

2015 Annual Report



About CEERT

The Center for Energy Efficiency and Renewable Technologies (CEERT) is a partnership of major environmental groups and clean-energy companies. Since our founding in 1990, we have designed and fought for policies that advance clean, renewable energy and climate solutions for California and the West.

CEERT's team of professional staff, active board members, expert consultants, and clean-technology and environmental affiliates carry out our work through a set of focused advocacy programs. We act as participants and intervenors before all the major governmental energy, climate, and air-quality agencies.

CEERT is pressing for the necessary changes in grid operations, renewable procurement, and climate policies that will enable California to reach its groundbreaking new energy and greenhouse-gas reduction goals, and put the entire Western region on the path to a low-carbon electric system and a clean-energy future.



Current CEERT Board Chair Jonathan Weisgall and Board Vice Chair Ralph Cavanagh





From the Executive Director

2015 was a watershed year in California's clean energy revolution. The year began with Governor Brown's inaugural address calling for bold new targets for renewables and clean energy, which led in September to the signing into law of Senate Bill 350 by Senator Kevin de León. Senator de León's landmark legislation put California on a path to achieve deep reductions in greenhouse-gas emissions and accelerate the transition to a low-carbon energy system, with 50% renewables on the electric grid by 2030 and an expansion of energy efficiency in buildings and end uses. The year culminated with Governor Brown, Senator de León, and other legislators joining world leaders at the Paris Climate Conference, which resulted in the first significant international agreement on climate change in two decades.

CEERT's leadership in shepherding the National Renewable Energy Laboratory's pathbreaking 2030 Low Carbon Grid Study through two detailed phases and independent peer review laid the foundation and created the analytical support for the Governor and the Legislature to pass SB 350 and take crucial next steps on the path to decarbonizing the California economy.

In addition to setting ambitious new renewables, efficiency, and climate targets, SB 350 directed the California Public Utilities Commission, the California Energy Commission, and the California Independent System Operator to initiate long-overdue measures that CEERT has been advocating to integrate longterm energy procurement with greenhouse-gas reduction targets, and to base future transmission and procurement planning on achieving both renewable-energy and GHG-reduction goals.

SB 350 also set the stage for an even more dramatic and important step forward by directing the California Independent System Operator to carry out necessary studies and technical analyses on the costs and benefits to the state of integrating our electric grid with the rest of the Western Interconnection. We expect these studies to be completed in late 2016, along with an examination of how an expanded, integrated Western grid would be governed. Decarbonizing the Western Interconnection is critical to meeting climate goals, and unifying currently balkanized and unnecessarily expensive grid operations would lower costs, increase efficiency, and accelerate renewable development and greenhouse-gas reductions.

CEERT looks forward to helping realize the promise of these crucial, pioneering laws and policies. We are on the right path to make extraordinary progress in the coming years, if we get the details right and are able to reform our regulatory programs and institutions to achieve success.

V John White Executive Director

Major Accomplishments

In 2015, CEERT:

- Sponsored and staffed Phase II of the California 2030 Low-Carbon Grid Study, which affirmed that the state could cut greenhouse gas (GHG) emissions from its electricity sector in half by 2030 with minimal rate impact and no compromise of grid reliability.
- Pressed for early engagement with policymakers to educate them about the value of electric-system coordination in the Western region, and developed approaches for outreach on regional grid integration issues to crucial stakeholders such as organized labor, consumer advocacy groups, and the environmental justice community.
- Urged the California Public Utilities Commission (CPUC) to consider additional high-priority issues in its new Renewable Portfolio Standard proceeding, and to place particular emphasis on starting a 2030 low-carbon planning process immediately and on integrating renewable resources into the Long-Term Procurement Planning rulemaking.
- With allied groups, challenged both the CPUC Energy Division's approval of Southern California Edison (SCE) and San Diego Gas and Electric (SDG&E) procurement plans for meeting their Local Capacity Requirement (LCR) needs, and SDG&E's LCR plans for not following an earlier CPUC directive to issue a Request for Offers that would include clean-energy resources as well as gas-fired generation.
- Won agreement from senior California Air Resources Board (CARB) staff on the state likely needing more than 50% renewable energy by 2030, and on fundamental changes to grid operations that will be necessary to achieve a 40% GHG-reduction goal by 2030.
- Worked closely with CARB on strengthening measurement and monitoring of methane hot spots, updating lifecycle emission estimates for imported natural gas, and reassessing methane's role as a precursor to the formation of photochemical ozone.
- Participated in a joint CPUC/California Energy Commission launch of the Renewable Energy Transmission Initiative 2.0, which builds on work that CEERT undertook several years ago; RETI 2.0 will be the first process to examine transmission system needs in light of the combined requirements of the state's new 50%-renewables and GHG-reduction targets for 2030.
- With the Latino Environmental Advancement Project and Environment California, co-hosted "Unlocking Renewables: A Valley Summit" at Fresno State University on the San Joaquin Valley's potential to become a clean-energy region.
- Continued our efforts to break the logjam on geothermal and solar development in the Salton Sea region of Imperial and Riverside counties.



