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Michael J. Graetz

Columbia Law School, mgraet@law.columbia.edu

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Energy Policy: Past or Prologue?

Michael J. Graetz

Abstract: The United States was remarkably complacent about energy policy until the Arab oil embargo of 1973. Since then, we have relied on unnecessarily costly regulations and poorly designed subsidies to mandate or encourage particular forms of energy production and use. Our presidents have quested after an elusive technological “silver bullet.” Congress has elevated parochial interests and short-term political advantages over national needs. Despite the thousands of pages of energy legislation enacted over the past four decades, Congress has never demanded that Americans pay a price that reflects the full costs of the energy they consume. Given our nation’s economic fragility, our difficult fiscal situation, and the daunting challenges of achieving energy security and limiting climate change, we can no longer afford second- and third-best policies. This essay discusses the failures of the past and how we might avoid repeating them.

MICHAEL J. GRAETZ, a Fellow of the American Academy since 2004, is Professor of Law at Columbia University and Professor Emeritus at Yale Law School. His most recent book, on which this essay is based, is *The End of Energy: The Unmaking of America’s Environment, Security, and Independence* (2011). His other publications include *100 Million Unnecessary Returns: A Simple, Fair, and Competitive Tax Plan for the United States* (2008) and *Death by a Thousand Cuts: The Fight over Taxing Inherited Wealth* (2005).

We take it for granted that when we come home at night and flip on the light switch, the bulb will illuminate. We also expect the heat to come on when we turn up the thermostat. Although we sometimes flinch at the price, we assume that when we pull up to one of the more than one hundred thousand gas stations in the United States, the fuel will flow from below the asphalt into our cars’ gas tanks.

For most of our nation’s history, we were able to garner all the energy we used from our own lands: first, wood, then coal and oil. From the end of World War II through the late 1960s, the United States not only produced the bulk of oil consumed domestically, but also served as emergency supplier to the rest of the free world. Large U.S. and British oil companies controlled vast oil reserves in the Middle East. Before the 1970s, our nation’s policy struggles over oil had mostly dealt with how to respond to abundance.

We remained remarkably complacent about energy policy until the Arab oil embargo in October 1973 surprised our political leaders and stunned the American public. Complacency had taken hold largely because oil prices had been remarkably sta-

ble, or even declining, for decades. Oil had been plentiful and cheap. Inflation in energy products had been lower than inflation generally.

The job of U.S. energy regulators – primarily state agencies, such as the Oklahoma Commerce Commission and the Texas Railroad Commission – had predominately been to manage abundant supplies. In effect, they limited output so as not to exceed domestic consumption. In 1969, when he visited the United States to attend President Dwight Eisenhower’s funeral, the Shah of Iran offered to sell the United States a million barrels of oil a day for a decade at \$1 a barrel; but, in a decision we would come to regret, U.S. policy-makers brushed his offer aside. In May 1971, when Saudi Arabia’s King Faisal visited Richard Nixon, oil was not even discussed. Our most conspicuous policy involving oil was an import quota that Eisenhower adopted in the 1950s. The quota kept foreign oil out of the country and raised oil prices high enough to satisfy the oil producers but without making consumers fret. We used up our own oil when it was cheap and plentiful, rather than buying Middle East and Venezuelan oil when it was even cheaper.

But dramatic change was afoot. Principally as a result of strong economic growth and rising incomes, total world energy consumption more than tripled between 1949 and 1972. Worldwide oil demand more than quintupled during this postwar period. However, vast new discoveries and production of oil, especially in the Middle East, had kept prices remarkably stable. The U.S. public viewed abundant, inexpensive oil as a birthright.

Our problems started with Muammar al-Qaddafi. Before he came along, the Organization of Petroleum Exporting Countries (OPEC) had been an ineffectu-

al and unimportant oil cartel. But in 1969, the twenty-seven-year-old Qaddafi led a military coup that overthrew Libya’s King Idris. Soon thereafter, Qaddafi expelled all American and British troops from their large Libyan air bases. Then – at a time when Libya was supplying about 30 percent of Europe’s oil imports – Qaddafi demanded substantial increases in the price of Libya’s oil. Executives of the major oil companies, badly underestimating both Qaddafi’s determination and his political skill, essentially ignored him. Qaddafi then went after one of the smaller independent companies, Occidental Petroleum, cutting its production by more than one-third and demanding a substantial price hike. Unlike the major companies, with large sources of oil elsewhere, Occidental depended entirely on Libyan oil to supply its European refineries. Qaddafi knew that. And after Exxon foolishly refused to make up Occidental’s shortfall by selling it, at cost, the oil it needed, Occidental capitulated to Qaddafi’s price demands. This move gave the majority of profits to Libya, ending the historical 50-50 profit split between the oil companies and the oil-producing nations that had prevailed since the 1950s. It also unmistakably and irrevocably transferred power over Middle East oil away from the oil companies to the oil-producing nations.

