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The Quiet Revolution Revived: Sustainable Design, Land Use Regulation, and the States

by Sara C. Bronin

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In 1971, *The Quiet Revolution in Land Use Control* inspired numerous scholarly debates about the states' role in land use regulation.[1] In that book, Fred Bosselman and David Callies recognized that localities have long borrowed states' police power to regulate land use.[2] They nonetheless argued that certain land use issues, such as those involving the environment, transcended local government boundaries and competencies.[3] A quiet revolution, the authors claimed, should occur to shift governmental authority from local governments to entities that could more adequately address "extralocal" issues.[4] They turned not to regional authorities or the federal government, but to the states, arguing that states should take back their police power to regulate extralocal issues in a manner that maintained two core values of the quiet revolution: the preservation of the existing land use system and the respect for local autonomy.

Thirty-seven years later, their anticipated transformation has not yet occurred. Carol Rose has noted that since the quiet revolution was first heralded, state and regional governments have not limited—and in fact, may have expanded—local discretion with respect to land use decisionmaking.[5] In 2002, David Callies himself acknowledged that localities play an increasingly important role in, among other areas, environmental protection.[6]

It is time, however, to revive the call of the quiet revolution for states to become more involved in regulating land use, particularly in light of growing evidence of the negative externalities of conventional construction. As written and enforced, "traditional" local land use laws such as zoning ordinances and design controls hinder efforts to build green. This Article examines this conflict and suggests reforms to our land use regulatory system that would facilitate sustainable design.

Part I defines green building by referencing widely accepted industry standards. It then examines the significant negative externalities of conventional construction. It argues that, as evidence of these negative externalities mounts, landowners, including the government, will gravitate toward green building.[7]

Part II explains how the shift toward green building has already created tension with respect to the administration and enforcement of traditional land use regulation. Those that allow green building often allow it piecemeal, but fail to develop comprehensive rules. And although a handful of communities have attempted to address green building through comprehensive legal regimes, localities are so autonomous, and local laws so varied, that it is difficult to transport best practices across jurisdictional lines. Evidence reveals that the dominant mode of land use regulation nationwide bars the reforms that environmentalists and the building industry have worked together to develop.

Part III asserts that states must take back at least some of their powers to regulate land use and facilitate green building

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1. Fred P. Bosselman & David L. Callies, The Quiet Revolution in Land Use Control (1971).
2. *See id.* at 1 ("The *ancien regime* being overthrown is the feudal system under which the entire pattern of land development has been controlled by thousands of individual local governments.").
3. *See id.* ("The tools of the revolution are new laws . . . sharing a common theme—the need to provide some degree of state or regional participation in the major decisions that affect the use of our increasingly limited supply of land.").
4. *Id.* at 3 (arguing that states "are the only existing political entities capable of devising innovative techniques and governmental structures to solve problems . . . beyond the capacity of local governments acting alone").
5. *See* Carol M. Rose, *Planning and Dealing: Piecemeal Land Controls as a Problem of Local Legitimacy*, 71 Cal L. Rev. 837, 842-43 (1983).
6. Carol M. Rose, *New Models for Local Land Use Decisions*, 79 Nw. U. L. Rev. 1155, 1156 (1985) (focusing entirely on local modes of land use decisionmaking).
7. This view is supported by the finding that governmental actors—which are immune from the land use rules they impose on private actors—have integrated green building into public projects.

as a solution to the significant extralocal negative externalities of conventional construction.

I. The Extralocal Impact of Conventional Construction

The rapidly growing green building movement challenges the notion that traditional land use regulation should be an exclusively local function. The movement has brought the environmental consequences of conventional construction to the forefront and exposed the inadequacy of local legal regimes to respond to private land use decisions with significant extralocal externalities. This part sets the stage for Part II's analysis of the tensions between green building and existing law by defining green building on the one hand, and conventional construction on the other. Studies underscore the stark differences between these two modes of construction and enumerate the benefits of sustainable design. As these benefits become more widely known, landowners will increasingly seek to build green.

A. A Green-Building Definition

While there are innumerable innovative ways one can build green, the best and most common definition of green building can be found in the Leadership in Energy and Environmental Design (LEED) program developed by the nonprofit, nongovernmental U.S. Green Building Council.[8] The LEED program evaluates the sustainable features of new construction by giving points in six areas: (1) location and siting; (2) water efficiency; (3) energy and atmosphere; (4) materials and resources; (5) indoor environmental quality; and (6) innovation and design.[9] Property owners can petition the U.S. Green Building Council for certification indicating that their buildings have achieved a certain number of points within each of these six areas.[10]

B. The Negative Externalities of Conventional Construction

With this definition of green building, it is possible to contrast green building with conventional construction, and consider the ways in which the impact of the construction and operation of conventionally designed buildings extends far beyond local boundaries.

Construction is the nation's largest manufacturing activity, using sixty percent of the nonfood, nonfuel raw materials consumed each year.[11] Worldwide, buildings and the construction of buildings account for one-sixth of the world's freshwater withdrawals, forty percent of the world's material and energy flows, and twenty-five percent of wood cut for nonfuel uses.[12] In conventional buildings, materials are often brought in from long distances, with project managers giving little or no consideration to the availability of local alternatives or to the amount of energy used to transport materials. Sustainable design principles, by contrast, recognize that the use of local materials helps the environment by reducing the number of vehicle miles attributed to a project, and LEED awards points for the use of materials extracted and manufactured within a five hundred mile radius of the registered project.[13] Similarly, few conventional projects incorporate recycled materials to a significant degree—unlike LEED-certified projects, nearly all of which incorporate recycled materials during construction, and all of which must provide recycling facilities to occupants once construction is completed.[14]

Post-construction, conventionally designed buildings consume massive amounts of natural resources. Large buildings require millions of gallons of water to operate basic systems and to meet inhabitants' needs; commercial buildings alone use nearly twenty percent of our nation's drinking water supply annually.[15] Keeping buildings lit, cool, warm, or otherwise habitable takes up thirty-six percent of primary energy use, and two thirds of all electricity use.[16] LEED-certified projects consume substantially less water and energy, which translates into operating savings for the owner: studies have shown that such projects generate utility bills (a reasonable proxy for consumption) thirty to fifty percent less than utility bills for conventional buildings.[17]

In light of such statistics, the value of sustainable design is clear. Green building reduces both the amount of waste that demolition and new construction produce, and the amount of resources consumed over the life of the building.

II. Local Barriers to Green Building

Despite the need for green building described in Part I, traditional land use laws tend to thwart green building. The vast majority of localities have responded to the nascent sustain-

8. *See, e.g.*, Brian D. Anderson, *Legal and Business Issues of Green Building*, 79 Wis. Law. 10, 10, 12 (2006) ("[T]he U.S. Green Building Council has taken the lead in establishing a formalized green building rating system.").
9. U.S. Green Bldg. Council, Green Building Rating System for New Construction & Major Renovations v-vi (Version 2.1, 2002, rev. 2003), *available at* https://www.usgbc.org/Docs/LEEDdocs/LEED_ RS_v2-1.pdf.
10. LEED levels include the basic certification level, then silver, gold, and platinum. *Id.* at vi.
11. John L. Sznopek & William M. Brown, Materials Flow and Sustainability, USGS Fact Sheet FS-068 98 (1998), *available at* http://pubs.usgs.gov/fs/fs-0068-98/fs-0068-98.pdf.
12. *See* David Malin Roodman & Nicholas Lenssen, Worldwatch Paper #124: A Building Revolution: How Ecology and Health Concerns Are Transforming Construction, Worldwatch Institute (1995).
13. U.S. Green Bldg. Council, *supra* note 9, at 43-44 (awarding one point if such materials account for twenty percent of the materials used and an additional point if such materials account for fifty percent of the materials used).
14. *Id.* at 37-42 (requiring that builders utilize recycling areas and allowing builders to receive more credits for reusing materials and incorporating recycled material).
15. Energy Star, The First Step to Improving Water Efficiency, http://www.energystar.gov/index.cfm?c=business.bus_water (last visited Oct. 16, 2008).
16. Stephanie J. Battles & Eugene M. Burns, Trends in Building-Related Energy and Carbon Emissions: Actual and Alternate Scenarios (Aug. 21, 2000), *available at* http://www.eia.doe.gov/emeu/efficiency/aceee2000.html (discussing primary energy use). "Primary energy is the amount of site or delivered energy plus losses that occur in the generation, transmission, and distribution of the energy." *Id.* at n.2; *see also* Smart Communities Network, Green Buildings Introduction, http://www.smartcommunities.ncat.org/buildings/gbintro.shtml (last visited Oct. 16, 2008) (discussing electricity use).
17. *See* Bureau of Nat'l Affairs, *Green Buildings Helping the Environment, the Bottom Line*, Envtl. Compliance Bull., June 18, 2007, at 208.

