



CEERT 2008 Annual Report

Center for Energy Efficiency and Renewable Technologies
cleanpower.org

From the Executive Director

I am delighted to share some of the highlights of CEERT's recent work and achievements in helping to move California and the West toward a renewable energy economy.

Our small but incredibly talented staff have managed to shape the outcome of several critical regulatory and policy decisions that we hope will enable California to once again lead the nation and the world in the deployment of renewable technologies.

California is uniquely blessed with an abundance of homegrown renewable resources. From the windy mountain passes of the Tehachapis, to the hot magma that flows from deep in the earth near the Salton

Sea, to the intense solar radiation of the Mohave Desert, to the biological waste and refuse in the Great Central Valley, our state's bountiful resources can be transformed into clean, affordable renewable power.

In the past year, CEERT has helped California's leaders make the build-out of the state's renewable potential the centerpiece of revitalizing our economy, reducing our dependence on fossil fuel energy imports, and responding to the challenge of global warming. We have tackled the obstacles that stand in the way of

achieving our goals by bringing key stakeholders and interests together to create the nation's most far-reaching renewable transmission planning project.

We have much more work to do, but are confident that we are on a path to success in transforming our energy economy and building our renewable energy future.



V. John White
Executive Director

About CEERT & Our Programs

The Center for Energy Efficiency and Renewable Technologies (CEERT) is a partnership of major environmental groups and private-sector clean energy companies. We design and fight for policies that promote global-warming solutions and increased reliance on clean, renewable energy sources for California and the West.

CEERT works to:

- Speed up the development of renewable energy
- Remove barriers to clean-energy deployment
- Create a low-carbon electricity grid
- Advance climate and clean-energy policies

We carry out this work through a comprehensive set of advocacy programs that aim to transform our energy system.

For more information and the latest news about CEERT, please visit our website cleanpower.org.

Read about CEERT's 2008 work in the following pages:

Climate Emission-Reduction Policies for California and the West	2
Renewable Energy Standards for California.	3
Planning of New Transmission Lines to Access Renewable Resources	5
Big Solar Power Development	7
Wind Power Development.	9
Geothermal Power Development	11
Solar Photovoltaic and Fuel Cell Development	13
Creation of a Low-Carbon Smart Grid	15
Clean Transportation and Alternative Fuels.	17
Clean Power Champions.	19
Board, Affiliates, Staff, and Foundation Supporters	20

V. John White presents on solar opportunities in California at the 1st German American Energy Conference in Berlin.



Kevin Riggs of KCRA-TV interviews V. John White outside CEERT's office



"The state energy regulatory community is the single most important policy actor in the United States . . . Our transition to a low-carbon economy hinges to a very large extent on how well regulators carry out dozens if not hundreds of decisions they will make, often with only a handful of utilities and activists engaged in obscure regulatory proceedings that lead to these actions."

— Peter S. Fox-Penner & Marc Chupka, two leading US experts on the electric utility industry and energy economics

Climate Emission-Reduction Policies for California and the West

California's landmark Global Warming Solutions Act of 2006 requires the state to reduce greenhouse gas emissions to 1990 levels by 2020. Given the size of the task, economic and financial conditions, and technological and project-siting challenges, this will be a monumental undertaking. CEERT is working on many fronts with utilities, state and federal agencies, environmental and environmental-justice groups, and our regional allies to roll back greenhouse gas emissions and advance clean-energy development.

In 2008, CEERT's Climate Action Program:

- Began work on the 2010 long-term procurement plan (LTPP) proceeding at the California Public Utilities Commission to ensure that the climate benefits and other advantages of renewables are characterized fairly in comparison with other resources.
- Following nearly a decade of education and coalition-building, successfully promoted a revamping of the Los Angeles Department of Water and Power's electric rate structure to a 3-tiered system – a major advance in pricing information that will encourage conservation and help lessen LA's reliance on coal-fired power. LADWP was one of the last utilities in the state to offer lower rates for increased energy consumption.

- Mobilized support for a clean-energy and clean-air agenda among key environmental-justice organizations, notably California Environmental Rights Alliance, Communities for a Better Environment, Central Valley Air Quality Coalition, and SCOPE in LA.
- Collaborated with the Audubon Society to produce a renewables education video and other materials for outreach to Audubon's members across the West, highlighting the urgency of clean energy and transmission development.
- Developed specific design recommendations for the Western Climate Initiative (WCI) on the compliance obligations for renewables in WCI's proposed regional carbon emissions cap-and-trade framework.



