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transportation and transit planning

land use, buildings and planning

landscape architecture

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# Executive Summary



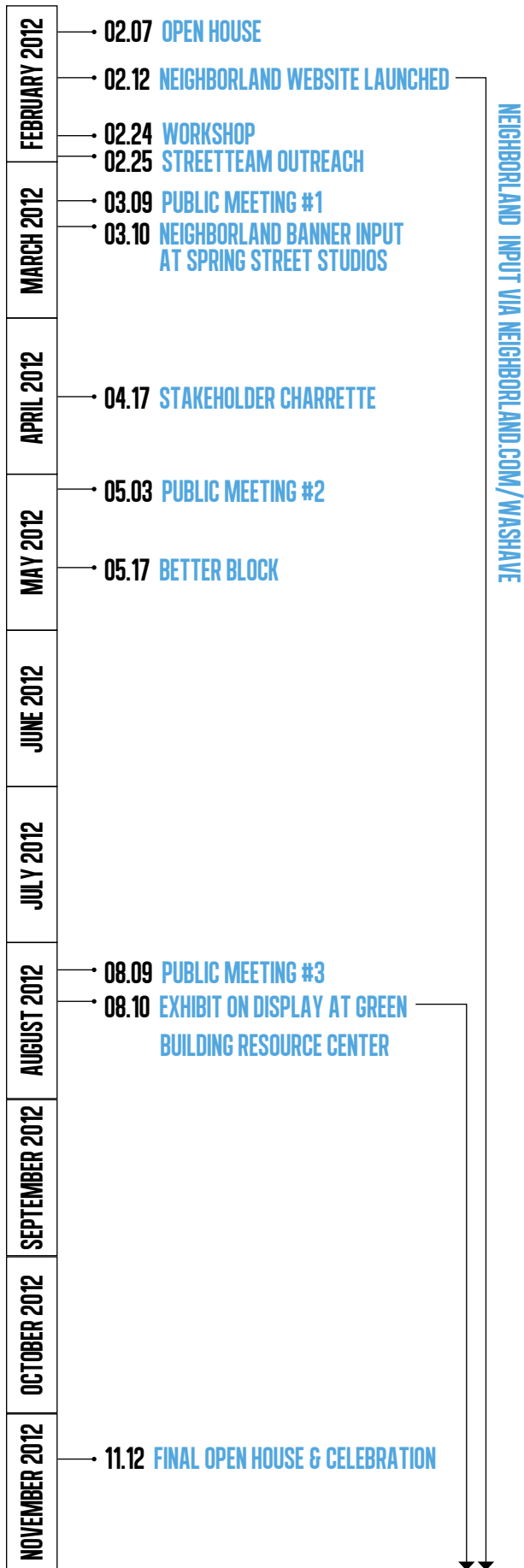
The Washington Avenue Livable Centers Study has provided the community with an opportunity to build a vision for the area's future development, while respecting and preserving the culture that exists today. The Study was undertaken at a crucial time, when the changing environment along Washington Avenue Corridor has been quickly transforming, much to the interest and dismay of the community. While the past decade has provided significant changes and challenges for residents of the corridor, the area can now be referred to as maturing.

The Study Area is adjacent to Downtown Houston and bounded by Interstate-10 to the north, Memorial Parkway to the south, Interstate-45 to the east, and Washington & Westcott to the west. Within the Study Area are historic neighborhoods that

are susceptible to the changes occurring around them, and consist of communities that have been eager to be involved in establishing the vision for Washington Avenue.



# PUBLIC ENGAGEMENT TIMELINE



The public engagement process has extended throughout the project period with public input opportunities, as shown on the timeline to the left. Early in the process, five Project Goals were established to guide the development of the study that would lead to twelve recommendations. Additionally, outcomes should adhere to the six Livability Principles put forward by the federal government to guide future federal funding.

## PROJECT GOALS

1. Develop a framework for the development of a mixed-use, multi-modal and unique community that supports its residents, employers and visitors regardless of life-stage, race or income.
2. Provide more transportation choices, especially for modes that are historically underutilized, that improve the overall environment and that are focused on the needs of the community.
3. Encourage the continued development of the Washington Avenue Corridor as a shopping, dining and entertainment destination in a way that respects the needs of area residents.
4. Ensure that community members have increasing and ongoing methods to have their voices heard and have an active role in shaping their community.
5. Focus on implementation, ensuring that the community's desires become on the ground realities.

## LIVABILITY PRINCIPLES (HUD, DOT, AND EPA)

1. Provide more transportation choices;
2. Promote equitable, affordable housing;
3. Enhance economic competitiveness;
4. Support existing communities;
5. Coordinate and leverage federal policies and investment;
6. Value communities and neighborhoods.



**SUBJECT AREAS**

Existing conditions and Recommendations were organized into five categories. Below are the five category icons with a summary of the Existing Conditions key findings:

**PLACEMAKING, BRANDING & WAYFINDING**

COMMUNITY BRANDING, CULTURAL AMENITIES &amp; IDENTITY

1. The area has a deep history and distinctive neighborhoods. One of the key assets of the area is its engaged citizenry.
2. Population had declined for many years, but is almost back to its 1950 level. At the same time, population growth has been unequal and has occurred mostly in the western neighborhoods. These changes have also brought cultural shifts, as Latino and black populations decline or hold steady while Asian populations grow significantly.
3. The arts, restaurants, open space and entertainment are very important to the character of the area, both for residents and visitors.

**CIRCULATION & CONNECTIVITY**

AUTOMOBILITY, BICYCLING, PEDESTRIAN FACILITIES, TRANSIT AND ROADWAYS

1. The Bayous, IH-10 and the rail lines severely limit north/south traffic through the area.
2. North/South traffic makes up most of the non-highway traffic through the area.
3. Paving quality, the availability of sidewalks and roadway safety vary greatly through the area.
4. Bicyclists have many desirable east/west paths, but are limited in north/south connectivity.
5. Many buses pass through the area, but the routes are difficult to understand and have had declining ridership.
6. Parking is one of the major quality of life issues for area residents.

**HOUSING CHOICE & BUILDINGS**

HOUSING &amp; BUILT FORM

1. Over half of the land in the neighborhood is residential, and more land has been transitioning to residential uses
2. 52% of buildings in the area were built between 2001 and 2011. 66% were built between 1990 and 2011.
3. Affordable housing choices have declined and/or deteriorated over the past decade. The remaining pockets of affordability are now endangered, especially in the First Ward.
4. Most residents consider the visual quality of buildings, and the way they relate to the street, negative along major corridors, especially for commercial development. Although townhouse development was problematic ten years ago, most residents no longer feel that it is negative.

**ECONOMIC DEVELOPMENT**

BUSINESSES, ECONOMIC DEVELOPMENT AND MANAGEMENT ENTITIES

1. The study area's population is growing faster than the City of Houston and the metropolitan statistical area (MSA) as a whole.
2. The study area has a higher median income than the City of Houston but not as high as the MSA.
3. Household size is smaller than the average MSA household, and has declined over the past decade.
4. Jobs in the area are increasing.
5. A greater number of the area's residents became professionals working downtown in recent times.
6. New homes and historic homes are more likely to be owned. Post war homes are more likely to be rented.
7. The retail mix is quite good, and improving, but residents desire more local, smaller businesses.



- 8. Land prices are strongest in the south and west of the area.

**SUSTAINABILITY & OPEN SPACE**

OPEN SPACE, PARKS, ENVIRONMENTAL ISSUES AND SUSTAINABILITY

- 1. The area is surrounded by green space, but it often feels inaccessible.
- 2. Lack of neighborhood parks and quality of schools is a major concern for parents.
- 3. Bayous surround the neighborhood and drainage issues are important.
- 4. Some historic industrial sites are contaminated.
- 5. Noise pollution comes from freight trains, IH-10 and night clubs.
- 6. Air pollution comes primarily from IH-10.

The existing challenges and opportunities, explained in further detail throughout the study, have led to twelve recommendations to guide the transformation of the Washington Avenue Study Area. Recommendations are classified with a scale and one or multiple types to guide implementation. In order to realize the long-term transformation of the corridor, a mix of short (0-5 years), medium (5 to 10 years) and long (+10 years) strategies are prioritized.

**TYPE**



**INFRASTRUCTURE**

The construction of physical infrastructure, from roads to buildings



**REGULATION**

A regulatory framework to affect the future of development or require state or local government intervention to approve



**PROGRAMMATIC**

A program to move to implementation, these may be put in place by the City, a TIRZ or management district or citizen groups

**SCALE**



**DISTRICT**

Apply to the entire study area



**NEIGHBORHOOD**

Apply to one or two of the neighborhoods, but not the entire study area



**NODES**








































Key areas that will be of extra importance to the future of the Washington Avenue Corridor, and may exhibit the potential of all other recommendations as they are carried through

Three nodes of activity within the study area exhibit the potential for redevelopment through phases, and initiatives that build upon other efforts, as displayed in the following pages.

**RECOMMENDATION & IMPLEMENTATION CHART**

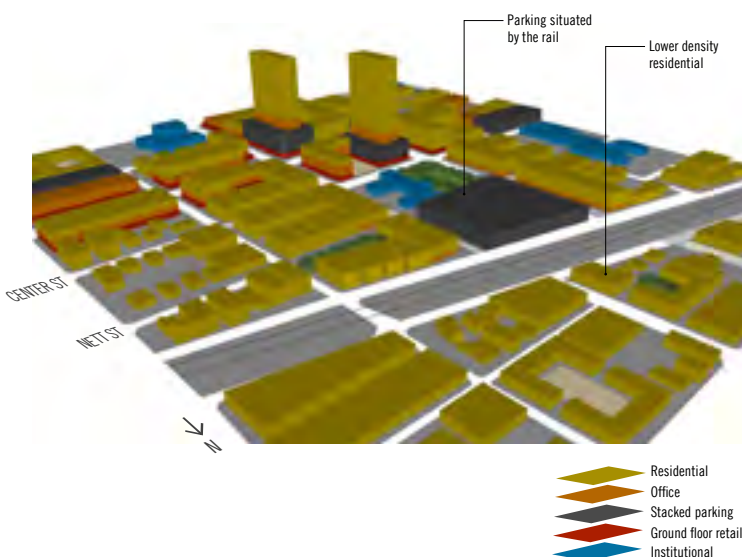
#	RECOMMENDATION	PROJECT GOALS / LIVABILITY PRINCIPLES	SUBJECT AREA	TYPE	SCALE	TIME FRAME	IMPLEMENTERS
01	<b>WASHINGTON AVENUE RIGHT-OF-WAY</b> Redesign Washington Avenue as an urban corridor that supports multi-modal mobility, community, economic development and has a high aesthetic quality for neighbors, visitors and property owners	<input checked="" type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input checked="" type="checkbox"/> 6	  			Medium /Long	METRO, CoH PWE
02	<b>MANAGEMENT ENTITY</b> Establish a management entity for the Washington Avenue Corridor to develop unified community branding and wayfinding, promote economic development, manage parking and promote the community's identity	<input checked="" type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input checked="" type="checkbox"/> 6	 			Medium /Long	State of Texas, Future Management District

Chart abbreviations – CoH: City of Houston, PD: Planning Department, PWE: Public Works & Engineering Department, HCDD: Housing and Community Development Department, BCE: Building Code Enforcement, TIRZ: Tax Increment Reinvestment Zone

#	RECOMMENDATION	PROJECT GOALS / LIVABILITY PRINCIPLES	SUBJECT AREA	TYPE	SCALE	TIME FRAME	IMPLEMENTERS
03	<b>HIGH FREQUENCY TRANSIT</b> Create high-quality, high-frequency, easy to understand transit options that make using transit for work, shopping, or recreation trips an appealing alternative to driving	<input checked="" type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input checked="" type="checkbox"/> 6				Medium /Long	METRO, CoH PWE, TxDOT
04	<b>BICYCLE FACILITIES</b> Create on and off street bicycle connections that allow bicyclists to cross barriers, connect to desirable destinations and that facilitates the desirability of cycling as everyday transportation	<input checked="" type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6				Short/ Medium	CoH PWE, CoH PD, Houston B-Cycle
05	<b>COMPREHENSIVE PARKING</b> Put into place parking requirements and management strategies that incrementally reduce the amount of surface parking in the community to improve aesthetic value and encourage non-automotive trips.	<input checked="" type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input checked="" type="checkbox"/> 6		 		Medium /Long	CoH PD, CoH Parking Dept, Future Mngt. District
06	<b>MEMORIAL &amp; WAUGH INTERCHANGE</b> Redesign the interchange between Memorial and Waugh to improve traffic flow, bicycle and pedestrian connections across Buffalo Bayou and to Spotts Park, and to create additional developable land and open space	<input checked="" type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input checked="" type="checkbox"/> 6	 	 		Long	CoH PWE
07	<b>SETBACKS, BUILT FORM &amp; MIXED-USE</b> Modify the existing regulatory environment to better support development and community amenities that fit within the community's desires and best practices	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 4 <input type="checkbox"/> 5 <input checked="" type="checkbox"/> 6				Short	CoH PD, Private Developers
08	<b>HOUSING CHOICE</b> Provide and protect affordable housing options for the residents of the Washington Avenue Corridor	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input checked="" type="checkbox"/> 4 <input type="checkbox"/> 5 <input checked="" type="checkbox"/> 6		 		Medium /Long	CoH HCDD TIRZ 3, 5, 13, Future Mngt Dis., CoH BCE
09	<b>STORMWATER MANAGEMENT</b> Develop stormwater management strategies that protect the community from storm events while providing mobility options and creating an aesthetically pleasing environment	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 4 <input type="checkbox"/> 5 <input checked="" type="checkbox"/> 6	 	  		Medium /Long	Future Management District
10	<b>PAVEMENT TO PARKS</b> Reuse underutilized parcels in the neighborhood and along Washington Avenue to create a world-class system of parks, squares, open-spaces and recreation areas that improve land values and tie neighbors to the Avenue	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input checked="" type="checkbox"/> 4 <input type="checkbox"/> 5 <input checked="" type="checkbox"/> 6		 		Short/ Medium	Future Management District
11	<b>PUBLIC ART</b> Support the continued development of the Washington Avenue Corridor as a primary destination for the arts in Houston. Create new opportunities for local artists to live, work and display their art throughout the neighborhood	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input checked="" type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 4 <input type="checkbox"/> 5 <input checked="" type="checkbox"/> 6				Short	Texas Commission on the Arts, Future Mngt District, CoH HCDD,
12	<b>LOCALLY-SCALED RETAIL DEVELOPMENT</b> Support the development of small local businesses and encourage Washington Avenue to continue to develop a unique commercial environment	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input checked="" type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 4 <input type="checkbox"/> 5 <input checked="" type="checkbox"/> 6	  			Short	Private Entity, TIRZ 3, 5, 13, Future Management District

## NODE ONE: DOWNTOWN WASHINGTON AVENUE

Washington Avenue and Shepherd/Durham are the two highest volume streets within our study area (with the exception of Memorial Drive). As such, it is an extremely important node for the community. Land values are increasing, making higher density development, including the possibility of towers, more likely. The volume of traffic along Shepherd and Durham will also necessitate an underpass for those streets along the rail line. The Downtown Washington Avenue area is envisioned to become a bustling node with heavy mixed-use density and greater pedestrian, bicycle, and transit traffic.



### 1 RIGHT-OF-WAY IMPROVEMENTS

#### RECOMMENDATION 1, 3, 4

Washington Ave, as well as adjacent and cross streets are envisioned to be improved functionally, and aesthetically. The ROW on Washington Ave can have a number of treatments based on the width at given points, to accommodate pedestrians, vehicles, transit, and cyclists.

### 2 FREIGHT RAIL UNDERPASS

#### RECOMMENDATION 1

With the traffic on Shepherd estimated to grow rapidly over the coming years, the movement of traffic below the freight rail is believed to alleviate the congestion, while reducing vehicular-rail conflicts. Since cars require less clearance to go below grade, this solution will minimize the impact mixed-use blocks surrounding this area and will still allow for safe multi-modal movement.

### 3 PARKS AND OPEN SPACE

#### RECOMMENDATION 8, 10, 11

The addition and enhancement of parks and open space in the area will provide a variety of opportunities for walking, sitting, and engaging in recreational activities. Parks and open spaces can balance the increased density in the area, creating a healthier environment, and vibrant ambiance.

### 4 MIX OF USES

#### RECOMMENDATION 7, 12

Promoting a mix of the uses in the area, coupled with street improvements, can lead to a bustling and vibrant atmosphere.

### 5 CONSOLIDATED PARKING

#### RECOMMENDATION 5

Bundling the parking in certain lots will reduce the need for surface parking, improving the pedestrian realm. Consolidated parking will also allow various land uses to share the parking, reducing the need for more spaces.

### 6 MIX OF HOUSING TYPES

#### RECOMMENDATION 8

A mix of housing types will ensure physical, as well as, socio-economic diversity in the area. The variety in housing will attract a diverse group of people, which will also support a diverse set of commercial activity.



0-5 YEARS

5-15 YEARS

15-30 YEARS

P H A S E 1  
P H A S E 2  
P H A S E 3

Washington Ave. lane reconfiguration - signs and paint

Signed bike route along Washington Ave.

Creation of Management District

Creation of a Parking Management District

Creation of a Parking Benefits District

High-Frequency route along Washington Ave.

Temporary open space and public art interventions

Relocating powerlines

Curb reconstruction

Greater density mixed-use

Enhanced parks and open spaces

Streetcar (dedicated lane possible if warranted by ridership and mode split)

High-density mixed use

Bulb-outs and medians

Consolidated garage parking

Pedestrian amenities

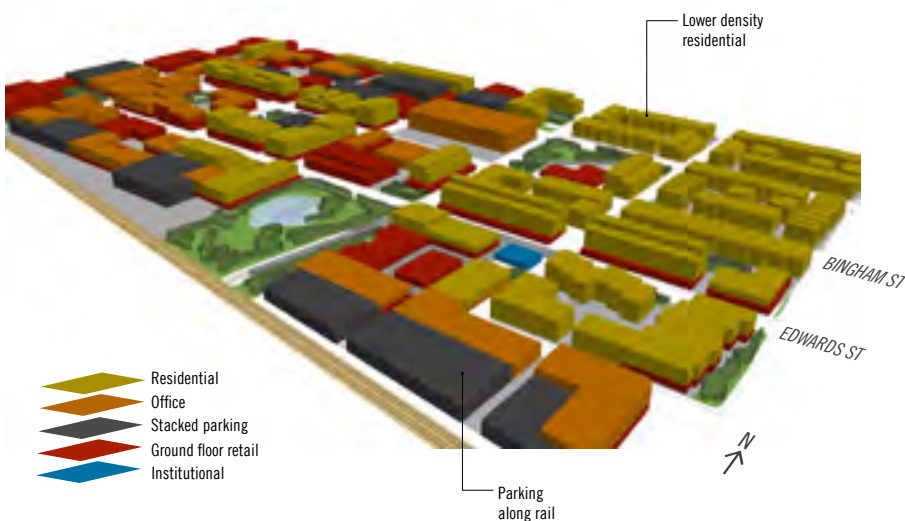
Sidewalk extensions

## NODE TWO: FIRST WARD INDUSTRIAL TRANSFORMATION

The First Ward's industrial areas contain some of the last remaining large developable parcels in the study area. Much development on these parcel types has been adjacent to IH-10 and has focused on big box development. Future development has an opportunity to be at a more human scale and to fit more closely into the existing neighborhood, while also capitalizing on proximity to both Washington Avenue and the Interstate. With an eclectic character, the First Ward is envisioned to be a diverse place with dynamic social and economic programming. The area's entrepreneurial and artistic potential can make it a destination for visitors from outside the neighborhood, while providing neighborhood residents with high-quality residential and public spaces.



- Residential
- Mixed Use and Non-Residential



10 Washington Avenue Livable Centers

### 1 RIGHT-OF-WAY IMPROVEMENTS

#### RECOMMENDATION 1, 3, 4

Washington Ave, as well as adjacent and cross streets are envisioned to be improved functionally, and aesthetically. The ROW on Washington Ave can have a number of treatments based on the width at given points, to accommodate pedestrians, vehicles, transit, and cyclists.

### 2 PARKS AND OPEN SPACE

#### RECOMMENDATION 8, 10, 11

The addition and enhancement of parks and open space in the area will provide a variety of opportunities for walking, sitting, and engaging in recreational activities. Parks and open spaces can balance the increased density in the area, creating a healthier environment, and vibrant ambiance.

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Promoting a mix of the uses in the area, coupled with street improvements, can lead to a bustling and vibrant atmosphere.

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#### RECOMMENDATION 5

Bundling the parking in certain lots will reduce the need for surface parking, improving the pedestrian realm. The consolidated parking will also allow various land uses to share the parking, reducing the need for more spaces.

### 5 MIX OF HOUSING TYPES

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A mix of housing types will ensure physical, as well as, socio-economic diversity in the area. The variety in housing will attract a diverse group of people, which will also support a diverse set of commercial activity.



0-5 YEARS

5-15 YEARS

15-30 YEARS

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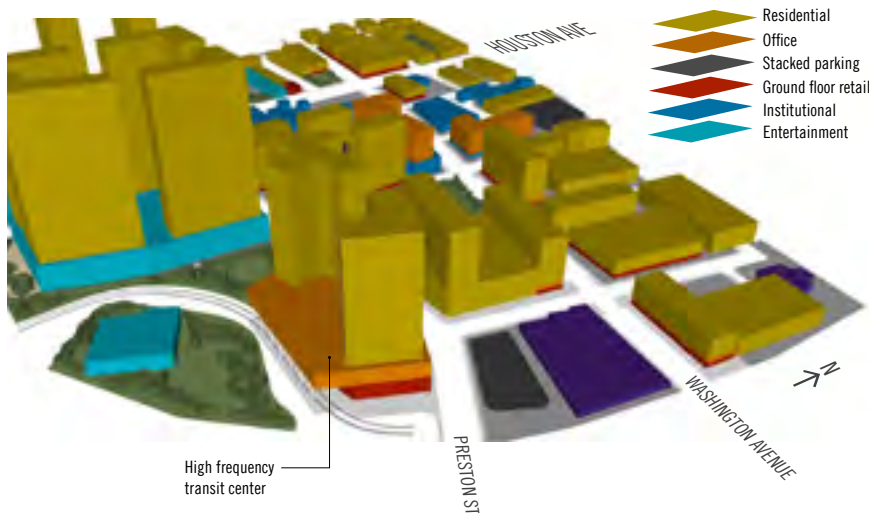
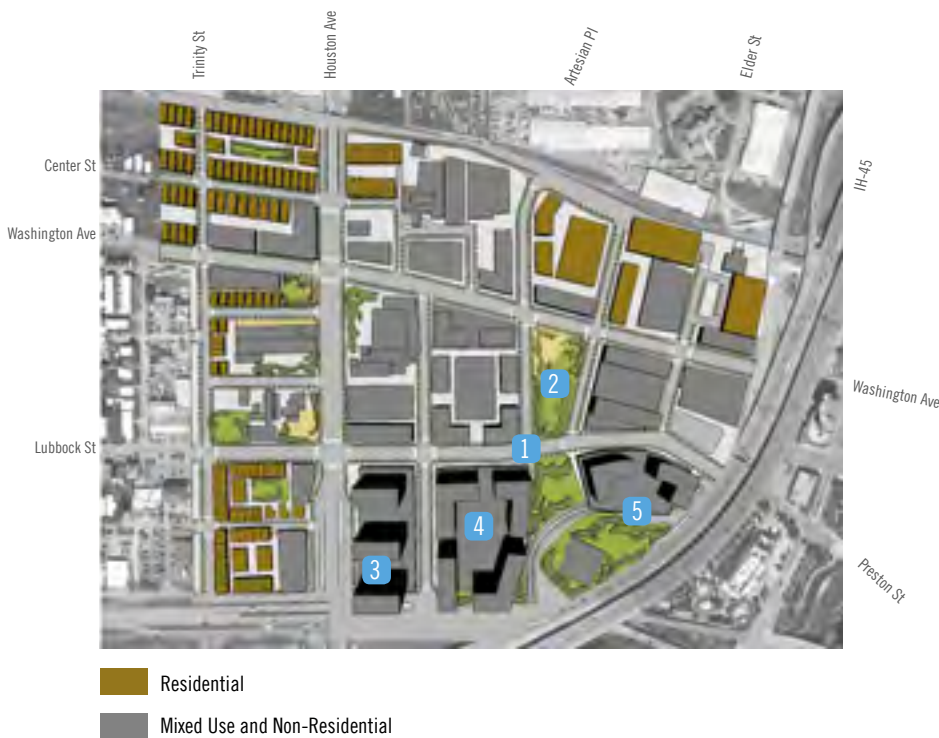
- Designation of an Arts District
- Develop an Arts District Vision
- Temporary open space and public art interventions
- Restriction of on-street parking on Silver St.
- Signed bike lanes and route on Silver St.
- Establish business incubation programming

- Relocating powerlines
- Curb reconstruction
- Higher-density mixed-use
- Enhanced parks and open spaces
- Continuous arts programming
- Retained artist housing and work spaces

- Bike boulevard along Center St.
- Higher-density mixed-use
- Consolidated garage parking
- Pedestrian amenities
- Sidewalk extensions
- Retained artist housing and work spaces

## NODE THREE: CIVIC CENTER

The Civic Center provides a wide range of services that should be easily accessible to visitors. A mixture of uses organized on a grid street system would improve the walkability of the site, which would be supported by transit, including the extension of light rail. The reorganized grid system creates developable parcels out of currently underutilized city owned land. Uses include those that exist today – Houston Police Department, Municipal Courts, City Code Enforcement, St. Joseph Church, Aquarium and Amtrak, among others – but with a greater mix of retail, commercial, office, entertainment and housing options. Higher density structures would be best situated adjacent to the elevated highway, offering a beautiful view of Downtown. Incorporating public green and open spaces provides event and recreational venues that physically connect the site to Buffalo Bayou.



### 1 RIGHT-OF-WAY IMPROVEMENTS

#### RECOMMENDATION 1, 3, 4

Reconfiguring the right-of-way on the site into a grid system will improve circulation and visitor orientation. Treatments should accommodate pedestrians, vehicles, transit, and cyclists.

### 2 PARKS AND OPEN SPACE

#### RECOMMENDATION 8, 10, 11

Open space serves as an extension of Buffalo Bayou, a visitor destination that should be easily accessible, and provides public space for events and recreation. Parks and open spaces can balance the density of the site and Downtown, while creating a healthier environment and vibrant ambiance.

### 3 MIX OF USES

#### RECOMMENDATION 7, 12

Existing services can be enhanced with increased commercial uses, which is easily supported by the job density of Downtown. Proximity to jobs and quality transit also serves as a benefit for high density residential development, ensuring that the site is inhabited by users at all hours.

### 4 CONSOLIDATED PARKING

#### RECOMMENDATION 5

Bundling the parking into garage structures will reduce the need for surface lots, improving the pedestrian realm and allowing for greater development of the site. Additionally, site proximity to transit may alleviate the need for parking spaces.

### 5 HIGH-FREQUENCY TRANSIT

#### RECOMMENDATION 3

Extension of the METRO Green & Purple light rail lines provides easy access to the site and its civic services. There is also potential to extend this line to the post office located to the northeast.





0-5 YEARS

5-15 YEARS

15-30 YEARS

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- Washington Ave. lane reconfiguration
- Signed bike route along Washington Ave.
- High-Frequency transit along Washington Ave.
- Temporary open space and public art interventions
- Pedestrian amenities
- Sidewalk extensions

- Reconfiguring street network south of Washington Ave.
- Development parcels sold to developers
- Relocating powerlines
- Transit Center north of Aquarium
- Curb reconstruction
- Greater density mixed-use
- Clustered civic uses
- Enhanced parks and open spaces

- Streetcar (dedicated lane possible if warranted by ridership and mode split)
- High-density mixed use
- Bulb-outs and medians
- Consolidated garage parking
- Further street network reconfiguration to tie development sites to Post Office redevelopment



# Introduction



The Houston-Galveston Area Council, in partnership with the City of Houston, BetterHouston and TIRZ 13, facilitated the development of a Livable Centers study of Houston's historic Washington Avenue Corridor.

The Livable Centers program seeks to create walkable, mixed-use places that provide multi-modal transportation, improve environmental quality and promote economic development. The Washington Avenue Livable Centers study area, which is bounded by I-45 in the East, I-10 in the North, Westcott in the West and Buffalo Bayou in the south, includes much of Superneighborhood 22 and contains all or most of the First and Sixth Wards, Memorial Heights, West End, Magnolia Grove, Westwood Grove, Rice Military, Wood Crest and Cottage Grove neighborhoods.

The study engaged area residents and workers, government agencies, businesses and institutions in developing recommendations for improvements to the area. These will include transportation, economic development, housing choice, sustainability, open space and placemaking recommendations.

The project team includes Asakura Robinson, Arup, Morris Architects, RCLCO, SWA Group, Traffic Engineers and Damon Williams Consulting.

Livable Centers projects are driven by a multi-jurisdictional approach to the development of a plan that will ultimately move to implementation. As such, it is useful to examine the mission and goals of the project overall, of the stakeholders and of the federal agencies who will provide funding for implementation of the plan.



**Study Area**

**Livable Centers Project Mission (H-GAC)**

Livable Centers are walkable, mixed-use places that provide multi-modal transportation options, improve environmental quality and promote economic development. H-GAC receives funding from sponsors for a Livable Centers Program to work on planning studies by applying program goals to a specified study area and on implementation projects, “on the ground projects” identified in a Livable Centers study or other planning efforts.

**BetterHouston Mission Statement**

BetterHouston, a civic action forum, is nonpartisan, nonprofit organization dedicated to informed civic involvement and dialogue, and to the betterment of the character and quality of our neighborhoods and of the urban environment. Our priorities are better neighborhoods, better transit and better urbanism. Plans for Livable Centers, to be effective, are supported by incentives, flexible regulations, and basic standards for walkable urbanism.

In addition to the missions of the funding agencies and organizations, the federal government has put forward the following principles which will guide future federal funding. As such, project recommendations will seek to adhere to these principles.

**Six Livability Principles (HUD, DOT, and EPA)**

- 1. Provide more transportation choices.** Develop safe, reliable, and economical transportation choices to decrease household transportation costs, reduce our nation’s dependence on foreign oil, improve air quality, reduce greenhouse gas emissions, and promote public health.
- 2. Promote equitable, affordable housing.** Expand location- and energy-efficient housing choices for people of all ages, incomes, races, and ethnicities to increase mobility and lower the combined cost of housing and transportation.
- 3. Enhance economic competitiveness.** Improve economic competitiveness through reliable and timely access to employment centers, educational opportunities, services and other basic needs by workers, as well as expanded business access to markets.

- 4. Support existing communities.** Target federal funding toward existing communities—through strategies like transit oriented, mixed-use development, and land recycling—to increase community revitalization and the efficiency of public works investments and safeguard rural landscapes.
- 5. Coordinate and leverage federal policies and investment.** Align federal policies and funding to remove barriers to collaboration, leverage funding, and increase the accountability and effectiveness of all levels of government to plan for future growth, including making smart energy choices such as locally generated renewable energy
- 6. Value communities and neighborhoods.** Enhance the unique characteristics of all communities by investing in healthy, safe, and walkable neighborhoods—rural, urban, or suburban.

Finally, based on consultation with the project team and stakeholders, the following specific goals have been developed for the Washington Avenue Livable Centers Plan. As you read the report, keep these missions, principles and goals in mind, as they shape many of the recommendations moving forward.

## PROJECT GOALS

- 1**      **Develop a framework for the development of a mixed-use, multi-modal and unique community that supports its residents, employers and visitors regardless of life-stage, race or income.**
- 2**      **Provide more transportation choices, especially for modes that are historically underutilized, that improve the overall environment and that are focused on the needs of the community.**
- 3**      **Encourage the continued development of the Washington Avenue Corridor as a shopping, dining and entertainment destination in a way that respects the needs of area residents.**
- 4**      **Ensure that community members have increasing and ongoing methods to have their voices heard and have an active role in shaping their community.**
- 5**      **Focus on implementation, ensuring that the community's desires become on the ground realities.**



# Existing Conditions

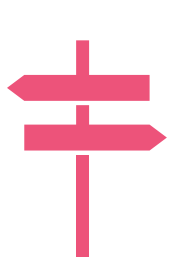


In order to be able to plan for a community's future, it is first necessary to understand a community's past and present. The first task of the Washington Avenue Livable Centers Plan consisted of collecting, consolidating, and assessing data from a number of sources, conducting field research to fill in gaps in knowledge and beginning a listening process to understand the needs and desires of area residents, stakeholders and landowners.

During this period, area residents were given a number of opportunities for input. A launch open house, hosted at the Asakura Robinson offices on February 7th, 2012, was attended by more than 80 area residents. Building upon the initial interest of community members, Workshops were held on five topical areas on February 24th, 2012.

With the help of volunteers from Better Houston, the Congress for New Urbanism - Houston and the Citizens' Transportation Coalition, a complete sidewalk survey of the study area corridors was conducted on February 25th, 2012. At the same time, the volunteers also conducted outreach to local businesses.

Finally, the first public meeting of the project was held on March 8th, 2012 at MECA in the Sixth Ward. This event allowed residents and stakeholders to review existing conditions findings and give additional input to areas of importance. The following report synthesizes all of the information collected. Each section concludes with a summary of key findings.



# Placemaking, Branding & Wayfinding





Placemaking is defined by the Project for Public Space as “a multi-faceted approach to the planning, design and management of public spaces. Placemaking capitalizes on a local community’s assets, inspiration, and potential, ultimately creating good public spaces that promote people’s health, happiness, and well being. Placemaking is both a process and a philosophy.”

Luckily, the Washington Avenue Corridor is blessed with many assets in the built, natural and social environments. The Placemaking, Branding and Wayfinding component of the study will work to identify and capitalize on these assets, both for local residents and to shape how the area is viewed in the wider city, region, and even nationally.

Many residents are active in shaping the area through participation in civic clubs, religious organizations, advocacy groups and through the arts.

The area has many identities to the larger city. The corridor is thought of as an arts district, a “funky” place, a nightlife district, and a historic district. As such, there are many assets to build upon in constructing a strong neighborhood brand and in creating inspirational, beautiful, and healthy places.

# HISTORY

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Washington Avenue is one of Houston's most historic corridors. According to historian Stephen Fox, the street was one of seven major roads that connected Houston to other Texas towns from the earliest times following the City of Houston's founding in 1836. Because of Houston's position in the south-east of the Republic of Texas, much traffic into the city used this entry point from the north and west.

Originally defined as the area between Buffalo and White Oak Bayous, the area was connected to Downtown by a bridge at Preston Street in 1843. In 1846, Houston's first railroad was constructed one block north of Washington near the location

of the current Amtrak station. The railroad would dominate the area's economy and culture for the remainder of the century, as many area residents worked for the railroad or for those who did.

The area also began to see much early industrial growth and was home to the Houston Novelty Works, the Eagle Car Works, and the Phoenix Iron Works, all of which can be seen in the historic map, from 1891, below.

At this time, settlement was limited to the First and Sixth Wards, constrained by the availability of transportation. By



1873, mule-pulled streetcars had made an appearance on the Avenue. Westward expansion was tamed, at least briefly, by the construction of Glenwood Cemetery, the first professionally landscaped public space in Houston.

In 1888, an investor named Anton Brunner platted a 137 block area west of the city limits named Brunner. City newspapers referred to this area as “uptown.” Although initially unsuccessful, the area received a boom when an even larger real estate venture, the Houston Heights, began to be constructed just to the north. Electrified streetcars ran six miles up Washington Avenue to Heights Boulevard to

connect Houston and the Heights. Several additional areas of the corridor were settled to the west of Heights Boulevard, including Magnolia Grove. All of these areas were annexed to the city between 1912 and 1918.

In 1912, the newly formed Board of Park Commissioners of the City of Houston hired landscape architect Arthur Coleman Comey to prepare a master plan for the city, who in turn recommended the creation of parkways along the bayous and Memorial Park. Although the bayous had long defined the neighborhood, the decline of public transportation and the construction of White Oak Drive and Allen Parkway insured



that many motorists avoided the busy, and less-affluent, neighborhoods that bordered Washington Avenue.

From the 1920s to the 1960s the Avenue was defined primarily as an urban highway, serving as the main connection to the Katy and Hempstead Highways. Through this time, suburbanization and the impacts of heavy industrial, freight rail, decaying housing stock and significant through-traffic contributed to the decline of quality of life for many of the eastern neighborhoods on the corridor. At the same time, western neighborhoods such as Rice Military (adjacent to the World War One military base at Camp Logan) developed in a more suburban housing typology of modest bungalows on small lots, as did the area of the military base itself following its decommissioning.

In the 1950s and 1960s, the completion of Memorial Drive from the Park to Downtown and the construction of IH10 relieved the avenue of its role as an urban highway. In the following decades, both industrial production and commercial activity in the area declined.

By the 1970s the residents of the Sixth Ward area, one of the largest collections of Victorian housing in Texas, and certainly the largest in Houston, sought to protect their neighborhood from decay and replacement by newer housing stock. The area was placed on the National Register of Historic Places in 1978, and was approved as a historic district by the city council in 1998. A council approved an ordinance fully protecting the area in 2001.

In the 1990s and 2000s, the proximity to downtown and the popularity of both Montrose to the south and the Heights to the north encouraged a fast redevelopment of housing in many of the corridor's neighborhoods, especially in the western neighborhoods. Many of the new developments are at a higher density than the original neighborhoods, leading to some stress for long-term residents.

At the same time, the eastern end of the neighborhood developed a thriving arts and entertainment scene. Although many of these developments have been positive for the area, significant issues with the way that new development relates to existing residents exist.



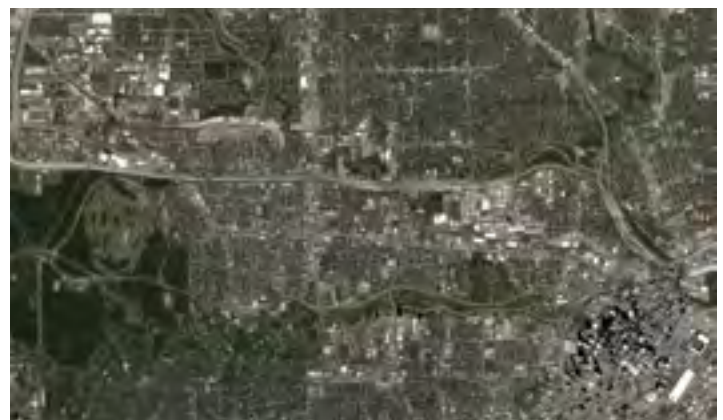
1944



1953



1989



2011

Source: Google Earth

\*Thanks to Stephen Fox for providing background materials for this section.

# NEIGHBORHOODS

Though the residents of Washington Avenue have much in common, they in fact live in a number of highly distinctive neighborhoods with their own character, culture, and vernacular architecture. The study area contains all or part of eight neighborhoods. From east to west, these neighborhoods are the Sixth Ward, the First Ward, Memorial Heights, West End, Magnolia Grove, Westwood Grove, Cottage Grove, Rice Military and Woodcrest.

The neighborhoods are sometimes divided into Lower (closer to Downtown) and Upper Washington, roughly at Heights/Waugh.

Almost uniquely in the city of Houston, each neighborhood has an active civic club. All of the neighborhoods are also members of Superneighborhood 22. Superneighborhoods are a program of City of Houston, defined as a “geographically designated area where residents, civic organizations, institutions and businesses work together to identify, plan, and set priorities to address the needs and concerns of their community.”

The Superneighborhood is extremely well organized and active. In July of 2010, the Transportation Committee of the

Superneighborhood completed a *Transportation Master Plan*, which will be summarised in the Circulation and Connectivity chapter.

In almost every case, Washington Avenue, as well as the major north-south streets (Sawyer, Studemont, Heights/Waugh, Shepherd, TC Jester and Westcott) in the study area form boundaries between the different neighborhoods rather than forming the centers of the communities. In the map below, residential properties are highlighted in green. Viewed in this way, it is possible to see how Washington Avenue’s land use encourages the separation of neighborhoods, rather than serving as a cohesive Main Street.



# DEMOGRAPHICS

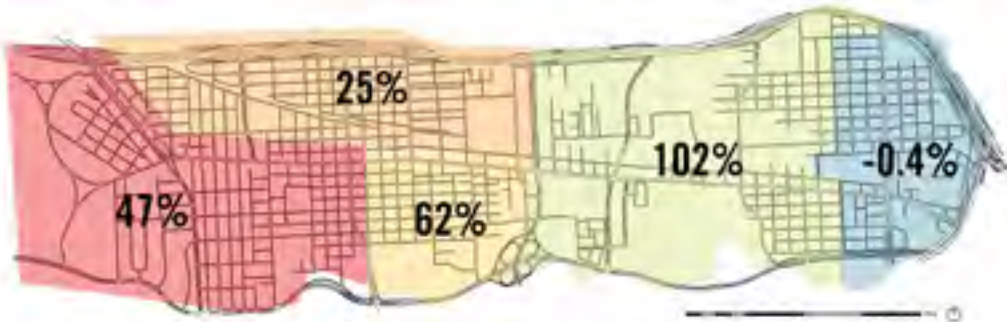
Like many inner-loop neighborhoods, the Washington Avenue corridor saw a decline in population for most of the last half of the twentieth century. This decline began prior to the decline of the loop overall and continued until the 2000 census. In the time since, the population has recovered significantly, growing at a much faster rate than the loop or city as a whole.

The area has maintained a significant Latino population, although the comparison between 2000 and 2010 is difficult to access due to the change in Census data collection. Almost 70% of the corridor's population lived west of Heights/Waugh in 2000, but significant growth is now occurring in the east.

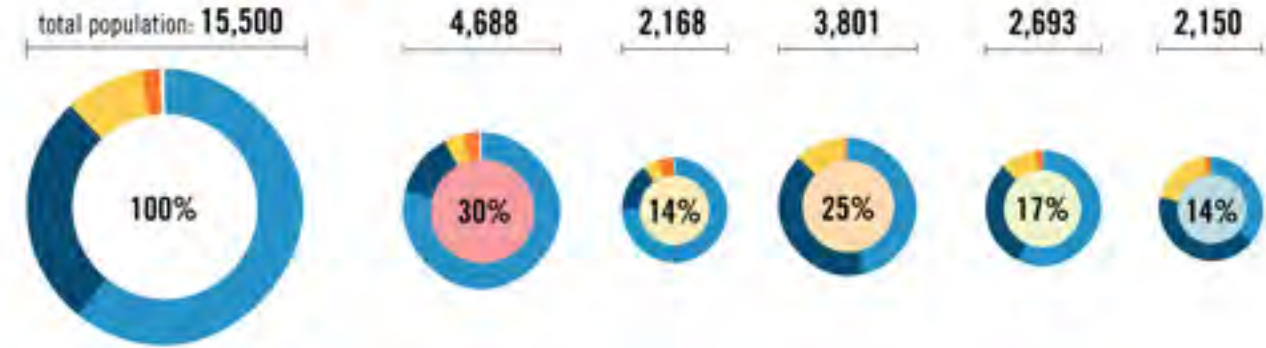


## POPULATION INCREASE BETWEEN 2000 & 2010:

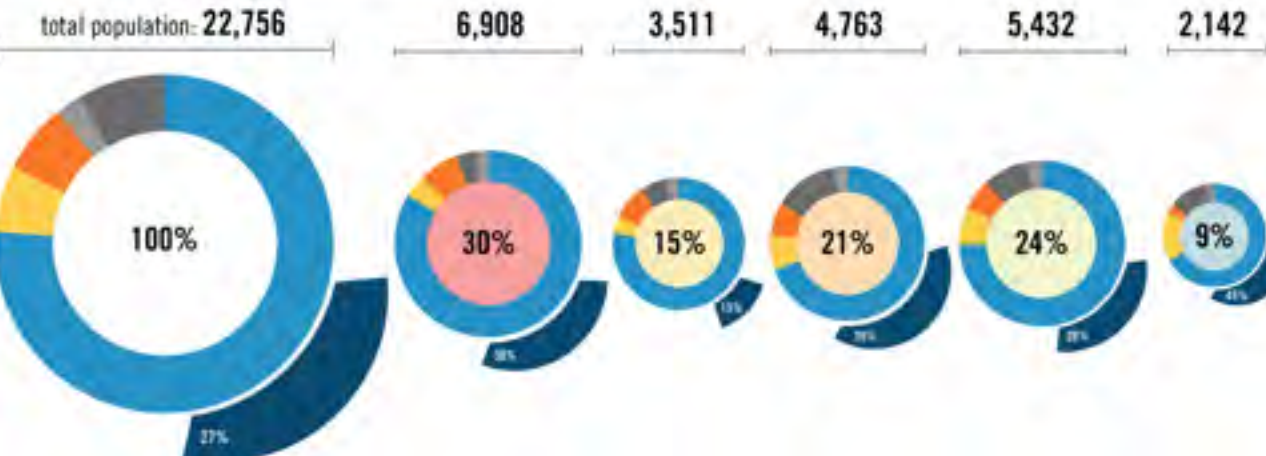
**47%**



### YEAR 2000



### YEAR 2010



# PLACES

During the first open house for the project, held on February 7th 2012 and attended by 80+ community members, participants were asked to identify their favorite places in the corridor. The participants placed stickers on a map.

The selected places fall into three main categories: restaurants and bars; open space and parks; and public art, landmarks and museums. Workgroup participants on February 24th 2012 confirmed those categories as major contributors to the identity of the neighborhood.

Some of the identified places include:

## Restaurants and Bars:

- Canyon Creek
- Benjy's
- Taps
- Revival Market
- Beaver's
- Liberty Station
- Catalina Coffee
- Broken Spoke
- Shandy's

## Open Space and Parks:

- Washington on Westcott Roundabout
- Spotts Park
- The Trails along Buffalo Bayou
- Glenwood Cemetery
- Heights Boulevard
- Memorial Park

## Public Art, Landmarks and Museums:

- Washington on Westcott Roundabout
- The Beer Can House
- The Art Car Museum
- David Addick's Sculpture Works
- Rosemont Bridge
- The Downtown Skyline



# ART

Arts have played an important role in the renaissance of the Washington Avenue corridor, both for residents and in a larger branding sense.



Washington Corridor Arts District Signage in the First Ward

In 2011, a group of local residents and organizations applied for a Cultural Arts District Designation from the Texas Commission on the Arts for the Lower Washington area. Although ultimately unsuccessful (there are plans to reapply), the group did go through a process of identifying local artists, galleries, and design firms, shown in the map below. During the process, 28 artists and galleries, 13 design firms, seven

fabricators, and three theater groups were identified just in the eastern portion of the study area. These groups are largely clustered in the First and Sixth Wards.

## Studio Redevelopments

At the heart of this redevelopment are three large studio redevelopments in the First Ward, the Elder Street Studios, Winter Street Studios and Spring Street Studios. Elder Street Studios is in the remodelled building of the old Jefferson Davis Hospital, a State Archeological Landmark (the hospital was constructed on the site of one of Houston's original cemeteries). The building was redeveloped by Avenue CDC and Artspace Projects, a Minneapolis based non-profit developer. Winter Street Studios (2005) and Spring Street Studios (2010) are both industrial reuse projects that now house 155 studios for artists, designers and theaters. Both studios hold a monthly open studio night, which has become the center of a thriving gallery district. A fourth studio, the Summer Street Studios, is also currently under renovation.

1. Aquilino Design Firm 280 Jackson St. Philadelphia
2. ArtCo Houston 1400 Jackson St. Philadelphia
3. ArtCo Houston 1400 Jackson St. Philadelphia
4. ArtCo Houston 1400 Jackson St. Philadelphia
5. ArtCo Houston 1400 Jackson St. Philadelphia
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7. ArtCo Houston 1400 Jackson St. Philadelphia
8. ArtCo Houston 1400 Jackson St. Philadelphia
9. ArtCo Houston 1400 Jackson St. Philadelphia
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Artists & Galleries

**Lower Washington Cultural Arts District**

The Lower Washington Cultural Arts District encompasses the historic First and Sixth Wards of Houston. It is the source of a unique blend of enjoyment, with historic establishments for eating, gathering and shopping and a variety of live-music spaces, resident, media and workplaces for artists, writers and designers all within the shadows of downtown Houston.

1. Allie Morgan 1000 Washington Ave. Houston
2. Andrew Robinson 1000 Washington Ave. Houston
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Architecture & Digital Design

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Transport & Hotels



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Education & Community

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Health

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Museums & Attractions

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Dining





Spring Street Studio in the First Ward



A legal street art mural on Washington Ave

### **Public Art**

The Washington on Westcott Roundabout and the WOW Initiative has been one of the major proponents of public art in the corridor. A new permanent piece, entitled *The Light Garden*, by artist Tim Glover, is currently being prepared for installation, and will serve as a western gateway to the corridor.

David Addicks Sculpture Works, identified by area residents as one of the favorite places in the area, is also a quasi-public sculpture garden. David Addicks' sculptures, mostly large-scale busts of American presidents, are quite popular and many people visit the area to take photographs.

### **Street Art**

The Washington Avenue Corridor is also a popular destination for street artists, both for wheat pasting, which involves pre-prepared posters, and more traditional spray painting. Art on the corridor includes both legal murals and illegal tagging. While not all Street Art is legal, it does drive visitors to the corridor and has had economic spin-offs, including gallery shows and a commercial screenprinting shop. In addition, some restaurant owners and retailers have identified the street art scene as creating a "vibe" for the neighborhood and giving them more reason to move to the area.

# HISTORIC DISTRICT

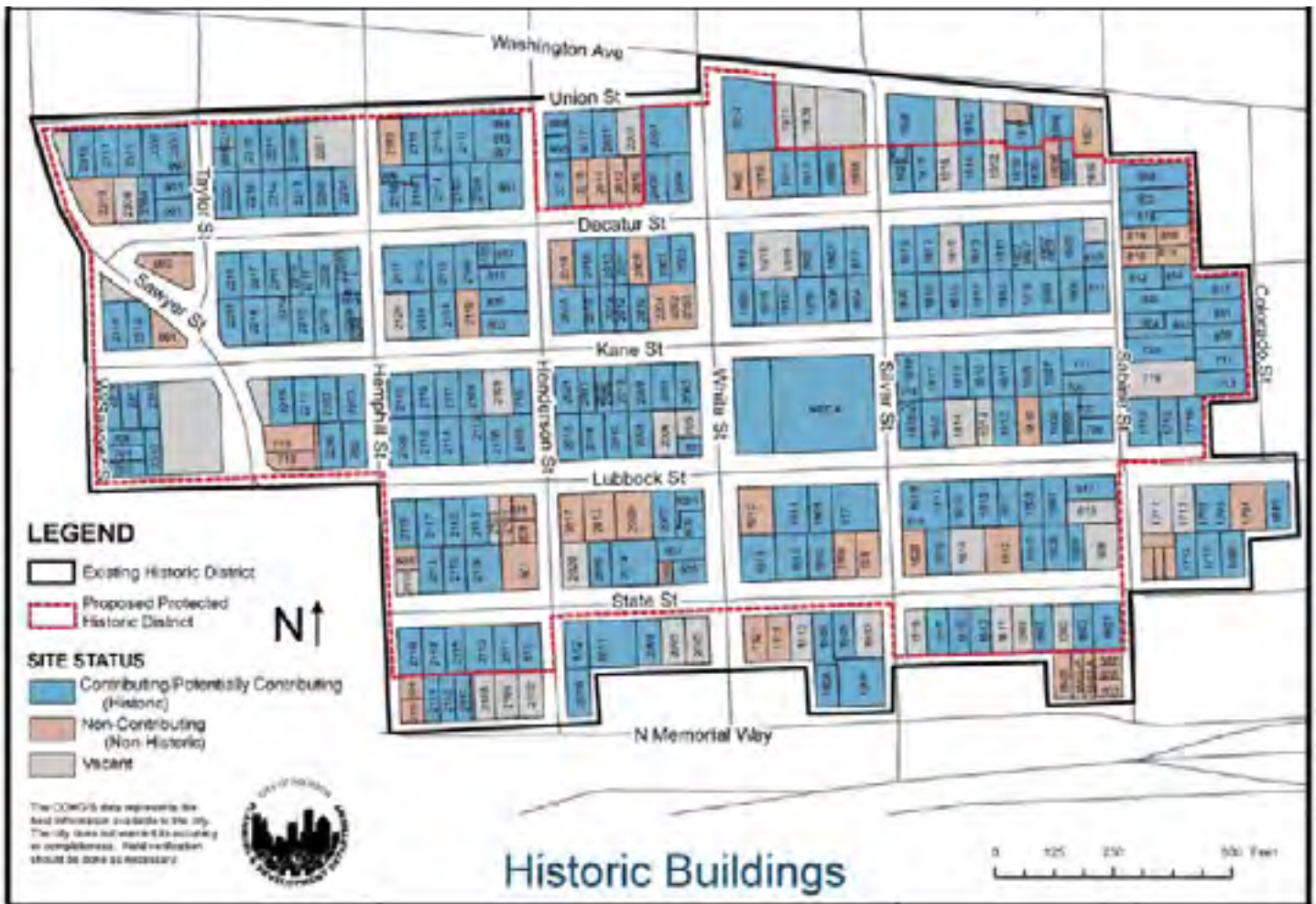
In the 1970s the residents of the Sixth Ward area, one of the largest collections of Victorian housing in Texas, and certainly the largest in Houston, sought to protect their neighborhood from decay and replacement by newer housing stock. The area was placed on the National Register of Historic Places in 1978, and was approved as a historic district by the city council in 1998. A council approved an ordinance fully protecting the area in 2001.

The area's collection of pre-1900 homes is significant, and the vacant lots in neighborhood have also been the site to which endangered historic structures from other parts of the city, including the First Ward, have been moved.

The District is subject to building restrictions that set it apart from other parts of the study area. These guidelines are available online through the City of Houston website and are entitled *Design Guidelines for the Old Sixth Ward*

*Historic District* [Civic Design Associates, 2007]. These restrictions deal primarily with the historic materials and character of building types. Despite the restrictions, some new buildings, though making a gesture towards historicism, appear at a much different scale than the original buildings.

The area of the historic district shows higher land values and home prices than much of the study area. The minority population of the area has also declined significantly in the past 20 years, when the neighborhood was known as Del Sesto. The retail environment, which largely served the Latino community, has declined or been transformed as well. Even as significant new housing development has taken hold, many retail spaces, both within the neighborhood and on the adjoining stretches of Washington Avenue, are currently vacant, or have been converted to other uses (including residential).



# SUMMARY OF KEY FINDINGS

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1. The area has a deep history and distinctive neighborhoods. One of the key assets of the area is its engaged citizenry.
2. Population had declined for many years, but is almost back to its 1950 level. At the same time, growth has been unequal and has occurred mostly in the western neighborhoods, though the eastern neighborhoods are starting to catch up. Latino and black populations are declining or holding steady while Asian populations are growing significantly.
3. The arts, restaurants, open space and entertainment are very important to the character of the area, both for residents and visitors.



# Circulation & Connectivity



Transportation planning is important in all cities. In Houston, where land use controls have typically been lax, transportation infrastructure is the major tool that the public sector can use to influence development. As such, circulation and connectivity is a key component for shaping the future of the Washington Avenue Corridor.

As was shown in the history section, transportation modes have played an important part in shaping the area's development, from trains to streetcars to automobiles.

Today, the neighborhood still feels the effects of these past modes, especially in the heavy presence of freight rail lines (which still run on roughly the same right-of-way as Houston's earliest railway) and in the role that Washington Avenue used

to play as an urban highway from downtown to points west and north.

In 2010, the Transportation Committee of the Superneighborhood released its transportation plan for the area, which has been instrumental in shaping the transportation desires of the area's residents.

# MODE SHARE

Mode share, the percentage of residents using different modes of transportation, is notoriously hard to measure. Privacy concerns create difficulty in collecting data, and the possibility of collecting through counts (actually standing on a street and counting off the number of people or vehicles that pass) is limited by the ability to be in many places at once, as well as the differences in the ways in which users behave while using different modes. For example, counting the cars on a main street may give you a good idea of the vehicular traffic, but many cyclists may avoid that street because of the high number of vehicles.

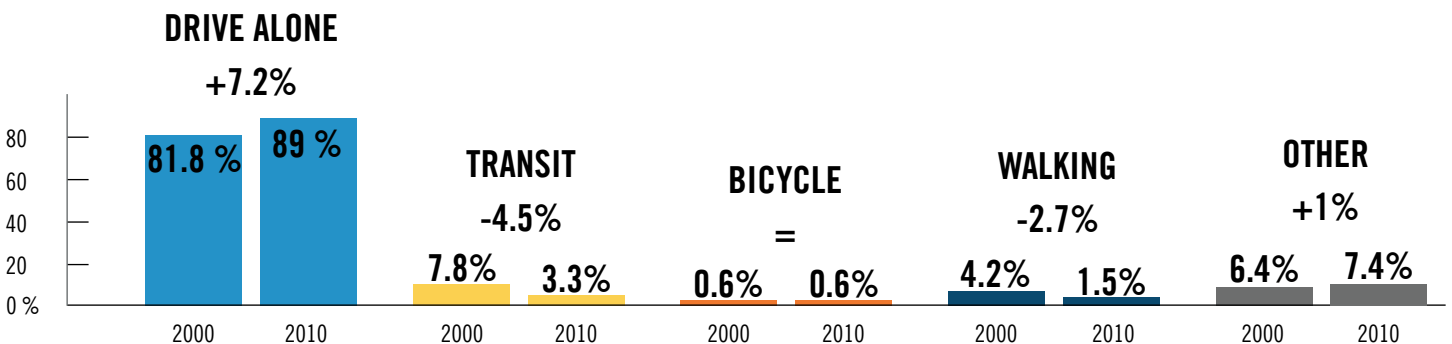
One of the main ways in which we may assess mode share is by using self-reporting about commute mode as reported to the census. Although this gives us an interesting picture of mode share, it is important to note that it is not complete. This style of reporting only captures the main way in which residents commute. A commuter who drives to work four days a week, rides his or her bike on the fifth and consistently walks to restaurants and takes transit to the grocery store will be reported as “drive alone.” Indeed, commute only makes up roughly ten trips per week, where each person may make many, many more trips overall.

At the same time, residents are not the only people who use a transportation system within a neighborhood. A better split would include those working, recreating and shopping in the study area. As the study area contains numerous off-street bicycle and running trails, there is almost certainly a higher number of people walking and bicycling than is reported using the census numbers. In addition, many trips are multi-modal. All transit trips will begin as walking, bicycling or driving trips.

Keeping all this in mind, looking at the mode share of commute is still useful, especially for looking at trends in subsequent censuses. Looking at the trends between the 2000 and 2010 census, the number of commuters driving alone has grown significantly, the “other” category has grown slightly, bicycling as remained at the same level and transit and walking have declined. The “other” category includes carpoolers, telecommuters and other “nontraditional” commuters. The significant increase in commuters driving alone reflects the increasing socio-economic situation of many residents, but varies significantly by neighborhood within the study area. Generally, the areas that have seen the most growth, both in new buildings and added residents, have seen the biggest decline in other modes, though some declines are fairly universal. Bicycling and “other” have also seen increases in some neighborhoods, generally at the expense of transit.

It is also important to remember that the overall population of the study area has increased. As such, a reduction in the percentage of people using a mode may still represent an increase in the absolute number of people using a specific mode. For example, the 0.6% of commuters using a bicycle in 2000 would represent 93 commuters, the same percentage in 2010 would represent 137. Transit and walking modes show absolute declines.

Overall, the study area remains automobile dominated, though significant opportunities exist to increase the uses of other modes.



Year 2000: 2000 & 2010 Census tracts were divided into six geographic areas based on the type and use of the transportation mode.

# 7.2%

**INCREASE IN DRIVE ALONE COMMUTES BETWEEN 2000 & 2010:**



**YEAR 2000**   drive   transit   bike   walk   other

total population: **15,500**

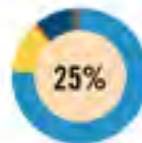
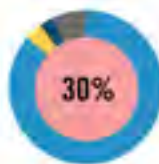
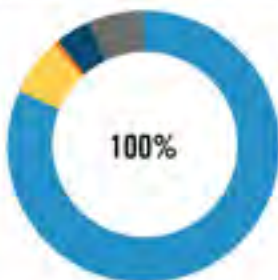
**4,688**

**2,168**

**3,801**

**2,693**

**2,150**



**YEAR 2010**   drive   transit   bike   walk   other

total population: **22,756**

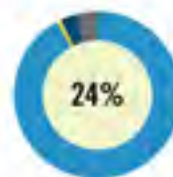
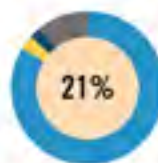
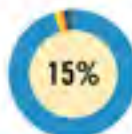
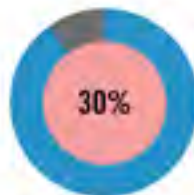
**6,908**

**3,511**

**4,763**

**5,432**

**2,142**



# STREET HIERARCHY

Although Washington Avenue has long defined the corridor, it is not one of the principal thoroughfares in the study area. Instead, Memorial Drive is the main east/west street for vehicular travel. In addition, Westcott and Shepherd/Durham are important north/south connections. Washington, Houston, Studemont, Heights/Yale/Waugh, and TC Jester are all classified as Thoroughfares. The primacy of these roads is further intensified by the lack of crossings over Buffalo Bayou and White Oak Bayou and under IH10. Sawyer and Crockett are the areas only Major Collectors.

The remainder of the study area's streets are classified as Local Streets. Private Streets exist in the cemeteries, on some industrial properties and in a few residential developments.



Data Sources: City of Houston GIMS, City of Houston Major Thoroughfare and Freeway Plan (2011)



Street Type	Description	Length (Miles)	Average Daily Traffic	Defined By
Freeway	Interstate Highway System	-	-	TIGER 2010
Principal Thoroughfare	Connects freeways to other principal thoroughfares	5+	30,000+	MTFP 2011
Thoroughfare	Connects freeways to other principal thoroughfares	3 to 5	20,000+	MTFP 2011
Major Collector	Connects thoroughfares and local streets	1 to 2	5,000+	MTFP 2011
Transit Corridor Street	Defined by Houston's Transit Corridor Ordinance	-	-	MTFP 2011
Local Street	Provides access to homes and local businesses	>1	-	TIGER 2010
Private Road	A road within private property for service	-	-	TIGER 2010



# TRAFFIC VOLUMES

The heaviest traffic in the study area (not including Interstate Highways and the limited access Memorial Drive) flows north/south. The Shepherd/Durham one-way pair carries the most traffic of the north/south streets, but Heights/Yale/Waugh and Studemont also carry significant traffic. Sawyer/Taylor and Houston carry more traffic closer to the I-10 and I-45 entrances respectively.

use Washington as a throughway from the western end to downtown, but rather are using it to connect to destinations on the Avenue and to the north/south streets to connect to other neighborhoods, to the interstates, or to Memorial Drive.

Traffic along Washington Avenue varies significantly, with the segment from Yale to Shepherd being the highest at just over 18,000 cars per day. The high degree of variation in the street's traffic volume suggests that most drivers do not



Data Sources: City of Houston GIMS, City of Houston Traffic Counter Team

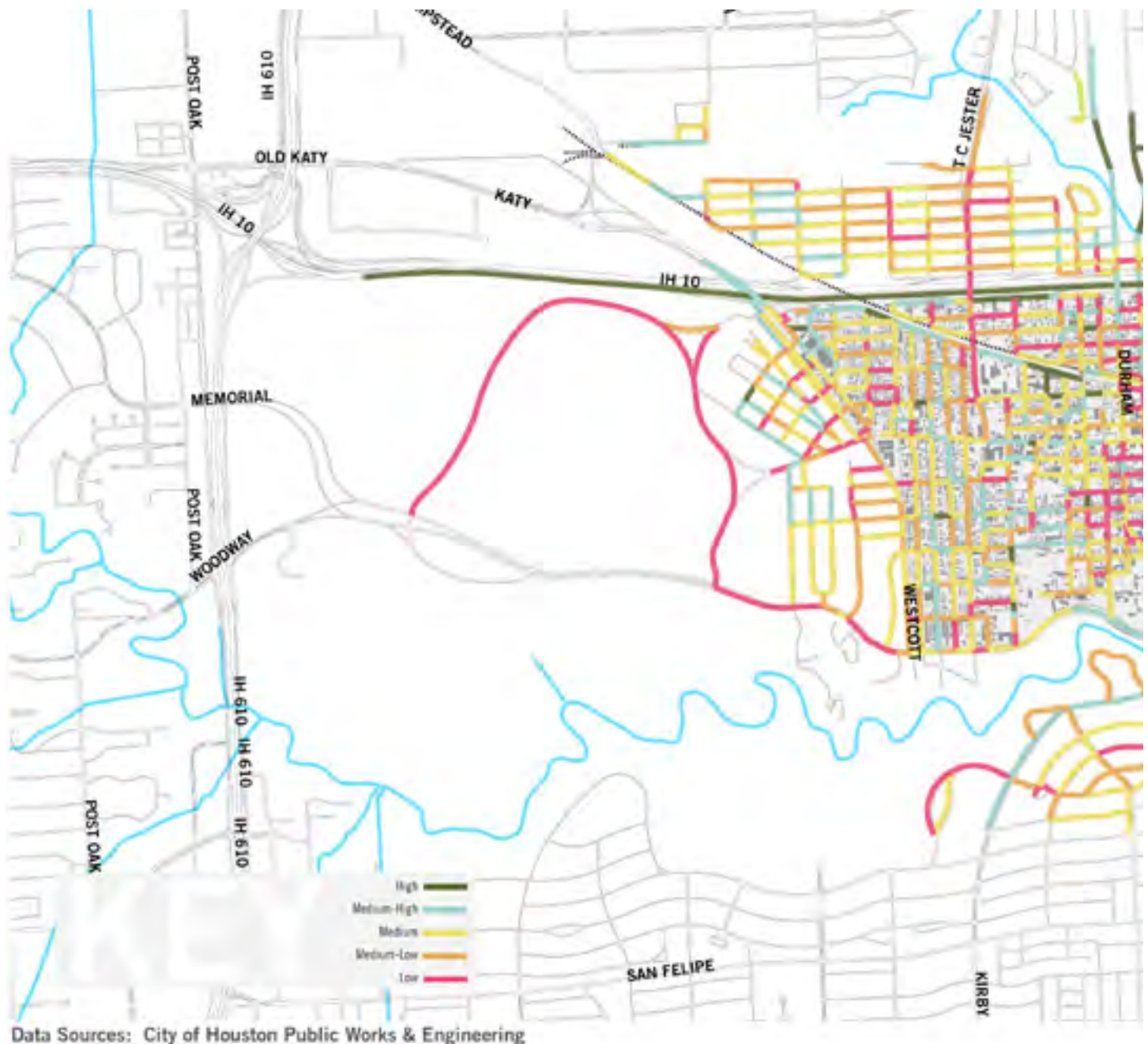


# PAVEMENT CONDITION

The City of Houston assesses roadway condition on a frequent basis (usually every three years). This assessment is used in prioritizing roadway improvement projects. The city uses a Street Surface Assessment Vehicle to automatically collect consistent data. The vehicle measures roadway distress and captures 360-degree video to allow the development of a holistic roadway assessment that is GPS-based.

