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## EDUCATION

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2011 *Ph.D., Engineering and Public Policy, Carnegie Mellon University*  
2009 *M.S., Engineering and Public Policy, Carnegie Mellon University*  
2004 *California Teaching Credential (Chemistry), National University*  
1999 *B.S., Environmental Science, Cum Laude, University of Massachusetts, Amherst*

## EMPLOYMENT

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2018-present **Associate Professor**, School of Economics, University of Maine, Orono, ME  
2011-2018 **Assistant Professor**, School of Economics, University of Maine, Orono, ME  
2006-2007 **Teacher**, *Physical Science and Astronomy (Eighth Grade)*, Colegio Americano, Quito, Ecuador  
2005-2007 **Teacher**, *International Baccalaureate Environmental Systems (Eleventh and Twelfth Grade)*, Colegio Americano, Quito, Ecuador  
2005-2006 **Teacher**, *International Baccalaureate Theory of Knowledge (Eleventh and Twelfth Grade)*, Colegio Americano, Quito, Ecuador  
2002-2005 **Teacher**, *Physical Sciences (Eighth Grade)*, King/Chavez Academy, San Diego, CA  
2002-2005 **Teacher**, *Natural Sciences (Seventh Grade)*, King/Chavez Academy, San Diego, CA  
2000-2002 **Environmental Technician**, Hargrave Environmental Consulting, Inc., San Diego, CA  
1999-2000 **Corps Member**, Americorps National Civilian Community Corps, Southeast Region

## HONORS

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2017-2018 Maine Development Foundation Leadership Maine Silver Class Participant  
2015-2017 University of Maine Faculty Fellow  
2012 White House Champion for Change - Americorps Alums  
2011 World Renewable Energy Congress Best Paper Award in Solar Thermal Applications  
2010 Graduate Student Assembly/Provost Conference Fund Award  
2010 Neuworth Scholarship Travel Grant, Carnegie Mellon University  
2009-2011 National Science Foundation Graduate Research Fellowship  
2008-2009 Steinbrenner Graduate Fellowship, Carnegie Mellon University  
2007 Carnegie Institute of Technology Dean's Fellowship Engineering Award

## RESEARCH & TEACHING INTERESTS

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1. Technical, economic, environmental and social tradeoffs inherent in the production, distribution, and use of sustainable energy options
2. Grassroots community renewable energy and energy efficiency
3. Engineering-economic analysis
4. Environmental life cycle assessment
5. Social benefit-cost analysis
6. Multi-criteria decision analysis
7. Tradeoffs associated with multiple environmental issues: water, waste, pollution, climate change, ecosystems, biodiversity

## PUBLICATIONS

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*Note: I changed my last name from Wagner to Klein in January 2013*

*\*Graduate student coauthor*

### Peer-Reviewed Journal Articles

- 1) Roy, S., Uchida, E., De Sousa, S., Blachy\*, B., Fox\*, E., Gardner, K., **Klein, S.J.W.**, Zydlewski, J., Damming decisions: A multi-scale approach to balance trade-offs among dam infrastructure, river restoration, and cost. *In press*.
- 2) Song\*, C., Gardner, K., **Klein, S.J.W.**, Pereira Souza, S., & Mo, W. (2018). Cradle-to-grave greenhouse gas emissions from dams in the United States of America. *Renewable and Sustainable Energy Reviews*, vol. 90, pp. 945-956.
- 3) Gunukula, S., **Klein, S.J.W.**, Pendse, H., DeSisto, W., & Wheeler, M. (2018). Techno-economic analysis of thermal deoxygenation based biorefineries for the coproduction of fuels and chemicals. *Applied Energy*, vol. 214, pp. 16-23.
- 4) **Klein, S.J.W.**, Noblet, C.L., Exploring Sustainable Energy Economics: Net Metering, Rate Designs and Consumer Behavior, *Curr Sustainable Renewable Energy Rep*, vol. 4, no. 2, pp. 23–32, Jun. 2017.
- 5) Whalley\*, S., **Klein, S.J.W.**, Benjamin, J., Economic analysis of woody biomass supply chain in Maine, *Biomass & Bioenergy*, vol. 96, pp. 38–49, Jan. 2017.
- 6) **Klein, S.J.W.**, Coffey\*, S., 2016, Building a sustainable energy future, one community at a time, *Renewable and Sustainable Energy Reviews*, vol. 60, pp. 867–880, doi: 10.1016/j.rser.2016.01.129.
- 7) Rubin, J., Neupane\*, B., Whalley\*, S., **Klein, S.**, 2015. Woody Biomass Supply, Economics, and Biofuel Policy. *Transportation Research Record: Journal of the Transportation Research Board* 2502, 108–115. doi:10.3141/2502-13
- 8) **Klein, S.J.W.**, Whalley\*, S., 2015, Comparing the sustainability of U.S. electricity options through multi-criteria decision analysis (MCDA), *Energy Policy*, 79, 127-149.
- 9) Anderson, M., Teisl, M., Noblet, C., **Klein, S.**, 2014, The incompatibility of benefit-cost analysis with sustainability science, *Sustainability Science*, September, 1-9. doi:10.1007/s11625-014-0266-4.

- 10) **Wagner, S.**, Rubin, E., 2014, Economic implications of thermal energy storage for concentrated solar thermal power, *Renewable Energy*, 61C, 81-95, <http://dx.doi.org.prxy4.ursus.maine.edu/10.1016/j.545.renene.2012.08.013>.
- 11) Teisl, M.F., McCoy, S., Marrinan\*, S., Noblet, C.L., Johnson, T., Wibberly\*, M., Roper, R., and **Klein, S.** 2014, Will offshore energy face 'fair winds and following seas'? Understanding the factors influencing offshore wind acceptance. *Estuaries and Coasts*. published online February 6, 2014, DOI 10.1007/s12237-014-9777-6.
- 12) **Klein, S.J.W.** 2013, A multi-criteria decision analysis of concentrated solar power with thermal energy storage and dry cooling, *Environmental Science & Technology*, 47, 13925-13933, <http://dx.doi.org/10.1021/es403553u>.
- 13) **Klein, S.J.W.**, Rubin, E.S. 2013, Life cycle assessment of greenhouse gas emissions, water and land use for concentrated solar power plants with different energy backup systems, *Energy Policy*, 63, 935-950, DOI: 10.1016/j.enpol.2013.08.057.

