

Competing Values, Institutionalizing Policies: U.S. Energy Policy Since World War II

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The trick in analyzing the history of U.S. energy policy since World War II is deciding how to untangle a series of complex webs of institutions, ideas, and interests

into a coherent account. Groups competing for credibility, resources, and power contest ideas, defend or challenge existing institutions, and reframe interests. Complicating matters further, larger political, social, and economic trends also influence those processes by generating the contexts in which they occur. For analyzing such processes, I have used a form of discourse analysis, looking at how important political groups used ideas to frame energy policy issues and which frames got embedded into governmental institutions. What has been remarkable about U.S. energy policy is the extent to which policy makers have consistently embraced certain ideas over long periods of time, despite challenges from social groups and external circumstances (Laird 2001 for the period up to 1981). That said, political elites and others in the policy process have seen a gradual shift in those ideas and their institutional embodiment, especially in the last 30 years.

For the purposes of this analysis across three major episodes in U.S. energy policy, I will use the concept of sociotechnical imaginaries being developed by Sheila Jasanoff, (Expert Group 2007, chap. 7, and personal communication). This approach is useful because the ideas that influence individuals' and groups' views on energy are not merely free-floating. Rather, their ideas derive from a more-or-less coherent vision of the kind of society in which they wish to live, even if that vision is not explicitly expressed as such. Technology is so central to the functioning of any society that visions of society carry with them, at least implicitly, visions of technologies that will make those societies possible. Imagining one's desired society, therefore implies a technological ensemble that goes with it. Hence, the term "imaginaries" does not disparage this vision as necessarily fanciful, but rather emphasizes the creative work of linking society and technology (Laird 2003 for an example). Note that a particular set of technologies may not result in the society its advocates desire—unintended consequences are at play in this, as in all, parts of life. But for our purposes, the concept of sociotechnical imaginaries helps to organize the analysis of the ideas that energy advocates hold.

I will focus in this paper principally on challenges to conventional energy policy, particularly challenges that sought to increase the role of renewable energy in the U.S. energy system. U.S. energy policy has evolved slowly in the last 60 years, but renewable energy advocates have brought the biggest challenges to conventional policy and sought the biggest changes in the system.¹ For three important

¹ Arguably the largest change during this period has been the triumph of market efficiency as a core value of such policies. That is not the focus of this paper.

instances of potential change in U.S. energy policy I will examine competing sociotechnical imaginaries as a way of seeing how different groups advocated for their policies and how institutional structures and norms influenced those debates and the policies that came out of them. Before starting that analysis, however, I will briefly sketch the four major periods of American energy policy since World War II and the features of those periods that created the political, technological, and resource environment in which energy policy debates took place.

Stage I: Energy Policy from 1945-71, Fragmented Institutions

For most of the two and one-half decades immediately after World War II, the United States enjoyed stability of supply and falling prices for energy. In the late 1940s the country became a net importer of oil, and the percentage of consumption fed by imports increased steadily (Laird 2001). In addition, there were shortages of oil just after the war. However, the rapid development of inexpensive oil in the Middle East and elsewhere led to a readily available supply of inexpensive crude (Yergin 1991). Steady improvements in the utility industry led to real decreases in electricity prices (Hirsh 1989). Martin Melosi described the situation as “coping with abundance” (Melosi 1985). Policy makers put limits on imported oil in an effort to keep prices from going too low and cheap energy helped to spur American growth and development, especially the rapid growth of sprawling suburbs (for overviews, see the essays in Goodwin 1981).

Government institutions for energy during this period exhibited strong fragmentation. An assortment of different agencies (ministries) looked after different fuel sources. The Atomic Energy Commission funded and regulated the development of nuclear power. Separate offices in the Department of the Interior oversaw coal, oil, and natural gas. The Army Corps of Engineers built large hydroelectric dams. Each separate agency had its own oversight committee in the Congress. Together, the agencies, the Congressional committees, and the relevant industries formed a policy subsystem (Baumgartner and Jones 1993), a tightly integrated group that dominated policy making in each area and successfully kept other policy makers or interest groups out of their respective areas.

Importantly, no agency looked beyond the time of cheap fossil fuels or had a mandate to develop any alternatives to fossil fuels, other than the AEC, which promoted nuclear power as the eventual replacement for all other energy sources. Certainly no agency sought to develop renewable energy, except for very small niche applications. The National Aeronautics and Space Administration funded R&D on photovoltaics to develop power sources for satellites. The National Science Foundation funded some basic research on assorted solar and biomass technologies (Laird 2001). Some advocates of an alternative energy future looked at looming problems with the conventional energy system (Daniels 1964), but they did not influence policy makers with their arguments. That neglect led to trouble, as slowly building problems, particularly increasing oil imports and controversy over nuclear power, set the stage for the energy crisis of the 1970s.

