



# 2020 Brazoria County Thoroughfare Plan



**BRAZORIA COUNTY, TEXAS**  
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# ACKNOWLEDGMENTS

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## EXECUTIVE SUMMARY

The Houston-Galveston Area Council (H-GAC), in partnership with Brazoria County and the Texas Department of Transportation (TxDOT), updated the Brazoria County Thoroughfare Plan (BCTP). The purpose of the 2020 BCTP is to provide the County with a long-term template to plan for future transportation while making short-term decisions related to roadway funding and new development approvals. This guidance will allow the County to provide a proactive plan for future roadway improvements.

A primary focus in development of the thoroughfare plan was to engage the public and develop a plan for citizen input. The planning process coordinated with and incorporated existing thoroughfare plans of the neighboring counties and cities. In developing the 2020 Brazoria County Thoroughfare Plan, a public engagement process, an overarching vision, and six goals guided its creation.

### Vision

The vision of the Brazoria County Thoroughfare Plan is to **establish guidelines and policies** to develop a **safe, well-connected and efficient** county-wide transportation system that provides adequate mobility for people, goods and services and promotes **orderly growth and redevelopment** throughout the County.

The corresponding **goals** are to:

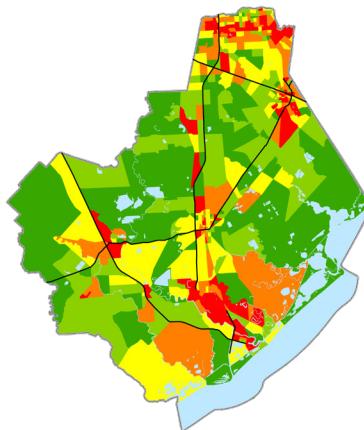
- Preserve adequate rights-of-way
- Establish countywide design standards
- Institute policies/procedures to coordinate/optimize transportation investments in the County
- Collaborate with the development community
- Preserve wetlands and wildlife areas within the County
- Develop a well-connected multimodal transportation system

### Plan Development

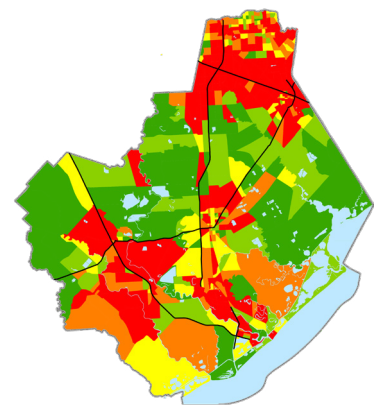
**Existing Conditions** included data for the County's population, employment, transportation networks, and environmental characteristics. Existing conditions demonstrated the current conditions and provided forecasted conditions for 2045, which demonstrate the need for an updated thoroughfare plan.



E1 - Location



E2 – Existing Employment



E3 – 2040 Employment

Approximately **67%** of the County’s land is within a Federal Emergency Management Agency (FEMA)-designated floodplain, making it difficult to plan for future roadways. There are a number of other barriers to development, including a vast amount of parkland, wetland, and other open spaces, as well as other long-term land uses such as correctional facilities, landfills, and airports.

The County is expected to double in population size between 2015 and 2045 with the most rapid rate of growth happening in Iowa Colony. Future employment in the County is projected to grow by 126%. Iowa Colony is expected to have the most employment growth in the County at 3,707%.

One of the major contributors of Brazoria County’s employment and transportation network is Port Freeport; other important economic industries include:

- Petrochemical
- Fishing
- Tourism
- Agribusiness
- Education
- Medical
- Retail

**Existing Plans** from municipalities within and adjacent to the County were incorporated into the planning process to better understand regional connectivity and transportation priorities. These plans were incorporated to the BCTP, in combination with public and stakeholder involvement and coordination. Plans that were incorporated into the creation of the BCTP include:

- Fort Bend County
- City of Alvin
- City of Angleton
- City of Houston
- City of Iowa Colony
- City of Lake Jackson
- City of Manvel
- Missouri City
- City of Pearland

Plan development was coordinated with staff and elected officials in these and other agencies throughout the life of the project.

**Gap and Connectivity Analysis** was performed to identify existing barriers to thoroughfare development, including environmental and man-made features, and produce a resulting map that indicates where gaps currently exist and where they will be reduced by the resulting BCTP roadway network.

The addition of roadways to the BCTP significantly reduces the gaps that exist in the current roadway network, however, there are still many barriers to construction that exist in Brazoria County.

**Public Involvement** was an important part of the planning process. Outreach tools included a Steering Committee, stakeholder meetings, public meetings, a comprehensive interactive survey, and social media. Feedback received from all tools was incorporated into the final documents.

## Thoroughfare Plan

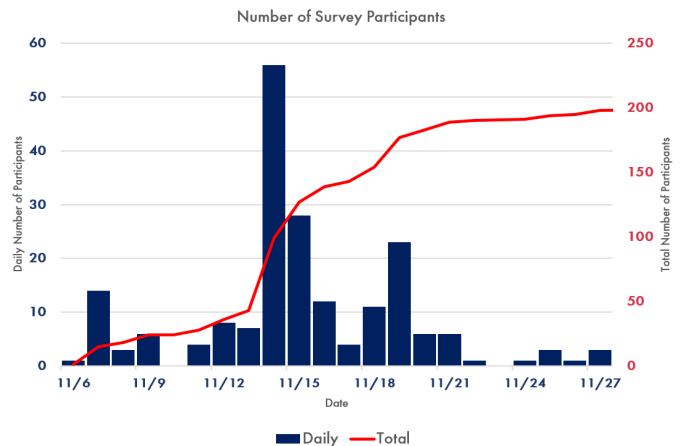
Four roadway classifications were used in the 2020 BCTP; each classification is associated with minimum ROW widths and general design characteristics. Classifications include:

**Limited Access Highway** – 300’ ROW minimum

**Principal Thoroughfare** – 150’ ROW minimum

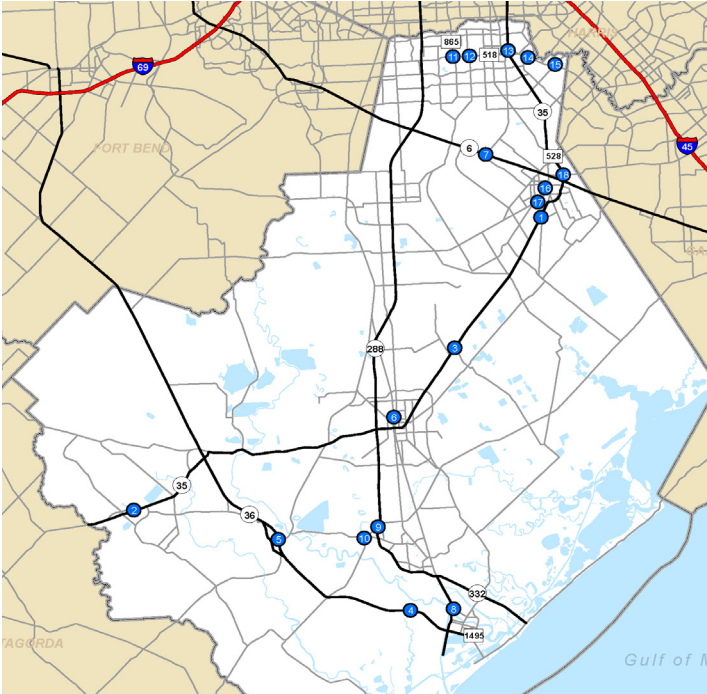
**Major Thoroughfare** – 120’ ROW minimum

**Major Collector** – 80’ ROW minimum



E4 – Survey Participants





E5 – Key Intersections for Additional ROW

## Recommendations

According to the outputs from all steps in the plan development, recommendations include implementation of the roadways on the BCTP map (E6), including right-of-way (ROW) width, number of travel lanes, and general alignment.

In general, 1000 roadways were added, 10 roadways were removed, 150 roadways were realigned, and 30 roadways were reclassified.

In addition, policy changes should accompany the implementation of these roadway changes. These policy change recommendations will ensure that regulations are updated to sufficiently accommodate future growth.

Regulatory documents to be affected are the Subdivision Regulations, the Roadway Safety and Road Preservation Standards for Work Conducted in Brazoria County Rights of Way, and the Drainage Criteria Manual. General categories of recommendations include:

- Changes to roadway classifications – update verbiage and general requirements to match new roadway typology; re-evaluate access and building line requirements to best serve incoming growth
- Drainage/detention – provide full update to sections that apply to roadway construction and development within floodplain
- Access considerations/building lines – re-evaluate requirements to best serve incoming growth
- Heavy truck traffic – create special design criteria for roadways that experience heavy truck traffic for better long-term roadway investment near port areas
- Coordination with municipalities – establish a quarterly meeting with all jurisdictions under the leadership of Brazoria County to discuss roadway project updates; future/ongoing planning efforts; national, statewide and local transportation policy updates; and potential funding opportunities

Each classification was provided a variety of typical cross-sections, except for Limited Access Highway, as these roadways are generally constructed and maintained by TxDOT.

Eighteen intersections were identified to be examined for future additional ROW width needs. These locations include potential grade-separation, major accident locations, and high-volume roadways during peak periods. The 18 intersections are shown in E5.

In addition to these intersections, rail crossings and streams, in general, need additional ROW to provide a safe vehicle buffer zone or accommodate the future need to construct grade-separated crossings at certain locations.

### Compared to the previous Thoroughfare Plan, the 2020 Plan added...

- 1002 miles of total roadways
- 30 miles of Limited Access Highways
- 16 miles of Principal Thoroughfares
- 651 miles of Major Thoroughfares
- 305 miles of Major Collectors

### In addition, the 2020 Thoroughfare Plan...

- Improved north-south and east-west connectivity throughout the County, while preserving right-of-way in future developable areas
- Removed 10 roadways that were previously proposed to cross existing barriers or flood-prone areas
- Realigned 150 roadways and reclassified 30 roadways to better coordinate with municipality plans and ensure regional connectivity
- Added 4 crossings of the Brazos River

## Funding

There are many tools available to all jurisdictional levels within Brazoria County. All recommendations should be prioritized and evaluated for funding potential. Brazoria County may present the BCTP to potential funding partners to communicate future needs before requesting funding partnership. As a first step, Brazoria County should prepare for the 2021/2022 H-GAC Transportation Improvement Program (TIP) Call for Projects.

## Implementation

To continue the efforts of the BCTP, continued data sharing and coordination between all stakeholders will be imperative. Municipalities and other agencies should continue to share development activity and changing policies to keep up to date. Based on these updates, minor amendments should be made every 1-2 years, with a major update every 5 years to include major amendments and changes in local and/or regional policies.





## 2020 Brazoria County Thoroughfare Plan

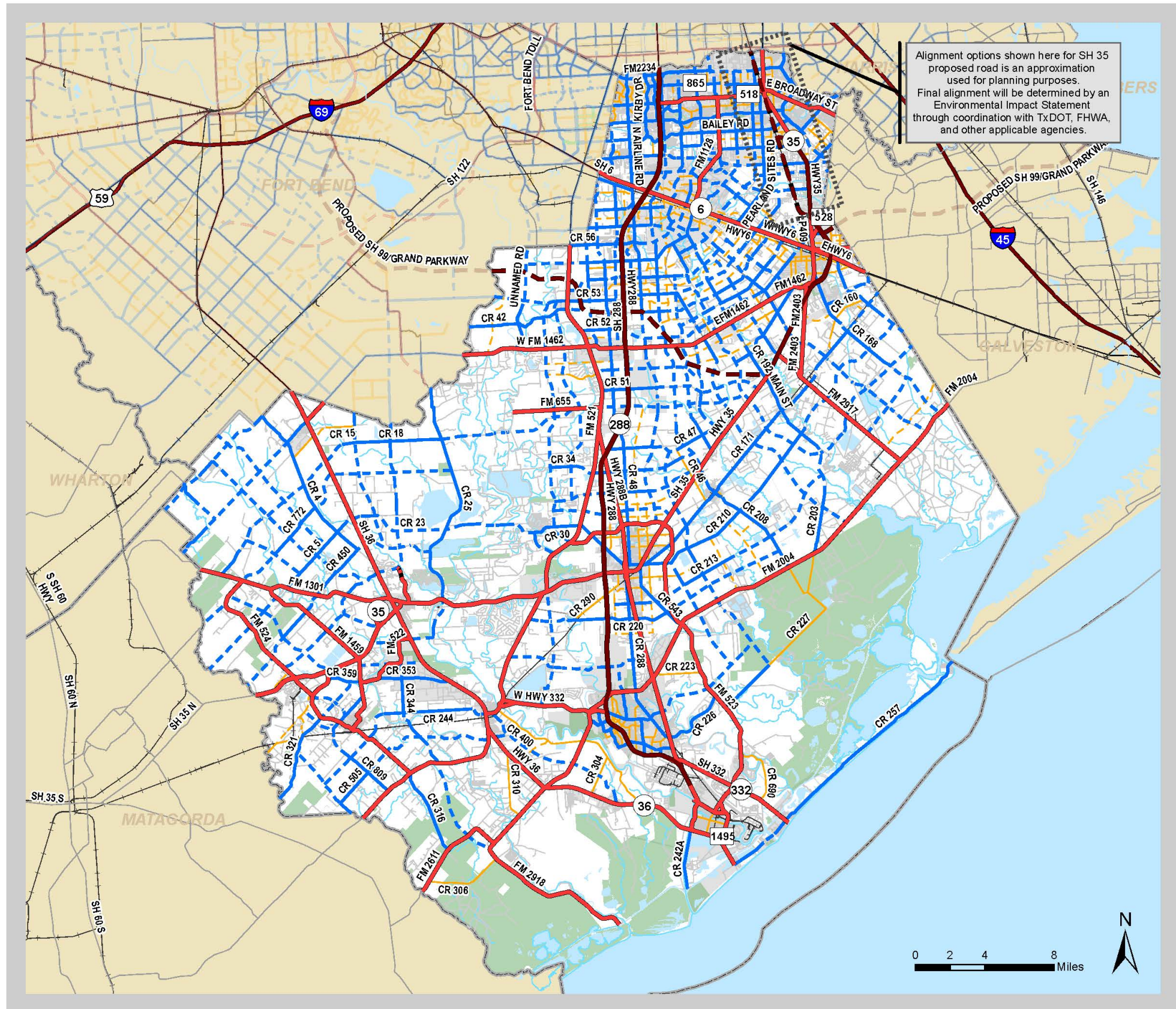
Adopted on August 11, 2020

### Legend

- Roadway Classification, Status**
- Limited Access Highway, Existing
  - - - Limited Access Highway, Proposed
  - Principal Thoroughfare, Existing
  - - - Principal Thoroughfare, Proposed
  - Major Thoroughfare, Existing
  - - - Major Thoroughfare, Proposed
  - Major Collector, Existing
  - - - Major Collector, Proposed
- Other**
- City Limits
  - Water
  - Parks and Open Space
  - Railroad

*Note: The map shows general road alignments only, which are subject to modification to fit local standards.*

Sources: BCAD, Brazoria County, HGAC, TxDOT  
Data is current as of 2019; Prepared on 08/11/2020



# 1. INTRODUCTION

## OVERVIEW

The Brazoria County Thoroughfare Plan (BCTP) was commissioned by the Houston-Galveston Area Council (H-GAC) and funded by a partnership between Brazoria County and the Texas Department of Transportation (TxDOT). Brazoria County's previous thoroughfare plan had not been significantly updated since the early 2000s. Since that time Brazoria County has experienced population and employment growth; both of which are projected to continue. The BCTP is a transportation framework that preserves ROW for transportation investments that will address mobility needs throughout the County. Brazoria County has many unique challenges and opportunities that make planning for future transportation a necessary task. With the future projected growth, the County will need to provide alternatives to the existing transportation system to accommodate incoming traffic. Much of the County lies within the existing floodplain; there are also significant natural resources that are important to preserve. In addition to limited area for new roadways, there are also specific traffic considerations for future planning. Industrial and petrochemical businesses are major employment centers in Brazoria County, attracting more growth, but also bringing heavy truck traffic to the roadways. The same traits that make Brazoria County a desirable place to live and work also convey a need to plan for future transportation possibilities.

The Thoroughfare Plan provides a long-range guide for planning future transportation in the County. The purpose of the Plan is to identify future roadway ROW so that land can be preserved as the County continues to develop, through the land development process or future Capital Improvement Planning (CIP) efforts. Construction of the roadways is dependent on many other factors (available funds, development practices, individual City and County decisions, changing needs, etc.). The typical CIP process is based on a rolling 5-year budgeting process. Therefore, creating the BCTP allows the County and its communities to plan for implementation on a regular basis and adjust priorities as necessary. This Plan should be used as a guide for future roadway network planning and it is not a guarantee of construction for the alignments illustrated on the Plan map.

### A Thoroughfare Plan:

- Is a **long range** (50+ years) transportation framework
- Identifies **general location** and type of transportation corridors
- Preserves **right-of-way** for future infrastructure
- Establishes consistent county **design guidelines**
- Organizes future development

### A Thoroughfare Plan Does NOT:

- Change ownership or land use
- Require counties/cities to build proposed roadways
- Identify or prioritize roadway projects
- Identify specific roadway alignments
- Include survey, design, cost estimate, or schedule of roadway projects
- Identify funding sources



## VISION AND GOALS

At the onset of the study, technical staff and decision-makers drafted an overarching vision that set a purpose and direction for the Plan. Included in this process were members of the Steering Committee and other stakeholders. More information about these groups can be found in [Chapter 3](#).

