WESTCHASE DISTRICT MOBILITY PLAN

2016 UPDATE

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WESTCHASE DISTRICT MOBILITY PLAN
DRAFT 2016 UPDATE

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SUMMARY

WESTCHASE DISTRICT MOBILITY PLAN
2016 UPDATE

INTRODUCTION

The Westchase area has grown to become a major activity center since it was originally developed in the early 1970s. Over the past 40 years, Westchase has become major part of Houston's development shift toward of West Houston. The area is now one of the city's largest employment centers with over 70,000 employees and is home to over 40,000 residents who are younger, more educated, and more diverse than Houston overall.

Since its creation in 1995, Westchase District (formerly Westchase Management District) has focused on improving the Westchase area and guiding development to ensure its continued success. The mission of the District is focused on economic development, public safety, mobility, and beautification. Current mobility options available within the District include an evolving mix of transit, walking, biking, and predominantly driving.

While a well developed major street network exists, there are many barriers to these different modes, such as a limited sidewalk and bikeway network impacting short trips and last mile connections, limited secondary streets forcing most trips to major arterials, and development patterns difficult to serve with transit. Westchase District has been working to improve access and mobility for each of these modes with sidewalk improvements, new bike trails, and roadway corridor enhancements.

The Westchase District Mobility Plan is an effort to define a clear mobility direction by bringing together recent relevant plans and projects, developing a clear and comprehensive understanding of the existing state of mobility, agreeing to consensus-driven goals, and providing strategic recommendations on how mobility can be further enhanced and improved in the near and long term to meet the District's vision.

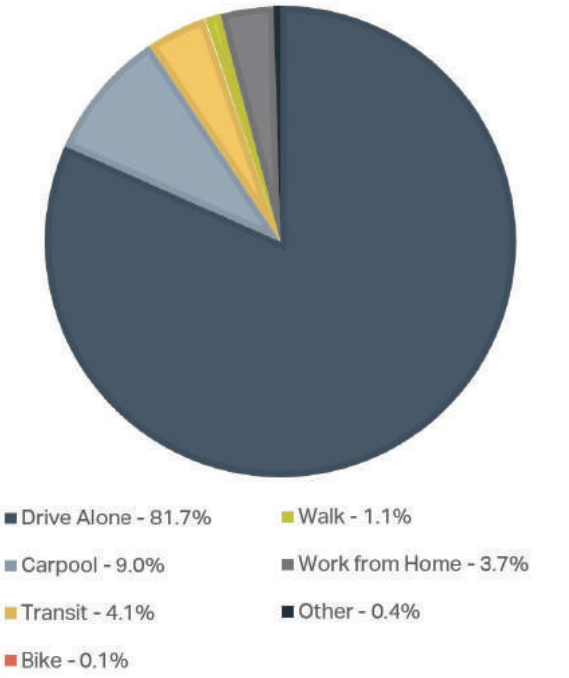
EXISTING CONDITIONS

Understanding the types of trips that are made to, from, and within Westchase District provides a platform to identify opportunities for mobility improvements for both access to and from the district and to support the many short trips within Westchase. **Chapter 1: Where We Are** provides a full analysis of the current state of mobility and growth in Westchase District.

Currently, most trips to and within the district are made by car. As the District grows, increase travel demands imposes stress on the transportation network. Regional access to Westchase District is available from two toll roads (Sam Houston and Westpark), as well as several major arterials. There is currently a grid of frequent transit routes that supports local connections, but additional circulation within the District, as well as longer, more regional trips are less directly served. Furthermore, while sidewalks exist, the overall walking environment and network is challenging and does not encourage walking as a viable mode share. Westchase District has placed an emphasis on growing the trail network, which creates opportunities for high comfort bikeway connections and increasing biking mode share.

Overall, approximately 41% of trips within the

FIGURE ES 1 | MODE SHARE OF RESIDENTS IN THE STUDY AREA



District are 3 miles or less. Trips that are shorter are most likely to be taken by alternative modes if there are safe, convenient options to do so. Further, as growth occurs, this percentage is projected to increase to 53% by 2040. The existing and future rates of short trips are much higher than what is shown for the City of Houston and the 8-county region indicating that Westchase District has a significant opportunity to provide choices to transit from largely driving to alternative modes.

Other factors that influence mode share and complement trip distance are land uses and density. Westchase currently has a mix of land uses, with multi-family and commercial uses as the most prominent. Ensuring a high degree of connectivity between the various land uses can be achieved through investments in multiple modes and considering all modes in the design of corridor improvements.

Density within the District is also expected to increase, which further makes access for walking, biking, and transit important. Just as in Westchase District, Houston in general has seen a continued desire for higher amenity neighborhoods with transportation choices partly driven by residents between the age of 18 to 34 moving to urban areas.

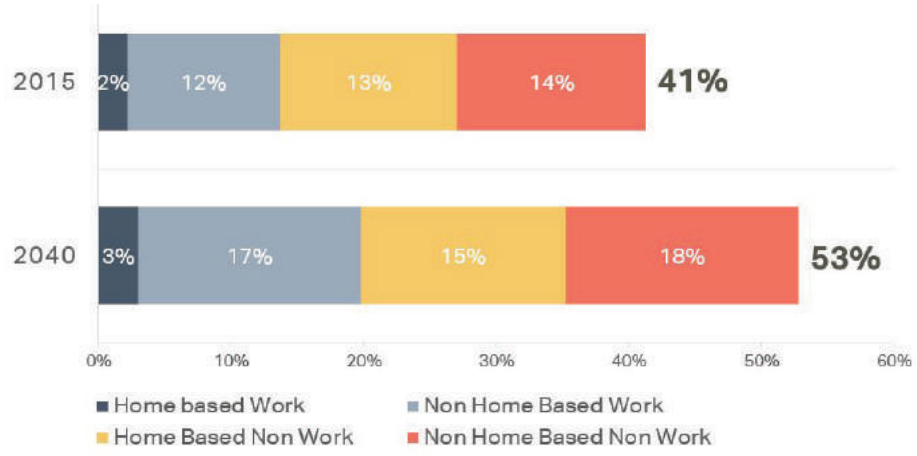
Figure ES 3 on the following page highlights areas (in Gold) that are projected to have both a high population density and a high employment density by 2040. Continuing west from the central city a future Houston with many areas of high activity density emerges. Within Westchase District, large densely populated areas along the Westheimer Road, Richmond Avenue, and Bellaire Boulevard corridors are projected. The projected density will change the landscape of West Houston and will require varying and creative mobility solutions that explore all modes of transportation.

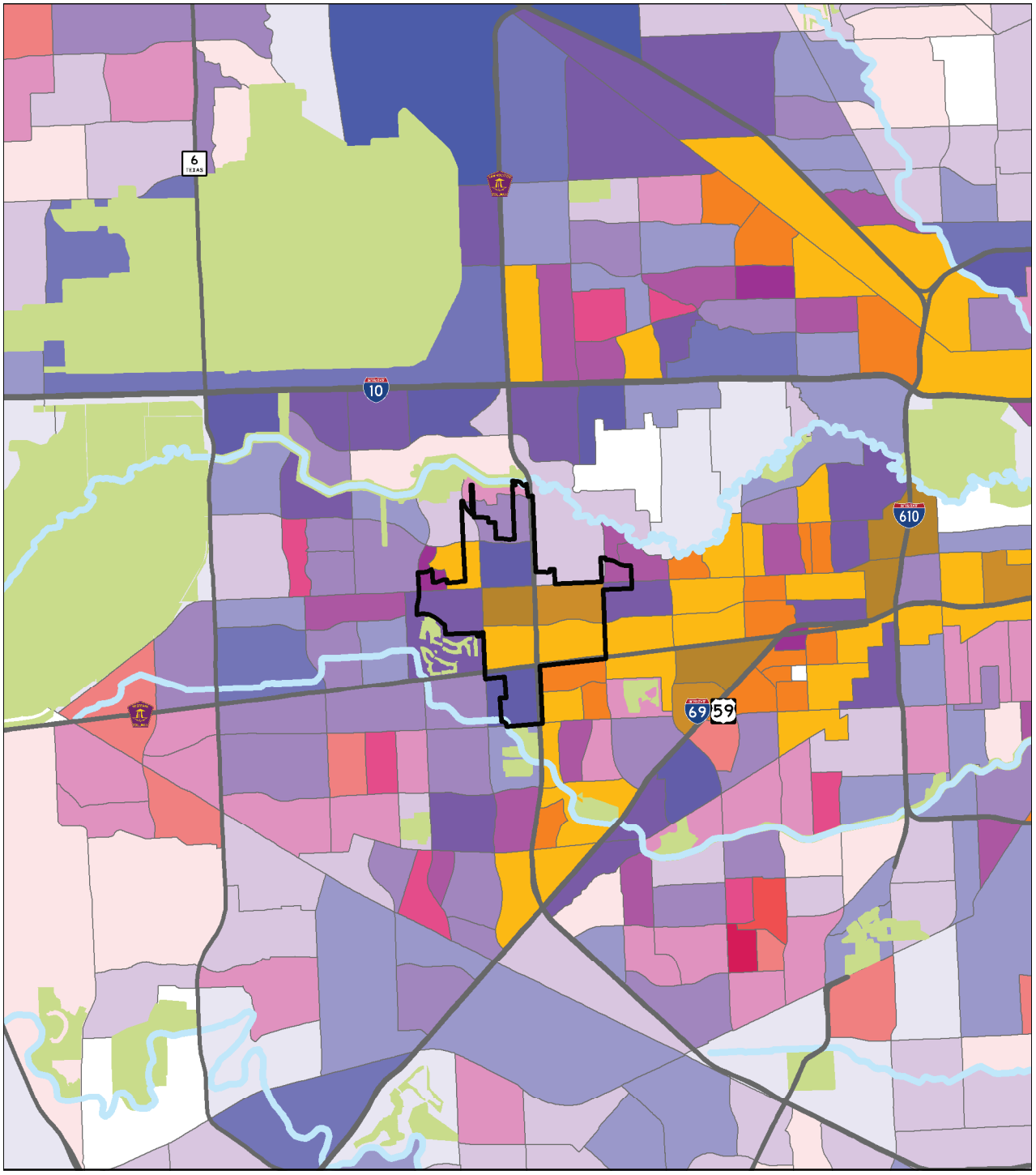
Greater activity density within the District presents an opportunity to truly become a more livable downtown for West Houston. Public realm improvements along with new and re-developed parcels oriented to making vibrant, mixed use places that encourage greater levels of walking, biking, and transit usage. Early infrastructure improvements that make these alternative modes more attractive as a transportation option can be a catalyst for development that further reinforces and moves forward the vision and goals of Westchase District.

Analysis of land availability, values, and development trends shows that there are significant development and redevelopment opportunities within Westchase District to transform the area and support a broader set of location and mobility choices. Quality investments in public infrastructure can support these developments to improve overall quality of life. For example, investment in trails could spur development oriented to transit and trail usage and other private investment to provide amenities such as bike parking, repair stations, or a bike share station, which further adds to the desirability and value of the initial infrastructure investment by the District.

Examining peer activity centers in the Houston area shows that multimodal investments are a priority to attract development, residents and employers. These peer activity centers are focusing their investments to provide community and economic value and returns, and reinforce the options for comfortable, easy-to-access transportation options. For Westchase District to maintain a competitive advantage, it must consider the these trends and how to improve the transportation systems both locally and regionally.

FIGURE ES 2 | BREAKDOWN OF TRIPS LESS THAN 3 MILES WITHIN THE STUDY AREA





FUTURE ACTIVITY DENSITY

Activity Density is a measure of both employment and population density in an area and as the Houston region grows, an increasing share of that grow is projected to move towards the Westchase District area. By 2040 Westchase is projected to see a 50% growth in population and nearly double the number of jobs in the area.

Area shown in gold on this map are projected to have higher densities of both jobs and residents. These dense areas result in shorter trip distances as more destinations are closer together. These areas can typically support and benefit from a broader range of transportation options. As a result, activity dense areas typically already have a higher than average share of non single occupancy vehicle commuters and provide options for people to avoid congestion by walking, biking or using transit for some or all of there trips.

LEGEND

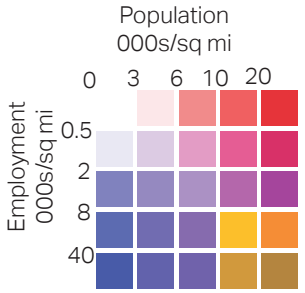


FIGURE ES3 | PROJECTED ACTIVITY DENSITY
Source: H-GAC Regional Growth Model, 2015 Quarter 2

KEY FINDINGS

Through extensive analysis of land uses, land value changes, residential and workplace characteristics, expected growth, roadway demand, safety, transit, and active transportation networks, eight key findings were identified and are shown in Table ES 1.

TABLE ES 1 | SUMMARY OF KEY FINDINGS

1.	Westchase District has experienced great success and growth by attracting new jobs and new corporate headquarters. The District continues to plan for the future with a long range plan, mobility plans focused on transit, pedestrian, and cyclists as well as a new 380 Agreement with the City of Houston to help fund future projects.	**5.**	While there is access to a grid of higher frequency routes, transit service focuses only on nearby local connections and there are limited services that allow for regional connections and commuter trips from locations like Katy and Sugar Land where many of the District employees live.
2.	The current growth patterns are starting to put a significant strain on the existing infrastructure and current projections show tremendous growth of both population and jobs within the District.	**6.**	Most current pedestrian and bicycle facilities are sub-standard with many gaps that weaken the network and create a challenging environment for both pedestrians and cyclists. Implementing a complete streets framework is one large step to making Westchase District a safer place for all roadway users.
3.	The current auto-oriented development pattern has created a cycle that is unsustainable as it leads to wider and wider corridors that will be unable to meet future demand and safely accommodate multiple modes.	**7.**	Crash rates are high within the study area especially along Westheimer Road where the current crash rate is 179% higher than the state average for similar roadways. In the past five years there have been 13 persons killed; ten were motorists, two were pedestrians, and one was a bicyclist.
4.	A large percentage of trips within the District (41%) are short trips that are a 3 miles or less. Short trips provide an opportunity to provide choices that encourage people to walk, bike, or use transit if proper infrastructure is provided. This will offset some impacts of growth.	**8.**	The City of Houston is changing as the focus is shifting to building sustainable developments and promoting multimodal access. Other areas within Houston have been taking big steps to ensure their continues success.

FIGURE ES 4 | MOBILITY PLAN GOALS

1. Promote great street designs that provide safe, efficient, and accessible transportation choices for all.
2. Increase the District's multimodal choices.
3. Improve regional connectivity and address critical bottlenecks to and from the District.
4. Encourage walkable (re)development that supports the District's vision of being West Houston's Downtown.
5. Coordinate planning efforts between agencies to fund and implement prioritized projects.

GOALS

Developing a plan and projects not only requires an extensive understanding of existing conditions, needs, and barriers, it requires development of clear goals that reflect the broad desires of the community. For goals to be most effective, they should also be aspirational, yet achievable. **Chapter 2: What We Want** outlines the feedback from public engagement and the development of project goals. Goals help guide development of recommendations, projects, and strategies to best allocate resources and pursue funding for the District to ultimately meet its long-term vision. Goals are also key to communicating with the community and stakeholders about the purpose of projects and investments.

The goals shown above in Figure ES 4 touch on five key themes that are crucial to improving multimodal mobility and developing quality places that support current and projected growth and development. These themes are intended to:

- Lay the foundation for future corridor improvements by promoting design and operations that make great streets;
- Develop comfortable networks for walking, biking, and transit use by increasing multimodal choices;
- Provide easy access to Westchase District from other areas by improving regional connectivity;
- Create an urban environment that is vibrant by encouraging a walkable development; and
- Leverage funding to implement projects quickly through pursuing grant opportunities and partnerships.

These goals also provide a basis for altering the traditional planning cycle that focuses on automobiles to one that focuses on all modes and identifying the right mode for the right surrounding context of land uses and activities as exemplified below in Figure ES 5. Shifting to a cycle that encourages multimodal transportation and supportive land uses will allow the District to best focus its resources in the future and reinforce public investments. This will also help address long term congestion issues in the area that can impact future development demands.

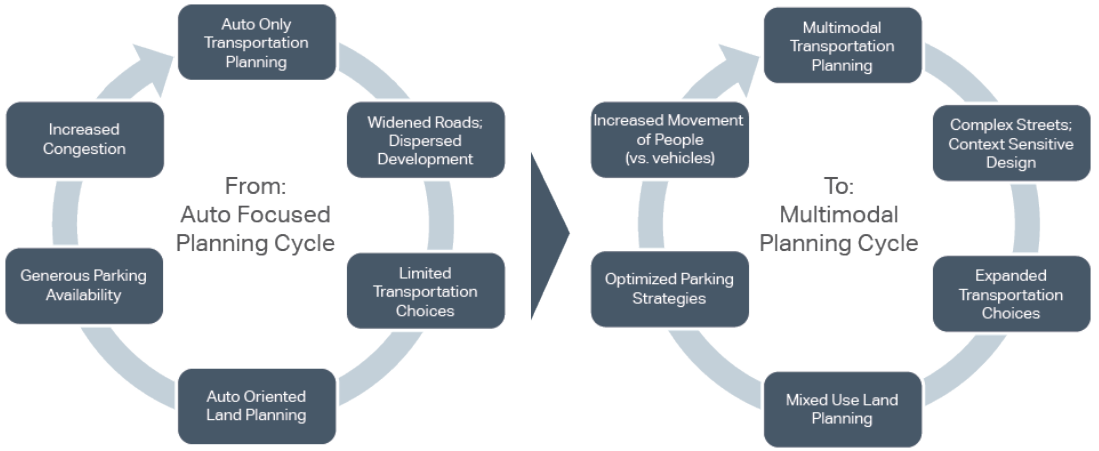


FIGURE ES 5 | PLANNING CYCLE SHIFT

RECOMMENDATIONS

Achieving the mobility goals will take a comprehensive effort that incorporates all modes over a period of time. Some projects will be able to be completed quickly and others will take more time. The recommendations laid out in **Chapter 3: How To Get There** and presented here provide a comprehensive platform for the District to build on and capture the current and future opportunities for improving mobility, access, and overall value for residents and businesses within the District.

These recommendations were developed to not only create functional, multimodal networks within the District, but also to connect Westchase District to other population and activity centers in the region. Moving these recommendations forward will require a variety of efforts as some recommendations are largely infrastructure based and others focus on policies and partnerships that provide support for others to build projects or lay the groundwork for other recommendations to be built. The information presented here identifies the title and general description of the recommendation. The report provides greater detail of the recommendations, key strategies to help move recommendations forward, likely partners, potential funding sources, and other related recommendations as many are related in developing a multimodal network.

PROMOTE GREAT STREETS

01 PLAN AND PROMOTE GREAT STREETS: Promote the design of great streets that match existing and future development context and provide options for all users.

02 TARGETED STREET RECONSTRUCTION: Prioritize roadway corridors for reconstruction that will continue to support the mobility and development goals of Westchase District.

03 EXPAND MAJOR THOROUGHFARE PLAN NETWORK: Include additional streets in the City of Houston Major Thoroughfare Plan to ensure all key roads in the network are maintained.

INCREASE MULTIMODAL CHOICES

04 CONTINUE TO DEVELOP A HIGH QUALITY BICYCLE NETWORK: Build a safe and comfortable bicycle network that welcomes all types of riders and connects to homes, jobs, schools, parks and other destinations.

05 IMPROVE THE PEDESTRIAN REALM TO ENCOURAGE WALKING: Complete a comprehensive sidewalk network that provides access for users of all abilities and encourages short trips to be taken by foot.

06A ENHANCE EXISTING TRANSIT SERVICE: Maximize the utility and benefit of existing transit with targeted infrastructure improvements to support more reliable service.

INCREASE MULTIMODAL CHOICES

06B EXTEND TRANSIT ROUTES & ADD SERVICE: Extend routes to improve network connectivity within the District. Add rapid service on Westheimer to reduce travel time to regional centers.

06C DEVELOP A HIGH CAPACITY TRANSIT NETWORK: Connect Westchase District into the regional rapid transit network with bus rapid transit services providing access to other major activity centers.

06D INTRODUCE BIKE SHARE: Introduce a bike share network that accommodates for short trips, last-mile connections and recreational opportunities.

IMPROVE REGIONAL CONNECTIVITY

07A SUPPORT EXPANDED COMMUTER TRANSIT: Provide transit and shared commute options from areas in Fort Bend County which are outside the METRO service area.

07B SUPPORT IMPROVED TOLLWAY ACCESS AND OPERATIONS: Work with both HCTRA and TxDOT to improve access between the District and the tollways.

08 MINIMIZE IMPACTS OF BOTTLENECKS: Develop a targeted approach to minimizing the congestion associated with intersection bottlenecks at key intersections within the District.

ENCOURAGE WALKABLE STREET NETWORK

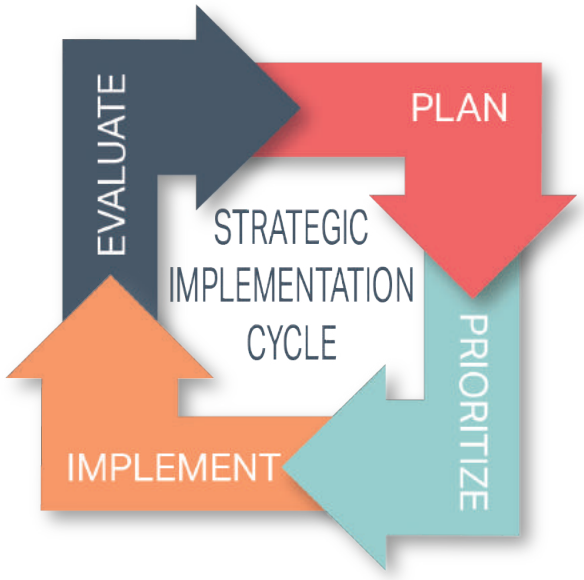
09 CREATE CHARACTER & DEVELOPMENT GUIDELINES: Support development along corridors tailored to the surrounding context, integrate community desires, and establish best practices.

10 CREATE A WALKABLE STREET GRID: Encourage a walkable street network that increases the property values of Westchase District and make the Distinct a more desirable place.

11 ENCOURAGE TRANSIT & TRAIL ORIENTED DEVELOPMENT: Encourage transit- and trail-oriented development (TTOD) through strategies that will enable robust, sustainable, and urban redevelopment.

IMPLEMENTATION

Successfully improving and sustaining high quality mobility options for people walking, biking, using transit, and driving can only be realized through effective implementation strategies. Implementation is a continuous cycle made up of initial planning, determining priority projects, implementing projects, and evaluating progress and goal attainment. **Chapter 4: Making It Happen** outlines project prioritization, implementation strategies, potential funding sources, partnerships, and metrics to help the District move the Plan, and ultimately their vision, forward to improve mobility options for all within Westchase District. The project prioritization table, Table ES 3 on page 10, provides information on cost, ease of implementation, potential time-frame of implementation, related goals, and benefits.



Additionally, Figure ES 6 visually depicts the anticipated timing of the recommendations.

CHALLENGES & OPPORTUNITIES

Key components of effective implementation strategies include coordination, partnerships, and flexibility. Coordination and partnerships will help the District make greatest use out of existing programs and leverage their resources to the greatest extent. Flexibility in implementation will allow the District to take advantage of opportunities as they become available, particularly since funding availability can be uncertain and sometimes come up quickly. Additionally, successful implementation of the Plan will rely on having community and political support.

Implementation is inherently tied to resource availability, particularly funding. It will be essential for Westchase District to identify multiple funding streams in addition to their existing local funds to support implementation of the Mobility Plan in the near term and further in the future. Grants present significant opportunities to the District to greatly leverage their local funds and expand their implementation capacity. Examples of grant opportunities for various project types are in Table ES 2.

Coordination with other agencies can be beneficial as elements of projects implemented by others may be completed to incorporate the District's desires and goals. The recommendations in the Mobility Plan not only add multimodal choices and improve safety and connectivity, they add significant value to the community. As such, projects - particularly pedestrian, bicycle, and transit - can attract investment interest from other agencies, developers, businesses, health organizations, and philanthropic/non-profit organizations. Beyond funding and capital investments, partnerships and coordination can be used to help maintain investments. Collaboration with other public agencies and organizations could provide greater flexibility for the District in the use of their local funds for future capital project needs.

EVALUATING SUCCESS

Crucial to any successful implementation plan is monitoring and evaluating how well the implemented project is meeting its intended goal(s) as well as the overall goals and vision of Westchase District. It is through thoughtful project monitoring and evaluation that the district can continue to prioritize projects and move them into implementation. As each project is implemented, defining metrics and establishing benchmarks will make future implementation, community support, and funding easier as the District will be able to show a proven track record of success.

TABLE ES 2 | POTENTIAL GRANT SOURCES

	Eligible Activity	FTA	CMAQ	HSIP	NHPP	STBG	TAP	RTP	CDBG
Bicycle/Pedestrian	Bicycle lanes on road	✓	✓	✓	✓	✓	✓		
	Bicycle parking	✓	✓		✓	✓	✓	✓	
	Bike share	✓	✓		✓	✓	✓		
	Bridges/overcrossings	✓	✓	✓	✓	✓	✓	✓	
	Crosswalks (new or retrofit)	✓	✓	✓	✓	✓	✓	✓	✓
	Curb cuts and ramps	✓	✓	✓	✓	✓	✓	✓	✓
	Data collection and monitoring for bicyclists and/or pedestrians	✓		✓	✓	✓	✓	✓	
	Landscaping, streetscaping (bike and/or ped route; transit access)	✓				✓	✓		✓
	Lighting (associated with ped/bike project)	✓		✓	✓	✓	✓	✓	✓
	Separated bicycle lanes	✓	✓	✓	✓	✓	✓		
	Shared use paths	✓	✓	✓	✓	✓	✓	✓	
	Sidewalks (new or retrofit)	✓	✓	✓	✓	✓	✓	✓	✓
	Signs/signals/signal improvements	✓	✓		✓	✓	✓		
	Signed bicycle or pedestrian routes	✓	✓		✓	✓	✓		
	Stormwater impacts related to bike/ped projects	✓		✓	✓	✓	✓	✓	
	Traffic calming	✓		✓	✓	✓	✓		
Roadway	ITS		✓		✓	✓			
	Mode shift programs (carpool, parking programs, electric/gas charging infrastructure)		✓			✓			
	New Construction/Reconstruction				✓	✓			
	Safety improvements			✓	✓	✓	✓		✓
	Traffic flow/operation improvements		✓			✓			
	Traffic signals/intersection improvements		✓			✓	✓		
	Turn lanes		✓			✓			
Transit	Capital facility improvements	✓	✓			✓			
	Rideshare/carpool programs		✓			✓			
	Circulator service (capital costs)	✓	✓			✓			
	Employer-based transportation management plans and incentives		✓						
	Bus shelters/Passenger amenities	✓	✓			✓	✓		

✓ = eligible

FTA: Federal Transit Administration Capital Funding (multiple funding categories, ex: 5310 programmed through METRO)

CMAQ: Congestion Mitigation & Air Quality Improvement Program (H-GAC)

HSIP: Highway Safety Improvement Program (TxDOT)

NHPP: National Highway Performance Program (TxDOT)

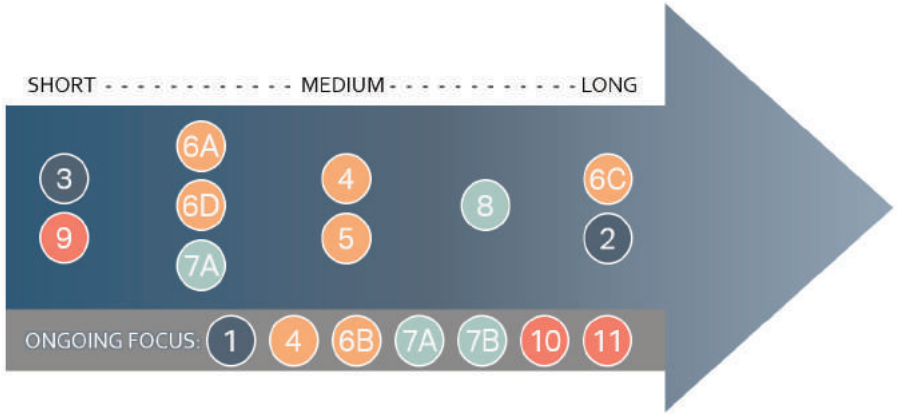
STBG: Surface Transportation Program (H-GAC)

TAP: Transportation Alternatives Program - Set Aside within STBG (H-GAC)

RTP: Recreational Trails Program (TxDOT)

CDBG: Community Development Block Grant (HUD)

FIGURE ES 6 | RECOMMENDATION TIMING



Projects:

1. Promote context sensitive design & planning
2. Targeted street reconstruction
3. Expand the Major Thoroughfare Plan network
4. Continue developing a high-quality bicycle network
5. Improve the pedestrian realm to encourage walking

6A. Enhance existing transit service

6B. Extend transit routes and add service

6C. Develop a high-capacity transit network

6D. Develop a bikeshare network

7A. Support expanded commuter transit

7B. Support improved tollway access and operations

8. Minimize impacts of bottlenecks
9. Create character and development guidelines
10. Create a walkable street grid
11. Encourage transit and trail oriented development

TABLE ES 3 | PROJECT PRIORITY AND SUMMARIZATION

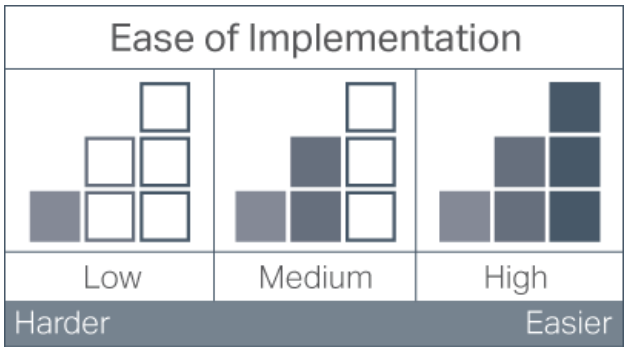
Project ID	Description	Timing	Magnitude of Cost	Ease of Implementation	Goals Supported	Benefits
1	Promote context sensitive design and planning	Ongoing	$		1 2 4 5	Improves safety for all modes; supports desired development
2.1	Targeted street reconstruction - Briar Forest Drive	Long	$$$$		1 2 3	Enhances pedestrian and bicycle environment and access; provides mobility for vehicles
2.2	Targeted street reconstruction - Richmond Avenue	Medium	$$$$		1 2 3	Improves pedestrian and bicycle realm; supports transit service and activity dense development
2.3	Targeted street reconstruction - Westpark Drive	Long	$$$$		1 2 3	Enhances pedestrian and bicycle realm; improves safety, supports potential future development
2.4	Targeted street reconstruction - Harwin Drive	Long	$$$$		1 2 3	Improves bicycle, pedestrian and transit access; supports transit service increase and TTOD
2.5	Targeted street reconstruction - Briarpark Drive	Long	$$$$		1 2 3	Supports biking; improves walkability and safety for short trips by adjacent land uses
3	Expand the network of designated collectors on the Houston MTFP	Short	$		1 5	Enhances connectivity; supports future development and funding opportunities
4	Continue to develop a high quality bicycle network	Trails: Medium On-street: Ongoing	$$$		1 2 4	Increases mode choice, connectivity, access, safety, and activity in the community
5	Improve the pedestrian realm to encourage walking	Medium	$$		1 2 4	Improves local access, mobility, and safety for pedestrians; supports transit
6A	Enhance existing transit service	Short/Medium	$$		2 4 5	Reinforces existing transit network
6B	Extend transit routes and add service	Ongoing	$		2 3 4 5	Increases mode choice and improves existing network; supports TTOD
6C	Develop a high capacity transit network	Long	$$$$		2 3 4 5	Increases mode choice and connectivity; supports TTOD

Project ID	Description	Timing	Magnitude of Cost	Ease of Implementation	Goals Supported	Benefits
6D	Develop a bike share network	Short/Medium	$		2 4	Improves access; supports greater walkability
7A	Support expanded commuter transit	Ongoing/ Short/Medium	$$		2 3 5	Increases connectivity, access, and mode choice
7B	Support improved tollway access and operations	Ongoing	$		3 5	Improves access and safety
8	Minimize impacts of bottlenecks	Medium/Long	$$		1 2 3 5	Improves LOS for drivers and transit
9	Create character and development guidelines	Short	$		1 4	Supports economic development and future development supportive of multiple modes
10	Create a walkable street grid	Ongoing	$		1 2 4 5	Improves walkability, safety, and overall accessibility
11	Encourage transit and trail oriented development	Ongoing	$$		2 4 5	Creates compact development and walkable destinations; increases mode choice

Note: Costs, project partners, and potential funding sources for each recommendation can be found in Chapter 3

Magnitude of Cost Definition:

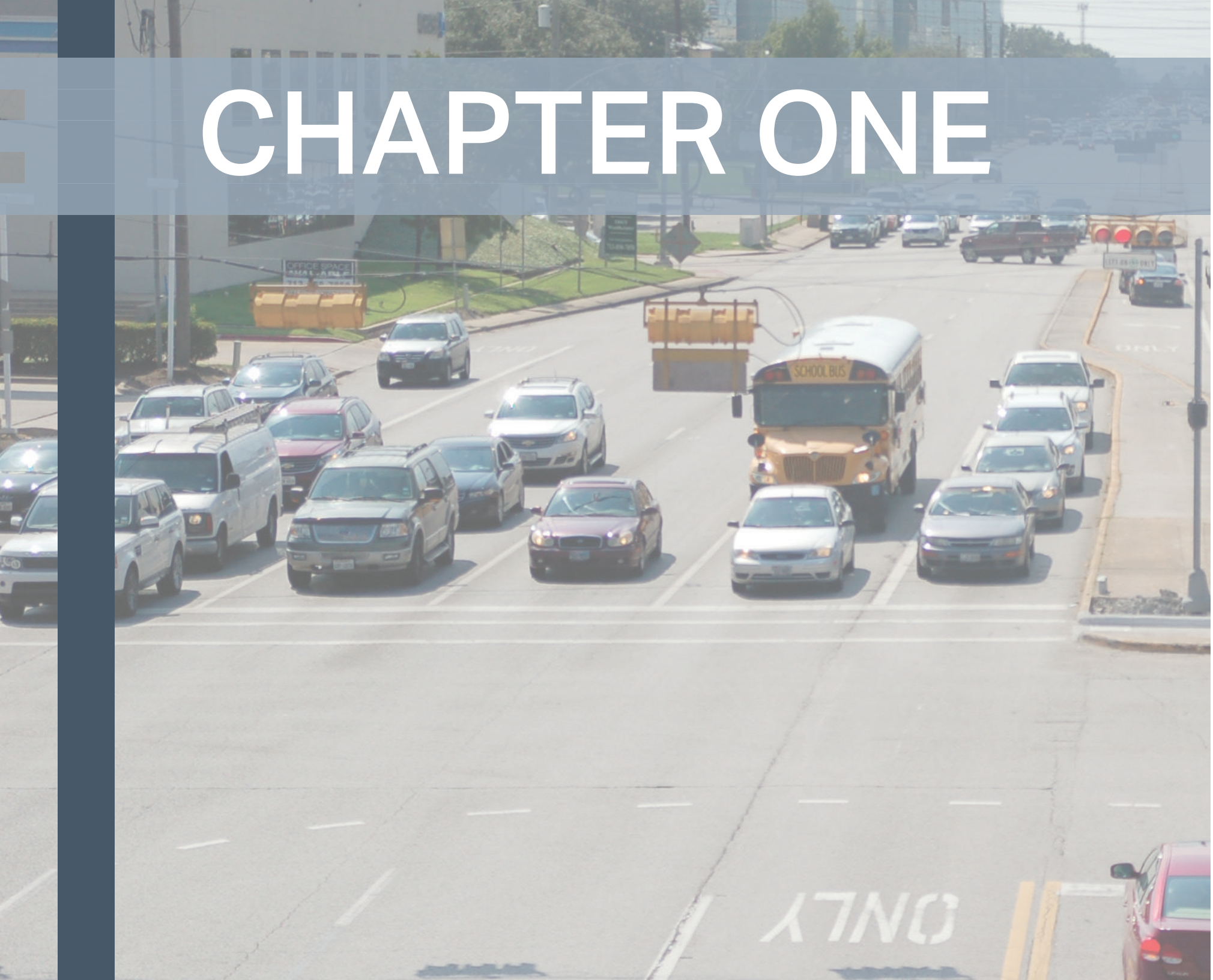
$ Less than $500,000 **$$** $500,000 to $1,000,000 **$$$** $1,000,000 - $5,000,000 **$$$$** Greater than $5,000,000



MOBILITY PLAN GOALS

1. Promote great street designs that provide safe, efficient, and accessible transportation choices for all
2. Increase local multimodal choices
3. Improve regional connectivity and address critical bottlenecks to and from the District
4. Encourage walkable development and redevelopment that supports the District's vision of being West Houston's Downtown
5. Coordinate planning efforts between agencies to fund and implement prioritized projects

CHAPTER ONE



WHERE WE ARE

WESTCHASE DISTRICT MISSION AND VISION

Development of the Westchase area originally occurred in the 1970s on what used to be farm land. Over the past 40 years, the area has seen tremendous growth and has become a key center of West Houston.

Westchase District (formerly Westchase Management District) was created in 1995. It has focused on improving and guiding development in the surrounding area to ensure its continued success for the next 40 and more years.

The mission of Westchase District is focused on:

- Economic development
- Maintaining a high level of public safety
- Mobility
- Beautification

The District also works with the City of Houston, the State of Texas, Harris County, METRO, TxDOT, and the Harris County Flood Control District to coordinate services and plan projects. Many of the planned projects are the result of studies conducted within the District.

THE WESTCHASE DISTRICT LONG RANGE PLAN

In 2006, Westchase District developed a Long Range Plan intended to create a framework for future development that would focus on building higher value and ensuring a prosperous future for the District. It developed high level goals and a vision for the future. This vision has led the direction of this Mobility Plan as well as other recent planning efforts.

The first part of the plan included a 1.92 mile trail from Richmond Avenue to the Brays Bayou trail system and Art Storey Park, that will be completed March 2017.

Certain elements of the long range plan included acquiring additional funding. To provide an additional source of revenue to fund public infrastructure projects, the District entered into a 380 agreement with the City of Houston in 2013. The majority of the funding from the 380 agreement has already been dedicated to infrastructure projects around the District. This Mobility Plan will focus on developing the next series of strategies and infrastructure projects to allow the District to continue to grow and prosper.

THE WESTCHASE DISTRICT MOBILITY PLAN

The Westchase District Mobility Plan is an effort to bring together the recent plans conducted by the District and provide strategic recommendations on how mobility can be enhanced and improved in the near and long term.

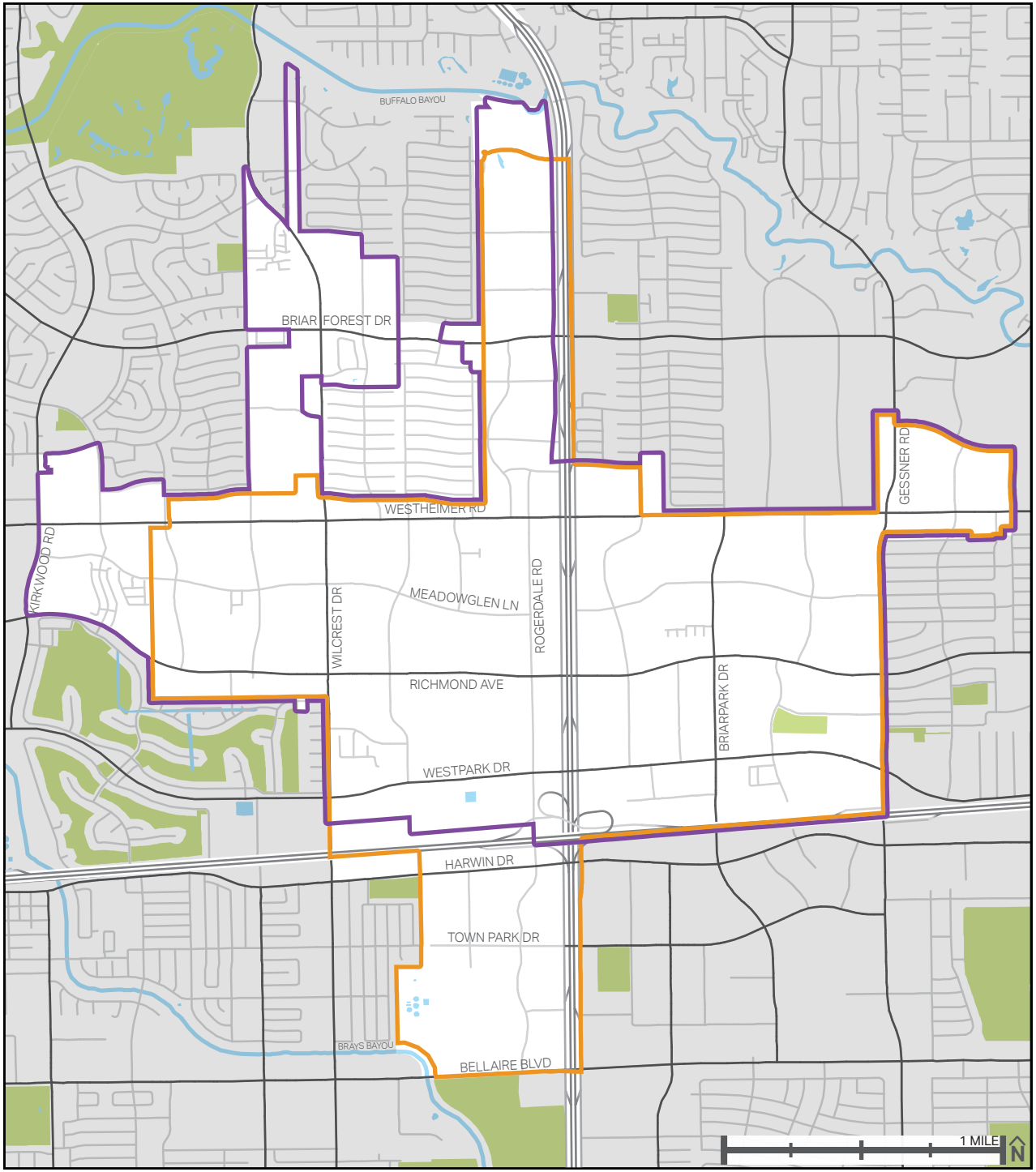
Building upon previous efforts, this plan leverages ideas that have been vetted and successful in moving Westchase District towards their vision. This study also provides new analysis of the current state of mobility at a comprehensive level and weaves that understanding into new strategies for implementation that reinforce the vision.

The sections of this Plan include analysis of the existing conditions, development of goals, recommendations, and implementation strategies. The existing conditions provide a baseline for which to understand barriers, needs, and opportunities. Development of goals uses an understanding of the existing conditions paired with the District's vision and public input to create aspirational, yet achievable goals for this project and for the District to define success in implementation. Recommendations develop the projects and strategies for meeting the goals, and implementation strategies lay out priorities and guidance of potential funding mechanisms and other strategies that allow the District to leverage their resources and measure success.

PREVIOUS PLANNING EFFORTS

Westchase District has been very proactive in developing planning studies and coordinating with other area planning efforts. This provides a base of information to assess prior recommendations and their effectiveness in meeting the District's needs and goals. The list below provides the relevant major planning efforts of both Westchase District and partner agencies.

- 2001 Westchase Mobility Plan
- Pedestrian and Transit Access Plan
- H-GAC West Houston Mobility Study
- Pedestrian and Bicycle Master Plan
- Beltway 8 Frontage Road Study
- METRO Transit Orientated Development Study
- HCTRA Westpark Corridor Study (ongoing)
- Westchase Trails & Parks Master Plan (ongoing)



STUDY AREA

To ensure a compressive study on mobility, a continuous and inclusive study area was defined. The study area includes both the Westchase District boundary and the 380 Agreement boundary. Figure 1.1 depicts both the Westchase District (orange) and 380 Agreement boundary (purple) along with the mobility plan study area (white).

The study area is 3,600 acres (5.6 square miles). The total area of the study area is greater than the sum of the areas of the Downtown Management District, the Uptown Management District, and the Memorial City Management District.

Due to the size of the study area, mobility challenges vary from one corner of the study area to another. The size can also pose challenges for developing solutions to improve mobility.

This chapter evaluates the existing conditions within the study area and starts to highlight locations for key mobility improvements.

Complementing this chapter is Appendix A. The existing conditions analysis in Appendix A catalogs important corridors within the study area and summarizes key characteristics including right-of-way, number of lanes, traffic volumes, sidewalks, and adjacent land uses.

LEGEND

- Mobility Plan Study Area - 3,600 acres
- Westchase District - 2,827 acres
- 380 Agreement Boundary - 2,827,acres

FIGURE 1.1 | STUDY AREA

LAND USE

The majority of the study area is comprised of commercial and multi-family residential development in red and orange, respectively (Figure 1.2). Most parcels are large with the average parcel size for all non single-family lots being 3.4 acres.

Many office towers are located along the West Sam Houston Parkway. Along Westheimer Road, the majority of commercial parcels are strip centers with a variety of retail, ranging from small store fronts to big box retail and a variety of restaurants.

The District is home to multiple education institutions, including the Houston Community College (HCC) campus located on Hayes Road. There are two elementary schools and one middle school located within the study area: Sneed Elementary, Walnut Bend Elementary, and Revere Middle School.

The majority of multi-family residential are garden apartment style homes built primarily between 1970 and 1989. There are also multiple large, vacant, undeveloped tracts, equaling 10.4% of the total land area.

LEGEND

- Commercial - 42.9% of land area
- Single Family Residential - 6.7% of land area
- Multi Family Residential - 26.1% of land area
- Civic - 8.6% of land area
- Industrial - 0.1% of land area
- Park/Open Space - 1.3% of land area
- Undeveloped - 10.4% of land area
- Transportation/Utilities - 4.0% of land area

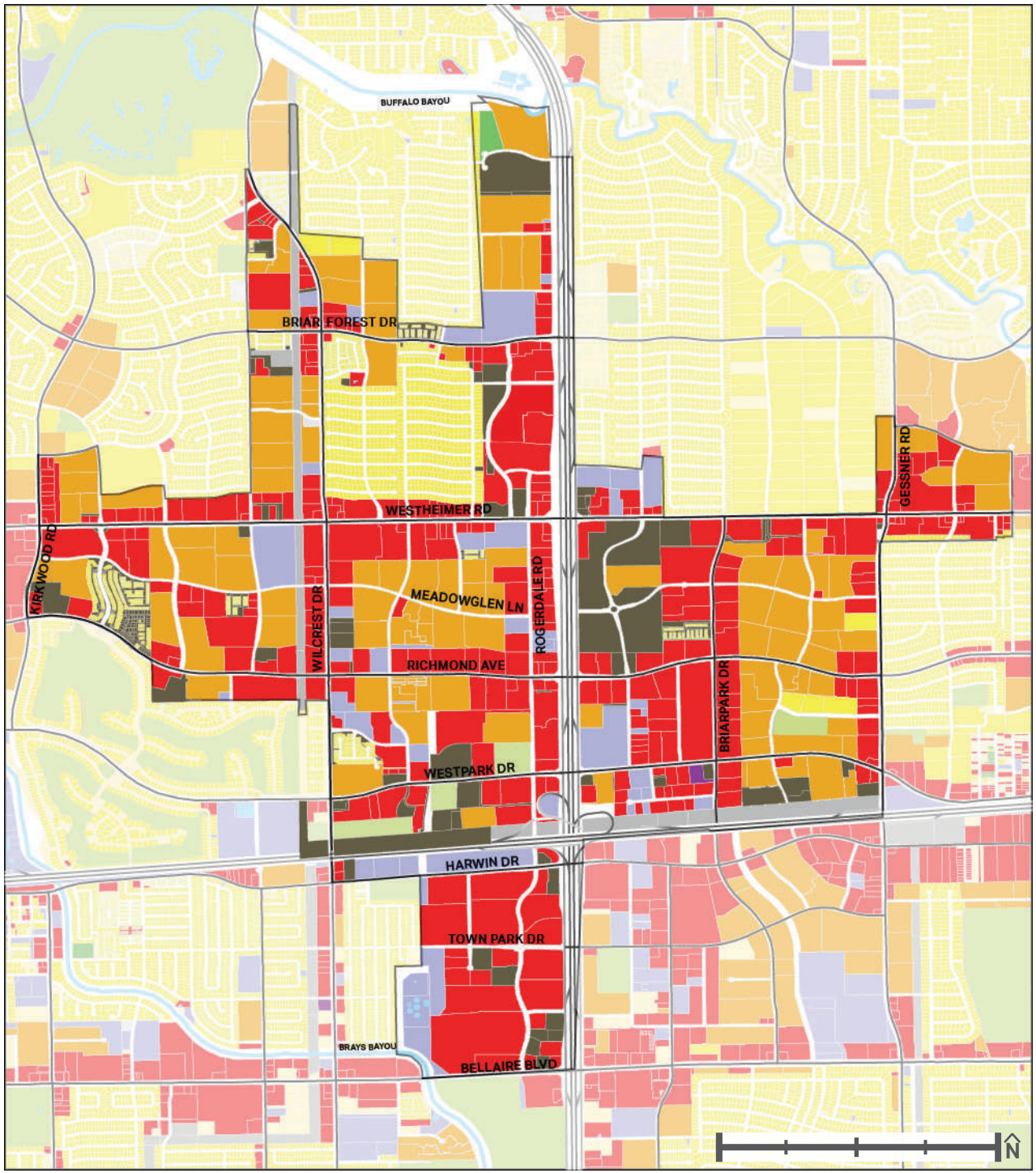
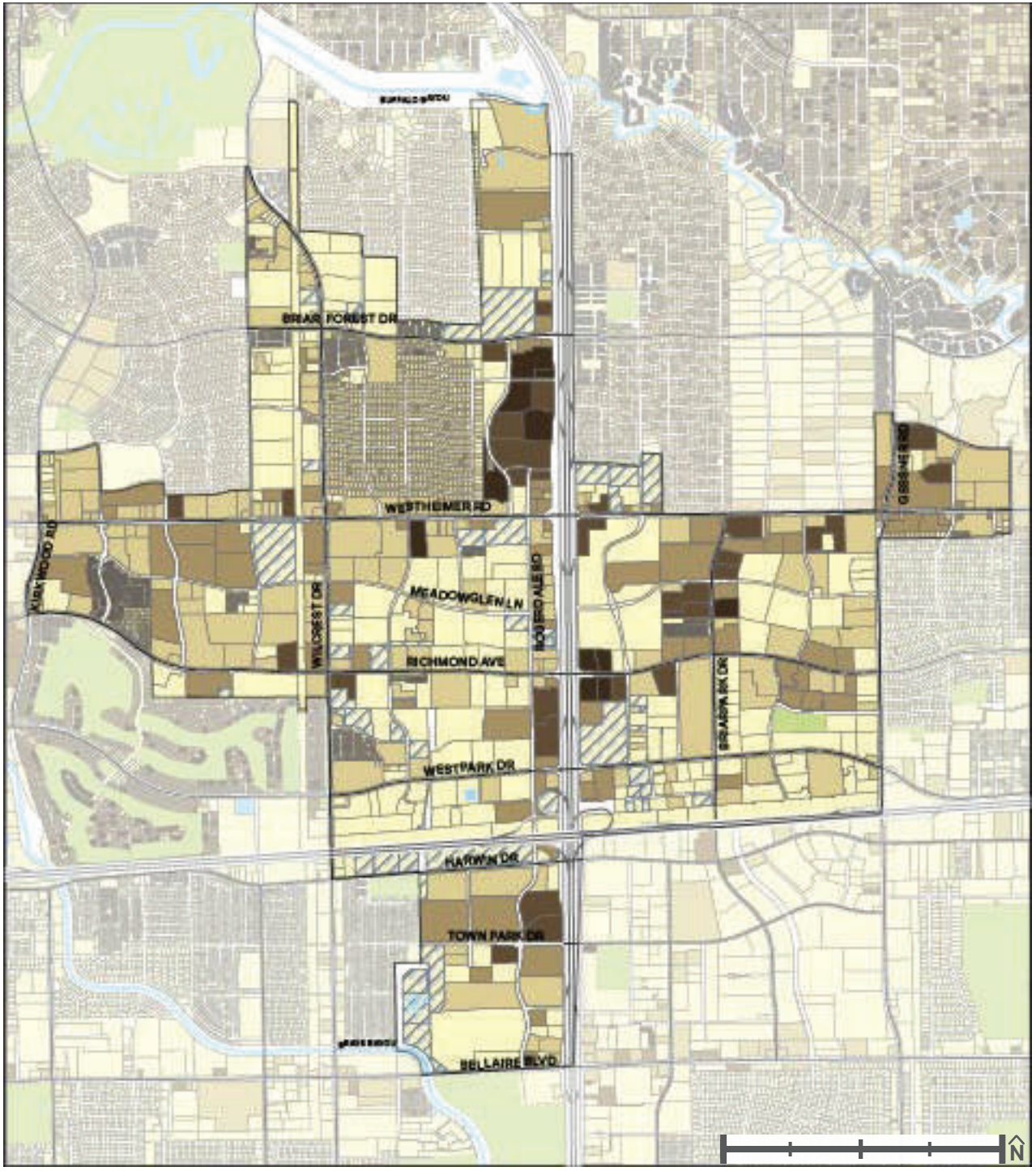


FIGURE 1.2 | LAND USE
Source: HCAD, 2015 (% of land area excludes roadway ROW)



LAND + IMPROVEMENTS VALUE

Property values show the health of an area. Higher values typically correspond to greater economic health. Figure 1.3 depicts the total appraised value, including land value and improvement, for all parcels within the study area. Values vary within the study area. The high value parcels are typically office towers or newer multi-family residential construction. Lower valued parcels are primarily garden style apartments and aging strip centers that are beginning to show their age.

With only 10.4% of the land area vacant, future growth within the District will likely be driven by investments in redeveloping old and outdated parcels. There have only been a few sites of redevelopment within the study area. The District seeks to promote additional growth with investments from a 380 agreement between Westchase District and the City of Houston. Investments in mobility infrastructure can also be a catalyst for quality development.

The study area is surrounded by single-family residential neighborhoods with high values and affluent households. These neighborhoods have continued to maintain their value and will help maintain and increase the values within the study area.

LEGEND

- Less than 25 $/sqft
- 25 - 50 $/sqft
- 50 - 100 $/sqft
- 100 - 300 $/sqft
- More than 300 $/sqft
- Exempt Properties

FIGURE 1.3 | LAND + IMPROVEMENTS VALUE
Source: Harris County Appraisal District, 2015

KEY LAND USES

The majority of the study area is comprised of commercial and multi-family residential development.

COMMERCIAL

Commercial properties make up 43% of the land area within the study area. Commercial development varies in both type and quality. There are large strip center retail developments along Westheimer Road and Richmond Avenue. The character of strip centers vary with some including multiple big box retail stores and others housing multiple small business and restaurants.

Age and quality of the strip center retail varies which is reflected in the variation of value (Figure 1.3) of retail within the District. Some retail developments have experienced success with multiple high demand tenants while others have multiple vacancies.

Westchase District is an employment hub. Office development within the District ranges from small, low-rise office parks to office towers and corporate campuses. Parcels with the highest value per square foot are typically Class-A office towers with structured parking.

MULTI-FAMILY RESIDENTIAL

Multifamily residential makes up 26% of the total land area. The majority of multi-family residential are garden apartment style homes built primarily between 1970 and 1989 (60%).

Multi-family housing within the District includes both condominiums and apartments. There are also neighborhoods of town homes. Condominiums typically have higher appraised value than apartments.

Multiple new apartment complexes have recently opened or are currently under construction within the District. The new developments are being constructed in a more urban style with attached structured garage parking.

UNDEVELOPED

Approximately ten percent of land area within the study area, almost 300 acres, is currently undeveloped. Undeveloped parcels vary in size and type from vacant single-family lots to the large undeveloped parcels at the southeast corner of Westheimer Road and Beltway 8. The currently vacant parcels located at Westheimer Road and Beltway 8 offer more than 70 acres of potential development in the heart of Westchase District and have the potential to be transformative.

The large percentage of undeveloped land along with aging strip centers and multi-family can become prime locations for redevelopment and additional value that can benefit the overall quality of life within the District.

RESIDENTS OF STUDY AREA

A demographic analysis was conducted for the study area[1]. The demographics of the study area are like a microcosm of the City of Houston with a few exceptions.

Residents of the study area are young, educated, and diverse. Millennials, the age cohort of 18 to 34, make up 35% of the study area population, which is much higher than the City percentage of 29% and the national average of 23%. Millennials often prefer higher density, high amenity neighborhoods that are located near multiple activity centers. They often live by themselves, or with a roommate, in a rented multi-family development.

While the percentage of Baby Boomers within the study area is lower than the average within the City, there is a higher percentage of Baby Boomers within the nearby single-family residential neighborhoods. Like Millennials, Baby Boomers have started to show preference for the amenities available in more urban settings, particularly among people looking to downsize their homes as their children have grown and moved away.

A large percentage of residents within the study area rent, which is expected with the high percentage of multi-family residential. It can be more challenging to engage residents who rent. But creating a sense of place, even for those who do not purchase property, allows residents to take ownership of their community and ensure long term viability for an area.

[1] The demographic study area included the study area as well as parts of the adjacent neighborhoods, due to limitations of geographic divisions of US Census data.

	STUDY AREA[2]	WEST HOUSTON	HOUSTON	HARRIS COUNTY
Total Population[1]	42,500	345,573	2,167,988	4,269,608
Households[1]	21,000	135,781	782,643	1,435,155
Average Household Size	2.2	2.8	2.64	2.82
Median Household Income	$48,070	$60,489	$45,728	$53,822
Unemployed	8.1%	8.1%	8.9%	8.2%
Below Poverty Line	15%	15%	20%	15%
% Own	24%	48%	44%	56%
% Rent	76%	52%	56%	44%
Vacancy	15.3%	12.1%	13.2%	10.7%
Single Family Detached	16%	42%	45%	57%
Single Family Attached	7%	8%	5%	4%
Apartment 2 - 9 Units	20%	14%	13%	10%
Apartment 10-49 Units	40%	25%	22%	17%
Apartment 50+ Units	16%	10%	14%	9%
Other	0%	1%	1%	3%
%Hispanic	30%	35%	44%	41%
% White (non Hispanic)	29%	28%	26%	32%
% Black (non Hispanic)	29%	19%	23%	19%
% Asian (non Hispanic)	10%	16%	6%	6%
% other (non Hispanic)	2%	2%	2%	2%
% 17 or Under	21%	25%	25%	28%
% 18-34	36%	26%	29%	26%
% 35-64	35%	40%	37%	38%
% 65+	8%	9%	10%	9%
% No High School	6%	10%	14%	11%
% Some High School	6%	9%	11%	10%
% High School Graduate	16%	20%	22%	23%
% Some College	24%	20%	19%	21%
% Assoc. Degree	8%	6%	5%	6%
% College Degree	26%	23%	18%	19%
% Grad School	15%	12%	12%	10%

TABLE 1.1 | DEMOGRAPHICS OF RESIDENTS
Source: American Community Survey, 2014 5-year estimates

[1] Population and Households for Study Based on US Census Block Geographic Areas

[2] Study Area includes Block Groups - 450900, 451002, 452202, 450801, 450802, 431101, 452201, 451001, 432300, 432400, 451100, 452100, 452300

WORKPLACE AREA CHARACTERISTICS

Westchase District is one of the major employment centers within the City of Houston. Businesses located within the District employ over 75,000 people. A study conducted in 2013, found an office occupancy rate of over 90%.

Westchase District has many competitive advantages that allow it to continue to attract business. The Sam Houston Tollway and Westpark Tollway provides access to the Greater Houston Region while also being centrally located. Westheimer Road, Richmond Avenue, Gessner Road, and Bellaire Boulevard all provide strong local connections for the study area.

The study area residents are young, diverse, and educated, which will support growing businesses. Also, the surrounding single-family, affluent, and educated residential neighborhoods provided a desirable work force within a small radius.

A high percentage of professional and business service jobs are located within the study area, as shown in Table 3.2. The Study Area includes a higher percentage of Natural Resource and Mining Jobs which correlates with the large number of energy-focused companies based within the study area.

Current development patterns and the large parcels within Westchase District allow it to cater to companies who want to develop a large corporate campus in a central and accessible location in the Houston region.

Westchase District is home to multiple corporate headquarters. BMC Software, which employs 1,300 people, located its corporate campus on CityWest Boulevard, south of Del Monte Drive in 1993.

Jacobs Engineering employs 2,300 people at its headquarters located on Rogerdale Road south of Harwin Drive. Other large employers within the study area include Randalls Food Markets, Inc., and Statoil.

Phillips 66 has recently completed a new corporate campus on 14 acres on CityWest Boulevard between Westheimer Road and Briar Forest Drive. The new campus will provide a central location for all Phillips 66 employees who are currently spread out in 7 locations around Houston. The two new office towers were completed in mid 2016 and house approximately 1,100 people. Many campuses are adding amenities such as a sports deck with putting greens, soccer fields, fitness centers, and training and development centers to improve quality of life for employees and continue to add value to the District.

	STUDY AREA	WEST HOUSTON	HOUSTON	HARRIS COUNTY
Natural Resources and Mining	14%	11%	5%	5%
Trade, Transportation, and Utilities	13%	19%	22%	22%
Construction	6%	6%	6%	7%
Manufacturing	3%	10%	7%	9%
Information	1%	1%	2%	1%
Finance and Insurance	7%	3%	4%	3%
Real Estate and Rental and Leasing	2%	2%	2%	2%
Professional and Business Services	27%	18%	10%	9%
Administration & Support, Waste Management and Remediation	10%	7%	9%	8%
Education and Health Services	8%	12%	19%	20%
Leisure and Hospitality	8%	7%	9%	9%
Other Services	1%	3%	3%	3%
Public Administration	1%	0%	3%	3%

TABLE 1.2 | JOB TYPES WITHIN STUDY AREA
Source: Longitudinal Employer-Household Dynamics, 2013 Workplace Area Characteristics

Study Area includes Census Tracts - 450900, 451002, 452202, 450801, 450802, 431101, 452201, 451001, 432300, 432400, 451100, 452100, 452300

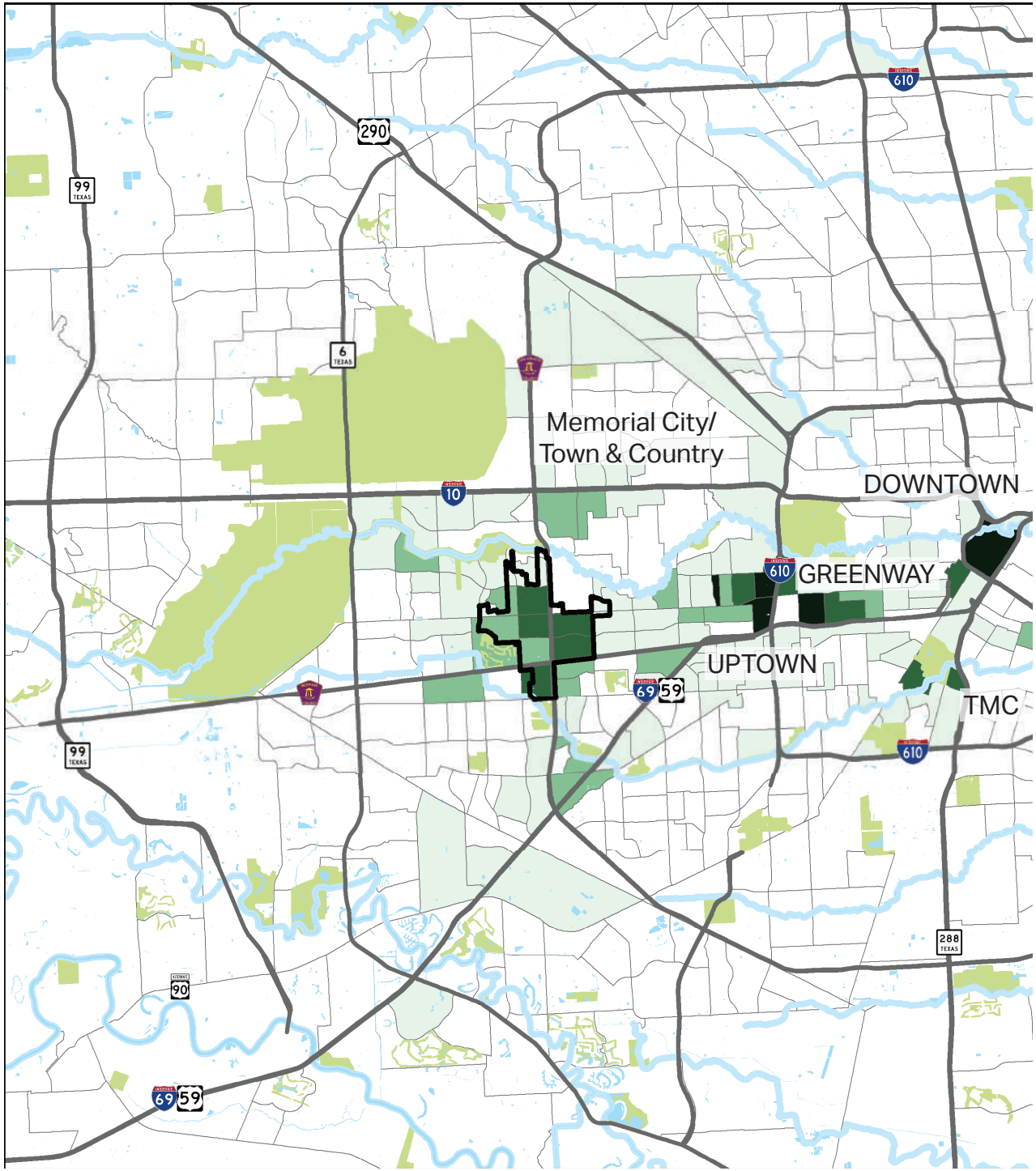
WHERE RESIDENTS WORK

To better understand the travel patterns of residents within the study area, an analysis of where residents work was conducted and is summarized in Figure 1.4. Longitudinal Employer-Household Dynamics (LEHD) data from the US Census was used and Journey to Work flows were based on the density of residents working in each Block Group. Areas with darker color have a larger density of residents working in that area.

The majority of residents work within the West Houston Region, but not within the study area.

Residents of the study area work in key employment centers within the City of Houston, including Downtown, the Texas Medical Center (TMC), Greenway and Uptown.

Westchase District is exporting 89% of its residents to jobs outside the study area, with 11% of residents both living and working in the study area.

