Spring 2012

Climate Change and the Roles of Land Use and Energy Law: An Introduction

David Markell

CLIMATE CHANGE AND THE ROLES OF LAND USE AND ENERGY LAW: AN INTRODUCTION

DAVID MARKELL*

The articles in this volume represent the work of a range of scholars with a diverse set of perspectives about the challenges posed by climate change and the roles that land use and energy law can play in addressing these challenges.[1] These challenges are daunting and have spawned an enormous literature, indeed many literatures.[2] The legal regimes that govern our use of land and energy have already been, and will continue to be, integral to the effort to devise effective responses.[3]

My aim in this introductory essay is to provide a frame for the contributions that follow. I identify and review six aspects of climate change in an effort to capture some of the ferment that now exists as policy makers, scholars, and others wrestle with the challenges that climate change poses for extant legal regimes.[4] I then briefly summarize the articles in this symposium volume.

An essential feature of climate change policy is that challenges fall into two basic categories, mitigation and adaptation.[5] Mitigation often involves actions to reduce the emission of greenhouse

---

* Steven M. Goldstein Professor, Florida State University College of Law. Thanks to Professors Emily Meazell and Hannah Wiseman for very graciously reviewing a draft of this introduction. Thanks also to the Journal staff for very helpful assistance.

1. The articles were generated from a symposium hosted by the Florida State University College of Law during the spring of 2011.

2. *See, e.g.*, SUSAN E. CAMERON DEVITT ET AL., FLORIDA BIODIVERSITY UNDER A CHANGING CLIMATE: A WHITE PAPER ON CLIMATE CHANGE IMPACTS AND NEEDS FOR FLORIDA 10 (Jan. 2012), *available at* http://floridaclimate.org/docs/biodiversity.pdf (noting that "[w]ell over 15,000 scientific papers have been published on the topic of climate change and biodiversity.").

3. *See generally* HANNAH CHOI GRANADE ET AL., MCKINSEY & CO., UNLOCKING ENERGY EFFICIENCY IN THE U.S. ECONOMY (2009), *available at* http://www.mckinsey.com/Client_Service/Electric_Power_and_Natural_Gas/Latest_thinking/Unlocking_energy_efficiency_in_the_US_economy (select "Read Full Report" hyperlink) [hereinafter MCKINSEY REPORT]; U.S. ENVTL. PROT. AGENCY, SMART GROWTH: A GUIDE TO DEVELOPING AND IMPLEMENTING GREENHOUSE GAS REDUCTION PROGRAMS (2010), [hereinafter U.S. E.P.A. REPORT].

4. This typology is not intended to be comprehensive. For example, I do not address the ferment about the underlying basic scientific underpinnings for the view that climate change is occurring and humans are contributing significantly. Similarly, a detailed review of the issues is far beyond the scope of this introduction. *See, e.g.*, DEVITT ET AL., *supra* note 2, at 10 (noting that "[t]he response of biodiversity to the various physical drivers of climate change is the subject of a prodigious amount of scientific research.").

5. *See generally* CENTER FOR CLIMATE AND ENERGY SOLUTIONS, CLIMATE CHANGE ADAPTATION: WHAT FEDERAL AGENCIES ARE DOING (Feb. 2012 Update), *available at* http://www.c2es.org/docUploads/federal-agencies-adaptation.pdf (providing a detailed summary of climate change adaptation efforts, policies, plans, and resources provided by various federal agencies); David Markell & J.B. Ruhl, *An Empirical Survey of Climate Change Litigation in the United States*, 40 Envtl. L. Rep. (Envtl. Law Inst.) 10,644 (July 2010).

gases ("GHG") that contribute to changes in climate.[6] Some have used the word "limiting" rather than "mitigation" in order to be clear that the focus of such initiatives is to limit the "main drivers of climate change" (notably GHG emissions).[7] The expectation is that limiting these drivers will limit climate change itself.[8] Adaptation is a "relatively new topic for U.S. citizens" and many others.[9] It typically involves actions to respond to the effects of climate change–to equip humans and other species to flourish if and as changes in climate occur.[10] Some strategies that will promote adaptation may undermine mitigation, and vice versa.[11] Thus, the need to confront mitigation *and* adaptation contributes to the complexity we currently face in the search for policies to address climate change and in the distribution of responsibility to develop and implement effective strategies.