CEERT Programs / Table of Contents

- **3** From the Executive Director
- 4 The Year's Major Accomplishments
- 6 Building the Low-Carbon Grid
- 7 Staffing the 2030 Low-Carbon Grid Study
- 8 Expanding the Use of Renewable Energy
- 9 Advancing California's Groundbreaking Climate Policies
- 10 Advocating for Transmission Expansions, Bulk Storage, and Demand Response
- **11** Promoting Clean Energy in Southern California and the Central Valley
- **12** Accelerating Clean Transportation
- 13 Western Grid Group
- 14 Clean Power Champions Event
- **15** Financial Statements
- 16 Board, Affiliates, and Staff
- **17** Funders and Donors





Mark Ferron, member of the CAISO Board of Governors and former CPUC Commissioner, speaks at CEERT's 2015 Board Retreat



Building the Low-Carbon Grid

In our work to foster a low-carbon grid throughout the Western Interconnection, CEERT is focusing on regional system integration, interstate energy imports and exports, expanded transmission upgrades, and new bulk storage facilities.

These measures will enable the export of surplus energy to neighboring states during peak solar hours, allow imports of low-cost resources like Wyoming wind power, smooth out the variability of renewable resources with less reliance on natural gas, and accelerate the retirement of coal plants across the West.

In 2015, CEERT:

- Took an active part in meetings with the California Independent System Operator (CAISO), PacifiCorp, Berkshire Hathaway Energy, Southern California Edison, and other key stakeholders to develop optimal plans for Western grid integration and the CAISO's evolving into a regional system operator.
- Voiced concerns about the CAISO's strategy for winning agreement on a revision of its governance structure to enable it to manage the grid throughout the Western states. We argued for early engagement with policymakers and stakeholders to educate them about the value of regional grid integration, and emphasized that the parties involved should not wait until the third quarter of 2016 to begin that process.
- Developed approaches for outreach on regional grid integration issues for crucial stakeholders, most notably
 organized labor, consumer advocacy groups, and the environmental justice community.
- Participated in several meetings in the Governor's Office on the development of regional grid expansion proposals, implementation of Senate Bill (SB) 350, the California Air Resources Board (CARB) Scoping Plan for meeting the new 2030 greenhouse-gas reduction target, and suggestions for the Integrated Resource Planning process at the California Public Utilities Commission (CPUC).
- Met with California Energy Commission (CEC) Commissioners Karen Douglas and Andrew McAlister about the 2015 Integrated Energy Policy Report combining 2030 planning scenarios with the CAISO's transmission planning, and helping identify pathways for bulk storage and nondispatchable, price-sensitive demand.

Cliff Rechtschaffen, senior advisor to California Governor Jerry Brown on climate, energy, and environmental issues, discusses state grid and renewables policies at CEERT's 2015 Board Retreat





Staffing the 2030 Low-Carbon Grid Study

In 2015 CEERT's Jim Caldwell and Liz Anthony continued to staff the California 2030 Low-Carbon Grid Study (LCGS), an in-depth analysis with a 2030 greenhouse-gas (GHG) emissions target of 50% below 2012 levels, which would put California on track to meet its 2050 GHG reduction goal. CEERT has been the LCGS's fiscal sponsor.

Phase I results demonstrated that this level of emission reductions can be achieved without significant rate impacts while maintaining the reliability of the electric grid. Jim, Ali Ehlen (a CEERT intern who played a key role in the study), and members of the LCGS Steering Committee reviewed the study's findings with commissioners and staff at the CPUC, CARB, CEC, CAISO, the Governor's Office of Planning and Research, and industry and utility groups. We understand that the LCGS Phase I findings were a critical element that helped prompt Governor Brown to set new, groundbreaking climate and clean-energy goals for the state in early 2015.

