The Politics of Clean Energy: Moving Beyond the Beltway

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We can say two things with a high degree of confidence about clean energy policy in 2011. First, a price on carbon is a desirable, if not a necessary element for a transformative energy policy. Second, the

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112th U.S. Congress will not address climate change legislation. While the 111th Congress came close to passing the Waxman-Markey bill that contained cap-and-trade provisions, that proposal was the victim of debilitating Washington politics. The federal role in clean energy politics has been diminished substantially, certainly in the legislative branch. Nevertheless, the development of or movement toward a clean energy future is not only desirable, but offers multiple returns on any investment we make today. The longer we wait, the more we will pay. The Department of Energy (“DOE”) notes the urgency of a clean energy transition and the need for a “new industrial revolution” to increase the likelihood of future economic prosperity.

Prospects for U.S. leadership, domestically and internationally, in addressing climate change are dim. World leadership also appears lacking to the point at which moving forward on climate change appears incoherent and spasmodic at best. Lord Anthony Giddens, for example, has written, “we have no politics of climate change.” Giddens may well be in despair, yet he is not alone in his despair as other energy analysts assess global climate change activities as being in gridlock. From the federal perspective, his argument seems correct: the U.S. has no politics of “climate change.” Nevertheless, the country may address climate change indirectly by focusing on clean energy, by transforming our traditional fossil fuel-based energy policy, and by recalibrating our traditional energy economy.

This article argues that the United States can achieve a new and smart energy policy and that we are taking active steps in this direction. Off of the Hill, at 1600 Pennsylvania Avenue, there is clear thinking about clean energy. Consider President Obama’s choice for Secretary of


4. See JOSEPH P. TOMAIN, ENDING DIRTY ENERGY POLICY: PRELUDE TO CLIMATE CHANGE (2011) [hereinafter ENDING DIRTY ENERGY POLICY].


7. See, e.g., DAVID G. VICTOR, GLOBAL WARMING GRIDLOCK: CREATING MORE EFFECTIVE STRATEGIES FOR PROTECTING THE PLANET (2011); see also NICHOLAS STERN, A BLUEPRINT FOR A SAFER PLANET: HOW TO MANAGE CLIMATE CHANGE AND CREATE A NEW ERA OF PROGRESS AND PROSPERITY (2009).
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Commerce, John Bryson. Bryson has been the CEO of a public electric utility, a founder of the Natural Resources Defense Council, and sits on the boards of such organizations as Boeing and Disney and clean energy firms like Coda Automotive and BrightSource Energy—exactly the right job description for a clean energy advocate. Additionally, the DOE has made U.S. leadership in clean energy technologies its first priority. Clean energy, at its core, is about business as much as it is about the environment. Simply, public and private sector actors beyond the Beltway are crafting a clean energy agenda and promoting a new energy economy.

This article describes the path for adopting that policy and sketches the politics of clean energy. This path is smoother than attempting to pass climate change legislation because there is a significant consensus about what the contours of a clean energy policy should be and there is an emerging clean energy politics that will drive that change. Much of the politics is occurring off Capitol Hill and beyond the Beltway. Clean energy politics are emerging despite the lack of Congressional leadership. The clean energy agenda is wise because a transition to a clean energy portfolio can promote environmental protection, stimulate the economy through innovation and job creation, advance national security and ultimately reduce the cost of energy consumption.

For the purposes of this article, the concept of a clean energy policy is defined as: (a) an aggressive reduction in oil and coal consumption; (b) the use of natural gas as a transitional fuel once hydraulic fracturing (“fracking”) is adequately addressed; and, (c) the rapid expansion of

9. Tomain, Our Generation’s Sputnik Moment, supra note 2, at 405–07.
10. DOE STRATEGIC PLAN, supra note 5, at 9.
12. Hydraulic Fracturing (“fracking”) has become newsworthy for two reasons. First, recent exploration of the Marcellus shale formations promise to provide substantial amounts of domestically produced natural gas (up to 20% of the country’s natural gas need by 2020). For the most part, that gas will be used to generate electricity. Second, environmental concerns have been raised about the impact on drinking water and groundwater. Congress has charged the Environmental Protection Agency (“EPA”) to study and report by late 2012 on the environmental consequences of that process. See Hydraulic Fracturing, EPA, http://water.epa.gov/type/groundwater/uic/class2/hydraulicfracturing/index.cfm (last visited Sept. 12, 2011). The EPA has submitted a draft report for review by the agency’s Science Advisory Board. See EPA, DRAFT PLAN TO STUDY THE POTENTIAL IMPACTS OF HYDRAULIC FRACTURING ON DRINKING WATER RESOURCES
energy efficiency and renewable resources.\textsuperscript{13} Of course, this very general definition is neither nuanced nor comprehensive.\textsuperscript{14} It is intentionally ambiguous, for example, about nuclear power. Nevertheless, it will serve as a marker for a discussion of the politics involved in making this vital transition.

The question is fairly presented: How does a national clean energy policy become officially adopted? This article describes the necessary elements for such a proposal to be adopted and argues that we, as a country, are more than half the way there. Of course, even “more than half the way” to the clean energy goal line is still a failure to score. Yet, the momentum toward a clean energy future is strong, the players are serious and many, and the policy choices are clear. What remains to be done is custom tailoring the political conversation to advance a clean energy agenda independent of an effort to address climate change. Fortunately, there is no either/or choice between clean energy and climate change. Rather, clean energy and climate change are complementary policies that can proceed simultaneously without one undermining the other. Nevertheless, the smart political choice is to focus on a smart energy future by designing an energy policy that is responsive to the threats posed by a warming planet while concentrating on clean energy markets and a new economy rather than on possible limits to resource use and economic growth.\textsuperscript{15}


\textsuperscript{14} For a more detailed and comprehensive description of clean energy policy, see TOMAIN, ENDING DIRTY ENERGY POLICY, supra note 4, at chs. 3–4.

\textsuperscript{15} See BILL MCKIBBEN, EAARTH: MAKING A LIFE ON A TOUGH NEW PLANET (2010).
I. AN ANALYTIC MODEL FOR A CLEAN ENERGY POLICY

We are all well aware that government regulation is ubiquitous in our lives. The government regulates the labels on foods and drugs we consume, what we watch on TV or listen to on the radio, as well as the air we breathe and the water we drink. We may be less aware of the fact that the government intervenes in private markets for only a limited number of reasons and that government has at its disposal only a limited number of regulatory tools to apply to perceived social and economic problems. Still, the range and pervasiveness of government regulation is as remarkable as it is contestable and contested. Does the government regulate health care too much or too little? Should the government impose more stringent controls on carbon emissions or let a less regulated market manage the environment? What role, then, does the government play in adopting a clean energy platform and in rejecting its incumbent dirty energy past? Any public policy, including clean energy, must pass through the gauntlet of the government approval process and to understand that gauntlet, we can apply an analytic model.

This analytic model, or heuristic, is not as robust as the microeconomic model used by economists. The microeconomic model is sturdy and has a good deal of predictive value. If, for example, the price of gasoline at the pump rises and stays at $4 dollars a gallon, then we can predict with confidence that people will drive less and they will switch to more fuel-efficient vehicles. The model has other applications. Most notably, it has been applied to political markets. Some political scientists, for example positive political theorists and public or rational choice theorists, have adopted and applied the microeconomic model to politics in an attempt to explain legislative and bureaucratic behavior. At its most basic, the political science version of microeconomics roughly equates dollars with votes. Under this rubric, politicians and bureaucrats use or refrain from

using\textsuperscript{18} their legislative or regulatory authority to curry favor with political contributors and other actors for re-election or job advancement.

Aside from that approach, other political scientists and government regulation theorists do not have a model of equal capability. The political science version of the microeconomic model cannot, with as high a level of assurance, predict which political or policy initiatives are likely to emerge from the welter of social problems and concerns that confront us at any given time. However, a lighter heuristic model does exist. This model may not be able to predict which regulatory proposals will come forward, but it can predict which ones will fail.\textsuperscript{19} Simply, a regulatory proposal must satisfy three requirements before it becomes a law on the books. Before a proposal is adopted as law it must satisfy constitutional and statutory law requirements; must be based on a policy analysis backed with reasonable empirical data; and, it must have sufficient political support.\textsuperscript{20} To be sure, those three requirements—law, policy and politics—are in themselves complicated and sometimes quite quixotic, especially the political leg of the stool. Fortunately, in the clean energy space, two legs of the stool—law and policy—are sturdy and in place.

\textit{A. The Law of Clean Energy}

Energy law as a recognized legal discipline emanated from the energy crises of the 1970s. Particularly in response to the OPEC Embargo of 1973 and the ensuing inflation, Presidents Nixon, Ford, and Carter each addressed energy as a matter of national economic and security concern.\textsuperscript{21} In one form or another, energy efforts were intended to promote our independence from Middle East oil, but all failed to achieve that independence.\textsuperscript{22} The failure was a double one. In the first instance, since the 1970s, our oil imports have only increased, from approximately 25\% in 1970 to in excess of 60\% today.\textsuperscript{23} In the second instance, all energy legislation for the last four decades has continued to promote a traditional

\begin{itemize}
\item[20.] See Shapiro & Tomain, supra note 16.
\end{itemize}
fossil fuel energy policy with occasional nods to energy efficiency and to a greater use of renewable resources.24

Even though energy law and policy may be seen as a reaction to the economic disruptions of the 1970’s, energy law had numerous antecedents, most particularly the regulation of public utilities such as natural gas and electricity. The principals of public utility regulation, later termed the regulation of network industries,25 are significant. Most particularly, public utility regulation was based upon the radical idea that in a capitalist democracy government can enter into private markets and set prices in those markets.

