1-1-2007

To a Point

Joseph P. Tomain
University of Cincinnati College of Law, joseph.tomain@uc.edu

TO A POINT

*Joseph P. Tomain**

Hurricanes have altered both natural and political geography, cutting new inlets with the same ease with which they dispatch navies.

–Kerry Emanuel[1]

I. INTRODUCTION

Hurricanes Katrina and Rita ravaged the Gulf Coast and are rightfully considered our nation's worst natural disasters. While there is no good time for a country to suffer such devastation and displacement, the hurricanes hit the United States at a politically sensitive time. For over a century, the United States has operated under a consistent energy policy that has served the country well. Events over the last four decades, however, have given cause to question that Traditional Energy policy. The hurricanes' damage helped focus that questioning. Increasingly over that period, national and international policymakers have recognized that energy policy does not and cannot stand alone and apart from the environmental consequences of energy exploration, production, distribution, and use. More specifically, those same policy thinkers have come to a consensus that global warming and climate change present significant threats to our natural and human environments[2] and that a responsive and

* Dean Emeritus and the Wilbert & Helen Ziegler Professor of Law, University of Cincinnati College of Law. This essay is based on remarks given at *Katrina Consequences: What Has the Government Learned?*, Loyola University, New Orleans College of Law (August 25-26, 2006).

1. KERRY EMANUEL, DIVINE WIND: THE HISTORY AND SCIENCE OF HURRICANES ix (2005).

2. *See generally* INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2001: IMPACTS, ADAPTATION AND VULNERABILITY (2001), *available at* http://www.grida.no/climate/ipcc_tar/wg2/. For a particularly graphic description of climate change, see ELIZABETH KOLBERT, FIELD NOTES FROM A CATASTROPHE: MAN, NATURE AND CLIMATE CHANGE 7-31 (2006).

responsible energy policy is necessary. Further, there is also a significant consensus that the human contribution to global warming and climate change through burning fossil fuels must be addressed. While it is fair to say that no consensus exists about what constitutes "dangerous anthropogenic interference" with the climate system, there is a growing sense that the current levels are unacceptable.[3]

While the hurricanes wreaked havoc in the Gulf, shutting down oil and gas production and damaging pipelines and refineries, they also had the odd effect of highlighting, once again, the significance and importance of our fossil fuel economy.[4] It is more than oddly ironic that storms of the severity of Katrina and Rita disrupted the very activities that contributed to them. While no one makes the case that Gulf oil and gas refining and production directly caused Katrina, those hurricanes give us pause to consider how climate change has altered the natural and political geographies of our energy policies. The timing of the hurricanes was also politically sensitive because less than a month before, on August 8, 2005, President Bush signed into law a "new" energy policy, the Energy Policy Act of 2005 ("EPAct 2005"),[5] which simply continued the old ways and the old thinking. He did so just as oil prices reached an historic high.

II. TRADITIONAL ASSUMPTIONS

The United States has enjoyed unparalleled economic growth and prosperity. Our country's success, in no small part, is attributable to an abundance of natural resources and to the intelligent and aggressive use of the energy derived from those resources. We have enjoyed our prosperity despite an absence of either a national industrial plan or a comprehensive national energy policy. Although the Department of Energy is required to report, bi-annually, a national energy policy to the Congress, the United States does not have a comprehensive and coordinated

---

3. *See* John P. Holdren, *The Energy Innovation Imperative: Addressing Oil Dependence, Climate Change, and Other 21st Century Energy Challenges*, INNOVATIONS, Spring 2006, at 13 (explaining that, by the end of this century, Earth is likely to be warmer than at any other time during the period when humans have lived on the planet).

4. *See, e.g.*, Joseph P. Tomain, *Katrina's Energy Agenda*, NAT. RESOURCES & ENV'T, Spring 2006, at 43, 44 (noting that oil prices reached an historic high after Katrina hit).

5. Pub. L. No. 109-58, 119 Stat. 594 (2005).

energy policy as such. There is no policy that connects various energy industries with each other. Nor is there an energy policy that organizes the development of natural resources throughout their various fuel cycles. Perhaps more surprising, even in this time of heightened sensitivity to the environmental consequences of energy use, there is no energy policy that is coordinated with any environmental policy. Today, energy laws and environmental laws are administered separately, by separate agencies, and are based on different sets of assumptions. Energy laws (and natural resources laws for that matter) are about production while environmental laws are about protection.[6] Production and protection are two goals that do not sit comfortably with each other and which often conflict. Instead of a coordinated and comprehensive energy plan, our national energy policy is based on a loose set of economic assumptions that have dominated the area for the past one hundred years.[7]

Our century-old Traditional Energy policy is based on three general and fundamental economic assumptions. First, Traditional Energy relies on private capital and markets to create wealth and stimulate innovation. This fundamental market assumption rejects government coordination in favor of private competition. Second, Traditional Energy is based on the belief that there is a direct and positive correlation between energy production and economic productivity. The more energy that we produce and consume, the healthier our economy will be. Third, Traditional Energy is based upon the belief that economies of scale will enable us to produce more energy at lower cost. In other words, bigger is better. As utilities and refineries increase in size, the price of energy should fall. Each of these assumptions is true—*to a Point*.

From Colonel Edwin Drake's first oil well in Titusville, Pennsylvania and Thomas Edison's first power station on Pearl Street in New York City, energy production and distribution have increased in scale; energy industries have nationalized and centralized; and, in the process, for most of the 20th century, prices have fallen to the benefit of consumers and producers as

6. *See* Sam Kalen, *Replacing a National Energy Policy with a National Resources Policy*, NAT. RESOURCES & ENV'T, Winter 2005, at 9 (promoting a national policy that incorporates energy, environment, and resources as opposed to treating each one separately).

7. *See, e.g.*, THE ENERGY LAW GROUP, ENERGY LAW & POLICY FOR THE 21ST CENTURY chs. 2 & 6 (2000).

well as the overall economy.

The first assumption regarding private capital and markets creating wealth and stimulating innovation is true—*to a Point*. Markets and private capital also create waste and negative externalities. Alone, without government intervention, energy producers have no incentive to reduce waste or limit pollution in a market where a competitor can gain an advantage spewing particulates into the air or dumping waste products onto the land or into clean waters. As a result of an energy policy that is unconnected to an environmental policy, the United States is both the largest consumer of energy and the biggest polluter in the world.

