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Current positions

- **Senior Research Scholar and Head**, Energy Systems Analysis Group, Andlinger Center for Energy and the Environment, Princeton University. (Since July 2015)
- **Affiliated Researcher**, Center for Policy Research on Energy and the Environment, Princeton School of Public and International Affairs, Princeton University. (Since 2004)
- **Associated Faculty**, High Meadows Environmental Institute, Princeton University. (Since 1999)

Previous positions

- 2008 – 2025: **Senior Scientist**, Climate Central, Inc., Princeton, New Jersey.
- 1999 – 2015: **Senior Research Engineer/Research Engineer**, Princeton Environmental Institute, Princeton University.
- 1991 – 1999: **Research Engineer**, Center for Energy and Environmental Studies, School of Engineering and Applied Sciences, Princeton University.
- 1988-1989 – **Visiting Research Engineer**, Department of Environmental & Energy Systems Analysis, Lund University, Sweden.
- 1983 – 1991: **Research Staff**, Center for Energy and Environmental Studies, School of Engineering and Applied Sciences, Princeton University.

Education

- Ph.D., 1983, University of Minnesota, Minneapolis, Mechanical Engineering
- MSE, 1981, University of Minnesota, Minneapolis, Mechanical Engineering
- BSE, 1979, Washington University, St. Louis, Mechanical Engineering.

Biosketch

Larson leads the Andlinger Center's Energy Systems Analysis Group, where research interests intersect engineering, environmental science, economics, and public policy. His group's energy-systems modeling and analyses aim at identifying sustainable, engineering-based solutions to major energy-related problems. The work assesses resource, economic, and environmental implications of prospective technology developments and helps inform public and private decision making in the U.S. and elsewhere. Larson has also published extensively on the design and analysis of advanced biomass and fossil fuel

conversion technologies with CO_2 capture and storage, and his work has included collaborations with colleagues worldwide, including in Australia, Brazil, China, Cuba, Finland, India, Italy, Jamaica, Spain, Sweden, Thailand, and elsewhere.

Larson co-led Princeton's *Net-Zero America study* (2021), and has ongoing collaborations with colleagues in Brazil, China, Poland, and the Republic of Korea on similar Net-Zero studies for those countries. The "Net-Zero" country studies align with the global Rapid Switch Initiative established by the Andlinger Center in 2019 that aims to identify sector-by-sector and region-by-region key potential bottlenecks to rapid energy-system decarbonization and associated debottlenecking strategies.

Earlier, Larson was a Co-Convening Lead Author of the fossil energy chapter and Lead Author of the renewables chapter of *The Global Energy Assessment* (2012). He was part of the Princeton team that contributed to the National Research Council report, *America's Energy Future: Technology and Transformation* (2009).

In addition to his position with the Andlinger Center, Larson is an Affiliated Faculty member of the High Meadows Environmental Institute and the Center for Policy Research on Energy and Environment in the School of Public and International Affairs at Princeton.

Research grants

Funder	Larson role	Project Title	Total $	Start	End
Google & Andlinger Fund for Energy Res. w/Corp Partner	Co-PI	Multi-scale modeling systems for national energy transitions, with test-case South Korea	$650,000	9/1/2025	8/31/2028
Anonymous gift	Co-PI	Net-Zero X development	$250,000	9/1/2025	8/31/2027
Anonymous gift	Co-PI	Net-Zero Brazil	$1,250,000	7/1/2025	6/30/2027
Silesian Univ. of Technology (Poland)	PI	Net-Zero Poland	$401,488	2/1/2025	1/31/2027
Carbon Mitigation Initiative (Princeton U)	PI	Decarbonization studies	$200,000	1/1/2025	12/31/2025
Deloitte LLP	Co-PI	Global Chemicals Industry Decarbonization	$70,000	12/1/2024	11/30/2025
Carbon Mitigation Initiative (Princeton U)	PI	Modeling CCUS hubs with BECCS	$200,000	1/1/2024	12/31/2024
Princeton High Meadows Environmental Institute	Co-PI	Assessing Socioeconomic Consequences of Energy Projects for Host Communities: Coal Mines and Wind Farms in West Virginia	$150,000	7/1/2023	6/30/2025
CATF, Google, Deloitte & Andlinger Fund for Energy Res. w/ Corp Part	Co-PI	Deep Decarbonization Speed Limits	$1,400,000	7/1/2023	6/30/2025
Schmidt Futures Fund	Co-PI	Net-Zero Earth: Scoping studies and modeling-tools development	$500,000	3/1/2023	2/28/2024
Carbon Mitigation Initiative (Princeton U)	PI	Modeling CCUS hubs with BECCS	$200,000	1/1/2023	12/31/2023
Weyerhaeuser	PI	Modeling CCUS hubs with BECCS	$150,000	6/1/2022	1/31/2024
Deloitte LLP	PI	Modeling CCUS hubs with BECCS	$250,000	6/1/2022	1/31/2024
ExxonMobil	PI	Modeling CCUS hubs with BECCS	$250,000	6/1/2022	1/31/2024
Carbon Mitigation Initiative (Princeton U)	PI	Modeling CCUS hubs with BECCS	$200,000	1/1/2022	12/31/2022
Andlinger Innovation Grant	Co-I	Risk-optimized Net-Zero-Emissions Energy-System Modeling	$182,000	9/1/2021	12/31/2024
Deloitte	Co-PI	Deep Decarbonization of the United States' Chemicals Sector	$70,000	5/1/2021	4/30/2022

New Jersey Transit	Co-PI	A roadmap for energy services meeting NJ Transit's sustainability goals: Phase 1, Techno-economic studies of decarbonization pathways	$508,437	7/1/2021	12/31/2023
Carbon Mitigation Initiative (Princeton U)	PI	Net-Zero America (wrap up) + Modeling CCUS hubs with BECCS	$200,000	1/1/2021	12/31/2021
Carbon Mitigation Initiative (Princeton U)	PI	U.S. Low-Carbon Infrastructure Plan (Net-Zero America)	$200,000	1/1/2020	12/31/2020
ExxonMobil	PI	U.S. Low-Carbon Infrastructure Plan (Net-Zero America)	$188,000	1/15/2020	12/31/2020
Public Service Enterprise Group	Co-PI	New Jersey's role in the deep decarbonization of PJM	$263,000	11/1/19	10/31/20
PU-University of Sao Paolo Partnerships	PI	Carbon abatement and renewable energy perspectives in the context of climate change	$25,000	9/1/19	8/31/21
Global Collaborative Networks (GCN, PU)	Co-PI	Rapid Switch Network – Collaboration to accelerate low-carbon energy transitions	$150,000	7/1/2019	6/30/2022
Andlinger Center (cost sharing GCN grant)	Co-PI	Rapid Switch Network – Collaboration to accelerate low-carbon energy transitions	$47,600	7/1/2019	6/30/2022
Princeton Institute for International & Regional Studies	Co-PI	Rapid Switch India: Sustainable decarbonization pathways.	$750,000	7/1/2019	6/30/2022
Princeton Institute for International & Regional Studies	Co-PI	Rapid Switch workshop grant	$10,000	5/1/19	6/30/19
Carbon Mitigation Initiative (Princeton U)	PI	U.S. Low-Carbon Infrastructure Plan	$550,000	1/1/2019	12/31/2019
ExxonMobil	PI	U.S. Low-Carbon Infrastructure Plan	$250,000	1/15/2019	1/14/2020
PU Dean for Research	PI	Deep Decarbonization of the Grid - Addressing the Challenge of Intermittent Renewable Electricity	$150,000	12/1/2018	11/30/2019
NRG Energy, Inc.	PI	General support for ESAG electric grid decarbonization research	$75,000	11/19/2018	11/18/19
Andlinger Center	Co-PI	The Rapid Switch Initiative	$300,000	9/1/2018	8/31/2021
PU International Fund	PI	Solar-thermal power systems in future electric grids	$20,000	9/1/18	8/31/19
Andlinger Center (cost sharing PU IF)	PI	Solar-thermal power systems in future electric grids	$5,000	9/1/18	8/31/19
ExxonMobil	PI	Applications of carbonate fuel cells in CO_2 capture.	$178,000	2/1/2018	12/31/2018
UK Power Networks	PI	Contact voltage losses in the U.K.	$113,400	1/1/2018	8/31/2018
PU Dean for Research	PI	Deep Decarbonization of the Grid - Addressing the Challenge of Intermittent Renewable Electricity	$100,000	3/1/2017	2/28/2018
Carbon Mitigation Initiative (Princeton U)	PI	Reliable, low-carbon electricity from grids with high penetrations of intermittent renewable generation	$100,000	1/1/2017	12/31/2017
Stanford University	PI	Sustainable Transportation Energy with Net Negative Carbon Emissions: An Integrated Ecological and Engineering Systems Analysis	$706,781	6/1/2015	5/31/2018