Stage II: System in Crisis, 1971-81

By the early 1970s, the United States began experiencing natural gas shortages and electrical brownouts. Mass media began running stories on the “energy crisis,” and officials in the Nixon

Administration started sending memoranda to the President with that same subject line. President Nixon sent the first presidential message on energy to the Congress in June 1971, calling for a host of responses, but not for decontrolling energy prices. Thus by the time of the OAPEC embargo of October 1973, the energy crisis was already well underway, greatly accelerated and deepened by the embargo and subsequent oil price increases (Laird 2001 for overview; Yergin 1991 for details on oil embargo). During the decade, prices for all forms of energy rose quickly and remained high, even after the embargo was over.

These dramatic events led to institutional change in energy policy. Political elites and interest groups had the opportunity to challenge and destroy many of the old energy policy subsystems (Baumgartner and Jones 1993 for the nuclear case). Those challenges were part of a larger institutional restructuring that led, after much political turmoil, to the creation of a centralized government agency for energy, the Department of Energy (Laird 2001 ch. 5). Designating a U.S. agency as a “department” means that the head of that agency has full status as a cabinet member, the highest appointed ranking in the executive branch.

However, at the very time that government policy making was centralizing, advocates of renewable energy, the groups pushing the hardest to change the conventional energy system, were fragmenting (Laird 2003). New advocacy groups sprang up and older ones split over the extent to which the push for renewable energy was an effort to protect the status quo or radically change it. I will discuss this split at more length below.

Stage III: Liberalizing the Energy System: 1981-1991

During the 1980s, energy prices went back down, due in part to a severe recession early in the decade that reduced demand and hence prices, in effect ending the energy crisis (EIA 2007, ch. 3). In many ways energy moved down on the national political agenda. The liberalization of the energy system begun in the 1970s proceeded apace, with the government removing price controls from natural gas. Globally, all forms of energy seemed abundant.

President Reagan’s principal policy initiative was increased support for nuclear power. However, that industry did not experience a revival or growth. The 1979 accident at the Three Mile Island nuclear power plant, along with years of cost overruns in plant construction, had soured utilities on the technology and they ceased ordering new plants (Morone and Woodhouse 1989).

Within civil society, renewable energy advocacy groups ran into serious trouble. Not only did they lose influence within the government, they lost members and funding. The American Solar Energy Society, the largest such umbrella group of advocates, almost collapsed entirely. Many renewable energy firms that had started in the 1970s went out of business in the 1980s as government subsidies for the technologies ended (EIA 2007, Tables 10.5 and 10.7).

Stage IV: Security and Climate: 1991- the Present

The first Gulf War of the early 1990s put energy back on the political agenda, this time with a security emphasis. Oil prices went up during the war and have been volatile ever since, recently going up to almost record levels (EIA 2007, ch. 3). Moreover, both Gulf Wars and 9/11 have made starkly clear

the nexus between oil and security. Some high-profile media commentators began writing again and again about the linkage, with one calling for a “geo-green strategy” (Friedman 2006).

The issue of climate change also began to be a factor in energy policy, although a fiercely contested one. The United States signed and ratified the 1992 Framework Convention on Climate Change, though it later withdrew from the 1997 Kyoto Protocol to that Convention. However, despite the resistance from a small but well-funded group of climate skeptics (Weart 2003), a combination of a growing scientific consensus and a social acceptance of that consensus put pressure on policy makers to enact some relevant policies (Mooney 2005). Political elites are still debating those policies, but the fact of climate change and the linkage of energy consumption to it is now widely accepted in the political discourse (see the discussion of the 2001 energy policy report below). Renewable energy advocates have, not surprisingly, eagerly embraced this linkage, arguing that aggressive support for renewables is the only rational response to climate change (ASES 2007). Congress, the administration, presidential candidates, and advocacy groups are debating these policies as we speak.

Contesting Values, Imagining Societies

At the heart of these policy debates is a deep contestation over values. For a technological system as foundational as energy, advocates on all sides link their preferred technological systems to their visions of the good and just society, what I am calling sociotechnical imaginaries (Laird 2003 for examples). Sometimes that link is implicit, but more often advocates spell it out quite explicitly, and political elites defend their policy decisions in such terms.

