CALIFORNIA'S SUSTAINABLE ENERGY POLICIES PROVIDE A MODEL FOR THE NATION

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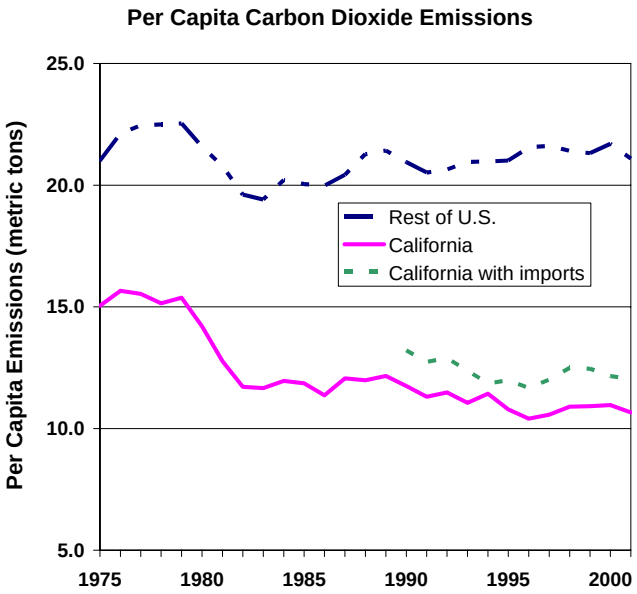
California has long been at the vanguard of innovative energy policy. Today, the Golden State continues to establish pioneering energy policies that address pressing environmental concerns while strengthening the sixth largest economy in the world.[1]

California has reduced its per-capita contributions to global warming and boosted its economy by focusing policies on its energy production and transportation sectors, which together account for 92% of the state's carbon dioxide (CO_2) emissions.[2] CO_2 emissions per capita in California have decreased by 30% since 1975 (when California's efficiency efforts first began in earnest), while U.S. per capita CO_2 emissions have remained essentially level.[3]



Source: Oak Ridge National Laboratory, 2004.[4]

California State Policy Establishes Sustainable Energy as a Priority

- The Energy Action Plan, adopted by the state's energy agencies and endorsed by Governor Schwarzenegger, establishes a "loading order" of preferred energy resources, placing energy efficiency as the state's top priority procurement resource, followed by renewable energy generation.[5]
- In November 2005, California adopted a greenhouse gas (GHG) performance standard, which requires that baseload power plants seeking new long-term investments from state utilities may not have greenhouse gas emissions per kilowatt-hour generated that exceed those of a combined-cycle gas turbine.[6]
- In June 2005, Governor Schwarzenegger signed an Executive Order setting aggressive greenhouse gas reduction targets for California: reduce GHG emissions to 2000 levels by 2010; to 1990 levels by 2020; and to 80% below 1990 levels by 2050.[7]
- In December 2004, Governor Schwarzenegger issued a green buildings Executive Order, requiring that all new and renovated state buildings achieve environmental ratings of LEED (Leadership in Energy and Environmental Design Green Building Rating System®) Silver or higher, setting a goal for all state buildings to be 20% more efficient by 2015, and encouraging the private sector to do the same.[8]

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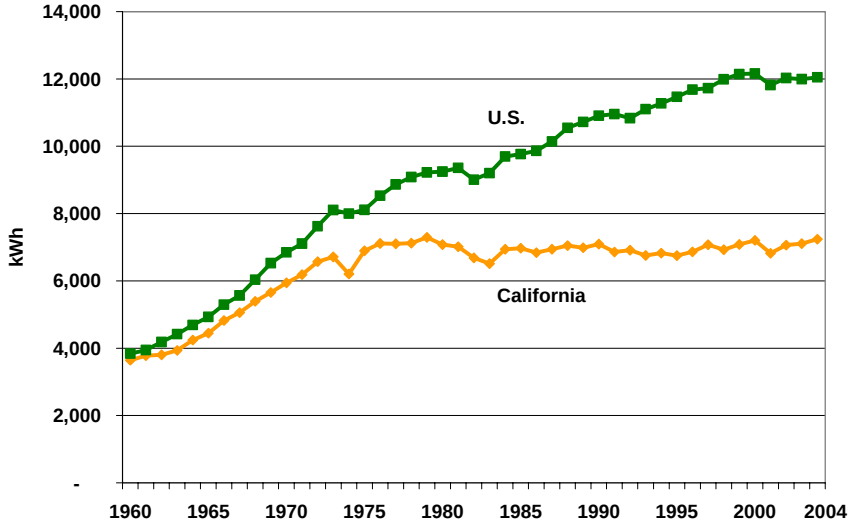
Energy Efficiency is a Proven and Cost-Effective Resource for California's Utilities