able design revolution by either explicitly prohibiting certain green technologies, typically on aesthetic grounds, or by ignoring the green building movement in the text of ordinances and making piecemeal decisions on land use applications, creating ambiguity and inconsistency. Only a few municipalities have begun to address climate change and the conservation of natural resources:[18] about seventy-five general purpose local governments (out of 38,967 nationwide) incorporate sustainable design principles into their ordinances.[19]

A. *Barring Green*

Communities typically impose zoning and design controls for the purpose of protecting and enhancing property values. Such laws depend, of course, on challenging judgments about what the market will value.[20] Presumably operating on the assumption that modern technologies are unattractive while adding no nonaesthetic value to the property, some communities explicitly use design controls to prevent their installation.

Perhaps the most common sustainable technology barred by design control laws is the photovoltaic panel, which can be placed on or around structures to capture and convert solar energy.[21] Indeed, aesthetic review boards and historic preservation boards, which typically govern structures visible from a public way, regularly reject their installation.[22] Unfortunately, to maximize sun exposure, panels must often be sited in locations at least partially visible from a public way. The solar panel example highlights the tension between the aesthetic concerns of design control boards and the energy-efficiency concerns of environmental advocates. Rather than celebrating and fully utilizing their energy-efficient technologies, homeowners are forced to hide or dismantle them.[23]

Many green technologies are not nearly as unattractive as design control boards assume, and the manufacturers who produce such technologies are working on ways to better integrate them into conventional building design.[24] Moreover, as green building becomes more popular and as its long-term benefits become clear, it may enhance property values as much as design controls do. It is critical, therefore, that communities maintain sufficient flexibility in their design controls so that they may adjust both to the rapidly evolving range of green technologies and the potentially growing market value of such features.

B. *Ignoring Green*

While some localities explicitly ban the installation or use of green technologies perceived to be inconsistent with the community's aesthetic standards, many more localities fail to include any explicit reference to green technologies in their land use regulations. Although undoubtedly less problematic than an outright ban, failure to contemplate green technologies can itself hinder their utilization.

Zoning ordinances often fail to address freestanding, bulky, or noisy green-building technologies. Technologies such as windmills, solar panels, fuel cells, water collectors, and turbines are mentioned in only a handful of the thousands of zoning ordinances in force across the country.[25] Where relevant language does not appear in the ordinance, applicants cannot know in advance whether the installation or modification of green technologies is subject to zoning board review. Applicants may review the ordinance, and, seeing no relevant language, proceed with construction, only to be told later that they must dismantle the structure or pay a fine.[26]

A related problem that occurs in the absence of relevant language is that zoning boards have no standards by which to judge applicants for zoning relief. Instead, the boards engage in ad hoc inquiries leading to uncertainty among applicants seeking to employ innovative techniques and technologies. As Carol Rose has argued, this type of piecemeal decision-

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18. *See* Randall S. Abate, *Kyoto or Not, Here We Come: The Promise and Perils of the Piecemeal Approach to Climate Change Regulation in the United States*, 15 Cornell J. L. & Pub. Pol'y 369, 384-85 (2006) (describing how 155 mayors signed a statement calling on the federal government to address climate change and 132 mayors representing 29 million citizens have embraced the Kyoto Protocol mandates for their cities); Cinnamon Carlarne, *Climate Change Policies an Ocean Apart: EU and US Climate Change Policies Compared*, 14 Penn St. Envtl. L. Rev. 436, 445-46 (2006) ("Faced with weak federal efforts to address climate change, states such as California and New York and cities such as Portland and Philadelphia are choosing to follow in the footsteps of the European Union."); John R. Nolon, *In Praise of Parochialism: The Advent of Local Environmental Law, in* New Ground: The Advent of Local Environmental Law 3, 3 (John R. Nolon ed., 2003) ("[Municipalities enact] local comprehensive plans expressing environmental values, zoning districts created to protect watershed areas, environmental standards contained in subdivision and site plan regulations, and stand-alone environmental laws adopted to protect particular natural resources such as ridgelines, wetlands, floodplains, stream banks, existing vegetative cover, and forests.").

19. *See* U.S. Census Bureau, U.S. Dep't of Commerce, Government Organization: 2002 Census of Governments 5 (2002), *available at* http://www.census.gov/prod/2003pubs/gc021x1.pdf (providing the 38,967 figure); Bureau of Nat'l Affairs, *supra* note 17, at 208 (noting that seventy-five local governments have committed to following LEED guidelines). These cities include Chicago, Dallas, Denver, Eugene, Portland, San Jose, Santa Monica, Scottsdale, and Seattle. *See* Christopher D. Montez & Darren Olsen, *The LEED Green Building Rating System and Related Legislation and Governmental Standards Concerning Sustainable Construction*, Construction Law., Summer 2005, at 38, 41-42.

20. *See* Beverly A. Rowlett, *Aesthetic Regulation Under the Police Power: The New General Welfare and the Presumption of Constitutionality*, 34 Vand. L. Rev. 603, 622-23 (1981).

21. *See generally* Peter Gevorkian, Solar Power in Building Design (2007) (describing the history, technology, and design of photovoltaic panels).

22. *See, e.g.,* David Collins, *Not So Hot*, Santa Fe New Mexican, Jan. 8, 2006, at I1 (describing the reluctance of the Santa Fe Historic Design Review Board to allow solar panels); Tom Sharpe, *Solar Collectors to Be Removed From House in Historic District,* Santa Fe New Mexican, July 23, 2005 (chronicling the experience of one Santa Fe couple forced to remove solar panels worth $40,000 from their home in a historic district).

23. *See, e.g.*, Lorraine Mirabella, *Marylanders Are Finding Energy Else-where*, Chi. Trib., Jan. 18, 2004, §16, at 5P (describing how a Takoma Park, Maryland homeowner hid thirty-six solar panels on the back of his roof).

24. *See, e.g.,* Sara Schaefer Muñoz, *An Inconvenient Turbine: Conservation vs. Preservation*, Wall St. J., July 12, 2007, at B6 (providing two examples of companies designing new energy-efficient products that fit in with existing surroundings).

25. *See supra* note 19 and accompanying text (explaining that relatively few localities nationwide address green-building issues).

26. *See* Sanya Carleyolsen, *Tangled in the Wires: An Assessment of the Existing U.S. Renewable Energy Legal Framework*, 46 Nat. Resources J. 759, 787 (2006) (suggesting that a builder often cannot find information about green technologies, such as solar panels, and consequently "will not know whether . . . he or she can simply confirm that the panels conform to height and setback regulations").

making tends to ignore extralocal effects, exclude low-income outsiders, shift environmental problems to neighbors, and thwart orderly and predictable development.[27]

C. Isolated Experiments in Local Reform

Only a handful of localities currently promote green building through their land use laws. They do so by issuing mandates, writing optional codes, comprehensively reevaluating certain existing laws, and granting green-building projects certain procedural benefits. While localities are currently testing each of these strategies, and might find some to be successful, adoption in most—or even a substantial minority of—localities across the country seems practically infeasible.

