CHAPTER 6
IMPLEMENTATION STRATEGIES



Chapter Table of Contents

FROM PLAN TO IMPLEMENTATION 6-1

COMMUNITY SUPPORT 6-2

IMPLEMENTATION CONTEXT 6-5

IMPLEMENTATION STRATEGIES 6-7

1. MANAGING PERFORMANCE AGAINST GOALS 6-9

2. PRIORITIZE AND COLLABORATE ON POLICIES AND PROGRAM 6-14

Implementation Matrix 6-16

3. PROJECT DEVELOPMENT AND IMPLEMENTATION 6-29

4. DEVELOP RESOURCE AND STAFFING NEEDS 6-36

5. LEVERAGE FUNDING OPPORTUNITIES 6-37

6. BUILD MOMENTUM THROUGH PILOT PROJECTS 6-47

7. CONNECT TO MAJOR BICYCLE THOROUGHFARES 6-72

8. ENGAGE NEIGHBORHOODS 6-82

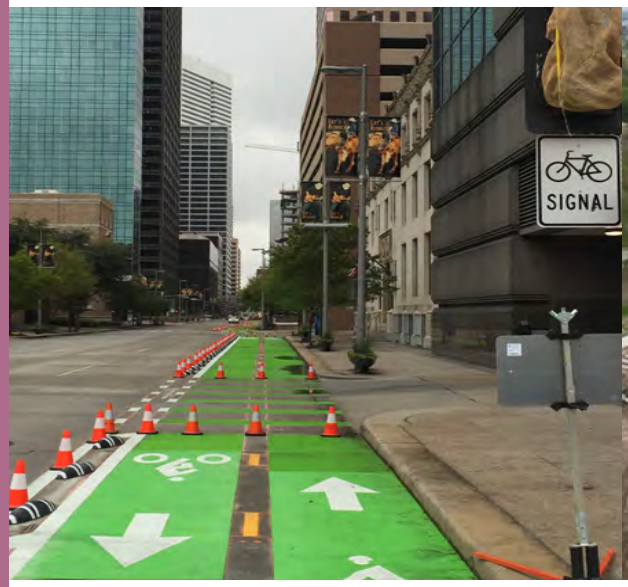
Neighborhood Planning Guide 6-83

9. PUBLIC ENGAGEMENT ON PROJECTS 6-102

HOUSTON BIKEPLAN

06

IMPLEMENTATION STRATEGIES





FROM PLAN TO IMPLEMENTATION

The Houston Bike Plan outlines a Vision for the City to become a Gold Level Bicycle Friendly Community by 2027 with a focus on improved safety, increased access to bicycling opportunities, overall ridership growth, and an expanding network of high quality, well-maintained, high-comfort bikeway facilities. **Chapter 4: Bicycle Toolbox** develops facility, policy and programmatic tools that can be implemented or leveraged to move the city toward its goals. **Chapter 5: Network Plan & Map** outlines the corridors and opportunities to expand the high-comfort bikeway network for people bicycling throughout the City of Houston.

The Bike Plan is a master plan similar to other City master plans that outline the City's long range vision, goals, and recommendations for policies, programs, and projects; and is not regulatory. Success in achieving the Plan's Vision will only be realized through effective implementation. An effective implementation approach builds on the recommendations to identify strategies that capture opportunities, support ongoing execution, manage progress against goals, and allocate resources where they can have the greatest impact. This chapter provides an overview of community support for the Plan and outlines eight key implementation strategies and supporting recommendations for the City of Houston to focus on to move forward and improve opportunities for people bicycling in Houston. Various departments within the City will need to lead many of the initiatives. Key partnerships have also been identified within many of the strategies to leverage the resources available to the City.

COMMUNITY SUPPORT

Community support is a vital component of implementation for any project. Significant effort was made to receive comments and obtain support from stakeholders, community leaders, advocates, and the general public. The outreach effort described here focused on feedback for the draft network and built upon the first phase of community engagement that focused on developing goals as described in Chapter 3. The study team, including City of Houston staff and BikeHouston, worked together to reach people and communities in Houston through a variety of methods. BikeHouston placed particular emphasis on outreach communities that were underrepresented from other methods of input and engagement. Figure 6.1 shows an overview of the engagement methods used and the level of public response for feedback on the draft plan.

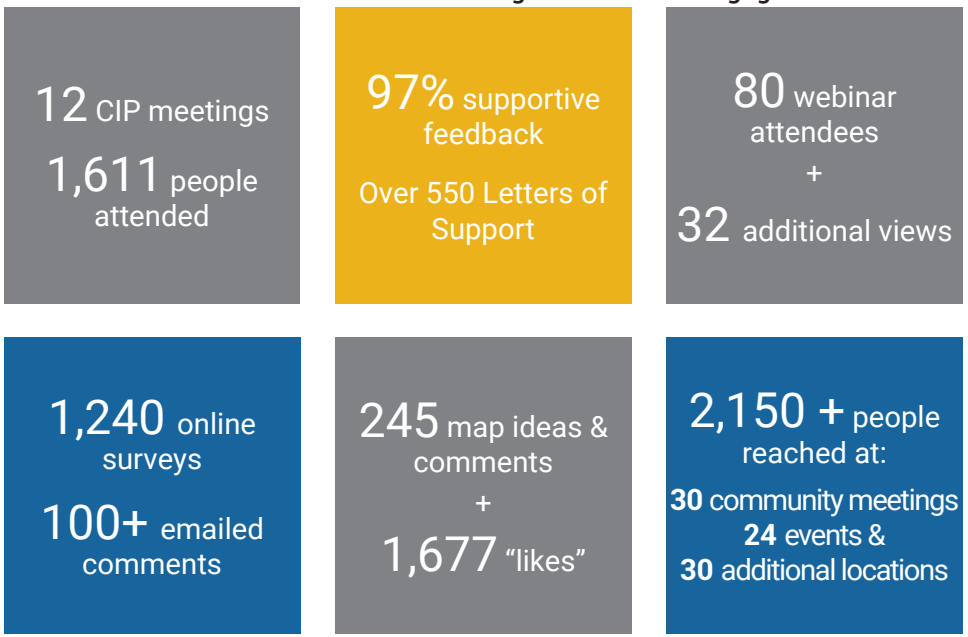
Public Meetings and Events

The study team pursued a multi-faceted approach of garnering public feedback and support by presenting at public meetings, attending existing community and civic association meetings, going to events, and engaging people during their regular activities. The input received through these methods was overwhelmingly positive. The City of Houston received a significant amount of positive feedback centered around improved safety and health as reasons to implement the Bike Plan, as well as letters of support from community organizations and management districts.

The timing of public engagement for the draft Plan coincided with the City's Capital Improvement Plan (CIP) meetings with one meeting held in each council district (two in District E) throughout the City. A short presentation about the Bike Plan was provided at each meeting, along with maps and information so people could ask questions and provide feedback. Additionally, a live webinar was hosted as an additional meeting option and was also posted on the project website for people to view at their convenience.

The City partnered with BikeHouston to extend the reach of community engagement

Figure 6.1 Public Engagement Overview



and focus on communities and people who are typically underrepresented. They attended a significant number of community meetings and events throughout the city including organized bike rides, Sunday Streets, parades, and festivals, and went to additional locations where people regularly are such as universities, transit centers, bike shops, METRO trains and buses, and more. By spending time in the community, a wide variety of people were reached and informed about the Bike Plan.

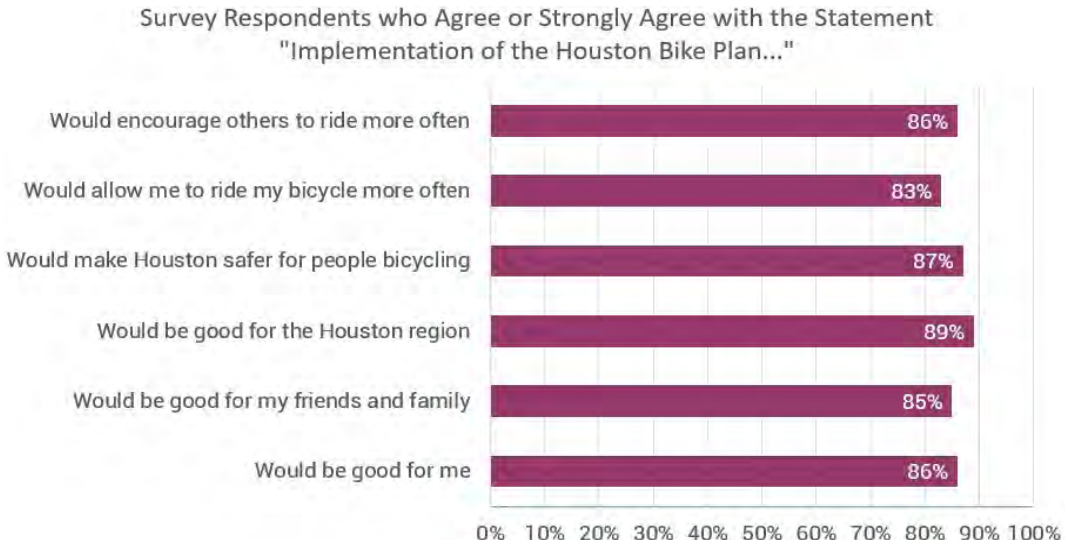
Online Resources

The draft plan, an interactive project summary, and network map were provided on the project website to provide information about the draft Bike Plan to the public. This allowed people to view the draft network in detail, understand the goals, the process of developing the plan, and proposed implementation strategies. Beyond emailing or mailing comments to the City of Houston, the website provided two tools for receiving community input:

- An online survey in English and Spanish, and
- An interactive map for participants to pinpoint ideas and allows comment on those ideas.

The online tools generated a substantial number of comments. A majority of the comments were highly positive and ranged from the importance of the Bike Plan to how the bike network will allow for safe transportation options to additional considerations for project locations and programs, and more. Figure 6.2 identifies the overall attitudes of the online survey participants regarding implementation of the Bike Plan. Between 83% and 89% of people agreed or strongly agreed that implementation of the Bike Plan would provide safer options, encourage more ridership, and overall be good for Houston.

Figure 6.2 Online Survey Attitudes



Feedback Summary

Overall, approximately 97% of feedback from all sources (online survey and map, written and email comments, community responses, and letters of support) was positive and supportive of the Plan. Feedback fell into a few key themes of improved safety, increased transportation options, greater quality of life, and benefits to health and the environment. A majority of comments also signaled support for implementation of the Bike Plan as soon as possible. Figure 6.3 shows a sample of the comments received in these themes.

A small percentage of comments were not supportive of the Plan. Reasons included requests to change the draft network citing additional or altered bikeway routes. Other comments focused on the City's financial position and a lack of funding, or concern with bicycling on roadways. This feedback was valuable in thinking through future communication strategies through implementation of the Bike Plan.

Figure 6.3 Comments About Why People Support the Bike Plan



The study team tabulated all of the public comments and identified whether or not the comment was adequately addressed in the draft plan, and if not, how to improve the recommendations. A majority of the comments focused on bicycle facilities, with some comments identifying policies or programs that could be helpful to the community to increase bicycle mode share. Adjustments to the draft network map were made with added or altered facilities where possible.

The final Bikeways map based on this feedback is the one presented in Chapter 5 of the Plan.

In total, 133 miles of additional bikeways were included in the final Long Term Bikeway network including 52 miles new off-street bikeways and 81 miles of new in street R.O.W. bikeways (shared + dedicated).

Addressing the feedback to provide more opportunities to access the bikeway network in the near term (5-10 years), the updated network identifies bikeways that increase access for an additional 5% of the City's population (87,000 people). These opportunities focused on connecting more neighborhoods, filling identified gaps in the network, and improving access to the expanding bayou greenways.

IMPLEMENTATION CONTEXT

It is important to understand the overall context and challenges that must be addressed to fully realize the positive, transformational opportunity that bicycling can be for the City.

Positive Momentum

The Houston region has made meaningful strides in implementing projects and adopting policies to become more bike friendly. The development of Plan Houston, the first general plan in the city's history, specifically calls for the development of a bicycle master plan.

Projects like the Bayou Greenways Initiative are expanding the network of high-comfort bikeways to more neighborhoods and activity centers. Updates to the Infrastructure Design Manual, policies related to context sensitive design, and the development process for CIP projects will add to the bikeway network as more projects move to final design and construction. The bike share network is on the cusp of a major expansion and more developments are locating in areas with quality access to trails and other amenities. This has all led to more people riding bicycles in the City of Houston.

Even given the positive momentum, the implementation environment will be challenging for the City of Houston over the next several years.

Funding Challenges

While a significant number of projects have dedicated funding programmed for implementation over the next five years, including projects in the City's CIP and the Bayou Greenways 2020 projects, the City of Houston budget projections indicate that there will be challenges in identifying additional resources, either in personnel, capital, or operations and maintenance to advance many additional components of the plan forward in the near term. Opportunities to leverage existing resources to meet goals of the plan are important. Additional resources will likely need to be identified to implement many of the Plan's recommendations.

Regulatory Changes

Many of the recommendations in this plan, particularly those related to policy and programmatic changes may require changes to the current regulatory environment. This may be done through modification of an existing City ordinance (e.g., riding on the sidewalk), a revision to the current city charter (e.g., operations and maintenance allocations), or change to state statutes (e.g., speed limits on local streets). Changes to any of these will require political support to enact and will likely take time to advance.

Competing Priorities

The condition of transportation infrastructure has suffered from levels of disinvestment over several decades leading to a situation where there are significant needs across the city. This presents an opportunity to expand the bicycle network by taking a multi-modal approach as new streets are built. At the same time, it creates strong competition for resources for new projects. Continuing to advocate for a holistic bikeway network leveraging all potential projects will be critical to successful implementation.

Building Strong Partnerships

The Bike Plan sets a direction for the City, but achieving success will require strong community partnerships. This includes working with advocacy organizations across the city such as BikeHouston, as well as strengthening implementation partnerships with agencies such as H-GAC, Houston Parks Board, Harris County, TxDOT, and various Management Districts and TIRZs who each are working to make their projects and areas more bike friendly. Building alignment on the efforts that partners already have underway will take some time but represents a significant opportunity to move parts of the Bike Plan forward in the short term that could not be done by the city alone.

IMPLEMENTATION STRATEGIES

The following sections of this plan represent nine strategies and supporting recommendations for the implementation of the Bike Plan. They focus on overall performance management of the plan's progress as well as some tactical strategies to translate the citywide plan to local areas and neighborhoods.

These strategies are targeted at building momentum for the plan, providing meaningful benefits and creating examples of what overall success will look like. The City of Houston and its partners should work to define leadership of these strategies and a path to implement in the near term. The City should take the lead to develop these strategies upon plan adoption.

It is recommended that as parts of the Bike Plan are implemented these strategies are revisited as part of regular 5-year updates to the plan that incorporates progress-to-date and the context at the time of the update.

Implementation Strategies and Key Recommendations for the Houston Bike Plan

1. Manage Performance Against Goals

1.1 Develop and present an annual Houston Bikeways Program Strategic Report.

1.2 Develop approach to capture data to assess performance on a regular basis and develop performance targets.

2. Prioritize and Collaborate on Policies and Programs

2.1 Develop agreed-upon roles with city departments including Houston Bikeways Program staff and partners for implementation of policies and programs identified in the Bike Plan.

2.2 Develop prioritization approach for tackling policies and programs considering resources, staffing levels, and partnership opportunities.

3. Project Development and Implementation

3.1 Develop packages of short-term bikeway projects that can be implemented within existing street rights-of-way and seek funding to implement.

3.2 Prepare key connection recommendations as a package of projects detailing benefits and costs. This package should be utilized to recruit funding partners and apply for grants as opportunities become available.

4. Develop Resource and Staffing Needs

4.1 Increase Houston Bikeways Program staff in appropriate departments in the City.

4.2 Establish the Bicycle Advisory Committee as a regular standing committee that works with City staff to implement the Bike Plan.

5. Leverage Funding Opportunities

5.1 Create a spending target with dedicated funds from the City's budget for bikeway projects and programs.

5.2 Identify and pursue funding partnerships and support from other local agencies, City departments, and private entities to leverage funds.

5.3 Pursue funding for short-term and key connection projects.

5.4 Develop bicycle facility maintenance prioritization criteria and incorporate bicycle facility maintenance as part of roadway maintenance activity as possible.

6. Build Momentum Through Pilot Projects

6.1 Create conceptual plans for specific bikeway treatments across the city.

6.2 Implement and celebrate bikeway projects to build momentum to implement the Plan.

7. Connect to Major Bicycle Thoroughfares (e.g., Bayous and Other Greenways)

7.1 Develop specific plans and policies for access to major greenway corridors to ensure safe access to these "bicycle highways" from neighborhoods and activity centers.

7.2 Coordinate with adjacent jurisdictions to provide a connected network across city lines.

8. Engage Neighborhoods to Translate Plan to a Local Level

8.1 Incorporate and refine the provided approach and tools for neighborhood level planning to connect to citywide bikeway network, in future planning projects.

8.2 Identify opportunities to apply specific policies or programs at the neighborhood level to support the growth of safe, healthy opportunities to bicycle.

8.3 Continue proactive outreach to neighborhoods and other civic groups on the Bike Plan

9. Continue to Engage the Public in the Development of Bicycle Facilities.

9.1 Incorporate public engagement on bikeway projects beginning no later than preliminary engineering i.e. the design phase of the project.

1. MANAGING PERFORMANCE AGAINST GOALS

The goals identified for the Bike Plan represent key building blocks to creating a Gold-level Bicycle Friendly Community. It will be important to measure how the City is performing against those goals. Utilizing performance metrics to monitor progress of implementing the Bike Plan will enable the City to understand the degree to which progress is being made and identify areas of focus for future improvements.

Figure 6.4 shows the performance management cycle for delivering against the goals. The performance management cycle has five key phases:

- **Assess Current Performance:** Establish the baseline from which an organization is working from, including strengths and opportunities.
- **Goal Setting:** Identify the direction for the organization in terms of performance outcomes and definitions of success.
- **Strategy Development:** Create the approach to achieving the goals.
- **Project Development:** Specific action plans to implement bikeways, policies and programs
- **Execution:** The tactical implementation of the projects.

As execution occurs, the performance cycle feedback loop is completed by assessing performance with a new baseline. Adjustments can be made to the goals or strategies based on the new starting point.

The Bike Plan has focused on the development of the first three phases of the cycle, Assessing Current Performance, Goal Setting, and Strategy Development. Specific project development and execution of the plan will be based on prioritization of the strategies and the available resources to implement projects, policies, and programs identified in the Bike Plan. Potential execution approaches will be detailed further in the discussion of other implementation strategies.

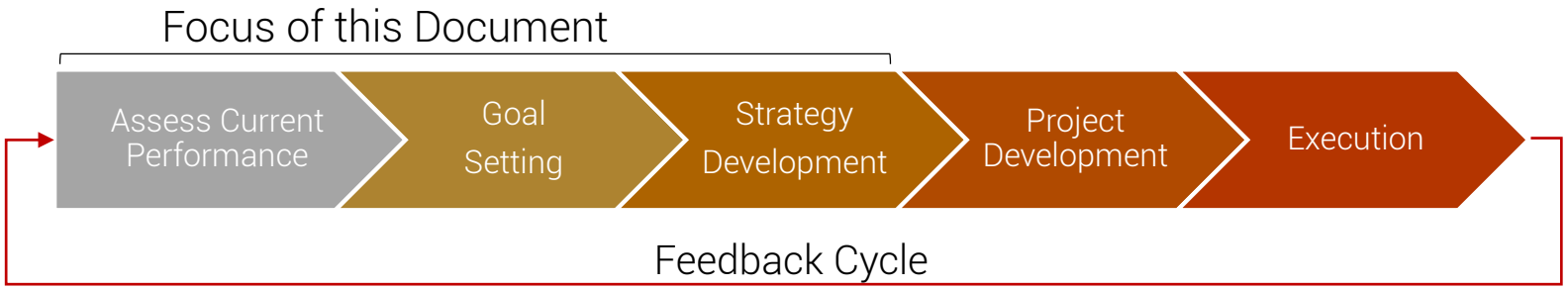


Figure 6.4 Performance Management Cycle for the Bike Plan

To support performance assessment of plan implementation, metrics aligned with each of the plan goals have been identified. There were many potential metrics considered and the proposed performance metrics have been developed through workshops with the Bicycle Advisory Committee. Metrics selected were determined to be quantifiable and aligned with evaluation criteria set by the League of American Bicyclists for Bicycle Friendly Community designation and goals outline in Plan Houston.

These performance metrics should be reviewed and updated periodically to allow the City to best assess performance, celebrate successes, and identify improvement areas. Performance monitoring will require participation from multiple City departments and external organizations. Figure 6.5 identifies the performance metrics, baseline data, recent performance trends of the data (positive, negative, or neutral), bicycle friendly community rating areas from the League of American Bicyclists, and the data source for each metric.

The City will need to collect the necessary data to establish baseline measures in a ongoing fashion. It is recommended that a Houston Bikeways Program Strategic Report outlining progress against these metrics be developed.

The report should :

- Align with the goals and approach for implementation of Plan Houston.
- Highlight progress made on implementation.
- Determine relative performance against the previous year.
- Assess trends in performance relative to the vision of Houston as a bicycle friendly community.
- Include a map exhibit(s) and be publicly available online.
- Develop updates to the strategic plan for the next year incorporating what is working and adjust as needed based on changing context, priorities, and available resources.
- Determine if metrics are still aligned with overall goals or if new metrics may be more relevant to overall goals.
- Identify priority opportunities to continue to improve.

The Bikeways Program Strategic Report will serve as a critical tool as the city works to implement the plan. It can create an ongoing avenue for the community to talk about what is working, improvement areas, and

Key Recommendation 1.1

Develop and present annual Houston Bikeways Program Strategic Report.

Key Recommendation 1.2

Develop approach to capture data to assess performance on a regular basis and develop performance targets.

Note on Setting Annual Report:
Among other roles, the Bicycle Advisory Committee (see Strategy 4) is recommended to play a key role in working with the City in achieving the ten-year vision, including the development of performance metrics and any interim targets, as well as development of the annual Bikeways report.

Figure 6.5 Goals and Performance Metrics

Vision: By 2027 Houston will be a Safer, More Accessible, Gold Level Bike-Friendly City

Goal Area	BFA Rating Areas: Enforcement	Education	Engineering	Evaluation	Encouragement	Key Outcomes	Performance Metrics	Current Performance	Performance Trend (+ - or neutral)	Data Source
Improve Safety						✓	# of bicycle related crashes reported	361	-	H-GAC
						✓	# of bicycle fatalities per 10,000 commuters	7.4	+	H-GAC, US Census
				✓			Disparity in bicycle mode share versus fatalities	3.8	+	H-GAC, US Census
		✓					# of people who complete an approved bicycle education program	TBD	N/A	TBD
					✓		# of "Bicycle Friendly Businesses"	4	Neutral	League of American Bicyclists
Increase Access			✓				% jobs within ½ mile of a high-comfort bike facility	46%	+	US Census
			✓				% population within ½ mile of a high-comfort bike facility			
							• Overall population	38%	+	US Census
							• Minority population	32%	+	US Census
							• Low income population	32%	+	US Census
			✓				% of facilities within ¼ mile of a high-comfort bike facility:			
							• Transit nodes (transit centers, Park & Rides, and light rail stations)	37%	+	METRO/City of Houston
							• Schools and libraries	23%	+	City of Houston
							• Community and multi-service centers	33%	+	City of Houston
			✓		✓		% population with comfortable access to greenways system (bayous and other trails)	21%	+	US Census
Increase Ridership						✓	Commute mode share	0.5%	-	US Census
				✓			# of permanent count stations	2	Neutral	H-GAC
				✓		✓	% growth in bicyclists observed through permanent count stations	TBD	N/A	H-GAC
				✓			# of bike boardings on Metro per year	258,094	+	METRO
				✓			# of bike share checkouts per year	98,449	+	Houston Bike Share
					✓		Annual City events that support increased ridership (e.g., Sunday Streets, Tour de Houston, Bicycle Advisory Committee meetings)	11	Neutral	City of Houston
Develop and Maintain Facilities			✓				Miles of high comfort bikeways per capita (per 10,000 people)	1.17	+	City of Houston/Census
			✓				% of bikeways in good or better condition	TBD	N/A	City of Houston
					✓		Population within ¼ mile of a bike share station	27,900	+	Houston Bike Share
					✓		Jobs within ¼ mile of a bike share station	155,600	+	Houston Bike Share
			✓				% of major transit nodes[1] with secured bike parking	4%	Neutral	METRO
				✓			Dedicated city staff (FTE) for bikeway program	1	Neutral	City of Houston

[1] Major Transit Nodes include Rail Stations, Transit Centers, and Park & Ride Facilities

Figure 6.6 Performance Metric Data Details

Performance Metric	*Data Details*
# of bicycle related crashes reported	3 year average 2012-2014 data from H-GAC (crash data)
# of bicycle fatalities per 10,000 commuters	3 year average 2012-2014 data from H-GAC (fatality data) and American Community Survey (ACS) (commuting data)
Disparity in bicycle mode share versus fatalities	3 year average 2012-2014 of the bicycle fatality rate for all roadway fatalities divided by the same 3 year average of the bicycle commute mode share
# of people who complete an approved bicycle education program	TBD
# of "Bicycle Friendly Businesses"	As of December 2015
% jobs within ½ mile of a high-comfort bike facility	2011 LEHD (Longitudinal Employer-Household Dynamics from US Census)
% population within ½ mile of a high-comfort bike facility (overall, minority, and low income)	2010 US Census block level population
Within ¼ mile of a high-comfort bike facility (transit nodes, schools & libraries, and community & multi-service centers)	2014 facility locations from METRO and City of Houston Reporting
% population with comfortable access to greenways system (bayous and other trails)	Comfortable access is defined as within ½ mile of an off-street trail of at least a mile or a high-comfort connection to such a trail
Commute mode share	ACS data – 3 year average (2012-2014)
# of permanent count stations	H-GAC is only entity with permanent counters currently
% growth in bicyclists observed through permanent count stations	Compile monthly bicycle counts to an annual number then determine growth over previous year.
# of bike boardings on Metro per year	Data is for calendar year 2014
# of bike share checkouts per year	2015
Annual City events that support increased ridership (e.g., Sunday Streets, Tour de Houston, Bicycle Advisory Committee meetings)	2015, City of Houston Reporting
Miles of high comfort bikeways per capita (per 10,000 people)	Population from 2014 ACS data
% of bikeways in good or better condition	TBD
Population within ¼ mile of a bike share station	2015
Jobs within ¼ mile of a bike share station	2015
% of major transit nodes with secured bike parking	2015
Dedicated city staff (FTE) for bikeway program	2014 Benchmarking Report (Alliance for Walking & Biking)

accelerate progress on plan implementation. Details of data sources and recommended metric calculations are provided in Figure 6.5.

As the Bikeway Program Strategic Report would identify progress as well as changes in context, priorities, and resources, it provides a basis for updating and amending the bikeway network as needed moving forward. Updates and amendments to the bikeway network should also be driven through input from the community and a Bicycle Advisory Committee. Updates based on performance and contextual changes in the community will ensure that the Bikeway network remains relevant to the City and continues to provide the greatest opportunity to meet the goals identified in the Bike Plan. While it is recommended that a Bikeway Program Strategic Report be developed and presented annually, updates and amendments to the bikeway network may not occur as frequent. The timing and frequency of potential changes should be determined by the City and Bicycle Advisory Committee.

Recent performance trends on many of the metrics show positive improvements in access to high-comfort facilities, growth in the bikeway network, bike share access, and bicycle connections on buses. Much of this is due to increases in the bikeway network from the Bayou Greenways Initiative, expansion of the bike share network, and recent increases in programs and events that encourage bicycling. While the trends largely show positive improvements, in some cases ,the trend is negative or has a low rate of improvement. Areas like safety, as measured by bicycle-related crashes and fatalities relative to commute mode share, show a negative trend. And while access to facilities and locations has improved, actual mode share for bicycle commuters has remained largely stable with only a 0.05% increase in the last American Community Survey.