US DOE/NETL & Southern Company Services	PI	Design/Cost Study and Commercialization Analysis for Synthetic Jet Fuel Production at a Mississippi site from Lignite and Woody Biomass with CO_2 Capture and Storage via EOR	$1,786,614	10/1/2014	3/31/2017
Andlinger Center	Co-I	Design and Cost-Analysis of Low-Carbon Transportation Fuel and Electricity Coproduction that Includes Carbon Capture and Storage in Shale Gas Formations	$6,000	7/1/2013	6/30/2014
U.S. DOE (National Energy Technology Laboratory)	PI	Technoeconomic Analysis (TEA) Subtask	$99,998	8/1/2012	2/28/2014
Andlinger Center for Energy the Environment	Co-I	Air Quality and Climate Benefits of Current and Potential Future Wind Energy Penetration in China	$5,500	7/1/2012	6/30/2013
Seibel Grand Challenges (Princeton University)	Co-I	Energy and water	$40,000	10/1/2011	6/30/2012
Edgerton Foundation	Co-I	Analysis and Outreach in Support of Market Establishment of Technologies for Simultaneous Decarbonization of Electricity and Transportation Fuels	$400,000	7/1/2011	6/30/2014
US Department of Energy (National Energy Technology Laboratory)	PI	Energy, Environmental, and Economic Analyses of Design Concepts for the Co-Production of Fuels and Chemicals with Electricity via Co-Gasification of Coal and Biomass	$442,121	10/1/2010	3/31/2012
Air Force Research Lab, Wright-Patterson Air Force Base	PI	Alternative Energy Fuels Analysis Support to AFRL/RZPF	$35,000	2/1/2010	10/31/2010
Net Jets Aviation, Inc.	Co-I	Next Generation Aircraft Fuel Project	$476,551	3/1/2009	2/28/2010
The William and Flora Hewlett Foundation	Co-I	Exploring Alternative Climate-Change-Mitigating Energy Supply Technologies As Candidate Energy Options for Sustainable Development	$400,528	10/1/2007	9/30/2010

Graduate student supervision

Name (Level) (project period)	***Dept.****	***Project Description***
Saiby Wong (summer '85)	Chemistry	Development of experiments in biomass gasification.
Anna Protopapas (fall '86)	CBE	Biomass gasification experiments.
Simone Hochgreb (summer '86 + 86/87)	MAE	Biomass-gasifier gas turbine cogeneration in cane sugar factories.
Angel Abbud-Madrid (summer '86 + 86/87)	MAE	Modeling steam turbine cogeneration at a cane sugar factory.
Lars Nilsson (1988-89 in Sweden)	Energy Analysis	Analysis of efficient industrial electricity-using technologies
Alistair Lloyd (1989/90)	MAE	Modeling biomass-gasifiers for gas turbine applications.

* CEE = Civil & Environmental Eng; CBE = Chemical & Biological Eng; EE = Electrical Eng.; EEB = Ecology and Evolutionary Biology; MAE = Mechanical and Aerospace Eng.; MoBio = Molecular Biology; QCB = Quantitative and Computational Biology; WWS = Woodrow Wilson School; Econ = Economics.

Ryan Katofsky (1991-93)	MAE (MSE thesis)	The production of fluid fuels from biomass.
Chris Marrison (1992-1995)	MAE (indep. research)	Cost study of biomass energy systems in Iowa; Biomass energy potential in Africa.
Jeff Chen (1992-1995)	MAE (MSE thesis)	Production of methanol and hydrogen from municipal solid waste.
Niklas Berglin (Spring 1996)	CBE (indep. Research)	Spreadsheet models of energy use in pulp and paper mills.
Wendy Hughes (1992-1998)	MAE (PhD co-adv)	Biomass integrated gasification/gas (turbine power generation in Zimbabwe.
Luis Solorzano (1993-1999)	EEB (indep. research)	Regional land use analysis relating to biomass plantations in Northeast Brazil.
Paul Henderick (1997-1999)	MAE (MSE thesis)	An assessment of biomass-powered micro-turbines and potential application in rural China.
Huiyan Yang (2002-2004)	Geociences (PEI-STEP certif.)	Chinese household energy usage and the black carbon emissions.
Fuat Celik (Fall 2002)	CBE (Research credit)	Aspen Modeling and Cost Analysis of Co-Producing Dimethyl Ether, Acetic Acid, and Electricity from Coal
Zheng Hongtao (2002-2003)	Tsinghua Univ. (Beijing)	Analysis of future energy scenarios for "Syncity", China.
Xiaoping Wang (2000-2004)	WWS (PhD thesis)	Evaluating Impacts of Air Pollution in China on Agriculture & Public Health: Implications for Air Pollution & Energy Policies
Cathy Kunkel ('06-'07 in China)	Physics ('06) Independent work	Grassland and crop residue biomass to energy in China.
Loek Eerhart (9/07-3/08)	Utrecht Univ., (Master thesis)	Modeling of Fischer-Tropsch Liquids Production from Coal and Biomass
Zhe Zhou (2010)	Tsinghua Univ. (Beijing)	Biomass torrefaction for entrained-flow gasification.
Ilkka Hannula (2011)	Aalto University (Finland)	Co-production of olefins and electricity via combined coal and biomass gasification.
Wei Peng (2012-2016)	WWS (PhD co-adv.)	Air quality impacts for scenarios of future increased wind electricity penetration on the Chinese grid.
Anna Hailey (2013-2016)	CBE (PhD co-adv.)	Simulation and analysis of biomass/natural gas co-processing for low-carbon liquid fuels production.
Kasparas Spokas (2018-2019, PEI-STEP)	CEE (co-adv.)	Assessment of CCS for fossil fuel power generation balancing variable renewable electricity.
Liqun Peng (Fall 2018)	WWS (PhD gen exam com)	Energy and electricity systems analysis.
Anna Jacobson (Fall 2020)	QCB (PhD gen exam com)	Energy-system model development
Molly MacDonald (Fall 2021 -)	CBE (PhD committee)	Long-Term Planning for Transition to Low-Carbon Technologies
Nathan Tran (Fall 2023 -)	CBE (PhD committee)	Long-term, integrated, spatially explicit optimization of biofuel supply chains and landscape design with capacity expansion
Mohamed Atouife (Fall 2023)	MAE (PhD gen exam com)	Decarbonization of steel making
Anna Li (Fall 2025 -)	MAE (PhD committee)	Industrial decarbonization in China and the U.S.

Undergraduate independent research supervision

Name (Level) (project period)	***Dept.****	***Project Description***
Gilberte Sumyeun (Jun) (fall'83-spring '84))	MAE	Bagasse-fired gas-turbine cogeneration for sugar factories in Mauritius.

* CEE = Civil & Env. Eng; Chem = Chemistry; ChemE = Chemical Eng.; CBE = Chemical & Biological Eng.; EE/ECE = Electrical & Computer Eng.; MAE = Mechanical & Aerospace Eng.; MoBio = Molecular Biology; WWS/SPIA = Public Policy School; EEB = Ecology & Evolutionary Biology; Econ = Economics.

Drew Bienkowski (Soph) (summer ’84)	Politics	A database of basic materials consumption in the U.S.
Ali Reza (Jun)	MAE	Design of a rice hull producer gas generator suitable for cooking use.
Ali Reza (Sen) (fall '85-spring '86)	MAE	Experiments in downdraft biomass gasification.
Anna Protopapas (Sen) (fall ’85-spring ’86)	ChemE	Thermochemical gasification of biomass: modelling and experiments.
Kaveh Sheibani (Sen) (summer ’86)	MechE	Gasifier design and computerized producer – gas database development.
Jocelyn Kaiser (Sen) (summer ’86)	ChemE	Design of diagnostic procedures for biomass gasification experiments
Stefan Hamblad (Sen) (spring '90)	ChemE	Analysis of efficient kraft pulp production.
Pramote Piriyapoksombut (Fr) (spring ’90)	EE	End-use electricity analysis for Thailand.
Jason Mark (Sen) (Summer ’90)	MAE	Cogeneration analysis of efficient kraft pulping
Jason Mark (Sen) (fall ’90)	MAE	Efficient kraft pulp production.
Robert Gansler (Sen) (summer '91)	MAE	Thermodynamics of hydrogen and methanol production from biomass.
Samta Khandelwal (Sen) ('91-'92 academic yr)	WWS	ESCo's: Promoting energy conservation in Indian Industry.
Todd Butterfield (Sen) ('91-'92 academic yr)	MoBio	Biotechnology and eucalyptus energy plantations.
Jennifer Leslie (Sen) ('92-'93 academic yr)	MAE	Wind-assisted methanol production from biomass.
David Teal (Sen) ('92-'93 academic yr)	ChemE	Study of scale effects in hydrogen production from biomass and natural gas.
Felipe Valdes-Arrieta (Sen) ('92-'93 academic yr)	MAE	Technology assessment of electricity conservation in the Chilean copper industry.
Federico Frigerio (Soph) (summer ’93)	MAE	Thermodynamic analysis of a Brayton air bottoming cycle.
Howard Shih (Sen) ('93-'94 academic yr)	MAE	Assessment of a Brayton air bottoming cycle.
Garth Grover (Sen) (summer & fall '94)	MAE	Modeling biomass-gasifier/gas turbine air bottoming cycles and biomass-fired heated gas turbine cycles.
Chris Jones (Sen) ('94-'95 academic yr)	ChemE	Analysis of ethanol production by enzymatic hydrolysis of biomass.
Chris Larsen (Sen) ('94-'95 academic yr)	Econ	Economics of biomass energy systems in South-Central Iowa.
David Matheu (Sen) (summer 1995)	ChemE	Analysis of energy use at a kraft pulp mill.
Claus Lorenz (Sen) ('95-96 academic yr)	MAE	Renewable energy district heating system design.
Prem Vadlamudi (Sen) ('95-'96 academic yr)	MAE	Modeling biomass-gasifier/gas turbine cogeneration for an advanced ethanol plant.
Davin Peterson (Sen) ('95-'96 academic yr)	MAE	Design of MSW-hydrogen production and use in New York City bus fleet.
Robert Wright (Sen) (summer 1996)	MAE	Modeling energy use in pulp and paper mills and gas turbine cycle modeling.
Jason Mullins (Sen) (‘96-‘97 academic yr)	CEE	Modeling energy use in linerboard production.
Roselle Safran (Jun) (Summer 1997)	CEE	Developing a help manual for GS process modeling software.
Rebecca Blackwell (Senior thesis) (‘97-‘98 academic yr)	ChemE	An assessment of black liquor gasification for the kraft pulp industry.