Within the study area, 38% of roads (representing 27.95 miles) are rated low or medium-low, 36% (representing 26.62 miles) are rated medium, and 25% (representing 18.83 miles) are rated high or medium-high.

These ratings were conducted in 2011, prior to the overlay project for Washington Avenue conducted in the summer and fall of that year. As such, conditions on Washington Avenue itself are likely better than reflected in the map.



7%

18%

36%

19%

19%

Percentages of study area roadways per condition



# SIGNALS & CROSSINGS

The unique geography of the study area contributes to a greater ease of east/west transportation compared to north/south transportation. The Bayous, railroads, IH10 and Memorial Drive all present significant barriers to crossing for pedestrians, cyclists and motorists.

IH10 (and White Oak Bayou) is crossed at 10 points by vehicles and an additional three by pedestrian bridges or underpasses. The railroad is crossed at 14 points, 11 at grade and three underpasses. Buffalo Bayou is only crossed at four points, with an additional two pedestrian bridges. Memorial Drive has several additional crossings, both separated pedestrian

crossings and at-grade, especially in the farthest western portion of the study area.

Traffic signals are concentrated along Washington and Center, IH10, Shepherd/Durham, Sawyer and Houston.



Data Sources: City of Houston Public Works & Engineering



Existing Conditions 43

# SAFETY

Vehicular crashes in the study area are distributed along the major streets, with a significant increase in the areas where major north/south streets intersect with Washington Avenue.

Houston Street and Shepherd/Durham have the most cyclist crashes and Memorial Drive at Shepherd is a dangerous area for pedestrians.

Transportation for America, a national advocacy organization for safer streets, produces a yearly report entitled Dangerous by Design in which they document pedestrian fatalities across the United States. The study area was the site of four

pedestrian fatalities between 2002 and 2008. Although a very small sample size, the data would suggest that very young people and older people are at the highest risk for these accidents (the fatalities were 18, 23, 57 and 80 at the time of the accident).

An additional fatality occurred in a hit and run incident in February of 2012.



Data Sources: 2006 - 2010 Crash Record Information System, TxDOT

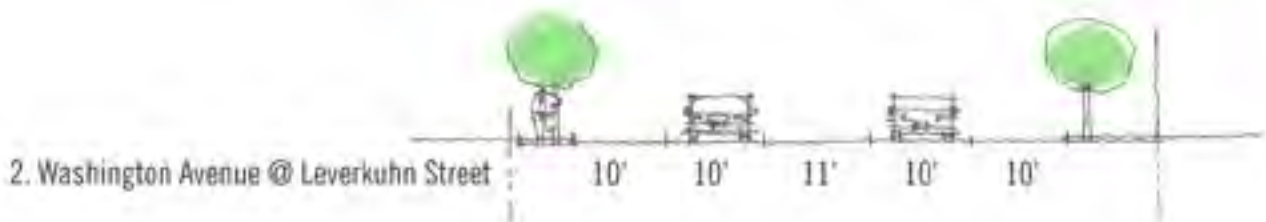
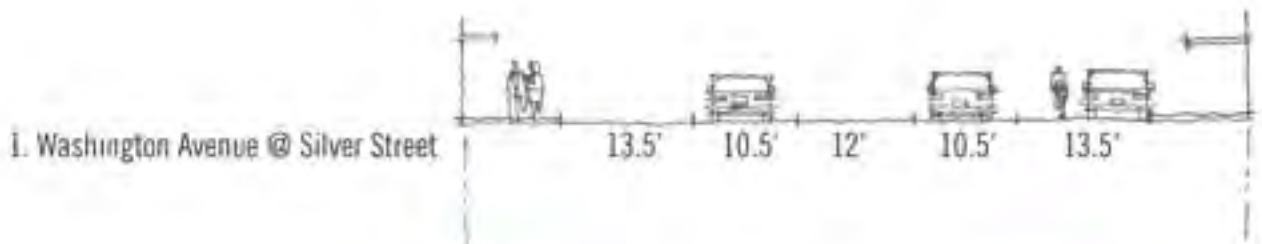


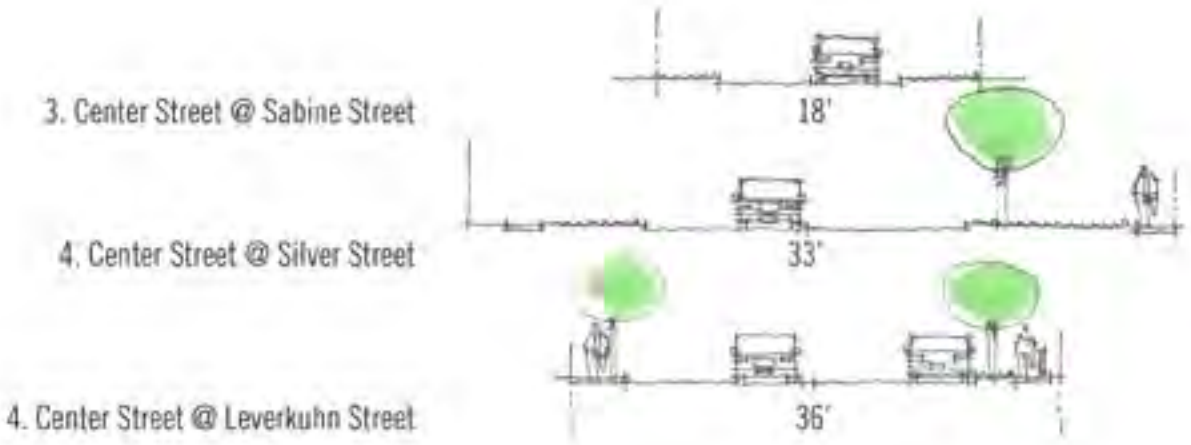
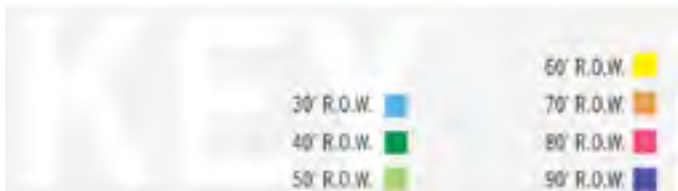


# RIGHT OF WAY

The right of way available on both Washington Avenue and Center Street shows significant variation throughout the study area. As such, the lane configuration changes widths throughout.

Since Washington Avenue also experiences significant variation in traffic volumes for different segments, this configuration is not necessarily sub-optimal. Indeed, studies have shown that variation in lane widths can contribute to traffic calming overall for a corridor.





# PEDESTRIAN REALM

Field observation has shown that sidewalk quality is extremely non-uniform along major corridors in the study area, and in many cases, non-uniform even on the same block. Obstructions, including utility poles, trees, bushes and signs are common. In addition, current city standards, which call for five foot wide, unobstructed sidewalks, are not wide enough to facilitate a walkable, multi-use and multi-modal urban commercial district.

Off of the corridor, many neighborhoods have open ditches for drainage rather than sidewalks.

Right: Trees obstruct a four foot sidewalk  
Far Right: Open ditches in Cottage Grove



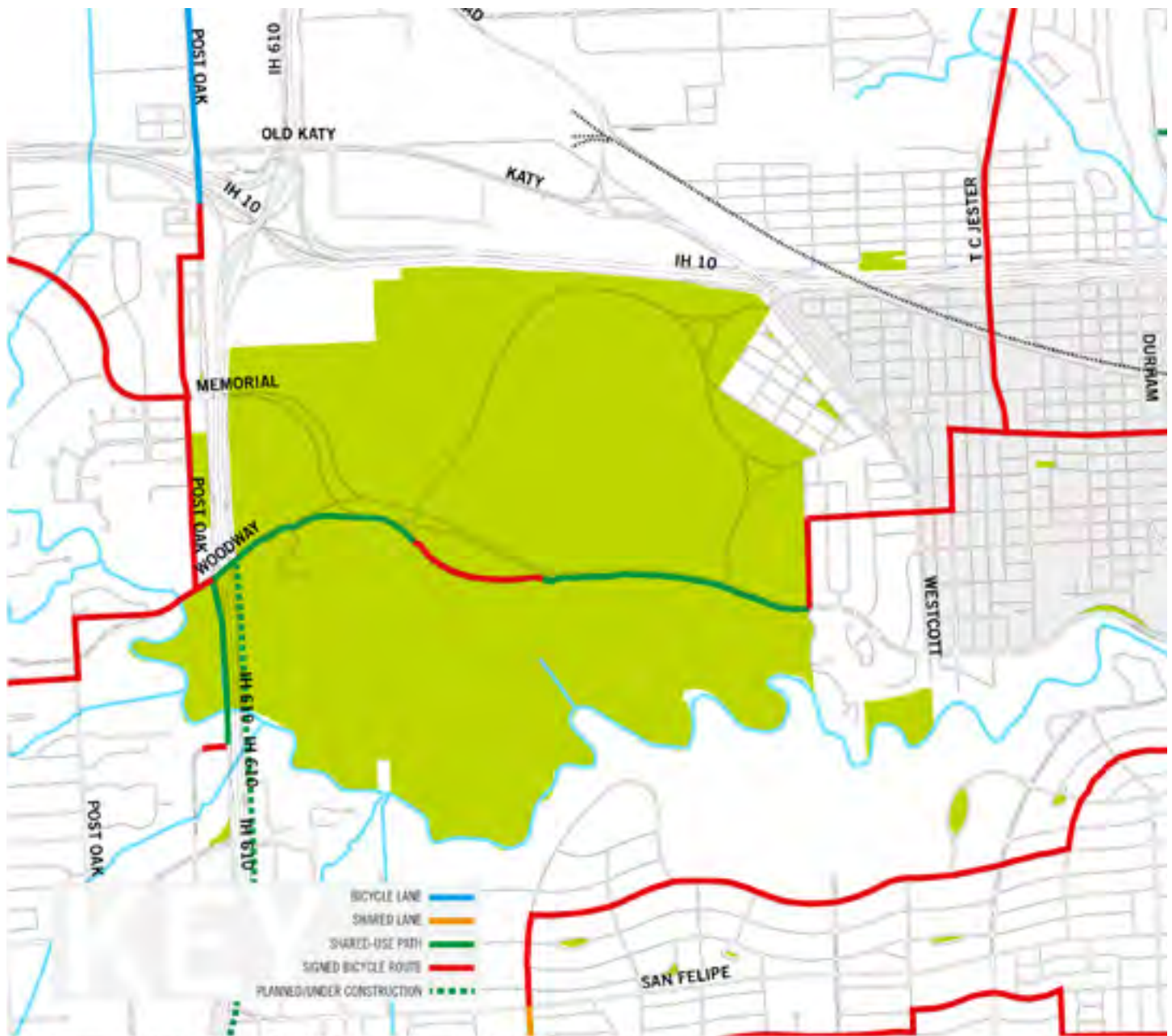


# BICYCLE INFRASTRUCTURE

The eastern part of the study area is well served by off-road shared-use trails, especially for east/west traffic. West of Heights/Waugh, many cyclists use neighborhood streets to avoid higher traffic areas. Although not marked as a bicycle route, Center Street also provides significant connectivity through the study area. Complaints about Center Street are usually related to street condition, not traffic volume. Washington Avenue is marked as a bicycle route throughout the study area, although lane width and traffic volumes/speeds make cycling difficult west of Heights/Waugh. The eastern portion of Washington has shared 13.5'-14' foot lanes, which provide a good level of service for experienced cyclists.

North/south connectivity is severely limited both within the study area and to destinations outside of it. Connections outside of the study area to the north are significantly easier than connections to the south. Silver Street in the First and Sixth Wards provides one of the few direction connections between the MKT and Buffalo Bayou trails.

Additional wayfinding and north/south connections are considered desirable by area residents.



Data Sources: City of Houston GIMS, City of Houston Public Works Bikeways



# LIGHT RAIL TRANSIT

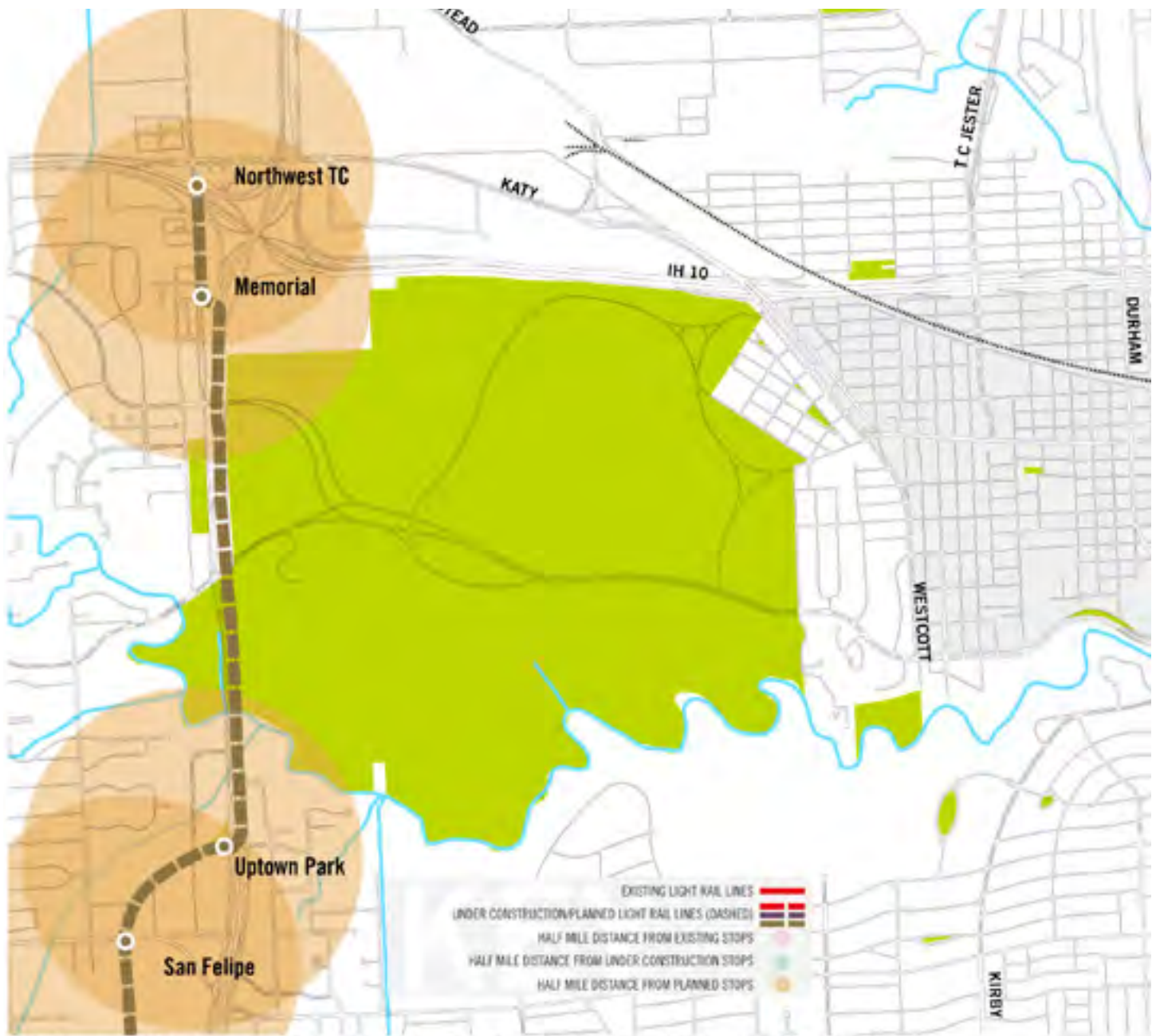
Houston's Light Rail system, called METRORail, currently consists of one 7.5 mile line (Main Street or Red Line) with 16 stations, running southwest from Downtown to the area around Reliant Stadium.

Two new lines and one extension are currently under construction and scheduled to open in 2013 or 2014, adding an additional 14.7 miles and 24 stations to the system. The new lines, the Southeast (Purple) and Harrisburg (Green) Lines, run together from the Theater District, through Downtown to EaDo/Stadium Station then continue east to Magnolia Park (Harrisburg) and Southeast by the University of

Houston and Texas Southern University to Palm Center Transit Center. The extension continues north from the current line to Northline Transit Center just north of I610 (the Loop).

An additional two lines, the University (Blue) and Uptown (Gold) Line, are currently planned, though currently no funding exists for these lines.

The study area lies between these planned and existing lines, but, except for half of the Sixth Ward which is within walking distance of the Theater District Station, is not directly served by the city's rail system. This suggested that bike and ride



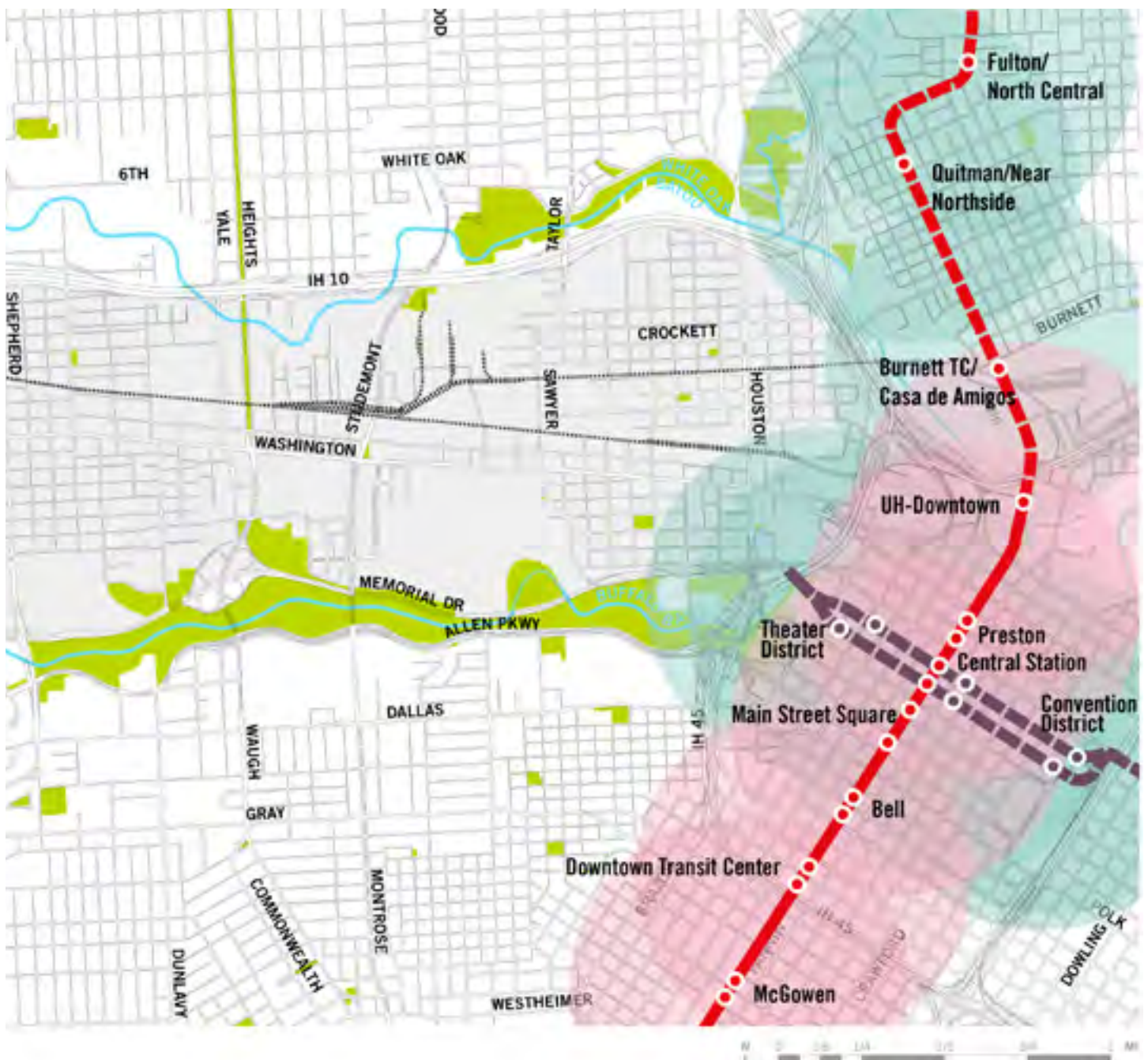
Data Sources: City of Houston GIMS, City of Houston Planning Department (planned LRT lines and stops)



connections and bus transit that serves as feeders to the rail system are especially important to tie area residents to METRORail.

Despite the proximity of the Theater District Station, significant barriers, both mental and physical, exist between the study area and the rail station. Residents wishing to board the METRORail there will need to walk next to a busy roadway bordered by parking lots, navigate a major intersection, cross underneath Memorial Drive and I45 overpasses, and cross over Buffalo Bayou before arriving at the station.

Significant opportunities exist for bike and ride traffic, as the trails along Buffalo Bayou pass near Theater District Station and the MKT Bike Trail will pass near UH-Downtown Station. Significant attention should be paid to making sure that signage and bike parking allows for easy connections.

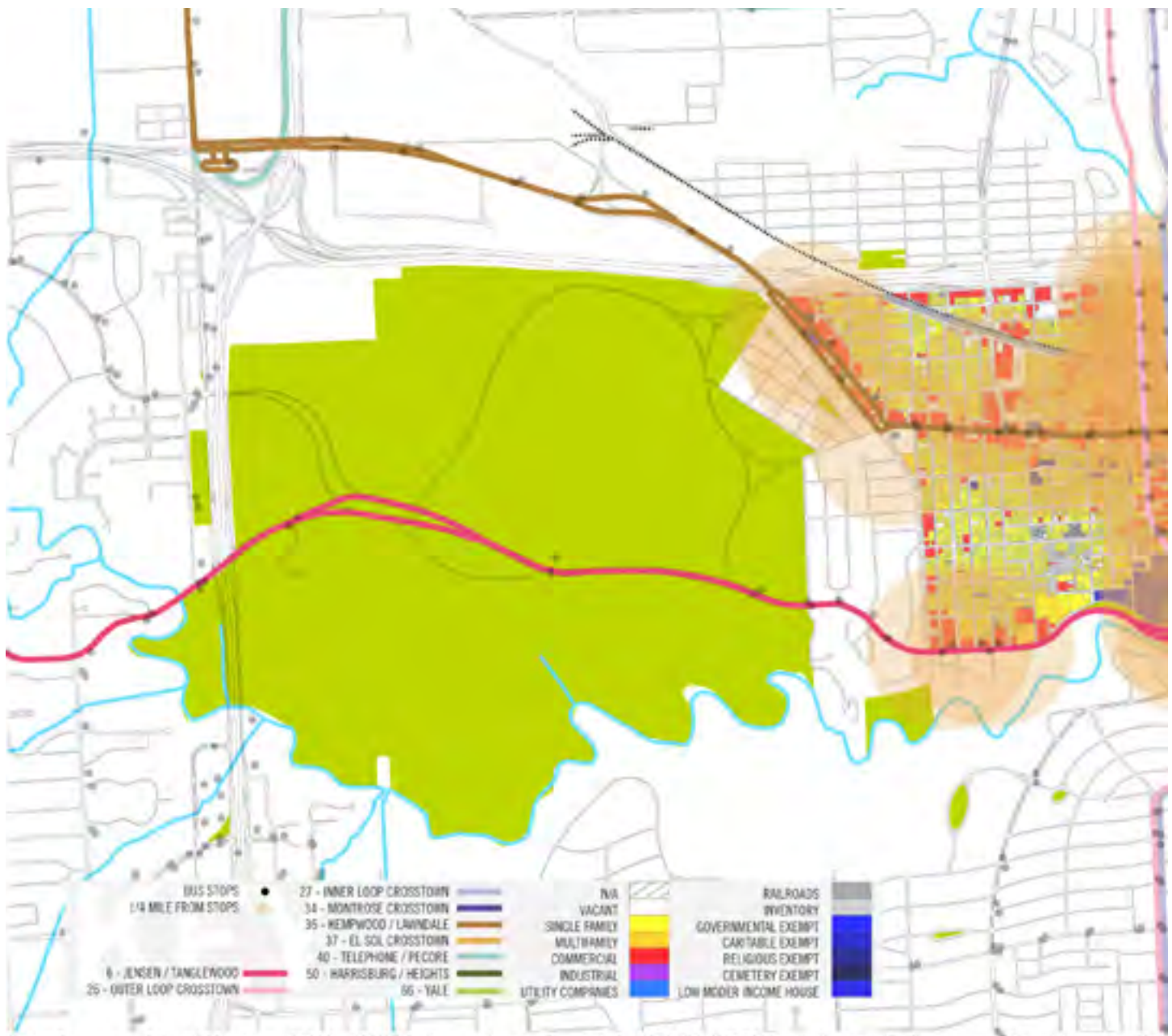


# BUS TRANSIT – ACCESS

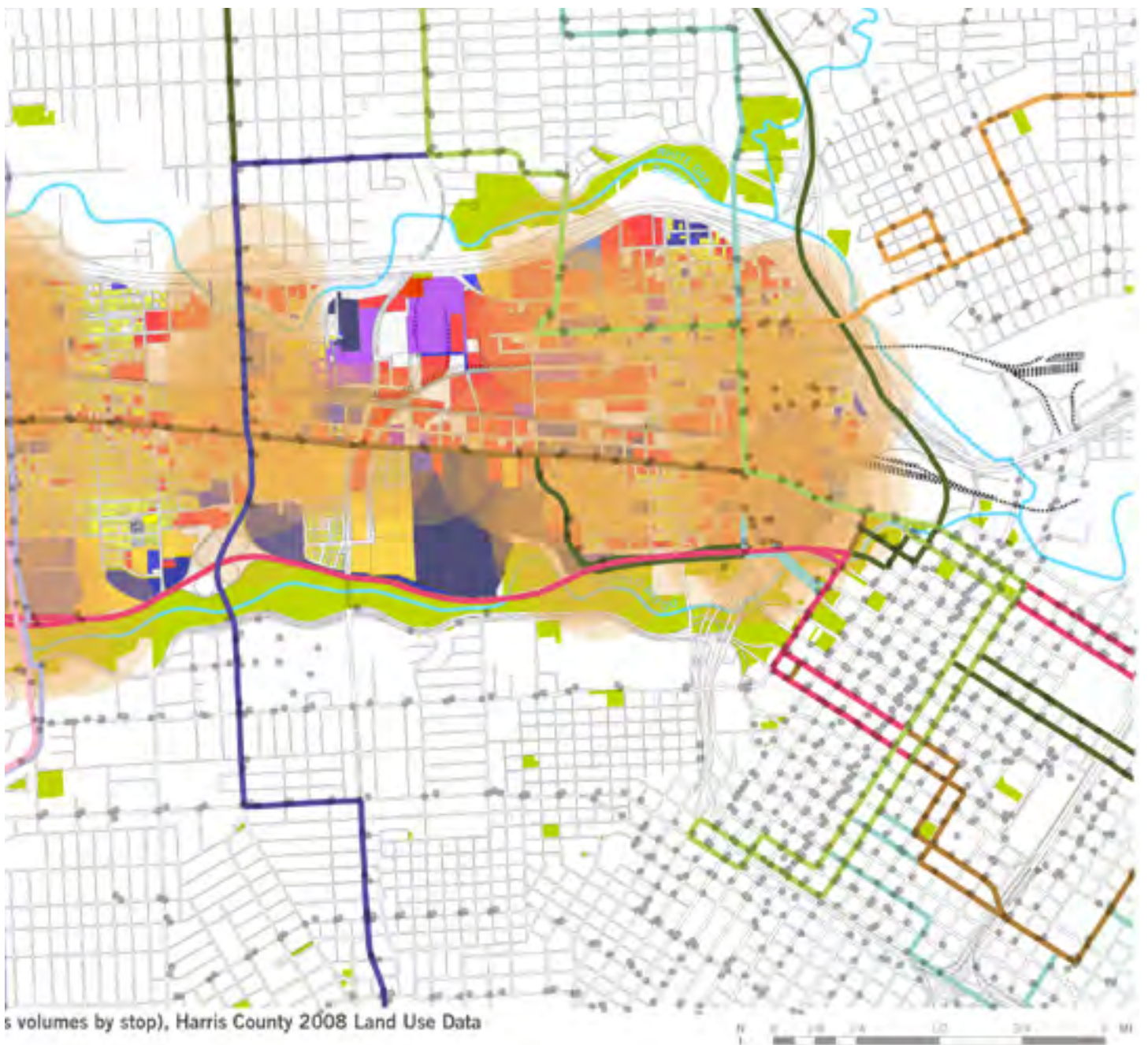
With the exception of small portions of Rice Military, Cottage Grove, Magnolia Heights and the West End, the residential portions of the study area well-served by transit. Almost all of the commercial portions of the study area are served. The portions of Washington east of Sawyer are the best served portions of the study area.

Despite the coverage, transit service is often difficult to navigate for residents and visitors. Routes make frequent turns and do not run on the Major Thoroughfares. A resident living at Silver and Dart would have transit service pass within 1/4th mile of their home roughly every five minutes during

rush hour. However, each bus leaves from a different street: the 36 on Washington, 50 on Sawyer, 40 on Houston and 66 on Crockett. As such, the resident would have a hard time knowing which bus line to walk toward. In addition, all three of the four of the above routes will take the same routes once they reach downtown, though they take several different routes to get there.



Data Sources: City of Houston GIMS, METRO (bus volumes by route), METRO IVOMS raw Automatic Passenger Counting data (bus Route 48 not included because service is to be discontinued on February 27, 2012)

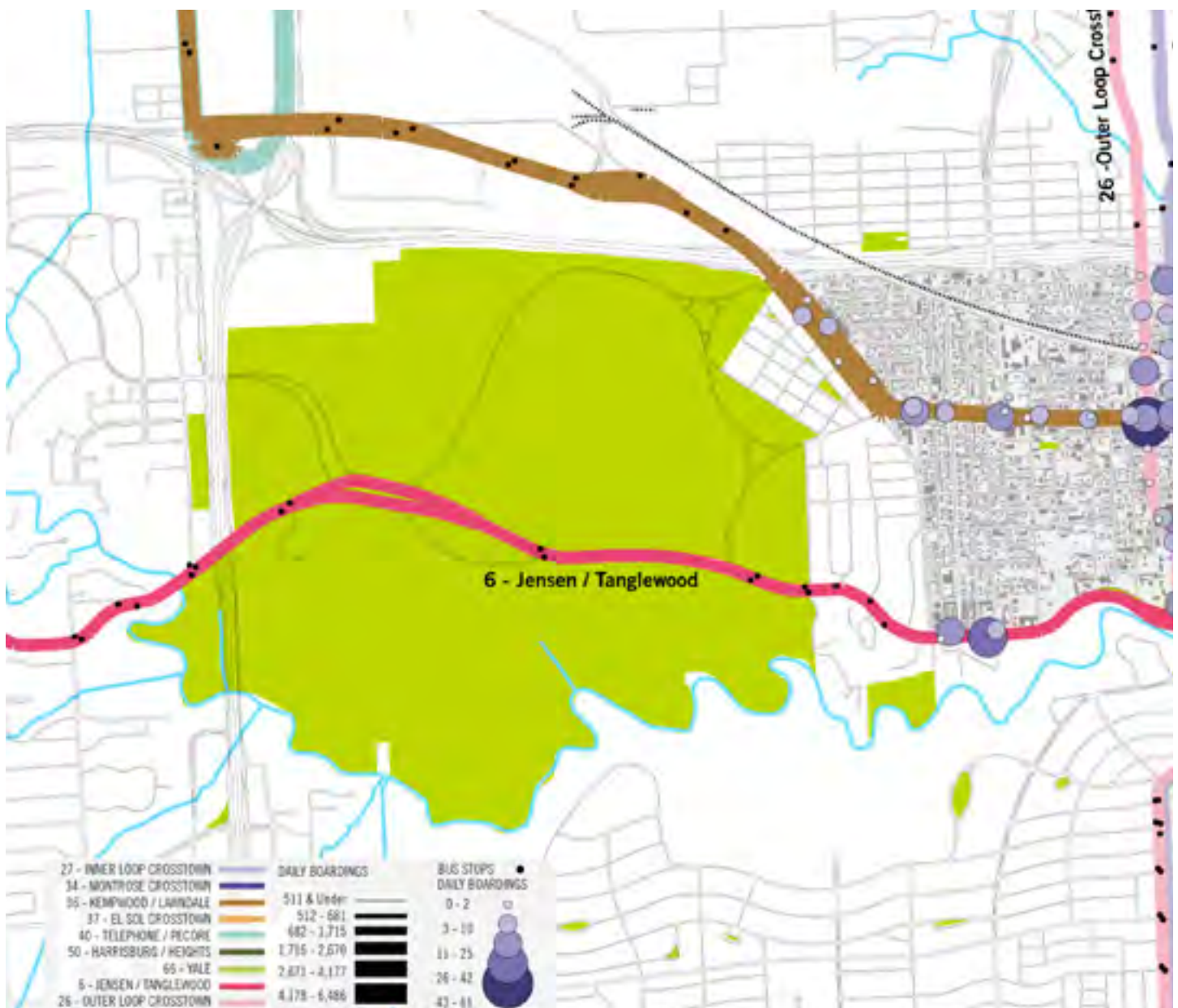


s volumes by stop), Harris County 2008 Land Use Data

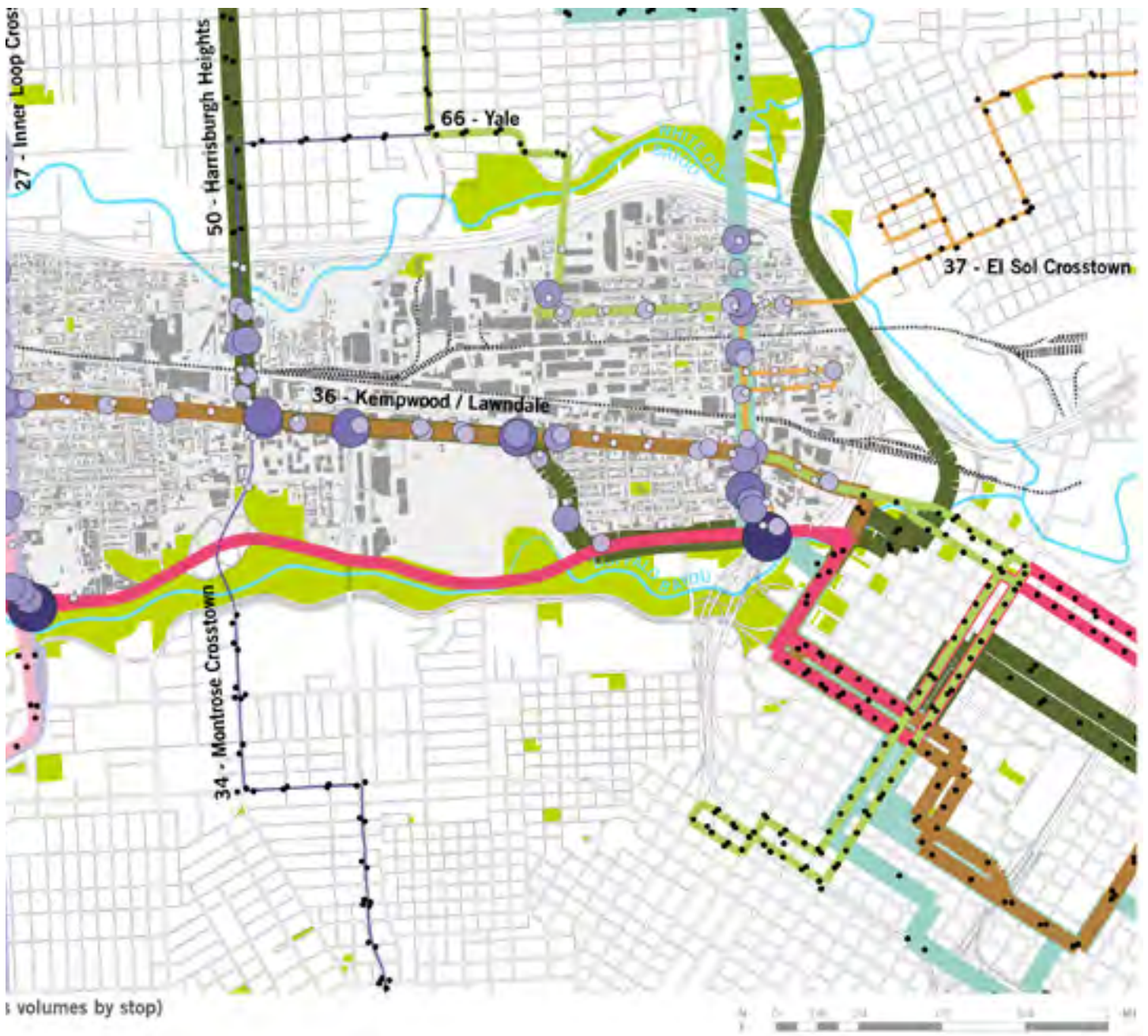
# BUS TRANSIT – VOLUMES

Buses 36, 40, and 50, all of which provide service to Downtown through Lower Washington are among the area's most important routes. The 6, on Memorial Drive, shows more boardings per stop than other routes, but has fewer stops as it provides more direct service to Downtown.

High rates of boardings at the intersection of Shepherd/Durham and Washington the intersection of Shepherd and Memorial indicate a number of transfers between the 6 and 36 and the 26 and 27, which provide north/south connectivity.



Data Sources: City of Houston GIMS, METRO (bus volumes by route), METRO IVOMS raw Automatic Passenger Counting data (bus stops). Route 48 not included because service is to be discontinued on February 27, 2012



# BUS TRANSIT – FREQUENCY

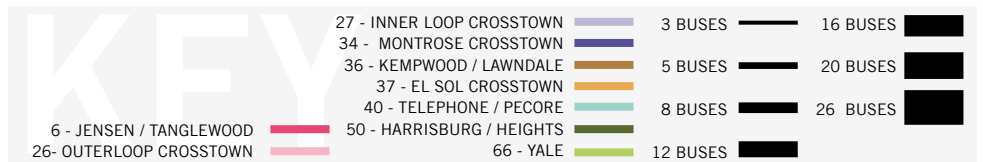
Though the study area has numerous bus routes that provide relatively frequent service throughout the day, none of the routes is especially accommodating to peak hour service. Bus 36, the only route that serves the entire corridor, is relatively infrequent compared to its volume. Buses 40 and 50 travel more often and provide better service to Lower Washington. The crosstown buses on Shepherd Durham provide the most frequent north/south connectivity.

## MORNING BUS FREQUENCY - 5 AM TO 12 PM



## MORNING PEAK BUS FREQUENCY - 7 AM TO 9 AM





AFTERNOON/EVENING BUS FREQUENCY - 12 PM TO 12 AM



EVENING PEAK BUS FREQUENCY - 5 PM TO 7 PM



# PARKING

Parking, both on and off street, has been one of the major issues for area residents and visitors over the last few years. Many residents feel that there is not enough parking, especially tied to specific land uses, namely bars and nightclubs. As such, the City of Houston is currently pursuing significantly raising parking requirements for those uses. A survey of surface parking on the corridor suggests that many of the bars and clubs will already meet this higher requirement. Indeed, a significant portion of the corridor is already devoted to surface parking, much of which remains vacant most of the week, reducing the walkability of the corridor.

Initial observation of the corridor suggests that the prevalence of weekend night visitors parking on residential streets (the main complaint of area residents) may be related more to the cost of parking on the corridor rather than the availability of parking. Most lots near bars and nightclubs charge between \$5 and \$10 for parking. In addition, allowing Valets to park along city streets encourages businesses not to use their own spots.

Among residents, there is a perception of lack of enforcement of current parking restrictions. Some residents of areas of Rice Military that are in close proximity to night club areas hire off-duty Houston Police officers to enforce parking restrictions in their neighborhood on weekend nights.

The new parking ordinance currently under consideration at the City of Houston allows for the creation of Parking Management Districts, a comprehensive tool to better regulate parking in areas with significant business activity.

Most parts of Washington Avenue allow for onstreet parking during non-peak hours, though it is seldom used outside of weekend evening hours.





# PREVIOUS STUDIES

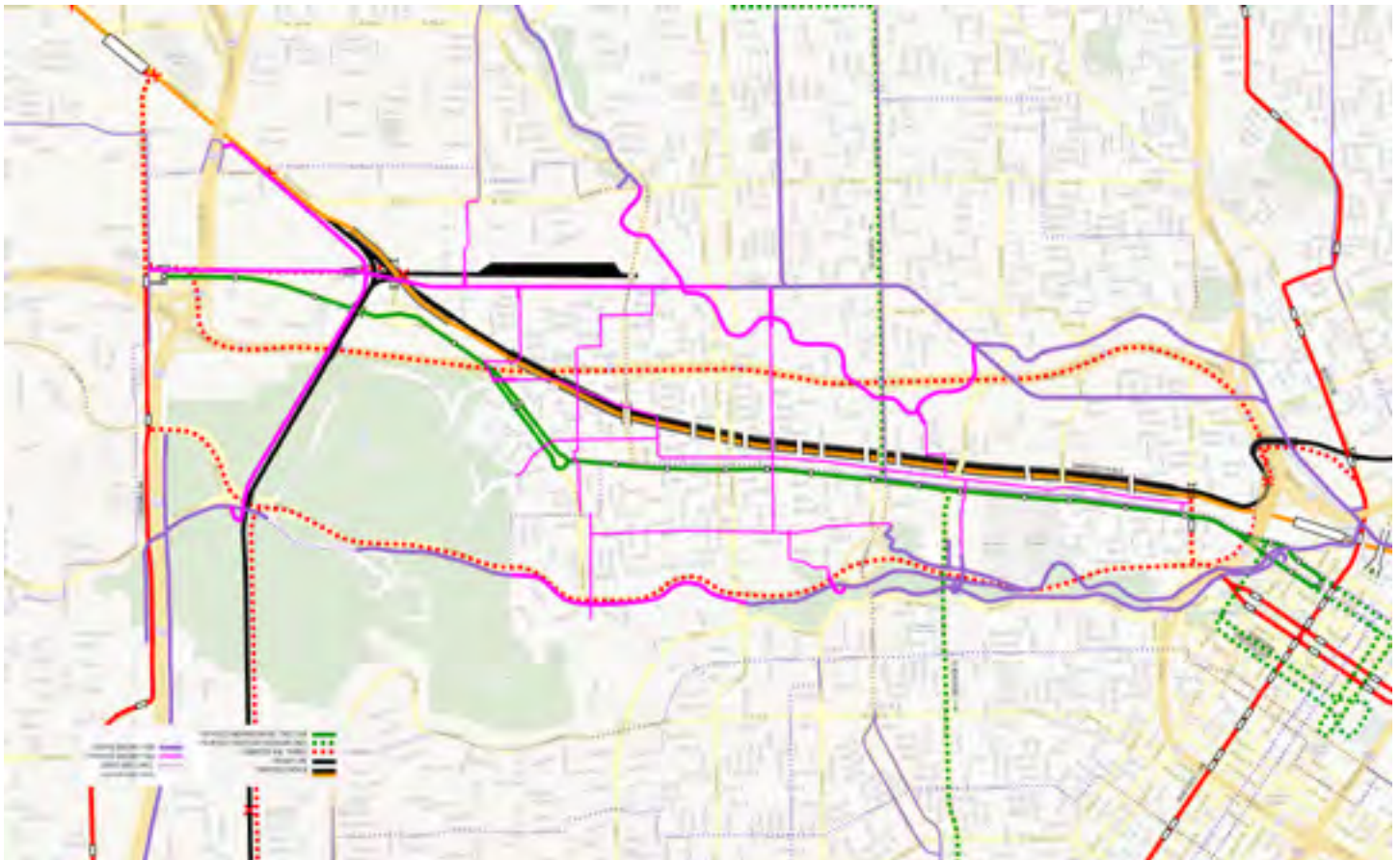
The Washington Avenue Corridor has been the subject of a number of studies in the previous ten years that have been important in documenting and shaping the desires of area residents. Among the most important have been:

- The Inner Katy Transit Oriented Development Study (Walter Smith)
- The Superneighborhood 22 SWA Summer Study (SWA)
- The Superneighborhood 22 Transportation Plan (Transportation Committee of Superneighborhood 22)

The SN22 Transportation Plan, especially, has been extremely important in documenting and shaping the desires of area residents (See map below). Important components of the plan include:

- Trenching Freight Rail through the neighborhood and increase the number of rails through the corridor to allow for commuter rail along the US 290 corridor.
- Upgrading of area sidewalks to 8 to 12 feet.
- Development of a streetcar system that serves the neighborhood, downtown and possibly the Heights and Montrose.

- Creation of a Parking Management District.
- Light Rail transit along either a I-10 or Memorial Drive alignment.
- Additional north/south bikeway connections.



# ACCESSIBILITY MODELING

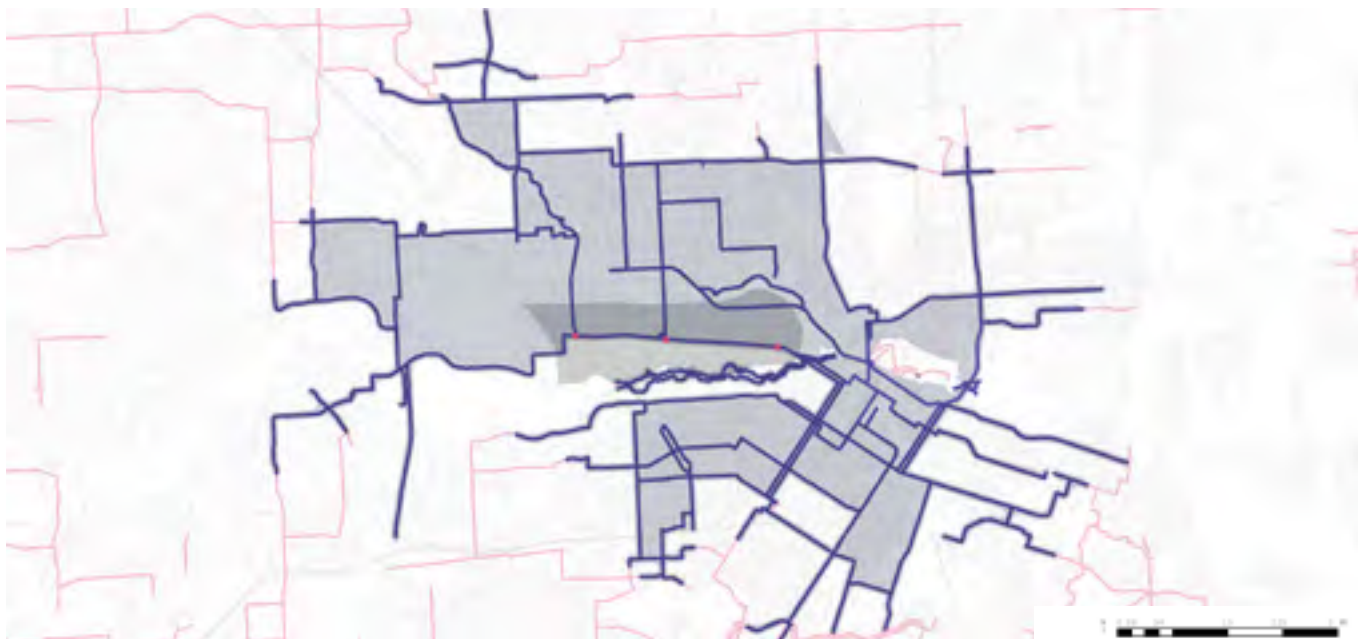
Models using Geographic Information Systems (GIS) and the Network Analyst tool can determine accessibility for a particular station, corridor or entire transit network for a range of modes. By mapping the various networks of roads, paths, cycle tracks and transit routes, and by inputting travel information, demand data and calculating total trip generalized costs, we can reveal the level of accessibility by one or a combination of modes. The information can be delivered as statistics or presented as travel isochrones on a map. The information helps us to identify gaps in the transit services (either physical or scheduled), physical barriers to pedestrian access, and it can help us understand

how each mode performs against each other which can help us understand and even predict mode choice. Accessibility modelling measures how accessibility can vary for different modes within an area and ultimately help us make decisions about how each mode can be improved to make it more competitive. Accessibility analysis highlights gaps in pedestrian sidewalk infrastructure and bus service at the northern and southern boundaries of the study area between Heights Blvd and Sawyer, as well as lack of north/south bicycle connections through the study area.

**PEDESTRIAN ACCESS**  
WITHIN A 1/2-MILE, 1-MILE AND 1.5-MILE DISTANCE FROM THE STUDY AREA



**BICYCLE FACILITY ACCESS**  
WITHIN A 30-MINUTE TRAVEL DISTANCE FROM THE STUDY AREA



# KEY

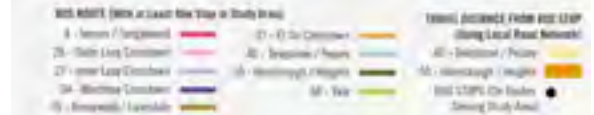
**PEDESTRIAN ACCESS**  
 WITHIN A 1/2-MILE, 1-MILE AND 1.5-MILE DISTANCE FROM THE STUDY AREA



**BICYCLE FACILITY ACCESS**  
 WITHIN A 30-MINUTE TRAVEL DISTANCE FROM THE STUDY AREA



**EXISTING BUS ACCESS**



**VEHICULAR ACCESS**  
 WITHIN A 15-MINUTE & 30-MINUTE TRAVEL DISTANCE FROM THE STUDY AREA

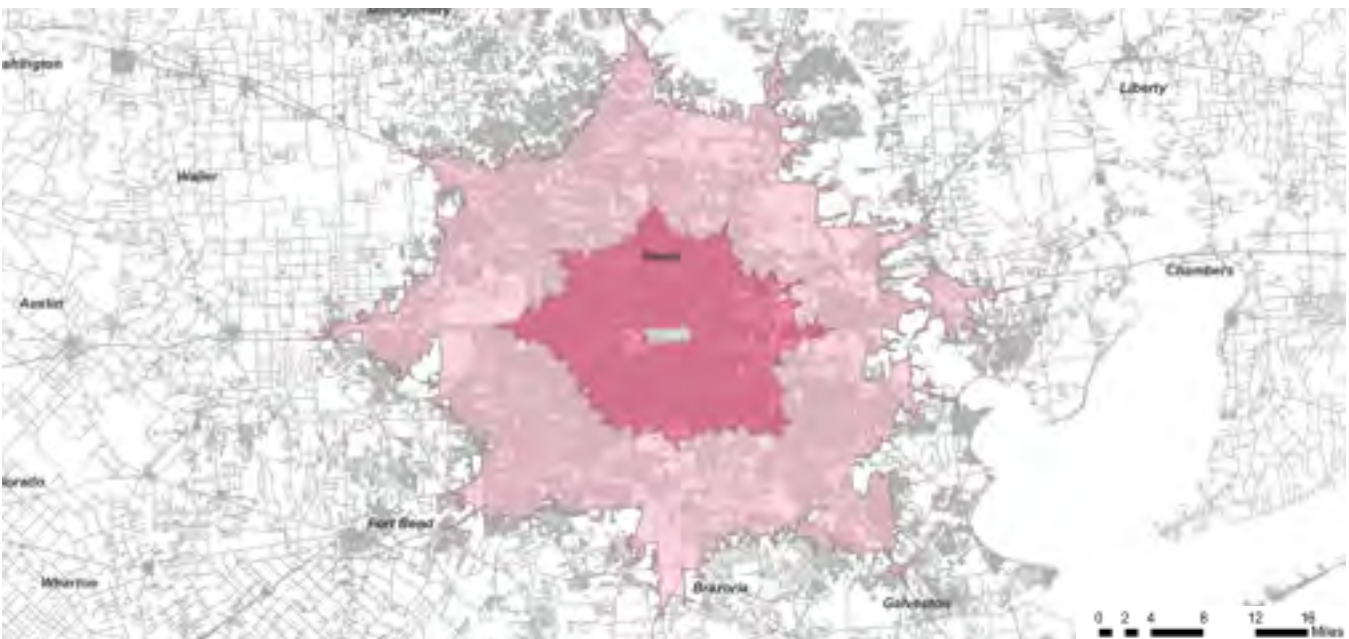


EXISTING BUS ACCESS



Data Sources: City of Houston GIS, METRO (Bus volumes by route), METRO (RIDE) see Automatic Passenger Counting data (Bus volumes by stop), Harris County 2008 Land Use Data  
 Route 46 not included because volume is to be discontinued on February 27, 2012

VEHICULAR ACCESS  
 WITHIN A 15-MINUTE & 30-MINUTE TRAVEL DISTANCE FROM THE STUDY AREA



# HOUSTON WAVE

Growing out of a need for more frequent evening service, The Wave, Houston's first official "jitney," has been in operation for 15 years. In Houston, a jitney is a shared shuttle service operating on a fixed route for a fixed rate, or kind of a hybrid between taxi, limo, and public bus. Currently the Wave travels within the Washington Corridor, Midtown, the Heights, Rice Village, Downtown, Uptown Park/Galleria, Upper Kirby/Shepherd, Montrose, and all of Houston's sporting and special event venues.

Operation is limited to weekend nights and special events. The Wave operates from a location in the First Ward and has dedicated stops and parking lots on Washington Avenue.

The Wave serves an important role in providing a specific transportation need and limited drunk driving in the study area.



# SUMMARY OF KEY FINDINGS

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1. The Bayous, I10 and the rail lines severely limit north/south traffic through the area.
2. North/South traffic makes up most of the non-highway traffic through the area.
3. Paving Quality, the availability of sidewalks and roadway safety vary greatly through the area.
4. Bicyclists have many desirable east/west paths, but are limited in north/south connectivity.
5. Many buses pass through the area, but the routes are difficult to understand and have had declining ridership.
6. Parking is one of the major quality of life issues for area residents.



# Housing Choice & Buildings



The Washington Avenue Corridor has seen a major explosion in new housing development in the past decade. Although this development has created significant pressures for existing residents, it has also created many opportunities for new commercial development and opportunities for improved quality of life for the neighborhood.

Pressures felt by area residents include rising housing prices, fear of a loss of historic built fabric and a number of issues relating to higher density development, especially the mushrooming number of curb cuts.

# LAND USE

Of the 2,303.32 acres within the study area, more than half is devoted to single-family housing. This percentage is quite high for an inner-city neighborhood (for comparison, the EaDo and East End neighborhoods, opposite the Washington Avenue Corridor on the East Side of Downtown, are only 24% single family residential).

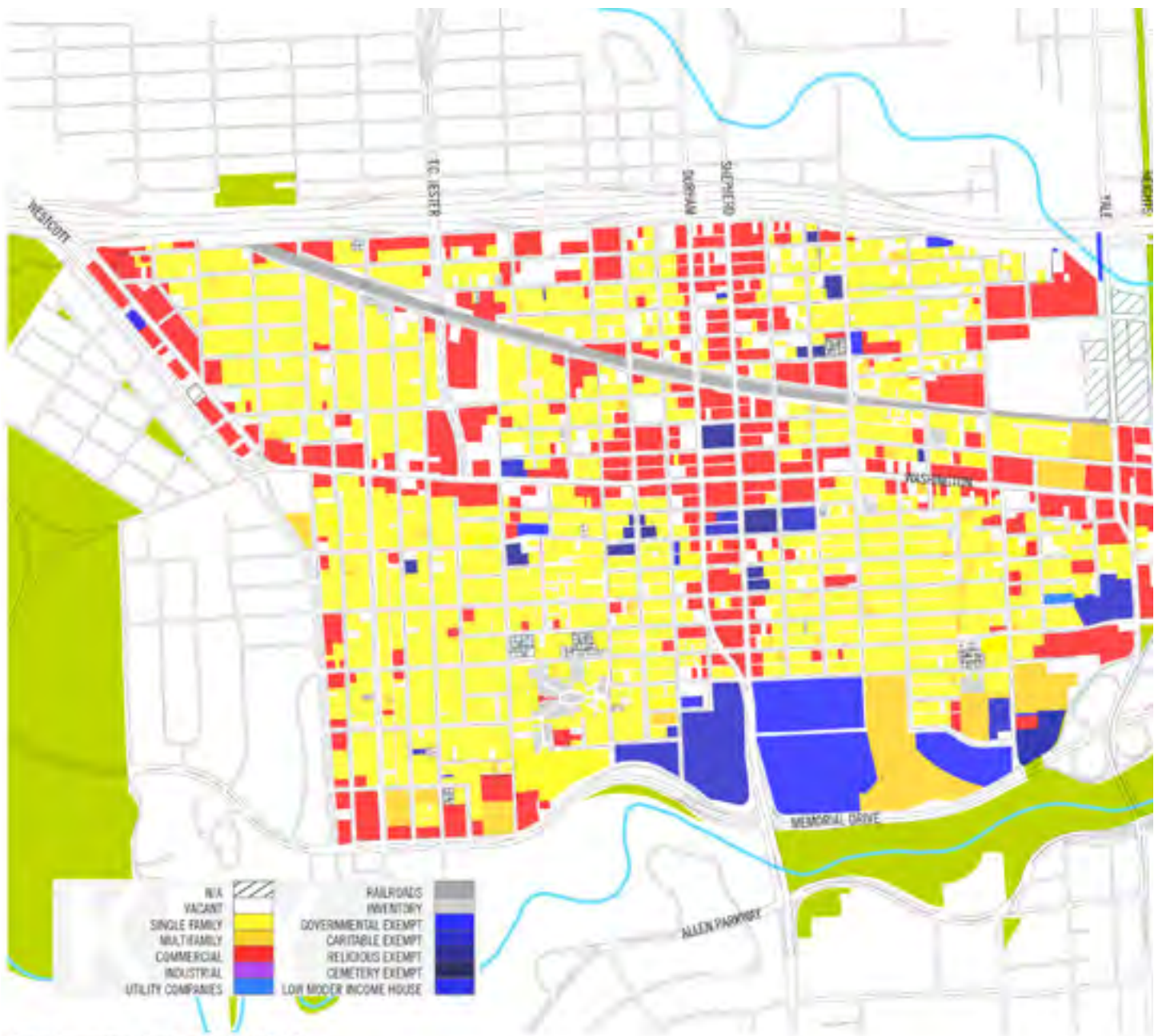
Commercial uses are the second highest land use, with 16.85% of the total, reflecting the importance of the corridor as an inner-city commercial center.

The third highest land use is vacant land, which is

exacerbated by the presence of a number of large, formerly industrial, vacant parcels in the First Ward and West End neighborhoods.

The past importance of industrial uses in the neighborhood waning, with many parcels being converted into commercial or residential.

The presence of large cemeteries, charitable organizations such as the Salvation Army and a large group of government facilities between I45 and Houston Avenue contributes to the 11.88% of the total land area which is tax exempt.



Data Sources: Public Data HCAD



N/A: 0.84%

SINGLE FAMILY: 51.94%

MULTIFAMILY: 4.99%

VACANT: 8.5%

COMMERCIAL: 16.85%

INDUSTRIAL: 2.34%

UTILITY: 0.38%

RAILROADS: 1.81%

INVENTORY: 0.47%

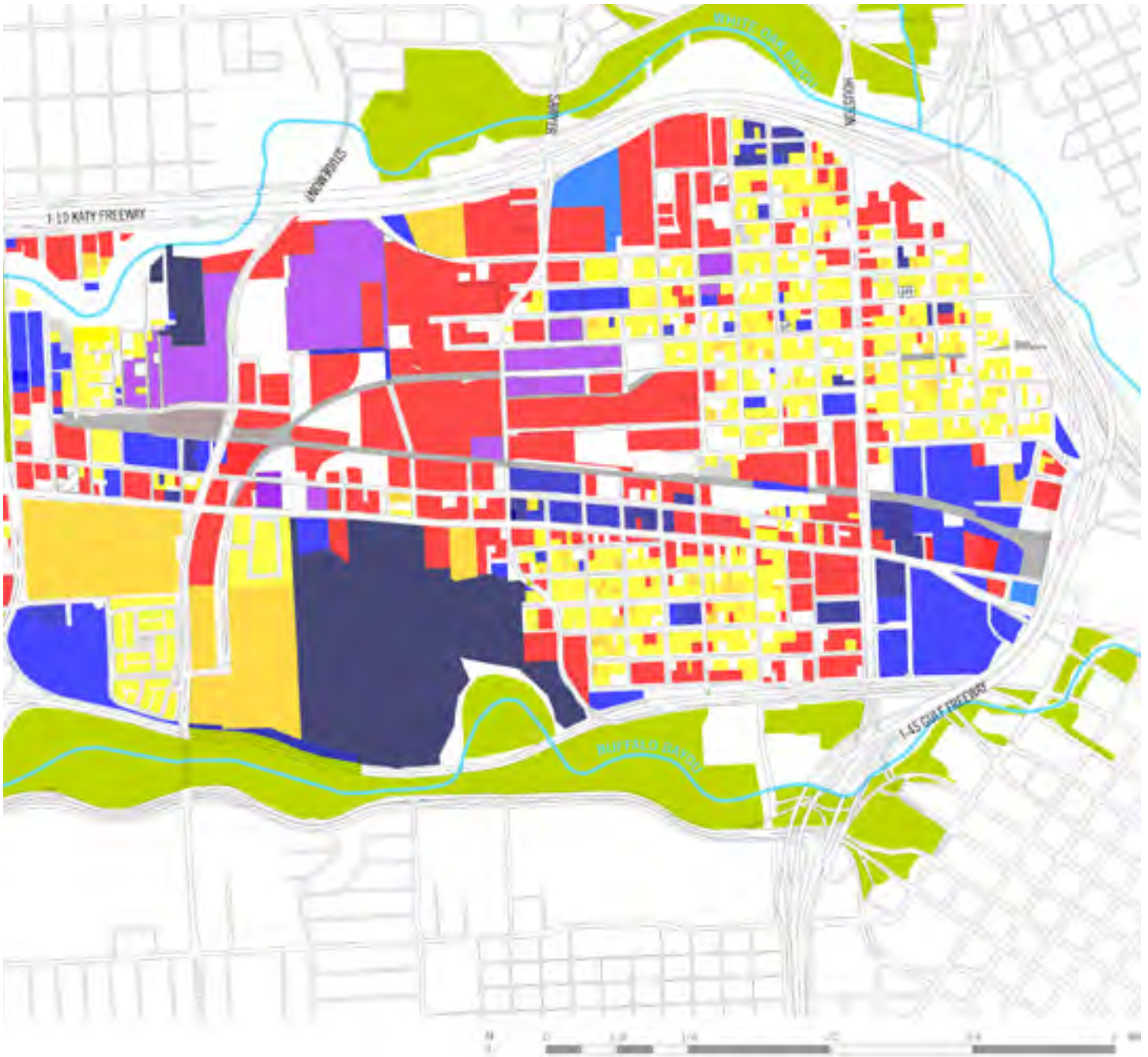
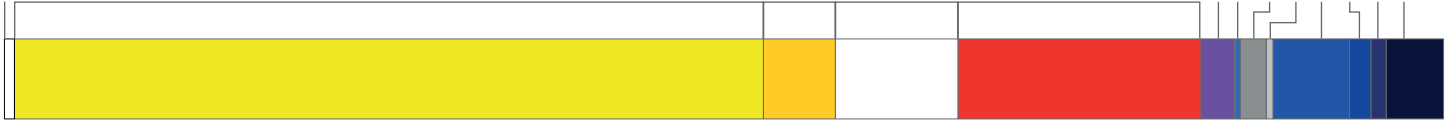
GOV'TAL EXEMPT: 5.3%

CHARITABLE EXEMPT: 1.48%

RELIGIOUS EXEMPT: 1.06%

CEMETERY EXEMPT: 93.98%

LOW/MOD INCOME HSNG: 0.04%



# BUILDING AGE

The age of buildings in the study area is striking. 52.22% of buildings in the area have been built in the twenty-first century and a further 14.04% were built in the last decade of the twentieth. Outside of these buildings, the majority of still-standing construction occurred before the Great Depression.