Following Qaddafi’s lead, Abu Dhabi, Iran, Iraq, Kuwait, Qatar, and Saudi Arabia also sought higher prices for their oil. But the price increases did not satisfy Qaddafi or the other OPEC nations for long: demanding “equity participation” in the oil companies, they established control over the oil in their lands. Soon after this turning point, the 1973 embargo made it unmistakable that control over Middle East oil production had shifted away from U.S. and European oil companies – which for decades had dictated both the level of

output and prices – to the countries in whose lands the oil was located.

The structural factors that made OPEC ineffective for its first decade had changed. In March 1971, Texas oil producers announced that they had reached peak oil production and that their output would begin to decline. By 1973, the United States was consuming 6.3 million barrels of oil per day more than it produced; Japan, 5 million more barrels than it produced; and Europe, 13.1 million more than it produced. The Middle East countries were exporting more than 20 million barrels a day. Middle East petroleum reserves were then estimated to exceed 316 billion barrels, while those in every other region of the world were estimated to have fallen to less than 50 billion. With the Middle East governments now in command, the oil companies served primarily as their technicians, sales agents, and managers.

Richard Nixon, the first of eight presidents to confront our nation's new dependence on foreign oil, thought he had a solution in turning to our Cold War allies Saudi Arabia and Iran for support. Washington provided both countries with military aid and encouraged their economic interdependence with the United States, hoping that in exchange they would serve as the Middle East's "two pillars" of anti-Soviet stability and free-flowing oil. Needless to say, that plan failed miserably.

The Iranian pillar collapsed a few years later in an anti-American Islamic revolution. And even though Saudi Arabia and the other Arab states of the Persian Gulf have nominally remained U.S. allies, they, not we, hold the key strings in the relationship. The United States continues to support and aid these regimes despite their authoritarianism. If the sheiks of the Persian Gulf decide to put down popular unrest with the same fervor of Libya and Syria, the hands of U.S. foreign policy will almost certainly be tied.

Our domestic policies also failed us. Notwithstanding all the new laws that Congress has enacted since the oil embargo of 1973, we still have not solved our nation's energy problems. For forty years, we have had no effective response to what all eight presidents from Richard Nixon to Barack Obama have called our "addiction to oil."

When the embargo hit in Fall 1973, both oil and natural gas were subject to domestic price controls that held their prices substantially below market levels. Controls on interstate natural gas prices had been part of our regulatory landscape since the late 1930s. By the mid-1970s, unregulated intrastate natural gas prices were three or four times as great as interstate prices, despite lower transportation costs. In the harsh winters of 1977 and 1978, severe shortages in the Northeast and Midwest led to federal rationing among users.

Oil price controls were a more recent phenomenon, a creature of Richard Nixon's 1971 wage and price freeze, which he had instituted for political advantage – not for the plan's economic soundness. The president and his advisors had expected the freeze to last only ninety days, with a short thawing period to follow. But the plan did not play out as anticipated: a 118-page government report was needed simply to describe the four phases of rules and regulations and some of the effects of petroleum price controls from the August 1971 freeze until the end of 1975 – nearly six years before the controls would be lifted.¹ Price controls produced shortages of home heating oil; lower domestic oil, coal, and natural gas production; hoarding and black market transactions; uncertainty throughout the energy industry and among energy users; and the bestowing of favorable or unfavorable treatment on categories of buyers and sellers unrelated to considerations of fairness or

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efficiency – to name just a few unfortunate and unintended consequences.

Price controls for oil and gas remained long after other controls had expired. After a period of general controls, a large price explosion followed, ultimately contributing to the combination of high unemployment and high inflation – the dreaded “stagflation” – that would haunt the country in the 1970s. Keeping the prices of oil and natural gas artificially low not only decreased incentives to conserve energy but also diminished the prospects for successfully developing and marketing alternative energy sources.

The political struggle over whether to decontrol the prices of oil and natural gas proved to be the dominant and most contentious energy policy issue of the 1970s, inhibiting policy-makers’ ability to respond to a brand-new set of energy conditions. Decontrol of natural gas prices began after 1978, when Congress enacted extraordinarily contentious and complex legislation that slowly allowed prices to rise to market levels over a number of years. On January 28, 1981, eight days after being sworn in as president, Ronald Reagan used the unilateral power that Congress had given the president to lift all federal controls on oil and gasoline prices.

The contradictions of our energy policy in the 1970s had become apparent: Congress endeavored to keep oil and gas prices low to benefit energy consumers, while presidents and environmental organizations exhorted citizens to use less. But why would a homeowner or business make large capital investments in energy-saving windows or insulation, for example, when natural gas and heating oil were cheap? Artificially low prices for oil and gas also hampered the environmentalists’ quest for a “soft” energy path. The prices made it much more difficult for energy produced from the sun, wind, or other non-fossil sources to compete with fossil fuels.

“For more than nine years,” Reagan said, “restrictive price controls have held U.S. oil production below its potential, artificially boosted energy consumption, aggravated our balance of payments problems, and stifled technological breakthroughs.”² Right on all counts.

