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Commentary

Climate Change and Sustainable Development: The Quest for Green Communities

John R. Nolon

INTRODUCTION TO CLIMATE CHANGE MITIGATION THROUGH SUSTAINABLE DEVELOPMENT LAW

This is the first of two commentaries that explore the role of local governments in mitigating and adapting to climate change through sustainable development strategies. They focus on the significant authority to regulate land use and building construction that is delegated to local governments by their states, and how that authority can be coordinated with the roles and responsibilities of state and federal governments to manage climate change and achieve sustainable development.

In a forthcoming article,[1] I illustrate how local governments could use existing sustainable development strategies to achieve an annual reduction of 1,200 million metric tons of CO_2 by mid-century. In the algebra of climate change management, 1,200 million metric tons—or 1.20 gigatons (Gt)—is a significant figure. According to the Intergovernmental Panel on Climate Change (IPCC), 38Gt of CO_2 are emitted worldwide each year, nearly 20 percent of which is attributable to the United States (7.1Gt).[2] Sequestration by the natural environment currently removes approximately 15 percent of the total U.S. CO_2 emissions, leaving 6.1Gt in the atmosphere. My estimate for emissions savings achievable through local sustainable development law (1.20Gt) represents 20 percent of these net emissions.[3]

The American Clean Energy and Security Act, adopted by the House of Representatives on June 26, 2009, aspires to reduce CO_2 emissions by 80 percent by 2050. Local sustainable development initiatives should be a key component of the national strategy to achieve this target. Reducing emissions by this amount through changes in land use laws, of course, requires significant alteration in the business-as-usual scenario, but this is precisely the task assumed by any significant mitigation strategy under consideration by policy makers as they react to the mounting evidence that the consequences of climate change will be grave. The second commentary in this series will discuss existing and emerging local sustainable development techniques that can be used to manage climate change, and will reflect on the proper role of the state and federal governments as partners in this initiative.

"Sustainable development law" comprises the laws that regulate economic development to meet present needs, provide for equitable community development, and preserve natural resources to meet the needs of future generations. Climate change mitigation is imperative if the needs of current and future U.S. generations are to be met. According to the U.S. Environmental Protection Agency (EPA), 16 percent of current CO_2 emissions come from the tailpipes of personal vehicles that convey passengers to work or to the many other destinations that can be reached only by car in the absence of transit systems.[4] Local laws that create transit-oriented development zones mitigate climate change by reducing vehicle trips and miles traveled. An additional 32 percent of all U.S. CO_2 emissions are caused by the use of electricity and fuel in the operation of residential and commercial structures.[5] Enhancing and enforcing energy-efficiency codes can substantially reduce the percentage of emissions caused by the operation of these structures.

Together, vehicle miles traveled and building operations total 48 percent of domestic CO_2 emissions.[6] The case can be made that how we develop the land, redevelop our cities and inner-ring suburbs, preserve our sequestering resources, and encourage the use of renewable and high-energy technologies—all of which can be affected by legislation at the local level—encompasses an even larger percentage of total emissions. With a total emissions target of this magnitude, climate change mitigation through local land use law revision is a promising addition to the national arsenal of climate change management weapons.

Sustainable development law is beginning to receive attention in academic literature.[7] A number of terms have emerged in the process that further define this nascent field of legislation and practice:

- Green development law is the most general of them. It can be used as a synonym for sustainable development law,

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encompassing the rules and regulations that govern the built and preserved environment in order to achieve sustainable development objectives.

