

JOSHUA LINN

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Employment

- 2022- Professor, University of Maryland Department of Agricultural and Resource Economics
- 2018-2022 Associate Professor, University of Maryland Department of Agricultural and Resource Economics
- 2014- Senior Fellow, Resources for the Future
- 2012-2014 Fellow (indefinite appointment) and Associate Director of the Center for Climate and Electricity Policy, Resources for the Future
- 2010-2012 Fellow, Resources for the Future
- 2008-2010 Research Scientist, MIT
- 2005-2009 Assistant Professor of Economics, University of Illinois at Chicago

Professional and Public Service

- 2020 Member, EPA Science Advisory Board Economic Guidelines Review Panel
- 2018-2021 Member, National Academy of Science committee on light-duty fuel economy
- 2014- Journal of Environmental Economics and Management (editorial board, 2014-2017; co-editor, 2017 -)
- 2014-2015 Senior Economist, Council of Economic Advisors

Education

- 2005 Ph.D., Economics, Massachusetts Institute of Technology
- 2000 B.A., Astronomy and Physics, Yale University

Refereed Journal Publications

Coal Demand, Market Forces, and US Coal Mine Closures (with B. Jordan and I. Lange). *Economic Inquiry* (forthcoming).

Environmental Regulation and Product Attributes: The Case of European Passenger Vehicle Greenhouse Gas Emissions Standards (with Y. Lin). *Journal of the Association of Environmental and Resource Economists* (forthcoming).

How Much Do Consumers Value Fuel Economy and Performance? Evidence from Technology Adoption (with B. Leard and Y. C. Zhou). *Review of Economics and Statistics* (forthcoming).

How Do US Passenger Vehicle Fuel Economy Standards Affect Purchases of New and Used Vehicles? (with X. Dou). *Journal of Environmental Economics and Management*, vol. 102 (2020).

The Effects of Market Size and Fuel Costs on Fuel-Saving Technology Adoption in Passenger Vehicles (with T. Klier and Y. C. Zhou). *Journal of Economics & Management Strategy*, vol. 29 (2020): 543-78.

The Effect of Owning a Car on Travel Behavior: Evidence from the Beijing License Plate Lottery (with J. Yang, A. A. Liu, and P. Qin). *Journal of Environmental Economics and Management*, vol. 99 (2020): 134-57.

Does Electricity Storage Innovation Reduce Greenhouse Gas Emissions? (with J.-S. Shih). *Journal of Environmental Economics and Management*, vol. 96 (2019): 130-58.

The Roles of Energy Markets and Environmental Regulation in Reducing Coal-Fired Plant Profits and Electricity Sector Emissions (with K. McCormack). *RAND Journal of Economics*, vol. 50 (2019): 733-67.

The Impacts of Lower Natural Gas Prices on Jobs in the US Manufacturing Sector (with W. Gray and R. Morgenstern). *Energy Journal*, vol. 40 (2019).

Interactions between Climate and Local Air Pollution Policies: The Case of European Passenger Cars. *Journal of the Association for Environmental and Resource Economists*, vol. 6 (2019): 709-40.

Charging Drivers by the Pound: The Effects of the UK Vehicle Tax System (with D. Cerruti and A. Alberini). *Environmental and Resource Economics*, vol. 74 (2019): 99-129.

Explaining the Evolution of Passenger Vehicle Miles Traveled in the United States (with B. Leard and C. Munnings). *Energy Journal*, vol. 40 (2019): 25-54.

The Role of State Policies under Federal Light-Duty Vehicle Greenhouse Gas Emissions Standards (with V. McConnell). *Energy Policy*, vol. 126 (2019) 507-17.

How Do Low Gas Prices Affect Costs and Benefits of US New Vehicle Fuel Economy Standards (with V. McConnell and B. Leard). *Economics of Energy and Environmental Policy*, vol. 7 (2018).

Flawed Analyses of U.S. Auto Fuel Economy Standards (with A. M. Bento, K. Gillingham, M. R. Jacobsen, C. R. Knittel, B. Leard, J. Linn, V. McConnell, D. Rapson, J. M. Sallee, A. A. van Benthem, and K. S. Whitefoot). *Science* vol. 362: 1119-21.

Vehicle Ownership Restrictions and Fertility in Beijing (with A. A. Liu, P. Qin, and J. Yang). *Journal of Development Economics*, vol. 135 (2018): 85-96.

The Heterogeneous Impacts of Low Natural Gas Prices on Consumers and the Environment (with L. Muehlenbachs). *Journal of Environmental Economics and Management*, vol. 89 (2018): 1-28.

