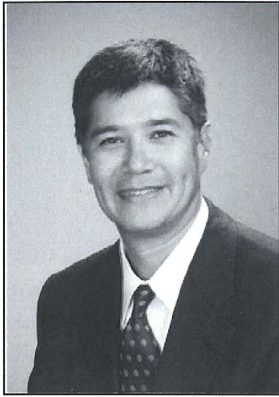


ERG Newsletter 2012

Energy & Resources Group

University of California, Berkeley

Dr. Ren Orans to Speak at ERG Commencement



Dr. Ren Orans is the managing partner and founder of Energy and Environmental Economics (E3), a consulting firm based in San Francisco. E3 has operated at the nexus of energy, environment, and economics since its inception in 1993, working with a broad range of clients that has included government agencies, utilities, regulators, power producers, energy technology companies, and investors. Through its analysis, E3 has informed debate on many of the key issues facing the electricity industry -- from market restructuring to renewable energy and climate change. In particular, E3 has played an active role evaluating policies for implementing the California Global Warming Solutions Act, AB32, and the California Solar Initiative.

Dr. Orans and E3 are generous supporters of ERG. Despite its small size, E3 currently employs more ERG graduates than any other private firm. Several ERG students have participated in E3's summer internship program. E3 also offers the Alexander E.

Farrell Fellowship, which supports one ERG PhD student each year to perform research related to energy, resource economics, and policy.

With more than 25 years of experience in the energy industry, Dr. Oran's work in utility planning is centered on the design and use of area and time specific (ATS) marginal costs for both pricing and evaluation of grid infrastructure alternatives. Using costs Dr. Orans developed, PG&E became the first electric utility in North America to use ATS costing in its ratemaking. This seminal work led to detailed area costing applications in pricing, marketing and planning for many utilities.

Dr. Orans is an expert in designing wholesale transmission tariffs and has served as an expert witness on transmission rates for Canada's three largest utilities. He provides expert advice to large utilities on retail rate design and wholesale transmission pricing. Dr. Orans has a Ph.D. in Civil Engineering from Stanford University and a B.A. in Economics from the University of California, Berkeley.



Congratulations ERG Masters Class

(Left to Right) Top: Michael Cohen, Cleo Woelfle-Erskine, Luke Dodds, Erich Huffaker Bottom: Michaelangelo Tabone, Morgan Levy, Alison Koppe, Lydia Smith, Maryam Mozafari, Rashmi Sahai, Mark Zimring. Front: Jo Seel, Naina Gupta

ERG PhD Recipients 2012



Carolina Balazs

I came to ERG certain that I would work on water management in Latin America, fulfilling my dreams of staying rooted to my family's homeland. I promised myself I'd quickly develop my research and stick to it, to finish my degree as efficiently as possible. But life and ERG has its magic, and I exchanged plans for passion. After a master's project in Brazil, drinking water contamination in California's San Joaquin Valley called to me. The fact that, as one reporter noted, "In the most prosperous state of the richest nation in the globe, there are towns with Third World problems" made me rethink my geographic focus.

My dissertation explored the distributional and procedural inequities associated with drinking water contamination in the Valley, and examined the origins of drinking water disparities. I uncovered the regional nature of an environmental injustice—that small, lower-income and more Latino communities receive worse water quality than wealthier, whiter communities, and that poorer communities face a composite burden—exposure to contaminants and challenges in compliance with the Safe Drinking Water Act.

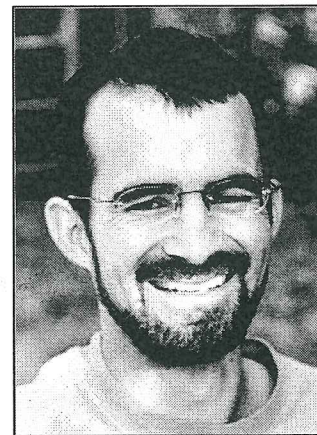
ERG was the perfect home base from which to undertake this journey. I am especially grateful to Professors Isha Ray, Rachel Morello-Frosch, Alan Hubbard, Dick Norgaard and Gene Rochlin, and to ERG friends, staff and colleagues, including the ERG Water Group. My writing buddies Kirubi, Carla and Bhavna ensured that we discuss methods and critique writing, but also rest our heads on each other's shoulders.

I am currently working as Research Scientist with the Community Water Center (CWC), supported by a Switzer Environmental Leadership Grant. Based in the Valley, CWC is a non-profit organization that uses legal, policy, research and community organizing tools to help communities gain access to safe drinking water. I am working on engineering and planning solutions, and developing long-term studies that address cumulative impacts and examine regional solutions. For this, and everything else, I thank David, my rock and love; my parents for teaching me to care about the world; my siblings, niece and nephews, Rachel and Nicola, and my entire extended family and community for the constant well of love and support.

Christian Casillas

I am very grateful for having had the opportunity to learn at ERG. In the realm of university education, ERG has been exceptional, providing the freedom to engage in meaningful work abroad, and meander among the confining structures of 'disciplines'. The continuous exchange between fieldwork in Nicaragua and campus created a space for reflection and the cultivation of new ideas.

ERG has done its work on me, providing an environment to evolve from a more mechanistic (read scientific) approach to understanding, to one that is more aware of the complexity, uncertainty, and curiosity of interconnections. I am extremely grateful to my advisor and dissertation chair, Dan Kammen, who has supported my nonlinear path, providing unwavering support and opportunities, as my interests have taken me from wind turbines to playing games with fishermen. I am very grateful for the attention, patience, and willingness of both Laura Enriquez and Isha Ray to support my desire, rather late in the game, to become more conversant in areas in the social sciences. And there is, of course, always Dick Norgaard's taciturn support, and the great care of many current and past ERG staff, notably Jane Youn, Sandra Dovali, Jane Stalhout, Bette Evans, Donna Bridges, and Kay Burns. Mathias and Guillaume Craig and Lal Marandin, cofounders of a Nicaraguan based NGO, have become close friends, collaborators, and supporters, as have many of my coworkers and community members. Of course, my experience at ERG would have been incomplete, and lonely, without the always thoughtful, diverse, inspiring, and fun group of students and friends. I'm especially thankful for the many fun adventures, good humor, and meals shared with Anand, Liz, Debbie, MK, Derek, Sintana, Lindsey, and many others.



ERG PhD Recipients 2012

Kevin Fingerman



My dissertation research has looked at both analytical and governance tools for managing the environmental and social impacts of the rapidly expanding bioenergy industry. In particular, I have drawn on Life Cycle Assessment and agro-climatic modeling to investigate the water resource impacts of biofuels and other energy technologies. In true ERGie fashion, I have researched this issue with an eye towards implementation, leading me to engage in California fuel policy formulation and to serve on the Steering Board of the Roundtable on Sustainable Biofuels – a certification system for responsible fuels.

My family and I will be moving to Rome shortly so that I can take a position with the UN Food and Agriculture Organization. I'll be working there on advising national governments – specifically Colombia and Indonesia – on designing their bioenergy expansion policies so as to avoid possible environmental and social detriment. I will return to California and to the classroom next Spring to become an Assistant Professor of Environmental Science at Humboldt State University.

I would not be who I am – personally, professionally, and intellectually – without ERG. This has been a truly formative experience for me, and it is the community of professors, staff, and most of all fellow students that makes it such a special and unique place. I am proud to call myself an ERGie.