The most aggressive tool for promoting green building is to actually mandate standards in land use laws. The handful of passed mandates set the LEED point system as their goal.[28] The largest city to embrace green-building mandates is Boston: in the summer of 2007, the city amended its zoning ordinance to require that all private construction over fifty thousand square feet meet minimum LEED criteria.[29] Through its Green Points Program, Boulder, Colorado, requires some combination of recycled materials (such as fiber concrete, reclaimed lumber, or recycled roofing materials), green insulation products, energy-efficient windows, radiant floor heating, or other sustainable products in private residential addition and remodeling projects larger than five hundred square feet.[30] Small towns have also experimented with mandates. For example, Babylon, New York, requires new construction of multiple residences, and commercial, office, and residential buildings greater than four thousand square feet, to meet LEED criteria; Babylon officials estimate that this change will reduce greenhouse gas emissions by 1.37 million tons.[31] Meanwhile, Greenburgh, New York, amended its building code to require greater energy efficiency, mandating that homes meet state ratings goals.[32]

Despite the few examples listed above, and despite the undoubted effectiveness of mandates as a tool for minimizing the negative externalities of conventional construction, mandates have never been popular. Developers in particular—whether or not they support green building in principle—are likely to be the strongest opponents of mandates, because they have the most to lose. Of course, developers might worry about the cost of green building, despite recent studies showing that the cost is lower than commonly perceived.[33]

Optional codes are an alternative to mandates and encounter less constituent opposition because individual landowners might choose to use either the traditional or the optional code. Instead, the major opposition to optional codes comes from overworked local land use officials who must draft, and regulate under, a new legal regime.[34]

In addition to substantive changes to land use laws, localities may consider procedural reforms that favor green building. Such reforms have the least impact of the reforms suggested, but they also meet with the least opposition. Several localities, for example, have waived building permit fees for buildings that incorporate at least one type of sustainable technology.[35] Instead of fee waivers, Scottsdale, Arizona, provides participants in its Green-building Program with public recognition, green-building inspections, and development process assistance for green projects.[36]

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27. *See* Rose, *supra* note 5, at 840-42.
28. *See* Conn. Gen. Stat. §16a-38k (2007) (requiring that new public construction projects which cost over five million dollars achieve LEED silver standard); S.B. 5509, 59th Leg., Reg. Sess. (Wash. 2005) (requiring all public buildings in Washington receiving state funding to achieve LEED silver standard); Cal. Exec. Order No. S-20-04 (Dec. 14, 2004), *available at* http://www.dot.ca.gov/hq/energy/ExecOrderS-20-04.htm (requiring that grid-based energy usage of public buildings in California decrease twenty percent by 2015 and that all public building construction achieve LEED silver standard).
29. Boston, Mass., Zoning Code arts. 37-3, 37-4, 80B-6(2)(vii) (2007) (stating that any proposed project that is subject to the city's "Large Project Review" must demonstrate that it would meet the appropriate level of LEED certification). In calculating LEED compliance, the city may award a bonus point if the project involves certain historic structures. *Id.* art. 37 app. A.
30. *See* City of Boulder, City of Boulder Residential Bldg. Guide, Green Building & Green Points Application, at 4-9 (2008), *available at* http://www.bouldercolorado.gov/files/PDS/codes/1001_web.pdf.
31. Anthony S. Guardino, *Green Revolution: New Local Regulations Address Global Warming*, N.Y. L.J., July 25, 2007, at 8.
32. *See id.*
33. *See, e.g.*, Jennifer R. DuBose et al., *Analysis of State-Wide Green Building Policies*, 2 J. Green Building 2, 161, 173-74 (Spring 2007) ("[D]ocumentation required for LEED certification is sometimes perceived as cumbersome and costly. . . . Cost is one of the biggest inhibitors to green building (with or without LEED certification)."); Rosemary Winters, "*Green" Building Products Can Prove Profitable in Salt Lake City*, Salt Lake Trib., Feb. 24, 2004, at E1 ("One of the largest barriers to popularizing green-building techniques is the perception that such techniques cost more."); Nat'l Ass'n of Home Builders, Codes and Standards, *available at* http://www.nahb.org/generic.aspx?genericContentID=3093&print=true (describing the need for cost-effective green-building guidelines as one of the National Association of Home Builders' policy concerns); Greg Kats et al., Report to California's Sustainable Building Task Force, the Costs and Financial Benefits of Green Buildings, at 15 (2003), *available at* http://www.usgbc.org/Docs/News/News477.pdf (studying thirty-three office and school projects to come up with an average cost premium of 1.84 percent on green buildings); Lisa Fay Matthieson & Peter Morris, Davis Langdon, Costing Green: A Comprehensive Cost Database and Budgeting Methodology 3 (2004), *available at* http://www.usgbc.org/Docs/Resources/Cost_of_Green_Full.pdf (analyzing six hundred projects located in nineteen states and concluding that "many projects achieve sustainable design within their initial budget, or with very small supplemental funding").
34. *Cf.* Sara C. Galvan, *Rehabilitating Rehab Through State Building Codes*, 115 Yale L.J. 1744, 1771-72 (2006) (describing how building code officials, whose departments are understaffed and underfunded, are among those most resistant to reform in building code texts). The understaffing of city planning departments has been documented only on a city-by-city basis. *See, e.g.*, City of L.A., Office of the Controller, Performance Audit of the Department of City Planning's Case Processing Function 24 (2005), *available at* http://www.lacity.org/ctr/audits/ctraudits1803321010312005.pdf (identifying an eighteen percent vacancy rate in staff positions); S.F. Chapter of the Am. Inst. of Architects & S.F. Planning & Urban Research Ass'n, Planning the City's Future 8 (2004), *available at* http://www.spur.org/documents/pdf/ 040301_report_01.pdf (calling the planning department "severely understaffed").
35. *See, e.g.*, Chelsea Phua, *Solar Fee Waiver Mulled, SMUD Proposes Program for Efficient Energy Use and Green Technology*, Sacramento Bee, Feb. 5, 2007, at B1 (describing how the Sacramento Municipal Utility District proposed to waive building permit fees for projects with solar panels, foregoing only five to ten thousand dollars in revenue, and how Elk Grove, California, adopted a similar ordinance); Stephen Wall, *Green Campaign Wins Green Light*, San Bernardino County Sun, Aug. 29, 2007 (describing how the San Bernardino County Board of Supervisors waived building permit fees for owners of existing buildings who "install solar panels, wind turbines, tankless water heaters, and energy-efficient air conditioning systems").
36. *See* City of Scottsdale, Ariz., Green Building Program, (2004) *available at* http://www.scottsdaleaz.gov/Assets/Public+Website/greenbuilding/ProgramOverview.pdf.

Despite examples of successful local reform, very few localities have taken steps to amend existing laws or to create new laws that address green building.[37] Institutional inertia serves as a key obstacle: simply put, local government officials resist change.[38]

III. The Quiet Revolution Revived Through State Control

In light of the impracticability of national or regional land use schemes, and in light of the failures of localities to enact reforms to address green building, states should reclaim their abilities to regulate land use under the police power to move reforms forward. This Part challenges the long-accepted view that states have no role to play in traditional land use regulation and explains why sustainable design might inspire a renewal of the long-dormant quiet revolution. The major barrier to the revival of the quiet revolution is the potential conflict with local autonomy. Yet as this Part demonstrates, the current land use regime allows the states to make changes without compromising local autonomy.

A. Why States

The argument that states should become more involved in land use is controversial but not new: *The Quiet Revolution* sets forth an argument for state involvement that consists of five major components. First, it recognizes that localities have long been the primary level of government involved in land use regulation.[39] Second, it identifies problems of statewide significance, including "social problems as well as problems involving environmental pollution and destruction of vital ecological systems, which threaten our very existence."[40] Third, it recognizes the ways in which localities cannot (or do not) address the identified problems.[41] Fourth, it analyzes the possibility of extralocal reforms which do not involve state governments.[42] Fifth, it asserts that states could do much more to tackle the problem identified.[43]

This Part finally considers the fifth component of the argument supporting the quiet revolution with respect to sustainable design: why states? In asking this question, this Article does not assert that states—or any other single level of government, for that matter—should address the sustainability dilemma alone; an integrated approach is necessary, and each level of government has something to offer. Instead, this Article aims to focus attention on the inactivity of states relative to their potential and their powers.

States have never fully exercised their land use authority.[44] States can expand or contract localities' decision-making powers by amending enabling acts or by enacting unrelated legislation. With the power to pass laws, which affect each locality, states have the power to reform the land use regulation system in a significant way to effect change on the wide scale, which the evidence suggests is necessary. Yet no state has demonstrated a willingness to change local land use laws to respond to the mounting evidence against conventional construction.

