Should the Arctic National Wildlife Refuge Be Opened to Oil Drilling?

YES: Dwight R. Lee, from “To Drill or Not to Drill: Let the Environmentalists Decide,” The Independent Review (Fall 2001)

NO: Amory B. Lovins and L. Hunter Lovins, from “Fool’s Gold in Alaska,” Foreign Affairs (July/August 2001)

ISSUE SUMMARY

YES: Professor of economics Dwight R. Lee argues that the economic and other benefits of Arctic National Wildlife Refuge (ANWR) oil are so great that even environmentalists should agree to permit drilling – and they probably would if they stood to benefit directly.

NO: Physicist Amory B. Lovins and lawyer L. Hunter Lovins assert that recovering ANWR oil is too costly and too vulnerable to disruption. They hold that alternatives such as developing greater fuel efficiency are wiser choices for meeting future energy needs.

The birth of environmental consciousness in the United States was marked by two strong, opposing views. Late in the nineteenth century, John Muir (1838–1914) called for the preservation of natural wilderness, untouched by human activities. At about the same time, Gifford Pinchot (1865–1946) became a strong voice for conservation (not to be confused with preservation; Gifford’s conservation allowed the use of nature but in such a way that it was not destroyed; his aim was “the greatest good of the greatest number in the long run”). Both views agree that nature has value; however, they disagree on the form of that value. The preservationist says that nature has value in its own right and has a right to be left alone, neither developed with houses and roads nor exploited with farms, dams, mines, and oil wells. The conservationist says that nature’s value lies chiefly in the benefits it provides to human beings.

The first national parks date back to the 1870s. Parks and the national forests are managed for “multiple use” on the premise that wilderness protection, recreation, timber cutting, and even oil drilling and mining can coexist. The first “primitive areas,” where all development is barred, were created by the US Forest Service in the 1920s. However, pressure from commercial interests (the timber and mining industries, among others) led to the reclassification of many such areas and their opening to exploitation. In 1964 the Federal Wilderness Act provided a mechanism for designating “wilderness” areas, defined as areas “where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain.” Since then it has become clear that pesticides and other man-made chemicals are found everywhere on earth, drifting on winds and ocean currents and traveling in migrant birds even to areas without obvious human presence. Humans might not be present in these places, but their effects are. And commercial interests are just as interested in the wealth that may be extracted from these areas as they ever were. There is continual pressure to expand commercial use of national forests and parks and to open wilderness areas to exploitation.

The Arctic National Wildlife Refuge (ANWR) provides a good illustration. It is not a “wilderness” area, for it was designated a wildlife preserve in 1960 and enlarged and renamed in 1980 with the proviso that its coastal plain be evaluated for its potential value in terms of oil and gas production. In 1987 the Department of the Interior recommended that the coastal plain be opened for oil and gas exploration. In 1995 Congress approved doing so, but President Bill Clinton vetoed the legislation. In 2001, after California experienced electrical blackouts, President George W. Bush declared that opening the ANWR to oil exploitation was essential to national energy security. The National Energy Security Act of 2001 was promptly put before Congress and debated vigorously. Industry representatives favored the bill; environmental groups opposed it. For a good review, see Norman Chance, “The Arctic National Wildlife Refuge: A Special Report” at http://arcticcircle.uconn.edu/ANWR/anwrindex.html.

Strict preservationists still remain, but the debate over protecting wilderness areas generally centers on economic arguments. In the following selections, Dwight R. Lee argues that the economic and other benefits of Arctic National Wildlife Refuge oil are so great that drilling should be permitted. Amory B. Lovins and L. Hunter Lovins argue that ANWR oil should not be developed, because it is too limited in quantity to relieve energy needs for long, it is too costly to exploit compared to alternative oil sources, and its delivery system is too vulnerable to disruption.
To Drill or Not to Drill

High prices of gasoline and heating oil have made drilling for oil in Alaska’s Arctic National Wildlife Refuge (ANWR) an important issue. ANWR is the largest of Alaska’s sixteen national wildlife refuges, containing 19.6 million acres. It also contains significant deposits of petroleum. The question is, Should oil companies be allowed to drill for that petroleum?

The case for drilling is straightforward. Alaskan oil would help to reduce U.S. dependence on foreign sources subject to disruptions caused by the volatile politics of the Middle East. Also, most of the infrastructure necessary for transporting the oil from nearby Prudhoe Bay to major U.S. markets is already in place. Furthermore, because of the experience gained at Prudhoe Bay, much has already been learned about how to mitigate the risks of recovering oil in the Arctic environment.

No one denies the environmental risks of drilling for oil in ANWR. No matter how careful the oil companies are, accidents that damage the environment at least temporarily might happen. Environmental groups consider such risks unacceptable; they argue that the value of the wilderness and natural beauty that would be spoiled by drilling in ANWR far exceeds the value of the oil that would be recovered. For example, the National Audubon Society characterizes opening ANWR to oil drilling as a threat “that will destroy the integrity” of the refuge (see statement at www.audubon.org/campaign/refuge).

So, which is more valuable, drilling for oil in ANWR or protecting it as an untouched Wilderness and wildlife refuge? Are the benefits of the additional oil really less than the costs of bearing the environmental risks of recovering that oil? Obviously, answering this question with great confidence is difficult because the answer depends on subjective values. Just how do we compare the convenience value of using more petroleum with the almost spiritual value of maintaining the “integrity” of a remote and pristine wilderness area? Although such comparisons are difficult, we should recognize that they can be made. Indeed, we make them all the time.