Andrew Jones

My time at ERG, like a good book or a well-organized dissertation, has had many chapters. Once upon a time, there were the early years. I came to ERG looking for low-hanging fruit – win-win opportunities for putting both our energy and agricultural systems on a more sustainable and equitable path. With wide eyes, I soaked in new concepts and embraced the ERGie ways of holistic interdisciplinary thinking and practical solutions-oriented analysis. This was an inspired time, marked by far-reaching, late-night conversations and more coursework than is conceivably possible to ingest.

In the middle years, I tasted the biofuel fruit and found it to be bittersweet. A technology that could displace fossil fuels while reducing environmental impacts of agriculture might also drive up food prices and contribute to deforestation. With Alex Farrell and the rest of the biofuel gang, I explored fundamental issues in life-cycle assessment regarding how one accounts for market-driven land use change responses.

During the final years, I joined the climate science department at LBL where I have been using earth system models to explore in more detail the climate effects of land use change, drawing policy-relevant conclusions where appropriate based on constraints of the physical climate system. Through all of this, ERG has been there to remind me of the big picture and infuse me with that now familiar mix of impassioned curiosity and principled concern for ecological and social well-being. I knew that ERG was a special place, but I never could have anticipated just how rich and rewarding the experience of growing up intellectually in this community has been. Thanks to everyone who has made this story possible.



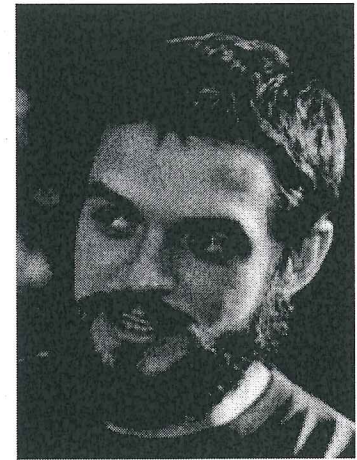
ERG PhD Recipients 2012

Fredrich Kahrl

“... the most interesting mysteries lie at the intersections of disciplines”

—Jonah Lehrer

I spent a good portion of my 6+ years here wrestling with the teleology of ERG and what I was meant to accomplish through an interdisciplinary Ph.D. At some point I gave up. ERG molded me into a radical epistemologist, a democratic scientist, a residual economist, an engineer for a better world, an academic misfit. I became comfortable being homeless in academia; I began to thrive at the intersections of disciplines. For this metamorphosis, for the ability to pry into the most interesting mysteries, I owe an existential debt to the ERG community — faculty, alumni, affiliates, and most importantly fellow students.



My ERG journey would not have been possible without the backing of my post-nuclear family, Wendy Tao and 陶睿蕾, or my nuclear family, Jim and Karen Kahrl and Christina Brody, who have always offered unconditional support even when I plainly didn't deserve it. I had the great fortune of having a wonderfully diverse and erudite dissertation committee that included Arpad Horvath (engineer), Dan Kammen (physicist), David Roland-Holst (economist), Jim Williams (physicist), and (my chair) David Zilberman (economist). Margaret Torn (scientist par excellence) and the late Alex Farrell (scholar sans frontiers) were also instrumental in shaping my thoughts and personal development over the course of my study at ERG. To all of you, and to the many others who made this journey possible, I am eternally grateful.

Amber Kerr



When I joined ERG in Fall 2003, I had a tendency to lie awake at night wondering how to use my training in plant ecology to make the world a better place. I had come to the right place: soon I was drawn into the ERG tradition of combining natural science with policy-relevant fieldwork in the developing world. I chose to merge my ecological and practical ambitions by studying agroforestry (the practice of growing trees together with crops). I wanted to know if agroforestry could help farmers in sub-Saharan Africa adapt to climate change, but I was stymied by the logistics: all the climate manipulation experiments I'd heard about involved multi-million-dollar NSF grants. An epiphany came one day in my advisor's office: “Instead of CO₂ or temperature,” she said, “why don't you try something more manageable, and manipulate rainfall?”

Thus my low-tech, high-sweat dissertation was born. I spent two years in Malawi working with the World Agroforestry Centre (ICRAF), studying how drought affects nitrogen-fixing *Gliricidia* and *Tephrosia* trees, which are used for soil fertility restoration. With local help, I designed and built thirty-six rain exclusion shelters — simple but effective, and (I hope) a template for future climate experiments in Africa. My conclusions: under drought, these trees can be vulnerable as seedlings, but when well-established can thrive and may even help protect maize (the staple crop) from disastrously low yields. As I finish my thesis, the next chapter in my life is enticingly open: Research? Teaching? Policy? Hopefully, all three.

Throughout this adventure I have been sustained by my remarkable brothers and parents; by my inspiring grandmother, whom I miss greatly; and by my wonderful husband Jeremy, for whose patience and love I am immensely lucky. I owe my academic progress to the dedicated mentorship of my dissertation chair Margaret Torn, my academic advisor John Harte, and my supervisor at ICRAF Malawi, Festus Akinnifesi. Heartfelt thanks to my fellow Harte Lab members, and to my Malawian colleagues and field assistants — *zikomo kwambiri*. To my many dear friends at ERG, I say: once an ERGie, always an ERGie!

ERG PhD Recipients 2012

Zachary Subin

Zack Subin has spent rich eight years at Berkeley and regrets to be leaving his friends, the evidently superior Left Coast culture, and the Bay Area's ubiquitous panoramic views to return to the Not-Quite-Garden State for his postdoc.

Over his extended period of debt accumulation (i.e., "graduate school") that also included a Masters in Public Policy, he has experienced the interdisciplinary nature of ERG through a series of monogamous disciplinary relationships with the social and natural sciences rather than embracing academic polyamory like many of his looser-mored peers. He completed Masters work on wind and transportation energy economics before returning to his college roots as a physicist, and has spent four years trying to force the complexities of limnology and soil biology into physics-like equations for fitting into a global climate model, hopefully learning something about Arctic terrestrial climatology along the way. He will be continuing these misguided efforts as a postdoc, working on understanding interactions of peatlands with climate.



Sintana Vergara

Dear ERG,

What an extraordinary gift you have been to me. For six years, you allowed me to explore classes, topics, and regions of the world without asking me why. You introduced me to colleagues who challenged me intellectually, more than my classes would, to professors who were generous with their time and ideas, and to dear friends; all three inspired me through their commitment to scholarship and environmental change. I feel extraordinarily privileged to have been a part of ERG's community; these years have been the most formative, challenging and beautiful of my life.



I arrived at your door as a young environmental engineer, frustrated with my discipline's narrow boundaries for environmental analysis. At ERG, I explored small-scale water treatment in Mexico, Bangladesh, and India for my master's work, and ended up diving into an under-studied area for my dissertation: the environmental benefits from alternative solid waste (trash) management. I leave now, though more aware than ever of all the things I do not know, armed with a critical eye, knowledge of and respect for social sciences, economics, engineering, natural sciences, and the importance of simple models, and still full of energy and hope to use environmental research as a vehicle for positive change.