- California's investments in energy efficiency programs and improvements in building and appliance efficiency standards over the past 30 years have:
  - Enabled California to hold per capita electricity use essentially constant, while the rest of the nation saw per capita electricity use increase by nearly 50%.[9]

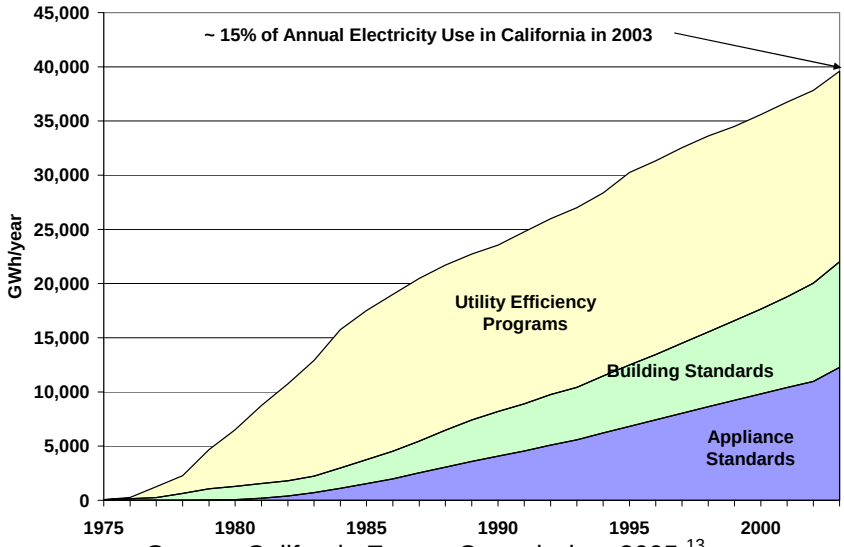
Comparison of Per Capita Electricity Consumption in U.S. and California



Source: California Energy Commission, 2005.[10]

  - Saved more than 12,000 MW of peak demand (equivalent to avoiding 24 giant power plants), and about 40,000 GWh each year (equivalent to 15% of California's energy consumption).[11]
  - Increased California's inflation-adjusted economic output per unit of electricity consumed by over 40% (while the rest of the nation increased by only 8%), demonstrating that economic growth need not be accompanied by proportional increases in power consumption.[12]

Annual Energy Savings from Efficiency Programs and Standards



Source: California Energy Commission, 2005.[13]

- The cost of efficiency programs over their lifetime has averaged 2-3¢ per kWh, less than half the cost of the avoided generation.[14] Over the last decade alone, these efficiency programs have provided net benefits of about $4.1 billion to California's economy.[15]
- Energy efficiency and conservation played a crucial role in calming the energy crisis in 2001. Californians avoided blackouts by cutting demand in summer 2001 by more than 5,500 MW, a decrease in peak demand of more than 10% when adjusted for economic growth and weather conditions.
- California law now requires the state's investor-owned utilities to use modest regular adjustments in electric and gas rates to break the link between the utilities' financial health and the amount of electricity and natural gas sold.[16] This removes significant regulatory barriers to utility investments in cost-effective energy efficiency improvements, and helps align the interests of utilities and customers.

California Continues to Lead the Nation in Energy Efficiency

- In January 2006, California utilities kicked off the most aggressive energy efficiency program in the country, which will provide $2 billion in funding over the next three years. This investment will return nearly $3 billion in *net* benefits to California's economy, avert the need every year to build a new giant power plant, and avoid over 3 million tons of CO_2 emissions, equivalent to removing 650,000 cars from the roads.[17]
- California's most recently adopted energy efficiency standards for buildings and appliances are expected to save 2,800 MW and avoid the need for 5 giant power plants in the next 10 years.[18] These standards are regularly revised, ensuring that California's buildings and appliances will remain the most energy efficient in the nation.[19]
- In September 2004, California regulators set the nation's most aggressive energy savings goals, which will more than double the current level of savings over the next decade.[20] The utilities are expected to invest nearly $6 billion over that period to reach these aggressive targets, which will:
    - Avoid the need to build 10 giant power plants (by saving nearly 5,000 MW). (While other states' energy efficiency efforts deliver annual savings ranging from about 0.1% to 0.8% of their annual electricity use,[21] the new targets will establish California as the undisputed energy efficiency leader, with annual electricity savings that will exceed 1% of total annual load by 2008.[22])
    - Provide customers relief from rising natural gas bills by tripling annual gas savings by the end of the decade (saving 444 million therms per year by 2013, equivalent to the consumption of one million households).
    - Reduce CO_2 emissions by an estimated 11 million tons per year by 2013, equivalent to taking over two million cars and trucks off the road.
    - Provide about $8 billion in *net* benefits to the state's consumers over the next decade.
- In January 2005, regulators adopted a new energy efficiency administrative structure, which fully integrates energy efficiency into resource procurement for the state's regulated utilities.[23] Utilities are now required to invest in energy efficiency whenever it is cheaper than building new power plants. The savings achieved through these energy efficiency programs will be subject to rigorous independent verification.
- Utilities provide energy efficiency services and rate assistance to low-income customers. Since May 2001, regulators have set a goal of reaching 100% of low-income customers who want to participate. To this end, the utilities are expected to provide energy efficiency services to 156,000 low-income households in 2005.[24]