Governor Arnold Schwarzenegger signing Executive Order S-14-08, which promotes action on climate and clean-energy issues. CEERT staff and affiliates were well represented at the signing ceremony

Renewable Energy Standards for California

CEERT was a leading member of the coalition that helped establish California's current Renewable Portfolio Standard (RPS), which requires that the state's utilities generate at least 20% of their power from renewable sources by 2010. We devoted much of our energies in the past year to helping shape implementation of the RPS and its defining regulations.

In 2008, CEERT's RPS Implementation Program:

- Successfully advocated for the inclusion of a 33% RPS by 2020 in the California Air Resources Board's Scoping Plan for implementing AB 32, the Global Warming Solutions Act of 2006.
- Sponsored productive meetings between Governor Schwarzenegger and his staff and renewables advocates that helped persuade the Governor to issue Executive Order S-14-08, which endorsed a 33% RPS by 2020 and ordered permit streamlining and greater state/federal agency coordination to accelerate renewables and transmission siting.

- Continued our regulatory intervention to improve and streamline implementation of California's RPS law to ensure that expected increases in renewable energy deliveries are actually being achieved, and to promote a fair, productive, and transparent procurement process.
- Published a new report, *Harvesting California's Renewable Energy Resources: A Green Jobs Business Plan*, that forecast a 33% RPS by 2020 could pump up to \$60 billion into the state economy and create as many as 200,000 new jobs.
- Successfully advocated significant changes in regulations that will help clean-power developers realize the environmental benefits of their projects through renewable energy credits (RECs).

CEERT Regulatory Counsel Sara Steck Myers



Planning of New Transmission Lines to Access Renewable Resources

In order to develop enough clean power to meet our aggressive RPS and climate targets, California first and foremost needs new transmission lines to connect the state's urban load centers with its abundant renewable energy sources – wind from Tehachapi, solar from the Mojave Desert, and geothermal from the Imperial Valley. To expedite planning and development of these vital transmission projects, CEERT is providing leadership and coordination for a unique stakeholder collaboration, the Renewable Energy Transmission Initiative (RETI).

In 2008, RETI:

- Produced an economic and environmental assessment of renewable energy resources in the western U.S., and began work on recommending upgrades to the transmission system necessary to tap enough renewable energy to meet California's Renewable Portfolio Standard targets.

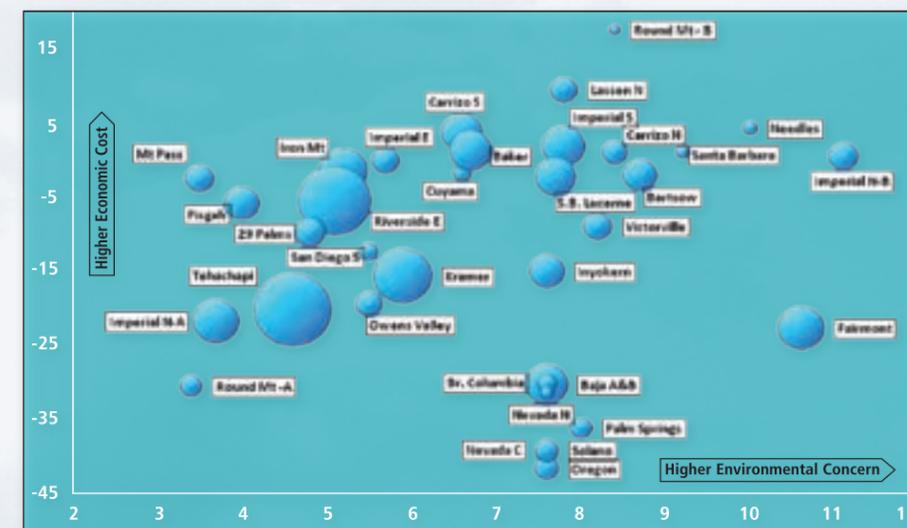
The results of this combined economic and environmental assessment are shown in the chart below:

The most promising competitive renewable energy zones (CREZs) that RETI assessed, which are in the lower left quadrant of the chart, have an estimated potential output in excess of 60,000 GWh/year – sufficient to enable California to get 33% of its power from renewables by 2020. For planning purposes, RETI identified about 100,000 GWh/year for potential new transmission links.

RETI's Phase 2 focuses on conceptual transmission planning that identifies the most effective ways to connect priority CREZs to the grid. In Phase 3, RETI stakeholders will work with utilities and the California Independent System Operator to translate Phase 2's conceptual plans into detailed plans of service for commercial transmission projects.

For more information, please see the RETI website at energy.ca.gov/reti/index.

