



LOCAL GOVERNMENT CLIMATE AND ENERGY STRATEGY GUIDES

Smart Growth

A Guide to Developing and Implementing
Greenhouse Gas Reduction Programs



U.S. ENVIRONMENTAL PROTECTION AGENCY

DRAFT

EPA's Local Government Climate and Energy Strategy Guides

The Local Government Climate and Energy Strategy Guides provide a comprehensive, straightforward overview of greenhouse gas (GHG) emissions reduction strategies that local governments can employ. Topics include energy efficiency, transportation, community planning and design, solid waste and materials management, and renewable energy. City, county, territorial, tribal, and regional government staff and elected officials can use these guides to plan, implement, and evaluate climate and energy projects.

Each guide provides an overview of project benefits, policy mechanisms, investments, key stakeholders, and other implementation considerations. Examples and case studies highlighting achievable results from programs implemented in communities across the United States are incorporated throughout the guides.

While each guide stands on its own, the entire series contains many interrelated strategies that can be combined to create comprehensive, cost-effective programs that generate multiple benefits. For example, efforts to improve energy efficiency can be combined with transportation and community planning and design programs to reduce GHG emissions, decrease the costs of energy and transportation for businesses and residents, improve air quality and public health, and enhance quality of life.

Local Government Climate and Energy Strategy Guides

All guides are available at www.epa.gov/statelocalclimate/resources/strategy-guides.html.

Energy Efficiency

- Energy Efficiency in Local Government Operations
- Energy Efficiency in K-12 Schools
- Energy Efficiency in Affordable Housing
- Energy-Efficient Product Procurement
- Combined Heat and Power
- Energy Efficiency in Water and Wastewater Facilities (*in development*)

Transportation

- Transportation Control Measures
- Efficient Fleets (*in development*)

Community Planning and Design

- Smart Growth
- Urban Heat Island Reduction (*in development*)

Solid Waste and Materials Management

- Resource Conservation and Recovery (*in development*)

Renewable Energy

- Green Power Procurement
- On-Site Renewable Energy Generation
- Landfill Gas Energy

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Executive Summary

Developing and Implementing Community Planning and Design Programs

Community design—including factors such as physical layout; proximity and accessibility to goods, services, workplaces, and schools; and the materials and designs used in building and infrastructure—affects energy consumption and vehicle use, and thus greenhouse gas emissions. By addressing these factors through planning, application of smart growth principles, measures to reduce urban heat islands, and other initiatives, local and regional governments can encourage economic development while preserving their open spaces and critical environmental habitats, protecting water and air quality, and helping to mitigate climate change.

Community planning and design programs generally act to reduce energy demand, as opposed to increasing energy efficiency. For example, by promoting mixed-use development and public transportation, communities can reduce the need for residents to drive a car for shopping, commuting to work, or getting to and from school. Similarly, measures to reduce the urban heat island effect, such as planting shade trees or installing cool roofs, reduce a community's cooling energy requirements. The community planning and design guides in this series describe the process of developing and implementing strategies, using real-world examples, that apply the principles of smart growth or take steps to reduce the urban heat island effect.

Smart Growth

Smart growth development, based on 10 key principles, benefits the economy, the community, the environment, and public health. This guide provides information on how local governments have planned, designed, and implemented approaches that encourage smart growth in their communities. It is designed to be used by city planners, local energy managers and sustainability directors, local elected officials, regional planning agencies, metropolitan planning organizations, and citizen groups.

Readers of the guide should come away with an understanding of smart growth principles and how they can be applied in practice, foundations and strategies for smart growth development, expected costs, and potential funding opportunities.

The guide describes the benefits of smart growth (section 2); planning and design approaches to smart growth (section 3); key participants and their roles (section 4); foundations for smart growth program development (section 5); implementation strategies for effective programs (section 6); investment and funding opportunities (section 7); federal, state, and other programs that may be able to help local governments with information or financial and technical assistance (section 8), and finally two case studies of local governments that have successfully implemented smart growth principles in their communities (section 9). Additional examples of successful implementation are provided throughout the guide.

Relationships to Other Guides in the Series

Local governments can use other guides in this series to develop robust climate and energy programs that incorporate complementary strategies. For example, local governments could combine smart growth development with **urban heat island reduction, transportation control measures, energy-efficient affordable housing, and energy-efficient K-12 schools** in a comprehensive, community-wide approach to reducing energy demand and vehicle miles traveled.

See the box at right for more information about these complementary strategies. Additional connections to related strategies are highlighted in the guide.

Related Guides in This Series

- **Community Planning and Design: *Urban Heat Island Reduction***
Dark-colored buildings, paved surfaces, and reduced tree cover in urban areas create “islands” of warmth, with impacts on air quality, energy use, and public health. Measures to reduce urban heat islands can complement smart growth strategies by further reducing energy costs and enhancing green space.
- **Transportation: *Transportation Control Measures***
Transportation control measures are strategies that reduce vehicle miles traveled and improve roadway operations to reduce air pollution, GHG emissions, and fuel use from transportation. Many of these measures encourage public transportation, carpooling, bicycling, and walking, thus contributing to one of the key principles of smart growth (to provide a variety of transportation choices).
- **Energy Efficiency: *Energy Efficiency in Affordable Housing***
Energy costs can contribute substantially to the overall financial burden of housing, and can make housing unaffordable for many families. Lower home energy use combined with smart growth strategies that reduce the need for personal vehicle use can lead to substantial reductions in the total energy cost burden of low-income residents.
- **Energy Efficiency: *Energy Efficiency in K-12 Schools***
The proximity of schools to the neighborhoods they serve, along with the accessibility of schools via a range of transportation options, are important considerations for smart growth strategies. Measures to improve energy efficiency in K-12 schools can be combined with smart growth strategies to reduce the total energy use and environmental impacts associated with schools—both within and beyond the school fenceline.

1. Overview

Many local governments strive to promote economic development while preserving their open spaces and critical environmental habitats, protecting water and air quality, and reducing greenhouse gas (GHG) emissions. Across the United States, municipalities have found that following smart growth principles can help meet these goals, and that in addition to producing environmental, economic, societal, and health benefits, smart growth can lead to significant energy savings (Friedman, 2004). Smart growth can also reduce costs for transportation infrastructure and services, and assist areas in attaining and maintaining air quality standards under the Clean Air Act.

Smart growth development focuses on the issues of how and where to accommodate new development and redevelopment, and how to improve the efficiency of the transportation system. It is centered on the 10 key principles listed in the text box to the right. These principles can be—and have been—applied to a wide range of communities and rural areas.

Implementing these principles to promote smart growth and its benefits involves rethinking typical approaches to development, and taking a strategic, often regionally coordinated approach to land use planning. It involves considering the design of neighborhoods, buildings, and infrastructure, as well as location and land use.

Smart growth is place- and situation-specific and can look quite different from community to community. Accordingly, the benefits resulting from smart growth strategies may vary widely from location to location, based on site-specific factors such as existing development patterns and infrastructure. Implementing the same smart growth strategies in two different communities may yield very different results, thus the examples presented in this guide are meant to be illustrative of what particular communities have achieved given their local conditions.

Smart growth policies and practices that advocate more compact and mixed-use communities, more transportation options, and the preservation of green space can influence energy consumption in multiple ways. For example, how buildings are designed can determine how much energy they use. Additionally, where development occurs relative to the transportation options that are available determines people's choice of transportation—whether they can drive, walk, bike, or take public transit. Consequently, an important component of a local government's

Smart Growth Principles

Based on the experience of communities around the nation, the Smart Growth Network developed a set of 10 basic principles:

- Mix land uses
- Take advantage of compact building design
- Create a range of housing opportunities and choices
- Create walkable neighborhoods
- Foster distinctive, attractive communities with a strong sense of place
- Preserve open space, farmland, natural beauty, and critical environmental areas
- Strengthen and direct development towards existing communities
- Provide a variety of transportation choices
- Make development decisions predictable, fair, and cost-effective
- Encourage community and stakeholder collaboration in development decisions

These principles are flexible and adaptable, and have been successfully applied in cities, suburbs, small towns, and rural areas throughout the United States.

Source: *Smart Growth Network, 1998.*

clean energy and climate change mitigation program involves making the connection between energy use, transportation infrastructure and services, and how and where development occurs in their community.

Even so, local governments have not typically implemented smart growth initiatives specifically to save energy, and thus may not have measured the energy savings from these strategies. Nevertheless, recent studies substantiate the link between smart growth and reductions in energy use. For example, many regional scenario planning efforts have compared alternative future development patterns and modeled the performance of “business-as-usual” growth versus more compact development (e.g., SACOG, 2005; Envision Utah, 2008). In these scenarios, energy use and other measures, such as vehicle miles traveled (VMT), water use, amount of land consumed, infrastructure costs, and other criteria have typically been significantly lower in the more compact scenarios.

Efforts are also being made to quantify the relationships between energy savings, GHG emissions reductions, smart growth strategies, transportation investment plans, and programs that provide transportation choices (see text box, *Energy Savings from Smart Growth Transportation Policies*, below, and EPA's *Transportation Control Measures* guide in the *Local Government Climate and Energy Strategy Guides* series). The link between the type and size of housing stock, urban heat island effects, and energy consumption is also being quantified (Ewing and Rong, 2008).

Energy Savings from Smart Growth Transportation Policies

Smart growth policies encourage a more efficient use of transportation and other infrastructure by developing mixed-use communities near commercial centers and incorporating a variety of transportation options. A reduction in vehicle miles traveled (VMT) is one of the largest and most easily quantifiable energy savings from smart growth policies. According to EPA's inventory of U.S. GHG emissions in 2007, 33% of U.S. carbon dioxide (CO₂) emissions (the largest component of GHGs) come from the transportation sector, of which 83% is from on-road vehicles (U.S. EPA, 2009b). Because transportation has such an effect on energy consumption and air emissions, many local governments are adopting smart growth principles that encourage compact development to reduce the distances their residents must drive, and create other options to driving, such as walking, biking, and transit, to lower emissions and save energy.

Growing Cooler

In 2008, the Urban Land Institute published *Growing Cooler: The Evidence on Urban Development and Climate Change*. This report reviewed the literature on compact development, travel, and GHG emissions to estimate the GHG reductions that would be possible from more compact, walkable development. Its main findings include:

- New vehicle and fuel technologies will not be sufficient on their own to reduce CO₂ emissions from driving. To reduce emissions to the level scientific consensus accepts as necessary to avoid potentially catastrophic consequences, vehicle miles traveled (VMT) must be reduced.
- Compact development reduces the need to drive by putting destinations closer together and making walking, biking, and using mass transit easier. Any given increment of compact development could reduce VMT up to 20 to 40 percent compared to dispersed development on the outer fringe of an urban area.
- Given the market demand for smart growth neighborhoods, the amount of new development expected by 2050, and the CO₂ reductions possible from compact development, aggressive implementation of smart growth strategies could reduce U.S. CO₂ emissions by 7 to 10 percent by 2050.

Source: Ewing et al., 2008.

Moving Cooler

A complementary report, entitled *Moving Cooler: An Analysis of Transportation Strategies for Reducing Greenhouse Gas Emissions*, published by the Urban Land Institute in July 2009, described an integrated, multi-strategy approach to reducing transportation-related GHG emissions. Among the findings:

- Combinations of strategies create synergies that enhance the potential reductions from individual measures. For example, land use changes combined with expanded transit services achieve stronger GHG reductions than when only one option is implemented.
- Advancing smart growth policies to increase compact development can achieve significant reductions in GHG emissions at relatively low costs, but requires investments in transit expansion and improved highway development to avoid issues of congestion, reduced mobility, and equity concerns.

Source: Cambridge Systematics, 2009.

This guide provides information on how local governments have planned and implemented activities that encourage smart growth in their communities, sources of funding, and case studies. Energy savings data are included where available. Additional examples and information resources are provided in Section 10, *Additional Examples and Information Resources*.

Local governments can combine smart growth principles with other strategies covered in the *Local Government Climate and Energy Strategy Guides* to develop comprehensive, robust programs that provide integrated social and environmental benefits. For example, local governments can integrate smart growth development with energy-efficient affordable housing and transportation control measures (TCMs) to put development in locations that are well connected to the region by public transit, take advantage of existing infrastructure, and are affordable for residents with a range of incomes. The cost of living in these locations is lower because they offer more transportation options and are closer to housing, jobs, and services. Development in these locations allows people to drive less, which reduces greenhouse gas emissions and air pollution. Please see the guides on energy efficiency in affordable housing and TCMs for more information on these complementary strategies.

2. Benefits of Smart Growth

Smart growth can produce significant energy, environmental, economic, social, public health, and other benefits by helping local governments to:

- *Reduce GHG emissions.* Driving less can help reduce CO₂ emissions. About 87 percent of all trips in the United States are made in personal vehicles (U.S. BTS, 2001). However, almost 60 percent of all trips are less than five miles. If neighborhoods were designed to make walking and biking safe and easy, more of these shorter trips could be made without a car. In addition, if stores, offices, schools, and other destinations were closer to homes, an even higher percentage of trips could be less than five miles (ORNL, 2007). Compact development reduces the need to drive by putting destinations closer together and making walking, biking, and using mass transit easier. According to *Growing Cooler* (see previous text box) compact development could reduce VMT by 20 to 40 percent compared to dispersed development on the outer fringe of an urban area.

Using green building techniques and building more compactly can also reduce GHG emissions.

For example, the life-cycle analysis of high-density and low-density residential development in Toronto found that low-density development emitted more than twice as much GHGs per capita as the higher-density development (Norman et al., 2006).