After we fulfilled John Kennedy’s promise by landing a man on the moon in 1969, presidents viewed committing the nation to a major technological project as proof of their vision and determination. It is therefore not surprising that our presidents sought a technological “silver bullet” to solve our nation’s energy problems. For Richard Nixon, the nuclear “breeder reactor” was the solution. Jimmy Carter placed his bets on fueling our cars with “synfuels” made from coal. Both cost billions, and both came to naught.

In Congress, the search for technological solutions to our energy problems presented another opportunity to distribute largesse to constituents and contributors. Congress became deeply involved in the business of picking winners and losers, awarding subsidies – whether in the form of direct spending or tax breaks – in such a way that their costs were often unrelated to the benefits they were intended to produce. Decisions about what to subsidize and by how much were, at best, arbitrary and capricious. At worst, they were wasteful and even nefarious.

The most comprehensive analysis of government energy R&D efforts in the 1970s, a book aptly titled *The Technology Pork Barrel*, concludes that the biggest R&D efforts of that period – the breeder reactor and synfuels projects – were “unambiguous failures” and that our overall energy R&D effort was “hardly a success.” Only the efforts to develop better and more economical photovoltaics for solar power garnered even passing marks from the authors.³

The greatest problems have been the tendency for Congress to place geographic considerations above technological and economic prospects, along with a pattern of boom-and-bust financing characterized by a debilitating mix of excessive optimism about technological developments, impatience for results, and a process of haste and waste. The synfuels program, for example, favored eastern over western coal for political, not technological, reasons.

Members of Congress frequently have insisted on their own personal priorities, directing funds to individual projects, locations, or institutions by earmarking projects. Between 2003 and 2006, for example, congressional earmarks in Department of Energy programs for energy efficiency, renewable fuels, and electricity production tripled from \$46 million to \$159 million, with earmarks accounting for about 20 percent of the total 2006 budget.⁴ By 2008, congressional earmarks totaled \$180 million, with an additional \$46 million directed to specific energy projects, including particular biofuel plants and green buildings.⁵ Earmarks that year accounted for one-half of the total R&D budget for biomass, one-third for wind, and more than one-quarter for hydrogen projects. The American Association for the Advancement of Science lamented that “earmarks eat up whatever increases there are for most energy programs and cut deeply into core R&D programs.”⁶ Clearly, many members of Congress have been more concerned with rewarding well-connected constituents and contributors than advancing science or promising technologies.

Federally financed R&D plays an important role in helping identify, develop, and induce the private sector to adopt the kinds of technological improvements that may ultimately enable us to shift from coal and oil to more climate-friendly fuels.

But the government’s spending priorities have not been set by scientists and engineers. Nor have government subsidies been neutral across products or technologies. Any way you analyze energy subsidies, you will find wide variations in their amounts relative to the fossil fuel savings they yield.

The “black liquor” scandal is the most notorious recent instance of the pitfalls of congressional efforts to pick and subsidize winners. Black liquor, a fuel by-product from the chemical production of wood pulp used in manufacturing paper, has been used as fuel to power paper mills since the 1930s. In 2007, Congress expanded the definition of alternative fuels eligible for a 50-cents-per-gallon tax credit to include a wide range of petroleum fuels containing biomass products. Paper companies soon discovered that by adding some diesel fuel to their black liquor they could become eligible for billions in tax credits. Instead of reducing the amount of petroleum fuel by substituting a biomass product, they added diesel fuel to the biomass simply to obtain tax credits. The U.S. paper industry garnered about \$8 billion from this gambit, having inadvertently become eligible for a tax benefit originally estimated to cost \$100 million.

If black liquor is the most scandalous beneficiary of energy subsidies, ethanol has been the most wasteful. In 1978, Congress enacted a 40-cents-per-gallon subsidy for ethanol used in gasoline. Unlike many other subsidies for renewable energy that were allowed to expire in the 1980s, the ethanol benefit has, until December 2011, consistently been extended at a level between 40 and 60 cents a gallon.

When ethanol subsidies were first enacted, the environmental activist Barry Commoner insisted that alcohol fuel could be produced at little or no additional cost and at a commercially feasible

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price simply as a by-product of farming. Commoner cited a Nebraska test suggesting that a mixture of 10 percent ethanol with 90 percent gasoline would result in 5 percent better gas mileage than gasoline alone.⁷ Who could resist the appeal of ethanol? It would help small farmers without increasing their costs and simultaneously produce a cleaner, more efficient automobile fuel as a by-product.