### Journal Articles in Preparation

- 1) Fox\*, E., **Klein, S.J.W.**, A Comprehensive Review on Small Hydropower Project Cost and Performance Modeling.
- 2) Fox\*, E., **Klein, S.J.W.**, Group participatory multi-criteria decision analysis (MCDA) in a dam decision context.
- 3) **Klein, S.J.W.**, Mistro\*, D. Energy savings and participant benefits from community-built window inserts.
- 4) **Klein, S.J.W.**, Coffey\*, S., Social and economic costs and benefits of different community-based solar approaches in New England.
- 5) **Klein, S.J.W.**, Langton\*, R.B.W., Hunt, G., The cost of producing drop-in biodiesel from woody biomass residues in the Northeast United States.
- 6) Neupane\*, B., **Klein, S.**, Wheeler, C., Life cycle assessment of energy and greenhouse gas emissions from drop-in diesel from forest biomass in Maine.

### Chapters in Books/Conference Papers

(<sup>†</sup>peer-reviewed)

- 1) Van Tulder\*, F., **Klein, S.**, & Morgan, E., California, USA - Consumer co-ownership in renewables. In *Energy Transition: Financing consumer ownership in renewables" – 18 country studies and a comparative analysis*. Palgrave Macmillan. In press (**INVITED**)
- 2) <sup>†</sup>**Klein, S.J.W.** and Coffey\*, S., 2017, United States Community Energy. *Handbook on Energy Transition and Participation* Springer VS, Wiesbaden; Lars Holstenkamp and Jörg Radtke, editors. ISBN: 9783658094157. (**INVITED**)
- 3) **Klein, S.J.W.**, Mistro\*, D., 2016 Community energy for a sustainable future: window insert builds in Maine. Second International Sustainable Consumption Research and Action Initiative (SCORAI) Conference "Transitions Beyond a Consumer Society", June 15-17, 2016, Wells Conference Center, University of Maine, Orono, ME.

- 4) †Rubin, J., Neupane\*, B., Whalley\*, S., and **Klein, S.**, 2015, Woody Biomass Supply, Economics, Biofuel Policy: Maine and Northeastern Forests, Transportation Research Board 2015 Annual Meeting, Washington D.C., January 11-15, 2015.
- 5) †**Wagner, S.**, Rubin, E., 2012. Evaluating renewable energy systems along the hybrid spectrum: concentrated solar power, *International Conference on Clean Energy (ICCE)*. Quebec, Canada.

## Published Abstracts

(†peer-reviewed)

- 1) †Roy, S., McGreavy, B., Quiring\*, T., Uchida, E., Wilson, K.A., **Klein, S.**, Fox\*, E., Zydlewski, J., Jansujwicz, J., deSouza, S., Hart, D., Gardner, K., Opportunities for resilient communities, ecosystems, and infrastructure by optimizing management of New England dams. Resilience Conference, Stockholm, Sweden, August 20-23, 2017, [http://media.resilience2017.org/2017/08/Resilience-2017\\_Final-pdf-program.pdf](http://media.resilience2017.org/2017/08/Resilience-2017_Final-pdf-program.pdf).
- 2) †McGreavy, B., Quiring\*, T., Roy, S., Wilson, K.A., deSouza, S., Hart, D., Gardner, K., Gottschalk Druschke, C., Ashcraft, C.A., Fultineer, S., Jansujwicz, J., **Klein, S.**, Mo, W., Vogler, E., Gold, A., Uchida, E. How do we decide what to do with dams? Dynamic Design Planning (DDP) to shape collaboration for sustainability science. Resilience Conference, Stockholm, Sweden, August 20-23, 2017, [http://media.resilience2017.org/2017/08/Resilience-2017\\_Final-pdf-program.pdf](http://media.resilience2017.org/2017/08/Resilience-2017_Final-pdf-program.pdf).
- 3) †Song\*, C., Mo, W., Gardner, K., **Klein, S.J.W.**, Pereira Souza, S., Understanding the Cradle-to-Grave Greenhouse Gas Emissions of Dams, Association of Environmental Engineers and Science Professors (AEESP) Research and Education Conference, University of Michigan, Ann Arbor, Michigan, June 21-22, 2017, [https://aeesp2017.com/program\\_list.php?sid=S20#a491](https://aeesp2017.com/program_list.php?sid=S20#a491).
- 4) †Mistro\*, D., **Klein, S.J.W.**, Window Inserts and the Communities Adopting Them, Canadian Economics Association 2017 Conference, St. Francis Xavier University, Nova Scotia, Canada, June 2, 2017, <https://economics.ca/2017/en/program.php>.
- 5) †**Klein, S.J.W.**, What are the financial and social costs and benefits of different community solar approaches? Behavior, Energy, and Climate Change Conference (BECC), Baltimore, Maryland, October 20-22, 2016, [http://beccconference.org/wp-content/uploads/2016/09/2016-BECC-Abstracts\\_Alpha-by-Last-Name.pdf](http://beccconference.org/wp-content/uploads/2016/09/2016-BECC-Abstracts_Alpha-by-Last-Name.pdf).
- 6) †Langton\*, R., **Klein, S.** Biofuels from Trees: A New Process to Produce Drop-in Biofuels from Woody Biomass, International Conference on Environment and Renewable Energy. Sheraton Munich Westpark Hotel. Munich, Germany, May 26, 2016, [http://energy.conference-site.com/archive/2016/proceedings/proceedings\\_ICERE\\_2016.pdf](http://energy.conference-site.com/archive/2016/proceedings/proceedings_ICERE_2016.pdf).
- 7) †Langton\*, R., **Klein, S.** Biofuels from Trees: A New Process to Produce Drop-in Biofuels from Woody Biomass. Maine Sustainability & Water Conference, Augusta Civic Center, Augusta, Maine, March 29, 2016, <https://umaine.edu/mitchellcenter/news/maine-water-conference/2016-maine-sustainability-water-conference/2016-concurrent-sessions/#energy>.
- 8) †Coffey\*, S., **Klein, S.** Does Community Solar Have a Future in New England? Maine Sustainability & Water Conference, Augusta Civic Center, Augusta, Maine, March 29,

2016, <https://umaine.edu/mitchellcenter/news/maine-water-conference/2016-maine-sustainability-water-conference/2016-concurrent-sessions/#energy>.

