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## Symposium

# Supply and Demand: Barriers to a New Energy Future

### INTRODUCTION

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Like many fields, energy law has had its ups and downs. A period of remarkable activity in the 1970s and early 1980s focused on the efficiencies arising from deregulation of energy markets, but the field attracted much less attention during the 1990s.<sup>1</sup> In the last decade, a new burst of activity has occurred, driven largely by the implications of energy production and use for climate change. In effect, this new scholarship is asking what efficiency means in a carbon-

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1. For a recent overview of the early trends in energy law, see Fred Bosselman, *A Brief History of Energy Law in United States Law Schools: An Introduction to the Symposium*, 86 CHICAGO-KENT L. REV. 3 (2011).

constrained world. Accounting for carbon has induced scholars to challenge the implicit assumption of the early scholarship that the price of energy reflects all important externalities, and that efficiency therefore can be assumed to mean the generation of the most energy at the lowest cost. Accounting for carbon also has contributed to the growing nexus between energy and environmental law, and has called on practitioners, regulators, and scholars to develop new regulatory solutions that integrate these previously distinct areas.<sup>2</sup>

This reconceptualization of energy law in light of carbon constraints has inspired two important areas of scholarship. The Vanderbilt Energy, Environment and Land Use Program, the Vanderbilt Climate Change Research Network, and the Vanderbilt Law Review organized this Symposium, *Supply and Demand: Barriers to a New Energy Future*, to address both areas. Robert Socolow's keynote address sets the stage for the articles that follow by explaining the urgency and priority of reducing carbon emissions.<sup>3</sup> Socolow's address draws on the literature from numerous disciplines to demonstrate that climate change involves hard truths, and he argues that we must become better at telling those truths to ourselves. In this instance, Socolow not only talked the talk, he walked the walk: he presented his keynote by video, an approach that enabled him to deliver his message on two levels, one through the force of his ideas, and one through his personal behavior.

Following the keynote, the initial four articles in the Symposium address the first emerging area of energy and environmental law scholarship. These articles reflect the often-overlooked notion that in a carbon-constrained world, reducing energy demand is as important as increasing the supply of renewable energy. Although scholarship and policy tend to focus on improving and increasing renewable energy supply, it is difficult to envision how widely accepted carbon targets can be met, as well as other goals such as energy security, without bending the growth curve of energy demand. The options for new sources of low-carbon energy are simply too limited and are being developed and deployed too slowly to enable carbon targets to be met without reducing demand from projected levels.

Daniel Farber's contribution draws on the growing social science literature exploring the distinction between wealth and well-

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2. BOSSELMAN ET AL., ENERGY, ECONOMICS AND THE ENVIRONMENT: CASES AND MATERIALS (3d ed. 2010) reflects the growing nexus between energy and environmental law.

3. Robert H. Socolow, *Truths We Must Tell Ourselves to Manage Climate Change*, 65 VAND. L. REV. 1455 (2012).

being to identify opportunities to reduce energy consumption at the individual level.<sup>4</sup> Farber notes that the loose connection between income and well-being provides an opportunity for interventions that reduce energy use without reducing individual welfare. He suggests that policies ranging from traditional energy efficiency regulatory measures, to behavioral interventions, to urban planning can have positive energy and environmental effects and are more likely to be adopted and implemented because of their positive effects on well-being.

Michael Vandenberg and Jim Rossi ask why efficiency and conservation programs at the household level have had only modest success to date.<sup>5</sup> They argue that one reason for the modest success of household electricity demand reduction efforts is that electric distribution utilities are important gatekeepers for “behavioral wedge” and other programs, but rate structures in many jurisdictions create incentives for utilities to sell more, not less, of their product. As a result, utilities have focused demand-side management (“DSM”) programs on load-shifting and peak-shaving, both of which shift the timing of energy use, but often do not reduce use overall and can increase emissions by increasing reliance on base load coal-fired generation. Vandenberg and Rossi propose a new goal, net demand reduction (“NDR”), and examine a range of policy options to achieve NDR.

