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"The Ultimate Environmental Dilemma": Making a Place for Historians in the Climate Change and Energy Debates

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Source: *Environmental History*, Vol. 15, No. 1 (JANUARY 2010), pp. 76-93

Published by: Oxford University Press on behalf of Forest History Society and American Society for Environmental History

Stable URL: <http://www.jstor.org/stable/20749644>

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PAUL SABIN

“the ultimate environmental dilemma”: making a place  
**FOR HISTORIANS**  
IN THE CLIMATE CHANGE AND ENERGY DEBATES

**ABSTRACT**

Historical thinking shapes climate and energy policy in the United States, yet few historians participate in these public debates. History guides policy choices, inspires proposals for action, and structures institutional development. Historical myths also valorize a free market in energy, helping to block legislative initiatives. Yet the history of energy transitions, and government's role in energy markets, support forceful governmental action for climate stabilization. Historians must ensure that climate and energy debates reflect a fundamental historical truth: our energy system embodies political power and social values as much as the latest engineering and science.

IN JULY 1979, leading atmospheric scientists met for five days at the Woods Hole Oceanographic Institute to consider what might happen to the global climate if carbon dioxide concentrations doubled. Commissioned by the National Research Council and chaired by distinguished MIT meteorologist Jule Charney, the scientific group predicted that global temperatures would increase between 2 and 3.5 degrees Celsius. The Charney Report concluded authoritatively, “we have tried but have been unable to find any overlooked or underestimated physical effects that could reduce the currently estimated global warmings.” This conclusion reflected an emerging scientific consensus that fossil fuel consumption was likely to profoundly alter the earth's climate. Eighteen months later, in the closing days of the Carter Administration, the White House Council on Environmental Quality followed with *Global Energy Futures and the Carbon Dioxide Problem*, which described

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Paul Sabin, “The Ultimate Environmental Dilemma: Making a Place for Historians in the Climate Change and Energy Debates,” *Environmental History* 15 (January 2010): 76–93. doi:10.1093/envhis/emq019

climate change as “the ultimate environmental dilemma,” and warned that the world was “performing a great planetary experiment.”<sup>1</sup>

Yet, despite these alarming reports three decades ago at the highest level of the national government, the United States has made little progress in addressing the climate threat and its corollary, dependency on fossil fuels. Technical experts, such as the scientists who gathered at Woods Hole in 1979, have achieved extraordinary advances analyzing the likely effects of global climate change and generating consensus scientific statements about the threats to humanity and the planet. But this scientific progress has yet to translate into practical action on a scale commensurate with the climate problem.

As the scientific predictions grow increasingly dire and national leaders struggle to find ways to address the problem, it is an opportune moment to ask: can history and historians suggest useful lessons to inform future policy making? History is limited in what it can tell us about the future, of course, yet historical narratives also provide some of the only guides that we have for that future. Historical analysis allows us to move beyond scientific and technical findings to contextualize them.

This essay explores how history and historians shape the ways that U.S. policy makers and the American public address the climate and energy problems. I argue that historical thinking and analogies already powerfully influence energy and climate policy—but with little participation from historians. Historians have allowed myths that valorize a free market in energy to dominate the public discourse, presenting current production and consumption patterns as largely unchangeable. Governments historically have subsidized, guided, and regulated energy markets, yet policy makers have been paralyzed in the face of the climate crisis. Examining the history of energy transitions in the United States, I outline the historical rationale for forceful government action in pursuit of society’s climate stabilization goals. I explain why national legislation is only one step in the rewriting of the rules that govern the energy system, a process that will unfold at all levels of government, and across the legislative, judicial, and administrative branches. Historians can help ensure that climate and energy debates better reflect a fundamental historical truth—the energy system reflects political power and social values as much as the latest engineering and science. A greater appreciation for that history can enable greater understanding of the potential routes to addressing the climate problem.

## HISTORICAL ANALOGIES IN CURRENT ENERGY AND CLIMATE POLICY

IN THEIR 1986 BOOK, *Thinking in Time: The Uses of History for Decision-makers*, Richard Neustadt and Ernest May argued that policy makers routinely and unavoidably rely on historical analogies and lessons to make decisions. Rather than choose whether to use history, Neustadt and May wrote, policy makers inevitably

**Figure 1A. Northwestern Glacier 1909. Figure 1B. Northwestern Glacier 2007.**

Photograph by Ulysses Sherman Grant, 1909, by permission of the National Snow and Ice Data Center/World Data Center for Glaciology, Boulder, CO.