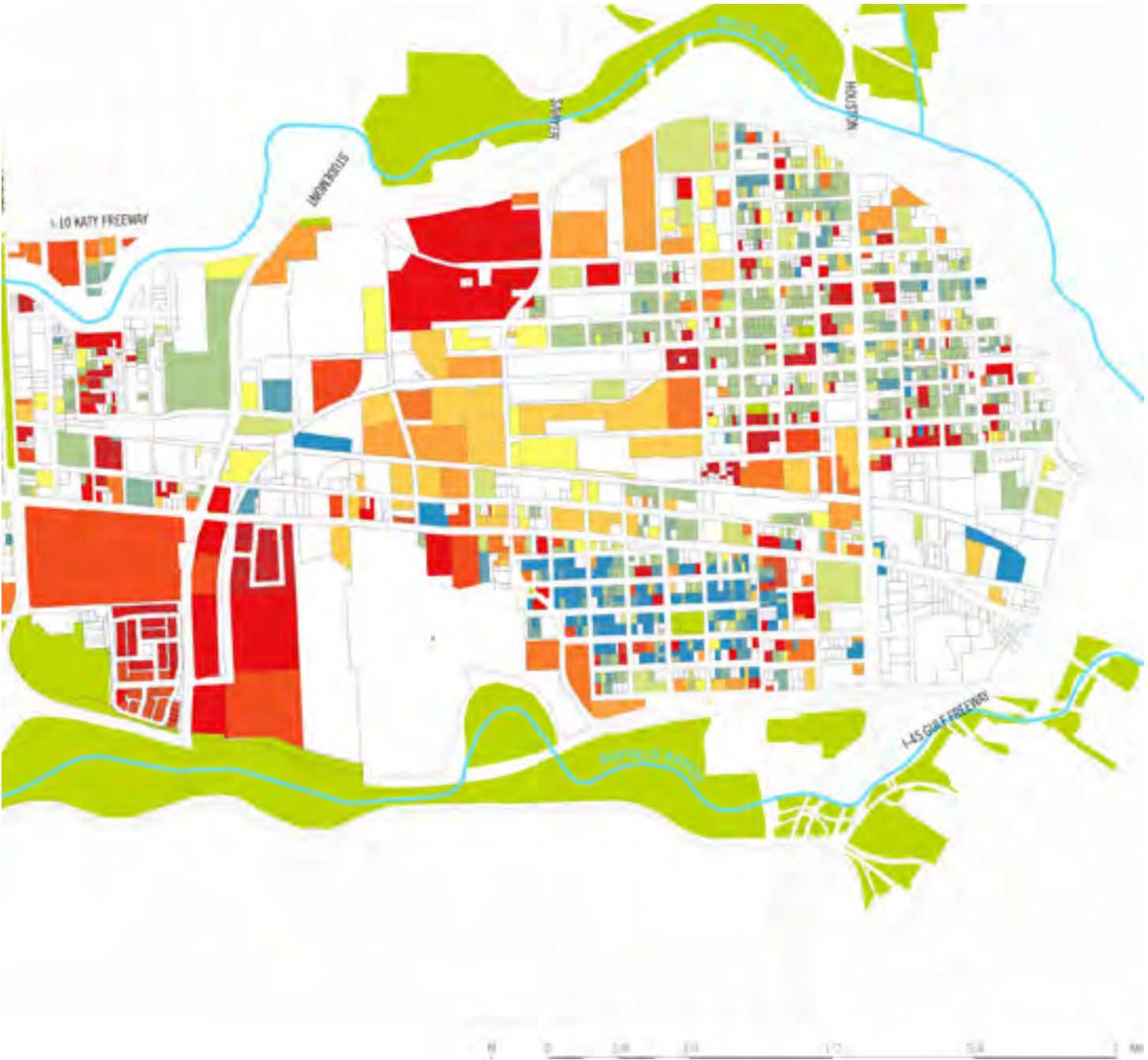
Two possible explanations (both of which hold a measure of truth) are that a) significant construction of new buildings did not occur between the Great Depression and the late 80s and/or b) many of the buildings built during that period were the ones that were replaced by new construction, while more historical buildings were preserved.

In addition, many of the buildings built over the past 20 years are townhouses, which, in many cases, replaced a single building with between 2 and 6 buildings. As such, the percentage of buildings may appear higher than usual when compared with the original building footprints and lots.



Data Sources: Public Data HCAD

# Number (%) of Buildings by Year Built



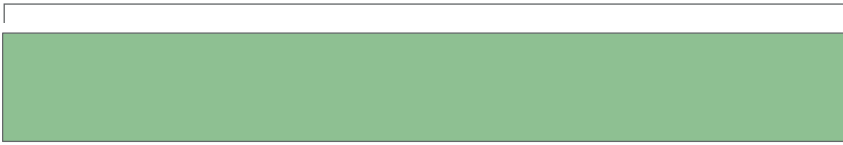
# BUILDING CONDITION

The majority of the study area's buildings are in good condition, which is unsurprising considering the relative youth of buildings in the area. The neighborhood with the lowest building conditions is the First Ward, due to the many aging structures. The Sixth Ward, which contains even older buildings, is generally in better condition than the First Ward, perhaps due to the Historic District designation, which has given building owners confidence that the neighborhood will remain well cared for and has encouraged owners to repair older buildings.

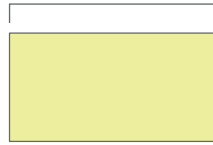


Data Sources: Public Data HCAD

**GOOD:** 9423 Buildings  
**60.97%**



**AVERAGE:** 2342 Buildings  
**15.15%**



**LOW:** 3379 Buildings  
**21.86%**

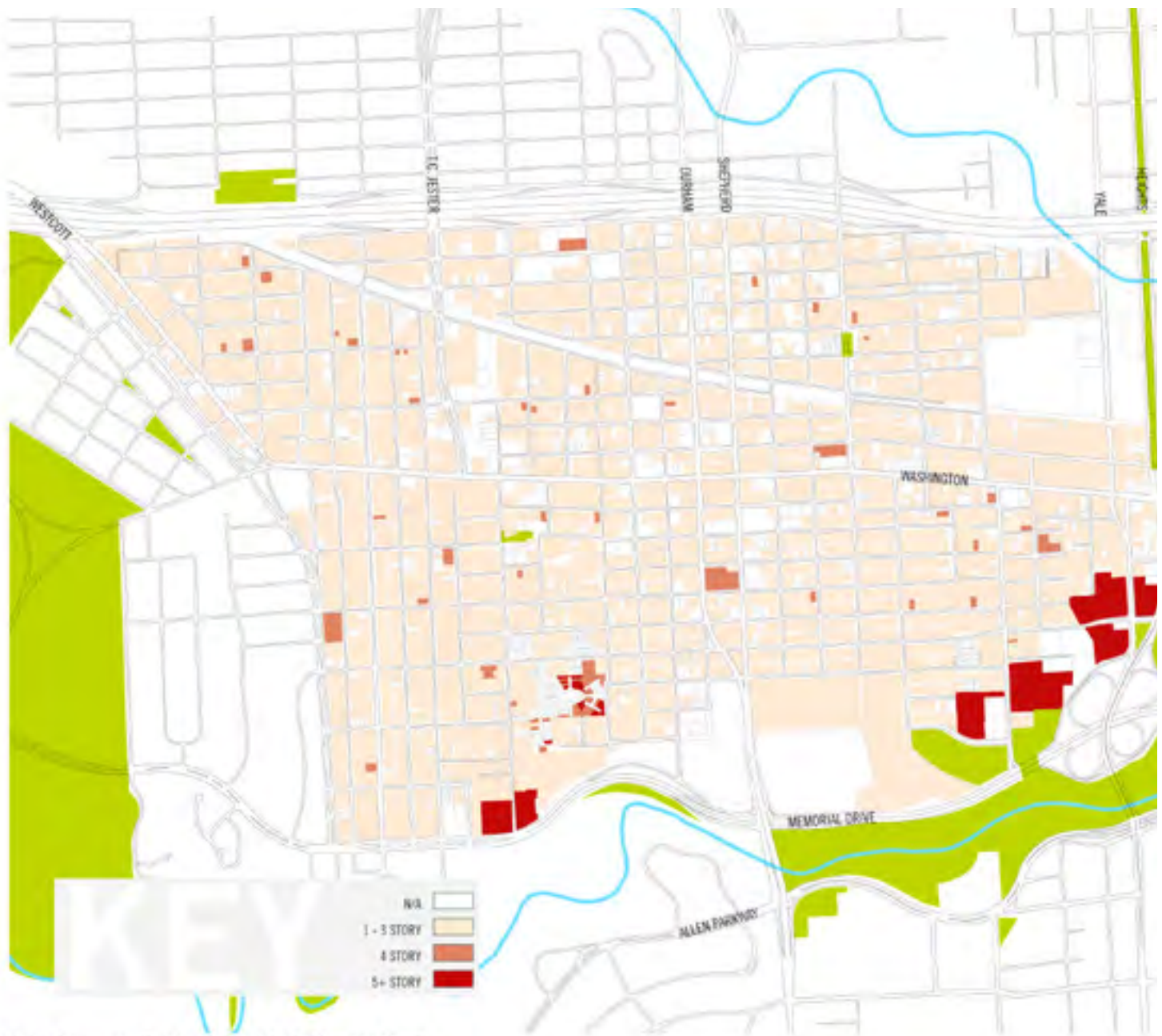


**POOR:** 311 Buildings / **2.01%**

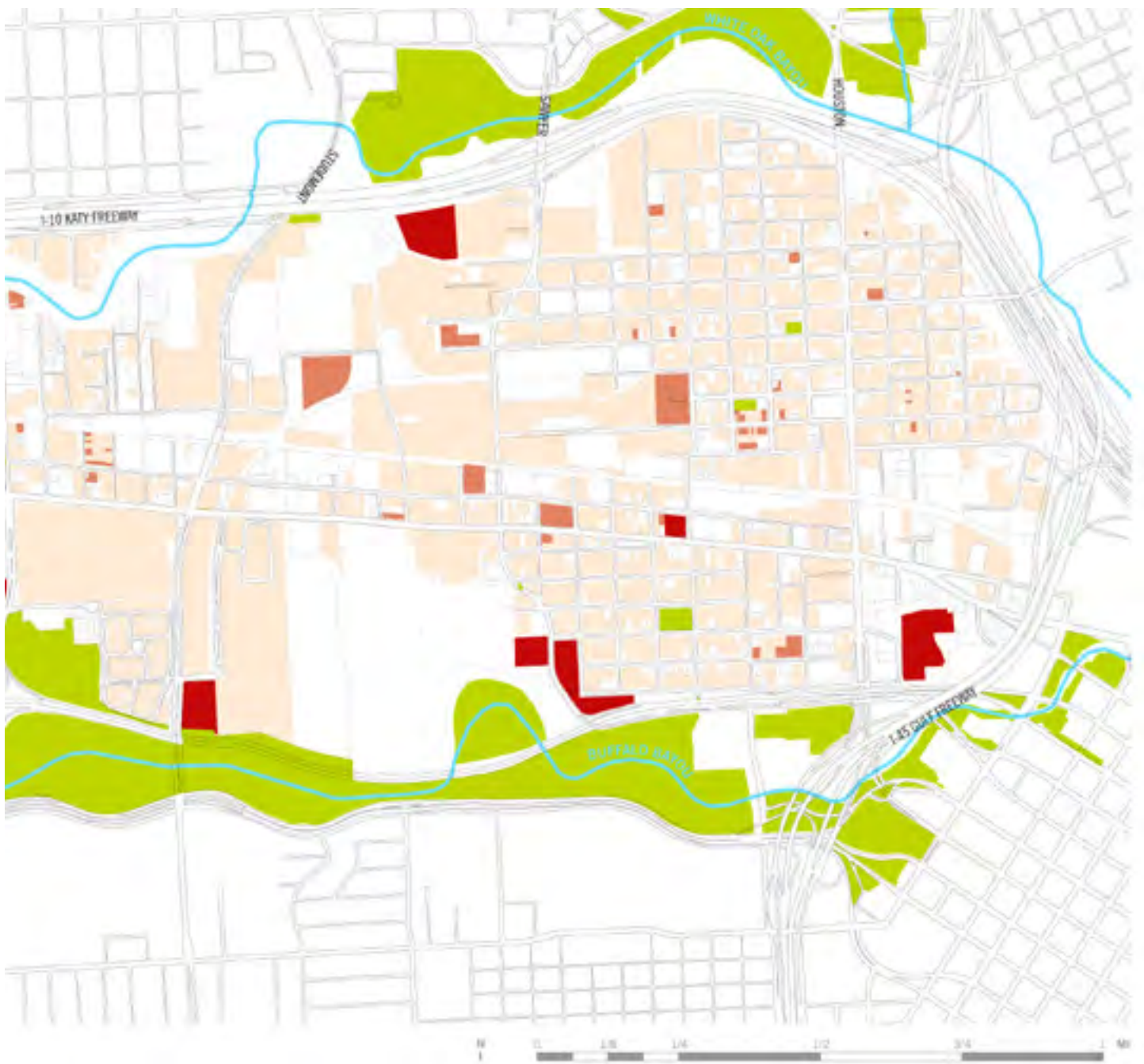


# BUILDING HEIGHT

The heights of buildings in the study area are largely low-rise (1-3 stories). Taller buildings are most prevalent not along Washington Avenue, but along Memorial Drive. Along with the taller office buildings on the south side of the Buffalo Bayou, these buildings form a high-rise spine that runs from Downtown towards Memorial Park and Uptown.



Data Sources: Public Data HCAD, Google Maps

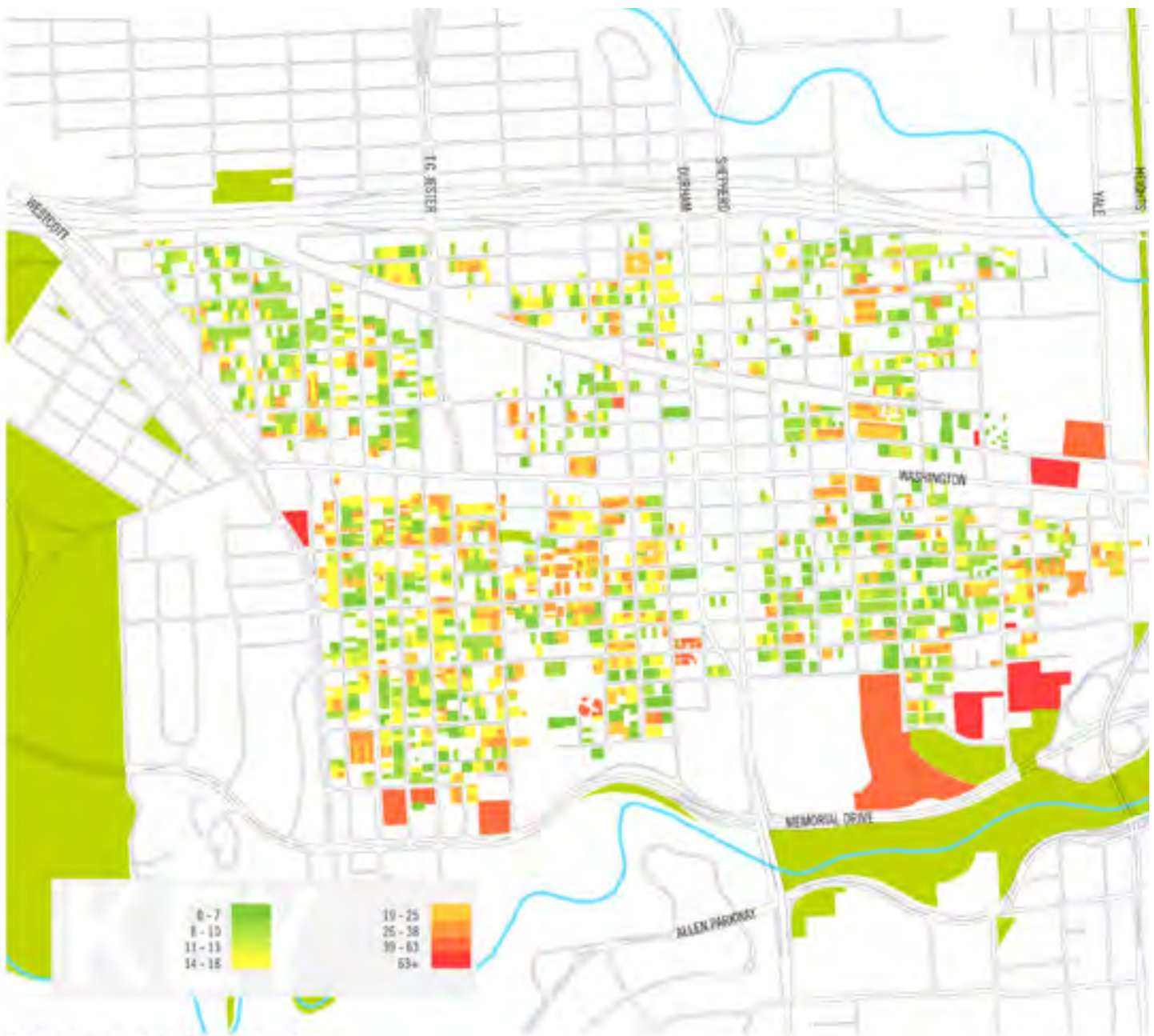


# DWELLING UNITS PER ACRE

Dwelling units per acre has a significant variation throughout the study area. Higher density areas include the areas south of Washington between Sawyer and Waugh, areas along Memorial Drive and an area of medium density south of Washington around TC Jester.

Although they account for a much smaller land area, the majority of units are at medium density (from 14 to 38 UPA).

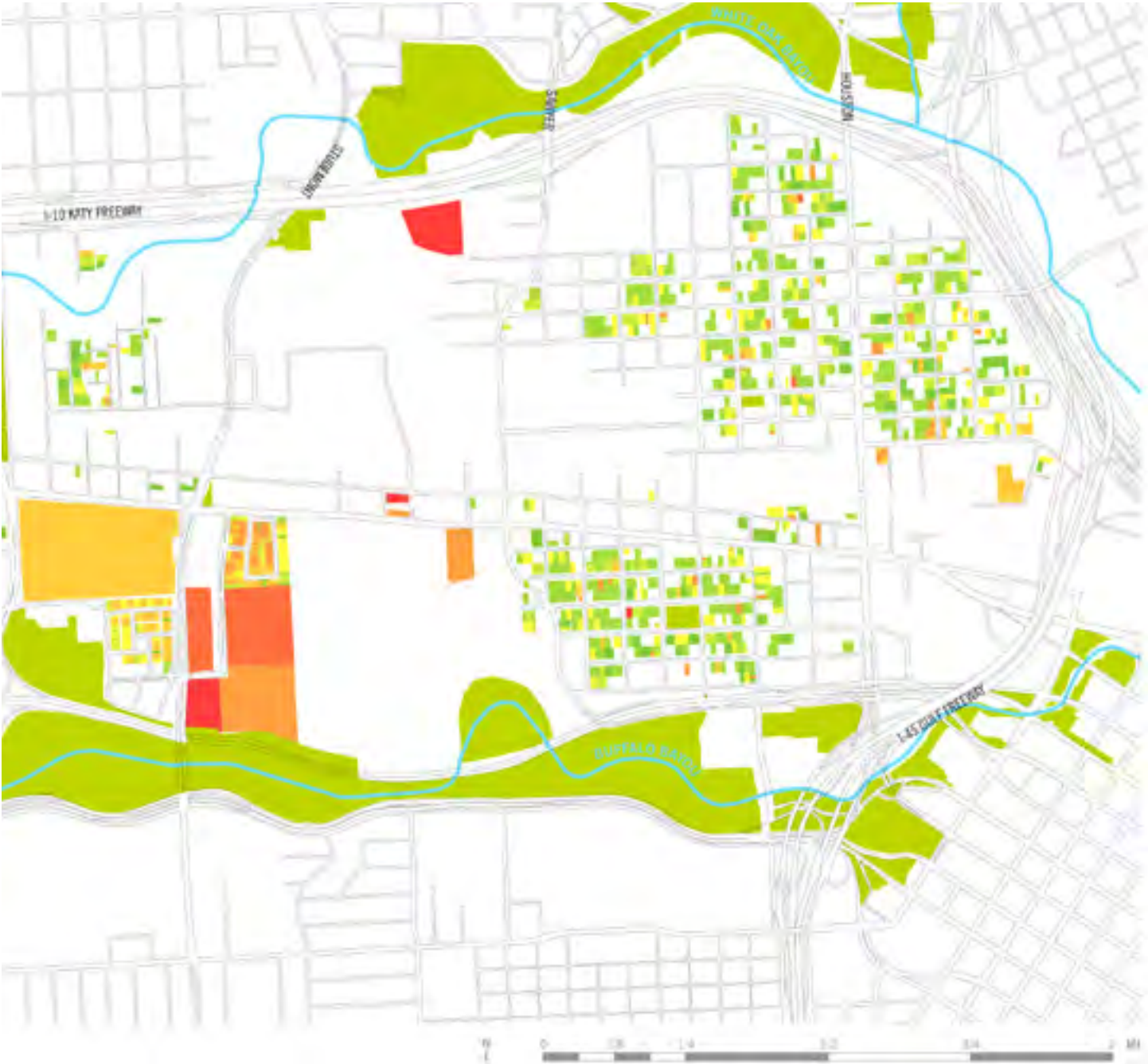
UPA CATEGORY	0 - 7 UPA	8 - 10 UPA	11 - 13
TOTAL # UNITS	1,605 units	8,555 units	2,489
ACRES (% of total)	46.41 acres (11.25%)	113.72 acres (27.57%)	21.5 (5.2%)



Data Sources: Public Data HCAD



14 - 18 UPA	19 - 25 UPA	26 - 38 UPA	39 - 62 UPA	63 +
14,076 units	18,508 units	22,627	2,582 units	919
60.2 acres (14.6%)	39.31 acres (9.53%)	28.9 (7.01%)	82.53 acres (20.01%)	19.9 (4.8%)



# BUILDING FRONTAGE

With the exception of historic buildings, most construction along the major thoroughfares and collectors has significant building setbacks. These setbacks can be further divided into those in which landscaping lies between the sidewalk and building frontage and those in which surface parking lies between the building frontage and sidewalk.



Data Sources: Google Maps



The following represents voting conducted by neighbors on built form during the first public meeting. In general, neighbors preferred historic buildings the most, followed by buildings that address the street frontage closely. Buildings with large setbacks and buildings which do not face the street were generally rated low.



Data Sources: Google Maps

The grid displays 30 numbered photographs of buildings, each with a color-coded bar above it indicating the voting result:

- LIKE (Blue bar):** Buildings 1, 2, 3, 4, 11, 12, 13, 18, 21, 27, 28, 29, 30.
- NEUTRAL (Grey bar):** Buildings 9, 10, 19, 20.
- DISLIKE (Orange bar):** Buildings 5, 6, 7, 8, 14, 15, 16, 17, 22, 23, 24, 25, 26.

On the left side of the grid, there is a vertical legend:

- LIKE (Blue text)
- NEUTRAL (Grey text)
- DISLIKE (Orange text)



5



6



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# SUMMARY OF KEY FINDINGS

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1. Over half of the land in the neighborhood is residential, and more land has been transitioning to residential uses
2. 52% of buildings in the area were built between 2001 and 2011. 66% were built between 1990 and 2011.
3. Affordable housing choices have declined over the past decade. The remaining pockets of affordability are now endangered, especially in the First Ward.
4. Most residents consider the visual quality of buildings, and the way they relate to the street, negative along major corridors, especially for commercial development. Although townhouse development was problematic ten years ago, most residents no longer feel that it is negative.





# Economic Development





The renewed growth of the study area has led to significant new economic development opportunities and challenges. Much of the commercial development that has occurred revolved initially around nightclubs and bars that capitalized on the availability of inexpensive former industrial buildings.

As the area developed as a “cool” area, more restaurants and bars with a greater neighborhood focus have begun to move in. As such, the existing conditions area somewhat of a transitional period.

Development along the corridor has been more focused on independent and local businesses, while much of the development nearer to I-10 has been in the form of big box businesses.

# DEMOGRAPHICS

Currently, the Houston Metropolitan Statistical Area (MSA) has a population of over 6 million, with a total of just over 2.1 million households. Of these households, 62% are owners, with the remaining 38% as renters. From 2000 to 2011, household growth in the MSA averaged 2.2% annually, higher than the state of Texas and the United States. Median income stands at just under \$53,000, just below the national median income of \$54,000.

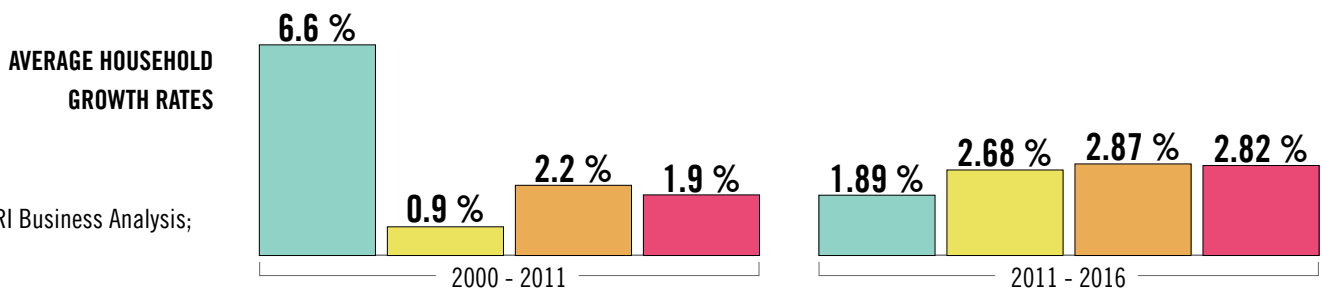
The Washington Avenue Corridor study area has been experiencing significant growth in the last decade, with a population increase of almost 50% from 2000 to 2011. Households grew at a 4.1% annual rate, much faster than the Houston MSA. Currently, the area contains just fewer than 11,000 households. Median income stands at just over \$40,000, much lower than the MSA median of \$52,849. Of the 11,000 households in the area, 53% are renter-occupied, with the remaining 47% owner-occupied.

Compared to the Houston MSA and the state of Texas, the Study Area contains a relatively higher percentage of younger households. Also, the Washington Avenue Corridor is somewhat more affluent than the city of Houston, but less so than the MSA. Average household size in the study area is 1.89, much lower than the MSA average of 2.87, indicating the presence of more singles and couples in the Washington Avenue Corridor.

In the next five years, ESRI Business Analyst predicts 2.9% annual household growth for the Washington Avenue Corridor, along with a population increase of 2.6% per year. The corridor is expected to grow much faster than the Houston MSA and the state of Texas. Continued household growth will increase demand for new housing, and provide further support for businesses in the area. While this increased growth will provide important new opportunities for retailers and residents, it will also continue to exacerbate current traffic and parking issues.

**COMPARATIVE SOCIOECONOMIC CHARACTERISTICS:**  
STUDY AREA, CITY OF HOUSTON, HOUSTON MSA AND STATE OF TEXAS (2000 - 2016)

CHARACTERISTIC	STUDY AREA	CITY OF HOUSTON	HOUSTON MSA	TEXAS
2000 Population	13,350	1,953,631	4,715,407	20,851,820
2011 Population	20,691	2,119,117	6,055,840	25,525,763
2016 Population	23,490	2,267,964	6,637,479	27,505,386
Pop. Growth Rate, 2000 - 2011	4.1%	0.7%	2.3%	1.9%
Pop. Growth Rate, 2011 - 2016	2.6%	1.4%	1.9%	1.5%
2000 Households	5,425	717,945	1,658,799	7,393,354
2011 Households	10,928	790,676	2,110,600	9,059,764
2016 Households	12,580	846,458	2,309,468	9,768,832
Household Growth Rate, 2000 - 2011	6.6%	0.9%	2.2%	1.9%
Household Growth Rate, 2011 - 2016	2.9%	1.4%	1.8%	1.5%
2011 Household Size	1.89	2.68	2.87	2.82
2011 Per Capital Income	\$33,330	\$23,771	\$25,974	\$24,332
2011 Median Household Income	\$40,554	\$41,232	\$52,849	\$47,753
2011 Average Household Income	\$61,685	\$62,380	\$73,288	\$66,699



SOURCE: ESRI Business Analysis; RCLCO

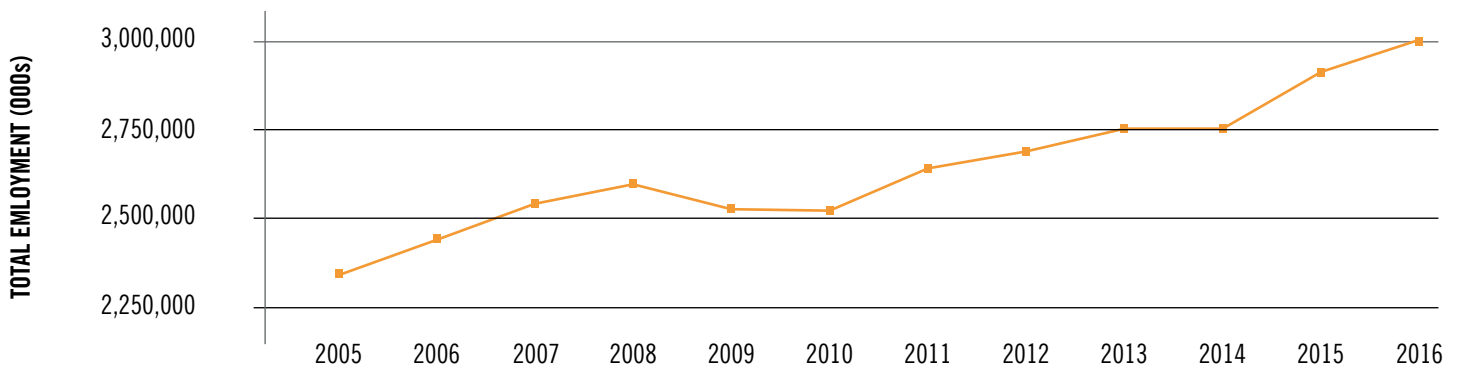
# EMPLOYMENT

The Houston MSA was the first major metropolitan area to recover all jobs lost during the previous recession. In particular, gains in the energy sector boosted the recovery of the region vis-à-vis the rest of the nation. In 2011, the region added 117,000 jobs, a 4.6% increase from 2010 levels. Moody's Economy.com predicts annual employment increases of 2.6% through 2016, leaving much room for regional economic growth.

The Study Area currently contains about 12,800 jobs. Compared to the Houston MSA, the Washington Avenue Corridor contains a higher concentration of transportation and warehousing, along with professional, scientific, and technical services jobs when compared to the Houston MSA. If growth in professional services employment continues in the Corridor, we expect to see an increased demand for more creative/open office space, along with rental housing as Gen Y employees prefer the flexibility of apartment living.

**EMPLOYMENT PROJECTIONS HOUSTON MSA (2005 - 2016)**

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
<b>TOTAL EMPLOYMENT (000s)<sup>1</sup></b>	2,350	2,448	2,548	2,602	2,533	2,529	2,646					
<b>ANNUAL EMPLOYMENT CHANGE</b>		98	100	54	-69	-4	117					
<b>UNEMPLOYMENT RATE<sup>1</sup></b>	5.6%	5.0%	4.3%	4.8%	7.6%	8.5%	7.6%					
<b>FORECASTS<sup>2</sup>:</b>												
<b>ANNUAL % CHANGE</b>								1.8%	2.3%	2.3%	3.4%	3.1%
<b>TOTAL EMPLOYMENT</b>	2,350	2,448	2,548	2,602	2,533	2,529	2,646	2,693	2,756	2,819	2,913	3,002



SOURCE: <sup>1</sup> Nonfarm employment, Bureau of Labor Statistics. 2011 data from November 2011

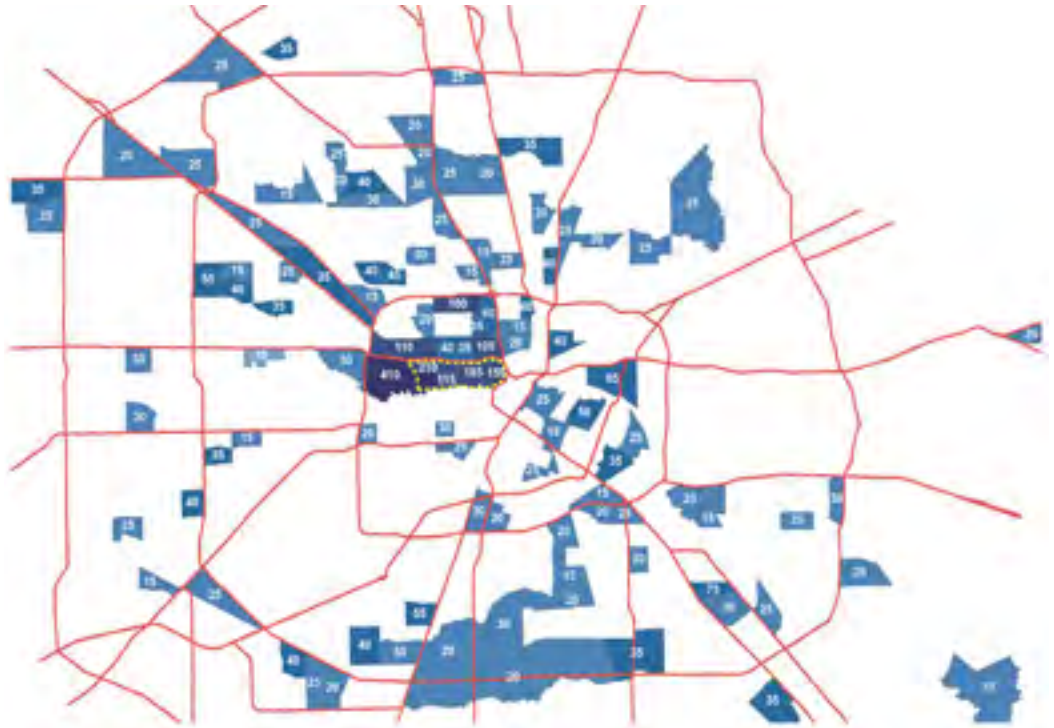
<sup>2</sup> Moody's Economy.com

# JOURNEY TO WORK

Although there is a concentration of people who both live and work in the study area, employees who work in the study area are spread out all around the metropolitan area. There are concentrations in the US 290 Corridor and in the areas northwest and south of the study area outside of the loop.

The locations of jobs of people living in the corridor is much less widely distributed. Many residents work Downtown, in the study area or along the US 290 corridor which heads northwest from the study area.

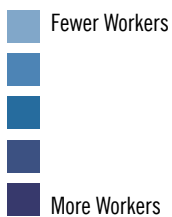
## JOURNEY TO WORK: FOR PEOPLE WITH JOBS IN THE STUDY AREA



## JOURNEY TO WORK: FOR PEOPLE LIVING IN THE STUDY AREA



### LEGEND



SOURCE: 2000 US Census Data

88 Washington Avenue Livable Centers

# RESIDENTIAL MARKET CONDITIONS

The Houston MSA has seen an increasing amount of housing construction, spurred by job growth and household formation. After reaching a high of over 71,000 permits in 2006, residential building activity dropped to just over 27,000 in 2009. Since 2009, permitting activity has increased by about 13%, with multifamily permitting increasing by almost 100% during this period. Median home prices are recovering in the region, with a 1% increase in prices recorded from 2011 to 2012 according to the Houston Association of Realtors.

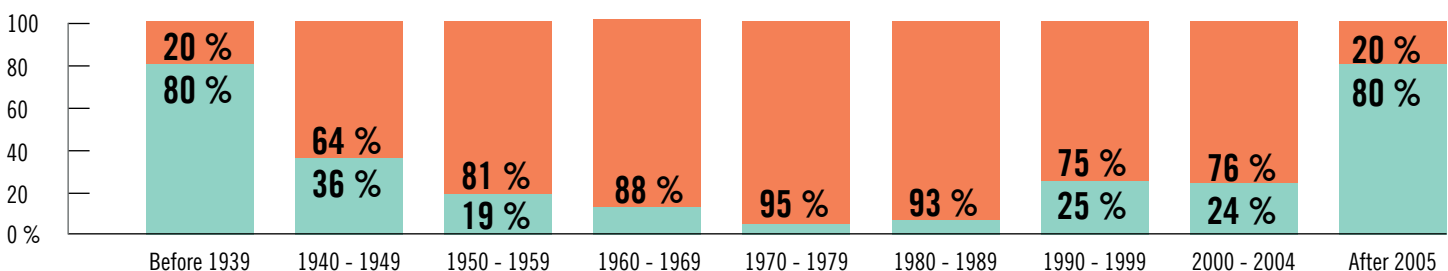
With the exception of recently built product (after 2000), and historic (before 1939) units, the Washington Avenue Corridor is dominated by rental housing. According to REIS, Inc., the average effective rent for apartment units in the Study Area is \$1,147. Effective rents increased by 1.4% last year and further gains are expected in the next five years as job growth and younger households spur apartment demand. With rents standing at about 35% of median income, continued rent growth will likely reduce the affordability of the area's housing options for low- to middle-income individuals.

As of the end of 2011, occupancy for the market stood at 93%, with further increases expected in the next five years. High construction levels have kept occupancies below equilibrium. In the next five years, the area is expected to add almost 3,900 units. Although this may indicate further excess supply issues, positive economic conditions should allow for rent increases and decreases in vacancy, as strong job growth is expected to continue in the area.

Overall, the Washington Avenue Corridor contains just over 6,300 housing units, according to American Community Survey data. The area's owner-occupied housing stock is either brand new or very old – about 1/3 of ownership homes were built before 1950, and more than 1/3 were built after 2000. In the study area, the average residential price is just under \$270,000, or \$139 per square foot, with newer homes valued 25% higher than the average-priced home in the area. In terms of value, about 2/3 of homes in the Washington Avenue Corridor are valued between \$150,000 and \$350,000, higher than the Houston region median price.

**TENURE BY YEAR STRUCTURE BUILT**  
WASHINGTON AVENUE CORRIDOR (2010)

YEAR STRUCTURE BUILT	OWNER-OCCUPIED UNITS	OWNER TENURE	RENTER-OCCUPIED UNITS	RENTURE TENURE
Before 1939	679	80%	170	20%
1940 - 1949	762	36%	1338	64%
1950 - 1959	140	19%	607	81%
1960 - 1969	39	13%	273	88%
1970 -1979	32	5%	564	95%
1980 - 1989	26	7%	367	93%
1990 - 1999	92	25%	279	75%
2000 - 2004	37	24%	115	76%
After 2005	652	80%	158	20%
<b>TOTAL</b>	<b>2,459</b>	<b>39%</b>	<b>3,871</b>	<b>61%</b>

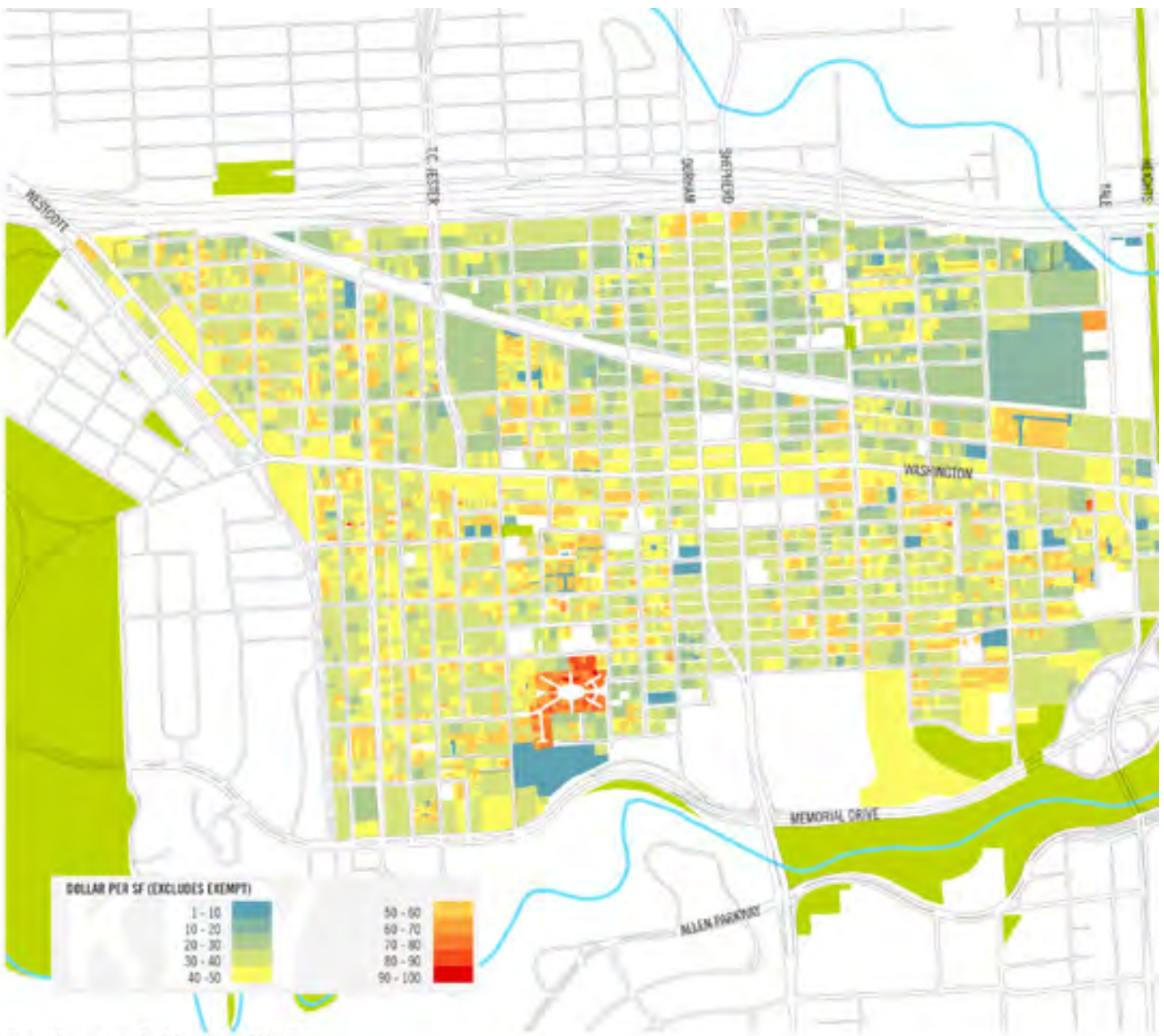


NOTE: Data corresponds to the following Harris County Census tracts: 5102, 5106 and 5107

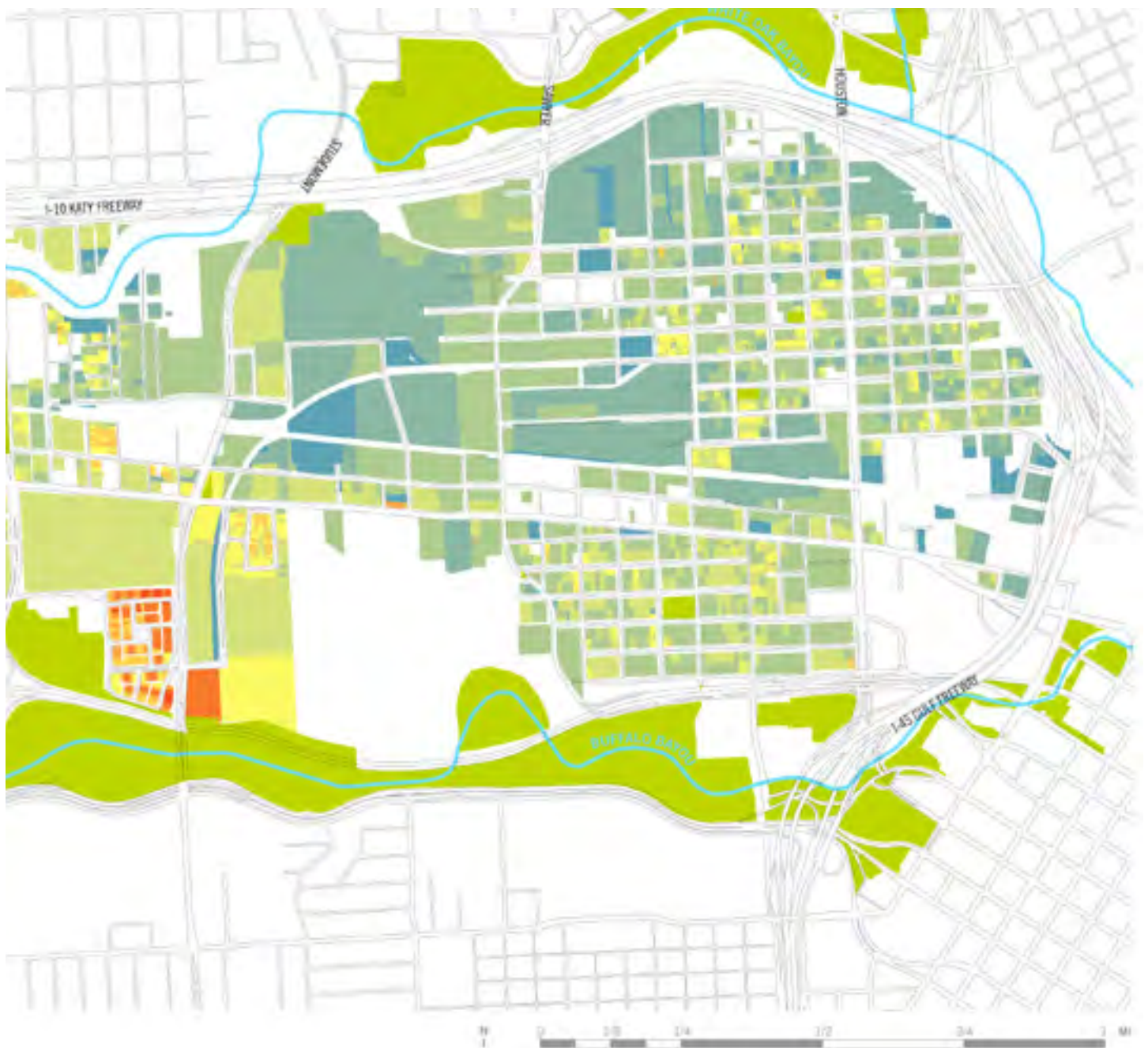
SOURCE: American Community Survey

# LAND PRICES

The cost of land in the study area shows very little variation on the whole. The vast majority of land ranges from \$1 to \$50 per square foot. The least expensive part of the study area is the First Ward. The most expensive parcels are directly adjacent to where Memorial Drive intersects one of the major north-south cross streets. Values in the southwest (Rice Military) area also higher than those of the western neighborhoods directly adjacent to the freight rail tracks. Values are higher in the southern neighborhoods (closer to Buffalo Bayou) than the northern (closer to I-10 and the freight rail corridors).



Data Sources: Public Data HCAD



# RETAIL MARKET CONDITIONS

The Washington Avenue Corridor currently captures approximately \$148,000,000 in retail sales, according to ESRI Business Analyst. More than 1/3 of the area's retail sales come from restaurants. Based on potential demand, the area is currently lacking grocery retail and general merchandise stores. Currently, residents are required to go outside the area for more than 3/5 of their grocery retail needs, along with about 1/2 of their general merchandise needs. Clearly, the area is vastly under-served by grocery stores and general merchandise. A recent (2011) remodel to the area's Target store to include more grocery options, as well as new Walmart and Kroger grocery stores which opened during the study period,

will see more of that need met. Still, the area will need a shift in retail development away from speciality retail and restaurants, with a greater focus on more basic retail needs for residents.







# MANAGEMENT STRATEGIES

The City of Houston has two main forms of regulation that allow for the management of urban districts. The two types are Management Districts and TIRZs (Tax Increment Reinvestment Zones). The study area currently contains all or part of three TIRZs and no Management Districts. The area is bounded by the Greater Northside and Downtown Management Districts and is in close proximity to the Montrose, Midtown, East Downtown and Greater East End Management Districts. The area is one of the only next-to-Downtown neighborhoods which does not have a management structure.

## Management Districts (from the City of Houston)

Management Districts are special districts created by the Texas legislature. These districts are empowered to promote, develop, encourage and maintain employment, commerce, transportation, housing, tourism, recreation, arts, entertainment, economic development, safety and the public welfare. Management Districts are given the power to finance their operations by issuing bonds or other obligations, payable in whole or in part from ad valorem taxes, assessments, impact fees, or other funds of the District to provide improvements and services. They may not levy a tax or assessment on single-family detached residences. Furthermore, districts may levy a tax only after holding an election within the district. These districts are intended to supplement, not supplant, existing public services.

## Tax Increment Reinvestment Zones (From the City of Houston)

Tax Increment Reinvestment Zones (TIRZs) are special zones created by City Council to attract new investment to an area. TIRZs help finance the cost of redevelopment and encourage development in an area that would otherwise not attract sufficient market development in a timely manner. Taxes attributable to new improvements (tax increments) are set-aside in a fund to finance public improvements within the boundaries of the zone.

### *Criteria for Reinvestment*

To be designated as a reinvestment zone, an area must substantially arrest or impair the sound growth of the municipality or county creating the zone, retard the provision of housing accommodations, or constitute an economic or social liability and be a menace to the public health, safety, morals, or welfare in its present condition and use because of the presence of:

- a substantial number of substandard, slum, deteriorated, or deteriorating structures;
- the predominance of defective or inadequate sidewalk or street layout;
- faulty lot layout in relation to size, adequacy, accessibility, or usefulness;
- unsanitary or unsafe conditions;
- the deterioration of site or other improvements
- tax or special assessment delinquency exceeding the fair value of the land;
- defective or unusual conditions of title;
- conditions that endanger life or property by fire or other cause; or



- structures, other than single-family residential structures, less than 10% of the square footage of which has been used for commercial, industrial, or residential purposes during the preceding 12 years, if the municipality has a population of 100,000 or more.

A city as complex as Houston is difficult to manage on a case-by-case basis. Stating the eligibility criteria for the use of city tools, funds, and incentives could spur a new wave of real estate activity.



# SUMMARY OF KEY FINDINGS

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1. The study area is growing faster than the city of Houston and the MSA as a whole.
2. The study area has more income than the City of Houston but less than the MSA.
3. Household size is smaller than the average MSA household, and has declined over the past decade.
4. Jobs in the area are increasing.
5. A greater number of the area's residents are professionals working downtown.
6. New homes and historic homes are more likely to be owned, post war homes are more likely to be rented.
7. The retail mix is quite good, and improving, but residents desire more local, smaller businesses.
8. Land prices are strongest in the south and west of the area.





**Sustainability &  
Open Space**



The Washington Avenue Corridor is, famously, the neighborhood between the Bayous. While this verdant green wrapper is a significant ecological and recreational amenity for the City of Houston, the Washington Avenue Corridor and its communities only nominally benefit from their proximity to these open spaces.

At the same time, the proximity to both the Bayous and to numerous transportation options raises significant environmental challenges, including issues with drainage, pollution, and noise.

# GREEN SPACE

The Washington Avenue Corridor is surrounded by green: Memorial Park, Buffalo Bayou, White Oak Bayou. Within the corridor, however, there is very little green. Small parks dot the neighborhoods, but they are few and far between. The corridor is in need of more park space, small pocket parks and potentially a larger urban park in the vacating industrial areas.

There is major opportunity in connecting the Washington Avenue Corridor to the peripheral green bayous. Some of the major north/south streets, such as Heights Boulevard, already provide a minor green connection through grassy medians and

trees. By transforming these north/south connectors into great green streets, Washington Avenue has a stronger literal and metaphoric connection to the bayou green.

There is also opportunity to take advantage of marginal green space in the corridor, namely interchanges, medians, and street and rail rights of way. These neglected spaces can be transformed into public amenities, offering additional green space and public programs such as trail networks, event space, picnic areas, dog parks, etc.



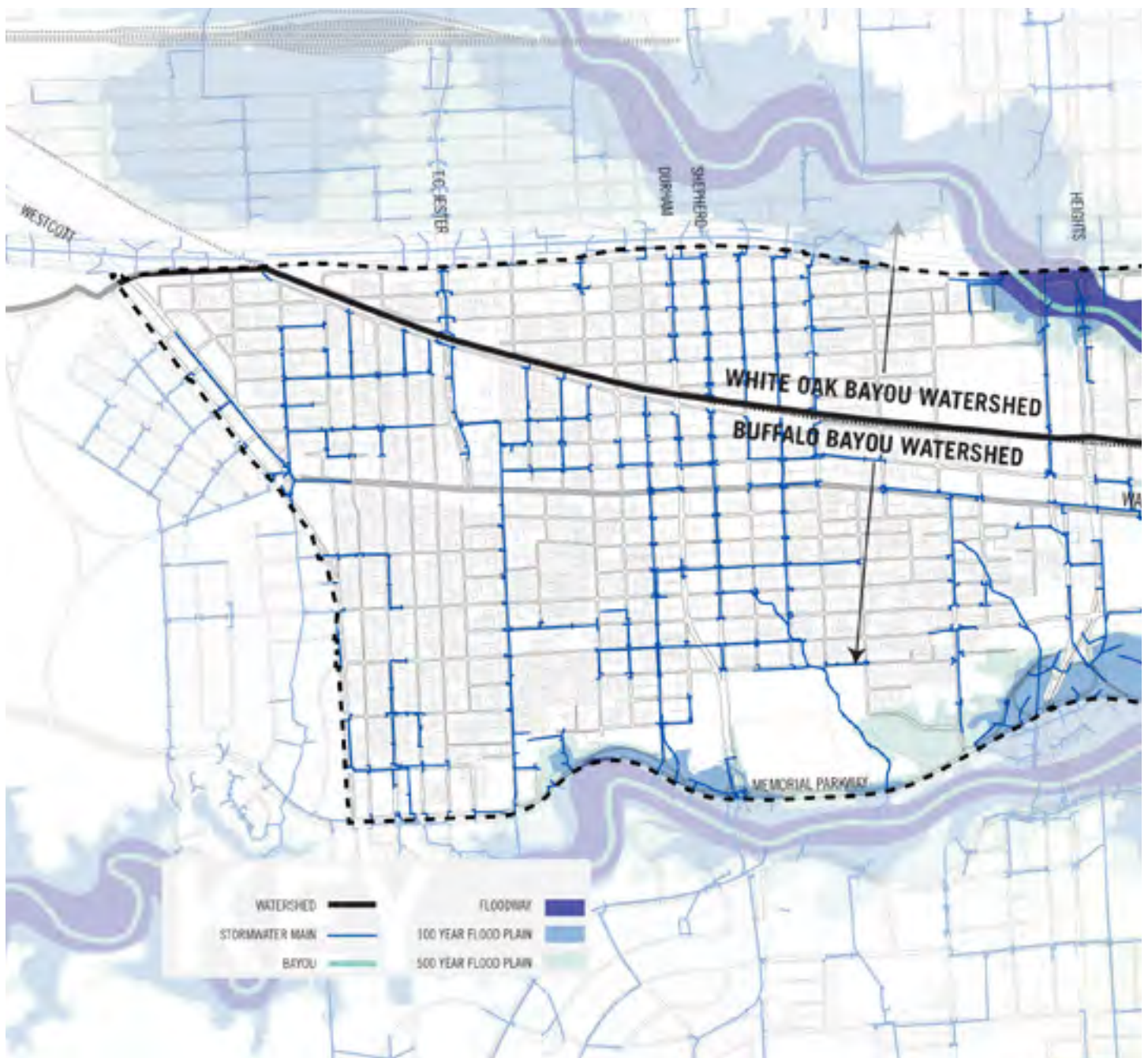


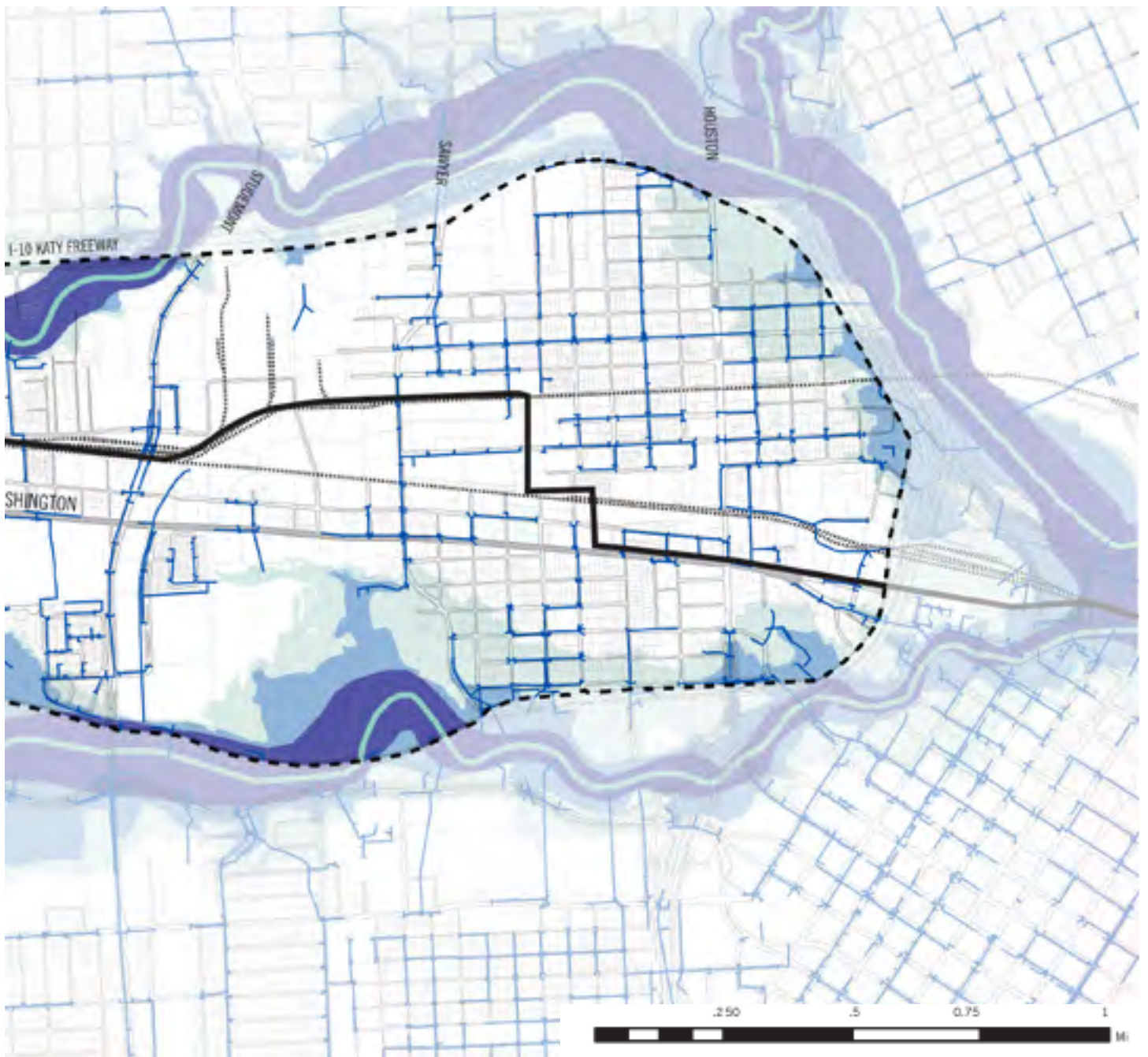


# DRAINAGE

There are opportunities in the Washington Avenue corridor to implement natural storm water management. Through the use of bioswales and natural streams, storm water is removed from the streets and filtered before it reaches the bayous. These solutions also provide green outlets for the community.

The current storm water system is aging. Pipelines beneath the streets are to be replaced soon, providing the district with an opportunity to redesign its streets. The new streets can incorporate green strategies that include storm water systems, creating cohesive green communities with strong ties to the surrounding bayous.

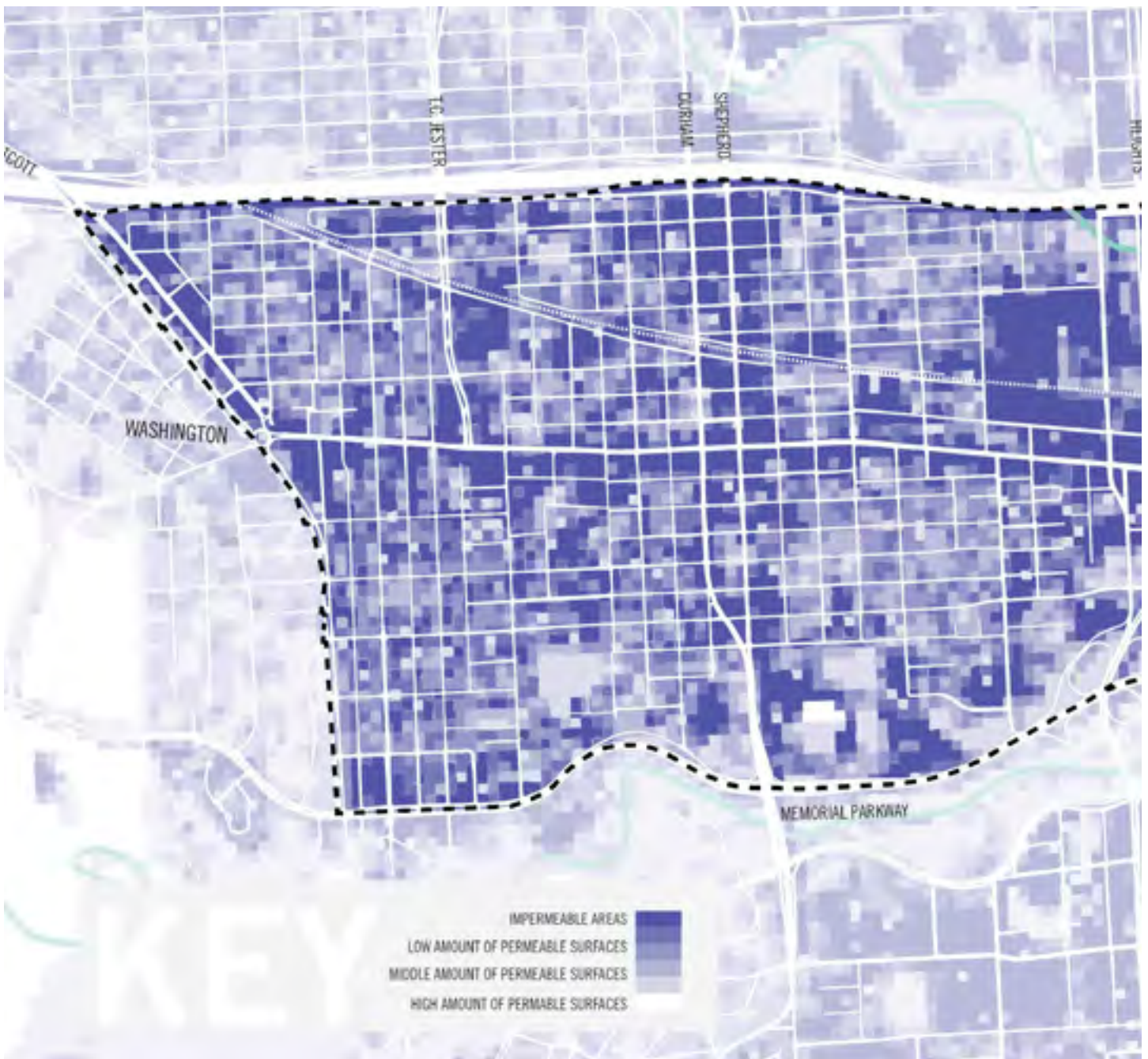


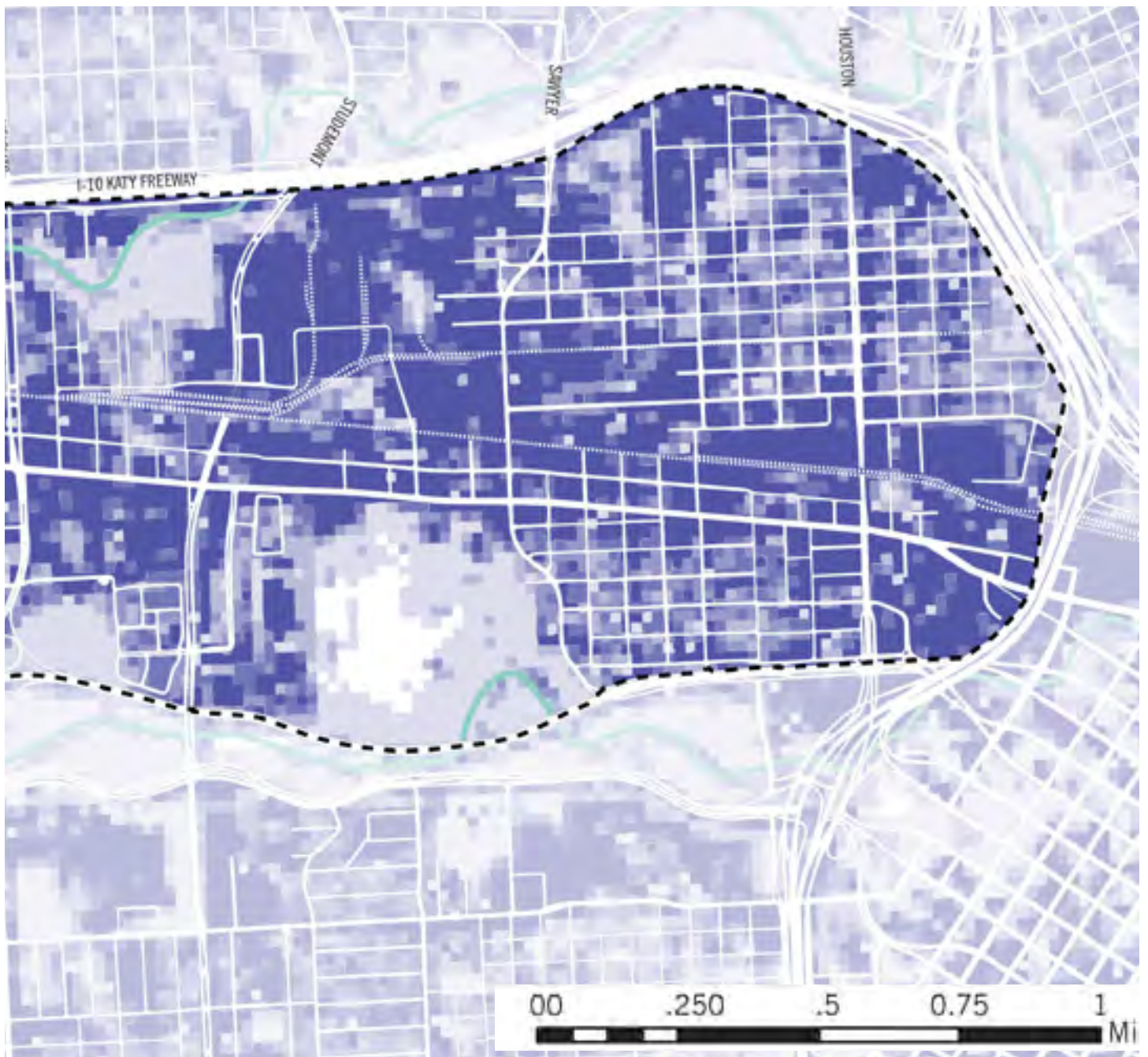


# IMPERMEABLE SURFACES

A significant issue, in terms of the changing built environment, especially in relation to the increase of new townhouses in the western part of the neighborhood, is the decrease in permeable surfaces, as such drainage may become an even more important issue over time.