California's Commitment to Renewable Energy

- California already has more renewable electricity generation capacity than any other state,[25] and this amount will double in the next ten years.[26] Currently, renewable resources (such as wind, solar, geothermal, biomass, and small hydroelectric plants) provide 10.6% of California's electricity production, compared to 2% for the nation.[27]
- California's Renewable Portfolio Standard, enacted in 2002, requires the state's largest utilities to buy or produce 20% of their power from renewable energy sources by 2017.[28] The Governor has accelerated this goal to 20% by 2010, which will result in the addition of up to 600 MW of new renewable energy generation capacity each year until then.[29]
- Governor Schwarzenegger and the California Energy Commission have recommended extending this renewable energy target to 33% by 2020.[30]
- In January 2006, California launched the California Solar Initiative, the largest solar program in the country. The Initiative, which provides $2.9 billion in incentives over 10 years, aims to increase the amount of installed rooftop solar capacity in the state by 3,000 MW by 2017.[31]

California Protects Utility Customers from the Risks of Global Warming

- In December 2004, the California Public Utilities Commission (CPUC) ruled that heat-trapping power plant emissions will likely be regulated in the future, and the CPUC approved a new policy to protect consumers from the risk of higher energy bills associated with global warming.[32]
- Utilities are now required to assign a dollar cost to greenhouse gas emissions, reflecting their associated financial risk, in long-term planning and procurement in order to select the overall least cost resources. The CPUC decided in April 2005 that the leading global warming pollutant, carbon dioxide, should be assigned a cost of $8 per ton, escalated at 5% per year, for these purposes.[33]
- Long-term investments in conventional coal-burning power plants, which emit twice as much CO_2 as natural-gas fired plants, present the most serious financial risk in the face of potential carbon regulation; on the other hand, renewable resources and energy efficiency emit little or no CO_2. The CPUC's new policy creates an additional incentive for utilities to invest in cleaner energy resources.
- In February 2006, the CPUC announced its intent to establish a load-based cap on GHG emissions for the state's utilities and load-serving entities. Implementation details will be worked out in close coordination with statewide efforts to meet California's GHG reduction goals.[34] The load-based cap will encompass imported electricity, responsible for over 50% of the GHG emissions associated with electricity consumption.[35]

California Minimizes Global Warming Pollution from the Transportation Sector

- California is the first state in the nation to regulate motor vehicle greenhouse gas emissions. With a new standard taking effect in January 2006, new passenger cars and light trucks beginning with model year 2009 will be required to have lower tailpipe emissions of CO_2 and other pollutants.[36] The standard is expected to reduce GHG emissions from new passenger vehicles by approximately 30% by 2016.[37]
- Under a 2003 law, the state will implement a replacement tire efficiency program to ensure that by 2008 replacement tires sold in California are, on average, as fuel efficient as the original tires of new vehicles sold in the state.[38] Without sacrificing safety, this law is projected to reduce California gasoline consumption by cars and light trucks by 3% by 2015,[39] saving in that year alone over 545 million gallons of gasoline, over $1 billion in fuel costs, and 4.8 million tons of CO_2.[40]

Endnotes for California's Sustainable Energy Policies

[1] Legislative Analyst's Office, *Cal Facts 2004: California's Economy and Budget in Perspective*, December 2004, p. 7. Available online at www.lao.ca.gov/2004/cal_facts/cal_facts_2004.pdf.

[2] When taking into account the emission from electricity imported into the state, the transportation sector accounts for 48% of California's CO2 emissions, and the natural gas and electricity sectors account for 46%. Calculated from data in: California Energy Commission, *Inventory of California Greenhouse Gas Emissions and Sinks: 1990-1999*, Publication #600-02-001F, November 2002.