- 9) †**Klein, S.** Renewable Energy Solutions. 33rd United States Association for Energy Economics/IAEE North American Conference, Pittsburgh, PA, [http://www.usaee.org/usaee2015/program\\_concurrent.aspx](http://www.usaee.org/usaee2015/program_concurrent.aspx), October 25-28, 2015.
- 10) †Neupane\*, B., **Klein, S.**, Wheeler, C., Rubin, J., Life Cycle Energy and Greenhouse Gases Emissions Assessment of Forest-based Drop-in Biofuel Production in Maine. American Center for Life Cycle Assessment Annual Meeting XV, Vancouver, British Columbia, October 6-8, 2015, <http://www.aclca.org/lca-xv/biofuels-3/>.
- 11) †Whalley\*, S., Neupane\*, B., **Klein, S.**, Rubin, J., Sustainability Assessment of Drop-In Biofuels in Maine. 20th Maine Sustainability & Water Conference. Augusta Civic Center, Augusta, Maine, April 1, 2014, <https://umaine.edu/mitchellcenter/mwc-2014/concurrent-sessions/session-g/#whalley>.

### Research Reports, Technical Papers, Websites

- 1) **Klein, S.**, Criner, G., Allen, T., Mid-Coast Solid Waste Corp Landfill Project Phase 2 Report. *Technical Report*, November 13, 2013.
- 2) Criner, G., **Klein, S.**, Allen, T., Leighton\*, R., Mid-Coast Solid Waste Corp Landfill Project Phase 1 Report, *Technical Report*. September 24, 2013.
- 3) Whalley\*, S., Neupane\*, B., **Klein, S.**, Rubin, J., Woody Biomass Supply in Maine, *Technical Report*. June 2, 2013.
- 4) **Klein, S.** Report on Gender Income Disparity in Maine. Prepared for Maine Development Foundation. April 2016.
- 5) **Klein, S.**, Coffey\*, S., Nittel, S., Stinson<sup>§</sup>, S., US Community Energy Website, published online April 2017, <https://www.communityenergyus.net>.

### Popular Media Publications

- 1) **Klein, S.** “5 myths people hold about solar power in Maine.” Bangor Daily News [Online] April 28, 2016 Published: <http://bangordailynews.com/2016/04/28/opinion/5-myths-people-hold-about-solar-power-in-maine/>.
- 2) Neiman, E., **Klein, S.** “One site ranks Maine 4th best for women, but there’s more to the story | BDN Maine.” Bangor Daily News [Online] April 1, 2016 Published: <http://bangordailynews.com/2016/04/01/the-point/one-site-ranks-maine-4th-best-for-women-but-theres-more-to-the-story/>.
- 3) **Wagner, S.**, Serving the United States Through AmeriCorps, White House Champions of Change Blog, August 17, 2012, <http://www.whitehouse.gov/champions/blog?page=12>.

## RESEARCH GRANTS

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### Awarded Research Grants

(Total: \$ 4,065,632)

- 1) *Addressing the mess: developing evaluative methods for group participatory decision support in riverine systems*. Principal Investigators: **S. Klein** (60%), B. McGreavy, A. Strong. Sponsor: US Geological Survey 104b Water Resources Sustainability Research Grant. Amount: **\$32,477**. July, 2018-June 2019.
- 2) *Advancing Renewable Energy and Energy Efficiency in Maine*. Principal Investigator: **S. Klein**. Sponsor: USDA National Institute of Food and Agriculture. Hatch-1013178, Project Dates: October 1, 2017-September 30, 2022.
- 3) *Building models for hydropower production analysis and stakeholder MCDA decision support*. Principal Investigator: K. Raffier (student). Faculty Advisor: **S. Klein**. Sponsor: University of Maine Center for Undergraduate Research. May 2017-April 2018. Amount: **\$3,000**.
- 4) *Stakeholder-Engaged Hydropower Decision-Making*, Principal Investigator: **S. Klein**. Sponsor: University of Maine Research Reinvestment Fund. June 2017-May 2018. Amount: **\$7,000**.
- 5) *Travel Support to Present at Behavior, Energy and Climate Change Conference (BECC)*, Principal Investigator: **S. Klein**. Sponsors: Bangor Savings Bank Faculty Development Fund, Lyndon Paul LoRusso Memorial Faculty Development Fund. October 2016. Amount: **\$1,500**.
- 6) *Community-Based Sustainable Energy Solutions*, Principal Investigator: **S. Klein**. Sponsor: Senator George J. Mitchell Center for Sustainability Solutions, University of Maine. July 2016-June 2017. Amount: **\$49,971**.
- 7) *Mandela Washington Fellowship Public Management Institute*, Principal Investigators: J. Hecker, C. Kim, D. Dixon, J. Rubin. Senior Personnel: **S. Klein**, others. Sponsor: IREX and US Department of State. June-August 2016. Amount: **\$145,000**.
- 8) *RII Track-2 FEC: Strengthening the scientific basis for decision-making about dams: Multi-scale, coupled-systems research on ecological, social, and economic trade-offs*, Principal Investigators: D. Hart, J. Zydlewski, B. McGreavy, **S. Klein**, S. Smith. Sponsor: National Science Foundation EPSCoR. September 2015-August 2019. Amount: **\$1,800,000**.
- 9) *Community-Based Sustainable Energy Solutions*, Principal Investigator: **S. Klein**. Sponsor: Senator George J. Mitchell Center for Sustainability Solutions, University of Maine. July 2015-June 2016. Amount: **\$49,939**.
- 10) *Campuses for Environmental Stewardship*, Principal Investigators: C. Sullivan, D. Dixon, **S. Klein**, C. Isenhour, S. De Urioste-Stone, B. McGreavy. Sponsor: Campus Compact Coalition. April 2015-May 2016. Amount: **\$4,000**.
- 11) *NSF CAREER Grant Development*, Principal Investigator: **S. Klein**. Sponsor: Margaret Chase Smith Policy Center. June 2015. Amount: **\$4,000**.