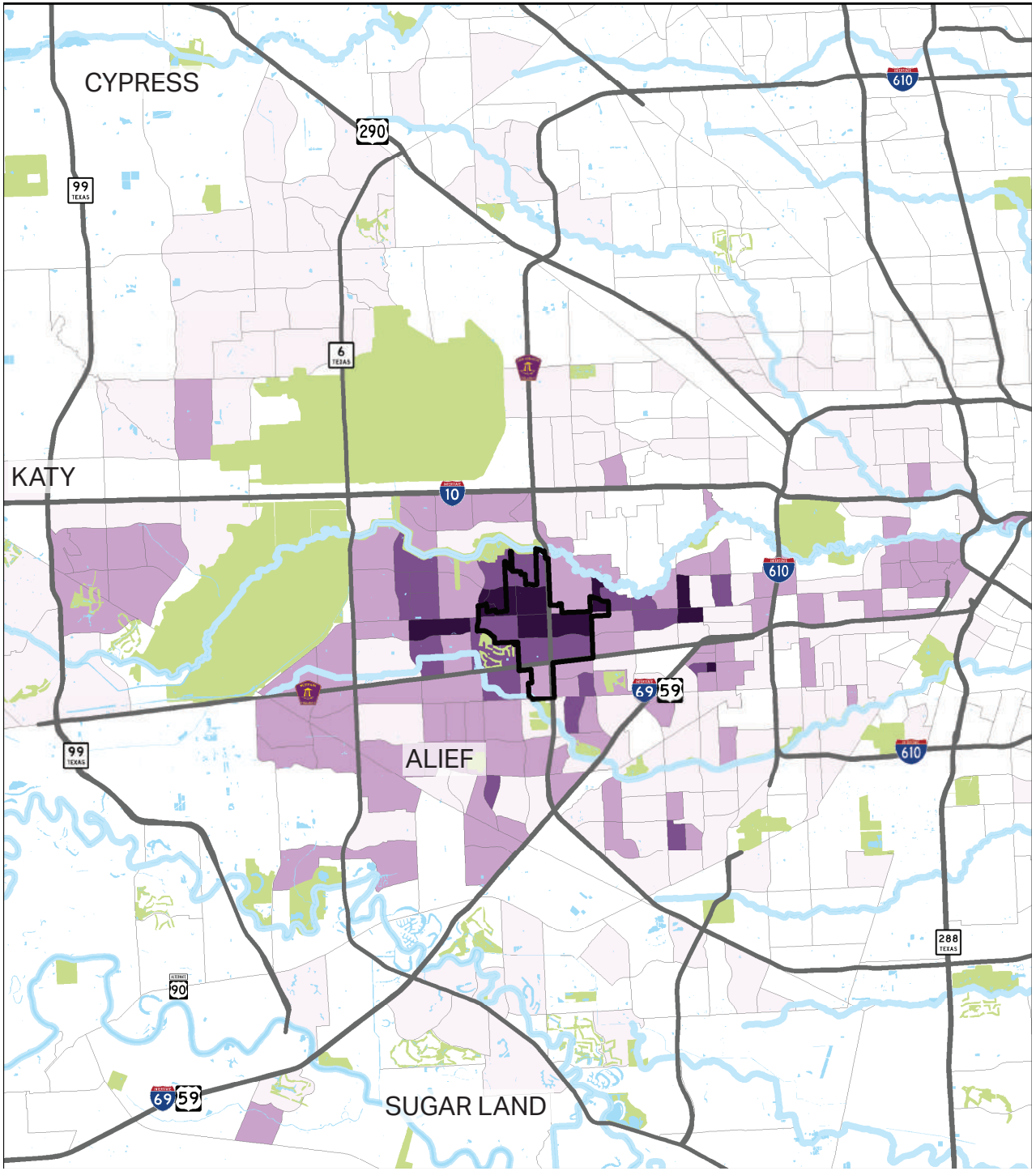


LEGEND

EMPLOYEES PER SQUARE MILE

- Less than 50
- 50 - 200
- 201 - 400
- 401 - 800
- More than 800

FIGURE 1.4 | WHERE RESIDENTS WORK
Source: Longitudinal Employer-Household Dynamics, 2013



WHERE EMPLOYEES LIVE

Figure 1.5 maps the location of where study area employees live. The map shows that a large percentage of employees live in West Houston, but are also spread through out the greater Houston region.

The strong regional connections allow Westchase District to attract employees who live in multiple locations through out the greater Houston region. Many employees (19%) live in Fort Bend County and are concentrated within Katy and Sugar Land. The direct access from the study area to Fort Bend County via IH-10, the Westpark Tollway, and US 59/IH-69 is a driver to the higher numbers of employees living in those locations.

Only 4.5% of employees of the study area live within the study area.

Figures 1.11 and 1.12 depict the daily inflow and outflow of jobs within the Westchase District. The high number of inflow of jobs and outflow of residents is a symptom of the mismatch between jobs available within the study area and the residents who live there. This also creates added stress on the transportation network.

LEGEND

EMPLOYEES PER SQUARE MILE

- Less than 50
- 50 - 100
- 100 - 200
- 200 - 300
- More than 300

FIGURE 1.5 | WHERE EMPLOYEES LIVE

Source: Longitudinal Employer-Household Dynamics, 2013:

REGIONAL POPULATION GROWTH

Over the past 25 years, the City of Houston has grown rapidly. In 1990, the City of Houston had a population of 1.7 million and the Houston Metropolitan Statistical Area (MSA) had a population of 3.8 million. By 2017, the population in Houston is projected to be 2.37 million and the population within the 8-county region is projected to exceed 6.8 million.

Much of the MSA population growth has been driven by suburban development outside the City in northwest Harris County, Fort Bend County, and Montgomery County.

Much of the growth within the City has occurred in West Houston. Figure 1.6 depicts the changes to the population density within West Houston between the 1990 and 2010 Decennial Census.

One of the key drivers of the West Houston population boom is the continued development of single-family suburban developments along the IH-10 and US 59/IH-69 corridors. As well as the growth of the Katy area and Fort Bend County.

West Houston has also experienced population density growth over the past 25 years due to the increase in demand for multi-family residential along Westheimer Road, Richmond Avenue, and Bellaire Boulevard. A significant driver of the density increase in West Houston is the large number of immigrants settling in the area. Today, Gulfton, southwest of the study area, is the densest area within the City of Houston due in large part to immigrants.

In addition, the cohort of 18-34 year olds in Houston has continued to grow. The number of young residents has driven up the demand for more dense housing.

The increase in population density is also echoed within the study area. This increase in density supports a variety of mobility modes and helps reinforce developments that are emphasizing amenities and access over the traditional model of lower density and high levels of surface parking.

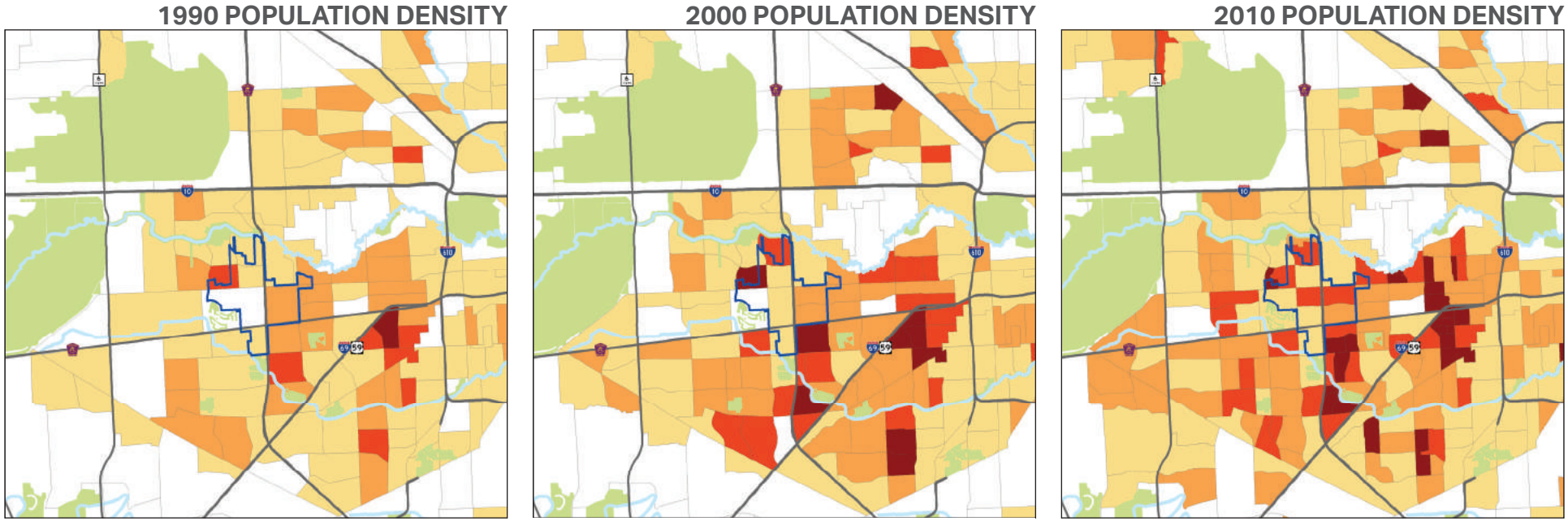
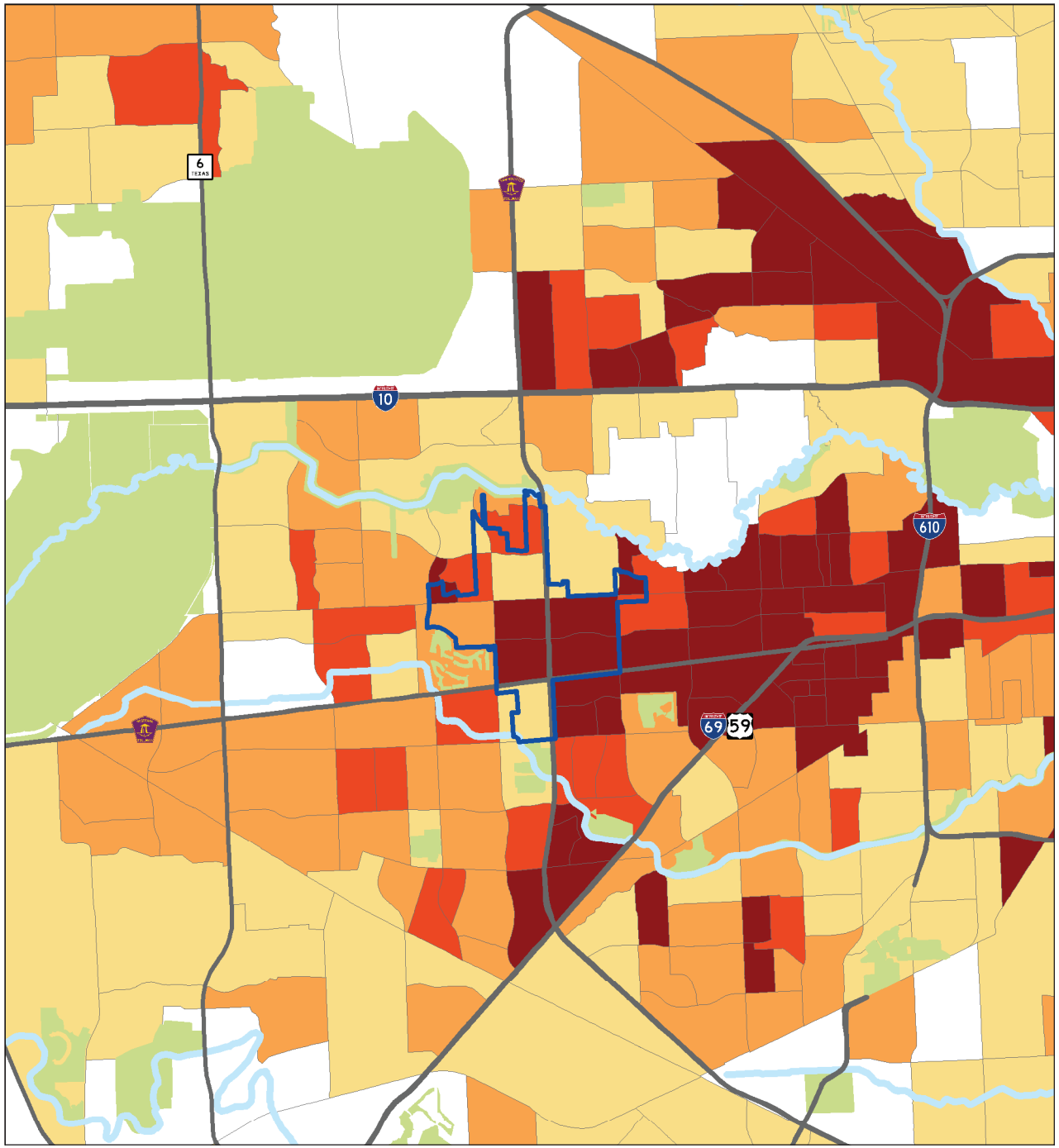


FIGURE 1.6 | POPULATION DENSITY INCREASE IN WEST HOUSTON
Source: United State Decennial Census, 1990, 2000, 2010



WESTCHASE POPULATION: 75,500

2040 POPULATION

The population density in West Houston (Figure 1.7) is projected to significantly increase over the next 20 years. The H-GAC growth model predicts a huge increase in population within West Houston, specifically between IH-610 and West Sam Houston Parkway along Westheimer Road and Richmond Avenue. The current population trends will continue and mobility planning will need to address the influx of population into the study area and the surrounding communities.

LEGEND

- Less than 3,000 persons per sqmi
- 3,000 - 6,000 persons per sqmi
- 6,000 - 9,000 persons per sqmi
- 9,000 - 12,000 persons per sqmi
- More than 12,000 persons per sqmi

FIGURE 1.7 | PROJECTED POPULATION DENSITY
Source: H-GAC Regional Growth Model, 2015 Quarter 2

REGIONAL GROWTH - EMPLOYMENT

As Houston's population grew and shifted west, business started locating outside of Downtown Houston. The Galleria and Uptown areas grew and densified, new office towers were built in the Memorial City/Town & Country area, and the Energy Corridor started to take shape.

Westchase District has continued to grow as more office towers were built and more companies saw the advantages of this central West Houston location.

Figure 1.8 depicts the increase in employment in West Houston from 2002 to 2013. The biggest changes are seen in Memorial City/ Town & Country, the Energy Corridor and the Westchase District. All three areas have seen an increase in office development over the past 15 years, primarily driven by petrochemical companies.

The continued growth and shift in population west and the higher number of job opportunities within West Houston continue to cycle and encourage growth of the entire West Houston region.

Westchase District has a location advantage over the other growing employment centers due to is proximity to four controlled access facilities and its positioning along Westheimer Road. These facilities encourage a high level of driving and also present barriers to a localized level of mobility, particularly for people walking and biking.

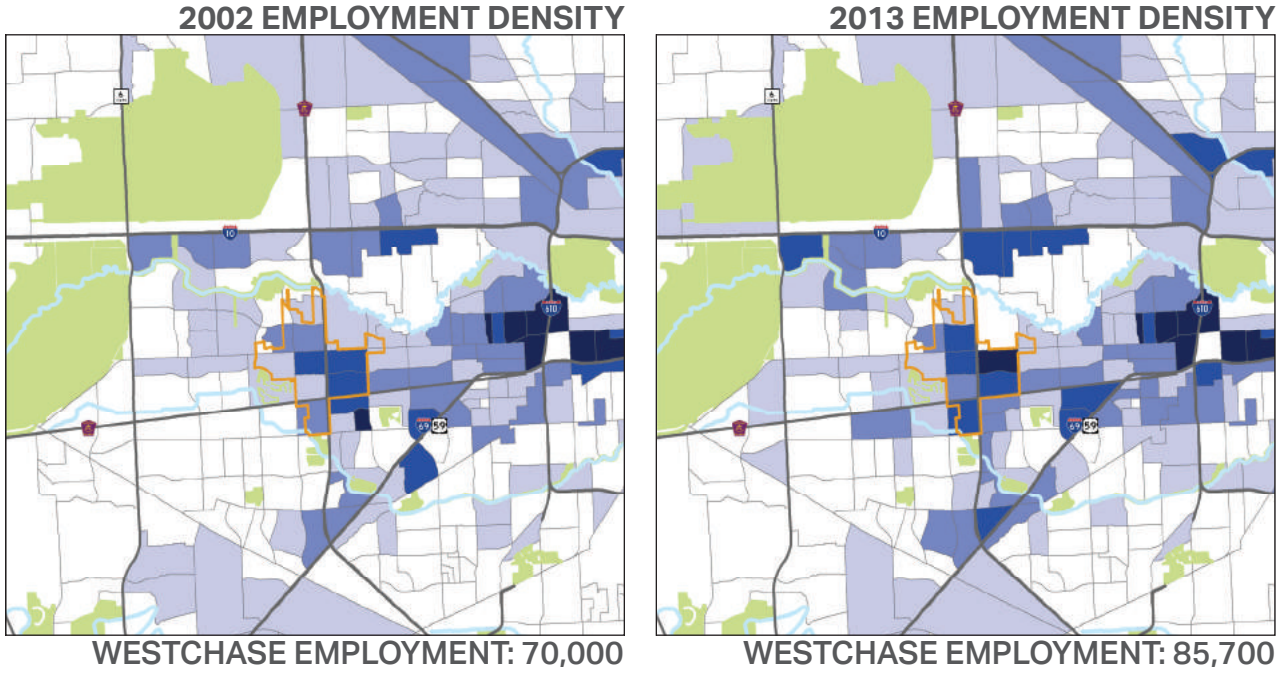
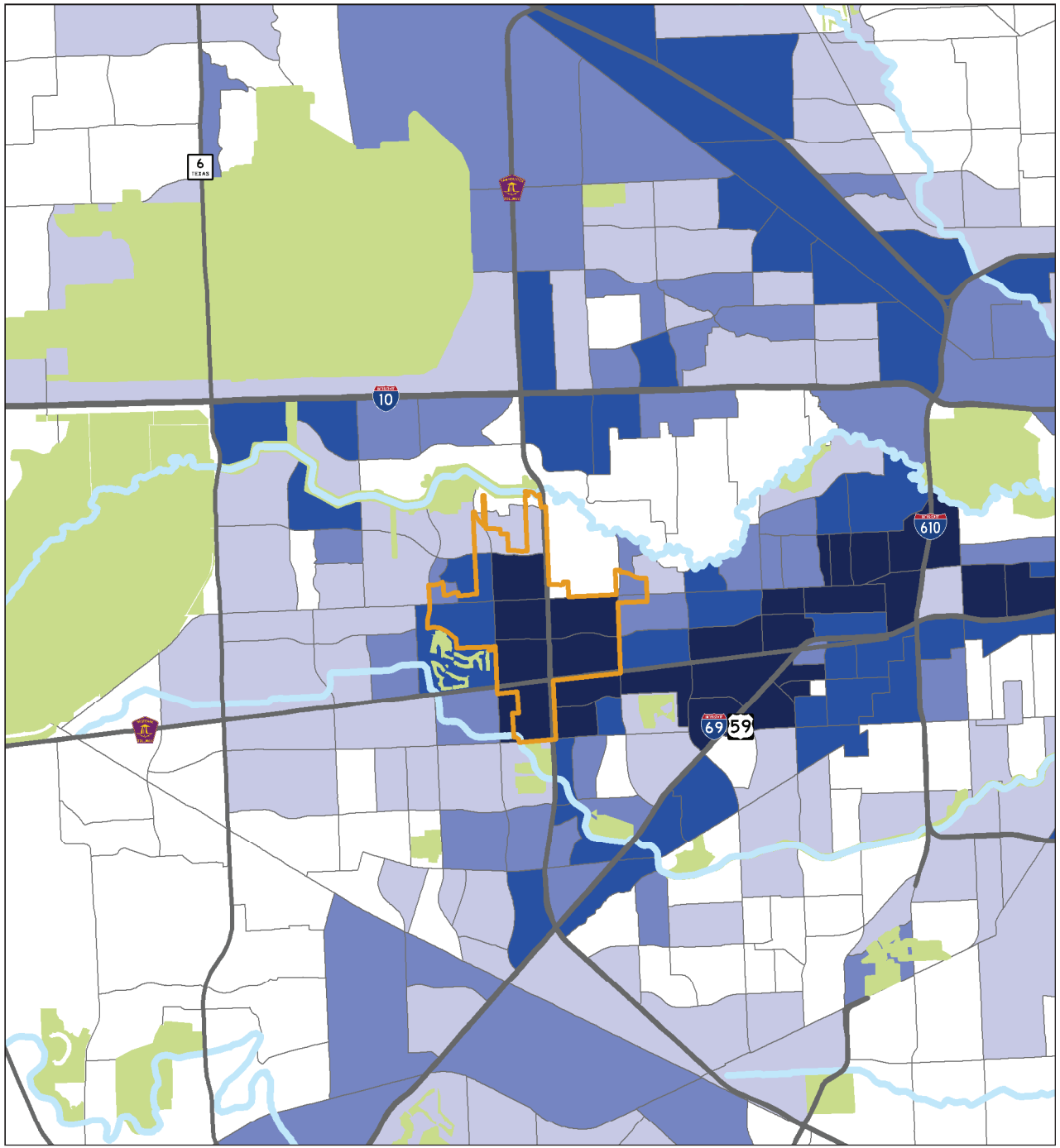


FIGURE 1.8 | EMPLOYMENT DENSITY INCREASE IN WEST HOUSTON
Source: Longitudinal Employer-Household Dynamics, 2002, 2013



WESTCHASE EMPLOYMENT: 166,000

2040 EMPLOYMENT

Figure 1.9 depicts the H-GAC projection for employment density within the West Houston region. Some of the highest growth in employment density is shown within Westchase District. Employment densities are expected to reach levels similar to Greenway and Uptown. Both of which have many high rise office towers.

There is also tremendous growth projected along the Westpark Drive, Westheimer Road, and Richmond Avenue corridors.

LEGEND

- Less than 1,500 jobs per sqmi
- 1,500 - 5,000 jobs per sqmi
- 5,000 - 10,000 jobs per sqmi
- 10,000 - 20,000 jobs per sqmi
- More than 20,000 jobs per sqmi

FIGURE 1.9 | PROJECTED EMPLOYMENT DENSITY
Source: H-GAC Regional Growth Model, 2015 Quarter 2

CURRENT ACTIVITY DENSITY

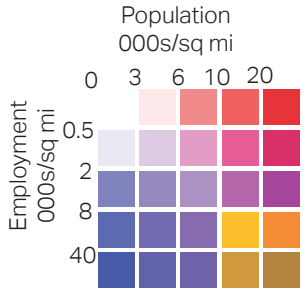
Activity density is a measure of both employment and population density. Figure 1.10 depicts activity density for West Houston. Areas that are deep red have a high population and areas that are dark blue have a high employment density. Areas with both high population density and high employment density are shown in gold. Westchase District has areas of high employment density and high population density as well as those gold areas with both.

Dense areas allow for shorter trip distances and support a broader range of transportation options. Activity dense areas typically already have a higher than average share of non single occupancy vehicle commuters and want more multi-modal options.

2010 POPULATION: 48,500

2013 EMPLOYMENT: 85,700

LEGEND



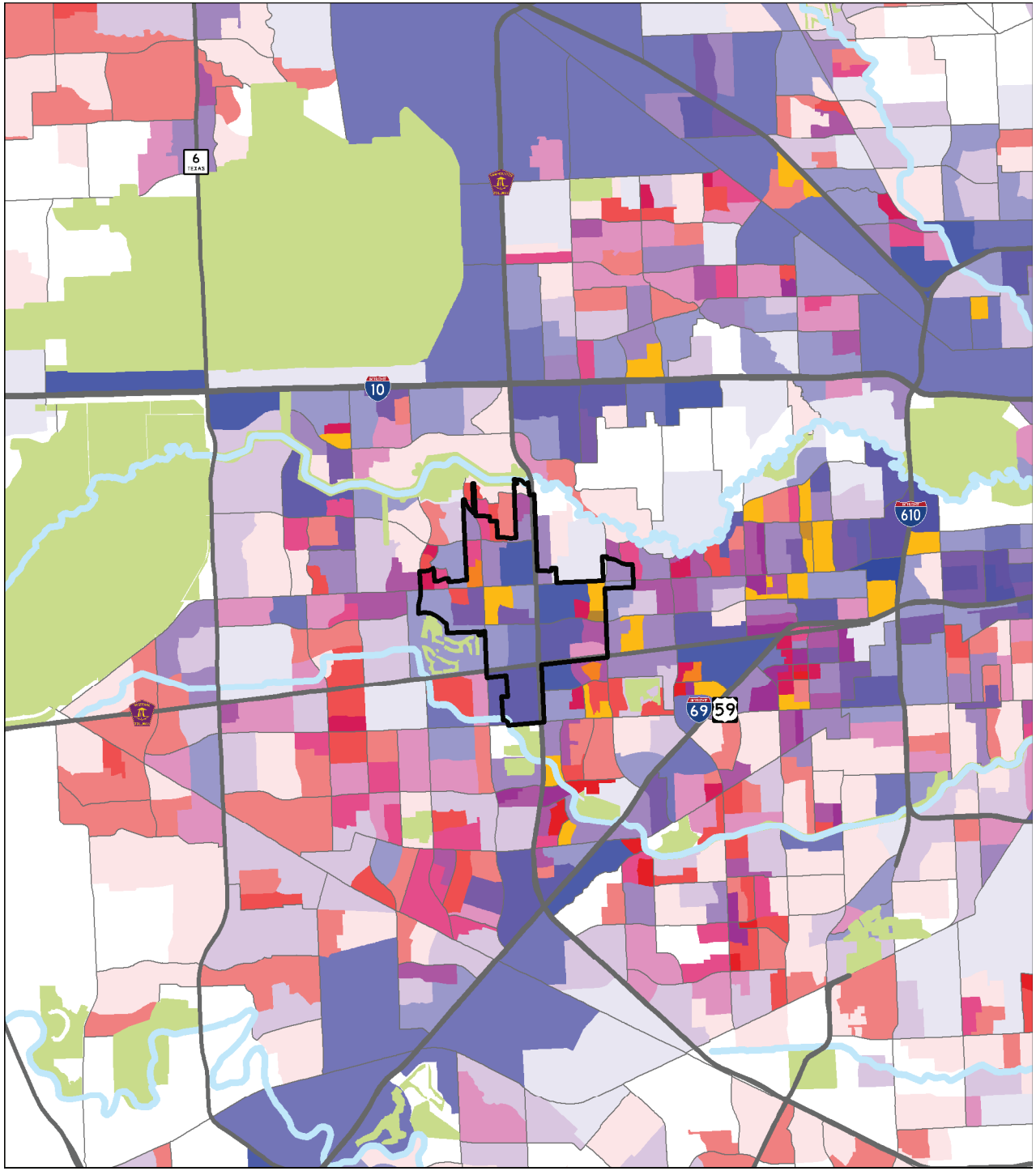
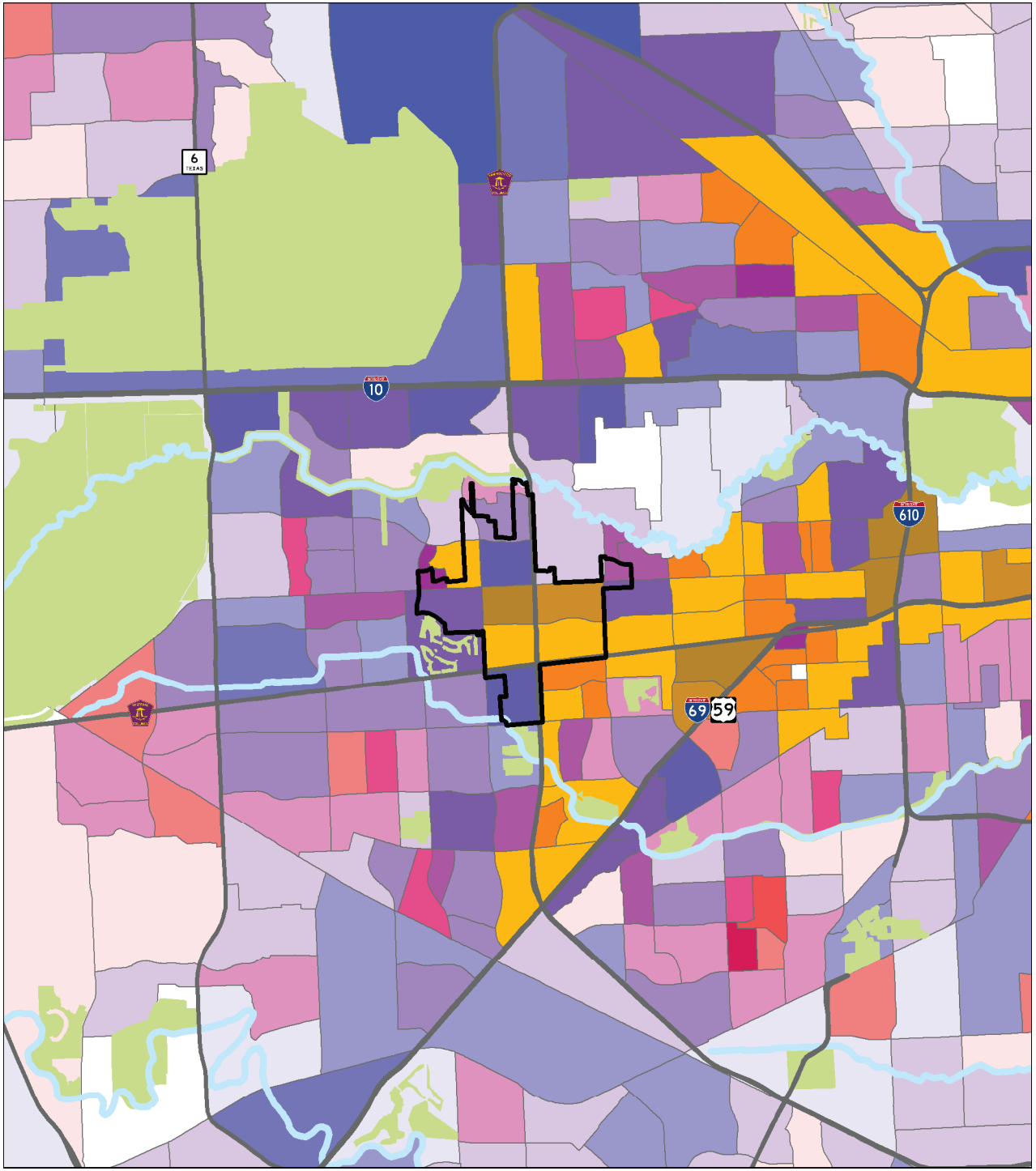


FIGURE 1.10 | EXISTING ACTIVITY DENSITY
Source: ACS 2013, LEHD 2011



2040 ACTIVITY DENSITY

The activity density map for the 2040 H-GAC projected residential and employment in West Houston is shown in Figure 1.11. Large ares of West Houston turn gold indicating projected high activity density. The map shows the high increase in both population and employment density especially along Westheimer Road, Richmond Avenue, and Bellaire Boulevard from IH-610 into Westchase District.

The projected density will change the landscape of West Houston and will require varying and creative mobility solutions that include all modes of transportation.

2040 POPULATION: 75,500

2040 EMPLOYMENT: 166,000

LEGEND

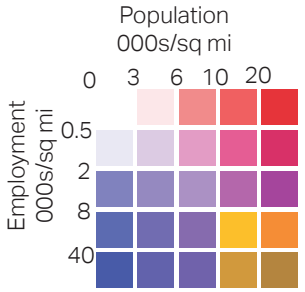


FIGURE 1.11 | PROJECTED ACTIVITY DENSITY
Source: H-GAC Regional Growth Model, 2015 Quarter 2

EXISTING ROADWAY DEMAND

The current mode share for residents within the study area is summarized in Table 1.3. The percentage of commuters who drive alone is higher than the City of Houston average, but similar to the drive alone commuter mode share for West Houston.

There is a 4% transit mode share, similar to the mode share for the City but higher than West Houston. The walk mode share is also higher than West Houston.

While the bicycle mode share is very low, observations during site visits have shown a substantial number of bicyclists within the study area. This may be in part because commute trips make up only half of regional trips.

Even with frequent transit access through the study area, residents predominantly commute by driving alone. This can be a result of long transit travel times or limited access to regional destinations. Whatever the cause may be, the number of residents commuting by car is putting a strain on the existing infrastructure.

While Table 1.3 only includes data on residents of the study area, it can be expected that the mode share for employees of the study area is similar.

As the study area continues to attract more residents and jobs, as indicated by the projections in Figure 1.11, all existing corridors will become oversaturated. Previously, the solution has been to widen the roadways. But, with Westheimer Road currently at 8 travel lanes wide, and plans for the widening of 6 corridors (listed below), space to widen roadways is becoming limited. Widening roadways can also have negative consequences on other modes of travel if not designed well, which can further exacerbate other mobility issues.

	STUDY AREA	WEST HOUSTON	HOUSTON	HARRIS COUNTY
COMMUTE MODE SHARE				
% Drive Alone	81.7%	81.5 %	75.9%	78.9%
% Carpool	9.0%	10.6 %	12.2%	11.4%
%Transit	4.1%	2.6 %	4.3%	2.9%
%Bike	0.1%	0.2 %	0.5%	0.4%
%Walk	1.1%	0.8 %	2.0%	1.5%
% Work from Home	3.7%	3.6 %	3.2%	3.2%
%Other	0.4%	0.7 %	1.9%	1.7%
VEHICLES AVAILABLE PER HOUSEHOLD				
% No Vehicle Available	8%	6%	10%	7%
% 1 Vehicle Available	55%	42%	43%	37%
% 2 Vehicles Available	32%	37%	34%	39%
% 3 or more Vehicles Available	6%	15%	13%	17%
TRAVEL TIMES				
Less than 10 minutes	8.6%	6.5%	8.5%	8.2%
10 to 19 minutes	25.2%	24.9%	27.4%	25.5%
20 to 29 minutes	24.5%	22.1%	23.7%	21.8%
30 to 44 minutes	27.8%	28.3%	25.8%	27.7%
45 to 59 minutes	8.6%	10.1%	7.5%	10.3%
60 or more minutes	5.3%	8.1%	7.1%	9.6%

TABLE 1.3 | STUDY AREA RESIDENT COMMUTE CHARACTERISTICS
Source: American Community Survey, 2014 5-year estimates

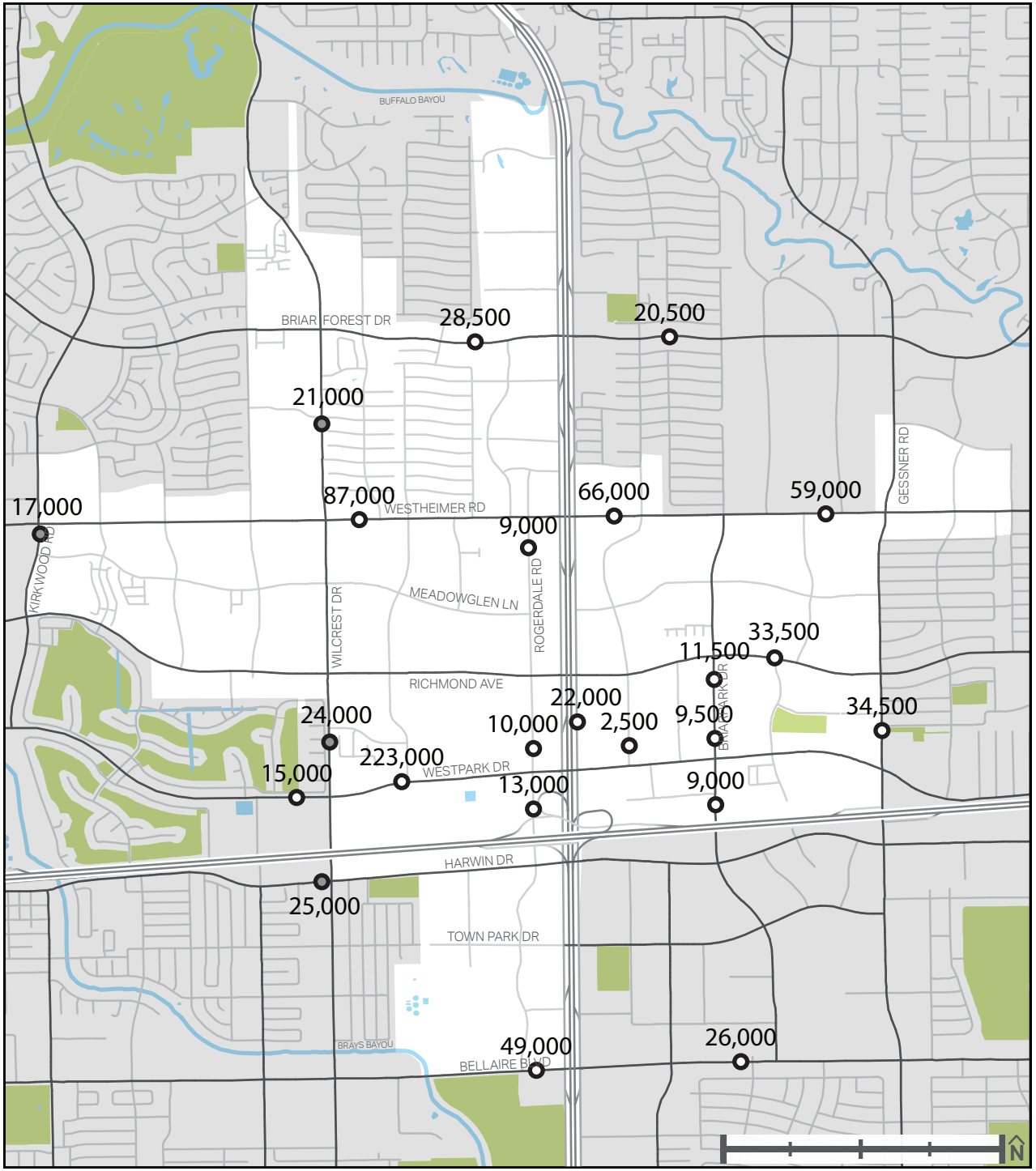
Study Area includes Census Tracts - 450900, 451002, 452202, 450801, 450802, 431101, 452201, 451001, 432300, 432400, 451100, 452100, 452300

PROPOSED H-GAC 2040 RTP ROADWAY WIDENING

- Gessner Drive to 6 lanes from Briar Forest to Richmond Avenue
- Richmond Avenue to 6 lanes from Rogerdale Road to Wilcrest Drive
- Wilcrest Drive to 6 lanes from Memorial Drive to Bellaire Boulevard

RECOMMENDATIONS FROM H-GAC WEST HOUSTON MOBILITY STUDY

- Westpark Drive to 6 lanes from Gessner Road to State Highway 6
- Richmond Avenue to 6 lanes from Wilcrest Drive to Westheimer Parkway



2015 TRAFFIC VOLUMES

Figure 1.12 highlights locations where counts were collected in 2015. The counts depict the high vehicular volumes experienced on the primary roadways within the study, especially Westheimer Road where volumes can reach nearly 90,000 vehicles per day.

Westchase District contains a secondary road network of local streets and collectors that function to provide relief from the primary roadways with alternative routes to reach destinations. Opportunities to optimize this network could provide more balanced transportation options and greater distribution of traffic in the District.

Local streets are often discontinuous, and do not form a grid. The limited connections of these streets places a higher demand on the longer, straighter thoroughfare corridors, which are also among the few streets that cross the tollways. The resulting demand for the thoroughfares is compounded so they are at or over capacity.

LEGEND

- 2015 Daily Traffic Volumes
- 2011 Daily Traffic Volumes

FIGURE 1.12 | 2015 TRAFFIC COUNTS
Source: The Westchase District, 2015

2018 ROADWAY PROJECTIONS

H-GAC maintains a Travel Demand Model (TDM) for the greater Houston region that projects the vehicular demand on major roadways. Inputs into the TDM include existing population and employment values and the projected growth presented in Figure 1.7 and Figure 1.9.

Figure 1.13 depicts the predicted TDM output for 2018. The links are color coded based on their volume to capacity ratio (v/c). The greater the ratio, the higher the level of traffic and associated travel delay.

The 2018 network has a few corridors with capacity constraints, but in general the network has sufficient capacity for the existing and short term (2018) projected demand.

The corridor expected to experience the largest capacity constraint is the Westpark Tollway, which is consistent with current experience. As northwest Fort Bend County continues to develop with new residential developments, the vehicular demand on Westpark Tollway will only increase. This reinforces the need for network improvements and options for multiple modes of travel.

LEGEND

Volume to Capacity Ratio (V/C)

- Less than 0.6
- 0.6 - 0.7
- 0.7 - 0.8
- 0.8 - 0.9
- 0.9 - 1.0
- Greater than 1.0

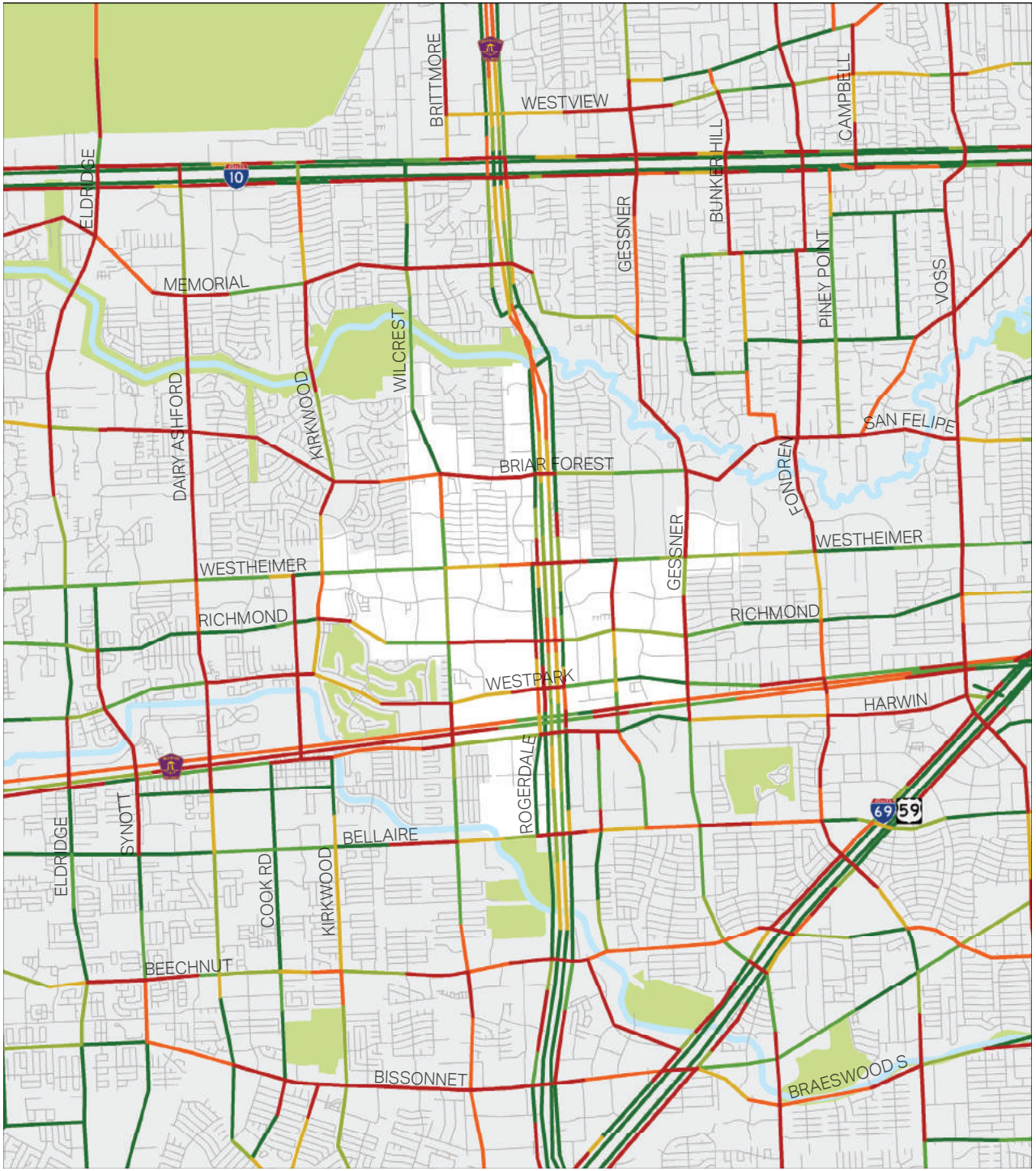
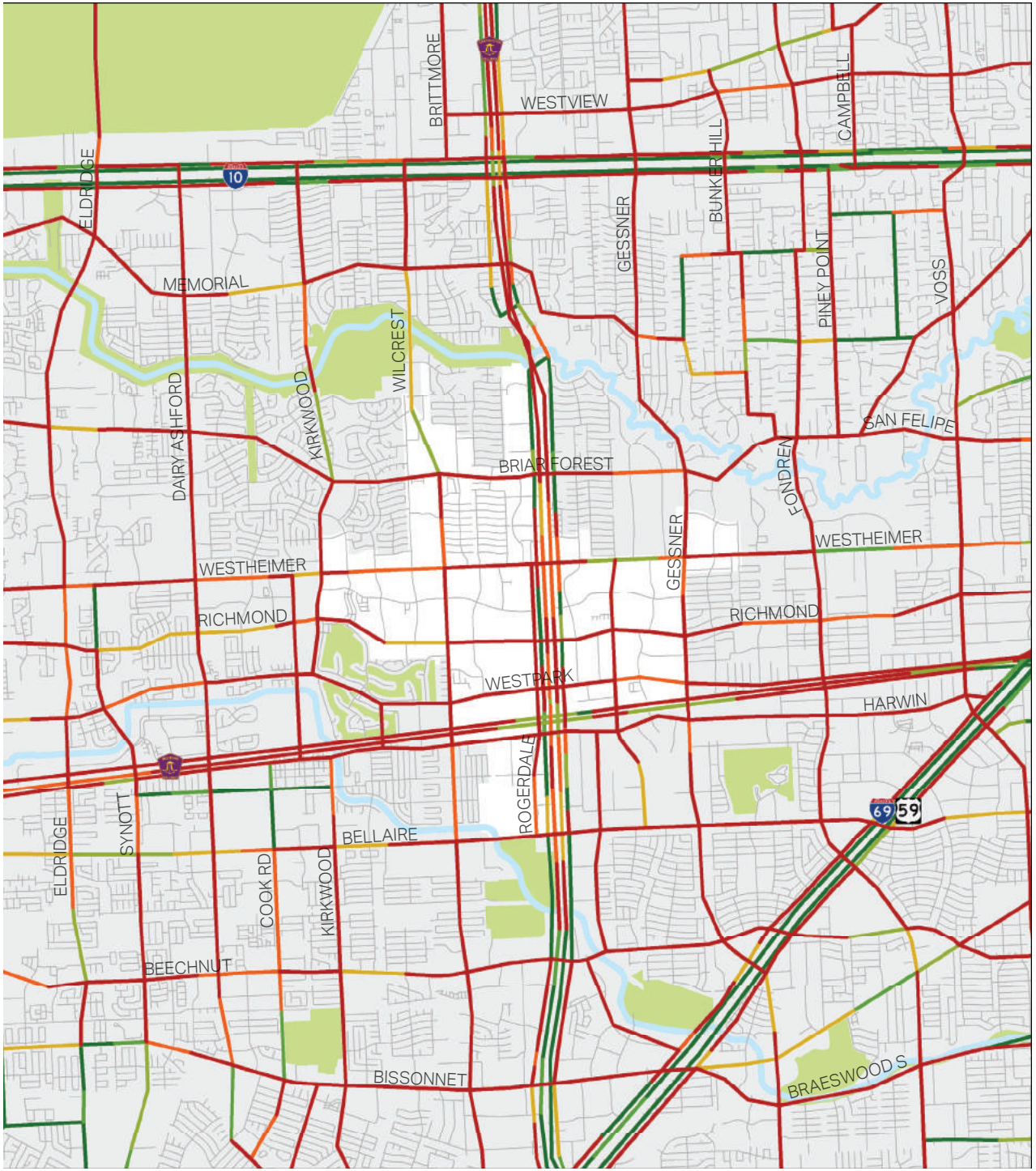


FIGURE 1.13 | H-GAC 2018 TDM RESULTS
Source: H-GAC Regional Growth Model, 2015 Quarter 2



2040 ROADWAY PROJECTIONS

The 2040 TDM output for the region near the study area is depicted in Figure 1.14. While the model does include all planned projects in the Regional Transportation Plan (RTP) and the City's Capital Improvement Program (CIP) with dedicated funding, the model highlights that the existing network will be operating at capacity.

Many of the links depicted in Figure 1.14 have calculated v/c ratios higher than 1.0, some reaching 3.0. What the model does not take into account is the fact that corridors with a calculated v/c of 3.0 will become impossible to navigate. Driving will become increasingly difficult, and other modes that can provide relief from the burden of congestion will become highly attractive.

While the regional roadway network is in a grid, it is a grid of wide major thoroughfares with spacings that exceed a half-mile. There are limited parallel corridors to ease expected demand. Therefore, solutions focused on providing choices and alternatives to driving, that complement greater activity density and support mixed-use, are key to future mobility in the District.

LEGEND

Volume to Capacity Ratio (V/C)

- Less than 0.6
- 0.6 - 0.7
- 0.7 - 0.8
- 0.8 - 0.9
- 0.9 - 1.0
- Greater than 1.0

FIGURE 1.14 | H-GAC 2040 TDM RESULTS
Source: H-GAC Regional Growth Model, 2015 Quarter 2

PLANNED CORRIDOR PROJECTS

Figure 1.15 depicts all corridor projects currently planed by the City within or adjacent to the study area. The map includes corridors on the CIP list, CIP + 5 years candidate projects, and future need areas within the Rebuild Houston program.

CIP PROJECTS

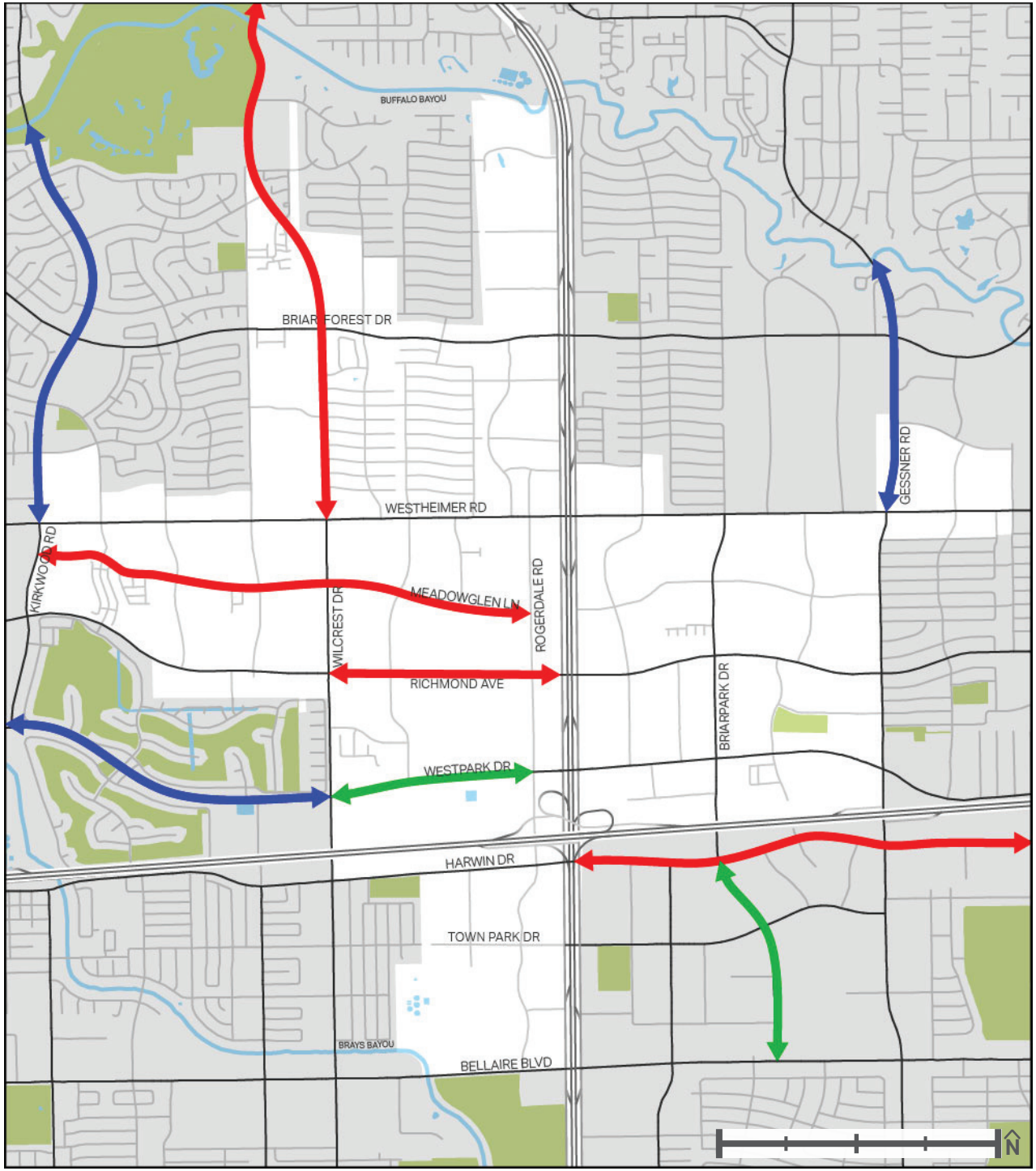
- GESSNER ROAD - Paving and drainage from Buffalo Bayou to Westheimer Road
- KIRKWOOD DRIVE - Paving and drainage from Buffalo Bayou to Westheimer Road
- WESTPARK DRIVE - Paving and drainage from Wilcrest to Dairy Ashford including widening corridor to 6 lanes

REBUILD HOUSTON PLANNING - CIP + 5

- WILCREST DRIVE - Widen from 4 to 6 lanes - provide necessary upgrades to storm sewer and utilities
- MEADOWGLEN LANE - Reconstruct as a complete street
- RICHMOND AVENUE - Widen from 4 to 6 lanes - improved storm sewer
- HARWIN DRIVE - Reconstruct at a 4-lane roadway with 8-foot bicycle lanes and 6' sidewalks - improved storm sewer and provide in-line detention

REBUILD HOUSTON PLANNING - NEED AREA

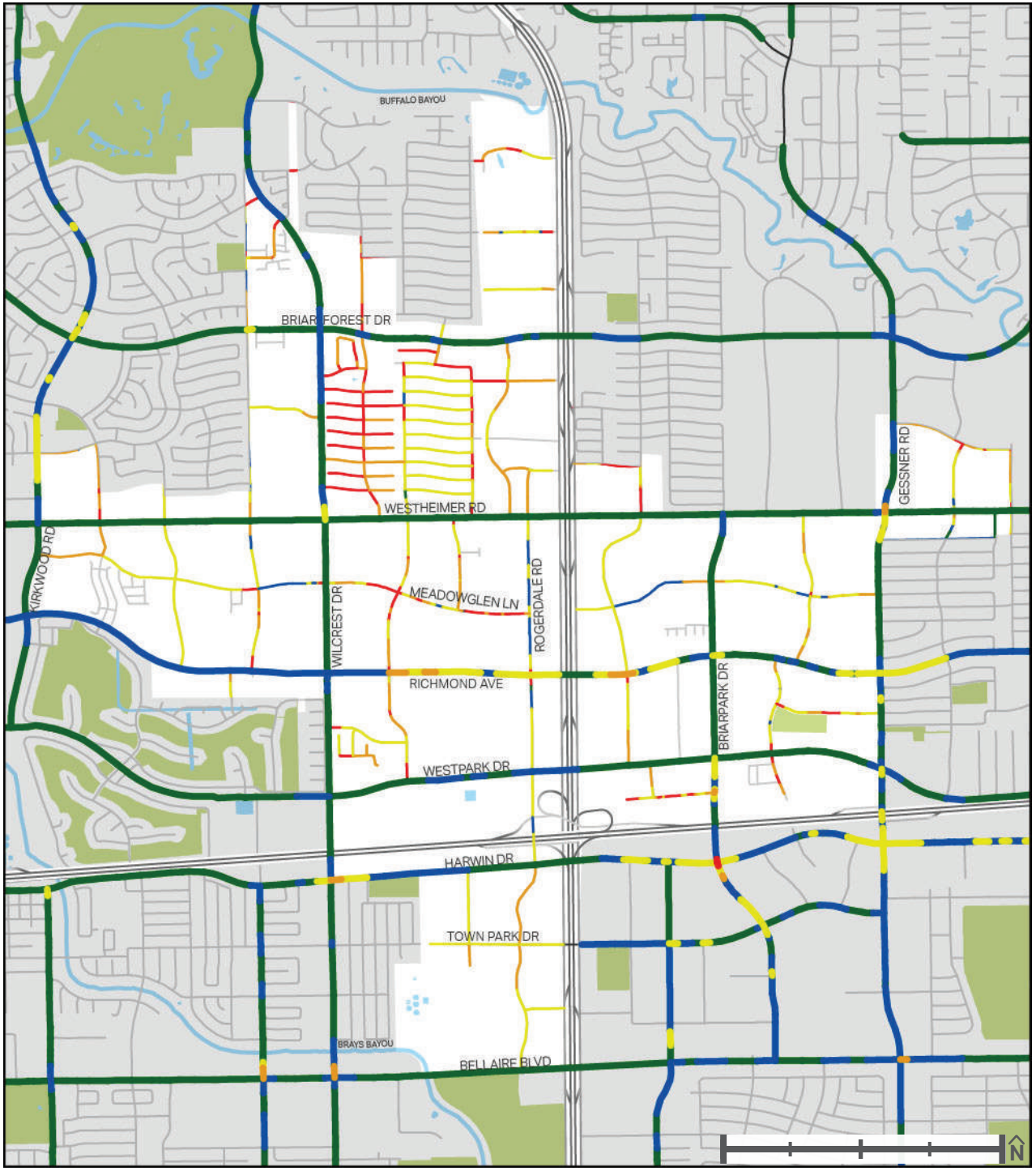
- WESTPARK DRIVE
- BRIARPARK DRIVE



LEGEND

- CIP Projects (2015-2021)
- ReBuild Houston Planning - CIP +5
- ReBuild Houston Planning - Need Area

FIGURE 1.15 | CIP & REBUILD HOUSTON CORRIDORS
Source: City of Houston



PAVEMENT QUALITY

Pavement quality plays a role in identifying corridors that should be evaluated under the Rebuild Houston's CIP program as well as the prioritization of candidate projects to receive funding. Corridors with a poor pavement quality typically rank higher.

Figure 1.16 depicts the pavement quality ranking (PCR) of corridors within the study area. PCR is one measure of pavement quality used by the City to determine how poor the pavement along a roadway is, the lower the PCR number the worse the pavement. The lowest quality pavement is shown in orange and red in Figure 1.16.

LEGEND

Pavement Quality Ranking (PCR)

- 0 - 59.0
- 59.1 - 64.9
- 65.0 - 72.0
- 72.1 - 78.6
- 78.7 - 100

FIGURE 1.16 | PAVEMENT QUALITY RANKING (PCR)
Source: City of Houston Pavement Quality Ranking (PCR), Major Roads, 2015

PARKING

SURFACE PARKING

There is an abundance of surface parking within the study area, specifically around strip center commercial developments. Strip centers are concentrated primarily along the east-west corridors. The example to the right depicts two developments at the intersection of Westheimer Road at Wilcrest Road. The majority of land area for each parcel is dedicated to surface parking.

Large surface lots are challenging locations for pedestrians, whether that be someone walking from their parked car or from the sidewalk along the adjacent roadway.

STRUCTURED PARKING

Primarily associated with office towers, structured parking varies in size, depending on the office complex it is serving. Structured parking can be paid parking. This is seen at some Class-A office towers, though many employers provide subsidies for their employees.

RESIDENTIAL

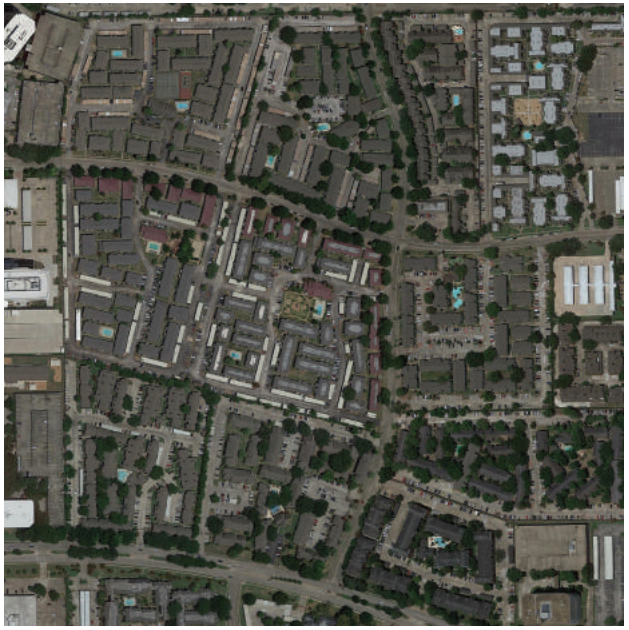
The majority of residential housing within the study area is multi-family garden-style apartments. This style includes multiple small buildings that are two or three stories with parking near the apartments front door. The design encourages residents to use their car for any trip, even a short one down the street.

ON-STREET

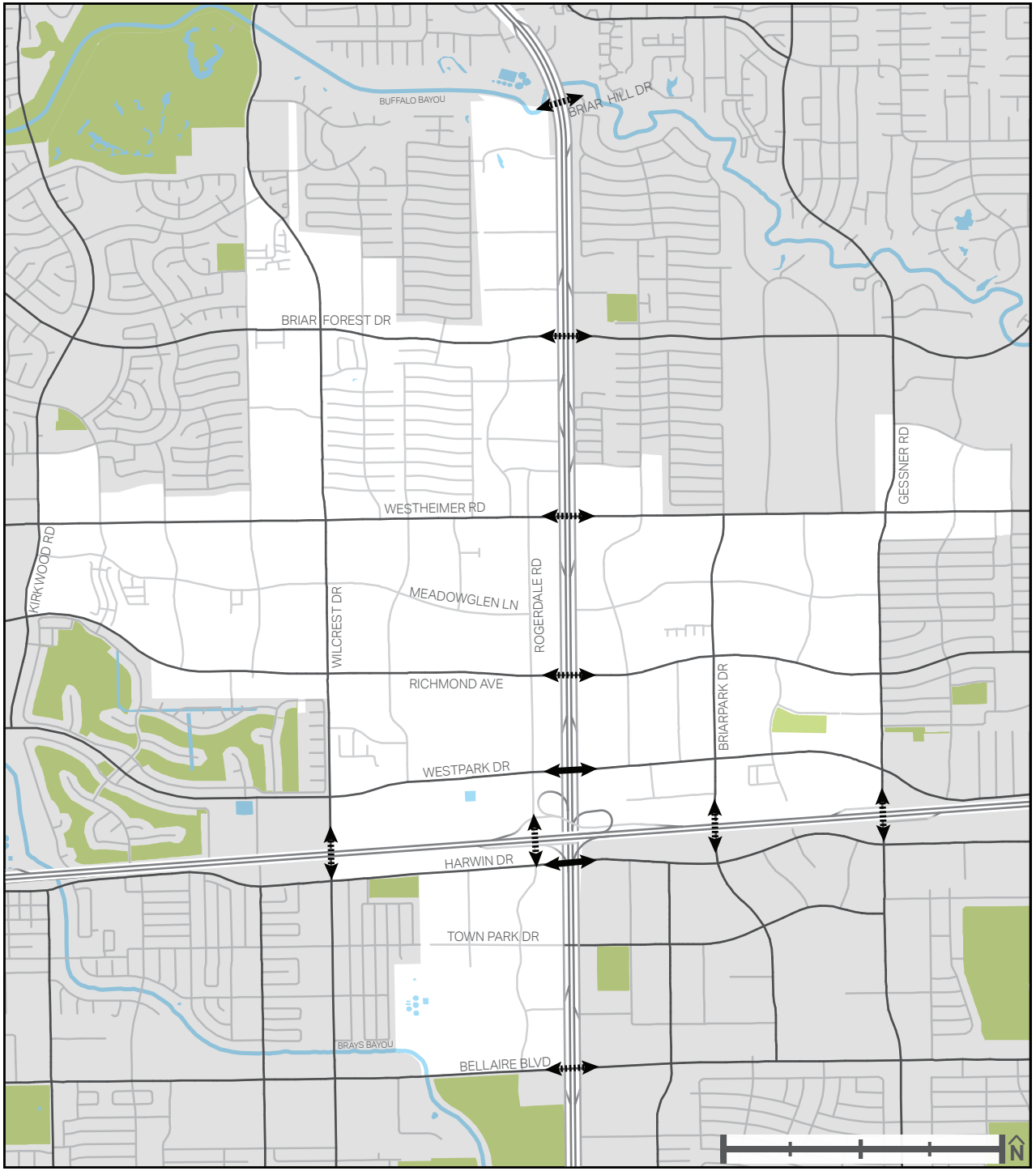
On-street parking is available along collector roadways in the study area, such as Meadowglen Lane. The on-street parking is primary through residential areas.

SURFACE PARKING

GARDEN STYLE APARTMENTS



STRUCTURED PARKING



CONNECTIVITY

Both the Sam Houston Tollway and the Westpark Tollway are critical access routes and barriers for connectivity within Westchase District. Emphasizing the importance of thoroughfares within the study area has led to wide spacing of tollway crossings. Both tolled facilities bisect the District and create isolated areas with limited crossing opportunities for vehicles, bicyclists, or pedestrians often ½ to 1 mile apart.

The West Houston Mobility Study proposed two additional crossings of the Sam Houston Tollway to improve connectivity. The two grade-separated connections are proposed at Meadowglen Lane and Town Park Drive.

The Tollways serve as a barrier to the local roads between the widely-spaced thoroughfares. The presence of large parcels and expansive parking lots limit connectivity throughout the District. With limited route options, higher demand is placed on the roadways that cross the Tollways, and also contributes to longer, less-direct travel patterns. In addition, the major thoroughfares are multiple lanes wide with limited crossing opportunities that create a challenging environment for pedestrian and bicyclists.

LEGEND

Tollway Underpass

Tollway Overpass

FIGURE 1.17 | BARRIERS TO CONNECTIVITY
Source: Team Analysis

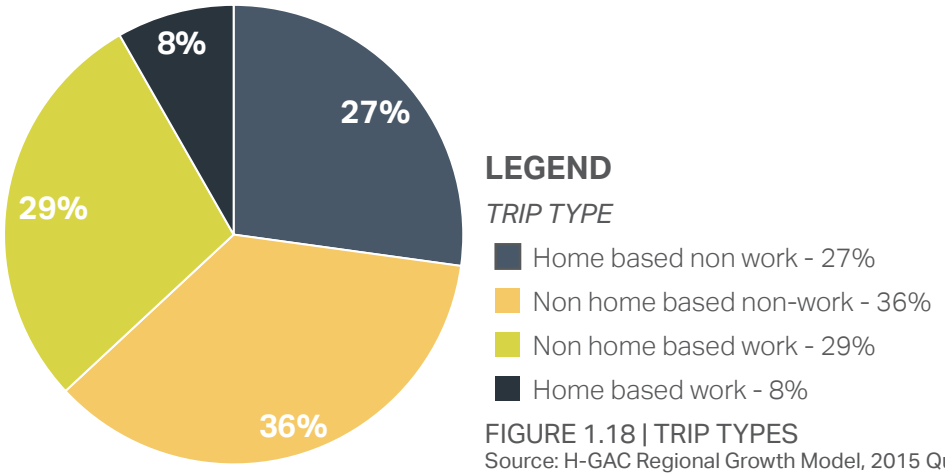


FIGURE 1.18 | TRIP TYPES
Source: H-GAC Regional Growth Model, 2015 Quarter 2

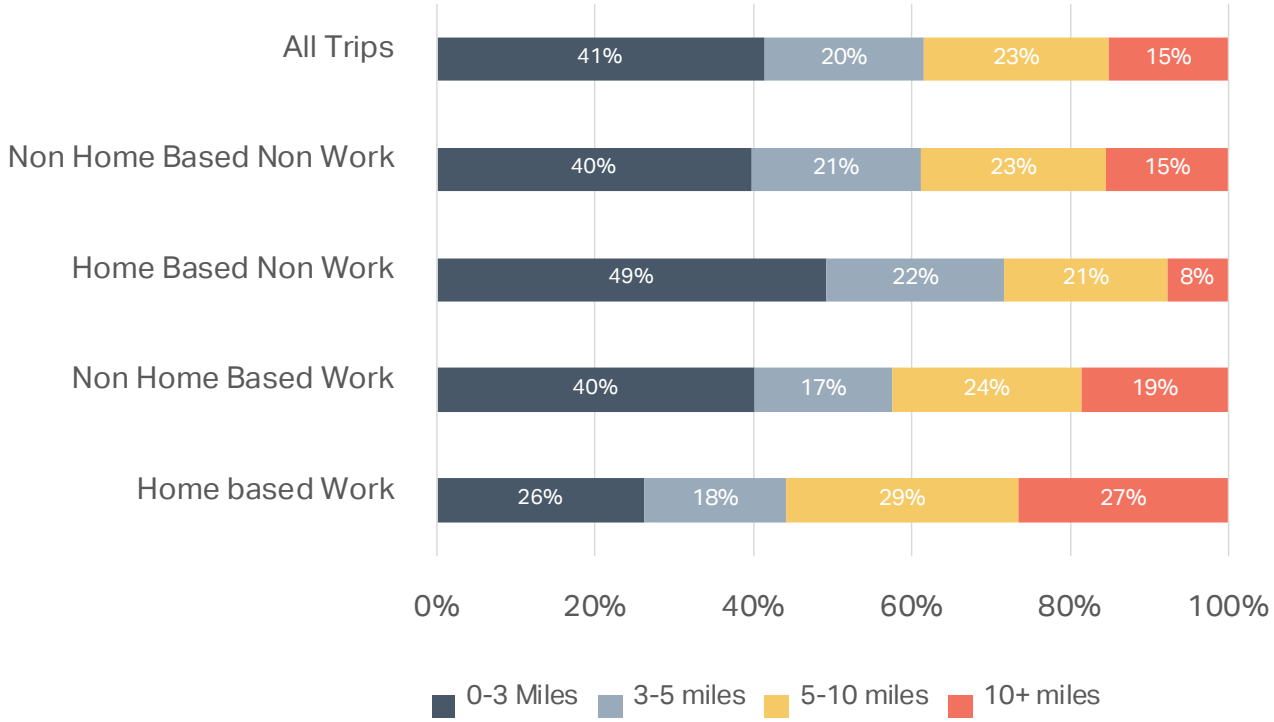


FIGURE 1.19 | TRIP TYPES BY TRIP DISTANCE
Source: H-GAC Regional Growth Model, 2015 Quarter 2

TRIP TYPES

The TDM separates trips into four trip types based on the trip's origin and destination. The four categories are listed below along with examples of each trip type.