The second assumption regarding the positive correlation between energy production and economic productivity is also true—*to a Point*. Reflect on your own experience. If you have ever gone camping, how much energy did you need to have a warm meal and to reduce the chill of a damp night? A low energy campfire works easily and well to increase your comfort dramatically. Reflect further. How many creature comforts do you enjoy? How many television sets are in your home? How many other electronic gadgets do you own? How cold do you like your apartment in the summer or your beer for that matter? Do appliances improve your comfort as much as that campfire?

The following United Nations chart demonstrates the relationship between energy use and human comfort nicely:

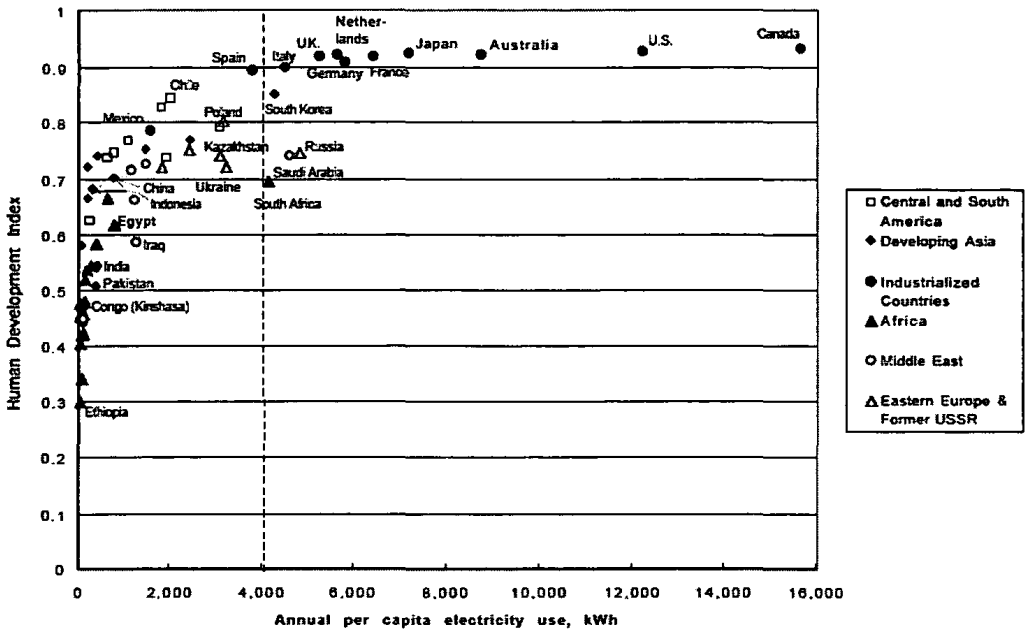

Figure One: **The United Nations' Human Development Index and electricity use. 60 Countries, 1997.** Sources: Human Development Report 1999, United Nations Development Programme, Table 1; International Net Electricity Consumption Information, Energy Information Administration, U.S. Department of Energy, http://www.eia.doe.gov/pub/international/iealf/table.62.xls; International Data Base, U.S. Bureau of the Census, http://www.census.gov/ipc/www/idprint.html.[8]

The United Nations Human Development Index ("HDI") shows that continued energy use does not continually increase human happiness. The *Y* axis, the HDI, measures comfort, based on longevity, knowledge, and standard of living while the *X* axis measures the amount of energy consumed to achieve a particular level of comfort.[9] The chart reveals that most countries in the world attain very high levels of comfort consuming no more than 4,000 kilowatt hours of electricity per year. Other countries, most notably the United States and Canada, consume over three times

8. ALAN D. PASTERNAK, GLOBAL ENERGY FUTURES AND HUMAN DEVELOPMENT: A FRAMEWORK FOR ANALYSIS 5 (2000), *available at* http://www.llnl.gov/tid/lof/documents/pdf/239193.pdf. This graph is reprinted with permission of the University of California, Lawrence Livermore National Laboratory. Credit must be given to the University of California, Lawrence Livermore National Laboratory, and the Department of Energy, under whose auspices the work was performed, when this information or a reproduction of it is used.

9. *See id.* at 2-4; Jose Goldemberg, *Development and Energy*, *in* THE LAW OF ENERGY FOR SUSTAINABLE DEVELOPMENT 37, 42 (Adrian Bradbrook et al. eds., 2005) (describing longevity, knowledge, and standard of living measurements).

as much energy but do not show a corresponding increase in human development and satisfaction. After all, how many iPods can one own and enjoy? It is not simplistic to argue that human energy use corresponds to human happiness because the second assumption that there is a positive correlation between energy production and economic productivity is based on exactly that correlation. The question is how far does that correlation take us? Apparently, the correlation takes us not much further beyond 4,000 kilowatt hours of electricity per year.

Energy consumption and use contributes to the quality of life, again, *to a Point*. In the early stages of a country's economic development, increased energy use has a dramatic and direct positive correlation with human satisfaction.[10] Moving from an agrarian economy to a manufacturing economy provides more jobs, increased longevity, decreased infant mortality, increased health, greater education, even more jobs, etc. But the relationship is not linear and not sustainable.

The third economic assumption, stating that economies of scale enable more production at a lower cost, is also true—*to a Point*. Larger power plants, as an example, even nuclear power plants, are run more efficiently the larger they get although only *to a Point*. Today, power plants have topped out at about 1,000 megawatts, and newer plants are projected at less than that in the belief that smaller plants are more efficient even at lower productivity. A nuclear plant is basically a large tea kettle using enriched uranium to heat water to turn turbines to generate electricity. As Amory Lovins argued, we must coordinate energy use to scale.[11] In Lovins's phrase, using nuclear power to generate electricity to heat water is like "cutting butter with a chainsaw."[12]

These three economic assumptions have generated an energy policy which has existed in the United States for over a century. Looking at each variable, one can conclude that bigger is better and cheaper; that large-scale, capital-intensive, and centralized energy industries will contribute to a healthy economy; and that the more energy we produce and consume, the happier and more comfortable we will be. As a result, instead of local utilities serving local communities, we have generated large-scale

10. PASTERNAK, *supra* note 8, at 16-17.

11. Amory B. Lovins, *Energy Strategy: The Road Not Taken?*, 55 FOREIGN AFF. 65, 78 (1976) [hereinafter Lovins, *The Road Not Taken?*].

12. *Id.* at 79.

electrical utilities with regional and national high voltage distribution systems; a national network of natural gas and oil pipelines; and a regional rail system in some parts of the country directly linking coal mines to electric utilities all to serve the country's energy demands. The oil, natural gas, electricity, coal, and nuclear power industries have all developed and prospered with faith in a catechism of these three economic assumptions.