Today, such an idea sets the teeth of libertarian Tea Partiers on a decided edge. Yet, government price setting is a 19th-century idea based on two elements. First, government can exercise price setting authority once the legislature has deemed that regulation of a service or product is “in the public interest.”26 Second, the particular industry that provides the good or service must be found to suffer a market imperfection such as natural monopoly.27 Notice that neither of these two elements are purely technical. Instead, even if we define “natural monopoly” in purely economic instead of political terms, then identifying what constitutes the “public interest” is essentially a political decision. Economists contest the issue of whether a “natural monopoly” exists, or if it does exist, whether regulation is justified.28 Thus, both elements needed to justify government price setting in private markets involve political considerations.

Once regulation of prices is justified, then it is a relatively small step to regulate entry and exit into and out of energy markets, and to regulate the allocation of goods within those markets, especially in times of

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27. Id.
increased scarcity. Entry controls such as licenses; exit controls such as abandonment permits; and, allocation controls are all regulatory tools that have been applied to oil, natural gas, nuclear power, hydroelectricity, electricity and coal among other energy resources. Consequently, the legal element for supporting a clean energy policy has been long and well accepted and it is amply discussed in a new publication, *The Law of Clean Energy* that surveys an extraordinarily wide range of local, state and national laws that directly regulate and promote clean energy initiatives.

Still, legal questions will occur and legal issues will continue to be contested. Because legal rules have been applied for over a century to an entrenched fossil-fuel based energy policy that has been adapted for traditional energy firms with their own corporate and industrial configurations, new entrants and new configurations will inevitably confront legal rules that have become encrusted by old ways. Federal Energy Regulatory Commission rules, for example, have been interpreted in a way to serve individual utilities and their customers and, today, a smart grid will require a different form of cost allocation that needs to be fully designed and adopted before investors will be confident that their expectations of returns are reasonable. Similarly, pre-emption or commerce clause rules may interfere with attempts to rationalize renewable portfolio standards across states and streamline permitting processes for solar and wind installations on public or tribal lands for new transmission lines so that renewable power projects can be connected to the grid.

**B. Consensus Clean Energy Policy**

The second leg of the model requires policy support for any regulatory proposal. Because we are dealing, initially, with a legislative matter of general applicability that does not affect any particular protected class, the policy support for clean energy need only satisfy a standard of rationality. The rationality standard, in turn, requires that a regulation be reasonably calculated to achieve the public interest end that is sought.

31. See, e.g., Illinois Com. Comm’n v. FERC, 576 F.3d 470 (7th Cir. 2009); Piedmont Environment Council v. FERC, 558 F.3d 304 (4th Cir. 2009); Cal. Wilderness Coal. v. DOE, No. 08-71074 (9th Cir. Feb. 1, 2011).
Subsidies for solar power are reasonably likely to encourage the production of solar installations and equipment. Therefore, a solar subsidy is reasonably related to the end of promoting this renewable resource to help protect the environment or to wean the country away from foreign oil as matters of public importance. Rationality review of regulation, then, is not a particularly difficult standard to satisfy, yet it is a useful one nonetheless because it forces policy proponents to articulate their public policy objectives, the means for obtaining them, and the data supporting them.

We must now ask whether or not there is adequate policy support for a clean or low-carbon energy policy. This may seem like a fairly mundane question, nevertheless, it must be answered and proponents of clean energy must be able to justify a move away from the traditional path to an alternative model with sufficient data. There is more than ample support for clean energy policy. In fact, policy analysts have been discussing this topic for over four decades. Not only do policy analyses satisfy the legal requirement of rationality, these analyses have been remarkably consistent over the decades.33

Four decades is a lengthy time for political action, and it is true that the policy analyses for clean energy have shown development. It is also true that these analyses tend to converge quite significantly over that time. Energy policy studies, similar to the development of the field of energy law, began in earnest in the 1970s. During that time, the price of a barrel of oil quadrupled, leading to double digit inflation, the rationing of oil as consumers waited in lines at gas pumps, and led to remarkable and unsuccessful oil price and allocation controls. The history of the period is also remarkable for its great flurry of energy legislation, especially during the Carter administration.34 President Carter’s National Energy Act35 and Energy Security Act36 set the contours for the new discipline of energy law and policy. This legislation created the cabinet level Department of Energy and attempted a comprehensive regulation of energy production, distribution and consumption.

Both in response to this flurry of legislation and in response to concerns about future energy supplies and future economic disruptions, think

33. TOMAIN, ENDING DIRTY ENERGY POLICY, supra note 4, at chs. 3–4 (chapters discuss numerous policy studies dating back to the early 1970s through 2010).
34. See TOMAIN & CUDAHY, supra note 24, at ch. 2.
tanks and university research centers began publishing energy studies. The early energy studies of the 1970s and 1980s were based upon two predominant ideas. First, energy independence and second, easily available energy were important for reasons of economic health and national security. In short, these studies were committed to the traditional idea that there was a direct and positive correlation between energy production and economic growth. Consequently, because of this perspective, these early energy studies were most concerned about increasing energy prices. High energy prices had led to high inflation and consumer dissatisfaction. Indeed, high energy prices betrayed the unstated principle of U.S. energy policy—consumers were “entitled” to cheap, abundant, and reliable energy resources.

The consumer (and producer) expectation of cheap energy, however, obscured the reality that cheap energy was also dirty energy. In effect, it was U.S. policy that cheap, dirty energy was treated as a public good. Nonetheless, cheap energy was considered a necessary element of the economy and high prices, according to such analyses, posed an unacceptable economic threat. The threat to the environment was barely acknowledged in these studies.

As it turns out, these studies tended to over-predict high energy prices and in this regard their conclusions were off the mark. After the international energy markets stabilized, oil and other resource prices fell well below the dire estimates. Still, the studies were sensitive to the country’s need to remove itself from Middle East oil and to develop substitutes, including the expanded use of nuclear power, for an independent energy economy.

The 1970s opened the field of energy law and policy. That decade also witnessed the creation of our nation’s most extensive environmental laws to protect air, land and water, and to monitor major federal actions that threatened the human environment. It has been, and to some degree


continues to be, a curiosity in our public policy landscape that energy and the environment have been treated independently of each other for the most part. There are historical, political, institutional and conceptual reasons for the distinction even though energy production, natural resources and the environment are directly intertwined with each other all along the fuel cycle.

Briefly, the conceptual distinction between energy and the environment is based upon two distinct views of the world. From the energy perspective, exploration and production are directly responsible for a growing and vibrant economy. From an environmental perspective, resource protection and conservation are normative values of high priority. Indeed, the conservation movement can trace itself easily back to Teddy Roosevelt’s creation of national parks and back further to his spiritual forebears, the Transcendentalists.

For decades, energy law and policy and environmental law and policy have simply talked past each other. Energy lawyers and policy analysts speak the language of production and economy, while environmentalists focus on preservation and protection. Energy lawyers and policy analysts tend to ignore the tragedy of the commons and environmentalists tend to ignore the economic costs of doing nothing and the lifestyle costs of limiting growth.

A clean energy politics can better our understanding of the relationships between energy and the environment. A clean energy politics can also fashion a policy in which energy and the environment share a common vocabulary and common metrics. The beginning of this merger can be traced, in part, to the environmental movement with its concern for more benign uses of natural resources. However, writers such as Amory Lovins and Herman Daly, who engaged in energy analysis on its own terms largely independent of the environment, set the stage on which energy advocates and environmental advocates could act together.


45. Herman E. Daly, Economics in a Full World, 293 SCI. AM. 3 (Sept. 2005).
Lovins, Daly, and others,46 in the tradition of E.F. Schumacher’s *Small is Beautiful*,47 argued strenuously that the key myth to debunk was that energy production and economic growth were inexorably tied together and that growth in the energy sector was the *sine qua non* for economic growth. If, for example, it could be shown that economic growth can continue with less energy consumption, then the myth is busted. Indeed, since the mid-1970s U.S. energy intensity has declined noticeably.48 And, world energy intensity is also predicted to decline.49 A developed country, such as the United States, can reduce its energy consumption while increasing its economic productivity. Exhibit A for that proposition is the state of California, which has leveled its electricity consumption while increasing its population and economic growth since 1970.50

In the 1970s and early 1980s, energy and environmental studies continued to stay within the mindsets and vocabularies of their own disciplines. As a consequence, energy and environmental laws remained uncoordinated and were administered by separate government agencies with little crossover between the two. Separate governance continues to this day, yet policy analysts over the last decade have begun to bridge the gap between energy and environment, recognizing the inevitable consequences of an energy policy that ignores the social costs of fossil fuels.