In 2010, the City of Houston passed a new assessment by referendum that collects from each household based on the amount of impermeable surface and which will be used on road and drainage repairs.





# NOISE/AIR POLLUTION

Washington Avenue Corridor is surrounded by highways and bisected by rail tracks. These sources of noise and air pollution can be treated through various systems, trees to absorb carbon dioxide and walls to absorb sound, to create a quiet welcoming neighborhood environment.

The various industrial sources are slowly moving out from the neighborhood. Replacing these with green centric neighborhoods will convert Washington Avenue into an ecologically sensitive corridor and provide a safer environment for its inhabitants.





# SUMMARY OF KEY FINDINGS

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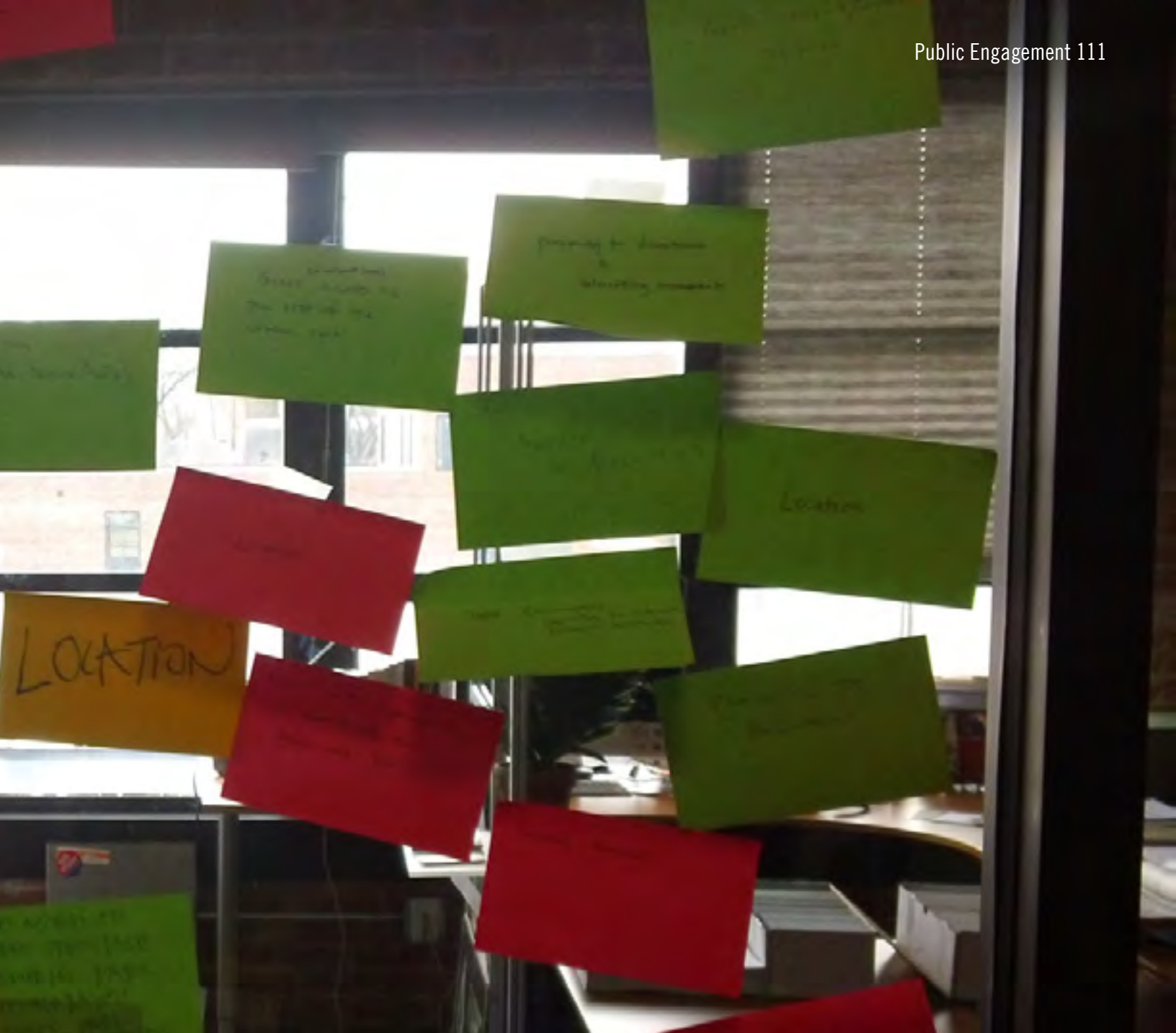
1. The area is surrounded by green space, but it often feels inaccessible.
2. Lack of neighborhood parks and quality of schools is a major concern for parents.
3. Bayous surround the neighborhood and drainage issues are important.
4. Some historic industrial sites are contaminated.
5. Noise pollution comes from freight trains, IH-10 and night clubs.
6. Air pollution comes primarily from IH-10.







# Public Engagement



People are at the heart of every community. The neighborhoods of the Washington Avenue corridor benefit from having many wonderful, well organized civic clubs and a forward thinking Superneighborhood council. Indeed, in many ways the Livable Centers planning process can be traced to the Superneighborhood 22's Transportation Committee's Transportation Plan. As such, the expectations of the community for the planning process are quite high, and, for the most part, many community members were well educated on issues relating to the development of their community, especially relating to transportation.

With this in mind, our project team sought to develop a public engagement strategy that would allow numerous points for

community members to give their input. In addition to the existing involved community members, we hoped to reach out to groups that were not previously engaged and create a strategy that would allow for multi-generational and multi-cultural outreach.

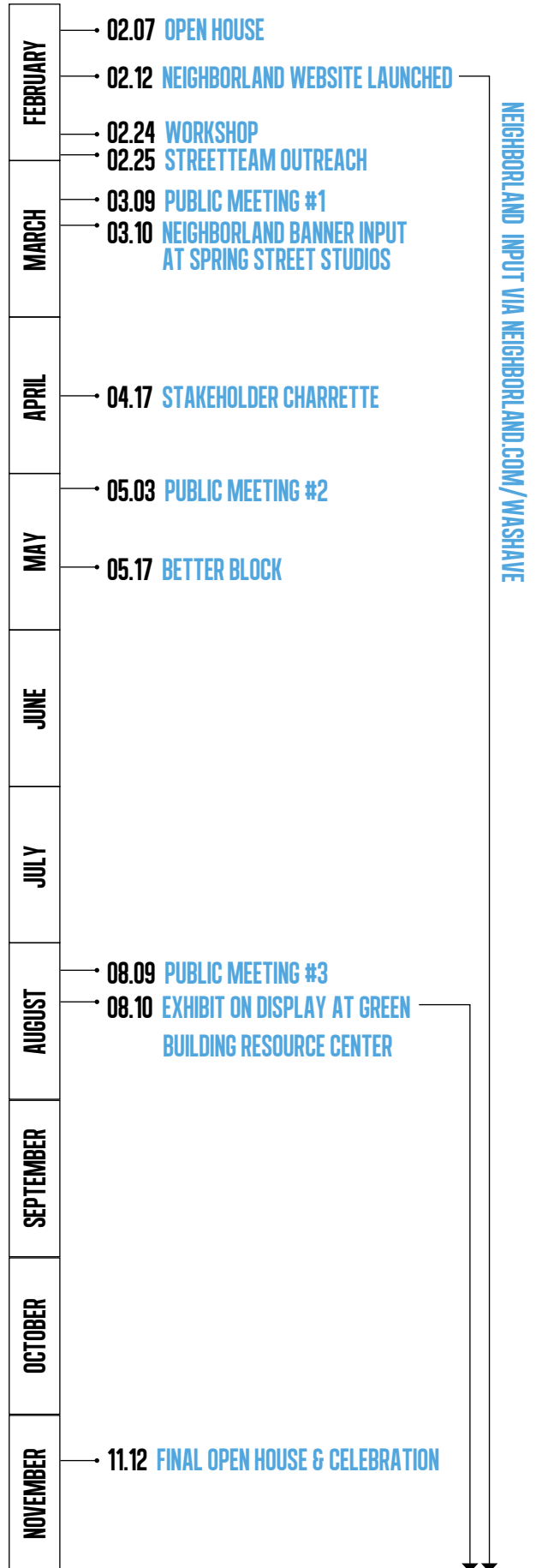
In addition to gathering input, our project team had several additional goals for the public engagement component of the planning process. First, as is reflected in the fourth goal of the project as a whole, we sought to "ensure that community members have increasing and ongoing methods to have their voices heard and have an active role in shaping their community." In other words, we sought to create methods of engagement that would outlive the planning process. This

continued engagement is made possible most significantly through the development of the Neighborland website, which allows community members to present their own ideas for the community and allows other community members to vote and discuss projects and ideas. Second, we sought to give community members who were interested in going deeper the ability to help shape the project. We did this through the use of workgroups and our streetteam. Finally, we sought to involve community members in a demonstration project, called Better Block, that would give community members an opportunity to come together and create an idea of what the community could look like in the future.

In addition to meeting these goals, the project team also held three traditional public meetings and a number of additional stakeholder meetings with local developers, community organizations, and city departments.

A project websites, neighborland and social media groups were created and stakeholders, civic clubs and the Superneighborhood provided contact lists for the community which were supplemented through additional sources. Our streetteam assisted in displaying posters for the public meetings and providing postcards regarding both the public meetings and neighborland to all businesses within the community. The City of Houston also notified community members using their Citizen’s Net e-mail list.

## PUBLIC ENGAGEMENT TIMELINE



# OPEN HOUSE

On February 7th, 2012, the project was “launched” for the community at an open house at the Asakura Robinson offices. The offices of Asakura Robinson, the prime consultant for the project, are located on Washington Avenue in the Sixth Ward. Our desire was to leverage the location in the study area to build the trust of community members and to allow them to “pop in” when they had questions or concerns regarding the project.

At the event, community members had the opportunity to meet project team members and stakeholders. Participants were asked to provide some of their thoughts on the community’s key strengths and were introduced to the Neighborland website. Community members were also able to sign up for the workgroups which supported the work of the project team.



# WORKGROUPS AND STREETTEAM

Workgroups were formed for each of the five subject areas: placemaking, wayfinding, and branding; circulation and connectivity; housing choice and buildings; economic development; and open space and sustainability. Community members who joined the workgroups were given additional opportunities to have a hands-on effect on the outcomes of the project.

The workgroups met two to three times during the course of the study. The first meeting occurred during the existing conditions study. The workgroups were asked to help the study team focus its data collection on the issues of the greatest importance to the community. The economic development workgroup, which contained several local developers, met during the conceptual planning phase to talk about major issues for developers. All the workgroups met during the implementation phase to discussing phasing and implementation priorities.

In addition to the workgroups, the project team worked with other local non-profits to create a streetteam, a group of (mostly) younger, interested community members to help collect data and get the word out regarding the project.

Volunteers from the Citizens' Transportation Coalition, the Houston chapter of the Congress for New Urbanism and students from Texas Southern University's Department of Urban and Environmental Planning assisted with this group and helped collect information regarding the retail market and sidewalk quality.



# NEIGHBORLAND

Neighborland was our online forum for community member input. Originally launched in New Orleans, the Washington Avenue Livable Centers project was the site's first deployment outside of their home city.

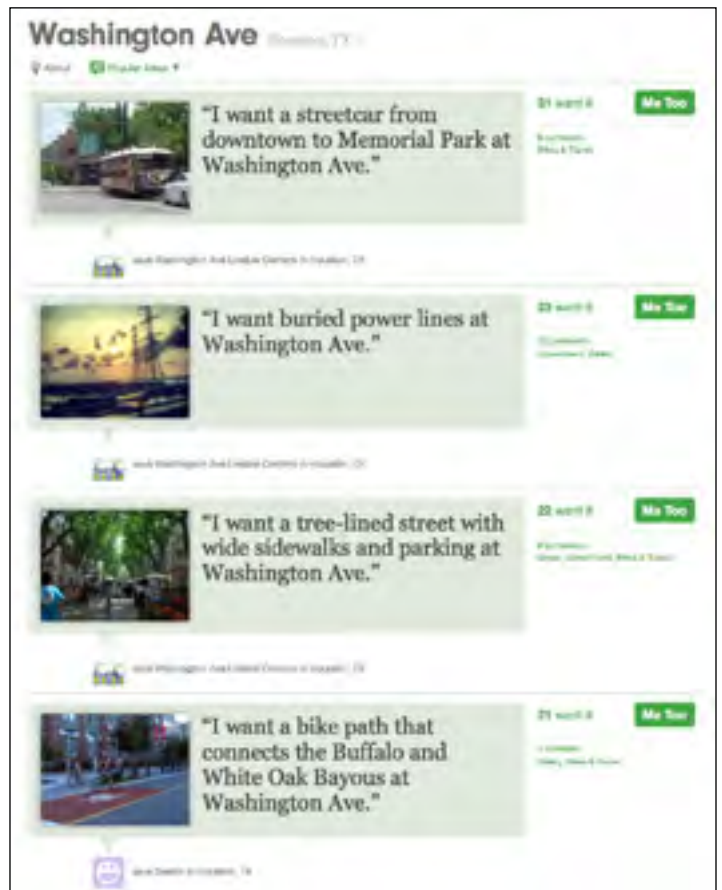
The format of the website is simple. Visitors log on to the site, either by creating a profile or using their existing facebook or twitter log-on and then are given a prompt: "I want \_\_\_\_\_ on Washington Avenue." Community members then add their ideas for the community. Once ideas have been added, the user is able to add more information regarding their idea, a picture or video, and can point to a specific address or property. Ideas range from big picture such as "I want a streetcar from downtown to Memorial Park at Washington Ave" to small ideas for specific locations such as "I want an Ethiopian restaurant at Silver and Washington on Washington Avenue."

Once the idea is put into the system, other visitors to the site area able to see it, vote on it, and comment. Using these features, community members are able to have discussions regarding the best ideas and, in some cases, connect with other community members who may be able to help bring a project to reality.

In addition to the website, the project team created postcards and a large neighborland banner that was positioned around the neighborhood at various events. The ideas added to the banner were added to the website by the project team.

Following Project Goal 4, the Neighborland website will remain available for community members following the completion of the project at Neighborland.com/WashAve

A full listing of all ideas collected on Neighborland during the project is included in the appendix.



# PUBLIC MEETINGS

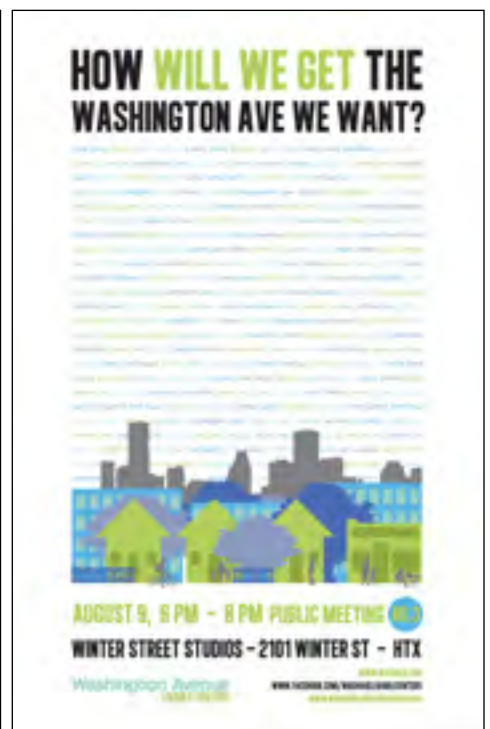
In addition to the less traditional outreach methods, our project team also held three traditional public meetings. Each meeting was held at a key time in the project schedule and attended by approximately 100 community members.

The first public meeting was held at the close of the existing conditions study phase at MECA in the Sixth Ward. The meeting focused on relaying the vast amount of information collected regarding the study area. Following the presentation, community members joined break out groups relating to the study's five subject areas. Information collected during the break outs were then collected back into the existing conditions in this report.

The second public meeting was held at The Council for Alcohol and Drugs in the Memorial Heights neighborhood during the conceptual planning phase. A presentation summarized the existing conditions portion of the study and then introduced the conceptual plan for the community. Following the presentation, community members were asked to vote on which recommendations they felt were the most important to the future of the neighborhood and to give feedback on the potential "nodes."

The third public meeting was held at the Spring Street Studios in the First Ward. An open house format, residents were encouraged to examine the proposed recommendations and

provide comments to team members. Following the meeting, the boards were displayed at the Green Building Resource Center in the First Ward.





# BETTER BLOCK

Based on a project that took place in 2010 in the Dallas neighborhood of Oak Cliff, a Better Block is a demonstration project that some have called a “living-charrette.” The premise of the project is to take a segment of an underutilized street or square and create a lively, vibrant urban space for a short period of time, usually lasting a day or weekend. As a Better Block project requires more time and funding than is usually possible for a planning process, the project team partnered with BetterHouston, a non-profit and one of the project stakeholders, to take the lead in organizing the Better Block event.

The project came together with the assistance of many community groups, city departments, property owners and community members, including the Citizens’ Transportation Coalition, METRO, the Houston Chapter of the CNU, the Houston Chapter of the American Society of Landscape Architects, BikeHouston, Houston Tomorrow and many others. Many organizations, individuals and stakeholders also contributed financially.

The project focused on a two-block segment of Washington Avenue from White Street to Hemphill Street, focused around a disused triangular land fronting on Washington. The segment also contained several vacant lots and a number of vacant storefronts. Pop-up businesses were brought in to occupy the vacant spaces, including restaurants, a food co-op and a coffee shop. Food trucks and other mobile vendors helped activate vacant lots and the streetscape. Huston’s Drug Store, a shop that had closed in the 1990s, reopened for the day and was a major scene stealer. The business had been active on Washington Avenue since the turn of the century and much of the store’s product and original fixtures were still present in the reopened shop.

The streetscape along Washington was reduced to one lane in each direction, and the center turn lane was temporarily “planted” using astroturf donated by the City of Houston’s Reuse Warehouse. The street was lined with new street trees, donated by Trees for Houston (and later replanted throughout the Sixth Ward). METRO created a pop-up bus station and provided information regarding service in the neighborhood and brought a bus’s bike rack so that community members would be able to try out loading a bicycle.

A community non-profit called Chain Reaction Ministries provided a number of bicycles for low-income community



*the project site before the Better Block*



*the project site during the event*



*the interior of Huston's Drugs*



*full temporary bike racks*

members and did repairs and checks for others who biked to the event. Other programming included a stage with local musicians performances, an area for outdoor games, including basketball and foursquare, facepainting and other events for children.

Project team members led community members on two neighborhood tours, a bicycle tour of the First and Sixth Wards and a transit and walking tour of Rice Military.

Overall, the project required input from over 50 volunteers, more than 10 sponsors, and a number of property owners. Through the course of a Saturday, over 1000 people attended the event. In October 2012, the Washington Avenue Better Block received a Mayor's Proud Partner Award from Keep Houston Beautiful.

**BETTER BLOCK WASHINGTON AVENUE**

FOR ONE DAY ONLY, RESIDENTS ARE EXPLORING WHAT WASHINGTON AVENUE, ONE OF THE OLDEST STREETS IN HOUSTON, COULD LOOK LIKE IN THE FUTURE! NEW SHOPS AND BATHRIES, SLOWER TRAFFIC, A GREENER STREET AND ALL OF THE GREAT CULTURAL AMENITIES OF THE AREA WILL BE ON DISPLAY!

**MAY 12, 2012  
3PM TO 10PM**

BETWEEN WHITE AND HEMPHILL

[WWW.WASHAVE.ORG](http://WWW.WASHAVE.ORG)  
[WWW.BETTERBLOCKHOUSTON.ORG](http://WWW.BETTERBLOCKHOUSTON.ORG)  
[WWW.FACEBOOK.COM/BETTERBLOCKHOUSTON](http://WWW.FACEBOOK.COM/BETTERBLOCKHOUSTON)  
 QUESTIONS? [BETTERBLOCK@BETTERHOUSTON.ORG](mailto:BETTERBLOCK@BETTERHOUSTON.ORG) / 713.528.0049

**FOOD TRUCKS**  
SHOWING OFF THE AMAZING LOCAL FOOD SCENE!

**POP UP SHOPS**  
GIVING LOCAL BUSINESS AN OPPORTUNITY TO TRY OUT THEIR BIG IDEAS!

**MUSIC**  
LOCAL STREET MUSICIANS WILL PERFORM!

**ARTISTS**  
DRAW ARTISTRY WITH SHARPS AND MARKERS!

**STREET TREES**  
AND OTHER GREENERY WILL IMPROVE THE STREETSCAPE!

**DOG PARK**

**BOOK STORE**  
BUY, SELL OR TRADE YOUR BEST BOOKS!

**SIDEWALK CAFES**

**LIBERTY STATION**  
LOCAL BEER ON TAP AND A CRAWFISH BOIL!

**BIKE REPAIR**  
PARTS, TUNE-UPS AND MORE. TOWNS BY THE MILLION!

**WAVE SHUTTLE TO ART, CAR PARADE AND NORTO WHEELS FOODTRUCK FESTIVAL BEING AT 71 AM! PARK AND RIDE RATE \$15**



*a pop-up coffee shop inside of a vacant storefront*



*an active streetscape*



*one of the vacant storefronts that the project activated*

*community members enjoying a food truck*





# Conceptual Plan



Based on our examination of the existing conditions and our conversations and input gathering activities with community members, our team developed a conceptual framework with which to base our recommendations for the future of the Washington Avenue Corridor. Keeping in mind both the project goals and the Six Livability Principles put forward by HUD, DOT and the EPA, the project team sought to design recommendations based around the key findings from each of the five subject areas.

Recognizing that cities are constructed over time by a multitude of actors, and that that is desirable, our team sought to create a number of ways in which recommendations can move to implementation and to create projects to a

number of potential implementing partners, from the City of Houston, to the area's TIRZs, a potential future management entity, developers and community members. In addition, we recognized that multiple scales of recommendations are necessary, from corridor-wide projects to smaller scale neighborhood interventions.

# CONCEPTUAL FRAMEWORK

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In order to create an organizational framework for our recommendations, the project team developed the following three tier organizing framework for our recommendations. On the first page of each recommendation, you will find some of the following icons, which describe how the recommendations relate to the whole.

## SUBJECT AREAS

The following icons will already be familiar to readers of this report. Each of the five subject areas introduced in the existing conditions have several recommendations, some of which overlap between multiple subject areas.



### **Circulation & Connectivity**

Recommendations relating to transportation in all its forms: automobility, bicycling, pedestrian facilities, transit and roadways.



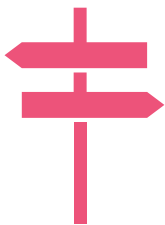
### **Housing Choice & Buildings**

Recommendations relating housing and built form.



### **Economic Development**

Recommendations relating to businesses, economic development and management entities.



### **Placemaking, Branding and Wayfinding**

Recommendations relating to community branding, cultural amenities and identity.



### **Sustainability and Open Space**

Recommendations relating to open space, parks, environmental issues and sustainability.

## TYPE

The following icons relate to the type of project that is being recommended. Some recommendations may have components of more than one type.



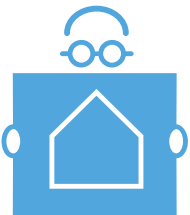
### Infrastructure

Recommendations that require the construction of physical infrastructure, from roads to buildings.



### Regulation

Recommendations that require a new regulatory framework to affect the future of development or require state or local government intervention to approve.



### Program

Recommendations that require a new program to move to implementation, these may be put in place by the City, a TIRZ or management district or citizen groups.

## SCALE

The following icons relate to the scale of the recommendation.



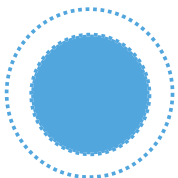
### District

As the icon suggests, these are recommendations that apply to the whole study area.



### Neighborhood

Recommendations that apply to only one or two of the neighborhoods, but not necessarily the entire study area.



### Nodes

Nodes, which are located in the report following the recommendations, are some key areas that will be of extra importance to the future of the Washington Avenue Corridor. The nodes, as we approach them, show the potential, should all of the other recommendations be carried through.



# Recommendations





Each Recommendation is preceded by an information box, similar to the sample below, summarizing key points to allow for a quick overview. Recommendations are then explained in further detail with a description and supporting documentation.

Project Title

RECOMMENDATION

## WASHINGTON AVENUE RIGHT-OF-WAY

Subject

Scale

Implementation Type

Ambitions established pages 4- 5 of Introduction

**Summary** — Redesign Washington Avenue as a neighborhood street that supports multi-modal mobility, community, economic development and has a high aesthetic quality for neighbors, visitors and property owners

PROJECT GOALS:  1  2  3  4  5

POSSIBLE PARTNERS:

POSSIBLE FUNDING SOURCES:

LIVABILITY PRINCIPLES:  1  2  3  4  5  6

**RECOMMENDATION 01**

Recommendation Number (12 total)

Guide for finding partners and funding

## WASHINGTON AVENUE RIGHT-OF-WAY



Redesign Washington Avenue as an urban avenue that supports multi-modal mobility, community, economic development and has a high aesthetic quality for neighbors, visitors and property owners



PROJECT GOALS:  1  2  3  4  5

LIVABILITY PRINCIPLES:  1  2  3  4  5  6

POSSIBLE PARTNERS: COH PWE, MANAGEMENT DISTRICT, TIRZ, WOW, METRO

POSSIBLE FUNDING SOURCES: COH CIP, FEDERAL, MANAGEMENT DISTRICT, TIRZ

Throughout the study team's conversations with community members, developers and business owners, the most agreed upon desire was for a more neighborhood-centered, walkable, and beautiful Washington Avenue. Community desires cited multiple times to make improvements in the following areas:

- Pedestrian experience, including crossings and shade
- Safe pedestrian crossings
- Bicycle facilities that appeal to inexperienced cyclists
- Slower automobile speeds
- Additional on-street parking
- Transit service enhancements

The street currently includes two lanes in each direction, a turn lane through the length of the avenue, and is designed primarily to support automobile commuters as a potential bypass for I-10. This space allocation makes sense for the street's former status as a major "highway" prior to the construction of the interstate system, and was needed to support industrial uses in the area, which are now declining. The underlying assumption of this design is that the right-of-way is apportioned for the period of greatest traffic flow. In other words, two lanes heading to downtown during the morning commute hours and two lanes heading towards West Houston during the evening commute. During the remaining time periods, the street right-of-way is underutilized, leading to travel speeds higher than the neighborhood finds desirable. In addition, the traffic patterns analysis conducted may indicate that few people are actually travelling the length of the avenue, which will be further solidified by the addition of frontage roads on I-10. Rather, Washington provides an east-west route to move toward the nearest major north-south cross street. As such, we recommend adjusting the right-of-way on Washington Avenue to support the community goals of greater multi-modal transportation, advancing commercial development and to support the existing and future traffic demand as determined by the ongoing City of Houston Inner West Loop Mobility Study (2012).

## Context Sensitive Design

Washington Avenue can be redesigned to create the type of street deemed desirable by community members, while also taking into consideration the assessment of existing traffic conditions. The potential right-of-way solution can be laid out with the following priorities:

1. Provide sufficient traffic flow along Washington Avenue with strong connections to major North-South streets.
2. Provide improved pedestrian facilities along the corridor.
3. Provide bicycle facilities throughout the corridor.
4. Provide the potential for priority transit lanes.
5. Provide as much on-street parking as possible.
6. Follow current city of Houston guidelines on lane-widths.

Washington Avenue's right-of-way width varies significantly (from 80 to 60 feet wide), and requires right-of-way solutions that address the fluctuating capacity, demand and character throughout the corridor. Expanded descriptions of these solutions can be found in the Appendix.

**SHORT-TERM:** Forty-eight feet for vehicles (four travel lanes, 11-12 feet wide) can carry the traffic on Washington Avenue. Additional lanes could be added to facilitate turning movements at major intersections by eliminating on-street parking.

**LONG-TERM:** Should high capacity transportation become a reality (see recommendation 3), the 48 foot right-of-way could be modified to four 12 foot lanes, with bicycle facilities shifting to Center Street (See recommendation 4). Pedestrian easements to create a wider pedestrian environment in the area of commercial development (See Recommendation 8).

**60-foot right-of-way:** Two lanes in each direction – outside lanes maintain widths of 12 feet to accommodate larger vehicles, such as buses and trucks. The outside lanes may be utilized for on-street parking during off-peak hours. Sidewalk and easement widths vary along the corridor, but should amount to a 15-foot pedestrian realm.



**70-foot right-of-way:** Two lanes in each direction – outside lanes maintain widths of 12 feet to accommodate larger vehicles, such as buses and trucks. On-street parking can be made available on one side of the street, which may alternate, and disappear in order to provide a turning lanes. Sidewalk and easement widths vary along the corridor, but should amount to a 15-foot pedestrian realm.



**80-foot right-of-way:** Two lanes in each direction – outside lanes maintain widths of 12 feet to accommodate larger vehicles, such as buses and trucks. On-street parking is available on both sides of the street that may be enclosed with bulb-outs (curb extensions), sometimes the location of transit stops. Traffic lanes shift at bulb-outs to provide space for turning lanes. Sidewalk and easement widths vary along the corridor, but should amount to a 15-foot pedestrian realm.



Right-of-way recommendations can be introduced with gradual changes, allowing for flexibility through three stages:

### STAGE ONE: Signs and Lines



Traffic flow is directed with painted lines rather than a built median, allowing for a testing period in lane alignment, which may be built or adjusted accordingly.

### STAGE TWO: Reconstruction



Sidewalk extension (bulb-out) defines the parking lane and improves the pedestrian realm.

### STAGE THREE: Optional Transit Realignment



Dedicated lane improves transit efficiency, which may be an option when ridership increases in the study area.

## Pedestrian Realm

Special attention should be paid to creating a beautiful, functional and complete pedestrian realm. A pedestrian realm of 15 feet should be maintained from the back of the curb to the property line (combining sidewalk and setback width). Sidewalks should extend from curb to property line (6-8 feet, depending on the street cross section) with trees placed at a regular interval to provide maximum shade for pedestrians. Setbacks (10-foot maximum) provide additional space to the pedestrian realm with a pedestrian public access easement.

**Recommendation 8** addresses pedestrian easements in commercial areas. Shops should, wherever possible, have active store fronts and awnings. Street cafes are extremely desirable. Sidewalk extensions (bulb outs) should be provided

128 Washington Avenue Livable Centers

The initial reconfiguration of Washington Avenue can be done inexpensively primarily through restriping. Roadway users become familiarized with the reconfiguration during this evaluation period prior to more costly alterations.

Additional construction costs would include targeted sidewalk improvements and improved pedestrian crossings.

Following a satisfactory evaluation period, Washington Avenue could be reconstructed allowing a 44-48-foot paving section, with additional accommodations for on street parking and turn lanes where necessary. Sidewalk reconstruction would occur with bulb outs and medians would be added where appropriate.

Should dedicated transit lanes become desirable in the future, the Avenue could be restriped to allow transit lanes, and bicycle lanes shifted to Center Street. The 48 foot paving section would continue to function in this alignment, but if necessary, additional on-street parking could be removed.

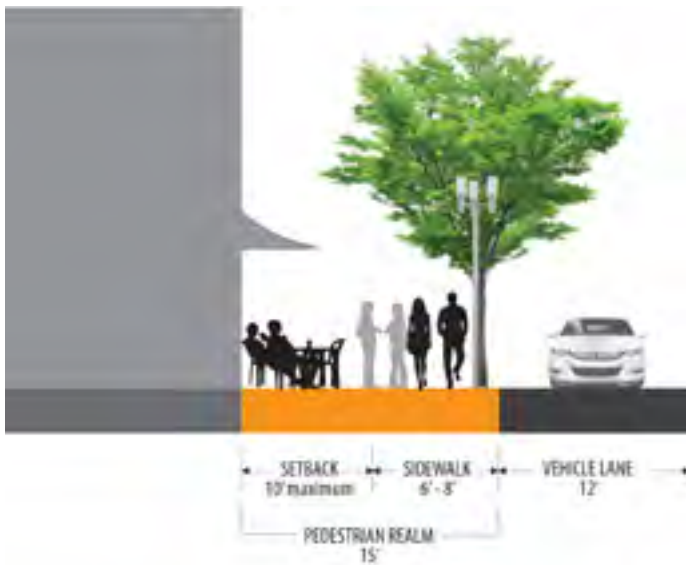
on blocks with on-street parking. Amenities in front of buildings and transit stops include benches, trash containers, pedestrian scaled lighting, planters, buffers from the street, and bicycle parking. Optional standards for transit corridors, as described in the City of Houston's *Urban Corridor Plan* [The Planning Partnership 2008], should be used as often as possible.

In order to coordinate with improved transit service and ensure the availability of safe crossings, we also recommend creating several new pedestrian activated traffic signals in the study area, so that signals will appear at roughly 1/4 mile intervals. This would include new signals at Silver Street, Patterson Street, and Roy or Reinermann Streets.

## PRECEDENT: MASSACHUSETTS AVENUE, CAMBRIDGE

Cambridge's Massachusetts Avenue (Mass Ave) is a historic multi-modal thoroughfare running diagonally from the Charles River towards Boston's northwestern suburbs. In addition to the subway running beneath the street, the avenue carries significant local bus service, including Bus 1, the MBTA's highest ridership route. It also serves as one of the main bicycle routes through the city and has a very active pedestrian realm and commercial businesses. Mass Ave also has significant on-street parking. With all of these uses fighting for street space, the avenue still carries 18,000 to 24,000 vehicles per day through most segments (a number slightly higher than Washington Avenue). Mass Ave deals with this traffic flow by having a highly differentiated right of way, with lane configurations changing from block to block. Generally, there are three traffic lanes, though the configuration (through lanes, turn lanes, and so on) adapts throughout. In areas with potential bottlenecks, the roadway may increase to up to five lanes by removing on-street parking. To the user, the avenue reads as an important street, but on a very human scale.





## Underground Powerlines

Relocating powerlines underground has been identified by community members and developers as desirable for economic development and community aesthetics. In addition, the relocation of powerlines can be seen as an important disaster readiness option, as many community members spent a significant amount of time without power following Tropical Storm Allison and Hurricanes Ike and Rita. At the least, Centerpoint energy polls should be located in positions that do not interrupt the pedestrian realm. ADA compliance must be a first priority.

*A public easement and sidewalk can be combined to create a 15-foot pedestrian realm that improves the quality of experience for pedestrians, allowing space for street cafes, bicycle parking, street furniture and other amenities without restricting accessibility.*

## PRECEDENT: KIRBY DRIVE [UPPER KIRBY PROJECT]



*Improved Kirby Drive streetscape, courtesy Gunda Corporation    Underground utility ducts, construction phase*

Overhead utilities were relocated into underground ducts as part of the streetscape improvements for the Upper Kirby Project along Kirby Drive. Other improvements included pedestrian lighting, enhanced sidewalks and improved landscaping and irrigation. Placing utility services underground clears sidewalks from unnecessary obstructions and improves the overall streetscape from clutter.

## Washington-on-Westcott Roundabout

Since its opening in 2004, the WOW Roundabout has been the source of significant pride for community members and an important source of identity as a gateway for Washington Avenue. At the same time, there are opportunities to upgrade the original design of the roundabout. These updates are desirable for the higher volume of bus traffic as shown in

**Recommendation 3.** Design improvements include lane configuration, lane width, and designs to accommodate large vehicle traffic. Potential improvements would also provide additional space for landscaping or art.



### DESIGN ISSUES: WOW Roundabout

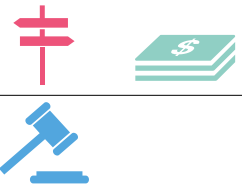
- 01 Entry lacks flaring**  
Making navigation difficult for buses and trucks
- 02 Inside lane pointing into the outside lane**
- 03 Lacking truck apron**  
Prevents trucks and buses from driving onto curb when making the turn
- 04 Circulating roadway too wide (28 ft)**  
Too wide for a single lane to provide positive guidance to vehicles in roadways and can lead to confusion
- 05 Insufficient exit width (20 ft) for two lanes**
- 06 Left lane into hashed out pavement**  
Physically guided into pavement section that has been hashed out
- 07 Right lane into circulation roadway**  
Guided into circulation roadway, but is designated right-turn only



### DESIGN IMPROVEMENTS: WOW Roundabout

- 01 Extend curb / Reduce circulation roadway to one lane**  
To clarify entry movement
- 02 Widen entry with lanes flare**  
To accommodate trucks
- 03 Wide lanes (16 ft each)**  
To accommodate trucks and buses
- 04 Truck apron**  
Preventing truck damage to central island
- 05 Extend curb / Reduce circulation roadway to one lane**  
Providing positive guidance to circulating vehicles
- 06 Reduce exit lane to a single lane**  
To clarify right of way
- 07 Improved striping and lane markers**

# MANAGEMENT ENTITY



Establish a management entity for the Washington Avenue Corridor to develop unified community branding and wayfinding, promote economic development, manage parking and promote the community's identity

PROJECT GOALS:  1  2  3  4  5

LIVABILITY PRINCIPLES:  1  2  3  4  5  6

POSSIBLE PARTNERS: STATE OF TEXAS, COH, WADA, SUPERNEIGHBORHOOD 22

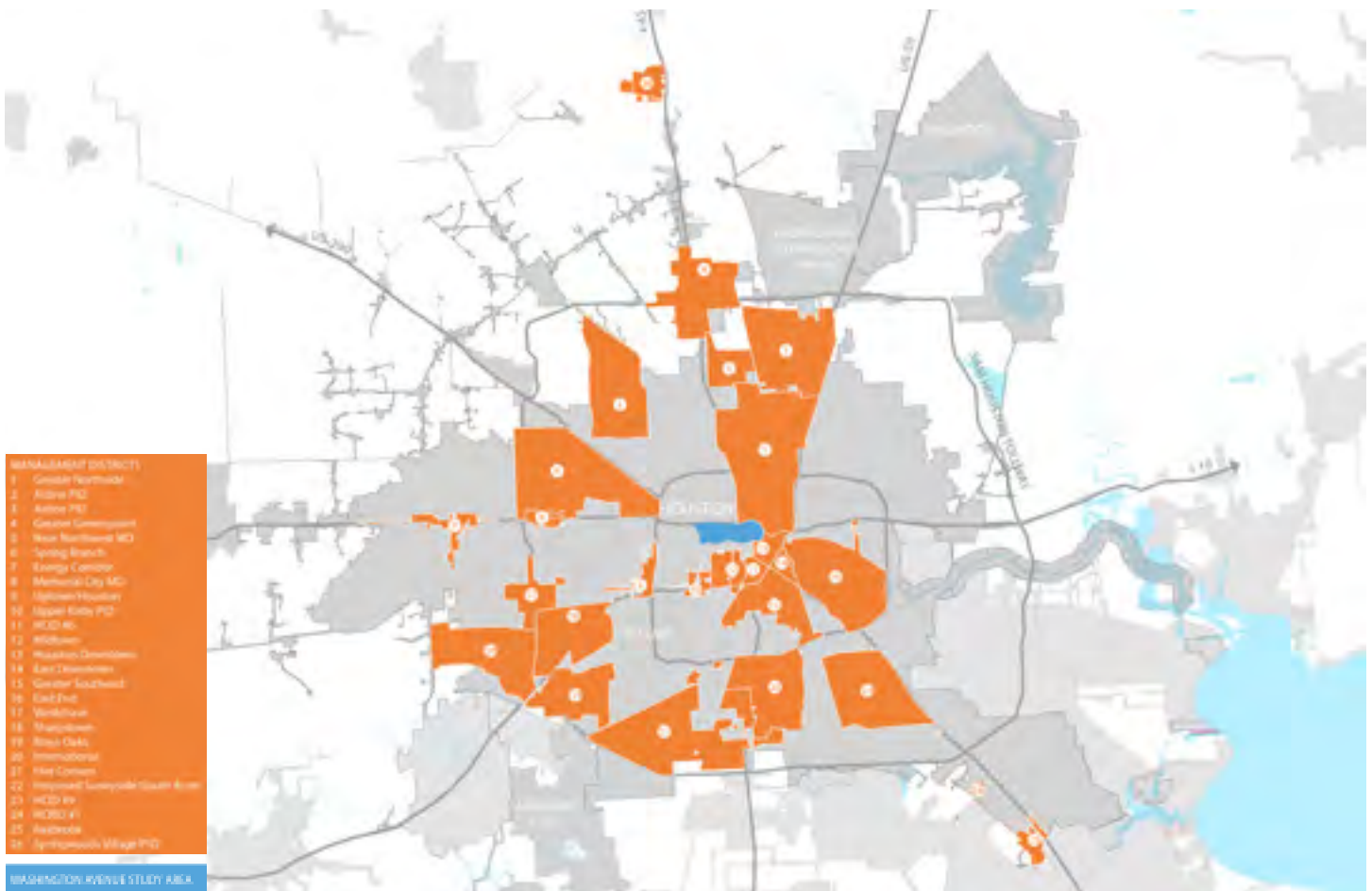
POSSIBLE FUNDING SOURCES: ASSESSMENT, GRANTS

Municipal Management Districts (MMDs) are special districts that are self governed, but approved by the host municipality. Through their fundraising powers they can provide infrastructure and other services within the district according to a district-approved service plan. Districts can be created through the Texas Commission on Environmental Quality or by the State Legislature.

It is important to note that the MMD supplements existing city services, rather than replacing them. The exact powers of the MMD are determined by the City Council, and can be dissolved by a vote of the District Board, City Council, or property owner petition.

Potential funding sources include tax exempt bonds, special assessments, property taxes, and impact fees. Permitted services include economic development, health and sanitation, public safety, traffic control, recreation, landscaping, lighting, signs, streets, walkways, drainage, and parking facilities.

Washington Avenue Study Area can be seen in the map below as bounded by the Greater Northside & Downtown Management Districts, and in close proximity to the Montrose, Midtown, East Downtown & Greater East End Management Districts. The area is one of the only next-to-Downtown neighborhoods which does not have a management structure. If created, a management district could leverage federal and state funding for projects for improvement and neighborhood identity.





## Potential Functions for Washington Avenue

Based on the success of other MMDs in the Houston area, there are several issues that the creation of a new Municipal Management District could alleviate for the Washington Avenue Corridor:

### Streetscape and Urban Design Maintenance:

The goal of this program would be to improve overall walkability in the Washington Avenue Corridor. Typical improvements include: overhead utility relocation, pedestrian lighting, upgraded bus shelters, widened sidewalks, and upgraded landscaping. Upgrading local streets will likely enhance walkability in the Corridor, resulting in increased foot traffic and retail sales.

### Graffiti Abatement / Litter Removal:

In the East End and Upper Kirby Districts, street beautification has been touted as a major success, especially by local businesses which benefit from a perceived safer environment. This program can be implemented with assistance from the city of Houston, and would also allow local artists to engage with the community through a mural program.

### Livable Centers Initiative:

Funds from the Municipal Management District can be used for improved street lighting, transit shelters, and sidewalk repair, resulting in enhanced walkability and access to public transit.

Descriptions of key services and possible funding sources for these three functions may be found the in Appendix on page ii.

## PRECEDENT: GREATER EAST END MANAGEMENT DISTRICT

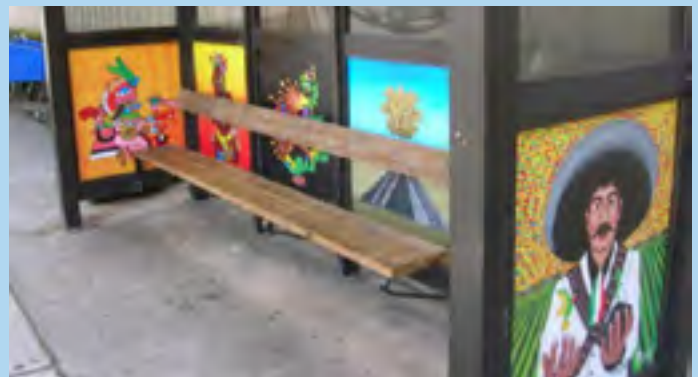
The Greater East End Management District, a neighbor to Washington Avenue on the opposite side of Downtown, has been one of the City of Houston's most successful districts. It was created in 1999 to promote economic development, improve infrastructure and amenities, provide services to commercial property owners, and create opportunities for workforce training and development.

Following on the success of their own Livable Centers Study (2009), Master Plan (2011) and Mobility Study (2012), the district has been very successful in drawing development dollars, funding and new construction.

With the opening of the Harrisburg METRORail Line in 2013-2014, the district will be well prepared to capitalize on future development and to continue to build upon each success.

Branded bus stations, sidewalks improvements and signage help unify the district and provide value to the community.

Greater East End and Upper Kirby Management District descriptions are located in the Appendix.



## Wayfinding and Branding

Wayfinding in urban neighborhoods serves multiple purposes. It allows the neighborhood to control their “brand,” a uniform, high-quality aesthetic experience for community members and to attract visitors, while providing directions for pedestrians, bicyclists and drivers to important destinations both within and outside the district.

The Washington Avenue corridor faces special challenges that may be addressed with branding and wayfinding. For the district as a whole, many residents of Houston have not had a clear idea of the area as a neighborhood. Realtors, for example, continue to market the area as a part of the Heights, rather than a distinctive district. Among the existing neighborhoods, only Rice Military and the First and Sixth Wards (and to a lesser extent the West End) are well known outside of the study area. In order to establish a unified district identity and maintain the unique identity of individual neighborhoods, we recommend that district branding maintain a unified overall aesthetic while also naming individual neighborhoods.

## Signage and Street Markings

Branded street signs should take into account both the district as a whole and the individual neighborhoods within the study area. Images could be chosen for each neighborhood, or, given recent advances in low cost sign printing, each neighborhood could have a set of images placed randomly throughout the neighborhood or could even be individual to each block.

Likewise, sidewalk street name markers at the intersections should contain both the district and individual neighborhood names. Images can be applied through etching or new styles of concrete printing. Off of main streets, street names, districts and neighborhoods could be applied through thermal application or stencils, while Washington Avenue and other main streets could use concrete, granite or other materials. Directional signage can also be applied to give direction and distance to important community destinations.



*Street Markings geared towards pedestrians provide the street name, neighborhood, distance & direction to area landmarks.*



### Parking lot fencing and street furniture

Uniform design for surface parking lot fencing and street furniture can be applied through management district design requirements. Uniform surface parking lot fencing will significantly improve both the aesthetic experience of the community and the community's walkability. Further requirements for street furniture, bicycle parking and the placement of street trees will likewise improve the community's aesthetics and walkability.



*Street signs indicate street name, neighborhood and often feature an image representative of area landmarks to instill community identity.*

# HIGH FREQUENCY TRANSIT



Create high-quality, high-frequency, easy to understand transit options that make using transit for work, shopping or recreational trips an appealing alternative to taking a driving



PROJECT GOALS:  1  2  3  4  5

LIVABILITY PRINCIPLES:  1  2  3  4  5  6

POSSIBLE PARTNERS: METRO, COH PWE, TXDOT, UPTOWN DISTRICT

POSSIBLE FUNDING SOURCES: METRO, FEDERAL

Transit is and has been a major desire of community members in the study area, as highlighted in the *Superneighborhood 22 Transportation Plan* [Transportation Committee of Superneighborhood 22]. At the same time, transit use has declined to 62% of the 2000 ridership numbers over the last ten years despite the population increasing by 47%. As land prices and average incomes have increased, the desirability of the existing transit services have decreased. The frequency and legibility of the system are major barriers to increased ridership.

Transit solutions should not be specified based on the type of transit vehicle (bus, bus rapid transit [BRT], streetcar, light rail, etc) but rather focus on several key questions:

- Where should transit go? – Destinations
- On what streets should it run? – Routing
- How often should it come? – Frequency of Service
- How often should it stop? – Frequency of Stops

Recommendations are based largely on the answers that we've come to on these questions.

## PRINCIPLES

### Destinations

Based on the distribution of where people living in the study area work and where workers in the study area live (page 78), common destinations include intra-corridor trips, Downtown, the East End, Uptown and the Texas Medical Center. Each of these destinations also has high concentrations of shopping, entertainment and recreation, as well as the potential for connections to existing high-quality, high-frequency transit service, including Houston's expanding METRORail system. Largely (and logically) these are also destinations that are convenient by automobile from the corridor.

### Routing

East/West transit in the study area is limited to three main corridors that travel the length of the study area, I-10, Washington Avenue or Memorial Drive. Based on our analysis, the existing transit on Memorial Drive largely operates well, though, with the reconstruction of the Waugh/Memorial interchange (see **Recommendation 5**) an added stop at Waugh and Memorial would be desirable. Transit running on I-10 currently provides convenient express service from the Northwest Transit Center to Downtown, but does not effect residents of the study area. Washington Avenue's position in the corridor is both geographically central and connects many local activity centers. As such, it is of primary importance as a transit corridor.

North/South traffic has more options than does east/west. Current primary transit corridors include Shepherd/Durham and Heights Blvd. Desirable destinations include the Heights to the north and Montrose, Highland Village, West Gray and the Texas Medical Center to the south. Heights Blvd and Washington Avenue were historically a transit pair.

### Frequency of Service

Bus transit on Washington Avenue varies significantly in different segments of the corridor. From the roundabout to Heights Blvd (the segment of the neighborhood that contains 66% of the population of the community) the midday frequency of buses is 23 minutes. From Heights to Sawyer it is 9 minutes, but served by multiple routes. From Sawyer to Houston it returns to 23 minutes. From Houston to downtown it is 12 minutes. These differences in transit headway contribute to the illegibility of the system for many users.

For transit to be useful for most community members day-to-day life, headways of less than 10 minutes are desirable. At 15 minutes, users no longer have to consult a schedule, but rather can simply walk to the nearest stop location with a certainty that the next transit vehicle will come shortly.

## Frequency of Stops

All existing transit within the study area, with the exception of the buses that run along Memorial Drive, stop roughly every other block. Although this shortens walks on either end of the transit trip, there is little data that says transit users require such short walks in order to use transit. Walks of up to 1/4th mile (or even 1/2 for high quality transit) are acceptable. Likewise, more frequent stops also slow trip times for users. As such, we recommend creating greater stop spacing for most services, focusing on 1/4 mile intervals (or roughly 4 to 5 blocks between stops).

## RECOMMENDATIONS

### T1 - Downtown - Washington Avenue - Northwest Transit Center High-Frequency Bus (Orange Line)

The primary transit recommendation for residents and visitors to the Washington Avenue Corridor is for a high-frequency, high-quality service, beginning as bus, but with potential to be replaced with a streetcar running along Washington Avenue from the Northwest Transit Center to either Market Square/Preston Station or to Discovery Green/George R. Brown Convention Center. The bus will run initially in mixed traffic, but, if successful, can be replaced with separated or shared



bus/streetcar lanes in the future (see **Recommendation 1**). The bus will be defined by distinctive branding, 10 minute frequency, and easily understandable routes and maps. The Washington Avenue frequent bus should be included on the METRORail maps. Stops will be located roughly 1/4 miles apart. The following stops will fall within the study area:

- Franklin/I-10
- Houston Avenue
- Silver Street
- Sawyer Street
- Studemont Street
- Heights Boulevard
- Patterson Street
- Shepherd Street
- TC Jester
- Washington/Westcott Roundabout
- Washington/Westcott/I10

Transfers would be available to the Uptown BRT (Gold Line) at Washington/Westcott/I10, Franklin/I-10 and at the Northwest Transit Center, to the Green and Purple Lines at Franklin/I-10 to the Red Line at either Preston Station or Main Street Square. Transfers to the Heights-Montrose frequent bus (Yellow Line) will be available at Heights Boulevard and Studemont Streets.

To maximize efficiency and convenience of high-frequency transit, the Orange line connections should be aligned with existing plans for the East End streetcar downtown, and coordinated between Management Districts.

## **T2 - METRORail Green/Purple Line Extension**

Based on our recommendations for the development of the City Court/Police Station Site (see Node 3), a two stop extension of the currently under construction Green and Purple METRORail lines will bolster land values, put a greater portion of the Sixth and First Wards within walking distance of the METRORail and create a rail connection to the existing Amtrak Station. The Green and Purple Lines will provide connections through Downtown to Discovery Green, the George R. Brown Convention Center, Minute Maid Park, BBVA Compass Stadium, the East End, the University of Houston and Texas Southern University, as well as connections to the Red Line to Texas Medical Center and Reliant Stadium.

## **T3 - Uptown BRT Line (Gold Line)**

Largely outside of our study area, but of potential importance to it, the current plans for the Uptown Light Rail Line, which is currently unfunded, has been considered as a potential

bus rapid transit (BRT) route. Although the Uptown Line is currently intended to end at Northwest Transit Center, there is potential for a significant ridership increase if the BRT were to continue downtown by way of I-10, existing the HOT lanes at Washington and then sharing platforms with the proposed METRORail extension through downtown. In addition, we propose additional stations at Washington/Westcott, Shepherd and Heights on I-10 (stations which could also be shared with other Park and Ride Buses).

Bus Rapid Transit is differentiated from other high-frequency services by its similarities to many other types of rail transit, including separated lanes, payment before boarding and multiple door entry.

## **T4 - Heights - Washington Avenue - Montrose - Texas Medical Center High-Frequency Bus (Yellow Line)**

A secondary transit recommendation for residents and visitors to the Washington Avenue Corridor is a high-frequency, high quality service, likewise beginning as a bus, but with potential to be replaced with a streetcar. Frequency, branding, and maps should be the same as described above running from the Heights to Texas Medical Center. Through the study area, the bus will run on Heights Boulevard, turn on Washington Avenue and then on Studemont/Montrose to Main Street. The following stops will fall within the study area:

- Heights/I-10
- Washington/Heights
- Studemont/Washington
- Studemont/Memorial

Transfers will be available to the Uptown BRT (Gold Line) at Heights/I-10 to the Washington Avenue Frequent Bus (Orange Line) at Heights/Washington and Studemont/Washington and to the Red Line at TMC Transit Center.

# **RIDERSHIP MODEL**

## **Assumptions**

The ridership model was calculated based on a variety of assumptions, such as 5-minute average walk-time to bus, a 1/4-mile catchment area of bus ridership, \$1.25 fare for new and existing services. See the Appendix, page vii, for a full list of ridership model assumptions.

## PRECEDENT: WASHINGTON, DC CIRCULATOR

Washington, DC's Circulator Bus system has been a highly successful rethinking of traditional bus routes. Using distinctive vehicles, with destinations painted on the side, 10 minute frequency, \$1 fare, and less frequent stops. The system is supported in part by a number of Business Improvement Districts (DC's equivalent of TIRZs and Management Districts).

The Circulator system supports DC's extensive rail system by creating connections to neighborhoods without rail service and by connecting lines that do not cross. The maps, which are available at all stops and on the buses themselves, treat bus lines in a way that is similar to most subway maps. Each line has its own color and stops are highlighted on the map.

The buses also serve as a flexible way to test routes for Washington's planned streetcar routes. Bus routes can be adjusted to gain ridership or create faster routes before physical investments are made in track.



buses have distinctive design and stop signage



the DC circulator map treats buslines like subway lines

## BUS CIRCULATORS

Both Concept 1A and Concept 1B bus circulators are anchored at the Northwest Transit Center, located on Old Katy Road near North Post Oak Road. The Northwest Transit Center already serves 14 METRO Bus routes (Route 20, 33, 36, 40, 58, 72, 85, 131, 214, 217, 219, 221, 286 and 298), linking the circulator route to a key transit hub.

### Concept 1A: NW Transit Center To Market Square

**Concept 1A** is illustrated in **Figure 1** (page 140). This concept connects the Northwest Transit Center to Market Square and consists of 32 stops with a roundtrip length of 40-50 minutes. With stops at Market Square, the circulator provides connections to the Main Line. The reduction of bus stops reduces travel times, but decreases the ¼ mile population served by 21.1% (from 9,133 to 7,206).

- In the short-term (1 year), ridership is projected to increase 76% (617 daily boardings)
- In the long-run (3 years), ridership is projected to increase 139% (839 daily boardings)
- Estimated percent of ¼ mile population using the bus service:
  - Existing Route 36: 4.9%

- Concept 1A short-term: 8.6%
- Concept 1A long-run: 11.6%

### Concept 1B: NW Transit Center To Discovery Green

**Figure 2** (page 141) illustrates **Concept 1B**, providing service from the Northwest Transit Center to Discovery Green, with stops adjacent to the Main Line and future Green and Purple Lines. The route consists of 47 stops and the roundtrip length is 50-60 minutes. Similar to Concept 1A, the reduction in bus stops decreases the ¼ mile population served by 14.4% (from 9,351 to 8,007). More buses are required to maintain a 10 minute headway than Concept 1A.

- In the short-term (1 year), ridership is projected to increase 17% (1,011 daily boardings)
- In the long run (3 years), ridership is projected to increase 54% (1,326 daily boardings)
- Estimated percent of ¼ mile population using the bus service:
  - Existing Route 36: 9.2%
  - Concept 1A short-term: 12.6%
  - Concept 1A long-run: 16.6%

# FIXED STREETCAR

Introducing a fixed streetcar circulator along Washington Avenue poses opportunities as well as key challenges.

Key advantages to a fixed streetcar system include:

- Serves as a catalyst for a development;
- Residents and businesses may be more willing to relocate and invest adjacent to a fixed transit service;
- Increased ridership;
- Perception of improved safety and cleanliness in comparison to riding a bus; and
- Dedicated right-of-way improves travel time and service.

Despite key advantages to adopting a streetcar system, obstacles for introducing a fixed street car are:

- Expensive acquisition of right-of-way;
- Expensive rail infrastructure;
- Politically difficult to permanently reallocate existing road space; and
- Rail cannot respond to changes in demand.

For the ridership uplift for switching from a bus system to a fixed, streetcar studies show that when service conditions are equal, rail transit will attract 34%-43% more passengers than a similar bus service. In Houston, an estimated 41% of Houston's Main Line were new to transit.

Holding population at Census 2010 levels, assuming a 38% increase in ridership from the proposed bus circulator concepts, projected daily streetcar ridership is:

- Concept 1A: NW Transit Center To Market Square: 1,158 daily boardings (16.1% of 1/4 mile population)
- Concept 1B: NW Transit Center To Discovery Green: 1,830 daily boardings (22.9% of 1/4 mile population)

Given the projected ridership between a bus circulator and a fixed-rail circulator, the daily ridership estimates suggest that a fixed-streetcar may not warrant the deployment of a streetcar system along Washington Avenue in the short term, given current ridership and population. A phased strategy is recommended. Initially deploying a branded, quality service

Figure 1: CIRCULATOR CONCEPT 1A



**Estimated Daily Ridership**  
 Headway: Circulator 10 minutes  
 Base Route 36 Ridership (all original stops): 351 (4.9% of 1/4 Mile Pop)

**Projected Circulator Ridership**  
 Short-Term Ridership (1 yr): 617 (8.6% of 1/4 Mile Pop)  
 Long-Term Ridership (3 yr +): 839 (11.6% of 1/4 Mile Pop)

Route Length: 12.3 miles  
 Roundtrip: 40 minutes  
 Stops: 23  
 1/4 Mile Pop: 7,206  
 1/2 Mile Pop: 20,302

Connects NW Transit Center to Market Square

Reduction in bus stops reduces travel

Reduction in stops decreases 1/4 Mile population served by 21.2% (from 9,133 to 7,206)

Longer route than 1B

Decrease headway to 10 minutes

Assumes removal of route 36

140 Washington Avenue Livable Centers

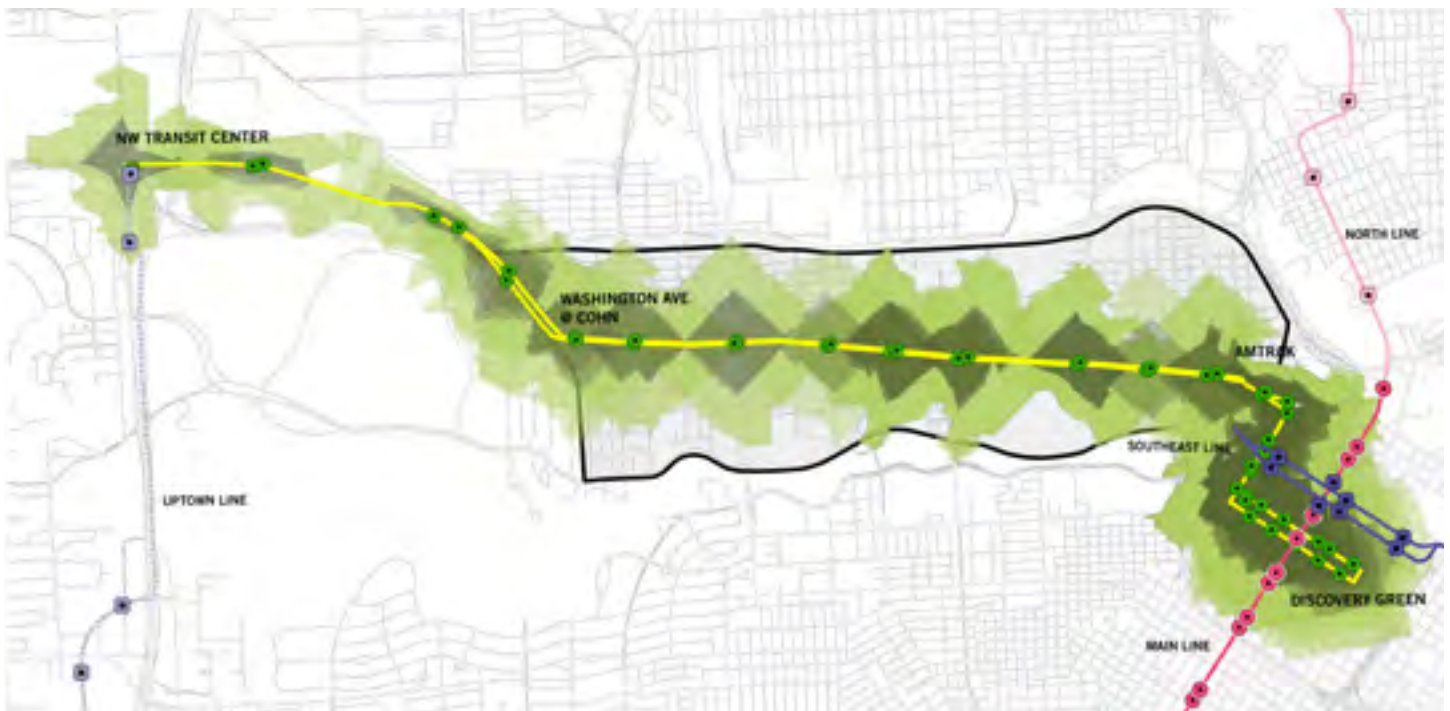


bus circulator will increase ridership and introduce new users to the transit system. In the medium-term, the bus circulator can be augmented to meet new demand. As the Washington Avenue corridor grows with residents and new businesses, and the bus circulator displays a high level of service and ridership, reevaluation of the development of a fixed streetcar system will be more appropriate.

Similarly to the Orange Line, construction of a fixed streetcar should be coordinated amongst Management Districts to ensure the proper connections are made between high-frequency transit lines, including the East End streetcar.