III. HAVE WE REACHED *THE POINT*?

The observations that energy markets have limits, that the relationship between energy growth and economic productivity is nonlinear, and that economies of scale can generate inefficiencies were made three decades ago by a young Harvard- and Oxford-trained experimental physicist, Amory B. Lovins.[13] Two of his early publications, an important article in Foreign Affairs entitled *Energy Strategy: The Road Not Taken?* and his seminal book, *Soft Energy Paths*, questioned the underlying economic assumptions of the country's energy policy.[14] Lovins argued that our Traditional Energy policy was outdated and that we had reached *The Point* where new thinking was required.[15] Lovins's work over the last three decades argues strongly that we can achieve higher levels of human development by consuming less energy or by consuming it more efficiently, suggestions which essentially represent the same idea.

Lovins called his concept of a truly alternative energy policy the soft energy path and contrasted it with the Traditional Energy policy he labeled the hard energy path.

> The [soft] path combines a prompt and serious commitment to the efficient use of energy, rapid development of renewable energy sources matched in scale and in energy quality to end use needs, and special transitional fossil fuel technologies . . . . [The soft path] does not try to wipe the slate clean, but rather to redirect our future efforts, taking

13. *See* Joseph P. Tomain, *Smart Energy Path: How Willie Nelson Saved the Planet,* 36 CUMBERLAND L. REV. 417, 418-20 (2005-2006) (outlining Lovins's initial formulation of alternative energy consumption patterns).

14. Lovins, *The Road Not Taken?*, *supra* note 11, at 68-71 (pointing to the capital intensity of building new energy systems as a major obstacle to achieving the traditional energy policy of more energy consumption); AMORY B. LOVINS, SOFT ENERGY PATHS: TOWARD A DURABLE PEACE (1977) [hereinafter SOFT ENERGY PATHS].

15. SOFT ENERGY PATHS, *supra* note 14, at 28-38.

advantage of the big energy systems we already have without multiplying them further.[16]

In 1977, Lovins argued that in fifty years we would develop a distinct energy policy which would replace the hard path on which we have relied for so long.[17] The soft path would substitute small-scale, clean, renewable energy production for large-scale, dirty, fossil-fuel energy- and nuclear-generated electricity.[18] The soft path would open new markets, capitalize on new technologies, and create a more flexible, as well as a more efficient, structure for energy production, distribution, and use.[19] The new path would rely on new technologies and market mechanisms to facilitate competition, economic growth, energy efficiency, and would provide resource, including environmental, protections.[20] The soft path was radical only in the sense that it was a departure from the energy structure with which we had grown familiar. The soft path was not radical in the sense of claiming that to achieve its goals, our quality of life needed to change.

If we flatten the curve in *Figure One*—the United Nations' Human Development Index and electricity use—we find the following:

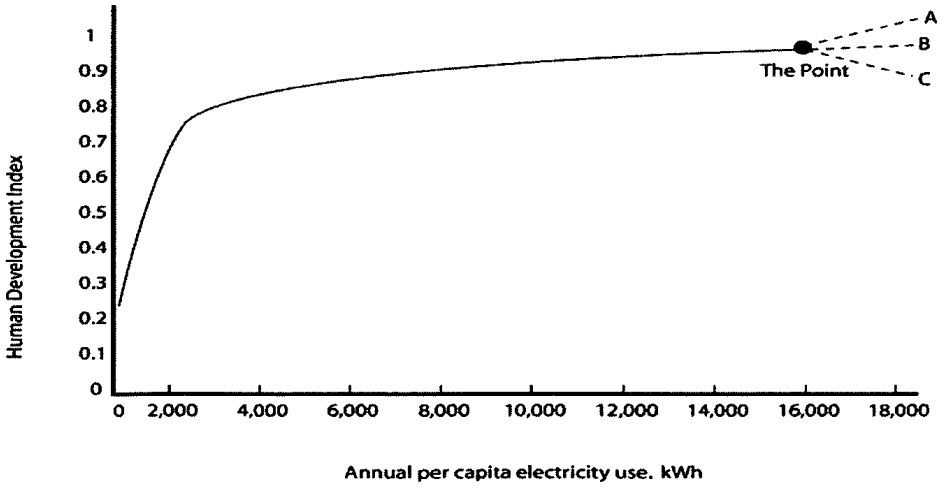

Figure Two: **Three Possible Futures for Energy Use**

16. SOFT ENERGY PATHS, *supra* note 14, at 25.
17. *Id.* at 45-49.
18. *Id.* at 38-39.
19. *Id.*
20. *Id.* at 28-38.

By referring to *Figure Two* and concentrating on *The Point*, it is clear that three possibilities exist for the energy future. First, we can extend the graph upward along Line A and increase human satisfaction and happiness through an energy policy that is less costly and more efficient. It is not inconceivable that technological developments can increase energy use, at lower cost, in more environmentally sensitive and sustainable ways. Or, we can continue along Line B on the energy path that we are currently on and continue to consume energy with no increase in human satisfaction or happiness. This static path of continued use with no deterioration of our human and natural environments is unlikely to occur without a change in energy policy.

The third and final alternative, along Line C, is to move downward on the graph and experience increasing energy use together with a reversal in human development.[21] This last path directly contradicts the economic assumption that our lives are better as we consume more energy. The reasons are clear. The more energy we use, the more pollution we create, and those negative externalities contain social costs. Economist Herman Daly argues that "[o]nce we pass the optimal scale, growth becomes stupid in the short run and impossible to maintain in the long run. Evidence suggests that the U.S. may already have entered the uneconomic growth phase . . . ."[22] This path is most likely as we continue to consume and burn products which contribute to global climate change and as countries such as India and China significantly increase their consumption of fossil fuel energy. A recent study, as an example, argues that we must reduce pollution; otherwise, it estimates the United States can suffer as much as $74 *trillion* in damages.[23]

The world's environment and economy demand that we reconsider and rethink our Traditional Energy policy. As we reconceptualize energy policy, it is useful to think of our economy as divided in half. Roughly half of our energy economy is devoted to oil and natural gas production and distribution and the

---

21. I can imagine, however, an additional alternative in which the line curves backwards indicating that we can improve human development *and* consume less energy.