The Long-Run Effects of Housing Location on Travel Behavior: Evidence from China's Housing Reform (with Z. Wang and L. Xie). *China Economic Review*, vol. 49 (2018): 114-40.

Fuel Prices, New Vehicle Fuel Economy, and Implications for Attribute-Based Standards (with B. Leard and V. McConnell) *Journal of the Association for Environmental and Resource Economists*, vol. 4 (2017): 659-700.

Who Will Be Affected by a Congestion Pricing Scheme in Beijing? (with Z. Wang and L. Xie). *Journal of Transport Policy*, vol. 47 (2016): 34-40.

Technological Change, Vehicle Characteristics and the Opportunity Costs of Fuel Economy Standards (with T. Klier). *Journal of Public Economics*, vol. 133 (2016): 41-63.

The Rebound Effect for Passenger Vehicles. *The Energy Journal*, vol. 37 (2016).

Estimating the Job Impacts of Environmental Regulation (with A. Belova, W. Gray, R. Morgenstern, and W. Pizer). *Journal of Benefit-Cost Analysis*, vol. 6, (2015): 325-40.

Using Vehicle Taxes to Reduce Carbon Dioxide Emissions Rates of New Passenger Vehicles: Evidence from France, Germany, and Sweden (with T. Klier). *American Economic Journal: Economic Policy*, vol. 7, (2015): 212-42.

Regulating Greenhouse Gases in the Electricity Sector under the Clean Air Act (with D. Burtraw and E. Mastrangelo). *Journal of the Association for Environmental and Resource Economists*, vol. 1/2 (2014): 97-134. Winner, Best Paper Award for 2014.

Gasoline Taxes and Consumer Behavior (with S. Li and E. Muehlegger). *American Economic Journal: Economic Policy*, vol. 6 (2014): 302-42.

The Effect of Voluntary Brownfields Programs on Nearby Property Values: Evidence from Illinois. *Journal of Urban Economics*, vol. 78 (2013): 1-18.

Renewable Electricity Policy, Intermittency, and Cost-Effectiveness (with H. Fell). *Journal of Environmental Economics and Management*, vol. 66 (2013): 688-707.

Fuel Prices and New Vehicle Fuel Economy—Comparing the United States and Western Europe (with T. Klier). *Journal of Environmental Economics and Management*, vol. 66 (2013): 280-300.

Evaluating “Cash for Clunkers”: Program Effect on Vehicle Sales and Cost-Effectiveness (with S. Li and E. Spiller). *Journal of Environmental Economics and Management*, vol. 65 (2013): 175-193.

New Vehicle Characteristics and the Cost of the Corporate Average Fuel Economy Standard (with T. Klier). *RAND Journal of Economics*, vol. 43 (2012): 186-213.

Incentives of Carbon Dioxide Regulation for Investment in Low-carbon Electricity Technologies in Texas (with A. Castillo). *Energy Policy*, vol. 39 (2011): 1831-1844.

The Price of Gasoline and New Vehicle Fuel Economy: Evidence from Monthly Sales Data (with T. Klier). *American Economic Journal: Economic Policy* vol. 2 (2010): 134-53.

The Effect of Cap-and-Trade Programs on Firms’ Profits: Evidence from the Nitrogen Oxides Budget Trading Program. *Journal of Environmental Economics and Management*, vol. 59 (2010): 1-14.

Why Do Oil Shocks Matter? The Role of Inter-Industry Linkages. *Economic Inquiry*, vol. 47 (2009): 549-567.

Energy Prices and the Adoption of Energy-Saving Technology. *The Economic Journal*, vol. 118 (2008): 1986-2012.

Technological Modifications in the Nitrogen Oxides Tradable Permit Program. *The Energy Journal*, vol. 29 (2008): 153-176.

Bush v. Gore and the Effect of New Source Review on Power Plant Emissions (with I. Lange). *Environmental and Resource Economics*, vol. 40 (2008): 571-591.

Regulatory Conflict in the Chicago VOC Control Program (with R. Kosobud, H. Stokes and C. Tallarico). *Journal of Environmental Planning and Management*, vol. 51 (2008): 561-579.

Market Size in Innovation: Theory and Evidence from the Pharmaceutical Industry (with D. Acemoglu). *Quarterly Journal of Economics*, vol. 119 (2004): 1049-1090.

Papers Under Review

The Effect of Income on Vehicle Demand: Evidence from China’s New Vehicle Market (with C. Shen).

The Effect of Vehicle Restrictions on Female Labor Supply (with A. A. Liu, P. Qin, and J. Yang).