In order to assess conditions most accurately, some metrics should be calculated based on three-year averages, which provide a more stable assessment of the data and evaluation of trends over time. These metrics are identified in Figure 6.6. Other metrics do not currently have data reported and a baseline will need to be established. For example, establishing a methodology to identify “good” and “better” conditions of bikeways, and identifying a reporting mechanism for comprehensively identifying how many people complete bicycle education programs annually will be necessary to track those performance on those metrics.

Specific targets for each of the metrics have not been identified through this plan. As the City begins to develop a better understanding of available resources for implementation, targets for performance metrics can be set to focus attention and resources on plan implementation. However, due to the starting point of the network and data, the City should aim towards improving performance annually.

2. PRIORITIZE AND COLLABORATE ON POLICIES AND PROGRAMS

As outlined in **Chapter 4: Bicycle Toolbox,** creating a sustainable, thriving bikeway program requires more than building bicycle infrastructure. It will require development of policies and programs that improve safety and design of the roadways, encourage end-of-trip amenities and last-mile connections, and increase maintenance, education, and enforcement programs.

Implementation will require coordination between multiple city departments, external public agencies, philanthropic and advocacy organizations, developers, and private businesses. As roles are defined, the departments that have coordinated to develop the Plan (Planning & Development, Public Works & Engineering, and Parks & Recreation) can organize and maintain accountability for their respective pieces of implementation.

They will need to work closely together. For example, Parks & Recreation and Public Works & Engineering are responsible for design decisions, implementation, and maintenance of many infrastructure projects, while Planning & Development is recommended to maintain and updating the overall bikeway network maps. It will be important that these efforts stay aligned. Additionally, the City's Health Department and Police Department will each have key roles to play, particularly with education, awareness, and enforcement with the public. There are many opportunities



2015 Bike-to-Work Day in Downtown Houston: a programmatic approach to get more people out on

for other organizations to take the lead on the implementation of recommendations in the Bike Plan. For example, BikeHouston is the logical lead on many of the educational, training, and outreach programs.

While the policies and programs identified in the Bicycle Toolbox are important to consider and implement over time, some have greater opportunity for impacting the community, some require more resources, and some will take less time than others. In a time of limited fiscal resources, it is important to prioritize policies and programs to ensure resources are used as efficiently as possible, while still making positive strides in the community. Efficient use of resources on high-impact policies and programs will also enable the City to establish a platform to fully implement the Plan as financial resources or grants become available.

On the following pages, Figures 6.7: Projects, 6.8 Policies, and 6.9. Programs outline the various non-bikeway infrastructure elements of the holistic plan and identify the roles of various City departments and organizations in implementation, potential funding partners, alignment to goals, and potential challenges to execute.

The Plan has identified a significant number of opportunities to improve bicycling in Houston presenting a challenge in determining where to start working. To address this, the tables also identify recommended near-term policies and programs to be prioritized.

Initial prioritization has been categorized into the following high-priority categories:

- Policy changes that require limited or no additional financial resources.
- Programs and projects eligible for grant opportunities.
- High-profile projects, policies, and programs that build momentum.

By focusing on these areas the City and its partners can continue to move implementation of the bicycle plan forward and build momentum for further improvements.

Figures 6.7, 6.8, and 6.9 on the following pages are not intended to be exhaustive nor exclusive. Other agencies, entities, and organizations may also play important roles in implementing the Bike Plan. Coordination between all appropriate City departments is recommended during implementation.

Key Recommendation 2.1

Develop agreed-upon roles with city departments and partners for implementation of policies and programs identified in the Bike Plan.

Key Recommendation 2.2

Develop prioritization approach for tackling policies and programs considering resources, staffing levels, and partnership opportunities.



Projects

Houston has a history and knowledge of getting transportation projects built, and bike facilities are no different to implement than roadway or transit lines.

The tables on the next three pages (Figure 6.7) show how bike projects fit into the goals of the Bike Plan and which agencies are responsible for implementing, funding, and approving them. This depends on context: Public Works is responsible for building bikeways on city streets, TxDOT for state highways, and the Parks Department for paths in parks. Private property owners also play a role, especially for parking.

Figure 6.7 Project Implementation Matrix (1 of 3)

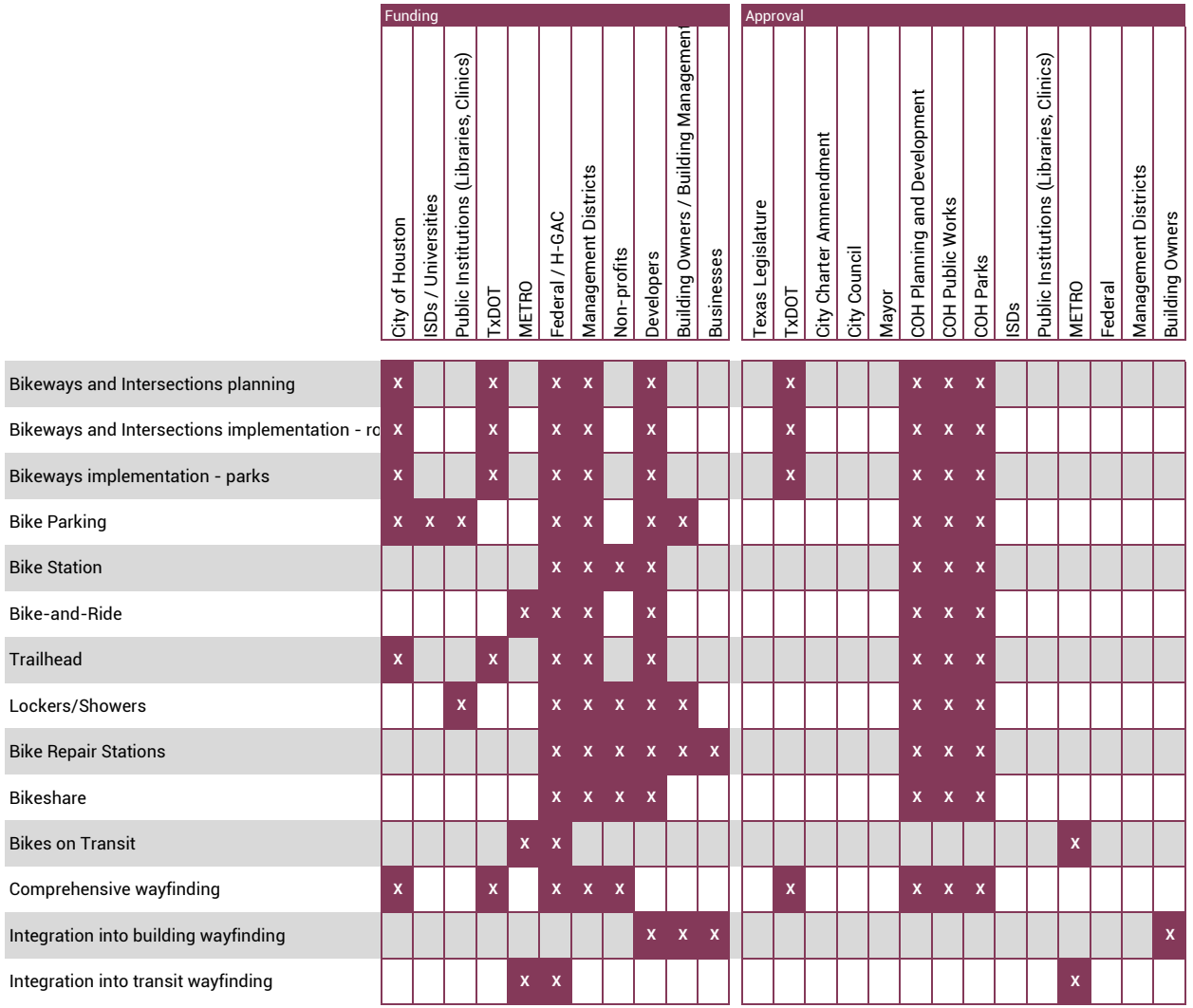
		High priority			Goals				Promotes						Requirements			
Description		High profile big moves	Potential grant priority	Low cost	Improve Safety	Increase Access	Increase Ridership	Develop and Maintain Facilities	Identifies a route	Provides a comfortable, safe, and secure path	Provides a secure place to park	Provides connections to other modes	Teaches how to ride	Helps acquire and maintain a bike	Significant Capital Cost	Small Capital Cost	Requires significant property	Requires additional staff resources
Bikeways and Intersections planning	Plan new bikeways and intersections to implement and maintain the Bikeway Map.				x	x	x	x		x						x		x
Bikeways and Intersections implementation - roads	Engineer and construct new bikeways and intersections within COH street right-of-way to implement the bikeway map.		x		x	x	x	x		x					x	x		
Bikeways implementation - parks	Engineer and construct new bikeways and intersections within COH parks to implement the bikeway map.		x		x	x	x	x		x					x	x		
Bike Parking	Build bike parking at destinations.		x	x		x	x	x			x	x				x		
Bike Station	Develop and operate a staffed bike station.	x				x	x				x				x			x
Bike-and-Ride	Develop and operate bike-and-ride facilities at more transit hubs.				x	x	x					x				x		
Trailhead	Build trailheads with appropriate bike and vehicle parking and improved access along Greenways and other off-road trails.					x	x	x				x			x		x	
Lockers/Showers	Build and operate locker/shower facilities at workplaces and educational institutions.					x	x				x				x			x
Bike Repair Stations	Build and maintain self-service bike repair stations.			x	x	x	x							x		x		x
Bike share	Operate and expand bikeshare system to more locations and neighborhoods.		x			x	x	x				x		x	x			x
Bikes on Transit	Expand opportunites to carry bikes on buses and trains.				x	x	x	x				x				x		
Comprehensive wayfinding	Implement a comprehensive wayfinding system for bicyclists along trails, streets, and at transit hubs.			x			x	x	x			x	x			x		
Integration into building wayfinding	Integrate bicycle information into building wayfinding signage (e.g., bike parking and nearby high comfort bikeways)			x			x	x	x			x	x			x		
Integration into transit wayfinding	Integrate bicycle information into transit wayfinding signage (e.g., bike parking and nearby high comfort bikeways)			x			x	x	x			x	x			x		

Figure 6.7 Project Implementation Matrix (2 of 3)

Implementation	COH Planning and Development	COH Public Works and Engineering	COH Parks	COH Police	COH Health	Houston Parks Board	Houston Bcycle	ISDs / Universities	Public Institutions (Libraries, Clinics)	TxDOT	METRO	H-GAC	Management Districts	Advocacy groups	Parks Conservancies	Non-profits	Developers	Building Owners / Building Management	Businesses
Bikeways and Intersections planning	L									X							X		
Bikeways and Intersections implementation - roads		L								X							X		
Bikeways implementation - parks			L							X					X	X	X		
Bike Parking	L	X	X					X	X		X		X				X	X	
Bike Station	L	X											X	X		X	X	X	
Bike-and-Ride		X								X	L		X				X		
Trailhead			L							X			X				X		
Lockers/Showers	L								X				X			X	X	X	
Bike Repair Stations	L												X	X			X		
Bikeshare	L	X					X												
Bikes on Transit											L								
Comprehensive wayfinding	L	X	X										X		X				
Integration into building wayfinding	L								X								X	X	
Integration into transit wayfinding											L								

L: Lead Agency or Organization for Toolbox Element
X: Meets Criteria/ Relevant for that Category

Figure 6.7 Project Implementation Matrix (3 of 3)





Policies

Policies at the local, state, and federal level play a large role in what it is like to bike in Houston. Compared to projects, policies are typically inexpensive, but the organizational and political effort required to implement them can be greater.

The following three tables (Figure 6.8) show how the policy recommendations support the Plan's goals, who would spearhead changes, and what approvals are required. The first columns of the first table highlight the changes that would be most impactful and should be considered priorities.

Figure 6.8 Policy Implementation Matrix (1 of 3)

		High priority			Goals				Promotes						Requirements			
	Description	High profile big moves	Potential grant priority	Low cost	Improve Safety	Increase Access	Increase Ridership	Develop and Maintain Facilities	Identifies a route	Provides a comfortable, safe, and secure path	Provides a secure place to park	Provides connections to other modes	Teaches how to ride	Helps acquire and maintain a bike	Significant Capital Cost	Small Capital Cost	Requires significant property	Requires additional staff resources
Complete Streets	Adopt a Complete Streets ordinance.				x	x	x	x		x								
CIP Process	Update Capital Improvement Plan criteria to allow projects which close key gaps in the bicycle network or improve bicycle safety to be prioritized.				x	x	x	x		x								
Safety and Vision Zero	Adopt a Vision Zero goal and approach for working to eliminate traffic fatalities on city roadways.	x			x		x			x								x
Major Thoroughfare Plan	Coordinate bike plan with Major Thoroughfare Plan and adjust designations as required.				x		x	x		x								
Bike Connections in New Developments	Update development ordinances to encourage and require bicycle connections in new developments.				x	x	x	x		x						x		
Infrastructure Design Manual	Update Infrastructure Design Manual to expand bicycle toolbox and bicycle facility design componenets aligned with recommendations in the Houston Bike Plan.			x	x		x	x		x								
Construction Coordination	Develop policies to mitigate impact of public and private construction projects on bike network.			x	x					x						x		
Dedicated Funding Source	Develop approach for dedicated funding for capital and operations projects				x	x	x	x		x								
Pursue Funding Opportunities	Develop coordinated approach to pursue federal and state funding to expand bikeway network.			x	x			x		x						x		x
Include Bike Facilities in Restriping/Overlays	Consider potential for bike facilities in all restriping/overlay projects.			x	x	x	x	x		x						x		
Speed Limits	Support legislation to adopt lower standard speed limits on neighborhood streets citywide.	x			x		x	x		x								
Lighting	Update lighting standards to encourage well lit on-street bikeways.				x		x			x								
Bike on Sidewalks Ordinance	Update ordinances to allow biking on sidewalks.			x	x	x	x			x								
Bike Crossings at Minor Streets	Develop approach for improving bike crossings at minors streets with significant bicycle volumes				x		x	x		x								
Prohibit parking in bicycle lanes	Adopt ordinance to prohibit parking in designated bike lanes (without need for supplemental signage).			x	x					x								
24hr operation for bike paths	Develop park rules that allows people bicycling to utilize a trail on the bikeway network through parks 24 hours a day.				x					x								x
Bike Parking Requirements	Require or create additional incentives for bike parking at all buildings except single family residential.		x	x		x	x				x					x		
Bike Facilities at Public Buildings	Provide conveniently located, well-lit. secure bike parking at all public buildings.						x				x					x		
Bike Friendly ISDs	Set district policies and programs to encourage bicycle education and biking to school.					x	x				x					x		
Agency Cooperation	Coordinate with TxDOT, METRO, adjacent cities and counties on bike related projects and design standards.					x	x			x	x					x		
Bike Rack/Station Permitting	Develop consistent approach to Bike Rack/Station permits			x		x		x			x					x		

Figure 6.8 Policy Implementation Matrix (2 of 3)

	Implementation																			
	COH Planning and Development	COH Public Works and Engineering	COH Parks	COH Police	COH Health	Houston Parks Board	Houston Bcycle	ISDs / Universities	Public Institutions (Libraries, Clinics)	TxDOT	METRO	H-GAC	Management Districts	Advocacy groups	Parks Conservancies	Non-profits	Developers	Building Owners/Building Management	Businesses
Complete Streets	L	X	X							X									
CIP		L																	
Safety and Vision Zero	L	X		X						X									
Major Thoroughfare Plan	L	X																	
Bike Connections in New Developments	L																X	X	
Infrastructure Design Manual		L																	
Construction Coordination	X	L																	
Dedicated Funding Source	X	L																	
Pursue Funding Opportunities	X	X	X		X	X	X				X	X	X	X					
Include Bike Facilities in Restriping/Overlays	X	L																	
Speed Limits		L																	
Lighting		L																	
Bike on Sidewalks Ordinance	X	L		X															
Bike Crossings at Minor Streets		L																	
Prohibit parking in bicycle lanes		L																	
24hr operation for bike paths			L																
Bike Parking Requirements	L																X	X	
Bike Facilities at Public Buildings	L							X	X										
Bike Friendly ISDs								L											
Bike Rack/Station Permitting		L																	

L: Lead Agency or Organization for Toolbox Element

X: Meets Criteria/ Relevant for that Category

Figure 6.8 Policy Implementation Matrix (3 of 3)

	Funding											Approval												
	City of Houston	ISDs / Universities	Public Institutions (Libraries, Clinics)	TxDOT	METRO	Federal / H-GAC	Management Districts	Non-profits	Developers	Building Owners/Building Management	Businesses	Texas Legislature	TxDOT	City Charter Ammendment	City Council	Mayor	COH Planning and Development	COH Public Works	COH Parks	ISDs	Public Institutions (Libraries, Clinics)	METRO	Federal	Management Districts	Building Owners
Complete Streets																	X	X	X						
CIP																		X	X						
Safety and Vision Zero	X			X	X	X										X	X	X	X						
Major Thoroughfare Plan															X										
Bike Connections in New Developments									X						X		X								
Infrastructure Design Manual																		X	X						
Construction Coordination																	X	X							
Dedicated Funding Source	X																X	X	X						
Pursue Funding Opportunities														X				X	X						
Include Bike Facilities in Restriping/Overlays																		X							
Speed Limits												X			X			X	X						
Lighting	X						X								X										
Bike on Sidewalks Ordinance															X										
Bike Crossings at Minor Streets																		X	X						
Prohibit parking in bicycle lanes															X			X							
24hr operation for bike paths																			X						
Bike Parking Requirements									X	X					X		X								
Bike Facilities at Public Buildings			X																		X				
Bike Friendly ISDs		X																		X					
Bike Rack/Station Permitting	X																	X							

L: Lead Agency or Organization for Toolbox Element
X: Meets Criteria/ Relevant for that Category



Programs

Programs require sustained effort over an extended period of time, but they are crucial in building a bicycle culture and attracting new riders. Non-profits, including bicycle advocates and community groups, can play a significant role here, but governmental entities can support them through coordination and funding.

These tables (Figure 6.9) show how the recommended programs support the Bike Plan goals and who could implement and fund them.

Figure 6.9 Program Implementation Matrix (1 of 3)

	Description	High priority			Goals				Promotes						Requirements			
		High profile big moves	Could be funded through grants	Low cost	Improve Safety	Increase Access	Increase Ridership	Develop and Maintain Facilities	Identifies a route	Provides a comfortable, safe, and secure path	Provides a secure place to park	Provides connections to other modes	Teaches how to ride	Helps acquire and maintain a bike	Significant Capital Cost	Small Capital Cost	Requires significant property	Requires additional staff resources
Bike Friendly Certifications	Work towards Gold Bicycle Friendly Community status and encourage more companies to achieve Bike Friendly Business designations.	X					X									X		
Bike Safety Training	Provide consistently available bike safety classes to the general public.				X								X			X		X
Defensive Cycling	Include defensive cycling in annual police office training and require officers to pro-actively inform cyclists about defensive cycling options.				X								X			X		X
Bike Shop Outreach	Maintain a list of bicycle shops and their contact information and publish the information online.					X	X						X	X		X		
Bike Trains / School Bus	Develop an annual "Bike-to-School" day, develop a bicycle safety program, and encourage City-wide Bike School Buses.			X	X		X			X			X			X		X
Commuter Outreach	Create outreach programs through workplaces, potentially leveraging existing commute programs.						X		X				X	X		X		
Safe Routes Ambassadors	Create group of school ambassadors to work with schools to conduct safety presentations and workshops.				X		X		X				X			X		X
Incentive Programs	Expand awareness of NuRide and provide resources to support growth.		X				X							X		X		
Guaranteed Ride Home	Create/coordinate with a Guaranteed Ride Home program for people who bike to work.		X		X		X			X						X		X
Driver Education	Implement a program through the city courts where those with traffic violations, especially those involving a person on a bicycle, can take driver education courses to dismiss their charges				X					X						X		
Bike Commuter Buddy	Support and advertise the development of a Bike Buddy program.		X				X						X			X		
Better Block	Institutionalize temporary or demonstration projects as an outreach technique for new projects.					X	X		X	X	X		X			X		
Open Streets	Expand Sunday Streets HTX to a year round event with the goal of moving to weekly or multiple time per month.	X				X	X		X				X			X		
Organized Bike Rides	Build on existing rides like Bike to Work Day, Bayou Bikers and Tour de Houston to develop a regular schedule of group rides with city staff to promote the Bikeways program.					X	X		X				X			X		X
Awareness Campaigns	Develop awareness campaign for the Bikeways program and bike resources and a bike safety campaign.			X	X		X			X			X			X		X
Bicycle Patrol Training	Require all sworn officers to complete a more extensive bicycle safety and law enforcement course and continue to expand bike patrol.				X					X						X		
Earn-a-Bike	Support additional earn-a-bike programs, especially in undeserved communities and at elementary and middle schools.		X			X	X							X				
Bike Repair Workshops	Create bike repair stations and support nonprofits proving how-to repair workshops.		X			X	X							X				X
Bicycle Co-op	Support bicycle co-ops that provide bikes and build skills for low income residents.		X			X								X				X
Integrated Bicycle App	Develop a bicycling app to inform people who bicycle and collect data for the City's or regional use.	X	X		X				X	X								
Data Collection	Conduct regular bicycle counts throughout the city.							X		X								X
Maps	Continue to update high-quality, easy to read, pocketable paper and online maps of the bike network.			X		X	X		X							X		
"Adopt-a-. . ." Program - roads	Develop "adopt-a-....." program for bicycle infrastructure in street right-of-way.							X		X								
"Adopt-a-. . ." Program - parks	Develop "adopt-a-....." program for bicycle infrastructure in parks.							X		X								
Infrastructure - 311	Create codes and categories and track bike-related issues in the City's 311 system.			X				X		X						X		
Safe Routes to School	Work with ISDs to identify safe bike routes to schools from neighborhoods.		X		X	X	X	X		X					X			
Grant program for bike racks	Develop grant programs and easy permit process for bike racks.		X															
Maintenance - roads	Develop maintenance program for bike facilities in street right-of-ways.				X		X	X		X								X
Maintenance -parks	Develop maintenance program for bike facilities in parks.				X		X	X		X								X

L: Lead Agency or Organization for Toolbox Element

X: Meets Criteria/ Relevant for that Category

Figure 6.9 Program Implementation Matrix (2 of 3)

	Implementation																			
	COH Planning and Development	COH Public Works and Engineering	COH Parks	COH Police	COH Health	Houston Parks Board	Houston Bcycle	ISDs / Universities	Public Institutions (Libraries, Clinics)	TxDOT	METRO	H-GAC	Management Districts	Advocacy groups	Parks Conservancies	Non-profits	Developers	Building Owners/Building Management	Businesses
Bike Friendly Certifications	X	X	X									X		L					X
Bike Safety Training				X	X						X	X		L		X			
Defensive Cycling				L	X											X			
Bike Shop Outreach				X	X									L		X			X
Bike Trains / School Bus	X			X	X			L								X			
Commuter Outreach	X			X	X						X	L	X	X		X		X	
Safe Routes Ambassadors				X	X			X				X		L		X			
Incentive Programs	X										X	L				X			
Guaranteed Ride Home											X	L				X			X
Driver Education				L	X						X					X			
Bike Commuter Buddy						L						X		L		X			
Better Block	X	X	X	X	X						X		X			L		X	X
Open Streets				X	L														
Organized Bike Rides	L	L			X	X								L		X			
Awareness Campaigns				X	X	L		X			X		X	L		X			
Bicycle Patrol Training				L															
Earn-a-Bike					X								X	X		L			X
Bike Repair Workshops				X	X									X		X			L
Bicycle Co-op								X						X		X			X
Integrated Bicycle App	X				X							L		X		X			
Data Collection	X	L			X					X	X	L				X			
Maps	L					X	X					X		X		X			
"Adopt-a-. . ." Program - roads		L														X			X
"Adopt-a-. . ." Program - parks			L													X			X
Infrastructure - 311		L																	
Safe Routes to School		L						X				X							
Grant program for bike racks	L				X			X	X			X		X					
Maintenance - roads		L												X					
Maintenance -parks			L																

L: Lead Agency or Organization for Toolbox Element
X: Meets Criteria/ Relevant for that Category

Figure 6.9 Program Implementation Matrix (3 of 3)

	Funding											Approval												
	City of Houston	ISDs / Universities	Public Institutions (Libraries, Clinics)	TxDOT	METRO	Federal / H-GAC	Management Districts	Non-profits	Developers	Building Owners/Building Management	Businesses	Texas Legislature	TxDOT	City Charter Ammendment	City Council	Mayor	COH Planning and Development	COH Public Works	COH Parks	ISDs	Public Institutions (Libraries, Clinics)	METRO	Federal	Management Districts	Building Owners
Bike Friendly Certifications	X						X	X			X														
Bike Safety Training	X						X	X																	
Defensive Cycling	X						X	X																	
Bike Shop Outreach	X						X	X			X														
Bike Trains / School Bus	X	X					X	X																	
Commuter Outreach	X					X	X	X		X															
Safe Routes Ambassadors	X	X					X	X																	
Incentive Programs	X				X	X	X	X	X																
Guaranteed Ride Home					X	X	X	X																	
Driver Education	X						X	X																	
Bike Commuter Buddy							X	X																	
Better Block	X						X	X																	
Open Streets	X																								
Organized Bike Rides	X						X	X																	
Awareness Campaigns	X	X				X	X	X																	
Bicycle Patrol Training																									
Earn-a-Bike	X						X	X																	
Bike Repair Workshops	X						X	X																	
Bicycle Co-op		X					X	X																	
Integrated Bicycle App	X					X	X	X																	
Data Collection	X					X	X	X																	
Maps	X					X																			
"Adopt-a-. . ." Program - roads							X	X										X							
"Adopt-a-. . ." Program - parks							X	X											X						
Infrastructure - 311																									
Safe Routes to School	X	X				X												X	X						
Grant program for bike racks						X									X		X								
Maintenance - roads																		X	X						
Maintenance -parks																		X	X						

L: Lead Agency or Organization for Toolbox Element

X: Meets Criteria/ Relevant for that Category



Utility Corridor Opportunity
in Memorial Park

3. PROJECT DEVELOPMENT AND IMPLEMENTATION

Building upon a strong foundation of policies and programs, building out the bikeway network will take significant coordination and resources. The Houston region is currently in the process of expanding the high-comfort bikeway network by leveraging programmed projects through the City of Houston's CIP or by other entities such as Management Districts and the Houston Parks Board. There are also opportunities to expand the network by implementing some of the potential short-term projects and key connections identified in **Chapter 5: Network Plan & Map**. This will require appropriate levels of resources to move the projects forward successfully.

Implementation of the next phase of high-comfort bikeways will likely involve a combination of several approaches:

- Retrofit bikeways onto existing roadways through reallocations of existing pavement or right-of-way, either proactively or as part of ongoing maintenance projects.
- Incorporate bikeway projects developed by partners including the Houston Parks Board, Management Districts and TIRZs, METRO, and others.
- Develop off-street and high-priority on-street capital projects.
- Include bikeways in City CIP projects as streets are reconstructed.

The full Bike Plan will take many years to realize due to the scope of the Plan, and the scale of Houston. The region will be able to reap the benefits of a growing bikeway network by strategically targeting implementation to link together existing bikeway corridors into a more cohesive network serving more people and destinations.

This third Implementation Strategy shows one proposed approach to develop and execute projects identified in the Bikeway Network Map. While the City and region should also be opportunistic in capturing potential bikeway improvements as other capital projects emerge, this strategy can be a model for how to think about implementation in terms of developing a connected network.

For each category of projects, planning level cost ranges have been developed to provide an estimate of funding that would be required. It is not necessary that all projects be completed at one time and funding and

Key Recommendation 3.1

Develop packages of short-term bikeway projects that can be implemented within existing street right-of-way and seek funding to implement.

Key Recommendation 3.2

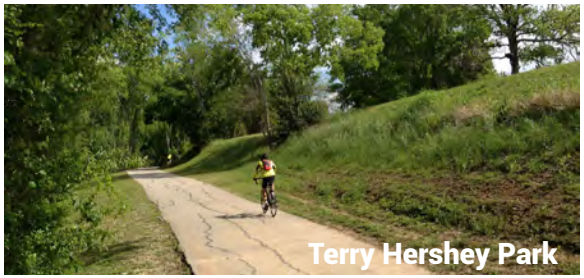
Prepare key connection recommendations as a package of projects detailing benefits and costs. This package should be utilized to recruit funding partners and apply for grants as opportunities become available.

other capacity constraints may dictate that projects are developed in smaller packages for implementation. This approach is meant to be illustrative of how bikeways can be expanded to create a network. Specific funding strategies are discussed in detail in Implementation Strategy 5.

