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NEWS & ANALYSIS

ARTICLES

Smart Growth and Innovative Design: An Analysis of the New Community

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In the early 19th century, most metropolitan areas were compact, with strong downtown areas that provided not only retail, government, and other services, but also a variety of cultural activities.¹ Although some of rich society lived in rural areas to escape the city's crime and health hazards,² the demarcation between city and countryside was clear.³ Most people were forced to live and work in one area because of the lack of reasonable transport between city and country.⁴ It was not until the railroad linked the city to the countryside that suburbs began to develop.⁵

The first areas that grew outside the central city were intended for the rich, with large homes built in secluded areas that maintained the quiet beauty of the countryside and excluded industrial use.⁶ By the late 19th and early 20th century, suburbs began to develop more rapidly as cities grew from an influx of immigrants and new forms of public transportation.⁷ The streetcar, for example, could transport more people and cover more ground, thereby enabling those with a more moderate income to work further from

1. TOM DANIELS, WHEN CITY AND COUNTRY COLLIDE: MANAGING GROWTH IN THE METROPOLITAN FRINGE 20 (1999); ERIC H. MONKKONEN, AMERICA BECOMES URBAN: THE DEVELOPMENT OF U.S. CITIES AND TOWNS 1780-1980, at 43 (1988); KENNETH T. JACKSON, CRABGRASS FRONTIER: THE SUBURBANIZATION OF THE U.S. 14-15 (1985).

2. DANIELS, *supra* note 1, at 20. As Prof. Tom Daniels explains:

To Americans in the early 1800s, a rural estate was something to admire and even aspire to own. The nation knew well of George Washington's Mount Vernon and Jefferson's Monticello. English peers and landed gentry and those of continental Europe had long lived in stately houses, chateaux, and castles. The countryside was quiet, green, and spacious. By comparison, cities were notorious for their crime, filth, and plagues. Poverty led to thievery, burglary, and begging. Public sanitation was sorely lacking. Crowded, dirty living conditions gave rise to tuberculosis. Polluted drinking water supplies brought on raging epidemics of cholera and typhus. Dolly Madison, wife of the fourth president, lost her first husband to a yellow fever epidemic in Philadelphia in the 1790s.

Id.

3. *Id.*

4. *Id.*

5. Although a few suburbs did exist, they were mainly independent communities that grew alongside the growing eastern cities. *Id.* at 20-21.

6. *Id.* at 21.

7. *Id.*

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where they lived.⁸ The advent of the mass-produced automobile after World War I made suburban living even more attainable, and by the 1920s every major city was surrounded by suburbs.⁹

By the end of World War II, a more complex network of roads continued to develop¹⁰ and automobile ownership became common. Transportation by automobile became preferable to public transportation,¹¹ and as suburban areas grew further away from jobs and shopping, automobile transport became almost essential.¹² With the creation of highways linking outlying areas to urban centers and the resultant decrease in commuting time, the desirability of suburban life increased.¹³

Suburban construction multiplied at a faster rate as the average household income rose, people sought larger homes, and home financing became more widely available.¹⁴ Single use zoning and density regulations sprawled construction by separating land-consumptive single-family housing from other uses and prohibiting compact design.¹⁵ Suburban areas began to grow in rings around the central core of the city, a new ring developing as the previous ring aged, grew in population, and lost its appeal.¹⁶ Suburbs also began to move further from the cities to escape annexation and taxes.¹⁷ Suburban populations multiplied as city residents sought a higher quality of life in the country.¹⁸ Even many of those who already lived in the suburbs

began to move further from the city as their chosen suburban ring became an undesirable location. As one commentator explained:

[P]eople moved out of cities and into immediately surrounding areas that promised cleaner air, better schools, and more open space. Eventually, these areas filled with people, cars, over-development, and “urban” problems. Residents who were unhappy and could afford to leave moved again, this time to a ring of development still further out from the center. But it was not long before this ring also became crowded with people, cars, over-development, and “urban” problems. Those who could afford to move did so again. Suburbanization is like a race that no one will ever win. Each move out from the center will inevitably be unsatisfying and require another move.¹⁹

This process of suburban growth, commonly referred to as urban sprawl,²⁰ has become a way of life around major United States cities. Although the initial outward move from a city’s central core may have been based mostly on population growth, affluence, and transportation accessibility, sprawled growth today is based largely on highway policy and unwise land use practices.²¹ Suburban growth has rapidly escalated to a point where suburban inhabitants now make up over one-half of metropolitan populations.²² Whereas new suburban rings surrounding a city used to take years to complete, suburban rings now seem to develop annually.²³ Indeed, one commentator notes that suburban growth has grown 10 times faster than the populations of urban centers,²⁴ and continued growth is expected for at least the next 25 years.²⁵

8. *Id.* (“The streetcar suburbs were noteworthy because they were fundamentally middle-class, not elite, enclaves. Houses were commonly built on uniform long and narrow lots. But more important, the streetcar suburbs truly underscored the separation of where people lived from where they shopped and worked.”).

9. *Id.* at 23; JACKSON, *supra* note 1, at 175.

10. Federal legislation in 1921 provided subsidies to state highway departments greatly increasing the number and quality of roads. See Federal Road Act of 1921, 42 Stat. 212 (1921); see also DANIELS, *supra* note 1, at 23 (noting that “[b]etween 1956 and the early 1970s, 42,500 miles of high-speed, interstate highways were paved” and suburban living became even more accessible and popular with the creation of beltways and “ring roads”). For a discussion of the rise of the highway system, see Michael Lewyn, “*Thou Shalt Not Put a Stumbling Block Before the Blind*”: *The Americans With Disabilities Act and Public Transit for the Disabled*, 52 HASTINGS L.J. 1037, 1046-48 (2001).

11. DANIELS, *supra* note 1, at 23.

12. Lewyn, *supra* note 10, at 1040-41.

13. ROBERT H. FREILICH, FROM SPRAWL TO SMART GROWTH: SUCCESSFUL LEGAL, PLANNING, AND ENVIRONMENTAL SYSTEMS 2 (1999).

14. U.S. GENERAL ACCOUNTING OFFICE (GAO), COMMUNITY DEVELOPMENT: EXTENT OF FEDERAL INFLUENCE ON “URBAN SPRAWL” IS UNCLEAR 6-7 (1999) (GAO/RCED-99-87) [hereinafter COMMUNITY DEVELOPMENT]; FREILICH, *supra* note 13, at 2; ROBERT H. FREILICH & BRUCE G. PESHOFF, *The Social Costs of Sprawl*, 29 URB. LAW. 183, 186 (1997). For an informative discussion of the favorable mortgaging practices existing after creation of the Federal Housing Administration mortgage insurance program, see Michael Lewyn, *Suburban Sprawl: Not Just an Environmental Issue*, 84 MARQ. L. REV. 301, 305-07 (2000).

15. See *infra* notes 201-04.

16. Freilich & Peshoff, *supra* note 14, at 184 (noting the post-World War I suburban growth outward from central city cores); Paul Skanton Kibel, *The Urban Nexus: Open Space, Brownfields, and Justice*, 25 B.C. ENVTL. AFF. L. REV. 589, 594-95 (1998) (noting the irony that “the very characteristics that drew people to the first generation of suburbs began to disappear as more and more people moved out of the city”).

17. DANIELS, *supra* note 1, at 21-22.

18. ROSE A. KOB, *Riding the Momentum of Smart Growth: The Promise of Eco-Development and Environmental Democracy*, 14 TUL. ENVTL. L.J. 139, 141 (2000).

19. *Id.* at 141.

20. A loose definition for urban sprawl is low-density, noncontiguous, auto-dependant development encompassing both residential and non-residential uses and surrounding metropolitan areas. JANICE C. GRIFFITH, *The Preservation of Community Green Space: Is Georgia Ready to Combat Sprawl With Smart Growth?*, 35 WAKE FOREST L. REV. 563, 565 (2000); ROBERT W. BURCHELL & NAVEED A. SHAD, *The Evolution of the Sprawl Debate in the United States*, 5 HASTINGS W.-NW. J. ENVTL. L. & POL’Y 137, 141 (1999); JEREMY R. MEREDITH, *Sprawl and the New Urbanist Solution*, 89 VA. L. REV. 447, 449 (2003).

21. See *supra* notes 184-204 and accompanying text; Meredith, *supra* note 20, at 448-49 (distinguishing sprawl from normal suburban growth caused by increased populations); see also F. KAID BENFIELD ET AL., SOLVING SPRAWL: MODELS OF SMART GROWTH IN COMMUNITIES ACROSS AMERICA 3 (2001) (noting that “[b]etween 1960 and 1990, the amount of developed land in metro areas more than doubled, while the population grew by less than half”); DANIELS, *supra* note 1, at 6 (“In 1993, the largest city in most major metropolitan regions did not contain even half of the region’s population and covered only a small proportion of the region’s territory.”); DAVID GOLDBERG, COVERING URBAN SPRAWL: RETHINKING THE AMERICAN DREAM (1999) (“Sprawl is occurring when, as in most metro areas, suburban expansion consumes more land at a faster rate than population grows, even as central cities and inner suburbs decline.”).

22. Burchell & Shad, *supra* note 20, at 139 (noting that suburbs represent more than 60% of metropolitan populations); see also Georgette C. Poindexter, *Collective Individualism: Deconstructing the Legal City*, 145 U. PA. L. REV. 607, 613 (1997) (“In 1940, over one-half of Americans lived in rural areas; more than twice as many lived in the central cities of metropolitan areas as lived in the suburbs. By 1970, the suburbs had surged ahead and, for the first time, had a greater population than either the cities or rural areas.” (footnotes omitted)).

23. Kob, *supra* note 18, at 141 (noting that “previously the ring cycles took a generation or two to complete, [but] they now occur nearly every year”).

24. *Id.* at 141 n.9 (citing F. Kaid Benfield, *Once There Were Greenfields*, F. APPLIED RES. & PUB. POL’Y, Oct. 1, 1999, at 6).

25. Burchell & Shad, *supra* note 20, at 139 (citing Arthur C. Nelson & Thomas W. Sanchez, *Exurban and Suburban Households: A Departure From Traditional Location Theory*, 8 J. HOUSING RES. 1 (1997)).

As sprawl continues today, the concerns relating to its impacts have heightened, and it has become of intense interest to both academics and local governments. Sprawl has created a variety of problems, which only become greater as the cycle of sprawl continues. The current response to sprawl is the subject of this Article. Part I sets out the problem of urban sprawl, discussing its economic, social, and environmental impacts. Part II follows up with an analysis of the main causes of sprawl, focusing on damaging governmental subsidies and zoning regulations. The Article continues in Part III with a description and analysis of the current means of addressing sprawl—creating a new community through the means of smart growth and innovative development, such as New Urbanism, conservation subdivisions, and low-impact development. Part IV ends the Article with a discussion of the continuing challenges that face creating this new community.

I. Sprawl-Induced Problems

To understand the need for change, it is important to understand the problems that sprawl creates. As populations have moved away from the urban core, sprawled development has continued to radiate outward, creating a variety of economic, social, and environmental issues. Any effective response to sprawl must somehow address and lessen these impacts.

A. Economic Impacts

Sprawled communities have three basic economic impacts on local governments—increased costs of public services, loss of a tax base, and urban core deterioration.²⁶ Although these impacts are intertwined, each having an impact on the other, they are discussed separately below.

1. Public Services

As an area's population reaches a critical mass, additional public services are required. A local government must provide new infrastructure, such as roads and bridges, schools, utilities, and police and fire departments, to service the growing population.²⁷ Infrastructure, of course, places a great cost on local governments and taxpayers, and creation of additional infrastructure multiplies that cost.²⁸ Although local governments might try to justify their decisions to approve sprawled development with a projected increased tax base, the cost of creating additional infrastructure greatly outweighs the revenue generated by new development.²⁹

26. Kob, *supra* note 18, at 143; Patrick Gallagher, *The Environmental, Social and Cultural Impacts of Sprawl*, 15 NAT. RESOURCES & ENV'T 219, Spring 2001, at 223; Meredith, *supra* note 20, at 449.

27. DANIELS, *supra* note 1, at 147; Robert W. Burchell, *Economic and Fiscal Costs (and Benefits) of Sprawl*, 29 URB. LAW. 159, 161-62 (1997).

28. DANIELS, *supra* note 1, at 148 (relating an example where a county paid \$5 million to expand a sewage treatment plant because of population growth and five years later paid another \$10 million to further expand the plant as growth continued); Thomas Benton Bare III, *Recharacterizing the Debate: A Critique of Environmental Democracy and an Alternative Approach to the Urban Sprawl Dilemma*, 21 VA. ENVTL. L.J. 455, 468 & n.73 (2003) (noting the "huge" cost of infrastructure and giving examples of such costs).

29. Michael J. Stewart, *Growth and Its Implications: An Evaluation of Tennessee's Growth Management Plan*, 67 TENN. L. REV. 983, 999

The National Wildlife Federation, for example, notes that for every tax dollar paid, agricultural uses require only \$.37 in public services; new development, on the other hand, requires \$1.15.³⁰

Part of the reason for the great burden imposed by new infrastructure costs lies in the fact that public services in settled areas already exist. As a community grows, the local government must provide new services to the outlying areas while also maintaining preexisting services for settled areas.³¹ These preexisting services, for which payment may not yet be complete, must still be provided even when those areas become partially abandoned as residents move to outlying suburban rings.³² As further rings grow, additional infrastructure costs are created. This cycle of costs impacts not only the local government, but also the local economy. As Prof. Robert Burchell explains:

The dual costs of (1) providing new infrastructure for those who are moving outward, and (2) maintaining the old infrastructure for the population and economic entities that are left behind, cause taxes and development costs to rise throughout the metropolitan area. These dual costs, in turn, cause a regional rise in the costs either to do business or to reside in the area. As a result, wage and product costs increase and companies and regions become less competitive. The reality of unplanned growth brings about a type of economic triage wherein a finite amount of money is allocated to prepare and access new areas while old areas are left to die. These are the middle-stage signs of a region that is becoming non-competitive and whose end state is a major loss of economic tenants.³³

Studies have shown three basic reasons for increased infrastructure costs. First, new development usually occurs in undeveloped areas. Therefore, rather than utilizing existing services, the development must have new services since none exist in that area.³⁴ Second, when those services are provided, they are generally at a greater cost because services for low-density development costs more than services for high-density development.³⁵ Indeed, as Professor Burchell notes, numerous studies have shown that large-lot single-family development not only causes public service costs to be excessive, it also increases residential housing and occupancy costs as well.³⁶ Finally, sprawled develop-

(2000) (noting examples in California and Virginia where costs for infrastructure outweigh revenues from taxes); National Wildlife Fed'n, *Smart Growth and Wildlife: Unfair Treatment of Taxpayers*, at <http://www.nwf.org/smartgrowth/taxpayers.html> (last visited July 25, 2003) [hereinafter *Unfair Treatment*].

30. *Unfair Treatment*, *supra* note 29.

31. Burchell, *supra* note 27, at 161-62.

32. *Id.*

33. *Id.* at 162-63.

34. Meredith, *supra* note 20, at 454.

35. *Id.* ("Costs of capital improvements for lower-density developments are greater than those of higher-density equivalents, because sprawled development requires more miles of roads, water pipes, sewer lines, and other infrastructure to serve the same number of people."). Although a local government might be able to contain costs of new infrastructure, the amount reduced will depend on how much the government can rely on preexisting services and how much of the cost can be recouped from developers through exactions. *Id.* at 455.

36. Burchell, *supra* note 27, at 165 (citing ROBERT W. BURCHELL ET AL., NEW JERSEY OFFICE OF STATE PLANNING, IMPACT ASSESSMENT OF THE NEW JERSEY INTERIM STATE DEVELOPMENT AND REDEVELOPMENT PLAN, REPORT III: RESEARCH FINDINGS (1992);

ment uses public services inefficiently, rather than utilizing economies of scale, which would reduce the number of public service facilities required.³⁷

2. Taxes

Taxes, especially property taxes, form the basis of municipal funds for providing public services.³⁸ Urban sprawl impacts a municipality's tax base in two ways. First, municipal governments lose a portion of their tax base as residents—especially wealthy residents—move from the urban center to suburban rings.³⁹ As commercial businesses and manufacturing facilities follow the population, the municipality loses an even greater portion of its tax base.⁴⁰ With the loss in revenue, the municipality either must raise taxes, which creates the possibility of losing even more of its tax base, or lower the quality of its services, which leads to degeneration of the urban core.⁴¹

Second, reliance on taxes for revenue creates incentives for further urban sprawl through the municipality's tendency to use "fiscal zoning." As Prof. Tom Daniels explains:

Fiscal zoning occurs when local governments zone land to encourage developments that will generate more in property taxes than they demand in services. The competition among communities and counties for stores, offices, gas stations, restaurants, factories, and high-value residential property tax "ratables" drives much of the struggle over land in the fringe. Property taxes commonly are lower on county or township land outside of incorporated cities and towns, because there are fewer public services to pay for . . . [L]and costs are lower and the appreciation potential of real estate is often greater than in core cities and older suburbs. Thus, both businesses and households have strong incentives to locate in the metro-fringe countryside.⁴²

Because of the better opportunities offered by locating in outlying areas, businesses and residences escape the high taxes of the center city, but still receive the infrastructure benefits provided by the municipality.⁴³ However, as the suburb grows, the tax rates in that area will increase to help support the additional infrastructure needed to support the population,⁴⁴ which may lead to further sprawl as people and businesses leapfrog over the area to avoid the increased tax rate.

3. Urban Core Deterioration

A city's urban core begins to deteriorate as the population moves out to the suburban rings. Because those who can afford to move to the suburbs are generally upper or middle class, those who remain in the inner city tend to be the poor who can ill-afford to pay high taxes.⁴⁵ Further adding to the problem is the loss of jobs in the inner city. Inner-city businesses once provided ample employment opportunities to support low-wage earners. However, when businesses relocated to suburban areas, the jobs moved with them.⁴⁶ Because few low-wage earners have sufficient transportation to take them to suburban locations and public transportation to outlying areas is often lacking,⁴⁷ many inner-city workers are unemployed.⁴⁸

Unable to collect sufficient taxes from inner-city residents, the city's public services have suffered despite the need for greater services since it is those with low income who generally require greater health care and welfare support.⁴⁹ Even further burdening the city's coffers are the suburban commuters and visitors to the cities, neither of whom pay taxes but who still benefit from use of the core city infrastructure.⁵⁰ Thus, as city residents have continued their move to the suburbs, cities have become poorer (with most

ROBERT W. BURCHELL ET AL., NEW JERSEY OFFICE OF STATE PLANNING, IMPACT ASSESSMENT OF THE NEW JERSEY INTERIM STATE DEVELOPMENT AND REDEVELOPMENT PLAN, REPORT III: SUPPLEMENTAL AIPLAN ASSESSMENT (1992); REAL ESTATE RESEARCH CORP., THE COSTS OF SPRAWL: ENVIRONMENTAL AND ECONOMIC COSTS OF ALTERNATIVE RESIDENTIAL DEVELOPMENT PATTERNS AT THE URBAN FRINGE (1990); VIRGINIA BEACH GROWTH MANAGEMENT STUDY, CROSSROADS: TWO GROWTH ALTERNATIVES FOR VIRGINIA BEACH (1989); MARIE L. YORK, FLORIDA ATLANTIC UNIVERSITY-FLORIDA INTERNATIONAL UNIVERSITY JOINT CENTER FOR ENVIRONMENTAL AND URBAN PROBLEMS, ENCOURAGING COMPACT DEVELOPMENT IN FLORIDA (1989); TISCHLER & ASSOCIATES, INC., MARGINAL COST ANALYSIS OF GROWTH ALTERNATIVES—KING COUNTY, WASHINGTON (1994); JAMES DUNCAN ET AL., FLORIDA DEP'T OF COMMUNITY AFFAIRS, THE SEARCH FOR EFFICIENT URBAN GROWTH PATTERNS (1989)).

