

RESEARCH INTERESTS

Optimal design of power systems with large shares of intermittent renewable energy, storage and price-responsive demand.

EDUCATION**Ph.D., Energy and Resources Group**

University of California, Berkeley, December 2008

DOCTORAL THESIS: *Optimal Investment in Wind and Solar Power in California*

ADVISORS: Daniel Kammen, Alex Farrell, Shmuel Oren, Severin Borenstein

M.S., Energy and Resources

University of California, Berkeley, May 2003

MASTER'S PROJECT: *Now You See It, Now You Don't: The Metastable Defect in Czochralski Silicon* (electronic analysis of silicon used for solar cells)

ADVISOR: Eicke R. Weber

B.A., Environmental Studies

Lewis & Clark College, Portland, Oregon, May 1999

THESIS: *Racing Down the Experience Curve: policies to accelerate the use of renewable energy*

ADVISOR: Eban S. Goodstein

PROFESSIONAL EXPERIENCE**Associate Professor of Electrical Engineering**

University of Hawaii at Manoa, August 2019 – present

Lead author of Switch, a capacity planning model for high-renewable power systems; assisting Hawaii stakeholders in planning transition to 100% renewable power; teaching courses on power systems and renewable energy integration.

Assistant Professor of Electrical Engineering

University of Hawaii at Manoa, May 2012 – July 2019

NextEra Research Fellow in Renewable Energy

University of Oxford (UK), Nov. 2008 – April 2012

Modeled the technical and economic performance of power systems with large shares of renewable power on long and short time scales.

Chief Modeler

Trexler and Associates, Inc., Portland, Ore., January 2000–July 2001

Assessed climate change mitigation projects, technologies and policy. Modeled the financial results of corporate climate change mitigation activities.

Summer Researcher

Renewable Northwest Project, Portland, Ore., May–July 1999

Created fact sheets on the economics and technology of wind, solar and geothermal energy. Researched green power programs for legislative testimony.

Membership Director, Database Analyst, Graphic Designer, Copy Editor

Best Friends Animal Sanctuary, Kanab, Utah, October 1991–July 1997; June 2002

Helped establish fundraising program for large animal rescue organization.

**JOURNAL
ARTICLES UNDER
REVIEW**

Imelda, **M. Fripp**, and M. J. Roberts, “[Variable pricing and the cost of renewable energy.](#)” Preprint.

J. Rahman and **M. Fripp**, “[Provision of Inertial and Droop Response by Controlling the Charging Rate of Battery Pack.](#)” Preprint.

**PEER-REVIEWED
JOURNAL
ARTICLES**

F. Najafi and **M. Fripp**, “[Stochastic Optimization of Electric Water Heater Under Dynamic Pricing Using Mixed Integer Linear Programming.](#)” *Sustainable Energy Technologies and Assessments*, vol. 42, Dec. 2020, 100834.

J. Johnston, R. Henríquez, B. Maluenda and **M. Fripp**, “[Switch 2.0: a modern platform for planning high-renewable power systems.](#)” *SoftwareX*, vol. 10, July–Dec. 2019, 100251.

M. Fripp, “[Intercomparison between Switch 2.0 and GE MAPS models for simulation of high-renewable power systems in Hawaii.](#)” *Energy, Sustainability and Society*, vol. 8, no. 1, p. 41, Dec. 2018.

F. Najafi, M. Hamzeh and **M. Fripp**, “[Unbalanced Current Sharing Control in Islanded Low Voltage Microgrids.](#)” *Energies*, vol. 11, no. 10, 2018, p. 2776.

A. Izawa and **M. Fripp**, “[Multi-Objective Control of Air Conditioning Improves Cost, Comfort and System Energy Balance.](#)” *Energies*, vol. 11, no. 9, 2018, p. 2373,

S. A. Fatemi, A. Kuh, and **M. Fripp**, “Parametric methods for probabilistic forecasting of solar irradiance,” *Renewable Energy*, vol. 129, no. Part A, pp. 666–676, Dec. 2018. <https://doi.org/10.1016/j.renene.2018.06.022>

S. Nourollah, A. Pirayesh, and **M. Fripp**, “Multitier decentralized control scheme using energy storage unit and load management in inverter-based AC microgrids,” *Turkish Journal of Electrical Engineering & Computer Sciences*, vol. 25, pp. 735–751, 2017. <http://online.journals.tubitak.gov.tr/openDoiPdf.htm?mKodu=elk-1506-64>