The states' unresponsiveness in the land use regulation context does not necessarily reflect an antipathy toward the green-building movement. To the contrary, state lawmakers have demonstrated a willingness to promote green building in other important areas. Approximately a dozen states have undertaken a variety of whole-building sustainable-design initiatives, including green-building tax credits and mandatory design requirements for public buildings.[45] In addition, many states provide financial incentives for the installation or utilization of specific green technologies.

State legislatures should go beyond incentives, however, and enact wide-scale land use reform that does not compromise local autonomy. As a practical matter, localities are already limited in their ability to exercise traditional land use regulatory powers.[46] This Article does not argue that states should limit localities even further by reclaiming all land use regulatory powers. In the absence of local leadership in an area as significant as green building, however, states—which enable localities to enact zoning, aesthetic review, and historic preservation ordinances in the first place—can and should work through the existing land use regime to limit localities' powers. In crafting such limitations, states must take into account—and even embrace—the structure of the existing land use regime. Indeed, one of the major tenets of the quiet revolution is that states should "relate in a logical manner to the continuing need for local participation."[47] According to Bosselman and Callies, even if localities' land use regulatory schemes produce undesirable results, their role must be respected.[48] A land use revolution may only be quiet—and successful—if it protects local autonomy.

37. *See* Nancy J. King & Brian J. King, *Creating Incentives for Sustainable Buildings: A Comparative Law Approach Featuring the United States and the European Union,* 23 Va. Envtl. L.J. 397, 415 (2005).
38. *See* Galvan, *supra* note 34, at 1772-73 (describing a similar concern with code officials' resistance to rehabilitation building codes, another innovation in coding).
39. Bosselman & Callies, *supra* note 1, at 2-3.
40. *Id.* at 3.
41. *Id.*
42. *Id.* at 4.
43. *Id.* at 327.
44. *Id.* at 2-3.
45. *See* Jennifer R. DuBose et al., *supra* note 33, at 161, (describing how green-building programs in eleven states evolved); Patricia E. Salkin, *Squaring the Circle on Sprawl: What More Can We Do? Progress Toward Sustainable Land Use in the States*, 16 Widener L.J. 787, 790-821 (2007) (describing various state programs relating to "smart growth"); Christopher D. Montez & Darren Olsen, *The LEED Green Building Rating System and Related Legislation and Governmental Standards Concerning Sustainable Construction*, Construction Law., Summer 2005, at 38, 39-41.
46. David J. Barron & Gerald E. Frug, *Defensive Localism: A View of the Field From the Field*, 21 J.L. & Pol. 261, 265-66 (2005) (explaining that localities sometimes feel constrained by "large structural forces over which they have little effective power given the limited reach of their jurisdiction").
47. Bosselman & Callies, *supra* note 1, at 320.
48. *Id.* at 3 ("A recognition of the inadequacies of local [control] must not, however, cause the values of citizen participation and local control . . . to be submerged completely in some anonymous state bureaucracy.").

B. Experiments in State Reform

A final question remains: how can states push localities to counteract the wide-scale problems created by conventional construction without infringing on local autonomy? In the broader context of land use regulation, several states have enacted legislation that directs localities to prioritize certain factors in decisionmaking, to undertake studies, to designate financial resources, or to manage growth in ways the state approves.[49] In the green-building context, some states, such as California, Connecticut, and Arizona, have already begun experimenting with state-level reforms which preserve the two core values of the quiet revolution: the preservation of the existing land use system and the protection of local autonomy.[50] They do not aim to rewrite existing land use regulations on a locality-by-locality basis, but instead aim to create statewide rules that either influence land use decisionmaking or address sustainable design techniques that have not been addressed by localities.

The California legislature, for example, prevents local governments from denying solar energy permits on the basis of aesthetics alone.[51] In reviewing a building permit for a solar energy system, a locality may only consider health and safety issues, and if the system "could have a specific, adverse impact upon the public health and safety," the locality may require the applicant to apply for a use permit in addition to the building permit.[52] This use permit cannot be withheld unless the locality "makes written findings based upon substantial evidence in the record that the proposed installation would have a specific, adverse impact upon the public health or safety, and there is no feasible method to satisfactorily mitigate or avoid the specific, adverse impact."[53] This language makes localities' denial of solar energy systems extremely difficult. As a result of this legislation, most California cities exempt solar panels from the aesthetic review process altogether.[54]

Connecticut, similarly, limits how far historic district commissions can go to regulate solar panels. Its historic district enabling statute, which allows localities to create historic districts, states that a local historic commission cannot block the construction of a solar energy system (or other systems which use renewable resources) unless such a system "cannot be installed without substantially impairing the historic character and appearance of the district."[55] Connecticut's protection of solar panels clearly leaves more to the historic commission's discretion than does California's: local commissioners may easily find that a solar panel "substantially impairs" the aesthetics of a historic building. Yet by including this language in its historic district enabling statute, the state has made a significant attempt to address the evolving interplay between green building and design controls.

Finally, Arizona is a leader among the states in accommodating gray water.[56] Most localities fail to address gray water—defined as any untreated household wastewater excluding toilet water—which can be used to water lawns, irrigate crops, or flush toilets. Three or four LEED water efficiency points can be earned by recycling gray water.[57] Despite gray water comprising fifty to eighty percent of domestic wastewater, and despite its reusability after relatively inexpensive treatment, localities often make the recycling of gray water very difficult.[58] Local laws do not always differentiate between gray water and black water (toilet water), which is considered to be sewage and which cannot be used for any reason unless it is thoroughly treated.[59] Arizona provides for three different tiers of gray water users; it does not require permits for household gray water recycling of less than four hundred gallons per day and it specifies performance standards instead of prescriptive rules for the remainder of the users.[60] Through this statute, the state provides guidance on an issue with which localities have not traditionally been involved, presenting an environmentally responsible approach to state regulation that should be replicated elsewhere.

The three preceding examples demonstrate the benefits of state-by-state experimentation—experimentation which could not occur at a federal level, where decisionmaking is both too centralized and too distant from the level at which land use decisions typically occur, or at the regional level, which despite scholars' support does not really even exist. Many more states should weigh this balance to find innovative ways to preserve both the environment and local autonomy.

IV. Conclusion

If policymakers find ways to reduce emissions from these future buildings, as well as from the buildings that already

49. John R. Nolon, *Champions of Change: Reinventing Democracy Through Land Law Reform*, 30 Harv. Envtl. L. Rev. 1, 26-29 (2006) (describing, for example, the state of Wisconsin mandate that each city develop a plan which incorporates specific smart growth elements, and the state of Iowa law that conservation districts design and enforce erosion-control measures).
50. *See id.*
51. Cal. Gov't Code §65850.5 (West 2007).
52. *Id.* §65850.5(b).
53. *Id.* §65850.5(c).
54. Isabelle Groc, *When the Joneses Go Solar*, High Country News, July 23, 2007, at 6 (noting that solar panels installed in the 1970s often are not maintained and become dilapidated and unattractive); Todd J. Wenzel, *State LEEDs Way in Green Building Movement*, Recorder, Mar. 26, 2007, at 16 (describing Marin County as one example which "speeds permit processing and waives some design review" for sustainable technologies).
55. Conn. Gen. Stat. §7-147f(a) (2007).
56. Larry Gallagher, *How Does Your Garden Grow?*, Onearth, Fall 2005, at 12 ("At the forefront are Arizona and New Mexico, where reining in water use is an obvious priority."); Art Ludwig, Oasis Design, Greywater Policy Packet 31 (2005), *available at* http://oasisdesign.net/downloads/GWPolicyPacket.pdf.
57. U.S. Green Bldg. Council, Leed for New Construction & Major Renovations: Version 2.2, at 27, 29-32 (2005), *available at* http://www.usgbc.org/ShowFile.aspx?DocumentID=1095.
58. Ludwig, *supra* note 56, at 3 (calling Arizona's gray water statute a model for other jurisdictions). Other states have not been as successful as Arizona: although California in 1994 became the first state to incorporate gray water systems into its statewide plumbing code, the law is so restrictive that an underground movement of gray water proponents—as many as two thousand in the Bay Area alone—operate gray water systems illegally. Gregory Dicum, *The Dirty Water Underground*, N.Y. Times, May 31, 2007, at F4.
59. *See* Dean Fosdick, Recycling Water Is a Gray Area, http://www.wral.com/lifestyles/house_and_home/story/2088188/ (last visited Nov. 27, 2007) (describing the consequences of prohibiting gray water usage in the southeastern United States).
60. Ariz. Admin. Code §R18-9-711 to -720 (2007).

exist, then thirty percent of current greenhouse gas emissions might be avoided by 2030, according to the respected Intergovernmental Panel on Climate Change.[61] With the opportunity to make such dramatic progress in such a short period, making our existing eighty-one million buildings and our future building stock more green deserves to be a national priority.