- Green buildings are structures built or rehabilitated to accomplish sustainable, or green, development objectives. Local laws that require that new buildings comply with the U.S. Green Building Council's (USGBC) LEED for New Construction and Major Renovations standards, for example, create green buildings, which earn points for sustainable sites, water efficiency, energy conservation and emissions reduction, the use of recycled building materials or construction waste, comfortable and healthful interior environments, and innovative design.
- Green neighborhoods are districts within communities where regulations, investments, and incentives are targeted to achieve a larger scale of operations for employing the standards used to create green buildings. Under the USGBC's LEED for Neighborhood Development standards, for example, points are awarded for buildings that are in "smart locations," and that avoid floodplains, do not imperil ecological communities, place housing in proximity to jobs, create walkable streets and mixed income communities, inter alia: objectives that cannot be achieved one building at a time.
- Green development plans and green development planning are local comprehensive plan components, transit station and neighborhood development plans, and project review protocols that envision and call forth green buildings and green neighborhoods.
- Energy-efficient buildings are individual structures designed and constructed to exceed existing energy-efficiency standards contained in "base codes," the current minimum legal standards required by energy construction codes, which are enforced locally in most states. Where not preempted by the state, local laws can require that new or substantially renovated buildings be designed to exceed the energy efficiency of base codes without imposing onerous (unsustainable) costs on building owners and occupants.
- High-energy technology buildings effect energy conservation and emissions reductions through the use of small solar or wind generation facilities, or by incorporating combined heat and power, microturbines, or geothermal heating and cooling systems in their design and construction.
- High-energy technology districts achieve energy savings and emission reductions through district electricity systems that take advantage of the diverse energy demands of various buildings in the district or through larger scale wind or solar systems.
- Green zoning refers to zoning laws that create transit-oriented development in transit area districts, require or encourage LEED certification, or create and regulate development in high-energy technology districts, for example.
- Green communities make some kind of formal declaration that they will adopt and implement local laws regulating the private sector to achieve sustainable development; to "green" their own operations, including their buildings, fleets of vehicles, capital projects, and employees' behavior; to conduct an outreach and education campaign to reduce the carbon footprint of residents and businesses; or some combination of the three.

LOCALISM: POWERFUL OR PAROCHIAL?

The proposition that local governments should be centrally involved in managing national climate change is neither intuitive nor popular in some quarters. Locally emitted CO_2 does not cause local climate change; it contributes to global climate change, which, in turn, is consequential at the local level. In his thoughtful commentary in the January issue of *Planning & Environmental Law*, Steven J. Eagle concludes, "American land use planning has complex and conflicting responsibilities now, with many groups gaming the system for their own ends. Partial responsibility for solving world climate imperatives might not be a feasible addition to the list."[8] Edward H. Ziegler, in making a case for "megapolitan growth management" in the Winter 2009 issue of *The Urban Lawyer*, states that local growth-management programs are "increasingly dysfunctional" and suggests that questions about broader regional governing arrangements may be about "not if, but simply when and how this transformation [from local to regional growth management] occurs."[9]

For more than three decades, responsible scholars have labeled municipalities as parochial, exclusionary, and acutely limited in resources and capacity. In their 1972 report entitled *The Quiet Revolution in Land Use Control*, Fred Bosselman, FAICP, and David Callies, FAICP, argued that local authority should be constrained by state governments; they called local land use regulation a "feudal system under which the entire pattern of land development has been controlled by thousands of individual local governments, each seeking to maximize its tax base and minimize its social problems, and caring less what happens to all the others."[10] Thirty-seven years later, however, Ziegler points out that local green development plans "are seldom, if ever, supported by any coordinated regional urban growth policy."[11] Assessing the nation's progress toward the objectives of the "Quiet Revolution," Robert H. Freilich's book *From Sprawl to Smart Growth* laments "the states' failure to reclaim some of their authority delegated early on in the land use field."[12]

Why is it that state governments have left largely intact a local land use control system developed nearly a century ago when times and challenges were so fundamentally different? Scholars in other disciplines provide some clues. They suggest that change in nature and society is a grassroots phenomenon and that top-down approaches to systemic change work within a limited range of problems. The Nobel Prize-winning physicist Murray Gell-Mann is an advocate of the bottom-up approach to sustainable development, and his book, *The Quark and the Jaguar*, explains why. It describes biological and human communities as "complex adaptive systems."[13] Each system, Gell-Mann writes, "acquires information about its environment and its own interaction with that environment, identifying regularities in that information, condensing those regularities into a kind of 'schema' or model, and acting in the real world on the basis of that schema."[14] Since essential information about what is

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happening to the environment is found at the local level, local governments have an information-gathering function of critical importance to the higher orders in the system. Armed with that information, local communities take needed action in response, even if in isolation, to climate change.