- Home based non work trips
  e.g. Home to daycare
- Non home based non work trips
  e.g. Daycare to grocery store
- Non home based work trips
  e.g. Grocery store to work
- Home Base Work trips
  e.g. Home to work

Only eight percent of all trips originating within Westchase District are commute trips (home based work trips), as shown in Figure 1.18. Most trips are non home based non work trips.

Often mobility planning is primarily focused on commute trips needs. But when only 8 percent of trips are home to work (and work to home) trips, mobility solutions should address the variety of trip types as well as take into consideration the varying distances in trip types.

Commute trips are typically longer than other trip types, with 56 percent over 5 miles and 27 percent over 10 miles (Figure 1.19). Home based non work trips are on average the shortest trips, with 49 percent three miles or less. Focusing efforts on these short trips will be key in creating meaningful changes in mobility within Westchase District.

SHORT TRIPS

Short trips are typically those that can most readily be transitioned from driving to biking or walking. Shifting short trips out of cars by giving people alternative choices, reduces demand on the existing roadways and eases congestion. Providing adequate infrastructure that is attractive to a broad range of people will support the mode shift.

Currently, Westchase District has a higher average than the City for trips that are three miles or less. By 2040, the percentage of short trips is expected to increase from 41 percent of all trips to 53 percent. Figure 1.22 depicts the projected increase in short trips from 2015 to 2040.

The existing and future rates of short trips are higher than what is shown for the City of Houston and the 8-county region indicating that Westchase District has a significant opportunity to provide residents and employees with a broader set of options for how to get around.

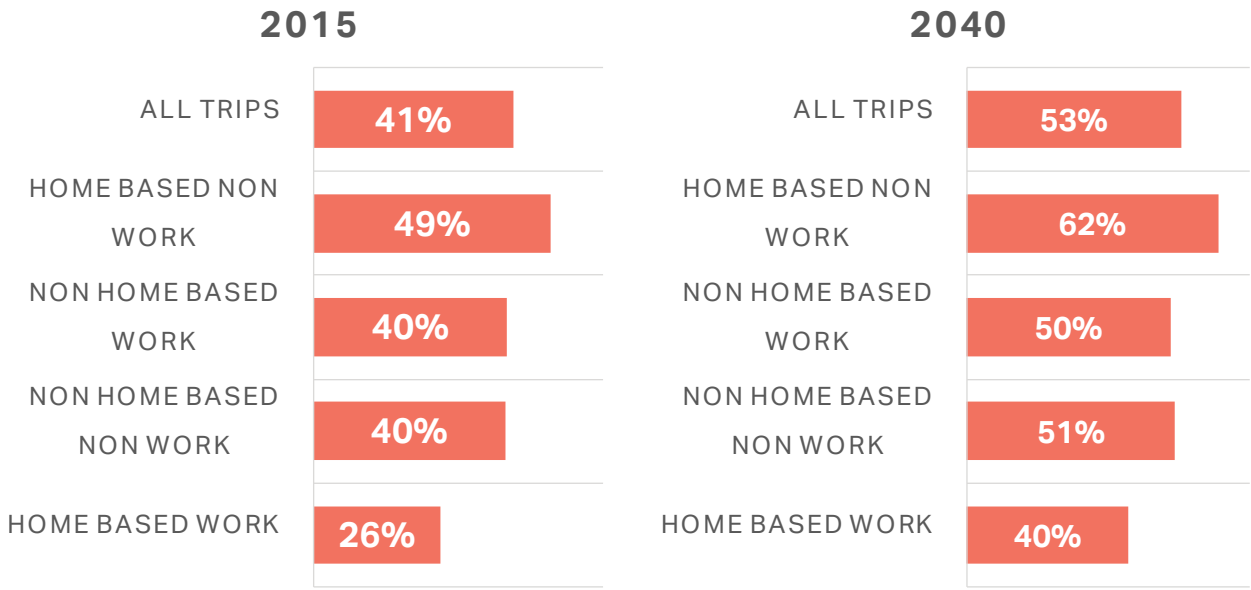
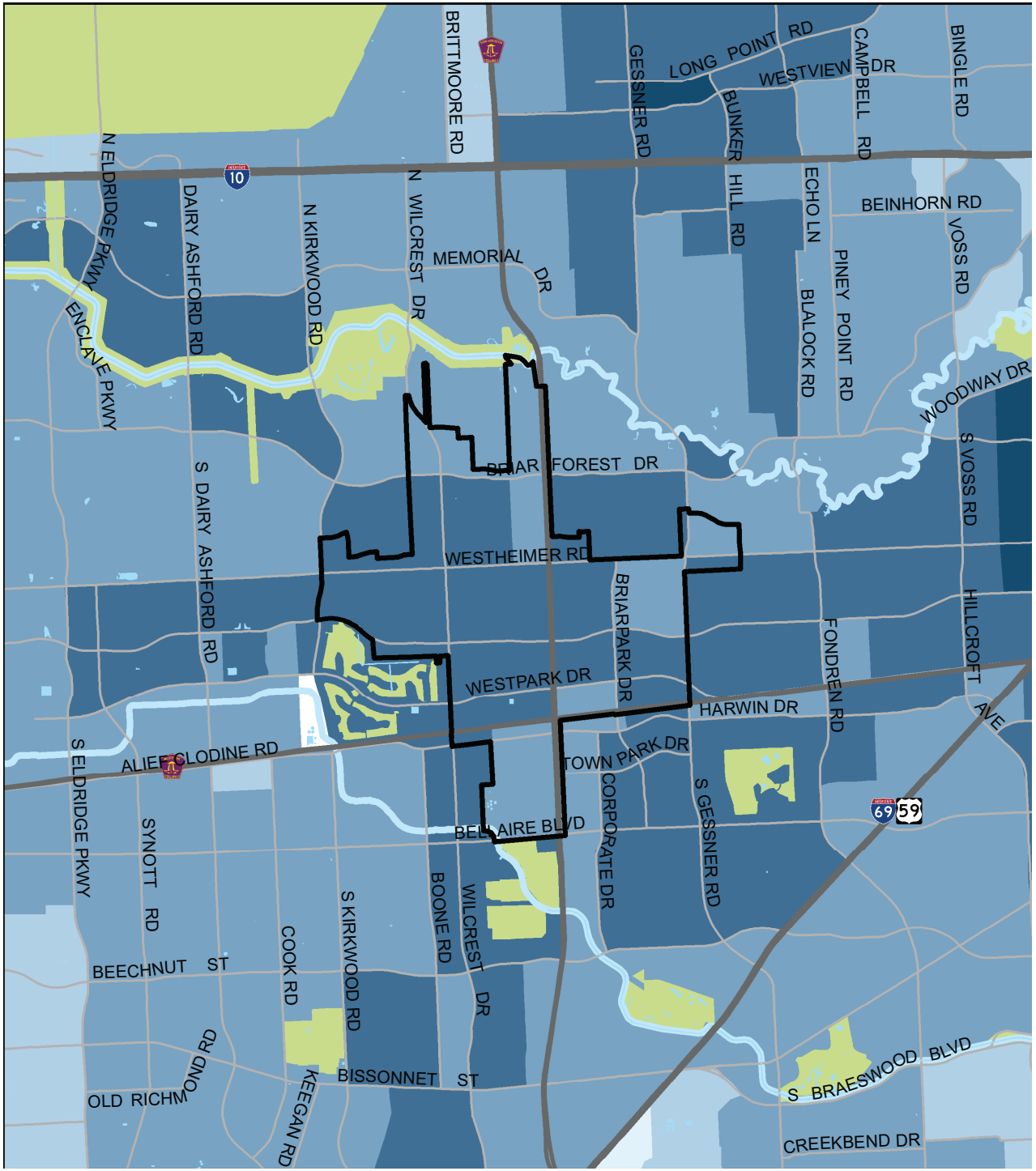


FIGURE 1.22 | EXISTING AND PROJECTED SHORT TRIPS ORIGINATING IN WESTCHASE DISTRICT
Source: H-GAC Regional Growth Model, 2015 Quarter 2

EXISTING SHORT TRIPS

Forty-one percent of all trips that originate within Westchase District are short trips. Short trips are trips that are three miles or less. Figure 1.20 depicts the percentage of short trips originating in or near the Study Area. This percentage of short trips is higher than the percentage within the City of Houston (33%) and the H-GAC 8-county region (31%).

Short trips provide an opportunity to entice drivers to walk, bicycle, or use transit if there are safe and convenient options to do so.

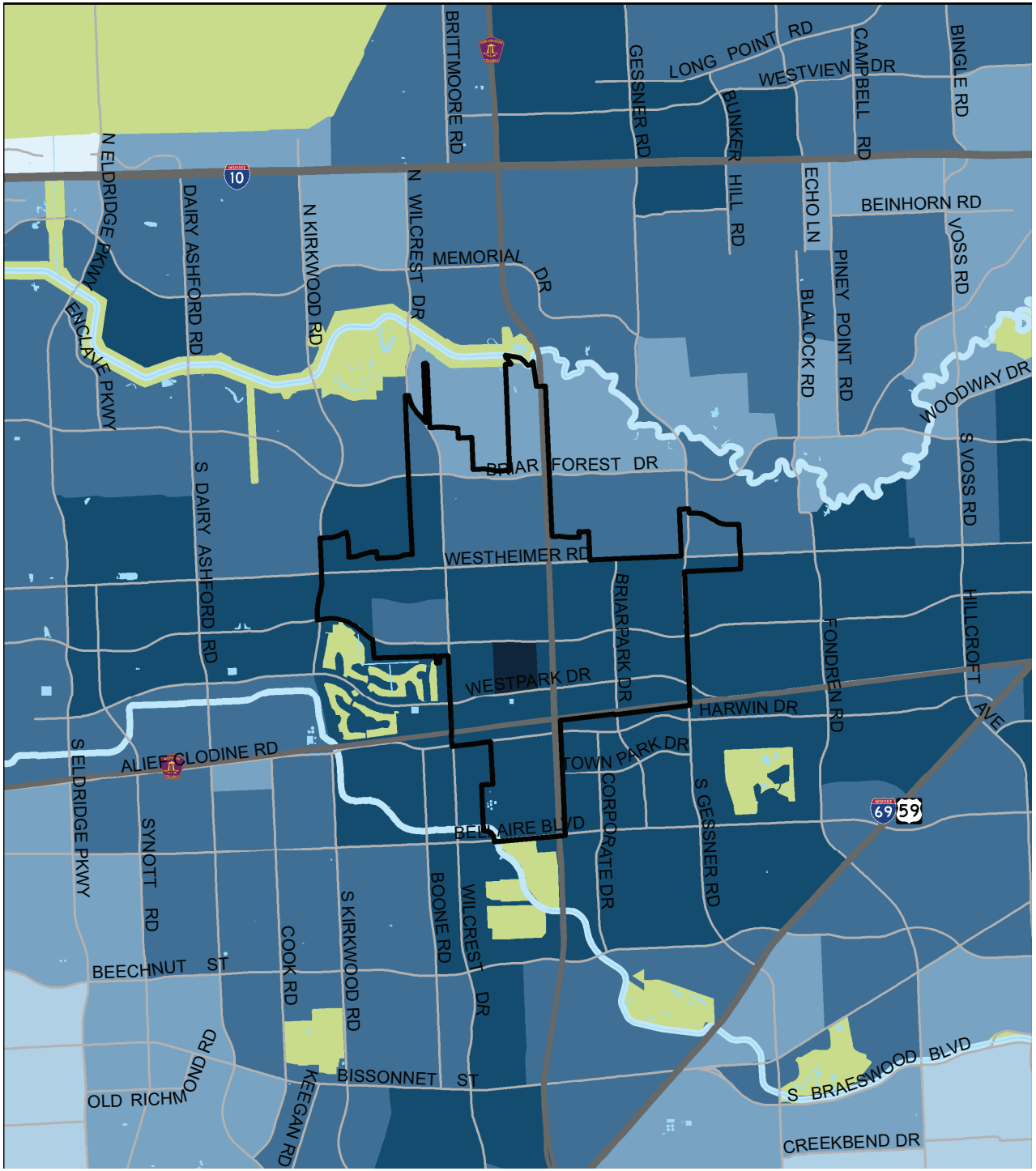


LEGEND

PERCENTAGE OF TRIPS 3 MILES OR LESS

- 1.1% - 10%
- 10.1% - 20%
- 20.1% - 30%
- 30.1% - 40%
- 40.1% - 50%
- 50.1% - 60%
- 60.1% - 65%

FIGURE 1.20 | WHERE RESIDENTS WORK
Source: H-GAC Regional Growth Model, 2015 Quarter 2



2040 SHORT TRIPS

Trip distances for 2040 are projected by the TDM and depicted in Figure 1.21. The percentage of short trips for areas within and adjacent to the study area increase substantially, with many areas within West Houston projected to have over 50% of all trips 3 miles or less. Over half (53%) of all trips originating within the study area are projected to be short trips. This is a substantially higher percentage than the projected City average of 38 percent.

The large percentage of short trips projected for the study area is a function of the projected high demand on surrounding corridors as well as the increase in both population and employment density (Figure 1.9).

LEGEND

PERCENTAGE OF TRIPS 3 MILES OR LESS

- 1.1% - 10%
- 10.1% - 20%
- 20.1% - 30%
- 30.1% - 40%
- 40.1% - 50%
- 50.1% - 60%
- 60.1% - 92%

FIGURE 1.21 | WHERE EMPLOYEES LIVE
Source: H-GAC Regional Growth Model, 2015 Quarter 2

TRANSIT SERVICE

The Metropolitan Transit Agency of Harris County (METRO) operates eight bus routes through the study area, as shown in Figure 1.24, including several of METRO's highest performing routes.

The bus service METRO provides within the district allows for 4% of residents able to commute using public transportation to get to work. A significant number of other riders utilize the network for other tasks within Westchase District or to pass through the District.

Westchase District recently received improved transit service as METRO launched a new bus network in August of 2015. The network was the result of "System Reimagining," a system redesign to react to the region's changing demographics, development, and travel patterns. One important result of the process was increasing the number of frequent routes. A frequent route provides service every 15 minutes or better. The new grid of frequent intersecting routes drastically increases the efficiency of transit, especially in West Houston. System-wide the number of frequent routes doubled from 11 to 22, while the number within Westchase District grew from 0 to 3. Further details about available transit service and usage are on the following pages.

LEGEND

Route Frequency

- 15 minutes or better
- 20 or 30 minutes
- 60 minutes
- Weekday peak only

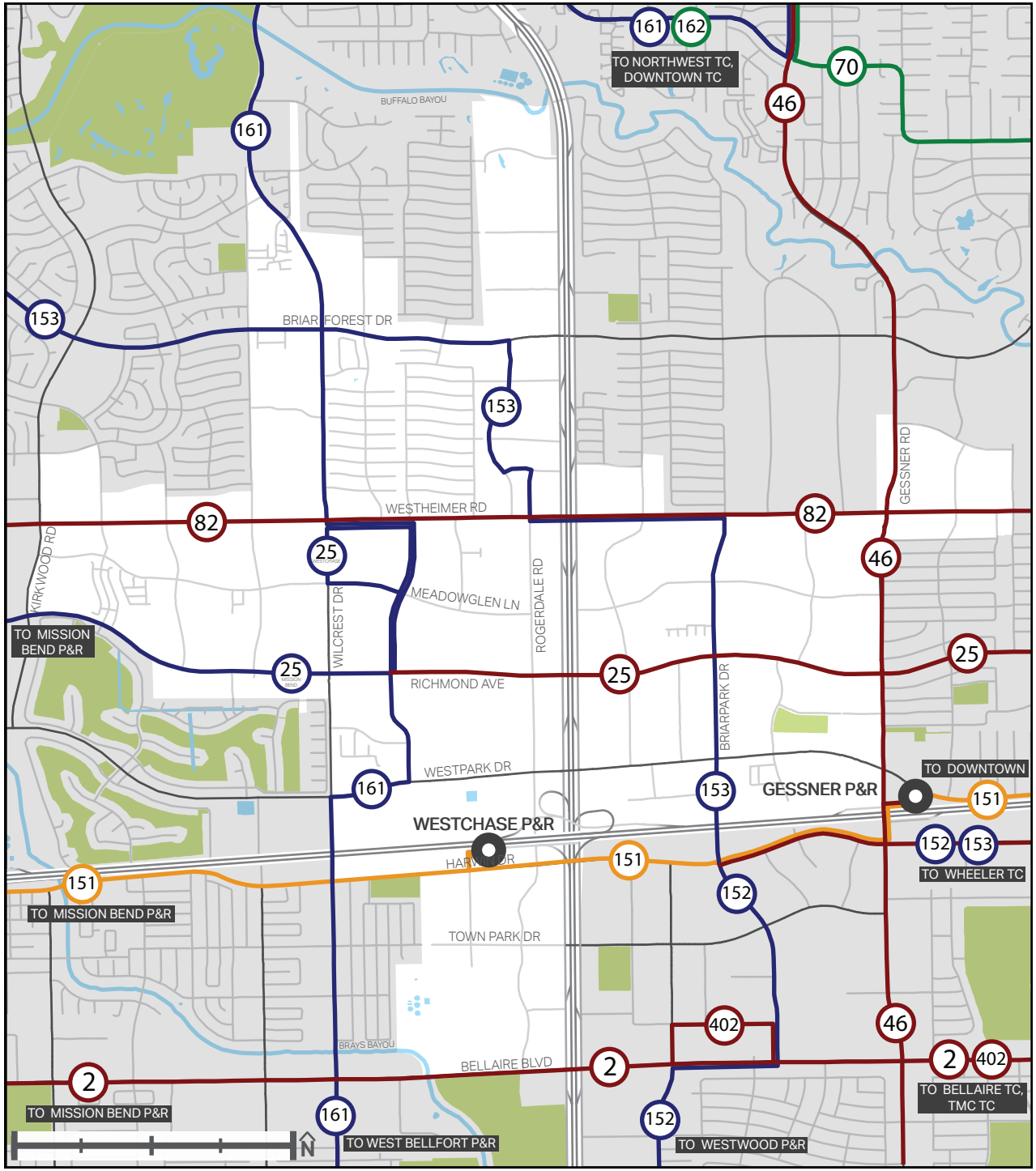


FIGURE 1.24 | METRO ROUTES
Source: METRO, 2016

2 BELLAIRE

A frequent local route, traveling along its namesake street, spanning from the Texas Medical Center west to Mission Bend Transit Center.

25 RICHMOND

An east-west route traveling from Eastwood Transit Center in the Third Ward to Wheeler Station, then along Richmond Avenue, through Greenway Plaza and Uptown, into Westchase District. At Wilcrest Drive the 25 buses split, traveling to one of two branches. The 'Westchase' branch completes a loop that reaches Westheimer Road, while the other branch terminates at Mission Bend Park & Ride (Alief Clodine Road at Metro Boulevard).

46 GESSNER

A frequent route spanning south from West Airport Boulevard north to Hempstead Road, passing through Westchase District and Memorial City.

82 WESTHEIMER

Metro's highest ridership route, which spans the length of Westheimer Road between Downtown and West Oaks Mall at State Highway 6.

151 WESTPARK EXPRESS

A weekday, peak-only, limited service route connecting downtown, Hillcroft Transit Center, Gessner Park & Ride and Mission Bend Park & Ride via IH-69, Westpark Drive, Harwin Drive, and Alief Clodine Road.

152/153 HARWIN EXPRESS

Routes that connect Wheeler Station Transit Center in Midtown to West Houston. Both routes travel along Interstate 69, Westpark Tollway, and Harwin Drive to Briarpark Drive. The 152 then travels south to Westwood Park & Ride, while the 153 goes north along Briarpark Drive and then west along Briar Forest Drive.

161 WILCREST EXPRESS

A north-south route that crosses the entirety of Westchase District, extending south to West Bellfort Park & Ride and connects north to Memorial City before traveling east to Northwest Transit Center and Downtown.

ROUTE	PEAK	MIDDAY	EVENING	SATURDAY	SUNDAY
2 Bellaire	10	15	20	15	15
25 Richmond	10 / 20	15 / 30	30	15 / 30	15 / 30
46 Gessner	15	15	30	15	15
82 Westheimer	6	10	20	10	10
151 Westpark Express	15	-	-	-	-
152 Harwin Express	10 / 20	15 / 30	30	15 / 30	15 / 30
153 Harwin Express	10 / 20	15 / 30	30	15 / 30	15 / 30
161 Wilcrest Express	30	30	30	30	30

TABLE 1.4 | ROUTE FREQUENCY (MINUTES)
Source: METRO, 2016

TRANSIT USE

Boardings on the frequent routes, 82 Westheimer, 46 Gessner, and 25 Richmond, comprise the majority of the transit ridership in the District. Mapping the average daily ridership by bus stop shows high use along the corridors and especially where the routes intersect. There are a total of 4,680 total daily boardings within the study area. Boardings along Westheimer Road are over 2,190, 47% of total boardings within Westchase District.

The intersection of Westheimer Road and Gessner Drive has the highest concentration of daily boardings, as shown in Figure 1.25. There are over 700 boardings at this intersection every day (15% of all boardings within the study area). Even prior to the METRO New Bus Netwrok, the intersection of Westheimer Road and Gessner Drive has always had a high number of transit transfers. The new bus system is built around a grid network of frequent routes which improves access by proving better connections.

As a result the number of bus riders transferring at key intersections will likely increase. Providing facilities to ensure safe and efficient transfers is essential to improve mobility.

LEGEND

METRO Bus Stop Daily Boardings

- 0 -15
- 16-40
- 41-80
- 81-150
- 151-250

1/4 mile walk from busy stop / transit center

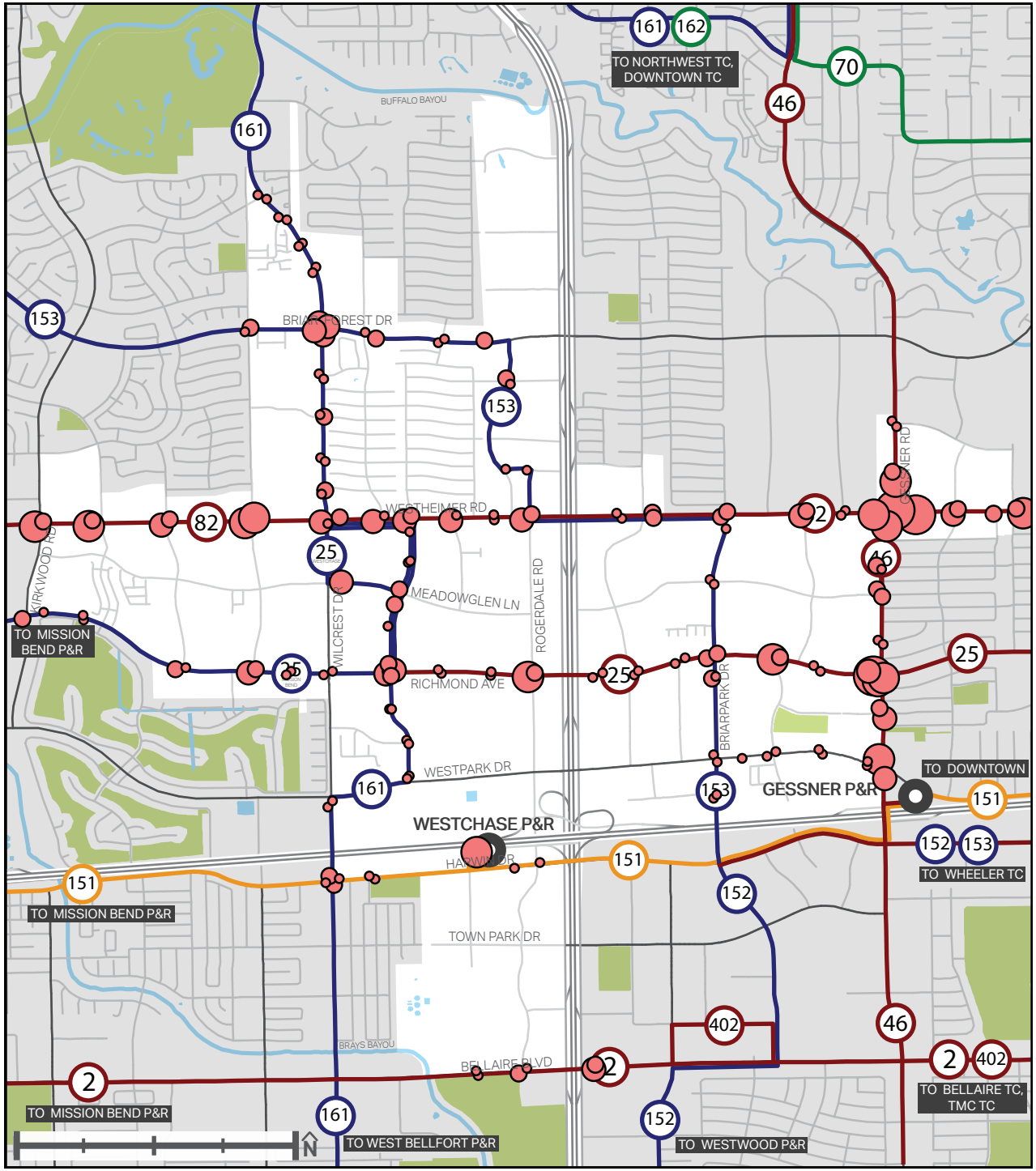


FIGURE 1.25 | METRO BUS BOARDINGS
Source: METRO, October 2015

TRANSIT TRAVEL TIMES

While access to transit is essential to increase transit use, it is just as important where the transit network can get you and how long it will take. Figures 1.26 and 1.27 are maps of "Transit Freedom." The maps demonstrate the range of destinations that can be reached by transit over the course of an hour at 5 PM. on a weekday from the intersection of Wilcrest Drive and Richmond Avenue (Figure 1.26) and the intersection of Gessner Road and Westheimer Road (Figure 1.27).

The power of the frequent network is demonstrated in the distance that can be traveled in 60 minutes (red area). The furthest most points are along frequent routes like the 82 Westheimer, 25 Richmond, and 46 Gessner.

The starting points, Westheimer Road at Gesnner Road and Wilcrest Drive and Richmond Avenue, were chosen because they have access to multiple routes and are adjacent to multiple land uses. Even though the starting point is at a one of the more transit friendly parts of the study area, the rider is barely able to reach the 610 Loop after one hour, and cannot reach downtown.

The destination that can be reached within 30 minutes (blue area) are limited and primarily focused along only two thoroughfares. While transfers increase the locations that can be reached within an hour via transit, the large grid network, current development patterns, and existing travel conditions (over saturated roadway and low resulting bus speeds) limit trips than can be taken in 30 minutes or less.

LEGEND

Distance that can be traveled by transit in:

- 0-15 minutes
- 16-30 minutes
- 31-45 minutes
- 46-60 minutes

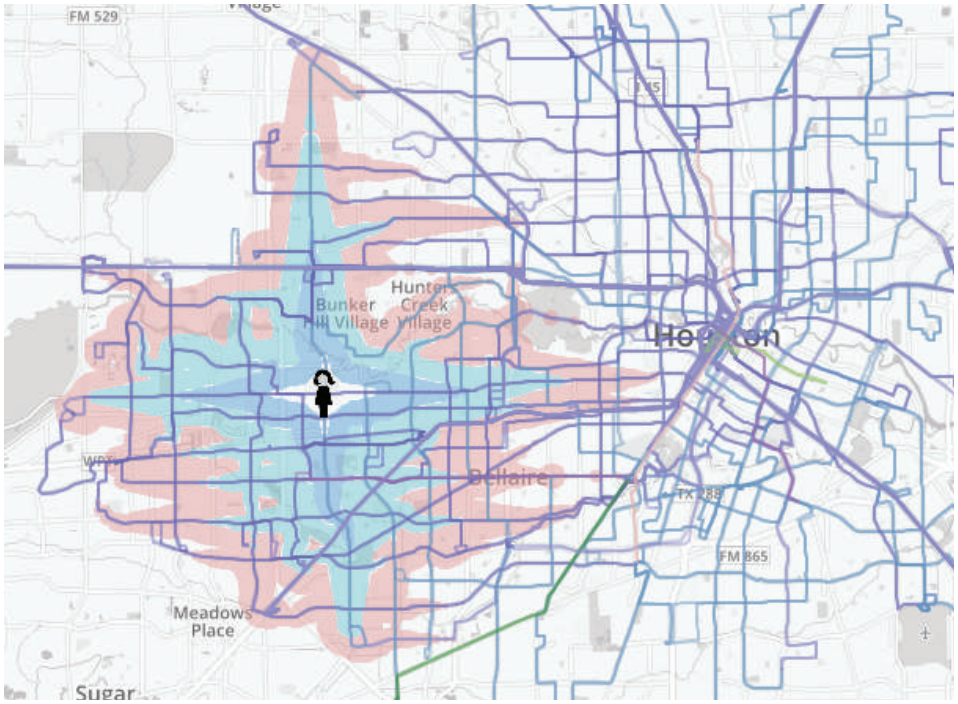


FIGURE 1.26 | WILCREST AND RICHMOND
Source: Remix

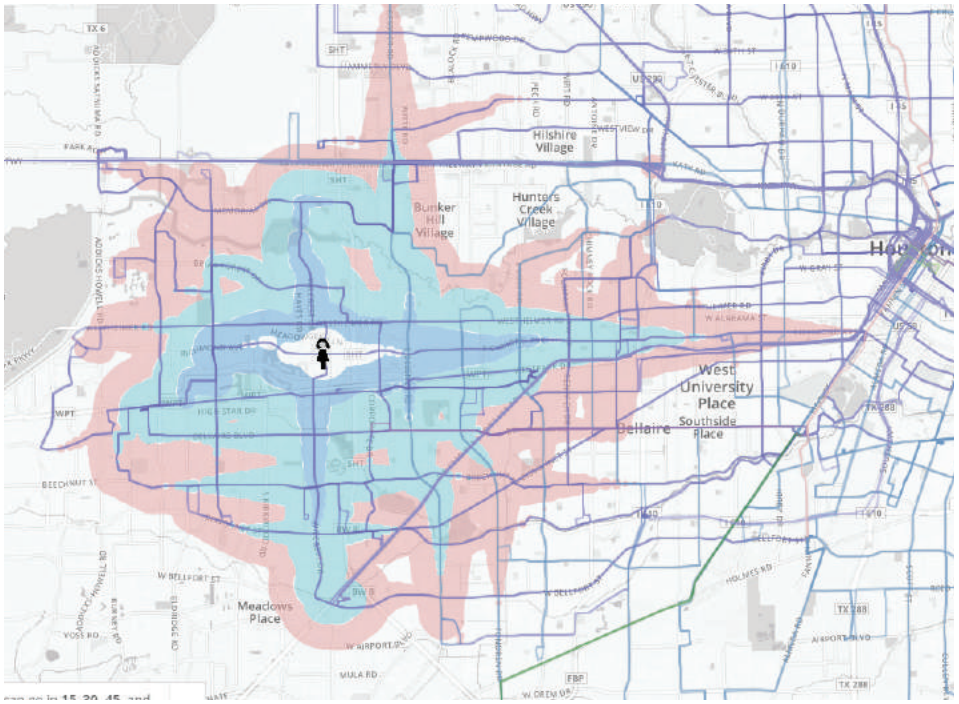


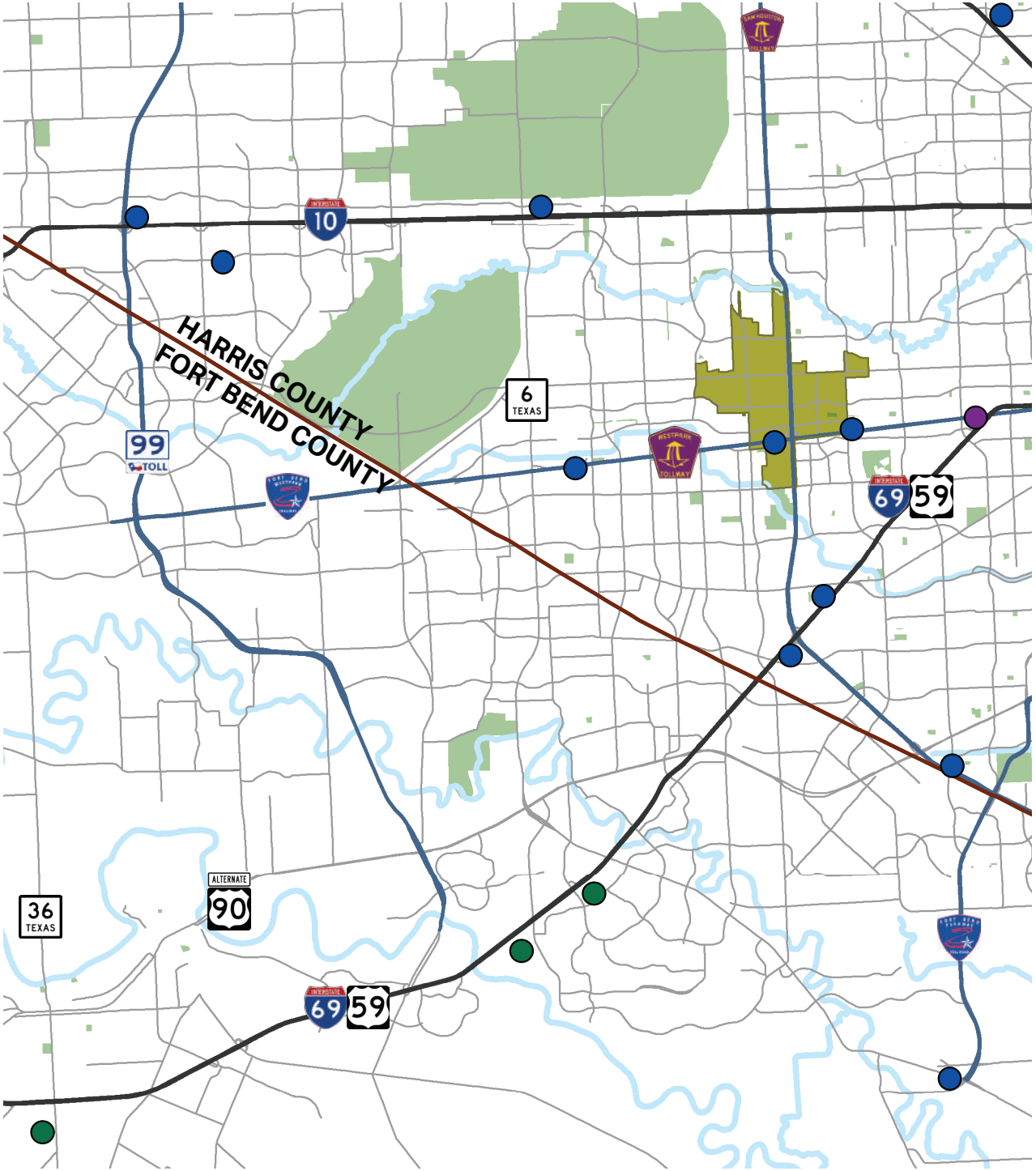
FIGURE 1.27 | GESSNER AND WESTHEIMER
Source: Remix

TRANSIT FACILITIES

Westchase Park & Ride is located southwest of the intersection of Westpark Tollway and Beltway 8. The facility is accessible from both Rogerdale Road and Harwin Drive. The facility is currently served by the 151 Westpark Express which serves downtown with stops along Harwin Drive and at the Hillcroft Transit Center. The 151 runs only in the peak periods on weekday (5:15-8:30 AM and 3:00-7:30 PM) Similarly, Gessner Park & Ride is also located adjacent to Westpark Tollway and served by the 151. The 46 Gessner bus runs along the perimeter of the facility and allows connections to the Park & Ride. Both Westchase and Gessner Park & Rides provide free car and bicycle parking.

One challenge to optimizing service along Westpark Tollway is that buses must run in mixed traffic, and not HOV lanes. This limits any travel time advantage a bus trip might have over single-occupancy vehicles. METRO's highest performing commuter services all run in dedicated HOV/HOT lanes for most of their peak direction trips to provide this time advantage.

Unfortunately, the Park & Ride locations removed from the heart of Westchase causes access challenges for potential riders who work in the study area. There is an opportunity for growth in ridership if METRO provided Park & Ride service to a more central location. A 2011 commute survey of persons who work within Westchase District revealed that 58% of respondents would be willing to use such a service.



CONNECTIONS TO FORT BEND

Westchase District is located near Fort Bend County, one of the nation's fastest growing counties, currently home to over 650,000 residents. There has always been a strong relationship between the District and Fort Bend County, as 19% of the employees within the study area reside in Fort Bend.

The county is outside of the METRO service area (with the exception of Missouri City), but has introduced commuter transit service over the last decade. Fort Bend County Transit (FBCT) provides service from three park & ride locations: the Fort Bend County Fairgrounds, University of Houston Sugar Land, and AMC Theater at First Colony. In addition, service is provided to the West Bellfort Park & Ride by the Greenway Plaza route, to allow for transfers to METRO Park & Ride Services to Downtown Houston.

The 2040 RTP includes a project to construct a Westpark Park & Ride near the Westpark Tollway and Grand Parkway interchange.

Fort Bend County Transit provides direct park and ride service to three key regional employment centers: Greenway, Uptown/ Galleria, and the Texas Medical Center, and is considering a Downtown link. The close proximity and amount of commuters makes Westchase District a strong candidate for expansion of the Fort Bend County commuter park and ride services.

LEGEND

- METRO Park & Ride
- METRO Transit Center
- FBCT Park & Ride

FIGURE 1.28 | PARK & RIDES
Source: H-GAC Regional Growth Model, 2015 Quarter 2

ASSESSING ACTIVE TRANSPORTATION

Active transportation modes include walking and bicycling. While improvements are occurring or planned, the current environment for active transportation within the study area has not been developed to be a key component of the study area's mobility network.

One measure of an area's active transportation mobility, specifically walking, is the Walk Score. Walk Score is an online tool that measures walkability of an area. The methodology analyzes many walking routes between a variety of locations, while also weighing population and roadway factors. The City of Houston has a score of 44 out of 100, which carries the description of "car-dependent," meaning most errands require a car. The Briar Forest neighborhood, which includes the study area north of Westheimer Road in addition to neighborhoods north and west of the District, is also "car-dependent" with a score of 43. The part of Westchase District located between Westheimer Road and Westpark Tollway is considered 'somewhat walkable' with a score of 52, meaning some errands can be accomplished on foot.

Beyond walking, access to high-comfort bikeways is also highly limited by the tollways and other major corridors that carry high travel speeds and volumes. Biking is a key mode of active transportation that can also act as a first-mile/last-mile connection to transit that greatly expands the reach of the bus network. While some trails are built and others are currently being constructed, access to the trails and the destinations along them are still limited.

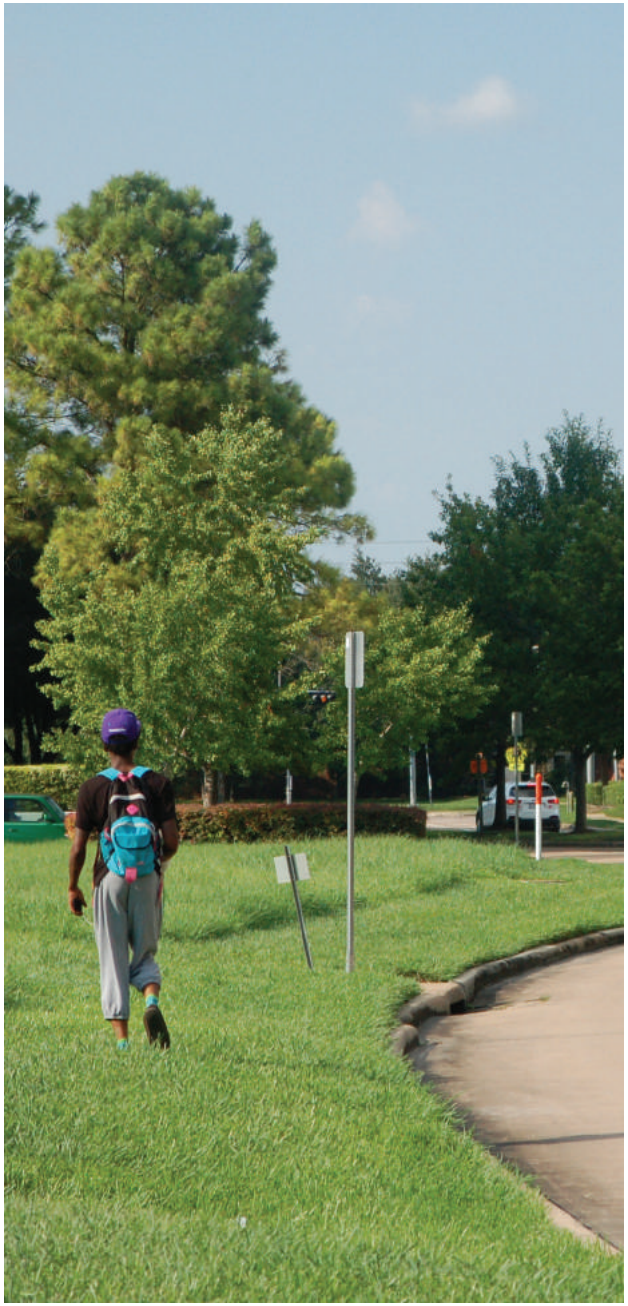
The tollways that intersect Westchase District present a challenge within the District for persons walking or bicycling. With only four crossings along the two-mile stretch of Westpark Tollway, and seven crossings along the four-mile stretch of the Sam Houston Tollway, sidewalk connectivity is highly restricted. The tollways create barriers that have led to up to a three quarter-mile gap between crossings. Additionally, the crossings are mostly located along busy streets, and intersect wide roadways with high volumes and travel speeds. These factors present significant access, comfort, and safety challenges.

WALKABILITY

While many of the roads within Westchase District are lined with sidewalks on both sides, there are many examples of substandard corridors and segments. Much of the older sidewalks are narrow, four-feet or less, and have low pavement quality, making walking difficult especially for anyone who is mobility challenged. Segments are missing along several corridors, especially along vacant properties, in addition curb ramps are lacking at many intersections. Walking to destinations also requires crossing wide roadways and large parking lots to reach destinations.

The walkability of an area is heavily influenced by the quality of the pedestrian environment. To ensure sidewalks are accessible for all, they should be a minimum of five-feet in width, six-feet on arterials, with smooth surfaces and gradual slopes. Missing segments in the network make it impossible to use for people in wheel chairs, others with disabilities and those with strollers. Curb ramps at intersections and clearly marked crossings are also vital towards making walking a safe possibility for people of all ages and abilities.

Other considerations such as buffering the sidewalk from the edge of the street, lighting to enhance visibility, seating, trash cans, and the presence of shade trees and other landscaping can improve safety and make walking more comfortable for all users.



BIKEABILITY

Bicycling is a mode of transportation with numerous financial and health benefits that has become an increasing priority not only in the Houston region, but also nationwide. Cycling is not only seen as a healthy option, but also as a way to reduce congestion and air pollution. It is an affordable method of transportation that provides an equitable opportunity for low-income individuals.

The City of Houston released the updated Houston Bike Plan (HBP) in 2016, providing a new, comprehensive framework to improve the bikeability of Houston.

The City of Houston has a 0.5% bicycle commute share, significantly lower than the 1.8% average of our peer cities (source Houston Bike Plan, 2016). Westchase has an even lower share with only 0.1% of residents that commute to work by bike. This is compared to the Texas Medical Center where 4% of employees commute to work by bicycle.

While the bicycle mode share numbers within Westchase District are low, site visits have shown there to be numerous persons cycling through the study area. Often on the sidewalk or along the side of a roadway if a sidewalk is not provided.

There is a need to develop a well-connected bicycle network within the District and provide incentives and encouragement to promote cycling within the district. The District has recently developed a Bicycle and Pedestrian Plan to address these concerns. This plan incorporates findings and recommendations from that plan.

BICYCLE FACILITIES

A successful bicycle network needs to be welcoming to all riders, regardless of age, gender and experience. The potential ridership and attractiveness of a bicycle facility is dependent on its level of comfort. Facilities on busy, wide, fast roadways that don't provide the cyclist with a dedicated space introduce a perceived and real safety risk. These risks prove to be an insurmountable hurdle to the portion of the population that are not experienced, confident, and enthused about bicycling. Multiple bicycle facility types are exemplified here and show that there is not a one-size-fits-all solution for every corridor or area.

MULTI-USE PATH

An off-street path, made available to both pedestrians and bicyclists. Multi-use paths are usually high-comfort facilities, with minimal street crossings, often built along bayous or other utility corridors.

BIKE LANES

Dedicated space within roadways for bicycles, separated from vehicular traffic. The level of comfort of bike lanes can vary greatly depending on design elements. Bike lane widths, surrounding land use, intersection design, roadway speed limit, and presence of a physical separation can lead to a bike lane being a high- or low-comfort facility.

BIKE ROUTES

An on-street bicycle facility that does not provide dedicated space for bicycles. Routes within residential streets, neighborhood bikeways, are marked with "bike route" signs and can be high comfort facilities if located on streets with low speeds and low volumes. Shared lanes are routes marked by "sharrow" symbols and are also used by motor vehicles. Bike routes are low-comfort where cyclists must interact with high volume, high speed traffic, is along a non-residential roadway, or crosses busy or wide streets.

EXISTING BICYCLE NETWORK

Westchase District has a variety of bicycle facilities, both on- and off-street. The network is shown in Figure 1.29. The existing bicycle infrastructure begins to connect select destinations, but does not provide a complete network. Many segments don't last long or don't provide connections between where people live and desired destinations. Highways present major barriers to connectivity. The lone Westpark Tollway bicycle crossing is on Wilcrest Drive, while the only Sam Houston Tollway crossing is along Briar Forest Drive. Increasing bicycle use in Westchase District, by commuters and for recreational use, is dependent on both completing a network and providing high-comfort facilities.

The high-comfort network is extremely fragmented. Library Loop Trail, a 1.35-mile off street trail, is the only high-comfort bicycle facility within the study area with trail connectors south to Art Storey Park under development. Adjacent high-comfort facilities also benefit the District, including a neighborhood bikeway that connects Westheimer Road to Briarpark Drive and multi-use paths near Brays and Buffalo Bayou. With the limitations of the high-comfort network it is nearly impossible to connect two destinations.

LEGEND

- Multi-Use Path (high-comfort)
- Bike Lane (high-comfort / low comfort)
- Bike Route (high-comfort / low comfort)
- Potential Greenway

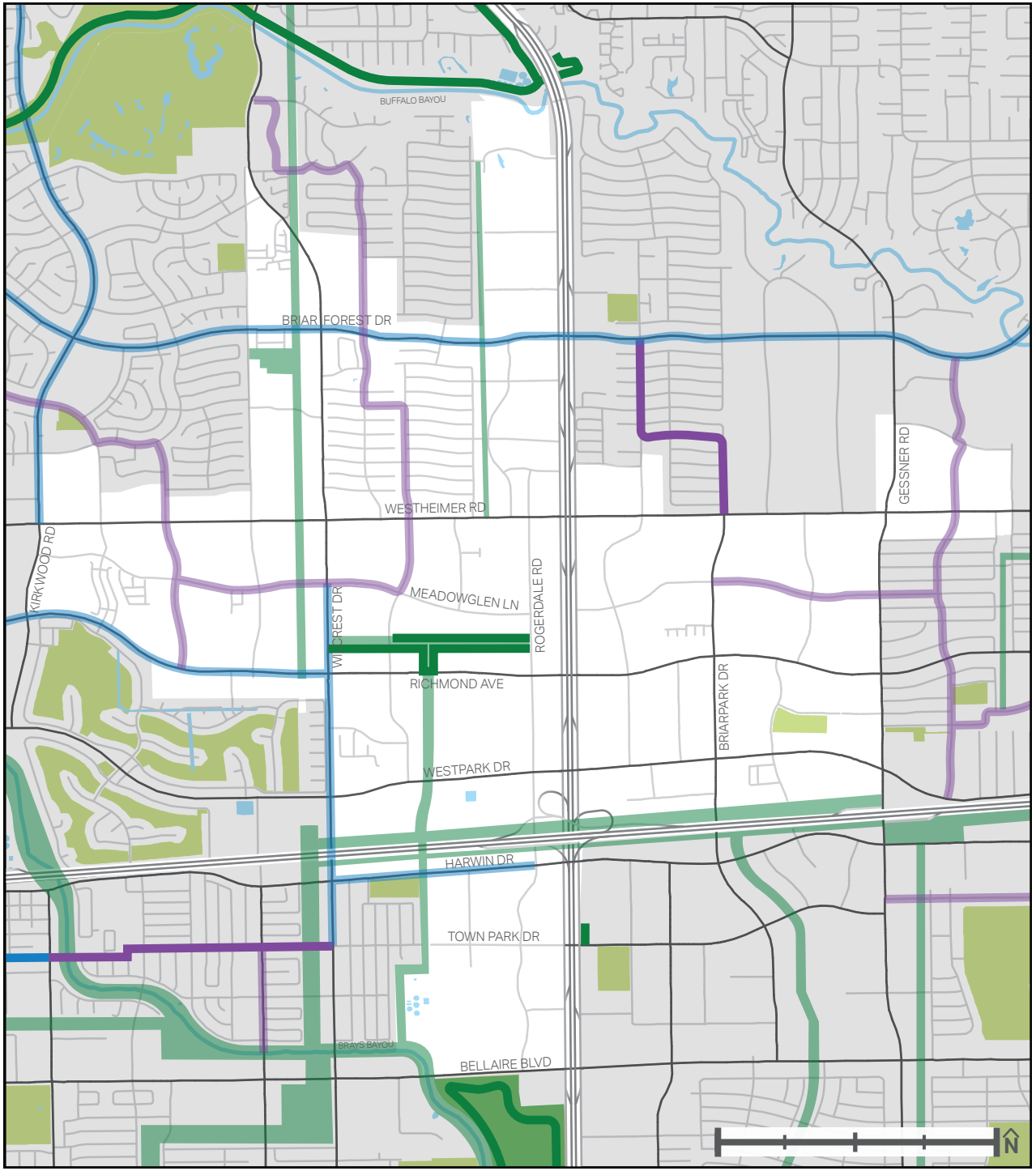


FIGURE 1.29 | EXISTING BICYCLE NETWORK
Source: Houston Bike Plan, Draft, February 2016

EXISTING FACILITIES

LIBRARY LOOP TRAIL

Westchase District is investing in off-street multi-use trails that provide commuters and residents a safe and comfortable way to travel by bicycle.

HARWIN DRIVE

All of the existing bike lanes within the District are narrow, many are along busy corridors, and considered to be low comfort for riders. The Harwin Drive bike lane (left) has debris in the gutter, and the striping is mostly worn off.

MEADOWGLEN LANE

Bike routes are common on some of the lesser traveled roadways. Many of these routes are still considered low comfort, such as Meadowglen Lane (right), due to travel speeds and busy intersection crossings.

BRIAR FOREST DRIVE

One of the challenges for bicyclists in Westchase District is that tollway crossings are infrequent and unsafe. The Briar Forest Drive bike lane passes through both Beltway 8 frontage road intersections as it crosses underneath the Sam Houston Tollway main lanes.

PROGRAMMED IMPROVEMENTS

Figure 1.30 highlights currently programed and under construction bicycle projects within the study area. Walnut Bent Lane will have a continuous bicycle lane from Westheimer Road to Westpark Drive. The bike lane will connect dense residential areas to employment opportunities and much of the retail in the area.

There are many utility corridors throughout the District, that provide the opportunity to have a bicycle network built upon off-street, multi-use paths. Connected to other corridors within Houston, these facilities could provide an expansive backbone to the overall bikeway network.

Westchase District is taking advantage of the utility corridors with three trails under development. Brays Bayou Connector Trail (currently under construction) is an extension from the Library Loop south to Art Storey Park. The HCC Campus Trail is between Westheimer Road and Richmond Avenue and will be the first piece of trail along the very extensive utility corridor. The District is also developing a trail north of Westpark Tollway between Briar Park Drive and Gessner Road along the east-west CenterPoint Transmission Corridor.

LEGEND

Multi-Use Path: *high-comfort* | *programmed*

Bike Lane: *high-comfort* | *low-comfort* | *programmed*

Bike Route: *high-comfort* | *low-comfort* | *programmed*

Potential Greenway

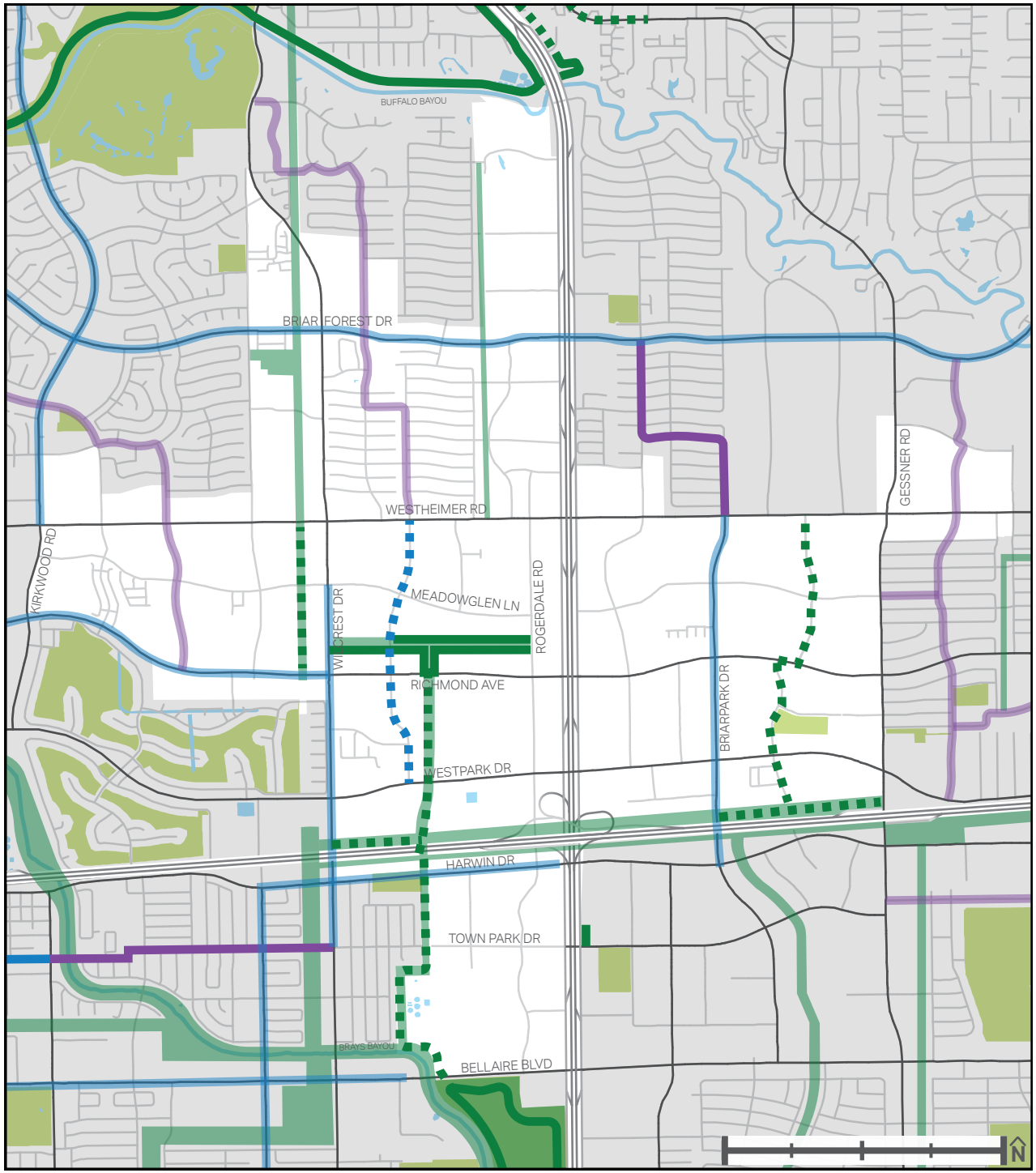
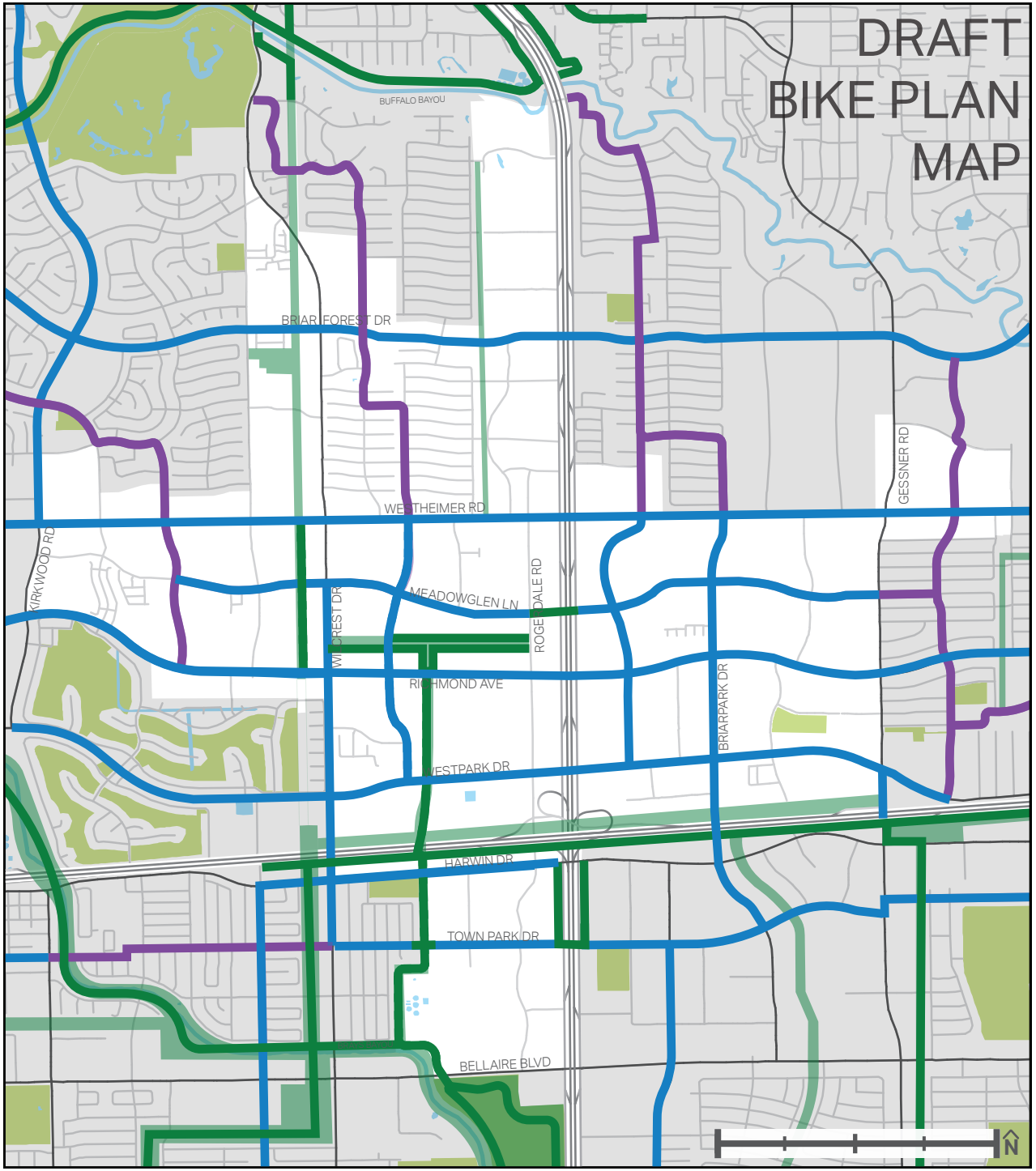


FIGURE 1.30 | PROGRAMED IMPROVEMENTS
Source: Houston Bike Plan Update, February 2016



HOUSTON BIKE PLAN

Bicycle network recommendations for this study take into consideration the proposed network in the Houston Bike Plan (HBP).

The Houston Bike Plan is a city-wide planning effort to develop a long-term bicycle network. The HBP, outlines policies, programs, and types of bicycle facilities that can be used together in an effort to increase access, ridership and safety. As projects within Westchase are planned it will be essential to coordinate with the HBP and any other relevant planning studies. The draft Long Range Division developed for the Houston Bike Plan is depicted in Figure 1.31.

LEGEND

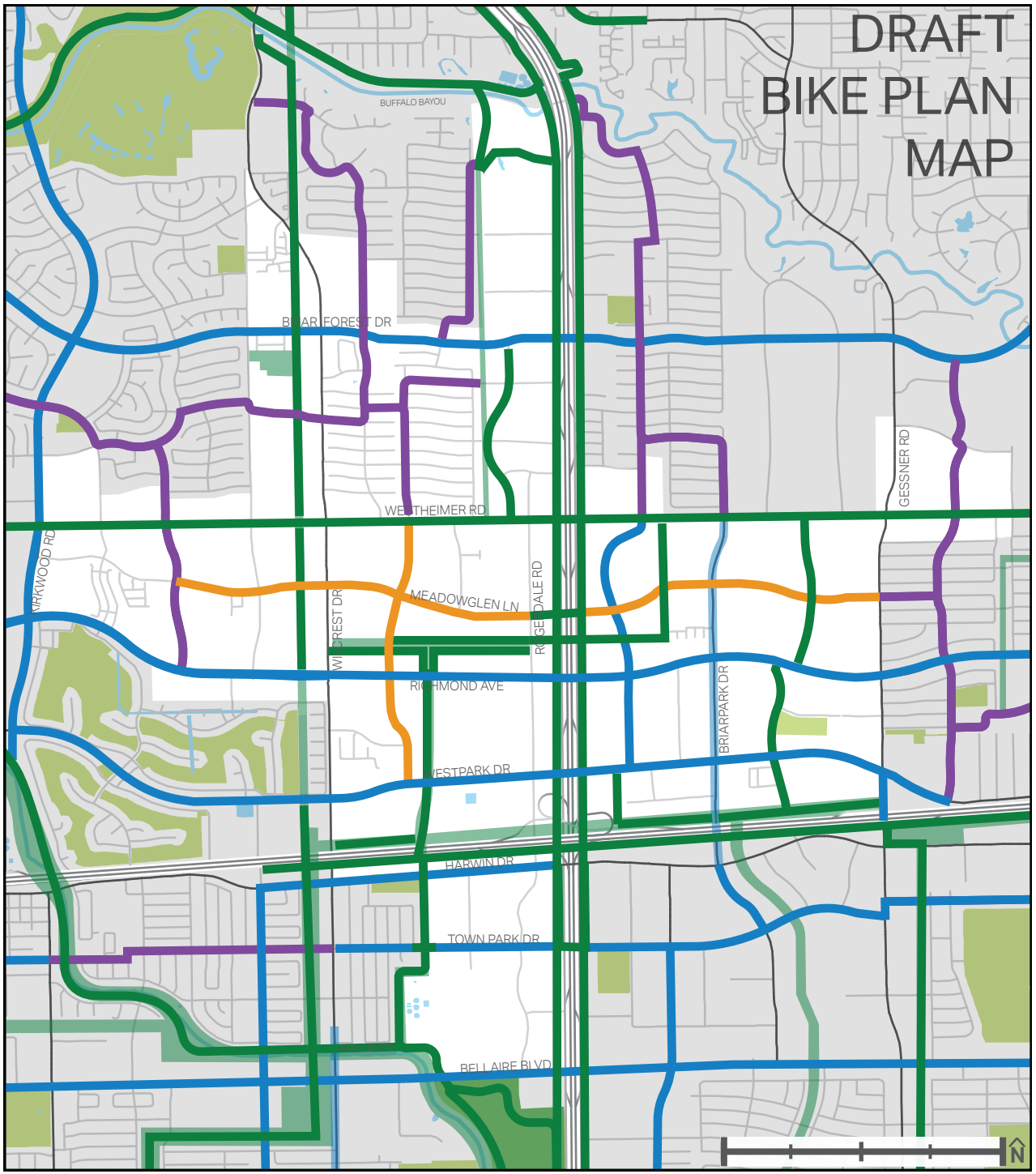
- Multi-Use Path
- Bike Lane
- Bike Route

FIGURE 1.31 | HOUSTON BIKE PLAN
Source: Houston Bike Plan, Draft, February 2016

WESTCHASE DISTRICT PED/BIKE PLAN

Bicycle network recommendations for this study also take into consideration the findings proposed in the Westchase District Pedestrian & Bicycle Plan.

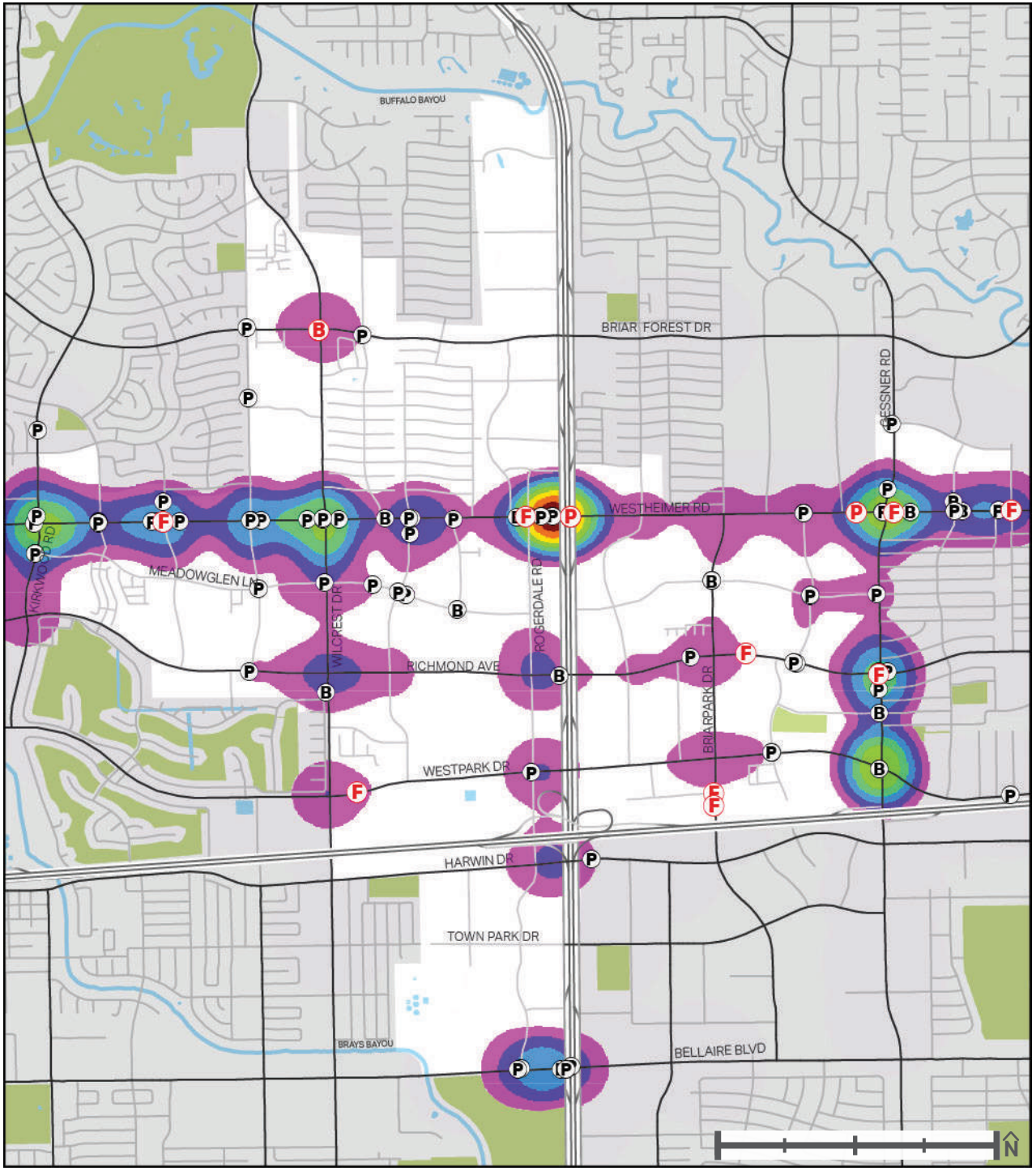
The Westchase District Pedestrian & Bicycle Plan was completed in Fall 2016. The Plan outlines a pedestrian and bicycle network for the District and prioritizes implementation and funding strategies.