37. Meredith, *supra* note 20, at 455 ("Compact developments use few, larger facilities, while sprawled developments require more, smaller facilities to meet the needs of a dispersed population.").
38. DANIELS, *supra* note 1, at 140.
39. JACKSON, *supra* note 1, at 284-85; Freilich & Peshoff, *supra* note 14, at 186; Meredith, *supra* note 20, at 456.
40. Stewart, *supra* note 29, at 1000-01; Freilich & Peshoff, *supra* note 14, at 186.
41. Lewyn, *supra* note 14, at 353-55; Meredith, *supra* note 20, at 456-57.
42. DANIELS, *supra* note 1, at 140-41; *see also* Jonathan D. Weiss, *Preface: Smart Growth and Affordable Housing*, 12 J. AFFORDABLE HOUSING & COMMUNITY DEV. L. 165, 169 (2003) (defining fiscal zoning as "zoning to maximize tax benefits while minimizing tax burdens"). Fiscal zoning also results in the exclusion of smaller and multi-family homes because they will require greater public services than large-lot homes. *Id.*

43. *See* Stewart, *supra* note 29, at 998-99 (noting that, even where a developer contributes to infrastructure costs, costs of supporting the new development will still lie with established residents' taxes); *Unfair Treatment*, *supra* note 29 (noting that "agricultural land owners and taxpayers in already-settled areas unwittingly contribute financially to the sprawl-type developments they oppose").

44. Lewyn, *supra* note 14, at 355-56.

45. *Id.* at 353; Stewart, *supra* note 29, at 1001; Burchell, *supra* note 27, at 162; Freilich & Peshoff, *supra* note 14, at 190.

46. Prof. Michael Lewyn notes: "About 95% of the 15 million new office jobs created in the 1980s were in suburbs, and suburbs captured 120% of net job growth in manufacturing. Today, two-thirds of all new jobs are created in suburbs." Lewyn, *supra* note 14, at 302 (footnotes omitted).

47. *Id.* at 364; Meredith, *supra* note 20, at 458-59. Professor Lewyn notes:

In small cities like Macon, many jobs are inaccessible without a car either because the public transportation system does not reach major employers or because the buses stop running early in the evening. And even in the relatively transit-friendly Boston metropolitan area, just 32% of entry-level employers are within one-quarter mile of transit, 43% are within one-half mile, and 58% are within one mile. Just 14% of entry-level jobs can be reached by transit within an hour from Boston's poorer neighborhoods.

Id. (footnotes omitted).

48. Lewyn, *supra* note 14, at 364; Stewart, *supra* note 29, at 1001.

49. Stewart, *supra* note 29, at 1002; Peter Dreier, *American's Urban Crisis: Symptoms, Causes, Solutions*, 71 N.C. L. REV. 1351, 1371 (1993); Meredith, *supra* note 20, at 456.

50. Dreier, *supra* note 49, at 1371; Meredith, *supra* note 20, at 456.

large cities having poverty rates above national average)⁵¹ and now suffer increased “homelessness, violent crime, infant mortality, and crumbling infrastructure.”⁵² Even where attempts have been made to revitalize the central core, it remains “a struggling entity with no soft-goods retail anchors, no quality supermarkets or movie theaters, a downwardly mobile population, public school systems being replaced by private, and increasingly higher property taxes to pay for rising public service costs.”⁵³

B. Social Impacts

Along with economic impacts, urban sprawl has serious social impacts, including economic and racial segregation, disparity in educational opportunities, and psychological impacts on society.

1. Economic and Racial Segregation

At the top of the list is the economic and racial segregation that occurs as city populations have moved to the suburbs. As mentioned above, loss of business in the urban core has impacted the ability of inner-city residents to garner and maintain employment.⁵⁴ Not only are there fewer low-wage jobs available because of the urban business center’s shift to white-collar employment opportunities,⁵⁵ but the lack of reliable transportation impairs the inner-city residents’ ability to reach the suburban jobs that are available.⁵⁶ Concentrated poverty,⁵⁷ reduced public services, and other social problems result.⁵⁷

Sprawl has also helped fuel a racially segregated society.⁵⁸ Studies show that African Americans have a disproportionate likelihood of living in central cities than their

non-Hispanic white counterparts.⁵⁹ This segregation is the result of several forces: white flight,⁶⁰ wealth disparity; and denial of housing opportunities. Creation of the suburbs has enabled white residents to flee what they have perceived to be deteriorating conditions due to increases in minority populations in the central city and inner suburban rings.⁶¹ As businesses followed the moving population, employment opportunities decreased, creating poor inner-city residents without the means to move to the suburbs.⁶²

Even those minorities who have tried to move, however, have found it difficult because of limited housing opportunities. The Federal Housing Administration (FHA) has played a large role in racially segregating the inner city and the suburbs through its mortgage interest program, which preferentially provided mortgage insurance (and a resultant lower interest rate) for “low-risk areas,” that is, “areas that were thinly populated, dominated by newer homes, and without African-American or immigrant enclaves nearby—areas that disproportionately tended to be suburban.”⁶³ The Home Owners Loan Corporation also played a role in denying housing opportunities by “redlining” high-risk areas, which were the areas ignored by the FHA’s mortgage insurance program.⁶⁴ Sellers contributed to the problem by the inclusion of “restrictive covenants, buyer steering, [and] indirect or off-market sales (i.e., sales occurring by word-of-mouth).”⁶⁵

In addition, local governments have contributed to a racially segregated city by the enactment of exclusionary zoning. Exclusionary zoning is “a generic term for zoning restrictions that effectively exclude a particular class of per-

51. Lewyn, *supra* note 14, at 302 (“In 1960, central cities contained one-third of America’s poor people; by 1990, the central city share had climbed to one-half, and thirty-one of America’s thirty-seven largest cities had poverty rates above the national average.” (footnotes omitted)).

52. Meredith, *supra* note 20, at 457.

53. Burchell, *supra* note 27, at 162.

54. The loss of low-wage jobs affects not only the central city, but also the first-ring suburbs that suffer job loss as suburban decline sets in. Freilich & Peshoff, *supra* note 14, at 192.

55. Employment opportunities in the urban core have shifted from low wage to high wage because of the shift in business focus of urban centers:

[T]he American economy [has] moved from a goods-producing to a service-producing industry. In making this transformation, urban centers shifted from “centers of production and distribution of material goods to centers of administration, information exchange, and higher-order service provision.” As a result, jobs remaining in the downtown core require higher levels of education, which many city residents do not possess.

Meredith, *supra* note 20, at 458 (citing WILLIAM JULIUS WILSON, *THE TRULY DISADVANTAGED: THE INNER CITY, THE UNDERCLASS, AND PUBLIC POLICY* 39 (1987)).

56. Lewyn, *supra* note 14, at 364; Meredith, *supra* note 20, at 458-59.

57. See Meredith, *supra* note 20, at 459 (“In addition to creating a self-perpetuating effect, concentrations of low-income residents may aggravate problems associated with poverty such as high crime rates, welfare dependency, slum housing, and drug use.”).

58. For detailed discussions on the development of segregated housing, see Leland Ware, *Race and Urban Space: Hypersegregated Housing Patterns and the Failure of School Desegregation*, 9 WIDENER L. SYMP. J. 55, 57-59 (2002), and Deborah Kenn, *Institutionalized, Legal Racism: Housing Segregation and Beyond*, 11 B.U. PUB. INT. L.J. 35, 39-41 (2001).

59. Nancy A. Denton, *Are African Americans Still Hypersegregated?*, in *RESIDENTIAL APARTHEID: THE AMERICAN LEGACY* 49 (Robert D. Bullard et al. eds., 1994) (noting that “only about one-fourth of African Americans live in suburbs”); Robert D. Bullard et al., *Race, Equity, and Smart Growth: Why People of Color Must Speak for Themselves*, at <http://www.ejrc.cau.edu/raceequitysmartgrowth.htm> (last visited July 28, 2003) (noting that in the South in 1999, “[m]ore than half of African Americans live in central cities within metro areas (55.1[%]) versus one-quarter of non-Hispanic whites (22.5[%])”).

60. White flight is the term used to describe “the phenomenon where whites leave cities that become integrated too quickly for their comfort, and move to the suburbs because they wrongly fear that the urban centers will deteriorate because of the growing African American population.” Alicia L. Mioli, Sheff v. O’Neill: *The Consequences of Educational Tablescraps for Poor Urban Minority Schools*, 27 FORDHAM URB. L.J. 1903, 1921 n.158 (2000) (citing John O. Calmore, *Spatial Equality and the Kerner Commission Report: A Back-to-the-Future Essay*, 71 N.C. L. REV. 1487, 1492 (1993)).

61. Daniel J. Hutch, *The Rationale for Including Disadvantaged Communities in the Smart Growth Metropolitan Development Framework*, 20 YALE L. & POL’Y REV. 353, 354 (2002).

62. Those who cannot afford to leave are then “forced to find ‘affordable’ or subsidized housing in geographically constrained areas,” which is often the inner city. Freilich & Peshoff, *supra* note 14, at 189.

63. Lewyn, *supra* note 14, at 305-06; see generally Joshua L. Farrell, *The FHA’s Origins: How Its Valuation Method Fostered Racial Segregation and Suburban Sprawl*, 11 J. AFFORDABLE HOUSING & COMMUNITY DEV. L. 374, Summer 2002, at 379-82.

64. Lewyn, *supra* note 14, at 306.

65. Freilich & Peshoff, *supra* note 14, at 189; see also Ware, *supra* note 58, at 58-61 (discussing the rise and fall of racial covenants). For a detailed discussion on the development of segregated housing, see Ware, *supra* note 58, at 57-59. For an argument that race-based home selling continues to persist despite the Fair Housing Act, see generally Reginald Leamon Robinson, *White Cultural Matrix and the Language of Nonverbal Advertising in Housing Segregation: Toward an Aggregate Theory of Liability*, 25 CAP. U. L. REV. 101 (1996).

sons from a locality by restricting the land uses those persons are likely to require.”⁶⁶ When a local government enacts zoning that prohibits multifamily housing or requires a minimum lot size, the government has excluded from those zones people who can only afford multifamily housing or who cannot afford the costs of a large-lot residence.⁶⁷

2. Educational Disparity

Schools and educational opportunities are also impacted by sprawl. Because property taxes form the basis for most school funding,⁶⁸ schools in poorer communities suffer because less money is available for education.⁶⁹ Unlike most suburban schools, urban schools are generally located in poorer areas, which places them at a financial disadvantage.⁷⁰ Urban schools also tend to educate a student body that is at a lower socioeconomic level⁷¹ and is disproportionately minority,⁷² especially in the larger cities,⁷³ educating “two-thirds of all African-American students, nearly [one-half] of other minority students, but less than [one-quarter] of white students.”⁷⁴ In comparison to suburban students, the educational needs of urban students (many of whom come from disadvantaged backgrounds) are much higher.⁷⁵ Indeed, students from lower socioeconomic backgrounds “suffer more from malnutrition and poor health care; lack of parental involvement and a nurturing, stimulating home environment; frequent changes of residence; and exposure to violence and drug use.”⁷⁶ These disadvantages require greater resources, and though some effort has been made to relieve the economic disparity between urban and suburban schools, the disparity still exists.⁷⁷

Because educational opportunities lead to better employment opportunities, those who attend inner-city schools are at a marked disadvantage in the job market later in life.⁷⁸ To get ahead, inner-city students must overcome not only the educational inadequacies brought on by poor school districts,⁷⁹ but also the self-fulfilling prophecies perpetuated by low expectations of the school system and influence from classroom peers. Schools located in poverty-stricken areas tend to operate with low expectations for the success of their students,⁸⁰ which can lead to students’ own similarly low expectations and poor performance. Indeed, studies show urban students generally perform lower on standardized tests⁸¹ and drop out of school at higher rates than suburban students.⁸² Further, urban students must fight the influence of their own peers and the “oppositional counterculture” that racial segregation creates.⁸³ The result is often the

66. Richard Thompson Ford, *The Boundaries of Race: Political Geography in Legal Analysis*, 107 HARV. L. REV. 1841, 1870 (1994).

67. See *id.* (noting that “exclusionary zoning takes the form both of restrictions on multi-family housing and of minimum acreage requirements for the construction of single-family homes (‘large-lot’ zoning)”).

68. Eric P. Christofferson, *Rodriguez Reexamined: The Misnomer of “Local Control” and a Constitutional Case for Equitable Public School Funding*, 90 GEO. L.J. 2553, 2554 (2002).

69. Kenn, *supra* note 58, at 48-49; Meredith, *supra* note 20, at 467-68.

70. Kenn, *supra* note 58, at 49-50 (noting that schools located in affluent suburban neighborhoods are much better off financially than urban or inner suburban ring schools); Meredith, *supra* note 20, at 467-68.

71. James E. Ryan, *Schools, Race, and Money*, 109 YALE L.J. 249, 285-86 (1999).

72. *Id.* at 272-73 (noting that, in 1990 and 1991 in the 47 largest urban school districts, white students accounted for only 25% of student enrollment, despite making up 70.7% of the nationwide student population, whereas African Americans and Hispanics accounted for 42.1% and 26.5% of the enrollment, respectively).

73. *Id.* at 273:

In 1995, 100% of the students in East St. Louis, Illinois, and Compton, California, were minority, as were 96% of the students in Washington, D.C., and Camden; 94% in Hartford, New Orleans, and San Antonio; 93% in Los Angeles, Oakland, Atlanta, and Paterson; 92% in Richmond; 91% in Newark and Jersey City; and 83% of the over one million students in the New York City public school system.

74. *Id.*

75. *Id.* at 285.

76. *Id.*

77. *Id.* at 285-86 (noting the existence of state programs that fund high poverty schools, federal funding under Title I of the original Elementary and Secondary Education Act, and state court recognition of at-risk students’ needs).

78. See Meredith, *supra* note 20, at 461 (noting that “the concentration of poverty propagates itself through the socio-economic environment” because poor communities “lack positive role models and networks to relay employment information, so youth in [those] areas possess limited examples and opportunities to escape poverty” (citing WILSON, *supra* note 55, at 56-57)).

79. Prof. James Ryan explains:

Part of the problem arises from the location and atmosphere of poor urban schools. They are often located in unsafe neighborhoods and experience levels of violence that exceed those of their suburban counterparts. This makes attracting the best teachers and administrators difficult because, all else being equal, teachers and administrators tend to choose schools that have pleasant and supportive environments. Given that salaries in suburban schools are often close to or exceed salaries in urban schools, it is not surprising that teachers and administrators who can choose their places of employment typically select suburban schools.

Ryan, *supra* note 71, at 294.

80. Meredith, *supra* note 20, at 467-68 (citing DOUGLAS S. MASSEY & NANCY A. DENTON, *AMERICAN APARTHEID: SEGREGATION AND THE MAKING OF THE UNDERCLASS* 141 (1993)); see also Ryan, *supra* note 71, at 295 (noting that “dedicated urban educators in [a system that takes better care of its employees than its students] ‘become outliers in a field of low expectations [and] many are eventually swallowed up by inertia’” (quoting AMY STUART WELLS & ROBERT L. CRAIN, *STEPPING OVER THE COLOR LINE: AFRICAN AMERICAN STUDENTS IN WHITE SUBURBAN SCHOOLS* 131 (1997))).

81. Ryan, *supra* note 71, at 274:

More than half of fourth- and eighth-grade students attending urban schools do not even reach the most basic proficiency level on national tests in such subjects as reading, math, and science, which means that they likely cannot do grade-level work. In schools where a majority of the students are poor, the percentage of students who do not perform at even the basic level on national tests rises to at least two-thirds. In nonurban schools, by contrast, the figure is nearly the opposite: Two-thirds of the students score at least at the basic level on national tests.

(Footnotes omitted.)

82. *Id.* at 274-75 (“Dropout rates in all large, central-city school districts significantly exceed the national average of 11%. Among the nation’s forty-seven largest school districts, the average dropout rate is nearly twice the national average.”).

83. *Id.* at 287-89. Professor Ryan describes oppositional counterculture as a “distinct culture in many poor, black neighborhoods that is defined primarily by its opposition to conventional middle-class ‘white’ values.” *Id.* at 287. He further explains:

Anthropologists theorize that subordinated minorities, such as black Americans, “develop a sense of collective identity . . . in opposition to the social identity of white Americans because of the way white Americans treat them in economic, political, social, and psychological domains, including white exclusion of these groups from true assimilation.” Once es-

student's own intentionally poor performance, which further separates the urban student from the suburban vision of success.⁸⁴

3. Psychological Impacts

In addition to furthering segregation and educational disparity, urban sprawl has a variety of psychological impacts on both urban and suburban residents. First, related to the previous discussions regarding segregation and educational disparity, is the feeling of hopelessness that can be engendered in inner-city residents who have few opportunities and little public support, a feeling that can result in further rejection of the inner city and its residents by suburbanites if anti-social behavior results.⁸⁵ As the isolation of urban society increases and the urban and suburban interests diverge, the bond between the central city and its suburbs begins to disintegrate,⁸⁶ and the poor are left abandoned, receiving minimal assistance from suburban interests.⁸⁷ Indeed, suburban rejection of inner-city problems can be so severe that the victims are blamed for their own problems. As Prof. Deborah Kenn explains:

The isolation of communities of color from mainstream society is undeniable. The crowning achievement of that isolation and the racism that caused it becomes the opportunity to blame the individual victims for the out-of-control societal forces. In the words of [Prof. John] Calmore: "Whereas in the late 1960s most in society were inclined to attribute poverty to societal causes that overwhelmed personal responsibility, most are now likely to blame the poor themselves for their poverty." Living in concentrated poverty, without access to quality education and self-supporting jobs, people of color are blamed for their inability to take advantage of the economic resources that are out of their reach, but easily available to the majority population. As stated by [Prof.] Charles Lawrence in analyzing the "stigma theory": "Labeling blacks as inferior denies them access to societal opportunities; as a result, inadequate educational preparation, poverty of experience, and insufficient basic necessities limit their ability to contribute to society, and the prophecy of their inferiority is fulfilled."⁸⁸

established, the theory continues, this oppositional culture becomes difficult to overcome because it is closely tied to the minority's sense of collective identity and security. "[I]ndividuals who try to behave like white Americans or try to cross cultural boundaries or to 'act white' in forbidden domains [including schools] face opposition from their peers and probably from other members of the minority community."

Id. at 287-88 (quoting Signithia Fordham & John U. Ogbu, *Black Students' School Success: Coping With the "Burden of Acting White,"* 18 URB. REV. 176, 181 (1986)).

84. *Id.* at 288-89.

85. Freilich & Peshoff, *supra* note 14, at 190:

Sprawl causes and exacerbates the problems of existing built-up communities as people feel "trapped" living in areas with little growth (or lower growth) potential and limited employment opportunities. Sprawl reinforces segregation, creating a new concept of separate and unequal. . . . [S]prawl systematically deprives inner city residents of opportunities and adequate services, which stimulates the anti-social behavior suburban America rejects.

86. *Id.* at 190.