Building Subway Systems and Improving Air Quality in China: Evidence from Multiple Chinese Cities (with L. Xie and H. Yan).

Pass-Through and Welfare Effects of Regulations that Affect Product Attributes (with B. Leard and K. Springel).

How Does State-Level Carbon Pricing in the United States Affect Industrial Competitiveness? (with B. Casey, W. Gray, and R. Morgenstern).

Costs and Benefits of US Fuel Economy Standards (with Ben Leard and Katalin Springel).

Rising US Income Inequality and Declining Residential Electricity Consumption: Is There a Link? (with Jing Liang and Yueming Qiu)

Work in Progress

Effects of Power Plant Emissions on High Ozone Events in the Eastern United States.

Operation of Emissions Controls in US Coal-Fired Power Plants.

Interactions Between Federal Passenger Vehicle Standards and Zero Emission Vehicle Programs.

What are the Climate, Air Pollution, and Health Benefits of Electric Vehicles?

Balancing Equity and Effectiveness for Electric Vehicle Subsidies

Emissions Standards and Electric Vehicle Targets for Passenger Vehicles

Other Publications and Unpublished Papers

An Analysis of US Subsidies for Electric Buses and Freight Trucks (with W. Look). RFF Issue Brief 22-1.

Emissions Projections under Alternative Climate Policy Proposals (with M. Hafstead, W. Look, N. Roy, K. Palmer, and K. Rennert). RFF Issue Brief 21-13.

Emissions Projections for a Trio of Federal Climate Policies (with W. Look, K. Palmer, D. Burtraw, J. Linn, M. Hafstead, M. Domeshek, N. Roy, K. Rennert, K. Gillingham, and Q. Xiahou). RFF Issue Brief 21-02.

Reducing the Costs of Federal Fuel Economy and Greenhouse Gas Standards by Accurately Estimating Lifetime Vehicle Miles Traveled. RFF Issue Brief 20-09.

Carbon Pricing 202: Pricing Carbon in the Transportation Sector. RFF Explainer.

How Targeted Vehicle Scrappage Subsidies Can Reduce Pollution Effectively. RFF Issue Brief 20-08.

Clean Energy Standards for Industry: Scoping Analysis (with V. Gonzales and R. Morgenstern). RFF Issue Brief 20-06.

Comments on Key Considerations for United States Climate Policy (with Ann Bartuska, Dallas Burtraw, Brian Flannery, Kristin Hayes, Alan Krupnick, Jan Mares, Karen Palmer, Brian Prest, and Kevin Rennert, and Daniel Shawhan), submitted to the House Committee on Energy and Commerce

An Analysis of Decarbonization Methods in Vermont (with Marc Hafstead, Wesley Look, Amelia Keyes, Dallas Burtraw, and Roberton C. Williams III). RFF Report

Comments to US EPA on the Proposed Affordable Clean Energy Rule (with Alan Krupnick, Maureen L. Cropper, Robert Kopp, Richard Newell, William Pizer, Kevin Rennert, Casey Wichman, Dallas Burtraw, and Amelia Keyes)

Comments to NHTSA and US EPA on the Safer Affordable Fuel-Efficient (SAFE) Vehicle Rule for Model Years 2021-2026: Passenger Cars and Light Trucks (with Alan Krupnick, Benjamin Leard, and Virginia McConnell)

The Future of Transportation Fuels and Vehicles. Testimony and public comments to the House Energy and Commerce Committee

How Does Employment in US Manufacturing Respond to Natural Gas Prices (with Wayne Gray and Richard D. Morgenstern). *Resources*, vol. 197

Making Sense of the Trump Administration's Fuel Economy Standard Rollback (with Jason Bordoff and Akos Losz). RFF Report 2018

The Future of Transportation Fuels and Vehicles

Combating Emissions Leakage from Oregon's Industrial Sector (with Dallas Burtraw). RFF Issue Brief 17-10

Designing State Policies to Complement US Federal Standards for Vehicle GHG Emissions (with Virginia McConnell). *Resources*, vol. 195

The Effect of Standards for New Vehicle Fuel Economy and GHG Emissions on US Consumers (with Benjamin Leard and Yichen Christy Zhou). *Resources*, vol. 195

The Supreme Court's Stay of the Clean Power Plan: Economic Assessment and Implications for the Future (with Dallas Burtraw and Kristen McCormack). *Environmental Law Reporter*, vol. 46 (October 2016): 10859-72