In framing the policy debates this way I am not minimizing the many and complex technical issues that discussions of energy entail. To be sure, energy policy decisions necessarily involve many detailed analyses of the technologies, their economics, their environmental impacts, and the efficacy of particular policy instruments. But these specific discussions take place within the context of more macro policy decisions about the best future direction for the energy system, decisions that are closely linked to broader social visions. Moreover, even the more detailed analyses often contain within them implicit assumptions about social values (Stone 1997).

By studying these social and technological links, we can better understand both the origins of U.S. energy policy and how it might be different. It also opens up the possibility of learning from European policies. In addition to specific policies, European experiences might give us new ways of imagining the American future, new sociotechnical imaginaries, that in turn make it possible to imagine new policies for getting there and the sorts of institutional changes it will take to enact and implement such policies. The analysis that follows will present three instances in which policy makers and groups in civil society expressed and contested sociotechnical imaginaries connected to energy. Over the more than fifty years that these cases span, the dominant imaginary has resisted radical change, despite numerous challenges, but it has also evolved incrementally to the point where new policies might now be possible.

The President's Materials Policy Commission

Immediately after World War II American policy makers expressed great concerns about shortages of energy, especially oil (this background comes from Laird 2001, ch. 1. See also Goodwin 1981 and Vietor 1984). They understood the importance of energy to the war effort and also knew how unpopular gasoline rationing had been during the war. Within ten years all forms of energy had become abundant in the United States, and prices overall came down. However, in those early post-war years policy makers did not know things would work out that way and so focused on the problems of energy and natural resources more generally. In doing so they laid out the basic narrative that guided policy for the next two decades.

In 1951 President Harry Truman established the President's Materials Policy Commission, a panel of very prominent individuals from outside the government. The President charged them with surveying all of the country's resource needs and developing policies to address them. The result was a five-volume report, loaded with tables and graphs (PMPC 1952). Energy was the only category of resource that got its own volume. The report laid out in detail the country's situation, articulated the principles that the government should use in addressing it, and made specific policy recommendations. The Commission noted that the United States was already a net importer of oil and consumed almost two-thirds of all the oil produced in the world outside of the Soviet Union and China. The Commission also assumed that reviving economies in Europe, Japan, and the developing countries would soon be competing for that oil, hence putting immense pressure on firms to develop sources all over the world (PMPC 1952, vol. 1, p. viii and chs. 16-22).

President Truman left office not long after the Commission issued its report, and President Eisenhower did not adopt many of the report's specific recommendations. However, the principles in the report did in fact continue to guide U.S. energy policy until the energy crisis of the 1970s. The narrative and values that the report espouses provide an unusually explicit glimpse of the sociotechnical imaginary that policy makers held in this period.

The report came out just a few years after the Soviet Union tested its first nuclear weapon and Mao's revolution took over China. Thus the Cold War powerfully shaped the report. The narrative at the core of the report that embodied its sociotechnical imaginary was the need to defend and extend democratic capitalist society, in the United States and elsewhere. The authors took as a given that western industrial society, with political freedom and private markets, was the form of social and economic organization to which all countries should aspire and that it was under grave threat from the Soviet Union and Warsaw Pact countries. As a result, the report set out two normative and two empirical beliefs as the basis of the report.

Right on the first page of the first volume the Commission asserted the linkage between natural resources and society: the nation must develop the "material means to sustain its civilization."

The United States, once criticized as the creator of a crassly materialistic order of things, is today throwing its might into the task of keeping alive the spirit of Man and helping beat back from the frontiers of the free world everywhere the threats of force and of a new Dark Age which rise from the Communist nations. In defeating this barbarian violence moral values will count most, but they must be supported by an ample materials base. (PMPC, v. 1, p. 1)

The Commission continued by setting out its normative beliefs, economic growth and national security, much like a religious declaration of faith.

First, we share the belief of the American people in the principle of Growth. Granting that we cannot find any absolute reason for this belief we admit that to our Western minds it seems preferable to any opposite, which to us implies stagnation and decay.

Second, we believe in private enterprise as the most efficacious way of performing industrial tasks in the United States. We believe in a minimum of interference with these pattern of private enterprise. But ... this minimum must not be set at zero. ...as we see the future, the coexistence of great private and public strength is not only desirable but essential to our preservation.

Third, we believe that the destinies of the United States and the rest of the free non-Communist world are inextricably bound together.

The over-all objective of a national materials policy of the United States should be to insure an adequate and dependable flow of materials at the lowest cost consistent with National security and with the welfare of friendly nations (PMPC 1952, v. 1, p. 3, emphasis in original).

