

Taking Action: Responses to Climate Change

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SCE's Response to Climate Change



Climate Change Policy—Overview

- Warming is occurring. The challenge is to reduce GHG dramatically by the end of the century on a global level (60-80% below business as usual forecast)
- Reductions by developing countries critical
 - Developing countries' GHG emissions will overtake those of developed countries by the end of the decade or soon thereafter (China will overtake the US as the world's largest GHG emitter in 2009, a decade earlier than forecast just two years ago)
- California is taking the lead: “The debate is over. We know the science. We see the threat. And we know the time for action is now.”—Gov. Arnold Schwarzenegger, June 1, 2005
- Low carbon technology revolution needed this century —RDD&D

Governor's Executive Orders

- Governor's Executive Order S-3-05 in June 2005 established statewide emissions reductions goals
 - 2000 levels by 2010 (requiring 60 million metric tons CO₂ equivalent (MMT CO₂e) reduction, 11% below business as usual forecast (BAU))
 - Reduce to 1990 levels by 2020 (requiring a 174 MMT reduction, or 30% below BAU)
 - Reduce to 80% below 1990 levels by 2050
- Executive Order S-01-07 in January 2007 established a Low Carbon Fuel Standard to address the transportation sector (40% of the emissions in California)
 - Establishes a market-based system to reduce the carbon intensity of transportation fuels 10% by 2020

California Greenhouse Gas Policy

- AB 32 (Speaker Nunez/Assemblywoman Pavley)
 - Establishes a mandatory GHG reporting system by 2008 for “all significant sources” (as defined by the California Air Resources Board or CARB); includes emissions from out of state electric supplies
 - Directs CARB to adopt regulations that will reduce CO₂e emissions beginning in 2012 and “gradually” reduce emissions to 1990 levels by 2020
 - Leaves many implementation details to be determined by regulatory agencies

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- SB 1368 (Senate President Pro Tem Perata)
 - Requires all base-load electricity procurement of five years or more meet the average GHG emission rate of natural gas fired, existing combined cycle base-load generation (subsequently set at 1100 lbs/ MMBtu)

Our Position

- Climate change is real and must be addressed on a national and global level through comprehensive and cost effective means
- Implementing AB 32 should be done in a manner that results in the lowest cost to the California economy and the state's electricity consumers
- Southern California Edison is committed to "Leading the Way in Electricity" to reduce emissions through the introduction of new technologies and expansion of industry-leading initiatives

SCE is Leading the Way In Renewables

- Renewables now account for nearly 17% of SCE's portfolio—approximately 13 billion kWh in 2006 from wind, solar, biomass, geothermal, and small hydro suppliers
- SCE purchases one-sixth of all renewable energy sold in the US, enough renewable energy to serve 1.8 million homes for an entire year
- By 2010, we hope to have contracts in place which, when fully operational, will provide 20 percent of our customers' needs.
- Transmission is key. SCE is developing a \$1.8 billion transmission line to the Tehachapi area, which has the potential to provide another 4500 MW of wind energy



SCE is Leading the Way in Energy Efficiency

- Total customer response to SCE's energy efficiency programs during the past five years has saved four billion kWh
 - Reduced CO₂ emissions by more than 2 million tons (equivalent of removing 250,000 cars off the road)
- Over one billion kWh saved annually from energy efficiency programs forecasted through 2008
- SCE's forecast of Maximum Reliability Achievable Potential in 2016 is 9,961 gWh in energy efficiency savings



SCE is Leading the Way in Building the Nation's Smartest Grid



- We will invest \$1.2 billion equipping every household and small business we serve with a state-of-the-art, 'smart,' all-digital electricity meter that will be a small, powerful computer and communication system.
- Among the benefits of **Edison SmartConnect™** will be time-of-use pricing options that will create incentives for customers to save money by shifting some of their use to off-peak hours when electricity costs are lower.
- Such options could reduce peak demand by as much as 1,000 megawatts, the output of an entire large power plant, with the related customer cost and environmental benefits.
- Smarter grid also will improve basic services. New technologies will enable faster outage response remote activation for new customer's service.

