

Corinne D. Scown

CONTACT INFORMATION	1 Cyclotron Road, 90-2012 Lawrence Berkeley National Lab Berkeley, CA 94720 USA	<i>Phone:</i> (510) 486-4507 <i>E-mail:</i> cdscown@lbl.gov <i>Website:</i> www.cscown.com
POSITION	Research Scientist, Deputy Group Leader Sustainable Energy Systems Group Energy Analysis & Environmental Impacts Division Energy Technologies Area Lawrence Berkeley National Laboratory	Director of Technoeconomic Analysis Joint BioEnergy Institute Emeryville, CA
RESEARCH INTERESTS	Life-cycle assessment, technoeconomic modeling, quantifying the environmental impacts of energy production, economic input-output models, linking air quality with life-cycle assessment, interaction between science and policy/decision-making	
EDUCATION	<p>University of California, Berkeley, USA</p> <p>Ph.D., Civil Engineering, December 2010</p> <ul style="list-style-type: none"> • Dissertation Title: “Life-Cycle Water Impacts of U.S. Transportation Fuels” • Advisor: Arpad Horvath <p>M.S., Civil Engineering, May 2008</p> <p>Carnegie Mellon University, Pittsburgh, Pennsylvania USA</p> <p>B.S., Civil Engineering, December, 2006 double major in Engineering and Public Policy</p>	
PEER-REVIEWED PUBLICATIONS	<p>Roger Sathre*, Hanna Breunig, Jeffery Greenblatt, Peter Larsen, Eric Masanet, Thomas McKone, Nigel Quinn, Corinne D. Scown (2015). “Spatially-explicit water balance implications of carbon capture and sequestration.” <i>Accepted with revisions to Environmental Modelling & Software</i>.</p> <p>Marcelle C. McManus*, Caroline M. Taylor*, Alison Mohr, Carly Whittaker, Corinne D. Scown, Aiduan Li Borrión, Neryssa Glithero, Yao Yin (2015). “Challenge Clusters Facing LCA in Sustainability Decision-making - What We Can Learn From Biofuels.” <i>International Journal of Life Cycle Assessment</i>, 20(10), 1399-1414.</p> <p>Sanil Sreekumar, Madhesan Balakrishnan, Konstantinos Goulas, Gorkem Gunbas, Amit A. Gokhale, Lin Louie, Corinne D. Scown*, Alexis T. Bell* and F. Dean Toste* (2015). “Upgrading Lignocellulosic Products to Drop-In Biofuels via Dehydrogenative Cross-Coupling and Hydrodeoxygenation Sequence.” <i>ChemSusChem</i>, 8(16), 2609-2614.</p> <p>Madhesan Balakrishnan, Eric R. Sacia, Sanil Sreekumar, Gorkem Gunbas, Amit A. Gokhale, Corinne D. Scown*, F. Dean Toste*, Alexis T. Bell* (2015). “Novel Pathways for Fuels and Lubricants from Biomass Optimized Using Life Cycle Assessment.” <i>Proceedings of the National Academy of Sciences</i>, 112(25), 7645-7649.</p> <p>Roger Sathre*, Corinne D. Scown, Olga Kavvada, Thomas P. Hendrickson (2015). “Energy and Climate Effects of Second-life Use of Electric Vehicle Batteries in California Through 2050.” <i>Journal of Power Sources</i>, 288, 82-91.</p>	

Thomas P. Hendrickson*, Olga Kavvada, Nihar Shah, Roger Sathre, **Corinne D. Scown*** (2015). “Life-cycle Implications and Supply Chain Logistics of Electric Vehicle Battery Recycling in California.” *Environmental Research Letters*, 10(1), 014011.

Roger Sathre*, **Corinne D. Scown**, William Morrow, John Stevens, Ian Sharp, Joel Ager, Karl Walczak, Frances Houle, Jeffrey B. Greenblatt* (2014). “Life-cycle Net Energy Analysis of Large-scale Hydrogen Production via Photo-electrochemical Water-splitting.” *Energy & Environmental Science*, 7(10), 3264-3278.

Corinne D. Scown*, Amit Gokhale, Paul Willems, Arpad Horvath, Thomas E. McKone (2014). “The Role of Lignin in Driving Down Life-cycle Carbon Emissions, Water Use, and Cost for U.S. Cellulosic Biofuels.” *Environmental Science & Technology*, 48(15), 8446-8455.