The vision of the Brazoria County Thoroughfare Plan is to **establish guidelines and policies** to develop a **safe, well-connected and efficient** county-wide transportation system that provides **adequate mobility** for people, goods and services and promotes orderly growth and redevelopment throughout the County.

Subsequent goals were then provided to help realize the Plan’s vision and to provide guidelines for the ultimate recommendations.

### Goals:

- Preserve adequate rights-of-way
- Establish countywide design standards
- Institute policies/procedures to coordinate/optimize transportation investments in the County
- Collaborate with the development community
- Preserve wetlands and wildlife areas within the County
- Develop a well-connected multimodal transportation system

## PLAN ORGANIZATION

The BCTP consists of a thoroughfare map and brief report documenting the thoroughfare planning process, results, and recommendations. The thoroughfare map shows the alignments of existing and proposed future connections. More detailed information about the thoroughfare map can be found in **Chapter 4**. The report was written throughout the project and is outlined to resemble the study sequence. Report chapters and a brief description of chapter contents are as follows:

- 1. Introduction:** Describes the purpose of a thoroughfare plan and the objectives of the BCTP specifically. Introduces key elements of plan development, including the challenges and opportunities that will be addressed.
- 2. Existing Conditions:** Reviews existing conditions within Brazoria County, including its population, employment, transportation networks, and environmental characteristics. Illustrates forecasted conditions for 2045, which demonstrate the need for an updated thoroughfare plan.
- 3. Thoroughfare Plan Development:** Outlines thoroughfare planning process, the gap and connectivity analysis, and public involvement. Describes the needs and challenges encountered in this particular thoroughfare plan as well as relevant findings from previous thoroughfare plans.
- 4. 2020 Thoroughfare Plan:** Depicts generally where ROW should be preserved and where ROW has not been acquired for proposed roadways. Describes the roadway classification system implemented in the BCTP. Explains how discrepancies with other municipalities have been mitigated.
- 5. Recommendations:** Recommends features regarding policy, funding, and implementation.

## 2. EXISTING CONDITIONS

### AREA OVERVIEW

This section includes a brief summary of the existing conditions within Brazoria County, including its population, employment, transportation, and unique characteristics. It is important to understand the attributes of Brazoria County in order to better plan for its future transportation.

Brazoria County is one of 254 counties in the state of Texas and is located along the Gulf of Mexico, south of Houston (Figure 1). It is also one of 13 counties within the service region of H-GAC. The County covers 1,597 square miles, which includes approximately 211 square miles of water.



Figure 1 - Location

### POPULATION

According to H-GAC socioeconomic data from 2018, about 343,579 people live in the County making it the 14th largest county by population in Texas. It has experienced steady population growth over the last 20 years, gaining around 7,000 residents each year since 2000.

The majority of the cities in the County have small populations of under 20,000 residents except for Pearland, Alvin, and Lake Jackson. Combined, these three cities are home to about 51% of the County's population. Figure 2 indicates the County's population distribution by city.

The County is expected to double in population size between 2015 and 2045 with the most rapid amount of growth happening in Iowa Colony. The population is also expected to grow in the currently unincorporated area of the County by 211%. Only two cities, Clute and Freeport, are expected to decrease in size, and even these decreases are expected to be minor. Table 1 lists the existing and forecasted populations for Brazoria County and its cities.

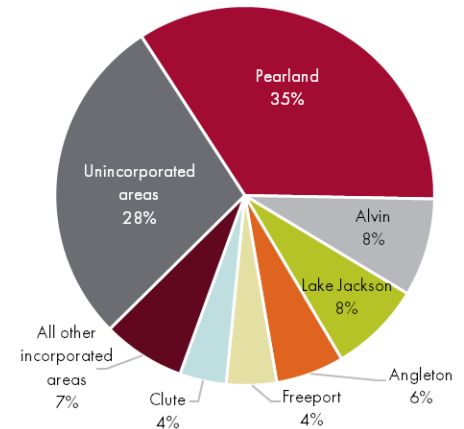


Figure 2 – Existing Population Distribution

Source: H-GAC socioeconomic data, 2018

Figures 3 and 4 show the County's existing and forecasted population by Traffic Analysis Zone (TAZ), respectively. The TAZs are used to perform the traffic modeling for future years. All existing and projected population data by TAZ is included in Appendix C.

Table 1 – Existing and Forecasted Population

City	Existing Population (2015)	Forecasted Population (2045)	% Change
Brazoria County (Incorporated)	246,561	397,447	61%
Brazoria County (Unincorporated)	97,018	301,845	211%
Brazoria County (Total)	343,579	699,292	104%
Iowa Colony	1,012	22,097	2,083%
Manvel	6,667	97,884	1,368%
West Columbia	4,677	7,114	52%
Richwood	4,391	5,921	35%
Pearland	118,371	158,656	34%
Lake Jackson	26,987	34,982	30%
Alvin	28,688	34,886	22%
Angleton	19,933	20,292	2%
Clute	13,648	12,979	-5%
Freeport	14,725	12,990	-12%

Source: H-GAC socioeconomic data, 2018

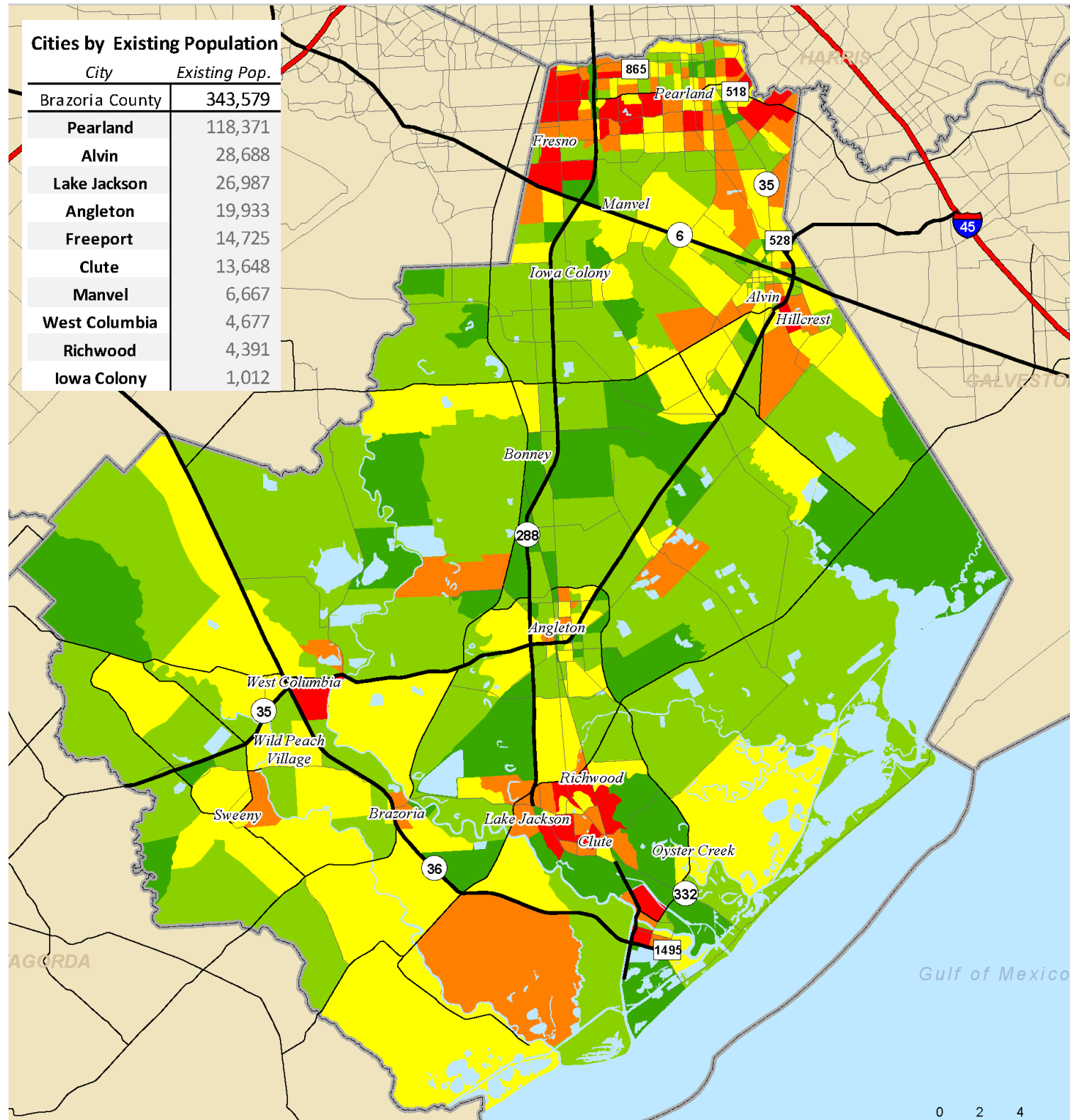


Figure 3 – Existing Population (2015) by Traffic Analysis Zone

Table Source: H-GAC socioeconomic data, 2018

Map Source: H-GAC socioeconomic data, 2015

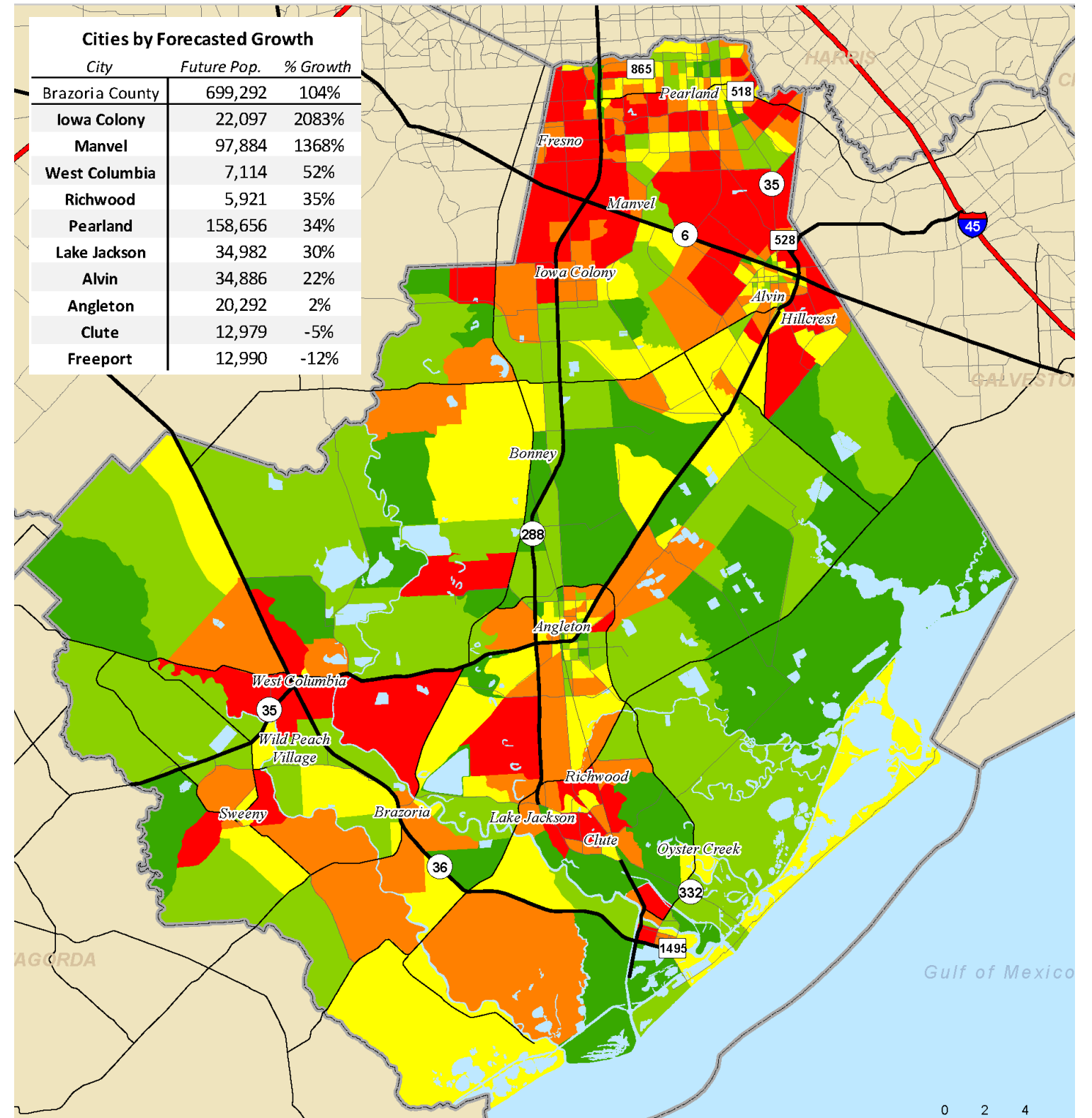


Figure 4 – Forecasted Population (2045) by Traffic Analysis Zone

Table Source: H-GAC socioeconomic data, 2018

Map Source: H-GAC socioeconomic data, 2015

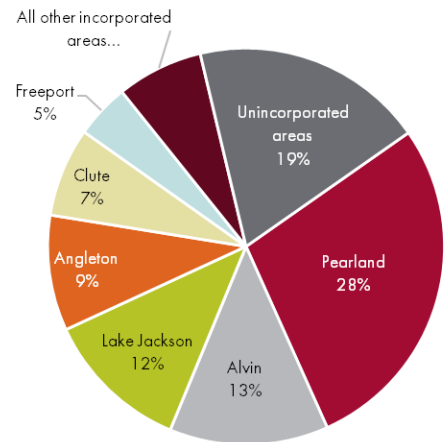
## EMPLOYMENT

It is estimated that there are just over 112,500 jobs in Brazoria County. The cities with the largest employment are Pearland, Alvin, and Lake Jackson, although 19% of the jobs are also located in unincorporated areas. **Figure 5** shows the job distribution of the top cities in the County.

Overall, the distribution of population and employment is very similar. The biggest difference is that the County’s unincorporated area has 9% less employment than it does population. However, it is common for people who live in the country to commute into the city for their work.

One of the major contributors of Brazoria County’s employment and transportation network is Port Freeport, located along the Gulf of Mexico. The port is located just 60 miles south of downtown Houston and ranks within the top 20 ports in the US in international cargo tonnage handled. Other important economic industries in the County include (Reports, Top Employers List n.d.) :

- Petrochemical
- Fishing
- Tourism
- Agribusiness
- Education
- Medical
- Retail



**Figure 5 – Existing Employment Distribution**

Source: H-GAC socioeconomic data, 2018

Future employment in the County is projected to grow by 126%. Iowa Colony is expected to have the highest rate of employment growth in the County at 3,707%. **Table 2** lists the existing and forecasted employment for Brazoria County and its cities.

**Table 2 – Existing and Forecasted Employment** Source: H-GAC socioeconomic data, 2018

City	Existing Jobs (2015)	Forecasted Jobs (2045)	% Change
Brazoria County (Incorporated)	91,176	178,149	95%
Brazoria County (Unincorporated)	21,377	76,215	257%
<b>Brazoria County (Total)</b>	<b>112,553</b>	<b>254,364</b>	<b>126%</b>
Iowa Colony	297	11,306	3,707%
Manvel	1,436	52,015	3,522%
Pearland	31,523	49,402	57%
Alvin	14,587	21,921	50%
West Columbia	2,030	2,556	26%
Lake Jackson	13,369	14,093	5%
Angleton	10,604	12,066	14%
Freeport	4,989	5,040	1%
Clute	8,169	8,224	1%
Richwood	529	530	0%

**Figures 6** and **7** show the County’s existing and forecasted employment by TAZ, respectively. All existing and projected population data by TAZ is included in **Appendix C**.