Our recent research on the advent of local laws that respond to sea level change is instructive on this point. When one looks at the local level, one finds impressive evidence of adjustments in the local legal system in preparation for the rising seas; the warning signals are vividly apparent to local observers and they have taken action in response. Meanwhile, this movement in the legal system has been barely detected in the literature and national policy discussions regarding adaptation to sea level rise. The critical task is to connect the local legal system to state and federal governments so that up-to-date scientific data on sea level rise, and additional resources and technical assistance, inform and enable appropriate local responses.

Summing up recent sociological research on how change occurs, Everett M. Rogers, in *Diffusion of Innovations*, describes "diffusion" as "a kind of societal change, defined as the process by which alteration occurs in the structure and function of a social system."[15] Diffusion scholars study how change happens in society, noting that through continued and effective communication, a system adapts in unpredictable but generally successful ways as it deals with external events. By observing neighboring coastal communities, for example, local officials witness peer groups adopting innovations to prepare for sea level rise; they learn from these legal changes and consider them trustworthy models for emulation. When the system is designed to connect local communities with state and federal agencies with information, models, best practices, and financial assistance, results improve through those influences.

At the federal level, an agency designated as the source of information on climate change science should be created and tied into the conversation with coastal communities to designate short-term and longer term inundation lines for planning purposes. The House Committee on Science and Technology approved a bill (H.R. 2407) on June 3, 2009, that would establish a national climate service for precisely this purpose, an administrative organ that would be housed in the National Oceanic and Atmospheric Administration (NOAA), but would also ensure participation of other federal agencies with relevant scientific information. If this bill passes, the next step is to ensure that this agency's data is readily available in a friendly format for state and local government analysis and use.

States can designate relevant regions for land use planning purposes, such as coastline protection and economic development, and gather communities, train them, provide models from other locales, offer technical assistance, and help finance the process of adaptation to sea level rise, including the relocation of critical infrastructure. In their working paper on *Network Power in Collaborative Planning*, David E. Booher and Judith E. Innes note that "[n]etwork power emerges from communication and collaboration among individuals, agencies, and businesses in a society.[16] Network power emerges as diverse participants in a network focus on a common task and develop shared meanings and common heuristics for action.[17] It grows as these players identify and build on their interdependencies to create new potential. In the process, innovations and novel responses to environmental stresses can emerge. These innovations, in turn, make possible adaptive change and constructive action of the whole."[18]

A handful of academics have written about the utility of reflexive law regimes in the context of land use planning.[19] They suggest that positive or formal lawmaking, where higher orders of government create and impose standards on lower order governments and constituents, is not up to the task of managing highly complex, multifaceted problems such as climate change and sustainable development. Instead, they offer procedural solutions: reflexive laws that prescribe or suggest decision-making processes such as those described by Booher and Innes: processes that involve all relevant government agencies and private sector and civic stakeholders in developing and achieving performance-based solutions.[20] Such laws encourage reciprocal reflection within and among governmental agencies, regulated entities, and involved stakeholders about their performance regarding sustainable development.

John C. Dernbach, in *Navigating the U.S. Transition to Sustainability* (2008), explains the two key tasks that reflexive law can perform. "First, it can provide information to government agencies and institutions on the effectiveness and impacts of particular laws and policies, which can then be used to modify those laws and policies. Second, it can encourage or prod nongovernmental entities, including businesses, to make their activities more sustainable, without being overly prescriptive."[21] These words are echoed in a January 31, 2009, Presidential Memorandum on Transparency and Open Government signed by President Obama.[22] He writes, "Knowledge is widely dispersed in society, and public officials benefit from having access to that dispersed knowledge. . . . Executive departments and agencies should use innovative tools, methods, and systems to cooperate among themselves, across all levels of Government, and with nonprofit organizations, businesses, and individuals in the private sector."[23]

Using a reflexive law approach, state or federal law might establish a goal for the reduction of energy consumption in new buildings, such as 30 percent over current building practices, and prescribe a process for local governments, developers, builders, architects, and advocates to determine how to accomplish such a reduction (by enhancing the energy construction code, by promoting the use of wind or solar facilities, by adopting combined heat and power or district energy systems, or by other strategies of their own invention).

