Mark Hayes, Cambridge University Press (2006)
- “Political and Economic Influences on the Future World Market for Natural Gas” with Peter Hartley, in *Natural Gas and Geopolitics: 1970-2040*, ed. David Victor, Amy Jaffe, and Mark Hayes, Cambridge University Press (2006)
- “Economic Issues of Natural Gas Transmission in Northeast Asia: Political Bridges and Economic Advantages” with Peter Hartley and Amy Jaffe, in *Joint U.S.-Korea Academic Studies*, Volume 16 (2006)
- “Energy Trade in China and Northeast Asia” with Amy Jaffe, in *Energy Security in the 21st Century: A New Foreign Policy Strategy*. Woodrow Wilson Center Press. (2005)
- “The Economics of Energy Demand” in *Encyclopedia of Energy*. Elsevier Press (April 2004)
- “Energy Trade in Asia: An Overview” with Amy Meyers Jaffe, in *Asian Energy Markets Dynamics and Trends*. The Emirates Center for Strategic Studies and Research. (2004)
- “The Present Status and Future Prospects of Energy in China” with Ron Soligo and Amy Meyers Jaffe, in *Asian Energy Markets Dynamics and Trends*. The Emirates Center for Strategic Studies and Research. (2004)

Other Articles

- “A U.S. Perspective: The Potential of Hydrogen Rests in its Diversity,” *Oxford Energy Forum*, Oxford Institute for Energy Studies, Issue 127 (May 2021), p. 52-55, online at <https://www.bakerinstitute.org/media/files/files/187ed5c4/forumjournal.pdf>.
- “Decarbonization by 2050: Looking Back to Look Ahead,” *IEEJ Energy Journal, Special Issue* (Dec 2020), *in press*.
- “Energy Transitions, COVID-19 and World of Uncertainty,” *Oxford Energy Forum*, Oxford Institute for Energy Studies, Issue 123 (July 2020), p. 63-66, online at https://www.bakerinstitute.org/media/files/files/df1ce7fb/oxford-inst-economic-studies_ukGyJvg.pdf.

- “Climate and Energy Discourse in the US: What is the Path Forward?” *IEEJ Energy Journal, Special Issue* (Dec 2019), *in press*.
- “Energy Transitions and the Shifting Sands of Geopolitics,” *IEEJ Energy Journal, Special Issue* (Dec 2018), online at https://enen.ieej.or.jp/en/publication/1812_enespecial_en.html.
- “Trade and Energy Under Trump,” *IEEJ Energy Journal, Special Issue* (Dec 2017), online at <https://www.bakerinstitute.org/research/trump-administration-trade-energy/>.
- “Well Productivity Analysis of the Bakken Shale Play” with Emilian Vankov, Svetlana Ikonnikova, Gurcan Gulen, *Unconventional Resources Technology Conference* (2017), DOI 10.15530/urtec-2017-2671321.
- “The Shale Revolution and Its Implications for the World Energy Market,” *IEEJ Energy Journal, The 50th Anniversary Special Issue* (June 2016).
- “US Shale: Ever Onwards,” *Petroleum Economist Outlook 2016*, *Petroleum Economist* (Dec 2015).
- “A Review of Sector and Regional Trends in U.S. Electricity Markets: Focus on Natural Gas,” with Jeffrey Logan and William C. Boyd, *Natural Gas and the Evolving U.S. Power Sector Monograph Series: Number 1 of 3*, Technical Report NREL/TP-6A50-64652 (Oct 2015), online at <http://www.nrel.gov/docs/fy16osti/64652.pdf>.
- “Deepwater activity will drive US offshore production,” *Offshore Magazine* (Jan 2014)
- “Barnett Study Develops Full-Field Reserves, Production Forecast – Part 2 of 2,” with John Browning, Scott Tinker, Svetlana Ikonnikova, Gurcan Gulen, Eric Potter, Qilong Fu, Susan Horvath, Tad Patzek, Frank Male, William Fisher, and Forrest Roberts, *Oil and Gas Journal* (Sep 2, 2013).
- “Barnett Study Develops Decline Analysis, Geologic Parameters for Reserves, Production Forecast – Part 1 of 2,” with John Browning, Scott Tinker, Svetlana Ikonnikova, Gurcan Gulen, Eric Potter, Qilong Fu, Susan Horvath, Tad Patzek, Frank Male, William Fisher, and Forrest Roberts, *Oil and Gas Journal* (Aug 5, 2013).
- “Impact of Shale Gas Development on Global Gas Markets,” in *Natural Gas and Electricity* (April 2011), online at <https://www.bakerinstitute.org/research/impact-of-shale-gas-development-on-global-gas-markets/>.
- “Recent Developments in the North American Natural Gas Market,” *Diamond Gas Report*, No. 904 (Feb 2009).
- “LNG Trading Evolves” in *Fundamentals of the World Gas Industry*, *Petroleum Economist* (Jun 2006).

