

CHAPTER 1

URBAN
DEVELOPMENT
PATTERNS AND
SMART GROWTH
POLICIES

Despite the widespread adoption of smart growth principles (see box 1.1), there has been little systematic assessment of their effectiveness or consequences. To fill this need, the Lincoln Institute of Land Policy collaborated with 14 of the country's leading public policy researchers and planners to measure performance in four states with statewide smart growth programs (Florida, Maryland, New Jersey, and Oregon) and performance in four states without such programs (Colorado, Indiana, Texas, and Virginia). The analysis begins with the 1990s, the first decade for which detailed, consistent data are available.

This introductory chapter sets the stage for the evaluation with a brief review of long-term urban growth patterns in the United States, and describes the evolution of state policies from an anti-growth to a growth-accommodating stance.

URBAN GROWTH PATTERNS

Low-density development at the urban periphery has been endemic since World War II. Over recent decades as concerns

Box 1.1 Ten Smart Growth Principles

1. Direct urban development to area where land is already served by existing infrastructure to avoid costly duplication of services.
2. Provide a variety of housing choice (especially affordable housing) by promoting mixed land use.
3. Ensure an equitable and predictable process in land development decisions.
4. Facilitate an adequate mix of transportation modes.
5. Improve environmental quality by conserving open space, farmland, and sensitive land areas.
6. Preserve local culture and natural environmental features in designing new development.
7. Promote stakeholder collaboration and community participation.
8. Design staged growth in urban fringes with compact development patterns.
9. Enhance access to public and private resources for all residents.
10. Revitalize existing urban and rural neighborhoods into safe and livable communities.

Source: Adapted from DeGrove (2005).

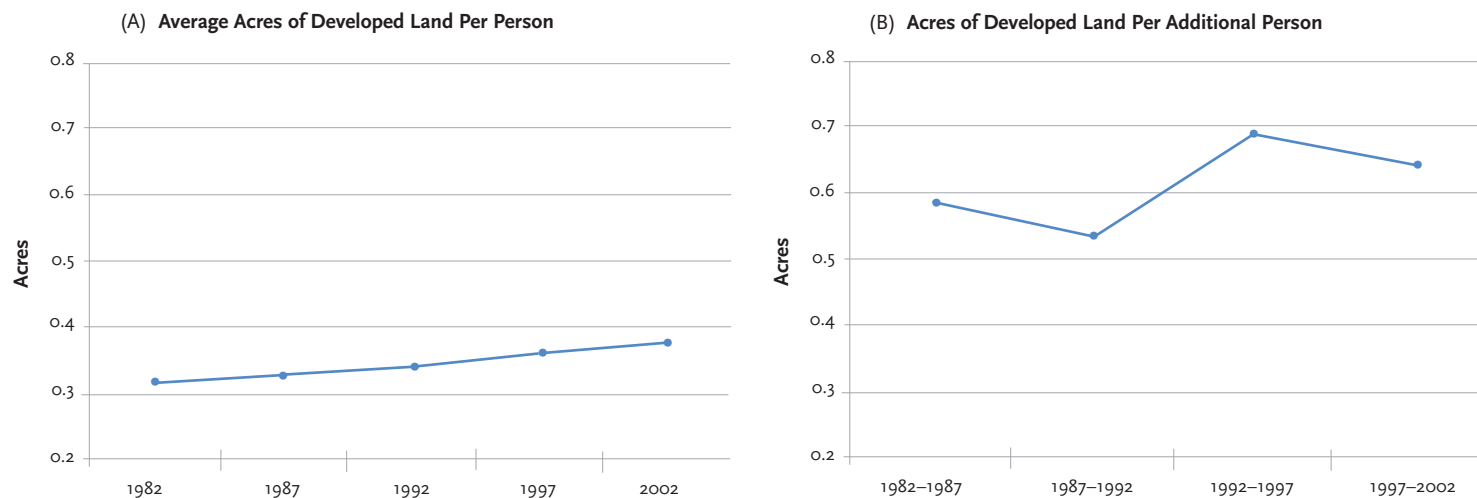
mounted about the economic, social, and environmental impacts of sprawl, many states and localities began to put policies in place to shape settlement patterns. By the 1990s, these efforts—intended to encourage more compact development, greater transit use, and enhanced environmental protection—came to be known as “smart growth” programs. While the meaning of this term continues to evolve, today’s sustainable development initiatives share many of the goals originally promoted by the smart growth movement.