These quotes emphasize the normative values of economic growth through reliance on private-sector markets and national security, both aided by abundant and low-cost supplies of energy and other resources.

In addition to these normative beliefs, the PMPC laid out two core technical beliefs that also appeared in almost all official energy policies through the energy crisis. First, the rapidly growing demand for resources was not anyone's fault, instead falling into the category of unintended consequences (see Stone 1997 for a discussion of causal mechanisms in policy). Billions of uncoordinated individual decisions led to global economic growth, and that added up to the problem of demand threatening to outstrip supply. The trend was inexorable, and policy makers simply had to deal with it, since they could not change it and would not wish to, given their normative commitment to economic growth (PMPC 1952, v. 1, p. 1. Laird 2001, pp. 28-32 explicates all these beliefs in the PMPC and subsequent policy statements in much greater detail).

Second, the authors of the PMPC believed that new technologies, spurred on in part by government funding for R&D, were the only solutions to the problems of scarce resources. They had a strong faith that such innovation was the key to providing abundance for all. Considering that they thought that war and peace hinged on such abundance, they put a very high priority on government R&D programs.

These normative and technical beliefs combined to provide both a sociotechnical imaginary and policy guidance. Preserving and expanding western capitalist democracies was a good in itself and in the context of the Cold War meant that the government had to help the market meet the inevitable growth in demand for resources. The PMPC had many specific policy recommendations, but foremost among them

was spending money for R&D and changing policies to encourage the development of oil in other countries (PMPC 1952, v. 3).

Advocates of alternative energy sources mostly agreed with these fundamental premises. For example, Farrington Daniels, the most prominent solar advocate of his day, voiced a similar discourse throughout the 1950s and 60s (Laird 2001 and Laird 2003 contain many specific examples from Daniels and other advocates). However, a few such advocates had a harshly critical view of ever-expanding industrialism, at least one driven by fossil fuels. Eugene Ayres, someone who had worked in the oil industry, published an article in *Scientific American* advocating solar energy. He starts his article with this image. “We are engaged today in an intensive search for anything that can be burned. . . . We have finally reached a furious tempo of effort to find and produce and destroy. The climax of this effort will certainly be reached within the lifetime of some of our children.” (Ayres 1950, p. 16). This rhetoric hardly invokes a peaceful and prosperous society. Ayres advocated solar energy precisely because he thought a fossil fuel-based society will be such a grim one. His sociotechnical imaginary is quite different from that held by policy makers, though he only minimally elaborated what his alternative world would look like. His discourse never broke into official circles but came up again in the 1970s and marked a sharp break within the renewable energy advocacy community.

Domestic Policy Review: System in Crisis

The energy crisis of the 1970s led to policy turmoil in many countries. Energy policy quickly went to the top of the governmental and public agendas, resulting in many policy initiatives and laws in the United States and elsewhere. Here I will discuss one particularly important policy review that, like the PMPC, made clear the normative and technical beliefs that drove policy and the sociotechnical imaginary those beliefs entailed. First, however, I need to present two important contextual factors for this analysis.

The United States finally got the centralization of authority over energy policy that reformers had wanted for years. The process took almost 5 years and spanned 3 administrations, but by 1977 the government established and staffed the Department of Energy (Laird 2001; see also Cochrane in Goodwin, 1981). For a highly fragmented political system, this was no small achievement. Though some energy policy issues remained in other departments, a single Cabinet official was responsible for policy relevant to all forms of energy and could make more comprehensive policy across different energy sources.

However, at the very time that the federal government administration for energy was centralizing, renewable energy advocacy groups in civil society were fragmenting. Of course, fossil and nuclear fuels always had trade associations to represent their interests in Washington (DiMarchi in Goodwin 1981). The 1970s, however, saw the rise of new groups who challenged the conventional energy system, greatly enlarging the ranks of advocates for renewable energy. Many of these new groups and people came from the environmental movement and embraced renewable energy explicitly for its environmental benefits. In addition, many of these new advocates promoted renewable energy because they believed that it would provide the material basis for a more decentralized and ecologically-based society. Thus the renewable energy advocacy movement de facto split into two groups, conventional advocates who accepted the basic narrative and sociotechnical imaginary that had driven energy policy for decades, and more radical ecological advocates, who explicitly challenged conventional values and imaginaries (Laird 2001, ch. 6 and Laird 2003).