S. A. Fatemi, A. Kuh, and **M. Fripp**, “Online and batch methods for solar radiation forecast under asymmetric cost functions,” *Renewable Energy*, vol. 91, pp. 397–408, Jun. 2016. <http://dx.doi.org/10.1016/j.renene.2016.01.058>

J. Carland, M. Umeda, T. Wilkey, A. Oberbeck, J. Cumming, N. Parks, **M. Fripp**, A. Kuh, and D. Garmire, “Self-Sustaining Meteorological Wireless Sensor Networks,” *Sensors & Transducers*, vol. 160, no. 12, pp. 118–124, Dec. 2013. http://www.sensorsportal.com/HTML/DIGEST/P_1588.htm

M. Fripp, “Switch: a planning tool for power systems with large shares of intermittent renewable energy,” *Environmental Science & Technology*, vol. 46, no. 11, pp. 6371–6378, Jun. 2012. <http://dx.doi.org/10.1021/es204645c>

J. Nelson, J. Johnston, A. Mileva, **M. Fripp**, I. Hoffman, A. Petros-Good, C. Blanco, and D. M. Kammen, “High-resolution modeling of the western North American power system demonstrates low-cost and low-carbon futures,” *Energy Policy*, vol. 43, pp. 436–447, Apr. 2012. <http://dx.doi.org/10.1016/j.enpol.2012.01.031>

**PEER-REVIEWED
JOURNAL**

ARTICLES,
continued

B. J. Krohn and **M. Fripp**, “A life cycle assessment of biodiesel derived from the ‘niche filling’ energy crop camelina in the USA,” *Applied Energy*, vol. 92, pp. 92–98, Apr. 2012. <http://www.sciencedirect.com/science/article/pii/S0306261911006799>

M. Fripp, “Greenhouse Gas Emissions from Operating Reserves Used to Backup Large-Scale Wind Power,” *Environmental Science & Technology*, vol. 45, no. 21, pp. 9405–9412, Nov. 2011. <http://dx.doi.org/10.1021/es200417b>

M. Fripp, “Optimal investment in wind and solar power in California,” Doctoral dissertation, Energy and Resources Group, University of California, Berkeley, Oct. 2008. <http://gradworks.umi.com/33/88/3388273.html>

M. Fripp and R. H. Wiser, “Effects of Temporal Wind Patterns on the Value of Wind-Generated Electricity in California and the Northwest,” *IEEE Transactions on Power Systems*, vol. 23, no. 2, pp. 477–485, May 2008. <http://dx.doi.org/10.1109/TPWRS.2008.919427>

D. A. Ghertner and **M. Fripp**, “Trading away damage: Quantifying environmental leakage through consumption-based, life-cycle analysis,” *Ecological Economics*, vol. 63, no. 2–3, pp. 563–577, Aug. 2007. <https://www.sciencedirect.com/science/article/pii/S0921800906006045>

WHITE PAPERS,
REPORTS,
CONFERENCE
PAPERS AND
BOOK CHAPTERS

M. Fripp, “Inter-model Comparison Between GE MAPS and Switch 2.0 for Production-Cost Modeling of a High-Renewable Power System,” Electric Vehicle Transportation Center, HI-20-17, Jul. 2018. <http://publications.energyresearch.ucf.edu/wp-content/uploads/2018/07/HI-20-17.pdf>

Imelda, **M. Fripp**, and M. J. Roberts, “Variable pricing and the cost of renewable energy,” National Bureau of Economic Research, Cambridge, Massachusetts, NBER Working Paper No. 24712, Jun. 2018. <http://www.nber.org/papers/w24712>

M. J. Roberts, R. Pratt, M. Coffman, and **M. Fripp**, “Realigning Institutions to Fit New Technologies,” University of Hawaii Economic Research Organization (UHERO), Honolulu, Hawaii, Nov. 2017. <http://uhero.hawaii.edu/assets/GoverningGreenPowerConferenceReport.pdf>

M. Fripp, “Effect of Electric Vehicles on Design, Operation and Cost of a 100% Renewable Power System,” University of Hawaii Economic Research Organization (UHERO), Honolulu, Hawaii, Working Paper No. 2017-3, Mar. 2017. <http://www.uhero.hawaii.edu/products/view/568>

