

**Land Use Planning for Public Health:  
The Role of Local Boards of Health in Community Design and  
Development**

**Authors:**

**Atlanta Regional Health Forum  
(ARHF)**

**Atlanta Regional Commission  
(ARC)**

**Editors:**

L. Fleming Fallon, Jr., MD, DrPH  
Director - NW Ohio Consortium for Public Health  
Professor of Public Health - Bowling Green State University

Jeffrey Neistadt, MS, RS  
National Association of Local Boards of Health (NALBOH)

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1840 East Gypsy Lane Road  
Bowling Green, Ohio 43402  
[www.nalboh.org](http://www.nalboh.org)

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National Association of Local Boards of Health  
1840 East Gypsy Lane Road  
Bowling Green, Ohio 43402  
Phone: (419) 353-7714; Fax: (419) 352-6278  
Email: [nalboh@nalboh.org](mailto:nalboh@nalboh.org); Website: [www.nalboh.org](http://www.nalboh.org)  
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## FOREWORD

The National Association of Local Boards of Health (NALBOH) is pleased to provide *Land Use Planning for Public Health: The Role of Local Boards of Health in Community Design and Development*. This guide is designed for local board of health members and others interested in ensuring that their community's land use planning decisions do not compromise the public's health. The Centers for Disease Control and Prevention's (CDC) National Center for Environmental Health (NCEH) encouraged this project and provided technical oversight and financial support.

The Atlanta Regional Health Forum (ARHF) ([www.arhf.net](http://www.arhf.net)) and the Atlanta Regional Commission (ARC) ([www.atlantaregional.com](http://www.atlantaregional.com)) collaborated with NALBOH on the creation of this guide. One of the current collaborative projects linking ARHF and ARC is integrating Health Impact Assessments (HIA) into regional planning processes. Although HIAs are widely used in Europe, they are rarely utilized in this country. We hope that this guide will be an introduction to this valuable tool.

Boards of health are responsible for fulfilling three public health core functions - assessment, policy development, and assurance. For a health agency, this includes overseeing and ensuring that there are sufficient resources, effective policies and procedures, partnerships with the public, and regular evaluation of an agency's programs and services.

This guide is designed to help local board of health members understand their role in land use planning. Local boards of health are responsible for assuring the provision of adequate public health services in their communities, including protecting constituents from the many health risks associated with municipal design and development.

The mission of NALBOH is to strengthen local boards of health, enabling them to promote and protect the health of their communities, through education, technical assistance, and advocacy. NALBOH is extremely pleased to offer this guide. We trust the information provided will enable board of health members to become more actively involved in their community's land use planning process.

Special recognition and thanks also go to David Goldberg for his assistance in writing this guide along with Scott Ball, President of the Association for Community Design, who has done most of the preparation for ARHF, and to Dan Reuter, Chief of Land Use Planning for ARC. Semira Ajani, Community Development Fellow for ARHF, provided the initial research. Invaluable input also has been received from Dr. Howard Frumpkin, Dr. Joyce Essien, and Dr. Peggy Barlett of Emory University; Dr. Lawrence Frank and his research team; Dr. Andrew Dannenberg, Dr. Candace Rutt and Marilyn Metzler of the Centers for Disease Control and Prevention; and the Healthy Places Research Group at the Georgia Institute of Technology coordinated by Dr. Catherine Ross, Director of the Center for Quality Growth and Regional Development.

***Public health officials need to view the built environment as having as much influence on public health as vaccines.***

Richard Jackson, MD, MPH, former director of the Centers for Disease Control and Prevention's National Center for Environmental Health

## **Introduction**

This guide will assist members of local boards of health and other public health professionals to understand their important role in protecting local environmental health and improving the health of their communities through land use planning. We begin by examining the longstanding connection between the built environment – the way we develop and organize our neighborhoods, cities, and metropolitan regions – and the “physical, mental and social well-being”<sup>1</sup> of our population.

The guide is based on the realization that health specialists or planning departments cannot afford to operate in isolation from one another. Planning issues remain at the root of some of the most intractable public health problems, including the declining rates of physical activity resulting from automobile-dependent environments or the isolation of poor and minority communities in areas plagued by environmental pollutants, violent crime, and high rates of disease.

Land use, community design, and transportation systems substantially impact local air quality, water quality and supply, traffic safety, physical activity and exposure to contaminated, industrial “brownfields.” Mental health and quality of life issues also are profoundly affected by factors ranging from the stress and difficulties of commuting to the presence or absence of natural areas and green spaces.<sup>2</sup>

After examining the historical role of public health in creating today's system of land use regulation, we will explore some of the other forces shaping the built environment, from public investment to demographic changes. We will also examine new planning tools and strategies that can help raise public health considerations in land use and planning, as well as specific strategies or actions that local board of health members can undertake in this area.

This guide will help local board of health members and other public health professionals in their efforts to educate planners and public officials about the health implications of their decisions on growth, development and transportation.

## **Public Health Origins of Planning and Zoning**

Land use planning and concern for the built environment originated from a public health focus. The Industrial Revolution of the nineteenth century caused a rapid growth of coal, steel, and manufacturing industries. In turn, this brought workers and their families from the countryside to the cities in droves. These exploding cities lacked sanitary infrastructures to cope with the swelling masses. Improvised and often crowded housing typically lay adjacent to factories that discharged smoke and other pollutants. Urban residents, “*lived in tiny unventilated apartments, often with whole families—and perhaps a few boarders—occupying the same room...the most miserable and degraded lived in unfinished cellars, their walls a mat of slime, sewage, and moisture after every rain.*”<sup>3</sup>

As the public health profession was formed through the nineteenth century, infectious diseases were the leading cause of death in the United States. Overcrowding and poor sanitation were the primary reasons for high rates of infectious disease. New York City led the way in regulating these conditions with passage of the Tenement House Act in 1901, setting standards for housing that governed construction, maintenance and the provision of light and air. By the late nineteenth and early twentieth centuries, industrial cities increasingly used public nuisance laws to regulate land use and separate noxious activities from residential areas. In 1916, New York City officials invoked public health and safety as the justification for the first zoning law, in which the city assumed the power to declare which land uses would be permissible in any given area. This separation of uses later was upheld in the 1924 Standard Zoning Enabling Act, developed by the U.S. Commerce Department under Herbert Hoover and promoted for use all across the country.

Zoning was granted constitutional legitimacy by the U.S. Supreme Court in the famous case of *Ambler Realty v. Village of Euclid, Ohio* (to this day, the practice is often referred to as “Euclidean” zoning.) In their decision, the justices said Euclid would promote “the health and safety of the community” by protecting residential areas from the “danger of fire, contagion and disorder, which attach ... to the location of stores, shops or factories.”

In the years that followed, many other government policies promoted population increases in suburbs designed using the new template, separating the components of the city into isolated pods for residential, shopping, office, industrial and institutional uses. As time passed, the connection with “health and safety” rationales faded to the background in lieu of economic considerations. Transportation spending funded the construction of roads and suburban highways, often at the expense of streetcars and bus lines that were largely operated by privately held companies. Housing policies backed mortgages for stand-alone houses in new areas while “red-lining” against backing houses and apartments in city neighborhoods. This steered members of minority groups to segregated neighborhoods and resulted in economic divestment leading to poorer health outcomes. These policies, and the market forces that accompanied them, gave rise to the rapid spread of automobile-dependent, land-hungry development that is known as urban sprawl.