We constantly make decisions that sacrifice environmental values for what many consider more mundane values, such as comfort, convenience, and material well-being. There is nothing wrong with making such sacrifices because up to some point the additional benefits we realize from sacrificing a little more environmental “integrity” are worth more than the necessary sacrifice. Ideally, we would somehow acquire the information necessary to determine where that point is and then motivate people with different perspectives and preferences to respond appropriately to that information.

Achieving this ideal is not as utopian as it might seem; in fact, such an achievement has been reached in situations very similar to the one at issue in ANWR. In this article, I discuss cases in which the appropriate sacrifice of wilderness protection for petroleum production has been responsibly determined and harmoniously implemented. Based on this discussion, I conclude that we should let the Audubon Society decide whether to allow drilling in ANWR. That conclusion may seem to recommend a foregone decision on the issue because the society has already said that drilling for oil in ANWR is unacceptable. But actions speak louder than words, and under certain conditions I am willing to accept the actions of environmental groups such as the Audubon Society as the best evidence of how they truly prefer to answer the question, To drill or not to drill in ANWR?

Private Property Changes One’s Perspective

What a difference private property makes when it comes to managing multiuse resources. When people make decisions about the use of property they own, they take into account many more alternatives than they do when advocating decisions about the use of property owned by others. This straightforward principle explains why environmental groups’ statements about oil drilling in ANWR (and in other publicly owned areas) and their actions in wildlife areas they own are two very different things.

For example, the Audubon Society owns the Rainey Wildlife Sanctuary, a 26,000-acre preserve in Louisiana that provides a home for fish, shrimp, crab, deer, ducks, and wading birds, and is a resting and feeding stopover for more than 100,000 migrating snow geese each year. By all accounts, it is a beautiful wilderness area and provides exactly the type of wildlife habitat that the Audubon Society seeks to preserve. But, as elsewhere in our world of scarcity, the use of the Rainey Sanctuary as a wildlife preserve competes with other valuable uses.

Besides being ideally suited for wildlife, the sanctuary contains commercially valuable reserves of natural gas and oil, which attracted the attention of energy companies when they were discovered in the 1940s. Clearly, the interests served by fossil fuels do not have high priority for the Audubon Society. No doubt, the society regards additional petroleum use as a social problem rather than a social benefit. Of course, most people have different priorities: they place a much higher value on keeping down the cost of energy than they do on bird-watching and on protecting what many regard as little more than mosquito-breeding swamps. One might suppose that members of the Audubon Society have no reason to consider such “anti-environmental” values when deciding how to use their own land. Because the society owns the Rainey Sanctuary, it can ignore interests antithetical to its own and refuse to allow drilling.
Yet, precisely because the society owns the land, it has been willing to accommodate the interests of those whose priorities are different and has allowed thirty-seven wells to pump gas and oil from the Rainey Sanctuary. In return, it has received royalties of more than $25 million.

One should not conclude that the Audubon Society has acted hypocritically by putting crass monetary considerations above its stated concerns for protecting wilderness and wildlife. In a wider context, one sees that because of its ownership of the Rainey Sanctuary, the Audubon Society is part of an extensive network of market communication and cooperation that allows it to do a better job of promoting its objectives by helping others promote theirs. Consumers communicate the value they receive from additional gas and oil to petroleum companies through the prices they willingly pay for those products, and this communication is transmitted to owners of oil-producing land through the prices the companies are willing to pay to drill on that land. Money really does "talk" when it takes the form of market prices. The money offered for drilling rights in the Rainey Sanctuary can be viewed as the most effective way for millions of people to tell the Audubon Society how much they value the gas and oil its property can provide.

By responding to the price communication from consumers and by allowing the drilling, the Audubon Society has not sacrificed its environmental values in some debased lust for lucre. Instead, allowing the drilling has served to reaffirm and promote those values in a way that helps others, many of whom have different values, achieve their own purposes. Because of private ownership, the valuations of others for the oil and gas in the Rainey Sanctuary create an opportunity for the Audubon Society to purchase additional sanctuaries to be preserved as habitats for the wildlife it values. So the society has a strong incentive to consider the benefits as well as the costs of drilling on its property. Certainly, environmental risks exist, and the society considers them, but if also responsibly weighs the costs of those risks against the benefits as measured by the income derived from drilling. Obviously, the Audubon Society appraises the benefits from drilling as greater than the costs, and it acts in accordance with that appraisal.

Cooperation Between Bird-Watchers and Hot-Rodders

The advantage of private ownership is not just that it allows people with different interests to interact in mutually beneficial ways. It also creates harmony between those whose interests would otherwise be antagonistic. For example, most members of the Audubon Society surely see the large sport utility vehicles and high-powered cars encouraged by abundant petroleum supplies as environmentally harmful. That perception, along with the environmental risks associated with oil recovery, helps explain why the Audubon Society vehemently opposes drilling for oil in the ANWR as well as in the continental shelves in the Atlantic, the Pacific, and the Gulf of Mexico. Although oil companies promise to take extraordinary precautions to prevent oil spills when drilling in these areas, the Audubon Society's position is no off-shore drilling, none. One might expect to find Audubon Society members completely unsympathetic with hot-rodding enthusiasts, NASCAR racing fans, and drivers of Chevy Suburbans. Yet, as we have seen, by allowing drilling for gas and oil in the Rainey Sanctuary, the society is accommodating the interests of those with gas-guzzling lifestyles, risking the "integrity" of its prized wildlife sanctuary to make more gasoline available to those whose energy consumption it verbally condemns as excessive.