Figure 2: CIRCULATOR CONCEPT 1B



**Estimated Daily Ridership**  
 Headway: Circulator 10 minutes  
 Base Route 36 Ridership (all original stops): 861 (9.2% of 1/4 Mile Pop)

**Projected Circulator Ridership**  
 Short-Term Ridership (1 yr): 1,011 (12.6% of 1/4 Mile Pop)  
 Long-Term Ridership (3 yr +): 1,326 (16.6% of 1/4 Mile Pop)

Route Length: 14 miles  
 Roundtrip: 50 minutes  
 Stops: 47  
 1/4 Mile Pop: 8,007  
 1/2 Mile Pop: 21,731

Connects NW Transit Center to Discovery Green

Reduction in bus stops reduces travel

Reduction in stops decreases 1/4 Mile population served by 14.4% (from 9,351 to 8,007)

Decrease headway to 10 minutes

Assumes removal of route 36

# BICYCLE FACILITIES



Create on and off street bicycle connections that allow bicyclists to cross barriers, connect to desirable destinations and that facilitates the desirability of cycling as everyday transportation

PROJECT GOALS:  1  2  3  4  5

LIVABILITY PRINCIPLES:  1  2  3  4  5  6

POSSIBLE PARTNERS: COH PWE, COH PDD

POSSIBLE FUNDING SOURCES: FEDERAL, COH CIP, TIRZ, MANAGEMENT DISTRICT

The study area has many potential destinations within short distances that make bicycle travel an attractive transportation option where there are dedicated facilities to support these trips. Existing bicycle facilities in the study area predominantly serve cyclists moving east-west. These east-west facilities include shared lanes along Washington Avenue and shared-use paths along Buffalo Bayou and Center Street. The only existing north-south bicycle facilities in the study area are a signed bike route along TC Jester Boulevard and bike lanes along Heights Boulevard north of Washington Avenue. All existing bicycle facilities primarily serve destinations along and north of Washington Avenue and along Buffalo Bayou; there are no existing bicycle facilities in the neighborhoods between Washington Avenue and Buffalo Bayou. Additionally, there are few existing dedicated bicycle facilities that connect to the Buffalo Bayou trails.

Potential facilities are shown on the map on the following pages and are described in detail below. The type of facility proposed for each corridor was selected based on existing traffic volumes, pavement, right-of-way, expected bicycle demand, and a goal of connecting to existing bicycle facilities with the same type of facility. Each facility type is defined on the following page and the proposed bicycle improvements are shown in the map on pages 144-145, and detailed descriptions are available in the Appendix on page xviii.

## **B1 – Bike lanes on Center Street between Detering Street and Houston Avenue.**

Center Street is proposed to complement Washington Avenue as the primary east-west bicycle corridor in the central part of the study area. If Washington Avenue's right-of-way is adapted for additional travel lanes or for dedicated transit lanes, Center Street could be redeveloped as a full bicycle boulevard (see the precedent on the following page).

## **B2 – Patterson Street between Washington Avenue and 7th Street.**

Patterson Street is desirable for bicycle facilities because it is a low-volume road that crosses the Terminal Subdivision rail line and is grade-separated at IH-10. It would connect proposed bicycle facilities on Feagan Street and Center Street to the existing MKT Rail-to-Trail facility in the Heights.

- B2 – 1: Signed Bike Route.
- B2 – 2: Bike Lanes.
- B2 – 3: Signed Bike Route.
- B2 – 4: Shared-use Path. A bridge will be required to cross White Oak Bayou. Right-of-way may need to be purchased between 6th Street & 7th Street.

## **B3 – Shared-use path on Studemont Street between Memorial Drive and the MKT Rail-to-Trail.**

Proposed to be a shared-use path; this bicycle facility would provide access to the newly-constructed bicycle/pedestrian bridge over Memorial Drive and Buffalo Bayou, and connect the MKT Rail-to-Trail and Buffalo Bayou Trails with a similar ride experience.

## **B4 – Memorial Drive and Silver Street between Sawyer Street and Spring Street.**

This facility would connect the existing trail along Memorial Drive to the MKT Rail-to-Trail along Spring Street. The following segments are proposed:

- B4 – 1: Bridge over Buffalo Bayou connecting trails on the north & south side of the bayou at Eleanor Tinsley Park.
- B4 – 2: Shared-use path between Sawyer and Silver.
- B4 – 3: Bike lanes on Silver Street between Memorial Drive & Washington Avenue.
- B4 – 4: Signed bike route on Silver Street between Washington Avenue & Spring Street.

### **B5 – Bike lanes on Houston Avenue between Lubbock and White Oak Drive.**

This facility would connect proposed bike lanes on Center Street and Washington Avenue and the signed bike route on Lubbock Street to existing bike lanes on Houston Avenue north of White Oak Drive and to the MKT Rail-to-Trail on Spring Street.

### **B6 – Waugh Drive between West Gray Street and Washington Avenue.**

The City of Houston Existing/Proposed Bikeway Map indicates that this corridor is already planned for a future on-street bicycle facility. Such a facility would connect existing bike lanes on Waugh Drive south of West Gray Street to existing bike lanes on Heights Boulevard north of Washington Avenue, existing trails long Buffalo Bayou, and a proposed signed bike route along Feagan Street. Two segments are proposed:

- B6 – 1: Bike lanes between West Gray Street & Allen Parkway.
- B6 – 2: Shared-use path between Allen Parkway & Washington Avenue.

### **B7 – Shared-use path on Shepherd Drive between Kirby Drive and Feagan Street.**

This facility would connect West Dallas Street (existing shared-use lanes), Buffalo Bayou (existing trails), Chilton Road (existing signed bike route), and Feagan Street (proposed signed bike route). As a part of the larger system of bicycle facilities, it also connects bicyclists between River Oaks, the Washington Avenue study area, and the Heights.

### **B8 – Neighborhood signed bike routes between Washington Avenue and Memorial Drive.**

These facilities will guide cyclists through and around the neighborhood on low-speed, low-traffic roads to other existing and proposed facilities.

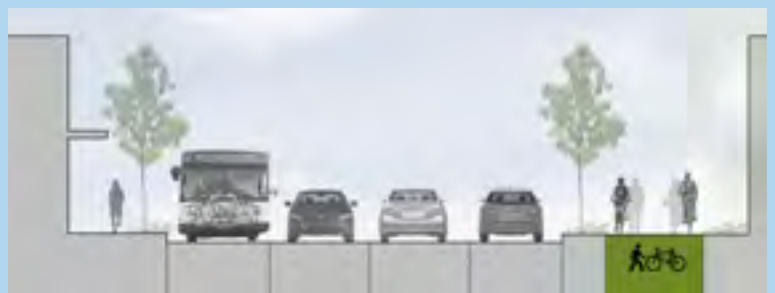
- B8 – 1: Signed bike route along Feagan Street between Birdsall & Studemont Street.
- B8 – 2: Signed bike route along Blossom Street between Birdsall Street & Detering Street.
- B8 – 3: Signed bike route along Birdsall Street between Blossom Street & Memorial Drive

## **TOOL KIT: BICYCLE FACILITY TYPES\***

**Bicycle Lane** designates roadway space for bicyclists marked by text (“Bike Lane”), symbol, and/or arrow markings, and is delineated by a solid white line -- dashed where travel modes may intersect, such as turning lanes. Bicyclists can comfortably ride between the gutter and adjacent traffic lanes with a width of 5 feet (minimum), 6 feet (recommended) and up to 12 ft to be shared with parking. To bicyclists’ safety, bike lanes should not be obstructed by drainage inlets or utility covers.

**Shared-use Path** is a pedestrian and bicycle path that is separated from automobile traffic -- by being raised, curb-separated, or by providing an alternate route. The path may provide bi-directional lanes (at least 5 feet wide) shared by pedestrians and bicyclists (10 feet total), or bi-directional bicycle lanes alongside a walking path (requiring approximately 15 feet).

**Shared Signed Bike Route (Sharrows)** is a bicycle route within an automobile traffic lane that should be wider than a typical lane, 14 to 16 feet wide. The arrow of the Sharrow symbol identifies the safe line of motion for a bicyclist, toward the left side of the lane, away from the doors of parked vehicles.



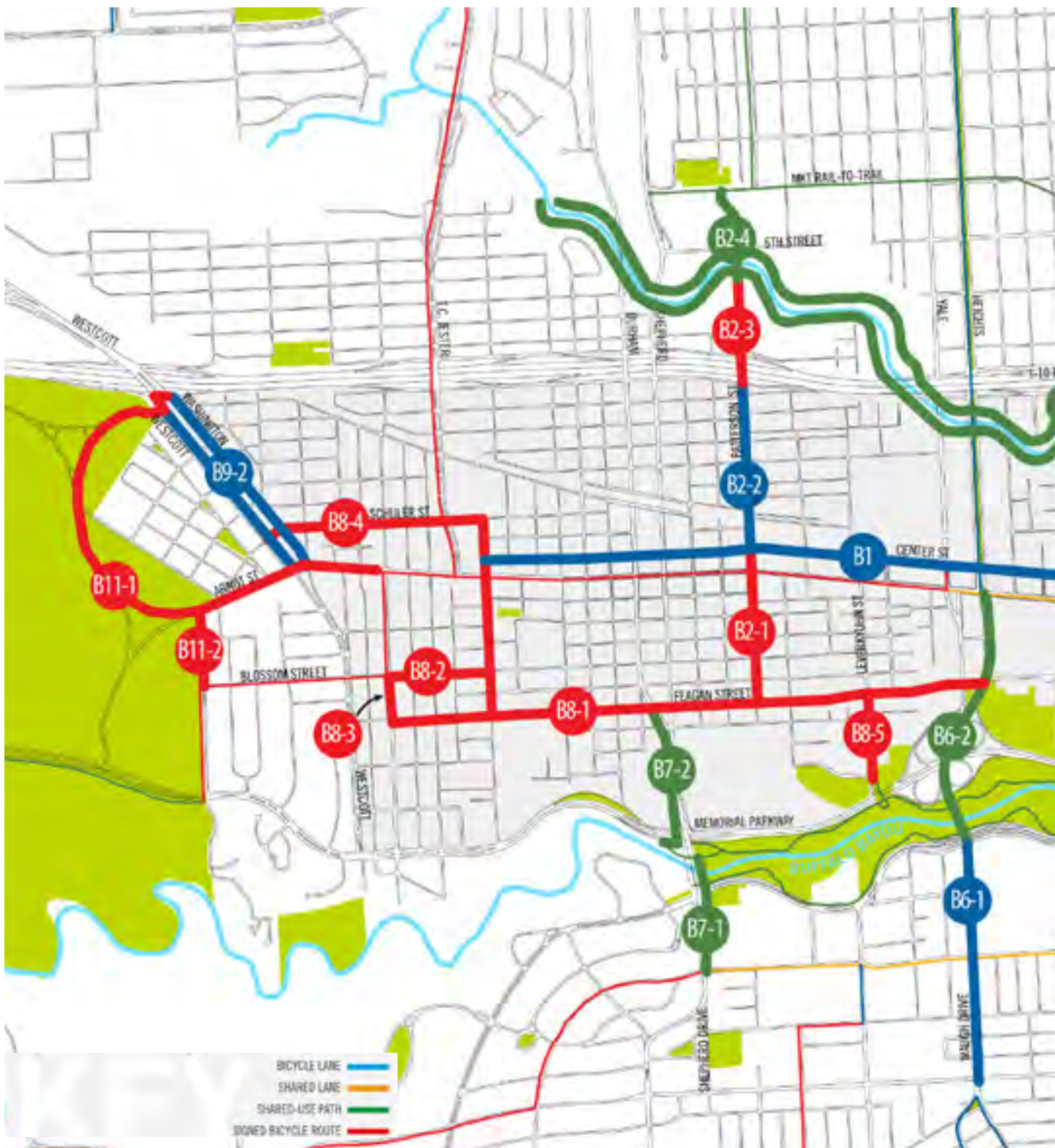
\*see Appendix 2 of the City of Houston Infrastructure Design Manual

- B8 – 4: Signed bike route along Schuler Street & Detering Street between Westcott Street & Memorial Drive.
- B8 – 5: Signed bike route on Jackson Hill Street between Scotland Street & Feagan Street.

### B9 – Washington Avenue Bicycle Lanes

This facility would, along with Center Street, provide the main east-west bicycle facility for the neighborhood, providing bicycle access to many of the study area’s main destinations.

- B9 – 1: Separated on-way bike path on Preston Street.
- B9 – 2: Bike Lanes on Washington and Westcott north of the roundabout to I-10.



### B10 – White Oak Bayou Trails

These facilities would improve access to White Oak Bayou and add to the trail facilities already under construction on the north side of the bayou. Special attention should be paid to connecting the trail to the MKT trail and to Heights Boulevard.

### B11 – Memorial Park Connections

These proposed signed bike routes would provide guidance and direction to cyclists accessing Memorial Park via other proposed bicycle facilities in the study area.

- B11 – 1: Signed Bicycle Route on Memorial Loop Drive and Arnot Street between Washington Avenue on the north and the Washington at Westcott Roundabout on the south



- B11 – 2: Signed Bicycle Route on Crestwood Drive between Arnot Street and Blossom Street, connecting to the existing signed bike routes on Blossom Street and Crestwood Drive south of Blossom Street.

### B12 – Lubbock Street Signed Bicycle Routes

These facilities would connect the Sixth Ward to the City Court Area and to two major gateways to the Theater District, including a connection to the new Green and Purple Light Rail Lines.

- B12 – 1: Signed Bicycle Route from Silver Street to Preston Street
- B12 – 2: Signed Bicycle Route on Reisner Street from Lubbock Street connecting to the Rusk Street Bridge and the Buffalo Bayou Trail.

### B13 – Bikeshare Network Expansion

Houston’s bike share system, Houston B-Cycle, opened a pilot with three stations in Downtown Houston in 2012, two that are located within a close bicycling distance to the study area –Market Square and City Hall (identified as C and B in the map below), and the third at Discovery Green Park (A) in the southeast corner of Downtown.

Additional stations cost roughly \$30,000, and extensions into the study area should prioritize Buffalo Bayou Park, the MKT Trail and connections to transit downtown. Potential locations listed below suggest bike stations that serve for both recreational and transportation use:

- 1 **Study Area Node 3:** Site redevelopment can prioritize walkability and bicycle-friendly roadways with a centralized bike station connection to the proposed Green/Purple light rail line and Buffalo Bayou.
- 2 **Buffalo Bayou East:** Demand for a bike station may be seen from the locations adjacency to Sabine Street lofts, Lee & Joe Jamail Skatepark, and Downtown that connect to the Buffalo Bayou trails.
- 3 **Bridge at Studemont:** A B-Cycle station at the existing pedestrian and bicycle bridge along the Buffalo Bayou Trail and Allen Parkway would connect residents of multi-family to the north and south.
- 4 **Bridge at Jackson Hill:** The previously proposed pedestrian and bicycle bridge would cross Buffalo Bayou, providing greater connecteion to Waugh Drive. A bike station would allow area residents to travel the length of



the Buffalo Bayou Trail to Downtown stations.

- 5 **Target Shopping Center:** The Target shopping center has spurred increased development, along the MKT Trail, but this popular commercial destination could be improved by decreasing automobile traffic with the introduction of a bikeshare station.
- 6 **Studemont & Washington:** This central bike station could serve adjacent multi-family complexes to access the bayous to the north and south, and commercial establishments along Washington Avenue.
- 7 **Studemont & White Oak Bayou:** A station at this intersection would connect residents north of the study area to the White Oak Bayou & MKT trail into downtown, and the proposed Studemont bike lane to the Buffalo Bayou trail.
- 8 **Heights & Washington:** This station would be a popular destination for bikeshare users who could easily access the point from the proposed Heights bike lanes, which would also be connected to the MKT, White Oak Bayou and Buffalo Bayou trails.

9 **Triangle Park:** Triangle Park was the location for the highly successful Better Block event this May that attracted visitors to existing venues, such as Liberty Station, and the featured amenities. The development of this site would allow residents to access the length of Washington Avenue from this neighborhood destination.

10 **Houston & MKT:** This station would serve as a connection point between station 1 (Study Area 3), 5 (Target Shopping Center), and the existing bikeshare stations downtown, accessible off of the MKT trail.

11 **Whole Foods:** This station would connect study area residents to the Whole Foods grocery store, as well as attract Montrose residents north into the Washington Avenue study area and its network of bikeshare stations.

### Bicycle Parking

Bicycle parking should be incorporated into commercial and mixed-use developments to promote walkable destinations that are supported by multi-modal street networks. Strategies for using bicycle parking as an incentive to reduce off-street automobile parking spaces are discussed further in Recommendation 5: Comprehensive Parking.

## PRECEDENT: BICYCLE BOULEVARDS

In the long term, Center Street (B1) has the potential to become an excellent Bicycle Boulevard, a street that prioritizes bicycle traffic over automotive. Streets selected for bicycle boulevards usually run parallel to major thoroughfares.

Bicycle Boulevards have become popular in many northwestern cities, including Minneapolis, St. Paul, Portland, Seattle, and Vancouver. Although vehicular traffic is allowed on bicycle boulevards, through traffic is often restricted by physical barriers and traffic calming measures are taken to reduce design speed to under 25 miles per hour for vehicles.



*bike boulevards create safe priority streets for cyclists*



*although open to cars, bike blvds often restrict through traffic*

# PARKING MANAGEMENT



Put into place parking requirements and management strategies that incrementally reduce the amount of surface parking in the community to improve aesthetic value and encourage non-automotive trips

PROJECT GOALS:  1  2  3  4  5

LIVABILITY PRINCIPLES:  1  2  3  4  5  6

POSSIBLE PARTNERS: COH PD, COH PARKING, MANAGEMENT DISTRICT, PRIVATE DEVELOPERS

POSSIBLE FUNDING SOURCES: N/A

Parking has been identified as a major quality of life issue for residents of Washington Avenue with no easy solution, especially when considered through a comprehensive lens. In many cases, potential goals and solutions for the issues of parking are at odds with other goals. For example, raising off-street requirements for nightclubs to prevent parking on neighborhood streets during weekend nights is at odds with the goal of providing walkable urbanism on Washington Avenue, as it increases distances and leaves spaces vacant much of the week. As such, it is important to identify the goals that are the most important to the neighborhood overall, and to move toward those goals in incremental steps. Parking is currently managed through Chapter 26 of the City Code.

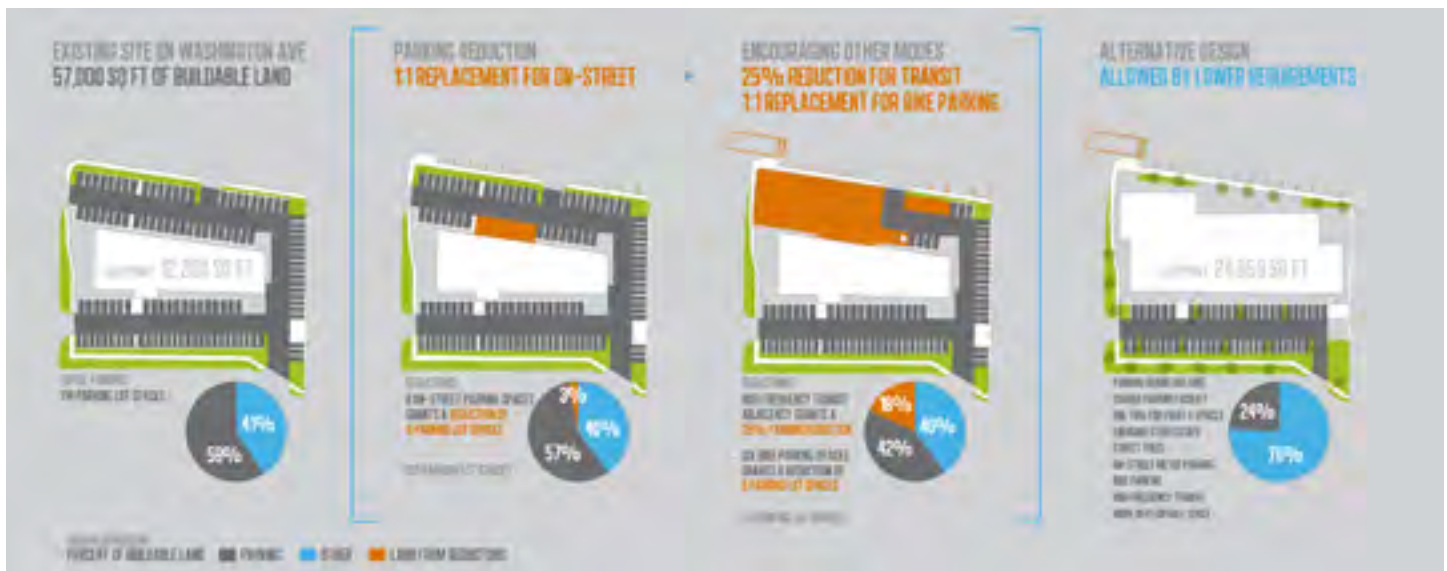
This recommendation covers a large tool kit of potential regulatory, infrastructural and programmatic parking solutions that may be implementable by the City of Houston, a management entity (see **Recommendation 2**) and individual developers. In each case, a supportive regulatory environment will be required.

Based on conversations with stakeholders and community

members and the overall goals developed for this plan, we recommend specific improvements to better tailor the amount of parking available in the study area in order to promote increased non-automotive trips, improved economic competitiveness and additional mixed use development. Over time, overall reductions in the amount of parking in the study area need to be undertaken in conjunction with improved transit service (Recommendation 3) and improved bicycle facilities (Recommendation 4). Centralized parking structures that serve a number of blocks rather than surface parking adjacent to each building is desirable. An overall goal of eliminating all surface parking for non-residential uses in the community within 30 years is desirable. This elimination will have positive impacts on land values and create significant new development opportunities over time.

## RESEARCH AND CERTIFICATIONS

In recent years, parking has become an increasing subject of research and programs. These recommendations were developed using programs such as the US Green Building Council's LEED ND, the GreenTrip (Traffic Reduction and





Innovative Parking) Certification available for developers in California, and by research such as Donald Shoup's *The High Cost of Free Parking* (2005) and Eran Ben-Joseph's *Rethinking a Lot* (2012) and other best practice examples from other cities.

## LEED ND Parking Requirements

Among the various certification programs available in the United States, LEED ND (Neighborhood Development) is easily the most recognizable and accepted. The LEED ND parking credit (entitled Reduced Parking Footprint) is extremely restrictive compared to the existing City of Houston Requirements. Although a laudable long term goal, incremental moves towards the significantly reduced parking will serve to create an increasingly attractive walkable, bikable and transit friendly community. The following are the requirements for the LEED ND credit:

- “For new nonresidential buildings and multiunit residential... either do not build new off-street parking lots, or locate all new off-street parking lots at the side or rear of buildings...”
- “Use no more than 20% of the total development footprint area for all new off-street surface parking facilities, with no individual surface parking lots larger than 2 acres.”
- “Provide Bicycle Parking” (see more about bicycle parking below)

## COH PARKING MANAGEMENT STRATEGIES

As stated in the existing conditions chapter, the City of Houston has created two new management strategies for activity zones within the city that provide tools that will allow Washington Avenue to reach its parking goals, especially when layered with other parking management strategies.

### Parking Benefit District

Washington Avenue will serve as the City's trial for the new Parking Benefit Districts.

#### Variable Rate Meters

The benefit district will add new parking meters to Washington Avenue; revenue will be reinvested in the community for off-street parking or streetscape improvements.

The City of Houston has been making efforts to streamline public parking Downtown with solar-electric parking meters, operational with a new cellphone payment system. Building on this technology, Washington Avenue can feature variable

rate meters that adjust hourly rates according to supply and demand. Variable Rate Meters, such as those currently in use in San Francisco, adjust their rates based on the market availability of parking and may be different from block to block. Research has shown that significant cause of traffic congestion in an urban area is drivers searching for parking. According to Donald Shoup, prices should fluctuate to produce blocks that are 85% full at all times. Under this situation, street use is not priced so expensively that no one uses off street spaces but also creates a situation where there are always available spaces on each block. During times of small demand, costs may be reduced to zero. During times of peak demand, such as weekend nights, prices would rise, producing additional revenue for the community.

#### Valet Parking and Residential Streets

One major regulatory change that would significantly improve quality of life for residents of the corridor would be to require valets to park vehicles only in off-street lots. Under the current regulatory environment, valets park cars on neighborhood streets in order to maximize the number of spots available in off-street lots (for which they also charge).

### Parking Management District

A second management strategy under consideration at the City of Houston is that of Parking Management Districts. Based on a current ordinance that allows managed districts with significant concentration of jobs to create their own parking requirements, as is currently done in the Texas Medical Center and Downtown (which has no parking requirements). The new ordinance would take into account residents and other activities in addition to jobs, allowing other “major activity zones” in the City to manage their own parking strategies, though this will require a Management Entity to oversee (see Recommendation 12).

To avoid “shocks” to the system and allow developers to adjust to the new regulatory environment, a incremental policy of change will move toward significantly reduced parking requirements over time. This policy will also allow constant reevaluation to insure that the parking strategies are working as desired. The first stage will retain the current city standards, but change regulations regarding positioning of parking lots, landscaping and design requirements and allow for specific reductions relating to access to other modes of travel and to mixed-use development (see Recommendation 6). The second stage will replace parking minimums with parking maximums and begin to shift more parking into structured parking lots.

## Parking Management District First Phase:

### Location of Parking

In the first phase of a new parking Management District (which would last 5 to 10 years), the city parking requirements would remain in place, but with new regulations regarding urban design and new reductions based on the accessibility of non-automotive modes. This incremental strategy would allow for additional assessment of the success of new parking strategies.

Based on LEED ND Parking requirements, a regulation should be put in place encouraging new nonresidential buildings and multiunit residential to locate all new off-street parking lots at the side or rear of buildings.



*New nonresidential buildings & multiunit residential: "Either do not build new off-street parking lots, or locate all new off-street parking lots at the side or rear of buildings..." (LEED ND)*

### Landscaping and Design Requirements

For new surface parking, regulations should be put in place to improve the aesthetic and environmental qualities of the parking lots. Street Tree requirements should be raised to 1 tree per 4 or 6 parking spaces (from 1 to 10: Chapter 33-127), and all surface parking lots should be required to be fenced using branded neighborhood approved fencing options in order to preserve the street wall and improve the pedestrian realm.



### Off Street Parking Reductions

Specific reductions in the parking required should be provided in cases where non-automotive modes are being encouraged and where parking can be shared. Parking reductions should be available for developments with adjacent off street parking.

### Transit Reductions

Parking requirements should be reduced 10% to 25% for proximity to high-frequency transit. The reduction should be given in zones (for example, 25% reductions on the blocks directly adjacent to transit stops and 10% reductions for all properties within 1/4 mile of transit stops).

### Bicycle Reductions

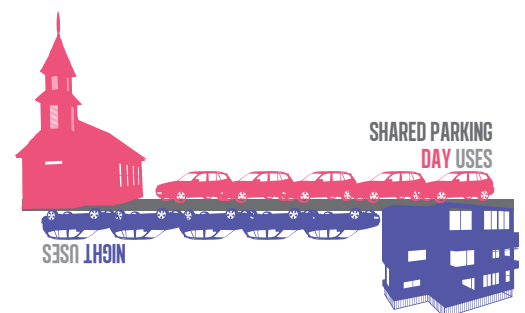
Bicycle parking provisions, as discussed on the previous page, should be provided and should trigger further reductions in required parking. The following are the requirements as set forward by LEED ND:

- **Multiunit residential:** Provide at least one secure, enclosed... space per occupant for 30% of the planned occupancy and at least 1 visitor space per 10 dwelling units.
- **Retail:** provide one secure, enclosed parking space per worker for 10% of workers and provide 1 customer parking space for 5000 sf of retail space.
- **Office:** provide one secure, enclosed parking space per worker for 10% of workers and provide 1 customer parking space for 10,000 sf of office space.

Bicycle spots should also reduce the number of required car parking spaces at a rate of 1 car space reduction per 4 or 6 bicycle parking spaces provided.

### Mixed-Use Reductions

Significant reductions should be provided for mixed use developments. Developments which are not a part of the same development should also be allowed to agree to shared parking. For example, a church that uses parking primarily on weekend days, an office building that uses parking primarily during weekday hours and a bar that uses parking primarily on weekend nights should be allowed to share parking, even if they are not a part of the same development.



## Parking Management District Second Phase:

### Parking Maximums

Once the available reductions have proved the viability of reduced parking requirements in the community, the existing parking minimums can be converted to parking maximums to guide future development in the area.

### Parking Freezes, Caps and Payment-in-Leiu

Parking caps can be a valuable tool to manage parking levels. A basic version would be to establish the number of existing off-street spaces in the community and set a cap at that number. Any new development will not add additional new spaces to the community, but rather developers will pay a fee-in-leiu of the parking spaces which can be applied by the community to collecting the same number of spaces replaced by development with off street spaces in structured parking. Over time, this method allows developers to earn a higher rate-of-return on properties previously used exclusively for parking and, over time, all surface parking lots disappear, creating a more walkable, transit-friendly community. This method has been used successfully in some Boston neighborhoods, and has, over the course of several decades, mostly eliminated surface parking in the parking districts.



Private Residences: Curb Cuts & On-street Parking

- Curb-reducing development: Side by side parking
- Option A: Linear parking
- Option B: Courtyard development

Reducing the maximum curb cut width for private residences allows space for on-street parking, which would require residents with multiple cars to park in front of one another (shown as Option A). If not required by the City, developers are unlikely to voluntarily choose this option because of consumer preference.

Option B focuses parking in a private courtyard, which increases the number of on-street parking spaces available.

## ADDITIONAL DEVELOPER DRIVEN TOOLS

### Unbundled Parking

In an unbundled parking situation, developers or building managers charge separately for housing rentals and for parking spots. In a multifamily development, renters may choose how much parking they require. While the current requirements are close to two spots per unit, these methods will allow residents to select the number of spots that they require. A couple with only one car can only take one space, people living without cars needn't take a space at all. This method can significantly reducing parking spaces required, but can also serve as a method of providing more affordable housing (in many cases, each parking spot may be between 5% to 10% of the total cost of rent in multifamily buildings).

### Car Sharing and Bike Sharing

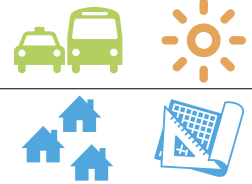
Car Sharing has become increasingly prevalent in large American cities. In many cases, either for-profit or non-profit companies will provide numerous cars with a keyless access system throughout a city or neighborhood for a yearly or monthly fee and a small per-hour charge for usage. Zipcar is among the most popular, and currently has several vehicles available at Rice University. As second case is that of private developers providing one or two cars for the exclusive use of residents of multi-family developments. Used in conjunction with unbundled parking, this can lead to significantly lower rates of car use and ownership.

Bike Sharing (as discussed in Recommendation 4) can also be provided by developers for specific developments to further reduce automobile traffic for short trips.

### Curb Cuts and Private Residences

The above recommendations relate primarily to non-single-family uses. Single-family homes still require off street parking provisions, though there may be some possibilities for slight reductions over time. While private garages are still required, the placement of parking on the lot and the amount and sizes of curb cuts could be significantly improved in residential areas. In most cases, if parking was placed in front and behind each other, rather than side by side, and curb cuts were reduced to a maximum of 8 feet for residential buildings, significant additional on-street parking would be made available and the pedestrian realm would be improved. Where possible, rear entry parking should be encouraged.

# MEMORIAL & WAUGH INTERCHANGE



Redesign the interchange between Memorial and Waugh to improve traffic flow, bicycle and pedestrian connections across Buffalo Bayou and to Spotts Park, and to create additional developable land and open space

PROJECT GOALS:  1  2  3  4  5

LIVABILITY PRINCIPLES:  1  2  3  4  5  6

POSSIBLE PARTNERS: COH PWE, HOUSTON PARKS BOARD, BUFFALO BAYOU PARTNERSHIP

POSSIBLE FUNDING SOURCES: COH CIP, COH GENERAL FUND, SALE OF DEVELOPABLE LAND

The interchange at Waugh Drive and Memorial Drive represents a major gateway to the study area, and Waugh is one of the few north-south corridors that crosses Memorial Drive, Buffalo Bayou, Washington Avenue, and IH-10. Since its opening in July 1955, the interchange of Waugh and Memorial has functioned as a clover leaf design with each of the main lanes grade separated allowing free flow movement through the intersection.

Memorial Drive is a primary east-west routes connecting into downtown Houston from River Oaks and other points west, and carries approximately 40,000 ADT. It is classified as a Principal Thoroughfare and functions as a limited-access parkway from Detering Street on the west to Bagby Street on the east as it approaches the downtown CBD. Waugh Drive is classified as a six lane Major Collector from Heights Boulevard to West Gray Street and carries approximately 22,000-28,000 ADT as it approaches the interchange. A significant portion of this traffic accesses either Memorial Drive or Allen Parkway, limiting through traffic at the interchange. South of West Gray, Waugh transitions to a Major Collector before terminating at Westheimer Road.

Adjacent land uses, including Buffalo Bayou, Spotts Park and multi-family residential properties, are significant generators of pedestrian and bicycle trips. Through traffic capacity on Waugh Drive is limited by the adjacent signalized intersections at the Allen Parkway frontage roads. The entire intersection covers approximately 23.5 acres of land with the area within the cloverleaves using approximately 16.3 of those acres.

Cloverleaf interchanges' primary advantage over typical interchange designs such as a signalized diamond interchange is that they are free-flowing and do not require the use of traffic control devices such as traffic signals and therefore have high theoretical capacity. The primary drawbacks of a cloverleaf design includes the amount of space they consume to provide safe turning radii for trucks and other



existing conditions

large vehicles, the amount a weaving that is required at the merge points, and the negative impact on pedestrians and bicyclists crossing the intersection. For many of these reasons, cloverleaf interchanges are typically designed in suburban or rural areas along interstates where space requirements and pedestrian conflicts are not significant issues.

Given that the interchange is in an urban area and the adjacent land uses include relatively high-density housing, office space and highly trafficked parks, it is recommended that the interchange of Waugh and Memorial be redesigned to better fit the context of its location. Potential interchange redesign objectives should include:

- Maintain/improve traffic operations and safety through the interchange;
- Improve pedestrian and bicycle access through the interchange;
- Improve transit service and stop locations to serve development adjacent to the interchange;
- Expand available park space and improve connectivity to Buffalo Bayou and Spotts Park ;
- Improve access to adjacent development and identify development opportunities that may support funding of an improved interchange.

While a traditional diamond intersection may be appropriate for this location, the fact that there are not continuous frontage roads that access development along Memorial Drive support more innovative approaches. Based on these objectives several options for the intersection should be considered including several innovative interchange designs specifically developed for urban environments. These include the Single Point Urban Interchange, the Double (or Pinched) Roundabout Interchange, or the Divergent Diamond Interchange.

Implementation of the interchange may be able to be funded, at least in part, by the sale of some of the land within the

current cloverleaf footprint. This location's excellent access to Downtown, Uptown/Galleria, Washington Avenue and the adjacent parks and Buffalo Bayou would potentially be a very attractive development location that would command attractive pricing for several acres that could be made available, particularly on the northwest corner of the interchange as well as directly adjacent to Spotts Park. The area in the northwest corner could also be expanded by straightening the roadway to the east of the existing alignment.

Additional engineering study will be needed to determine the most appropriate design for the interchange, based on traffic projections, safety, adjacent development, aesthetics and

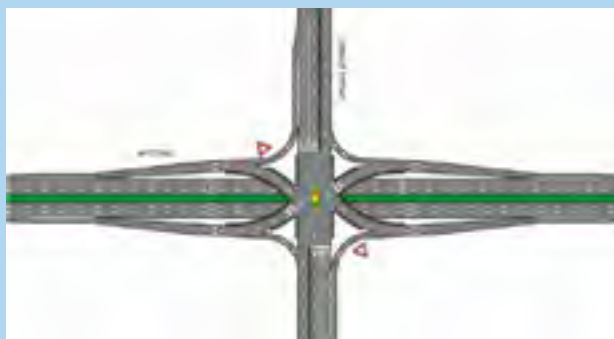
funding availability.

### **TOOLKIT: SINGLE POINT URBAN INTERCHANGE**

The Single Point Urban Interchange (SPUI) design would maintain free-flow operations on Memorial Drive, while tightening up the interchange and aligning the left turn movements to be operated concurrently without conflict. Right turns are made at unsignalized ramps separated from the main intersection. SPUIs tend to have a high capacity given the amount of space they require and therefore this would be an attractive alternative for the intersection of Memorial at Waugh. Signal timings could be coordinated with the adjacent signals at Allen Parkway to maximize capacity along Waugh Drive. While pedestrian and bicycle connectivity through the intersection would have some unprotected movements, it could be designed such that it would be significantly safer and more appealing than the current design. A SPUI design would potentially require widening of the Waugh bridge overpass, which would increase the cost of the project.

### **DOUBLE (OR PINCHED) ROUNDABOUT INTERCHANGE**

Another potential option for the interchange at Memorial at Waugh is a double roundabout or a pinched roundabout. The benefit of these designs is that they maintain the intersection as unsignalized with yield conditions on the approaches. Roundabouts also have safety benefits and allow for additional aesthetic improvements in the internal islands. Properly design roundabouts can also be successfully navigated by active transportation modes including pedestrian and bicyclists.



*St. Louis, Missouri*



*Carmel, Indiana*



## SETBACKS, BUILT FORM &amp; MIXED USE



Create a regulatory environment that supports the development of buildings and community amenities that fit within community desires and building best practices



PROJECT GOALS:  1  2  3  4  5

LIVABILITY PRINCIPLES:  1  2  3  4  5  6

POSSIBLE PARTNERS: COH PD, PRIVATE DEVELOPERS

POSSIBLE FUNDING SOURCES: N/A

The buildings along Washington Avenue are as important to the character of the street as the street itself. A street-lined with buildings feels like a defined, welcoming, textured, human scaled space. Buildings temper the elements, shade the sidewalk, and add a feeling of security. Most importantly, buildings add activity: places to live, places to work, places to eat, places to shop, places to meet. If the scale and character of the residential neighborhoods of SN22 is to be maintained, growth must be concentrated along Washington itself.

In the first public meeting, residents and other stakeholders were asked to identify which of today's buildings on Washington best meet the street. Based on this feedback, 10 key desirable characteristics were identified for the buildings along Washington. As the chart on the opposite page shows, these correlate closely to neighborhood preferences. Many also match the City of Houston's Urban Corridors Ordinance and the LEED for Neighborhood Development rating system.

Under the current regulatory environment, several of the desirable characteristics require variances for development, as Chapter 42, which regulates these characteristics applies to the entire city, not just the Washington Avenue corridor. Therefore, developers desiring to pursue variances to achieve these building types will be looked on favorably by the City of Houston.

### Building Matrix and Characteristics

The buildings represented on pages 144 and 145, illustrate a range of typical buildings along Washington Avenue. The "Public Rating" column is based on positive and negative votes by public meeting attendees; note that the buildings are sorted by public rating, with the highest rated buildings listed first. The "Characteristics rating" column represents

how many of the desirable characteristics the buildings meet, these numbers are shown in light blue and a corresponding bullet is shown when the characteristic is met. The number on the upper left of each building photograph references the building back to the votes collected from the public at the first public meeting.

### Built Form Preferences

The graphics on pages 68 and 69, in Existing Conditions, represent the voting results from a survey conducted by residents and stakeholders during the first public meeting to determine their preferences on built form. In general, neighbors preferred historic buildings the most, followed but buildings that address the street frontage closely. Buildings with large setbacks and buildings which do not face the street generally received a low rating.

Based on community feedback, we have identified 10 key desirable characteristics for the buildings along Washington.

#### 1 Pedestrian Realm

15 foot minimum pedestrian realm – combination of sidewalk and public easement widths, as discussed in Recommendation 1: Washington Avenue Right-of-Way

#### 1a Plazas and Patios

Publicly accessible walkable parks and plazas adjacent and connected to the pedestrian realm may be considered as part of the pedestrian realm.

#### 2 Building Height to Street Proportion

Minimum building height (h) to street width (w) ratio of 1:3. Height (h) should be measured to the eave or roof deck. Attempt to achieve a building height of at least 1/3 the width of the space between building facades on opposite sides of the street.

#### 3 Setbacks

The facade of the building built within 10 feet of the pedestrian realm.

The owner may build up to the property line but no closer than 15 feet from the back of curb, if the owner provides a pedestrian realm.

#### 4 Frontage Build-out

Frontage build-out of at least 80%.

#### 5 Retail

Ground floor activity

#### 6 Parking

No Parking or driveways between the facade of the building and the pedestrian realm

#### 7 Entrances

A public entrance from the building adjacent to the pedestrian realm

The facade of the building should be within 10 feet of the pedestrian realm and have doors, windows or other openings every 20 feet. No doors swinging into the pedestrian realm

#### 8 Fences

Fences built on the front property line over 4 feet in height be non-opaque for the portion exceeding 4 feet in height

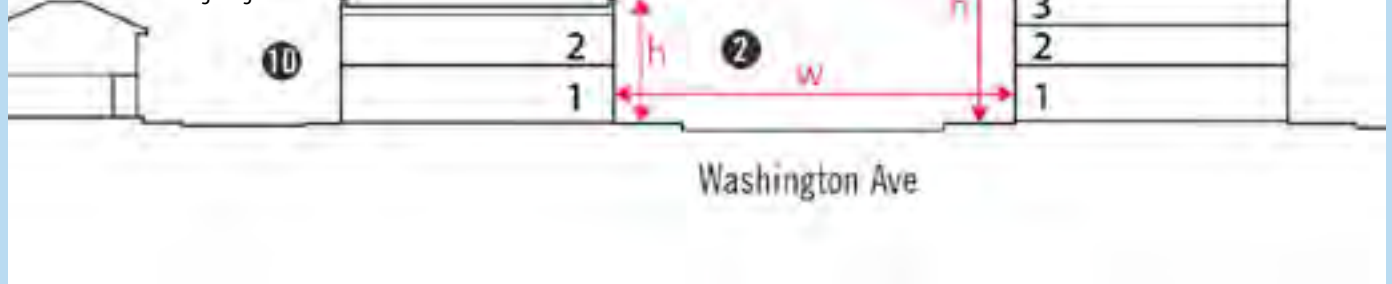
#### 9 Transparent Facades

30% of the surface of the facade between the ground and 8 feet high of buildings within 10 feet of the pedestrian realm must be transparent

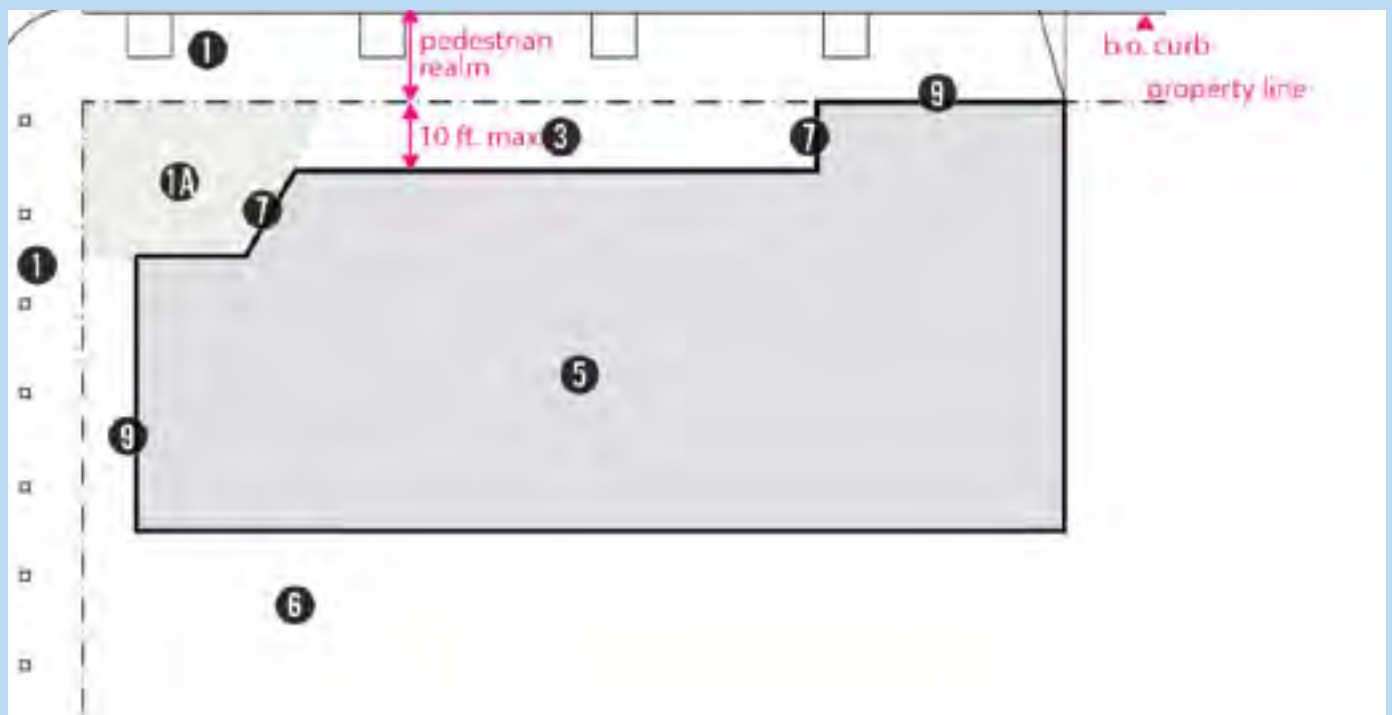
#### 10 Buffer from residential

### RECOMMENDED CHARACTERISTIC GRAPHICS

SECTION DIAGRAM: Building Heights



PLAN DIAGRAM: Building Placement and Setbacks



PUBLIC RATING	CHARACTERISTICS RATING		BUILDING HEIGHT	SETBACKS	FRONTAGE BUILDOUT	RETAIL	PARKING	BUILDING ENTRANCE	FENCES	TRANSPARENT FACADES
11	8/8		■	■	■	■	■	■	■	■
8	8/8		■	■	■	■	■	■	■	■
7	8/8		■	■	■	■	■	■	■	■
6	8/8		■	■	■	■	■	■	■	■
6	7/8		■	■	■	■	■	■	■	■
4	8/8		■	■	■	■	■	■	■	■
4	7/8		■	■	■	■	■	■	■	■
4	7/8		■	■	■	■	■	■	■	■
2	7/8		■	■	■	■	■	■	■	■
2	7/8		■	■	■	■	■	■	■	■
2	6/8		■	■	■	■	■	■	■	■
1	8/8		■	■	■	■	■	■	■	■
1	6/8		■	■	■	■	■	■	■	■





## HOUSING CHOICE



Provide and protect affordable housing options for the residents of the Washington Avenue Corridor at multiple income levels



PROJECT GOALS:  1  2  3  4  5

LIVABILITY PRINCIPLES:  1  2  3  4  5  6

POSSIBLE PARTNERS: COH HCDD, TIRZ 3, 5, 13, MANAGEMENT DISTRICT

POSSIBLE FUNDING SOURCES: FEDERAL, STATE, LOCAL, PRIVATE

The Washington corridor has seen a dramatic increase in housing demand over the last two decades, leading to higher housing prices. An area that once housed many low-income residents has only a few pockets of inexpensive housing remaining, and these are rapidly turning over. Low-moderate-income housing is defined by HUD as including families that don't exceed 80% of the median area income. Very low-income families are those that do not exceed 50% of the median area income. Historically, the Washington Avenue study has housed low-moderate-income families; this group will be the primary focus of the "Housing Mix" Recommendation.

Most of the affordable housing in the area was old single family homes; these are either being renovated into more expensive housing or replaced entirely. Their former residents are being displaced, often to inner suburban areas that do not offer the public services, transit access, or proximity to employment areas that Washington does. This is evident in the housing tenure ratios ("Residential Market Conditions - page 77) that show the significant shift over the past 60 years from greater renture tenure to greater owner-tenure. Maintaining affordable housing in the urban core is key to maintaining economic opportunities for many Houstonians. Low-cost housing is also a boon for artists, and many of these opportunities are disappearing as well.

Many cities deal with affordable housing in redeveloping neighborhoods through zoning, either by mandating an affordable component in all new construction or by offering a development bonus (more square footage or additional permissible uses) to projects that include affordable housing. Houston does not have these measures in place as there is no zoning and density bonuses aren't as much of an incentive given the surplus of land. However, there are many options available that Houston can implement such as changes to building ordinances, incentivized public-private partnerships and changes in the permitting process.

Given the increasing land values, the best prospect for affordable housing is multi-family, either in stand-alone residential complexes or as part of mixed-use developments. In some cases, scattered site single family may be possible, but this is much more suitable to neighborhoods with lower land prices. There is also demand for live/work units, particularly for artists.

Currently, the primary funding source for affordable housing in the study area is private development; much of the available rental low-income housing is aging privately owned multifamily complexes. Private developers are also investigating housing types than can accommodate live-work spaces for artists.

Over the last two decades, the area has also seen significant supplementary funding coming from federal affordable housing funds and through organizations such as Avenue Community Development Corporation. Though non-profits like Avenue CDC have been active in the area, much of their activity is shifting to other areas due to land costs. Building relationships between the City and CDCs can mitigate this effect and present greater possibilities of sustained CDC and non-profit activity in the study area.

One significant possible source of public financial support for affordable housing is publicly owned land. Where the city owns a piece of surplus property, it can include affordable housing provisions. Housing can also be combined with other facilities as vertical mixed-use; a city multi-service center, for example, could actually include housing above ground-level services. Land banking, or the acquisition of available property for future use, is also a valuable tool, but there is little low-cost land available in the area.

Affordable housing can be maintained in this area, as in other neighborhoods close to Downtown, through deliberate policy, using multiple coordinated tools. Public agencies should

consider opportunities for affordable housing in all projects implemented in the area. It is important to note that multiple approaches need to be taken in order to holistically address the issues. Components such as transportation and social services run tangentially with affordable housing, therefore, it

is imperative to keep these in consideration. The following are sets of programs, funding approaches and guidelines the City of Houston can use to drive the development and protection of affordable housing along the Washington Avenue corridor.

ACTIVE PROGRAMS WITHIN THE CITY OF HOUSTON

\* FURTHER DISCUSSED IN THE APPENDIX

FEDERAL FUNDING LEAD AGENCY	ELIGIBLE USES	PROGRAM SUMMARY
* <b>COMMUNITY DEVELOPMENT BLOCK GRANT</b> FEDERAL FUNDS – HUD (HOUSTON HOUSING & COMMUNITY DEVELOPMENT DEPARTMENT)	HOUSING ECONOMIC DEVELOPMENT	The City of Houston can apply for CDBG funds to assist in the development and preservation of affordable housing developments. These funds can also be used to pay for additional infrastructure and services that support affordable housing.
* <b>HOME INVESTMENT PARTNERSHIPS PROGRAM</b> FEDERAL FUNDS – HUD (HOUSTON HOUSING & COMMUNITY DEVELOPMENT DEPARTMENT)	HOUSING	The HOME Investment Partnerships Program is specifically geared toward affordable housing and can be applied for by the City of Houston. The grant can be used for a variety of purposes, and also has provisions for green building, which further improve affordability during the operational phase of a housing development.
* <b>LOW INCOME HOUSING TAX CREDITS</b> FEDERAL GOVERNMENT THROUGH STATE OF TEXAS	PRIVATE & NONPROFIT DEVELOPERS – RENTAL HOUSING (ALL TYPES)	The LIHTC program provides incentives for utilizing private equity for the development of low-income housing. While there are some federal regulations that must be followed, such as the amount of credits that developers can obtain, states and local agencies are responsible for regulating and setting the goals of the program. This means that local governments can add additional stipulations based on the demand of the neighborhood they are serving and the response from developers. This program is especially effective in areas that are not yet gentrified.

LOCAL FUNDING AND POLICIES LEAD AGENCY	ELIGIBLE USES	PROGRAM SUMMARY
<b>DEVELOPER “SET ASIDE”</b> HOUSTON HOUSING & COMMUNITY DEVELOPMENT DEPARTMENT	HOUSING	<p>“Developer set-aside” housing creates a public-private partnership where a developer agrees to build an integrated development, following certain stipulations laid out by the City. By providing incentives such as tax exemptions, subsidized infrastructure improvements, streamlining or waiving permits, developers can direct the resources saved into creating affordable housing units. The market-rate units within the development also contribute to offsetting the costs for subsidized housing. Mandatory inclusionary ordinances can also be imposed, requiring developers to meet the requirements for a minimum number of affordable housing units within the development. The ordinances do have to go through legislation, but developers can also be offered additional incentives such as the ones mentioned, to generate private interest. The distribution of the affordable housing units versus market-rate units can vary depending on the demand of the area. A common ratio used in mixed-income developments is 1/3 public housing, 1/3 affordable housing, and 1/3 market-rate housing. This level of affordability can be established as appropriate so some developments may not even include public housing.</p> <p>A developer can also opt out of a mandatory affordable housing requirement if he/she agrees to pay a fee that can then be used to develop affordable housing in a different area, as chosen by the City. In this case, the mandatory requirement can be imposed in a more gentrified area of the City, with the secondary location being the Washington Avenue corridor, or the mandatory requirement can be applied to the corridor, with the affordable housing developed in an adjacent area. The development of affordable housing in a secondary location, however, should avoid segregation or concentration of people in the same income bracket.</p>
<b>HOUSING TRUST FUND</b> STATE OF TEXAS (AVAILABLE TO NON-PROFITS, FOR-PROFITS, AND CITY OF HOUSTON)	GRANTS, LOANS, AND SUBSIDIES	Housing Trust Funds are more flexible financial tools that can be geared toward affordable housing development or rehabilitation. They typically come from real estate transfer taxes, accumulated interest from real estate transactions, and penalties for late or delinquent payments of real estate excise taxes. Agencies can decide how they want to appropriate money, whether as grants or loans to developers and non-profit organizations, as loans to individual homeowners, or for other services. Local agencies can also choose to direct the funds towards specific groups such as homeless individuals looking for transitional homes, or seniors in need of affordable housing. Because the funds are dependent upon existing real estate, the market needs to be thriving in order for enough revenue to be generated for fund allocation.

LOCAL FUNDING AND POLICIES LEAD AGENCY	ELIGIBLE USES	PROGRAM SUMMARY
* HOUSTON SINGLE FAMILY HOME REPAIR PROGRAM HOUSTON HOUSING & COMMUNITY DEVELOPMENT DEPARTMENT	HOME OWNERS EARNING UP TO 80% OF AREA MEDIAN INCOME	Single Family Home Repair Program (“SFHRP”) is to assist as many homeowners as possible, to address only repairs needed to alleviate threats to health, life, and safety of homeowners, to improve curb appeal, uplift the general street appearance of the City of Houston, and to keep costs at a minimum.
SPLIT-RATE TAXES HARRIS COUNTY	PROPERTY	Split-rate taxes separate taxes into lower tax rates for buildings and higher for land. This is particularly useful in areas with high vacancies, as this encourages improvement and renovations of buildings, but a disincentive for vacancy. While this strategy does not create affordable housing, it reduces vacancies which may deter further development in the neighborhood. This approach also encourages property owners to make building or home improvements without the fear of increased tax rates.
SECOND GENERATION RENT CONTROL HOUSTON HOUSING & COMMUNITY DEVELOPMENT DEPARTMENT OR “RENT CONTROL BOARD”	HOUSING	While traditional rent control methods are controversial and run the risk of landlords reducing quality of maintenance, second generation rent controls allow for incremental annual increases in rent. This ensures that landlords get a fair return on their investment. Units within a development can be market-rate or rent-controlled and provisions can be created for dealing with vacancies.
ALTERNATIVE FUNDING APPROACHES LEAD AGENCY	ELIGIBLE USES	PROGRAM SUMMARY
COMMUNITY LAND TRUST DESIGNATION BY HOUSTON HOUSING & COMMUNITY DEVELOPMENT DEPARTMENT (APPLICABLE TO NON-PROFITS)	PROPERTY	A Community Land Trust is a model for affordable housing where a non-profit group retains ownership of the land, but can sell of existing buildings and building rights to individual homeowners, other non-profit organizations, for-profit entities or governmental agencies. The CLT has a long-term lease on the land, ensuring affordability. CLT Boards are mostly comprised of members that live on the property and are bound to maintain a level of affordability. The non-profit also has the option to buy any part of the property that an owner wants to sell, thereby always having control over the transfer of ownership. The CLT maintains an interest on the uses of the property and requires that owners comply with the requirements of the Board, developed through a voting process.
HOUSING COOPERATIVE (LIMITED EQUITY) HOUSTON HOUSING & COMMUNITY DEVELOPMENT DEPARTMENT (APPLICABLE TO NON-PROFITS)	HOUSING	A housing cooperative, in particular a limited-equity cooperative is a member-based legal entity in which members pool their resources together and share ownership of the building/development. A limited equity co-op maintains affordability by limiting the purchase price and appreciation rate of a share. The housing cooperative essentially serves as the landlord and decisions of who moves in and that management of property requires the consensus of the members (residents). Though many co-ops become non-profit organizations, governmental agencies can assist with financing, by providing similar or additional subsidies than those offered to private developers for mixed-income developments.
CITY OWNED PROPERTY HOUSTON HOUSING & COMMUNITY DEVELOPMENT DEPARTMENT	HOUSING	Depending on the location and condition of the property, many vacant properties hold great potential for affordable housing. Vacancy may be due to owners land banking for future appreciation or simply not being able to afford development on the properties. For properties that are developed, but have vacant buildings on them, the landlord may find it difficult to lease the spaces. In any case, vacancies have an impact on neighboring property values and can deter further development in the area. The City can consider buying out land that remains vacant for an extended period of time. In some cases, the cost of the land may be lower than market-rate, making it more suitable for affordable housing. The City can then resell the land to a private developer for a less-than-market-rate price, under the condition that the developer will allocate a certain percentage of the units to affordable housing. Further subsidies and tax credits can then be applied as appropriate. The development could potentially increase neighboring land values, as well as generate further development, increasing the tax base for the City.
* HOMEOWNERSHIP EXPANSION HOUSTON HOUSING & COMMUNITY DEVELOPMENT DEPARTMENT	HOMEBUYERS 80% AMI OR BELOW	In addition to creating provisions for the development and retention of affordable housing, services are also needed that encourage homeownership and maintenance of finances. This can be achieved through a supply-side approach or a demand-side approach. From a supply-side approach, assistance is provided with the production, rehabilitation, and improvement of housing units. Developments that start off as rental units can then transition towards homeownership through a co-op model or traditional ownership.

DESIGN AND REGULATORY GUIDELINES LEAD AGENCY	ELIGIBLE USES	PROGRAM SUMMARY
<b>TRANSIT-ORIENTED DEVELOPMENTS</b> HOUSTON PLANNING AND DEVELOPMENT DEPARTMENT (APPLICABLE TO DEVELOPERS)	HOUSING	<p>A key component of affordable housing that often gets overlooked is access to transportation. While housing is considered affordable if its cost makes up less than 30% of a household's income, than affordable housing and transportation should make up less than 45%. As proposed in Recommendation 3, High Frequency Transit, if the Washington Avenue corridor sees greater transportation investment over the coming years, it will be an ideal place for transit-oriented affordable housing. With access to other parts of the city, thus jobs and services, the burden of transportation will be significantly reduced. Transit-oriented and mixed-use developments should be encouraged that holistically address urban issues.</p> <p>The introduction of greater mass transit also tends to attract a greater number of market-rate residents, often resulting in gentrification and reduced affordability. In order to mitigate this, the City can have precautionary provisions laid out to include affordable housing as a part of the spurred development. This can occur in the form of land trusts, rent control parameters, or stipulations in public-private partnerships.</p>
<b>PARKING REDUCTION</b> HOUSTON PLANNING AND DEVELOPMENT DEPARTMENT WITH HOUSTON PARKING MANAGEMENT DIVISION	PARKING	<p>Reducing parking requirements has many indirect benefits, one of them being that the less land is required for the development of residential units, thus reducing the initial costs for a developer. With the loosening of parking requirements, future maintenance of property costs are also lowered, as there is less land to maintain. Furthermore, the developer can put the money saved towards additional housing units, increasing density of the development, and allowing for more affordable units, without losing a return on investment.</p>
* <b>LIVE/WORK SPACES</b> HOUSTON BUILDING CODE ENFORCEMENT (APPLICABLE TO DEVELOPERS)	HOUSING	<p>With many warehouse structures that have been or will be turning over in the coming decades, the Washington Avenue corridor and adjacent areas are conducive to a variety of live/work spaces. The presence of a growing number of artisan spaces make this housing type appropriate for the area. Many of the homes in the area already double as office spaces. Live/work spaces in themselves are not necessarily affordable housing units, but reduce the need for additional studio/office space that would cost more money.</p>
<b>GREEN DESIGN</b> HOUSTON PLANNING AND DEVELOPMENT DEPARTMENT WITH HOUSTON BUILDING CODE ENFORCEMENT (APPLICABLE TO DEVELOPERS)	HOUSING	<p>When considering the development of affordable housing, post-occupancy and operational costs are often overlooked. These costs can be significantly reduced if proper measures are taken in the design and planning phases. Developers, planners, owners/landlords, and designers can be encouraged to employ sustainable measures to reduce operational costs, while also improving the health and quality of life for residents, and maintaining future affordability. This can be done by offering incentives such as subsidies for "green" designs or an expedited permitting process. attract more market-rate customers. If the Washington Avenue corridor and adjacent nodes are intended to serve and retain artists in the area, then the spaces need to reflect that. While landlords cannot be discriminatory when finding tenants, "preferred tenants" can be sought out or marketed to so that the spaces attract the residents they are designed for. Furthermore, the City can allocate subsidies to developers that design spaces specifically as live/work spaces, assuming the designs fit the intended purposes.</p>

## PROPOSED GOALS FOR THE CITY OF HOUSTON HOUSING DEPT WITHIN THE STUDY AREA

1. **Build partnerships** with private equities, CDCs and non-profits to manage the development, preservation, and maintenance of affordable housing developments.
2. **Establish a trust fund or subsidy structure** to encourage and assist in the development and retention of affordable housing.
3. **Revise ordinances** that hinder the development and maintenance of affordable housing (i.e building codes, parking requirements). **Adopt additional ordinances** that support a variety of housing types (i.e. live/work ordinances, green design requirements such as LEED).
4. Limit future displacement by **establishing inclusionary parameters** that ensure space for affordable housing. These can be achieved through land trusts and rent control ordinances.
5. **Develop social services and programming** that assists residents in maintaining a steady financial structure and transitioning from rental to homeownership, as appropriate.

## STORMWATER MANAGEMENT



Develop stormwater management strategies that protect the community from storm events while also providing mobility options and creating an aesthetically pleasing environment



PROJECT GOALS:  1  2  3  4  5

LIVABILITY PRINCIPLES:  1  2  3  4  5  6

POSSIBLE PARTNERS: MANAGEMENT DISTRICT, COH PWE, COH PDD

POSSIBLE FUNDING SOURCES: REBUILD HOUSTON, MANAGEMENT DISTRICT, TIRZ

The City of Houston receives an average rainfall of nearly 48 inches annually, some times in high-intensity storm events. In combination with clay soils and large areas of impervious surfaces, such as rooftops, roadways and parking lots - large quantities of water are often discharged into the bayous, largely untreated. This stormwater contains pollutants and can cause downstream flooding. There are simple and effective ways that the storm water can be handled on a localized basis to improve the water quality, slow the flow rate, and reduce the surge of water entering the bayous.

While most people are aware of localized flooding issues around their home, many do not consider the larger 'downstream' issues in the community. One of largest problems with conventional stormwater management is that it is treated as a 'waste product' rather than a resource, and is disposed of quickly through the concrete-lined channels of the bayous. However, if the majority of property owners would incorporate simple, low-cost interventions to capture rain water in conjunction with larger public regional systems, positive environmental benefits and flood mitigation could be achieved in our shared open space environment. With approximately 80% of the study area being residential land uses, using a combination of incentives and regulatory measures will go a long way to achieve these goals.

While the stormwater strategies for the Washington Avenue corridor will likely be more urban in nature vs. the surrounding neighborhood streets, all forms of alternative storm water management used in combination will be important to affect positive change. Several practices are identified below that can help to slow the stormwater down, increase permeability and clean the water before it enters the natural drainage ways. Some of these solutions are more relevant for the public realm (Street Right-of-Way in accordance with Chapter 33) while others can be used for private property, but many of these strategies can be used in combination to achieve the most effective results. The costs vary by application, but most are quite reasonable in today's market. In many cases costs may be less than conventional storm drainage. The creation of a management district (**Recommendation 2**) would support street right-of-way solutions for proper maintenance. In most cases, suggested improvements would require an entity other than the City of Houston to maintain and several items, including Plastic Cell Pavers, Turf Blocks are not currently allowed in public right-of-way.



### Rain Gardens

Rain gardens are micro-scale storm water basins with deep-rooted plants which capture runoff before it enters storm sewers or the bayous, generally without drainage pipes. Native plant species are the best choice for low maintenance costs and are often most successful when planted around natural drainage flows (low-lying street edges and parking lots, low parts of property, areas fed by down-spouts, etc). They may be particularly appealing within the residential corridors adjacent to Washington Avenue, especially where drainage ditches tend to minimize walking surfaces.



### **Bio-Swales**

These linear forms of bio-retention are popular for treating water quality using microbes, improving flood control, and increasing infiltration and groundwater recharge from storm water runoff. As vegetated swales, they help to filter pollutants from the water and reduce the quantity of water leaving the site, as opposed to rain gardens, they usually have underground perforated drainage pipe. Parking lots, sidewalk edges and street medians are favorable applications. The Washington Avenue corridor as well as the major cross streets are preferred locations for these facilities.