There has been an explosion of policy analyses addressing clean energy from multiple precincts within the last decade. University-based institutes and research centers, newly created non-governmental organizations (“NGO”) and independent think tanks,51 as well as traditional trade associations and interest groups regularly publish clean energy studies that evince the beginning of a serious dialogue between energy and the environment. The central concept in this new generation of energy analyses

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47. See generally E. F. SCHUMACHER, SMALL IS BEAUTIFUL: ECONOMICS AS IF PEOPLE MATTERED (1973). Schumacher’s influence has led to the creation of an economic think tank—The New Economics Institute, see http://neweconomicsinstitute.org/.


49. INT’L ENERGY AGENCY, WORLD ENERGY OUTLOOK 2010 81 (2010).


51. See, e.g., ENERGY POLICY PROJECT OF THE FORD FOUND., supra note 37; KENNETH J. ARROW ET AL., supra note 37; SAM H. SCHURR ET AL., supra note 37.
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is that any discussion of future energy policy cannot focus solely on the relationship between energy and the economy. Energy, of course, is and will always be a primary input into the economy. Nevertheless, the linkage between energy production and economic growth is no longer as direct or costless as it was once believed. Indeed, the entire concept of energy efficiency is based upon the idea that we can use less energy or use energy more intelligently while not sacrificing our economic health.

Current energy studies, like those of a generation ago, continue to discuss the need for energy independence or, perhaps more accurately, independence from Middle Eastern oil. These studies approach discussion of oil independence in terms of both national security as well as economic security. From a national security perspective, continued reliance on oil imports from an unstable Middle East poses not only security threats to our country but imposes substantial national security costs as well. From an economic security perspective, volatile prices make investments in the energy sector financially risky as our country’s flirtation with synfuels in the late 1970s and early 1980s demonstrated. Dependence on imported oil thus threatens economic security because prices are unstable, subject to manipulation by the oil cartel, and disrupt economic planning. Finally, these new policy studies are acutely aware of the challenges posed by global warming and climate change. In brief, these new energy policy studies address security and the environment as well as energy and the economy. Because of these four variables—energy, economy, environment, and security—the new energy studies focus on clean energy as distinguished from fossil fuels. Clean energy policy, then, shifts its focus from fossil fuels to energy efficiency and renewable resources as necessary elements for a healthy future economy.


C. The Political Challenge

Clean energy policy, then, has ample legal and policy support for going forward. Clean energy policy, however, faces a substantial political challenge. In part, that challenge can be met with a more finely tuned message about a smart energy future, discussed below. Above, the lack of congressional leadership on clean energy has been noted. This lack, however, does not end the story about clean energy politics. Rather, the political focus must lie elsewhere and it does.

President Obama has consistently advocated a clean energy future. He assembled a “green energy dream team” in the White House and in his administration; his annual budgets to Congress show increased support for clean energy initiatives and decreasing support for fossil fuel subsidies, while regularly advocating for increased clean energy innovation research and design (“R&D”) funding. One branch of government, of course, can only go so far, yet President Obama has begun to execute an energy transition to a clean energy economy more than any president before him.

The real politics of clean energy are being acted out in other precincts. By way of example, the new generation of energy reports discussed above is decidedly non-partisan and those reports have been animated and published by a wide variety of research centers and NGOs. Perhaps even more impressive has been the willingness of private sector actors to fund clean energy activities. Over the last few years, domestic and global clean energy funding has expanded more than any other investment sector. Select venture capitalists concentrate on clean energy and climate change initiatives. Commercial and investment banks have set up clean energy, climate change and carbon emissions investment desks. In a complementary way, public sector innovation funding is increasing, with the specific goal of bringing clean energy technology innovations to commercial scale. From the public sector, clean energy programs are taking place in the states, again most notably in California, in the cities, and in efforts such as the regional greenhouse gas initiative in the Northeast and in the Midwest.

54. Tomain, Our Generation's Sputnik Moment, supra note 2, at 389.
57. See REG’L GREENHOUSE GAS INITIATIVE, http://www.rggi.org/home (last visited Dec. 20, 2011); see also Regional Greenhouse Gas Initiative, PEW CTR. ON
climate change program as well. Here, it is important to note that even though Washington leadership on Capitol Hill is decidedly absent, a vibrant clean energy politics exists and thrives elsewhere.

The political landscape for a clean energy politics is under active development. Certainly, national leadership from Washington is highly desirable and that leadership can be best manifested by legislation that sets a price on carbon. A well-constructed carbon price, i.e., a price that fully accounts for the cost of carbon externalities, would begin to level the playing field for clean energy market actors. Nevertheless, even without that price, the contours of the developing clean energy politics are coming into clearer view.

A robust clean energy politics must, at a minimum, address the following issues. First, what options are available for pricing carbon? Second, as a society, we must recognize that clean energy, like climate change, is a categorically different type of regulatory problem necessitating categorically different regulatory solutions. Third, moving away from a century-old fossil fuel policy is challenging—a policy with which all of us, consumers and producers alike, have grown quite comfortable. What lifestyle changes, then, will result from switching industries? Fourth, what is the political “message” for clean energy? Finally, who are the likely foot soldiers to carry the message? These are the political issues to which we now turn.

II. BACKGROUND CONDITIONS

The most fundamental and basic argument for clean energy politics is that the focus should remain on efficiency and non-fossil fuel resources instead of attending to the complications involved with global warming or climate change. Indeed, even choosing the proper label—climate change or global warming—is contentious in itself as well as in the environmental community. While it is true that energy and the environment are directly connected and that a clean energy politics is complementary to climate change, there are differences between the two that are noteworthy, can inform the public discussion and may become


contentious. By way of example, clean energy advocates prefer to streamline the federal permitting of wind and solar projects on public lands, which challenges the interests of environmentalists that seek to protect those lands as well as to guard against environmental harms involved in the construction of these renewable resources projects.59

A. Conceptual Difficulties

Clean energy and climate change, however, share a very deep and important commonality. Both issues are categorically different from the routine sort of regulatory problems that governments have confronted in the past. When the modern activist state began in the late 19th and early 20th centuries, a pattern for government regulation was established. Our government is quite content to let competitive markets serve as a force for social ordering by which is meant the production, distribution and consumption of goods and services throughout society as widely as possible. Through the give-and-take of the marketplace, both consumer and producer surplus is maximized in competitive markets. By the mid-to late 19th century, however, it was clear that industrialized economies could distort markets for any number of reasons. Oil, grain, and rail cartels exhibited monopoly power and thus constrained consumer choice while creating producer rents. Similarly, the failure of drug and pharmaceutical industries to police themselves and allow tainted products onto the market serve as other examples of market failure. In response to these market failures, government regulation is justified. The central point is that government reacts to problems ex post rather than anticipates them ex ante.

Another characteristic of traditional government regulation is that problems such as a monopoly in an industry, or asymmetrical information, or unsafe and dangerous products are all fairly discrete problems that, with a well-crafted regulation, can be fixed. This type of retrospective government regulation can even go beyond discrete problems in specific industries and can address economy-wide problems. Government regulation during the New Deal did shore up failing financial markets through securities regulation, protected the middle class through Social Security and contributed to building a national energy infrastructure through oil pipeline, natural gas pipeline and electricity transmission

59. The argument against using public lands for clean energy projects can also be manipulated by anti-green interest groups. See Robert Bryce, The Gas Is Greener, N.Y. TIMES, June 8, 2010, at A21.
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regulations.\textsuperscript{60} Traditional regulation, then, is best characterized as retrospective and discrete.

Neither clean energy nor climate change can be considered discrete in the sense just described. The contours of both are complex and multi-layered. Indeed, complexity and uncertainty are the hallmarks of each problem, although less so for clean energy. Climate change, to begin with, has an established science relative to understanding that the planet is warming. There is also a strong scientific consensus that there is a human contribution to that warming because of the burning of fossil fuels.\textsuperscript{61} There is less scientific consensus, however, about the exact relationship between the build-up of greenhouse gases and the rate of temperature increase. Further, even assuming that policymakers can establish specific benchmarks, such as limiting the amount of carbon dioxide in the atmosphere or preventing or limiting warming to a certain degree, the technical means for doing so are open for discussion.\textsuperscript{62} Moreover, the calculation of costs and benefits for reducing global warming

\textsuperscript{60} See, e.g., \textsc{Alan Brinkley}, \textit{The End of Reform: New Deal Liberalism in Recession and War} (1995); \textit{see also} \textsc{Tomain \& Cudahy}, \textit{supra} note 24, at ch. 2.


are highly contentious. In short, climate change is imbued with scientific, technical, and economic uncertainty and complexity. To further complicate matters, climate change is multi-generational, multi-jurisdictional, and trans-boundary. Climate change is a global problem that will outlast all of us.

Because of the magnitude of the climate change challenge, it is not unusual for policy makers, politicians and ordinary citizens to resist confronting the problem because it is beyond their ability to understand and address it. Lord Anthony Giddens refers to this phenomenon as Giddens paradox:

Giddens Paradox captures the idea of future discounting. It is an ordinary psychological phenomenon that individuals prefer to think about today rather than tomorrow, particularly a tomorrow many years in the future because of the difficulty of evaluating the future. Climate change is more likely to affect our grandchildren than it is likely to affect us. Carbon dioxide released into the atmosphere today cannot be measured for 30 years as an example.