Figures 6.10 through 6.13 demonstrate how a thoughtful implementation approach can connect existing segments of high-comfort bikeways, largely isolated and disconnected in the current network, and transition towards a true network. Figure 6.10 shows three high-comfort bayou trails in three different neighborhoods of Houston: Buffalo Bayou in the Inner West Loop, Terry Hershey Park in west Houston, and Halls Bayou in northeast Houston.

As shown in the pictures below, these are all attractive corridors with well-designed







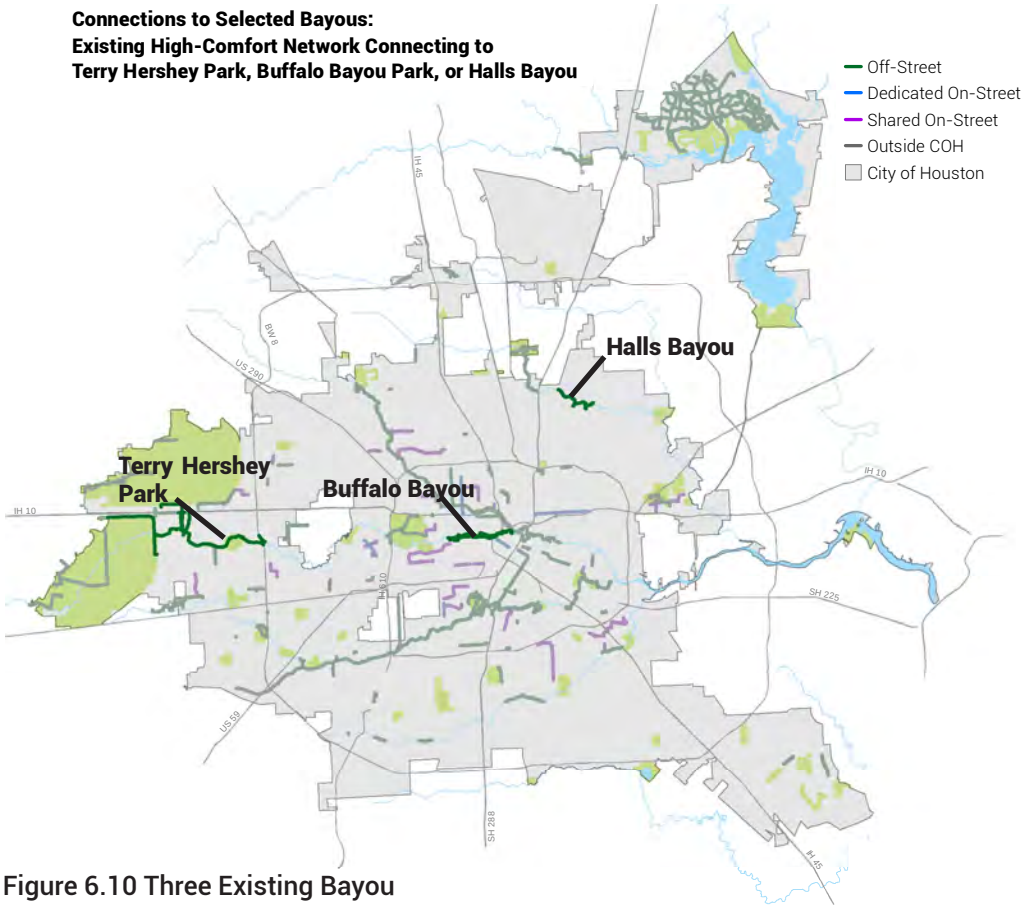


Figure 6.10 Three Existing Bayou Corridors

bikeways but each is disconnected from the rest of the bikeway network. Other high-comfort bikeways in the network that are not directly connected to these trails have been grayed out.

The Programmed Projects Map in Figure 6.11 includes known capital projects from the City of Houston CIP, Bayou Greenways 2020, Management District and TIRZ CIPs, and TxDOT that are funded and planned for completion in the next five years, or roughly by 2021. This includes connections currently in design or construction which will link White Oak Bayou, Lamar Street, Columbia Tap Trail, and parts of Brays Bayou into one high-comfort network. It will also extend the Halls Bayou Trail to Keith-Weiss Park and further east and add street corridor bikeways connecting to Terry Hershey Park.

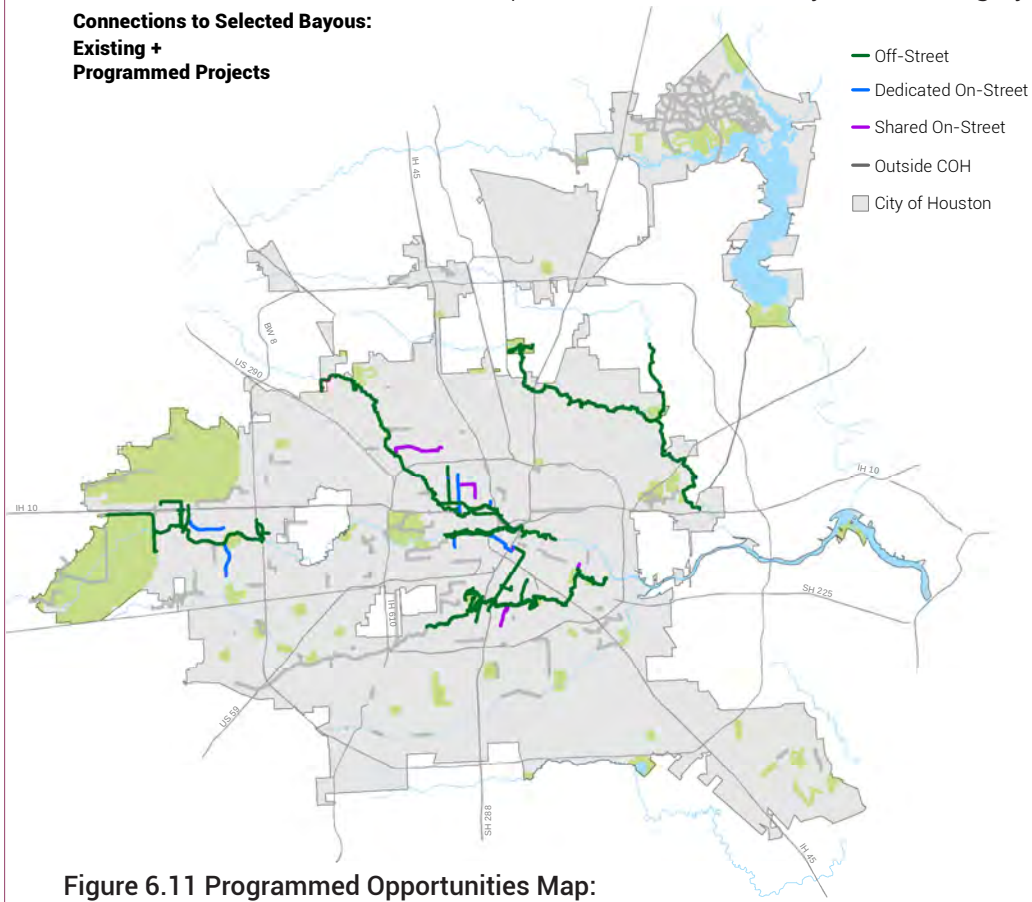


Figure 6.11 Programmed Opportunities Map: Existing + Programmed Project Network

The number of projects already in development shows the momentum underway in the city to extend and expand the bikeway network. This will make these attractive corridors more accessible to more people and begin to better connect major activity centers like Downtown, the Texas Medical Center, and the Energy Corridor. However, the programmed projects don't connect these smaller area networks together in order to create the "connected, city-wide network" set forth as a goal of the Houston Bike Plan. Achieving the beginnings of such a network sooner rather than later will require the completion of a set of the short-term potential projects as well as certain key connections to link these and other areas together.

The highest potential opportunity to expand the high-comfort bikeway network in the relatively near term is to focus on the corridors where improvements can be implemented within the existing street pavement. These typically take the form of signage and pavement marking projects with small capital requirements. Such projects would designate low-volume, low-speed streets as shared on-street routes and allocate pavement space

to dedicated bike lanes on other streets with higher volumes and speeds and available capacity.

While further engineering studies and neighborhood engagement will be required to determine the ultimate feasibility of these potential short-term bikeway projects, corridors that have been preliminarily identified as opportunities and connect to the initial three bayou corridors are shown on the Short-Term Potential Opportunities Map in Figure 6.12. These are just the corridors that connect to these three bayous shown to illustrate the approach. There are many other short-term opportunities that may be implemented in other neighborhoods.

As shown, access to each of the bayous is greatly enhanced by implementing these projects. The Energy Corridor would be connected to Westchase and CityCentre in west Houston, and Halls Bayou would connect to Hunting Bayou in northeast Houston. Due to a more robust, well-connected street grid that distributes traffic across more streets and provides more alternate routes, central Houston has the highest potential for short-term projects that create a strong bikeway network. This also aligns with where the most people are making relatively short trips across all modes, a key indicator of where bicycle use has the greatest potential to grow.

Where gaps exist, this is typically because the roadway network is limited, often with only the major arterials providing meaningful connectivity. This presents several challenges to expanding the bikeway network: first there is a limited or non-existent network of secondary streets that may be more suitable for comfortable bikeways; second, the limited roadway connectivity focuses more traffic on fewer streets, leaving limited space to reallocate towards bikeways; and third, the network makes trip distances longer and less direct making it less attractive for bicycle trips. Typically, to provide a comfortable bikeway network in these areas, capital

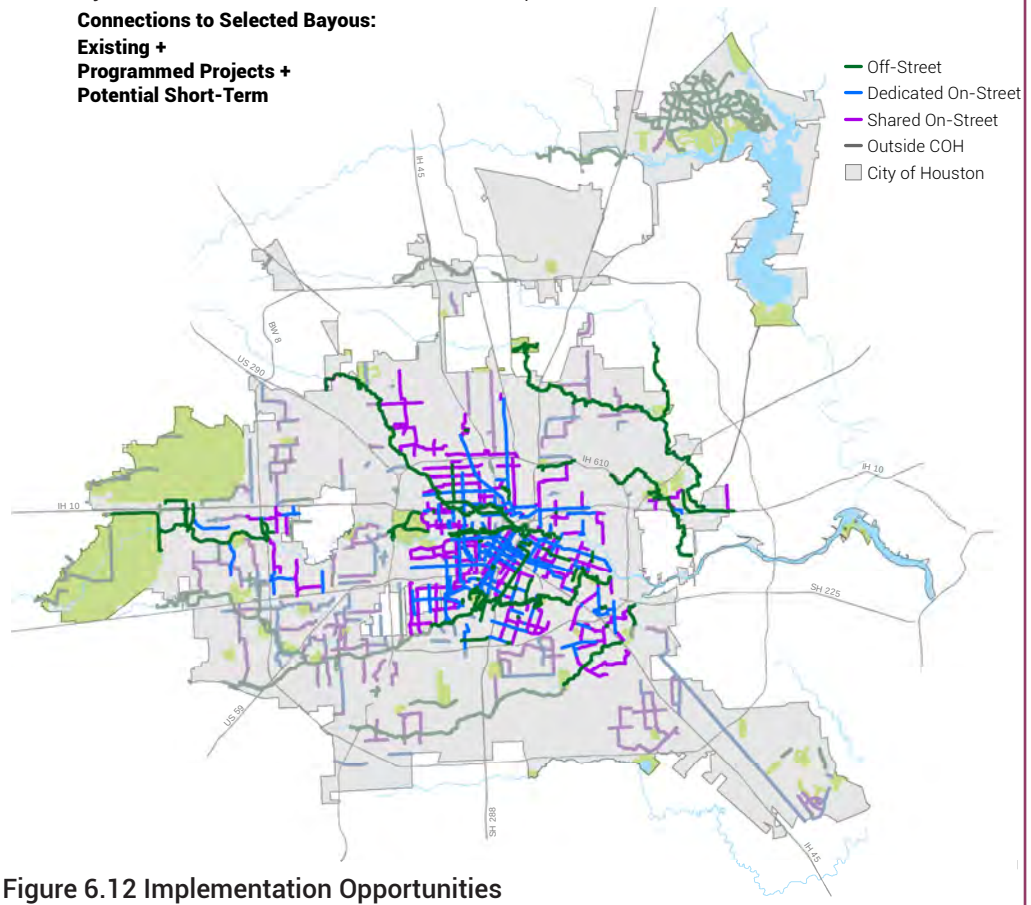


Figure 6.12 Implementation Opportunities Map: Short-Term Potential

projects such as side paths, off-street trails, or street reconstructions are required.

Overall, the short-term retrofit opportunity bucket includes ***138 miles of dedicated in street R.O.W. bikeways*** (typically some type of bike lanes) and ***242 miles of shared on-street bikeways*** (typically bike routes or neighborhood bikeways). Based on estimates presented in the 2014 H-GAC Regional Bikeway Plan, implementing all of these projects is estimated to cost between ***$27 million and $51 million***. The range will depend on the mix of bikeway types ultimately designed for these corridors, which could be anything from simple signed bike routes to buffered bike lanes depending on the context and constraints. All costs in this section are planning-level estimates and will require further engineering study to refine. They typically include restriping of the entire street segment when implementing dedicated bike lanes. Planning-level costs across these implementation buckets are summarized in Figure 6.14.

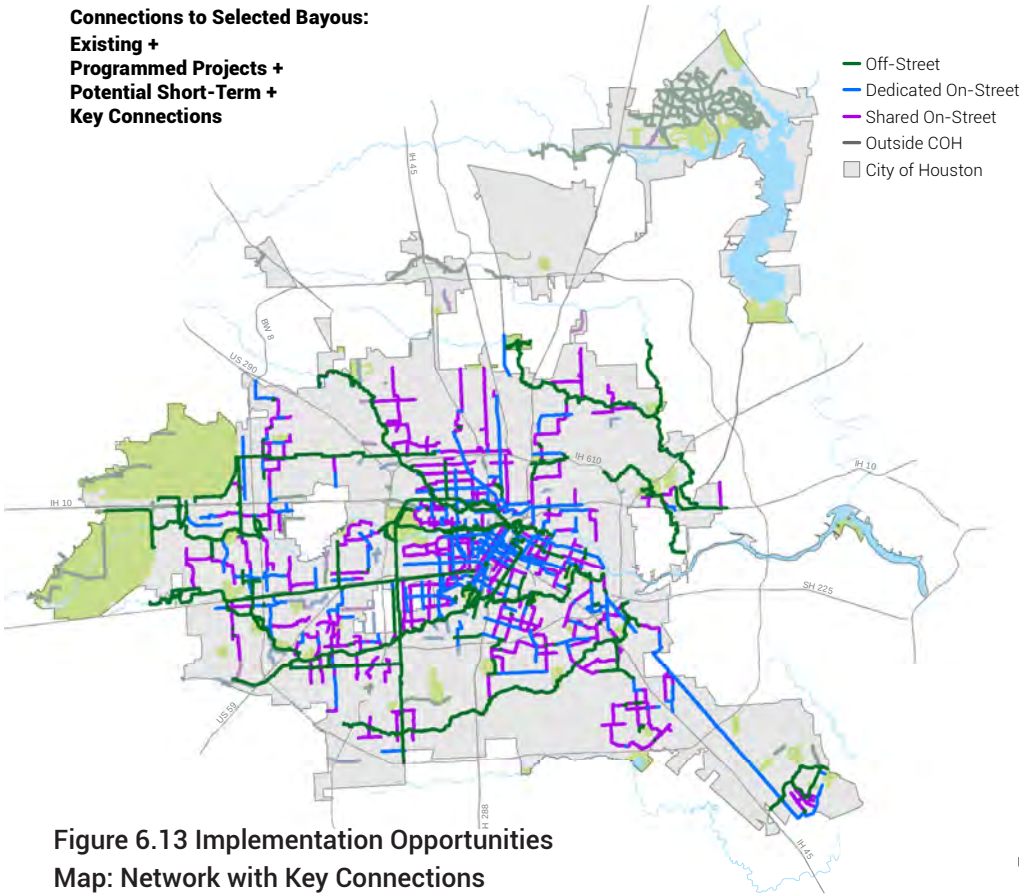


Figure 6.13 Implementation Opportunities Map: Network with Key Connections

One approach to minimize the cost of implementing these projects is to incorporate them into the regular replacement cycle of pavement markings and asphalt overlays. Doing so would add high-comfort bikeway connections while only incurring the incremental cost of the bikeway striping and signage. As maintenance funds are limited, projects could also be implemented by partnering with districts or other agencies, or by packaging projects into grant or other funding applications.

The potential short-term opportunities would create extensive on-street networks within many neighborhoods in the city. It's the Key Connection Projects, however, that tie short-term opportunities from across the city into one network, as shown in Figure 6.13. Until long term projects are completed, Kingwood would not be connected into the rest of the citywide network since the area in between is outside city limits; however, it would be

connected to Townsen Park & Ride and the Spring Creek Greenway.

The Key Connection Projects have a total estimated cost of ***$73 million to $119 million***. Therefore, the total estimated cost to implement the potential Short-Term Opportunities and the Key Connection Projects would be approximately $100 million to $170 million. A list of the Key Connection Projects is shown in Figure 6.15. They include ***75 miles of off-street***, ***8 miles of dedicated in street R.O.W.***, and ***4 miles of shared on-street bikeways***.

Some off street path segments may be fairly straightforward to build, such as those along utility corridors or on drainage easements with well-defined maintenance shelves, while others will require significant drainage work, bridge infrastructure, traffic control, or right-of-way acquisitions that can increase costs substantially. Further engineering study will be required to refine these estimates.

The long-term master plan contains an additional ***269 miles of off-street*** and ***648 miles of in street right-of-way bikeways***. The off-street paths can be estimated at ***$235 million to $382 million*** and would require development as projects. Planning work underway by the Houston Parks Board will further refine the opportunities and cost estimates for potential off-street paths along area greenways.

The on-street components would be implemented as streets are reconstructed, so specific costs and timelines will vary. Individual projects and segments may not provide immediate connectivity or continuity with the wider network, but implementing the plan consistently and methodically over the coming decades will ultimately create the comprehensive network envisioned.

Implementation Category	Miles of Bikeway			Average Cost per Mile* Low-High Range ($Thousands)			Planning Level Cost Range ($Millions)
	Dedicated in Street ROW	On-Street Shared	Off-Street	Dedicated in Street ROW	On-Street Shared	Off-Street	
Existing High-Comfort Bikeway Network	8	30	232	-			-
Programmed Projects	42	1	91	-			-
Short Term Potential	138	242	-	$90-210	$10-140	n/a	$27 - $51
Key Connections	8	4	75	$90-210	$10-140	$600-1,700	$73 - $119
Full Bikeway Network	620	28	269	n/a**	$10-140	$600-1,700	$235 - $382
Total Network	816	305	668				$335 - $552

Figure 6.14 Planning Level Cost Summary for Bikeway Network Implementation

* Cost per mile estimates are based on data from the 2014 H-GAC Regional Bikeway Plan, general planning estimates from comparable projects. Total cost estimates assume a 75%-25% and 25%-75% mix of low and high cost projects to develop range. Cost per mile estimates also include 20% to 40% for contingency, survey, engineering, and project management.

** Dedicated in Street R.O.W. bikeways will have a cost as part of the full network build-out but these would be included in the cost of street reconstruction and therefore are not included here.

#	Project	Type	Miles
1	Centerpoint/Terminal Sub Trail - BW 8 to Memorial Park	Off-Street	12.1
2	Eureka Trail - Memorial Park to White Oak Bayou	Off-Street	2.6
3	Buffalo Bayou connections at IH 610	Off-Street	0.7
4	Riverway-Woodway connection	Off-Street	0.2
5	CenterPoint Spring Branch/Oak Forest Trail - Addicks Reservoir to Shepherd	Off-Street	10.8
6	CenterPoint Wilcrest Trail - Addicks Reservoir to Buffalo Bayou	Off-Street	4.2
7	Westpark Trail - Brays Bayou to Wheeler TC	Off-Street	12.2
8	Brays Bayou Trail - Cennection at BW 8	Off-Street	0.1
9	Centerpoint Willowbend Trail - Keegans Bayou to Terminal Sub	Off-Street	5.3
10	MLK Boulevard - IH 610 Crossing - Southlea to Yellowstone	Dedicated	0.3
11	Donoho Connection - Crestmont to Mykawa	Off-Street & Shared	0.5
12	Buffalo Bayou north bank eastward extension to Bayou St.	Off-Street	0.2
13	Clinton Drive - Hirsch to Schweikhardt	Dedicated	0.3
14	Hunting Bayou Trail - Collingsworth to LBJ Hospital	Off-Street	2.1
15	Kashmere Connection - Sayers to Hunting Bayou	Off Street & Shared	1.5
16	Tidwell - IH 45 Crossing - Werner to Nordling	Dedicated	0.2
17	White Oak Bayou Heights Connections - 18th, 24th, Wynnwood	Off-Street & Dedicated	0.7
18	Tidwell Park Connection - Tidwell & Compton to trail	Off-Street	0.1
19	Hamblin Road - IH 69 to Woodland Hills	Off-Street or Dedicated	2.8
20	Sims Bayou - IH 45 to Milby Park	Off-Street	3.2
21	Berry Bayou and Connections - Sims Bayou to Allendale	Off-Street & Shared	2.2
22	Old Galveston Road - Howaed to Broadway & Connection	Dedicated	2.5
23	Glencrest Drainage Corridor - Sims Bayou to Airport	Off-Street	1.8
24	Airport Boulevard - Telephone to Hansen	Off-Street	1.8
25	Southeast Houston Connections (6)	Off-Street & Dedicated	0.4
26	Clear Lake Bayou Trails	Off-Street	7.5
27	Bay Area Boulevard - Old Galveston to Bay Area P&R	Off-Street or Dedicated	0.4
28	Bering Ditch Trail	Off-Street	2.4
29	Memorial Drive - Memorial Park to Shepherd	Off-Street	1.2
30	Shadowdale Connections	On-Street & Off-Street	2.1
31	Scott, Reed & Red Bud Connections	Off-Street	1.1
32	Brays Bayou Gaps - Buffalo Speedway & Chimney Rock	Off-Street	1.1
33	Fulton - Melbourne/North Lindale Station to Donlen	Off-Street or Dedicated	0.1
34	Hendon at Centerpoint Easement	Off-Street	0.1

Total: 87 Miles

Figure 6.15 Key Connections Priority Projects Connecting Potential Short-Term Bikeways

4. DEVELOP RESOURCE AND STAFFING NEEDS

Implementation of the Houston Bike Plan will require significant resources from the City and presents a staffing resource challenge that will need to be addressed. Staffing resources will be needed for a variety of activities to move policies forward, develop and manage programs, and provide input or review projects being implemented by the City and other entities. Additionally, coordination within multiple city departments, external agencies, developers, and the advocacy community will require a substantial amount of staff time.

Staffing of the Houston Bikeways Program to manage a comprehensive bicycle plan should include, at a minimum, two full-time staff between the Public Works & Engineering and the Planning & Development departments, including the Pedestrian and Bicycle Coordinator (potentially renamed the Active Transportation Coordinator).

Other City departments, particularly Parks & Recreation focused on parks and bayou trails, the Police Department related to enforcement, and the Health Department for education and outreach, will have a variety of roles to play in implementation. Future staffing needs of all departments should be considered comprehensively to ensure best use of resources.

Staffing requirements across all departments should be evaluated regularly, potentially through the annual Bikeways Strategic Report as implementation progresses to ensure adequate capacity to successfully employ recommendations and strategies of the Plan. There should be increased opportunities for training of staff in appropriate departments in the planning, design, engineering, construction, and maintenance of bikeway facilities.

In addition to Houston Bikeway program staff, the development and management of a **Bicycle Advisory Committee** (BAC) can play a key role in implementation. With strong ties to the community, advocacy groups, and public agencies, this committee should be formally established and meet regularly throughout the year. The committee will be vital to implementation through coordination and prioritizing future efforts based on the annual strategic assessment report and new issues or opportunities that develop in the community.

The role of the BAC is recommended to include but not be limited to:

- Working with the City in achieving the ten-year vision and any interim goals and targets
- Development of an annual Houston Bikeways report;
- Working with the City to develop recommendations to address the issue of long-term maintenance of bikeways, both off and on street.

Key Recommendation 4.1

Increase Houston Bikeways Program staff in appropriate departments in the City.

Key Recommendation 4.2

Establish the Bicycle Advisory Committee as a regular standing committee that works with the City staff to implement the Bike Plan.

5. LEVERAGE FUNDING OPPORTUNITIES

For the Houston Bike Plan to be implemented, funding is a key element that must be identified and secured. The City of Houston and its partners have successfully obtained multiple forms of federal and local funding in recent years with TIGER and FHWA grants, as well as a voter-approved bond for the Bayou Greenways Initiative.

However, spending for bicycle facilities and programs has varied greatly over the past several years. For example, from 2011 to 2014, the amount spent on bicycle and pedestrian facilities ranged from $32.3 million and $46 million in 2011 and 2012 respectively, to $15.9 million and $15.1 million in 2013 and 2014 respectively. This funding was allocated from the City's budget and Capital Improvement Program, and included spending from bicycle related projects and programs through the Public Works and Engineering and the Parks and Recreation Departments. (Source: City of Houston data reporting for Alliance for 2014 and 2016 Biking and Walking Benchmarking Report)

Current best practices from cities that have made significant improvements in their bicycle networks, mode share, and overall culture have created funding targets and dedicated funding from their budgets to address Bike Plan implementation. A regular source of funding, with a minimum or target amount within the budget, is needed to not only build the bicycle network, but also provide the required regular maintenance of facilities that ensure that the bikeways remain comfortable and safe.

Funding for bicycle facilities and programs comes from a variety of sources such as local resources, federal funds, and grant programs. While a dedicated funding source within the City is desirable, the key to successful implementation of a bicycle network for the City of Houston is utilizing a variety of funding sources that can complement local funding and best leverage available resources. Below is a description of available funding sources for bicycle planning and implementation.

Local Funding Mechanisms

The City's **General Fund** is responsible for providing core city services such as public safety, facility development and maintenance, and parks and recreation. The Public Works & Engineering (PWE) and Planning & Development (PD) departments are funded through the general fund's development and maintenance services category. The Parks and Recreation Department (HPARD) is funded through the human and cultural services category. Bicycle program resources and non-capital projects would most likely be supported through these categories within the respective department's allocated budget through the general fund.

The City of Houston's **Capital Improvement Program (CIP)** allocates funds for all major capital improvement projects, regardless of the funding source. Many projects implement physical improvements to public facilities and infrastructure. This program

is an important tool for improving bicycle facilities and utilizes funds from a wide variety of sources including bonds, fees, and federal grant sources. The CIP shows a five-year prioritization of infrastructure projects and is revised annually. The City's CIP also provides a long-term planning process for street and drainage systems. Within the CIP, ReBuild Houston provides a specific method for funding street and drainage system infrastructure. Several funding sources are comprised within ReBuild Houston for street projects, which can include bicycle facilities. Those funds come from a drainage utility charge, developer impact fees, ad valorem taxes, and third party funds, such as METRO, TxDOT and federal grants. Incorporating bikeways into the street design of projects as part of the CIP and ReBuild Houston project development processes will aid in the ability to fund implementation of the Bike Plan recommendations. Capital planning and allocation must be consistent with City of Houston processes and approvals, including the CIP and City Council authorization and funding requirements,

The City of Houston has the authority to issue **municipal bonds** for the purpose of financing infrastructure needs. The City has recently utilized bonds to fund the Bayou Greenway Initiative, which develops green corridors with hike and bike trails along the bayous in the Houston area. Voters in the City of Houston could authorize future bonds to be slated for build-out of the bicycle network as identified in the Bike Plan recommendations

Energy Corridor Bikeway

Source: http://energy-corridor.blogspot.com/2015/03/biking-in-energy-corridor.html



as a method to implement the long-range network.