### **Trench Drains**

This solution is most appropriate along the Washington Avenue corridor in places where the desire is to maximize the sidewalk area between the face of the building and the curb for pedestrians, outdoor cafes, sidewalk sales, etc. Trench drains can be located near the top of curb on the sidewalk, but are best placed between the driving and parking lanes to replace typical curb inlets as a more attractive solution.



### **Street Trees / Urban Forest Cover**

In addition to adding to the beauty of urban thoroughfares, street trees contribute to reduced traffic speeds, create safer walking environments, increase security and further separate motorists from pedestrians when used in combination with planting strips and planter pits. Considering the subtropical climate of Houston, urban trees provide shade to mitigate the urban heat island effect, hold rain water on their leaves and can absorb as much as 30% of precipitation around their roots.



### **Plastic Cell Pavers**

These grass paver systems are available as 100% recycled content and are ground reinforcement grids that can be filled with either a gravel or grass finish. These systems are ideal for low traffic use areas such as driveways or parking spaces. They can take the full weight of vehicles while reducing storm water runoff, improving permeability and improving water quality by trapping suspended solids.



### **Turf Block**

Houston's compacted clay soils make storm water permeability difficult - including filtering pollutants before being discharged into the bayous and minimizing erosion. The turf block system can mitigate some of these issues and is similar to the plastic cell paver, however, it holds more weight for fire trucks and tractor trailers. This system is ideal for alleys, fire lanes, parking stalls and delivery / dock areas. In some Houston applications, it has been found difficult to maintain turf within these systems.



### **Permeable Pavement**

For high-use pedestrian, bicycle and vehicle paths, vegetated cell pavers do not perform as well. In these areas, the use of permeable pavement can be used in lieu of conventional impervious asphalt and concrete. Another permeable product is ‘decomposed granite’ (DG) or other similar crushed rock set on a sub-base excellent for walking and running paths. New permeable concrete and permeable asphalt products are also available for higher-volume vehicular traffic areas and also provide a safety benefit of reducing standing water.



### **Retention Basins or “Wet Ponds”**

These basins are popular water features which can also accommodate and ‘retain’ large amounts of storm water and reduce sediment loads. They enhance the natural aesthetic value in neighborhood parks and small spaces. If implemented and connected properly, a series of these basins can help to reduce additional discharge into the bayous and lessen flooding impacts.



### **Dry Detention Basins**

Different from wet ponds, these basins are normally dry, and only fill up during storm events when extra capacity is needed. Their function is to slow the water before it enters the natural drainage channels. This allows more time for the basin and channels to drain slowly, and for some of the sediments and pollutants to settle out. The current practice is to plant trees in these basins for added water absorption.



### **Neighborhood Detention**

As noted throughout this section of the report, storm water detention can occur at multiple scales and types. Detention basins (as shown above) are good for new development and existing neighborhoods where land can be made available. An alternative for the Washington Avenue Study Area is to provide smaller neighborhood detention facilities on a more frequent basis, incorporated into park spaces.



### **Roadside Swales**

These open ditches are very common throughout the study area, particularly along the many narrow residential thoroughfares. While they can be a nuisance to accommodate parallel parking along the street, the water storage capacity of these swales in many cases exceeds storm sewers, which are limited in size. These vegetated swales also provide some percolation into the soil and slow flow rate.





### **Underground Storage**

In areas of large impervious surfaces, another solution is to detain water underground. This is particularly effective under parking lots where an area is excavated and a series of large pipes are installed to receive storm water from rooftops and the paved areas. In addition to increasing developable space, these storage facilities can be more cost effective than purchasing additional land for much larger surface basins.



### **Soil Permeability / Enhancement**

As previously noted, our local soils do not absorb much storm water. However, by introducing soil remediation strategies that add more sand and organic matter to the clay-rich soils, the amount of water that can percolate through it and be held increases. In addition, using deep-rooted native prairie plants instead of shallow-rooted turf grass will also increase water uptake, increase soil stability and decrease erosion.



### **Vegetated Roofs**

The application of “green roofs” should be encouraged as much as possible, particularly buildings with flat roofs. They can be designed as a part of new construction as well as added to existing buildings with minimal effort. They can be ‘extensive’ with shallow soil and modular tray systems or as ‘intensive’ with deeper soils and more plant choices. All systems provide better roof life, added insulation and low maintenance in addition to slowing and filtering rain water.



### **Rain Barrels / Cisterns**

Another localized solution, rainwater storage in barrels or cisterns provide small-scale solutions for the re-use of storm water for both public and private functions such as irrigation and indoor non-potable uses such as toilet flushing. Practices like this will be increasingly important for the future of Houston's efforts toward water conservation and alternative water sources.

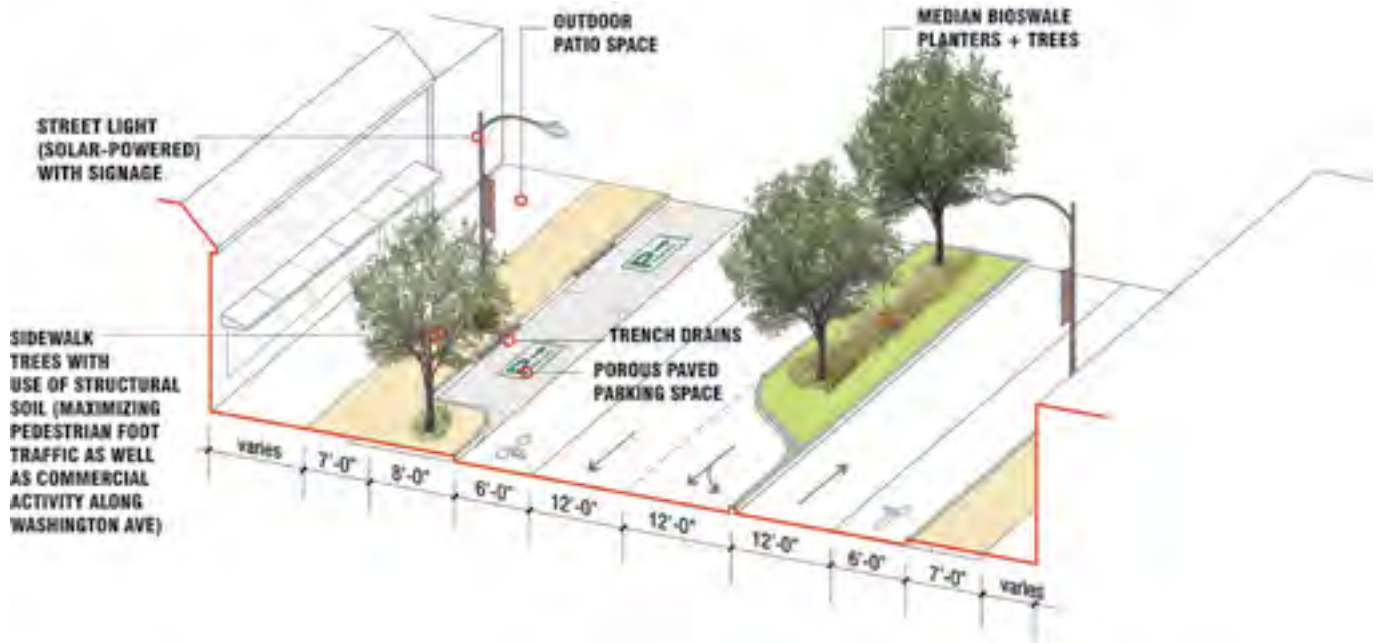


### **Planters**

Above ground planters can be tasteful accents to storefronts, restaurants and cafes along Washington Avenue as well as curb extensions and medians as a part of the “green streets” initiative. The plants can add color and texture to the urban fabric and be a subtle divider between pedestrian and semi-private spaces. The planters can be irrigated with recycled rain water where possible.

# 1 MAJOR STREETS TYPICAL SECTION

70'-0" ROW



# 3 SECONDARY STREETS TYPICAL SECTION

54'-0" ROW



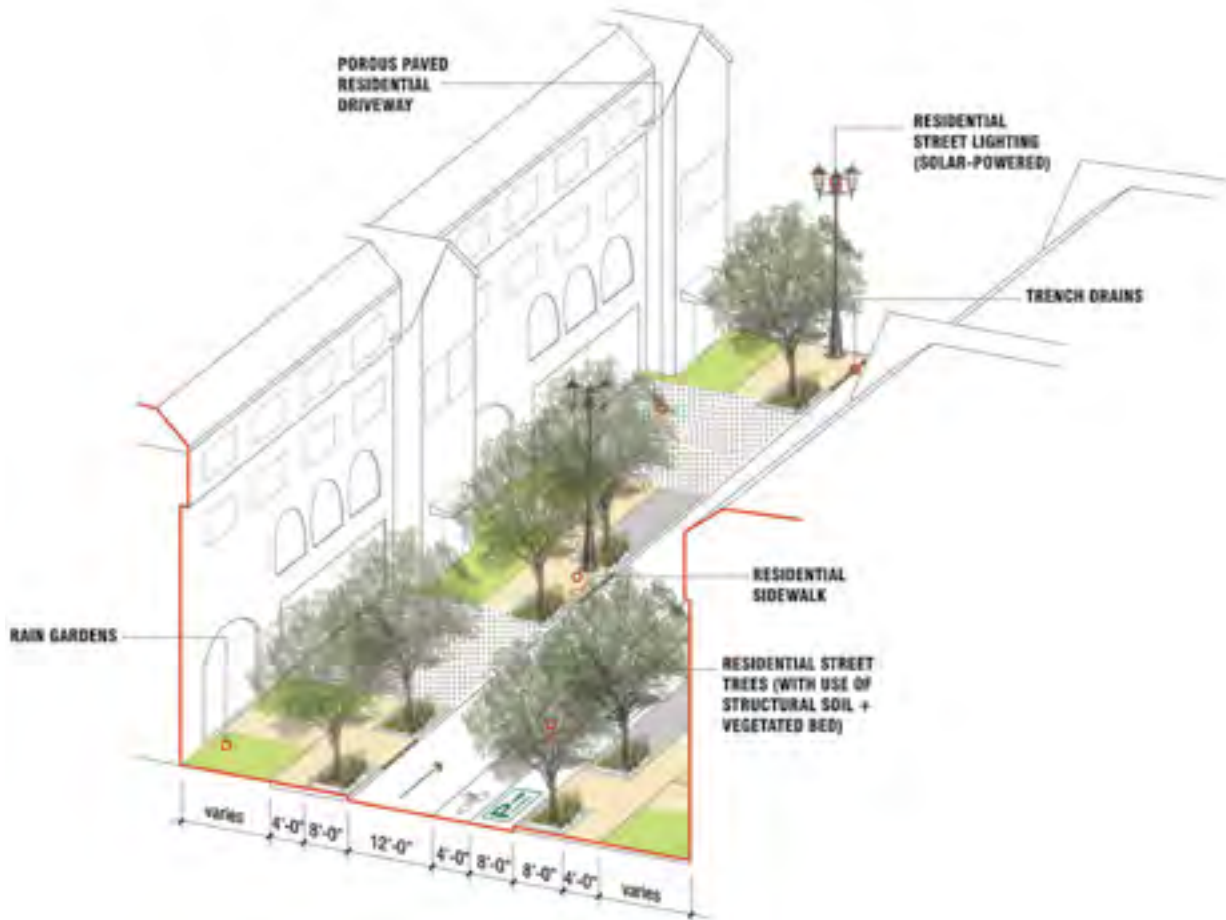
## 2 MAJOR CROSS-STREETS TYPICAL SECTION

55'-0" ROW



## 4 PRIVATE RESIDENTIAL STREETS TYPICAL SECTION

48'-0" ROW



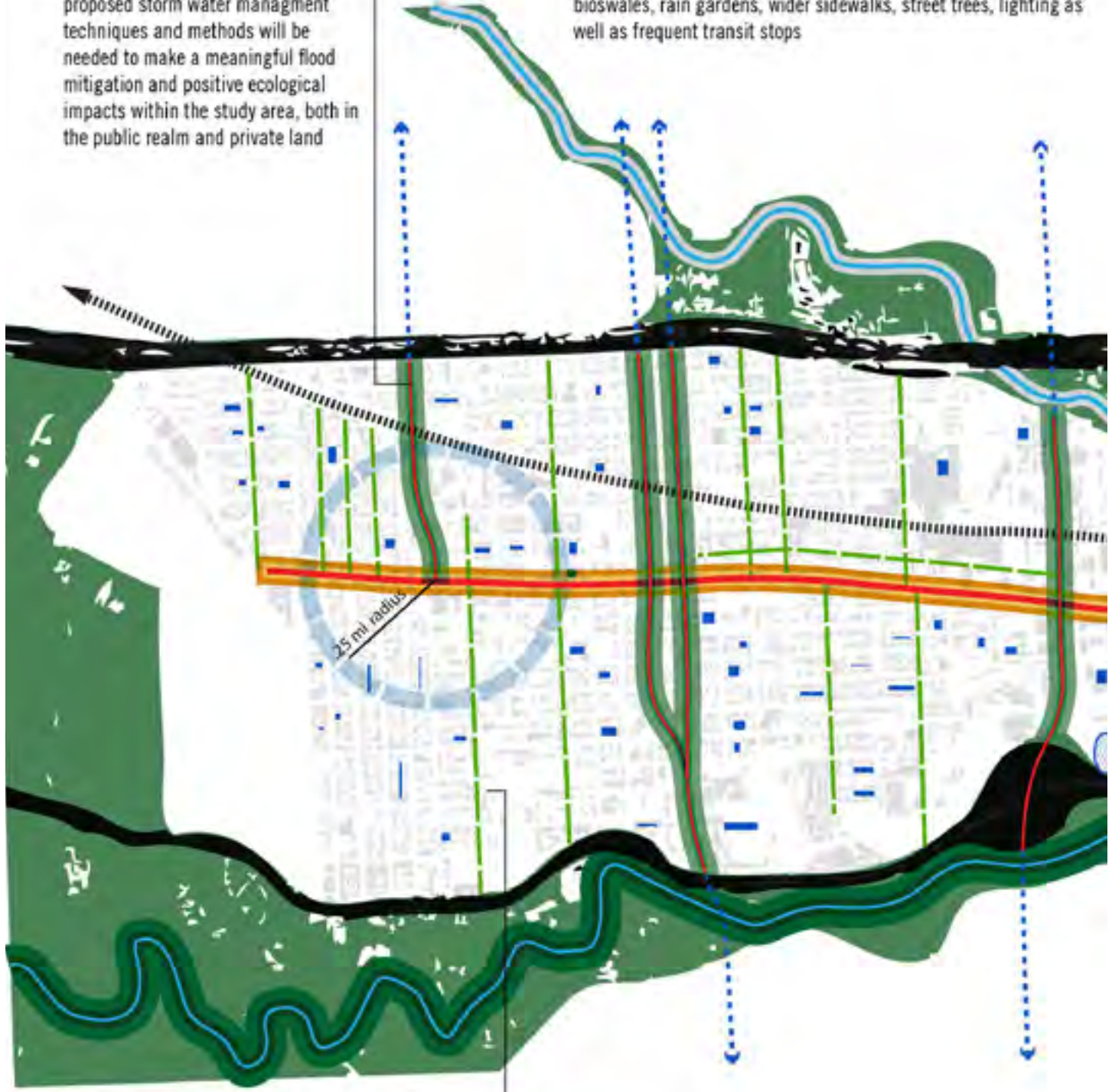
# CONCEPTUAL STORM WATER MANAGEMENT APPROACH\*

## AN INTEGRATED STRATEGY

Ultimately, a wide variety of the proposed storm water management techniques and methods will be needed to make a meaningful flood mitigation and positive ecological impacts within the study area, both in the public realm and private land

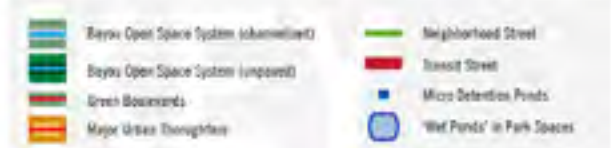
## GREEN BOULEVARDS

Major cross streets at Washington Avenue which include bioswales, rain gardens, wider sidewalks, street trees, lighting as well as frequent transit stops



## NEIGHBORHOOD STREETS

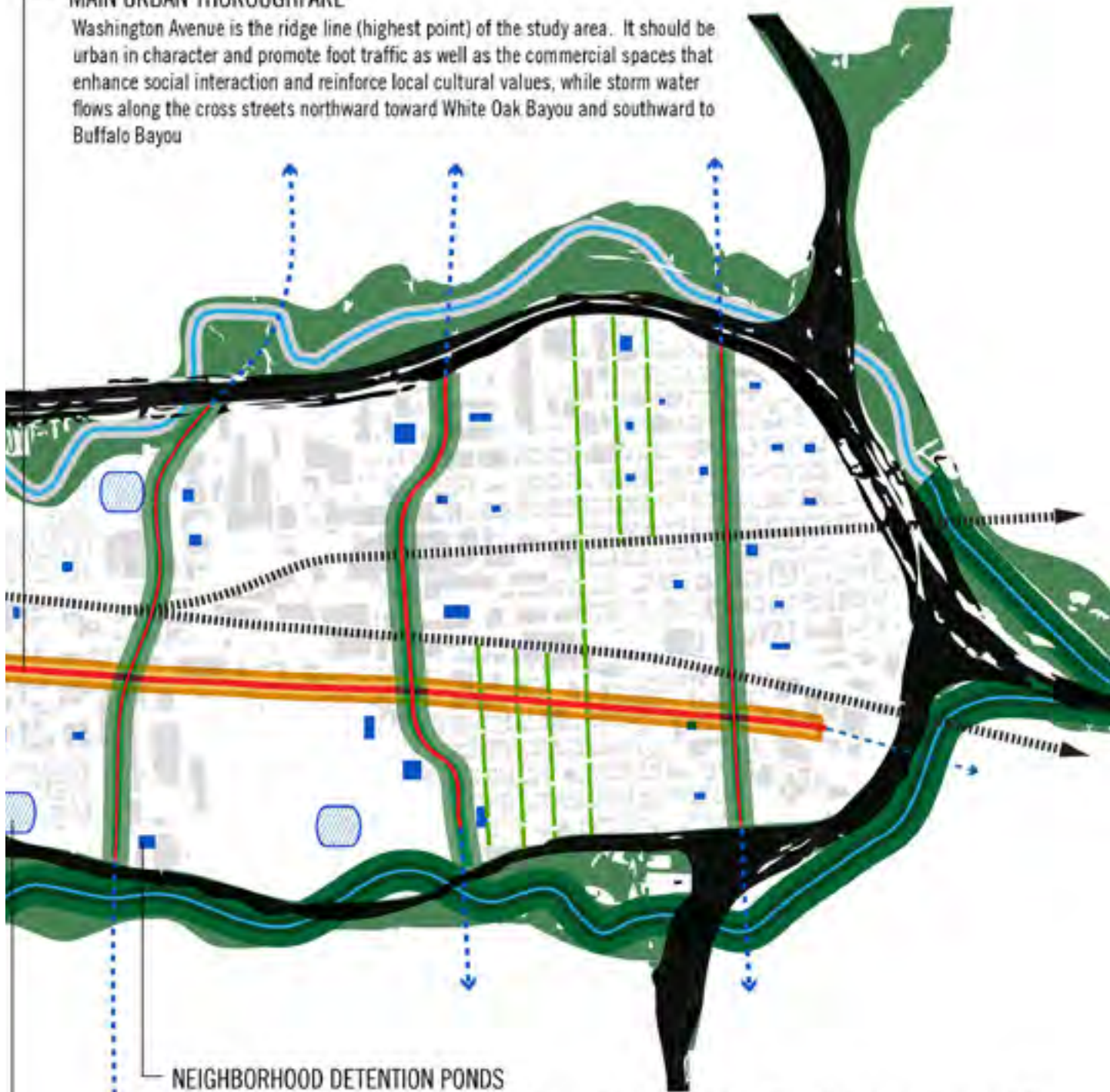
Secondary access streets should be widened to allow adequate traffic circulation and on-street parking as well as improved to add and upgrade sidewalks, add and enhance roadside swales, rain gardens and bury power lines where feasible



\*This map is intended as an illustrative strategy, not a comprehensive determination of the exact location of detention areas. Further study would be required to determine the amount of capacity that the locations would afford and whether that would have any impacts on regional drainage.

### MAIN URBAN THOROUGHFARE

Washington Avenue is the ridge line (highest point) of the study area. It should be urban in character and promote foot traffic as well as the commercial spaces that enhance social interaction and reinforce local cultural values, while storm water flows along the cross streets northward toward White Oak Bayou and southward to Buffalo Bayou



### NEIGHBORHOOD DETENTION PONDS

These smaller catchment basins are intended to receive rain water from roofs and other impervious surfaces in order to increase percolation and slow the storm water down before it enters the roadside swales and ultimately the bayous. This distributed approach complements large and costly regional detention systems, and can be implemented on a project by project basis as required by the City's Permit Office

### 'WET PONDS'

Larger storm water retention basins / storage ponds which are located in community parks and double as neighborhood amenities



# PAVEMENT TO PARKS



Reuse underutilized parcels in the neighborhoods and along Washington Avenue to create a world-class system of parks, squares, open-spaces and recreation areas that improve land values and tie neighbors to the Avenue



PROJECT GOALS:  1  2  3  4  5

LIVABILITY PRINCIPLES:  1  2  3  4  5  6

POSSIBLE PARTNERS: MANAGEMENT DISTRICT, TIRZ, PRIVATE DEVELOPER

POSSIBLE FUNDING SOURCES: MANAGEMENT DISTRICT, TIRZ, GRANT

Washington Avenue is literally the neighborhood “Between the Bayous,” and, with Memorial Park on the west side, the neighborhood is surrounded by some of the best open spaces in Houston. However, access to those spaces, as well as smaller neighborhood parks is often lacking, and finding space for new, large parks is difficult. Rather than accepting this condition, we propose to focus on smaller spaces that can be inserted into the neighborhood at locations that are currently underutilized, including vacant lots, street right-of-way and surface parking lots. A hierarchy of new spaces can be created that appeals to residents and visitors, raises property values and shows the unique flavor of the community. These spaces could be created or maintained by a Management District, TIRZs or other non-profits or community groups. These parks may be supplementary to, but should fit within the framework of, the City of Houston Parks and Recreation Department’s Master Plan.



## Native Gardens

Native gardens may be appropriate for areas of the study area that are of a temporary nature or are unsafe for people to be in. For example, developers could plant vacant lots that are waiting for phased development with native grasses. Medians, small spaces next to busy roadways or areas that are unreachable by pedestrians may also be excellent candidates for native garden development. Native gardens can be thought of as promoting the landscape heritage of the neighborhood prior to the founding of Houston in 1836.



## Community Gardens and Markets

Community gardens and farmers markets are increasingly identified as desirable amenities for urban dwellers. Two community gardens currently exist in the First Ward, an older one tended by community members and a new one at the City’s Permit Center. Community Gardens need very little space, often a single vacant lot is enough, and can also be placed in containers. Farmers markets can easily take place in vacant lots or parking lots, as they often occur only one day per week.



## Sidewalk Plaza

A sidewalk plaza could be considered a sidewalk extension. In most cases, they replace existing on street parking in order to create extra sidewalk spaces, most often to accommodate additional street cafe tables. In areas of Washington Avenue where restaurants are housed in historic buildings built to the lot line, such as the Broken Spoke or Pearl Bar, a sidewalk plaza could be constructed to create additional seating space and sidewalk vibrancy.



### Pocket Parks

Pocket Parks are small neighborhood parks, often with passive uses, that may be constructed on vacant lots or between two buildings on leftover land. Although pocket parks are small, they can be quite well used, especially if they are in areas with high foot traffic. Pocket parks can be wonderful places to take a lunch break or retreat from noises of the city around. Pocket Parks must be maintained by an entity other than the City of Houston Parks and Recreation Department (HPRD).



### Sports Fields

Sports fields are popular with neighbors and visitors alike. Many neighborhood parks and schools playgrounds will contain playing spaces for numerous sports, including tennis, basketball, baseball, soccer and football. One possible use for the many parking lots along Washington Avenue that are only used during certain hours or days during the week would be to create a program that creates basketball courts, or other sports that use a hard surface, so that the vacant lots take on new usefulness for the community during their off hours.



### Performance Spaces

Performances may take place in any public space, however, it is also possible to arrange space to make it especially valuable for performances. An outdoor performance space for the area's theater groups or for musical performances would add to the artistic character of the neighborhood. Spaces along White Oak Bayou beneath I-45 are already utilized by church groups, and given the sloping nature of the landscape, could be adapted for other performances.



### Public Plazas

Public plazas are a common type of open space, but are notoriously lacking in Houston. A plaza, as opposed to a neighborhood park, is usually hardscaped and often has a number of commercial uses surrounding the plaza. Plazas are often activated by additional programming, for example food or newspaper kiosks, fountains, public art or stages. They may also include green areas, dog parks or playgrounds. Plazas should be located in central, highly visible locations where the ability of the plaza to boost commercial land values and desirability of development is maximized. Programming would be the responsibility of a management entity



### Natural Features

Natural features, such as bayous, hills (such as they are in Houston), and other landscape features, should be capitalized on to the greatest extent possible. Improved natural areas can have a significant impact on property values and desirability for both commercial and residential uses. Bayous and other water features may also provide convenient linear pathways for bicycles and pedestrians.



### Outdoor Art Galleries

Building upon the unique character of the neighborhood, spaces for outdoor art galleries or sculpture gardens could be a wonderful use for one or more open spaces in the community that would attract visitors and residents alike. The large columns of I-45 and I-10 where the MKT Bike trail passes underneath have a potential to become a legal, curated street art gallery, which would push the neighborhood and Houston to national prominence.



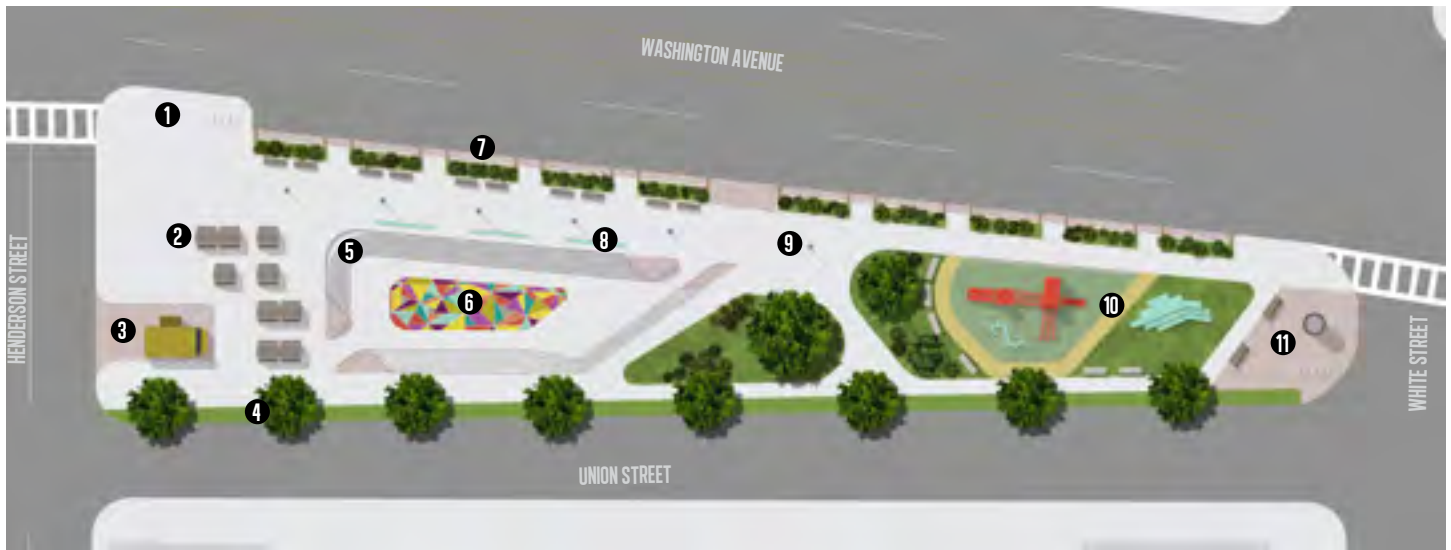
### Neighborhood Parks

Neighborhood parks are traditional centerpieces of many communities. Containing sports fields, playground, pools and other community amenities, they are the focus of many childhoods. Additional neighborhood parks in the eastern, central and western parts of the neighborhood are all desirable. These parks may be less likely to be on major streets, though that is not a requirement. Examples of this type of park in the study area include Dow School Park in the First Ward.



The map above shows examples of sites that would be plausible and desirable areas for open space, but are not the only possible sites. Many of the sites represented are privately owned. The map represents a desirable distribution of types of open space and some possible locations.





Rendering for the redevelopment of a vacant property along Washington Avenue. Too narrow for a built structure and located between two historic neighborhoods, the site is perfect for a community plaza – features listed below.

The site above is along Washington Avenue between Henderson Street and White Street, the location for the Better Block event discussed previously in the Public Engagement Section. The event was a great success and brought many community members together for a day full of activities. The plan (above) and view (right) renderings help establish the vision for how this site may be redeveloped as a community plaza that attracts visitors.

Plaza features may include:

1. Bulb-out, or sidewalk extension, delineates street parking and provides additional space to the pedestrian realm; ideal location for a bike rack
2. Outdoor seating/dining area that caters to customers purchasing from food truck vendors, or community gatherings and events.
3. Designated food truck platform, equipped with the electrical outlets
4. Existing, recently planted, street trees
5. Descending stairs that provide seating around a site water feature; a potential location for musical and theatrical performances, and temporary art installations
6. Colorful splash pad; water jets create an interaction feature -- local artists may be commissioned to design splash pad pattern
7. Green street infrastructure allows stormwater runoff to flow into the wide planters that create a buffer from the street, improving the quality of space for area seating



8. Linear water feature wide and deep enough for people to cool their feet in
9. Pedestrian-scaled lighting
10. Children-oriented play area, lined with benches and guarded on one side with a low fence barrier, approximately 3 - 4 feet high
11. Neighborhood-oriented corner with brick pavement, bike racks, and a kiosk for advertising plaza/park activities, community flyers, etc.

## PUBLIC ART



Support the continued development of the Washington Avenue Corridor as a primary destination for the arts in Houston. Create new opportunities for local artists to live, work and display their art throughout the neighborhood

PROJECT GOALS:  1  2  3  4  5

LIVABILITY PRINCIPLES:  1  2  3  4  5  6

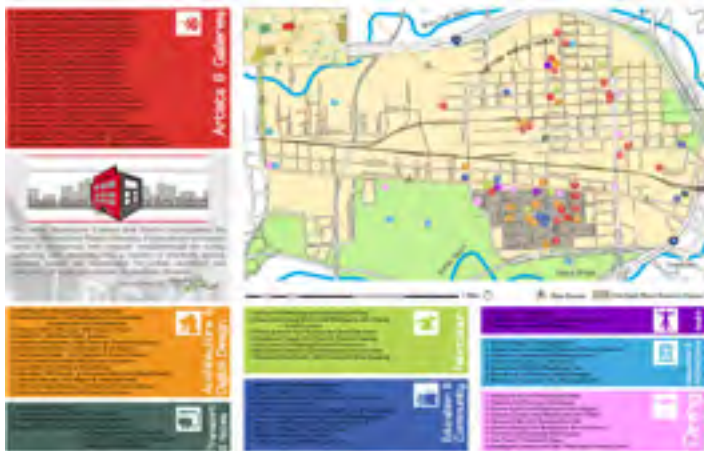
POSSIBLE PARTNERS: MANAGEMENT DISTRICT, TIRZ, PRIVATE DEVELOPER, COMMUNITY ORGANIZATIONS

POSSIBLE FUNDING SOURCES: MANAGEMENT DISTRICT, TIRZ, PRIVATE FUNDING, COMMUNITY GRANTS

Washington Avenue, and especially the eastern portion, has become an important arts district within the City of Houston. Artist's housing, gallery space and both formal and informal public art (from high art to street art) all draw numerous new residents and visitors to the study area. Future development has the potential to limit the area to artists because of concerns about affordability and tone. As such, steps can be taken to continue to incorporate the arts into public space, housing and the commercial and educational vitality of the community.

### Cultural Arts District Designation

Following upon the unsuccessful application to the Texas Commission for the Arts for a Cultural Arts District Designation, the Lower Washington area should reapply for designation. This application could be paired with infrastructure improvements, especially sidewalk improvements. The Arts District also needs a cohesive plan so the designation should inspire an ARTS DISTRICT VISION that outlines specific projects and measures to be implemented.



To create more accessibility and visibility, an arts walking trail, through signage, pavement markers or some other method, should be created through the neighborhood. Mobile phone technology could be used to create a walking tour. Second,

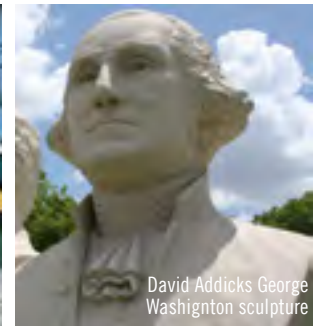
Saturday and other arts events should be heavily promoted and expanded upon.

### Public Art in Parks and Public Spaces

Following upon Recommendation 10, all parks and public spaces should have space and funding set aside for public art. Several large arts pieces have already been offered to the community and are awaiting appropriate spaces for display (including a large bust of George Washington by artist David Addicks). One recommendation from the community is for public art and historical displays throughout the corridor to tell the story of the development of the City of Houston (starting in the east and stretching west). The unique history of the corridor makes it a prime candidate for an arts intervention of this type, as it parallels (literally) the development of Houston.



street art on Washington Avenue



David Addicks George Washington sculpture

Spaces should also be found for the legal display of Street Art. The areas where the MKT bike trail passes underneath I-45 and I-10, for example would make a wonderful "gallery" space for the community. Several local organizations, including Aerosol Warfare and Houston Street Art, would be capable of curating such an area. The display of public art should also extend beyond the Arts District into other parts of the City, but with proper recognition of the artists from the Arts District. This will bring more visibility to the area and publicize the activities happening in the District.

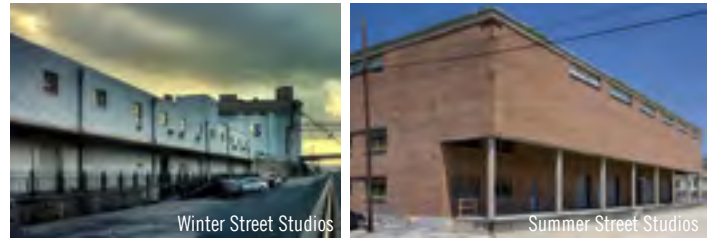
Additionally, public art can be displayed in vacant storefronts. The Washington Avenue corridor has a number of vacant properties that have fallen to blight and deter development. By matching landlords with artists, a collaboration can be formed to beautify the area, while mitigating consequences of vacancies. Art can be used to activate these spaces, promoting visitation and walkability in the area, and motivating the use of the vacant property.

Artists can also be employed to create urban design elements within the neighborhood such as tree grates, lighting fixtures, and wayfinding signage. This will strengthen the identity of the neighborhood as an Arts District, while also creating an investment by the artists into the neighborhood.

### Additional Live/Work Spaces

Where possible, public policy can support developers in converting additional industrial properties into affordable studio or live/work spaces. As proposed in **Recommendation 8**, the development of live/work spaces in the neighborhood strengthens the investment of artists in the area. There are already a number of studios and galleries in the area, but they need reinforcement through affordable housing. The design and financing of the housing needs to accommodate the needs of artists and is further explored in **Recommendation 8**.

Investment in developing these fluid spaces could also spur exchange programs such as an “artist-in-residency” program,



bringing in artists national and international. This would connect the Arts District to a much larger network, as well.

### Arts Education and Programming

Arts education should be supported in the community, and tied together to existing arts programs in the area. Crockett Elementary School’s existing exemplary programs should be expanded and supported strongly. The First Ward should be strongly considered as a future site for the High School for the Performing and Visual Arts, with strong ties created between Crockett and the HSPVA, including mentorship programs.

Through a strong arts foundation for kids and greater social servicing for adults, arts education can also become platform for inter-generational dialogue and training. Free art classes and demonstrations by volunteers can increase community appreciation for the arts and provide training for more sustainable arts programs. This can be further accentuated by the already occurring open studio days when community members can see the work being done, while interacting with the artists.



A street art gallery beneath I-10 and I-45 could become a wonderful open space and a destination for visitors to the community.

## LOCALLY-SCALED RETAIL DEVELOPMENT



Support the development of small local businesses and encourage Washington Avenue to continue to develop a unique commercial environment



PROJECT GOALS:  1  2  3  4  5

LIVABILITY PRINCIPLES:  1  2  3  4  5  6

POSSIBLE PARTNERS: PRIVATE DEVELOPERS, TIRZ, MANAGEMENT DISTRICT

POSSIBLE FUNDING SOURCES: N/A

### Capitalizing on Eclecticity

Locally-scaled businesses are of great importance to a community as they tend to keep revenue within the community and ensure future economic development. The Washington Avenue corridor, with its array of character is already home to a variety of business types. Leveraging the unique artisanal skills of community members and investment in small businesses can reinforce many of the recommendations proposed, while enhancing the vitality of the community.

As per **Recommendation 2**, a management entity would be instrumental in supporting the economic development along Washington Avenue. As more investment is made in the area, the management entity can host festivals, outdoor markets, and additional programming to promote walking and spending in the area. It is also essential to consider the space and needs of existing businesses such as food trucks, which have social, historical, and economic significance to the Houston.

### Small Business Incubation

Business incubators are programs designed to support the development of entrepreneurial enterprises by providing business support and services. Successful completion of a small business incubation program increases the likelihood that a business will stay afloat. Industries typically supported by incubation programs include: technology, manufacturing, life sciences, electronics, eCommerce, arts, energy, retail, and fashion.

#### Technology Incubator West Houston (TIWH)

TIWH is a technology-focused, non-profit business incubator serving the Greater West Houston/Energy Corridor area—major supporter of local venture forums and entrepreneurial programs through its partnerships with Rice University and the Houston Technology Center. The incubator provides assistance with business plan development, IT, finance, and recruiting. They also plan to establish a venture capital fund in the coming years.

## PRECEDENT: POPUPHOOD, OAKLAND, CALIFORNIA

Popuphood is a small business incubator project in Oakland, California that sought to revitalize a neighborhood, targeting a vacant block in Old Oakland, and support the local economy. Six local retailers were given the opportunity to run their starting business rent-free for six months in five previously vacant storefronts. If successful, the temporary tenants may then sign long-term leases.

The concept was realized through a collaboration between the building owner, the City of Oakland's Community & Economic Development Agency and the Oakland Redevelopment Agency, which gave a \$30,000 grant through its Tenant Improvement Program and assisted with permits, marketing and publicity for the Popuphood grand opening.

The initiative has proven to be a success, and founders Alfonso Dominguez and Sarah Filley have developed a Popuphood "toolkit" to help developers, municipalities, retailers and citizens replicate the community-driven model.



### Houston Arts Alliance MODE Arts Incubator Program

This organization provides incubator residency, management services, and capacity funding to new and emerging arts organizations.

Financially supported by the City of Houston, Harris County, the Texas Commission on the Arts, the National Endowment for the Arts, and private donations. Services include shared business equipment, private office space, funding, and assistance with organization.

### Cowork Space

Coworking is an affordable option for entrepreneurs to run their business, where space is rented out within a large open-office environment. For certain industries, this setting is perfect for collaborating and networking, providing a cooperative setting for individuals to work.

Shared workspaces for artists are also extremely appropriate for this area. As many artists are not able to afford permanent studio spaces or workshops, having facilities that rent out space for short-term use is particularly helpful. These spaces generally also provide use of resources and equipment that may otherwise be too expensive such as an electric shop, wood and metal shop equipment, etc.

### Better Block

The Better Block project came together this May to envision an underutilized segment of Washington Avenue as an active street. Overall, the project required input from over 50 volunteers, more than 10 sponsors, and a number of property owners. Through the course of a Saturday, over 1000 people attended the event.

Better Block occurred on a two-block segment of Washington Avenue (White Street to Hemphill) containing several vacant lots and storefronts, with the event focused around a disused triangular land fronting on Washington. Programming included:

- Pop-up businesses occupied vacant spaces
- Reducing streetscape to one lane in each direction
- Temporarily “planted” median using astroturf
- New street trees
- Pop-up bus station & service information from METRO
- Affordable bicycle sale, free repairs & checks
- Stage with local musicians performances
- Area for outdoor games (basketball and foursquare)
- Face painting & other events for children

- Two neighborhood walking tours
- Bicycle tour of the First & Sixth Wards
- Transit & walking tour of Rice Military



### Finance Strategies

Generating interest in areas with low economic investment is a great hurdle, especially in a market that is struggling; This makes financing startups and entrepreneurial endeavors particularly difficult. The most effective approaches to this are utilizing federal or local grants, attracting private developers through tax incentives, partnering with non-profit agencies, or a combination of the above.

### New Market Tax Credit

The New Market Tax Credit (NMTC) is a federal initiative that was developed to spur greater investment in new and operating business endeavors, particularly in low-income communities. Individual and private developers receive tax credits for investing in what are known as Community Development Entities. NMTCs have been instrumental in getting developers to invest in buildings that would have otherwise remained vacant.

### Microfinance and Lending

Non-profits and lenders such as The Reinvestment Fund (TRF) and Opportunity Fund provide capital to a number of development projects ranging from small businesses to community facilities. Partnerships between organizations such as these and private developers can result in community facilities and business projects fueled by low-interest loans that would normally be held up by financial limitations.



# Implementation Plan



The broad range of recommendations lead to multiple implementers, funding sources, and partners to accomplish the goals established to guide the study. This Implementation Plan first lists and defines important entities and resources that will be essential to bringing the recommendations to fruition, which is then organized in a table according to each recommendation.

This chapter should give readers a clear understanding of who holds the power or responsibility to make certain changes in the community, and where limitations exist.

## Implementers

### CITY OF HOUSTON (CoH)

#### PLANNING & DEVELOPMENT DEPARTMENT (CoH PDD)

The Planning and Development Department is responsible for the implementation of ordinances, policies, contracts and studies that will impact the development of the City and vitality of its neighborhoods. PDD has been a partner through this study, and may use it as a tool to create and implement policies, ordinances, and regulate land development that will influence the long-term success of the Washington Avenue Study Area.

#### PUBLIC WORKS & ENGINEERING DEPARTMENT (CoH PWE)

The Public Works and Engineering Department is responsible for the construction and maintenance of the City's infrastructure, including streets, drainage, stormwater management, traffic control signs, freeways, and public utilities. Other PWE programs include Green Building, Houston Bikeways, Corral the Grease, Small Business Development Group, Water Education, and the WaterWorks Education Center.

#### PARKING MANAGEMENT DIVISION (CoH PMD)

A primary goal of the Parking Management Division is to make public parking friendly and convenient throughout the City. The on-street parking program creates regulations for commercial and residential areas based on the concerns of businesses and residents. They currently service and maintain 7,000 on-street parking spaces across Greater Houston, and will be an important implementer to addressing parking issues in the Washington Avenue Study Area, while also enhancing pedestrian safety and traffic flow.

#### HOUSING & COMMUNITY DEVELOPMENT DEPARTMENT (CoH HCDD)

To assist with establishing affordable housing for low and moderate income persons, HCDD manages and administers federal and non-federal funds, and assists customers with single family housing down payments, single family home repair, commercial (multi and single family housing development), municipal/private public facilities, and public services.

#### PARKS AND RECREATION DEPARTMENT (CoH PRD)

The Houston Parks & Recreation Department stewards and

manages over 37,832 acres of parkland and greenspace for the City of Houston; develops and implements recreational programming for citizens of all abilities; maintains greenspace for the Houston Public Library and the Houston Health Department and manages all department facilities.

#### THE MAYOR'S OFFICE OF ECONOMIC DEVELOPMENT

This division of the Mayor's Office, under the responsibility of the Mayor's Chief Development Officer, develops, implements and manages citywide policies and procedures for economic development programs such as Tax Increment Reinvestment Zones (TIRZ) and tax abatements in addition to other tax incentive programs. Other tax incentive programs might be funded through accelerated capital improvements plan action or special district financing such as special assessment financing, or in-city municipal utility districts. The City could also consider beneficial land exchanges, right of way abandonment, or below-market financing or leases on public property that could provide mutual benefit to the City and the proposed development. Any offer of such an incentive would be reviewed case-by-case to determine eligibility and compliance with all applicable laws.

Further information about City of Houston departments and their services is available at [www.houstontx.gov/](http://www.houstontx.gov/).

#### THE METROPOLITAN TRANSIT AGENCY OF HARRIS COUNTY (METRO)

METRO serves Harris County cities, providing bus routes, Park & Ride facilities, an expanding light rail system (METRORail), and transit centers. These facilities and others continue to be improved with the adoption of the METRO Solutions plan, a comprehensive transit system plan developed to address the traffic congestion and air quality concerns in the Greater Houston region.

#### MANAGEMENT DISTRICT (MD) / STATE OF TEXAS

A Management District is created by the Texas Legislature. The establishment of a Management District requires a petition of support to be submitted to the City of Houston with the name and boundaries of the proposed management district, a description of its special purpose supported by the need and general nature of the work, projects and services that would be performed, along with the estimated costs of services and a list of the proposed initial directors.

Once established, the management district empower the local community by providing a range of services that supplement



city services, and promote housing, commerce, recreation, arts, entertainment, economic development, transportation, safety and public welfare. The services may be funded through bonds issued by the MD, from ad valorem taxes, assessments, impact fees, among other options, excluding the levying of a tax on single family detached residences.

#### DEVELOPER / PRIVATE ENTITY

The amount of public land and right of way available for project implementation is limited, leaving private entities and developers to influence the future of the Washington Avenue Study Area. The City of Houston Planning and Development Department may consider incentives to help encourage desired development patterns. Per current ordinance language, developers are not required to provide certain amenities and desired building types. However, a joint effort between the City, developer, and - if created management entity should be recognized to help achieve desired area development patterns. Additionally, a management district can coordinate with developers to provide certain amenities that will promote business activity.

#### TEXAS COMMISSION ON THE ARTS

The Texas Commission on the Arts (TCA) has the power to designate cultural districts in Texas, zones that stimulate economic development and community revitalization through cultural resources.

Additionally, TCA offers services to promote economic development, arts education, cultural tourism and artist sustainability initiatives to arts and cultural industries.

#### TAX INCREMENT REINVESTMENT ZONE (TIRZ)

There are three Tax Increment Reinvestment Zones (TIRZs) in the Washington Avenue Study Area (TIRZ 3, 5, 13); special zones that were created by City Council to attract new investment through its ability to finance the cost of redevelopment within their boundaries. An increase in taxes that can be attributed to new improvements may be used to finance additional public improvements.

## Funding Sources

### LOCAL FUNDING SOURCES

#### CITY OF HOUSTON - CAPITAL IMPROVEMENT PROGRAM (CoH CIP) / REBUILD HOUSTON

The ReBuild Houston Initiative, approved by Houston voters in 2010, is the City's plan to address the ongoing improvement of drainage and street infrastructure with four funding sources: drainage utility fee, developer impact fee, ad valorem taxes (property taxes), and third-party funds (such as Metro, TxDOT, and Federal Grants). The planning process for improvements in the Capital Improvement Program follows four steps: identify needs, prioritize needs (worst first), develop solutions, and refer candidate projects.

#### METRO

The Metropolitan Transit Agency of Harris County assesses a one-percent sales tax of its service area that may be utilized for transit. In upcoming years, METRO can determine how these recommendations fit into their Capital Improvement Program and Operating Budget.

#### HARRIS COUNTY

Harris County funds projects through multiple programs, including their Capital Improvement Program, and services created through the Harris County Community Services Department (HCCSD). Non-profit organizations, for-profit developers of affordable housing, municipalities and local governments servicing low-income clients within Harris County are all eligible for funding programs through HCCSD.

#### TAX INCREMENTAL FINANCING

There are three Tax Increment Reinvestment Zones in the Washington Avenue Study, as discussed previously – TIRZ 3, 5, & 13. Improvement projects that fall within the TIRZ boundary may be eligible for funding aid.

#### MANAGEMENT DISTRICT GENERAL FUNDS

If created, a Management District would have the power to finance operations and improvements projects that supplement existing services. General Fund revenue is obtained by issuing bonds payed for through ad valorem taxes, assessments, impact fees, or other funding sources established by the District. Additionally, Districts may levy a tax through a district election.

#### PRIVATE ENTITY

Developers and property owners may contribute to project implementation through public/private developments, land dedications, by adhering to revised design standards that improve the quality of public realm (easements, setbacks,

location of parking), and by providing amenities for public use, such as benches, or contribute to the quality of a space, such as planting street trees.

## HOUSING TRUST FUND

Housing Trust Funds are flexible financial tools that can be geared toward affordable housing development or rehabilitation. They typically come from real estate transfer taxes, accumulated interest from real estate transactions, and penalties for late or delinquent payments of real estate excise taxes. Agencies can decide how they want to appropriate money, whether as grants or loans to developers and non-profit organizations, as loans to individual homeowners, or for other services. Local agencies can also choose to direct the funds towards specific groups such as homeless individuals looking for transitional homes, or seniors in need of affordable housing. Because the funds are dependent upon existing real estate, the market needs to be thriving in order for enough revenue to be generated for fund allocation.

## HOUSTON SINGLE FAMILY HOME REPAIR

Single Family Home Repair Program (“SFHRP”) is to assist as many homeowners as possible, to address only repairs needed to alleviate threats to health, life, and safety of homeowners, to improve curb appeal, uplift the general street appearance of the City of Houston, and to keep costs at a minimum.

## STATE AND FEDERAL FUNDING SOURCES

### MAP-21 (MOVING AHEAD FOR PROGRESS IN THE 21ST CENTURY)

Moving Ahead for Progress in the 21st Century (MAP-21) went into effect on October 1, 2012, providing two years of funding with programs for highway, transit, and nonmotorized transportation improvements for fiscal years 2013 and 2014, replacing previous SAFETEA-LU legislation. Below is a list of MAP-21 programs that apply to the Washington Avenue study area:

A) Surface Transportation Program (STP) provides funding for State and localities on projects that preserve or improve conditions and performance on any Federal-aid highway, bridge projects on any public road, facilities for nonmotorized transportation, transit capital projects and public bus terminals and facilities. Fifty percent of the State’s STP funds are distributed to areas based on population.

STP is applicable to the following recommendations:

- 01 - Washington Avenue Right-of-Way
- 03 - High-frequency Transit,
- 04 - Bicycle Facilities
- 06 - Waugh & Memorial Interchange

B) Congestion Mitigation and Air Quality Improvement Program (CMAQ) provides a flexible funding source to State and local governments for transportation projects and programs to help meet the requirements of the Clean Air Act.

CMAQ is applicable to the following recommendations:

- 03 - High-frequency Transit (to reduce vehicle miles traveled)
- 06 - Waugh & Memorial Interchange (minimize vehicle idling)

C) Transportation Alternatives (TA) includes transportation alternative projects, recreational trails, safe routes to schools program, and the planning, designing or constructing of roadways within the right-of-way of former Interstate routes or other divided highways. Fifty percent of TA funds are distributed to areas based on population.

TA is applicable to the following recommendations:

- 03 - High-frequency Transit
- 04 - Bicycle Facilities

### TRANSPORTATION INVESTMENT GENERATING ECONOMIC RECOVERY GRANT PROGRAM (TIGER)

Houston received \$15 million from the TIGER grant program this year through the Department of Transportation for hike and bike trails, sidewalk improvements, and on-street bikeways.

### COMMUNITY DEVELOPMENT BLOCK GRANT (CDBG)

The City of Houston can apply for CDBG funds to receive federal funds that will assist in the development and preservation of affordable housing developments. These funds can also be used to pay for additional infrastructure and services that support affordable housing.

### HOME Program

The HOME Investment Partnerships Program is specifically geared toward affordable housing and can be applied for by the City of Houston. The grant can be used for a variety of purposes, and also has provisions for green building, which further improve affordability during the operational phase of a housing development.

## LOW INCOME TAX CREDITS

The Low Income Housing Tax Credits program provides incentives for utilizing private equity for the development of low-income housing. While there are some federal regulations that must be followed, such as the amount of credits that developers can obtain, states and local agencies are responsible for regulating and setting the goals of the program. This means that local governments can add additional stipulations based on the demand of the neighborhood they are serving and the response from developers. This program is especially effective in areas that are not yet gentrified.

## LOCAL PARTNERSHIPS

Many recommendations involve “projects of interest” to existing organizations, who may already be involved in similar efforts. Below is a list of possible local partnerships, some of which are referenced in the subsequent Implementation table.

Super Neighborhood 22

Area civic associations

Community Development Corporations (CDCs)

Buffalo Bayou Partnership

White Oak Bayou Partnership

Washington-on-Wescott Roundabout Initiative, Inc. (WOW)

Better Houston

MECA

Washington Avenue Developers' Association (WADA)

## IMPLEMENTATION TABLE

	ITEM	DESCRIPTION	TYPE	IMPLEMENTER	COST*	FUNDING	PARTNERS
01 WASHINGTON AVE RIGHT-OF-WAY (p. 126)	ROADWAY RECONFIGURATION	Lane reconfiguration - Signs and paint [Curb reconstruction]	INFR	CoH PWE	\$290,000 [\$2,360,000]	CoH CIP	CoH PWE, MD
		Transit alignment	INFR	METRO, CoH PWE	\$290,000	CoH CIP MAP-21 STP MAP-21 TA	METRO, CoH PWE
	PEDESTRIAN ELEMENTS	Sidewalk construction, pedestrian crossings, sidewalk extension, pedestrian amenities	INFR	CoH PWE	\$85,850 / Block face	CoH CIP MDGF TIGER	CoH PWE, MD
	POWERLINE RELOCATION	Underground powerlines	INFR	CoH PWE	\$1,000 / linear foot	TIRZ 13 & 3 MDGF	City of Houston Management District
	ROUNDAABOUT IMPROVEMENTS	Lane reconfiguration - curb construction and pain	INFR	CoH PWE	\$75,358	CoH CIP	WOW
02 MANAGEMENT DISTRICT (p. 132)	CREATION OF MD	Petition of support submitted to the City of Houston	REGU	State of Texas	-----	N/A	City of Houston State Legislature WADA
	WAYFINDING & BRANDING	Signage and street markings	PROG	Management District	\$9,500 (\$250/sign)	MDGF	
03 HIGH-FREQUENCY TRANSIT (p. 136)	T1	High-frequency route Concept 1B [Concept 1A]	INFR	METRO CoH PWE	Operating: \$4,380,000 [\$3,650,000]	METRO MAP-21 STP MAP-21 TA	
	T2	METRO Rail Extension to existing Amtrak station	INFR	METRO CoH PWE		METRO MAP-21 STP MAP-21 TA	
	T3	BRT on existing I-10 HOT lanes (Uptown to Downtown)	INFR	METRO CoH PWE TxDOT	See Uptown District Plan	METRO MAP-21 STP MAP-21 TA	Uptown District
		Stations: I-10 & Washington/Westcott, Shepher, Heights	INFR				
	T4	High-frequency route	INFR	METRO CoH PWE		METRO MAP-21 STP MAP-21 TA	
	BUS CIRCULATOR	Bus fleet Concept 1B [Concept 1A]	INFR	METRO	\$5,080,000 [\$3,180,000]	METRO	
	FIXED STREETCAR	Tracks & fleet	INFR	METRO		METRO	
04 BICYCLE FACILITIES (p. 142)	B1	Bicycle Boulevard - Center Street	INFR	CoH PD CoH PWE	\$186,148	TIRZ 13 CoH CIP TIGER MAP-21 STP MAP-21 TA	TIRZ 13
	B2-1	Bike Route - Patterson Street	INFR	CoH PD CoH PWE	\$2,491	CoH CIP TIGER MAP-21 STP MAP-21 TA	
	B2-2	Bike Lane - Patterson Street	INFR	CoH PD CoH PWE	\$11,235	CoH CIP TIGER MAP-21 STP MAP-21 TA	
	B2-3	Bike Route - Patterson Street	INFR	CoH PD CoH PWE	\$2,491	CoH CIP TIGER MAP-21 STP MAP-21 TA	
	B2-4	Shared-use path & Bridge - Patterson Street	INFR	CoH PD CoH PWE	\$111,483	CoH CIP TIGER MAP-21 STP MAP-21 TA	

\*Detailed explanations of costs are available in the Appendix  
184 Washington Avenue Livable Centers

	ITEM	DESCRIPTION	TYPE	IMPLEMENTER	COST	FUNDING	PARTNERS
<b>04 BICYCLE FACILITIES</b>	<b>B3</b>	Shared-use path - Studemont St	INFR	CoH PD CoH PWE	\$533,416	TIRZ 5 CoH CIP TIGER MAP-21 STP MAP-21 TA	TIRZ 5
	<b>B4-1</b>	Shared-use path - Connection to BBP Bridge	INFR	CoH PD CoH PWE	\$111,483	CoH CIP TIGER MAP-21 STP MAP-21 TA	
	<b>B4-2</b>	Shared-use path - Memorial Drive	INFR	CoH PD CoH PWE	\$57,712	TIRZ 3 CoH CIP TIGER MAP-21 STP MAP-21 TA	TIRZ 3
	<b>B4-3</b>	Bike lanes - Silver Street	INFR	CoH PD CoH PWE	\$9,562	TIRZ 13 CoH CIP TIGER MAP-21 STP MAP-21 TA	TIRZ 13
	<b>B4-4</b>	Bike route - Silver Street	INFR	CoH PD CoH PWE	\$3,735.75	CoH CIP TIGER MAP-21 STP MAP-21 TA	
	<b>B5</b>	Bike lanes - Houston Avenue	INFR	CoH PD CoH PWE	\$64,135	CoH CIP TIGER MAP-21 STP MAP-21 TA	
	<b>B6-1</b>	Bike lanes - Waugh Drive	INFR	CoH PD CoH PWE	\$34,213	TIRZ 3 CoH CIP TIGER MAP-21 STP MAP-21 TA	TIRZ 3
	<b>B6-2</b>	Shared-use path & 2 bridges - Waugh Drive	INFR	CoH PD CoH PWE	\$3,232,274	TIRZ 3 CoH CIP TIGER MAP-21 STP MAP-21 TA	TIRZ 3
	<b>B7-1</b>	Shared-use path - Shepherd Drive	INFR	CoH PD CoH PWE	\$85,353	CoH CIP TIGER MAP-21 STP MAP-21 TA	
	<b>B7-2</b>	Shared-use path - Shepherd Drive	INFR	CoH PD CoH PWE	\$144,371	CoH CIP TIGER MAP-21 STP MAP-21 TA	
	<b>B8-1</b>	Bike route - Feagan Street	INFR	CoH PD CoH PWE	\$7,471	CoH CIP TIGER MAP-21 STP MAP-21 TA	
	<b>B8-2</b>	Bike route - Blossom Street	INFR	CoH PD CoH PWE	\$1,245	CoH CIP TIGER MAP-21 STP MAP-21 TA	
	<b>B8-3</b>	Bike route - Birdsall Street	INFR	CoH PD CoH PWE	\$1,245	CoH CIP TIGER MAP-21 STP MAP-21 TA	
	<b>B8-4</b>	Bike route - Schuler Street	INFR	CoH PD CoH PWE	\$4981	CoH CIP TIGER MAP-21 STP MAP-21 TA	
	<b>B8-5</b>	Bike route - Jackson Hill	INFR	CoH PD CoH PWE	\$1,425	CoH CIP TIGER MAP-21 STP MAP-21 TA	

	ITEM	DESCRIPTION	TYPE	IMPLEMENTER	COST	FUNDING	PARTNERS	
<b>04 BICYCLE FACILITIES</b>	<b>B9-1</b>	Shared-use path - Preston Street	INFR	CoH PD CoH PWE	\$142,426	CoH CIP TIGER MAP-21 STP MAP-21 TA		
	<b>B9-2</b>	Bike lanes - Washington / Westcott	INFR	CoH PD CoH PWE	\$16,763	CoH CIP TIGER MAP-21 STP MAP-21 TA		
	<b>B10</b>	Shared-use path - White Oak Bayou	INFR	CoH PD CoH PWE	\$1,929,456	TIRZ 5 CoH CIP TIGER MAP-21 STP MAP-21 TA	TIRZ 5	
	<b>B11-1</b>	Bike route - Memorial Loop Drive	INFR	CoH PD CoH PWE	\$6,226	CoH CIP TIGER MAP-21 STP MAP-21 TA		
	<b>B11-2</b>	Bike route - Crestwood Drive	INFR	CoH PD CoH PWE	\$1,245	CoH CIP TIGER MAP-21 STP MAP-21 TA		
	<b>B12</b>	Bike route - Lubbock Street	INFR	CoH PD CoH PWE	\$2,491	CoH CIP TIGER MAP-21 STP MAP-21 TA		
	<b>B13</b>	Bikeshare network expansion	INFR	CoH PD, Houston B-Cycle	\$30,000/station, \$1,000/bike	CoH CIP TIRZ 3, 5, 13 MDGF	CoH PD Houston B-Cycle Developer TIRZ 3, 5, 13 Management District	
<b>05 COMPREHENSIVE PARKING (p. 148)</b>	<b>VALET &amp; RESIDENTIAL STREETS</b>	Require valets to park vehicles in off-street lots	REGU	CoH PD			CoH Planning Dept CoH Parking Dept	
	<b>PARKING BENEFIT DISTRICT PHASE 1</b>	Creation of a Parking Benefit District	REGU	CoH PD			CoH Parking Dept	
	PHASE 2	Variable rate meters	INFR	CoH Parking Dept				
	<b>PARKING MANAGEMENT DISTRICT PHASE 1</b>	Creation of a Parking Management District	REGU	CoH Parking Dept				
		Regulate positioning and quality of parking lots	REGU	MD				
		Reductions in parking provided where non-automotive modes are encouraged, and where parking can be shared	REGU	MD				
		Parking requirements reduced for proximity to high-frequency transit	REGU	MD				
		Reduction in parking requirements where bicycle parking is put in place	REGU	MD				
		Reductions provided for shared parking	REGU	MD				
	PHASE 2	Parking maximums	REGU	MD				
		Cap on off-street spaces	REGU	MD				
		Pay fee-in-leu of parking towards structured parking	REGU	MD			Developer Private entity	Developer Private entity
	OTHER	Unbundled parking: tenants rent space	PROG	MD				
Car Sharing program		PROG	MD				MD, TIRZ 3, 5, 13	
Restrict curb cuts of private residences		REGU	MD					

	ITEM	DESCRIPTION	TYPE	IMPLEMENTER	COST	FUNDING	PARTNERS
06 WAUGH & MEMORIAL INTERCHANGE (p. 152)	PHASE 1	Engineering Study	PROG	CoH PWE		CoH General Fund	
	PHASE 2	Interchange reconstruction- Single Point Urban Interchange (SPUI)	INFR	CoH PWE	\$30,550,103	CoH CIP MAP-21 STP MAP-21 CMAQ	
		Interchange reconstruction- Diverging Diamond (DDI)	INFR	CoH PWE	\$6,897,095	CoH CIP MAP-21 STP MAP-21 CMAQ	
07 SETBACKS ET ALL (p.154)	<b>DEVELOP DESIGN GUIDELINES</b>	Developers utilize guidelines in the design or future developments	REGU	CoH PD			Developer Private entity
08 HOUSING CHOICE (p. 158)	<b>FUNDING APPROACHES</b>	Set up a fund and subsidy structure to assist developers, non-profits, and individuals with affordable housing retentivo	REGU	CoH HCDD TIRZ 3, 5, 13 MD		Federal: CDBG, HOME Program, Low Income Tax Credits; Local: Housing Trust Fund, Houston Single Family	Developers CDCs
	<b>CREATE/AMEND DESIGN AND REGULATORY GUIDELINES</b>	Create or amend guidelines that facilitate the development of affordable housing	PROG	CoH HCDD CoH BCE MD			Developers CDCs
09 STORMWATER (p. 162)	<b>STORMWATER MANAGEMENT PLAN</b>	Identify areas to incorporate stormwater treatments	INFR	MD		ReBuild Houston	CoH PD CoH PWE
10 PAVEMENT TO PARKS (p. 170)	<b>TRANSFORMATIONS</b>	Transform available spaces with temporary and/or permanent interventions	PROG	Management District, TIRZ, Private developer	-----	Houston Arts Alliance, Crockett Elementary	
11 PUBLIC ART (p. 174)	<b>CULTURAL ARTS DISTRICT DESIGNATION</b>	Reapply to the Texas Commission for the Arts for a Cultural Arts District Designation	REGU	Texas Commission on the Arts			
		Develop a cohesive plan to inspire an ARTS DISTRICT VISION that outlines specific projects and measures to be implemented	PROG	Management District		Management District, TIRZ	
	<b>ADDITIONAL LIVE/WORK SPACES</b>	Create provisions that support developers in converting additional industrial properties into affordable studio or live/work spaces	PROG	CoH HCDD		Private Equity	
	<b>PROGRAMMING</b>	New social programming should be created, while existing exemplary programs should be expanded and supported		Management District		Management District, TIRZ	

	ITEM	DESCRIPTION	TYPE	IMPLEMENTER	COST	FUNDING	PARTNERS
<b>12 LOCALLY-SCALED DEVELOPMENT (p. 176)</b>	<b>SMALL BUSINESS INCUBATION</b>	Industries typically supported by incubation programs include: technology, manufacturing, life sciences, electronics, eCommerce, arts, energy, retail, and fashion	PROG	Private entity TIRZ 3, 5, 13 MD		TRF and Opportunity Funds	Private entity TIRZ 3, 5, 13 MD







# Nodes and Phasing



As recommendations take effect over the course of time, the Washington Avenue corridor will evolve, with new regulation, infrastructure investment and community members shaping the future development in the corridor.