Chart summarizing RETI's economic and environmental assessment of California renewable-energy zones



RETI Phase 2A Final Report



Big Solar Power Development

Large-scale solar technology holds the promise of someday satisfying the entire summer peak electricity demand of California and the West. But before we can tap this inexhaustible clean-energy resource, we must identify the most promising solar-resource sites, continue to safeguard wildlife and natural resources, help coordinate the multiple governmental agencies responsible for the desert, educate local communities about solar benefits, and ensure that the buyers and sellers of solar energy have the necessary incentives to do business in California. CEERT is working on all these fronts to accelerate deployment of concentrated solar thermal power plants and distributed and large-scale photovoltaic systems.

Roman Korzynietz and V. John White at the Plataforma Solar research center, which is testing large-scale solar parabolic trough, power tower, photovoltaic, and linear Fresnel technologies.



In 2008, CEERT's Big Solar Development Program:

- Focused on the Bureau of Land Management's (BLM's) Solar Energy Development Programmatic Environmental Impact Statement (PEIS) process, in an effort to maximize the amount of prime land available for large-scale solar generation in California and the Southwest. Most significantly, CEERT and our allies successfully advocated that BLM reverse its position and lift the PEIS's initial freeze on processing new and already-received solar project applications.
- Pursued our additional concerns with the PEIS: ensuring that the process is as streamlined as possible, pressing for the inclusion of non-BLM lands in the PEIS review, and expediting BLM coordination with transmission-planning efforts like the Renewable Energy Transmission Initiative and with key federal and state agencies.
- Organized and convened three large public meetings in Southern California at which we outlined the need for large-scale solar projects and transmission links, reviewed site-mapping issues, addressed the potential of military-base land for solar siting, discussed clustering projects to minimize habitat impact, gave local conservationists a chance to vent their concerns, and established channels for ongoing communication.
- Produced a Big Solar video that was widely distributed in DVD form and via our Cleanpower website. The video provides a compelling, easily digested narrative by leading environmental and renewable energy advocates of the technology's potential and the barriers in the way of its speedy deployment.
- Commissioned an "externality analysis" to estimate the full value of large-scale solar technologies. "Full value" will include such benefits as cuts in greenhouse gas emissions and other air pollutants, price stability, diversification of fuel sources, jobs, and public-health improvements.

Wind Power Development

With price-competitive wind energy resources and a strong commitment from both the public and private sectors, California and the West are poised for a quantum leap in wind-power generation. CEERT's Wind Program focuses on removing such barriers to wind-power development as lack of transmission from remote resource areas, land-use and siting hurdles, inadequate market mechanisms for power procurement, misperceptions about the technology's impacts on wildlife, and concerns about integrating wind's variable output into the grid.

In 2008, CEERT's Wind Power Development Program:

- Participated in the launch of the Pine Tree Wind Project in eastern Kern County, which CEERT and a coalition of environmental allies helped shepherd through a four-year approval process. The 170-megawatt facility will more than double the portion of Los Angeles' power that comes from wind, and will be the largest wind farm in the U.S. operated by a city-owned utility.
- Helped secure permitting and approval for enXco's Shiloh II Wind Project in the Montezuma Hills of Solano County. The project will have a capacity of 150 megawatts, and will sell the power that its 75 turbines generate to Pacific Gas and Electric Company (PG&E).
- Helped convene environmental, regulatory, and wind power stakeholders to develop new guidelines to minimize bird deaths and injuries from new wind turbines. These regulations put forward by the California Energy Commission and the Department of Fish and Game will both maximize protection of wildfowl and remove a central obstacle to accelerated wind power development, which reduces the considerable harm to wildlife caused by fossil-fuel use.
- In collaboration with Horizon-Wind and Iberdrola Renewables, successfully urged the California Public Utilities Commission to rewrite final resolutions on two wind-power projects to ensure that the Commission upheld and applied the California Energy Commission's RPS-eligible delivery guidelines.
- In partnership with the Energy Foundation and the American Wind Energy Association, launched a new Western Renewables Integration Project, which will map least-cost ways to integrate wind and other variable resources into the grid, and promote to regulatory staff and policymakers that balancing the electrical system is the most practical way to integrate large amounts of renewables.

Shiloh II Wind Project employees Victor Chat, Adrian Grannum, John Opris, Joaquin Villalobos, and Mike Villalobos



CEERT tour of Shiloh II Wind Project in Solano Co.



John H. Shahabian



Geothermal Power Development

Geothermal energy is a reliable, around-the-clock baseload generating source with minimal greenhouse-gas and other emissions, a small land-use footprint, and no storage or backup-power requirements. A recent MIT report estimated that if enhanced geothermal technology proves to be viable, 2% of the sub-surface heat in the U.S. at reasonable drilling depths would supply 2,500 times the nation's yearly energy needs.