First thanks go to you, ERG – your humble and wise students and faculty (especially Alex Farrell and Isha Ray), for excellent discussions and questions, during PhD seminar, Water Group, and in hallways and homes. I also owe thanks to my committee – Kara Nelson, Arpad Horvath, Mike O'Hare, and George Tchobanoglous – for giving me great independence to pursue the research questions that interested me most. Thanks to an inspirational group of ERG women who came before me – especially Ashley, Anne, and Malini – and to extraordinary friends, especially Josh, Lindsey, Niels, Christian, Stacy, Mariana, and Carolyn. Thanks to Pepe for these years of love and adventure. The greatest thanks of all go to my family: to my father for encouraging my pursuit of interesting questions, and for believing I could do anything; to my brother, for being a positive, brilliant force in the world and for this life-long friendship; and to my mother, my inspiration and my best friend, for her commitment to love, truth, and justice.

Though it will be impossible to find another community such as ERG, I will take your spirit – openness, inquisitiveness, rigor, activism – with me.

With love and gratitude,

Sintana

ERG Student Fellowships, Scholarships and Awards

National Science Foundation

Zoe Chafe
Michael Cohen
Luke Dodds
Mark Dyson
Jessica Goddard
Pierce Gordon
Sasha Harris-Lovett
Margareta (Gogi) Kalka
Erica Newman
Autumn Petros-Good
Jalel Sager
Daniel Sanchez
Laura Schewel
Imran Sheikh
Froylan Sifuentes
Michaelangelo Tabone
Cleo Woelfle-Erskine
Grace Wu

EPA- STAR

Peter Alstone
Joshua Apte
Erich Huffaker
Morgan Levy

UC Berkeley Fellowship

Michael Cohen
Mark Dyson
Grace Wu

UC Chancellor's Fellowship

Lindsay Holiday
Rashmi Sahai
Gordon Pierce
Daniel Sanchez

Dissertation-Year Fellowship

Deborah Cheng

Foreign Language and Area Studies Fellowship

Andrew Crane-Droesch

I-House Gateway Fellowship

Dimitry Gershenson
Ida Sognaes

Link Energy Fellowship

James Nelson

German Academic Exchange Service

Joachim Seel



David Puzey successfully campaigned for the passage of a new law to ensure protection of volunteers who are whistleblowers and victims of rape and other violence. His tireless work in memory of his sister, who was murdered in the course of her Peace Corps work in Benin in West Africa brought about The Kate Puzey Peace Corps Volunteer Protection Act.

Chang-Lin Tien Graduate Fellowship in the Environmental Sciences

Danielle Svehla Christianson

Chilean Commission for Technological and Scientific Research Scholarship and Fulbright Fellowship

Juan Pablo Carvallo

David L. Boren Fellowship

Froylan Sifuentes

Alexander E. Farrell Graduate Fellowship

Samuel Borgeson

Switzer Environmental Leadership Fellowship and UC President's Postdoctoral Fellowship

Carolina Balazs

Switzer Environmental Leadership Fellowship

Christian Casillas

Albert Newman Fellowship

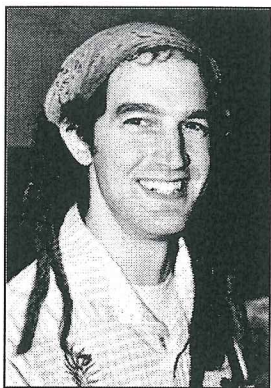
Anna Kantenbacher

Outstanding Graduate Student Instructor Award

Joseph Kantenbacher

Note: a number of the fellowships listed above are multi-year awards.

ERG Master's Degree Recipients 2012



Michael Cohen

The year was 2009. After much meandering, I had finally found a career goal I felt good about: cleaning up our electricity supply. I was working at EnerNOC, an energy management company, helping to design the software that facilitated their electrical demand response operations. I was learning, growing and contributing to something that felt important, yet I could see that demand response was only part of the solution to our energy/environmental crisis and I longed to develop strategies for the power grid as a whole. It was time for graduate school. But what kind of energy-related program would consider a software developer with a BA in psychology? What kind of program would take me seriously as an engineer while also giving me a grounding in economics, policy, climate science, and all the other systems that intimately affect our energy infrastructure? I was so relieved to discover ERG, and so grateful to be accepted!

ERG is, in fact, a place where faculty takes students seriously despite our often unconventional backgrounds. It is also a place where students take each other seriously, although our interests could not be more diverse and, in some cases, unfamiliar. We know that none of us, however bright, can fix all that is broken on our own. More practically, we recognize that we cannot fix much of anything outside of academia unless we can explain what we are discovering to non-specialists and also demonstrate respect for knowledge from other fields. In the course of my research on how best to integrate intermittent renewable energy sources into the power grid, ERG has been a great disciplinary training ground as well as a constant buffet of insight, challenge and support from my mentors and classmates with so many different perspectives. I look forward to a few more years of this wonderful smorgasbord while pursuing the PhD!

Sharada CS

I am a screwed up human being, careerwise (and otherwise!) - I am an electronics engineer by training who worked as a software engineer for a few years only to end up with a non-profit that worked on water issues which motivated me to take up research in social sciences. Yes! And there is only one place where weirdos like me get accepted - ERG!

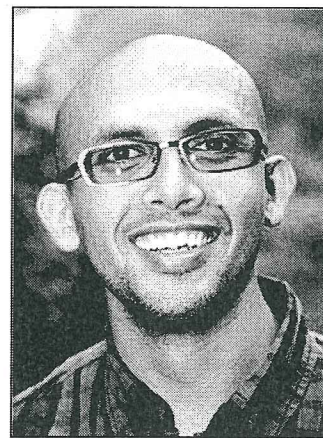
In 2008, I applied to only one school in this whole world since I wanted to work only with Isha. Yes. I just applied to ERG and nowhere else! Everything about ERG seemed right, almost perfect.

Unfortunately I had to wait one extra year to get my admission. But it is worth the wait. I am a MS/PhD student who is relieved that the MS part is almost over and excited that I can now continue with my real research. I have struggled in this country in many ways because of lack of understanding of some of the social, cultural nuances, and the new (to me) system of education. Without Isha's and Dick's help and understanding, it would have been hard for me to get accustomed to this system of education. And without the support of first years I would have never survived my second year! That is the beauty of ERG. Someone is always there for you. I have met best of the best minds here. I am glad and in a way honored to be part of a group that inspires the world and strives to make it a better place. I always think, has it been worthwhile leaving all my family and

friends back in India to come here and study? The answer to that question is, Yes!

I came to ERG keeping water and sanitation research in mind. My masters project is about understanding the challenges in assessing the bacteriological contamination in intermittent water supply systems. I looked at three approaches - GIS modeling, water quality tests, and qualitative framework.

I am continuing my PhD research at ERG and I am now in the phase of determining my exact research question. In India we have as many problems as the number of people we have. It is hard to choose "the One" among those as my research question. But it seems by end of this summer I would stop being single and get committed to a research question. I am ever thankful to Bette (my first friend at ERG), Sandra, Kay, Toby, Lee, Jane, and Donna for their continued support in helping us get through grad school!



ERG Master's Degree Recipients 2012



Luke Dodds

Luke Dodds has a far-flung international background and wide-ranging scholarly interests. After growing up in rural Galena, Illinois, his undergraduate major in international studies at American University took him around the globe as he pursued interests in culture, politics, and language.

