

Energy: 1945–1980

Most Americans now date the nation's current, unsolved energy problems back to 1973—the time of the Arab oil embargo, OPEC price increases, and gas lines. Yet both the long-term question of U.S. energy supplies and the much-debated remedies of the 1970s surfaced repeatedly in Washington after World War II. The failure of successive Presidents and Congresses—from the Truman days through the Carter era—to devise a coherent national energy policy is a complex political story. Duke economist Craufurd D. Goodwin and four colleagues have produced the first comprehensive account of this failure: *Energy Policy in Perspective*. We present here a three-part summary of their 728-page work, ending with Professor Goodwin's analysis of why things went so wrong for so long.

SETTING THE STAGE

With the death of Franklin D. Roosevelt, Harry S Truman became President of the United States on April 12, 1945. He faced a host of challenges. First, he had to see World War II through to victory. Later, he had to oversee the economy's conversion to peacetime, promote a stable new world order, and contain Joseph Stalin's ambitions in Europe and the Mideast.

As it happened, these preoccupations coincided with a little-publicized development: The United States was suddenly no longer self-sufficient in energy. In 1947, the United States, an exporter of oil since 1870, became a net importer. It was clear, moreover, to noted specialists such as geologist Everette De Golyer that the "center of gravity" of world oil production was shifting rapidly from the Western Hemisphere to the Middle East.

Harry Truman thus became the nation's first chief executive to face energy matters in a "modern" context. He did not consciously set out to forge an "energy policy" as recent Ameri-

Adapted from Craufurd Goodwin, *Energy Policy in Perspective: Today's Problems, Yesterday's Solutions* (Washington, D.C.: The Brookings Institution, 1981). Copyright © 1981 by the Brookings Institution.

can Presidents have done, and he had not the luck to do so accidentally. Rather, he confronted (or avoided) energy issues as they arose, one at a time, fuel by fuel. In Washington, as in the press and in the country at large, there was no overriding sense that “energy,” as such, was destined to become a Big Problem.

Yet, as Truman and the Congress dealt with the “fuel” issues before them, they did not operate in a vacuum. Three distinct ways of thinking about energy supplies, prices, and producers shaped the recurring postwar debates—and flavor American energy debates today.

The first approach was a legacy of the Depression and the New Deal. Its advocates in the Interior Department and the White House believed that if the free market threatened to produce economic distress for workers or consumers, then the free market system should be modified. Often this meant that key industries, such as oil, gas, and public power, needed the leash of regulation to keep prices down. Sometimes it meant that Washington was prepared to set itself up in the energy business, as it did in creating the Tennessee Valley Authority and the Bonneville Power Administration during the 1930s. Harold Ickes, FDR’s (and briefly Truman’s) Interior Secretary, and the first U.S. official to acquire the sobriquet “energy czar,” once proposed that oil companies be regulated like electric utilities.

A second perspective, that of officials in the Pentagon and at the State Department, may be summed up by the word *expediency*. After December 1941, America had a war to win. Legitimate concerns about the price of electricity, resource conservation, or antitrust laws had to give way to the needs of mobilization. With some modifications, this view applied to the Cold War and to the task of ensuring adequate supplies of foreign oil for reasons of “national security.” Thus, despite the lingering memory of Teapot Dome, cooperative relationships developed between the federal government, especially the Interior Department, and the producers of oil, gas, and coal.* “God help Government,” wrote C. Pratt Rather, a gas industry execu-

*In 1922, Interior Secretary Albert Fall persuaded President Warren G. Harding to transfer control over the U.S. Naval Petroleum Reserves to his department. Fall then leased, in return for a bribe, the 9,481-acre Teapot Dome reserve in Wyoming to oilman Harry Sinclair; he subsequently leased the 38,969-acre Elk Hills reserve in California to another oilman, Edward Doheny. A congressional investigation later uncovered the scheme. Fall, Sinclair, and Doheny were indicted, convicted, and briefly imprisoned.

This essay has been adapted by the editors from chapters 1–3 of Energy in Perspective, which were written by Craufurd D. Goodwin (the Truman years) and William J. Barber, an economist at Wesleyan University (the Eisenhower years).

tive assigned to Interior in 1951, "and industry too, if this sensible alliance is not maintained."

A third viewpoint was that of the free-market economists and their allies, represented primarily by the Federal Trade Commission and the antitrust division of the Justice Department. Only vigorous competition among many small producers of oil, coal, and gas—not planning, not federal price-fixing, not a peacetime War Production Board—would guarantee minimum energy costs and maximum efficiency. This notion was embodied in the Sherman Antitrust Act of 1890 and the Clayton Antitrust Act of 1914. "Big Oil" was a favorite target.

Competition vs. Regulation

Each of these views had its sincere adherents in such places as the Bureau of Mines and the Petroleum Administration for War, and its advocates on Capitol Hill. When he assumed the Presidency, Harry Truman acquired not one energy policy but several:

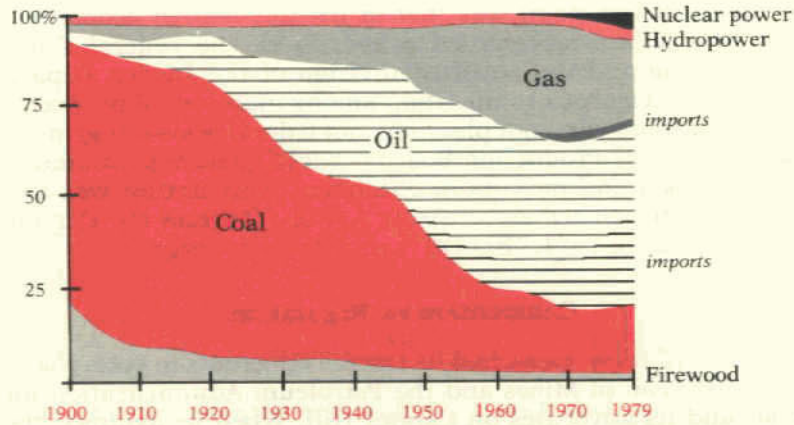
Oil. Here the free-marketers had won the first round with the breakup in 1911 of John D. Rockefeller's Standard Oil, "mother of trusts," into 34 separate companies. But *laissez faire* in the oil industry led, in the 1920s, to overproduction, price wars, and waste. (Drilling too many wells in close proximity often resulted in loss of pressure and hence of recoverable reserves.) After Columbus M. ("Dad") Joiner's 1930 strike in the Sabine Basin in East Texas, opening up what was then the largest oil field in the world, the price of U.S. petroleum plummeted to 65¢ a barrel.*

As a result, Congress stepped in with the Connally Hot Oil Act in 1935 to enforce a complicated system of quotas (or "allowables") governing the amount of petroleum each producing state could sell. ("Hot oil" was oil sold in excess of the allowable.) The federal government collected nationwide data on oil consumption so that just enough petroleum would be produced to satisfy demand at an arbitrary price. Local allowables were set by intrastate bodies, such as the Texas Railroad Commission. The whole scheme was overseen by an Interstate Oil Compact Commission. The controlled price of U.S. oil was higher than that of crude available from Venezuela or Mexico, but an oil tariff was already in place (1932) to discourage imports.

In effect, Congress sanctioned a petroleum oligopoly blessed

*A barrel of oil is equivalent to 42 gallons. Normally a barrel contains 55 gallons, but petroleum was first transported to market in wooden casks by horse-drawn wagons; there was so much slopping around that refiners were willing to pay only for 42 gallons per barrel.

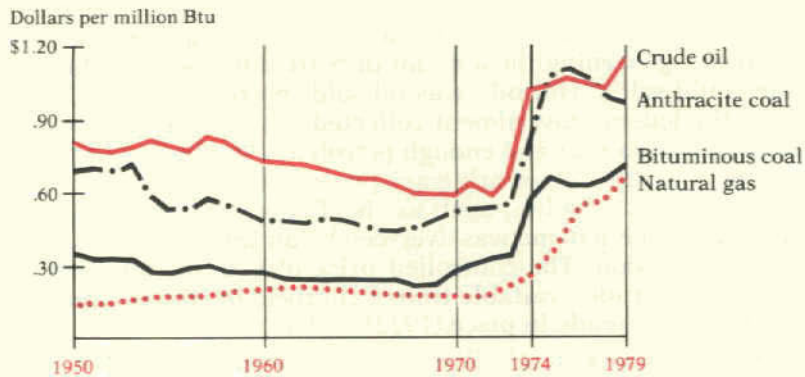
U.S. ENERGY CONSUMPTION BY SOURCE, 1900-79
(as % of total consumption)



Source: U.S. Department of the Interior; U.S. Department of Energy; *Historical Statistics of the United States*, 1975.

Relative consumption of various fuels has changed dramatically over time (above). Increases in oil prices and depletion of gas reserves have led to a modest revival of coal. Firewood has overtaken nuclear power as a source of energy. In constant dollars (below), the price of all fuels steadily declined until the early 1970s, contributing to record demand.

PRICES OF U.S.-PRODUCED FOSSIL FUELS, 1950-79
(in constant 1972 dollars)



Source: Energy Information Administration, *Annual Report to Congress*, 1979.

with a legal price-fixing regime. Through this and other interventions, such as the oil-depletion allowance, the federal government ensured that the free market did not determine the price of oil, or the rate of production, or the pace of exploration.*

Foreign oil soon added a new twist. America's demand for petroleum had grown rapidly during World War II, and demand continued to expand following V-J Day, after a brief postwar downturn. To most specialists, it had long been obvious that the nation's petroleum future did not lie in Texas or Oklahoma. This prospect posed several dilemmas. German U-boats had decimated Allied shipping during World War II: Would heavy reliance on imports leave the United States exposed in the event of future hostilities? Or was it actually better to buy cheap foreign oil during peacetime, saving domestic reserves for an emergency? There was no easy answer. To exploit such reserves, a strong domestic oil industry had to be preserved; yet foreign imports could undercut U.S. producers.

Many of the large, vertically integrated American oil companies (the "majors") had invested heavily overseas.† Their economic interests did not always coincide with those of their smaller, stay-at-home cousins—or with Washington's foreign policy goals for that matter. (From the beginning, Arab oil and support for Israel did not mix well.) The bottom line, however, was that the United States was going to need foreign oil. With such needs in mind, President Roosevelt, returning from Yalta in February 1945, arranged a friendly cruise through the Red Sea with Ibn Saud, King of oil-rich Saudi Arabia.

Natural gas. Gas emerged as a potential major fuel only during World War II. Like oil, natural gas was cheap, could move by pipeline, and was a "clean" fuel increasingly preferred to coal by industry and utilities. By war's end, greater and greater proportions of gas to oil were being found.

Should gas be further regulated? Under the 1938 Natural

*The oil depletion allowance was established in 1926 to encourage producers to search for new oil. An oil company could deduct from its tax base 27.5 percent (changed to 22 percent in 1969) of gross income from a given oil property; the deduction could not exceed one-half the net income from that property. (Similar but lesser tax incentives nourished many industries. For example, there was a 3 percent depletion allowance for clam shells.) There was, of course, a certain contradiction between Washington's twin goals of encouraging oil exploration and limiting production.

†Great Britain dominated Mideast oil production before World War II, but American companies pulled abreast after the war and then moved far ahead. The situation during the early Truman years was as follows: Exxon and Mobil owned interests in the Trucial States, Qatar, and Iraq, but shared the fields with Great Britain; Gulf was established, alongside the British, in Kuwait; Exxon was the main foreign presence in Venezuela. The 440,000-square-mile Aramco concession in Saudi Arabia—once regarded as a "white elephant"—was owned jointly by Socal, Texaco, Mobil, and Exxon. Iran remained largely a British preserve, although Exxon and Mobil had a quarter interest in the Anglo-Iranian Oil Company.

Gas Act, the Federal Power Commission (FPC) plainly had the authority to regulate the prices that the few existing interstate pipeline companies could charge local utilities and industry. But what about the "wellhead" price that gas producers charged the pipeline? Here, there was room for interpretation.

