Henry M. Louie

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Academic Experience

Seattle University, Seattle, WA
Professor 2019 to present
Thomas J. Bannan Professor 2025-Present
Fr. Francis Wood, S.J. Endowed Research Chair 2017-2019, 2023-2024
Associate Professor 2014-2019
Assistant Professor 2008-2014

Navajo Technical University, Crownpoint, NM
Adjunct Instructor (Sabbatical) Fall 2022

Copperbelt University, Kitwe, Zambia
Visiting Academic (Fulbright Scholar) 2015-2016

University of Washington, Seattle, WA
Affiliate Professor 2009 to present
Pre-Doctoral Lecturer Fall 2006, Fall 2007

Education

PhD, Electrical Engineering, March 2008
University of Washington, Seattle, WA

M.S., Electrical Engineering, May 2004
University of Illinois at Urbana-Champaign, Champaign, IL

B.S.E.E, Electrical Engineering, June 2002
Kettering University, Flint, MI

Industry/Non-Profit Organization Experience

KiloWatts for Humanity, Seattle, WA

Co-Founder and President 2015-Present
Non-profit organization enabling electricity access to the energy-impoverished in Sub-Saharan Africa.

3TIER, Inc., Seattle, WA

Business Development Manager 2007-2008
Oversaw development of wind energy forecasting business segment. Authored technical proposals and research publications on renewable energy forecasting.

Power Engineers, Inc., Longview, WA

Field Engineer 2001-2002
Commissioned electric power generating facilities and substations up to 500 kV and 1.7 GW.

Electro-Test, Inc., Kent, WA

Field Engineer 1997-2001

Tested and inspected electric power apparatus up to 125 kV.

Courses Taught

Confronting Climate Change	FQ20, WQ25
Control Systems Laboratory	SQ15
Digital Operations and Computation	FQ09, WQ10, FQ10, WQ11, WQ12
Electrical Circuits I	WQ12, SQ13, SQ14
Electrical Circuits II	FQ21
Electrical Energy Systems	WQ15, WQ16, WQ18, WQ19, WQ20, WQ21, WQ22, WQ24, WQ25
Electromechanical Energy Conversion	WQ11, FQ12, SQ17, SQ22
Electromechanical Energy Conversion Laboratory	WQ13, WQ20
Electronic Circuits Laboratory	SQ09, WQ11, SQ13
Energy Utilization and Conservation (Copperbelt Univ.)	2015/2016
Off-Grid Electrical Systems	FQ16, SQ19, FQ21
Engineering Design	FQ14, WQ15, SQ15, FQ16, WQ16, SQ17, FQ17, WQ18, FQ18, WQ19, SQ19, FQ19, WQ20, FQ20, WQ21, SQ21, FQ21, WQ22, SQ22
Engineering Problem Solving with MATLAB®	FQ10, FQ13, WQ14, FQ14, WQ15
Introduction to Applied Optimization	SQ11
Introduction to Engineering	FQ12, FQ13, FQ14, FQ17, FQ26
Introduction to MATLAB®	FQ18
Power Electronics	FQ08
Power Systems	WQ13
Power System Analysis (Univ. of Wash.)	FQ06, FQ07
Renewable Energy Systems	WQ08, SQ10, SQ12, SQ14, WQ17, SQ21, SQ24, SQ26
Renewable Off-Grid Systems (Navajo Tech. Univ.)	FS 22
Signals and Systems Laboratory	WQ09, WQ10, WQ14

Awards and Fellowships

Fulbright Specialist 2025
National Institute of Public Administration, Zambia
Collaborating for Renewable Energy Solutions

Peter W. Sauer Outstanding Engineering Educator Award (Undergraduate) 2024
IEEE Power & Energy Society
For contributions to undergraduate education in the area of electricity access

All-Around Grants Champ Award 2024
Seattle University Office of Sponsored Projects
For exemplary grantsmanship and award management aptitude through multiple successful awards, and seamless award administration

Region 6 Outstanding IEEE Member who Promoted 2022
Global Humanitarian Projects or Activities
For sustained, impactful, and passionate global contributions in the area of energy poverty alleviation

Kettering University Outstanding Civic Achievement Award 2021
Given annually to one alumni of Kettering University in recognition of contributions to civic causes

IEEE Power & Energy Society Seattle Chapter 2021
Outstanding Educator Award

For contributions related to off-grid electrification education

Mark V. Anderson Character-in-Action Leadership Award 2020

For displaying good character and leading through integrity by donating time and energy to a worthy cause, Sigma Chi Fraternity

Faculty Innovation Award 2019

Seattle University College of Science and Engineering

General Electric Chairman's Award 2017

$25,000 Award given to KiloWatts for Humanity

Fulbright Scholar (Teaching/Research Core Program) 2015-2016

Electrification in the Context of Less Economically Developed Countries, Copperbelt University, Zambia

Provost's Faculty Award for Excellence in Teaching (inaugural recipient) 2015

Awarded by the Provost to a single faculty member each year

SU Center for Environmental Justice and Sustainability Fellow 2013-2014

Development of Electric Vehicle Load Forecasting Techniques for a Sustainable Future

Outstanding Educator Award 2013

IEEE Region 6 Northwest Area (WA, OR, ID, AK)

Clare Boothe Luce Scholarship Mentor Award 2012-2014

Statistical Modeling of the Usage and Impact of Electric Vehicles on Electric Power Systems (Student: N. Ng)

Outstanding Teacher Award 2012

Seattle University College of Science and Engineering

Seattle University Summer Faculty Fellowship 2012

Field Testing of an Appropriate Technology Wind Turbine in Rural Zambia

Seattle University Summer Faculty Fellowship 2009

Enabling Renewable Energy through Simulation of Hybrid Energy Storage and Weather Forecasting Technologies

Selected Grants

SU Global Research Grant ($3,800) 2026
Understanding Community Energy Hubs in Rural Zambia

