Chapter 1

Choosing Energy

In August 2014 New Jersey governor Chris Christie quietly vetoed bipartisan legislation that would have prohibited the state from accepting wastewater produced by the extraction of gas and oil in neighboring states, particularly Pennsylvania, home to one of the country's most intense energy booms. Christie did not explain his decision, except to note that refusing the wastewater and finding ways of disposing it was at odds with the U.S. Constitution's rules governing commerce. There was no substantive discussion on the governor's part about the underlying concern that the state legislature sought to address, which was that wastewater from the process called hydraulic fracturing, or "fracking," is laced with toxins like benzene as well as radioactive elements, which, should they be brought into the state and disposed of locally, constitute a clear threat to New Jersey's public and environmental health.

It was not the first time the state legislature had attempted to address fracking. In 2012 legislators passed a bill that sought to ban it completely. It was a largely symbolic effort, since New Jersey is not home to rich energy deposits like its neighbors. Even so, Christie convinced the legislature to pass only a one-year ban instead, pending further study of fracking's dangers.

There are powerful reasons for concern about the dangers of treating and disposing of fracking waste. New Jersey has a dreadful legacy of toxicity and polluted landscapes. Its most

dubious distinction is being home to the most Environmental Protection Agency toxic Superfund sites in the United States, places that are so contaminated that they are designated as particularly dangerous and marked for cleanup. Avoiding adding to the state's toxic woes should be a clear priority. Beyond the history of pollution and toxic dumping and the consequences of the state's industrial rise and fall, there are urgent concerns that are particular to fracking in Pennsylvania and the wastewater it produces.

Part of the concern is volume. Home of the Marcellus Shale Formation, a geological formation that contains trillions of cubic feet of natural gas, Pennsylvania is drilling and fracking for gas and oil on an unprecedented scale. Fracking involves injecting millions of gallons of water at high pressure into rock or shale that contains trapped gas and oil. The water has been laced with sand and chemicals to increase its destructive power and prevent blockages in the wells. The injected water helps break apart shale rock and frees gas to travel back up the well. Around 80 percent of the water injected into wells travels back to the wellhead, where it is temporarily stored on site and then trucked away for disposal. Because it contains chemical and other elements, water used for fracking is unsafe simply to dump in local rivers. It must be treated in order to remove as many of the toxins as possible before its final disposal.

The recent energy boom, which has seen fracking for oil and gas rise dramatically in the past decade in Pennsylvania and other parts of the United States, has produced much more wastewater than ever before. Since 2004 the volume of Pennsylvania's wastewater has increased by perhaps as much as 570 percent.[1] Because the energy industry does not disclose details about the quantity of water it produces and uses, this figure is an estimate. But it is conservative to suggest that tens of millions of gallons of wastewater are now produced annually. Drillers use as much as four million gallons of water each time

they frack a well. With thousands of gas wells in operation in Pennsylvania, and many more being planned, the volume is significant. Indeed it has overwhelmed Pennsylvania's capacity to manage it. Brian Lutz, a scientist who studies fracking and water, remarked in an interview in 2013 that channeling wastewater through treatment facilities had "been Pennsylvania's go-to method for decades" but that "these systems [are now] being overwhelmed. They were just taking too much waste, leading to water quality problems," and "there simply isn't [enough] disposal infrastructure in place."[2]

Pennsylvania's struggle to manage this massive volume has led drillers to seek more distant sites of disposal. Over the past decade, as wastewater levels have risen, Pennsylvania-based drillers have shipped or tried to ship their waste to New York, West Virginia, Ohio, and even Michigan. Aside from volume and the problem of infrastructure, there are more pernicious and dangerous reasons why Pennsylvania is struggling to manage the wastewater problem. Most important are the environmental and health dangers posed by the water itself and the invisible threats that inhabit it.

The energy industry has mostly resisted disclosing the makeup of the cocktail of water, chemicals, and sand that it blasts into its fracking wells. As a result of recent pressure and scrutiny, driven by anxieties about their health from those who live near fracking activity, some companies have made available limited information about their chemical use. Fracking water, also known as produced water, contains a range of hazardous and carcinogenic materials, including benzene, arsenic, and various acids. In spite of protests from the energy industry that its practices are safe, there is increasing evidence of pollution from spills, from the seepage of fracking water underground, and from industrial negligence. (These patterns and the politics around them are examined in more detail in the second essay of this volume.) The energy industry's habits

in Pennsylvania and its reliance on toxic water to maximize the extraction and production of gas are not exceptional. What is pumped into Pennsylvania's wells resembles similarly produced water elsewhere.

