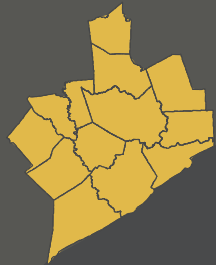




**BUILDING BETTER**

# BIKEWAYS

A Planning Guide for the Houston-Galveston Region



Houston-Galveston  
Area Council  
2009

H-GAC is the voluntary association of local governments in the 13-county Gulf Coast Planning region of Texas. H-GAC also serves as the Metropolitan Planning Organization (MPO) for the eight-county Houston-Galveston area. As the MPO, H-GAC is responsible for developing and maintaining the long-range Regional Transportation Plan (RTP). The RTP identifies and prioritizes transportation projects needed to improve mobility in the region, including bikeways.

# bike·way

(\bîk-wâ\)

A generic term for any road, street, path, or way which in some manner is specifically designated for bicycle travel, regardless of whether such facilities are designated for the exclusive use of bicycles or are to be shared with other transportation modes.

Source: Guide for the Development of Bicycle Facilities. American Association of State Highway and Transportation Officials (AASHTO), 1999.



People throughout the region and across the nation are looking for more occasions to get out of their cars and onto their bicycles. The increased interest in cycling is leading many community leaders, developers, and transportation agencies to ask the question,

“How do we make our communities more bicycle friendly?”

Unfortunately, bikeway planning isn't “just like riding a bike” — the process is not necessarily intuitive and mastery takes practice. This guide offers fundamentals of bikeway planning for those new to the topic and introduces emerging trends and best practices for those seeking new ideas and out-of-the-box solutions.

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By 2035, the eight-county Houston-Galveston region is expected to grow by an additional **3.5 million** people, posing significant challenges to the region's transportation system. A safe and connected bikeway network is one key strategy to improve transportation choice, mobility, and quality of life as the region grows.



Why are more people choosing to bike?



Concern for the environment has influenced many people to choose bicycling as a clean and “green” transportation option.

Bicycling is accessible to people of any age or income, providing a cost-effective transportation option for those who do not have access to a vehicle.

Bicycling provides an opportunity to introduce physical activity into routine trips.

Many people are simply tired of spending so much time in their cars and stuck in traffic. Riding a bike to the store, coffee shop, a friend’s house, a park, or work is an appealing alternative.



### Environment



### Increased Access



### Health



### Quality of Life

**12** MILLION TONS

Replacing short car trips with bicycle trips can prevent more than 12 million tons of carbon dioxide from being released into the air.

**15** POUNDS

A short, four-mile round trip by bicycle keeps about 15 pounds of pollutants out of the air we breathe.

**54%** OF AMERICANS

54% of Americans are concerned about air pollution from transportation sources in their community, 45% are concerned about water pollution from transportation sources in their community, and 59% are concerned about the effect of vehicle emissions on global weather patterns.

**3** MILES

In the Houston-Galveston area, 26% of vehicle trips are three miles or less — a reasonable biking distance.

**8%** OF HOUSEHOLDS

8% of households in the Houston-Galveston Region do not have access to a motor vehicle, and school-aged children who are too young to drive represent 16% of the region’s population.

**5,000** PASSENGERS

METRO’s Bikes on Busses Program recorded a monthly average of more than 5,000 passengers boarding busses with bicycles in 2009.

**3** HOURS

Three hours of bicycling per week can reduce a person’s risk of heart disease and stroke by 50%.

**30** MINUTES

The Centers for Disease Control (CDC) recommends 30 minutes of moderate exercise on most days, which can be accommodated by a five-mile bike ride.

**2 TO 3** POUNDS

Youth who commute to school by motorized transport gain an average of 2 to 3 pounds per year more than those who actively commute to school.

**1.15** BILLION

**BICYCLE OUTINGS**

Young Americans, ages 6 to 17, say bicycling is their favorite outdoor activity. In 2008, this group enjoyed 1.15 billion bicycling outings, averaging 74 outings per bicyclist.

**TOP 10** ACTIVITIES

Bicycling is one of the top 10 most popular recreational activities in the U.S. — more Americans ride bicycles than ski, play tennis, or golf combined.

**35%** OF AMERICANS

More than 35% of Americans stated the availability of bikeways, walking paths, and sidewalks was important in choosing where to live.

# Planning Principles

Bikeway planning occurs at all scales from a single development project all the way to the neighborhood, district, city, county, and region. Though each plan has unique goals and circumstances, and cyclists differ in skill and purpose, there are key planning principles that consider the fundamental needs of all cyclists. These principles can be widely applied to guide bikeway planning efforts.

## Safety

Providing designated space for cyclists and minimizing conflicts with motor vehicles are critical elements to developing a safe bicycle network. Other important safety considerations include traffic volume, vehicular speed, sight distance, pavement condition, and intersection treatments.

## Convenience

Bike routes should be continuous and link to other bikeways to provide direct and seamless travel. Gaps in the network, lengthy detours, frequent stops, and physical barriers such as highway and bayou crossings can be discouraging for cyclists.