Analysis for Phase II was conducted at the National Renewable Energy Laboratory, General Electric, and JBS Energy, with results and all assumptions and modeling conventions vetted by a Technical Review Committee that included representatives of the CPUC, CEC, CAISO, Western Electricity Coordinating Council, Western Interstate Energy Board, SCE, PG&E, SDG&E, SMUD, NV Energy, The Utility Reform Network, and the U.S. Energy Information Administration.

Phase II modeling is now complete and reports have been posted on www.lowcarbongrid2030.org along with a PowerPoint presentation that is continuously updated as outreach proceeds.

Phase II results demonstrate that Phase I results are robust across a broad range of variables with rate impacts ranging from -4% to +7%, while highlighting a series of changes in planning and grid operations practices that are required to achieve deeper carbon reductions and lower costs while positioning the grid for even deeper carbon reductions post-2030. Jim Caldwell, Liz Anthony, and V. John White have conducted numerous briefings on these results and their implications for implementation of Senate Bill (SB) 350 and the state's clean-energy and climate goals.

> Jim Caldwell, CEERT Senior Technical Consultant and Project Manager of the 2030 Low-Carbon Grid Study, presents the study's Phase II results





Expanding the Use of Renewable Energy

In 2015 CEERT focused our advocacy at the California Public Utilities Commission (CPUC) on an expanded, diversified renewable energy portfolio and fair valuation of renewable resources' wide-ranging benefits.

We have been urging the Commission to start implementing the state's new 50%-renewables-by-2030 goal without delay, and we continue our efforts to persuade state regulators that renewables can meet all of the grid's complex needs while substantially lowering GHG emissions.

In 2015, CEERT:

- Urged the CPUC to add high-priority issues to the Preliminary Scoping Memo of its new Renewable Portfolio Standard (RPS) rulemaking, and to place particular emphasis on starting a 2030 low-carbon planning process immediately and on integrating renewable resources into the Long-Term Procurement Planning rulemaking.
- With allied environmental groups, challenged both the CPUC Energy Division's confidential, in-house review and approval of Southern California Edison (SCE) and San Diego Gas and Electric (SDG&E) procurement plans for meeting their Local Capacity Requirement (LCR) needs, and SDG&E's LCR plans for not following an earlier CPUC directive to issue a Request for Offers that would include clean-energy resources as well as gas-fired generation.
- Made a series of recommendations for a top-to-bottom re-examination of the existing Resource Adequacy flexible-capacity framework based on data to be gathered during the 2015-2017 compliance years, in order to make informed changes to that framework in a manner that will advance cost-effective improvement in grid reliability and further GHG emission reductions.



- Filed Comments to reiterate our longstanding position in favor of integrating renewables into long-term procurement plans, consistent with the provisions of AB 327 and the state's Loading Order mandate, and to support a proposal in the Long-Term Procurement Planning rulemaking for a preapproved renewables product.
- Proposed that the CPUC require the investor-owned utilities' Least-Cost, Best-Fit resource evaluation methodologies to explicitly include GHG emission reduction criteria. The Commission delayed consideration of the issue until 2016.

CEERT Regulatory Counsel Sara Steck Myers and Associate Regulatory Attorney Megan Myers



Advancing California's Groundbreaking Climate Policies

On April 29, 2015, Governor Jerry Brown issued Executive Order B-30-15, which set a 2030 state GHG emissions reduction target of 40% below 1990 levels, as an interim goal toward achieving an 80% reduction in GHGs by 2050. Reaching these goals requires substantial emission cuts in the energy, buildings, and transportation sectors.

CEERT's Climate Action Program is working to improve the state's GHG accounting, help shape the California Air Resources Board's (CARB's) update of the AB 32 Scoping Plan, strengthen GHG-reduction goals in the Integrated Resource Plans that SB 350 requires, support higher-cost renewable resources that will be indispensable for meeting our climate targets, and tighten controls on methane and other potent but short-lived climate pollutants.

In 2015, CEERT:

- Met with CARB Chair Mary Nichols to discuss the findings of the 2030 Low-Carbon Grid Study and the process CARB will follow in developing a 2030 electric sector scoping plan.
- Won agreement from senior CARB staff on California likely needing more than 50% renewable energy by 2030, and on changes to grid operations that will be necessary to achieve a 40% GHG-reduction goal by 2030.
- Suggested a planning process for meeting the state's GHG reduction targets that would include integration
 of renewables with long-term procurement planning; using renewables, demand response, and efficiency

to provide essential grid services; right-sizing the gas fleet to enable more renewables and less GHG emissions from grid management; and developing a procurement pathway for bulk storage.