Photograph by Bruce F. Molnia, 2005, by permission of the National Snow and Ice Data Center/World Data Center for Glaciology, Boulder, CO.

Comparative photographs of the Northwestern Glacier in Alaska, 1909 and 2005, demonstrate rapid changes in ice cover, and underscore the ways that climate scientists use history to document climate change.

draw on history to tell stories that give meaning and direction to their thinking about a current issue or problem. More recently, scholars of American political development have analyzed the ways that political institutions and practices in the United States, including the development of health care and welfare policy, are shaped and constrained by historical forces. The political scientist Jacob Hacker has examined how the lessons of failure have been applied with mixed results in the case of health care reform.<sup>2</sup>

Current climate and energy policy debates in the United States rarely involve historians. If you search the Intergovernmental Panel on Climate Change's 2007 synthesis report, for instance, you will not find the words "history" or "historical." Climate scientists, of course, are engaged in a kind of historical research as they study trends and change over time. Scientists have carefully reconstructed past climates, past atmospheric carbon dioxide concentrations, past changes in sea level, and the history of glaciers to establish historical baselines against which to examine current trends. This study of past climates puts the present predicament in historical perspective, revealing that recent years have included some of the hottest years on record, and that the projected change in temperature is on the scale of the Little Ice Age.<sup>3</sup> Despite this historical bent to climate studies, few historians have participated in the Intergovernmental Panel's activities, however, or engaged prominently with recent policy debates about climate change and energy in the United States.<sup>4</sup>

Yet history pervades climate and energy policy discussions, guiding policy choices, inspiring proposals for action, and structuring institutional development. Historical interpretations have played a particularly powerful role guiding public choices between different national regulatory and tax strategies. The ongoing national debate over whether to reduce carbon dioxide emissions through a "cap-and-trade" program or through carbon taxes draws heavily on interpretations of the politics of the early 1990s. On the one hand, many

political observers believe that voters harshly punished the Clinton Administration and Democratic Congress in 1994 after the Democrats sought to impose a new energy tax in 1993. On the other hand, observers argue that the sulfur dioxide trading program under the 1990 Clean Air Act Amendments reduced power-plant emissions with comparatively minor political or financial consequences. In theory, a similar cap-and-trade program for carbon dioxide emissions would set an economy-wide cap and allow industries to trade pollution credits, thereby steadily improving efficiency and cutting emissions.

While many economists and policy makers believe that a carbon tax would be more transparent, easily administered, and economically efficient than a cap-and-trade program, the powerful historical analogies from the 1990s have persuaded most Washington politicians and many environmental advocates that a carbon tax is political suicide and therefore only a cap-and-trade policy is politically feasible. The regional sulfur dioxide analogy, however, fits awkwardly with a national or global carbon dioxide trading system encompassing the entire economy.<sup>5</sup> The underlying historical interpretation of the political consequences of the proposed 1993 energy tax also is questionable; conflicts over health care, guns, gays in the military, and congressional ethics all shaped the 1994 Republican take-over of Congress.

Proponents likewise turn to history to find stories that might inspire forceful government action to counter climate change. Proposals that the federal government invest billions of dollars in renewable energy embrace the legacy of the Manhattan Project for the atomic bomb and President John F. Kennedy's call to put a man on the moon within ten years. The Apollo Alliance, an advocacy group, makes these connections explicit in pushing for a multi-billion dollar investment in clean energy, a kind of new Apollo project. In its October 2008 manifesto, the Apollo Alliance cited the space program's role in generating advances in computer sciences and digital communications "that drove this country's economic expansion for decades to come." "We did it before. We can do it again," the Apollo Alliance report declared. These proposals for public investment, some of which were incorporated in the February 2009 stimulus package, also point to the history of national investment in highways after 1956 and the public employment programs of the New Deal.<sup>6</sup> Narrowly focused public projects may provide only an imperfect model for humanity's planetwide struggle against climate change. But the historical stories factor prominently in the public policy debate.