Municipal Management Districts (MMDs) are special districts created by the Texas legislature. These districts are empowered to promote transportation and economic development, along with several other functions within their boundaries. Beyond infrastructure investment, MMDs provide a maintenance activities for transportation facilities, implement bicycle programs, and are a valuable resource. Most MMDs are able to issue bonds and receive funding from ad valorem taxes, assessments, impact fees, or other funds in order to provide improvements and services. MMDs are an important partner for the City of Houston as many are working towards improvements in their bicycle infrastructure already.

Tax Increment Reinvestment Zones (TIRZs) are special zones created by City Council in efforts to attract new investment in an area. Taxes from new improvements are set aside in a fund designed to finance public improvements within the boundaries of the TIRZ. Public improvements can include bicycle facilities and amenities. Many TIRZ boundaries overlap with MMDs as well, providing even greater opportunities to support implementation and maintenance of the Bike Plan. Coordinating and leveraging funding with MMDs and TIRZs is an important strategy that the City of Houston should embrace in order to build out the bicycle network and provide amenities such as bike parking, showers, or promotion of bicycling.

Impact Fees are currently employed in the City of Houston in relation to managing wastewater capacity and demands and drainage through ReBuild Houston. Best practices in other localities include assessing impact fees on new development to pay for transportation projects that are tied to vehicle trip generation rates and traffic impacts of those developments on the transportation network. Developers can reduce these impacts and pay decreased rates by paying for on or off-street bikeway improvements. In-lieu parking fees may also be used to contribute to the construction of new or improved bicycle parking facilities.

Voter Approved Sales Taxes have been utilized in cities to pay for bike facilities. Currently, the City of Houston imposes an 8.25% sales and use tax rate, which is at the maximum allowed by the State of Texas. Bills have been introduced in the last two state legislative sessions for a local-option tax, which would allow cities to impose additional sales taxes above the 8.25% cap to pay for the needs of the locality, including transportation-related infrastructure. If the Texas Legislature creates a local-option sales tax in the future, and voters in the City of Houston approve, it could be a reliable revenue stream to fund implementation of the Bike Plan.

Parking Benefit Districts can serve as a financing tool to support improvements in employment and activity centers. Within

a parking benefit district, public parking spaces (on and off-street) are charged hourly rates designed to keep a particular percentage of parking spaces vacant at all times. Funds collected from parking charges go directly to improvements within the district, such as bike facilities and amenities. According to case studies in Austin, Texas and Washington, D.C., the Federal Highway Administration has found that the application of parking benefit districts has been shown to reduce the need for surface parking and improve traffic congestion while funding local improvements, such as bicycle facilities within the district.

Federal Grant Programs

In 2015, Congress passed the Fixing America's Surface Transportation (FAST) Act, which is a five-year transportation funding bill. The FAST Act provides funding for eligible bicycle projects through multiple funding programs. Utilization of federal funds to grow and improve the City's bicycle network can be most advantageous for large-scale projects or packages of projects. Federal funds typically require a local match of at least 20%. Additionally, projects must meet federal standards. The FAST Act now recognizes NACTO design guidelines in addition to AASHTO and state design standards for bicycle facilities, providing cities with added flexibility for the design of projects. In addition to more flexible design standards, non-profit agencies are also now eligible to receive funding.

The following funding sources are most commonly utilized for bicycle projects and are also shown in Figure 6.16 along with other federal programs that can also support funding for bicycle projects.

Surface Transportation Block Grant Program (STBGP) funds are perhaps the most flexible federal funding available and may be used for nearly all transportation project types, including construction of a wide variety of bicycle facilities and non-construction projects such as maps, data collection and monitoring, bike share, bicycle storage, and public service announcements related to safe bicycle uses, among others. STBGP funds are allocated to states, with 55% suballocated to the local Metropolitan Planning Organization (MPO). The Houston region's MPO is the Houston-Galveston Area Council (H-GAC). H-GAC holds a competitive process for distributing funds and typically holds a call-for-projects every other year, coordinating with approval of the Transportation Improvement Program (TIP).

The Surface Transportation Block Grant Set-aside Program (STBGSP) allocates funding specifically for bicycle and pedestrian projects (previously the Transportation Alternatives Program). Eligible activities include infrastructure facilities, safety and educational activities, and Safe Routes to School programs. These funds are subject to the same competitive process and allocation as the overarching STBGP funds.

Funds from the **Congestion Mitigation and Air Quality (CMAQ) Improvement Program** may be used to construct bicycle facilities or non-construction projects such as maps, brochures, and public service announcements related to safe bicycle use. CMAQ funds are also allocated through a competitive process by the MPO, and typically match the same call-for-projects timing as STBGP funds.

The Highway Safety Improvement Program (HSIP), aims to improve roadway safety for all modes of travel. A highway safety improvement project is any strategy, activity, or project on a public road that is consistent with the State Strategic Highway Safety Plan (SHSP) and corrects or improves a hazardous road location, or addresses a highway safety problem. The program can provide funds for bicycle infrastructure improvements. Based upon analysis from the League of American Bicyclists, this funding source has historically been underutilized for bicycle projects based on analysis of the number and types of bicycle projects that applied for funding, as well as overall funding allocation of the program.

The National Highway Traffic Safety Administration provides funding related to bicycle and pedestrian projects for law enforcement training programs, safety enforcement campaigns, and education and awareness campaigns. This is administered under the **Section 405 National Priority Safety Programs**. These funds are eligible to states where bicycle and pedestrian fatalities exceed 15% of overall traffic fatalities. According to current data, Texas is eligible to receive these funds.

The Recreational Trails Program has been reauthorized under the FAST Act. The program funds trails for recreational modes such as walking, hiking, bicycling, equestrian use, and more. This is a set-aside of the STBGSP funding, administered locally by the Texas Parks and Wildlife Department, and awarded annually.

Other Federal Funding Mechanisms

Transportation Investments Generating Economic Recovery (TIGER) funds are competitive discretionary grants allocated directly by the U.S. Department of Transportation for innovative projects that focus on safety, economic competitiveness, state of good repair, livability, or environmental sustainability. Projects are intended to provide significant impacts to the project area and larger region or metropolitan area. Houston has received three TIGER grants since the program's first allocation in 2010, including one for a package of bicycle access to transit projects. TIGER funds are historically allocated every year through annual appropriations.

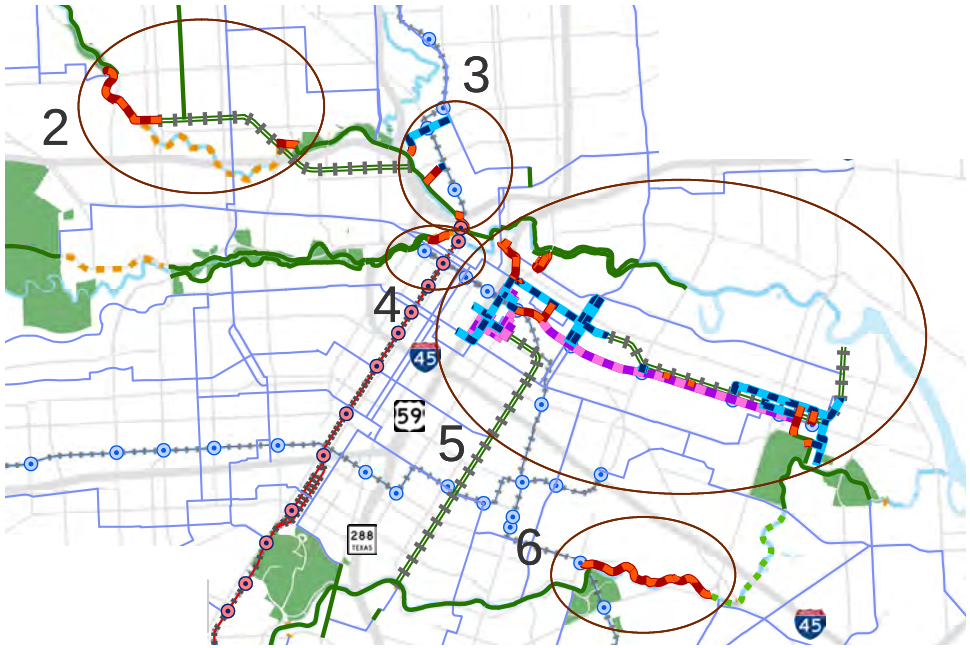
The Transportation Infrastructure Finance and Innovation Act (TIFIA) program provides federal credit assistance through direct loans, loan guarantees, and standby lines of credit to finance surface transportation projects of national and regional significance. TIFIA is helpful tool to advance large-scale projects that may otherwise be delayed due to size, complexity, or timing of revenues. The FAST Act requires a $10 million project threshold.

The **Centers for Disease Control and Prevention (CDC)** recognizes the nexus between active transportation, such a bicycling, and improved community health. The Division of Community Health (DCH) manages multiple grant programs that aim to improve community health, including improving access to and increasing physical activity. Working together with the City of Houston and/or Harris County Health Department may provide opportunities to leverage funding through the DCH for programs that encourage physical activity through bicycling and improve access to physical activity with high-comfort bikeways.

The **Community Development Block Grant (CDBG)** Entitlement Program provides annual grants on a formula basis to cities and counties. These grants are awarded from the U.S. Department of Housing and Urban Development (HUD) to revitalize neighborhoods, improve economic development, and provide improved community facilities and services. Eligible activities include construction of public facilities improvements, including bikeways.

Community Partnerships

Partnerships with other city departments, outside agencies, and others within the community are key to funding bikeways and leveraging resources efficiently. As high-comfort bikeways provide healthy, affordable, and fun transportation options to a community, they also add significant value. As such, bikeway projects can attract investment interest from developers, businesses, hospitals, philanthropic organizations, non-profits, universities, and transit agencies. The following list identifies means to better leverage resources from these entities.



Map of TIGER grant projects awarded in 2012 connecting bikeways to transit

Source: www.houstonparksboard.org

Figure 6.16 Federal Funding Sources and Eligible Bicycle Project Activities

	Eligible Activity	TIGER	FTA	CMAQ	HSIP	NHPP	STBGP	TAP	405	RTP	SRTS	402
Bicycle Project Type	Access enhancements to public transportation	X	X	X			X	X				
	Bicycle lanes on road	o	X	X	X	X	X	X			X	
	Bicycle parking	o	X	X		X	X	X		X	X	
	Bike share	X	X	X		X	X	X				
	Bicycle storage or service centers	o	X	X			X	X				
	Crosswalks (new or retrofit)	X	X	o	X	X	X	X		X	X	
	Data collection and monitoring	o	X			X	X	X		X	X	
	Helmet promotion						X	*			X	X
	Landscaping, streetscaping (bicycle route; transit access)	o	X				X	X				
	Lighting (pedestrian and bicyclist scale associated with bike project)	X	X		X	X	X	X		X	X	
	Maps		X	X			X	X			X	
	Paved shoulders	X		o	X	X	X	X			X	
	Police patrols/ Enforcement Campaign						*	*	X		X	X
	Safety brochures, books						*	*	X		X	X
	Separated bicycle lanes	X	X	X	X	X	X	X			X	
	Shared use paths	X	X	o	X	X	X	X		X	X	
	Signs/signals/signal improvements	X	X	X		X	X	X			X	
	Signed bicycle routes	X	X	X		X	X	X			X	
	Spot improvement program	X	X		X		X	X		X	X	
	Traffic calming	X	X		X	X	X	X			X	
	Training			X			X	X	X	X	X	X

X = eligible o = eligible, only competitive as part of a larger project * = only eligible under srts program

TIGER: Transportation Investment Generating Economic Recovery
FTA: Federal Transit Administration Capital Funding (includes Section 5307 and 5339 programs)
CMAQ: Congestion Mitigation & Air Quality Improvement Program
HSIP: Highway Safety Improvement Program
NHPP: National Highway Performance Program
STBGP: Surface Transportation Block Grant Program
TAP: Transportation Alternatives Program (set-aside of STBGP)
Section 405 National Priority Safety Programs
RTP: Recreational Trails Program (set-aside of STBGP)
SRTS: Safe Routes to School Program (set-aside of STBGP)
402: State & Community Highway Safety Grant Program

- The City can develop policies to require or create incentives for **developers** to enhance their projects with bicycle parking, amenities, or investment in infrastructure on or adjacent to the developer's property. Incentives through the permitting process have successfully been utilized in other cities to help develop bicycle facilities and encourage bicycle amenities.
- **Businesses** designated as "Bicycle Friendly" and others that have a particular interest in bicycling may be interested in partnerships as they already see the benefits of bicycling. Financial assistance in connecting bikeways to their business or providing parking, other bicycle amenities, and promotion of bicycling are just a few ways that businesses may be partners in implementing the Bike Plan.
- **Hospitals and other health service providers** are natural places of concern for community health and can be a partner for improving active transportation facilities. For example, the Seattle Children's Hospital committed to making bicycle and pedestrian improvements in its Major Institution Master Plan. Through that, they are improving nearby connections, including bike lanes, to the hospital and investing $2 million in a Bicycle and Pedestrian Fund to build infrastructure to help employers and visitors access the hospital safely. Working with hospitals in Houston, particularly within areas like the Texas Medical Center, could be an additional strategy to aid in the "last-mile connections" within activity centers and neighborhoods.
- **University and educational campuses** are historically attractive for bicycling by students, faculty, and staff as parking constraints are common. Bicycling eases parking demand and is an attractive option to community members looking for low-cost transportation. Colleges across the country have helped fund bikeways that provide important connections to or across their campuses.
- **Philanthropic entities and non-profits** exist to make improvements to the community. Partnerships with non-profit organizations can demonstrate support for projects and programs beyond the City government, which can be crucial to obtaining federal funds or leveraging new local funding. The Kinder Foundation focuses on the greater Houston area and has supported bicycle infrastructure improvements through the Bayou Greenway Initiative. The National Foundation Center (www.foundationcenter.org) provides a database of grant program information, including guidelines and application

procedures. The Robert Wood Johnson Foundation awards grants for bicycle and pedestrian projects if they can be tied to research or promotion of health and physical activity. The Rails to Trails Conservancy provides grants to turn unused rail corridors into public places.

- As the City's transit provider, the **Metropolitan Transit Authority of Harris County (METRO)** can be an important partner for the City in implementation of the Bike Plan. Federal Transit Authority (FTA) formula funding allocated to METRO is available to be spent on access to transit facilities, providing parking, improving signage, and even maintaining those facilities, provided there is a link to transit. Additionally, the FTA Bus and Bus Facilities program provides eligibility for bicycle routes to transit facilities. Biking and transit have natural linkages and a partnership with the METRO, which would improve opportunities for transit patrons to better access and utilize METRO services and facilities, building upon the METRO Bike & Ride Plan, and could leverage funding that would benefit both agencies.
- As the region's Municipal Planning Organization (MPO) the **Houston-Galveston Area Council (H-GAC)** will be a key partner in the development, coordination and funding of the Bike Plan. Continued engagement and coordination on funding opportunities will be critical to implementation success.

Bike parking at METRO's Kingsland Park & Ride

Source: www.ridemetro.org



Maintenance & Operation Funding

Maintenance of bikeways is an important issue to discuss in relation to funding. When maintenance dollars available to the City are already stretched, the addition of new bikeways, particularly the miles of facilities recommended in the Bike Plan, can be an additional strain on the budget. Many funding sources typically support the construction of new facilities, but often do not address the continued maintenance needs associated with those facilities.

While constrained funding for maintenance should not preclude constructing new bikeways, it does present a need to develop priorities for maintaining bikeways along with other facilities. Other cities have utilized a

variety of strategies including but not limited to partnerships, federal funding through the FTA's State of Good Repair program or the Recreational Trails Program, or local funding through prioritization and inclusion in other routine maintenance programs, or increases in the local sales tax to ensure proper bikeway maintenance.

Development and maintenance of bike facilities has been identified as one of four goals for the Bike Plan. Not all bikeways are maintained by the City; multiple agencies and entities build and maintain infrastructure within the City. As the City implements the Bike Plan it is recommended to use best practices to maintain these facilities within its funding constraints. It is recommended that one of the key roles of the Bicycle Advisory Committee (Strategy 4.2) should include working with the City to develop recommendations to address the issue of long-term maintenance of bikeways, both off and on street.

Key Recommendation 5.1:

Create a spending target with dedicated funds from the City's budget for bikeway projects and programs.

Key Recommendation 5.2:

Identify and pursue funding partnerships and support from other local agencies, City departments, and private entities to leverage funds.

Key Recommendation 5.3:

Pursue funding for short-term and key connection projects.

Key Recommendation 5.4:

Develop bicycle facility maintenance prioritization criteria and incorporate bicycle facility maintenance as part of roadway maintenance when possible.

6. BUILD MOMENTUM THROUGH PILOT PROJECTS

With each new high-comfort bikeway that opens and expands the network, more people will have access to better opportunities. These instances should be wholeheartedly celebrated.

One additional approach for building momentum for implementation of the Bike Plan is the development of pilot projects that showcase how the Bicycle Toolbox can be applied. Often in Houston, people who have not had a chance to view best practices in bikeway design in other cities do not clearly understand what high-comfort bicycle infrastructure can look like with the exception of the great bayou paths expanding across the city. Their experience is typically narrow bike lanes or shared roadways that are not designed to encourage people of a broad range of ages and abilities to ride.

The City of Houston and its partners already have several bikeway projects in development that will start to change this. The Separated Bikeway on Lamar Street in Downtown was a first step to showing what is possible and projects are planned that extend this facility west to connect to Buffalo Bayou and east to St. Emanuel in EaDo.

Additional projects that are coming online soon include:

- Bike Route and Wayfinding on Hutchens Street - EaDo
- Center Point Easement Walk/Bike Path north of Orem Street in southwest Houston
- MKT Trail Crossings
- Bayou Greenway Trails Multiple Bayous

This Implementation Strategy showcases an additional five proposed pilot projects that will provide the City with additional, key near-term improvement opportunities. Through pilot projects, people will be able to see and experience quality bicycle infrastructure, which will in turn provide opportunities for more community feedback and encouragement to the City to implement more high-comfort facilities in more locations.

The proposed pilot projects were selected to show conceptual improvement across various contexts and in different geographic areas of the City. The projects utilize a range of approaches from the Toolbox. These locations have been identified as gaps or barriers to people bicycling. They show how facilities can meet community needs identified through public outreach, provide important links in the bikeway network, improve intersections, and help bicyclists safely navigate neighborhoods.

1. Intersection Improvements – Polk Street at Scott Street

The intersection of Polk Street is one of the longer on-street bikeways in Houston's East End. The corridor connects Downtown, EaDo, and the Columbia Tap Trail with METRORail

Pilot Projects:

Proposed pilot projects are conceptual in nature. Development of pilot implementation should follow the public engagement process as recommended under Section 9 of this chapter. Key Recommendation 9.1 recommends incorporation of public engagement beginning no later than preliminary engineering, i.e. the design phase of the project.

transit and neighborhoods east of Scott Street. The intersection presents a barrier due to the current design and is complicated by the presence of METRO's Purple Line LRT and the transition of Scott Street to the Sampson/York one-way pair north of the intersection. The pilot project develops a design to improve the bike lanes on Polk Street through the intersection.

2. ROW Reallocation – Kelley Street Hirsch to LBJ Hospital

Kelley Street is a six-lane Major Thoroughfare carrying low traffic volumes. The corridor is an important connection to METRO's Kashmere Transit Center and LBJ Hospital. The pilot project develops improved bike lanes along this corridor connecting destinations and linking to a north-south bikeway on Hirsch Road which provides connections to the Bayou trail system.

3. ROW Reallocation – Gemini Avenue– Bay Area Park & Ride to Saturn Lane

This bikeway was recommended in the 2011 Clear Lake Pedestrian and Bicycle Plan as a route to connect Bay Area Park & Ride to Saturn Lane and the Johnson Space Center. These streets are four-lane undivided roadways with an estimated 4,000 to 6,000 vehicle trips per day. This pilot project would develop a four-lane to three-lane conversion approach as well as potential intersection treatments for signalized intersections along the route.

4. Neighborhood Bikeways – Gulfton-Sharpstown neighborhood plan area.

Implementation Strategy 8 is developing a pilot approach to neighborhood planning looking at how to integrate neighborhoods into the citywide bikeway network. This also includes programs and policies to support an increase in bicycling tailored to that neighborhood's needs and starting point. This pilot project details some of the recommendations developed with the community.

5. Bike Station – Downtown Houston

The ThinkBike workshop in Downtown Houston identified the potential to develop a BikeStation in downtown which generates support among the Downtown District, potential developers, and others. This pilot project outlines a potential location to develop a Bike Station and create a plan for how it could be implemented.

Key Recommendation 6.1

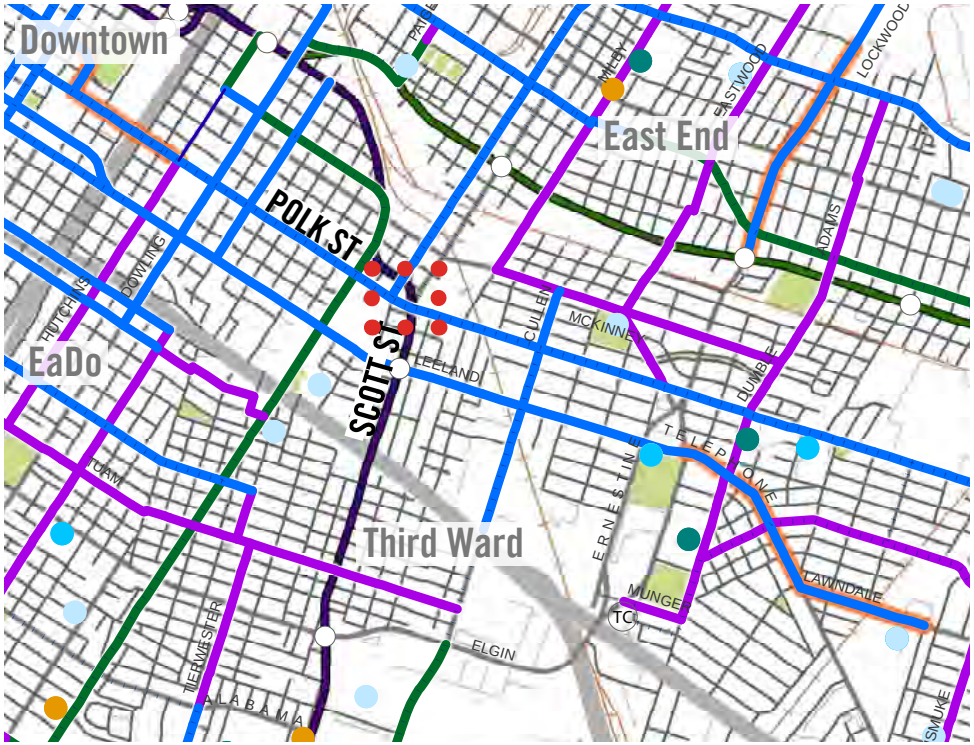
Create conceptual plans for specific bikeway treatments across the city.

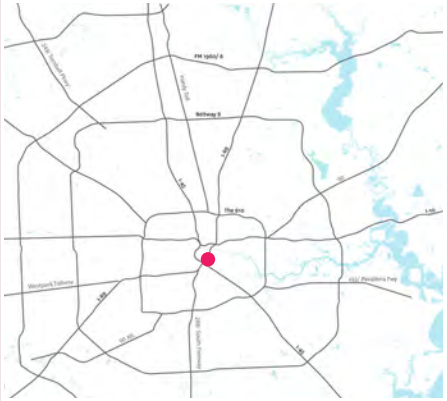
Key Recommendation 6.2

Implement and celebrate bikeway projects to build momentum to implement the Plan.

Pilot Projects

Polk Street at Scott Street





TOOLBOX ITEMS

Bike Lane

Turn Lane Treatment

Intersection Crossing Markings

CONTEXT

A wide intersection of two arterials with bus traffic, a light rail line, and high turn volumes.

SOLUTION

A continuous bike lane through the intersection area separated from cars

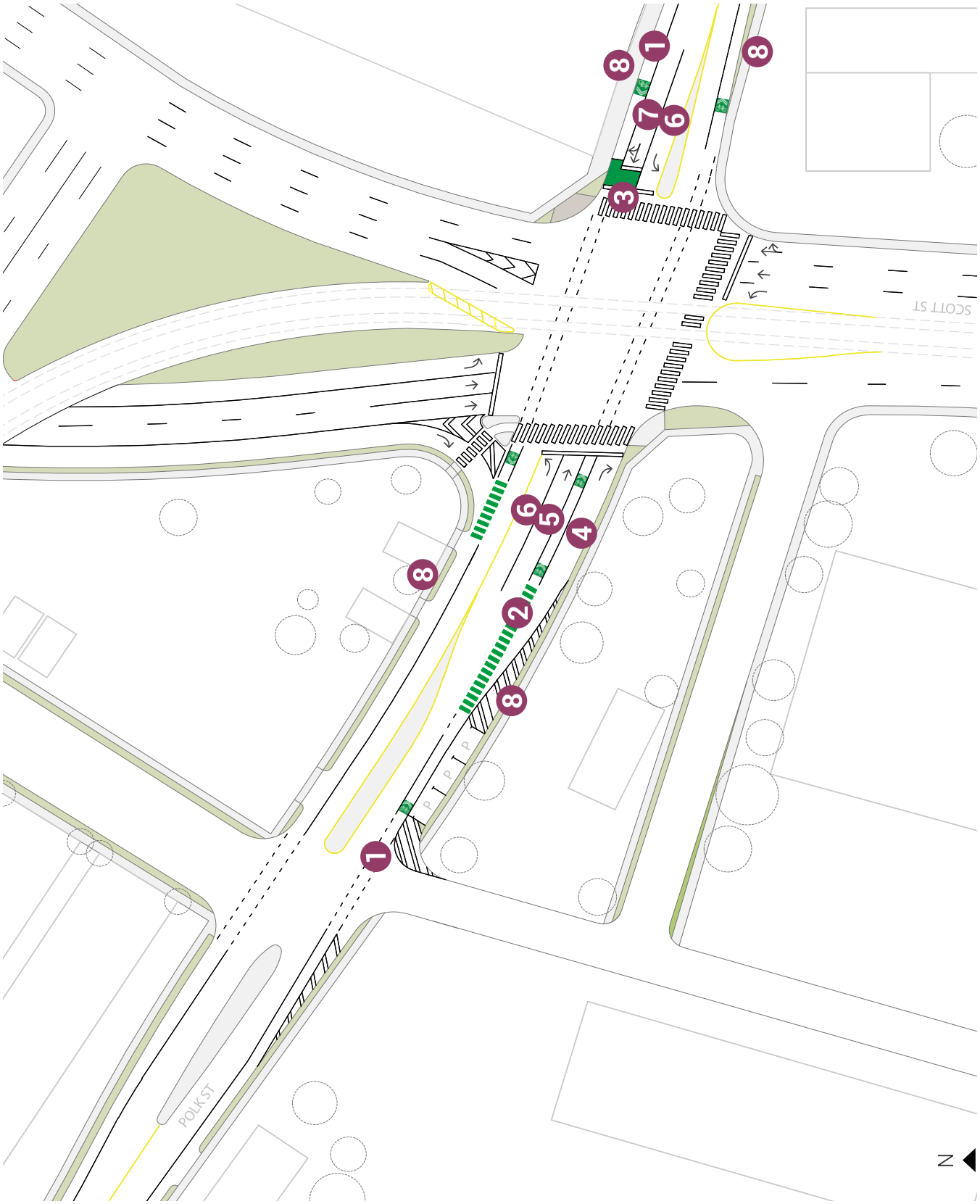
OUTCOME

Creates a more comfortable and safer bike route from the East End and EaDo into Downtown.

1. Bike Lane
2. Merge Zone
3. Bike Box
4. Right Turn Lane
5. Through Lane
6. Left Turn Lane
7. Right Turn Lane / Through Lane
8. Bike Lane and No Parking Signage

DESCRIPTION

Polk Street is a major east-west bike route that creates a link from Downtown through a rapidly developing part of EaDo to dense residential neighborhoods in the East End. It connects to Buffalo Bayou to the west, Brays Bayou to the east, and the Columbia Tap in EaDo. It also meets two light rail lines and several high frequency bus routes. Because of proximity to the Lamar Street separated bike lane into Downtown, Polk Street has potential to be a high quality connection into and Downtown. It is already a well-used bike


SCOTT ST
POLK ST
N

route, and, because it serves neighborhoods with many short trips, it has the potential to increase bike use.