- Proposed targeting the Cap-and-Trade Program's Greenhouse Gas Reduction Fund to support high-value, higher-cost renewables such as geothermal and captured biomethane that are needed for GHG reduction and economic development.
- Convened a briefing for policymakers and agency staff on decreasing short-lived climate pollutants (SLCPs) such as methane, black carbon, and fluorocarbon gases in order to reduce global warming until measures to cut longer-lived CO₂ emissions can take effect.



Our own V. John White at the 2015 Climate Conference in Paris.

Advocating for Transmission Expansions, Bulk Storage, and Demand Response

CEERT advocates at the CPUC and CAISO for transmission expansions, large-scale energy storage, and demand response. These pivotal technologies will accelerate the use of clean energy, supply essential grid reliability services, and make a low-carbon electric system more readily achievable.

CEERT is pushing for new transmission lines and upgrades that connect prime wind, solar, and geothermal areas to the grid. We are championing bulk storage projects that can help to balance the grid during periods of high demand and to integrate larger amounts of clean energy. Demand response (DR) programs compensate utility customers for lowering their electricity use during peak-load hours; CEERT seeks to strengthen existing DR programs while advancing new structures and incentives that will significantly increase DR usage in California.

In 2015, CEERT:

- Backed strategic new transmission lines and upgrades in Imperial County, the Central Valley, and the West Mojave – areas with both an acute need for well-paying jobs and abundant renewable resources that will be critical to meeting the state's energy and climate goals.
- Participated in a joint CEC/CPUC workshop launching the Renewable Energy Transmission Initiative 2.0, which builds on work that CEERT undertook several years ago. This process will be the first to examine transmission system needs in light of the combined requirements of the state's new 50%-RPS and GHG-reduction targets for 2030.
- Recommended that the CPUC explore joint utility ownership of large-scale storage projects because the benefits are spread across utility service territories, and briefed key policymakers and environmental and industry stakeholders on the urgency of at least 1,000 MW of new bulk storage coming online in the next five years, thereby reducing the need to rely on natural gas for load balancing and ancillary services.
- In the CPUC's demand response (DR) proceeding, monitored the meetings of Working Groups on Supply Resource DR Integration, Load-Modifying Resource (LMR) DR Valuation, LMR DR Operations, and the Demand



Response Auction Mechanism (DRAM).

Worked intensively with CAISO's Board of Governors and senior management to encourage CAISO to be more flexible and accommodating of demand response aggregators by reducing barriers to increased use of this key resource.

CAISO Board of Governors member Dave Olsen and CEERT Executive Director V. John White

Promoting Clean Energy in Southern California and the Central Valley

CEERT is working to lessen reliance on fossil-fueled power in Southern California and the Central Valley, and to expedite the region's development of its abundant renewable resources, particularly Kern County wind, Imperial Valley geothermal, Mojave Desert solar, and Central Valley solar and biogas.

In 2015, CEERT:

- Continued our efforts to break the logiam on geothermal and solar development in the Salton Sea region of Imperial and Riverside counties, and worked to narrow differences on transmission planning and the allocation of deliverability of exported power between the Imperial Irrigation District (IID) and the CAISO.
- Held discussions with the Governor's office and the state Resources Agency about IID, the Department of Water Resources, and SDG&E collaborating on an initial joint procurement of geothermal resources as part of a first-phase Salton Sea Mitigation and Restoration Plan. We also worked with leading geothermal developers in the Salton Sea area to explore opportunities for minerals extraction, desalination, and energy storage as part of geothermal development plans in order to lower costs, increase flexibility, and create cobenefits and additional revenue streams.
- Briefed the senior management of the Los Angeles Department of Water and Power on the 2030 Low Carbon Grid Study, met with senior sustainability and infrastructure staff of Los Angeles Mayor Garcetti, and talked with officials of the City of Burbank Municipal Utility about large-scale storage and transmission issues.
- With the Latino Environmental Advancement Project and Environment California, co-hosted "Unlocking Renewables: A Valley Summit" at Fresno State University to jumpstart a dialogue about the San Joaquin Valley's potential to become a clean-energy region. Over 225 people attended from throughout the state and region.
- Continued to advocate for a Development Focus Area on federal lands in the West Mojave that would take advantage of some of the highest solar resource potential in the U.S.