Issue/Policy Briefs

- “Grids and Renewables” with Julie Cohn and Olivera Jankovska, part of a series of Baker Institute recommendations for the Biden administration (Feb 2021), online at <https://www.bakerinstitute.org/research/grids-renewables/>.
- “Prioritize Engineered and Natural Solutions for Effective GHG Mitigation” with Keily Miller, part of a series of Baker Institute recommendations for the Biden administration (Jan 2021), online at <https://www.bakerinstitute.org/research/prioritize-both-engineered-and-natural-solutions-effective-ghg-mitigation/>.
- “Climate Policy in 2021: An Opportunity for Bipartisan Action” with Jim Krane, Mark Finley and Michael Maher, part of a series of Baker Institute recommendations for the Biden administration (Jan 2021), online at <https://www.bakerinstitute.org/research/climate-policy-2021-opportunity-bipartisan-action/>.
- “Time to Update America’s Energy Security Programs” with Mark Finley, part of a series of Baker Institute recommendations for the Biden administration (Jan 2021), online at <https://www.bakerinstitute.org/research/time-update-americas-energy-security-programs/>.
- “Trade War, Energy and Coronavirus: How to Make the US-China Deal a Success” with Steven Miles, Baker Institute Issue Brief (Apr 2020), online at <https://www.bakerinstitute.org/research/trade-war-coronavirus-and-energy-how-achieve-success-us-china-phase-1-trade-agreement/>.

- “U.S. Energy Policy: Guidance for the Next Administration,” part of a series of Baker Institute recommendations for the Trump administration (Jan 2017), online at <https://www.bakerinstitute.org/research/us-energy-policy-guidance-next-administration/>.
- “Assessing Shale Producers’ Ability to Scale Up Activity,” with Gabriel Collins, Baker Institute Issue Brief (Jan 2017), online at <https://www.bakerinstitute.org/research/assessing-shale-producers-ability-scale-activity/>.
- “U.S. Natural Gas Policy: Recommendations for the President,” part of the Baker Institute’s *2013 Policy Recommendations for the Obama Administration* (Feb 2013), online at <https://www.bakerinstitute.org/research/us-natural-gas-policy-recommendations-for-the-president/>.
- “International Implications of Expanded Shale Gas Production,” *Unconventional Energy Options*, Committee for Economic Development of Australia (July 2012).
- Proposal for domestic gas (domgas) policy submitted at request of the Committee Chair of the “Inquiry into Domestic Gas Prices, Economics and Industry Committee, Legislative Assembly of the Parliament of Western Australia,” with Peter Hartley (Dec 2010).
- “U.S. Gasoline Policy: Recommendations for the Next President,” with Amy Myers Jaffe, Baker Institute Policy Brief (Jan 2009), online at <https://www.bakerinstitute.org/research/us-gasoline-policy-recommendations-for-the-next-administration/>.
- “Speculation: A Cause or Symptom? An Important Question for Designing a Policy Remedy,” Baker Institute Issue Brief (Sep 2008), online at <https://www.bakerinstitute.org/research/speculation-a-cause-or-symptom-an-important-question-for-designing-a-policy-remedy/>.
- “The Price of Gasoline: How High for How Long? (Revisited)” Baker Institute Issue Brief (Aug 2008), online at <https://www.bakerinstitute.org/research/the-price-of-gasoline-how-high-for-how-long-revisited/>.
- “U.S. Energy Policy FAQ: The US Energy Mix, National Security and the Myths of Energy Dependence,” with Amy Jaffe and Lauren Smulcer, Baker Institute Issue Brief (Feb 2008), online at <https://www.bakerinstitute.org/research/us-energy-policy-faq-the-us-energy-mix-national-security-and-the-myths-of-energy-independence/>.
- “Gas FAQ: US Gasoline Markets and US Oil Import Dependence” with Amy Jaffe, Baker Institute Issue Brief (Jul 2007), online at <https://www.bakerinstitute.org/research/gas-faq-us-gasoline-markets-and-us-oil-import-dependence/>.
- “The Price of Gasoline: How High for How Long?” Baker Institute Issue Brief (Jul 2007), online at <https://www.bakerinstitute.org/research/the-price-of-gasoline-how-high-for-how-long/>.