Polk Street has an existing bike lane. The lane is substandard, but the street space exists to make it a high-comfort facility through re-striping, maintenance, and parking restrictions. However, the intersection with Scott Street is a major barrier. Scott has four lanes with a center running light rail line. Polk also widens to provide turn lanes at the intersections. Both streets carry some truck traffic and frequent bus routes, and there are many turning movements. The bike lane on Polk continues to the intersection, but is located between the curb and right turning cars, setting up dangerous conflicts.

The proposed pilot project creates a dedicated right turn lane. This sets up an approach with one left-turn lane, one right-turn lane, and one through lane to match the single receiving traffic lane on the other side of the intersection. Using a recommended turn-lane treatment as shown in the Bicycle Toolbox, the bike lane is placed between the right-turn lane and the through lane, resolving conflicts between bikes and right running cars. Pavement markings continue the bike lane through the intersection.



Polk St @ Scott St Looking East (Existing)

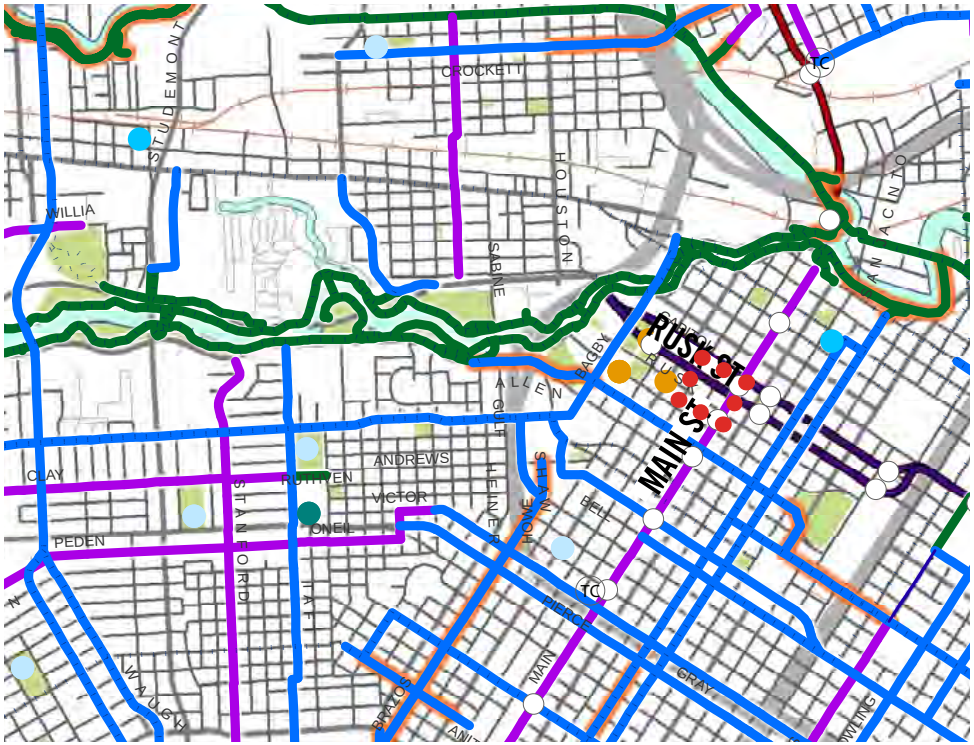


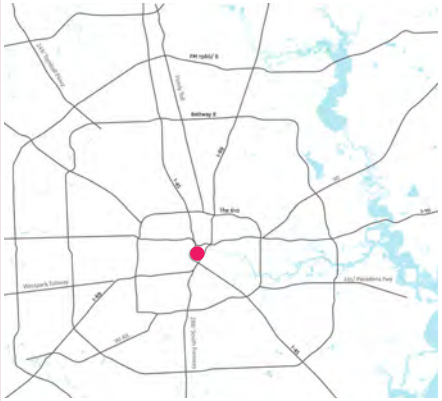


Proposed Pilot Project - Polk St @ Scott St

Pilot Projects

Bike Station at Rusk St and Main St





TOOLBOX ITEMS

Bike Station

CONTEXT

The ground floor of an office building in the center of the Downtown employment core.

SOLUTION

A Bike Station offering bike valet parking, bike repairs, bike supplies and accessories and, information.

OUTCOME

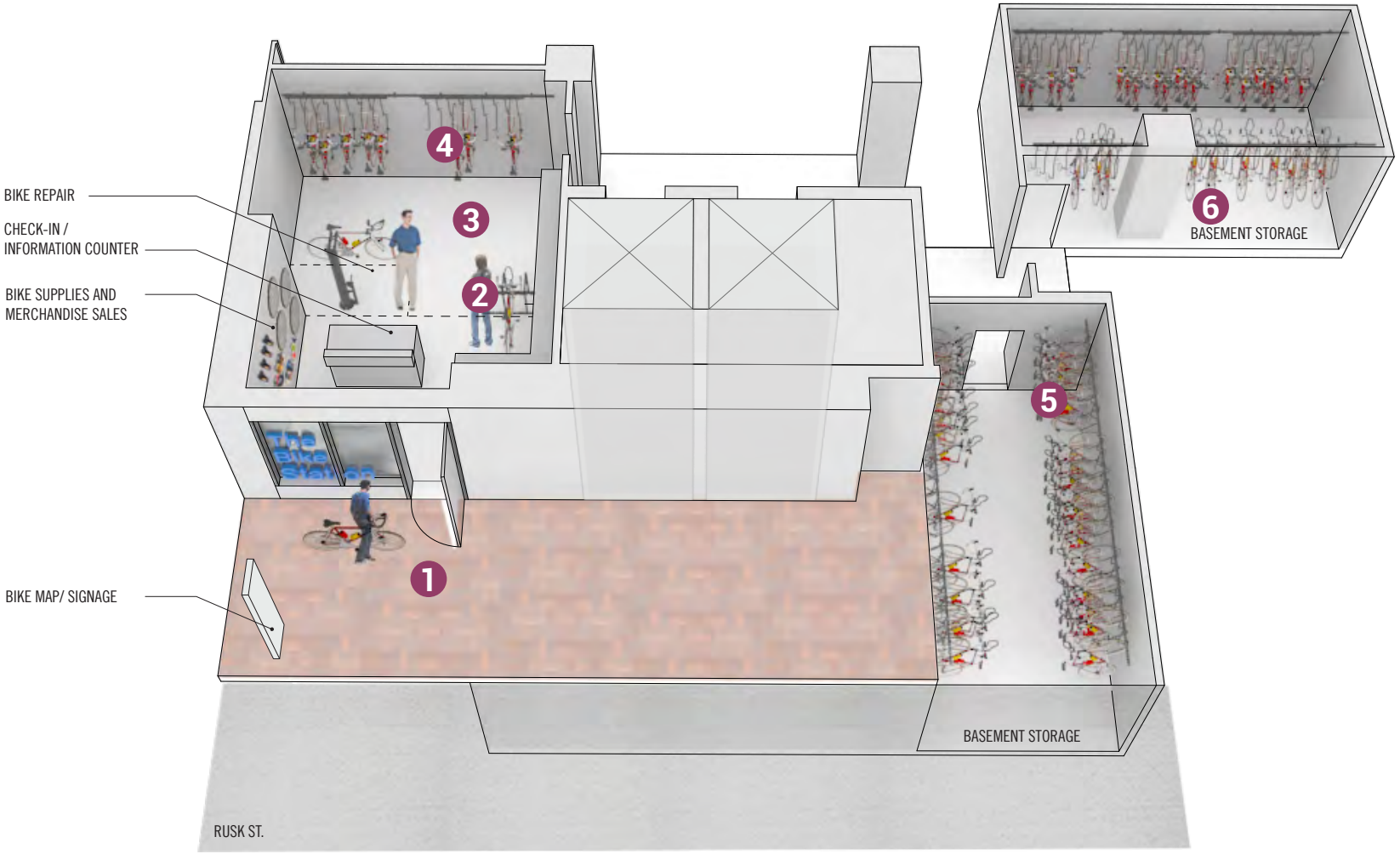
Makes it easier for employees in Downtown office buildings to bike to work.

1. Rider bikes to station
2. Rider parks bike at drop-off rack
3. Rider gets claim slip from attendant
4. Attendant hangs bike
5. Basement storage
6. Additional basement storage may be added

DESCRIPTION

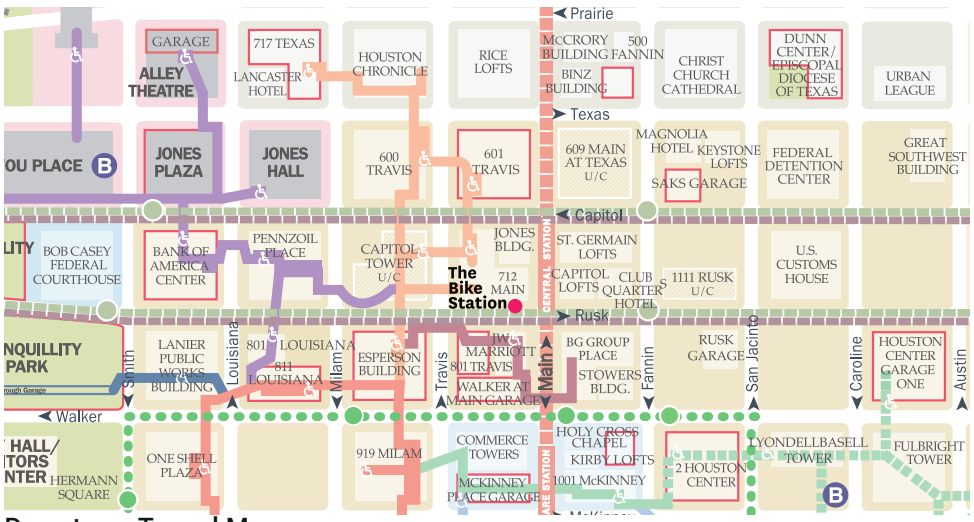
Downtown has a high potential for bike commuting. There are a lot of jobs in a small area, surrounding neighborhoods are dense, and the Bayou Greenways offer high-comfort connections. However, secure bike parking can be a challenge. Only some companies and office buildings offer sheltered, protected parking.

A bike station would address the parking need for a large number of Downtown employees with a single project. Located on the ground floor of a Downtown building, it would offer valet parking: riders would ride up, leave their bike with an attendant, get a claim ticket, and walk out. The station would also be able to offer other services. Bikes could be professionally repaired during the day, and the attendant could also sell bike supplies and accessories.


BIKE REPAIR
CHECK-IN / INFORMATION COUNTER
BIKE SUPPLIES AND MERCHANDISE SALES
BIKE MAP/ SIGNAGE
1
2
3
4
5
6
BASEMENT STORAGE
BASEMENT STORAGE
RUSK ST.
N

Equally as important, the bike station would be a visible bike presence in Downtown, raising awareness and giving people who are interested in riding the opportunity to walk in and get information and advice.

The site shown here is on the ground floor of 712 Main Street, facing Rusk Street. This is an ideal location within two blocks of over 10 million square feet of office space, adjacent to a light rail station, and close to Main Street, which is designated as a bike corridor in the Bike Plan. The building is currently being renovated by Lionstone Investments and Midway, and space is available for the bike station on the ground floor, in addition to remote storage space in the basement. Since the building will have a gym, it might also be possible to reach an agreement where bike station members could use the showers and lockers in the gym a critical component for some people to ride. The station could be managed by the building owner, a non-profit, or the Downtown Management District. The operator might operate themselves or contract operations to a bike shop. Bike valet rates could support operating costs, or public funds could be used to subsidize the operation.



Downtown Tunnel Map

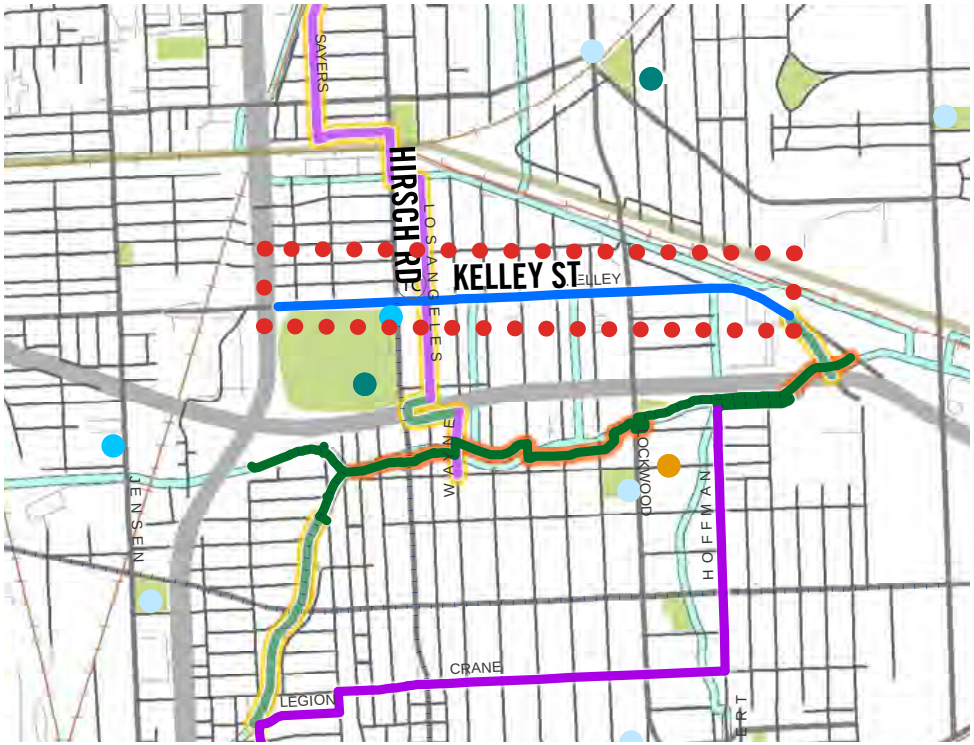


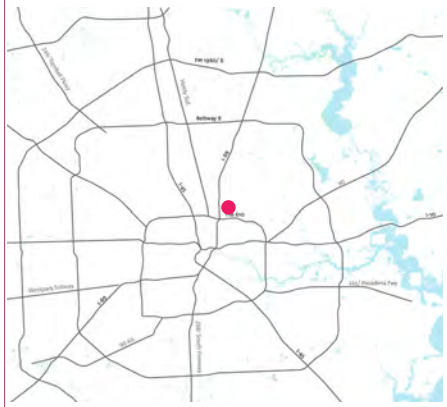


Proposed Pilot Project
Bike Station

Pilot Projects

Kelley Street





TOOLBOX ITEMS

Buffered Bike Lane

CONTEXT

An oversized arterial in a low income neighborhood.

SOLUTION

Restriping of 6 lane street to 4 lane street with buffered bike lanes.

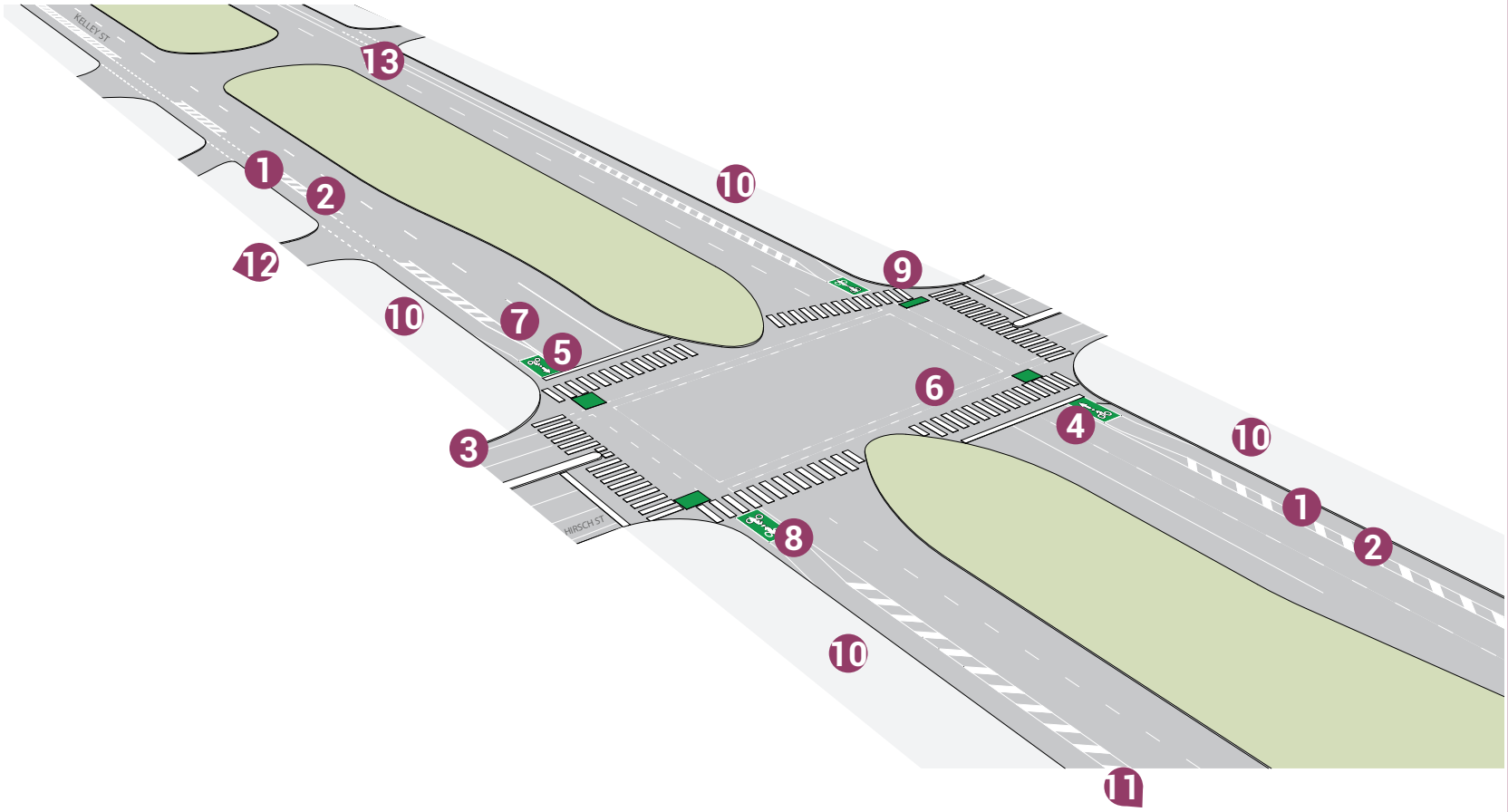
OUTCOME

A new high-comfort bike facility connecting to LBJ Hospital, Barbara Jordan High School, and the Kashmere Transit Center.

1. Existing 11' Travel Lane converted to 7' Bike Lane
2. 4' Buffer
3. Existing Bike Lane on Hirsch Road - future project
4. Bike Box increases visibility for cars turning right
5. Bike Box allows two-stage left turns
6. Dashed Lines increase visibility at intersections
7. Bike Lane shifts towards travel lane to increase visibility
8. Green pavement marking directs bicyclists across intersection
9. Improved curb ramp recommended to align crosswalk
10. Bike Lane and No Parking Signage
11. Access to school
12. Access to transit
13. Access to hospital

DESCRIPTION

Kelley Road once served as a precursor to 610, linking the Houston Ship Channel to the nation. Today, that traffic is on the interstate and Kelley's six lanes are dramatically


KELLEY ST
HIPSCH ST
13
1
2
12
10
7
5
3
10
9
6
4
10
1
2
8
10
11
N

underused. This is not just a waste of pavement but a danger to residents. The wide road encourages speeding, endangering people on foot or on bicycles, including people from the surrounding single family neighborhoods headed to local stores, the high school, the large public hospital, and the transit center (which has all-day frequent service to major employment centers). Biking here is a basic means of transportation, but people on bicycles are not given a comfortable place to ride.

The outer lanes could easily be re-purposed as buffered bike lanes through paint and signs. This low-cost project would create a safe, high- comfort bike facility to meet the neighborhood's transportation needs and make the street safer for all users. It could also connect to north-south bikeways linking the neighborhood to Hunting and Buffalo Bayou opening up opportunities to connect across the city.

Additional improvements to medians or curb ramps to allow for easier crossing or the inclusion of a raised barrier separating the bikeway would be potential enhancements to this project as funding allows.



Kelley St @ Hirsch St Looking West (Existing)

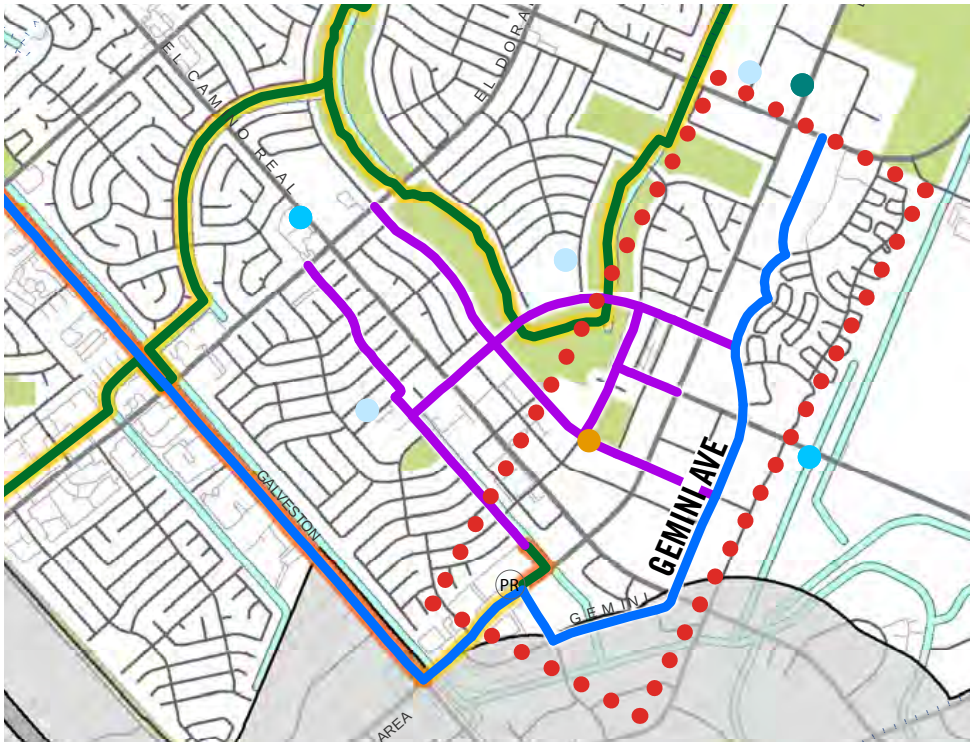


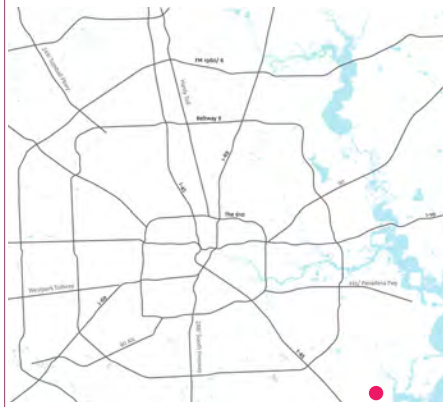


Proposed Pilot Project- Kelley Street

Pilot Projects

Gemini Avenue





TOOLBOX ITEMS

Bike Lane

4 to 3 conversion

Jurisdictional Coordination

CONTEXT

A low traffic commercial street connecting residents to employment in a suburban setting.

SOLUTION

Conversion of a four-lane street to a three-lane street with continuous turn lane and bike lanes. Coordination with the City of Webster would be required.

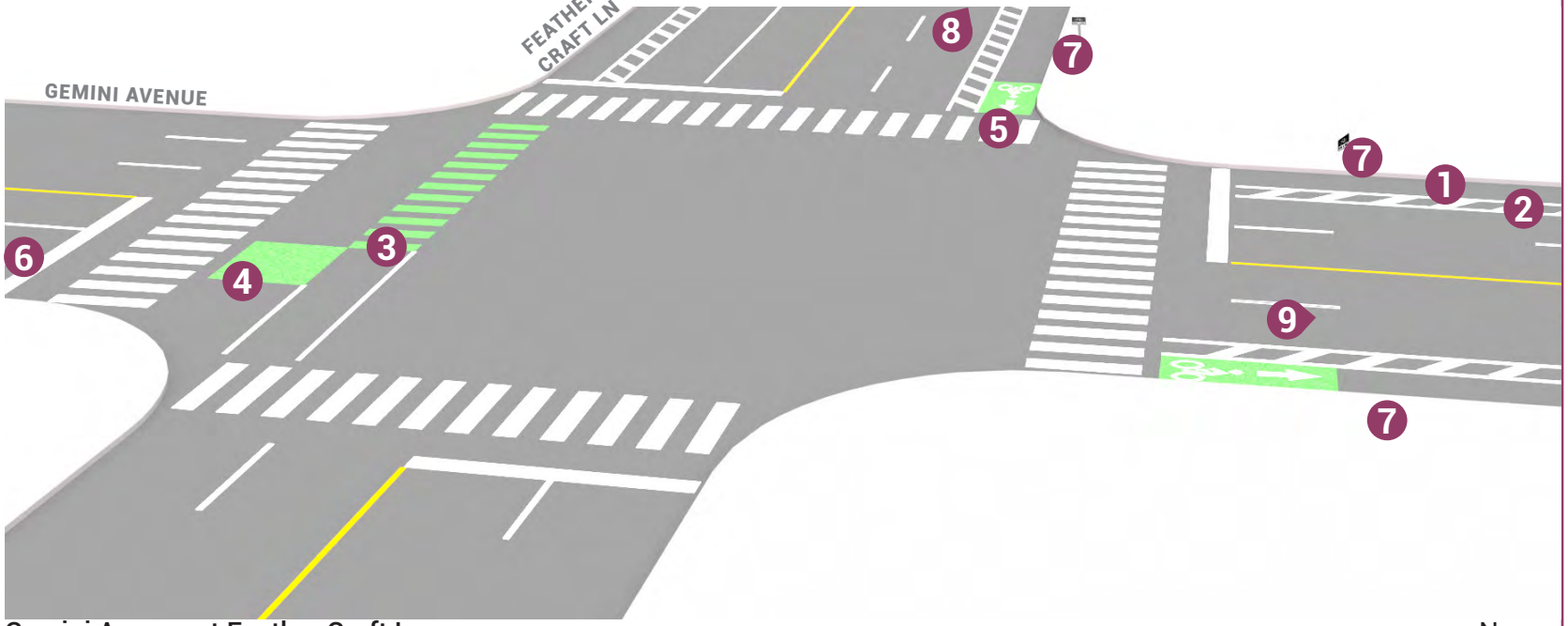
OUTCOME

Links residential areas to office buildings, the Johnson Space Center, and the Bay Area Park and Ride

1. Existing travel lane conversion to 7' Bike Lane
2. 3' Buffer from travel lane
3. Pavement treatment to increase driver awareness of bicycle presence
4. Bike box to accommodate common turning movement from Feather Craft to Gemini
5. Pavement treatments to guide bicyclists as bike route turns
6. Right turn only lane allows bike lane to begin
7. Bike Lane and No Parking Signage
8. Access to Bay Area P&R
9. Access to jobs, housing, and NASA

DESCRIPTION

Bikes can provide a useful alternative to driving and serve as a feeder to the transit system, extending the catchment area of people that can easily access transit.