Mitigation presents a multitude of policy challenges and opportunities in its own right. There are opportunities on the "supply side" to reduce emissions, either by reconfiguring existing sources so that they emit less in the future than they have in the past, or by shifting from more to less polluting sources. This is playing out for stationary as well as mobile sources. For example, the energy sector (especially coal-fired power plants, perhaps the poster child for emitters of large volumes of GHGs),[12] has been the focus of efforts to reconfigure existing facilities to reduce emissions and to

---

6. *See* NAT'L RESEARCH COUNCIL, LIMITING THE MAGNITUDE OF FUTURE CLIMATE CHANGE, at ix (2010).

7. *Id.*

8. *Id.*

9. NAT'L RESEARCH COUNCIL, ADAPTING TO THE IMPACTS OF CLIMATE CHANGE, at ix (2010).

10. *See id.* As for mitigation, additions to the literature on adaptation appear on a seemingly daily basis. *See, e.g.*, CTR. FOR CLIMATE STRATEGIES, CENTER FOR CLIMATE STRATEGIES ADAPTATION GUIDEBOOK: COMPREHENSIVE CLIMATE ACTION (2011), *available at* http://www.climatestrategies.us/library/library/view/908 [hereinafter ADAPTATION GUIDEBOOK]; MARGUERITE KOCH-ROSE ET AL., FLORIDA WATER MANAGEMENT AND ADAPTATION IN THE FACE OF CLIMATE CHANGE: A WHITE PAPER ON CLIMATE CHANGE AND FLORIDA'S WATER RESOURCES (Nov. 2011).

11. *See, e.g.*, EXEC. OFFICE OF ENERGY & ENVTL. AFFAIRS & ADAPTATION ADVISORY COMM., MASSACHUSETTS CLIMATE CHANGE ADAPTATION REPORT 2, 24-26 (Sept. 2011), *available at* http://www.mass.gov/eea/docs/eea/energy/cca/eea-climate-adaptation-report.pdf (concluding that "[t]here are . . . areas of potential conflict between climate change adaptation and mitigation strategies that must be reconciled," in addition to strategies that might further both objectives).

12. *See, e.g.*, COMM'N FOR ENVTL. COOPERATION OF N. AM., NORTH AMERICAN POWER PLANT AIR EMISSIONS 6, 9, 36 fig.2.12 (2011), *available at* http://www.cec.org/temp/power_plants_english_web.pdf [hereinafter CEC POWER PLANT EMISSIONS] (indicating that in 2005 the energy sector accounted for over sixty percent of the world's GHG emissions and that "one third of the total GHG emissions in the United States were from electricity generation"); Andrew Childers & Avery Fellow, *Power Plants Accounted for 72 Percent of Greenhouse Gases Reported in 2010*, Bloomberg Online Daily Environment Report (BNA) (Jan. 12, 2012) (reporting that power plants emitted 72.3 percent of reported CO2e emissions nationwide in 2010).

shift from more polluting sources of energy to cleaner sources of energy including both non-renewable production (for example, natural gas powered plants) and renewable (for example, solar, wind, and biomass).[13] For mobile sources, recent federal policies have incentivized plug-in hybrid and natural gas vehicles, as well as other low-carbon transportation options.[14]

Opportunities also abound on the "demand side" to limit emissions of GHGs. In a 2009 report, McKinsey & Company observed that "energy efficiency stands out as perhaps the single most promising resource [in the nation's pursuit of climate change mitigation]."[15] Further, McKinsey & Company identified well over $100 billion in annual energy-saving opportunities that were going unrealized despite their potential for positive returns on investment.[16] The report identified a series of strategies to "unlock" this efficiency potential.[17] McKinsey & Company's conclusion provided at least some cause for cautious optimism:

> The central conclusion of our work: *Energy efficiency offers a vast, low-cost energy resource for the U.S. economy–but only if the nation can craft a comprehensive and innovative approach to unlock it. . . . [A] holistic approach . . . is estimated to reduce end-use energy consumption in 2020 by 9.1 quadrillion BTUs, roughly 23 percent of projected demand, potentially abating up to 1.1 gigatons of greenhouse gases annually*.[18]

Several articles in this volume highlight the contributions that land use legal regimes can make to energy efficiency–to "unlocking" this energy-saving potential.[19] These articles contribute to discussion of these possibilities in policy circles. For example, in a recent report EPA notes that "[s]mart growth policies and prac-

---

13. Reflecting the importance of such efforts to the "sustainability" of the United States and North American economy, the CEC has noted that "[t]he fossil fuel electricity generation sector is an important component of North America's economy and provides an indispensable commodity." *See* CEC POWER PLANT EMISSIONS, *supra* note 12, at 1.