Amelia Kaufman (Jun) (Summer 1998)	Chemistry	Assessment of New Jersey's MSW resources.
Ben Urquhart (Sen) ('97-'98 academic year)	EEB	GIS analysis of biomass energy plantations in Northeast Brazil.
Brad Morgan (Soph) ('99-'00 academic year)	CEE	MSW resources of New Jersey.
Emily Johnson (Sen) ('00-'01 academic year)	Geology	Carbon sequestration with alternative land uses in Maranhao state, Brazil.
Laurie Williams (Senior thesis) ('05-'06 academic year)	WWS	Chinese Energy Policies: Implications for U.S. Policy
Eugene Franco (Jun) ('06-'07 academic year)	Geosciences	The energy balance of corn ethanol; The energy balance of cellulosic ethanol.
Joe Vogel (Senior thesis) ('07-08 academic year)	MAE	A Kinetic Model of Cobalt-based Fischer-Tropsch Synthesis
Jimmy Nowicke (Sen) ('07-'08 academic year)	WWS	Potential Economic Impacts of Carbon Policies in the United States
Angus Pacala (Sen) (summer 2009)	Mech Eng (Stanford)	Water use in coal conversion processes.
Dobromir Parushev (Sen) (summer 2009)	MAE	Lifecycle greenhouse gas emissions from Camelina, Jatropha, and algae biofuels.
Haley Thompson (Sen) (summer 2010 and '10-'11 academic year)	MAE	Case study of combined coal/biomass co-production (electricity and gasoline) in the Powder River Basin of Wyoming
Kevin Steinberger (Senior thesis) (summer 2011 and '11-'12 academic year)	MAE	Too Good to be True? : The Economic Viability of Carbon-Negative Biochar + Bioenergy Systems
Christina Kirkwood (Senior thesis) ('11-'12 academic year)	MAE	Water and Low-Carbon Energy in Wyoming: Water Demands of an Energy Conversion Plant with Carbon Capture and Storage and the Potential to Meet these Demands with Brine Extracted from CO_2 Storage Formations
Miranda Marks (Sen) (summer 2012)	CBE	Developing a new course on the energy-water nexus
Charlotte Conner (Jun) (summer 2012)	Geosciences	Improving the ESAG framework for techno-economic analyses
Miranda Marks (Senior thesis) ('12-'13 academic year)	CBE	Coproduction of electricity and desalinated water from natural gas using a chemically-recuperated gas turbine with CO_2 capture.
Nicole Businelli (Senior thesis) ('12-'13 academic year)	CBE	Coproduction of electricity and desalinated water using solar energy.
Sarthak Gupta (Sen) (summer 2013)	MAE	Developing a solar PV electricity day-ahead forecasting tool.
Lauren Edelman (Senior thesis) ('13-'14 academic year)	CBE	Techno-economic analysis of catalytic biomass hydropyrolysis to make transportation fuels.
Jacob Miller (Sen) (summer 2014)	CBE	Biochemical processing routes for production of biomass-sourced transportation fuels
Aditya Trivedi (Jun) (summer 2014)	CompSci	Location-specific wind electricity forecaster
Jaclyn Rambarran (summer 2015)	MAE	Modeling carbon storage and flows for loblolly pine plantations in the Southeastern U.S.
Ejeong Baik (Sen) (summer 2015)	CEE	Assessment of uncertainties in estimates of U.S. methane leakage.
Jacyln Rambarran (Senior thesis) ('15-'16 academic year)	MAE	Refrigeration from coffee processing wastes: alternative designs for rural Karnataka, India.
Lucy Tang (Jun) ('15-'16 academic year)	MAE	Modeling carbon storage and flows for loblolly pine plantations in the Southeastern U.S.
Corinne Lowe (summer 2016)	CBE	Assessing biomass production and soil carbon storage potential for the United States.
Ari Mytelka (summer 2016)	CompSci	Development of a wind-energy forecasting tool (Climate Central).

Li Xu (summer 2016)	Engineering Physics (Tsinghua University)	Assessing biomass production and soil carbon storage potential for the United States.
Corinne Lowe (Senior thesis) ('16-'17 academic year)	CBE	Assessment of non-oxidative glycolysis route to convert corn stover into ethanol.
Frank Nguyen (Senior thesis) ('16-'17 academic year)	CBE	Design and analysis of advanced biochemical conversion of lignocellulosic biomass to fuels
Erin McCabe (Sen) (summer 2017)	Geosciences	Assessing and visualizing U.S. potential for negative GHG emissions via soil carbon storage
Marissa Webber (Sen) (summer 2017)	CEE	Low net-carbon emission biomass-based transportation scenarios for the U.S.
Nuss Visatemongkolchai (Senior thesis) ('17-'18 academic year)	CBE	Lifecycle greenhouse gas footprint analysis for electrochromic windows
Samantha Lee (Senior thesis) ('17-'18 academic year)	CBE	Lifecycle greenhouse gas footprint assessment and mitigation for production of an insulating down.
Charles Copeland (summer 2018)	GEO	Mapping potential sustainable U.S. biomass energy supplies
Christopher Chu (summer 2018)	CEE	Development of a geospatial wind and solar electricity generation forecasting tool
Miriam Buscher (Senior thesis) ('18-'19 academic year)	CBE	Process simulation and techno-economic assessment of biomass-gasifier Allam cycle
Taylor Bacon (Senior thesis) ('18-'19 academic year)	CBE	Process simulation and techno-economic assessment of Gen-2 biofuels (Fischer-Tropsch)
Elise Colter (summer 2019)	CompSci	Refining a geospatial wind and solar electricity generation forecasting tool for the U.S.
Jessica Fielding (summer 2019)	CompSci	Refining a geospatial wind and solar electricity generation forecasting tool for the U.S.
Neil Slighton (Senior thesis) ('19-'20 academic year)	ORFE	Multi-Objective Optimization for Planning and Design of Regional Mini-Grid Development in Rural India
Riley Wagner (Senior thesis) ('19-'20 academic year)	CBE	Design of sustainable solar-powered microgrids with capacity for grid-integration in India
Joshua Drossman (summer 2020 + '20-'21 ac yr)	ORFE	Net Zero America Project
Kaylee Zecchin (Summer 2020)	Math	Refining a geospatial wind and solar electricity generation forecasting tool for the U.S.
Jaiteg Singh (summer 2020)	CompSci	Refining a geospatial wind and solar electricity generation forecasting tool for the U.S.
Yazan Mimi (summer 2020)	CompSci	Refining a geospatial wind and solar electricity generation forecasting tool for the U.S.
Joseph Gugiure (Senior thesis) '20 – '21 academic year	CEE	Modeling capital investment decision processes in net-zero emissions transitions
Joshua Drossman (summer 2021)	ORFE	Design and modeling of CCUS hubs
Joshua Drossman (Senior thesis) '21 – '22 academic year	ORFE	Managing Uncertainties in the Development of CO_2 Capture, Transport, and Storage Infrastructure: A Risk-Optimized Approach
Lilliana Gittoes (summer 2022)	ORFE	Optimizing the design of CO_2 capture, transport and storage networks.
Vinay Konuru (summer 2022)	ECE	Optimizing the design of CO_2 capture, transport and storage networks.
Sreeta Basu (summer 2022)	Math	Real-options analysis of energy system decarbonization investments
Lilliana Gittoes (fall 2022 independent work)	ORFE	Optimizing the design of CO_2 capture, transport and storage networks.
Alex Giannattasio (senior thesis) '22 – '23 academic year	SPIA	Assessing Chile's National Green Hydrogen Development Strategy
Helena Frudit (fall 2023 independent work)	MAE	High-resolution analysis of rooftop solar PV potential approach demonstrated for Wash. DC

Helena Frudit (senior thesis) '24 – '25 academic year	MAE	A high-resolution bioenergy sector model for Net-Zero Brazil
Cameron Farid (senior thesis) '25 – '26 academic year	MAE	Techno-Economic Analysis of a HTGR-coupled SOEC for H_2-DRI steel production

Publications (chronological in sections), Google scholar h-index: 54

Books and book chapters

1. E.D. Larson and R.H. Williams, "Technical and Economic Analysis of Steam-Injected Gas-Turbine Cogeneration," in *Energy Sources: Conservation and Renewables*, D. Hafemeister, H. Kelly, and B. Levi (eds.) American Institute of Physics, New York, NY, 1985, pp. 402-25.

2. E.D. Larson, P. Svenningsson and I. Bjerle, "Biomass Gasification for Gas Turbine Power Generation," in *Electricity: Efficient End-Use and New Generation Technology, and Their Planning Implications*, T.B. Johansson, B. Bodlund, and R.H. Williams (eds.), Lund University Press, Lund, Sweden, 1989, pp. 697-739.

3. R.H. Williams and E.D. Larson, "Expanding Roles for Gas Turbines in Power Generation," in *Electricity: Efficient End-Use and New Generation Technology, and Their Planning Implications*, T.B. Johansson, B. Bodlund, and R.H. Williams (eds.), Lund University Press, Lund, Sweden, 1989, pp. 503-53.

4. R.H. Williams and E.D. Larson, "Power Generation with Natural Gas-Fired Gas Turbines," Chapter 5 in *Natural Gas: Its Role and Potential in Economic Development*, Vergara, Hay, and Hall (eds.), Westview Press, 1990.

5. R.H. Williams and E.D. Larson, "Advanced Gasification-Based Biomass Power Generation," in *Renewable Energy: Sources for Fuels and Electricity*, T.B. Johansson, H. Kelly, A.K.N. Reddy, and R.H. Williams (eds.), Island Press, Washington, DC, 1993, pp. 729-85.