Clean energy shares many of these issues but not to the same degree. Thus, assuming that clean energy is a desirable path forward regardless of climate change, numerous technical and economic uncertainties and complexities must be confronted. Perhaps the most significant problem that faces clean energy is the existence of an incumbent fossil fuel industry that has sunk billions of dollars in capital expenditures. These expenditures have political as well as economic consequences. The politics of dirty energy is well entrenched in U.S. law and institutions and dirty energy advocates have successfully prevented Congress from


64. Giddens, supra note 6, at 2.

acting. Clean energy advocates, then, must not only justify a new energy policy, they must confront an incumbent one. The proper justification can occur by arguing that a clean energy future is economically desirable and valuable. Still, the devil in the details involves which clean technologies can be made commercially available, when they can be made available and at what cost.

Thus, while clean energy and climate change contain complexities and uncertainties along numerous dimensions, clean energy is something that we can address now. Clean energy does not embody Giddens Paradox in the way that the paradox applies to inaction over climate change. Individuals can use compact fluorescent light bulbs, recycle, purchase electric or hybrid vehicles, monitor their consumption of electricity and politically support the greater use of renewable resources such as wind and solar. In other words, a clean energy politics can transform government policy and can transform the way we live today, rather than wait a generation or two.

B. Pricing Carbon

Clean energy and climate change programs would both benefit from a nationally set carbon price. Indeed, advocates from both camps recognize the central importance of a price on carbon for advancing both agendas. Unfortunately, these same groups recognize the unlikelihood of Congressional leadership on this issue. Nevertheless, a brief primer on the four basic methods for pricing carbon is instructive. As for the four methods, two rely on economic or financial indicators and two rely on standard setting as regulatory options.

Economists generally agree that the simplest and most straightforward method to price carbon is a carbon tax. Known as a Pigovian tax, named after the English economist, A.C. Pigou, it is imposed on activities, such as greenhouse gas emissions, which generate negative externalities. By imposing a tax, the price of that activity can rise to the point at which consumption diminishes to a desired level or abatement measures are

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taken to reduce the impact of the negative externalities. The trick is to set the optimum tax rate.

In the context of clean energy policy, a tax would be imposed on gasoline, coal burning and other fossil fuel activities that generate greenhouse gas emissions. Taxes are simple to design and administer, and they have the advantage of signaling a price to the market. A tax, however, does not set a limit on emissions. Clearly, the tax would raise the price of certain products to consumers, which makes this approach wildly unpopular. On one hand, higher taxes reduce the consumption of fossil fuels and reduce carbon emissions. On the other hand, higher consumer prices are politically unattractive, most often regressive and can have an inflationary impact. A carbon tax policy, however, can be designed to help ameliorate some of the regressive effects that tax will have on lower income consumers through tax credits, rebates or the like. A carbon tax also generates revenues that can be shifted back to consumers or invested in a clean energy transition or both.67

As simple and as directed as a carbon tax is, difficult issues must be addressed. What should the tax rate be? Theoretically, the tax should equal the marginal cost of the pollution, which is also known as the social cost of carbon. Experts, however, disagree on what that cost actually is.68 Additionally, how much greenhouse gas reduction can be achieved? How should revenues be treated? Should revenues be dedicated to public purposes such as clean energy? Should they be used for tax reductions?

A cap-and-trade regime is a more complicated economic regulation but it has broader political support.69 Like a tax, a cap-and-trade program is intended to raise the price of fossil fuels. Unlike a tax, though, cap-and-trade sets emissions limits but does not set a price and does not necessarily raise revenue. Instead, it is intended to be a more market-oriented

67. See, e.g., GRAETZ, supra note 53, at 180–81.
regulatory scheme. The regulator must determine a level of emissions of any particular pollutant that will be allowed. Carbon dioxide, for example, would have an allowable limit. Carbon dioxide emitters would then be required to have permits allowing them to emit to the allowable level. A firm, such as a public utility that cannot achieve its allowable limit would then be required to purchase tradable permits in a carbon emissions market.

A cap-and-trade scheme requires the regulator to set an emissions limit and to monitor that limit to determine its effectiveness. Additionally, the regulator must determine whether or not the emissions market is functioning as desired and that prices are regularly calibrated to achieve the desired emissions reductions. Further, decisions must be made concerning who is required to use the permits, who is entitled to offsets, and who monitors the markets.

Instead of financial indicators, government regulators can use standards as regulatory tools. The basic form of a regulatory standard would be simply to set a limit on greenhouse gas emissions. A firm, for example, would be prohibited from emitting more than a set level of carbon dioxide. In this way, the firm will then have to take measures, such as install pollution control technologies, to reduce those emissions. Thus, an emissions standard can be seen as technology-forcing. The major drawback of this approach is that a firm can go out of business because it may be unable to reduce emissions in satisfaction of the standard. A cap-and-trade approach gives a firm more flexibility because it allows it to trade in an emissions market to meet the standard. This approach also gives a firm more flexibility in choosing or not choosing to use pollution control technologies.

Finally, a clean energy standard has been proposed that limits the volume of carbon dioxide that can be generated by a utility. Public utilities currently emit 0.56 tons of carbon dioxide per megawatt hour of electricity generation. A clean energy performance goal would be to reduce carbon emissions to 0.4 tons per megawatt hour by 2015 with a further reduction to 0.2 tons per megawatt hour by 2035. By imposing such performance goals, a clean energy standard is neutral regarding technology, is easier to administer, and can smooth out the amalgam of renewable portfolio standards now in existence in over 30 states. The standard can also be designed to provide for clean energy credits for those firms that
exceed the goal and those credits could be sold in an emissions market
similar to a cap-and-trade market.70

These market regulations and regulatory standards are all intended to
price carbon for the express purpose of reducing greenhouse gas pollutants.
Each scheme has different attributes. Yet, all will raise the price of carbon
emissions to some extent and all should have the effect of reducing fossil
fuel consumption and promoting clean energy alternatives. Some schemes
will have greater opportunities for raising revenue than others. Further,
each has a different degree of administrative complexity. What all of these
schemes do share, however, is that they should be federally imposed
in order to have a significant impact and to have a chance of success.

Unfortunately, what all of these schemes have in common is that the
federal government will not step in to directly price carbon either through
financial or market-based regulations or through command-and-control
type standards. As policy thinkers, this impasse presents a choice: retreat or
take another tack? Markets abhor vacuums. Therefore, market actors
will not sit idly by waiting for the Washington impasse to clear. Instead,
a clean energy politics is emerging that will make its business and policy
case on its own, unfettered to climate change initiatives. Certainly, climate
change advocates and environmentalist are desirable partners for coalition
building. Nevertheless, today clean energy policy has a strong case that
is easier to craft and implement than a national climate change mitigation
policy.

III. DESIGNING A CLEAN ENERGY POLITICS

From the beginning of the modern environmental movement and from
the time of our growing concerns about energy in the 1970s, energy policy
and environmental policy have traveled fairly distinct paths. Clean energy
politics pays more attention to environmental policy than the traditional
energy path has done and yet a distinction remains between energy and
the environment. Not surprisingly, environmental advocates tend to be
sensitive to and protective of environmental threats posed by energy
projects whether they are solar farms on public lands or traditional
oil pipelines.71 Similarly, energy advocates tout our economic need for
energy and particularly our need for energy independence.

70. See Joseph E. Aldy, Promoting Clean Energy in the American Power Sector,
papers/2011/05_clean_energy_aldy/05_clean_energy_aldy_paper.pdf.
71. See, e.g., Ian Austen, Canada Prepares Plans B and C in Case Oil Sands
Pipeline Hits a Roadblock, N.Y. TIMES, June 7, 2011, at B10 (The proposed Keystone
XL pipeline is intended to transport shale oil from Alberta Canada to the Gulf of Mexico.
Most of the pipeline from Canada is already constructed and ends in Cushing,
Consequently, although clean energy and climate change are directly connected, they remain distinct concepts in public discourse and in public opinion. This continuing division between energy and the environment should send a strong signal for those who wish to craft politics of clean energy. Indeed, the most powerful political message that can be given by clean energy advocates is to demonstrate that clean energy initiatives, while consistent with responsible environmental stewardship, are important independent objectives. The message continues that the construction of a new energy economy built on energy efficiency and renewable resources is the best public policy path forward.

A. Clean Energy and Public Opinion

Public opinion polls show a continuing division among the American public between their beliefs about clean energy and their beliefs about climate change. Polls demonstrate that more Americans believe that the country’s and the world’s environments are worsening. Yet, going behind the numbers, there is a deep split along political party and ideological lines. A majority of Democrats believe that climate change is occurring and believe it is caused by human behavior. Republicans believe exactly the opposite with less than 20% believing that climate change is occurring and approximately 20% believing that it is caused by human behavior.\textsuperscript{72} The 2010 midterm election made conversation even more difficult, with half of the new incoming House Republicans denying that there is reliable science behind global warming. Indeed, climate denial is an article of political faith.\textsuperscript{73} Republican Representative and Congressional Tea Party Caucus founder Michelle Bachmann is of the opinion that global warming science is hooey and that “[c]arbon is natural, it is not harmful. It is part of Earth’s life cycle” and that to


reduce carbon dioxide will “reduce the American standard of living. . .”74 Remarks such as these are fodder for the conservative faithful.