LEGEND

- Multi-Use Path
- Bike Lane
- Bike Route
- On/Off Street Bike Lane

FIGURE 1.32 | DISTRICT PED/BIKE PLAN
Source: Westchase District Ped & Bike Plan, Draft, Feb 2016



SAFETY

Safety is a major concern within Westchase District. Figure 1.33 depicts a crash density of all study area crashes from 2010-2015 included within the TxDOT Crash Records Information System (CRIS) database. The Figure depicts study area crash hot spots. The CRIS database only includes recorded crashes that result in an injury or over $1,000 of property value.

The crash map depicts the locations of crashes that involved a pedestrian or a bicyclists. Crashes that resulted in a fatality are shown in red. Between 2010 and 2015, thirteen people were killed in a crash within the study area; ten in vehicle only crashes, two in pedestrian involved crashes and one fatality was a bicyclist.

The majority of crashes haven taken place along Westheimer Road. The crash rate along Westheimer Road within the study area is 372 crashes per 100 Million Vehicle Miles Traveled (VMT). The Texas average for four-lane urban divided roadway is 133.25 per 100 Million VMT. The crash rate along Westheimer Road is 179% higher than the state average.

The densest crash hot spot along Westheimer Road is between Rogerdale Road and the West Sam Houston Parkway, resulting in a crash rate higher than 1,000 crashes per 100 million VMT.

LEGEND

- (F) Fatality
- (P) Pedestrian Collision
- (P) Pedestrian Fatality
- (B) Bicycle Collision
- (B) Bicycle Fatality

Crash Density

Less Crashes — More Crashes

FIGURE 1.33 | CRASH DENSITY
Source: TxDOT CRIS Database, 2010-2016

ACTIVE TRANSPORTATION SAFETY

Even with limited, substandard facilities within the study area, people are walking and bicycling. Unfortunately, there is a high number of pedestrians and bicyclists involved in crashes with automobiles. Figure 1.34 depicts the crash density of all pedestrian and bicycle crashes within the study over the past five years.

Within the five years of data collected there have been 77 crashes involving pedestrians and 24 crashes involving bicyclists. Two pedestrians and one bicyclist have been killed within the study area.

The largest hot spot of pedestrian and bicycle crashes is located at the Westheimer Road at Crescent Park Dr/Royal Oaks Club Drive intersection.

Additional hot spots are located near the Westheimer Road at Wilcrest Drive intersection and the Westheimer Drive at Gessner Road intersection.

The study area is challenging to pedestrians and bicyclists and clearly improving mobility must include safer pedestrian and bicycle facilities. Implementing the City of Houston's complete streets framework is a key tool and an important step to making the District a safer place for all roadway users.

LEGEND

- (P) Pedestrian Collision
- (P) Pedestrian Fatality
- (B) Bicycle Collision
- (B) Bicycle Fatality

Pedestrian and Bicycle Crash Density

Less Crashes — More Crashes

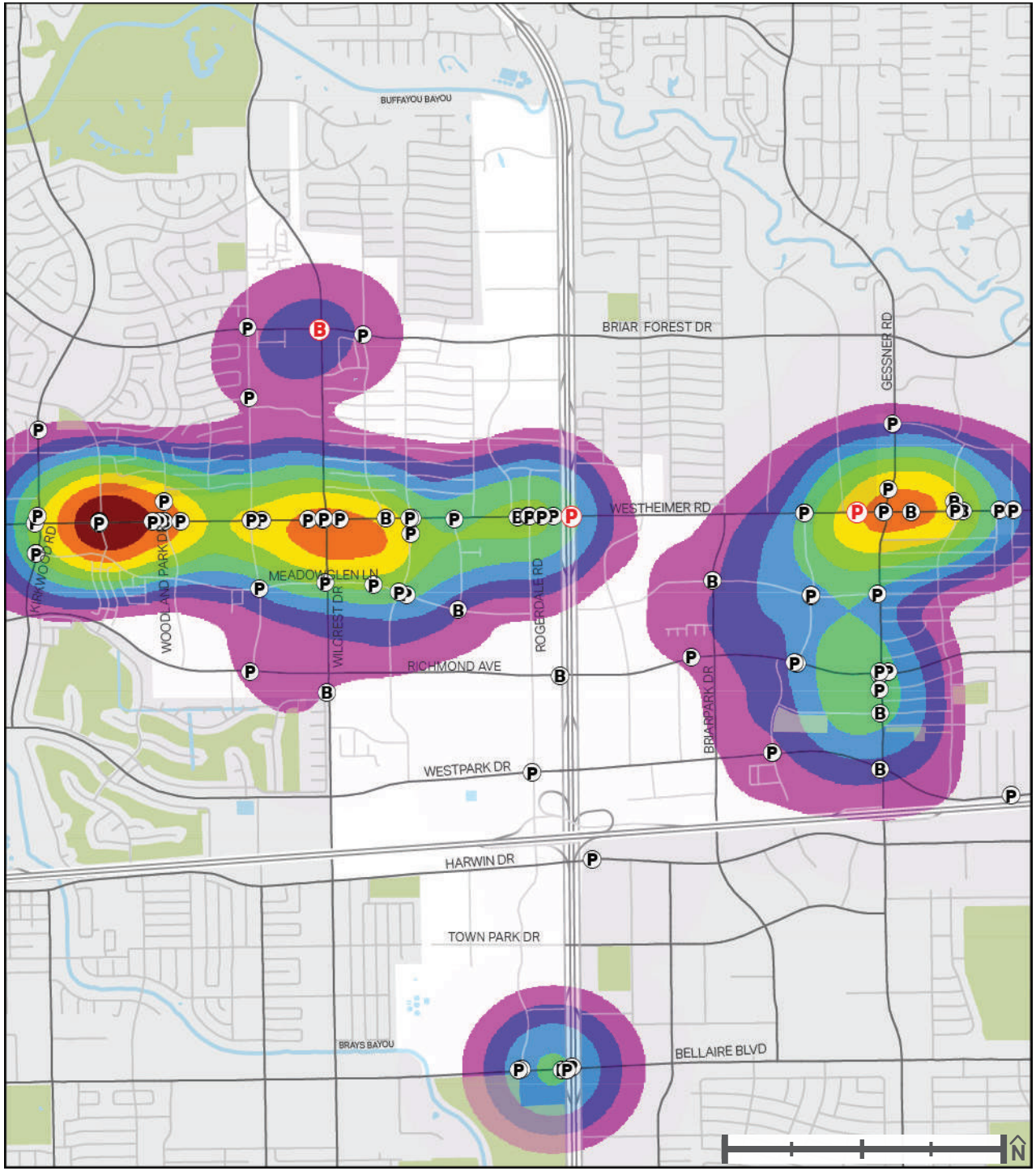


FIGURE 1.34 | PEDESTRIAN & BIKE CRASH DENSITY
Source: TxDOT CRIS, 2010-2015

CURRENT DEVELOPMENT CYCLE

Development patterns within Westchase District have been primarily focused on getting drivers into, out of, and through the District in the shortest amount of time. The methods to achieve this goal have been designed around a narrow view of mobility focused on single occupancy vehicles.

Auto-oriented development prevalent within the study area includes strip center retail, office buildings with abundant surface or structured parking, and garden style apartments that allow a resident to park their car a short distance from their front door. These auto orientated development types provide abundant, and frequently free, parking that encourage single occupancy vehicle use.

The current development cycle is unlikely to change outcomes. It has developed a challenging environment for all road users, as evidenced by high crash rates. The resulting wider corridors are already unable to meet the demands placed on them at certain periods of the day and will be unable to meet future demand for even larger segments of time. The cycle does not align with the Westchase District Vision and Mission.

A broader, more comprehensive view of development and mobility that prioritizes a strong transit system complemented with active transportation facilities is the only way to break the cycle and encourage future land uses to appropriately invest in developments that feed into and reinforce mobility choices and options for all users.

CASE STUDIES

Assessing existing conditions provides an understanding of the context in which the community utilizes facilities and infrastructure and where opportunities exist to make improvements. In order to fully assess where Westchase District currently is and how it can move forward, case studies of peer management districts across Houston were analyzed, particularly those that have focused on enhanced multimodal planning.

Case studies provide an opportunity to determine how peer districts have been able to excel, overcome barriers, and be competitive in the region. It is important that Westchase District position itself highly among its peers to compete for jobs, residents, visitors, and funding and collaborate to identify opportunities to benefit the overall region. Each of the peer districts have created a unique niche that ties infrastructure improvements and future projects to a particular lifestyle or sector.

Each of the four peer districts highlighted in the case studies presented here are shown on the map on the following page. The Greater East End is the largest management district with over 10,000 acres. The other districts, Energy Corridor, Uptown, and Memorial, are more comparable to Westchase in size ranging from approximately 1,700 to 850 acres, respectively.

The Energy Corridor Management District was chosen due to similarities in mobility barriers, development patterns, and financial mechanisms available. The Energy Corridor has been successful in creating an identity that is holistic and very inclusive of mobility options, particularly in ways that help create the feel of an urban district.

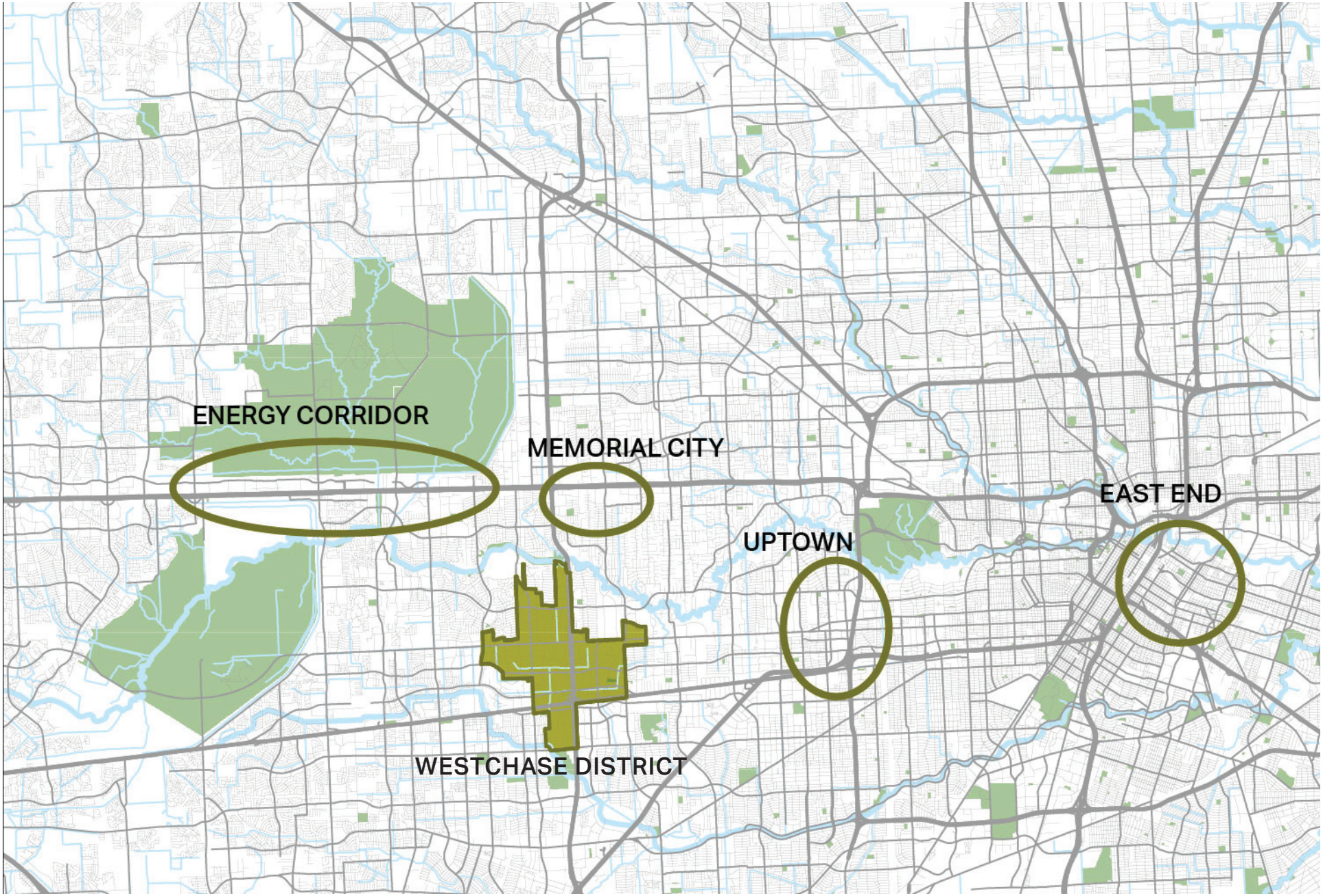
The Uptown Management District also shares similarities in mobility barriers and development patterns. Uptown has been very successful in marketing itself as a "vibrant mixed-use environment" in the heart of the city. The management district has a significant mix of retail, commercial, residential, and hotel activities. Mobility is very important to uptown as it has high traffic congestion. Projects, funding, and improvements have been focused on traffic operations, new dedicated transit service, and pedestrian connectivity.

The Greater East End Management District does not share many of the similarities as the management districts presented in here. However, the East End has been exceptional at planning and investing in mobility projects, and particularly at successfully competing for grant funds and highly leveraging their budget. The East End's focus is on mobility infrastructure and creating walkable, livable places.

The Memorial Management District shares mobility barriers and development pattern commonalities with Westchase. The Memorial District is largely focused on increasing pedestrian and bicycle friendly facilities, whether that be streets or trails. The Memorial District is also focused on drainage improvements and utility work that will improve existing issues and provide better capacity in the future. The Memorial District financially utilizes their associated TIRZ and other public partners to fund improvements within the Memorial City/Town and Country area.

Key takeaways from the case studies include:

- Working with a wide variety of partners to ensure or encourage better mobility opportunities through existing projects can boost funding.
- Build planning efforts off of each other and leverage them together to receive grant funding.
- Promoting a vision that resonates throughout mobility, livability, and economic development opportunities can help build community support, tie plans and projects together, and bolster support for funding.
- Mobility plays a key role in marketing and messaging. Transit and access to transit service provides benefits and is being promoted and expanded upon by management districts.
- A highly connected street grid that allows for more connections, routes, and uses over a street grid with few connections is being pursued, or improved upon by all management districts.
- Pedestrian and bicycle projects are a key driver to improving mobility options in all management districts.


ENERGY CORRIDOR
MEMORIAL CITY
UPTOWN
EAST END
WESTCHASE DISTRICT

ENERGY CORRIDOR

ABOUT THE DISTRICT

SIZE: 1,700 acres

POPULATION: 21,000

EMPLOYMENT: 91,000

OFFICE SPACE: 23 million sq.ft.

RETAIL: 2.8 million sq.ft.

ANNUAL BUDGET: $3 million

FINANCIAL MECHANISMS

- Tax Assessment of $0.10 per $100 valuation
- 380 Agreement - $20,093,263 maximum reimbursement to fund completion of Park Row from Addicks P&R to Eldridge Parkway with landscaping and lighting

MARKETING/MESSAGING

The Energy Corridor District's vision is to be "internationally recognized as a premier place in which to work, live, and invest." This vision is to be achieved by being a place full of "energy" with high quality mobility options and an urban environment that compliments and harnesses the natural environment.

MOBILITY BARRIERS

- I-10
- Traditional suburban development pattern with wide streets and few connection points

RECENT PLANNING STUDIES

The Energy Corridor has placed investment into developing multiple plans that complement and build off of each other. Additionally, these plans are informing their future projects and aiding in leveraging grant funds.

- West Houston Trails Master Plan
- West Houston Mobility Plan
- Unified Transportation Plan
- Bicycle Master Plan
- Livable Centers Plan
- Energy Corridor District Master Plan

CURRENT MOBILITY FOCUS

- Promote commute solutions for employees, including car sharing, carpools and vanpools, METRO transit service, and hike & bike trails.
- Develop future TOD at the Addicks Park & Ride.
- Completing the street network and enhancing it to provide increased connectivity.

FUTURE FOCUS ON MOBILITY

The Energy Corridor is working towards creating quality urban places that work with the environment and leverage the significant park space adjacent to thier district. Within that framework, an urban development pattern that places importance on enhancing the street network, walkability and transit is essential. Future circulator service, bicycle, and pedestrian networks will feed into and complement development.

LEVERAGED FUNDING

The Energy Corridor has been very active in leveraging grant dollars and partnerships to significantly expand the reach of local dollars, and to receive services and funding for projects that would have been delayed or canceled from a lack of local funds. Overall, the district has spent approximately $2.6 million and received $42.7 million overall. The Energy Corridor has successfully leveraged grants and partnerships for a wide variety of projects including:

- Signage program
- Car Share
- Plantings and landscape improvements
- New trails and trail extensions
- Sidewalks
- Intersection improvements and signal timing
- Tree plantings
- Roadway connectivity
- Maintenance

Vision of Energy Corridor Transit Center
Source: Energy Corridor District 2015 Master Plan

UPTOWN

ABOUT THE DISTRICT

SIZE: 1,000 acres

POPULATION: 166,577

EMPLOYMENT: 96,000

OFFICE SPACE: 26 million sq.ft.

RETAIL: 6 million sq.ft.

ANNUAL BUDGET: $11.3 million

FINANCIAL MECHANISMS

- Tax Assessment of $0.14345 per $100 valuation
- TIRZ 16 - 2015 budget $116.7 million

MARKETING/MESSAGING

Uptown identifies itself as the "heart of a city that pulses with the energy of its diverse residents and visitors." Uptown's focus on its "vibrant mixed-use environment" is central to all aspects of business and life. They actively promote access to Memorial Park and the Galleria. Uptown focuses on growth in commercial business space, luxury hotels, high-end shopping, and upscale opportunities to live in, all within walking distance to fine retail establishments and excellent dining.

MOBILITY BARRIERS:

- I-610
- Poor street network connectivity
- High traffic volumes

RECENT PLANNING STUDIES

The Uptown District takes a tactical approach in project development by focusing efforts on facilities to fix existing problems or key areas of need. Uptown was a stakeholder in the Memorial Park Master Plan, and has been active in addressing mobility concerns in the community and working with other stakeholders, such as the City of Houston, METRO, TxDOT, and others regarding improvements to facilities and services. Planning and design for the Uptown BRT project has been led by Uptown.

CURRENT MOBILITY FOCUS

- Improve transit access with new BRT (Bus Rapid Transit) service along Post Oak Boulevard connecting Northwest Transit Center and Uptown Transit Center.
- Traffic control and management.
- Pedestrian improvements and connectivity integrated with roadway and intersection improvements, and increasing connectivity of the street network.
- Expand park and bike share access.

FUTURE FOCUS ON MOBILITY

Uptown's most significant focus for future mobility improvements center around the completion of the Post Oak BRT project. In addition, Uptown District has focused on improvements to the pedestrian realm to further improve walkability and roadway facilities to maintain traffic flow and develop connectivity. Additionally, Uptown plans to make improvements to park space.

LEVERAGED FUNDING

Uptown has been successful in leveraging local funds to receive federal grants. Uptown has been the driving force behind the development of BRT lanes along Post Oak Boulevard that will connect into transit centers at its northern and southern terminus points. Uptown partnered with METRO for project development and future operation. Beyond the BRT project, Uptown has utilized $5.3 million in local dollars to fund $28.1 million in mobility projects, including the following:

- Pedestrian and intersection improvements
- Transit accessibility and infrastructure
- Roadway and traffic signal improvements
- Streetscaping and pedestrian amenities
- Signage
- Traffic management operations

Rendering of Uptown BRT project
Source: Uptown District Presentation to Post Oak Lofts

GREATER EAST END

ABOUT THE DISTRICT

SIZE: 10,000 acres

POPULATION: 85,570

EMPLOYMENT: 31,006

COMMERCIAL: 23 million sq. ft. (includes both office and retail)

BUDGET: $2.1 million

FINANCIAL MECHANISMS

- Tax Assessment of $0.15 per $100 valuation
- TIRZ 23 - 2015 budget $207 thousand

MARKETING/MESSAGING

The Greater East End Management District (GEEMD) is striving to be the most walkable neighborhood in the City of Houston and connect neighborhoods and businesses to high-quality transit. Overall GEEMD is focusing on revitalization, which includes increasing housing, retail, and commercial opportunities. The district focuses on their proximity to Downtown Houston and other regional amenities to draw investment, as well as to build upon public infrastructure investment that complements economic development tools.

MOBILITY BARRIERS:

- Union Pacific Railroad tracks

RECENT PLANNING STUDIES

The GEEMD has significantly invested in planning studies that focus on mobility, walkability, creating a livable place that has its own identity, and encouraging economic development. These plans have greatly informed their recent and future projects, and provided a springboard for grant funding opportunities.

- Livable Centers Plan (2009)
- Pedestrian & Transit Plan (2009)
- East End Livable Centers Master Plan (2011)
- East End Mobility Study (2012)
- 5th Ward/Buffalo Bayou/East End Livable Centers Plan (2015)
- Greater East End Economic Development Strategy (2013)
- East End Retail Market Analysis (2013)

CURRENT MOBILITY FOCUS

- Improve connectivity to transit
- Provide high-quality sidewalks
- Encourage biking with hike and bike trails
- Improving the public realm with streetscape improvements, public art, and park space.

FUTURE FOCUS ON MOBILITY

The GEEMD is focused on fully realizing a livable center, with sidewalk and bikeway connectivity, park space, high-quality transit connections. By leveraging mobility improvements, GEEMD is working to bolster economic development and retail space.

LEVERAGED FUNDING

Through focused planning Work that identified needs and projects to move forward, GEEMD has leveraged local dollars to obtain grant funding. Since 2010, $29 million in infrastructure improvements has been built, with a significant portion from federal grant funds. Specifically, $2.5 million leveraged more than $12 million for sidewalk and bikeway improvements. Between 1999 and 2013, approximately 34% of GEEMD revenue came from grant funding. Recently funded projects include:

- Building new pedestrian and bike trails (including nearly 30 miles of sidewalks in the historic Second Ward)
- Improving transit connections
- Improving park and green space
- Widening Navigation Boulevard Esplanade and creating an urban street market
- Neighborhood beautification including streetscape, pedestrian amenities, and public art

New Esplanadw on Navigation Boulevard
Source: Greater East End Management District online photos

MEMORIAL

ABOUT THE DISTRICT

CREATED: 1999

SIZE: 850 acres

POPULATION: 4,400

EMPLOYMENT: 47,600

OFFICE SPACE: 8.3 million sq.ft.

RETAIL: 6.1 million sq.ft.

BUDGET: $3.2 million

FINANCIAL MECHANISMS

- Tax Assessment of 0.15 per $100 of valuation
- TIRZ 17 - 2015 budget $44.7 million

MARKETING/MESSAGING

Memorial Management District characterizes its area as an oasis within a major metropolitan city, containing highly regarded shopping centers, Memorial Herman Memorial City Hospital, and CityCentre. The district advocates for use of outdoor amenities and gardens with access through hike and bike trails. The district is investing in infrastructure to support more retail, a luxury hotel, and mid-rise condos to provide additional livability options.

MOBILITY BARRIERS:

- I-10
- Beltway 8
- Decreased street connectivity leading to higher traffic on major roadways

RECENT PLANNING STUDIES

Memorial Management District has recently completed a couple of studies that identify their key demographics and opportunities for future connections. They are utilizing the information in these studies to work with partners, such as the City of Houston or the TIRZ, to include walkable and bike friendly options along corridors.

- Bike-Pedestrian Study
- Demographic Study
- East-West Mobility Improvement Study (TIRZ project)

CURRENT MOBILITY FOCUS

- Increasing connectivity to major activity centers via biking and walking access.
- Intersection and signal improvements to improve traffic flow and pedestrian safety.
- Drainage improvements.
- Promoting effective commuter solutions such as vanpool and carpool options, transit, and walking/biking.

FUTURE FOCUS ON MOBILITY

The district is planning to install its first Bike Share station in 2016 with an additional 13 stations over the next 3 to 4 years. The district plans to continue developing infrastructure for pedestrians and bicyclists to encourage the public, and their partners, to increase utilization of alternative modes. Terry Hershey trail extension and Mathewson Lane extension are additional projects being planned.

LEVERAGED FUNDING

Memorial Management District works closely with the TIRZ to ensure mobility components for all users are appropriately included into their capital projects. Recently, the district is in a $1 million shared partnership with the TIRZ to bury utilities. Additionally, the district has sponsored the Gessner Drive and Memorial Drive mobility and drainage projects in partnership with the TIRZ. The district utilizes partnerships with other public entities as a cost effective means of developing projects that support its goals.

CityCentre
Source:Memorial Management District website

WESTCHASE DISTRICT

1. Westchase District has experienced great success and growth by attracting new jobs and new corporate headquarters. The District continues to plan for the future with a long range plan, mobility plans focused on transit, pedestrian, and cyclists as well as a new 380 Agreement with the City of Houston to help fund future projects.

2. The current growth patterns are starting to put a significant strain on the existing infrastructure and current projections show tremendous growth of both population and jobs within the District.

3. The current auto-oriented development pattern has created a cycle that is unsustainable as it leads to wider and wider corridors that will be unable to meet future demand and safely accommodate multiple modes.

4. A large percentage of trips within the District (41%) are short trips that are a 3 miles or less. Short trips provide an opportunity to provide choices that encourage people to walk, bike, or use transit if proper infrastructure is provided. This will offset some impacts of growth.

WHERE WE ARE

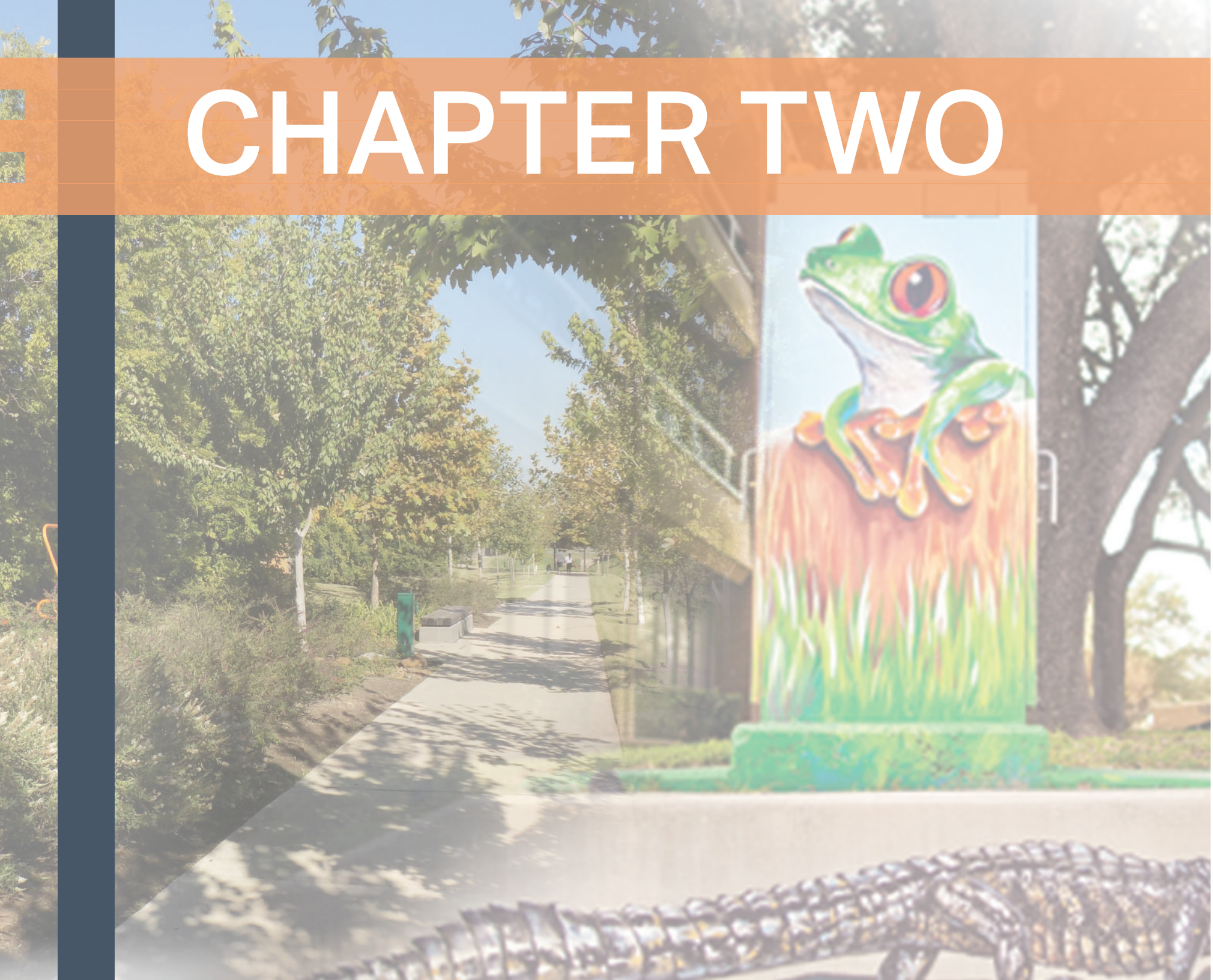
5. While there is access to a grid of higher frequency routes, transit service focuses only on nearby local connections and there are limited services that allow for regional connections and commuter trips from locations like Katy and Sugar Land where many of the District employees live.

6. Most current pedestrian and bicycle facilities are sub-standard with many gaps that weaken the network and create a challenging environment for both pedestrians and cyclists. Implementing a complete streets framework is one large step to making Westchase District a safer place for all roadway users.

7. Crash rates are high within the study area especially along Westheimer Road where the current crash rate is 179% higher than the state average for similar roadways. In the past five years there have been 13 persons killed; ten were motorists, two were pedestrians, and one was a bicyclist.

8. The City of Houston is changing as the focus is shifting to building sustainable developments and promoting multimodal access. Other areas within Houston have been taking big steps to ensure their continues success.

CHAPTER TWO



WHAT DO WE WANT

DEVELOPING GOALS

Westchase District has an active community of businesses and residents that provided input and guidance on the Mobility Plan, most notably the goals of the project. Engaging these communities with targeted public outreach ensured the needs and desires of the Westchase District community were captured and clearly identified through goals that help achieve the District's long-term vision and feed into the development of project recommendations for the District. Figure 2.1 exemplifies how public and stakeholder input merge with data and known best practices to develop goals that are achievable, yet aspirational.

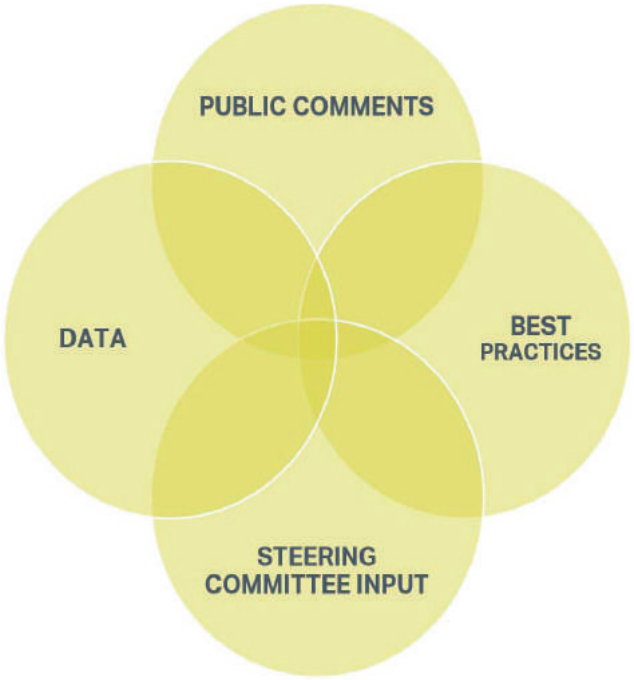


FIGURE 2.1 | GOAL DEVELOPMENT DIAGRAM

The development of goals required inclusion of previously captured input aligned with conversations from a diverse set of stakeholders and participants to reflect the values and expectations of a comprehensive mobility network for all modes that functions together and is easily accessible. Information about existing conditions and questionnaires were provided to stakeholders, the community, and public agencies that operate within the District to determine the role that each mode should play within the network, how the streets should interact with the surrounding businesses and neighborhoods, and how the District should be connected to the region.

STEERING COMMITTEE

A steering committee was developed for this project that consisted of representatives from various stakeholder groups in order to help provide feedback throughout the development of the Mobility Plan, including development of goals, assistance with public outreach, and feedback on project recommendations. The Steering Committee convened for four meetings throughout the project, representing residents and community members, businesses, property owners and developers, public agencies, schools, and public officials.

COMMUNITY INPUT

The public outreach strategy for the Plan hinged on leveraging input from other recent planning projects within the District, attending community events and asking key survey questions, hosting an online website and public forum, conducting focus groups, and hosting a public meeting.

Overall, the project team went to three community events including the Corporate Challenge and two Farmer's Markets, receiving 83 survey responses. Eight focus groups were conducted with a variety of stakeholders representing residents, employers, developers, retail/commercial entities, and school interests. Attendees at the public meeting provided comment on the goals and recommendations, as well as identified their priorities for implementation.

WHAT WE HEARD

Feedback from the Steering Committee and the public resulted in identifying four focus areas for Plan development:

- Pedestrian & Bicycle Access
- Transit Access
- Capacity & Roadway Challenges
- Growth Strategies, Economic Development & Branding

Largely, input from the committee and the public aligned and, while they represent different perspectives, it became clear that similar challenges were being experienced by both groups. Examples of what we heard from both groups can be found in Figure 2.2 on the following page.

Overwhelmingly, between the Steering Committee, the public survey, and the focus groups, several key problems and desires were consistently identified, and are clearly important for this Plan to address. Some of those most identified topics are identified below.

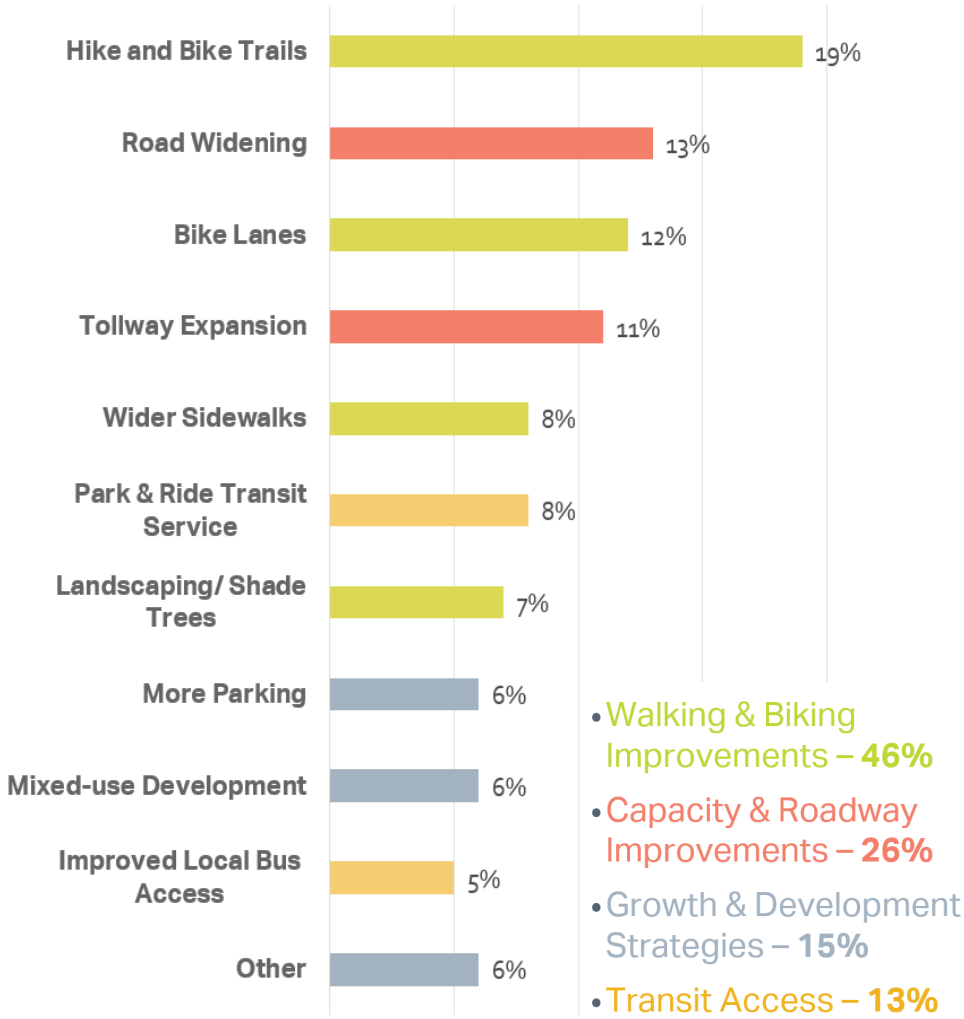
- Access to Westchase District, as well as to Westpark Tollway from within the District, is a challenge at peak times and is getting worse.
- Getting around within the District without a car is difficult. Pedestrian facilities need improving, the bike network is not connected, more transit service within the District is needed, along with amenities like bike parking, transit shelters.
- The traffic on major roadways and bottlenecks at major intersections need improvements for both cars and pedestrians.
- Overall road conditions should be improved especially corridors like Richmond Avenue, Westheimer Road, and Harwin Drive.

While many of the identified problems and needs complemented each other, some identified needs are at odds with other needs, such as the desire for wider roads, but also more sidewalks and hike and bike trails. The resources for providing these facilities may ultimately compete with each other and, due to other constraints like right of way, trade-offs will be required. The development of clear goals that define the intended outcome and support the District's vision will help clarify where these trade-offs must occur and how to identify appropriate solutions.

FIGURE 2.2 | PUBLIC AND STEERING COMMITTEE INPUT

Public Survey

"What transporation and land use topics would you like Westchase District to explore?"



DEFINING GOALS

Goals were developed using knowledge from existing conditions paired with public and stakeholder outreach, then refined by the steering committee. Five goals were created to direct the development of recommendations and projects, as well as to help align the purpose of the projects into easily understandable areas (Figure 2.3).

While each of these goals are separate, together they create a holistic approach to improving mobility and implementing projects within Westchase District. Consensus around these goals will help the District clearly communicate what it is trying to achieve and how they are attempting to meet their needs with the community as well as potential partner organizations and agencies.

Goal 1 provides the foundation for street infrastructure improvements to be made while focusing on the surrounding context and specific mobility needs of an individual corridor while keeping the full network in mind. It sets the stage for meaningful coordination and proactively developing corridors that serve the needs of all users.

Goal 2 focuses on specific improvements to multimodal networks such as walking, biking, and transit within Westchase District. This goal builds on Goal 1 and focuses on infrastructure and service improvements on a more local scale to the District to ensure mobility is improved and maintained to support current and future development and community needs.

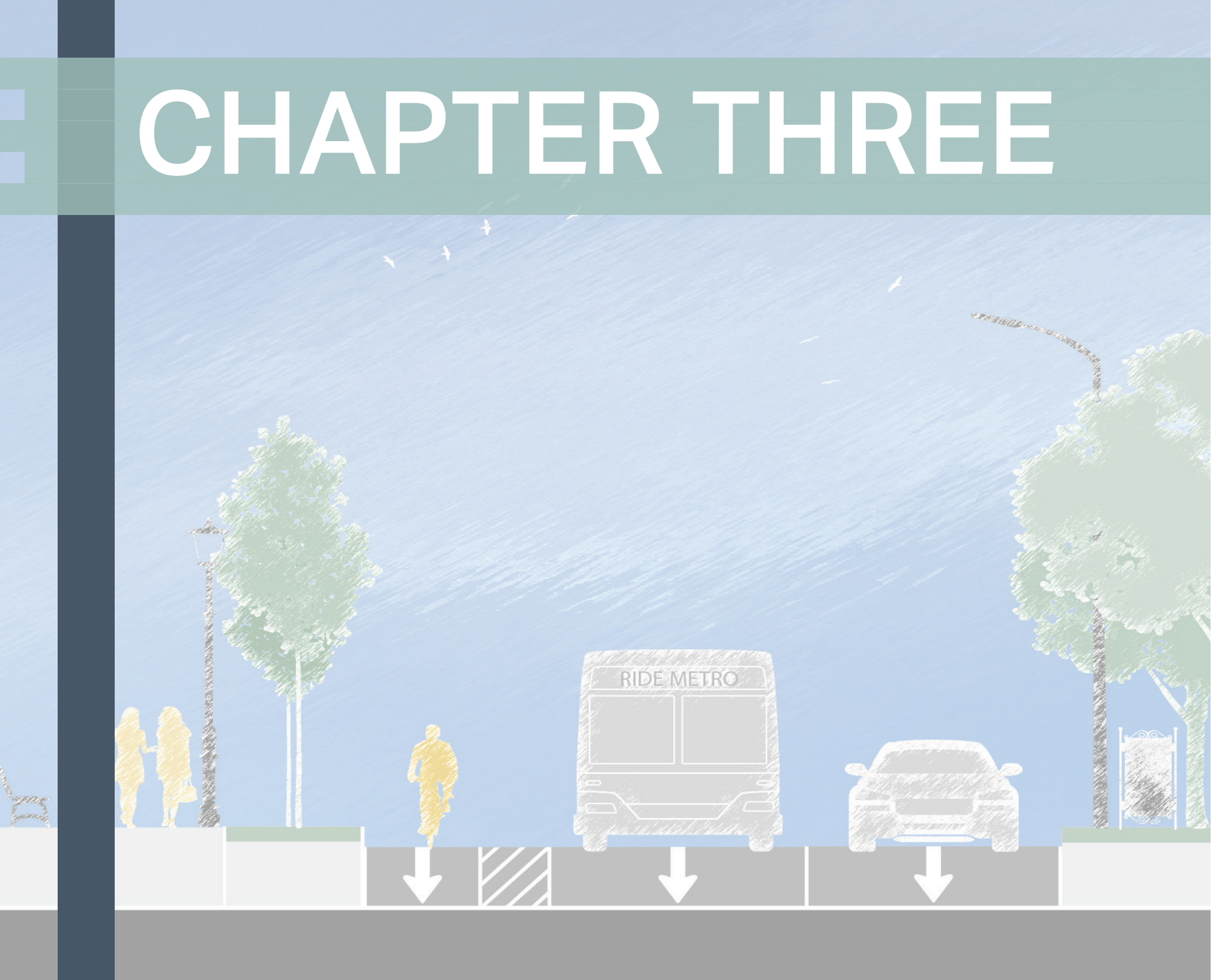
Goal 3 further builds on Goal 1 and Goal 2 by focusing on more fine-grained issues of bottlenecks at intersections and access points to and from the District. Regional connectivity and access will require different strategies, coordination, and partnerships from those needed in Goal 2 in order to bring about improvements and maintain a high level of access in the future as the nature of trips on a more regional scale greatly differ from those on a local scale.

Goal 4 is intended to help focus the context of new and redevelopment projects on best utilizing and reinforcing the District's infrastructure investments and strategies that further encourage high value projects that support a variety of mobility choices. This goal will require significant partnerships and a long-term focus, but could ultimately have a transformative effect for the District.

Goal 5 is intended to promote and emphasize the need for continuous efforts to coordinate with all applicable entities to ensure that funding is best leveraged and infrastructure projects and development incorporate elements that are desired by Westchase District and continue to promote and reinforce the District's vision.

FIGURE 2.3 | DEVELOPED GOALS

CHAPTER THREE



HOW TO GET THERE

DEVELOPING RECOMMENDATIONS

Achieving the mobility goals for the Westchase District outlined in Chapter 2 will take a comprehensive effort that incorporates all modes over a period of time. Some projects will be able to be completed quickly and others will take more time, but ultimately the recommendations presented here provide a comprehensive platform for the District to build on and capture the current and future opportunities for improving mobility, access, and overall value for residents and businesses. Sustaining progress will require focus in multiple reinforcing areas and will involve many stakeholders and partners working with the District to implement the plan.

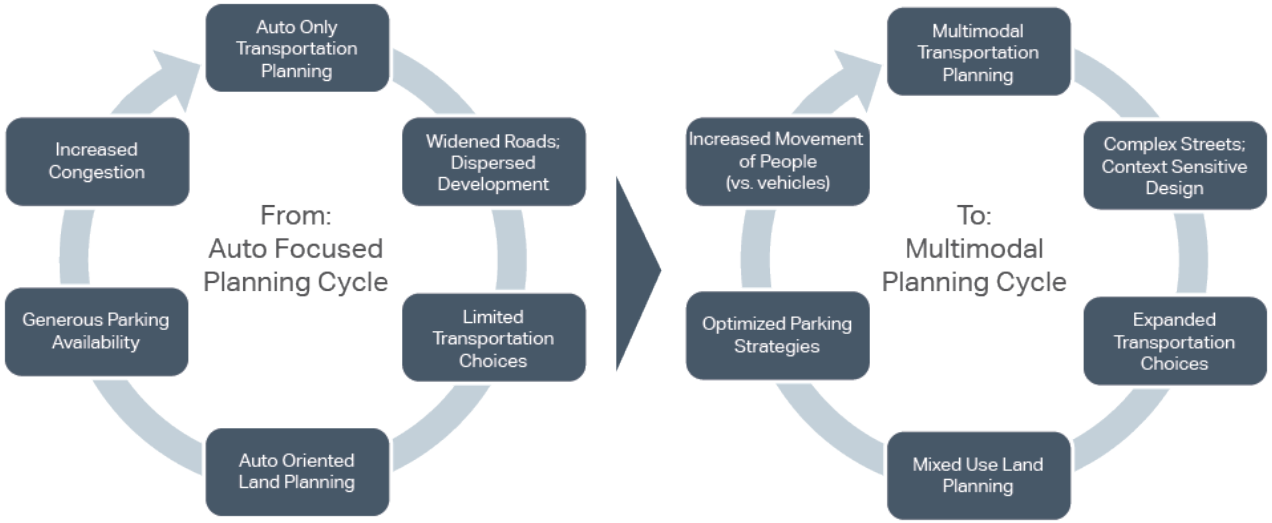
As the recommendations are aimed at developing a multimodal transportation network that supports context sensitive infrastructure and more mixed-use, pedestrian friendly development, it will be key for Westchase District to support and encourage efforts to redefine the transportation and development planning cycle from auto oriented to multimodal. As shown in Figure 3.1, planning the design of the transportation network can have a significant impact on the surrounding development and longer-term infrastructure investments. It has been shown through best practices across the country that when places are designed for vehicles, you get more vehicles, when places are designed for people, you get more people.

Development of the recommendations aimed to help the District transition towards a multimodal planning cycle. A multimodal cycle appropriately accounts for existing and future surrounding land uses, the type and purpose of each corridor, and the needs of the community. The recommendations presented are designed to provide improved access and mobility for all modes. Essentially, easy access for people biking and walking also bolsters transit usage, which in turn allows more space on roadways for vehicles as well as safer conditions for everyone.

The goals and recommendations summary, presented on the following page, shows the breadth of the recommendations and their distribution throughout Westchase District. Each of these recommendations are interlaced into a broad network of improved access and mode choices for residents, workers, and visitors.

The following pages present each recommendation in greater detail along with identification of the main goal the recommendation is intended to help achieve, potential partners, external funding opportunities, other related recommendations, and key implementation strategies.

FIGURE 3.1 | AUTO FOCUS TO MULTIMODAL FOCUS



GOALS & RECOMMENDATIONS SUMMARY

1 Promote great street designs that provide safe, efficient, and accessible transportation choices for all.

1. Plan and Promote Great Streets
2. Targeted Street Reconstruction
3. Expand Major Thoroughfare Plan Network

2 Increase the District's multimodal choices.

4. Increase Trail & Bikeway Network
5. Connected Sidewalk Network
6A. Enhance Existing Transit Service
6B. Extend Transit Routes & Add Service
6C. Develop a High Capacity Transit Network
6D. Introduce a Bike Share Network

3 Improve regional connectivity and address critical bottlenecks to and from the District.

7A. Support Expanded Commuter Transit
7B. Support Improved Tollway Access & Operations
8. Minimize Impacts of Bottlenecks

4 Encourage walkable (re)development that supports the District's vision of being West Houston's Downtown.

9. Create Character & Development Guidelines
10. Develop Walkable Street Grid
11. Encourage Transit & Trail Oriented Development

5 Coordinate planning efforts between agencies to fund and implement prioritized projects.

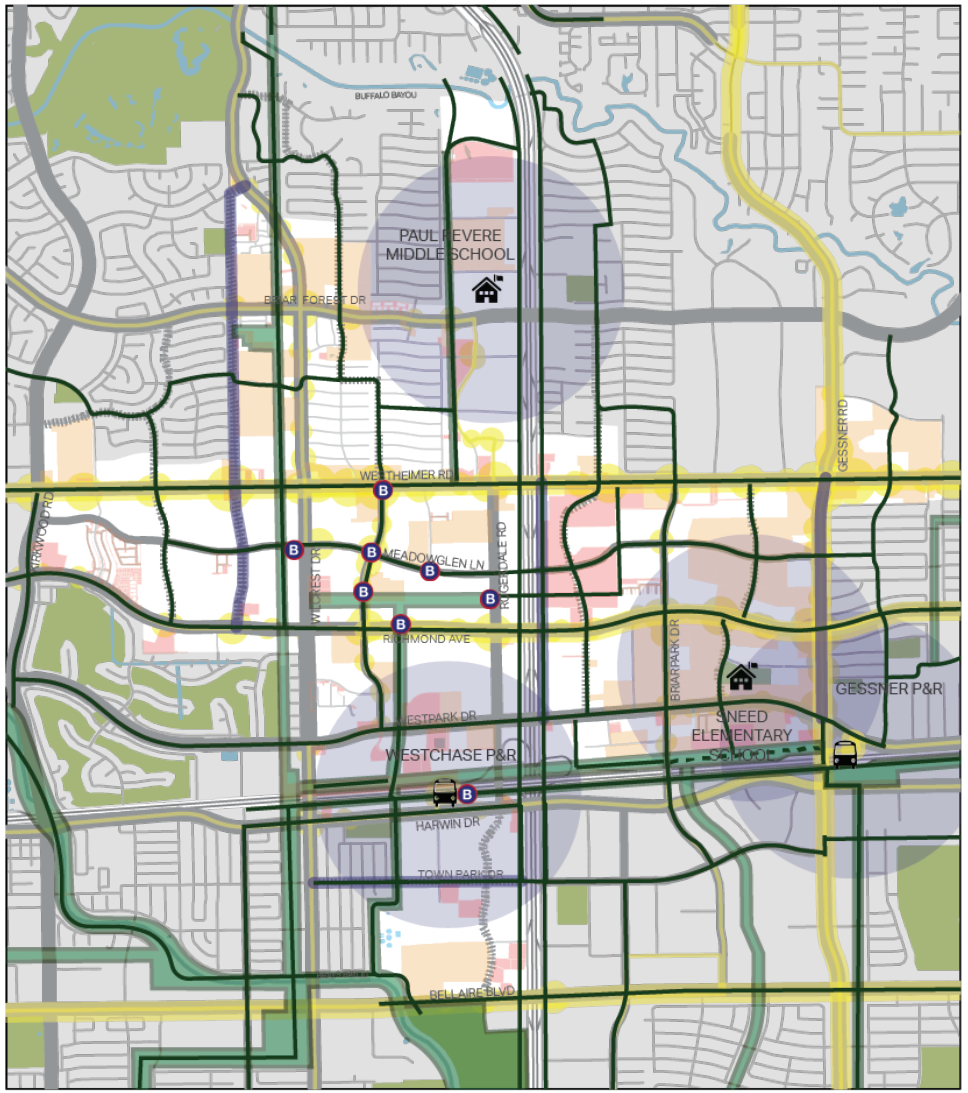


FIGURE 3.2 | RECOMMENDATION SUMMARY MAP

01 PLAN AND PROMOTE GREAT STREETS

Promote the design of great streets that match existing and future development context and provide options for all users.

PROMOTE GREAT STREETS

PARTNERS

- City of Houston
- Developers

OVERLAPPING RECOMMENDATIONS

02 04 05 09

Streets historically have been designed predominantly for vehicle usage and direct access from one place to another. Rethinking the purpose of streets and public rights-of-way as significant public assets that contribute to and influence the health, economy, and overall livability of a community can result in the design of streets that create places tailored to the surrounding land uses and encourage future development to further enhance the public realm and provide true mobility options for all modes and people of all abilities.

Following a context sensitive approach to these great public assets requires balancing safety, mobility, community, and environment goals while involving the public, private partners, and other public agencies early and continuously. Incorporation of urban design practices is also an integral part in creating great streets as it can significantly alter the feel of the street and encourage more people to use other modes of travel to reach their destinations.

As there are a number of recent studies that address the needs and opportunities for multiple modes within the District, it is essential to incorporate them together when thinking about the ultimate design for roadway corridors, rights-of-way, and development/ redevelopment. These plans include:

- City of Houston Major Thoroughfare and Freeway Plan (MTFP)
- Houston Bike Plan
- Westchase Pedestrian/Bicycle Plan
- Transit Plan
- Parking Plan
- Pedestrian Plan

A key step in incorporating multiple plans and recommendations is to establish a vision and modal priority for individual corridors. Each corridor must serve the needs of the adjacent properties and accommodate the demands of the greater street network, while providing a safe means of travel for all modes. Each mode of travel (auto, transit, bicycle and pedestrian) has unique considerations that must be appropriately included. However, due to constrained right-of-way and limited resources, it is typically not feasible to provide every user and mode with their ideal outcome and trade-offs must be made.

KEY IMPLEMENTATION STRATEGIES

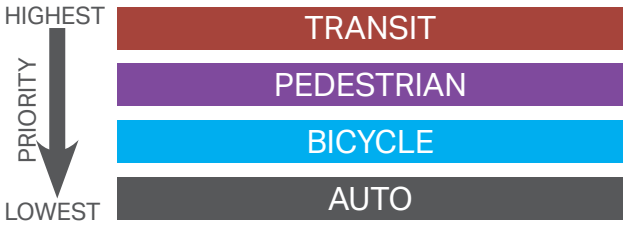
1. **Set an example by utilizing the COH Complete Street and Transportation Plan Framework (Draft).**
2. **Plan for future and existing context, land use and area type along each corridor.**
3. **Optimize trade-offs between transportation modes by prioritizing Westchase Districts mobility goals.**
4. **Incorporate policies and projects outlined in other District, City and regional planning efforts.**

On some streets, it may make sense to prioritize space for a bicycle lane, while on other streets providing an alternative bicycle route may be required in order to meet vehicle demand. To help inform decisions like these on a regional level, a mode priority was defined for each of the corridors and is shown in Table 3.1. Mode priority is based on the existing conditions and future vision for the corridor along with what role the corridor plays in the District's mobility network. Full details regarding mode priority can be found in Appendix A.

Based on the context and mode priority, proposed street cross sections were also developed for each street.

MODE PRIORITY

Example street mode priority



CORRIDOR	MTFP	METRO ROUTES	WD PED/BIKE PLAN[1]	AREA TYPE	LAND USE TYPE	MODE PRIORITY			
						HIGHER			LOWER
BELLAIRE BOULEVARD	P-6-120	2	Bike Lane	Urban Center	Commercial	TRANSIT	BIKE	PED	AUTO
BELTWAY 8	Tollway	-	Off-street	General Urban	Commercial	AUTO	PED	BIKE	
BRIAR FOREST DRIVE	T-4-100	153	Bike Lane	General Urban	Residential	BIKE	PED	AUTO	TRANSIT
BRIARPARK DRIVE	MJ-4-80	153	Bike Lane	Urban Center	Commercial	BIKE	PED	AUTO	TRANSIT
CITYWEST BOULEVARD	Local	153	-	Urban Center	Commercial	PED	TRANSIT	AUTO	BIKE
ELMSIDE DRIVE	Local	-	On/Off Street Bike Lane	Urban Center	Residential	BIKE	PED	AUTO	
GESSNER ROAD	P-6-110	46	-	Urban Center	Mixed-use	TRANSIT	PED	AUTO	BIKE
HARWIN DRIVE	T-4-80	151	Bike Lane	Urban Center	Commercial	PED	BIKE	TRANSIT	AUTO
HAYES ROAD	Local	-	-	Urban Center	Mixed-use	PED	BIKE	AUTO	
KIRKWOOD ROAD	T-4-100	-	Bike Lane	General Urban	Mixed-use	BIKE	PED	AUTO	
MEADOWGLEN LANE	MJ-2-60	25	On/Off Street Bike Lane	Urban Center	Residential	BIKE	PED	AUTO	TRANSIT
RICHMOND AVENUE	T-4/6-100	25	Bike Lane	Urban Center	Commercial	TRANSIT	BIKE	PED	AUTO
ROGERDALE RD (N OF RICHMOND)	MJ-4-70/80	153	Shared-use path[2]	Urban Center	Commercial	PED	BIKE	AUTO	
ROGERDALE RD (S OF RICHMOND)	MJ-4-70/80	-	-	Urban Center	Commercial	AUTO	PED	BIKE	
SEAGLER RD/WESTCENTER DR	Local	-	Bike Lane	Urban Center	Vacant	PED	BIKE	AUTO	
TANGLEWILDE STREET	Local	-	Shared on-street[3]	Urban Center	Mixed-use	BIKE	PED	AUTO	
TOWN PARK DRIVE	Local	-	Bike Lane	Urban Center	Commercial	BIKE	PED	AUTO	
WALNUT BEND LANE	MJ-2-60	25 | 161	On/Off Street Bike Lane	Urban Center	Residential	PED	BIKE	TRANSIT	AUTO
WESTHEIMER ROAD	P-8-120/150	25 | 82	Off-street	Urban Center	Commercial	TRANSIT	PED	AUTO	BIKE
WESTPARK DRIVE	T-4-100	161	Bike Lane	Urban Center	Commercial	BIKE	PED	AUTO	
WILCREST DRIVE	T-6-90/100	25 | 161	-	Urban Center	Mixed-use	AUTO	PED	TRANSIT	BIKE
WOODCHASE DRIVE	Local	-	Off-street	General Urban	Residential	BIKE	PED	AUTO	

Notes:
[1]Classifcations from the Westchase Pedestrian/Bicycle Long Term Vision. The bike lane classification is considered to be any dedicated bicycle facility within the ROW.
[2] This plan recommended the bicycle classification on Rogerdale Road north of Richmond be converted to a bike lane for the entire segment from Richmond Avenue to Westheimer Road.
[3] Due to adjacent land uses and observed vehicular volumes, a bicycle lane is recommended for Tanlgewilde Street between Westheimer Road and Ella Lee Lane

TABLE 3.1 | MODE PRIORITY FOR WESTCHASE DISTRICT CORRIDORS

02 TARGETED STREET RECONSTRUCTION

Prioritize roadway corridors for reconstruction that will continue to support the mobility and development goals of Westchase District.

PROMOTE GREAT STREETS

PARTNERS

- City of Houston
- H-GAC

FUNDING

- City of Houston CIP
- Grants (e.g. STBG)*

OVERLAPPING RECOMMENDATIONS

01

One of the key roles Westchase District can provide is continued leadership on street reconstruction to support mobility and development goals. This is evidenced by recent projects to improve Walnut Bend Lane, Meadowglen Lane and Westheimer Road. Certain corridors in the District play a more prominent role in mobility and offer unique opportunities to redefine and enhance access and connectivity within the District. Working with its partners, including the City of Houston, H-GAC and others, Westchase District should continue to prioritize key roadway corridors for reconstruction to align with their CIP, plans, and projects. These recommended key corridors are identified below and shown on the following map (Figure 3.3).

- Briar Forest Drive
- Richmond Avenue
- Westpark Drive
- Harwin Drive
- Briarpark Drive

The following pages show the proposed typical cross-section for each corridor along with a brief description of the recommendation and proposed mode priority. Full details of each of these corridors, and other key corridors highlighted in Recommendation 1, are provided in Appendix A. Cost estimates for the reconstruction of these corridors is included at the end of this chapter.

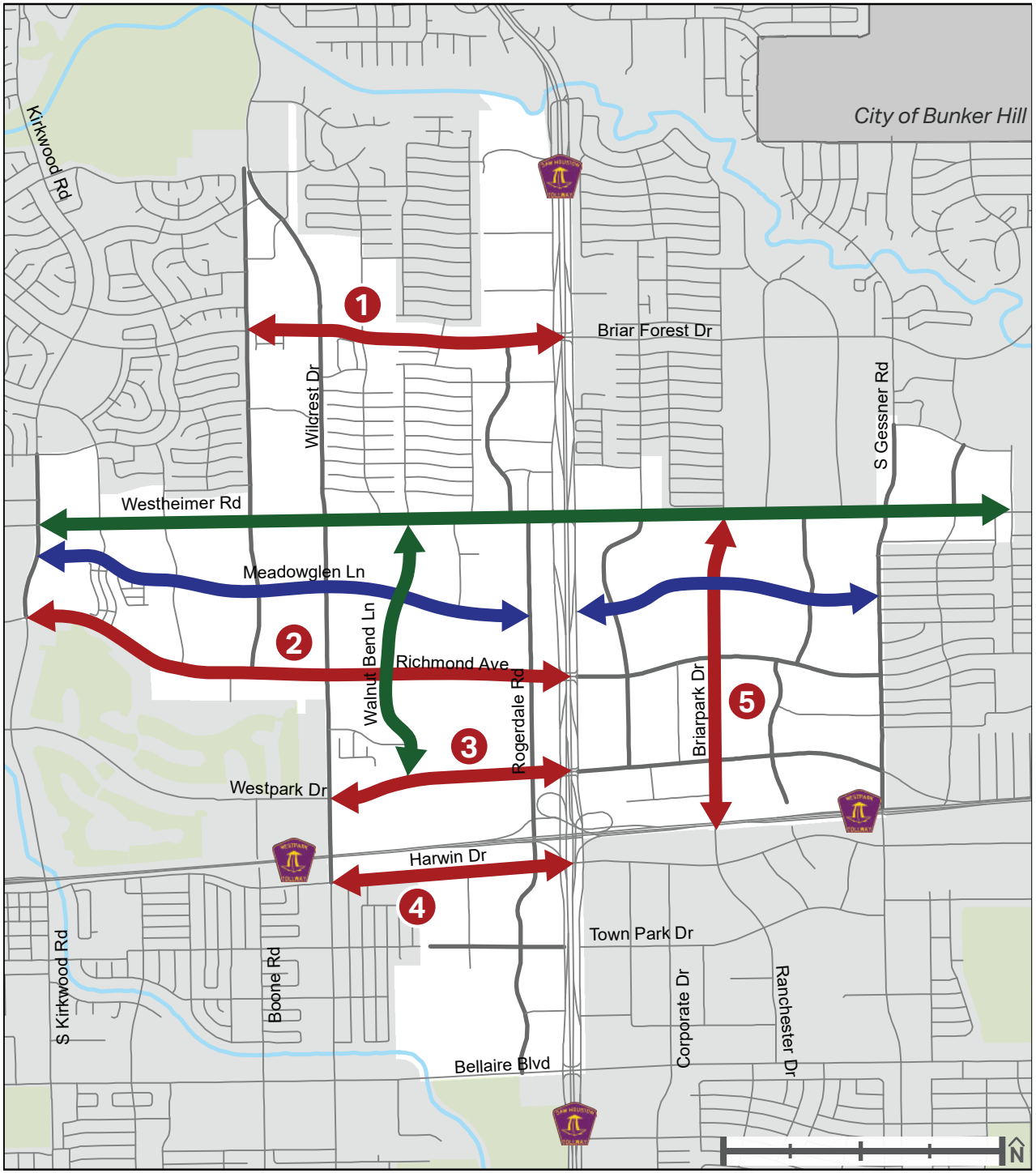
Example of a corridor that accommodates autos, bikes, and pedestrians with high-comfort design

Example design of Walnut Bend Lane from the City of Houston Preliminary Engineering Report

*See page 121 for grant description

KEY IMPLEMENTATION STRATEGIES

1. **Advocate for pre-engineering of corridors.**
2. **Begin coordination early and work with stakeholders to develop support.**
3. **Pursue grant funding and identify a post-380 Agreement funding strategy.**



KEY STREET RECONSTRUCTION

LEGEND

- Key roadway corridor to consider for reconstruction
- Corridor improvements currently in design
- Preliminary design has been developed
- Key corridors highlighted in Recommendation 1

FIGURE 3.3 | TARGETED STREET RECONSTRUCTION

BRIAR FOREST DRIVE

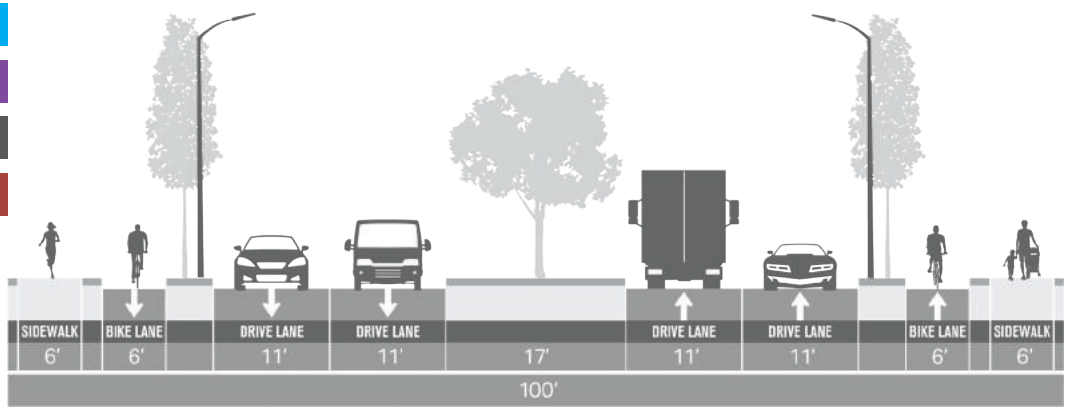
To align with the context of the corridor, the two priority modes for enhancing Briar Forest Drive are bicycle and pedestrian. Improving the existing bicycle and pedestrian facilities along Briar Forest Drive can create a great street for short trips, and allow the four travel lanes to serve longer vehicular trips. It is also a far reaching east-west connection that will serve as an important segment of the regional bike network.

BICYCLE

PEDESTRIAN

AUTO

TRANSIT



RICHMOND AVENUE

The METRO 25 Richmond bus provides frequent service along the corridor. At the Walnut Bend Lane intersection, the route branches with one line continuing along Richmond Avenue and the other providing service north along Walnut Bend Lane. Transit can play a key role in providing access to the activity dense corridor, with signature service enhancements and an expanded pedestrian realm. Wide sidewalks and a back of curb bikeway are recommended. Long term transit recommendations include improving transit access and operation and coordination of converting the outside lane of the 6-lane segment of Richmond Avenue to a bus lane.

Richmond Avenue is a key regional corridor. The MTFP classifies Richmond Avenue east of Rogerdale Drive as a T-6-100. The proposed six-lane cross section would require 120 feet of right-of-way. Therefore a change to the MTFP for this segment of Richmond Avenue to a T-6-120 is recommended. The additional right-of-way required also poses challenges for this corridor due to the additional cost associated.

