Patricia Hidalgo-Gonzalez

phidalgogonzalez@ucsd.edu, U.S. citizen
Science and Engineering Research Facility (SERF), Office 237, University of California, San Diego

EDUCATION

University of California, Berkeley, CA
Ph.D., Energy and Resources Group (ERG)
May 2020
Advisors Dr. Claire Tomlin and Dr. Daniel Kammen

University of California, Berkeley, CA
M.S., Electrical Engineering and Computer Sciences
December 2019
Advisor Dr. Claire Tomlin

University of California, Berkeley, CA
M.S., Energy and Resources Group
May 2016
Advisor Dr. Daniel Kammen

Pontificia Universidad Católica de Chile, Santiago, Chile
Industrial and Electrical Engineering (Six year program)
September 2012
Highest Honors

HONORS, AWARDS, AND RECOGNITIONS

Outstanding Young Investigator Award *2025*
Institute of Industrial and Systems Engineers (IISE) Energy Systems Division
One winner per year globally (no self nominations)

Nature Communications Editors' Highlights *2024*
50 best papers recently published in "Engineering and Infrastructure"
"Offshore Wind and Wave Energy Can Reduce Total Installed Capacity Required in Zero Emissions Grids" (Last author)
Nature Communications

Cited by The White House 2024 Economic Report of the President *2024*

UC San Diego Jacobs School Early Career Faculty Development Award *2022*
(Refer to GRANTS for more information)

(Best paper award) PSCC 2020 Highlights Award, top 3 % of papers *2020*
"Learning to control in power systems: Design and analysis guidelines for concrete safety problems" (Joint first author)
XXI Power Systems Computation Conference

Siebel Scholar in Energy Science *2019 - 2020*
The Siebel Foundation and the University of California, Berkeley

Rising Stars in Electrical Engineering and Computer Sciences *2019*
Academic Career Workshop for Women in Electrical Engineering and Computer Sciences

Outstanding Graduate Student Instructor *2019*
University of California, Berkeley

National Science Foundation Graduate Research Fellowship Program *2015*

Graduate Opportunity Program (GOP) Award *2014 - 2015*
University of California, Berkeley
Covered tuition and stipend

"Research Abroad in Science and Technology" *2012*
Covered all expenses of the visit to the University of Arizona
Comisión Nacional de Investigación Científica y Tecnológica (CONICYT), Santiago, Chile

"Study Abroad (at UC Berkeley) Scholarship" *2011*
Pontificia Universidad Católica de Chile, Santiago, Chile
Covered all expenses to attend to UC Berkeley in Spring 2011

"Admitted with Honors Scholarship" *2006*
Pontificia Universidad Católica de Chile, Santiago, Chile
Covered tuition during first academic year

RESEARCH EXPERIENCE

Assistant Professor *Jul 2020 - Present*
Mechanical and Aerospace Engineering (MAE)
University of California, San Diego, CA, U.S.

Graduate Student Researcher *2018 - 2020*
Electrical Engineering and Computer Sciences
University of California, Berkeley, CA, U.S.
PI: Dr. Claire Tomlin

Graduate Student Researcher for California Energy Commission *2015 - 2017*
Energy and Resources Group
University of California, Berkeley, CA, U.S.
Co-developed Stochastic SWITCH-WECC, a power system capacity expansion model under climate change uncertainty.
PI: Dr. Daniel Kammen and Dr. Max Wei

Power Systems Engineer and Policy Consultant *Mar - Jul 2014*
Natural Resources Defense Council
Co-developed SWITCH-Chile, a power system capacity expansion model
Technical report and presentation for Chilean power system operators, policy makers and stakeholders.

Research Staff *2013*
Energy and Resources Group
University of California, Berkeley, CA, U.S.
Professor Dr. Daniel Kammen

Visiting Scholar *Jan - Jun 2012*
Undergraduate thesis title: "String-Level (kW-Scale) IV Curves From Different Types Of Modules Under Partial Shade"
Department of Physics
University of Arizona, Tucson, AZ, U.S.

Professor Dr. Alexander Cronin

Undergraduate Research Assistant *Jun - Aug 2011*
Energy and Resources Group
University of California, Berkeley, CA, U.S.
Professor Dr. Daniel Kammen

Exchange Abroad Program (EAP) *Jan - May 2011*
Industrial Engineering and Operations Research
University of California, Berkeley, CA, U.S.

Undergraduate Research Assistant *Mar - Jul 2010*
Electrical Engineering Department
School of Engineering
Pontificia Universidad Católica de Chile, Santiago, Chile
Professor Dr. David Watts

GRANTS

Summary as a Prof.: *Total awarded $5.3M, where $2.1M are as the lead PI*

Awarded: *Designing California's clean and climate resilient electricity grid for vulnerable communities* *2023 - 2025*
Principal Investigator: **Dr. Patricia Hidalgo-Gonzalez, 35 %**
Co-Principal Investigators: Dr. Jan Kleissl (UC San Diego), Dr. Ranjit Deshmukh (UC Santa Barbara, 36 %), Dr. Duncan Callaway (UC Berkeley, 29 %), Dr. Adam Warren (National Renewable Energy Lab, 0 %), and Dr. Miguel Heleno (Lawrence Berkeley National Lab, 0 %).
Amount US$ 2,000,000
University of California, Office of the President