## Regional Corridors

Long-distance bikeways can provide continuous travel throughout the region. Because they require continuous right-of-way, regional corridors are often found along bayous and utility easements and may not provide direct access to destinations alone. As a result, creating connections between regional corridors, the on-street bikeway network, and key destinations is a critical strategy for improving non-motorized travel in the region.



## Optimize All Transportation Investments

Roadway construction, widening, and maintenance projects can provide opportunities to add bicycle and pedestrian accommodations. By incorporating the needs of bicyclists and pedestrians in initial project design, roadway projects can improve safety and mobility for all users in a cost-effective manner.

### Access

Cyclists want access to the same destinations as everyone else. By connecting destinations throughout residential, commercial, and recreational areas, bikeways can serve as key transportation routes.

### Comfort

Smooth pavement, designated operating space, lighting, landscaping, and directional signage improve the sense of comfort for cyclists. Additional amenities such as drinking fountains, restrooms, and shaded seating areas are a welcome addition on routes where cyclists may be traveling longer distances.

### Special Districts

Areas within the region have been identified in H-GAC's *Pedestrian and Bicyclist Special District Study* as being conducive to walking and bicycling based on demographic and physical characteristics. Improvements in special districts focus on improving circulation for pedestrians and bicyclists by providing a connected network of local bikeways and pedestrian improvements.

### Livable Centers

Livable Centers are destinations with a mix of land uses allowing people to live, work, and play with less reliance on their cars. By concentrating a variety of activities together in a small area, cyclists are able to conveniently access multiple destinations with short trips. Safe connections to surrounding areas, secure bicycle parking, and shower facilities are key elements for accommodating cyclists in Livable Centers.



H-GAC's Pedestrian-Bicyclist Program focuses on **4** primary strategies to improve mobility for pedestrians and cyclists throughout the region.



## Knowing Your Users

While all bicyclists need safe, accessible bikeways, not all bicyclists are the same. The American Association of State Highway and Transportation Officials (AASHTO) identifies three types of cyclists that require different planning considerations based on ability, experience, and comfort level.



**A** Advanced or experienced cyclists are comfortable riding with motor vehicles in traffic and want direct, fast, and convenient access to destinations. Advanced cyclists typically prefer on-street bikeways but still require adequate operating space on a roadway to minimize conflicts with motor vehicles.

### Goals

As with all planning processes, bikeway planning starts with identifying what the community or neighborhood wants to achieve. Goals guide the overall planning and implementation process and help ensure that the community understands the intended outcome of the planning effort.

### Existing Conditions

An inventory of existing conditions provides critical information that will be used to identify recommendations and improvements, including the examination of elements such as existing bike routes, vehicular traffic counts, pedestrian and bicyclist counts, roadway conditions, vehicular speeds, signalized intersections, existing traffic generators, and planned transportation improvements.

### Public Involvement

As with all planning efforts, the public should be engaged in bikeway planning to ensure that the needs and desires of the community are met. Local cycling clubs, advocacy organizations, and neighborhood groups can identify existing issues as well as provide guidance on preferred cycling routes.

### Destinations

Understanding where people want to go is an important starting point. Destinations such as employment centers, schools, parks, civic buildings, transit stops, and retail centers should be identified as priorities for providing safe bicycle access.

## PLANNING PROCESS







**B** Basic cyclists are less confident than advanced cyclists. They typically select routes where cyclists have designated operating space such as bike lanes, shared use paths, or neighborhood streets with low traffic volumes and speeds.



**C** Children benefit from having routes that provide access to destinations such as schools, parks, and libraries. Child cyclists are best accommodated on shared use paths and neighborhood streets with low traffic volumes and speeds.

### Barriers and Constraints

Bikeway planning rarely begins with a clean slate. As a result, the successful implementation of a bikeway plan requires a keen understanding of barriers and constraints. Barriers can be physical, such as a freeway crossing or bayou, and can also include things like right-of-way availability, funding, or community opposition.

### Route Selection

Determining goals, evaluating existing conditions, identifying destinations, and overcoming barriers can lead to the selection of routes that are safe, convenient, accessible, and comfortable. Proposed routes should be checked through field work to evaluate suitability.

### Implementation

An implementation strategy is key to success and requires that improvements be prioritized and given an estimated time-frame for completion. Funding sources and responsible agencies should also be identified.

### Evaluation

Regular evaluation helps determine whether the planning goals are being achieved and whether there are additional issues that need to be addressed. Evaluation also provides an opportunity for the community to celebrate progress.