22. Herman E. Daly, *Economics in a Full World*, Sept. 2005, SCI. AM., at 74, 100.

23. *See* FRANK ACKERMAN & ELIZABETH STANTON, CLIMATE CHANGE—THE COST OF INACTION 1 (2006), *available at* http://www.foe.co.uk/resource/reports/econ_costs_cc.pdf.

remaining half to electric production and distribution.[24] We can further divide the electric side of our energy pie into half again with approximately 50% of our electricity being generated by coal and another 20% generated by nuclear power.[25] As a result, coal, natural gas, oil, and nuclear power constitute about 90% of our energy economy. To be sure, we have enjoyed the fruits of Traditional Energy, but the world has changed. We must ask ourselves whether we have reached *The Point* at which a new energy policy, with new energy thinking, has become a necessity.

IV. OLD WAYS

Although Hurricanes Katrina and Rita drew our attention to energy policy, those events by themselves did not stimulate new energy thinking. Three decades ago, Amory Lovins raised these questions. Today, he is no longer alone. Lovins's ideas were intended to change the political geography and natural landscapes of this world over the last thirty years and they have provoked any number of people to rethink old ways. Unfortunately, the federal government has failed to take these developments seriously. This failure is not a partisan matter.[26] Rather, several presidential administrations and the Congresses associated with them have continued to maintain policies that have worked in the past. A brief snapshot of current energy policy reveals the continuing adherence to old ways.

The current Bush Administration, like the Clinton, Bush, Carter, Reagan, and other presidential administrations before it, has continued Traditional Energy policy and practices. Current energy policy is contained in two significant policy statements. The first is the *National Energy Policy*, published May 2001. The *National Energy Policy* was the result of the National Energy Policy Development Group chaired by Vice President Cheney.[27] The *Policy* addressed the great need for increased energy arguing that we are facing the most significant energy shortage since the

24. ENERGY INFO. ADMIN., ANNUAL ENERGY REVIEW 2005, at 3 (2006), *available at* http://www.eia.doe.gov/emeu/aer/pdf/aer.pdf [hereinafter ANNUAL ENERGY REVIEW].

25. *Id.*

26. For a discussion of energy policy in the past and its non-partisan dimension, see Joseph P. Tomain, *The Dominant Model of United States Energy Policy*, 61 U. COLO. L. REV. 355, 356-76 (1990); JOSEPH P. TOMAIN & RICHARD D. CUDAHY, LAW IN A NUTSHELL: ENERGY LAW 48-75 (2004).

27. NAT'L ENERGY POLICY DEV. GROUP, NATIONAL ENERGY POLICY (2001) [herinafter NATIONAL ENERGY POLICY].

mid-1970s and that we will need a 32% increase in energy production by 2020.[28] The *Policy* also emphasized the preference for private sector energy production,[29] the need for more oil refineries,[30] the possibility of drilling in the Alaskan National Wildlife Refuge ("ANWR"),[31] and the need for an improved electricity infrastructure.[32] The *Policy* also spoke about the need for more nuclear power while giving a nod to conservation and alternative and renewable energy resources.[33]

The *National Energy Policy* formed the basis of the Energy Policy Act of 2005 signed on August 8, 2005[34] just weeks before Katrina hit New Orleans. EPAct 2005 was consistent with the *National Energy Policy*. When President Bush signed EPAct 2005, he explicitly emphasized one of the key economic assumptions discussed above. He reiterated the belief that our economy is directly linked to energy production and consumption:

> I want to remind you about the fact that this economy of ours has been through a lot. And that's why it was important to get this energy bill done, to help us continue to grow. We've been through a stock market decline; we went through a recession; we went through corporate scandals; we had an attack on our homeland; and we had the demands on [sic] an on-going war on terror. And to grow this economy, we worked together to put together an economic growth policy, an economic growth package, the cornerstone of which was to cut the taxes on the American people. And that tax relief plan is working. This economy is strong, and it's growing stronger. And what this energy bill is going to do, it's just going to help keep momentum in the right direction so people can realize their dreams.[35]

The EPAct 2005 stayed true to Traditional Energy pieties; and while it does not authorize drilling in ANWR, it does

---

28. NATIONAL ENERGY POLICY, *supra* note 27, at 1-1.

29. *Id.* at 5-6 to -9.

30. *Id.* at 7-13 to -14.

31. *Id.* at 5-9.

32. *Id.* at 5-10 to -19.

33. *Id.* at 6-1 to -16.

34. Energy Policy Act of 2005, Pub. L. No. 109-58, 119 Stat. 594 (2005).

35. Press Release, White House, President Signs Energy Policy Act (Aug. 8 2005), *available at* http://www.whitehouse.gov/news/releases/2005/08/20050808-6.html.

streamline nuclear power plant licensing and construction,[36] allows for the fast tracking of liquid natural gas facilities,[37] promotes clean coal projects,[38] and mandates a survey for the outer continental shelf for further oil and gas exploration and production,[39] while giving a nod to conservation and to alternative and renewable energy resources.[40] The heart of EPAct 2005 is the Electricity Modernization Act which significantly affected the Public Utility Holding Company Act of 1935 and the Public Utility Regulatory Policy Act of 1978.[41] These acts, passed seventy and thirty years ago respectively, were intended to put constraints on electric utilities. Those restraints were lessened in the recent legislation.

Loosening the previous regulatory hand on the electric industry was intended to promote competition and lower prices to consumers as new sources of electricity came on line. Such has not come to pass for several reasons. First, looser restrictions have generally enabled greater concentration in the de-regulated industries.[42] Second, the so-called "deregulation" or industry restructuring has been stalled[43] as electricity prices remain high.[44]

---

36. Energy Policy Act of 2005 §§ 641-45, Pub. L. No. 109-58, 119 Stat. 594, 794-99 (2005).

37. *Id.* §§ 311-18, 119 Stat. 594, 685-93.

38. *Id.* §§ 411-17, 119 Stat. 594, 754-56.

39. *Id.* § 357, 119 Stat. 594, 720.

40. *See, e.g., id.* §§ 801-16, 119 Stat. 594, 844-56 (establishing a program to develop hydrogen and fuel cell technology); *id.* §§ 931-35, 119 Stat. 594, 868-73 (authorizing research and development of renewable energy activities).

41. *Id.* § 1263, 119 Stat. 594, 974 (repealing the Public Utility Holding Company Act of 1935); *id.* §§ 1251-54, 119 Stat. 594, 962-71 (amending the Public Utility Regulatory Policy Act of 1978).

42. *See* Richard D. Cudahy, *Deregulation and Mergers: Is Consolidation Inevitable?*, PUB. UTIL. FORTNIGHTLY, Oct. 15, 1996, *available at* http://www.pur.com/pubs/1921.cfm (describing the inevitability of consolidation in the electrical generation industry following deregulation and addressing the antitrust implications).