Southwestern Congressmen like Senator Robert S. Kerr (D.-Okla.) believed that federal intervention was unnecessary: With 2,300 producers, the gas industry, Kerr claimed, was quite competitive. Regulators like Leland Olds, veteran New Dealer and FPC commissioner, countered that 75 of those producers (mostly oil companies) controlled 70 percent of the market.

The neglected long-range issue was whether the United States should encourage conservation of finite gas reserves through relatively high prices or stimulate widespread use of gas via politically popular low prices.

A Free-Marketer's Nightmare

Coal. Dirty, bulky coal was America's most abundant natural resource, but the coal industry was the most financially troubled of all the energy producers. Its share of U.S. energy consumption had been declining for years. N. H. Collisson, chief of the U.S. Coal Mines Administration, warned soon after World War II that the coal problem "far exceeds the ability of the industry to effect a solution."

Demand for oil and gas—coal's attractive rivals—had grown steadily after World War I. The coal industry ran in the red every year from 1924 until 1939, when a temporary system of minimum coal prices, established under the Bituminous Coal Act, began to have an effect. But price supports ended in 1943 and the industry as a whole, plagued by high fixed costs and too many small, marginal producers (there were then about 5,000 coal-mining companies) slipped back into unprofitability.

Unlike oil, coal benefited from neither market regulation nor subsidy. Its depletion allowance was a mere 5 percent. The industry was a free-marketer's nightmare: It was the one truly laissez-faire industry left in the energy sector, and it was thus placed at a severe competitive disadvantage. Ironically, geologists and bureaucrats alike knew that the nation's return to coal was inevitable when oil and gas ran out. Coal's long-term future was secure. Looking ahead, Evelyn Cooper, a member of the Interior Department's secretariat, predicted in 1946 that coal would eventually regain "all markets lost to these competing fuels and, in addition, . . . will itself be an important raw material for the manufacture of [synthetic] gasoline." The question

was whether the coal industry could survive till then.

This, then, was the energy picture that greeted Harry Truman at war's end. The United States was consuming about 30 quadrillion Btu's of energy a year (two-fifths of the 1980 level).^{*} Almost half the U.S. energy came from coal, followed by oil, then gas. In 1946, America was a net exporter of all of these fuels. In that year, a barrel of U.S. oil cost \$1.41. Natural gas was priced at 5¢ per thousand cubic feet.

When Truman sought to act on energy matters, it was generally as an interventionist. Truman was suspicious of big corporations, fearful of monopoly, and loyal to the New Deal that he supported as a Senator from Missouri in 1935-45. He himself promised Americans a "Fair Deal," favoring the "little guy," and pushed ahead with plans for "more TVAs" in Colorado, California, and elsewhere. He didn't want the West, he said, to be "an economic colony of Wall Street."

The ailing coal industry got no succor from Truman. Any good will he may have had ebbed quickly during a wave of coal strikes beginning in 1946. Amid brownouts, Truman symbolically doused the floodlights on Capitol Hill and ordered a federal takeover of the coal mines for a year. The President possibly had better relations with Stalin than he did with John L. Lewis, imperious president of the United Mine Workers.

The reality was that coal operators could not afford to pay appreciably higher wages to 400,000 coal miners unless they also raised the price of coal; yet higher coal prices would merely encourage coal's remaining customers to switch to oil.

Keeping Gas Cheap

Harry Truman's one concession to the coal industry was a nod in the direction of developing synthetic oil and gas derived from coal. There was no mystery about synthetics. Very early in World War II, the Germans were producing 30 million barrels of synthetic oil a year in Silesian and West Prussian coal-oil plants. U.S. technicians, examining Nazi scientific records after the Allied victory, learned the details. Congress authorized \$85 million for "synfuel" research during the Truman years.

Yet, without slave labor (which the Germans employed), and with plenty of cheap oil and gas still available, producing synthetic oil and gas was too costly a proposition. For 30 years, synfuels were to remain perpetually "a decade away."

In 1946, looking at another fuel, President Truman decided

^{*}A British thermal unit (Btu) is the quantity of heat required to raise one pound of water 1° Fahrenheit.

to turn over the government's two large-diameter steel pipelines—the Big Inch and Little Big Inch, built during the war to bring oil from Texas to the Atlantic seaboard—to the “gas people.” This decision, to the dismay of the coal industry, promoted gas from the status of a petroleum by-product (which was, for the most part, used locally) to that of an important fuel with a new national market. Truman's instincts urged him toward stricter regulation of the gas industry. To him, this meant that the Federal Power Commission should regulate the price of gas at the wellhead, not simply the pipeline price.

The pricing issue quickly found its way into the federal courts. The city of Detroit filed a motion in 1946 requesting the FPC to assert its jurisdiction over Phillips Petroleum, the local supplier of gas; the suit wound a tortuous path to the Supreme Court, and no ruling was forthcoming until the Eisenhower administration. Meanwhile, gas-state Congressmen—Senator Kerr of Oklahoma, and Senator Lyndon Johnson and House Speaker Sam Rayburn of Texas—pushed through a bill in 1950 to exempt natural gas from wellhead regulation. Advised by aide Charles Murphy that the legislation had “no merit” and would “take some of the shine off of the Fair Deal,” Truman vetoed the bill. There the matter rested, for a while.

Truman's veto climaxed a bitter fight in Congress, pitting consumer states (which favored low prices) against producer states (which favored high prices). Even racial prejudice was brought in: “The colored people,” wrote Charles LaFollette, director of Americans for Democratic Action, “are particularly incensed because they regard this measure [the Kerr bill] as a reward to the chief foes of civil rights legislation.” For all the passion aroused by the debate, few voices warned that excessive demand and excessive dependence might result from selling gas at prices far lower than what the market would bear. The realities became clearer three decades later.

Trouble in Iran

The major *oil* policy question Truman faced was what to do about petroleum imports. As a percentage of total U.S. oil consumption, imports swelled during the Truman era from zero to 13 percent—or to almost 1 million barrels a day.

Imports meant different things to different people. Domestic producers feared a tidal wave of inexpensive foreign oil. Consumers looked forward to a “softening” in the price of gasoline. The State Department, believing that more imports were inevitable, hoped by “active, energetic, and consistent support” to



Public suspicion of the oil industry ran deep during the Truman years. Yet, despite their presumed power, oil companies gained only one of the three initiatives Herblock criticized in this 1950 cartoon—tax benefits.

From The Herblock Book, Beacon Press, 1952.

ensure that American companies got the lion's share of the Middle East's oil concessions. The Pentagon was worried about defending distant oil supplies and a vulnerable tanker lifeline in the event of war but also conceded that "draining America first" would only make matters worse. The Defense Department pressed hard—and in vain—for a massive stockpile of crude.

For his part, Harry Truman saw growing imports as part of "a concerted effort by the big companies to put the little [domestic] companies out of business." He was apparently on the verge of curbing imports drastically when the Korean War broke out on June 25, 1950. The import question was left in limbo.

A year later, with the United States deeply involved in war, events in Iran underscored the risk in heavy reliance on oil from the Mideast. In April 1951, Iran's frail but frenetic premier, Dr. Mohammed Mossadegh, nationalized the Anglo-Iranian Oil Company. Anglo-Iranian was largely a British firm (it became British Petroleum in 1954), and the production cutbacks did not affect the United States. But Western Europe and Japan were threatened with shortages.

Washington responded by looking the other way as the "Seven Sisters" joined to create a "disaster plan" cartel, boycotting all Iranian oil and arranging for the supply of oil, from other sources, to Europe and the Far East.* Despite Truman's

*The "Seven Sisters," the oil companies controlling almost all Mideast petroleum production at the time, were Exxon, Shell, British Petroleum, Gulf, Texaco, Mobil, and Socal.

suspensions, the majors could be useful; then as later, they brought order out of chaos when governments failed to do so.

But, unlike its European allies, the United States never established ground rules for its own day-to-day relations with the big oil companies operating abroad; instead, the executive branch acted erratically. In 1952, for example, the Federal Trade Commission filed a criminal suit against Gulf, Exxon, Texaco, Mobil, and Socal for “cartel practices” overseas, even as Secretary of State Dean Acheson warned that weakening of the oil companies would lead to a “decrease of political stability” in the Mideast.

The Paley Commission

Thus, Harry Truman bequeathed to his successor a set of energy policies with many unresolved contradictions and no guiding rationale. Why did no comprehensive policy emerge?

Ignorance was not the culprit. In the yeasty period of discussion following World War II, energy policy had been given considerable attention by Harold Ickes and others in Washington. Conferences were held, studies commissioned, proposals advanced. The general dimensions of America’s long-term energy supply problem were clear. There was no want of expert advice, even if firm quantitative data on fuels, which the government did not then collect, were scarce.

The main barrier to concerted action on energy—as on other matters—was Washington’s chronic peacetime preoccupation with short-term political costs and benefits. Stephen Raushenbush, an influential Interior Department official, asked himself in 1944: “Can a sensible fuels policy be devised?” He decided that the answer was no. Neither Congress nor the White House, he concluded, was equipped to address the matter on a broad national level. “Every measure comes up as a special commodity interest measure, is handled by a special agency, and goes before special interest committees of Congress.”

The energy sector was fragmented, and individual energy industries themselves were riven by conflicts. No one federal agency had responsibility for energy matters, but many of them—from the Bureau of Mines to the Bureau of Reclamation—had something at stake. The policymaking structure had so evolved that even minor projects, like synfuel development, touched many nerves, soothing some (in the coal industry), irritating others (in the oil and gas industries). Sudden crises such as the Korean War heightened awareness of long-range energy needs but at the same time deadened sensation to all but the cri-

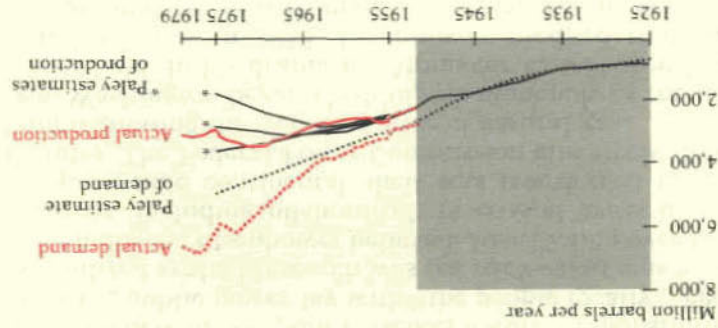
sis at hand.

Some issues were extraordinarily divisive. "Big Oil" had been a target of savage criticism since the 1880s; by the early 1950s, suspicion of the multinational oil companies was virtually embedded in American political rhetoric. "Oil continues to ally embedded in American political rhetoric," culminated in Harold Ickes as the 1947-52 "tidelands" controversy raged in Washington. At issue was whether mineral rights to submerged coastal lands should rest with the states or with the federal government. The oil companies favored state control (they believed royalties would be lower and access easier), but President Truman felt otherwise; and he prevailed against those whom he regarded as "special privileged promoters."

It is unfortunate that the one broad White House energy initiative—creation of the Paley Commission—came at the end of the Truman era instead of at the beginning. Formally known as the President's Materials Policy Commission, and headed by CBS chairman William S. Paley, this blue-ribbon study group was set up by President Truman in 1951 to take stock of America's future needs for all types of nonrenewable natural resources. With a staff of 50, Paley brought the study to completion in 1952.

The final report, *Resources for Freedom*, was widely publicized. The authors insisted that "the hydra heads of energy policy must be reined together." They recommended a wide

U.S. CRUDE OIL DEMAND VS. DOMESTIC PRODUCTION, 1925-79



Source: *Resources for Freedom* (Paley Report), 1952; Energy Information Administration, Annual Report to Congress, 1979.