Awarded: *Interregional Model Comparison for COP28* *2022 - 2024*
Principal Investigator: **Dr. Patricia Hidalgo-Gonzalez**
Amount US$ 50,029
Environmental Defense Fund

Awarded: *Model Intercomparison for a Decarbonized US Electric Grid* *2023 - 2025*
Principal Investigator: Dr. Matthias Fripp (Environmental Defense Fund)
Co-Principal Investigators: **Dr. Patricia Hidalgo-Gonzalez**, Dr. Michael Roberts (University of Hawaii), Dr. Paulina Jaramillo (Carnegie Mellon University), and Dr. Jesse Jenkins (Princeton University)
This project compares decarbonization pathways using three capacity expansion models in the U.S. Models/Teams: GenX from Princeton University, TEMOA from Carnegie Mellon University and Switch from the University of Hawaii and UC San Diego. Funds were evenly split among the three teams.
Amount US$ 350,000
The Sloan Foundation

Awarded: *Clean Energy Future for New Mexico and Western North America* *2022 - 2023*
Principal Investigator: **Dr. Patricia Hidalgo-Gonzalez**
Amount US$ 92,734
GridLab

Awarded: *Reliable and Local Reinforcement Learning for Microgrid Control* *2022 - 2023*

Principal Investigator: Dr. Yuanyuan Shi
Co-Principal Investigator: **Dr. Patricia Hidalgo-Gonzalez**
Amount US$ 56,335
UC San Diego Jacobs School Early Career Faculty Development Award

Awarded: *Wave Energy Technology Assessment for Optimal Grid Integration and Blue Economy Advancement* *2021 - 2025*
Principal Investigator: Dr. Deborah Sunter (Tufts University)
Co-Principal Investigators: **Dr. Patricia Hidalgo-Gonzalez** (UC San Diego, 27 %), and Dr. Daniel Kammen (UC Berkeley)
Amount US$ 1,500,000
U.S. Department of Energy

Awarded: *Modeling of Long-Duration Storage for Decarbonization of California Energy System* *2020 - 2023*
Principal Investigator: Dr. Sarah Kurtz (UC Merced)
Co-Principal Investigators: Dr. Daniel Kammen (UC Berkeley), **Dr. Patricia Hidalgo-Gonzalez** (UC San Diego, 24 %), Dr. Noah Kittner (UNC), and Dr. Sergio Castellanos (UT Austin)
Amount US$ 1,254,955
California Energy Commission

Awarded: *Building a Healthier and More Robust Future: 2050 Low-Carbon Energy Scenarios for California* *2015 - 2017*
Written by Wei, M., Raghavan, S., and **Hidalgo-Gonzalez, P.**
Principal Investigator: Dr. Daniel Kammen and Dr. Max Wei
Amount US$ 700,000
California Energy Commission

Awarded: *Power systems modeling for Chile to integrate renewable energy* *2015*
Written by Carvallo, J. and **Hidalgo-Gonzalez, P.**
Principal Investigator: Dr. Daniel Kammen
Amount US$ 40,000
Energy and Climate Partnership of Americas

Awarded: *Assessing the pivotal role of solar power in the future of the Chilean electricity sector* *2014 - 2015*
Written by Carvallo, J. and **Hidalgo-Gonzalez, P.**
Principal Investigator: Dr. Daniel Kammen
Amount US$ 19,000
Center for Latin American Studies and Conicyt

JOURNAL PUBLICATIONS

* Denotes equal contribution.

[J24] Gonzalez, N., D., Sunter, D., and **Hidalgo-Gonzalez, P.**, "The Use of Carbon Capture in Decarbonizing the Power Sector Increases Health Costs and Perpetuates Inequities." (Under review in Nature Sustainability)

[J23] Bansal, R.K., Singh, M., Deshmukh, R., and **Hidalgo-Gonzalez, P.** "Risk-Constrained Electricity Tariffs for Flexible Load: Addressing Equity and Public Safety Power Shutoff Challenges." (Under review)

[J22] Bansal, R.K., Mallada, E., and **Hidalgo-Gonzalez, P.** "Two-Stage Electricity Market Mechanism with Supply Function Bidding and Storage Degradation." (Under

review)

[J21] Schivley, G., Blackhurst, M., **Hidalgo-Gonzalez, P.**, Jenkins, J., Lugovoy, O., Luo, Q., Roberts, M.J., Zheng, R., Wade, C., and Fripp, M. "Process and Policy Insights from an Intercomparison of Open Electricity System Capacity Expansion Models." Environmental Research: Energy, 2025.

[J20] French, J., Alverson, S., Sanchez Perez, P., Staadecker, M., **Hidalgo-Gonzalez, P.**, and Castellanos, S. "Challenges in Incorporating Environmental Justice Constraints for Capacity Expansion Modeling." Environmental Science & Technology, 2025.

[J19] Yu, N., Zhang, S., Qin, J., **Hidalgo-Gonzalez, P.**, Dobbe, R., Liu, Y., Dubey, A., Wang, Y., Dirkman, J., Zhong, H., Lu, N., Ma, E., Ding, Z.,Cao, D., Zhao, J., and Gao, Y. "Data-Driven Control, Optimization, and Decision-making in Active Power Distribution Networks." Applied Energy, 2025.

