

Energy security: It takes more than drilling

By R. JAMES WOOLSEY, AMORY B. LOVINS, AND L. HUNTER LOVINS*

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The savagery of Sept. 11 confirmed that both Mideast oil dependence and fragile infrastructure threaten national security. Replacing Mideast oil is vital, but not by substituting equally or more vulnerable domestic sources.

Domestic energy systems aren't secure unless they're designed to make large-scale failures impossible and local failures benign. Today the opposite is true: The United States' extraordinarily concentrated energy flows invite and reward devastating attack.

Two decades ago, two of us authored and one wrote the foreword to a Pentagon study called *Brittle Power: Energy Strategy for National Security*. It found - and little has changed since - that a handful of people could shut down three-quarters of the oil and gas supplies to the Eastern states (without leaving Louisiana), cut the power to any major city, or kill millions by crashing an airliner into a nuclear power plant. Expanding centralized and vulnerable energy systems didn't protect national security then, and it won't now.

Energy security starts with using less energy far more efficiently to do the same tasks. The next step is to obtain more energy from sources that are inherently invulnerable because they're dispersed, diverse, and increasingly renewable. Meanwhile, we must not increase reliance on existing vulnerable systems. This strategy doesn't cost more; indeed, it's already winning in the marketplace.

Oil fuels 97 percent of US mobility. Relying for 13 percent of US oil supply on the pathological predators and vulnerable autocrats of the Mideast - home of at least two-thirds of the world's reserves - is a tragedy waiting to happen. We need not just another crude-oil source, but also an inherently secure supply chain delivering useful transportation fuels all the way to customers - then using those fuels productively so we need less. Alternatives can supply a bigger share, and stockpiles last longer.

Efficiency is the first and cheapest rapid-deployment energy resource. In 2000, America used 40 percent less energy and 49 percent less oil to produce each dollar of GDP than in 1975. Those savings are now the nation's largest "source" - five times domestic oil output. Most were achieved in just six years, from 1979 to 1985, when gross domestic product grew 16 percent, total oil use fell 15 percent, and Gulf imports fell 87 percent.

Modern efficiency technologies can put another \$ 300 billion a year back into Americans' pockets. Just a 2.7-m.p.g. better light-vehicle fleet could save as much petroleum as we import from the Persian Gulf.

Saving oil is the fastest way to blunt OPEC's market power, beat down prices, and expand invulnerable sources' share of energy supply. Billions of dollars in annual military fuel-saving opportunities just found by the Defense Science Board would also let US armed forces fight more effectively far from home.

New ways to supply fuel from renewable sources can be secure, fast, and competitive. Urban, industrial, farm, and forest wastes and soil-replenishing crops, such as prairie grass, can yield clean transportation fuels, electricity, fertilizer, and substitutes for petrochemicals. Done right, this can also improve topsoil, enhance farmers' income, preserve rural culture, and stabilize the climate. Producing such biofuels locally

* R. James Woolsey, an attorney, was Director of Central Intelligence 1993 to 1995. The Lovinses, who lead the nonprofit Rocky Mountain Institute, have long advised major oil companies and the Energy and Defense Departments. For more information on this subject, go to www.rmi.org/sitepages/pid533.php and www.nepinitiative.org.

bypasses vulnerable pipelines, employs Americans, and keeps dollars at home. Hydrogen fuel cells based on natural gas (but without using more) or renewable energy could also save about \$ 1 trillion of investment for transportation fuel infrastructure in the next 40 years while displacing oil promptly, securely, profitably - and in the long run, almost completely.

Drilling for more oil in the United States might be a useful but limited step, since the US uses 25 percent of the world's oil but owns only 3 percent. New domestic oil is generally costly and far from customers. Of the some 4 million oil wells drilled since the 1860s, 3 million have been drilled in the lower 48. Alaska has been less exploited, so the Arctic National Wildlife Refuge might yield oil - albeit, says the US Geological Survey, uneconomically, a decade off, and briefly cutting imports by only up to 5 percentage points.

But the real show-stopper is national security. Delivering that oil by its only route, the 800-milelong Trans-Alaska Pipeline System (TAPS), would make TAPS the fattest energy-terrorist target in the country - Uncle Sam's "Kick Me" sign.

TAPS is frighteningly insecure. It's largely accessible to attackers, but often unrepairable in winter. If key pumping stations or facilities at either end were disabled, at least the above-ground half of 9 million barrels of hot oil could congeal in one winter week into the world's biggest Chapstick.

The Army has found TAPS indefensible. It has already been sabotaged, incompetently bombed twice, and shot at more than 50 times. Last Oct. 4, a drunk shut it down with one rifle shot.

In 1999, a disgruntled engineer's sophisticated plot to blow up three critical points with 14 bombs, then profit from oil futures trading, was thwarted by luck. He was an amiable bungler compared with the Sept. 11 attackers. Connect the dots: Doubling and prolonging dependence on TAPS hardly seems a prudent centerpiece for what advocates whimsically called the Homeland Energy Security Bill.

Reliance both on Mideast oil and on vulnerable domestic energy infrastructure such as TAPS imperils the security of the US and its friends.

Both sources of vulnerability are unnecessary and uneconomic. They should be countered by the cheapest mix of two secure options: efficiency gains and distributed domestic supply alternatives. Then, adding the power of markets to the ingenuity of industry, we can move promptly toward an energy system that terrorists can't shut off - and a durable foundation for an America that would no longer be a brittle power.

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