NSF IUSE ($749,879, PI Louie portion: $183,255) declined

Collaborative Research: Integrating Electricity Access Concepts into Electrical Engineering Courses

Willow Springs Foundation ($100,000) 2024

A Program to Continue the Empowerment of Zambian Communities

NSF ENG ($99,936, PI Louie portion: $6,558) 2023-2024

Conference: CET: Convergent Clean Energy Research in Support of Sovereign and Prosperous Tribal Nations

NSF EEC ($106,966, PI Louie portion: $20,374) 2023

Collaborative Research: Conference: Electricity Access and Sustainable Business Educators Workshop

NSF EEC ($49,068, PI Louie portion: $36,291) 2022

Collaborative Research: Conference: Energy Access Educators Workshop

NSF EPCN ($540,595, PI Louie portion: $267,621) 2021-2025

Collaborative Research: RUI: Data-Driven Analysis, Modeling, and Design of Off-Grid Power Systems on Tribal Lands

Willow Springs Foundation ($50,000) 2019

A Program to Power and Empower Dengeza, Zambia

Seattle University Global Grant ($7,000) 2019

Implementing a Solar Energy Kiosk for Drought Resiliency in Kanchomba, Zambia

Willow Springs Foundation ($40,000) 2019

A Program to End Energy Poverty in Kanchomba, Zambia

Seattle University Global Grant ($8,350) 2018

Establishing a Micro-Utility Social Enterprise in Zambia

Seattle University Global Grant ($9,490) 2017

Sustainability Assessment of Electricity Access Projects in Zambia

Seattle University Global Grant ($8,950) 2016

Experiential Sustainable Energy Development and Rural Adult Education Program
Co-PI

Global Research Grant ($893) 2016

Contextualizing Technical Operational Data from Off-Grid Electrical Systems

Global Research Grant ($7,220) 2015

Experiential Energy Development Program

Alstom We Share the Power Program ($26,394) 2015

A Sustainable Energy Kiosk for Rural Development in Siavonga, Zambia

IEEE Smart Village ($24,650) 2015

A Sustainable Energy Kiosk for Rural Development in Filibaba, Zambia

Global Research Grant ($1,975) 2014

Indicators of Sustainable Off-Grid Energy Systems

Alstom Foundation for the Environment ($85,000) 2013

A Sustainable Community Charging Station for Energy and Empowerment in Rural Kenya

Seattle University Global Grant ($1,160) 2012

An Experiential Appropriate Illumination Technology Workshop and Student Immersion Experience

Science and Engineering Summer Student Research Support ($4,160) 2012

Development of an Appropriate Technology Testbed (Student: D. Nausner)

Seattle University Endowed Mission Fund ($5,000) 2012

Wind Turbine Deployment in Zambia

Seattle University Global Grant ($9,524) 2011

Development of an Experiential Humanitarian Engineering Pilot Program

Seattle University Endowed Mission Fund ($6,000) 2011

Wind Turbine Construction in Zambia

Independent Colleges of Washington ($10,000) 2010-2011

Using Smart Grid Technology to Promote Energy Efficiency and Conservation in Student Housing (Student: J. McIntosh)

Washington NASA Space Grant Consortium ($3,500) 2010

Compression of Large Wind Speed and Wind Power Data Sets (Student: S. Hitchen)

Books, Chapters, and Technical Magazine Articles

H. Louie, "Off-Grid Electrical Systems in Developing Countries," 2nd Ed., Cham, Switzerland: *Springer Nature*, DOI: 10.1007/978-3-031-88542-6, 2025.

H. Louie, "Off-Grid Electrical Systems in Developing Countries," Cham, Switzerland: *Springer Nature*, DOI: 10.1007/978-3-319-91890-7, 2018.

R. Podmore, R. Larsen, H. Louie, N. Johnson and S. Saha, "Fueling Sustainability: The Exponential Impact of Empowering Off-Grid Communities," *Electrification Magazine*, vol. 4, no. 1, pp. 11-17, DOI: 10.1109/MELE.2015.2509878, Mar. 2016.

H. Louie, E. O'Grady, V. Van Acker, S. J. Szablya, N. P. Kumar and R. Podmore, "Rural Sub-Saharan Microgrids," *Electrification Magazine*, vol. 3, no. 1, pp. 7-15, DOI: 10.1109/MELE.2014.2380111, Mar. 2015.

H. Louie, P. Dauenhauer, M. Wilson, A. Zomers and J. Mutale, "Eternal Light: Ingredients for Sustainable Off-Grid Energy Development," *Power & Energy Magazine*, vol. 12, no. 3, pp. 70-78, DOI: 10.1109/MPE.2014.2317093, Jul./Aug. 2014.

H. Louie and J. M. Sloughter, "Modeling and Statistical Characteristics of Wind Power," Book Chapter in *Large Scale Renewable Power Generation: Advances in Technologies for Generation, Transmission and Storage*, Springer, DOI: 10.1007/978-981-4585-30-9, 2014.

R. Podmore, R. Larsen, H. Louie, P. Dauenhauer, W. Gutschow, P. Lacourciere, R. Parigoris and S. J. Szablya, "Affordable Energy Solutions for Developing Communities," vol. 10, no. 2, pp. 89-98, *IEEE Power & Energy Magazine*, DOI: 10.1109/MPE.2014.2322296, Apr. 2012.

Peer-Reviewed Journal Articles

H. Louie, P. Dauenhauer, H. M. Mweetwa, A. S. Musimuko, "Community Energy Hubs for Rural Development: Concept and Deployment Experiences in Zambia," *Journal of Applied and Natural Sciences*", accepted for publication, 2026.

H. Louie, S. O'Shea, S. Atcitty, D. Terry, D. Lee, and P. Romine, "Load Profiles of Residential Off-Grid Solar Systems on the Navajo Nation," *Energy for Sustainable Development*, vol. 83, DOI: https://doi.org/10.1016/j.esd.2024.101572, Dec. 2024.