The United Nations Environmental Programme (UNEP) advocates for the adoption of national "framework laws" as a method of organizing communications within the national decision-making system. UNEP's recommended framework law "lays down the basic legal principles without any attempt

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at codification."[24] It covers "the entire spectrum of cross-sectoral environmental issues and [facilitates] a more cohesive, coordinated and holistic approach to environmental management."[25] In other words, it defines the actors within the system, assesses their competencies, allocates roles for each, and ensures connectivity and communication among them as components of the system: a network capable of communicating about what is happening to it and how it must react to survive and thrive.

These scholars urge us to pay attention to connections among levels of government and the private actors they affect because together they constitute the relevant system within which change must occur to deal with external crises such as the consequences of climate change. The larger system relevant to adopting sustainable development strategies to manage climate change comprises the local, state, and federal governments and constituent civic and private sector stakeholders. The task at hand, as climate change worsens, is to design a cogent legal system that comprises all of these relevant parts.

AN INTEGRATED NATIONAL LAND USE SYSTEM

We tried to create such a system as part of the Quiet Revolution and nearly succeeded. Why we failed is instructive. In the early 1970s, at the dawn of the federal environmental era, Sen. Henry Jackson (D-Wash.), a principal sponsor and proponent of the National Environmental Policy Act (NEPA), wanted to integrate the environmental and land use policies and resources of all levels of government into a coherent system—a collection of governmental influences, each nested in an overall, cogent hierarchy. He proposed the National Land Use Planning Act, which was contained in his bill, S.3354, and would have provided several powerful incentives to states to encourage them to create strategic land use plans based on local input and public participation.[26] The incentives in the Act included financial assistance, the provision of data needed to plan efficiently, and the promise that federal actions of all types would conform to state and local land use plans after they were adopted and accepted.

State plans were to designate areas for growth and areas for conservation. In the context of climate change, state plans that did not use reliable science to designate sea level rise zones would, presumably, be sent back for further study and refinement. Under S.3354, federal resources would be directed to encourage growth and conservation, in accordance with the state plan. The Act would have designated a federal agency to facilitate federal action; states were encouraged to establish coordinating agencies for the same purpose. The Senator described the Act as containing new procedures and machinery to lessen the conflicts, the wasteful delays, and the inefficient results that land use competition generates, shifting this competition from the adversary process to the planning process.

Jackson proposed the efficient use of all reliable and objective data and the use of citizen participation at the grassroots level to fill the inevitable gaps in databases and to benefit from this practical wisdom and its tendency to balance the influence of particular interests within the system. His Act would have integrated local, state, and federal systems. Planning would have emerged from the local level to be memorialized in a state plan, which was under constant review as new challenges emerged. The federal role was to provide incentives, such as funding, data, technical assistance, and training to supplement similar state activities and to help the states in their coordinative role such as convening communities in relevant regions.

Jackson's bill was amended several times and, in its final form, was narrowly defeated. Changes made to S.3354 moved the National Land Use Planning Act away from Jackson's central vision toward a top-heavy approach to land use control and a more modest commitment of federal resources. These modifications added more federal requirements, made state plans less comprehensive, lessened the incentives, and added new sanctions. Although the modified bill passed the Senate, it was narrowly defeated by the House Rules Committee (204-211) on a vote to consider national planning legislation, where charges of "federal zoning" and "regulatory taking" were leveled against this altered version of the statute.[27]

The purpose of this commentary and the one to follow is to demonstrate how local governments can help implement regional, state, and federal climate management policies as partners in a federal system of law, one built from the ground up. It is animated by concern that a reawakened federal government might repeat past mistakes of ignoring important local functions or violating critical norms and triggering powerful opposition in its haste to create national solutions to the crisis of climate change. Seeing clearly what localities are empowered to do, indeed what they are doing in many instances, urges policy makers to embrace localities in formulating climate change policies rather than to cast them as irrelevant to—or obstacles standing in the way of—top-down solutions. Nearsighted concentration on the paramount role of any level of government—or private market or civic sector—carries the risk of overlooking the critical resources that each brings to addressing the consequences of climate change: a critical and complex problem that affects them all profoundly.

It may be that any search for a preeminent authority in land use matters is a fool's errand. Federal jurisdiction is limited, both constitutionally and practically: there are certain distances beyond which Congress cannot or will not travel to protect national interests. State legislators, too, although vested with plenary police powers to protect state interests of all sorts, often will not pay the political price of preempting local governmental authority. Meanwhile, local officials know that their much-touted home rule powers do not give them control over the many regional influences that frustrate their efforts to create quality communities or the resources they need to manage the increasingly worsening consequences of climate change.