Katrina Fischer Kuh’s contribution examines one of the principal means of reducing household energy demand: new technologies that provide information designed to induce efficiency and conservation.<sup>6</sup> Kuh explores the opportunities arising from these technologies (e.g., smart meters and radio information technology devices, or RFIDs), identifies the potential privacy harms that may arise, and evaluates approaches that balance the benefits of information disclosure against the privacy costs. She wrestles with the tradeoffs between information disclosure and privacy concerns, and she notes that, in the absence of careful attention to privacy concerns, backlash against information gathering could undermine household demand reduction measures.

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4. Daniel A. Farber, *Sustainable Consumption, Energy Policy, and Individual Well-Being*, 65 VAND. L. REV. 1479 (2012).

5. Michael P. Vandenberg & Jim Rossi, *Good for You, Bad for Us: The Financial Disincentive for Net Demand Reduction*, 65 VAND. L. REV. 1527 (2012).

6. Katrina Fischer Kuh, *Personal Environmental Information: The Promise and Perils of the Emerging Capacity to Identify Individual Environmental Harms*, 65 VAND. L. REV. 1565 (2012).

Noah Sachs then examines the advisability of more traditional energy efficiency regulations for consumer products.<sup>7</sup> Sachs acknowledges the intrusiveness and complexity of government efficiency mandates, but he argues that minimum efficiency performance standards in the residential sector can reduce the demand for over six hundred power plants worldwide and are an important part of domestic and global climate mitigation strategies. Sachs argues that efficiency standards are appropriate responses to market failures and the externalities of energy use. He notes the recent clash between energy efficiency and consumer choice triggered by light bulb efficiency standards, but he argues that efficiency standards are politically viable and can achieve gains at the residential level unlikely to be achieved through the modest price increases that will arise from carbon tax or cap-and-trade measures.

The second emerging area of energy and environmental law scholarship is represented by the remaining five articles in the Symposium, which focus on the legal barriers to increased supply of energy from renewable sources. Enhancing our nation's renewable energy portfolio to levels that cut meaningfully into carbon emissions cannot be accomplished by relying on rooftop solar panels and backyard wind turbines. It will require nothing less than a commercial-scale industry deploying intensive power generation and transmission infrastructure across the landscape. This puts renewable energy squarely in competition with fossil fuel industries and presents difficult land use and environmental impact issues—two factors that are bound to lead to legal frictions.

Uma Outka opens the supply discussion with a broad overview of two kinds of legal barriers to renewable energy.<sup>8</sup> First, she identifies what she calls the lagging law effects associated with legal change and transition. Traditional energy law and policy was not constructed with renewable energy principally or even peripherally in mind, making it difficult to fit the new square peg in the old round hole. Renewable energy thus is handcuffed to a large extent by the slow pace of transition in energy law. Even more difficult to overcome, however, are what Outka identifies as the entrenched structural biases in other fields of law that work in favor of fossil energy sources. Ironically, many of these biases are evident in environmental law. Structurally, the pollution control orientation of environmental law

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7. Noah M. Sachs, *Can We Regulate Our Way to Energy Efficiency? Product Standards as Climate Policy*, 65 VAND. L. REV. 1631 (2012).

8. Uma Outka, *Environmental Law and Fossil Fuels: Barriers to Renewable Energy*, 65 VAND. L. REV. 1679 (2012).

offers no reward for the low-pollution profile of renewable energy, and in any event fossil fuel energy sources enjoy numerous safe harbors from the full brunt of environmental regulation. Outka thus concludes that environmental law must evolve as well, by tightening controls of fossil energy's environmental impacts and supporting policies that favor renewable energy.

Dan Tarlock evokes similar themes in his discussion of the nation's oldest renewable energy source—hydropower.<sup>9</sup> As Tarlock explains, hydro is a clean, reliable, abundant, and largely untapped renewable energy source. Yet its further development is significantly constrained by existing environmental laws, and it has been largely ignored in the push for renewable energy. Tarlock uses this context as an object lesson on potential conflicts between externality regulation and the “new” renewable energy sources. He pushes this theme toward the “heretical question” of whether renewable energy policy demands a different approach to environmental policy, and if so which existing laws would need to be changed to promote expanded hydro capacity.