The incentives provided by private property and market prices not only motivate the Audubon Society to cooperate with NASCAR racing fans, but also motivate those racing enthusiasts to cooperate with the Audubon Society. Imagine the reaction you would get if you went to a stock-car race and tried to convince the spectators to skip the race and go bird-watching instead. Be prepared for some beer bottles tossed your way. Yet by purchasing tickets to their favorite sport, racing fans contribute to the purchase of gasoline that allows the Audubon Society to obtain additional wildlife habitat and to promote bird-watching. Many members of the Audubon Society may feel contempt for racing fans, and most racing fans may laugh at bird-watchers, but because of private property and market prices, they nevertheless act to promote one another's interests.

The Audubon Society is not the only environmental group that, because of the incentives of private ownership, promotes its environmental objectives by serving the interests of those with different objectives. The Nature Conservancy accepts land and monetary contributions for the purpose of maintaining natural areas for wildlife habitat and ecological preservation. It currently owns thousands of acres and has a well-deserved reputation for preventing development in environmentally sensitive areas. Because it owns the land, it has also a strong incentive to use that land wisely to achieve its objectives, which sometimes means recognizing the value of developing the land.

For example, soon after the Wisconsin chapter received title to 40 acres of beach-front land on St. Croix in the Virgin Islands, it was offered a much larger parcel of land in northern Wisconsin in exchange for its beach land. The Wisconsin chapter made this trade (with some covenants on development of the beach land) because owning the Wisconsin land allowed it to protect an entire watershed containing endangered plants that it considered of greater environmental value than what was sacrificed by allowing the beach to be developed.

Thanks to a gift from the Mobil Oil Company, the Nature Conservancy of Texas owns the Galveston Bay Prairie Preserve in Texas City, a 2,263-acre refuge that is home to the Attwater's prairie chicken, a highly endangered species (once numbering almost a million, its population had fallen to fewer than ten by the early 1990s). The conservancy has entered into an agreement with Galveston Bay Resources of Houston and Aspects Resources, LLC, of Denver to drill for oil and natural gas in the preserve. Clearly some risks attend oil drilling in the habitat of a fragile endangered species, and the conservancy has considered them, but it considers the gains sufficient to justify bearing the risks. According to Ray Johnson, East County program manager for the Nature Conservancy of Texas. "We believe this could provide a tremendous opportunity to raise funds to acquire additional habitat for the Attwater's prairie chicken, one of the most
threatened birds in North America.” Obviously the primary concern is to protect the endangered species, but the demand for gas and oil is helping achieve that objective. Johnson is quick to point out, “We have taken every precaution to minimize the impact of the drilling on the prairie chickens and to ensure their continued health and safety.”

Back to ANWR

Without private ownership, the incentive to take a balanced and accommodating view toward competing land-use values disappears. So, it is hardly surprising that the Audubon Society and other major environmental groups categorically oppose drilling in ANWR. Because ANWR is publicly owned, the environmental groups have no incentive to take into account the benefits of drilling. The Audubon Society does not capture any of the benefits if drilling is allowed, as it does at the Rainey Sanctuary; in ANWR, it sacrifices nothing if drilling is prevented. In opposing drilling in ANWR, despite the fact that the precautions to be taken there would be greater than those required of companies operating in the Rainey Sanctuary, the Audubon Society is completely unaccountable for the sacrificed value of the recoverable petroleum.

Obviously, my recommendation to “let the environmentalists decide” whether to allow oil to be recovered from ANWR makes no sense if they are not accountable for any of the costs (sacrificed benefits) of preventing drilling. I am confident, however, that environmentalists would immediately see the advantages of drilling in ANWR if they were responsible for both the costs and the benefits of that drilling. As a thought experiment about how incentives work, imagine that a consortium of environmental organizations is given veto power over drilling, but is also given a portion (say, 10 percent) of what energy companies are willing to pay for the right to recover oil in ANWR. These organizations could capture tens of millions of dollars by giving their permission to drill. Suddenly the opportunity to realize important environmental objectives by favorably considering the benefits others gain from more energy consumption would come into sharp focus. The environmentalists might easily conclude that although ANWR is an “environmental treasure,” other environmental treasures in other parts of the country (or the world) are even more valuable; moreover, with just a portion of the petroleum value of the ANWR, efforts might be made to reduce the risks to other natural habitats, more than compensating for the risks to the Arctic wilderness associated with recovering that value.

Some people who are deeply concerned with protecting the environment see the concentration on “saving” ANWR from any development as misguided even without a vested claim on the oil wealth it contains. For example, according to Craig Medred, the outdoor writer for the Anchorage Daily News and a self-described “development-phobic wilderness lover,”

That people would fight to keep the scar of clearcut logging from the spectacular and productive rain-forests of Southeast Alaska is easily understandable to a shopper in Seattle or a farmer in Nebraska. That people would argue against sinking a few holes through the surface of a frozen wasteland, however, can prove more than a little baffling even to development-phobic, wilderness lovers like me. Truth be known, I’d trade the preservation rights to any 100 acres on the [ANWR] slope for similar rights to any acre of central California wetlands... It would seem of far more environmental concern that Alaska’s ducks and geese have a place to winter in overcrowded, overdeveloped California than that California’s ducks and geese have a place to breed each summer in uncrowded and undeveloped Alaska.