By providing large and ongoing subsidies, we have successfully substituted ethanol for a substantial amount of gasoline. But when one compares the costs of the program to its benefits, applause disappears. Despite Commoner's claims to the contrary, gasohol has a lower fuel economy than gasoline. According to a 1986 report by the U.S. Department of Agriculture, "Each gallon of ethanol contains about two-thirds as much energy as does gasoline."⁸ The Department of Energy concluded that gasohol-fueled vehicles average 4.7 percent fewer miles per gallon than gasoline-fueled vehicles. In July 2010, the Congressional Budget Office estimated that in 2009 ethanol subsidies cost taxpayers \$1.78 for every gallon of gasoline saved and \$750 for every ton of carbon dioxide emissions saved.⁹

Despite their shortcomings, ethanol subsidies, mandates, and tariffs have enjoyed great political support. First, farm states are represented by a substantial, bipartisan, and aggressive cadre of influential senators. Second, the special importance of Iowa as the earliest state to play an important role in our presidential nominating process and the importance of corn to that state's economy have led many a vocal ethanol opponent to reverse that position when running for president. Indeed, every president who has moved into the White House since the 1970s has made campaign commitments to support ethanol subsidies. Finally, key players from corporations that have made

the most money from ethanol have been exceptionally generous financiers of political campaigns. Thus, despite the waste caused by ethanol subsidies, and despite their status as a poster child for poor policy, they became very difficult to dislodge.

In the past and today, analysts of energy R&D efforts agree that success will require major institutional changes. Eliminating earmarks is a useful first step; multiyear budgeting for greater funding stability would be a second. Congress's diffuse and overlapping committee structure remains a fundamental problem, perhaps even "dooming the enterprise to failure."¹⁰ That structure, however, is very difficult to change.

Much greater neutrality in the incentives for technological innovations and commercial development is necessary. Trying to pick winners and avoid losers has proved to be a fool's errand.

In theory, if one wanted only to substitute more benign fuels for oil and other carbon-emitting fuels and cared little about curbing overall energy use, a subsidy for the favored fuel substitutes could work as well as a tax on disfavored fuels. Congress, for example, might either increase the gasoline tax by a dollar per gallon or subsidize alternatives by a dollar for every gallon of gasoline they save. Likewise, to combat climate change, Congress might impose a tax of, say, \$25 per ton on carbon-emitting fuels or grant a subsidy based on an equivalent amount of carbon dioxide emissions avoided. Either the tax or subsidy approach should decrease the costs of alternatives relative to the prices of oil, coal, and natural gas. In practice, however, taxes and subsidies operate quite differently.

For one, the burdens and benefits of taxes and subsidies are different. A tax imposed on the carbon content of fossil fuels, for example, would burden the pro-

ducers and consumers of carbon-intensive products. It would raise the price of coal-fired electricity, for example, compared to solar, wind, hydro, or nuclear power, which are carbon free. The tax would reduce demand for carbon-emitting products so that people would consume less, and producers of fossil fuels might also earn smaller profits. Consumers would face higher prices for much of the electricity, gasoline, or home heating fuels they use (although the revenues from the tax could be returned to the public or, for instance, used to reduce payroll taxes so that low- and middle-income consumers would not have less money to spend or save). In contrast, the costs of subsidizing alternative sources of energy would be financed by the public at large; the subsidies would increase the profits of those who produce the favored products and lower costs for those who use them.

Importantly, imposing a tax on disfavored fuels does not create any favorites among cleaner alternatives or among particular technologies. As we have seen when it comes to subsidies, however, our government often plays favorites. In response to a tax on energy, people might change a wide range of behaviors – such as turning off lights, lowering thermostats, driving less or more slowly, properly inflating tires, and maintaining their automobiles more consistently. Congress would have a hard time subsidizing these activities in anything close to an efficient manner. It is also virtually impossible to design a subsidy so that it does not provide an unnecessary benefit for behavior that would have occurred without the subsidy. Some folks, for example, will buy insulation or a more energy-efficient air conditioner or furnace (at least when the old one wears out) without any government subsidy. If half the amount of the favored activity would have occurred without a subsidy, the cost of a subsidy

doubles without any additional benefits. Limiting the benefits of a subsidy to generally incremental activity is impractical. *Michael J. Graetz*

But since the 1970s, U.S. policy has been to subsidize the production and consumption of fuels we want to encourage rather than to tax the use of fuels we want to discourage. Politics explains why. In 1971, Richard Nixon proposed a “sulfur tax” to curb the sulfur dioxide output of coal-fired power plants, which had just reached a new all-time high – the plants having doubled their output of this noxious gas every decade since 1940. Nixon garnered little support for this tax, however. Coal companies obviously opposed it; surprisingly, so did environmental groups, which shortsightedly criticized the level of the tax, claiming that the companies would pay it rather than investing in cheaper technologies.

Other tax proposals hardly fared better. In the 1970s, the Nixon administration announced that it was considering a substantial gasoline tax increase, but it quickly dropped the idea. Gerald Ford rejected any increase in gas taxes, despite support from Alan Greenspan, chairman of his Council of Economic Advisers. President Ford also fired his key energy advisor, John Sawhill, when Sawhill publicly suggested that gasoline taxes be hiked up to 30 cents a gallon. In 1975, the House Ways and Means Committee chairman, Oregon Democrat Al Ullman, proposed a substantial gasoline tax increase, but his plan was soundly defeated on the House floor and never even considered in the Senate. In 1977, Jimmy Carter proposed (as part of his comprehensive energy plan engineered by James Schlesinger) increasing the gasoline tax by a nickel per gallon each year for ten years, up to a 50-cent ceiling, for every percentage point that the nation’s gasoline consumption exceeded specified national goals. In March 1980, President Carter exercised the authority he had been

given by Congress to impose a fee on oil imports, designed to function similarly to a tax on gasoline; Congress then voted overwhelmingly to stop the import fee from taking effect. As an independent candidate for president in the 1980 election, John Anderson urged an increase in gasoline taxes of 50 cents per gallon, but he garnered only about 7 percent of the popular vote. In 1983, Ronald Reagan signed a gas tax increase of a nickel per gallon to provide additional funds for highway construction and mass transit.