<sup>1</sup>The Economic Development Alliance for Brazoria County, 2019, [https://chambermaster.blob.core.windows.net/userfiles/UserFiles/chambers/9408/CMS/Top\\_Employers\\_List/Brazoria-County-Non-Retail-Employers-2-2019.pdf](https://chambermaster.blob.core.windows.net/userfiles/UserFiles/chambers/9408/CMS/Top_Employers_List/Brazoria-County-Non-Retail-Employers-2-2019.pdf)



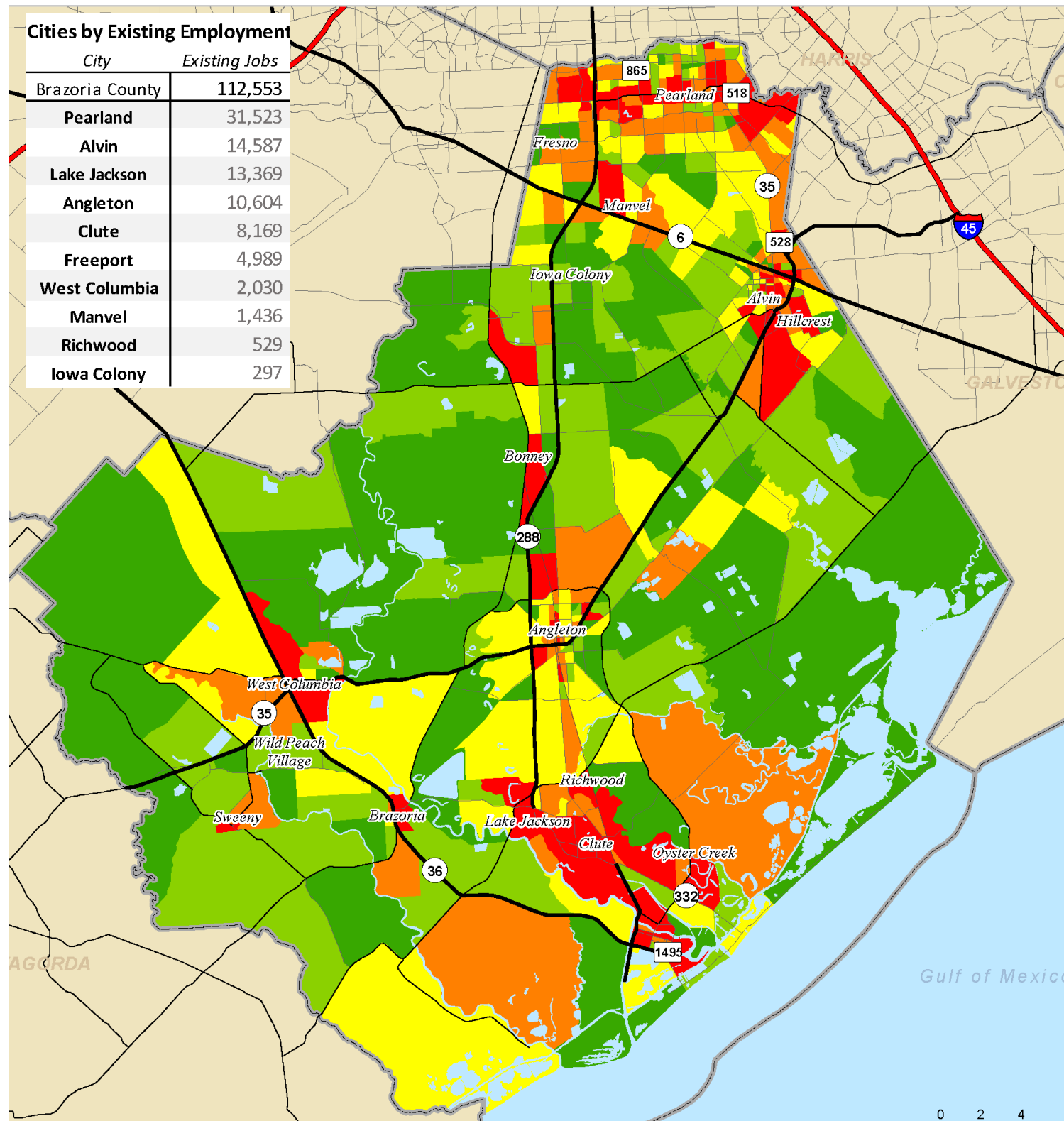


Figure 6 – Existing Employment (2015) by Traffic Analysis Zone

Table Source: H-GAC socioeconomic data, 2018

Map Source: H-GAC socioeconomic data, 2015

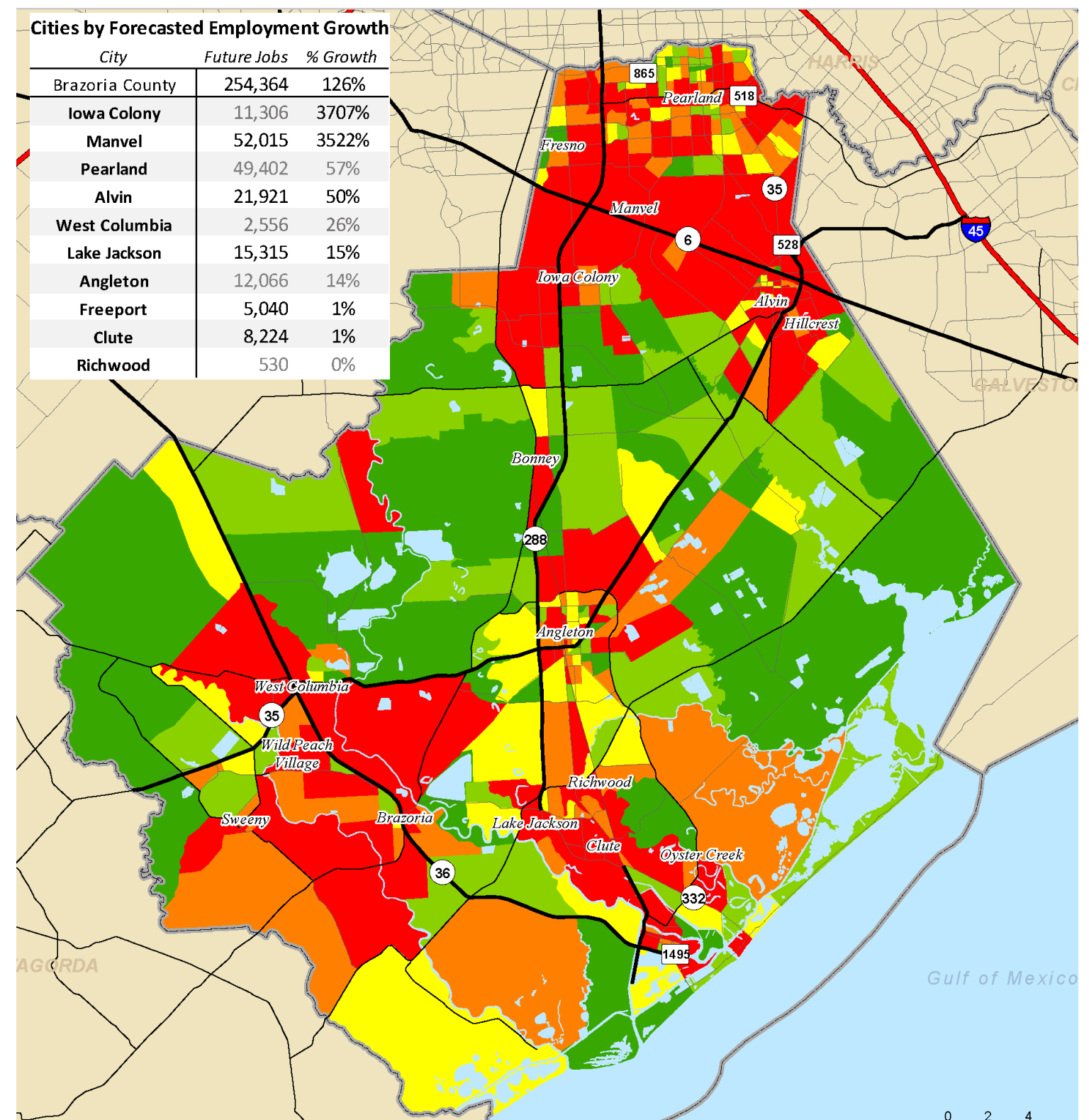


Figure 7 – Forecasted Employment (2045) by Traffic Analysis Zone

Table Source: H-GAC socioeconomic data, 2018

Map Source: H-GAC socioeconomic data, 2015

## ROADWAY NETWORK

Brazoria County’s existing public roadway network can be divided into three major categories of roadways: state, county, and city. **Figure 8** shows the distribution of each type of roadway in the County. Further descriptions of each are given below.

### STATE ROADWAYS

There are approximately 587 miles of state roadways in Brazoria County, making up 20% of the public roadway network.

**State Highways (SH):** facilities that carry large volumes of traffic at relatively higher speeds. They provide regional (north-south and east-west) mobility and access to local roads. There are currently 338 miles of state highways in Brazoria County.

The major north-south SH connections in Brazoria County are:

- SH 288 from Harris County to Freeport,
- SH 36 from Fort Bend County to Freeport,
- SH 332 from SH 288 to Surfside Beach, and
- SH 35 from Harris County to SH 288.

The major east-west SH connections in Brazoria County are:

- SH 35 from Matagorda County to SH 288 and
- SH 6 from Fort Bend County to Galveston County.

**Farm-to-Market (FM):** rural arterials that provide regional access, connectivity, and mobility. There are currently 246 miles of FM roadways in Brazoria County.

### Proposed

Proposed SH 99/Grand Parkway Toll Road will be located in the northern part of the County. SH 99 is currently constructed north of US 59 in Fort Bend County and east of SH 146B in Chambers County. The entire portion within Brazoria County is currently a TxDOT-proposed toll road project. When built, this alignment will provide east-west connectivity through the northern part of the County.

State Highway 35 is a proposed extension of the Alvin Bypass. Alignment options are shown on the BCTP map for planning purposes. Final alignment will be determined by an Environmental Impact Statement through coordination with TxDOT, FHWA, and other applicable agencies.

### COUNTY ROADWAYS

County roads provide connections between the cities, unincorporated areas, and the larger state roadways. There are approximately 1,195 miles of county roadways within Brazoria County and they make up 40% of the public roadway network.

### CITY ROADWAYS

City roads provide users with access to local connections and are usually lower in capacity. There are approximately 1,196 miles of city roadways within Brazoria County and they make up 40% of the public roadway network.

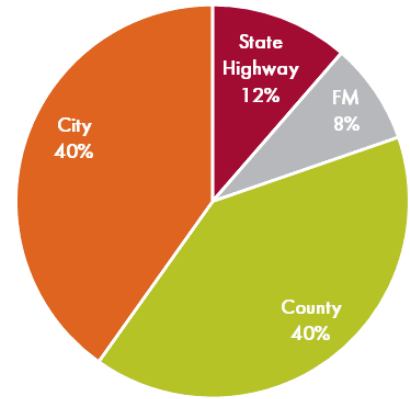


Figure 8 – Distribution of Roadway Types in Brazoria County

Source: H-GAC STAR\*map data

## CRASH DATA (2016-2018)

The City of Pearland had the most vehicular crashes of any city in the County between 2016 and 2018 (5,185) but has a relatively low fatality rate (0.21%). In comparison, the City of Alvin’s number of crashes was over three times less than Pearland’s, but its fatality rate is five times higher (1.09%).

In 2018, the crash fatality rate in Texas was 0.54%. There are three cities in the County whose fatality rates are above this statewide average: Alvin (1.09%), Manvel (0.74%), and Richwood (0.63%). **Table 3** shows the top 10 cities in Brazoria County by number of crashes. This data is sourced from TxDOT’s Crash Record Information System (CRIS) database for 2016-2018. All raw crash data is provided in **Appendix C**.

*Table 3 – Crash Data (2016-2018)*

Rank	City Name	Crashes	# Fatal	% Fatal
<b>State of Texas</b>		<b>1,879,608</b>	<b>10,219</b>	<b>0.54%</b>
1	Pearland	5,185	11	0.21%
2	Alvin	1,647	18	1.09%
3	Lake Jackson	1,416	5	0.35%
4	Angleton	1,063	3	0.28%
5	Manvel	945	7	0.74%
6	Freeport	910	3	0.33%
7	Clute	658	2	0.30%
8	Brazoria	214	0	0.00%
9	West Columbia	177	0	0.00%
10	Richwood	158	1	0.63%

Source: TxDOT CRIS database

**Figure 9** shows the County’s vehicular crash and fatality history in more detail.



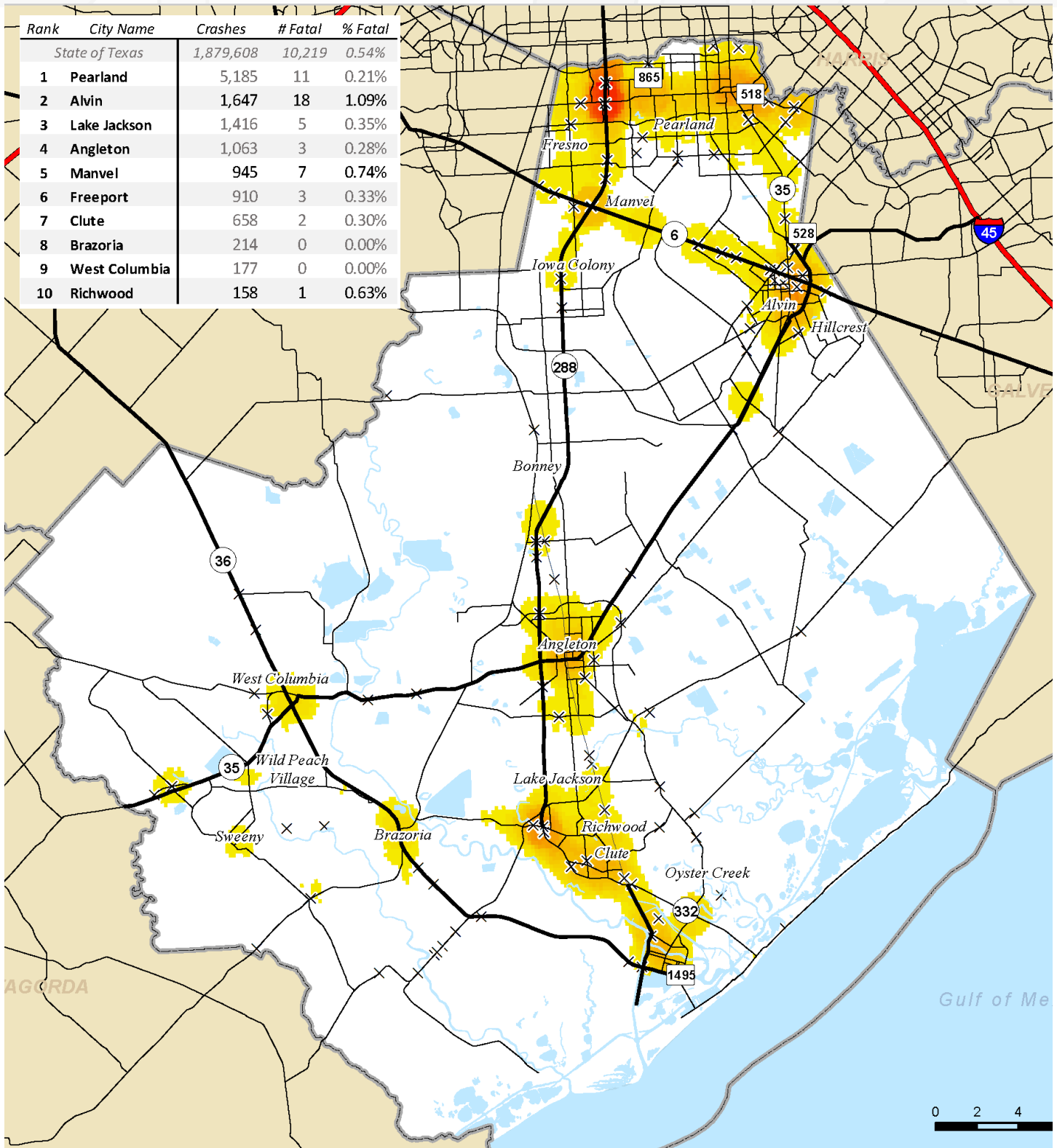


Figure 9 – Crashes and Fatalities (2016-2018)

Source: TxDOT CRIS database

## FLOODING AND EVACUATION ROUTES

Since Brazoria County borders the Gulf of Mexico, a vast amount of the area is low-lying and is susceptible to flooding during a severe rainstorm. For this same reason, storm surges generated by hurricanes also pose a great threat. Only 33% of the County’s land is outside of the FEMA-designated floodplain. Precinct 1 is especially prone to flooding, with 82% of its land being inside the floodplain. **Table 4** shows the floodplain acreage for the County and for each county precinct.

*Table 4 – Floodplain Acreage by Precinct*

Area	Floodplain	# Acres	% Area
County	Floodway	29,727	3%
	100-Year	568,214	60%
	500-Year	70,715	7%
	Inside Floodplain	638,930	67%
	Outside Floodplain	313,584	33%
Precinct 1	Inside Floodplain	375,214	82%
	Outside Floodplain	67,920	18%
Precinct 2	Inside Floodplain	66,669	46%
	Outside Floodplain	79,048	54%
Precinct 3	Inside Floodplain	20,107	51%
	Outside Floodplain	19,444	49%
Precinct 4	Inside Floodplain	238,535	61%
	Outside Floodplain	153,497	39%

Source: Brazoria County Engineering Department

Severe weather and the resulting flooding pose a threat for the County’s residents; emergency mitigation and response efforts are of the utmost importance. Evacuation routes are specifically designated roadways used to provide the safest and most timely evacuation of coastal areas and determine the best allocation of resources during a severe weather threat. Since 67% of Brazoria County is located with a floodplain area, it is essential that this designated network provide adequate evacuation routes for residents during a storm.

The major evacuation routes in Brazoria County are:

- SH 332 moving away from the coast to SH 288,
- SH 288 continuing north towards Houston,
- SH 36 from Freeport heading northwest to Fort Bend County, and
- SH 6 moving west from Galveston to IH 69.