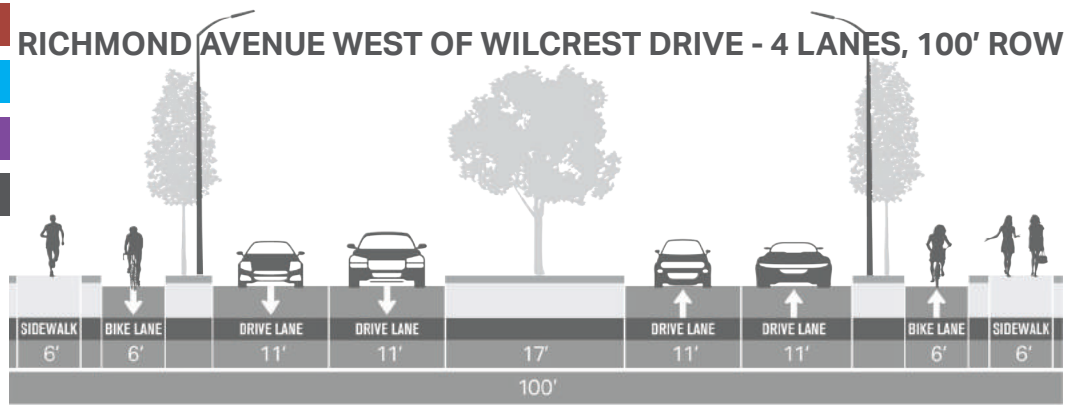
TRANSIT

BICYCLE

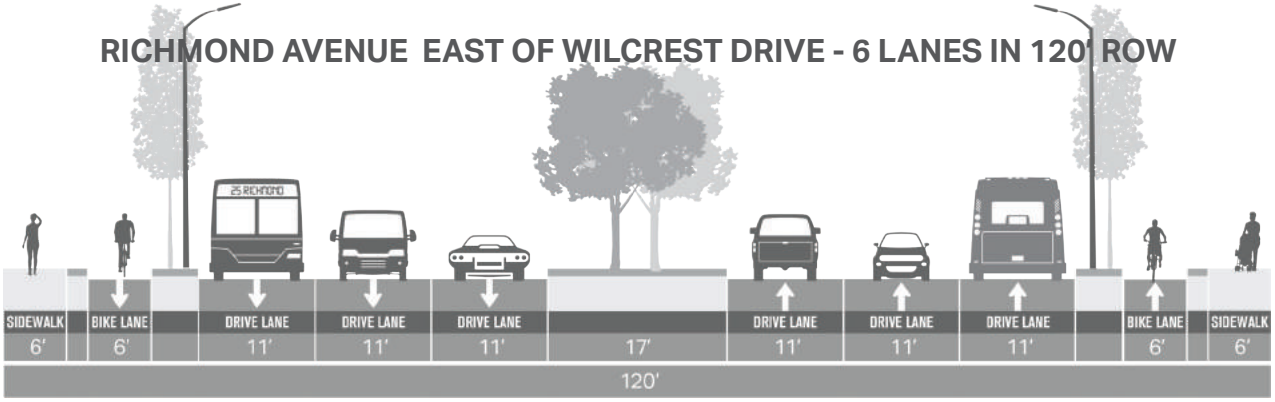
PEDESTRIAN

AUTO

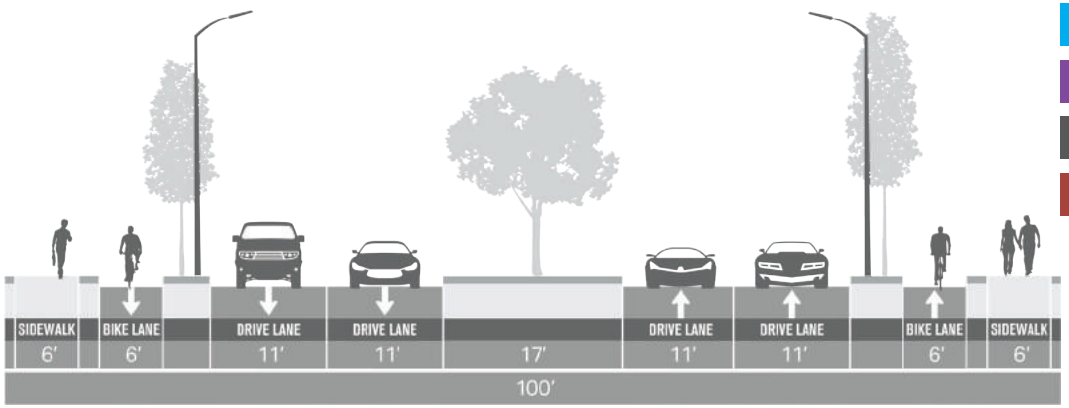
RICHMOND AVENUE WEST OF WILCREST DRIVE - 4 LANES, 100' ROW



RICHMOND AVENUE EAST OF WILCREST DRIVE - 6 LANES IN 120' ROW



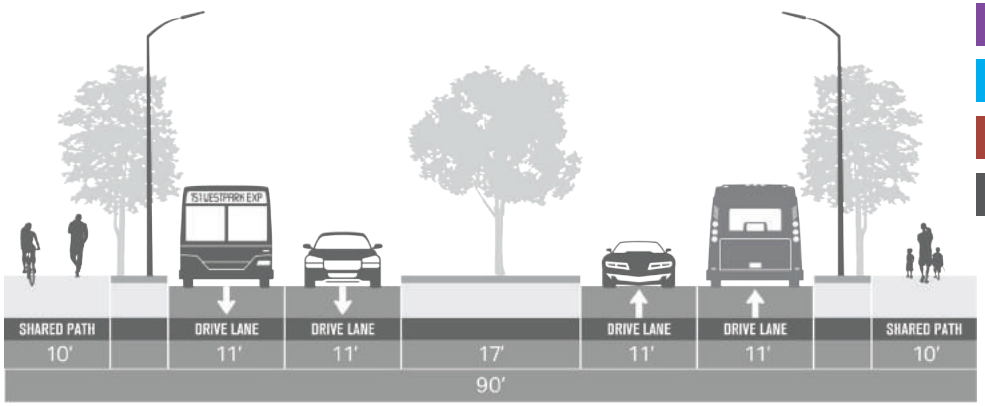
WESTPARK DRIVE



BICYCLE
PEDESTRIAN
AUTO
TRANSIT

To match the MTFP classification for Westpark Drive through the study area from Wilcrest Drive to Gessner Road, a four-lane boulevard with bikeways is recommended. The proposed cross-section will provide quality bicycle and pedestrian facilities that will support potential future develop and align with the mobility goals.

HARWIN DRIVE

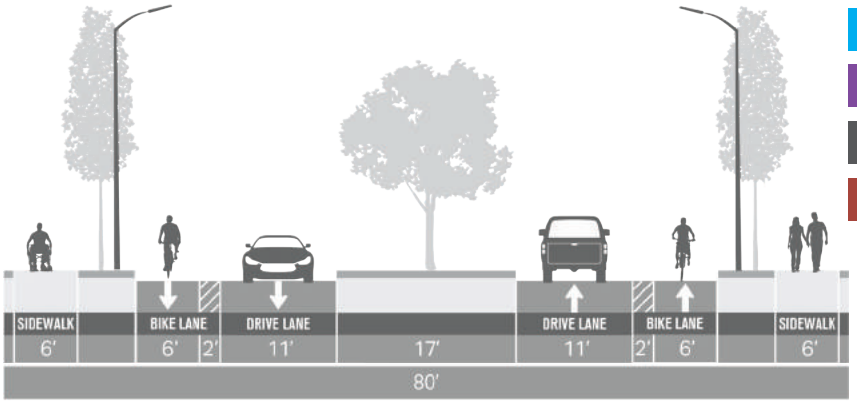


PEDESTRIAN
BICYCLE
TRANSIT
AUTO

To provide access for both pedestrians and bicyclists within the constrained right-of-way, a 10-foot minimum shared path is recommended. The proposed cross-section will required the addition of 10' of right-of-way as well as a change to the existing MTFP classification.

The Harwin Drive bridge over the drainage canal may need to be rebuilt to accommodate the proposed shared-use path. Pedestrians and bicyclists could also be accommodated with separate bridges adjacent to the existing bridge.

BRIARPARK DRIVE



BICYCLE
PEDESTRIAN
AUTO
TRANSIT

The recommended cross-section includes a minimum six-foot sidewalk and an improved pedestrian realm to meet the demand of many employees along Briarpark Drive who walk to (or wish to walk to) Carillion Shopping Center on Westheimer Road. The blocks along Briarpark Drive are long, resulting in excessive walking distances between available pedestrian crossings (up to 0.4 miles). The 17-foot median can allow for pedestrian refuges and midblock crossings to reduce walking distance and improve connectivity.

03 EXPAND MAJOR THOROUGHFARE PLAN NETWORK

Include additional streets in the City of Houston Major Thoroughfare and Freeway Plan to ensure all key roads in the network are maintained.

PROMOTE GREAT STREETS

PARTNERS

- City of Houston

OVERLAPPING RECOMMENDATIONS

01

Collector streets play an important role in the transportation network of the Westchase District. Given the large blocks and development pattern, collector streets provide alternate travel routes and opportunities for more multimodal connectivity. These streets should be included in the City of Houston Major Thoroughfare and Freeway Plan (MTFP) to ensure they are maintain their key role in the network and are eligible for additional opportunities for funding improvements.

The District should coordinate with the City of Houston to incorporate existing Westchase District collector streets into the City of Houston's MTFP as appropriate to develop a more comprehensive hierarchical roadway network. This will allow Westchase District to continue to expand the MTFP within the District and utilize roadways classifications as building blocks to promote great streets.

As the District works with the City to incorporate changes to the MTFP network, funding opportunities should be explored to enhance the expanded collector street network.

The following map highlights six minor collectors and four major collectors that are recommended to be added to the MTFP network.

Recommended minor collector corridors:

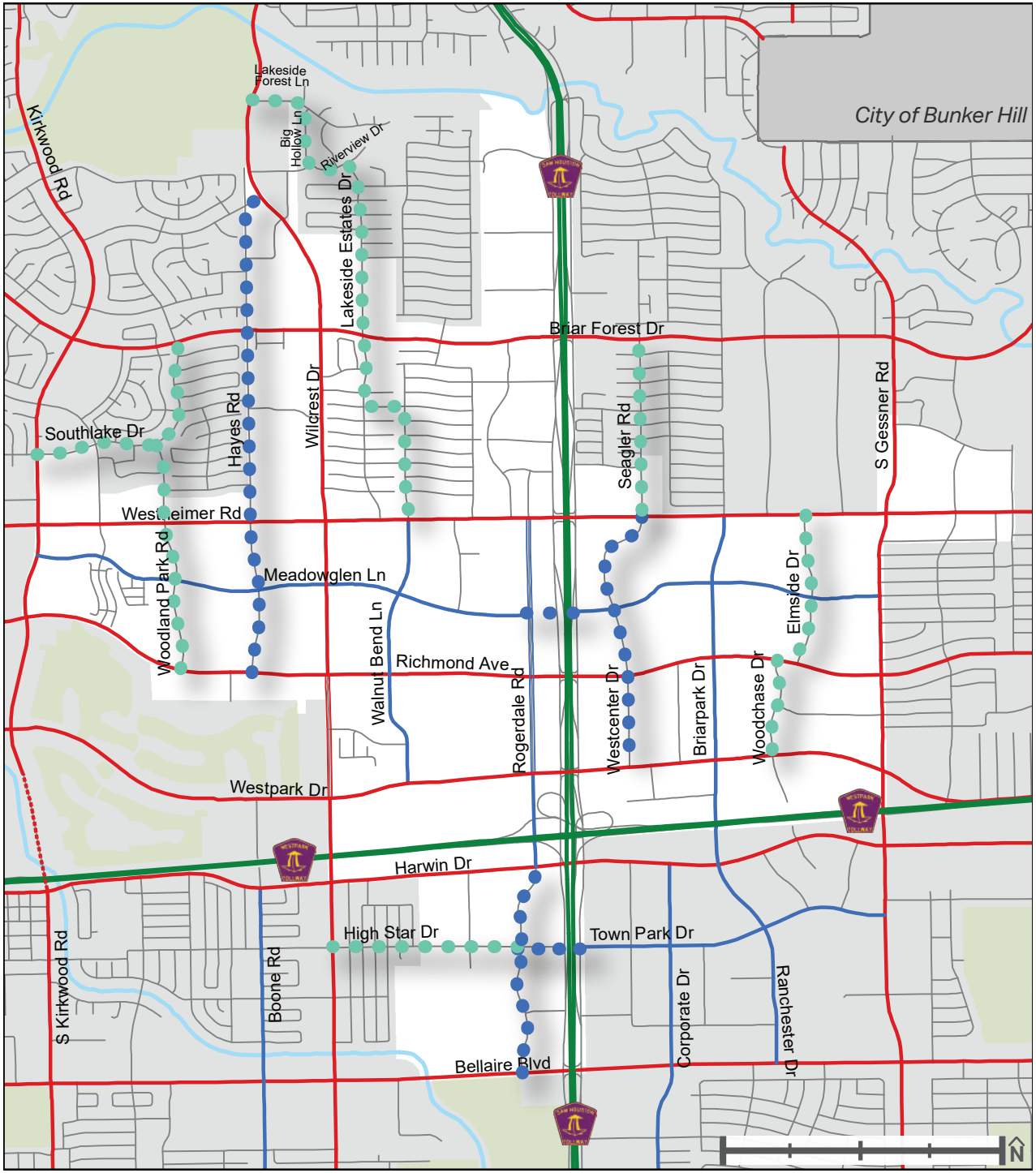
- Lakeside Estates Drive (Lakeside Forest Lane, Big Hollow Lane, Riverview Drive)
- Southlake Drive
- Woodland Park Road
- Seagler Road
- Elmside Drive
- Woodchase Drive

Recommended major collector corridors:

- Hayes Road
- Westcenter Drive
- High Star Drive
- Rogerdale Road (south of Harwin Drive)

KEY IMPLEMENTATION STRATEGIES

1. **Incorporate collector streets into the City of Houston Major Thoroughfare and Freeway Plan.**
2. **Use roadway classification as a building block to promote great streets.**
3. **Explore funding opportunities to enhance and expand the collector street network.**



RECOMMENDED MTFP NETWORK

EXISTING MTFP
- Freeway
- Major Thoroughfare
- To-be-widened (ROW) Major Thoroughfare
- Proposed Major Thoroughfare
- Major Collector
- Minor Collector

RECOMMENDED
- Major Collector
- Minor Collector

RECOMMENDED MTFP CLASSIFICATIONS

Roadway	*Proposed Classification*
Big Hollow Lane	MN-2-60
Elmside Drive	MN-2-65
Hayes Road	MJ-2-60
High Star Drive	MJ-2-60
Lakeside Estates Drive	MN-2-60
Lakeside Forest Lane	MN-2-60
Meadowglen Lane	MJ-260
Riverview Drive	MN-2-60
Rogerdale Road	MJ-4-100
Seagler Road - South of Westheimer Road	MN-2-65
Seagler Road - North of Westheimer Road	MJ -2-65
Southlake Drive	MN-2-60
Town Park Drive	MJ-2-105/65
Town Park Drive	MN-2-105/65
Westcenter Drive	MJ -2-65
Woodchase Drive	MN-2-60
Woodland Park Road	MN-2-60

FIGURE 3.4 | CORRIDOR UPDATES TO MTFP

04 CONTINUE TO DEVELOP A HIGH QUALITY BICYCLE NETWORK

Build a safe and comfortable bicycle network that welcomes all types of riders and connects to homes, jobs, schools, parks and other destinations.

INCREASE MULTIMODAL CHOICES

PARTNERS

- City of Houston
- Bike Houston
- Businesses
- Harris County Flood Control District

FUNDING

- City of Houston
- Grants (e.g. TAP, CMAQ)*
- Developers

OVERLAPPING RECOMMENDATIONS

01 05 06D

Westchase District recently made great improvements to the bicycle network. While there are limited bicycle facilities in the District, efforts to build a more comprehensive network are ongoing. The recently complete Library Loop Trail, along with other planned off-street facilities within utility corridors and planned roadway improvements along Meadowglen Lane and Walnut Bend Lane are adding bicycle infrastructure in a core portion of the District. Completing a bicycle network throughout Westchase District will provide a healthy, equitable transportation choice.

Amenities that provide added support and encouragement for bicycling will also be important to encourage riding and leverage infrastructure investments. Bike parking is critical to encouraging biking and consists of short term racks or bike corrals, or longer-term secured bike parking with lockers or bike cages.

The City of Houston and METRO are developing programs to support increasing the number of bike racks in the City and at transit facilities. The District can complement these efforts with encouragement and incentives for bike parking at businesses and in public spaces. Development of maps that show the facilities, their linkages to places of interest and transit, and bike parking can also be a great tool that encourages biking.

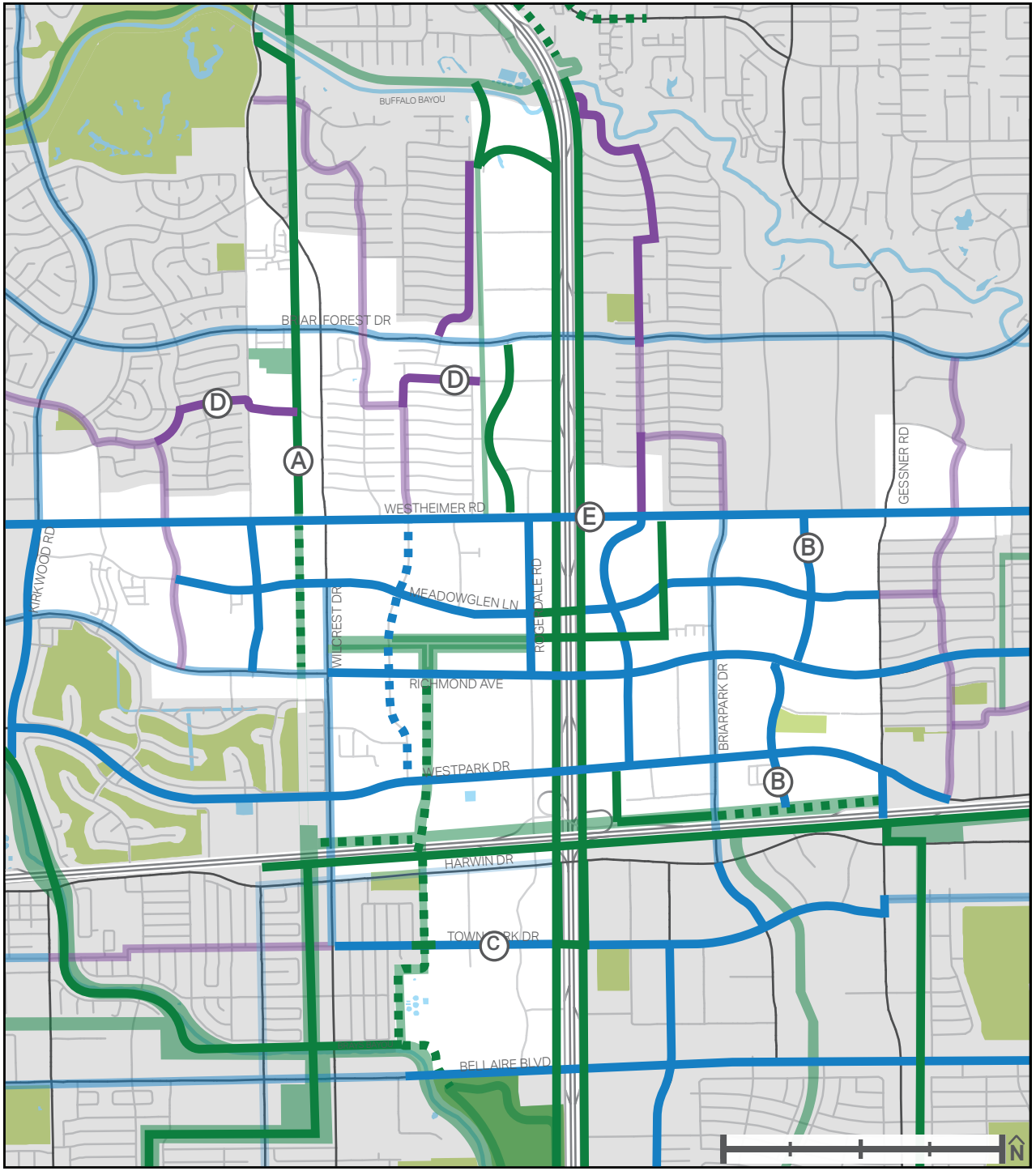
Working with private businesses and developers to encourage promotion of bicycling and inclusion of amenities for employees and residents can have a significant impact and build further support for bicycling. For example, installation of showers can be a powerful tool and particularly useful to employees. The District should also encourage companies to apply for designation as "Bicycle-Friendly Business," which can add value for the companies themselves and help attract and retain employees.

Example of a comfortable bike lane separated from traffic by vehicle parking

*See page 121 for grant description

KEY IMPLEMENTATION STRATEGIES

1. Connect bicycles to jobs, school, recreation and other destinations including the regional network.
2. Develop paper and online interactive maps that communicate how to easily use the bike network.
3. Construct high comfort facilities to encourage riders of all abilities to bicycle.
4. Encourage incorporation of bicycle amenities and promote "Bicycle-Friendly Business" designation.



BIKE AND TRAIL CONNECTIVITY

The recommended bicycle network (Figure 3.5) takes into consideration the Draft City of Houston Bike Plan and the Westchase District Ped/Bike Study. Evaluation of the District resulted in identification of additional connections as well.

There are three categories of recommended bicycle facilities: multi-use path, bike lane, and bike route. Multi-use paths are off-street facilities and are shared between people biking and walking. Bike lanes are on-street facilities that have a dedicated space for people biking and can be marked with a painted line, include a striped buffer, or a physical buffer such as a raised curb. Bike routes are on-street facilities that are shared between people biking and driving.

Five key projects are highlighted on Figure 3.8. Cost estimates for these five projects are included at the end the chapter.

Key Projects:

- Ⓐ Utility Corridor parallel to Hayes Road
- Ⓑ Elmside Drive/Woodchase Drive
- Ⓒ Town Park Drive
- Ⓓ Olympia Drive
- Ⓔ Beltway 8 (north-bound between Westpark Drive and Westheimer Road)

LEGEND

Multi-Use Path: *existing* | *recommended* | *programmed*

Bike Lane: *existing* | *recommended* | *programmed*

Bike Route: *existing* | *recommended* | *programmed*

Potential Greenway

FIGURE 3.5 | RECOMMENDED BICYCLE NETWORK

05 IMPROVE THE PEDESTRIAN REALM TO ENCOURAGE WALKING

Complete a comprehensive sidewalk network that provides access for users of all abilities and encourages short trips to be taken by foot.

INCREASE MULTIMODAL CHOICES

PARTNERS

- City of Houston
- METRO
- Property Owners

FUNDING

- City of Houston
- METRO
- Grants (e.g. CMAQ, CDBG)*

OVERLAPPING RECOMMENDATIONS

01 04 10

Better sidewalk infrastructure in Westchase District will improve safety, comfort, and accessibility for pedestrians of all abilities. It will also facilitate other desired outcomes that support the mobility goals. Improved walkability will lead to increased transit use, more short trips being made by foot, and more walkable development.

Today, the sidewalk network in the District is mostly complete, however there are some missing segments and sidewalks that are not built to current standards. All sidewalks should be at least five feet wide, with six feet wide or wider, recommended along major thoroughfares and busier streets. Additionally, ADA compliant curb ramps should be provided at all intersections.

Sidewalk infrastructure should be prioritized along corridors likely to see the most use and connect to popular destinations. Thoroughfares, collectors, and other streets with transit routes are all corridors worthy of extra attention, in addition to areas surrounding schools and transit centers. Figure 3.6 identifies these priority corridors and the 1/2 mile area around schools and transit centers.

The existing street network and intersection treatments in Westchase District often provide other challenges for pedestrians. The widely spaced street grid creates large distances between pedestrian crossings and funnels the majority of the vehicle traffic onto a limited number of streets that have very large crossing distances for pedestrians. Opportunities for mid-block crossings should be investigated and a finer street grid would also benefit pedestrians.

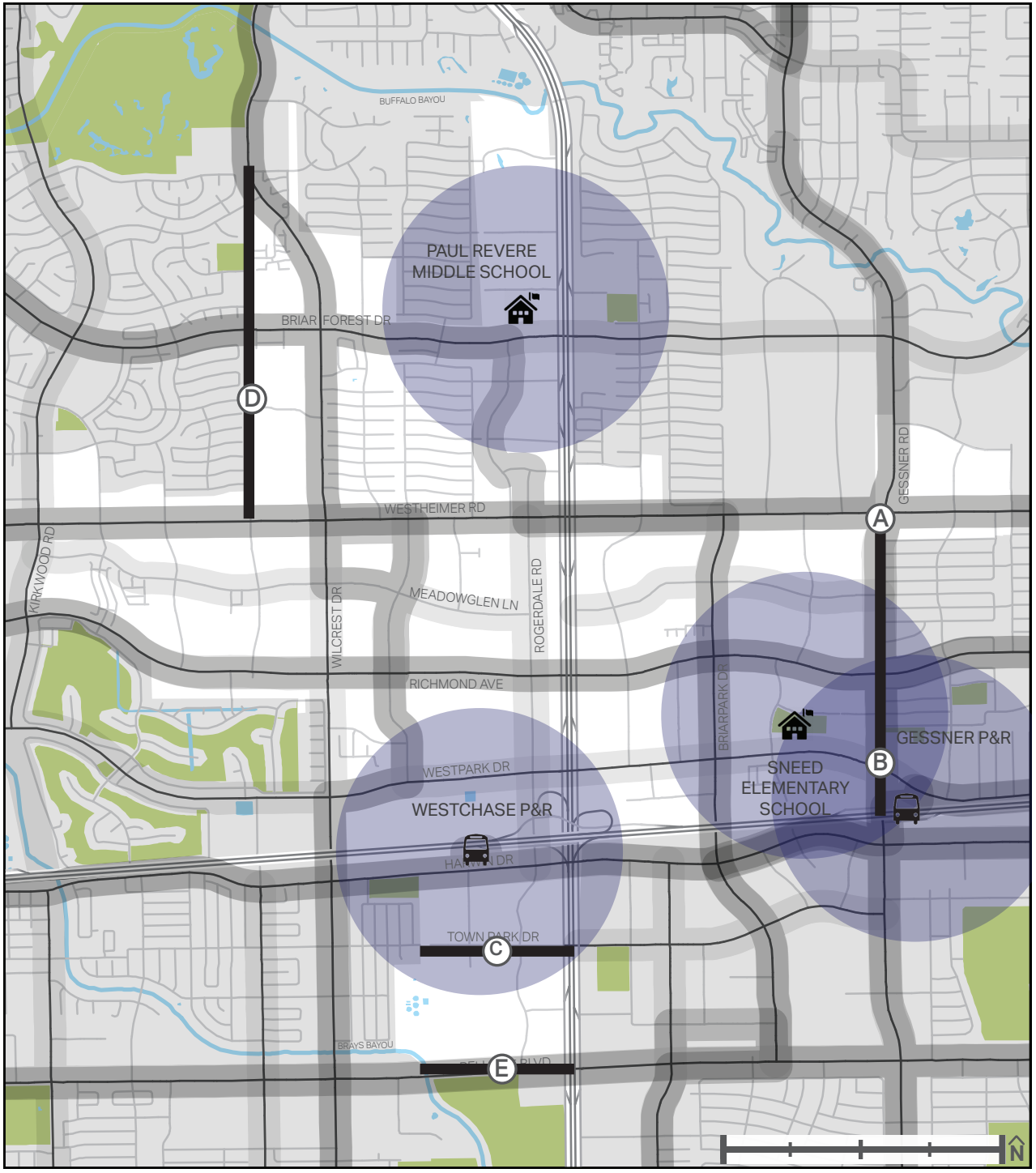
The tollways traverse the District, creating barriers for pedestrians. Not only are the number of crossings limited, but they are also restricted to underpasses and beneath bridges. Where possible, the number, quality and safety of pedestrian crossings should be increased.

A sidewalk assessment was previously conducted within the District as part of the Ped/Bike Study. The District should continue to build upon and update this assessment as sidewalks are constructed. The assessment can also be utilized to identify sidewalk deficiencies given the identification of mode priorities for the major corridors in the District.

*See page 121 for grant description

KEY IMPLEMENTATION STRATEGIES

1. Prioritize sidewalks along transit corridors.
2. Build sidewalks and curb ramps to ADA standards.
3. Complete any missing segments in the sidewalk network.
4. Provide amenities, such as lighting, trees, benches, trash cans and wayfinding.



SIDEWALK PRIORITIZATION

Thoroughfares, collectors, transit routes, schools and transit centers are highlighted to emphasize some of the areas where sidewalk infrastructure improvements should be prioritized. Five key projects are highlighted on Figure 3.6. These five projects were identified as short-term opportunities that can make a large impact on improving walkability within the study area. Cost estimates for the five projects listed below are included at this end of this chapter.

Key Projects:

- Ⓐ Gessner Road and Westheimer Road Intersection
- Ⓑ Gessner Road
- Ⓒ Town Park Drive
- Ⓓ Hayes Road
- Ⓔ Bellaire Boulevard

LEGEND

Transit routes, Thoroughfares, Collectors

Schools and Transit Centers (0.5 mile radius)

FIGURE 3.6 | PRIORITY SIDEWALK CORRIDORS

06A ENHANCE EXISTING TRANSIT SERVICE

Maximize the utility and benefit of existing transit with targeted infrastructure improvements to support more reliable service.

INCREASE MULTIMODAL CHOICES

PARTNERS

- METRO
- City of Houston

FUNDING

- Grants (e.g. FTA, CMAQ)*
- METRO
- City of Houston CIP
- Developers

OVERLAPPING RECOMMENDATIONS

01 11

Westchase District already receives a high level of METRO local bus service, with four "Frequent Network" routes touching the district. On these routes, buses are scheduled to arrive every fifteen minutes or less throughout the day, seven days a week. With short wait times and straight, simple routes along major corridors, these are services that are likely to be useful to a wide array of people for many types of trips as seen by the high levels of ridership on routes like the 82 Westheimer and 46 Gessner.

Opportunities exist, however, to increase the attractiveness of these bus routes through targeted infrastructure enhancements to support more reliable operation and a better customer experience. In some cases, bus stops along the corridors are spaced more closely than would be optimal to allow buses to efficiently traverse the corridor. Stop locations should be evaluated to ensure proper spacing and maximum connectivity to destinations and other routes.

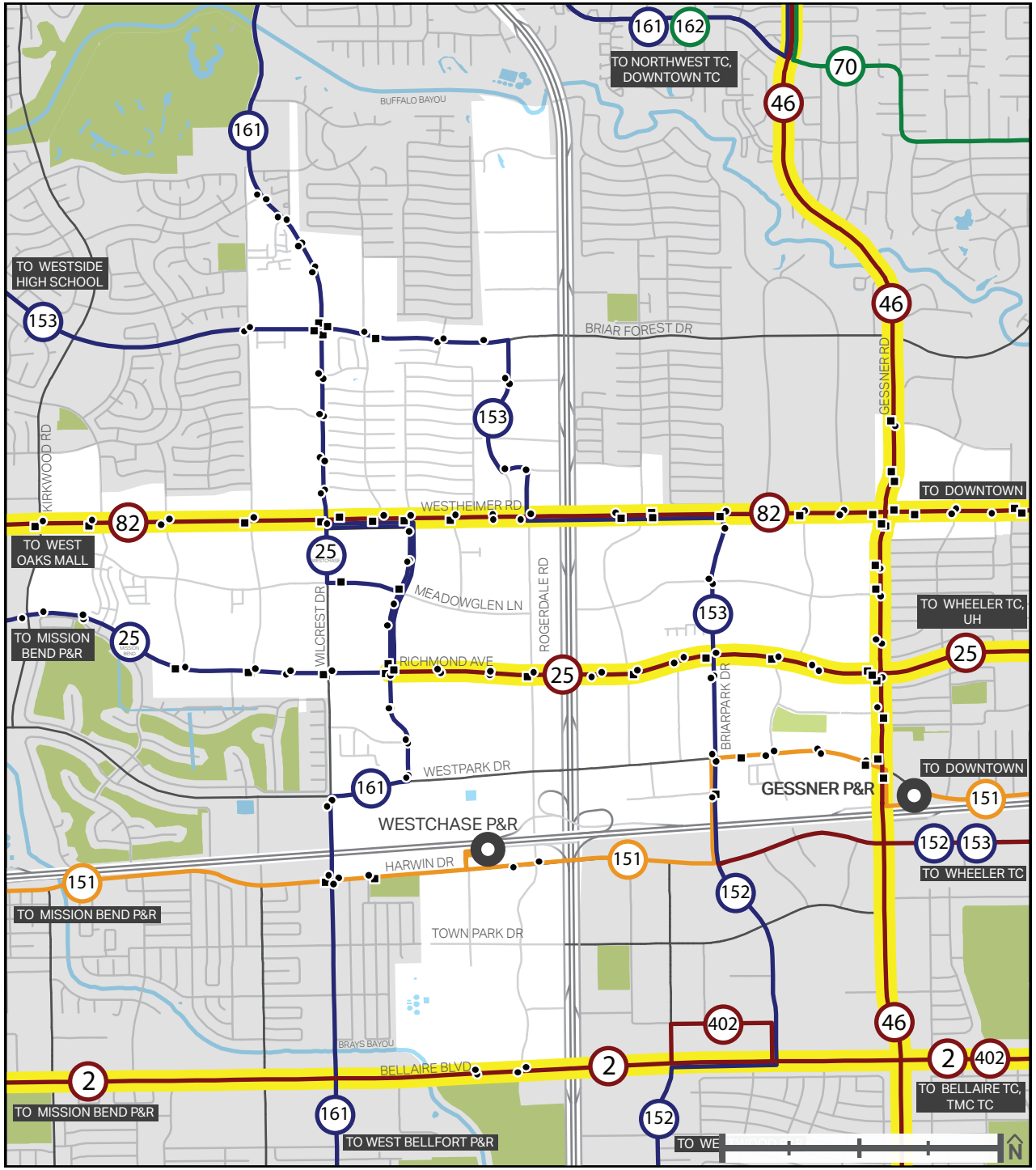
Once optimal stop locations are determined, infrastructure improvements to provide a more comfortable waiting experience and useful information to customers can be pursued. This could include functional and aesthetically pleasing bus shelters that communicate Westchase District's brand, improved sidewalks to provide accessibility, and information about bus service and arrival times. Enhanced bus stops have been shown to increase transit ridership. High-volume and high-visibility locations like transfer points between routes should be prioritized for enhancements.

A pair of projects currently in development along Westheimer can serve as pilots for these strategies. Coordination between METRO's Westheimer Enhanced Bus Service Study and Westchase District's Streetscape Improvement Project should be pursued to demonstrate the potential for relatively low-cost enhancements to existing local bus service.

*See page 121 for grant description

KEY IMPLEMENTATION STRATEGIES

1. Evaluate stop location and spacing along major transit routes.
2. Improve the customer experience by enhancing bus stops with attractive shelters and information.
3. Prioritize infrastructure improvements at transfer points between routes.
4. Coordinate and collaborate with METRO on ongoing Westheimer Enhanced Bus Service Study.



KEY TRANSIT IMPROVEMENTS

Example of a signature bus stop along the 402 Bellaire route

Example of a branded bus stop in Upper Kirby District

LEGEND

- Frequent Bus Route (15 minutes or less)
- Bus Route (20 to 30 minutes)
- Bus Route (peak only)
- Bus Stop with Shelter
- Bus Stop without Shelter
- Frequent Transit Corridors to Be Optimized

FIGURE 3.7 | LOCATIONS TO IMPROVE TRANSIT INFRASTRUCTURE

06B EXTEND TRANSIT ROUTES & ADD SERVICE

Extend routes to improve network connectivity within the District. Add rapid service on Westheimer to reduce travel time to regional centers.

INCREASE MULTIMODAL CHOICES

PARTNERS

- METRO
- City of Houston

FUNDING

- METRO
- Employers/Businesses
- Grants (e.g. 5339, CMAQ)*

OVERLAPPING RECOMMENDATIONS

06A 11

Potential bus route extensions have been identified to improve transit connectivity and access in Westchase District.

An extension of the end-of-line loop on the 25 Richmond Westchase branch to Hayes Road would have minimal cost and would improve transit service to the expanding HCC campus at Hayes and Westheimer.

An extension of the 402 Bellaire Quickline would have more significant cost but would enhance the grid of frequent transit routes in the District. Currently, Gessner is the westernmost north-south route in the Frequent Network. The 402 Bellaire Quickline provides rapid service with widely spaced stops along Bellaire Boulevard from TMC Transit Center. Conceptually, the 402 could continue west along Bellaire Boulevard from its current terminus at Ranchester and turn north along Rogerdale. It could connect to Westchase Park & Ride and provide frequent north-south service through the central portion of Westchase District, linking to other frequent routes along Richmond and Westheimer. The 402 currently operates weekdays only, but strong weekend performance on the local 2 Bellaire may indicate demand for seven-day service.

METRO is currently studying the addition of rapid service along Westheimer, designed to reduce transit travel times between major activity centers. This may be the highest-value transit improvement for Westchase District that can be made in the short to medium term, potentially providing significant travel time improvements to other major activity centers. Westchase District should support and advocate for the advancement of this project.

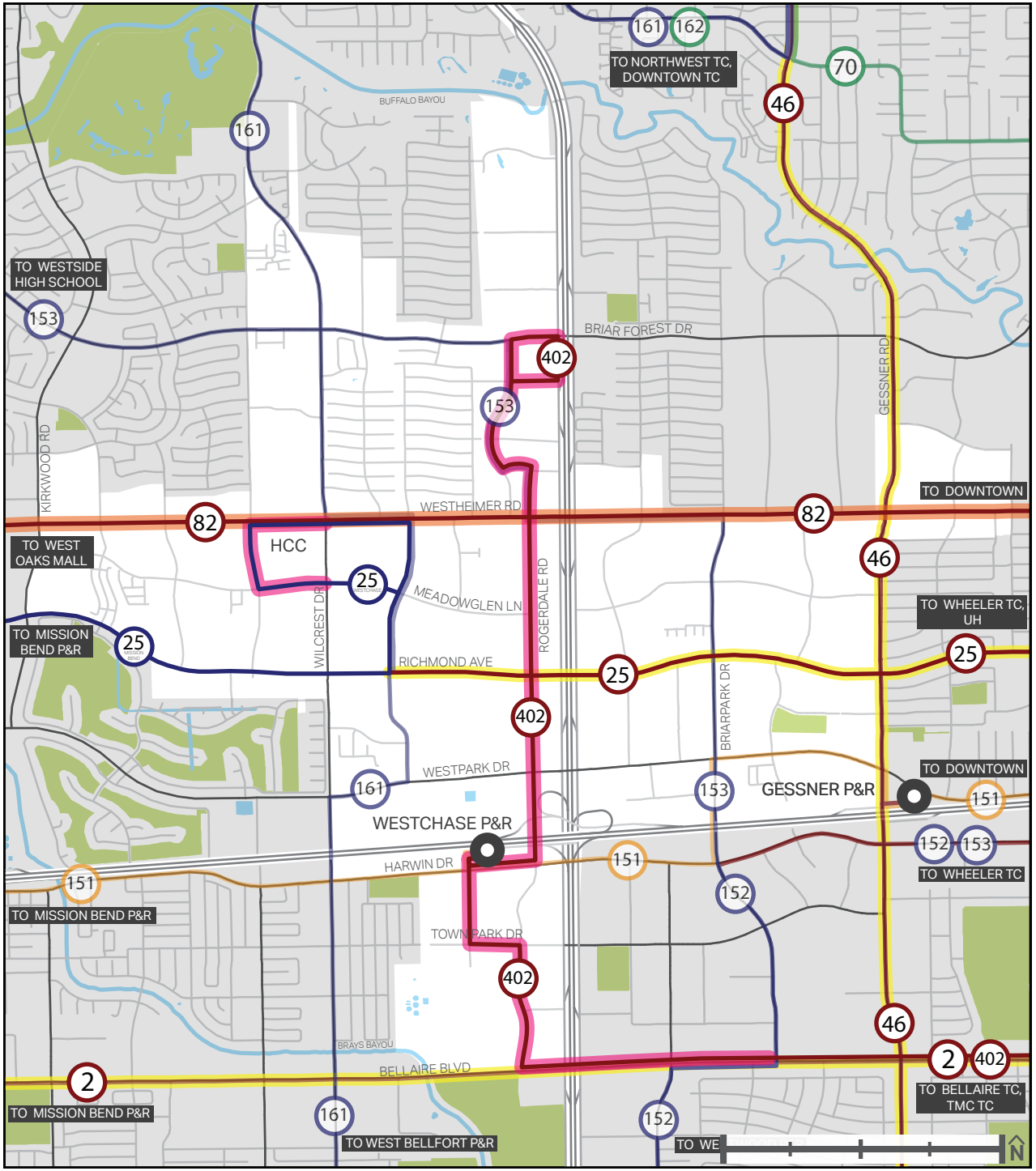
A number of the local bus routes that serve Westchase District operate every 20 to 30 minutes. As ridership grows on routes like the 161 Wilcrest or 153 Harwin, the District can advocate for improved frequency to make the service more attractive to more potential riders.

*See page 121 for grant description

KEY IMPLEMENTATION STRATEGIES

1. **Extend 25 Richmond Westchase Branch and 402 Bellaire Quickline to better serve Westchase District.**
2. **Support rapid transit service on Westheimer Road.**
3. **Advocate for increased frequency on routes that serve Westchase District.**

KEY TRANSIT SERVICE EXPANSION



LEGEND

- Frequent Bus Route (15 minutes or less)
- Bus Route (20 to 30 minutes)
- Bus Route (peak only)
- Proposed Route Extension
- Proposed Westheimer Rapid Service
- Proposed Optimized Corridor (Rec. 06A)

FIGURE 3.8 | RECOMMENDED TRANSIT SERVICE EXPANSION

06C DEVELOP A HIGH CAPACITY TRANSIT NETWORK

Connect Westchase District into the regional rapid transit network with bus rapid transit services providing access to other major activity centers.

INCREASE MULTIMODAL CHOICES

PARTNERS

- METRO
- City of Houston
- H-GAC

FUNDING

- METRO (Potential Bond Referendum)
- Harris County

OVERLAPPING RECOMMENDATIONS

06A 06B 11

The intensity of development coming to Westchase District and West Houston will ultimately make high-capacity transit a necessity. Westheimer Road and the METRO-owned corridor along Westpark Tollway provide the most evident opportunities for transit service that is protected from traffic congestion in an exclusive or semi-exclusive right-of-way.

METRO is currently conducting a study of enhanced bus service and bus rapid transit options for the Westheimer corridor. Westchase District should advocate for advancing high-performance service to improve connectivity to Uptown, Greenway Plaza, Downtown, and other activity centers.

Plans for the METRO Westpark right-of-way are not currently defined. One possibility could be to use the corridor for an extension of the proposed University Line light rail project, but that project is not currently advancing. Another possibility could be to construct a dedicated transitway that would host both bus rapid transit (BRT) service as well as potential rail service. Providing for both rail and bus within the transit way improve capacity and flexibility. The BRT would have the capability to leave the transitway and circulate through the District; for example, commuter bus service could be provided from further west in Fort Bend County, while rail vehicles allow for higher capacity along the corridor to meet the projected demand.

A Westpark Corridor transitway could provide quick, reliable commuter express services to the east and west of Westchase District. Services in the trasnitway could serve Uptown, Greenway Plaza, TMC, and Downtown directly or with frequent connectors.

As METRO develops a new long range transit plan, Westchase District should advocate for inclusion of rapid transit projects in the Westheimer and Westpark corridors. Additionally, designation of these, or other frequent transit corridors, as Transit Corridors in the City's Chapter 42 Ordinance would allow for and encourage additional development tools for the surrounding activities and land uses that would better support development of a high capacity transit network.

KEY IMPLEMENTATION STRATEGIES

1. **Increase transit connectivity to and from other activity centers in the region.**
2. **Support bus rapid transit implementation on Westheimer Road.**
3. **Support dedicated transitway implementation along the Westpark Corridor.**

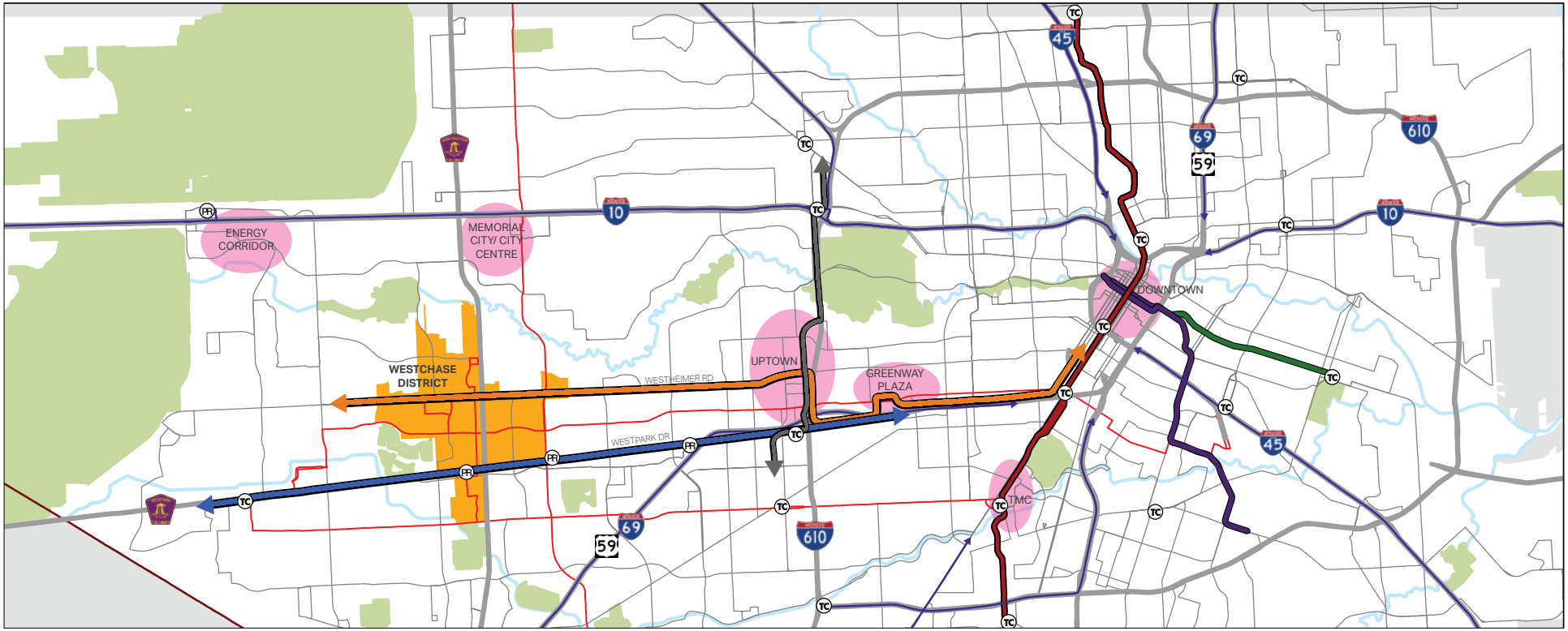


FIGURE 3.9 | POTENTIAL BRT SERVICE CONNECTIONS

LEGEND

- Westheimer BRT
- Westpark Transitway
- METRO Park & Ride Express Bus
- Optimized/New Local Bus (Rec. 06A/B)
- METRO Local Bus
- TC METRO Transit Center
- PR METRO Park & Ride
- Harris/Fort Bend County Line
- Outside METRO Service Area

BRT in Markham, Ontario

06D BIKE SHARE

Introduce a bike share network that accommodates for short trips, last-mile connections and recreational opportunities.

INCREASE MULTIMODAL CHOICES

PARTNERS

- Houston Bike Share
- City of Houston
- Developers
- Businesses

FUNDING

- Businesses/Property Owners
- Grants (e.g. TAP, STBG)*

OVERLAPPING RECOMMENDATIONS

06A 06B 06C 11

Introducing a bike share system in Westchase District will expand the travel options and will help build a stronger mulitmodal transportation network. Strategically locating bike share stations throughout Westchase District that allow users to check out a bike for short amounts of time and would provide a new option for completing short trips, which make up a higher share of trips in Westchase District than most areas in the region. Bike share could also serve as a last-mile connection for transit users, allow cyclists to bike to other areas of the city that have bike share and serve as an added recreational opportunity.

There are currently over 30 bike share stations in Houston, mostly within the 610 Loop and located near downtown. The system is expanding outward to over 100 stations in the coming years. Memorial City, located just north of the study area, recently installed their first station, with plans to add additional stations each year.

Stations should be placed in visible, high-activity locations. As bike share is introduced to the area, it is recommended that the first stations be located along existing high-comfort bike facilities, especially trails, to serve as a viable option to riders with varying levels of ability. Areas near the Library Loop Trail, connections to Art Storey Park, and local corporate campuses are high potential locations for stations.

As the network expands, stations should be placed at destinations with large concentrations of jobs, housing, retail, transit, schools, parks and trails. The density of the network as each new accessible station makes the other stations more valuable.

Bike share station in Downtown Houston

*See page 121 for grant description

KEY IMPLEMENTATION STRATEGIES

1. Position bike share stations near high activity density, recreational opportunities and bike facilities.
2. Extend network towards other activity centers with bike share networks.
3. Encourage property owners to fund bike share stations.
4. Integrate bike share with the transit network to provide last-mile connections.

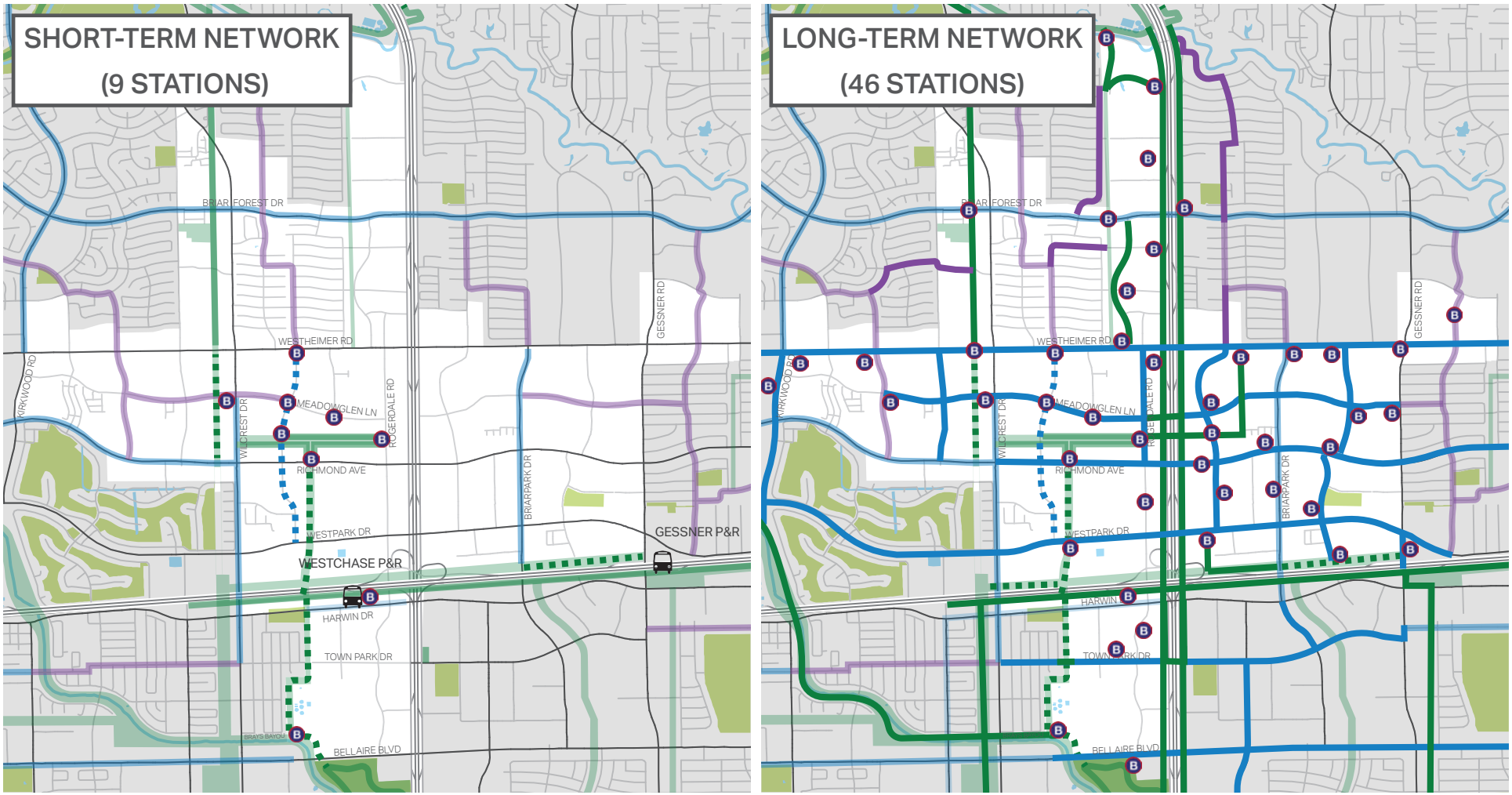


FIGURE 3.10 | RECOMMENDED BIKE SHARE NETWORK

07A SUPPORT EXPANDED COMMUTER TRANSIT

Provide transit and shared commute options from areas in Fort Bend County which are outside the METRO service area.

IMPROVE REGIONAL CONNECTIVITY

PARTNERS

- METRO
- Fort Bend County Transit
- H-GAC
- TxDOT
- HCTRA
- Other Management Districts

FUNDING

- METRO
- Fort Bend County Transit
- Grants (e.g. FTA 5339, CMAQ)*

OVERLAPPING RECOMMENDATIONS

06A 06B 06C 06D 11

Developing options for longer-distance commuters beyond driving on congested tollways will be an important aspect of maintaining Westchase District's attractiveness to employers and employees. Partnerships to provide and promote commuter services can help the District create these options.

Fort Bend County Transit (FBCT) is currently developing a Park & Ride facility along the Westpark Tollway just east of SH 99. This is a convenient location for Westchase District workers who live in the Katy area, either to park and carpool or board a commuter bus.

Based on journey to work data, another potential Park & Ride location to serve a large number of Westchase District employees is in the Sugar Land area. Options to implement bus services from both of these areas should be evaluated.

The distributed nature of employment density in Westchase District and generally ample parking will make uptake of commuter transit services more challenging. Connection to local transit, including bus and bike share, will be important to provide last mile connections.

Commuter transit will also be challenged by the absence of travel time advantages over general tollway traffic. Westchase District should identify and advocate opportunities to support HOV lanes and bus lanes to benefit higher occupancy modes, such as the Westpark transitway.

METRO Star is a successful vanpool program that provides vans to groups of commuters who ride together. Westchase District currently works with METRO to promote this service in Westchase District. Continued promotion, particularly in these key commute market areas, could help make potential users aware of the service.

Additionally, encouragement through employers and businesses with incentives, such as partial cost reimbursement or discount programs, for transit users can help increase marketing of available services and encourage new services. For example, NuRide is an internet-based program available throughout the Houston area where people can register and log their trips made by transit, carpooling, walking, and biking to get points that accumulate into discounts for a wide variety of goods and services, including groceries.

*See page 121 for grant description

KEY IMPLEMENTATION STRATEGIES

1. Coordinate with Fort Bend County Transit to develop Park & Ride facilities.
2. Integrate any commuter service with existing local transit.
3. Continue to encourage vanpooling and carpooling through education and partnering with METRO Star.
4. Identify opportunities to give buses travel time advantages through HOV lanes and dedicated busways.

KEY COMMUTE MARKET AREAS

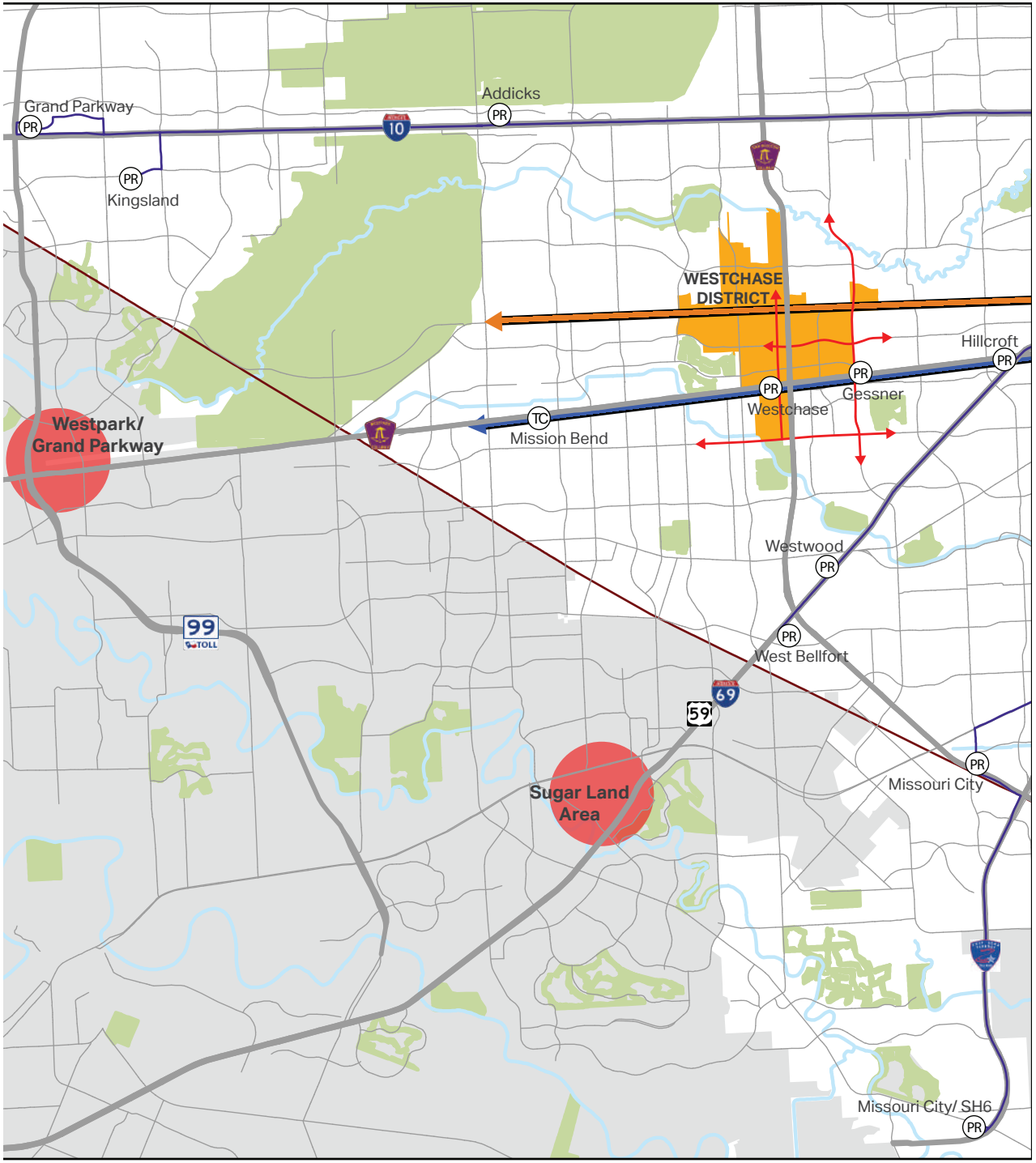


FIGURE 3.11 | MARKET AREAS FOR RECOMMENDED COMMUTER SERVICE EXPANSION

07B SUPPORT IMPROVED TOLLWAY ACCESS AND OPERATIONS

Work with both HCTRA and TxDOT to improve access between the District and the tollways.

IMPROVE REGIONAL CONNECTIVITY

PARTNERS

- HCTRA
- TxDOT
- City of Houston

FUNDING

- HCTRA
- Grants (e.g. NHPP, STBG)*

OVERLAPPING RECOMMENDATIONS

08

Regional access to the District is provided by Westpark Tollway and Sam Houston Tollway; both facilities are owned and maintained by HCTRA. Frontage roads along Sam Houston Tollway (West Sam Houston Parkway or Beltway 8) are owned and maintained by TxDOT. While Westchase District will not be an implementing agency with this recommendation, they can play a key role in partnering and advocating for improvements that will ensure that improvements maintain corridor operations, benefit the local network within Westchase District, and move the District towards its mobility goals.

Key areas to focus coordination efforts with TxDOT and HCTRA are identified below. The District will need to be proactive in order to help develop and prioritize projects in these key areas. These potential projects will be critical to safely and efficiently travel across significant barriers and transition from regional to local travel.

- An underpass at the Westheimer Road and West Sam Houston Parkway intersections
- Corridor improvements to minimize weaving
- Tollway access improvements
- Intersection operations and safety projects

Early and continuous input and coordination with the ongoing Westpark Tollway Corridor Study will be important for the District to establish and maintain. This study is intended to identify means of improving existing access and exploring opportunities for additional points of access.

As the Westpark Tollway and Sam Houston Tollway (along with West Sam Houston Parkway frontage roads) are both important components of regional access, their interface and connectivity within the Westchase District area should be examined to develop improvements that would benefit both localized and regional travel. The District should work with HCTRA, TxDOT, and the community to provide the local context and perspectives that will ensure future travel options are inclusive, meet the needs of the community, and reinforce the local context and goals.

*See page 121 for grant description

KEY IMPLEMENTATION STRATEGIES

1. **Remain involved in the ongoing TxDOT study of Beltway 8/West Sam Houston Parkway operations.**
2. **Coordinate with HCTRA during the ongoing Westpark Tollway Corridor Study.**
3. **Identify potential connection improvements between Sam Houston Tollway and Westpark Tollway.**

REGIONAL ACCESSIBILITY

Currently there are not direct connections for all movements between Sam Houston Tollway and Westpark Tollway. Vehicles traveling north on the Sam Houston Tollway from westbound Westpark Tollway are required to exit Westpark Tollway and travel though the intersection highlighted below. Forcing regional trips onto the local roadways in Westchase Distinct is an additional strain to existing bottlenecks.

Continuing to work with HCTRA to improve the connections between West Sam Houston Parkway and Westpark Tollway will assist with improving mobility within the District.

Map highlighting access points at the Sam Houston Tollway/ Westpark Tollway intersection.

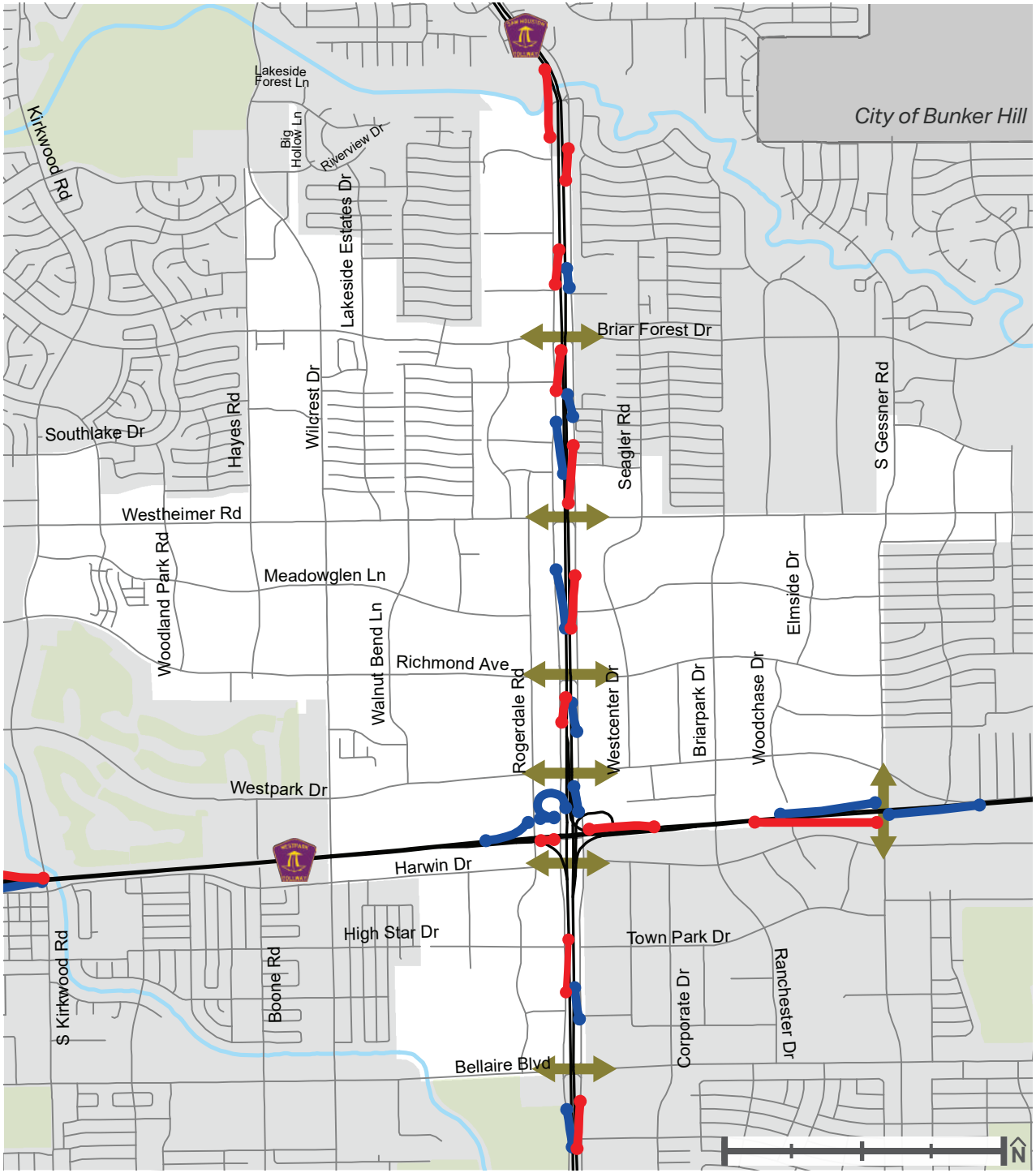


FIGURE 3.12 | TARGETED IMPROVEMENT POINTS FOR REGIONAL ACCESS

08 MINIMIZE IMPACTS OF BOTTLENECKS

Develop a targeted approach to minimizing the congestion associated with intersection bottlenecks at key intersections within the District.

IMPROVE REGIONAL CONNECTIVITY

PARTNERS

- City of Houston
- TxDOT
- HCTRA

FUNDING

- City of Houston
- Grants (e.g. CMAQ, STBG)*
- Developers

OVERLAPPING RECOMMENDATIONS

04 05 06A 06B 06C 06D 07A 07B

Within the District, multiple intersections operate at or above capacity during the peak periods creating bottlenecks that impede traffic flow and operations at those intersections and more widely along the corridors. Westchase District should develop a targeted approach to minimizing the congestion associated with intersection bottlenecks at key intersections within the District.

A major component of this approach is to conduct detailed traffic operation studies at highlighted intersections to provide solutions to improve operations and reduce congestion. As many of the identified intersections are currently constrained by right-of-way, capacity can only be added by widening an approach and other options should be explored. The cost/benefit of acquiring right-of-way should be evaluated as part of these studies to fully understand whether or not potential solutions are sound, long-term investments.

Overall, all intersection improvements should assess the impact on pedestrian crossings and nearby transit or bicycle facilities to ensure safety and access is not diminished for these modes. By assessing these impacts, it is also possible to develop solutions that focus on encouraging travel choices through multiple modes and aim to reduce demand for single occupancy vehicles.

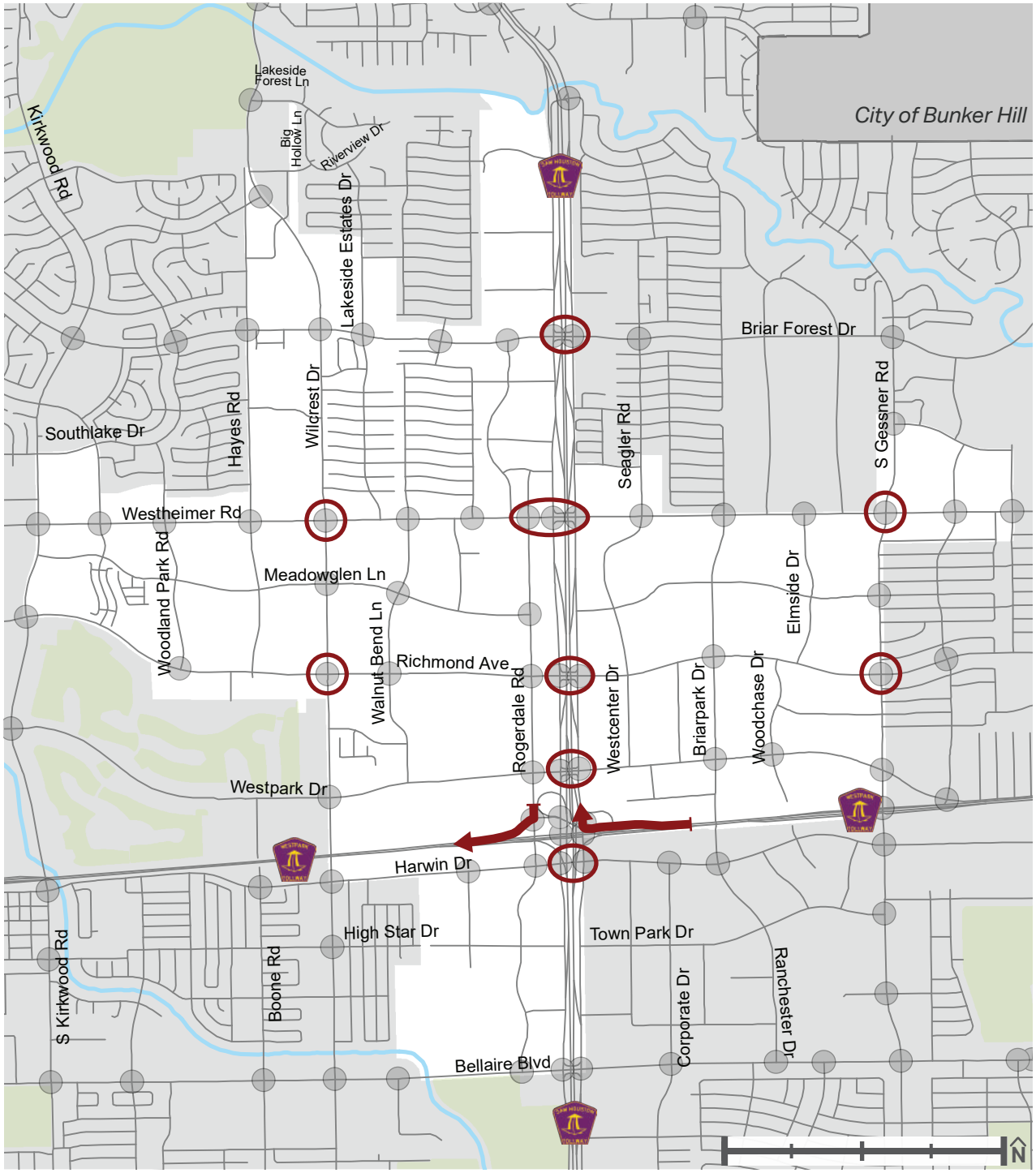
An area that is key to efficiently improving intersection operations is the exploration of technological advancements. For example, ITS (Intelligent Transportation Systems) can have significant impacts on the flow of traffic along a corridor at a fraction of the cost of infrastructure widening.