- *Reduce energy costs.* There is a close connection between energy costs and land use decisions. While energy availability and pricing are volatile and dependent on changing political and economic factors, the built environment, such as buildings and infrastructure, cannot adjust easily to energy changes. Incorporating smart growth principles allows the built environment to use less energy and even adjust energy use during periods of rising energy prices. Emphasizing compact building means fewer resources and less energy are used to build new roads and other

infrastructure, or to build and provide transit service. Similarly, reusing existing structures preserves the energy that was already invested in building them (known as “embodied energy”). Employing these strategies also helps to promote investments in existing infrastructure.

Compact and transit-oriented development patterns, in conjunction with transit-focused transportation investment strategies, allow people to drive less if they choose, resulting in reduced vehicle fuel use. With an estimated cost of 50 cents per mile to operate a vehicle,¹ a person can see immediate savings by walking, biking, or taking public transit (U.S. GSA, 2010). Smaller homes and residential buildings with shared walls (e.g., apartments, condominiums, duplexes, and townhouses), which are among the housing choices offered in smart growth communities, use less energy for heating and cooling.

Smart growth often incorporates green infrastructure techniques which can save energy costs by reducing stormwater overflow. Other benefits of green infrastructure include reduced energy costs for heating and cooling due to tree shading, and the reduction of the urban heat island effect. For more information on green infrastructure and heat islands, see the text box to the right and EPA’s *Urban Heat Island Reduction* guide in the *Local Government Climate and Energy Strategy Guides* series.

Some research has been conducted to compare the energy use of low-density, automobile-dependent development to that of higher-density neighborhoods. One life-cycle analysis of the construction materials, building operations, and transportation of high-density and low-density residential development in Toronto found that, per capita, the low-density development used more than twice as much energy as the high-density development (Norman et al., 2006).

Green Infrastructure

Green infrastructure can work hand in hand with smart growth initiatives. Communities can use green infrastructure to make better use of existing infrastructure and to encourage more compact, walkable, mixed use communities. The goal of any green infrastructure project, or redesign, is to design a hydrologically functional site that mimics predevelopment, or natural conditions. This is achieved by using design techniques that infiltrate, filter, evaporate, and store stormwater runoff close to its source. Rather than rely on costly large-scale conveyance and treatment systems, green infrastructure addresses stormwater overflow through a variety of small, cost-effective landscape features located on or near the development. Green infrastructure is an approach that can be applied to new development, urban retrofits, and urban revitalization projects. These landscape features include green roofs, porous pavement, rain gardens, and vegetated swales, and produce a variety of environmental benefits. In addition to effectively retaining and infiltrating rainfall, these technologies can simultaneously help filter air pollutants, reduce energy demands, mitigate urban heat islands, and sequester carbon while also providing communities with aesthetic and natural resource benefits. Green infrastructure can be an important facet of any compact, walkable community.

Source: U.S. EPA, 2008a.

Studies have found an average cost savings of nearly 27 percent on sewer infrastructures when compact development was pursued. Similarly for water infrastructure, the compact development pattern saved an average of approximately 25 percent in infrastructure costs. Sewer and water systems typically account for 30 to 60 percent of municipal energy costs,

¹ As of June 23, 2008. Includes gas, insurance, depreciation, and maintenance.

and can be the largest controllable energy cost (U.S. EPA, 2008b). More compact systems typically use less electricity for pumping, along with reducing the energy embodied in materials and construction. Several additional studies have also examined costs for maintenance and new construction of transportation infrastructure reported an average savings of nearly 33 percent when compact development is used (Delaware, 2003).

- *Demonstrate leadership.* Adopting smart growth development policies can help a local government demonstrate fiscal, environmental, and societal responsibility. Public investments often meet multiple goals, and investments in smart development can pay off in energy savings as well as reduced infrastructure costs. Municipal governments can send signals to the private sector through their investment decisions. If the government invests in infrastructure upgrades and amenities in compact, walkable communities, private investors such as banks and asset management groups might be more comfortable investing their money in new developments in those areas. Often, a small initial public investment can be the catalyst for private funding.
- *Reduce pollution.* In addition to reducing GHGs, creating neighborhoods where people can choose to walk, bike, or take public transit means less air pollution from vehicle travel. Air pollution is estimated to cause thousands of cases of chronic respiratory illness and about 60,000 premature deaths in the United States every year (Kaiser, 2005). Vehicle technology and cleaner fuels have reduced the amount of certain air pollutants (nitrous oxide, volatile organic chemicals, and carbon monoxide) per mile; however because vehicle miles traveled (VMT) have increased at three times the rate of population growth, this increased driving has offset these reductions in air pollution (Winkelman, 2002).
- *Enhance public health.* Recent research has established a link between automobile-oriented development patterns and the rise of obesity, respiratory illnesses, and other chronic diseases. Medical research (CDC, 2009) has shown that 30 minutes per day of moderate exercise like walking, several times per week, can reduce obesity and improve health. Other recent research (Frank et al., 2005) has demonstrated that compact, connected development patterns in a region will increase overall activity levels.

Policies that offer more transportation options can have an immediate effect on public health by reducing air pollution from driving while increasing physical activity. Compact, mixed-use communities with streets that are safe for pedestrians and bicyclists give people the opportunity to incorporate physical activity into their daily routine by walking or biking to school, work, transit, stores, and restaurants, or for recreation.

One study in the Atlanta region found that people who live in compact, more walkable neighborhoods drive 30 to 40 percent less than people who live in more dispersed areas, are more than twice as likely to get the recommended amount of physical activity, and weigh an average of 10 pounds less than people who live in more dispersed areas (Goldberg, 2007). Increasing physical activity can make people healthier, often leading to a reduction in

healthcare costs. Another study found that physically active people spend about \$600 less on health care annually than inactive people (Pratt et al., 2000).²

Smart growth also improves emergency services response times as fire departments, emergency responders, and police stations are closer to the areas they serve and have more route options to respond to emergency calls, given a typically gridded street pattern with a choice of more direct routes.

Recently, many communities have been trying to bring back neighborhood schools. Walking or biking to school incorporates physical activity into a child's daily routine. A Centers for Disease Control survey found that only about 36 percent of students had completed the recommended level of physical activity in the week preceding the survey (Eaton et al., 2006). Lack of regular physical activity puts a child at greater risk of becoming overweight or obese, which can lead to problems such as diabetes, heart disease, high blood pressure, depression, and respiratory problems. Programs such as the Federal Highway Administration's Safe Routes to School can help communities make the environment around a school more appealing and safer for pedestrians and bicyclists (FHWA, 2008).

Marin County: Safe Routes to School

Marin County, California, was one of the Safe Routes to School pilot communities in 2000. Its program includes educating and encouraging children and parents, enforcing safety with crossing guards and other measures, and improving infrastructure like sidewalks and crosswalks.

The county estimated that parents driving their children to school accounted for as much as 20% to 25% of morning traffic during the school year. Since the program started, the county has seen a 13% decrease in traffic around schools. By making it safe and easy for children to walk or bike to school, municipalities can also reduce GHG emissions and other pollution resulting from driving.

Sources: *Safe Routes*, 2008; *Kallins*, 2002.

- *Increase community choices.* Market surveys have found that many homebuyers—at least one-third and perhaps as many as two-thirds of people looking for a home—prefer communities that contain smart growth characteristics, such as stores within walking distance, parks, and safe places to walk and bike (Logan et al., 2009). Many experts believe that there are not enough homes in these communities to meet current demand, and expect demand to grow due to demographic shifts, such as the growth in households without children and retiring baby boomers (Nelson, 2009).
- *Enhance quality of life.* A less tangible benefit of smart growth neighborhoods is the way they feel and look, and the experience of living in them. Design features of compact, carefully designed neighborhoods make it easier to get to know neighbors and promote neighborhood activity on the street throughout the day, increasing safety.

² Converted from \$330 in 1987 dollars to \$616 in 2007 dollars.

3. Planning and Design Approaches to Smart Growth

By making strategic decisions on how and where to encourage new development and redevelopment, policy makers can use smart growth strategies to achieve multiple benefits, such as reduced infrastructure costs and reduced energy consumption from transportation, community services, and buildings. The “how” of smart growth concerns the design of neighborhoods, buildings, and infrastructure, while the “where” involves location and land use issues. Combining these two concepts, while adapting the principles of smart growth to best meet the needs and constraints of their particular area, and directing transportation plans and programs accordingly, allows policy makers to maintain a high quality of life in their community while reducing the demand for energy and total energy consumption.

Where Development Occurs

Development that is infill or close to existing development and infrastructure can help reduce energy consumption and more effectively use resources. By encouraging development in these types of locations, local governments can support existing communities with smaller environmental footprints, create distinctive and attractive places, and help preserve open space.

- *Support existing communities.* When local governments direct development toward existing communities already served by infrastructure, they can take advantage of the resources offered by existing neighborhoods while conserving open space and irreplaceable natural resources on the urban fringe. This type of development can benefit from a stronger tax base; closer proximity to a range of jobs and services; increased efficiency associated with using already developed land, reusing/repurposing existing buildings, and using existing infrastructure; and reduced development pressure on the edge. Several economic incentives and tax policy options are available to direct business development toward existing communities, and more information is provided in Section 5, *Foundations for Program Development*, and Section 7, *Investment and Funding Opportunities*.
- *Foster distinctive and attractive communities with a strong sense of place.* Local governments can encourage development that reflects the culture and heritage of the neighborhood, town, and region to create a distinctive sense of place. This approach encourages the preservation of existing buildings and construction of new buildings that enhance the architectural beauty and distinctiveness of the community. Well-designed, well-located buildings are assets to a

Baldwin Park: Infill and Base Reuse

Baldwin Park in Orlando, Florida is a new neighborhood built on the site of a former military base. Orlando's Base Reuse Commission organized to plan the property's future, engaging citizens in hundreds of meetings over two years to help devise and refine a plan to redevelop the base. At visioning workshops, citizens described what they wanted: a variety of housing types, a vibrant main street, public access to lakes, and linkages with existing neighborhoods. Mixed in with its variety of housing types are offices, a supermarket, restaurants, doctors' offices, schools, adult education, parks, and many other stores and services. The community also created 16 extra acres of parkland using an underground stormwater management system. Audubon of Florida helped plan parks and wetlands restoration projects, recreating ecosystems that were lost years ago. Since it is an infill redevelopment project, Baldwin Park can take advantage of existing power plants and water and wastewater treatment facilities. At the same time, the city will gain an additional \$30 million in annual property tax revenues. This project was a winner of the National Award in Smart Growth Achievement.

Source: Baldwin Park, 2008; U.S. EPA, 2005.

community over time, not only because of the services provided within, but because of the unique contribution they make to the look and feel of a city.

Preserving older buildings saves energy on demolition and new construction, and allows for retrofitting the buildings with more energy efficient measures. Local governments can establish revolving loan funds designated for historic preservation and educate the public about historically significant buildings and areas. They can also develop design guidelines to encourage appropriate building form and regional architecture.

- *Preserve open space.* Preservation of open space can help reduce energy consumption, support local economies, preserve critical environmental areas, improve quality of life, and guide new growth into existing communities. Open spaces that include trees and vegetation help save energy by reducing the urban heat island effect (for more information on urban heat islands, see EPA's *Urban Heat Island Reduction* guide in the *Local Government Climate and Energy Strategy Guides* series). Economic benefits include increased local property values, greater tourism and recreation revenue, support for agriculture and working lands, and limiting local tax increases (due to savings from reducing the construction of new infrastructure).

Management of the quality and supply of open space also ensures that prime farm and ranch lands are available, prevents flood damage, and provides a less expensive and natural alternative for providing clean drinking water. Preservation of open space benefits the environment by combating air pollution, reducing erosion from wind and water, and moderating temperatures. Open space also protects surface and ground water resources by filtering trash, debris, and chemical pollutants before they enter a water system.

Smart Growth and Brownfields

Brownfields are properties that may contain or be exposed to possible hazardous substances, pollutants, or contaminants. Local governments can achieve multiple benefits by encouraging smart growth practices when redeveloping cleaned-up brownfields. These benefits include: a stronger tax base, closer proximity of jobs and services, taxpayer savings, reduced pressure to build on undeveloped (often called "greenfield") sites, and the preservation of farmland and open space.

Brownfield and greenfield sites compete with each other for new development activity. Many existing government policies make it easier for developers to build on the greenfield parcels rather than brownfields. Municipalities can work with regional and state governments to find ways to support planning initiatives that direct growth to already-developed brownfield areas.

Financial incentives and smart growth approaches, such as allowing reduced parking or encouraging mixed use and higher density development, can make a developer more willing to redevelop brownfields. Numerous federal, state, and local governments have provided funds to support brownfields assessment and cleanup, including:

- **Brownfields Assessment, Revolving Loan Fund and Cleanup Grant Guidelines.** These grants may be used to address sites contaminated by petroleum and hazardous substances, pollutants, or contaminants (including hazardous substances co-mingled with petroleum).
- **Brownfields Tax Incentive.** This incentive allows taxpayers to receive a current federal income tax deduction for certain qualifying remediation costs that would otherwise be subject to capitalization.

For more information on mechanisms for brownfield development, see Section 7, *Investment and Funding Opportunities*.

Local governments can use land trusts and other financing techniques to promote land conservation and develop new permitting approaches for development to make it easier to develop in desired locations. Some communities develop open space plans to support compact development, achieve other land use goals, and protect crucial resources.

How Development Occurs

The design of a community also influences its energy use and environmental impact. Development that is compact, mixes uses, provides a range of housing and transportation options, and creates walkable neighborhoods can help reduce the energy use and environmental footprints of buildings, infrastructure, and transportation, while meeting the needs of residents with a range of incomes.