The ecological challenge, and its inability to influence official thinking about energy policy, showed up starkly in a policy analysis exercise called the Solar Energy Domestic Policy Review (DPR). Initiated in 1978 by the Carter Administration, the DPR attempted a comprehensive review, spanning multiple agencies, of policies for renewable energy (for a detailed history see Laird 2001, pp. 138-148). Americans in the 1970s used “solar” as an umbrella term that included all renewable energy sources, including wind and biomass. The purpose of these interagency reviews was to give the White House advice that was not biased by a single agency. Though energy policy was supposed to be centralized in the Department of Energy, inevitably other agencies, such as the Department of Transportation and the Environmental Protection Agency, influenced the country’s use of energy, and so needed to be part of a comprehensive policy review. The study took over a year, involved extensive interaction with all sorts of organized advocacy groups and individual citizens, had the attention of high-level policy makers, including Cabinet secretaries and the President, and ultimately led to a Presidential announcement of new policy initiatives for renewables. Because of its importance, the DPR became a site where different groups aggressively promoted both their favored policies and the explicit visions of the society that they imagined such policies would favor. With everyone’s sociotechnical imaginaries so clearly on display, both the final policies that the President adopted and the rationales that he gave for them demonstrate how difficult it was for alternative visions of society to penetrate the official framing of the energy problem.

The President and his top aides made clear, both in public pronouncements and internal communications, that they held to the traditional values of economic growth and national security, plus the commitment to a vision of a market-based democratic society that those values entail, that had driven energy policy for so long. They were interested in renewable energy insofar as it could help them defend that society by keeping the price of energy down and reducing dependence on oil from turbulent areas of the world. They were well aware of the environmental benefits of renewables, but that was clearly secondary in their thinking. In his charge to the DPR, Stuart Eizenstat, one of the President’s top aides, said:

The national security and economic problems posed by our increasing dependence on imported oil establish a clear need for the rapid development and use of alternative domestic energy sources. Continued economic growth can occur only if we prepare now to make the transition from oil and natural gas to energy sources we have in abundance (Eizenstat 1978 in n. 17, p. 234 of Laird 2001).

Those words could have been written thirty years earlier in the Truman administration. In this view, renewable energy was just a substitute for fossil fuels that had become politically problematic and economically expensive. Eizenstat made little mention of environmental benefits, much less the material basis of a more ecological society.

After a year of analysis and various public participation exercises, the DPR issued a multi-volume study and a set of recommendations, both couched in language that made it clear how the policy process framed the problem. The problem at the end, as it was at the beginning, came down to how much oil and other fossil fuels renewable energy could displace by the year 2000 and what new policies and programs the government needed to meet that goal.

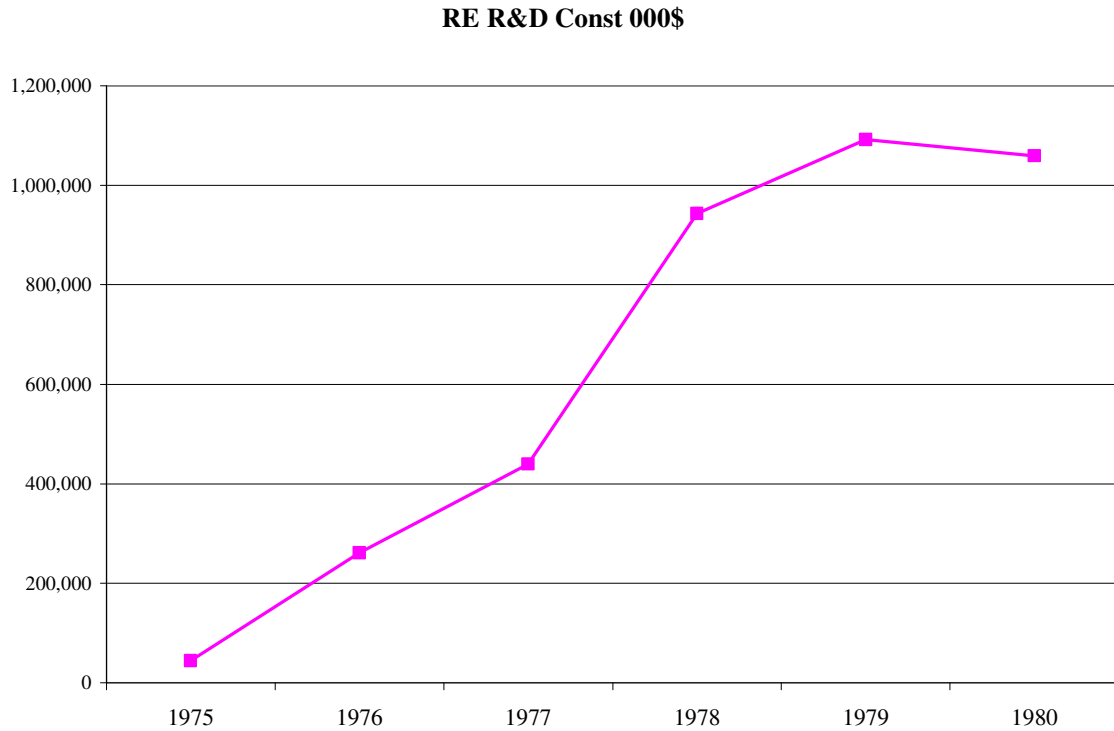
These topics were subject to furious debate both in and out of government. In the end, the President chose goals and policies that were more aspirations than realistic goals. Ever mindful of