[3] Oak Ridge National Laboratory; data compiled from: Blasing, T.J., C.T. Broniak, and G. Marland, "Estimates of Annual Fossil-Fuel CO2 Emitted for Each State in the U.S.A. and the District of Columbia for Each Year from 1960 through 2001," 2004 In Trends: A Compendium of Data on Global Change, Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, U.S. Department of Energy. Available online at cdiac.esd.ornl.gov/trends/emis_mon/stateemis/emis_state.htm.

[4] Oak Ridge National Laboratory; data compiled from: Blasing, T.J., C.T. Broniak, and G. Marland, "Estimates of Annual Fossil-Fuel CO2 Emitted for Each State in the U.S.A. and the District of Columbia for Each Year from 1960 through 2001," 2004. In Trends: A Compendium of Data on Global Change, Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, U.S. Department of Energy. Available online at cdiac.esd.ornl.gov/trends/emis_mon/stateemis/emis_state.htm.

[5] California Consumer Power and Conservation Financing Authority (CPA), California Energy Resources Conservation and Development Commission (CEC), and California Public Utilities Commission (CPUC), *Energy Action Plan*, Adopted May 8, 2003 by CPUC; April 30, 2003 by CEC; and April 18, 2003 by CPA. Available online at www.energy.ca.gov/energy_action_plan/2003-05-08_ACTION_PLAN.PDF. Letter from Governor Schwarzenegger to CPUC President Peevey, April 28, 2004.

[6] California Energy Commission, "Advanced Coal Technologies" *in 2005 Integrated Energy Policy Report*, Commission Report, Publication CEC-100-2005-007, November 2005, p. 80-84.

[7] Executive Order S-3-05, June 1, 2005.

[8] Executive Order S-20-04, December 14, 2004.

[9] Xenergy Inc., *California's Secret Energy Surplus: The Potential for Energy Efficiency*, September 23, 2002, p. A-1.

[10] John Wilson, California Energy Commission, November 2005.

[11] California Energy Commission, *Implementing California's Loading Order for Electricity Resources*, Staff Report, Publication CEC-400-2005-043, July 2005, p. E-4.

[12] D. Bachrach, M. Ardeman, and A. Leupp, *Energy Efficiency Leadership in California: Preventing the Next Crisis.* April 2003, p. 2.

[13] California Energy Commission, *Implementing California's Loading Order for Electricity Resources*, Staff Report, Publication CEC-400-2005-043, July 2005, Figure E-1, p. E-5.

[14] The cost over the lifetime of energy efficiency initiatives undertaken during 2001 will be an average of 3¢/kWh (Global Energy Partners, *California Summary Study of 2001*, for the California Measurement Advisory Council (CALMAC), Report ID# 02-1099, March 2003.) The average cost of saved energy of PGC funded efficiency from 1990-1998 was about 2.5¢/kWh (Sheryl Carter, *Investments in the Public Interest: California's Public Benefit Programs under Assembly Bill 1890*, Natural Resources Defense Council, January 2000).

[15] 1994-1997 IOU energy efficiency programs yielded $1.4 billion in net benefits (California Public Utilities Commission, Decision 03-10-057, "Interim Opinion on Whether to Reopen the Shared-Shavings Incentive Mechanism Adopted in Decision 94-10-059 for Energy Efficiency Programs," Finding of Fact 9, October 16, 2003, p. 36). 1998-2004 electricity efficiency programs yielded $2.68 billion in net benefits (Pacific Gas and Electric Company, Southern California Edison, and San Diego Gas & Electric, *Energy Efficiency Annual Report*s, May 1999-2005).

[16] California Public Utilities Code Section 739.10 states: "The commission shall ensure that errors in estimates of demand elasticity or sales do not result in material over or undercollections of the electrical corporations."

[17] California Public Utilities Commission, Decision 05-09-043, "Interim Opinion: Energy Efficiency Portfolio Plans and Program Funding Levels for 2006-2008 – Phase 1 Issues," September 22, 2005.

[18] Title 24 building standards will save 180 MW/year (California Energy Commission, "Energy Commission Approves New Building Standards to Help the State Cut Energy Use," Press Release, November 5, 2003), and Title 20 appliance standards will save 100 MW/year (California Energy Commission, "Energy Commission Approves New Energy-Saving Rules for Appliances," Press Release, December 15, 2004).

[19] Title 24 is revised on a three-year cycle, and the next update will be in 2008. Title 20 is revised approximately every three years.