- 12) *NSF CAREER Grant Writing Workshop*, Principal Investigator: **S. Klein**. Sponsor: ADVANCE Rising Tide Center. June 2015. Amount: **\$6,148**.
- 13) *Mid-Coast Solid Waste Landfill Project Phase II*, Principal Investigators: **S. Klein** and G. Criner. Sponsor: Mid-Coast Solid Waste Corporation. August 2013 - June 2014. Amount: **\$17,330**.
- 14) *Pretenure Research and Creativity Fellowship*, Principal Investigator: **S. Klein**. Sponsor: PRE-VUE grant supported by President's Office University of Maine. 2013-2014. Amount: **\$24,914**.
- 15) *Mid-Coast Solid Waste Landfill Project*, Principal Investigators: **S. Klein** and G. Criner. Sponsor: Mid-Coast Solid Waste Corporation. January-June 2013. Amount: **\$17,330**.
- 16) *SEP Integrated National Framework for Cellulosic Drop In Fuels*, Principal Investigators: H. Pendse, J. Rubin, L. Silka, C. Wheeler, I. Fernandez; Senior Personnel: **Sharon Klein**, along with eight others. Sponsor: National Science Foundation – Sustainable Energy Pathways. 2012-2016, extended to 2017. Amount: **\$1,895,523**.
- 17) *Renewable Energy in Maine*. Principal Investigator: **S. Klein**. Sponsor: USDA National Institute of Food and Agriculture, 230040 [Maine Agricultural and Forest Experiment Station ME0-H-3-00526-13]. Project Dates: October 1, 2012-September 30, 2017.
- 18) *Assessment of the economic, environmental, and social implications of solar water heating in Maine*, Principal Investigator: **S. Klein**. Sponsor: Faculty Research Funds Committee, University of Maine. July 2012. Amount: **\$7,500**.

## PROFESSIONAL PRESENTATIONS (since 2011)

*NOTE: I changed my last name from Wagner to Klein in January 2013*

*\*Graduate student coauthor*

*§Undergraduate student coauthor*

*‡High school student coauthor*

*†peer-reviewed*

### Presentations at Professional Conferences and Meetings

*NOTE: includes Conference Papers and Published Abstracts listed above*

- 1) †**Klein, S.J.W.**, Nittel, S., Stinson<sup>§</sup>, K., Noblet, C.L., Isenhour, C., Coffey\*, S., Oral Presentation. Communities taking solar into their own hands: a social science look at the growing community solar movement, American Solar Energy Society's 46<sup>th</sup> National Solar Conference, University of Colorado, Denver, Colorado, October 9-12, 2017.
- 2) †**Raymond\*, G.**, Klein, S.J.W., Poster Presentation. Using Multi-Criteria Decision Analysis to Compare Fuel Production Processes, International Conference & Exhibition on Clean Energy (ICCE), Toronto, Canada, August 21-23, 2017, <http://icce2017.iaemm.com/documents/ICCE2017ProgramDetail.pdf>.
- 3) †**Roy, S.**, McGreavy, B., Quiring\*, T., Uchida, E., Wilson, K.A., Klein, S., Fox\*, E., Zydlewski, J., Jansujwicz, J., deSouza, S., Hart, D., Gardner, K., Poster Presentation. Opportunities for resilient communities, ecosystems, and infrastructure by optimizing management of New England dams. Resilience Conference, Stockholm, Sweden,

August 20-23, 2017, [http://media.resilience2017.org/2017/08/Resilience-2017\\_Final-pdf-program.pdf](http://media.resilience2017.org/2017/08/Resilience-2017_Final-pdf-program.pdf).

- 4) †**McGreavy, B.**, Quiring\*, T., Roy, S., Wilson, K.A., deSouza, S., Hart, D., Gardner, K., Gottschalk Druschke, C., Ashcraft, C.A., Fultineer, S., Jansujwicz, J., Klein, S., Mo, W., Vogler, E., Gold, A., Uchida, E. Oral Presentation. How do we decide what to do with dams? Dynamic Design Planning (DDP) to shape collaboration for sustainability science. Resilience Conference, Stockholm, Sweden, August 20-23, 2017, [http://media.resilience2017.org/2017/08/Resilience-2017\\_Final-pdf-program.pdf](http://media.resilience2017.org/2017/08/Resilience-2017_Final-pdf-program.pdf).
- 5) †**Song\*, C.**, Mo, W., Gardner, K., Klein, S.J.W., Pereira Souza, S., Oral Presentation. Understanding the Cradle-to-Grave Greenhouse Gas Emissions of Dams, Association of Environmental Engineers and Science Professors (AEESP) Research and Education Conference, University of Michigan, Ann Arbor, Michigan, June 21-22, 2017, [https://aeesp2017.com/program\\_list.php?sid=S20#a491](https://aeesp2017.com/program_list.php?sid=S20#a491).
- 6) †**Mistro\*, D.**, Klein, S.J.W., Oral Presentation. Window Inserts and the Communities Adopting Them, Canadian Economics Association 2017 Conference, St. Francis Xavier University, Nova Scotia, Canada, June 2, 2017, <https://economics.ca/2017/en/program.php>.
- 7) †**Fox\*, E.**, Klein, S.J.W., Raffier<sup>§</sup>, K., Poster Presentation. Participatory Group MCDA in a Dam Decision Context, Maine Sustainability & Water Conference, Augusta Civic Center, Augusta, Maine, March 30, 2017.
- 8) †**Moreira, A<sup>†</sup>**, Klein, S.J.W., Mistro\*, D. Poster Presentation. A Review of the Costs of Solar Policy to Society and Utility Rate Payers, Maine Sustainability & Water Conference, Augusta Civic Center, Augusta, Maine, March 30, 2017, <https://umaine.edu/mitchellcenter/2017-conference/poster-session/>.
- 9) †**Raffier<sup>§</sup>, K.**, Klein, S.J.W., Fox\*, E. Poster Presentation. Analysis of Dams through Fact Sheet Creation to Aid in Future Dam Decision-Making, Maine Sustainability & Water Conference, Augusta Civic Center, Augusta, Maine, March 30, 2017.
- 10) **Klein, S.J.W.**, Oral Presentation (**Invited**). The Power of the People: socio-economic dimensions of community-based energy initiatives in the United States, Conference on the Practical Engagements and the Social-Spatial Dimensions of the Post-Petroleum Future, Le Studium, Tours, France, November 7-9, 2016.
- 11) †**Klein, S.J.W.**, Oral Presentation. What are the financial and social costs and benefits of different community solar approaches? Behavior, Energy, and Climate Change Conference (BECC), Baltimore, Maryland, October 20-22, 2016, [http://beccconference.org/wp-content/uploads/2016/09/2016-BECC-Abstracts\\_Alpha-by-Last-Name.pdf](http://beccconference.org/wp-content/uploads/2016/09/2016-BECC-Abstracts_Alpha-by-Last-Name.pdf).
- 12) †**Silka, L.**, Sullivan, C., Blais, J., de Urioste-Stone, S. Dixon, D., Hart, D., Isenhour, C., Klein, S., McGreavy, B., Oral Presentation. How to inspire students, energize faculty and serve your community. 17<sup>th</sup> Annual Engagement Scholarship Consortium Conference, University of Nebraska, Omaha, Nebraska, October 12, 2016, <https://engagementscholarship.org/conference/past-conferences/esc-2016-meeting/schedule>.