Commentary

- “The Colonial Pipeline Outage: An Important Lesson for U.S. Energy Security,” *Forbes* (May 2021), online at www.forbes.com.
- “Let’s Mess with Texas’ Power Market – And Make It Stronger,” with Peter Hartley, Jim Krane and Michael Maher, *Forbes* (Apr 2021), online at www.forbes.com.
- “‘Green LNG’ – A Pathway for Natural Gas in an ESG Future?” with Marcia Hook and Steven Miles, *Forbes* (Oct 2020), online at www.forbes.com.
- “Steel, Hydrogen and Renewables: Strange Bedfellows? Maybe Not...” with Dolf Gielen and Morgan Bazilian, *Forbes* (May 2020), online at www.forbes.com.
- “April 20: WTI at -\$37, Brent at \$26! What Happened? What Comes Next? The Stories that will be Told...” *Forbes* (Apr 2020), online at www.forbes.com.
- “Attacks on Saudi Oil Facilities Cast a Huge Shadow of Uncertainty on the Oil Market,” with Mark Finley, *Forbes* (Sep 2019), online at www.forbes.com.

- "Energy Transitions and Local Action: The Case of Colorado's Coal Transition," with Chris Hansen and Morgan Bazilian, *Forbes* (Aug 2019), online at www.forbes.com.
- "Storing Germany's Renewable Energy," with Dolf Gielen, Morgan Bazilian and Jeffrey Logan, *Forbes* (May 2019), online at www.forbes.com.
- "Natural Gas and Clean Energy," with Dolf Gielen and Morgan Bazilian, *Forbes* (Feb 2019), online at www.forbes.com.
- "Millennials and the 'Energy Transition'," *Forbes* (Nov 2018), online at www.forbes.com.
- "Colorado Oil and Gas Development," with Morgan Bazilian, *Forbes* (Oct 2018), online at www.forbes.com.
- "Why America's Clean Energy Plans Need to Embrace Nuclear Power," with Shih Yu Hung, *Forbes* (Mar 2016), online at www.forbes.com.
- "Hillary, Bernie, Hydraulic Fracturing and The Future of US Oil and Gas Production," with Michael Maher and Anna Mikulska, *Forbes* (Mar 2016), online at www.forbes.com.
- "Could trade help achieve energy security?" *World Economic Forum* (Mar 2016), online at <https://www.weforum.org/agenda/2016/03/could-trade-help-achieve-energy-security?>
- "Confronting Climate Change: Policies and Opportunities," with Regina Buono and Shih Yu Hung, *Forbes* (Feb 2016), online at www.forbes.com.
- "Pennsylvania and Truth in The Incidence of a State Severance Tax," with Anna Mikulska, *Forbes* (Aug 2015), online at www.forbes.com.
- "The US Shale Experience: A Script for Mexico?" *Forbes* (Sept 2014), online at www.forbes.com.
- "Russia to China: A Gas Deal We All Should Have Seen Coming," *Forbes*, online at www.forbes.com (May 2014).
- "A 'Credible Threat' Approach to Long Run Deterrence of Russian-European Hegemony," *Forbes*, online at www.forbes.com (Mar 2014).
- "Are Global Natural Gas Markets in a Period of Transition? The Magic 8-Ball Says..." *Forbes*, online at www.forbes.com (Feb 2014).
- "The American Energy Renaissance: Who Is to Credit and What Is the Future Direction?" with Keily Miller, *Forbes* (Jan 2014), online at www.forbes.com.
- "Shale Gas: A Game Changer with Global Implications," Baker Institute Blog (Oct 2009), online at <https://www.bakerinstitute.org/research/shale-gas-a-game-changer-with-global-implications/>.
- "Is the U.S. Vulnerable to a Cyber Attack?" with Chris Bronk and Dan Wallach, *Houston Chronicle* (May 2009)
- "Hacking the Grid: Considering the Cyber Threat to the Nation's Power Distribution System," with Chris Bronk and Dan Wallach, *Houston Chronicle* (Apr 2009).
- "The OCS Leasing Moratorium: Which Way Forward?" *Houston Chronicle* (Jul 2008).
- "You, Your Car and U.S. Energy Policy: Things You Need to Know" with Amy Jaffe, *AAA magazine* (Oct 2007).

