



## 15. RETROFITTING SUBURBIA

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*(Credit: Kimley-Horn and Associates, Inc.)*





## INTRODUCTION

Much of suburbia will have to change in order to thrive and meet the health, environmental, and economic challenges of the coming decades. Because of their form, widely separated land uses, and disconnected street networks, most suburban areas lack walkability and require that people travel by car for most of their needs. This has serious environmental consequences (poor air quality, climate change, and high energy consumption) as well as health consequences as suburbanites live in environments that discourage active transportation and social cohesion while favoring driving.



*Aerial view of typical suburban development pattern showing disconnected housing developments. The separation of houses from stores, schools, parks, and employment opportunities, results in long trip distances, which in turn creates a car-centric transportation pattern where almost every trip must use a busy arterial boulevard.*

*(Photo Source: Google Maps, Accessed May 23, 2012)*



Residents in these neighborhoods tend to become isolated due to the lack of walkable streets and walkable destinations. Rising fuel costs pinch both family budgets and local economies as people have less discretionary income.

Changing demographics also present challenges. Suburban homes have been built to accommodate young families with children, but fewer households now fit that profile. More and more households are comprised of empty nesters, young singles, divorced adults, and other non-nuclear families, and this trend is expected to grow in the future. Therefore, environments that foster social capital are more important than ever.



*Sidewalk on a suburban boulevard in Broward County near a bus stop*

*(Credit: Kimley-Horn and Associates, Inc.)*

As fuel prices continue to rise and as residents age, suburbs will need to serve more of their residents' needs closer to home, and serve those needs in places that can be accessed without a car. Suburban areas will need to be retrofitted to accommodate a new reality that rewards places that are close to more people and reachable in many ways. Economic and land constraints along with social desires are now motivating a return to a more compact development pattern with lower transportation costs. In South Florida, this motivation is leading to a polycentric land development pattern where clusters of density are taking shape in many areas.

This chapter describes how streets can support retrofitting suburbia, provides strategies for retrofitting streets, and recommends priorities and phasing. All of the changes recommended in this chapter will improve safety. The first priority for a local jurisdiction beginning to retrofit itself for the future should be to find and fix the places that are unsafe.

## SMART GROWTH

Smart growth as a comprehensive development concept will play a vital role in helping to retrofit suburbia to become more sustainable. In Broward County, the Smart Growth Partnership is already working to achieve these goals. According to the Broward Complete Streets Initiative public survey, one-third of a diverse group of Broward County residents stated they were familiar and could reiterate one or more Smart Growth principles. These respondents were twice as likely (OR=2.69) of preferring houses that were built closer together on smaller lots ( $p < .000$ ). The following information is from the website for the Smart Growth Partnership ([www.smartgrowthpartnership.org](http://www.smartgrowthpartnership.org)).





“Smart Growth”, a comprehensive approach to development used in many cities across the nation, incorporates the following principles.