Even a small share of the petroleum wealth in ANWR would dramatically reverse the trade-off Medred is willing to make because it would allow environmental groups to afford easily a hundred acres of central California wetlands in exchange for what they would receive for each acre of ANWR released to drilling.

We need not agree with Medred’s characterization of the ANWR as “a frozen wasteland to suspect that environmentalists are overstating the environmental amenities that drilling would put at risk. With the incentives provided by private property, environmental groups would quickly reevaluate the costs of drilling in wilderness refuges and soften their rhetoric about how drilling would “destroy the integrity” of these places. Such hyperbolic rhetoric is to be expected when drilling is being considered on public land because environmentalists can go to the bank with it. It is easier to get contributions by depicting decisions about oil drilling on public land as righteous crusades against evil corporations out to destroy our priceless environment for short-run profit than it is to work toward minimizing drilling costs to accommodate better the interests of others. Environmentalists are concerned about protecting wildlife and wilderness areas in which they have ownership interest, but the debate over any threat from drilling and development in those areas is far more productive and less acrimonious than in the case of ANWR and other publicly owned wilderness areas.

The evidence is overwhelming that the risks of oil drilling in the arctic environment are far less than commonly claimed. The experience gained in Prudhoe Bay has both demonstrated and increased the oil companies’ ability to recover oil while leaving a “light footprint” on arctic tundra and wildlife. Oil-recovery operations are now sited on gravel pads providing foundations that protect the underlying permafrost. Instead of using pits to contain the residual mud and other waste from drilling, techniques are now available for pumping the waste back into the well in ways that help maintain well pressure and reduce the risks of spills on the tundra. Improvements in arctic road construction have eliminated the need for the gravel access roads used in the development of the Prudhoe Bay oil fields. Roads are now made from ocean water pumped onto the tundra, where it freezes to form a road surface. Such roads melt without a trace during the short summers. The oversize rubber tires used on the roads further minimize any impact on the land.

Improvements in technology now permit horizontal drilling to recover oil that is far from directly below the wellhead. This technique reduces further the already small amount of land directly affected by drilling operations. Of
the more than 19 million acres contained in ANWR, almost 18 million acres have been set aside by Congress—somewhat more than 8 million as wilderness and 9.5 million as wildlife refuge. Oil companies estimate that only 2,000 acres would be needed to develop the coastal plain.

This carefully conducted and closely confined activity hardly sounds like a sufficient threat to justify the rhetoric of a righteous crusade to prevent the destruction of ANWR, so the environmentalists warn of a detrimental effect on arctic wildlife that cannot be gauged by the limited acreage directly affected. Given the experience at Prudhoe Bay, however, such warnings are difficult to take seriously. The oil companies have gone to great lengths and spent tens of millions of dollars to reduce any harm to the fish, fowl, and mammals that live and breed on Alaska’s North Slope. The protections they have provided for wildlife at Prudhoe Bay have been every bit as serious and effective as those the Audubon Society and the Nature Conservancy find acceptable in the Rainey Sanctuary and the Galveston Bay Prairie Preserve. As the numbers of various wildlife species show, many have thrived better since the drilling than they did before.

Before drilling began at Prudhoe Bay, a good deal of concern was expressed about its effect on caribou herds. As with many wildlife species, the population of the caribou on Alaska’s North Slope fluctuates (often substantially) from year to year for completely natural reasons, so it is difficult to determine with confidence the effect of development on the caribou population. It is noteworthy, however, that the caribou population in the area around Prudhoe Bay has increased greatly since that oil field was developed, from approximately 3,000 to a high of some 23,400. . . . Some argue that the increase has occurred because the caribou’s natural predators have avoided the area—some of these predators are shot, whereas the caribou are not. But even if this argument explains some or even all of the increase in the population, the increase still casts doubt on claims that the drilling threatens the caribou. Nor has it been shown that the viability of any other species has been genuinely threatened by oil drilling at Prudhoe Bay.

### Caribou Versus Humans

Although consistency in government policy may be too much to hope for, it is interesting to contrast the federal government’s refusal to open ANWR with some of its other oil-related policies. While opposing drilling in ANWR, ostensibly because we should not put caribou and other Alaskan wildlife at risk for the sake of getting more petroleum, we are exposing humans to far greater risks because of federal policies motivated by concern over petroleum supplies.

For example, the United States maintains a military presence in the Middle East in large part because of the petroleum reserves there. It is doubtful that the U.S. government would have mounted a large military action and sacrificed American lives to prevent Iraq from taking over the tiny sheikdom of Kuwait except to allay the threat to a major oil supplier. Nor would the United States have lost the nineteen military personnel in the barracks blown up in Saudi Arabia in 1996 or the seventeen killed onboard the USS Cole in a Yemeni harbor in 2000. I am not arguing against maintaining a military presence in the Middle East, but if it is worthwhile to sacrifice Americans’ lives to protect oil supplies in the Middle East, is it not worthwhile to take a small (perhaps nonexistent) risk of sacrificing the lives of a few caribou to recover oil in Alaska?

Domestic energy policy also entails the sacrifice of human lives for oil. To save gasoline, the federal government imposes Corporate Average Fuel Economy (CAFE) standards on automobile producers. These standards now require all new cars to average 27.5 miles per gallon and new light trucks to average 20.5 miles per gallon. The one thing that is not controversial about the CAFE standards is that they cost lives by inducing manufacturers to reduce the weight of vehicles. Even Ralph Nader has acknowledged that “larger cars are safer—there is more bulk to protect the occupant.” An interesting question is, How many lives might be saved by using more (ANWR) oil and driving heavier cars rather than using less oil and driving lighter, more dangerous cars?