While researchers and policy analysts agree that low-density developments have been expanding beyond urban areas, the scope and pace of this shift are less well known. As figure 1.1(A) shows, average developed land per capita in the United States increased from 0.32 acres in 1982 to 0.38 acres in 2002.¹ At the same time, however, figure 1.1(B) indicates that incremental land consumption (i.e., the amount of newly developed land per additional person) averaged about 0.6 acres—nearly twice the level of average land consumption.

Figure 1.2 illustrates how population and income growth have helped to drive up land consumption and reduce development densities. During the same 20-year period, the U.S. population increased by 24.2 percent and personal income by 77.2 percent, while the number of acres of developed land climbed by 46.3 percent. If developed land area rises in line with population, these growth rates imply that the income elasticity of demand for developed land is about 0.3. Glaeser, Kahn, and Rappaport (2008) estimate that the elasticity of demand for lot size with respect to household income ranges from 0.25 to 0.5 for single-family detached homes and apartments. In other words, if personal income doubles, lot size will expand by 25 to 50 percent and overall developed land by about 30 percent.

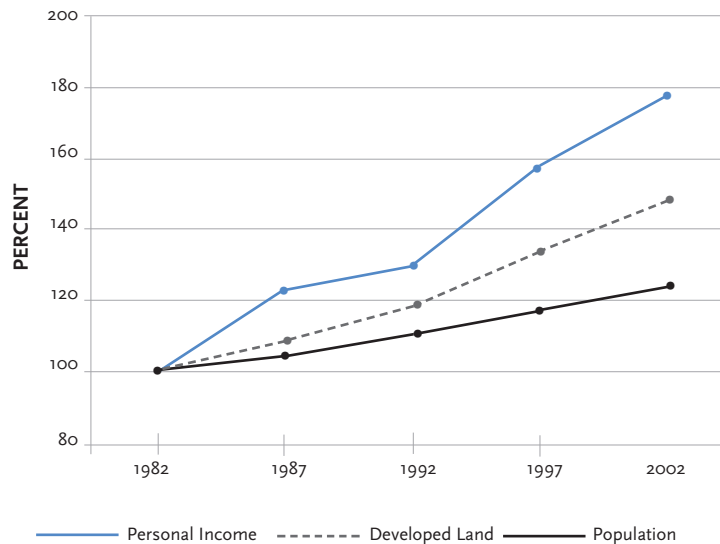
Spatial Gini coefficients provide another perspective on the deconcentration of the U.S. population. If the population were evenly distributed, the spatial Gini coefficient would be zero; if the population were concentrated in a single zone, it would be one. Increases in the spatial Gini coefficient over time

Figure 1.1 Change in Developed Land, 1982–2002



Sources: U.S. Department of Agriculture (2003); U.S. Census Bureau (2007).

Figure 1.2 Percent Growth in Personal Income, Developed Land, and Population, 1982–2002



Notes: Personal income is in 2005 dollars. Population and developed land estimates do not include Alaska.

Sources: U.S. Census Bureau (1990c; 2000c); U.S. Census Bureau (1990d; 2000d); U.S. Census Bureau (2007); and U.S. Department of Agriculture (1982; 1987a; 1992; 1997; 2003).

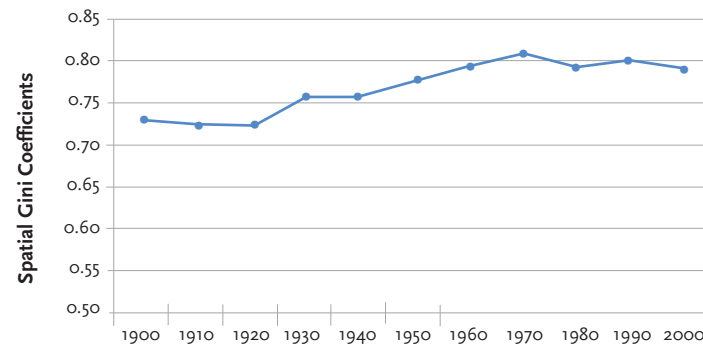
therefore indicate that the distribution of the population is becoming more concentrated, while decreases indicate that the pattern is becoming more dispersed (Ingram and Whitehead 2008).

The spatial Gini coefficients from 1900 to 2000 for the country as a whole, excluding Alaska and Hawaii, are presented in figure 1.3. Starting in about 1920, the concentration of population at the county level rose more or less steadily from 0.73 to 0.80. By 1970 overall concentration leveled off, just at the point when concerns about urban sprawl began to escalate.