14. *See, e.g.*, I.R.C. §§ 30, 30B, 30D (West 2012), as amended by the American Reinvestment and Recovery Act of 2009 (providing tax credits for hybrid, plug-in, and alternative fuel vehicles).

15. *See* MCKINSEY REPORT, *supra* note 3, at xiv.

16. *Id.* at i.

17. *See generally id.*

18. *Id.* at iii (emphasis in original).

19. *See* Uma Outka, *The Energy-Land Use Nexus*, 27 J. LAND USE & ENVTL. L. 245 (2012); Steven Ferrey, *Earth, Air, Water and Fire: The Classical Elements Confront Land and Energy*, 27 J. LAND USE & ENVTL. L. 259 (2012); John R. Nolon, *Land Use for Energy Conservation and Sustainable Development: A New Path Toward Climate Change Mitigation*, 27 J. LAND USE & ENVTL. L. 295 (2012); Patricia Salkin, *The Key to Unlocking the Power of Small Scale Renewable Energy: Local Land Use Regulation*, 27 J. LAND USE & ENVTL. L. 339 (2012).

tices . . . can influence energy consumption in multiple ways."[20] To name two, "green building" is an important part of the mix while, on a larger scale, where development occurs is also critical because of its impact on transportation patterns.[21]

Taken together, land use, energy efficiency, and mobile and stationary source emission reduction approaches demonstrate that on the mitigation side of climate change supply and demand-oriented approaches are by no means "either-or." Instead, new sources of no- and low-carbon generation and energy efficiency are critical parts of the "overall portfolio of energy solutions."[22]

Like mitigation, adaptation provides a wide range of challenges and opportunities. Efforts are ongoing to develop and implement strategies to diagnose and respond to stresses that different environmental media face.[23] Similarly, enormous amounts of effort are being devoted to challenges to individual species and to biodiversity more generally.[24] And, adaptation of the entire human enterprise is receiving considerable attention as well.[25] It is well understood at this point, in short, that initiatives to facilitate adaptation to climate change will be an essential part of the policy response.[26]

Another critical component of the effort to devise effective responses to climate change (beyond recognizing the need for attention to adaptation and mitigation, and the value of focusing on different strategies to address the myriad challenges each poses) involves the question of normative objectives: the question of what we should be striving to accomplish. One's diagnosis of the risks

---

20. U.S. E.P.A. REPORT, *supra* note 3, at 1. *See generally* INT'L CITY/CNTY. MGMT. ASS'N, GETTING TO SMART GROWTH: 100 POLICIES FOR IMPLEMENTATION, *available at* http://www.smartgrowth.org/pdf/gettosg.pdf (discussing ten smart growth principles and the variety of ways that communities can achieve them).

21. *See, e.g.*, THE LAW OF GREEN BUILDINGS: REGULATORY AND LEGAL ISSUES IN DESIGN, CONSTRUCTION, OPERATIONS, AND FINANCING (J. Cullen Howe & Michael B. Gerrard eds., 2010); U.S. E.P.A. REPORT, *supra* note 3, at iv.

22. *See* MCKINSEY REPORT, *supra* note 3, at iii-xiv, 92.

23. *See* ADAPTATION GUIDEBOOK, *supra* note 10.

24. DEVITT ET AL., *supra* note 2, at 10.

25. I do not make an effort to capture the scale and scope of such activities here, but suffice it to say that such efforts include land use regulation (the impacts of climate change on local land use law), insurance (how climate change should affect the price and availability of insurance), environmental regulation (for example, the location and operation of basic infrastructure such as wastewater treatment plants and the siting of new power sources), and a host of other fields. *See, e.g.*, SWISS RE, THE ESSENTIAL GUIDE TO REINSURANCE (2010), *available at* http://media.swissre.com/documents/The_Essential_Guide_to_Reinsurance_EN.pdf (for an example of the efforts in insurance regulation).