87. Bare, *supra* note 28, at 469.

88. Kenn, *supra* note 58, at 42 (quoting John O. Calmore, *Racialized Space and the Culture of Segregation: Hewing a Stone of Hope From*

For suburban residents, sprawl has created a feeling of distance, not only from inner-city residents, but also from their own neighbors. Modern, single-family home neighborhoods decrease social interaction between residents because their construction is not conducive to such activity.⁸⁹ With the loss of sidewalks and front porches in many suburban neighborhoods, as well as the distance between residential and commercial uses, residents are much less likely to engage in spontaneous social interaction.⁹⁰ The use of automobiles rather than public transportation increases this loss.⁹¹

Community ties for both urban and suburban residents alike has also diminished with the increase in sprawl. According to scholars, people today are much less likely to volunteer their time for community activities, participate in community organizations, make contributions to charities, or even make the effort to vote in elections.⁹² Instead, "a new culture of segregation and disassociation among groups and individuals" has developed,⁹³ resulting in less time spent on activities that involve neither family nor work.⁹⁴ Indeed, because of the distance from suburban rings to the inner city, suburban residents often forego the cultural and athletic entertainment and social interaction available in downtown areas.⁹⁵

Further, suburban development has lost the "sense of place" engendered by pre-sprawl development. "Sense of place" is "that sense of connection with a particular urban or naturally indigenous environment."⁹⁶ Modern subdivisions, with their detached single-family dwellings and lack of common areas to enjoy nature and community activities, no longer have a sense of community or connection between residents.⁹⁷ Even the sense of countryside living has been

a Mountain of Despair, 143 U. PA. L. REV. 1233, 1248 (1995); Charles R. Lawrence III, *The Id, the Ego, and Equal Protection: Reckoning With Unconscious Racism*, 39 STAN. L. REV. 317, 351 (1987)).

89. *Cf.* Bare, *supra* note 28, at 484 (noting that suburban housing patterns facilitate suburban residents' desire for privacy rather than social interaction).

90. *See id.* at 486; Meredith, *supra* note 20, at 462 (citing RICHARD MOE & CARTER WILKIE, *CHANGING PLACES: REBUILDING COMMUNITY IN THE AGE OF SPRAWL* ix, x (1997)); *see also* DOUGLAS KELBAUGH, *COMMON PLACE: TOWARD NEIGHBORHOOD AND REGIONAL DESIGN* 43 (1997) (noting the impact of increased traffic on "neighborliness and friendships").

91. *Cf.* Bare, *supra* note 28, at 486 (noting that "many city dwellers use available public transit rather than individual automobiles for their transportation needs, and are generally less afraid of large groups of people and random social interaction").

92. Freilich & Peshoff, *supra* note 14, at 190; Bare, *supra* note 28, at 469.

93. Bare, *supra* note 28, at 469.

94. Freilich & Peshoff, *supra* note 14, at 190.

95. Meredith, *supra* note 20, at 462.

96. Michael Hough, *Formed by Natural Process—A Definition of the Green City*, in *GREEN CITIES: ECOLOGICALLY SOUND APPROACHES TO URBAN SPACE* 19 (David Gordon ed., 1990); *see also* Mark Sagoff, *Settling America or the Concept of Place in Environmental Ethics*, 12 J. ENERGY NAT. RESOURCES & ENVTL. L. 349, 358-60 (1992) (distinguishing the terms "place" and "environment").

97. Kob, *supra* note 18, at 144 ("Some have called these new sprawl developments 'mushburbs' in honor of their complete lack of planning and coherence, resulting in a 'shortage of affordable housing, a lack of educational, cultural, and aesthetic amenities, and an absence of civic traditions and a sense of community.'" (quoting Benfield, *supra* note 24, at 6)); Gallagher, *supra* note 26, at 223 ("[S]prawl creates a void in the human psyche: Something is missing. Apart from the absence of a swift, uninterrupted journey to work or the store,

lost as sprawl has expanded. Instead of living in the peaceful countryside—part of the initial reason for leaving the city—suburban residents live in homogenous communities, on “street after street of houses that look exactly the same . . . cordoned off from one another by identical large yards.”⁹⁸ No longer do residents live beside rural farmlands, rolling hills, and pristine forests⁹⁹; rather, suburbanites are neighbor to major highways and streets crowded with grocery stores, shopping malls, and multiplexes.

C. Environmental Impacts

In addition to economic and social impacts, sprawl has a great impact on the environment. Sprawled development and increased automobile use caused by that type of design contributes greatly to both air and water pollution and has a detrimental impact on plants and wildlife and their ecosystems.¹⁰⁰ Each of these issues are discussed in this section.

1. Air Quality

One consequence of sprawled development is its impact on air quality. Many sprawl-plagued cities suffer from reduced air quality because of the automobile culture that sprawl has created.¹⁰¹ Because of the spread-out design of sprawling metropolitan areas and the lack of reasonable public transportation, automobiles are a way of life for most suburban

there is a sense that we have lost something perhaps less tangible in the process of growth and change. A frequent observation is that American communities, particularly the newer ones, no longer provide a sense of place.” (quoting AMERICAN PLANNING ASS'N, PLANNING COMMUNITIES FOR THE 21ST CENTURY (1999) (internal quotation marks omitted)).

98. Bare, *supra* note 28, at 484.

99. Sprawl consumes farmland at a great rate. According to the U.S. Department of Agriculture:

[T]he rate of farmland and forest conversion has increased rapidly in the last decade. The development of farmland, forests and other open space doubled during this decade to more than 3 million acres per year. Nearly 16 million acres were converted to development between 1992 and 1997, according to the USDA study. By comparison, the development rate was 1.4 million acres a year between 1982 and 1992. According to the American Farmland Trust, 70 percent of this country's prime farmland lies in the path of sprawl development. Sprawl is literally consuming the heart of the country.

Gallagher, *supra* note 26, at 222. *But cf.* Clint Bolick, *Subverting the American Dream: Government Dictated “Smart Growth” Is Unwise and Unconstitutional*, 148 U. PA. L. REV. 859, 861-62 (2000):

The hysteria [over loss of farmland and countryside] is without foundation. Total urban and suburban uses of land in the United States constitute only sixty million acres—only 3.1% of the nation's land. Approximately one million acres are urbanized each year; at that pace, “it would take nearly 200 years . . . [to urbanize] 10 percent of the total land in the Continental U.S.” Moreover, . . . “the amount of land dedicated exclusively for parks, wilderness, and wildlife has been growing twice as fast as urbanized land since the end of World War II.”

(Footnotes omitted.)

100. One scholar notes that sprawl also increases energy uses because of elevated levels of automobile use, which requires greater amounts of fuel, and use of residential housing, which uses more energy than all other residential options. Meredith, *supra* note 20, at 466.

101. Gallagher, *supra* note 26, at 219-20.

residents. The increase in highways and roads,¹⁰² the distance between work and home,¹⁰³ and the separation of residential and commercial uses have made automobile use a necessity.¹⁰⁴ Indeed, more cars are owned and on the road for longer periods in sprawled areas than in other areas.¹⁰⁵ One report finds, for instance, that

[i]n relatively sprawling regions, cars are driven longer distances per person than in places with lower-than-average sprawl. Over an entire region, that adds up to millions of extra miles and tons of additional vehicle emissions. Also, . . . in the [10] most sprawling metropolitan areas, there are on average 180 cars to every 100 households; in the least sprawling metro areas (excluding New York City and Jersey City, which are outliers), there are 162 cars to every 100 households. The research indicates that this is not simply a matter of greater or lesser affluence; even controlling for income, households are more likely to bear the expense of additional vehicles in more sprawling areas.¹⁰⁶

Unfortunately, with the increase in cars, commuting time, and traffic congestion, air quality suffers.¹⁰⁷ Automobile

102. ANDRES DUANY ET AL., *SUBURBAN NATION: THE RISE OF SPRAWL AND THE DECLINE OF THE AMERICAN DREAM* 88 (2000). Ironically, highways are constructed and streets are widened often in an attempt to relieve traffic congestion. Unfortunately, the opposite often occurs and “induced traffic” is created. *Id.* at 89. Rather than improve traffic conditions, having more and improved roadways merely creates greater traffic problems because “[i]ncreased traffic capacity makes longer commutes less burdensome, and as a result, people are willing to live farther and farther from their workplace.” *Id.* As traffic increases on the new roadways, disgruntled commuters demand improved roadways, and the traffic cycle repeats. *Id.* at 90.

103. One federal study shows that commuters spend an average of one hour per day traveling to and from work. FEDERAL HIGHWAY ADMIN., U.S. DEP'T OF TRANSP., *JOURNEY TO WORK TRENDS IN THE UNITED STATES AND ITS MAJOR METROPOLITAN AREAS, 1960-1990*, at ES-2 (1993), *cited in* Meredith, *supra* note 20, at 465 n.99. One commentator argues, however, that sprawl does not cause increased traffic congestion because most travel is not from the suburbs to the city's central core, but rather between different suburbs, since many companies are now located near residential areas. Bolick, *supra* note 99, at 861.

104. Nicolas M. Kublicki, *Innovative Solutions to Euclidean Sprawl*, 31 ELR 11001, 11009 (Aug. 2001); Lee R. Epstein, *Where Yards Are Wide: Have Land Use Planning and Law Gone Astray?*, 21 WM. & MARY ENVTL. L. & POL'Y REV. 345, 347-48 & n.10 (1997); *see also* DUANY ET AL., *supra* note 102, at 24-25 (noting that buffers between residential and commercial uses force residents to forego walking to shopping and entertainment centers and considerably increases driving time because of subdivision design).

105. The traffic-enhancing design of traditional subdivisions does not help matters. Rather than building residential streets in a grid pattern, which would move traffic more efficiently out of a subdivision, developers have tended to confine traffic to one or two major thoroughfares leading from residential areas to highways. Although there may be numerous looping streets and cul de sacs within the subdivision, access to the major thoroughfares is usually limited to one or two exits from the area. Traffic, of course, bottles up as the number of cars on the road increases. DUANY ET AL., *supra* note 102, at 23.

106. Reid Ewing et al., *Smart Growth America, Measuring Sprawl and Its Impact* 5, at <http://www.smartgrowthamerica.org/sprawindex/MeasuringSprawl.pdf> (last visited July 30, 2003) [hereinafter *Measuring Sprawl*].

107. Increased vehicle usage caused by sprawl also accounts for road rage and a greater risk of automobile-related fatalities. According to research, road rage shows a direct link to sprawl, with the 10 cities having the greatest “aggressive driving deaths” being “recently designed suburban cities.” DUANY ET AL., *supra* note 102, at 23 (listing San Bernardino, Tampa, Phoenix, Orlando, and Miami as being the top five). Research also shows that residents of sprawled cities have a greater likelihood of dying in an automobile accident. *Measuring Sprawl*, *supra* note 106, at 5:

emissions are a major contributor to urban air pollution, emitting a variety of pollutants that can contribute to increased health problems and death rates.¹⁰⁸ For example, automobiles emit hydrocarbons (volatile organic compounds), which can irritate eyes and cause coughing, wheezing, shortness of breath, and possible permanent lung damage.¹⁰⁹ Another major automobile pollutant, carbon monoxide, can impair mental and visual perception.¹¹⁰ Cancer has even been linked to increased automobile emissions, especially in children,¹¹¹ with automobile emissions being responsible for as many as 2,700 cancer deaths each year.¹¹² Pollutants in vehicle emissions also contribute to crop destruction,¹¹³ smog,¹¹⁴ acid rain,¹¹⁵ and global warming.¹¹⁶

2. Water Impacts

a. Water Quantity

Urban sprawl also has a variety of water-related impacts. Sprawl has a significant effect on water quantity in the United States, especially in the West, because traditional suburban design and amenities result in heavy water con-

In the nation's most sprawling region, Riverside CA, 18 of every 100,000 residents die each year in traffic crashes. The eight least sprawling metro areas all have traffic fatality rates of fewer than 8 deaths per 100,000. The higher death rates in more sprawling areas may be related to higher amounts of driving, or to more driving on high-speed arterials and highways, as opposed to driving on smaller city streets where speeds are lower. Speed is a major factor in the deadliness of automobile crashes.

108. See Todd A. Stewart, *E-Check: A Dirty Word in Ohio's Clean Air Debate—Ohio's Battle Over Automobile Emissions Testing*, 29 CAP. U. L. REV. 265, 266 (2001) (noting that “[o]ne study estimates that pollution particulates [from air pollution] are responsible for 3% of all deaths in the United States, or about 60,000 deaths each year. In urban areas, which have the highest levels of particulates, death rates were 15 to 17% higher than rural areas.”). For a more complete discussion of the dangers of automobile emissions, see Craig N. Oren, *Getting Commuters Out of Their Cars: What Went Wrong?*, 17 STAN. ENVTL. L.J. 141, 151-56 (1998).
109. ENVIRONMENTAL HEALTH CENTER, NATIONAL SAFETY COUNCIL, *WHAT YOU CAN DO ABOUT CAR EMISSIONS* (1998), available at http://www.nsc.org/ehc/mobile/mse_fs.htm#problem.
110. *Id.*
111. Gallagher, *supra* note 26, at 220 (discussing two studies that showed a link “between vehicle emissions and cancer, particularly among children, in communities near highways”).
112. Oren, *supra* note 108, at 152-53 (attributing mobile source emissions as the cause of approximately 1,700 to 2,700 cancer deaths each year).
113. Gallagher, *supra* note 26, at 220; Meredith, *supra* note 20, at 465 n.99.
114. The combination of volatile organic compounds and nitrogen oxides (NO_x), both of which are emitted by automobiles, creates ground-level ozone, i.e., smog. Gallagher, *supra* note 26, at 220; Oren, *supra* note 108, at 154.
115. Oren, *supra* note 108, at 154. “Acid rain (or, more properly, acid deposition) occurs when sulfur dioxide (SO₂) and [NO_x] react in the atmosphere to form sulfuric and nitric acids, respectively. These acids then fall to earth, sometimes hundreds of miles downwind from their source, in either wet or dry form.” Paul L. Joskow & Richard Schmalensee, *The Political Economy of Market-Based Environmental Policy: The U.S. Acid Rain Program*, 41 J.L. & ECON. 37, 40 (1998) (footnote omitted).
116. Automobiles emit carbon dioxide, one of the greenhouse gases responsible for the greenhouse effect and global warming. Gallagher, *supra* note 26, at 220. For a discussion regarding the causes and impacts of global warming, see generally Arnold W. Reitze Jr., *Global Warming*, 31 ELR 10253 (Mar. 2001).

sumption.¹¹⁷ Over and above the normal consumption of a municipal household for sanitary purposes, water use patterns of suburban residents are high because of residents’ optional consumption of water—maintaining backyard pools, washing cars (inefficiently) in driveways, and watering large lawns.¹¹⁸ Indeed, according to one study, “new suburban ‘estate’ style homes with large lawns can consume as much as 16 times the water of a home on a more traditional urban grid.”¹¹⁹

Sprawl’s impact on the American water supply, however, is based not only on overuse of surface and groundwater,¹²⁰ but also on the change in hydrology caused by impervious surfaces.¹²¹ Because rainwater and snowmelt are artificially channeled away from their normal water courses by the existence of paved roads, parking lots, roofs, and storm sewers, much of the water fails to percolate into the soil and recharge the related aquifer.¹²² Indeed, as an example, American Rivers, the Natural Resources Defense Council, and Smart Growth America point to Charlotte, North Carolina, which loses between 13 and 31 billion gallons of water annually from recharge failure due to 15 years of sprawled development.¹²³

b. Water Quality

Another problem of suburban growth relates to water pollution caused by urban runoff. As the rainwater or snowmelt that has failed to percolate into the soil moves over impervious surfaces, contaminants existing on those surfaces are often picked up and diverted either directly or indirectly through storm sewers into nearby water bodies.¹²⁴ These contaminants, as they build up, pollute the water body and can cause destruction to aquatic habitat, impair aquatic life, and create undesirable impacts on human health and enjoyment.¹²⁵ The mixture of water and contaminants is known as

117. Gallagher, *supra* note 26, at 220; *American Rivers, America's Most Endangered Rivers of 2003: Ten Rivers Reaching the Crossroads in the Next 12 Months*, at 6, at <http://www.americanrivers.org/mostendangered/2003report.htm> (last visited July 30, 2003) [hereinafter *Most Endangered Rivers*]; see generally Holly Jo Franz et al., *An Insatiable Thirst: The Impact of Water Law on Sprawl in the West*, 15 NAT. RESOURCES & ENV'T 228 (2001) (discussing ways Arizona, Colorado, and Montana are dealing with the impacts of urban sprawl on water).
118. Gallagher, *supra* note 26, at 220; Mona L. Hymel, *The Population Crisis: The Stork, the Plow, and the IRS*, 77 N.C. L. REV. 13, 112 (1998).
119. *Most Endangered Rivers*, *supra* note 117, at 6.
120. Gallagher, *supra* note 26, at 220; *Most Endangered Rivers*, *supra* note 117, at 6 (noting, for example, that in Charlotte, North Carolina, “the number of municipal water customers grew by 45[%] since 1990 but water use soared by 71[%]”).
121. Gallagher, *supra* note 26, at 220; *Most Endangered Rivers*, *supra* note 117, at 6.
122. Gallagher, *supra* note 26, at 220; *Most Endangered Rivers*, *supra* note 117, at 6.
123. *Most Endangered Rivers*, *supra* note 117, at 6.
124. U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA), *URBAN RUNOFF POLLUTION PREVENTION AND CONTROL PLANNING 2* (1993) [hereinafter *URBAN RUNOFF POLLUTION*]; Avi Brisman, *Considerations in Establishing a Stormwater Utility*, 26 S. ILL. U. L.J. 505, 505-06 (2002); see Joel B. Eisen, *Toward a Sustainable Urbanism: Lessons From Federal Regulation of Urban Stormwater Runoff*, 48 WASH. U. J. URB. & CONTEMP. L. 1, 12 (1995).
125. Brisman, *supra* note 124, at 506; Marc A. Yaggi, *Impervious Surfaces in the New York City Watershed*, 12 FORDHAM ENVTL. L.J. 489, 496-97 (2001).

urban runoff.¹²⁶ The U.S. Environmental Protection Agency (EPA) ranks urban runoff as a major source of contaminants in U.S. waters.¹²⁷

As discussed further below, water pollution results when urban runoff enters a water body.¹²⁸ Pollution from urban runoff is often more severe than runoff in non-urban areas for several reasons. First, urban areas contain a greater and more diverse number of pollutants than those found in non-urban areas. Urban runoff often contains multiple contaminants, including sediments, nutrients, pathogens, organic enrichment pollutants, e.g., biochemical oxygen demand and dissolved oxygen, trace amounts of toxic metals and organics, and salts.¹²⁹ Airborne pollutants from automobile and industrial emissions that settle onto streets and land are also commonly found in urban runoff.¹³⁰

The sources for runoff pollutants are also diverse, although most come from precipitation flowing over urban and agricultural lands.¹³¹ Main sources for organic and inorganic sediments include construction sites, landfills and septic fields, and overflow from combined sewer systems.¹³² Nutrients, such as nitrates and phosphates, are picked up from simple erosion and atmospheric deposition.¹³³ Pathogens like fecal coliforms and streptococci are usually found in septic systems, illicit sanitary connections, combined sewer overflow, boat discharges, and animal waste.¹³⁴ The sources for toxic pollutants, of course, are many. Pesticides and herbicides, underground storage tanks, hazardous waste sites and landfills, industrial discharges, and illegal and accidental petroleum spills all contribute to the presence of toxic pollutants in runoff.¹³⁵

A second cause of increased pollution from urban runoff is the amount of impervious cover¹³⁶ and the use of sewer systems in metropolitan and suburban areas. Impervious cover, such as rooftops, streets and parking lots, and sewer systems has two main impacts. First, it prevents water from being absorbed by the soil, thereby increasing the total volume of water and pollutants channeled into a water body.¹³⁷ Second, once runoff reaches a storm system, the flow of the water speeds up.¹³⁸ Since neither infiltration nor evaporation can occur to slow the speed, the runoff enters the water body at a higher velocity than normal.¹³⁹ This velocity creates greater risk of streambank erosion, vegetation damage, and stream channel alteration.¹⁴⁰ Indeed, studies show that watersheds can be “demonstrably and irreversibly degraded when as little as 10% of their surface area is covered by impervious surfaces.”¹⁴¹

When water discharged from municipal sewer systems flows into a water body it is often untreated,¹⁴² which can cause a variety of undesirable impacts. First among these is impairment to aquatic habitat and life. The introduction of untreated stormwater runoff to a water body can cause biological and physical damage to a habitat because of the contaminants carried by the runoff.¹⁴³ Sediments can create turbidity, alter habitat, erode banks, and change the natural hydrology of the area,¹⁴⁴ while excessive nutrients in a water body can create algal blooms and ammonia toxicity in surface water and nitrate toxicity in groundwater.¹⁴⁵ Salts can damage plants which can alter habitat and impact the health of aquatic organisms.¹⁴⁶ Other impacts to aquatic life include fish kills caused by organic enrichment and/or toxic

126. URBAN RUNOFF POLLUTION, *supra* note 124, at 5, tbl. 1-2.

127. U.S. EPA, ENVIRONMENTAL IMPACTS OF STORMWATER DISCHARGES: A NATIONAL PROFILE 7 (1992):

While urban population areas take up only about 2.5% of the total land surface of the country, stormwater pollution from these urban areas and associated urban activities (i.e., storm sewers/urban runoff, combined sewers, hydromodification, land disposal, construction, urban growth, etc.) accounts for a proportionately high degree of water quality impairment (i.e., 18% of impaired river miles, 34% of impaired lake acres, and 62% of impaired estuary square miles reported under 319) when compared to that from rural activities (i.e., agriculture, silviculture and mining) which take up approximately 53% of the total land surface.