43. The main culprits in frustrating the deregulation of the electric industry are the Enron scandal, the California energy crisis of the Summer of 2000, and the Northeast Blackout in August 2003. *See, e.g.,* Sidney A. Shapiro & Joseph P. Tomain, *Rethinking Reform of Electricity Markets*, 40 WAKE FOREST L. REV. 497, 497-98 (2005) (noting the reform efforts that gained strength after these crises).

44. David Cay Johnston, *Competitive Era Fails to Shrink Electric Bills*, N.Y. TIMES, Oct. 15, 2006, at A1. *See also* THE BRATTLE GROUP, WHY ARE ELECTRICITY PRICES INCREASING?: AN INDUSTRY-WIDE PERSPECTIVE 9 (2006), *available at* http://www.eei.org/industry_issues/electricity_policy/state_and_local_policies/rising_electricity_costs/Brattle_Report.pdf ("Between 2002 and 2005, annual operations and maintenance (O&M) expenses for investor-owned utilities (IOUs) increased

These regulatory changes more resemble Traditional Energy than a smarter alternative as the electric industry remains stuck despite the hoped-for competition.

Following EPAct 2005, the President had a post-Katrina opportunity to address energy once again, and he did so in his *State of the Union* message in January 2006. The language in the *State of the Union* message seemingly paid significant attention to the new energy thinking and to post-Katrina energy needs. The message recommended investment in zero-emission coal technologies as well as investments in solar and wind power.[45] The message also suggested that the United States fund research and development for hybrid cars, batteries, and ethanol, and that we begin to wean ourselves from Middle East oil imports.[46] This hopeful language, however, was not followed up with hard investments. If we go inside the numbers of the *State of The Union* message, we find that it is estimated that its total investment would be about $236 million[47] or 1/40th of the $10.7 billion *quarterly* profit that Exxon enjoyed earlier this year.[48] The energy message also recommended research and development of new batteries and earmarked the miserly sum of $6.7 million for such investment.[49]

Funding is where the rubber meets the proverbial road, and the funding contained in EPAct 2005, like the negligible funding for the *State of the Union* energy program, is tilted heavily in favor of Traditional Energy despite the calls for new initiatives favoring new energy sources. The text of EPAct 2005 itself stated that it would provide $14.5 billion for energy industries.[50] A House Minority Report indicated that 85% of the $14.5 billion would go to oil, coal, and nuclear power.[51] A Congressional

---

approximately 22 percent.").

45. President George W. Bush, State of the Union Address (Jan. 31, 2006), *available at* http://www.whitehouse.gov/stateoftheunion/2006/index.html.

46. *Id.*

47. *See* David B. Sandalow, *President Bush and Oil Addiction*, THE BROOKINGS INSTITUTION, Feb. 3, 2006, http://www.brookings.edu/views/op-ed/fellows/sandalow_20060203.htm.

48. Exxon Mobil Posts Record Profit of $10.7 Billion, MSNBC.COM, Jan. 30, 2006, http://www.msnbc.msn.com/id/11098458/.

49. *See* Sandalow, *supra* note 47.

50. Energy Policy Act of 2005, Pub. L. No. 109-58, §§ 1301-64, 119 Stat. 594, 986-1060 (2005) (establishing tax credits and other subsidies for the energy industry).

51. U.S. HOUSE OF REPS. COMM. ON GOV'T REFORM, MINORITY STAFF SPECIAL INVESTIGS. DIV., KEY IMPACTS OF THE ENERGY BILL, H.R. 6, at 5 (2005), *available at*

Budget Office Memorandum suggested that the Bill would increase direct spending by only $1.6 billion, but would reduce revenues by $12.3 billion.[52] Other sources, such as Bloomberg[53] and the Public Interest Research Group,[54] indicated that the bulk of the money would go to fossil fuel and nuclear power. But even those numbers do not reveal the hidden subsidies contained in EPAct 2005. One of the most egregious subsidies was the power of the Department of Interior to forgive royalty payments to oil and gas exploration companies.[55] Royalty payments are not insubstantial. The Interior Department had dropped certain claims against oil companies that would forgive hundreds of millions of dollars of royalties.[56] The announcement that Interior intended to drop those charges was quickly met with a request by the Republican lead House Government Reform Committee to ask the Government Accounting Office to look into potential deficiencies in how the government collects billions of dollars in royalties.[57] So the fight over Traditional Energy continues.

The *National Energy Policy*, EPAct 2005, and the President's *State of The Union* message are consistent with Traditional Energy. We continue to search for fossil fuels even though it is generally acknowledged that domestic oil production has peaked.[58] Recently, the President signed legislation to allow the

---

http://www.democrats.reform.house.gov/Documents/20050726164801-76366.pdf. *See also* ROBERT L. BAMBERGER & CARL E. BEHRENS, CRS ISSUE BRIEF FOR CONGRESS: ENERGY POLICY: COMPREHENSIVE ENERGY LEGISLATION (H. R. 6) IN THE 109TH CONGRESS 11 (2005), *available at* http://fpc.state.gov/documents/organization/45212.pdf ("Of the $8.1 billion in tax incentives in [H.R. 6], $7.5 billion are for traditional energy sources such as oil, natural gas, and power and electricity transmission.").

52. Letter from Congressional Budget Office to Rep. Joe Barton 1 (July 27, 2005), *available at* http://www.cbo.gov/ftpdocs/65xx/doc6581/hr6prelim.pdf.

53. Jonathan D. Salvant, *U.S. Energy Industry's Lobbying Pays Off With $11.6 Bln in Aid*, BLOOMBERG.COM, July 27, 2005, http://www.bloomberg.com/apps/news?pid=10000103&sid=agbeVimf04Ec&refer=us.

54. U.S. Pub. Interest Research Group & Friends of the Earth, Final Energy Tax Package Overwhelmingly Favors Polluting Industries (July 27, 2005) http://www.foe.org/new/releases/july2005/energybillanalysis72705.html.

55. *See* ENERGY POLICY ACT OF 2005, Pub. L. No. 109-58, §§ 341-57, 119 Stat. 594, 697-720 (2005).

