

Hiding the True Costs of Energy Sources

By H. RICHARD HEDE
And AMORY B. LOVINS

How much does the federal government spend to subsidize energy to make it look cheaper than it really is? Ten billion dollars a year? Twenty billion?

That was the range of conventional wisdom before Rocky Mountain Institute started counting. We've conservatively compiled government and industry assessments of 17 kinds of tax breaks, program outlays (net of revenues) from 21 agencies' budgets and the reduced marginal cost of capital from eight agencies' loans and guarantees.

These major items just for fiscal year 1984 totaled more than \$46 billion. We're still counting: Adding smaller items should bring the total to more than \$50 billion a year. And it's so unevenly allocated that 1984 energy output per dollar of subsidy varied by a factor of nearly 200 between different energy technologies (see chart).

Everyone loses, except the recipient industries. Taxes are \$46 billion a year higher. Skewed subsidies steer an even larger amount of private investment into capital-intensive but uneconomic projects, forcing up interest rates. The U.S. trades new multibillion-dollar export markets (losing in solar cells to Japan, in wind turbines to Denmark) for largely imaginary ones (synfuels, nuclear plants to China). Finally, uneconomic energy investments make everyone pay bloated energy bills for decades to come, making American industry less competitive abroad. We end up exporting fewer goods, importing more oil, and increasing the trade deficit.

So what if energy is subsidized? the beneficiaries say: Government underwrites airports, water projects, hospitals, factories, condos—practically everything (except analyses of federal energy subsidies). But though regrettably true (and outside the scope of this study), that self-serving view ignores two key issues.

First, when true energy costs are concealed, people underinvest in energy productivity, wasting much of the \$400 billion-plus in annual U.S. energy expenditures.

Second, unequal subsidies to competing energy options leverage and amplify the misallocation of private capital. Investments in conventional new energy supply (excluding energy-saving measures) totaled \$125 billion in 1982 alone, or two-fifths of all U.S. investment in new plant and equipment.

For example, the most capital-intensive form of energy, electricity, delivered 13% of U.S. energy but got \$30 billion (65%) of fiscal 1984 subsidies, decreasing its apparent average price by about a fifth. Electricity, counted at its heat value, got more than 11 times as much subsidy per unit of energy as directly used oil, gas and coal, and was at least 48 times as heavily subsidized as energy-saving technologies. No wonder utilities are still investing about a dollar per household per day to build power plants they don't need and can't afford: Their subsidies almost equal their investments. That's not just a free lunch; it's a lunch the Treasury pays them to eat.

Nuclear power provided 13% of U.S. electricity sold in 1984, or 4.8% of the nation's primary energy consumption counting the heat produced by the reactors. The nuclear electricity sold, however, was only 1.9% of all delivered energy, about half as much as wood delivered. Yet nuclear power got 34% of all federal energy subsidies. Each dollar of those subsidies yielded only 1/80th as much energy delivered or saved as a dollar of subsidies to renewable sources (other than large hydro) and energy savings.

What are all those nuclear subsidies? Nine agencies' civilian line-item expenditures in fiscal 1984 provided \$2.32 billion directly. Eight kinds of tax breaks totaled \$10.2 billion; some of them are unknown in other industries, and all are unavailable for (say) insulating your roof. Finally, federal loans and guarantees saved the nuclear enterprise \$3.32 billion in financing costs. We still haven't evaluated some subsidies to the nuclear fuel cycle or to several federal power marketing administrations, and we exclude imponderables such as the Price-Anderson Act's ceiling on liability for nuclear accidents. Still, direct nuclear subsidies last year totaled \$15.8 billion—nearly as much as the total retail revenue from 1984 nuclear output.

In 1982 the U.S. invested twice as much in building nuclear plants, many of which won't even be finished, as it invested in the motor-vehicle, iron and steel industries combined. Surprised we have a Rust Belt? Investors were just continuing to feed at the federal nuclear trough.

Why is that trough kept so full? Partly by sheer political muscle—the electronuclear industry has several Washington lobbyists per member of Congress. Often, sub-

sidies simply outlive their purpose: Depletion allowances were introduced in 1918 to spur energy output for World War I, rural electrification began in the 1930s, 1951 capital-gains treatment of coal royalties matched subsidies to timber lessors and spurred postwar mining.

One 1985 rationale—energy independence for national security—cannot withstand scrutiny. During 1979-83, savings provided more than a hundred times as much new energy as all net expansions of energy supply combined. Of those expansions, more new energy came from sun, wind, water and wood than from oil, gas, coal and uranium. These renewable sources now provide 10% of this nation's total primary energy, and the fastest-growing part, outpaced only by efficiency improvements. Just the increase in renewable energy's annual output during 1979-84 exceeded all Arab oil burned in America last year.