Projections of U.S. oil supply and demand made by the Paley Commission in 1952 proved remarkably accurate. The commissioners warned that Americans had "skinned the cream" off domestic energy resources.

range of federal programs, including research into solar and atomic energy and creation of an underground petroleum reserve. They challenged Detroit to come up with a fuel-efficient car and challenged Americans generally to start preparing for the energy demands of the 1970s. "As a nation," the authors observed, "we have always been more interested in sawmills than seedlings."

The timing of the Paley report was inauspicious. Four months after its publication, Dwight D. Eisenhower was elected President of the United States; the warnings of *Resources for Freedom* were largely forgotten in the transition to the first Republican administration since 1933.

Whether or not Eisenhower read the Paley report, he would certainly have been comfortable with its assertion that a consistent energy policy "implies no increase in government activity; it might well mean less." The new administration's basic stance on economic matters might be summed up by the words "hands off." Eisenhower believed in free markets, in private enterprise, and in regulation by states and localities, not by the federal government. Energy policy per se did not rank high on the Eisenhower agenda. But in its various applications, the broader official free-market doctrine affected the energy sector in many ways.

Conception without Sex?

As early as the summer of 1953, the Interior Department announced a "no new starts" policy: Henceforward, responsibility for developing public power lay with "the people locally." Federally subsidized synfuel research was cut back—that was a job for private industry, Eisenhower believed. Jurisdiction over seabed resources, including offshore oil, in coastal areas of the 875,000-square-mile continental shelf was transferred to the several states. The Federal Power Commission effectively drew back from regulating the wellhead price of natural gas.

Soon, Washington began shedding its monopoly of the nuclear power field. In his dramatic "Atoms for Peace" speech to the United Nations in 1953, Eisenhower pledged that the "miraculous inventiveness of man" would be put to work in harnessing atomic energy. With White House backing, the Republican-controlled Congress rejected Democratic Senator Albert Gore's proposal to make generating electricity from nuclear power a federal monopoly. Instead, Congress authorized the Atomic Energy Commission to make uranium fuel and reactor blueprints available to the private sector. The first com-

mercial nuclear power plant went into operation in 1957 in Shippingport, Pennsylvania, using a reactor modeled on that of the Navy submarine, *Nautilus*. When questioned by reporters about the high cost (\$110 million) of the new plant, Admiral Hyman Rickover, who helped supervise its construction, replied: "You people are asking for conception without sex."

When the Iran crisis came to an end in 1954 following the overthrow of Mossadegh and the return of the Shah—"a diplomatic victory for the West," as the *New York Times* put it—Eisenhower again paid homage to free competition by inviting U.S. independent oil producers, most of them with little or no foreign experience, to join with six "majors" in dividing up the 60 percent of Iranian oil production reserved to U.S. firms under the terms of the new settlement.

Erecting a "Quota Dike"

For a full year, the Eisenhower administration adhered to its free-market principles. Then, in 1954, came a recession. Despite his professed distaste for the "new economics," the first Republican President since Herbert Hoover was not about to preside over a depression. The notion of government intervention in the economy regained some of its appeal.

Eisenhower was opposed to "slam-bang" stimulants to increase demand, but some kind of stimulus was clearly in order. New public power projects, favored by the Democrats, were a possibility. But the public works project that the President backed and Congress approved was the construction of a new 41,000-mile interstate highway system. The highway program helped to open up the hinterland to industry and tourism and encouraged suburbanization. In effect, it also subsidized growing U.S. dependence on cars and buses, further weakening the ailing passenger railways. In the end, the highway program helped to create a sizable new demand for imported oil.

The year 1954 also brought a Supreme Court decision in the long-simmering Phillips Petroleum case. The Court ruled that the Federal Power Commission, as Truman had believed, *must* regulate the wellhead price of natural gas. Eisenhower promptly sought to annul the ruling by legislation, and a bill to exempt natural gas from FPC jurisdiction cleared Congress after a reprise of the bitter debate of 1950. But evidence came to light of an attempt by an oil company lawyer to bribe Senator Francis Case (R.-S.D.), and Eisenhower reluctantly vetoed the legislation, saying that "any good bill ought to be passed without having a terrible stench connected with it." Later attempts to

In 1957, President Eisenhower waved a "neutron wand" in the White House, activating the nation's first atomic power plant at Shippingport, Pa.



Courtesy Dwight D. Eisenhower Library.

revive the legislation were stalled in Congress.

So, for almost three decades, the FPC was to set prices for natural gas. Responsive to consumer pressure, it kept them low, overlooking the long-term effects of its actions on future U.S. energy supply and demand.

Like its predecessor, the Eisenhower administration worried most about oil, notably, the rising volume of imports. As a proportion of total U.S. oil consumption, imports rose from 13 to almost 19 percent during the Eisenhower years. Growing Mideast production by American companies spurred this trend. After 1950, U.S. tax laws made foreign crude, already cheap to produce, especially attractive: At the urging of the State Department, the Treasury Department had ruled that royalty payments to foreign governments by American companies could be subtracted from their U.S. taxes. Domestic U.S. oil producers demanded protection.

In 1955, Eisenhower established a system of voluntary import controls, whereby U.S. oil companies would limit future imports to the share of the domestic market that foreign oil held in 1954. (Canadian and Venezuelan oil was, in effect, exempted.)

The voluntary system did not work, in part because some of the "newcomers"—American independents who had ventured late into the Arab world—defied such discipline.

On March 10, 1959, Eisenhower issued Presidential Proclamation 3279 replacing the voluntary quota system with mandatory oil import controls—a "quota dike." Henceforth, foreign oil could not legally be brought into the United States without a license issued by the Secretary of the Interior; the Interior Secretary would allocate these imports among domestic refiners. The "hemispheric preference" for Canadian and Venezuelan oil was ended. The President did not like what he had done. He privately complained about the "tendencies of special interests in the United States to press almost irresistibly for [protective] programs like this."

Mandatory quotas did not change the underlying reality—a condition of surplus at home and abroad. A lid had long been kept on domestic production to keep oil prices stable; now a lid was clamped on imports largely for the same reason. But foreign oil was still cheaper to produce than domestic oil, and the major oil companies still stood to make greater profits by bringing it in. Controls moderated the glut but did not eliminate it. By 1960, *Time* magazine was urging motorists to drive four minutes more each day to help reduce surplus gasoline stocks.

Designed to protect domestic interests, the Eisenhower controls program was to have long-term international repercussions. The State Department had viewed quotas with foreboding, warning of hostility from oil-producing countries anxious to find markets for what, in some cases, was their only source of export revenue. The Venezuelans, dependent on U.S. imports and about to embark on a massive economic development effort, were especially upset.

In 1960, Venezuela, Iran, Iraq, Kuwait, and Saudi Arabia formed the Organization of Petroleum Exporting Countries, the brainchild of Venezuelan oil minister Perez Alfonso. Many things would have to fall into place before OPEC could challenge its customers. But a new actor, as yet hardly noticed in the West, was now on the world stage.

FROM JOHN F. KENNEDY TO JIMMY CARTER

On October 6, 1973—the Jewish holiday of Yom Kippur—Syria and Egypt invaded Israel. This brief war, the fourth Arab-Israeli conflict since 1947, coincided with a series of events that most Americans now commonly identify as the origins of the “energy crisis.”

Ten days after Egyptian armies bridged the Suez Canal and pushed into the Sinai, representatives of the 13-nation Organization of Petroleum Exporting Countries, meeting in Kuwait, raised the posted price of “marker” crude—Saudi Arabian “light”—from \$3.01 to \$5.12 per barrel.

Four days later, on October 20, enraged by President Richard M. Nixon’s request to Congress for \$2.2 billion in arms for Israel, the seven-member Organization of *Arab* Petroleum Producing Countries brandished the “oil weapon” and ordered an oil embargo against the United States.

In early November, the Arab oil ministers, whose governments together controlled 60 percent of the noncommunist world’s proven reserves of petroleum, agreed to cut production to 75 percent of the September 1973 level.

On Christmas Eve 1973, OPEC raised the price of marker crude once again, to \$11.65.

In eight weeks, the price of OPEC crude had nearly quadrupled. The cost of foreign oil soared above the artificially supported price of U.S. crude.

Initially, however, the prospect of a long embargo seemed to Americans more ominous than the impact of higher prices. Owing in part to unwieldy federal efforts to allocate supplies, shortages appeared here and there almost immediately, as the Northern Hemisphere braced for winter. School systems were shut down to conserve heating fuel, and janitors removed 750,000 light bulbs from federal buildings in Washington. There were long lines at the gasoline pumps, especially in urban areas.

The Arab embargo and the OPEC price hikes coincided; therefore, in the eyes of many Americans and their Congressmen, there was a direct link between the two. Even as the major oil companies, in the absence of effective cooperation among Western governments, adroitly eased the winter crisis by re-routing tankers and allocating supplies around the globe, there

was a widespread suspicion in America that the shortages were "artificial," to use consumer advocate Ralph Nader's word.

Skepticism in Congress and the press grew when the Arab embargo faded in the spring of 1974; yet oil prices still remained on a high plateau. Oil industry profits for 1973 rose by an average of 48 percent.

In fact, sharp foreign increases in the price of crude had long been inevitable—and openly predicted by officials of producing countries and Western oil companies alike. OPEC had matured since its founding in 1960, when news reports generally prefixed its name with the tag "little-known." Its membership had grown from 5 to 13, and each of the member nations now boasted a cadre of native-born, Western-trained technocrats who well understood the international oil economy. They knew how to turn the spigot on and off to get a better deal from their customers. Increasingly, there was no one strong enough to prevent them from doing so.

If the Seven Sisters had once mounted an effective cartel, by the early 1970s they no longer could. The number of oil companies with investments in the Middle East and Africa had grown into the hundreds as "independents" such as Sohio and Getty Oil and scores of wildcatters had gained access to the established fields and opened up new ones west of Suez, in Libya and

After the 1973-74 oil embargo, the menacing Arab became a stock character in editorial cartoons.

By Warren King, Copyright 1974 New York News Inc. Reprinted by permission.



Algeria. By the early 1960s, the oil majors' dominance of all aspects of the international market, from exploration to production to transport to marketing, had eroded.

Needed: A Blackout

The new order was fragile. Independent producers and refiners, often dependent on a single Mideast or African nation's crude, were vulnerable to the demands of their hosts; in price negotiations, the oil companies were no stronger than their weakest link. Thus, in 1970, Libya's mercurial Colonel Muammar al-Qaddafi, successor to the pro-Western King Idris, won an increase in both the posted price of Libyan crude and the oil company taxes paid into his treasury by briefly squeezing supplies to Occidental Petroleum, which depended on Libyan oil for its European refineries. Occidental's capitulation soon led to others. Moreover, by 1973, the Arab oil-producing nations had taken steps toward full control of the oil production facilities on their soil.

The final necessary factor in the crisis of 1973-74 was the West's increasing dependence on foreign oil. This was an unfamiliar phenomenon in the United States, whose domestic oil production peaked in 1970 even as demand kept growing. America's surplus production capacity had averted shortages at home and abroad during the Suez crisis in 1956 and the Mideast War in 1967, but there was no longer any such capacity. The United States was now an importer not by choice but by necessity, depending on the Arabs alone for 1 million barrels of oil a day in 1973, and on OPEC as a whole for 65 percent of total imports.

In vain, for two decades, oil industry geologists and Washington specialists had warned that a day of reckoning would come. Early in 1973, Representative Chet Holifield (D.-Calif.), chairman of the Joint Committee on Atomic Energy, wondered whether anything short of a "good, 24-hour blackout" could focus the attention of the public and official Washington on the need for a coherent energy policy. The Arab oil embargo and OPEC price increases sounded the necessary alarm, at a time when the United States still had many energy options to explore.

The events of 1973-74 provided an opportunity to act. The

This essay has been adapted by the editors from chapters 4-9 of Energy in Perspective, which were written by economists William J. Barber (Kennedy), James L. Cochrane of the University of South Carolina (Johnson and Carter), Neil de Marchi of Duke University (Nixon and Ford), and Joseph A. Yager of the Brookings Institution (Carter).

question was whether the United States would seize it.