What distinguishes Pennsylvania, and thus the character of the threat, from most other centers of oil and gas extraction is the amount of radium and other radioactive elements that flow back out of the well with the wastewater. Radium is naturally occurring, a misleading point often offered up by energy companies that seek to downplay the risk. Although radium is indeed naturally occurring, it would normally remain hidden deep underground if not for fracking.

Fracking's radioactive consequences have been reported across the United States, including in West Virginia, North Dakota, and Colorado. But drilling in the Marcellus Shale is particularly likely to create radioactive dangers. In 2011 the U.S. Geological Survey published a report arguing that the levels of radioactive radium, uranium, and thorium in wastewater from the Marcellus Formation were far higher than elsewhere. This higher concentration likely comes from large saline water aquifers in the region's Appalachian Basin.[3] There are several dangers from high levels of radioactive materials dredged up from fracking. Water treatment facilities can theoretically remove them, although observers believe doing so is made more difficult as the volume of water being treated grows exponentially. Volume, then, matters. In addition, while humans may not come into direct contact with or drink radioactive water, there are still significant environmental risks that threaten public health. Like other toxic materials, once produced water settles into the ground or leaks into freshwater and is ingested by fish, livestock, or other animals or is exposed to plants, the radiation it emits can alter the plants' and animals' biological makeup. Over time the cumulative effect can be quite dangerous.

There are direct threats to people who come into contact with radium. Susan Phillips, a journalist based in Pennsylvania who has written extensively about the risks of fracking, notes that while the Environmental Protection Agency (EPA) concedes that human bodies can "eliminate the bulk of radium" that gets ingested or inhaled, any exposure nevertheless raises the likelihood of lymphoma, bone cancer, and leukemia and other blood-related diseases. She quotes the EPA, which states that "these effects take years to develop. External exposure to radium's gamma radiation increases the risk of cancer to varying degrees in all tissues and organs."[4]

Pennsylvania's Department of Environmental Protection was sufficiently concerned about the increase of scientific evidence for the radioactive dangers of wastewater in 2013 that it commissioned its own study from the Atlanta-based waste management firm Permafix. Permafix issued a report in January 2015 that argued that the risks of direct radioactive exposure to the public or to workers at treatment facilities were limited. Handled correctly, Permafix claimed, radioactive wastewater and solid waste, like the mud or sludge that such water is often mixed with, have a low likelihood of significant danger. The report's conclusions hinged on safe handling. Permafix noted that spilling or negligent handling, which might dump wastewater into the environment inadvertently, would be cause for alarm.[5] The message is that while the waste itself is dangerous, proper management and expertise will assure limited risk.

There are several reasons to be skeptical of Permafix's conclusion. The company's faith in technological management and the power of proper handling deserve scrutiny. Faith in technology and the power of experts to handle dangers has a long history in the United States and elsewhere, despite how frequently they fail. The energy industry is no exception to failure, including in managing the waste it produces. The reality is that as drilling and fracking have intensified in

scale, so too have spills and leaks and accidents. In 2014 there was on average at least one reported wastewater spill a week in Pennsylvania.[6] Spills are supposed to be reported directly to state authorities, a regulatory demand that some energy companies observe. Others do not. The scientific and activist collective at Fracktracker.org uses community resources and crowdsourced reporting to build empirical data and mapping analysis of wastewater contamination and other energy industry practices that threaten the environment and public health. The evidence is overwhelming that, even if well intended and committed to caution, the energy industry is confronted with so much waste that it is impossible to handle it all safely and effectively. In early January 2015 almost three million gallons of wastewater produced by the oil and gas industry in North Dakota spilled through a broken pipeline into a creek system just fifteen miles outside the city of Williston. The size of the spill is remarkable, although it is not unprecedented. Millions of gallons of waste have spilled into some of California's freshwater aquifers in the past few years. Perhaps what is most remarkable about the spill in North Dakota is that it took Summit Midstream Partners, the company that operated the leaking pipeline, several weeks to determine the size and scale of the spill.[7] When it comes to the scale of the threat and the magnitude of the potential dangers, even the energy industry is not always fully aware.

There is also evidence that the regulatory and safety burden state and national environmental agencies impose on energy companies is often disregarded. Not all energy companies seek to outmaneuver expensive environmental and health regulations, but some do. Illegal dumping and attempts to escape regulatory oversight have been reported all over the country. Scott Radig, who oversees North Dakota's waste management operations at the state's Health Department, told a reporter at Bloomberg, "Some [waste] ends up in roadside

ditches, garbage dumpsters, or is taken to landfills in violation of local rules."[8]

While the findings of Permafix likely soothed some Pennsylvania officials' anxieties, state regulators there and elsewhere have sought to minimize risks by restricting the amount of radioactive and other toxic threats in their own facilities and landfills. In chasing energy and seeking to capitalize on the prize beneath its soil, Pennsylvania has sought to export the toxic detritus that comes with it.