In both 1990 and 1993, Congress came close to imposing a substantial tax on energy consumption, but the motivation then was deficit reduction, not energy policy. In 1990, many observers blamed Congress's failure to enact an energy tax on the fact that oil prices nearly doubled (from \$14 a barrel to \$24 a barrel between July and September) after Iraq invaded Kuwait. This price spike made it difficult for politicians to pile additional costs onto their constituents. When all was said and done, in 1990, Congress simply increased the federal gasoline tax by another nickel a gallon.

In 1993, when oil prices were again low (having fallen back to about \$14 a barrel), President Clinton urged Congress to enact an energy tax – a so-called Btu tax. After much presidential arm-twisting, the House of Representatives barely passed this provision – without garnering a single Republican vote. The Btu tax then died in the Senate. The following year, Republicans won a majority in the House of Representatives for the first time in a generation, defeating many House Democrats who had voted for the Btu tax.

In the Senate, as usual, regional politics inhibited sound policy. Higher energy taxes were opposed by a variety of regional interests, ranging from northeastern liberals worried about low-income constituents who burn home heating oil to

western conservatives worried about voters who drive long distances. Midwestern senators were particularly concerned about the potential impact of an energy tax on the international competitiveness of energy-intensive manufactured products, such as steel and chemicals. The Btu tax also foundered on the opposition of key senators from the oil-producing states of Louisiana and Oklahoma.

Following al-Qaeda's attack on the World Trade Center on September 11, 2001, George W. Bush might have rallied public opinion and Congress to support a substantial increase in gasoline taxes, an oil import fee, or perhaps even a broad-based energy tax to fund the military operations he launched in Afghanistan and Iraq. He never even considered such options, however, instead funding those ventures through borrowing.

Nor has President Obama demonstrated any intention of proposing a carbon tax, a gasoline tax, or any other tax to advance his energy policy goals – no matter how strong the merits. On April 16, 2008, debating Hillary Clinton in Philadelphia at a crucial moment in their campaign for the Democratic presidential nomination, Barack Obama pledged not to raise taxes on Americans earning less than \$250,000 a year. Hillary Clinton made a similar pledge. Obama repeated this pledge frequently during the 2008 campaign and after he took office: no tax increase for any family making less than \$250,000 a year. This promise, of course, seems to rule out a gasoline tax increase, any broader tax on petroleum fuels and products, or a new carbon tax.

Given the failures of energy subsidies and politicians' refusals to impose substantial petroleum taxes, a broad-based energy tax, or a carbon tax, one other major policy option remains: to require specified behavior through regulations or

mandates. Before the 1970s, the federal government played only a bit part in regulating energy use. The federal role consisted mostly of the Federal Power Commission's regulation of interstate natural gas; the Atomic Energy Commission's insistent promotion of nuclear power; the building of dams for hydroelectric power; and the leasing of federal lands for exploration of oil and natural gas. But by 1980 – after adding many thousands of pages of new laws and regulations – the national government had entered into every nook and cranny of our nation's energy policy, with federal regulations affecting virtually all aspects of energy production and consumption.

In 1974, for example, Congress required the administration to set specific energy-efficiency standards for thirteen household appliances and heating and cooling equipment. However, the executive branch under Presidents Ford and Carter dithered, and the Reagan administration refused to implement any such rules. Congress responded in 1987 by passing the National Appliance Energy Conservation Act, which not only set national standards for appliances, but also imposed deadlines for the Department of Energy to promulgate specific rules. In 1992, Congress extended energy-efficiency mandates to some lighting products and certain industrial and commercial technologies. More recent legislation further extended and tightened efficiency standards. States also continue to be active in regulation – with California the most aggressive.

Virtually all the federal and state regulations of the 1970s were of the “command and control” sort. Congress, the Department of Energy, the Environmental Protection Agency (EPA), and state authorities told producers and manufacturers exactly what practices were permissible and, frequently, what kind of technology had to be employed to attain

regulatory goals. Under the 1970 Clean Air Act, for example, federal regulators set air-quality standards for particular regions of the country, requiring state and local authorities to impose restrictions on individual polluters in order to meet the region's goals. (In some circumstances, the federal regulators told polluters directly what limitations applied to their emissions.)