H. Louie, S. Atcitty, D. Terry, D. Lee, P. Romine, "Daily electrical energy consumption characteristics and design implications for off-grid homes on the Navajo Nation," *Energy for Sustainable Development*, vol. 73, pp. 30–43, DOI: 10.1016/j.esd.2023.02.012, Apr. 2023.

R. Ngoma, A. Tambatamba, B. Oyoo, D. Mulongoti, B. Kumwenda and H. Louie "How Households Adapted their Energy Use During the Zambian Energy Crisis," *Energy for Sustainable Development*, vol. 44, pp. 125 - 138, DOI: 10.1016/j.esd.2018.03.007, Jun. 2018.

B. Rawn and H. Louie, "Planning for Electrification: On- and Off-Grid Considerations in Sub-Saharan Africa," *Institute of Development Studies Bulletin*, vol. 48, no. 5/6, DOI: 10.19088/1968-2017.161, Dec. 2017.

C. Blodgett, P. Dauenhauer, H. Louie and L. Kickham, "Accuracy of Energy-Use Surveys in Predicting Mini-Grid User Consumption," *Energy for Sustainable Development*, vol. 41, pp. 88–105, DOI: 10.1016/j.esd.2017.08.002, Dec. 2017.

H. Louie, "Time Series Modeling of Aggregated Electric Vehicle Charging Station Load," *Electric Power Components and Systems*, vol. 45, no. 14, pp. 1498-1511,
DOI: 10.1080/15325008.2017.1336583, Dec. 2017.

H. Louie and P. Dauenhauer, "Effects of Load Estimation Error on Small-Scale Off-Grid Photovoltaic System Design, Cost and Reliability," *Energy for Sustainable Development*, vol. 34, pp. 30–43, DOI: 10.1016/j.esd.2016.08.002, Sept. 2016.

H. Louie, "Operational Analysis of Hybrid Solar/Wind Microgrids Using Measured Data," *Energy for Sustainable Development*, vol. 31, pp. 108–117, DOI: 10.1016/j.esd.2016.01.003, Apr. 2016.

H. Louie, "Probabilistic Modeling and Statistical Analysis of Aggregated Electric Vehicle Charging Station Load," *Electric Power Components and Systems*, vol. 43, no. 20, pp. 2311–2324, DOI: 10.1080/15325008.2015.1080770, Oct. 2015.

H. Louie, "Correlation and Statistical Characteristics of Aggregate Wind Power in Large Transcontinental Systems," *Wind Energy*, vol. 17, no. 6, pp. 793-810, DOI: 10.1002/we.1597, Feb. 2013.

H. Louie, "Evaluation of Bivariate Archimedean and Elliptical Copulas to Model Wind Power Dependence Structures," *Wind Energy*, vol. 17, no. 2, pp. 225-240,
DOI: 10.1002/we.1571, Nov. 2012.

H. Louie and A. Miguel, "Lossless Compression of Wind Plant Data," *IEEE Transactions on Sustainable Energy*, vol. 3, no. 3, pp. 598-606, DOI: 10.1109/TSTE.2012.2195039, Jul. 2012.

K. Strunz and H. Louie, "Cache control for energy storage: power system integration and education based on analogies derived from computer engineering," *IEEE Transactions on Power Systems*, vol. 24, no. 1, pp. 12-19, DOI: 10.1109/TPWRS.2008.2005713, Feb. 2009.

H. Louie and K. Strunz, "Superconducting Magnetic Energy Storage (SMES) for energy cache control in modular distributed hydrogen-electric energy systems," *IEEE Transactions on Applied Superconductivity*, vol. 17, no. 2, pp. 2361-2364, Jun. 2007.

H. Louie and K. Strunz, "Hierarchical multiobjective optimization for independent system operators (ISOs) in electricity markets," *IEEE Transactions on Power Systems*, vol. 21, no. 4, pp. 1583-1591, 10.1109/TPWRS.2006.881151, Nov. 2006.

Selected Peer-Reviewed Technical Conference Publications

R. Khan, P. Dauenhauer, A. Singh, E. Nirere, R. C. Nutter, H. Louie, and I. Barring-Gould, "Theory of Change Informed Monitoring, Evaluation, and Learning Framework for Off-Grid Electricity Access Projects," *Proceedings of the IEEE Global Humanitarian Technology Conference*, Boulder, CO, Oct. 2026.

D. Aquino and H. Louie, "Efficiency of Residential Standalone Solar-Powered Systems," *North American Power Symposium*, Houghton, MI, Oct. 2026.

P. Dauenhauer, R. Khan, B. Schmitt, H. M. Mweetwa, B. Helland, and H. Louie, "Case Study of the Cheeba Solar Energy Kiosk," *Proceedings of the IEEE Global Humanitarian Technology Conference*, Golden, CO, Oct. 2025.

M. Dang, D. Aquino, and H. Louie, 'Effects of Load Estimation Detail on Off-Grid System Design and Reliability," *Proceedings of the IEEE Global Humanitarian Technology Conference*, Golden, CO, Oct. 2025.

J. Davis, P. Dauenhauer, H. Louie, K. MacLearnsberry, and J. M. Sloughter, "Monitoring and Evaluation of Two Solar Energy Kiosks in Zambia," *Proceedings of the IEEE Global Humanitarian Technology Conference*, Villanova, PA, Oct. 2023.

P. Alikhani, A. Mrad, H. Louie, and L. Bertling Tjernberg "On the Reliability and Life Cycle Cost Analyses of Small-scale Standalone Solar Systems in Rural Areas," *IEEE PES Innovative Smart Grid Technology Conference*, Washington, D.C., Feb. 2021.

L. D. Smith, H. Louie, S. Szablya, and D. Goldsmith "Remote Assessment of Battery Degradation-Related Service Interruptions in an Energy Kiosk," *IEEE Global Humanitarian Technology Conference*, Seattle, WA, Oct. 2020.