**Figure 10** depicts the floodplain within Brazoria County. **Figure 11** shows the County’s evacuation routes.



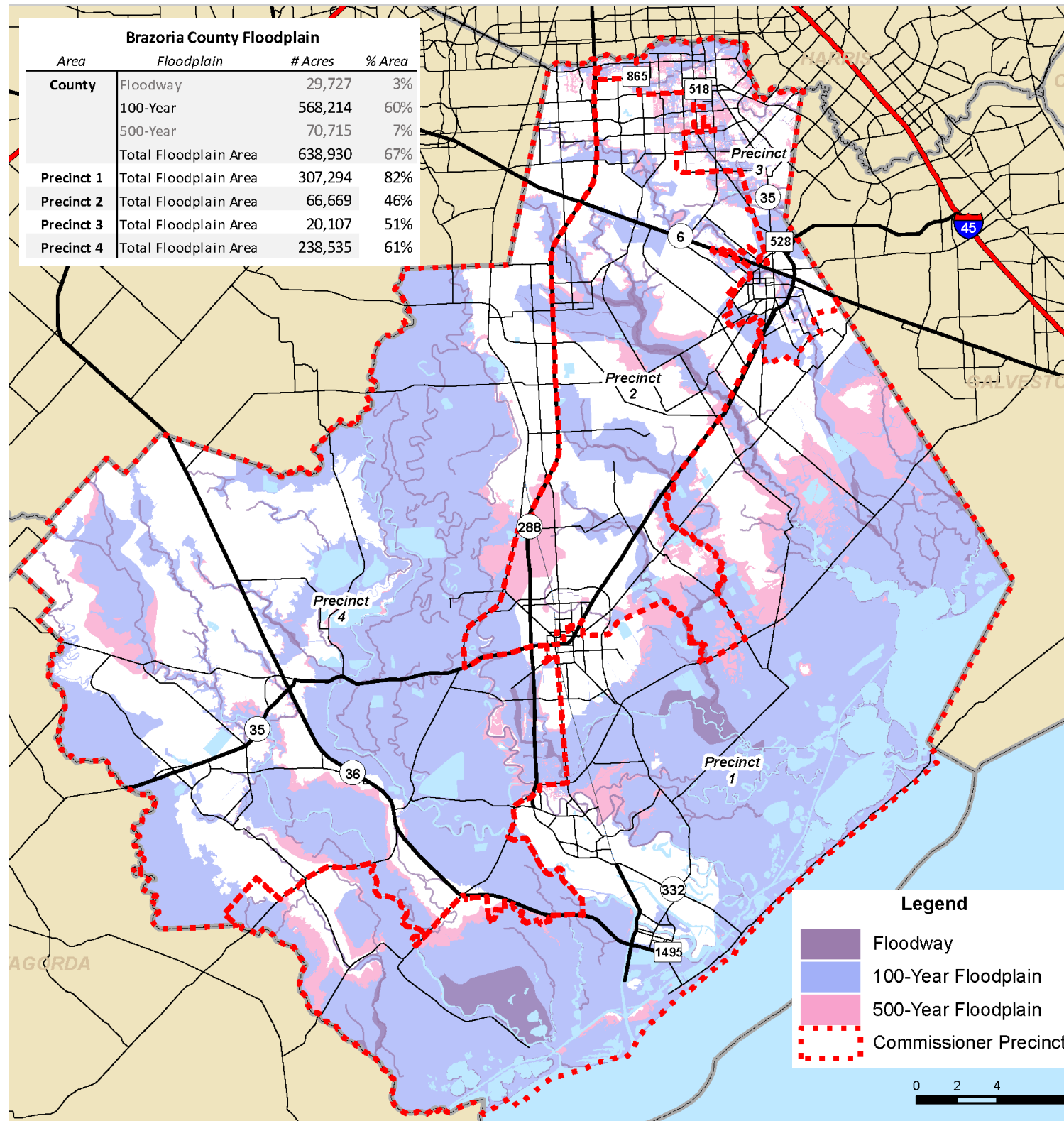


Figure 10 – FEMA Floodplain (2017)  
Source: Brazoria County Engineering Department

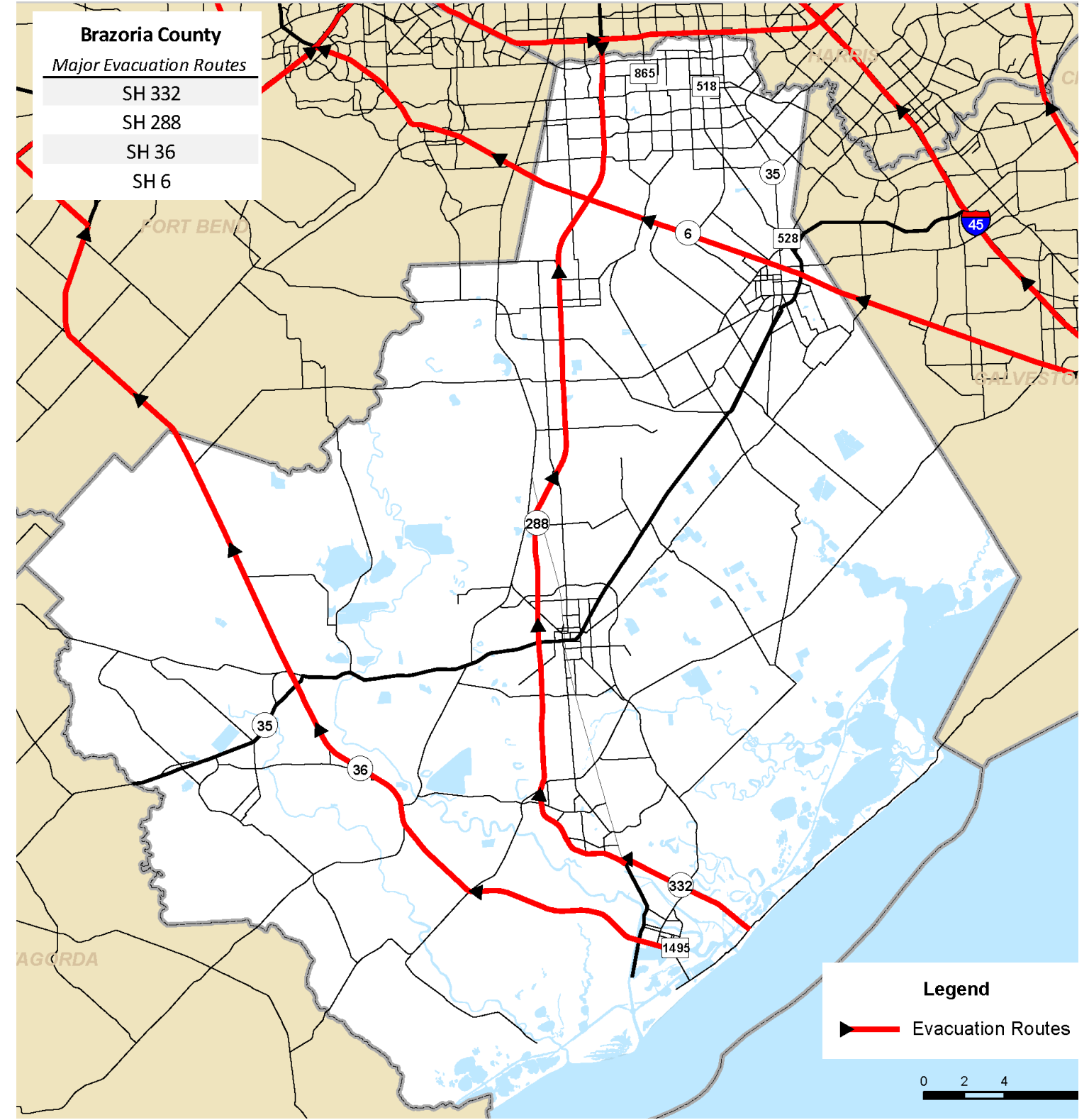


Figure 11 – Major Evacuation Routes  
Source: TxDOT Open Data Portal

## ACTIVE TRANSPORTATION NETWORK

Brazoria County’s active transportation plan was created as part of the Houston-Galveston Area Council 2045 Regional Transportation Plan. The plan defines four major types of bicycle/pedestrian facilities:

- Bike lanes – dedicated lanes marked with painted lines for use by bicyclists,
- Shared-use paths/trails – dedicated trails completely separated from auto traffic and used by both pedestrians and bicyclists,
- Signed shared roadways – routes with signs indicating cars and bicyclists to share the travel lanes, and
- Signed shoulder bike routes – routes with signs indicating that bicyclists are permitted to use the shoulder as a travel lane.

Most of the County’s active transportation network is concentrated in Lake Jackson, Alvin, and Pearland. In addition, there is a bike lane corridor near Sweeny, as well as a shared-use path/trail along the coast in Surfside Beach.

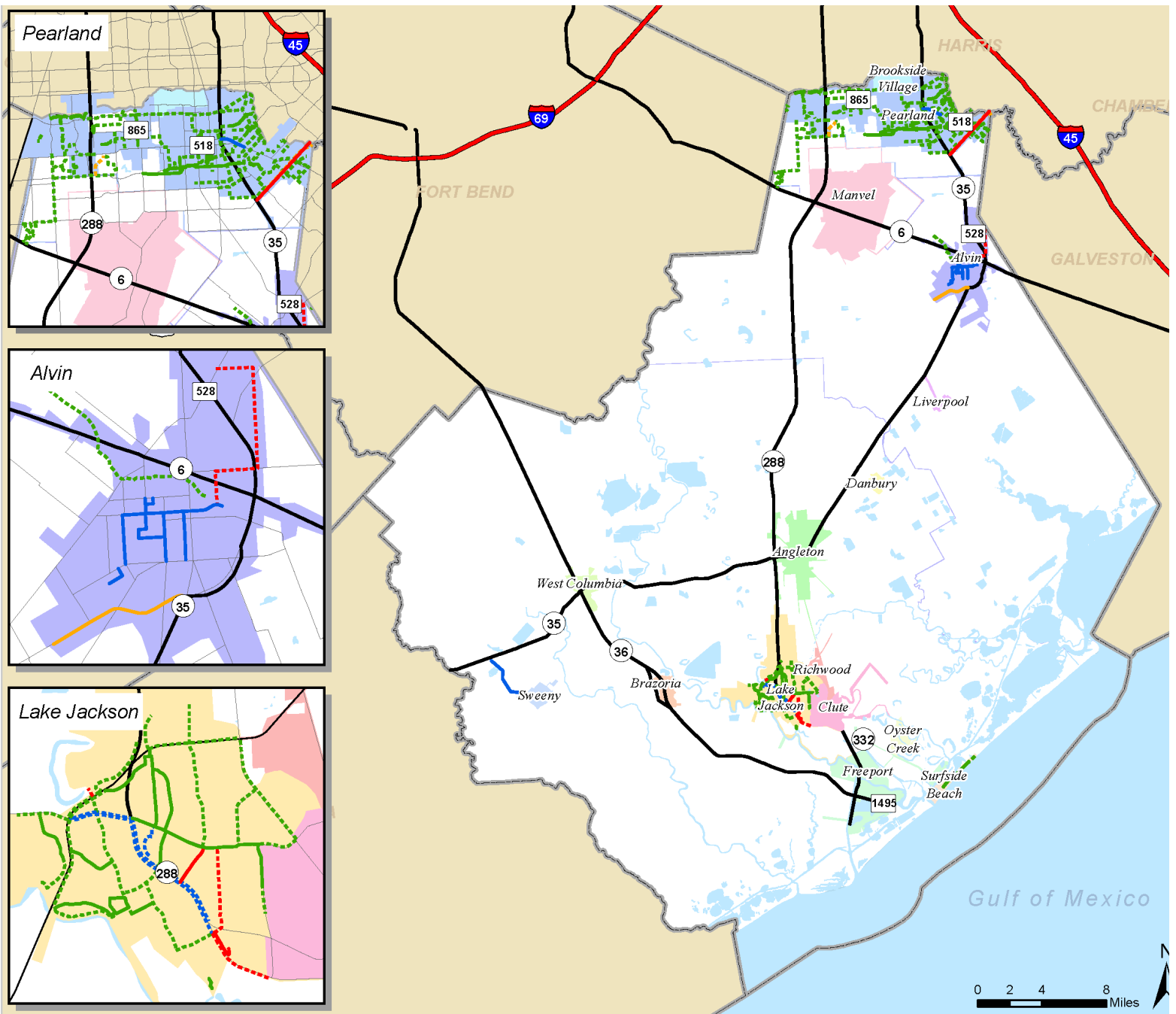
Brazoria County’s current shared use path/trail network consists of just under 30 miles of trails; the 2045 Regional Transportation Plan proposes to nearly quadruple the size of that network to over 130 miles. Combined, those trails represent 85% of the planned growth for the County and will largely be in the northern Brazoria-Pearland area. **Table 5** lists the number of centerline miles of both existing and proposed facilities for Brazoria County.

*Table 5 – Existing and Proposed Active Transportation Facilities*

<b>Facility Type</b>	<b>Existing (mi)</b>	<b>Proposed (mi)</b>
<b>Bike Lane</b>	10.22	6.84
<b>Shared Use Path/Trail</b>	28.55	101.58
<b>Signed Shared Roadway</b>	4.79	6.02
<b>Signed Shoulder Bike Route</b>	2.30	4.77
<b>TOTAL:</b>	<b>45.86</b>	<b>119.21</b>

*Source: H-GAC GIS Datasets – Bikeways*

**Figure 12** shows the County’s active transportation network in more detail.



**Legend**

- Existing Bike Lane
- Existing Shared Use Path/Trail
- Existing Signed Shared Roadway
- Existing Signed Shoulder Bike Route
- - - Prop. Bike Lane
- - - Prop. Shared Use Path/Trail
- - - Prop. Signed Shared Roadway
- - - Prop. Signed Shoulder Bike Route

**Figure 12 – Active Transportation Network**

Source: H-GAC GIS Datasets – Bikeways

**Miles of Bicycle Facilities**

Facility Type	Existing (mi)	Proposed (mi)
<b>Bike Lane</b>	10.22	6.84
<b>Shared Use Path/ Trail</b>	28.55	101.58
<b>Signed Shared Roadway</b>	4.79	6.02
<b>Signed Shoulder Bike Route</b>	2.30	4.77
<b>TOTAL</b>	<b>45.86</b>	<b>119.21</b>



# TRANSIT NETWORK

Public transit and active transportation go hand-in-hand as alternative modes of transport. When the two are planned and promoted in tandem, it can increase the number of users for both modes. In total, there are 83 route-miles of bus service within Brazoria County. The service is called Southern Brazoria County Transit and is provided by Connect Transit. This bus system consists of interconnected routes that circulate within and between Angleton, Lake Jackson, Clute, and Freeport. **Figure 13** shows the County’s transit network in more detail.

The fixed-route service operates Monday through Friday from approximately 6:00 am to 6:00 pm, and on Saturday from 8:00 am to 6:00 pm. The fares range from free for children to \$1.00 for adults, with half-priced fare for seniors, Medicare cardholders, persons with disabilities, and students. The provider also has special accessibility and on-call programs for people who qualify. As the County continues to develop and the population continues to grow, the transit authority should monitor the situation for potential expansion of existing transit operations.

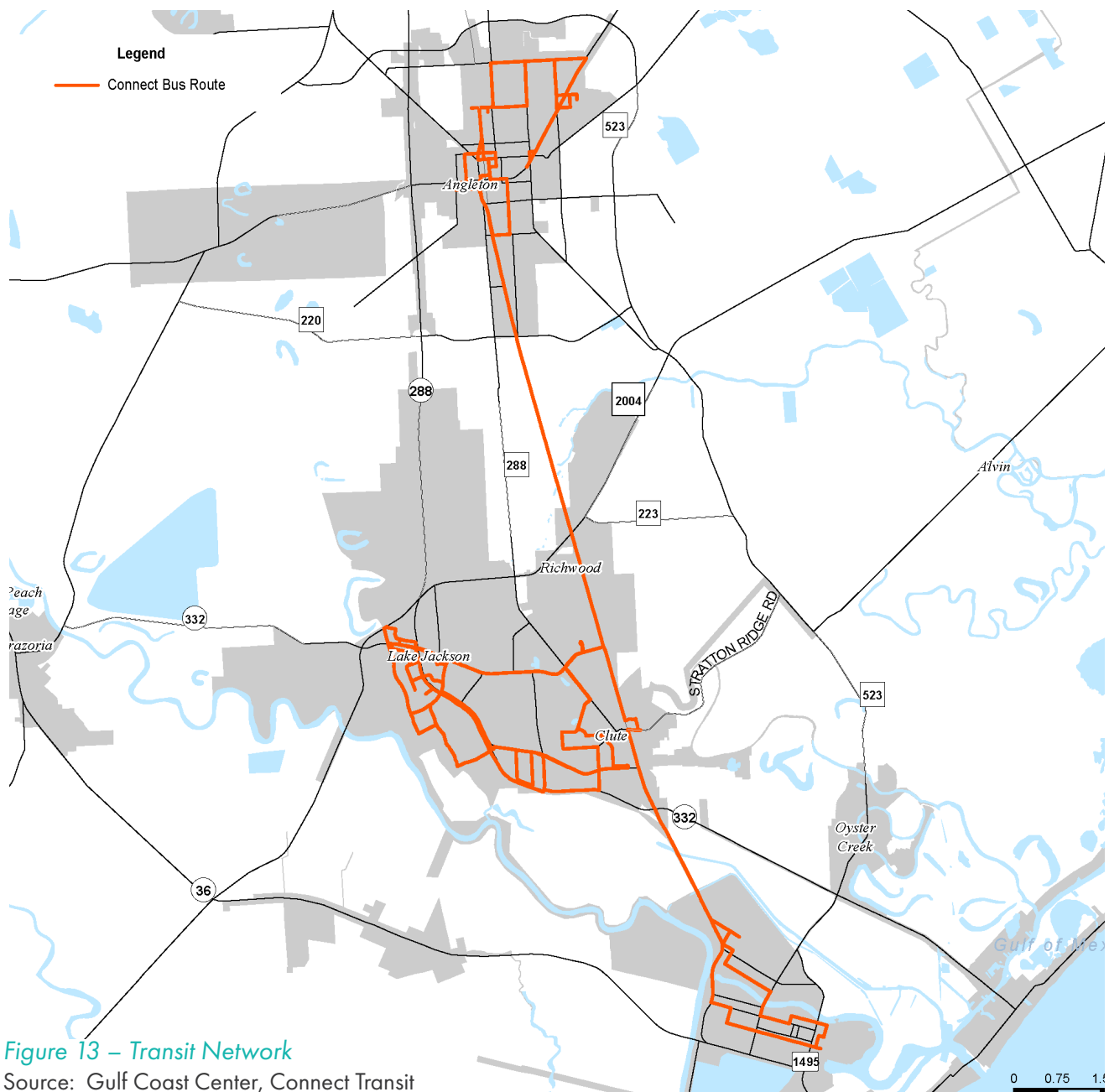


Figure 13 – Transit Network

Source: Gulf Coast Center, Connect Transit

# FREIGHT NETWORK

Within Brazoria County, there are six airports and one seaport. Port Freeport, as well as the many petrochemical industry locations, influences the County’s freight network quite a bit. As a result, the railroad network in the County is built primarily around moving freight north, away from the coast. In total, there are about 132 miles of rail and 266 miles of highway designated as freight routes. **Figure 14** shows the County’s freight network in more detail.

