

# THE CQ Researcher

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## Energy Security

*How vulnerable is America's energy system?*

The nation's dependence on foreign oil has troubled energy experts since the Arab oil embargo in 1973. Policies calling for more reliable sources of oil, curbs on energy consumption and the development of alternative fuels have reduced the dependence, but U.S. use of foreign oil still has continued to grow. Now the Sept. 11 terrorist attacks have intensified energy concerns. Some observers say the use of airliners as weapons places the entire domestic energy system at risk, including nuclear power plants and oil pipelines. But most experts agree that the biggest threat to U.S. energy security remains dependence on foreign oil. To reduce the risk, the Bush administration proposes more domestic production — including drilling in the Arctic National Wildlife Refuge — while Democrats favor conservation measures and increased use of renewable fuels.



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Cover: A heavily armed sheriff's deputy guards a Florida Power Corp. nuclear power plant in Crystal River, Fla. Nuclear plants and other energy facilities around the nation stepped up security after the Sept. 11 terrorist attacks. (Getty Images/Joe Raedle)

# Energy Security

BY MARY H. COOPER

## THE ISSUES

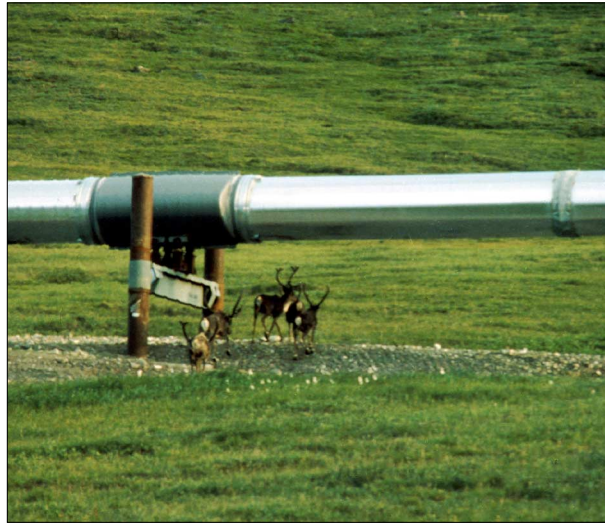
Ever since the 1973 Arab oil embargo, concern about cutoffs of oil imports by foreign suppliers has been a major focus of U.S. energy policy. Now there's a new threat: sabotage of pipelines, nuclear power plants and other energy facilities.

"The Sept. 11 terrorist attacks greatly widened what are considered credible threats to the energy system," says Arjun Makhijani, president of the Institute for Energy and Environmental Research (IEER). "Before Sept. 11, this was a discussion about energy policy. After Sept. 11, it should be primarily a discussion about security."

In a recent report, the Takoma Park, Md., institute warned that:

- Growing dependence on Middle Eastern oil imports increases the United States' military commitment in an unstable region of the world;
- The country's 103 working nuclear power plants are potential targets for attacks that could release lethal levels of radiation;
- Sabotage anywhere in the centralized electricity grid could cause extensive blackouts; and,
- Much of the nation's extensive network of oil and gas pipelines is in remote areas, where terrorists could wreak havoc on both the fuel supply and the surrounding environment.<sup>1</sup>

President Bush cited the attacks on New York City and the Pentagon as one more reason Congress should pass the energy plan he proposed last May. Bush's plan calls for more domestic energy production, notably by opening



Getty Images/U.S. Fish and Wildlife Service

*Caribou graze under the 800-mile-long Trans-Alaska Pipeline. Conservationists say the pipeline disturbs animals in the region. But others argue the pipeline has been a benign presence and that, similarly, President Bush's plan to allow drilling in the Arctic National Wildlife Refuge won't be harmful.*

the Arctic National Wildlife Refuge (ANWR) and other federal lands to oil and gas production, expanding nuclear power and increasing coal production.

"The less dependent we are on foreign sources of crude oil, the more secure we are at home," Bush said on Oct. 11. "We've spent a lot of time talking about homeland security, and an integral piece of homeland security is energy independence."

Not surprisingly, many congressional Democrats reject Bush's plan, especially drilling in the Arctic, for its potentially harmful environmental impact. Environmentalists have long advocated more federal support for developing cleaner alternatives to fossil fuels — oil, coal and natural gas — not only to reduce America's energy dependence but also to reduce emissions of both air pollutants and the gases that are thought to contribute to global warming, mainly CO<sub>2</sub>.<sup>2</sup>

Senate Majority Leader Tom Daschle, D-S.D., has promised that early this year — perhaps in February — he will be ready to ask the Senate to con-

sider a Democratic alternative to Bush's plan. The measure, introduced by Daschle on Dec. 5, is based on a bill formulated before the September attacks by Senate Energy and Natural Resources Committee Chairman Jeff Bingaman, D-N.M. It focuses more on conservation and development of alternative-energy sources. Rejecting the Bush plan as "drill, dig and burn," Daschle described the Democrats' alternative as a "balanced energy plan that will strengthen our economy, protect our environment and provide energy security."<sup>3</sup>

Some proponents of energy conservation found both proposals wanting. "Some provisions in the [Democrats']

bill would encourage some conservation," says Mark Hopkins, vice president of the Alliance to Save Energy, a business, consumer and government coalition. "But I actually don't find that much difference between the two approaches."

The terrorist attacks have prompted environmentalists to add a new argument to their energy conservation agenda. Brent Blackwelder, president of Friends of the Earth, wants policymakers to make national security the watchword for all energy policy. In a Nov. 20 letter to Tom Ridge, director of the new Office of Homeland Security, Blackwelder asked that "every energy provision in proposed legislation be subject to a basic security screen that asks: 'Does the proposed measure or action make our energy system more or less vulnerable to terrorism, war, natural disasters and accidents?'"

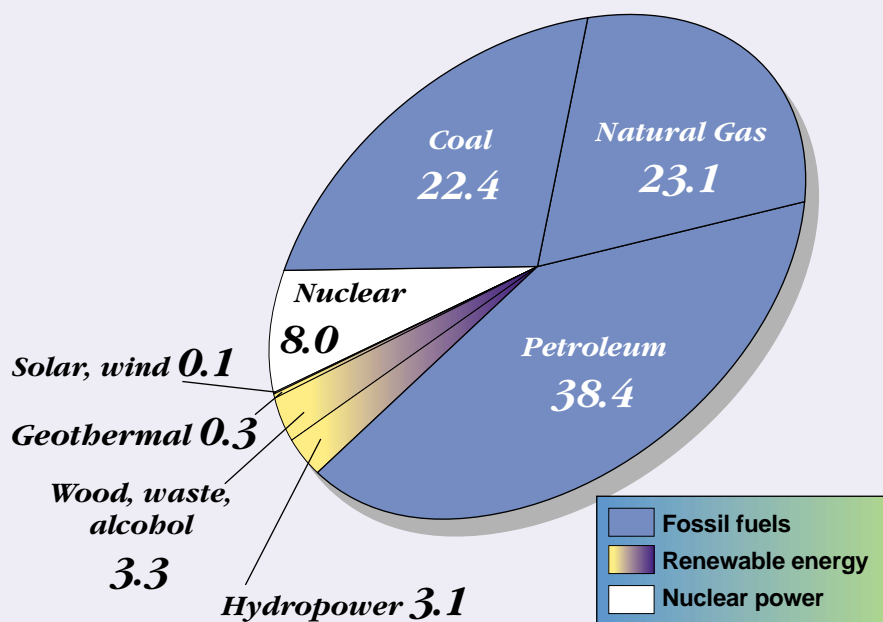
Experts say there are many things the government could do to enhance energy security. First, Makhijani says, it should phase out nuclear power — the only way, in his view, to eliminate po-

## Fossil Fuels Generate Most U.S. Energy

Oil and other fossil fuels provide about 85 percent of all the energy used in the United States. Conservationists and other critics of U.S. energy policy want greater use of renewable domestic sources, especially geothermal, solar and wind. Renewables, including hydropower, currently provide 7 percent of the nation's total energy needs.

### U.S. Energy Consumption in 2000 by Source

(in quadrillion Btus)



Source: "Monthly Energy Review," Energy Information Administration, December 2001.

tentially catastrophic terrorist attacks on plants, on pools of spent nuclear fuel stored onsite or on trucks and trains carrying radioactive waste across the country for more secure disposal.<sup>4</sup>

"The consequences of a complete loss of containment by accident or attack," the IEER report said, "could very well be on the same scale as the 1986 Chernobyl accident" in Ukraine, which released lethal amounts of radioactive iodine-131 into the atmosphere and caused 30 deaths as well as a rise in cancer incidence and environmental damage in Belarus, Ukraine, Russia and beyond.<sup>5</sup>

The nuclear power industry rejects Makhijani's assessment of the threat, and Bush himself has called for expanding nuclear power as a reliable source of electricity.

The government could also decentralize the nation's electric power grid into regional and local grids — so-called distributed power systems — centered around smaller generating plants that could generate electricity from alternative, less-polluting energy sources such as solar, geothermal or biomass power.