In 2008, CEERT's Geothermal Development Program:

- Worked to continue narrowing differences between environmentalists and the Los Angeles Department of Water and Power on transmission routes that will enable LADWP to access geothermal resources from the Imperial Valley and help cut the city's dependence on coal.
- Continued our advocacy at the California Public Utilities Commission to ensure that the recently approved Sunrise Powerlink transmission line will be used to access Imperial Valley geothermal power and other renewable resources.

- Worked to better document the costs and benefits of geothermal heat exchangers, also called ground-source heat pumps, which are a relatively economical and environmentally friendly way to heat and cool buildings. CEERT is exploring the potential for green-energy payments (widely known as "feed-in tariffs") to encourage this technology.

The geothermal resources in California's Imperial County represent the "crown jewels" of our state's renewable resources.



Ormat Technologies, Inc.



Solar Photovoltaic and Fuel Cell Development

Distributed-generation technologies like stationary fuel cells and rooftop solar photovoltaic (PV) systems are particularly valuable because they create electricity near where utility customers use the power, eliminating the need for new transmission. PV panels are most familiar as the components of small solar-power systems mounted on the roofs of homes and businesses. Stationary fuel cells are an environmentally preferable alternative to fossil-fired power sources because they emit almost no GHGs or criteria pollutants, and can be powered by methane from landfills, wastewater treatment plants, and dairy digesters. The costs of both technologies have fallen dramatically in the past decade and are continuing to decline.

In 2008, CEERT's Distributed Generation Development Program:

- Worked to expand state initiatives for PV systems greater than 1 megawatt, and provided technical support for those expanded initiatives, building on CEERT's analysis of the benefits that large-scale PV delivers to the environment and the grid.
- Held meetings with the Governor's office and with California utilities to press the case for stationary fuel cells, which have compiled a strong track record of operating in the state and around the world as a reliable source of baseload power.

Large scale commercial PV installation



Stationary fuel cell at wastewater treatment plant, Riverside, CA



Creation of a Low-Carbon Smart Grid

The development of an intelligent electric grid will enable the harnessing of many different technologies to manage and reduce energy demand, including energy-efficiency measures, time-of-use demand response, distributed generation, energy storage technologies, and combined heat and power (cogeneration). CEERT is working to identify the technical feasibility and market barriers for each of these technologies, and to lay the foundation for an integrated low-carbon grid that would be less expensive and more reliable than our current one.

In 2008, CEERT's Low-Carbon Grid Program:

- Continued our advocacy at the California Public Utilities Commission on implementation of a strategic plan that governs the energy-efficiency investment programs of each investor-owned utility over the next three years. We are working to promote better linkages between greater efficiency measures, smart-grid technologies, clean distributed generation, and the integration of expanded renewable generation. CEERT will continue this focus in 2009 in the CPUC's smart grid rulemaking.
- Continued to work with the California Energy Commission as it develops policy proposals for European-style green energy payments (or "feed-in tariffs"), which would provide expanded incentives for broad deployment of renewable energy self-generation.
- Helped promote large-scale storage systems that will store a significant increment of solar heat collected in the afternoon to generate power during early evening hours, thereby minimizing the need to keep costly fossil-fuel peaking plants on standby for when the sun goes down.
- Worked with both solar and geothermal heating and cooling companies to better document these technologies' costs and benefits, and continued to explore the potential for green energy tariffs to encourage natural gas and electricity-saving technologies for heating and cooling.

A fuel cell supplies distributed power at an industrial site



FuelCell Energy, Inc.



Itron, Inc.

Itron, Inc.

Clean Transportation and Alternative Fuels

Last year's sky-high prices for gasoline helped spur unprecedented public awareness of the need to make our transportation system more efficient. While prices have moderated from those recent highs, many consumers remain wary of buying gas-guzzlers that will become liabilities when the cost of gasoline goes up again. These pocketbook concerns, together with growing awareness of climate and pollution threats and the dangers of U.S. overdependence on imported oil, have combined to push cleaner vehicles and fuels to the forefront of the country's political agenda. CEERT is promoting sustainable transportation alternatives, with an emphasis on the electrification of our transport system and its implications for a low-carbon electric grid.

