

FEATURED TOPICS

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ISO AT A GLANCE

\$6.4
billion in annual billings

286
million megawatt-hours delivered

25,526
circuit miles of power lines

54,436
megawatts of power capacity

1,300
power plant units

50,270
megawatts at peak demand (2006)

One megawatt =
annual energy needs
of 1,000 homes

The California ISO is a nonprofit public benefit corporation that acts as an impartial link between power plants and utilities, managing the flow of electricity for about 80 percent of the state. As California seeks to meet 33 percent of its electricity needs through renewable resources, the ISO strives to balance environmental goals with running the grid as efficiently and reliably as possible. Our state's energy landscape is changing in rapid and exciting ways. Grid Update is intended to help you keep current on issues affecting the California power grid and the consumers it serves.

Reducing Barriers to Clean Energy

Ways the ISO is advancing renewable power integration:

- **Integration of renewable resources study** that identifies the operational tools, market enhancements and existing generation capability required to achieve California's 20 percent RPS. [Click here to view full report.](#)
- **Advancing the wholesale electricity market** to improve efficiency, promote demand response, and facilitate the integration and participation of renewable energy resources.
- **Transmission planning** reforms to accelerate new infrastructure needed to connect remote renewables to the grid. Includes proposed new category of power lines needed to meet state or federal policy objectives. [Click here to view full report.](#)
- **Pilot projects** that test emerging technologies such as storage devices to understand their operating characteristics and ability to meet future system needs.
- **Demand response** programs that enable consumers to adjust their power use in response to high demand and high prices.



The shift to using renewable resources and advanced technologies is critical to meeting the state's clean air and water policies as well as diversifying the state's generation portfolio by reducing reliance on natural gas-fired power plants.

-Yakout Mansour
ISO President and CEO



The ISO is joining forces with the California Air Resources Board, California Public Utilities Commission, California Energy Commission and California Environmental Protection Agency to expand cooperation regarding ambitious environmental and energy policy goals. *California's Clean Energy Future* points the way toward new investments in transmission, energy efficiency, smart grid applications, and increased use of renewable resources.

The plan supports the following targets by 2020:

- Reductions of electricity (13,200 to 18,000 gigawatt-hours) and natural gas use (800 million therms).
- 5,000 MW installed renewable distributed generation statewide at the right locations on the power grid to support reliability and provide economic value.
- The development of at least one large-scale carbon capture and storage generating facility in California.
- 1,000 MW of additional storage capacity to be brought onto the system.
- Developing enough charging stations at home, work, and in public areas to accommodate one million electric and hybrid vehicles.

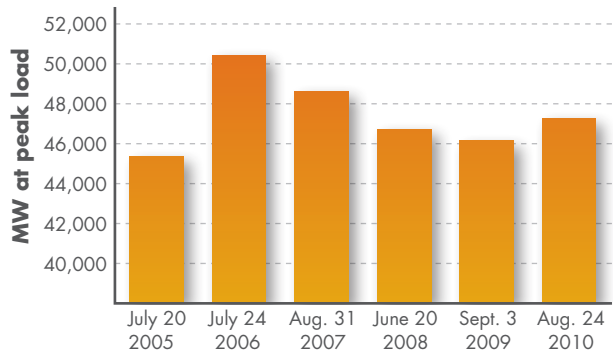
For more information visit:
CAcleanenergyfuture.org

Economy and weather impact summer power usage

Fires keep ISO operators on alert

It is no surprise that power demand was down during summer 2010. The economy and mild temperatures impacted California's appetite for electricity to the point there was a four percent decrease in electricity consumption compared to summer 2009. However, heat waves did send peak demand soaring. The 2010 peak demand was 47,350 MW, well above the 2009 summer peak demand of 46,003 MW. The ISO record peak remains at 50,270 MW, set on July 24, 2006.

There were busy days in the ISO control room when major fires erupted. On July 29, a major wildfire near Palmdale cut a key transmission pathway in Southern California for only the second time in ISO history. Path 26, which is a major electrical artery linking Northern and Southern California, also serves as part of a high-voltage transmission loop that circulates power throughout the West. The blaze de-energized the three lines simultaneously, which threatened the flow of electricity within the western grid. ISO operators, who train annually for this type of scenario, coordinated the transmission emergency without any forced power interruptions. Another transmission emergency on September 27 resulted from a fire breaking out in Northern California. The demand for electricity spiked to 45,210 MW, which is extremely high for so late in the year. Again, the ISO control center kept the grid humming without impacting customers.



Transmission approved by ISO to meet renewable targets

Major Transmission Projects: 2006-2009

PROJECTS	SIZE	RENEWABLE ACCESS
Tehachapi Renewable Transmission Project	4,500 MW	Major wind resource area
Sunrise Powerlink	1,700 MW	Major geothermal and other renewable resource area
CA segment of Devers-PV II	4,700* MW	Major solar resource area
El Dorado-Ivanpah Substation	1,400 MW	Major solar resource area
TOTAL	12,300 MW	

Source: California ISO 2009 Annual Report

*This number is existing capacity plus the upgrade capacity.