- *Reduce required infrastructure through compact building design.* Compact building design makes more efficient use of land and resources. By constructing and siting buildings that use space more efficiently, local governments can design communities that reduce the environmental footprint of new construction and preserve open space. This approach encourages more energy-efficient buildings and reduced materials and construction efforts. Similar results can be achieved by redeveloping and infilling existing neighborhoods, including renovating all types of infrastructure such as buildings and transit facilities. By taking advantage of existing infrastructure, as well as reducing energy and materials use associated with new construction, communities can maximize the efficiency and sustainability of smart growth strategies.

More compact communities require shorter and fewer roads, sewer, water, and other utility lines; they can use emergency services more efficiently; and they can build schools, libraries, parks, and other civic facilities that serve a larger population on less land. More compact, mixed-use development should reduce some infrastructure costs, increase the feasibility and cost-effectiveness of public transit, and expand housing choices where compact developments are undersupplied. Other benefits include less conversion of agricultural and other environmentally fragile areas, and greater opportunities for physical activity by facilitating the use of non-motorized modes of travel, such as walking and bicycling. On the cost side, the savings in highway infrastructure will be offset, at least in part, by increased expenditures for public transit, particularly rail transit, to support high-density development.

Examples of how governments can encourage compact building include adopting zoning ordinances to remove minimum lot and home sizes and to eliminate or minimize parking

Integrating Multiple Smart Growth Approaches: Stapleton in Denver, Colorado

In Denver, Colorado, the government and local residents integrated multiple smart growth approaches into a plan for redeveloping the Stapleton airport, which is also a brownfield. When it was announced that the airport would close, citizens in the adjacent neighborhoods, under the name “Stapleton Tomorrow,” collaborated on a plan for redevelopment and, over a two-year period, gathered ideas from all over the city. The mayor appointed a citizens advisory group to produce the redevelopment plan, which became the official blueprint for the new Stapleton neighborhood. The plan incorporates a strong sustainability component that promotes walking, biking, and transit use; preserves open space; requires home builders to meet ENERGY STAR or Colorado Built Green standards; and promotes green building for commercial structures. By the time it is completed in 2020, Stapleton will have more than 30,000 people living in 12,000 homes (apartments, duplexes, and single-family homes), 13 million square feet of office and retail space, six schools, and more than 1,000 acres of open space.

Source: Forest City Stapleton, 2004; Stapleton, 2006; Leccese, 2005

requirements, and using best management practices for energy efficiency in buildings. Investments in public transportation networks can complement compact design strategies and can yield significant savings in off-site road construction and parking facilities on a regional scale.

In a regional planning effort to envision future growth patterns, the Sacramento, California region compared various growth scenarios to the “business as usual” base case. The preferred growth scenario, which directed some development to infill and promoted mixed-use, walkable, compact development, was estimated to save \$13.8 billion in infrastructure and land costs by 2050 compared with the base case (SACOG, 2005).

The LEED for Neighborhood Development Rating System

The LEED for Neighborhood Development (LEED-ND) Rating System integrates the principles of smart growth, new urbanism, and green building into a rating system for neighborhood design. The rating system places emphasis on the design and construction elements that create environmentally, economically, and socially sustainable neighborhoods. The system is designed to achieve the following benefits:

- Promote sustainable communities.
- Encourage healthy living
- Increase transportation choices and decrease automobile dependence

Source: USGBC, 2008.

- *Encourage a mix of uses.* Neighborhood design that encourages a mix of uses, such as residences, commercial spaces, recreational facilities, and schools, can save energy and reduce transportation costs by putting destinations nearby so that people can walk, bike, take transit, or drive shorter distances. A mixed use approach includes mixed-use buildings (e.g., stores on the ground floor and apartments or condominiums above), parking that can be shared among facilities that need parking at different times of the day (e.g., a parking structure that is used by employees from an office building during the day and then patrons of a restaurant next door during the evening), and neighborhoods where people have transportation options (e.g., walking, biking, or using transit) to travel from their homes to work, shopping, and recreation.
- *Create a range of housing opportunities and choices.* Another important element of mixed use development is having safe, decent, and affordable housing for people of all income levels, and ensuring a range of single-family and multi-family housing types are available to provide housing choices for families and individuals at different stages of life. Even in built-out neighborhoods, communities can add new housing options by allowing attached housing or accessory units without changing the landscape or developing open spaces. By sharing walls, multi-family homes and condominiums reduce heating and cooling needs. According to the Department of Housing and Urban Development (HUD), energy costs consume 19 percent of total annual income for low-income residents (compared with a national average of only 4 percent). Reducing energy and transportation costs can ensure that housing remains affordable for these individuals (U.S. HUD, 2007). For more information on improving the energy performance of affordable housing, see EPA’s *Energy Efficiency in Affordable Housing* guide in the *Local Government Climate and Energy Strategy Guides* series.

Local governments can encourage the mixing of land uses and the provision of housing choices by revising their zoning codes. They can achieve these goals by promoting energy

efficient mixed-use development, and by requiring larger developments to include a variety of housing types and price ranges.

- *Require a walkable, connected street network.* In a walkable neighborhood, the goods (e.g., housing, offices, and retail stores) and services (e.g., transportation, schools, libraries) that people need on a regular basis are located so that they are within easy and safe walking distance. Walkable neighborhoods encourage higher pedestrian activity, thus expanding transportation options and creating a streetscape that better serves a wide range of users. An increase in the number of pedestrians results in fewer vehicle miles traveled, less fuel consumption, and lower GHG emissions and air pollution. A streetscape that encourages walking and biking, especially in proximity to a transit facility, provides an economic boost to the local economy since area retailers see increased foot traffic near their stores.

To foster walkability, it is important to mix land uses and build compactly, and ensure safe and inviting streets. Specific measures might include bike lanes and secure bike parking; sidewalks, crosswalks, and street furniture; sheltered transit stops with homes, stores, and workplaces located nearby; and maps that make it easy to find biking, walking, and transit routes to get to various destinations.

- *Provide a variety of transportation choices.* Many communities use bike and pedestrian master plans, integrated into their transportation master plans, to create a vision for how all modes of transportation can work safely together and to lay out plans to achieve that vision. Local governments can provide a wide range of transportation options to give people more choices in how they get around, reduce fuel consumption, and save money. Communities are coordinating land use and transportation; increasing the availability and reliability of transit service; creating redundancy (the availability of multiple possible routes for any given trip, which minimizes congestion), resiliency and connectivity within their road networks; and ensuring connectivity between pedestrian, bike, transit, and road facilities. They are coupling a multi-modal approach to transportation with supportive development patterns, to create a variety of transportation options. These transportation options can yield energy savings and GHG emissions reductions by reducing the number of vehicle miles traveled and the demand for fuel. For more information on transportation options, see EPA's *Transportation Control Measures* guide in the *Local Government Climate and Energy Strategy Guides* series.

**Integrated Transportation Master Plan:
Boulder, Colorado**

Through its Transportation Master Plan, Boulder, Colorado, integrates a variety of smart growth approaches to improve its transportation network, infrastructure, and local economy. Boulder began by establishing a plan for its bicycle/pedestrian network. The plan articulates the purpose of this network—"The city will complete a grid-based system of primary and secondary bicycle corridors to provide bicycle access to all major destinations and all parts of the community"—and includes maps showing existing and proposed pedestrian, bicycle, and transit enhancements. The plan sets goals—for instance, reducing single-occupancy vehicle trips to no more than 25% of total trips by 2025—and establishes periodic travel surveys to measure its progress toward these goals. From 1990, the year after the first master transportation plan was adopted, to 2006, single-occupancy vehicle travel dropped by almost 6%, while bicycle use rose by nearly 5%. The city updates its transportation master plan, which includes updated bicycle and pedestrian plans, about every five years with extensive public involvement.

Source: *City of Boulder, 2007*

4. Key Participants

A broad range of public and private groups and individuals can be key participants in planning and implementing smart growth activities, including:

- *Local government officials and staff.* Local elected officials and government staff can provide leadership and action on smart growth activities. Elected officials, planning board members, and staff in the planning, public works, transportation, water and sewer, parks, housing, and other departments are typically involved in making decisions about development. Some communities involve their public health departments and school boards as well.

For example, in Portland, Maine, development proposals go through a review by a team that includes representatives from the departments handling planning, fire, public works, parks and recreation, economic development, and traffic, as well as the city's corporation counsel (City of Portland, 2008).

- *Regional planning agencies.* Regional planning organizations, such as Metropolitan Planning Organizations (MPOs) and Councils of Governments, typically serve more of a coordinating function, developing long-term regional transportation, housing, or environmental plans. MPOs have a federal statutory role in transportation planning, whereas COGs and other regional planning agencies do not. Many COGs host MPOs, but also cover more rural outlying counties, and frequently deal with rural planning issues.

Since regional organizations are typically “owned” and directed by their member localities (with local elected officials serving as the board), regional organizations can play a very effective role by exploring impacts and benefits of different development patterns. By conducting and integrating transportation and land use scenario planning and visioning, and by educating the public and policy makers about smart growth policies, regional planning organizations can often develop a regional consensus that leads to locally adopted plans, policies, and projects. It can also be more effective to develop new codes and guidelines at the regional scale, which then can be customized and enacted by each jurisdiction.

- *Utilities.* Utilities have a significant interest in growth and development because of the effect planning has on their costs. Development that is spread out and far away from central water-treatment or electricity-generating facilities costs more to serve than compact, close-in development. Utilities are not always able to charge the customer the actual cost of service to these distant locations.

Local governments have different relationships with utilities depending on state and local regulations. In some areas, the local government might control a utility [e.g., the water utility in Albuquerque, New Mexico, is governed by a board of local officials (Albuquerque, 2008)] and will thus have more power to implement policies that promote efficient use of the utility infrastructure, such as emphasizing maintenance of existing lines rather than extending new service, or pricing service and hook-ups based on actual costs of delivery. In communities that obtain their utility services from a private company or a state, regional, or federal authority, the local government has less direct influence on utilities' policies.

In some cases, the utility company has taken the lead on smart growth efforts as it realizes that sprawling development costs more and reduces available funds that could be used to maintain existing infrastructure.

For example, a Rhode Island utility helped start Grow Smart Rhode Island, a nonprofit that works with municipalities to promote more efficient development. The utility realized that its gas subsidiary was spending \$18 million a year on expanding its infrastructure to outlying areas, while its customer base was growing by only 1 percent a year (Wasserman, 2000). Grow Smart Rhode Island is now a statewide public interest group that represents a broad coalition of partners working to improve development decision-making and researching policies that lead to better-managed growth.

- *Real estate/development community.* Real estate and development communities understand the market benefits of building more energy-, resource-, and location-efficient communities.³ As more communities, businesses, and residents demand more efficient homes and offices, and as municipal governments make smart growth development easier, the development community will respond by increasing the supply of these buildings and neighborhoods.

In Boca Raton, Florida, a developer and the city formed a public-private partnership to demolish a failing mall and redevelop it into Mizner Park, a mixed-use project of stores, entertainment facilities, housing, and office space. The project encouraged residents to travel downtown and spurred new development in the area (City of Boca Raton, Undated). The city entered into a leaseback agreement with the developer and guaranteed a bond issue supported by tax increment financing (Thorne, 2002).

- *Business community.* The local business community has a stake in ensuring that attractive, energy-efficient, transit-accessible neighborhoods are available within a reasonable commuting distance for their workers. Research suggests that walkable, vibrant communities attract and retain skilled workers for area businesses (Cortright, 2007; Florida, 2004).

In Traverse City, Michigan, the local chamber of commerce realized that development pressures threatened the natural beauty and quality of life that drew people to the area. Working with local officials, the chamber developed “New Designs for Growth” to promote smart growth development practices. The project produced a development guidebook and the DevelopMentor program, which offers training resources for officials who make decisions on land use issues (Traverse City Area Chamber of Commerce, Undated).

- *Public transportation operators.* Since providing a variety of transportation choices is essential to smart growth development, public transportation operators can play an important role in helping to implement smart growth strategies. Transportation operators can get directly involved in development around transit stations, both in terms of investing in real

³ EPA commissioned a set of papers from leading real estate experts to outline the market benefits of smart growth. These papers are available at http://www.epa.gov/smartgrowth/sg_business.htm.

estate projects near transit stations and improving accessibility to transit (for example, by supporting community bike paths that lead to transit stations).

Valley Metro, a light rail system serving the area of Greater Phoenix, Arizona, takes an active role in promoting high-quality, more intensive development on and near properties adjacent to transit stations. By doing so, the transit operator can increase ridership and support long-term system capacity while creating investment opportunities for the private sector and stimulating additional development (Valley Metro, 2010).

- *General public and interest/citizens groups.* Interest groups and citizens groups have a strong stake in development decisions and can slow down or even stop development if they are not included in the process. It is important to involve these groups early and often with opportunities to offer ideas and concerns and to provide feedback on development and smart growth proposals. Local governments can keep the entire community informed using a variety of outreach mechanisms, including local news media, Web sites, government newsletters, and other means.

Smart Growth Vermont works with local officials, developers, non-profit organizations, political leaders, and businesses to develop land use and development policies that enhance communities. The group coordinates the Vermont Smart Growth Collaborative, a group of 10 organizations working to shape and implement smart growth policies and practices. The collaborative also provides Housing Endorsement for projects that meet established smart growth criteria (Smart Growth Vermont, Undated).