- 13) †**Klein, S.J.W.**, Coffey\*, S. Oral Presentation. A comparison of community solar policy incentives in three New England states. Northeastern Agricultural and Resource Economics Association (NAREA) Annual Meeting, Bar Harbor Regency, Bar Harbor, Maine, June 19-21, 2016, [http://www.narea.org/2016/conference/NAREA\\_2016\\_Detailed\\_Program\\_J1.pdf](http://www.narea.org/2016/conference/NAREA_2016_Detailed_Program_J1.pdf).
- 14) †**Klein, S.J.W.**, Mistro\*, D. Oral Presentation. Community energy for a sustainable future: window insert builds in Maine. Second International Sustainable Consumption Research and Action Initiative (SCORAI) Conference “Transitions Beyond a Consumer Society”, Wells Conference Center, University of Maine, Orono, Maine, June 15-17, 2016, [http://www.confmanager.com//communities/c2865/files/ConferenceProgram\\_FINAL.pdf](http://www.confmanager.com//communities/c2865/files/ConferenceProgram_FINAL.pdf).
- 15) **Klein, S.J.W.**, Greco, V. Oral Presentation (**Invited**). Community solar decision support tool. National Community Solar Partnership Regional Workshop, US Environmental Protection Agency Region 1 Headquarters, Boston, MA, June 9, 2016.
- 16) †**Langton\***, R., Klein, S. Oral Presentation. Biofuels from Trees: A New Process to Produce Drop-in Biofuels from Woody Biomass, International Conference on Environment and Renewable Energy. Sheraton Munich Westpark Hotel. Munich, Germany, May 26, 2016, [http://energy.conference-site.com/archive/2016/proceedings/proceedings\\_ICERE\\_2016.pdf](http://energy.conference-site.com/archive/2016/proceedings/proceedings_ICERE_2016.pdf).
- 17) †**Mistro\***, D., Klein, S. Poster Presentation. Window Inserts and the Communities Adopting Them. Maine Sustainability & Water Conference, Augusta Civic Center, Augusta, Maine, March 29, 2016.
- 18) †**Langton\***, R., Klein, S. Oral Presentation. Biofuels from Trees: A New Process to Produce Drop-in Biofuels from Woody Biomass. Maine Sustainability & Water Conference, Augusta Civic Center, Augusta, Maine, March 29, 2016, <https://umaine.edu/mitchellcenter/news/maine-water-conference/2016-maine-sustainability-water-conference/2016-concurrent-sessions/#energy>.
- 19) †**Coffey\***, S., Klein, S. Oral Presentation. Does Community Solar Have a Future in New England? Maine Sustainability & Water Conference, Augusta Civic Center, Augusta, Maine, March 29, 2016, <https://umaine.edu/mitchellcenter/news/maine-water-conference/2016-maine-sustainability-water-conference/2016-concurrent-sessions/#energy>.
- 20) †**Klein, S.** Oral Presentation. Renewable Energy Solutions. 33<sup>rd</sup> United States Association for Energy Economics/IAEE North American Conference, Pittsburgh, PA, [http://www.usaee.org/usaee2015/program\\_concurrent.aspx](http://www.usaee.org/usaee2015/program_concurrent.aspx), October 25-28, 2015.
- 21) †**Neupane\***, B., Klein, S., Wheeler, C., Rubin, J., Oral Presentation. Life Cycle Energy and Greenhouse Gases Emissions Assessment of Forest-based Drop-in Biofuel Production in Maine. American Center for Life Cycle Assessment Annual Meeting XV, Vancouver, British Columbia, October 6-8, 2015, <http://www.aclca.org/lca-xv/biofuels-3/>.
- 22) †**Dutra\***, S., Klein, S., Poster Presentation. Economic Feasibility of Distributed Solar Water Heat in Maine. Maine Economics Conference, Colby College, Waterville, Maine, April 26, 2014, <http://www.colby.edu/econ/2014/04/02/2014-maine-economics-conference-student-researchers/>.

- 23) <sup>†</sup>**Whalley\*, S.**, Neupane\*, B., Klein, S., Rubin, J., Oral Presentation. Sustainability Assessment of Drop-In Biofuels in Maine. 20th Maine Sustainability & Water Conference. Augusta Civic Center, Augusta, Maine, April 1, 2014, <https://umaine.edu/mitchellcenter/mwc-2014/concurrent-sessions/session-g/#whalley>.
- 24) **Pendse, H., Klein, S., (Invited)** Poster Presentation. Integrated national framework for cellulosic drop-in fuels. National Science Foundation Sustainable Energy Pathways Meeting, Westin Arlington Gateway, Arlington, Virginia, June 6, 2013.
- 25) <sup>†</sup>Teisl, M., McCoy, S., **Marrinan\*, S.**, Noblet, C., Johnson, T., Wibberly\*, M., Roper, R., Klein, S., Oral Presentation. Will offshore energy face fair winds and following seas?: Understanding what influences offshore wind acceptance. Maine Economics Conference, Bates College, April 27, 2013, <http://www.bates.edu/economics/files/2013/04/Maine-Economics-Conference.pdf>.
- 26) **Wagner, S.**, Oral Presentation (**Invited**). Energy-related solutions to climate change. Maine EPSCoR Conference, Breakout Session 3A "Research Frontiers in Sustainability", University of Maine, Orono, Maine, September 26, 2011.

