



Industrial Energy Efficiency in California

Overview

Combined heat and power, or CHP, technologies provide reliable electricity, mechanical power, or thermal energy by capturing heat that is wasted during electricity generation. District energy takes heat from a CHP system to heat or cool entire complexes, such as a university campus, office park, or downtown area. More recently, a process called waste heat to power, or WHP, has been used to capture heat released during industrial processes that convert raw materials into products.

These on-site technologies allow businesses to achieve energy efficiencies of up to 80 percent. Technologies such as CHP and WHP represent tremendous potential to reduce energy consumption in California's industrial sector, saving manufacturers money and creating energy businesses and jobs.

State and regional statistics

California has 1,315 CHP sites across the state, with a total generating capacity of 8,805 megawatts.

Source: U.S. Department of Energy

California's strong manufacturing sector makes up almost 11 percent of the total gross state product and employs 8.02 percent of the nonfarm work force.

Source: National Association of Manufacturers

California ranked third in the nation in industrial energy use in 2012 (1,744.2 trillion British thermal units). The industrial sector represents 23 percent of the total energy consumed statewide.

Source: U.S. Energy Information Administration State Energy Data System Rankings and U.S. Energy Information Administration California Profile

There are more than 200 in-state power plants in California—representing about half of online power from all in-state plants—that use emission-generating fuels without using cogeneration or CHP.

