

**INTO CLEAN AIR:
*GREEN CARS AND THE POLITICS OF
MODERN MOBILITY***

***REMARKS BY DAVE REEVES
PRESIDENT - - NORTH AMERICA PRODUCTS
CHEVRONTEXACO
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So, what would Jesus drive?

Now this is a truly provocative question . . . and a very hypothetical one at that.

But it's being asked . . . in earnest . . . by a growing number of Americans.

Concerns about automobiles, their size, their impact on the environment, and strife in nations where oil is often found, are raising challenges to the very morality of mobility.

Of course, we'll never know what Jesus - - or figures from any other great and ancient faith - - might choose to drive.

But the question sure generates strongly-held opinions.

Some folks contend that He'd drive an electric car, because electric vehicles have no tailpipe emissions.

Others claim He'd choose one of the new hybrids, because of their fuel economy.

And then there's Michael Marsden, a professor at Eastern Kentucky University who teaches a course on automobiles and culture.

In answering a newspaper reporter who posed the wonderful question, Marsden thought long and hard before saying: "Jesus would probably drive a Suburban . . . because he had those 12 apostles."

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It's pretty clear that personal priorities shape diverse opinions on what is - - after all - - a theological riddle.

But the political side of mobility is a worldly battle that is here, now and very real.

It also represents an interesting social evolution.

For most of the past century, automobiles have been judged largely on styling and horsepower.

They were essential to teenage rites of passage . . . a utilitarian way to get to work . . . or a means of hauling the kids up to Yosemite for the weekend.

For a lot of us - - to put a twist on Dr. Freud - - a car was just a car.

Today, autos are the nexus of an issue that combines environmental quality . . . international relations . . . national security . . . economic security . . . and freedom of choice.

In fact, where a person's choice of car is often based on comfort or necessity, others may interpret it as a public statement on politics and the environment.

And with some folks employing a nasty strain of rhetoric . . . including claims that SUV drivers support terrorism . . . it's no wonder car-buyers are looking for divine guidance.

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Well, from my humble perspective, I'd like to tee up a few ideas about autos . . . a variety of fuels . . . where those fuels might come from . . . and what it all means to societies around the world.

First off, the politics of mobility is not just about cars and trucks . . . but the oil that's used to make the gasoline and diesel that fuel them.

The concerns generally focus on three areas:

One is the environmental impact of petroleum, from finding, producing, transporting and refining it - - to the tailpipe emissions of vehicles using gasoline and diesel.

Another is the "finite" nature of oil.

And finally there's the view that the United States is too dependent upon oil from unstable regions.

These notions are what's behind the latest California legislative push to force reductions in the use of petroleum - - laws that would require auto makers to boost average fleet mileage and offer vehicles that use alternative fuels.

Fair enough.

Whether you agree with these proposals or not - - and accept the additional price and tradeoffs the state's consumers might have to bear - - this is the stuff of a healthy social policy debate.

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It's certainly different than hearing from those who say autos and oil are as harmful as tobacco.

That little exercise in sophistry totally overlooks the benefits of modern mobility.

Indeed, cars, trucks, trains and planes are the essential components of 21st century prosperity.

They provide ease of movement and commerce that supports abundant food . . . access to medical care . . . and directly contribute to life expectancies that now approach an astounding 80 years.

They also support lifestyles that as Tom Wolfe so famously said, "would make the Sun King blink."

Old Louie the 14th never flew cross country in at 35,000 feet . . . cruised down a freeway at 70 miles per hour . . . or took his family to a Wal-Mart bigger than Versailles.

In the U.S., most all of us share similar and very common experiences.

While only 12 percent of the world's population has access to personal vehicles, that's changing.

The Economist recently noted that car sales in China jumped 56 percent last year, to more than 1 million vehicles.

Young people bought most of the private cars, said the magazine, "for the sense of freedom it offers."

To me, this growing demand for cars and fuel is the strongest argument for new automotive technologies that conserve natural resources . . . and have less environmental impact.

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There's a new "conventional wisdom" about this future that's intriguing.