Research Papers and Reports

- "The Future of Houston as Energy Transitions" a Baker Institute Report (May 2021), online at <https://www.bakerinstitute.org/research/future-houston-energy-transitions/>.
- "Expanding Carbon Capture in Texas" with Keily Miller, a Baker Institute Research Paper (Jan 2021), online at <https://www.bakerinstitute.org/research/carbon-capture-texas/>.
- "BCarbon: A New Soil Carbon Storage Standard" with Jim Blackburn, Baker Institute Working Paper, online at <https://www.bakerinstitute.org/research/bcarbon-new-soil-carbon-storage-standard/>.

- “Promoting Energy Market Stability in a Transitioning World,” with Hossa Almutairi and Axel Pierru, Policy Brief for T20 Solutions (Oct 2020), online at <https://www.bakerinstitute.org/media/files/files/b4e92b93/medlock-t20-101220.pdf>.
- “Refreshing Global Energy Security Policy and Infrastructure for the Energy Transition,” with Mark Finley, Morgan Bazilian and Steve Griffiths, Policy Brief for T20 Solutions (Oct 2020), online at https://t20saudi Arabia.github.io/PolicyBriefs/T20_TF10_PB3.pdf
- “Carbon Capture in Texas: Comparative Advantage in a Low Carbon Portfolio,” with Keily Miller, Baker Institute Research Paper (Jun 2020), online at <https://www.bakerinstitute.org/research/carbon-capture-texas/>.
- “Price War and Pandemic: The Oil Market Reaction,” with Jim Krane and Mark Finley, Baker Institute Research Paper (Apr 2020), online at <https://www.bakerinstitute.org/research/price-war-and-pandemic-oil-market-reaction/>.
- “The Role of Foreign Direct Investment in Resource-Rich Regions: Research Protocol and Executive Summary,” with Keily Miller, Baker Institute Report summarizing the working paper series on “The Role of Foreign Direct Investment in Resource-Rich Regions” (Feb 2020), online at <https://www.bakerinstitute.org/research/role-foreign-direct-investment-resource-rich-regions-research-protocol-and-executive-summary/>.
- “Houston Energy Dialogues 2019,” Baker Institute Conference Report (Feb 2020), online at <https://www.bakerinstitute.org/research/houston-energy-dialogues-2019/>.
- “Mercantilism’s Groundhog Day: The US-China Trade War and Some Regional Energy Market Implications,” with Ted Temzelides and Woongtae Chung, Baker Institute Research Paper (Feb 2020), online at <https://www.bakerinstitute.org/research/mercantilisms-groundhog-day-trade-war-trump-administration-and-northeast-asia/>.
- “Houston Energy Dialogues 2018,” Baker Institute Conference Report (Aug 2018), online at <https://www.bakerinstitute.org/research/houston-energy-dialogues-2018/>.
- “Economic Assessment of Biochar Benefits,” Baker Institute Research Paper (Sep 2017), online at <https://www.bakerinstitute.org/research/economic-assessment-biochar/>.
- “Energy and Economic Diversification Policy Roundtable,” with Jim Krane, Francisco Monaldi, Kristian Coates Ulrichsen and Gabriel Collins, Baker Institute Study (Sep 2017), online at <https://www.bakerinstitute.org/research/energy-and-economic-diversification-policy-roundtable/>.
- “Houston Energy Dialogues 2017,” Baker Institute Conference Report (Jun 2017), online at <https://www.bakerinstitute.org/research/houston-energy-dialogues/>.
- “From the ‘What?’ to the ‘How?’ in the Water-Energy Nexus,” with Regina Buono and Shih Yu Hung, Baker Institute Conference Report (Jul 2016), online at <https://www.bakerinstitute.org/research/what-how-water-energy-nexus/>.
- “Confronting Climate Change: Policies and Opportunities,” with Regina Buono and Shih Yu Hung, Baker Institute Conference Report as part of the French Ameri-Can Climate TalkS (Feb 2016), online at <https://www.bakerinstitute.org/research/confronting-climate-change-policies-and-opportunities/>.
- “The Macroeconomic Impact of Increasing U.S. LNG Exports” with Adrian Cooper, Michael Kleiman and Scott Livermore, sponsored by the U.S. Department of Energy (Dec 2015), online at <https://www.bakerinstitute.org/research/macroeconomic-impact-increasing-us-lng-exports/>.
- “Summary of the 2014-15 Climate Lecture Series,” with Regina Buono and Anna Mikulska, Baker Institute Report summarizing a series of lectures delivered at the Baker Institute on Climate Science and Policy (Sep 2015), online at <https://www.bakerinstitute.org/research/climate-lecture-series-summary/>.