5. Foundations for Program Development

As described in Section 3, *Planning and Design Approaches to Smart Growth*, it is crucial for local governments to include a wide range of approaches in their smart growth programs. When implementing these approaches, local governments can choose from many different mechanisms to achieve their goal. Implementation mechanisms to promote smart growth in communities include:

- *Develop a vision for the region and the community of an energy-efficient, smart future.* Engaging the entire community in creating a vision for the future helps leaders understand what residents want; educate the community about development patterns that use less energy and emit less GHGs; and determine how the community can achieve its smart growth goals. A community leader, a local government staff person, an elected official, or a planning commissioner who believes the community needs a cohesive vision for the future typically initiates the visioning process. Often the process is prompted by an outside action that could drastically change a community's direction, such as closing or expanding a military base; the need to reduce air pollution in order to comply with air quality standards under the Clean Air Act, or projections of rapid growth that must be accommodated.

After the municipal staff and elected officials agree that the region needs a visioning process, a project timeline and budget is developed. Typically, the community issues a request for proposals for a consultant to conduct the process. Then a consultant is selected, and when the process is complete, the appropriate commissions and councils review the work and decide

whether to accept it as a formal element of how the community functions. Once the community has a vision, it can translate that vision into its comprehensive plan, which can help guide development decisions.

Many regional government organizations, such as MPOs and councils of governments, conduct regional visioning and related scenario planning.

Envision Utah was a visioning exercise conducted in the Greater Wasatch area around Salt Lake City. Concerned by growth estimates that predicted 1 million new residents in the area by 2020, local leaders engaged residents to determine how the region could grow. The process lasted almost three years and included research about commonly held values, extensive public meetings and workshops, and surveys. Residents chose a development scenario that conserved land, provided more housing and transportation choices, and invested public funds wisely (Envision Utah, 2008).

It is important to ensure that existing regulations align with the community vision. One way to determine if rules need to be changed is to conduct an audit of existing development regulations. Several do-it-yourself audits and scorecards are available online.⁴ The Smart Growth Leadership Institute created a *Smart Growth Implementation Toolkit* to help local governments assess their development regulations (Smart Growth Leadership Institute, 2008) (see text box, *Smart Growth Implementation Toolkit*, above). EPA has also developed tools to help communities revise their development ordinances to meet their vision, including *Essential Smart Growth Fixes for Urban and Suburban Zoning Codes*, which offers guidance on everything from minor tweaks to comprehensive overhauls of zoning and other regulations,⁵ and *The Water Quality Scorecard*, which helps communities incorporate green infrastructure practices in their codes and ordinances.⁶ Both tools are designed to work for urban, suburban, and rural areas.

Smart Growth Implementation Toolkit

The Smart Growth Leadership Institute, using an EPA grant, created a toolkit based on its experience helping communities determine why they were not achieving the type of development they wanted. The toolkit includes:

- A Quick Diagnostic to help the community determine which tool will be most helpful.
- A Policy Audit to assess whether existing land use and development policies align with the community's aspirations for its future.
- A Code and Zoning Audit to check if local zoning codes and regulations implement the vision for smarter growth.
- An Audit Summary to summarize the findings from the policy and zoning audits.
- A Project Scorecard to evaluate how a proposed development project adheres to the community's vision for smarter growth.
- An Incentives Matrix to identify and catalog available incentives to encourage specific smart growth projects.
- A Strategy Builder to identify the weaknesses, opportunities, and challenges in the community, and to help find the most lasting change.

See <http://www.sgli.org/toolkit/index.htm>.

Source: *Smart Growth Leadership Institute, 2008.*

4 See <http://www.epa.gov/smartgrowth/scorecards/> for some sample audit tools and scorecards.

5 Available at http://www.epa.gov/smartgrowth/essential_fixes.htm. A version specifically for rural communities is under development and will be available at the same URL.

6 Available at http://www.epa.gov/dced/water_scorecard.htm.

- *Engage the local planning process.* Many local governments have used their ongoing, comprehensive land use, smart growth, and/or transportation planning processes to establish goals and/or new regulations to encourage compact development and enhanced, efficient community design. As part of the Partnership for Sustainable Communities, described in Section 7, *Investment and Funding Opportunities*, HUD's Sustainable Communities Planning Grant Program will offer \$40 million in competitive challenge grants to local communities that collaborate on housing, transportation, and environmental planning efforts.

Envision Lancaster County (Pennsylvania) is a comprehensive, multi-staged countywide plan to direct new development to existing towns to protect the farmland, rural areas, and natural landscapes that define the county's rural character. Throughout the process of developing the plan, the Lancaster County Planning Commission actively engaged the public and local governments. The county's good working relationship with municipalities encouraged them to buy into the plan's principles. To ensure public input, the commission conducted educational workshops and public forums and developed a citizens' task force. The county also reached out to Lancaster's Amish and Plain Sect communities through targeted publications and meetings with religious leaders. The commission worked with municipalities to establish 47 Urban Growth Areas and Village Growth Areas. In the city of Lancaster, 62 projects have been completed, are under development, or are planned for development in Growth Areas. As part of the broader Green Infrastructure plan for this initiative, the commission has protected almost 82,000 acres of farmland and preserved nearly 6,000 acres of parks and natural lands throughout the county. By doing so, the plan preserves open space, protects water resources, and provides for greater housing and transportation choices. This plan received EPA's 2009 National Award for Smart Growth Achievement (U.S. EPA, 2009c).

An award winner in 2004 for Smart Growth Achievement, the San Juan Pueblo in New Mexico initiated a community planning process in 2000. The resulting Master Land Use Plan provides a long-term growth strategy for the pueblo. This strategy coordinates existing infrastructure with housing and commercial development, preserves walkable plazas, encourages retail and commercial uses in the main street area, and incorporates design guidelines to preserve the architectural heritage of the pueblo (U.S. EPA, 2004).

- *Change development rules to make it easier to implement smart growth projects.* Developers who want to build smart growth projects can face barriers, including the need to: coordinate with multiple sellers to assemble a large parcel of land for development, work with neighbors who oppose new development, clean up environmental contamination, or improve existing infrastructure (Leinberger, 2008). In many communities, zoning and other land use regulations can make it illegal to build smart growth projects. If a developer wants to build using a smart growth approach, he or she must obtain waivers or other exceptions, which can be time-consuming and difficult. Revising land use rules to make smart growth "by right"—meaning it does not need special approvals from the planning commission or similar entity—clears the way for developers to build smart growth development. The process for changing development rules varies depending on state and local regulations and procedures.

Specific mechanisms for changing development rules often work in the same way for municipalities with a mayor or a city or county executive, manager, or council. All of these

entities can initiate development rule reviews and changes. Other stakeholders that can initiate these reviews include lawyers representing government, planning commission members, or government staff, such as a planning director. Even local citizens or a committee, such as a historic preservation review committee, can propose a rule change or visioning process.

Examples of zoning changes that municipalities have used to encourage and implement more compact and energy-efficient growth include:

- *Density bonuses.* The community can allow a developer to build more densely than the zoning code states in exchange for providing an additional amenity. This allows denser development, which supports retail and transit, and often delivers additional benefits from development.

One of the many cities that use density bonuses is Bellevue, Washington. As part of an effort to make the downtown more appealing to pedestrians, the city developed a formula that calculates how much more developers can build in exchange for providing retail space, public places, plazas, and similar amenities (Bach, 2007; City of Bellevue, 2006). Because of this policy and other efforts to bring development to its downtown, Bellevue has 5,000 residents now living downtown, with another 9,000 expected by 2020, compared with very few residents 10 years ago (City of Bellevue, 2007; Pryne, 2008).

Density bonuses are often used to encourage developers to build affordable housing in both suburban and urban areas.

For example, in Montgomery County, Maryland, the Moderately Priced Dwelling Unit program requires developments of more than 20 units to reserve 12.5 to 15 percent of those units for moderate-income residents. As an incentive, the county grants a density bonus that allows the developer to build up to 22 percent more units than would otherwise be allowed. Because localities bear little of the financial cost of this program, it is an alternative or supplement to traditional housing subsidy programs. The county notes that the program has “not been shown to have a detrimental effect on the value of the market priced housing and the program has never been legally challenged by either developers or citizens” (Montgomery County, 2005).

- *Parking regulations.* Local governments can evaluate parking space requirements to ensure they match both use and need, and develop city ordinances for meeting smart growth parking space requirements. Many municipalities establish parking standards that set a minimum number of parking spaces for a development project. It is important to base these parking space standards on the specific conditions or needs of the immediate neighborhood and to avoid developing excessive parking.

For example, a mixed-use, compact development that has multiple transit options does not require as many parking spaces as a lower-density area where residents rely on their private vehicles for transportation. “Overparking” can hinder development or redevelopment. Building parking spaces is expensive and takes up land that could be more

profitably used for additional homes, offices, retail, or open space. Large parking lots in areas that do not need them create more impervious surfaces that produce runoff into water supplies.

Some municipalities that want to encourage walking, biking, and transit use have found that providing free parking subsidizes drivers. In some cases, these municipalities are revising their regulations to allow less parking if the project is in a walkable area or near transit, or if it can share parking with other nearby uses, while other municipalities are setting maximum parking standards instead of minimums.

Portland, Oregon, has no minimum parking requirements in its downtown—if a developer finds that its parking needs can be met by a nearby garage, it is not required to provide additional parking spaces. In most neighborhoods, the city sets maximum parking standards. Developments that choose not to build the maximum allowed parking can sell the rights to that parking to another entity, which gives them a financial incentive to provide only the parking their tenants actually need. The city allows developments to meet their parking needs through shared parking with nearby uses. For example, a new apartment building shares parking with an adjacent high school; the school parking lot is most in demand during the day, when apartment residents are at work, but it would otherwise be empty at night and on weekends, when the apartment residents need it. By sharing parking, the developers of the apartment building were able to save about \$1 million in construction costs (U.S. EPA, 2006a).

Effects of Transit-Oriented Development on Parking

In an analysis of more than 17 Transit-oriented Development (TOD) projects nationwide, the Transit Cooperative Research Program found that TOD housing generates an average of 44 percent fewer weekday vehicle trips than the number estimated by the Institute for Transportation Engineers (ITE) manual for a typical housing development

Many communities use the ITE guidelines to determine minimum parking requirements, even for TOD projects. This practice can cause an oversupply of parking in TOD areas and increases development costs unnecessarily, costs that may be passed on by developers to consumers as higher housing costs.

Source: TCRP, 2008.

- *Street design and streetscape standards.* To encourage walking, biking, and taking transit, some communities are setting street design standards for narrower streets with sidewalks, trees, crosswalks, medians, and other amenities that make it safer and easier to walk or bike.

For example, the town of Addison, Texas wanted to encourage more people to walk around its mixed-use, transit-accessible town center, Addison Circle. The main street was modified to be more pedestrian friendly, with parallel parking, planters, street trees, and few driveways to cross. At intersections, curbs are extended to shorten the distance pedestrians have to cross. The street originally had two 15-foot travel lanes in each direction, which were changed to two 10.5-foot lanes and an 8-foot parking lane, so no traffic capacity was lost. The town has additional design standards for the area to make it engaging and comfortable for pedestrians, including benches, lighting, minimum setbacks from the sidewalk, landscaping, and other amenities (ITE, 2006).

- *Rehabilitation codes.* Making it easier for developers to rehabilitate and reuse existing buildings saves energy, and in the case of historic buildings, also preserves a community's heritage and sense of place. Rehabilitation codes take into account that renovation of existing

buildings—and particularly of historic buildings—requires more flexibility in meeting code requirements than new structures. The authority for these codes is usually vested in the state, but in states with home rule, municipalities can adopt a rehabilitation subcode.

In 2001, Wichita, Kansas, convened a committee of architects, engineers, preservationists, developers, realtors, and business owners to develop incentives for reusing existing buildings in the city. A rehabilitation subcode was one of the committee's recommendations. The city hired a consultant to create the code, adopted it, and organized trainings and seminars to educate the local development community (Pianca, 2002). Combined with design guidelines and public-private partnerships, the city restored and revitalized its Old Town and other historic neighborhoods, encouraging more people to visit, new residents to move in, and generating more than \$40 million in increased property values in Old Town alone (U.S. EPA, 2006b; City of Wichita, 2008).

New Jersey—The First Rehabilitation Code

New Jersey instituted the first rehabilitation code because the state wanted to encourage development in its cities, increase housing options, and promote reusing buildings to conserve energy and natural resources. However, existing regulatory barriers and the additional costs involved in renovating existing buildings discouraged developers and encouraged building on greenfields instead. Instead of treating existing buildings like new structures, the new code described requirements for specific types of projects, like renovations or additions, and ensured that rehabilitated buildings would be as safe as new ones, although they might meet the safety standards in a different way.

In 1998, the year after New Jersey adopted its rehabilitation subcode, spending on rehabilitation projects in its five largest cities grew by 60%. By comparison, in 1997, rehabilitation spending in those cities grew by less than 2%. HUD used New Jersey's rehabilitation code as the basis for its model code, the Nationally Applicable Recommended Rehabilitation Provisions, and in turn, the International Codes Council used HUD's code for its model rehabilitation code. Several other states have since adopted the code.

Sources: Connolly, Undated; Van Gieson, 2005.

- *Transit districts.* Some communities designate areas around transit stations for denser, mixed-use development. Zoning codes can require a transit district overlay or similar mechanism to make it easier for developers to build to the community's vision of transit-oriented development (TOD). A California study of the potential benefits of TOD found that if a typical household moved from a suburban area with no transit access to a TOD, it could consume, on average, 250 to 380 fewer gallons of gasoline annually (CA DOT, 2002). The annual *Emerging Trends in Real Estate* report from the Urban Land Institute and PricewaterhouseCoopers notes TODs as strong investments. The 2009 report remarked that "Increasingly, people want to drive less and seek subway, commuter railroad, or light-rail alternatives. Developers can't miss securing project sites near rail stops and train stations" (ULI and PricewaterhouseCoopers, 2009).