It had been many years since energy, even briefly, had held the spotlight. When John F. Kennedy assumed the Presidency on a cold day in January 1961, millions of Americans viewed the festivities on TV in their living rooms, thermostats turned up high. If there was an energy problem, it was a problem of surfeit.

Yet specific energy issues had cropped up in JFK's 1960 campaign to "get the country moving again." The Senator from Massachusetts found himself, for example, stumping for public power projects (in depressed Maine) and for a revival of coal (in West Virginia). In language reminiscent of the Paley Commission report, he had championed a "national fuels policy."

Business As Usual

By the time of his assassination in November 1963, no such policy had emerged. Comforted by the scientific optimism that pervaded his administration and feeling hemmed in politically by his narrow election victory over Vice President Richard Nixon, President Kennedy, like his predecessors, ignored the long-term in favor of coping with the short-term. His calls to action during the campaign became calls for "more study" when he reached the Oval Office.

Unwilling to face opposition from the oil and gas industries, Kennedy backed away from the campaign pledges that played so well in the mining towns during the 1960 West Virginia primary. He settled instead for symbolic gestures—an order that U.S. forces in West Germany use American coal, for example.

On other issues, Kennedy was content to tinker with the status quo. The protective oil import quota program inherited from Eisenhower was riddled with loopholes. The President engineered some adjustments but generally left the system intact. Natural gas, meanwhile, had become the fifth-largest industry in the nation, and Kennedy favored continued federal regulation to keep prices low. Neither he nor his advisers were struck by the decline in domestic gas reserves that low prices, popular with consumers, only abetted. A few federal moves were made in behalf of atomic energy, notably a reduced price to private utilities for government-owned uranium oxide, or "yellowcake." In 1962, Westinghouse took its first orders for "turnkey" atomic generating plants in Connecticut and California.

In sum, President Kennedy made few changes in the mixed bag of federal energy policy. Thanks to exemptions and loopholes, foreign oil imports kept on growing—to 20 percent of U.S. oil consumption in 1963. Natural gas continued to outdistance



Courtesy of the John F. Kennedy Library. Photographer unknown.

Candidate John F. Kennedy assured West Virginia coal miners during the 1960 campaign that “the future of coal and the future of West Virginia can both be bright.” But in office, Kennedy pledged more studies but no action, and the ailing coal industry continued its long decline.

coal as the preferred fuel nationwide.

Energy was the least of Lyndon Johnson’s concerns when he took the oath of office on Air Force One. Sensitive to conflict of interest charges (he had been a Senator from Texas), he later told reporters that Interior Secretary Stewart Udall would have “full control over oil matters.” Johnson then turned his attention to getting JFK’s New Frontier legislative program through Congress, and to the 1964 election.

To some in Lyndon Johnson’s entourage, notably Donald Hornig, director of the White House Office of Science and Technology, it seemed obvious that the cumulative effect of Washington’s energy policies was contradictory. Hornig, a Manhattan Project alumnus and later president of Brown University, worried that “energy pluralism”—setting policies for individual fuels without reference to the energy picture as a whole—had led increasingly to bizarre and worrisome consequences.

Much of the nation, for instance, was now “hooked” on artificially cheap natural gas, to the detriment of coal, even as the

ratio of gas reserves to production dwindled to half the 1947 level. Curbing oil imports, meanwhile, had had the ironic effect of worsening the U.S. trade balance; American petrochemical manufacturers, compelled to rely largely on relatively expensive U.S. petroleum "feedstocks," claimed that they could no longer compete with foreign rivals in the export market.

Yet a high-level interagency staff report concluded in 1966 that there was really nothing to worry about. "The nation's total energy resources," its authors wrote, "seem adequate to satisfy expected requirements through the remainder of the century, at costs near present levels."* President Johnson, immersed in the politics of his Great Society and in the torments of the Vietnam War, was not inclined to argue.

To LBJ, technology promised salvation. In 1964, the President hailed an "economic breakthrough" in nuclear power. Utilities had suddenly discovered that atomic energy could be commercially successful. Twenty-one reactor contracts were awarded in 1966, 30 in 1967. Plans for a federally funded liquid-metal fast "breeder" reactor, which would create more fissionable material than it consumed, went forward. The breeder, like atomic power generally, would not become an "issue" for another decade.

As for oil policy, Lyndon Johnson did not keep his word to Interior Secretary Udall. It was a promise no President could sustain. Thus, early in 1966, with the future course of the Vietnam War uncertain, and the consumer price index edging upward, LBJ intervened to keep down crude oil prices by increasing the production "allowables" on domestic oil. Domestic crude prices remained constant during the Johnson years, at about \$3 per barrel. In constant, uninflated dollars, crude oil prices actually declined; not surprisingly, so did drilling for new wells.

Because consumers are highly sensitive to changes in the price of gasoline—far more than its 3 percent weight in the Consumer Price Index would justify—LBJ privately jawboned oil company executives to keep gasoline prices down. The oilmen, fearing a flood of imported gasoline, did as they were bid.

Johnson virtually lifted what remained of the restrictions on imported residual fuel oil, continually raising the quota ceilings so that, in effect, supply always conformed to demand.†

**Energy R&D and National Progress*, Washington: Government Printing Office, 1966.

† Residual fuel oil is what is left over when lighter products, such as gasoline, have been distilled from crude. Refiners generally sold the "bottom of the barrel" to utilities and industrial users, primarily on the East Coast, at prices below cost. As demand for gasoline and other refined products rose after World War II, the fraction of each barrel of U.S. crude left as resid declined; imports—not coal—filled the gap.

LBJ's "resid" policy illustrated the gradual unraveling of Eisenhower's protective oil import program generally. More important, because coal might have been substituted for residual fuel in almost all its uses, allowing unhampered imports guaranteed that a significant proportion of U.S. energy supplies was needlessly exposed to the OPEC price hikes in 1973.

The Johnson administration, in the main, was notable for its senior officials' blindness to the problems of impending scarcities, price rises, and growing OPEC strength. LBJ unabashedly subordinated energy issues to transient political and economic pressures. By passing on to his successor a war in Southeast Asia and the first stirrings of rampant inflation, he ensured that underlying energy issues would gain little White House attention for several years to come.

The Environmentalists Arrive

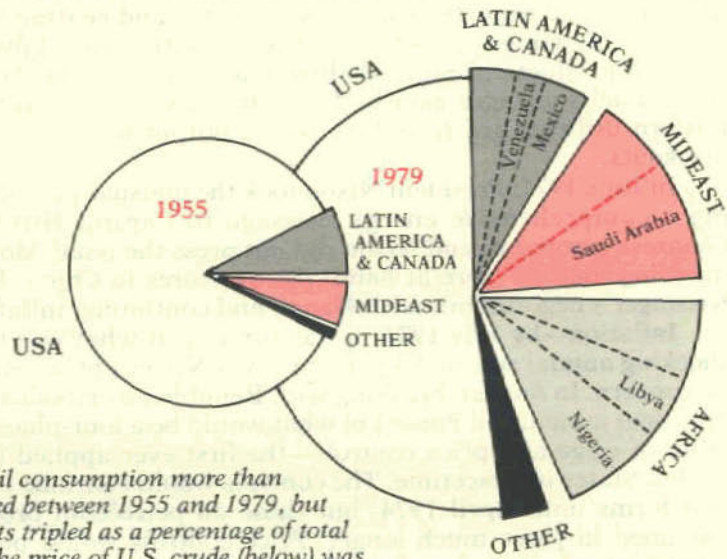
Vietnam, inflation, détente, China, and Vietnam again: These were Richard M. Nixon's overriding concerns during his beleaguered first term in office, facing a hostile Democratic Congress. Energy problems were treated by the White House in piecemeal fashion and received only intermittent attention at the highest levels.

Perhaps President Nixon's most important contribution to the U.S. energy problem during his early years in office did not involve energy per se. Eight days after his inauguration in 1969, an oil rig "blowout" in the Santa Barbara Channel coated southern California beaches with black muck. Press photographs of seals and seabirds mired in slime gave new impetus to an environmental movement that had quietly been growing in power and cohesion. Thousands descended on Washington in April 1970 to celebrate the first "Earth Day."

Protecting the environment was widely viewed in the press and on Capitol Hill as a necessary effort that a wealthy nation could afford. From the White House, the environment appeared as a field for bold—and politically popular—action. President Nixon backed the Clean Air Act of 1970 and creation of the Environmental Protection Agency that same year.

It was not long before the consequences for energy use became clear. Power plant executives began converting even faster from "dirty" coal to "clean" oil and gas. Refinery construction slumped. Licensing of new nuclear power plants, though favored by Mr. Nixon, became a nightmare of red tape. Offshore drilling for oil and gas was placed under a federal moratorium. Strip mining encountered new roadblocks.

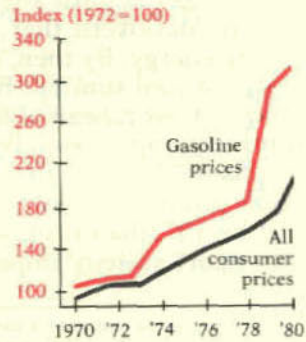
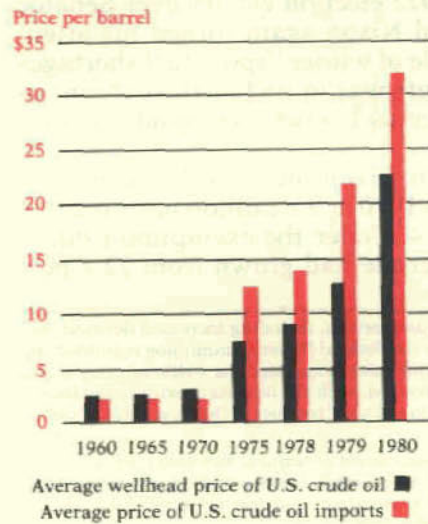
WHERE AMERICA GOT ITS OIL, 1955 AND 1979



U.S. oil consumption more than doubled between 1955 and 1979, but imports tripled as a percentage of total use. The price of U.S. crude (below) was artificially held above, and then below, world levels. Gasoline prices paced inflation in the 1970s, but total energy costs account for less than 25 percent of current U.S. double-digit inflation.

Source: U.S. Bureau of Mines.

OIL IMPORT PRICES AND THE PRICE OF GASOLINE



Source: The British Petroleum Company Ltd.; U.S. Department of Energy; U.S. Department of Labor.

Even before Earth Day, the first signs of a chronic energy imbalance had begun to appear. Natural gas and heating oil ran short in the winter of 1969–70.* A few months later, Libya cut back oil production. Summer brownouts plagued the Atlantic coast. Fuel shortages persisted into the next winter, and four Eastern utilities had to reduce power output to prevent total blackouts.

In June 1971, President Nixon took the unusual step of sending a comprehensive energy message to Capitol Hill.† The Congress ignored it, and Nixon did not press the issue. More demanding matters were at hand: the overtures to China; Henry Kissinger's negotiations with Hanoi; and continuing inflation.

Inflation—by July 1971, it was running at what was then a shocking annual rate of 4.4 percent—was Nixon's prime domestic concern. In August, breaking with Republican orthodoxy, the President announced Phase I of what would be a four-phase program of wage and price controls—the first ever applied in the United States in peacetime. The controls would continue in various forms until April 1974, but those on petroleum products remained in place much longer. Price controls would play an important role in undermining Nixon's later energy policies, as foreign oil prices began to rise. "It would be hard to think of a more effective way of creating a fuel crisis," Paul McCracken, chairman of the energy subcommittee of Nixon's Domestic Council, pointed out, "than to decree U.S. price ceilings . . . below those prevailing in the world market."

It was not until after his 1972 election victory over Senator George McGovern that Richard Nixon again turned his attention to energy. By then, the cycle of winter "spot" fuel shortages and localized summer brownouts was in its fourth year, an extended dress rehearsal for the crisis to come. Demand was rapidly outstripping supply.