But the most urgently needed policy change, most critics agree, is to curb Americans' appetite for oil. Be-

cause nearly half of the oil consumed by Americans is gasoline, Americans would have to change entrenched driving habits. Hybrid cars that run on gas and electricity and easily get twice the mileage of today's fleet are just coming on the market. Hydrogen fuel cells may soon make the gasoline-powered internal-combustion engine obsolete altogether. (See box, p. 80.)

But conservationists say there's no need to wait for new technology to reduce Americans' demand for oil. If the federal government were to provide more support for conservation measures, they say, it would enhance energy security and reduce pollution at the same time. Fuel-economy standards, for example, have not changed since the 1980s, despite technological developments that would enable automakers to improve efficiency. The Sierra Club calls increasing gas mileage "the biggest single step to curbing global warming and saving oil."<sup>6</sup>

But Detroit argues that consumers prefer gas-guzzling trucks, vans and sport-utility vehicles — SUVs — which now account for about half of auto sales.

Other experts call for an increase in gasoline taxes, which are much lower in the United States than in other industrial countries. "I don't know of any experts who pay attention to energy and environmental policy who don't think that the best way of all to deal with the problem is to increase the price of energy," says Paul R. Portney, president of Resources for the Future. "That would stimulate conservation on the part of consumers and stimulate industry to look for new sources domestically and internationally on the production side."

Other policy tools that could save energy today include tax breaks for investment in renewable energy, direct funding of research and development of alternative fuels and selective procurement of items that incorporate leading-edge technology, such as hybrid vehicles for government fleets.

Amid the outpouring of post-9/11 patriotism — symbolized by the nationwide display of American flags — some experts say now is the time for a radical shift in energy policy. Americans appear eager to do their part to protect national security, they point out, but today's leaders are not tapping into that patriotism by asking this generation to make sacrifices like their parents and grandparents did during World War II.

"Everybody is looking for something they can do to help, but that message is not being sent to the people," Hopkins says. "Most politicians are a little scared of recommending change, for fear that potential voters may be upset with the idea that somehow we can't have it all."

Many lawmakers wonder whether American consumers are really ready to take drastic steps to curb their energy appetites. Many of those flags, after all, are flying from the antennas of SUVs that only get 13 miles to the gallon.

As lawmakers consider energy policy in the new post-Sept. 11 world, these are some of the issues they are considering:

**Can nuclear power plants be made safe from terrorist attack?**

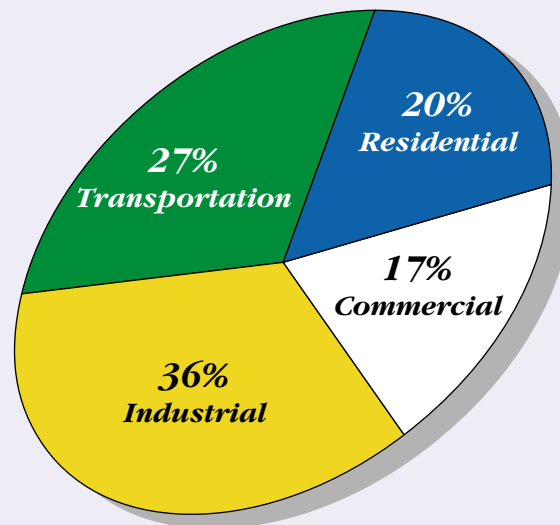
President Bush's plan encourages further development of nuclear energy. When the plan was drawn up last spring, an electricity shortage in California was causing widespread blackouts and price hikes, cited by the administration as evidence of a new U.S. energy "crisis."

Although the shortage quickly passed, the administration did not alter its call for more electricity generators, including nuclear power plants. If enacted, Bush's plan would provide the biggest boost to the beleaguered nuclear power industry since an accident at Pennsylvania's Three Mile Island plant in 1979 sparked fears of serious radiation leaks. Though the accident was contained with no apparent harm, public concern was so high that no

**Manufacturing Uses the Most Energy**

*Manufacturing and other industrial uses accounted for 36 percent of U.S. energy consumption in 2000 — as much as the residential and commercial sectors combined. Transportation consumed slightly more than a quarter of the energy used.*

**Energy Consumption by Sector**



Source: "Monthly Energy Review," Energy Information Administration, December 2001

new nuclear plants were licensed after that date.

However, seven years later, the nuclear accident at Chernobyl reinforced public opposition to nuclear power. In the years that followed, several plants closed down, mainly because they were not economically viable. Today, the 103 nuclear reactors in 31 states produce about 20 percent of the electric power used in the United States.

The events of Sept. 11 raised new fears that nuclear plants could be tempting targets for terrorist attack. "It's imperative that the potential of catastrophic nuclear accidents and attacks be actually factored into energy-policy thinking," says Makhijani, of the Institute for Energy and Environmental Research. He argues that nuclear power plants are so vulnerable to attack that they should be phased out altogether as

their operating licenses expire.

Industry officials insist that such fears are unwarranted, though they concede that no actual tests have been performed to determine whether a nuclear power plant could sustain an attack by a large, fully fueled airliner.

According to Mitch Singer, a spokesman for the Nuclear Energy Institute, nuclear plants are hardened to withstand almost any foreseeable attack. The reactor core, he says, is housed inside a steel container, which in turn is surrounded by a containment building covered by a 45-inch-thick dome of reinforced concrete and lined with steel and additional concrete shielding.

"The odds of an airliner the size of a Boeing 757 or 767 hitting the containment dome at just the precise angle it would need to possibly breach the dome itself are almost infinitesimal,"

Singer says. “If the plane did impact at that exact angle, there probably would not be any significant damage to the reactor core itself. There’s no question that the area outside would sustain a lot of damage, but the fire from the fuel igniting would basically fall off the concrete dome and burn out.”

Makhijani calls Singer’s assessment “dangerous speculation coming from the pocketbook and not from the head. Just think of the physical shock of a major deposition of kinetic energy and the explosion and fire that would follow. I don’t even think an airliner would have to penetrate the core to create the risk of a major accident.”

Without a detailed analysis based on experimentation on scale models, he says, “Industry assertions that a full-speed, full-fuel attack by a 747 on a nuclear reactor would not result in catastrophic damage are not responsible.”

The industry says that new “pebble-bed modular reactors,” currently under development, will be safer because they are smaller and use less fuel. But as currently designed, to be constructed without secondary containment buildings, they would be even more vulnerable to sabotage than conventional plants, many critics say.<sup>7</sup>

Critics of nuclear power also cite the dangers posed by spent nuclear fuel, usually stored in waste pools on site. Controversy over where to permanently dispose of this highly radioactive material has raged since the 1950s. On Jan. 10, Energy Secretary Spencer Abraham recommended that President Bush formally designate Yucca Mountain in

Nevada as the nation’s centralized repository for nuclear waste. The facility is currently under construction.<sup>8</sup> But even if the repository opens on schedule, in 2010, critics say transporting nuclear waste across the country would present the risk of accident or attack against the trucks or trains carrying it.

Supporters of Bush’s plan to expand nuclear power say the risks are overstated and distract people from the country’s disturbing growing reliance on foreign energy sources. Luke Popovich, a

power plant today,” says Jerry Taylor, director of natural resources studies at the Cato Institute. When capital costs are taken into consideration, he says, “It is twice as expensive to generate power from a nuclear power plant as it is to generate it from a gas-fired or a coal-fired power plant. For that reason alone, we’re not building nuclear power plants, and we’ll never build nuclear power plants.”

But Taylor stops short of supporting Makhijani’s call to phase out existing nuclear plants out of security concerns. “If we’re worried that terrorists may figure out a way to shut down the electricity grid, and we unilaterally start shutting down nuclear power plants, we may well do that for them,” he says. “You may well cut off your nose to spite your face.”

### **Would drilling for oil in the Arctic National Wildlife Refuge enhance energy security?**

Because oil accounts for about 40 percent of U.S. energy consumption — and about 60 percent

of that oil is imported — the Bush energy plan focuses on coaxing more crude out of American soil.<sup>9</sup>

But after more than a century of aggressive oil production, there are few promising places left to drill in the United States. Deposits in Texas and Oklahoma are petering out. Even Alaska’s North Slope, which helped the United States weather earlier oil crises, is nearing the end of its productive life. Thousands of wells scattered mostly around the West still could yield oil, but at current world petroleum prices extraction would cost more than the oil would bring on the market.



Getty Images/U.S. Fish and Wildlife Service

*The House has approved oil drilling in the Arctic National Wildlife Refuge’s coastal plain, but the Bush administration plan faces a battle in the Senate. Proponents and critics disagree over whether drilling will despoil the region known as America’s Serengeti.*

spokesman for the business-oriented Alliance for Energy and Economic Growth, says that the need to lessen U.S. dependence on foreign oil and develop more domestic resources is “the single most important lesson that can be learned from Sept. 11.”