### **Health Issues Arising from the Built Environment**

Urban sprawl emerged from attempts to address a public health crisis arising from rapid industrialization and urbanization, but its pervasiveness has spawned a new set of health concerns. The following appeared in a recent article in the *American Journal of Preventive Medicine*. “Zoning was born and grew up in a time dramatically different from today. Instead of overcrowding and the spread of fire and disease, American cities confront an array of health and economic challenges .... Population declines and stagnant economies continue to plague many cities and inner suburbs as market forces and government policies have redirected jobs and housing into outlying suburban and rural communities. Zoning’s separation of uses created vast suburban communities where routine daily trips to stores and schools must be done in automobiles. Walking ... is often not a practical or safe alternative.”<sup>4</sup>

While many of the issues that plagued cities 80 years ago have been resolved, the excessive application of automobile-oriented design and formulaic land use regulation has engineered behavior changes that give rise to new health concerns. Today, a typical suburban resident spends more than an hour and a half in the car each day. As recently as the 1960s, roughly one in two children walked or biked to school. Today, only one child in ten gets to school under his or her own power. Low-income populations remain in unhealthy concentrations, separated from jobs that have migrated to the suburbs because of inadequate public transportation. At the same time, low-income families are restricted from moving toward the jobs in suburban jurisdictions that practice “exclusionary zoning,” imposing restrictions that outlaw the apartments, smaller homes and

smaller lots that can be more affordable to low-wage workers. A number of health issues are associated with these conditions:

### **Physical Inactivity**

Obesity has reached epidemic proportions and chronic diseases associated with physical inactivity are rapidly increasing. Physical inactivity and being overweight are factors contributing to over 200,000 premature deaths each year.

The public discussion of this emerging health crisis has focused largely on questions of diet, but researchers are starting to pay attention to the other half of the weight-gain equation: Americans' low frequency of physical activity. A pressing question is whether the design of our communities makes it more difficult for people to be physically active and maintain a healthy lifestyle.

A 2003 study, *Relationship between Urban Sprawl and Physical Activity, Obesity, and Morbidity*,<sup>5</sup> found that people living in counties marked by sprawling development are likely to walk less and weigh more than people who live in less sprawling counties. In addition, residents in counties with sprawl are more likely to suffer from hypertension (high blood pressure). These results remain valid after controlling for factors such as age, education, gender, race, and ethnicity.

People in sprawling areas walk less for exercise. This may help explain the higher obesity rates although routine daily activity, such as walking for errands, may have a bigger role. When the researchers controlled for the amount of walking for exercise that people reported, they found that people in counties with more sprawl weigh more whether or not they walk for exercise. This suggests that people in sprawling areas may be missing out on significant health benefits that are available simply by walking, biking, climbing stairs, and integrating physical activity into their everyday lives. Residents in counties with more sprawl also spend more time driving. Driving is a highly sedentary activity. A study of 10,808 households in Atlanta found that every hour spent in the car raises the likelihood of being obese by 6%. However, each kilometer walked per day was associated with a 4.8% reduction in the likelihood of obesity.<sup>6</sup>

### **Air Quality**

Asthma, whose prevalence has soared in recent years, and other respiratory conditions may be triggered or exacerbated by poor air quality. In most metropolitan areas identified as violating national air quality standards, automobiles are responsible for 50% or more of the problematic emissions. A 2002 study entitled, *Measuring Sprawl and Its Impact*,<sup>7</sup> found that peak ozone concentrations are 40% higher in sprawling metropolitan areas than in more compact regions. Recent research has shown that in-vehicle air quality is often worse than that found outdoors, putting those who drive longer hours at greater risk. In addition, children who live near busy, high-speed roadways have been shown to have higher rates of respiratory ailments, including asthma compared to those living in less congested or more rural areas.

### **Water Quality**

Widespread development often covers large portions of urban area watersheds with hard surfaces such as pavements and rooftops. The stormwater run off from these impervious surfaces is channeled directly into rivers and streams, carrying with it sediment, oil, brake dust, lawn chemicals, and other toxins that are the primary sources of water pollution today. In many rapidly suburbanizing counties, which lack the sewer infrastructure to support widespread development, millions of homes are being built with onsite wastewater treatment systems that may be poorly monitored and eventually prone to failure. Over time, these systems may pose a significant public health threat through the contamination of wells, aquifers and streams. At the same time, poorly

planned growth is responsible for increased development in wetlands and riparian buffers that leach contaminants from the water before it returns to groundwater or streams.

### **Traffic Safety**

Long hours in an automobile expose people to greater risks of being hurt or killed in a car crash, while roadways designed only for automobiles pose serious risks for pedestrians and cyclists. More than 40,000 Americans die in vehicle crashes each year. The lifetime odds of dying in an automobile are many times greater than those of being killed on a bus, train, or airplane. Street design is an important factor in the safety of both motorists and pedestrians. Wide residential streets encourage increased speeds and thus are more dangerous; 55% of the 6,000 vehicle-related pedestrian deaths each year occur on residential streets.

### **Loss of Farmland and Local Food Production**

Sprawl has reduced the amount of open land for farming and thus has limited the availability of fresh, local food in many urban areas. Economic loss from the reduction of farming communities may compound the health implications of a diet deficient in fresh fruits and vegetables. In addition, long distance transport of food (averaging 1,500-2,000 miles from farm to consumer) reflects an increasing dependence on energy resulting in inadequate attention to air pollution and climate change consequences.

### **Residential Segregation**

Development that segregates land uses, income, and age groups may result in social and physical isolation of vulnerable populations, particularly low-income minorities and the elderly. This often leads to a lack of access to jobs, affordable healthy foods and other needed services. Populations living in areas of concentrated poverty suffer disproportionately from virtually all health impacts including violence, HIV/AIDS, and other sexually transmitted diseases, weather-related deaths, poor nutrition, and traffic fatalities. Asthma mortality rates are three times higher among African-Americans, who also are more likely to live in areas in violation of federal air standards.

## **Factors Affecting the Built Environment**

The health outcomes identified above resulted from three features of urban planning and design practices that have become standardized since World War II:

- Spread-out, low density development that can only be sustained by use of the automobile
- Street networks that foster additional driving and congestion and suppress walking by virtue of large blocks and cul-de-sac streets
- Strict segregation of land uses, separating home from school, shopping, work, and other activities

A result of these practices has been the emergence of populations that are disbursed to some degree by income, housing type, family status, and age. This approach to development has been reinforced by a combination of government policy, investment, and private-sector practices. Because investment and private-sector practices are often responses to government policy, and because local boards of health are more likely to be able to affect government practices, we put our emphasis there.

## **The Government Role**

All levels of government (federal, state, and local) have important responsibilities in land use planning. From zoning regulations to the construction of transportation systems, government decisions regarding land use have a significant impact on public health.

## **Zoning and Planning**

In the eight decades since zoning was introduced, the notion of separating cities into districts by use has become firmly entrenched. Zoning has far exceeded the original intent of keeping noxious and incompatible uses, such as slaughterhouses and factories, out of residential neighborhoods. Today it is used to keep compatible uses such as shops isolated from houses, and farms far away from city consumers. Suburban jurisdictions have used it as a way to keep out families of modest means and apartment-dwellers. Residential districts have been carved up into increasingly more-specific zones based on uniform lot and house sizes, meaning not only that one type of housing is separated from another, but also that middle class and affluent families are segregated by home price.