A panel discussion at the "Unlocking Renewables: A Valley Summit" conference at Fresno State University





Accelerating Clean Transportation

Because vehicles account for nearly 40% of greenhouse-gas emissions in California, the state needs to place special emphasis on the transportation sector in order to meet its climate goals. CEERT's Clean Transportation Program works to speed up the transition to low-carbon fuels and to support viable markets for zero-emission electric and fuel-cell vehicles.

In 2015, CEERT:

- Successfully advocated for the extended eligibility of electricity and hydrogen fuels under the Low-Carbon Fuel Standard program.
- Advocated at CARB for integrating electric transportation development with low-carbon grid management, especially the use of electric-vehicle charging to provide demand response and the use of surplus renewable generation for hydrogen production and desalination.
- Was an active member of the working group exploring the integration of the electrical grid with renewable power sources and hydrogen production, and the role that hydrogen can play as a transportation fuel or as a form of energy storage for use in stationary fuel cells during periods of peak demand.
- Worked with the CEC, CARB, and other stakeholders on an emergency rulemaking that eliminated a disincentive for producers of advanced biofuels.
- Continued to serve on the Advisory Committee for the Alternative and Renewable Fuel and Vehicle Technology (AB 118/AB8) Program. The Program's 2015 2016 Investment Plan included \$18 million for EV charging infrastructure and \$20 million for FCV hydrogen fueling infrastructure, with additional EV and FCV funding possible as part of the \$20 million Medium and Heavy Duty Vehicle Technology Program.





Western Grid Group

Western Grid Group is a fiscally sponsored project of CEERT that works to transition the Western electricity sector to low-carbon energy resources. WGG provides regional leadership through broad thinking on Western energy market developments, planning, and operations, as well as technical assistance on reliability and system integration issues.

WGG focuses on:

- Improving the efficiency of the grid through technology, operations, and market changes to provide near-term access for clean power;
- Ensuring system planning incorporates all cost-effective energy efficiency, dynamic load resources, and distributed generation; and
- Expanding the grid to access and deliver renewable energy, minimize lifecycle greenhouse gas emissions, and enhance system reliability.

In 2015, WGG:

- Began evaluating specific, detailed market design options and opportunities that would promote clean energy under a proposed West-wide Regional System Operator (RSO), and created a set of principles to govern market design that influenced policy debate around the organizing of the RSO.
- Helped develop the Low-Carbon Grid Study—the most far-reaching electric sector carbon study in the West (see page 7).
- Helped shape the Western Wind and Solar Integration Study, phases II and III, which demonstrated that the Western Interconnection can withstand severe grid disturbances with high penetrations of renewable energy.
- Completed the Western Electricity Coordinating Council (WECC) Energy and Water Climate Impacts scenario, and provided the subject matter for an E3 consultant report to the WECC on electric system reliability impacts due to climate change.
- Brought together over 35 of the West's most influential organizations working on clean energy to develop a shared advocacy strategy for the Western Interconnection.
- Supported the expansion of the Energy Imbalance Market by encouraging additional key utilities to join the EIM to improve reliability, decrease consumer costs, and support integration of variable generation.
- Influenced the development of EIM governance by successfully advocating that the public interest should be represented on the technical board.





Clean Power Champions

At our 12th annual Clean Power Champion Awards Ceremony on May 5, 2015, CEERT honored four exceptional leaders for their achievements in expanding clean, renewable energy.



Richard Maullin

Richard Maullin was appointed the first chair of the California Energy Commission in 1975, and left it one of the most influential energy policy and planning agencies in the world. During his tenure, the CEC adopted the world's first appliance and building efficiency standards, implemented the California Nuclear Safeguards Act, and established forecasts of electricity demand that confirmed the cost-effectiveness of energy efficiency and renewable energy.

Following successful business and academic careers, Richard returned to public service as a member and now chair of the California Independent System Operator Board of Governors, where he is helping lead the transformation to the renewable-based grid of the future.



Tom Hayden

Tom Hayden was founding chair of the California Solar Energy Council in 1979. He served 18 years in the Legislature, authored the first legislation in the country requiring a renewable setaside for new power generation, and led many battles to advance clean energy goals.

"Tom Hayden changed America," writes Nicholas Lemann of *The Atlantic*. He created "the blueprint for the Great Society programs," notes former presidential adviser Richard Goodwin. He was "the single greatest figure of the 1960s student movement," according to a *New York Times* book review. Tom remains active today in advocating for a rapid transition to renewable resources and energy efficiency.