Corinne D. Scown*, Michael Taptich, William W. Nazaroff, Arpad Horvath, Thomas E. McKone (2013). “Achieving Deep Cuts in the Carbon Intensity of US Automobile Transportation by 2050: Complementary Roles for Electricity and Biofuels.” *Environmental Science & Technology*, 47(16), 9044-9052.

Corinne D. Scown*, William W. Nazaroff, Umakant Mishra, Bret Strogon, Agnes B. Lobscheid, Eric Masanet, Nicholas J. Santero, Arpad Horvath, Thomas E. McKone (2012). “Lifecycle Greenhouse Gas Implications of US National Scenarios for Cellulosic Ethanol Production.” *Environmental Research Letters*, 7(1) 014011.

Corinne D. Scown*, Arpad Horvath, Thomas E. McKone (2011). “Water Footprint of U.S. Transportation Fuels.” *Environmental Science & Technology*, 45(7), 2541-2553. Also published in *Environmental Science & Technology* virtual issue entitled “Water-Energy Nexus” 1(1).

Thomas E. McKone*, William W. Nazaroff, Peter Berck, Maximilian Auffhammer, Tim Lipman, Margaret S. Torn, Eric Masanet, Agnes Lobscheid, Nicholas Santero, Umakant Mishra, Audrey Barrett, Matthew Bomberg, Kevin Fingerma, **Corinne Scown**, Bret Strogon, Arpad Horvath (2011). “Grand Challenges for Life-Cycle Assessment of Biofuels.” *Environmental Science & Technology*, 45(5), 1751-1756.

Ping Chen, **Corinne Scown***, H. Scott Matthews, James H. Garrett, Jr., Chris Hendrickson (2009). “Managing Critical Infrastructure Interdependence through Economic Input-Output Methods.” *ASCE Journal of Infrastructure Systems*, 15(3), 200-210.

Chung Yan Shih, **Corinne D. Scown**, Lucio Soibelman, H. Scott Matthews*, James H. Garrett, Jr., Keith Dodrill, Sandra McSurdy (2009). “Data Management for Geospatial Vulnerability Assessment of Interdependencies in US Power Generation.” *ASCE Journal of Infrastructure Systems*, 15(3), 179-189.

*Corresponding author(s)

TECHNICAL
REPORTS

Roger Sathre, Hanna Breunig, Peter Larsen, Eric Masanet, Thomas McKone, Nigel Quinn, Corinne Scown (2012). *Spatially-Explicit Impacts of Carbon Capture and Sequestration on Water Supply and Demand*. Lawrence Berkeley National Laboratory, Berkeley, CA.

Iain S. Walker, Sara Al-Beaini, Samuel Borgeson, Brian Coffey, David Gregory, Kyle Konis, Corinne Scown, Jelena Simjanovic, John Stanley, Bret Strogon (2009). *Feasibility of Achieving Net-Zero-Energy Net-Zero-Cost Homes*. Lawrence Berkeley National Laboratory, Berkeley, CA, LBNL 2067E.

GRANTS

- Paths to Sustainable Distributed Generation through 2050: Matching Local Waste Biomass Resources with Grid, Industrial, and Community Needs** **Begins July 2015**
Amount: \$1.5M, Agency: California Energy Commission
Role: Lead PI
- Enabling Anaerobic Digestion Deployment for Municipal Solid Waste-to-Energy** **Begins July 2015**
Amount: \$4.3M, Agency: California Energy Commission
Role: Co-PI
- Synthesis of bio-inspired adaptive membranes for direct capture of CO₂ from biogas** **2014-present**
Amount: \$221K, Agency: LBNL Laboratory Directed Research and Development
Role: Co-PI
- Large-scale Recycling of California's PEV Battery Packs** **2013-2015**
Amount: \$250K, Agency: California Energy Commission
Role: Lead PI
- Life-cycle Assessment** **2012-present**
Amount: \$150K, Agency: LBNL Program Development Funds
Role: Lead PI
- Building Life-cycle Assessment Capacity for Advanced Biofuels** **2013-present**
Amount: \$565K, Agency: Energy Biosciences Institute
Role: Co-PI
- The Future of Drop-in Fuels** **2013-present**
Amount: \$400K, Agency: California Air Resources Board
Role: Technical Lead