symbolism, President Carter made the announcement on the roof of the White House in a ceremony that dedicated the solar hot water heaters recently installed there.



He chose a solar goal, twenty quads of renewable energy by 2000, that was less than what ambitious renewable advocates wanted but more than his advisors had counseled. Moreover, he announced a set of policies that everyone involved knew had no hope of ever reaching that goal. The advocates attending that ceremony complained to the press minutes later about the President's lack of commitment to renewable energy (Laird 2001, pp. 1-2).

As unhappy as they were, the renewable energy advocates did get some significant policies on their wish list. The President supported establishing a government financing mechanism called a Solar Bank, since many advocates identified inadequate finance as a major barrier to adopting renewables. More immediately, the administration, with strong support in Congress, dramatically increased funding for renewable energy R&D, accelerating a trend that had started under Presidents Nixon and Ford.



Nonetheless, despite these policy successes, the ecological renewable energy advocates, who had been very prominent in the DPR process, never succeeded in changing the way senior government officials thought about energy and renewable sources as part of it. They were successful in the short term as a pressure group but failed to institutionalize a new problem frame that would sustain these policies once President Carter left office. Their energy sources could not solve the problem as the President and his aides framed it. They failed at this deeper task because they framed the energy issue using very different values and grounded in a very different sociotechnical imaginary than that held by policy makers, one that policy makers did not remotely accept. It is certainly true that renewable energy advocates held a diversity of views, and the more conventional advocates had been opposed to grand ambitions for renewables and the visions of social transformation that went with it. Nonetheless, some policy makers and media pundits, especially those opposed to the rapid development of renewable energy, associated the ecological vision of an alternative society with renewable energy (this is detailed at length in Laird 2001 and Laird 2003). As for the ecological advocates themselves, they promoted such notions of social transformation, never more clearly than with a poster they put out the at roughly the same time as the Solar DPR.



Labeled “Appropriate Technology: Tools for Community Self-Reliance,” the poster seen here depicts a future society base on renewable energy. The first thing to note is that the society bears no resemblance to any community actually existing in the United States at the time, though a few small utopian groups sought this sort of arrangement. The poster contains not one car.



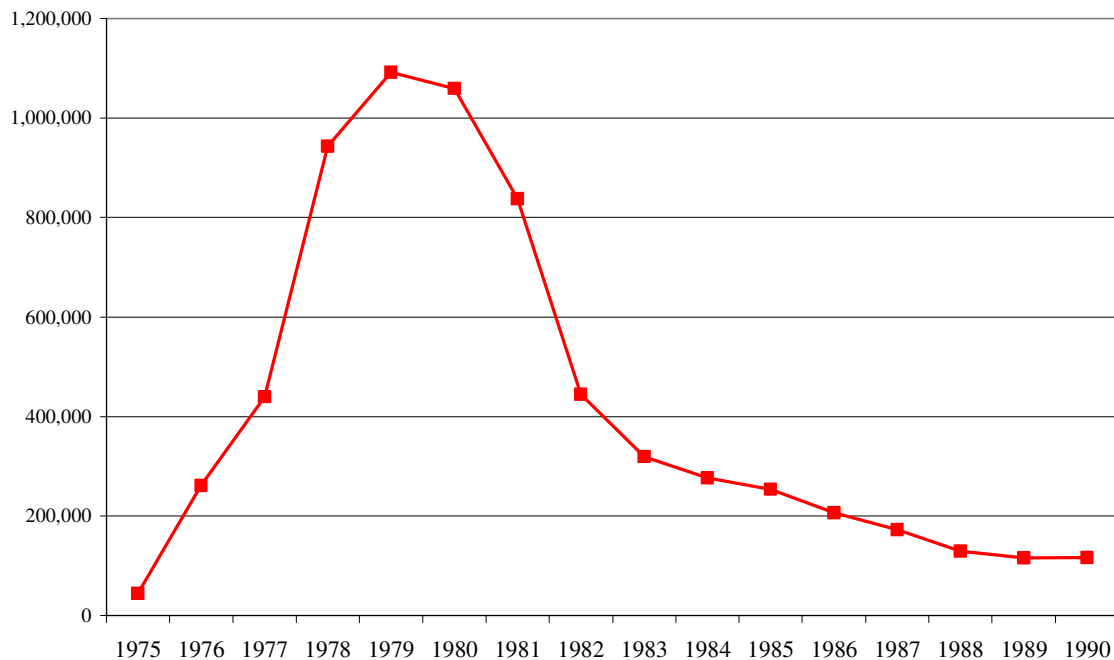
The population is multi-racial (unlike actually existing renewable energy groups) and exhibits social and economic equality. Wind, solar, biomass, and small hydropower provide the energy the town needs and activities include urban gardening, and recycling. There is a free medical clinic, comprehensive sex education, in short virtually everything needed to infuriate conservatives and present solar as a threat to the existing way of life in the United States.

