

Sustainable Development Strategy Team Land Use and Development Work Group

Part 1: Use Description and Trends

In releasing its "Sustainable America" report in March 1996, The President's Council on Sustainable Development offered a series of operating principles to guide efforts toward a sustainable future. One such principle states that "environmental progress will depend on individual, institutional and corporate responsibility, commitment and stewardship." The President's Council placed a special focus on "sustainable communities" and the role of brownfields redevelopment and greenfields preservation in achieving sustainability. Nine years later, these principles still hold true, but the challenge remains of putting them into practice at a scale and with a timeliness to reverse or even slow the challenges we face for healthy, livable, vital future for the Great Lakes Basin.

Land Use in the Great Lakes Basin and Region

The Great Lakes basin covers nearly 300,000 square miles (800,000 square kilometres), about a two-thirds of which is land. Most of that land is forested (about 40 percent) or used for agriculture (about 30 percent). The remainder, broadly categorized as "developed areas" or the "built environment,"— including industrial, commercial, residential, institutional, and transportation uses—takes up less than 10 percent of the basin's area. The built environment is concentrated in 17 metropolitan areas (11 in the United States and 6 in Canada), where nearly 27 million of the basin's 33 million-plus people live.¹ Despite its small share of total land area, the impacts of the built environment are the most remarkable and far reaching. With most of the Great Lakes region's metropolitan areas located on or near the Great Lakes or their tributaries, the built environment has particular consequences for the water resources of the Great Lakes.

Sprawl: The Predominant Land Development Pattern

The Population-Land Consumption Mismatch

Since World War II, the human footprint on the land around the Great Lakes has been transformed by a major shift in land development patterns from high-density urban development to low-density suburban and rural development. This shift reflects that of the nation at large and has happened at a rate unparalleled in American history. Over several decades, the Great Lakes went from being a region of distinct cities, towns and rural areas to one of metropolitan areas dominated by suburbs comprised of strip malls and segregated bedroom communities connected by vast amounts of wide lane highways and roads.²

Despite a relatively stable U.S. population around the Great Lakes, people and the development supporting them continue to spread out. From 1970 to 1990 the binational population of the

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Great Lakes Basin – that portion of the region that drains into the Great Lakes – increased by less than 1 percent.³ During that time the four largest metropolitan areas on the U.S. side of the

Great Lakes– Chicago, Detroit, Cleveland and Milwaukee-- experienced significant population loss in their central cities, and significant growth in their suburbs.⁴ Data show that Milwaukee, Flint, Buffalo/Niagara Falls and Youngstown-Warren experienced virtually no population growth but continued to sprawl out (consume land and related natural resources) at an average rate of 26 percent.⁵

Between 1990 and 2000, population of the Great Lakes region (eight Great Lakes states) increased at a slight 6.6 percent—a rate less than half of the national population increase during that decade. Most of the 66 Great Lakes metropolitan statistical areas continue to gain population while nearly half of medium and large cities have been losing population.⁶ This increase in metropolitan populations is primarily due to the migration of people within the region—from inner cities to areas on the urban fringe—rather than from people moving to the Great Lakes region from elsewhere.

Land Consumption and Population Growth in Selected Great Lakes Metropolitan Areas: 1982-1996*			
Metropolitan Area	Percent Population Growth	Percent Urbanized Area Growth	Ratio of Area Growth to Population
Detroit, MI	-1.1	19.6	---
Rochester, NY	-3.1	15.5	---
Buffalo-Niagara Falls	0.0	52.0	---
Chicago-NW Indiana	10.9	44.2	4.1
Cleveland	6.3	23.8	3.8
Average of 5 Metro Areas	2.6	31	---

*Adapted from U.S. EPA, 2001⁷

Urban Form and the Density Factor

It is not the shift from urban to suburban that is so important for sustainable development as is the *density* of that shift. The following examples illustrate that over the past three decades the increase in land consumption for development has far outpaced the increase in population.

- Research carried out in the mid-1990s for the Michigan Society of Planning Officials (MSPO) which looked at residential development densities, indicates that from the mid 60's to the mid 90's, dwelling units per acre in Michigan were cut by more than half. For southeast Michigan alone, a 1.6 percent increase in population has increased urbanized land by 28 percent.
- From 1970 to 1990 the Chicago metropolitan area grew in population by a mere 4 percent, but spread its inhabitants across 35 percent more land.