After graduating, Luke spent nearly five years living in China and Taiwan where he studied Chinese language and history, taught English in rural elementary schools, and worked as an energy and climate researcher for a Taiwanese environmental legal defense foundation. During a year of study at Monterey Institute of International Studies he discovered his interests in energy and climate change and was encouraged to look into ERG. Since coming to ERG Luke has looked beyond technical approaches to addressing climate change, and has instead focused on social causes of the problem. He is particularly interested in the evolutionary roots of human behavior, the link between social equality and individual wellbeing, and the history of economics.

Naina Gupta

Receiving the acceptance mail from Professor Norgaard in early 2010 was one of the happiest moments of my life. When I had decided to apply for Master's studies in 2009, it was a big decision and actually coming to ERG in 2010 was an even bigger step. Excited as I was, leaving home was one of the scariest things I have ever done and doubts about having made the right choice to leave my country did bother me.

The transition was very hard at times and in fact it is still a process that is going on, but all throughout, the learning experience that I have had at ERG has made the whole process more than worth it. Every day I am more and surer of the path that I chose.

The past two years have exposed me to so much more than I had ever imagined. I came expecting to learn through courses, but I have learned as much through experience, through all that is going on around me, through seeing others and learning about what they're doing. ERG is full of bright and motivated people, at all levels in their own paths and everyone serves as an inspiration.

And the flexibility that ERG gave me to craft my own path and the environment that ERG provides of the freedom to explore has helped me broaden my horizons immensely and understand the complex world of the

environment and sustainability so much better. There is so much possibility here, that it just never ceases to amaze or excite me.

When I came to ERG, I was hoping to end up working in the environmental field because I felt I wanted to make a difference. Now, two years on, that desire is only stronger and more defined. While I still have a lot of learning to do, ERG has helped me feel certain that I can make a positive impact in the world, all the while doing something that is immensely interesting and personally fulfilling.



Erich Huffaker

It's pretty easy to have a lot of love for ERG. There's an amazing sense of community here. I love almost every single one of my classmates. It's a great place to be a self-directed individual. And it always surprises me how a group of people that is so smart can also be so fun.



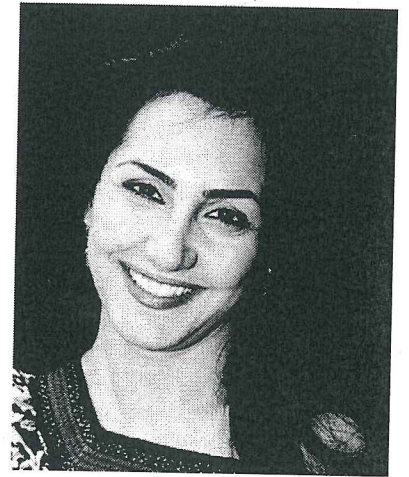
Morgan Levy

Leave it to ERG to both bless and curse you with the kind of academic freedom no other graduate program ever would, or possibly ever should, give to a graduate student! I'm honored by that freedom, and also by being given the opportunity to work alongside such an intellectually diverse and talented group of people. Every day, I'm inspired by the questions ERGies ask, and the optimism they have about our potential to truly appreciate and respect our planet and its people. I'd like to thank ERG faculty for giving me the space to truly challenge myself -- academically and personally, and ERG students for being unconditionally helpful, motivated, and inspiring. Cheers to another few years in good ERG company!

Maryam Mozafari

For me Berkeley was a dream come true and ERG was even beyond dreaming! I came to ERG with a passion to change the world. To make it a better place and to do so I had brought along my mechanical engineering skills and a corporate (oil & gas) view of the world, which soon I would find absolutely useless! I should admit it took me a while to even learn to pronounce the word "inter-disciplinary" let alone getting a firm grasp of what it really meant!

It was at ERG that I learned how to combine science, technology, psychology, policy, politics and even art to craft a better solution to the complex problems of the world. ERG, its extraordinary talented people and unique culture makes you believe that knowledge, wisdom and passion can in fact change the world to a better place. Over the past two years at ERG, I drove an electric car, installed solar panels, manipulated the California electricity grid! (thanks to Severin Borenstiens' grid game), cleaned the fridge wearing a hat with wind turbines and solar panels mounted on it, watched a hummingbird nesting for the first time and fought a big ugly coal power plant.



At ERG I met the loveliest spherical cow whom I instantly fell in love with and cried upon leaving (thanks to John and his amazing speech on the last day of ER102). When I look back at how much I've learned during the past two years I feel I've been here for a good decade of my life! So once again thanks to all ERGies (faculty, staff & students) for being such an amazing group of people who never fail to guide, support or simply cheer you up. Thanks to Bette and Bessma for giving me the first ERGie smiles and thanks to Christa and Rebekah for their never ending kindness! And to my amazing cohort! You guys rock! And a big thanks to my parents for EVERYTHING in my life. For all of this I'm immensely and forever grateful.



Volunteers from ERG installed solar panels for low-income families in Richmond, CA



ERGies hiking at Point Reyes, California

Rashmi Sahai

While majoring in environmental science as an undergraduate at UCLA, I became frustrated and discouraged by the many environmental problems our world faces today. After two years working in environmental consulting, and still feeling like I was not making a positive impact, I was drawn to ERG because it was one of the few programs that focused on interdisciplinary solutions to global challenges.

These past two years at ERG have been a whirlwind of learning, with the program's unique curriculum allowing me to tailor my degree to match my exact interests. The problem was that I had too many interests! After exploration of many different topic areas, from photovoltaic materials to biomimicry, I focused my masters project on the area I had originally intended to address at ERG, the water-energy nexus. My project explored the feasibility of using greywater for residential evaporative cooling.



Much of my positive experience at ERG can be attributed to my fellow ERG students, especially my cohort. They have been my competitors, collaborators, and my best friends here at Berkeley. They have been the ones to set the bar of excellence high and encouraged me to reach for it. As I wrap up my masters degree, I am sad to leave the ERG community but excited to start applying the valuable tools and knowledge I have gained towards real-world sustainable solutions.



Joachim Seel

My years at ERG were wonderful and I want to take this opportunity to thank everybody who enriched it. ERG is such a great and diverse collection of people: we are engaged in very different fields, passionate about the various aspects of "Energy and Resources" and yet we all come together at the end of the day in our firm belief to stand up for the environment and a healthy world. From the first canoe-trip on the Russian River to the ERG Halloween parties I had a great time with you and felt truly at home. I wish you all the best for your respective paths, and hope to stay in touch with many of you.

Emma Shepherdson

I found out that I had been accepted into ERG around the same time I found out I was also pregnant with my first child. Both findings have led me on a big adventure, with one dragging out the other a little longer than I might have liked, but at least it has given me the luxury of getting to know even more of the impressive ERG community than I would have from just two years here.

Being a graduate student and a parent has been quite a challenge and definitely a different experience from my first go through grad school as a structural engineering student ten years ago. It hasn't been quite as easy to immerse myself with all the great talks going on or to stay up late discussing the many wonderful ideas ERGies love to toss around. I must admit that has sometimes been frustrating. Yet, what struck me right away when arriving at ERG was the camaraderie and diversity - I was on my own trajectory but so was everybody else. Never have I seen a set of students so engaged with their department and contributing so essentially to life on campus and beyond. It's been an empowering experience.