As 1973 began, the situation, in outline, was this: Domestic crude production had peaked in 1970 at 9.6 million barrels a day and by 1973 had declined to 9.4. Under the exemption-riddled oil import system, imports of crude had grown from 22.7 per-

*There were several reasons for the natural gas shortage, including increased demand. Another was the "double market" for gas. While the Federal Power Commission regulated the wellhead price of gas sold *interstate*, state commissions regulated the wellhead price of gas sold *intrastate*. These two prices gradually diverged, with the intrastate price rising faster. As a result, producers of gas had an incentive to sell their product in their own states, rather than in, say, New England.

†Nixon's proposals included: creation of a Department of Natural Resources; expansion of the civilian nuclear power program; stepped-up research into synthetic fuels; accelerated leasing of the outer continental shelf for oil exploration; and leasing of federal lands for shale oil development. The emphasis was on *long-term* energy needs.

cent of U.S. needs in 1970 to 35.9 percent. Consumption of regulated, low-priced natural gas (it cost 22¢ per 1,000 cubic feet, compared to 72¢ for an energy-equivalent amount of oil) was running at twice the rate of new discoveries, and winter curtailments of usage were expected to equal 10 percent of demand in 1973-74. Oil from Alaska's promising North Slope, meanwhile, had not yet begun to flow; Congress, citing environmental hazards, had not approved construction of the Prudhoe Bay-Valdez pipeline. And there were tremors overseas: For the first time, the cost of foreign oil on the international "spot" market exceeded the price of domestic crude.

Spreading Scarcity Around

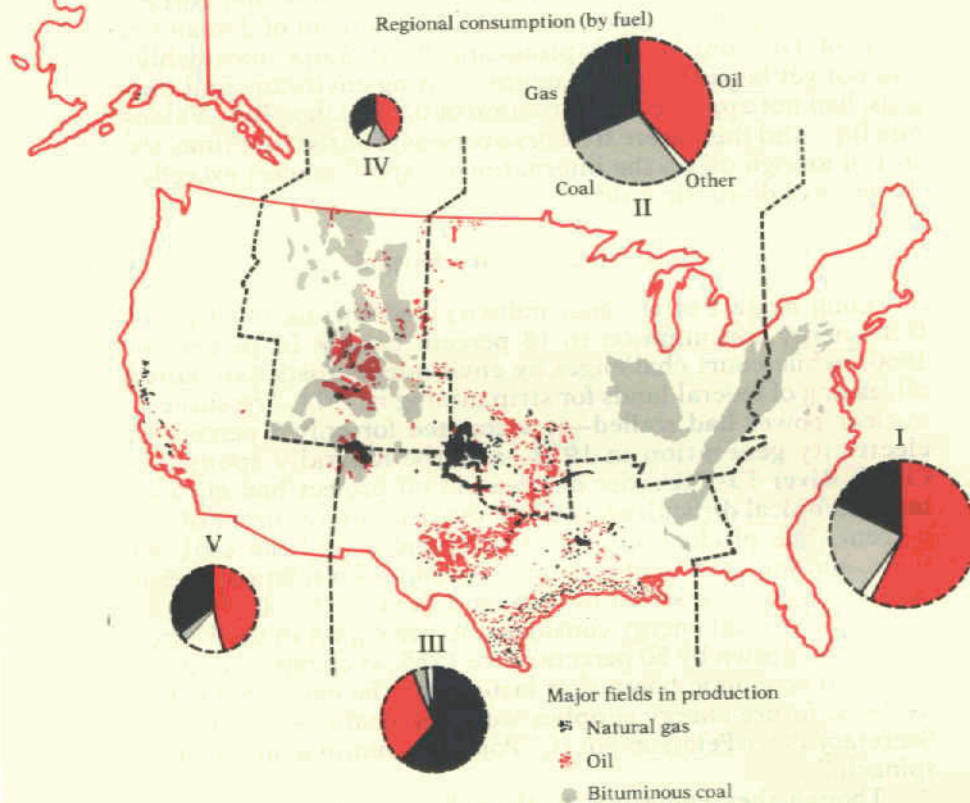
Long neglect of the coal industry had shrunk its share of U.S. energy consumption to 18 percent (versus 23 percent in 1960), while court challenges by environmentalists had halted all leasing of federal lands for strip mining in 1971. The surge to nuclear power had stalled—it accounted for only 5 percent of electricity generation in 1973—and the federally sponsored Clinch River Fast Breeder demonstration project had encountered technical difficulties and cost overruns on the order of 250 percent. The production cost of synthetic fuels from coal, oil shale, and tar sands still remained too high—in relation to that of other fuels—to warrant heavy investment.

In all, annual energy consumption per capita in the United States had grown by 50 percent since 1955, as cheap oil and gas fueled an economic boom that lasted into the early 1970s. But by 1973, future energy supplies were uncertain. As Commerce Secretary Peter Peterson put it, "Popeye is running out of cheap spinach."

Though they came late to the subject, Nixon and his key advisers—these included, at various times, Treasury Secretary George Shultz, his deputy (and later head of the Federal Energy Office) William E. Simon, special energy assistant Charles Di Bona, and former Colorado Governor John Love, director of the Energy Policy Office—arrived at a sound diagnosis of what was wrong with U.S. energy policy.

As they saw it, Washington's regulatory policies, especially those affecting oil and gas prices, were contradictory and had helped to cause the transient shortages of 1969-73. Further, the administration had gone too far in the right direction on the environment, leading to unreasonable curbs on coal burning and mining and to bottlenecks in the construction of refineries, power plants, and other facilities.

ENERGY PRODUCTION AND CONSUMPTION, 1970
(by U.S. Petroleum Administration regions)



Source: *International Petroleum Encyclopedia*; U.S. Department of Energy; U.S. Geological Survey, Department of the Interior.

Rival regional interests have helped fashion many U.S. energy policies; federal policies, in turn, have affected regional energy development. Exploitation of vast Western coal reserves was impeded by curbs on the leasing of federal lands for mining and by environmental regulations. (The latter, by requiring all coal-fired plants to install expensive "scrubbers" to remove pollutants from high-sulfur coal, reduced utilities' incentives to buy the West's naturally low-sulfur coal.) Politicians from energy-short Regions I and II pressured Washington to ease oil import controls and regulate gas prices to keep domestic fuel costs down; their counterparts in energy-rich Region III shared a different perception of the national interest.

Effective control over energy policy, the White House also realized, had long been impeded by the dispersion of responsibility throughout both Congress and the executive branch.

The Departments of State and Defense, for example, had an important say on security issues, notably oil import and naval reserves policy. The Office of Emergency Planning watched over the oil import quota program, which was actually administered by the Interior Department. Coal was the bailiwick of Interior's Bureau of Mines and its Office of Coal Research; oil and gas policy was set by Interior's Office of Oil and Gas. Nuclear energy was the province of the Atomic Energy Commission. The Federal Power Commission regulated interstate sales of gas and electricity. Surveillance of the "competitive climate" of the energy industries was the responsibility of the Federal Trade Commission and the Department of Justice. Nothing seemed beyond the purview of the Environmental Protection Agency.

Whether President Nixon, given time, might have brought a coherent energy policy to life (and the various energy bureaucracies to heel) is idle speculation. For the events of 1973 acquired a momentum of their own; and Nixon, preoccupied with surviving the Watergate investigation, did little more than take each crisis as it came. There was no time for grand strategies.

In April 1973, in response to a worsening gasoline shortage, Nixon issued a makeshift energy message, his second. It lacked all the elements of the bold "big play" that had so appealed to him earlier.

The 14-year-old protective quota system had become a poignant relic of an era of surplus. By 1973, as world oil prices neared the level of domestic U.S. prices, the quota system, combined with Nixon's price controls, had the effect of choking off desperately needed imports, since oil companies could not pass on all foreign price increases to consumers. In his April message, President Nixon replaced the quota program with a system of license fees whereby importers could bring in as much oil as they wished; the fees were modest, but those on refined products were stiffer than those on crude, to encourage refinery construction at home. Inadequate refinery capacity was a major cause of gasoline shortages.*

By May, local gasoline shortages had become acute, and the administration slipped more deeply into regulation. In response to charges by independent refiners and dealers that the big oil

*In his April message, President Nixon also called for the deregulation of "new" natural gas; easing of Clean Air Act standards for coal-burning; accelerated leasing of the outer continental shelf for oil and gas exploration; and, once again, creation of a Department of Energy and Natural Resources.

companies were using shortages to deprive them of oil and thereby drive them out of business, Nixon announced a voluntary "allocation" plan. Major oil companies were asked to supply all refineries and dealers with the same percentage of the total supply of crude and petroleum products as they received between September 1971 and August 1972. Allocations did nothing to ease the basic energy problem; at best, they merely spread the scarcity around.

By June, 1,500 independent gasoline dealers had closed temporarily; 400 more had shut down for good. Gasoline prices crept upwards, as far as controls allowed. Nixon responded with another quick energy message, calling for voluntary conservation and urging a five-year, \$10 billion investment in energy R&D. In July, Phase IV of the price stabilization effort went into effect, introducing a two-tier crude pricing system, with "old" oil subject to a price ceiling but "new" oil (anything produced from a given property above the 1972 level) exempt. Variations of this system remained in effect until January 1981.

Fighting inflation through price controls was no more compatible with curing energy ills in mid-1973 than it had been six months earlier. Ceilings remained on retail prices of many oil products. As foreign crude prices rose through the summer, responding to increased world demand, importers, still unable to pass on many cost increases to consumers, cut back on foreign oil purchases. The shortages grew worse.

In September 1973, as Arab governments stepped up their calls for a "correction" in U.S. policy toward Israel, President Nixon worried openly at a press conference that the nation might soon be "at the mercy of the producers of oil in the Mideast." He pleaded with Congress to approve the 789-mile Alaska pipeline. (Congress didn't act until November.) In early October, with the winter fuel situation looking bleak, the President ordered mandatory federal allocation of propane, heating oil, and jet and diesel fuels. Mandatory allocations were eventually extended to all crude oil and refined products.*

*A further "refinement" in the allocations program came in late 1974 with the appearance of "entitlements." Entitlements were devised to aid small and independent refiners, which had popped up when foreign oil was inexpensive and were threatened now that it was dear (the world price was about \$11). Unlike the large refiners, the independents often had little access to "old" domestic crude, the price of which was then controlled at \$5.25. Under the scheme, all refiners were issued entitlements authorizing them to use a proportion of old crude in their runs equal to the national average. A large refiner with *more* than the national average of old crude available thus had to buy entitlements (initially, at \$5 per barrel) from small refiners with *less* than the national average. This gave small and independent refiners a vested interest in keeping price controls on old oil, where no such interest had existed before. President Reagan lifted the remaining controls on oil in January 1981; the negative impact on small refiners is expected to be substantial.

On October 20, the Arab oil ministers placed the United States under an oil embargo. By the end of the month, the posted price of OPEC crude had nearly doubled.

By now, federal involvement in the U.S. energy markets was as tangled and complex as the White House's involvement in the Watergate cover-up, but the economy seemed to have built up a certain immunity to intervention. It took more to do less.

As his authority and prestige steadily deteriorated, Nixon delivered a major televised address in November to the nation to promote "Project Independence." With the Mideast crisis as a backdrop, he asked Congress to establish a nationwide 50-mile-per-hour speed limit for cars (55 for trucks), to permit year-round establishment of Daylight Savings Time, to relax environmental standards and ease licensing of nuclear power plants, and to act on his proposed Energy Research and Development Agency. A detailed blueprint for energy self-sufficiency would be drawn up soon, he promised. "Let us set as our national goal," Nixon concluded, "in the spirit of Apollo, with the determination of the Manhattan Project, that by the end of this decade we will have developed the potential to meet our own energy needs."