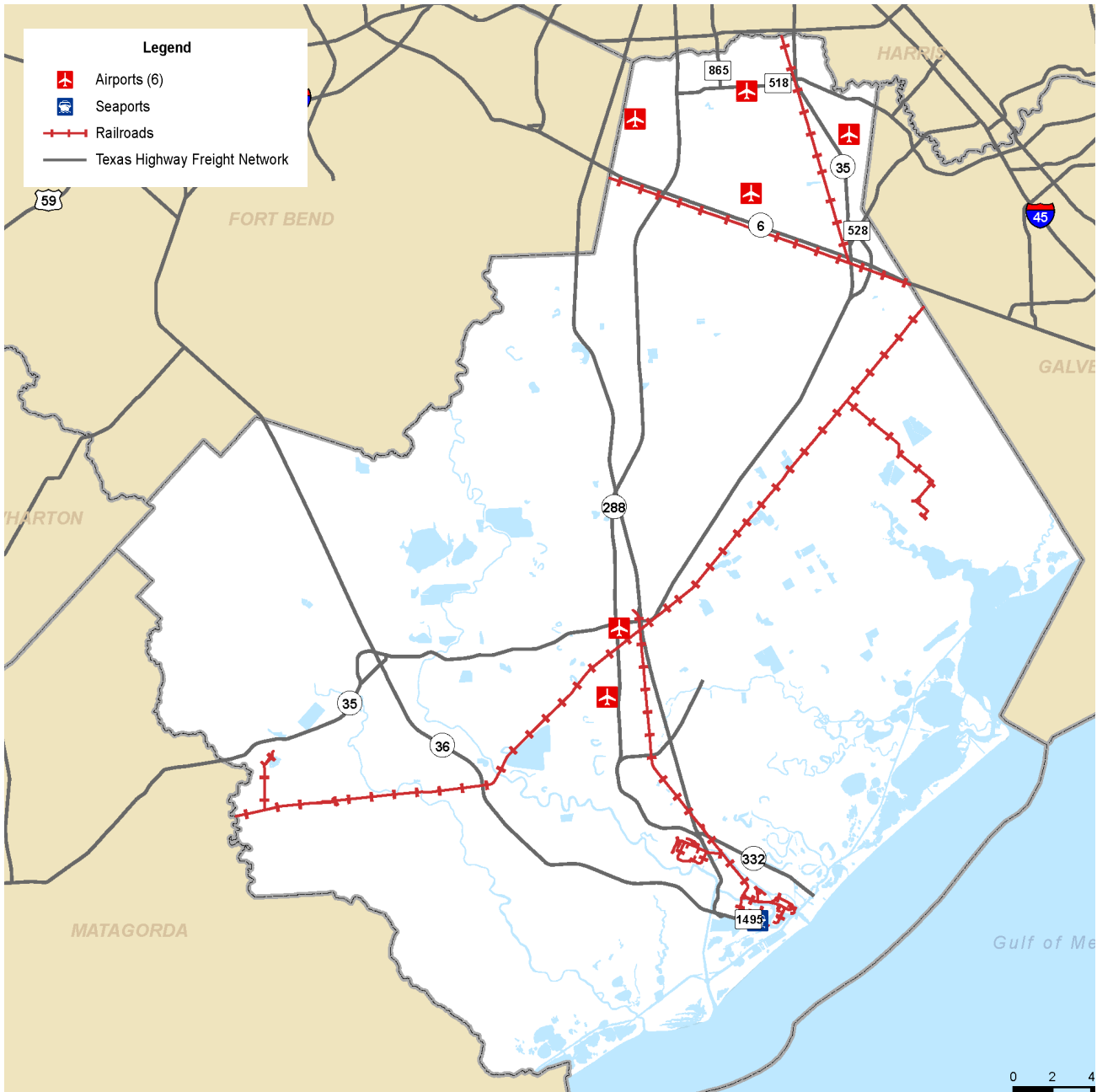


Figure 14 – Freight Network

Source: TxDOT Open Data Portal, H-GAC GIS Datasets – NTAD Rail lines

## LAND USE

Since the County is located along the coast, 67% of the land is in the floodplain. As a result, much of the land is classified as federally-protected wetland or dedicated as park-land to prevent future risky development. Nearly half of Brazoria County’s land-based 870,000 acres is currently classified as Vacant Developable/Farming by H-GAC’s Regional Land Use Information System (RLUIS). The next most common land uses are Parks/Open Space (14%) and Residential (13%). Most of the land dedicated to Government/Medical/Education is being used for correctional facilities within the County. It is also notable that most of the County’s industrial land is concentrated in three places: Freeport, Sweeny, and southwest of Liverpool.

In the future land use plan, 5% of Vacant Developable land (49,000 acres) will be set aside for new residential and industrial development. **Table 6** lists the amount of land assigned to each category in the current and future land use plans. **Figures 15** and **16** show the County’s current and future land use plans, respectively.

*Table 6 – Current and Future Land Use Area*

Land Use Category	Current Acres	Current %	Future Acres	Future %
Vacant Developable/Farming	420,661	48%	371,442	43%
Parks/Open Spaces	117,488	14%	117,488	14%
Residential	110,652	13%	147,818	17%
Unknown	82,633	10%	82,594	10%
Government/Medical/Education	59,027	7%	58,303	7%
Multiple	31,122	4%	32,031	4%
Undevelopable	21,802	3%	21,802	3%
Industrial	18,125	2%	29,061	3%
Commercial	6,116	1%	7,112	1%
Other	1,768	< 1%	1,743	< 1%

Source: H-GAC RLUIS



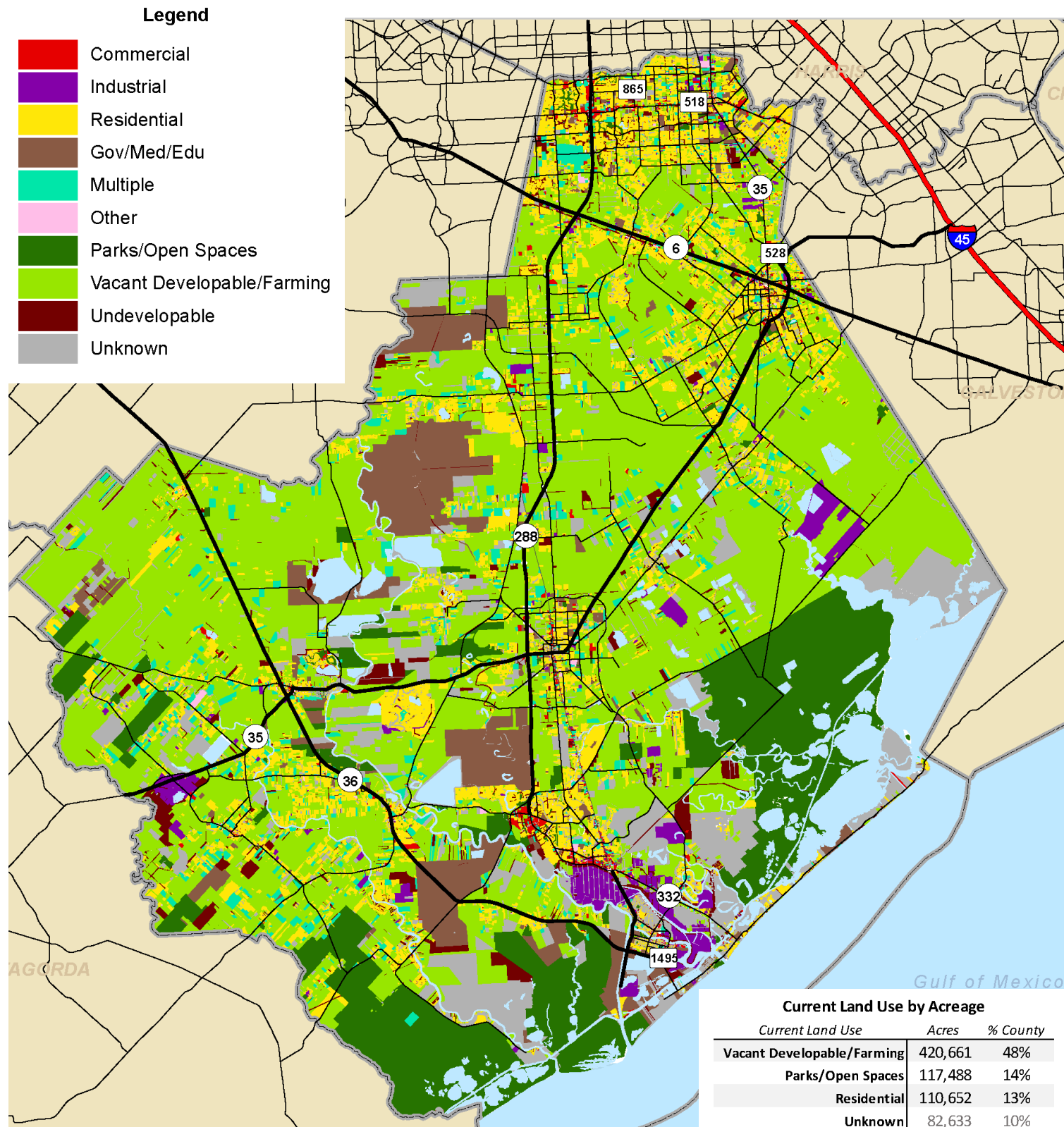


Figure 15 – Current Land Use  
Source: H-GAC RLUIIS

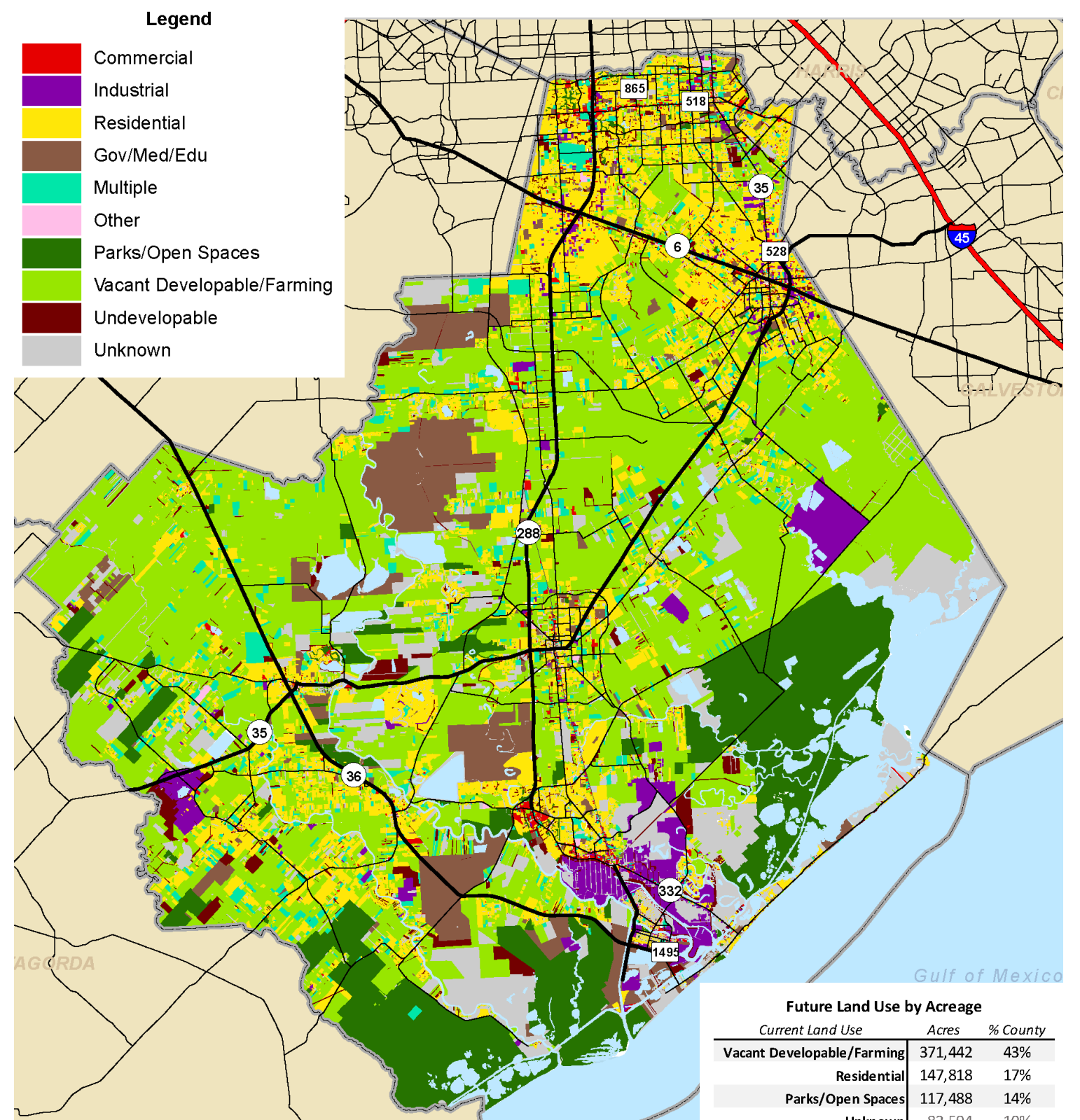


Figure 16 – Future Land Use  
Source: H-GAC RLUIIS

# ENVIRONMENTAL FEATURES

Environmental features have a large influence over a jurisdiction’s road network. Forests, lakes, and wetlands are an asset to the County and it is critical to preserve them, where possible, to maintain pervious surfaces for future drainage, as well as to conserve the aesthetic and natural benefits that they bring to the County. These features can also prevent certain connections from being made, and thus should be heavily considered when planning a future transportation system.

Additionally, there are solid waste facilities and superfund sites that can affect the construction of new roadways. Typically, these areas are difficult to build on and are long-term sites that are not easily redeveloped. **Figure 17** shows the County’s environmental features in more detail. Data is from the Texas Commission on Environmental Quality (TCEQ).

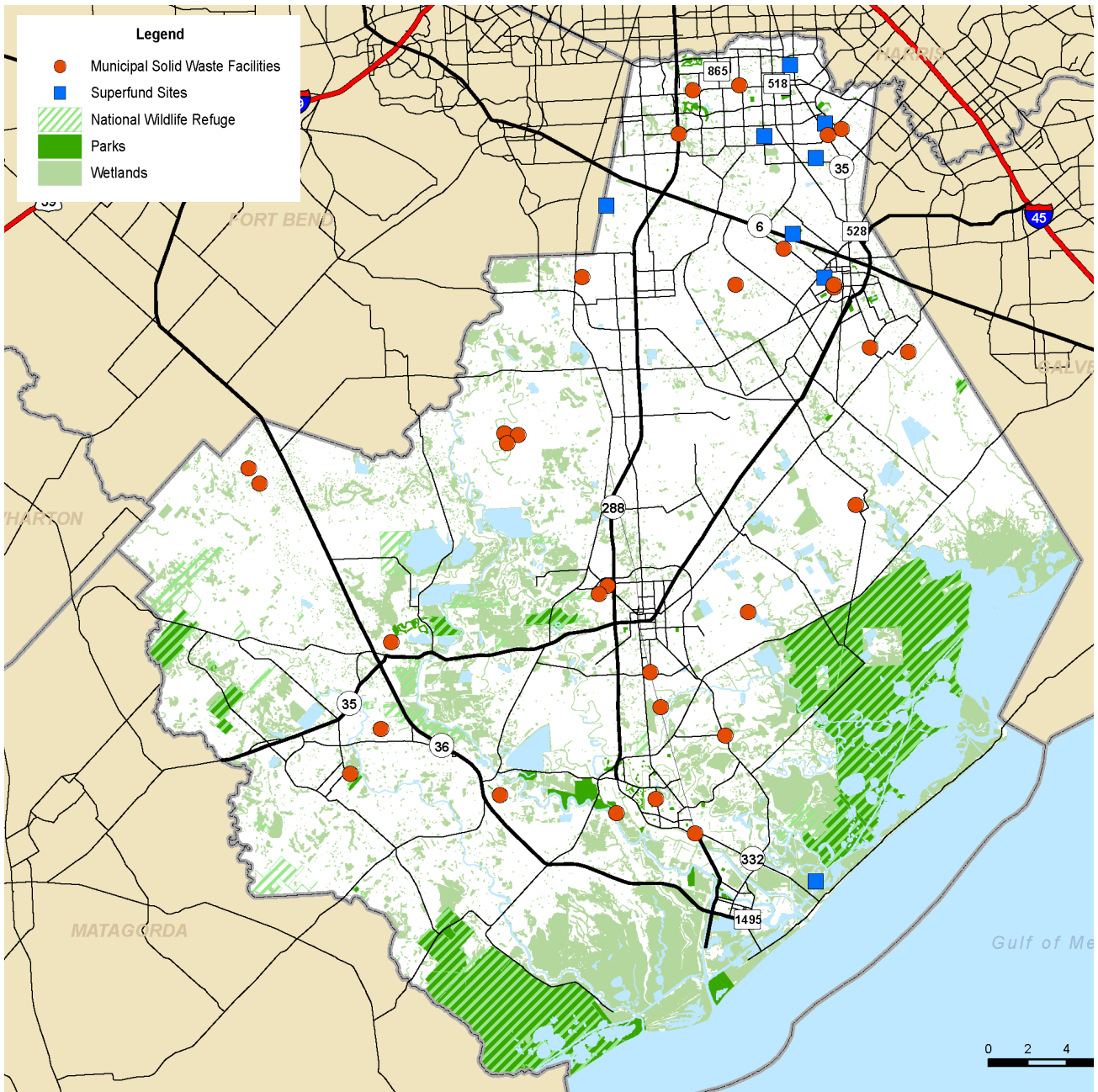


Figure 17 – Environmental Features  
Source: TCEQ

## 3. THOROUGHFARE PLAN DEVELOPMENT

The primary purpose of a thoroughfare plan is to provide the County with a long-term, high-level plan for addressing transportation needs. The plan should identify where the needs are for connectivity, traffic volume relief, and ROW preservation for future expansion of the transportation network. The plan should also identify where existing barriers to expansion are, including areas within the floodplain. As these needs are addressed through long-term implementation, the transportation network should experience operational efficiency and improved safety with a minimal environmental impact.