I was looking to ERG to mark an inflection point in my life, helping me to leave an engineering career behind me and seek out greener pastures. Life cycle analysis, modeling, GIS, collaborative planning and negotiation, energy markets, climate policy - these are just a smattering of the many things I learned at ERG. Even more valuable than the collection of great skills is the memory of so many phenomenal people that I will take away. I'm grateful to have been a part of this amazing community and take comfort in the knowledge that although I am at last graduating (yeehah!), I am joining an even more impressive alumni mafia.



Lydia Smith

Ten years ago, I studied art with a love of the sciences. Now, I study science with a love of the arts. Before I came to ERG, I was a painter, printmaker, and sculptor, working at the intersection of form and culture. Here, I study ecology, climate change, and arctic soils. I never would have guessed I'd find my way to a graduate program in the sciences, but now I see how well my two paths fit together. Both art and science are about finding new modes of seeing, about understanding and interpreting. I came to ERG to see ecosystems in a different way, with the goal of helping protecting them. What I found was a community with complementary goals and a curriculum that does not merely allow for my breadth of interests, but actively values it.

I can't express how fortunate I feel to have found my way to ERG, to be surrounded by such diversity of interests and humbling intelligence. It's a rare thing to feel both so challenged and supported, and sometimes I can't believe I get to spend my days learning about anything I want. The mentorship I have found here has been truly outstanding and has helped me grow immensely over the past two years. I have turned a broad interest in ecology into a defined fascination with soils, and look forward to long days in the Alaskan Arctic this summer, studying soil microorganisms and carbon turnover. Thank you to everyone in the ERG community: the staff, the faculty, and especially the students! I wouldn't be here without you.

Congratulations ERG Undergraduate Minors

Sruti Bharat, Tiffany Chang, Katya Cherukumilli, Kelley Doyle, Jared Dozal, Alex Fung, Zhongxiang Gao, Jesson Go, Katherine He, Kevin Hwa, Jin U Jeong, Kimberly Lam, Dominic Molinari, Zachary Schmidt, Mo Zhou, Sophia Zug

ERG Master's Degree Recipients 2012



Michaelangelo Tabone

I had to work up a lot of courage before coming to ERG, and I'm still not sure that I am up to its challenge. ERG students must navigate multiple disciplines, each with decades or centuries of history; we must choose where we fit into this disciplinary web, and become authoritative in our territory; we must be passionate about our research and consistently defend its importance; and we each must support and challenge the entire ERG community to make novel research that is communicable and applicable to everyone and everything that it affects. It has been a daunting task. However, with the support of my faculty, friends, and classmates I have made it this far and am confident that the results will be well worth the effort.

My Masters' project assesses the impacts that intermittent solar power may have on the power system. As I continue on to a PhD in ERG, I hope to not only discuss the technical challenges and benefits of renewable energy, but also to understand the social and political impacts of visible commitments to the environment. While at ERG I not only learned about renewable energy, through my classmates and teachers I also learned about the intricacies of water in California, the many varied implications of altering ecosystems, the difficulties of assessing the benefits of aid to developing nations, and many other ways that humans affect each other and the environment.

However, what pleases me most about ERG is not what I have learned; it is that I took part in a community that was capable of teaching it to one another. Our community is both challenging and supportive at the same time. We hold each other to extremely high standards and we speak our minds, but we do so as true friends. It is through our camaraderie more than through our classes that we learn to communicate across disciplines and that our research becomes more insightful and useful than it could have been otherwise.

Cleo Woelfle-Erskine

I came to ERG with a desire to study hydrological and cultural aspects of household water use and infrastructure, in particular rainwater harvesting and ecosan strategies. My Masters work at ERG took me on a detour through urban water supply in India, where conversations with people who receive water only every 5 days about their complex hybrid water systems stretched my ideas about human-water coevolution. As I begin my PhD work in California, I will continue exploring the human-water interface through the lens of community science, using methods from fields I've encountered since coming to ERG: science and technology studies, fisheries ecology, discourse analysis, and qualitative social science. I would like to thank my collaborators and mentors who have helped me down this river: Isha Ray, Kara Nelson, everyone on the Hubli team, ERG Water Group, the grad student Watershed Governance Conversation group, Kimberly Tallbear, my partner July Oskar Cole, and my queer family in the Water Underground.



Mark Zimring

I came to Berkeley straight from a decade long debacle as a Wall Street bond trader. Searching for more meaningful pursuits, I saw the university and its unique community of scholarship, engagement and activism as my ticket to gaining a better grasp of how we got ourselves into such a big mess and how we're going to get ourselves out. While I started out at the Goldman School of Public Policy, I found an intellectual home in ERG—and ERG's powers at be made a rare error in granting me admission as one of the inaugural ERG/MPP dual degree candidates.

I feel honored to have been part of such an incredible program—a program whose faculty, staff and students humbled me, challenged me and never ceased to impress me with their good looks. More than any skill I learned, being around such diverse, passionate and dedicated people working so hard on such deep problems gave me the most important thing in these dark days—hope—and for that I am deeply grateful.

Energy and Resources Group Faculty



Maggie Witt at Mono Lake, CA

Duncan Callaway is an assistant professor in ERG. He teaches courses in electric power systems ("the grid") and energy efficiency in buildings. This year he also led a reading seminar titled *Energy Analysis Classics* in which he and a brilliant handful of students read and discussed some seminal books and papers analyzing global trends and impacts of energy production and consumption, mostly from the '70s.

One of the highlights of his year was a dinner at John Harte's house, when he found himself sitting between Art Rosenfeld and Robert Socolow (two of the most influential authors from those '70s papers), getting the inside scoop on the genesis of the ideas from that era. Duncan also published a few of his own research papers this year, mostly focusing on electric vehicles on the grid and demand response in buildings, and he strengthened collaborations with faculty in the College of Engineering and Lawrence Berkeley National Lab, where he holds informal appointments.

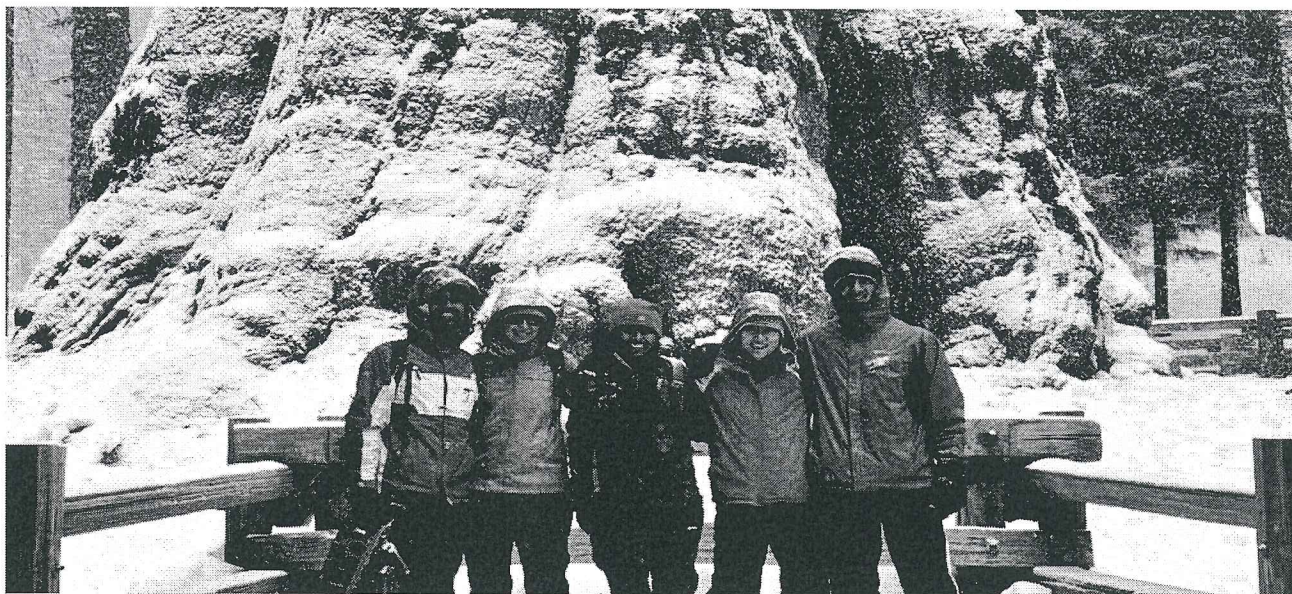
Daniel Farber has now completed his fourth year of service as ERG's chair. In the Fall, he taught a course on Climate Change and the Law. His recent publications have focused on climate change (including papers on climate justice, equity and cap-and-trade systems, and climate adaptation) and catastrophic risks (including papers on risk assessment in the context of the Fukushima disaster and on the societal and ecological impacts of the BP oil spill).