Past political strategies also have shown ways to advance national climate policy, even in the absence of presidential leadership. California and other states' contested role in national environmental regulation has built directly on the history of air quality regulation and the role that California's policies played in forcing the adoption of a national Clean Air Act.<sup>7</sup> As scholars of American political development have argued, the historical structure of institutions matters deeply to future institutional development. In this case, the

enduring strength of the federal system has given states a prominent role in climate policy. Most recently, California successfully sought a waiver to allow the state to regulate greenhouse gas emissions, causing national automakers to look once more to Congress for nationally consistent emissions laws.<sup>8</sup>

In these specific ways, as policy guide, inspiration and strategic model, history is being used to shape society's response to the climate problem. More broadly, ideas about history that are prevalent in society also play a critical role blocking action on climate and energy. Several key history-based arguments have thwarted a strong public response:

1. Society's dependence on fossil fuels resulted principally from market forces and shows the futility of distorting the energy market or subsidizing alternatives.
2. Governments have failed to direct the economy in helpful ways in the past, and therefore should not try to spur industrial innovation in efficiency and renewable energy.
3. Settlement patterns, the car-dependent lifestyle, and consumer behavior in the United States are fixed and unchangeable, rather than a very recent and tenuous development.
4. Past competition among states and nations shows that cooperation on climate policy is impossible to attain.

These stories all contain grains of historical truth. Yet they have become powerful, obscuring myths that receive far too much attention. In light of the use of historical analogies and the deployment of these historical myths, historians have an important role to play in the climate policy dialogue. Historical interpretations help drive the policy process, with or without participation by historians.

## HISTORICAL PERSPECTIVES ON CHANGING THE FUEL SUPPLY

WILL HUMAN SOCIETIES shift away from fossil fuels in the coming decades? Public climate goals, tightening oil supplies, and changing energy politics suggest that a profound energy transition may be possible, and, in the view of many, necessary. Will this energy transition occur, and, if so, how will it unfold? Historians can frame expectations about an energy transition, including the ways in which historical trends in energy politics and markets are likely to persist in the future.

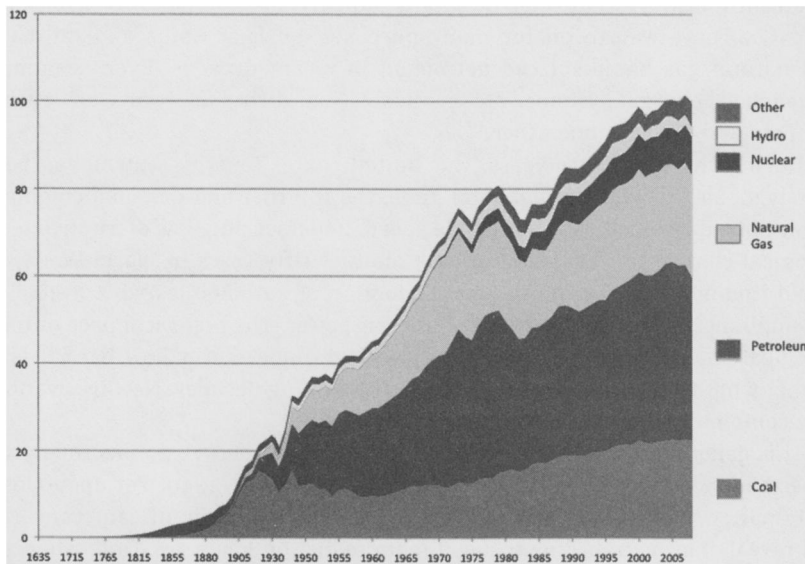
Current climate policy objectives seek to dramatically reduce carbon dioxide emissions by 80 percent by 2050.<sup>9</sup> Is it possible to change an energy system so quickly? A historical perspective suggests that rapid energy revolutions have happened in the past and that energy systems can rise and fall very quickly. Oil and natural gas have dominated the United States energy market for only

fifty to one hundred years. Whale oil provided illumination in the mid-nineteenth century, but then kerosene quickly made whale oil irrelevant. King Coal gave way to oil for many purposes, such as ships and railroads, and natural gas has displaced petroleum in recent decades. Even seemingly entrenched energy systems are malleable as different forms of energy compete and displace one other.<sup>10</sup>

During the past forty years, the United States' energy system has been largely stable. Yet during that same time, the Internet and personal computer revolutions developed with incredible speed, underscoring how disruptive technological change can be. Looking back another fifty years to World War I, we would find ourselves before the mass adoption of automobiles, air travel, electric appliances, and the invention of nuclear power. The historical pace of technological change during the twentieth century underscores how hard it is to predict what technologies will emerge in the coming decades. New innovations may completely transform the energy economy.