61. Working Group III, Intergovernmental Panel on Climate Change, Climate Change 2007: Mitigation of Climate Change, Summary for Policy makers 13 (B. Metz et al. eds., 2007).

Legislating Sustainable Design: The Challenge of Local Control and Political Will

by Lavea Brachman

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Sara C. Bronin's *The Quiet Revolution Revived: Sustainable Design, Land Use Regulation, and the States*[1] revisits the age-old, American democratic debate of finding the right balance between local control and imposition of a statutory regime for the greater public good. Fundamentally, I agree with the article's premise that state policy powers are generally underutilized in the land use reform context and could be used productively to advance implementation of local green building design and construction. However, I would argue that implementation of this concept faces steep practical and political obstacles, particularly in certain states around the country, and caution that these challenges may dictate a modification in Bronin's recommendation. It will require a different vehicle or process in order for state policy to override "traditional" local land use laws, such as zoning ordinances and design controls, to enable states to "take back their police power" [2] in these areas.

I heartily concur with the general thrust of Bronin's argument that states should play a more prominent role in advancing sustainable development and design practices. As the result of either state inaction or proactive statutory regimes, an uneven playing field has emerged that encourages unsustainable development in several ways beyond the construction and design context, including encouraging greenfields development and sprawl over adaptive reuse, urban infill or brownfield redevelopment, or incentivizing development in rural, exurban or unincorporated areas outside cities (so-called townships in some states, like Ohio, Pennsylvania, and Indiana), instead of in urbanized environments. Some of the state policies causing these perverse impacts are not even directly land use-related but arise from other areas of state power, such as taxing authority where taxes are imposed unevenly on different types of jurisdictions, thus skewing the market and private sector development decisions about where to invest and develop. Conversely, such as in the case of green building where the market may not account sufficiently for negative externalities over the longer term, state intervention is beneficial. There is no question, then, that states can and should be more proactive about reexamining land use-related policies. Where they have been silent, they should act to encourage sustainable growth; where they have acted, with perverse impacts, they should reform policies to discourage unsustainable growth practices.

In addition, the uniformity among local jurisdictions in the implementation of green building practices that would result from state standards would be advantageous, thereby possibly removing the decisionmaking about construction and development practices from the confines of local politics and reducing the favoritism that inevitably taints local development processes. This would advance the green building cause considerably, and perhaps transcend the parochialism that pervades many of our local communities when confronted with new ideas, such as green building and sustainable communities. Ultimately, state intervention would go a long way toward leveling the playing field between projects that use conventional materials that are less costly in the short-term, and projects providing long-term community benefits for which local planning commissions are unable to account. Ideally, sound government policy should promote the greater public good, reflecting the philosophical democratic underpinnings on which our country was founded.

I. Challenges and Barriers to Implementation

However, *real politik* barriers to implementing the recommendation that states should adopt land use powers to promote green building may prove too steep to overcome. First, it is a more complicated process than Bronin suggests for states to adopt statewide rules that either "influence land use

1. Sara Bronin, *The Quiet Revolution Revived: Sustainable Design, Land Use Regulation, and the States*, 40 ELR (Envt'l L. & Pol'y Ann. Rev.) 10733 (Aug. 2010) (a longer version of this Article was originally published at 93 Minn. L. Rev. 231 (2008)).
2. *Id.* at 10733.

decisionmaking or address sustainable design techniques,"[3] particularly in states where there is a strong constitutionally grounded tradition of home rule and local control, as in places like Ohio, Michigan, Pennsylvania, Indiana, and other Midwestern states. The challenge of galvanizing sufficient political will to adopt such rules cannot be ignored.

A second and related point is that there tends to be an overlap between places with a long tradition of home rule and strong local control, and those with legal, economic, and cultural conditions that cause them to be less predisposed to pass sustainable building codes in the first place. Therefore, the proposed changes in state law to provide for green building are generally more applicable in places with some existing tradition of or popular support for less traditional building and development. In many states it is difficult to imagine scenarios where these changes in green building would take place in a vacuum without advancing a broader sustainability agenda and bolder reforms. Where there is opportunity, arguments for green building should be made in the context of the larger macroeconomic changes that are taking place and the reality that communities with sustainable growth patterns are more likely to compete in the new twenty-first century economy. In order to compete, workers must live closer to where they work, so denser communities will attract new workers, and transportation costs will be reduced. While this less incremental approach may seem to be bolder and less achievable and thus a "heavier lift," placing a plea for state-level green building codes in this broader context will help forge deeper and wider support for sustainability reforms in the long term.

Finally, even if green building codes are implemented, they are merely a small piece of overall sustainable development. At one point Bronin points to particular states (such as California, Connecticut, and Arizona) that have begun experimenting with state-level reforms in the green building arena.[4] However, these are not tied to other reforms that ultimately would prove to have a more widespread impact on business practices and land use activities. It is perhaps more likely that contextualizing and making the case for the merits of sustainable development more broadly will lead more naturally to green building in many places.

Therefore, the article should highlight and address the challenges in galvanizing the statewide collective political will—beyond just acknowledging the conflict between state power and local autonomy—in order to make the recommended legislative changes. Expansion of state powers in any area of the law can incite opposition, territoriality, and controversy, but particularly in the area of land use in places with a deeply embedded home rule constitutional tradition. Home rule is typically defined as the power of a local city or county to set up its own system of self-government without receiving a charter from the state; it is explicitly allowed under some state constitutions. Home rule, which is a cornerstone of local law in many Midwestern states, seems to have had its origins when these states were borne out of the Northwest Territory. It shifts much of the responsibility for local government from the state legislature to the local community. As they emerged into statehood in the early 19th century, these states adopted home rule clauses and many decided to create incorporated territory called townships wherever cities did not exist. Township leaders have historically dominated the legislatures (in places like Ohio, Pennsylvania, Michigan, Indiana, Illinois, to name a few), skewing laws toward rural interests, and steering control back to the localities. This rural-urban schism is at the heart of the political will challenges to Bronin's proposal. Of course, the extent of the schism would vary from state to state, depending upon the degree of control that localities are accustomed to having. Generally, a local jurisdiction that adopts a home rule charter has the ability to amend its governmental organization and powers to suit its needs. In many states, local leaders utilize these charters as both a sword and a shield to vigorously defend their interests and protect the powers they already have.

Based on this background, then, the understanding of and preference for sustainable building and development, and thus the proposed reforms related to such sustainability issues, are likely to vary widely from state to state. Therefore, even under the best circumstances, the advantages of sustainable development may not be widely understood or accepted. It would advance Bronin's argument to acknowledge and define the conditions under which the suggested reforms might occur. In the places that are further along in understanding and adopting sustainable practices, there will be less opposition, even in the face of a preference for local control. As a result, these places are more likely to be implementing green building codes already. Ironically, it is the places that have less green cultures that need state law to change the most—and those places tend to be the states where state law change related to the governance of localities is the hardest to come by. The primary challenge, then, is how to make the business and economic case for green building, particularly in the current economic climate. While it makes legal and rational sense to endow states with the power of requiring green building codes in communities, shoring up the political will to legislate this outcome will be very challenging. The arguments must be couched in terms that highlight the places that need to adopt green building in order to be more competitive in a global, twenty-first century economy. A related argument would be to point to the job creation that would accompany a growth in the green building industry due to the need for new skills. In the states previously dominated by the auto industry, such as Michigan, Ohio, and Indiana, worker retraining is necessary for an economy driven by low carbon and green jobs.