[J18] Ali, S. A., Serna-Torre, P., **Hidalgo-Gonzalez, P.**, Ghazavi Dozein, M., and Bahrani, B. "Modularized Small-Signal Modeling of Grid-Forming Inverters." IEEE Access, 2025.

[J17] Szinai, J., Yates, D., Sanchez-Perez, P., Staadecker, M., Kammen, D., Jones, A., and **Hidalgo-Gonzalez, P.**, "Climate change and its influence on water systems increases the cost of electricity system decarbonization." Nature Communications, 2024.

[J16] Staadecker, M., Szinai, J., Sanchez-Perez, P., Kurtz, S., and **Hidalgo-Gonzalez, P.**, "The Value of Long-Duration Energy Storage under Various Grid Conditions in a Zero-Emissions Future." Nature Communications, 2024.

[J15] Serna-Torre, P. and **Hidalgo-Gonzalez, P.**, "Frequency Dynamics With Inverters: Proof of Stabilizability and Existence of Nash Equilibrium." IEEE Control Systems Letters, 2024. Also in IEEE Conference on Decision and Control 2024.

[J14] Feng, J., Muralidharan, M., Henriquez-Auba, R., **Hidalgo-Gonzalez, P.**, and Shi, Y., "Stability-Constrained Learning for Frequency Regulation in Power Grids With Variable Inertia." IEEE Control Systems Letters, 2024. Also in IEEE Conference on Decision and Control 2024.

[J13] Gonzalez, N., Serna-Torre, P., Sanchez-Perez, P., Davidson, R., Murray, B., Staadecker, M., Szinai, J., Wei, R., Kammen, D., Sunter, D., and **Hidalgo-Gonzalez, P.**, "Offshore Wind and Wave Energy Can Reduce Total Installed Capacity Required in Zero Emissions Grids." Nature Communications, 2024.

[J12] Serna-Torre, P., Shenoy, V., Schoenwald, D., Poveda, J. I., and **Hidalgo-Gonzalez, P.**, "Non-cooperative Game to Control Learned Inverter Dynamics of Distributed Energy Resources." Electric Power Systems Research. Also in XXIII Power Systems Computation Conference, 2024.

[J11] Shenoy, V., Serna-Torre, P., Schoenwald, D., **Hidalgo-Gonzalez, P.**, and Poveda, J. I., "Fast Frequency Regulation of Virtual Power Plants via Droop Reset Integral Control." Electric Power Systems Research. Also in XXIII Power Systems Computation Conference, 2024.

[J10] Srivastava, P., **Hidalgo-Gonzalez, P.**, and Cortés, J., "Learning Constant-Gain Stabilizing Controllers for Frequency Regulation under Variable Inertia." IEEE Control Systems Letters, 2022. Also in IEEE Conference on Decision and Control 2022.

[J9] Sanchez-Perez, P., Staadecker, M., Szinai, J., Kurtz, S., and **Hidalgo-Gonzalez, P.**, "Effect of modeled time horizon on quantifying the need for long-duration storage." Applied Energy, 2022.

[J8] Serna Torre, P. and **Hidalgo-Gonzalez, P.**, "Decentralized Optimal Power Flow for Time-Varying Network Topologies Using Machine Learning." Electric Power Systems Research, 2022. Also in XXII Power Systems Computation Conference, 2022.

[J7] Wu, M.*, Roy, R.*, Serna Torre, P. and **Hidalgo-Gonzalez, P.**, "Effectiveness of Learning Algorithms with Attack and Defense Mechanisms for Power Systems." Electric Power Systems Research, 2022. Also in XXII Power Systems Computation Conference, 2022.

[J6] Zhang, X., Cui, X., Li, B., **Hidalgo-Gonzalez, P.**, Kammen, D. M., and Zou, J. "Immediate actions on coal phaseout enable a just low-carbon transition in China's power sector." Applied Energy, 2022.

[J5] Yin, G., Li, B., Fedorova, N., **Hidalgo-Gonzalez, P.**, Kammen, D.M., Duan, M. "Orderly retire China's coal-fired power capacity via capacity payments to support renewable energy expansion." iScience, Volume 24, Issue 11, 2021.

[J4] Henriquez-Auba, R., **Hidalgo-Gonzalez, P.**, Pauli, P., Kalathil, D., Callaway, D.S. and Poolla, K., "Sharing Economy and Optimal Investment Decisions for Distributed Solar Generation." Applied Energy, 2021.

[J3] **Hidalgo-Gonzalez, P.**, Johnston, J.L., Kammen, D.M., "Cost and Impact of Weak Medium Term Policies in the Electricity System in Western North America." The Electricity Journal, 2021.

[J2] Li, B., Ma, Z., **Hidalgo-Gonzalez, P.**, Lathem, A., Fedorova, N., He, G., Zhong, M., Chen, M., and Kammen, D. "Modeling the Impact of Electrical Vehicles in the Chinese Power System: Pathways for Implementing Emissions Reduction Commitments in the Power and Transportation Sectors." Energy Policy, 2020.

[J1] Dobbe, R.*, **Hidalgo-Gonzalez, P.***, Karagiannopoulos, S., Henriquez-Auba, R., Hug, G., Callaway, D. S., and Tomlin, C.J. "Learning to Control in Power Systems: Design and Analysis Guidelines for Concrete Safety Problems." Electric Power Systems Research, 2020. Also in XXI Power Systems Computation Conference, 2020.