The Center for Transit-Oriented Development studied the demand for housing near transit and found that almost 15 million households will want homes within half a mile of transit by 2025—more than double the number that live in those areas now, and about a quarter of all households in the United States. This demand offers energy-saving opportunities as well; a little over half the people who currently live in transit areas commute by private vehicle, compared to more than 80 percent for the regions as a whole (CTOD, 2004).

Some regions have let market forces start TOD around transit stations and have only later modified their development rules to make it easier to build the compact, walkable development that TOD requires. Other cities planned for TOD and revised their regulations to support it.

Jersey City, New Jersey incorporated the New Jersey Transit light rail line into its master plan before the rail line had even been built. When the rail line was built and developers, who wanted access to New York City without paying Manhattan real estate prices, became interested in land around the stations, the city had a process already worked out to help the developers acquire land and get the necessary approvals quickly. As a result, development in Jersey City is well ahead of other areas in the county, and its population increased from 1980-2004 while other New Jersey cities declined (Fitzsimmons and Birch, 2003).

- *Subdivision regulations.* These rules govern how land is subdivided into lots and may include review and approval of plans, design guidelines, street design, and other standards. They also have to conform to the community’s comprehensive plan. Subdivision regulations account for a significant share of the costs of producing new housing, and in many cases impose costs beyond those necessary to achieve health and safety benefits for the community. Excessive lot size regulations account for the largest percentage of this additional cost, with excessive floor area and lot width also contributing notable amounts (NAHB Research Center, 2007).

In Nashville, Tennessee, the city found that its residents could not get the type of development they wanted in rural and urban areas because the city’s subdivision regulations treated every area, regardless of its surrounding context, the same way—as suburban development with wide streets and low density. The city could get around these requirements with overlay zones and planned unit developments, but these require the city planning and public works departments to decide case-by-case on whether to use these options (Smart Growth Leadership Institute, 2004). To make the process more predictable, Nashville decided to rewrite its subdivision regulations to fit

Transit-Oriented Development and Older Adults

Housing located within walking distance of reliable, safe public transit and other amenities provides many benefits for older adults, allowing them to retain independence as they age. Transit-oriented development can help fill this need, although communities may need to ensure that senior housing remains affordable as land and property values increase in transit-accessible neighborhoods due to market demand.

To ensure the availability of affordable housing near transit for low-income older people, a report by the American Association of Retired Persons (AARP) Public Policy Institute recommends that communities preserve existing affordable housing; integrate housing, transportation, and land use planning more effectively; and improve and invest in public transportation.

Source: AARP Public Policy Institute, 2009.

a variety of contexts—for example, promoting more compact, walkable conditions in urban neighborhoods while preserving more open space in rural areas (Nashville, 2005).

- *Design guidelines.* To maintain a consistent visual character, communities can institute design standards that govern the appearance of buildings and streets. Often these guidelines are based on the cultural or historic character of the neighborhood, but they also support public safety and maintain aesthetic standards.

Austin, Texas, bases its downtown design guidelines on shared community values, such as preserving its history and character, building sustainably, maintaining diversity and economic vitality, and making streets safe, comfortable, and appealing. The guidelines include images of appropriate development and describe goals, such as recycling existing building stock or providing lighting along pedestrian paths, without being restrictive about specific methods to achieve those goals (City of Austin, 2000).

- *Change the development approval process to give priority to smart growth projects.* Private developers who want to build smart growth development can be rewarded with an easier approval process. If a development proposal conforms to the community’s vision and meets or exceeds its goals in areas like density, affordable housing, amenities for pedestrians and bicyclists, or public transportation facilities, the developer could get expedited proposal review.

Some communities, such as Silver Spring, Maryland, have speeded development reviews by creating a team from all the city departments to review proposals. The team works with the developer before the proposal is even submitted, and proposals under this program are given priority for review. Cities can apply this program to proposals in areas where they want revitalization, or to proposals that meet certain smart growth criteria (U.S. EPA, 2006c).

- *Prioritize development and spending to encourage infill and transit access.* Funding is a lever for locating the type of development a community wants where it wants it. By gathering and prioritizing funding, including federal and state funds for infrastructure, municipalities can help ensure financial assistance for their smart growth projects. Some communities use a scorecard to rank projects for funding.⁷ A scorecard also gives developers predictability by allowing them to see what attributes their projects must include to score well. Criteria might include mixing uses; proximity to a transit station; safe and pleasant sidewalks; efficient use of land; and/or amenities for the community, such as public space, libraries, schools, or recreational facilities.

The city of Mobile, Alabama, created a matrix for proposed developments that developers and city staff can use to assess their projects. The matrix gives the development proposal a score based on several factors, including its location relative to existing communities, mix of uses, street design, accessibility to various transportation

⁷ See <http://www.epa.gov/smartgrowth/scorecards/> for examples of scorecards.

modes, and environmental factors. The development can be eligible for a range of incentives, based on its score. For example, a development that scores 40-55 percent of the total possible score can get a 50 percent reduction of permit and application fees, and one that scores above 55 percent has those fees waived entirely (City of Mobile, 2008).

6. Strategies for Effective Program Implementation

Local governments can use a number of strategies to reduce potential barriers to smart growth and ensure that the desired development patterns and policies are efficiently and effectively implemented and monitored over time. In addition to implementing and maintaining the mechanisms described in the previous section, these strategies include:

- *Engage in regional collaboration.* Communities often are concerned that if they institute stronger development regulations, they will encourage development to move to neighboring jurisdictions with more relaxed regulations. One solution is to cooperate regionally. Land use decisions in one town can affect the entire region's traffic, air quality, housing prices, and economic well-being. Regional cooperation is a way to get an outcome that works for all the communities in the region. In many places, the MPO, which has a statutory mandate to conduct regional transportation planning, may be coincident with the regional planning agency responsible for land use planning, and thus able to facilitate this coordination. In other areas, multiple organizations may need to coordinate to ensure that transportation, land use, and environmental planning considerations are integrated regionally.

In the Minneapolis-St. Paul region, the Met Council not only coordinates plans for regional growth in transportation, water resources, regional parks, and open space, it reviews local governments' comprehensive plans for consistency with regional plans. The council "encourage[s] land-use patterns that connect a variety of uses, take advantage of existing sewer infrastructure, and have convenient access to transportation corridors" (Met Council, 2008a). The Met Council also has a regional tax-base sharing program to reduce fiscal disparities among its member governments. Forty percent of the growth in the commercial and industrial property tax base since 1971 goes into a pool shared among the jurisdictions that contribute. This pool is then redistributed back to jurisdictions based on their population and property values. Municipalities with lower per capita property values get a larger share. All the jurisdictions benefit from growth in the region, and the program reduces competition among individual towns for tax revenue (Met Council, 2008b). The Met Council was also a recipient of the National Award for Smart Growth Achievement (U.S. EPA, 2004).

- *Educate and engage stakeholders.* Educating the public and local officials about the benefits of smart growth development and of using energy more efficiently is important for gaining support for smart growth strategies. There may be a perception that people are automatically against new development, especially when the development is dense. However, municipalities can respond to these concerns by presenting the facts clearly and providing public education. Public education can include editorials in the local newspaper, public workshops, meetings with small groups of key stakeholders, or informative displays in civic buildings, like city hall or a library. Providing opportunities for stakeholder engagement also helps to ensure that the

decision making process is transparent and that resulting development strategies meet the unique needs of the community.

When the city of Pasadena, California was developing its Central District Specific Plan, the planning department found new ways to engage the public. The department had a “Story Bus” that traveled to community events to reach people who would not normally attend planning meetings. They used low-tech tools like Play-Doh and cardboard boxes to demonstrate how new development might look. The department also made its GIS data available to the public so that people could create maps showing where they lived or worked and discuss their ideas and concerns with planning staff (U.S. EPA, 2005).

- *Use design charrettes.* On the community level, tools like design charrettes can help involve people in making sure they get the type of development they want. A charrette is a design workshop that engages the public by soliciting their concerns about and desires for the proposed development, then obtains public feedback on different designs. Residents have a chance to share what they like about their community, what they want to preserve, and what they want to change. They can offer suggestions for new development and see those ideas sketched out by design professionals. With several feedback loops to incorporate residents’ and developers’ concerns and ideas, the process results in a plan that everyone has had a chance to influence.
- *Use real world examples:* Showing people attractive, compact, walkable, energy-efficient neighborhoods is also a tool to help make development decisions. Some cities have taken key staff and elected officials to national models such as Portland, Oregon; Arlington, Virginia; or Chattanooga, Tennessee. To find closer examples, governments can use EPA’s National Award for Smart Growth Achievement; the Urban Land Institute’s Awards for Excellence; the Congress for the New Urbanism’s Charter Awards; and the American Institute of Architects’ Honor Awards, particularly for Housing and Regional & Urban Design, to find model communities (links to these awards are provided in Section 10, *Additional Examples and Information Resources*). Many state and regional smart growth organizations, such as Vision Long Island (New York), Idaho Smart Growth, and 10,000 Friends of Pennsylvania, give their own awards as well.

7. Investment and Funding Opportunities

This section provides information on the costs of implementing more energy-efficient land use patterns and describes funding opportunities for addressing these costs.

Investment

Implementing smart growth policies typically requires an investment, although that investment is often one that would have to be made anyway, such as updating land use regulations. The size of this investment varies depending on the size and scope of the activity and the community, and may include some of the following activities:

- *Development and review of land use regulations.* Land use regulations often come up periodically for review. Some local governments have the expertise and staff to revise

regulations themselves; others may need to hire consultants. Costs vary widely depending on the scope of the revisions, the government staff capacity, the extent of public outreach, and other factors.

If a community is interested in revising its regulations to fit smart growth principles, several resources are available to help communities with limited funds. The American Planning Association and the Local Government Commission have each compiled model smart growth codes that local governments can use as a basis for revising their land use regulations (Meck et al., 2006; Tracy, 2003). EPA also has resources to help communities review and update their zoning codes (U.S. EPA, 2009a).

- *Public outreach.* Public engagement mechanisms such as visioning exercises and design charrettes often require assistance from outside consultants because of their complexity. Having a neutral third-party conduct these exercises can often make them more open and fair.
- *Incentives.* Some localities may worry about the cost of incentives for developers who build according to the community's vision; in those places, the local government can consider solutions such as Silver Spring's streamlining program, described in Section 5, *Foundations for Program Development*. Programs that streamline and speed development approvals cost the local government nothing but translate into financial incentives for developers.

Despite these potential costs, in many cases smart growth development can cost less for communities than conventional development because it uses existing infrastructure and other resources more efficiently. Sprawling land use patterns can increase the cost of providing public services because it is less efficient to provide services to dispersed buildings. Research suggests that local governments could save about 10 percent in local road costs, 10 percent in public service costs, and 7 percent in water and sewer infrastructure costs by encouraging compact growth in already developed areas, rather than dispersed development on the fringe (Burchell and Mukherji, 2003).

Funding Opportunities

This section describes a variety of financing mechanisms and funding sources that local governments can use when investing in smart growth initiatives.

Financing

Financing refers to accessing new funds through means such as loans, bonds, and grants to pay for smart growth initiatives. Key financial vehicles, which can be used to access the sources of funding described in the subsequent section, are described below.

- *Direct grants.* Some federal agencies offer grants that help communities plan for or implement better development practices; affordable housing and community development; improved walking, biking, and transit options; or parks and open space. The Web site, <http://www.grants.gov> lists all available federal grants. EPA's brownfields program offers grants, revolving loan funds, and links to other funding resources for brownfields assessment,

clean-up, and other assistance at <http://www.epa.gov/brownfields/mmmatters.htm>. The Department of Housing and Urban Development (HUD) offers Community Development Block Grants; some block grants are awarded directly to major cities and others are awarded to states to pass along to smaller cities (U.S. HUD, 2008). The Federal Transit Administration sponsors a variety of grants to urban and rural communities to assist with public transportation-related projects (FTA, 2008).

In June 2009, EPA, HUD, and the Department of Transportation formed the Partnership for Sustainable Communities to help improve access to affordable housing, more transportation options, and lower transportation costs, while protecting the environment in communities nationwide. Through a set of guiding livability principles and a partnership agreement that will guide the agencies' efforts, this partnership will coordinate funding for federal housing, transportation, and other infrastructure investments to protect the environment, promote equitable development, and help to address the challenges of climate change. One funding opportunity arising through this partnership is HUD's Sustainable Communities Planning Grant Program, which will offer \$40 million in competitive challenge grants to local communities that collaborate on housing, transportation, and environmental planning efforts. Additional funding opportunities may arise through this partnership. (See Section 8, *Interaction with Federal, State, or Other Programs*, for more information on the partnership.)

In 1998, the Metropolitan Transportation Commission (MTC) in the San Francisco Bay area launched the Transportation for Livable Communities (TLC) program. Since then, MTC has awarded more than \$80 million to more than 80 local projects that support multimodal travel, more livable neighborhoods, and the development of jobs and housing in existing town centers. Successful projects improve walking and bicycle access to transit hubs and stations, major activity centers, and neighborhood commercial districts as a way of fostering community vitality. The program provides technical assistance and capital grants to help cities, neighborhoods, transit agencies, and nonprofit agencies develop transportation-related projects fitting the TLC profile (Metropolitan Transportation Commission, 2009).