A Cat-and-Mouse Game

Project Independence never really got off the ground, although Congress did approve the speed limit and Daylight Savings proposals, and White House officials spent much of the next year drawing up a "Project Independence Blueprint." The winter of 1973-74 was unusually warm; shortages were less severe than anticipated. By summer, the lines of automobiles at gas stations had disappeared. Congress, it seemed, was less interested in pursuing solutions than in finding scapegoats; and the attentions of Senator Henry Jackson (D.-Wash.) and others were fixed on the big oil and gas companies, whose long-cherished and once sacrosanct depletion allowance was promptly eliminated.

"The American people want to know," Senator Jackson demanded during a series of hearings, "whether major oil companies are sitting on shut-in wells and hoarding production in hidden tanks and at abandoned service stations." Three times, Congress came within a handful of votes of requiring oil companies to divest themselves of all but one phase—exploration, production, refining, marketing—of their business. To what extent the oil companies may have created (or exploited) shortages during the 1970s is difficult to say. Much was beyond their control. Justified or not, the backlash against the oil industry de-

flected attention once again from the business of formulating a national energy policy.

In the throes of Watergate, President Nixon was in no position to follow through on his energy proposals.

He did not leave Washington in disgrace until August 9, 1974. But Watergate's repercussions had been felt outside the Oval Office for many months, measured by executive indecision, tangled lines of agency authority, and paralysis in Congress. For the new President, Gerald R. Ford, devising a politically salable package of energy initiatives in late 1974 was further complicated by prickly short-run concerns (e.g., record postwar unemployment, persistent inflation) and the hazards of getting any energy bill past a gauntlet of special interests.

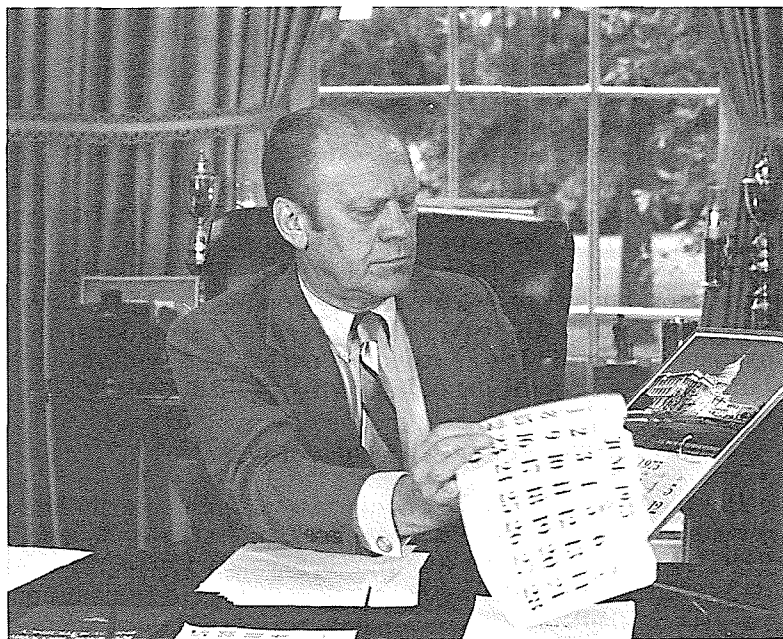
President Ford nevertheless acted bravely to get energy planning under his control. By December 1974, he had a comprehensive energy package, striking in its consistency, ready for Congress. It was put together largely by Interior Secretary Rogers Morton and Frank Zarb, administrator of the Federal Energy Agency, which Nixon had created after the embargo in an attempt to get energy planning "under one roof."

The main objectives of the Ford program were to reduce oil imports, spur energy research and production, and create a free market in energy. Among its key proposals: decontrol of oil and deregulation of natural gas (coupled with an excise tax on gas to equalize the price of oil and gas on a per-Btu basis); a rise in utility rates; weakening of the Clean Air Act; authority to order major power plants to switch from oil and gas to coal; creation of a 300-million-barrel strategic petroleum reserve as a hedge against supply interruptions; and a tariff on imported crude of (eventually) \$3 per barrel.

President Ford believed, correctly, that his energy plan was the most coherent yet devised by an American President; he believed, incorrectly, that a Democratic Congress, the press, and the public would respond with gratitude. He encountered instead the larger problem that occurs when laws must be made by legislators subject to frequent re-election: the temptation in Congress to sacrifice the electorate's real long-term interests to its perceived short-term interests.

"If this energy problem is as bad as they tell us," observed Representative James A. Burke (D.-Mass.) early in 1975, "we're going to have to take steps in every direction." Congress did just that, coming up with a grab bag of Democratic alternatives to the program submitted by the President, all of them backed by powerful coalitions on Capitol Hill.

As domestic oil and gas production sagged and imports



The Gerald R. Ford Library.

In a May 1975 TV address, President Ford ripped pages from a calendar to illustrate how long Congress had been sitting on his energy proposals.

reached pre-embargo levels, a peculiar cat-and-mouse game developed. While the undisciplined Democrats could not agree on their own plan, they had enough votes to block any Ford initiative; while Ford couldn't get his own legislation passed, he had enough votes to sustain a veto of any Democratic bill. The basic conflict was between the President's free-market philosophy and a Congress that was disposed, in Interior Secretary Rogers Morton's words, "to [regulating] our way out of something we've regulated our way into." Ford also faced the traditional Democratic reluctance to impose higher prices on consumers.

In the end, Ford had to give way, watering down his proposals until Congress finally passed the Energy Policy and Conservation Act in December 1975. Ford got his strategic petroleum reserve, authority to ration petroleum in an emergency, and his coal conversion measures. As for oil decontrol, the composite price of "old" and "new" domestic crude—then around \$8.75—was actually rolled back by more than \$1; price controls and the complex allocation program would remain in effect for more

than three years. The President was given limited authority to increase the price of oil to keep up with inflation.*

Despite pressure from oil companies and conservative Republicans to veto the legislation—Senator John Tower (R.-Tex.) had called it the “OPEC Relief Act of 1975”—Ford reluctantly signed the bill into law. It was, he said, a “first step.”

Energy issues played almost no role in the 1976 Ford-Carter presidential campaign. Memories of 1973 had faded. Among the Big Three auto makers, only General Motors had begun in earnest to “downsize” its fleet. Democratic nominee Jimmy Carter’s proposal to create a Cabinet-level Department of Energy (it was established in August 1977) aroused far less interest than his attacks on Gerald Ford’s economic record. The media seemed interested mostly in the candidates’ slips of the tongue.

The Moral Equivalent of War?

But if energy was not a campaign issue, Jimmy Carter knew it would be an issue in his Presidency. He took steps even before the election to put together a comprehensive energy package. As it happened, Carter failed as Ford had failed, even though Congress was controlled by his own party.

Jimmy Carter announced at his inauguration that an energy package would be on Congress’s doorstep within three months. The Carter program quickly took shape in a second floor suite of the Old Executive Office Building next to the White House, under the leadership of James Schlesinger. Schlesinger, a Harvard-trained economist who had held the top posts at the AEC, the CIA, and the Defense Department under Richard Nixon, was interested in efficiency, not consultation with Congress or the rest of the executive branch. He worked in virtual secrecy. All of his associates favored increased federal intervention in the energy sector. They asked for no advice, except in the odd form of a questionnaire sent out to 450,000 Americans, most of them picked at random from the census rolls. (Among the 28,000 replies: “Darken Las Vegas”; “Reduce the birthrate.”)

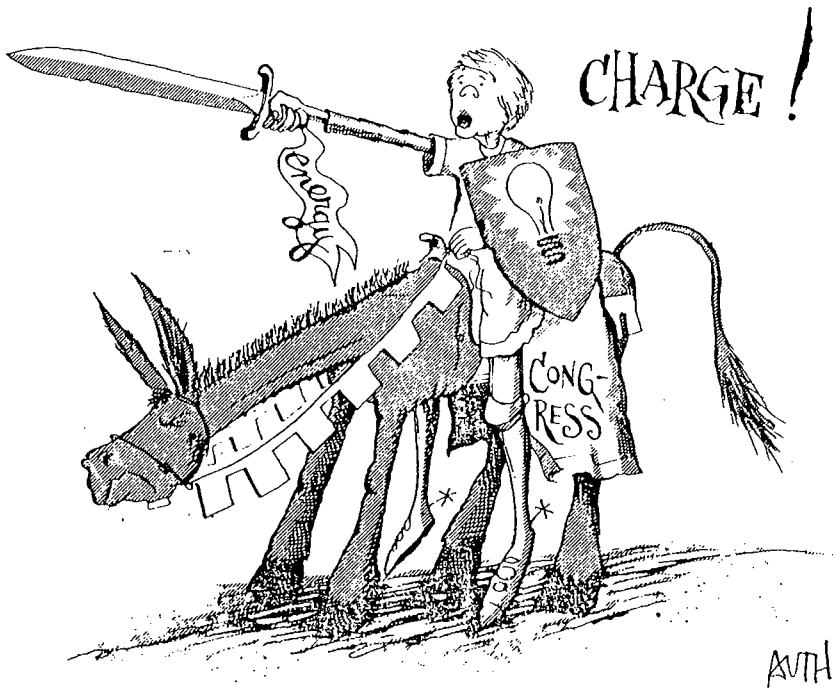
On April 20, 1977, in a speech before a joint session of Congress, President Carter unveiled his National Energy Plan and called for the “moral equivalent of war” in the struggle to get the United States on a sound energy footing.

The basic objectives of the Carter plan were to reduce reliance on imports, turn consumers away from oil and gas, and be-

*Congress took no action on deregulation of natural gas prices, but the Federal Power Commission periodically acted on its own, in 1975-76, to raise the price of “new” natural gas sold interstate to as much as \$1.42 per thousand cubic feet.

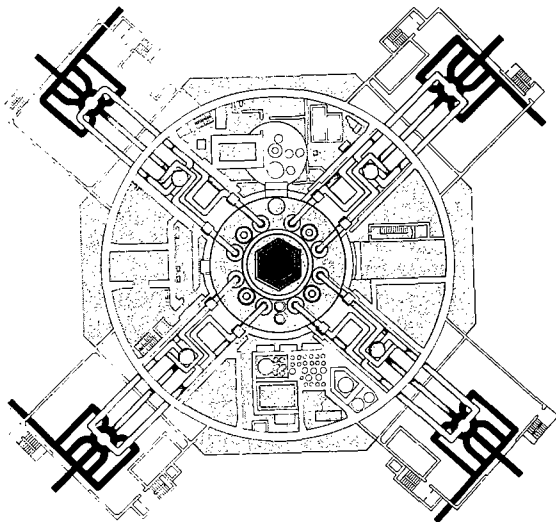
gin using more coal, despite the environmental hazards, until the sun and other clean and renewable resources could be tapped. (Carter considered nuclear power a "last resort" and tried, with some success, to scuttle the Clinch River breeder project, even as breeder development proceeded in France, the Soviet Union, and elsewhere.) He estimated that his program would reduce projected 1985 oil imports from 16 to 6 million barrels a day, lower annual growth in energy consumption to 2 percent, and cut gasoline usage by 10 percent.

Carter's major proposals included: a crude oil equalization tax that would lift the price of domestic crude up to the world market price, with receipts from the tax rebated to the public in the form of tax credits; new pricing policies for gas that would gradually bring its price into line with that of oil, on a per-Btu basis; and tax incentives to promote fuel-efficient cars, cut gaso-



Auth—Philadelphia Inquirer.

The crusade for a National Energy Plan dominated President Carter's first year in office, but Carter was unable to work effectively with Congress. Pollster George Gallup reported that one-half of all Americans surveyed were "relatively unconcerned" about energy problems.



Cross section of the Superphénix "breeder" power station, under construction in France. (Dark red represents the active core, black the steam circuit leading to the generator.) Development of a U.S. breeder was slowed by the Carter administration.

From Superphénix: A Full-Scale Breeder Reactor by Georges A. Vendryes. Copyright © 1977 by Scientific American, Inc. All rights reserved.

line consumption, encourage the use of solar energy, and stimulate the conversion of utilities from oil to gas to coal.