This general history of innovation and malleable energy systems thus gives hope that society can meet ambitious climate goals for 2050. Yet upon closer examination, the history of energy markets also raises significant concerns, and reveals how extraordinary the climate reduction goals are. Only when the unique properties of a new fuel helped create a new market, or made a competitor obsolete, has change gone so fast, as when oil was adopted rapidly for mobile transportation. Petroleum's cheap, dense, liquid energy better suited emerging transportation needs than coal's bulky, solid, and less powerful characteristics. Renewable fuels have some strategic benefits. Wind turbines and solar cells are broadly distributed, domestically based, and less dangerous or vulnerable to attack. Once installed, some renewable energy systems, such as wind towers, steadily produce energy at a consistent cost, rather than fluctuating with the price of oil and natural gas. While these attributes are desirable, the strategic and economic benefits presently do not match the economic advantages that oil had over coal when it started its rise. New opposition to renewable power installations also promises to slow the growth of alternative energy.<sup>11</sup>

Additionally, new fuels historically supplemented existing fuels and expanded overall supply, rather than displacing prior fuels. Data from the Energy Information Agency shows the steady aggregation of forms of energy, rather than the displacement of prior fuels. Figure 2 shows how the shift to oil stopped coal's rapid growth. Coal consumption in the United States crested at 651 million tons in 1918.<sup>12</sup> Rather than disappear from the marketplace, however, coal leveled off at a lower level and then increased sharply after World War II. While coal's residential and commercial use declined, it found a new role in electricity generation. In 2007, more than 90 percent of the nation's coal consumption went to electricity generation.<sup>13</sup> As the coal story illustrates, the energy market historically has added new supply to previous fuels rather than substituting for or eliminating existing fuels. Since

**Figure 2. U.S. Energy Consumption by Source, 1635-2008 (quadrillion btu).<sup>14</sup>**

Graphic by Author, drawing on data from Energy Information Administration.

The history of energy consumption in the United States shows how new fuels typically add to an expanding energy supply, rather than displace other fuels. The historical pattern of adding to the fuel supply underscores the challenge of cutting back on carbon dioxide emission-levels by increasing alternative energy production.

the climate problem is defined as too much greenhouse gas emissions, rather than too little energy, only a solution that actually limits carbon dioxide emissions will work.

The evolving fuel mix thus suggests that ambitious 2050 goals are conceivable, because broad changes in energy sources have occurred before in a relatively short period of time. But the hoped-for transition also is unprecedented. The publicly stated goals involve replacing currently functional fuels, for instance, by possibly imposing a moratorium on conventional coal-fired power plants.<sup>15</sup> There are few comparable historical examples. Moratoriums on offshore oil drilling, for instance, cut back production, but did not stop oil consumption. The halt to nuclear power construction after Three Mile Island resulted primarily from financial challenges, although the politics of nuclear safety and waste storage may resemble growing concern about coal-fired power plant pollution.<sup>16</sup>

What does this history of changing fuels and expanding energy supply in the United States mean for the current energy and climate challenges? Only government action to restructure the energy market has any hope of bringing society close to the new goals. Renewable sources of energy will not displace coal-fired power plants unless politicians rewrite the energy rules. Otherwise, if renewable



energy could compete on price with coal and other fossil fuels, then wind, solar, and other fuels would simply supplement fossil fuels, providing the economy with an expanded energy pie.

## POLITICS AND ENERGY MARKETS: THE CASE OF PETROLEUM

PUBLIC ACTION TO RESHAPE United States energy markets would build on an ample historical legacy of government involvement. Politics have always shaped the energy economy, and relative market prices are determined partly by politics. Take petroleum as an example—for the past century, political choices have strongly promoted oil production and consumption.

In the area of tax policy, President Lyndon Johnson had an iron rule of politics—his allies had to protect the oil depletion allowance. For half a century, with Texas Democrats like Sam Rayburn dominating Congress, the depletion allowance allowed oil companies to deduct more than a quarter of their gross income before taxes. A companion rule, the intangible drilling cost deduction, meant that companies also could deduct immediately the cost of drilling new wells, instead of amortizing the expense over the life of wells. Together, these tax policies strongly encouraged the development of the U. S. oil reserves and helped drive down the price of oil. As a character in the old James Dean movie *Giant* declares, the oil tax exemption was “one of the finest laws ever passed in Washington.”<sup>17</sup>