JOURNAL COMMENTARIES

[M2] Kittner, N., Castellanos, S., **Hidalgo-Gonzalez, P.**, Kammen, D.M., Kurtz, S. "Cross-sector storage and modeling needed for deep decarbonization." Joule Commentary, 2021.

[M1] Kurtz, S., Kittner, N., Castellanos, S., **Hidalgo-Gonzalez, P.**, and Kammen, D. "For Cleaner, Greener Power, Expand the Definition of Batteries." Issues in Science and Technology, 2021.

CONFERENCE PUBLICATIONS

[C11] Muralidharan, M., Srivastava, P., Khurram, A., Murakami, K., Kleissl, J., and

Hidalgo-Gonzalez, P., "Decentralized Dynamic Virtual Inertia Allocation for Power Grids with Low and Variable Inertia." 2025 American Control Conference. Peer reviewed.

[C10] Salas Cardenas, P., Serna-Torre, P., and **Hidalgo-Gonzalez, P.**, "The Importance of an Optimal Integrated Operation of Electrical and Natural Gas Systems During Gas Rationing." 2024 IEEE XXXI International Conference on Electronics, Electrical Engineering and Computing (INTERCON). Peer reviewed.

[C9] French, J., Alverson, S., Sánchez-Pérez, P.A., Staadecker, M., Kurtz, S., **Hidalgo-Gonzalez, P.**, and Castellanos, S. "Environmental Justice in the Energy Transition: Modeling Air Pollutant Dispersion Alongside Capacity Expansion for Equitable Decarbonization Pathways." AGU Fall Meeting 2023. Peer reviewed.

[C8] Sánchez-Pérez, P.A., Kurtz, S., Gonzalez, N., Staadecker, M., **Hidalgo-Gonzalez, P.** "Effect of Time Resolution on Capacity Expansion Modeling to Quantify Value of Long-Duration Energy Storage." 2022 IEEE Electrical Energy Storage Application and Technologies Conference (EESAT). Peer reviewed.

[C7] Szinai, J., Yates, D.N., **Hidalgo-Gonzalez, P.**, Kammen, D.M., Deshmukh, R., Jones, A.D. "Evaluating Climate Change Adaptation Strategies for Electricity and Water Systems in the Western US with a Cross-Sectoral Energy-Water Nexus Modeling Approach." AGU Fall Meeting 2020. Peer reviewed.

[C6] **Hidalgo-Gonzalez, P.**, Henriquez-Auba, R., Callaway, D. S., and Tomlin, C.J. "Frequency Regulation using Sparse Learned Controllers in Power Grids with Variable Inertia due to Renewable Energy." IEEE Conference on Decision and Control 2019. Peer reviewed, acceptance rate: 50 %.

[C5] Anderson, S., **Hidalgo-Gonzalez, P.**, Dobbe, R., and Tomlin, C.J. "Distributed Model Predictive Control for Autonomous Droop-Controlled Inverter-Based Microgrids." IEEE Conference on Decision and Control 2019. Peer reviewed, acceptance rate: 50 %.

[C4] **Hidalgo-Gonzalez, P.**, Henriquez-Auba, R., Callaway, D. S., and Tomlin, C.J. "Frequency Regulation using Data-Driven Controllers in Power Grids with Variable Inertia due to Renewable Energy." In 2019 IEEE PES General Meeting. Peer reviewed, acceptance rate: 50 %.

[C3] **Hidalgo-Gonzalez, P.**, Dobbe, R., Henriquez-Auba, R., Callaway, D. S., and Tomlin, C.J. "Frequency Regulation in Hybrid Power Dynamics with Variable and Low Inertia due to Renewable Energy." In 57th IEEE Conference on Decision and Control, 2018. Peer reviewed, acceptance rate: 50 %.

[C2] **Hidalgo-Gonzalez, P.L.**, Brooks, A.E., Kopp, E.S., Lonij, V.P., and Cronin, A.D., "String-Level (kW-Scale) IV Curves From Different Types Of Modules Under Partial Shade." 38th IEEE Photovoltaic Specialists Conference 2012, Austin, TX, U.S.

[C1] Kopp, E.S., Lonij, V.P., Brooks, A.E., **Hidalgo-Gonzalez, P.L.**, and Cronin, A.D., "IV curves and visual inspection of 250 PV modules deployed over 2 years in Tucson." 38th IEEE Photovoltaic Specialists Conference 2012, Austin, TX, U.S.

TECHNICAL REPORTS AND POLICY BRIEFS

[T5] Kurtz, S., Colombo, M., ZareAfifi, F., Mahmud, Z., Abido, M., Serna-Torre, P.,

Staadecker, M., **Hidalgo-Gonzalez, P.**, and Noah Kittner. 2024. "Evaluating the Value of Long-duration Energy Storage in California." California Energy Commission. Publication Number: CEC-500-2024-085. 64 pages.

[T4] GridLab, 2023, The Moonshot 100 % clean electricity study: Assessing the tradeoffs among clean portfolios with a PNM case study 44 pages.

[T3] M. Wei, S. Raghavan, **P. Hidalgo-Gonzalez**, R. Henriquez-Auba, D. Millstein, M. Hoffacker, R. Hernandez, E. Ruffini, B. Tarroja, A. Agha Kouchak, J. Johnston, D. Kammen, J. Szinai, C. Shepard, A. Gopal, K. Sun, T. Hong, and F. Langer. 2019. "Building a Healthier and More Robust Future: 2050 Low-Carbon Energy Scenarios for California". California Energy Commission. Publication Number: CEC-500-2019-033. 167 pages.