56. Edmund L. Andrews, *U.S. Drops Bid Over Royalties from Chevron,* N.Y. TIMES, Oct. 31, 2006, at A1.

57. Edmund L. Andrews, *U.S. Agency to Review Oil Royalties*, N.Y. TIMES, Nov. 2, 2006, at C1.

58. *See* KENNETH S. DEFFEYES, BEYOND OIL: THE VIEW FROM HUBBERT'S PEAK 3-4 (2005) (using the methodology of M. King Hubbert to predict that world oil production would peak in November 2005); KENNETH S. DEFFEYES, HUBBERT'S PEAK:

exploration and development of the Outer Continental Shelf,[59] and three new Liquefied Natural Gas terminals are planned for Louisiana, Texas, and New Jersey.[60] Coal remains our old and future king. Depending upon whose reserve estimates you read, the United States has either 250, 500, or 1000 years of coal reserves. An all time high of over 60% of our oil[61] and an increasing amount of natural gas comes from imports, and even hard-line environmentalists are now beginning to soften on the future of nuclear power because of its carbon-free emissions.[62] Indeed, the Nuclear Regulatory Commission is entertaining several new applications for construction and operating licenses and has recently approved the designs for standardized plants.[63] From the electricity side, we see an increase in merger and acquisition activity, a movement towards standardizing grid reliability, re-licensing hydro-electricity plants, and easing regional transmission organization regulations. In other words, coal will play a role in our future; oil and natural gas imports will continue and so will domestic exploration; electric utilities will become larger and more integrated; and nuclear power, which has not seen a new plant since 1978, may see new plants under construction soon. All of these developments are supported by new legislation and policy documents and all honor Traditional Energy and the industries and politicians that support it.

THE IMPENDING WORLD OIL SHORTAGE 1 (2001) (noting that many analysts have placed the peak of world oil production at somewhere between 2004 and 2008); Peter Maass, *The Breaking Point*, N.Y. TIMES MAGAZINE, Aug. 21, 2005, at 30 (highlighting the concerns that some analysts have of an impending oil production peak); TOM MAST, OVER A BARREL: A SIMPLE GUIDE TO THE OIL SHORTAGE (2005); MATTHEW R. SIMMONS, ENERGY IN THE 21st CENTURY: A ROUGH RIDE AHEAD, *available at* http://www.simmonsco-intl.com/files/Energy%20In%20The%2021st%20Century.pdf (illustrating the implications of peak oil production).

59. *See* Tax Relief and Health Care Act of 2006, Pub. L. No. 109-432, Div. C, Tit. I, 120 Stat. 2922 (enacting Gulf of Mexico Energy Security Act of 2006).

60. *See* Simon Romero, *Demand for Natural Gas Brings Big Import Plans, and Objections*, N.Y. TIMES, June 15, 2005.

61. *See* ANNUAL ENERGY REVIEW, *supra* note 24, at 126 (illustrating petroleum flow for 2005).

62. *See, e.g.*, THOMAS B. COCHRAN ET AL., POSITION PAPER: COMMERCIAL NUCLEAR POWER 2 (2005), *available at* http://www.nrdc.org/nuclear/power/power.asp ("NRDC would not seek to exclude new nuclear generation from competing on a level playing field with other reduced-carbon energy sources.").

63. The Nuclear Energy Institute reports that four nuclear power plants are under review and that several others are under consideration. Nuclear Energy Institute, New Nuclear Power Plants, http://www.nei.org/index.asp?catnum=2&catid=344 (last visited November 15, 2006). Additionally, the Nuclear Regulatory Commission has approved three standard designs and is considering a fourth. *Id.*

While the new legislation does provide some support for alternative and renewable energy resources, that support does not go far enough, and the playing field is not level. It is imperative that we broaden our energy strategies and think beyond the simple idea that the more energy we use, the better our economy will be. As we broaden our energy strategies, what other variables should we consider?

V. NEW ENERGY THINKING

Let's return, for a moment, to *The Point*. Traditional Energy policy, which connected energy production with economic growth, has greatly benefited the country. However, that policy may not be able to sustain us, and the issue of sustainability is crucial. The idea of sustainable energy began in the United Nations[64] but has only been paid lip service in United States energy policy.[65] Nevertheless, the ideal of sustainability is crucial for our future. Sustainable development has been defined as the ability to develop in a way which "meets the needs of the present without compromising the ability of future generations to meet their own needs."[66] In terms of energy policy, sustainability means not only developing healthy and vibrant economies, it also means protecting the environment, paying attention to increasing globalization, and being sensitive to domestic and international security. This new energy thinking is reflected in several important non-partisan studies.[67] These studies venture beyond

---

64. *See, e.g.*, MARIE-CLAIRE CORDONIER SEGGER & ASHFAQ KHALFAN, SUSTAINABLE DEVELOPMENT LAW: PRINCIPLES, PRACTICES & PROSPECTS 2-3 (2004) (crediting the World Commission on Environment and Development's report, *Our Common Future*, for initiating the use of sustainable development language in the environmental debate). *See also* Nicholas A. Robinson, *Foreword* to ENERGY LAW AND SUSTAINABLE DEVELOPMENT vii, vii (Adrian Bradbrook & Richard A. Ottinger eds., 2003) (describing the objectives of the United Nations World Summit on Sustainable Development).

65. *See* ENERGY LAW GROUP, *supra* note 7, at 6-42 ("[T]he country has yet to deliver the idea of actualizing the rhetoric of sustainability in real day-to-day policies except in marginal examples.").

66. WORLD COMM'N ON ENV'T AND DEV., OUR COMMON FUTURE 8 (1987).

67. *See, e.g.*, NAT'L COMM'N ON ENERGY POLICY, ENDING THE ENERGY STALEMATE: A BIPARTISAN STRATEGY TO MEET AMERICA'S ENERGY CHALLENGES (2004), *available at* http://www.energycommission.org/files/contentFiles/report_noninteractive_44566feaabc5d.pdf; William J. Clinton Presidential Found., New Thinking on Energy Policy: Meeting the Challenges of Security, Development and Climate Change, http://www.clintonfoundation.org/120604-nr-cf-gn-env-usa-fe-new-thinking-on-energy-policy.htm; ENERGY FUTURE COALITION, CHALLENGE AND OPPORTUNITY: CHARTING A NEW ENERGY FUTURE, *available at* http://www.energyfuturecoalition.org/pubs/EFCR

simply linking energy and the economy. Instead, future energy policy now must operate with more complex variables and must pay increasing attention to energy, the economy, the environment, as well as national and international security.