In the area of property rights and public land law, oil developers have fought to open ecologically vulnerable public lands for oil development. From offshore Santa Barbara to northern Alaska, each new political victory boosted supply, further reducing oil prices. For years the United States government (and many other governments worldwide) gave oil-development rights away at fire-sale prices, charging meager royalties on rich, proven oil fields.<sup>18</sup>

In the area of environmental regulation, oil and automobile companies and their allies typically fought new demands for improved efficiency or environmental quality. Successful political opposition to requirements for double-hulled tankers, for example, substantially worsened the Exxon Valdez oil spill. Keeping shipping costs down with less expensive tankers helped boost profits and lower gasoline prices, yet amplified the risk of a major oil spill in Prince William Sound.<sup>19</sup> Multinational oil companies also exploited weak regulatory systems overseas in nations such as Ecuador to cut costs on oil extraction.<sup>20</sup>

Even as public policy shaped petroleum supply, it also created demand for oil. Local, state, and federal governments have spent trillions of dollars building the infrastructure for oil consumption. Taxpayer-financed highways and airports helped create a petroleum landscape oriented around oil consumption.

**Figure 3. Powerful Allies.**

Bettmann/Corbis.

Senate Majority Leader Lyndon B. Johnson, left, and House-Speaker Elect Representative Sam Rayburn, pictured together in 1954, along with other powerful congressional allies helped protect the oil industry's financial interests with tax policies like the oil depletion allowance and intangible drilling expensing.

With gasoline and airport taxes earmarked for further development, rising use automatically spurred new construction, tightening oil's hold.<sup>21</sup>

Other public actions to support the petroleum economy were not related directly to the production and consumption of oil, but helped make the oil economy possible. The United States has spent more than a trillion dollars on diplomatic and military efforts closely tied to American dependence on oil and the need to keep oil flowing from the Persian Gulf. Needless to say, the government has not spent comparable funds safeguarding the nation's wind supply.

One of the most important lessons from the nation's oil history, then, is that there never has been a free market in energy. Frankly, there never could be. Public choices inevitably shape the energy sector through tax policy, property rights, labor law, and many other unavoidable decisions.<sup>22</sup>

## ENDURING PATTERNS OF GOVERNANCE

THE GOVERNMENT'S PAST ROLE in the oil economy suggests the importance of finding new ways to talk about markets, ways that take efficiency into account while recognizing that markets are social institutions and that public policy historically has significantly determined prices. Policy and politics established the playing field for market interactions among producers and consumers. In the future, the United States will continue to make political choices about the energy economy. What kind of energy system will these political choices favor? Historical scholarship suggests that the answer will reflect

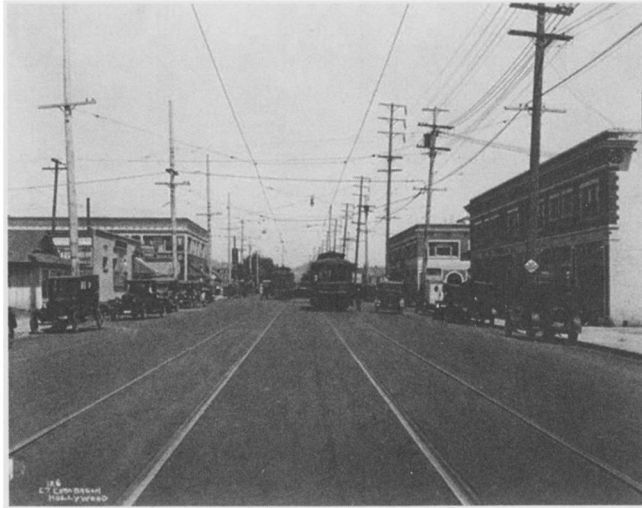
political power and social values as much as technological efficiency and available resources.

Two key historical insights can frame our thinking about the years ahead. First, an energy system involves more than the mere production and consumption of energy, but rather is embedded in rules and institutions that usually favor dominant fuels. Second, moving to a new fuel mix necessarily will involve years of political conflict to restructure policies and institutions to favor efficiency and fuels that do not produce greenhouse gases. These conflicts will occur at all levels of government, and across the legislative, executive, and judicial branches.