[T2] **Hidalgo-Gonzalez, P.L.**, Johnston, J.L., and Kammen, D.M., "Supplementary analysis for CAISO SB 350 regionalization study" (Policy brief. 7 pages), Memo prepared per CAISO's request, July 2016, Berkeley, CA, U.S.

[T1] Carvallo, J.P., **Hidalgo-Gonzalez, P.L.**, and Kammen, D.M., "Envisioning a Sustainable Chile: Five findings about the future of the Chilean electricity and energy system" (Policy brief. 14 pages), Natural Resources Defense Council, 2014, Washington, D.C., U.S.

SELECTED TALKS

(Upcoming invited talk) "Model-free data-driven control and model order reduction for inverter dominated grids," Champéry Power Conference, February 2026, Champéry, Switzerland.

(Invited talk) "Enabling renewable energy integration: Challenges and opportunities," AI Institute for Advances in Optimization, Georgia Institute of Technology (Hosted by Dr. Daniel Molzahn), June 2025, Atlanta, GA.

(Invited talk) "Enabling renewable energy integration: Challenges and opportunities," Women in Systems Engineering (WiSE), IEEE Systems Council (Hosted by Dr. Somayeh Sojoudi), May 2025, Online.

(Invited talk) "Enabling renewable energy integration: Challenges and opportunities," Energy Science and Engineering, Stanford University (Hosted by Dr. Adam Brandt), March 2025, Palo Alto, CA.

(Invited talk) "Enabling renewable energy integration: Challenges and opportunities," Electrical Engineering and Computer Sciences, UC Berkeley (Hosted by Dr. Robert Pilawa-Podgurski), February 2025, Berkeley, CA.

(Invited talk and panel) "Design guidelines for data-driven techniques to operate power systems reliably" 2025 AAAS Annual Meeting, February 2025, Boston, MA.

(Opening talk for the storage session) "Evolving Energy Storage Modeling Practices," EPRI's 43rd Seminar on Resource Planning, Washington D.C., October 2024.

(Invited talk) "Climate change and its influence on water systems increases the cost of electricity system decarbonization," 2024 INFORMS Annual Meeting, Seattle, WA, October 2024.

(Invited talk) "Non-cooperative games to control learned inverter dynamics of dis-

tributed energy resources," 7th Workshop on Autonomous Energy Systems, National Renewable Energy Laboratory, Golden, September 2024.

(Invited talk) "Enabling renewable energy integration: Challenges and opportunities," Center for Climate and Energy Decision making and the Carnegie Mellon Electricity Industry Center (Hosted by Dr. Granger Morgan), March 2024, Pittsburgh, PA.

(Invited talk for the U.S. NAS) "The Role and Value of Long Duration Energy Storage in Zero-Emissions Grids," U.S. National Academy of Science, Halle, Germany, October 2023.

(Invited talk) Hidalgo-Gonzalez, P. and Shi, Y. "Reliable and Local Reinforcement Learning for Microgrid Control," Keynote speakers at the Dean's Council of Advisors Meeting, May 2023, San Diego, CA.

(Invited talk) "Grids Powered by Renewable Energy: Solutions for Real-Time Operations and Long-Term Planning," Energy Science and Engineering, Stanford University, March 2023, Palo Alto, CA.

(Invited talk) "Renewable Energy Integration: Open Challenges and Opportunities," CaliBaja Seminar, UC San Diego, July 2023, San Diego, CA.

(GridLab event) "The Moonshot 100 % Clean Electricity Study. SWITCH Results Deep Dive," Technical Review Committee, GridLab, February 2023 (virtual).

(Invited talk) "Learning for control in power systems: Design and analysis guidelines for concrete safety problems," GERAD Seminar at Polytechnique Montreal, October 2022 (virtual).

(Invited talk) "The Role and Value of Long Duration Energy Storage in Zero-Emissions Grids," 2022 INFORMS Annual Meeting, October 2022, Indianapolis, IN.

(Invited talk) "Three Stages to Achieve Resilient Energy Systems," RE:WIRED Green, San Francisco, CA, September 2022.

(Invited talk) "Decentralized Optimal Power Flow for time-varying network topologies using machine learning," National Renewable Energy Laboratory, Human Dimensions of Energy Systems Workshop, Golden, CO, September 2022.

(Invited talk) "The Role and Value of Long Duration Energy Storage in Zero-Emissions Grids" International Energy Agency PVPS Task 16 – Firm PV Power, International Solar Energy Society, August 2022 (virtual).

(California Energy Commission's meeting) "Long duration storage modeling in California and Western North America," California Energy Commission Technical Advisory Committee, August 2022 (virtual).

(GridLab event) "Kick Off: The Moonshot 100 % Clean Electricity Study" Technical Review Committee, GridLab, July 2022 (virtual).

(PSCC) Wu, M., Roy, R., Serna Torre, **P., Hidalgo-Gonzalez, P.** "Effectiveness of Learning Algorithms with Attack and Defense Mechanisms for Power Systems," XXII Power Systems Computation Conference, Porto, Portugal, June 2022. Gave talk

on behalf of all authors.