- **Enhance Quality of Life.** Smart Growth communities are designed to attract a diverse population of residents and businesses – then keep them there, with pedestrian-oriented walkable neighborhoods, diverse housing, and an array of local businesses and services. Nearby resources minimize car trips and maximize walking, bicycling, and person-to-person interaction. Its compact land-use planning at its best, including commercial, office, public, and recreational uses.
- **Promote Economic Development.** Attract businesses and jobs to locations near housing, infrastructure, and transportation options. Promote economic development in industry clusters. Expand access to education, training, and entrepreneurial opportunities. Support the growth of local businesses, including sustainable natural resource-based businesses, such as agriculture, forestry, clean energy technology, and fisheries.
- **Create Livable Communities.** Support the revitalization of city and town centers and neighborhoods by promoting development that is compact, conserves land, protects historic resources, and integrates uses. Encourage remediation and reuse of existing sites, structures, and infrastructure rather than new construction in undeveloped areas. Create pedestrian-friendly districts and neighborhoods that mix commercial, civic, cultural, educational, and recreational activities with open spaces and homes.
- **Promote Alternative Transportation.** Maintain and expand transportation options that maximize mobility, reduce congestion, conserve fuel and improve air quality. Prioritize rail, bus, boat, rapid and surface transit, shared-vehicle and shared-ride services, bicycling, and walking. Invest strategically in existing and new passenger and freight transportation infrastructure that supports sound economic development consistent with Smart Growth objectives.
- **Create a Range of Housing Opportunities.** Support the construction and rehabilitation of homes to meet the needs of people of all abilities, income levels, and household types. Build homes near jobs, transit, and where services are available. Foster the development of housing, particularly multifamily and smaller single-family homes, in a way that is compatible with a community's character and vision and with providing new housing choices for people of all means.
- **Preserve Open Space, Natural Resources, and the Environment.** Protect and restore environmentally sensitive lands, natural resources, agricultural lands, critical habitats, wetlands and water resources, and cultural and historic landscapes. Increase the quantity, quality and accessibility of open spaces and recreational opportunities

These Smart Growth principles have been developed to help South Florida meet the needs of our current and future communities by revitalizing neighborhoods, preserving natural areas,



stimulating economic development, and providing transportation alternatives to the car. A model Smart Growth resolution is available for review in Appendix C.

## LIVABILITY

The concept of livability is focused on creating ways to increase the economic prosperity of neighborhoods, reduce commute times to work and recreational activities, and also reduce pollution. Livability is a way to add sustainability to the places where the following principles are incorporated. The following information is from the Partnership for Sustainable Communities website ([www.sustainablecommunities.gov](http://www.sustainablecommunities.gov)).

The following six principles comprise the concept of livability.

- Provide More Transportation Choices. Develop safe, reliable, and economical transportation choices to decrease household transportation costs, reduce our nation's dependence on foreign oil, improve air quality, reduce greenhouse gas emissions, and promote public health.
- Promote equitable, affordable housing. Expand location- and energy-efficient housing choices for people of all ages, incomes, races, and ethnicities to increase mobility and lower the combined cost of housing and transportation.
- Enhance Economic Competitiveness. Improve economic competitiveness through reliable and timely access to employment centers, education opportunities, services and other basic needs by workers, as well as expanded business access to markets.
- Support Existing Communities. Target federal funding toward existing communities – through strategies like transit-oriented, mixed use development and land recycling – to increase community revitalization and the efficiency of public works investments and safeguard rural landscapes.
- Coordinate and Leverage Federal Policies and Investment. Align federal policies and funding to remove barriers to collaboration, leverage funding, and increase the accountability and effectiveness of all levels of government to plan for future growth, including making smart energy choices such as locally generated renewable energy.
- Value Communities and Neighborhoods. Enhance the unique characteristics of all communities by investing in healthy, safe, and walkable neighborhoods – rural, urban, or suburban.



## TRANSFORMING SUBURBAN STREETS TO COMPLETE STREETS

Streets play an enormous role in determining a place's quality of life. Everywhere in the country, people prefer a certain kind of street ("*Redefining Charlotte's Streets*," Urban Street Design Guidelines, Charlotte, North Carolina, 10/22/2007). People's favorite streets include those with the following characteristics.

- An abundant tree canopy and other streetscape features
- Sidewalks and buffering from traffic
- Moderate traffic speeds
- All kinds of uses (walking, cycling, driving, and enjoying the lawns or sidewalks and patios on either side)

People need not know the term "complete street" to recognize and enjoy one.

The least favorite streets are those where driveways, parking lots, and utility poles are more abundant than trees and people. They often consist of wide expanses of pavement for moving traffic, and make little or no provision for any other users. In particular, there is little opportunity to cross the street.

The challenge for local governments with too many least favorite streets is to transform them into most favorite, complete streets.

