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RESEARCH AREAS

Applied Econometrics · Energy Economics · Environmental Policy

POSITIONS

2020– Fellow, RESOURCES FOR THE FUTURE
2018–2020 Postdoctoral Fellow, RESOURCES FOR THE FUTURE
2011–2013 Senior Analyst, NERA ECONOMIC CONSULTING
2009–2011 Analyst, CONGRESSIONAL BUDGET OFFICE (CBO)
2006 & 2007 Research Intern, THE BROOKINGS INSTITUTION

EDUCATION

2013–2018 Duke University
PH.D., ENVIRONMENTAL & RESOURCE ECONOMICS · 2018
M.A., ECONOMICS · 2014
2005–2009 Williams College
B.A., ECONOMICS · 2009

PEER-REVIEWED PUBLICATIONS

Prices versus Quantities with Policy Updating

*Environmental
policy design*

Dynamic modeling of the economics of inter-temporal environmental policy when policies are updated over time. Co-author: Billy Pizer. *Journal of the Association of Environmental and Resource Economists*, Forthcoming. Working version available at [NBER](#).

Peaking Interest: How awareness drives the effectiveness of time-of-use electricity pricing

*Machine learning
& electricity
demand*

Using machine learning to determine the key factors driving consumer responses to time-of-use electricity pricing. *Journal of the Association of Environmental and Resource Economists* (7, no. 1), (January 2020): 103-143. Working version available [here](#).

The Unconventional Oil Supply Boom: Aggregate Price Response from Micro-data

*Economics of
shale/tight oil*

Econometrically estimating the effects of the shale revolution on the price elasticity of U.S. oil supply. Co-author: Richard Newell. *The Energy Journal* (40, no. 3), May 2019. Working version available [here](#).

Trophy Hunting vs. Manufacturing Energy: The Price-Responsiveness of Shale Gas

Economics of shale gas

Econometric analysis of the effects of advanced drilling technology (hydraulic fracturing and horizontal drilling) on the price elasticity of U.S. natural gas supply. Co-authors: Richard Newell, Ashley Vissing. *Journal of the Association of Environmental and Resource Economists* (6, no. 2) March 2019: 177-217.

Explanations for the 2014 Oil Price Decline: Supply or Demand?

Oil markets and price formation

Time series econometrics analyzing the relative contributions of supply and demand factors to the decline in global oil prices in 2014. *Energy Economics*, (74) August 2018, 63-75.

WORK IN PROGRESS

How Clean is “Refined Coal”? An Empirical Assessment of a Billion-Dollar Tax Credit

Coal subsidies & air quality

Assessing the effectiveness of, and legal compliance with, coal tax credits. Co-author: Alan Krupnick. Available at [RFF](#). *Under review*.

A Discounting Rule for the Social Cost of Carbon

Social cost of carbon & discounting

Estimating an empirically-driven discounting rule for the Social Cost of Carbon in an integrated assessment framework with stochastic economic growth and discount rates. Co-authors: Richard Newell and Billy Pizer. *In progress*.

The GDP-Temperature Relationship: Implications for Climate Change Damages

Economic impacts of temperature

Estimating the economic impacts of temperature, and the implication for damages of climate change—in context of model uncertainty by using cross-validation techniques. Co-authors: Richard Newell, Steven Sexton. *Under review*.

Informing SPR Policy Through Oil Futures and Inventory Dynamics

Oil reserve management

Econometric modeling of crude oil prices, futures spreads, and inventories, to analyze impacts of the Strategic Petroleum Reserve. Co-author: Richard Newell. Available at [NBER](#) and [RFF](#). *In progress*.

REPORTS

IPBES Global Assessment of Biodiversity and Ecosystem Services

IPBES Report

Contributing author to the assessment report of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) on Global Assessment of Biodiversity and Ecosystem Services. 2019.

The Effects of Renewable or Clean Electricity Standards

Renewable electricity policy

Analyzed the economic implications of renewable and clean electricity standards and economically efficient policy design. Co-author: Terry Dinan. 2011 CBO Report, available from [CBO](#).

Immigration Policy in the United States: An Update

Immigration policy

Analyzed historical patterns in U.S. immigration and border enforcement policy and trends. Co-author: Paige Piper-Bach. 2010 CBO Report, available from [CBO](#).