M. Fripp, “PSIP Data Recommendations,” in Hawaiian Electric Companies’ PSIPs Update Report, Vol. 2, Honolulu, Hawaii: Hawaiian Electric Company, 2016, p. B.222–B.230. https://cca.hawaii.gov/dca/files/2016/12/dkt_2014_0183_20161223_companies_PSIP_update_report_2_of_4.pdf

WHITE PAPERS,
REPORTS,
CONFERENCE
PAPERS AND

P. Das, D. Chermakani, and **M. Fripp**, “Development of SWITCH-Hawaii Model: Loads and Renewable Resources,” Electric Vehicle Transportation Center, HI-13-16, Aug. 2016. <http://evtc.fsec.ucf.edu/publications/documents/HI-13-16.pdf>

**BOOK CHAPTERS,
continued**

S. A. Fatemi, A. Kuh, and **M. Fripp**, “Solar radiation forecast under convex piecewise linear cost functions,” in 2016 International Joint Conference on Neural Networks (IJCNN), Vancouver, CA, July 2016, pp. 4985–4990.

<http://dx.doi.org/10.1109/IJCNN.2016.7727856>

M. Fripp, “Making an Optimal Plan for 100% Renewable Power in Hawaii - Preliminary Results from the SWITCH Power System Planning Model,” University of Hawaii Economic Research Organization (UHERO), Honolulu, Hawaii, Working Paper No. 2016-1, Jan. 2016. http://www.uhero.hawaii.edu/assets/WP_2016-1.pdf

P. Das and **M. Fripp**, “Savings and peak reduction due to optimally-timed charging of electric vehicles on the Oahu power system,” Electric Vehicle Transportation Center, HI-14-17, Dec. 2015. <http://fsec.ucf.edu/en/publications/pdf/HI-14-17.pdf>

M. Coffman, **M. Fripp**, M. J. Roberts, and N. Tarui, “Efficient Design of Net Metering Agreements in Hawaii and Beyond,” University of Hawaii Economic Research Organization (UHERO), Aug. 2015.

http://www.uhero.hawaii.edu/assets/Net_Metering.pdf

M. Motoki, M. Umeda, **M. Fripp**, and A. Kuh, “Approximate Dynamic Programming for Control of a Residential Water Heater,” presented at the International Joint Conference on Neural Networks (IJCNN), Killarney, Ireland, July 2015.

<http://dx.doi.org/10.1109/IJCNN.2015.7280735>

S. Fatemi, A. Kuh, **M. Fripp**, and others, “Online solar radiation forecasting under asymmetric cost functions,” in Asia-Pacific Signal and Information Processing Association, 2014 Annual Summit and Conference (APSIPA), 2014, pp. 1–6.

<http://dx.doi.org/10.1109/APSIPA.2014.7041755>

M. Fripp, “Life-Cycle Greenhouse Gas Emissions from Clean Coal, Clean Gas and Wind Generators,” Environmental Change Institute, Oxford University, Oxford, UK, Apr. 2009.

https://ee.hawaii.edu/public/gfx/contents/mfrripp/papers/Fripp_2009_Generator_LCA.pdf

D. Poputoaia and **M. Fripp**, “European Experience with Tradable Green Certificates and Feed-In Tariffs for Renewable Electricity Support,” Environmental Change Institute, Oxford University, Oxford, UK, Dec. 2008.

https://ee.hawaii.edu/public/gfx/contents/mfrripp/papers/Poputoaia_and_Fripp_2008_TGCs_and_FITs.pdf

M. Fripp and R. Wiser, “Analyzing the Effects of Temporal Wind Patterns on the Value of Wind-Generated Electricity at Different Sites in California and the Northwest,” Lawrence Berkeley National Laboratory, Berkeley, California, LBNL-60152, Jun. 2006. <http://www.osti.gov/servlets/purl/883800-DgRF1u/>

D. M. Kammen, K. Kapadia, and **M. Fripp**, “Putting Renewables to Work: How Many Jobs Can the Clean Energy Industry Generate?,” Renewable and Appropriate Energy Laboratory, U.C. Berkeley, Berkeley, California, Jan. 2006.

http://rael.berkeley.edu/old_drupal/sites/default/files/very-old-site/renewables.jobs.2006.pdf

**WHITE PAPERS,
REPORTS,
CONFERENCE
PAPERS AND**

**BOOK CHAPTERS,
continued**

R. McCann, D. Burtraw, **M. Fripp**, and S. Moss, “Recommendations for the design of modeling and analysis of the electricity sector to guide options for climate policy in California,” in *Managing Greenhouse Gas Emissions in California*, W. M. Hanemann and A. E. Farrell, Eds., The California Climate Change Center at UC Berkeley, January 2006.

https://ee.hawaii.edu/public/gfx/contents/mfripp/papers/Hanemann_Farrell_2006_California_Climate.pdf

Solar Power Fact Sheet, Renewable Northwest Project, Portland, Oregon, 1999.