Rulemaking and institutional structures reflect and reinforce commercial dominance in the energy market. The relationship between streetcars and automobiles illustrates the important shift in rules that accompanied the rise of the oil age. As automobiles rose in importance, streetcars lost privileges. Streetcars had to make way for autos that cut in front of them and slowed them down. Taxes on streetcars helped pay for road construction and repairs that benefited autos, whereas taxes on auto use simply fed back into the highway system.<sup>23</sup> In this fashion, ascendant energy and transportation systems are rewarded with privileges that enhance their dominance. Judicial rulings during the oil era often deferred to oil's privileged position and importance. As the California Supreme Court ruled in a 1928 court case opening the coastline to oil drilling, "the development of the mineral resources, of which oil and gas are among the most important, is the settled policy of state and nation, and the courts should not hamper this manifest policy except upon the existence of most practical and substantial grounds."<sup>24</sup> More recently, favorable court rulings have shielded fossil fuel companies from costly expenditures, as when the Supreme Court slashed punitive damages for the Exxon Valdez tanker spill. Administrative decisions similarly have pushed capital expenditures far into the future, as when the Department of Justice decided not to enforce New Source Review for coal-fired power plants.<sup>25</sup>

Public debate over energy and climate policy has focused largely on national policy making, including possible national climate legislation. Yet historically, rule making and institution building in the fossil fuel economy occurred at *all levels* of governance: international, national, state, regional, and local. State and local governments set many of our most important energy policies, from Robert Moses's Triborough Bridge Authority to the Texas Railroad Commission and the California Air Resources Board.<sup>26</sup> State-level utility deregulation set the stage for the Enron fiasco of the early 2000s. Recent initiatives by states such as California and New Jersey and by cities such as Berkeley, California, therefore simply continue the dispersed power and leadership seen over the course of the United States' energy history. We should expect this pattern to endure.

A political realignment to create a new energy system will involve *all branches* of governance, in addition to different levels of government. A

**Figure 4. Streetcar on Santa Monica Blvd., Los Angeles, CA, 1922.**

E.T. Estabrook, Los Angeles Public Library

Streetcars and automobiles competed for primacy and political favor on the shared roadways.

collection of articles collected on the *New York Times's* "Green Inc" blog in February 2009 illustrates how energy politics are changing across the United States' federal system of governance. Gathered under the heading "A Tough Week for Coal," the articles described a series of setbacks across the country, from the local to the national level. During this one week, Michigan's governor called for a near-moratorium on new coal-fired plants, as did the Georgia state legislature. In an area of West Virginia, residents sued eight coal companies over contaminated tap water, while in another part of the state anti-coal activists chained themselves to equipment at a mountaintop removal mining operation. The Air Force rejected proposals to build a large coal-to-liquid-fuels plant around Malstrom Air Force Base in Montana. Lastly, the Justice Department and Environmental Protection Agency imposed a \$1.4 million civil penalty on Kentucky Utilities for clean air violations and required the company to spend another \$135 million on pollution controls.<sup>27</sup> In this fashion, new energy rules have started to strip power from the coal industry and create a new market framework.

As these coal stories show, executive, legislative, and judicial branches set public energy policies together. Key national developments across the three branches recently include a Supreme Court case ordering carbon dioxide regulated as a pollutant, legislative efforts to pass a climate bill, and administrative decisions about offshore drilling. Pivotal decisions shaping the energy system are found not just under the rubric of "energy" policy, but also as tax policy, regulation, property rights, and public infrastructure. Energy intersects with

virtually every aspect of our economy and social organization, so energy policy often is made in unexpected places.

As an issue that crosses all areas of governance and different levels of the federal system, energy will remain the focus of fierce and enduring political conflict in the coming decades. Even if the U.S. Congress passes a national climate law soon, the political battle will continue. Decades-long fights over smog, oil spills, mining waste, mileage standards, and nuclear plant siting show how the rules of the energy system are continually renegotiated. One thing is certain: politics and governance will drive the coming energy transition. If recent interventions in the United States' financial markets have not driven a stake through the pernicious myth of a free market in the United States, of course, it is hard to know what ever could. The Enron fiasco and California electricity crisis of 2000 and 2001, and the focus on climate change and high oil prices more recently, have made less favorable the idea that government should stay out of energy markets. Yet the fairy tale persists. Wind energy and other renewable forms of energy continue to suffer comparisons based on their relative market price. The political history of energy in the United States shows clearly, however, that relative market prices reflect past politics as much as current economic factors.

