

# JACQUELYN PLESS

UNIVERSITY OF OXFORD

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Graduate Administrator: Julie Minns, [julie.minns@economics.ox.ac.uk](mailto:julie.minns@economics.ox.ac.uk), +44 1865 281162

## CURRENT AFFILIATION & RELEVANT POSITIONS

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- 2016 - **University of Oxford**, Oxford Martin Fellow & Postdoctoral Researcher, Institute for New Economic Thinking, Oxford Martin Programme on Integrating Renewable Energy, Research Associate of OxCarre (Department of Economics)
- Fall 2018 **Harvard University**, Visiting Researcher in the Kennedy School of Government, Postdoctoral Affiliate of the Harvard Environmental Economics Program
- 2015 **The Wharton School & Kleinman Center for Energy Policy, University of Pennsylvania**, Research Assistant to Arthur van Benthem

## EDUCATION

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- 2012-16 Colorado School of Mines, Ph.D. in Mineral & Energy Economics  
2012-14 Colorado School of Mines, M.S. in Mineral & Energy Economics  
2005-09 University of Vermont, Honors College, B.A. in Economics and Political Science

## RESEARCH FIELDS

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Economics of innovation, energy and environmental economics, public economics, applied econometrics

## REFERENCES

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| Harrison Fell<br>Associate Professor<br>North Carolina State University<br>+1 919-515-4676; <a href="mailto:hfell@ncsu.edu">hfell@ncsu.edu</a>           | Meredith Fowlie<br>Associate Professor<br>University of California, Berkeley<br>+1 501-642-4820; <a href="mailto:fowlie@berkeley.edu">fowlie@berkeley.edu</a>                            |
| Cameron Hepburn<br>Professor<br>University of Oxford<br>+44 7960 090 490; <a href="mailto:cameron.hepburn@new.ox.ac.uk">cameron.hepburn@new.ox.ac.uk</a> | Arthur van Benthem<br>Assistant Professor<br>The Wharton School, University of Pennsylvania<br>+1 215-898-3013; <a href="mailto:arthurv@wharton.upenn.edu">arthurv@wharton.upenn.edu</a> |

## SELECT PUBLICATIONS AND ACCEPTED PAPERS

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- Pless, J., van Benthem, A. "Pass-Through as a Test for Market Power: An Application to Solar Subsidies", *NBER Working Paper No. 23260* [accepted by the **American Economic Journal: Applied Economics**]  
"How to Make Your Post-Merger Reorg a Success" (with Stephen Heidari-Robinson and Suzanne Heywood). *Harvard Business Review* [online article only]. 2018.

- Hepburn, C., Pless, J., Popp, D., 2018. "Encouraging Innovation that Protects Environmental Systems: Five Policy Proposals," *Review of Environmental Economics and Policy*, 12(1), 154-169.
- Pless J., Fell, H., 2017. "Bribes, Bureaucracies, and Blackouts: Towards Understanding How Firm-Level Corrupt Behavior Impacts Electricity Reliability," *Resource and Energy Economics*, 47, 36-55.

## **JOB MARKET PAPER**

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### **"Are 'Complementary Policies' Substitutes? Evidence from R&D Subsidies in the UK"**

*Abstract:* Governments subsidize R&D through a mix of interdependent mechanisms, but subsidy interactions are not well understood. This paper provides the first quasi-experimental evaluation of how R&D subsidy interactions impact firm behavior. I use funding rules and policy changes in the UK to show that direct grants and tax credits for R&D are complements for small firms but substitutes for larger firms. Increasing the generosity of both subsidy types more than doubles small firms' R&D expenditures, but for larger firms, increasing tax credit rates cuts the positive effect of grants in half. I explore the mechanisms behind these findings and provide suggestive evidence that subsidy complementarity is consistent with easing financial constraints for small firms. Substitution by larger firms is most consistent with the subsidization of infra-marginal R&D expenditures. I rule out some alternative explanations. Subsidy interactions also impact the *types* of innovation efforts that emerge: with increases in both subsidies, small firms steer efforts increasingly towards developing new goods (i.e., horizontal innovations) as opposed to improving existing goods (i.e., vertical innovations). Accounting for subsidy interactions could substantially improve the effectiveness of public spending on R&D.