CLIMATE CHANGE, DEMOGRAPHICS, TRAVEL, BUILDINGS, AND CO_2

NOAA reports that the concentration of CO_2 in the atmosphere in 2007 was approximately 384 parts per million

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(ppm).[28] To prevent catastrophic global warming, this concentration must not exceed 450 ppm and, eventually, it must return to 350 ppm.[29] Current emissions trends (the business-as-usual scenario under the current development paradigm) will take atmospheric concentrations to 650 ppm or greater by 2100.

The 2009 report of the U.S. Global Change Research Program supports and updates the consensus of the 2007 fourth assessment report of the Intergovernmental Panel on Climate Change.[30] Both reports state with certainty that climate change is happening, that it is caused in significant part by human behavior, and that its consequences may be catastrophic if current trends continue. The 2009 report was tasked by the Federal Advisory Committee Act; its contents are sobering. The full report can be found online at http://www.globalchange.gov/usimpacts. It discusses already observable domestic results of climate change, including:

- increased air and water temperatures;
- degradation of freshwater fish habitat;
- diminished terrestrial biodiversity;
- increased bleaching and die-off of coral reefs;
- increased frequency and intensity of heavy downpours;
- a rise in sea level;
- reduced snow cover, glaciers, permafrost, and sea ice;
- reduced water supply in some regions;
- a longer ice-free period on lakes and rivers;
- lengthening of the growing season; and
- increased water vapor in the atmosphere.

The report also lists likely future changes, including more intense hurricanes with related increases in wind, rain, and storm surges, and drier conditions in some regions. "These changes will affect human health, water supply, agriculture, coastal areas, and many other aspects of society and the natural environment," concludes one report.[31] The first observers of the consequences of climate change, of course, are locally affected constituents and their elected officials, who will become increasingly interested in mitigation and adaptation strategies as climate change progresses.

Climate change is caused by excessive quantities of greenhouse gases in the atmosphere. Eighty-five percent of anthropogenic emissions in the US are CO_2, much of which is caused by the buildings and land use patterns that local land use plans and codes regulate and approve. Vehicle trips and miles traveled have increased dramatically in the past three decades as development patterns have spread out, consuming land at much greater rates than the rate of population growth.[32]

The worst is yet to come, at least until local governments alter the types of buildings and settlement patterns that their land use plans and regulations produce. The U.S. Census Bureau estimates that by 2039 the population will have increased by 100 million, a one-third increase over the 300 million mark reached in 2006. By 2050, 66 percent of the development on the ground will have been built between now and then to accommodate these new residents and workers and to replace buildings that become obsolete during the next four decades.[33]

Under the current legal system, these new homes and offices will be built in accordance with local land use plans and building regulations and approved by local planning and zoning commissions. How much CO_2 these buildings will emit—and the traveling their location requires—depends on how large and energy-efficient new homes and commercial structures are, whether land uses are mixed or separated, and how many miles are traveled getting from one destination to the other. Local governments are beginning to change building construction, design, massing, uses, and the shape of human settlements, all through the use of existing sustainable development laws. States and federal agencies have been of some help, but changes in federal and state law and policy are needed to speed up and to guide local action. The time to construct this new legal system is now.

TOWARD A REFLEXIVE LEGAL SYSTEM FOR MANAGING CLIMATE CHANGE

The framework of laws that we must create to manage climate change through sustainable development must integrate and leverage the competencies and resources of the federal, state, and local levels of government. It must be reflexive as well, creating connections among the many disciplines, sectors, interest groups, resources, and knowledge bases relevant to the complexities of the task of climate change management.