REGIONAL DEVELOPMENT PATTERNS

Regional trends in population density are similar to but more diverse than the national trend. Table 1.1 details land consumption and development density by region in 1982–1992 and

Figure 1.3 Spatial Gini Coefficients for Population Concentration in the Lower 48 States, Based on County Data



Source: Ingram and Whitehead (2008).

1992–2003, while figure 1.4 shows average and incremental densities during the same two periods. The table data show that in 1982 average density in the Northeast (6.16 persons per acre) was more than twice that in the South (2.72 persons per acre) and in the Midwest (2.67 persons per acre), while density in the West (3.52 persons per acre) was in between. By 1992, the South, Midwest, and Northeast had low incremental densities (in the 0.90 to 1.77 persons per acre range) while the West had a higher density of 4.08 people per acre.

Between 1982 and 1992, the incremental density was lower than average density in all regions except the West, and it declined over time in all regions except the Midwest. Between 1992 and 2003, the Northeast had by far the highest average density and the lowest incremental density (see Fulton et al. 2001 for similar findings).

During these two periods, population growth and incremental density were not closely related. The Northeast experienced the slowest growth in population and developed area,

Table 1.1 Change in Land Consumption and Development Density by Region, 1982–1992 and 1992–2003

	Average Developed Acres per Person at Beginning of Period	Average Density at Beginning of Period (Persons per Acre)	Added Population (Millions)	Added Developed Acres (Millions)	Incremental Developed Acres per Person	Incremental Density Over 10 Years (Persons per Acre)
1982–1992						
West	0.28	3.52	9.89	2.43	0.25	4.08
Northeast	0.16	6.16	0.16	0.09	0.57	1.77
Midwest	0.37	2.67	2.14	2.38	1.11	0.90
South	0.37	2.72	10.44	7.10	0.68	1.47
1992–2003						
West	0.28	3.61	10.76	3.53	0.33	3.05
Northeast	0.18	5.49	0.17	0.21	1.21	0.82
Midwest	0.40	2.50	4.42	3.80	0.86	1.16
South	0.40	2.47	15.75	11.69	0.74	1.35

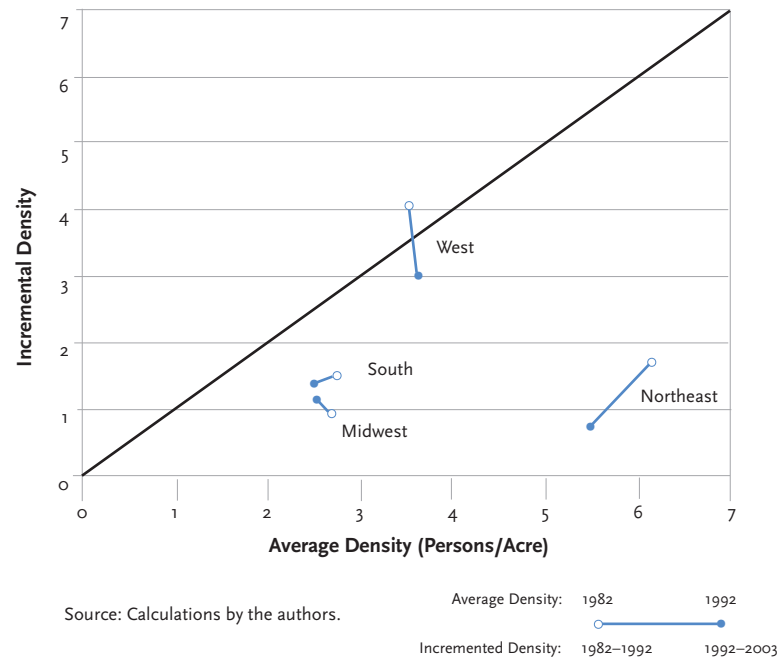
Sources: U.S. Census Bureau (2007); U.S. Department of Agriculture (2003).

and incremental density was low. The Midwest had the second slowest population growth, along with low average and incremental densities. The South gained the most population and continued its pattern of low density development. In contrast, the West saw rapid population growth but still managed to keep incremental densities higher than elsewhere in the country.