Quoted in Eisen, supra note 124, at 17 n.84.

128. According to EPA's 2000 Water Quality Report, urban and agricultural runoff was the leading cause of pollution in each type of water body evaluated. See U.S. EPA, NATIONAL WATER QUALITY INVENTORY 2000 REPORT, at ES-3 (2000), *available at* <http://www.epa.gov/305b/2000report/execsum.pdf>.

129. URBAN RUNOFF POLLUTION, *supra* note 124, at 5, tbl. 1-2; *see also* Eisen, *supra* note 124, at 14 (listing as pollutants “road salts, nutrients, suspended solids, trace metals, pesticides, herbicides, fungicides, fertilizers, petroleum products, and other chemicals widely disposed of in urban areas”); Brisman, *supra* note 124, at 505-06 (listing as pollutants “sediment, suspended solids, nutrients (phosphorous and nitrogen), heavy metals and other toxic pollutants”).

130. Eisen, *supra* note 124, at 14-15.

131. URBAN RUNOFF POLLUTION, *supra* note 124, at 5, tbl. 1-2.

132. *Id.*

133. *Id.*

134. *Id.*

135. *Id.*; *see also* Brisman, *supra* note 124, at 510 (noting the pollutants created by motor oil, gasoline and coolant leaks, and brakepads and tires).

136. The amount of impervious cover in developed areas varies by type of use. In residential areas, the amount of impervious cover can be anywhere from 25% to almost 60% of the land area; industrial areas range from 60% to 70%, and commercial areas cover between 80% and 90%. Yaggi, *supra* note 124, at 499-500 (citing GEODIGITAL MAPPING, INC., SIGNIFICANT SOURCES OF URBAN STORMWATER RUNOFF IN UNINCORPORATED AREAS OF THE SOUTH COAST OF SANTA BARBARA COUNTY IDENTIFIED FROM LANDSAT IMAGERY: REPORT TO THE SANTA BARBARA COUNTY WATER AGENCY 2 (2000)).

137. Brisman, *supra* note 124, at 509 (“This increased volume and velocity of runoff is directly correlated to the amount of impervious cover in the given area; essentially, the more impervious cover, the more runoff.”); *see also id.* at 509 n.20 (“On a 1-acre natural meadow, a 1-inch rainstorm normally produces 218 cubic feet of runoff. The same 1-inch storm on a 1-acre paved parking lot would produce 3,450 cubic feet of runoff approximately sixteen times more than the natural meadow.” (citing PETER H. LEHNER ET AL., STORMWATER STRATEGIES: COMMUNITY RESPONSES TO RUNOFF POLLUTION 23 (Natural Resources Defense Council 1999)); Yaggi, *supra* note 124, at 499 (“The post-construction runoff from suburban residential development can be up to 10 times that of pre-development conditions and runoff from new commercial development can be as much as 18 times higher.”).

138. U.S. EPA, *Managing Urban Runoff*, Pointer No. 7 (EPA 841-F-96-004G), at <http://www.epa.gov/OWOW/NPS/facts/point7.htm> (last updated Sept. 10, 2002) [hereinafter *Managing Urban Runoff*].

139. Brisman, *supra* note 124, at 510.

140. *Managing Urban Runoff*, *supra* note 138.

141. Yaggi, *supra* note 124, at 499.

142. This is especially true in older cities. *Managing Urban Runoff*, *supra* note 138.

143. Eisen, *supra* note 124, at 18-19.

144. URBAN RUNOFF POLLUTION, *supra* note 124, at 5, tbl. 1-2; Brisman, *supra* note 124, at 505-06.

145. URBAN RUNOFF POLLUTION, *supra* note 124, at 5, tbl. 1-2.

146. *Id.*

ity from harmful pollutants¹⁴⁷ as well as other harmful impacts resulting from runoff heated by sun-warmed rooftops and streets.¹⁴⁸

Urban runoff can also create problems for humans. Polluted water bodies may threaten drinking water, and contaminated fish or shellfish beds may create potentially toxic food supplies.¹⁴⁹ Further, swimming in water polluted by pathogens can trigger ear or intestinal infections.¹⁵⁰ Recreational and aesthetic enjoyment of a water body may also be destroyed. Organic enrichment pollutants can create disagreeable odors, making recreational activity unpleasant or undesirable.¹⁵¹ Excessive sediment can cause changes in the natural hydrology of the area, cause bank erosion, and impair navigation.¹⁵² Loss in habitat and fish kills can decrease fish stocks, causing diminished fishing capacity.¹⁵³

3. Biodiversity

Urban sprawl also has a negative effect on biodiversity.¹⁵⁴ Biodiversity is “the variety of life in all of its shapes and forms,”¹⁵⁵ and it encompasses diversity at the genetic, species, and ecosystem levels.¹⁵⁶ Sprawl has an impact at each of these levels because of its tendency to destroy and fragment habitat, cause pollution, and create detrimental edge effects.

a. Habitat Loss

Sprawled development has two basic impacts on habitat and the ecosystem that it supports. First is the outright destruc-

tion that can occur as new construction is placed in formerly undeveloped areas. Wetlands, for example, are extremely important, not only as habitat for fish and wildlife, but also as filters to protect water quality, natural storage for floodwaters, and buffers to prevent erosion caused by surface water.¹⁵⁷ Development, however, is now the leading cause of wetlands loss, consuming approximately 60,000 acres of wetlands per year.¹⁵⁸ Similarly, the prairie grasslands of the Great Plains states—home to wolves, pronghorn, black-footed ferrets, and prairie dogs—is now considered “North America’s most rapidly disappearing ecosystem,”¹⁵⁹ due to conversion to urban and agricultural uses.¹⁶⁰

Loss of habitat, of course, detrimentally affects the species that the habitat supports by forcing the species to either move (for those that can move) or be destroyed. When species are pushed out of traditional habitat, species loss can occur if they are unable to adapt to changing conditions.¹⁶¹ Habitat loss can also cause an ecosystem to collapse if a keystone species is unable to survive in reduced or new habitat.¹⁶² As the linchpin to the ecosystem, once the keystone species is gone, the rest of the ecosystem will follow.¹⁶³

Sprawled development also fragments habitat by leaping over small pockets of open space.¹⁶⁴ Because of the reduction in contiguous land, habitat options are reduced for species and ecosystems that have greater space requirements.¹⁶⁵ The construction of roads and highways also divides habitat, isolating species populations, which can cause individual species to suffer genetic losses¹⁶⁶ and alter migration patterns.¹⁶⁷

b. Pollution

Pollution caused by development is also detrimental to species and ecosystems. In addition to the harm that urban runoff can cause to plants and wildlife,¹⁶⁸ other types of pollu-

147. *Id.*

148. Brisman, *supra* note 124, at 513:

During the summer, “[u]nshaded rooftops, parking lots, and other impervious areas can be 10-12° F warmer than fields and forests.” These hot surfaces heat the rain that passes over them, often to 90° F or more. When this runoff reaches a lake or stream, it raises the temperature of the stream, affecting the aquatic organisms, which have specific water temperature thresholds.

(Footnotes omitted.)

149. URBAN RUNOFF POLLUTION, *supra* note 124, at 5, tbl. 1-2; Brisman, *supra* note 124, at 514.

150. URBAN RUNOFF POLLUTION, *supra* note 124, at 5, tbl. 1-2; Brisman, *supra* note 124, at 514; see also Yaggi, *supra* note 125, at 497-98 (describing human disease that can result from stormwater pollutants in urban runoff).

151. URBAN RUNOFF POLLUTION, *supra* note 124, at 5, tbl. 1-2.

152. *Id.*

153. Brisman, *supra* note 124, at 514.

154. For discussions of the importance of biodiversity, see Francesca Ortiz, *Biodiversity, the City, and Sprawl*, 82 BOSTON U.L. REV. 145, 152 & n.33 (2002); Judith I. McGeary, *A Scientific Approach to Protecting Biodiversity*, 14 J. NAT. RESOURCES & ENVTL. L. 85, 88 (1988-1999); Julie B. Bloch, *Preserving Biological Diversity in the United States: The Case for Moving to an Ecosystems Approach to Protect the Nation’s Biological Wealth*, 10 PACE ENVTL. L. REV. 175, 183-94 (1992).

155. Ortiz, *supra* note 154, at 150; see also Oliver A. Houck, *On the Law of Biodiversity and Ecosystem Management*, 81 MINN. L. REV. 869, 874 (1997) (defining biodiversity as the “full range of variety and variability within and among living organisms and the ecological complexes in which they occur” (quoting National Biological Diversity Conservation and Environmental Research Act, H.R. 585, 102d Cong. §3(1) (1991))).

156. See generally REED F. NOSS & ALLEN Y. COOPERRIDER, *SAVING NATURE’S LEGACY: PROTECTING AND RESTORING BIODIVERSITY* 5-13 (1994) (discussing the various levels of biodiversity).

157. U.S. EPA, *THREATS TO WETLANDS* (2001), available at <http://www.epa.gov/owow/wetlands/facts/threats.pdf>.

158. *Id.* Only one-half of the 220 million acres of wetlands in the United States currently exist. The other half have been drained and put to other uses, including agricultural and commercial. *Id.*

159. NATIONAL WILDLIFE FEDERATION, *PROTECTING THE NATION’S PRAIRIE GRASSLANDS* (2002), available at <http://www.nwf.org/enviroaction/index.cfm?articleId=181&issueId=23>.

160. Sandra B. Zellmer & Scott A. Johnson, *Biodiversity in and Around McElligot’s Pool*, 38 IDAHO L. REV. 473, 475 (2002).

161. Bare, *supra* note 28, at 466.

162. Ortiz, *supra* note 154, at 155 (noting the devastating impact that loss of a keystone species has on its ecosystem).

163. All species in an ecosystem depend on the keystone species for their survival. NOSS & COOPERRIDER, *supra* note 156, at 7. Typical examples are beavers, which create habitat for others and regulate hydrology, and sea otters, which control urchin populations that would devastate kelp beds, a food source for a variety of sea life. Ortiz, *supra* note 154, at 155 nn. 50-51.

164. Ortiz, *supra* note 154, at 149; Epstein, *supra* note 104, at 348; see also David W. Burnett, *New Science but Old Laws: The Need to Include Landscape Ecology in the Legal Framework of Biodiversity Protection*, 23 ENVIRONS ENVTL. L. & POL’Y J. 47, 66-67 (1999) (noting that landscape may also be altered by the processes of perforation, shrinkage, attrition, and dissection).

165. NOSS & COOPERRIDER, *supra* note 156, at 56; Bare, *supra* note 28, at 466.

166. See Ortiz, *supra* note 154, at 153-54 & nn.40-41.

167. Gallagher, *supra* note 26, at 220.

168. See *supra* notes 142-53 and accompanying text.

tion can have serious impacts. The presence of toxic chemicals in water and soil, for example, can cause endocrine disruption in wildlife (resulting in impaired reproduction and offspring deformity), suppression of immune systems, and even death.¹⁶⁹ Air pollution, especially that caused by motor vehicles, can cause health problems to plants and wildlife through inhalation or absorption of the pollutants,¹⁷⁰ and acid rain can cause fish kills and damage to plants' photosynthesis processes.¹⁷¹

Noise and light pollution also create problems. The noise from automobiles, airplanes, and other machinery frequently found in and around urban areas have a variety of impacts on wildlife, including stampeding, physiological problems, disruption in mating behavior, abandonment of habitat, and injury and death.¹⁷² Harm may occur even to those species that habituate to the noise because they may become less attentive to their surroundings and possible dangers.¹⁷³ Light pollution may also create problems, especially for those species that use the natural light from the night sky as a guide¹⁷⁴ or require darkness for moving, nesting, or foraging.¹⁷⁵

c. Edge Effects

In areas where wildlife and plant habitat abut areas of human population, harmful "edge effects" can occur. For example, indigenous wildlife and plants are often forced to compete with non-native species and pets present in urban and suburban areas for food and habitat.¹⁷⁶ Because non-native species have no natural predators, local species may have more difficulty surviving in border areas.¹⁷⁷ Local species also suffer as they become prey for pets and pests. Songbirds, for example, are particularly affected¹⁷⁸; estimates of songbirds killed by cats annually in the United States run into the hundreds of millions.¹⁷⁹ In addition, edge species are also more greatly impacted by pest species, e.g., brown-headed cowbirds, raccoons, and crows, than species that live farther from development.¹⁸⁰ Finally, because of the proximity to humans and roadways, species can be

harmed by homeowners defending their property¹⁸¹ or by passing motor vehicles.¹⁸²

II. Causes of Sprawl

To craft effective responses to the problems created by sprawl, one must analyze and address its causes. Sprawl is not just a reflection of mere consumer preference.¹⁸³ Rather, as discussed below, sprawl mainly results from federal automobile and housing subsidies and local zoning requirements.

A. Government Subsidies

1. Automobile Subsidies

One of the greatest causes of urban sprawl is governmental subsidies that encourage automobile use. The construction of highways and other roadways at government expense made it easier for development to grow further away from the central city. Taxpayers paid for highway construction through motor fuel taxes, and by 1921, states were receiving federal matching funds for highway construction.¹⁸⁴ At the same time, public transportation began to decline as less money was channeled for its support.¹⁸⁵ Even today, the disparity between federal subsidies for road construction and public transit is dramatic at a rate of almost five to one.¹⁸⁶ Indeed, strong highway subsidies currently in existence grant billions as federal aid.¹⁸⁷

181. *See id.*; *see also* Ortiz, *supra* note 154, at 191 n.267 ("Larger vertebrates, like coyotes in Toronto and Los Angeles or feral pigs in Florida, may be considered dangerous or nuisances by landowners.").

182. Gallagher, *supra* note 26, at 222 (noting that "roadkill on a new toll road in mountain lion territory [in the Santa Ana Mountains] is eliminating 10% of the local lion populations annually" and that "almost half of all known panther deaths [in Florida] are from roadkill").

183. JACKSON, *supra* note 1, at 293 (noting that the idea that "the postwar suburbs blossomed because of the preference of consumers who made free choices in an open environment" is a myth); Michael E. Lewyn, *The Urban Crisis: Made in Washington*, 4 J.L. & POL'Y 513, 550 (1996) (arguing that sprawl resulted not from consumer preference but from a variety of governmental decisions that influenced consumer choice).

184. Lewyn, *supra* note 14, at 313.

185. Indeed, until 1962, federal money was unavailable for public transportation needs. *Id.* at 314.

186. *Id.* Prof. Michael Lewyn notes that the gap in funding is even greater than this ratio suggests:

This statistic dramatically understates the "funding gap" between roads and transit, because federal transit spending is canceled out by a variety of federal mandates that either increase transit agencies' costs or reduce their revenues, including (1) Americans With Disabilities Act provisions mandating that transit agencies install costly amenities to serve the disabled (which alone cost transit providers about \$1 billion a year in the early 1990s, about one-fourth of federal transit spending); (2) labor laws that limit transit operators' ability to reduce labor costs (which alone cost transit providers \$2 billion to \$3 billion per year, or about half of all federal transit spending); (3) imposition of federally mandated wage rates for federally funded construction; (4) limitations upon transit agencies' use of parts manufactured in foreign countries; and, (5) limitations on charter and school bus service in competition with the private sector.

Id. at 314-15.

187. Meredith, *supra* note 20, at 475 ("The highway subsidy continues today in the form of the Intermodal Surface Transportation Efficiency Act (ISTEA), which granted \$108 billion of federal aid to highways over six years, and the Transportation Equity Act for the 21st Cen-

169. The Biodiversity Partnership, *Habitat and Sprawl*, at <http://www.biodiversitypartners.org/sprawl/Disc/01e.html> (last visited July 31, 2003) [hereinafter *Habitat & Sprawl*].

170. *Id.*

171. *Id.*

172. *Id.*

173. LOWELL W. ADAMS, *URBAN WILDLIFE HABITATS: A LANDSCAPE PERSPECTIVE* 20, 27 (1994).

174. *Habitat & Sprawl*, *supra* note 169 (noting the impact of light in coastal areas on sea turtle hatchlings that are drawn inland by their focus on artificial lights).

175. *Id.*

176. Ortiz, *supra* note 154, at 153-54 & nn.40-41; Steve A. Wade, *Stemming the Tide: A Plea for New Exotic Species Legislation*, 10 J. LAND USE & ENVT. L. 343, 343-44 & n.9 (1995).

177. Ortiz, *supra* note 154, at 153-54 & nn.40-41.

178. Allan M. Strong et al., *Effects of Mountain Resorts on Wildlife*, 26 VT. L. REV. 689, 703 (2002); Gallagher, *supra* note 26, at 222.

179. *See* David L. Herman, *California Law and Ferrets: Are They Truly "Wild Weasels"?*, 23 ENVIRONS ENVT. L. & POL'Y J. 37, 46 (2000) (noting one study that estimates the annual songbird kill in Wisconsin as between 20 and 150 million and a second study that estimates songbird kills nationwide could be as much as 4.4 million daily).

180. Gallagher, *supra* note 26, at 222.

Automobile use has also been made easier and less expensive by not forcing drivers to more directly internalize the costs they create by driving¹⁸⁸ and by subsidizing fuel costs. Most of the external costs of driving are paid by the general public through general funds, taxes, and other fees.¹⁸⁹ External costs include environmental costs, e.g., air, water, and noise pollution impacts and waste disposal, impacts on land use, roadway land values, accidents, and road construction and maintenance.¹⁹⁰ By one calculation, if both individual and external costs are taken into account, the actual cost of driving is \$1.19 per mile.¹⁹¹ Similarly, automobile use is subsidized in the United States by relatively inexpensive fuel prices. According to one analysis, if the true cost of gasoline were reflected in the retail price, American drivers would pay between \$5.60 to \$15.14 per gallon of gasoline.¹⁹² As one commentator has explained: “With inexpensive auto use available and a dearth of public transportation, the public is not only tricked into a preference but is actually forced into automobile dependence.”¹⁹³

2. Housing Subsidies

Housing subsidies have also played a role in increasing urban sprawl. As previously mentioned, the FHA’s mortgage insurance program opened up suburban areas for growth by enabling purchasers to obtain low-interest mortgages.¹⁹⁴ Because the FHA’s insurance program was biased against high-risk minority areas, many minority purchasers were denied favorable housing opportunities.¹⁹⁵ The U.S. Congress’ later attempt to abolish this preference led to even greater suburban movement. As Prof. Michael Lewyn explains:

In order to undo the damage caused by FHA redlining, Congress enacted the Section 235 Homeownership Assistance Program in 1968. This program subsidized low-income homebuyers by providing mortgage insurance and reducing interest rates to as low as 1%. From 1969 to 1979, approximately 500,000 homes were purchased under the program. But instead of stabilizing cities, Section 235 fueled “white flight” from cities. In some communities, the federal infusion of capital to the

tery (TEA-21), which provides over \$171 billion to federal highway programs over four years.”); *see also* Bare, *supra* note 28, at 460-61 (suggesting that TEA-21 will perpetuate sprawl because states will likely choose to increase highway spending rather than public transit spending).