Proposed Clean Hydrogen Power Generation Project (CHPG)

- SCE is seeking authorization to commit \$52M from customer rates for a two year advanced technology feasibility study
- CHPG would be nation's first assessment to combine several advanced clean coal technologies on a full commercial scale
 - Extract hydrogen from domestic coal
 - Use hydrogen in a combined-cycle generating system
 - Capture and sequester 80-90% of the carbon produced in deep saline formations
- Plant estimated to be online in 2017 with a net output of 600MW

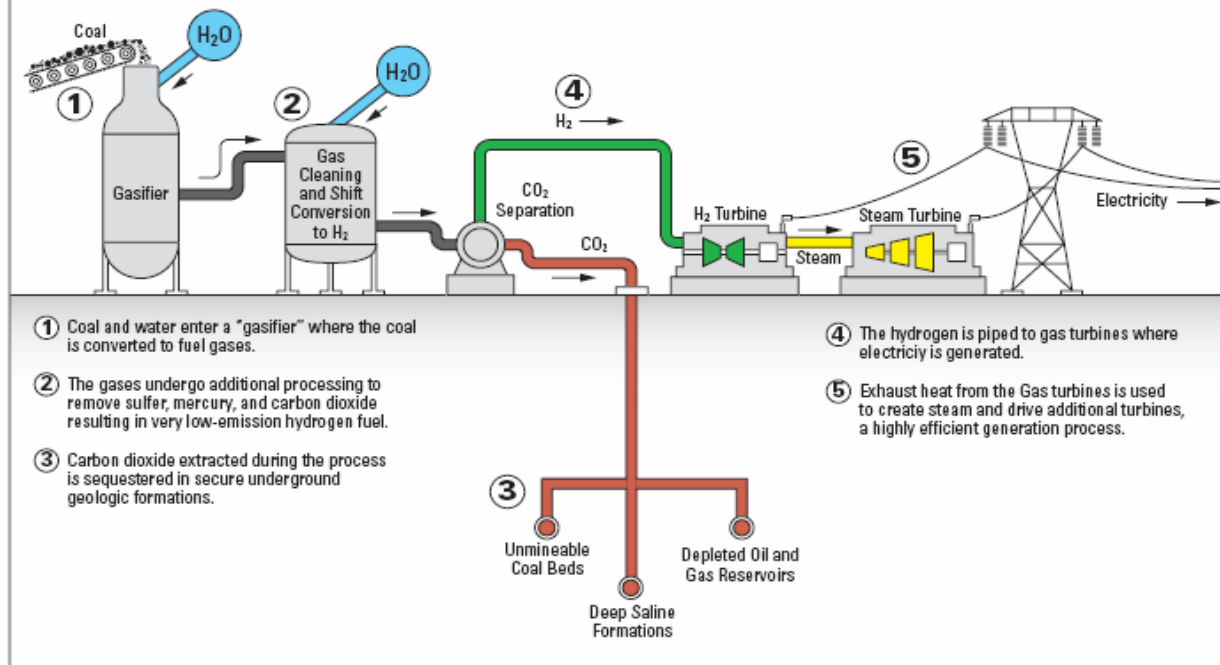


Proposed Clean Hydrogen Power Generation Project (CHPG)



Southern California Edison Feasibility Study Clean Hydrogen Power Generation

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Source: Southern California Edison



Plug-in Hybrids Can Help Reduce Emissions from the Transportation Sector

- Plug-in Hybrid Electric Vehicles will reduce air pollution and greenhouse gas emissions 45-60 percent below a typical new gasoline car or SUV for California, and about 40 percent below today's best conventional hybrid vehicles.
- A recent US DOE report concludes that there is enough **excess** capacity on the grid to charge more than 80% of the vehicles on the road (some 200 million vehicles) **today!**
- Looking even further out, these vehicles could serve as distributed generation sources that may reduce the need for new plants and lines.
- We are working closely with automakers to prepare for the PHEV future. We have the nation's first Plug-in Hybrid prototype vans from DaimlerChrysler and we are working on Plug-in Hybrid medium duty utility bucket trucks from Ford and Eaton.

Changing the Paradigm

California First...In Innovation

- Achieving California's ambitious climate change goals while serving the electricity needs of a growing population and economy presents significant challenges.
- The technology transformation we are witnessing in the electricity sector will be part of the solution to reduce emissions and protect the environment.
- Building on our existing leadership in renewables and energy efficiency is the first step in addressing climate change.
- Smart grid technologies will help reduce peak consumption and power generation, make it easier for utilities to integrate intermittent renewable energy sources such as wind and solar, and support the emergence of cleaner electric transportation fuel, reducing the nation's petroleum consumption.
- Plug-in hybrid electric vehicles have an important role in reducing greenhouse gases and our dependence on foreign oil.
- We must begin now to explore new low-carbon technologies like Clean Hydrogen Power Generation.