The rigid separation of uses has made it very difficult to meet contemporary demands for more compact, walkable neighborhoods on the model of the Main Street or streetcar suburb. Today's zoning effectively outlaws the traditional neighborhoods that are treasured in most communities, such as Inman Park in Atlanta, Oak Park in Chicago, or the city of Charleston, South Carolina.

### ***How Zoning Works:***

Zoning regulations determine how and where new growth occurs by controlling land use, density requirements, and other building specifications within a specific jurisdiction. Government is authorized to enforce the local legislation by police power that gives local, state, and federal jurisdictions the power to enact laws to promote and protect the health, safety, morals, and general welfare of communities.

With zoning controls in place, a property owner or developer is required to apply for permits issued through a local government entity in charge of development regulations. All property in a community is zoned for a permitted use. If a proposed development is within a permitted use, an owner or developer applies for site and building permits and submits a detailed description of the project. This allows a zoning review staff person or planner to determine suitability within the proposed zoning designation and whether it meets the standards of the adopted local comprehensive plan. If the desired use is not permitted, the owner/developer must apply for a rezoning or a variance.

The proposed development is then scheduled for a public hearing before a planning commission or elected board which provides opportunity for public feedback, helps to determine the level of community support, and allows for important changes to be negotiated when necessary. The rezoning must be approved by the elected board of the jurisdiction in order to receive a permit. A property owner with compelling reasons to depart from development or building codes within a zone may apply for a variance special use permit, without changing the underlying zoning.

## **Transportation Systems**

Transportation planning is another essential element shaping the built environment in ways that affect public health. As noted above, conventional zoning typically dictates a land use pattern that is extraordinarily dependent on the use of personal automobiles. This is one reason roads are the predominant form of transportation in most communities. Another is that motor fuel taxes are dedicated overwhelmingly to road building, with many states allocating their gas tax revenues exclusively to road construction.

Transportation development has enormous impacts on regional networks, and on local neighborhoods. While the spread-out nature of automobile-oriented communities makes it less likely people will walk or bike for essential transportation, the car-only design of many roadways suppresses such activity even for recreation.

### **How Transportation Systems are Built**

Because roads are necessary to develop land, “sprawl” development frequently follows the construction of these roads. While it is difficult or nearly impossible to separate transportation development from land use planning, governmental infrastructure actually keeps these two issues disconnected from the other.

Under the federal transportation law known as TEA-21, and the successor legislation billed as SAFETEA (still awaiting passage as of this writing), national motor fuel taxes fund 80 percent of most major road projects. Qualifying mass transit projects, which must compete for funds, are eligible for up to 50 percent in federal assistance. These programs are administered by separate agencies under the U.S. Department of Transportation.

At the metropolitan area level, federal funds are, in principle, allocated by the *Metropolitan Planning Organization (MPO)*, a statutory body comprised of a combination of local governments and state or regional transportation agencies. MPOs create *Transportation Improvement Plans* that identify which projects in an area will receive federal funding. In many metropolitan areas, the work of the MPOs is limited strictly to transportation planning and is disconnected from other planning agencies. Even in areas where land use and transportation planning functions are integrated, transportation tends to be the driving force because of the large amounts of money available for allocation.

Federal money is used to maintain interstate highways. State money maintains (and controls) the state highways that serve as commercial arterials. Local governments support the remaining 90% of roadways through local property and sales taxes. Local governments have almost exclusive control over the land use and development decisions surrounding federal and state highways. Those decisions may determine how well, and for how long, those facilities meet performance expectations. Localities have far less control over the design of federal and state transportation facilities that pass through their neighborhoods and town centers. Until some recent (and modest) reforms were instituted, most state departments of transportation built highways through urban areas under design guidelines that emphasized the speed and through-put of vehicles, often at the expense of community considerations such as separating neighborhoods without a convenient way for residents to travel from one portion to another. Boards of health and other public health professionals could play a substantial role advocating for these community considerations, particularly in instances where favoring automobile access negatively affects public health.

## “Loops and Lollipops” vs. the Grid

Some critics argue that the design of the street networks is as much a factor in the unwalkable nature of cities as automobile orientation itself. Street networks can be laid out either in grid or hierarchical fashion. In the U.S., city planners conventionally rely on a transportation hierarchy to determine the street network. Within the hierarchy there are arterial roads, collectors, and residential streets. Arterial roads are designed to carry high-speed, high-volume traffic between major destination points. Along these roadways, non-motorist uses are extremely limited, making the predominant character of an arterial road facilitating the rapid flow of vehicular traffic. Collector streets accommodate moderate vehicle capacity and are a buffer between the arterial roadway and residential streets. Residential streets support low-volume traffic and are commonly laid out in a cul-de-sac fashion. With its winding arterials fed by cul-de-sac streets, this pattern has been described as “loops with lollipops.”

Designing a city’s street network with a greater number of blocks, intersections, bicycle pathways and sidewalks increases the level of connectivity and public space within which residents can exercise and interact more freely with one another. Traditional transportation goals have focused on improving the mobility of a region or community through widening streets and increasing the volume of traffic flow. Recently, improving personal accessibility of communities has become a focus by locating uses closer to one another thus limiting dependence on automobiles.

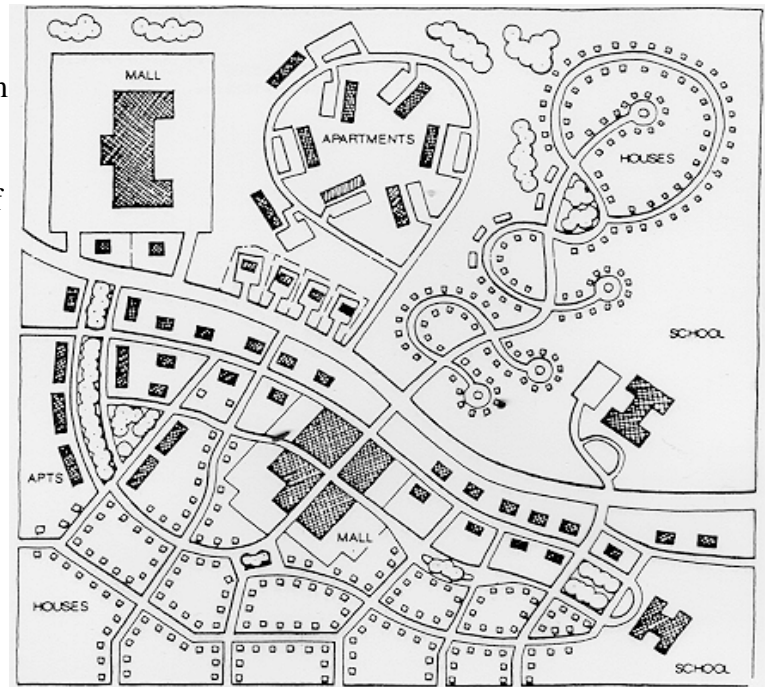
For more on safer, healthier design, see the Federal Highway Administration web site at: [http://safety.fhwa.dot.gov/ped\\_bike/univcourse/swless06.htm](http://safety.fhwa.dot.gov/ped_bike/univcourse/swless06.htm)

### SPRAWL NEIGHBORHOOD

- Residential housing areas separated from apartments and shopping areas.
- School separated from residences thus making the automobile the only mode of transportation.
- Spread-out development limiting opportunities for physical activity.

