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Tilting at Energy Windmills

Amory Lovins believes the U.S. can drastically slash its oil consumption. Here's how.

By JEFFREY BALL
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Suddenly, lots more people are paying attention to Amory Lovins.

Mr. Lovins, a disheveled 57-year-old intellectual whose résumé includes an Oxford University degree and a MacArthur Foundation genius grant, has been tilting at the windmill of U.S. energy policy for more than a generation. He first gained notoriety in 1976, when, in the wake of the Arab oil embargo, he proposed a radical notion: that the smart way to ensure adequate cheap energy for the future was to reduce consumption, rather than increase supply.

Since then, Mr. Lovins has built an international reputation as an energy-efficiency guru—and a career as a consultant to dozens of Fortune 500 companies. His base remains the Rocky Mountain Institute in Old Snowmass, Colo., a think tank he founded in 1982 with his former wife, Hunter Lovins.

Mr. Lovins's basic thesis: Energy efficiency is good business because it cuts costs—and that big moves to boost efficiency are better, and ultimately cheaper, than little ones. His latest grand idea: that the U.S. can drastically slash its oil consumption by shifting its auto fleet to vehicles built with carbon composites—materials that are lighter than steel and yet, Mr. Lovins argues, even stronger in a crash.

Such vehicles are the keystone of a broad strategy to wean the U.S. off oil that Mr. Lovins's institute lays out in a recent study called "Winning the Oil Endgame." The study also argues that U.S. auto makers are behind Japanese competitors in rolling out fuel-efficient vehicles such as gasoline-and-electric hybrids—and that unless Detroit catches up quickly, it will find itself in the industry's back seat for years.

REVVING DOWN
Amory Lovins, energy-efficiency guru

Mr. Lovins's ideas often have been dismissed as interesting but too radical to implement. Yet, since the study was published last fall, it has been touted in places not known for out-of-the-box thinking: Wall Street and Capitol Hill. John Casesa, an auto-industry analyst at Merrill Lynch, organized a conference call with Mr. Lovins for his clients and last month issued a report, subtitled "Investing in the Clean Car Revolution," that Mr. Casesa says was inspired in part by Mr. Lovins's ideas. And partisans of Mr. Lovins took his case to Washington last month as Congress debated a proposed energy bill. The chairman of a group called the Committee on the Present Danger issued a paper setting out a policy agenda to curb oil use. Among the technologies the group proposes: Mr. Lovins's favorite, lightweight carbon composites.

Mr. Lovins, as always, is confident about the prospects for his proposals. In a recent interview, he explained his ideas.

THE WALL STREET JOURNAL: ***The U.S. made big energy-efficiency gains in the late '70s and early '80s, but since then the gains have flattened out. You say it's possible to ramp up efficiency again. How?***

MR. LOVINS: New light vehicles have been getting, on average, less efficient for over 20 years. And the government forecasts over the next 20 years they'll get only 0.5 miles per gallon better than they were in 1987. But if all light vehicles on the road in 2025 were only as efficient as the hybrid sedans and SUVs in showrooms today, which will look pretty antique 20 years on, they would save one-sixth of the nation's oil, or twice what we now import from the Persian Gulf.

If such popular hybrid power trains are mated with ultralight auto bodies, better aerodynamics and better tires, this can save 69% of light vehicles' forecast fuel use in 2025, and the cost of saving a gallon will average

only 57 cents. In fact, such a midsize SUV getting 66 mpg would repay its sticker-price premium in two years at today's gasoline prices. The reason that cutting out half the car's weight doesn't cost more, as had always been assumed, is that the costlier materials are paid for by simpler auto making and smaller propulsion systems.

WSJ: ***What are these "ultralight" vehicles, and what's the chance they'll make it out of the lab and onto the road?***

MR. LOVINS: You can make a car or light truck with half the weight, and a third the fuel use, at comparable cost, with improved safety even if it hits a heavy car, by making its structure out of carbon composites that have six to 12 times the crash-energy absorption per pound as steel. We think it's realistic that a capable auto maker, starting now, could ramp up production of a composite car in 2010. BMW showed a handmade carbon concept sedan in 2000 and said they intended to bring it into series production as quickly as possible and it would take them about five years. The five years are about up.

(Editor's note: A BMW spokesman says the company has no plans to build a vehicle in which carbon fiber replaces all the metal. When BMW showed a carbon-fiber concept car in 2000, the spokesman explains, it said that within five years it would build a vehicle with some carbon-fiber parts. BMW did build a limited-edition version of its M3 coupe with a carbon-fiber roof in 2003, and it currently sells another high-end coupe, the M6, with a carbon-fiber roof and spoilers. But the spokesman says: "To do a whole car from carbon fiber would be very expensive.")