As the roadways within the District are controlled by TxDOT and the City of Houston, it is important that Westchase District coordinate with these entities throughout project development and implementation. As a majority of the bottlenecks are on major corridors, including tollways and frontage roads, they will likely be addressed through other corridor improvement projects. However, ensuring that the District's mobility goals are well represented and that the ultimate project development will be influenced by the goals is essential.

*See page 121 for grant description

KEY IMPLEMENTATION STRATEGIES

1. **Conduct traffic operation studies to address bottleneck intersections.**
2. **Consider cost/benefit of expanding right-of-way at constrained intersections.**
3. **Reduce demand for single occupancy vehicles by providing transportation choices.**
4. **Assess impact on pedestrians and bicyclists when considering intersection improvements.**



BOTTLENECK REDUCTIONS

There are a variety of common solutions that can be utilized to ease congestion at the highlighted bottlenecks. Possible solutions include:

- Access management along corridors to reduce the number of driveways and median breaks near signalized intersections to reduce conflict points and friction to traffic flow.
- Improve signal coordinations and/or modify signal phasing. (e.g. changing signal phasing at diamond intersections from 3 phase to 4 phase.)
- Implement adaptive traffic signal timings at intersections near saturation flow rate (Westheimer Road at Gessner Road).
- Add intersection capacity by the introduction of dual left-turn lanes.
- Grade separations where appropriate (e.g. Westheimer Road at Beltway 8)

LEGEND

- Signalized Intersection
- Intersection Bottleneck
- Tollway Access Bottleneck

FIGURE 3.13 | KEY BOTTLENECK LOCATIONS

09 CREATE CHARACTER & DEVELOPMENT GUIDELINES

Support development along corridors tailored to the surrounding context, integrate community desires, and establish best practices.

ENCOURAGE WALKABLE STREET NETWORK

PARTNERS

- City of Houston
- METRO
- Developers

FUNDING

- Westchase District

OVERLAPPING RECOMMENDATIONS

01 10 11

Character and development guidelines are a tool that can be utilized to encourage development and redevelopment practices that will help Westchase District achieve its mobility goals and will provide a supporting context for other recommendations in this plan. These guidelines should identify and encourage design approaches, options, and best practices for corridors, multimodal accessibility, and the interaction with surrounding land uses. As the District cannot directly regulate development, encouragement during coordination and incentivizing development that incorporates or exceeds the guidelines are key strategies in implementation.

In order to create character and development guidelines, the District should first develop and define corridor or zone typologies that are based on the corridor's primary modes, surrounding context, and land uses. Proposed corridor types are defined on the following page. These can be used as a starting point for development of more detailed typologies that set the basis for character and development guidelines.

Several chapters in the City of Houston Code of Ordinances provide tools that can be leveraged to provide the greatest benefit in advancing the District's mobility goals. Chapter 42 includes regulations for development and platting, such as setbacks, streets and easements. Parking related regulations are primarily found in Chapter 26, while landscaping standards are principally located in Chapter 33.

The designation in Chapter 42, are regulations for transit corridors (METRO light rail corridors and designated cross streets), whose purpose is to encourage dense, pedestrian friendly development in transit rich environments. Westchase District should coordinate with the City to designate corridors with high-frequency fixed-route service as potential Transit Corridors, such as along the 82 Westheimer route. This is particularly true if BRT on dedicated transit lanes are provided on Westheimer or other corridors.

Parking management strategies can also be an effective tool to use to optimize land use and the use of transit, walking, and biking. Encouraging and working with developers and property owners to take advantage of flexible and reduced parking requirements, as well as incorporate shared parking facilities. These parking strategies can spur economic activity and livability by providing walkable development that place emphasis on access through multiple modes and ensuring the pedestrian realm and surrounding development are coordinated to enhance walkability and overall mobility.

KEY IMPLEMENTATION STRATEGIES

1. Identify and promote guidelines for corridor "types" based on their surrounding context and uses.
2. Promote utilization and expansion of the City of Houston's Chapter 42 Ordinance.
3. Encourage use of alternative parking strategies to optimize land uses, transit, walking, and biking.

POTENTIAL CORRIDOR TYPES

COMMERCIAL STREET

Commercial Streets are roadways that primarily serve economic and social activities, move a higher volume of people, and serve major destinations, through a variety of modes. These roadways tend to have higher volumes and are typically served by transit. Commercial Streets should have a comfortable pedestrian realm with amenities and, as applicable, bikeway access and amenities such as parking and setbacks.

Example: Briarpark Drive (south of Westheimer Drive), Harwin Drive


Example Commercial Street

RESIDENTIAL STREET

Residential Streets are lower volume roadways that provide access to neighborhoods, parks, schools, services, and other activities. These streets serve multiple modes of travel, primarily automobile and pedestrian, but can include bicycle and transit. Residential Streets should provide a comfortable pedestrian realm with amenities for pedestrians, and bicyclists as applicable, and should include streetscaping elements such as shade, lighting, and landscaping.

Example: Walnut Bend Road, Meadowglen Lane


Example Residential Street

MIXED-USE STREET

Mixed-Use Streets serve a variety of uses and can include residences, shops, services, civic or cultural activities. The use and character of the street can change along the street depending on the mix of uses. These streets thrive on pedestrian activity but must also balance high levels of travel from other modes such as autos, bicycles and transit as the mix of uses and destinations attracts a wide variety of travelers. Mixed-Use Streets should have a comfortable pedestrian realm with significant pedestrian and bicycle amenities, and enhanced transit amenities if applicable. Potential streetscape treatments include landscaping, pedestrian safety elements, public space uses, and other amenities to complement surrounding land uses.

Example: Westheimer Road, Richmond Avenue


Example Mixed-Use Street

SPECIAL CASE: CORPORATE CAMPUSES

Corporate Campuses along commercial or mixed-use streets serve a high number of employees and are most accessible with automobiles. As they typically take up a significant amount of block space, walking can be more challenging to reach destinations. Multimodal access to and along the campus area is important to encourage use of transit, walking, and biking as viable transportation options. A high quality pedestrian realm and comfortable transit stops, if applicable, should be provided. Encouraging bike friendly access and parking within the campus is also recommended.

Example: CityWest Blvd, Rogerdale Drive


Example Corporate Campus

Note: Corridor types may change along a street as the surrounding contexts change.

10 CREATE A WALKABLE STREET GRID

Encourage a walkable street network that increases the property values of Westchase District and make the Distinct a more desirable place.

ENCOURAGE WALKABLE STREET NETWORK

PARTNERS

- City of Houston
- Developers
- Property Owners

FUNDING

- Westchase District

OVERLAPPING RECOMMENDATIONS

01 03 04
05 09 11

A traditional, urban street network is walkable, allows the area to redevelop easily over time, and spreads the traffic loads onto multiple parallel streets rather than concentrating vehicles on a few arterials. A disconnected network has trouble redeveloping past its first generation due to the challenges of congestion, poor access, and lack of modal choices, among others.

Places with the most connected street networks also tend to be the most valuable. They attract investment and people and, thus, tend to retain their value over time. In areas with more suburban development patterns, enhancing the existing street network to be more connected can add significant value to the community. By adding streets to provide more of a grid network, congestion can be relieved and other mobility benefits can be realized, such as:

- Supportive of development patterns with high value
- Reduces long, circuitous travel distances due to large blocks
- Provides more alternatives for walking and biking

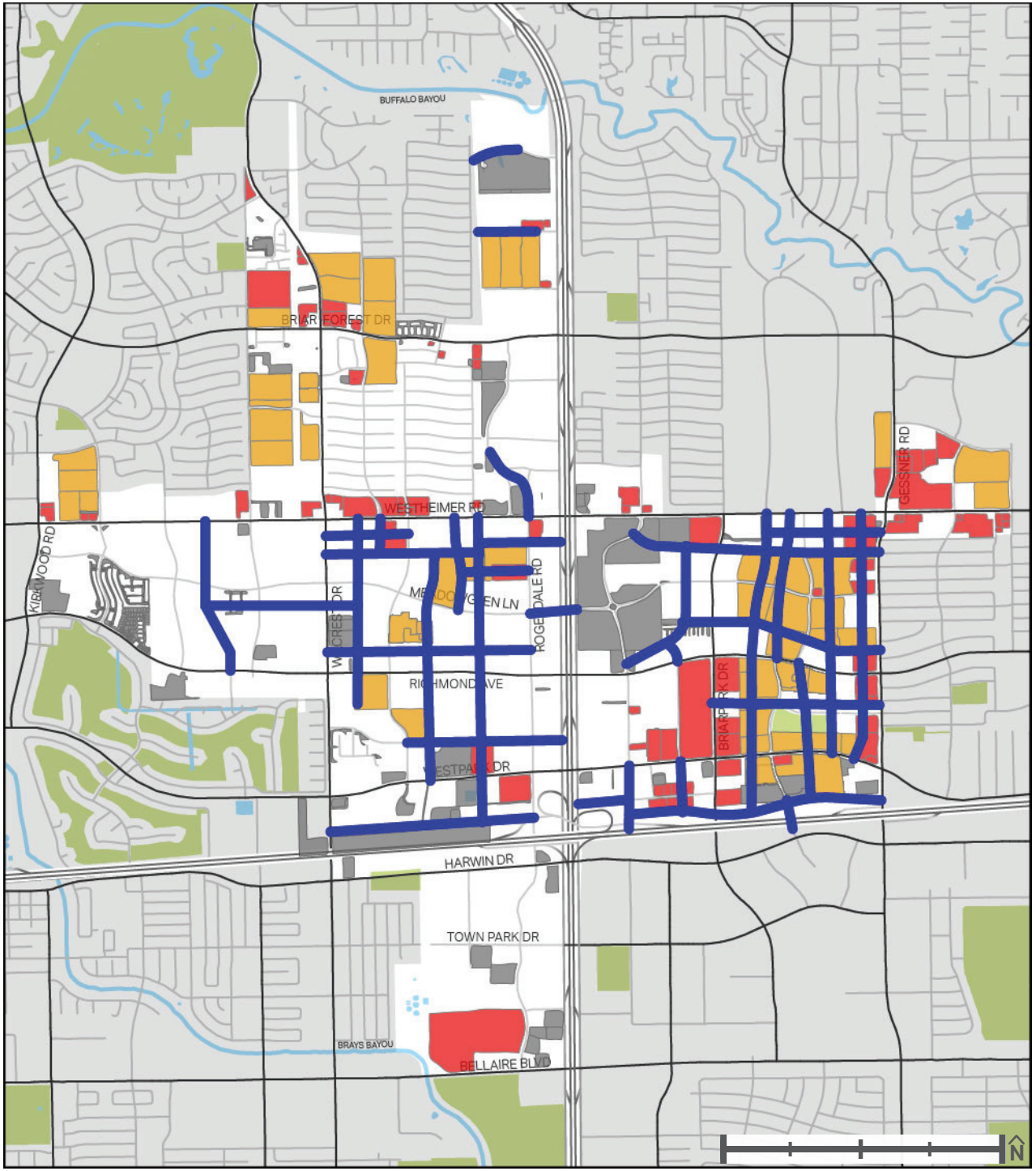
Retrofitting an existing suburban area with a connected street system is a difficult and long process due to a variety of constraints including property ownership patterns. While difficult to implement, where possible opportunities should be captured to break down super blocks to smaller block with more connected street grid. These efforts can focus on older developments that have a high possibility for redevelopment.

Westchase District can play an important role in improving the street network by promoting a vision for the District as a whole and smaller-scale areas, providing support and technical resources where possible, and helping to create a process that involves property owners, developers, and appropriate public agencies to identify and coordinate as opportunities arise. Design and construction of the street network, along with a complete urban design for the area, can add value that can be leveraged in creation of the new network and public realm changes.

Figure 3.14 shows potential redevelopment areas where potential may exist to create new connections and further explore for developing a tighter street grid.

KEY IMPLEMENTATION STRATEGIES

1. **Coordinate with the City of Houston, other public agencies, and developers on development of potential opportunity areas.**
2. **Promote benefits of increasing the street and intersection density to developers and property owners.**



LEGEND

- Proposed grid network from 2006 Long Range Plan
- Commercial parcel constructed prior to 1981
- Multi-family parcel constructed prior to 1981
- Vacant Parcel

FIGURE 3.14 | POTENTIAL STREET NETWORK

11 ENCOURAGE TRANSIT & TRAIL ORIENTED DEVELOPMENT

Encourage transit- and trail-oriented development through strategies that will enable robust, sustainable, and urban redevelopment.

ENCOURAGE WALKABLE STREET NETWORK

PARTNERS

- METRO
- City of Houston
- TIRZ #20
- HCTRA

FUNDING

- METRO
- Developers
- Grants (e.g. STBG, CMAQ)*

OVERLAPPING RECOMMENDATIONS

04 05 06A 06B 06C 06D 09 11

*See page 121 for grant description

The transit centers in Westchase District currently operate as a means of traveling between the District and Downtown Houston. According to future population and job projections, Westchase District will experience significant growth. Redevelopment of the transit centers into hubs with high quality transit and trail access will allow the District to evolve into an urban destination.

This idea of Transit & Trail Oriented Development (TTOD) will encourage development compatible with the District's vision and goals. Redevelopment will support locating new destinations that combine transit services, trail access, integrated bicycle and pedestrian infrastructure, mixed-use development, new residential living, civic amenities, and open space. Transit and Trail Oriented Development is being shown as highly desirable across the country. People want to live or be in places where they can easily access a variety of amenities, including shopping and outdoor space, access to jobs and other entertainment through high quality transit and/or trails.

Employing tenets of sustainable urban development will allow for a form that could serve as a model for future urban mixed-use development throughout the District. Emphasizing a mix of uses and a pedestrian – focused public realm can activate the space throughout the day while enhancing the value and potential of surrounding sites. The internal street network should encourage a variety of uses and begin to blend together indoor retail activity and street life.

There are several recommended steps that will enable a robust, sustainable, and urban redevelopment of the Westchase Park & Ride lot into a TTOD. These recommendations include the following:

- Encourage development in places with great transit access, such as the Westchase Park & Ride, Westheimer Road at Gessner Road, or other key locations. The Westchase Park & Ride offers multiple existing assets that make it a priority site.
- Improve access to the Westchase Park & Ride for all modes through improved access to Westpark Tollway and the proposed transitway connectivity to the surrounding trails and street network.
- Transform the current use of underutilized sites for programmed events and develop a signature transit center facility and urban plaza that can spur private, mixed-use development.
- Increasing transit services and options for connections within the District and to other activity centers will increase the desirability of TTOD.

KEY IMPLEMENTATION STRATEGIES

1. Encourage development in places with great transit and/or trail access.
2. Improve bus, bicycle, and pedestrian access to the desired TTOD site(s).
3. Transform the use of existing underutilized sites with programmed events and signature infrastructure.
4. Increase transit services connecting to the desired site(s).

Top:
Ponce City Market (Atlanta, Georgia) is a development that centers around the idea that broad transportation choices improve quality of life. It utilizes a variety of key features such as a bike valet, over 400 bike parking spaces, wide hallways within the development, changing areas for bicyclists, significant bikeway and trail access, and more to make biking a predominant mode choice for residents and visitors.
Photo credit: Sarah Dorio for Jamestown LP.

Center:
The Westchase Park & Ride site has been analyzed by METRO in their recent TOD study and is identified as an opportunity for Transit Oriented Development. Construction of the Brays Bayou Connector Trail extension to Art Storey Park runs directly adjacent to the site and has direct access, which further elevates the opportunity of this location for development focused around transit and bicycle usage. This site layout is an example of the multiple uses that could potentially be supported.
Photo credit: METRO

Bottom:
The Cypress Park & Ride is a local example of TOD in the greater Houston area. The transit facility includes a shared parking garage and is surrounded by multifamily housing and a variety of retail establishments. The site is also utilized for hosting a variety of events throughout the year including the Wine Fair Cy-Fair as shown. Events can be a great way to activate a site and show potential while gaining support for continued development.
Photo credit: Steven David, Houston Chronicle.

COST ESTIMATES

Cost estimates were developed for a selection of the mobility plan recommendations that will likely require capital investment from the District. The following cost estimates are planning-level cost estimates and are to be used as a guide to maintain and prioritize funding for key projects within the District. Costs are not intended for bidding or as a basis for financial commitment.

02 **RECOMMENDATION 2** prioritizes five roadway corridors for reconstruction that will continue to support the mobility and development goals of Westchase District. Cost estimates for corridors in Recommendation 2 are included in Table 3.2.

04 **RECOMMENDATION 4** highlights the need to build a safe and comfortable bicycle network that welcomes all types of riders and connects to homes, jobs, schools, parks, and other destinations. Five short-term projects were developed for this recommendation. Cost for these five projects is based on general cost estimates developed in the Westchase District Pedestrian and Bicycle Plan. Cost estimates for the projects are included in Table 3.2.

05 **RECOMMENDATION 5** focuses on creating a complete and comprehensive sidewalk network that provides access for users of all abilities and encourages short trips to be taken by foot. Five short-term key projects were highlighted and cost estimates were developed. The five projects are included in Table 3.2.

06A **RECOMMENDATION 6A** highlights opportunities to maximize the benefit of existing transit services by investing in targeted infrastructure improvements. One way to improve the transit experience for riders is providing shelters at all transit stops. The typical cost for transit shelters are approximately $20,000 per shelter. Enhancements, including real time rider information and messaging can increase cost by a minimum of $10,000.

Transit shelters also offer a branding opportunity for the District similar to what has been done in Upper Kirby and Uptown.

06B **RECOMMENDATION 6B** encompasses the extension of transit service within the District. One of the proposed route extensions is the 25 Richmond Westchase branch to Hayes Road. This extension would have minimal cost.

An extension of the 402 Bellaire Quickline west along Bellaire Boulevard from its current terminus at Ranchester Drive and turn north along Rogerdale Road would have a cost of approximately $1,000,000 per year. This cost is based on a approximate increase of 48 revenue hours to the service.

06D **RECOMMENDATION 6D** includes the development of a bike share network within the District. B-Cycle bike share stations cost $40,000 per station, including bikes.

07A **RECOMMENDATION 7A** proposed two Park & Ride locations within Fort Bend County (outside the METRO service area). Park & Ride service scenario sketches and estimates costs were conducted by Texas A&M Transportation Institute (TTI) for the proposed location near the intersection of the Grand Parkway and Westpark Toll Road (near Cinco Ranch). Total costs (inclining operating cost, supervision costs and marketing costs) are scaled up over a four year period. Year 1 costs are $481,000 and Year 4 costs are $621,000.

08 **RECOMMENDATION 8** includes the development of a targeted approach to minimizing the congestion associated with intersection bottlenecks at key intersections within the District.

Each bottleneck presents its own set of issues and challenges. Further study is recommended to appropriate intersections that are currently experiencing high congestion. Detailed studies for specific intersections or entire corridor assessments can identity specific recommendations. Table 3.2 includes common intersection improvements and their general cost. The items and costs in Table 3.2 are to be a guide for future planning. Many intersections within the District are located in areas with limited right-of-way. The general costs in Table 3.2 do not take into account right-of-way cost that could be a factor when constructing the items listed in the table.

	PROJECT	COST ESTIMATE
02	Reconstruct **BRIAR FOREST DRIVE** from Hayes Road to Beltway 8 as a four-lane roadways with enhance bicycle facility and expanded pedestrian realm within existing right-of-way.	$10,780,000
	Reconstruct **RICHMOND AVENUE** from Kirkwood Road to Wilcrest Drive as a four-lane roadway within existing right-of-way including enhanced bicycle facility and expanded pedestrian realm.	$9,220,000
	Widen **RICHMOND AVENUE** from four-lanes to six-lanes between Beltway 8 and Wilcrest Drive in an expanded right-of-way including enhanced bicycle facility and expanded pedestrian realm.	$10,001,000
	Reconstruct **WESTPARK DRIVE** from Wilcrest Drive to Beltway 8 as a four-lane roadways with enhance bicycle facility and expanded pedestrian realm within existing right-of-way.	$9,157,000
	Reconstruct **HARWIN DRIVE** from Wilcrest Drive to Beltway 8 as a four-lane roadways with enhance bicycle facility and expanded pedestrian realm within expanded right-of-way.	$8,720,000
	Reconstruct **BRIARPARK DRIVE** from Westheimer Road to Westpark Tollway as a two-lane divided roadway with buffered bicycle lanes and expanded pedestrian realm within existing right-of-way.	$9,240,000
04	Construct multi-use path along the **UTILITY CORRIDOR** parallel to Hayes Road from Westheimer Road to Terry Hershey Park	$750,000 per mile
	Re-stripe **ELMSIDE DRIVE** to include bidirectional bicycle lanes.	$40,000 per mile
	Re-stripe **TOWN PARK DRIVE** to include bidirectional bicycle lanes.	$40,000 per mile
	Upgrade **OLYMPIA DRIVE** to a neighborhood bicycle route.	$13,750 per mile
	Construct a multi-use path along the east side of **BELTWAY 8** from Bellaire Boulevard to Terry Hershey Park.	$750,000 per mile
05	Pedestrian improvements at the intersection of **GESSNER ROAD** at **WESTHEIMER ROAD** including sidewalks,	$70,000 - $100,000
	Widen sidewalks and improve pedestrian realm along **GESSNER ROAD** from Westheimer Road to Westpark Drive.	$1,224,000.00
	Construction 6' sidewalks along **TOWN PARK DRIVE** from the future multi-use path to Beltway 8 in areas without existing sidewalks.	$52,000.00
	Reconstruct sidewalks and improve intersections along **HAYES ROAD** from Richmond Avenue to Wilcrest Drive.	$848,000.00
	Reconstruct sidewalks and improve intersections along **BELLAIRE BOULEVARD** from Brays Bayou to Beltway 8.	$690,000.00
06A	Install transit shelters. (Base cost for single shleter)	$20,000
06B	Extension of 402 Bellaire Quickline	$1,000,000
06D	Bike Share Station	$40,000
07A	Park and Ride Service from Cinco Ranch are in Fort Bend County (Cost - after 4 year ramp up)	$621,000
08	Left turn lane	$150,000
	Right turn lane	$150,000
	Traffic Signal (4 way intersection)	$150,000
	Traffic Signal (Diamond interchange)	$300,000
	Left turn acceleration lane	$150,000
	Michigan left turn intersection	$1,000,000
	Restricted crossing U-turn intersection	$1,000,000
	Diverging Diamond interchange	$7,000,000
	Continuous Green "T" intersection	$750,000
	Continuous flow intersection	$7,000,000

TABLE 3.2 | SUMMARY OF COSTS FOR SELECT PROJECTS

CHAPTER FOUR

MAKING IT HAPPEN

MOVING INTO IMPLEMENTATION

The Westchase Mobility Plan provides a series of recommendations to improve multi-modal mobility and safety for residents, workers, and visitors and supports the overall development goals for the area. Success in improving and sustaining high quality mobility options for people traveling to and through Westchase District can only be realized through effective implementation strategies. Additionally, implementation of the recommendations will serve as a driver for economic development, facilitating redevelopment and development patterns that will increase land values and attract businesses and visitors to the District. This chapter will identify strategies and potential funding sources for the District to utilize as they transition their focus from planning to implementation.

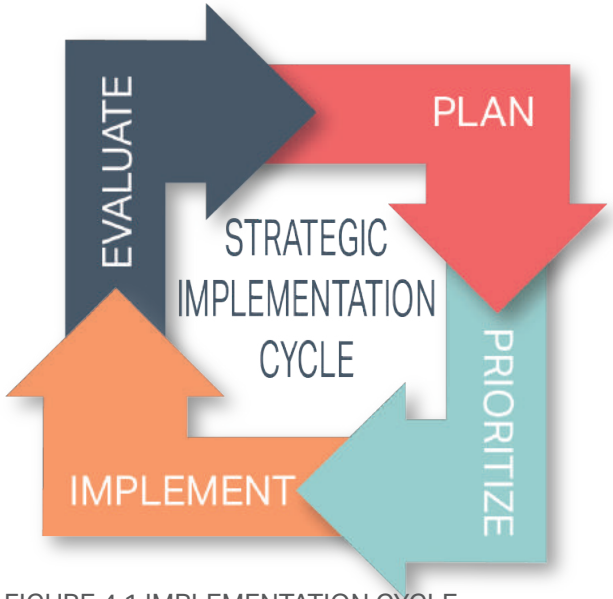


FIGURE 4.1 IMPLEMENTATION CYCLE

It is important to first understand that implementation is a continuous cycle made up of initial planning, determining priority projects, implementing projects, and evaluating progress and goal attainment, as shown in Figure 4.1.

Some of the Plan's recommendations can be pursued through existing policies or initiatives, while others will require the securing of additional resources. As such, the precise programs that the District pursues, in which order, and when, will, in part, be opportunity-driven, dependent on the availability of funding, staffing, and other necessary resources.

Key components of effective implementation strategies include coordination, partnerships, and flexibility. Coordination and partnerships will help the District make greatest use out of existing programs and leverage their resources to the greatest extent. Flexibility in implementation will allow the District to take advantage of opportunities as they become available, particularly since funding availability can be uncertain and sometimes come up quickly. Additionally, successful implementation of the Plan will rely on having community and political support; this support can take longer for some projects, impacting the schedule for implementation.

This chapter is separated into the following sections that together provide a framework for implementing the Plan.

- Strategic Prioritization
- Funding
- Coordination & Partnerships
- Evaluation & Monitoring

STRATEGIC PRIORITIZATION

The mobility recommendations presented in Chapter 5 were developed based on their ability to satisfy the goals of this mobility study, summarized below:

1. Promote great street designs that provide safe, efficient, and accessible transportation choices for all.
2. Increase local multimodal choices
3. Improve regional connectivity and address critical bottlenecks to and from the District.
4. Encourage walkable development and redevelopment that supports the District's vision of being West Houston's Downtown.
5. Coordinate planning efforts between agencies to fund and implement prioritized projects.

Each of the identified recommendations support one or more of these goals and, if implemented, would promote improved mobility within and around the study area and accommodate and support future development.

In order to support implementation, a strategic prioritization table was developed with accompanying examples of how implementation includes multiple factors and recommendations. The recommendations were ranked by priority, which was determined by the ability of the project to satisfy project goals, estimated cost, community and stakeholder support, level of coordination

required, and the anticipated availability of funding mechanisms.

Overall, nineteen projects were identified as recommendations in Chapter 3 to achieve the scope of the project goals. These projects are summarized in Table 4.1. The summary includes the following information about each project:

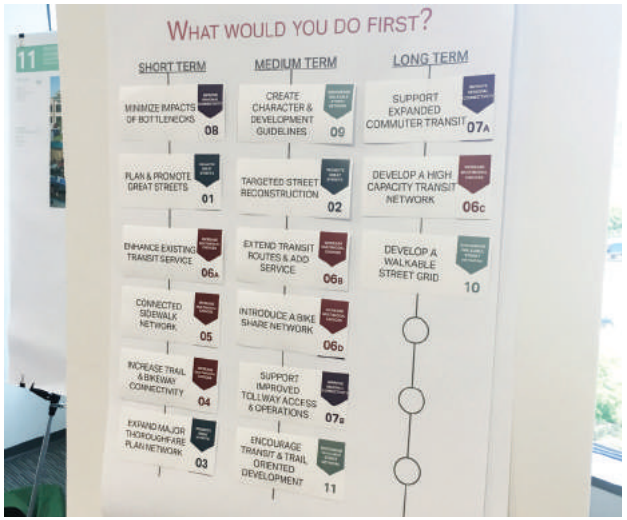
- Project description - A brief description of the major elements of each project.
- Cost - Estimated magnitude of cost of the recommendation. Specific cost estimates for appropriate recommendations were developed based on planning-level conceptual designs and are included in Chapter 3.
- Ease of implementation - A qualitative assessment of the overall ease of implementation for a project. This assessment includes consideration of cost, community and stakeholder support, right-of-way requirements, regulatory hurdles, coordination with other entities/projects, and the level of the overall project scope. A project with a high ease of implementation has a higher potential of being implemented quickly and inexpensively.
- Goals supported - Identifies the primary goals addressed by each project.
- Benefits - Summarizes the mobility benefits associated with each recommended project.
- Priority - Identifies the priority level of each recommended project and the associated time frame.

PRIORITY LEVEL & TIMING

Each recommendation was selected because of its potential to improve mobility and thus all recommendations are important. However, as implementation relies on a variety of factors and constraints, such as funding and implementation of other projects, it is necessary to break the projects into multiple priority levels that indicate likely timing for implementation. The priority level was based on each project's cost, ease of implementation, overall impact on mobility goals, and community and stakeholder feedback. The priority levels for each project are based on existing conditions and projects may be accelerated or decelerated based on the surrounding factors and constraints unique to each project. The four priority levels are identified as:

- Ongoing - Projects that are planning based and will require continued coordination and potentially updates over time. Some of these efforts may be able to be completed early, others could take longer to develop.
- Short - Projects with lower costs or projects that do not require extensive right-of way, coordination with other projects, or may be necessary for other projects to be successful. These projects will typically be able to be implemented in a shorter time frame.
- Medium - Projects with lower or medium costs that may require more coordination or a higher level of effort to implement. These projects could be able to be implemented in the short term, but could also stretch out due to a larger project scope or reliance on other projects to be implemented.
- Long - Projects with typically medium and higher costs that likely have a high level of coordination necessary with other stakeholders and projects, as well as include right-of way or regulatory issues. These projects are anticipated to have longer implementation horizons due to their complexity and reliance upon other factors.

A general strategy for the District to pursue is to address the recommendations and projects, or elements of projects, that it can implement directly and with lower costs and build up to implementing recommendations that are complex, involve a multitude of partners and coordination, and that are higher cost.



Steering Committee exercise in prioritization of draft recommendations

TABLE 4.1 PROJECT PRIORITY AND SUMMARIZATION

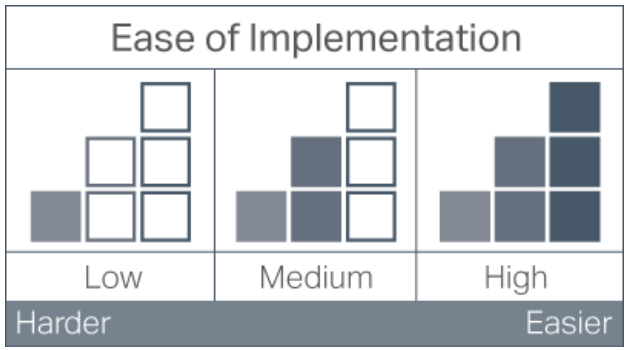
Project ID	Description	Timing	Magnitude of Cost	Ease of Implementation	Goals Supported	Benefits
1	Promote context sensitive design and planning	Ongoing	$		1 2 4 5	Improves safety for all modes; supports desired development
2.1	Targeted street reconstruction - Briar Forest Drive	Long	$$$$		1 2 3	Enhances pedestrian and bicycle environment and access; provides mobility for vehicles
2.2	Targeted street reconstruction - Richmond Avenue	Medium	$$$$		1 2 3	Improves pedestrian and bicycle realm; supports transit service and activity dense development
2.3	Targeted street reconstruction - Westpark Drive	Long	$$$$		1 2 3	Enhances pedestrian and bicycle realm; improves safety, supports potential future development
2.4	Targeted street reconstruction - Harwin Drive	Long	$$$$		1 2 3	Improves bicycle, pedestrian and transit access; supports transit service increase and TTOD
2.5	Targeted street reconstruction - Briarpark Drive	Long	$$$$		1 2 3	Supports biking; improves walkability and safety for short trips by adjacent land uses
3	Expand the network of designated collectors on the Houston MTFP	Short	$		1 5	Enhances connectivity; supports future development and funding opportunities
4	Continue to develop a high quality bicycle network	Trails: Medium On-street: Ongoing	$$$		1 2 4	Increases mode choice, connectivity, access, safety, and activity in the community
5	Improve the pedestrian realm to encourage walking	Medium	$$		1 2 4	Improves local access, mobility, and safety for pedestrians; supports transit
6A	Enhance existing transit service	Short/Medium	$$		2 4 5	Reinforces existing transit network
6B	Extend transit routes and add service	Ongoing	$		2 3 4 5	Increases mode choice and improves existing network; supports TTOD
6C	Develop a high capacity transit network	Long	$$$$		2 3 4 5	Increases mode choice and connectivity; supports TTOD

Project ID	Description	Timing	Magnitude of Cost	Ease of Implementation	Goals Supported	Benefits
6D	Develop a bike share network	Short/Medium	$		2 4	Improves access; supports greater walkability
7A	Support expanded commuter transit	Ongoing/ Short/Medium	$$		2 3 5	Increases connectivity, access, and mode choice
7B	Support improved tollway access and operations	Ongoing	$		3 5	Improves access and safety
8	Minimize impacts of bottlenecks	Medium/Long	$$		1 2 3 5	Improves LOS for drivers and transit
9	Create character and development guidelines	Short	$		1 4	Supports economic development and future development supportive of multiple modes
10	Create a walkable street grid	Ongoing	$		1 2 4 5	Improves walkability, safety, and overall accessibility
11	Encourage transit and trail oriented development	Ongoing	$$		2 4 5	Creates compact development and walkable destinations; increases mode choice

Note: Costs, project partners, and potential funding sources for each recommendation can be found in Chapter 3

Magnitude of Cost Definition:

$ Less than $500,000 **$$** $500,000 to $1,000,000 **$$$** $1,000,000 - $5,000,000 **$$$$** Greater than $5,000,000



MOBILITY PLAN GOALS

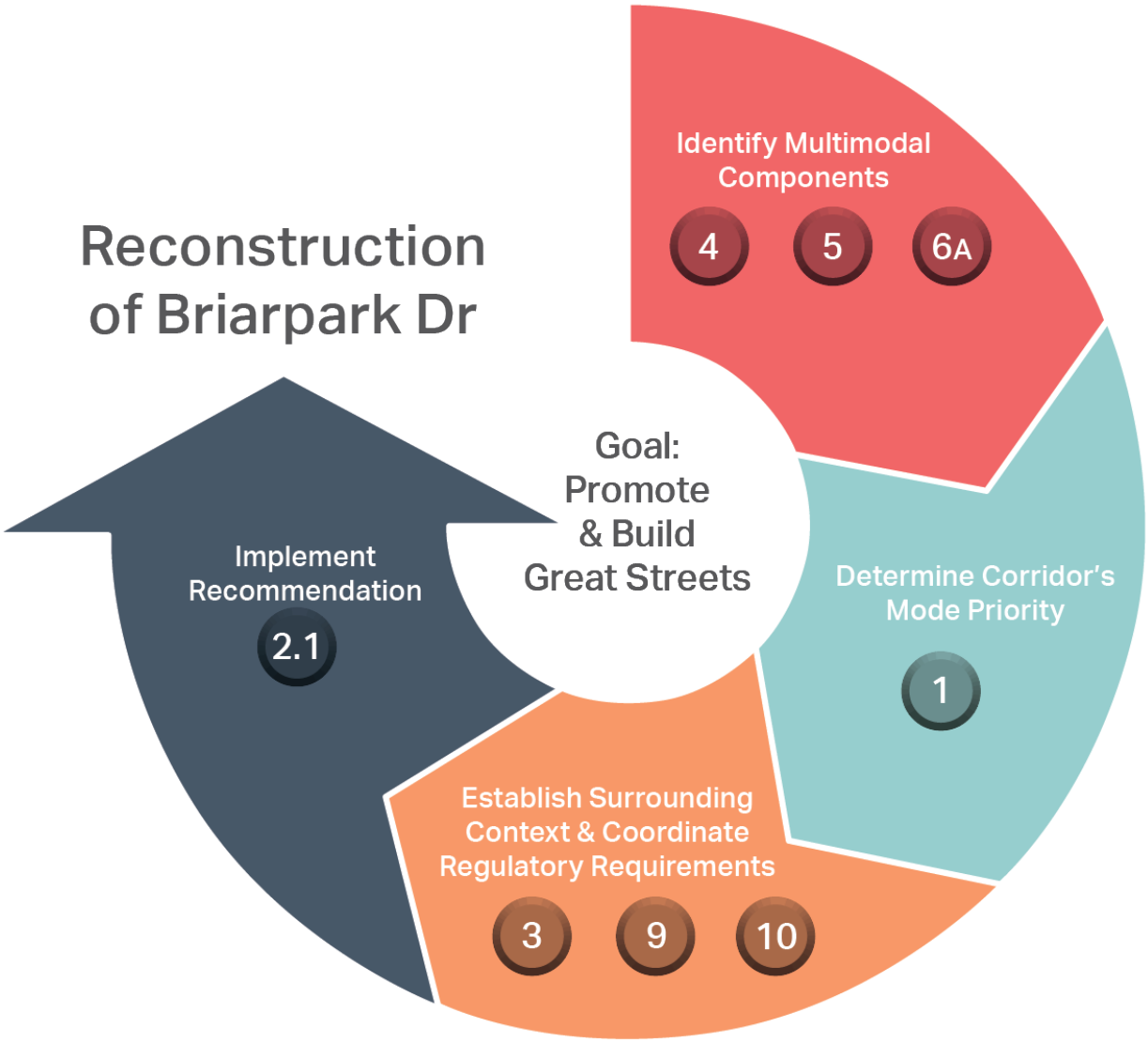
1. Promote great street designs that provide safe, efficient, and accessible transportation choices for all
2. Increase local multimodal choices
3. Improve regional connectivity and address critical bottlenecks to and from the District
4. Encourage walkable development and redevelopment that supports the District's vision of being West Houston's Downtown
5. Coordinate planning efforts between agencies to fund and implement prioritized projects

ACHIEVING THE GOALS

Prioritization of projects and recommendations to meet the desired goals of Westchase District is key to successful implementation. While many of the projects could be completed singularly, they also have relationships and sometimes dependencies with other projects and recommendations. Understanding how the recommendations relate to each other will help the District build successes and support implementation.

Figure 4.2 depicts an example of how to build a great street like Briarpark Drive in Recommendation 2. As great streets are multimodal and take into account the surrounding context, these attributes from other recommendations must be identified and appropriately acted upon in the potential reconstruction of Briarpark Drive. As shown, these recommendations build off of each other to provide the right context and framework for the street. It should also be noted that recommendations, such as improving transit (6A) will also encourage more walking and could elevate the importance of walkability and improving the pedestrian realm (5), or that developing a bike share network (6D) becomes feasible with improvements to the bike network (4). These all factor into the ultimate design and functionality of the corridor.

FIGURE 4.2 EXAMPLE PROCESS TO PROMOTE & BUILD GREAT STREETS

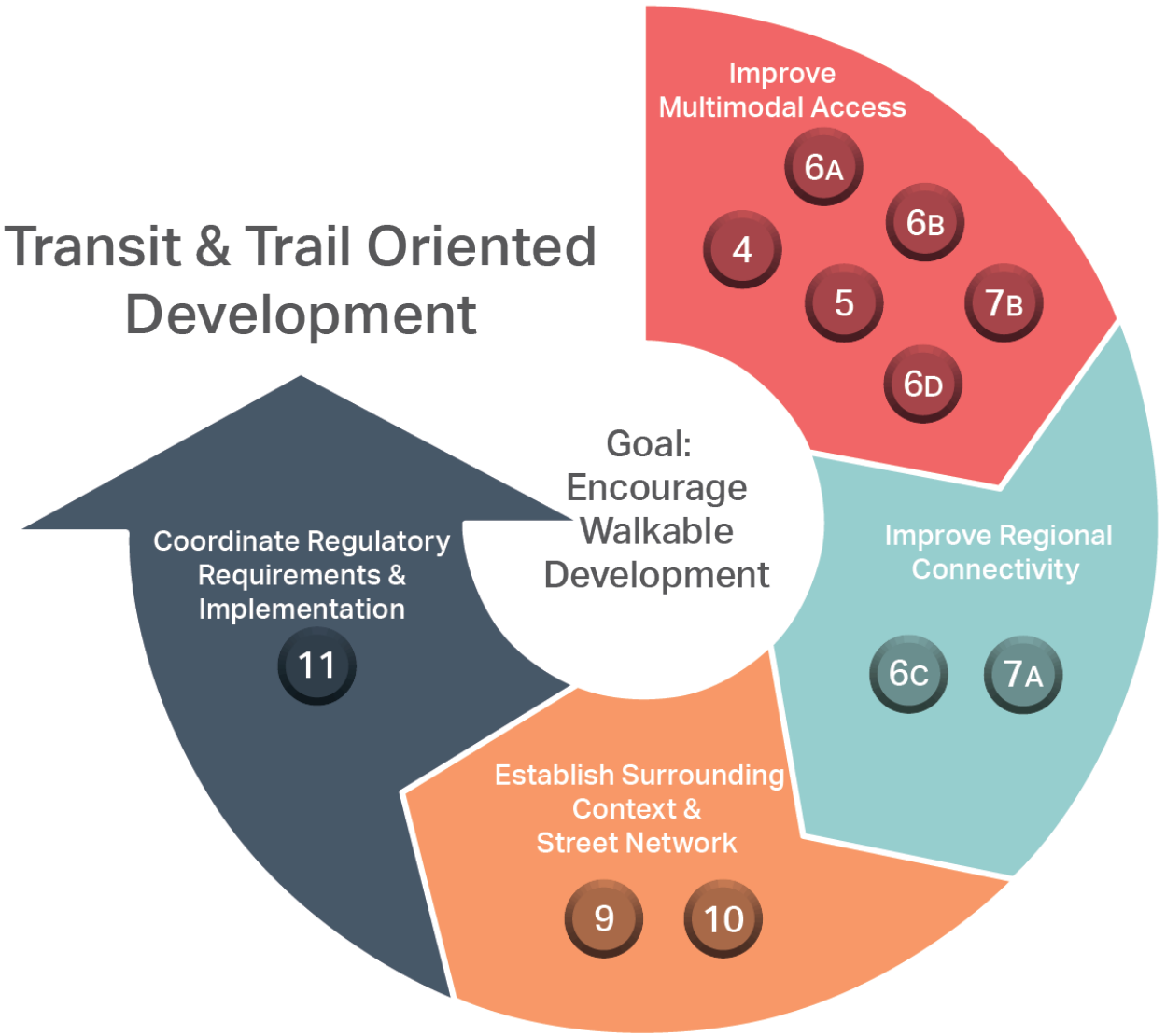


Another example that shows the complexity and interrelated nature of implementing some of the recommendations is shown in Figure 4.3. This example is intended to encourage walkable development through developing Transit & Trail Oriented Development (TTOD). While the example in Figure 4.2 focused on identifying necessary components and improvements in order to develop the right design and context, this example is more complex with significant improvements being necessary to make implementation of the recommendation possible. While not all of the identified recommendations in the example need to be completed, they should be identified and planned for as appropriate.

Additionally, the development of complete streets will help to create access for all modes, which ultimately increases the feasibility of a TTOD. Updates and coordination with the City of Houston's MTFP, Chapter 42, Chapter 33, and Chapter 26 could assist in making the surrounding development context feasible for TTOD. Another recommendation that is not specifically identified, but could help increase access to the TTOD site is minimizing impacts from bottlenecks.

As identified, many of the recommendations support and build off of each other to create holistic and potentially transformative changes within the District.

FIGURE 4.3 EXAMPLE PROCESS TO ENCOURAGE WALKABLE DEVELOPMENT



FUNDING SOURCES

Implementation is inherently tied to resource availability, particularly funding. It will be essential for Westchase District to identify multiple funding streams in addition to their existing local funds to support implementation of the Mobility Plan in the near term and further in the future. Recommendations have been developed at a level that will support funding opportunities.

The District will have a key role in implementing the recommendations as they will be project managers and facilitators for coordination. For some recommendations, the District will be able to fund and implement on their own, but for other projects, typically large-scale or complex with multiple stakeholders, the District may not have the resources available and will need to rely on being a facilitator with other agencies and stakeholders, and potentially contribute funding towards those projects. The District can also incentivize high priority projects and prime them for future, more significant public or private funding opportunities.

EXISTING FUNDING SOURCES

The District's Chapter 380 Economic Development Agreement and Westchase District Assessments are two key sources of existing funding that can be used to implement recommendations, or be leveraged against for additional funding through grant opportunities. Additionally, the City of Houston's Capital Improvement Plan (CIP), METRO's CIP, and TxDOT's Unified Transportation Plan (UTP) are significant resources and opportunities for coordination and partnerships for relevant recommendations.

GRANT OPPORTUNITIES

Grants provide the District with opportunities to leverage additional dollars and stretch their financial capacity. Grants require a local match that, while varying based on the source of the grant, is typically 20% of the total project cost. Some grants also allow in-kind match to be provided as well, which can consist of things like staff time or equipment. Grants are highly competitive and typically have a short time frame to complete the application process.

It will be important for Westchase District to identify which projects will require or be a priority to apply for grant funding. Grants are available from local, regional, state, and federal entities. In order to best utilize time and effort in applying for grants, while generating the highest possibility for funding, it is important for the District to match the right project, or projects, to the right grant opportunity. Table 4.2 on the following page identifies relevant grant programs and eligible project activities to help the District proactively identify potential funding sources.

Beyond those funding resources listed in Table 4.2, there are additional, non-traditional sources of funding that may be useful. For example, the Center for Disease Control (CDC) identified complete street-type infrastructure and improvements in the built environment to increase levels of walking and biking as a primary strategy to combat obesity. The CDC currently has the following grant programs, that can be used to fund projects that improve mobility and encourage greater levels of activity in the community.

- Partnerships to Improve Community Health (PICH)
- Racial and Ethnic Approaches to Community Health (REACH)

H-GAC provides two Community Enhancement Grants funded through the Houston-Galveston Area Local Development Corporation that are designed to promote economic development through investments in creating quality places that attract people and activity.

- The *Community Trees Grant Program* which provides up to $2,000 to purchase trees for community-based plantings in parks, public spaces, and community gateways.
- The *Downtown Public Spaces Improvements Program* that is intended to improve public spaces in the Downtown or community gateway areas. A wide variety of project activities are eligible, and include streetscape improvements, street amenities, lighting, sidewalks, and landscaping.

FUNDING STRATEGIES

In order to be competitive in the grant process, it is important for the District to match the right project(s) to the right grant. The desired outcomes of the grant program should be achievable through the proposed project(s) and the benefits of the proposed project should be well communicated in the grant application. It may also be key to pair recommendations together that further enhance the benefits and outcomes of the projects. Additionally, taking pieces of the recommendations that are applicable to funding opportunities and moving them forward can be a strategy to provide forward movement toward implementing a recommendation, particularly for large and complicated recommendations that will ultimately require significant financial resources.

TABLE 4.2 GRANT PROGRAMS AND ELIGIBLE ACTIVITIES

	Eligible Activity	FTA	CMAQ	HSIP	NHPP	STBG	TAP	RTP	CDBG
Bicycle/Pedestrian	Bicycle lanes on road	✓	✓	✓	✓	✓	✓		
	Bicycle parking	✓	✓		✓	✓	✓	✓	
	Bike share	✓	✓		✓	✓	✓		
	Bridges/overcrossings	✓	✓	✓	✓	✓	✓	✓	
	Crosswalks (new or retrofit)	✓	✓	✓	✓	✓	✓	✓	✓
	Curb cuts and ramps	✓	✓	✓	✓	✓	✓	✓	✓
	Data collection and monitoring for bicyclists and/or pedestrians	✓		✓	✓	✓	✓	✓	
	Landscaping, streetscaping (bike and/or ped route; transit access)	✓				✓	✓		✓
	Lighting (associated with ped/bike project)	✓		✓	✓	✓	✓	✓	✓
	Separated bicycle lanes	✓	✓	✓	✓	✓	✓		
	Shared use paths	✓	✓	✓	✓	✓	✓	✓	
	Sidewalks (new or retrofit)	✓	✓	✓	✓	✓	✓	✓	✓
	Signs/signals/signal improvements	✓	✓		✓	✓	✓		
	Signed bicycle or pedestrian routes	✓	✓		✓	✓	✓		
	Stormwater impacts related to bike/ped projects	✓		✓	✓	✓	✓	✓	
	Traffic calming	✓		✓	✓	✓	✓		
Roadway	ITS		✓		✓	✓			
	Mode shift programs (carpool, parking programs, electric/gas charging infrastructure)		✓			✓			
	New Construction/Reconstruction				✓	✓			
	Safety improvements			✓	✓	✓	✓		✓
	Traffic flow/operation improvements		✓			✓			
	Traffic signals/intersection improvements		✓			✓	✓		
	Turn lanes		✓			✓			
Transit	Capital facility improvements	✓	✓			✓			
	Rideshare/carpool programs		✓			✓			
	Circulator service (capital costs)	✓	✓			✓			
	Employer-based transportation management plans and incentives		✓						
	Bus shelters/Passenger amenities	✓	✓			✓	✓		✓

✓ = eligible

FTA: Federal Transit Administration Capital Funding (multiple funding categories, ex: 5310 programmed through METRO)

CMAQ: Congestion Mitigation & Air Quality Improvement Program (H-GAC)

HSIP: Highway Safety Improvement Program (TxDOT)

NHPP: National Highway Performance Program (TxDOT)

STBG: Surface Transportation Program (H-GAC)

TAP: Transportation Alternatives Program - Set Aside within STBG (H-GAC)

RTP: Recreational Trails Program (TxDOT)

CDBG: Community Development Block Grant (HUD)

COORDINATION & PARTNERSHIPS

Partnerships with other public agencies, developers, property owners, and businesses are key to successful implementation of projects that are supported in the community and receive grant funding. The recommendations in the Mobility Plan not only add multimodal choices and improve safety and connectivity, they add significant value to the community. Pedestrian, bicycle, and transit projects can attract investment interest from other agencies, such as the City of Houston, H-GAC, or TxDOT, developers, businesses, medical facilities, and philanthropic/non-profit organizations. In order to coordinate and partner with other agencies, Westchase District must be able to clearly identify the benefits to the partnering entity.

Additionally, partnerships and coordination can be utilized to provide information, drive public support, and build capacity. For example, the District could partner with major employers to promote or encourage higher utilization of METRO services such as vanpool or Park & Ride. This could ultimately aid in implementation of expanding transit service and regional connectivity, but also provide real benefits to commuters in the short term while growing support and understanding of transit service.

Another area beyond grant funding where partnerships and coordination can be beneficial to the District is in maintenance of infrastructure and capital investments. All sidewalk, trail, and street investments include a commitment for maintenance. Collaboration with other public agencies and other organizations could allow the District to ensure maintenance of the project, and have greater flexibility in the use of their local funds for future capital project needs. Entities to collaborate with could include public agencies, advocacy entities such as BikeHouston, non-profits, and businesses. Maintenance activities could also include "adopt-a-" programs as a means to maintain project elements and build community support for future projects.

The Westchase District Community Fund (WDCF) is a significant partner for the District to leverage. As a charitable organization, it can help garner support for projects to advance the District's goals and objectives, as well as assist with local match for projects through in-kind donations, such as volunteer time, or fundraising.

EVALUATION & MONITORING

Crucial to any successful implementation plan is monitoring and evaluating how well the implemented project is meeting its intended goal(s) as well as the goals of Westchase District. It is through thoughtful project monitoring and evaluation that the District can continue to prioritize projects and move them into implementation.

As communities change over time, the types of projects and strategies that help strengthen the mobility and community as a whole may change as well. As projects are implemented, the District should employ efforts to monitor the effectiveness of the project, whether that is transit stop boardings, bicycle usage, or intersection delay, and evaluate whether or not that project is meeting its intended goal. From that point, additional measures to further improve the project may be necessary, or it can become a success story that helps the District build towards more project implementation.

Additionally, using data and public opinion may indicate which types of projects are likely to achieve higher support and meet set goals within Westchase District, which in turn can signal which types of projects to further prioritize and invest in. For example, expanding transit options and increasing the bikeway network may provide a greater impact on overall mobility within the District than other types of projects. In that case, further investment into those types of projects first may yield the greatest outcomes for the community, while building momentum and support for other projects that may be important, but provide less obvious impacts. This type of prioritization can only happen through monitoring and evaluating implemented projects.

Prior to starting a project, the appropriate data must be collected to adequately define baseline (before) conditions and measures, providing a benchmark for measuring successful implementation. Obtaining future funding for projects will be easier as the District will be able to quantify a proven track record of success. The following information identifies example metrics based on best practices for a variety of project types.

MODE	CATEGORY	METRIC	DATA SOURCE
Pedestrian	Facilities	Total length of all sidewalk facilities; % of sidewalks that meet or exceed ADA standards, % of sidewalks in good condition	Observation
	Comfort	% of facilities with shade, % of facilities with pedestrian-scale lighting	Observation
	Activity	Number of people walking measured in PPD (pedestrians per day)	Observation
Bicycle	Facilities	Length of bicycle facilities by type (on-street bike lane, protected bike lane, shared path/off-street, shared on-street)	Observation
	Access	% of people and jobs within 1/4 mile of a high-comfort bikeway	Observation
	Amenities/Support	Number of bike parking spaces	Conduct counts and supplement with surveys
		Number of Bicycle-Friendly Businesses; number of businesses with bicycle amenities	Data from League of American Bicyclists, supplement with surveys and observation
	Activity	Number of people riding a bike measured in CPD (cyclists per day)	Conduct counts
Transit	Facilities	Number of stops; number and % of stops with shelter and seating	METRO; supplement with observation
	Access	Number of people and jobs within 30 minutes of Westchase District by walking and biking	US Census Bureau - requires additional analysis
	Accessibility	Number of stops with ADA compliant ramps, sidewalks, and bus pads	METRO; supplement with observation
All	Mode Share	% of people walking, biking, using transit, and personal vehicles. % of trips as percentage of total	US Census Bureau (American Community Survey); supplement with surveys and observation
	Mode Share	Average trip length by mode, % of trips under 3 miles	H-GAC
Roadway	Intersection Density	Number of intersections per square mile, note the % of intersections with pedestrian crossings, crosswalk signals, and bicycle facilities.	Observation
	Activity	Number of vehicles measured in VPD (vehicles per day), include turning movement counts at key intersections	TxDOT, City of Houston, supplement if needed through additional counters/ observation
	Capacity	Delay experienced at key intersections, note peak period and off-peak period	Observation

Note: This table represents some recommended metrics based on best practices. Other metrics may be useful for Westchase District to track as well in relation to specific projects or goals. Further information on these and many other metrics can be found in the Global Street Design Guide.

APPENDIX A

GREAT STREETS

All thoroughfares, collectors and key local corridors within Westchase District were cataloged and included in this Appendix. For each corridor, the existing conditions including:

- Major Thoroughfare and Freeway Plan (MTFP) classification
- Right-of-way (ROW)
- Speed limit
- Number of lanes
- Pavement width
- Sidewalk condition
- Bicycle facilities
- Transit service
- Street parking
- Vehicular volumes

Understanding the existing conditions assists with developing the vision for each corridor that aligns with the goal of creating great streets within Westchase District. Recommendation 1 from the updated Mobility Plan focuses on promoting the design of great streets that matches existing and future development context and provides options for all users. Great streets balance safety, mobility, economic development, community, and environment goals.

The following pages highlight the future great street vision for each of the key corridors with Westchase District. Typical cross-sections were developed based on the City of Houston Complete Street and Transportation Plan Framework (currently a draft document). As part of the framework, the following were incorporated into each corridor vision:

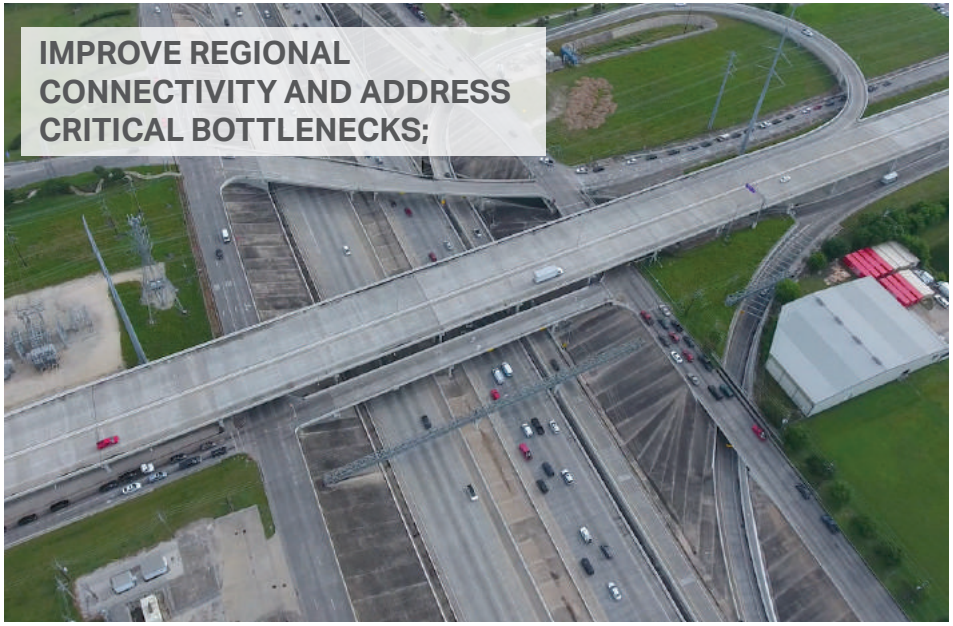
- Westchase District Ped/Bike Plan
- Houston Bike Plan
- Transit Plans from METRO
- Parking Plan to be developed by City of Houston or Westchase District
- Future Pedestrian Plans

The complete streets framework encourages planning for not only existing context but also future context. Existing and future context of a corridor is defined by land use and area typology. Land use and area type are defined for each of the corridors. There are five area typologies: urban core, urban center, general urban, suburban, rural. The framework defines Westchase District as an urban core.

ACHIEVE MOBILITY GOALS THROUGH STREETS THAT:

PROVIDE SAFE, EFFICIENT AND ACCESSIBLE TRANSPORTATION CHOICES FOR ALL;

INCREASE LOCAL MULTIMODAL CHOICES;

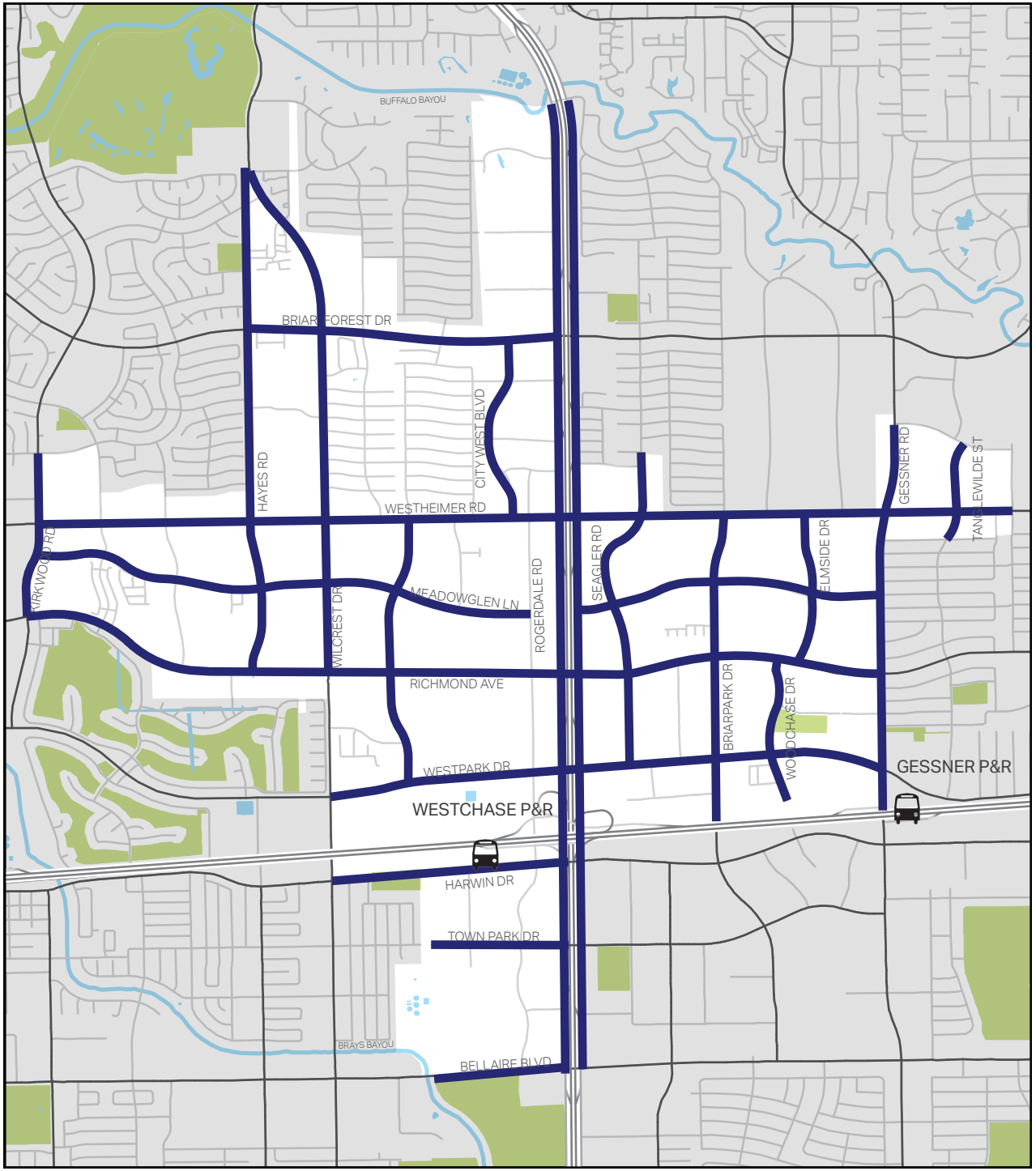


IMPROVE REGIONAL CONNECTIVITY AND ADDRESS CRITICAL BOTTLENECKS;

AND ENCOURAGE WALKABLE DEVELOPMENT.

CORRIDOR SUMMARY MAP

To provide more specific insight into how Westchase District can achieve the mobility goals and develop a comprehensive network of Complete Streets, 21 corridors that serve a valuable role in the local transportation network were evaluated. Based on the current and desired future function and development context, a mode priority and recommended typical cross-section were created for each corridor. A map showing the corridors and their extents is shown here. The approach and recommendations are detailed on the following pages.



LEGEND

study area study corridor

TABLE A.1 CORRIDOR MODE PRIORITIES

CORRIDOR	MAJOR THOROUGHFARE AND FREEWAY PLAN	METRO ROUTES	WD PED/ BIKE PLAN[1]	AREA TYPE	LAND USE TYPE	MODE PRIORITY			
						HIGHER			LOWER
BELLAIRE BOULEVARD	P-6-120	2	Bike Lane	Urban Center	Commercial	TRANSIT	PED	AUTO	BIKE
BELTWAY 8	Tollway	-	Off-street	General Urban	Commercial	AUTO	PED	BIKE	
BRIAR FOREST DRIVE	T-4-100	153	Bike Lane	General Urban	Residential	BIKE	PED	AUTO	TRANSIT
BRIARPARK DRIVE	MJ-4-80	153	Bike Lane	Urban Center	Commercial	BIKE	PED	AUTO	TRANSIT
CITYWEST BOULEVARD	Local	153	-	Urban Center	Commercial	PED	AUTO	BIKE	TRANSIT
ELMSIDE DRIVE	Local	-	On/Off Street Bike Lane	Urban Center	Residential	BIKE	PED	AUTO	
GESSNER ROAD	P-6-110	46	-	Urban Center	Mixed-use	TRANSIT	PED	AUTO	BIKE
HARWIN DRIVE	T-4-80	151	Bike Lane	Urban Center	Commercial	PED	BIKE	TRANSIT	AUTO
HAYES ROAD	Local	-	-	Urban Center	Mixed-use	PED	AUTO	BIKE	
KIRKWOOD ROAD	T-4-100	-	Bike Lane	General Urban	Mixed-use	BIKE	AUTO	PED	
MEADOWGLEN LANE	MJ-2-60	25	On/Off Street Bike Lane	Urban Center	Residential	BIKE	PED	AUTO	TRANSIT
RICHMOND AVENUE	T-4/6-100	25	Bike Lane	Urban Center	Commercial	TRANSIT	BIKE	PED	AUTO
ROGERDALE RD (N OF RICHMOND)	MJ-4-70/80	153	Shared-use path[2]	Urban Center	Commercial	PED	BIKE	AUTO	
ROGERDALE RD (S OF RICHMOND)	MJ-4-70/80	-	-	Urban Center	Commercial	AUTO	PED	BIKE	
SEAGLER RD/WESTCENTER DR	Local	-	Bike Lane	Urban Center	Vacant	PED	BIKE	AUTO	
TANGLEWILDE STREET	Local	-	Shared on-street[3]	Urban Center	Mixed-use	BIKE	PED	AUTO	
TOWN PARK DRIVE	Local	-	Bike Lane	Urban Center	Commercial	BIKE	PED	AUTO	
WALNUT BEND LANE	MJ-2-60	25 | 161	On/Off Street Bike Lane	Urban Center	Residential	PED	BIKE	TRANSIT	AUTO
WESTHEIMER ROAD	P-8-120/150	25 | 82	Off-street	Urban Center	Commercial	TRANSIT	PED	AUTO	BIKE
WESTPARK DRIVE	T-4-100	161	Bike Lane	Urban Center	Commercial	BIKE	PED	AUTO	TRANSIT
WILCREST DRIVE	T-6-90/100	25 | 161	-	Urban Center	Mixed-use	AUTO	PED	TRANSIT	BIKE
WOODCHASE DRIVE	Local	-	Off-street	General Urban	Residential	BIKE	PED	AUTO	

Notes:
[1]Classifcations from the Westchase District Ped/Bike Long Term Vision. The bike lane classification is considered to be any dedicated bicycle facility within the ROW.
[2] This plan recommends the bicycle classification on Rogerdale Road north of Richmond be converted to a bike lane for the entire segment from Richmond Avenue to Westheimer Road.
[3] Due to adjacent land uses and observed vehicular volumes, this plan recommends a bicycle lane for Tanlgewilde Street between Westheimer Road and Ella Lee Lane

There are many considerations when developing a vision for a corridor. Each corridor must serve the needs of the adjacent properties and accommodate the demands of the greater street network, while providing a safe means of travel for all road users. Each mode of travel (auto, transit, bicycle and pedestrian) has unique considerations. For motor vehicles, a sufficient number of travel and turn lanes is required to meet travel demand. Encouraging more bicyclists requires facilities that provide separation and safety from cars. Transit service may benefit from dedicated lanes, prioritized signals and enhanced bus stops. Transit users and all other pedestrians benefit from a continuous sidewalk network built to standards that accommodate users of all abilities.

Considering the demands for a mode will yield some preferred design elements, like number of vehicle travel lanes or the width of a bike lane. For the majority of scenarios, when designing for the desires all modes, tradeoffs must be made. There are often simply not enough resources, whether it be space within the ROW or financial means, to provide every user with their ideal outcome.

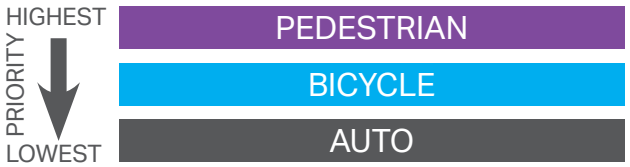
On some streets, it may make sense for a vehicle lane to be eliminated in favor of a bicycle lane, while on others providing an alternative bicycle route may be required in order to meet vehicle demand. To help inform decisions like these on a regional level, a mode priority was defined for each of the corridors. Mode priority is based on the existing conditions and future vision for the corridor along with what role the corridor plays in the District's mobility network. Mode priority is a tool to actively plan for future projects and optimize trade-offs that will be present along every corridor.

A summary of all corridors with key details and mode priority is shown in Table A.1.

MODE PRIORITY EXAMPLE

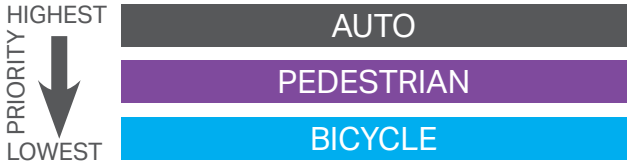
Rogerdale Road is a corridor that demonstrates how factors like land use and travel demands influence mode priority.