### QUALITY NEIGHBORHOOD

- Residential houses are more integrated with apartments.
- School is integrated with residences offering the option to walk or bike to school.
- Residences are integrated with shopping options creating an opportunity for people to walk or bike for supplies.



Drawing by Duany Plater Zyberk as shown in F. Spielberg, “The Traditional Neighborhood Development: How Will Traffic Engineers Respond?” *ITE Journal*, 1989;59:17-1

### **Investment and Subsidies**

Development patterns also are shaped to some extent by the decisions about where, when, and how to spend government money on infrastructure and services. Decisions about where to extend sewer and water services are second only to roads in determining whether and when a new area is developed. Municipal and county hearings for considering extension proposals are therefore suitable venues for comments from board of health members about the long-term health implication of these proposals. In order to receive notification about these hearings, boards of health will need to determine which county or municipal offices have jurisdiction over “public works” in their area, and ask to be placed on their public notice list. Limited state and local infrastructure funds may be directed toward subsidizing new development, or prioritized toward maintaining or enhancing infrastructure and services in existing areas that could accommodate growth. In either case, boards of health and other public health professionals should be part of the decision making process.

Though they rarely work closely with other planning entities, school systems may also have an enormous impact on the location of new school buildings: On the urban fringe or near existing neighborhoods? On an arterial road or in a walkable environment? Should they renovate or close older schools in walkable, traditional neighborhoods? These are the types of decisions that may have significant impact on a community’s health and thus are the types of decisions with which boards of health should be involved. It is usually possible to receive notification for the public hearings that consider these issues simply by calling the local school board office and requesting to be on the public notification list.

### **Urban Design**

Urban design refers to the planning and oversight of the built environment from the municipal or metropolitan perspective and includes consideration of local land use distribution, aesthetics, transportation, safety, suburbanization, and the environment. Good urban design recognizes that public space should accommodate the diverse needs of the young, elderly, and physically challenged. It considers such things as:

- mix of residential and commercial development
- streets and sidewalks
- vehicular traffic control and parking
- transit access and bikeways
- trees and landscaping
- signage and way-finding
- attractive and appropriate building materials
- height and mass of buildings relative to the streetscape
- space for public activities and civic events
- provision for community gardens and farmers markets
- farmland preservation around each urban area
- mixed uses of the built environment for long term flexibility
- public art and the integration of local design elements and themes

Though private-sector developers have a large say on many issues of urban design, local governments have powerful influence through building codes, which shape the setback, bulk, massing, and style of structures; development codes that affect the layout of a development; street and traffic engineering; and the provision of public amenities, such as parks and plazas.

All of these are factors in determining whether people have safe, inviting and efficient routes for walking and cycling, whether physical structure reduces or enhances opportunities for social capital, and the influence the urban form will have on a long list of health factors. In most areas, the most direct approach for local board of health members or other public health professionals to assist local governments with urban design issues is to determine which municipal or county office is responsible for land use planning and to simply express an interest in dialogue with officials in that office.

## **Investment and Private Sector Role**

The profit motive drives much activity in seeking uses for land that will reward investors and developers with a rich return. Engaging the public through education of the health consequences of such proposed developments and educating them on the principles below will help preserve or improve the health of neighborhoods affected by the proposed plans.

### **Ten Principles for Healthier Planning & Development**

- 1. Encourage citizen and stakeholder participation in development decisions**  
Health Benefits: increases civic participation, develops social capital and reduces isolation-related depression.
- 2. Make development decisions predictable, fair and cost-effective**  
Health Benefits: increases civic pride and sense of ownership in communities.
- 3. Create a range of housing opportunities and choices**  
Health Benefits: decreases segregation by age, income, and race thus developing social and cultural capital. In diversified communities, automobile dependency is decreased as residents spend less time commuting to jobs and family members.
- 4. Provide a variety of transportation options**  
Health Benefits: increases physical activity and decreases ailments associated with inactivity. More energy efficient transportation options improve air quality and helps decrease respiratory problems.
- 5. Strengthen existing communities and direct development towards them**  
Health Benefits: keeps communities compact and less auto-dependent, decreases segregation by age, income, and race and thus develops social and cultural capital. Residents spend less time commuting to jobs and family members. Increases physical activity and decreases ailments associated with inactivity. Improves air quality and helps decrease respiratory problems.
- 6. Preserve natural beauty, parks, farmland, and environmentally critical areas**  
Health Benefits: Increases recreational activity and decreases ailments associated with inactivity. Concentrations of plant life improve air quality and helps decrease respiratory problems. Parks provide more opportunity for formal and informal social interaction. Farmland rebuilds a connection to place and adds a component of social capital and community identity.

**7. Create complete neighborhoods where daily needs are close at hand**

Health Benefits: keeps communities compact and less auto-dependent. As a result, decreases segregation by age, income, and race and thus develops social and cultural capital. Residents spend less time commuting to jobs and family members. Provides more opportunity for walking to destinations, thus increasing physical activity and decreasing ailments associated with inactivity. Improves air quality and decreases respiratory problems. Supplies fresh, local food for maximum nutritional benefit at a lower environmental cost.

**8. Create a safe, inviting environment for walking**

Health Benefits: provides more opportunity for walking to destinations such as community gardens and parks for more vigorous exercise, thereby increasing physical activity and decreasing ailments associated with inactivity. Improves air quality and helps decrease respiratory problems.

**9. Foster distinctive communities with a strong sense of place**

Health Benefits: increases civic pride and sense of ownership in communities. Supports a strong public realm and helps develop cultural and social interaction among citizens. Decreases depression and sense of isolation and increases the perception of safety.

**10. Make efficient use of public investments in infrastructure, schools, and services**

Health Benefits: keeps communities compact and less auto-dependent. As a result, decreases segregation by age, income, and race and thus develops social and cultural capital. Residents spend less time commuting to jobs and family members. Provides more opportunity for walking to destinations and thus increases physical activity, decreases ailments associated with inactivity, improves air quality, and helps decrease respiratory problems.

The built environment we inhabit is not static; in fact, it is changing all the time. The form and function of American towns have changed dramatically in the last 80 years. Even more dramatic change is to come, as the nation adds another 125 million inhabitants by the year 2050. A recent study for the Brookings Institution noted that building new and replacement structures needed to accommodate the population expected by 2030 will require erecting nearly the equivalent of everything standing today.

Growth and change in our communities are a given. Our towns, cities, and metropolitan regions are constantly faced with decisions about what and where to build next so that residents' quality of life and health are maintained or improved. One framework for making these decisions is known as smart growth.

The basic smart growth principles listed here were designed to help communities choose a future that provides housing options for people of all incomes and ages; protect farmland and natural areas; revitalize neighborhoods and offer a variety of options for getting around. The principles have been endorsed by myriad state, local, and national civic and advocacy organizations, and by many professional associations and government agencies, such as the American Planning Association, the Institute of Transportation Engineers, the National Association of Realtors, and the U.S. Environmental Protection Agency.