Throughout that decade, such “command and control” regulations were increasingly criticized as wasteful, expensive, and often ineffective. Complaints about updating delays and ossification became commonplace. Litigation flourished, though with decidedly mixed results. Congress and the EPA frequently loosened and postponed standards they had originally set. For example, the 1970 Clean Air Act mandated that carbon monoxide and nitrous oxide emissions for new cars be reduced by 90 percent of their 1970 levels within five years. Automobile manufacturers soon insisted that achieving this goal was impossible, and by 1977, Congress had lowered the standards to about 50 percent reductions. Even this requirement was subsequently delayed until 1981. EPA enforcement actions frequently resulted in promises by industries to comply “sometime” or “pretty soon.”

As energy and environmental regulation came to the fore in the 1970s, economists began urging a regulatory innovation that we now know as “cap and trade.” Elsewhere in this volume, Joseph Aldy and Robert Stavins systematically discuss this and related incentives for controlling pollution, but for purposes of our discussion, here is how cap and trade works: Congress (or the EPA) determines the volume of emissions from a particular pollutant that will be permitted. The government then issues transferable allowances to emit a specified quantity of

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the restricted substance(s). For example, it might issue permits to emit one ton of carbon dioxide in any particular year, with the total number of permits adding up to that year's total permissible emissions. These emissions permits or allowances may either be sold – auctioned – by the government or given away; they can be used by their owners or sold to others. The fundamental idea is that sales (or “trades”) of the permits will operate to concentrate their ownership in companies that find it most expensive to curb emissions. Companies that are able to reduce or eliminate their emissions more cheaply than the price of the permits will do so, and then will sell their excess allowances to others who would otherwise have to spend more than the permits' price in order to curb their own emissions. In this way, market transactions allow emissions to be reduced in the least costly manner and avoid the wasteful additional costs that would occur under command-and-control regulations requiring each company to limit its own emissions to a government-specified level.

The most successful use of cap and trade to date, the Clean Air Act of 1990, instituted a pollution permit-trading program to tackle the problem of acid rain caused by coal-fired electric utilities. In applying the market-based cap-and-trade technique, Congress broke a legislative logjam that had prevented it from dealing with the acid rain problem for more than a decade. The Government Accountability Office estimated that cap and trade has saved business more than half the costs (up to \$3 billion a year) of command regulations. Recently, however, questions have arisen over whether too many permits have been issued, a common occurrence in cap-and-trade programs.

Even as cap and trade, with its cost-saving advantages over command-and-control regulation, has emerged as the pre-

ferred regulatory approach for addressing environmental problems, there has been considerable reluctance to transform pre-existing regulatory structures. Take, for instance, the Corporate Average Fuel Economy (CAFE) fuel-efficiency standards enacted in 1975 and phased in during the following decade. Even though the automotive industry took enormous advantage of the “light truck” loophole (read: SUV), which resulted in the number of light trucks growing by two-and-a-half times between 1979 and 1999 – from 22 percent of the nation's motor vehicle fleet to 37 percent – Congress waited three decades before revising the CAFE rules in 2007. The new rules prescribe fuel standards covering both light trucks and automobiles and, beginning in 2011, require average fuel economy to increase to 35 miles per gallon by 2020. In 2009, President Obama accelerated fuel mileage improvements, announcing that a new standard of 35.5 miles per gallon must be reached by 2016. In 2011, he announced that the EPA will issue new regulations requiring automobile manufacturers to double their cars' average fuel consumption from the current 27.5 miles per gallon to 54.5 mpg by 2025.

When the CAFE standards were first enacted in 1975, President Ford, who had long served in Congress as the representative of Grand Rapids, Michigan (a city about 160 miles from Detroit and itself home to an automobile manufacturer early in the twentieth century), had no enthusiasm for mandatory rules of any sort. Furthermore, the automobile industry and its powerful unions had another key ally in Congress: Michigan Congressman John Dingell, who chaired the key House subcommittee. As a result, the mileage requirements enacted in 1975 did little more than ratify changes already under way in the auto industry, with trivial penalties for failing to meet them.

Political journalist Elizabeth Drew of *The New Yorker* described the new standards as “in effect, a product of the Ford Motor Company.”¹¹ Because the mileage requirements were based on the average fuel economy of each manufacturer’s fleet, they favored the small cars from Japanese manufacturers, which easily met the requirements and, responding to Americans’ taste for larger cars, began to sell larger, less fuel-efficient brands, such as the Lexus and Infiniti. Despite its weaknesses, however, CAFE is regarded by many experts as the most effective conservation measure adopted in response to the OPEC oil embargo and price shocks of the 1970s. That, however, is faint praise. CAFE may rank among our nation’s most successful energy policies, but it is a long way from the best we might have had.

Unlike a gasoline tax, the CAFE standards create no incentive for people to reduce how much they drive. Economists have estimated that a gasoline tax of just 25 cents per gallon could have saved as much oil as the fuel efficiency standards at one-third the cost to the economy. Alternatively, a cap-and-trade automobile fuel efficiency regime would permit those manufacturers that are most efficient at increasing gas mileage to sell excess credits to firms that find increasing the mileage of their vehicles more costly. This would substantially bring down the total costs to auto manufacturers of complying with the mileage standards. Given the serious economic challenges that automobile companies now face, lowering the costs of complying with CAFE should be a national priority.