## PLANNING PROCESS



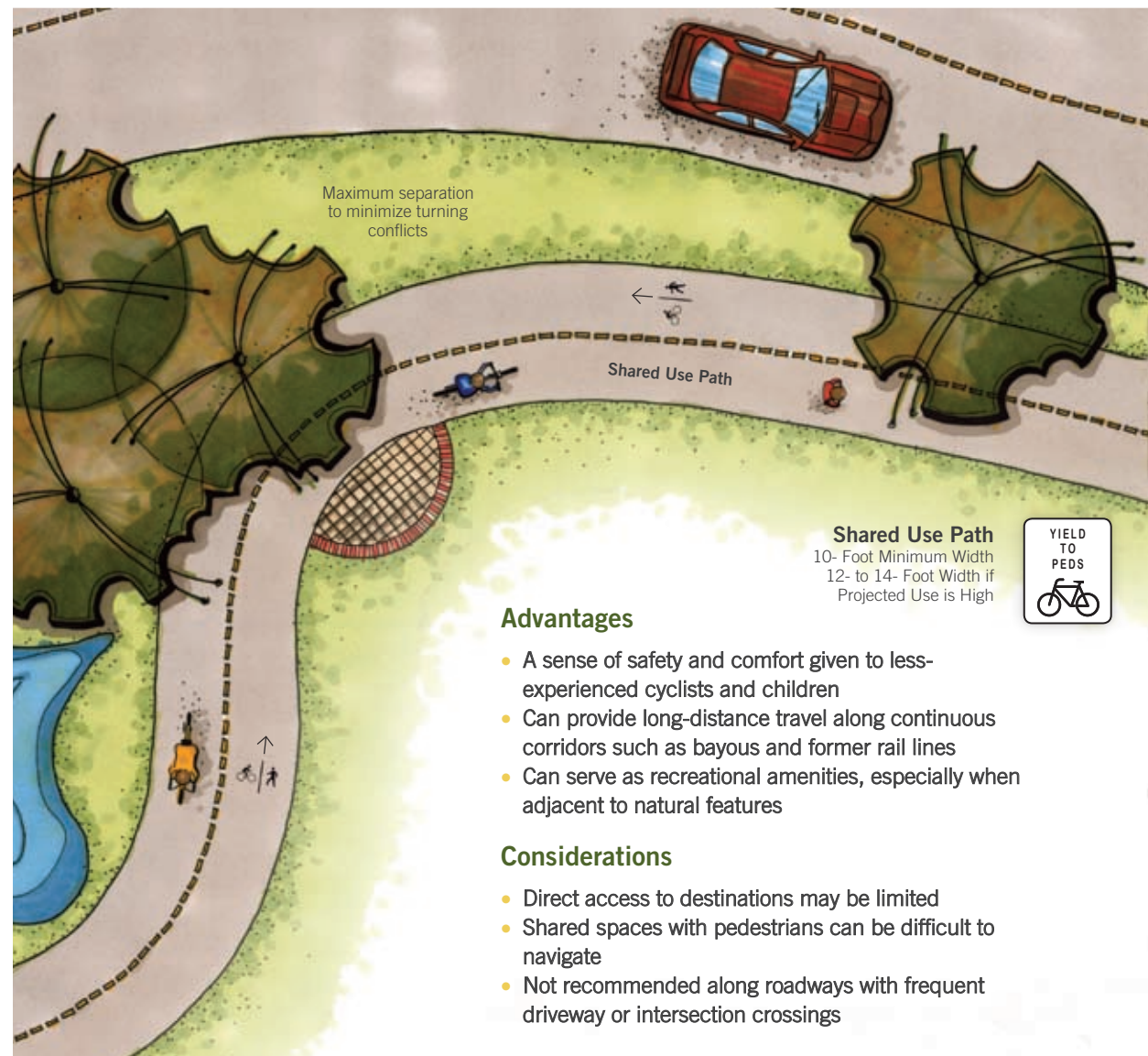
# Bikeway Types

A bikeway network will be comprised of four primary bikeway types, none of which provide a one-size-fits-all solution. Different bikeway types are favored by different cyclists, and each performs best in certain contexts. The bikeway types defined here should be used as building blocks in the bikeway network, working together to provide safe and comfortable operating space for cyclists in a variety of settings.

Bikeway definitions and recommended dimensions are based on guidelines from AASHTO's Guide for the Development of Bicycle Facilities and H-GAC's Regional Bikeway Plan.

## Shared Use Path

A bikeway physically separated from motorized vehicular traffic by an open space or barrier and either within the roadway right-of-way or within an independent right-of-way. Shared use paths may also be used by pedestrians, skaters, wheelchair users, joggers, and other non-motorized users.



### Advantages

- A sense of safety and comfort given to less-experienced cyclists and children
- Can provide long-distance travel along continuous corridors such as bayous and former rail lines
- Can serve as recreational amenities, especially when adjacent to natural features

### Considerations

- Direct access to destinations may be limited
- Shared spaces with pedestrians can be difficult to navigate
- Not recommended along roadways with frequent driveway or intersection crossings

## Signed Shoulder Bike Route

The portion of the roadway contiguous with the traveled way for accommodation of stopped vehicles and for emergency use. In Texas, bicyclists are permitted to ride on the roadway's shoulder, and shoulders may be signed as bike routes.