Gemini Avenue at Feather Craft Lane Intersection

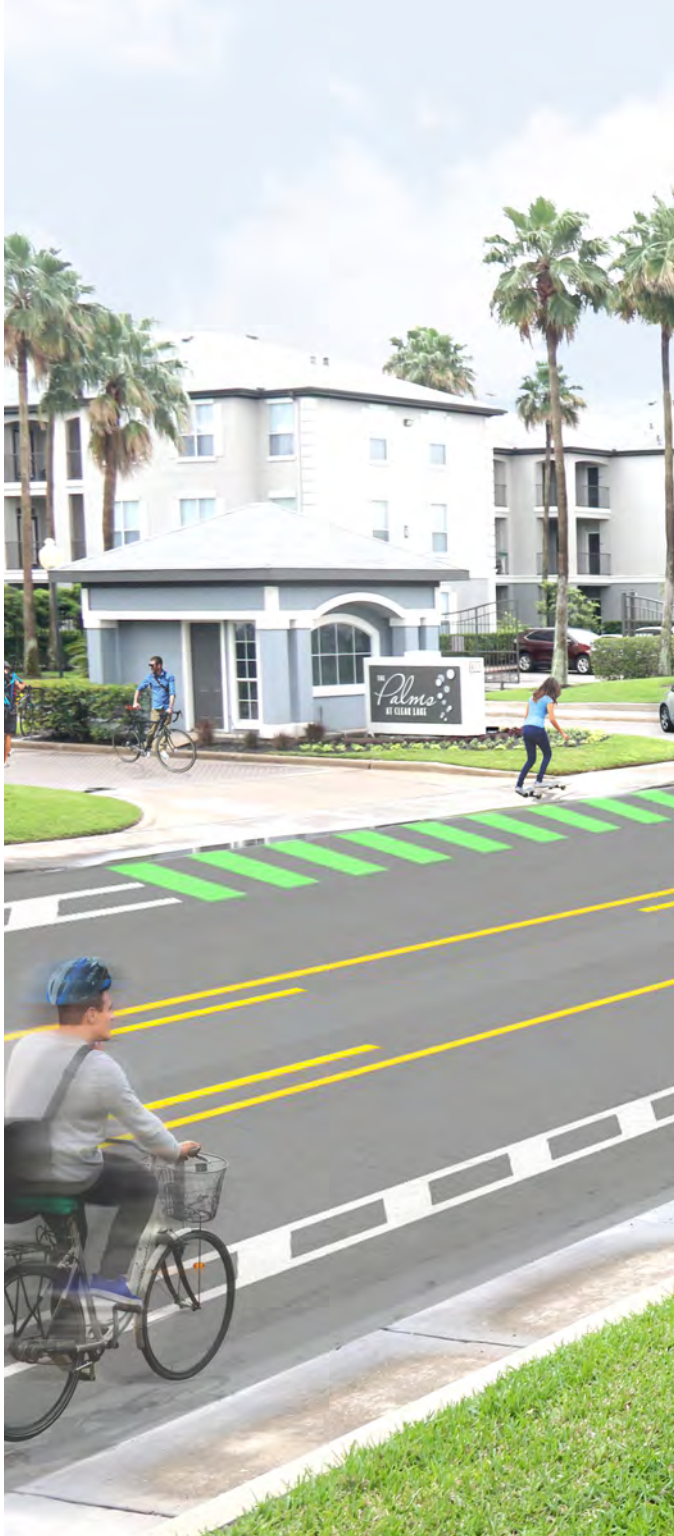
Gemini Avenue runs parallel to the congested Bay Area Boulevard corridor. It carries relatively low traffic volumes but has signalized crossings of major cross streets. At its east end it connects to a single family residential neighborhood. Also at its east end, at Saturn, it connects to a potential bike corridor to the Johnson Space Center. At the west end is the Bay Area Park and Ride, with express bus service to Downtown Houston with connections to the rest of the region. Along the way, Gemini is lined with apartments and office buildings. This corridor includes a large mix of uses in close proximity, making many trips bikable.

Gemini currently has four lanes. Because its primary purpose is local access, the inner lanes often serve as turn lanes. Thus, the street effectively has two through lanes. This is not a problem, since the traffic volumes — 4,000 to 6,000 cars per day — require only two lanes. By converting the center lane to a turn lane, the street can carry the same volume of traffic in three lanes. This frees up space for a buffered bike lane in each direction, potentially with vertical separation such as armadillos, creating a high quality bike facility with no impact on cars.

Gemini is an opportunity to create a high-quality bike facility, and a key connection in the bikeway network, by restriping an existing street with no impact on its currently functionality. One segment of the corridor runs through the City of Webster and would require inter-agency coordination.



Gemini Ave Looking South (Existing)

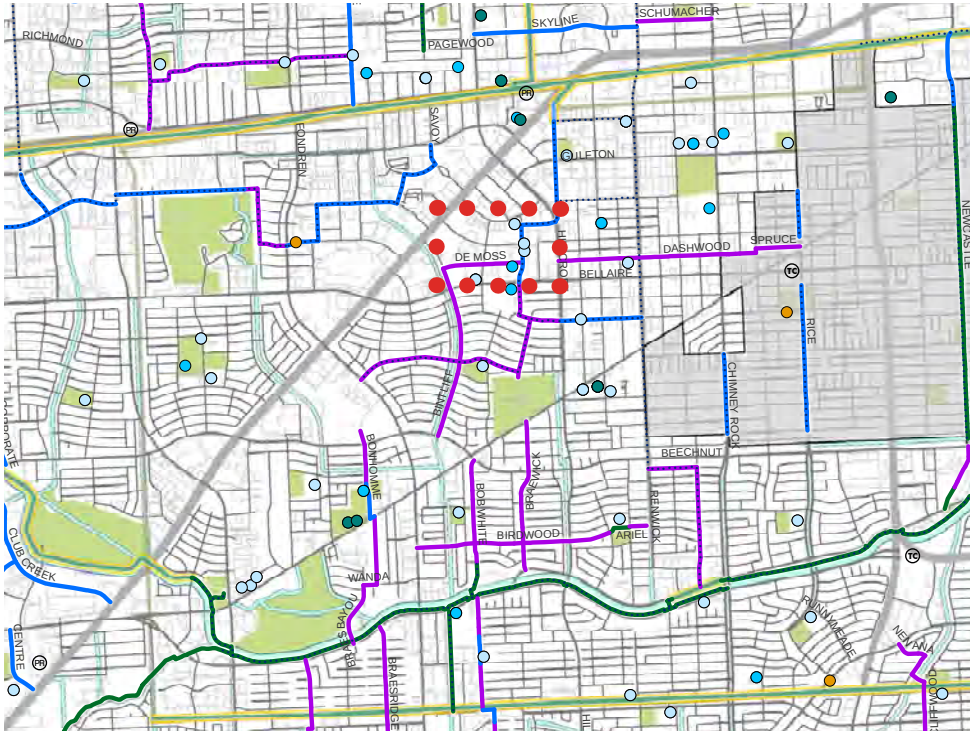


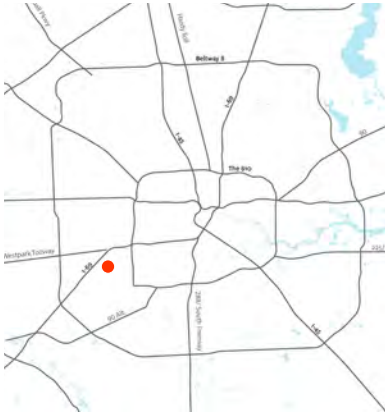


Proposed Pilot Project- Gemini Avenue

Pilot Projects

De Moss Drive at Rookin, Rookin Street, High Star Drive at Hillcroft





TOOLBOX ITEMS

Bike Lane

Two-way bike lane

Intersection Crossing Markings

CONTEXT

Gulfton and Sharpstown, located in southwest Houston, consist of diverse communities who benefit from the concentration of services located in the area. This area was identified as an important location for a pilot project because of the prevalence of residents who currently bike for transportation. The streets are generally perceived as unsafe for cycling because of high traffic corridors like Hillcroft Avenue and Bellaire Boulevard that are barriers to otherwise comfortable bikeway connections along neighborhood streets. Another logical connection is to the trail along Brays Bayou. As seen throughout the region, these bayou trails are attracting people for recreational use, and opening the opportunity for useful transportation trips by bike.

In an effort to better understand the needs of the community, two focus groups were held with community leaders followed by a neighborhood workshop that offered residents an opportunity to refine the city-wide bike plan at a neighborhood level. A more detailed description of this public engagement process and findings can be found in Implementation Strategy 8: Neighborhood Plan, which provides a framework for helping other neighborhoods discover how the Houston Bike Plan Toolbox can be applied in their community.

A priority project identified in this process was De Moss Drive from Bintliff to Rookin and Rookin Street from Bellaire to Hillcroft, where there are several community destinations, including schools, clinics, a community

center, a library, and a mosque. Community members expressed a desire to make this area safer for children. The density of destinations along these corridors promote a walkable neighborhood, however, the street design does not encourage bicycle use.

SOLUTION

A two-way bike lane on the south side of De Moss Drive that is physically protected by a row of on-street parking with appropriate intersection treatments to support turning movments.

A standard bike lane on either side of Rookin Street, where on-street parking alternates on either side of the roadway.

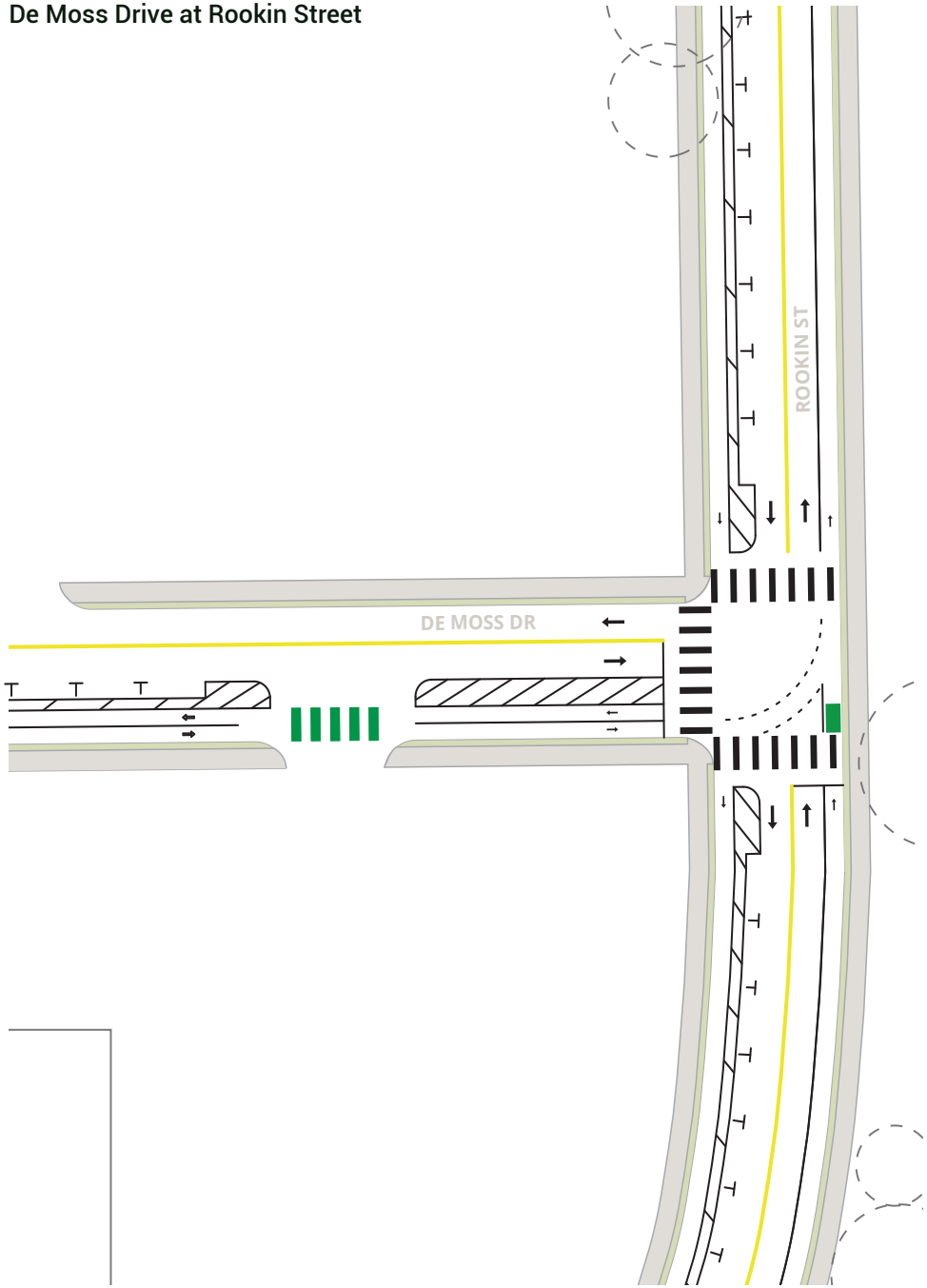
OUTCOME

Safer streets that are more appropriate for all ages and abilities, where automobile traffic is slowed through the reduction of vehicle lane widths, and bikes are separated from moving traffic with parking lanes.

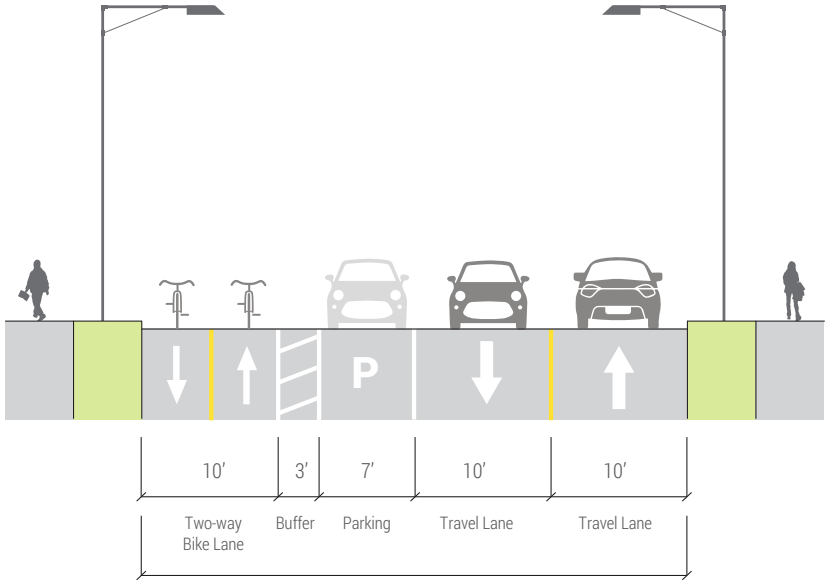
DESCRIPTION

De Moss Drive was originally designated as a ***bike route*** on the draft Bike Plan, which means there could be traffic calming devices put in place, and bikes and cars would share a slow-speed roadway. However, because of the character of De Moss Drive and the destinations that it serves, the community recommended that greater physical protection would make it safer for the children who use it regularly. They preferred a 10-foot two-way bike lane separated from moving automobile traffic by a row of on-street

De Moss Drive at Rookin Street



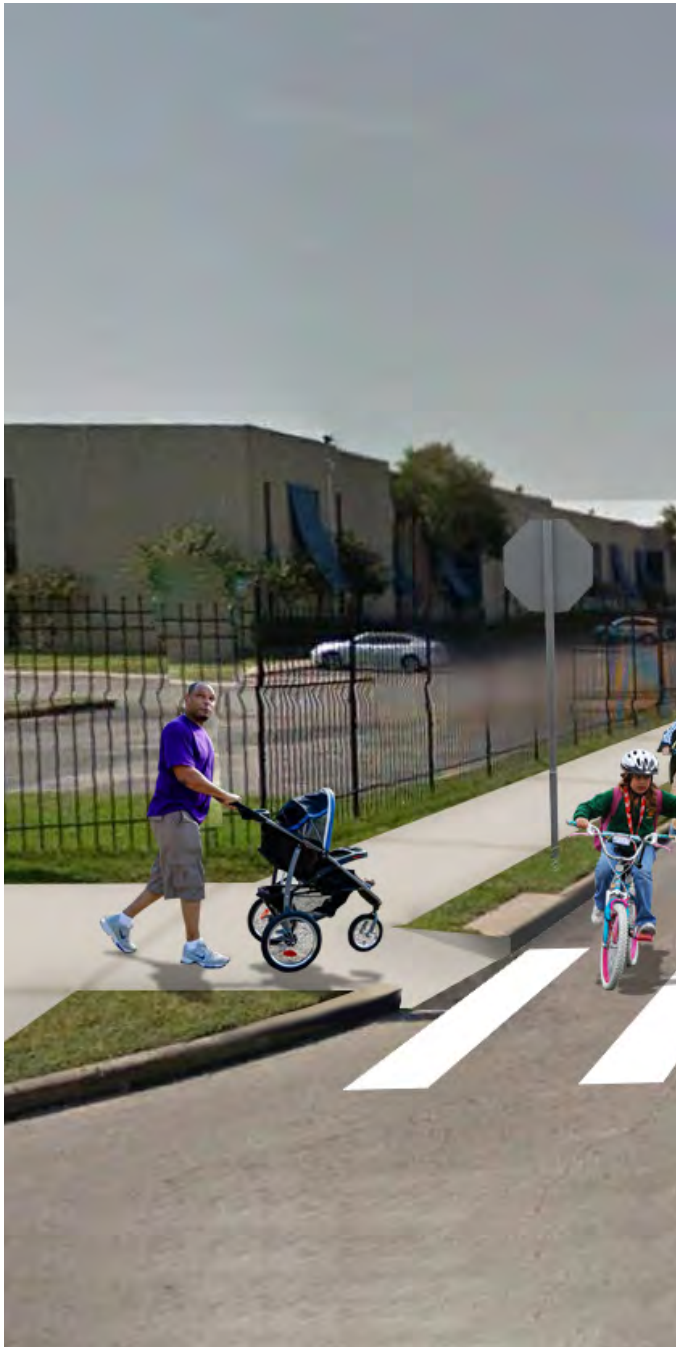
parking that would serve the adjacent properties. Automobile traffic lanes would be reduced from 20-feet to 10 feet, which would require a variance from the Infrastructure Design Manual.



Proposed section: De Moss Drive at Rookin Street facing west



De Moss Drive at Rookin Street facing west (Existing)



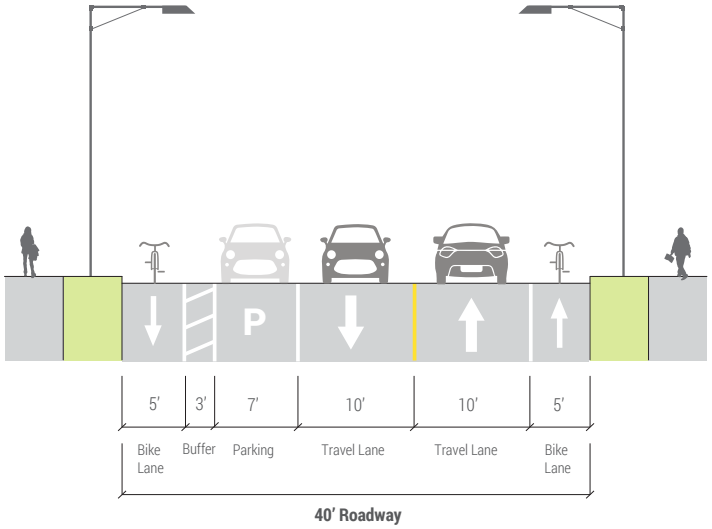


Proposed Pilot Project- Demoss Street

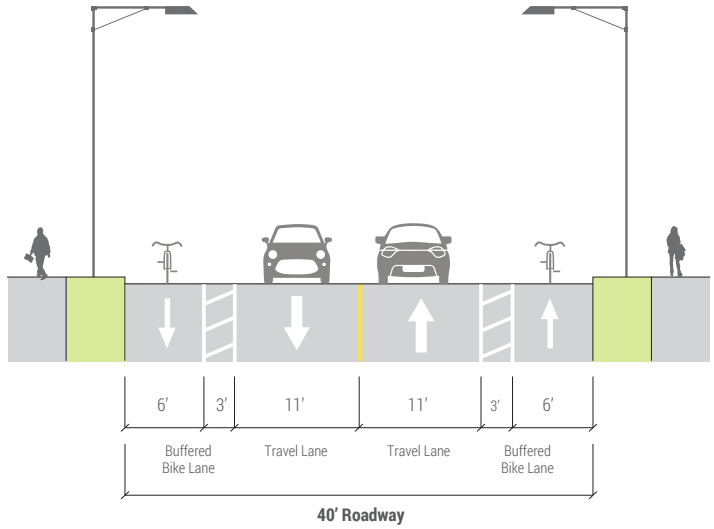
Rookin Street is an important north-south connection between nearby residences and area destinations, which was designated a proposed ***bike lane*** on the draft Bike Plan. In order to improve safety, 5-foot bike lanes would be installed on either side of the street, while on-street parking could alternate on either side, similar to the design on De Moss Drive, would serve as a physical protection between bike and motorist traffic. Automobile traffic lanes would be reduced from 20-feet to 10-feet, which would require a variance from the Infrastructure Design Manual.

For both corridors, the use of intersection crossing markings help alert drivers to look out for bicyclists on the road as they intersect with a bike facility. This is particularly important along a two-way bike lane, where drivers aren't accustomed to looking both ways before making a right-turn.

On-street parking would be restricted for the first 200 feet on High Star Drive, just west of Hillcroft Avenue to provide adequate roadway space for bicyclists crossing Hillcroft Avenue.



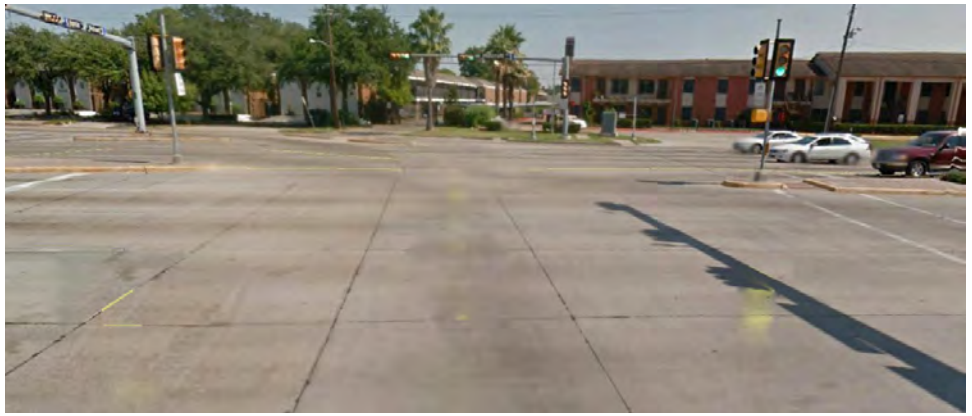
Proposed section: Rookin Street



Proposed section: High Star at Hillcroft

The street section for the gateway into the neighborhood would be 6-foot bike lanes with 3-foot buffers on either side of the street, and 11-foot automobile travel lanes. When on-street parking is integrated back into the street section, the bike lanes will narrow to 5-feet and the buffer will drop. On-street parking may alternate on either side of the roadway.

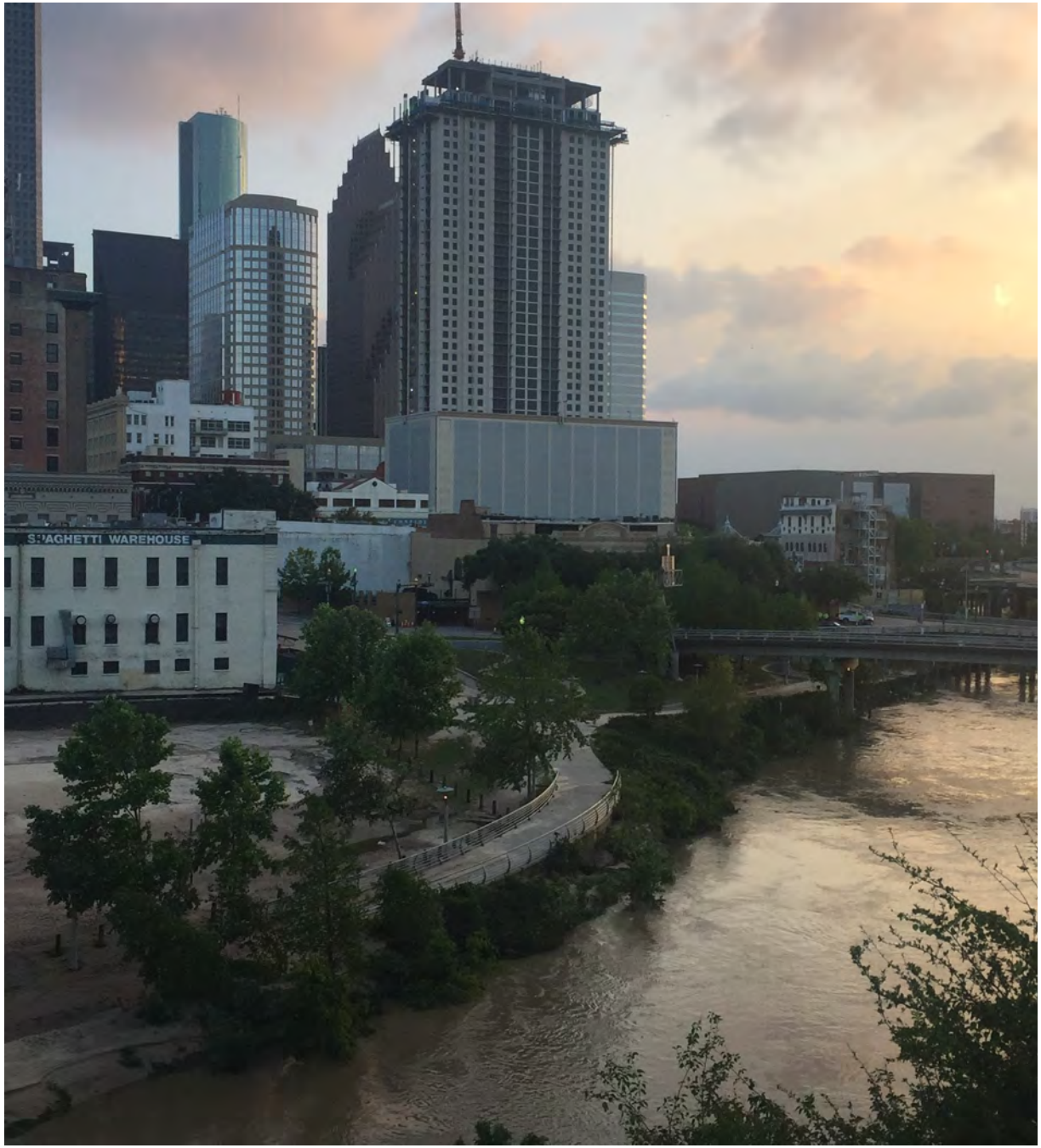
Intersection treatments should be added on Hillcroft Avenue, where green striping alerts drivers of bicyclists presence and informs bicyclists of their safest path in what is currently a large and intimidating intersection design.



Existing: High Star Drive at Hillcroft Avenue facing east



Proposed: High Star Drive at Hillcroft Avenue facing east



Buffalo Bayou Trail from the Main Street Bridge

7. CONNECT TO MAJOR BICYCLE THOROUGHFARES (E.G., BAYOUS AND OTHER GREENWAY TRAILS)

As the Houston bayou and greenway paths and trails are an integral part of the high-comfort bikeway network and provide a backbone to the broader citywide network, special attention was paid to how projects can connect neighborhoods and activity centers to the bayous. Developing a high-comfort network that provides access to bayous and other significant trail corridors is important because these corridors have the potential to be bicycle "highways" that can significantly change the landscape of biking in Houston.

This Implementation Strategy specifically identifies an example of how more detailed planning related to these corridors can be applied. An in-depth look at Sims Bayou looks at access on a detailed level, specifically how that access changes at various implementation stages of the Bike Plan. Recommendations will ensure access works at a detailed level and identify key linkages and new trail heads, available amenities, and gaps that will need to be addressed.





Existing Sims Bayou

Key Recommendation 7.1

Develop specific plans and policies for access to major greenway corridors to ensure safe access to these "bicycle highways" from neighborhoods and activity centers.

Key Recommendation 7.2

Coordinate with adjacent jurisdictions to provide a connected network across city lines.