188. Meredith, *supra* note 20, at 475.

189. Commute Solutions, Santa Cruz County Regional Transportation Commission, *The True Costs of Driving*, at <http://www.commutesolutions.org/TCODBro.pdf> (last visited Aug. 1, 2003) [hereinafter *True Costs of Driving*].

190. *Id.*; *see also* Meredith, *supra* note 20, at 475-76 (including “the strategic petroleum reserve” and “military costs associated with serving gasoline-based interests in the Persian Gulf” as additional external costs).

191. *True Costs of Driving*, *supra* note 191.

192. International Center for Technology Assessment, *The Real Price of Gas*, at <http://www.icta.org/projects/trans/rlprexsm.htm> (last visited Aug. 1, 2003) (determining true price of gasoline by factoring external costs such as tax subsidies to the oil industry and government programs, protecting oil shipments and motor vehicle services, and environmental, health and social costs and calculating that such costs total between \$558.7 billion to \$1.69 trillion per year).

193. Bare, *supra* note 28, at 459.

194. Lewyn, *supra* note 14, at 305.

195. *See supra* notes 63-65 and accompanying text.

poor fueled “blockbusting”: Realtors sold “a few homes to minority purchasers,” then “spread the rumor that the neighborhood would soon become entirely black,” thus causing “a wave of panic selling.” Whites would sell their homes at artificially low prices, and neighborhoods turned from all white to all black in a manner of months.¹⁹⁶

Tax policies have also contributed to sprawl by encouraging the development of larger houses and creating a preference for new home construction rather than repair. Under the tax code, homeowners may deduct from taxable income their mortgage interest and taxes. Because purchasing a larger home will protect more income, homeowners are encouraged to buy larger homes to protect greater incomes and, because of the capital gains tax, to purchase an even larger home after sale of the first.¹⁹⁷

B. Zoning Regulations

Zoning regulations also play a large role in the creation of sprawl. Implemented in major cities in the early 1900s,¹⁹⁸ and approved by the U.S. Supreme Court in 1926,¹⁹⁹ zoning has become the primary means for controlling land use.²⁰⁰ Single use or Euclidean zoning creates sprawl by separating uses, such as residential from commercial or even single-family housing from multifamily housing.²⁰¹ Thus, suburban development has become less compact as local governments have sought to maintain the sanctity of residential living by zoning out manufacturing facilities, apartments, and other low-cost housing options from single-family housing areas.²⁰² Density and minimum lot size restrictions further contribute to sprawled development by forcing the creation of large, land consumptive subdivisions.²⁰³ The effect of such restrictions is not only further sprawl, but also the creation of greater economic and racial segregation.²⁰⁴

196. Lewyn, *supra* note 14, at 306 (footnotes omitted).

197. Freilich & Peshoff, *supra* note 14, at 187-88; *see also* Meredith, *supra* note 20, at 475 (“Federal tax regulations also contribute to sprawl through policies such as, ‘accelerated depreciation; five-year amortization; and deductibility of “passive” real estate losses,’ that make suburban development cheaper than urban development and building new houses cheaper than repairing old ones.” (citation omitted)).

198. DANIELS, *supra* note 1, at 21 (noting that Los Angeles enacted the first zoning ordinance in 1912, but that the 1916 ordinance adopted by New York “was far more influential in promoting the separation of large areas for specific land uses”).

199. *See Village of Euclid v. Ambler Realty Co.*, 272 U.S. 365 (1926) (upholding the validity of zoning ordinances as a proper use of a state’s police power).

200. DANIELS, *supra* note 1, at 21.

201. JULIAN C. JUERGENSMEYER & THOMAS E. ROBERTS, *LAND USE PLANNING AND CONTROL LAW* §4.3, at 82 (1998).

202. DANIELS, *supra* note 1, at 21; COMMUNITY DEVELOPMENT, *supra* note 14, at 6-7; James A. Kushner, *Smart Growth, New Urbanism and Their Impact on Poor and Minority Ethnic Populations*, 21 UCLA J. ENVTL. L. & POL’Y 45, 46 (2002-2003). Developers are often forced to develop outward and leapfrog over residential areas if their intent is incompatible construction. Ortiz, *supra* note 154, at 179-80.

203. *See* Kublicki, *supra* note 104, at 11009.

204. *See* Alice M. Burr, *The Problem of Sunnyvale, Texas, and Exclusionary Zoning*, 11 J. AFFORDABLE HOUSING & COMMUNITY DEV. L. 203, 204 (2002):

Exclusionary zoning laws that raise the cost of purchasing or renting housing can prevent all but the wealthy from moving into an area, further restricting the rights of groups that are al-

III. Reducing Sprawl's Impacts

Traditional control of metropolitan growth and the various problems caused by development have involved uncoordinated efforts at unconnected levels of government. Land use, for example, is handled typically at the state and local levels through growth management techniques like state comprehensive plans, local timing, phasing and sequencing controls,²⁰⁵ density limitations, development moratoria, and population caps.²⁰⁶ Federal and state environmental laws govern activities that impact the environment, and educational and social agencies oversee programs that try to improve economic and racial disparities between urban and suburban residents. As awareness and concern about the impacts of sprawl has increased, however, local governments and developers have sought creative solutions in the form of smart growth and innovative design.

A. Smart Growth

Smart growth is a growing movement in the United States, although the term itself has no settled meaning.²⁰⁷ It can generally be described as a variety of initiatives that seek to achieve “the benefits of growth without the negative impacts.”²⁰⁸ As former Gov. Parris Glendening (D-Md.) explained about his state’s smart growth initiative, smart growth is “not no growth or even slow growth . . . [b]ut sensible growth that balances our need for jobs and economic development with our desire to save our natural environment before it is forever lost.”²⁰⁹

Begun in the 1990s, smart growth initiatives have gained popularity, with smart growth proposals now in over one-half of the states.²¹⁰ A recent survey of state smart growth

ready disadvantaged by race. Exclusionary zoning laws establish minimum requirements for housing, such as lot or house size or particular structural features and amenities that increase the cost of construction of residential homes. In addition, some communities use exclusionary zoning laws to prohibit apartments and mobile homes, which are the kinds of housing most needed by those with low incomes.

205. Timing, phasing, and sequencing controls attempt to manage growth by placing absolute limits on new development, requiring available infrastructure before development, and using urban growth boundaries. See Tom Pierce, *A Constitutionally Valid Justification for the Enactment of No-Growth Ordinances: Integrating Concepts of Populations Stabilization and Sustainability*, 19 U. HAW. L. REV. 93, 102-03 (1997).
206. See *id.* at 106-07. For a more comprehensive discussion of traditional growth controls, see Ortiz, *supra* note 154, at 174-77.
207. The term “smart growth” was popularized by the “Neighborhood Conservation and Smart Growth Initiative” in Maryland in 1997. See Patricia E. Salkin, *Smart Growth at Century's End: The State of the States*, 31 URB. LAW. 601, 604, 616 (1999). One commentator has described smart growth as “a movement that potentially represents the most significant American architectural, social, and political change since the short-lived populist movements of the late 19th Century.” Kushner, *supra* note 202, at 48-49.
208. Oliver A. Pollard III, *Smart Growth: The Promise, Politics, and Potential Pitfalls of Emerging Growth Management Strategies*, 19 VA. ENVTL. L.J. 247, 252 (2000).
209. *Id.* at 253 (citation omitted).
210. *Id.* at 251:

In November 1998, there were over 240 ballot measures in thirty-one states dealing with conservation, parklands, and smart growth issues. Seventy-two percent of these measures were approved, which will trigger more than \$7.5 billion of additional state and local conservation spending. The following November, in an “off-year” election when far fewer is-

programs reveals that state approaches take four basic forms: (1) elimination of state subsidies promoting sprawl; (2) promotion of infill development, revitalization of existing areas, and reuse of brownfields; (3) preservation of farmland, open space, and valuable environmental and recreational areas; and (4) creation of incentives and technical assistance to encourage local planning and participation in regional planning agreements.²¹¹ States and municipalities have also encouraged smart growth by allowing for and implementing zoning models that create more compact uses.

1. Subsidy Elimination

Recognizing the role that governmental subsidies have played in creating sprawl,²¹² several states have begun to work toward limiting damaging subsidies by creating institutions to examine the sprawl issue and make recommendations on growth policy.²¹³ Florida and New Hampshire, for instance, each have growth commissions that have already made recommendations for improvement.²¹⁴ Other states have taken even further steps by attempting to eliminate new infrastructure costs by “limiting state funds to designated growth areas or specified growth projects.”²¹⁵ By taking such measures, a state can discourage expansion by making growth more costly for the city and developer.²¹⁶

Maryland’s Smart Growth Program, for example, strictly limits state development funds to specified “Priority Funding Areas,”²¹⁷ which include “existing communities . . . , neighborhood revitalization areas, enterprise zones, heritage areas, and planned growth areas designated by counties.”²¹⁸ The program also limits funds to those municipalities that have established development standards relating to public school capacity.²¹⁹ Similarly, Ohio encourages repair of current infrastructure, rather than creation of new infrastructure, by creating a monetary incentive for municipalities. Under the program, municipalities must pay 50% of all costs related to infrastructure expansion; should they choose to repair infrastructure, municipality contribution is limited to 10%.²²⁰

suces and races were on the ballot, seventy-seven percent of 140 sprawl-related measures passed, and growth issues were a primary focus in a number of local and state elections.

See also Nicole Stelle Garnett, *Trouble Preserving Paradise?*, 87 CORNELL L. REV. 158, 183 (2001).

211. Ed Bolen et al., *Smart Growth: A Review of Programs State by State*, 8 HASTINGS W.-N.W. J. ENVTL. L. & POL’Y 145, 147-48 (2002). For a review of land use regimes, including smart growth initiatives, for all 50 states, see generally *id.*
212. See *supra* notes 184-97 and accompanying text.
213. Bolen et al., *supra* note 211, at 147-48.
214. *Id.* at 157-58, 190 (discussing the reports of Florida’s Growth Management Study Commission and New Hampshire’s Growth Management Advisory Committee).
215. *Id.* at 148; see also Pollard, *supra* note 208, at 260 (discussing elimination of state subsidies).
216. Bolen et al., *supra* note 211, at 147-48; Pollard, *supra* note 208, at 259-60 (noting the incentives for growth created by subsidies).
217. MD. CODE ANN., STATE FIN. & PROC. §§5-7B-01 (2001).
218. Bolen et al., *supra* note 211, at 173; see also Kushner, *supra* note 202, at 46 (discussing Maryland’s “establishment of urban service districts that simply limit public delivery and public subsidy of services rather than impose direct restraint on growth and development”).
219. MD. CODE ANN., STATE FIN. & PROC. §§5-7B-04 (2001).
220. Bolen et al., *supra* note 211, at 157-58, 204.

Another means to make new development more costly is the implementation of impact fees. Impact fees are one-time assessments placed on developers by local governments to help provide or improve necessary infrastructure.²²¹ For example, local governments may use impact fees to recoup costs for water and sewer infrastructure, road improvements, parks or recreational facilities, and social welfare programs.²²² Although constitutional and other legal constraints limit the scope of impact fees²²³ and local governments may be able to cover indirect infrastructure costs,²²⁴ the use of such fees may at least have a slowing effect on sprawl.

2. Reuse and Revitalization

Another method that states use to control the spread of sprawl and reduce its impacts is to encourage infill development, revitalization of existing areas, and redevelopment of brownfields.²²⁵ Infill development is “the creative recycling of vacant or underutilized lands within cities and suburbs.”²²⁶ Because of the leapfrog growth of sprawl, many undeveloped lands exist in areas that already have supporting infrastructure. By developing infill lands, developers can take advantage of the existing infrastructure and thereby reduce costs for themselves and the local government.²²⁷ In addition, underused areas in many central cities can be redesigned at an economic benefit for the city, using assets that may be unrecognized—“historic buildings and parks; natural features like waterfronts; a strong employment base provided by hospitals and universities; the availability of large tracts of inexpensive land; and access to transit.”²²⁸ This revitalization creates low infrastructure costs and can add to the central city’s tax base as people move inward from the suburbs. Revitalization of downtown Baltimore, supported with state and city funds and tax breaks, is a case in point:

[S]tate-sponsored, short-term financing provides \$2 million annually to convert downtown commercial buildings to housing. The city is deferring or reducing property taxes for such conversions. Most buildings in the district already qualify for federal historic preservation tax credits. The city also is contributing \$10 million toward a partnership with property owners to pay for streetscape improvements.

221. Nick Rosenberg, *Development Impact Fees: Is Limited Cost Internalization Actually Smart Growth?*, 30 B.C. ENVTL. AFF. L. REV. 641, 649 (2003) (defining impact fees as “monetary charges imposed by local government on new development to recoup or offset a proportionate share of public capital costs required to accommodate such development with necessary public facilities” (quoting JAMES C. NICHOLAS & DAN DAVIDSON, LAND USE RESEARCH FOUND., IMPACT FEES IN HAWAII: IMPLEMENTING STATE LAW 2 (1993)).

222. *Id.* at 651.

223. *Id.* at 651-66 (discussing legal challenges to impact fees).

224. *Id.* at 685-86.

225. *Id.* at 648; Kushner, *supra* note 202, at 46; Pollard, *supra* note 208, at 257.

226. NORTHEAST-MIDWEST INSTITUTE, CONGRESS FOR THE NEW URBANISM, STRATEGIES FOR SUCCESSFUL INFILL DEVELOPMENT 3 (2001), available at <http://www.nemw.org/infillbook.htm>.

227. MUNICIPAL RESEARCH & SERVICES CENTER OF WASHINGTON, INFILL DEVELOPMENT STRATEGIES FOR SHAPING LIVABLE NEIGHBORHOODS, REP. NO. 38 (1997), available at <http://www.mrsc.org/Publications/textfill.aspx#E19E1> (noting the various savings that occur to local governments when infill development occurs).

228. NORTHEAST-MIDWEST INSTITUTE, *supra* note 226, at 9.

By 1999, some 414 housing units were constructed or underway. These include the conversions of an 1878 warehouse, a 1903 hotel, and a closed department store. Another apartment building was constructed on air rights above a city-owned parking garage and provides stunning views of the Camden Yards baseball stadium. Completed projects are leasing and selling quickly—many to out-of-towners who have never lived in Baltimore before.

The Gallery Tower project epitomizes the success of this strategy. Converted from a long-vacant public housing project, Gallery Tower created 14 new market-rate apartments that were leased within four months. All but one new tenant moved into downtown from outside Baltimore. With an average household income of \$45,000, this new population has added significantly to Baltimore’s income-tax base.²²⁹

Other states have encouraged infill and revitalization by earmarking planning funds for infill and revitalization projects²³⁰ or assisting localities in finding such funds,²³¹ creating infill incentive districts,²³² and establishing tax credits to offset redevelopment costs.²³³

Similar methods are used to encourage the redevelopment of brownfields, which are often found in many older urban areas. Brownfields are “former industrial sites that require rehabilitation because of industrial contamination.”²³⁴ Once cleaned up, these sites can be used for infill development and revitalization. In addition to providing funding for cleanup and redevelopment,²³⁵ many states have implemented voluntary cleanup programs that lower the level of cleanup required depending on what the land will be used for in the future.²³⁶ In doing so, states reduce the disincentives for cleanup by reducing costs, which results in the more likely reuse of the land.²³⁷

229. *Id.* at 14-15.

230. See, e.g., Bolen et al., *supra* note 211, at 157 (discussing the smart growth programs in New Hampshire and Florida).

231. *Id.* at 166, noting that Kentucky’s smart growth program supplements the state’s existing revitalization programs and

uses the state’s expertise and resources to focus and direct state funding to selected cities, to create and reassess methods for accessing local, state, and federal sources of funding, to assist communities in locating funding sources and other information for revitalization, and to encourage the restoration and preservation of unique downtown historic buildings to promote infill development.

232. *Id.* at 150 (discussing infill development incentives in Arizona).

233. See, e.g., *id.* at 157 (discussing Colorado’s and Florida’s programs for redeveloping former industrial and commercial properties).

234. Ortiz, *supra* note 154, at 179.

235. Bolen et al., *supra* note 211, at 191, 204 (noting that New Hampshire “has already leveraged over \$30 million in private investment in formerly contaminated sites” and Ohio has provided \$400 million for both brownfields redevelopment and land acquisition).

236. See TODD S. DAVIS & KEVIN D. MARGOLIS, BROWNFIELDS: A COMPREHENSIVE GUIDE TO REDEVELOPING CONTAMINATED PROPERTY 287-676 (summarizing state voluntary cleanup programs).

237. As one commentator has noted:

If federal and state authorities insist that [brownfields] be restored to the same degree as residential land, at prodigious cost to their owners, many sites will likely not be restored at all. This means they will lie fallow, not returned to the tax rolls, and commercial and industrial development will flow to now-pristine parcels outside the cities. This vastly augments sprawl, because economics will drive developers to

By encouraging these types of land recycling efforts, state and local governments are not only able to improve the city's tax base, but they also reduce the incentive to destroy pristine lands outside the city for development. In addition, such developments may help to improve air quality. Although one might think that increasing density in the city would enhance traffic congestion, studies suggest that it does not because residents take fewer automobile trips and have alternative transit options, such as walking and biking.²³⁸ Thus, air quality may be improved by encouraging the creation of more urban residential areas.

3. Preservation

Another method that states use to avoid the impacts of urban sprawl is to preserve vanishing farmland, open space, and areas of environmental and recreational value. Land preservation has been an option for years through the use of land trusts²³⁹ and conservation easements.²⁴⁰ States have encouraged the use of these tools for preserving land for the public benefit by creating incentives,²⁴¹ such as tax breaks for the grantor.²⁴²

use tracts not reachable by public transportation or accessible to an urban work force.

Phillip Weinberg, *Control of Suburban Sprawl Requires Regional Coordination Not Provided by Local Zoning Laws*, N.Y. ST. B.A. J., Oct. 2000, at 48. Note, however, that less-stringent cleanup standards may increase hazards to nearby neighborhoods and schools. *Id.*

238. See Greenbelt Alliance, *Infill Development: Rebuilding Our Cities for a Sustainable Future* 1-2, at <http://www.sustainable.doe.gov/landuse/infill.shtml> (last updated Apr. 14, 2003) (noting that “[a] major study found that in a neighborhood with 15 homes per acre, one-third fewer auto trips occur compared to a suburban tract” (emphasis in original)).

239. Land trusts are organizations that acquire lands on their own or assist others in the acquisition of lands to enable preservation. Ortiz, *supra* note 154, at 173; see also Federico Cheever, *Public Good and Private Magic in the Law of Land Trusts and Conservation Easements: A Happy Present and a Troubled Future*, 73 DENV. U. L. REV. 1077, 1083-84 (1996) (noting that land trusts are “either a governmental entity or private nonprofit corporation, association, or trust committed to biological, historical, or aesthetic preservation”). Land trusts can also accept other assets, including conservation easements, to help fund preservation efforts. Ortiz, *supra* note 154, at 173.