Wind Power Fact Sheet, Renewable Northwest Project, Portland, Oregon, 1999.

Geothermal Power Fact Sheet, Renewable Northwest Project, Portland, Oregon, 1999.

INVITED TALKS

M. Fripp, “Switch: A modern platform for planning high-renewable power systems,” presented at panel on Open Decarbonization: Open Source Models to Inform Action at Climate Week NYC, 24-Sep-2020.

M. Fripp, “Generation Adequacy with Variable Generation,” presented at the 2018 UVIG Spring Technical Workshop (Online), 25-Mar-2020.

M. Fripp, “Switch 2.0 Tutorial,” presented at the Environmental Defense Fund Emerging Economics Issues Workshop, New York, New York, 22-Aug-2019.

https://ee.hawaii.edu/public/gfx/contents/mfripp/talks/Fripp_2019-08-22_EDF_Switch_Tutorial.pdf

M. Fripp and M. Roberts, “Switch 2.0: Open-Source Planning Software for High-Renewable Power Systems with Storage and Demand Response,” presented at the Environmental Defense Fund Emerging Economics Issues Workshop, New York, New York, 21-Aug-2019.

https://ee.hawaii.edu/public/gfx/contents/mfripp/talks/Fripp_Roberts_2019-08-21_Switch_Overview.pdf

M. Fripp, “Supply and demand options for the renewable energy transition,” presented at the EUCI 2019 Hawai’i Power Summit, Honolulu, Hawaii, 16-Jan-2019.

https://ee.hawaii.edu/public/gfx/contents/mfripp/talks/Fripp_2019-01-16_EUCI_Supply_Demand.pdf

M. Fripp, “Efficient market design for the renewable energy transition,” presented at the Hawaii Clean Energy Law and Finance Workshop, Honolulu, Hawaii, 14-Sep-2018.

https://ee.hawaii.edu/public/gfx/contents/mfripp/talks/Fripp_2018-09-14_HCELF_Market_Design.pdf

M. Fripp, “Variable pricing and the social cost of renewable energy,” presented at Governing Green Power II: How should utilities of the future make money? (conference co-organizer), Honolulu, Hawaii, 12-Apr-2018.

https://ee.hawaii.edu/public/gfx/contents/mfripp/talks/Fripp_2018-04-12_GGP_Variable_Pricing.pdf

**INVITED TALKS,
continued**

M. Fripp, “Simplified Chronological Capacity Expansion Planning Model with Storage, Demand Response and Unit Commitment,” presented at the 2018 UVIG Spring Technical Workshop, Tucson, Arizona, 14-Mar-2018.

https://ee.hawaii.edu/public/gfx/contents/mfrripp/talks/Fripp_2018-03-14_UVIG_Switch.pdf

M. Fripp, “Planning a Transition to 100% Renewable Power in Hawaii,” presented at the 2018 UVIG Spring Technical Workshop, Tucson, Arizona, 14-Mar-2018.

https://ee.hawaii.edu/public/gfx/contents/mfrripp/talks/Fripp_2018-03-14_UVIG_Hawaii_100.pdf

M. Fripp and M. J. Roberts, “Variable Pricing and the Social Cost of Renewable Energy,” presented at the 23rd Annual POWER Conference on Energy Research and Policy, Berkeley, California, 23-Mar-2018.

https://ee.hawaii.edu/public/gfx/contents/mfrripp/talks/Fripp_Roberts_2018-03-23_Berkeley_Power.pdf

M. Fripp and M. J. Roberts, “Variable Pricing and the Social Cost of Renewable Energy,” presented at the NBER Economics of Energy Distribution Workshop, Cambridge, Massachusetts, 7-Mar-2018.

https://ee.hawaii.edu/public/gfx/contents/mfrripp/talks/Fripp_Roberts_2018-03-07_NBER_Pricing.pdf