BAYOU ACCESS PLAN

The Bayou Greenways 2020 project is creating extraordinary bicycle connectivity. Trails along Sims Bayou, Braes Bayou, Buffalo Bayou, White Oak Bayou, Hunting Bayou, Halls Bayou, and Greens Bayou will be continuous high-comfort corridors stretching for miles. These will be the City's "bicycle highways."

Because Bayou Greenways follow natural drainage corridors and have committed to building out the entire lengths of the bayous, it is also a truly equitable project. All neighborhoods along the bayous, regardless of income or race, get trails. In low-income neighborhoods like the Near North Side, Kashmere, Sunnyside, and the East End, this will link residents to jobs and education and provide families with recreational opportunities.

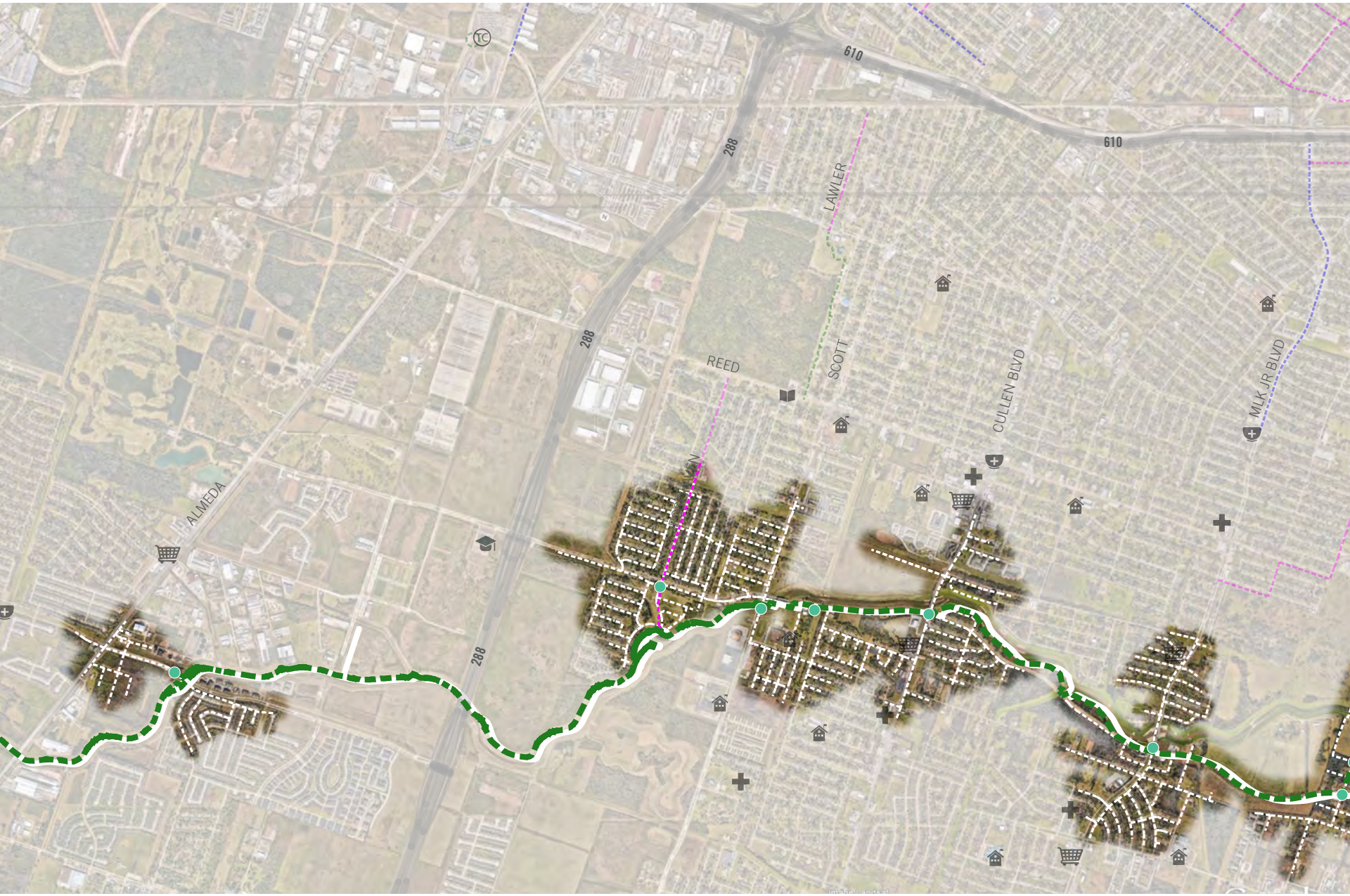
Just being near a bayou trail, though, is not the same as being connected to one.

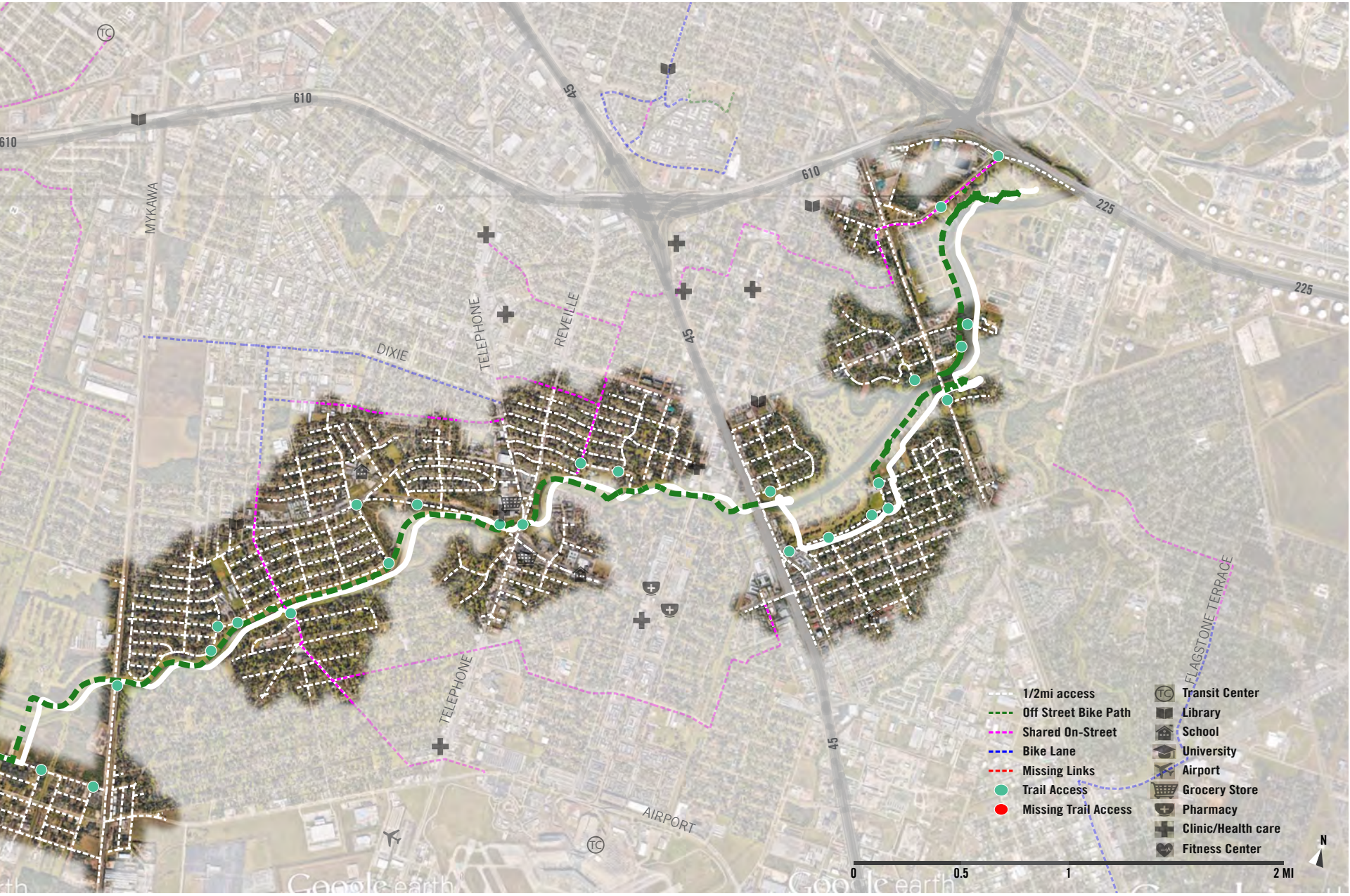
Because development in Houston historically turned its back on the bayous, and because street networks were laid out with no thought to the bayous being an asset, street connectivity to the bayous is uneven. In some neighborhoods, there are frequent streets crossing the bayou and neighborhood parks alongside the bayous. These create natural connection points, and trails built here are well connected without unusual effort. In other neighborhoods, the bayous are behind residential backyards and industrial parcels and crossing points are widely spaced. Here, there are many neighborhoods (as well as destinations like schools, colleges, transit centers, community centers, and retail) that are within a half mile of the bayou trail directly, or as the crow flies, but miles away along the roadway network.

Thus, truly taking advantage of the greenways requires neighborhood scale links along the length of the bayous. In some cases these can use existing parkland or street right of way; in others they may require agreements with other governmental entities, the use of utility easements, or even acquisition.

This map shows Sims Bayou with the currently designed trail access points (shown as green dots.) The highlighted areas and the dashed white street networks show what is within 1/2 mile travel of those access points. In some areas, this covers all the property and development along the bayou; in others, neighborhood bordering the bayous have no readily available access. Bike facilities included in the short-term bike plan are also shown, along with major destinations.


FONDREN
AIRPORT
CHIMNEY ROCK
GASMER
POST OAK
ALLUM
SAM HOUSTON PKWY
HILLCROFT
ADIBE
TIDEWATER
WUTHERING HEIGHTS
PLAYER
OREM
GRAPEVINE
ROCKWELL
CHASEWOOD
FUQUA
SAM HOUSTON PKWY
Google earth


610
610
288
288
288
LAWLER
SCOTT
REED
CULLEN BLVD
MLK JR BLVD
ALMEDA


610
610
610
45
45
45
225
225
MYKAWA
DIXIE
TELEPHONE
REVEILLE
TELEPHONE
AIRPORT
FLAGSTONE TERRACE
1/2mi access
Off Street Bike Path
Shared On-Street
Bike Lane
Missing Links
Trail Access
Missing Trail Access
Transit Center
Library
School
University
Airport
Grocery Store
Pharmacy
Clinic/Health care
Fitness Center
0
0.5
1
2 MI
N
Google earth
Google earth

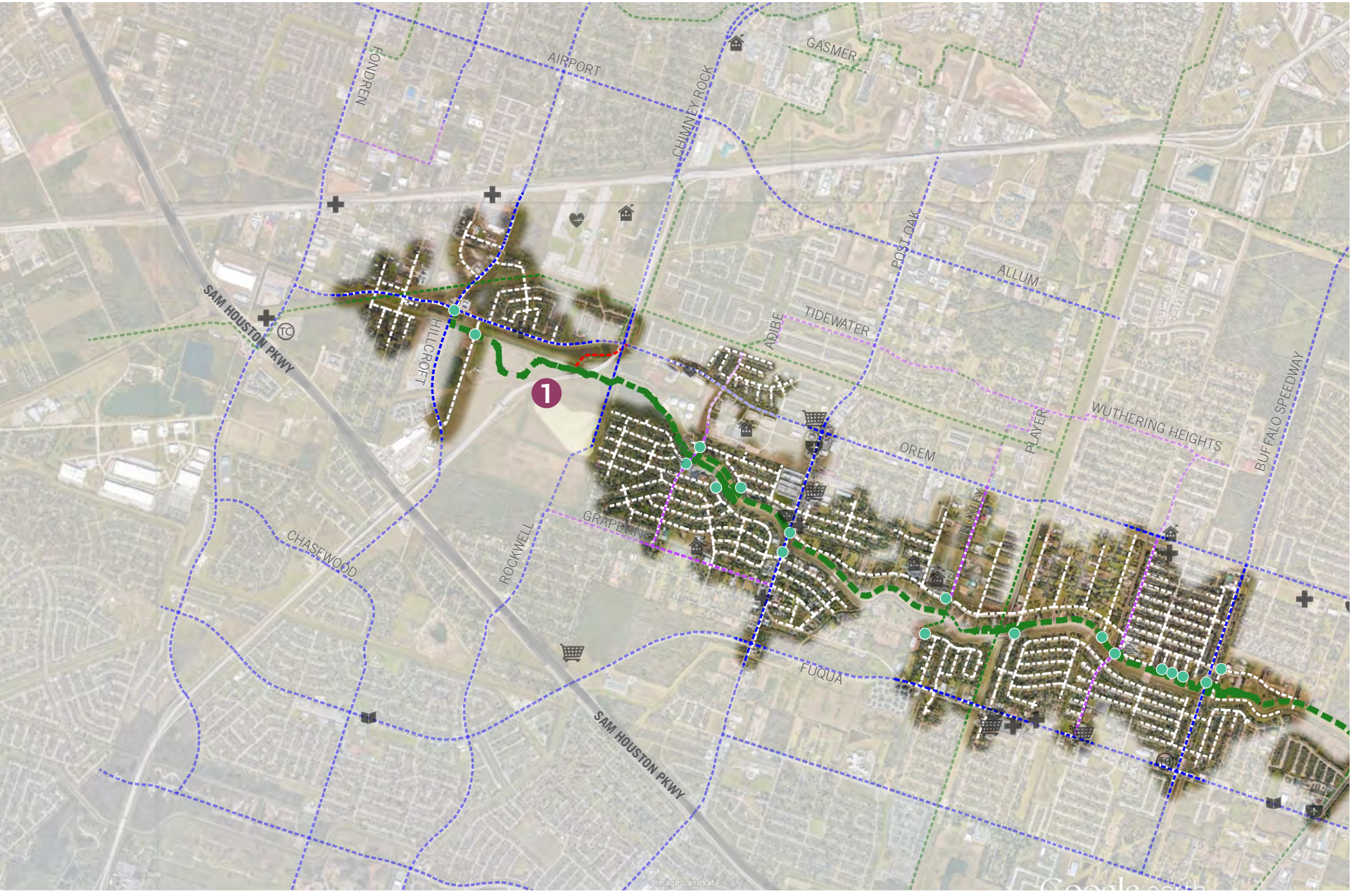
PROPOSED ACCESS IMPROVEMENTS

Looking at the bayou access based on the draft Bike Plan maps allows identification of gaps and improvement opportunities. These short connections greatly expand access to neighborhoods and major destinations as shown in the figures on the following pages.

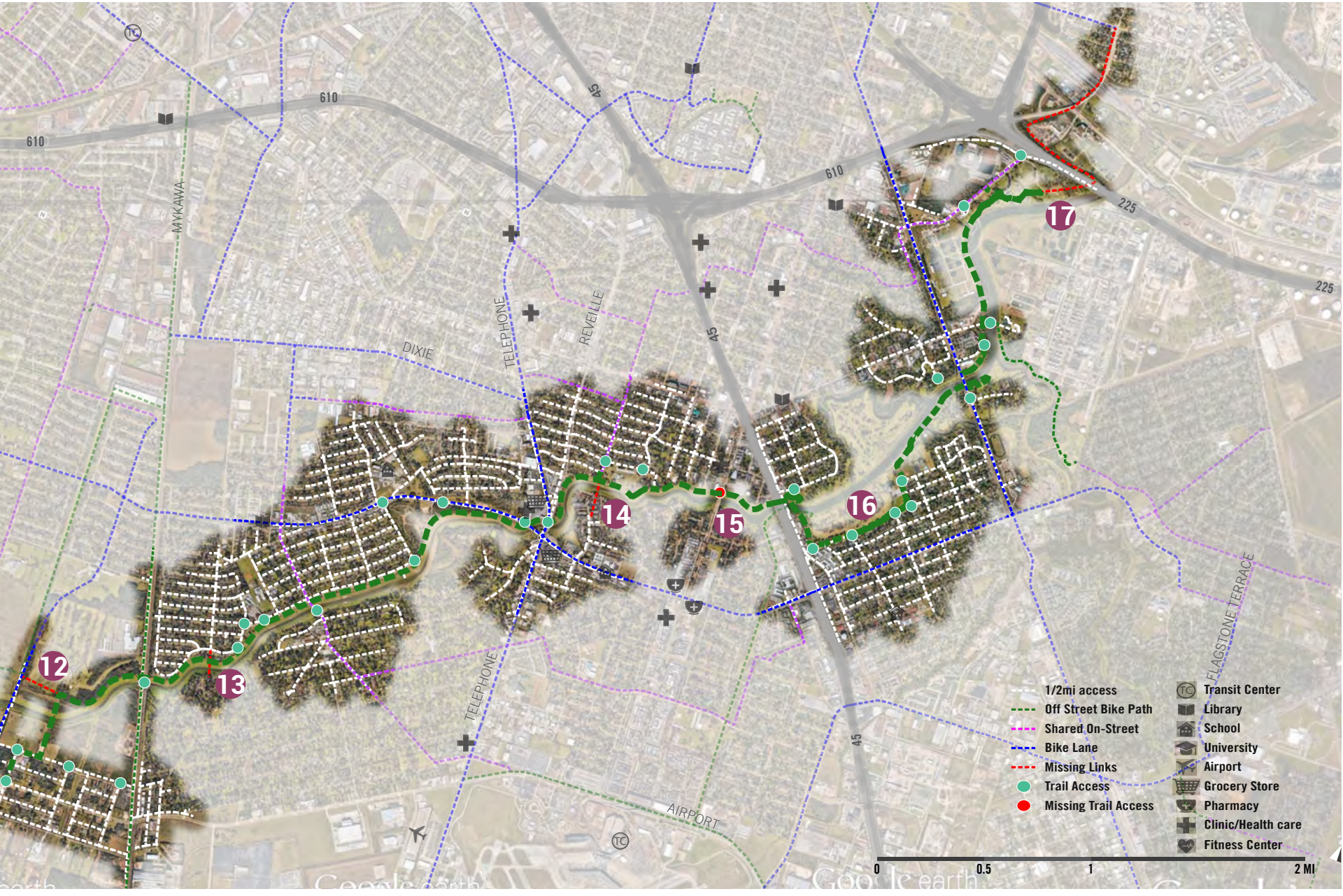
1. A connection at the Fort Bend Toll Road would connect the bayou to Orem Drive and utility corridor connections that extend up to HISD's Joe Kelley Butler Sports Complex, a charter school, Westbury, and Willow Waterhole.
2. A bike trail along Almeda connects to neighborhoods to the north and south.
3. A drainage easement allows a neighborhood connection to Regal Oaks subdivision.
4. A connection directly to neighborhood streets provides higher comfort access than the route along West Orem.
5. When Kirby is built as shown on the Major Thoroughfare plan, bike connections to the bayou should be provided.
6. A connection along 288 would access the Houston Community College campus.
7. The Flood Control District detention basin on Scott can be a neighborhood amenity and a link to the trail system and Orem Street.
8. A short connection opens up the southern end of the neighborhood to the trail.
9. A drainage canal offers a connection to the nearby utility easement.
10. Neighborhoods south of the bayou can be connected with a new trail along a drainage easement.
11. A bridge would open up neighborhoods north of the bayou.
12. FW Law Park borders the bayou but does not have any trails connecting to it.
13. Neighborhoods south of the bayou could be connected with a bridge.
14. A bridge and connection to Leonora Street would allow residents to avoid the fast traffic on Telephone Road and access to the trail.
15. An access point at Broadway would connect to retail, neighborhoods, and high frequency bus service.
16. The new Houston Botanical Garden should be designed with a "front door" to the bayou trail.
17. Extending the bayou trail north, under SH 225 and railroad lines, would connect the isolated enclave of Manchester to Milby Park and the bayou greenway.

A similar analysis should be conducted along all the other bayous as well as along proposed drainage and utility corridor trails to identify similar improvements.

Where possible policies that supported making these connections should be developed, especially to address existing trails and bikeways like the Columbia Tap or Halls Bayou where connections can be challenging.


AIRPORT
GASMER
CHIMNEY ROCK
POST OAK
ALLUM
TIDEWATER
ADIBE
HILLCROFT
SAM HOUSTON PKWY
1
OREM
PLAYER
WUTHERING HEIGHTS
BUFFALO SPEEDWAY
GRAPEVINE
ROCKWELL
CHASEWOOD
FUQUA
SAM HOUSTON PKWY


610
610
288
288
288
LAWLER
SCOTT
CULLEN BLVD
MLK JR BLVD
REED
ALMEDA
2
3
4
5
6
7
8
9
10
11


610
610
610
45
45
45
225
225
MYKAWA
DIXIE
TELEPHONE
REVELLE
TELEPHONE
AIRPORT
FLAGSTONE TERRACE
12
13
14
15
16
17
1/2mi access
Off Street Bike Path
Shared On-Street
Bike Lane
Missing Links
Trail Access
Missing Trail Access
Transit Center
Library
School
University
Airport
Grocery Store
Pharmacy
Clinic/Health care
Fitness Center
0
0.5
1
2 MI



Existing Sims Bayou
Site for Future Bayou
Greenway Trail

8. ENGAGE NEIGHBORHOODS TO TRANSLATE PLAN TO LOCAL LEVEL

The Houston Bike Plan defines a framework for a citywide bicycle network with policies and programs to help make Houston a safer, healthier, more bicycle friendly city. Every neighborhood in Houston will have a different starting point; some have a significant number of existing people who bicycle and some may not. Attitudes toward biking may be quite different as well. To bring the Bike Plan to a local level, and develop implementation strategies that are most effective for a specific community, the City and others can develop neighborhood plans that link to the citywide bikeway network and prioritize specific programs and policies tailored to a neighborhood context.

This Implementation Strategy outlines the Houston Bike Plan Neighborhood Planning Guide and resulting Neighborhood Bike Plan recommendation for the Gulfton-Sharpston area. It is intended to serve as an example or go-by for future neighborhood planning efforts.



Gulfton-Sharpstown Area Roadways

Key Recommendation 8.1

Incorporate and refine the provided approach and tools for neighborhood level planning to connect to citywide bikeway network, in future planning projects.

Key Recommendation 8.2

Identify opportunities to apply specific policies or programs at the neighborhood level to support the growth of safe, healthy opportunities to bicycle.

Key Recommendation 8.3

Continue proactive outreach to neighborhoods and other civic groups on the Bike Plan.

NEIGHBORHOOD PLANNING GUIDE

The Houston Bike Plan public engagement efforts have been effective in reaching thousands of people, and it is evident that many Houstonians are anticipating a connected bike network in the city. With the planned addition of over 1,000 miles of high-comfort bike facilities, the implementation strategy must be continuously pursued over the years. Additionally, while the Plan provides guidance in creating a city-wide network, it will be necessary for neighborhoods to tie into the larger network at a more granular scale, pursuing specific projects, policies and programs that are appropriate to the area demographics and needs.

This Neighborhood Bike Plan Guide may be used by City departments and community organizations to help guide the incremental implementation of the Houston Bike Plan by continuing to gain input from the community members. Throughout the Houston Bike Plan public engagement process, participants have been invited to share their location, offering valuable data for understanding where community feedback has been strong and where it is lacking. Areas that haven't received significant responses should be targeted for increased engagement as the opportunity for facility implementation arises. It is advised that the City consult with community members in shaping infrastructure that serves their needs.

This guide was developed during the organization, facilitation, and review of a pilot Neighborhood Workshop in the Gulfton and Sharpstown areas of southwest Houston. Materials and responses from this pilot workshop can be reviewed when planning future workshops, and, of course, when pursuing efforts in this area of Houston. The following sections provide a process for organizing and leading meaningful focus groups and a neighborhood workshop to gain useful information and support from the community.

Focus Group Overview

Prior to hosting neighborhood workshops, one or two focus groups should be organized to inform community leaders about the Houston Bike Plan and learn about opportunities and challenges that the community may face regarding cycling, infrastructure, and community organization. The Houston Bike Plan Toolbox is a wealth of information, but its comprehensive nature can be overwhelming. These focus group conversations will be useful in understanding how to best target and narrow down this resource for the Neighborhood Workshop, which the larger community will be invited to attend. The focus group participants should also help disseminate workshop invitations through their networks.

Invitation & Outreach

A focus group is a quick way to gain information about a community, but the range of information will be limited to those that are invited and can attend. Focus Group outreach should be targeted towards specific community leaders when possible. Having individuals' names and direct contact will be important to gaining the attention of busy leaders, and helping them understand the importance of their involvement. Begin with an e-mail that offers clear instructions on how to be involved, allow them to indicate their availability, and offer contact information for questions. If no response is given within a reasonable time frame, follow up with a phone call.

Gulfton - Sharpstown Focus Area



Potential Focus Group Invitation List

Civic association leaders

Neighborhood association leaders

Non-profit and community leaders

School principals

Parent-teacher organization leaders

Local business owners

City Council district representative

Religious group leaders

Police liaison

District State Representative

Management District Representative

Tax-Increment Reinvestment Zone (TIRZ)

Chambers of commerce leaders

University and college representatives

Sample Letter

Dear Community Leader,

In 2015, the City of Houston began the planning process for its update of the City's comprehensive bike plan. The draft network reaches the extents of Houston's over 600 square miles, which varies incredibly in its social and urban fabric. As we look closer at your community, we would greatly appreciate your involvement in understanding the needs, opportunities, and challenges that your neighborhood faces.

We would like to invite you to participate in a focus group with other community leaders to review the proposed bike network. Knowledge of bicycling is not necessary to contribute, as this presents an opportunity to learn about the tools that have been developed and explore how biking can be improved for the community.

We'd be happy to answer any questions you may have about the Houston Bike Plan and the focus group. We look forward to meeting with you soon.

Sincerely,
Houston Bike Plan Team

Focus Group Materials

- Printed copy of bike network map in focus area with points of interest in large format
- Printed copy of questions for focus group facilitator
- Audio recorder (used with participant approval)

Focus Group Questions

Focus group questions may vary based on what is already known about the community. Consider what questions will be helpful in preparing for the Neighborhood Workshop and building a strong community profile to understand partnership and implementation opportunities moving forward. The following questions may be used or built upon, depending on the desired outcome of the focus group:

Connections

1. Where do people currently bike in this area?
2. Where do you see opportunities to make safe and useful connections?
3. What type of cycling do you see the most in the community (e.g. sport, youth, commuter, recreational, casual)?

Barriers

4. What are some of the challenges this community faces for bicycling?
5. What physical barriers prevent people from biking?
6. Who do you think would be most likely to use bikes in the community if they had the opportunity?

Businesses and Community Leaders

7. What organizations are there in the community that are providing important services? Do you know if these or other organizations offer bike-related services?
8. What businesses and organizations might be interested in partnering to improve biking in the area?

Outreach

9. Considering we aim to receive diverse participation in the upcoming workshop, what days of the week and times of day would be most conducive for members of this community?
10. What are the most successful forms of outreach? Are you able to share workshop information or materials in either physical or digital format?

Workshop Overview

The Neighborhood Workshops are an opportunity to hone in on elements of the Houston Bike Plan at a local level and tailor it to communities' needs. Unlike the focus group(s), the Neighborhood Workshop should be advertised to the broader community. It is an opportunity to educate citizens on the progress of the Houston Bike Plan and the resources available in the Toolbox, present realistic expectations about the plan, introduce the timeline for implementation, and gain feedback from the community. Types of feedback will vary in each community, considering the types of funding available and the level of organization that community members are engaged around bike-related issues. Workshop organizers should consider which of the following fit the neighborhood , and how to devote attention and outcomes.

- **The City or partnering agency has funding to pursue project implementation in the community.**
  The community may be involved in identifying priority projects or guiding the design specifics of a proposed project. The Houston Bike Plan Toolkit will be helpful in explaining the options to community members. Consider that people may have a variety of concerns, including the availability of sidewalks or parking, connections to destinations, and the appropriateness of design for potential users.

- **There is a clear gap in previous participation in the Houston Bike Plan from the identified community, however, there isn't funding available to pursue projects.**
  There is still an opportunity to dive into bike-related issues and refine the draft bike network with the community's help. There may be missed opportunities that participants can help identify, such as a useful connection. Documentation of participants' responses will be important to make it easy to revisit at a later date. If revisions can't be made to the draft network directly, there should be a database for comments that help create a living document for the City as future improvements are made.