### Advantages

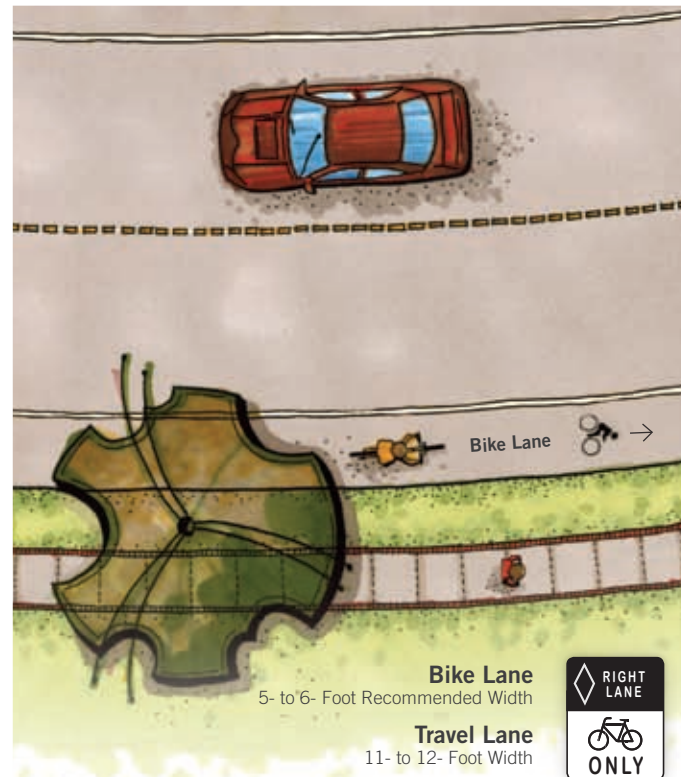
- Improves safety for motorists while also providing space for cyclists
- Accommodates cyclists in rural areas

### Considerations

- Vehicular speed and sight-distance must be considered before designating as bike routes
- Rumble strips used to warn motorists often interfere with operating space for cyclists unless properly designed

## Bicycle Lane or Bike Lane

A portion of a roadway which is designated by striping, signage, and pavement markings for the preferential or exclusive use by bicyclists.



### Advantages

- Increased comfort for both cyclists and motorists through defined spaces
- Fast and direct travel options to destinations

### Considerations

- Bike lanes must be clear of hazards such as parked cars, sewer grates, road seams, and debris
- Changing roadway conditions and contexts can pose design challenges when right-of-way is limited

## Signed Shared Roadway

A shared roadway which is designated by signage as a preferred route for bicycle use. Shared roadways with multiple lanes often have a curb lane that is wider than other travel lanes to accommodate shared bicycle and vehicular traffic. This is called a wide curb lane or wide outside lane.



### Advantages

- Few or no modifications to existing roadways creates a cost-effective project
- Roadway debris is swept to the curb by motor vehicle movement, keeping the lane clear for cyclists

### Considerations

- Motorists and cyclists must share the lane, which can be uncomfortable for some motorists and less-experienced cyclists
- Wide lanes may inadvertently encourage faster vehicle speeds

# Emerging Trends

The field of bikeway planning and design is constantly evolving and responding to new innovations to increase safety and comfort for cyclists. Emerging trends described here represent treatments that are gaining interest around the country, but are not yet widely applied and may not yet be acknowledged in national design manuals.

## Sharrows

A sharrow is a pavement marking used to indicate a shared lane. The marking, which includes a bicycle with a double chevron symbol, guides cyclists to ride in the correct direction and encourages proper positioning on the roadway away from parked cars and gutters. The sharrow also provides a visible reminder that the lane is intended to be shared by motorists and cyclists.



## Bicycle Boulevards

The bicycle boulevard has emerged in several North American cities as a preferred bikeway type because it can comfortably accommodate cyclists of all abilities and gives cyclists an alternative to busy roadways, while also providing connections to local destinations. Bicycle boulevards are defined as, “low-volume and low-speed streets that have been optimized for bicycle travel through treatments such as traffic calming and traffic reduction, signage and pavement markings, and intersection crossing treatments.” Bicycle boulevards are most successful when applied in areas with a traditional grid network of streets so that vehicular through traffic can be routed to nearby parallel streets.

### CHARACTERISTICS OF BIKE BOULEVARDS

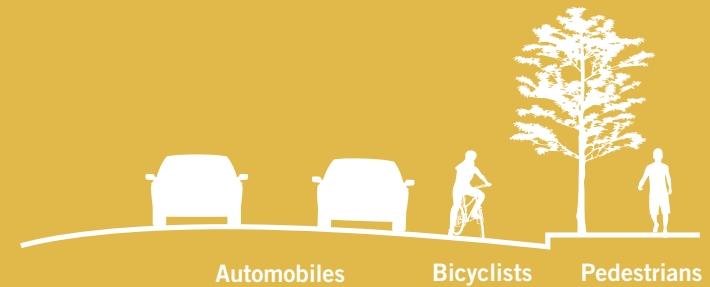
- Locations on streets with low vehicular traffic volumes and speeds
- Traffic calming measures to discourage vehicular through traffic and give preference to cyclists and pedestrians
- Well-marked routes with signage and pavement markings
- Intersections which are safe and minimize delay for cyclists
- Streets which are continuous and connect to destinations and other bikeways

Source: Fundamentals of Bicycle Boulevard Planning and Design. Initiative for Bicycle and Pedestrian Innovation and Alta Planning and Design, July 2009.