Greening the grid



ISO engineers perform analysis to study the impacts proposed power plants will have on the grid. As a result of the state's renewable goals, a flood of interconnection study requests overloaded the process.

Peaking one time at 361 requests, totaling more than 105,000 MW, the interconnection queue was streamlined in 2008 to speed

viable projects through the process. Instead of being studied individually, a more holistic approach examines clusters of projects together. This successfully reduced the backlog in the queue enabling the ISO to more expeditiously interconnect

generation to the grid. The queue now has 52,000 MW or 331 green projects pending, with an estimated 89% of the projects proposed within California.

[Visit our web site for more information.](#)

EMERGING TECHNOLOGY: Energy Storage

The ISO participated in or closely monitored several energy storage pilots conducted in 2009 to better understand how we can successfully integrate the use of storage into our markets. Storage technology can help us overcome over-generation and can help manage heavy demand or intermittent resource energy ramps.

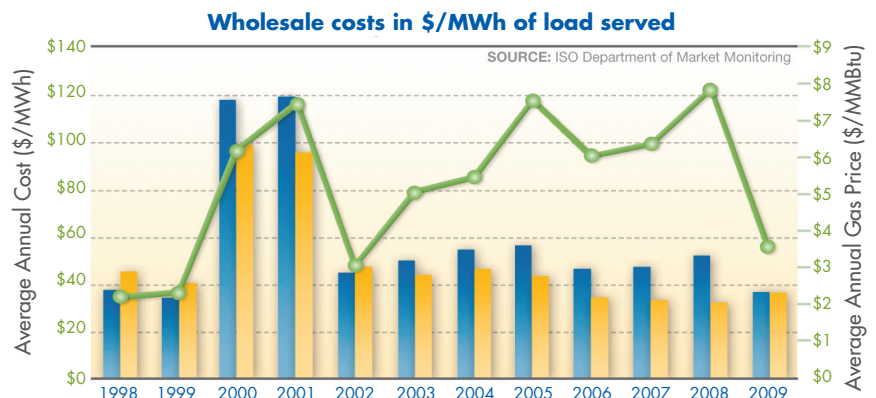
Wholesale Electricity Prices Decline

California's new energy market is highly effective and competitive with strong indications it is reducing costs. The 2009 ISO Annual Market Issues and Performance Report reveals total wholesale costs dropped from \$53 per megawatt-hour in 2008 to \$38 per megawatt-hour in 2009. The new day-ahead market provides an electricity exchange not seen in California since the California Power Exchange closed during the energy crisis in 2001. Prices in the day-ahead and real-time energy markets are following

patterns of well-functioning competitive markets, reflecting production costs and trending generally with the price of natural gas. Additionally, the cost of ancillary services (operating reserves)

declined from 74 cents per megawatt-hour in 2008 to 39 cents per megawatt-hour in 2009. [Click here to view the full report.](#)

■ Average cost nominal (\$/MWh)
■ Average cost nominalized to 2009 Gas Prices (\$/MWh)
● Average Daily Gas Price (\$/MMBtu)



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At a Click

Quick links to useful information on the ISO web site

See [Today's Outlook](#) and track renewable production

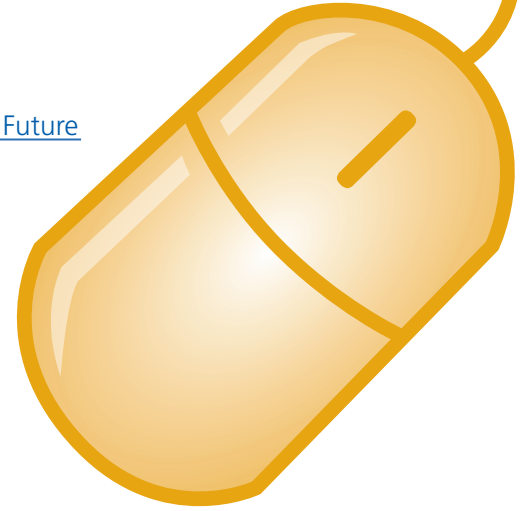
[Stakeholder initiatives](#) currently underway

Explore our [news releases](#)

View upcoming [stakeholder meetings](#)

Learn more about [California's Clean Energy Future](#)

Visit www.caiso.com



OUR VISION

California ISO strives to be a world-class electric transmission organization built around a globally-recognized and inspired team providing cost-effective and reliable service, well-balanced and transparent energy market mechanisms and high-quality information for the benefit of our customers.

OUR MISSION

For the benefit of our customers, we:

- Operate the grid reliably and efficiently*
- Provide fair and open transmission access*
- Promote environmental stewardship*
- Facilitate effective markets and promote infrastructure development*

All through the provision of timely and accurate information.

OUR CORE VALUES

- Integrity
- Teamwork
- Excellence
- People-Focused
- Open Communication