But President Obama is handcuffed. Although he worries about risks from climate change and wants to reduce our dependence on imported oil, persuading Congress to enact policies to reduce the regulatory costs of CAFE seems impossible. Pledges signed by virtually all Repub-

lican members of Congress take gasoline taxes off the table. Moreover, despite its conservative Republican pedigree and notable success in reducing emissions from electric power plants that cause acid rain, “cap and trade” has become an epithet in our political process, no matter how cost effective and limited in scope. Cap-and-trade regulations are so poorly understood by the public that political opportunities for mischaracterization and demagoguery abound. Thus, our dysfunctional politics keeps us mired in an inefficient regulatory structure enacted more than thirty-five years ago, while unnecessary costs to our fragile economy multiply. Either a cap-and-trade regime or a gas tax would eliminate more gasoline consumption at a fraction of CAFE’s costs. But no politician is now urging us to move in either of those directions.

In Spring 2011, Barack Obama announced his *Blueprint for a Secure Energy Future*.¹² The president said he would use the full force of government power to regulate, bribe, purchase, and cajole in order to transform how we produce and use energy in this country. He promised to open federally controlled property to more oil drilling and to expand production of domestic natural gas. He said he would deploy the might of the federal government’s spending power to purchase only hybrid, electric, and alternative fuel cars and trucks as well as to substitute biofuels for petroleum in military jets. President Obama also promised government “incentives” for a litany of oil-saving items and activities, including automobile batteries, electric fueling stations, high-speed rail and mass transit, energy-efficient building materials, and biofuels. Many (if not most) of the incentives the president promised will, unfortunately, take the shape of tax breaks, despite nearly a half-century of compelling evidence –

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from ethanol, wind power, black liquor, hybrid vehicles, and energy-saving home improvements, to name just a few – that such incentives are wasteful and inadequate to the task. President Obama also promised to tighten regulatory requirements governing automobile fuel efficiency, to extend such regulations to large trucks, and to adopt new federal requirements for the ways in which the nation’s electricity will be produced. Along the way – notwithstanding the then-recent troubles in Japan and subsequent moves away from nuclear power in Europe – he once again embraced nuclear power, and he even gave a thumbs up to that chimera, “clean coal.”

No doubt looking ahead to his 2012 re-election campaign, which he kicked off only a few days later, the president said his energy plan would require “tough” choices. But he did not ask the American people to do anything tough. He did not ask us to drive less or more slowly, to turn down our thermostats, or even to turn off the lights when we leave a room. Despite all his bold talk of policy initiatives, the president failed to explain how he planned to pay for his new spending incentives, saying only that this was a “fair” question to ask.

The phrase “cap and trade” was absent from the president’s remarks. This, of course, is what distinguished his 2011 energy speech from those he had made during the previous three years. Nor did he venture to suggest that we should tax what we want to reduce – petroleum use and electricity consumption from fossil fuels – and use the revenues that this would produce to reduce taxes on jobs or wages: things we want to increase.

Sherlock Holmes famously instructed us to be alert to a dog that fails to bark. In the large kennel of policies that the United States has deployed to address energy policy, one dog fails to bark – the same

dog that never barks. In the thousands of pages of energy legislation and regulations enacted since energy policy came to the fore in the 1970s, Congress has never demanded that Americans pay a price that reflects the true costs of the energy they consume. As I have described, for nearly a decade following the oil embargo of 1973, Congress refused even to allow the price of gas at the pump to rise enough to reflect the worldwide market price of oil. Today, not one of our political leaders urges a requirement that gasoline prices include, for example, the costs of keeping oil moving safely from the Persian Gulf into our gas tanks, or that our electricity prices reflect the costs of coal pollution. None is insisting that the price of fossil fuels should reflect the risks of climate change from greenhouse gas emissions.

The problem, of course, is that reflecting these kinds of costs in the price of energy would require taxing energy consumption, rather than subsidizing its production. And as our nation’s massive public debt reminds us, it is far easier for our government to spend than to tax. Despite all the costs our nation has paid in lives and treasure to keep oil moving from the Middle East to our gas tanks, past efforts to tax energy consumption offer no encouragement: Jimmy Carter failed in his effort to tax gasoline; Bill Clinton’s Btu energy tax plan suffered a resounding defeat. We should not be surprised that no American politician is now proposing that we tax petroleum use and electricity consumption from fossil fuels.

We will continue our quest for a technological panacea, pretending that such a search is separate from any need to insist that energy prices reflect their true costs. In the absence of a carbon tax or a cap-and-trade system for curbing greenhouse gas emissions, the outlook for carbon-free alternatives does not seem bright. The

Fukushima disaster has made a wary public more fearful of nuclear power, and bets are now off for a “nuclear renaissance” in the United States. Some analysts claim that ongoing improvements in solar technology will drive the costs of solar power below that of coal a decade hence, but we have heard similar hopes before, and they have not been realized.¹³ Energy efficiency continues to improve, but the absence of appropriate incentives inhibits progress on that front.