CHANGES IN STATE POPULATION DISTRIBUTION

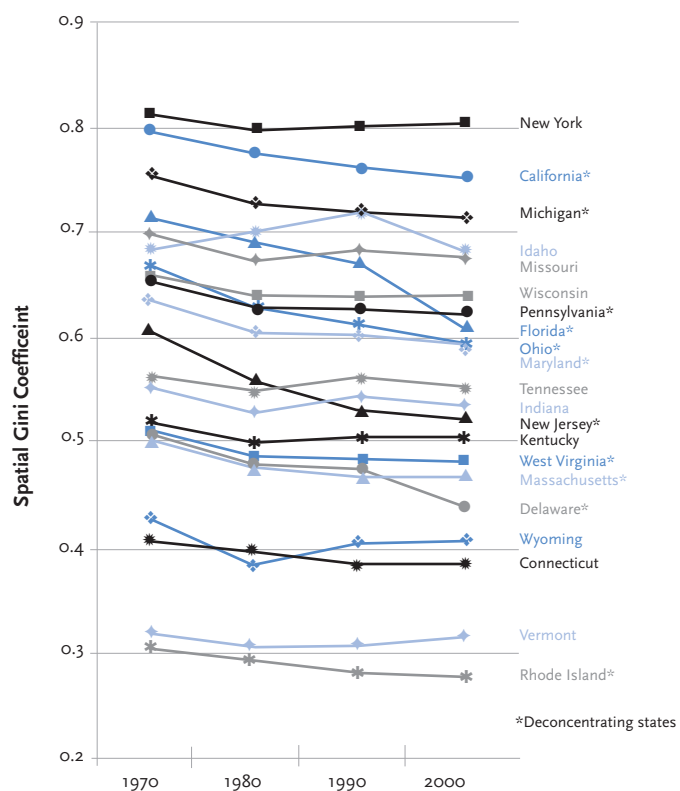
The sharp variation in the distribution of population is most apparent at the state level. Indeed, the populations of 27 states became more spatially concentrated at the county level between 1970 and 2000, while the distribution in 21 states became less concentrated. As figure 1.5 shows, 11 of these 21 states saw their population disperse steadily over the period. While this deconcentration appears to be independent of the pace of population growth and the state’s spatial Gini coefficient, high density states (such as California, Michigan, Pennsylvania, and Florida) seem more likely to experience population dispersal than low density states (such as Idaho and Missouri).

Figure 1.4 Change in Average and Incremental Densities of U.S. Regions, 1982–2003



These measures indicate that densities in the nation as a whole, as well as in many regions and states, have indeed fallen as growth in developed land area continues to outpace increases in population. This dispersion of the population—both within and across counties—has prompted some states to enact smart growth programs in an effort to limit urban and residential sprawl and its attendant effects. The potential negative impacts include increased costs of local infrastructure and service provision, transportation, land conservation, urban decay, and environmental pollution. The balance of this chapter describes the history of state programs that attempt to address these issues.

Figure 1.5 Spatial Gini Coefficients for 21 Selected States, 1970–2000



Source: Ingram and Whitehead (2008).

THE EVOLUTION OF SMART GROWTH

This study defines “smart growth” as a family of related policies with similar goals that have evolved over time. As such, the term refers not only to the latest incarnation of policies originally known as “land use control” and “growth management,” among others, but also to the movement itself. This movement reflects a more or less continuous process of state land use policy development that began sometime before 1970 and continues today. Although different states join or exit the smart growth movement and policy priorities shift over time, the essential coherence of these programs has persisted.

The antecedents of smart growth were environmentally driven, regional planning friendly land use programs that extended to the substate, state, and even federal levels, although proposals for national land use legislation were short-lived. Instead, national legislation focused on clean air, clean water, and coastal zone management, all of which required states to adopt a higher level of planning.

The roots of smart growth go back to the regionalists of the 1920s and national resource planning of the Progressive Era. But it was the seminal work of Fred Bosselman and David Callies (1971) in *The Quiet Revolution in Land Use Control* that marks the beginning of the smart growth movement we know today. Their book was prepared at the behest of the Council on Environmental Quality, the oversight body created by the National Environmental Policy Act of 1969. The environmental underpinnings of the movement are evident in groundbreaking state legislation such as the Vermont Environmental Control Law, the San Francisco Bay Conservation and Development Commission, the Massachusetts Wetlands Protection Program, and the Wisconsin Shoreland Protection Program.