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- Between 1982 and 1997, the population of the Milwaukee Metropolitan Area grew by 6.5 percent while its urbanized area grew by 24.9 percent and vehicle miles traveled increased 23 percent.⁸
- Between 1982 and 1997 the Duluth region spread out over 30.7 percent more land while losing 7.5 percent of its population.⁹
- From 1960 to 1990 Ohio's population grew by only 13 percent while the amount of urban land expanded by 64 percent.
- From 1969 to 1990 population in Pennsylvania's largest metropolitan areas grew by 13 percent while the amount of developed land in these areas increased by 81 percent.¹⁰

With low density development, fewer people occupy more land. As the density of development decreases, more roads and highways are needed to connect these areas that at the same time become less feasible to support with public transit. The urban form characteristic of sprawl also creates more impervious surfaces roads, rooftops and parking lots to connect far-flung shops, homes and workplaces and, house the automobiles necessary to get there and then park as alternative modes of transportation are often not practical or available. Impervious surfaces are a key contributor to the degradation of on Great Lakes water quality and are discussed elsewhere in this report (Note: make sure NPS Team is addressing the ecological impacts of IC, including flooding).

In sum, **the rate of land consumption continues to far outpace population increases and most of this occurs at the expense of farmland and open space.** By and large the new demands major new public investment in the full range of infrastructure, and/or the use of outdated utilities standards especially related to water resources for both supply and treatment. Nearly two-thirds of the farmland in the region is within 50 miles of medium and large cities. Between 1982 and 1997, the amount of developed, non-federal land increased by 27 percent and more than 11 million acres of farmland was converted to other uses--an area greater than the surface of lakes Erie and Ontario combined.¹¹

INSERT FARMLAND LOSS CHARTS—BASIN AND REGION, FROM BRIDGES REPORT, P. 8

Characteristics of Sprawl

For this document, sprawl is defined as *extensive low-density disjointed development on previously unbuilt land*. Sprawl is both a *land development pattern* and an *urban form*. The common characteristics of sprawl are listed in figure _____ (**Characteristics of Sprawl in the Great Lakes Region**)

Characteristics of Sprawl in the Great Lakes Region

- high ratio of land consumption to population growth
- low density, new construction outside established settlements
- widespread strip commercial development along roads
- physically and economically segregated subdivisions
- new wide roads
- utility expansion/extension
- automobile dependency
- segregation of land uses by zones
- large setbacks requirements around buildings
- lack of connectivity or integration among different development projects
- little or no consideration for design/aesthetics
- expansive parking lots in front of buildings
- lack of regional or coordinated planning
- large fiscal disparities among localities

V.Pebbles, Great Lakes Commission, 2005

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array of subsidies, incentives and regulations that encourage low-density suburban development. Financial institutions follow these market demographics and resist financial support “market innovations.” This development creates job and housing opportunities in suburban and exurban areas for those who can afford it. This attracts more residents who migrate out of urban centers and older suburbs, undermining the tax base, leading to further disinvestment and decay. Meanwhile increase population and tax base in the suburbs attracts more businesses, which attract more residents, and the cycle continues. As outlying areas are developed, their natural features and quality of life attributes that attracted people and businesses in the first place are compromised by traffic congestion, single-market housing, bare asphalted parking lots and strip malls. At current rates, the metropolitan area commuter might be spending nearly 80 hours a year sitting still on congested roads. (check reference/number)

INSERT SPRAWL CYCLE GRAPHIC HERE:

