



## CLEANER FUEL -- AT WHAT PRICE? State increases ethanol content -- effect on cost of gas unclear

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California air quality regulators voted this week to boost the amount of ethanol in the state's gasoline, a move that could have big repercussions on fuel supplies and prices.

The measure requires that refiners adopt a formula that raises the ethanol content of California gasoline to about 10 percent starting in 2010. It's part of Gov. Arnold Schwarzenegger's push to fight global warming.

Made from plants instead of petroleum, ethanol produces smaller quantities of greenhouse gas emissions than conventional fuel. Gas sold in the state already includes about 6 percent ethanol.

The potential effects of the change are complex. Experts disagree about whether California's prices at the pump -- among the highest in the nation -- will go up or down as a result.

But a decade ago, when California mandated a major change in its gasoline blends, the switch increased the hold of big oil companies over the market, raised costs to consumers and boosted refinery profit margins.

The state's air board and ethanol enthusiasts hope the new change will push California's gas prices down. Using more additives will help stretch gasoline supplies in a state that consumes more fuel than it can produce, they say.

But the change will force the state's 14 gasoline refineries to retool their equipment, possibly at great expense. Those costs could trickle down to drivers.

One fuel expert with the California Energy Commission estimated that the move could raise gasoline prices by 4.2 cents to 6.5 cents per gallon. That would add up to \$716 million to \$1.1 billion per year.

"It's kind of a double-edged sword," said Susanne Garfield, spokeswoman for the energy commission, referring to the offsetting effects of increased supply and higher refiner costs.

The California Air Resources Board approved the change Thursday. The vote marked a significant step in Schwarzenegger's "low-carbon fuels" initiative, an effort to cut carbon dioxide emissions from the state's vast fleet of cars.

In a prepared statement, Schwarzenegger hailed the decision as "an important step toward diversifying California's fuel supply with alternative and, in this instance, renewable fuels."

Oil industry representatives say refineries can make the changes, but not as fast as the state wants.

Refineries that can't meet the 2010 deadline can get a two-year extension from the air resource board, but only if they find other ways to cut carbon dioxide emissions. One possibility is buying old, inefficient cars from vehicle fleets and junking them.

"If it's the state's goal to increase ethanol in gasoline, we don't have an argument with that," said Cathy Reheis-Boyd, chief operating officer with the Western States Petroleum Association. "You know in California what it takes to get permits, buy new equipment and install it? Two years is not enough."

In the 1990s, the state ordered refineries to begin producing a new, unique gasoline formula designed to fight smog. Smaller refineries closed down rather than pay for the needed upgrades.

The state ended up with a gasoline blend used nowhere else and made by a limited number of refineries and companies. Most energy economists point to that as one of the main reasons California has the nation's second-highest gasoline prices; only Hawaii's are higher.

In 2003 and 2004, California stopped blending MTBE (methyl tertiary-butyl ether) into its gasoline. The toxic chemical helped gas burn more thoroughly, but it also polluted groundwater. In its place, the state started adding ethanol.

The amount of ethanol used in each gallon, however, wasn't as large as the amount of MTBE it replaced.

MTBE had made up 11 percent of every gallon of gas sold in the state. But state officials worried that using more than 6 percent ethanol would make air pollution worse, not better. They even fought with the federal government, arguing that California shouldn't have to use ethanol at all.

As a result, gas supplies no longer stretched as far as they had, because they no longer contained as much additive. The tighter supplies drove prices higher.

"Effectively, you shut down a refinery's worth of production," said Lynn Westfall, chief economist with Tesoro Corp., one of California's largest gasoline makers.

By boosting ethanol content, Thursday's decision should undo some of that damage to supplies, at least in theory. Air quality shouldn't take a hit, so long as refineries adjust other parts of their gasoline formula, said board member Daniel Sperling.

The air resources board did not explicitly order that all California gasoline contain 10 percent ethanol. Rather, it requires refineries to use a computer model to design fuel blends, a formula that will put most fuel in the state at about the 10 percent level.

"As you crank through the model, you find you can go with a 10 percent blend of ethanol, and it's in fact easier than a 6 percent blend," said Sperling, who also helps lead Schwarzenegger's low-carbon fuel initiative.

But the change will require using far more ethanol, the price of which can swing up and down just like gasoline's. Big increases in the demand for ethanol last year helped contribute to a nationwide price spike at the gas pump.

In addition, ethanol contains less energy per volume than does gasoline. Switching to a 10 percent ethanol blend will force drivers to buy 1.3 percent more fuel, California Energy Commission fuel specialist Gordon Schremp estimated.

In a presentation to the air board, Schremp said finding enough ethanol shouldn't be a problem. Production of the biofuel is growing fast across the country, including in California.

Local ethanol producers welcomed the new fuel standards.

"By incorporating a larger percentage of less expensive, renewable, clean-burning, low-carbon ethanol into California's gasoline blend, consumers, the environment and the economy all benefit," said former California Secretary of State Bill Jones, who now chairs the Pacific Ethanol biofuel company.

### **Ethanol increase**

**Additive:** The state is ordering an increase in the ethanol content of gasoline from 6 percent to about 10 percent.

**Emissions:** The move is designed to help fight global warming by mandating cleaner fuel blends.

**Price:** Experts disagree on what will happen to gas prices, but one state expert forecasts an increase of 4.2 cents to 6.5 cents per gallon.

**Source:** California Energy Commission, California Air Resources Board

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