It has been estimated that increasing the average weight of passenger cars by 100 pounds would reduce U.S. highway fatalities by 200 a year. By determining how much additional gas would be consumed each year if all passenger cars were 100 pounds heavier, and then estimating how much gas might be recovered from ANWR oil, we can arrive at a rough estimate of how many human lives potentially might be saved by that oil. To make this estimate, I first used data for the technical specifications of fifty-four randomly selected 2001 model passenger cars to obtain a simple regression of car weight on miles per gallon. This regression equation indicates that every additional 100 pounds decreases mileage by 0.85 miles per gallon. So 200 lives a year could be saved by relaxing the CAFE standards to allow a 0.85 miles per gallon reduction in the average mileage of passenger cars. How much gasoline would be required to compensate for this decrease of average mileage? Some 135 million passenger cars are currently in use, being driven roughly 10,000 miles per year on average (1994-95 data from U.S. Bureau of the Census 1997, 843). Assuming these vehicles travel 24 miles per gallon on average, the annual consumption of gasoline by passenger cars is 56.25 billion gallons (= 135 million x 10,000/24). If instead of an average of 24 miles per gallon the average were reduced to 23.15 miles per gallon, the annual consumption of gasoline by passenger cars would be 58.32 billion gallons (= 135 million x 10,000/23.15). So, 200 lives could be saved annually by an extra 2.07 billion gallons of gas. It is estimated that ANWR contains from 3 to 16 billion barrels of recoverable petroleum. Let us take the midpoint in this estimated range, or 9.5 billion barrels. Given that on average each barrel of petroleum is refined into 19.5 gallons of gasoline, the ANWR oil could be turned into 185.25 billion additional gallons of gas, or enough to save 200 lives a year for almost ninety years (185.25/2.07 = 89.5). Hence, in total almost 18,000 lives could be saved by opening up ANWR to drilling and using the fuel made available to compensate for increasing the weight of passenger cars.

I claim no great precision for this estimate. There may be less petroleum in ANWR than the midpoint estimate indicates, and the study I have relied on may have overestimated the number of lives saved by heavier passenger cars. Still, any reasonable estimate will lead to the conclusion that preventing the
recovery of ANWR oil and its use in heavier passenger cars entails the loss of thousands of lives on the highways. Are we willing to bear such a cost in order to avoid the risks, if any, to ANWR and its caribou?

**Conclusion**

I am not recommending that ANWR actually be given to some consortium of environmental groups. In thinking about whether to drill for oil in ANWR, however, it is instructive to consider seriously what such a group would do if it owned ANWR and therefore bore the costs as well as enjoyed the benefits of preventing drilling. Those costs are measured by what people are willing to pay for the additional comfort, convenience, and safety that could be derived from the use of ANWR oil. Unfortunately, without the price communication that is possible only by means of private property and voluntary exchange, we cannot be sure what those costs are or how private owners would evaluate either the costs or the benefits of preventing drilling in ANWR. However, the willingness of environmental groups such as the Audubon Society and the Nature Conservancy to allow drilling for oil on environmentally sensitive land they own suggests strongly that their adamant verbal opposition to drilling in ANWR is a poor reflection of what they would do if they owned even a small fraction of the ANWR territory containing oil.

---

**Fool’s Gold in Alaska**

**The Bottom of the Barrel?**

Oil prices have fluctuated randomly for well over a century. Heedless of this fact, oil’s promoters are always offering opportunities that could make money—but on the flawed assumption that high prices will prevail. Leading the field of these optimists are Alaskan politicians. Eager to keep funding their state’s de facto negative income tax, oil provides 80 percent of the state’s unrestricted general revenue—they have used every major rise in oil prices since 1973 to advocate drilling beneath federal lands on the coastal plain of the Arctic National Wildlife Refuge. Just as predictably, environmentalists counter that the refuge is the crown jewel of the American wilderness and home to the threatened indigenous Gwich’in people. As some see it, drilling could raise human rights issues under international law. Canada, which shares threatened wildlife, also opposes drilling.

Both sides of this debate have largely overlooked the central question: Does drilling for oil in the refuge’s coastal plain make sense for economic and security reasons? After all, three imperatives should shape a national energy policy: economic vitality, secure supplies, and environmental quality. To merit serious consideration, a proposal must meet at least one of these goals.

Drilling proponents claim that prospecting for refuge oil will enhance the first two while not unduly harming the third. In fact, not only does refuge oil fail to meet any of the three goals, it could even compromise the first two. First, the refuge is unlikely to hold economically recoverable oil. And even if it did, exploitation would only briefly reduce U.S. dependence on imported oil by just a few percentage points, starting in about a decade. Nor would the refuge yield significant natural gas. Despite some recent statements by the Bush administration, the North Slope’s important natural-gas deposits are almost entirely outside the refuge. The gas-rich areas are already open to industry, and environmentalists would likely support a gas pipeline there, but its high cost—an estimated $10 billion—would make it seem uneconomical.

Furthermore, those who suppose that any domestic oil is more secure than imported oil should remember that oil reserves almost anywhere else on earth are more accessible and more reliably deliverable than those above the Arctic.