The Sprawl Cycle

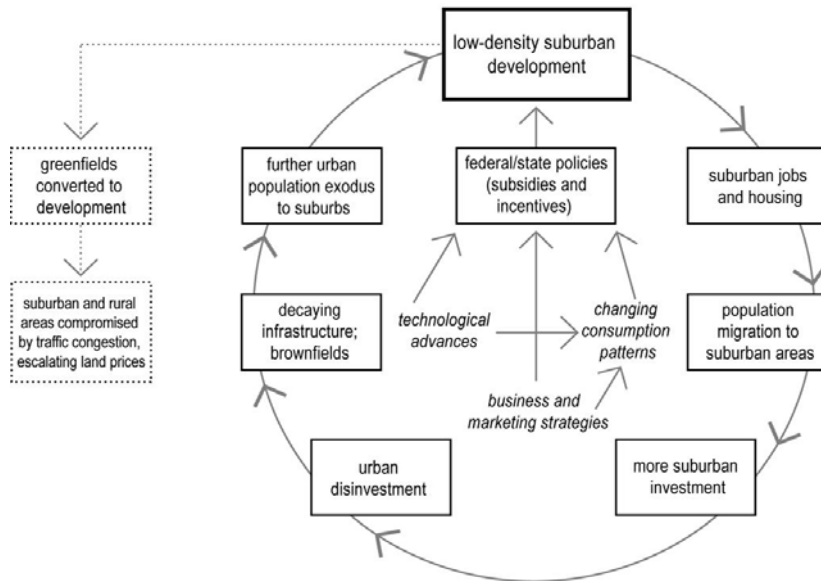


Diagram courtesy of Victoria Pebbles

Deterrents to Sustainable Development: Sprawl Incentives and Subsidies

While some of this is attributable to increases in real income, smaller household size (people having fewer children) and technological advances, the trend to sprawl is supported and indeed subsidized by a suite of policies and institutions at the federal, state and local level that encourage low-density development and segregated land uses. For example, U.S. public policies enacted after World War II created the Interstate Highway system and provided government-backed mortgage insurance for new suburban houses. By 1999, U.S. home ownership reached a national all time high of 66 percent and most of this was in the suburbs. Federal funding and subsidies for private automobile transportation infrastructure, sewer and water infrastructure and state and local funding for public services—everything from new schools to libraries and fire houses—have created deeply entrenched institutions and policies that favor for new construction in previously undeveloped “greenfield” areas over investment in already built areas. These “transparent” subsidies for sprawl are complemented by a suite of “hidden” or not-so-obvious subsidies, that fail to account for the true and full cost of providing the myriad services that support modern lifestyles, including:

- average cost pricing whereby consumers pay the same for public services regardless of the incremental costs associated with providing those services based on location
- lacking or inadequate impact fees to cover capital investments/environmental impacts
- property tax policies based on type of land use rather than the cost of services being provided
- property taxes that tax building rather than land in urban areas and thereby discourage denser/more efficient development in urbanized areas
- lack of capability or willingness to quantify and account for ecological services (and damages to them); and

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- ineffective and duplicative land use planning and inconsistencies with development policies and practices.

Transportation policies and funding proclivity to support highway and automobile interests are among the most resounding in driving current land development patterns. Evidence exists that average U.S. private transportation costs are under-priced by as much as 47 percent.¹² Research indicates that U.S. metropolitan regions would be as much 12 percent smaller on average if the full costs of private transportation costs were internalized. Put another way, metropolitan areas would preserve 12 percent more agricultural land and open space just by accounting for the full costs of private transportation.¹³

Projected Trends

A comparison of projected population and land consumption figures indicates what we can expect if current land development patterns continue.

- In Michigan, from 1990 to 2020, an almost 12 percent population increase will result in 60-80 percent more developed land. In terms of actual land area, this converts to the development of between 1.4 and 2 million acres of land. This is the same amount of land that served 9 million people in 1978, but will accommodate only 1.1 million people in the year 2020 if current trends continue.
- For southeastern Michigan alone, which is anchored by the Detroit metropolitan area, a 6 percent increase in population is expected to result in a 40 percent increase in land consumption between 1990 and 2020.
- The five-county area surrounding Cleveland is expected to lose 3 percent of its population while increasing its residential land base by 30 percent between 1980 and 2010;
- Further from the lakes, a four-county area in southeastern Pennsylvania is expected to convert more than 200,000 acres of open space to urban uses between 1990 and 2020– a 47 percent increase in developed land.¹⁴
- The Chicago Metropolitan region anticipates a 25 percent growth in employment and population, but a 55 percent increase in the amount of urbanized land.¹⁵

Note: We need to decide whether to use the first table below (adapted from McGrath) or the second table (developed by NIPC). Can we get regional planning agencies to complete the second table? Where we cannot get comparable data, we should still include the relevant information in the narrative, such as in the previous paragraph.

Table ____ (**Land Consumption Forecast in Selected Great Lakes Metropolitan Areas**) shows forecasts for sprawl (e.g., land consumption in Selected Great Lakes Metropolitan Areas to 2025.

Land Consumption Forecast in Selected Great Lakes Metropolitan Areas				
Urbanized Area	Est. 2000 Land Area in mi ²	2025 Land Area Forecast in mi ²	Change in mi ²	Percent Change 2000-2025

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Chicago	1766	2640	695	39.3
Detroit	1238	1549	311	25.1
Cleveland	650	985	335	51.6
Milwaukee	546	833	287	52.5
Buffalo	323	571	248	76.7
Total	4223	6578	1876	
Average				49.0

Adapted from McGrath, 2000.¹⁶

GREAT LAKES METROPOLITAN GROWTH

Metropolitan Area (each one needs to be defined—are these MSAs?)	Land Dev 1980-90	Population Change 1980-90	Jobs Change 1980-90	Land Dev 1990-2000	Pop Change 1990-2000	Jobs Change 1990-2000	Pop Forecast 2000-2020	Jobs Forecast 2000-2020
Duluth								
Green Bay								
Milwaukee								
Chicago*	199 sq mi	157,552	458,500	223 sq mi	830,544	494,700	1,942,315**	1,240,727**
Gary								
Grand Rapids								
Detroit								
Toledo								
Erie								
Buffalo								

*NIPC 6-county service area in Northeastern Illinois

**Projected change, 2000-2030. Forecast for 2020 not available.

Note: Regional land use data for 1980 or 2000 not available. Figures are estimates based on the decline in farmland reported by the 1982, 1992, & 2002 U.S. Censuses of Agriculture.