## **PRIMARY WORKING PAPERS**

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### **"Pass-Through as a Test for Market Power: An Application to Solar Subsidies"** (with Arthur van Benthem) [accepted by *American Economic Journal: Applied Economics*]

We formalize pass-through over-shifting as a simple yet under-utilized test for market power. We apply this test in the market for solar energy. Specifically, we estimate the pass-through of solar subsidies to solar system prices using rich micro-level transaction and subsidy data from California. Buyers of solar systems capture nearly the full subsidy, while there is more-than-complete pass-through to lessees. We conclude that solar markets are imperfectly competitive by ruling out alternative explanations for over-shifting, and reinforce this conclusion with a test of solar demand curvature. This procedure can serve to detect market power beyond the solar market.

### **"Disentangling Uncertainty and Salience"** (with Eoghan McKenna)

Uncertainty and salience lead to different policy implications, but the distinction between them as mechanisms to explain how information affects behavior is not always clear in empirical studies. We use high-frequency data on solar energy generation and electricity consumption to disentangle rational habits from endowment salience effects. We test how providing real-time information regarding onsite solar generation affects household electricity consumption substitution patterns. Preliminary results show that information increases the endowment elasticity by 4 percent on average and up to 18 percent depending on time of day and year. Continued work is exploring the mechanism (i.e., uncertainty versus salience), examining expectation formation, and applying econometric and machine learning methods to derive salience-adjusted self-consumption counterfactuals and welfare effects. The methods can be applied in other settings with misoptimizing consumers.

## OTHER WORKING PAPERS

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- “Steering the Climate: Comment” (with L. Mattauch, C. Hepburn, R. van der Ploeg, N. Stern, and others) **[submitted to the *American Economic Review* in August 2018]**
- “Mission Innovation, Not Mission Impossible” (with C. Hepburn, J. Rhys, and N. Farrell) **[R&R with *Nature Energy*]**
- “Is This the End of Conventional Wholesale Electricity Markets?” (with N. Farrell, C. Hepburn, and J. Rhys) **[R&R with *Oxford Review of Economic Policy*]**
- “To Buy or Lease? Business Model Consumer Preferences in the Residential Solar PV Market” **[R&R with *The Energy Journal*]** (with H. Fell and B. Sigrin)

## RESEARCH IN PROGRESS

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- “Environmental Policy and Labor Demand in China” (with Yangsiyu Lu)
- “R&D Subsidy Interactions and Directed Technological Change”
- “Directed Technological Change: Evidence from Horizon 2020” (with Myra Mohnen and Ralf Martin)

## OTHER PUBLICATIONS (PRE-DOCTORAL & INTERDISCIPLINARY)

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- “Solar photovoltaic self-consumption in the UK residential sector: new estimates from a smart grid demonstration project” (with Eoghan McKenna and Sarah Darby). *Energy Policy* 118. 2018.
- “Quantifying the value of investing in distributed natural gas and renewable electricity systems as complements: Applications of discounted cash flow and real options analysis with stochastic inputs”, (with D. Arent, J. Cochran, J. Logan, O. Zinaman). *Energy Policy* 97. 2016.
- “Diffusion into new markets: Evolving customer segments in the solar photovoltaics market,” (with B. Sigrin and E. Drury). *Environmental Research Letters*. 2015.
- “Implications of high renewable electricity penetration in the U.S. for water use, greenhouse gas emissions, land-use, and materials supply,” (with D. Arent, T. Mai, R. Wiser, M. Hand, S. Baldwin, G. Heath, J. Macknick, M. Bazilian, A. Schlosser, P. Denholm). *Applied Energy*. 2014.

## TEACHING EXPERIENCE

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| 2018     | Lecturer, Econometrics, Quantitative Skills Module (MSc), University of Oxford<br>Lecturer, Introduction to Economics (D.Phil short course), University of Oxford<br>Lecturer, Environmental Economics, Enterprise and the Environment Summer School, University of Oxford |
| 2017, 18 | Grader, Energy Markets (MBA), University of Oxford   |
| 2016     | Graduate Teaching Assistant, Principles of Economics (undergrad), CSM  |
| 2015, 16 | “So, you want to ‘do’ econometrics?” (PhD), CSM [invited guest lecture]  |

## OTHER WORK EXPERIENCE

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| 2017 -  | Quartz Associates, Head of Analysis   |
| 2013-16 | National Renewable Energy Laboratory, Joint Institute for Strategic Energy Analysis, Research Economist |
| 2010-13 | National Conference of State Legislatures, Energy Policy Specialist (promoted twice)                    |
| 2009-10 | Pennsylvania House of Representatives, Legislative Assistant  |
| 2008    | The World Bank, Chief Economist’s Office of the Human Development Network, Intern                       |