(Invited talk) "The Role and Value of Long Duration Energy Storage in Zero-Emissions Grids," Pacific Climate Forum of the Americas, June 2022 (virtual).

(IEEE Workshop) "Convex Optimization and applications to power systems" Prof. Patricia Hidalgo-Gonzalez and her Ph.D. student, Paul Serna Torre, held a virtual workshop for the IEEE Chapter at Universidad Nacional de San Antonio Abad del Cusco, January 2022 (virtual).

(Invited talk) "Learning for control in power systems: Design and analysis guidelines for concrete safety problems," 2021 INFORMS Annual Meeting, Anaheim, CA, October 2021

(Invited talk) "Learning and control systems for the integration of renewable energy into grids of the future," MIT, Electrical Engineering and Computer Sciences, Cambridge, MA, February 2020

(Invited talk) "Learning and control systems for the integration of renewable energy into grids of the future," University of Wisconsin –Madison, Mechanical Engineering, Madison, WI, February 2020

(Invited talk) "Learning and control systems for the integration of renewable energy into grids of the future," Purdue University, Electrical and Computer Engineering, West Lafayette, IN, January 2020

(Invited talk) "Learning and control systems for the integration of renewable energy into grids of the future," UC San Diego, Mechanical and Aerospace Engineering, La Jolla, CA, January 2020

(Invited talk) In the organizer's words: "The purpose of the lightning rounds is to showcase five of the brightest graduate students and their research on our campus." **Hidalgo-Gonzalez, P.** "Learning and control systems for the integration of renewable energy into grids of the future," UC Berkeley Campaign Volunteer Summit, Berkeley, November 2019

Hidalgo-Gonzalez, P., Henriquez-Auba, R., Callaway, D. S., and Tomlin, C.J. "Frequency Regulation using Sparse Learned Controllers in Power Grids with Variable Inertia due to Renewable Energy," NSF Graduate Education and the Professoriate Research Exchange, Stanford, October 2019

Hidalgo-Gonzalez, P. "Learning and control systems for the capacity expansion planning and integration of renewable energy into grids of the future," STEM Faculty Launch, Worcester Polytechnic Institute, October 2019

Hidalgo-Gonzalez, P., Dobbe, R., Henriquez-Auba, R., Callaway, D. S., and Tomlin, C.J. "Frequency Regulation in Hybrid Power Dynamics with Variable and Low Inertia due to Renewable Energy." In 57th IEEE Conference on Decision and Control, December 2018

Hidalgo-Gonzalez, P. "Invited Lecture on Applications of Convex Optimization to Energy Systems". Course: EE127/227AT Optimization Models in Engineering, Fall 2018, Professors: Laurent El Ghaoui and Alexandre Bayen, UC Berkeley

Hidalgo-Gonzalez, P. "Frequency Regulation in Variable and Low Inertia Inertia Power Systems due to Renewable Energy". Invited talk at professor Alexandra von Meier's group meeting at UC Berkeley, November 2018

Hidalgo-Gonzalez, P.L., "Ingeniería construyendo un futuro energético limpio y sustentable", Engineering Conference, October 2016, Centro Universitario de Oriente CUNORI, Guatemala.

Hidalgo-Gonzalez, P.L., Wei, M., Johnston, J.L., Raghavan, S., Coignard, J., Greenblatt, J., Saxena, S., Kammen, D.M., "Building a Healthier and More Robust Future: 2050 Low Carbon Energy Scenarios for California", Progress presentation to Policy and Technical Advising Committees (CAISO, PG&E, CPUC) and CEC Chair Dr. Robert Weisenmiller, September 2016, California Energy Commission, Sacramento, CA, U.S.

Hidalgo-Gonzalez, P.L., Johnston, J.L., Kammen, D.M., "2030/2050 power system planning path dependency in western North America", Masters presentation, May 2016, Energy and Resources Group, University of California, Berkeley, CA, U.S.

Hidalgo-Gonzalez, P.L., Johnston, J.L., Kammen, D.M., "2030/2050 power system planning path dependency in western North America", Renewable and Appropriate Energy Laboratory seminar, May 2016, Energy and Resources Group, University of California, Berkeley, CA, U.S.

Kammen, D.M., Carvallo, J.P., **Hidalgo-Gonzalez, P.L.**, "A framework to manage national decarbonization regimes", Our Common Future Under Climate Change Conference, July 2015, Paris, France.

Hidalgo-Gonzalez, P.L., Carvallo, J.P., Castro, F.I., Negrete-Pincetic, M., "Rethinking Electricity Systems in Chile: Renewable Energy, Efficiency, and Innovation", Chile-California Conference (Calcubo), October 2013, Stanford, CA, U.S.

PROFESSIONAL ACTIVITIES

Co-lead for the "Climate Change and the Energy Sector" appendix 2025 - Present
California's Fifth Climate Change Assessment
The Governor's Office of Land Use and Climate Innovation.

Chair, IEEE Control Systems Society (CSS) Technical Committee on Energy Systems to award Outstanding Student Paper Prize 2025 - Present
Chair of the IEEE CSS Technical Committee on Energy Systems to award the Outstanding Student Paper Prize (one award among the nominees from the IEEE Conference on Decision and Control and the IEEE Conference on Control Technology and Applications).