- "To Lift or Not to Lift? The U.S. Crude Oil Export Ban: Implications for Price and Energy Security," Baker Institute Research Paper (Mar 2015), online at <https://www.bakerinstitute.org/research/lift-or-not-lift-us-crude-oil-export-ban-implications-price-and-energy-security/>.
- "Exploring the Role of Natural Gas in U.S. Trucking," with Amy Myers Jaffe, Rosa Dominguez-Faus, Allen Lee, Nathan Parker, Daniel Scheitrum, Andrew Burke, Hengbing Zhao and Yueyue Fan. University of California, Davis. Institute of Transportation Studies Research Report, No. UCD-ITS-RR-15-05 (Feb 2015), online at <https://trid.trb.org/view/1345491>.
- "North American Resources and Natural Gas Supply to the State of California," University of California, Davis. Institute of Transportation Studies Research Report, No. UCD-ITS-RR-15-06 (Feb 2015), online at <https://trid.trb.org/view/1346221>.
- "The Market Impacts of New Natural Gas-Directed Policies in the United States," with Peter Hartley, Baker Institute Research Paper, sponsored by the Alfred P. Sloan Foundation (Feb 2015), online at <https://www.bakerinstitute.org/research/market-impacts-new-natural-gas-directed-policies-united-states/>.
- "The Shale Revolution: What Do We Know and Where are We Going? A Conference Report," Baker Institute Conference Report, sponsored by the Alfred P. Sloan Foundation (Jan 2015), online at <https://www.bakerinstitute.org/research/market-impacts-new-natural-gas-directed-policies-united-states/>.
- "The Land of Opportunity? Policy, Constraints and Energy Security in North America," Baker Institute Report, sponsored by Goldman Sachs (Jun 2014), online at <https://www.bakerinstitute.org/research/land-opportunity-policy-constraints-and-energy-security-north-america/>.
- "HVDC Transmission and Solar Power in the US Southwest," with Peter Hartley, Baker Institute Working Paper (2014), online at <https://ideas.repec.org/p/ecl/riceco/14-025.html>.
- "Natural Gas Price in Asia: What to Expect and What it Means," Report commissioned by the Non-proliferation Education Center (Feb 2014), online at <https://www.bakerinstitute.org/research/natural-gas-price-asia-what-expect-and-what-it-means/>.
- "Speculation, Fundamentals, and the Price of Crude Oil," Baker Institute Research Paper (Aug 2013), online at <https://www.bakerinstitute.org/research/speculation-fundamentals-and-price-crude-oil/>.
- "New Dynamics of the U.S. Natural Gas Market," Contributing author, Bipartisan Policy Commission (May 2013).
- "U.S. LNG Exports: Truth and Consequence," Baker Institute Research Paper (Aug 2012), online at <https://www.bakerinstitute.org/research/us-lng-exports-truth-and-consequence/>.
- "Vehicle Stocks in China: Consequences for Oil Demand," with Ron Soligo and James Coan, Baker Institute Research Paper (Nov 2011), online at <https://www.bakerinstitute.org/research/vehicle-stocks-in-china-consequences-for-oil-demand/>.
- "Quantitative Analysis of Scenarios for Chinese Domestic Unconventional Natural Gas Resources and Their Role in Global LNG Markets," with Peter Hartley, Baker Institute Research Paper (Nov 2011), online at <https://www.bakerinstitute.org/research/quantitative-analysis-of-scenarios-for-chinese-domestic-unconventional-natural-gas-resources-and-the/>.
- "The Status of World Oil Reserves: Conventional and Unconventional Resources in the Future Supply Mix," with Ron Soligo, Baker Institute Research Paper sponsored by the Emirates Center for Strategic Studies and Research (Nov 2011), online <https://www.bakerinstitute.org/research/the-status-of-world-oil-reserves-conventional-and-unconventional-resources-in-the-future-supply-mix/>.
- Prudent Development of North American Oil and Gas Resources*, Contributing Author, Macroeconomic/Data & Studies Subgroups, National Petroleum Council (2011).

