

# Breaking free from energy dependence

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Breaking free from energy dependence

By Mark Clayton, The Christian Science Monitor

Ray Kopp enjoyed tooling around in a hydrogen-powered Honda prototype vehicle so much that, for a moment, he pictured driving one home.

Then Mr. Kopp, an economist at Resources for the Future, remembered the car's price tag – \$1.5 million – and his hopes were dashed.

Therein lies the core of America's energy problem. Short of radically altering America's driving habits, the United States cannot achieve energy independence without spending billions of dollars on new initiatives. And no political consensus exists to spend those sums despite decades of promises to cut oil imports.

But new plans are emerging that might sway lawmakers.

"Certainly energy independence for the United States is possible in rough technical terms," says Bill Prindle of the American Council for an Energy-Efficient Economy in Washington, D.C. "The question is: 'What would it cost? How quickly could it happen? What kind of political and economic sacrifices would have to be made?'"

Achieving energy independence really means retooling the car. Coal, natural gas, and other domestic fuels can heat and power US homes and factories. But some 70% of oil is used in transportation, four-fifths of that by cars and trucks. Replacing them with alternative vehicles will be tough. Hydrogen cars are still at the prototype stage. Hybrids ease but don't solve the problem. Other alternatives – such as driving less – dredge up uncomfortable memories of the 1970s.

Even today, the three-decades-old injunctions to drive 55 miles per hour and buy "unsafe, sluggish, squinchy" little cars – as one new report says – still haunt consumers as a step backward for the American dream.

But a number of hard-edged new proposals suggest something different: heavy federal investment in new technologies.

## sci.energy: Breaking free from energy dependence

The "New Apollo Project" is a plan backed by labor and environmental groups. Modeled after America's decade-long push to put a man on the moon, it would invest \$300 billion over 10 years in dozens of energy projects from hybrid cars to factories to high-speed rail. Predicted result: 3.3 million new jobs; some 91 million high-mileage vehicles on the road; a \$284 billion savings from a 16% reduction in energy use; and at least a 54% cut in Persian Gulf oil imports.

"It's clear this country has to make a dramatic transition to much more sustainable sources of energy," says Robert Borosage, president of the Institute for America's Future, which backs the plan. "In the long term, we can see total energy independence. But in the short term, you can still dramatically reduce American energy dependence, so we don't have to see young Americans guarding pipelines in Iraq and elsewhere."

Another plan put out earlier this month by a coalition of conservative Washington think tanks, including the Institute for the Analysis of Global Security and the Hudson Institute, fingers imported oil as a critical national security problem that must be addressed.

Called "Set America Free," the plan envisions \$12 billion in incentives paid over four years to automakers and consumers to create a market for flexible-fuel cars that run on biofuels distilled from plant material. At the same time, it would promote hybrid and "plug-in hybrid" gas-electric cars that charge up on electricity at home for short trips, but still use gasoline as a backup for longer trips.

"We think the transportation fuel sector should be diversified by utilizing more electricity as a fuel," says Gal Luft, executive director of the Institute for the Analysis of Global Security, an energy security think tank. "Plug-in hybrids could get 100 miles per gallon. With a flexible-fuel engine, where 80% of the fuel is alcohol and 20% is gasoline, a hybrid could get 500 miles per gallon" of gas.

Lighter but stronger

One of the most radical energy independence plans may also be among the most conservative in its assumptions. "Winning the Oil Endgame" is a Pentagon-funded study by the Rocky Mountain Institute, an energy think tank. The idea is to take carbon-fiber material used to create fighter jets and bring it to the mainstream of car manufacturing.

The plan envisions that by 2025, most cars will be made of carbon-composites so light that they require little energy to move down the highway – but so strong that steel vehicles would be easy losers in crash-test comparisons.

Nobody has to give up their SUV, according to this plan. Just build it with carbon fiber instead.

Under the plan, \$180 billion would be invested over 10 years to pay for "fee-bate" market incentives. Based on a government forecast of \$26 per barrel, the plan would save \$133 billion a year by 2025 – a modest prediction given today's oil prices, the authors say.

Even if by 2025 the nation were driving only the equivalent of 2005's best hybrid vehicles, it would save a sixth of projected US oil needs – twice the level of its Middle East imports, the report says.

"Our energy future is choice, not fate," the report states. "Oil dependence is a problem we need no longer have – and it's cheaper not to."

Crashworthy

Already, carmaker BMW is building carbon-fiber body parts, buying body-molding equipment, and has plans to shift many operations to carbon fiber, the report indicates.

"It is very commonly assumed that if cars get lighter they'll become less safe if they get hit by heavier cars," says Amory Lovins, executive officer of the Rocky Mountain Institute and an author of the report. "But if the light car is made out of carbon composites, the game changes – those materials can absorb six to 12 times as much crash energy as steel and do so more smoothly. So the lighter car is safer, even if hit by a heavy car."

If "state of the art" technology were applied to vehicle manufacture, 52% of the forecast oil use would be eliminated by 2025, he predicts. Half of the remaining oil demand could also be eliminated by then using a range of biofuels – from ethanol to bio-diesel – as substitutes. The final 7 million barrels of oil a day could be cut by either boosting biofuels further, substituting natural gas, or at last implementing hydrogen fuel-cells.

Such proposals, however, seem like long shots to some – and even unproductive to others.

"We have a strong relationship with Saudi Arabia and oil independence for the US would amount to a huge economic hit to them," says John Felmy, chief economist of the American Petroleum Institute. "It would increase that country's instability."

And while higher mileage standards on cars helped lower oil consumption, they "were a huge hit on Detroit," Mr. Felmy says.

"I think a lot of people use these plans to advance their own agendas," adds Mr. Kopp of Resources for the Future. "Some want more drilling in Alaska; others hate SUVs. So a lot of that stuff goes under the guise of energy independence. What will ultimately be needed is an alternative to petroleum. Until you do that, you're not going to be able to attain

independence."

After the first oil shock in 1973, President Nixon vowed energy independence in a decade. Every president since then has promised greater energy security. Yet oil imports that were 35% of US oil consumption in 1973 are expected to rise to 63% by 2015, federal projections show.

John Kerry and President Bush have touted fairly modest plans to boost US energy security. Mr. Bush would drill for more oil at home and push research into hydrogen-powered cars. Mr. Kerry champions hydrogen cars, too, but would mandate tougher mileage standards for cars.

Neither would do more than dent oil imports, experts say.

Mr. Lovins believes the move toward energy independence would not damage the economy, but revitalize it – giving the equivalent of a huge energy tax break while fueling a shift to more competitive technologies. That's what happened during the 1977 to 1985 energy crisis. Oil use fell 17% and Gulf imports fell 87% – but the nation's output rose 27%, he notes.

"We have market power," Lovins says. "We can save oil faster than they can sell it."

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