M. Fripp, “Performance-Based Ratemaking to Drive Least-Cost Planning,” presented at the EUCI 7th Hawai‘i Power Summit—“Setting the Table for Success,” Honolulu, Hawaii, 30-Nov-2017.

https://ee.hawaii.edu/public/gfx/contents/mfrripp/talks/Fripp_2017-11-30_EUCI_PBR.pdf

M. Fripp, “Incentive Problems in Planning the Transition to 100% Renewable Power,” presented at the EUCI 7th Hawai‘i Power Summit - “Setting the Table for Success,” Honolulu, Hawaii, 30-Nov-2017.

https://ee.hawaii.edu/public/gfx/contents/mfrripp/talks/Fripp_2017-11-30_EUCI_Incentives.pdf

M. Fripp, “Why Not Build the Best Power System? – Problems with Ratebase-Indexed Compensation,” presented at the Hawaii Clean Energy Law and Finance Workshop, Honolulu, Hawaii, 21-Jul-2017.

https://ee.hawaii.edu/public/gfx/contents/mfrripp/talks/Fripp_2017-07-21_HCELF_Ratebase.pdf

M. Fripp, “New Ideas for Making Market-Based Electricity Systems Work Better with Renewable Energy,” presented at Governing Green Power: Realigning Institutions to Fit New Technologies (conference co-organizer), Honolulu, Hawaii, 29-Mar-2017.

https://ee.hawaii.edu/public/gfx/contents/mfrripp/talks/Fripp_2017-03-29_GGP_New_Ideas.pdf

M. Fripp, “Current Institutions and Challenges with Intermittent Renewables,” presented at Governing Green Power: Realigning Institutions to Fit New Technologies (conference co-organizer), Honolulu, Hawaii, 28-Mar-2017.

**INVITED TALKS,
continued**

https://ee.hawaii.edu/public/gfx/contents/mfrripp/talks/Fripp_2017-03-28_GGP_Challenges.pdf

M. Fripp, “Designing a 100% Renewable Power System for Hawaii,” presented to delegation from Beijing University of Civil Engineering and Architecture at University of Hawaii, 9-Mar-2017.

https://ee.hawaii.edu/public/gfx/contents/mfrripp/talks/Fripp_2017-03-09_BUCEA_100_percent.pdf

M. Fripp, “Optimal Design and Operation of Power Systems with Large Shares of Renewable Energy,” presented at the Stanford University Energy Resources Engineering Seminar, Palo Alto, California, 6-Feb-2017.

https://ee.hawaii.edu/public/gfx/contents/mfrripp/talks/Fripp_2017-02-06_Stanford.pdf

M. Fripp, “PSIP Data Recommendations,” presented at the Hawaiian Electric Company PSIP Stakeholder Meeting, Honolulu, Hawaii, 19-Oct-2016.

https://ee.hawaii.edu/public/gfx/contents/mfrripp/talks/Fripp_HECO_2016-10-19_HECO_PSIP_Data.pdf

M. Fripp, “SWITCH: A Capacity Expansion Model for Power Systems with Large Shares of Renewable Energy,” presented to Hawaii Division of Consumer Advocacy – Public Utilities, Honolulu, Hawaii, 29-Sep-2016.

https://ee.hawaii.edu/public/gfx/contents/mfrripp/talks/Fripp_2016-09-29_DCA_Switch.pdf

M. Fripp, “Methodology discussion with HECO modelers,” co-leader of session at the Hawaiian Electric Company PSIP Stakeholder Meeting, Honolulu, Hawaii, 22-Sep-2016. [no slides]

M. Fripp, “SWITCH model details,” presented at Hawaii State Energy Office, Honolulu, Hawaii, 11-Aug-2016.

https://ee.hawaii.edu/public/gfx/contents/mfrripp/talks/Fripp_2018-08-11_HSEO_Switch.pdf

M. Fripp, “Consensus-Based Power System Planning Using Open Assumptions and Models,” presented at the Hawaiian Electric Company PSIP Stakeholder Meeting, Honolulu, Hawaii, 29-Jun-2016.

https://ee.hawaii.edu/public/gfx/contents/mfrripp/talks/Fripp_2016-06-29_HECO_Consensus.pdf

K. Datta and **M. Fripp**, “Valuing Risk in the Power Supply Improvement Plans,” presented at the Hawaiian Electric Company PSIP Stakeholder Meeting, Honolulu, Hawaii, 29-Jun-2016.