P. Dauenhauer, J. W. Lauer, H. Louie, J. M. Sloughter, C. Lacampre, C. Smith, E. Smith, J. Ohara and N. Sebhat "Impact Assessment of Energy Kiosks in Rural Zambia," *IEEE Global Humanitarian Technology Conference*, Seattle, WA, Oct. 2019, DOI: 10.1109/GHTC46095.2019.9033068.

C. Berry, H. Louie and J. M. Sloughter "Remote Diagnosis of Solar Panel Performance: A Case Study of the Filibaba Energy Kiosk," *IEEE Global Humanitarian Technology Conference*, San Jose, CA, Oct. 2018, DOI: 10.1109/GHTC.2018.8601648.

B. Kumwenda, W. Mwaku, D. Mulongoti and H. Louie, "Integration of Solar Energy into the Zambia Power Grid Considering Ramp Rate Constraints," *Proceedings of IEEE PES PowerAfrica Conference*, Accra, Ghana, Jun. 2017, DOI: 10.1109/PowerAfrica.2017.7991233.

D. Mulongoti, G. Mugala, B. Kumwenda and H. Louie, "Determining the Effects of Load-shedding on Residential Electricity Consumption Using Meter Data–A Case Study of Kitwe, Zambia," *Proceedings of IEEE Global Humanitarian Technology Conference*, Seattle, WA, Oct. 2016, DOI: 10.1109/GHTC.2016.7857324.

R. Ngoma, A. Tambatamba, B. Oyoo and H. Louie, "Domestic Electric Consumers Response to Load-shedding: A Case Study of Kitwe, Zambia," *Proceedings of IEEE Global Humanitarian Technology Conference*, Seattle, WA, Oct. 2016, DOI: 10.1109/GHTC.2016.7857323.

M. Shields, H. Louie, G. Goldsmith, B. Blainedavis and D. Nausner, "Technical Design of Off-Grid Energy Kiosks," *Proceedings of IEEE Global Humanitarian Technology Conference*, Seattle, WA, Oct. 2016, DOI: 10.1109/GHTC.2016.7857310.

J. M. Sloughter, J. Isakson, Y. P. Mak, A. K. Scheicher, H. Louie, K. Shields and M. Salmon, "Designing a sustainable business plan for an off-grid energy kiosk in Chalokwa, Zambia," *Pro-*

ceedings of IEEE Global Humanitarian Technology Conference, Seattle, WA, Oct. 2016, DOI: 10.1109/GHTC.2016.7857312.

H. Louie, D. Goldsmith, P. Dauenhauer and R. Almeida, "Issues and Applications of Real-Time Data from Off-Grid Electrical Systems," *Proceedings of IEEE PES PowerAfrica Conference*, Livingstone, Zambia, Jun. 2016, DOI: 10.1109/PowerAfrica.2016.7556577.

H. Louie, M. Shields, S. J. Szablya, L. Makai and K. Shields, "Design of an Off-Grid Energy Kiosk in Rural Zambia," *Proceedings of IEEE Global Humanitarian Technology Conference*, DOI: 10.1109/GHTC.2015.7343946, Seattle, WA, Oct. 2015.

P. Dauenhauer and H. Louie, "System Usage Trends for Off-grid Renewable Energy Users in Developing Communities," *Proceedings of 4th Symposium on Small PV Applications*, Müchen, Germany, Jun. 2015.

V. Van Acker, S. J. Szablya, H. Louie, A. Pirbhai and J. M. Sloughter, "Survey of Energy Use and Costs in Rural Kenya for Community Microgrid Business Model Development," *Proceedings of IEEE Global Humanitarian Technology Conference*, San Jose, CA, Oct. 2014, DOI: 10.1109/GHTC.2014.6970277.

H. Louie, V. Van Acker, S. J. Szablya and P. Dauenhauer, "Opportunities and Challenges for Micro Wind Turbines in Developing Communities," *Proceedings of IEEE Global Humanitarian Technology Conference*, Seattle, WA, Oct. 2012, DOI: 10.1109/GHTC.2012.47.

H. Louie, "Evaluating Archimedean Copula Models of Wind Speed for Wind Power Modeling," *Proceedings of Power Africa 2012*, Johannesburg, South Africa, Jul. 2012, DOI: 10.1109/PowerAfrica.2012.6498610.

H. Louie and S. J. Szablya, "Electromagnetic Field Modeling of Appropriate Technology Generators for Rural Electrification Applications," *Proceedings of IEEE Global Humanitarian Technology Conference*, Seattle, WA, Oct. 2011, DOI: 10.1109/GHTC.2011.34.

R. Podmore, R. Larsen, H. Louie and B. Waldron, "Affordable Energy Solutions for Developing Communities," *Proceedings of the IEEE Power & Energy Society General Meeting*, Detroit, MI, Jul. 2011, DOI: 10.1109/PES.2011.6039517.

H. Louie, "Experiences in the Construction of Open Source Low Technology Off-Grid Wind Turbines," *Proceedings of the IEEE Power & Energy Society General Meeting*, Detroit, MI, Jul. 2011, DOI: 10.1109/PES.2011.6038924.

H. Louie, S. J. Szablya, K. Peng and E. Hoffstetter, "Design and Testing of a Small Human-Powered Generator for Developing Rural Communities," *Proceedings of the 42nd North American Power Symposium*, Arlington, TX, Sept. 2010, DOI: 10.1109/NAPS.2010.5619603.

H. Louie, "Characterizing and Modeling Aggregate Wind Plant Power Output in Large Systems," *Proceedings of IEEE Power & Energy Society General Meeting*, Minneapolis, MN, Jul. 2010, DOI: 10.1109/PES.2010.5589286.

H. Louie, "Evaluation of Probabilistic Models of Wind Plant Power Output Characteristics," *Proceedings of Probabilistic Methods Applied to Power Systems*, Singapore, Jun. 2010, DOI: 10.1109/PMAPS.2010.5528963.

H. Louie, S. Parker and R. Christie, "Estimating Aggregate Wind Plant Capacity from Historical Time Series Data," *Proceedings of the 41st North American Power Symposium*, Starkville, MS, Oct. 2009, DOI: 10.1109/NAPS.2009.5484045.