6. E.D. Larson and R.H. Williams, "Biomass Plantation Energy Systems and Sustainable Development," in *Energy as an Instrument for Socio-Economic Development*, J. Goldemberg and T.B. Johansson (eds.), United Nations Development Program, New York, NY, 1995, pp. 91-106.

7. E.D. Larson, "Modernized Biomass Energy," in L. Gomez-Echeverri (ed.), *Climate Change and Development*, The Yale School of Forestry and Environmental Studies, Yale University, New Haven, CT, 2000, pp. 271-291.

8. S. Kartha and E.D. Larson, *Bioenergy Primer: Modernized Biomass Energy for Sustainable Development*, United Nations Development Program, New York, NY, 2000, 133 pages.

9. E. Larson (Contributing Author), "Renewable Energy Technologies," chapter 7 (W. Turkenburg, Convening Lead Author) in *World Energy Assessment*, pp. 219-272, United Nations Development Program, New York, 2000.

10. E.D. Larson and T.B. Johansson, "Future Demands on Forests as a Source of Energy," chapter 9 in *Forests in a Full World*, G.M. Woodwell (ed.), Yale University Press, New Haven, CT, 2001, pp. 111-160.

11. E.D. Larson, *Biofuel Production Technologies: Status, Prospects, and Implications for Trade and Development*, United Nations Conference on Trade and Development, New York and Geneva, 2008.

12. E.D. Larson and Z. Li (Co-Convening Lead Authors), T. Fleisch, G. Liu, G. Nicolaides, X. Ren, and R.H. Williams, "Fossil Energy Systems," chapter 12, *The Global Energy Assessment*, Cambridge U. Press, Cambridge, UK, 2012. DOI: 10.1017/CBO9780511793677.

13. E.D. Larson and A. Faaij (Lead Authors, Bioenergy), " "Renewable Energy Systems," (W. Turkenburg Convening Lead Author), chapter 11, *The Global Energy Assessment*, Cambridge U. Press, Cambridge, UK, 2012.

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Peer-reviewed articles

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3. "Material Consumption Patterns and Industrial Energy Demand in Industrialized Countries," special seminar at the Guangzhou Institute for Energy Conversion, Chinese Academy of Science, Guangzhou, China, Dec. 25, 1984.

4. "Some Basic Issues in the Gasification of Biomass and Its Connection to Economic Development," seminar series on the Future Role of Biomass as an Energy Source, School of Forestry and Environmental Studies, Yale University, New Haven, CT, February 6, 1985.
5. "The Use of Biomass for Energy in China," Tuesday Seminar Series, Center for Energy and Environmental Studies, Princeton University, Princeton, NJ, February 26, 1985.
6. "The Thermodynamics and Economics of Steam-Injected Gas-Turbine Cogeneration," American Physical Society Short-Course on Energy Conservation, Washington, D.C., April 27-28, 1985.
7. "The Quiet Revolution in Power Generating Technology: Steam-Injected Gas Turbines," Tuesday Seminar Series, Center for Energy and Environmental Studies, Princeton University, Princeton, NJ, October 15, 1985.
8. "Overview of Steam-Injected Gas Turbines: Cogeneration and Utility Applications," Energy Policy/Technology Assessment Seminar Series, Center for Energy and Environmental Studies, Princeton University, Princeton, NJ, September 17, 1985.
9. "Steam-Injected Gas Turbines," special seminar at the Department of Mechanical Engineering, University of Minnesota, Minneapolis, MN, October 25, 1985.
10. "Biomass Gasification: Research, Development and Application," Energy Policy/Technology Assessment Seminar Series, Center for Energy and Environmental Studies, Princeton University, Princeton, NJ, November 22, 1985.
11. "Steam-Injected Gas Turbines," ASME International Gas Turbine Conference, Dusseldorf, Germany, June 8-12, 1986.
12. "Gas Turbine Cycle Concepts for Bagasse-Fueled Cogeneration in Sugar Factories," Eastern Headquarters, Bechtel Power Corp., Gaithersburg, MD, Oct. 15, 1986.
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15. "Progress at CEES in the Assessment of Biomass-Fueled Gas Turbine Power Generation," Bechtel National, Inc. and of the US Agency for International Development, Princeton, NJ, Feb. 17, 1987.
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21. "Biomass-Fired Gas-Turbine Cogeneration at Efficient Cane-Sugar Factories: A Jamaican Case Study," Meeting of the Jamaican Association of Sugar Technologists, Ocho Rios, Jamaica, Nov. 6, 1987.
22. "Biomass-Fired Steam-Injected Gas Turbine Cogeneration," special seminar at the Energy Systems Analysis Program, University of Lund, Lund, Sweden, January 14, 1988.
23. "Gas Turbine Cogeneration with Agricultural Residues," Convocation on Rice Residue Utilization Technology, Louisiana State University, Baton Rouge, LA, Jan. 28, 1988.

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57. "Biomass-Gasifier/Gas Turbine Power Generating Technology," Electric Power Research Institute's Conference on Strategic Benefits of Biomass and Waste Fuels, Washington, March 1993.

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70. “Advanced Gas Turbine Power Generation with Natural Gas and Biomass as Fuel," guest lecture in MAE 221, Thermodynamics, Engineering School, Princeton University, Princeton, NJ, April 7, 1995.

71. “Electricity Cogeneration in Sugar/Alcohol Industries," Workshop on Perspectives of Ethanol Fuel in Brazil, São Paulo, Brazil, June 28, 1995.

72. “Low GHG Emitting Technologies," Meeting on Future Programming in the Context of the GEF Climate Change Operational Strategy, United Nations Development Program, New York, NY, Nov. 22, 1995.

73. “Research, Development, and Commercialization Needs for Biomass Electricity Systems," Workshop on Energy from Biomass and Wastes, Dublin, Ireland, Dec. 5-7, 1995.

74. “Advanced Technologies for Biomass-Energy Utilization in the Pulp and Paper Industry," Office of Industrial Technologies, US Department of Energy, Washington, DC, Dec. 19, 1995.

75. “Advanced Technologies for Biomass-Energy Utilization in the Pulp and Paper Industry," NOELL, Inc., Herndon, VA, Feb. 15, 1996.

76. “Advanced Gas Turbine Power Generation," guest lecture in MAE 221, Thermodynamics, Engineering School, Princeton University, Princeton, NJ, February 23, 1996.

77. “Biomass Energy,” Workshop on Sustainable Energy, United Nations Development Program, New York, NY, April 18, 1996.

78. “Biomass Energy Case Studies,“ Workshop on Sustainable Energy, United Nations Development Program, New York, NY, April 18, 1996.

79. “Future Prospects for Biomass as a Major Global Energy Source,” invited seminar, Dartmouth College, Hanover, NH, May 2, 1996.

80. “International Market Opportunities for Gas Turbine Power Generation with Natural Gas and Biomass Fuels,” Energy Daily 3rd Annual Conference on Advanced Combustion Turbines: New Strategies and Business Opportunities, Washington, DC, May 9-10, 1996.

81. “Advanced Technologies for Biomass-Energy Utilization in the Pulp and Paper Industry," Union Camp Research and Development Center, Princeton, NJ, May 14, 1996.

82. “Performance Modeling of Aeroderivative Steam-Injected Gas Turbines and Combined Cycles Fueled from Fixed or Fluid-Bed Biomass Gasifiers,” ASME Turbo Expo, Birmingham, UK, June 10-13, 1996.

83. “Economic Scales for First-Generation Biomass-Gasifier/Gas Turbine Combined Cycles Fueled from Energy Plantations,” ASME Turbo Expo, Birmingham, UK, June 10-13, 1996.

84. “Technical Advances in Biomass Conversion for Energy,” the Woods Hole-Princeton Workshop on Competing Uses of the Planet’s Photosynthetic Product for Food, Fuel, Fiber, Feedstock, and Ecosystem Function, Woods Hole Research Center, Woods Hole, MA, June 27-28, 1996.

85. “GEF Climate Change Activities,” Seminario de Disseminacao de Informacoes sobre o GEF, organized by the GEF (World Bank and United Nations Development Program) and government of Brazil, Brasilia, July 3-5, 1996.

86. “Advanced Technologies for Biomass-Energy Utilization in the Pulp and Paper Industry," Air Products and Chemicals, Inc., Princeton, NJ, July 23, 1996.

87. “GEF Operational Strategy for Climate Change,” United Nations Development Program Environment Focal Points Workshop, Margarita Island, Venezuela, Nov. 18-20, 1996.

88. “Gasification of Municipal Solid Waste,” Meeting on MSW Gasification/Fuel Cells held at the Natural Resources Defense Council Office, New York, NY, Nov. 25, 1996.

89. "Overview of Black Liquor and Biomass Gasification/Gas Turbine Systems," Workshop on Commercialization of Black Liquor and Biomass Gasification for Gas Turbine Applications in the Pulp and Paper Industry, School of Engineering, Princeton University, Princeton, NJ, Jan. 16-17, 1997.

90. "Advanced Technologies for Biomass-Energy Utilization in the Pulp and Paper Industry," Workshop on Commercialization of Black Liquor and Biomass Gasification for Gas Turbine Applications in the Pulp and Paper Industry, School of Engineering, Princeton University, Princeton, NJ, Jan. 16-17, 1997.

91. "GEF Operational Strategy for Climate Change," United Nations Development Program Workshop, Bogota, Colombia, May 21, 1997.

92. "Climate Change and Mitigation Strategies," Seminario International Desarrollo Sostenible, Ministry of the Environment, Bogota, Colombia, 22-23 May 1997.