- “Shale Gas and U.S. National Security” with Peter Hartley, Baker Institute Policy Report (Oct 2011), online at <https://www.bakerinstitute.org/media/files/Research/fe70d25c/EF-pub-PolicyReport49.pdf>.
- “Shale Gas and U.S. National Security” with Peter Hartley and Amy Myers Jaffe, Baker Institute Research Paper sponsored by the US Department of Energy Office of International Policy and Affairs (Jul 2011), online at <https://www.bakerinstitute.org/research/shale-gas-and-us-national-security/>.
- “The Revenue Efficiency of Pemex: A Comparative Approach” with Peter Hartley, Baker Institute Research Paper (Apr 2011), online at <https://www.bakerinstitute.org/research/the-revenue-efficiency-of-pemex-a-comparative-approach/>.
- “Scenarios for Oil Supply, Demand and Net Exports for Mexico” with Ron Soligo, Baker Institute Research Paper (Apr 2011), online at <https://www.bakerinstitute.org/research/scenarios-for-oil-supply-demand-and-net-exports-for-mexico/>.
- “Energy Market Consequences of Emerging Renewable Energy and Carbon Dioxide Abatement Policies in the United States,” with Peter Hartley, Baker Institute Research Paper (Sep 2010), online at <https://www.bakerinstitute.org/research/energy-market-consequences-of-emerging-renewable-energy-and-carbon-dioxide-abatement-policies-in-the/>.
- “Innovation, Renewable Energy, and Macroeconomic Growth,” with Peter Hartley, Ted Temzelides and Xinya Zhang, Baker Institute Research Paper (Sep 2010), online at <https://www.bakerinstitute.org/research/innovation-renewable-energy-and-macroeconomic-growth/>.
- “LNG, Globalization, and Price Volatility: Understanding the Paradigm Shift,” prepared for the American Clean Skies Foundation and the National Council on Energy Policy (June 2010)
- “Fundamentals of a Sustainable U.S. Biofuels Policy,” with Pedro Alvarez, Joel Burken, James Coan, Marcelo E. Dias de Oliveira, Rosa Dominguez-Faus, Diego E. Gomez, Amy Myers Jaffe, Susan E. Powers, Ronald Soligo and Lauren Smulcer, Baker Institute Research Paper (Jan 2010), online at <https://www.bakerinstitute.org/research/fundamentals-of-a-sustainable-us-biofuels-policy/>.
- “Who’s in the Oil Futures Market and How has it Changed?” with Amy Myers Jaffe, Baker Institute Research Paper (Aug 2009), online at <https://www.bakerinstitute.org/research/who-is-in-the-oil-futures-market-and-how-has-it-changed/>.
- “Scenarios for Russian Natural Gas Exports: The Role of Domestic Investment, the Caspian, and LNG” with Peter Hartley, Baker Institute Research Paper (May 2009), online at <https://www.bakerinstitute.org/research/scenarios-for-russian-natural-gas-exports-the-role-of-domestic-investment-the-caspian-and-lng/>.
- “Energy Security in a Context of Hyper-Social Mobilization: Insights from Bolivia,” with David Mares and Peter Hartley, Baker Institute Research Paper (May 2008), online at <https://www.bakerinstitute.org/research/energy-security-in-a-context-of-hyper-social-mobilization-insights-from-bolivia/>.
- “U.S. Energy Policy and Transportation,” with Amy Myers Jaffe, Baker Institute Research Paper (May 2008), online at <https://www.bakerinstitute.org/research/us-energy-policy-and-transportation/>.
- “Climate policy and energy security: two sides of the same coin?” with Peter Hartley, Baker Institute Research Paper (May 2008), online at <https://www.bakerinstitute.org/research/climate-policy-and-energy-security-two-sides-of-the-same-coin/>.
- “Iran, Energy and Geopolitics,” with Daniel Brumberg, Jareer Elass and Amy Myers Jaffe, Baker Institute Research Paper (May 2008), online at <https://www.bakerinstitute.org/research/iran-energy-and-geopolitics/>.
- “The Future of Russian Natural Gas Exports,” with Peter Hartley, Baker Institute Research Paper (May 2008), online at <https://www.bakerinstitute.org/research/the-future-of-russian-natural-gas-exports/>.