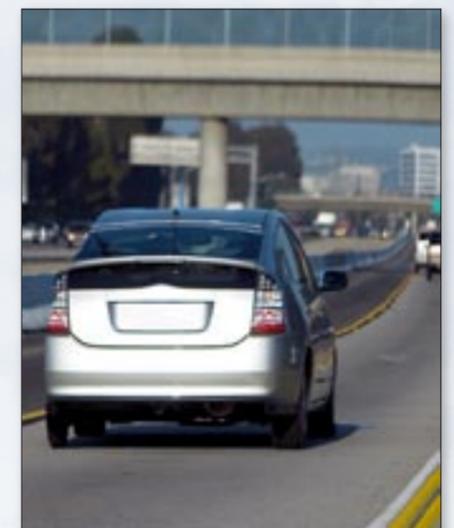
One of AC Transit's zero-emission buses, which get 70% better fuel economy than diesel models

In 2008, CEERT's Clean Transportation and Alternative Fuels Program:

- Advocated before the California Air Resources Board (CARB) to expand the state's Zero Emission Vehicle program to mandate a 100% hybrid electric vehicle fleet by 2020, and worked with CARB staff on redesigning the state's Low Emission Vehicle regulations.
- Worked to speed up the marketing of plug-in hybrid retrofit kits, and urged the California Energy Commission to defray the cost of emissions-certification of retrofitted cars.
- Helped CARB incubate and implement the Low Carbon Fuel Standard (LCFS). CEERT has played a critical role in LCFS proceedings by focusing attention on more sustainable sources of biofuels.
- Co-hosted and helped organize the Joint Forum on Bioenergy Sustainability and Lifecycle Analysis, which drew more than 200 participants, including representatives of the UN, International Energy Agency, European Commission, and U.S. Environmental Protection Agency. The conference was one of the first international dialogues on bioenergy and biofuels.
- Organized, hosted, and co-sponsored a regional Transportation Energy & Fuels conference in Fresno that educated attendees about climate change, the Valley's challenge in meeting clean-air standards, and the state of clean fuel and vehicle technology.
- Provided technical assistance and encouragement to the province of British Columbia, Canada, as it considered and ultimately adopted California's vehicle regulations.



AC Transit



Clean Power Champions

On January 22, 2008, CEERT hosted our fifth annual Clean Power Champion Awards Ceremony, at which we honored Terry Tamminen, Sheryl Carter, Bernadette Del Chiaro, and Jan McFarland for their trailblazing roles in the fight for clean, renewable energy sources.

2003 Award Winners:

Charles Warren
Alfred Alquist
Byron Sher

2004 Award Winners:

Jerry Brown
Vic Calvo
Gary Hart

2005 Award Winners:

Jananne Sharpless
Charles Imbrecht
Roberta Nichols

2006 Award Winners:

Arthur Rosenfeld, PhD
S. David Freeman
Marco Firebaugh

The 2008 Clean Power Champion Awards:

Terry Tamminen

Secretary of the California Environmental Protection Agency, 2003 – 2005, and Governor's Cabinet Secretary, 2005 – 2006

For his visionary leadership, passionate commitment, and heart full of grace, we honor Terry's singular contributions in helping bring about California's historic achievements on climate change, air quality, and solar energy.

Sheryl Carter

Senior Policy Analyst and Co-Director, Natural Resources Defense Council

For her cheerful, patient, and relentless efforts to advance energy efficiency and end California's reliance on conventional coal imports, we honor Sheryl for helping transform the Western energy grid.

Bernadette Del Chiaro

Clean Energy Advocate, Environment California

For her tenacious and energetic leadership of the campaigns to enact the California Solar Initiative and the Solar Water and Efficiency Act of 2007, we honor Bernadette for helping renew and revive solar energy in California.

Jan McFarland

Co-Founder, The Center for Energy Efficiency and Renewable Technologies

For her passionate commitment and determination in realizing a new vision for the future of solar energy, we honor Jan for helping turn solar dreams into economic and environmental reality through her leadership and rigorous economic analysis that resulted in the success of the California Solar Initiative.



Retired State Senator Byron Sher presents the 2008 Clean Power Champion Awards



Clean Power Champions Bernadette Del Chiaro, Terry Tamminen, Sheryl Carter, and Jan McFarland



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(through January 2009)

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(through December 2008)

A working session at the 2008 CEERT Board retreat



CEERT staff: (seated) Anne Baker, Sara Steck Myers, V. John White, Danielle Osborn Mills, John Shahabian; (standing) Ryan Drobek, Saúl Acosta Gómez, Alexandria Shahabian, Rich Ferguson, Fran Prisco, Dave Olsen, Marilyn Hawes, Nicholas Warden, Heather Taylor, John Shears, Peter Stern; (not pictured) Rhonda Mills, Merrisa Moore, Michelle Palomares.



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