Not everyone has been happy to go along with the energy industry's effort to export its waste. Neighboring states like Ohio and West Virginia have begun to impose their own definitions of what kinds of radioactive and toxic waste can safely be managed. This has led drilling companies to search farther afield for places to dump their toxic waste, creating increasingly expansive radioactive geographies. Thus more and more communities are being confronted with potential risks, which are alarming no matter the reassurances of companies like Permafix. In August 2014 thirty-six tons of solid radioactive Pennsylvania fracking waste, too radioactive for Pennsylvania itself, was rejected by a landfill in West Virginia. The waste, collected by the drilling company Range Resources, was eventually shipped to Michigan, which does not have rigid guidelines for disposal.[9]

PRESSED WITH THE CHALLENGE of managing so much waste and wastewater, it is hardly surprising that energy companies in Pennsylvania would like to see New Jersey help solve the dilemma. It is disheartening that, in spite of the risks, Governor Christie has demonstrated so much accommodation. Why is he willing to have residents in his state assume risks associated with fracking and the energy boom?

There are a number of factors informing Christie's decision, some of them likely directly related to his political ambitions.

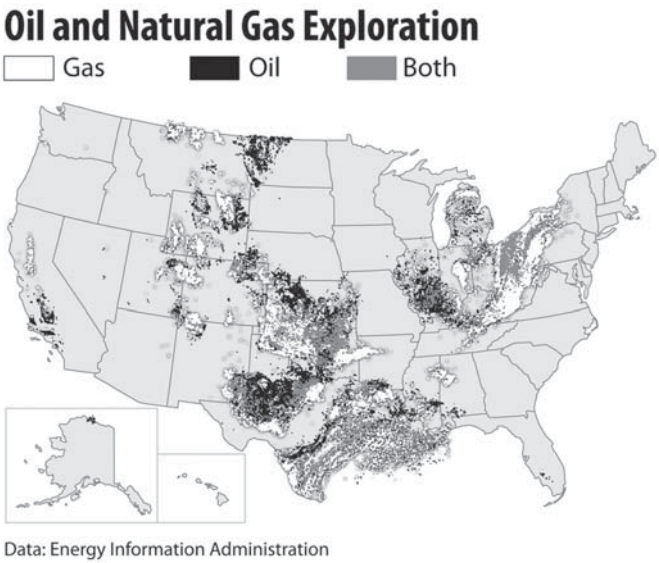

Figure 2. Map of gas and oil exploration in the United States today. Map used with permission and compliments of The Need Project, www.need.org.

It has long been the case that those who aspire to political office, particularly the presidency, cozy up to the moneyed classes. And there are fewer classes more wealthy and powerful than the forces behind Big Energy. Christie has left little doubt that he is committed to supporting the energy industry's interests, even at the expense of public and environmental health.

In December 2014, just months after vetoing the wastewater ban, Christie went to Calgary, Canada, where he met with and expressed his devotion for the chief executive of the corporation that seeks to build the Keystone XL pipeline from Canada to the Gulf of Mexico. Christie delivered remarks, almost certainly as a booster for the industry and the XL pipeline, at the Calgary Petroleum Club. It is important to consider why Christie, known as a brazen political operator, chose this venue and why energy receives the kind of support that was on display in Calgary. Doing so will also allow for some reflection

on why energy and supporting the pursuit of it has been privileged over concerns about public health, the environment, and living with the potential risks of our dependence on carbon-based fossil fuels.

The prospect of the Keystone XL pipeline has generated both massive opposition and massive support. Advocates argue that the pipeline is essential for making up to 830,000 barrels of Canadian oil available for consumption in a world that has a seemingly unlimited thirst for petroleum.[10] Its most powerful and outspoken backers are fellow members of Christie's Republican Party, which just a month earlier enjoyed a sweeping electoral victory, gaining seats and power in the U.S. Congress. It was widely anticipated that among the new majority's first acts once seated in January would be to put forward congressional support for building the pipeline. The pipeline's opponents have doggedly cited the dangers it poses to the environment, particularly from spills and leaks, and have questioned its ability to satisfy energy demand or create jobs.