RESEARCH
EXPERIENCE

- Joint BioEnergy Institute**, Emeryville, California USA
Director of Technoeconomic Analysis **2015-present**
Leader of JBEI's technoeconomic modeling and life-cycle assessment research in collaboration with experimental and computational researchers within JBEI and the Advanced Biofuel Process Demonstration Unit (ABPDU). 40% time appointment, remaining 60% time spent on other LBNL projects.
- Lawrence Berkeley National Lab**, Berkeley, California USA
Deputy Group Leader, Sustainable Energy Systems Group **2015-present**
Serving in the leadership for the Sustainable Energy Systems group at LBNL, supervising fellow scientists as well as postdocs and grad students. Coordinating with group and division leadership to ensure high-quality scientific output, funding stability, and career development for members.
- Research Scientist* **2014-present**
Leading a variety of projects, including state-funded research on drop-in biofuels and electric vehicle battery recycling as well as biofuels research funded by the Energy Biosciences Institute.
- Principal Scientific Engineering Associate* **2012-2013**
Team: Energy & Environmental Analysis Team, Carbon Cycle 2.0
Research on scenario and model development for energy efficient buildings, biomass for energy applications, photovoltaics, and carbon capture and sequestration.

University of California, Berkeley, USA

Postdoctoral Scholar/Research Engineer **2011-present**

Project Title: Life-Cycle Environmental and Economic Decision-Making for Alternative Biofuels
 Advisor: Professor Arpad Horvath Primary objective is to develop an understanding of the broad environmental and economic impacts of producing biofuels with respect to other transportation fuel alternatives such as petroleum-based fuels and electricity. Deliverables include a carbon assessment tool and a series of national biofuel production scenarios.

Postdoctoral Scholar **2010-2011**

Project Title: Life-Cycle Energy Assessment of Water and Waste Water Systems in California
 Advisor: Professor Arpad Horvath Primary objective is to develop a tool for assessing the greenhouse gas and water resource impacts of water supply and wastewater treatment in California.

Graduate Student Researcher **2007-2010**

Project Title: Life-Cycle Water Impacts of U.S. Transportation Fuels
 Advisor: Professor Arpad Horvath
 Primary objective is to conduct dissertation-oriented research in the following areas: water requirements for transportation fuel production and delivery, energy-water connection, and water consumption impact assessment.

Graduate Student Researcher **2008-2009**

Project Title: World Resources Institute Transportation Energy Tool
 Advisor: Lee Schipper, Ph.D.
 Tasks include developing an excel-based policy analysis tool for determining the greenhouse gas impacts of various transportation-related policies and writing a series of white papers to be published by the World Resources Institute in Washington, DC.

Advisory Board Member **2008**

Project Title: Energy Free Home Challenge
 Advisor: Iain Walker, Ph.D.
 Tasks include estimating the cost for model net zero energy home to determine whether the cost and energy requirements for the competition entrants would be feasible and providing general input on proposed rules, contest logistics, and contest goals.

Carnegie Mellon University, Pittsburgh, Pennsylvania USA

Graduate Research Assistant **2007**

Project Title: Knowledge Management and Visualization in Support of Vulnerability Assessment of Electricity Production
 Advisor: Professors H. Scott Matthews and Lucio Soibelman
 Tasks include developing a prototype that integrates spatial and non-spatial data for vulnerability assessment of electricity supply based on coal mine production and rail transportation.

Undergraduate Research Assistant **2004-2006**

Project Title: Economic Input-Output Life-Cycle Assessment
 Advisor: Professor H. Scott Matthews
 Tasks include retrieval and aggregation of Occupational Safety and Health Administration data for integration into the Economic Input-Output Life-Cycle Assessment (EIO-LCA) tool and development of a tutorial for new EIO-LCA users.

Northeast Midwest Institute, Washington, DC USA

Undergraduate Research Fellow **2006**

Project Title: Electrical Grid Modernization
 Advisor: Diane DeVaul, Ph.D. and Richard Munson

Tasks include collection of information on electrical grid modernization, distributed generation, and broadband over power lines for preparation of a white paper.

CONFERENCE
PAPERS

Roger C. Sathre, Hanna Breunig, Jeffery Greenblatt, Peter Larsen, Thomas E. McKone, Nigel W. Quinn, Corinne Scown (2012). "Spatially-Explicit Water Balance Implications of Carbon Capture and Sequestration." *Proceedings of the 11th Annual Conference on Carbon Capture, Utilization, and Sequestration*, Pittsburgh, PA. April 30-May 3, 2012.

Aurora L. Sharrard, Ashley Nikithser, Corinne Scown, H. Scott Matthews, Melissa Bilec (2007). "The Challenge of Correlating Air Monitor Data with Construction Site Activity: A Pittsburgh Case Study." *Proceedings of the Construction Research Congress*, Grand Bahama Island, Bahamas. American Society of Civil Engineers, Construction Institute. May 6-8, 2007.