What the nation should not be doing, Popovich says, is using the terrorist attacks as “a license to condemn or boost any particular fuel source.”

Some critics of Bush’s nuclear-expansion proposal say terrorism is only part of the reason to oppose it. “The reason we’re not expanding our nuclear capacity is simply that it’s ridiculously expensive to build a nuclear

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Over the past decade, domestic oil production has fallen from more than 7 million barrels a day to just under 6 million, while consumption has grown to almost 20 million barrels a day. Since the mid-1990s, imports have risen to about 11 million barrels a day.<sup>10</sup>

Environmental-protection laws enacted decades ago have restricted oil and gas drilling on most public lands. But as domestic reserves on private lands have dwindled, the industry has sought to have those rules relaxed.

Preliminary research indicates that the biggest untapped reserves on U.S. soil are under ANWR's 1.5-million-acre coastal plain, where no energy production is currently allowed. Citing the urgent need for alternatives to oil imports, the Bush administration plan would allow oil companies to drill for oil on about 2,000 acres of the reserve.

"The mid-range estimates for reserves in ANWR are the equivalent of 10 years of oil from the Persian Gulf," wrote Energy Secretary Abraham. "That's 10 years to let diplomacy work in the event of a serious disruption in supply. Not a bad investment, I would say."<sup>11</sup>

Environmentalists say drilling in ANWR would disrupt wildlife migration patterns as well as pose the risk of an environmental catastrophe from potential oil spills.

Environmentalists also cite General Accounting Office (GAO) estimates that drilling for oil in ANWR would satisfy U.S. demand for no more than six months. Moreover, even if measurable reserves are found in ANWR, critics point out, it would be a decade before it would begin to flow to consumers in the Lower 48.

"What we get from the Arctic National Wildlife Refuge amounts to about what this country uses in six months," Daschle said. "So we [would] wait 10 years to get a six-month supply. I just don't think that's a very good deal."<sup>12</sup>

The Democratic alternative to Bush's

plan would continue barring ANWR oil drilling and emphasize federal support for conservation and accelerated development of renewable energy sources like geothermal, solar and wind power. Under the Democrats' plan, a tenth of all domestic electricity would have to be produced from renewable sources by 2020. By 2012, refiners would have to triple the amount of corn-derived ethanol that they produce. Ethanol is a renewable gasoline additive that increases the gasoline supply and curbs air pollution. However, ethanol critics say it takes more energy to produce than it replaces.

Other experts say both the Bush and Democrats' plans have it all wrong because they ignore the economic realities of the global oil market, in which no consuming nation can isolate itself.

"The conversation about oil imports is really no more intellectually serious than a conversation about food independence," Taylor says. "Even if all the oil we consume came from Texas and not a drop of it came from abroad, it wouldn't matter because if OPEC production were to go down, [world crude prices would skyrocket and] that would increase the price of domestic crude just as high as it would increase the price of [imported] crude."

For that reason, he says, both sides are looking at drilling in ANWR for the wrong reasons. "Even if we drill in ANWR it's not going to reduce our vulnerability to OPEC," he says. "The case for drilling in ANWR has absolutely nothing to do with national security. The case for drilling in ANWR is whether the oil beneath some of that tundra is more valuable than the wilderness above it."

Taylor proposes letting oil companies and environmental organizations bid for rights to the ANWR tracts. "If people really care about conserving ANWR they can send their checks to a Save the ANWR Fund, and maybe those checks will be larger than what the oil industry is willing to pay for drilling rights.

If it's true, as the environmentalists say, that there is very little oil there, the industry won't bid so much. It's not in their interest to overbid."

Supporters of drilling in ANWR say environmentalists ignore the industry's success in minimizing the environmental impact of their activities, especially since the disastrous *Exxon Valdez* oil spill in 1989.

"Companies are taking steps to police themselves because ever since the *Exxon Valdez* accident, shareholders don't want to be associated with a company that is routinely irresponsible," Popovich says. "The don't-explore-don't-develop crowd seems to be either believing its own propaganda or exaggerating the threat of accidents to wildlife habitat."

### ***Should conservation play a more prominent role in energy policy?***

While the Bush and Democratic energy plans both stress increasing domestic energy supplies, many experts say a better approach to solving the country's energy problems — including its vulnerability to attack — would be to emphasize conservation.

"Energy efficiency is not only the fastest, cheapest, least-polluting energy resource, but it also has a potentially major impact on energy security by reducing the energy demand on our system," says Hopkins of the Alliance to Save Energy. "It allows us to minimize the energy infrastructure's vulnerability to attack."

Conservation plans have been on the books since the mid-1970s, when a series of disruptions in Middle East oil exports caused energy prices to spike. The decade's energy crises sparked tax breaks to improve home insulation, the federal Energy Guide efficiency rating system for appliances and several other incentives to reduce energy consumption.

One of the most controversial measures, the Corporate Average Fuel Economy (CAFE) standards, required au-

## Battle of the Energy Plans

The Bush administration and Senate Democrats have presented radically different plans to protect U.S. energy resources. The Bush plan was submitted in May and incorporated into the 2001 Securing America's Future Energy (SAFE) Act, which was passed by the House on Aug. 1. The Democrats' 2002 Energy Policy Act was introduced on Dec. 5 by Senate Majority Leader Tom Daschle, D-S.D., who plans action on the legislation in February. Here are highlights of the two competing proposals:

### **The Bush Plan**

- Opens 2,400 acres of Alaska's Arctic National Wildlife Refuge (ANWR) to drilling for oil and gas.
- Encourages deep-water drilling in the Gulf of Mexico.
- Loosens restrictions on oil and gas production on federal lands.
- Provides \$33.5 billion in tax cuts and other incentives over 10 years to encourage oil and gas exploration, nuclear power generation and research into cleaner-burning coal technology, nuclear-fuel reprocessing and renewable-energy sources.
- Provides tax breaks to purchasers of hybrid cars and other energy-efficient products.
- Sets slightly higher fuel-economy standards for sport-utility vehicles (SUVs) between 2004 and 2010.
- Calls for a 20 percent increase in air-conditioner and heat-pump efficiency instead of the 30 percent sought by the Democrats.
- Increases home-energy assistance to low-income families.

### **The Senate Democrats' Plan**

- Continues to bar drilling in ANWR.
- Provides federal loan guarantees to build a \$20 billion natural gas pipeline from Alaska to the Lower 48 states.
- Streamlines permitting of oil and gas drilling on federal lands, consistent with environmental regulations.
- Boosts research-and-development funding for renewable energy from \$400 million to \$733 million by 2006.
- Bans the clean-air gasoline additive MBTE, found to pollute groundwater and requires refiners to triple use of renewable ethanol, a clean-air additive made from corn, by 2012.
- Contains no provisions to improve vehicle fuel economy, expected to be addressed in separate legislation.
- Provides tax incentives, as yet unspecified, expected to be far less than the Bush plan's \$33.5 billion and focused more heavily on conservation and efficiency programs than on energy production..
- More than doubles energy assistance available to low-income families.



Corbis Images

*Deep-water drilling in the Gulf of Mexico is encouraged by President Bush's energy plan, which was passed by the House in August.*



Corbis Images

*More funding for research and development of wind power and other renewable energy sources is called for in the Senate Democrats' plan.*

tomakers to improve their products' fuel efficiency. By building smaller models, they succeeded.

But when oil prices later dropped thanks to new discoveries of deposits, consumers began buying bigger, less

fuel-efficient cars and SUVs.

As oil imports continued to climb in recent years, many experts argued



that the CAFE standards — which have remained unchanged for 15 years — should be tightened. However, Detroit's hottest sellers in a time of relatively low oil prices are gas-guzzling SUVs, and the industry is resisting the regulatory change for fear of losing customers. (See "At Issue," p. 89.)

In 1996, under pressure from the automakers, Congress actually prohibited the National Highway Traffic Safety Administration (NHTSA) from even studying the possibility of raising the CAFE standards. Last year, however, lawmakers lifted the ban and required the agency to issue a new standard for the 2004 model year of SUVs, vans and other light trucks by April 1. But on Jan. 18, NHTSA announced it would maintain the current light-truck standard of 20.7 miles per gallon through 2004, saying it would be hard for the industry to make the needed improvements by the deadline.