At the law school, he is the faculty co-director of the Center for Law, Energy and Environment, which recently received a \$1 million gift to help support an institute center on water law and policy. In terms of public service, he organized an amicus brief in defense of California's Low Carbon Fuel Standard and am serving as a contributing author on the IPCC's 5th assessment.



ERGies' big Bollywood number at the annual talent show

Energy and Resources Group Faculty



ERGies snowshoeing in the Sequoias

John Harte's new book advancing a unified and tested theory of the abundance, distribution, and energetics of species (*Maximum Entropy and Ecology*; Oxford U.Press) was published in August, and his Fall semester graduate course taught it and rival theories. Invited to Japan for a lecture tour on both ecological theory and climate-ecosystem interactions in March, he also began a collaboration with Japanese ecologists studying land use change and biodiversity.

He departs shortly after graduation for his 36th summer of ecological field research at the Rocky Mountain Biological Laboratory. He is also the scientific advisor to a NYC ballet production that will portray global environmental problems through the lens of Aesop's fables.

Dan Kammen was on leave during Spring 2011, when he would normally have taught a masters dissertation seminar in science and public policy (Pub Pol 205), and his combined graduate and undergraduate course on energy systems, "Energy and Society" (En Res 100, 200, and Public Policy 184 and 284). During Spring 2012 Dan again offered Pub Pol 205 and a special doctoral seminar with Professor George Lakoff (Linguistics)

on "Systemic Action and the Individual" (En Res 290). While on leave, he served as the inaugural Chief Technical Specialist for Renewable Energy and Energy Efficiency for the World Bank Group.

At ERG, he has been developing high-resolution models of regional electricity grid systems, working on low-carbon and island energy sustainability. His public service includes work for the US State Department on clean energy partnerships in the Americas, for the UN Secretary General on the Sustainable Energy for All task force.

Catherine Koshland continued service to the campus as Vice-Provost for teaching, learning, academic planning and facilities. Major projects underway are partnering with LBNL on the Richmond Field Station campus; working on how best to leverage and integrate technology into teaching and courses; sponsoring the implementation of OE initiatives in advising and in the various technology developments to support student services; reconceptualizing support for faculty development around teaching and learning, and the undergraduate experience; and continued work on planning and implementing various facilities projects from Campbell Hall to Lower Sproul. Her research

group has completed proof of principle work for a low-cost easily regenerated sensor for measuring mercury concentrations in air that could be deployed in support of a global mercury monitoring network. The group will continue to develop the design of the sensor over the next year. Other research is focused on ways to assess how differences in the built environment affect air quality and health through a study in several neighborhoods in Xi'an, China.

Richard Norgaard teaches the courses titled: *Ecological Economics in Historical Context* and *Energy Economics*, leads the teaching of ERG's course on Interdisciplinarity, and co-teaches with a theologian from the Graduate Theological Union a course titled *Religion, Science, and the Ecological Crisis*. He serves on the Intergovernmental Panel on Climate Change and chairs the Delta Independent Science Board of the State of California. He also serves on the Board of Directors of the New Economics Institute, an effort to build broad support for a sustainable, equitable economy. He continues to work with PhD students at the Graduate Theological Union who are addressing the moral issues of ecological change and the global economy. Oxford University Press published the *Oxford Handbook on Society and Climate Change* this past fall that he co-edited with two political scientists.

Isha Ray taught courses on Social Science Research Methods, Water and Development, and Environmental Classics in the past year. She and her students have been working on access to safe drinking water in the economically disadvantaged regions of peri-urban India, rural Mexico, rural Tanzania and California's San Joaquin Valley. She has been elected President of the Association of Academic Women for the coming year.

Gene Rochlin has been retired for several years, but has been helping to run the ERG PhD seminar and to advise the occasional student in both ERG and Transportation Studies. He has also been participating in faculty seminars on complexity and organizational change, and in the continuing evolution of the international study group on reliable organizations and system safety.

Margaret Torn teaches Quantitative Analysis of Global Environmental Problems and leads seminars on climate change impacts and adaptation, sustainable food systems, and other topics in biogeochemistry. She also co-heads the Climate and Carbon Sciences Program at Lawrence Berkeley Laboratory, studying climate change and terrestrial ecosystems with field experiments and earth system models running on super computers. In the past year, she started a large field project on ecosystem feedbacks to

climate change in Alaska and published papers in *Nature* (*The persistence of soil organic matter as an ecosystem property*) and *Science* (*The technology path to deep greenhouse gas reductions*).



Margaret Torn conducting research on the Alaskan Tundra

ERG Alumni News

Sam Arons (MS 2007) recently switched over from Google's internal sustainability team to Google's datacenter energy team, focusing on procuring renewable energy for operations. He was married last August and continues to live in San Francisco.

Eric Cutter (MS 2001) continues to work as an energy consultant for Energy and Environmental Economics in San Francisco, with fellow ERGies Jim Williams, Fritz Kahl and Jamil Farbes. Eric is working on energy storage and load based solutions for integrating renewable and high penetration distributed generation. Current projects include working with UCSD and Viridity to use campus resources to support grid operations and working with EPRI and utilities to value energy storage (no it's not cost-effective yet). Kathleen and Eric still live in San Anselmo, having survived a year-long remodel and Kathleen's is still sticking people with needles to help them feel better. Daegan just turned 7 and Anya is almost 10. We're looking forward to our family river trip on the Green River in Utah since Anya was 'ahem' conceived on the Rouge River oh so many years ago.



ERG solar panel installation in Richmond, CA

Karen Plaut Berger (MS 1995) is now a full-time Lecturer in Earth and Environmental Sciences and Coordinator of College Sustainability Studies at the University of Rochester in Rochester, New York. She balances this work with ongoing community activism on environmental issues and shuttling her children, Henry (9) and Marlena (7) to their many activities. She and her family are planning to spend the 2013-14 academic year in Germany and would love to connect with any ERGies in Europe.