When the conversation turns to energy, though, there is a firm consensus about the need for a new energy policy. In a June 2010 New York Times poll, 89% said that fundamental changes are needed in U.S. energy policy and 61% said that alternatives to oil should be developed with twenty-five years.75

Aside from the partisan divide, public opinion remains unsettled and conflicted about the relationship between energy and the environment. In a 2008 poll, for example, more than 90% of Americans believe that the United States should act to reduce global warming even if it had economic costs.76 Yet, in 2010 polls conducted by the same organizations, opinion had shifted. In November 2008, over 70% of those polled believed that global warming was occurring, and in June 2010 only 61% believed it to be the case. Similarly, there has been a decline in public opinion regarding the belief that global warming is occurring as a result of human action; fewer people are worried about global warming; and more people believe, against the evidence, that there is disagreement among scientists regarding global warming.77 Americans see global warming as a less significant priority in 2010 than they did in 2008.

Public opinion, though, is increasing that clean energy should be a high priority on the American agenda. Polls indicate notable support for funding renewable energy research, for tax rebates for efficient cars and solar panels, for regulation of carbon dioxide and for increasing building efficiency. A public consensus exists that energy policy should promote energy efficiency, create jobs and new energy sources, and protect national security as reasons to adopt cap-and-trade regulations.78 A recent PEW poll indicates that 63% of Americans are in favor of developing clean energy resources with 29% preferring the continued development of oil, natural gas and coal, although that preference also divides along liberal

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and conservative lines. Liberals favor clean energy and believe in climate change while conservatives prefer to “Drill, Baby, Drill” and deny global warming.79 At the same time, Americans support offshore drilling and nuclear power.80 The tension between the hard and soft energy paths continues.

Perhaps unsurprisingly, the levels of knowledge concerning climate change and responses to it vary across the population. While no single group scores particularly high in understanding climate change and possible solutions, Americans who are concerned and express a belief in climate change tend to have more knowledge than those that deny its existence.81

This conflict between climate change skepticism and growing support for clean energy is both instructive and historic. The conflict indicates that whereas public opinion is more comfortable with the language of clean energy, there remains a need for a broad political and economic conversation with a new language and a new vocabulary about a future energy policy that incorporates environmental concerns. Still, energy advocates and environmental advocates continue to talk past one another and that disconnection is continuing as the polling data discussed previously indicate.82

The lessons to be learned from this polling are clear and direct and, have in fact, been applied. In the 2010 elections in California, an initiative known as Proposition 23, was on the ballot which was aimed at voiding the previously enacted bill, the Global Warming Act of 2006. Proposition 23 supporters were well financed by anti-tax advocates and energy firms. The supporters argued that the state’s Global Warming Act would be a job killer and would raise energy prices. Opponents of Proposition 23, in part under the leadership of former Republican Secretary of State George Schultz, argued that Proposition 23 should

be rejected in favor of promoting clean energy jobs and markets. Proposition 23 was defeated by a substantial margin.83

B. The Clean Energy Message

Polls show that clean energy resonates with more Americans than climate change. Americans are voracious consumers of energy; we are devoted to our cars, and we are becoming increasingly addicted to electronic consumer products. We have enjoyed abundant and relatively cheap energy for decades. Unfortunately, cheap energy is also dirty energy and continuing to consume fossil fuel-based energy is not sustainable. Our comfort, however, with cheap energy is such that the preference for clean energy or climate change is rooted, at least partly in an unwillingness to engage any significant change in lifestyle regarding energy and the environment. Indeed, resistance to regulations that may affect lifestyle, including regulations promoting higher efficiency standards is noticeable. Witness the great light bulb conspiracy. Pursuant to the bipartisan Energy Independence and Security Act of 2007 (“EISA”), signed into law by President Bush, efficiency standards were established for incandescent light bulbs.84 This efficiency standard has transmuted into a threat to American freedom as noted by the Texas legislature, which passed legislation intended to circumvent the federal law.85 In fact, the EISA does not outlaw incandescent lights but does require them to perform more efficiently. This high-performance standard may have the effect of taking these bulbs off the market to be replaced by more efficient ones. Clearly, energy efficiency can come into play politically.

Consequently, given past experience and our historic reliance on traditional energy, then, the clean energy message must contain particular elements. First, and perhaps most importantly, a clean energy economy must continue to provide reliable energy at reasonable prices. Second, and of equal importance, the new clean energy economy must create jobs. Third, a clean energy economy should promote consumer choice, help small businesses and structure new markets. In other words, a clean energy economy must be more competitive, must be open to new entrants and must encourage new investments.

Those three elements constitute the positive dimension of a clean energy politics. The negative dimension, what a clean energy politics is

not, is more difficult, but no less necessary to convey. A clean energy economy must not continue to pollute and must account for the social costs of carbon. Because of negative externalities, a movement to a clean energy economy is an attempt to correct what is called the largest market failure in the world, i.e., global warming.86 A clean energy politics cannot deny the truth about global warming, nor can it deny a direct connection between energy efficiency and renewable resources relative to the reduction of greenhouse gas emissions. Nevertheless, the energy message must be distinct for climate change. So much so, that a clean energy politics must be willing to oppose environmental NIMBY-ism. Clean energy projects, such as Cape Wind in Nantucket Sound, must be promoted with reasonable environmental reviews and accommodations, but must not be held hostage to old anti-growth environmental politics.87

Clean energy politics must also distinguish itself from the traditional energy path that the country has followed for over a century. Fossil fuel energy fouls the air, spoils lands, and pollutes water, it is responsible for a significant number of fatalities and disease because of those negative harms. A clean energy policy would reduce risks to health and life. Given the magnitude, as well as the depth, of this market failure, government regulation is necessary.

One way of understanding our production and consumption of energy is to analyze energy more as a public good than as a private one. Of course, we treat our energy resources such as oil, gas, electricity and the like as privately owned and sold in open markets. Indeed, these resources are private goods and yet as a matter of public policy, we have treated energy as a public good. More accurately, we have treated cheap energy as a public good. We do not include all of the costs of production in the price of a gallon of gas; nor do we price a ton of coal so that it includes all of its social costs because the full price of that gas and coal would be substantially higher. Instead, it is the public policy of the U.S. to put as much cheap energy on the market as possible because the private sector has not fully accounted for the costs of pollution in its products.

Clean energy, then, should receive the same treatment. Clean energy is a public good that the private market will not fully provide because of

86. Nicholas Stern, A Blueprint for a Safer Planet: How to Manage Climate Change and Create a New Era of Progress and Prosperity 7 (2009).
its cost. Clean energy from efficiency or renewable resources or from clean fossil fuel technologies, will, at least initially, cost more than the dirty energy we currently consume. The public goods nature of clean energy is that all the costs of production are included and that clean energy will also yield environmental goods for the general public that the private market will not fully supply. 88

The message, then, for clean energy advocates is that without government regulation, the benefits of a clean energy economy will not occur. There are important concepts in this idea that a clean energy economy can only move forward with effective government regulations. At one level, a clean energy politics must proceed independently of and not adopt the language of precaution and sustainability advocated by climate change advocates. 89 Instead, a clean energy politics promotes economic growth, not limits; 90 favors markets rather than command-and-control government; and, entertains the use of nuclear power and natural gas as transitional fuels.

At a deeper level, a clean energy politics may require new economic models and a new vision of government. The role of government in clean energy politics is not intended to be top-down, but it is intended that government serve as a partner, facilitator and significant actor in building and sustaining the new energy economy. This new role may best be seen as government takes a more prominent role through innovation policy specifically intended to bring new energy technologies to commercial scale. 91 Under the old R&D model, government solved problems and promoted specific technological fixes. In the new model, government is agnostic regarding specific technologies but it is a believer in market solutions to energy and environmental challenges. 92

A clean energy politics, thus, is a broad-based approach to a significant sector of our economy. It should not favor any particular industry over another. Instead, this politics should be aligned with and complementary to issues such as healthcare, education, job creation and national security as well as environmental responsiveness and technological innovation. This “convergence” of policies perceives government as an active participant in maintaining a vibrant economy along a broad spectrum of

89. E.g., Giddens, supra note 6, at 10–11; Nordhaus & Shellenberger, supra note 82, at 16–17.
91. See Tomain, Our Generation’s Sputnik Moment, supra note 2, at 389; DOE STRATEGIC PLAN, supra note 5, at 1.
92. See, e.g., Deutch, supra note 1, at 5–7.
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interests. In this regard, then, clean energy politics should be considered either non-partisan or post-partisan. Further, clean energy politics must be forward-looking rather than fight old battles; anticipate new problems rather than try and solve old ones; and seek to diminish government’s role going forward over time rather than entrench new bureaucracies. A clean energy politics that is: oriented toward economic growth, responsive and sensitive to social costs, open and flexible to new markets and actors, recognizes global interconnections and a new role for American leadership and participation in a changing world economy, and is willing to go beyond shrill partisanship and embrace pragmatism may well be a paradigm for a new, more encompassing set of political commitments for all sectors of our society and economy.