North of Richmond Avenue, the four-lane street has no bicycle facilities, low traffic volumes and is surrounded by dense activity, including office building, hotels and other commercial properties. It was determined that along this segment encouraging walking and bicycling is in line with the mobility goals, therefore the mode priority is:



Transit was not included as a priority for this corridor due to the absence of an existing recommended transit route. The resulting recommendation for this segment is to reduce the number of travel lanes from four to three, while introducing a center turn lane and buffered bike lanes in each direction.

South of Richmond Avenue, the context changes as the activity density is lower and the street becomes a vital access point to Westpark Tollway. Along this portion of the street the mode priority is:



The proposed design with respect to this prioritization maintains four travel lanes, widens the existing sidewalk, but does not include a bike facility, as there is not enough space within the ROW.

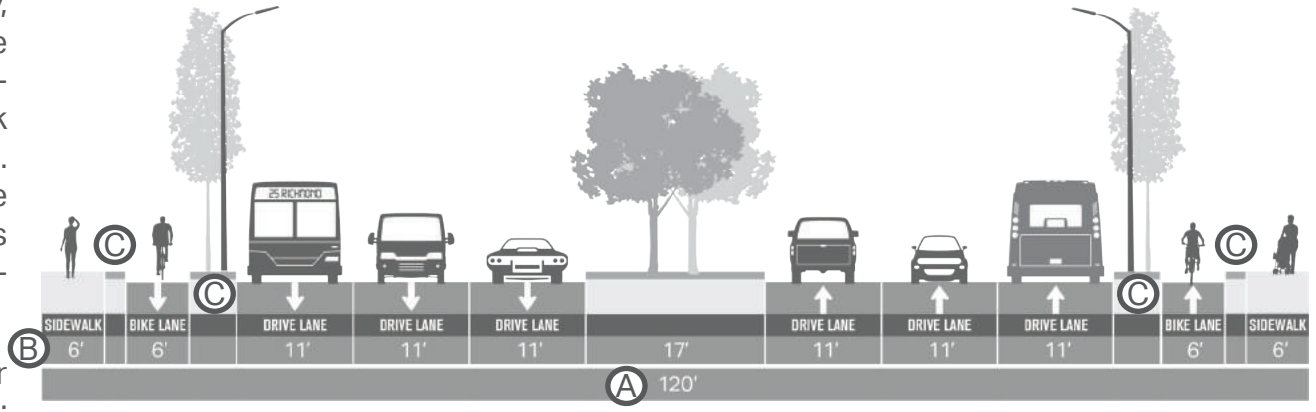
BICYCLE FACILITY TIMELINE

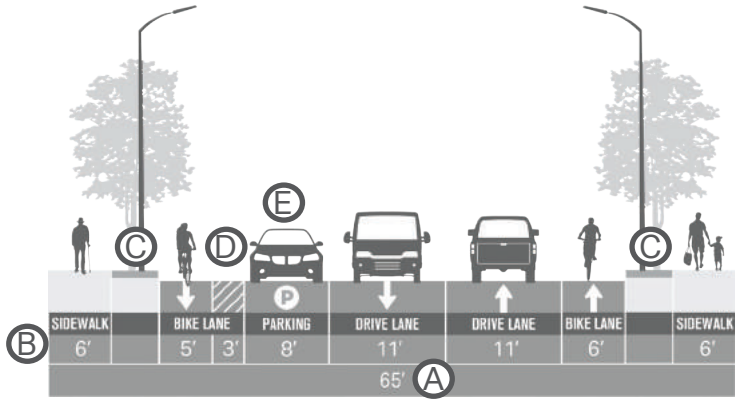
All recommended bicycle facilities are given a short- or long-term designation based on cost of construction and difficulty to implement. Corridors that only require reallocating space with paint markings can potentially be implemented in the short-term, while facilities requiring ROW acquisition or reconstruction are likely long-term projects.

DEVELOPING TYPICAL CROSS-SECTIONS

After developing an understanding of existing infrastructure, a vision for the corridor's development context, and a mode priority, typical cross-sections for each street were developed. On the following pages, cross-sections depict what each road could look like in the future at mid-block locations. Further study would be required to finalize a design, and approaches to intersections would likely vary from the mid-block cross-sections.

Cross-sections are not shown for Meadowglen Lane and Walnut Bend Lane; they are currently under design, thus renderings are shown instead. Similarly, details from ongoing studies are outlined for Westheimer Road. A cross-section was not created for Seagler Road because the future of the corridor and surrounding land uses will be based on development of the surrounding parcels.





CROSS SECTION ELEMENTS

A Proposed total ROW

B Design widths

C Landscaping buffer[1]

D Paint buffer

E Parking lane

1. Buffer widths are not specified, and may vary along a corridor based on ROW, bus stops, turn lanes, utilities and other factors. Maximizing and utilitizing this space is essential for creating acomfortable space for pedestrian and bicyclists. If for example, a six-foot sidewalk is recommended with a small landscaping buffer, a wide buffer is preferred to create a seperation between pedestrians and passing vehicular traffic and allow room for trees to create shade.

BELLAIRE BOULEVARD | EXISTING

EXTENT | Brays Bayou — Beltway 8

EXISTING MTFP | P-6-120

EXISTING RIGHT OF WAY | 120'

THROUGH TRAVEL LANES | 6

POSTED SPEED LIMIT | 35 mph

TYPICAL ROADWAY WIDTH | 35' - 25' - 25'

SIDEWALKS | mostly present, below standard

BICYCLE FACILITIES | none

TRANSIT ROUTES | 2 Bellaire

STREET PARKING | none

TRAFFIC VOLUMES | 42,500

TDM PROJECTIONS | 72,500 (2040)

LAND USE | office, detention, commercial

AREA TYPOLOGY | urban center

MULTIMODAL CLASS. | commercial boulevard

eastbound at Rogerdale Lane

eastbound near Brays Bayou

EXISTING CORRIDOR LEGEND

- transit route
- bike facility
- P — on-street parking
- traffic signal
- corridor stop sign
- traffic count (year)

BELLAIRE BOULEVARD | PROPOSED

The southern most boundary of the mobility study study area is a 0.5 mile segment of Bellaire Boulevard between Brays Bayou and the West Sam Houston Parkway. Land uses along Bellaire Boulevard within the study area include a large corporate campus, strip center and big box retail; Arthur Storey Park is adjacent to Bellaire Boulevard south of the study area.

Bellaire Boulevard is a key east-west Principal Thoroughfare in West Houston. It extends west into Fort Bend County and east through Sharpstown and the City of Bellaire. Bellaire turns into Holcombe Boulevard which connects to the Texas Medical Center.

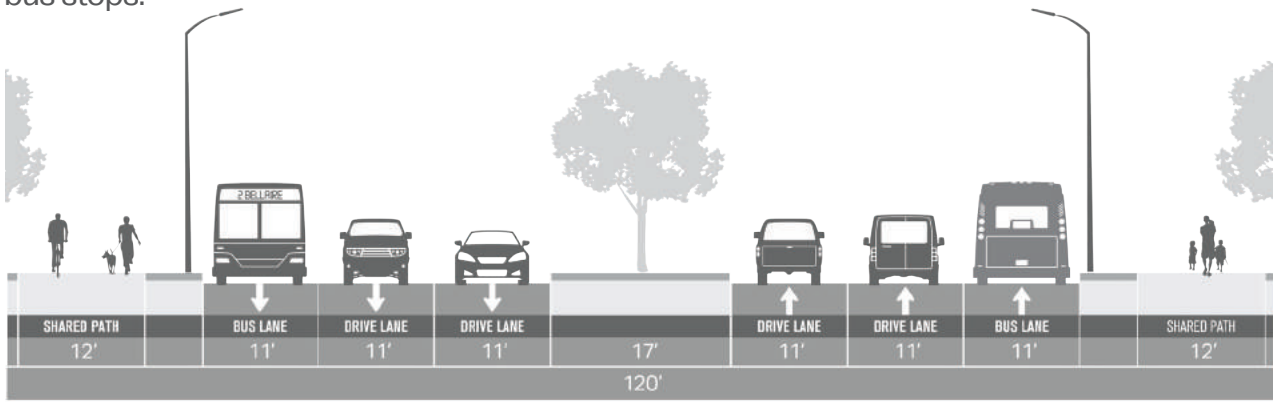
East of the study area between West Sam Houston Parkway and Harbor Town Drive, Bellaire Boulevard was recently reconstructed from a six-lane boulevard to a seven-lane boulevard with four westbound lanes and three eastbound lanes. Reconstruction also included improved medians, wide sidewalks, improved pedestrian crossings, and signature bus stops.

METRO route 2 Bellaire is a high frequency route that runs along Bellaire Boulevard from Mission Bend Transit Center through the study area to TMC Transit Center. The 2 Bellaire is one of the top ridership routes within the network with over 7,000 daily boardings.

East of the study area is the terminus of the 402 Bellaire Quickline, a signature service bus route that runs weekdays and provides express service from Ranchester Road to TMC Transit Center.

Bellaire Boulevard is a critical corridor within the transit network. Bus stop spacing should be optimized and stop amenities should be improved. Long-term plans should include converting the outside travel lane to a dedicated bus lane and improve transit operations and prioritizing transit along Bellaire Boulevard.

A 12-foot wide shared-use path adjacent to both sides of the roadway is recommended to accommodate pedestrian and bicycle traffic.



MODE PRIORITY

TRANSIT

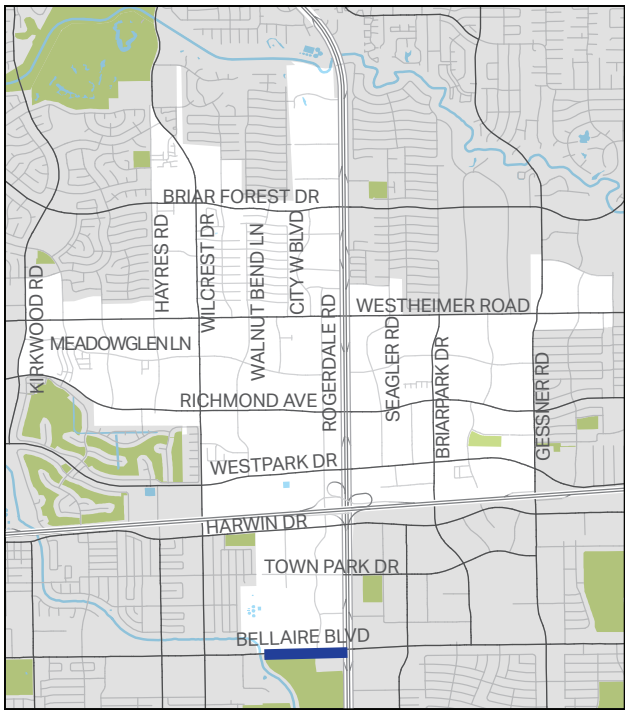
PEDESTRIAN

AUTO

BICYCLE

PROPOSED MTFP CHANGE | none

BICYCLE RECOMMENDATION | bike lane (long-term)



study area corridor

BELTWAY 8 FRONTAGE ROADS | EXISTING

EXTENT | Deerwood Dr — Bellaire Blvd

EXISTING MTFP | n/a[2]

EXISTING RIGHT OF WAY | 400' - 500'

THROUGH TRAVEL LANES | 6

POSTED SPEED LIMIT | 45 mhp

TYPICAL ROADWAY WIDTH | 36'[3]

SIDEWALKS | discontinuous, varying condition, width

BICYCLE FACILITIES | none

TRANSIT ROUTES | none

STREET PARKING | none

TRAFFIC VOLUMES | 68,000

TDM PROJECTIONS | 107,500 (2040)

LAND USE | commercial

AREA TYPOLOGY | urban center

MULTIMODAL CLASS. | mixed-use street

[1] This page describes Beltway 8 (West Sam Houston Parkway), the state controlled roadway which acts as the frontage road for the Sam Houston Tollway through the study area.

[2] There is no classification for Beltway 8 on the COH MTFP. The Sam Houston Tollway is classified as a Tollway with sufficient width.

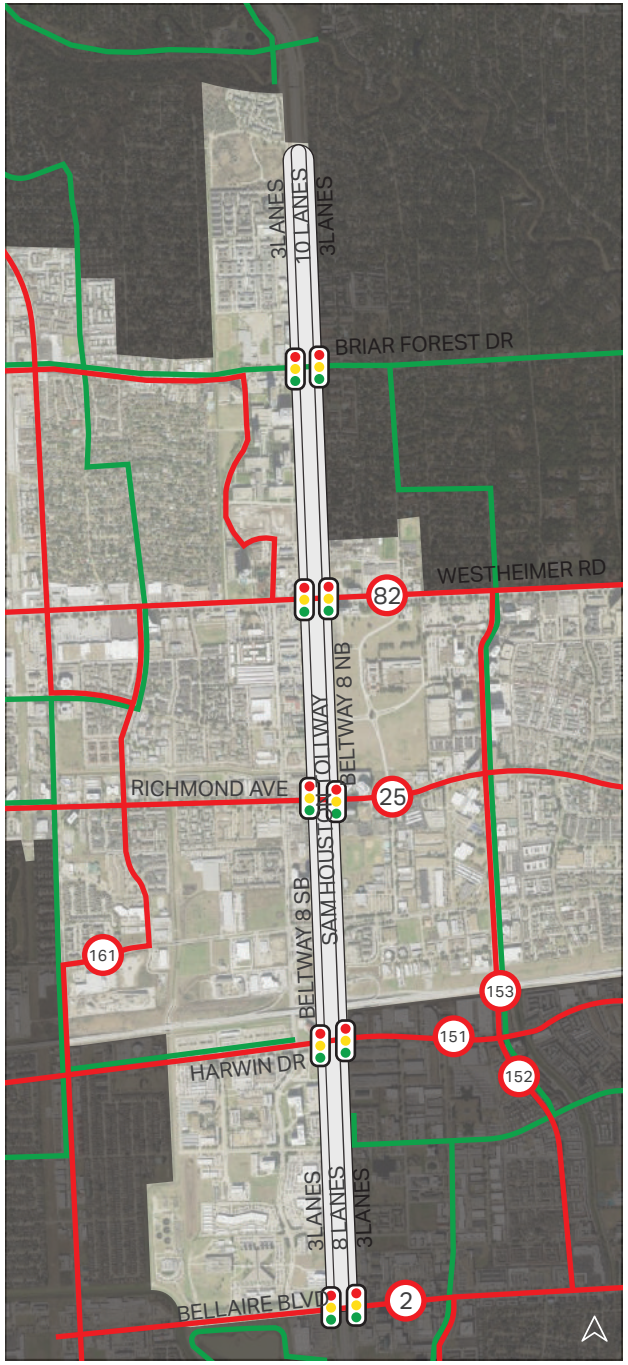
[3] Roadway width for one directional 3 lane section.

northbound approaching Town Park Drive

northbound approaching Westheimer Road

EXISTING CORRIDOR LEGEND

- transit route
- bike facility
- P — on-street parking
- traffic signal
- corridor stop sign
- traffic count (year)



BELTWAY 8 FRONTAGE ROADS | PROPOSED

Beltway 8 is a TxDOT maintained facility that operates as the frontage roads for the Sam Houston Tollway, a HCTRA owned and operated controlled-access facility. Beltway 8 is also name the West Sam Houston Parkway.

There is currently an ongoing TxDOT study to evaluate operations along Beltway 8 and highlight potential improvements that will minimized bottlenecks along both Beltway 8 and the major corridors that intersect Beltway 8.

One recommendation is to reconstruct the intersection of Westheimer Road at Beltway 8 as a grade separated intersection. This would improve operations along both Westheimer Road and Beltway 8. It could also provide an advantage for future transit improvements along the Westheimer corridor.

The Westchase District Ped/Bike Plan recommended wide, shared-use paths along Beltway 8 to accommodate pedestrians and bicycles.

MODE PRIORITY

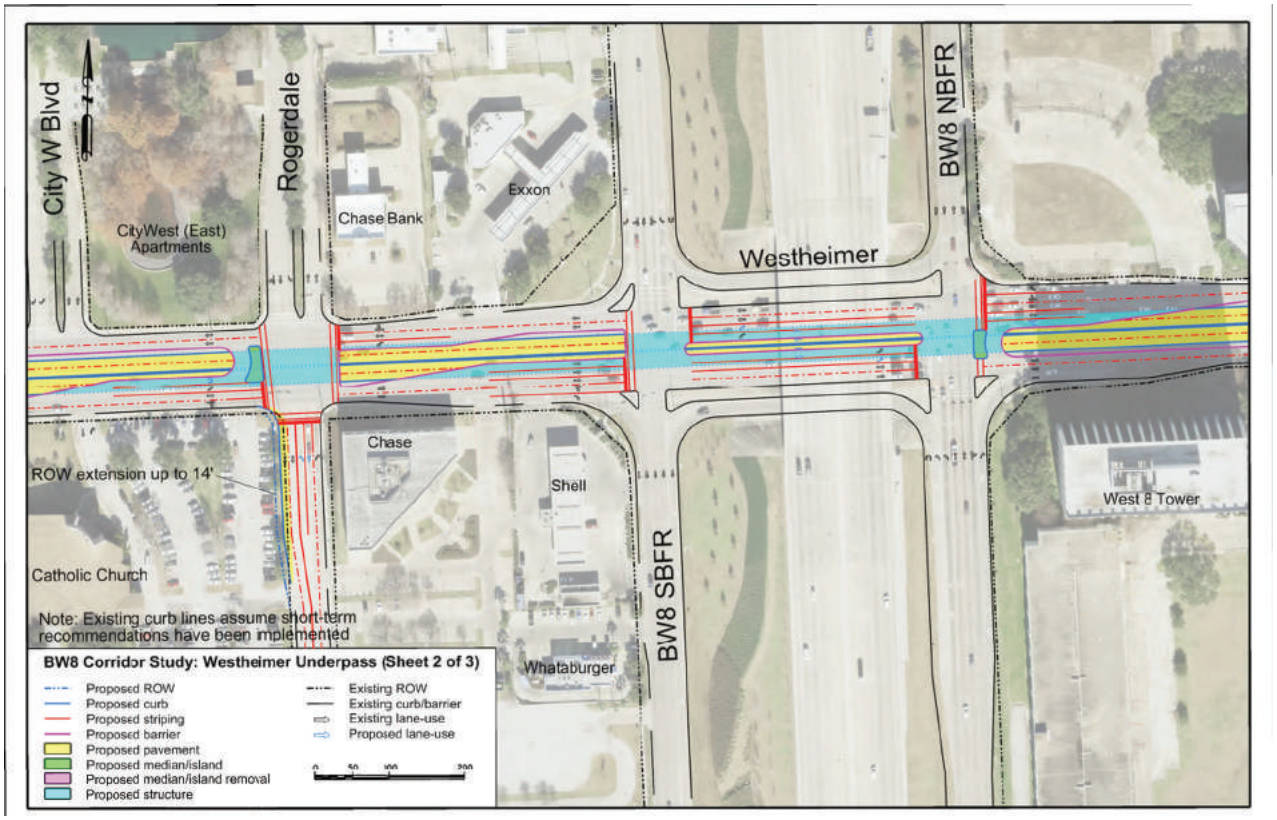
AUTO

PEDESTRIAN

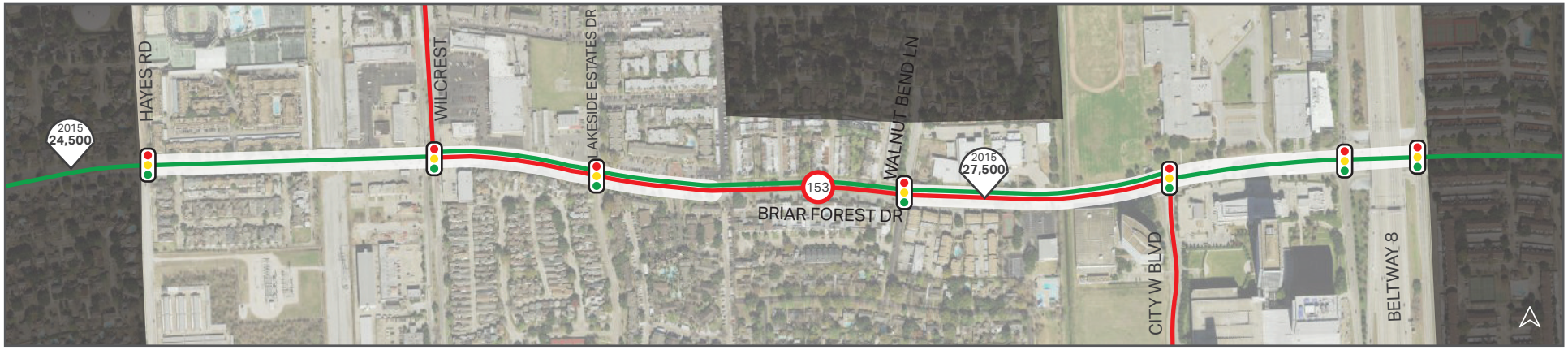
BICYCLE

PROPOSED MTFP CHANGE | none

BICYCLE RECOMMENDATION | wide sidewalk (short-term)



BRIAR FOREST DRIVE | EXISTING



EXTENT | Hayes Road — Beltway 8

EXISTING MTFP | T-4-100

EXISTING RIGHT OF WAY | 100'

THROUGH TRAVEL LANES | 4

POSTED SPEED LIMIT | 35 mph

TYPICAL ROADWAY WIDTH | 24' - 30' - 24'

SIDEWALKS | both sides, continuous, narrow

BICYCLE FACILITIES | low comfort bike lane

TRANSIT ROUTES | 153 Harwin Express

STREET PARKING | none

TRAFFIC VOLUMES | 24,500 - 27,500

TDM PROJECTIONS | 63,000 (2040)

LAND USE | residential, commercial, office

AREA TYPOLOGY | general urban

MULTIMODAL CLASS. | residential boulevard

westbound at Paul Revere Middle School

eastbound at Beltway 8

EXISTING CORRIDOR LEGEND

- transit route
- bike facility
- P — on-street parking
- traffic signal
- corridor stop sign
- traffic count (year)

BRIAR FOREST DRIVE | PROPOSED

Briar Forest Drive is a Major Thoroughfare that is lined primarily with town homes and apartments with clusters of commercial and office at major intersections. Walnut Bend Elementary School and Paul Revere Middle School are on Briar Forest Drive within the study area. The corridor is primarily built out and, while redevelopment is likely at some locations, context of the corridor is expected to remain primarily residential.

To align with the context of the corridor, the top two modes for Briar Forrest Drive are bicycle and pedestrian. Improving the bicycle and pedestrian facilities along Briar Forest Drive can create a mode shift for short trips from automobiles, and allow the four travel lanes to serve longer trips. It is also a far reaching east-west connection that will serve as an important segment of the regional bike network.

The reconstruction of Briar Forest Drive is included in Recommendation 2: Targeted Street Reconstruction.

MODE PRIORITY

BICYCLE

PEDESTRIAN

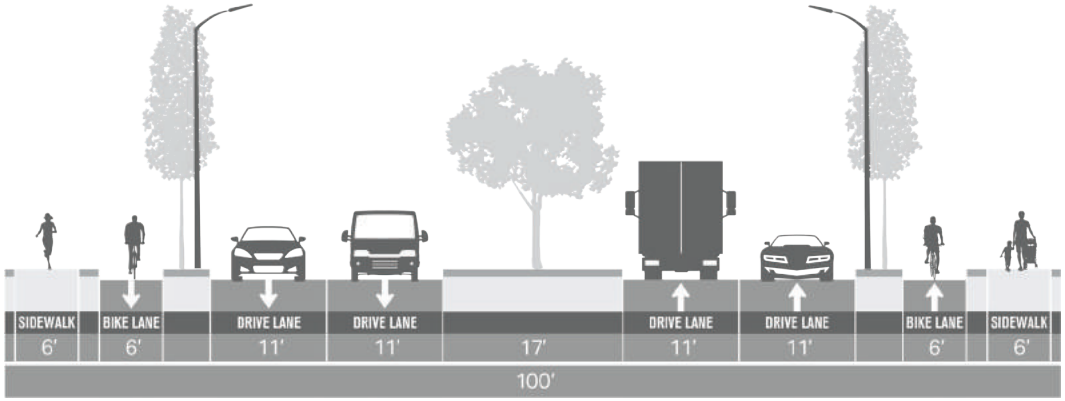
AUTO

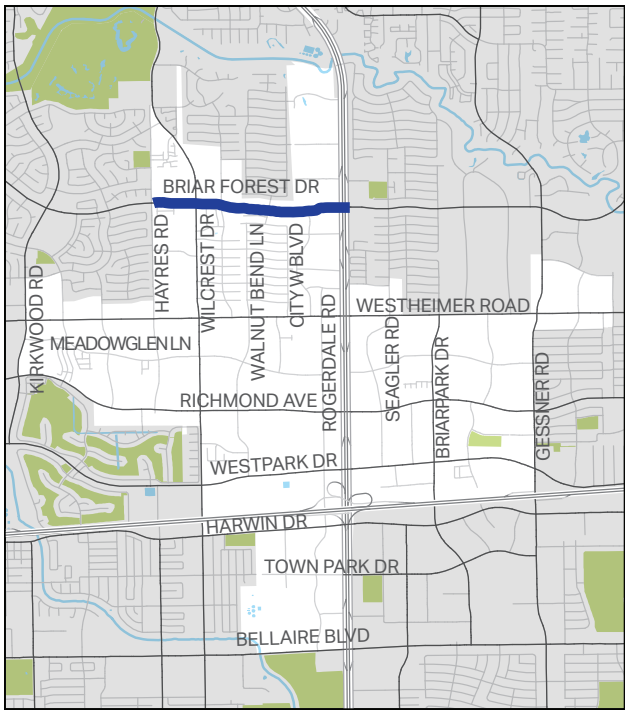
TRANSIT

PROPOSED MTFP CHANGE | none

BICYCLE RECOMMENDATION | bike lane

TARGETED STREET RECONSTRUCTION RECOMMENDATION





BRIARPARK DRIVE | EXISTING

EXTENT | Westheimer Rd — Westpark Tollway

EXISTING MTFP | MJ-4-80

EXISTING RIGHT OF WAY | 80'

THROUGH TRAVEL LANES | 4

POSTED SPEED LIMIT | 35 mph

TYPICAL ROADWAY WIDTH | 25' - 10' - 25'

SIDEWALKS | continuous, both sides, narrow

BICYCLE FACILITIES | neighborhood bikeway north of Westheimer Rd. low-comfort bike lane south of Westheimer Rd.

TRANSIT ROUTES | 153 Harwin Express

STREET PARKING | none

TRAFFIC VOLUMES | 9,000

TDM PROJECTIONS | n/a

LAND USE | office, commercial

AREA TYPOLOGY | urban center

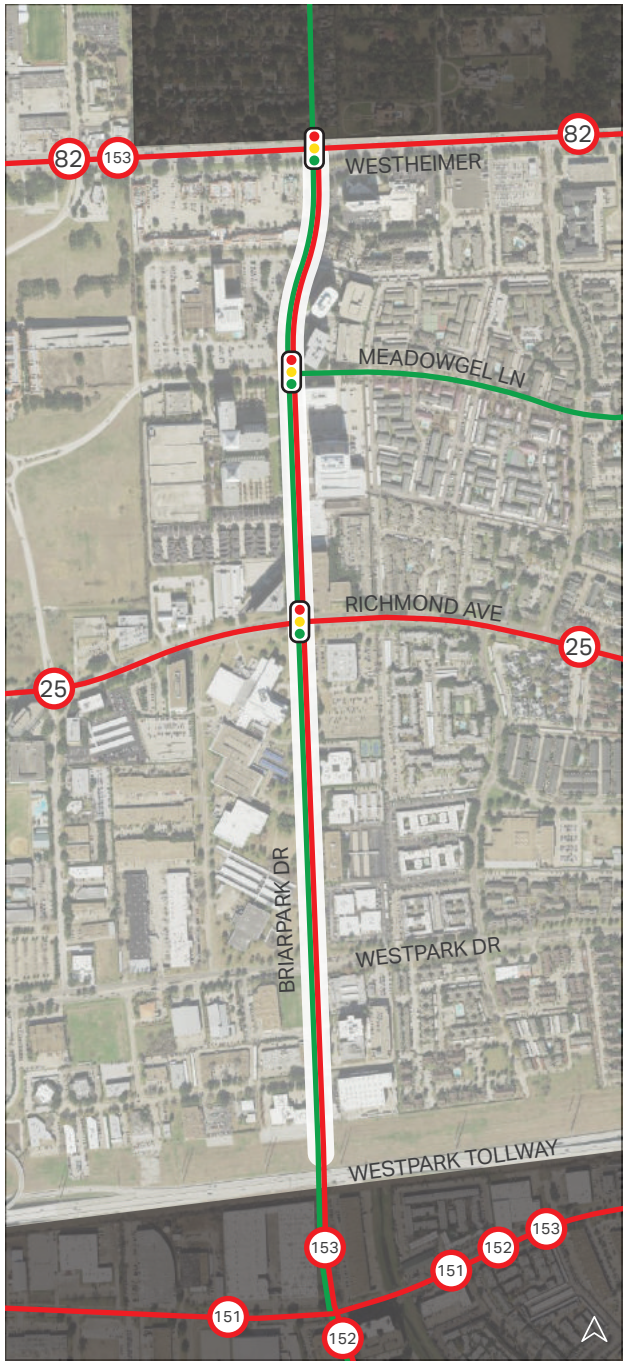
MULTIMODAL CLASS. | commercial boulevard

northbound near Meadowglen Lane

southbound approaching Richmond Avenue

EXISTING CORRIDOR LEGEND

- transit route
- bike facility
- P — on-street parking
- traffic signal
- corridor stop sign
- traffic count (year)



Briarpark Drive is a Major Collector within the urban center area of Westchase District. Between Westheimer Road and Westpark Tollway, Briarpark Drive is lined primarily by office buildings. Office buildings vary in height, with newer construction being high-rise Class A office towers. As Westchase District grows, development along Briarpark Drive is expected to increase in density, with the construction of more office towers.

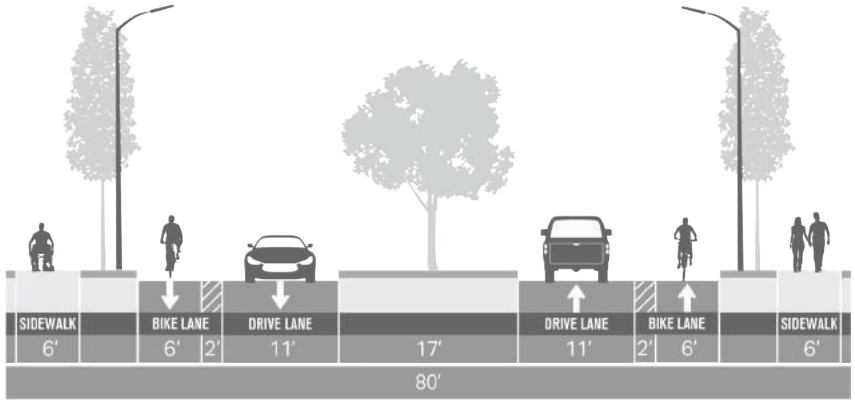
The four-lane roadway is currently operating with excess vehicle capacity. Daily volumes are under 10,000 vehicles. There are sub-standard bicycle lanes along the corridor. It is recommended the corridor be reconstructed with two lanes and high comfort, buffered bicycle lanes. Existing trees within the median be maintained, where possible.

The recommended cross-section includes a minimum six-foot sidewalk and an improved pedestrian realm to meet the demand of many employees along Briarpark who walk to (or wish to walk to) the Carillion shopping center along Westheimer Road.

The blocks along Briarpark Drive are long resulting in long walking distances between available pedestrian crossings (up to 0.4 miles). The 17-foot median can allow for pedestrian refuges and midblock crossings to reduce walking distance and improve connectivity.

The reconstruction of Briarpark Drive is included in Recommendation 2: Targeted Street Reconstruction.

TARGETED STREET RECONSTRUCTION RECOMMENDATION



MODE PRIORITY

BICYCLE

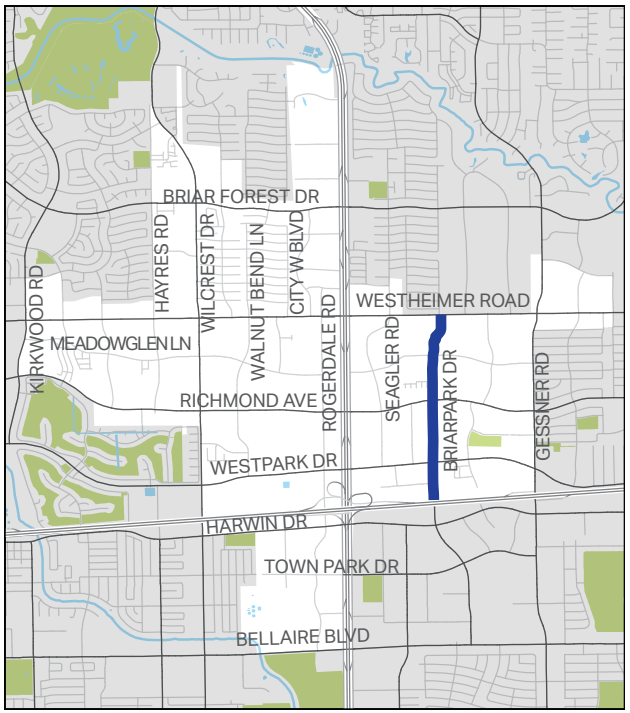
PEDESTRIAN

AUTO

TRANSIT

PROPOSED MTFP CHANGE | MJ-2-80

BICYCLE RECOMMENDATION | bike lane



CITYWEST BOULEVARD | EXISTING

EXTENT | Briar Forest Dr — Westheimer Rd

EXISTING MTFP | n/a

EXISTING RIGHT OF WAY | 80'

THROUGH TRAVEL LANES | 4

POSTED SPEED LIMIT | 30 mph

TYPICAL ROADWAY WIDTH | 25' - 10' - 25'

SIDEWALKS | east side meets standard, largely missing on west side

BICYCLE FACILITIES | none

TRANSIT ROUTES | 153 Harwin Express

STREET PARKING | none

TRAFFIC VOLUMES | n/a

TDM PROJECTIONS | n/a

LAND USE | office

AREA TYPOLOGY | urban center

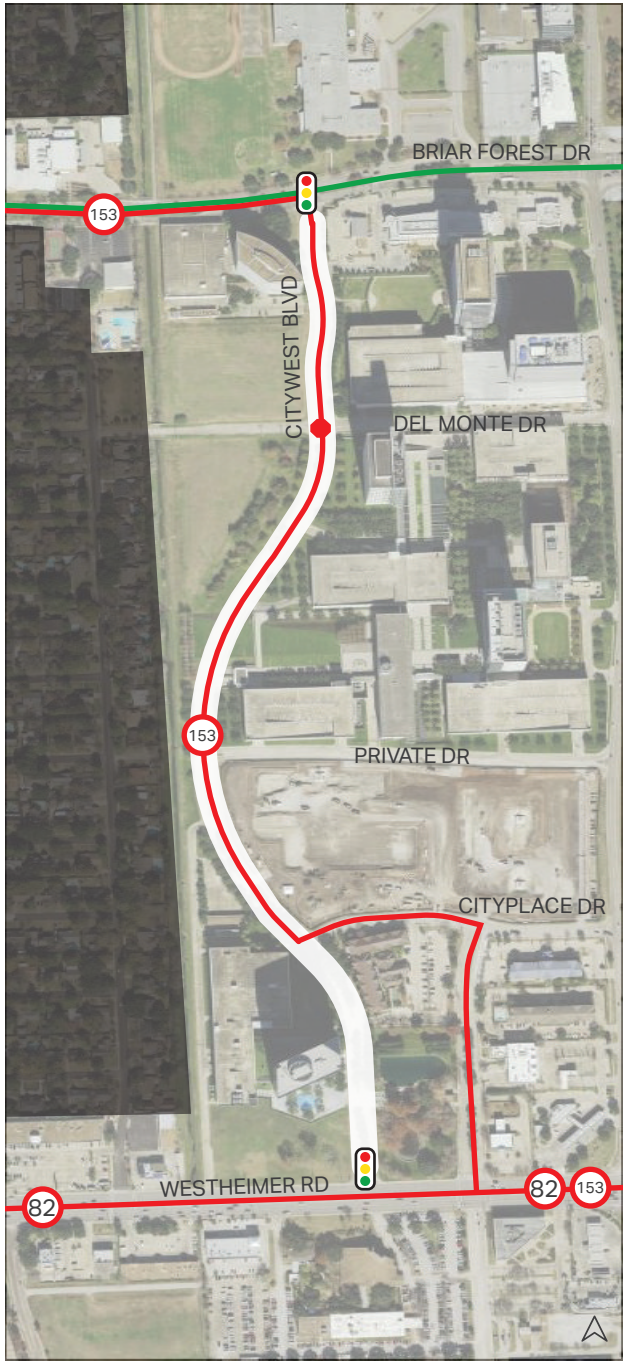
MULTIMODAL CLASS | commercial street

northbound near Private Drive

southbound near Del Monte Drive

EXISTING CORRIDOR LEGEND

- transit route
- bike facility
- P — on-street parking
- traffic signal
- corridor stop sign
- traffic count (year)



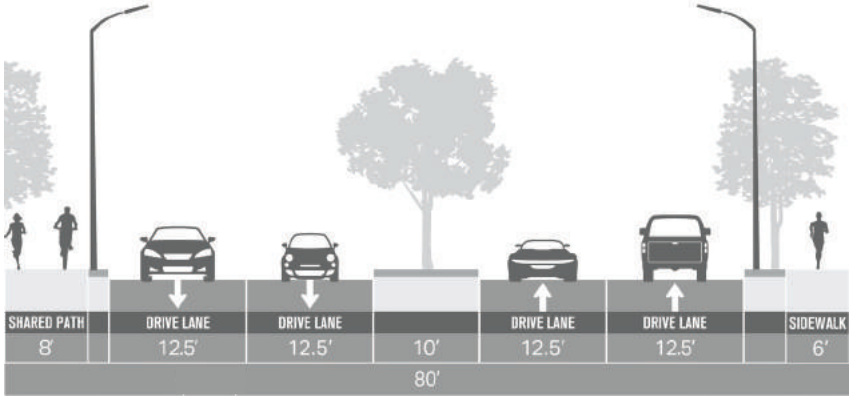
CityWest Boulevard is a four-lane street with sufficient vehicle capacity. There are many large Class-A office towers with structure parking along the corridor. The new Phillips 66 corporate campus is located along CityWest Boulevard. There is also a new mid-rise multifamily under construction at the CityWest Boulevard at Westheimer Road intersection. Any future development on CityWest Boulevard is expected to be additional Class-A office or multifamily which will maintain the urban center context of the corridor.

Improvements should be focused on enhancing the pedestrian realm with wider sidewalks, and installing bus stop shelters. This will help encourage walking along the corridor and to nearby destinations, including Westheimer Road and will also improve access to transit.

The District has plans to construct a shared-used path along the west side of CityWest Boulevard to provide north/south connectivity. Right-of-way may restrict the width of the shared-use path, but if possible a 10-foot path should be considered.

The existing 12.5-foot travel lanes are wider than current standard and the 10-foot median is narrower than City of Houston standards. If the roadway is reconstructed, it can be designed to meet the City's Infrastructure Design Manual (IDM) standards with a 17-foot median and 11-foot travel lanes.

SHORT-TERM RECOMMENDATION



MODE PRIORITY

PEDESTRIAN

AUTO

BICYCLE

TRANSIT

PROPOSED MTFP CHANGE | none

BICYCLE RECOMMENDATION | shared-use path

study area corridor

ELMSIDE DRIVE | EXISTING

EXTENT | Westheimer Road — Richmond Avenue

EXISTING MTFP | n/a

EXISTING RIGHT OF WAY | 65'

THROUGH TRAVEL LANES | 4

POSTED SPEED LIMIT | 35 mph

TYPICAL ROADWAY WIDTH | 48'

SIDEWALKS | Continuous, mostly narrow

BICYCLE FACILITIES | none

TRANSIT ROUTES | none

STREET PARKING | none

TRAFFIC VOLUMES | n/a

TDM PROJECTIONS | n/a

LAND USE | multifamily residential and commercial

AREA TYPOLOGY | urban center

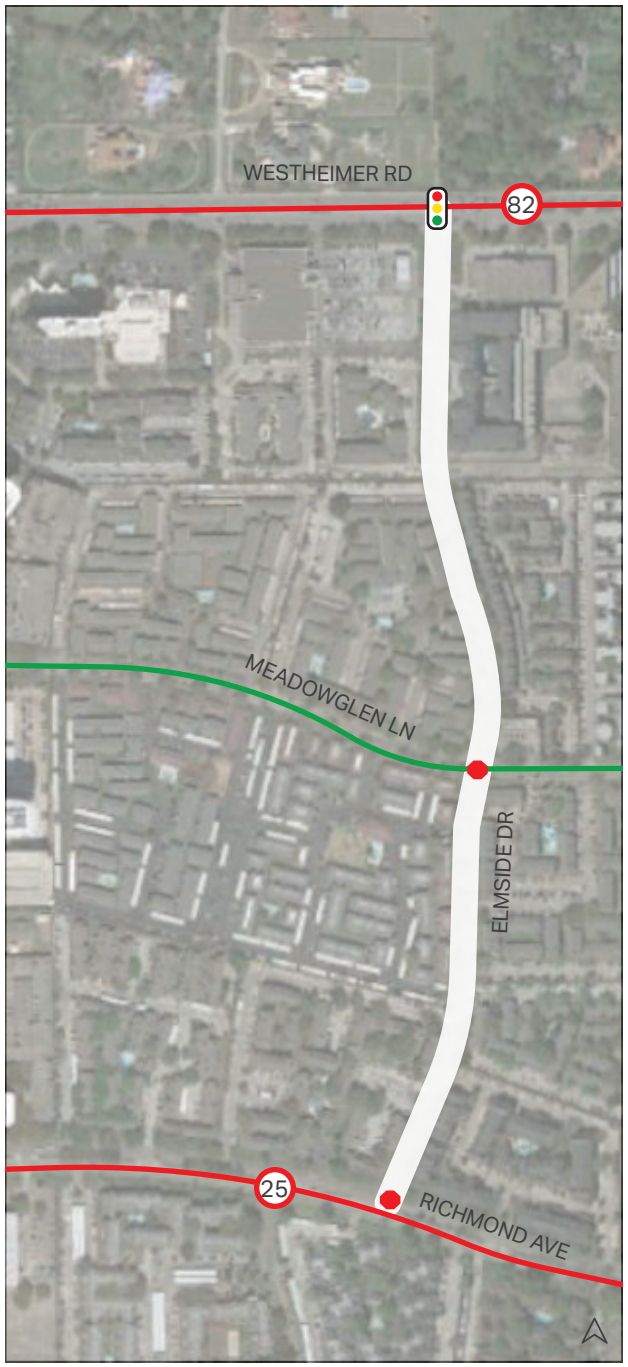
MULTIMODAL CLASS | res. high-density street

northbound near Meadowglen Lane

southbound near Richmond Avenue

EXISTING CORRIDOR LEGEND

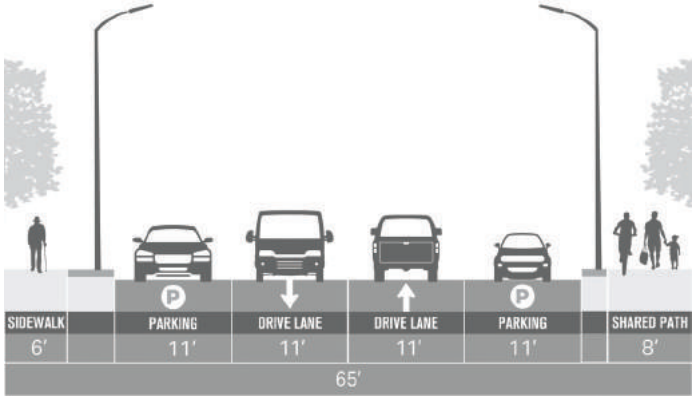
- transit route
- bike facility
- P — on-street parking
- traffic signal
- corridor stop sign
- traffic count (year)



Elmside Drive provides access to several multifamily residential complexes located between Westheimer Road and Richmond Avenue. Many of the large lot garden apartments along the corridor are aging and there is potential that these will redevelop. New development has the potential to be designed to support multimodal connections and fit the urban center context of Westchase District.

Elmside Drive, along with Woodchase Drive, is a key north-south connection, east of Beltway 8, in the development of a safe pedestrian and bicycle network. Elmside Drive and Woodchase Drive are offset at Richmond Avenue. It is recommended that a signal be installed at one of the corridors at Richmond Avenue to provide safe north-south access along both corridors.

LONG-TERM RECOMMENDATION



Currently, an 8 foot shared-use path is in design to be constructed along the eastern side of the roadway.

As bicycle demand increases the planned shared-use path may not be sufficient. It is recommended that the corridor be re-striped in the future to allow for bidirectional on-street bicycle lanes. The existing 44 foot pavement width allows for high comfort bicycle facilities, parking, and two travel lanes. Two lanes are expected to provide adequate travel capacity. As redevelopment occurs the potential to align Elmside Drive and Woodchase Drive at Richmond Avenue should be explored.

MODE PRIORITY

BICYCLE

PEDESTRIAN

AUTO

PROPOSED MTFP CHANGE | MN-2-65

BICYCLE RECOMMENDATION | shared-use path (short-term) bike lane (long-term)

study area corridor

GESSNER ROAD | EXISTING

EXTENT | Ella Lee Lane — Richmond Avenue

EXISTING MTFP | P-6-100

EXISTING RIGHT OF WAY | 110′ - 120′

THROUGH TRAVEL LANES | 4-6

POSTED SPEED LIMIT | 35 mph

TYPICAL ROADWAY WIDTH | 24′ - 50′ - 24′; 36′ - 24′ - 36′

SIDEWALKS | Continuous, mostly narrow

BICYCLE FACILITIES | none

TRANSIT ROUTES | 46 Gessner

STREET PARKING | none

TRAFFIC VOLUMES | 29,000 - 30,000

TDM PROJECTIONS | 88,000 (2040)

LAND USE | commercial, single-family residential, multifamily residential

AREA TYPOLOGY | urban center, general urban

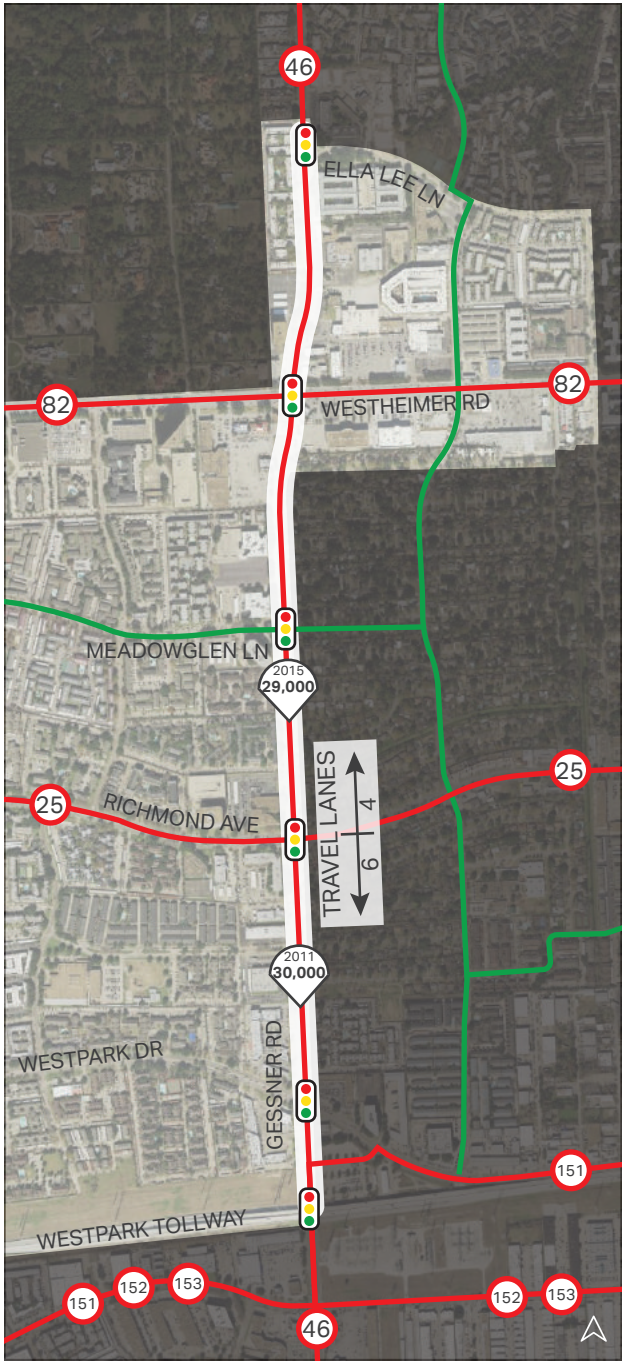
MULTIMODAL CLASS | mixed-use boulevard

median north of Westheimer Road

median at Meadowcroft Drive

EXISTING CORRIDOR LEGEND

- transit route
- bike facility
- P — on-street parking
- traffic signal
- corridor stop sign
- traffic count (year)



Gessner Road is a Principal Thoroughfare on the eastern edge of the study area. For the most part, adjacent land use is residential to the east and commercial to the west. Destinations north and south support higher traffic volumes and transit on the corridor. There are four travel lanes north of Richmond Avenue and six to the south.

The frequent 46 Gessner bus route is one of the top ridership routes within the transit network with major stops along the corridor, especially at the Westheimer Road and Richmond Avenue intersections. To enhance transit service, bus stop spacing should be optimized and stop amenities and pedestrian crossings should be improved. Long term recommendations include converting the outside travel lane of the six-lane segment of Gessner Road to a dedicated bus lane to improve transit operations and prioritize transit.

Gessner is not included on the Westchase District Ped/Bike Plan. To accommodate people walking and last mile bicycle connections along the corridor, a 10-foot wide sidewalk is recommended on each side of the street.

MODE PRIORITY

TRANSIT

PEDESTRIAN

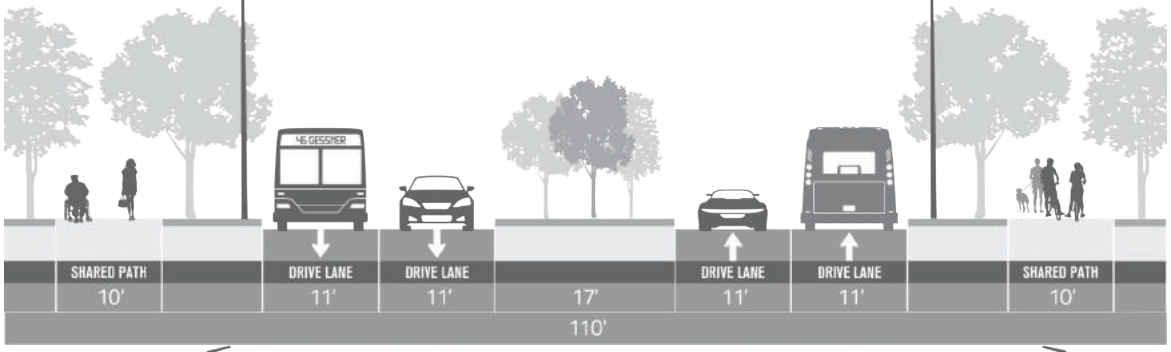
AUTO

BICYCLE

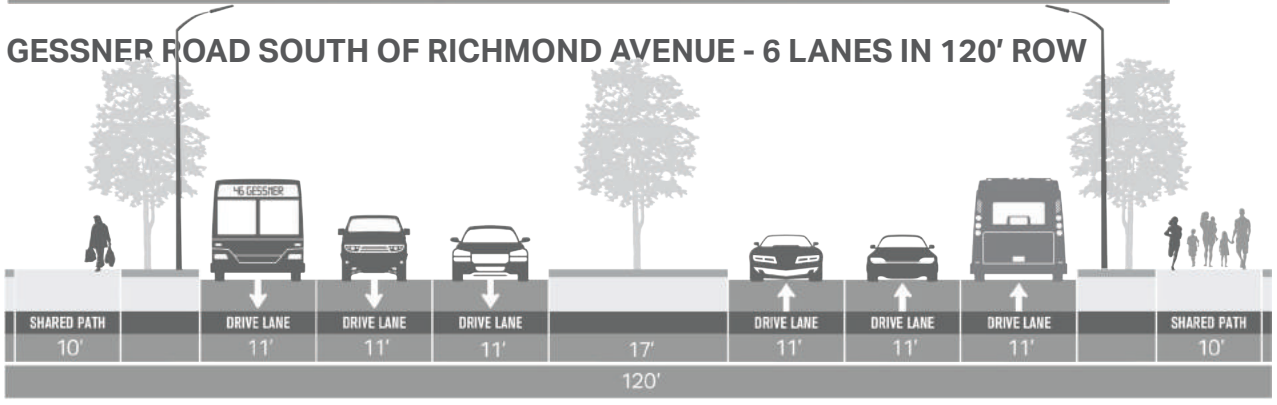
PROPOSED MTFP CHANGE | none

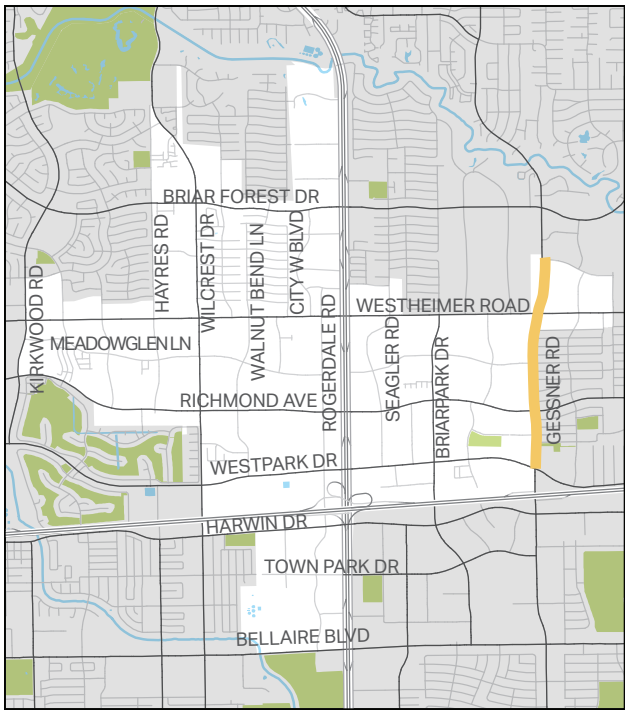
BICYCLE RECOMMENDATION | none

GESSNER ROAD NORTH OF RICHMOND AVENUE - 4 LANES IN 110′ ROW

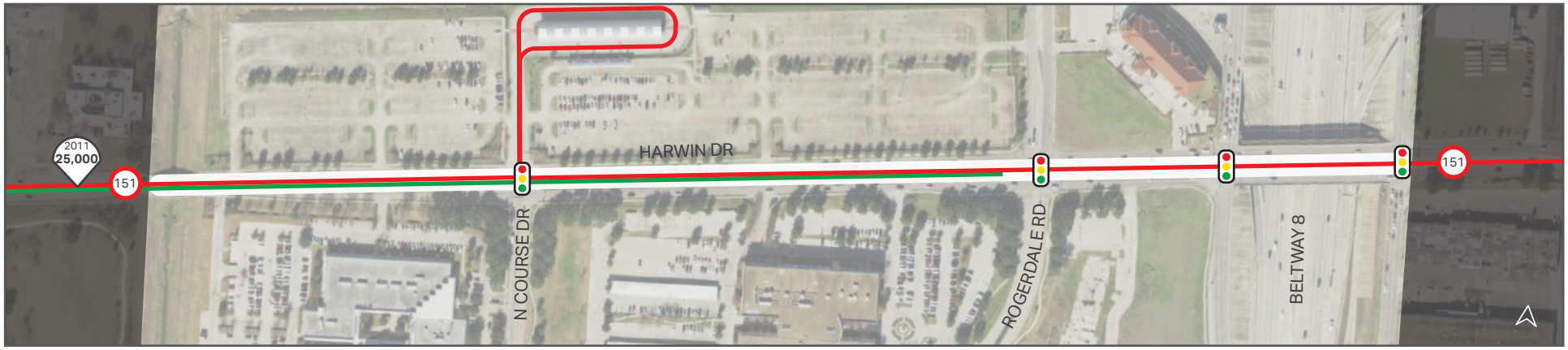


GESSNER ROAD SOUTH OF RICHMOND AVENUE - 6 LANES IN 120′ ROW





study area corridor



EXTENT | Utility Easement — Beltway 8

EXISTING MTFP | T-4-80

EXISTING RIGHT OF WAY | 80'

THROUGH TRAVEL LANES | 4

POSTED SPEED LIMIT | 35 mph

TYPICAL ROADWAY WIDTH | 24' - 30' - 24

SIDEWALKS | narrow, missing segments

BICYCLE FACILITIES | low-comfort bike lane

TRANSIT ROUTES | 151 Westpark Express

STREET PARKING | none

TRAFFIC VOLUMES | 25,000

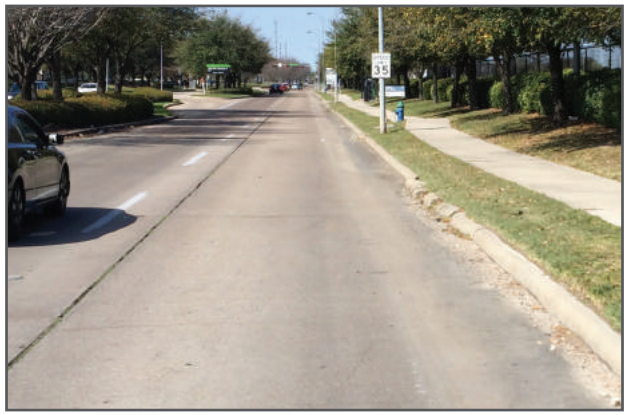
TDM PROJECTIONS | 34,000 (2040)

LAND USE | office, park and ride

AREA TYPOLOGY | urban center

MULTIMODAL CLASS | commercial boulevard

westbound approach to Rogerdale Road



westbound along Westchase Park & Ride

EXISTING CORRIDOR LEGEND

- transit route
- bike facility
- P — on-street parking
- traffic signal
- corridor stop sign
- traffic count (year)

HARWIN DRIVE | PROPOSED

A short segment of Harwin Drive is located in Westchase District. On the north side of the street is the Westpark Park & Ride; there are office buildings on the south. The large parcels and transit facility make the surrounding area a high development potential area, including possible transit-oriented development at, or adjacent to, the Park & Ride. In addition, the currently under construction Brays Bayou Connector Trail will intersect Harwin Drive and tie into the Westpark Park & Ride, Library Loop Trail and Arthur Storey Park.

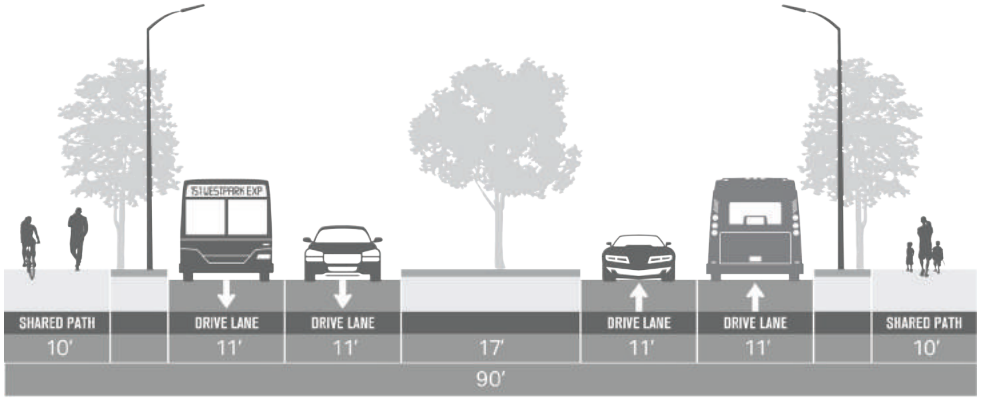
Harwin Drive currently has 80 feet of ROW and is classified on the MTFP as a T-4-80. If the corridor is to be reconstructed to Houston IDM standards, a minimum of 90 feet of ROW is needed. The MTFP should be amended to include for a 90 foot proposed ROW along Harwin Drive.

To provide access for both pedestrians and bicyclists within the constrained right-to-way, a 10-foot minimum shared-use path is recommended. At Beltway 8, sidewalks and curb ramps should be rebuilt to make the crossing safer and more comfortable for pedestrians.

The Harwin Drive bridge over the drainage canal is currently very narrow and may need to be rebuilt to accommodate the proposed shared-use path. Pedestrians and bicyclists could also be accommodated with separate bridges adjacent to the existing bridge.

The reconstruction of Harwin Drive is included in Recommendation 2: Targeted Street Reconstruction.

TARGETED STREET RECONSTRUCTION RECOMMENDATION



MODE PRIORITY

PEDESTRIAN

BICYCLE

TRANSIT

AUTO

PROPOSED MTFP CHANGE | T-4-90/100

BICYCLE RECOMMENDATION | bike lane (short-term)

study area corridor

HAYES ROAD | EXISTING

EXTENT | Lakeside Place Dr — Richmond Ave

EXISTING MTFP | n/a

EXISTING RIGHT OF WAY | 60'

THROUGH TRAVEL LANES | 4

POSTED SPEED LIMIT | 30 mph

TYPICAL ROADWAY WIDTH | 40'

SIDEWALKS | variable quality, nearly continuous

BICYCLE FACILITIES | none

TRANSIT ROUTES | none

STREET PARKING | none

TRAFFIC VOLUMES | n/a

TDM PROJECTIONS | n/a

LAND USE | multi-family residential, office

AREA TYPOLOGY | urban center, general urban

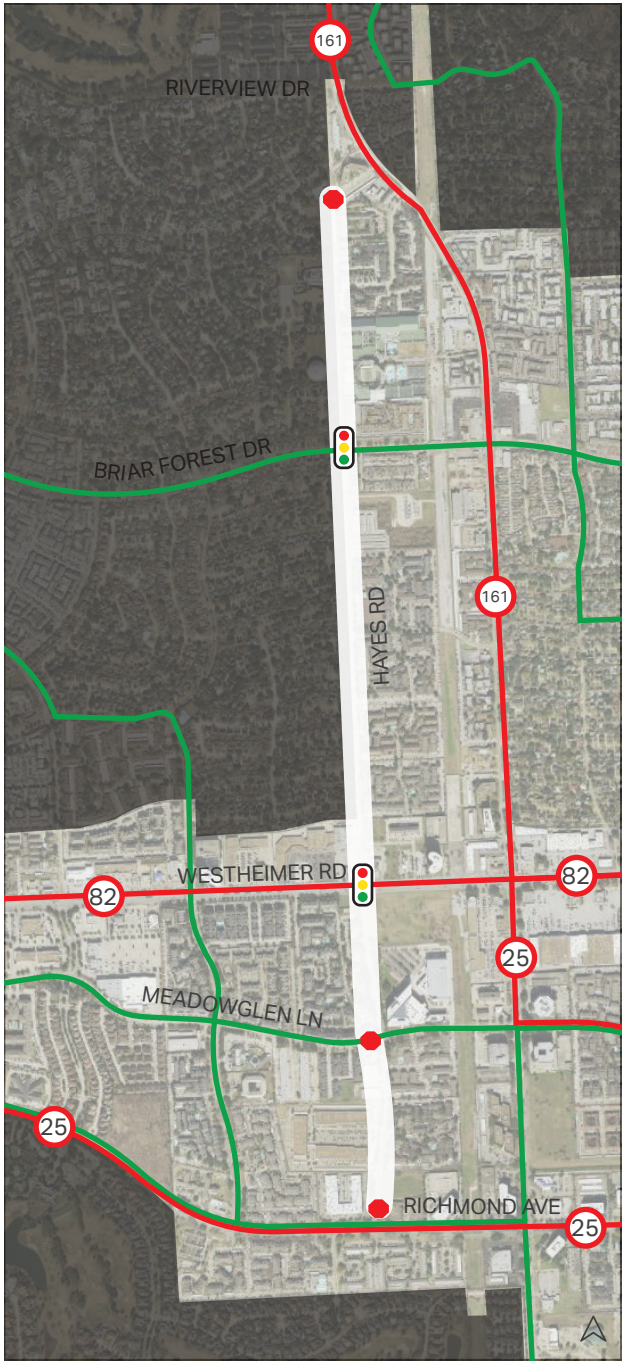
MULTIMODAL CLASS. | mixed use street

southbound near HCC campus

northbound between Richmond Ave and Meadowglen Ln

EXISTING CORRIDOR LEGEND

- transit route
- bike facility
- P — on-street parking
- traffic signal
- corridor stop sign
- traffic count (year)



Hayes Road is a north-south street on the west side of Westchase District that is lined with multi-family residential complexes and a single-family residential neighborhood. Alief-Hayes Houston Community College (HCC) campus is located between Westheimer Road and Meadowglen Lane.

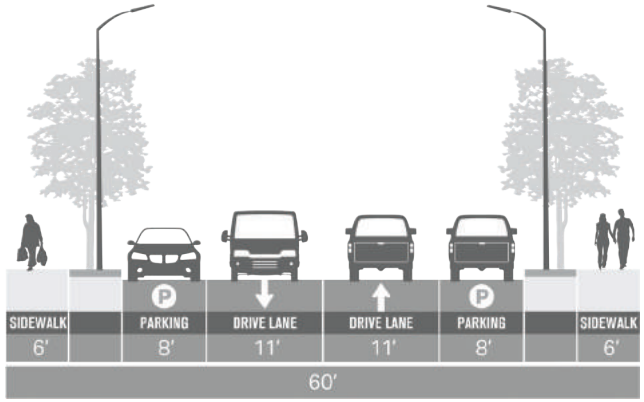
With four travel lanes, the roadway currently provides more vehicle capacity than is needed, therefore, it is recommended to re-stripe the street with parking lanes. A center turn lane should be maintained at major signalized intersections to sustain traffic operations.

Due to the number of residents along the corridor and the presence of the HCC campus, pedestrians are designated the top mode priority. In the short term, attention should be given to improving the sidewalks by reconstructing sub-standard facilities to 6-foot minimum sidewalks.

North of Westheimer Road, a bicycle facility is not recommended along Hayes Road due to the proposed HCC Campus Trail that will run parallel east of Hayes Road from Richmond Avenue to Terry Hershey Park. Plans for the segment of the HCC Campus between Richmond Avenue and Westheimer Road are currently under development.

South of Westheimer, there are current plans to reconstruct Hayes Road between Westheimer Road and Richmond Avenue as a signature corridor, similar to the ongoing plans for Walnut Bend Lane and Meadowglen Lane.

SHORT-TERM RECOMMENDATION - NORTH OF WESTHEIMER ROAD



MODE PRIORITY

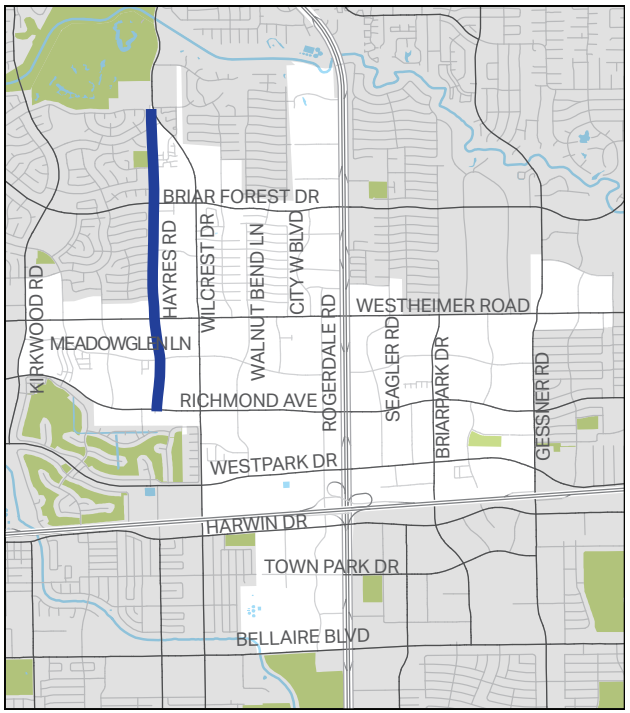
PEDESTRIAN

AUTO

BICYCLE

PROPOSED MTFP CHANGE | MJ-2-60

BICYCLE RECOMMENDATION | bike lane (short-term)



KIRKWOOD ROAD | EXISTING

EXTENT | Southlake Dr — Richmond Ave

EXISTING MTFP | T-4-100

EXISTING RIGHT OF WAY | 100'

THROUGH TRAVEL LANES | 4

POSTED SPEED LIMIT | 35 mph

TYPICAL ROADWAY WIDTH | 24' - 30' - 24'

SIDEWALKS | continuous, both sides

BICYCLE FACILITIES | low-comfort bike lane

TRANSIT ROUTES | none

STREET PARKING | none

TRAFFIC VOLUMES | 6,500 - 17,000

TDM PROJECTIONS | 40,500 (2040)

LAND USE | commercial, multi-family residential

AREA TYPOLOGY | general urban

MULTIMODAL CLASS. | mixed-use boulevard

southbound approach to Richmond Avenue

southbound near Westheimer Road

EXISTING CORRIDOR LEGEND

- transit route
- bike facility
- P — on-street parking
- traffic signal
- corridor stop sign
- traffic count (year)

Kirkwood Road is a north-south Major Thoroughfare along the western edge of the Westchase District with large commercial properties and multi-family residential. The corridor is currently a four-lane boulevard with low-comfort bike lanes north of Westheimer Road.