These four variables—energy, economy, environment, and security—emphasize the need for a more broadly focused energy policy. Our energy future depends upon it. Our energy policies must contribute to a healthy economy without destroying the environment, and our energy policies must protect us in the post-9/11 world. Our energy policies should be sustainable, decentralized, and scaled-to-task. Further, these policies should develop new and smarter technologies, increase the use of conservation through decreased demand, increase energy efficiency, and rely on renewable resources and alternatives to fossil fuels. Again, Amory Lovins has written extensively and wisely on the types of changes that must be made both on the electric side of our energy economy and on the oil side of our energy economy to change our reliance on traditional energy policies. On the electric side of our energy economy, better batteries, smarter meters, more efficient transmission, better architecture, and longer-lived light bulbs can increase energy efficiency notably.[68] Similarly, on the oil side of the energy ledger, improved fuel efficiency standards, biomass, better engine design, better built highways, and lighter and safer trucks can reduce oil consumption and reduce our oil dependence.[69]

There are no technological barriers to Lovins's suggestions to reduce electricity and oil consumption, nor are there market barriers. Markets and venture capitalists are beginning to see

---

eport.pdf (last visited Dec. 28, 2006); CTR. FOR AMERICAN PROGRESS, THE PROGRESSIVE PRIORITY SERIES: SECURING OUR ENERGY FUTURE (2004), *available at* http://americanprogress.org/kf/energychapter.pdf; U.S. PUB. INTEREST RESEARCH GROUP EDUC. FUND, REDIRECTING AMERICA'S ENERGY: THE ECONOMIC AND CONSUMER BENEFITS OF CLEAN ENERGY POLICIES (2005), *available at* http://www.uspirg.org/reports/redirectingamericasenergy.pdf.

68. *See generally* AMORY B. LOVINS ET AL., SMALL IS PROFITABLE: THE HIDDEN ECONOMIC BENEFITS OF MAKING ELECTRICAL RESOURCES THE RIGHT SIZE 107-307 (2002) (providing ways in which the electrical industry can be administered according to scale).

69. *See generally* AMORY B. LOVINS ET AL., WINNING THE OIL AND THE GAME: INNOVATION FOR PROFITS, JOBS AND SECURITIES 43-102 (2004), *available at* http://www.rmi.org/images/other/WtOE/WtOEg_72dpi.pdf. *See also* ANN BORDETSKY ET AL., SECURING AMERICA: SOLVING OUR OIL DEPENDENCE THROUGH INNOVATION 13-20 (2005), *available at* http://www.nrdc.org/air/transportation/oilsecurity/plan.pdf.

opportunities for profit-making. There are, however, attitudes (as well as entrenched policies) that do prevent greater dissemination of these new technologies and new ideas. One of the attitudes is contained in the economic assumption about economies of scale. We like to believe that bigger is better and that there is precious little that any individual can do to prevent global warming. After all, we can replace our light bulbs with longer lasting bulbs or we can drive less or even buy a hybrid car, but such small efforts will have only small pay-offs.

This attitude about scale needs to be refocused. While it is true that any individual effort will have little impact, what if we think about small changes to be made by many individuals? If the consumption patterns of federal, state, and even local governments change, the impacts will be significant. If government requires higher energy efficiency standards in buildings or requires fuel efficiency standards on their fleets, then the individual impacts will be magnified, and energy consumption and production patterns will change accordingly.

Private companies can act like governments in this regard. Lee Scott, Wal-Mart CEO, in a widely distributed speech entitled *Twenty First Century Leadership*, discussed his reaction to Katrina.[70] Katrina hit him personally by damaging his stores and injuring his people. In response, Scott recognized that his company could have an impact on the environment and that Wal-Mart had a social responsibility to do so. In his speech, Scott outlined a set of goals including creating zero waste and using 100% renewable energy.[71] He acknowledged how ambitious those goals were but went on to note that Wal-Mart was in a position to act responsibly.[72] As the world's largest private fleet owner, if Wal-Mart reduced fleet fuel mileage by one mile per gallon of gasoline, they could save over $52 million per year.[73] If they could increase fuel efficiency by 25% over three years and double that within ten years then Wal-Mart could save more than $310 million.[74] On a larger scale, Scott outlined a plan to invest approximately $500 million annually in technologies to reduce

70. Lee Scott, 21st Century Leadership (Oct. 24, 2005), http://www.walmartstores.com/Files/21st% 20Century%20Leadership.pdf.

71. *Id.* at 5.

72. *Id.*

73. *Id.* at 6.

74. *Id.*

greenhouse gases from Wal-Mart stores and buildings throughout the world by 20% over the next seven years[75] and reduce solid waste by 25% over the next three years.[76] Simply, there is a good business case to be made for energy improvements even on small scales.

Another problem of attitude is that of focus. By increasing the number of key variables in creating a sound energy policy, the number of possible paths increases, causing a possible loss of focus. Traditional Energy concentrated on the link between energy and the economy. Smart Energy requires a policy that additionally acknowledges the importance of the environment and security as we go forward.

Massachusetts Institute of Technology Professor John Holdren sets out the problem nicely in a recent paper.[77] Holdren points out that developing an energy policy is difficult because of "the multiplicity and diversity of economic, environmental, and security aims."[78] In addition, we must accept the fact that there is no "silver bullet."[79] There is no energy source free of limitations and liabilities. Consequently, if we hope to develop an energy policy that is only concerned with the economy, we will end up with a Traditional or hard path policy. We will continue to invest in existing industries and markets because they are already developed and they are entrenched both in the economy and in our politics.

If, instead, we chose to focus on an energy policy that is primarily environmentally sensitive, we may be thinking too narrowly about renewable resources and alternatives and may be making investments that have not been fruitful in the past. Finally, if we concentrate primarily on energy and security, then as we try to domesticate our energy production, distribution, and use and as we wean ourselves away from foreign sources of oil and natural gas, we will find ourselves relying more heavily on domestic coal and nuclear power.

Each of these policy perspectives involves real and notable trade-offs. If we domesticate our energy production, for example,

---

75. Scott, *supra* note 70, at 7.
76. *Id.* at 9.
77. Holdren, *supra* note 3, at 3.
78. *Id.*
79. *Id.* at 6.

we will be burning more coal, which will create more pollution and increasingly contribute to global warming. Similarly, if we continue to import oil at the current rate, our security is threatened. If we use only renewable and alternative resources, we might face an energy shortage because of the variability of energy sources such as wind and solar and because markets in these resources have not been robust. The answer lies in a Smart Energy path and is based on transitional policies that Lovins wrote about thirty years ago.[80]

As we move to Smart Energy, we need not abandon our economic assumptions; nor do we need to dramatically alter our quality of life. Indeed, we need not alter it at all. Instead, we can continue to rely on markets and private capital, and we can continue a high rate of energy production and consumption. We will simply get greater use out of less energy. We can accomplish this goal by modifying the economic assumptions to make room for greater efficiencies, a diversity of energy sources, and smarter technologies that deliver less centralized and scaled-down energy to consumers.