Our national legal system can be structured to coordinate governmental roles in land use control and environmental protection. It can become integrated horizontally and vertically through a proper legislative approach. We know how to create a framework of laws that links separate but related land use issues and that mediates the tensions among federal supremacy, states rights, and local home rule. Consider, for example, the federal approach to coastal protection and disaster mitigation. The Coastal Zone Management Act, 16 U.S.C. §§ 1451–1465 (2000), creates an intergovernmental initiative involving federal, state, and local agencies in coastal planning and management. It includes among its purposes the mitigation of disaster damage. The Disaster Mitigation Act, Pub. L. No. 106–390, 114 Stat. 1552 (2000), is a federal law that encourages state and local governments to conduct disaster mitigation planning in disaster-prone areas—including coastal zones—and awards them financial incentives if they do so. However accidental the relationship was in the mind of Congress, these two laws are linked horizontally: they relate to each other as a matter of policy, and promote both economic development and environmental protection in similar ways.

These federal laws create vertical links as well; they rely on state and local governments to adopt disaster and coastal plans consistent with federal policies and encourage implementation of those plans by providing federal funding and technical assistance. Using their police power authority, the states have created comprehensive regimes for land use control in coastal zones and disaster-prone areas, relying mostly on

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local land use planning and regulation for implementation. This local authority is guided, in turn, by state policies and plans enacted in response to federal coastal zone management and disaster mitigation statutes, completing the vertical dimension.

The term "reflexive law" was first coined in a 1983 article, *Substantive and Reflexive Elements in Modern Law*, written by German sociologist Gunther Teubner.[34] A reflexive legal system imposes procedural, rather than substantive, requirements that are designed to trigger reflexive responses among those implicated in the problem that the prescribed procedures are designed to solve. Teubner thought that in a complex, postindustrial age, law needed to progress beyond assuring specific outcomes by establishing procedures that organize the components within the relevant system, ensuring that they have and share information, and engaging them in establishing standards, metrics, and objectives for problem-solving that are consistent with operative norms. Sen. Jackson understood this approach; NEPA forced federal agencies to consider environmental information and consequences, and his National Land Use Planning Act would have ensured an ongoing conversation about national, state, and local land use interests and objectives in relation to natural resources.

Tim Iglesias, in *Housing Impact Assessments: Opening New Doors for State Housing Regulation While Localism Persists* (2005),[35] applied reflexive law theory to exclusionary zoning, one of the most intransigent characteristics of the local system of land use control. Rather than impose allocations for the production of affordable housing on localities, as New Jersey does, for example, he suggests imposing a Housing Impact Assessment (HIA) requirement on local governments to require them to mitigate significant adverse impacts of their actions on housing affordability.[36] HIA is a procedural requirement that respects the norms of local officials. Iglesias explains that local elected officials believe that they know local conditions and needs best, that they are elected to serve local interests, and that they exercise that responsibility with a sense of pride. To impose a duty to rezone the community to provide a certain number of affordable housing units, a quota fixed by a state or regional agency, violates those norms and triggers certain opposition to any such state requirement from powerful associations of towns and conferences of mayors. New Jersey is nearly alone in imposing housing allocations on local governments for this reason.

Instead, requiring local officials to follow a procedure for conducting a housing impact analysis respects operative norms and, if adopted as a legal procedure in the state, would engage local officials, developers, citizens, employers, and housing advocates in a process of investigating and analyzing the need for meeting local housing needs and discovering workable strategies for doing so. In that process, information will be reviewed by those involved regarding regional housing needs and the importance of meeting them to foster needed economic development and to accommodate housed-out young families, workers, and seniors. They will study how similar communities have used existing techniques to meet local and regional housing needs. This process will inform and animate a local constituency more likely to favor inclusionary housing actions and will support elected local officials who take action to meet the discovered needs. Those officials may be more inclined to respond because the process conforms to the norms under which they operate. Information about regional housing needs and effective housing strategies inserted into this process by state or regional agencies will be accepted as helpful, rather than intrusive. Importantly, a legislative strategy inclined toward this approach is much more likely to emerge from state legislatures than a more prescriptive system. State legislators represent small electoral districts, many falling within the boundaries of single municipalities, and this makes state lawmaking sensitive to local concerns and norms.