It's a future in which cars will have fuel cell motors . . . which emit no pollutants or greenhouse gasses . . . and that run on hydrogen, one of the most abundant elements on earth.

Earlier this year, President Bush announced his Freedom CAR initiative - - to spend \$1.2 billion over the next five years to research ways for hydrogen to replace gasoline in autos.

Like most energy companies, ChevronTexaco is already engaged in such research.

We are in ventures to study various types of fuel cells, advanced batteries, and methods of processing and storing hydrogen.

Our scientists think that stationary fuel cells to power buildings - - using hydrogen made from natural gas - - will be practical sooner than fuel cells for autos.

But it's the promise of automotive fuel cells - - powered by hydrogen that's made with zero emissions - - that has advocates touting it as a replacement for oil.

It's a great concept - - in theory.

But before we irrevocably commit ourselves to this course, we owe it to ourselves - - and our grandchildren - - to understand the full social and environmental consequences of what it might take.

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You see, pure hydrogen does not occur naturally on earth.

Except for in the sun and other stars, it's not really even an energy source, but a medium to deliver it.

Here on the Third Rock, hydrogen molecules are bound up with other elements, such as oxygen, which together make up the water in the planet's lakes, rivers and oceans.

We can extract pure hydrogen from water through a process called electrolysis.

However, that requires vast quantities of electricity - - more, in fact, than the energy value of the hydrogen.

And that's a law of nature that neither opinion, willpower nor advanced technology can ever repeal.

Making automotive hydrogen with electricity from coal or natural gas-fired plants seems counter-productive.

So what about electricity from renewable sources?

Well, there's the rub, and the side of the hydrogen story you seldom hear.

Power from wind, solar and biomass all require tremendous amounts of land - - which triggers their own set of environmental consequences.

Our friends at Hawaiian Electric, who use renewable power in their electrical grid, say it takes up to 10 acres of solar cells to produce one megawatt of electricity, as much as 40 acres to get it from wind, and 280 from biomass.

Electricity from renewable sources belongs in our energy mix, but is perhaps put to its most productive use in the power grid.

Meanwhile, there may be other alternatives for making hydrogen and getting some of its benefits.

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For the foreseeable future, the best source of hydrogen is natural gas, oil and other forms of hydrocarbons, which is broken out of the raw material by a device called a reformer.

Auto makers claim that by converting a gallon of liquid hydrocarbons to hydrogen, a fuel cell can squeeze up to 50 percent more mileage out of the energy - - a boon to conservation.

Many of us at ChevronTexaco believe that fuel cell cars with small on-board reformers will crack hydrogen from a fuel cell grade gasoline - - purchased at your friendly Chevron station.

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Of course, this scenario is enough to make the anti-oil folks go absolutely berserk.

We're back to square one on the risks of using oil - - which I'd counter by saying we're managing better than at any time in history.

We're back to square one on using a "finite" resource, which I'll address in a moment.

And the United States still remains dependent upon nations in troubled regions.

I'm going to level with you.

The U.S. will never be "energy independent" - - at least not for most of this century.

Until something like fusion is perfected - - or we take radical steps to slash energy use and imports - - to say otherwise is unrealistic.

We live in an interdependent world of energy . . . and share energy security concerns with every other nation on earth.

The good news is that we've never had a more diverse supply of oil . . . better prospects for additional discoveries of hydrocarbons . . . and technologies to make good and clean use of them.

Is the U.S. hostage to Middle Eastern oil?

According to author Daniel Yergin, the U.S. gets 70 percent of its crude oil from its own production . . . and from Canada and South America.

Much of the rest comes from West Africa, Russia, Kazakhstan and elsewhere.

The Middle East is important, but you have to recognize that its nations are often in competition for our business.

What's more, while the Middle East has huge reservoirs of crude, it doesn't have a monopoly on present reserves or future discoveries - - which are not quite as "finite" as some folks suggest.

"People sometimes seem to think of reserves as a fixed amount of oil, laid down by nature," wrote Yergin in *The Financial Times* earlier this year. "In fact, reserves are a more elastic concept . . . determined by geology, economics, politics and technology."