Higher prices and expectations that expanding demand from rapidly developing economies, especially China and India, will keep prices robust have stimulated important technological breakthroughs for natural gas and oil. The ability to extract oil and gas from shale through hydraulic fracturing, or “fracking” – in which a high-pressure mixture of chemicals, sand, and water is used to open cracks in rocks and allow oil and gas to flow into wells miles below the earth’s surface – now offers the potential to keep our cars and trucks running without relying on the flow of oil from the Middle East. And we could significantly lower our greenhouse gas emissions by substituting natural gas for coal in generating electricity, if we could only muster the political will to do so.

In the meanwhile, we will continue to rely on second- or third-best policies – government purchases, unnecessarily costly regulations, poorly designed subsidies – even though, given our nation’s fragile economy, our difficult fiscal condition, and the daunting challenges of simultaneously limiting climate change and achieving energy security, we have never been more in need of cost-efficient and effective energy policies.

As our failed energy policy story has unfolded – in all its complexity – many villains have come to the fore, including,

no doubt, the OPEC cartel and some of its members in particular. At home, we have suffered from poor leadership from both ends of Pennsylvania Avenue, with short-term political expediency trumping sensible long-term policies. Key legislators far too frequently have elevated parochial interests over our national needs and have been led astray by the potential for short-term partisan gains. Our political leaders have also often been seduced by sweet visions of technological silver bullets around the next corner. Environmental organizations have sometimes insisted on unrealistic goals, now and then forged inapt alliances, and been used to further elite, not-in-my-backyard (NIMBY) agendas. Energy companies have frequently underestimated risks and shifted to taxpayers costs that the companies themselves should properly bear.

Amid all the currents and crosscurrents, however, one character plays a particularly central role: price. Although our government has enacted thousands of pages of energy legislation since the 1970s, it has never demanded that Americans pay a price that reflects the full costs of the energy they consume. Nothing that we did or might have done has had as much potential to be efficacious as paying the true price. The contrast with tobacco, for example, in which taxes have been used over time both to reduce its consumption and to help finance some of the costs it imposes on public budgets and society, could hardly be more stark. This failure, alongside quite a few others, accounts for the state of affairs we face today.

Despite all the laws Congress has enacted since 1973, our policies have always been inadequate. The weekend following President Obama’s Spring 2011 energy policy speech and the simultaneous release of his *Blueprint for a Secure Energy Future*, many newspapers ran a cartoon by Jeff Stahler depicting the eight presidents

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from Richard Nixon to Barack Obama, each supplying one word of the refrain: “We must reduce our dependency on Mideast oil.” Nearly a year earlier, after President Obama delivered his first Oval Office address to the nation, setting forth his energy policy goals following the BP oil spill in the Gulf of Mexico, Jon Stewart of *The Daily Show* played clips from the same eight presidents – all promising to

end our dependence on oil, all offering other energy alternatives, and all setting deadlines for reaching their goals. The problem, of course, is that forty years of energy policy failures is not funny. But our history offers little cause for optimism. Knowing our past failures may not be enough to prevent us from repeating them.

ENDNOTES

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- ² Ronald Reagan, “Oil Decontrol Statement,” *The New York Times*, January 28, 1981.
- ³ William M. Pegram, “The Photovoltaics Commercialization Program,” in *The Technology Pork Barrel*, ed. Linda R. Cohen and Roger Noll, with Jeffrey S. Banks, Susan A. Edelman, and William M. Pegram (Washington, D.C.: Brookings Institution, 1991).
- ⁴ Fred Sissine, *DOE Budget Earmarks: A Selective Look at Energy Efficiency and Renewable Energy R&D Programs*, RL 33294 (Washington, D.C.: Congressional Research Service, March 3, 2006).
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- ⁷ Barry Commoner, *The Politics of Energy* (New York: Random House, 1979), 41 – 44.
- ⁸ Earle E. Gavett, Gerald E. Grinnell, and Nancy L. Smith, *Fuel Ethanol and Agriculture: An Economic Assessment*, Agricultural Economic Report No. 562 (Washington, D.C.: U.S. Department of Agriculture, August 1986).
- ⁹ Congressional Budget Office, “Using Biofuel Tax Credits to Achieve Energy and Environmental Policy Goals,” July 2010, <http://www.cbo.gov/doc.cfm?index=11477&zzz=40959>.
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- ¹¹ Elizabeth Drew, “The Energy Bazaar,” *The New Yorker*, June 21, 1975, 35 – 72.
- ¹² *Blueprint for a Secure Energy Future* (Washington, D.C.: Executive Office of the President, March 2011), http://www.whitehouse.gov/sites/default/files/blueprint_secure_energy_future.pdf.
- ¹³ Ramez Naem, “Smaller, Cheaper, Faster: Does Moore’s Law Apply to Solar Cells?” *Scientific American* blog, March 16, 2011, <http://blogs.scientificamerican.com/guest-blog/2011/03/16/smaller-cheaper-faster-does-moores-law-apply-to-solar-cells/>.