### **Invited Presentations**

*NOTE: includes 4 professional conferences/meetings from the previous list*

- 1) **Klein, S.J.W.**, Panelist. Rockland Energy Forum, Town of Rockland, Maine, September 26, 2018.
- 2) **Klein, S.J.W.**, Panelist. Teaching Panel Discussion, University of Maine Faculty Orientation, Wells Conference Center, Orono, Maine, August 24, 2017.
- 3) **Klein, S.J.W.**, Mistro\*, D., Oral Presentation. Window Insert Research, WindowDressers Annual Local Coordinators Meeting, St Francis of Assisi Church, Belfast, Maine, March 17, 2017.
- 4) **Klein, S.J.W.**, Oral Presentation. The Power of the People: socio-economic dimensions of community-based energy initiatives in the United States, Conference on the Practical Engagements and the Social-Spatial Dimensions of the Post-Petroleum Future, Le Studium, Tours, France, November 7-9, 2016.
- 5) **Klein, S.J.W.**, Panelist. Teaching Panel Discussion, University of Maine Faculty Orientation, Wells Conference Center, Orono, Maine, August 25, 2016.
- 6) **Klein, S.J.W.**, Oral Presentation and Moderator. Economics of Solar in Maine, Bangor Solar Forum, Eastern Maine Community College, Bangor, Maine, June 28, 2016.
- 7) **Klein, S.J.W.**, Greco, V. Oral Presentation. Community solar decision support tool. National Community Solar Partnership Regional Workshop, US Environmental Protection Agency Region 1 Headquarters, Boston, MA, June 9, 2016.
- 8) **Klein, S.** Oral Presentation. Update on a New Decision Support Tool for Diverse Community Solar Stakeholders, National Community Solar Partnership Community Building Working Group Monthly Webinar Series, April 12, 2016.
- 9) **Mistro\*, D., Klein, S., Brannigan<sup>§</sup>, J., Cormier<sup>§</sup>, N., Cushing<sup>§</sup>, T., Gillis<sup>§</sup>, O., Lemmler<sup>§</sup>, S., Masi<sup>§</sup>, M., Noble<sup>§</sup>, W., Peterson<sup>§</sup>, S., Sturrock<sup>§</sup>, E.** Oral Presentation.

Window Insert Project. Campuses for Environmental Stewardship Presentations, Orono, Maine, December 10, 2015.

- 10) **Klein, S.**, Coffey\*, S. Oral Presentation. Community Solar: Harnessing the Power of the People. Mitchell Center for Sustainability Solutions Fall 2015 Seminar Series, Orono, Maine, <http://umaine.edu/mitchellcenter/news/multimedia/video-on-demand/#fall15>, November 30, 2015.
- 11) **Klein, S.**, Oral Presentation. Multi-Criteria Decision Analysis. Future of Dams Kickoff Meeting, University of New Hampshire, November 20, 2015.
- 12) **Klein, S.**, Oral Presentation. Multi-Criteria Decision Analysis. Future of Dams Knowledge Systems Meeting, webinar, November 13, 2015.
- 13) **Sullivan, C., Dixon, D.**, Isenhour, C., DeUrioste-Stone, McGreavy, B., Klein, S. Oral Presentation. Where Service Learning Meets Sustainability: Connecting Classrooms with Communities for Stewardship and Civic Engagement. Mitchell Center for Sustainability Solutions Fall 2015 Seminar Series, Orono, Maine <http://umaine.edu/mitchellcenter/news/multimedia/video-on-demand/#fall15>, October 26, 2015.
- 14) **Klein, S.**, Rubin, J., Neupane\*, B., Langton\*, R., Whalley\*, S. Oral Presentation. Integrated Sustainability Assessment of Forest-based Drop-In Biofuel in Maine. FBRI Board Meeting, University of Maine, Orono, Maine, October 9, 2015.
- 15) **Klein, S.**, Oral Presentation. Comparing Sustainable Energy Tradeoffs. University of Massachusetts Mechanical and Industrial Engineering Seminar Series, Amherst, MA, <https://mie.umass.edu/event/comparing-sustainable-energy-tradeoffs>, September 21, 2015.
- 16) **Brannigan<sup>§</sup>, J.**, Klein, S., Oral Presentation. Building Sustainable Energy Communities. Old Town Rotary Club Meeting, Black Bear Inn, Orono, Maine, September 10, 2015.
- 17) **Klein, S.**, Oral Presentation. Solar Energy in Maine. Environment Maine Lighting the Way Press Event, University of Maine, Orono, Maine, September 3, 2015.
- 18) **Klein, S.**, Oral Presentation. Community Window Insert Build Fall 2015. Old Town Rotary Club Meeting, Black Bear Inn, Orono, Maine, May 21, 2015.
- 19) **Klein, S.**, Oral Presentation. Community Solar Trends and Opportunities, Solar Powering Your Community Workshop, Bangor, Maine, May 2, 2015.
- 20) **Klein, S.** Oral Presentation. Climate Change Solutions: Carbon Pricing and Community Energy, Earth Week Seminar, University of Maine, Orono, Maine, April 20, 2015.
- 21) **Klein, S.**, Criner, G., Allen, T., Oral Presentation. Jacobs Quarry Development: Economic Analysis Phase 2. Mid-Coast Solid Waste Corporation Meeting. Rockport Town Hall, Rockport, Maine, November 13, 2013.
- 22) **Pendse, H., Klein, S.**, Poster Presentation. Integrated national framework for cellulosic drop-in fuels. National Science Foundation Sustainable Energy Pathways Meeting, Westin Arlington Gateway, Arlington, Virginia, June 6, 2013.