---

Doing More With Less

Unstable oil prices have historically triggered the new energy strategies. In the years following the oil-price jump in 1973, Presidents Richard Nixon and Gerald Ford sought to reduce U.S. dependence on oil imports by stimulating domestic energy supplies. With the country beset by inflation, however, they also controlled oil and gas prices, so the new supplies often appeared cheaper than they really were. President Jimmy Carter repeated this supply mistake by promoting a costly flop in synthetic fuels, but he also trusted the market enough to deregulate oil and gas prices. (Paradoxically, he discouraged exploration for natural gas by prohibiting its use in most new power plants.) The fall of the shah of Iran again hiked oil prices in 1979 and contributed to Carter’s political demise. Yet that second shock also stimulated a nationwide, seven-year drive for greater energy efficiency. Cheaper ways of delivering “energy services” (e.g., hot showers and cold beer) by using energy more productively left the energy-supply industries with costly surpluses as their prices collapsed in 1985-86. This crash benefited consumers but punished the same energy producers that the Reagan administration had sought to help. Underlying this energy glut was not just a response to higher prices but a basic policy shift: Carter had emphasized the efficient use of energy, especially in cars, and Americans then discovered how quickly demand-side policies can swing the global oil market.

Greater efficiency bore dramatic results. Carter’s policies made new American-built cars more efficient by seven miles per gallon (mpg) over six years. During Carter’s term and the five years following it, oil imports from the unstable Persian Gulf region fell by 87 percent. From 1977 to 1985, U.S. GDP [gross domestic product] rose 27 percent while total U.S. oil imports fell by 42 percent, or 3.74 million barrels a day. That savings took away from the Organization of Petroleum Exporting Countries [OPEC] an eighth of its market. The entire world oil market shrank by a tenth of OPEC’s share of it was slashed from 52 percent to 30 percent, while OPEC’s output fell by 48 percent. The United States accounted for one-fourth of that reduction. More-efficient cars - each driving one percent fewer miles on 20 percent fewer gallons were the most important cause: 96 percent of those savings came from smarter design, whereas 4 percent came from smaller size. Other countries also improved car efficiency, but they used higher fuel taxes instead of higher efficiency standards to do so.

In those eight years, U.S. oil productivity soared by 52 percent, demonstrating an effective new source of energy security and a potent weapon against high oil prices and supply manipulations. The United States showed that a major nation could respond to supply disruptions by focusing on the demand side and boosting its energy productivity at will. It could thereby exercise more market power than suppliers, beat down prices, and enhance the relative importance of less vulnerable, more diversified sources of energy.

Drilling proponents today ignore this lesson. Instead, they cite the imperative of displacing Middle East oil to justify drilling in every U.S. site where oil might occur. But even if this imperative existed, refuge oil would be a poor solution. After a decade of drilling and preparation, it could provide only modest, brief relief—totaling less than one percent of projected U.S. oil needs and would cost much more than the efficiency-boosting alternatives. Repaying refuge-oil investments would require oil prices so high that, in the ensuing decade, they would elicit far greater efficiency. Those efficiency gains, in turn, would depress oil prices, displace the targeted imports, and make refuge oil
Oil Roulette

The refuge is one of the planet’s most inhospitable and remote locations. For oil companies to invest profitably there, it must hold a lot of oil. Furthermore, world oil prices must stay high enough for a long enough time to recover costs and earn profits. But even official proponents of drilling have found its economics dubious.

In 1998, the U.S. Geological Survey (USGS) found that better (and fourfold cheaper) production technologies could probably draw 3.2 billion barrels from the refuge. This oil would be worth recovering only if its long-term price were at least $22 per barrel in West Coast ports (the destinations that the USGS picked for its price calculations). But until it spiked up from $13 per barrel in 1998 to $30 per barrel in late 2000, Alaskan oil did not exceed that level for 8 years. That spike was a blip, not a trend. In April 2001, Alaska’s Department of Revenue forecast a steady price drop from $22 per barrel in 2001–2 to less than $13 per barrel in 2009–10—the earliest that any refuge oil might flow. Alaska’s latest price forecast for 2020 is $18 per barrel. The U.S. Department of Energy predicts that world oil prices will not reach $23 per barrel until 2020; nearly all industry forecasts are lower.

But it is no longer necessary to speculate which forecast is correct; they all tend to converge on the prices discovered in the futures market. Alaska’s forecasters agree that this convergence is unaffected by price spikes such as the one in 2000. Their projection for 2004–10 accordingly stays under $16 per barrel. (One of the world’s largest oil companies does not even consider any prospect requiring a delivered price of more than $14 per barrel.) According to the USCG, that price is also the threshold below which there is probably no economically recoverable oil beneath the refuge. Even that threshold may be too high volatile oil prices make drilling especially risky, requiring higher returns and prices in any high-cost area where exploration and development will be slow and difficult. And if the federal government were to demand lease fees, such as the multi-billion-dollar revenues that the Alaskan delegation inserts into budget bills, or if TAPS needed more maintenance, the price threshold would rise.