## Complete Streets

“Complete Streets” is a movement to ensure that roadways provide for the mobility and safety of all users including bicyclists, pedestrians, motorists, and transit users through more effective design. Jurisdictions around the country have committed to building Complete Streets through legislation, internal policy, and revised design manuals.



### Designated Pedestrian Lane

Conflicts between cyclists and pedestrians on well-traveled shared use paths can be minimized when a separate lane is provided for pedestrians. Two-way pedestrian traffic is contained within the same lane adjacent to the bikeway. Pavement markings and signage are used to clearly demarcate space for cyclists and pedestrians.



### Neighborhood Traffic Circles

Neighborhood traffic circles are raised circular islands applied to intersections of low-speed residential streets in place of stop signs. The City of Seattle recorded a 94 percent reduction in crashes after traffic circles were installed on local streets.\* Cyclists benefit from neighborhood traffic circles because conflict points are reduced, vehicular traffic slows, and cyclists are allowed to yield rather than stop at the intersection. Compatibility with emergency vehicles is important to the design of traffic circles and proper landscaping improves visual appeal and neighborhood acceptance.

\*Source: BIKESAFE: Bicycle Countermeasure Selection System



### Bike Boxes

The bike box is a pavement marking that provides a designated space, or "box," for cyclists waiting at a traffic signal in front of stopped cars. Positioning cyclists at the front of the queue makes cyclists more visible and prevents motorists from making a right turn and colliding with a cyclist going straight through the intersection (also known as "right-hook" collisions). Vehicular right turns on red should not be allowed at intersections with bike boxes.

An alternative to the bike box is a recessed stop bar which requires motorists to stop in advance of the intersection when a bike lane is present. This ensures that a cyclist in the bike lane is not immediately beside the motorist while waiting at a traffic signal.



### Bicycle Activated Signal

Signalized intersections can be improved for bicyclists by including detectors under the pavement that activate a green light when cyclists approach. Standard detection devices used for motor vehicles can be used if calibrated properly to detect cyclists. The addition of pavement markings can help show cyclists where to wait in order to activate the signal. Push buttons can also be used but should be within easy reach of cyclists. Along routes with very high volumes of cyclists, some cities have started to include bicycle signal heads with a bicycle-only signal phase.



# Implementation

Implementation is an ongoing process that requires commitment well beyond project design and construction. Broad support of community members, local staff, elected officials, and other partners is needed long-term to ensure that bikeways are maintained and the network is expanded. Implementation should be guided by local policies and planning documents that articulate the goals of the community and provide a foundation for tools such as ordinances, design manuals, dedication requirements, and budgetary decisions.

## General Maintenance

When planning and budgeting for the prospect of a new bikeway facility, local governments must also be sure to allocate adequate funding for ongoing, routine maintenance.

- Minor Surface Repairs
- Roadway Debris Clearance
- Landscaping
- Litter Removal
- Facility Cleanup

Good design results in quality facilities and lower maintenance costs.

The cost of building one linear mile of bikeway or trail is highly variable depending on local conditions and terrain plus the specific design and improvements. The good news for the H-GAC region is that most of the area is relatively flat, making it a lower-cost environment for bikeway construction compared to many places. Careful drainage planning is also essential depending on local rainfall conditions and terrain. Use of recycled materials should also be considered where this will bring down overall costs, including reduced maintenance needs after installation.



## Resurfacing

Every bikeway will require resurfacing and/or major rehabilitation, similar to streets and other infrastructure. The time frame varies depending on surface material and maintenance regimen.

## Security

Bikeways should be designed as well-lit and safe environments, but sufficient resources need to be budgeted for police visibility and quick response along paths and trailhead locations.

## Shared Costs

Bikeways along public parkland, rights-of-way, school campuses, or other publicly-maintained areas may benefit from general mowing and maintenance that already occurs regularly.

## Volunteer Resources

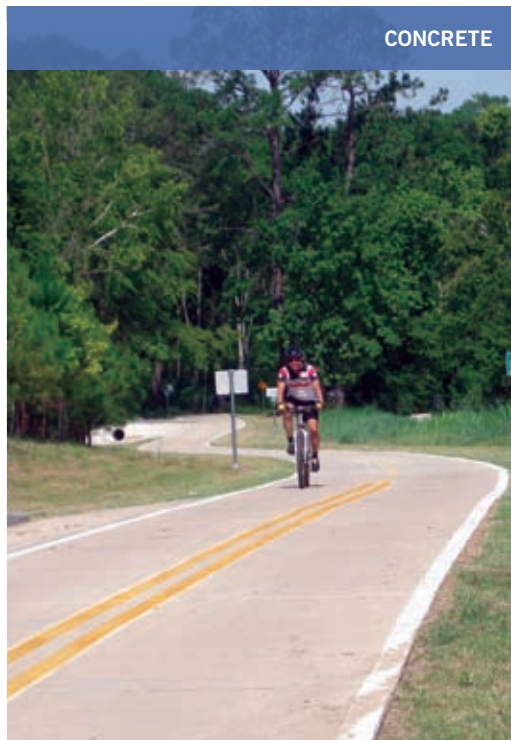
Segments near neighborhoods and commercial areas may particularly lend themselves to volunteer mowing and upkeep assistance (such as through “Adopt-a-Path” initiatives or periodic service projects).