There is another shift in focus of which we must be aware. Federal energy policy, as noted above, is today what it has been for over a century. Energy industries, firms within those industries, and politicians who represent those firms and industries are familiar parts of the federal energy policy bureaucracy and network. The new energy thinking that has been emerging over the last several years has come not from the federal government but from the states and from private markets.

Nearly half of the states in the country now have renewable portfolio standards, which require electricity producers to use certain percentages of renewable or alternative sources in their energy production as part of their energy policies. As of yet, there are no new federal renewable portfolio standards. In addition, the states have instigated litigation against the Environmental Protection Agency in order to enforce clean air standards.[81] Also, the states have developed fleet vehicle rules and, perhaps most notably, California has an aggressive solar incentive program and

---

80. Lovins, *The Road Not Taken?*, *supra* note 11, at 84-88.

81. *See* Massachusetts v. EPA, 415 F.3d 50 (D.C. Cir. 2005), *cert. granted*, 74 U.S.L.W. 3713, 74 U.S.L.W. 3720, 75 U.S.L.W. 3018 (U.S. June 26, 2006) (No. 05-1120).

has imposed a cap on CO^2 emissions in the state.

The private sector has been very active, aggressive, and busy. Organizations such as the American Council on Renewable Energy, the Renewable Energy Policy Network, and other trade organizations bring together business and industry leaders, federal and state government actors, and academics in an endeavor to demonstrate the new future of energy policy.[82] In addition, private companies such as BP and Shell have devoted substantial resources to sustainable energy programming.[83] The investment company of Goldman Sachs has dedicated a billion dollars to venture capital for new energy,[84] and recent reports indicate that the private sector will invest nearly $40 billion in the coming year to renewable resources. Recently, President Clinton's Global Initiative reports an investment of $7 billion, with most of it devoted to climate change.[85] Cleanttech Venture Network reports $594 million in the second quarter of 2006 for clean energy technology, and New Energy Finance Ltd. estimates an investment of $63.3 billion in renewable and low carbon technologies in 2006.[86] Thirteen states have amassed $3.5 billion in clean energy funds for renewable research projects,[87] and the

82. *See, e.g.,* The American Council on Renewable Energy, http://www.acore.org (last visited Jan. 27, 2007); CHRISTOPHER FLAVIN & MOLLY HULL AECK, ENERGY FOR DEVELOPMENT: THE POTENTIAL ROLE OF RENEWABLE ENERGY IN MEETING THE MILLENIUM DEVELOPMENT GOALS, *available at* http://www.ren21.net/pdf/REN21Report%20RETs%20for%20MDGs.pdf (last vistited Jan. 27, 2007).

83. *See generally* BP, MAKING ENERGY MORE: SUSTAINABILITY REPORT 2005, *available at* http://www.bp.com/liveassets/bp_internet/globalbp/STAGING/global_assets/downloads/S/bp_sustainability_report_2.pdf (reviewing BP's performance in implementing sustainable practices); SHELL, THE SHELL SUSTAINABILITY REPORT 2005, *available at* http://www.shell.com/static/envandsoc-en/downloads/about_this_site/shell_sustainability_report_2005.pdf (reviewing Shell's commitment to sustainable development).

84. *See* Goldman Sachs, Goldman Sachs Environmental Policy Framework 4, http://www2.goldmansachs.com/our_firm/our_culture/social_responsibility/environmental_policy_framework/docs/EnvironmentalPolicyFramework.pdf (last visited Dec. 28, 2006) (declaring an intention to seek opportunities for investment in the environmental market).

85. New Energy Finance, Global Clean Energy Investment Overview: Trends and Issues in the Financing of Renewable Energy and Low-Carbon Technology 1 (2006), *available at* http://www.clintonglobalinitiative.org/netcommunity/document.doc?&ID=42.

86. Stella Group, Growth of Clean Energy 2006, *available at* http://www.acore.org/download/Federal%20Financing-Scott%20Sklar.ppt.

87. Clean Energy States Alliance, http://www.cleanenergystates.org/about.html (last visited Dec. 28, 2006) (noting the amount of funds that participating states have reserved to expand the use of clean energy).

New York Times has recently reported that ethanol can make up 40% of Archer Daniel Midlands 2007 sales estimated at over $36 billion.[88]

There are two things we can take away from reflecting upon what Katrina means for our energy future. First, even though Traditional Energy policy is alive and well in the federal government, it does not go unchallenged. State governments and private actors are pushing forward with the new energy thinking. Private markets see the value in renewable resources and are responding to investment opportunities. Similarly, states are not constrained and are responding to what their citizens perceive as our necessary energy future. No longer can we simply focus on the relationship between energy and the economy. Instead, we must acknowledge and recognize the need for our energy policy to provide both security and environmental protection.

VI. NEW POLICY CHOICES

Given the new thinking on energy, how does or should it translate into policy? Two alternatives suggest themselves. The first alternative is the brute force alternative. Let markets take care of energy policy as various consumers and producers let the laws of supply and demand operate. Remove all subsidies, tax incentives, and other financial supports. Given entrenched interests in industry and government, this is not a realistic option, particularly given the fact that existing legislation so heavily favors the Traditional path.

The other alternative is to level the playing field. This alternative has several dimensions. First, funding should be shifted away from traditional industries and towards those alternative or transitional industries that can better produce energy, protect the environment, and safeguard our economy and our security. In addition, significant increases in research and development are necessary. John Holdren notes that US public and private spending on energy technology totals about $5 to $6 billion per year or less than 1% of what the country spends for electricity and fuels.[89] Senator John Glenn suggests that we should engage in a massive Manhattan project on energy

88. Alexei Barrionuevo, *A Bet on Ethanol, with a Convert at the Helm*, N.Y. TIMES, Oct. 8, 2006.

89. Holdren, *supra* note 3, at 19. *See also* Andrew C. Revkin, *Budgets Falling in Race to Fight Global Warming*, N.Y. TIMES, Oct. 30, 2006, at A1.

specifically for the purpose of developing sophisticated large scale electricity storage systems. In either event, it is important to recognize both that Traditional Energy has had its day and that diversity, new technologies, and innovation are necessary for a future responsive to the new thinking.

***