How will the changes to our energy economy unfold? People concerned about peak oil suggest that oil will suddenly disappear and civilization will fall off a cliff.<sup>28</sup> Others paint rosy scenarios of technological breakthroughs in efficiency and renewable power. A historical perspective suggests that our energy future likely will be better than what the apocalypitics predict because markets and prices will adjust to impending shortages, prompting substitution, efficiency, and innovation. Yet our future also is likely to be worse than optimists and idealists suggest. Changes in fuels are unlikely to yield hoped-for social transformation and are certain to bring undesired consequences.

History has seen many utopian predictions about energy that have not come to pass. In the 1930s, Lewis Mumford wrote about the ways that hydroelectric power would liberate workers, purify polluted industrial cities, and foster independence, decentralization, and democracy. The songwriter Woody Guthrie sung ballads about "Big Grand Coulee Dam" as the eighth wonder of the world. The new dams would bring victory in humanity's struggle with nature. But as the historian Richard White has written in his book the *Organic Machine*, the damming of the Columbia River has not been democratic; it did not bring vibrant regional culture; and, it did not link people with the land.<sup>29</sup> The dam's boosters promised to create new, electrified family farms—"place the landless man on the manless land," as Oregon Congressman Walter Pierce put it in 1938.<sup>30</sup> Instead, the dams encouraged greater social inequality in the form of large irrigated corporate farms worked by migrant laborers. Nuclear power similarly was expected to be "too cheap to meter" but ended up saddling utilities across the country with heavy debt loads, which they passed on to ratepayers. In a similar manner, many have celebrated biofuels

as a potentially clean, green, abundant, and sustainable energy source. But already there are signs that biofuels may undercut food production and land conservation, and that land clearance to produce biofuels actually might increase greenhouse gas emissions.<sup>31</sup>

Emerging conflicts over wind farms, solar installations, and biofuels reinforce the simple, yet enduring historical lesson that every kind of energy comes with a cost. While there is a material reality to energy—in terms of how much wind, oil, or sun is available, and how much energy can be squeezed from a corn crop—societal decisions about energy also typically require challenging choices reflecting competing interests and values. Should governments permit construction of a wind farm that will alter the views of Nantucket Sound while generating reliable wind energy, or should they risk allowing liquefied natural gas tankers into the Boston Islands or Fall River, Massachusetts? Should Congress and the state governments stop mountaintop removal mining and limit coal-fired plants, and instead expand nuclear power, thereby generating new nuclear waste and security risks? Is it better to expand the oil supply by opening the Alaskan National Wildlife Refuge, or to pay the upfront costs of greater energy efficiency? The trade-offs usually are not clearly linked. The United States has never had a coherent national energy policy. Rather, the United States historically has balanced competing priorities and interests through ostensibly unconnected political battles throughout the governance system.

## CONCLUSION

IN SUM, HISTORY AND POLITICS help determine both energy prices and the energy mix. The United States' energy future will be as fiercely contested as its past, shaped as much by societal values, economic interests, and political choices as by technology and available sources of energy. Talking more about the history of change and possibility can facilitate creative policy making, helping to free public debate from a mythic energy past. Several historical themes offer suggestive, and corrective, lessons relevant to policy discussions about energy and climate:

1. The current car-based, fossil-fuel dependent society developed only recently, and it is changeable like the social organization that preceded it;
2. Government has shaped energy markets in the past and will continue to structure them in the future;
3. Climate changes in the past have been difficult to adapt to, and predicted future climate change warrants dramatic action;
4. Successful cooperation among states and nations has occurred on energy and trade issues in the past, and is possible in the future; and,
5. National innovation policies have established new industries, such as the Internet, and can drive future energy technology development.

History does not provide a roadmap for the future, but rather stories, parables, and analogies that help inspire and guide our thinking.<sup>32</sup> The stories that have blocked action on climate and the ones that might give us hope already are present in our consciousness and in our history. Each needs to be told and retold, and tested to see which are most compelling. Serious engagement with these stories will puncture many dominant myths, showing the potential for public action and anticipating the enduring political struggle that guides the energy economy. Historians, just like more technical experts, have an opportunity to shape society's response to one of its most complex and urgent problems.

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## NOTES

I am grateful for the comments of Emily Bazelon, Mark Cioc, Robin Einhorn, David Engerman, Robert Harms, Karen Hébert, David Iglar, Anthony Leiserowitz, Peter Perdue, Harry Scheiber, members of the Yale Environmental History working group, and two anonymous reviewers.

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