- **There is a significant segment of the community that is passionate about bicycling, and will want know what types of improvements will be made and when.**
  This situation presents an opportunity to strengthen partnerships to define and pursue funding for an important project. Explore potential programming opportunities that community members can achieve on their own or with other groups. This type of setting may begin with identifying priority projects, then move into a brainstorm on partnerships to advocate and pursue funding.

- **There are consistent design challenges that make it difficult to provide safe bicycling conditions, such as lack of right-of-way and/or a disconnected grid network.**
  Explore design and route alternatives, including unconventional ideas. It would be important that the designers and engineers explore a variety of options to present to participants, and allow them to weigh the pros and cons. Facilitators may need to be prepared to discuss issues of ownership and policy that currently prevent solutions from being achieved. Participants may also come with their alternative routes to share, and an area map will be helpful.



Gulfton-Sharpstown Neighborhood Workshop

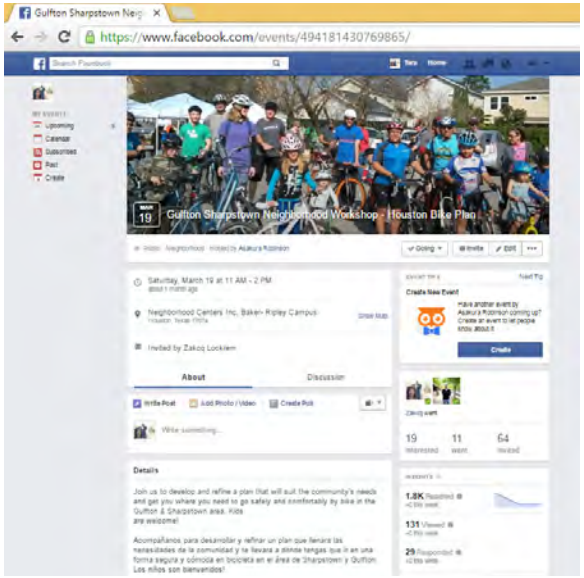
Existing Conditions Analysis

In preparation for the workshop, an existing conditions analysis should be conducted in the focus area; information from the network plan should be expanded upon, and relevant information should be gathered from the Toolbox (Chapter 4). The Toolbox includes a comprehensive list of projects, policies, and programs that may be applied throughout the city. By determining which of these could potentially be applied in the focus area, the workshop may be designed to determine what is most appropriate: street design, programs developed through community partnerships, or support for policies that can address issues in the neighborhood.

- **Projects:** For each proposed route on the draft network, determine the right-of-way widths and which facility types could work.

- **Programs:** Discuss with community leaders in the focus group what bike-related issues need to be addressed, determine what programs could address those, and which community organizations could be potential partners. These potential partners should be invited to the workshop.

- **Policies:** Discuss with community leaders in the focus group what bike-related issues need to be addressed, and determine what policies could address those. City officials and appropriate department representatives should be invited to the workshop so that they may respond to issues that may be brought up at the workshop.



Workshop Facebook Invitation

Workshop Outreach

A multi-faceted approach should be utilized for workshop outreach efforts to ensure that participants reflect diversities within the community, and that people who are not typically involved in civic groups or organized communities still have an opportunity to be informed of the event and are encouraged to provide their input. Outlets for communication include but are not limited to the following:

- Flyers and posters at community centers, schools, libraries, restaurants, shops, and commercial destinations
- Flyers distributed door-to-door
- Emails distributed through community groups such as those on the invitation list
- Notices included in community groups' newsletters
- Posts and announcements sent out through social media outlets (Twitter, Facebook, NextDoor, etc.) that allows audiences to share within their networks
- Radio announcements

Sample 2-Hour Workshop Agenda

15 minutes	Sign-in
30 minutes	Presentation
75 minutes	Station Exercises

Station Instructions

Workshop instructions and station design will vary per community and the desired outcomes of the workshop. Stations should present participants with a chance to learn about elements of the Houston Bike Plan that are relevant to the neighborhood and determine what solutions are most appropriate to their needs.

Facilitator Materials:

- Digital presentation
- Computer
- Projector
- Large writing board

Station Materials:

- Printed copies of presentation
- Printed copies of table instructions
- Printed copies of existing bikeways map
- Large printed copies of draft bike network map in focus area with points of interest
- Markers, pens, or pencils
- Printed copies of the Houston Bike Plan Toolkit or select pages from the Toolkit
- Printed copies of labeled photos of roadway conditions
- Printed copies of typical street section drawings for roadways with proposed bikeways
- Best practice pictures
- Translated materials (if applicable)
- Children's activities

Potential Workshop Invitation List

Civic associations

Neighborhood associations

Community groups

Non-profit organizations

School organizations

Parent-teacher organizations

Local businesses

Religious organizations

District State Representative

Management District

Tax-Increment Reinvestment Zone (TIRZ)

Chambers of commerce

Residents

Area employees

Students

GULFTON-SHARPSTOWN NEIGHBORHOOD PLAN PILOT

Context

The Neighborhood Plan establishes a framework for engaging communities across Houston in bike-related issues, and how to best implement elements of the Houston Bike Plan. The Gulfton and Sharpstown areas were identified for the pilot Neighborhood Plan because of the prevalence of residents who currently bike for transportation on streets that are often unsafe for cycling, and the concentration of services in the area that make this neighborhood well positioned for bikeability.

Focus Groups

The Houston Bike Plan team held two focus groups with community leaders and residents of the area who had previously engaged with planning efforts to date through the online forum or at public meetings held across Houston. The focus groups were intended to inform community leaders and community members about the Houston Bike Plan; and allow the facilitators to learn about opportunities and challenges that the community may face regarding cycling, including infrastructure and community organization. These focus group conversations were also designed to better understand how to best target and narrow down the Houston Bike Plan Toolbox.

This discussion was helpful in adjusting the boundary of the focus area and determining which issues to target. For example, we learned that the most common bicyclists seen in the community are utilitarian or commuter cyclists, who bike for transportation; and that the neighborhood streets are typically easy to travel on, but major corridors are challenging to cross.

Workshop

The Gulfton-Sharpstown Workshop was held on Saturday, March 19, 2016 from 11AM to 2PM at Neighborhood Centers - Baker Ripley Campus. Based on feedback from the focus group, it was believed that hosting a Saturday event would make it easier for people to attend. Similarly, allowing people to drop in at their convenience during this three-hour period would also improve accessibility of the event.

Because of the diversity of the community, flyers and other outreach information were distributed in English, Spanish, Urdu, and Hindi, with the availability of translators at the event.

Outreach for the workshop consisted of a variety of methods. Volunteers from BikeHouston distributed flyers and posters to neighborhood shops, and went door-to-door in multi-family apartment complexes to help spread the word. A Facebook event was created, which reached sixty-four people. Everyone with zip codes adjacent to the focus area, who were previously engaged with the



Workshop flyer



Workshop agenda

Houston Bike Plan, was invited via e-mail. Emails were also sent to various community groups from a list that was created with the help of community leaders that participated in the focus groups. Among these groups was the local Houston City Council Member's contact list. Outreach material indicated that kids were welcome as not to exclude families, and a kids' table at the workshop offered activities. Additionally, a volunteer from the non-profit BikeHouston set up a bike repair station outside the event.

The workshop consisted of a presentation and three stations that people could move through and discuss with Houston Bike Plan team members:

1. Area Bikeways
2. Bikeways Toolbox
3. End-of-Ride Facilities.

Workshop Map: Focus Route

LEGEND

Bicycle Facility Recommendations

- Bike Lane
- Bike Route
- Off Street

Existing Bicycle Facilities

- Low Comfort Bike Lane
- Shared Lane / Signed Bike Route
- Shared-Use Path
- High Comfort Shared-Use Path

- Focus Bike Route

Points of Interest

- University / College
- Library
- hgac_school
- Police Stations
- Fire Stations
- Hospital
- Health
- Community Centers
- METRO Bus Stops

- Bayous, Creeks, Streams
- Water Features
- Parks

0 0.25 0.5 mi



A focus route was identified to hone in on potential implementation projects in the area. The route's southern end was at an existing connection to the Brays Bayou trail, meandered through the neighborhood along proposed bikeways, cut across the popular Bayland Park (currently closed at night for safety reasons), continues north to Rookin Street where several community services are offered, and crosses Hillcroft Avenue to Westward Street where students currently bike to Benavidez Elementary School.

During the focus groups, Hillcroft Avenue was identified as an important bike connection for people, however, the redesign of this major corridor has been identified as a long-term project. The workshop, instead, focused on short-term projects such as neighborhood bikeways, bike lanes, and intersection crossings.



Workshop Board: Area Bikeways

1 Area Bikeways

The area bikeways board included relevant information from the Toolbox that could be considered on proposed bike routes in the area, with a board with a map for reference and mark-ups. The proposed bike routes included segments of Bob White Drive, Birdwood Drive, Braewick Drive, and Scribner Road. Participants explored traffic calming options for these streets such as chicanes, speed humps, and neckdowns.

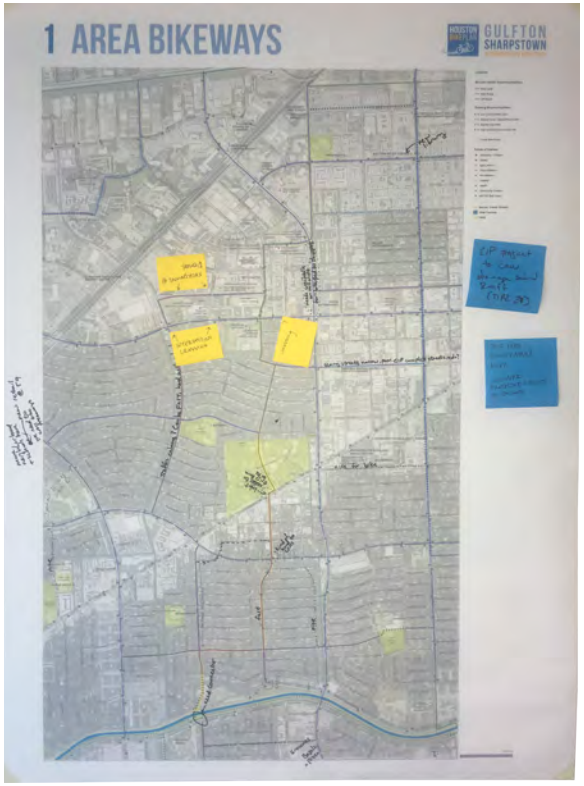
No specific traffic calming projects were identified by participants along the focus routes. However, within the focus area, De Moss was seen as a priority, with proposed neckdowns that delineate street parking and promote slower motorist speeds.

The following are major points identified by community members during the workshop:

- Cars drive fast on Braewick Drive (south of Beechnut Street) — Bob White Drive is a better connection. The focus route

should continue north from the bayou trail on Bob White to Tanger Street and Cypress Street before heading north on Braewick Drive.

- The bike route on Braewick Drive drops off at N. Braeswood Boulevard, and should divert at Birdwood Road instead.
- A bike route should be added on Tanger St/Albacore Dr (from Bob White to Cypress) and Cypress St (Albacore to Braewick).
- The traffic signal at Bissonnet St and Braewick Dr should activate when bikes arrive at the intersection.
- Traffic calming is needed on Bintliff Drive from Beechnut St to Bellaire Blvd. Alternatively, the drainage corridor on the west side of Bintliff may be incorporated into a shared-use trail as a capital improvement project, and through coordination with TIRZ 20. People currently bike on Sandpiper between Hazen and Leader, east of the drainage corridor, which isn't included on the plan. The proposed drainage corridor trail would be a welcome alternative.
- Intersection crossings should be improved for pedestrians and bicyclists on Bellaire Blvd at Bintliff and Tarnef.
- Neckdowns should be added on De Moss Drive at Bintliff and Rookin.



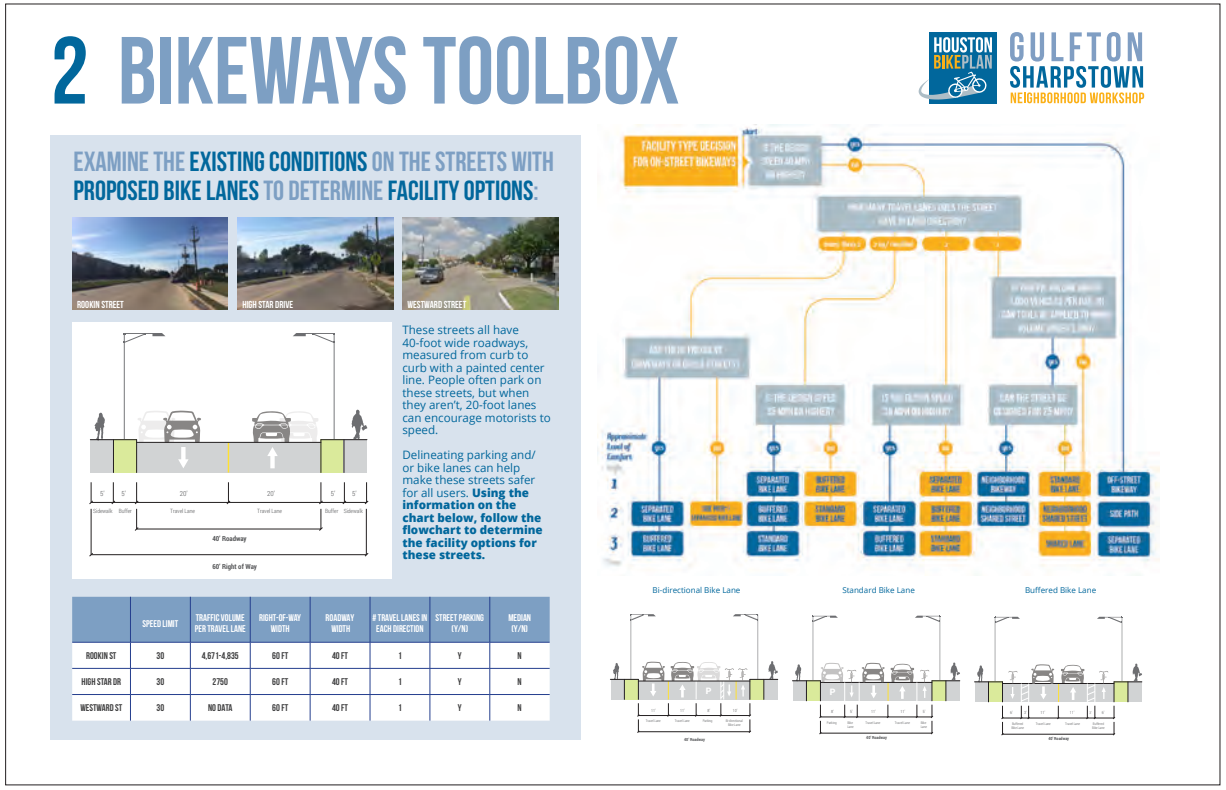
Workshop Map with Notes: Area Bikeways

- Crosswalks are needed on Hillcroft between Bellaire and High Star, which is a popular shopping destination for many people traveling by bike and on foot.
- Bike facilities should connect through the Houston Baptist University campus.



Gulfton-Sharpstown Neighborhood Workshop

The charts provided included the following information about the streets: speed limit, traffic volume per travel lane, right-of-way width, roadway width, number of travel lanes in each direction, street parking (y/n), and median (y/n).



	SPEED LIMIT	TRAFFIC VOLUME PER TRAVEL LANE	RIGHT-OF-WAY WIDTH	ROADWAY WIDTH	# TRAVEL LANES IN EACH DIRECTION	STREET PARKING (Y/N)	MEDIAN (Y/N)
ROOKIN ST	30	4,671-4,835	60 FT	40 FT	1	Y	N
HIGH STAR DR	30	2750	60 FT	40 FT	1	Y	N
WESTWARD ST	30	NO DATA	60 FT	40 FT	1	Y	N

Workshop Board: Bikeways Toolbox

2 Bikeways Toolbox

The bikeways toolbox focused on three streets that were identified along the focus route as proposed bike lanes: Rookin Street, High Star Drive, and Westward Street. These all have 40-foot wide roadways, measured curb to curb with a painted center line. People often park along the sides of the roadways, but when they aren't, these 20-foot wide lanes can encourage motorists to speed, making them potentially unsafe for people biking.

Participants were invited to use data about these streets, indicated on a provided chart, to use a ***Facility Type Decision Flow Chart*** for Bikeways to determine what the appropriate facility types are for these corridors. Using the data provided in the chart, the flow chart path for Rookin Street is as follows:

- Is the design speed 40 MPH or higher? The speed limit is 30 — No.
- How many travel lanes does the street have in each direction? —1.



Workshop Board: Bikeways Toolbox

- Is traffic volume under 3,000 per day, or can tools be applied to bring volume under 3,000? The traffic volume is 4,671 - 4,835 —No.
- Options include standard bike lane, neighborhood shared street or shared lane.

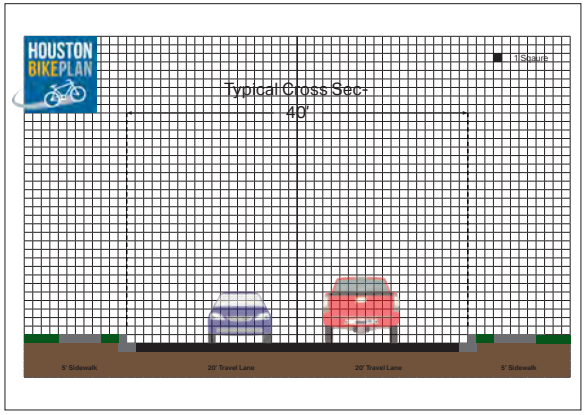
Rookin Street is proposed as a bike lane. Workshop participants were able to explore different roadway configurations through a street section exercise that included paper cut-out components of a potential street section that could be arranged within the 40-foot roadway. This exercise is helpful for participants to understand the trade-offs of roadway design. They may want a protected bike lane, but it could come at the expense of existing street parking.

It's important to recognize that the flow chart does not determine the only feasible facility types. Rather, it is a useful exercise for understanding standards and their

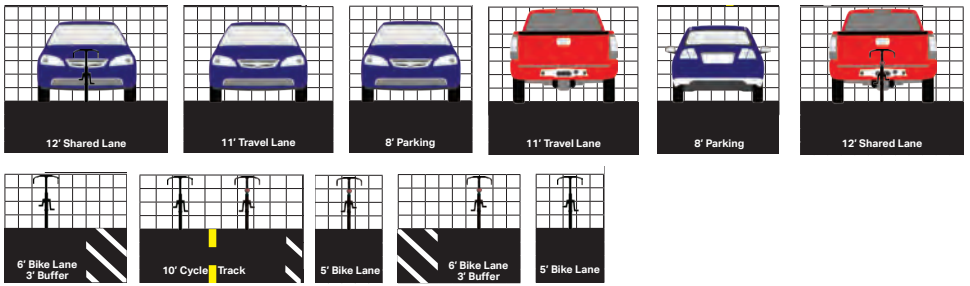


Workshop Board: End-of-Ride Facilities

- CVS at Houston Baptist University
- Sugar Grove Elementary
- Fiesta on Hillcroft Ave
- Walgreens of Hillcroft Ave
- Destinations in the social services area between Bellaire and US-59, Bintliff and Hillcroft
- Apartment complexes east of Hillcroft Avenue
- SER Ninos
- Along Harwin Drive at shopping destinations



Bikeways Street Section Exercise: Game Board



Bikeways Street Section Exercise: Game Pieces

relationship to roadway comfort such as speed and lane width. While the three options determined for these three roadways using the flow chart were standard bike lane, neighborhood shared street, and shared lane, the context of these streets may warrant deviation from those types.

Participants weighed in on the design of these streets, and the prevalence of children was considered an important justification for a separated bike lane on Rookin Street where a parking lane separates people biking from motorist traffic.

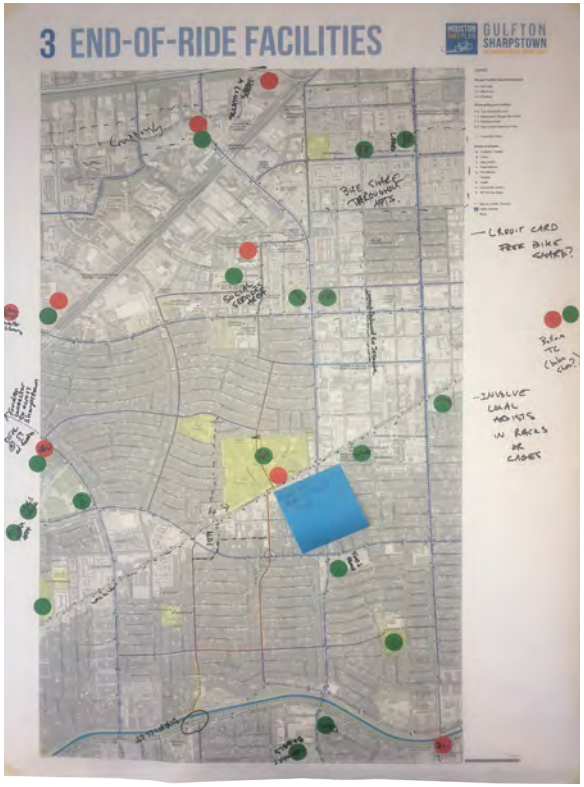
Including representative images on board materials helps participants understand what the possibilities are, and to visualize the character and level of comfort these facilities could offer. Since many of these types have not yet been implemented in Houston, participants may not be aware of what facility types look like.

3 End-of-Ride Facilities

During the focus groups, participants indicated that shops often lack bike racks and it's common to see bikes locked to METRO bus stop posts. During the workshop, the End-of-Ride Facilities station offered a description of various types of amenities and their purpose, and allowed people to indicate on a map where these might be most useful to people.

Participants indicated that bike racks are needed at the following locations:

- Walmart south of Brays Bayou
- Shopping area on Hillcroft Avenue at Brays Bayou
- Herod Elementary and adjacent park
- Foodarama at Hillcroft and Beechnut
- Energized For Excellence Middle School and Early Childhood
- Bayland Park



Workshop Map with Notes: End-of-Ride Facilities

The following were identified by participants as potential bike share station locations:

- Jewish Community Center
- Bayland Park
- Houston Baptist University
- Neighborhood Centers Baker-Ripley Campus
- At Hillcroft Ave and Harwin Dr
- Hillcroft Transit Center

Conclusion

There were many noteworthy ideas shared during the focus groups and workshop which helped inform recommendations for project implementation in the Gulfton and Sharpstown areas. To date, funding is limited, but should be pursued as available to build on the momentum. Recommendations from the community helped refine the draft recommendations for the Houston Bike Plan and a potential pilot project was developed that would make the neighborhood more bike-friendly.

This Neighborhood Planning approach should serve as a framework for engaging with communities as the City or partners have funding or resources to improve biking conditions through either physical projects, programs in the community, or policy changes. It will help build momentum and tailor the approach to a neighborhood's specific challenges and opportunities. Where needed, this approach can help translate the higher level City Bikeway network to local plans and programs tailored to a neighborhoods specific needs.

9. CONTINUE TO ENGAGE THE PUBLIC IN THE DEVELOPMENT OF BICYCLE FACILITIES

The City should develop a process(es) for continued public engagement for the implementation of bikeway projects. Building on the significant public input on the Bike Plan the City should work with stakeholders and communities as it develops final decisions on the design and location of bicycle facilities. Implementation of final designs will happen after additional analysis and public engagement which should begin no later than the preliminary engineering phase of project development. Mobility plans/studies should be referenced to determine the vision for streets within the study area.

Bikeway improvements as a part of City of Houston Projects:

All Houston 5+5 CIP Projects take bicycle facilities into consideration based on the City's Complete Streets Executive Order. If a bicycle facility exists or is proposed on the Bike Plan, the Public Works and Engineering (PWE) Department evaluates design alternatives prior to the project design and engineering phase to determine if a high-comfort bicycle facility is feasible in the project scope. If a bicycle facility is feasible, design options are evaluated and may be recommended. If a high-comfort bicycle facility is not feasible; the report identifies options for bicycle facilities in the near term or long term and may identify alternate routes to serve desired connections. Examples of options for implementation might include a wide shared sidewalk or side path where feasible, or a parallel corridor for a bikeway facility. City of Houston CIP projects typically include public engagement at three stages of the CIP process:

1. The public has an opportunity to provide input on projects during annual CIP town hall meeting.
2. Public input is solicited on the conceptual design in preliminary engineering before the project moves forward to final design and engineering. Public meeting format allows the public to provide input via online public comments and the design is updated and released to the public.
3. A final public meeting is held prior to construction of the project.

Key Recommendation 9.1
Incorporate public engagement on bikeway projects beginning no later than preliminary engineering i.e. the design phase of the project.

Bikeway corridor implementation projects, not associated with the City's CIP process, along public streets that warrant pavement reconfiguration, should include these public engagement steps or a similar process:

- Coordination with key stakeholders such as District Council Member(s), Management Districts, public agencies, large institutions, etc. and conduct initial community engagement.
- A stakeholder/community public meeting in the neighborhood near the corridor to discuss plans.
- Notification of stakeholders and the community on the final implementation plans and project schedule.

The project development and community engagement process for these two types of projects are graphically represented In Figure 6.17 below:

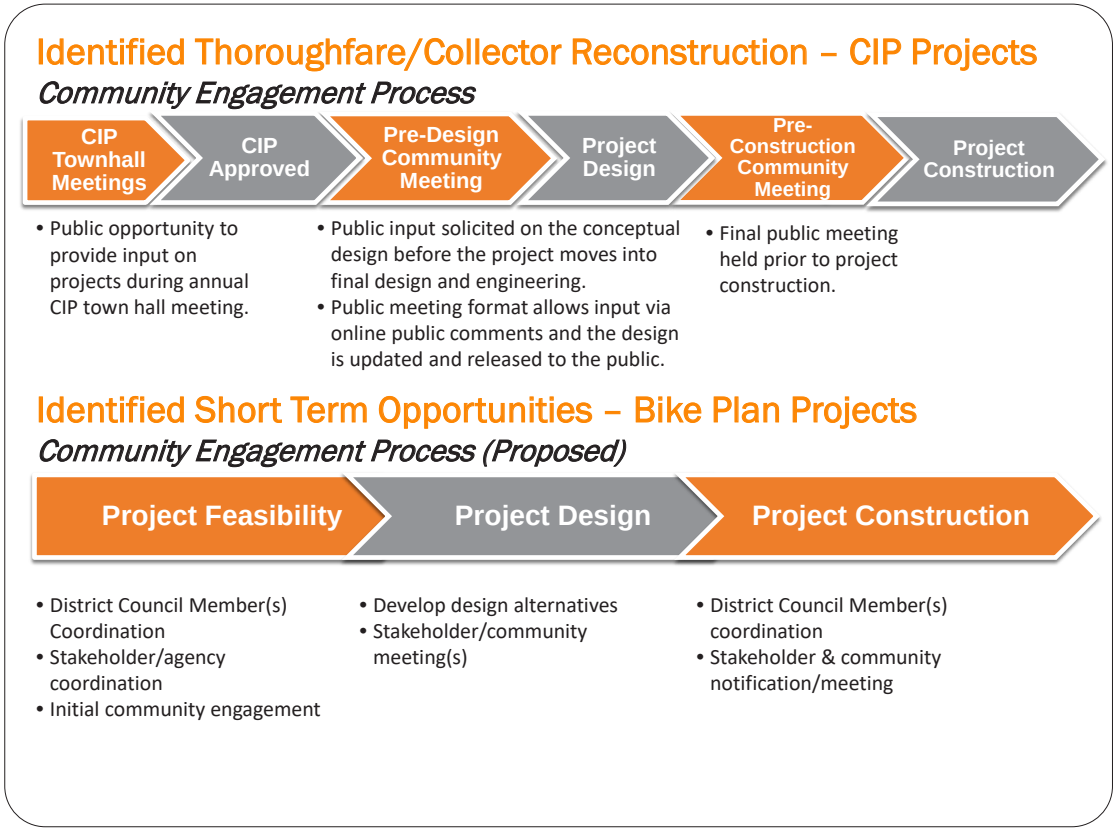


Figure 6.17 Recommended Engagement Process for City of Houston CIP and Non-CIP Projects