93. "Effect of Fuel Moisture Content on Biomass-IGCC Performance," Turbo-Expo '97, 42nd ASME Gas Turbine and Aeroengine Conference, Orlando, FL, June 2-5, 1997.

94. "Black Liquor-Gasifier/Gas Turbine Cogeneration," Turbo-Expo '97, 42nd ASME Gas Turbine and Aeroengine Conference, Orlando, FL, 2-5 June, 1997.

95. "Performance of Black Liquor-Gasifier/Gas Turbine Combined Cycle Cogeneration in the Kraft Pulp and Paper Industry," Third Biomass Conference of the Americas, Montreal, Canada, August 25-29, 1997.

96. "Biomass and Black Liquor Gasifier/Gas Turbine Cogeneration at Pulp and Paper Mills," Third Biomass Conference of the Americas, Montreal, Canada, August 25-29, 1997.

97. "GEF Operational Strategy for Climate Change," Taller Nacional del Fondo para el Medio Ambiente Mundial, Ministerio del Medio Ambiente, Bogota, Colombia, 29 Sept. - 1 Oct. 1997.

98. "The Role of Biomass in the World Context: Potential and Perspectives," invited plenary talk, Conference on Biomass for Electricity Production: Experiences and Perspectives in the European Union and Brazil, Brasilia, Brazil, October 6-8, 1997.

99. "Hydrogen Production, Storage, and End-Use," National Academy of Science, Havana, Cuba, October 24, 1997.

100. "Advanced Technologies for Biomass-Energy Utilization in the Pulp & Paper Industry," US Department of Energy contractors' review meeting, Chicago, IL, December 1, 1997.

101. "Assessing Prospective Costs and Benefits of Black Liquor Gasifier/Combined Cycle Technology," US Department of Energy/Agenda 2020 poster review session, Chicago, IL, December 2, 1997.

102. "Assessment of Gasifier/Fuel Cell Powerplant Systems for Biomass By-Products Utilization in the Forest Products Industry," US Department of Energy/Agenda 2020 poster review session, Chicago, IL, December 2, 1997.

103. "Gasification of Municipal Solid Waste to Run Fuel Cell Buses," Department of Environmental Protection, State of New Jersey, Trenton, NJ, Dec. 16, 1997.

104. "Small-Scale Gasification-Based Biomass Power Generation," Workshop on Small-Scale Electricity Generation from Biomass, Energy Strategies Working Group, China Council for International Cooperation on Environment and Development, Changchun, Jilin Province, China, January 12-13, 1998.

105. "Transport Fuels from MSW for New Jersey," presentation to Commissioner Robert Shinn and others at the Department of Environmental Protection, State of New Jersey, Trenton, Feb. 25, 1998.

106. "Fuel Cell Vehicles and New Jersey," presented at a briefing on Hydrogen Energy for New Jersey Transportation, New Jersey State House, Trenton, NJ, March 11, 1998.

107. "Biomass Energy," guest lecture, Geosciences 524, Princeton University, Princeton, NJ, April 21, 1998.

108. "Preliminary Economics of Black Liquor Gasifier/Gas Turbine Cogeneration at Pulp/Paper Mills," 43rd ASME Gas Turbine & Aeroengine Congress, Stockholm, Sweden, June 3, 1998.

109. "Combined Biomass and Black Liquor Gasifier/Gas Turbine Cogeneration at Pulp/Paper Mills," 43rd ASME Gas Turbine & Aeroengine Congress, Stockholm, Sweden, June 3, 1998.

110. "Transport Fuels from MSW in New Jersey, Division of Solid Waste," NJ Dept. of Environmental Protection, Trenton, NJ, July 9, 1998.

111. "Advanced Technologies for Biomass-Energy Utilization in the Pulp & Paper Industry," project review meeting, US Department of Energy, Washington, DC, Oct. 20, 1998.

112. "Preliminary Cost Assessment of Black Liquor Gasification," Babcock and Wilcox R&D Center, Barberton, OH, May 25, 1999.

113. "Biomass Gasification in the USA," Brazil Biomass Gasification Project Expert Workshop, The World Bank, Washington, DC, June 3, 1999.

114. "Advanced Technologies for Biomass Conversion to Energy," keynote talk, Second Olle Lindström Symposium on Renewable Energy: Bioenergy, Royal Institute of Technology, Stockholm, Sweden, June 9, 1999.

115. "Biomass Conversion to Fischer-Tropsch Liquids: Preliminary Energy Balances," 4th Biomass Conference of the Americas, Oakland, CA, Aug. 29- Sept. 2, 1999.

116. "A Preliminary Assessment of Biomass Conversion to Fischer-Tropsch Cooking Fuels for Rural China," 4th Biomass Conference of the Americas, Oakland, California, Aug. 29- Sept. 2, 1999.

117. "Crop-Residue Fueled Trigeneration with Microturbines in Rural China," Technical Training Workshop of the Jilin Biomass Energy Modernization Project, Changchun, Jilin Province, China, 27-28 March 2000.

118. "Commercialization Prospects for Fuel Cell Buses," Workshop on Commercialization of Fuel Cell Buses: Potential Roles for the GEF, United Nations Headquarters, New York, 27-28 April 2000.

119. "Biomass Integrated-Gasifier/Gas Turbine Combined Cycle Technology for Sugarcane Processing Industries: Possibilities for Cuba," International Workshop on Sugarcane Energy, Havana, Cuba, 7-9 November 2000.

120. "Ethanol from Biomass," Atmospheric Environment Institute, Chinese Research Academy of Environmental Sciences, State Environmental Protection Agency, Beijing, China, 14 Dec. 2000.

121. "Creating a Village Biomass-CHP Industry in Jilin Province," Jilin Biomass Energy Modernization Project, Business Seminar, Changchun, Jilin Province, China, 16 December 2000.

122. "Polygeneration Strategies for Clean, Low-Carbon Energy Futures for China," invited lecture, Chalmers Technical University/Goteborg University, Gothenburg, Sweden, 1 February 2001.

123. "Polygeneration: a Fundamental Strategy for Environmentally-Sustainable Future Energy for China?" presented at China headquarters of BP (British Petroleum), Beijing, 19 June 2001.

124. "The Carbon Challenge," presented at the Community Learning Day session on Environmental and Societal Tradeoffs in Meeting Society's Demand for Electrical Power, The College of New Jersey, Ewing, NJ, 17 October 2001.

125. "Socio-Economic and Environmental Impact Assessment for the Jilin Modernized Biomass Energy Project," (presented with John Young), Business Enterprise Workshop, Yanji City, Jilin Province, China, 7 December 2001.

126. "The Carbon Mitigation Initiative at Princeton University and the Tsinghua-Princeton Collaboration," Department of Thermal Engineering, Tsinghua University, Beijing, China, 12 December 2001.

127. "The Princeton-Tsinghua Collaboration on Low Emission Energy Technologies and Strategies for China," Hydrogen Meeting, Carbon Mitigation Annual Review, Princeton University, Princeton, NJ, 16 January 2002.

128. "Future Implications of China's Energy Technology Choices," (presented with Pat Delaquil), invited seminar, US Department of Energy, Washington, DC, 22 January 2002.

129. "Technology Strategies for Addressing China's Energy Challenges," Associated Faculty Forum, Princeton Environmental Institute, Princeton University, 9 April 2002.

130. "Energy Strategies for China," Group Meeting, Carbon Mitigation Initiative, Princeton University, 29 April 2002.

131. "Exploring Implications to 2050 of Energy-Technology Options for China," 6th International Conference on Greenhouse Gas Control Technologies (GHGT-6), Kyoto, Japan, 1 Oct, 2002.

132. "Production of Hydrogen and Electricity from Coal with CO_2 Capture," (presentation of paper by Kreutz, Williams, Socolow, Chiesa, and Lozza), 6th International Conference on Greenhouse Gas Control Technologies (GHGT-6), Kyoto, Japan, 2 Oct, 2002.

133. "A Cost Benefit Analysis of Black Liquor Gasification in the Southeast United States," (presented with Ryan Katofsky) to the Steering Committee and Review Board of the BLGCC Analysis Project, American Forest and Paper Association, Washington, DC, 5 November 2002.

134. "Global Renewable Energy Resource Estimates for the SAGE Model," (presented with Pat Delaquil), invited seminar, Energy Information Administration, US Department of Energy, Washington, DC, 13 November 2002.

135. "Polygeneration Analysis at Princeton University, 2002," presented at meeting of the Task Force on Energy Strategies and Technologies of the China Council for International Cooperation on Environment and Development, Tsinghua University, Bejing, 10-11 December 2002.

136. "Clean Energy Technologies and Strategies for China," Center for Environmental Research and Technology, Bourns College of Engineering, University of California, Riverside, 3 March 2003.

137. "Synthetic Fuels Production by Indirect Coal Liquefaction," Workshop on Coal Gasification for Clean and Secure Energy (convened by Task Force on Energy Strategies and Technologies, China Council for International Cooperation on Environment and Development), Beijing, 25-26 Aug. 2003.

138. "Cost-Benefit Assessment of Black Liquor Gasification Combined Cycle (BLGCC)," Black Liquor Program Review, U.S. Department of Energy, Morgantown, WV, 21 October 2003.

139. "A Cost-Benefit Analysis of Black Liquor Gasification Combined Cycle Systems," Fall Technical Conference, Technical Association of the Pulp and Paper Industry, Chicago, IL, 29 October 2003.

140. "A Cost-Benefit Analysis of Black Liquor Gasification Combined Cycle Systems," Oak Ridge National Laboratory, 8 December 2003.