A clean energy politics, then, can be perceived, at once, as both mainstream and radical. It is mainstream because of its focus on jobs, growth, competition and markets. It is radical because it demands that we rethink the economic model we use to set policy and that we reconceive the role that government has in furthering those policies. To be sure, a clean energy politics which seeks a radical transition away from fossil fuels and which seeks new models for the economy and for government regulation will not be cost free. We turn now to the types of choices, including costs, that we are likely to confront during transition.

IV. TRAGIC, HARD, AND HEROIC CHOICES

Any transition from one state of affairs or from one legal regime to another involves costs. And, any issue of costs requires difficult choices.

93. E.g., GIDDENS, supra note 6, at 8–9; NORDHAUS & SHELLENBERGER, supra note 82, at 230.


The better question is whether or not those choices are simply hard or whether or not, as a society, the choices we face are either tragic or heroic and likely involve difficult lifestyle choices. Will the decision to move to a clean energy future be a decision made in the calm of reasoned deliberation, in the give-and-take of ordinary politics or under a sense of crisis?97 Regardless of the many estimates of the many possible worlds of energy transition, there is a consensus among policy analysts that the sooner the transition will occur, the cheaper it will be.

Estimates and calculations regarding current cost to combat climate change are heavily contested, ranging from a manageable portion of GDP to a painful one.98 A transition from a fossil fuel policy to a clean energy policy will also involve costs, although reliable estimates are hard to come by. Instead of specific or overall costs for a clean energy transition, we can identify the likely categories of cost increases. Today, electricity from wind and solar power is more expensive than coal-fired electricity, and biofuels and shale oil are more expensive than conventional oil. Similarly, the cost of an electric vehicle or hybrid electric car is greater than one propelled by internal combustion engine but the cost of a kwh to run such cars is much cheaper than an equivalent gallon of gasoline. The good news is that efficiency and renewable energy costs are declining. In fact, new solar and wind installations in the U.S. are outpacing coal plants. In the last four years, new wind generation was second only to natural gas and more than coal and nuclear power combined.99 Similarly, the cost of solar power is projected to be cut in half over the next


decade. Thus, savings are both possible and likely even more so once an alternative energy policy is fully adopted in which case substantial profits are predicted.

In the area of costs, we can also distinguish between climate change and clean energy. In both instances, the range in the amount of costs will depend upon the rapidity of a transition. When we speak about climate change we are talking about generations. What will global temperature increases be 100 or 200 years from now? When we speak about a transition to a clean energy economy, though, the time frames are shorter and we should not be put off by thinking in terms of at least one generation.

Traditional industry proponents make two conflicting arguments. First, they argue that because of the volume of sunk capital costs in traditional energy that a transition to clean energy is unwise because sunk costs must be recovered. Second, they argue that because we need energy now (i.e. we need economic growth), it will take too long to change our energy profile. On the one hand, the argument is go slow for capital returns and on the other hand, the argument is that a transition will take too long at a risk to the economy. Besides being contradictory, both arguments are unpersuasive. First, regarding recouping investment, an energy transition will take time and sunk costs will be recovered, but not perpetually. Private companies take on financial and business risks and are rewarded by the market for doing so. They cannot continue to invest in old ways and expect that new entrants and competitors will sit on the sidelines. To the extent that an energy firm is regulated, the Fifth Amendment prohibition against takings provides protection against government actions that significantly devalue a firm. Further, regulatory history reveals that government regulators have protected utilities through rate treatment. Private firms must take business and financial risks and they must expect competition. A clean energy policy is based, in large part, on increased competition in energy markets. Therefore, financial


and business risks are inherent in a market economy and we cannot (and should not) expect government to bailout fossil fuel firms. They have enjoyed government favor for too long.

Second, the argument that an energy transition will take too long is equally spurious. Any wise energy firm manager must think in generations. Think of the electric industry as an example. If the utility decides to build a coal plant today, it will generate electricity in a few years and will generate that electricity for a generation or more. Similarly, a that that plant will generate electricity within a decade. If, however, such decision today to build a nuclear power plant means that it is unlikely a plant does come online, then it will generate electricity for at least 40 years and, given the current state of renewing nuclear power plant licenses, will generate electricity for at least 60 years. In other words, a decision to build a nuclear power plant today will last two generations. The point is a simple one, thinking in generations is something a prudent businessperson does in a capital intensive industry like energy; it is not an argument against transition.

A similar go-slow or anti-transition argument involves consumer choice. The anti-green lobby argues, generally, that government regulation is unwise because it restricts individual liberty. The idea behind this argument is that government regulation restricts the ambit of individual preferences and, therefore, regulation should be resisted. Again, this argument is faulty for at least two reasons. First, energy firms have enjoyed government support for over a century and have not competed in open, unfettered markets. Consumer choice has been circumscribed in favor of dirty energy firms. Second, to the extent that open and free markets maximize individual choice, they allow people to maximize the exercise of their preferences. This argument is sound as far as it goes. But it does not go far enough. People are not born, as if like Athena from the head of Zeus, with their preferences fully formed. No one has individual preferences uninfluenced by the external world. Otherwise there would be no advertising profession. Markets can create demand, advertising can shape preferences, and, as social animals, our choices and preferences are influenced by those around us as well as by our own desires.

Similarly, government activity, including regulation, affects our choices and preferences. Forty years ago, for example, cars were not equipped with either air bags or safety restraints. Today, not only are cars required to have them, consumers would not buy a car without them. As consumers,

our preference for airbags was indeed shaped by government regulators. Our desire to understand what is contained in the products we consume by reading nutrition labels and drug warnings has likewise been shaped by government regulators. These lessons can be easily applied to a clean energy transition. Regulations regarding product efficiency, efficient buildings, and efficient appliances, such as light bulbs, can be utilized to shape preferences for a clean energy transition.

As consumers, we have grown comfortable with recycling. As consumers we can learn to make choices among providers. Consumers find it easier to choose among telephone service providers than among energy providers, nevertheless, the idea of choice of providers is the same for energy and telecommunications and may require public education; and clean energy choices may benefit from a “nudge” here and there. Indeed, as consumers we have available any number of “apps” at our fingertips that allow us to compare prices and products from any number of energy firms. In brief, an energy transition will involve lifestyle choices, yet it is not obvious that the choices need to be dramatic nor is it obvious that lifestyle choices will be different in degree than those that we make routinely.

The large issue, of course, will be cost to the consumer. Today, it is the case that electricity from solar and wind projects are more costly than from coal-fired utilities. This comparison of costs between these electricity sources, however, masks the fact that the social costs of carbon are not included in the price of coal-fired electricity. Again, accurate estimates on leveled costs, i.e. the present value of the total cost of building and operating an electricity plant, from all of these sources, once pollution costs are included, are difficult to come by. Nevertheless, critics of the clean energy policy also opposed environmental regulations that would acknowledge the cost of the externalities. They cannot have it both ways. The critics cannot pursue government favor for fossil fuels


and reject it for clean energy. From a competitive market standpoint, for a true apples to apples comparison, though, the cost of all sources of energy, fully inclusive of all social costs, must be made. The choice cannot be between clean energy and cheap, dirty energy. In other words, a transition to clean energy may raise consumer prices and yet, if we are committed to a free market in energy, then we cannot ignore the full cost of its production.

Along similar lines, the argument against government support of a clean energy transition is based on the idea that traditional fossil fuel industries have served the country well; that they have invested billions, if not trillions, of dollars in energy production and distribution; and, that “the market” signals a preference for traditional energy. Again, this argument is spurious. At the end of the 19th century, fossil fuel firms were competitive and were largely unregulated. By the turn-of-the-century, government regulation of energy firms began, and before the mid-twentieth century, they were heavily regulated. The regulation of energy firms, however, was not terribly opposed by industry. In fact, the energy industry flourished because of government support in the construction of infrastructure and with the financial subsidization of fossil fuel energy interests. Today those subsidies continue. Historically, fossil fuel and nuclear firms have been the largest beneficiaries of government financial support. Recently, however, clean energy initiatives have been receiving more attention particularly through the American Reinvestment and Recovery Act of 2009 also known as the Stimulus Bill. Still, government support has firmly entrenched fossil fuel firms in our economy.

Thus, the argument that clean energy industries should compete in a “free” market without government subsidies is disingenuous at best. We might well agree that subsidies distort market operations and send flawed price signals to consumers and producers. In fact, subsidies do have those effects. The problem, and it is a political one, is that the history of energy regulation is so embedded with government incentives and subsidies that to now say that clean energy firms should not benefit is to prevent the leveling of the energy market playing field.