- *Federal tax incentives.* Tax incentives, which are available for historic preservation, affordable housing, and land conservation, can make it more feasible for local governments and private developers to meet community goals. Federal tax incentives are typically awarded through competitive programs administered by state housing or community development agencies.
- *Tax-increment financing (TIF).* In addition to direct grants or low-interest loans from the federal government, local governments can help finance development through bonds or tools, such as tax-increment financing, to encourage smart growth development. This mechanism allows a city to use the additional tax revenue generated by a new development or redevelopment project to fund improvements to the district in which it is located. Tax revenue continues to go to the city's general coffers in the same amount as before the new project; the "increment," or additional amount that the project generates, is usually used to pay off a bond that the city has used to fund for the improvements. Once the bond is paid off, all of the tax revenue goes to the general coffers. According to the Council of Development

Finance Agencies, “No new taxes are requested and no existing taxes are used in the financing of the project” (CDFA, 2007).

TIFs can be used to fund infrastructure maintenance and repair, parks, pedestrian amenities, and other improvements. Almost every state gives local governments authority to create a TIF district. Originally, TIFs were intended to help areas that needed redevelopment and revitalization. However, some states are now permitting them to be used in affluent areas, which diverts public money from helping places that otherwise would have a harder time attracting redevelopment (Good Jobs First, Undated). Local governments can institute guidelines that ensure that TIFs are used only in locations where the community wants growth and for projects that will benefit the community by providing jobs, housing, amenities, or other priorities (CDFA, 2007).

A mixed-use brownfield redevelopment in midtown Atlanta, called Atlantic Station, was designated a Tax Allocation District (Georgia’s term for TIF) in 1999, a designation that will stand for 25 years. The city uses the additional revenue to pay off the bonds that helped finance the development. Before the redevelopment in 1999, the district’s per acre tax digest was roughly \$3,000; in 2006, it was more than \$210,000—an increase of more than 7,000 percent (Livable Communities Coalition, 2007).

Funding Sources

Numerous sources are available to fund smart growth initiatives. These sources of funding can be accessed through the financial vehicles described above. EPA’s Smart Growth Program maintains a Web page of funding opportunities at <http://www.epa.gov/smartgrowth/grants/index.htm>. Examples of these funding opportunities are noted below.

- *EPA’s Brownfields Program.* EPA provides direct funding for brownfields assessment, cleanup, revolving loans, and environmental job training. The program collaborates with other EPA programs, other federal partners, and state agencies to identify and make available resources that can be used for brownfields activities. In addition to direct brownfields funding, EPA also provides technical information on brownfields financing matters. These include assessment grants, revolving loan fund grants, and cleanup grants.
- *Federal funding.* Federal surface transportation funding is allocated to states, MPOs, and urbanized areas to support local transportation needs. Funding from a number of Federal Highway Administration and Federal Transit Administration programs—many of which have broad eligibility requirements—can be used for improvements that support livability and promote the safety of pedestrians, bicyclists, and transit users. Relevant programs include the Congestion Mitigation and Air Quality Improvement Program (FHWA and FTA), the Highway Bridge Program (FHWA), the Highway Safety Improvement Program (FHWA), the National Highway System (FHWA), New and Small Starts (FTA), Nonurbanized Area Formula Grants (FTA), Safe Routes to School (FHWA), the Surface Transportation Program (FHWA), and Transportation Enhancements (FHWA). (See EPA’s *Transportation Control Measures* guide in the *Local Government Climate and Energy Strategy Guides* series for more information on transportation-related funding opportunities.) Individual states may also have programs that can help fund smart growth approaches.

Using federal transportation funds, the Livable Centers Initiative (LCI) encourages mixed-use, walkable, and transit-accessible development in the Atlanta metropolitan area, covering 18 counties and more than 4.5 million people. The Atlanta Regional Commission created the LCI in 1999, and has awarded more than \$1 million annually in planning grants to help communities use transportation improvements to revitalize town centers and key corridors. Once the planning studies funded by LCI are completed, the communities can apply for implementation funding through the regional Transportation Improvement Program (TIP), which is also funded by federal transportation money. As of 2006, 724 projects had been completed or had broken ground in communities that received LCI funds. These developments include 63,000 residential units, more than 11 million square feet of commercial space, and 40 million square feet of office space. LCI has helped spur not only revitalization, but also policy changes in towns throughout the Atlanta region. Almost all of the communities that have received funding have revised their comprehensive plans to promote pedestrian-friendly, mixed-use development (U.S. EPA, 2008c).

- *Nonprofit funding:* Foundations, nonprofit organizations, and financial institutions also can provide funding to help communities improve quality of life. The Foundation Center (<http://foundationcenter.org>) and the Funders' Network for Smart Growth and Livable Communities (<http://www.fundersnetwork.org>) are resources for identifying foundations based on topics or location. National and regional nonprofit organizations can offer small grants, but they also can direct local governments to funding sources.

In addition, organizations can help with the acquisition of open space. Land trusts operate at the local and regional level to acquire and protect land of significant ecological, open space, recreational, and historical value. Organizations such as the Trust for Public Land (TPL) (<http://www.tpl.org>) and the Nature Conservancy (<http://www.nature.org>) act as intermediate brokers for land acquisition by purchasing property, conveying it to the local jurisdiction, and then waiting for local funding to come through.

The city of Tucson, Arizona asked TPL to buy a scenic mountain tract overlooking downtown, which was being offered for sale by a savings and loan. City officials intended to include the costs of the property in the next budget, but legally they could not commit the funds. The trust purchased the property for the city and was reimbursed during the next budget cycle (TPL, Undated).

8. Federal, State, and Other Program Resources

A variety of federal, state, regional, and other agencies and organizations provide resources that local governments can use when planning and implementing smart growth activities.

Federal Programs

The federal government offers resources to help states and localities make development decisions.

- *Federal Highway Administration.* This federal-aid transportation planning program supports efforts to coordinate land use and transportation decision making and to foster smart growth initiatives.

Web site:

<http://www.fhwa.dot.gov/planning/ppasg.htm>

- *Federal Transit Administration.* This program provides funding for planning multimodal transportation investments in metropolitan areas and states, including the coordination of land use and transportation decision making, and provides technical assistance for transportation planning staff and policy makers.

Web site:

http://www.fta.dot.gov/planning_environment.html

- *Partnership for Sustainable Communities.* In June 2009, EPA, the Department of Transportation (DOT), and the Department of Housing and Urban Development (HUD) formed this partnership to coordinate their funding and better support sustainable communities. EPA, DOT, and HUD will work to assure that their programs maximize the benefits of their combined investments in communities for livability, affordability, environmental excellence, and the promotion of green jobs of the future. HUD and DOT will work together to identify opportunities to better coordinate their programs and encourage location efficiency in housing and transportation choices. HUD, DOT, and EPA will also share information and review processes to facilitate better-informed decisions and coordinate investments.

- *U.S. EPA Office of Transportation and Air Quality.* This program offers policy and guidance documents regarding land use.

Web site: http://www.epa.gov/otaq/stateresources/policy/pag_transp.htm#lu.

Web site: <http://www.epa.gov/smartgrowth/partnership/index.html>.

- *U.S. EPA Smart Growth program.* This program offers research and publications, tools, and technical assistance to help communities create better development. EPA offers an annual Smart Growth Implementation Assistance competition, which funds national experts to offer technical assistance to tribal, regional, state, and local governments that want to implement smart growth strategies but aren't sure how to do it.

Transportation Planning Capacity Building Program—FHWA & FTA

The Transportation Planning Capacity Building (TPCB) Program—a joint venture of FHWA and FTA—is designed to help decision makers, transportation officials, and staff resolve the increasingly complex issues they face when addressing transportation needs in their communities. This comprehensive program for training, technical assistance, and support targets state, local, regional, and tribal governments; transit operators; and community leaders. Resources provided by TPCB include:

- Examples of effective transportation planning practices from across the nation.
- A central clearinghouse for information and contacts within the transportation planning community.
- Training programs and peer-to-peer information exchange opportunities.

Many of these resources can help communities implement smart growth projects.

See <http://www.planning.dot.gov/default.asp>; http://planning.dot.gov/Peer/NewMex/albuquerque_09.asp

Web site: www.epa.gov/smartgrowth

- *U.S. EPA State and Local Climate and Energy Program.* This program assists state, local, and tribal governments in meeting their climate change and clean energy efforts by providing technical assistance, analytical tools, and outreach support. It includes two programs:
 - The *Local Climate and Energy Program* helps local and tribal governments meet multiple sustainability goals with cost-effective climate change mitigation and clean energy strategies. EPA provides local and tribal governments with peer exchange training opportunities and financial assistance along with planning, policy, technical, and analytical information that support reduction of greenhouse gas emissions.
 - The *State Climate and Energy Program* helps states develop policies and programs that can reduce greenhouse gas emissions, lower energy costs, improve air quality and public health, and help achieve economic development goals. EPA provides states with and advises them on proven, cost-effective best practices, peer exchange opportunities, and analytical tools.

Web site: <http://www.epa.gov/statelocalclimate/>

State Programs

Although states may set specific development objectives, the authority to make land use determinations usually resides in the local zoning process. States can influence land use to varying degrees through funding and sometimes through direct regulation. Local governments should look to their states for more information about available programs and funding opportunities. The examples below are just a few of the many states that have smart growth-related offices or programs.

In 2000, Colorado's legislature passed into law legislation which created the Office of Smart Growth in the Colorado Department of Local Affairs. The goal of the office is to provide direct technical and financial assistance to local governments in the areas of land use planning and growth management.

- *Colorado Office of Smart Growth Web site:*
<http://dola.colorado.gov/dlg/osg/index.htm>

In Massachusetts, the state allocates funding through its Commonwealth Capital Fund using a scorecard that awards points to local governments based on their development rules. Those municipalities that promote compact, mixed-use, walkable neighborhoods receive higher scores and funding priority (Massachusetts, 2008a). Local governments can work with states to make sure their plans meet the state's goals for energy efficiency and land use. The state has developed a *Smart Growth/Smart Energy* toolkit to assist local governments in making smart growth decisions (Massachusetts, 2008b).

- *Massachusetts Smart Growth/Smart Energy toolkit Web site:*
http://www.mass.gov/envir/smart_growth_toolkit/index.html

New Jersey's **Office of Smart Growth (OSG)** coordinates planning throughout New Jersey to protect the environment and guide future growth into compact, mixed-use development and redevelopment. OSG integrates programmatic and regulatory land use decisions through all levels of government and with the private sector. The office implements the goals of the State Development and Redevelopment Plan to achieve comprehensive, long-term planning.

- *New Jersey Office of Smart Growth Web site:*
<http://www.nj.gov/dca/osg/>

Other Programs

Metropolitan Planning Organizations

All metropolitan areas (i.e., urbanized areas with populations greater than 50,000) have a MPO designated by local officials and the governor of the state, which is responsible for carrying out the metropolitan transportation planning process required for securing federal funding of transportation projects, plans, and studies. In some instances, the body designated as the MPO may also be responsible for making regional land use decisions. MPOs, COGs, and other regional governments can be important to help municipalities cooperate on development issues. Some, like the Minneapolis-St. Paul Metropolitan Council, take responsibility for developing visions for the region's growth, funding affordable housing, and offering grants or awards to their member jurisdictions to help them promote smarter, more efficient development (Met Council, 2008c). Others are less active in growth management issues, but they are still important partners to engage because they control transportation funding, and that has a significant impact on growth patterns in the region.

- *American Association of Metropolitan Planning Organizations:*
Web site: <http://www.ampo.org/index.php>

Nonprofit Organizations

- *Smart Growth Online.* The Smart Growth Network provides a clearinghouse of smart growth-related news, resources, tools, and other information.
Web site: www.smartgrowth.org

9. Case Studies

The following two case studies describe comprehensive programs for promoting smart growth. Each case study describes how the program was initiated, key program activities and features, and program benefits.

High Point, Washington

High Point is a HOPE VI redevelopment project in West Seattle, Washington. This former public housing project is now a neighborhood with narrow streets, playgrounds, parks, mature trees, and community gardens. It blends rental and for-sale homes, and its affordable housing units are indistinguishable from the market-rate homes. All the homes are built to at least the three-star level of Washington's Built Green standards (City of Seattle, 2006a). Residents of the old High Point project and of surrounding neighborhoods were closely involved in the design of the new neighborhood development.

Program Initiation

The Seattle Housing Authority (SHA) initiated redevelopment of the public housing project in 2001. About 40 percent of the funding for the project came from public entities, including \$41 million from SHA funds (including bonds), \$39 million from the U.S. Department of Housing and Urban Development's HOPE VI program and other federal sources, \$4 million from the Washington State Housing Trust Fund, and \$3 million from city funds. The remaining 60 percent came from private sources, including \$65 million in land sales to private builders, \$53 million in affordable housing tax credit capital investment, and \$6 million in private fundraising (SHA, 2007).

Seattle's Design Commission and the West Seattle Design Review Board reviewed the master plan for High Point. The city council passed a resolution authorizing the redevelopment plan in 1999 (City of Seattle, 2006b).

Program Features

- *Public involvement.* With an intensive public involvement process, SHA gathered ideas and feedback from residents of the existing public housing, as well as the neighborhoods around it, about what they wanted to see in the new High Point development.

Profile: High Point, Seattle, Washington

Area: 120 acres

Population: Approximately 4,000 residents expected at build-out (1,600 housing units)

Structure: The Seattle Housing Authority owns the land and is building about half the development; private developers are building the rest.

Program Scope: Using funds from the federal HOPE VI program, High Point reflects many of Seattle's priorities, including reducing greenhouse gas emissions, creating mixed-income communities, and using natural drainage systems. The city is using many of the techniques from High Point, including the natural drainage system and the public outreach program, as models for other development projects.

Program Creation: The Seattle Housing Authority initiated the redevelopment and commissioned the plan in 2001. Residents began living in the neighborhood in 2005.

Program Results: The neighborhood's 1,600 homes are projected to use less energy than the 716 homes that were previously on the site. The city estimates that energy savings, reduced demand on wastewater treatment facilities, and other environmental benefits add up to about \$17 million.