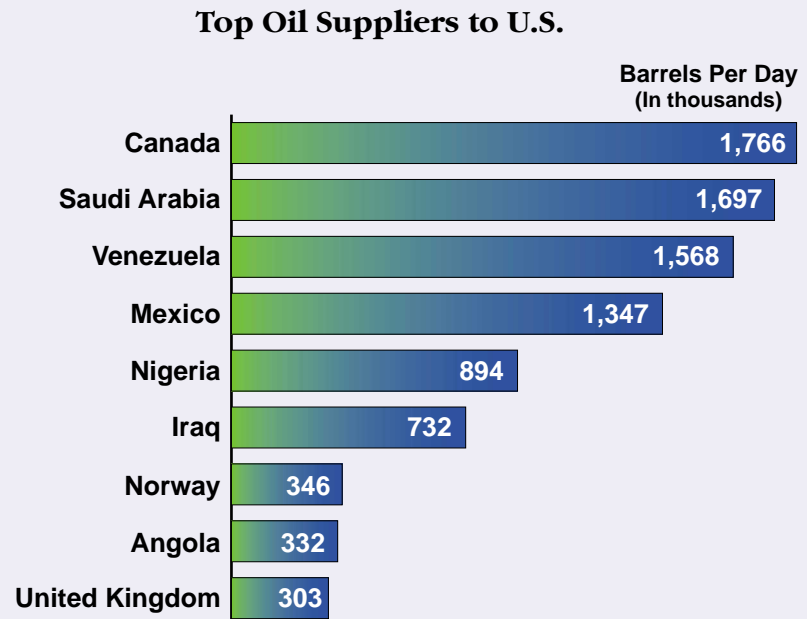
"The automakers have scared people into believing that the only way to increase fuel efficiency is to downsize into little cars that smack into trucks and get people killed," Hopkins says. "But that's completely false. There's an array of new technologies that can be applied to cars to make them much more fuel-efficient while maintaining auto safety."

Indeed, many experts say technology exists to permit the tightening of CAFE standards to 40 miles per gallon for both cars and light trucks by 2010. But the IEER's Makhijani says the technology is available to raise it much higher — even to 100 miles per gallon by 2020. In fact, General Motors already has made a prototype fuel-cell car that gets the equivalent of that mileage.<sup>13</sup> Adopting such a high standard, he says, would not only reduce air pollution but increase energy security as well.

"It would even reduce the incentive for terrorists to blow up pipelines in Saudi Arabia," he says, "because it would

## Leading U.S. Petroleum Suppliers

*Canada is America's leading supplier of crude oil. Of the top five suppliers to the U.S., only Saudi Arabia is from the Middle East. Overall, the United States imported 8.9 million barrels daily from non-Arab suppliers in 2000, compared with 2.7 million barrels from Arab producers, or about 31 percent.*



Source: Energy Information Administration

show a tremendous determination by the United States not to be held hostage to Persian Gulf oil supplies and to invest enough in its domestic energy policy that it could do without."

Free-market advocates say conservation programs distort the self-correcting power of market forces. "When prices get high, people conserve," Taylor says. "They don't have to have Ralph Nader tell them to do so; they'll do it out of their own self-interest." Furthermore, he says, when prices for certain fuels are high, companies will invest in new energy supplies because it will be profitable to do so. "Those two things working together bring prices back down."

In any case, Taylor says, fuel-efficiency standards are not the most effective tools to achieve energy con-

servation. "CAFE standards actually decrease the marginal cost of using energy," he says. "If I sell my SUV that gets 20 miles to the gallon and buy a Dodge Neon that gets 42 mpg, you've made it cheaper for me to drive, and so I'll drive more. If your idea is to reduce consumption, the only way you're going to get people to use less energy is to make it more expensive for them to use it. And the best way to do that is to increase the tax on energy."

Portney, of Resources of the Future, agrees that raising energy taxes would conserve energy more effectively than CAFE standards. "By itself, CAFE would do very little, and it would take a long time to do it," says Portney, who chaired a National Academy of Sciences transportation panel

that recently issued a report on CAFE standards.<sup>14</sup> That's because the tougher fuel-economy standards would only apply to new cars, which make up only 16 million of the approximately 200 million vehicles on the road. "It will take 15 or 20 years before we would have a whole fleet that gets substantially better fuel economy than today," Portney says.

Democrats are divided on the standards, with lawmakers from auto-manufacturing states siding with the industry. The Democratic alternative to Bush's energy blueprint would add up to \$15 billion in tax credits and incentives to encourage energy production and conservation.

"While it is vital that we increase domestic production of traditional and alternative sources of energy," said Sen. Byron L. Dorgan, D-N.D., "it is also important, on the consumption side of the equation, that we stop wasting energy."<sup>15</sup>



*Long lines at U.S. service stations were common in 1973, after the Organization of Petroleum Exporting Countries embargoed oil exports to the U.S. because of its support for Israel in the Yom Kippur war.*

AP Photo

oil boom at the turn of the century, oil replaced coal in many applications, notably as the fuel of choice for the new internal combustion engine.

Oil remained abundant through the skyrocketing post-World War II demand for cars. Although domestic oil production peaked in the late 1950s and the country began to import oil, energy-security concerns were virtually absent from the policy debate.

All that changed in the 1970s, with the nation's first energy shocks and a resulting policy designed to reduce U.S. dependence on outside sources of energy. The shocks began on Oct. 20, 1973, when Arab members of the Organization of Petroleum Exporting Countries (OPEC) placed an embargo on oil exports to the United States in retaliation for its support of Israel in the Yom Kippur War earlier that month.<sup>16</sup>

Crude prices skyrocketed as once-abundant supplies were disrupted, triggering a surge in heating-oil prices and panic buying of gasoline. The widespread public anxiety led President Richard M. Nixon to form the Energy Research and Development Administration (ERDA), the precursor of today's Energy Department, which

was charged with making the United States energy-independent.

The chaos at gas pumps and the fear of even greater economic turmoil if supplies were disrupted prompted Congress in 1975 to create the Strategic Petroleum Reserve, a federally owned stockpile of crude stored in underground salt caverns in Louisiana and Texas. Capable of holding 700 million barrels, the reserve provided a critical buffer to oil cut-offs and constituted one of the first efforts to enhance energy security.

The first energy crisis also spurred development of new domestic oil deposits, notably in Alaska's Prudhoe Bay, where production began in the late 1970s. To curb demand, Congress in 1975 created the innovative CAFE standards requiring automakers to improve fuel consumption in new cars. By 1987, the standards required a company-wide average threshold on all new cars of 27.5 miles per gallon and 20.7 mpg for light trucks.

While automakers could continue to sell the gas-guzzlers that were so popular at the time, the rules essentially required them to produce more fuel-efficient vehicles as well in order to meet the company average. Japanese automakers specializing in small, energy-efficient cars, like Toyota and Honda, quickly stepped in to meet Americans' sudden demand for their vehicles.

OPEC's "oil weapon" had dealt a harsh blow to the United States, by then the world's biggest oil consumer. Although the embargo was short-lived, its imposition had awakened U.S. policy-makers to the threat of energy dependence.

*Continued on p. 84*

## BACKGROUND

### Oil Shocks

For most of America's history, abundant deposits of fossil fuels have powered the country's industrial economy and transportation system. Vast deposits of coal, long the chief energy source for factories, trains and heating plants for large buildings, seemed virtually inexhaustible. After the Texas

# Chronology

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**1970s** *Energy crises spur new policies to enhance U.S. energy security.*

**Oct. 20, 1973**

Arab oil producers impose an embargo on exports to the United States, hiking oil prices and plunging the country into its first energy crisis.

**1975**

Congress sets up the Strategic Petroleum Reserve, a federally owned stockpile of crude oil aimed at cushioning the impact of future disruptions of oil imports. Congress also sets Corporate Average Fuel Economy (CAFE) standards requiring automakers to improve fuel efficiency in new cars.

**1977**

Newly elected President Carter unveils his National Energy Plan calling its goal — reduced dependence on foreign oil — the “moral equivalent of war.” He asks Congress to establish a Cabinet-level Department of Energy and encourages conservation and energy-efficiency standards for appliances. The Trans-Alaska pipeline opens enabling oil produced in Alaska’s Prudhoe Bay to reach U.S. markets.

**1978-79**

Iranian Revolution leads to cutoff of some Mideast oil, triggering the nation’s second major energy crisis in a decade.

**1979**

An accident at Pennsylvania’s Three Mile Island nuclear power plant sparks fears of a catastrophic radiation leak, bringing further nuclear plant construction to a halt.

**1980s** *New oil becomes available from non-OPEC sources discovered in the 1970s, triggering lower world crude prices and loosening OPEC’s control of prices. Amid low oil prices, the Reagan administration reverses many energy-conservation measures.*

**January 1981**

Following the Iranian Revolution of 1978-79, oil prices peak at \$34 a barrel, setting off a round of inflation and economic stagnation that lasts for much of the decade.

**1986**

Oil prices reach their lowest level since 1973.

**1989**

The oil tanker *Exxon Valdez* runs aground off Alaska, causing a disastrous oil spill.

**1990s** *Robust economic growth spurs growing reliance on oil imports.*

**Aug. 2, 1990**

Iraq occupies Kuwait, interrupting the flow of 1.6 million barrels of oil a day from the Persian Gulf. In retaliation, the U.N. approves an embargo barring oil exports from Iraq, a major oil producer. In the ensuing panic, oil prices rise from \$13 a barrel to \$40.

**Jan. 16, 1991**

After Iraq ignores a Jan. 15 U.N. deadline for withdrawal from Kuwait, a coalition of 31 nations and the United States launches Operation Desert Storm. Iraq is defeated after 44 days.