### CHANGING STREETS WITHOUT CHANGING THE RIGHT-OF-WAY

By definition, a retrofit occurs on an existing street. This manual gives design guidance for all streets, existing and new. The following section recommends how to accommodate those design recommendations on *existing* streets. Many aspects of complete streets actually take *less* space than typical suburban design.

To create a complete street in the right-of-way of an existing street, local governments should utilize the following strategies (LaPlante, J., "*Retrofitting Urban Arterials Into Complete Streets*," 3rd Urban Street Symposium, June 24-27, 2007, Seattle, Washington).

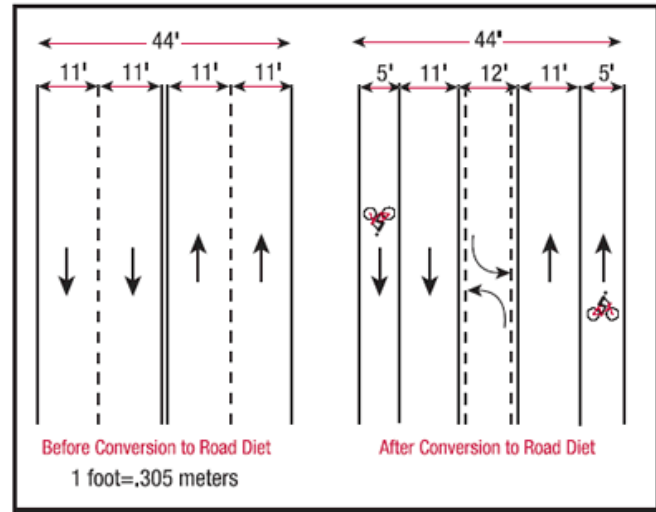
- Narrow travel lanes. Ten or 11-foot lanes are acceptable for most urban boulevards. They are just as safe as 12-foot lanes for posted speeds of 35 mph or less (Dumbaugh, E., "*Safe Streets, Livable Streets*," Journal of the American Planning Association 71[3] 283-300). Narrowing travel lanes to create complete streets elements is consistent with the Florida Department of Transportation (FDOT) Plans Preparation Manual (PPM) Chapters 8, 21, and 25, which reference narrowing travel lanes for the purpose of creating bike lanes. Furthermore, an FDOT Central Office study found that narrowing inside travel lanes to provide more space for bicyclists on the outside of the roadway



produced positive safety benefits for all users including reduced conflicts and greater passing separation afforded by motorists when performing an overtaking maneuver.

- Seek opportunities to put streets on a road diet. This strategy involves eliminating superfluous travel lanes. Common scenarios include the following.

- Convert a four-lane undivided road to a three-lane road with bike lanes (two-way left-turn center lane, two motor vehicle travel lanes, and two bike lanes). This configuration can handle up to 18,000 ADT and improves safety and access to adjacent destinations; the two-way left-turn center lane can be replaced with short sections of medians and pedestrian crossing islands in selected locations. On-street parking can be substituted for bike lanes where the context and conditions warrant.



Example of a 4-lane to 3-lane road diet with bike lanes  
(Credit: Federal Highway Administration)



Simulation of the positive result of a 4-lane to 2-lane road diet with bike lanes and on-street parking  
(Credit: Kimley-Horn and Associates, Inc.)

- Reduce seven-lane roads to five lanes for ADTs of up to 35,000 utilizing a similar strategy as presented in the previous point.