141. "Thermochemical Processing of Non-Grain Biomass for Energy," Non-Grain Biomass Meeting, Cargill, Inc., Minneapolis, MN, 22 January 2004.

142. "Production of Electricity and/or Fuels from Biomass by Thermochemical Conversion," Public Meeting of the project, Renewable Biomass Energy for America's Energy Future, American Association for the Advancement of Science, Washington, DC, 23 February 2004.

143. "Biomass Gasification Systems for Electric Power, Cogeneration, Liquid Fuels, and Hydrogen," Global Climate and Energy Project (GCEP) Energy Workshops, Stanford University, Stanford, California, 27 April 2004.

144. "Environmental and Economic Implications of Phasing Out Solid Fuels Used for Cooking in China," Workshop on Mitigation of Air Pollution and Climate Change in China, Norwegian Academy of Science and Letters, Oslo, 17-19 October 2004.

145. "Future Energy Technologies and Strategies for China," Industrial Performance Center, Massachusetts Institute of Technology, Cambridge, Massachusetts, 22 February 2005.

146. "New Value from Residuals and Spent Liquor," American Institute of Chemical Engineers, Spring Meeting, Atlanta, 11 April 2005.

147. "Gasification-based Liquid Fuels and Electricity from Biomass with Carbon Capture and Storage," 4th Annual Conference on Carbon Capture and Sequestration, US Dept. of Energy, Alexandria, VA, 2-5 May 2005.

148. "Gasification-based Liquid Fuels and Electricity from Biomass with Carbon Capture and Storage," UOP Research Headquarters, Des Plaines, Illinois, 3 June 2005.

149. "Energy Systems Analysis (Bioenergy Focus) and Related Policy Issues," special seminar, Joint Graduate School of Energy and Environment, King Mongut's University of Technology Thonburi, Bangkok, Thailand, 6 July 2005.

150. "Development and Deployment of Biomass Power Generation Systems: a Global Perspective," Conference on Power Generation from Renewable Energy: Practical Approaches, Bangkok, Thailand, 8 July 2005.

151. "Review of LCA Studies on Liquid Biofuel Systems for the Transport Sector," Workshop on Biofuels for the Transport Sector, Science & Technology Advisory Panel, Global Environmental Facility, New Delhi, India, August 30, 2005.

152. "Transportation Energy and Environmental Concerns at Home and Abroad," Physic Department Colloquim, Rutgers University, New Brunswick, 2 November 2005.

153. "The Role of Biomass in America's Energy Future," ECON Analysis, Oslo, Norway, 8 November 2005.

154. "Toward a Global Clean Cooking Initiative," Norwegian Ministry of Foreign Affairs, Oslo, Norway, 8 November 2005.

155. "Evaluating the Impact of Air Pollution on Agriculture and Human Health in China: Implications for future air pollution and energy policies," presented on behalf of X. Wang at D. Mauzerall at A Policy Workshop on Mitigation of Air Pollution and Climate Change in China: co-benefits and co-control**,** Beijing, 22-23 November 2005.

156. "Low-Carbon Transport Fuels from Coal and Biomass for China and the U.S.," Civil, Architectural, and Environmental Engineering Department, Drexel University, Philadelphia, PA, 30 November 2005.

157. "Lifecycle Analyses of GHG Impacts of Biofuels for Transport," Energy Week, The World Bank, 7 March 2006.

158. "Hydrogen and Electricity from Biomass With and Without Carbon Capture and Storage," Fifth Annual Conference on Carbon Capture and Sequestration, Alexandria, VA, 8-11 May 2006.

159. "DME from Biomass (USA) and Coal (China)," Second International DME Conference, London, 15-17 May 2006.

160. "Low-Carbon Liquid Transportation Fuel from Coal and Biomass," Argonne National Laboratory, Chicago, IL, 2 June 2006.

161. "Fuels and Electricity from Biomass with CO_2 Capture and Storage," poster presentation by R.H. Williams on behalf of Larson, 8th International Conference on Greenhouse Gas Control Technologies, Trondheim, Norway, 19-22 June 2006.

162. "Gasification in the Pulp and Paper Industry," Georgia Bioenergy Conference, Tifton, GA, 2 Aug. 2006.

163. "Cost-Benefit Analysis of Gasification-Based Biorefining at U.S. Kraft Pulp Mills," TAPPI 2006 Engineering, Pulping and Environmental Conference, Atlanta, GA 7 Nov. 2006.

164. "Liquid Biofuel Technologies and Technology Issues," Biofuels Workshop, United Nations Conference on Trade and Development, Geneva, Switzerland, 30 Nov 2006.

165. "Cost-Benefit Analysis of Gasification-Based Biorefining at U.S. Kraft Pulp Mills," presentation to the AFPA Agenda 2020 CTO Committee, American Forest & Paper Association, Washington, DC, 7 Dec. 2006.

166. "Making Liquid Biofuels at Kraft Pulp/Paper Mills in the USA: Results of a Detailed Cost-Benefit Assessment," invited lecture, Dept. of Thermal Engineering, Chalmers University, Gothenburg, Sweden, 11 Jan. 2007.

167. "Biofuel Technologies Overview," testimony to Committee on Environment and Natural Resources Finance, Minnesota State House of Representatives, St. Paul, MN, 1 Feb 2007.

168. "Biofuel Technologies Overview," Symposium on Pathways Toward a Renewable Energy Future: Environmental Sustainability Through Technology and Policy, Initiative for Renewable Energy and The Environment, University of Minnesota, St. Paul, 1 Feb 2007.

169. "Making Liquid Biofuels at U.S. Kraft Pulp and Paper Mills," Dept. of Bioproducts and Biosystems Engineering, University of Minnesota, St. Paul, MN, 2 Feb 2007.

170. "Gasification-Based Liquid Biofuels Production," meeting on Coal/Biomass to Liquids Technology, National Energy Technology Laboratory, Pittsburgh, PA, 13 March 2007.

171. "Advanced Gasification-Based System Concepts for Biorefining," Advanced Bioenergy Technologies and Biofuels from Municipal Solid Waste, California Biomass Collaborative 4th Annual Forum, Sacramento, California, 28-29 March 2007.

172. "Gasification-Based Biorefineries Integrated with Pulp Mills," First Wednesday Seminar, Resources for the Future, Washington, DC, 4 April 2007.

173. "Gasification-Based Production of Electricity and/or Liquid Transportation Fuels," Seminar on Technologies for Future Production of Ethanol in Brazil, Instituto de Tecnologia Promon, Sao Paulo, Brazil, 17 April 2007.

174. "CO_2 for EOR from Coal Gasification," PetroChina – BP CCS/EOR Seminar, Research Institute of Petroleum Exploration and Development (RIPED), Beijing, 24-25 April 2007.

175. "Pulp Mill Integrated Gasification-Based Liquid Biofuels Production," TAPPI International Conference on Renewable Energy, Atlanta, GA, 10-11 May 2007

176. "Synfuels from Coal and Coal/Biomass: Greenhouse Gas Emissions and Policy Implications," Gasification Technologies Council Spring Meeting, Williamsburg, VA, 17-18 May 2007.

179. "Biofuel Production Technologies: Status and Prospects," Ad hoc expert group meeting on Biofuels: Trade and Development Implications of Present and Emerging Technologies, United Nations Conference on Trade and Development, Geneva, 19 June 2007.

180. "Making Better Use of Biomass for Energy," D.W. Brooks Lecture, College of Agricultural and Environmental Sciences, University of Georgia, Athens, GA, 2 October 2007.

181. "Low-GHG Liquid Fuels from Coal + Biomass," Chewonki Carbon Capture and Storage Seminar, Wiscasset, Maine, 24 October 2007.

182. "Prospects for Second Generation Biofuels Technologies," Conference on Biofuels: An Option for a Less Carbon-Intensive Economy, organized by the United Nations Conference on Trade and Development and the Energy Planning Agency of the Ministry of Mines and Energy of Brazil, Rio de Janeiro, 4-5 December 2007.

183. "China's Energy Challenges," guest lecture in Global Environmental Governance (WWS586d, taught by Michael Oppenheimer), Woodrow Wilson School of Public and International Affairs, Princeton University, 3 April 2008.

184. "China's Energy Challenges," guest lecture in Global Environmental Governance (ORF571, taught by Gregory Chow), Department of Operations Research and Financial Engineering, Princeton University, 3 April 2008.

185. "Low GHG Liquid Fuels (and Electricity) from Coal + Biomass," CTLtec Americas 2008, 23 June 2008, Pittsburgh, PA.

186. "Analysis of Fischer-Tropsch Fuels from Coal and Biomass," Commercial Aviation Alternative Fuels Initiative (CAAFI) Business Team Meeting and Workshop, 8-9 September 2008, Washington, DC

187. "Co-production of synfuels and electricity from coal + biomass with zero net carbon emissions: an Illinois case study," poster presentation at 9th International Greenhouse Gas Control Technologies Conference (Elsevier Energy Procedia), Washington DC, 17-18 November 2008.

188. "Biomass-Energy Technologies: Perspectives for Brazil's Sugarcane Industry," presented to the Technical Advisory Committee of the Centro de Tecnologia Canavieria, Piracicaba, Brazil, 24 Nov 2008.

189. "Biomass-Energy Technologies: Perspectives for Brazil's Sugarcane Industry," presented to the Board of Directors of the Centro de Tecnologia Canavieria, Sao Paulo, Brazil, 26 Nov 2008.

190. "Design/Simulation/Costing of Gasoline from Coal and Biomass (work in progress!)," presentation at ExxonMobil Research and Engineering Company, Annandale, NJ, 17 Feb 2009.