H. Louie and K. Anderson, "Economic Analysis of Power Generation Forecast Utilization by Merchant Wind Plants," *Proceedings of the 40th North American Power Symposium*, Calgary, AB, Canada, Sept. 2008, DOI: 10.1109/NAPS.2008.5307368.

H. Louie and K. Strunz, "Energy Market-Integrative Wind Plant Modeling for Wind Plant Integration Economic Analysis," *Proceedings of IEEE Power Engineering Society General Meeting*, Pittsburgh, PA, Jul. 2008, DOI: 10.1109/PES.2008.4596366.

H. Louie and K. Strunz, "Locational Marginal Pricing in North American Power Systems," *Proceedings of VDE Netzregelung und Systemführung*, München, Germany, Mar. 2008.

H. Louie and K. Strunz, "Integration of Capital Costs and Operating Profits into Distributed Hydrogen-Electric Power System Design," *Proceedings of the 38th North American Power Symposium*, Carbondale, IL, Sept. 2006, DOI: 10.1109/NAPS.2006.359631.

H. Louie, et al., "Integrated Hydrogen Production and Fueling for the Marine Transportation Sector," *Proceedings of the Annual Hydrogen Conference*, Long Beach, CA, Mar. 2006.

H. Louie and K. Strunz, "Market-Based Power Flow Control with Reduced Wide-Area Impact," *Proceedings of the CIGRE/IEEE PES Symposium on Congestion Management in a Market Environment*, San Antonio, TX, Oct. 2005, 10.1109/CIGRE.2005.1532758.

Peer-Reviewed Pedagogical & Professional Conference Publications

S. Abraham, A. Miguel, M. Vurkaç, H. Louie, S. Singh, and M. D. Takach, "Reimagining the ECE Curriculum by Bridging Technical Preparation, Professional Formation, and University Mission for a Holistic Education: Pilot Implementation," *Proceedings of the 2025 ASEE Annual Conference & Exposition*, Montréal, QC, Jun. 2025.

S. Lord, P. Singh, and H. Louie " Exploring Electricity Access Education," *Proceedings of IEEE Frontiers in Education*, Washington, D.C., Oct. 2024.

S. Abraham, M. Vurkaç, A. Miguel, M. D. Takach, E. Ferré, S. Singh, and H. Louie, "Work in Progress: Reimagining the ECE Curriculum: Bridging Technical Preparation, Professional Formation, and University Mission for a Holistic Education," *Proceedings of the 2024 ASEE Annual Conference & Exposition*, Portland, OR, Jun. 2024.

H. Louie, P. Singh, S. Vasconcelos and S. Lord "Faculty and Stakeholder Perspectives from a Workshop on Electricity Access Education" *Proceedings of the ASEE Conference and Exhibition*, Portland, OR, Jun. 2024.

S. Lord, P. Singh, S. Vasconcelos and H. Louie "Electricity Access and Sustainable Business Models Educators Workshop" *Proceedings of the ASEE Conference and Exhibition*, Portland, OR, Jun. 2024.

H. Louie, P. Singh, J. Urquizo, M. Tran, "A workshop for electricity access educators," IEEE Global Humanitarian Technology Conference, Villanova, PA, Oct. 2023.

H. Louie, S. J. Szablya and A. Miguel "A Sustainable Student Design of an Energy Kiosk for Rural Kenya," *Proceedings of the ASEE Conference and Exhibition*, Seattle, WA, Jun. 2015.

H. Louie and A. Srivastava "Resources for Pre-University Power Engineering Outreach," *Proceedings of the IEEE Power & Energy Society General Meeting*, Detroit, MI, Jul. 2011, DOI: 10.1109/PES.2011.6039475.

H. Louie, M. Burns and C. Lima "An Introduction and User's Guide to the IEEE Smart Grid Web Portal," *Proceedings of the Innovative Smart Grid Technologies Europe*, Gothenburg, Sweden, Oct. 2010, DOI: 10.1109/ISGTEUROPE.2010.5638927.

H. Louie, "Using Audience Response Systems to Enrich Engineering Education", *Proceedings of the ASEE Conference and Exhibition*, Louisville, KY, Jun. 2010.

External Student Publications, Posters, and Presentations

M. Dang, "Value of Accurate Load Profile Estimation for Residential Off-Grid Solar Power on the Navajo Nation," *IEEE PES General Meeting*, Seattle, WA, Jul. 2024.

D. Kasakula, " Battery Discharge Tests Using Variable Load Profiles for Off-Grid Power Systems", *National Conference on Undergraduate Research*, Long Beach, CA, Apr. 2024.

M. Dang, "Low-Cost Data Acquisition System for Irradiance Measurements for Solar-Powered Homes on the Navajo Nation," *American Indian Science and Engineering Society Annual Conference*, Spokane, WA, Oct. 2023.

D. Kasakula, " Battery Discharge Tests Using Variable Load Profiles for Off-Grid Power Systems", *IEEE Global Humanitarian Technology Conference*, Villanova, PA, Oct. 2023.

N. Ng, "Markov Modeling of Electric Vehicle Charging," *National Conference on Undergraduate Research*, Spokane, WA, Apr. 2015.

P. Berg, "Can Wind Power be used to Provide Sustainable Energy to Electric Vehicles?," *National Conference on Undergraduate Research*, Lexington, KY, Apr. 2014.

N. Ng, "Parametric Modeling of Electric Vehicle Charging Profiles," *National Conference on Undergraduate Research*, Lexington, KY, Apr. 2014.

D. Nausner, "Harmonic Distortion in Improvised Power Systems," *National Conference on Undergraduate Research*, La Crosse, WI, Apr. 2013.

J. McIntosh, "Using Smart Grid Technology to Promote Energy Efficiency and Conservation in Student Housing," *National Conference on Undergraduate Research*, Ithaca, NY, Mar. 2011.