### THOROUGHFARE PLANNING PROCESS

The thoroughfare planning process was accomplished using the following steps:

1. Review existing conditions and existing/previous thoroughfare plans of Brazoria County and cities in and adjacent to the County, to better understand the needs and challenges of transportation in the area.
2. Gather input from Steering Committee and stakeholders regarding what the County wants to “look” like in 50 years. This assisted in forming the vision and goals that guided the ultimate plan.
3. Document Steering Committee and stakeholder suggestions regarding where new corridors are needed and location of “missing roadway links”.
4. Perform gap and connectivity analysis to identify network gaps (i.e. where roads do not exist) and where there may be barriers to the future development of roadways.
5. Identify corridors in the floodway, 100-year flood plain, or 500-year flood plain and/or preservation/park areas.
6. Develop draft thoroughfare plan and solicit input from the Steering Committee, local municipalities, and communities through stakeholder groups and public meetings. Plan may need to be adjusted when necessary.
7. County adoption of the Thoroughfare Plan.

## TRANSPORTATION NEEDS AND CHALLENGES

### CONNECTIVITY

One important facet of a county thoroughfare plan is to provide regional connectivity. Standard transportation planning practice is to provide a roadway network in a grid. This allows for a hierarchy of roadways to provide efficient travel through and within the County. The desirable spacing for a roadway network is typically a 1 to 5-mile grid; however, the spacing is ultimately dependent on the physical features of the surrounding area. The physical features to consider include but are not limited to radial highways/railroads, existing development and property ownership patterns, and topography. Given the existing conditions of Brazoria County, a 1 to 5-mile grid is only realistically obtainable in certain areas.

The existing network was reviewed to identify gaps to determine where closer-spaced alignments could be provided (see Gap and Connectivity Analysis for more detailed information). Oftentimes, the gaps were caused by thoroughfares ending at another thoroughfare. This is typically difficult on an operational level, as traffic is not able to continue in the desired direction. Where these “dead-end” thoroughfares occurred, an effort was made to provide a continuous alignment. The ability to provide more closely spaced and continuous alignments was also measured against the existing barriers.

#### Existing Barriers

The entire southeast side of Brazoria County borders the Gulf of Mexico. This brings opportunities for a rich economy of port and freight activity, but also brings barriers to thoroughfare extensions: most notably, the vast bodies of water and expansive floodplain. Proposed alignments that cross these features are expensive and difficult to build. Analysis of the plan ensured that care was taken not to intersect these features often with proposed alignments. However, where the plan identifies proposed alignments that intersect with these features, the benefits of connectivity are necessary to provide for future growth. Approximately 67% of the land in Brazoria County falls within a floodway or floodplain. Avoiding all these areas would not allow for additional network expansion, which will be needed according to the growth projections.

Another 26% of the land in the County is made up of parks, wetlands and open spaces. These are valuable spaces, especially in Brazoria County, as many of them are home to National Wildlife Refuges and many different species of flora and fauna. They also provide an active tourism economy, as these parks have become popular destinations for visitors. At the time of design and construction, proposed alignments that intersect these features should be closely coordinated with the necessary environmental and engineering entities. This will ensure that proper mitigation and planning has been done to construct the roadways without causing additional harm to the surrounding areas.

Similarly, other manmade barriers include petrochemical sites, airports, prisons (TDCJ units), solid waste sites, and TCEQ superfund sites. Given the long-term nature of these land uses, these areas were considered difficult for future roadway construction. The few proposed alignments through these areas should be considered long-term improvements and should be closely coordinated with all applicable agencies should thoroughfares be constructed through these areas.

## RELEVANT THOROUGHFARE PLANS

Before beginning to consider possible future alignments, the project team analyzed existing thoroughfare plans, including those of Brazoria County, adjacent counties, and cities within and adjacent to Brazoria County. These plans were examined to see where previously proposed thoroughfare alignments were still needed, and where some had potentially changed due to now-existing development, ROW acquisition, and other factors.

Many cities within Brazoria County have adopted their own plans with thoroughfare considerations. Each municipality uses their local knowledge of development and existing conditions to propose thoroughfares within their municipality boundaries. To ensure connectivity and continuity of thoroughfares between and across municipalities, all plans were incorporated into the BCTP. Where potential thoroughfares differed between plans, additional coordination was required to establish a common solution.

The following thoroughfare plans were incorporated into the 2020 BCTP:

- Fort Bend County
- City of Alvin
- City of Angleton
- City of Houston
- City of Iowa Colony
- City of Lake Jackson
- City of Manvel
- Missouri City
- City of Pearland

The previous Brazoria County Thoroughfare Plan (BCTP) was completed in 2002. Decisions for future roadway alignments were approved by City and County officials. Since that time, some ROW has been preserved for those identified alignments. As such, the majority of the alignments were kept on the Plan but may have undergone other changes. Types of changes made to the previous Thoroughfare Plan include:

- **Addition:** Where additional connectivity could be provided, additional alignments were proposed; some of these proposed alignments included segments of existing ROW
- **Deletion:** In a few instances, proposed thoroughfares were removed from the Plan; these were identified by Brazoria County Engineers as alignments that were not likely to be constructed, given existing conditions
- **Realignment:** Where there were existing barriers to proposed alignments, the Plan proposed a new alignment to avoid the barriers
- **Reclassification:** Roadway classifications are defined in Chapter 4 and include (listed from highest to lowest classification) Limited Access Highway, Principal Thoroughfare, Major Thoroughfare, and Major Collector
  - o Higher-order classification: Where proposed alignments were found to serve future growth or potentially accommodate more capacity, some proposed alignments received a higher roadway classification than what was previously proposed
  - o Lower-order classification: Where proposed alignments were found to have limited ROW, or where a high roadway classification was no longer needed because of adjacent alternatives, some alignments received a lower roadway classification than what was previously proposed

Each change to the previous thoroughfare plan was documented. A map showing the types of changes can be found in **Appendix B**.

In general, the decisions to change alignments on the previous thoroughfare plan can be categorized into the following:

- Future development is anticipated in many areas of the County. Alignments were added to the map to preserve future ROW and connectivity in case of development. These areas include the west side of Brazoria County, all land adjacent to the proposed Grand Parkway alignment, undeveloped land near larger cities, and areas near potential industrial plant expansions. In many cases, thoroughfare alignments were added to extend existing dead-end roadways.
- Many areas had existing barriers to future construction, including wetlands, floodplains, other bodies of water, existing wildlife or nature preserves, and railroads. In these cases, alternatives were provided to preserve connectivity, or alignments were removed completely if a viable alternative was not available.
- Realignments and additions were provided in many cases to coordinate between multiple jurisdictions. As many cities have existing thoroughfare plans, individual and group meetings assisted in determining how to coordinate all municipalities. More information about this is included in **Chapter 4**.

## **GAP AND CONNECTIVITY ANALYSIS**

A gap and connectivity analysis was performed to identify roadway network gaps (i.e. where roads do not exist) and where there may be limitations to constructing future roadways.

Several natural and man-made barriers were inventoried and considered to analyze the feasibility of building new roadway connections. These barriers are shown on **Figure 18** and include railroads, pipelines, floodways, floodplains and Federal Wildlife Refuges. Since there are numerous pipelines throughout the County and the majority of the County is in the floodplain, complete avoidance of these elements was not possible.

Superfund sites, solid waste sites, petrochemical sites, and airports, were considered not suitable for building roadways. Hence, a 0.25-mile buffer was drawn to represent the (estimated) footprint of these facilities, and they were eliminated from consideration of future roadway construction. Government, medical, educational, and correctional land uses, as well as parks and open spaces, were determined to be limited opportunity corridors. Proposed alignments in these areas were limited in number, should be considered long-term corridors and should be re-evaluated for necessity of future connectivity. A map indicating the designation of either lost or limited opportunity corridors are displayed on **Figure 19**.

In the next step, network connectivity was evaluated for the existing and proposed roadway networks. Link-to-node ratio was used as an indicator of network connectivity. In this context, a link is a street segment and a node is an intersection formed by two or more streets. At the individual intersection level, a four-leg intersection node provides the highest connectivity by connecting four links. A three-leg or T intersection provides a moderate level of connectivity by connecting three links. A dead-end provides little to no connectivity.

Two different sets of parameters were assumed to evaluate network connectivity, one for the northern part of the county where urban development is concentrated, and another for the southern part of the county. For the area north of FM 1462, a four-leg intersection was assumed to serve a 1-mile radius area, whereas a three-leg intersection serves a 0.5-mile radius area. For the area south of FM 1462, four-leg and three-leg intersections were assumed to serve a radius area of 2 miles and 1 mile, respectively. Buffers were drawn around intersections according to these parameters. The areas outside of these buffers were identified as gaps in the roadway network, indicating that connectivity is limited.

This analysis was performed using the existing roadway network and the 2020 BCTP roadway network, at full build-out. The gaps in the roadway networks are shown in purple on **Figures 20** and **21**, respectively.