**1992**

The 1992 Energy Policy Act calls for restructuring the electric power industry, more conservation, development of renewable energy sources and alternative fuels and construction of new nuclear power plants.

**1996**

Congress bars the National Highway Traffic Safety Administration (NHTSA) from considering raising vehicle fuel-efficiency standards, unchanged since 1987.

**2000s** *The Sept. 11 terrorist attacks raise new concerns about the security of U.S. energy supplies.*

**May 2001**

President Bush declares a new energy crisis after California suffers electricity shortages. His administration unveils an energy blueprint that would open the Arctic National Wildlife Refuge (ANWR) in Alaska to oil drilling.

**Dec. 5, 2001**

Senate Majority Leader Tom Daschle, D-S.D., introduces a Democratic energy plan barring drilling in ANWR.

**Jan. 10, 2002**

Energy Secretary Spencer Abraham recommends that President Bush formally designate Nevada’s Yucca Mountain as the central repository for spent nuclear fuel from the country’s nuclear power plants.

**Jan. 18, 2002**

NHTSA declines to set stricter standards for SUVs and other light trucks beginning with the 2004 model year.

## Hybrids Offer Fuel-Efficient Choices

As lawmakers prepare to debate national energy policy, new-car buyers can now make a statement of their own about energy security.

With a quarter of U.S. oil consumption coming from the troubled Middle East, many energy experts say the best way Americans can reduce the energy system's vulnerability is by using less gasoline. One way is by forsaking gas-guzzling sport-utility vehicles (SUVs) and vans — and there are now more energy-efficient models than ever before to choose from. The ultimate energy-saving, non-polluting vehicle — powered by hydrogen fuel cells — is not yet on the market.

Vehicles using cleaner-burning and more abundant natural gas have been around for some time. But because there aren't enough refueling stations around the country for their wider use, they have been almost entirely limited to fleets of delivery or service vans for government and commercial entities with their own fueling facilities.

With natural gas vehicles not yet widely available, the first commercially viable alternative to the internal-combustion engine is the so-called hybrid car, which pairs the traditional, gasoline engine with an electric engine. Unlike fully electric cars, which have to be plugged in for recharging and carry heavy, cumbersome batteries, the small batteries in hybrid cars are charged by a device that converts the energy generated during braking into electricity. By substituting electric power for gasoline for part of the driving time, hybrid cars can get up to 65 mpg — better than anything else on the road today.

Japanese automakers have beat Detroit to the punch with

hybrids — just as they did during the 1970s when American consumers abandoned their big cars for smaller, fuel-efficient models. Last year, Honda came out with the Insight, a small two-seater that gets 65 mpg. Toyota was close behind with its slightly roomier, four-passenger Prius, which gets 48 mpg.

A massive switch to hybrids would greatly enhance U.S. energy security. According to one estimate, if everyone used hybrids today, the United States would save 1.6 billion barrels of oil each year — much more than the country imports from the Middle East.<sup>1</sup>

Although SUVs continue to dominate American new-car sales, demand for both Japanese hybrids is high. Both Toyota and Honda plan to add more models to their U.S. lineups, including a hybrid version of the popular Honda Civic, due out this year.

For its part, Detroit plans to bring hybrids to the market by 2004. But consumers' tastes continue to discourage U.S. automakers from shifting away from big vehicles. Indeed, SUVs, pickups and minivans outsold passenger cars for the first time in 2001.

Detroit automakers argue that better mileage means smaller, lighter cars that aren't as safe in collisions. But energy experts insist that SUV-lovers can have it both ways. "People don't want to have bad mileage, but unfortunately the auto industry has cried wolf, telling people with several kids that they won't be able to have the kind of big car they want [and still get good mileage]," says Mark Hopkins, vice president of the Alliance to Save Energy. "That's completely false. The same technology that's in the Prius could be applied to SUVs."

*Continued from p. 82*

### Jimmy Carter's Plan

No one seemed to have learned the energy-dependence lesson better than President Jimmy Carter. In 1977, shortly after taking office, he unveiled his National Energy Plan to help America become more energy self-sufficient. He called the goal "the moral equivalent of war." Carter asked Congress to combine various energy-related agencies, including ERDA, into the Department of Energy, with a Cabinet-level secretary of Energy.

In addition, Carter urged citizens to conserve energy, appearing on national television clad in a cardigan sweater.

Carter urged Americans to turn down their thermostats in winter and up in summer, take public transportation, drive fuel-efficient cars, insulate their houses and take other steps to reduce energy consumption.

A spurt of patriotic conservation resulted, with many Americans improving their home insulation and buying more fuel-efficient cars. But they largely ignored, and sometimes ridiculed, the president's more inconvenient or uncomfortable proposals, such as taking public transportation and lowering the thermostat. Memories of the public's adverse reaction to Carter's conservation initiatives still haunt some lawmakers, who say the Carter experience proves Americans would never accept radical conservation proposals.

However, environmentalists point out that many industries and homes became much more energy efficient as a result of a variety of efficiency regulations imposed during the Carter administration. In fact, home owners and businesses alike found that energy efficiency saved them money. Congress also passed tax incentives to spur research and development of alternative energy sources for electricity generation, including such renewable sources as solar, wind and geothermal energy.

Carter's warnings about the folly of overdependence on foreign oil came true in the winter of 1978-79, when the Iranian Revolution swept the militant Muslim fundamentalist leader Ayatollah Ruhollah Khomeini to power, again disrupting the flow of oil from the Middle East. Although this second

Critics say the Bush administration's energy policies discourage the development of more fuel-efficient cars. Last month, Energy Secretary Spencer Abraham announced that the administration was abandoning the Partnership for a New Generation of Vehicles, a federal program established by former President Bill Clinton that funded research that helped produce the hybrid car.

In its place, Abraham announced a new Freedom Car program, aimed at developing hydrogen as a primary fuel for cars and trucks. Fuel cells, which use hydrogen and oxygen to generate electricity and emit only water vapor, have been in development for decades. The Bush plan is aimed at giving a vital boost to fuel-cell development, in partnership with Detroit.

While applauding efforts to boost development of non-polluting cars that use an energy-secure fuel, critics fault the administration for abandoning the Clinton program, and with it, a chance to achieve immediate gains in fuel efficiency.

"It will be at least another 10 years before fuel-cell vehicles will become a serious response to the need to conserve energy," said Therese Langor, transportation director for the American Council for an Energy-Efficient Economy. "My concern is that we don't



AFP Photo/Daniel Lippit

*Hybrid cars use gasoline and electric engines to achieve better mileage. Toyota says its four-seater Prius gets 48 mpg. Honda's two-seater Insight promises 65 mpg.*

let the long-term objectives interfere with the desperately needed short-term goals."<sup>2</sup>

Abraham defended his action, saying the partnership had cost taxpayers \$1.5 billion but was far from reaching its goal of creating an 80-mpg family sedan by 2004. The new administration program will produce hydrogen fuel cells suitable for all vehicles, and thus will "move us beyond fossil fuels and free us

from dependence on imported oil," he wrote. "Such a vehicle can be a reality and would indeed be my dream car."<sup>3</sup>

Meanwhile, Japanese automakers continue to fill the "green" vehicles niche that Detroit has for now, at least, left open. Every major Japanese carmaker presented at least one less-polluting, higher-efficiency vehicle at last November's Tokyo Auto Show. And, both Honda and Toyota plan to put fuel-cell cars on the market by 2003.

It remains to be seen whether American consumers will bite.

<sup>1</sup> See "The Year in Ideas," *The New York Times Magazine*, Dec. 9, 2001, pp. 78-79.

<sup>2</sup> Quoted by John Gartner, "Is Bush's Fuel Cell Plan Hot Air?" *Wired News*, Jan. 22, 2002.

<sup>3</sup> Letter to the editor, *The New York Times*, Jan. 20, 2002.

oil shock did not come as the result of an intentionally imposed embargo, its impact was equally damaging to the U.S. economy. Price hikes again triggered long lines at service stations, many of which imposed 10-gallon quotas per vehicle. A gasoline-allocation system introduced earlier by President Nixon — designed to facilitate deliveries and control prices — exacerbated the situation.

Carter was roundly defeated by Ronald Reagan in 1980, largely as a result of a year-long unresolved "hostage crisis" that ensued after Khomeini loyalists kidnapped 52 Americans from the U.S. Embassy in Tehran, highlighting again for Americans the instability of the Middle East.

By January 1981, oil prices had reached \$34 a barrel, setting off a round

of inflation and economic stagnation that would last for much of the decade.