This poster and the arguments around it might seem like a foolish act on the part of the ecological advocates, and they were. But their view of the possibilities for radical change was influenced by their historical context. Many intellectuals, and no small part of the population, (Laird 1989) shared their notion that the United States was in a state of crisis. The energy crisis was the third serious setback in rapid succession. The United States had seen rioting and social unrest associated with civil rights issues just a decade earlier and the resulting racial tensions were very much alive in the 1970s. In addition, the country suffered a humiliating defeat in the widely unpopular war in Vietnam, culminating in the final withdrawal of all American troops in 1975. Finally, of course, the energy crisis had revealed another vulnerability and been part of a decade of economic stagnation. Thus in less than a decade, American’s sense of social stability at home, international power abroad, and ability to provide economic prosperity had all been badly shaken. The notion of a deep, systemic crisis was not so far-fetched as it looks in hindsight, and the ambitious ecological renewable energy advocates thought such a crisis was a time when it might be possible to create a new society. Indeed, many people opposed to these advocates thought such a crisis was nigh and were trying hard to avert it.

Energy's Slow Re-emergence: The 2001 Energy Policy Study

President Carter had started the decontrol of oil and natural gas prices and that trend continued under President Reagan. However, other than eliminating price controls, President Reagan rolled back much of President Carter's energy policy. He attempted to abolish the Department of Energy but encountered bipartisan resistance, and the proposal failed (Raines 1981, Miller, 1981. For an overview of Reagan's early years, see Katz 1984). However, while he was not able to eliminate that institutional structure, he was able to cut much of its funding, particularly for renewable energy.

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Throughout the 1990s the liberalization of the energy system continued, with some of the individual states (which in the United States have the greatest power over electric utilities) restructuring their utility systems (Hirsh 1999). However, at the same time, energy began to re-emerge as an important political issue and government involvement increased. Immediately after the first Gulf War, the first President Bush pushed for a new energy policy law and increased funding for energy R&D, among other things. By the year 2000, oil and natural gas prices had gone up (EIA 2007), and California experienced turmoil—high prices and blackouts—in its electricity market due the manner in which it had restructured as well as the machinations of some energy supply companies.

By the time President George W. Bush took office in January 2001, energy was a high-salience item on the political agenda. During his second week in office the President set up the National Energy Policy Development Group, chaired by Vice President Cheney and consisting of other members of his Cabinet. He charged that group with coming up with a comprehensive energy policy. The Group released its report in May 2001 (NEPD 2001). In its substance, the report is in many ways not surprising coming from a conservative administration whose leaders were both in the oil industry. However, the discourse in the report is in some ways surprising and in any case quite revealing about the sociotechnical imaginaries that underlie the report and how renewable energy sources have become more compatible

with that dominant, officially sanctioned imaginary. Yet again, values of national security and economic growth drive energy policy, and yet again political elites believe that growth in energy demand is inevitable and that only technological innovation can meet that demand. All of these policies are in defense of a democratic market economy, now perhaps more post-industrial than industrial. Indeed, the report depicts reliable and reasonably priced energy as necessary to avoid the risk of getting a different society. “America’s energy challenge begins with our expanding economy, growing population, and rising standard of living. Our prosperity and way of life are sustained by energy use” (NEPD 2001, p. ix).