Facing the Hard Truths, Contributing Author, LNG Subgroup and Peak Oil Deliberations, National Petroleum Council (2007).

“Electricity Sector Demand for Natural Gas in the United States,” with Peter Hartley and Jennifer Rosthal, Baker Institute Research Paper (Nov 2007), online at <https://www.bakerinstitute.org/research/electricity-sector-demand-for-natural-gas-in-the-united-states/>.

“A Brief Narrative on the International Influences on the Link between U.S. Crude Oil and Natural Gas Prices,” with Peter Hartley and Amy Jaffe, Baker Institute Research Paper (Nov 2007), online at <https://www.bakerinstitute.org/research/a-brief-narrative-on-the-international-influences-on-the-link-between-us-crude-oil-and-natural-gas-p/>.

Western Integrated Energy Policy Report, Contributing author, California Energy Commission (2005).

“Energy and Natural Gas in Northeast Asia: Options for the Future,” prepared for the SIIS conference *Energy Security: Options for US-China-Middle East Relations* (Jul 2005), online at <https://www.bakerinstitute.org/research/energy-and-natural-gas-in-northeast-asia-options-for-the-future/>.

“Energy Security: Implications for U.S.-China-Middle East Relations,” with Steven Lewis, prepared for the SIIS conference *Energy Security: Options for US-China-Middle East Relations* (Jul 2005), online at <https://www.bakerinstitute.org/research/energy-security-implications-for-us-china-middle-east-relations/>.

“Russian Natural Gas Supply: Some Implications for Japan,” with Peter Hartley, Baker Institute Research Paper (Oct 2004), online at <https://www.bakerinstitute.org/research/russian-natural-gas-supply-some-implications-for-japan/>.

“The Role of Nuclear Power in Enhancing Japan’s Energy Security,” with Peter Hartley, Baker Institute Research Paper (Sep 2004), online at <https://www.bakerinstitute.org/research/the-role-of-nuclear-power-in-enhancing-japans-energy-security/>.

Balancing Natural Gas Policy, National Petroleum Council, Lead modeler and contributing author, Modeling Subgroup of the Supply Task group (2003).

Testimony

Testimony to the Texas Railroad Commission, Hearing on Prorationing, “The Best and Worst of Times Each Require Competitive Resolve for the Oil and Gas Industry” prepared with Mark Finley (Apr 8 2020).