Although there are countless strategies for implementing them, the key goals of smart growth principles are to present more people with the chance to live in well-designed, compact neighborhoods that offer:

- An array of options for getting around, whether by car, foot, bike or public transit
- A range of choices in living arrangements, from single-family houses to townhouses, or apartments over stores
- Shopping, restaurants, libraries, post offices, and other daily destinations within walking or biking distance of homes or offices
- Choices in neighborhood type and location for all income levels
- Access to green space and natural areas

There is a growing volume of literature on smart-growth planning, design, and connections to health. For more detail, see the web sites of Smart Growth America ([www.smartgrowthamerica.org](http://www.smartgrowthamerica.org)), Smart Growth Network ([www.smartgrowth.org](http://www.smartgrowth.org)), or Active Living by Design, a project of the Robert Wood Johnson Foundation and the University of North Carolina ([www.activelivingbydesign.org](http://www.activelivingbydesign.org)).

### **Walkable Communities and Active Living**

*“People who report having access to sidewalks are 28% more likely to be physically active.”<sup>8</sup>*

Recent research developed through the Robert Wood Johnson Foundation’s Active Living Programs has shown that walkable communities tend to increase physical activity and decrease ailments associated with physical inactivity among people living within them. There are strong correlations between compact, pedestrian-friendly environments and decreases in negative health indicators such as obesity, diabetes, hypertension, and asthma. In addition, decreasing automobile dependence and increasing pedestrian friendly communities will:

- Improve regional air quality leading to decreases in asthma and other respiratory problems
- Decrease vehicular and pedestrian injuries
- Decrease commuter stress and the incidence of “road rage”
- Improve community access for those unable to operate automobiles for economic or disability reasons
- Improve water quality by reducing the need for impervious paving associated with parking and traffic management, and by decreasing point-sources of water pollutants such as petroleum hydrocarbons

## **Strategies to Create More Walkable Communities**

A few samples of initiatives intended to improve the walkability of communities are offered in the following paragraphs.

### **Create Complete Streets for All Users**

One way to begin developing streets that invite physical activity is for states and localities to adopt “complete streets” policies that include or add pedestrian and bicycle accommodations whenever streets are built or modified. Complete streets are designed and operated to enable safe access for all users. To learn about model complete-streets policies and activities, visit ([www.CompleteStreets.org](http://www.CompleteStreets.org)) or see *Increasing Physical Activity through Community Design* by the National Center for Bicycling and Walking at ([www.bikewalk.org](http://www.bikewalk.org)).

### **Calm Traffic**

Traffic engineers are using a variety of new techniques to slow traffic and give pedestrians and cyclists priority on neighborhood streets. Narrowing streets at intersections, creating raised crosswalks, and installing traffic circles makes streets safer and more pleasant for pedestrians. In Seattle, for example, engineers installed hundreds of traffic circles on neighborhood streets, decreasing traffic crashes by roughly 77%. Learn about traffic calming approaches by visiting the Institute of Traffic Engineers website at ([www.ite.org](http://www.ite.org)).

### **Create Safe Routes to School**

The trip to school may be one of the first places to help children be active. Communities across the country are trying to create safe walking and biking environments for the trip to school, and encourage children and their parents to get in the habit of walking through the Safe Routes to School programs. In California, one-third of federal traffic safety funds are devoted to creating safe routes to school. The National Highway Traffic Safety Administration has created a toolkit for communities interested in creating Safe Routes to School programs. For more information, go to their web site at ([www.nhtsa.dot.gov/people/injury/pedbimot/bike/Safe-Routes-2004/](http://www.nhtsa.dot.gov/people/injury/pedbimot/bike/Safe-Routes-2004/)).

### **Build Transit-Oriented Development**

Many communities around the country are concentrating a mix of housing and businesses around train or bus stations. This makes it more convenient for people to walk to and from transit, and to pick up a quart of milk or drop off dry cleaning along the way. Dallas, Texas is using its new light-rail line as a launching point for creating new, walkable neighborhoods. See the book *Solving Sprawl* by Kaid Benfield (Natural Resources Defense Council, 2001) for more examples. The Center for Transit-Oriented Development at Reconnecting America has conducted innovative research and developed numerous tools to help communities pursue such development solutions. See ([www.reconnectingamerica.org](http://www.reconnectingamerica.org)) for more details.

### **Retrofit Sprawling Communities**

Existing “edge cities” and suburban shopping areas designed for the automobile, in some cases, may be retrofitted to make walking safer and more inviting. Communities are able to create pedestrian cut-throughs that allow people who live on cul-de-sacs to reach shops, parks, and offices on foot. Foundering shopping malls, isolated from neighborhoods by expansive parking lots, are being reborn as developers cut new streets through the once-massive

buildings, remodeled to hold apartments, businesses, and shops. The Congress for the New Urbanism's website ([www.cnu.org](http://www.cnu.org)) gives many good examples of these types of projects.

### **Revitalize Walkable Neighborhoods**

Many cities and towns have downtowns and main streets with the basic attributes of a walkable and bikeable community, but they lack economic investment. These struggling communities may have dozens, if not hundreds, of vacant buildings, a lack of good retail outlets, and high crime rates. Local governments are concentrating on revitalizing these neighborhoods through commercial investment, bringing vacant property back to productive use, and creating new housing for a mix of income levels. Minneapolis, Minnesota revitalized its old train station into a large farmers' market, featuring dozens of booths and celebrating the contributions of recent immigrants of healthy food for the whole community. For other examples and tools, visit the National Vacant Properties Campaign at ([www.vacantproperties.org](http://www.vacantproperties.org)) or the National Trust for Historic Preservation at ([www.nthp.org](http://www.nthp.org)).

### **Educate and Encourage**

While changing community design is critical, it is also essential that all boards understand the health benefits of physical activity. Many programs combine environmental changes with outreach to inform and motivate people. For example, many communities undertaking Safe Routes to School programs celebrate 'Walk a Child to School Day' in October. In addition, the Centers for Disease Control and Prevention (CDC) has launched a national youth media campaign aimed at helping young teenagers make healthy choices that include physical activity described at ([www.cdc.gov/youthcampaign/index.htm](http://www.cdc.gov/youthcampaign/index.htm)).

### **Plan for a Stronger Local Food System**

The average food item travels 1,500 to 2,000 miles to reach a consumer's table. Fostering a vibrant local network of small farmers has been shown to benefit local economies and offer consumers a variety of fresh, locally grown food.

Sustainable agricultural production supported by aware consumers may also help reduce erosion and water contamination in the area of farms. Planners who integrate space for local community gardens, school gardens, and farmers' markets are laying the groundwork for a creative dimension of urban life and improving access to high-quality food.

## **Health and Comprehensive Planning**

### **A. Comprehensive Planning Background**

Board of health members interested in participating in planning might begin by investigating the local government's comprehensive development planning process. These plans are required and monitored by a designated agency within each state.

Federal funds for many programs including housing, urban development, and transportation are "passed through" state governments to local governments. States are required to designate a statewide agency and empower it with the authority to establish

**Make it your business to be included in land use and transportation decision-making.**

A health perspective is always relevant at land use planning meetings yet is rarely present. Local boards of health may want to attend or designate a representative to study the zoning processes and attend critical land use planning meetings.

standards and procedures for appropriate and timely comprehensive planning by the local governments. State agencies require that local governments prepare, adopt, maintain, and implement a *comprehensive development plan*, and review those plans to ensure that they meet federal and state imposed standards. Upon review and acceptance of their comprehensive development plan, local governments become eligible for federal pass through funds as well as many sources of state funding.