## **SELECT HONORS & AWARDS**

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- 2018 Marie Curie Fellowship, mobility grant
- 2016 Hubert and Sarah Risser Award for “outstanding academic and co-curricular performance”, CSM Division of Economics and Business
- 2015 P.E.O Scholar Award, an international merit-based award for “women who are expected to make significant contributions to their fields”
- 2014 Finalist, IAEE Best Student Paper Award
- 2012-13,15 Darlene Regina Pauli Scholarship, CSM Division of Economics and Business
- 2009 Gersten Award given by the Department of Economics, Univ. of Vermont, to “a senior demonstrating outstanding academic achievement in economics”
- 2008 Milton J. Nadworny Award given by the Department of Economics, Univ. of Vermont, for “academic merit, independence of mind, determination, intellectual curiosity, and commitment to human welfare”

## **RESEARCH GRANTS**

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- 2015 Center for Sustainable Energy Research Grant (\$35,000)
- 2014 National Renewable Energy Laboratory Research Grant (\$46,000)
- 2013 Joint Institute for Strategic Energy Analysis Research Grant (\$18,200)

## **ACADEMIC CONFERENCE & SEMINAR PRESENTATIONS**

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- 2018 Harvard (HEEP/HKS), ASSA (Philadelphia), Royal Economic Society (Brighton), Oxford (Economics), WCERE (Gothenburg), University of Kansas (Economics)
- 2017 Oxford (Economics), AERE Summer Conference (Pittsburgh), IAEE (Singapore), University of Sussex (SPRU), Oxford (INET)
- 2016 University of Cambridge (Judge Business School & Faculty of Economics), Oxford (Säid Business School), University of Manchester (Economics), AERE Summer Conference (Breckenridge), North Carolina State University (ARE), Colorado State University (DARE), CU-Boulder (Economics), CSM (Economics), Front Range Energy Workshop (Golden)
- 2015 AERE (San Diego), University College London, CU-Boulder (Economics), CU-Boulder Environmental and Resource Economics Workshop (Vail), University of Vermont (Economics), Front Range Energy Workshop (Boulder)
- 2014 IAEE Best Student Paper Competition (New York), CSM (Economics)

## **OTHER SELECT PRESENTATIONS & INVITED WORKSHOP PARTICIPATION**

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- 2017 Harnessing International Cooperation to Advance Clean Energy Innovation (Council on Foreign Relations), National Renewable Energy Laboratory Seminar (NREL)
- 2016 Breaking Carbon Lock-in (CIFF, JISEA), JISEA 2016 Annual Meeting (Golden)
- 2015 JISEA 2015 Annual Meeting (Golden)
- 2014 Synergies of Natural Gas and Renewable Energy Workshop (San Antonio), NREL
- 2013 Midwest Environmental Health Policy Summit (Des Moines)
- 2012 University of Michigan (Gerald R. Ford School of Public Policy), U.S. DOE of Indian Energy, University of Maryland (School of Public Health)

## DOCTORAL STUDENTS

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Yangsiyu Lu, University of Oxford (expected graduation year: 2020) (co-advisor)

## PROFESSIONAL ACTIVITIES

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**Refereeing:** *Journal of Environmental Economics and Management, Oxford Review of Economic Policy, Ecological Economics, Journal of Policy Analysis and Management, Resource and Energy Economics, The Energy Journal, Energy Economics, Energy Policy, Journal of Renewable and Sustainable Energy, WIREs Energy and Environment*

**Memberships:** American Economic Association (AEA), Association of Environmental & Resource Economists (AERE)

### Conference Organization:

2018 Co-organizer of “Clean Energy Innovation: Making the Most of R&D Investments” [in partnership with the Energy Policy Institute at Chicago, ClearPath, and ACCF]

### Other:

2015-16 Women in Economics & Business, initiated and led discussion group

2016 USAEE CSM Chapter, Vice President

2014-15 USAEE CSM Chapter, Secretary

## SELECT MEDIA

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Wall Street Journal, “As energy boom nears cities, a backlash grows,” February 27, 2013

The Denver Post, “As energy boom nears Colorado cities, a backlash grows,” February 27, 2013

Governing, *Stateline*, “States Scramble to Regulate, Ban Fracking,” May 9, 2012

The Michigan Daily, “Forum considers fracking in Michigan,” December 3, 2012

Illinois Public Radio interview on natural gas development in the U.S., 2012

Ohio Public Radio interview on natural gas development in the U.S., 2012

NBC-Dallas-Fort Worth, *Vortex*, “Texas Could Lead Way in Fracking Disclosure,” May 13, 2011