These disagreements over the pipeline adhere to familiar partisan political fault lines between Republicans and Democrats, especially after President Barack Obama stated in January 2015 that he would veto any legislation supporting its construction. He did so in February. The reality is more complicated. Obama has not opposed the pipeline because of its environmental risks, at least not publicly. In fact he and other major Democrats are as enthusiastically supportive of the energy industry in general as Christie is. His opposition to the legislation has more to do with Beltway politics than environmental principle. For now, however, Obama is waiting for the U.S. State Department, whose involvement is mandated in matters like the Keystone XL pipeline, which crosses national borders, to make its determination before he decides his level of support.

Christie has left little doubt about his support. In Canada he remarked, "On the merits, Keystone should have been approved a long time ago. . . . It is time—well over time—to get this done." He dismissed concerns about safety, saying, "You know, in the United States, we already have over 2.2 million miles of pipeline. Canada has tens of thousands of miles of pipelines. In both cases, the safety record is sound."[11] His enthusiasm was called into question a month later, when 40,000 gallons of oil spilled into the Yellowstone River in Montana, rendering water undrinkable for thousands of residents near the town of Glendive.[12]

It is tempting to criticize Christie for traveling thousands of miles from New Jersey to stump for the energy industry, to argue that he is grandstanding on an issue that is increasingly central to national Republican Party operatives and yet distant from the concerns of those he actually represents, or to dismiss his behavior as opportunistic. After all, he has a demonstrated record of carefully crafting his political image and recklessly pursuing self-interest. But such criticism would be mistaken. Equally mistaken would be to view Christie's energy politics through the lens of contemporary political partisanship in the United States. While the Republican Party has been particularly enthusiastic about the Keystone XL pipeline, the reality is that support for and from Big Energy transcends party affiliation. Democrats are perhaps not as callous or outspoken in their public support for the domestic energy industry, largely because many Democratic officials recognize that part of their base opposes the industry; nevertheless they support it fundamentally. The 2014 Democratic-controlled Senate fell only one vote short of authorizing the construction of the pipeline.

With all of its wealth and power to shape campaign treasure chests, the energy industry has likely purchased much of its support, although its success has not been due solely to corruption and the influence of money. The reasons for the

industry's success are rooted in the particular ways that energy and especially oil were prioritized and privileged in the United States in the late twentieth century.

I suggest that understanding why supporting energy seems to consistently trump protecting the environment requires a look at developments in the late twentieth century, particularly the moment when the possibility of setting American energy policy on an environmentally friendly course was lost. Since the 1970s American policymakers and the public have struggled to reconcile contradictory interests: the country's dependence on oil and a growing concern for the environment and public health. Presented with the choice of protecting the environment and pursuing potentially more expensive but unquestionably healthier and more sustainable energy choices, or continuing to be dependent on oil, gas, and coal, Americans have mostly chosen the latter. Protecting the environment has been rendered a secondary concern at best. Particularly with the rise of an antiscience political class that has sought to undermine efforts to stem climate change, environmental dangers and concerns have been dismissed as unfounded. This latter development is often a corporate-backed assault, but there are other forces that explain why carbon-based energy has retained primacy at the expense of other possibilities and at the expense of the environment. Some of these have to do with the social and cultural consequences of oil in the early twentieth century and their lasting legacy on the ways we live in the world. Others reflect a particular kind of national politics and anxieties about security that took shape in the closing decades of the century.

OIL, OF COURSE, has been central to the making of modern America since the closing decades of the nineteenth century, when it emerged as a critical source of power for industry and transportation. It has been the quintessential industrial

commodity ever since. One of oil's advantages in the United States was that for the first two-thirds of the twentieth century, it was plentiful at home. The oil patches of Pennsylvania, Texas, Oklahoma, Louisiana, and California produced enough to satisfy the needs of rapid industrialization and the resulting social and technological changes. Lighter and more efficient than coal or wood, it quickly displaced potential energy alternatives. For oil producers, both large and small operations that sought to profit from drilling and marketing American oil, the problem was never that oil was scarce. Rather, much of oil's early history in the United States and even globally was marked by concern that there was too much of it. So much easy oil facilitated rapid dependence. Just as important, it also rendered oil an afterthought, a source of power readily available and with so little effort that its abundance and cheap cost were taken for granted.

But by the end of the 1960s, America's appetite for oil ran up against lagging domestic production. The golden era of American oil was over. It is not that America had run out of oil but that the easy-to-get oil was being depleted. Accessing deeper oil, trapped in shale formations and located in remote outposts, was prohibitively expensive, especially considering that there was plenty of oil available globally. The decline in American resources was unsettling for policymakers, who worried about the potential leverage that foreign suppliers might command over the U.S. economy.

