

TOUGH LOVINS

The Weekly Standard

4 June 2001

Section: Correspondence; Pg. 6

Byline: Amory B. Lovins, Chief Executive Officer (Research),
Rocky Mountain Institute, Inc., Snowmass, CO

William Tucker's long cover story in your May 21 issue recycles his recent pieces in *The American Spectator* and *The Philadelphia Inquirer* and adds new errors, fabrications, and misquotations. I've replied to those articles, and will reply here briefly to this latest disgrace to journalism.

So long as California followed my advice to do the cheapest things first, chiefly efficient energy use, that state had ample electricity (one-third of it renewable), held per-capita use of electricity flat for a quarter-century, added 15 billion watts of efficiency and renewable resources, and saved billions of net dollars. Even during the 1990s, California installed more decentralized generating capacity than its total nuclear capacity.

The California electricity crisis was caused by the state government's rejecting in the mid-1990s, over my protest, what had worked well—and still does for the municipal utilities that continued to follow it and weren't restructured. The crisis has many complex causes, but the main one is nutty restructuring that created a ticket-scalper's paradise. Seven firms control two-thirds of the biddable market, so each can move the market and can earn more profit by generating less electricity at a higher price than more at a lower price. This travesty of competition is not a test of my ideas but their opposite.

He further attacks me as a "bit of a crackpot" with "sloppy or ill-thought-out ideas," some "on the fringes of scientific speculation" (apparently a reference to Professor Gold's deep-methane hypothesis, which I mentioned in passing but told Mr. Tucker is controversial and in no way underlies my and the major energy firms' identical view of abundant natural-gas resources). He even claims that my hydrogen transition proposal "defies the laws of physics"—laws he evidently doesn't understand as well as do the major energy and car companies that are implementing my approach for profit. If the scores of major energy and other firms that have benefited from my advice over the past few decades shared his skepticism, they would hardly continue to pay Rocky Mountain Institute for that advice, prestigious journals would not publish it, and my work would not be recognized by leading awards and featured in top business publications. Perhaps these authorities know something he doesn't.

Mr. Tucker's belief system rests on denial of any practical alternatives to building more coal-fired and nuclear power plants. The market disagrees and is vigorously investing in those alternatives: wind and photovoltaics are the fastest-growing energy sources worldwide, and wind alone, now the cheapest U.S. new generating option, is adding more global capacity each year than nuclear power did through the 1990s. Distributed generation is the hottest electricity market trend, simply because it's cheaper and more reliable than the now-obsolete central-station-and-grid solutions. The supposed unreliability of renewable sources is an old canard debunked two decades ago. That's why the European Union expects to get 22% of its electricity from renewable sources in 2010, and Denmark plans to get half its power from wind turbines in 2030.

Mr. Tucker seems blissfully unaware of these modern energy options and trends—or that his favorite technologies are failing in the marketplace. As the current *Economist* remarks, "In fact, the trend since the mid-1970s has been toward smaller plants. It is micropower, not megapower, that the market favors, thanks to the far smaller financial risk involved." Nuclear power, concludes the *Economist*, has gone from too cheap to meter to too costly to matter.

Before Mr. Tucker wrote this article, I gave him a lengthy interview, ignoring his insulting and accusatory tone and carefully correcting in detail his misunderstandings of each of the topics he misrepresents—my supposed errors about hydrogen and gasohol, what happened to California electricity and U.S. renewable energy, etc. He ignored or failed to grasp everything I told him. The resulting article is a tissue of falsehoods written with reckless disregard for the truth. Shame on him. Shame on you.

Editor-Note:

William Tucker Responds:

Amory Lovins holds up the "municipal utilities that continue to follow [my advice] and weren't restructured" as proof that his "soft path" could have worked. The Los Angeles Department of Water and Power is the prime example. The municipal utility has become the beacon of hope in the California debacle because it has kept electricity flowing without raising its rates. What no one in the press has asked, though, is, "How does LADWP generate its electricity?" Here are the figures: LADWP gets 50 percent of its power from coal plants in Utah, Nevada, and Arizona, plus 10 percent from the Palo Verde nuclear plant near Phoenix. Another 30 percent comes from natural gas plants around Los Angeles. The final 10 percent is from hydro, half of that from the federally owned Hoover Dam. Where are the alternative energies? There are none. As a favor to a fellow municipal authority, the California Public Utilities Commission set LADWP "replacement costs" very low. This meant that the producers of wind and garbage-burning "alternatives" found it uneconomical to force the LADWP to sign long-term contracts to buy their expensive and often unusable power, as federal law allows. It is precisely because the Los Angeles municipal utility was spared the forced march down the soft path that it is in reasonably good shape today.

Lovins says he told me "Professor Gold's deep-methane hypothesis, which I mentioned in passing . . . is controversial and in no way underlies my and the major energy firms' identical view of abundant natural gas resources." Here are his exact words: "You might want to ask yourself, as Tommy Gold does, why there are very large objects in the solar system that have enormous amounts of methane on them and as far as we know nothing has ever lived there. Regardless of what you think of Gold's theories about methane formation in the deep, hot biosphere, the fact is there's a hell of a lot of methane in the solar system that does not appear to come from living things. It is ubiquitous and abundant on earth as well." Professor Gold's projections of almost unlimited natural gas supplies are essential to Lovins's "hydrogen transition" because—as emphasized in the article—hydrogen is only a carrier of energy. It can only store energy generated from natural gas or other natural resources.