The nodes highlighted here were selected to show an example of how development could occur within the study area. Do to the different types of development, streetscapes, scales, and designations of each node, subsequent examples provide an array of examples of how the Washington Avenue corridor can mature in the coming years.

The following visions are not prescriptive. The exact development that occurs will look different and the timeframes

will also vary. At the same time, each real development will build upon the framework that we've put forward, so the results should be similar, depending on market situation, infrastructure investment and other issues. As such, these nodes provide a visual direction that development can trend towards with the proper policies, design, planning, and community organizing.

# NODE ONE: DOWNTOWN WASHINGTON AVENUE

Washington Avenue and Shepherd/Durham are the two highest volume streets within our study area (with the exception of Memorial Drive). As such, it is an extremely important node for the community. Land values are increasing, making higher density development, including the possibility of towers, more likely. The volume of traffic along Shepherd and Durham will also necessitate an underpass for those streets along the rail line. The Downtown Washington Avenue area is envisioned to become a bustling node with heavy mixed-use density and greater pedestrian, bicycle, and transit traffic.





## 1 RIGHT-OF-WAY IMPROVEMENTS

### RECOMMENDATION 1, 3, 4

Washington Ave, as well as adjacent and cross streets are envisioned to be improved functionally, and aesthetically. The ROW on Washington Ave can have a number of treatments based on the width at given points, to accommodate pedestrians, vehicles, transit, and cyclists.

## 2 FREIGHT RAIL UNDERPASS

### RECOMMENDATION 1

With the traffic on Shepard estimated to grow rapidly over the coming years, the movement of traffic below the freight rail is believed to alleviate the congestion, while reducing vehicular-rail conflicts. Since cars require less clearance to go below grade, this solution will minimize the impact mixed-use blocks surrounding this area and will still allow for safe multi-modal movement.

## 3 PARKS AND OPEN SPACE

### RECOMMENDATION 8, 10, 11

The addition and enhancement of parks and open space in the area will provide a variety of opportunities for walking, sitting, and engaging in recreational activities. Parks and open spaces can balance the increased density in the area, creating a healthier environment, and vibrant ambiance.

## 4 MIX OF USES

### RECOMMENDATION 7, 12

Promoting a mix of the uses in the area, coupled with street improvements, can lend to a bustling and vibrant atmosphere.

## 5 CONSOLIDATED PARKING

### RECOMMENDATION 5

Bundling the parking in certain lots will reduce the need for surface parking, improving the pedestrian realm. The consolidated parking will also allow various land uses to share the parking, reducing the need for more spaces.

## 6 MIX OF HOUSING TYPES

### RECOMMENDATION 8

A mix of housing types will ensure physical, as well as, socio-economic diversity in the area. The variety in housing will attract a diverse group of people, which will also support a diverse set of commercial activity.



0-5 YEARS

5-15 YEARS

15-30 YEARS

P H A S E 1  
P H A S E 2  
P H A S E 3

Washington Ave. lane reconfiguration - signs and paint

Signed bike route along Washington Ave.

Creation of Management District

Creation of a Parking Management District

Creation of a Parking Benefits District

High-Frequency route along Washington Ave.

Temporary open space and public art interventions

Relocating powerlines

Curb reconstruction

Greater density mixed-use

Enhanced parks and open spaces

Streetcar (dedicated lane possible if warranted by ridership and mode split)

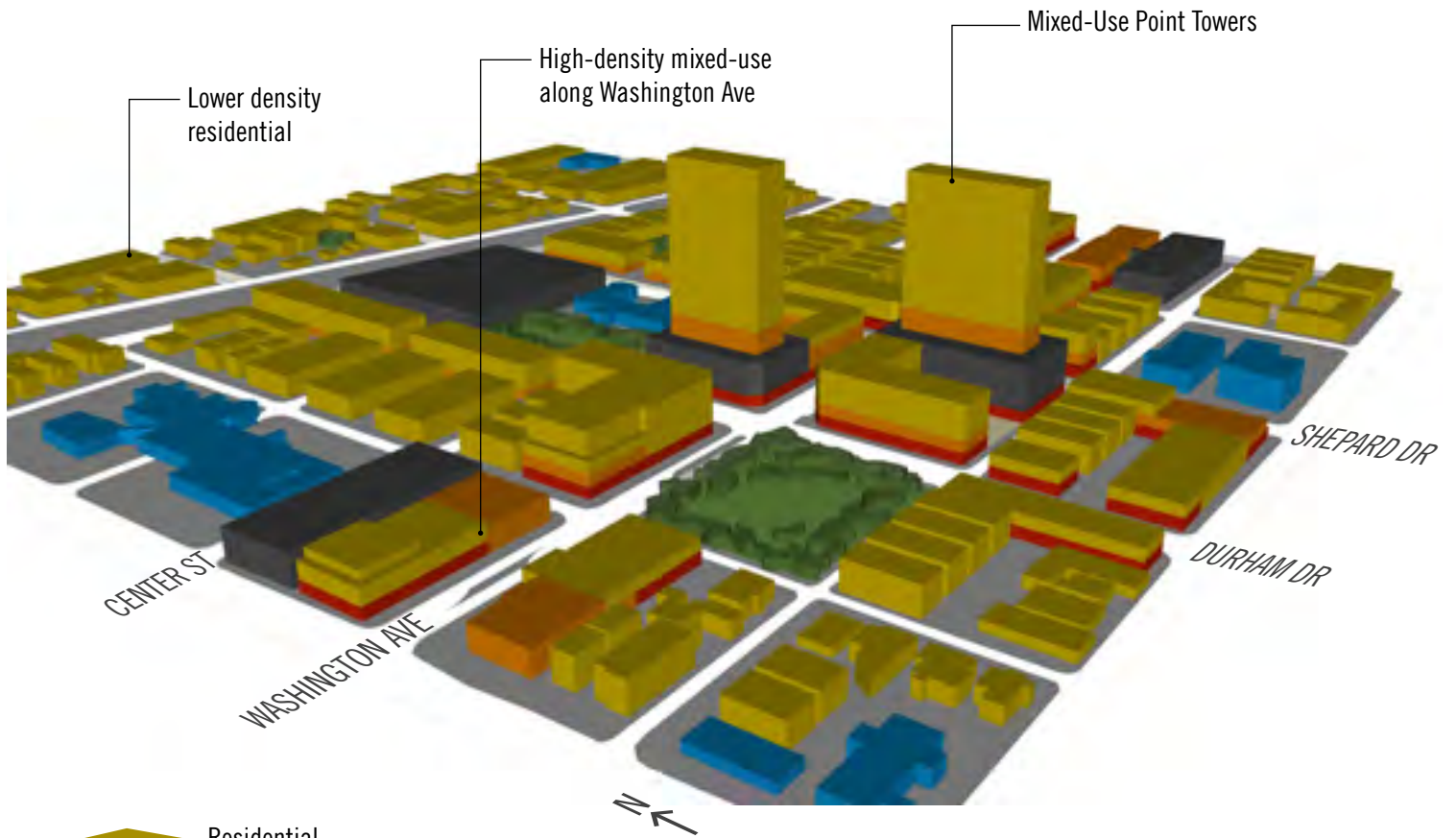
High-density mixed use






Bulb-outs and medians

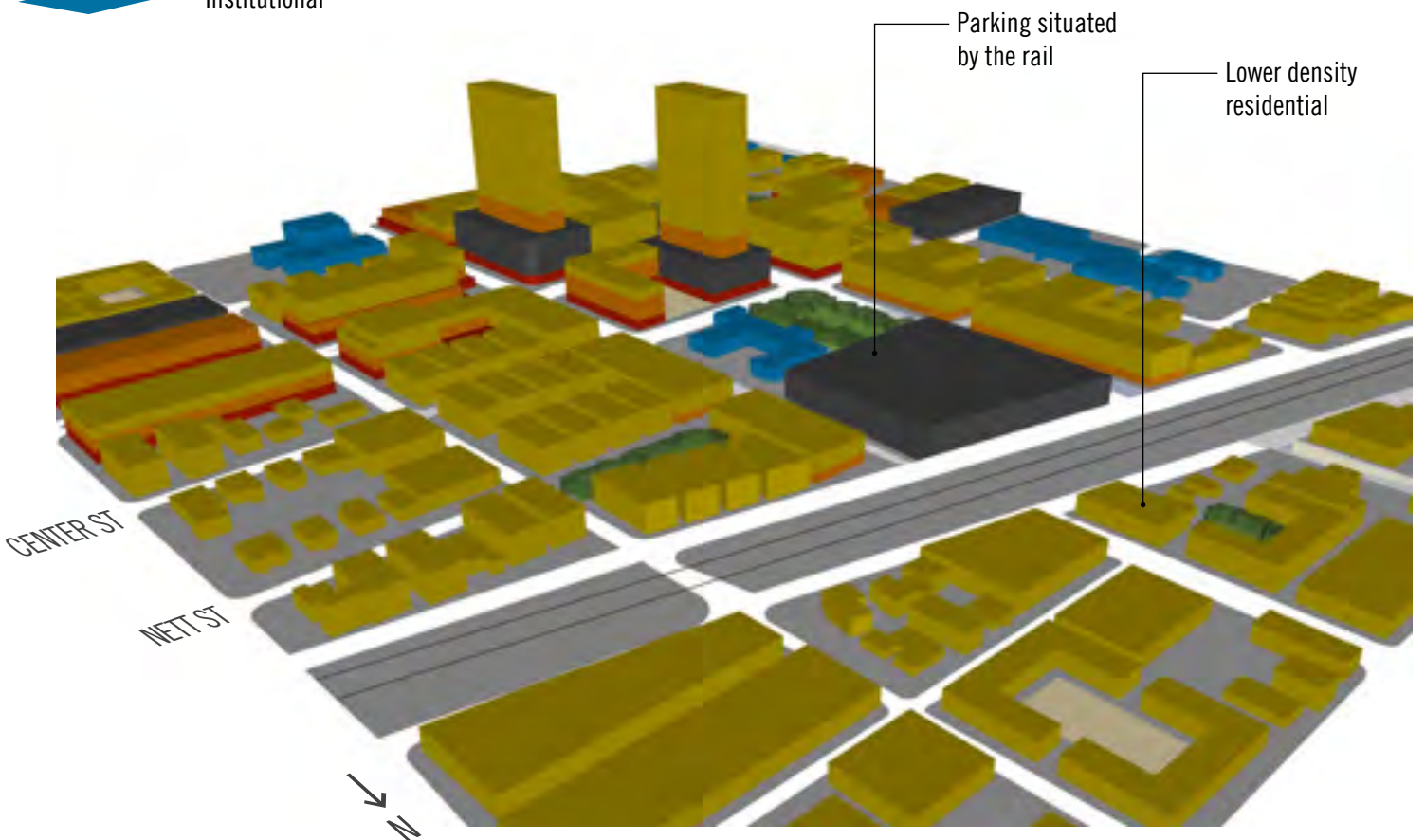
Consolidated garage parking

Pedestrian amenities

Sidewalk extensions



-  Residential
-  Office
-  Stacked parking
-  Ground floor retail
-  Institutional



## NODE TWO: FIRST WARD INDUSTRIAL TRANSFORMATION

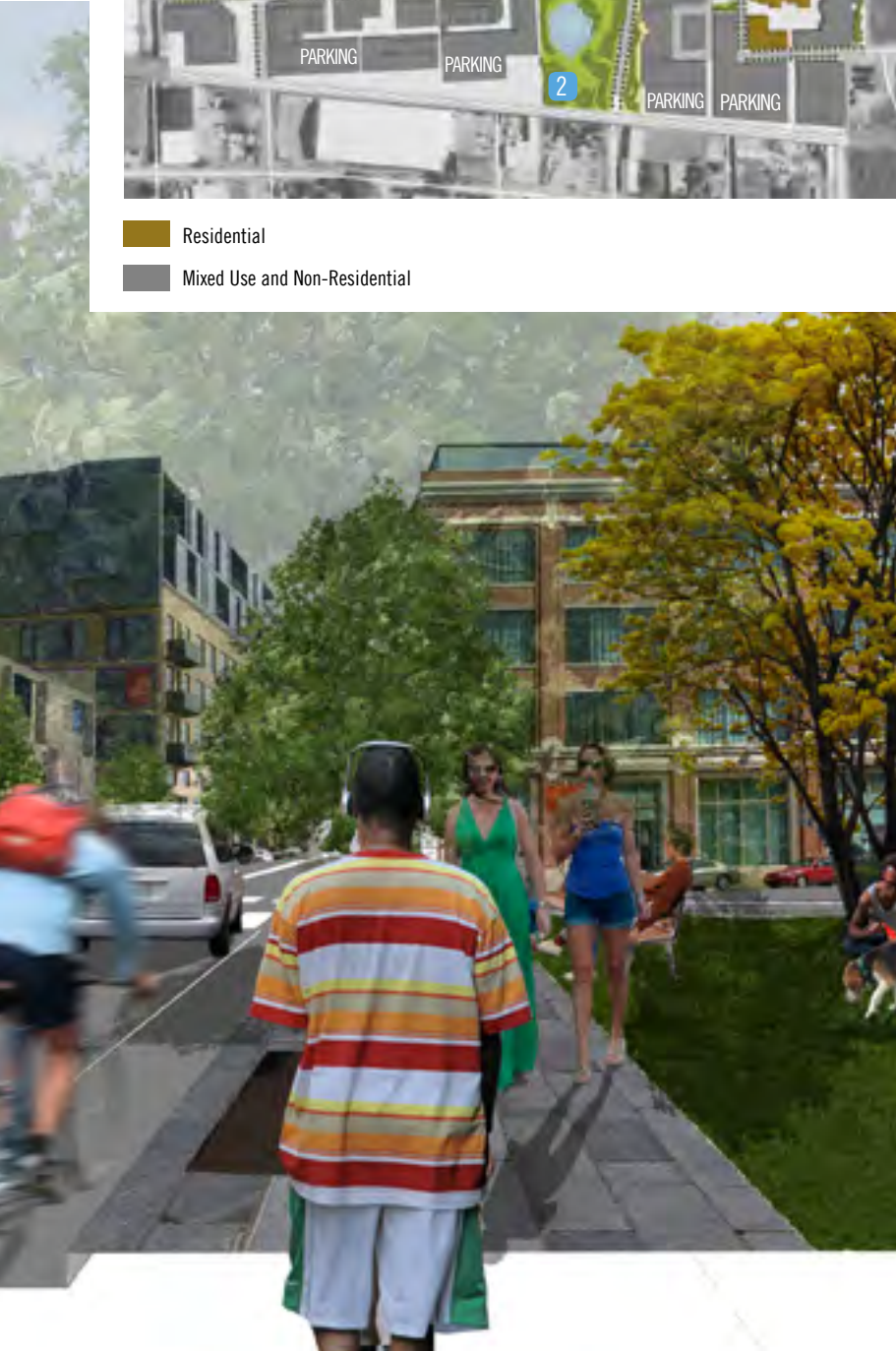
The First Ward's industrial areas contain some of the last remaining large developable parcels in the study area. Much development on these parcel types has been adjacent to I-10 and has focused on big box development. Future development has an opportunity to be at a more human scale and to fit more closely into the existing neighborhood, while also capitalizing on proximity to both Washington Avenue and the Interstate. With an eclectic character, the First Ward is envisioned to be a diverse place with dynamic social and economic programming. The area's entrepreneurial and artistic potential can make it a destination for visitors from outside the neighborhood, while providing neighborhood residents with high-quality residential and public spaces.







- Residential
- Mixed Use and Non-Residential



**1 RIGHT-OF-WAY IMPROVEMENTS**

**RECOMMENDATION 1, 3, 4**

Washington Ave, as well as adjacent and cross streets are envisioned to be improved functionally, and aesthetically. The ROW on Washington Ave can have a number of treatments based on the width at given points, to accommodate pedestrians, vehicles, transit, and cyclists.

**2 PARKS AND OPEN SPACE**

**RECOMMENDATION 8, 10, 11**

The addition and enhancement of parks and open space in the area will provide a variety of opportunities for walking, sitting, and engaging in recreational activities. Parks and open spaces can balance the increased density in the area, creating a healthier environment, and vibrant ambiance.

**3 MIX OF USES**

**RECOMMENDATION 7, 12**

Promoting a mix of the uses in the area, coupled with street improvements, can lend to a bustling and vibrant atmosphere.

**4 CONSOLIDATED PARKING**

**RECOMMENDATION 5**

Bundling the parking in certain lots will reduce the need for surface parking, improving the pedestrian realm. The consolidated parking will also allow various land uses to share the parking, reducing the need for more spaces.

**5 MIX OF HOUSING TYPES**

**RECOMMENDATION 8**

A mix of housing types will ensure physical, as well as, socio-economic diversity in the area. The variety in housing will attract a diverse group of people, which will also support a diverse set of commercial activity.



0-5 YEARS

5-15 YEARS

15-30 YEARS

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Designation of an Arts District

Develop an Arts District Vision

Temporary open space and public art interventions

Restriction of on-street parking on Silver St.

Signed bike lanes and route on Silver St.

Establish business incubation programming

Relocating powerlines

Curb reconstruction

Higher-density mixed-use

Enhanced parks and open spaces

Continuous arts programming

Retained artist housing and work spaces

Bike boulevard along Center St.

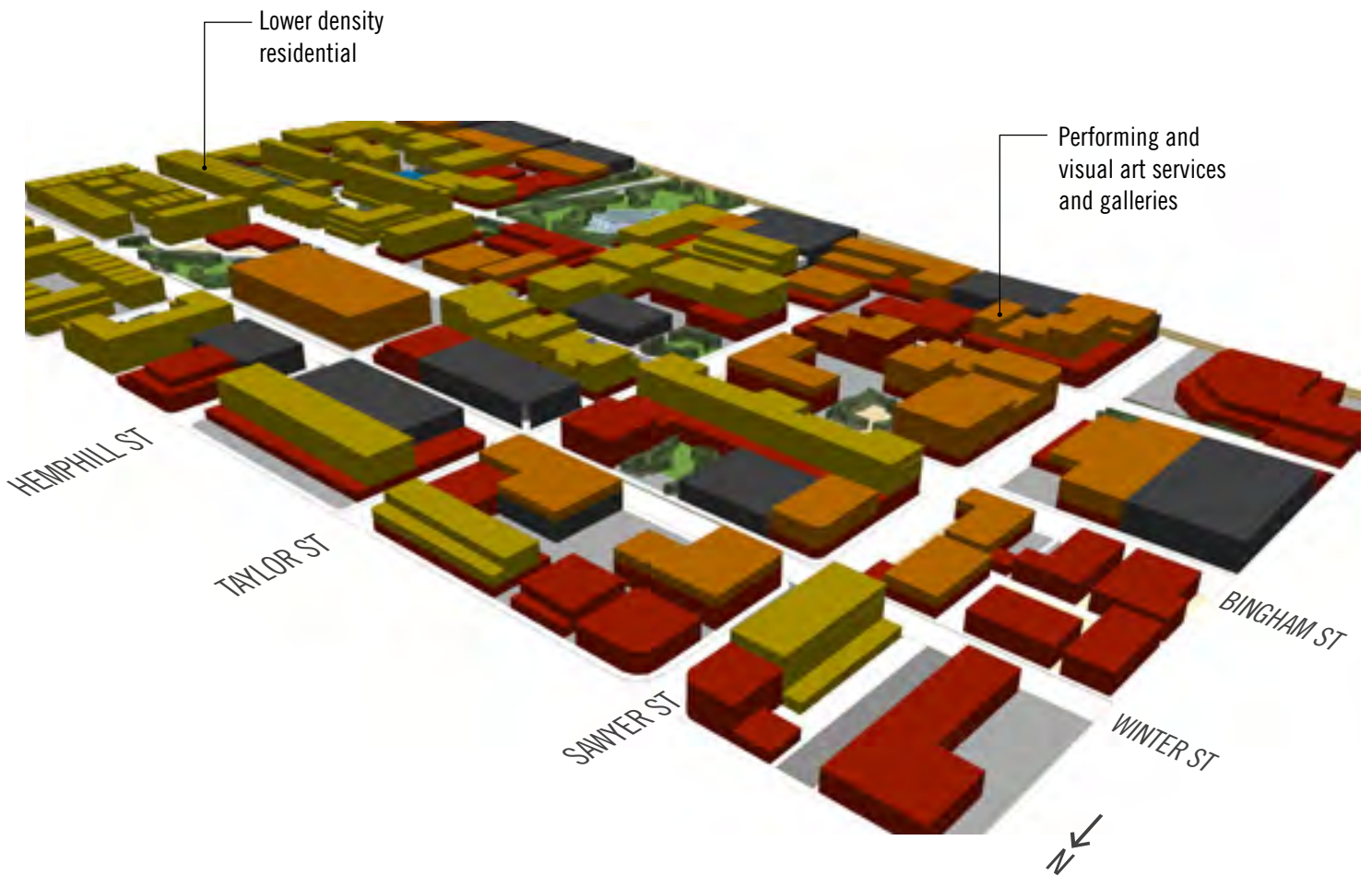
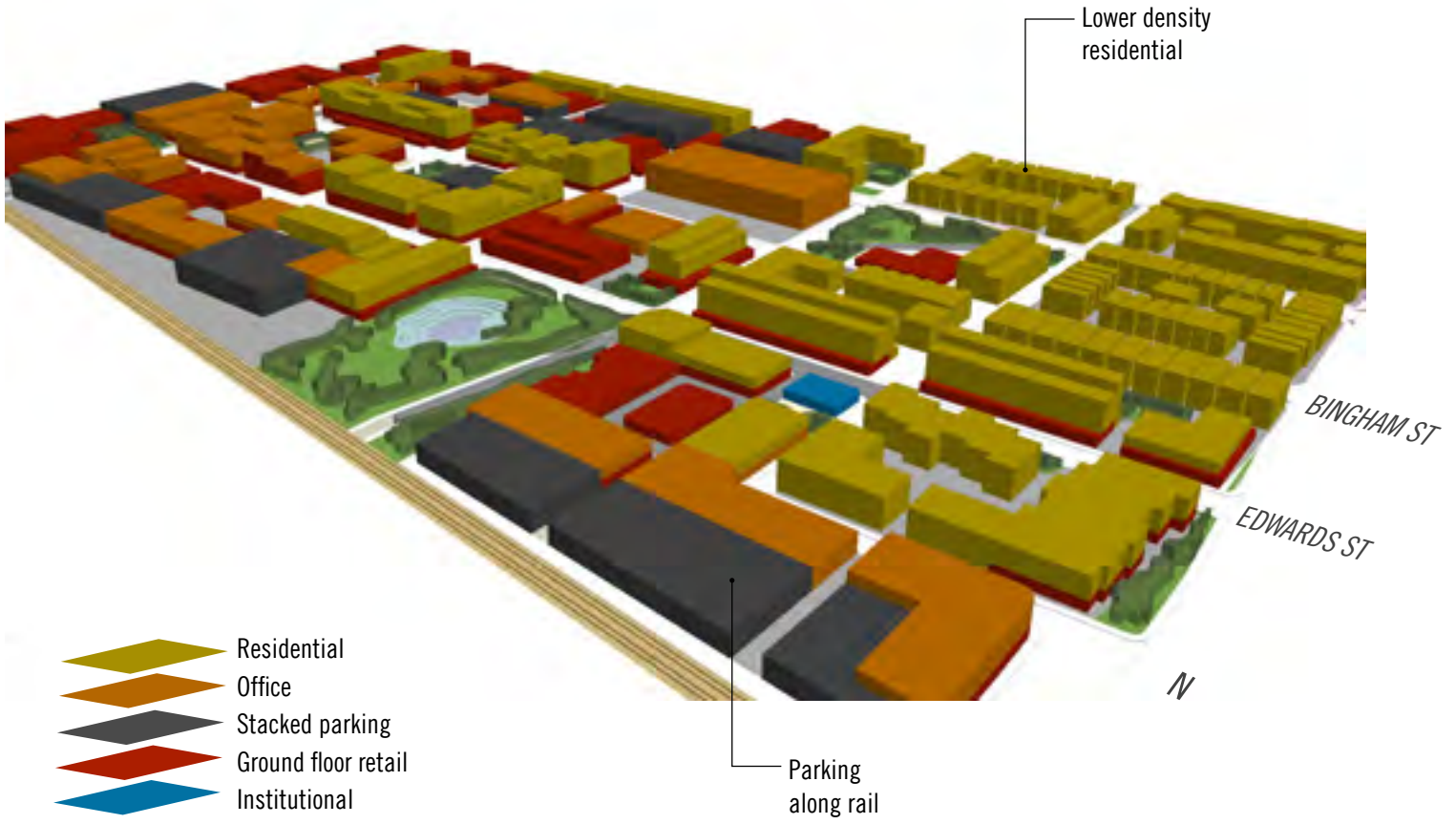
Higher-density mixed-use

Consolidated garage parking

Pedestrian amenities

Sidewalk extensions

Retained artist housing and work spaces



## NODE THREE: CIVIC CENTER

The Civic Center provides a wide range of services that should be easily accessible to visitors. The site as it exists today is broken up with surface parking lots and does not take advantage of the development potential gained from its proximity to Downtown. Potential redevelopments could take a number of forms, but should begin based on a reorganization of the existing street network to provide a walkable urban grid while creating useful sites for development. A mixture of uses organized on a grid street system would improve the walkability of the site, which would be supported by transit, including the extension of light rail. The reorganized grid system creates developable parcels out of currently underutilized city owned land. Potential uses include those that exist today – Houston Police Department, Municipal Courts, City Code Enforcement, St. Joseph Church, Aquarium and Amtrak, among others – but with a greater mix of retail, commercial, office, entertainment and housing options. Higher density structures would be best situated adjacent to the elevated highway, offering a beautiful view of Downtown, and building heights would descend to mid-rise structures. Incorporating public green and open spaces provides event and recreational venues that physically connect the site to Buffalo Bayou with an extension of the trail that leads visitors to the vibrant node at the east end of Washington Avenue. Further value will be added by coordinating development and infrastructure with the Post Office site on the opposite side of IH-10/IH-45.





**1 RIGHT-OF-WAY IMPROVEMENTS**

**RECOMMENDATION 1, 3, 4**

Reconfiguring the right-of-way on the site into a grid system will improve circulation and visitor orientation. Treatments should accommodate pedestrians, vehicles, transit, and cyclists.

**2 PARKS AND OPEN SPACE**

**RECOMMENDATION 8, 10, 11**

Open space serves as an extension of Buffalo Bayou, a visitor destination that should be easily accessible, and provides public space for events and recreation. Parks and open spaces can balance the density of the site and Downtown, while creating a healthier environment and vibrant ambiance.

**3 MIX OF USES**

**RECOMMENDATION 7, 12**

Existing services can be enhanced with increased commercial uses, which is easily supported by the job density of Downtown. Proximity to jobs and quality transit also serves as a benefit for high density residential development, ensuring that the site is inhabited by users at all hours.

**4 CONSOLIDATED PARKING**

**RECOMMENDATION 5**

Bundling the parking into garage structures will reduce the need for surface lots, improving the pedestrian realm and allowing for greater development of the site. Additionally, site proximity to transit may alleviate the need for parking spaces.

**5 HIGH-FREQUENCY TRANSIT**

**RECOMMENDATION 3**

Extension of the METRO Green & Purple light rail lines provides easy access to the site and its civic services. There is also potential to extend this line to the post office located to the northeast.





0-5 YEARS

5-15 YEARS

15-30 YEARS

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Washington Ave. lane reconfiguration

Signed bike route along Washington Ave.

High-Frequency transit along Washington Ave.

Temporary open space and public art interventions

Pedestrian amenities

Sidewalk extensions

Reconfiguring street network south of Washington Ave.

Development parcels sold to developers

Relocating powerlines

Transit Center north of Aquarium

Curb reconstruction

Greater density mixed-use

Clustered civic uses

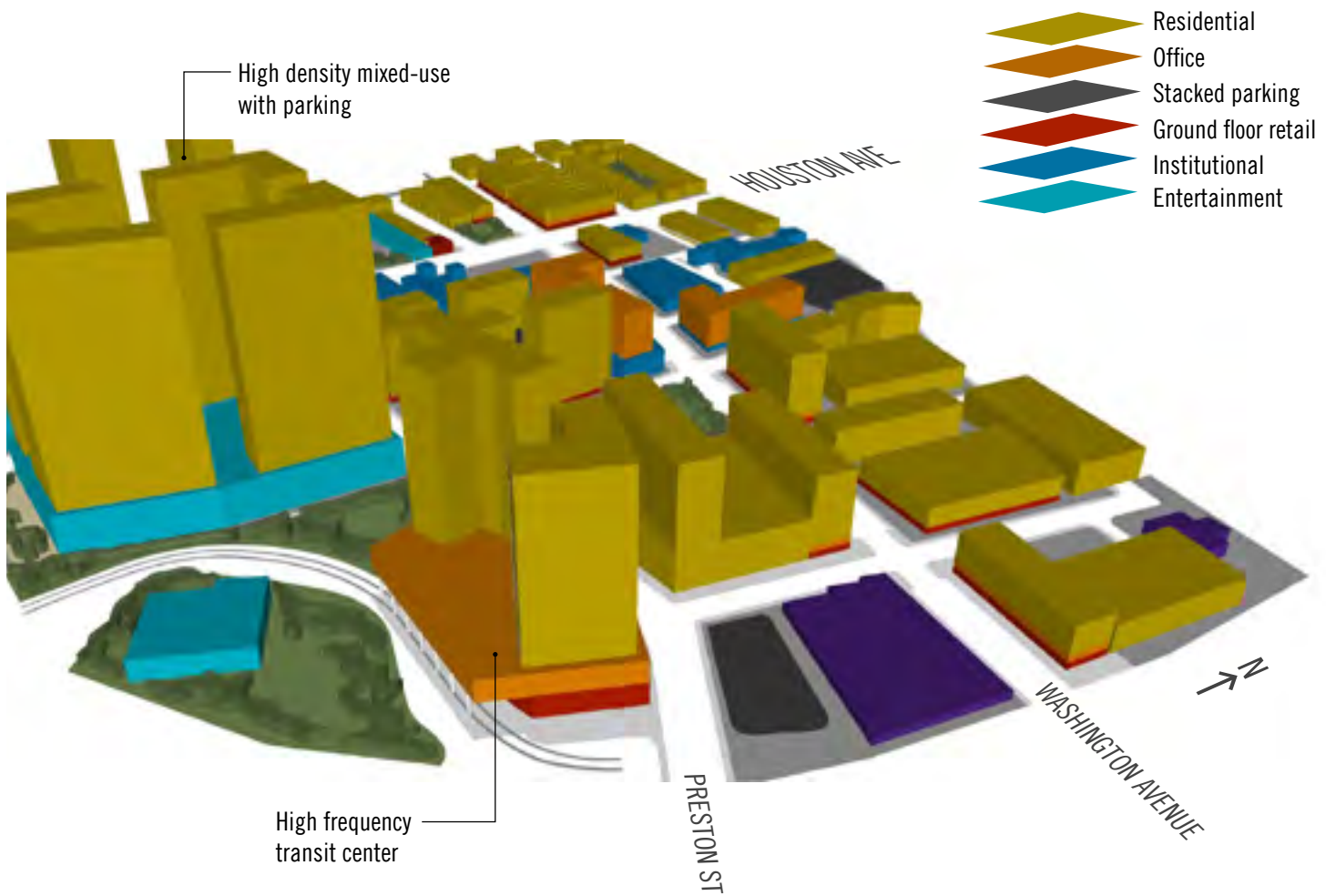
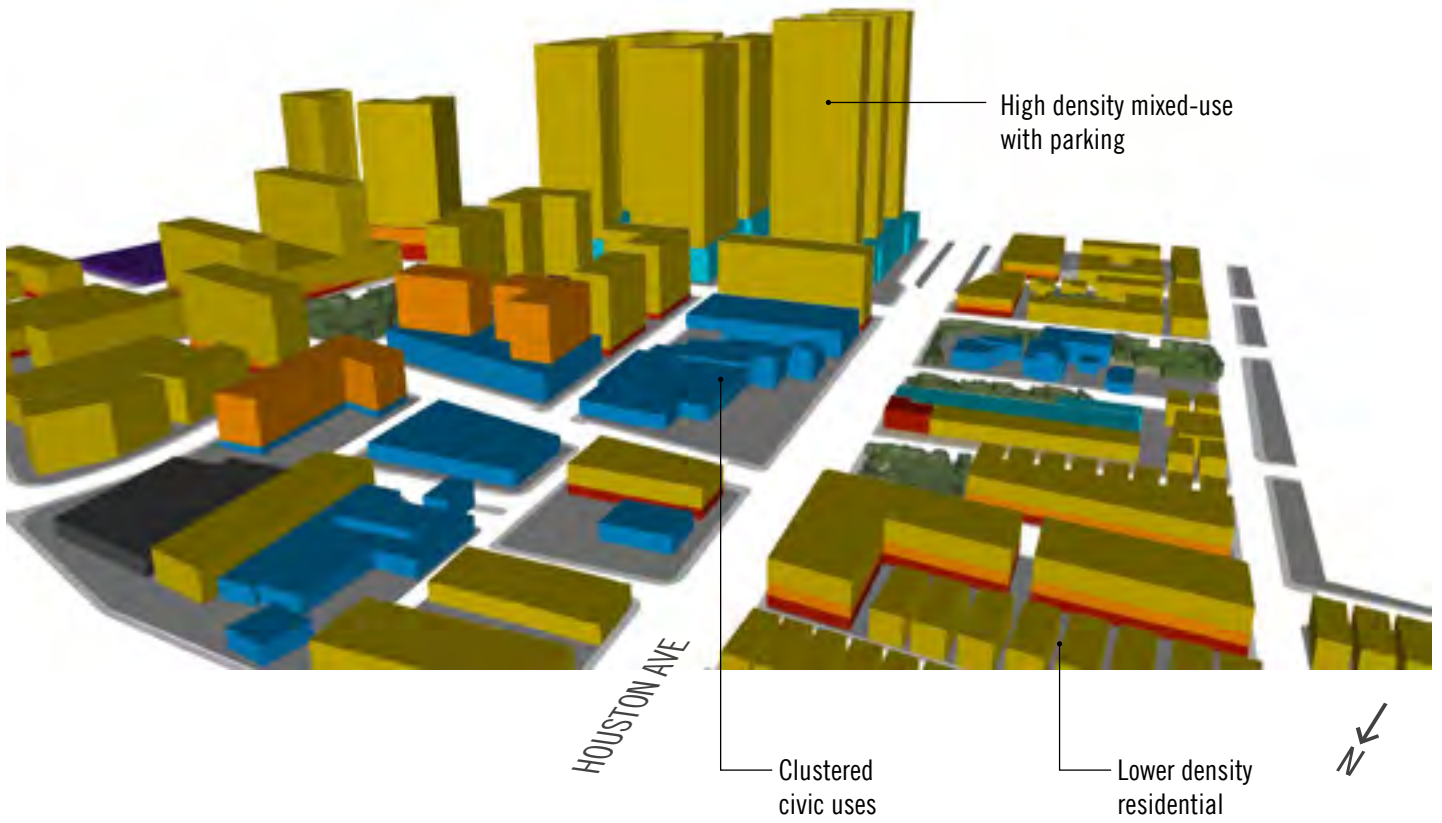
Streetcar (dedicated lane possible if warranted by ridership and mode split)

High-density mixed use

Bulb-outs and medians

Consolidated garage parking

Further street network reconfiguration to tie development sites to Post Office redevelopment







# APPENDIX

## RECOMMENDATION 01: WASHINGTON AVENUE RIGHT-OF-WAY

### Context Sensitive Design

Using the community's stated preferences and our assessment of existing traffic conditions, Washington Avenue can be redesigned to create the type of street deemed desirable by community members. The potential right-of-way solution can be laid out with the following priorities.

1. Provide sufficient traffic flow along Washington Avenue and strong connections to major North-South streets.
2. Provide improved pedestrian facilities throughout the corridor.
3. In the short term, provide a bicycle facilities throughout the corridor.
4. In the long term, provide the potential for priority transit lanes.
5. Provide as much on-street parking as possible.
6. Follow current city of Houston guidelines on lane-widths.

As the width of the avenue's right-of-way varies significantly throughout the corridor (from 80 to 60 feet wide, see pages 34-35), we also sought to find right-of-way solutions that would be applicable throughout the corridor.

We found that we could carry the necessary traffic using 48 feet for vehicles, three 12 foot travel lanes and two 6 foot bicycle lanes. This allows one travel lane in each direction and one lane for turning movements at major intersections or travel in the direction of the heaviest traffic flow. At major intersections, additional lanes could be added to facilitate turning movements by eliminating on-street parking.

In the long term, should high capacity transportation become a reality on Washington Avenue (see recommendation 3), the 48 foot right-of-way could be modified to four 12 foot lanes, with bicycle facilities shifting to Center Street (See recommendation 4).

In a 60 foot right-of-way, the remaining 12 feet would be dedicated to pedestrians (6 feet on each side). In an 80 foot right-of-way, two 8 foot parking lanes would be added and 14 feet would be dedicated to pedestrians. In a 70 foot right-of-way, on-street parking would be available on one side of the street and 14 feet would be dedicated to pedestrians. Recommendation 8 deals with additional pedestrian easements to create a wider pedestrian environment in the area of commercial development.

Right-ofway recommendations can be introduced with gradual changes, allowing for aflexibility through three stages:

#### STAGE ONE: Signs and Lines

The initial reconfiguration of Washington Avenue can be done inexpensively primarily through restriping. Doing so will allow a greater period of evaluation before costly changes to the curb line take place. Additional construction costs would include targeted sidewalk improvements and improved pedestrian crossings.

#### STAGE TWO: Reconstruction

Following a satisfactory evaluation period, Washington Avenue could be reconstructed allowing a 44-48-foot paving section, with additional accommodations for on street parking and turn lanes where necessary. Sidewalk reconstruction would occur with bulb outs and medians would be added where appropriate.

#### STAGE THREE: Transit Realignment

Should dedicated transit lanes become desirable in the future, the Avenue could be restriped to allow transit lanes, and bicycle lanes shifted to Center Street. The 48 foot paving section would continue to function in this alignment, but if necessary, additional on-street parking could be removed.

## RECOMMENDATION 02: MANAGEMENT DISTRICT

### Case Study: East End Management District

#### History and Purpose

The Greater East End Management District was created in 1999. Its purpose was to promote economic development, improve infrastructure and amenities, provide services to commercial property owners, and create opportunities for workforce training and development.

The purpose of the District is to implement projects that:

- Create a safe environment within the District
- Enhance the image of the District
- Improve infrastructure and amenities
- Attract more businesses and investment
- Improve business opportunities, in order to increase economic activity for the business property owners, tenants, and their customers

#### Funding

Services are funded by an assessment of commercial property owners and multifamily housing properties with 13 or more units within the district boundaries. Annual assessments typically average \$1.6 million per year. Programs and services are approved and monitored by a District Board of Directors comprised of commercial property owners, business owners, and residents.

#### Key Services

**Graffiti Abatement:** Since the inception of the program over ten years ago, the District has cleaned up more than 9,000 graffiti sites. The purpose of the program is to encourage economic development and public safety. The program is available at no extra cost to business owners, and is one of the more popular programs in the District. Working with a Community Mural Program, the District enlists the help of local students and artists to paint murals on designated wall settings previously covered with graffiti.

**Litter Removal:** The District currently has a seven-person crew that picks up litter, plastic, and other debris on major arterial streets every week. The District also partners with Keep Houston Beautiful for an East End Clean Up Day every year.

**Public Safety:** The District works with business owners and the Houston Police Department to proactively reduce criminal activity. Other programs include walking trail patrols, a Lock-Take-Hide initiative, and publishing of studies outlining when thefts are likely to occur. Street light repairs are another improvement, with reported outages fixed within three days.

**Workforce Development:** The District partners with educational institutions and other entities to provide skills and training to students and the unemployed.

#### Livable Centers Initiative

In 2009, The Greater East End Management District was awarded \$5 million in stimulus funds to bring sidewalks to city standards. Sidewalk improvements include lighting, striping, planting, transit shelters, and ramps. The project enhances walkability and improves access to public transit.

# Case Study: East End Management District

## History and Purpose

The Upper Kirby District was created by the State Legislature in 1997, and consists of the Harris County Improvement District and Tax Increment Reinvestment Zone No. 19. Upper Kirby is defined by a network of historic neighborhoods along with new urban mixed-use developments.

With the development of large retail and residential parcels, the area required a funding mechanism for infrastructure and landscaping improvements, along with ongoing maintenance services to create a blueprint for accommodating the city's growing population.

## Funding

The Upper Kirby District is funded with three sources:

- Harris County Improvement District No. 3 – Created in 1997, levies a 0.15% Ad Valorem Tax on commercial property only
- Tax Increment Reinvestment Zone No. 19 – Created in 1999, a tax on incremental value over 1999 base value
- Upper Kirby District Foundation – A 501 (c) 3 Nonprofit established in 1996, funded by private donations, rental income, and grant funds.

## Key Services

**Police Patrol:** The Upper Kirby District provides police patrol services using off duty Houston Police Department officers, Metro Police, and Texas State Troopers. The patrol provides 24/7 coverage with armed officers capable of issuing citations and making arrests. Supplemental police patrols have subsequently reduced crime in the District.

**Graffiti Abatement:** Prompt removal of graffiti from public rights-of-way and commercial properties.

**Right-of-Way Maintenance:** The District spends over \$300,000 annually maintaining the area's public spaces. Improvements include landscaping, street light repair, and sidewalk cleaning.

**Urban Design and Streetscape:** The goal of this program is to improve overall walkability in the District. Typical improvements include: overhead utility relocation, pedestrian lighting, upgraded bus shelters, widened sidewalks, and upgraded landscaping.

<b>Roundabout Improvements</b>				
Provide truck apron; remove unneeded pavement				
ITEM	UNIT	UNIT PRICE	QTY	TOTAL PRICE
<b>ROADWAY IMPROVEMENTS</b>				
EXCAVATION (ROADWAY)	CY	\$ 5.94	9.3	\$ 54.96
EMBANKMENT (FINAL)(DENS CONT)(TY C)	CY	\$ 5.10	38.9	\$ 198.33
BLOCK SODDING	SY	\$ 2.66	233.3	\$ 620.67
REMOVING CONC (CURB AND GUTTER)	LF	\$ 4.36	181.0	\$ 789.16
REMOVING CONC (PAVERS)	SY	\$ 7.59	233.3	\$ 1,771.00
REMOVING CONC (WHEELCHAIR RAMP)	SY	\$ 24.15	15.6	\$ 375.67
LANDSCAPE PAVERS	SY	\$ 48.31	55.6	\$ 2,683.89
COLORED TEXTURED CONC (6")	SY	\$ 67.65	234.6	\$ 15,867.68
LIME TRT (SUBGR)(DC)(6")	SY	\$ 2.15	246.3	\$ 529.51
LIME(HYD,COM OR QK)(SLRY)OR QK(DRY)	TON	\$ 145.53	3.0	\$ 443.54
CONC CURB & GUTTER (TY II)	LF	\$ 27.83	181.0	\$ 5,037.20
DRAINAGE INLET MODIFICATIONS	EA	\$ 5,000.00	4.0	\$ 20,000.00
CURB RAMPS (TY 7)	EA	\$1,034.56	2.0	\$ 2,069.12
SUBTOTAL 1				\$ 50,440.73
TCP AND MOBILIZATION (4.5%)				\$ 2,269.83
CONTINGENCY (20%)				\$ 10,088.15
SUBTOTAL 2				\$ 62,798.71
ENGINEERING (10%)				\$ 6,279.87
PROJECT MANAGEMENT (4%)				\$ 2,511.95
CONSTRUCTION MANAGEMENT (6%)				\$ 3,767.92
<b>TOTAL FOR CORRIDOR</b>				<b>\$ 75,358.45</b>

**Line item descriptions**

- Remove dirt from splitter islands where roadway is widened.
- Add dirt to splitter islands where roadway is narrowed.
- Add grass to splitter islands where roadway is narrowed.
- Remove all existing curb and gutter.
- Remove pavers where roadway is narrowed.
- Remove existing curb ramps where impacted by splitter island change.
- Add pavers where roadway is widened.
- Add concrete truck apron.
- Subgrade for truck apron.
- Lime treatment for truck apron.
- All new curb and gutter.
- Make modifications to drainage inlets.

Single Point Urban Interchange (SPUI)				
At Waugh Interchange				
ITEM	UNIT	UNIT PRICE	QTY	TOTAL PRICE
<b>ROADWAY IMPROVEMENTS</b>				
REMOV STR (BRIDGE 100-499 FT LENGTH)	EA	\$ 46,829.72	1	\$ 46,829.72
REMOVING CONC (PAV)	SY	\$ 4.14	21666.67	\$ 89,700.00
CONSTRUCTION OF SPUI	EA	\$ 20,000,000.00	1.0	\$ 20,000,000.00
UTILITY MODIFICATIONS	EA	\$ 312,000.00	1.0	\$ 312,000.00
SUBTOTAL 1				\$ 20,448,529.72
TCP AND MOBILIZATION (4.5%)				\$ 920,183.84
CONTINGENCY (20%)				\$ 4,089,705.94
SUBTOTAL 2				\$ 25,458,419.50
ENGINEERING (10%)				\$ 2,545,841.95
PROJECT MANAGEMENT (4%)				\$ 1,018,336.78
CONSTRUCTION MANAGEMENT (6%)				\$ 1,527,505.17
<b>TOTAL FOR CORRIDOR</b>				<b>\$ 30,550,103.40</b>

Diverging Diamond				
At Waugh Interchange				
ITEM	UNIT	UNIT PRICE	QTY	TOTAL PRICE
<b>ROADWAY IMPROVEMENTS</b>				
REMOV STR (BRIDGE 100-499 FT LENGTH)	EA	\$ 46,829.72	1	\$ 46,829.72
REMOVING CONC (PAV)	SY	\$ 4.14	21666.67	\$ 89,700.00
CONSTRUCTION OF DIVERGING DIAMOND	EA	\$ 4,168,000.00	1.0	\$ 4,168,000.00
UTILITY MODIFICATIONS	EA	\$ 312,000.00	1.0	\$ 312,000.00
SUBTOTAL 1				\$ 4,616,529.72
TCP AND MOBILIZATION (4.5%)				\$ 207,743.84
CONTINGENCY (20%)				\$ 923,305.94
SUBTOTAL 2				\$ 5,747,579.50
ENGINEERING (10%)				\$ 574,757.95
PROJECT MANAGEMENT (4%)				\$ 229,903.18
CONSTRUCTION MANAGEMENT (6%)				\$ 344,854.77
<b>TOTAL FOR CORRIDOR</b>				<b>\$ 6,897,095.40</b>

Interchange cost <http://www.transportation.wv.gov/highways/programplanning/comment/richlandsinterchange/Pages/default.aspx>  
 DDI cost [http://www.ocite.org/movite2009/PDF/Diverging\\_Diamond\\_Interchange.pdf](http://www.ocite.org/movite2009/PDF/Diverging_Diamond_Interchange.pdf)  
 SPUI cost [http://www.browngay.com/PDFs/WP\\_SPUI%20Design%20GrandPkwy\\_FINAL.pdf](http://www.browngay.com/PDFs/WP_SPUI%20Design%20GrandPkwy_FINAL.pdf)  
 DDI cost [http://www.dailycamera.com/superior-news/ci\\_20412148/states-first-diverging-diamond-interchange-moves-forward-superior](http://www.dailycamera.com/superior-news/ci_20412148/states-first-diverging-diamond-interchange-moves-forward-superior)  
 DDI cost <http://www.time.com/time/magazine/article/0,9171,2044725,00.html>  
 DDI cost [http://usatoday30.usatoday.com/news/nation/2010-01-27-diverging-diamond-interchange\\_N.htm](http://usatoday30.usatoday.com/news/nation/2010-01-27-diverging-diamond-interchange_N.htm)  
 DDI cost <http://ksmu.org/article/work-begins-new-diverging-diamond-interchange>

SPUI Cost: \$21-29 million  
[http://wycokck.org/uploadedFiles/Departments/Public\\_Works/Village%20West%20Project%20Fact%20Sheet\\_120925.pdf](http://wycokck.org/uploadedFiles/Departments/Public_Works/Village%20West%20Project%20Fact%20Sheet_120925.pdf)

Modified diamond: \$18 million, SPUI: \$27 million  
[http://www.ccrpcvt.org/library/scoping/Exit12B\\_alignment\\_study/Exit12B\\_alignment\\_study\\_appG\\_200907.pdf](http://www.ccrpcvt.org/library/scoping/Exit12B_alignment_study/Exit12B_alignment_study_appG_200907.pdf)

SPUI: \$18.85 million  
<http://www.modot.mo.gov/business/documents/J411402.pdf>

SPUI: \$23 million, DDI: \$10 million  
[http://www.270dorsettpage.com/documents/MoDOTFactSheetDDI3-23-11\\_000.pdf](http://www.270dorsettpage.com/documents/MoDOTFactSheetDDI3-23-11_000.pdf)

TUDI: \$9.2 million, SPUI: \$20 million  
<http://azmemory.azlibrary.gov/utills/getfile/collection/statepubs/id/1266/filename/1266.pdf>



## RECOMMENDATION 03: HIGH FREQUENCY TRANSIT

# RIDERSHIP MODEL

### Assumptions

- Average Walk Time to Bus: 5 minutes
- Bus Ridership Catchment Area: 1/4 Mile
- Average Wait Times at Bus Stop:  $\text{Wait Time} = 0.72 * (\text{average headway})^{0.75^1}$
- Base Behavioral Weights (bus riders value time differently based on activity): <sup>2</sup>
- Generalized Time Elasticity <sup>3</sup>
  - Short-Term: 1st year of service change (1.2)
  - Long-Term: After 3 years of service change (2.4)
- Fare (for new and existing services): \$1.25
- Value of time assumption: \$0.24/min <sup>4</sup>
- Population Estimate: Census 2010 block data. Distance is measured from the centroid of each block.
- Population Growth: Population is held at the 2010 level for all analysis
- Average AM/PM Peak: Peak hours are from 6:30 - 9:00am and 3:00 - 6:00 pm.
- Daily Bus Ridership: Bus ridership is estimated on boarding data by bus stop collected on May 26, 2011.
- When multiple bus routes served a bus stop in the study area <sup>5</sup> [boardings / # bus routes at stop].

Action	Behavioral Weight
Bus In-vehicle time	1.0
Bus Walk time	1.4
Bus Wait time	1.8

(1) The model uses a wait curve recommended by the Australian Transport Council's guidelines on transport modeling.

(2) <http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp100/part%203.pdf> and [http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp\\_webdoc\\_12.pdf](http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_webdoc_12.pdf)

(3) Australian Transport Council's guidelines for generalized time elasticity in the short-term is 1-1.5, with the long-term twice the value of the short-term. The midpoint elasticity (1.2 and 2.4) was used in this analysis.

(4) Value of time based on US DOT 2003 recommendation of \$11.20 per hour, converted to 2010 dollars (\$14.37 an hour).

(5) Downtown stop ridership is estimated differently, given many stops served by multiple routes. Ridership is estimated: [Total Ridership by Line (from METRO May 2011 average weekday daily ridership) \* % of Total Route Boardings at the stop (from May 26, 2011 data collection)].

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To Zackq Lockrem, Asakura Robinson

Date  
October 3, 2012

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Copies

Reference number

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From Arup

File reference

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Subject Washington Avenue Livable Center Study: Transit Implementation Costs

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## 1 Introduction

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The following memo summarizes preliminary cost estimates to implement the following interventions along the Washington Avenue corridor:

- Signs and Lines: Restriping lanes and adding signage to more effectively serve multiple users along the corridor;
- Washington Avenue Bus Circulator: Short run strategy to provide high frequency transit for the Washington Avenue community; and
- Washington Avenue Light Rail Circulator: Potential long term option to provide high frequency transit for the Washington Avenue community.

The estimates presented in this memo are preliminary in nature, and more detailed cost analysis is required as these strategies are further refined beyond the concept development phase.



# Memorandum

## 2 Washington Avenue Road Diet Strategy: Signs and Lines

The estimated cost for the Signs and Lines road diet strategy is presented in Table 1. In the short-term, this project will cost an estimated \$290,000 which incorporates striped curb extensions / bulb-outs. With the construction of raised curb extensions / bulb-outs, in the median-run the costs will cost an estimated \$2.4 million.

**Table 1: Washington Avenue ‘Signs and Lines’ Strategy Estimated Costs**

Facility	Cost per Unit	WAVE Quantity	Total Cost
Travel Lane Restriping: 4" Thermoplastic	\$0.33 / LF	10,400 ft.	\$3,400
Crosswalk Striping (at key intersections)	\$2 / LF	6,500 ft. (10 intersections)	\$13,000
Bicycle Lanes 4" Striping (Thermoplastic)	\$0.33 / LF	66,000 ft.	\$22,000
Bicycle Marking + Arrow	\$160 / marking set	190 (30 per mile)	\$64,000
Curb Extensions / Bulb Outs			
- Stripped / Painted (Short-Run):	\$500 / bulb-out	36	\$18,000 (SR) /
- Raised (Median-Run):	\$35,000 / bulb-out		\$1,260,000 (MR)
<u>Signage:</u>			
- Bicycle Signs	\$250 per sign	72 signs (10 per mile)	\$18,000
- Wayfinding / Directional Signs / Regulatory Signs	\$250 per sign	144 signs (20 per mile)	\$36,000
<b>Subtotal</b>			\$170,000 (SR) / \$1,420,000 (MR)
Mobilization / Insurance Fees / Permits / Bonds / Contingency (45%)			\$70,000 / \$640,000
<b>Construction Total</b>			\$250,000 (SR) / \$2,050,000 (MR)
Design Fee / Construction Administration (15%)			\$38,000 / \$308,000
<b>Total ‘Signs and Lines’ Strategy Estimate</b>			\$290,000 (SR) / \$2,360,000 (MR)

The following sub-sections discuss sources of cost benchmarks used in this estimate. While pricing information for cities outside Texas are provided for reference, this analysis only uses Texas specific costs benchmarks for all facilities detailed in Table 1.

# Memorandum

## 2.1 Restriping

Assuming a one-to-three ratio for broken travel lane markings, an estimated 10,400 ft. of 4" thermoplastic paint will be restriped at a cost of \$0.33 per LF.<sup>1</sup>

Table 2 shows costs for crosswalk markings from different city agencies. At 10 key intersections, crosswalks will be restriped, at a cost of \$2 per LF.

The cost of restriping roads and installing signs varies based on a city's prevailing cost structure, the design and amount of linear feet to be placed, and the technology and materials used for the project. As all striping will require periodic maintenance and upkeep, these costs take into account installation only, rather than a multi-year maintenance and replacement cycle.

**Table 2: Crosswalk Markings Cost Comparison**

Agency	Type / Notes	Cost
Harris County, TX <sup>2</sup>	Standard crosswalk pavement (thermoplastic)	\$2 LF
Westchester / Rockland Country, NY <sup>3</sup>	Includes appropriate signage (ie: Yield to Pedestrians signs)	\$2.50 LF
San Diego, CA <sup>4</sup>		\$600 / crosswalk
Pittsboro, NC <sup>5</sup>		\$4.80
San Francisco MTA, CA <sup>6</sup>	Standard / Zebra Striping – High Visibility Florescent Tape	\$3 LF - \$6 LF

<sup>1</sup> [http://dallascityhall.com/committee\\_briefings/briefings0112/TEC\\_PavementMarkings\\_012312.pdf](http://dallascityhall.com/committee_briefings/briefings0112/TEC_PavementMarkings_012312.pdf)

<sup>2</sup> [http://hcpid.org/Construction/payestimates/pdf/current\\_yr/04102012/\\$200K%20Thermoplastic%20Striping%20%28Professional%20Traffic%20Control%29-Pet.%204\\_6.pdf](http://hcpid.org/Construction/payestimates/pdf/current_yr/04102012/$200K%20Thermoplastic%20Striping%20%28Professional%20Traffic%20Control%29-Pet.%204_6.pdf)

<sup>3</sup> <http://www.co.rockland.ny.us/planning/documents/Bikeped/typical%20unit%20costs.pdf>

<sup>4</sup> ([http://www.sanbag.ca.gov/planning/pdf/Best%20Practices\\_Final.pdf](http://www.sanbag.ca.gov/planning/pdf/Best%20Practices_Final.pdf))

<sup>5</sup> <http://pittsboronc.gov/vertical/sites/%7B512CE168-4684-4855-9CD9-7D209FE775E3%7D/uploads/%7BBFB25829-952A-4132-AA7C-450768284EEA%7D.PDF>

<sup>6</sup> [http://www.mtc.ca.gov/planning/bicyclespedestrians/Ped\\_Districts/04-Generic-Cost-Estimating-Tool.pdf](http://www.mtc.ca.gov/planning/bicyclespedestrians/Ped_Districts/04-Generic-Cost-Estimating-Tool.pdf)

# Memorandum

## 2.2 Bicycle Lanes and Markings

Table 3 shows cost for bicycle lane striping and markings from different city agencies. This analysis incorporates solid 4” thermoplastic solid bicycle lane markings and bicycle and arrow symbols. A full color treatment of the corridor, while providing many benefits, is not considered due to costs. For a full color treatment of the nearly 200,000 sq. ft. of bicycle lanes, costs would be approximately \$800,000.

Bicycle lane and arrow symbols are estimated at \$160. Bicycle markings are planned for 30 per mile, resulting in approximately 190 markings needed for 6.3 miles of bicycle lanes.

**Table 3: Bicycle Markings Cost Comparison**

Agency	Pavement Marking Type	Cost	Recommended Frequency
Dallas, TX <sup>7</sup>	- Bicycle Marking / Arrow <sup>8</sup> - Bicycle Lane (full color) - Bicycle Lane (stripping)	\$160 / marking \$4 / SF \$17,400 - \$24,500 / mile	30 per mile
North Central Texas Council of Governments <sup>9</sup>	Lane placement, direction of travel and eight markings per mile	\$8,720 / mile	
Nevada County, CA <sup>10</sup>	Lane Symbol (paint)	\$50/ marking	20 per mile
Wichita, KS <sup>11</sup>	Lane Symbol (thermoplastic)	\$165 / marking	20 per mile
Westchester / Rockland Country, NY <sup>12</sup>	- Stripe and Sign	\$17,850 / mile	
Los Angeles County, CA <sup>13</sup>	- Striping - Sharrow Marking	\$4 / linear foot \$155 / marking	4 per block

<sup>7</sup> [http://dallascityhall.com/committee\\_briefings/briefings0112/TEC\\_PavementMarkings\\_012312.pdf](http://dallascityhall.com/committee_briefings/briefings0112/TEC_PavementMarkings_012312.pdf)

<sup>8</sup> [http://www.dallascityhall.com/development\\_services/bikePlan/pdf/2011\\_Dallas\\_Bike\\_Plan.pdf](http://www.dallascityhall.com/development_services/bikePlan/pdf/2011_Dallas_Bike_Plan.pdf)

<sup>9</sup> [http://nctcog.org/trans/sustdev/bikeped/Pedestrian\\_Bicycle\\_System\\_AHedits\\_July07.pdf](http://nctcog.org/trans/sustdev/bikeped/Pedestrian_Bicycle_System_AHedits_July07.pdf)

<sup>10</sup> [http://www.nctc.ca.gov/documents/Miscellaneous/Bicycle%20Master%20Plan/Appendix\\_E\\_Nevada\\_County\\_Cost\\_Estimates.pdf](http://www.nctc.ca.gov/documents/Miscellaneous/Bicycle%20Master%20Plan/Appendix_E_Nevada_County_Cost_Estimates.pdf)

<sup>11</sup> [http://www.wichita.gov/NR/rdonlyres/01FF1D4D-AE19-424F-8E4A-](http://www.wichita.gov/NR/rdonlyres/01FF1D4D-AE19-424F-8E4A-2BCC89E514F2/77034/AppendixCPlanningLevelCostEstimator.pdf)

[2BCC89E514F2/77034/AppendixCPlanningLevelCostEstimator.pdf](http://www.wichita.gov/NR/rdonlyres/01FF1D4D-AE19-424F-8E4A-2BCC89E514F2/77034/AppendixCPlanningLevelCostEstimator.pdf)

<sup>12</sup> <http://www.co.rockland.ny.us/planning/documents/Bikeped/typical%20unit%20costs.pdf>

<sup>13</sup> <http://dpw.lacounty.gov/pdd/bikepath/bikeplan/docs/bmp/Appendix%20H.pdf>

# Memorandum

## 2.3 Signage

Bicycle signs are planned at a quantity of 10 per mile, resulting in 72 signs needed for the corridor. Additional wayfinding and directional signs for the neighborhood are planned at 20 per mile, resulting in 144 signs. Each sign is estimated to cost \$250 per sign. Final cost will be determined by a detailed survey of existing signs, and pending approval of the final designs.

Table 4 shows cost for signage from different city agencies.

**Table 4: Signage Cost Comparison**

Agency	Type	Cost	Frequency
Dallas, TX <sup>14</sup>	Bicycle Sign / Wayfinding Signs	\$250 per sign \$250 per sign	10 per mile 20 per mile
North Central Texas Council of Governments <sup>15</sup>	Bicycle Route Signing (on street)	\$1,090 per mile	10 per mile
Westchester / Rockland Country, NY <sup>16</sup>	Directional Signage	\$250 / sign	
Los Angeles County, CA <sup>17</sup>	Bicycle Route Signing (on street)	\$300 / sign	2 per block
Wichita, KS <sup>18</sup>	Bicycle Route Signing (on street)	\$125 / sign	10 per mile
San Francisco MTA, CA <sup>19</sup>	Pedestrian Crossing Signage (standard)	\$300 / sign	

<sup>14</sup> [http://www.dallascityhall.com/development\\_services/bikePlan/pdf/2011\\_Dallas\\_Bike\\_Plan.pdf](http://www.dallascityhall.com/development_services/bikePlan/pdf/2011_Dallas_Bike_Plan.pdf)

<sup>15</sup> [http://nctcog.org/trans/sustdev/bikeped/Pedestrian\\_Bicycle\\_System\\_AHedits\\_July07.pdf](http://nctcog.org/trans/sustdev/bikeped/Pedestrian_Bicycle_System_AHedits_July07.pdf)

<sup>16</sup> <http://www.co.rockland.ny.us/planning/documents/Bikeped/typical%20unit%20costs.pdf>

<sup>17</sup> <http://dpw.lacounty.gov/pdd/bikepath/bikeplan/docs/bmap/Appendix%20H.pdf>

<sup>18</sup> <http://www.wichita.gov/NR/rdonlyres/01FF1D4D-AE19-424F-8E4A-2BCC89E514F2/77034/AppendixCPlanningLevelCostEstimator.pdf>

<sup>19</sup> [http://www.mtc.ca.gov/planning/bicyclespedestrians/Ped\\_Districts/04-Generic-Cost-Estimating-Tool.pdf](http://www.mtc.ca.gov/planning/bicyclespedestrians/Ped_Districts/04-Generic-Cost-Estimating-Tool.pdf)

# Memorandum

## 2.4 Curb Extensions / Bulb Outs

Table 5 provides costs for curb extensions / bulb-out construction from different city agencies. For this analysis, a short-run and medium-run condition is considered. In the short-run, curb extensions / bulb-outs would be painted (at an estimated cost of \$500 per bulb-out) while in the medium-term they would be raised (at an estimated cost of \$35,000 per bulb-out). These estimates are based from H-GAC's Access Management Study (2011) and appear higher than other cities' estimates for curb-extension / bulb-out construction. The costs of curb extensions / bulb-outs vary depending on drainage considerations, street furniture, and the requirement to move items like traffic signal mast arms.

The plan calls for 36 curb extensions / bulb-outs.

**Table 5: Curb Extension / Bulb-Outs Cost Comparison**

Agency	Type	Cost
HGAC Access Management Study, TX <sup>20</sup>	Stripped-Bulb-Out Raised Bulb-Out	\$500 / stripped bulb-out \$35,000 / raised bulb-out
San Francisco MTA, CA <sup>21</sup>	Bulb-Out	\$15,000 - \$25,000 /each (6' wide bulb-out extension, and 20' length)
Pennsylvania State DOT <sup>22</sup>		\$7,000 - \$10,000 / each
Bloomington, MN <sup>23</sup>	Bulb-out	\$7,500 /each

<sup>20</sup> [http://www.h-gac.com/taq/Access%20Management/FM1764/docs/AccessManagementStudy-Draft-11-23-11-revised\\_sm.pdf](http://www.h-gac.com/taq/Access%20Management/FM1764/docs/AccessManagementStudy-Draft-11-23-11-revised_sm.pdf)

<sup>21</sup> [http://www.mtc.ca.gov/planning/bicyclespedestrians/Ped\\_Districts/04-Generic-Cost-Estimating-Tool.pdf](http://www.mtc.ca.gov/planning/bicyclespedestrians/Ped_Districts/04-Generic-Cost-Estimating-Tool.pdf)

<sup>22</sup> <ftp://ftp.dot.state.pa.us/public/pdf/TrafficCalming/Ch5TCH.pdf>

<sup>23</sup> <http://www.ci.bloomington.mn.us/cityhall/council/cpolicy/locstpo109.pdf>



# Memorandum

a.m. – 12 a.m. Sunday-Thursday, and 7 a.m. – 2 a.m. Friday and Saturday, the estimated annual cost is \$3.6 million for Concept 1A and \$4.4 million for Concept 1B (shown in Table 7).