240. See Kibel, *supra* note 16, at 597. A conservation easement, by contrast, prohibits development on lands without transferring ownership. See, e.g., Melissa Waller Baldwin, *Conservation Easements: A Viable Tool for Lane [sic] Preservation*, 32 LAND & WATER L. REV. 89, 105 (1997) (defining “conservation easement” as a “nonpossessory interest of a holder in real property imposing limitations or affirmative obligations the purposes of which include retaining or protecting natural, scenic, or open-space values of real property, assuring its availability for agricultural, forest, recreational, or open-space use,” as well as “protecting natural resources, maintaining or enhancing air or water quality, or preserving historical, architectural, archaeological, or cultural aspects of real property” (quoting Uniform Conservation Easement Act §1(1) (Supp. 1995)); see also Cheever, *supra* note 239, at 1079-80, explaining that

[b]y granting a conservation easement, the owner of land splits [the owner's] bundle of rights, reserving the rights to engage in certain activities (for example: hunting, farming, building a cabin) to the grantor—holder of the underlying possessory interest—and ceding the right to prevent the grantor or anyone else from engaging in another range of activities (for example: building casinos, housing developments, clearcutting timber, or filling swamps) to another party, the grantee.

241. Jean Hocker, *Land Trusts: Key Elements in the Struggle Against Sprawl*, 15 NAT. RESOURCES & ENV'T 244, 244 (2001); Baldwin, *supra* note 240, at 97-98.

Most states have increased efforts in this area by providing funding for public land acquisition. The “Florida Forever” preservation program, for example, creates a 10-year \$3 billion investment for acquiring and protecting open space and recreational areas.²⁴³ Georgia's preservation initiative sets a goal of 20% green space in the state and provides funds to large counties to help meet this goal.²⁴⁴

Other states have attempted to preserve lands by allowing the transfer of development rights (TDR). Under this type of program, the government determines which land areas will be set aside for conservation and which will be used for growth. Landowners in conservation areas are then allocated development rights for growth areas if they permanently preserve their conservation area land.²⁴⁵ The landowner can then choose to either use the development rights or sell them to others.²⁴⁶ Another mode of preservation—the habitat transaction method—focuses on habitat value and can be used in conjunction with lands protected by habitat conservation plans (HCPs) under the Endangered Species Act.²⁴⁷ Under this method, mitigation credits are established based on habitat value. These credits are then used to determine the amount of land that must be mitigated in exchange for development on other lands; more ecologically sensitive lands require greater mitigation, less sensitive lands require less mitigation.²⁴⁸

Preserving lands has several benefits. A state, local government, or even private individual can slow the spread of sprawl by setting lands off limits for development. By doing so, wildlife and plants are protected because their habitat is left untouched. By leaving trees and other plant life intact, temperatures are reduced and air quality is improved because of their ecological services of cleaning the air and re-

242. Ortiz, *supra* note 154, at 173; see also Cheever, *supra* note 239, at 1088-89 (illustrating the monetary benefits of land trusts); John L. Hollinghead, *Conservation Easements: A Flexible Tool for Land Preservation*, 3 ENVTL. LAW. 319, 337-60 (1997) (explaining the federal and state tax benefits received by grantors of conservation easements).

243. Bolen et al., *supra* note 211, at 157.

244. *Id.* at 159.

245. Ortiz, *supra* note 154, at 180; Dana Clark & David Downes, *What Price Biodiversity? Economic Incentives and Biodiversity Conversion in the United States*, 11 J. ENVTL. L. & LITIG. 9, 51 (1996).

246. Ortiz, *supra* note 154, at 180; Clark & Downes, *supra* note 245, at 51. New Jersey's TDR program, for example, preserves the Pine-lands area of the state from surrounding metropolitan growth:

The Pinelands are divided into several land use zones, with TDR credits issued through a credit bank for lands in the agricultural and ecologically sensitive areas. Density allowances are determined for all other areas, and TDR credits purchased from others can increase construction density in certain areas. As a prerequisite to the selling of TDR credits, the landowner must record deed restrictions that require future owners to use the land for only the same authorized use.

Ortiz, *supra* note 154, at 180 (citing Clark & Downes, *supra* note 245, at 54).

247. 16 U.S.C. §§1531-1544, ELR STAT. ESA §§2-18. HCPs must be prepared when a person seeks a permit to incidentally take an endangered or threatened species. *Id.* §§1538-1539. To better understand the role of HCPs in species and ecosystem protection, see Ortiz, *supra* note 154, at 168-69; Karin P. Sheldon, *Habitat Conservation Planning: Addressing the Achilles' Heel of the Endangered Species Act*, 6 N.Y.U. ENVTL. L.J. 279 (1998).

248. Ortiz, *supra* note 154, at 180; Clark & Downes, *supra* note 245, at 54-55.

ducing pollution.²⁴⁹ In addition, because undeveloped areas have no man-made impervious cover, both water quantity and water quality are improved, which in turn improves aquatic habitat.

4. Planning

States also attempt to reduce the problems of sprawl by funding local governments in their planning efforts, through both technical support and direct funds.²⁵⁰ Technical support can be as simple as providing a website that provides local governments with helpful materials that can assist in planning efforts.²⁵¹ More technical support often involves the preparation of planning guidelines or model ordinances.²⁵²

Funding goes toward encouraging local governments to coordinate regional planning programs. New Hampshire, for example, provides for planning grants meant to “strengthen regional planning agencies and allow them to work with communities on such projects as developing new in-town and village zoning districts to revitalize downtowns, and discourage sprawling development, or adopting traffic-calming techniques on existing commercial strips.”²⁵³ Oregon also requires state and local planning and even coordinates state agency activities that involve land use.²⁵⁴

5. Compact Zoning

Finally, local governments attempt to relieve sprawl by retooling their land use ordinances. As previously discussed, unwise application of single-use zoning has resulted in sprawled development because it separates residential uses from different, but not necessarily incompatible, uses.²⁵⁵ Smart growth efforts at the local level have abandoned this conventional idea of metropolitan growth and embraced methods that result in more compact growth. Oregon, for example, requires local governments to designate urban growth boundaries that contemplate reasonable growth over a period of 20 years.²⁵⁶

Other options that states use to encourage compact development is mixed-use zoning and minimum density restrictions. Mixed-use zoning allows the creation of compatible

uses of varying affordability in the same area.²⁵⁷ For instance, in a mixed-use neighborhood, one might find single-family housing mingled with multifamily residences, both within walking distance of a grocery store, dry cleaner, or other commercial establishment. Mixed uses might also be found in the same building; for example, one might find a row of shops along the street, a second floor filled with business offices, and apartments on a third.²⁵⁸

By creating housing near employment opportunities and regularly frequented establishments, mixed-use zoning can improve sprawl by making residents less automobile-dependent, which, as mentioned before, can improve air quality.²⁵⁹ Mixed-use neighborhoods can also foster a greater sense of community by discarding the relative privacy of suburban life and creating opportunities for interaction between neighbors.

B. Innovative Design

In addition to states and local governments, architects and developers have also sought creative solutions to the problems created by sprawl. This section discusses three of these methods. New Urbanism development attempts to address many of sprawl’s economic, psychological, and environmental impacts. Conservation subdivisions and low-impact development, on the other hand, focus more on reducing environmental impacts.

1. New Urbanism

New Urbanism is generally characterized as a return to traditional planning concepts and enables “the restoration of existing urban centers and towns within coherent metropolitan regions, the reconfiguration of sprawling suburbs into communities of real neighborhoods and diverse districts, the conservation of natural environments, and the preservation of our built legacy.”²⁶⁰ As such, it neatly fits into smart growth efforts because of its shared vision.

Douglas Kelbaugh, a New Urbanist planner, notes several basic goals that New Urbanist development seeks to achieve. The first New Urbanist goal is to create denser development with clearly delineated community boundaries.²⁶¹ These developments, although more compact, have nearby areas, e.g., natural areas or farmlands, that not only serve as neighborhood borders but also appeal aesthetically to neighborhood residents.²⁶² Such areas can help to create a sense of place by providing “opportunities for leisure, exercise, culture, scenery, and public space”²⁶³ and can “enhance[e] the environmental health of a neighborhood and provid[e] a universal link with nature.”²⁶⁴ Like smart growth, denser development, especially in infill areas, can

249. See Vivian D. Encarnacion, *More Trees Please: Utilizing Natural Resources in the Urban Environmental Management of New York City*, 26 *FORDHAM URB. L.J.* 1571, 1571 (1999) (noting that “[a]side from aesthetic appeal, trees also serve an important role in the ecological system by cleansing the air, reducing pollution, mitigating extreme temperatures, conserving energy and preventing excessive storm-water runoff”).

250. Bolen et al., *supra* note 211, at 148.

251. *Id.* (discussing Minnesota’s website, Minnesota Planning, and New Hampshire’s Planning Net).

252. *Id.*

253. *Id.* at 191.

254. *Id.* at 207.

255. See *supra* notes 201-03 and accompanying text.

256. Bolen et al., *supra* note 211, at 207. A growth boundary is an indication of where a city can grow and the limits of that growth. Inside the boundary, urban development may continue; outside the boundary, the land use will remain essentially rural. See OREGON DEP’T OF LAND CONSERVATION & DEV., *WHAT IS AN URBAN GROWTH BOUNDARY?* (1992, rev. ed. 1995), available at <http://www.uoregon.edu/~pppm/landuse/UGB.html> (describing the urban growth boundaries used for cities in Oregon).

257. Lewyn, *supra* note 14, at 380 & n.559.

258. Amanda Siek, *Smart Cities: A Detailed Look at Land Use Planning Techniques That Are Aimed at Promoting Both Energy and Environmental Conservation*, 7 *ALB. L. ENVTL. OUTLOOK J.* 45, 53 (2002) (citation omitted).

259. See *id.* at 53.

260. CONGRESS FOR THE NEW URBANISM, *CHARTER OF THE NEW URBANISM* v (Michael Leccese & Kathleen McCormick eds., 2000).

261. KELBAUGH, *supra* note 90, at 48.

262. *Id.*

263. CONGRESS FOR THE NEW URBANISM, *supra* note 260, at 113.

264. *Id.* at 117.

improve a city's tax base and its air quality with fewer cars on the road.

The second goal of New Urbanism is to utilize mixed-use zoning in such a way that it makes the community more livable and appeals to a broader range of people.²⁶⁵ New Urbanist communities are composed of different types of land use, different types of housing and buildings, and different age and socioeconomic groups.²⁶⁶ Creating this mixture allows residents to live closer to their jobs in housing they can afford,²⁶⁷ to mix with groups of people to which they would not otherwise have as close access, and to rely less on the automobile.²⁶⁸ In the ideal New Urbanist neighborhood, the number of residents and employment opportunities are balanced.²⁶⁹

The third goal is to reduce dependence on the automobile by making walking, bicycling, and use of public transit more convenient.²⁷⁰ For example, streets in New Urbanist communities are better networked to allow more direct routes to a greater number of destinations, and more interesting walks are created by the inclusion of paths, greenways, and waterways.²⁷¹ When possible, uses are within walking distance of transit stops to make public transportation more user-friendly.²⁷² Many New Urbanist designers attempt to limit walking times to no more than 5 or 10 minutes by ensuring transit stops and shops are conveniently located.²⁷³

The fourth goal of New Urbanism is to revitalize and restore existing lands before building new communities in un-

developed areas.²⁷⁴ Recycling areas allows development to be more efficient by using existing social, physical, and institutional infrastructure.²⁷⁵ To encourage correct prioritization, some New Urbanist scholars suggest completion of permit processing in the following order: "[U]rban infill sites, suburban infill sites, existing and future rail stops, urban extensions adjacent to existing neighborhoods, and major roadway intersections."²⁷⁶

The fifth goal is to make neighborhoods "spatially coherent and cohesive" to a sense of place.²⁷⁷ In such neighborhoods, residents have a greater sense of community, which may encourage greater involvement in community projects. Creating a sense of place involves making a neighborhood's inhabitants feel secure in an enclosed area. As scholars explain:

The desire for enclosure stems from several sources among them the fundamental human need for shelter, orientation, and territoriality. Whatever the cause, people are attracted to places with well-defined edges and limited openings, while they tend to flee places that lack clear definition or boundaries. For this reason, the most effective technique for designing successful urban spaces is to think of them as outdoor living rooms.²⁷⁸

The sixth New Urbanist goal is to make neighborhoods more interesting and desirable, thereby providing stimulation other than that provided by "electronically mediated reality . . . and life spent primarily in privatized spaces."²⁷⁹ New Urbanism encourages "strengthening of the public realm, with face-to-face interaction, citizen participation and public/community art in dignified, physically defined places."²⁸⁰ Neighborhood residents tend to become more pedestrian-oriented when they are interested in their surroundings, and "[n]othing interests humans more than other humans, and architecture that fails to express the presence of humans is unsatisfying to the pedestrian."²⁸¹ The addition of nearby parks and other public spaces creates this interest and allows communities to interact, which may "ultimately evoke pride and participation in public life."²⁸²

The last goal of New Urbanism is to encourage more sustainable and energy-efficient "environmental, economic and cultural practices, traditions, and mythologies" to reduce consumption of natural resources.²⁸³ Indeed, New Urbanist developers try to incorporate natural landscape into development plans and recognize climate needs to en-

265. KELBAUGH, *supra* note 90, at 48.

266. *Id.*

267. One way to create affordable housing and a more dense neighborhood design is to create garage apartments; "[t]hey make housing more affordable for singles or young families by providing starter units, and for large or extended families by providing extra space or extra income." *Id.* at 126.

268. Meredith, *supra* note 20, at 478-79.

269. Balancing residents and employment requires coordination between the neighborhood's housing developer and commercial developer. DUANY ET AL., *supra* note 102, at 189. The fact that many employees now choose to telecommute makes this balance much easier to attain. *Id.*

270. KELBAUGH, *supra* note 90, at 48. Means of achieving this goal include the creation of "pedestrian pockets," transit-oriented development, and traditional neighborhood designs (also known as "Neotraditionalism"). *Id.* at 128-31 (describing these designs).

271. *See id.* at 48.

272. Meredith, *supra* note 20, at 480. Although automobile use is limited, it is not precluded and can be adequately accommodated in New Urbanist neighborhoods. *See id.*

273. DUANY ET AL., *supra* note 102, at 198-99. As some commentators have explained:

The five-minute walk—or pedestrian shed—is roughly one-quarter mile in distance. It was conceptualized as a determinant of neighborhood size in the classic 1929 New York City Regional Plan, but it has existed as an informal standard since the earliest cities, from Pompeii to Greenwich Village. If one were to map the neighborhoods of most prewar cities, they would average about one-quarter mile from edge to center. While some flexibility is advisable[,] . . . most new traditional town plans are designed around the five-minute measure. One-quarter mile is usually the distance from which you can actually spot your destination. More important, experience suggests that it is a distance short enough that most Americans simply feel dumb driving, making it a perfect rule of thumb for our auto-dependent times.

Id. (emphasis omitted).

274. KELBAUGH, *supra* note 90, at 48. "Urban villages," like those created in Seattle, are examples of New Urbanist revitalization. *See id.* at 121-27 (describing urban villages and analyzing their benefits and weaknesses).

275. *Id.*

276. DUANY ET AL., *supra* note 102, at 145.

277. KELBAUGH, *supra* note 90, at 49.

278. DUANY ET AL., *supra* note 102, at 75 (comparing the flat street walls of Georgetown with the "wiggly" walls of California suburban development). New Urbanists further enhance a community's sense of place by incorporating into their designs elements of local history and building practice. *See* Meredith, *supra* note 20, at 482 (noting that New Urbanist design "celebrates . . . local elements such as local history, climate, ecology, and building practice" to "create memorable places").

279. KELBAUGH, *supra* note 90, at 49.

280. *Id.*

281. DUANY ET AL., *supra* note 102, at 80-81.

282. Meredith, *supra* note 20, at 482.

283. KELBAUGH, *supra* note 90, at 49.

sure energy-efficient buildings.²⁸⁴ As Kelbaugh states: “The lone-riding Marlboro man needs to be overtaken by a bus-riding urban hero; Paul Bunyan needs to give way to Johnny Appleseed; and the detached house with three-car garage needs to move over for the solar townhouse with bicycles and walking sticks.”²⁸⁵

2. Conservation Subdivisions

Like New Urbanism, conservation subdivisions seek to eliminate some of the negative elements created by sprawl through the use of compact development. Instead of taking a broad focus, however, the conservation subdivision “has as its central principle the preservation of natural lands as building blocks in community-wide open space networks.”²⁸⁶ Unlike the community parks and open space contemplated by New Urbanism, the open space involved in conservation subdivision design is on a much larger scale with a different purpose: perpetual protection of large tracts of land and woodlands that serve as corridors between developments.²⁸⁷ Further, conservation subdivisions are generally located at city’s edge and are “especially adaptable to situations in which central water or sewer is not available and where low-density, residential zoning is a given.”²⁸⁸

Conservation subdivisions are able to conserve large tracts of land by clustering compact forms of single-family houses, semi-detached, and attached dwellings.²⁸⁹ Density in these neighborhoods is neither increased nor decreased from a normal subdivision; rather, compact construction is meant to make the subdivision “density-neutral.”²⁹⁰ The design of the conservation subdivision is simple: “[H]ousing is clustered in small groups on small lots, separated from similar clusters by large expanses of land generally covering both sensitive habitat areas and unique land features.”²⁹¹ Before building, a detailed evaluation of the land’s ecology is performed to determine which lands to protect.²⁹² To make this determination, developers review the local wildlife’s habitat needs, especially those of declining species populations.²⁹³ Once that decision is made, the land to be protected is divided into two conservation areas, primary and secondary,²⁹⁴ and construction commences, with housing allowed around (but not in) the secondary area.²⁹⁵ Conservation areas are often linked with wildlife corridors to support free

movement of species populations,²⁹⁶ and larger wildlife and riparian corridors can be linked to additional conservation subdivisions once they are created.²⁹⁷

Conservation subdivisions contribute to improving sprawled conditions in the same manner that land preservation does under smart growth or New Urbanism initiatives. Since large tracts of land are protected, greater amounts of habitat are conserved. Indeed, because ecological evaluations are prepared, the habitat most important to species is preserved rather than just protecting the habitat that is most convenient, which might result under smart growth or New Urbanism plans. Further, protecting wildlife corridors helps to ensure more stable and healthy species populations. Finally, water impacts may also be helped by creating smaller amounts of impervious surfaces.

3. Low-Impact Development

A third type of innovative design meant to relieve urban runoff issues is low-impact development.²⁹⁸ As previously described, conventional stormwater management involves conveying runoff over various impervious surfaces and through discreet conduits until it reaches its destination, such as the end of a pipe or a stream.²⁹⁹ This type of management causes a variety of problems, including reduced aquifer recharge, increased urban runoff volume and velocity, stream bank erosion, water quality degradation, and other pollutant problems.³⁰⁰ Low-impact development attempts to reduce these problems by abandoning conventional management techniques in favor of close-to-the-source management and drainage systems that use or simulate the area’s natural hydrology.³⁰¹ It can often be implemented at a much lower cost than traditional water management options.³⁰²

Low-impact development is “based on the paradigm that stormwater management should not be seen as stormwater disposal.”³⁰³ Its main goal is “to reduce runoff volume by infiltrating rainfall water to groundwater, evaporating rainwater back to the atmosphere after a storm, and finding beneficial uses for water rather than exporting it as a waste product

284. Meredith, *supra* note 20, at 482.

285. KELBAUGH, *supra* note 90, at 49.

286. RANDALL G. ARENDT, CONSERVATION DESIGN FOR SUBDIVISIONS: A PRACTICAL GUIDE TO CREATING OPEN SPACE NETWORKS 8 (1996).

287. *Id.*

288. *Id.*

289. *Id.* at 6.

290. *Id.* at 6-7.

291. Ortiz, *supra* note 154, at 184. The open land that separates the housing clusters may be dedicated to an organization for management purposes or given to landowners through their homeowners’ associations. ARENDT, *supra* note 286, at 173-74.

292. *Id.* at 6-7.