The choice of surface type for a bikeway is a primary determinant of project cost. While asphalt surfacing costs less up front, concrete will normally be much more durable and have a longer life before interim patching and eventual resurfacing is necessary. Many cyclists also prefer smooth concrete surfaces, and primary routes in a bikeway network are often designed for concrete construction given their expected utilization level. Additionally, hard surfaces are usually best near waterways and others areas subject to periodic flooding and potential erosion, which is an issue in much of the H-GAC region.

Secondary routes sometimes have alternative surface types to concrete depending on their location, length, and anticipated use, especially if intended for shared use by walkers and joggers. A crushed gravel surface is another option that can be comparable or slightly lower in cost than asphalt. However, an “edge restraint” is usually needed to combat erosion, which can raise costs in addition to on-going maintenance costs. Continuous maintenance of crushed gravel trails may end up making a crushed gravel design cost more than an asphalt surface.



ASPHALT



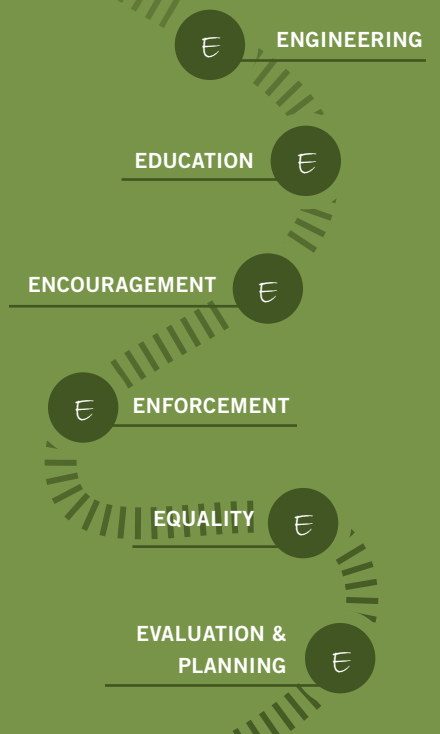
CONCRETE



CRUSHED GRAVEL

## The 6 E's of Creating Bicycle Friendly Communities

Creating a safe bicycle network requires more than good engineering and the designation of safe routes. The League of American Bicyclists uses six E's to evaluate communities for consideration in the Bicycle Friendly Communities program.



## Getting Started

An action agenda might encompass the following elements:

■ Including bikeway planning principles and general design guidelines into new plans, policies, and ordinances.

■ Constructing a first signature project as a system “backbone” and to generate community interest and enthusiasm.

1

## Step 1 Plans and Policies



Local plans and other official documents establish public policy and basic direction for government initiatives. In particular, thoroughfare plans, in tandem with city and county subdivision regulations, can establish street cross section standards that include bikeway features or other accommodations (narrower vehicle lanes, wide shoulders, wider sidewalks, etc.). These standards are then directly applied through public construction projects, as well as when private developments build planned thoroughfare segments through or along the perimeter of their sites.

### Physical Plans

Address a range of general or specific issues, placing bikeway planning in the context of community-wide issues.

- Local Comprehensive Plans
- Transportation and Thoroughfare Plans
- Parks & Recreation and Trail Master Plans

### Financial Plans

Establish fiscal policy and project prioritization.

- Annual Budget Documents
- Multi-Year Capital Improvement Plans

2

## Step 2 Development Ordinances



Ordinances establish mandates or incentives that govern development practices, particularly through the standards they establish for various aspects of site design. The key to such regulatory approaches is to establish, through the comprehensive planning process or other local studies, a demonstrated need and community desire for safer bicycle circulation and enhanced access to commercial areas and public facilities by modes other than the private automobile.

### Mandates

Require that all new developments (and significant redevelopment projects) address on-site bicycle circulation, bike parking locations, and parking lot safety, among other criteria.

- Example Standard: On-site bicycle parking located no farther than the closest car parking space.

### Incentives

Encourage bike-friendly design through density/intensity bonuses or a point system, as an alternative or supplement to mandates.

#### DENSITY/INTENSITY BONUSES

Allows for increased density (number of residential units) or intensity (increased square footage or height of non-residential buildings) — beyond what is normally permitted — if bike accommodations are included in the site design.

- Example Standard: Dedicated access and circulation paths from site perimeters to on-site destinations.

#### POINT SYSTEM

Provides a range of ways to achieve overall compliance, requiring applicants to meet specified “base” standards, and then a certain point total must be reached by choosing from among a menu of “value-added” options.

- Bike-related amenities could be included as base standards or as optional items.
- Example Standard: Direct links to off-site public bikeways.