Three billion years of life on earth has left behind a lot of hydrocarbons - - in oil and many other forms.

They're in natural gas . . . coal . . . and oil shale.

And don't ignore the tar sands of Venezuela and Canda, which aren't even counted in oil reserves, but are said to hold more hydrocarbon than Saudi Arabia.

I won't burden you with the details of several developing technologies, but with the right economics it's clear that we'll be able to convert just about any hydrocarbon into a clean fuel, including hydrogen.

What once seemed so "finite" is a resource that might stretch out well beyond today's concerns - - and beyond our capacity to make logical plans.

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There's one more piece to this story.

We are, plain and simple, in the middle of an environmental revolution *in conventional* automobiles.

Fueled with the latest generation of California reformulated gasoline, these cars that not only out-perform fuel cell vehicles in cost and utility - - but *can match* their environmental benefit.

Some are hybrids, with gasoline engines working in concert with electric motors to get better mileage - - a technology you'll soon see in SUV's.

But whether it's a hybrid or conventional, the exhaust from an average new car is 99.9 percent cleaner than vehicles from the early 1970s.

What's more, the advent of "partial zero emission vehicles," or PZEV's, is one of the reasons the California Air Resources Board recently dropped its mandate that auto-makers sell battery-powered cars.

Let me quote Board Chairman Dr. Alan Lloyd, from a recent press release out of Sacramento:

"Over the last 13 years, we've seen the near impossible accomplished with gasoline vehicles: zero evaporative emissions and exceedingly clean exhaust - -cleaner, in some cases, than the outside air entering the cabin . . ."

In other words, the air going out the tailpipe is cleaner than when it's taken into the engine - - which makes the car nothing less than a rolling air filter.

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When I tell this story, people typically say:

"Sure Reeves, but how far do I have to go to get one, and how big a fortune is it going to cost?"

Well, the answer is: To your nearest Honda, BMW, Ford, Nissan, Toyota, Volkswagon or Volvo showroom.

All have popular models certified as PZEV's, and cost about the same as if they weren't so clean.

I'll say it again: This is a revolution.

Despite the tremendous growth in the number of autos on California roads and miles traveled, air quality is rapidly improving.

Over the past decade in San Diego, against very tough state standards, the number of bad air days has decreased by 83 percent.

And since the auto fleet turns over every 8-to-10 years, the new generation of PZEV's is certain to make things even better.

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Of course, this doesn't solve the greenhouse gas issue - - although ChevronTexaco and others are working on many ways to reduce its production.

We've developed a proprietary system to gather and manage data on energy use and greenhouse gas emissions, and are offering it free-of-charge to the global energy industry.

We're developing a means of converting natural gas to liquid fuel in remote locales, where that gas would otherwise be flared, which produces greenhouse gas emissions.

And we're working with governments and universities on ways to capture and sequester carbon dioxide.

Of course, we still face challenges with diesel engines and air quality.

But technology is helping here, too.

The Ports of Los Angeles and Long Beach are both now using a form of diesel called Chevron Proformix, which cuts terminal equipment emissions in half.

What's more, Europeans are driving a new generation of high performance diesels that not only get 30 percent better mileage than gasoline cars, but are ultra clean.

These may too be in our future.

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You've just heard a perspective on mobility and the environment that might be different than what's more commonly articulated.

If you agree with these thoughts, I encourage you to urge elected officials to let the technologies compete in the marketplace - - without regulations that favor one over the other.

I have faith that consumers, ultimately, will make the choices that most benefit society.

We in the developed world are fortunate indeed to have choice.

Some of us buy cars that look sleek and go fast.

Others get trucks that climb icy mountain roads.

Still others pick a vehicle that's easy on the budget.

In our hearts, though, most all of us want to make a moral choice in transportation - - -a vehicle that keeps our family safe . . . gets us where we need to be . . . and leaves the lightest of environmental footprints.

We're already headed in that direction, and I believe our choices will keep us on that road.

Thank you.