Testimony to the Senate Energy and Natural Resources Committee, “Electricity and a Changing Climate” (March 5, 2019).

Testimony to the House Committee of Foreign Affairs, Subcommittee of Terrorism, Nonproliferation and Trade, U.S. House of Representatives, “Geopolitics of U.S. Oil and Gas Competitiveness” (May 22, 2018).

Testimony to the Senate Energy and Natural Resources Committee, “The Evolution of Energy Infrastructure in the United States and How Lessons from the Past Can Inform the Future” (February 8, 2018).

Testimony to the House Committee on Small Business, “U.S. Crude Oil Exports” (June 17, 2015).

Testimony to the House Committee of Foreign Affairs, Subcommittee of Terrorism, Nonproliferation and Trade, U.S. House of Representatives, “U.S. Crude Oil Exports” (April 2, 2014).

Testimony to the Senate Energy and Natural Resources Committee, “Opportunities for U.S. Natural Gas” (February 12, 2013).

Testimony to the Senate Energy and Natural Resources Committee, “The Prospect of LNG Exports from the United States” (November 8, 2011).

Selected Speaking and Conference Organization Activities

IAEE/AEA Session Organizer and Chair, 2012-2017

IAEE International Conference, Special Subject Matter Workshop Organizer, 2013-2016

Various Board/Executive Committee Presentations – Accenture, Air Liquide, BASF, BHP, Chevron, Chevron Phillips, CoBank, Direct Energy, EDP Renewables, The Energy and Minerals Group, EP Energy, Equinor, E&Y Energy, GDF Suez, GE, GenOn, Haddington Ventures, Linn Energy, Marathon, Methanex, Murphy Oil, NGSa, Noble, Oceaneering, Phillips 66, Plains, PWC, Rice Management Company, Trinity Industries, VAALCo, Yetter Coleman LLP

Over 650 speaking engagements from 2006-2020, including keynote addresses and panel discussions at venues such as AEA, IAEE, OTC, Gas Tech, METI LNG Producer-Consumer Conference, CERAWEEK, FLAME, OPEC, NAPE, NABE, WPC, WGLC, Goldman Sachs, URTEC, Dallas Federal Reserve, AAPG, Rio Oil and Gas, WGC, GCPA, and more.

University invited lectures from 2006-2020 at Boise State, Curtin University, Duke, Georgia Tech, Jacobs University, LSU, Rice University-Jones Graduate School of Business, Stanford University, Tulane University, Union College, University of Calgary, University of California-Davis, University of Colorado-Denver, University of Oklahoma, University of Texas-Bureau of Economic Geology, University of Texas-Hildebrand School of Petroleum Engineering, University of Tokyo, University of West Australia, USC, Washington & Jefferson College.

Consulting Activities

All consulting is related to modeling energy markets or advising on published works and modeling frameworks – Chevron Corporation, California Energy Commission, US Department of Energy, Bipartisan Policy Commission, US Department of Justice, Congressional Budget Office, Non-proliferation Education Center

Teaching Experience

Energy Economics I, Energy Economics II, Economics of the Energy Industries, Macroeconomic Theory, Principles of Macroeconomics, Mathematical Economics

Senior Independent Research (55 Thesis Submissions)

Doctoral Dissertations (22 Thesis Committees)

Media

Interviews appearing in *Bloomberg*, *New York Times*, *Wall Street Journal*, *Forbes*, *Oil and Gas Investor*, *USA Today*, *Minneapolis Star Tribune*, *San Francisco Chronicle*, *Congressional Quarterly*, *Financial Times*, *Fortune*, *Hard Assets Investors online*, *BusinessWeek*, *Wirtschaftswoche*, *Platts Gas Daily*, *Platts Oil Daily*, *Kallanish Energy*, *Natural Gas Intelligence Weekly*, *Time Magazine*, *Boston Globe*, *Dallas Morning News*, *Times-Picayune*, *Detroit Free Press*, *Houston Chronicle*, *San Antonio Express*, *Politico*, *E&E News*, and others.

Various television and radio appearances.