Virinder Singh

Since 2010, Virinder has served as Director of Regulatory and Legislative Affairs at EDF Renewable Energy, which has developed over 1,000 MW of renewable energy in California. Virinder's efforts resulted in a 2013 U.S. Federal Energy Regulatory Commission rulemaking that reformed outdated small generator interconnection requirements, and in the first promulgation of New York's "NY-Sun" solar market expansion program.

Virinder is Chair of the Solar Energy Industries Association State Policy Committee, Chair of the American Wind Energy Association's Western States Caucus, and on the boards of Renewable Northwest, the Interwest Energy Alliance, and the Clean Power Campaign.



Hal Romanowitz (1933-2014)

Hal was one of California's wind energy pioneers. He played a leadership role in the expansion of the Tehachapi Wind Resource Area and associated transmission system, and was instrumental in resolving conflicts between military operations and wind energy development in Kern County. Most recently, Hal focused on combining renewable energy and energy storage.

Hal served on the AWEA and CalWEA Boards of Directors, and as President of the Kern Wind Energy Association. He was honored with the American Wind Energy Association's Lifetime Achievement Award and the Utility Wind Interest Group's Transmission Achievement Award. He was a mentor and friend to many, and a giant in the clean-energy industry.



CEERT's Tehya Wood and Kimber West



Attendees at the 2015 Clean Power Champions Awards Ceremony



CEERT's Rich Ferguson and V. John White with Annie Hansen, daughter of 2015 Clean Power Champion Hal Romanowitz (1933-2014)



Virinder Singh, Director of Regulatory and Legislative Affairs, EDF Renewable Energy



Dan Jacobson of Environment California, Tom Hayden and V. John White



Richard Maullin, Chair, CAISO Board of Governors and former Chair, California Energy Commission



Tom Hayden, former State Senator, legendary activist, and leading clean-energy advocate



V. John White and the 2015 Clean Power Champion honorees



Financial Statements

Balance Sheet December 31, 2015

Assets			
Current Assets	\$	392,772	
Fixed Assets	\$	27,107	
Total Assets	\$	419,879	
Liabilities and Equity			
Current Liabilities	\$	172,703	
Restricted Assets	\$	286,067	
Fund Balance	\$	(38,891)	
Total Liabilities & Equity	\$	419,879	
Program Operations			
CEERT Expenses by Program			
Core Renewable Energy Advocacy	\$	642,730	7.9%
CPUC Regulatory Intervention	\$	73,182	4.3%
Preferred Resources & System Integn	\$	82,848	4.9%
Climate Policies	\$	54,044	3.2%
Desert Renewable Energy Planning	\$	47,280	2.8%
Regional Grid Integration	\$	105,747	6.2%
Central Valley Renewables	\$	54,044	3.2%
Subtotal, CEERT Programs	\$	1,059,875	62.5 %
CEERT Sponsored Projects			
Western Grid Group	\$	463,730	27.3%
Latino Environmental Advancement	\$	26,739	1.6%
2030 Low Carbon Grid Study	\$	145,629	8.6%
Subtotal, Sponsored Projects	\$	636,098	37.5%
Total Program Expenses	\$	1,695,973	100.0%
CEERT Program & Administrative Expense	95		
Direct Program Expenses	\$	1,695,973	74.4%
Administrative OH & Fundraising	\$	584,444	25.6%
Total Organizational Expenses	\$	2,280,417	

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V. John White Executive Director

John Shahabian Director of Operations

Sara Steck Myers Regulatory Counsel

James Caldwell, Jr. Senior Technical Consultant

Rich Ferguson Director of Research Emeritus

Megan Myers Associate Regulatory Attorney Ali Ehlen Clean Energy Fellow (through 6/19/15)

Liz Anthony UC Davis ELIPPS Fellow & Clean Energy Fellow (as of 5/15/15)

John Shears Research Consultant

Nicole Ochoa Southern California Program Associate (through 3/15/15)

Rhonda Mills Senior Consultant for Special Projects

Jan McFarland Strategic Advisor Kimber West Controller

Peter Stern Development Director

Heather Taylor Operations Assistant

Telicia Benson Project Assistant

Mary Calvo Executive Assistant

Tehya Wood Policy Assistant (through 8/13/15)



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Center for Energy Efficiency and Renewable Technologies

1100 Eleventh Street, Suite 311 Sacramento, California 95814 916/442-7785 916/447-2940 FAX info@ceert.org ceert.org