Chung Yan Shih, Corinne D. Scown, Lucio Soibelman, H. Scott Matthews, James H. Garrett, Jr., Keith Dodrill, Sandra McSurdy (2007). "Decision Support Framework for Electricity Production Vulnerability Assessment." *Proceedings of the 2007 ASCE Computing in Civil Engineering Conference*, Pittsburgh, PA, July 24-27, 2007.

CONFERENCE
ORGANIZING

Organizing Committee, International Society for Industrial Ecology 2011 Conference, Berkeley, CA, June 2011.

Organizing Committee, International Symposium on Sustainable Systems & Technologies, Oakland, CA, May 2014.

INVITED TALKS

"Closing the Gap Between Basic Research, Technoeconomic Analysis, and Life-cycle Assessment for Bio-based Fuels and Products", Joint BioEnergy Institute Seminar, Emeryville, CA, June 2015

"Technoeconomic Analysis at JBEI", Joint BioEnergy Institute, Emeryville, CA, April 2015.

"Life-cycle Greenhouse Gas Assessment", Guest Lecture, Chemical Engineering 90, UC Berkeley, Berkeley, CA, March 2015.

"Water and Climate Impacts of Transportation Systems", Keynote at University of Illinois, Urbana-Champaign EWES SRIS Summit, Urbana, IL, April 2014.

"US Water-Energy Nexus: Data gaps, uncertainties, and future projections", The National Academies Roundtable on Science and Technology for Sustainability, Washington, DC, June 2013.

"The Role of Biomass in Low-Carbon Automotive Transport", Society of Environmental Toxicology and Chemistry North America, Long Beach, CA, November 2012.

"Life-cycle Assessment at Lawrence Berkeley National Laboratory", Life-cycle Assessment XII, Tacoma, WA, September 2012.

"Uncertainty and Scenario Analysis in LCA of Emerging Technologies", Life-cycle Assessment XII, Tacoma, WA, September 2012.

"Life-cycle Assessment of Biofuels for Transportation: Understanding the Effects of Scale", Society of Environmental Toxicology and Chemistry Europe, Berlin, Germany, May 2012.

"Life-Cycle Water and Greenhouse Gas Implications of Alternative Fuel Production", Lawrence Berkeley National Lab, Berkeley, CA, January 2012.

“Life-Cycle Water and Greenhouse Gas Implications of Alternative Fuel Production”, Arizona State University, Tempe, AZ, January 2012.

“Sustainable Systems: The Interface Between Infrastructure and the Environment”, University of Illinois Urbana-Champaign, Urbana, IL, December 2011.

“Life-Cycle Water Impacts of Transportation Fuels”, International Society for Industrial Ecology 2011 Conference, Berkeley, CA, June 2011.

“Water Footprint of U.S. Transportation Fuels”, Webinar for the Engineers for a Sustainable World National Chapter, June 2011.

“Biofuels”, Guest lecture given four separate times for UC Extension Courses: “Energy for Sustainability”, “Transportation Sustainability”, 2009 & 2010.

PEER REVIEW
ACTIVITIES

Manuscript Reviewer for BioEnergy Research (a Springer publication)

Manuscript Reviewer for Environmental Science & Technology (an ACS publication)

Manuscript Reviewer for Environmental Research Letters (an IOP ejournal)

Manuscript Reviewer for Resources, Conservation & Recycling (an Elsevier publication)

Manuscript Reviewer for Energy Policy (an Elsevier publication)

Manuscript Reviewer for Water Resources Research (an American Geophysical Union publication)

Manuscript Reviewer for International Journal of Life Cycle Assessment (a Springer publication)

Manuscript Reviewer for 2007 ASCE Conference on Computing in Civil Engineering

HONORS AND
AWARDS

Invited to join the Balaton Group as a Donella Meadows Fellow, 2015

Carnegie Mellon University Civil & Environmental Engineering Dept. Recent Alumni Achievement Award, 2014

National Science Foundation Graduate Research Fellow, 2007

Graduated from Carnegie Mellon with University Honors and College of Engineering Honors, 2006

UC Berkeley Bears Breaking Boundaries: Energy and Environmental Innovation, 3rd Place, 2008

Carnegie Mellon Stephen Omer Lee Outstanding Engineering & Public Policy Project Award, 2007