The whole plan was presented in terms of how much energy each measure would "save" in millions of barrels of oil. The emphasis was almost entirely on reducing energy demand and increasing energy efficiency. According to some estimates, the United States wasted half of its energy. Unlike the earlier Ford plan, there were few incentives for increasing supply. (Higher oil prices were meant to promote conservation; the crude oil equalization tax meant that oil producers could not "plow back" profits into exploration.) The President sent his program, encompassing 113 separate proposals, to Congress and told reporters it would be passed by October 1, 1977.

October 1 found the House and Senate deadlocked. The President's congressional liaison had been poor, and many Congressmen were irked by Carter's initially high-handed approach to energy planning. A more basic problem was that the Carter plan had been devised to be "fair"—i.e., to offend everybody. Unlike the Ford proposals, which at least had the solid backing of oil and gas companies, there was no constituency for the Carter plan. Congress went into recess, overcome by what Robert Samuelson, a columnist for *National Journal*, called "the moral equivalent of chaos."

When Congress reconvened in 1978, it had other fish to fry: the Panama Canal treaties, the Korean influence-peddling scandal, a financial bail-out of New York City. There were no gas lines, and oil had started to flow from Alaska's North Slope, causing an embarrassing local glut on the West Coast that seemed, in the eyes of the press, to undermine administration claims that a crisis was at hand.

In November 1978, Jimmy Carter finally got an energy bill, in tatters. Half of his proposals were gone, including the crude oil equalization tax, the centerpiece of the program. Decontrol of natural gas prices was accepted but would be phased in gradually through 1985; until then, gas would be subject to a bewildering array of regulations. Many of the tax credits survived.

Few expected the resulting energy "program" to do much of anything, and the U.S. monthly oil import bill continued to run at more than \$3 billion. But Jimmy Carter could assert that he now had an energy program, however modest. The President hoped he would not have to tackle the subject again. His State of the Union message in January 1979 was almost devoid of references to energy. It was time to turn attention to other matters: SALT; revived inflation; the Egyptian-Israeli peace treaty.

It would not be possible. Even before the State of the Union address, the Shah of Iran had left his country for an extended "vacation" from which he would never return. An Islamic revolution was underway. Iran's oil production had been cut back sharply, even as OPEC stepped in with another series of price increases, the largest since 1973, boosting the price of a barrel of crude by midyear to between \$18 and \$23.50. (By the end of the year, the price hovered around \$30.) On March 28, an accident at the Three Mile Island nuclear power plant near Harrisburg, Pennsylvania, reawakened fears over the safety of atomic energy. By April, gas lines appeared, first in California, soon spreading east, largely the result of the lapse in Iranian crude production.

On April 5, President Carter, in a nationwide television address, reacted to the uproar. He revealed his intention to decontrol the price of domestic oil ("a painful step") in order to ration consumption. Decontrol would be subject to passage by Congress of a 50 percent "windfall profits" tax on oil company earnings, with proceeds going to an "energy security fund" that would help poor families pay for fuel, and provide more subsidies for mass transit.

By July, Congress had yet to act, and Jimmy Carter's approval rating in the polls had sunk below 30 percent, where it seemed to stick. Inflation was running at 11.3 percent. OPEC

threatened further price increases. Domestic affairs adviser Stuart Eizenstat warned the President that, more than anything else, it was the nation's energy woes that had "added so much water to our ship."

An energy speech had been scheduled for July 5, but Carter mysteriously postponed it and instead convened a "domestic summit" at Camp David, the presidential retreat in the Catoctin Mountains. After meeting there with more than 100 business and civic leaders, President Carter flew back to Washington and, on July 15, delivered yet another nationwide address.

In the first part of his speech, he lectured his audience about a "crisis of confidence," asserting that America was beset by a pervasive "malaise," the first French word Americans had learned from the White House since "détente." Later in the address, the President announced a ceiling on imports of foreign crude oil and called for crash development of synthetic fuels (using funds raised by the proposed windfall profits tax) overseen by a federally sponsored Energy Security Corporation. It was the first time Carter had addressed the problems of energy's "supply side." Congress eventually passed a stiff windfall profits tax and phased in decontrol of oil. But it sharply reduced the proportion of new oil tax receipts to be applied to a synthetic fuels program, whose costs and benefits were disputed.

On November 4, 1979, Iranian militants occupied the U.S. embassy in Tehran and took 65 Americans hostage. Obscured by the hostage crisis and other issues, energy got little attention during the 1980 presidential election campaign. As Ronald Reagan was sworn into office in January 1981, both economic recession and conservation measures had curbed U.S. demand for foreign oil. But America was still importing 37 percent of its oil and 5 percent of its natural gas. A gallon of gasoline cost \$1.28, and the price of a barrel of OPEC oil had climbed to \$34.83, ten times what it cost in 1970. Construction of new nuclear plants had slowed. Seven years after the crisis of 1973–74, a Roper Poll found that more than half of all Americans surveyed believed that there had never been a real oil shortage and that the Arab embargo had been contrived by the oil companies.

THE LESSONS OF HISTORY

by Craufurd D. Goodwin

The United States emerged from World War II with a new appreciation of the importance of energy to the nation's survival. It had participated in the first fully mechanized war in history. In the view of the State Department's Charles B. Rayner, testifying before the Senate in 1945, the Allies won because the United States had oil in abundance; Germany and Japan fought for it in Baku and Kirkuk, in Burma and Indonesia, and they lost because they were unable to capture it, or to capture it in time. Rayner's version of history was highly simplistic, but his implicit warning was sound.

America's reserves of oil and gas were limited, as Rayner noted. Future generations would perceive the nation's heavy dependence on these fuels to have been transient, like its earlier dependence on whale oil or wax candles. New energy sources would be needed: synthetic liquid fuels; gas made from coal; atomic and solar power. This much was clear from the start of the Truman administration.

During the next 30 years, what to do about future energy supplies remained the nation's most important piece of unfinished business, variously languishing from neglect or overwhelmed by a brief rush of attention. Successive Presidents worried about fuel prices and shortages, about imports, about competition among coal, oil, and natural gas. But a truly broad, painful White House attack on the problem, it seemed, was always deferrable as wars, recessions, or political conflicts intervened.

The inventory of energy policies adopted by Washington before and after the Arab embargo in 1973-74 is long and intricate. Stripped of embellishments, however, two themes stand out: the unwillingness, despite all their rhetoric, of energy producers, consumers, and the federal government to allow a genuinely free market in energy to develop; and the inability to create a system of central planning—the obvious alternative—to take the place of the marketplace.

The hybrid and piecemeal approach to energy policy that evolved instead puzzled everyone who bothered to study it. Events may prove that it was a tragedy for the nation.

The oil industry's chaotic early history, of course, did not

constitute overwhelming evidence in favor of a laissez-faire approach. During the 1930s, Congress took steps to supplant the free market in petroleum. Oil was treated like some other commodities—wheat, for example—and its price was stabilized, as wheat's was stabilized, by taking fields out of production.

The Failure of Planning

Under the slogan "Democracy on the March," Washington also intervened during the New Deal with vast public power programs and construction subsidies to keep electricity prices low. After World War II, when natural gas became important, it too was regulated, and its price held down. During the 1950s, the White House added restrictions on imported oil. After that, federal regulation, like Topsy, just "grow'd." Only the coal industry was left unfettered. Mine owners and workers did not fail to note the correspondence between the freedom of the market for their product and the coal industry's economic decline.

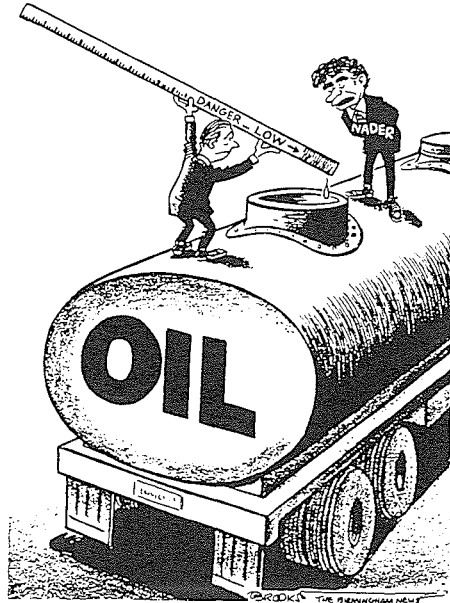
Washington's tinkering with the marketplace may have been justified, temporarily, at particular times. The result, all the same, was gradual erosion of public confidence in the market as an allocator of energy resources. When the energy crisis struck during the 1970s, most of the proposals to deal with it, including the comprehensive schemes of Presidents Ford and Carter, ultimately counted on "market solutions"—i.e., allowing prices to rise to curb demand or stimulate production. But, by then, the notion of free markets in the energy field had been abandoned by almost everyone involved. The market could not be put back to work anew at the stroke of a pen.

Ironically, as postwar history demonstrated, only market forces, when unleashed, seemed to have any impact on energy shortages.* Every President since Truman "jawboned" producers and consumers or presided over some awkward, short-term

*It is interesting to note how quickly oil-well drilling responded to the gradual decontrol of domestic oil prices beginning in 1979. The "rig count" grew by 34 percent in 1980.

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"It's a myth to raise prices," asserted consumer advocate Ralph Nader in this 1974 cartoon. "Who do you believe, that lousy stick or me?" Yet only higher prices seemed to have any effect on energy demand.



*Courtesy of Charles Brooks,
the Birmingham (Ala.) News.*

administrative strategy in order to ease the nation painlessly out of a fuel crunch. Invariably, price adjustments, had they been politically palatable, would have done the job more quickly, more easily, and, in many cases, more fairly.

If, after World War II, the energy markets were no longer free, and so no longer efficient, what could be put in their place? Some kind of national planning was clearly an alternative. Yet, except during wartime or deep economic trouble, Americans have had a strong ideological aversion to planning.

Even during emergencies, Americans were less interested in serious long-range planning than in "stopgap" solutions. Crises were the bane of effective energy policy, drawing attention to a problem while diverting the means to deal with it. Never was the urgency of "synfuel" development perceived as clearly as at the outset of the Korean War; never was it less likely that Congress and the White House would embark on a multibillion dollar scheme that wouldn't pay off for at least a decade.

Crises also prompted Presidents to assign energy matters to various short-lived emergency bureaus, such as Truman's National Security Resources Board and Eisenhower's Office of Emergency Preparedness. What little official thinking on energy issues occurred was thus repeatedly interrupted as the bureaucratic structures devoted to it were dismantled or reshaped.

HOW OTHER COUNTRIES COPE

In September 1979, the Gallup Poll reported that 45 percent of Americans surveyed did not know the United States imported *any* oil. The citizens of other industrialized nations, however, have long been aware of their dependence on foreign petroleum. (West Germany, France, and Japan, for example, import almost 100 percent of their oil.) In the wake of the 1973 OPEC price increases, Western governments began to reassess their various energy strategies.

Most Europeans have tried to couple substantial conservation with conversion to new sources of energy. Banking on the success of their Superphénix breeder reactor, the French hope to satisfy 20 percent of their energy needs through nuclear power by 1985. The Germans are stepping up coal production and also pushing forward with nuclear power, despite domestic opposition. The Netherlands, by contrast, has opted to *increase* its reliance on OPEC oil in the short run, conserving its own vast Groningen gas field. Norway and Great Britain began pumping North Sea oil during the 1970s; both countries are self-sufficient in petroleum. Over all, the "energy crisis" has not yet been a calamity for the industrialized West.