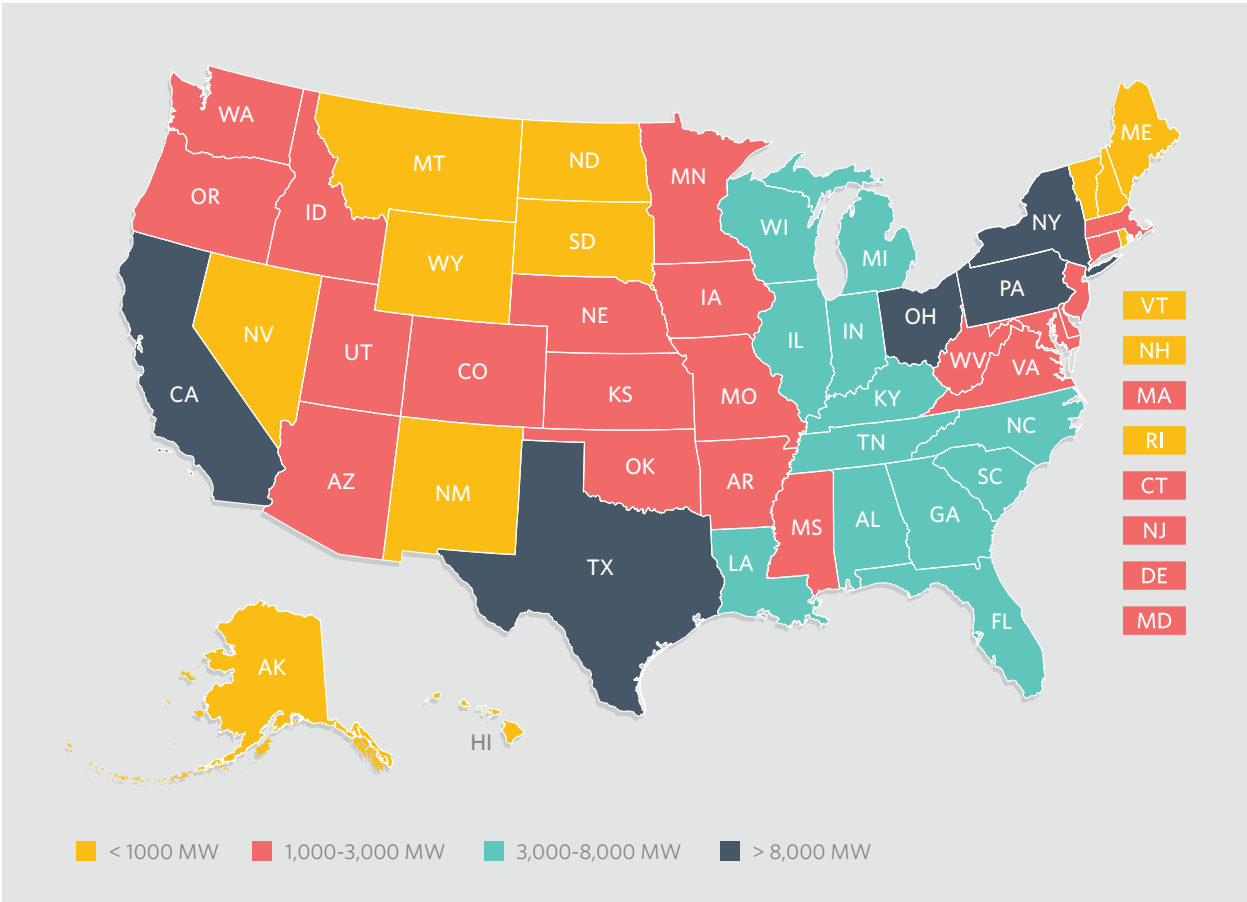
Source: Energy Almanac

State policies support industrial energy efficiency

From May 2000 to June 2001, California experienced unprecedented electricity market disruption. Owing to a combination of factors including market manipulation and deregulation, customers experienced rolling blackouts across the state throughout the year. The state was forced to buy electricity from other states to keep the lights on, and the total cost of energy in California jumped from \$7.4 billion in 1999 to over \$27.1 billion in 2000.

Source: California Department of Justice

CHP Technical Potential



Source: U.S. Department of Energy
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After the 2001 electricity crisis, the California Integrated Energy Policy Report was developed, and it included power savings goals for investor-owned utilities. In 2004 the California Public Utilities Commission, or CPUC, formalized these goals, which called for a 23 billion kilowatt hour reduction in electricity use in 2013 and peak demand reductions of 4.9 million kilowatts from programs operated between 2004 and 2013.

Source: American Council for an Energy-Efficient Economy

In 2006 the California Legislature enacted Assembly Bill 2021, which established a 10 percent electricity consumption reduction goal over 10 years. It also requires that interested parties including the California Energy Commission and the CPUC study cost-effective energy savings measures to develop a 10-year strategy for electricity and natural gas efficiency.

Source: Database of State Incentives for Renewables and Efficiency

In 2006, California implemented Assembly Bill 32 which set a goal of achieving 6.7 million metric tons of carbon dioxide reductions using CHP. In addition, Governor Jerry Brown has set a goal of installing 6.5 gigawatts of new CHP capacity by 2030.

Source: California Energy Commission

The state has established a variety of incentives such as standard contracts, feed-in tariffs, and rebates to reduce the costs of CHP and WHP and to encourage their deployment. Improving federal incentives would complement the state's efforts to deploy these technologies. By 2013, California is expected to achieve 70,000 gigawatt hours of energy savings in efficiency resulting from all of the policies and programs it has put in place since 1975.

Source: California Energy Commission

Examples of Newly Installed CHP Facilities in California

City	Facility	Application	Year operational	Capacity (kW)	Fuel type
Fresno	Community Regional Medical Center	Hospitals/ health care	2013	9,200	Natural gas/propane
Pasadena	NASA	Space research and technology	2011	200	Natural gas/propane
Sacramento	Sacramento International Airport	Air transportation	2011	1,500	Natural gas/propane
Agoura	Calabasas Landfill Gas to Energy Facility	Wastewater Treatment	2010	13,800	Biomass

Source: U.S. Department of Energy

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CHP improves energy security

Reducing strain on the electrical grid with energy-efficient technologies increases power reliability during electrical outages resulting from extreme weather and other causes.

California experienced the most blackouts in the nation in 2010, 2011, and 2012. Over those three years the state experienced 1,389 blackout incidents. New York experienced the second-most blackouts during that period with only 468 incidents.

Source: Blackout Tracker

For further information, please visit:

pewtrusts.org/industrialefficiency

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