## **B. Components of Comprehensive Planning**

Typically, comprehensive development plans must include a Community Assessment, a Community Participation Program, and a Community Agenda. Board of health members or their designated representative should become involved in all three of these areas. The following section contains a description of each category of comprehensive development planning excerpted from Georgia Department of Community Affairs' *Why Do We Plan? Guidebook for Citizens and Local Planners*. See ([www.dca.state.ga.us](http://www.dca.state.ga.us)) for more information.

**Community Assessment.** The first part of a comprehensive plan is an objective and professional assessment of data and information about the community. This assessment is intended to be prepared without extensive direct public participation. The Community Assessment includes: (1) a list of potential issues and opportunities that a community may wish to act on or address; (2) analysis of existing development patterns, including a map of recommended character areas for consideration in developing an overall vision for future development in the community; (3) evaluation of current community policies, activities, and development patterns for consistency with the Quality Community Objectives; and (4) analysis of data and information to check the validity of the above evaluations and the potential issues and opportunities. The product of the Community Assessment must be a concise and informative report (such as an executive summary), to inform decision-making by stakeholders during development of the Community Agenda portion of the plan.

**Community Participation Program.** The second part of a comprehensive plan is a Community Participation Program that describes the local government's strategy for ensuring adequate public and stakeholder involvement in the preparation of the Community Agenda portion of the plan. After holding a first required public hearing, the local government transmits both the Participation Program and the Community Assessment to the regional development center for review.

**Insist that health measures be included in the evaluation of transportation and land use plans.**

That which is measured gets addressed. Develop measurable indicators of health impacts, such as air emissions, availability and use of recreational trails or sidewalks.

**Community Agenda.** The third part of a comprehensive plan is the most important, for it includes a community's vision for the future as well as a strategy for achieving this vision. Because the Community Agenda provides guidance for future decision-making regarding the community, it must be prepared with adequate input from stakeholders and the public. The Community Agenda must include three major components: a community vision for the future physical development of the community, expressed in the form of a map indicating unique character areas, each with its own strategy for guiding future development patterns; a list of

issues and opportunities identified by the community for further action; and an implementation program for achieving the community’s vision for the future and addressing the identified issues and opportunities. Development of the Community Agenda must not be initiated until review of the Community Assessment and Community Participation Program is complete, since this review may include guidance or suggested revisions of these two important inputs to development of the Community Agenda. Upon completion, the Community Agenda is transmitted to the regional development center for review, following a second required public hearing. This is the portion of the plan that must be implemented by the local government, once it has been approved as being in compliance with the planning requirements.

**C. Opportunities for Influence**

Local boards of health will become involved in local comprehensive development plans by simply attending the public hearings required as part of the Community Participation Program and Community Agenda development. These components of the plan are advertised and open to the public. For more information, contact the planning agency within the local government, or contact the state agency designated to oversee the comprehensive development planning processes of local governments.

**Learn and understand the Health Impact Assessment (HIA) process and seek opportunities to apply it.** Public health consideration should be routinely included in land use planning.

As local boards of health develop a familiarity with planning processes and relationships with local government planning agencies, opportunities may be presented for board members to become more involved in the Community Assessment process, either through the incorporation of Health Impact Assessments (HIAs) or simply by providing feedback and advice about public health issues facing the community.

Typical public health subjects on which local board of health members can provide valuable input to the Community Assessment process include identifying:

- Areas requiring special attention
- Stakeholders who should have a voice in the process
- Participation techniques that help integrate health concerns into the process
- Issues and opportunities the community intends to address in its planning
- Opportunities for strategically addressing community issues in the short term
- Specific policies that could be adopted to address community concerns
- Opportunities to address environmental health considerations within the supplemental plans that focus on areas requiring special attention

**Build health coalitions around planning issues.** Community education and coalition building is a key component to any health or planning program. Are there current coalitions in which your health agency participates that would benefit from education on related planning issues? Are there existing planning coalitions that would benefit from health education?

Elements considered in comprehensive development planning that have relevance to public health include:

- Population
- Housing
- Economic development
- Natural and historic resources
- Community facilities and services
- Land use and future land use maps
- Transportation
- Intergovernmental coordination
- Sustainable local food systems

### **A Promising New Tool: Health Impact Assessments**

One way for local boards of health to become more integrated into the planning process is to institute the use of health impact assessments (HIAs). First developed in Europe in the 1990s, HIAs have been defined as “a combination of procedures, methods, and tools by which a policy, program, or project may be judged as to its potential effects on the health of a population, and the distribution of those effects.” Similar to Environmental Impact Statements, health assessments provide a practical framework for identifying health impacts and ways of addressing them. Information on HIAs and how London, England’s transportation patterns changed because of the assessment are online at (<http://jech.bmjournals.com/cgi/reprint/58/3/169.pdf>).

Health Impact Assessments are based on a number of key principles:

- *An explicit focus on fairness and social justice*, creating equal opportunities for health and reducing health disparities down to the lowest possible level.
- *A multidisciplinary, participatory approach*. HIAs draws on the experiences not only of professional practitioners and decision-makers, but also that of relevant voluntary organizations in the communities whose lives may be affected by the policy, program, or project.
- *The use of qualitative as well as quantitative evidence*. HIAs involves an evaluation of quantitative, scientific evidence where it exists, but also recognizes the importance of more qualitative information. This may include the opinions, experience, and expectations of those people most directly affected by public policies.
- *Openness to public scrutiny*. To be consistent with the focus on equity, HIAs also intends to be transparent and open to public scrutiny throughout.

Ideally, HIAs should be applied *prospectively* (e.g., before policy, program, or project implementation) to ensure that steps are taken at the planning stage to maximize positive health impacts and to minimize potential negative effects. In practice, it is not always possible to do this, so HIAs may also be carried out *concurrently* (e.g., during the implementation stage) or *retrospectively* (e.g., after it has finished) in order to inform the ongoing development of existing work.

HIAs are intended to influence decisions by:

- Raising awareness among decision-makers to the relationship between health and the physical, social, and economic environments, thereby ensuring that they always include a consideration of health consequences in their deliberations.
- Helping decision-makers identify and assess possible health consequences and optimize overall outcomes of the decision.
- Helping those affected by policies to participate in policy formation and contribute to decision-making.

## **Conclusion**

Boards of health have a critical role of assuring the public's health. This includes ensuring that land use patterns do not compromise the health of their communities. Board of health members must become involved in their community's planning process and ensure that a health component is always considered in land use decisions. Establishing health coalitions and educating members of the community will also raise awareness of land use planning issues and concerns. Boards of health must become and remain involved in land use planning decisions in order to effectively fulfill their obligation to protect the public's health.

## **APPENDIX A: CONDUCTING HEALTH IMPACT ASSESSMENTS: THE FIVE STAGES**

### **1. Screening**

An in-depth HIA cannot be conducted on all projects, programs, or policies that might possibly impact public health; choices have to be made. Screening is the process where these choices are systematically and explicitly made. Questions asked in the screening stage should include:

- What is the description of the program, policy, or project?
- Does the program, policy, or project affect any of the selected determinants of health?
- Does the program, policy, or project affect the whole population or only selected vulnerable groups?
- Should the program, policy, or project undergo a HIA?