John DeGrove (1984; 1992; 2005) developed a “three-wave” model to chronicle the evolution of this movement from growth management policies in the 1970s to contemporary notions of smart growth. In the first wave during the 1970s, seven states enacted growth management programs as a way to advance environmental protection. These programs were based on the regulation of land development either throughout the

state or within specially designated zones. Of these states, only Oregon and Hawaii had truly comprehensive statewide programs. In California and North Carolina, the programs were limited to coastal areas. In Vermont, Florida, and Colorado, the focus was on developments of regional impact and areas of critical state concern. Just two of these first-wave states, Florida and Oregon, remain identified as smart growth states today.

The second wave, from the 1980s into the early 1990s, marked a shift from controlling growth to planning for growth. In the words of Maryland's Economic Growth, Resource Protection, and Planning Act of 1992, this was a period when planning was aimed at "furtherance of a specific economic growth and resource protection policy," and responsibility for important public policies was reallocated among state, regional, and local governments (DeGrove 1992). It was also a period when the deployment of infrastructure became more important as a land use planning tool. DeGrove's second-wave states are Florida, New Jersey, Maine, Vermont, Rhode Island, Georgia, and Washington.

DeGrove (2005) calls the third wave, beginning in the late 1990s, the "shift to smart growth." With a renewed emphasis on economic development, this stage arguably marked the evolution from an anti-growth to a growth-accommodating movement. Statewide efforts moved away from land use regulation, urban growth boundaries, and requirements for local comprehensive plans. They focused instead on policies to revitalize cities; reform local zoning to encourage compact development and infill; coordinate state agencies and their growth policies; and overhaul capital investments to align with a sustainable agenda.

Maryland's landmark smart growth initiative, passed by the state legislature in 1997, became a national model with its system of incentives and disincentives to preserve open space and farmland while also concentrating development in urban areas rich in infrastructure. The third wave brought several additional states into the fold, among them Minnesota, Utah, Pennsylvania, and Tennessee. This period also saw the "Fix It First" programs in Massachusetts, Pennsylvania, Michigan, and Ohio, which called for investments to keep existing infrastructure in good repair before constructing new roadways.

Following a political and cultural backlash in some parts of the country—fueled by property rights advocates, Libertarian groups, and interests aligned with suburban development patterns—the term "smart growth" began to fall out of favor. Instead statewide initiatives were aimed at "livable communities," "community design," "quality of life," or "sustainability." At the same time, smart growth advocates began to place greater emphasis on action at the local, metropolitan, and regional levels, and less on the hegemony of statewide programs.

SMART GROWTH TODAY

The Massachusetts model illustrates the latest approach to smart growth. In 2003 Governor Mitt Romney established the Office for Commonwealth Development to coordinate the major state agencies with a role in growth and development, including housing, transportation, energy, and the environment. The Commonwealth Capital system scored cities and towns on their smart growth efforts. Those with high ratings had preference in receiving \$500 million in state funding for local infrastructure and economic development projects. As an incentive for more compact and dense development, the state passed legislation in 2004 that provides additional funding to communities that amend zoning to allow higher density housing near transit, town centers, and other smart growth locations.

The legislation also required that 20 percent of new housing developments in these areas be affordable. Commonly referred to as 40R, the smart growth zoning legislation provides a community between \$10,000 and \$600,000 in unrestricted funds up front, plus an additional \$3,000 for every dwelling unit that is built. As of January 2008, 22 out of 351 cities and towns had received approval for 40R districts. Additional financial incentives were added for the education of school-age children. Other states have implemented a variety of similar policies with a mix of restrictions and incentives (see box 1.2)

Metropolitan and regional efforts to implement smart growth policies include Envision Utah, a citizen-based planning program in the Salt Lake City area. In Denver, for example, voters approved a \$4.1 billion light-rail network predicated on

Box 1.2 Smart Growth Policies in Selected States

Pennsylvania Governor Edward Rendell launched a statewide smart growth program shortly after being elected in 2002 to redirect sprawl from green-field sites to established cities. Rendell provided over \$500 million in a Business in Our Sites program for economic development and water and sewer infrastructure improvements in urban neighborhoods, as well as tax relief for brownfield reclamation opportunity zones. He also proclaimed a Fix It First policy barring construction of new roadways until existing infrastructure was in satisfactory repair.

Michigan Governor Jennifer Granholm in 2002 campaigned on revitalizing the state's cities and older suburbs as the key to economic well-being. Her smart growth policies to slow the rapid consumption of farmland and open space for suburban development were described as "quality of life investments," linking environmental protection, transportation, land conservation, and urban investment. Supporting programs for these goals include a Land Use Leadership Council, a Cool Cities effort to revitalize Michigan's cities, and a Fix it First policy. By 2005, however, the governor's office shifted emphasis from statewide smart growth initiatives to policy priorities that would address the economic downturn.