Co-Founder, Power and Energy Systems at UC San Diego 2020 - Present
Organized recurring biweekly seminars were graduate students in power and energy systems at UC San Diego present their work, as well as holding yearly virtual public workshops to provide access to everyone on how to apply to a Ph.D. in the field (see below). I have also been organizing the Ph.D. visit day for Power and Energy Systems at UC San Diego
2020 - Present.

Power and energy systems Ph.D. application workshop (virtually) 2020 - Present
I have been hosting this public workshop alongside Dr. Michael Davidson and Dr. Yuanyuan Shi. The objective is to provide wider access to resources to succeed in

applying to graduate programs in energy and power systems. We teach applicants how to craft a strong application, how admissions committees select, how to choose a graduate program, and what "Power and Energy Systems" at UC San Diego offers, fellowships, and more.
Offered: Fall 2020, 2021, 2022, 2023 and 2024.

IEEE Task Force 2025 - Present
Task Force: "Wildfire Aware-Risk Management (WARM) for the Electric Power Grid"
IEEE Power & Energy Society General.

EPRI's Working Group 2024
Working Group: "Long-duration Energy Storage Modeling"

IEEE Task Force 2020 - 2025
Task Force: "Data-Driven Controls for Distributed Systems"
IEEE Power & Energy Society General.

IEEE Control Systems Society (CSS) Technical Committee on Energy Systems to award Outstanding Student Paper Prize 2023 - 2024
Selection committee member for the IEEE CSS Technical Committee on Energy Systems to award the Outstanding Student Paper Prize. **One out of four committee members** to rank and propose one award among the nominees from the IEEE Conference on Decision and Control and the IEEE Conference on Control Technology and Applications.

Session Chair, Invited Session, 2024
"Power Systems Planning and Operation II: Cutting Edge Strategies," 2024 INFORMS Annual Meeting.

Session Co-Chair (alongside my postdoc, Dr. Bansal), Invited Session, 2024
"Optimization and Learning for Future Electricity Market Design," 2024 INFORMS Annual Meeting.
Invited speakers: Dr. Steven Low, Dr. Baosen Zhang, Dr. Shmuel Oren, and Dr. Rajni Bansal.

Co-Chair and judge for Best Paper session, 2020
"Distribution Systems, Energy Hubs, and Smart Grids," IEEE Power & Energy Society General Meeting, 2020.

Co-Chair and judge for Best Paper session, 2020
"Distribution Systems, Energy Hubs, and Smart Grids," IEEE Power & Energy Society General Meeting, 2020.

Chair for two "Power System Operations" paper forums, 2020
IEEE Power & Energy Society General Meeting, 2020.

Best Paper Sessions Judge, 2019
Session: "Power System Stability, Phasor Measurements, Protection, and Control"
IEEE Power & Energy Society General Meeting, 2019.

Reviewer for journals:

- IEEE Transactions on Power Systems
- IEEE Transactions on Control of Network Systems

- Electric Power Systems Research
- Nature Communications

Reviewer for conferences:

- IEEE Conference on Decision and Control
- IEEE American Control Conference
- IEEE Power & Energy Society General Meeting
- Power Systems Computation Conference

Ph.D. and M.S. Admissions committee member
Control, Intelligent Systems, and Robotics
Electrical Engineering and Computer Sciences
University of California, Berkeley, CA, U.S.
Admissions 2019

TEACHING EXPERIENCE

Linear Systems Theory (MAE 280A) Instructor *Fall 2021, 2022, 2023, 2024*
Mechanical and Aerospace Engineering
University of California, San Diego, CA, U.S.

Introduction to Renewable Energy (MAE 119) Instructor *Spring 2021, 2022, 2023, 2024, 2025*
Mechanical and Aerospace Engineering
University of California, San Diego, CA, U.S.

Convex Optimization for Engineers (MAE 227) Instructor *Winter 2021, 2023, 2024, 2025*
Mechanical and Aerospace Engineering
University of California, San Diego, CA, U.S.

Renewable Energy Integration (MAE 244) Instructor *Spring 2021*
Mechanical and Aerospace Engineering
University of California, San Diego, CA, U.S.

Optimization Models in Engineering (EE227AT) Head Graduate Student Instructor *Fall 2018*
Electrical Engineering and Computer Sciences
University of California, Berkeley, CA, U.S.
Professor: Dr. Alexandre Bayen and Dr. Laurent El Ghaoui
Duties: 2 hours of discussion per week for 280+, students, discussion design, management of four graduate student instructors and overseeing their tasks (grading, homework and exam design), evaluations' logistics, correspondence with students, and 1 office hour.

Optimization Models in Engineering (EE227AT) Graduate Student Instructor *Spring 2018*
Electrical Engineering and Computer Sciences
University of California, Berkeley, CA, U.S.
Professor: Dr. Laurent El Ghaoui
Duties: 1 hour of discussion per week for 80, students, discussion design, test grading, and homework design, 2 office hours.