3. *Id.* at 10738.
4. *Id.*

In many of these places, then, change in a state green building code should be part of a larger effort to reinvest in our cities and promote local and regional planning. Part of accomplishing these goals is modernizing arcane state planning and zoning statutes, which many states have not amended since the 1940s, in order to facilitate regional planning or allow for new kinds of zoning, such as urban agriculture.

II. Alternative or Complementary Solutions

Alternative or complementary ways to Bronin's recommendations are proposed here that would help change public perception and encourage acceptance of the underlying sustainability principles, and thus help advance the cause of greater state regulation of green building. First, as suggested earlier, the proposed green building reforms could be packaged with other reforms, as part of a larger revision of state planning statutes to change the uneven playing field between sustainable and traditional development. This comment recommends advancing a "package" of land use improvements that would achieve greater sustainability rather than just green building. It might seem easier to take a "single shot" approach with green building codes, but in the current economic climate in which there is very little new construction at all, the threshold is even higher to demonstrate how a change in green building law and codes would have an economically competitive impact. Therefore, a package that incentivizes cross-jurisdictional planning might be more compelling.

Also, rather than legislate a change in practices, another option would be to change administrative policy to advance sustainability practices through executive action rather than through legislative reforms. A governor or cabinet official could utilize her discretionary authority to impose or create state incentives for green building. It might be practical to target certain locations for these changes, such as urban areas where rehabilitation projects are more likely. On a practical level, companies doing urban development and rehabilitation work may be more likely to adopt green building practices than those building in greenfields.

Finally, a hybrid approach, whereby a local buy-in process—where local authorities would retain some authority over the sustainability principles that are applied—would be utilized in combination with changes in state administrative or statutory law change, might be the best solution. A process such as that alluded to in the article would be instructive for Bronin to flesh out further. In the face of the potential practical and political will impediments to implementation, this might be an appealing compromise solution; particularly as many states transition to new economies and learn the advantages of sustainability for doing business but are unlikely to make large-scale reforms overnight.

RESPONSE

Response to *The Quiet Revolution Revived: Sustainable Design, Land Use Regulation, and the States* by Sara Bronin

by Felicia Marcus and Justin Horner

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The focus of much dialogue and debate in the public eye over climate change and greenhouse gas emissions (GHGs) tends to focus on industrial emissions of pollution for manufacturing or the production of electricity. Emissions from transportation sources (like trains, planes, and automobiles) and from the heating, cooling, and lighting of buildings themselves are less readily visible, yet each constitutes roughly a third of America's total greenhouse gas emissions. In The Quiet Revolution Revived: Sustainable Design, Land Use Regulation, and the States,[1] Sara Bronin correctly focuses on the importance of facilitating the creation of "green" buildings, and identifies what she sees as significant barriers, at the local level, to the implementation of greener buildings.

While agreeing with Bronin's objectives, we feel that The Quiet Revolution Revived could benefit from consideration or reconsideration of three particular areas: (1) the article's conflation of "green building" regulation and "land use" regulation; (2) transportation energy related to building location; and (3) recent federal, state, and local efforts that are addressing all of these issues in ways consistent with what we see as Bronin's intent. Our intent here is less to critique the article than to provide other information that interested readers should know about reducing GHG emissions related to buildings. In short, we think there are both times when localities will lead states and times when states need to step in to facilitate important policy objectives. In this case, there are other vehicles to achieve greater GHG reductions that do not require even a "quiet revolution" in order to have a tremendous impact.

I. "Green Building," "Building Codes," and "Land Use": The Importance of Terminology

From a technical perspective, The Quiet Revolution Revived conflates "green" building standards, building codes, and design standards into "land use" policies, when, in fact, the terms are considered separate in practice. "Land use" generally refers to the type, general size, and use of a structure for a given location (that is, residential vs. retail vs. industrial; offices vs. restaurants vs. drugstores), whereas the article focuses more specifically on building codes and design standards. The question the article tackles is not whether we put residential or mixed use on a particular parcel (which is a land use question), but rather, since we know we're putting, say, a house, on a particular parcel, how do we make it green? Bronin recognizes this important distinction between zoning and design standards in her Section Ia, but the paper would benefit from a more precise treatment of each of the three elements.

The distinction is important because there are a variety of measures at both the state and local levels that encourage "green" principles outside of zoning or other aesthetic requirements.[2] California's Title 24, for example, is a national leader in energy efficiency without being characterized as a "green building" regulation. Changes to existing codes, or environmental performance standards within existing codes, can do as much without the "green" trappings.

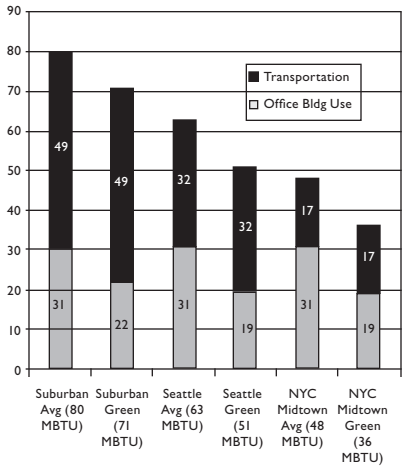
Building codes are extremely important; indeed, they are far more important from an environmental standpoint than

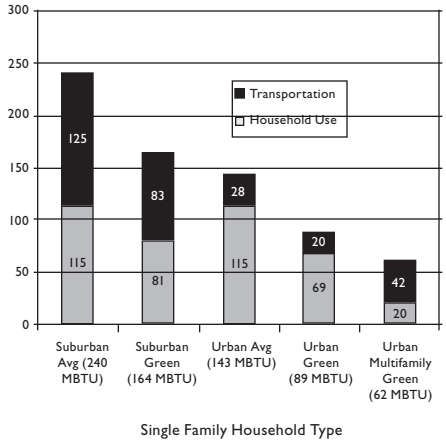
1. Sara Bronin, *The Quiet Revolution Revived: Sustainable Design, Land Use Regulation, and the States*, 40 ELR (Envt'l L. & Pol'y Ann. Rev.) 10733 (Aug. 2010) (a longer version of this Article was originally published at 93 Minn. L. Rev. 231 (2008)).

2. We think it is also important to note that there is really no consensus definition of "green building," so even that frame can lead to misunderstanding. NRDC, for one, prefers the admittedly clunky phrase "environmentally sustainable materials, design and construction."

anything design review could regulate. Most of a building's energy use (and the strategies that are used to make buildings more efficient) is entirely invisible (location being the clearest example).[3] According to the U.S. Green Building Council, nearly 70% of all the environmental impacts of a building are the results of decisions made in the first 10% of the design phase of construction, meaning that the energy profile of the building is basically set before anyone actually knows what the building will look like.

Yes, some localities limit solar panels, but that is not necessarily synonymous with limiting or discouraging green building overall. Bronin concludes that "[t]he evidence reveals that the dominant mode of land use regulation nationwide bars the reforms that environmentalists and the building industry have worked together to develop,"[4] when no such case is made. Indeed, some local building codes that encourage green building (in San Francisco or San Mateo County, for example) are actually stronger than state building codes. We would all like the level of authority with the broadest and "greenest" reach to be the one to implement our ideal policies, but we must also leave room for local innovation.





Source: Jonathan Rose Companies, LLC

II. The Importance of Transportation Energy

In addition to design review regulations on the environmental performance of buildings, there is another area that is vastly more important and directly involves land use: transportation and location efficiency.

Green buildings are good; green buildings in the right locations are even better. What a growing evidence base[5] tells us is that where a project is sited can have more of an environmental impact than how a project is constructed or even operated.[6] Building energy use analysis should not only consider what a building is made of and how it is powered, but how much energy will be required by residents, employees, guests, and customers to get to and from the building each day. As the graphs show for residential and commercial development, transportation energy is a significant part of a project's entire energy impact.

Leading proponents of green building and development have accepted the importance of transportation energy. The U.S. Green Building Council (USGBC), the Congress for New Urbanism (CNU), and Natural Resources Defense Council (NRDC) have released LEED-Neighborhood Development (LEED-ND), the first effort to describe, catalog, and verify what constitutes green development at the project and neighborhood scale. LEED-ND endeavors to integrate planning and urban design into the evaluation of the environmental performance and energy efficiency of buildings.

