

## Analysis: California continues clean-car quest

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One of Barack Obama's first actions as incoming US President could allow California to set its own limits on greenhouse gas emissions from vehicles.

When President Obama signed an executive order on 26 January advising the US Environmental Protection Agency (EPA) to revisit California's bid to set its own vehicle emissions standards, his pen stroke had huge ramifications. Just last March, the EPA had denied California's request for a waiver exempting it from the US Clean Air Act, which mandates limits on air pollution levels but currently not greenhouse gas emissions.

The Clean Air Act specifically allows California to apply for a waiver once it determines that its individual standards are as protective of health and safety as federal standards. The EPA is required to provide the opportunity for a hearing. California was permitted this option because its more stringent air pollution regulations pre-dated the creation of the legislation.

In denying the application – an unusual setback for the California Air Resources Board (CARB) – the George W Bush Administration delivered a blow to environmentalists and other Americans. Currently, 13 states and the District of Columbia (DC) have joined California in seeking a waiver for tailpipe emissions, which would limit CO<sub>2</sub>, nitrous oxide, methane, and the HFC refrigerants in mobile air conditioning systems by the year 2020.

Such moves are opposed by the automotive industry. Both the Auto Alliance, representing manufacturers, and the National Automobile Dealers Association have called for single national standards on emissions and fuel economy.

The EPA will now conduct a review of the California waiver decision, which may take a few months. The Agency's new Obama-appointed administrator, Lisa Jackson, commented: "Knowing EPA has the full support of the President as we proceed to revisit the denial of the California waiver is very encouraging. The President's actions herald a sea change in America's commitment to addressing climate change."

Indeed, a "sea change" is necessary. As EPA spokesperson Cathy Milbourn pointed out, presently the EPA does not put a cap on CO<sub>2</sub> emissions. Yet, she stressed that the overall level of cleanliness from auto emissions has improved significantly since the Clean Air Act of 1970, which required a 90 per cent reduction in emissions from new automobiles by 1975.

"Congress also established the EPA, giving us the responsibility for regulating motor vehicle pollution. In 1970, new cars had to meet a standard of 0.41g of hydrocarbon per mile at a 3.4g of carbon monoxide per mile standard by 1975," Milbourn says. Since that time, a variety of US landmarks have continually improved auto emission regulations, most notably the 1990 version of the Clean Air Act.

According to CARB, the so-called Pavley Waiver would mean reducing greenhouse gas emissions in California by 2020 to 1990 levels, with at least the aforementioned 13 states following suit. While the initial focus was on cleaning up light-duty vehicles, there is now a larger effort to cut emissions from all sources.

Meanwhile, terms of the waiver will mean controlling the motor vehicles themselves and implementing new technologies "under the hood and on the drive line", according to CARB's Steve Albu, division chief of the mobile source division.

Albu cites Honda and Toyota as companies advancing green technologies, but points out that Toyota's high-end Prius hybrid does not necessarily portend the car of the future.

Other auto technologies in development include direct-injection fuel systems, whereby fuel is injected into the combustion chamber, as well as variable valve timing and lift, which "gives the engine more flexibility to operate more efficiently throughout the operating range", Albu says. With direct-injection fuel systems, the compression ratio of the engine adds power without using high grades of fuel.

CARB is also looking at downsizing the engine, including through direct injection, and also incorporating some turbo charging, such as is included in Ford's 'eco-boost' system. "They've got downsized engines with direct injection, and turbo charging using the same power output as much bigger engines, with better fuel economy and lower emissions, in our case," Albu adds. "Our intent has been to reduce the greenhouse gas emissions from all vehicles without displacing the customer from the vehicles they want to drive."

Another interested participant is the US Alliance of Automobile Manufacturers. Spokesperson Charles Territo told *E&T* that the alliance is looking beyond standard hybrid vehicles into alternatives such as ethanol-capable flexible fuel, plug-in hybrid electric, clean diesel, hydrogen internal combustion engine, hydrogen fuel cell vehicles and “a wide range of alternative fuels”.

According to Paul Hughes, manager of CARB’s Low Emissions Vehicle section, the EPA’s former administrator, Stephen Johnson, determined that California did not have “a compelling need that was extraordinary above and beyond the rest of the United States – or the rest of the world,” at least in his final ruling on the matter.

“But we argued in deference that we felt that because of our tourism industry, any rise in sea level could have a dramatic effect on our coastal areas.” Hughes says. “We have mountains that contain our snow pack that we rely upon for water throughout the state, and if it melts early, we have trouble containing the water sufficiently to provide water throughout the year.”

Albu stresses that they’re mainly looking at vehicles that weigh 3,825kg and below, although the so-called ‘medium duty’ vehicles – up to 6,300kg – are a subcategory that the board includes in its emissions regulations. To the best of his knowledge, heavier vehicles are not being regulated for greenhouse gas emissions.

Territo says that his industry wants uniform guidelines at the federal level. “We’re pushing for a national standard that gives manufacturers the ability to offer consumers highly fuel-efficient vehicles at an affordable price,” Territo says. The Alliance hopes that a standard will rid itself of what he calls the current “chaos, complexity and confusion” surrounding this issue and bring “certainty and consistency.”

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