Jason Burwen (MA 2011) I've spent the last year at FSC Group, a consultancy that works with several utilities including PG&E, SCE, and SDG&E, where I work primarily on demand response and EV charging issues, and renewables integration. I'm becoming a ninja at modeling electricity demand from smart meter interval data. Get in touch if you want to talk data!

Rafael Friedmann (PhD 1996) Rafael Friedmann (PhD 1996), continues to work as an Expert Strategic Analyst for PG&E's Customer Energy Services Evaluation team. He will be Co-Leader of Panel 2 at the upcoming ACEEE Summer Study Conference. In the past year, he has led research on industrial and agricultural customers' energy efficiency options and markets. He has written extensively on energy efficiency evaluation policy, frameworks and practices. He has consulted on energy efficiency and renewable energy implementation and evaluation in Chile, Canada and China.

Matthias Fripp (PhD 2008) and Kamal Kapadia (PhD 2008) had a son - Jehan Kapadia Fripp - in January 2011. He's doing great and starting to learn the meaning of some words and how to turn off light switches. We're now finishing up post-doc positions in Oxford and moving to Honolulu on May 15. I'll be starting as an assistant professor of electrical engineering in June, and Kamal will begin retraining to work as a secondary school teacher.

Rebecca Ghanadan (PhD 2008), along with Jim Williams and Margaret Torn, published an important paper in Science laying out technology paths to 2050: [The Technology Path to Deep Greenhouse Gas Emissions Cuts by 2050: The Pivotal Role of Electricity.](#)

Brent Haddad (PhD 1996) has been appointed Associate Dean of Engineering for Technology Management at UC Santa Cruz. He will maintain his professorial appointment in Environmental Studies while also taking on these School of Engineering duties. He will build a Technology Management program leading to establishment of a department, lead the campus's growing entrepreneurship programs and curriculum, and lay the groundwork for a school of management. A major theme in all of these activities will be sustainability, where a new faculty search will take place very soon. His son Bert, who was born within two weeks of Brent's QE back in '94, just turned 18 and will attend UC San Diego this fall.

Karen Herter (PhD 2006) recently completed a study for SMUD and the CEC showing that residential customers reduce electricity use in response to time-varying rates and real-time energy information.

Taylor Keep (MS 2011) While crafting a Masters thesis at ERG, I was also building a small architecture and engineering firm called VITAL environments. A year later, my life is strangely similar. I still have the privilege of working with Duncan and Froy on demand response control strategies for HVAC systems, and VITAL is alive and well though still in the "building" phase. Catherine and I have moved to a new home in West Oakland and continue to be infatuated with this place. We're growing to love the front porch culture, and I've been able to put my ERG background to good use in local meetings about the West Oakland Specific Development Plan and discussions about port redevelopment. We hope to leverage the ERG community as we seek the good of our home in a time of dramatic environmental and economic change.



ERG Open Classroom during Occupy Berkeley in November 2011

Patrick Gonzalez (PhD 1997) is now in his second year as the National Park Service Climate Change Scientist, where he leads climate change research efforts in U.S. national parks. In addition, Patrick is serving as an author on two Intergovernmental Panel on Climate Change (IPCC) reports for 2013: Lead author - 2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands; Contributing Author - 2013 IPCC Fifth Assessment Report: Impacts, Adaptation, and Vulnerability. Patrick is also a lead author on the 2013 U.S. National Climate Assessment. Finally, in 2011, the National Academy of Sciences invited Patrick to speak in Bogor, Indonesia at the Kavli Frontiers of Science symposium.

Jon Kommeys (PhD 1990) latest book, *Cold Cash, Cool Climate: Science-based Advice for Ecological Entrepreneurs*, came out on February 15, 2012 (<http://www.analyticspress.com/>). He's also exploring the implications of the six-plus-decades-long trend in the energy efficiency of computing (doubling every 1.5 years, as shown in an article in the *IEEE Annals of the History of Computing* in 2011) by documenting the most interesting recent technological and business innovations that rely on that trend. If you have ideas for cool companies or cutting-edge research labs doing work in this area, please contact Jon at <http://www.koomey.com>.

Chris Marnay (PhD 1993) Following a Division reorganization, Chris is now the Deputy Leader of a newly formed research team, the Grid Integration Group. These new entity will be focusing on analyzing and deploying microgrids, demand response, and related technologies. The wider group that we now belong to also conducts more fundamental research on batteries, fuel cells, combustion, and related energy technologies. Visit our web site, microgrid.lbl.gov, to see recent work.

Nicholas Martin (MS 1999) continues to serve as chief technical officer of the American Carbon Registry (ACR), where he is in charge of carbon offset protocols for a broad range of sectors. Nick has been making a lot of trips

back to California of late, as ACR is closely engaged with the California Air Resources Board in supporting the development of offsets within the California cap-and-trade GHG market. ACR has just opened a Sacramento office and will shortly begin listing compliance offset projects as a California offset project registry. Nick lives in Saint Paul, Minnesota with his wife Rachel and kids Frances (7) and Earl (5).

Lisa Micheli (PhD 2000) is sinking in to her relatively new position as Executive Director of the Pepperwood Foundation of Sonoma County. Based at the 3200-acre Pepperwood Preserve in the Mayacamas Mountains, the Foundation opened the new Dwight Center for Conservation Science in 2010 and since has received over 10,000 visitors engaged in environmental education and applied conservation science programs on-site. Lisa is enjoying her role as co-chair of the Terrestrial Biodiversity Climate Change Collaborative (TBC3) research team focused on generating applied science products for Bay Area water and conservation land managers faced with the challenge of climate adaptation.'

Michael Simpson (MS '79) recently became Chair of the CSC STEM Council. The Council is dedicated to enhance public awareness and students' and workers' capabilities in Science Technology Engineering and Mathematics. CSC (csc.com) is a global leader in providing technology enabled business solutions and services. CSC also is a Gold Sponsor of STEMconnector (stemconnector.org), the one-stop shop for STEM education. Millions of jobs in the US are unfilled because of a shortage of people with appropriate STEM capabilities. The demand is great for enhanced connectivity among people and entities improving the STEM-skilled workforce and STEM-using public. Dr. Simpson is working in this nexus and always invites communication and collaboration to promote STEM education, training, and appreciation. (Dr. Simpson also is a CSC Fellow and Senior Principal Leader).



ERGies on a hike

Lana Skrtic (M.S. 2006) After several years in the public sector, I am now in the beginning stages of running my own native and edible gardening business, *Make Like A Tree*. Think of me if you have any landscaping needs, and also help me spread the word! www.make-like-a-tree.com

Anna Sommer (MA 2010) After graduating in May 2010, Anna moved to Vermont and started a consulting company, Sommer Energy LLC, that works on behalf of consumer and environmental clients to assess the

economics of constructing new coal plants and retiring existing facilities. Her recent work includes an evaluation of the imprudence and gross mismanagement that occurred in the construction of the Edwardsport coal gasification plant in Indiana. In August 2012, she and her soon-to-be husband will be relocating to Grand Canyon National Park.