- Remove a travel lane from three- and four-lane one-way streets. Two-lane one-way streets can handle around 21,000 ADT. Three-lane one-way streets can handle around 32,000 ADT.
- Reduce six-lane boulevards to four lanes for ADT's of up to 35,000. This strategy has been studied extensively by FDOT and the City of Fort Lauderdale for a section of State Road A1A between Oakland Park Boulevard and Flamingo Avenue. The study found negligible impacts on motor vehicle capacity while providing a valuable opportunity to add greenway and complete streets elements. The study produced a plan that was accepted by FDOT and the City, and this road diet project is currently in the design phase.
- Tighten corner curb radii to the minimum needed to provide a usable turning radius for an appropriately selected design vehicle. Occasional encroachment by larger vehicles into other travel lanes is acceptable; intersections should not be designed for the largest occasional vehicle.
- Eliminate unnecessary turn lanes at intersections. An example is a right-turn lane with very few right turning vehicles (fewer than 100 per hour). Free-flow right-turn lanes, including freeway entry and exit ramp connections to surface streets, should be replaced with yield control.
- Replace painted channelization islands at intersections with raised islands. This gives pedestrians a true refuge and breaks up a long crossing of many lanes into smaller discrete steps.



*Curb extensions with tight corner radii and outdoor seating  
(Credit: Dan Burden)*

All of these changes can free up space, which can be used for additional elements. To improve street quality, local jurisdictions can incorporate the following elements or others included in other chapters of the *Broward Complete Streets Guidelines*.

- Add green colored pavement bike lanes or cycle tracks.
- Add or widen sidewalks.
- Add raised medians, which visually narrow the roadway and provide a median refuge for midblock crossings.
- Provide median and parkway landscaping, which further visually narrows the roadway and provides a calming effect.



- Add or retain curb parking, which improves community access, calms traffic, and buffers pedestrians.
- Add bulb-outs, which shorten pedestrian crossing distances and improve sight lines.

## NON-PHYSICAL CHANGES

In addition to physical retrofits, local governments can and should adapt existing street management and operations to

- Adjust signal timing for slower speeds and to ensure comfortable crossing times for appropriate populations. In areas with aging populations, for example, crossing times may need to be lengthened. The Institute of Transportation Engineers (ITE) Recommended Practice, *Designing Walkable Urban Thoroughfares: A Context Sensitive Approach*, recommends using 2.8 feet per second in areas with aging populations.
- Work with transit agencies to improve bus operations
- Work with schools to develop a Safe Routes to School Program
- Reexamine the parking code (for example, off-street parking requirements may be reduced, especially in coordination with additional on-street parking)
- Work with housing authorities and aging alliances to develop Safe Routes Around Home targeted towards older adults.
- Incorporate standards that address health and transportation access disparities in the long-term blueprint of a local jurisdiction's transportation system, such as a Long Range Transportation Plan or Comprehensive Development Master Plan.

## STREET CROSSINGS

A connected sidewalk network includes street crossings. See Chapter 6, "Intersection Design," and Chapter 8, "Pedestrian Crossings," for design details. To improve street crossings, jurisdictions can consider the following:

- Make pedestrian crossing locations safe, comfortable, and more frequent (LaPlante, J., "Retrofitting Urban Arterials Into Complete Streets," 3rd Urban Street Symposium, June 24-27, 2007 Seattle, Washington).
- Allow crossing at every corner of all intersections.
- On streets with a bus route, make provisions for pedestrians to cross



*Crossings should be designated on every leg of all intersections in an urban context  
(Credit: Kimley-Horn and Associates, Inc.)*



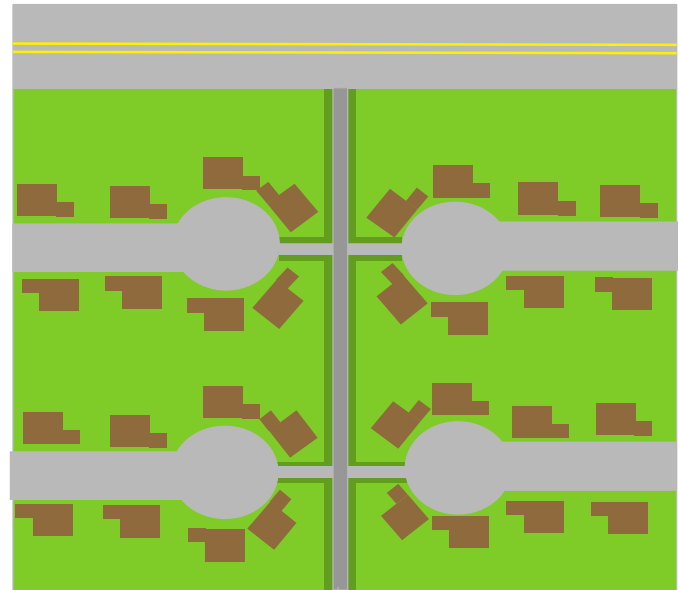
the street at all bus stops. Bus riders need to cross the street either coming or going.