(SHA, 2007)

- *Reconnecting to the community.* One of the key points that all parties agreed on was that the new community should be integrated into the surrounding neighborhoods. Toward that end, High Point includes a library, a medical and dental clinic, community center, and an elementary school. Residents of High Point can walk to these facilities, as well as residents of the surrounding neighborhoods (SHA, 2007).
- *Transportation choices.* The neighborhood is served by bus lines and has narrow streets that feel safer for walking and biking, so residents can reduce the amount they need to drive (SHA, 2007).
- *Energy efficiency.* The site and all the multifamily rental housing are built to the highest Built Green standards; other homes are built to at least the three-star level. Most buildings are ENERGY STAR qualified as well. Sixty homes are “Breathe-Easy Homes,” designed for people with asthma (SHA, 2007).
- *Green space.* The project doubled the density from what existed before, but was able to do so while preserving trees and adding parks and open space (SHA, 2007).
- *Low impact development.* High Point uses an innovative natural drainage system to manage stormwater runoff, helping to protect the salmon stream that runs through the neighborhood (SHA, 2007). SHA and the city worked together to get narrower streets to reduce the amount of impervious surface, as well as natural stormwater management elements that would blend into the neighborhood’s design. The city has agreed to cover the difference between the cost of a conventional stormwater management system and that of a natural drainage system (Wells, 2008).

Program Results

- SHA estimates that, in addition to the initial \$210 million investment that got the project started, about \$225 million in private investment has come in (SHA, 2007).
- Homes at High Point use about 20 percent less energy than similar homes at another Seattle HOPE VI redevelopment, New Holly, which was built about six years earlier (Wells, 2008).
- SHA estimates that High Point has created about \$58 million in new property taxes, residents’ income taxes, and spending by businesses and residents (SHA, 2007).
- The neighborhood provides much-needed affordable housing for a variety of income levels. Half the homes are market rate, 29 percent are rental units for people earning 30 percent or less of the area’s median income, 16 percent are rental units for people earning 60 percent or less of median income, and 5 percent are for-sale homes reserved for people earning 80 percent or less of median income (City of Seattle, 2006b). The housing mix also includes market-rate and income-restricted independent and assisted-living apartments for seniors (SHA, 2008b).
- High Point has won numerous awards, including EPA’s 2007 National Award for Smart Growth Achievement (SHA, 2008a; U.S. EPA, 2007).

- The High Point project created new ways of working together for city agencies and has been a model for other development projects in the region (SHA, 2007).
- **Web site:** <http://www.seattlehousing.org/Development/highpoint/highpoint.html>, and <http://www.thehighpoint.com/>

Arlington, Virginia

Arlington County is an inner suburb just across the Potomac River from Washington, D.C., and a nationally recognized leader in smart growth and transit-oriented development. The county has aligned its land use policies to make the most of public investment in the regional transit system.

Program Initiation

When the Washington Metrorail subway system was being planned in the 1960s, the portion of it that would pass through Arlington County was originally to run down the median of Interstate 66. Arlington County lobbied to have the line go underground through the county's commercial corridor instead, with closely spaced transit stops (Arlington, 2008a). The county wanted to leverage the investment in the Metro system to revitalize its Rosslyn-Ballston corridor, which had started losing businesses and residences to suburbanization. Arlington decided to build a strategy that the county's transportation director calls "brand-new and untested" at the time: focusing mixed-use development around the transit stations and tapering down the intensity and size of buildings into the surrounding residential neighborhoods (Leach, 2004).

The county planning staff developed a general land use plan for the entire corridor, then sector plans for each station area that outlined the specific design features, land uses, public improvements, and other aspects of that location. The public had extensive involvement in creating not only the individual station plans, but also the overall policy framework (Leach, 2004). Each station area has a different character, intentionally developed to reflect the county's goals—although all have a mix of uses within a quarter mile of the station, some place more emphasis on retail, others are more residential, and others are office-oriented (Arlington, 2008b).

Program Features

- *Development approvals for station areas.* Developments are approved using a site plan process that must comply with the general land use plan, the zoning ordinance, and the station area sector plan. Developers get to build more densely in exchange for building the type of development the county wants, where it wants it, and with the public improvements the county requests (Arlington, 2008a).

Profile: Arlington County, Virginia

Area: 26 square miles

Population: 208,000

Structure: The county is governed by a five-member county board, elected at large.

Program Scope: Arlington County has two Metrorail corridors. The Rosslyn-Ballston corridor has five stations, and the Jefferson Davis corridor has two.

Program Creation: Arlington began planning its transit-oriented strategy in the 1960s as the Washington, D.C. Metrorail system was being developed. The county has added many other policies designed to give its residents more transportation options and improve their quality of life in the years since then.

Program Results: The county's land use policies and transportation options allow at least one-third of its residents to commute to work without a car, which reduces air pollution, fuel use, and greenhouse gas emissions.

- *Housing options.* Because Arlington’s station areas quickly taper down to residential neighborhoods, people who live in single-family houses on quiet streets are still within walking distance of public transit, as well as a vibrant array of shops, restaurants, and other amenities. The density around the stations and the emphasis on a mix of uses has created apartments, condominiums, and townhouses, which give new options to people who don’t want or can’t afford to buy a house.
- *Transportation options.* Arlington’s transit-oriented, walkable urban villages give residents and visitors a wide variety of options to get around without a car:
 - Metrorail (subway): 12 miles of Metrorail lines and 11 stations⁸ (one of which also serves the regional commuter rail)
 - Metrobus (DC area regional bus service): 18 major bus lines and approximately 100 individual route variations serving Arlington
 - Arlington Regional Transit (local bus service): 12 lines, uses smaller, neighborhood-friendly vehicles fueled with compressed natural gas
 - Paratransit service for elderly and disabled residents
 - Carsharing services
 - Walking and biking: the county creates maps showing popular routes and Web sites with resources (WalkArlington.com and BikeArlington.com).

Program Results

- More than 35 million square feet of office space, 4 million square feet of retail space, and 35,000 residential units are in Arlington’s Metro corridors, creating vibrant urban villages around the stations (Arlington, 2005).
- The Metro corridors contain 11 percent of Arlington’s land area but provide almost half the county’s assessed land value (Arlington, 2008a).
- About 28 percent of county residents live in one of the two Metrorail corridors, and two-thirds of the county’s jobs are in the two Metrorail corridors (Arlington, 2005).
- 23 percent of residents commute using public transit; 39 percent of residents living in the Metrorail corridors commute by transit (Arlington, 2005). By comparison, the national average for commuting by transit is about 5 percent (Arlington, 2008a).

⁸ Metrorail’s Orange Line has five stations in the Rosslyn-Ballston corridor and a sixth Arlington station further away. The Blue Line has two stations in the Jefferson Davis corridor and three additional stations that are surrounded by land not under the county’s control.

- Almost 10 percent of county residents commute by bike or on foot, compared to a regional average of 2 percent (Arlington, 2008a).
- Although Arlington’s population continues to grow by about 1 percent per year, traffic on arterials and neighborhood streets has remained fairly stable or even declined. On average, traffic increased by less than one-half of one percent on most streets (Arlington, 2008a).
- In a 2006 survey, 88 percent of county residents rated their quality of life as “good” or “very good” (Arlington, 2008c).
- **Web site:** <http://www.arlingtonva.us>

10. Additional Examples and Information Resources

Title/Description	Web Site
Examples of Local Smart Growth Activities	
<p>Marin County, California. Marin County’s comprehensive Safe Routes program has education programs, encouragement activities, safety enforcement, and infrastructure plans. Funds for infrastructure in Marin County come from local jurisdictions, as well as from state and federal funds.</p>	<p>http://drusilla.hsrrc.unc.edu/cms/downloads/srts_case_studies.pdf</p>
<p>Orlando, Florida. Baldwin Park is a redevelopment project that used community outreach to plan the property’s future, engaged citizens in hundreds of meetings over two years. Mixed in with its variety of housing types are offices, a supermarket, restaurants, doctors’ offices, schools, and adult education, parks, and many other stores and services. The community also created 16 extra acres of parkland using low impact development.</p>	<p>http://www.baldwinparkfl.com</p>
<p>Boulder, Colorado. Boulder developed a transportation master plan that integrates a variety of smart growth approaches to improve its transportation network, infrastructure, and local economy.</p>	<p>http://www.bouldercolorado.gov/files/Transportation_Master_Plan/modal_shift1990-2006_report_final.pdf</p>
<p>Denver, Colorado. The Stapleton brownfield redevelopment project incorporates a strong sustainability component that promotes walking, biking, and transit use; preserves open space; requires home builders to meet ENERGY STAR or Colorado Built Green standards; and promotes green building for commercial structures.</p>	<p>http://about.stapletondenver.com/about/sustainability#</p>
<p>Portland, Maine. Portland involves a large variety of local government offices when developing its smart growth initiatives. Development proposals go through a review by a team that includes representatives from the departments handling planning, fire, public works, parks and recreation, economic development, and traffic, as well as the city’s corporation counsel</p>	<p>http://www.ci.portland.me.us/planning/devreview.asp</p>
<p>Boca Raton, Florida. The development of Mizner Park in Boca Raton consisted of the acquisition of approximately 30 acres of land, and the construction of a mixed-use urban village incorporating public park facilities, mixed-use development and cultural facilities.</p>	<p>http://www.ci.boca-raton.fl.us/dev/pdf/CRA/MiznerParkHandout.pdf</p>

Title/Description	Web Site
<p>Salt Lake City, Utah. The Envision Utah partnership was formed to guide the development of a broadly and publicly supported Quality Growth Strategy. This strategy is a vision to protect Utah's environment, economic strength, and quality of life.</p>	<p>www.envisionutah.org</p>
<p>Bellevue, Washington. Bellevue developed the FAR Amenity Incentive System, a Land Use Code (LUC) process designed to ensure the provision of amenities that are essential to the creation of the urban environment envisioned by Bellevue's Comprehensive Plan.</p>	<p>http://www.ci.bellevue.wa.us/pdf/PCD/L-15_FAR_Dwntwn.pdf</p>
<p>Montgomery County, Maryland. Montgomery County developed the country's first mandatory, inclusionary zoning law that specified a density bonus allowance to builders for providing affordable housing. The law currently requires that between 12.5 and 15 percent of the total number of units in every subdivision or high-rise building of 20 or more units be moderately priced. The law is applicable to property zoned one-half acre or smaller.</p>	<p>http://www.montgomerycountymd.gov/dhctmpl.asp?url=/content/dhca/housing/housing_P/mpdu/history.asp</p>
<p>Portland, Oregon. Portland has introduced several smart growth planning policies to balance transportation needs with environmental protection, community design, affordable housing, and other goals. These include a range of parking policies to promote infill development and balance driving and alternatives to the private car.</p>	<p>http://www.portlandonline.com/bps/index.cfm?</p>
<p>Examples of State Smart Growth Activities</p>	
<p>California Strategic Growth Council. In September 2008 Governor Arnold Schwarzenegger signed SB 732, creating the Strategic Growth Council. The Council is a cabinet level committee that is tasked with coordinating the activities of state agencies to improve air and water quality; protect natural resource and agriculture lands; increase the availability of affordable housing; improve infrastructure systems; promote public health; and assist state and local entities in the planning of sustainable communities and meeting AB 32 goals.</p>	<p>http://www.sgc.ca.gov/</p>
<p>Colorado Office of Smart Growth. Established by the state legislature in 2000, the office provides direct technical and financial assistance to local governments in the areas of land use planning and growth management.</p>	<p>http://dola.colorado.gov/dlg/osg/index.htm</p>
<p>Florida Department of Community Affairs. The Department of Community Affairs assists Florida's communities as they plan for the impacts of growth and development. It provides funding to local communities to help improve housing, streets, utilities, and public facilities. The division assists with efforts to revitalize underserved communities and encourage economic development for the common good, and to help low-income residents meet the costs of such essential services as home heating and cooling.</p>	<p>http://www.dca.state.fl.us/</p>
<p>Maryland Department of Planning—Office of Smart Growth. The office of Smart Growth directs the state to target programs and funding to support established communities and locally-designated growth areas, and to protect rural areas. The Priority Funding Areas Act provides a geographic focus for the State's investment in growth-related infrastructure.</p>	<p>http://www.mdp.state.md.us/OurWork/SmartGrowth.shtml</p>