- 23) **Criner, G.**, Klein, S., Allen, T., Leighton\*, R., Oral Presentation. Jacobs Quarry North: Economic analysis phase 1, Rockport Town Meeting, Rockport, Maine, May 20, 2013.
- 24) **Wagner, S.**, Oral Presentation. Sustainable solar power, School of Economics Seminar Series, University of Maine, Orono, Maine, March 16, 2012.
- 25) **Klein, S.** Panel Discussion. White House Champions of Change Panel Discussion, Americorps Alums Day at the White House, Washington, D.C., August 17, 2012.
- 26) **Wagner, S.**, Oral Presentation and Panel Discussion. Energy-related solutions to climate change. Maine EPSCoR Conference, Breakout Session 3A “Research Frontiers in Sustainability”, University of Maine, Orono, Maine, September 26, 2011.

### Other Presentations

- 1) **Mistro\***, D., Klein, S.J.W., Oral Presentation. A Window on Energy Savings, Senator George J. Mitchell Center for Sustainability Solutions Student Lightning Talks, University of Maine, November 15, 2016, <https://umaine.edu/mitchellcenter/2016/11/15/so-much-to-say-so-little-time/>.
- 2) **Raymond\***, G., Klein, S.J.W., Poster Presentation. Using Multi-Criteria Decision Analysis to Compare Fuel Production Processes, UMaine Student Symposium: Research & Creative Activity, Cross Insurance Center, Bangor, Maine, April 24, 2017, <https://umaine.edu/research/wp-content/uploads/sites/48/2017/04/UMSS17Program.pdf>.
- 3) **Mistro\***, D., Klein, S.J.W., Oral Presentation. Window Inserts and the Communities Adopting Them, UMaine Student Symposium: Research & Creative Activity, Cross Insurance Center, Bangor, Maine, April 24, 2017 <https://umaine.edu/research/wp-content/uploads/sites/48/2017/04/UMSS17Program.pdf>.
- 4) **Raffier<sup>§</sup>, K.**, Klein, S.J.W., Fox\*, E., Poster Presentation. Analysis of Dams through Fact Sheet Creation to Aid in Future Dam Decision Making, UMaine Student Symposium: Research & Creative Activity, Cross Insurance Center, Bangor, Maine, April 24, 2017 <https://umaine.edu/research/wp-content/uploads/sites/48/2017/04/UMSS17Program.pdf>.
- 5) **Fox\***, E., Klein, S.J.W., Raffier<sup>§</sup>, K., Poster Presentation. Group Participatory Multi-Criteria Decision Analysis (PMCDA) and Dam Decisions, UMaine Student Symposium: Research & Creative Activity, Cross Insurance Center, Bangor, Maine, April 24, 2017 <https://umaine.edu/research/wp-content/uploads/sites/48/2017/04/UMSS17Program.pdf>.
- 6) **Mata\***, R., Klein, S.J.W., Poster Presentation. Developing Best Practice Methods by Using Survey Data, UMaine Student Symposium: Research & Creative Activity, Cross Insurance Center, Bangor, Maine, April 24, 2017 <https://umaine.edu/research/wp-content/uploads/sites/48/2017/04/UMSS17Program.pdf>.
- 7) **Michaud<sup>§</sup>, K.**, Klein, S.J.W., Poster Presentation. EnergySmart Bangor Residential Rebate Program Presentation, UMaine Student Symposium: Research & Creative Activity, Cross Insurance Center, Bangor, Maine, April 24, 2017 <https://umaine.edu/research/wp-content/uploads/sites/48/2017/04/UMSS17Program.pdf>.
- 8) **Raymond<sup>§</sup>, G.**, Klein, S. Poster Presentation. Should Maine fund sustainability by selling license plates? UMaine Student Research Symposium, Cross Insurance Center, Bangor, Maine, April 27, 2016.

- 9) **Neupane\***, **B.**, Klein, S., Wheeler, C. Oral Presentation. Environmental Life Cycle Assessment of Drop-in Biofuel Production in Maine. GradExpo, University of Maine, Orono, Maine, April 3, 2015.
- 10) **Coffey\***, **S.**, Klein, S. Poster Presentation. What is Community Energy?, GradExpo, University of Maine, Orono, Maine, April 2, 2015.
- 11) **Klein, S.**, Oral Presentation. Creating a Sustainable Energy Future One Community at a Time, School of Economics Seminar Series, University of Maine, Orono, Maine, November 14, 2014.
- 12) **Whalley\***, **S.**, Klein, S., Oral Presentation. Toward a Sustainable Energy Future: A Multi-Criteria Decision Analysis of Electricity Options for the United States. TED<sup>x</sup> UMaine: The Student Experience. University of Maine, Orono, Maine, April 5, 2014.
- 13) **Whalley\***, **S.**, Klein, S., Rubin, J., Oral Presentation. An Estimation of the Cost to Harvest and Deliver Biomass Chips in Maine. University of Maine Graduate Academic Exposition, University of Maine, Orono, Maine, April 3, 2014.

### **Sessions Chaired, Workshops Led**

- 1) Organizer/Facilitator, *Solar Phone Charger Building Workshop*, Mandela Washington Fellowship Program, University of Maine, Orono, Maine, July 6, 2017.
- 2) Moderator (**Invited**), *Greater Bangor Solarize Kickoff event*, Bangor Public Library, Bangor, Maine, July 19, 2017.
- 3) Facilitator, *Future of Dams All-Team Meeting Model, Stakeholder Engagement, and Integrative Synthesis working groups*, University of New Hampshire, Durham, New Hampshire, June 5-6, 2017.
- 4) Chair (Invited), *Session III – Urban and Local, Materiality and Social Spaces in the Energy Transition*, Conference on the Practical Engagements and the Social-Spatial Dimensions of the Post-Petroleum Future, Le Studium, Tours, France, November 8, 2017.
- 5) Moderator, *Solar Phone Charger Building Workshop for Mandela Washington Fellowship Program*, Maine Solar Energy Association, Jonesport, Maine, July 6, 2016.
- 6) Moderator (**Invited**), *Bangor Solar Forum*, Eastern Maine Community College, Bangor, Maine, June 28, 2016.
- 7) Chair (**Invited**), *Maine's Energy Future*. Maine Sustainability & Water Conference, Augusta Civic Center, Augusta, Maine, March 29, 2016.
- 8) Organizer/Facilitator, *NSF Career Grant Writing Workshop*, University of Maine, June 3, 2015.
- 9) Moderator (**Invited**), *Alternative Energy*, Maine Science Festival, Bangor, Maine, March 21, 2015.
- 10) Moderator (**Invited**), *Science Bound: The Path Less Traveled*, Maine Science Festival, Bangor, Maine, March 22, 2015.