Of course, not everyone shared this anxiety. As late as the late 1960s it was still the case that the largest supplies of global oil were under Western corporate dominance. Powerful European and U.S. oil companies had expanded globally in the early twentieth century, even helping to shape the borders of the Middle East, where the world's largest oil supplies exist, in the interest of securing a foothold there. U.S. and European corporate dominance would pass by the

1970s, however, as Arab states began to take direct control over their own oil, underscoring a deepening sense of anxiety that was beginning to become clear in the 1960s. Much of the oil consumed in the United States was still domestically produced, and most of the important energy companies, at least those that refined, transported, and made oil and gas available for consumption in the United States, were American. But not all American demand could be met through American sources. Gaps in supply had to to be filled from abroad, leading to concerns about potential shortfalls and anxieties that oil would be increasingly scarce and hard to come by. Alarm about scarcity and having to rely on foreign production, on states in the Middle East to extract and make available the crude oil that would be turned into gas, to meet domestic needs was growing.

No longer able to rely fully on its own supplies, the United States was settling into an era that Presidents Richard Nixon, Gerald Ford, and Jimmy Carter, along with a generation of policymakers and consumers, characterized as one of "crisis." The long energy crisis of the late twentieth century was first given expression by Nixon, who began to be alarmed by rising energy prices and the specter of scarcity in 1968. Three years later he outlined what became a central occupation of his administration and those of his immediate successors, arguing that "a major cause of our recent energy problems has been the sharp increase in demand that began about 1967. For decades, energy consumption had generally grown at a slower rate than the national output of goods and services. But in the last four years it has been growing at a faster pace and forecasts of energy demand a decade from now have been undergoing significant upward revisions."[13] Nixon called for a sweeping new approach to energy, a way of thinking about oil, its production, and consumption that was increasingly complex and tinged with urgency and fear. He also called for the energy industry, and its

protection, to be better integrated into the American political system, which required greater federal oversight.

The long energy crisis, as the Yale University historian Paul Sabin has written, developed at the same time as a growing set of concerns about environmental protection. But while environmental protection would grow teeth in the 1970s, this development did little to alter American dependence on petroleum. Some growing environmental concerns were connected directly to oil, as was the case after the 1969 oil spill off the coast of Santa Barbara, California, which, along with hundreds of smaller spills by the early 1970s, brought attention to the risks of extracting oil and transporting it by pipelines. More generally, though, emerging environmental politics were based in apprehensions about industrial and chemical dangers lurking in landscapes and bodies. Rachel Carson's book *Silent Spring*, published in 1962, about the dangers of pesticides to ecological systems and public health, kindled concern about unregulated industrial agriculture. Carson's call for greater efforts to protect the environment received a boost with the 1969 Santa Barbara spill and when the Cuyahoga River near Cleveland, "awash in refinery waste and other debris," caught fire six months later.[14] By 1970, when millions of people marched in support of the first Earth Day, it seemed that the environment's moment was at hand.

National attention and concern produced what appeared to be meaningful policy outcomes. President Nixon created the Environmental Protection Agency in 1970 and ushered a series of water protection measures through Congress early in the decade. Confronted with declining oil production in the early 1970s and growing national concerns about dependence on foreign oil, Nixon sought to reconcile the energy crisis with the new environmental politics. In April 1973 he asked for a more robust and careful approach to energy, including increasing domestic energy production wherever possible (opening

Alaska to exploration), energy conservation (lowering consumption), and embracing the need to import more oil. This last point was particularly tricky, as domestic producers had enjoyed protections from foreign competition, including caps and taxes on imports. Nixon forged ahead, lifting tariffs on oil on April 18, promising, "This action will help hold down the cost of energy to the American consumer."[15]

In pushing for expanded access to foreign oil and for finding more sources of domestic production, Nixon sought to straddle the line between making more energy available and protecting the environment. He was also "striv[ing] to meet our energy needs at the lowest cost consistent with the protection of both our national security and our natural environment." He suggested the country's energy and environmental needs could be managed together: "In determining how we should expand and develop these resources, along with others such as nuclear power, we must take into account not only our economic goals, but also our environmental goals and our national security goals. Each of these areas is profoundly affected by our decisions concerning energy. If we are to maintain the vigor of our economy, the health of our environment, and the security of our energy resources, it is essential that we strike the right balance among these priorities."[16]

Nixon's hope of managing an energy policy while protecting the environment ultimately failed. Over the next few years efforts to regulate environmental protection would continue, but they did little to alter the central importance of oil. Indeed oil and the demand to protect "access" to it globally would supplant environmental concerns. The terms in which this divide took shape involved the stark language of crisis and the rise of a new kind of political emphasis on energy security and the pursuit of energy independence, a way of thinking about energy policy that aspired to an era of oil plenty lost with declining production in the late 1960s. The country's leaders talked of an energy crisis, which they explained as a looming

danger that sufficient oil would not be available to meet American needs from secure sources.