### **2. Scoping**

Scoping identifies which health impacts should be included. Health impacts to be considered include:

- Physical activity, obesity, cardiovascular disease
- Air quality, asthma, other respiratory diseases
- Water quality, water-borne diseases
- Food quality, food-borne diseases, nutrition
- Motor vehicle, pedestrian and other injuries
- Mental health
- Social capital, community safety
- Accessibility for persons with disabilities
- Noise pollution
- Access to jobs, stores, schools, recreation
- Social equity, environmental justice

Questions asked in the scoping phase may include:

- What is the present “baseline” health status of the affected population, including any health inequalities between population sub-groups?
- What are the factors that influence this population’s health status and which health determinants will be affected by the proposal?
- How will the nature, magnitude, and distribution of these health determinants change (quantified, if possible)?
- Can we estimate the subsequent change in the overall health of the population, including the effect of health inequalities?

Responsibilities are assigned at this stage to clarify exactly what is expected from whom and a decision is made regarding performing a “rapid” versus a “comprehensive” HIA, referring to the next, or appraisal stage. A “rapid” HIA has an appraisal stage which is carried out quickly (often only in days/weeks) with a limited amount of resources. The appraisal stage in a “comprehensive” HIA generates new information, undergoes significant literature review, and has in-depth involvement by stakeholders.

### 3. Appraising the Health Impacts

Appraising the health impacts to be included in a HIA identifies not only *how many* and *which* people may be affected, but also assesses *how* they may be affected.

Questions asked in the appraising stage may include:

- Who will conduct the HIA and who will be in charge?
- Are there specialists or practitioners who should be involved?
- What monitoring and evaluation of the HIA will occur?
- When must the HIA be completed to influence key decision makers (often influencing the choice of whether a rapid or comprehensive HIA is undertaken)?
- Can we set and agree on the objectives of the HIA?

### 4. Recommending to Decision-Makers

The HIA report is usually the only lasting record of what occurred in an HIA assessment process. Decision-makers have preferences for report formats and the written report should be suitable in length and depth for the specific audience. Useful items to include are:

- Description of proposals and options under consideration
- Description of background situation
  - The current health status of the community
  - The determinants of health in the community
  - The particular groups in the community likely to be impacted differentially by the proposal
  - How the current health status would develop under a “no change” option
- Prediction of what changes might occur for each health determinant in the proposal
- How much it will change and the estimated extent of impact (may be different for each sector of the community, and may be measured by a numerical estimate or by rating as “major,” “intermediate” or “minor”)
  - How people will be affected by changes
  - The uncertainty attached to the estimate
- Statement of how the proposal will effect health equity
  - Who will be the gainers and the losers
  - How different groups (e.g. geographical, ethnic, socio-economic) will be affected
- Recommendations to maximize benefit and minimize harm
- Description of the monitoring and evaluation process, measures, and timelines

### 5. Evaluating and Monitoring

Monitoring is concerned with what is happening as the project/program/policy unfolds and is implemented. Evaluation seeks to identify whether the HIA has achieved its objective. These phases enhance the decision-making process and may improve the evidence base.

## APPENDIX B: CASE STUDY

### Using the news media: An op-ed on Atlanta's Belt Line proposal

When *The Atlanta Journal-Constitution* editorialized on the proposed transit and greenway known as the Atlanta Belt Line, the Atlanta Regional Health Forum took the opportunity to address the health implications in a follow-up column, excerpted below:

#### ***Belt Line will make Atlanta healthier***

*A recent editorial calling for visionary leadership to make the Atlanta Belt Line a reality was right on target ('Wanted: Someone at head of Belt Line,' @issue, January 11, 2005). But it overlooked the many health benefits of this marvelous resource. These include:*

- *Physical activity. Belt Line trails will offer an attractive setting for walking, bicycling and other recreational activity. The Belt Line will enable commuting by foot and bicycle, and by transit—which includes walking to and from transit stops. Physical activity leads to weight loss and promotes health. Obesity and physical inactivity shorten life and raise the risk of heart disease, diabetes, hypertension, depression and some cancers.*
- *Cleaner air. The Belt Line could reduce the use of automobiles, whose emissions are major contributors to ozone in Atlanta. Ozone is linked to increased asthma attacks and heart disease mortality. Atlanta exceeded the Environmental Protection Agency's air quality standard for ozone 51 times in 2002-2003.*
- *A safer city. Driving less reduces each individual's risk of injury on the highways. Nationally, motor vehicle crashes are the leading cause of death among persons 1-34 years old. Good trails and pedestrian infrastructure reduce the risk of pedestrian and bicyclist injuries and deaths.*
- *Mental health. In many people, driving causes stress, aggravation and even belligerence (think of road rage). Alternatives to driving are good for mental health. Physical activity, such as walking, is an effective treatment for depression.*
- *Stronger community. The Belt line will help build community by providing a public setting for people to meet and greet each other. This 'social capital' is good for the overall health of a community.*
- *Brown-field redevelopment. Redevelopment of underutilized urban land can reduce sprawl and preserve green space. Redevelopment promotes health by offering economically and socially thriving communities that are walkable.*

*Leading researchers and institutions in Atlanta, including the Atlanta Regional Health Forum, the Centers for Disease Control and Prevention and the Atlanta Regional Commission, have recognized that our built environment can affect our health. Broader appreciation of the positive health impacts of the Belt Line could help galvanize public and private support and assist in attracting the leadership needed to make it happen."*

## APPENDIX C: GLOSSARY OF TERMS

*Adapted, with permission, from “Choosing Our Community’s Future: A citizen’s guide to getting the most from development” by David Goldberg, Smart Growth America, 2005.*

### **Accessory Dwelling Unit (ADU)**

A second dwelling attached to or separate from the main single family residence, such as a garage or basement apartment. This apartment or cottage may house one or more persons who may or may not be a member of the family. ADUs are often referred to by other names as well such as “mother-in-law apartment” or “granny flat.”

### **Brownfield**

A former industrial site, often with environmental contamination, that is in a promising location for reclamation and redevelopment as a mixed use or residential area.

### **Complete neighborhood**

A complete neighborhood is one which includes residential, commercial, and civic areas within easy access of each other—preferably all within walking distance.

### **Complete street**

A planning and design term for streets that offer safe, comfortable and convenient options to walk, drive, bicycle or take public transportation. Many jurisdictions are adopting policies to create complete, rather than car-only, streets whenever they build, overhaul or upgrade roads.

### **Density**

In the field of urban planning, density usually refers to the number of units of housing, office space, or commercial space per unit of area within a larger neighborhood, municipality or jurisdiction. Higher density development, especially when accomplished attractively and near transit, is an important component of successful smart growth.

### **Developer**

A developer is any person who is improving or reconfiguring a parcel of land within a city, and who may or may not be the owner of that property. Most people use the term “developer” to refer to a privately funded person or corporation that seeks to build upon, or otherwise make changes to, a parcel of land, in order to sell and profit from that property.

### **Development fees**

Fees charged to developers or builders as a prerequisite to permit approval. The most common are: (1) impact fees (such as parkland acquisition fees, school facilities fees, or street construction fees) related to funding public improvements which are necessitated in part or in whole by the development; (2) connection fees (such as water line fees) to cover the cost of installing public services to the development; (3) permit fees (such as building permits, grading permits, sign permits) for the administrative costs of processing development plans; and, (4) application fees (rezoning, CUP, variance, etc.) for the administrative costs of reviewing and hearing development proposals.

