

Ryan Shelby, PhD

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Education: PhD, Mechanical Engineering , University of California, Berkeley Major Field: Design, Minors: Management of Technology & Energy Science Policy	2013 Berkeley, CA, USA
MS, Mechanical Engineering , University of California, Berkeley Major Field: Design, Engineering and Business for Sustainability Certificate	2008 Berkeley, CA, USA
BS, Mechanical Engineering , Alabama Agricultural & Mechanical University Major Field: Propulsion Systems	2006 Normal, AL, USA

Skills & Expertise:

- Energy Modeling & Systems Design (HOMER, DER-CAM, GridLAB-D)
- Sustainable Development & Energy Poverty Policy
- Energy & Environmental Policy (NEPA, CAFE, ITC, PTC)
- Climate Change Mitigation & Adaptation
- User Needs Analysis
- Community-Based Design Research
- Energy and Water Efficiency
- Life Cycle Assessment (TRACI, SimaPro)

Professional Experience:

United States Agency for International Development (USAID) Energy Engineering Advisor

**Washington, DC
Dec. 2013-Current**

- Served as a Contracting Officer Representative (COR) and Program Manager for ~ \$6 million of grants associated with the \$47.1 million multi-donor funded Powering Agriculture: Energy Grand Challenge for Development initiative
- Lead the development of Powering Agriculture solicitation for public-private alliances to support the scaling of clean energy solutions to increase smallholder farmers' agricultural productivity and/or income in developing countries
- Co-designed the Powering Agriculture website, newsletter, and communication/outreach strategy
- Provided technical support to USAID's Bureau for Economic Growth, Education and Environment (E3) & USAID Missions related to power sector reforms, energy access programs, decentralized energy projects, leveled cost of energy estimates, cost reflective tariffs design, and mini grids design in Sub Saharan Africa and other emerging regions
- Conducted technical and financial due diligence on the private-sector partners of the Power Africa Beyond the Grid sub-initiative to help increase private sector investment in emerging energy markets in target countries
- Serve on technical review panels for USAID's Development Innovation Ventures (DIV), Middle East Regional Cooperation (MERC), Office of the Global Climate Change, and Office of American Schools and Hospitals Abroad (ASHA) to aid in determination of funding recommendations for the Office of Acquisition and Assistance (OAA).
- Represented USAID in interagency and international meetings with BMZ, GIZ, SIDA, DOS, USDA-FAS, DOE, & World Bank on clean energy solutions, energy access, minigrids, and decentralized energy projects.

Community Assessment of Renewable Energy and Sustainability (CARES) Co-Founder & Program Manager

**Berkeley, CA
Nov. 2007-Dec 2013**

- Oversaw development of climate change adaptation and sustainable development strategies for Native American tribes in CA
- Served as principal liaison to stakeholders within UC Berkeley and maintained relations with 7 Native American nations
- Led 15 person engineering team for the Pinoleville Pomo Nation's (PPN) culturally inspired, sustainable housing project that incorporated AIA, LEED, and Energy Star green building design principles, codes, and technologies
- Identifying cost savings opportunities related to lighting, mechanical and electrical systems for housing designs
- Worked with EPA Region 9 office to co-design and implement green building codes for the PPN's sustainable homes
- Conducted feasibility study and created designs for utility scale renewable energy power systems (1MW – 5MW solar PV)
- Conducted site assessments (substation and transmission line location), climate change risk assessments, technology components lists, estimated ROI, and estimated energy capacity for solar, wind, microhydro, and biogas systems
- Worked with tribal partners to secure ~\$1.4 million in funding for PPN homes & funding from the 2013 START Renewable Energy Project Development program for a PPN solar utility based on previous feasibility studies
- Oversaw the transition of CARES in 2010 to a seed funded research center in UC Berkeley's i4Energy Center in CITRIS

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Professional Experience:

Millennium Challenge Corporation – Arizona State University

Washington, DC

MCC-ASU Science, Technology, & Innovation Fellow

Jan. 2013-July 2013

- Identified electricity grid extension and mini-grid designs options for the expansion of electricity services in six Sub Saharan African (SSA) countries: (1) Sierra Leone, (2) Liberia, (3) Ghana, (4) Benin, (5) Tanzania, and (6) Malawi
- Developed case studies on the lessons learned from the electrification efforts of Brazil, China, Nepal, and Vietnam
- Estimated levelized cost of energy for renewable energy systems in mini-grid & electricity grid extension configurations
- Conducted feasibility study on organic feedstock and created designs for an anaerobic digestion system (300kW-1MW)
- Developed policy interventions related to cost reflective tariffs and independent power producers for mini-grids
- Represented MCC in interagency and international meetings with USDA-FAS, DOE, & World Bank on mini-grids