https://ee.hawaii.edu/public/gfx/contents/mfrripp/talks/Datta_Fripp_2016-06-29_HECO_Risk.pdf

Imelda, **M. Fripp**, and M. J. Roberts, “The potential value of demand response in high-renewable power systems,” presented at the NBER Future of Energy Distribution conference, Berkeley, California, 19-Mar-2016.

https://ee.hawaii.edu/public/gfx/contents/mfrripp/talks/Roberts_Fripp_2016-03-19_NBER_DR.pdf

**INVITED TALKS,
continued**

M. Fripp, “Optimal Generation Portfolios to Reach 100% Renewable Power”, presented at Blue Planet Foundation Board of Directors Meeting, Honolulu, Hawaii, 23-Feb-2016. https://ee.hawaii.edu/public/gfx/contents/mfrripp/talks/Fripp_2016-02-23_Blue_Planet.pdf

M. Fripp, “Optimal Generation Portfolios to Reach 100% Renewable Power”, presented to Engineers and Architects of Hawaii, 19-Feb-2016. https://ee.hawaii.edu/public/gfx/contents/mfrripp/talks/Fripp_2016-01-28_EUCI_100_percent.pdf

M. Fripp, “The Big Paradigm Shift for Grid Power”, ThinkTech Hawaii, 12-Feb-2016. https://www.youtube.com/watch?v=_Db2XJprGbg

M. Fripp, “Optimal Generation Portfolios to Reach 100% Renewable Power”, presented at EUCI 5th Annual Hawaii Power Summit, Honolulu, Hawaii, 28-Jan-2016. https://ee.hawaii.edu/public/gfx/contents/mfrripp/talks/Fripp_2016-01-28_EUCI_100_percent.pdf

M. Fripp, “Resource Combinations to Achieve 100% Renewable Power (Oahu focus),” presented at Hawaiian Electric Company PSIP Stakeholder Conference, 17-Dec-2015. https://ee.hawaii.edu/public/gfx/contents/mfrripp/talks/Fripp_2015-12-17_HECO_PSIP.pdf

M. Fripp, “Getting to 100% Renewables”, ThinkTech Hawaii, 2-Dec-2015. <https://www.youtube.com/watch?v=2SZwSUItNgE>

M. Fripp (2015), “Using Variable Pricing to Balance Demand with Variable Supply from Renewables? A Case Study of Oahu, Hawaii”, presented at Western Economic Association International 90th Annual Conference, Honolulu, Hawaii, 30-Jun-2015. https://ee.hawaii.edu/public/gfx/contents/mfrripp/talks/Fripp_2015-06-30_WEAI_RTP.pdf

M. Fripp, “Using Demand Response to Help Integrate Large Shares of Renewable Power,” presented at KEDB Energy Conference – Transforming Kauai's Energy Sector, Lihue, Kauai, Hawaii, 14-Aug-2013. https://ee.hawaii.edu/public/gfx/contents/mfrripp/talks/Fripp_2013-08-14_KEDB_DR_and_RE.pdf

M. Fripp, “Greenhouse Gas Emissions from Reserves Used to Backup Large-Scale Wind Power,” presented at Association of American Geographers Annual Conference, New York City, NY, 24-Feb-2012. https://ee.hawaii.edu/public/gfx/contents/mfrripp/talks/Fripp_2012-02-24_AAG_Reserve_GHG.pdf

M. Fripp, “Greenhouse Gas Emissions from Operating Reserves Used to Backup Large-Scale Wind Power,” presented at Utility Wind Integration Group Fall Technical Workshop, Lahaina, Maui, HI, 12-Oct-2011. https://ee.hawaii.edu/public/gfx/contents/mfrripp/talks/Fripp_2011-10-12_UWIG_Reserve_GHG.pdf

**INVITED TALKS,
continued**

M. Fripp, “The Cost of Using Wind and Solar Power to Achieve Radical Greenhouse Gas Emission Reductions,” presented at Association of American Geographers Annual Conference, Washington, DC, 16-Apr-2010.

https://ee.hawaii.edu/public/gfx/contents/mfrripp/talks/Fripp_2010-04-16_AAG_Reductions.pdf

M. Fripp, “Optimal Investment in Wind and Solar Power in California, 2010-2025,” presented at Chair’s Air Pollution Seminar, California Air Resources Board, Sacramento, California, 17-Feb-2009.