Linear Algebra for Engineering Lecturer *Fall 2012*
Department of Mathematics
Pontificia Universidad Católica de Chile, Santiago, Chile
Duties: 4 hours of class per week for 120 students, advise two teaching assistants

Linear Algebra for Engineering Teaching Assistant *2008 - 2010*
Department of Mathematics
Pontificia Universidad Católica de Chile, Santiago, Chile
Professors: Dr. Carolina Becerra, M.S. Carla Barrios and Dr. Angel Carocca
Duties: 1.3 hours of class per week for 120 students and test grading
Teaching evaluation: Highest score during all six semesters

FONDEF Project's Teaching Assistant *Nov - Dec 2007*
"Remote Laboratory for teaching with new technologies"
Department of Mechanics and Metallurgic Engineering
School of Engineering
Pontificia Universidad Católica de Chile, Santiago, Chile
Professor Dr. Luciano Chiang

MENTORSHIP

Qi Geng (Postdoctoral fellow, MAE at UC San Diego)
Indu Manogaran (Ph.D. student, MAE at UC San Diego)
Adam Sedlak (Ph.D. student, MAE at UC San Diego)
Natalia Gonzalez (Ph.D. student, MAE at UC San Diego)
Paul Serna-Torre (Ph.D. student, MAE at UC San Diego)
Martin Staadecker (Massachusets Institute of Technology Visiting M.S. student at UC San Diego)
Erik-Anant Stedjan Narayan (Norwegian University of Science and Technology Visiting Ph.D. student at UC San Diego)
Lithurshanaa Muraleetharan (M.S. student, MAE at UC San Diego)
Katelyn Wong (B.S. student, Economics at UC San Diego)

PAST MENTORSHIP

Julia Lee (B.S. student, MAE at UC San Diego)
Rajni Bansal (Postdoctoral fellow, MAE at UC San Diego)
Manasa Muralidharan (Ph.D. student co-advised with J. Kleissl, MAE at UC San Diego)
Rangrang Zhang (Postdoctoral fellow at the University of Hawaii co-advised with Dr. Matthias Fripp and Dr. Michael Roberts)
Dinah Shi (M.S. student, GPS at UC San Diego)
Lauren Streitmatter (undergraduate student, Energy Science Engineering at U. of Toronto)
Sergio Reojas (B.S. student at Tecnologico de Monterrey as summer intern through ENLACE program at UC San Diego)
Rachel Wei (B.S. student, CSE at UC San Diego)
Albert Chang (B.S. student, MAE at UC San Diego)
Rahul Roy (M.S. student co-advised with J. Kleissl, MAE at UC San Diego)
Mingyuan Wu (M.S. student, MAE at UC San Diego)
Aditya Kulkarni (M.S. student, ECE at UC San Diego)
Martin Staadecker (undergraduate student, Electrical Engineering at U. of Toronto)
Xiaoli Zhang (Visiting Ph.D. student, ERG at UC Berkeley)
Guangzhi Yin (Visiting Ph.D. student, ERG at UC Berkeley)
Dongran Liu (Visiting Ph.D. student, ERG at UC Berkeley)
Bo Li (Chongqing University Visiting Ph.D. student, ERG at UC Berkeley)

Natalie Fedora (B.S. student, Energy Engineering at UC Berkeley)
Ziming Ma (Tsinghua University Visiting Ph.D. student, ERG at UC Berkeley)
Alexander Lathem (Yale University Visiting B.S. student, ERG at UC Berkeley)
Sahana Rangarajan (B.S. student, EECS at UC Berkeley)
Sean Anderson (B.S., Energy Engineering at UC Berkeley, advised his thesis)
Megan Swanson (B.S. student, EECS at University of Washington, through NSF SUPERB)
Florin-James Langer (B.S. student, EECS at UC Berkeley)
Eric (Yiqi) Hou (B.S. student, EECS at UC Berkeley)
Yawen (Sabrina) Sun (B.S. student, EECS at UC Berkeley)
Jason Wang (B.S. student, EECS at UC Berkeley)
Eva Osandón (B.S. student, Industrial Engineering at Universidad Adolfo Ibáñez, Santiago, Chile)
Daniel Kincade (B.S. student, Industrial Engineering at Universidad Adolfo Ibáñez, Santiago, Chile)

DIVERSITY AND EQUITY EFFORTS

Diversity, Equity, and Inclusion committee at Mechanical and Aerospace Engineering UC San Diego
Faculty member
2024 - Present

ENLACE summer research program at UC San Diego
Promotes cross-border research experiences between Latin American high school and undergraduate students and the United States.
Faculty host
Summer 2024

Academic Community for Engineering Success at UC San Diego
Faculty mentor for minority students in engineering
2020 - Present

"Choosing a Career: Engineering" Conference at UC San Diego
Roundtable with the objective of increasing the pool of students who are eligible to pursue postsecondary education particularly among underrepresented and underserved populations.
June 2024

"CaliBaja Seminar" at UC San Diego
Faculty speaker. The seminar supports underrepresented minorities to access academic research
March 2021, July 2023

Girls in Engineering at UC Berkeley
Taught Robotics workshops for Middle school girls
Summer 2017, Summer 2019

Undergraduate mentoring program
Berkeley Artificial Intelligence Research
Electrical Engineering and Computer Sciences
Fall 2018

"Country's Mission and Work"
Community building in remote and low income towns in Chile
Designed and held workshops for children

Repaired and maintained public infrastructure
Jan 2007, July 2001, and Jan 2010

Earthquake relief in Chile (Mar 2010)

LANGUAGES *Fluent: English and Spanish. Basic: Italian.*

REFERENCES

Claire Tomlin (Ph.D. Advisor)
email: tomlin@eecs.berkeley.edu

Daniel Kammen (Ph.D. Advisor)
email: kammen@berkeley.edu

Duncan Callaway
email: dcal@berkeley.edu