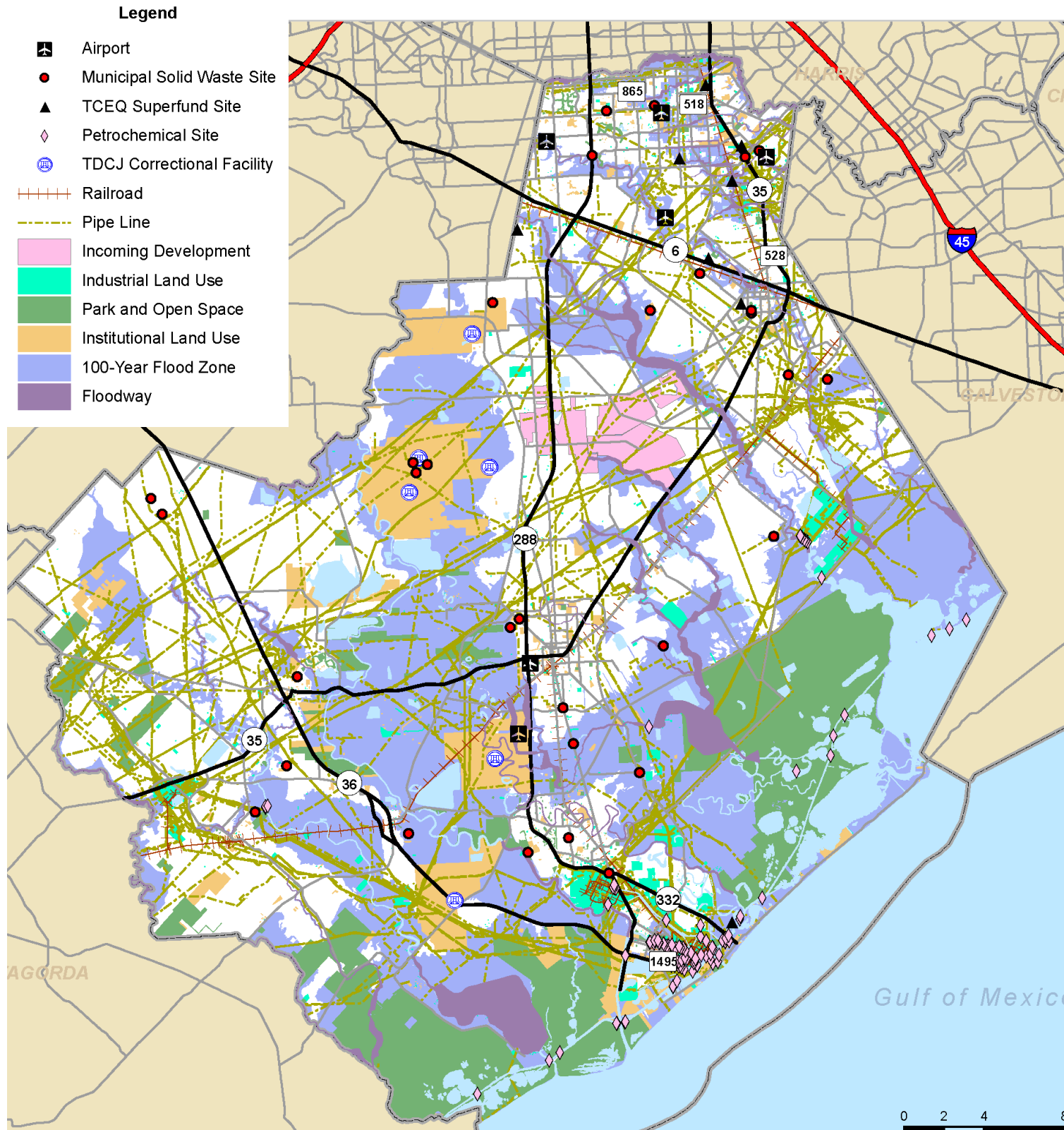


Figure 18 – Barriers to Corridor Development

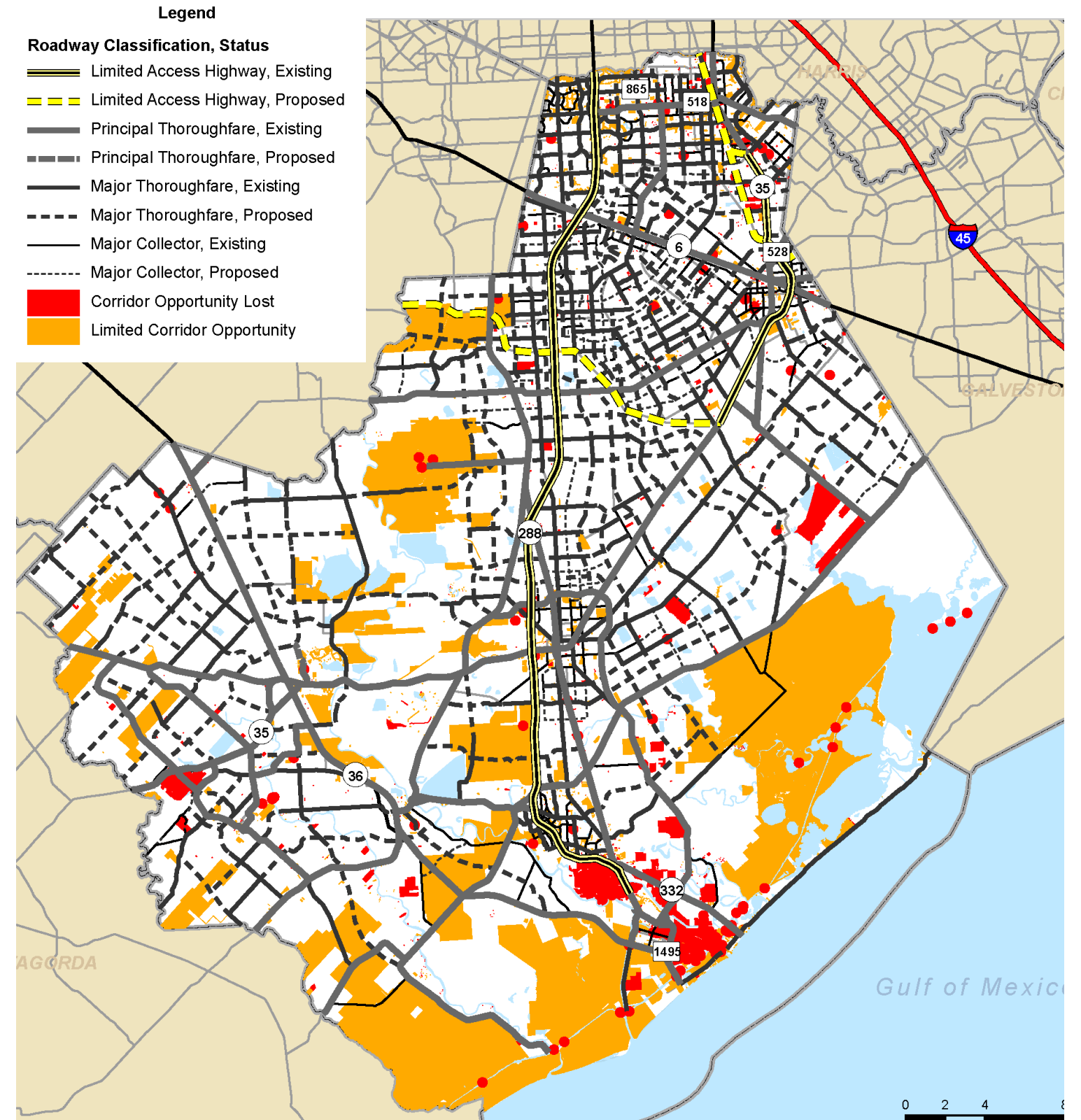


Figure 19 – Corridor Opportunity Limitations

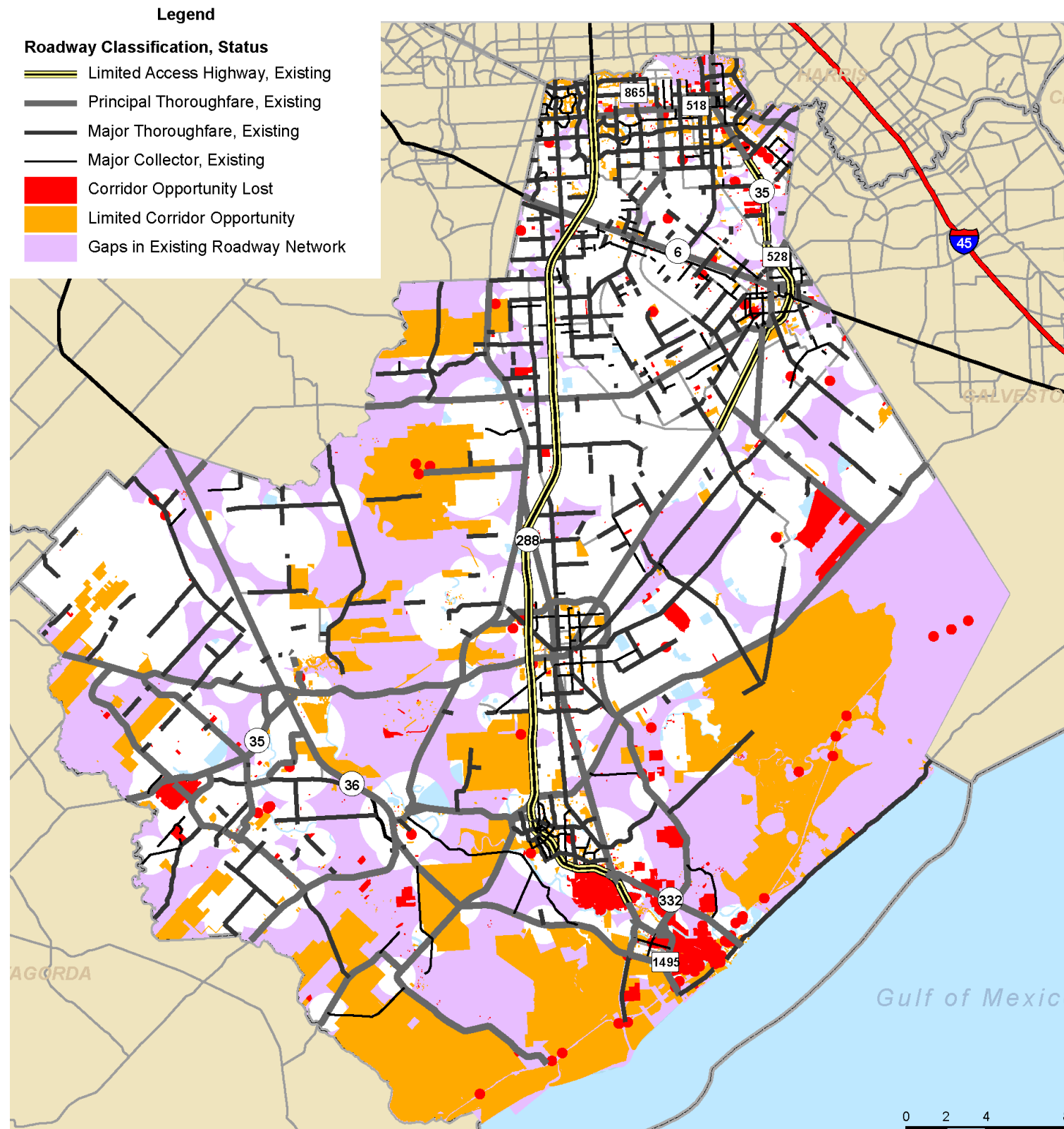


Figure 20 – Gap Analysis, Existing Roadway Network

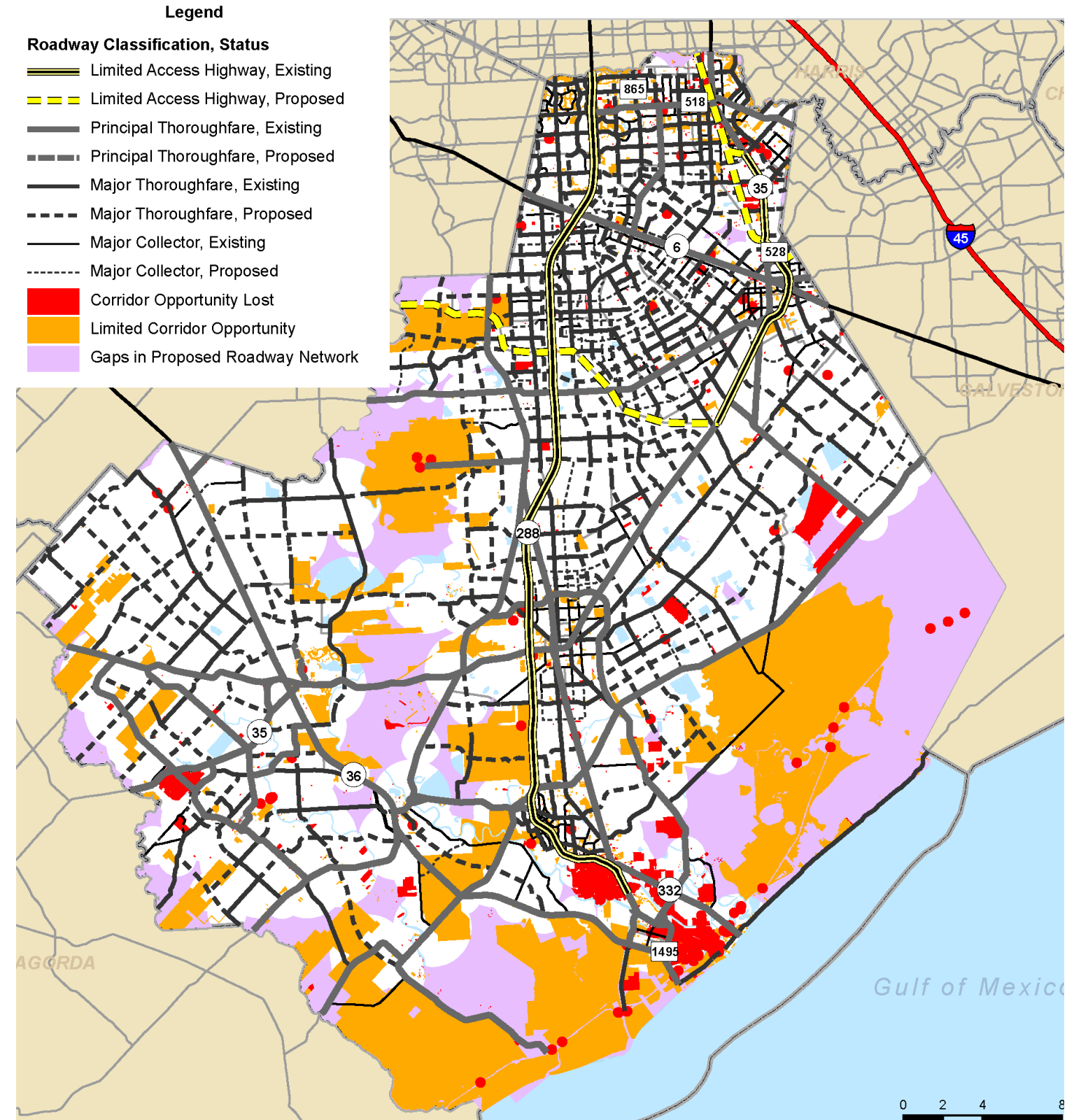


Figure 21 – Gap Analysis, 2020 BCTP Roadway Network

## PUBLIC INVOLVEMENT

Public involvement was an important factor of the thoroughfare planning process. The people who live, work, and otherwise spend time in Brazoria County are the ones most familiar with its transportation needs, challenges, and opportunities. As such, an important part of the planning process was soliciting and incorporating feedback from the public.

The first step in starting the public involvement process was to create a Public Involvement Plan (PIP). Using the PIP, as written by H-GAC, allowed for a structured and detailed method of involvement throughout the life of the planning process. The final method of public involvement differed slightly from the original PIP; as the project progressed, different needs and budget considerations required flexibility in the method of involvement. The resulting public involvement more closely fit the needs of the project and did not hinder the results. The complete original PIP is included as a part of [Appendix A](#).

The following key strategies, as outlined in the PIP, were employed to involve key stakeholders and the general public throughout the life of the planning process:

- Collaborating with elected officials by establishing a steering committee to guide the technical development of the thoroughfare plan
- Engaging public and private stakeholders through a series of stakeholder meetings to provide input on the development of the plan
- Involving county residents in the planning process by providing adequate public notice of information with sufficient time to review and comment at public meetings

Tactics used to employ these strategies included:

- Steering Committee meetings
- Stakeholder meetings
- Public meetings
- MetroQuest Survey
- Social Media

## MAJOR THEMES/RESULTS

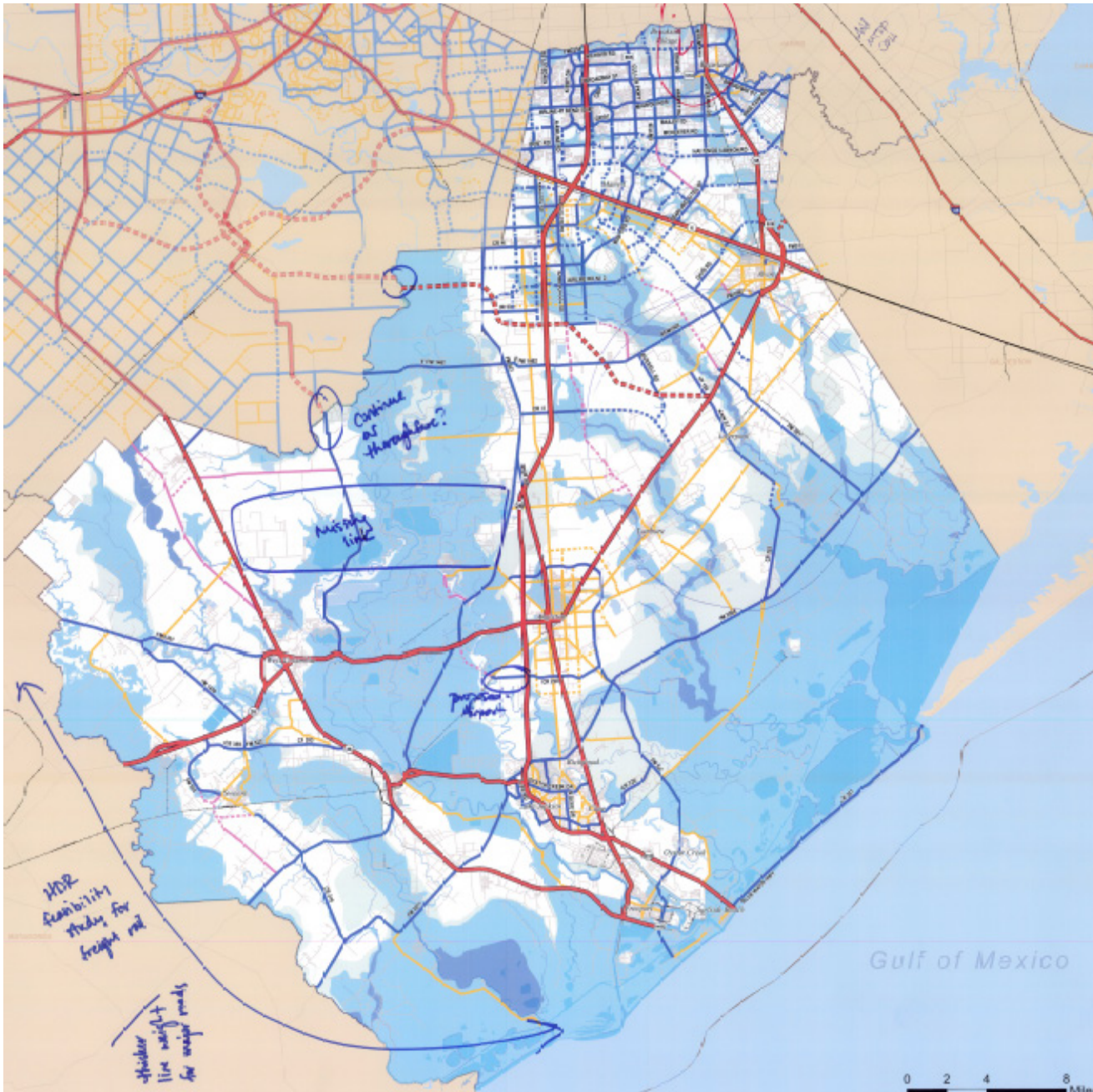
At each of the steering, stakeholder, and public meetings, a presentation was given to provide a general project status, as well as more detailed information about what work had been done to date and what could be expected for next steps. Following, attendees at each meeting were asked to provide feedback based on the presented information. Feedback was also solicited using an online survey and through social media. Feedback was then incorporated into the final BCTP.

A brief overview of each outreach strategy can be found below. More detailed information about public involvement, how each specific strategy was implemented, and all materials can be found in [Appendix A](#).

## Steering Committee Meetings

Steering Committee members were made up of technical staff from Brazoria County, TxDOT, and economic development organizations. Five meetings were held throughout the planning process. Feedback received at steering committee meetings was more technical in nature. Input included:

- what information to be shown on the resulting map,
- updates regarding the Grand Parkway,
- where more connectivity may be needed in the future,
- where future ROW may be needed for grade separations,
- areas where flooding issues or natural preservation should be considered,
- materials to be presented at the public meeting,
- additional stakeholder meetings needed, and
- future funding considerations.



Steering Committee Markup of Draft Thoroughfare Plan Map

## Stakeholder meetings

Invitees of the stakeholder meetings included elected officials and staff from local municipalities, police and EMS, non-profits, ISDs, economic development organizations, and wildlife services. Feedback provided at the stakeholder meetings included input regarding local issues:

- areas of key traffic and safety concerns related to
  - plant and landfill traffic,
  - freight (rail and truck), and
  - flooding/evacuation routes;
- where future widening may be needed;
- potential future developments; and
- the need to coordinate between municipalities.



Stakeholder Meeting | February 25, 2020

## Public Meetings

A total of 94 people attended the two public meetings, held in Alvin and Lake Jackson, including elected officials and staff from local municipalities and TxDOT. At the meetings, questions and feedback from the public included the following topics:

- how drainage/flooding/open space and park land were considered,
- inquiries as to specific properties that may be impacted by the recommendations,
- if bicycles were considered,
- site-specific/neighborhood knowledge,
- compatibility with municipality thoroughfare plans, and
- questions on general timeline, conditions analysis and specific terminology.



Public Meeting; November 14, 2019

## MetroQuest Survey

MetroQuest is an online engagement tool that is designed to educate the public about the project and the Draft Transportation Plan and to collect feedback using interactive and visual screens. The survey was published on H-GAC’s website and the MetroQuest digital platform from November 6 to November 27th, 2019, and was advertised using newsletter articles in agency newsletters, email marketing, flyers, newspapers, social media, and agency websites.

Approximately 200 people participated in the MetroQuest survey. There were over 400 comments provided and 2,300 total data points collected during the survey. **Figure 22** shows the number of survey participants both by day and cumulatively over time. Forty-nine percent of the participants who took the survey have lived or worked in Brazoria County for more than 30 years.

A complete summary of results from the MetroQuest survey are provided in **Appendix A**. A brief summary of the feedback received is below.