293. SHEILA PECK, PLANNING FOR BIODIVERSITY: ISSUES AND EXAMPLES 42 (1998).

294. Primary conservation areas generally include “unbuildable wetlands, waterbodies, floodplains, and steep slopes.” ARENDT, *supra* note 286, at 7.

295. *Id.*

296. PECK, *supra* note 293, at 185.

297. ARENDT, *supra* note 286, at 49-55.

298. Maryland’s Prince George’s County is credited with being the pioneer of low-impact development, having begun use of low-impact development techniques in the early 1990s. U.S. EPA, LOW-IMPACT DEVELOPMENT: A LITERATURE REVIEW 1 (2000), available at <http://www.epa.gov/owow/nps/lid/lidlit.html> [hereinafter LOW-IMPACT DEVELOPMENT].

299. *Id.* at 1; DEPARTMENT OF ENVIRONMENTAL RESOURCES, PRINCE GEORGE’S COUNTY, MARYLAND, LOW-IMPACT DEVELOPMENT DESIGN STRATEGIES: AN INTEGRATED DESIGN APPROACH 1-5 (1999), available at <http://www.epa.gov/owow/nps/lid/lidnatl.pdf> [hereinafter LOW-IMPACT DESIGN STRATEGIES].

300. See *supra* notes 124-53 and accompanying text.

301. LOW-IMPACT DEVELOPMENT, *supra* note 298, at 7 (defining low-impact development as “a site design strategy with a goal of maintaining or replicating the pre-development hydrologic regime through the use of design techniques to create a functionally equivalent hydrologic landscape”); NATURAL RESOURCES DEFENSE COUNCIL, STORMWATER STRATEGIES: COMMUNITY RESPONSES TO RUNOFF POLLUTION, LOW-IMPACT DEVELOPMENT (1999), available at <http://www.nrdc.org/water/pollution/storm/chap12.asp>.

302. LOW-IMPACT DEVELOPMENT, *supra* note 298, at 2; NATURAL RESOURCES DEFENSE COUNCIL, *supra* note 301.

303. NATURAL RESOURCES DEFENSE COUNCIL, *supra* note 301.

down storm sewers.³⁰⁴ To reach this goal, low-impact development offers a variety of flexible techniques, such as bioretention areas, grass swales, roof gardens, permeable pavements, and other simple design strategies.³⁰⁵

Bioretention areas are landscaped depressions that can be fit into parking lot islands and residential landscaped areas.³⁰⁶ Generally designed to drain areas that are five acres or less,³⁰⁷ they serve both to reduce water volume³⁰⁸ and remove contaminants from urban runoff through filtration.³⁰⁹ After filtering, runoff is collected and returned to the city's storm drain system to avoid groundwater contamination, although systems can be designed to allow groundwater recharge.³¹⁰

Grass swales perform similar services. They are linear vegetated channels used to replace curbs and gutters along residential streets and highways.³¹¹ They treat runoff and reduce its velocity by filtering the runoff through the channel's vegetation and soil.³¹² Although inappropriate for some areas,³¹³ they are ideal for small drainage areas like those found in residential areas.³¹⁴ Because many local and state road and drainage regulations require the use of curbs

and gutters, however, revision of relevant regulations may be necessary to implement this management option.³¹⁵

Roof gardens, also known as vegetated roof covers and green roofs, reduce urban runoff by decreasing the amount of impervious surfaces.³¹⁶ They generally consist of several layers—vegetation, drainage material, and a waterproof membrane—that work to filter and absorb rainfall.³¹⁷ Absorption is so effective that a simple roof garden with as little as three inches of substrate “can reduce annual runoff by more than 50% in temperate climates.”³¹⁸ They are particularly effective in older urban areas, especially those that have problems created by combined sewer overflow.³¹⁹

Apart from decreasing impervious surfaces, roof gardens offer other benefits as well. For example, as long as the roof garden has been properly installed,³²⁰ it can extend the life of a roof by up to 20 years or longer,³²¹ lowering building maintenance costs. They can also reduce energy costs because the vegetation helps cool the air³²² and, since the roof garden is cooler than a simple rooftop, threats of thermal shock are reduced.³²³ Finally, roof gardens aid in conservation by eliminating the need for greater land consumption for stormwater control.³²⁴

Permeable pavement (also known as porous pavement) is another low-impact development method used to reduce impervious surface and treat runoff. Permeable pavement generally consists of a porous surface, such as porous asphalt, pervious concrete, or grass pavers,³²⁵ under which is placed a lined stone reservoir that holds runoff before it percolates into the subsoil.³²⁶ It is often used in low-traffic or

304. *Id.* Low-impact development also seeks to “minimize disturbance, preserve and recreate natural landscape features, reduce effective impervious cover, increase hydrologic disconnects, increase drainage flow paths, enhance off-line storage, facilitate detention and infiltration opportunities.” *Id.*

305. LOW-IMPACT DEVELOPMENT, *supra* note 298, at 7-8.

306. U.S. EPA, *Post-Construction Stormwater Management in New Development and Redevelopment: Bioretention*, at http://cfpub2.epa.gov/npdes/stormwater/menuofbmps/post_4.cfm (last updated Aug. 15, 2002) [hereinafter *Bioretention*].

307. *Id.*

308. LOW-IMPACT DEVELOPMENT, *supra* note 298, at 5. Grass buffers and depressions in bioretention areas slow the flow of water and hold it to allow the pollutants time to settle and the water to evaporate. *Id.*

309. Local vegetation, soil and clay, organic materials, and sand beds perform the cleaning function of the bioretention cell. Vegetation aids in evapotranspiration and pollutant removal by recycling nutrients found in the runoff. *Id.* As the vegetation grows, the bioretention cell's performance improves; however, annual maintenance is required and soil replacement may be necessary as filtering abilities decline. *Id.* at 6. Planting soils help the vegetative growth, but also adsorb hydrocarbons, heavy metals and nutrients. Organic materials in the bioretention cell contain microorganisms that decompose and degrade pollutants, especially petroleum-based pollutants, and the sand bed aerates, drains, and flushes pollutants from the planting soil. *Id.* at 7.

310. *Bioretention*, *supra* note 315.

311. U.S. EPA, *Post-Construction Stormwater Management in New Development and Redevelopment: Eliminating Curbs and Gutters*, at http://cfpub2.epa.gov/npdes/stormwater/menuofbmps/post_8.cfm (last updated Aug. 15, 2002) [hereinafter *Curbs and Gutters*].

312. U.S. EPA, *Post-Construction Stormwater Management in New Development and Redevelopment: Grassed Swales*, at http://cfpub2.epa.gov/npdes/stormwater/menuofbmps/post_24.cfm (last updated Aug. 15, 2002) [hereinafter *Grassed Swales*]. Similar drainage devices include grassed channels, dry swales, and wet swales, each of which have slightly different designs and methods of treatment. *Id.* For a description of each of these options, see *id.*

313. In some situations grassed swales may be inappropriate because of location. For example, grassed swales in exceptionally arid areas require maintenance through irrigation; therefore, the value of the swales may be less than that in more humid regions. *Id.* Densely developed urban areas with little pervious surfaces and areas with extremely contaminated runoff, e.g., around gas stations, are also inappropriate because they do not have the level of pervious surface required to create effective grassed swales. *Id.* Overly contaminated areas, also known as stormwater hot spots, are inappropriate because use of the grass swales may lead to infiltration into groundwater, leading to contamination by insufficiently filtered runoff. *Id.*

314. *Id.*

315. *Curbs and Gutters*, *supra* note 311.

316. LOW-IMPACT DEVELOPMENT, *supra* note 298, at 7.

317. U.S. EPA, VEGETATED ROOF COVER 1-2 (2000) (EPA-841-B-00-005D), available at lowimpactdevelopment.org/ftp/Roof_cover_Factsheet.pdf [hereinafter VEGETATED ROOF COVER].

318. LOW-IMPACT DEVELOPMENT, *supra* note 298, at 8.

319. *Id.* at 7. Combined sewers not only convey urban runoff, but also sanitary sewage and industrial waste. Brisman, *supra* note 124, at 506 n.3.

320. Considerations for those who wish to install a roof garden include the roof's load-bearing capacity, how well the impervious membrane resists moisture and root penetration, hydraulics and wind shear. VEGETATED ROOF COVER, *supra* note 317, at 1.

321. LOW-IMPACT DEVELOPMENT, *supra* note 298, at 7; VEGETATED ROOF COVER, *supra* note 317, at 3.

322. Measurements of temperature differences based on a roof garden in Philadelphia, Pennsylvania, were extreme. Results showed that “[d]uring the spring and summer, temperatures on a neighboring black tar roof varied by as much as 90° F, while the variation under the 2.74-inch vegetated cover was only 18° F.” VEGETATED ROOF COVER, *supra* note 317, at 3.

323. *Id.* at 2. Thermal shock is the rapid increase in water temperature caused by heated roofs and paved areas. *Id.*

324. LOW-IMPACT DEVELOPMENT, *supra* note 298, at 7.

325. Porous asphalt and pervious concrete look like regular pavement, but are made of coarse aggregate with interconnected voids that are highly permeable. Grass pavers are “concrete interlocking blocks or synthetic fibrous gridded systems with open areas designed to allow grass to grow within the void areas.” U.S. EPA, *Post-Construction Stormwater Management in New Development and Redevelopment: Porous Pavement*, at http://cfpub2.epa.gov/npdes/stormwater/menuofbmps/post_21.cfm (last updated Aug. 15, 2002) [hereinafter *Porous Pavement*].

326. U.S. EPA, STORMWATER TECHNOLOGY FACT SHEET: POROUS PAVEMENT 1 (1999) (EPA 832-F-99-023), available at www.epa.gov/ow-owm.html/mtb/porouspa.pdf [hereinafter STORMWATER FACT SHEET]; *Porous Pavement*, *supra* note 325. A different look is created by other types of pavers, such as “gravel, cobbles, wood mulch, brick, grass pavers, turf blocks, [and] natural stone,”

overflow parking lots.³²⁷ Although it can be quite effective, especially in highly urban areas, permeable pavement has its challenges. Permeable pavement designs are costly³²⁸ and require high maintenance to ensure that the surface permeability is not impaired by clogging.³²⁹ Further, because of the potential for groundwater contamination, it is inappropriate for use near stormwater hot spots and may be inappropriate for cold climates where sand or salt is applied during the winter.³³⁰ Permeable pavement also has a high risk of failure and is not designed to treat leaks of petroleum or toxic chemicals from vehicles,³³¹ which could easily occur if used in a parking lot.

Other simple design strategies can also be used to reduce the impacts of development on stormwater drainage, some at very low cost. Rain gutter disconnects on rooftops, for example, reduce the amount of water reaching storm sewers by redirecting runoff into treatment devices such as the ones discussed above.³³² In residential areas, redirecting rooftop runoff to rain barrels or rainwater tank systems can reduce water bills by allowing the landowner to use the collected runoff for lawn and garden irrigation, hot water systems, toilets, and washing machines.³³³

Finally, innovative street design can reduce runoff by creating fewer impervious surfaces. Streets, for example, can be reduced to the absolute minimum width necessary for effective management of traffic, parking, and emergency vehicles.³³⁴ Imperviousness can also be reduced by including center islands in cul-de-sacs and designing residences to include shared driveways and parking lots.³³⁵

although not all types of porous cover include the stone reservoir. U.S. EPA, *Post-Construction Stormwater Management in Development and Redevelopment: Green Parking*, at http://cfpub2.epa.gov/npdes/stormwater/menuofbmps/post_12.cfm (last updated Aug. 15, 2002); *Porous Pavement*, *supra* note 325 (noting that only porous asphalt, pervious concrete, and grass pavers use a stone reservoir for collecting rainfall).

327. *Porous Pavement*, *supra* note 325.
328. *Id.* (noting that traditional asphalt usually runs from \$.50 to \$1 per foot, whereas permeable pavement can range from \$2 to \$3 per foot); see also STORMWATER FACT SHEET, *supra* note 326, at 5 (detailing costs for a porous pavement system).
329. STORMWATER FACT SHEET, *supra* note 326, at 3, 5. Maintenance includes annual inspections and quarterly bouts of vacuum sweeping followed by high-pressure hosing to unclog pores and waste disposal. *Id.*
330. *Id.* at 2; *Porous Pavement*, *supra* note 325.
331. STORMWATER FACT SHEET, *supra* note 326, at 2. Further, organic decomposition may be impeded if the soil underlying the stone reservoir remains moist between storms. *Id.*
332. LOW-IMPACT DEVELOPMENT, *supra* note 298, at 8.
333. *Id.*; LOW-IMPACT DESIGN STRATEGIES, *supra* note 299, at 4-18 to 4-19; PETER COOMBS & ROSEANNE PASKIN, LOWER HUNTER AND CENTRAL COAST REGIONAL ENVIRONMENTAL MANAGEMENT STRATEGY, THE WATER SMART HOME, PRACTICE NOTE 1, at 4 (2002), available at http://www.lhccrems.nsw.gov.au/projects/wsd/1_WaterSmartHome.pdf (describing various options for creating a "WaterSmart" home, defined as "one in which the dwelling and its surrounding land are designed and used so as to minimize harmful impacts on the natural water cycle").
334. LOW-IMPACT DEVELOPMENT, *supra* note 298, at 8. Indeed, this idea has been used on an experimental basis in Vancouver, British Columbia, for use on alleys and back lanes. Rather than paving an entire roadway, the developer paves only two narrow strips using concrete and separated by a supporting plastic structural grid that is covered with topsoil and grass, which allows for drainage. Puget Sound Action Team, *Permeable Pavement: Country Lanes*, at http://www.psat.wa.gov/Publications/LID_studies/permeable_pavement.htm (last updated Aug. 10, 2000).
335. LOW-IMPACT DEVELOPMENT, *supra* note 298, at 8.

IV. Challenges of the New Community

Taken together, smart growth and innovative development like New Urbanism, conservation subdivisions, and low-impact development form a new, more livable and environmentally friendly community. They share similar concepts and each works to reduce the impacts of sprawled growth.

Each approach on its own, however, is insufficient to create this new community. Rather, each approach supplements the others to lessen sprawl's impacts. Indeed, smart growth and innovative design are interrelated. Neither one can function without the other. For example, smart growth, though enacted by the government, requires acceptance by developers before it can be implemented. Although states and local governments can eliminate subsidies for infrastructure or impose impact fees to reduce the drain on public services, developers are still free to develop in a sprawled manner should they choose to do so, as long as they pay the cost. Similarly, developers will often be prohibited from creating the most effective innovative developments without favorable smart growth legislation and changes to outdated zoning regulations.

Further, a combination of innovative design mechanisms can have a more beneficial impact on sprawl than any single mechanism. For example, although the revitalization of New Urbanism may offer promise by reducing urban core deterioration, increasing the tax base and reducing environmental impacts caused by automobile usage and loss of habitat, it has minimal impact on improving water quality. Incorporation of low-impact development into New Urbanist design, though, can fill this void and help reduce detrimental water impacts. Similarly, since many people will be unwilling to give up a suburban lifestyle, conservation design that incorporates low-impact development will be helpful to reduce impacts on the suburban fringe.

If one sees the goals of these mechanisms as reduction of sprawl's impacts, the new community may be successful. As discussed further below, however, creation of the new community faces many challenges, and its ultimate success remains to be seen.

A. Politics

One of the greatest challenges to creating the new community is overcoming institutional inertia. Smart growth and innovative design require states and local governments to abandon conventional notions about growth and transportation. To make these mechanisms work, legislation is required that allows nontraditional zoning options, eliminates destructive subsidies, and refocuses transportation dollars on public transit.

Increased density, for example, is the key to successful implementation of smart growth, New Urbanism, and conservation design. Because the laws of many jurisdictions tie the hands of developers by requiring the use of traditional Euclidean zoning, states and local governments must legislatively authorize mixed-use zoning or clustered housing before progress in these areas can be made. Implementation of low-impact development may also require appropriate governmental changes to zoning or building codes. In addition, other smart growth techniques, especially those requiring funding, require authorizing legislation. Yet, despite general (although not unanimous) agreement on the benefits

of these techniques, many states and local governments still have taken no definitive steps to implement them.³³⁶

Similarly, in many cases, elimination of damaging subsidies and creation of appropriate funding requires changes in legislation and policy. Ending the impacts of fiscal zoning,³³⁷ for example, requires cities to consider municipal tax reform. Achieving that reform and obtaining alternative revenue streams, however, is difficult, as evidenced by the continuing existence of the property tax.³³⁸ Further, creating funding mechanisms, tax breaks, and other smart growth incentives and improving public transportation also require government action. Until these actions are taken, reduction in sprawl-related impacts will be small.

One reason for the slow change is the competing interests at stake. New Urbanist designer Andres Duany and Prof. Emily Talen note the difficulty:

[P]lanning is mired in a culture of separation that makes it difficult to effectuate systemic change. For example, planning is stymied by a self-imposed system of specialization: planning professionals include economic development planners, transportation planners, and environmental planners—all competing to make their own issue the dominant force in development politics.³³⁹

Even when these different interest groups work together, however, change may be difficult. Smart growth, although popular, has its opponents. The state of Wisconsin, for example, currently faces opposition to its recently enacted requirement that local governments adopt and implement comprehensive land use plans. Even though the requirement is partially funded, small communities dispute the need for the same land use management requirements as larger cities, and three counties argue that “local communities should be able to do their own land-use plans without the state dictating what they should include in those and when the plans should be carried out.”³⁴⁰ Proponents of smart growth may also delay growth legislation if they disagree with the effectiveness of the proposed legislation. Twenty-five recent growth-related bills in the state of Washington, for example, were “halt[ed] or neutraliz[ed]” by the citizens group 1000 Friends of Washington because they deemed the proposal

“anti-growth management.”³⁴¹ Further, debate continues over the constitutionality of certain smart growth measures, such as urban growth boundaries,³⁴² an issue that could hinder passage of smart growth initiatives. Until these issues are resolved and governments overcome their statutory inertia, much of the promise of smart growth and innovative design will be beyond the reach of many cities.

One possible way to increase the adoption of smart growth legislation is to create avenues for greater public participation in planning decisions. Prof. William Shutkin, for example, argues that new environmental organizations must be created to bridge the gap between the various sectors of society. As he states:

We need organizations that can institutionalize networks of key institutional stakeholders. We need institutions that can leverage those networks and emphasize eco-development’s competitive advantages and compatibility with conventional practices. We need mechanisms that can act as a catalyst for eco-development efforts by linking stakeholders and spreading eco-development innovations and change concepts across the region. In short, we need institutions that can enable a diverse set of stakeholders to plan, organize, and execute eco-development strategies aimed at improving and protecting the environment while facilitating sustainable economic development and building the civic capacity of communities.³⁴³

Prof. Rose Kob makes a similar argument, but suggests the creation of a process that allows all opinions and ideas to be voiced, including those of residents.³⁴⁴ By creating such a

336. See generally Bolen et al., *supra* note 211 (noting the land use techniques of the 50 states); see also Andres Duany & Emily Talen, *Making the Good Easy: The Smart Code Alternative*, 29 *FORDHAM URBAN L.J.* 1445, 1449-50 (2002) (noting a study of 168 Illinois municipal and county regulations that showed “mixed use zoning to be limited; smart growth tools almost nonexistent; and proscriptive requirements for lot sizes, setbacks, road widths and parking decidedly in favor of low-density sprawl and urban fragmentation” and studies that found “a blatant lack of connection between smart growth rhetoric and corresponding implementation devices”).

337. See *supra* note 42 and accompanying text.

338. For an interesting discussion regarding the determined persistence of the property tax, see generally Edward A. Zelinsky, *The Once and Future Property Tax: A Dialogue With My Younger Self*, 23 *CARDOZO L. REV.* 2199 (2002).