The message for a clean energy politics, then, can acknowledge the existence of transition costs but can also argue that the longer the country waits to make the transition, the more costly it will be. Further, the transition to clean energy can occur within a timeframe with which, as an industrial economy, we are familiar. Building large-scale, capital-

intensive energy plants and a national infrastructure is something with which we are quite familiar in the United States. Building a clean energy economy that includes distributed as well as centralized power stations and promotes competition is easily within industry’s ability. Additionally, government support is not anathema to the energy industry and can be essential to a transition that promises greater energy efficiency, new markets, and a new economy.

A clean energy policy is transformative for several reasons all of which hold economic, as well as the environmental, promise. Our country’s traditional energy path has been based on large-scale and highly centralized power production and distribution. A green energy economy, even one that may contain nuclear power, can take a decidedly different form. A clean energy economy can be decentralized and scaled-to-task. Small nuclear power plants and other distributed generation can be built closer to end-users. In this way, transmission and distribution costs are lowered, congestion on the grid can be reduced and energy efficiency can be increased. Further, clean energy can be cost saving. Increased energy efficiency is the lowest hanging fruit on the clean energy tree. It is virtually costless and does not threaten economic growth.109

The most significant aspect of the clean energy politics message is that the creation of the new energy economy is firmly based upon a belief in competitive markets. For the last political generation of free-market rhetoric, i.e., the Regan Revolution or the period of neo-liberalism, the idea of competitive markets has been significantly skewed as the recent history of the Great Recession demonstrates.110 With truly competitive markets comes innovation, jobs, consumer choice and economic growth. The political debate about our energy future should not be obscured by the worn out dichotomy between government regulation and free markets. Workable and competitive markets cannot exist without government regulation. Undoubtedly, a modern, particularly pluralist, democracy such as ours inevitably brings a clash of interests. Nevertheless, a clean energy message is one firmly rooted in the values of democratic capitalism;

109. See Granade et al., supra note 101.
that markets and innovation are primary engines for economic growth and are opportunities for greater market participation for producers and consumers rather than for a select few.

There is no doubt that a clean energy future is hardly a panacea for many of the economic dislocations, such as health care and public education, that now plague us. Nevertheless, the argument for continuing down a well-worn fossil fuel path has little, if anything, to recommend it. The largest complaints against transition are cost and lifestyle change, but these need not be abrupt nor catastrophic—unless we wait too long to engage in a transition. Today, there are abundant signs that multiple sectors of our economy and our society are actively pursuing a transition to a clean energy future. We are already on the smart path; we simply need to hasten our steps.

V. GOING FORWARD

Clean energy politics offers the best promise for merging energy and the environment. As noted above, public opinion is divided on matters of climate change but less so regarding clean energy. Also noted above, Washington leadership on climate change will not occur in the near term. Even in the summer of 2011, the Environmental Protection Agency has been influenced by Republican opposition to slow down its release of rules curbing greenhouse gas emissions.\(^\text{111}\) Congressional leadership on clean energy is equally unlikely in the near term. However, the Obama administration has invested political capital favoring clean energy initiatives through increased R&D for clean energy, a smart grid initiative\(^\text{112}\) and opposition to fossil fuel subsidies. Additionally, the real politics of clean energy are occurring outside the Beltway and there is much activity in this new political landscape.

The Academy. Academics have been actively involved in energy policy studies for decades. The reports from the 1970s were based on significant academic input. Today, we can identify a new generation of academic activity involving energy and the environment. Historically, university-based research centers tended to be fairly narrowly focused. The federal government contributed significant amounts of R&D funding


along a wide range of scientific and technological activities.¹¹³ Under this model, a university research center had a particular client and was geared to solving a particular problem such as designing and testing a defense technology. Even today, DOE funding tends to focus on specific technological issues such as fuel cells or on basic scientific research on such matters as cold fusion. Recently, however, the DOE has expanded its scope of energy related activities and has dedicated more financial support to non-defense energy projects.¹¹⁴ More specifically, DOE funding for clean energy is being spread out among a consortia of academic research centers and institutes, thus reflecting changes within the academy.¹¹⁵

The proliferation of energy and environmental research centers in the academies is indicative of the significance of this issue. The design of these research centers and institutes is more revealing. Historically, a university, most often a college or a department within a university, would create a research center or institute for its own faculty who would compete for grants, contracts and other government awards. Today, academic energy and environmental centers are multidisciplinary; they involve more than a single department, college or university. They engage outside researchers and some partner with private institutions.¹¹⁶

Consistent with the design of these modern academic research centers is the output. Formerly, the most frequent take-away from an academic research project was a report that went to the funder and was published in academic journals. Today, these research centers continue to write reports and publish their work, however, the purpose and distribution of those reports is decidedly different. The output of these modern institutions is intended (1) for a broad-based and multidisciplinary audience; (2) to have practical and commercial effects; and (3) to influence public policy.¹¹⁷

The new academic research center, then, becomes an advocate and participant in the development of public policy and, therefore, becomes an actor on the clean energy politics stage.

¹¹³. TOMAIN, ENDING DIRTY ENERGY POLICY, supra note 4, at ch. 7.
¹¹⁴. TOMAIN, ENDING DIRTY ENERGY POLICY, supra note 4, at ch. 8.
¹¹⁶. See, e.g., NICHOLAS INST. FOR ENVTL. POLICY SOLUTIONS, http://Nicholas institute.duke.edu/about/.
In addition to engaging in clean energy research and development, the academy is also expanding the study and education of clean energy and climate change in its undergraduate and graduate programs. Law schools are also offering areas of concentration and advanced degrees in this field and the number of symposia, journals, and other research is expanding noticeably. Indeed, this law review, San Diego Journal of Climate & Energy Law, is a leading example of the special focus that legal educators and scholars place on clean energy and climate change.

Philanthropy. Over the last two decades or more, foundations and other philanthropies have been actively engaged in changing the way they do business. In the past, the usual course of performance was for a foundation to either receive requests for grants or to send out a request for proposals in a particular area of interest such as arts or the environment. The foundation, then, would review the proposals and award grants for those requests that satisfy the foundation’s mission. The problem with this approach, not unlike a narrow vision of R&D funding, was that projects would be funded, reports would be written and they would gather dust on any number of shelves. In short, philanthropic foundations began to realize that they were getting little return for their grant dollars and that their impacts in their communities were either unknown or negligible.

In response to this recognition that foundation money accomplished little, forward thinking foundations began to reassess their missions and to reassess the way they did business. Foundations then began to...
identify particular areas or fields of interest that they found to be critical for their communities. They would then articulate detailed guidelines, dedicate monies to those activities and then develop tools for measuring any impact that their grants would have. Philanthropies took another turn when they began to concentrate on returns on their investments. Foundations began to engage in venture philanthropy, mission investing, social entrepreneurship or social investing. The idea behind all of these movements is the same. Foundation money should have an impact and one way of measuring impact is based on return. Those returns can be financial returns or measurable outcomes in the community.

Perhaps the most notable examples of this type of philanthropy are the Bill and Melinda Gates Foundation and the Clinton Global Initiative. In both instances, these foundations have narrowly focused their investments with the specific intent of improving world health in the case of the Gates Foundation and of improving the environment in the case of the Clinton Initiative. The approach has proven to be attractive to other donors and philanthropists as each foundation has received substantial gifts with a stipulation that the gifts be spent or invested for the explicit purpose of achieving results. Warren Buffett’s $30 billion gift to the Bill and Melinda Gates Foundation was given with the express promise that the gift be spent over a stated period of time. Similarly Richard Branson’s $3 billion gift to the Clinton foundation was given with a stipulation that it would be invested in climate change projects that may yield returns.

Venture Capital. Clean energy investment is expanding noticeably. Clean energy investing, however, is unlikely in the near term to attain the status of dot.com boom. Not only is the country in a period of slow economic recovery from the Great Recession of 2008–2010, but clean
energy has a significant unknown that contributes to financial risk. Quite simply, investors cannot rely on current price signals. First, clean energy investing would greatly benefit from a carbon price. It could also benefit from a stable oil price, but oil prices have been volatile for decades. Second, clean energy investors cannot rely on predictable clean energy subsidies and financial support from the federal government. Tax and production incentives for solar and wind, for example, have been established by government but most often for two or three years at a time. Nevertheless, the clean energy market has attracted investors and is yielding profitable initial public offerings (“IPOs”) that attract capital investments. The ultimate success for venture capital, of course, is profit and in the VC world profit comes in the form of initial public offerings. Recent IPOs include Tesla Motors,124 the maker of premium electric cars; Gevo,125 an advanced biofuels company; Amyris,126 another biotech firm; and, Solazyme,127 manufacturers of renewable oils from plant sugars.

Globally, over the last decade, clean investments have been remarkable. Pew Charitable Trusts reports an average compound annual growth rate of 39% for clean energy investments between 2004 and 2009.128 The solar and wind markets, for example went from $6.5 billion in 2000 to $131.6 billion in 2010. Growth in the clean tech market in 2010 increased 30.2% over 2009 reaching $188.1 billion with the bulk of that growth consisting of a doubling of solar PV installations. Most recently, Google announced its investment of $280 million in SolarCity, a company that makes residential solar rooftop installations.129 In the United States, less than 1% of venture capital was invested in clean tech in 2000 and more than 23% invested in clean tech in 2010.130 There are multiple clean and green venture capital (“VC”) firms and intermediary companies investing in clean energy markets and the volume of investment is
increasing. In the first quarter of 2010, VC investments were estimated to be $733.3 million, up 68 percent from the previous year. It is also notable that VC firms are acutely aware of the political dimension of clean energy markets.