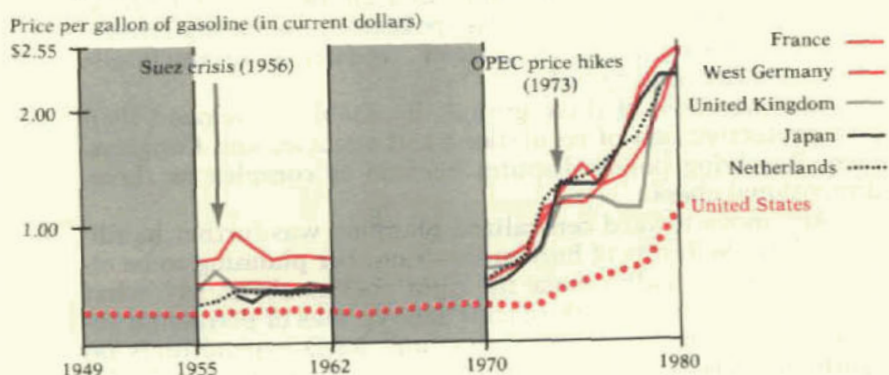
The rise in crude oil prices has crippled the economies of many Third World nations in Asia, Africa, and Latin America. To pay for OPEC oil, most of them have gone heavily into debt (outstanding Third World loans now total \$385 billion). OPEC officials claim that, through higher oil prices, they rob the rich West to give to the world's poor. But so far, OPEC's aid to its less fortunate brethren has not come close to compensating for their higher oil costs.

President Nixon had three successive energy "czars" heading up two successive energy offices in 1973 alone.

If there was to be planning, whose job would it be? The great virtue of competitive markets is that they permit prices and the allocation of resources to be determined by the interplay of impersonal forces—Adam Smith's "invisible hand." When free markets in energy were supplanted, the hand became visible. Individuals had to be designated to make decisions. The questions then became who and on what criteria.

For some federal policies, the first question was relatively easy to answer. For antitrust work, for example, there was a cadre of lawyers and economists in the mold of Thurman Arnold and Louis Brandeis, who saw themselves as guardians of competitive free enterprise. But energy policy lacked a comparable group. The Interior Department came closest during the early Truman years, but its controversial ties to the oil and gas industries, and the jealousy of bureaucratic rivals, soon stunted its

In the view of some governments, the United States (which consumes 20 percent of OPEC exports) poses as much a problem as OPEC. The "sheer weight" of U.S. demand for oil, as German Chancellor Helmut Schmidt has noted, helps to keep crude prices high everywhere. European nations have far outpaced America in conservation, even as U.S. imports have leveled off.



Americans continue to pay less for gasoline than do citizens of other Western nations, where high gas taxes promote conservation and energy R&D. (Foreign data for 1949-55 and 1962-70 are not available.) In constant dollars, U.S. gasoline cost less in 1979 than it did in 1922.

leadership potential.

Besides, many of the department's own officials in the various bureaus and fuel offices were skeptical of comprehensive planning. Rather, they believed, through "consensus and accommodation," real people—not eggheads "schooled in the academic disciplines" but people who knew their own small piece of the energy business down to the last Hughes drilling bit and Louisiana salt dome—should continue to set policies for individual fuels according to their best lights.

It is obvious in retrospect that an elite corps of energy advisers, and long-term federal energy planning, could have thrived in Washington only with the support of a strong national constituency. Before energy problems were perceived by Americans as vital and permanent, this constituency did not exist in the White House or Congress, or, for that matter, in industry, or in the universities, foundations, and "public-interest" groups. (It is questionable whether it exists even now.) Broad energy propos-

als, in consequence, shared the fate of Jean-Paul Sartre, who once complained that he had many readers “but no public.”

By default, the Washington representatives of special interests evolved into the dominant intellectual forces in energy policy: the suppliers of oil, coal, natural gas, and electrical power; the advocates of atomic energy; the environmentalists; and the “consumers,” who comprised an awkward mix of regional, ideological, and business spokesmen, including refiners who were as sensitive to the price of “feedstocks” as any family to its monthly heating bill.

In time, most of these groups, inevitably, developed their own protective belt of regulations and agencies and Congressmen. Resolving policy disputes became as complex as three-dimensional chess.

Any move toward centralized planning was further handicapped by the limits of human intuition. For planning to be effective, experts had to make the right guesses about, say, what was going to happen with reactor safety, rates of petroleum recovery and natural gas discovery, and R&D expenditures on synthetic fuels. “Safe” assumptions could be made, but the future was obdurately capricious. As the authors of the Paley Commission report observed, trying to *plan* energy was like trying to plan “the fingerprints of one’s great-grandchildren.”

It is sobering to recall that, in 1970, a Nixon task force assumed in its projections that imported crude would continue to be less expensive than domestic crude, that the risk of an Arab embargo was slight, and that oil from Alaska’s new North Slope fields would reach the Lower 48 by 1973. By the end of 1973, all of these suppositions were shown to have been in error.

Repairing the Damage

Thus, it is not at all clear, even with the benefit of hindsight, exactly what the nation ought to have done at a given moment to prepare for the energy transitions that all the data indicated lay down the road. It was never possible to say precisely *what* the future would bring, exactly *when* synthetic fuels would be needed or *where* new oil would be found or *who* would throw down the gauntlet to oppose one proposal or another. Such uncertainties would have plagued any concerted effort by a President and Congress to deal with the problem. But no concerted effort was ever made.

What is striking is that those involved in the various debates over energy policy seldom had any but parochial concerns in mind. An issue such as increased imports of residual fuel oil

galvanized Northeastern Congressmen (whose constituents depended on imported heating oil), the leaders of the United Mine Workers (who feared that competition with "resid" would cost jobs in the mines), and officials in the State Department (who worried that curbing imports would antagonize Venezuela, the main supplier). There was no one to represent the long-term *national* interest, except possibly a President who was preoccupied with difficulties elsewhere.

When it came to "doing something" about energy, the cards were therefore stacked heavily in favor of the status quo. The public (and media) memory was short, the tyranny of the immediate decisive. Energy was so broad a subject that politicians, buffeted by lobbyists, inevitably broke it down into "manageable" components—imports, production, pricing, research, conservation, environmental issues—and found that, even so, the sheer pain of reaching agreement on any single item dampened desires to address the subject ever again. A costly by-product of this was an official reluctance to dismantle emergency measures, such as President Nixon's jerrybuilt allocations program, once the emergency had passed.

And energy questions were continually submerged by other disputes. Exploitation of offshore oil and gas reserves was ensnared in court battles over states' rights. Increased use of coal conflicted with environmental statutes. Energy plans also had to be weighed against other objectives: promoting economic growth; controlling inflation; maintaining national security. Historically, even totalitarian regimes have found it difficult to reconcile such major goals.

The United States was no totalitarian regime. Indeed, since the early 19th century, even foreign visitors had held up the "American model" of decentralized democracy and competitive free enterprise as uniquely efficient, politically and economically. Yet, over a period of 50 years, as the nation's energy problems grew in magnitude and complexity, the system failed to respond in timely fashion. Energy policy was continually torn between two extremes of economic theory: free markets and central planning. Repairing the damage is a challenge awaiting us in the 1980s.

BACKGROUND BOOKS

ENERGY: 1945-1980

There are many under-investigated subjects in academe. Economic history—as opposed to economic theory or policymaking—is one of them. The gap is apparent to anyone looking for comprehensive accounts of U.S. and foreign development of oil, gas, coal, and nuclear energy. Historical treatment of these topics tends to be superficial, heavily biased, or unreadable. We offer a few exceptions here.

Study in Power (Scribner's, 1953), historian Allan Nevins's sympathetic, two-volume biography of John D. Rockefeller, treats energy issues *per se* only intermittently, but the 19th-century expansion of the petroleum industry is explored thoroughly. "John D.," founder of Standard Oil (1873) and prime target of federal trustbusters, loved what he called "the big game." Nevins supplies vivid details on Rockefeller's organizing skills, his financial ups and downs, and the evolution of Big Oil.

Rockefeller was caricatured and vilified as a monopolist (which he was), but Standard Oil brought order out of the chaotic early conditions described in **The American Petroleum Industry** by Harold F. Williamson et al. (Northwestern, 1959, vol. 1; 1963, vol. 2). The authors of this dry but useful chronicle trace the erratic path of the oil business from the sinking of Drake's well in Pennsylvania in 1859 to President Eisenhower's imposition of controls on imports 100 years later. No comparable survey covers the industry since 1959.

British journalist Anthony Sampson focuses on the rise and decline of **The Seven Sisters** (Viking, 1975,

cloth; Bantam, 1976, paper), the five American, one British, and one Dutch/British multinational oil giants. Beset by dissension and by official suspicions in Washington, they confronted, then succumbed to, OPEC on higher oil prices in 1970-74. The Seven Sisters, Sampson believes, are now simply "middlemen" between OPEC and Western consumers.

Even so, during the 1973-74 Arab oil embargo, as Western governments failed to coordinate their responses, the multinationals quietly re-allocated available world supplies and averted a more serious economic shock. This becomes clear in a detailed country-by-country postmortem, **The Oil Crisis** (Norton, 1976, paper only), edited by Harvard's Raymond Vernon.

David E. Lilienthal considers the past and future of nuclear power in his brightly written **Atomic Energy: A New Start** (Harper, 1980). Lilienthal, chairman of the Tennessee Valley Authority under Franklin Roosevelt and first head of the Atomic Energy Commission under Harry Truman, was an early proponent of America's nuclear power program. He concedes that the "technical method chosen for producing electricity from fission [the "light water" reactor] has proven to be far from an unmixed blessing," with its plutonium by-products and safety problems. But nothing can take the place of nuclear energy: "We need to turn our backs on the past—but not to quit."

Journalist James A. Wechsler looks at the troubled, pre-World War II coal industry and the United Mine Workers' powerful president John L.

Lewis in **Labor Baron** (Morrow, 1944; Greenwood, 1972). Denounced by 70 percent of respondents in a wartime survey as one of the nation's most "harmful individuals" and lauded by *Time* as "the greatest labor tactician in U.S. history," Lewis assumed the presidency of the UMW in 1920 and did not relinquish the post for 41 years. Four times, he shut down the mines during World War II.

Coal's future may be brighter than its past, believe the authors of **Coal—Bridge to the Future** (Ballinger, 1980), the report of the World Coal Study headed by MIT professor Carroll L. Wilson. The team of 80 specialists from 16 countries calls for "a tripling of coal use" and a massive shift from oil and gas to coal.

A medium-sized utility could probably operate for several years by using as fuel the special task force studies published since 1973 on America's overall energy future. Of varying quality, they range from Denis Hayes's utopian **Rays of Hope** (Norton, 1977, cloth & paper), which makes the case for an "efficient, solar-powered" world, to the Ford Foundation's somber **A Time to Choose** (Ballinger, 1974, cloth & paper), recommending a "conservation strategy" similar in many respects to President Carter's ill-fated 1977 National Energy Plan.

The best of these "future" volumes—and by far the most readable—is **Energy Future: Report of the Energy Project at the Harvard Business School** (Random, 1979, cloth; Ballantine, rev. ed., 1981, paper), edited

by Harvard professors Robert Stobaugh and Daniel Yergin. The authors make a persuasive case for price deregulation (now accepted) of oil and natural gas and for further tax breaks to promote conservation and solar energy.

An engaging and philosophical summary of America's energy dilemmas may be found in Jeremy Bernstein's **Hans Bethe: Prophet of Energy** (Basic, 1980), a profile that originally appeared in *The New Yorker*. Bethe, the émigré physicist who became one of the principal architects of the atomic bomb, draws on a half century of thinking about energy—and on memories of his boyhood in coal-short Germany after World War I.

"First of all," says Bethe, "the country has to realize that the energy problem is terribly serious and is likely to be permanent. Next, it must recognize that there are really two problems: One is to provide enough total energy, and the other is to provide fluid fuels of all types—mainly oil and gas. But for the next 20 years, at least, I believe the mainstays will have to be coal and nuclear power—that we will need more of them. Much more. . . . We need a vigorous program to make synthetic fuels. . . . Research and development of solar energy should be encouraged, although I do not believe it will make a substantial impact in the next twenty years or so. No one of these programs by itself will solve our energy problems, but all of them together have a good chance of succeeding."

EDITOR'S NOTE: *Many of the titles mentioned in this essay were suggested by former Wilson Center Fellow Chester Cooper of the Institute for Energy Analysis.*