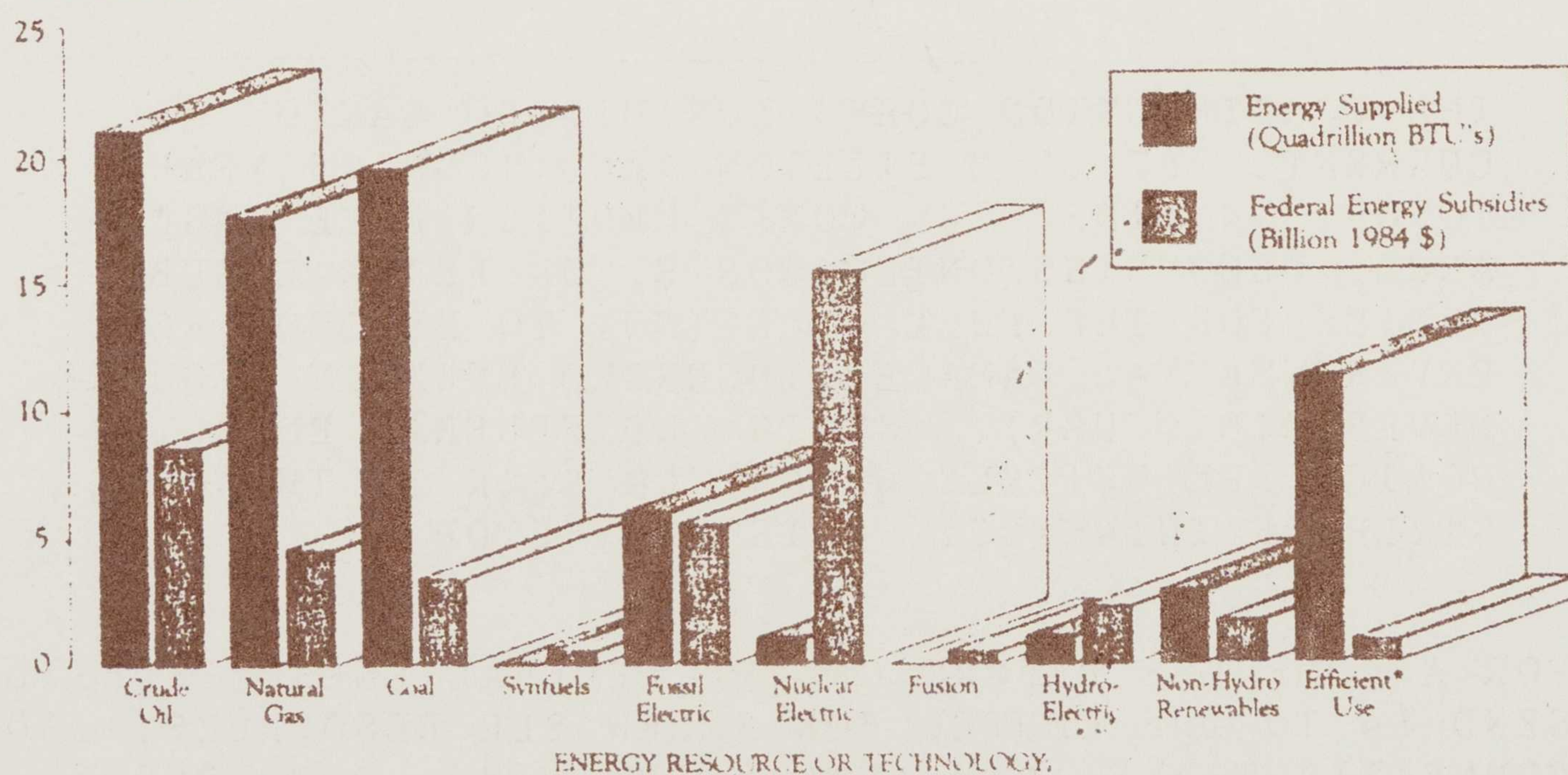
In fact, every dollar spent on slow and costly ways to save oil, like building power plants, retards oil displacement. That dollar can't finance fast, cheap ways to save oil, such as weatherizing buildings and making cars efficient—either of which could eliminate oil imports before a power plant ordered now could deliver any energy whatever, and at a tenth the cost.

Recent terrorist attacks in more than 50 countries confirm that reliance on fragile pipelines, transmission lines and power plants degrades energy security. The Rapid Deployment Force, too, probably couldn't seize and protect Mideast oil fields. Yet diverting one year's RDF budget into well-designed weatherization programs would eliminate Mideast oil imports. Experience over the past decade proves that displacing foreign oil and husbanding scarce resources at home can be done cheapest and quickest by energy efficiency and renewables—the chief causes of today's durable fuel and power gluts.

Subsidies to efficiency and renewable energy sources (such as solar tax credits) will abruptly expire at the end of this year without legislation such as that by Rep. Cecil Heftel (D., Hawaii) and Sen. Mark Hatfield (R., Ore.). However, other energy subsidies will continue (even, by and large, under the Treasury II proposal). This worsening imbalance will prevent the free market from smoothly replacing exhaustible with sustainable resources over the coming decades. Meanwhile, lopsided subsidies cheat the taxpayer, destroy fair

Quadrillion BTU's
or Billion 1984 \$

Federal Energy Subsidies in 1984 and Energy Supplied



*Assumes only assuming that improved end use efficiency accounted for only half of the 1973-1984 reduction in primary energy used \$ GNP.
SOURCE: R. HEDE, ROCKY MOUNTAIN INSTITUTE