191. "Biofuels," commentary as a member of the "Bioenergy Panel" at the Massachusetts Institute of Technology Energy Conference, Boston, MA, 7 March 2009.

192. "Commercializing New Biomass Energy Technologies," Third Meeting of the International Sugarcane Biomass Utilization Consortium of the International Society of Sugarcane Technologists, Shandrani Resort and Spa, Mauritius, 28 June – 1 July 2009.

193. "Perspectives on Energy Supply: 'Green' Transportation Fuels," invited talk, Topsøe Catalysis Forum: Catalysis in New Environmental Processes," Munkerupgaard, Denmark, 28 August 2009.

194. "Princeton CBTL Work," Interagency Life Cycle GHG Benchmark Studies Meeting, MIT, Cambridge, MA, 14-15 October 2009.

195. "Algae Analysis at Princeton (work in progress)," Interagency Life Cycle GHG Benchmark Studies Meeting, MIT, Cambridge, MA, 14-15 October 2009.

196. "Using Coal for Energy Security and Climate Change Mitigation," Lunchtime Energy Seminars, Princeton Environmental Institute, Princeton University, 26 February 2010.

197. "Nuclear in New Jersey: Status and Alternatives," 8th Annual Public Affairs Forum, Woodrow Wilson School of Public and International Affairs, Princeton University, 6 May 2011.

198. "Using Biomass Efficiently to Make Hydrocarbon Fuels," Institute for Renewable Energy and the Environment, University of Minnesota, St. Paul, MN, 15 June 2011.

199. "Low-GHG Hydrocarbon 'Biofuels' Using Less Biomass," Risø DTU National Laboratory for Sustainable Energy, Roskilde, Denmark, 27 September 2011.

200. "Resource-Efficient Liquid Hydrocarbon Fuels from Biomass," Department of Chemical Engineering, McMaster University, Hamilton, Ontario, Canada, 6 October 2011.

201. "Decarbonized Electricity and Fuels from Coal and Biomass," Sixth Sino-US Joint Conference on Chemical Engineering, Beijing, China, 8 November 2011.

202. "Decarbonized Electricity and Fuels from Coal and Biomass," School of Energy, Power, and Mechanical Engineering, North China Electric Power University,Beijing, China, 11 November 2011.

203. "Biomass Energy with Carbon Capture and Storage (BECCS): Strategies for Reducing the Carbon Footprint of the Oil Industry," (R.H. Williams, co-author), poster presentation, CMI Annual Meeting, Princeton University, April 17, 2012.

204. "Energy Systems Analysis," Energy, Environment and Climate Policy panel of the Science Policy Careers Symposium, Harvard University, Cambridge, MA, May 2, 2012.

205. "Shale Gas and Global Warming," Energy Lunch seminar, Princeton Environmental Institute, Princeton, NJ, 26 April 2013.

206. "Princeton Prefeasibility Analyses of Coal/Biomass Co-Processing for Electricity and Fuels Co-Production with CO_2 Capture," presentation at Southern Company Headquarters, Birmingham, Alabama, 3 June 2013.

207. "Recent and Prospective ESAG Research," Department of Energy and Environment, Division of Heat and Power Technology, Chalmers University of Technology, Gothenburg, Sweden, 18 November 2013.

208. "Techno-Economic Systems Analysis of Jet Fuel and Electricity Co-Production from Biomass and Coal with CO_2 Capture: an Ohio River Valley (USA) Case Study," System and Integration Aspects of Biomass-Based Gasification Joint Workshop between IEA Bioenergy Task 33 and IEA Industrial Energy-Related Technologies and Systems, Gothenburg, Sweden, 19 November 2013.

209. "Climate Change: How bad is it?" Westminster Place Presbyterian Homes, Evanston, Illinois, 28 Dec. 2013.

210. "Water Challenges for Electricity Generation," guest lecture in Princeton course ELE 547C, *Contemporary Challenges in Electric Power*, 25 Feb 2014.

211. "Energy Systems Analysis Group," presented to T. Johnson, S. Baxley, and G. Gao (Southern Company), Princeton University, April 25, 2014.

212. "Design/Cost Study and Commercialization Analysis for Synthetic Jet Fuel Production at a Mississippi site from Lignite and Woody Biomass with CO_2 Capture and Storage via EOR: Project Kick Off Meeting," Alabama Power Headquarters, Birmingham, AL, December 9, 2014.

213. "Biofuels: Systems Perspectives and Thermochemical Production," Andlinger Center for Energy and the Environment, E-ffiliates Retreat, Chauncey Conference Center, Princeton, NJ, February 5, 2015.

214. "Perspectives (USA) on Smaller-Scale Gasification-Based Transportation Fuels from Biomass and Biomass + Fossil Fuels, with Low or Negative CO_2 Emissions," Division of Industrial Energy Systems and Technologies, Department of Energy and Environment, Chalmers University of Technology, Gothenburg, Sweden, March 30, 2015.

215. "Perspectives on the Energy-Water Nexus," keynote talk, Annual Meeting of the Princeton University China Energy Group, Princeton, New Jersey, April 2, 2015.

216. "Design/Cost Study and Commercialization Analysis for Synthetic Jet Fuel Production at a Mississippi site from Lignite and Woody Biomass with CO2 Capture and Storage via EOR," National Energy Technology Laboratory's 2015 Gasification Systems and Coal & Coal-Biomass to Liquids Workshop, Morgantown, WV, August 2015.

217. "Design/Cost Study and Commercialization Analysis for Synthetic Jet Fuel Production at a Mississippi site from Lignite and Woody Biomass with CO_2 Capture and Storage via EOR," 2015 International Pittsburgh Coal Conference, Pittsburgh, PA, October 2015.

218. "Sustainable Transportation Energy with Net Negative Carbon Emissions," GCEP Research Symposium 2015: Driving Change in the Energy Field, Global Climate and Energy Project, Stanford Univ., Palo Alto, CA, Oct. 2015.

219. "Negative Emissions Initiative," BP Headquarters, St. James Place, London, 15 Apr., 2016.

220. "US Transportation Energy Challenges," Panel on Energy Innovations & Transformations for a Livable Climate, CCL/CCE Conference, Washington, DC, 20 Jun 2016.

221. "The Water-Energy Nexus Panel Session Introduction," Andlinger E-ffiliates Partnership Annual Meeting, Princeton University, 11 Nov. 2016.

222. "Deep Decarbonization: What Role for BECCS and Other Negative Emissions?" Energy Express Seminar Series, UQ Energy Initiative, University of Queensland, Brisbane, Australia, 7 Dec. 2016.

223. "Negative Emissions via Bioenergy with CO_2 Capture and Storage (BECCS)," Security and Sustainability Forum webinar: *Restoring the Carbon Balance- Session 2: The Technologies*, 1 February 2017.

224. "Energy Systems Analysis Group contributions to GCEP project: *Sustainable Transportation Energy with Net Negative Carbon Emissions*," research collaboration kick-off meeting, Natural Resource Ecology Laboratory, Colorado State University, 14 April 2017.

225. "Potential for climate change mitigation via agriculture-based sequestration of carbon in soils," joint talk with Keith Paustian (Colorado State University) at a meeting on The Promise of Perennials, McKnight Foundation Headquarters, Minneapolis, MN, 6 July 2017.

226. "Lignite-plus-Biomass to Synthetic Jet Fuel with CO_2 Capture and Storage ("LBJ"): Design, Cost, and Greenhouse Gas Emissions Analysis for a Near-Term, First-of-a-Kind Demonstration Project in Mississippi and Prospective Future Commercial Plants," 2017 International Pittsburgh Coal Conference, Pittsburgh, PA, September 2017.

227. "An evaluation of negative-emission transportation-energy systems for the US: Mid-Century Potential of Biomass-Based Options," fall meeting of the American Geophysical Union, New Orleans, LA, Dec. 15, 2017.

228. "Rapid Switch™– an international, cross-disciplinary collaboration applying a new approach to the challenge of global decarbonization," Advisory Council Meeting, Andlinger Center for Energy and the Environment, Princeton University, April 26, 2018.

229. "The Energy Systems Analysis Group," Market Operations Group, PJM Headquarters, Audubon, PA, June 28, 2018.

230. "Biomass Energy, Part 1: Sustainability Issues," São Paulo School of Advanced Science on Renewable Energies, University of São Paulo, São Paulo, Brazil, July 31, 2018.

231. "Biomass Energy, Part 2: Bioenergy with CO_2 Capture and Storage (BECCS)," São Paulo School of Advanced Science on Renewable Energies, University of São Paulo, São Paulo, Brazil, July 31, 2018.

232. "Biomass Energy: Sustainability Issues and BECCS," Bioenergy Workshop: Advanced Technologies and Sustainability Issues, Instituto de Energia e Ambiente (IEE), University of São Paulo, São Paulo, Brazil, Aug. 1, 2018.

233. "Efficient Electricity Markets and Grid Decarbonization," Public Service Enterprise Group Headquarters, Newark, NJ, August 13, 2018.

234. "How fast can the world decarbonize?" Annual Meeting, Andlinger Center for Energy and the Environment, Princeton University, November 9, 2018.

235. "Energy storage for the grid using decarbonized H_2: a work in progress," Energy Storage Workshop, Department of Chemical and Environmental Engineering, University of Seville, Seville, Spain, November 12, 2018.

236. "The role of energy systems analysis in understanding how rapidly the world's energy system can be decarbonized," Department of Chemical and Environmental Engineering, University of Seville, Seville, Spain, November 13, 2018.

237. "The *Rapid Switch* project, and some thoughts on CCS in energy transitions," keynote talk, Energy Transition Research and Innovation 2019, Research Centre for Gas Innovation, University of São Paulo, SP Brazil, 1 Oct 2019.