Comments on Midterm Evaluation Draft Technical Assessment Report for Model Year 2022-2025 Light Duty Vehicle GHG Emissions and CAFE Standards (with Virginia McConnell, Benjamin Leard, and Kenneth Gillingham), RFF Report 2016

How Do Low Gas Prices Affect Costs and Benefits of US New Passenger Vehicle Fuel Economy Standards? (with Benjamin Leard and Virginia McConnell). RFF Policy

Brief

Do Low Oil Prices Undermine the US Passenger Vehicle Fuel Economy Standards? (with Benjamin Leard and Virginia McConnell). RFF Policy Brief 16-08

Is Halting the Clean Power Plan Economically Justified? (with Dallas Burtraw and Kristen McCormack). *Resources*, vol. 193: 26-9

Employment and Output Leakage under California's Cap-and-Trade Program (with Wayne B. Gray and Richard D. Morgenstern). RFF Discussion Paper 16-17 (2016)

Approaches to Address Potential CO2 Emissions Leakage to New Sources under the Clean Power Plan (with Dallas Burtraw, Karen L. Palmer, Anthony Paul, Kristen McCormack, and Hang Yin), RFF Report 2016.

Comparing US and EU Approaches to Regulating Automotive Emissions and Fuel Economy (with Thomas Klier). RFF Policy Brief 16-03; reprinted in *Resources*, vol. 193: 40-5.

Clearing the Air: How Market-Based Policies Help Meet the Tighter US Ozone Limit (with Alan Krupnick and Kristen McCormack). *Resources*.

The Environmental Effects of Clean Energy Innovations Under Rate-Based Regulation (with John Horowitz). RFF Discussion Paper 15-42.

Defining the Unknown: A Look at the Cost of Tighter Ozone Standards (with Alan Krupnick and Kristen McCormack). RFF Issue Brief 15-03.

Lessons of Wind Policies in Texas (with Clayton Munnings). *Texas A&M Journal of Real Property Law*, vol. 1 (2014): 425-446.

The Costs and Consequences of Clean Air Act Regulation of CO2 from Power Plants (with Dallas Burtraw, Karen Palmer, and Anthony Paul). *Papers and Proceedings of the American Economic Association*, vol. 104, 2014: 557-62.

Preparing for the Midterm Review of the Fuel Economy and Greenhouse Gas Emissions Rate Standards for Light-Duty Vehicles: A Summary of Priority Research Questions (with Alan J. Krupnick and Virginia McConnell). RFF Issue Brief 14-04.

Preparing for the Midterm CAFE Review (with Alan Krupnick and Virginia McConnell). *Resources*.

How Electric Cars Can Increase Greenhouse Gas Emissions (with Virginia McConnell). *Resources*, v184, 2013.

Do Market Shares or Technology Explain Rising New Vehicle Fuel Economy? (with Shefali Khanna). RFF Discussion Paper 13-29.

Environmental Regulation and Employment: A Reassessment (with Anna Belova,

Wayne B. Gray, and Richard D. Morgenstern). CES Working Paper 13-36.

Designing Renewable Electricity Policies to Reduce Emissions (with Harrison Fell and Clayton Munnings). RFF Discussion Paper 12-54.

The Supply Chain and Industrial Organization of Rare Earth Materials: Implications for the U.S. Wind Energy Sector (with Jhih-Shyang Shih, Timothy J. Brennan, Joel Darmstadter, Molly K. Macauley, and Louis Preonas), RFF Report 2012.

Loan Guarantees Reconsidered (with Joel Darmstadter). Resources for the Future Policy Commentary, reprinted in *Resources*, v179, 2012: 10-12.

Cutting Carbon Take Two: A Brief Guide to Federal Electricity-Sector Climate Policy without Cap-and-Trade (with Nathan Richardson). *Issue Brief* 11-09, 2011. Published in *Applied Economics Perspectives and Policy*, vol. 35 (2013): 377-97.

Corporate Average Fuel Economy Standards and the Market for New Vehicles (with Thomas Klier). *The Annual Review of Resource Economics*, v3, 2011: 445-62.

Deepwater Drilling: Law, Policy, and Economics of Firm Organization and Safety (with Mark A. Cohen, Madeline Gottlieb, and Nathan Richardson). *Vanderbilt Law Review*, vol. 64 (2011): 1853-1916.

The Price of Gasoline and the Demand for Fuel Economy: Are There Any Links" (with Thomas Klier). Published in *Issues of the Day: 100 Commentaries on Climate, Energy, the Environment, Transportation and Public Health Policy*. Ian W. H. Parry and Felicia Day (eds.), Resources for the Future Press, Washington, DC, 2010.