As for the auto companies trying to build hydrogen cars, I certainly don't dispute that. My argument is with Lovins's supplementary hypothesis that electricity generated by a fleet of hydrogen-powered cars can—as he told *Fortune*—"end the car, oil, steel, aluminum, nuclear, coal, and electricity industries." He proposes doing this with either (1) virtually unlimited supplies of natural gas or (2) electricity from the grid. Using electricity from the grid to replace the electrical grid, as I pointed out, defies the laws of physics.

I don't dispute that power companies are scaling down their plants, but that doesn't necessarily support Lovins's soft-energy thesis. The power industry has abandoned 1,000-megawatt plants because they created too much "supply overhang." Instead they are proposing and building 500-mw plants—including the possibility of some 500-mw nuclear plants—because smaller plants are more economical. Lovins thinks 500-mw gas generators are still too big and opposes everything larger than 250-mw gas-fired co-generation plants. This is all California has built in the last 20 years and that is why it is short of electricity.

Finally, I do not dispute that Lovins has been "recognized by leading awards and featured in top business publications." My point is that much of this praise has been naive and uncritical. One reason that Lovins took our rather amiable conversation to be "insulting and accusatory," I suspect, is that he has hardly ever before encountered skeptical questioning from the press.

RMI-Note:

Amory Lovins Responds to William Tucker's Response:

If William Tucker (June 4) were correct that the Los Angeles municipal utility "is in reasonably good shape today***precisely because it was spared the forced march down the soft path," how does he explain why that muni, though historically reliant on old coal and nuclear capacity, no longer favors either, sold its 20% of the Mohave coal plant, and is aggressively pursuing renewables and efficiency instead—even solar cells on the Convention Center? or why the half-as-big Sacramento muni shut down its operating nuclear plant by popular vote, leads the nation in efficiency and solar power, gets about 9% of its electricity from those "expensive and often unusable" renewables (plus 27% hydro, 48% gas cogen and other gas, and 16% bulk purchases)...yet is doing as least as well as Los Angeles?

Mr. Tucker can't understand or explain the basics of hydrogen energy systems, so let me try. Hydrogen will be made mainly from abundant natural gas—two centuries' worth without Professor Gold's theory, and substitutable by other fossil fuels including coal without climatic risk if, as now appears likely, the carbon can be safely stored. The hydrogen transition (www.rmi.org/images/other/HC-StrategyHCTrans.pdf) could even *decrease* natural gas use, because making the hydrogen could use less natural gas than is now used by the power plants, gas chillers, boilers, and furnaces that the fuel cells displace. A little electricity, mainly renewable, may make some hydrogen too. Yet even if that electricity were all fossil-fueled, the seemingly circular conversion—electricity to hydrogen to fuel cells to electricity—would not, as Mr. Tucker claims, be a perpetual motion machine, "defy the laws of physics," or lose money. My explanation eluded him and hence your readers, so here it is:

The main and most valuable reason for making hydrogen is to run fuel-cell vehicles. They're 3–4 times as efficient as otherwise identical gasoline-engine cars, and the ultralight, ultra-low-drag Hypercar(SM) designs I've proposed are even more efficient. This lets them save lots of fuel and money despite the roughly 15–30% losses inherent in producing the hydrogen. Additionally, when those Hypercars are parked, their idle fuel cells can sell electricity back to the grid. This can save fuel and money because the offpeak electricity used to make the hydrogen, if fossil-fueled, would generally be made in plants 2–3 times as efficient as those whose on- and near-peak electricity is displaced by the hydrogen fuel cells. Moreover, the waste heat from fuel cells and hydrogen appliances in buildings can provide valuable heating and cooling, nearly redoubling their fuel savings. In contrast, U.S. central coal and nuclear plants, which Mr. Tucker favors, now throw away as waste heat the same amount of energy that Japan uses for everything.

Mr. Tucker claims California is short of electricity because it built plants of 250 megawatts or less (actually averaging tens of megawatts), rather than the 500-plus megawatt units he likes. In fact, big and small plants produce identical electricity, but big plants cost more, build slower, raise financial risk, and are less reliable. That's why the market chose smaller units instead. The conclusion that California's electricity shortage was caused not by lack of capacity, but largely by excessive market power and crazy rules that rewarded suppliers for not running plants, isn't just mine: it's what ten prominent economists' careful study found, as they wrote President Bush on May 29.

My side of our interview sounded "rather amiable" because I ignored Mr. Tucker's insults (such as asking a physicist if he's ever heard of the First Law of Thermodynamics). In more than 30 years of public life, I've welcomed my many challenging interviewers: skepticism is both their job and a public duty. But I've never had an interviewer as argumentative and unprofessional as Mr. Tucker. Having now seen how he abused my and your readers' trust, I can only advise other potential victims to hang up.