26. *See, e.g.*, CENTER FOR CLIMATE AND ENERGY SOLUTIONS, *supra* note 5, at 2; INTERAGENCY CLIMATE CHANGE ADAPTATION TASK FORCE, FEDERAL ACTIONS FOR A CLIMATE RESILIENT NATION (2011), *available at* www.whitehouse.gov/sites/default/files/microsites/ceq/2011_adaptation_progress_report.pdf; David Markell & J.B. Ruhl, *An Empirical Assessment of Climate Change in the Courts: A New Jurisprudence or Business as Usual?*, 64 FLA. L. REV. 15 (2012).

that climate change poses,[27] and the feasibility (considered broadly) of options for responding, inevitably influences one's views about best approaches. Value-infused judgments are also clearly integral to normative decisions, such as one's views about the extent to which legal regimes should take a "precautionary" approach, however that is defined,[28] or how one should balance the elements of "sustainable development," which include economic development, peace and security, human rights, as well as environmental protection.[29] One think tank recently suggested a set of adaptation actions that seemingly would be attractive to people across a broad spectrum of views, notably "actions that improve our ability to adapt to a changing climate [and that] also improve economic, environmental, health and energy security if they are properly developed and implemented."[30] The real world, however, can be much more difficult as trade-offs need to be made between and among different interests. The trade-offs that are made, and the processes used to make them,[31] will have enormous implications for the content and effectiveness of future policy decisions.

The final feature of this partial typology of challenges we face in addressing climate change involves the question of roles–what roles different levels of government should play (raising questions of horizontal as well as vertical governance), and the roles that should be available to and/or expected of NGOs, both those in the regulated (and potentially regulated) party community, and community and other groups who purport to be operating in the broader "public interest."[32] In addition to the fact that "[i]nteragency co-

---

27. The disputes about the soundness of the science and current state of the science have received enormous attention. *See, e.g.*, Shi-Ling Hsu, Managing Regulatory Risks from Changing Climate Policy, (Nov. 18, 2011) (unnumbered Working Paper), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1956269.

28. *See, e.g.*, Jonathan B. Wiener, *Whose Precaution After All? A Comment on the Comparison and Evolution of Risk Regulatory Systems*, 13 DUKE J. COMP. & INT'L L. 207 (2003); Jonathan B. Wiener, *Precaution in a MultiRisk World*, *in* HUMAN AND ECOLOGICAL RISK ASSESSMENT: THEORY AND PRACTICE 1509-31 (Dennis J. Paustenbach ed., 2002).

29. *See* Daniel C. Esty, *A Term's Limits,* FOREIGN POL'Y, Sept.-Oct. 2011, at 74, 74-75 (claiming that, for all its laudable goals and initial fanfare, sustainable development has become a buzzword largely devoid of content); David L. Markell, *Greening the Economy Sustainably*, 1 WASH. & LEE J. ENERGY, CLIMATE, & ENV'T 49 (2010); ENVTL. LAW INST., AGENDA FOR A SUSTAINABLE AMERICA (John C. Dernbach ed., 2009).

30. ADAPTATION GUIDEBOOK, *supra* note 10, at 8.

31. *See, e.g.*, Tom Tyler & David Markell, *The Public Regulation of Land Use Decisions: Criteria for Evaluating Alternative Procedures*, 7 J. EMPIRICAL LEGAL STUD. 538 (2010).

32. One of the particular challenges of climate change is its anti-silo character. That is, climate change raises issues that fall within the turf of various government entities horizontally. *See, e.g.*, CENTER FOR CLIMATE AND ENERGY SOLUTIONS, *supra* note 5 (discussing some of the federal actors involved in adaptation). Vertically, it implicates land use regulation, traditionally to a significant degree the province of local governments, as well as state and federal responsibilities. *See, e.g.*, Markell & Ruhl, *supra* note 26 (noting that climate change litigation to date has arisen under a variety of laws, including NEPA, the Endan-

ordination is one of the central challenges of modern governance,"[33] integration of the relevant publics poses a challenge of similar magnitude.[34]

With that contextual backdrop, I now turn to a brief overview of the contributions that follow. Each of the contributors brings years of experience to the challenges we face, and the pieces stand on their own; my hope is that these brief summaries will help the reader make the best use possible of this symposium volume.