WSJ: ***There's heated debate about whether the world is running out of cheap oil. You say that's beside the point. Why?***

MR. LOVINS: Nobody knows or can know how soon oil output will peak, because 94% of the reserves are held by governments, not companies, and the data, if known, are secret. But it doesn't matter, because you ought to do the same things just to save money whether you're concerned about depletion or not. All the oil the U.S. uses, or is projected to use, can be saved or substituted cheaper than buying it—even at half today's price.

We believe this transition will be led by business for profit. The worst that can happen, if you get off oil sooner than you turned out to need to, is you make more profit earlier. That's OK.

WSJ: ***You say the political debate over whether to toughen the nation's fuel-economy rules also is beside the point. You endorse another idea: a "feebate." How would it work?***

MR. LOVINS: Within whatever size class of vehicle a consumer chooses, a feebate would charge a fee on the less-efficient models and use it to pay a rebate on the more-efficient models. But you'd have no incentive to change vehicle size. People would pick whichever size class they want—and then see a greater price spread within that size class according to the efficiency of the different offerings. Each year the fees would pay for the rebates. This would speed innovation, widen the availability of efficient models and make money for both consumers and auto makers.

WSJ: ***Why are Detroit's auto makers in such trouble today?***

MR. LOVINS: Their industry is at the mercy of oil prices which they can't control but which their technology and marketing choices have substantially contributed to increasing. And they have such weak balance sheets that each of the Big Three can afford only one bet, which is already placed, whereas Toyota has enough money to bet on everything—and has. The bad joke in Detroit has long been, "We make cars so we can loan the people the money to buy them."

To be sure, some of the burdens are not of their own making—notably health care for their employees and retirees. But the Big Three have not been as bold and visionary as some of their competitors, particularly in Japan. I hope that the depth of their problems will now bring them to the kind of technological breakthroughs of which they're capable.

WSJ: ***Detroit has tried in the past to build radically more-efficient cars -- particularly battery-powered electric cars. Those efforts fizzled. What went wrong?***

MR. LOVINS: The best of those products was GM's EV-1. Within the niche markets that battery cars can exploit, it was excellent. Unfortunately, it was unmarketed by the legal, lobbying and PR side of the same company, which ideologically opposed California's electric-car mandate—and gutted the law that had created that market. The lobbying and litigation sides of the Big Three often advance strategies directly contrary to the companies' interest—as if nobody had told them what strategy is.

WSJ: ***Hybrids appear to be a market hit. But Japanese auto makers are dominating that market. Where's Detroit?***

MR. LOVINS: Playing catch-up. Ford's Escape hybrid SUV is a valiant example, but Detroit remains years behind and hampered by Japanese prebooking of production capacity for key parts. With bolder leadership and more-aggressive spending, Detroit could still catch and surpass Japanese hybrids.

WSJ: ***Is Detroit changing?***

MR. LOVINS: The initial sour-grapes reaction to the success of the latest Prius has given way to, "Oh my God, we'd better get ahead of this one, or at least try to catch up." There are many superb engineers in all three of the Detroit companies who are trying to make it happen. Given a faster evolution of business strategy, they could pull it off.

WSJ: ***You argue Detroit is hurting itself by continuing to crank out inefficient SUVs that you say won't be marketable in the fastest-growing auto markets, such as China. What's the threat?***

MR. LOVINS: The SUVs they're making are so inefficient that the heavier models are now illegal in China, and most of the rest will be in the next few years, as the Chinese government fuel-economy standards ratchet down. China plans to be a major car exporter by 2010—in the context of a visionary energy policy based on strong efficiency and breakthrough technologies. They coordinate their energy and car policies even though we don't. They are not planning to export your father's Buick. They're planning to export cars that use much less oil and ultimately no oil, because they also plan to become leaders in fuel cells.

One Detroit expert told me in 10 years you'll probably be able to drive home your efficient Chinese car from Wal-Mart. And after China comes India, which already exports cars to Britain. America's choice is very simple: Do we continue to import very efficient cars to displace our demand for foreign oil, or do we make efficient cars and import neither the oil nor the cars?

WSJ: ***The Bush administration is pushing hydrogen-powered fuel cells as the ultimate clean-car solution. Critics say it's an unrealistic dream. Who's right?***

MR. LOVINS: They're both right. If hydrogen were a distraction from, rather than a successor to, adopting today's efficiency-doubling hybrids, then the critics would be right. That's what they fear—that hydrogen is being promoted as a way to avoid adoption of currently available technologies. The logical thing to do is: hybrids now, ultralight hybrids as soon as possible, and ultralight fuel-cell hybrids after that. The first auto maker to go ultralight will win the fuel-cell race. That's because ultralight cars with low drag can run on a fuel cell three times smaller than today's cars could.

WSJ: ***Many people call your ideas intriguing but pie-in-the-sky. Is anyone who has the money to change things listening to you?***

MR. LOVINS: In the last few years we've helped large companies redesign over $20 billion worth of major facilities. And we are providing or have been asked to provide such services to over 70 Fortune 500 companies.

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