https://ee.hawaii.edu/public/gfx/contents/mfrripp/talks/Fripp_2009-02-17_ARB_Switch.pdf

M. Fripp, “Optimal Investment in Wind and Solar Power in California,” presented to California Public Utility Commission, Sacramento, California, 13-Feb-2009.

https://ee.hawaii.edu/public/gfx/contents/mfrripp/talks/Fripp_2009-02-13_Switch.pdf

M. Fripp, “Optimal Investment in Wind and Solar Power in California,” presented at Energy and Resources Group Colloquium, Berkeley, California, 1-Oct-2008.

https://ee.hawaii.edu/public/gfx/contents/mfrripp/talks/Fripp_2008-10-01_ERG_Switch.pdf

M. Fripp, “Putting Renewables to Work: How Many Jobs Can the Clean Energy Industry Generate?” presented at Employment Effects of Renewable Energy Systems workshop, German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, 24-April-2007.

https://ee.hawaii.edu/public/gfx/contents/mfrripp/talks/Fripp_2007-04-24_Jobs_and_Renewables.pdf

M. Fripp and Ryan H. Wiser, “Effects of Temporal Wind Patterns on the Value of Wind-Generated Electricity at Different Sites in California and the Northwest,” presented at United States Association for Energy Economics, 26th USAEE/IAEE North American Conference, Ann Arbor, MI, 25-Sep-2006.

https://ee.hawaii.edu/public/gfx/contents/mfrripp/talks/Fripp_2006-09-25_USAEE_Wind_Timing.pdf

M. Fripp and R. H. Wiser, “Analyzing the Effects of Temporal Wind Patterns on the Value of Wind-Generated Electricity at Different Sites in California and the Northwest,” presented at National Wind Technology Center, National Renewable Energy Laboratory, Golden, Colorado, 07-Aug-2006.

https://ee.hawaii.edu/public/gfx/contents/mfrripp/talks/Fripp_2006-08-07_NREL_Wind_Timing.pdf

**RESEARCH
GRANTS**

Environmental Defense Fund, “Interactions Between Gas Network Upgrades and Renewable Energy Expansion in U.S. and Modeling of Colombia Power System,” \$65,000 (co-PI with Michael Roberts), 9/19–present

Uluono Initiative, “Robust optimization of Hawaii power systems,” \$160,000, 11/15–present

Blue Planet Foundation, “Optimal design of Hawaii power system, including electric vehicles,” \$17,500, 1/16–7/18

Various Hawaii sponsors, “Governing Green Power Conference,” \$42,000 (co-organizer with Michael Roberts, Richard Pratt and Makena Coffman), 1/16–3/16

U.S. Department of Transportation, “Effect of Electric Vehicles on Power System Expansion and Operation,” \$100,000 (sub-award via Univ. of Central Florida and Hawaii Natural Energy Institute), 7/14–10/16

NSF Electrical Communications and Cyber Systems, “JST-NSF Workshop on Cooperative Distributed Energy Management Systems, Honolulu, HI, January 11-12, 2014,” \$89,511 (co-PI with Anthony Kuh), 12/13–1/14

NSF Electrical Communications and Cyber Systems, “Sensing, Modeling, and Control of Smart Sustainable Microgrids,” \$360,000 (co-PI with Anthony Kuh), 7/13–6/17

U.S. NSF Doctoral Dissertation Research Improvement Grant, \$9,800, 3/06–8/06

FELLOWSHIPS & SCHOLARSHIPS

NextEra Energy Resources Fellowship in Renewable Energy, Oxford University, 10/08–5/12

U.S. EPA Science to Achieve Results (STAR) graduate fellowship, 8/06–12/08

Berkeley Fellowship, University of California, Berkeley, 8/01–12/06

Dr. Robert B. Pamplin Society of Fellows, Lewis & Clark College (the college’s highest academic honor), 9/96–5/99

R. Harold Burton Achievement Scholarship, Lewis & Clark College, 9/97–5/99

Cheney Foundation Scholarship, Lewis & Clark College, 9/96–5/97

Dean’s Scholarship, Lewis & Clark College, 9/95–5/99

HONORS & AWARDS

Outstanding Young Alumnus, Lewis & Clark College, 2011

Departmental Honors, Environmental Studies, Lewis & Clark College, 5/99

Degree with Distinction (*summa cum laude*), Lewis & Clark College, 5/99

Inducted into Phi Beta Kappa honor society, Lewis & Clark College, 5/99

TEACHING EXPERIENCE

“Smart Grids and Renewable Energy Integration,” University of Hawaii at Manoa Dept. of Electrical Engineering, Spring 2013 – present

Created graduate course on power system analysis and control with emphasis on demand-side engagement and integration of intermittent renewable energy.