President Reagan reversed Carter's focus on alternative fuels, demonstrating his preference for fossil fuels by opening up federal lands to oil exploration and sending U.S. warships to protect Persian Gulf shipping lanes. He allowed government subsidies for alternative fuels to expire in 1985, and federal funding for alternative fuels research dropped from \$1 billion in 1981 to \$116 million in 1989.<sup>17</sup>

## Domestic Risks

The search for alternative energy sources led to renewed interest in nuclear power. The nuclear indus-

try received generous government subsidies in the hope that it could provide a safe and reliable source of electricity. But after the 1979 accident at Three Mile Island, the government halted new reactor construction. The far more serious accident at Chernobyl only added to fears of devastating nuclear mishaps.

Despite the far-reaching policy responses to the oil disruptions of the 1970s and '80s, some energy experts warned that policy-makers had ignored important vulnerabilities in the U.S. energy system. According to a 1980 report by the Federal Emergency Management Agency (FEMA), the centralized nature of the electricity grid and fuel pipelines left these essential energy conduits open to potentially debilitating attacks.

Indeed, the 800-mile Trans-Alaska Pipeline, which in 1977 began carrying oil from the North Slope oil fields to the port of Valdez, had already been attacked in 1978 by an unknown vandal, resulting in a 700,000-gallon spill. To reduce this type of risk, the report called for the rapid development of solar and other non-fossil-fuel energy sources to generate electricity and the construction of smaller, regional grids to transmit it to consumers. "Dispersed, decentralized and renewable energy sources can reduce national vulnerability and the likelihood of war by substituting for vulnerable centralized resources," the FEMA report concluded.<sup>18</sup> The report failed to prompt any action by the federal government.

Another report that failed to result in significant policy changes came out in 1981. Commissioned by the Defense Department, it concluded that the domestic energy infrastructure — such as pipelines, nuclear power plants and transmission lines — was even more vulnerable to disruption, accidental or intentional, than supplies of foreign oil.<sup>19</sup>

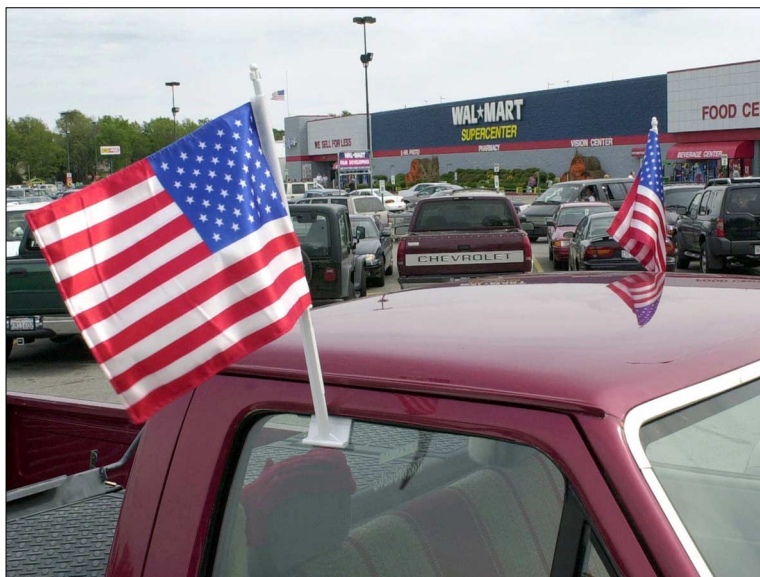
### Energy Use

During the 1980s the United States and other major industrial powers continued to try to reduce their vulnerability to Middle East political instability by seeking alternative sources of oil. Rich deposits of non-OPEC oil, which had been discovered

in Mexico, Nigeria and the North Sea in the 1970s, were contributing sizable exports by the early 1980s. In addition to its Alaska oil fields, the United States turned to neighboring Mexico and Venezuela for an increasing share of its ever-growing imports of crude. Although Venezuela is an OPEC member, its proximity to the United States reduces the risk of unintentional supply interruptions resulting from turmoil in the Middle East.

Largely as a result of this diversification, OPEC lost much of its ability to control the output and price of oil on world markets. The increase in

Growing gasoline consumption and dwindling domestic petroleum reserves led to greater U.S. dependence on foreign oil. The security threat posed by increasing oil imports returned to the fore on Aug. 2, 1990, when Iraq invaded its Persian Gulf neighbor Kuwait, cutting off the flow of 1.6 million barrels of oil a day from the region. In retaliation for the invasion, a U.S.-led coalition eventually went to war in January 1991 and expelled Iraq from Kuwait, and the United Nations approved an embargo on oil exports from Iraq, a major producer. Oil prices rose from \$13 a barrel to \$40.



*Energy conservationists say national leaders should tap into the patriotism that blossomed after the terrorist attacks last Sept. 11 and ask Americans to trade in their gas-guzzling SUVs and light trucks for more fuel-efficient vehicles.*

crude supplies caused prices to fall during most of the 1980s, reaching their lowest level in 1986 since the first oil shock in 1973.

Gasoline became cheaper, prompting many U.S. motorists to abandon the conservation effort and to purchase bigger, less-efficient cars, especially the new and wildly popular additions to the light-truck category — SUVs — and passenger vans. These large vehicles, held to less stringent fuel economy standards than cars, are high consumers of fuel.

### Action in Congress and the States

Though the oil-price spike surrounding the Persian Gulf War was short-lived, concern over U.S. vulnerability to oil shocks prompted Congress to pass sweeping energy legislation, the first major attempt to reduce the country's dependence on foreign oil since the 1970s.

Based on an energy blueprint issued by President George Bush, the 1992 Energy Policy Act called for restructuring the electric power industry, encouraging conservation, developing

renewable energy sources and alternative fuels and facilitating construction of new nuclear power plants. But aside from a new research program to reduce the hazards of nuclear waste from civilian reactors, the law contained few new provisions to enhance security around energy facilities.<sup>20</sup>

In fact, the law's biggest impact was on electricity markets, since it opened the door for deregulation of electric utilities, the last heavily regulated energy sector. Beginning with New Hampshire

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in 1996, several states began to free up their electric utilities to competition.

The same year, California became the first state to deregulate the retail side of the utility industry. The poorly executed transition in 2000 and early 2001 gave Californians a taste of what a catastrophic disruption in electricity supplies would look like. Power providers, many of them out of state, were free to withhold electricity from the California market and profit from the resulting higher prices. State utilities suddenly were unable to buy all the power they needed, even at higher prices, triggering four blackouts and more rate hikes to dampen demand.

Gasoline prices also spiked in 2001, reaching their highest levels — around \$1.70 per gallon — since the gulf war. A shortfall in natural gas supplies, increasingly the fuel of choice for home heating and new power plants, also pushed up energy prices last year. The price hikes and uncertainties surrounding utility deregulation prompted President Bush to declare that the country faced the worst energy crisis since the late 1970s. In May he unveiled his energy plan, based largely on increasing domestic production of oil, gas and nuclear power. ■

## CURRENT SITUATION

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### Competing Energy Plans

The main difference between the Bush energy plan, passed by the House last August, and the Democratic alternative introduced in December, boils down to a distinction between supply and demand. (*See sidebar, p. 80.*) The House bill stresses the supply side of the energy equation by

boosting domestic production of traditional fossil fuels — oil, gas and coal. In addition to opening federal lands to more oil and gas drilling, it would help fund development of technology to make coal, America's most abundant fossil fuel, burn more cleanly. The measure also would encourage more nuclear power to generate electricity.

The Democrats' plan emphasizes reducing Americans' demand for imported oil and other fossil fuels. The bill's tax incentives and programs are weighted toward conservation and development of alternative energy sources. It would require that by 2020, 10 percent of the nation's electricity be generated by non-hydroelectric renewable sources, which today make up less than 5 percent.

Curbing pollution is another major goal of the Democrats' proposal. Fossil fuels not only pollute the air, but also are considered by most scientists to be the primary contributor to global warming. Recognizing that the country will not soon wean itself entirely from its reliance on oil, the bill would encourage drilling on all federal lands already open to oil and gas production, but pointedly would not allow drilling in ANWR.

Despite the rhetoric, many experts say the two approaches are more alike than they are at odds. "There is probably a greater commonality in these two plans than the conventional wisdom would admit," says Popovich, of the Alliance for Energy and Economic Growth. "ANWR is the single largest difference, and CAFE standards are another, but there are areas where both approaches increase energy efficiency [and] conservation efforts and modernize the infrastructure."

The sudden collapse in December of Enron Corp., the Texas energy giant, has complicated the Bush administration's job of selling its energy plan. Enron's bankruptcy, the largest in U.S. history, left thousands of employees

and small investors holding worthless Enron stock in their retirement plans.

Congressional and Justice Department investigations into alleged wrongdoing by Enron executives, who had funneled large campaign contributions to influential lawmakers of both parties, promised to muddy the energy-policy debate with questions about the company's influence in policy proposals. Former Enron CEO Kenneth L. Lay, for example, reportedly had a large and perhaps inappropriate role in crafting the Bush energy blueprint last spring under Vice President Dick Cheney's direction. In addition, questions were being raised about Enron's contacts with the Bush administration shortly before the company collapsed.<sup>21</sup>

Citing executive privilege, the White House has refused to release records of the energy task force proceedings, which included six meetings with Enron and other energy companies.