J. Motioke, "Assessment of Rooftop Wind Resource for Renewable Power Generation," *National Conference on Undergraduate Research*, Missoula, MT, Apr. 2010.

Selected Keynotes, Tutorials, and Invited Talks

Keynotes and Featured Talks

"Ending Energy Poverty through Off-Grid Solar Power", *Tau Bate*, Tau Beta Pi Webinar, Dec. 2023.

"Why Power Engineers Should Care about Energy Access, Energy Equity, and Energy Justice" *Power Engineering Conference at Illinois*, Keynote, Urbana, IL, Feb. 2023.

"What Happens When a Country Runs Out of Electricity?" *Power Engineering Conference at Illinois*, Keynote, Urbana, IL, Feb. 2017.

"Power to the People: Engineering Education and Energy Poverty Alleviation," ASEE Annual Conference, Distinguished Lecture, Seattle, WA, Jun. 2015.

"Lighting Up a Village: How Social Enterprises and Technology Can Change Lives," Bethel College Spring Convocation, Keynote, Wichita, KS, Mar. 2015.

"Electricity Past and Future: The U.S. Experience," Keynote, Electricity Engineers' Association Conference, Auckland, New Zealand, Jun. 2013.

"The Past, Present and Future of the Power & Energy Society," Keynote, Innovative Smart Grid Technologies Middle East, Jeddah, Saudi Arabia, Dec. 2011.

Tutorials

"Fundamentals of Solar-Powered Off-Grid Electrical Systems," IEEE Global Humanitarian Technology Conference, Seattle, WA, Oct. 2026.

"Solar PV Off-Grid System Design: Foundations and AI Applications," IEEE PES/IAS Power Africa, Nairobi, Kenya, Sept. 2026.

"Fundamentals of Off-Grid Systems," IEEE Global Humanitarian Technology Conference, Seattle, WA, Oct. 2021.

"Fundamentals of Off-Grid Systems," IEEE PES/IAS Power Africa, Nairobi, Kenya, Aug. 2021.

"Fundamentals of Off-Grid Systems," IEEE Global Humanitarian Technology Conference, Seattle, WA, Oct. 2020.

"Fundamentals of Off-Grid Systems," IEEE PES/IAS Power Africa, Nairobi, Kenya, Aug. 2020.

"Fundamentals of Off-Grid Systems," IEEE Global Humanitarian Technology Conference, Seattle, WA, Oct. 2019.

"Fundamentals of Off-Grid Systems," IEEE PES/IAS Power Africa, Abuja, Nigeria, Aug. 2019.

"Fundamentals of Off-Grid Systems," IEEE PES General Meeting, Atlanta, GA, Aug. 2019.

"Fundamentals of Off-Grid Systems," IEEE Decentralized Energy Access Workshop, Atlanta, GA, Feb. 2019.

Technical Panel Sessions

"Cyber-Physical Security and Resilient Grid Infrastructure", North American Power Symposium, Houghton, MI, Oct. 2026.

"Community Energy Hubs for Rural Productive Uses", IEEE Smart Village, Nairobi, Kenya, Sept. 2026.

P. Singh, S. Lord and H. Louie "Bringing Humanitarian Engineering into ECE Programs through Electricity Access Education", Frontiers in Education, Washington, D.C., Oct. 2024.

"Technology-enabled Climb up the Demand-Driven Energy Ladder," IEEE Global Humanitarian Technology Conference, Seattle, WA, Oct. 2020.

"Electrification Programs: Local Partnerships," IEEE PES General Meeting, Montreal, Canada, Aug. 2020.

"Condition Monitoring of Off-Grid Systems in Developing Countries," IEEE PES General Meeting, Atlanta, GA, Aug. 2019.

"Condition Monitoring of Off-Grid Systems in Developing Countries," Probabilistic Methods Applied to Power Systems Conference, Jun. 2018.

"Innovation in Microgrids," Engineering for Change Webinar, Oct. 2017.

"Standards for DC Microgrids," IEEE Global Humanitarian Technology Conference, San Jose, CA, Oct. 2017.

"Sustainable Microgrids in Less Economically Developed Communities," IEEE PES General Meeting, Washington, D.C., Jul. 2014.

"Energy Storage Opportunities and Challenges in Improvised Rural Micro Grids," Great Lakes Symposium, Chicago, IL, Sept. 2012.

"Reliable Electricity in Haiti," IEEE Humanitarian Technology Challenge Projects, IEEE Global Humanitarian Technology Conference, Seattle, WA, Oct. 2011.

Industry Education & Training

"Design and Deployment of African Mini-Grids," IEEE e-Learning Course, 2023.

"Operation of African Mini-Grids," IEEE e-Learning Course, 2023.

"Electricity Access in Developing Countries," IEEE Distinguished Lecture, PPL, Allentown, PA, Apr. 2017.

"The Effects of Geographic Diversity on Wind Plant Integration," 3TIER Inc., Technical Seminar, Seattle, WA, Jan. 2010.

"A Brief Introduction to Renewable Energy and the Smart Grid," Power Exchange Session, Seattle City Light, Seattle, WA, Jul. 2011.

"The Smart Grid: Applications, Technologies and Standards", IEEE New Technologies Conference, The Boeing Company, Renton, WA, Aug. 2010.

"Energy, Engineering and Social Justice," Transpower, Wellington, New Zealand, Jun. 2013.

Selected Invited Technical Talks, Seminars, and Webinars

"Ending Energy Poverty through Off-Grid Solar Power", IEEE Seattle Section Tech Talk, Seattle, WA, Nov. 2024.

"Ending Energy Poverty through Off-Grid Solar Power and IEEE Smart Village," Lehigh University Seminar, Bethlehem, PA, Oct. 2024.

"Ending Energy Poverty through Off-Grid Solar Power and IEEE Smart Village," IEEE Lehigh Valley Section, Bethlehem, PA, Oct. 2024.

"Off-Grid Electricity," National University of Zambia Seminar, Sept. 2024.