- Provide mid-block crossings. Pedestrians should not be expected to travel to the closest signalized intersection to cross the street when signalized intersections in suburban and urban areas are often spaced ¼ mile, ½ mile, or even further apart; it is unreasonable to expect people to walk that far to cross the street. Nor do signalized intersections offer complete safety protection benefits to pedestrians, due to the many added turning conflicts at large suburban intersections.

Many of these changes can be made through spot improvement programs. Many are relatively inexpensive; it is not necessary to wait for a reconstruction to create a complete street. More substantial retrofits may require reconstruction (see the Model Project section at the end of this chapter). A planned surface repaving project is an excellent time to retrofit the corridor to add comfort, convenience, safety, aesthetics, and economic value.

## RE-ESTABLISHING STREET NETWORKS

Chapter 4, “Street Networks and Classifications,” details the need for interconnected street networks with short blocks. Much of today’s suburban landscape was built in isolated pods: residential subdivisions, business parks, shopping centers, and schools that are poorly connected to neighboring properties. These pods create barriers to getting around other than in a car, because they create long distances between destinations and because the pods are often surrounded by sound walls, fences or berms, literally blocking potential bicycle and walking routes. These pods don’t work well for auto traffic either, since they force all traffic onto busy streets rather than allowing connection and local circulation through local streets.



Connecting cul-de-sacs (Credit: Marty Bruinsma)

*“I can travel by walking but not easily because I live in a gated community with only two inconvenient entry/exit gates.”*

- (Broward Complete Streets survey respondent)

To create a vibrant suburb that will thrive in new conditions, direct connections must be created or re-created to enable efficient, direct travel by everyone. That means establishing or re-establishing street and sidewalk networks.

Re/establishing a street network can be more challenging, particularly when right-of-way has not been preserved. Some local governments have purchased homes at the end of cul-de-





sacs, put the connectors in, and then sold the homes. In cases where a local government is still developing suburbs, it should make connectivity a fundamental priority by following the principles in Chapter 4, "Street Networks and Classifications."



Cul-de-sacs break up connections.  
 (Credit: PB Americas, *EWA Connection Study*, May 2009)



Pedestrian networks can be re-established by opening noise walls and connecting new sidewalks. (Credit: PB Americas, *EWA Connection Study*, May 2009)



*Pedestrian connector path between buildings, Coconut Creek Promenade*  
 (Credit: Kimley-Horn and Associates, Inc.)

*Bicyclists on a connector path between two street rights-of-way*  
 (Credit: Kimley-Horn and Associates, Inc.)





## SECOND-GENERATION LAND USE ALONG TRANSFORMED STREETS

Not only streets will need to change in suburbia; many land uses are obsolete and/or no longer economically viable. However, street improvements generally should come before land use change in suburban retrofitting. This is because *high-quality land uses come to high-quality streets*. Very rarely will high-quality land uses come to low-quality streets.

The street and the land use work together and determine whether a place is attractive and draws people and investment. To that end, communities retrofitting older suburban areas would do well to use the following three principles:

### 1. Focus new investment in nodes on streets.

In most of suburbia, there will not be enough investment all at once to transform whole corridors. Identify and focus investment at individual nodes. A good example of this strategy is the Downtown Coral Springs plan centered on the important node at University Drive and Sample Road.