The controversy intensified on Jan. 25, when U.S. Comptroller General David M. Walker, head of the General Accounting Office, Congress' investigative arm, said he would sue the White House, if necessary, to gain access to the records. Two days later, Cheney said he would not hand them over.

The vice president based his forceful rejection of the GAO's demand for information on his desire to restore presidential power to its previous level. "I have repeatedly seen an erosion of the powers and the ability of the president of the United States to do his job," he told the ABC News program "This Week." "We are weaker today as an institution because of the unwise compromises that have been made over the last 30 to 35 years," he added.

Meanwhile, President Bush went on the offensive last month to shore up union support for his energy plan. Opening ANWR to oil exploration and production, he said, would create new

union jobs at a time of economic hardship. “This energy bill that we’re working on is a jobs bill,” he told union leaders in a visit to the Teamsters Union headquarters in Washington. “It will be good for our foreign policy, good for our national security and, more importantly, it will be good for jobs.”<sup>22</sup> The Teamsters, contending the new drilling could employ hundreds of thousands of new workers, have endorsed the proposal.

On Jan. 22, Sen. John F. Kerry, D-Mass., tried to gain the upper hand in the energy debate by announcing he would soon introduce a new Democratic bill that would increase CAFE standards by an unspecified amount and increase tax breaks aimed at developing new energy sources. “If we enact the entire Bush energy plan, we will find ourselves 20 years from now more dependent on foreign oil than we are today,” he said. By 2020, under Kerry’s plan, alternative and renewable fuels would account for 20 percent of energy use in the United States — twice as much as under the earlier Democratic proposal.<sup>23</sup>

“Many politicians may feel that we need to increase the fuel efficiency of vehicles,” says Hopkins of the Alliance to Save Energy. “That’s almost a given of a smart policy.”

The prospects for passage of either Bush’s energy plan or the Democrats’ alternative are far from certain.

After receiving endorsement for his plan by the Teamsters Union — traditionally allied with the Democrats — Bush predicted optimistically that he

had the 60 votes in the Senate needed to ensure congressional approval.<sup>24</sup>

But Senate Democrats are unlikely to approve any measure that allows drilling in ANWR, and Sen. Ted Stevens, R-Alaska, has said he would filibuster any bill that does not allow it. Daschle plans to bring his party’s alternative plan to the floor the week of Feb. 11. But both Sens. Joseph Lieberman, D-Conn., and Kerry, who calls it a “status quo” plan, have vowed to filibuster the measure as it stands.<sup>25</sup>



*After more than a century of domestic oil exploration and production, there are few promising places to drill in the United States. Even Alaska’s North Slope is nearing the end of its productive life.*

Adding to the uncertainty is the political fallout from the Enron collapse, which Rep. John Dingell, D-Mich., and other Democratic lawmakers have cited as reason to reconsider electric utility

deregulation, which they already were considering doing as a result of the California deregulation fiasco.<sup>26</sup>

### Increasing Security

One of the few non-controversial actions President Bush has taken since Sept. 11 to shore up energy security was his Nov. 13 directive to keep the Strategic Petroleum Reserve filled to its 700-million-barrel capacity, up from the current level of 549 million barrels. At current consumption levels of almost 20 million barrels a day, about 60 percent of which is imported, the move would enable the United States to weather a cutoff of foreign oil supplies for a couple of weeks beyond the 54 days the reserve currently covers.

“Our current oil inventories, and those of our allies who hold strategic stocks, are sufficient to meet any potential near-term disruption in supplies,” Bush said in announcing his decision. “Filling the SPR up to capacity will strengthen the long-term energy security of the United States.”

But critics continue to insist that neither the Republican nor the Democratic energy plans sufficiently address the new kinds of energy-security threats made clear on Sept. 11. “The ideas in the public debate are too timid and don’t correspond to the magnitude of the problem,” says Makhijani, who estimates that it would take about \$20 billion a year over 10 years

to achieve his goals of phasing out nuclear energy, speeding the switch from oil to renewable sources, decentralizing the electricity grid and taking other

*Continued on p. 90*



# At Issue:

## *Should auto fuel-economy standards be tightened to reduce dependence on foreign oil?*

**DAVID FRIEDMAN**  
*SENIOR ANALYST, CLEAN VEHICLES PROGRAM,  
UNION OF CONCERNED SCIENTISTS*

FROM TESTIMONY BEFORE THE SENATE COMMERCE, SCIENCE  
AND TRANSPORTATION COMMITTEE, DEC. 6, 2001

**U**.S. drivers consumed 121 billion gallons of gasoline in 2000. . . [which is] 40 percent of the oil products that the nation consumes. . . . Vehicle travel is expected to increase nearly 50 percent over the next 20 years. . . .

SUVs and other light trucks are allowed to use one-third more fuel than cars under current CAFE . . . requirements. This "light truck loophole" caused consumers to use about 20 billion more gallons of gasoline in 2000 and cost consumers about \$30 billion more than if the fuel economy standards of light trucks [were] the same as that of cars. . . .

Raising fuel economy standards is the fastest, least expensive and most effective thing Congress can do to reduce our future dependence on oil. The oil savings associated with reaching an average fuel economy of 40 mpg by 2012 for all new cars and light trucks would be 1.9 million barrels per day in that year alone — four times the expected peak output from the Arctic National Wildlife Refuge at today's oil prices and over three times the oil we imported from Iraq last year (and more than we imported from Saudi Arabia).

The cumulative oil savings would be about 3 billion barrels of oil or 125 billion gallons of gasoline. That means that in 10 years we would save almost as much oil as is recoverable at today's oil prices from the whole Arctic refuge in its 50-60 year lifetime. That is also 25 times the oil savings called for in the House energy bill. . . . At the same time we [would be] significantly cutting our oil dependence, consumers [would be] saving \$12.6 billion in 2012 and close to \$100 billion per year by 2015, while the auto industry will see a growth of over 40,000 jobs in the U.S. . . .

[I]t is clear that the technology exists to cost-effectively increase fuel economy with resulting benefits to oil use, consumers and the environment. These significant improvements in fuel economy can be achieved with existing technology, enabling us to achieve progress in fuel economy in the near term as we watch the market for hybrid electric and fuel-cell vehicles grow.

[B]oth near- and longer-term increases in fuel economy . . . can be accompanied by the same safety, comfort and performance consumers expect today, and could even improve the overall safety of America's highways if the light-truck loophole is closed.

**THOMAS J. DAVIS**  
*VICE PRESIDENT, NORTH AMERICAN PRODUCT  
DEVELOPMENT, GENERAL MOTORS CORP.*

FROM TESTIMONY BEFORE THE SENATE COMMERCE, SCIENCE  
AND TRANSPORTATION COMMITTEE, DEC. 6, 2001

**a**s the Congress has examined energy policy this year, a number of statements have been made about the continuing need for the U.S. to conserve energy, to increase and diversify energy supplies and to enhance energy security. We share these concerns. . . .

We see the ultimate vision for a sustainable energy future in vehicles powered by hydrogen fuel cells. Hydrogen fuel made from renewable sources of energy can be used to power fuel-cell vehicles that are more than twice as energy efficient as today's vehicles and emit only pure water. . . .

For those who argue for more high-fuel-economy vehicles, many such vehicles are available today. In fact, over 50 models . . . offer fuel economy above 35 mpg, but they attract less than 1 percent of sales. Hence, they have an insignificant impact on Corporate Average Fuel Economy, or CAFE. . . .

What does our long-term vision for hydrogen-based, clean, efficient, personal mobility have to do with CAFE policy? Well, CAFE is actually an obstacle to the realization of this vision. With relatively low gasoline prices, CAFE works against the market, the consumer and long-term technology development. . . .

We are investing significant engineering resources to create a completely revolutionary technical capability. A near-term shift in CAFE pulls engineering resources back to incremental advancements in internal-combustion-engine systems and to reductions in vehicle power, weight and size. . . .

There are better ways than CAFE to conserve petroleum in the transportation sector. With over 200 million passenger vehicles already on American roads today, reducing their fuel consumption would be the best policy to pursue. For example, we see opportunities in incentives to scrap older, less-efficient vehicles and to reduce fuel-consuming congestion on U.S. roads.

In addition, fuel savings can be encouraged through incentives to deploy hybrid buses for urban mass transit — since the fuel savings of hybrid powertrains are greatest in stop-and-go urban driving and in high-consumption vehicles like buses — and the purchase of hybrid vehicles for government fleets. . . .

These types of policies would . . . reduce fuel consumption by the large number of vehicles already on the road. Advances in the energy efficiency of future vehicle[s] can also contribute, though at a slower pace, because new vehicles [only] replace approximately 5 percent of the on-road fleet each year.