[20] California Public Utilities Commission, Decision 04-09-060, "Interim Opinion: Energy Savings Goals for Program Year 2006 and Beyond," September 23, 2004.

[21] Kushler, M., D. York, and P. Witee, "Five Years In: An Examination of the First Half-Decade of Public Benefits Energy Efficiency Policies," April 2004, p. vi.

[22] Calculated from targets in CPUC Decision 04-09-060, September 23, 2004 and demand forecasts in California Energy Commission, *Integrated Energy Policy Report*, Appendix A, December 2003.

[23] California Public Utilities Commission, Decision 05-01-055, "Interim Opinion on the Administrative Structure for Energy Efficiency: Threshold Issues," January 27, 2005.

[24] California Public Utilities Commission, Decision 05-04-052, "Interim Opinion Approving 2005 Low Income Energy Efficiency (LIEE) and California Alternative Rates for Energy (CARE) Programs for Pacific Gas and Electric Company, Southern California Edison Company, Southern California Gas Company, and San Diego Gas & Electric Company," April 21, 2005.

[25] Energy Information Administration, *Renewable Energy Trends 2003, with Preliminary Data for 2003*, July 2004, p. 5.

[26] Based on estimated amount of renewable energy needed to meet RPS (20% by 2010), California Energy Commission, *Public Interest Energy Strategies Report*, Publication 100-03-012F, December 2003, p. 96, Table 5-5.

[27] California Energy Commission, *2004 Net System Power Calculation*, Commission Report, Publication CEC-300-2005-004, April 2004, p. 3. Energy Information Administration, *Electric Power Monthly: April 2005, with Data for January 2005*, Tables 1.6.A and 1.14.A, April 18, 2005. Available online at www.eia.doe.gov/cneaf/electricity/epm/epm.pdf.

[28] SB 1078 (2002).

[29] California Consumer Power and Conservation Financing Authority (CPA), California Energy Resources Conservation and Development Commission (CEC), and California Public Utilities Commission (CPUC), *Energy Action Plan*, Adopted May 8, 2003 by CPUC; April 30, 2003 by CEC; and April 18, 2003 by CPA, p. 5. Available online at www.energy.ca.gov/energy_action_plan/2003-05-08_ACTION_PLAN.PDF.

[30] California Energy Commission, *Integrated Energy Policy Report: 2004 Update*, November 2004, p. 37.

[31] California Public Utilities Commission, Decision 06-01-024, "Interim Order Adopting Policies and Funding for the California Solar Initiative," January 12, 2006.

[32] California Public Utilities Commission, Decision 04-12-048, "Opinion Adopting Pacific Gas and Electric Company, Southern California Edison Company and San Diego Gas & Electric Company's Long-Term Procurement Plans," December 16, 2004, Findings of Fact 76-78.

[33] California Public Utilities Commission, Decision 05-04-024, "Interim Opinion on E3 Avoided Cost Methodology," April 7, 2005, Conclusion of Law 7.

[34] California Public Utilities Commission, Decision 06-02-032, "Opinion on Procurement Incentives Framework," February 16, 2006.

[35] California Energy Commission, *Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2002 Update*, Staff Paper, Publication CEC-600-2005-025, June 2005, p. 2.

[36] AB 1493 (Pavley, 2002) directed CARB to establish motor vehicle standards to limit GHG emissions from passenger cars and light trucks. CARB unanimously approved their standards in September 2004.

[37] As compared to business as usual. California Environmental Protection Agency Air Resources Board, "Staff Report: Initial Statement of Reasons for Proposed Rulemaking, Public Hearing to Consider Adoption of Regulations to Control Greenhouse Gas Emissions from Motor Vehicles," August 6, 2004, p. 39.

[38] AB 844 (Nation, 2003).

[39] With the program starting in 2008, it is assumed that by 2015 all light-duty replacement tires will be fuel-efficient tires. The fuel-efficient replacement tires increase the fuel economy of vehicles using them by 4%. This translates into a 3% decrease in fuel consumption from all light-duty vehicles, since about 75% of light-duty vehicles use replacement tires. The range of fuel economy benefits from fuel-efficient replacement tires is provided in a consultant report to the California Energy Commission: "California State Fuel-Efficient Tire Report: Volume II," Consultant Report 600-03-001CR Vol. II, January 2003.

[40] NRDC calculation using a gasoline price of $2/gal and a 2015 gasoline demand of 18,200 million gallons from California Energy Commission, *Integrated Energy Policy Report Subsidiary Volume: Transportation Fuels, Technologies, and Infrastructure Assessment Report*, Commission Report 100-03-013F, December 2003. Fuel cost savings are gross savings.