"Off-Grid Electricity Use on the Navajo Nation," University of Washington Energy Systems Seminar, Feb. 2023.

"Data-Driven Design for Off-Grid Systems: Electricity in the Navajo Nation," webinar, Engineering for Change, Apr. 2023.

"Ending Energy Poverty," Engineers without Borders Puget Sound Professional Chapter, Seattle, WA, Apr. 2023.

"Design and Application of Solar Power Systems for Off-grid Communities," guest lecture, Sustainable Energy Access, Lipscomb University, Feb. 2023.

"Off-Grid Electricity Access Through Energy Kiosks," IEEE International Humanitarian Technology Conference, Dec. 2022.

"Photovoltaics in Humanitarian Projects," IEEE HAC Webinar, Oct. 2021.

"The Role of Energy Storage in Ending Energy Poverty," University of Texas Electrochemical Society, Seminar, Nov. 2020.

"Off-grid Systems for Energy Poverty Alleviation," IEEE PES Colombia Chapter, Seminar, Nov. 2020.

"Off-grid Systems for Energy Poverty Alleviation," IEEE South Africa Section, IEEE Distinguished Lecture, Aug. 2020.

"Scaling Renewable Energy," Moderator, Engineering for Change Virtual Salon, Oct. 2019.

"Fundamentals of Off-Grid Solar Systems," IEEE SIGHT Webinar, July 2019.

"Renewable Energy Microgrids," IEEE PES Student Chapter Seminar, Western Washington University, Bellingham, WA, May 2019.

"Renewable Energy Microgrids," Guest Lecture, University of Washington, May 2018.

"Design of Off-Grid Systems Part 2: System Design," Engineering for Change Webinar, Mar. 2019.

"Design of Off-Grid Systems Part 1: Load & Resource Estimation," Engineering for Change Webinar, Feb. 2019.

"Battery Fundamentals for Off-Grid Systems," Engineering for Change Webinar, Jan. 2019.

"Generating Off-Grid Power," Engineering for Change Webinar, Dec. 2018.

"Off-Grid Power Systems in Developing Countries", IEEE PES Chapter Meeting, Seattle, WA, Nov. 2018.

"Why the Power Grid Isn't Everywhere: The Role of Grid Extension in Electricity Access," Engineering 4 Change Webinar, Nov. 2018.

"Energy Access and Requirements of Rural Communities," Engineering for Change Webinar, Oct. 2018.

"Off-Grid Electrical Systems," School of Engineering Seminar, University of Zambia, Lusaka, Zambia, Sept. 2018.

"The Role of Microgrids in Energy Poverty Alleviation," Guest Lecture, Creighton University, Omaha, NE, Apr. 2018.

"The Role of Microgrids in Energy Poverty Alleviation," IEEE Section Meeting, University of Idaho, Moscow, ID, Feb. 2018.

"The Role of Microgrids in Energy Poverty Alleviation," EECS Dept. Seminar, Washington State University, Pullman, WA, Feb. 2018.

"The Role of Microgrids in Energy Poverty Alleviation," IEEE Distinguished Lecture, Johnson Space Center, Galveston, TX, Jun. 2017.

"The Role of Microgrids in Energy Poverty Alleviation," ECE Dept. Seminar, Villanova University, Philadelphia, PA, Apr. 2017.

"The Role of Microgrids in Energy Poverty Alleviation," ESCI Seminar, Lehigh University, Bethlehem, PA, Apr. 2017.

"What Happens When a Country Runs Out of Electricity?," IEEE PES Chapter Meeting, Seattle, WA, Jan. 2017.

"Energy," Masters of Development Practice Program, Guest Lecture, Regis University, Denver, CO, Sept. 2016.

"Rural Microgrids and the Zambian Energy Crisis," IEEE Distinguished Lecture, Univ. of Cape Town, S. Africa, Mar. 2016.

"Rural Microgrids and the Zambian Energy Crisis," IEEE Distinguished Lecture, Stellenbosch, S. Africa, Mar. 2016.

"Life without Electricity and the Role of Microgrids in Energy Poverty," IEEE Distinguished Lecture, Stockholm, Sweden, Jan. 2016.

"Re-envisioning Electricity Service in Sub-Saharan Africa," IEEE-IEEMA Intelect Conference and Exhibition, Invited Speaker, Mumbai, India, Jan. 2015.

"Lighting Up a Village," IEEE PES Chapter Meeting, Distinguished Lecturer, Redmond, WA, Nov. 2014.

"Community Microgrids: A New Hope for the Energy Impoverished," Renewable Energy Research Conference, Oslo, Norway, Jun. 2014.

"Energy, Engineering and Social Justice," IEEE PES Chapter Meeting, Lincoln, NE, Sept. 2013.

"Energy, Engineering and Social Justice," Seminar, University of Auckland, Auckland, New Zealand, Jun. 2013.

"Energy, Engineering and Social Justice," Seminar, University of Canterbury, Christchurch, New Zealand, Jun. 2013.

"Energy Poverty," IEEE PES Women in Power, Webinar, Jun. 2013.

"Electrification and Sustainable Design," Guest Lecture, Sustainable Design, University of Washington, Seattle, WA, Jun. 2013.

"Power to the People," IEEE PES Chapter Meeting, Lehigh University, Bethlehem, PA, Jan. 2013.

"Power to the People: The Role of Power Engineers in Energy Poverty Alleviation," IEEE PES Seattle Chapter Meeting, Alstom Grid, Redmond, WA, Oct. 2012.

"Recent Field Experiences in Zambia," Tutorial Session, Power Africa, Johannesburg, South Africa, Jul. 2012.

"Affordable Energy Solutions for Developing Communities," Tutorial Session, IEEE Global Humanitarian Technology Conference, Seattle, WA, Oct. 2011.

"Technologically Appropriate Wind Turbines for Zambia: A Sustainable Pathway for Rural Electrification," EECS Dept. Seminar, Washington State University, Pullman, WA, Sept. 2011.