339. Duany & Talen, *supra* note 336, at 1450.

340. Amy Rinard, *Smart Growth Quietly Moving Along*, *MILWAUKEE J. SENTINEL*, May 11, 2003, at 2, available at 2003 WL 3324407; see also Smart Growth Network, *Bay Area Housing Targets Draw Criticism From Local Officials* (Nov. 12, 2002), at <http://www.smartgrowth.org/news/article.asp?art=3019&State=5&res=800> (noting the Alameda city planning and building director’s statement that “his city ‘is committed to working cooperatively toward a regional smart growth plan,’ but its housing decisions ‘cannot be made by a consensus at a public workshop by those who are not familiar with our community goals and policies’”).

341. 1000 Friends of Washington, *Attack on Growth Management Halted*, at http://www.1000friends.org/current_work/legislature/legislative_update.cfm (last visited Aug. 13, 2003).

342. Compare Michael Lewyn, *Sprawl, Growth Boundaries, and the Rehnquist Court*, 2002 *UTAH L. REV.* 1, 20-21 (2002) (arguing that urban growth boundaries are not unconstitutional) and Timothy J. Dowling, *Reflections on Urban Sprawl, Smart Growth, and the Fifth Amendment*, 148 *U. PA. L. REV.* 873, 873 (2000) (arguing that “efforts to combat sprawl are entirely consistent with longstanding traditions regarding appropriate regulation of land use, as well as the Takings Clause of the Fifth Amendment” and that “[t]hose who argue that courts should constrain smart growth initiatives through an activist application of the Takings Clause threaten not only our constitutional structure, but also the very property rights they purport to champion”), with Bolick, *supra* note 99, at 870-71 (arguing that the proof required to show that “urban growth boundaries and other growth-control restrictions” can meet the *Lucas* takings test “should not present a difficult hurdle because the objective of the restrictions is to prevent development consistent with the otherwise predictable use of the property” and that “a development moratorium could trigger compensation obligations for a temporary taking”).

343. William A. Shutkin, *Realizing the Promise of the New Environmental Law*, 33 *NEW ENG. L. REV.* 691, 703 (1999). Prof. William Shutkin defines “eco-development” as a “new model of environmental protection,” one that “focuses on land use decisions and local planning efforts to ensure that development occurs in accordance with environmental principles such as pollution prevention as well as community vision.” *Id.* at 691.

344. Kob, *supra* note 18, at 165-66. As Professor Kob states:

The only way to alter people’s attitudes about the public is through a face-to-face confrontation with the fact of our linked futures. The eco-development movement has an enormous reserve of public energy, and it must ensure that this energy is channeled into meaningful public participation structures. People must be able to have a voice in development decisions that affect the environment. If eco-development can seize this energy to reinvigorate people about their ability to influence decisions, the movement has the potential to transform the way our country functions.

Id. at 163.

process, it may become a means for consensus-building, although the process will still be faced with governmental reluctance for change and the eventual waning of the public's interest in participation.³⁴⁵

B. Individual Preference

In addition to legislative opposition, individual preference will influence the effectiveness of smart growth measures and the acceptability of innovative design. As discussed above, a variety of factors worked to create urban sprawl by making suburban living attainable and desirable. Yet sprawl continues not only for those reasons, but also because it is fueled by a continued individual preference for suburban living.³⁴⁶ Whether this preference was initially created by federal subsidies,³⁴⁷ influenced by favorable suburban taxes and services,³⁴⁸ or whether it exists purely as the "American dream,"³⁴⁹ a suburban preference continues today despite recognition of and displeasure with the negative aspects of sprawl.

The adoption of smart growth measures indicates American discontent with sprawl's problems. However, smart growth legislation may be motivated in part by the not-in-my-backyard attitude. As one scholar suggests:

Suburban growth has unleashed an antisprawl backlash. But this merely reflects the ambivalence of an American public that frets over the "evils" of sprawl while continu-

ing to enjoy the benefits of low-density suburban living. Although Americans, voting with both their feet and their dollars, overwhelmingly prefer to live in suburbs, they also wonder whether they have too much of a good thing, especially if expansive growth has indeed eradicated open space and farmland, generated too much traffic, and undermined a sense of "community."

In short, suburbanites do not want to give up the perceived advantages they have in the suburbs. . . . Convenient travel and private living arrangements have become ingrained in the suburban spirit, and any discontent voiced over traffic congestion and air pollution reflects a desire to resolve complications and make life in suburbia better.³⁵⁰

Because of this attitude, smart growth advocates might find that they easily attain support for the adoption of smart growth measures but face much more resistance when it comes to its implementation.

Similarly, New Urbanist ventures and conservation subdivisions may find some difficulty gaining support. Prof. William Buzbee notes that Americans continue to exhibit a strong preference for newer, affordable housing on larger land lots in communities that are situated some distance from shopping and public transportation opportunities.³⁵¹ This preference, unfortunately, conflicts with the New Urbanist ideal of dense neighborhoods designed to discourage automobile usage³⁵² and the clustering of houses in conservation-oriented neighborhoods. Such developers therefore may find that, despite a growing interest in sprawl reduction, they have a smaller market for their planned communities than they would otherwise desire.³⁵³

Professor Buzbee suggests that the suburban preference may change, but only if citizens are "presented with an alternative vision or if discomforts associated with long commutes and congestion increase."³⁵⁴ Educating the public

345. See Bare, *supra* note 28, at 489-93.

346. *But see* Kob, *supra* note 18, at 150:

It seems odd that people who are satisfied with their ability to live out their preferences would vote in such large numbers for the policies to limit sprawl that have been presented to the electorate. The popularity of politicians and policies denouncing sprawl seems to negate . . . [the] view that people prefer their current choices of living arrangements.

347. See Lewyn, *supra* note 185, at 550 (concluding that "numerous federal policies affected consumers' choices" and that "suburbanization has been a by-product of 'big government' social engineering, rather than a natural result of the free market").

348. Prof. Charles Tiebout has posited that people locate in areas in which the services and taxes in the area meet their individual needs. See Poindexter, *supra* note 22, at 614 (describing the Tiebout hypothesis (citing Charles M. Tiebout, *A Pure Theory of Legal Expenditures*, 64 J. POL. ECON. 416, 418 (1956))). As Prof. Georgette Poindexter notes:

Empirical data, in fact, bear out the Tiebout hypothesis. Consumers do choose between the city and the suburbs based upon a bundle of taxes and services. Middle-class migration between the city and the suburbs is significantly related to two salient differences between city and suburbs: (1) taxes; and (2) spending for education. In effect, a consumer move to the suburbs is a revealed preference for that community's bundle of goods and services.

Id. at 615 (citing Vicki Been, "Exit" as a Constraint on Land Use Actions, 91 COLUM. L. REV. 473, 524 (1991); Steven L. Percy et al., *Revisiting Tiebout: Moving Rationales and Interjurisdictional Relocation*, 25 PUBLIUS, Fall 1995, at 13-14; and Paul A. Samuelson, *A Note on the Pure Theory of Consumer's Behaviour*, ECONOMICA, Feb. 1938, at 61-65 (with errata, Aug. 1938)).

349. See Bare, *supra* note 28, at 480 (noting that "most citizens do want to enjoy the privacy of suburban, single-family homes and the convenience of being able to go wherever and whenever they want in their own cars" (citing Peter Gordon & Harry W. Richardson, *Are Compact Cities a Desirable Planning Goal?*, 63 J. AM. PLAN. ASS'N 95, 96 (1997))); see also Garnett, *supra* note 210, at 177 ("Americans consider a single-family suburban home their 'ideal,' and they are willing to make significant financial sacrifices, and commute long distances, to live in one.").

350. Bare, *supra* note 28, at 481 (footnotes omitted); see also Brent D. Lloyd, *Accommodating Growth or Enabling Sprawl? The Role of Population Growth Projections in Comprehensive Planning Under the Washington State Growth Management Act*, 36 GONZ. L. REV. 73, 143 (2000-2001) ("[W]hile the electorate may favor the elimination of sprawl as an abstract policy choice, the preference for wide-open spaces is deeply ingrained in the American psyche, particularly in the western part of the country where aesthetic preferences are still informed by a deeply-rooted frontier mindset.").

351. William W. Buzbee, *Urban Sprawl, Federalism, and the Problem of Institutional Complexity*, 68 FORDHAM L. REV. 57, 65 (1999):

Even where central city neighborhoods are not at a notable market disadvantage due to the ills of urban deterioration, housing on the periphery of the urban center often offers larger homes on larger plots of land for less money. Many citizens favor affordable housing and new residential communities over urban settings where homes are smaller, closer together, and stores are in greater proximity. Many urban planners and legal scholars, particularly the "new urbanists," favor development patterns that concentrate residential areas, retail areas, and mass transit in close proximity. Many Americans recently surveyed about sprawl, however, confirmed market trends that indicate many, if not most, citizens favor new residential developments with cul de sacs set at a substantial distance from retail markets and mass transit.

352. *Id.*

353. Interestingly, several New Urbanist communities have been created in suburban areas as a response to the suburban preference. Although helpful by creating denser housing, these developments do little to address other negatives aspects of sprawl. See Meredith, *supra* note 20, at 493.

354. Buzbee, *supra* note 351, at 66.

about the negative impacts of sprawl and the benefits of smart growth and innovative design is an important step in changing public attitudes. Yet even with the implementation of smart growth legislation and the creation of New Urbanist and conservation communities, suburban populations may not lessen. In many instances, individuals will seek to stay in suburban areas, even if they are displeased with the negatives aspects of sprawl, either because they are unable to relocate due to the cost involved or because there is no need to relocate, as would be the case for individuals whose employers have relocated to outlying areas.³⁵⁵

Because development is influenced by the likes and dislikes of the people who purchase homes, the effectiveness of smart growth and innovative design will always be limited by those preferences.

C. Gentrification and Affordable Housing

A further challenge for the new community is overcoming the consequences of gentrification as smart growth and New Urbanist techniques are implemented. Although the new community addresses many of the impacts of sprawl favorably, smart growth and innovative design fail to adequately address the social impacts caused by sprawl, namely, the segregation and educational disparity that exists between inner-city and suburban rings. Indeed, because revitalization of urban neighborhoods results in gentrification, the new community may actually cause additional problems related to race and class, including not only displacement of residents, but also “changes in power structures, institutions, voting power and losses of local businesses, social networks and services.”³⁵⁶

Gentrification, although originally defined to describe just the movement of middle- and upper-class populations to urban areas,³⁵⁷ is now often defined with reference to the “economic, social, and population changes that affect the physical characteristics of a neighborhood.”³⁵⁸ As one scholar describes: “Gentrification results from a ‘return-to-the-city’ movement by private developers and business investors who purchase and rehabilitate older and structurally sound buildings into expensive housing to attract more affluent residents, replacing long-time residents who are usually low-income, minority or ethnic group members, and the elderly.”³⁵⁹ As gentrification takes hold, these groups are

forced to relocate, causing a greater need for affordable housing options.

Yet adequate affordable housing may not be available due to sprawl-limiting measures.³⁶⁰ Opponents of smart growth argue that growth restrictions negatively impact the availability of affordable housing because reduced land resources raise the cost of homes.³⁶¹ For example, one study that compared housing costs in Atlanta and Portland (both of which have implemented growth management efforts) found increases in housing costs by 25% and almost 100%, respectively.³⁶² Whether smart growth is the actual cause of higher housing prices is unclear, however. Another study found that the “single most important influence on housing prices was market demand, regardless of whether growth-management practices were present” and suggested that “growth management can improve the distribution of affordable housing throughout a region, and, if carefully implemented, [have] no effect on the cost of housing.”³⁶³ In either case, the threat of losing affordable housing may delay or defeat passage of smart growth initiatives. In Colorado, for instance, opponents of a smart growth measure successfully defeated an initiative that would have required assessment of housing, traffic, air quality, and water supply, based largely on claims that affordable housing would be lost.³⁶⁴

The construction of New Urbanist communities may also result in less affordable housing if not carefully managed. According to one study, homes in New Urbanist communi-

360. Affordable housing includes both owned and rented property. Just as housing prices go up with the implementation of smart growth and innovative design, rental values can rise as well, which has a detrimental impact on many individuals who have no options except renting. Cf. SMART GROWTH NETWORK SUBGROUP ON AFFORDABLE HOUSING, AFFORDABLE HOUSING AND SMART GROWTH: MAKING THE CONNECTION 8 (2001), available at <http://www.epa.gov/smartgrowth/topics/ah.htm> [hereinafter AFFORDABLE HOUSING AND SMART GROWTH] (noting that “[i]n 2000, the National-Low Income Housing Coalition (NLIHC) reported that there was not a locale in the United States where a full-time minimum-wage earner could afford fair-market rent for a two-bedroom apartment”).

361. Weiss, *supra* note 42, at 168; see also Negative Population Growth, Fact Sheet, *Myths of Smart Growth*, at http://www.npg.org/factsheets/smart_growth.html (last visited Oct. 13, 2003) (arguing that “when ‘smart growth’ restricts the amount of land available to build on but population growth continues, demand and competition for housing increase, leading to sharp increases in land and home prices”). According to one study, restrictive growth policies have several effects. First, they tend to raise the price of housing, which in turn slows population growth in that area because fewer people can afford housing. Second, because of slowed population growth, employment growth slows because of increased labor costs. Finally, housing prices become volatile since “restrictive policies increase the time interval for developers to respond to any change in housing demand.” Donald Jud & Daniel Winkler, *How Much Does “Smart Growth” Cost?*, CHARLOTTE BUS. J., Aug. 27, 2001, available at <http://charlotte.bizjournals.com/charlotte/stories/2001/08/27/editorial3.html?t=printable>.

362. Arthur C. Nelson & Susan M. Wachter, *Growth Management and Affordable Housing Policy*, 12 J. AFFORDABLE HOUSING & COMMUNITY DEV. L. 173-74 (citing Arthur C. Nelson, *Smart Growth or Business as Usual: Which Is Better at Improving Quality of Life and Central City Vitality*, in BRIDGING THE DIVIDE (PROCEEDINGS) 100 (Susan M. Wachter et al. eds., HUD 2000)).

363. Weiss, *supra* note 42, at 168 (citing ARTHUR C. NELSON ET AL., THE LINK BETWEEN GROWTH MANAGEMENT AND HOUSING AFFORDABILITY: THE ACADEMIC EVIDENCE (2002)).

364. AFFORDABLE HOUSING AND SMART GROWTH, *supra* note 360, at 18 (describing the defeat of Colorado’s Amendment 24 in November 2000).

355. *Id.*

356. John A. Powell & Marguerite L. Spencer, *Giving Them the Old “One-Two”*: Gentrification and the K.O. of Impoverished Urban Dwellers of Color, 46 HOW. L.J. 433, 435 (2003). For an informative discussion of gentrification as it relates to race, class, and spatial and temporal dimensions, see *id.* at 436-54.

357. Deliah D. Lawrence, *Can Communities Effectively Fight Displacement Caused by Gentrification?*, 11 J. AFFORDABLE HOUSING & COMMUNITY DEV. L. 357, 359 (referring to definitions from the American Heritage Dictionary and the Oxford American Dictionary).

358. *Id.*

359. *Id.* (citing Peter Marcuse, *Gentrification, Abandonment, and Displacement: Connections, Causes, and Policy Responses in New York*, 28 WASH. U. J. URB. & CONTEMP. L. 195, 204 (1985)); see also J. Peter Byrne, *Two Cheers for Gentrification*, 46 HOW. L.J. 405, 406 (2003) (defining gentrification as “the process by which people of higher incomes move into lower income urban areas and seek to change its physical and social fabric to better meet their needs and preferences”). *But cf.* Powell & Spencer, *supra* note 356, at 435 (criticizing J. Peter Byrne’s definition of gentrification for its failure to include displacement as an essential element of the term).

ties come at a greater cost—up to 12% to 15% higher—than comparable homes on the market.³⁶⁵ Indeed, one scholar suggests that at least some communities built along New Urbanist ideals have become resort communities catering to wealthier residents, even though they may have initially been meant to be more reasonably affordable.³⁶⁶ He suggests further that developers have and may continue to use restrictive covenants crafted to maintain higher property values to exclude poorer home purchasers from buying in those areas.³⁶⁷

Maintaining affordable housing is possible, but will require governmental assistance and attention to the need for *sufficient* housing. The Smart Growth Network—a network consisting of both nonprofit and governmental organizations, including EPA³⁶⁸—recognizes the affordable housing shortage that smart growth initiatives can cause and recommends implementation of measures to provide affordable housing. For example, the network encourages making housing affordable by decreasing production costs through smaller lots and setback requirements, creating flexible parking options, and changing building codes to allow restoration of older homes.³⁶⁹ Individual household costs can also be lowered by allowing the creation of accessory living space for aging family members and by locating housing near public and other low-cost transportation options.³⁷⁰ Commitments to provide affordable housing might also be provided through regional allocation plans and establishing incentives, such as flexible and streamlined zoning processes, for developers to build affordable housing.³⁷¹ Local governments can also encourage the construction of affordable housing by targeting tax revenues for that activity.³⁷²

Like smart growth in general, though, these measures depend on the passage of effective legislation, and lack of incentives to create affordable housing may limit the success of the new community.

365. Meredith, *supra* note 20, at 492 (citing Lawrence W. Cheek, *New Urbanism Sees Green*, ARCHITECTURE, Mar. 2000, at 74).

366. *Id.* at 491-92 (noting the comment that Seaside, Florida, may have been “[o]riginally designed to be an inexpensive beachfront vacation community,” but now has the feel of “an upscale resort” and noting also the developer’s description of Windsor, Florida, as “an exclusive, upscale resort community” (citations omitted)).

367. *Id.* at 492.

368. AFFORDABLE HOUSING AND SMART GROWTH, *supra* note 360, at 4.

369. *Id.* at 23-24.

370. *Id.* at 23, 25.

371. *Id.* at 28-29.

372. *Id.* at 33. For a discussion of legislative efforts relating to the creation of affordable housing, see Robert Puentes, *First Suburbs in the Northeast and Midwest: Assets, Challenges, and Opportunities*, 29 FORDHAM URB. L.J. 1469, 1479-80 (2002).

V. Conclusion

The development of American cities, although once compact and intensely urban, has followed a pattern of sprawl for the last 70 years. Governmental programs aimed at improving automobile transportation and making housing more affordable for a broader spectrum of people resulted in cities that radiate outward along highways, peppered with subdivisions and commercial areas in a land-consumptive and haphazard fashion.

The result of this growth has been detrimental. At an economic level, sprawl has resulted in deterioration of urban centers and has strained governmental coffers as local governments try to pay for additional infrastructure and public services without an adequate tax base to fund them. At a social level, sprawl has contributed to segregation, widening the gaps between racial groups and income classes, increasing the educational disparity that exists between urban and suburban schools, and creating a negative psychological impact on both urban and suburban residents. At an environmental level, sprawl adds to the country’s already severe pollution problems and devours valuable open lands necessary for wildlife and plant habitat.

Because of these increasing problems, states and local governments have sought to steer growth along wiser channels through the use of smart growth and encouragement of innovative development designs like New Urbanism, conservation subdivisions, and low-impact development. The “new community” that results from implementation of all of these approaches is a more livable and environmentally friendly community.

Yet implementation of the new community is and will continue to be fraught with challenges. States and local governments seeking to adopt smart growth initiatives face political opposition not only from those who oppose the concept of smart growth, but also from those who fear that the proposed programs are insufficiently stringent. Governments and developers face the opposition of individuals who continue to prefer the suburban lifestyle over dense, urban living. In addition, social impacts may become worse in the new community as gentrification takes hold, forcing minority, low-income, and elderly groups to search for scarce affordable housing.

The effectiveness of the new community will depend on the response to these challenges. Public participation, for example, presents a way for states and local governments to build consensus and gain support for smart growth and innovative design. Education about sprawl’s impacts and alternatives can help to change individual attitudes toward suburban living, and deliberate incorporation of affordable housing may make urban revitalization more acceptable and successful. Although not the final answer, such measures may help implementation of the new community.