National Academy of Engineering (NAE)

Washington, DC

J. Herbert Hollomon and Christine Mirzayan Science & Technology Policy Fellow

Aug. 2012-Jan. 2013

- Developed policy briefs and actor networks on election violence, armed groups, and internally displaced persons in Libya, Haiti, & Kenya for the NAE & U.S. Institute of Peace Roundtable on Technology, Science & Peacebuilding
- Identified system engineering applications for foreign affairs and peace building endeavors in Libya, Haiti, and Kenya
- Performed a preliminary review of the alignment of the US based undergraduate and graduate programs to attributes listed in the NAE's *The Engineer of 2020* and *Educating the Engineer of 2020* reports to determine workforce competitiveness

Intel Corporation

Hillsboro, OR

Logic Facilities Technology Division Intern

June 2009-Aug. 2009

- Developed energy model to determine electricity and natural gas consumption of D1D Fabrication Facility
- Determined energy cost savings of D1D's design compared to ASHRAE design standards using Energy Plus & DOE-2
- Determined the number of LEED Energy & Atmosphere credited earned given D1D's design
- Identified areas of opportunities for improving the sustainability of the potential D1Z Fabrication Facility

Lawrence Livermore National Laboratory

Livermore, CA

Technology Resources Engineering Division Intern

May 2007 – June 2008

- Developed designs for a (L)H₂ cryogenic capable pressure vessel (CCPV) for use in a hydrogen powered Toyota Prius
- Created a program to generate the elastic properties of the carbon fiber/epoxy composite laminate layer (CF/ECLL)
- Created finite element models and performed stress and thermal analyses of each pressure vessel design
- Determined that the spherical vessel experienced the least stress amongst the designs regardless of CF/ECLL usage
- Created designs for a modular CCPV with a spherical inner vessel and a cubic vacuum outer jacket using REVIT & Inventor

Honors & Awards:

- [2012 Denise D. Denton Best Paper Award, ASEE Women in Engineering Division](#), 2012
- [Outstanding Graduate Student Instructor Award](#), UC Berkeley, Department of Mechanical Engineering, 2009-2010
- [Native American Community Assessment of Renewable Energy and Sustainability](#), CITRIS Grant, 2010
- [Management of Technology Certificate](#), UC, Berkeley, 2010
- [Chancellor's Awards for Public Service](#), CARES - Pinoleville Pomo Nation Partnership, 2010
- [Engineering and Business for Sustainability Certificate](#), UC Berkeley, 2008
- [Community Assessment of Renewable Energy and Sustainability](#) (CARES), NCIIA Advanced E-Team Award, 2007

Selected Publications (*, accepted; ~, under review):

- Edmunds, D., **Shelby, R.**, James, A., Steele, L., Baker, M., Perez, Y., and TallBear, K. (2013). "Tribal Housing, Co-Design & Cultural Sovereignty". *Science, Technology, & Human Values*, 38(6), pp. 801-828.
- **Shelby, R.**, Patten, E., Farzana, A., Pruitt, A., Walker, G., and Wang, J. (2013). "Implementation of Leadership and Service Learning in a First-Year Engineering Course Enhances Professional Skills", *International Journal of Engineering Education*, 29(1). pp. 1-14.
- **Shelby, R.**, Perez, Y., and Agogino, A. (2012). "Partnering with the Pinoleville Pomo Nation: Co-Design Methodology Case Study for Creating Sustainable, Culturally Inspired Renewable Energy Systems and Infrastructure. *Sustainability*. 4(5). pp. 794-818.
- Wang, J., Patten, E., **Shelby, R.**, Farzana, A., Pruitt, A. (2012). "Leadership and Service Learning Improves Confidence of Engineering Skills in Women", In *Proceedings of 2012 American Society of Engineering Education Annual Conference and Exposition*, June 10-13, 2012, San Antonio, Texas, USA.