- 11) Discussant (**Invited**): *Energy Project Planning Workshop*, Island Energy Conference, Island Institute, Portland, Maine, November 7, 2014.

## JOURNAL REVIEWS

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*Renewable & Sustainable Energy Reviews* (2), 2016-2017  
*Journal of Renewable and Sustainable Energy* (2), 2014  
*Energy Policy* (6), 2013-2015, 2017, 2018  
*Earthscan Publications* (1 book proposal), 2012  
*Environmental Science and Technology* (2), 2010-2011  
*World Renewable Energy Congress* (1), 2011

## PROFESSIONAL MEMBERSHIPS

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American Solar Energy Society (ASES) (2015-present)  
Environmental and Energy Technology Council of Maine (E2Tech) (2017)  
International Association for Energy Economics (IAEE) (2015-present)  
Northeastern Agricultural and Resource Economics Association (NAREA) (2016)  
Sustainable Consumption Research and Action Initiative (SCORAI) (2016)  
United States Association for Energy Economics (USAEE) (2015-present)

## SELECTED PRESS

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*NOTE: I changed my last name to Klein in January 2013*

- Science and service. (2017, November 15). Retrieved February 7, 2018, from <https://umainetoday.umaine.edu/stories/2017/science-and-service/>.
- Newsroom. "UMaine Website Catalogs Renewable Projects." Accessed June 15, 2017. <http://www.foxbangor.com/news/item/20201-umaine-website-catalogs-renewable-projects>.
- "UMaine Researchers Create U.S. Community Renewable Energy Website - UMaine News - University of Maine." *UMaine News*, June 2, 2017. <https://umaine.edu/news/blog/2017/06/02/umaine-researchers-create-u-s-community-renewable-energy-website/>.
- The BDN Editorial Board, "Making Bangor walkable will help residents, visitors — and homeowners, too," *The Bangor Daily News*, January 2, 2017, <http://bangordailynews.com/2017/01/02/opinion/editorials/making-bangor-walkable-will-help-residents-visitors-and-homeowners-too/>.
- "Service Learning: Engaging Students for Real-World Problem Solving - Senator George J. Mitchell Center for Sustainability Solutions - University of Maine," *Senator George J. Mitchell Center for Sustainability Solutions*, <https://umaine.edu/mitchellcenter/news/news-2/service-learning-engaging-students-for-real-world-problem-solving/>.
- Zachary Warren, "U-Maine Students Stay Energy Efficient While Helping Others," *WABI TV5*, October 29, 2016, <http://wabi.tv/2016/10/29/u-maine-students-stay-energy-efficient-while-helping-others/>.

- Sun for All, All for Sun: UMaine’s Sharon Klein tracks the rise of community solar, <https://umaine.edu/mitchellcenter/news/news-2/sun-for-all-all-for-sun/>, May 2016.
- “UMaine commits to National Community Solar Partnership - UMaine News - University of Maine,” *UMaine News*, 18-Nov-2015.
- Students in economics class work with community to keep homes warm - UMaine News - University of Maine. (2015, November 19). Retrieved from <https://umaine.edu/news/blog/2015/11/19/students-in-economics-class-work-with-community-to-keep-homes-warm/>
- *Bangor Daily News*, August 17, 2012, UMaine professor honored at White House for Americorps service, <http://bangordailynews.com/2012/08/17/education/umaine-professor-honored-at-white-house-for-amicorps-service/?ref=regionbangor>

## TEACHING

**ECO 180 – Citizens, Energy, and Sustainability** (2011-present) introduces students to the technical, economic, environmental, and social implications of energy production and use, providing students with a broad understanding of energy issues. Students learn how citizens play a vital role in determining the direction that the future energy system and policies will take. This course adopts a “flipped” classroom and active learning approach to instruction and includes a service-learning component.

**ECO 405/590 – Sustainable Energy Economics and Policy** (2011-present) is a mixed undergraduate/graduate level course that engages students in examining tradeoffs associated with the technical, economic, environmental, and social implications of energy supply, distribution, and use in the context of transitioning toward a sustainable energy future. Students examine a variety of energy options, with a focus on renewable energy sources (solar, wind, biomass, hydro, and geothermal power), energy efficiency and conservation, nuclear power, and natural gas, alongside policies to mitigate negative effects. The course adopts a systems-thinking approach, considering options for electricity, heating and transportation and the interplay between these options. Students assess quantitative and qualitative indicators of sustainability related to greenhouse gas (GHG) emissions and climate change, air and water quality, human health and safety, energy security, economic development, wildlife and the environment, technological efficiency and availability. They examine the effect of policies (e.g., carbon prices, emissions targets, efficiency requirements, renewable portfolio standards, feed-in tariffs) on these indicators and tradeoffs. The course provides a brief introduction to environmental life cycle assessment (LCA), a method for considering the environmental impact of a product or process from the “cradle to the grave”, as well as a more in-depth introduction to social benefit cost analysis (SBCA) and multi-criteria decision analysis (MCDA). Students apply course concepts to a service-learning project in work with people from surrounding communities on local sustainable energy solutions.

**ECO 370 - Sustainable Community Energy through Service Learning** (pilot course in Fall 2015) taught students about the role of community action in creating a sustainable energy future. Students engaged in service learning – *“a teaching and learning strategy that integrates meaningful community service with instruction and reflection to enrich the learning experience, teach civic responsibility, and strengthen communities”* (see <http://umaine.edu/upcc/files/2014/05/Service-Learning-at-UMaine.pdf>). Students also engaged in original research - preparing a final project that evaluated the costs and benefits of the service learning project. For the service project, we partnered with [WindowDressers](#) and the

[Unitarian Universalist Society of Bangor](#) to do a [window insert build](#), in which we built 375 interior wood-framed, plastic window inserts to reduce heat loss and save energy in old, drafty windows for 33 clients, with 27% of the inserts available to low-income families for a suggested contribution of \$1/insert (up to \$10; regular customers paid \$2/square ft).