Local ordinances should create a direct link between any bike-friendly features required by mandates or encouraged by incentives and the community benefits that would be gained. Such benefits may include fewer vehicle trips generated, reduced vehicular parking demand, greater transit use by bike commuters, reduced vehicular emissions, etc. For example, provision of on-site bike parking can be rewarded with a reduced off-street parking requirement.



Conducting inventories and prioritizing intersections in the community that are heavily used by cyclists so that safety improvements can be targeted.

Investigating, in conjunction with neighboring cities or other entities, opportunities for continuous linkages across jurisdictional lines.

Exploring the possibility and logistics of incorporating land dedication requirements or other supportive development standards in local ordinances.

Designing and printing guides and/or maps for the initial bikeway segments, along with an interactive website.



Land dedication requirements and easements can be used to reserve linear corridors for bikeway purposes as recommended by the National Parks Service.

### Land Dedication Requirements

Preserve rights-of-way for future trail and bikeway segments based on an adopted network plan, similar to thoroughfare planning practices and parkland dedication requirements.

#### FAVORABLE CIRCUMSTANCES

- Significant growth and new land development occurring.
- The local government has a strong park/trail master plan to guide the development of new facilities.
- Area developers have typically complied well with local development ordinances.

#### UNFAVORABLE CIRCUMSTANCES

- The dedication ordinance could be difficult and costly to administer.
- The local government does not have adequate resources to pay for the maintenance of newly dedicated/acquired lands.
- The cost of required dedications could become a deterrent to new development.

### Easements

Mechanism for private or public land owners to allow entry to their property for a specific purpose. A public agency or other entity can then develop and maintain a bikeway through part of a property without needing to purchase the entire tract. Permanent easements “run with the land” and are not affected by changes in ownership.

#### FAVORABLE CIRCUMSTANCES

- Substantial cost savings in acquiring an easement rather than land in fee simple (full purchase).
- The easement is in perpetuity (versus easement arrangements that grant access only for a fixed number of years).
- The granting landowner is already a public entity, and adding public use would be easy.

#### UNFAVORABLE CIRCUMSTANCES

- The granting landowner is cautious of government and/or public use.
- The landowner’s terms and conditions would prove too restrictive to provide a reasonable amount of public access and use.
- The local government does not have adequate staff to effectively manage the easement to prevent negative impacts on the landowner.



### Optimizing Public Property via Easements

The H-GAC region has numerous special districts focused on drainage and flood control needs, especially given annual rainfall in the area and relatively flat terrain criss-crossed by creeks and bayous. Such districts typically have jurisdiction along these waterways for construction and maintenance purposes. In these cases, easements are a vehicle to enable one public agency, such as a municipality, to obtain certain rights related to another public agency’s property. Most special districts do not have a recreational mandate or the capabilities or staffing to manage public use of a path or bikeway within their property, so a city or other entity — via an easement — can fulfill this role in partnership with the district.

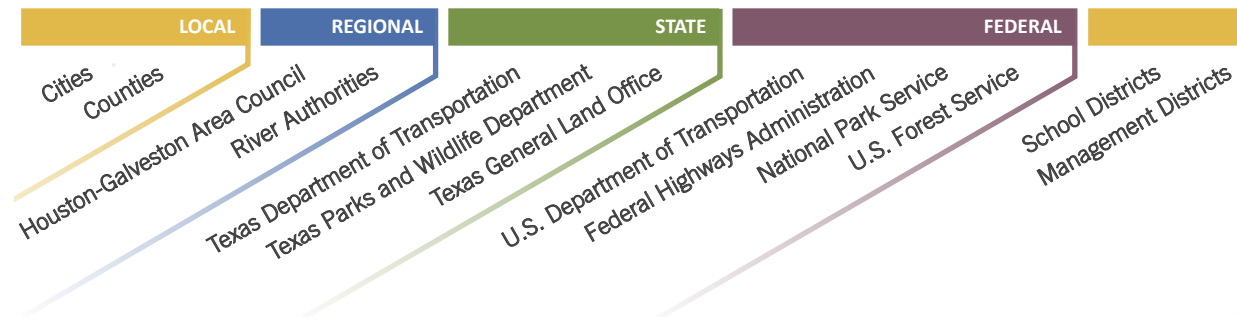
# Resources

In most jurisdictions bikeway implementation requires coordinated efforts between land use and transportation planning, traffic engineering, public works, and parks personnel, often with the involvement of other public and private partners. Beyond formal partnerships, community outreach efforts are essential, from initial design through ribbon-cutting day and beyond, to raise public awareness of bikeway facilities and associated amenities.

## Addressing Neighborhood Concerns

The Rails-to-Trails Conservancy offers tips for working with adjacent property owners:

Promptly respond to problems, such as unauthorized motorized vehicle use, vandalism, and graffiti. Consistent quality upkeep will build community confidence in the ability to manage this and future facilities.



Local partners are often the most valuable resource in implementation.