It is worth reflecting on this. The anxieties around energy in the 1970s had little to do with material, environmental, or political consequences of being dependent on oil itself. Rather Americans feared being dependent on oil from foreign sources. The emerging sense of crisis could have generated a meaningful push toward alternative sources of energy. President Nixon, those around him, and observers everywhere began to talk openly about pursuing non-carbon-based energy sources, but the pursuit was almost entirely rhetorical. Very little was done to accomplish a break from oil.

It is not hard to understand why. Oil had become so dominant, had shaped social and other relations in such fundamentally meaningful ways, and even at the beginning of the crisis was still cheap enough that actually pushing an alternative energy agenda would have come at considerable cost. The early 1970s clearly marked a moment when an opportunity was lost, but it bears acknowledging how difficult ushering in a post-oil moment would have been. Consumers would have borne most of the expense of any transition. Just as important, the corporate forces behind oil and gas would have stubbornly resisted. And they had the power to mount significant opposition.

The oil companies were undergoing their own transition and expansion, steadily transforming into larger and more complex corporate entities, becoming Big Energy in the late 1960s with power not only over oil but increasingly over more disparate sectors of the energy industry too. Joe Stork, who wrote about the energy crisis in the middle of the 1970s, documented that besides owning large parts of oil production in the United States and globally, the energy industry moved into natural gas, coal, and nuclear power. With increasing control over a vast range of resources and markets, the energy industry,

which sought profit over security, was a powerful barrier to any kind of post-petroleum transition. It remains so today.[17]

While many both inside and outside of the establishment recognized that the environment was imperiled, there was no widespread corresponding urgency about what it meant for the environment to be threatened, at least none that rose to the level of the crisis talk about energy. Because environmental damage was often hard to measure, sometimes taking years to manifest, and was not always clearly linked to social and economic needs, it was not viewed in terms as stark as oil and energy needs. Sabin has argued that activists and those most engaged in environmental matters made no particular effort to distinguish oil as exceptionally or particularly dangerous to the environment or to public health. It was enough to try to sustain a broadly conceived approach to the environment in which oil was one concern among many. Because of petroleum's pernicious impact on the environment ever since, and especially its climate effects, in hindsight this seems to have been a bad strategy. However, once access to oil rose to the level of national vulnerability and was marked as part of an unfolding crisis, there was little rhetorical or political space to single it out critically.

Crisis talk spiked in frequency and urgency in the early 1970s. Commentators speculated that there was potential for yet more serious trouble, especially as perceptions crystallized that the United States was increasingly dependent on and vulnerable to foreign supply shocks and that, with tensions growing in the oil-rich Middle East in particular, oil producers around the world that were critical of U.S. foreign policy might decide to use oil as a weapon. These worries seemed to be realized in the fall of 1973, when the most powerful oil producers in the Middle East announced an embargo against the United States. The combination of war and geopolitical anxiety that shaped the Middle East in 1973 and 1974 also left a lasting imprint on U.S. energy policy and the ways American

policymakers and consumers would come to think about oil, and it helps explain why energy and oil would come to enjoy greater status than protecting the environment.

The oil embargo followed the outbreak of war between Israel and Egypt in October 1973. Hoping to regain Israeli-controlled territory in the Sinai Peninsula and pressure the United States into becoming an active broker in long-standing tensions with Israel over its regional role and the fate of Palestine, Egypt launched a surprise invasion against Israeli forces east of the Suez Canal. The attack, which caught Israel off-guard, led to initial battlefield success for the Egyptians and Israel's request for material U.S. support. The United States obliged, providing several billion dollars' worth of equipment in the midst of the fighting and prompting outrage from the region's oil producers. Led by Saudi Arabia, the Arab members of the Organization of the Petroleum Exporting Countries (OPEC) imposed an oil embargo against the United States and a handful of other Western countries. It lasted until March 1974.

The impact of the October War and the oil crisis of 1973–74 was wrenching and long-lasting. The embargo came at a difficult economic moment for Americans, who were struggling with inflationary pressures and generally anxious about economic malaise and energy and its availability. The embargo angered many Americans, who saw it as evidence of vulnerability. These anxieties were compounded in the fall and winter of 1973 and 1974, as consumers were confronted with long lines at gas stations and scarcity in the heating oil market. Fear of foreign oil power alongside frustration at not being able to access what was once so available helped shape what would become a deep antipathy toward Arab oil producers. It did not help that foreign producers were also raising their prices, led by Iran. Price levels, which had historically been controlled by oil companies and kept low, rose from $3 a barrel to over $12

in the spring of 1974. Prices would move even higher before flattening out a decade later.