Some drilling advocates argue that technological advances in finding and extracting oil can still make refuge oil profitable. Those advances are indeed real and astonishingly rapid. From 1987 to 1999, they increased the discovery of new U.S. oil resources by an estimated three-fifths. One-ninth of all U.S. oil reserves discovered since 1859 were found just in the past decade, even as oil prices fell. Better technologies could make extracting refuge oil cheaper—but those same advances would also cut costs everywhere else, and just about anywhere else is easier and more attractive. Better technology makes global oil more plentiful and therefore cheaper, so it renders high-cost areas less competitive. During the 1990s, this process combined with increasing competition from energy alternatives to halve long-term forecasts of oil prices, which are still falling. The Department of Energy now forecasts that imported oil will cost three-fifths less by 2020 than what the Department of the Interior had forecast in 1987, when it predicted prices hitting $61 per barrel. If oil companies really believed in sustained high prices, they would be drilling everywhere—and they are not. On the contrary, when oil prices rose from $10 per barrel to $25 per barrel in 1998–99 and lifted the oil and gas revenues of major U.S. energy companies by more than 50 percent, those firms cut exploration and development outlays by 66 percent in the United States (onshore) and 38 percent worldwide. These companies believe that advancing technology will keep the world long awash in oil that is too cheap for refuge drilling to beat.

Who, then, is pushing for drilling—aside from the powerful Alaskan congressional delegation? Oil-service companies and Alaskan operations offices of major oil companies naturally want to extend and expand their activities and apply their special skills, but they would be risking others’ money, not their own. Likewise, the TAPS consortium wants more revenue and a political commitment that might justify a later government bailout if the pipeline turned out to need costly repairs, but it too would not be the one making the huge investment. Conspicuously absent is a ringing endorsement from leaders of major oil firms. They understand the high risk and the prospect of poor rewards, and those that are more astute also fear global consumer boycotts. To the extent that any are interested, it is to seek a bargaining chip for other areas now off-limits or to avoid the social embarrassment of being left off the dance card if the government throws an oil party—not because there is a sound business case.

Finally, the rationale that refuge drilling is urgently needed to relieve U.S. dependence on OPEC oil is full of holes. Net U.S. oil imports have indeed risen past their 1977 peak, but OPEC’s share of imports has fallen by one-third. Only a quarter of the oil consumed in the United States now comes from OPEC members. Imports are diversified and come mainly from westernhemisphere countries that offer major opportunities for expanding both oil and gas supplies. The more that imports are a concern, however, the stronger the case for substituting not just any option but the cheapest one—slashing America’s energy bills by a further $300 billion a year by raising energy productivity.

It’s Easy (and Lucrative) Being Green

Oil is becoming more abundant but relatively less important. For each dollar of GDP, the United States used 49 percent less oil in 2000 than it did in 1975. Compared with 1975, the amount that energy efficiency now saves each year is more than five times the country’s annual domestic oil production, twelve times its imports from the Persian Gulf, and twice its total oil imports. And the efficiency resource is far from tapped out; instead, it is constantly expanding. It’s Easy (and Lucrative) Being Green
benefits are even more valuable: 6 to 16 percent higher labor productivity in energy-efficient buildings, 40 percent higher retail sales in stores with good natural lighting, and improved output and quality in efficient factories. Efficiency also has major policy advantages. It is here and now, not a decade away. It improves the environment and protects the earth’s climate. It is fully secure, already delivered to customers, and immune to foreign potentates and volatile markets. It is rapidly and equitably deployable in the market. It supports jobs all across the United States rather than in a few firms in one state. Yet the energy options now winning in the marketplace seem oddly invisible, unimportant, and disfavored in current national strategy.

Those who have forgotten the power of energy efficiency should remember the painful business lessons learned from the energy policies of the early 1970s and the 1980s. Energy gluts rapidly recur whenever customers pay attention to efficiency—because the nationwide reserve of cheap, qualitatively superior savings from efficient energy use is enormous and largely accessible. That overhang of untapped and unpredictably accessed efficiency presents an opportunity for entrepreneurs and policymakers, but it also poses a risk to costly supply investments. That risk is now swelling ominously.

In the early 1980s, vigorous efforts to boost both supply and efficiency succeeded. Supply rose modestly while efficiency soared. From 1979 to 1986, GDP grew 20 percent while total energy use fell by 5 percent. Improved efficiency provided more than five times as much new energy service as the vaunted expansion of the coal and nuclear industries; domestic oil output rose only 1.5 percent while domestic natural gas output fell 18 percent. When the resulting glut slashed energy prices in 1985-46, attention strayed and efficiency slowed. But just in the past five years, the United States has quietly entered a second golden age of rapidly improving energy efficiency. Now, with another efficiency boom underway, the whole cycle is poised to repeat itself—threatening another energy-policy train wreck with serious economic consequences.

From 1996 to 2000, a complex mix of factors—such as competitive pressures, valuable side benefits, climate concerns, and e-commerce’s structural shifts—unexpectedly pushed the pace of U.S. energy savings to nearly an all-time high, averaging 3.1 percent per year despite the record-low and falling energy prices of 1996-99. Meanwhile, investment in energy supply, which is slower to mature, lagged behind demand growth in some regions as the economy boomed. Then in 2000, Middle East political jitters, OPEC machinations, and other factors made world oil prices spike just as cold weather and turbulence in the utility industry coincidentally boosted natural gas prices. Gasoline prices are rising this year—even though crude-oil prices are softening due to shortages not of crude oil but of refineries and additives... ...

The higher fuel and electricity prices and occasional local shortages that have vexed many Americans this past year have rekindled a broader national interest in efficient use. The current economic slowdown will further dampen demand but should also heighten business interest in cutting costs. Efficiency also lets numerous actors harness the energy market’s dynamism and speed—and it tends to hear results quickly. All these factors could set the stage for another price crash as burgeoning energy savings coincide, then collide, with the new administration’s push to stimulate energy supplies. Producers who answer that call will risk shouldering the cost of added supply without the revenue to pay for it, for oil prices high enough to make refuge oil profitable would collapse before or as supply boomed.