Huffington Post, “Texas Fracking Bill would Be First to Require Public Disclosure of Gas Drilling Chemicals,” May 12, 2011

Bloomberg Business, “NJ considering ban on fracking despite little gas,” June 28, 2011

## SELECT POLICY BRIEFS & OTHER WRITING

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Pless J., Langheim R., Machak C., Hellow H., Sigrin B., 2017. *The Price-Concentration Relationship in Early Residential Solar Third-Party Markets*, National Renewable Energy Laboratory.

Hepburn C., Pless J., Teytelboym A., 2016. Response to the House of Lords Economic Affairs Committee Inquiry into the *Economics of UK Energy Policy: A Focus on Electricity*.

Pless J., Schiele J., 2016. “Why we should think of power grids like fisheries,” *Oxford Martin School Opinion*, University of Oxford

Adams R., Pless J., Arent D., Locklin K., 2016. *Accelerating Clean Energy Commercialization: A Strategic Partnership Approach*, National Renewable Energy Laboratory.

Carmichael S., Booten C., Robertson J., Chin J., Christensen D., Pless J., Arent D., 2016. *Annual energy savings and thermal comfort of autonomously heated and cooled office chairs*, National Renewable Energy Laboratory.

Pless J., Arent D., Logan J., Cochran J., Zinaman O., Stark C., 2015. *Pathways to Decarbonization: Natural Gas and Renewable Energy*, National Renewable Energy Laboratory.

Stark C., Pless J., Logan J., Zhou E., Arent D., 2015. *Renewable Electricity: Insights for the Coming Decade*, National Renewable Energy Laboratory.

Cowlin S., Heimiller D., Macknick J., Mann M., Pless J., Munoz D., 2014. *Multi-Metric Sustainability Analysis*, National Renewable Energy Laboratory.

Bazilian, M., Pless, J., 2013. *Increasing Energy Access in Sub-Saharan Africa: Exploring Public-Private Models for Intervention*, Energy+ Technical Working Group.

Heap, D., Pless, J., 2013. "Clean Energy Finance: Challenges and Opportunities of Early-Stage Energy Investing," National Renewable Energy Laboratory. Dec. 3, 2013.

Pless, J., 2013. *States Take the Lead on Regulating Hydraulic Fracturing: A Policymaker's Guide*. National Conference of State Legislatures. Denver, CO: NCSL.

Pless, J., 2012. *Natural Gas Development and Hydraulic Fracturing*. National Conference of State Legislatures. Denver, CO: NCSL.

Pless, J., 2012. *Oil and Gas Severance Taxes: States Work to Alleviate Fiscal Pressures Amid the Natural Gas Boom*. National Conference of State Legislatures. Denver, CO: NCSL.

Pless, J., 2012. *Metal Theft Can Threaten U.S. Energy Security: A Hot Issue in 2012*. National Conference of State Legislatures. Denver, CO: NCSL.

Pless, J., 2012. "Fracking Fracas," *State Legislatures Magazine*. National Conference of State Legislatures. Denver, CO: NCSL.

Pless, J., 2012. "Copper Robbers," *State Legislatures Magazine*, National Conference of State Legislatures, Denver, CO: NCSL.

Pless, J., 2011. *A Policymaker's Guide to Climate Economics*. National Conference of State Legislatures. Denver, CO: NCSL.

Pless, J., 2011. *Making State Gas Pipelines Safe and Reliable: An Assessment of State Policy*. National Conference of State Legislatures. Denver, CO: NCSL.

Pless, J., 2011. *Copper Theft Can Cause Major Electrical Outages and Impact Ratepayers: A Hot Issue in 2011*. National Conference of State Legislatures. Denver, CO: NCSL.

Pless, J., 2011. *Climate Change: Policy Update 2011*. National Conference of State Legislatures. Denver, CO: NCSL.

Pless, J., 2011. *Fracking Update: What States are doing to Ensure Safe Natural Gas Extraction*. National Conference of State Legislatures. Denver, CO: NCSL.

Pless, J., 2010. *Taxing Natural Gas Production*. National Conference of State Legislatures. Denver, CO: NCSL.

Pless, J., 2010. *Hydraulic Fracturing: What's the Big Fracking Deal?* National Conference of State Legislatures. Denver, CO: NCSL.