Neglecting transportation energy has at least three downsides: (1) as the graphs show, ignoring transportation is simply not a fully accurate way to measure the environmental impacts of a building; (2) it avoids the fact that many traditionally built buildings are more energy efficient than so-called green buildings as a result of their location, which could significantly impact localities' policy approaches; and (3) it prevents an exploration of a real state role in transportation and land use planning (like SB 375 in California[7]), which is the cutting edge at the intersection of land use and building efficiency.

III. Examples of Innovative Federal, State, Regional, and Local Approaches to Green Building

Bronin recommends overturning the traditional locality-based approach to land use and replacing it with a stronger state role. However, we feel that while states should have strong roles in land use and building code decisions, there are more appropriate approaches short of wholesale preemption of local decisionmaking. Bronin rightly describes the significant political obstacles to a stronger state role, yet we can also say that some of the country's most innovative recent environmental policies around land use have come from within the structure of existing institutions. Importantly, one of these reforms, SB 375, relies heavily on existing regional institutions (in this case, Metropolitan Planning Organizations (MPOs)), which the article largely dismisses as potential actors.

3. For an extended discussion of energy and location efficiency and applicable policies, see David B. Goldstein, Invisible Energy (2010).
4. Bronin, *supra* note 1, at 10733.
5. *See, e.g.*, Reid Ewing et al., Growing Cooler: The Evidence on Urban Development and Climate Change, (2008).
6. We should note that the USGBC now has a system that measures and certifies building operations. LEED-Existing Buildings: Operations and Maintenance, http://www.usgbc.org/DisplayPage.aspx?CMSPageID=221 (last visited June 16, 2010).
7. *See infra* Part III A.

A. SB 375 and the American Power Act: The Intersection of Land Use and Transportation

In 2008, California passed SB 375, the nation's first law requiring regional land use and transportation planning to be done together, and to be tied to reducing vehicle miles travelled and GHGs from cars and light trucks. SB 375 is a great example of how different levels of government can play constructive, appropriate roles. A state-level environmental body, the California Air Resources Board, sets a GHG reduction target for each MPO region. The MPOs then create regional plans in cooperation with local governments. Regional plans that meet the GHG reduction targets benefit from prioritized transportation spending and streamlined environmental review of projects.

This common sense approach has gained significant support because it does not explicitly overturn existing structures or judge one as superior to another. In fact, the latest global warming bill recently introduced in the US Senate, the American Power Act, takes SB 375's approach to the national level. The bill would require the U.S. Department of Transportation to set a national goal for cutting global warming pollution and oil use in the transportation sector. States and large metropolitan regions would be asked to set similar targets and over time incorporate strategies to meet these goals into their transportation investment plans.

B. Solar Access Laws and PACE Programs: States Are Definitely Getting Solar

States clearly see the benefits of solar power, and are moving quickly to make it more widespread. Although some localities may limit the use of rooftop solar panels for aesthetic reasons, others promote it actively. The thirty-six states in blue already have measures in place, similar to the California law mentioned by Bronin, to limit local restrictions.[8]

Source: States Advancing Solar, 2010

In addition, the biggest barriers to the installation of solar panels are not just aesthetic. Local regulations also focus on issues of cost, convenience, and public awareness. Just this past April in California, a law was passed that will have a far greater impact on promoting solar panel installation than removal of local design standards.[9] By standardizing a statewide Property Assessed Clean Energy (PACE) financing system and having the state guarantee loans, the bill will make it easier and more affordable for Californians to undertake energy efficiency measures and small renewable energy projects on their properties. PACE lowers interest costs (because of the state guarantee) and allows property owners to amortize the cost of the project through an assessment on their property tax that runs with the property over a long period of time. The law will catalyze voluntary energy retrofits to residential and commercial property while creating a projected 10,500 direct jobs.[10]

C. U.S. Department of Housing and Urban Development (HUD): Using LEED-ND to Foster Sustainable Development

As noted above, LEED-ND is the first effort to describe, catalog, and verify what constitutes green development at the project and neighborhood scale. Just last month, HUD announced that it would use location efficiency and LEED-ND to score grant applications. HUD will invest more than $3.25 billion in local communities in the next few years, and localities will be strongly incentivized to incorporate the location, design, and green-building approaches contained within LEED-ND.

This is just the latest step in a growing federal recognition of the importance of a comprehensive view of development, one that "captures" as many externalities in good policy as possible. Earlier this year, HUD, the Department of Transportation, and the Environmental Protection Agency created an Interagency Partnership for Sustainable Communities to address the whole raft of building and development-related environmental issues.

IV. Conclusion

In sum, we appreciate Bronin's treatment of this vital area of policy. All efforts should be made to eliminate unnecessary barriers to more sustainable approaches to building. While a strong state role is often called for, we do not think that fact leads to a conclusion that dramatic preemption of local land use authority is the most important route to reducing GHG emissions from buildings. Indeed, as we hope we have demonstrated, there are ample opportunities within the existing land use regulation system (the proverbial low hanging fruit of energy efficiency being the most obvious) that can be successfully tackled without marking local land use laws as the biggest enemy.

8. *See* States Advancing Solar, http://www.statesadvancingsolar.org/policies/policy-and-regulations/solar-access-laws (last visited June 16, 2010).

9. SB77 (Pavley): California Alternative Energy and Advanced Transportation Financing Authority: Property Assessed Clean Energy (PACE). Note that implementation of PACE-like programs is currently the subject of litigation. *See* Federal Housing Financing Authority, FHFA Statement on Certain Energy Retrofit Loans (July 6, 2010), *available at* http://fhfa.gov/webfiles/15884/PACESTMT7610.pdf; Robert Selna, *State sues feds over green loans for homes,* San. Fran. Chron., July 15, 2010, *at* http://www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2010/07/15/MN651EEDEG.DTL.

10. SB77: Agenda 2010, *available at* http://senweb03.senate.ca.gov/focus/agenda2010/bill_pace.aspx.

Making the Land Use/Transportation Connection: Quietly Revolutionizing Land Use in the 21st Century

by Gerald P. McCarthy

Gerald P. McCarthy is Executive Director of Virginia Environmental Endowment in Richmond, Virginia, and a member of the Commonwealth Transportation Board. He acknowledges with appreciation the work of the state Secretariat of Transportation in providing information regarding the new transportation/land use connection legislation and regulations.

In her article, *The Quiet Revolution Revived: Sustainable Design, Land Use Regulation, and the States*, Sara Bronin argues that after almost four decades since the publication of *The Quiet Revolution in Land Use Control* by Fred Bosselman and David Callies, it is time to revive some predictions about that "quiet revolution."[1] Bronin uses the green building example as the basis for reconsidering the necessity for "extralocal" land use controls and the interplay between state and local land use functions and authority. This is an interesting lens through which to examine a very old question, having at its core the balance of power between the two levels of government as well as the balance between development and conservation. The report by Bosselman and Callies was commissioned by the new President's Council on Environmental Quality and was published in 1971. The report analyzed several innovative state land use laws to learn how some of the most complex land use issues and problems of re-allocating responsibilities between state and local governments were being addressed, especially focusing on those laws designed to deal with problems related to land use issues of regional or state concern.

A proposed federal bill was drafted, for example, that called upon states to identify and control development in areas of critical environmental concern, assure that development of regional benefit is not blocked or unduly restricted by local governments, and control large-scale development and land use in areas impacted by key facilities. Legislation and programs cited and analyzed included the (1) Hawaiian Land Use Law, (2) Vermont Environmental Control Law, (3) San Francisco Bay Conservation and Development Commission, (4) Twin Cities Metropolitan Council, (5) Massachusetts Zoning Appeals Law, (6) Maine Site Location Law, (7) Massachusetts Wetlands Protection Program, (8) Wisconsin Shoreland Protection Program, and (9) New England River Basins Commission. The conceit embedded in the report, its major policy goal, was to assert that some problems—environmental protection and conservation in particular—were too big for local governments to handle correctly and effectively, and that something between the local and state level of regulation needed to be established to do that job. Bronin states that the "quiet revolution" never occurred, and that now it might via the opportunities presented to localities and builders by "green building."[2]

In fact the "quiet revolution," a radical idea when Bosselman, Callies and the Council on Environmental Quality raised it in 1971, has proceeded, mostly under the radar, in communities across the country and in ways not even imagined in the early 1970s. Using the place I know best, the Commonwealth of Virginia, I shall try to illustrate some of the progress over the past few decades.