*Continued from p. 88*

steps to reduce the energy system's vulnerability. His plan would cost "a fraction" of the Bush tax cut and "a tiny fraction of current military expenditures," he says. Instead of tax breaks to advance these goals, as the proposed energy plans would provide, Makhijani would use federal money to buy renewable energy, fuel cells, more efficient cars and other leading-edge technology to hasten its commercialization.

Meanwhile, energy companies have increased security around hundreds of power plants and refineries and thousands of miles of pipelines and transmission lines since the attacks. In late November the Federal Bureau of Investigation (FBI) warned gas companies that Osama bin Laden had made arrangements for attacks on North American natural gas pipelines if he was captured or killed.<sup>27</sup>

However, guarding these lines, which stretch over 260,000 miles, is a daunting task. In an unrelated incident on Oct. 4, an intoxicated man took a potshot at a remote section of the Trans-Alaska Pipeline, causing a 286,000-gallon oil spill and shutting down the oil flow until workers could find and stop the leak.<sup>28</sup>

### **Some Critics Dismiss Concerns**

Of all the components of the energy system, nuclear power plants and their spent-fuel pools may hold the greatest potential for cataclysmic damage from terrorist attack, critics say. Since Sept. 11, security measures have been tightened around nuclear plants, including contingents of National Guardsmen patrolling the perimeters, but the efforts have not always been enough to allay fears of neighboring residents. A group of New York residents recently petitioned the Nuclear Regulatory Commission to shut down the two reactors at Indian Point on the Hudson River until security measures are tightened. Meanwhile, the NRC last month announced plans to

dispense free doses of potassium iodide — thought to protect against radiation poisoning — to neighbors of the nation's nuclear power plants, in case of an accident or sabotage.<sup>29</sup>

But some conservative economists say the concern about sabotage against most of the energy system is overblown. "There are only so many human bullets that bin Laden can fire at us; in fact, we haven't seen any since Sept. 11 in the United States," says Taylor of the Cato Institute, who says fears of attack on the power grid or most utility plants are unwarranted. "One has to assume that there is a finite number of agents he can send on suicide missions, which means the opportunity costs of any of these actions are quite steep from his perspective. So if you've got maybe 15 agents who are capable of being human bombs, would you really fire them at some gas-fired power plant in Kentucky? I can think of 100 targets that would be more psychologically and economically important than most of the power plants or most of the electricity grid."

In Taylor's view, beefing up security around energy infrastructure at government expense actually would make the energy system more vulnerable to terrorist attacks. "Most of the risks of terrorism in the energy markets would be internalized quite nicely if you didn't have the federal government constantly picking up the tab for security and suggesting they it may well bail out industries that find themselves on the receiving end of terrorism," he says, adding that the marketplace is a better guardian of energy security. "If energy investors were to find that the costs of providing security for their plants were their cost to bear, and not the federal government's, I think you'd find investors naturally putting their money in places which are less likely to be at risk."

But in view of the massive airport security lapses that occurred on Sept. 11 under the auspices of private security agencies, many have questioned

the ability and willingness of the private sector to provide adequate security for various terrorist targets.

Even state and local law enforcement agencies may not be up to the task of safeguarding the nation's energy system. Joseph Tinkham II, Maine's commissioner of emergency management, recently appealed for federal help after a security audit uncovered numerous lapses around nuclear power plants and other key facilities.

"While we in the states take great pains to protect our citizens from the natural perils which may befall us," Tinkham said, "protection from attack by a foreign enemy upon our people in their homes and in their places of business has, for almost two centuries, been within the purview of the federal government."<sup>30</sup> ■

## OUTLOOK

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### **Changing Alliances**

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**N**ow in its fourth month, the war on terrorism may affect U.S. relations with some of its major foreign oil suppliers in unpredictable ways. About a quarter of U.S. oil imports come from the Persian Gulf, the epicenter of fundamentalist Islam. Saudi Arabia, where bin Laden and most of the suicide hijackers implicated in the Sept. 11 attacks were born, is also the third-largest source of oil imports to the United States. Bin Laden, living in exile, has repeatedly called for the overthrow of the Saudi royal family for allowing some 5,000 American troops in the country, an affront, he says, to the Muslim holy cities of Mecca and Medina.

According to a recent *Washington Post* story, due to pressure from conservative Muslims, the Saudi government may soon ask the United States

to withdraw its forces from the Prince Sultan Air Base, which has served as a key command-and-control post for the U.S. military since the Gulf War.<sup>31</sup> Although Saudi officials deny the report and Secretary of State Colin L. Powell says he has received no such request, some lawmakers suggest that a withdrawal might help quell instability in that vital oil-producing country.

"We need a base in that region, but it seems to me we should find a place that is more hospitable," said Senate Armed Services Committee Chairman Carl M. Levin, D-Mich. "I don't think they want us to stay there."<sup>32</sup>

The United States maintains other bases in Kuwait, Bahrain and Oman along the Persian Gulf oil transit routes, as well as in Turkey.

As the region's biggest oil producer, Saudi Arabia continues to dominate OPEC and its production decisions. But some experts downplay the country's ability to wreak havoc on the U.S. energy system again. "OPEC needs our money more than we need its oil," the Cato Institute's Taylor says. "One of the reasons why there is instability in Saudi Arabia is that the oil dole is much lower today than it was 20 years ago. If Saudi Arabia were to cut production by half, they'd find themselves in a revolution before we'd find ourselves in a depression."

The war on terrorism has enhanced U.S. standing in other potentially key oil supplying countries, notably Russia — the world's second-largest oil exporter — and the former Soviet republics of Kyrgyzstan, Uzbekistan and Tajikistan, which ring the Caspian Sea and are considered to cover the world's last sizable reservoir of untapped oil. The recent thawing of U.S. relations with Russia has raised hopes that the former Cold War enemy could become a reliable energy supplier for the West.<sup>33</sup>

Plus, the United States has been involved in ongoing negotiations for construction of a major oil pipeline out of the Caspian region, which the United

States hopes will be routed to the Mediterranean through NATO ally Turkey. Russia and the three Caspian republics have supported the United States' intervention in Afghanistan.

At the same time, the anti-terrorism campaign is complicating relations with Iran, which has significant oil supplies. While Iran has not been a source of U.S. imports for more than a decade, the rise over the past several years of political moderates less hostile to the United States had fueled hopes for improving relations with this major Persian Gulf producer.

However, reports that bin Laden's Al Qaeda militants may recently have fled from Afghanistan into neighboring Iran has prompted concern in Washington that Tehran may try to influence the delicate nation-building effort under way in Afghanistan under U.S. leadership. In a thinly veiled threat against interference, Bush said that if Iranian officials "in any way, shape or form try to destabilize the [Afghan] government," the United States would "deal with them . . . in diplomatic ways — initially."<sup>34</sup>

However the fight against terrorism shifts allegiances in the major oil-exporting regions, no one expects the United States to wean itself entirely from foreign oil, or indeed from Middle Eastern oil.

"I don't think it is necessary or even desirable to get rid of oil imports altogether," says Makhijani of the Institute for Energy and Environmental Research. "So many regions of the world would become bankrupt that it would cause a lot of harm, because the West has been the one to cultivate oil-exporting

countries, and that cannot suddenly be changed. What is necessary, I think, is to eliminate the leverage that one region has on world supplies." ■

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## About the Author

**Mary H. Cooper** specializes in energy and defense issues. Before joining *The CQ Researcher* as a staff writer in 1983, she was Washington correspondent for the Rome daily newspaper *l'Unita'*. She is the author of *The Business of Drugs* (CQ Press, 1990) and holds a B.A. in English from Hollins College, in Virginia.

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**American Council for an Energy-Efficient Economy**, 1001 Connecticut Ave., N.W., Suite 801, Washington, D.C. 20036; (202) 429-0063; [www.aceee.org](http://www.aceee.org). Dedicated to advancing energy efficiency as a means of promoting both economic prosperity and environmental protection.

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# The Next Step:

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## **CAFE Standards**

**“CAFE Leaves a Bitter Taste,”** *The Economist*, Aug. 4, 2001.

Established after the first Middle East oil crisis in 1973, Corporate Average Fuel Economy (CAFE) standards now require the average passenger car to get 27.5 miles per gallon, while light trucks need to get only 20.7 miles.

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If doomsday enviros have their way, America’s love affair with the SUV may soon be over.

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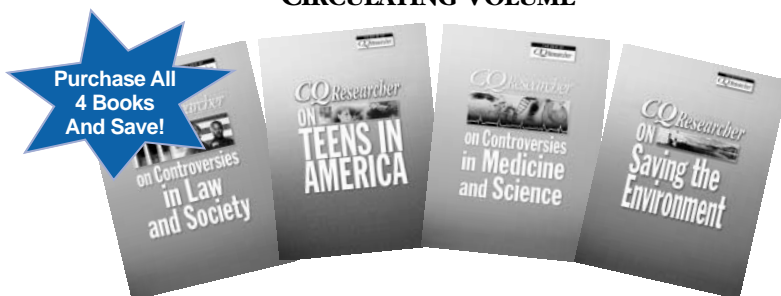
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