However, the material impacts of the embargo have often been overstated. As Joe Stork, Timothy Mitchell, and others have demonstrated, the embargo was largely ineffective in keeping oil from the United States.[18] There was no actual shortage; the long gas lines were the result of Nixon's putting in place a rationing policy that limited sales and an overstressed refining capacity. These details have yet to be fully appreciated by historians. The dominant narratives that took hold during and immediately after the embargo placed blame on and directed anger toward the large oil producers in the Persian Gulf. Belief that the United States was a victim of avaricious oil sheikhs who aimed to expose and capitalize on American energy vulnerabilities has persisted ever since. Much is lost in this way of thinking, including the initial impetus for the embargo and rising prices: America's Middle East policy, its disregard for Palestine, and its political and material support for a rapidly militarizing Iran, which sought expensive American weapons and needed high oil prices to buy them.

In addition to growing anti-Arab sentiment, other responses to the oil embargo have shaped energy policy and the collective American embrace of oil, particularly at the expense of the environment. The first was Americans' belief in domestic oil scarcity and the corresponding vulnerability from having to rely on foreign oil. Nixon's response in the fall of 1973 was to accelerate the energy policies he had outlined the previous spring. To survive the crisis he imposed significant limits on consumption: "In order to minimize disruptions in our economy, I asked on November 7 that all Americans adopt certain energy conservation measures to help meet the challenge of reduced energy supplies. These steps include reductions in home heating, reductions in driving speeds, elimination of unnecessary lighting. And the American people, all of you,

you have responded to this challenge with that spirit of sacrifice which has made this such a great nation."[19]

Nixon also called for the country to become "energy independent," a vision that has remained central to how we think about energy in America today. Despite insisting just a few months earlier that energy policy be pursued with regard to environmental protection, Nixon now made the environment a secondary concern. Appealing to the symbolic power and cultural weight that Americans attach to the notion of self-sufficiency, he argued that the country's "overall objective" should be independence:

> From its beginning 200 years ago, throughout its history, America has made great sacrifices of blood and also of treasure to achieve and maintain its independence. In the last third of this century, our independence will depend on maintaining and achieving self-sufficiency in energy. . . . As far as energy is concerned, this means we will hold our fate and our future in our hands alone. As we look to the future, we can do so, confident that the energy crisis will be resolved not only for our time but for all time. We will once again have plentiful supplies of energy which helped to build the greatest industrial nation and one of the highest standards of living in the world. The capacity for self-sufficiency in energy is a great goal. It is also an essential goal, and we are going to achieve it.[20]

He proceeded to make the remarkably ambitious claim that with determined effort and careful planning, something he called Project Independence 1980, by the end of the 1970s "Americans will not have to rely on any source of energy beyond our own." The president was overreaching. But in the atmosphere of anger and fear, his ambitious gambit was well received.

The urgency of the moment and the scale of the oil crisis refocused the White House's and national priorities around

energy and ensuring access to it. In the years and decades that followed the oil crisis, the pursuit of energy and the terms in which it was characterized singled it out as particularly central to the country's economic health and national security. Protecting the environment, though still urged by public officials and activists, never rose to the same level of interest.

Nixon's pursuit of energy independence became a central theme in U.S. politics in the late twentieth and early twenty-first century, crossing partisan political lines. After the Republican Nixon, President Jimmy Carter, a Democrat, asked Americans to practice conservation at home by turning down their thermostats. Although oil had been a national security issue at least since World War II, fears of U.S. economic vulnerability had intensified. Only by exploring for energy at home could Americans be safe.

There is a contradiction at the heart of this vision for energy independence, for U.S. policymakers ended up developing even closer ties to and strategic relationships with Iran, Saudi Arabia, and other energy-rich countries in the Persian Gulf. Over the rest of the 1970s the United States would sell billions of dollars' worth of weapons to the shah of Iran and the Saudi royal family. With the fall of the shah in 1979 and the Soviet invasion of Afghanistan, the United States accelerated its military support for allies in the region, especially Saudi Arabia, and became involved in a long war in the Persian Gulf.[21] The origins of this military commitment were outlined in the winter of 1980, when President Carter promised to use whatever means necessary to protect "vital resources" in the Persian Gulf. Carter's euphemistic reference to oil and American concerns about protecting access to it belie the underlying claims about energy independence.