Carnegie Mellon Tom Johnson Fellowship, 2006

Carnegie Mellon Advani Memorial Scholarship, 2006

Carnegie Mellon Andrew Carnegie Society Scholarship, 2006

Carnegie Mellon, Civil Engineering H.A. Thomas, Sr. Distinguished Service Award, 2007

PROFESSIONAL REGISTRATION, ORGANIZATIONS AND COMMITTEES	<p>Division Representative, LBNL Women Scientists & Engineers Council</p> <p>Member, Society of Environmental Toxicology and Chemistry</p> <p>Engineer-in-Training, State of Pennsylvania</p> <p>Former President, Associated General Contractors of America, UC Berkeley Chapter</p> <p>Former President, American Society of Civil Engineers, Carnegie Mellon Chapter</p> <p>Former Vice President, Chi Epsilon Society, Carnegie Mellon Chapter</p> <p>Member, Society of Women Engineers, Carnegie Mellon Chapter</p> <p>Former Co-President, UC Berkeley Civil & Environmental Engineering Grad Student Society</p> <p>Former Executive Board Member, UC Berkeley Graduate Assembly (Graduate Student Government)</p> <p>Former Grad Student Representative, UC Berkeley Academic Senate (Supreme Governing Body at Berkeley) Graduate Council</p> <p>Former Graduate Student Representative, UC Berkeley Chancellor's Advisory Committee on Sustainability</p> <p>Former President, Carnegie Mellon Engineering and Public Policy Student Advisor Committee</p> <p>Former Chair, Carnegie Mellon Civil & Environmental Engineering Student Advisory Committee</p> <p>Member, Andrew Carnegie Society Scholars</p>
TEACHING EXPERIENCE	<p>UC Berkeley Extension, USA</p> <p><i>Lecturer</i> 2011</p> <p>Course Title: Energy Use and Climate Change</p> <p>Course comprised of five three-hour meetings, including weekly homework and a large project.</p> <p><i>Lecturer</i> 2011</p> <p>Course Title: Transportation Sustainability: Life Cycle Assessment</p> <p>Course comprised of one six-hour meeting.</p> <p>Carnegie Mellon University, Pittsburgh, Pennsylvania USA</p> <p><i>Head Teaching Assistant</i> 2004-2007</p> <p>Course Title: Introduction to Civil and Environmental Engineering</p> <p>The job of a head teaching assistant includes teaching a discussion section, managing the graders, holding office hours, and leading one of three major course projects.</p> <p><i>Course Advisor</i> 2005-2006</p> <p>Course Title: Introductory/Intermediate Programming</p> <p>This course served as the introductory Java programming course in the School of Computer Science. Course advisors are required to hold office hours, grade assignments, and attend all lectures.</p>
OUTREACH	<p>Sustainability-Related Outreach</p> <p><i>Carnegie Science Center National Engineers' Week</i> 2006-2007</p> <p>Topic(s): Life-cycle assessment mapping and buoyancy demonstrations Created and managed two display booths for children K-8.</p> <p><i>SEED Educational Program</i> 2008</p> <p>Topic(s): Introduction to climate and energy</p> <p>Helped develop the curriculum for this after-school educational program aimed at teaching junior high students about energy and climate change.</p>

*7th Annual UC Berkeley Sustainability Summit***2010**

Topic(s): Campus-wide discussion about sustainability

Sat on a four-member panel including Vice Chancellor Ed Denton and Vice Provost Cathy Koshland, and answered questions about how the graduate student community is involved in campus sustainability at UC Berkeley. Video of the panel discussion can be found here: <http://sustainability.berkeley.edu/cacs/pages/summits/overview.shtml>

*Matching Grad School Choices with Environmental Career Goals***2008**

Topic(s): Panel discussion on how to choose grad schools and degree programs for students interested in sustainability

Organized and sat on this panel discussion for undergraduates interested in attending grad school in areas related to energy and the environment.

Female-Focused Engineering Outreach*Engineering Your Future***2003-2006**

Topic(s): Basic engineering concepts and demonstrations for high school girls in Pittsburgh, PA

Helped organize and led groups of girls through laboratory demonstrations for this day-long program.

*Summer Engineering Experience***2007**

Topic(s): Basic engineering concepts and demonstrations for high school girls in Pittsburgh, PA

Lectured for this two week summer program for 8th and 9th grade girls in Pittsburgh, PA.

*High School Day***2004-2007**

Topic(s): Basic engineering concepts and demonstrations for high school girls in Pittsburgh, PA

Lectured for this two week summer program for 8th and 9th grade girls in Pittsburgh, PA.