“Electric Power Systems”, University of Hawaii at Manoa Dept. of Electrical Engineering, Fall 2012 – present

Created senior-level course on the design and operation of electric power systems.

“Programming for Engineers,” University of Hawaii at Manoa Dept. of Electrical Engineering, Spring 2021 – present

Updated core course on computer programming for electrical engineers to use Python instead of C.

“Basic Circuit Analysis II,” University of Hawaii at Manoa Dept. of Electrical Engineering, Spring 2020

Sophomore-level course on circuit analysis in the Laplace and frequency domains.

“Energy Resource Assessment,” University of Oxford Environmental Change Institute, 2009 – 2012

Created graduate course on costs, land-use, environmental impacts and other aspects of energy production and consumption.

“Energy and Society,” University of California, Berkeley, Energy and Resources Group, 2007

Teaching assistant. Graduate and undergraduate course on the socioeconomic, technical and environmental dimensions of energy production and consumption.

“Quantitative Aspects of Global Environmental Problems”, University of California, Berkeley, Energy and Resources Group, 2007

Teaching assistant. Broad environmental science class, covering stocks and flows in the environment, acid deposition and global climate.

CURRENT GRADUATE STUDENTS

Foad Najafi, Ph.D. student, Elec. Eng., Univ. of Hawaii

Jonathan Uejbe, M.S. student, Elec. Eng., Univ. of Hawaii

Rory Johnson, M.S. student, Elec. Eng., Univ. of Hawaii

PREVIOUS GRADUATE STUDENTS

Hsin-Yi Chen, M.S., Elec. Eng., Univ. of Hawaii, 2019

Imelda (no last name), Ph.D., Economics, Univ. of Hawaii, 2018 (co-supervised)

Seyyed Fatemi, post-doctoral researcher, Elec. Eng., Univ. of Hawaii, 2018

Seyyed Fatemi, Ph.D., Elec. Eng., Univ. of Hawaii, 2017 (co-supervised)

Jubeyer Rahman, M.S., Elec. Eng., Univ. of Hawaii, 2018

Seth Jones, M.S., Elec. Eng., Univ. of Hawaii, 2017

Andrew Izawa, M.S., Elec. Eng., Univ. of Hawaii, 2016

PREVIOUS GRADUATE STUDENTS, continued

Monica Umeda, M.S., Elec. Eng., Univ. of Hawaii, 2016 (co-supervised)

Matthew Motoki, M.S., Elec. Eng., Univ. of Hawaii, 2015 (co-supervised)

Paritosh Das, M.S., Elec. Eng., Univ. of Hawaii, 2015

Deepak Chermakani, M.S., Elec. Eng., Univ. of Hawaii, 2015

Daniel Curtis, Ph.D. student, Enviro. Change and Mgmt., Univ. of Oxford, 2011–12 (co-supervised)

Brian Krohn, M.S., Enviro. Change and Mgmt. Univ. of Oxford, 2011

Dominic Hofstetter, M.S., Enviro. Change and Mgmt., Univ. of Oxford, 2011

**PRE-PH.D.
RESEARCH
EXPERIENCE**

Doctoral student, Energy and Resources Group, University of California, Berkeley,
May 2003 – October 2008

Created Switch, a power system planning model that identifies the optimal amount of new renewable and conventional generators and transmission capacity in large power systems over a multi-decade period.

Research assistant, Energy, Markets and Policy group, Lawrence Berkeley National Laboratory, May 2003 – July 2006

Assessed the effect of temporal patterns on the market value and capacity contribution of wind power in California and the Pacific Northwest.

Research assistant, Materials Science Division, Lawrence Berkeley National Laboratory, Aug. 2002 – Aug. 2003

Analyzed an electronic defect in silicon used for solar cells.

Senior honors research, Lewis & Clark College, Portland, Ore., May 1999

Analyzed policies to expand markets for renewable energy. Developed learning curves and projected future costs of wind and solar power as markets expand.