Reflexive law regimes, in addition to integrating the influences of multiple levels of government, involve the private actors who are affected by governmental regulation and whose engagement is necessary to achieve policy objectives. By embracing the reform of local land use plans and regulations, climate change policy makers incorporate the entire apparatus of local land use law decision making in the administration of state and federal initiatives. The local land use legal system relies on work sessions of the legislative body, open meetings, public notices of pending legislation and project reviews, public hearings, local agency review of regulated projects, and the right to challenge adopted laws and approved projects in the courts: a full spectrum of opportunities for citizen and stakeholder engagement. Federal and state policies that encourage localities to adopt climate action plans, for example, will involve, inform, and stimulate the larger public; as involved citizens consider ways their local government can lower its carbon footprint and the CO_2 emissions of the development it regulates, they will become more likely to change their own behavior. Climate action plans include outreach and citizen education programs designed to promote recycling, energy conservation, walking, biking, car pooling, transit use, and fewer car and plane trips.

This reflexive law approach translates well to climate change management because there are many strategic paths and countless tools and techniques available to achieve the goal of reduced CO_2 emissions or more resilient communities that can adapt to natural disasters and sea level rise. Local governments have responded enthusiastically to two voluntary climate change assessment initiatives, one led by ICLEI-Local Governments for Sustainability (ICLEI) and the other by the U.S. Conference of Mayors. Five hundred local governments have joined ICLEI, which carries with it a commitment to inventory emissions, establish emission targets, develop a local climate action plan, and implement measures to achieve the targets.[37] Nearly 1,000 mayors from all 50 states have subscribed to the U.S. Conference of Mayors Climate Protection Agreement, which commits the mayors to work toward a goal of reducing greenhouse gas pollution levels to seven percent below 1990 levels.[38] Federal and state information about climate change science, forecasts

If the Act does pass in its current form, local governments will be forced to implement ambitious energy-efficiency code standards or stand down and watch the Department of Energy attempt to achieve compliance and to prosecute developers, owners, and sellers of buildings built in violation of the national code.

regarding sea level rise, methodologies for establishing inventories of emissions, setting targets, and monitoring the results would be welcomed by these communities and would encourage localities to build constituencies supporting effective climate change action through a reflexive law process.

A CURRENT CASE IN POINT: WAXMAN-MARKEY AND ENERGY-EFFICIENCY LEGISLATION

The Waxman-Markey bill, known as the American Clean Energy and Security Act of 2009 (ACESA),[39] provides an interesting application of formal and substantive lawmaking that will test the ability of the federal government to require significant changes in state and local energy-efficiency code enforcement. The bill forces vertical integration in the enactment and enforcement of energy-efficiency standards but exhibits few reflexive governance traits. ACESA is best known, of course, for its greenhouse gas cap-and-trade provisions. If adopted by the Senate, it will be the first to establish a national limit to greenhouse gas emissions, a critical step in climate change management. These provisions envision the imposition of serious requirements, in a previously unregulated market, for trading newly created carbon and renewable energy credits, futures, and derivatives.

Title II of the Act, entitled Energy Efficiency, establishes a goal of achieving significant mandatory reductions in energy use in new and substantially renovated residential and commercial buildings, another first for federal policy. To accomplish this ambitious objective, the Act instructs the Secretary of Energy to adopt a national energy-efficiency building code and to impose it on state and local governments. Under its provisions, unless state and local governments receive a certification that they have adopted and are enforcing efficiently the national code or a stricter version, "the national code shall become the applicable energy efficiency building code for such jurisdiction." Where a state or locality fails to adopt the code, the Secretary would be responsible for its enforcement. The bill requires the Secretary to establish an "enforcement capacity" designed to achieve 90 percent compliance with the code, to collect fees for federal inspections, and to enforce the code directly when states and local governments fail to conform to the Act's provisions. The Act incentivizes states and localities to voluntarily adopt the national code by making them eligible to receive valuable emissions allowances and direct funding, which are denied them if they fail to conform.

In the version of the bill that emerged from the House committee, the Secretary was to "assess a civil penalty for violations," with each day of "unlawful occupancy" considered a separate violation. The committee's bill subjected a builder, owner, or knowing seller of any building that does not comply with the code to penalties for violating its provisions, enforceable in federal courts. In the bill adopted by the full House, the details of violations, violators, and jurisdiction of federal courts over violations are removed, while additional incentives, including provisions for training and education, are added. States are allowed more time to achieve compliance with the bill's 90 percent compliance requirement and are given guidelines for making "significant progress." The Secretary is instructed to return to Congress if it is determined that further statutory authority is required to allow federal enforcement of violations of the national code. This postpones until a later date the controversial and messy matter of sorting out 10th Amendment authorities and of inserting a remote federal agency into the traditionally local process of reviewing development proposals, issuing building permits, and awarding certificates of occupancy.