In her article, *The Energy-Land Use Nexus*,[35] Professor Outka focuses on several significant challenges that climate change poses for energy and land use law. After summarizing some of the regulatory efforts to integrate land use and energy consumption that concerns about climate change have spawned (for example, California's SB 375, its Sustainable Communities Act, and 2008 Florida legislation that explicitly required integration of energy conservation issues into land use regulation), Professor Outka emphasizes the uniquely challenging context for the progress new regulatory regimes of this sort have made in addressing the institutional governance challenge of integrating energy concerns into land use regulation. She suggests that these efforts "[have] been paired with problems, criticism, and set-backs," including 2011 Florida legislation that weakened the 2008 enactments, the withdrawal of the Florida rulemaking that was intended to implement the Florida legislation, and the dissolution of the Florida State agency, the Department of Community Affairs (DCA), charged with developing and administering land use policy at the state level.[36] Her conclusion: the enactment of SB 375 and the 2008 Florida legislation underscore that "[r]ecognizing the influence of land use on energy consumption is a key first step in this direction, but an incredible amount of consensus building and policy work stands between the status quo and having effective law in place to moderate and rationalize that influence."[37]

A second important issue that Professor Outka addresses involves regulation of land used to generate energy, through siting regimes and other approaches. Many commentators have argued

---

gered Species Act, and the Clean Air Act). Multilateral efforts and international institutions have obviously been a part of the climate change landscape as well.

33. Jody Freeman & Jim Rossi, *Agency Coordination in Shared Regulatory Space*, 125 HARV. L. REV. 1131, 1134 (2012).

34. *See, e.g.*, David L. Markell & Tom R. Tyler, *Using Empirical Research to Design Government Citizen Participation Processes: A Case Study of Citizens' Roles in Environmental Compliance and Enforcement*, 57 U. KAN. L. REV. 1 (2008); David Markell et al., *What Has Love Got to Do with It?: Sentimental Attachments and Legal Decision-Making*, 57 VILL. L. REV. (forthcoming 2012), *available at* ssrn.com/abstract=1923807.

35. Outka, *supra* note 19.

36. *Id.* at 249-50.

37. *Id.* at 250.

for preferential, streamlined treatment of renewable energy sources, asserting that they are essential in the transition to a less GHG emitting future.[38] Such an approach raises obvious questions about the appropriateness of government "picking winners and losers."[39] Beyond this issue, Professor Outka emphasizes the significant impacts that the creation of new renewable energy sources may have on land and wildlife conservation goals, citing a 2009 study by The Nature Conservancy that examines the significant adverse impacts of renewable energy sources.[40] Professor Outka also points out that local residents potentially may be skeptical of such facilities for a variety of reasons.[41] She suggests that we need to do better at assessing "cumulative land impacts of energy policy"[42] and urges attention to governments' progress in assessing use of public lands for renewable energy generation for insights that can and should be transferred to development of private lands.[43]

In her final section, entitled "Energy-Land Use Integration," Professor Outka highlights the importance of demand side issues, such as improving energy efficiency for our built environment and for motor vehicles.[44] She also favors a concept discussed in more detail in other articles in this volume, notably the idea of distributed energy and the need to revisit legal regimes to ensure they appropriately encourage development of such sources (rooftop solar panels, urban wind power, etc.).[45] A third issue addressed in this section is the idea of taking advantage of existing infrastructure by promoting redevelopment of brownfield sites for energy generation purposes rather than locating renewable technologies in greenfields.[46] Reflecting the multi-layered governance challenges in-

---

38. *See, e.g.*, American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, § 1609(c), 123 Stat. 115, 304 (2009) (streamlining the NEPA review for renewable energy projects); *see also* Exec. Order No. 13, 212, Actions to Expedite Energy-Related Projects, 66 Fed. Reg. 28,357 (May 18, 2001) (mandating expedited review of renewable energy projects); DEP'T OF INTERIOR, ORDER NO. 3285, RENEWABLE ENERGY DEVELOPMENT (Mar. 11, 2009), *available at* http://solareis.anl.gov/documents/docs/soenergy.pdf (streamlining renewable energy siting on federal land within the Department of Interior's jurisdiction).

39. *See, e.g.*, NORMAN Y. MINETA, FORMER U.S. SEC'Y OF TRANSP., U.S. COAL. FOR ADVANCED DIESEL CARS, THE CASE FOR TECHNOLOGY NEUTRAL PUBLIC POLICY IN FUEL ECONOMY DEBATE: ALLOWING PERFORMANCE TO DETERMINE SOLUTIONS 1 (2011), *available at* http://www.cleandieseldelivers.com/upload/CleanDieselDelivers_White_Paper.pdf.