Title/Description	Web Site
<p>Massachusetts Clean Energy & Smart Growth-Smart Energy. The state has developed a Smart Growth/Smart Energy toolkit to assist local governments in making smart growth decisions. The state also allocates funding through its Commonwealth Capital Fund using a scorecard that awards points to local governments based on their development rules.</p>	<p>http://www.mass.gov/?pageID=gov3subtopi&c&L=4&L0=Home&L1=Key+Priorities&L2=Job+Creation+%26+Economic+Growth&L3=Clean+Energy+%26+Smart+Growth-Smart+Energy&sid=Agov3</p>
<p>New Hampshire—Office of Energy and Planning—Achieving Smart Growth in New Hampshire. The office developed a pilot project which included an evaluation of development policies and regulations in relation to principles and examples of Smart Growth. Three communities selected and residents were invited by the local planning boards to participate in two public meetings to explore what they value about their towns, their visions for the future, and to consider possible ways to preserve the features and character.</p>	<p>http://nh.gov/oep/programs/SmartGrowth/index.htm</p>
<p>New Jersey Office of Smart Growth. New Jersey's Office of Smart Growth (OSG) coordinates planning throughout New Jersey to protect the environment and guide future growth into compact, mixed-use development and redevelopment. OSG integrates programmatic and regulatory land use decisions through all levels of government and with the private sector.</p>	<p>http://www.nj.gov/dca/osg/</p>
<p>Washington State Community, Trade, and Economic Development—Smart Growth. Washington State Community, Trade, and Economic Development developed an action plan Smart Growth Strategy for the 21st Century. The plan builds on the state's growth management efforts, and finds solutions for emerging needs. It includes benchmarks and indicators to measure Smart Growth progress.</p>	<p>http://smartgrowth.wa.gov/</p>
<p>Wisconsin Department of Natural Resources—Wisconsin's Planning Law. Wisconsin's Planning Law defines what a "comprehensive plan" is, outlines procedures for adopting plans, and requires that certain actions, beginning in 2010, be consistent with an adopted plan. The legislation creates a comprehensive planning grants program and stresses the importance of citizen involvement, community visioning, and other types of public participation in the planning and plan adoption processes.</p>	<p>http://www.dnr.state.wi.us/org/es/science/landuse/smart/SGlaw.htm</p>
Information Resources for Smart Growth Activities	
<p>Affordable Housing and Smart Growth: Making the Connection. This paper uses case studies to illustrate strategies that can foster affordable housing and smart growth.</p>	<p>http://www.epa.gov/smartgrowth/pdf/epa_ah_sg.pdf</p>
<p>Air Quality and Smart Growth: Planning for Cleaner Air. This paper describes the links between development and air quality.</p>	<p>http://www.fundersnetwork.org/files/Air_Quality_and_Smart_Growth.pdf</p>
<p>American Planning Association and the Environmental and Energy Study Institute. The American Planning Association and the Environmental and Energy Study Institute are working together to better connect land use planning and energy conservation.</p>	<p>http://www.eesi.org/apa</p>
<p>Atlantic Station (Atlantic Steel Site Redevelopment Project). This example describes the transformation of a brownfield in midtown Atlanta into the thriving Atlantic Station neighborhood.</p>	<p>http://www.epa.gov/smartgrowth/topics/atlantic_steel.htm</p>

Title/Description	Web Site
<p>Best Development Practices: A Primer for Smart Growth. This International City/County Management Association and Smart Growth Network primer describes land use practices that create attractive communities, offer more transportation choices, and protect the environment.</p>	<p>http://www.epa.gov/smartgrowth/pdf/bestdevprimer.pdf</p>
<p>Case Studies for Action. This Web site provides information on a series of case studies of innovative programs from ULI District Councils aimed at engaging stakeholders to resolve complex land use, development, and redevelopment problems.</p>	<p>http://www.uli.org/CommunityBuilding/Smart%20Growth%20Alliances/SGAIN%20Resources/Case%20Studies%20for%20Action.aspx</p>
<p>Choosing Our Community's Future: A Citizen's Guide to Getting the Most Out of New Development. This paper focuses on the visioning and planning efforts that set the stage for smarter growth and how citizens can engage and make suggestions for better growth and development through collaborative stakeholder meetings and workshops.</p>	<p>http://www.smartgrowthamerica.org/resources.html</p>
<p>Creating Great Neighborhoods: Density in Your Community. This report highlights nine community-led efforts to create vibrant neighborhoods through density, discusses the connections between smart growth and density, and introduces design principles to ensure that density becomes a community asset.</p>	<p>http://www.epa.gov/smartgrowth/density.htm</p>
<p>Congress for the New Urbanism Charter Awards. CNU gives its Charter Awards each year to recognize excellent plans and projects that advance the principles of the Charter of the New Urbanism.</p>	<p>http://www.cnu.org/awards</p>
<p>Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities. This Institute of Transportation Engineers report provides guidance for practitioners on how major urban streets can be designed to support walking and biking, compact development, and mixed land uses.</p>	<p>http://www.ite.org/css/</p>
<p>Economic Development and Smart Growth. This report highlights the connections between smart growth and economic outcomes, such as job growth, occupancy rates, tax base, and private investment. Uses detailed case studies to illustrate economic outcomes in places that have incorporated smart growth development strategies.</p>	<p>http://www.iedconline.org/Downloads/Smart_Growth.pdf</p>
<p>Emerging Trends in Real Estate. This report provides an annual outlook for the real estate and land use industries.</p>	<p>www.uli.org/emergingtrends/</p>
<p>Energy and Smart Growth: It's about How and Where We Build. This paper, by the Funders' Network for Smart Growth and Livable Communities, explains the links between energy use and development patterns.</p>	<p>http://www.fundersnetwork.org/files/Energy_and_Smart_Growth.pdf</p>
<p>EPA Smart Growth program. This program offers research and publications, tools, and technical assistance to help communities create better development.</p>	<p>www.epa.gov/smartgrowth</p>
<p>Essential Smart Growth Fixes for Urban and Suburban Zoning Codes. The document addresses the most common barriers local governments face in implementing smart growth. Each Essential Fix describes the problem or barrier and the actions that the community could take to overcome that barrier.</p>	<p>http://www.epa.gov/smartgrowth/essential_fixes.htm</p>

Title/Description	Web Site
<p>Getting to Smart Growth: 100 Policies for Implementation. This International City/County Management Association and Smart Growth Network book provides a road map for states and communities that have recognized the need for smart growth, but are unclear on how to achieve it. The book provides 100 policy ideas, along with additional resources and brief case studies of communities that have applied these approaches to achieve better development.</p>	<p>http://www.epa.gov/smartgrowth/getting_to_sg2.htm</p>
<p>Getting to Smart Growth II: 100 More Policies for Implementation. This International City/County Management Association and Smart Growth Network book is Volume 2 of an ongoing series by ICMA and the Smart Growth Network, which describes the concrete techniques of putting the 10 smart growth principles into practice.</p>	<p>http://www.epa.gov/smartgrowth/getting_to_sg2.htm#2</p>
<p>Growing Cooler: The Evidence on Urban Development and Climate Change. This Urban Land Institute book connects compact, walkable development with CO₂ reductions.</p>	<p>http://www.smartgrowthamerica.org/gcindex.html</p>
<p>Growing Toward More Efficient Water Use: Linking Development, Infrastructure, and Drinking Water Policies. This EPA document focuses on the relationships among development patterns, water use, and the cost of water delivery. It includes policy options for states, localities, and utilities that directly reduce the cost and demand for water while indirectly promoting smarter growth.</p>	<p>http://www.epa.gov/smartgrowth/water_efficiency.htm</p>
<p>Higher-Density Plans: Tools for Community Engagement. This best-practices report from San Jose State University's Mineta Transportation Institute gathers an extensive list of tools and techniques local governments can use to engage residents and educate them about development decisions. It includes several California case studies.</p>	<p>http://transweb.sjsu.edu/mtportal/research/publications/documents/03-02/Higher-DensityPlans.book.htm</p>
<p>Measuring the Air Quality and Transportation Impacts of Infill Development. This EPA document illustrates how regions can calculate the transportation and air quality benefits of infill, based on standard transportation forecasting models used by metropolitan planning organizations across the country. The results suggest that strong support for infill development can be one of the most effective transportation and emission reduction investments regions can pursue.</p>	<p>http://www.epa.gov/smartgrowth/impacts_infill.htm</p>
<p>Model Smart Growth Codes. The American Planning Association has developed a set of model codes for municipal governments that address mixed uses, open space preservation, housing, transportation options, and predictability in the development review process.</p>	<p>http://www.planning.org/research/smartgrowth/</p>
<p>National Center for Appropriate Technology (NCAT) Smart Communities Network. This Web site provides resources, tools, links to articles and publications, and community success stories on a variety of "smart communities" topics, including community energy, land use planning, transportation, and financing.</p>	<p>http://www.smartcommunities.ncat.org/</p>
<p>National Award for Smart Growth Achievement. This annual award from EPA recognizes communities that use the principles of smart growth to create better places.</p>	<p>http://www.epa.gov/smartgrowth/awards.htm</p>
<p>National Center for Safe Routes to School. The National Center for Safe Routes to School has resources to help communities improve the walking and biking environment around their schools.</p>	<p>http://www.saferoutesinfo.org</p>

Title/Description	Web Site
National Charrette Institute. The National Charrette Institute offers training and other resources to help communities set up charrettes for development projects.	www.charretteinstitute.org
National Trust Main Street Center. The National Trust for Historic Preservation's Main Street Center helps communities revitalize historic commercial districts, making them economically successful while preserving their distinctive character.	http://www.mainstreet.org
New Partners for Smart Growth. This annual conference brings together a multidisciplinary audience to learn from each other.	www.newpartners.org
Our Built and Natural Environments: A Technical Review of the Interactions Between Land Use, Transportation, and Environmental Quality. This EPA document examines trends in land use and their impacts, then explores how different development patterns and practices can minimize environmental damage.	http://www.epa.gov/smartgrowth/built.htm
Parking Spaces/Community Places: Finding the Balance Through Smart Growth Solutions. This EPA document highlights proven approaches that balance parking with broader community goals. Communities have found that combinations of parking pricing, shared parking, demand management, and other techniques have helped them create vibrant places while protecting environmental quality.	http://www.epa.gov/smartgrowth/parking.htm
Pedestrian- and Transit-Friendly Design: A Primer for Smart Growth. This International City/County Management Association and Smart Growth Network primer suggests design elements that make walking and transit use easier and more comfortable.	http://www.epa.gov/smartgrowth/pdf/ptfd_primer.pdf
Public Transportation's Contribution to U.S. Greenhouse Gas Reduction. This report by the American Public Transportation Association assesses how public transportation can help reduce greenhouse gas emissions.	http://www.apta.com/resources/reportsandpublications/Documents/climate_change.pdf
Reconnecting America. This nonprofit organization provides a number of reports and books on both development-oriented transit and transit-oriented development. For example, TOD 101: <i>Why Transit-Oriented Development And Why Now?</i> lays out the case for TOD in a simple, easy-to-read format.	http://www.reconnectingamerica.org/public/reports
Sample Bicycle Plans. The Pedestrian and Bicycle Information Center maintains a list of sample bicycle master plans from states, regions, and cities around the country.	http://www.bicyclinginfo.org/develop/sample-plans.cfm
Sample Pedestrian Plans. The Pedestrian and Bicycle Information Center maintains a list of sample pedestrian master plans from states, regions, and cities around the country.	http://www.walkinginfo.org/develop/sample-plans.cfm
Schools for Successful Communities: An Element of Smart Growth. This EPA document explains why and how communities can employ smart growth planning principles to build schools that better serve and support students, staff, parents, and the entire community.	http://www.epa.gov/smartgrowth/schools.htm
Smart Growth America.	www.smartgrowthamerica.org
Smart Growth Illustrated. This EPA resource shows how smart growth techniques look in communities around the country.	http://www.epa.gov/smartgrowth/case.htm

Title/Description	Web Site
<p>Smart Growth Is Smart Business. This National Association of Local Government Environmental Professionals and Smart Growth Leadership Institute publication identifies successful companies that promote smart growth and bring vitality and prosperity to their communities.</p>	<p>www.nalgep.org</p>
<p>Smart Growth Online. The Smart Growth Network's clearinghouse of smart growth-related news, resources, tools, and other information.</p>	<p>www.smartgrowth.org</p>
<p>Smart Growth Scorecards. EPA has developed this online-only resource of sample scorecards used by communities to evaluate policies and development projects.</p>	<p>http://www.epa.gov/smartgrowth/scorecards</p>
<p>Smart Growth Shareware. Contains a library of smart growth resources from more than 100 organizations, including road-tested presentations and materials by local and national leaders and organizations, publications and fact sheets, and Web links to more than 100 additional resources.</p>	<p>www.smartgrowthamerica.org</p>
<p>Smart Growth: The Business Opportunity for Developers and Production Builders. Provides eight white papers that present a "business case for smart growth" to assist developers and home builders considering whether to pursue smart growth projects.</p>	<p>http://www.epa.gov/smartgrowth/sg_business.htm</p>
<p>Smart Growth Zoning Codes: A Resource Guide. This publication from the Local Government Commission helps communities learn about and implement smart growth codes.</p>	<p>www.lgc.org</p>
<p>This Is Smart Growth. This International City/County Management Association and Smart Growth Network report illustrates how communities can turn their values, visions, and aspirations into reality, using smart growth techniques to improve development. It features 40 places around the country—from cities to suburbs to small towns to rural areas—which have found success by implementing smart growth principles.</p>	<p>http://www.epa.gov/smartgrowth/tisg.htm</p>
<p>Transit Oriented Development Best Practices. The Greater Cleveland Regional Transit Authority analyzed case studies of TOD in regions around the country and developed lessons learned from other regions' experiences.</p>	<p>http://www.riderta.com/pdf/tod/GCRTA_TO_D_Best_Practices.pdf</p>
<p>Transportation Reform and Smart Growth: A Nation at the Tipping Point. This Founders' Network for Smart Growth and Livable Communities paper discusses the links between growth patterns and transportation policy.</p>	<p>http://www.fundersnetwork.org/files/transportation_paper.pdf</p>
<p>Travel and Environmental Implications of School Siting. This EPA document provides important information about how the location of a school affects how its students get to it, showing that school siting and design can influence traffic congestion, air pollution, school transportation budgets, and children's health and obesity.</p>	<p>http://www.epa.gov/smartgrowth/school_travel.htm</p>
<p>Urban Land Institute Awards for Excellence. ULI gives these awards each year to recognize outstanding projects that enhance the community and the environment.</p>	<p>http://www.uli.org/AwardsAndCompetitions/AwardsForExcellenceProgram</p>
<p>Win-Win Emission Reduction Strategies. This paper by the Victoria Transport Policy Institute outlines transportation and land use strategies that can reduce GHG emissions and provide other societal benefits.</p>	<p>http://www.vtppi.org/wwclimate.pdf</p>

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