**Table 7: Estimated Washington Avenue Bus Circulator Operating Costs (with existing METRO bus operating costs)**

Route	Roundtrip Length	Route Roundtrip Duration	Stops	Est. Vehicles <sup>26</sup>	Est. Annual Vehicle Revenue Hour	Est. Annual Operating Cost
Concept 1A	12.3 miles	50 minutes	32	5 (+1 spare)	32,000	\$3,650,000
Concept 1B	14 miles	60 minutes	47	6 (+2 spare)	39,000	\$4,380,000

The most recent example of a major city successfully developing and operating a downtown circulator is Washington DC, operated by a public-private partnership. The DC Circulator currently operates on 5 routes with standard 10-minute headways and a simplified flat fare of \$1. It is owned by the District Department of Transportation, managed by WMATA, the local transit authority, and operated by a private operator. The most successful Circulator routes operate along corridors that are underserved by current bus routes and offer opportunities to connect to other transit services either at terminal points or enroute.

The DC Circulator operates at a cost per revenue hour of \$83.01.<sup>27</sup> The farebox recovery ratio is approximately 20%, which means that farebox revenue covers 20% of operating expenses. Since the DC Circulator is comparable to the system envisioned for Washington Avenue, Table 8 shows the estimated costs for the proposed circulator using the DC Circulator operating expenses as the benchmark. The estimated annual cost for Concept 1A is \$2.7 million and for Concept 1B \$3.2 million, lower estimates than using Houston’s overall bus system’s operating expenses.

**Table 8: Estimated Washington Avenue Bus Circulator Operating Costs (with DC Circulator operating costs)**

Route	Roundtrip Length	Route Roundtrip Duration	Est. Vehicles <sup>28</sup>	Est. Annual Vehicle Revenue Hour	Est. Annual Operating Cost
Concept 1A	12.3 miles	50 minutes	5 (+1 spare)	32,000	\$2,660,000
Concept 1B	14 miles	60 minutes	6 (+2 spare)	39,000	\$3,200,000

<sup>26</sup> A 20% spare factor is required in order to cover vehicles out of service for routine maintenance, mechanical failures, or other unscheduled reasons.

<sup>27</sup> [http://ddot.dc.gov/DC/DDOT/Publication%20Files/On%20Your%20Street/Mass%20Transit/DC%20Circulator/DCCirculatorTransitDevelopmentPlan\\_03-2011.pdf](http://ddot.dc.gov/DC/DDOT/Publication%20Files/On%20Your%20Street/Mass%20Transit/DC%20Circulator/DCCirculatorTransitDevelopmentPlan_03-2011.pdf)

<sup>28</sup> A 20% spare factor is required in order to cover vehicles out of service for routine maintenance, mechanical failures, or other unscheduled reasons.





# Memorandum

Southeast Corridor LRT (Houston)	\$792 -29 LRT Vehicles <sup>31</sup>	6.5 Miles (double-track line) / 10 Stations	\$122	\$12.50 (Forecast from FTA)
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To compare against national costs, Table 11 shows cost per mile for 14 light-rail projects, existing and proposed. While recognizing the varying site conditions and system specifics that yield this range of costs, the average cost is \$88.6 million per mile.

**Table 11: Light Rail Systems Comparable Costs**

LRT System	Cost per Mile (2011)
Norfolk	\$45.9
San Diego Mid Coast	\$58.0
Orlando	\$65.8
Dallas	\$68.2
Cincinnati	\$73.8
Salt Lake City	\$76.4
Phoenix	\$76.5
Denver	\$76.6
Austin	\$81.1
Minneapolis	\$83.9
Portland Interstate	\$109.9
San Diego Mission Valley	\$117.0
San Francisco	\$148.4
Portland North South	\$158.4
<b>Average Cost</b>	<b>\$88.6</b>

## 4.2 Light Rail Operating Costs

For light rail operating costs, FTA’s National Transit Database calculates Houston’s METRO light rail operational expenses per vehicle hour is \$199.33 in 2010.<sup>32</sup> With the proposed Washington Avenue light rail circular, operating hours will be similar to other METRORail hours of 4:30 a.m. – 12 a.m. Monday through Thursday, 4:30 a.m. to 2:20 a.m. Friday, 5:30 a.m. to 2:20 a.m. Saturday, and 5:30 a.m. to 11:40 a.m. Sunday. Estimated annual operating costs for Concept 1A is \$6.5 million and Concept 1B \$7.8 million.

<sup>31</sup> [http://www.yourhoustonnews.com/pasadena/news/metro-receives-million-for-light-rail-construction/article\\_039e0eaf-f351-5224-948b-a728e4f0a83c.html](http://www.yourhoustonnews.com/pasadena/news/metro-receives-million-for-light-rail-construction/article_039e0eaf-f351-5224-948b-a728e4f0a83c.html)

<sup>32</sup> [http://www.ntdprogram.gov/ntdprogram/pubs/profiles/2010/agency\\_profiles/6008.pdf](http://www.ntdprogram.gov/ntdprogram/pubs/profiles/2010/agency_profiles/6008.pdf)

## RECOMMENDATION 04: BICYCLE FACILITIES

Potential facilities are shown on the map on the following pages and are described in detail below. The type of facility proposed for each corridor was selected based on existing traffic volumes, pavement, right-of-way, expected bicycle demand, and a goal of connecting to existing bicycle facilities with the same type of facility. Each facility type is defined on the following page and the proposed bicycle improvements are shown in the map on pages 132-133

### **B1 – Bike lanes on Center Street between Detering Street and Houston Avenue.**

Center Street is proposed to complement Washington Avenue as the primary east-west bicycle corridor in the central part of the study area. Although Center Street runs only 2.6 miles between Detering Street and Houston Avenue, many cyclists will likely only need to use it for local trips or to connect to north-south routes.

At a time in the future when Washington Avenue's right-of-way is adapted for additional travel lanes or for dedicated transit lanes (especially if this includes rail transit, which is often incompatible with bicycling), Center Street could be redeveloped as a full bicycle boulevard (see the precedent on the following pages).

### **B2 – Patterson Street between Washington Avenue and 7th Street.**

Patterson Street is desirable for bicycle facilities because it is a low-volume road that crosses the Terminal Subdivision rail line and is grade-separated at IH-10. It would connect proposed bicycle facilities on Feagan Street and Center Street to the existing MKT Rail-to-Trail facility in the Heights.

- B2 – 1: Signed Bike Route.
- B2 – 2: Bike Lanes.
- B2 – 3: Signed Bike Route.
- B2 – 4: Shared-use Path. A bridge will be required to cross White Oak Bayou. Right-of-way may need to be purchased between 6th Street and 7th Street.

### **B3 – Shared-use path on Studemont Street between Memorial Drive and the MKT Rail-to-Trail.**

A bicycle facility along Studemont Street would provide a connection between the MKT Rail-to-Trail and the Buffalo Bayou Trails. It would also provide access to the newly-constructed bicycle/pedestrian bridge over Memorial Drive and Buffalo Bayou – one of the few facilities along the corridor that is suitable for bicyclists of all skill levels that crosses both barriers. The facility is proposed to be a shared-use path so that it will provide a similar ride experience to that of the MKT Rail-to-Trail and Buffalo Bayou Trails. The underpass sidewalk at the Terminal Subdivision rail line would need to be modified to allow two-way bicycle traffic. The pavement width of the underpass could be reduced to 22 feet on the northbound side, and that combined with a reworking of the curb and sidewalk railing could provide approximately 10 feet for a side-path.

### **B4 – Memorial Drive and Silver Street between Sawyer Street and Spring Street.**

This facility would connect the existing trail along Memorial Drive to the MKT Rail-to-Trail along Spring Street. The following segments are proposed:

- B4 – 1: Bridge over Buffalo Bayou connecting the trails on the north side and south side of the bayou at Eleanor Tinsley Park. The trails on both sides are elevated at this point. The bridge would create a logical connection to the frequent activities at Eleanor Tinsley Park and along Allen Parkway for residents in the Washington Avenue study area.
- B4 – 2: Shared-use path between Sawyer Street and Silver Street. Alternatively, North Memorial Way could be designated as a signed bike route if the right-of-way along Memorial Drive is insufficient for a shared-use path.
- B4 – 3: Bike lanes on Silver Street between Memorial Drive and Washington Avenue. Bike lanes would require the prohibition of on-street parking; if on-street parking must remain, then Silver Street could be designated as a signed bike route.
- B4 – 4: Signed bike route on Silver Street between Washington Avenue and Spring Street. Long-term, bike lanes could be painted on this segment if Silver Street is widened to a consistent cross section.

### **B5 – Bike lanes on Houston Avenue between Lubbock and White Oak Drive.**

This facility would connect proposed bike lanes on Center Street and Washington Avenue and the signed bike route on Lubbock Street to existing bike lanes on Houston Avenue north of White Oak Drive and to the MKT Rail-to-Trail on Spring Street. South of Spring Street, bike lanes could be added without reducing travel lanes if on-street parking were prohibited. North of Spring Street, Houston Avenue would need to be reduced to two travel lanes with a center turn lane to accommodate bike lanes. The railroad underpass north of Center Street currently has a non-ADA compliant stairway for pedestrians. Refitting this with ramps would allow bike lanes a safe and easy crossing of the rail line.

### **B6 – Waugh Drive between West Gray Street and Washington Avenue.**

The City of Houston Existing/Proposed Bikeway Map indicates that this corridor is already planned for a future on-street bicycle facility. Such a facility would connect existing bike lanes on Waugh Drive south of West Gray Street to existing bike lanes on Heights Boulevard north of Washington Avenue, existing trails along Buffalo Bayou, and a proposed signed bike route along Feagan Street. Two segments are proposed:

- B6 – 1: Bike lanes between West Gray Street and Allen Parkway. Waugh Drive would need to be reduced to two lanes in either direction for this segment to accommodate bike lanes, which would match the lane capacity of Waugh Drive / Commonwealth Street south of West Gray Street and Heights Boulevard north of Washington Avenue.
- B6 – 2: Shared-use path between Allen Parkway and Washington Avenue. This facility would require a redesign of the Waugh Drive / Memorial Drive interchange that would include dedicated facilities for bicyclists and pedestrians.

Additionally, a dedicated bridge for bicyclists and pedestrians would need to be constructed at Buffalo Bayou. The bridge over Allen Parkway has an existing wide sidewalk that would be suitable for bi-directional bicycle traffic.

### **B7 – Shared-use path on Shepherd Drive between Kirby Drive and Feagan Street.**

This facility would connect existing shared-use lanes on West Dallas Street, existing trails along Buffalo Bayou, an existing signed bike route on Chilton Road, and a proposed signed bike route on Feagan Street. This facility and its connections with existing and other proposed facilities would provide a connection for bicyclists between River Oaks, the Washington Avenue study area, and the Heights. It would also provide the westernmost crossing of Memorial Drive and Buffalo Bayou in the study area. Crossing Buffalo Bayou would require a dedicated bicycle and pedestrian bridge, which has been proposed in the Buffalo Bayou Partnership's Shepherd to Sabine project.

### **B8 – Neighborhood signed bike routes between Washington Avenue and Memorial Drive.**

These facilities will guide cyclists through and around the neighborhood on low-speed, low-traffic roads to other existing and proposed facilities.

- B8 – 1: Signed bike route along Feagan Street between Birdsall and Studemont Street.
- B8 – 2: Signed bike route along Blossom Street between Birdsall Street and Detering Street.
- B8 – 3: Signed bike route along Birdsall Street between Blossom Street and Memorial Drive
- B8 – 4: Signed bike route along Schuler Street and Detering Street between Westcott Street and Memorial Drive.
- B8 – 5: Signed bike route on Jackson Hill Street between Scotland Street and Feagan Street. This facility would connect the proposed signed bike route on Feagan Street to the existing pedestrian overpass over Memorial Drive at Scotland Street.

### **B9 – Washington Avenue Bicycle Lanes**

This facility would, along with Center Street, provide the main east-west bicycle facility for the neighborhood. As many of the study area's main destinations lie along Washington, it is extremely desirable to have improved bicycle facilities along the Avenue (see recommendation 1). If, at some time in the future, dedicated transit lanes are required on Washington, bicycle facilities should be further strengthened on Center Street (see B1).

- B9 – 1: Separated on-way bike path on Preston Street.

- B9 – 2: Bike Lanes on Washington and Westcott north of the roundabout to I-10.

### **B10 – White Oak Bayou Trails**

These facilities would improve access to White Oak Bayou and add to the trail facilities already under construction on the north side of the bayou. Special attention should be paid to connecting the trail to the MKT trail and to Heights Boulevard.

### **B11 – Memorial Park Connections**

These proposed signed bike routes would provide guidance and direction to cyclists accessing Memorial Park via other proposed bicycle facilities in the study area.

- B11 – 1: Signed Bicycle Route on Memorial Loop Drive and Arnot Street between Washington Avenue on the north and the Washington at Westcott Roundabout on the south. This proposed loop would provide connections to the baseball fields, the Memorial Park golf course, and Memorial Park trails.
- B11 – 2: Signed Bicycle Route on Crestwood Drive between Arnot Street and Blossom Street, connecting to the existing signed bike routes on Blossom Street and Crestwood Drive south of Blossom Street.

### **B12 – Lubbock Street Signed Bicycle Routes**

These facilities would connect the Sixth Ward to the City Court Area and to two major gateways to the Theater District, including a connection to the new Green and Purple Light Rail Lines.

- B12 – 1: Signed Bicycle Route from Silver Street to Preston Street
- B12 – 2: Signed Bicycle Route on Reisner Street from Lubbock Street connecting to the Rusk Street Bridge and the Buffalo Bayou Trail.

### **B13 – Bikeshare Network Expansion**

Houston's bike share system, Houston B-Cycle, opened a pilot with three stations in Downtown Houston in 2012. Two of the stations, Market Square and City Hall, are within close bicycling distance of the study area. Additional stations, available at a cost of roughly \$30,000. Extensions into the study area should prioritize Buffalo Bayou Park, the MKT Trail and connections to transit downtown.

<b>B1 - Center Street</b>				
Make Center Street a bicycle boulevard by discouraging through traffic and high speeds				
ITEM	UNIT	UNIT PRICE	QTY	TOTAL PRICE
<b>BICYCLE BOULEVARD</b>				
PAVEMENT MARKINGS - SHARROWS	EA	\$ 234.01	112	\$ 26,209.00
SIGNAGE - BIKE ROUTE	EA	\$ 425.00	22	\$ 9,350.00
SPEED HUMPS	EA	\$1,000	35	\$ 35,000.00
ROADWAY DIVERTERS	EA	\$ 4,503.16	12	\$ 54,037.98
SUBTOTAL 1				\$ 124,596.98
TCP AND MOBILIZATION (4.5%)				\$ 5,606.86
CONTINGENCY (20%)				\$ 24,919.40
SUBTOTAL 2				\$ 155,123.24
ENGINEERING (10%)				\$ 15,512.32
PROJECT MANAGEMENT (4%)				\$ 6,204.93
CONSTRUCTION MANAGEMENT (6%)				\$ 9,307.39
<b>TOTAL FOR CORRIDOR</b>				<b>\$ 186,147.88</b>

**Bicycle Boulevard Assumptions:**

- 2 bike symbols per side of road per block
- 1 bike route sign per side of road per block
- New pavement markings (center line, parking stripe)

**Diverter Assumptions:**

- Diversers at: Sawyer, Studemont, Heights, Shepherd, Durham, and Yale
- Each diverter consists of 180 LF of curb, 6.7 CY of concrete, and two sign assemblies

<b>B2-1</b>				
Patterson Street signed bike route				
ITEM	UNIT	UNIT PRICE	QTY	TOTAL PRICE
<b>BIKE ROUTE</b>				
SIGN AND SIGN ASSEMBLY - BIKE ROUTE	EA	\$ 416.75	4	\$ 1,667.00
SUBTOTAL 1				\$ 1,667.00
TCP AND MOBILIZATION (4.5%)				\$ 75.02
CONTINGENCY (20%)				\$ 333.40
SUBTOTAL 2				\$ 2,075.42
ENGINEERING (10%)				\$ 207.54
PROJECT MANAGEMENT (4%)				\$ 83.02
CONSTRUCTION MANAGEMENT (6%)				\$ 124.52
<b>TOTAL FOR CORRIDOR</b>				<b>\$ 2,490.50</b>

**Bike Route Assumptions:**

- 1 bike route sign per side of road per 1/4 mile

<b>B2-2</b>				
Patterson Street bike lanes				
ITEM	UNIT	UNIT PRICE	QTY	TOTAL PRICE
<b>BIKE LANES</b>				
PAVEMENT MARKINGS - LANE LINES	EA	\$ 4,300.00	1	\$ 4,300.00
PAVEMENT MARKINGS - BIKE SYMBOLS	EA	\$ 387.50	4	\$ 1,550.00
SIGNAGE - BIKE ROUTE	EA	\$ 417.50	4	\$ 1,670.00
SUBTOTAL 1				\$ 7,520.00
TCP AND MOBILIZATION (4.5%)				\$ 338.40
CONTINGENCY (20%)				\$ 1,504.00
SUBTOTAL 2				\$ 9,362.40
ENGINEERING (10%)				\$ 936.24
PROJECT MANAGEMENT (4%)				\$ 374.50
CONSTRUCTION MANAGEMENT (6%)				\$ 561.74
<b>TOTAL FOR CORRIDOR</b>				<b>\$ 11,234.88</b>

**Bike Lanes Assumptions:**

- 2 bike symbols per side of road per 1/4 mile
- 1 bike route sign per side of road per 1/4 mile
- Bike lane striping (6" white stripe)

<b>B2-3</b>				
Patterson Street signed bike route				
ITEM	UNIT	UNIT PRICE	QTY	TOTAL PRICE
<b>BIKE ROUTE</b>				
SIGN AND SIGN ASSEMBLY - BIKE ROUTE	EA	\$ 416.75	4	\$ 1,667.00
SUBTOTAL 1				\$ 1,667.00
TCP AND MOBILIZATION (4.5%)				\$ 75.02
CONTINGENCY (20%)				\$ 333.40
SUBTOTAL 2				\$ 2,075.42
ENGINEERING (10%)				\$ 207.54
PROJECT MANAGEMENT (4%)				\$ 83.02
CONSTRUCTION MANAGEMENT (6%)				\$ 124.52
<b>TOTAL FOR CORRIDOR</b>				<b>\$ 2,490.50</b>

**Bike Route Assumptions:**

- 1 bike route sign per side of road per 1/4 mile

<b>B2-4</b>				
Bridge over bayou and shared-use paths				
ITEM	UNIT	UNIT PRICE	QTY	TOTAL PRICE
<b>BRIDGE AND SHARED-USE PATHS</b>				
PEDESTRIAN TRUSS BRIDGE	EA	\$ 500,000.00	1	\$ 500,000.00
CONC SIDEWALKS (4")	SY	\$ 36.06	1360	\$ 49,041.60
CURB RAMPS (TY 7)	EA	\$ 1,034.56	2	\$ 2,069.12
SIGN AND SIGN ASSEMBLY	EA	\$ 416.75	6	\$ 2,500.50
SUBTOTAL 1				\$ 553,611.22
TCP AND MOBILIZATION (4.5%)				\$ 24,912.50
CONTINGENCY (20%)				\$ 110,722.24
SUBTOTAL 2				\$ 689,245.97
ENGINEERING (10%)				\$ 68,924.60
PROJECT MANAGEMENT (4%)				\$ 27,569.84
CONSTRUCTION MANAGEMENT (6%)				\$ 41,354.76
<b>TOTAL FOR CORRIDOR</b>				<b>\$ 827,095.17</b>

**Assumptions**

Shared use path estimated as 12 foot wide sidewalk

<b>B3</b>				
Studemont Shared Use Path				
ITEM	UNIT	UNIT PRICE	QTY	TOTAL PRICE
<b>SHARED USE PATH</b>				
CONC SIDEWALKS (4")	SY	\$ 36.06	5973.333	\$ 215,398.40
CURB RAMPS (TY 7)	EA	\$ 1,034.56	20	\$ 20,691.22
REMOVING CONC (PAV)	SY	\$ 4.14	235.5556	\$ 976.36
CONC CURB (TY II)	LF	\$ 6.74	2120	\$ 14,293.04
CONCRETE PAVEMENT UNDERNEATH RR	SY	\$ 38.12	117.7778	\$ 4,607.26
CONCRETE FOR SIDEPATH UNDERNEATH RR	CY	\$ 500.00	183.2099	\$ 91,604.94
MOVE RAILING ALONG SIDEWALK	LF	\$ 5.00	1060	\$ 5,300.00
SIGN AND SIGN ASSEMBLY	EA	\$ 416.75	10	\$ 4,167.50
SUBTOTAL 1				\$ 357,038.72
TCP AND MOBILIZATION (4.5%)				\$ 16,066.74
CONTINGENCY (20%)				\$ 71,407.74
SUBTOTAL 2				\$ 444,513.20
ENGINEERING (10%)				\$ 44,451.32
PROJECT MANAGEMENT (4%)				\$ 17,780.53
CONSTRUCTION MANAGEMENT (6%)				\$ 26,670.79
<b>TOTAL FOR CORRIDOR</b>				<b>\$ 533,415.84</b>

**Assumptions**

Shared use path estimated as 12 foot wide sidewalk

<b>B4-1</b>				
Shared use path to use proposed Police Memorial pedestrian bridge				
ITEM	UNIT	UNIT PRICE	QTY	TOTAL PRICE
<b>SHARED USE PATH</b>				
CONC SIDEWALKS (4")	SY	\$ 36.06	2000	\$ 72,120.00
SIGN AND SIGN ASSEMBLY	EA	\$ 416.75	6	\$ 2,500.50
SUBTOTAL 1				\$ 74,620.50
TCP AND MOBILIZATION (4.5%)				\$ 3,357.92
CONTINGENCY (20%)				\$ 14,924.10
SUBTOTAL 2				\$ 92,902.52
ENGINEERING (10%)				\$ 9,290.25
PROJECT MANAGEMENT (4%)				\$ 3,716.10
CONSTRUCTION MANAGEMENT (6%)				\$ 5,574.15
<b>TOTAL FOR CORRIDOR</b>				<b>\$ 111,483.03</b>

**Assumptions**

Shared use path estimated as 12 foot wide sidewalk

<b>B4-2</b>				
Shared use path along Memorial Drive from Sawyer Street to Silver Street				
ITEM	UNIT	UNIT PRICE	QTY	TOTAL PRICE
<b>SHARED USE PATH</b>				
REMOVING CONC (SIDEWALKS)	SY	\$ 7.30	311	\$ 2,271.77
CONC SIDEWALKS (4")	SY	\$ 36.06	933	\$ 33,656.00
CURB RAMPS (TY 7)	EA	\$ 1,034.56	1	\$ 1,034.56
SIGN AND SIGN ASSEMBLY	EA	\$ 416.75	4	\$ 1,667.00
SUBTOTAL 1				\$ 38,629.33
TCP AND MOBILIZATION (4.5%)				\$ 1,738.32
CONTINGENCY (20%)				\$ 7,725.87
SUBTOTAL 2				\$ 48,093.52
ENGINEERING (10%)				\$ 4,809.35
PROJECT MANAGEMENT (4%)				\$ 1,923.74
CONSTRUCTION MANAGEMENT (6%)				\$ 2,885.61
<b>TOTAL FOR CORRIDOR</b>				<b>\$ 57,712.22</b>

**Assumptions**

Shared use path estimated as 12 foot wide sidewalk



<b>B4-3</b>				
Bike lanes on Silver Street between Memorial Drive and Washington Ave				
ITEM	UNIT	UNIT PRICE	QTY	TOTAL PRICE
<b>BIKE LANE</b>				
PAVEMENT MARKINGS - LANE LINES	EA	\$ 3,180.00	1	\$ 3,180.00
PAVEMENT MARKINGS - BIKE SYMBOLS	EA	\$ 387.50	4	\$ 1,550.00
SIGNAGE - BIKE ROUTE	EA	\$ 417.50	4	\$ 1,670.00
SUBTOTAL 1				\$ 6,400.00
TCP AND MOBILIZATION (4.5%)				\$ 288.00
CONTINGENCY (20%)				\$ 1,280.00
SUBTOTAL 2				\$ 7,968.00
ENGINEERING (10%)				\$ 796.80
PROJECT MANAGEMENT (4%)				\$ 318.72
CONSTRUCTION MANAGEMENT (6%)				\$ 478.08
<b>TOTAL FOR CORRIDOR</b>				<b>\$ 9,561.60</b>

**Bike Lanes Assumptions:**

- 2 bike symbols per side of road per 1/4 mile
- 1 bike route sign per side of road per 1/4 mile
- Bike lane striping (6" white stripe)

<b>B4-4</b>				
Bike route on Silver Street between Washington Ave and Spring St				
ITEM	UNIT	UNIT PRICE	QTY	TOTAL PRICE
<b>BIKE ROUTE</b>				
SIGN AND SIGN ASSEMBLY - BIKE ROUTE	EA	\$ 416.75	6	\$ 2,500.50
SUBTOTAL 1				\$ 2,500.50
TCP AND MOBILIZATION (4.5%)				\$ 112.52
CONTINGENCY (20%)				\$ 500.10
SUBTOTAL 2				\$ 3,113.12
ENGINEERING (10%)				\$ 311.31
PROJECT MANAGEMENT (4%)				\$ 124.52
CONSTRUCTION MANAGEMENT (6%)				\$ 186.79
<b>TOTAL FOR CORRIDOR</b>				<b>\$ 3,735.75</b>

**Bike Route Assumptions:**

- 1 bike route sign per side of road per 1/4 mile

<b>B5</b>				
Bike lanes along Houston Avenue; fix sidewalk ramps under RR				
ITEM	UNIT	UNIT PRICE	QTY	TOTAL PRICE
<b>BIKE LANE</b>				
REMOVING CONC (MISC)	SY	\$ 13.32	89	\$ 1,183.81
CURB RAMPS	SY	\$ 99.50	89	\$ 8,844.51
REMOVE EXISTING PAVEMENT MARKINGS	FT	\$ 5,100.00	1	\$ 5,100.00
PAVEMENT MARKINGS - LANE LINES	EA	\$17,700.00	1	\$ 17,700.00
PAVEMENT MARKINGS - BIKE SYMBOLS	EA	\$ 5,100.00	1	\$ 5,100.00
SIGNAGE - BIKE ROUTE	EA	\$ 500.00	10	\$ 5,000.00
<b>SUBTOTAL 1</b>				\$ 42,928.32
TCP AND MOBILIZATION (4.5%)				\$ 1,931.77
CONTINGENCY (20%)				\$ 8,585.66
<b>SUBTOTAL 2</b>				\$ 53,445.76
ENGINEERING (10%)				\$ 5,344.58
PROJECT MANAGEMENT (4%)				\$ 2,137.83
CONSTRUCTION MANAGEMENT (6%)				\$ 3,206.75
<b>TOTAL FOR CORRIDOR</b>				\$ 64,134.91

<b>B6-1</b>				
Bike lanes along Waugh Drive between Allen Parkway and West Gray Street (Convert 6 lanes to 4 lanes + center turn lane and 2 bike lanes)				
ITEM	UNIT	UNIT PRICE	QTY	TOTAL PRICE
<b>BIKE LANE</b>				
REMOVE EXISTING PAVEMENT MARKINGS	EA	\$ 3,600.00	1	\$ 3,600.00
PAVEMENT MARKINGS - LANE LINES	EA	\$14,000.00	1	\$ 14,000.00
PAVEMENT MARKINGS - BIKE SYMBOLS	EA	\$ 2,300.00	1	\$ 2,300.00
SIGNAGE - BIKE ROUTE	EA	\$ 500.00	6	\$ 3,000.00
<b>SUBTOTAL 1</b>				\$ 22,900.00
TCP AND MOBILIZATION (4.5%)				\$ 1,030.50
CONTINGENCY (20%)				\$ 4,580.00
<b>SUBTOTAL 2</b>				\$ 28,510.50
ENGINEERING (10%)				\$ 2,851.05
PROJECT MANAGEMENT (4%)				\$ 1,140.42
CONSTRUCTION MANAGEMENT (6%)				\$ 1,710.63
<b>TOTAL FOR CORRIDOR</b>				\$ 34,212.60

**Bike Lanes Assumptions:**

- 2 bike symbols per side of road per 1/4 mile
- 1 bike route sign per side of road per 1/4 mile
- Bike lane striping (6" white stripe)

<b>B6-2</b>				
Shared use path along Waugh Drive north of Allen Parkway				
ITEM	UNIT	UNIT PRICE	QTY	TOTAL PRICE
<b>SHARED USE PATH</b>				
CONCRETE WORK ON ALLEN PARKWAY BRIDGE	EA	\$ 2,000.00	1	\$ 2,000.00
NEW SIDEWALK TO ADD ON ALLEN PKWY BRIDGE	SY	\$ 36.06	55.55556	\$ 2,003.33
BRIDGE OVER BUFFALO BAYOU	EA	\$ 1,000,000.00	1	\$ 1,000,000.00
BRIDGE OVER MEMORIAL DRIVE	EA	\$ 1,000,000.00	1	\$ 1,000,000.00
REMOVE EXISTING SIDEWALKS ALONG WAUGH	SY	\$ 7.30	1200	\$ 8,762.54
NEW SHARED USE PATH ALONG WAUGH	SY	\$ 36.06	3600	\$ 129,816.00
CURB RAMPS FOR PATH	EA	\$ 1,034.56	17	\$ 17,587.53
SIGNAGE FOR PATH	EA	\$ 416.75	8	\$ 3,334.00
SUBTOTAL 1				\$ 2,163,503.41
TCP AND MOBILIZATION (4.5%)				\$ 97,357.65
CONTINGENCY (20%)				\$ 432,700.68
SUBTOTAL 2				\$ 2,693,561.75
ENGINEERING (10%)				\$ 269,356.17
PROJECT MANAGEMENT (4%)				\$ 107,742.47
CONSTRUCTION MANAGEMENT (6%)				\$ 161,613.70
<b>TOTAL FOR CORRIDOR</b>				<b>\$ 3,232,274.10</b>

**Assumptions**

Shared use path estimated as 12 foot wide sidewalk  
 Widen sidewalk on east side of Allen Parkway bridge by 5 feet  
 Narrow median on Allen Parkway bridge by 5 feet

**Calculations**

New curb on Allen Parkway Bridge 200 FT

<b>B7-1</b>				
Shared use path along Shepherd Drive south of Bayou				
ITEM	UNIT	UNIT PRICE	QTY	TOTAL PRICE
<b>SHARED USE PATH</b>				
REMOVING CONC (SIDEWALKS)	SY	\$ 7.30	444	\$ 3,245.39
CONC SIDEWALKS (4")	SY	\$ 36.06	1333	\$ 48,080.00
CURB RAMPS (TY 7)	EA	\$ 1,034.56	4	\$ 4,138.24
SIGN AND SIGN ASSEMBLY	EA	\$ 416.75	4	\$ 1,667.00
SUBTOTAL 1				\$ 57,130.63
TCP AND MOBILIZATION (4.5%)				\$ 2,570.88
CONTINGENCY (20%)				\$ 11,426.13
SUBTOTAL 2				\$ 71,127.63
ENGINEERING (10%)				\$ 7,112.76
PROJECT MANAGEMENT (4%)				\$ 2,845.11
CONSTRUCTION MANAGEMENT (6%)				\$ 4,267.66
<b>TOTAL FOR CORRIDOR</b>				<b>\$ 85,353.16</b>

**Assumptions**

Shared use path estimated as 12 foot wide sidewalk

<b>B7-2</b>				
Shared use path along Shepherd Drive north of Bayou				
ITEM	UNIT	UNIT PRICE	QTY	TOTAL PRICE
<b>SHARED USE PATH</b>				
REMOVING CONC (SIDEWALKS)	SY	\$ 7.30	711	\$ 5,192.62
CONC SIDEWALKS (4")	SY	\$ 36.06	2133	\$ 76,928.00
CURB RAMPS (TY 7)	EA	\$ 1,034.56	10	\$ 10,345.61
SIGN AND SIGN ASSEMBLY	EA	\$ 416.75	10	\$ 4,167.50
SUBTOTAL 1				\$ 96,633.73
TCP AND MOBILIZATION (4.5%)				\$ 4,348.52
CONTINGENCY (20%)				\$ 19,326.75
SUBTOTAL 2				\$ 120,308.99
ENGINEERING (10%)				\$ 12,030.90
PROJECT MANAGEMENT (4%)				\$ 4,812.36
CONSTRUCTION MANAGEMENT (6%)				\$ 7,218.54
<b>TOTAL FOR CORRIDOR</b>				<b>\$ 144,370.79</b>

**Assumptions**

Shared use path estimated as 12 foot wide sidewalk

<b>B8-1</b>				
Signed bike route along Feagan				
ITEM	UNIT	UNIT PRICE	QTY	TOTAL PRICE
<b>BIKE ROUTE</b>				
SIGN AND SIGN ASSEMBLY - BIKE ROUTE	EA	\$ 416.75	12	\$ 5,001.00
SUBTOTAL 1				\$ 5,001.00
TCP AND MOBILIZATION (4.5%)				\$ 225.05
CONTINGENCY (20%)				\$ 1,000.20
SUBTOTAL 2				\$ 6,226.25
ENGINEERING (10%)				\$ 622.62
PROJECT MANAGEMENT (4%)				\$ 249.05
CONSTRUCTION MANAGEMENT (6%)				\$ 373.57
<b>TOTAL FOR CORRIDOR</b>				<b>\$ 7,471.49</b>

**Bike Route Assumptions:**

1 bike route sign per side of road per 1/4 mile

<b>B8-2</b>				
Signed bike route along Blossom				
ITEM	UNIT	UNIT PRICE	QTY	TOTAL PRICE
<b>BIKE ROUTE</b>				
SIGN AND SIGN ASSEMBLY - BIKE ROUTE	EA	\$ 416.75	2	\$ 833.50
SUBTOTAL 1				\$ 833.50
TCP AND MOBILIZATION (4.5%)				\$ 37.51
CONTINGENCY (20%)				\$ 166.70
SUBTOTAL 2				\$ 1,037.71
ENGINEERING (10%)				\$ 103.77
PROJECT MANAGEMENT (4%)				\$ 41.51
CONSTRUCTION MANAGEMENT (6%)				\$ 62.26
<b>TOTAL FOR CORRIDOR</b>				<b>\$ 1,245.25</b>

**Bike Route Assumptions:**

1 bike route sign per side of road per 1/4 mile.

<b>B8-3</b>				
Signed bike route along Birdsall				
ITEM	UNIT	UNIT PRICE	QTY	TOTAL PRICE
<b>BIKE ROUTE</b>				
SIGN AND SIGN ASSEMBLY - BIKE ROUTE	EA	\$ 416.75	2	\$ 833.50
SUBTOTAL 1				\$ 833.50
TCP AND MOBILIZATION (4.5%)				\$ 37.51
CONTINGENCY (20%)				\$ 166.70
SUBTOTAL 2				\$ 1,037.71
ENGINEERING (10%)				\$ 103.77
PROJECT MANAGEMENT (4%)				\$ 41.51
CONSTRUCTION MANAGEMENT (6%)				\$ 62.26
<b>TOTAL FOR CORRIDOR</b>				<b>\$ 1,245.25</b>

**Bike Route Assumptions:**

1 bike route sign per side of road per 1/4 mile.

B8-4				
Schuler and Detering bike route				
ITEM	UNIT	UNIT PRICE	QTY	TOTAL PRICE
<b>BIKE ROUTE</b>				
SIGN AND SIGN ASSEMBLY - BIKE ROUTE	EA	\$ 416.75	8	\$ 3,334.00
SUBTOTAL 1				\$ 3,334.00
TCP AND MOBILIZATION (4.5%)				\$ 150.03
CONTINGENCY (20%)				\$ 666.80
SUBTOTAL 2				\$ 4,150.83
ENGINEERING (10%)				\$ 415.08
PROJECT MANAGEMENT (4%)				\$ 166.03
CONSTRUCTION MANAGEMENT (6%)				\$ 249.05
<b>TOTAL FOR CORRIDOR</b>				<b>\$ 4,981.00</b>

**Bike Route Assumptions:**

1 bike route sign per side of road per 1/4 mile.

B8-5				
Jackson Hill bike route				
ITEM	UNIT	UNIT PRICE	QTY	TOTAL PRICE
<b>BIKE ROUTE</b>				
SIGN AND SIGN ASSEMBLY - BIKE ROUTE	EA	\$ 416.75	2	\$ 833.50
SUBTOTAL 1				\$ 833.50
TCP AND MOBILIZATION (4.5%)				\$ 37.51
CONTINGENCY (20%)				\$ 166.70
SUBTOTAL 2				\$ 1,037.71
ENGINEERING (10%)				\$ 103.77
PROJECT MANAGEMENT (4%)				\$ 41.51
CONSTRUCTION MANAGEMENT (6%)				\$ 62.26
<b>TOTAL FOR CORRIDOR</b>				<b>\$ 1,245.25</b>

**Bike Route Assumptions:**

1 bike route sign per side of road per 1/4 mile.

<b>B9-1</b>				
10 FT Shared-use path along Washington/Preston from Houston to Bagby				
ITEM	UNIT	UNIT PRICE	QTY	TOTAL PRICE
<b>BIKE ROUTE</b>				
REMOVING CONC (SIDEWALKS)	SY	\$ 7.30	889	\$ 6,490.77
CONC SIDEWALKS (4")	SY	\$ 36.06	2222	\$ 80,133.33
CURB RAMPS (TY 7)	EA	\$ 1,034.56	6	\$ 6,207.36
SIGN AND SIGN ASSEMBLY	EA	\$ 416.75	6	\$ 2,500.50
SUBTOTAL 1				\$ 95,331.97
TCP AND MOBILIZATION (4.5%)				\$ 4,289.94
CONTINGENCY (20%)				\$ 19,066.39
SUBTOTAL 2				\$ 118,688.30
ENGINEERING (10%)				\$ 11,868.83
PROJECT MANAGEMENT (4%)				\$ 4,747.53
CONSTRUCTION MANAGEMENT (6%)				\$ 7,121.30
<b>TOTAL FOR CORRIDOR</b>				<b>\$ 142,425.97</b>

**Assumptions**

Shared use path estimated as 10 foot wide sidewalk

<b>B9-2</b>				
Bike lanes along Westcott and Washington north of Roundabout				
ITEM	UNIT	UNIT PRICE	QTY	TOTAL PRICE
<b>BIKE LANE</b>				
REMOVE EXISTING PAVEMENT MARKINGS	FT	0.4	3412.5	\$ 1,365.00
PAVEMENT MARKINGS - LANE LINES	EA	\$8,000	1	\$ 8,000.00
PAVEMENT MARKINGS - BIKE SYMBOLS	EA	\$ 387.50	4	\$ 1,550.00
SIGNAGE - BIKE ROUTE	EA	\$ 417.50	4	\$ 1,670.00
SUBTOTAL 1				\$ 11,220.00
TCP AND MOBILIZATION (4.5%)				\$ 504.90
CONTINGENCY (20%)				\$ 2,244.00
SUBTOTAL 2				\$ 13,968.90
ENGINEERING (10%)				\$ 1,396.89
PROJECT MANAGEMENT (4%)				\$ 558.76
CONSTRUCTION MANAGEMENT (6%)				\$ 838.13
<b>TOTAL FOR CORRIDOR</b>				<b>\$ 16,762.68</b>

**Bike Lanes Assumptions:**

- 2 bike symbols per side of road per 1/4 mile
- 1 bike route sign per side of road per 1/4 mile
- Bike lane striping (6" white stripe)

<b>B9-3</b>				
Bike route along Washington Ave between Birdsall and Roundabout				
ITEM	UNIT	UNIT PRICE	QTY	TOTAL PRICE
<b>Bike Route</b>				
SIGNAGE - BIKE ROUTE	EA	\$ 417.50	4	\$ 1,670.00
SUBTOTAL 1				\$ 1,670.00
TCP AND MOBILIZATION (4.5%)				\$ 75.15
CONTINGENCY (20%)				\$ 334.00
SUBTOTAL 2				\$ 2,079.15
ENGINEERING (10%)				\$ 207.92
PROJECT MANAGEMENT (4%)				\$ 83.17
CONSTRUCTION MANAGEMENT (6%)				\$ 124.75
<b>TOTAL FOR CORRIDOR</b>				<b>\$ 2,494.98</b>

**Bike Route Assumptions:**

1 bike route sign per side of road 1/4 mile

<b>B10</b>				
12 FT shared use path on either side of White Oak Bayou				
ITEM	UNIT	UNIT PRICE	QTY	TOTAL PRICE
<b>BIKE ROUTE</b>				
REMOVING CONC (SIDEWALKS)	SY	\$ 7.30	11111	\$ 81,134.67
CONC SIDEWALKS (4")	SY	\$ 36.06	33333	\$ 1,202,000.00
SIGN AND SIGN ASSEMBLY	EA	\$ 416.75	20	\$ 8,335.00
SUBTOTAL 1				\$ 1,291,469.67
TCP AND MOBILIZATION (4.5%)				\$ 58,116.14
CONTINGENCY (20%)				\$ 258,293.93
SUBTOTAL 2				\$ 1,607,879.74
ENGINEERING (10%)				\$ 160,787.97
PROJECT MANAGEMENT (4%)				\$ 64,315.19
CONSTRUCTION MANAGEMENT (6%)				\$ 96,472.78
<b>TOTAL FOR CORRIDOR</b>				<b>\$ 1,929,455.68</b>

**Assumptions**

Shared use path estimated as 12 foot wide sidewalk



<b>B11-1</b>				
Signed bike route on Memorial Loop Drive				
ITEM	UNIT	UNIT PRICE	QTY	TOTAL PRICE
<b>BIKE ROUTE</b>				
SIGN AND SIGN ASSEMBLY - BIKE ROUTE	EA	\$ 416.75	10	\$ 4,167.50
SUBTOTAL 1				\$ 4,167.50
TCP AND MOBILIZATION (4.5%)				\$ 187.54
CONTINGENCY (20%)				\$ 833.50
SUBTOTAL 2				\$ 5,188.54
ENGINEERING (10%)				\$ 518.85
PROJECT MANAGEMENT (4%)				\$ 207.54
CONSTRUCTION MANAGEMENT (6%)				\$ 311.31
<b>TOTAL FOR CORRIDOR</b>				<b>\$ 6,226.25</b>

**Bike Route Assumptions:**

1 bike route sign per side of road per block

<b>B11-2</b>				
Signed bike route on Reisner Street				
ITEM	UNIT	UNIT PRICE	QTY	TOTAL PRICE
<b>BIKE ROUTE</b>				
SIGN AND SIGN ASSEMBLY - BIKE ROUTE	EA	\$ 416.75	2	\$ 833.50
SUBTOTAL 1				\$ 833.50
TCP AND MOBILIZATION (4.5%)				\$ 37.51
CONTINGENCY (20%)				\$ 166.70
SUBTOTAL 2				\$ 1,037.71
ENGINEERING (10%)				\$ 103.77
PROJECT MANAGEMENT (4%)				\$ 41.51
CONSTRUCTION MANAGEMENT (6%)				\$ 62.26
<b>TOTAL FOR CORRIDOR</b>				<b>\$ 1,245.25</b>

**Bike Route Assumptions:**

1 bike route sign per side of road per block

<b>B12</b>				
Bike route on Lubbock Street				
ITEM	UNIT	UNIT PRICE	QTY	TOTAL PRICE
<b>BIKE ROUTE</b>				
SIGN AND SIGN ASSEMBLY - BIKE ROUTE	EA	\$ 416.75	4	\$ 1,667.00
SUBTOTAL 1				\$ 1,667.00
TCP AND MOBILIZATION (4.5%)				\$ 75.02
CONTINGENCY (20%)				\$ 333.40
SUBTOTAL 2				\$ 2,075.42
ENGINEERING (10%)				\$ 207.54
PROJECT MANAGEMENT (4%)				\$ 83.02
CONSTRUCTION MANAGEMENT (6%)				\$ 124.52
<b>TOTAL FOR CORRIDOR</b>				<b>\$ 2,490.50</b>

**Bike Route Assumptions:**

1 bike route sign per side of road per 1/4 mile

## RECOMMENDATION 08: HOUSING AFFORDABILITY

### FEDERAL FUNDING

#### **Community Development Block Grant:**

##### Neighborhood Stabilization Program

Foreclosed Housing Acquisition, Repair and Resale Program. The City of Houston received \$13,542,193 in NSP funding for the 2010 fiscal year. While the eligible uses and projects for these funds is flexible, all of the 2010 funding is already designated to particular projects.

\$8,802,425 is designated for the rehabilitation of the Zollie Scales Apartments.

\$3,385,549 is designated for single family rehabilitation to provide home ownership opportunities for households at or below 120% of AMI. These funds are designated for four non-profits to acquire, rehab, and sell the homes at affordable levels. \$1,354,219 is designated for administration. These funds are administered through the Housing and Community Development Department.

##### Brownfields Economic Development Initiative

BEDI funds though are not directly applicable towards creating affordable housing may be useful in creating live/work spaces, especially in brownfield areas. As the Washington Avenue corridor has many industrial uses that will potentially turn over in the coming years, remediation will be necessary on the sites, and many of them will be quite suitable as live/work spaces.

#### **HOME Investment Partnerships Program**

The amount of HOME subsidy for a particular project is determined based on the bedroom count and construction type, and range between \$102,000 and \$214,000 per unit. These funds are issued through the RFP process as funds are available; there is no set schedule for the issuing of these RFPs. \$6,890,323 was designated for this program through federal HOME funds in the 2010 fiscal year, to provide an estimated 250 additional housing units.

#### **Low-Income Housing Tax Credit**

Applies to new construction and rehab projects for rental units with tenants earning no more than 60% of area median income. Investors earn dollar-for-dollar credits against their federal tax liability. Investors also get tax benefits from losses. Generally, tax credits are received over the first 10 years of operation. Some tax credits are recaptured by the IRS if the project does not operate for 15 years.

9% New Construction/ Rehab Credit – the standard kind of tax credit

4% New Construction/ Rehab Credit – used when the project is federally-subsidized.

### LOCAL FUNDING AND POLICIES

#### **Houston Single Family Home Repair Program**

The program is budgeted to repair 241 homes in 2010, using \$4,411,251 in CDBG funds. The three types of repairs include the following:

- 1 Emergency Repairs (Tier I) - Repair for emergency situations that were beyond the control of homeowner, Request for repair services must be within two weeks of the event.
- 2 Rehabilitation (Tier II) - Repairs to correct deferred maintenance items, i.e., replacement of old roof covering,

foundation repair, exterior painting, etc.

- 3 Reconstruction (Tier III) - When a structure is determined to be beyond rehabilitation (very poor overall condition), the old structure is razed and a new home reconstructed on the site. Provides up to \$30,000 for repairs.

## ALTERNATIVE FUNDING APPROACHES

### **Homeownership Expansion**

The City of Houston provides financial assistance to low-to-moderate income homebuyers in the incorporated area of the City. The family's combined income must be at or below 80% of the area median income must live in the home for 10 years for assistance to be forgiven. The amount of the assistance is \$19,500. Through a demand-side approach, homeowners receive assistance with mortgage financing, homeownership counseling, and obtaining low-interest loans. The expansion to homeownership happens on a more individual basis, but strengthens the investment, while reducing the turnover of residents in a community.

## DESIGN AND REGULATORY GUIDELINES

### **Live/Work Spaces**

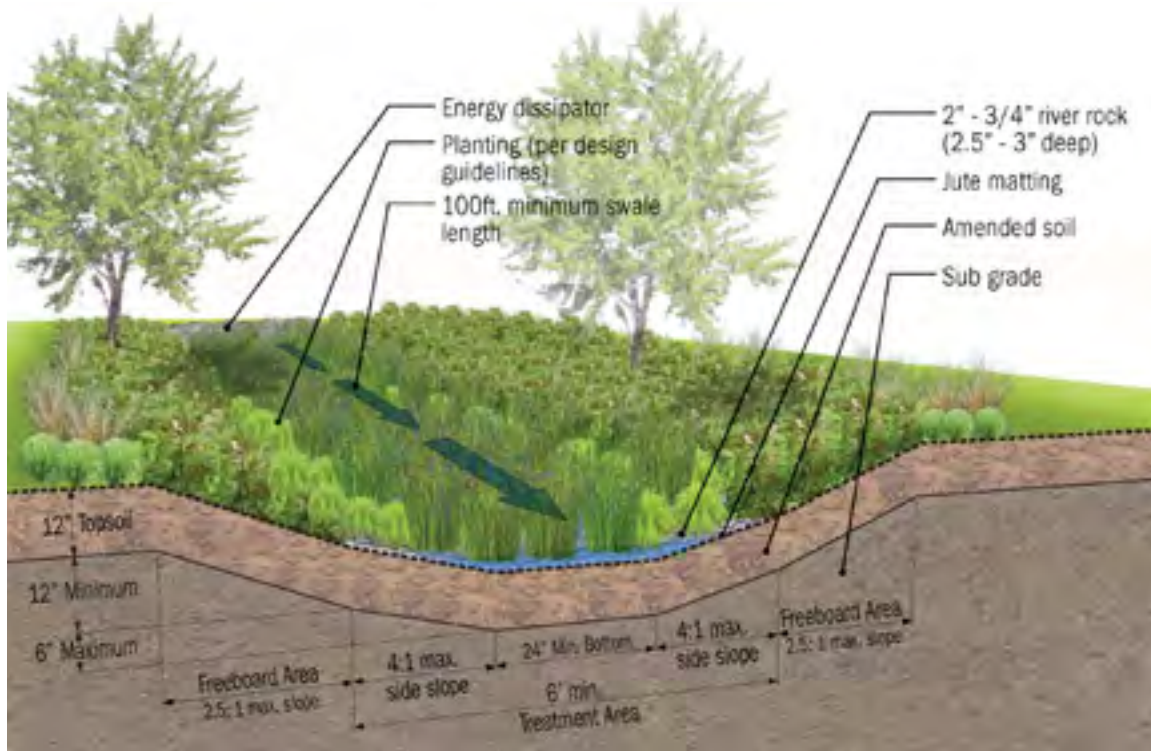
The development of more live/work spaces has been encouraged in a number of major cities, namely San Francisco, Chicago, and Los Angeles through zoning and ordinances. While zoning is not a preventive issue in Houston, building codes can severely hinder the development of live/work spaces. Amendments and ordinances can be established that properly define the process of developing live/work spaces, as well as standards that can be applied to them. This includes specific building codes that recognize the multi-use nature of spaces, and allow for an easier permitting and construction process, while maintaining safety standards.

In order to encourage the development and retention of live/work spaces in the area, the design of the spaces also needs to accommodate the end users. Also, many live/work spaces tend to just be open rooms, with less finishing than in a conventional home. While the look of a more industrial space is aesthetically popular, this also greatly decreases construction and costs of finishing, making many live/work spaces affordable. Many developers are serving market demand for creative live/work spaces, but these spaces are often not suitable for the clients that will actually use them for the intended purpose. Instead, the housing becomes too over-priced and instead begins to attract more market-rate customers. If the Washington Avenue corridor and adjacent nodes are intended to serve and retain artists in the area, then the spaces need to reflect that. While landlords cannot be discriminatory when finding tenants, 'preferred tenants' can be sought out or marketed to so that the spaces attract the residents they are designed for. Furthermore, the City can allocate subsidies to developers that design spaces specifically as live/work spaces, assuming the designs fit the intended purposes.

## RECOMMENDATION 09: STORMWATER MANAGEMENT

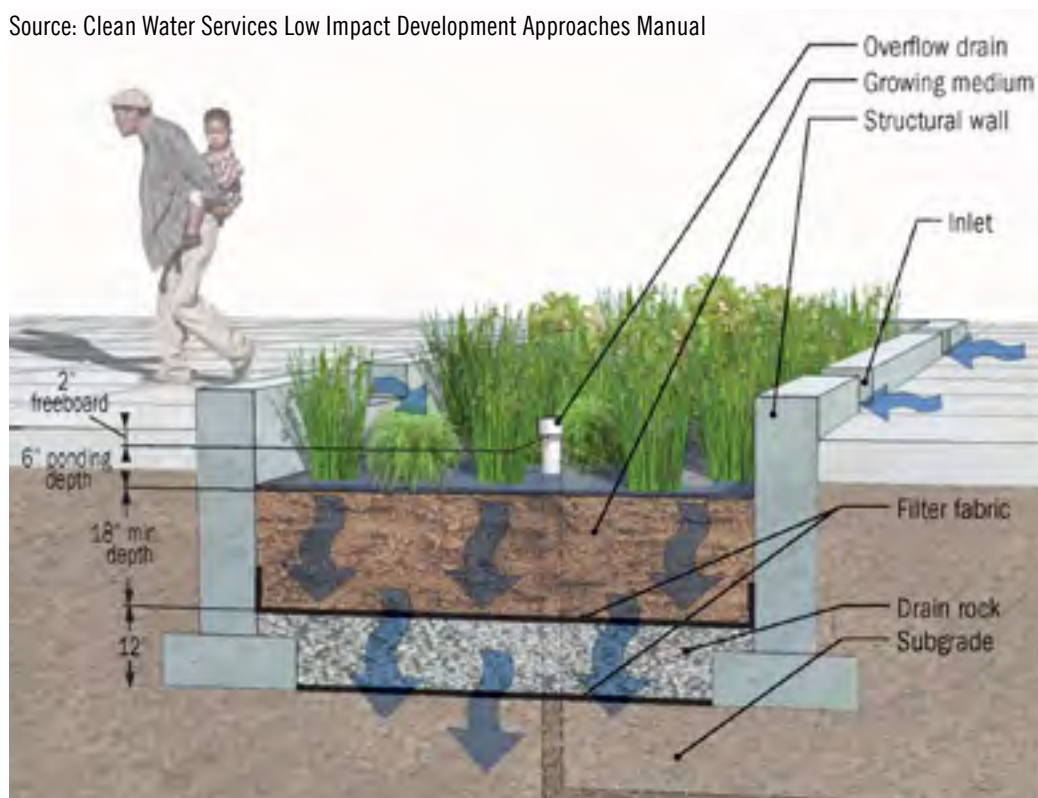
### 5 VEGETATED SWALE DETAIL

Source: Clean Water Services Low Impact Development Approaches Manual



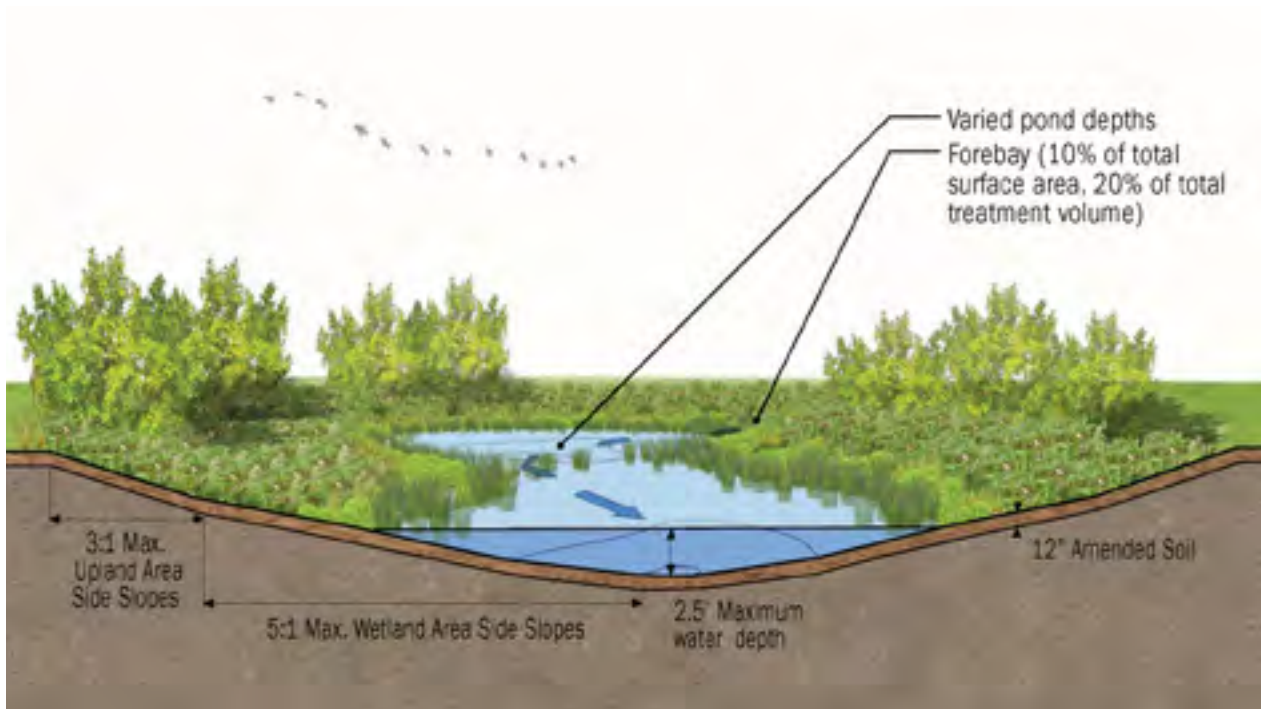
### 6 INFILTRATION PLANTERS / RAIN GARDENS DETAIL

Source: Clean Water Services Low Impact Development Approaches Manual



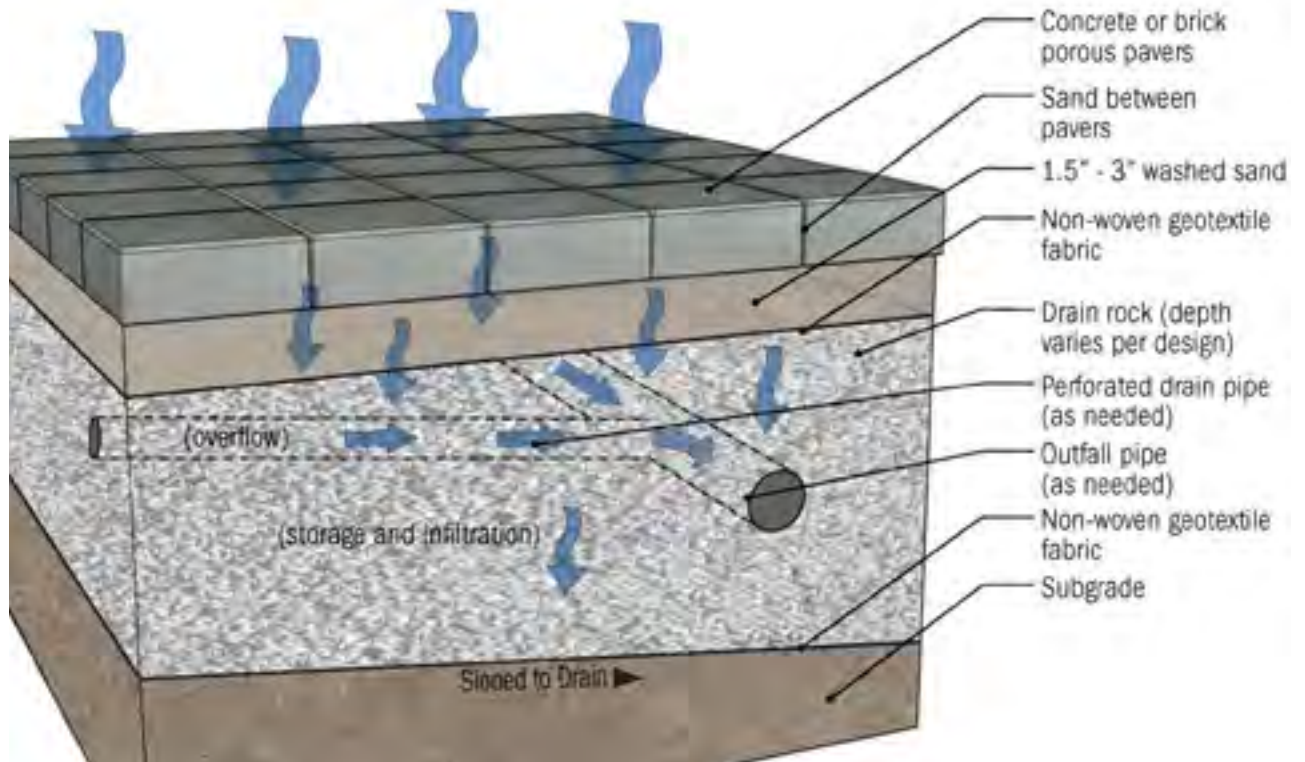
## 7 CONSTRUCTED 'WET PONDS' DETAIL

Source: Clean Water Services Low Impact Development Approaches Manual



## 8 POROUS PAVEMENT DETAIL

Source: Clean Water Services Low Impact Development Approaches Manual



## AIR QUALITY

### ANALYSIS METHODOLOGY

The air quality benefits derived from implementation of the recommended improvements for Washington Avenue Study Area were estimated based on the following methodology:

#### Catchment Area

The Washington Avenue Study Area was defined as the catchment area to determine the number of trips that would potentially be affected by the recommended improvements.

#### Trips Generated

The following regional trip generation rates based on data from H-GAC were used to estimate the total trips produced in the catchment area:

- 6.54 trips per household
- 2.53 trips per job

#### Demand

An assumed one percent (20%) of the household and employment trips generated in the catchment area will switch from vehicular trips to bicycle and pedestrian trips. The trip length of an estimated 20% of the trips generated by households in the catchment area were assumed to be reduced by 60 percent.

#### VMT Reduction

The total vehicle miles traveled (VMT) were calculated utilizing the average trip length from the National Household Travel Survey (9.72 miles/trip) and multiplying by the computed demand.

#### Air Quality Benefits

The MOSERS 11.1 methodology was used to estimate emissions reductions. The estimates for the emissions per mile were used for the following air quality factors:

- NO<sub>x</sub> – 0.239 grams per mile
- VOC – 0.315 grams per mile
- CO – 3.732 grams per mile

Total emissions were annualized to determine the reduction in annual kilograms (kg) resulting from implementation of Nassau Bay projects that will result in a shift in mode share from vehicular trips to bike, ped, and transit trips (Table A2) and from trip length reductions (Table A3). Total estimated air quality benefits are provided in Table A1.

TABLE A1

#### AIR QUALITY BENEFIT SUMMARY

Total Annual Emissions Reduction	NO <sub>x</sub>	19,471.39	kg/year
	VOC	25,622.19	kg/year
	CO	303,564.35	kg/year

TABLE A2

**MODE (BIKE/PED/TRANSIT) SHARE SHIFT**

<b>Calculation Step</b>	<b>Equation</b>		<b>Quantity</b>	<b>Units</b>
Washington Avenue Trip Generators	a	Households	10,928	homes
	b	Employment	12,800	jobs
Trip Rates	c	Households	6.54	trips/day/homes
	d	Employment	2.53	trips/day/job
Total Trips	$e=(a*c)+(b*d)$		103,853	trips/day
Mode Shift Rate	f		20%	percent trips
Trips Replaced	$g=e*f$		20,770.62	trips
Miles per Trip Replaced	h		9.72	miles/trip
Vehicle Miles Travel Replaced	$j=g*h$		201,890.47	miles
Emissions Factors	k	NOx	0.24	gm/mile
	l	VOC	0.32	gm/mile
	m	CO	3.73	gm/mile
Total Emissions Reduced	$n=j*k$	NOx	48,334.60	gm
	$o=j*l$	VOC	63,602.97	gm
	$p=j*m$	CO	753,549.62	gm
Assumed Annual Days	q		260	days/year
Metric Conversion Factor	r		1,000	gm/kg
Annual Emissions Reduction	$s=n*q/r$	NOx	12,567.00	kg/year
	$t=o*q/r$	VOC	16,536.77	kg/year
	$u=p*q/r$	CO	195,922.90	kg/year

Source: 2010 Census, 2000 Census Long Form, regional trip generation rates from HGAC estimates



TABLE A3  
TRIP LENGTH REDUCTION

Calculation Step	Equation		Quantity	Units
Washington Avenue Trip Generators	a	Households	10,928	homes
Trip Rates	c	Households	6.54	trips/day/homes
Total Trips	$e=(a*c)$		71,469	trips/day
Mode Shift Rate	f		20%	percent trips
Trips Replaced	$g=e*f$		14,293.82	trips
Miles per Trip Replaced	h		7.776	miles/trip
Vehicle Miles Travel Replaced	$j=g*h$		110,920.07	miles
Emissions Factors	k	NOx	0.24	gm/mile
	l	VOC	0.32	gm/mile
	m	CO	3.73	gm/mile
Total Emissions Reduced	$n=j*k$	NOx	26,555.37	gm
	$o=j*l$	VOC	34,943.93	gm
	$p=j*m$	CO	414,005.58	gm
Assumed Annual Days	q		260	days/year
Metric Conversion Factor	r		1,000	gm/kg
Annual Emissions Reduction	$s=n*q/r$	NOx	6,904.40	kg/year
	$t=o*q/r$	VOC	9,085.42	kg/year
	$u=p*q/r$	CO	107,641.45	kg/year

Percent Reduction of Trip	Average Trip Length
0.6	9.72