40. Outka, *supra* note 19, at 251-52.

41. *Id.* at 250-51.

42. *Id.* at 252.

43. *Id.* at 252-53.

44. *Id.* at 255-57.

45. *See, e.g.*, Nolon, *supra* note 19; Salkin, *supra* note 19.

46. Outka, *supra* note 19, at 256-57. For a primer on using brownfields for green energy, see NAT'L ASS'N OF LOCAL GOV'T ENVTL. PROF'LS CULTIVATING GREEN ENERGY ON BROWNFIELDS: A NUTS AND BOLTS PRIMER FOR LOCAL GOVERNMENTS 4-5 (2012). EPA has also invested considerable energy in siting renewable energy projects on contaminated parcels. *See, e.g.*, U.S. ENVTL. PROT. AGENCY, RE-POWERING AMERICA'S LAND FACT SHEET: SIT-

volved in energy and land use decision-making, Professor Outka notes the role the federal EPA has played in developing legal guidelines that influence where development occurs.[47]

In his article, *Earth, Air, Water and Fire: The Classical Elements Confront Land and Energy*, Professor Ferrey suggests that "electricity has become perhaps the signature technology of the 21st century" because the "modern information age, national defense, and a variety of other communication and intelligence-based applications are dependent on electricity with no available energy substitutes."[48] He identifies a series of strategies that could help to assure adequate supplies of electricity with greater efficiency and reduced environmental impact.[49]

Like Professor Outka, Professor Ferrey raises a number of issues concerning the land use implications of the ongoing shift to renewable sources of energy. Prominent concerns include the relatively large land area that solar and wind renewable energy generation tends to require, the significant water demands in some cases, and the need for transmission capability between the areas where such sources exist and where demand is located.[50] Professor Ferrey identifies a number of legal issues that will require attention in developing needed transmission capacity in particular.[51]

A third topic Professor Ferrey addresses is the extraordinary promise of demand-side strategies. He highlights opportunities to reduce energy demand through a variety of conservation measures and summarizes some of the substantial amount of ongoing activity, including more than 200 local government initiatives, statewide initiatives across the country, and the federal stimulus packages' multi-billion dollars worth of support for energy efficiency improvements.[52]

Finally, Professor Ferrey addresses the use of waste as an energy resource. He focuses especially on methane gas from landfills—its use as an energy source has the double benefit of providing a new source of energy and reducing GHG emissions. Professor Ferrey suggests that "[b]ecause methane is much more harmful as a [GHG] than CO_2, . . . and the landfills are such a dominant anthropogenic source of methane emission[s], it is a prime emission to control."[53] Professor Ferrey also discusses a variety of other

---

ING RENEWABLE ENERGY PROJECTS WHILE ADDRESSING ENVIRONMENTAL ISSUES (Dec. 2011), *available at* http://www.epa.gov/oswercpa/docs/decision_tree_factsheet.pdf.

47. Outka, *supra* note 19, at 256-57.
48. Ferrey, *supra* note 19, at 261.
49. *Id.* at 262-67.
50. *Id.* at 262-63.
51. *Id.* at 264-67.
52. *Id.* at 269-76.
53. *Id.* at 284.

ways in which "distressed land" can be recycled and provide energy. For example, he suggests that landfills may provide a good location for wind turbines in some cases because the landfills are at an elevated height and are cleared, though he indicates that this marriage of wind generation and landfills has been a rare occurrence to date.[54] He suggests that "landfills have become a prime location for the siting of large arrays of solar [photovoltaic] electric generation," again, because the land is elevated and often cleared and the terrain is flat, as well as secure.[55] Professor Ferrey reviews the different types of financial incentives that are available to promote development of renewable energy sources, including on distressed properties.