Picking up on Tarlock's question, J.B. Ruhl examines the emerging conflicts between commercial-scale wind power and the Endangered Species Act (“ESA”).<sup>10</sup> Through protracted permit proceedings and intense citizen suit litigation, the ESA has proven to be a formidable constraint on the rapid deployment of wind power infrastructure. Indeed, consistent with Outka's broad take on lagging law, Ruhl explains that the ESA simply was not designed to produce anything like a national policy to site wind power across the landscape: the statute was enacted after all the existing national-scale infrastructure projects were largely completed, and its orientation does not take the “greenness” of land uses into account. To adapt to this new context while still fulfilling its species protection goal, Ruhl proposes new administrative polices in support of wind power siting, such as expedited permits and clear guidelines, that will reduce the business risks the ESA's regulatory program currently is imposing on the industry.

As if siting of wind, solar, and other renewable energy facilities is not challenging enough, the next question raised in the Symposium is even more problematic—how to move the green electrons to consumers, particularly given that many of the promising areas for

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9. Dan Tarlock, *Hydro Law and the Future of Hydroelectric Power Generation in the United States*, 65 VAND. L. REV. 1723 (2012).

10. J.B. Ruhl, *Harmonizing Commercial Wind Power and the Endangered Species Act Through Administrative Reform*, 65 VAND. L. REV. 1769 (2012).

wind and solar power generation are far from existing transmission infrastructure. Alexandra Klass and Elizabeth Wilson take up this topic through a sweeping review of interstate power transmission law and policy.<sup>11</sup> They provide a thorough account of the poor existing fit between the transmission grid and renewable energy, meaning that new interstate transmission capacity must be installed to facilitate renewable energy policy. They then review federal, state, and regional laws and policies governing transmission facility planning and siting. Even putting aside for their purposes opposition based on aesthetic and environmental concerns, Klass and Wilson show that the highly devolved decision making structure of energy transmission policy imposes significant impediments to fulfilling our nation's renewable energy goals. Although complete federal preemption is an obvious alternative, Klass and Wilson propose a softer approach under which federal rules would govern transmission siting processes and facilitate the spreading of costs across multi-state consumer pools.

While the first four articles dealing with supply issues are pitched at the commercial industry scale, no evaluation of the supply challenges would be complete without accounting for small-scale distributed energy sources. Sara Bronin provides that component in her case study of building-related renewable energy ("BRRE")—the incorporation of renewable energy generation capacity into inhabited structures for use primarily by the inhabitants.<sup>12</sup> The operation of buildings accounts for two-thirds of our nation's electricity usage and 40% of our greenhouse gas emissions, and thus one might expect the law to embrace BREE. Like the authors of the other articles, Bronin examines the irony of numerous legal obstacles one building developer faced in pursuing BRRE. As Bronin explains, however, these obstacles have less to do with siting—which has been the primary focus of legal scholarship on BERE—than with restrictions a building owner faces in allocating the costs of BREE operation (e.g., maintenance, repairs, administration, and inputs) to the end users. As Bronin's case study reveals, existing state utility laws were not designed to facilitate a BREE building owner to function like a utility in this regard and thus present strong financial biases against BREE and in favor of traditional utility suppliers.

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11. Alexandra B. Klass & Elizabeth J. Wilson, *Interstate Transmission Challenges for Renewable Energy: A Federalism Mismatch*, 65 VAND. L. REV. 1801 (2012).

12. Sara C. Bronin, *Building-Related Renewable Energy and the Case of 360 State Street*, 65 VAND. L. REV. 1875 (2012).

We hope that readers will agree that the articles included in this Symposium make an important contribution to the literature at the boundary of energy and environmental law—a boundary that is shifting and increasingly blurred in both legal scholarship and practice.

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