Outside the study area, land uses along Kirkwood Road are primarily single family residential. The general urban land use context along the corridor is not expected to change.

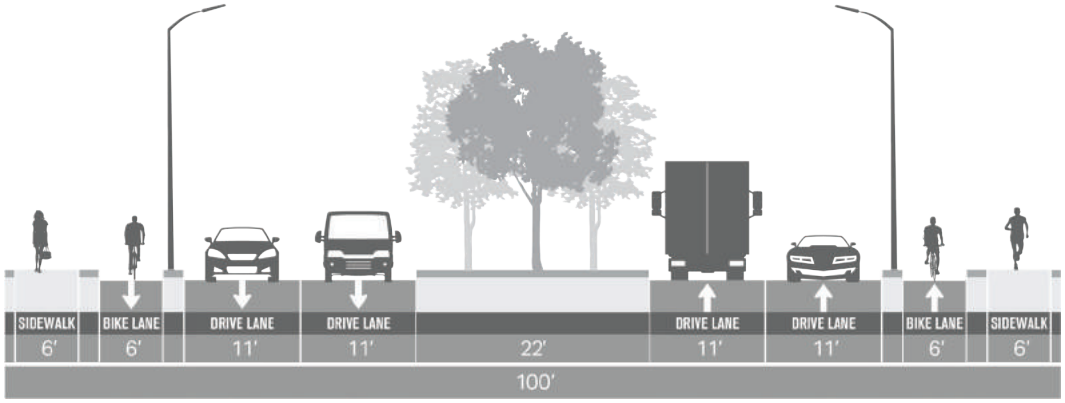
South of the study area, Kirkwood Road terminates at Westpark Drive; the MTFP includes an extension of Kirkwood Road south of Westpark Drive to Alief Clodine Road. There are currently no plans for this extension.

Brays Bayou runs just 1,000 feet south of the existing terminus of Kirkwood Road at Westpark Drive. There are proposed trails for this segment of Brays Bayou that will eventually provide connections west into Fort Bend County and east into central Houston.

North of the study area, Kirkwood Drive intersects Terry Hershey Trail.

Rebuilding Kirkwood Road to maintain traffic flow and include high quality bicycle facilities, will convert Kirkwood Road into a major north-south multimodal corridor that will connect key off-road trails as well major destinations in west Houston.

LONG-TERM RECOMMENDATION



MODE PRIORITY

BICYCLE

AUTO

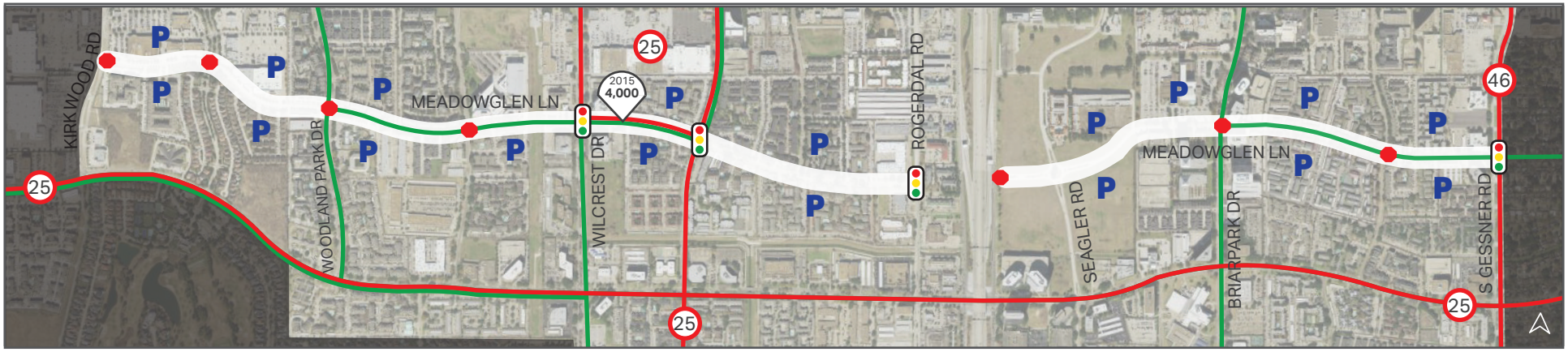
PEDESTRIAN

PROPOSED MTFP CHANGE | none

BICYCLE RECOMMENDATION | bike lane (long-term)

study area corridor

MEADOWGLEN LANE | EXISTING



EXTENT | Kirkwood Rd — Gessner Rd

EXISTING MTFP | MJ-2-60

EXISTING RIGHT OF WAY | 60'

THROUGH TRAVEL LANES | 2

POSTED SPEED LIMIT | 30 mph

TYPICAL ROADWAY WIDTH | 40'

SIDEWALKS | nearly continuous, narrow

BICYCLE FACILITIES | bike routes

TRANSIT ROUTES | 25 Richmond

STREET PARKING | in lane

TRAFFIC VOLUMES | 4,000

TDM PROJECTIONS | n/a

LAND USE | multi-family residential, office

AREA TYPOLOGY | urban center, general urban

MULTIMODAL CLASS. | mixed-use avenue

westbound near Gessner Road

eastbound at Seagler Road

EXISTING CORRIDOR LEGEND

- transit route
- bike facility
- P — on-street parking
- traffic signal
- corridor stop sign
- traffic count (year)

MEADOWGLEN LANE | PROPOSED

Meadowglen Lane is an east-west Major Collector within the heart of Westchase District. Meadowglen Lane extends from Kirkwood Road to Rogerdale Road west of the Sam Houston Tollway. East of the West Sam Houston Tollway, Meadowglen Lane connects northbound Beltway 8 to Gessner Road. Both the West Houston Mobility Plan and the Westchase District Ped/Bike Plan propose a grade separation of Meadowglen Lane at Sam Houston Tollway to provide local vehicular access along with pedestrian and bicycle connections.

Land uses along the corridor are primarily multi-family residential and strip center retail at key nodes. At the Hayes Road intersection is the Alief Houston Community College Campus. Major large parcels along Meadowglen Lane are aging and redevelopment as higher density residential and mixed use is likely in the near future.

Preliminary design of a multimodal Meadowglen Lane has been conducted. The preliminary design includes a reconstructed roadway with wide shaded sidewalks to encourage walking. Bicycle facilities will be both inside and outside the curb, depending on location. Parking will be maintained in areas that have a demand for on-street parking.

As the design moves to final stage, special attention should be paid to reduce potential bicycle and bus conflicts as well as bicycle and parked car conflicts.

MODE PRIORITY

BICYCLE

PEDESTRIAN

AUTO

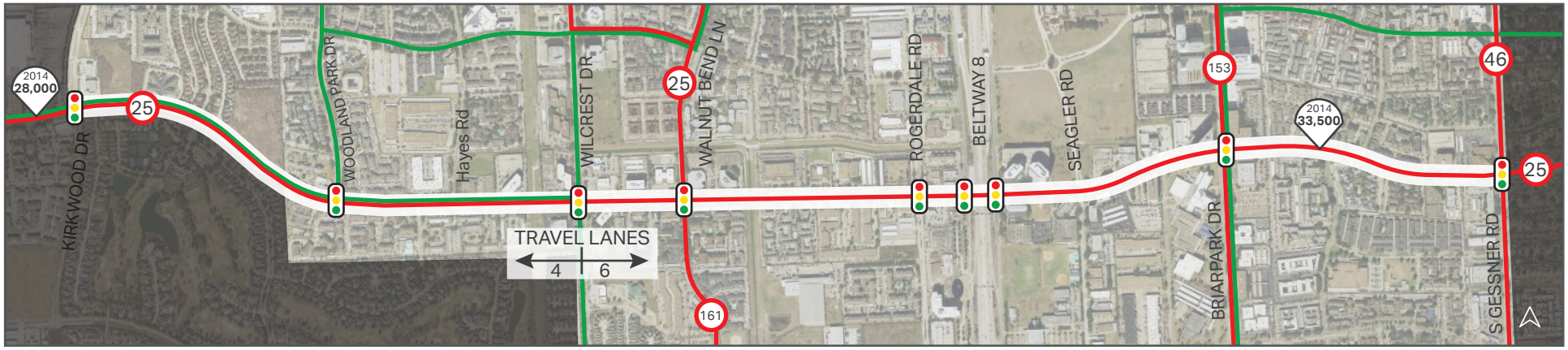
TRANSIT

PROPOSED MTFP CHANGE | none

BICYCLE RECOMMENDATION | bike lane (short-term)

study area corridor

RICHMOND AVENUE | EXISTING



EXTENT | Kirkwood Dr — Gessner Rd
MTFP WEST OF WILCREST | T-4-100
MTFP EAST OF WILCREST | T-6-100
EXISTING RIGHT OF WAY | 100'
THROUGH TRAVEL LANES | 4-6
POSTED SPEED LIMIT | 35 mph
ROADWAY WIDTH | 24'-30'-24', 33'-14'-33'
SIDEWALKS | narrow, continuous, both sides
BICYCLE FACILITIES | low-comfort bike lane
TRANSIT ROUTES | 25 Richmond
STREET PARKING | none
TRAFFIC VOLUMES | 28,000 - 33,500
TDM PROJECTIONS | 61,000 (2040)
LAND USE | Office, residential, retail
AREA TYPOLOGY | urban center, general urban
MULTIMODAL CLASS. | mixed-use boulevard

westbound east of Wilcrest Drive

westbound at Seagler Road

EXISTING CORRIDOR LEGEND

- transit route
- bike facility
- P — on-street parking
- traffic signal
- corridor stop sign
- traffic count (year)

Richmond Avenue is a Major Thoroughfare with six travel lanes east of Rogerdale Drive and four lanes and low comfort bike lanes to the west. Richmond Avenue is one of the busiest corridors in the District, and is primarily built-out with a mix of multi-family, commercial, and low- to mid-rise office buildings. The large parcels and blocks along the corridor create long distances between signalized intersections but also represent future redevelopment opportunities.

The frequent METRO 25 Richmond bus provides service along the corridor. At the Walnut Bend Lane intersection, the route branches with one line continuing along Richmond and the other providing service north along Walnut Bend Lane. Transit can play a key role in providing access to the activity dense corridor, with signature service enhancements and a expanded pedestrian realm. Wide sidewalks along with a back of curb bikeway are recommended. Long term transit recommendations include improving transit access and operation and coordination of converting the outside lane of the 6-lane segment of Richmond Avenue to a bus lane.

MODE PRIORITY

TRANSIT

BICYCLE

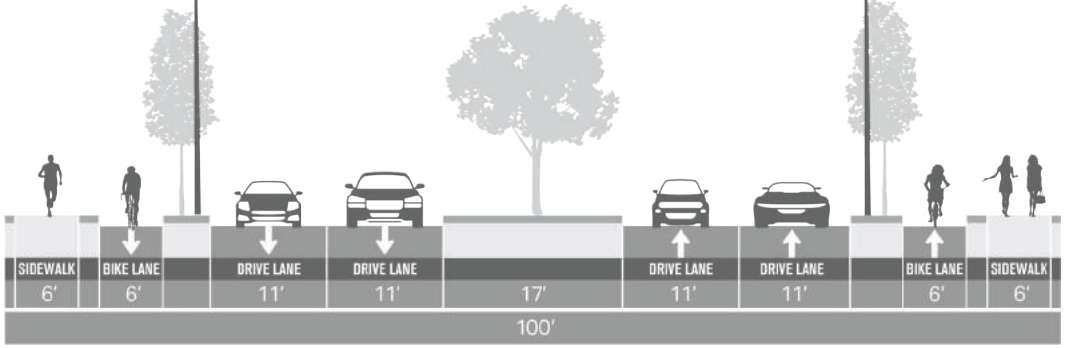
PEDESTRIAN

AUTO

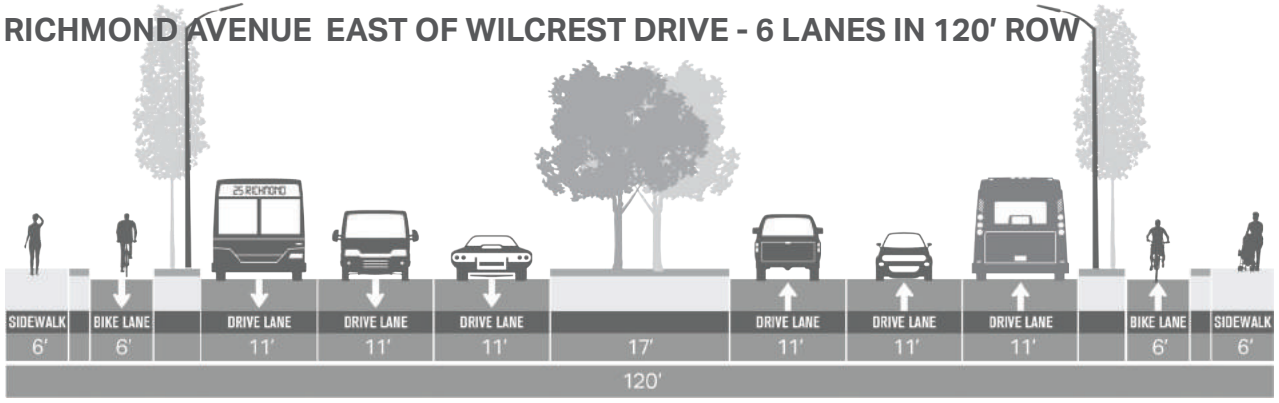
PROPOSED MTFP CHANGE | T-6-120
EAST OF WILCREST

BICYCLE RECOMMENDATION | bike lane (long-term)

RICHMOND AVENUE WEST OF WILCREST DRIVE - 4 LANES IN 100′ ROW



RICHMOND AVENUE EAST OF WILCREST DRIVE - 6 LANES IN 120′ ROW



study area corridor

ROGERDALE LANE | EXISTING

EXTENT | City Place Dr — Bellaire Blvd

EXISTING MTFP | MJ-4-70/80 - To be widened

EXISTING RIGHT OF WAY | 70'-80'

THROUGH TRAVEL LANES | 4

POSTED SPEED LIMIT | 30 mph

TYPICAL ROADWAY WIDTH | 44'; 25'-10'-25'

SIDEWALKS | nearly continuous

BICYCLE FACILITIES | none

TRANSIT ROUTES | 153 Harwin Express

STREET PARKING | in lane

TRAFFIC VOLUMES | 7,000-8,500

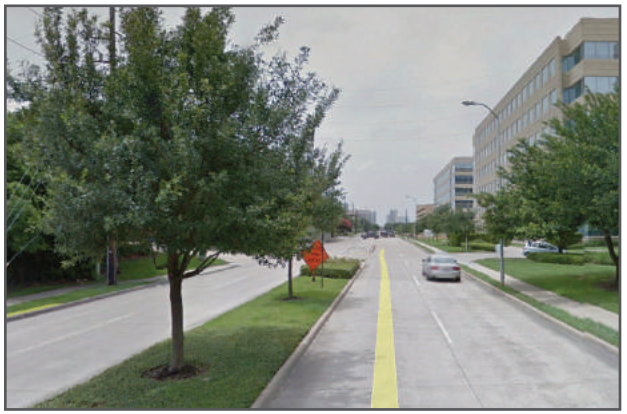
TDM PROJECTIONS | 46,000 (2040)

LAND USE | office, commercial

AREA TYPOLOGY | urban center

MULTIMODAL CLASS. | commercial avenue

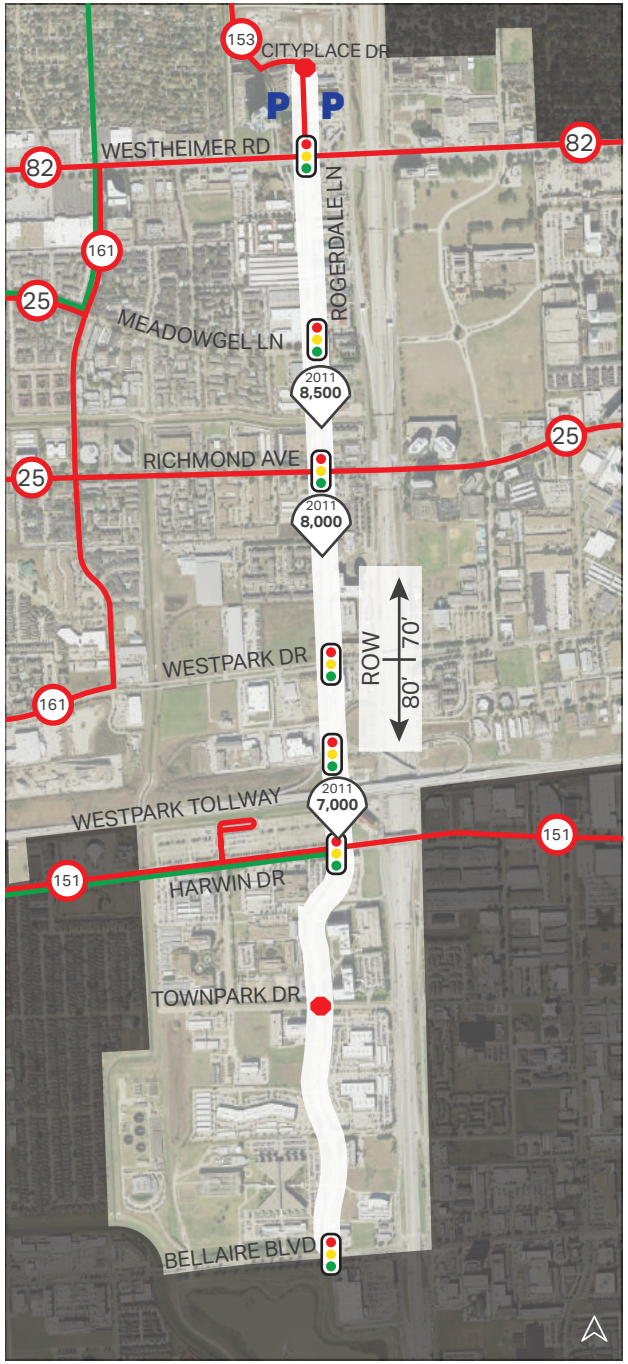
northbound near Westpark Drive



northbound near Westpark Drive

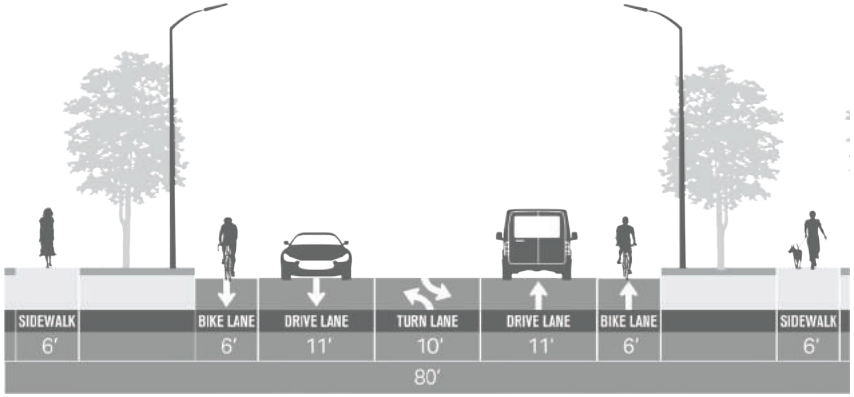
EXISTING CORRIDOR LEGEND

- transit route
- bike facility
- P — on-street parking
- traffic signal
- corridor stop sign
- traffic count (year)



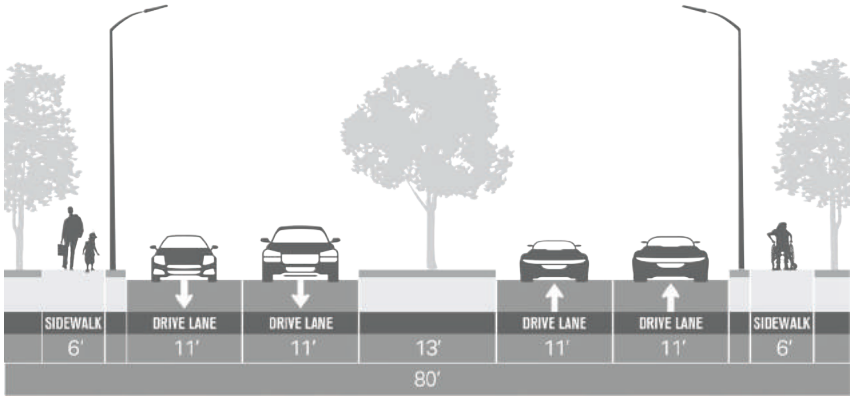
ROGERDALE ROAD NORTH OF RICHMOND AVENUE

Rogerdale Road is a Major Collector with many limited-service hotels and office buildings. Pedestrians and bicyclists are the top priority between Westheimer Road and Richmond Avenue, where vehicle volumes are low. Although a bicycle facility along this segment has not been recommended in previous studies, it would provide a valuable north-south connection, especially between Library Loop Trail and Meadowglen Lane. The existing 44 feet of pavement could be re-striped to add a bicycle lane as shown below.



RECOMMENDATION SOUTH OF RICHMOND AVENUE

South of Richmond Avenue the top mode priority changes to prioritize traffic because Rogerdale Road serves as a major access point to Westpark Tollway. There a many segments with substandard sidewalks that are in need of reconstruction and widening. Shade trees are also recommended.



MODE PRIORITY

N OF RICHMOND AVE	S OF RICHMOND AVE
PEDESTRIAN	AUTO
BICYCLE	PEDESTRIAN
AUTO	BICYCLE

PROPOSED MTFP CHANGE | MJ-4-100 SOUTH OF HARWIN

BICYCLE RECOMMENDATION | bike lane (short-term)

SEAGLER ROAD / WESTCENTER DRIVE | EXISTING

EXTENT | Westheimer Rd — Westpark Dr

EXISTING MTFP | n/a

EXISTING RIGHT OF WAY | 65'

THROUGH TRAVEL LANES | 2

POSTED SPEED LIMIT | 30 mph

TYPICAL ROADWAY WIDTH | 40'

SIDEWALKS | sparse

BICYCLE FACILITIES | none

TRANSIT ROUTES | none

STREET PARKING | in lane

TRAFFIC VOLUMES | n/a

TDM PROJECTIONS | n/a

LAND USE | vacant, office, multi-family residential

AREA TYPOLOGY | urban center

MULTIMODAL CLASSIFICATION |

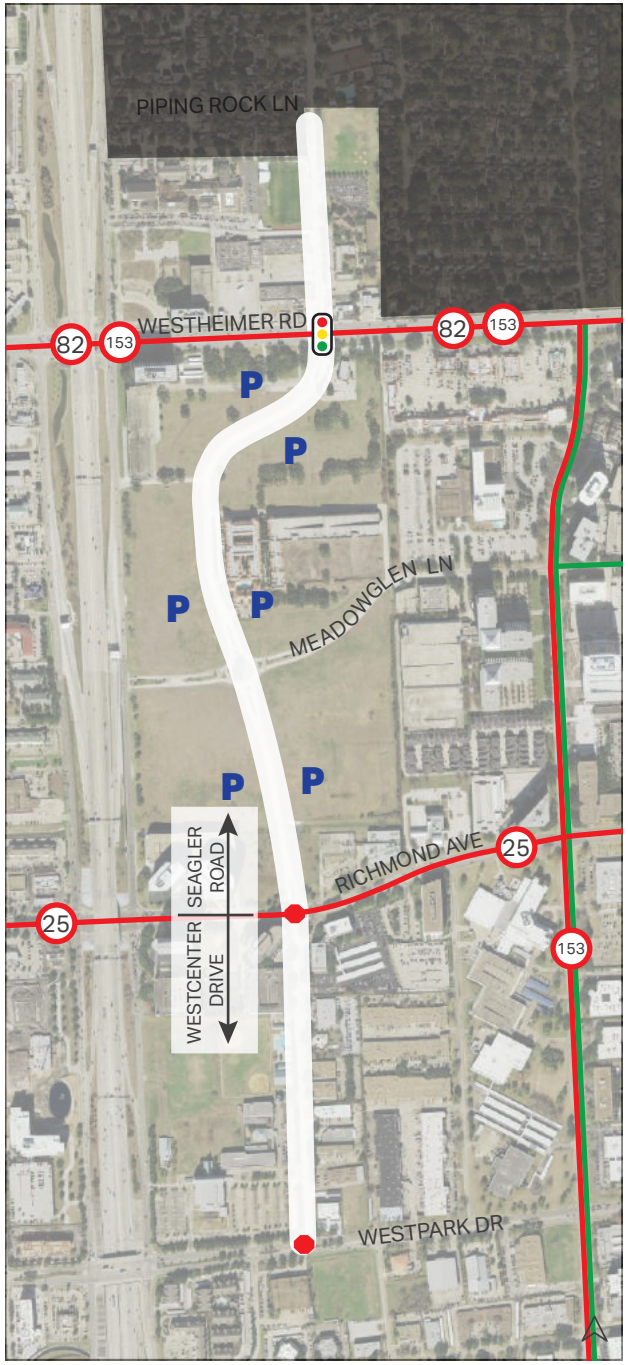
There is a median aside a turn lane on Richmond Avenue that does not allow travel across Richmond between Seagler Road and Westcenter Drive.

northbound past Richmond Avenue

northbound at Meadowglen Lane

EXISTING CORRIDOR LEGEND

- transit route
- bike facility
- P — on-street parking
- traffic signal
- corridor stop sign
- traffic count (year)



SEAGLER ROAD / WESTCENTER DRIVE | PROPOSED

Currently Seagler Road between Richmond Avenue and Westheimer Road is surrounded by vacant parcels. There are office towers near both the Westheimer Road and Richmond Avenue intersections. An apartment complex is located near the Meadowglen Lane intersection, which is a roundabout. Three churches, two of which have Pre-K to 8th Grade schools, are located along the corridor.

The vacant land area around Seagler Road totals over 80 acres and is owned by a single land owner. The future corridor design will be driven by the development that occurs on the vacant parcels.

It is recommended that any future development be encouraged to align with the Westchase District Vision as the Dowtown of West Houston. New development should create a more walkable street grid that accomodates all modes of transportation and aligns with both the Westchase District Long Range Plan and Recommendation 10 from this report.

The future Seagler Road should be a walkable corridor that aligns with the proposed urban center context of future development. Future corridor design should also accommodate the bicycle lane proposed in the Pedestrian/Bicycle Plan.

The redevelopment of Seagler Road between Westheimer Road and Richmond Avenue will drive the future corridor vision for Seagler Road north of Westheimer Road and Westcenter Drive south of Richmond Avenue.

MODE PRIORITY

PEDESTRIAN

BICYCLE

AUTO

PROPOSED MTFP CHANGE | MN-2-65
SEAGLER ROAD NORTH OF WESTHEIMER AND WESTCENTER DRIVE

BICYCLE RECOMMENDATION | bike lane (short-term)

study area corridor

TANGLEWILDE STREET | EXISTING

EXTENT | Ella Lee Ln — Val Verde St

EXISTING MTFP | n/a

EXISTING RIGHT OF WAY | 65'

THROUGH TRAVEL LANES | 2

POSTED SPEED LIMIT | 30 mph

TYPICAL ROADWAY WIDTH | 32'-42'

SIDEWALKS | varying widths, segments missing

BICYCLE FACILITIES | bike route

TRANSIT ROUTES | none

STREET PARKING | in lane

TRAFFIC VOLUMES | 3,000

TDM PROJECTIONS | n/a

LAND USE | multi-family residential

AREA TYPOLOGY | urban center

MULTIMODAL CLASS. | residential high density

southbound near Westheimer Road

southbound near Ella Lee Lane

EXISTING CORRIDOR LEGEND

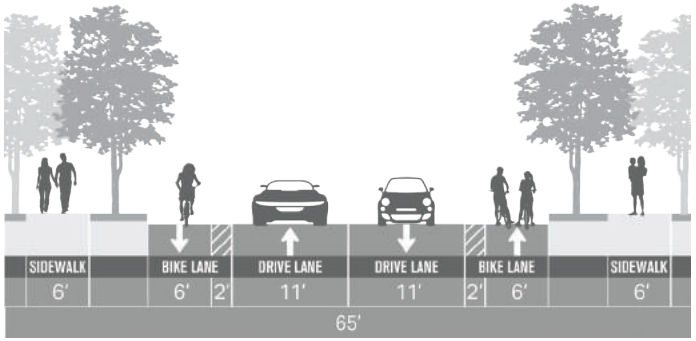
- transit route
- bike facility
- P — on-street parking
- traffic signal
- corridor stop sign
- traffic count (year)

TANGLEWILDE STREET | PROPOSED

Tanglewilde Street is a local street with multi-family residential on the eastern end of the study area. Given the context of the area and traffic volumes along the segment between Westheimer Road and Ella Lee Lane, the road should be re-striped to include a bike lane in each direction. The proposed cross-section utilizes the existing pavement while also providing a safe and buffered bicycle facility to reduce automobile-bicycle conflicts near the major commercial developments at the Westheimer Road intersection.

The proposed bicycle facility along Tanglewilde will be part of an existing north-south neighborhood route that connects Briar Forest Drive to Westpark Tollway and the proposed Westpark Trail. In addition, Tanglewilde Street improves pedestrian connections from the multi-family developments along the corridor to the Westheimer corridor, where the intersection is signalized.

SHORT-TERM RECOMMENDATION



MODE PRIORITY

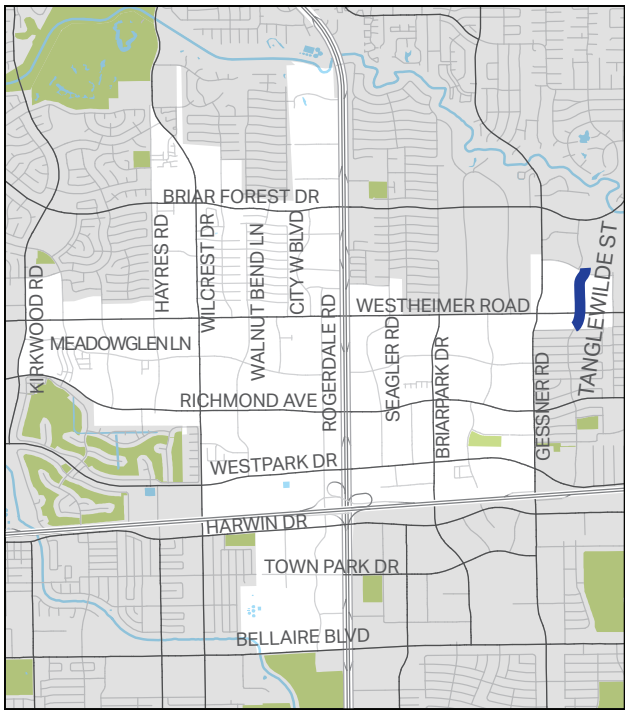
BICYCLE

PEDESTRIAN

AUTO

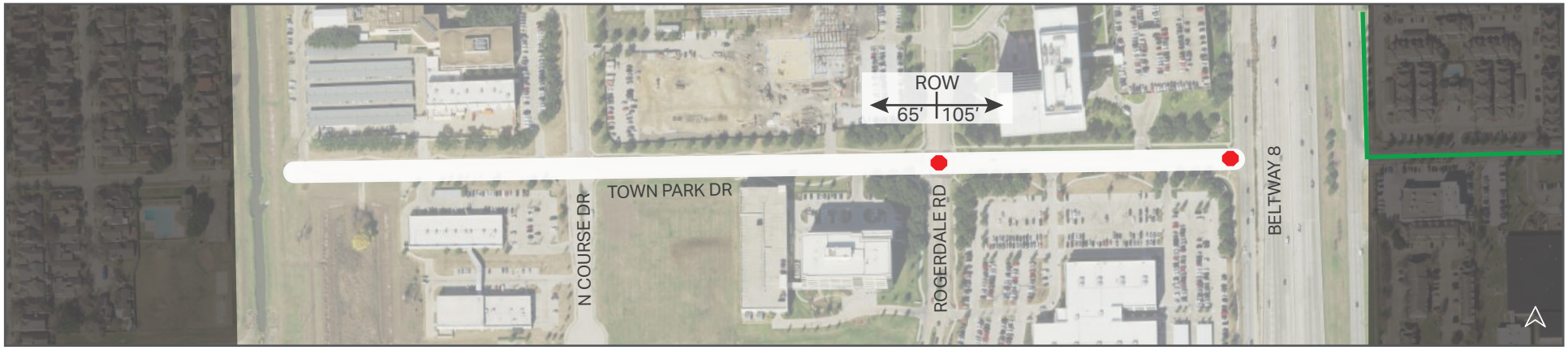
MTFP RECOMMENDATION | none

BICYCLE RECOMMENDATION | bike lane (short-term)



study area corridor

TOWN PARK DRIVE | EXISTING



EXTENT | Utility Easement — Beltway 8

EXISTING MTFP | n/a

EXISTING RIGHT OF WAY | 65′-105′

THROUGH TRAVEL LANES | 4

POSTED SPEED LIMIT | 30 mph

TYPICAL ROADWAY WIDTH | 44′

SIDEWALKS | meet standard, gaps on south side

BICYCLE FACILITIES | none

TRANSIT ROUTES | none

STREET PARKING | none

TRAFFIC VOLUMES | n/a

TDM PROJECTIONS | n/a

LAND USE | office, vacant

AREA TYPOLOGY | urban center

MULTIMODAL CLASS. | commercial street

westbound near Rogerdale Lane

eastbound at utility easement

EXISTING CORRIDOR LEGEND

- transit route
- bike facility
- P — on-street parking
- traffic signal
- corridor stop sign
- traffic count (year)

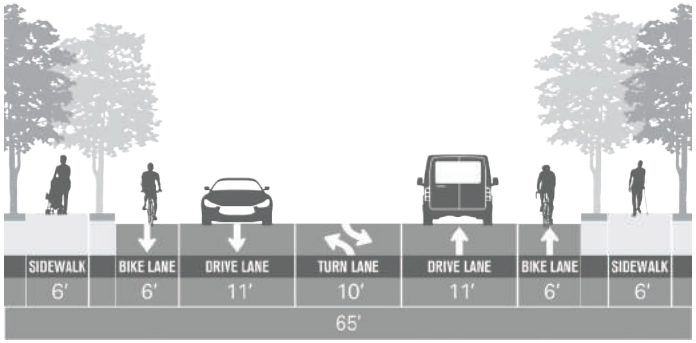
Town Park Drive is a half-mile long four-lane road lined with office buildings, and some vacant parcels. Vacant parcels along the corridor are expected to be developed into office development similar to the existing surrounding land uses. The existing street can be re-striped to better accommodate bicyclists, while still meeting existing and projected vehicle demands. The addition of bike lanes will provide last-mile connections to many workplaces. There are some sidewalk segments along the south side of the street that are missing and need to be constructed.

Town Park Drive currently terminates at a drainage canal. Westchase District has broken ground on Brays Bayou Connector Trail that will run from the Library Loop to Art Storey Park south of the study area.

The Westchase District Ped/Bike Plan recommended a connector pedestrian and bicycle bridge to connect Town Park Drive west to High Star Drive.

The West Houston Mobility Study, along with the Westchase District Ped/Bike Plan recommended a local street connection for Town Park Drive over Beltway 8 to connect east. The proposed connector bridge would include accommodations for pedestrians and bicyclists. East of Beltway 8, Town Park Drive has existing bicycle lanes that are in adequate condition.

SHORT-TERM RECOMMENDATION



MODE PRIORITY

BICYCLE

PEDESTRIAN

AUTO

PROPOSED MTFP CHANGE | MN-2-65

BICYCLE RECOMMENDATION | bike lane (short-term)

WALNUT BEND LANE | EXISTING

EXTENT | Westheimer Rd — Westpark Dr

EXISTING MTFP | MJ-2-60

EXISTING RIGHT OF WAY | 60'

THROUGH TRAVEL LANES | 2

POSTED SPEED LIMIT | 30 mph

TYPICAL ROADWAY WIDTH | 40'

SIDEWALKS | narrow, segments missing

BICYCLE FACILITIES | bike route

TRANSIT ROUTES | 25 Richmond
161 Wilcrest Express

STREET PARKING | in lane

TRAFFIC VOLUMES | n/a

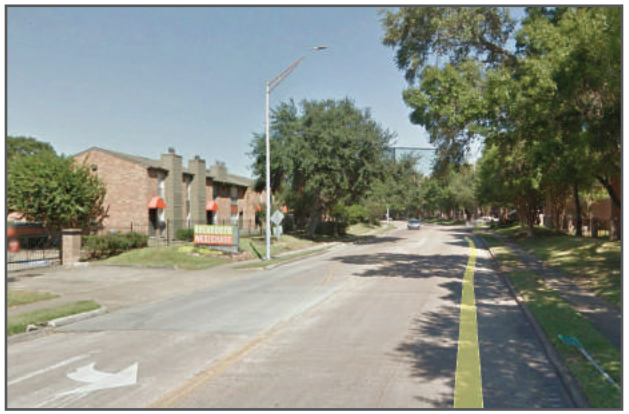
TDM PROJECTIONS | n/a

LAND USE | multi-family residential, commercial, office

AREA TYPOLOGY | urban center

MULTIMODAL CLASS. | mixed use avenue

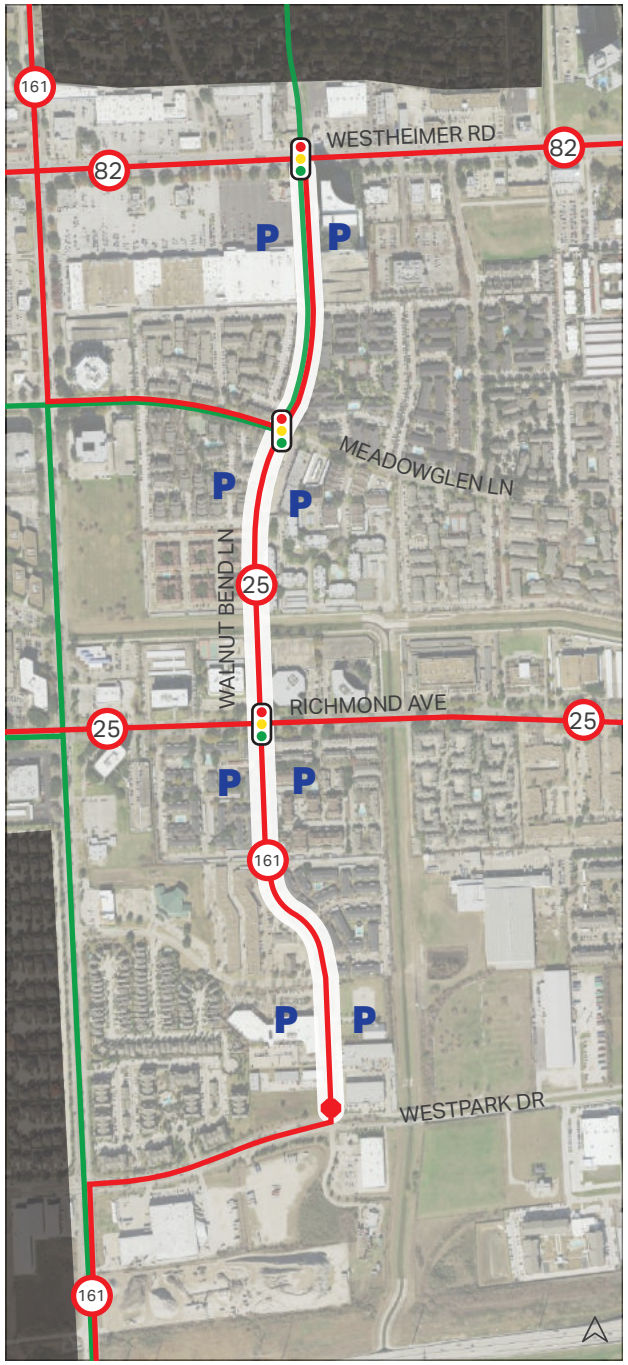
north of Westheimer Road



northbound at Meadowglen Lane

EXISTING CORRIDOR LEGEND

- transit route
- bike facility
- P — on-street parking
- traffic signal
- corridor stop sign
- traffic count (year)



WALNUT BEND LANE | PROPOSED

Walnut Bend Lane is a north-south Major Collector that provides connections to multiple multi-family residential complexes.

Walnut Bend Lane is currently undergoing a redesign to improve the corridor by providing a reconstructed roadway with enhanced pedestrian, transit, and bicycle facilities and support continued economic development. The design of the roadway is focused on converting Walnut Bend Lane into a multi-modal corridor to support existing and future land uses along the corridor and creating a signature corridor as Westchase District becomes the downtown of West Houston.

The proposed design includes wide shaded sidewalks to encourage walking. Bicycle facilities will be either inside or outside the curb, depending on location. Parking will be maintained in areas that have a demand for on-street parking.

Potential bicycle and bus conflicts as well as bicycle and parked car conflicts should be identified and mitigated through design.

MODE PRIORITY

PEDESTRIAN

BICYCLE

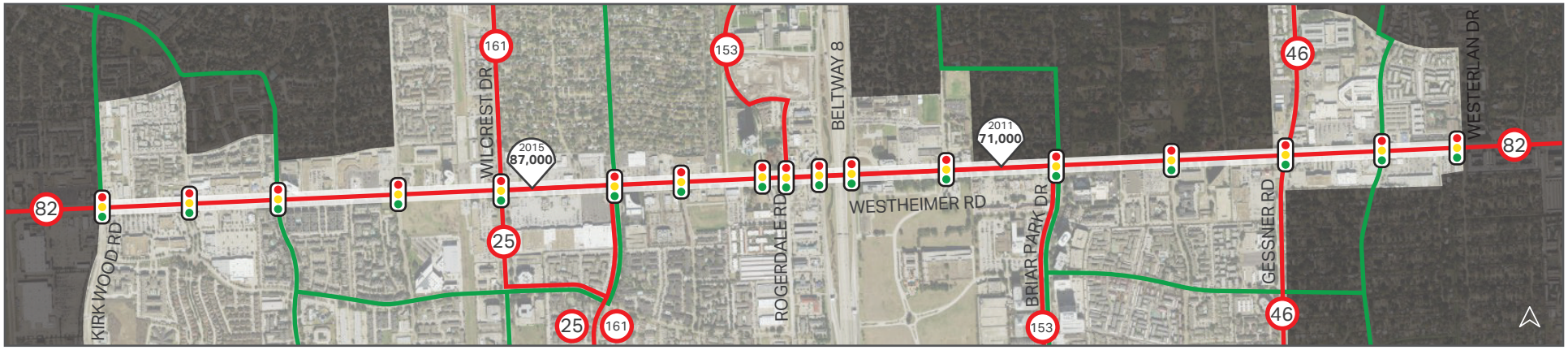
TRANSIT

AUTO

PROPOSED MTFP CHANGE | none

BICYCLE RECOMMENDATION | bike lane (short-term)

WESTHEIMER ROAD (FM 1093) | EXISTING



EXTENT | S Kirkwood Rd — Westerland Dr

EXISTING MTFP | P-8-120/150

EXISTING RIGHT OF WAY | 120' - 150'

THROUGH TRAVEL LANES | 8

POSTED SPEED LIMIT | 35 - 40 mph

TYPICAL ROADWAY WIDTH | 105'

SIDEWALKS | continuous, most meet standards

BICYCLE FACILITIES | none

TRANSIT ROUTES | 25 Richmond
82 Westheimer

STREET PARKING | none

TRAFFIC VOLUMES | 59,000 - 87,000

TDM PROJECTIONS | 99,730 (2040)

LAND USE | commercial

AREA TYPOLOGY | urban center

MULTIMODAL CLASS. | commercial boulevard

westbound approaching Wilcrest Drive

eastbound approaching Gessner Road

EXISTING CORRIDOR LEGEND

- transit route
- bike facility
- P — on-street parking
- traffic signal
- corridor stop sign
- traffic count (year)

westbound approaching Kirkwood Road

Westheimer Road within Westchase District is an eight-lane corridor with high traffic volumes and major bottlenecks at key intersections. Land uses along the corridor are primarily strip center retail.

The corridor provides east-west mobility in West Houston and connects key activity centers. Population and employment projections show a major increase in density along the corridor.

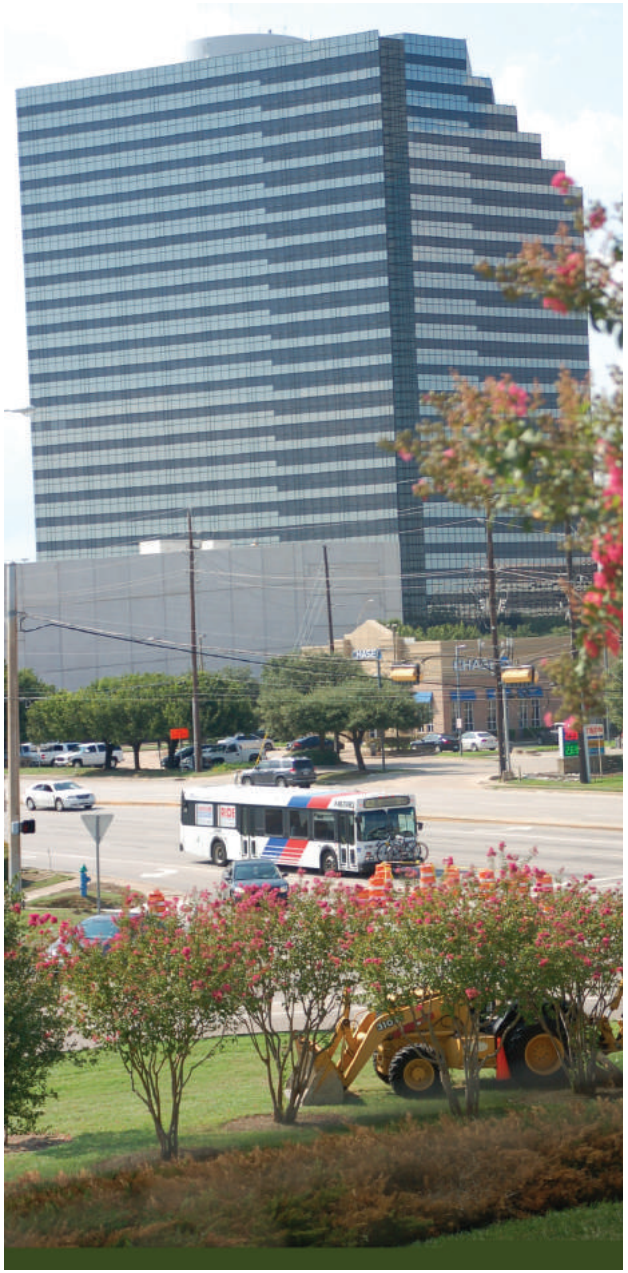
To plan for the expected demand resulting from an increase in density along the corridor, there are multiple ongoing projects along Westheimer Road within Westchase District.

Westchase District has recently started design work to improve the pedestrian realm along the corridor from Kirkwood Road to Westerland Drive. The project also includes improvements to pedestrian crossings at signalized intersections and improved access to transit stops.

The corridor has the highest transit ridership in the METRO service area and METRO is currently conducing a study to evaluate short-term and long-term transit improvements along the corridor. Within Westchase District, there are over 2,000 boardings along Westheimer Road demonstrating the existing demand for transit service. Demand is only expected to increase. Future developments along the corridor should complement the existing and future high quality transit service along Westheimer Road.

Westchase District and other stakeholders along the corridor should work with the City of Houston to designate Westheimer Road as a Transit Corridor to support more walkable transit-friendly development and redevelopment.

sidewalk with minimal seperation from traffic



high activity density surrounding Westheimer Rd

METRO's ongoing Westheimer Corridor Enhanced Bus Service Study is considering a variety of short- and long-term transit service improvements. In addition to providing added service, short-term improvements may include optimized stop spacing to improve bus operations and transit signal priority improvments.

Additionally, future transit operations may be improved by converting the two outside lanes into bus and right-turn only lanes.

In the long-term, adding a dedicated busway in the middle of the roadway that provides limited stop, rapid service should be explored. The added busway would likely replace a travel lane in each direction and would require right-of-way acquisition at intersections to provide space for stops. This would support the redevelopment of Westheimer Road as a more walkable multimodal corridor.

This study recommends work to develop Bus Rapid Transit along the corridor in Recommendation 6C.

MODE PRIORITY

TRANSIT

PEDESTRIAN

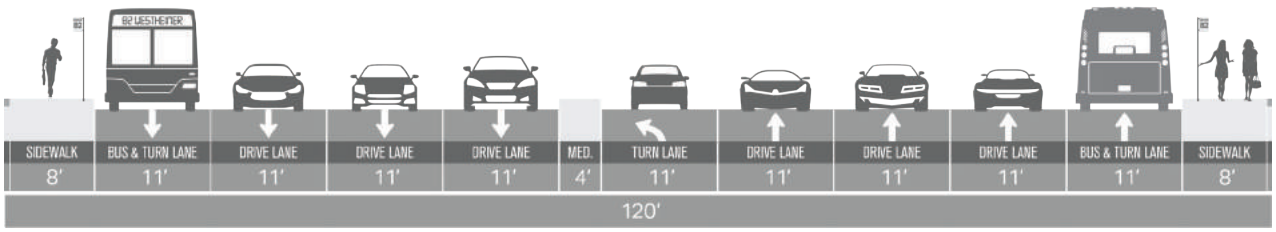
AUTO

BICYCLE

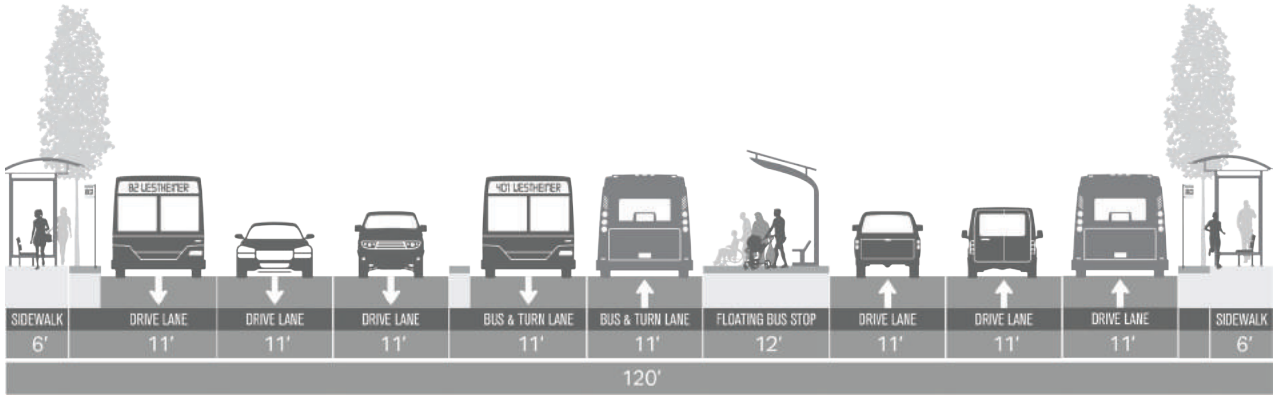
PROPOSED MTFP CHANGE | Transit Corridor

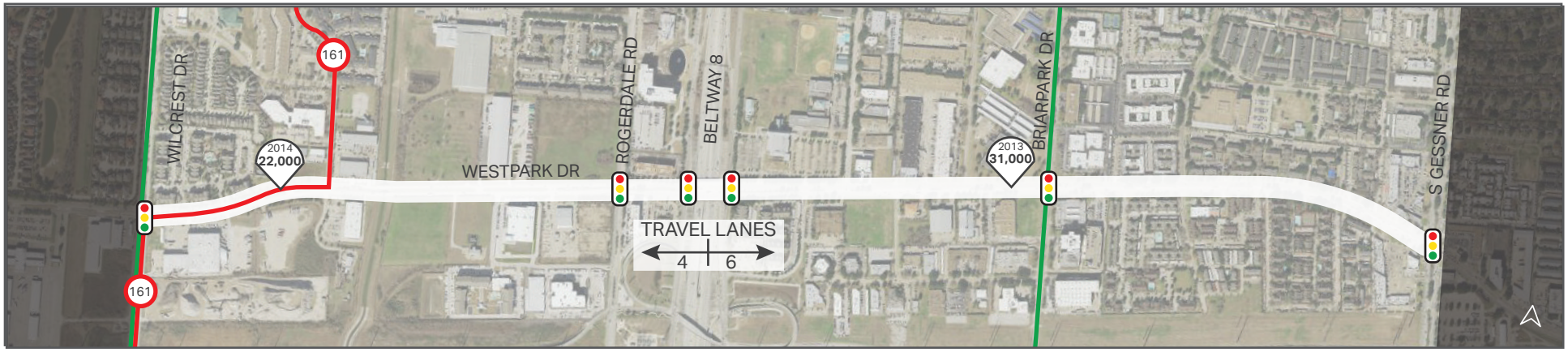
BICYCLE RECOMMENDATION | wide sidewalk

MEDIUM-TERM RECOMMENDATION



LONG-TERM RECOMMENDATION





EXTENT | Wilcrest Dr — Gessner Rd

EXISTING MTFP | T-4-100

EXISTING RIGHT OF WAY | 100'

THROUGH TRAVEL LANES | 4, 6

POSTED SPEED LIMIT | 35 mph

ROADWAY WIDTH | 24'-30'-24', 33'-14'-33'

SIDEWALKS | narrow, many segments missing

BICYCLE FACILITIES | none

TRANSIT ROUTES | 161 Wilcrest Express

STREET PARKING | none

TRAFFIC VOLUMES | 22,000-31,000

TDM PROJECTIONS | 75,000 (2040)

LAND USE | commercial, multi-family residential, office

AREA TYPOLOGY | urban center

MULTIMODAL CLASS. | commercial boulevard

westbound near Beltway 8

eastbound approaching Briarpark Drive

EXISTING CORRIDOR LEGEND

- transit route
- bike facility
- P — on-street parking
- traffic signal
- corridor stop sign
- traffic count (year)

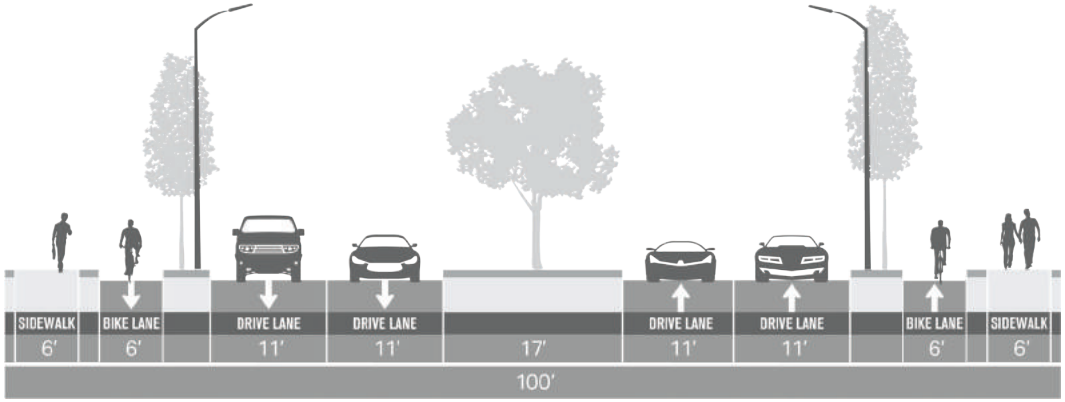
Westpark Drive is an east-west Major Thoroughfare. The corridor is four-lanes west of Beltway 8 and six-lanes to the east. While currently six-lanes between Beltway 8 and Gessner Road, the MTFP classifies this segment of Westpark Drive as a T-4-100.

Westpark Drive runs parallel to the Westpark Tollway. East of the study area, Westpark Drive acts as a defacto frontage road to Westpark Tollway. West of the study area, Westpark Drive becomes a two-lane half boulevard segment as it runs through the Royal Oaks neighborhood.

The adjacent land uses includes some vacant parcels and aging multi-family housing complexes that have strong development and redevelopment potential.

To match the MTFP classification for Westpark Drive through the study area from Wilcrest Drive to Gessner Road, a four-lane boulevard with bikeways is recommended. The proposed cross-section will provide quality bicycle and pedestrian facilities that will support potential future develop and align with the mobility goals.

LONG-TERM RECOMMENDATION



MODE PRIORITY

BICYCLE

PEDESTRIAN

AUTO

TRANSIT

PROPOSED MTFP CHANGE | none

BICYCLE RECOMMENDATION | bike lane (long-term)

WILCREST DRIVE | EXISTING

EXTENT | Riverview Dr — Westpark Tollway

EXISTING MTFP | T-6-90/100

EXISTING RIGHT OF WAY | 90'-100'

THROUGH TRAVEL LANES | 4

POSTED SPEED LIMIT | 35 mph

TYPICAL ROADWAY WIDTH | 24'-30'-24'

SIDEWALKS | both sides, narrow

BICYCLE FACILITIES | low-comfort bike lane

TRANSIT ROUTES | 25 Richmond
161 Wilcrest Express

STREET PARKING | none

TRAFFIC VOLUMES | 21,000-24,000

TDM PROJECTIONS | 64,500 (2040)

LAND USE | commercial, office, multi-family and single-family residential

AREA TYPOLOGY | urban center, general urban

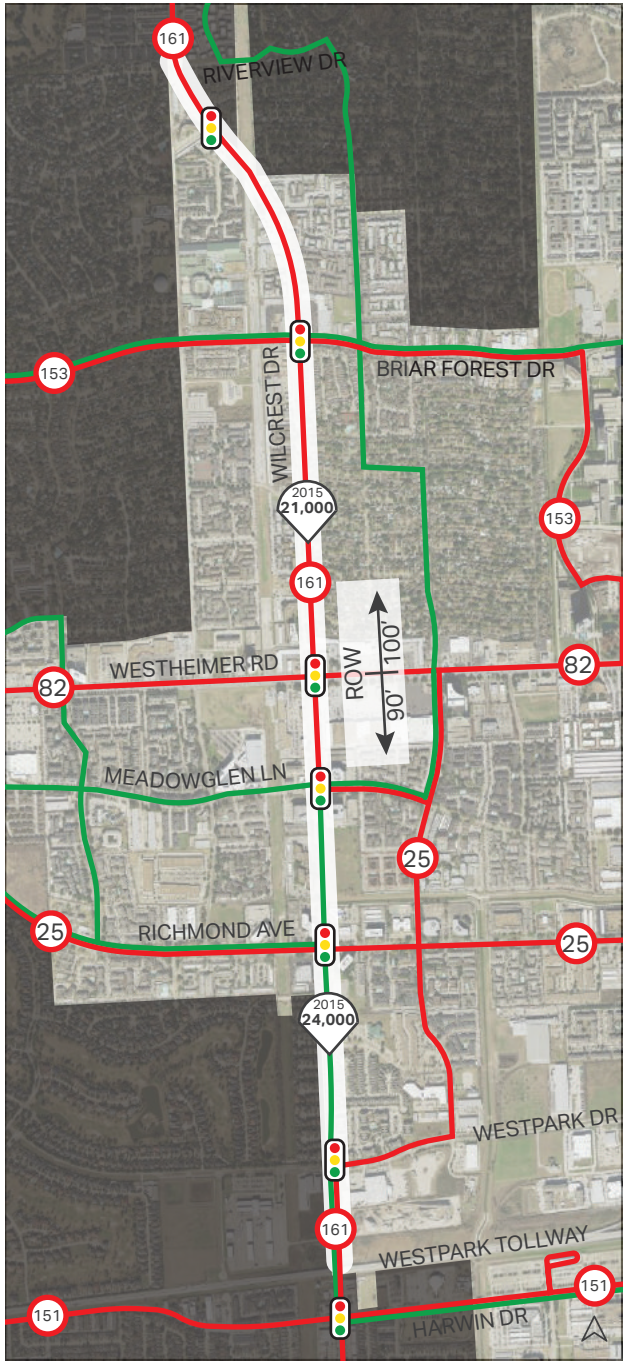
MULTIMODAL CLASS. | mixed-use boulevard

northbound approaching Meadowglen Lane

northbound past Richmond Avenue

EXISTING CORRIDOR LEGEND

- transit route
- bike facility
- P — on-street parking
- traffic signal
- corridor stop sign
- traffic count (year)



Wilcrest Drive is currently a four-lane, divided Major Thoroughfare with a variety of adjacent land uses, including strip center commercial, single-family residential, multi-family residential, and office buildings. Parts of the corridor have a high potential for redevelopment.

There is currently transit service (METRO 25 and 161) and a low-comfort bike lane, south of Meadowglen Lane. The Houston Bike Plan does not include future bicycle lanes along Wilcrest Drive due to the proposed off-street path adjacent to Wilcrest Drive.

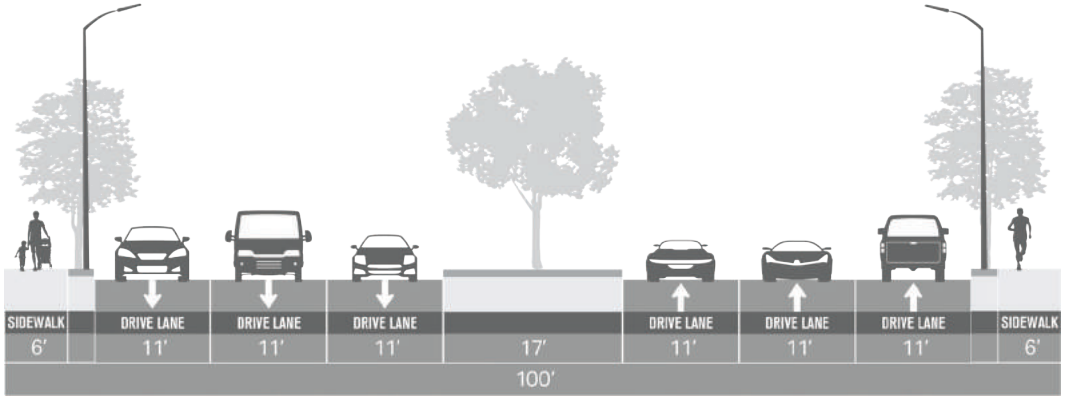
Although the MTFP plans for six lanes, the West Houston Mobility Study classified Wilcrest Drive as an area of concern because future projections show a high volume to capacity ratio even after widening to six lanes.

Wilcrest Drive is a key north south connection within West Houston. It extends from IH-10 south to US 59/IH69 where it turns into Murphy Road (FM 1092). Due to the regional significance of the corridor, auto is the proposed top mode priority for the corridor.

Widening Wilcrest Drive to six lanes will require right-of-way acquisitions if it is constructed to City standards. Therefore, the short-term recommendation is to maintain the existing travel lanes while making improvements to the sidewalks along the corridor. The sidewalks along the corridor are below standard and should be widened to at least six feet as part of future projects.

Further study is recommended on Wilcrest Drive to determine if widening to six lanes is feasible due to possible right-of-way constraints.

LONG-TERM RECOMMENDATION



MODE PRIORITY

AUTO

PEDESTRIAN

TRANSIT

BICYCLE

PROPOSED MTFP CHANGE | none

BICYCLE RECOMMENDATION | none

study area corridor

WOODCHASE DRIVE | EXISTING

EXTENT | Richmond Ave — Westpark Tollway ROW

EXISTING MTFP | n/a

EXISTING RIGHT OF WAY | 60'

THROUGH TRAVEL LANES | 2

POSTED SPEED LIMIT | 30 mph

TYPICAL ROADWAY WIDTH | 40'

SIDEWALKS | both sides, narrow

BICYCLE FACILITIES | none

TRANSIT ROUTES | none

STREET PARKING | in lane

TRAFFIC VOLUMES | n/a

TDM PROJECTIONS | n/a

LAND USE | multi-family residential, school

AREA TYPOLOGY | urban center

MULTIMODAL CLASS | res. high-density street

northbound near Sneed Elementary School

southbound south near Westpark Drive

EXISTING CORRIDOR LEGEND

- transit route
- bike facility
- P — on-street parking
- traffic signal
- corridor stop sign
- traffic count (year)

WOODCHASE DRIVE | PROPOSED

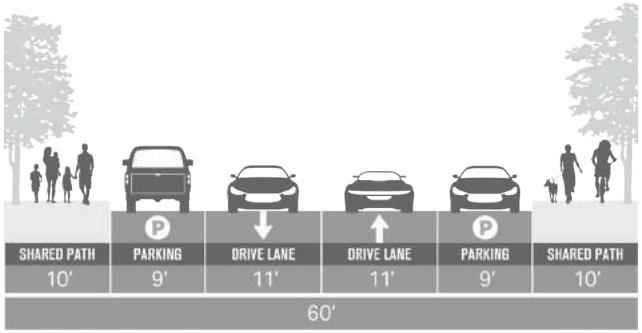
Woodchase Drive runs from Richmond Avenue to its current terminus just north of the Westpark Tollway. Land uses along the corridor include multi-family residential as well as a public school. The context of the corridor is expected to stay residential with an increase in density.

An off-street bicycle facility on Woodchase Drive is included in the Westchase District Ped/Bike Plan. The Plan recommends a shared-use path along both sides of the roadway that will connect to the proposed Westpark Trail located north of Westpark Tollway between Briarpark Drive and the Gessner Park & Ride.

Currently an eight- to 10-foot shared-use path is under design to be constructed along the east side of the corridor.

The recommendation for Woodchase Drive includes the proposed shared-use path along with re-striping or reconstructing of the roadway to accommodate parking lanes and an enhanced crossing at Richmond Avenue.

RECOMMENDATION



MODE PRIORITY

BICYCLE

PEDESTRIAN

AUTO

PROPOSED MTFP CHANGE | MN-2-60

BICYCLE RECOMMENDATION | shared route (short-term)

APPENDIX B

PUBLIC OUTREACH

PUBLIC OUTREACH ACTIVITIES

As a supplement to the information presented in **Chapter 2: What We Want**, the dates and details of what was provided as part of the public outreach and community engagement effort for the Westchase Mobility Plan is provided below.

The outreach efforts were designed to maintain contact with the following groups throughout development of the Plan:

- Westchase residents
- Westchase employers and employees
- Public agencies
- Elected officials
- Project Steering Committee

A Steering Committee was established for the project, which consisted of employers, residents, public agency staff and elected officials/staff. The Steering Committee confirmed existing conditions, served as a sounding board for strategies and provided direction in the development of the Mobility Plan. The Steering Committee Meetings met on the following dates:

- March 3, 2016
- May 24, 2016
- August 23, 2016

PROJECT DEVELOPMENT COMMUNITY ENGAGEMENT ACTIVITIES

- Attendance at Community Events
  - Westchase Corporate Challenge – April 8, 2016
  - Westchase Farmer's Market – June 9, 2016 and June 16, 2016
- Focus Group Meetings – March and April 2016
  - Residents
  - Employers
  - Developers
  - Retail/commercial
- Project Website Postings
  - Survey questions
  - Steering Committee meeting presentations and minutes
  - Notice of project Public Meeting
- Westchase Wire Articles
  - March 9, 2016
  - April 6, 2016
  - September 21, 2016
- Public Meeting on October 17, 2016

MOBILITY PLAN REPORT COMMUNITY ENGAGEMENT ACTIVITIES

- Draft Mobility Plan Update Report
  - Post Draft Report on project website for 30-day comment period: December 2016 - January 2017
  - Articles in Westchase Wire about availability of Final Report: December 2016 - January 2017
  - Westchase District e-mail link to Draft Report to elected officials; meet at elected officials request: December 2016 - January 2017
  - Present Draft Mobility Plan Update to Westchase District Board of Directors: December 2016
  - Review Draft Report with public agencies: November-December 2016
- Final Mobility Plan Update Report
  - Post Final Report on project website: April 2017
  - Article in Westchase Wire about availability of Final Report: April 2017