Virginia Governor Tim Kaine took on the issue of rapid population growth and sprawling development patterns in his 2005 campaign. In 2007 the State Legislature passed the \$3 billion Comprehensive Transportation Funding and Reform Act, which included significant land use planning reforms. For example, all large counties are required to designate specific areas for higher-density development, employ pedestrian-friendly, New Urbanism design principles, and implement impact fees.

Arizona Governor Janet Napolitano made sprawl a major theme of her second term beginning in 2006, emphasizing a Tucson–Phoenix rail link and other transit projects, and establishing a Growth Cabinet composed of state

officials from 13 agencies engaged in development issues. She directed the group to integrate land use and infrastructure planning and development while considering the effects on water quality, air quality, and wildlife. In 2004, voters in the state approved the first 57 miles of the Valley Metro light-rail project, the first section of which was set to open in December 2008. The \$1.4 billion, 20-mile light-rail line extended from northwest Phoenix, through downtown and the airport, and on to Tempe and Mesa southeast of Phoenix.

In Connecticut, Governor M. Jodi Rell issued an executive order establishing the Office of Responsible Growth in 2006 to coordinate state agencies, including economic development, to work on an agenda of clean water, recreation, and natural heritage programs; brownfield remediation; and open space and farmland preservation. Her stated goal is to create more attractive, livable, economically strong communities while protecting natural resources.

Since 2000 several states have made more targeted efforts. South Carolina passed legislation modifying minimum acreage requirements and other site guidelines for the construction of new schools. Illinois offers incentives for workforce housing and the location of housing near major employers. The State Legislature also passed the Green Neighborhood Grant Act, providing subsidy and financial incentives for energy-efficient, environmentally sustainable, pedestrian-friendly communities. Rhode Island offers tax incentives for the redevelopment and adaptive reuse of historic properties and for construction of affordable housing, along with new requirements for local comprehensive plans and brownfield remediation.

Sources: Napolitano (2007); Schneider (2007).

transit-oriented development at all stations. The Denver area also has promoted so-called "greyfields" redevelopment of deteriorating shopping malls and of the former Stapleton Airport, as well as a voluntary growth boundary as part of its Mile High Compact.

NEW RATIONALES FOR SMART GROWTH

The climate change crisis, soaring energy costs, and a new emphasis on investments in public works infrastructure have

bolstered the argument for smart growth initiatives. With the link between automotive travel and greenhouse gas emissions firmly established, efforts to encourage more compact development patterns have gained new priority.

California is seen as a leader in this regard. In 2006, Governor Arnold Schwarzenegger signed the Global Warming Solutions Act (AB32), a pledge to reduce greenhouse gases by 25 percent by 2020. In 2008 the state legislature passed SB375, which spells out a process for land use planning and regional

transportation policies to implement the goals of AB32 in lowering greenhouse gas emissions. SB375 puts incentives in place for metropolitan regions to reduce pollution from cars and trucks by calculating how those emissions would vary under different development scenarios. In 2007 California's attorney general filed a lawsuit charging that San Bernardino County's land use policies continued to encourage sprawl and thwarted any chance of reaching the emissions reduction goals.

Until the recent awareness about the impact of land use patterns on global warming, the question was whether the incentive-based programs characteristic of the third wave of smart growth could achieve the same dramatic effects as Oregon-style regulatory approaches. Now, however, the threat of climate change may bring a return to the more command-and-control structure of the Clean Air Act.

Major development projects are increasingly subjected to regulatory scrutiny on the amount of stationary and mobile-source greenhouse gas emissions they will generate. For example, in August 2008 Massachusetts Governor Deval Patrick signed the Global Warming Solutions Act, which included a pro-

vision authorizing the Massachusetts Environmental Protection Agency to require analysis of emissions associated with large projects that need a state permit and the filing of an Environmental Impact Report.

In summary, a possible fourth wave of smart growth policies is emerging. States are expected to turn to land use planning to help achieve emissions reduction goals; a new regulatory regime will benefit development proposals that adhere to a smart growth framework; and market forces may also encourage more compact, mixed-use development as households attempt to limit their travel costs and achieve other energy savings. The findings of this study should help to guide decisions about the designs of new policy initiatives and regulatory regimes.

Note

1. The census definition of urbanized land area has changed several times, making comparisons unreliable. This discussion therefore focuses on developed land area.