"The use of land is a fundamental determinant of environmental quality."[3] This was written in the very first report of the Virginia Governor's Council on the Environment. Just as the federal Council did, Virginia's environmental leadership recognized that a new approach to land use control was needed. The idea of a federal law to accomplish it, however, was politely viewed as highly unlikely to happen. Accordingly, work began on a long-term program of land use reforms that continues to this day.

In 1972, Virginia enacted its Wetlands Control law, probably the first time that the state interposed its own standards on local land use decisionmaking in order to protect a vital natural resource. The law established local wetlands boards to carry out state criteria when local permits were sought to alter or destroy wetlands in coastal localities. In 1973, Virginia enacted a Sediment and Erosion Control law that gave localities responsibility for preventing erosion and sedimentation fouling local rivers and streams. The state Division of Planning and Community Affairs attempted to pass a bill to identify and control development in areas of "critical envi-

1. Sara Bronin, *The Quiet Revolution Revived: Sustainable Design, Land Use Regulation, and the States*, 40 ELR (Envt'l L. & Pol'y Ann. Rev.) 10733 (Aug. 2010) (a longer version of this Article was originally published at 93 Minn. L. Rev. 231 (2008)).

2. *See id.*

3. The State of Virginia's Environment, Dec. 1971.

ronmental concern," one of those catch phrases from the Bosselman book, and proposed federal legislation. Not only did the "critical environmental areas" bill meet overwhelming opposition and defeat, but the Division of State Planning and Community Affairs was abolished in the bargain. No one proposed any further legislation resembling the ill-fated federal bill again in Virginia.

By the 1980s, the Chesapeake Bay was beginning to be recognized for the national natural treasure that it is. A multi-state and federal agreement was signed in 1983 that launched what has now become an extensive and expensive program to restore the environmental health of the Bay.[4] Virginia, recognizing that it had to intensify and strengthen the legal connection between the natural connection of land and water, negotiated and passed a landmark law[5] whose goal was, once and for all, to impose an affirmative responsibility on local governments to manage land uses in ways that protected water quality in the Bay region. This law established a state agency to oversee the implementation of the program, which was to be carried out by a new set of local boards in each Bay area locality. The law extended and surpassed the previous authority embedded in the Wetlands law. Later, in the 1990s, the Wetlands law was extended to cover non-tidal wetlands as well.

Meanwhile, some local governments were pressuring the state legislature for more control over their communities' development. Virginia is a Dillon Rule state, so specific authority for land use controls, such as the provision for impact fees on development, must be requested by localities and granted by the state. This is a subject for a paper in its own right as the complexities and politics of such legislation and regulation are myriad.

In recent years there has been more progress to advance the quiet revolution, and it has been accomplished in an unusual, unexpected, and unprecedented way: by use of the state's power to develop its transportation system. Since 2006, Virginia has developed an innovative and much-improved system for coordinating state transportation planning and local land use decisionmaking, and in the process has done more to assert the state's legitimate role in land use planning than almost anything else it has tried over the decades since the Bosselman report.

The state of Virginia accomplished this by a skillful combination of "carrot and stick" involving road fund investment policies and congestion-reduction strategies. One of the biggest challenges facing transportation planners is continued growth in population and development of Virginia, and as a result, the need to make better land use decisions. Improving the coordination between transportation and land use is imperative.

One key step in that direction was the development of traffic impact analysis requirements. Too often, local governments considered development proposals without accurate information on the traffic impacts of the proposed development. In 2006, the General Assembly of Virginia directed the Virginia Department of Transportation (VDOT) to develop Traffic Impact Analysis regulations.[6] These regulations require that all developments with a substantial impact on the state highway network use VDOT's statewide, uniform standards to analyze the impacts of the development on the transportation network. The first application of this regulation to a major development in northern Virginia developed sufficient information to cause the Board of Supervisors to reject a major new residential development because of its extraordinary impact on the local roads.[7]

Another improvement was to update the state's access management standards. Curb cuts and traffic signals have a significant impact on the capacity of highway corridors. Commercial growth frequently occurs along such corridors and tends to increase the number of entrances and signals along such roads. Right turns into and out of business entrances, left turns, and traffic signals all contribute to slowing traffic flow and reducing the capacity of these highways. In 2007, the Virginia General Assembly approved bills that require VDOT to establish new standards to manage access to state highways "through the control of and improvements to the location, number, spacing, and design of entrances, median openings, turn lanes, street intersections, traffic signals, and interchanges."[8] The principal purpose of these regulations, adopted by the Commonwealth Transportation Board, effective July 1, 2008, is to preserve the public investment in existing roadways by maximizing their performance, as well as to reduce the need for new highways and road widening by improving the performance of the existing network. The growth management and environmental benefits of such goals being realized are substantial.

Also in 2007, the legislature passed a bill addressing "urban development areas."[9] This law requires high growth localities to establish urban development areas (UDAs) to allow for concentration of dense development. A UDA is an area that is appropriate for dense development because of its proximity to transportation facilities and existing development. Residential densities must be at least four dwelling units per acre within a UDA and must also incorporate the principles of "new urbanism," including reduced street width, reduced setbacks, and a mix of land uses.

This kind of compact development encourages and promotes walking and cycling, more efficient transit services,

4. Chesapeake Bay Protection Agreement among D.C., Maryland, Pennsylvania, Virginia, and EPA.
5. Chesapeake Bay Preservation Act (1988).
6. Senate Bill 699.
7. In Virginia, virtually all roads in developments are taken into the state system as soon as they are constructed, and thus the state, not the local government, must maintain them. The state has both a programmatic and a financial interest in getting land use right.
8. Senate Bill 1312; House Bill 2228.
9. House Bill 3202.

and fewer vehicle miles traveled. In May 2009, the Commonwealth Transportation Board approved funding for a UDA Planning Grant Program. This state funding will enable local governments to employ consultant services for assistance in designating UDAs and revising local ordinances to combine the principles of new urbanism with traditional neighborhood design. While this might also promote "green building," it is the transportation goals that are driving this quiet revolution.

House Bill 3202 also authorized the same high-growth localities to implement road impact fees to help pay for the cost of new transportation infrastructure in order to offset the impacts of new development. Prior to this bill, localities were limited to requesting voluntary contributions from developers for improvements to the transportation system. Such properly implemented road fee programs can help reward developments that minimize the impact on the road network and assure that all development, not just those requiring a rezoning, pay their proportional share of costs for improving the road system.

Unlike most states, Virginia is responsible for maintaining most local subdivision streets. The state almost always accepted streets for perpetual public maintenance without considering the overall public benefit they provided. This frequently resulted in a network of one-way-in and one-way-out street networks that forced all trips to use the regional highway network to get from one subdivision to another or to a local shopping center. The bottlenecks that result from such design are numerous and cause delays, inconvenience, and pollution. The Virginia General Assembly passed legislation requiring new Secondary Street Acceptance standards, which were then adopted by the Commonwealth Transportation Board in February 2009. These new standards aim to ensure that streets accepted for perpetual state maintenance provide public benefit. Now, for example, streets in new developments must connect to adjacent developments to allow for local trips to use the local streets and thus disperse traffic.

Finally, in 2009 the General Assembly unanimously adopted legislation that included recommendations from the state Climate Commission relating to transportation and land use.[10] The new law requires that the Statewide Long Range Transportation Plan explicitly consider regional accessibility to promote urban development areas as major components of the plan, and that VDOT work with regional organizations (such as Regional Planning District Commissions and Metropolitan Planning Organizations) to develop regional transportation and land use performance measures. Regional organizations will use these measures to analyze the impacts of land use on the transportation network. This law also provided VDOT with the authority to establish standards for the coordination of transportation and land use planning to promote commuter choice and transportation system efficiency.

The "quiet revolution" anticipated by Bosselman and Callies continues. It is surprising sometimes how it occurs. The necessity to improve and maintain a 21st century multimodal transportation system that moves people and goods to their destinations in environmentally responsible ways has quietly transformed the relationship and made the connection between local land use and state transportation planning and management.

10. Senate Bill 1398; House Bill 2019.