Unless significant shifts in policies that affect land use and development at all levels are modified to redirect current urbanization patterns and urban form, we can expect the populations of Great Lakes Cities to remain relatively stable or decline while rural and suburban areas continue to experience accelerated rates of development. This consumption of land, dispersal of once tight community networks, sacrifice of personal time to ever longer commutes and degradation of environmental resources is simply not sustainable. A new green urban and sustainable community vision is needed to capture the hearts, minds and investment priorities of the American public.

Part Two: Use Description and Trends (to be further developed)

Smart Growth – A Name for Sustainable Development
 (Write short statement for the points below)

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While land consumption and its related resource consuming patterns have grown exponentially in the last three decades, a number of countervailing trends have been gaining interest of policy makers, developers and the public alike, and provide the stepping stones into what can be hoped is a sustainable future for the Great Lakes basin.

- Public initiatives to fund open space acquisition
- Main Street and Downtown Revitalization
- Community Reinvestment Act
- ISTEA allowance for environmental, historic and amenity concerns
- Growth of transit projects and plans in metro areas
- Historic Tax Credits
- Cluster, conservation and mixed use development standards
- Back to the city trends and in-city housing
- Urban forestry and urban biodiversity efforts
- Increase in State planning programs and legislation
- Green Building technology

These trends are mostly indicators of what is possible. There are a sufficient and increasing number of demonstrations of these sustainable development practices that neither public officials nor the private sector need be leery of their application. In fact major private development associations such as the Urban Land Institute and the National Association of Homebuilders are actively championing their application. However, in anecdote after anecdote researchers hear some of the strongest resistance to wide application of these practices can be traced back to a vocal public resistant to change, skeptical of “urban densities” and demanding an increased road capacity to relieve their morning commutes. Ironically, an increasing number of private developers see a fast growing market for the new urbanism, walkable, transit oriented development as the “Starbucks” indicator shows.

The challenge now is to find ways to take these best practice demonstrations (which will be explored in following sections) to a scale that will make a difference to the environmental quality, the community livability and economic viability of a sustainable Great Lakes Basin.

¹ Thorp, S., Rivers, R. and Pebbles, V. 1997. Impacts of Changing Land Use. Background Paper for the State of the Lakes Ecosystem Conference. U.S. Environmental Protection Agency, Chicago, Illinois and Environment Canada, Burlington, Ontario. ISBN 0-0662-26034-1.

² Pebbles, V. and Blais, P. 1999. Changing Land Use and Reurbanization. Unpublished paper.

³ Thorp, Rivers, et al.

⁴ Pebbles and Blais, 1999.

⁵ Kolankiewicz, L. and R. Beck. 2001. Weighing Sprawl Factors in Large U.S. Cities: A report on the nearly equal roles played by population growth and land use choices in the loss of farmland and natural habitats to urbanization. NumbersUSA. SprawlCity, Arlington, VA.

⁶ Pebbles, V. and Thorp S. 2001. Linking Brownfields Redevelopment and Greenfields Protection for Sustainable Development. Great Lakes Commission, Ann Arbor, Michigan.

⁷ U.S. Environmental Protection Agency, 2001. Our Built and Natural Environments: A Technical Review of the Interactions Between Land Use, Transportation, and Environmental Quality. Adapted from Table 2-3 based on research conducted by the Texas Transportation Institute.

⁸ GHK International Ltd. 2003. Forecast and Analysis of Urban Development in the Great Lakes Basin. Final Report Prepared for the Great lakes Regional Office of the International Joint Commission.

⁹ GHK International Ltd. 2003. Forecast and Analysis of Urban Development in the Great Lakes Basin. Final Report Prepared for the Great lakes Regional Office of the International Joint Commission.

¹⁰ Pebbles and Blais, 1999.

¹¹ Pebbles, V. and Thorp S. 2001. Linking Brownfields Redevelopment and Greenfields Protection for Sustainable Development. Great Lakes Commission, Ann Arbor, Michigan.

¹² T. Litman, Transportation Cost analysis for Sustainability, Victoria Transport Policy Institute, (1999).

¹³ McGrath, D.T. 2005. More Evidence on the Spatial Scale of Cities. Forthcoming paper in the *Journal of Urban Economics*.

¹⁴ Pebbles and Blais, 1999.

¹⁵ Chicago Openlands Project, 1999. Under Pressure—Land Consumption in the Chicago Region, 1998-2028.

¹⁶ McGrath, D. 2000. 2025 Urban Land Area Forecasts for the US Top 20 Coastal Metropolitan Regions. Unpublished study presented at the Coastal Society; Portland, Oregon, 2000. Great Cities Institute, Illinois-Indiana Sea Grant, Chicago, IL.