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How Automakers Can Meet New Fuel Efficiency Standards

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Automakers face a weighty choice: They can devote their energy to cars that use batteries, or they can make the gasoline engine superefficient.

If they do the first, it will cost consumers more in the early going. If they do the second, it will cost less, but the car as we know it may have to radically change.

Those are the choices the Obama administration sees, according to its most recent documents on fuel economy.

Last week, U.S. EPA and the Department of Transportation kicked off the process of setting fuel economy standards for the 2017-2025 window. For now, they are envisioning cars in 2025 that get between 47 and 62 miles per gallon.

That's a considerable jump from today's cars. But in a technical report written with the California Air Resources Board, the agencies laid out two philosophies of getting there: Start using more batteries in cars, or make gasoline engines way more efficient.

No matter what automakers do, the agencies said, people will save money. In 2025, they will save between \$4,900 and \$7,400 over the lifetime of a car. That means even though the cars will cost more than today, the additional cost will be paid back in about four years, or less.

The gasoline-versus-electric approach might differ for another reason: appearance.

Americans drive some of the largest, heaviest cars in the world, and fuel economy gains have tended to be reduced by engines that are ever more powerful.

Engineers have doubts about how fuel-efficient that kind of car can be, if Americans aren't willing to compromise on size.

"There's an awful lot of people that think an Escalade is a gorgeous vehicle. But they don't care that it's like driving a brick through the air," said Steve Wesoloski, who spent two decades at General Motors Co. working on the Corvette and race cars.

'Downweighting' the SUV

Most recently, Wesoloski was technical director for the Progressive Automotive X Prize, a competition to build the most fuel-efficient vehicle that still met safety standards and could conceivably be bought by an auto consumer.

To get hundreds of miles to the gallon, contestants used designs that would seem bizarre to the average driver.

Yet Wesoloski said that's the point: Consumers have become so accustomed to cars with roomy interiors and enough

space for once-a-year hauling trips that automakers can't really make the cars much more fuel-efficient. "You're not just going to turbocharge a Camry and get to 80 miles per gallon," he said.

Andrew Frank, a professor at the University of California, Davis, has also found that big cars have their limit.

He and his students have converted many SUVs to hybrids, from large ones like the Chevy Suburban to smaller ones like Chevy's Equinox. "The best you can do while preserving performance is about double the current fuel economy," he said.

That got the Suburban from 15 mpg to 30 mpg and the Equinox from 18 to 36.

The public may have found its compromise in the "crossover," a vehicle that looks like an SUV, but is built on a car frame and therefore weighs much less. These vehicles have been stealing much of SUVs' market share, since they get much better fuel economy.

But the way fuel economy rules are written, such vehicles don't help automakers comply.

The fuel economy rules are size-based: The larger the vehicle, the lower the mpg target it is measured against. The smaller the vehicle, the higher the mpg target it has to meet.

Thus, an automaker can replace its largest SUV with a crossover, but then its crossover will have to face a higher mpg target than the SUV did.

Rather than "downsizing," the trend may become "downweighting."

Will Americans choose small?

Ed Cohen, Honda's vice president of government and industry relations, said Honda will focus on using lighter steel and aluminum parts. Then, it will squeeze more efficiency out of the gasoline drivetrain. Finally, it will keep improving its hybrid systems.

He said Honda is cautious about how quickly plug-in hybrids and all-electric cars will catch on with the public. Honda and Toyota have had hybrids available for 10 years, but they still only make up 2 or 3 percent of sales.

Today, electric cars run the gamut from tiny, one-person vehicles to small sedans. Major automakers have focused on the latter, since they resemble other cars. But to power a vehicle of that size requires stowing a lot of heavy batteries, and that drives up the cost of the car.

Despite their cost, environmentalists see another reason to emphasize electric vehicles -- competitiveness. Roland Hwang, who directs the transportation program at the Natural Resources Defense Council, said the United States consigns itself to last place, behind Germany, Japan and China, if it chooses a standard less than 62 mpg.

So will customers accept an electric or plug-in hybrid that looks like a regular car, but putters to a stop when its charge runs out? What if the car has to have a smaller trunk than average, or has to carry fewer than five passengers?

"If we had a magic ball, I think we'd be very successful as an auto company," Cohen said.

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