Indeed the deepening ties to the Arab oil producers made clear a basic flaw in the pursuit of energy self-sufficiency: it is impossible, at least if the primary source of energy remains oil

and other carbon-based resources. U.S. rates of oil and gas consumption outstrip that of every other society on the planet. In 2013 Americans used almost nineteen million barrels of petroleum products daily. In 2014 U.S. domestic production of oil totaled only about nine million barrels, with natural gas production adding a few million more, still well short of meeting basic demand. This gap was clear as early as the 1970s, and yet officials and influential policymakers have routinely referred to the need for energy independence ever since. Much of this has been political grandstanding, a way to tap into some mythological American triumphalism and resolve and to attract support at the ballot box. This was at the heart of Nixon's Project Independence 1980, perhaps much more so than any actual plan. During the 2008 presidential campaign, the Republican nominee, Senator John McCain, used "Drill, baby, drill!" as a rallying cry that became a mantra for the Republican Party.[22]

It is in this frame of energy independence that Chris Christie expressed his support for the Keystone XL pipeline in late 2014, against the backdrop of his veto of measures that would protect New Jersey's environment from the energy industry's waste. Following Christie to Canada, the *New York Times*' Michael Barbaro reflected, "As Mr. Christie weighs a presidential run, his trip here seemed calibrated to appeal to two crucial Republican constituencies: the elite corporate donors who loathe President Obama's inaction on the pipeline, and the grass-roots Republican activists who are convinced that it is vital to American energy independence."[23]

It is clear that energy independence has taken a commanding and uncritical hold over how many Americans think about oil and its importance to the economy and national security. The origins of this perspective are the uncertainty and anxiety that marked the mid-1970s. What exactly it entails is mostly mystified, especially the sheer scale of oil and petroleum products that energy self-sufficiency would require. In some ways it

is the visceral power of the idea of independence more broadly, especially the ways it connects to notions of American strength and power, that is more important than the actual stakes involved in making sure energy resources are readily available. After all, in spite of rapidly growing rates of energy consumption in the United States, oil and gas have almost always been easily accessible and available. Even in the middle of the 1970s oil crisis, there was no real shortage of oil. It is as though the idea of scarcity and the possibility that American consumers might be cut off from oil are manufactured for purposes other than national security.

When it comes to the environmental dangers of so much dependence on oil and gas, the crisis of the 1970s and the politics of energy independence have had a pernicious effect. Prior to the oil crisis it seemed that environmental and energy policy, including the development of non-oil alternatives, would be developed together. The fallout from the oil crisis undermined this possibility.

THE 1970S' ENERGY AND ENVIRONMENTAL politics and the pursuit of energy independence have had other, subtle effects that remain in place today. Even those whose thinking has otherwise been progressive on the environment have struggled to overcome the power of old thinking about energy. In 2009 President Obama and the Democratic Party staked their energy policies to energy independence, much like their political rivals and predecessors. Shortly after being sworn in as president, Obama addressed what was then a pressing economic crisis and outlined an energy policy meant to steer the United States clear from future vulnerability. Obama stated, "At a time of such great challenge for America, no single issue is as fundamental to our future as energy. America's dependence on oil is one of the most serious threats that our nation has faced. It bankrolls dictators, pays for nuclear proliferation, and funds both sides

of our struggle against terrorism. It puts the American people at the mercy of shifting gas prices, stifles innovation, and sets back our ability to compete."[24] He offered an energy policy that attended, at least notionally, to worries about too much consumption of oil, safeguarding against climate change, and establishing pathways to alternatives. He devoted a great deal of attention to curbing emissions by mandating stricter mileage requirements for automobiles. Yet even with this more complex approach to energy, with a view toward conservation and supporting green industry, his administration has also consistently backed fracking and, toward the end of his presidency, more drilling in places like the Gulf of Mexico. This is hardly the kind of break in energy policy that will steer the largest oil-consuming nation in a meaningfully new direction.

There is, of course, a need for a robust energy policy in the United States at the national level, although what has passed for talking about energy has almost always meant talking about oil and continuing dependence on petroleum. Obama's energy policy, while mostly well-intended and perhaps reasonable given the scale of American dependence on oil, was still little more than a better *oil* policy. As long as oil remains the dominant source of energy in the United States and in most industrialized countries, the environment, environmental protection, and related concerns about public health will be subordinate. This does not mean that they cannot be addressed or protected, only that the odds are long and that officials less inclined to listen to such concerns, like Chris Christie, will prove powerful obstacles to change. It might have served Obama better if he had thrown out the idea of energy independence and made a claim instead for rethinking what energy should mean today.