However, the report also features strong and pervasive discourse about the environment. “America’s commitment to environmental protection runs deep. We are all aware of past excesses in our use of the natural world and its resources. No one wishes to see them repeated. In the 21st century, the ethic of good stewardship is well established in American life and law” (NEPD 2001, p. xiv). This discourse about protecting the environment shows up repeatedly and even gets its own chapter in the report. Energy supplies must be “environmentally sound.” There is no talk of dismantling regulatory agencies, once a goal so popular among conservative elites. The report almost says something nice about regulation.

As U.S. energy needs grow, additional innovations will be necessary to continue improving environmental conditions and to meet new environmental challenges. As we improve the energy production and distribution system, all levels of government must ensure that regulatory systems protecting public health and the environment are rigorous and efficient, and encourage innovation and improvement (NEPD 2001, p. 3-1).

Coming from the most conservative administration in many decades, this is quite a statement. But it is not a surprise. Public opinion polling had for decades been showing strong public support for protecting the environment, and conservative advisors like the pollster Frank Luntz had been arguing for some years that the Republicans had to stop sounding anti-environmental and needed to use poll-tested phrases and stories to convince voters that they too cared about protecting the environment (Lee 2003).

However, this environmental discourse exists as an overlay on the more fundamental problem. The report frames the energy problem much the same way as had others over the past fifty years. “Our challenge is clear—we must use technology to reduce demand for energy, repair and maintain our energy infrastructure, and increase energy supply” (NEPD 2001, p. 1-1). The consequences of not doing so were high energy prices and dependence on foreign oil. The report devotes an entire chapter, titled “Striking Home,” to the effects of higher prices. The chapter begins “American families, communities, and businesses all depend on reliable and affordable energy for their health, safety, and livelihood” (NEPD 2001, p. 2-1). The solution to the problem, the report makes clear, is greatly expanded production of domestic energy sources, including greater use of domestic coal and oil. This includes drilling for oil in frontier areas such as the Arctic National Wildlife Refuge (ANWR), a proposal fiercely opposed by environmentalists. In what I assume was intentional irony, the report proposed using royalty payments from ANWR production to fund R&D for renewable energy.

Central to all of this report’s ambitions is the need for technological innovation. Only in that way, the report argues, can the country meet its energy needs while still protecting the environment. What is different from earlier reports about this approach to innovation is the emphasis the report gives to reducing and streamlining regulations as a spur to innovation. Again, this coincides with the Bush

Administration's vision of the good society as a minimally regulated one. It also talks about the need for government funding for R&D, but such funding is only one part of the larger policy. In fact, the administration has proposed some increases in R&D funding since this report, but they have not been dramatic.

Conclusions

The continuity of values and sociotechnical imaginaries that these three reports demonstrates does not mean that U.S. energy policy and the system around it has been in stasis. Slowly, painfully, advocates for changes to the system have insinuated their ideas into the policy process and since 1992 administrations have slowly and erratically increased support for alternative forms of energy. Individual states have instituted much more aggressive regulatory policies for renewables and efficiency than those of the federal government (for an overview, see the Database of State Incentives for Renewable Energy, www.dsireusa.org). Wind and solar energy are the most rapidly growing energy sources in the country. But there are two points to note about these changes.

First, renewable energy advocates have gotten better at fitting their technologies into the existing mainstream sociotechnical imaginary rather than trying to change it. A changing business structure for the industry has helped that change greatly. Instead of small firms owned by devoted advocates of renewables, the industry today includes huge multinational firms, especially from Europe and Japan. A listing of such firms includes General Electric, BP, Royal Dutch Shell, Sony, and Sharp, as well as the more specialized but still large wind firms in Denmark, Germany, and Spain. Large and important firms now have a stake in renewable energy, which greatly aids its credibility and acceptance among political elites.

Second, by accepting most of the standard sociotechnical imaginary, renewable energy advocates are accepting a definition of the problem that excludes certain features of the relationship of energy to society. Questions about equity and decentralization for local control seem to vanish amid the excitement of gigawatts of annual installed wind capacity. Policy makers and advocates for change may both neglect forms of renewable energy that make little or no appearance in the official statistics, such as passive solar or daylighting. Some of the problems may be solved by more nuanced energy policies and some may not be the proper province of energy policy at all. But it is not a small thing to lose sight of them. Energy is so integral to how our societies function that it is foundational to any sociotechnical imaginary. The understandable excitement of attaining more sustainable sources of energy should not stop us from imagining better worlds.

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