### 2. Focus revitalization efforts on creating genuine places in those nodes: compact, mixed-use, transit-oriented, and at least internally walkable.

Plan for and enable neighborhood-serving commercial districts. Where necessary, rezone from automobile-oriented commercial sites (gas stations, convenience stores, and fast food outlets). These car plazas are designed for, and dependent on, vehicular access and offer no relationships with the nearby residential areas. They absorb retail potential and will tend to discourage development of neighborhood-serving commercial districts.

### 3. Carefully detail the desired outcomes.

It is vital that retrofit efforts pay attention to the details described in the individual chapters of the *Broward Complete Streets Guidelines*. Adopting well-intentioned policy goals is not enough. There must be follow through by incorporating the vision's details in the design and construction of the project. Desired outcomes may include reduce vehicle miles traveled (VMT), reduce greenhouse gas emissions (GHG), increase transit ridership, and development consistent with established smart growth principles.





Infill development between nodes that follows the principles of this document will help to connect the nodes into livable neighborhoods.



*Conversion of shopping center to a neighborhood  
 (Credit: Michele Weisbart)*

## SETTING PRIORITIES AND PHASING

The primary challenge in retrofitting suburbia is less fixing the infrastructure and more creating economically sustainable places, with the emphasis on place.

As suggested above, the priority should be to begin by creating vibrant nodes. Local jurisdictions should not allow themselves to be daunted by the scale of the retrofit challenge.

Take advantage of opportunities. Only a small sample of current opportunities are listed below.

- The growing popularity of smart growth and place-making as development concepts.
- Increased interest for in-town living.
- Public-private partnerships.
- Transit-oriented development (TOD).

As with street retrofits, creating places can be done incrementally. The images on the next page show such an incremental process.





*Example of a transformed suburban street (Credit: Urban Advantage, Inc.)*





## MODEL PROJECT: BRIDGEPORT WAY

Before reconstruction, Bridgeport Way in University Place, Washington, was a classic auto-oriented suburban arterial street. The existing street had a high accident rate, and did not support economic growth; it attracted neither people nor investment.



*Bridgeport Way before transformation: University Place, WA (Credit: Dan Burden)*

After reconstruction, the corridor served more people, was far safer, and drew economic development.



*Bridgeport Way after transformation: University Place, WA  
(Credit: Michael Wallwork)*



Safety improved significantly:

- 7% speed reduction (35.3 -> 33.4 mph)
- 60% crash reduction (19 -> 8 in five blocks)

Bridgeport Way illustrates the principle described above of leading with a street retrofit, then following with bringing higher-quality land uses to the now high-quality street.

The City of University Place identified empty, redevelopable space along the corridor and at intersections. The photo below shows ample space that has been used for parking, building setbacks, and other uses.



*Bridgeport Way transformation opportunities: University Place, WA  
(Credit: Michael Wallwork)*





The City planned for new development that would create a new *place*, as shown in the rendering below.



*Bridgeport Way plan: University Place, WA (Credit: City of University Place)*

## ADDITIONAL RESOURCES

American Planning Association (APA). *The Transportation / Land Use Connection*, APA Report Number 546/547, June 2007.

Institute of Transportation Engineers. *Smart Growth Transportation Guidelines*, 2010.

ICF International with Nelson\Nygaard Consulting Associates and Reid Ewing. *Transportation Study of the U.S. Route 1 College Park Corridor*, July 14, 2008.

PB Americas, *EWA Connectivity Study*, May 2009.

Dunham-Jones, E. and Williamson, J., *Retrofitting Suburbia: Urban Design Solutions for Redesigning Suburbs*, John Wiley & Sons, 2009. This book focuses more on retrofitting parcels of land, rather than on the streets between them. Nonetheless, it is an excellent resource.