**Downzone**

This term refers to the rezoning of land to a more restrictive or less intensive zone (for example, from multi-family residential to single-family residential or from residential to agricultural).

**Floor Area Ratio (FAR)**

Floor Area Ratio, or FAR, is a measure of development intensity. FAR is the ratio of the amount of floor area of a building to the amount of area of its site. For instance, a one-story building that covers an entire lot has an FAR of 1. Similarly, a one-story building that covers 1/2 of a lot has an FAR of 0.5.

**Greenfield development**

Development that occurs on previously undeveloped farm, forest or other open land.

**Impact fees**

*See “development fees.”*

**Impervious surface**

Hard surfaces, such as rooftops, sidewalks, roads, and parking lots, that are covered by impenetrable materials like asphalt, concrete, brick, and stone. These materials seal surfaces, repel water and prevent precipitation from infiltrating soils, and therefore from being filtered before entering back into groundwater.

**Infill**

The practice of re-developing vacant, abandoned, or empty lots of land in otherwise developed areas. For example, a small-scale, open parking lot located between two modern office buildings might be transformed into a mixed-use apartment and retail building that better fits the neighborhood.

**Local food system**

A component of public health efforts in many areas, local food systems include farm-to-school programs, community gardens, and farmers’ markets. Loss of farmland to sprawl and the high environmental and economic costs of long-distance food transport have led many regions to strengthen policies to support local food. Part of obesity programs and wellness initiatives, affordable and tasty fresh fruits and vegetables encourage healthy eating habits, while also supporting sustainable food production methods and consumer awareness of place. Food stamp and WIC program connections to local food programs increase the availability of high-quality produce in under-served neighborhoods. Clear labeling in all stores allows consumers to make choices consistent with their individual health concerns.

**New urbanism**

According to the Congress for the New Urbanism, this is the process of reintegrating the components of modern life—housing, workplace, shopping, and recreation—into compact, mixed-use neighborhoods linked by transit and set in a larger regional open space framework. These principles can be applied successfully to infill and redevelopment sites within existing urbanized areas, or to new developments in the suburbs.

### **Overlay Zone**

A set of zoning requirements that is superimposed upon a base zone. Overlay zones are generally used when a particular area requires special protection (as in a historic preservation district) or has a special problem (such as steep slopes, flooding or earthquake faults). Development of land subject to overlay zoning requires compliance with the regulations of both the base and overlay zones.

### **Planned Unit Development (PUD)**

Land use zoning which allows the adoption of a set of development standards that are specific to the particular project being proposed. Typically PUDs involve a mixture of different land uses and thus flexibility is needed from the rigid standards of the zoning code. PUD zones usually do not contain detailed development standards. These are established during the process of considering the proposals and adopted by ordinance if the project is approved.

### **Purchase of development rights (PDR)**

PDR is a public program that pays landowners the fair market value of their development rights, in exchange for a permanent conservation easement that restricts development of the property. PDR programs are strictly voluntary and are usually funded by the sale of bonds or tax revenue.

### **Setback**

Minimum distance required by zoning between two structures or between a structure and property lines.

### **Transfer of development rights (TDR)**

This is a legal covenant that protects a parcel of land in perpetuity from development and grants enforcement of the covenant to the county.

### **Traditional neighborhood development (TND)**

This is a compact, mixed-use neighborhood where residential, civic, and commercial buildings are all in close proximity to one another. It is characterized by human scale design, a concern for walkability, increased density, and may exhibit the following tell-tale characteristics: alleys, grid street pattern, buildings oriented to the street, front porches on houses, and village squares, among others.

### **Transit-oriented development (TOD)**

TOD refers to moderate to high density housing concentrated in mixed use developments situated to encourage the use of public transit. Typically, they are located on top of, or very near, public transit access points, where residents can easily and conveniently walk or bike to transit which will carry them to their final destinations.

**Variance**

A variance provides the property owner a means to deviate from the standard rules to mitigate any “unnecessary hardship” caused by complying with the zoning code. Variance requests are subject to a public hearing, usually before a zoning administrator or board of zoning adjustment. Variances do not allow a change in land use, usually just the intensity of use.

**Watershed**

A watershed is any given area of land which, upon receiving precipitation, feeds that water into a given body of water, such as a lake, river, stream, or bay. For example, a parcel of land would be within the Chesapeake Bay watershed if rain falling on the parcel eventually traveled from there into the Chesapeake Bay.

## APPENDIX D: RESOURCES FOR ADDITIONAL INFORMATION

### CITED WORKS

- <sup>1</sup> The World Health Organization defines health as “a state of physical, mental and social well-being, not merely the absence of disease or infirmity.”
- <sup>2</sup> *Public Health in Land Use Planning and Community Design*, fact sheet of the National Association of County and City Health Officials, 2005.
- <sup>3</sup> Rosenberg, C. *The Cholera Years: The United States in 1832, 1849, and 1886*. Chicago: University of Chicago Press, 1962, p 18.
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- <sup>5</sup> Ewing, R., T. Schmid, R. Killingsworth, A. Zlot, and S. Raudenbush. *Relationship Between Urban Sprawl and Physical Activity, Obesity and Morbidity*, published in the September 2003 issue of the American Journal of Health Promotion.
- <sup>6</sup> SMARTRAQ, Frank, L., et al, Atlanta, GA, 2004.
- <sup>7</sup> Ewing, R., R. Pendall, and D. Chen. *Measuring Sprawl and Its Impact*, 2002. Online at <<http://www.smartgrowthamerica.org/sprawindex/sprawreport.html>>
- <sup>8</sup> Brownson R, et al., Environmental Determinants of Physical Activity in the United States. *American Journal of Public Health* (2001), Vol.91, No.12.

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- Kemm, J., J. Parry, and S. Palmer. *Health Impact Assessment: Concepts, Theory, Techniques, and Applications*. Oxford University Press, 2004.

### WEBSITES

- Active Living by Design. <[www.activelivingbydesign.org](http://www.activelivingbydesign.org)>.
- Center for Transit-Oriented Development at Reconnecting America. <[www.reconnectingamerica.org](http://www.reconnectingamerica.org)>.
- Centers for Disease Control and Prevention. <[www.cdc.gov/youthcampaign/index.htm](http://www.cdc.gov/youthcampaign/index.htm)>
- Congress for the New Urbanism's. <[www.cnu.org](http://www.cnu.org)>.
- Federal Highway Administration. <[http://safety.fhwa.dot.gov/ped\\_bike/univcourse/swless06.htm](http://safety.fhwa.dot.gov/ped_bike/univcourse/swless06.htm)>.
- Georgia Department of Community Affairs. [www.dca.state.ga.us](http://www.dca.state.ga.us)>
- Institute of Traffic Engineers. <[www.ite.org](http://www.ite.org)>.
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- National Trust for Historic Preservation. <[www.nthp.org](http://www.nthp.org)>.
- National Vacant Properties Campaign. <[www.vacantproperties.org](http://www.vacantproperties.org)>.
- Smart Growth America. <[www.smartgrowthamerica.org](http://www.smartgrowthamerica.org)>.
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