Policymakers can avoid such overreaction and instability if they understand the full range of competing options, especially the ability of demand to react faster than supply and the need for balancing investment between them. As outlined above, in the first half of the 1980s, the U.S. economy grew while total energy use fell and oil imports from the Persian Gulf were nearly eliminated. This achievement showed the power of a demand-side national energy policy. Today, new factors—even more powerful technologies and better designs, streamlined delivery methods, and better understanding of how public policy can correct dozens of market failures in buying efficiency—can make the demand-side response even more effective. This can give the United States a more affordable and secure portfolio of diverse energy sources, not just a few centralized ones.

### A. Barrel Saved, a Barrel Earned

If oil were found and profitably extracted from the refuge, its expected peak output would equal for a few years about one percent of the world oil market. Senator Frank Murkowski (R-Alaska) has claimed that merely announcing refuge leasing would bring down world oil prices. Yet even a giant Alaskan discovery several times larger than the refuge would not stabilize world oil markets. Oil prices reached their all-time high, for example, just as such a huge field, in Alaska’s Prudhoe Bay, neared its maximum output. Only energy efficiency can stabilize oil prices—as well as sink them. And only a tiny fraction of the vast untapped efficiency gains is needed to do so.

What could the refuge actually produce under optimal conditions? Starting about ten years from now, if oil prices did stay around $22 per barrel, if Congress approved the project, and if the refuge yielded the USGS’s mean estimate of about 3.2 billion barrels of profitable oil, the 30-year output would average a modest 292,000 barrels of crude oil a day. (This estimate also assumes that such oil would feed U.S. refineries rather than go to Asian markets, as some Alaskan oil did in 1996-2000.) Once refined, that amount would yield 156,000 barrels of gasoline per day—nough to run 2 percent of American cars and light trucks. That much gasoline could be saved if light vehicles became 0.4 mpg more efficient. Compare that feat to the one achieved in 1979-85, when new light vehicles on average gained 0.4 mpg every 5 months.

Equipping cars with replacement tires as efficient as the original ones would save consumers several “refuges” full of crude oil. Installing superinsulating windows could save even more oil and natural gas while making buildings more comfortable and cheaper to construct. A combination of all the main efficiency options available in 1989 could save today the equivalent of 54 “refuges”—but at a sixth of the cost. New technologies for saving energy are being found faster than the old ones are being used up—just like new technologies.
for finding and extracting oil, only faster. As gains in energy efficiency continue to outpace oil depletion, oil will probably become uncompetitive even at low prices before it becomes unavailable even at high prices. This is especially likely because the latest efficiency revolution squarely targets oil’s main users and its dominant growth market—cars and light trucks—where gasoline savings magnify crude-oil savings by 85 percent.

New American cars are hardly models of fuel efficiency. Their average rating of 24 mpg ties for a 20-year low. The auto industry can do much better—and is now making an effort. Briskly selling hybrid-electric cars such as the Toyota Pruis (a Corolla-class 5-seater) offer 49 mpg, and the Honda Insight (a CRX-class 2-seater) gets 67 mpg. A fleet that efficient, compared to the 24 mpg average, would save 26 or 33 refuges, respectively. General Motors, DaimlerChrysler, and Ford are now testing family sedans that offer 72–80 mpg. For Europeans who prefer subcompact city cars, Volkswagen is selling a 4-seater at 78 mpg and has announced a smaller 2003 model at 235 mpg. Still more efficient cars powered by clean and silent fuel cells are slated for production by at least eight major automakers starting in 2003–5. An uncompromised fuel-cell vehicle—the Hypercar—has been designed and costed for production and would achieve 99 mpg: it is as roomy and safe as a midsized sport-utility vehicle but uses 82 percent less fuel and no oil. Such high-efficiency vehicles, which probably can be manufactured at competitive cost, could save globally as much oil as OPEC now sells; when parked, the cars’ dual function as plug-in power stations could displace the world’s coal and nuclear plants many times over.

As long as the world runs largely on oil, economics dictates a logical priority for displacing it. Efficient use of oil wins hands down on cost, risk, and speed. Costlier options thus incur an opportunity cost. Buying costly refuge oil instead of cheap oil productivity is not simply a bad business decision: it worsens the oil-import problem. Each dollar spent on the costly option of refuge oil could have bought more of the cheap option of efficient use instead. Choosing the expensive option causes more oil to be used and imported than if consumers had bought the efficiency option first. The United States made exactly this mistake when it spent $200 billion on unneeded (but officially encouraged) nuclear and coal plants in the 1970s and 1980s. The United States now imports oil, produces nuclear waste, and risks global climate instability partly because it bought those assets instead of buying far cheaper energy efficiency.

Drilling for refuge oil is a risk the nation should consider taking only if no other choice is possible. But other choices abound. If three or four percent of all U.S. cars were as efficient as today’s popular hybrid models, they would save the equivalent of all the refuge’s oil. In all, many tens of times more oil is available—sooner, more surely, and more cheaply—from proven energy efficiency. The cheaper, faster energy alternatives now succeeding in the marketplace are safe, clean, climate-friendly, and overwhelmingly supported by the public. Equally important, they remain profitable at any oil price. They offer economic, security, and environmental benefits rather than costs. If any oil is beneath the refuge, its greatest value just might be in holding up the ground beneath the people and animals that live there.