David J. Stoldt (MS 1982), a civil engineer and infrastructure financing consultant, accepted a position as General Manager of the Monterey Peninsula Water Management District in Fall 2011. David spent 29 years in the private sector as a consultant to a number of

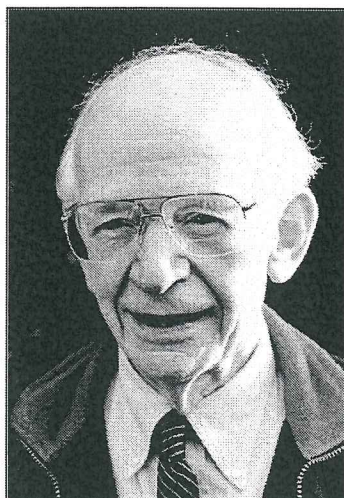
water agencies, was the lead investment banker for the public-private Pebble Beach Reclamation Project, served as senior management of a number of start-up companies, and was an officer in a leading Wall Street firm.

Jim Williams (PhD 1994), Margaret Torn (PhD 1994, Adjunct ERG Professor), and Rebecca Ghanadan (PhD 2008) recently published an important article in Science Magazine laying out technology paths to 2050: [The Technology Path to Deep Greenhouse Gas Emissions Cuts by 2050: The Pivotal Role of Electricity.](#)



ERG Class of 2005 Reunion

In Memoriam



Ned Birdsall

Charles K. (Ned) Birdsall, Professor Emeritus at the University of California, Berkeley, died March 6, 2012. He was 86.

Ned was one of the principal founders of the Energy and Resources Graduate Group. His energetic efforts to establish an interdisciplinary group were described by former ERG faculty member John Holdren, now an advisor to President Obama: "Ned was at once the catalyst, the nucleus, and the principal architect of UC Berkeley's unprecedented, campus-wide, interdisciplinary graduate-degree program in energy and resources, which remains to this day an unequalled exemplar of rigorous graduate training combining scientific, engineering, and social-science perspectives in the study of problems at the intersection of energy, environmental resources, and human well-being. He was cheerfully and relentlessly effective in pursuing this idea, all but camping out in the offices of the relevant University administrators when there was the slightest sign of foot-dragging.

"Ned was incredibly nurturing and productive mentor of PhD students and post-docs in that field, as well as an interdisciplinary visionary and innovator par excellence. He was also the warmest, most good natured, most loyal friend one could have."

Among numerous awards, Ned was selected as the inaugural recipient for the IEEE Marie Sklodowska-Curie Award in 2011. Ned was awarded the Berkeley Citation in 1991. Outside his professional life, Ned was known for his love of hiking, skiing and long-distance running.

Born in 1925 in Manhattan, Ned graduated from the University of Michigan with bachelor's and master's degrees in electrical engineering, and received his PhD in electrical engineering from Stanford University in 1951. In 1959 Ned joined the Electrical Engineering Department at UC Berkeley. In addition to his work in establishing ERG at UC Berkeley, Ned initiated the Plasma Theory and Simulation Group, where his contributions to plasma science have made lasting impacts on communications and other technologies.

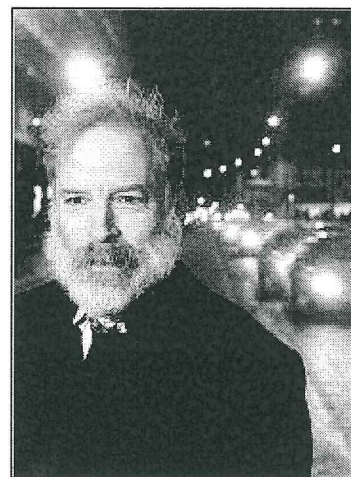
Lee Schipper

Dr. Leon J. (Lee) Schipper, international physicist, researcher, and musician, inspired and shaped the thinking of a generation of students and professionals. He was widely recognized for enriching policy dialogue with his passion for data and willingness to challenge conventional wisdom. He died August 14, 2012 in Berkeley of pancreatic cancer. He was 64.

Lee held a bachelor's degree in music and a Ph.D. in astrophysics, both from Berkeley, but he specialized in energy efficiency and transportation energy. Lee gained prominence early in his career for a paper published in *Science* in 1976 showing how Sweden, an affluent country, had an energy intensity far lower than that of the U.S. By the mid-1970s he was one of the most highly regarded energy analysts in the U.S. He created an important tradition of understanding energy usage by studying it from the bottom up, by the end user.

He joined the Energy and Resources Group in 1973 where he conducted in-depth international comparative studies of energy use and energy efficiency. In 2002 he co-founded EMBARQ, the World Resources Institute's center for sustainable transport, and his studies of transport energy are among the most quoted references in the field. He was often a critic of the conventional wisdom. For example, in his view the 2009 "cash for clunkers" program, which offered rebates to people who bought a new car that got better mileage than their old one, did little to save energy. In many cases, he found, buyers were using the rebate money to buy a bigger, more high-powered car than they would have otherwise. "The effect is the inverse of what we were hoping for," he said.

Lee was a passionate teacher, mentor, and lecturer. He spoke many languages fluently, and his friends remember many instances in which he would be conversing in his office in one language, emailing a colleague in another, and answering a phone call in a third. He was also an accomplished musician, performing jazz vibraphone around the world. Ronald Gold, who worked with Lee at LBNL, said, "Lee was always a font of new ideas and offered different ways of looking at otherwise conventional issues. His enthusiasm and good humor was infectious. He made an indelible impression on all of us."



A Farewell Note from the Chair

It's hard to believe that I'm now near the end of my fourth and final year as chair of ERG. The biggest development during that time, of course, has been the decision to affiliate with the College of Natural Resources. That was a big change, and it was one that wasn't taken lightly. There were many meetings during the process with many different groups and individuals -- campus administrators, ERG faculty, affiliates, staff, and students. But the transition has been successful, and we are already seeing benefits from CNR's administrative resources and the support of CNR Dean Keith Gillless.

That hasn't been the only change at ERG, of course. During the transition to CNR, valued long-term staff moved elsewhere in the university or retired. Our new staff members are off to a terrific start but don't yet have the depth of experience that we lost. In terms of faculty, we hired Duncan Callaway; we have just begun a search for a new joint position with LBNL; and we received preauthorization for another faculty search next fall. We've improved support for graduate students with the Farrell fellowship and the new Birdsall fund for student research. And we've added concurrent degree programs with the Goldman School of Public Policy and with the Law School.

Administering any organization involves a lot of routine and a vast amount of paperwork. But what I will remember most about chairing ERG is not that, or even the changes here. Rather, it is the opportunity that I had to work closely with, and to learn from, ERG's faculty and students over these four years. It has been an enriching experience. Where else could I have found such a talented, diverse, and dedicated group spanning so many different disciplines?

- Dr. Daniel Farber, Chair, Energy and Resources Group

The Charles K. (Ned) Birdsall Endowed Graduate Research Support Fund has been established by Ned's family in memory of his commitment to ERG as one of its major founders. The fund will enable ERG students to travel for conferences and research. All additional gifts to the fund will qualify for a matching opportunity during the current Campaign for Berkeley, which ends in 2013.

The Schipper Family and EMBARQ are spearheading the creation of The Lee Schipper Memorial Scholarship, which will target sustaining the momentum of Lee's contribution to the enrichment of the international policy dialogue in the fields of energy efficiency and sustainable transportation. Anecdotes, photos, and tributes can be found at <http://www.lee-schipper.org/>.