"Wind Turbine Generators for Energy Poverty Alleviation in Rural Communities," Seminar, Kettering University, Flint, MI, Jul. 2011.

"Field Experiences in Wind Turbines for Energy Poverty Alleviation," Special Technical Session on Eliminating Global Energy Poverty, IEEE PES General Meeting, Detroit, MI, Jul. 2011.

Selected Professional Development Talks

"A Novel Educational Partnership between Tribal and Non-Tribal Universities", American Indian Science and Engineering Society, Spokane, WA, Oct. 2023.

"Writing Research Proposals and Grants," School of Engineering Seminar, Copperbelt University, Kitwe, Zambia, Sept. 2018.

"Opportunities for Students in Professional Associations," WCERTE, Moses Lake, WA, Apr. 2013.

"Making it Relevant: Leveraging Public Interest in Renewable Energy to Promote Power Engineering Education," UWIG/NREL Industry-University Workshop on Power Engineering Needs for the Wind Industry, Broomfield, CO, May 2008.

"Doing More Than Talking About the Weather: What Power Engineers Need to Know About Renewable Energy," UWIG/NREL Industry-University Workshop on Power Engineering Needs for the Wind Industry, Broomfield, CO, May 2008.

Service

University and College Committees

Office of Sponsored Projects Advisory Committee	2024-present
Science & Engineering Personnel Committee	2023-present
Budget Advisory Committee	2021
Paccar Professor Selection Committee	2020
University Strategic Planning Steering Committee	2018-2019
Paccar Professor Selection Committee	2018
Sister Kathleen Sullivan Chair Selection Committee	2018
University Mission Day Committee	2017
Science & Engineering Personnel Committee	2014-2015
President's Committee for Sustainability	2011-2014
Science & Engineering Master of Eng. in Systems Engineering Comm.	2013-2015
Science & Engineering Awards Comm.	2013

Science & Engineering Project Center Hiring Comm. 2012
Science & Engineering Science Fair Expo Comm. 2012-2013
Science & Engineering Faculty Development Comm. 2010-2011
Science & Engineering Grad. Research Fellowship Comm. 2010-2011, 2013-2014

Professional Association Leadership Positions

IEEE Power & Energy Society (PES) By-Laws Committee, Chair 2017-2019
IEEE Power & Energy Society (PES) VP of Membership & Image 2011-2015
IEEE Smart Village Steering Committee, Member 2015-2017
IEEE PES Working Group on Sustainable Energy Systems for Developing Communities, Secretary, Vice-Chair, Chair, Past-Chair 2014-2021
IEEE Power & Energy Society (PES) Governing Board, Member-At-Large 2010
IEEE PES Seattle Chapter, Chair 2010-2012
IEEE PES Seattle Chapter, Past Chair 2012-2014
IEEE PES Seattle Chapter, Award Chair 2012-2014
IEEE PES Scholarship Plus Initiative Steering Committee, Member 2010-2014
IEEE PES Long-Range Planning Committee, Member 2010-2016
IEEE PES Nominations & Appointment Committee, Member 2010-2012
IEEE Smart Grid Steering Committee, Member 2009-2010
IEEE PES Student Meetings Subcommittee, Secretary-Elect 2009-2010
IEEE PES Education Committee, Member 2008-2014
IEEE PES Website Development Committee, Chair 2008-2009

Conference Leadership Positions

NSF Convergent Clean Energy Research in Support of Sovereign and Prosperous Tribal Nations Workshop Co-Chair 2024
NSF Energy Access and Sustainable Business Educators Workshop Co-Chair 2023
NSF Energy Access Educators Workshop Co-Chair 2022
IEEE PES/IAS PowerAfrica, Steering Committee Chair 2019-2021
IEEE Global Humanitarian Technology Conference, Energy Track Chair 2020-2021
IEEE Global Humanitarian Technology Conference, Tech. Program Chair 2018-2019
IEEE Decentralized Energy Access Solutions Workshop, Steering Committee Member 2018-2019
IEEE PES PowerAfrica Conference, Tech. Program Co-Chair 2015-2016
Energy Workforce Workshop, Co-Chair 2013
IEEE Global Humanitarian Technology Conference, Tech. Program Co-Chair 2012

Editorial Activities

Energy for Sustainable Development (Journal), Associate Editor

Civic Activities

Navajo Technical University Graduate Program in Electrical Engineering Advisory, Board member, 2023-Present
National Science Foundation, Energy, Power, Controls, and Networks CAREER, Panel Reviewer
National Science Foundation, Cyber Physical System CAREER, Panel Reviewer
National Science Foundation, Energy, Power, Controls, and Networks, Panel Reviewer
Seattle City Light Integrated Resource Planning Board, Member 2009-2019

Professional Association Memberships

Institute of Electrical and Electronic Engineers (IEEE)	2002-Present
IEEE Power & Energy Society (PES)	2002-Present
American Society of Engineering Education (ASEE)	2007-Present
Engineering Institute of Zambia (EIZ)	2016-2017

Professional Development Activities

Beginning Research in Engineering Education: Designing Quantitative and Qualitative Studies (2024)
Sociotechnical Curricula for Engineering and Science (ASEE, 2022)
Arrupe Seminar (Seattle University 2016/2017)
Grant Development Workshop (University of Washington, 2013)
Active Learning (Seattle University, 2012)
Stepping Into the VOID: Active Learning (Seattle University, 2012)
Writing, Procrastination, and Resistance (Seattle University, 2011)
Universal Design for Learning (Seattle University, 2011)
Lab-Volt Training Seminar (North Seattle Community College, 2010)
American Society of Engineering Education Conference and Exposition (Louisville, KY, 2010)
Effective Academic Advising Workshop (Seattle University, 2010)
Office of Naval Research Reforming Electric Energy Undergraduate Curricula (Tucson, AZ, 2010)
Ignatian Pedagogy Workshop (Seattle University, 2009)
Future Gazing on Sustainability Workshop (Seattle University, 2009)
Advising for the Core Workshop (Seattle University, 2009)