Did Medicare Induce Pharmaceutical Innovation? (with Daron Acemoglu, David Cutler and Amy Finkelstein). *Papers and Proceedings of the American Economic Association*, May 2006.

Awards, Research Funding, and Fellowships

2020	Sloan Foundation, General Motors, Maryland Transportation Institute
2019	University of Maryland honoree for research excellence
2016	Sloan Foundation, National Science Foundation
2015	Smith Richardson Foundation
2014	Lincoln Institute
2013	Swedish Energy Agency, California Air Resources Board
2012	Heising-Simons Foundation
2012	Swedish Energy Agency
2012	EPA/NREL
2011	Department of Energy
2010	Bechtel Foundation
2010	Presidential Oil Spill Commission
2009	EPA
2008	Sloan Air Cleaning Industry Center (startup grant)

- 2006 Winner, Best Presentation at the Heartland Environmental and Resource Economics Workshop
- 2000-2004 Jacob K. Javits Graduate Fellowship
- 2000 Graduated *magna cum laude*, with distinction in the major

Academic Seminars and Conference Presentations

- 2020 University College Dublin, Infra4Dev Conference
- 2019 UC Davis, Yale University, Congressional Budget Office, Association of Environmental and Resource Economists Summer Conference, European Association of Environmental and Resource Economists Summer Conference, ITAM, American University, Environmental Protection Agency
- 2018 Transportation Research Board Annual Meeting, World Conference of Environmental and Resource Economists
- 2017 University of Maryland, Environmental Protection Agency, Carnegie Mellon, Association of Environmental and Resource Economists Summer Conference, APPAM Fall Conference, Society of Risk Analysis Annual Meeting
- 2016 Georgia Tech, Department of Transportation
- 2015 Yale University, California Air Resources Board
- 2014 Stanford, Society for Cost Benefit Analysis Conference, International Industrial Organization Conference
- 2013 AERE Summer Conference, International Industrial Organization Conference, Colorado School of Mines, Cornell University, MIT CEEPR Workshop, National Academy of Sciences
- 2012 AERE Summer Conference, POWER Conference, Santa Barbara AB 32 Workshop, Rutgers, Environmental Defense Fund, Deloitte Alternative Energy Conference
- 2011 New York University Transportation Workshop, RFF First Wednesday, APPAM Fall Research Conference, USAEE Conference, Boise State, Chicago/RFF Energy Conference, Senate Briefing on Clean Energy, Association of Environmental and Resource Economists Summer Conference, International Industrial Organization Conference, European Association of Environmental and Resource Economists, Carnegie Mellon (invited lecture)
- 2010 RFF/IETA Cancun Climate Conference Side Event, RFF First Wednesday, University of Dauphine Energy in the USA Conference

Referee Activities

American Economic Review, American Economic Journal: Economic Policy, BE Journal of Economic Analysis and Policy, Contemporary Economic Policy, Ecological Economics, Econometrica, The Economic Journal, Energy Economics, The Energy Journal, Energy Policy, Energy Economics, Energy Policy, Environmental and Resource Economics, Environmental Science and Technology, Forum for Health Economics and Policy, Journal of Benefit-Cost Analysis, Journal of Environment and Development,

Journal of Environmental Management, Journal of Environmental Economics and Management, Journal of Environmental Management, Journal of Health Economics, Journal of Industrial Economics, Journal of Political Economy, Journal of Regional Science, Journal of Transportation Economics and Policy, Regional Science and Urban Economics, Research Policy, Resource and Energy Economics, Review of Economics and Statistics, Review of Environmental Economics and Policy, Transportation Research

Advising

Lauren Beatty (committee member, January 2020 - Present)

Jeff Hunt (committee chair, January 2020 - Present)

Chang Shen (committee member, August 2020 – Present)

Christopher Holt (committee chair, August 2018 - Present)

Yujie Linn (committee chair, August 2018 - Present)

Xiaoya Dou (committee chair, January 2018 - Present)

Tihitina Andarge (committee member, 2019 - 2020)

Yongjoon Park (committee member, 2019-2020)

Jikun Wang (committee member, 2018 - 2019)

Guanghue Que (committee member, 2018 - 2019)

Jun Zhang (committee member, 2018-2019)

Youpei Yan (committee member, 2018 - 2019)

Wenjun Wang (committee member, 2018)

Teaching

AREC 240 (2021) Introduction to Economics and the Environment

AREC 456 (2019-2021) Energy and Environmental Economics

AREC 784 (2019-2020) Energy Economics, Empirical Industrial Organization, and Public Policy