As the title reflects, Professor Nolon's contribution to this volume, *Land Use for Energy Conservation and Sustainable Development: A New Path Toward Climate Change Mitigation*, focuses primarily on land use tools to conserve energy and mitigate emissions of GHGs. Professor Nolon grounds his analysis in three basic facts: 1) "construction and operation of buildings as well as the [vehicle miles travelled] . . . will account for a large percentage of the energy needs by mid-century";[56] 2) currently, because of the large amount of energy they use, "residential and commercial buildings accounted for thirty-five percent of CO_2e emissions" in 2009, and, similarly, "[t]ransportation activities . . . accounted for [thirty-three] percent of CO_2 emissions from fossil fuel combustion in 2009";[57] and 3) there are a wide array of strategies available to reduce emissions from both sources, from greater efficiency in the generation and transmission of energy for these buildings to "urban settlement" that would reduce vehicle miles travelled (VMT).[58] Professor Nolon's proposals for reducing energy use and GHG emissions focus largely on these strategies for reducing energy use in buildings and by mobile sources.[59]

Professor Nolon urges particular attention to opportunities at the local level to make a difference because local governments often create and enforce the legal rules that govern energy efficiency in buildings and the amount of travel "within and between human settlements."[60] He begins with energy conservation codes. These

---

54. *Id.* at 287.
55. *Id.* at 288.
56. Nolon, *supra* note 19, at 297.
57. *Id.* at 299.
58. *Id.* at 300.
59. Nolon "presupposes that climate change is happening." *Id.* at 298. He cites the IPCC reports for the underlying notion that climate change is occurring, anthropogenic GHG emissions are contributing to this phenomenon, and the consequences may be significant.
60. *Id.*

are codes that establish standards for the design, construction, and installation of various parts of buildings. The goal of such codes is to "reduce the energy consumed . . ." by buildings.[61] In some states, state building codes preempt local codes; in others, there is no statewide energy code and local governments may adopt their own. In still others, there is a statewide code but local governments are free within various parameters to build on the statewide version. Professor Nolon encourages local governments to take the initiative where possible to strengthen their building codes to conserve energy and make buildings more efficient.[62]

Professor Nolon also outlines a series of opportunities to conserve energy and reduce GHG emissions through regulation of buildings in ways beyond the coverage provided in energy codes. For example, regulations can direct or encourage plug-in facilities for hybrid cars, limit idling, require bike storage and other infrastructure to encourage bicycling, dictate building orientation and landscaping that reduces energy consumption, and encourage active solar and wind generation facilities, to name a few. Professor Nolon suggests that, while the structure of land use law varies by state, local governments in some states possess the delegated land use authority to "require or encourage these energy-conserving features of land development as part of their land use regulatory system" and he urges them to do so.[63]

In addition to his proposals for improving regulation of individual buildings and building sites in order to improve energy conservation and reduce GHG emissions, Professor Nolon offers a series of ideas for reconfiguring communities to further the same goals. He suggests that high density living, in tandem with mixed-use development and better transit systems, will help to create a less car-dependent society, which is a key feature of this more expansive vision of possible strategies.[64] Professor Nolon suggests that inter-governmental coordination, both horizontal (for example, local governments working with each other) and vertical (for example, local governments and regional organizations collaborating) will be needed, since federal law gives Metropolitan Planning Organizations (MPOs) responsibility for various aspects of transit services.[65] From a normative standpoint, Professor Nolon touts the promise of Leadership in Energy and Environmental Design (LEED) for neighborhood development as establishing standards and methodologies that will lead to more efficient use of energy

61. *Id.* at 303.
62. *Id.* at 303-04.
63. *Id.* at 307-08.
64. *Id.* at 313-15.
65. *Id.* at 321.

and other best practices for entire neighborhoods, not merely individual buildings.[66] He concludes that "[o]ne of the historic inefficiencies in our zoning system [has been] the lack of respected standard-setting agencies to guide the drafting of local regulations," and suggests that "the LEED-ND system responds to this need by providing intelligent practices that can be used to guide sustainable neighborhood planning and regulation."[67]

Another piece of the energy efficiency and reduced GHG emission scenario that Professor Nolon discusses involves the promise of distributed energy generation. He suggests that "[b]uildings can be made up to eighty percent more energy efficient through distributed-generation systems . . . ."[68] He encourages including such systems in the neighborhood planning process, noting that their scale can extend to multiple buildings in close proximity to one another. Professor Nolon offers several recommendations for structuring local land use regulatory systems to allow and incentivize such systems and provides examples of communities that have done this effectively.[69]