For example, the California venture capital firm of Kleiner Perkins named former Vice President Al Gore as a partner working in their Greentech division. Greentech has an investment portfolio intended to promote clean power, clean water and clean transportation as the world’s population continues to urbanize. Kleiner Perkins invests in early-stage breakthrough ventures that promise to create new markets. To date, they have invested in nearly two-dozen companies ranging from geothermal development of biofuels to solar power through renewable fuel cells powered by oxygen and hydrogen.

One Kleiner Perkins alumnus, Vinod Khosla, began his own venture capital firm, Khosla Ventures, and named former British Prime Minister Tony Blair as senior advisor. The firm has dedicated more than $1 billion for clean and information technologies. Khosla Ventures focuses on building sustainable companies through leveraging relationships and building teams to assist new firms in becoming billion-dollar businesses. The firm’s clean energy portfolio runs from battery development and building materials to utility-scale generation and cellulosic alcohol. It has invested in nearly four dozen clean tech companies such as Altarock Energy, which develops engineered geothermal systems and in Calera, a company that has developed a process of capturing carbon dioxide and other emissions including mercury, and converting those pollutants into sustainable building materials and water.


The approach of these two VC firms is instructive. Both are invested in a range of clean and green technologies. The investments are intended to bring new technologies to scale as well as build sustainable businesses. Further, both firms approach the greening of our energy economy by realizing the necessity of not only partnering with other firms but with having the public and private sectors linked to expand these markets. It is no accident that people such as Al Gore, Colin Powell, and Tony Blair have become attractive to VC firms. These former national and international leaders have joined these firms to open doors, help build coalitions, and broaden the base for new energy initiatives as well as respond to climate change challenges. More importantly, the linkage between venture capital and political clout underscores the pervasive geopolitics of energy. The history of fossil fuels is a history of government support. To effectively counter that history, a clean energy future must well understand the old energy politics just as it must create a new one.

Non-Governmental Energy Organizations. It is unsurprising that with the federal government heavily involved in both traditional and clean energy funding and projects, trade associations and other organizations would form to influence policy and to garner benefits. Traditional trade associations such as the American Petroleum Institute, the National Mining Association, and the Chamber of Commerce have been actively involved in lobbying Congress against climate change legislation and in favor of traditional fossil fuels for decades. So it stands to reason that industry-specific clean energy associations such as the American Wind Association and the Solar Electric Power Association would also form to lobby Congress. Traditional trade associations, of course, are simply business as usual. What is more interesting relative to clean energy politics is the formation of non-traditional trade associations.

Organizations such as the United States Climate Action Partnership, the American Energy Innovation Council, The Climate Action Network, and the American Council on Renewable Energy, were intentionally created to bring together a diverse group of actors such as utilities and environmentalists, businesspersons, and academics, as well as public and private sector institutions. These organizations are distinguishable from traditional trade associations on a number of fronts. Where old-line trade associations narrowly focus on the interests of their membership, these new non-governmental energy organizations (“NGEOs”) have a broader focus on clean energy policy in general and in the commercialization of clean energy technologies in particular. These NGEOs are also actively engaged in coalition building, looking to build public and private support for a broad-based national clean energy policy.
The NGEOs perceive their advocacy as less ideological and more nonpartisan than organizations such as Center for American Progress or the Cato Institute, although of course, these think tanks would be welcome to the discussion. These new NGEOs are policy oriented, produce research and reports for public consumption, and engage in public education as a necessary component of their work. Additionally, these organizations perceive government as facilitator and partner that can play a supporting role in developing clean energy markets and technologies for the long term.

Social Networks. Perhaps the most interesting phenomenon in clean energy politics is the emergence of social networks dedicated to addressing clean energy and climate change. Traditional energy firms are also using social networking. Organizations such as Focus the Nation and 350.org are committed to civic engagement and rely on social network communications on the Internet, Twitter, Facebook and the like to organize activities, promote their agenda and educate their followers.

In 2011, for example, Focus the Nation advertised 20 clean energy fora around the country. In addition, the organization has a number of programs throughout the country, has developed a wide range of partnerships, and publicizes clean energy news on its website. 350.org was founded by author Bill McKibben and, like Focus the Nation, embraces social engagement, publicizes its rallies over the Internet, and has had remarkable success in spreading its mission throughout the country and the world. Also, like Focus the Nation, 350.org provides a good deal of content on its website, including the science of climate change.

The social movements of the 1960s had their day, and while it is unlikely that we will see similar types of demonstrations and rallies, it is now time for social activism to take a new form. In the Facebook and Twitter age, the new form is the social network. Interacting, communicating, learning, and organizing are all facilitated by handheld devices that put

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us in touch with people across the globe as easily as next door. It is fitting
that matters of energy and the environment employ communications
technologies in an attempt to change policy and develop a clean energy
politics and to do so through public education and broad civic
engagement.140

VI. CONCLUSION

The model of government regulation applied here requires that any
regulatory proposal satisfy three requirements—law, policy and politics.
Clean energy can easily meet the legal and policy elements. From a
policy perspective, all recent energy studies argue that a move away
from Middle East oil is valuable for our national security. Indeed, the
argument for oil independence has been with us for over a generation
with no signs of progress and only increasing reliance on an increasingly
tense part of the world. The Arab Spring of 2011 may show citizen
dissatisfaction with despotic regimes. That dissatisfaction may result in
more democratic governments but it is far from clear that new Arab
government will look favorably on the United States and its energy
predicament. Therefore, the need for energy security is heightened.

The recent policy studies also pay more than lip service to the
environment. Greenhouse gas emissions have environmental and human
health costs and those costs are not passed on to consumers in energy
prices. Economically, the uncompensated social costs send inaccurate
price signals thus distorting energy markets as the reports referenced
above recognize. Further, these studies are bullish on new energy
markets, new entrants into those markets and new energy technologies
and innovations. In short, new markets translate into more competition
and more competition translates into more jobs in a new and expanding
sector of the economy—the clean energy sector.

From the legal perspective, there is good and bad news. As for the
fundamental regulatory tools needed to achieve these gains, those tools,
e.g., standards, disclosure, price regulation etc., are readily available and
have been applied to energy industries for over a century. Herein lies
the rub. As noted above, interest groups will fight over and contest the
application of many legal rules as the transition from one energy paradigm
to another takes place. Nevertheless, the fundamental constitutional
legitimacy and the settled statutory experience of energy regulations are
sound.

140. See, e.g., Al Maiorino, Social Media in the Renewable Energy World, ENVT.
LEADER (May 19, 2011), http://www.environmentalleader.com/2011/05/19/social-media-in
the-renewable-energy-world/.

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The issue, then, is whether or not a clean energy politics can develop so as to spur Congress to take a leadership role and rationalize clean energy rules for national application. The most significant political action from Congress to advance a clean energy policy would be to set either a hard number for emissions or a hard number for the price of carbon. In either case, clean energy investors can better assess financial risk and dedicate their money accordingly. What both of those numbers have in common, though, is that they are measures of climate change and it is climate change that is the stumbling block to a clean energy politics. Indeed, to the extent that even Congress is addressing energy issues, ethanol subsidies for example, it is politics as usual as legislators watch out for their own constituencies.141 Given the dichotomy in our national conversation between climate change and clean energy, the political message should be clear. Politicians and the public are both more comfortable and more receptive to discussions about energy than they are about climate change. Consequently, as a clean energy agenda develops and as a clean politics advances, a focus on clean energy is likely to yield a greater reception.

This article is an attempt to broadly describe a clean energy politics. The first lesson is simple—focus on energy, not on global warming. The second lesson is equally obvious—Congress is in gridlock as long as climate change and clean energy are mingled together. The third lesson may well be the most important—clean energy policy advocates are in abundance; they appear in every sector of society; the private sector is investing money; public actors at the state and local levels are adopting and implementing clean energy programs; and, public opinion favors a clean energy transition. In short, today’s clean energy politics is bottom-up and its success can be advanced once Washington takes notice of what is happening beyond the Beltway.

141. See, e.g., Carl Hulse, Effort to End Tax Credit for Ethanol Fails in Senate, N.Y. TIMES, June 14, 2011, at A16, available at http://www.nytimes.com/2011/06/15/us/politics/15senate.html; see also Jennifer Steinhauer & Carl Hulse, A Tough Day for Farmers as Lawmakers Look for Cuts, N.Y. TIMES, June 17, 2011, at A22, available at http://www.nytimes.com/2011/06/17/us/17congress.html?_r=1&seid=auto&smid=tw-nytimes&pagewanted=all. These Senate votes are double-edged for clean energy. On the one hand, the tax credits go to non-fossil fuels. On the other hand, to the extent that they are used for highly inefficient corn ethanol that does not advance a clean energy agenda. Rather, the vote indicates that partisan politics is alive and well and responsive to coalition bipartisan building.