## Community Outreach Ideas

- Interactive web pages
- Trail maps and bikeway literature
- Newsletter
- Local newspaper column
- Bicycling and fitness groups
- Bikeway tours
- “Name the Path” poster/logo contests
- Bike-a-thons and walk-a-thons
- Photo competitions
- Kids parade of decorated bicycles
- Designated volunteer work days

## Volunteerism

Many communities also have a potentially significant volunteer base that would be willing to help with fundraising, construction labor, and maintenance. Appropriate aspects of bikeway projects should be broken down into enough component parts that a business, organization, or individual could potentially sponsor a particular, tangible item, or an overall trailhead location. “Hands-on” support can occur through service projects of the type frequently undertaken by community organizations such as those listed. In-kind donations of labor, materials, or property can also prove highly valuable to implementation efforts.

## AMENITY ITEMS FOR POTENTIAL SPONSORSHIP

- |                   |                                 |
|-------------------|---------------------------------|
| • Bike racks      | • Map/brochures stands          |
| • Benches         | • Exercise/stretching equipment |
| • Picnic tables   | • Shade/rain structures         |
| • Water fountains | • Landscaping                   |
| • Restrooms       |                                 |
| • Signage         |                                 |

■ Maintain the facility on a regular basis, and consider involving citizens in upkeep with volunteer work groups and/or “Adopt-a-Path” programs.

■ Provide a specific contact person for adjacent landowners to contact if any specific problems arise.

■ Consider scheduling regular meetings to receive input from users, residents, and landowners.

■ Invite landowners on a bikeway tour led by local staff or someone else who is involved with facility management or planning.

■ Make sure adequate facilities, such as restrooms and drinking fountains, are provided so that adjacent landowners are assured that users will stay on the facility.

#### SPECIAL DISTRICTS

Drainage  
Flood Control  
Levee Improvement  
Municipal Utility  
Economic Development Corporations

#### LOCAL ORGANIZATION AND SUPPORT

Chambers of Commerce  
Convention and Visitors Bureaus  
Neighborhood Groups  
Homeowners Associations  
Individual Property Owners

#### SERVICE / CHARITABLE

Boy Scouts and Girl Scouts  
Keep Texas Beautiful Affiliates  
Local Foundations  
Cycling and Running Clubs

#### RECREATION

YMCA  
Bicycle and Sporting Clubs

#### LOCAL AND NATIONAL BUSINESSES

Hardware and Building Stores  
Fitness/Wellness Stores  
Pipeline Companies  
Oil/Gas/Chemical Companies  
Railroads (Rails-to-Trails)  
Utility Companies

**Partnerships**

## Additional Resources

### MANUALS

- **Bicycle Parking Guidelines**  
Association of Pedestrian and Bicycle Professionals, 2002.  
[www.apbp.org](http://www.apbp.org)
- **Fundamentals of Bicycle Boulevard Planning and Design**  
Initiative for Bicycle and Pedestrian Innovation and Alta Planning and Design, 2009.  
[www.ibpi.usp.pdx.edu](http://www.ibpi.usp.pdx.edu)
- **Guide for the Development of Bicycle Facilities**  
American Association of State Highway and Transportation Officials (AASHTO), 1999.  
[www.transportation.org](http://www.transportation.org)
- **Manual on Uniform Traffic Control Devices**  
U.S. Department of Transportation, Federal Highway Administration (FHWA)  
[www.mutcd.fhwa.dot.gov](http://www.mutcd.fhwa.dot.gov)
- **Texas Manual on Uniform Traffic Control Devices**  
Texas Department of Transportation (TxDOT), 2006.  
[www.txdot.gov/txdot\\_library/publications/tmutcd.htm](http://www.txdot.gov/txdot_library/publications/tmutcd.htm)

### ONLINE TOOLS

- **Benefit-Cost Analysis of Bicycle Facilities**  
[www.bicyclinginfo.org/bikecost/index.cfm](http://www.bicyclinginfo.org/bikecost/index.cfm)
- **BIKESAFE: Bicycle Countermeasure Selection System**  
[www.bicyclinginfo.org/bikesafe/index.cfm](http://www.bicyclinginfo.org/bikesafe/index.cfm)
- **Sidepath Suitability Calculator**  
[www.bikelib.org/roads/blos/sidepathform.htm](http://www.bikelib.org/roads/blos/sidepathform.htm)

### ORGANIZATIONS AND WEB RESOURCES

- **Bikes Belong**  
[www.bikesbelong.org](http://www.bikesbelong.org)
- **League of American Bicyclists**  
[www.bikeleague.org](http://www.bikeleague.org)
- **National Center for Safe Routes to School**  
[www.saferoutesinfo.org](http://www.saferoutesinfo.org)
- **National Complete Streets Coalition**  
[www.completestreets.org](http://www.completestreets.org)
- **Pedestrian and Bicycle Information Center**  
[www.bicyclinginfo.org](http://www.bicyclinginfo.org)
- **Rails to Trails Conservancy**  
[www.railstotrails.org](http://www.railstotrails.org)

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Houston-Galveston  
Area Council

[www.h-gac.com/go/pedbike](http://www.h-gac.com/go/pedbike)

