



# The Petroleum Industry in California

Solutions For California's Energy Future

## A Reality Check

World population has doubled in the past 40 years and is expected to grow from 6.4 billion to 9 billion people by 2050. Economic growth is also expected to increase exponentially, especially in developing countries. Experts agree that, as a result, world energy demand will also dramatically increase, upwards of 40% to 50% in the next 25 to 30 years according to some sources.

## The Challenge

How can we provide the clean, affordable energy needed to sustain economic growth in our country and throughout the world?

## The Paths Forward

The fact is we will need all the energy we can get over the next few decades to meet the world's energy needs. The California economy will continue to rely on petroleum and natural gas for many decades. However, we can't afford to put all our eggs in any one source of energy whether that is oil, natural gas, hydrogen, renewables, coal or alternative fuels. It will be important to pursue a diversified energy portfolio to meet our country and the world's energy needs. Below are several examples of how WSPA's member companies are actively engaged in extending and producing not just clean petroleum-based energy, but many other forms of energy and fuels.

## Energy Diversity to Meet Demand – Petroleum Plus

Conservation, using existing energy sources more efficiently, is perhaps the most cost-effective and reliable way to maximize the energy available today. Our member companies are helping to lead the way in conservation.

Specifically, most refineries operate cogeneration facilities in which natural or refinery gas is burned in turbines to produce electricity to meet refinery needs and any excess electricity is sent to the grid. The steam from the cogeneration process is used to power the refinery processes as an added benefit. Cogeneration facilities at one company have reduced carbon dioxide emissions by almost 7 million tons annually, the equivalent of taking one million cars off the road. Another WSPA member company has teamed up with a grocery store chain to install high efficiency lighting and motion-sensor technologies that will save 17 million kilowatt hours of electricity per year.

*The earth contains more than enough energy resources to meet demand for many decades to come."*

Oil now provides about 60% of the world's energy needs and is expected to provide the same percentage in the decades ahead. According to the International Energy Agency (IEA), "the earth contains more than enough energy resources to meet demand for many decades to come." But while petroleum supplies are currently abundant, technological advances and economics will determine how long supplies will last.

Based on our California experience, clean fuels can be produced from petroleum. California's cleaner-burning gasoline was the single largest source of emissions reductions in the state when it was introduced in 1996. Clean diesel vehicles running on ultra low sulfur diesel fuel reduces emissions by 95%.

Some of our companies are investing in what they see as a viable and exciting future in renewables such as hydrogen fuel cells and solar, hydroelectric and wind power. Some of these renewable fuels, such as wind and solar, are growing rapidly. Nevertheless, renewable fuels are expected to provide only about 3% of total energy supply by 2015 according to IEA.

For more about how WSPA member companies are providing California's energy needs, please visit these websites:

Aera Energy [www.aeraenergy.com](http://www.aeraenergy.com)

Berry Petroleum [www.bry.com](http://www.bry.com)

British Petroleum [www.bp.com](http://www.bp.com)

Chevron [www.chevron.com](http://www.chevron.com)

ConocoPhillips [www.conocophillips.com](http://www.conocophillips.com)

ExxonMobil [www.exxonmobil.com](http://www.exxonmobil.com)

Navajo Refining [www.hollycorp.com](http://www.hollycorp.com)

Occidental Petroleum [www.oxy.com](http://www.oxy.com)

Plains Exploration [www.plainsxp.com](http://www.plainsxp.com)

Seneca Resources [www.natfuel.com](http://www.natfuel.com)

Shell [www.shell.com](http://www.shell.com)

Tesoro Petroleum [www.tesoropetroleum.com](http://www.tesoropetroleum.com)

U.S. Oil & Refining [www.usor.com](http://www.usor.com)

Valero [www.valero.com](http://www.valero.com)

Venoco [www.venocoinc.com](http://www.venocoinc.com)

Western Refining [www.westernrefining.com](http://www.westernrefining.com)



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