These accommodations might have been necessary to avoid the fate of Sen. Jackson's National Land Use Planning Act, which some felt extended jurisdiction too far into the terrain protected by the 10th Amendment. Whether a mandatory national energy-efficiency code, ambitious short-term energy savings objectives, and strict compliance standards for state and local governments will survive the Senate's scrutiny of Waxman-Markey remains to be seen. The House version of the Act bears some resemblance to frustrated federal attempts to enforce Total Daily Maximum Load standards on state and local governments, which would have required them to amend land use regulations to control nonpoint sources of pollution from construction projects. Local energy-efficiency code compliance is a mess and will be very costly to improve. Anecdotal evidence suggests that compliance is less than 50 percent under the less stringent baseline energy codes that the proposed national code will supplant, and that most states and localities have woefully inadequate energy code inspection and enforcement capacities. If the energy-efficiency title of the ACESA, as adopted by the House, passes the Senate, it will be a triumph of substance over norms. It represents classic substantive lawmaking and will test the capacity of the federal government to force significant non-normative change upon state and local governments.

If the Act does pass in its current form, local governments will be forced to implement ambitious energy-efficiency code standards or stand down and watch the Department of Energy attempt to achieve compliance and to prosecute developers, owners, and sellers of buildings built in violation of the national code. Currently, the adoption of enhanced energy-efficiency codes is a voluntary prerogative of local governments in many states—part of the suite of sustainable development strategies available to them to manage climate change.

CONCLUSION

One wonders whether it would be wiser for Congress to reshape the energy-efficiency title of ACESA as a framework law with national standards and measures combined with reflexive governance provisions. Significant progress along these lines is already evident. The Obama administration is moving toward a reflexive governance approach throughout the Executive Branch of the federal government. The stimulus bill, which provided $3 billion for state energy programs, motivated the majority of states to strengthen their energy conservation codes. Voluntary programs initiated by the U.S. Conference of Mayors and ICLEI have

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inspired over 1,500 local governments to initiate climate action plans, which can be implemented by effective energy conservation code enforcement.

Local governments, with proper state and federal support, can employ a variety of strategies to mitigate climate change by reducing CO_2 emissions—and to reduce dependence on foreign oil in the process—enhancing national security and protecting the global environment by acting locally. Enforcement of an energy-efficiency code is just one of many suitable approaches to achieve these objectives. Should Congress simply quantify how much CO_2 must be reduced—and energy saved—to promote national interests, such as Waxman-Markey's goal of achieving a 50 percent savings from new buildings by 2015 or the cap-and-trade target of an 80 percent reduction of greenhouse gas emissions by 2050? Should it provide incentives for state and local governments that help meet these objectives, with greater incentives afforded those that exceed average expectations?

Such an approach would call on the full range of available state and local strategies, respect regional geographical and economic differences, and benefit from the innovation that comes from state and local experimentation. Federal legislation could set climate change mitigation and adaptation goals, create standard baseline calculation methods and monitoring systems, recommend various strategies and practices, and then establish procedures for engaging professionals, developers, building owners, energy technicians, energy-efficiency advocates, and informed citizens in discussions about how to meet national emission reduction and energy-efficiency goals. Funding could be allocated to those local governments most motivated to act to support initiatives that suit local conditions and capacities. Federal and state resources could be targeted more strategically, rather than be devoted to code enforcement in communities that resist cooperating with the federal regime.

Title II of Waxman-Markey focuses on energy code enhancement and enforcement. Energy-efficiency codes do not deal with building orientation, integrated building design, or post-construction building management. Local sustainable development laws and protocols can. Energy-efficiency codes do not encourage wind turbines and solar panels on buildings, but local laws and protocols can. Energy codes do not provide for microturbines, geothermal heating and cooling, combined heat and power, or district energy systems, but local laws and protocols can. The list goes on. It includes all the techniques currently employed by local governments to achieve sustainable development, which will be explored in the next issue of *Planning & Environmental Law*.

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