AWARDS, GRANTS & HONORS

- 2017 · *Fisher Dissertation Fellow-in-Residence*, Resources for the Future.
- 2017 · Student Paper Award, United States Association for Energy Economics (USAEE)
- 2017 · *Joseph L. Fisher Doctoral Dissertation Fellowship*, Resources for the Future. \$18,000.
- 2016 · *The Economics of Energy Markets* Grant (with Richard Newell), National Bureau of Economic Research (NBER), Department of Energy, and National Science Foundation (NSF). \$23,000.
- 2016 · *Duke University Summer Research Fellowship*, Stuart Irwin Harris Fellowship.
- 2016 · *Energy Doctoral Student Fellow*, Duke University Energy Initiative. 2016-2018.
- 2015 · *Pathfinder Fellow*, Data Expedition Grant, Information Initiative at Duke (iiD).
- 2014 · *Duke Environmental Economics Doctoral Scholars Fellowship* (DEEDS), Nicholas Institute for Environmental Policy Solutions.
- 2011 · *CBO Director's Award*, the agency's highest honor, granted annually to a select few individuals for exceptional achievement.
- 2009 · *Highest Honors* for a senior thesis in Economics, Williams College.
- 2009 · *Jack Larned 1942 International Management Prize*, for best undergraduate paper "dealing with the management of development in governments and private or public enterprises in African, Asian, or Latin American countries".
- 2008 · *Class of 1960 Scholar*, Economics, Williams College.
- 2007 · *Mead Internship Program*, policy internship sponsorship, Williams College.

INVITED PRESENTATIONS

- 2020 · AEA Annual Conference (San Diego, CA), National Council for Science and the Environment (Washington, DC) (scheduled)
- 2019 · Environmental Protection Agency (Clean Air Markets Division), Congressional Budget Office, AERE Summer Conference (Lake Tahoe, NV), Southern Economic Association (scheduled)
- 2018 · London School of Economics, Virginia Tech, University of Georgia, Environmental Protection Agency (NCEE), Resources for the Future, Federal Reserve Bank of Dallas
- 2017 · United States Association of Energy Economics (USAEE) Conference (Houston, TX), Colorado University Environmental and Resource Economics Workshop (Vail, CO), Camp Resources XXIV Conference (Wrightsville Beach, NC), AERE Summer Conference (Pittsburgh, PA), AEA Annual Conference (Chicago, IL).
- 2016 · Camp Resources XXIII Conference (Wrightsville Beach, NC), AERE Summer Conference (Breckenridge, CO), NBER Environmental and Energy Economics Conference (Cambridge, MA), Rice University (Houston, TX).

REFeree SERVICE

American Economic Journal: Economic Policy (AEJ:EP), *Journal of the Association of Environmental and Resource Economists (JAERE)*, *Journal of Environmental Economics and Management (JEEM)*, *The Energy Journal*, *Energy Economics*, *Energy Policy*, *Economic Inquiry*

IN THE NEWS

E&E News, Dylan Brown, June 11, 2019, “Dems attack tax credit that may not cut pollution”

S&P Global Market Intelligence (SNL), Taylor Kuykendall, June 10, 2019, “3 Senate Democrats call on IRS to review refined coal credit program”

New York Times, U.S. News and World Report, Reuters, Tim McLaughlin, June 10, 2019, “U.S. Senators Target \$1 Billion a Year Coal Subsidy, Ask IRS for Test Results”

Utility Dive, Gavin Bade, August 22, 2018, “EPA’s new ACE rule is a coal lifeline ‘disguised as a GHG regulation,’ critics say”

RTO Insider, Rich Heidorn Jr., June 11, 2018, “Five Questions on Trump’s Coal, Nuke Bailout”

RFF Blog, with Karen L. Palmer, June 7, 2018, “A Strategic Electricity Generating Reserve: Not Enticing Enough to Add to the Menu”

Forbes, Ryan Kellogg, June 7, 2018, “If Oil Prices Climb, The U.S. Is Less Able To Play The Role Of Swing Producer Than Some Think”

Forbes, Ryan Kellogg, March 5, 2018, “U.S. Shale Boom Has Led To Big Payoffs, But Energy Independence Isn’t One – Nor Should It Be”

Wall Street Journal, Grep Ip, February 21, 2018, “America’s Emerging Petro Economy Flips the Impact of Oil”

S&P Global Platts, November 10, 2017, “Interview: US oil reacts quicker to price, but remains far from swing producer”

TEACHING

Instructor, Calculus Review, Duke Nicholas School Master of Environmental Management
 Teaching Assistant for Billy Pizer, Climate Change Economics and Policy
 Teaching Assistant for Matthew Harding, Applied Big Data Science
 Teaching Assistant for Steven Sexton, Energy Economics and Policy
 Teaching Assistant for Steven Sexton, Resource and Environmental Economics

SKILLS

Subjects

Econometrics[†] · Economic Modeling · Energy Economics[†] · Environmental Policy[†] · Machine Learning[†] · Scuba Instructor (PADI)[†]

Programming

Advanced: R[†] · Matlab · Stata · L^AT_EX

Familiar: Python · VBA

[†]Teaching Experience