Finally, Professor Nolon urges creation of "energy conservation districts," perhaps modeled after initiatives in other policy arenas, such as the federal Enterprise Zone initiative, which sought to reduce poverty and enhance job growth through creation of enterprise zones. Professor Nolon notes that the Enterprise Zone initiative used census-based metrics to identify areas that would be eligible for various types of assistance (for example, in that program, poverty rate, unemployment rate, and rate of public assistance). Professor Nolon's concept is that similarly helpful census-based data is available to identify areas where opportunities for energy efficiency and GHG emission reduction are significant, and that a federal energy conservation zoning district program could provide support for interested states (similar to the Coastal Zone Management Act) and local governments that are prepared to pursue different options for energy efficiency and GHG emission reduction, such as enhanced energy codes and various neighborhood sustainability practices.[70]

Like Professor Nolon, Professor Salkin focuses on local land use regulation. In her article, *The Key to Unlocking the Power of Small*

---

66. *See, e.g.*, *What LEED Is,* U.S. GREEN BLDG. COUNCIL, http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1988 (last visited July 5, 2012). The initiative discussed in the text takes the LEED concept to the next level by extending it beyond individual structures. *See* Nolon, *supra* note 19, at 326 n.181.

67. *See* Nolon, *supra* note 19, at 330.

68. *Id.*

69. *Id.* at 330-34.

70. *Id.* at 334-37.

Scale Renewable Energy: Local Land Use Regulation,[71] Professor Salkin focuses particularly on one aspect of local land use regulation, facilitation or promotion of small-scale renewable energy sources. She notes the potential contribution that such sources can make to the effort to achieve a paradigm shift towards more affordable and less polluting energy sources; discusses some of the incentives that the federal government and some states have provided to encourage such sources; identifies some of the barriers that local government laws (as well as private restrictions such as deed restrictions in home association rules) put in the way; and outlines some of the strategies local governments have developed to encourage rather than impede new small-scale renewable energy sources.[72] Further, on the "stick end" of the regulatory spectrum, Professor Salkin suggests that local governments' inaction in supporting siting of renewable energy sources may expose them to preemptive federal and/or state legislative or regulatory initiatives.[73] Thus, her bottom line is that such sources have great promise, and that while local land use law sometimes acts as an impediment, there are a variety of practical steps local governments can take to transform themselves from naysayers to facilitators that would benefit their communities. Further, if the vision and reach of local governments fails to rise to the challenge other levels of government may step in and occupy the regulatory landscape.

Professor Salkin suggests that local governments interested in promoting small-scale renewable energy sources rely on the tools commonly used in land use regulation throughout the country to move in this direction. For example, Professor Salkin highlights features of comprehensive planning statutes from several states that advise local governments to consider renewable energy and sustainability as part of the comprehensive planning process. Similarly, she highlights a series of local comprehensive plans that include provisions that do so.[74]

In addition, Professor Salkin identifies various aspects of general zoning regulations that may impede or promote renewable energy sources. These include allowing permitting of renewable energy devices as of right, configuring setback and height limitations in a way that enhances opportunities for renewable energy systems such as solar and wind energy systems, treating visual impacts associated with such systems (for example, wind turbines) sensibly, and making renewable energy devices permissible acces-

71. Salkin, *supra* note 19, at 339.
72. *See id.*
73. *Id.* at 340, 367.
74. *Id.* at 351-54.

sory uses.[75] Designing site plan review, structuring special permit procedures, enacting subdivision requirements, and adapting planned unit developments (PUDs) in ways that promote small scale renewable energy sources are other strategies from the land use regulatory toolbox that Professor Salkin suggests hold considerable promise.[76]

In short, in her contribution to this volume, Professor Salkin urges local governments to conduct "renewable energy audits" of their local comprehensive plans and land use regulations "to ensure that the regulatory regime is designed to accommodate and welcome the use of small-scale renewable energy" and that they use conventional land use regulatory authorities to encourage small-scale renewable energy systems.[77] She further urges federal and state support of local governments in this arena, and suggests that local governments fail to adopt best practices at their peril, with the specter of federal or state preemption looming if local governments do not "step up to the plate."[78]

As I have tried to illustrate, the articles that follow offer a rich mix of assessments of the energy/land use landscape, including an essential toolbox of strategies to address the many challenges we face.

75. *Id.* at 356-60.
76. *Id.* at 361-63.
77. *Id.* at 367.
78. *Id.* at 367.