238. "US Net-Zero Infrastructure Project," for Helge Lund (BP Chairman of the Board), 15 Oct 2019, Princeton, NJ.

239. "Planning for a Net-Zero America," Princeton Energy & Climate Scholars mtg, Princeton, NJ, 30 Jan 2020.

240. "Net-Zero Emissions for the USA by 2050 ?" Symposium on Energy Transitions in Industry, Indian Institute of Technology – Bombay, Mumbai, India, 25-26 Feb 2020.

241. "The Princeton Net-Zero America Project: Planning for net-zero greenhouse gas emissions by 2050," Climate Central Brownbag Lunch talk, March 26, 2020.

242 to 284. "Net-Zero America: Potential pathways, infrastructure & impacts," Zoom briefings:

- Carbon Mitigation Initiative 19th Annual Meeting, April 23, 2020.
- ExxonMobil (Executive briefing), August 26, 2020.
- NZA project consultative group briefing, September 9, 2020.
- Tsinghua-BP Clean Energy Research and Education Center, September 29, 2020.
- U.S. Representative Diana DeGette's staff (she chairs the House Energy & Commerce Committee's Oversight & Investigations Subcommittee), December 15, 2020.
- House Select Committee on the climate crisis staff, January 6, 2021.
- Natural Resources Defense Council leadership (Gina McCarthy, Mitch Bernard, David Hawkins), January 7, 2021.
- Morgan Stanley analysts, January 11, 2021.
- House Energy & Commerce Subcommittee on Environment and Climate, January 14, 2021.
- Deputy Chief of Staff to New Jersey Senator Cory Booker, January 15, 2021.
- Mitsubishi Corporation, January 19, 2021.
- New Jersey Assemblyman Andrew Zwicker, January 20, 2021.
- House Science Committee staff, January 21, 2021.
- Xcel Energy, January 25, 2021.
- Congressman Frank Pallone's office, January 28, 2021.
- U.S. Senate Energy & Natural Resources Committee staff, January 28, 2021.
- U.S. Senate Environment and Public Works Committee staff, January 29, 2021.
- U.S. Senator Jeff Merkely staff, February 3, 2021.
- New Jersey Department of Environmental Protection, February 4, 2021.
- BP, February 5, 2021.
- Citigroup analysts, February 10, 2021.
- U.S. Senator Debbie Stabenow staff, February 17, 2021.
- 100% Clean Energy Alliance, February 23, 2021.
- Louisiana Governor's Climate Initiative Task Force, February 24, 2021.
- Environmental Protection Agency staff, February 24, 2021.
- Senate Energy & Natural Resources Committee staff, February 25, 2021.
- Senate Energy & Natural Resources Committee staff, March 3, 2021.
- DOE Office of Fossil Energy, March 19, 2021.
- Blackrock investors, March 24, 2021.

- JP Morgan investors, April 6, 2021.
- Senate Environment and Public Works Committee staff, April 9, 2021.
- AllianceBernstein investors, April 26, 2021.
- Organizing Action on Sustainability in New Jersey Schools, May 6, 2021.
- Senate Finance Committee staff, May 7, 2021.
- Eric Lander (President Biden's Science Advisor), May 26, 2021.
- Citigroup analysts, June 10, 2021.
- Blackrock Research Brownbag, September 30, 2021.
- Building Net-Zero Cities Workshop, October 7, 2021.
- BP Snack and Learn, November 11, 2021.
- Harding High School environmental studies class, St. Paul, MN, December 7, 2021.
- Virginia Office of Energy, December 14, 2021.
- Sherwin Williams (Executives briefing), December 15, 2021.

285. "Net Zero America," (w/ J. Jenkins), Kleinman Center for Energy Policy, University of Pennsylvania, January 28, 2021. (zoom)
286. "Net Zero America," Research Center for Gas Innovation, University of Sao Paulo, February 11, 2021. (zoom)
287. "Net Zero America," International Energy Agency energy modeling group, February 19, 2021. (zoom)
288. "Net Zero America," Austin Electricity Conference, April 1, 2021. (zoom)
289. "CCUS in the Net-Zero America study," Carbon Mitigation Initiative 20th Annual Meeting, April 20, 2021. (zoom)
290. "Power-to-fuels in the Net-Zero America study," Powerfuels Workshop, German Energy Agency, May 5, 2021. (zoom)
291. "Net Zero America," Andlinger E-ffiliates Retreat, June 3, 2021. (zoom)
292. "Net Zero America," (invited by Jonathan Pershing, US State Dept.), U.S.-China Expert Dialogue, July 6, 2021. (zoom)
293. "Net Zero America," Carbon Neutrality Forum, Institute of Energy, Peking University, October 22, 2021. (zoom)
294. "Net Zero America," Nassau Club Lunch Seminar series, Princeton, NJ, October 27, 2021. (zoom)
295. "Net Zero America," Princeton University Energy Association Annual Conference, November 6, 2021.
296. "Net Zero America," Wisconsin Electric Cooperative Association Annual Meeting, November 10, 2021. (zoom)
297. "Net Zero America," Dialogue on China-US Cooperation on Climate Change, Understanding China Conference, December 2, 2021. (zoom)
298. "Net Zero America," plenary talk, American Fuels & Petrochemical Manufacturers Annual Meeting, New Orleans, LA, March 14, 2022.
299. "Net Zero America," 46th Trenton Computer Festival, March 19, 2022. (zoom).
300. "Designing American CCS Hubs," Carbon Mitigation Initiative Annual Meeting, London, April 27, 2022.
301. "Hydrogen in the Net-Zero America study," Andlinger Center Hydrogen Workshop, April 27, 2022 (zoom).
302. "Net-Zero America, Reliable Decarbonization in the Northeast – Dialogues, Policies and Innovation," Blue Bell, PA, June 9, 2022.
303. "Modeling & Analysis of Regional CCS Hubs with BECCS," for BP, Nov. 9, 2022 (zoom).
304. "Hydrogen in the Net-Zero America study," Princeton-Deloitte H2 Workshop, Houston, TX, Nov. 30, 2022.
305. "Net-Zero America," (with J. Jenkins), Princeton-Deloitte chemical industry event, Princeton, NJ, Dec. 5, 2022.

306. "Prospective economics for clean fuels under the Inflation Reduction Act," CMI Annual Meeting, Princeton, May 4, 2023.

307. "Net-Zero America," Invited lecture at Net-Zero Poland Workshop, Warsaw, Poland, 18 May 2023.

307. "Green energy transitions for the USA, Thailand and beyond," ESG Symposium, Bangkok, 30 Sept. 2024.

308. "Net-Zero America: What will it take for the United States to reach net-zero greenhouse gas emissions by 2050?" Invited lecture, State University of Campinas, Sao Paulo, Brazil, 1 April 2025

309. "A story of U.S. carbon emission reduction goals, strategies, and policies," 57th Climate Change Global Lecture, Institute of Climate Change and Sustainable Development, Tsinghua University, Beijing, China, 26 June 2025.

310. "Net-Zero X (NZx): An open, high-resolution national decarbonization modeling community for decision support," as part of Visualizing Net-Zero Economies panel, Planetary Science Pavilion, Blue Zone, Conference of the Parties (COP30), Belem, Brazil, November 12, 2025.

311. "Net-Zero X (NZx): An open, high-resolution national decarbonization modeling community for decision support," as part of 'Visualizing Net-Zero Economies' panel, International Solar Alliance Pavilion, Blue Zone, Conference of the Parties (COP30), Belem, Brazil, November 13, 2025.

Courses taught at Princeton

- ENE 372 – Rapid Switch: the transition challenge to low-carbon energy (each spring, 2019-2026)
- CBE 335 – The Energy-Water Nexus (fall 2012, spring 2018, spring 2019)
- MAE 328 – Energy for a Greenhouse Constrained World (spring 2011, 2012, 2013, 2014)
- WWS591b – Graduate policy workshop on Deploying Clean Energy in Rural China (2004)
- MAE 554 – The Greenhouse Problem and Hydrogen Energy Solutions (1999, 2000)
- MAE 319 – Renewable Energy Technology (1991, 1993, 1995, 1999)
- PA 592 – Agro-Energy and Third World Development (1988)
- MAE 423 – Heat Transfer (1987, 1990)

Princeton University service

- Member, Committee on Appointments and Advancement for the Professional Researchers and Professional Specialists (C7), September 2025 – August 2028.

Other professional activities

- Board of Directors member (1999 - present) of the International Energy Initiative (IEI), an international, non-governmental, non-profit organization working for efficient production and use of energy in developing countries in support of sustainable development. IEI has regional offices in Brazil and India and publishes the peer-reviewed journal, *Energy for Sustainable Development*.
- Advisory Board member (2019 – present), DG Fuels LLC, a startup company developing biogenic low-carbon emissions aviation and diesel fuel production.
- Peer reviewer for *Applied Energy, Biomass and Bioenergy, Bioresources Technology, Combustion Science and Technology, Energy and Environmental Science, Energy Conservation and Management, Energy the International Journal, Energy Policy, Energy for Sustainable Development, Environmental Science & Technology, Industrial & Engineering Chemistry Research, Journal of Engineering for Gas Turbines and Power, Journal of Solar Energy Engineering, Resources, Conservation, and Recycling*, *Science*, and others.
- PhD examining committee member for students outside Princeton, including at Dartmouth College, Stanford University, Utrecht University (Netherlands), and in Scandinavia: Aalto University, Chalmers University of Technology, Lulea University of Technology, Lund University, Royal Institute of Technology, Technical University of Denmark, and University of Oslo.