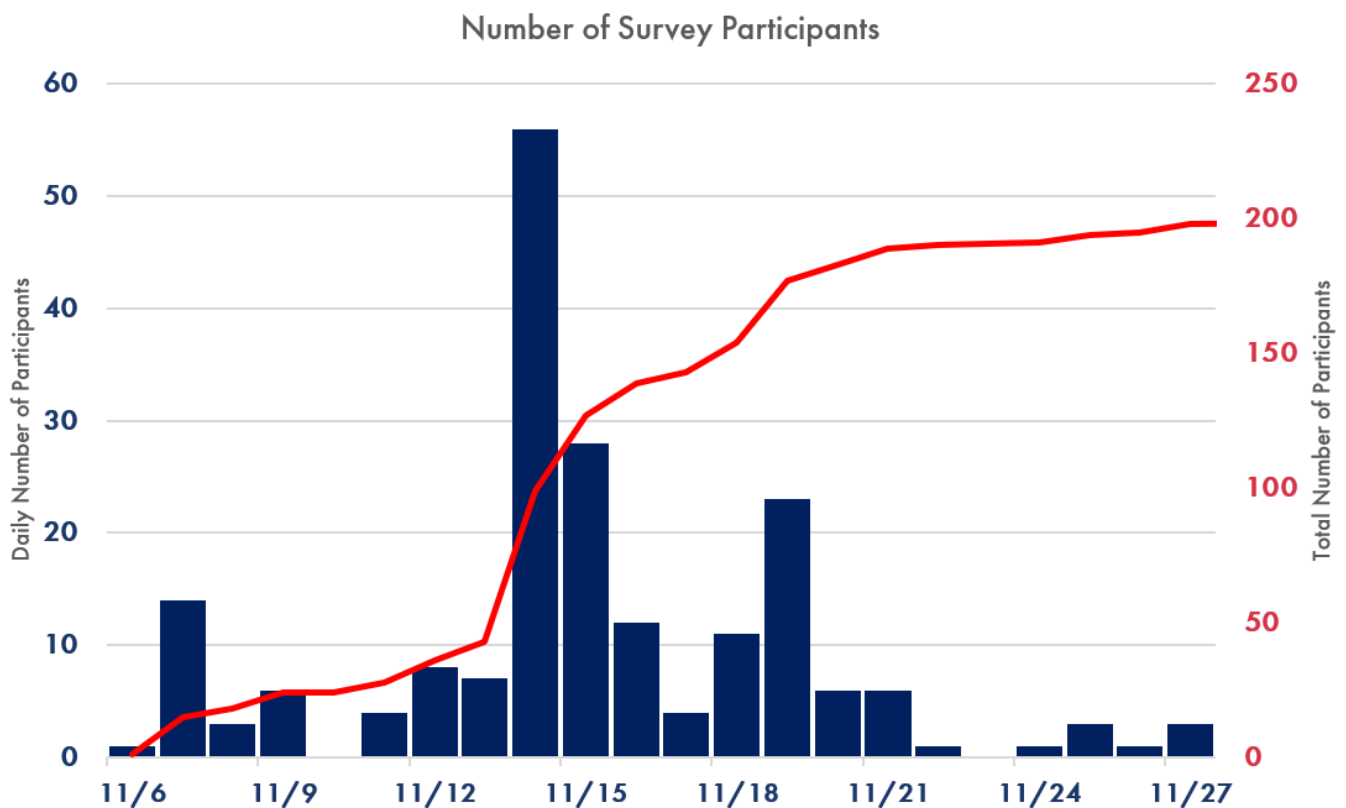


Figure 22 – Total MetroQuest Participants

Participants were asked to give a word to describe transportation as it is currently and again to provide a word that describes ideal transportation in Brazoria County in the future. The results are shown as “word clouds” in **Figures 23** and **24**, respectively.

Participants were also asked to rank key elements of a successful transportation system; each participant was asked to rank their top 3 choices. **Figure 25** shows which elements the respondents thought were important for Brazoria County. Some highlights from this exercise include:

- “Safety and evacuation” ranked in the top 3 choices most often, and when it was ranked, it received the highest average score
- “Operational efficiency” came as a close second in both frequency ranked and the intensity of the responses
- “Inter-county” and “Intra-county travel” ranked third and fourth most often in the top 3 preferences, but they received the lowest average intensity scores
- “Environment” ranked in the top 3 least often; when ranked, it received a mid-level score

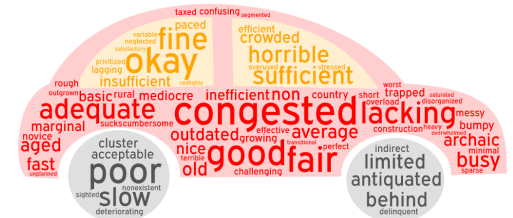


Figure 23 – Existing Transportation Network

“Safety and Evacuation” was ranked in the top 3 choices the most often. Respondents who chose this category indicated things to focus on when planning corridors, including:

- Providing more options for evacuation routes
- Separating truck travel from other travelers on the roadway
- Reducing emergency response times
- Providing roadway improvements (more lanes, wider shoulders, super 2, center turn lanes, alternative to 288, more overpasses, safer pavement – when wet)
- Reducing congestion (public transportation, limit growth)
- Addressing known safety issues and speeding



Figure 24 – Future Transportation Vision

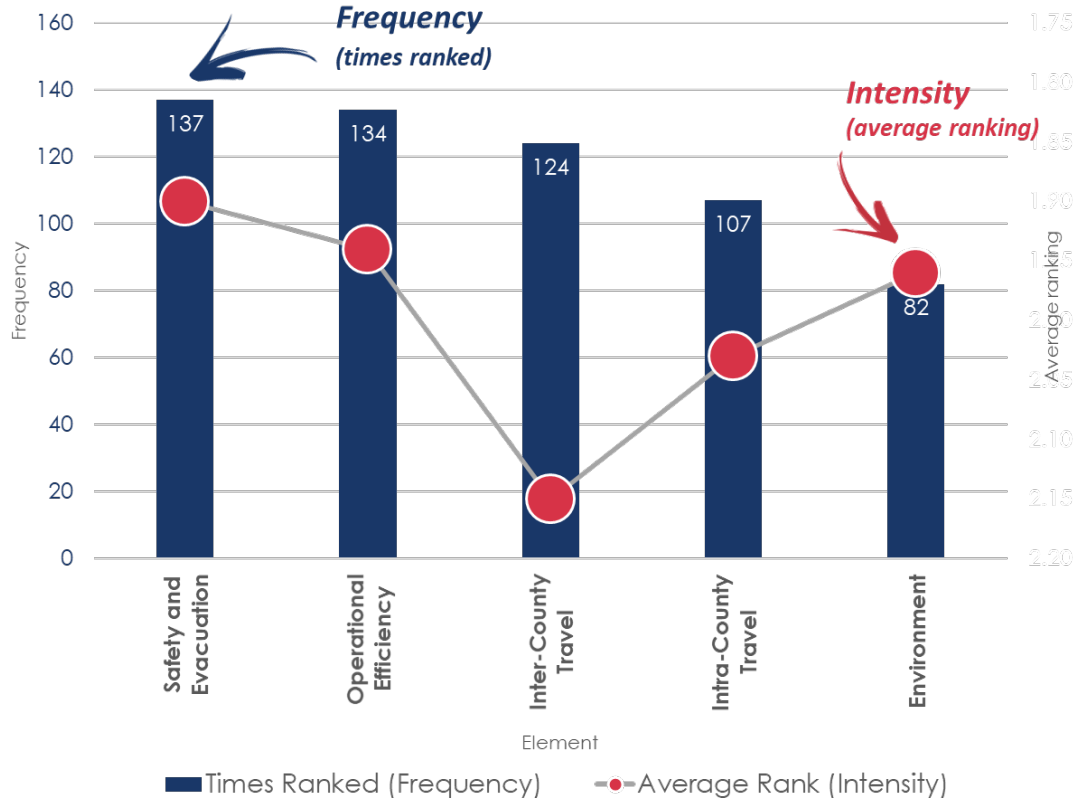


Figure 25 – Priority Ranking

There was also a mapping option that allowed participants to place multiple pins on a map and provide comments where they wanted additional things addressed. A map of where all markers were placed, as well as a breakdown of what topic that marker represented, is provided as **Figure 26**. More detailed information is provided in **Appendix A**.

## Digital/Social Media

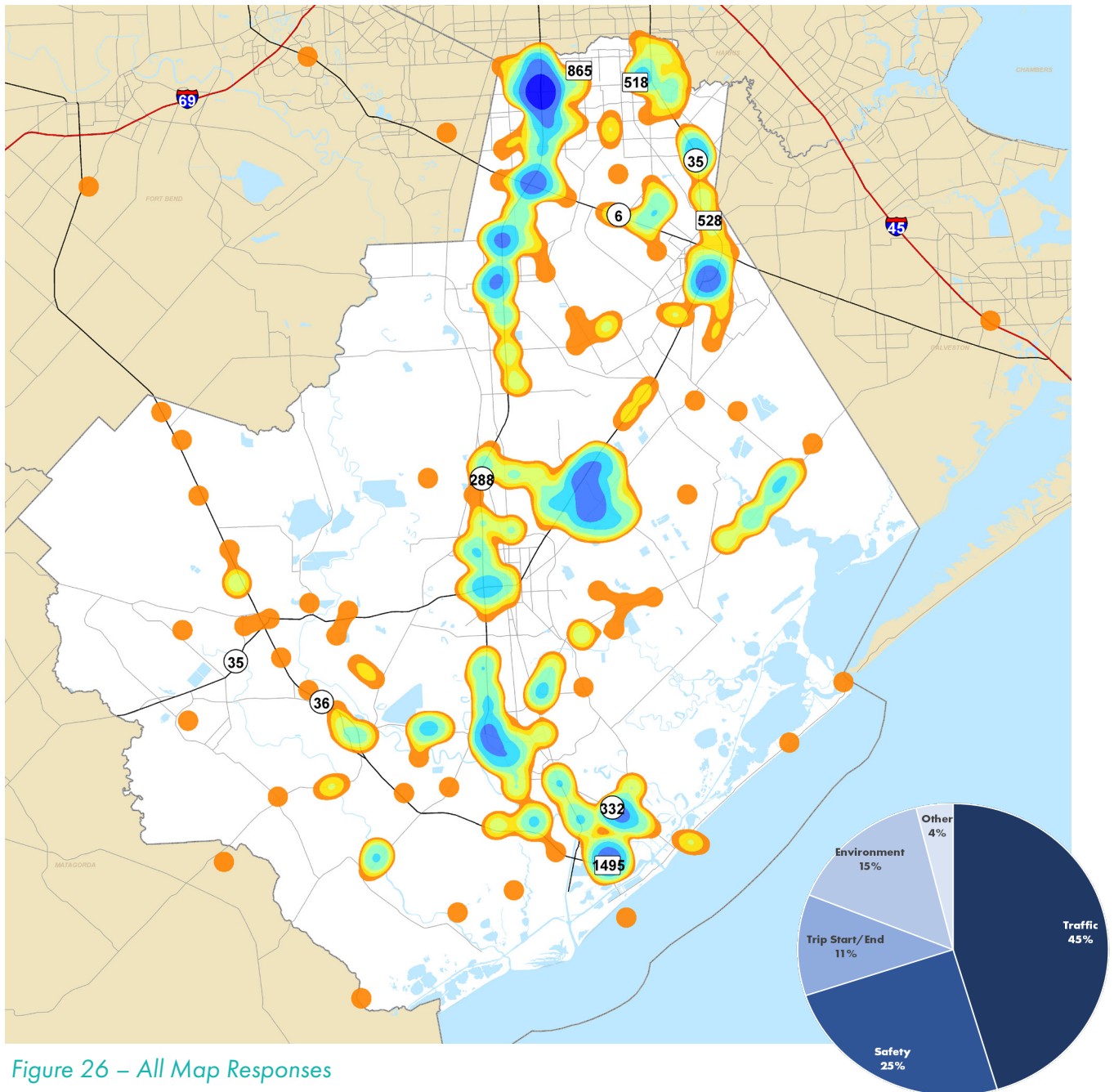


Figure 26 – All Map Responses

Social media has become an integral tool utilized to disseminate important information to the public. It is an efficient, affordable, and effective way to connect with residents of our region. Platforms such as Facebook, Instagram, Twitter, and LinkedIn were used to notify the public of the public meetings and how they can engage in the planning process. Public meeting notices were also placed in the Regional Focus Newsletter and the Region View Newsletter. Digital efforts reached more than 2,200 people. In addition to H-GAC’s social media platforms, many of the partner agencies shared information and notices on their social channels.



## 4. 2020 THOROUGHFARE PLAN

### THOROUGHFARE PLAN MAP

The Brazoria County Thoroughfare Plan (BCTP) map documents the corridors to be preserved for future transportation. The decisions to preserve these corridors were made using existing data, future projections, and through coordination with the public and municipalities within and adjacent to Brazoria County. Previous sections of this report document the analysis used to create this map, as well as the public involvement outcomes that proved to influence the final map document.

The final 2020 BCTP map, as adopted by Commissioners Court on August 11, 2020, is presented as **Figure 27**. A full-size version is provided in **Appendix E**.

Floodplain and water features, built environment, and right-of-way were all considered during the development of corridor recommendations. However, the county-wide plan represents high-level recommendations of corridors that should be preserved. Any future alignments should be refined based on updated local data. Individual cross-sections, geometries, and so on, should be studied at a more detailed level prior to construction. Future development containing proposed alignments should be developed in collaboration with, and under the review of, Brazoria County and applicable municipalities.



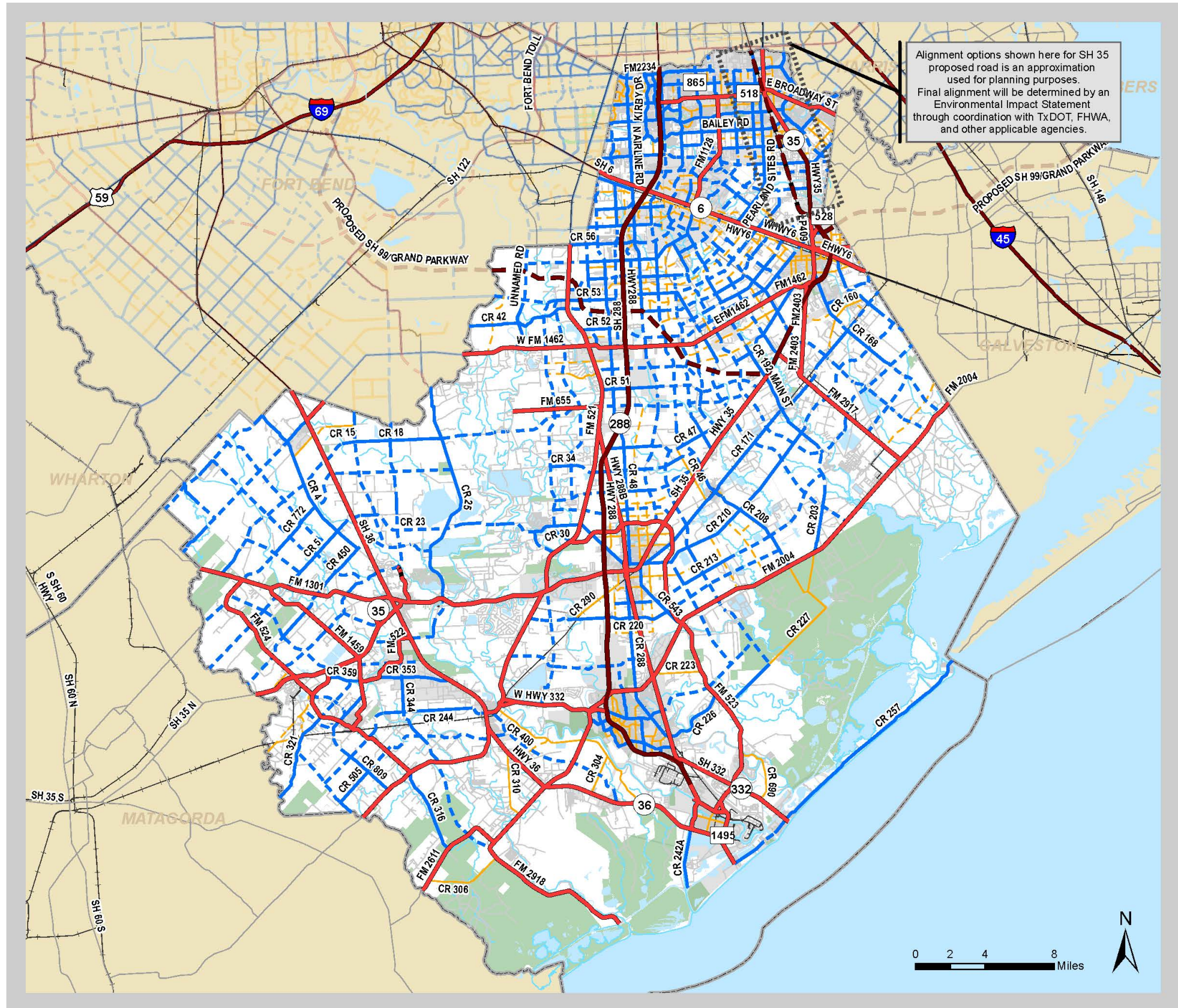


**2020 Brazoria County  
Thoroughfare Plan**  
Adopted on August 11, 2020

**Legend**

- Roadway Classification, Status**
- Limited Access Highway, Existing
  - Limited Access Highway, Proposed
  - Principal Thoroughfare, Existing
  - Principal Thoroughfare, Proposed
  - Major Thoroughfare, Existing
  - Major Thoroughfare, Proposed
  - Major Collector, Existing
  - Major Collector, Proposed
- Other**
- City Limits
  - Water
  - Parks and Open Space
  - Railroad

*Note: The map shows general road alignments only, which are subject to modification to fit local standards.*



Sources: BCAD, Brazoria County, HGAC, TxDOT  
Data is current as of 2019; Prepared on 08/11/2020

Figure 27 – 2020 Brazoria County Thoroughfare Plan Map

## ROADWAY CLASSIFICATIONS

Each alignment that is identified on the BCTP map was also given a classification. Roadway classification is an ordering system that assigns each roadway a hierarchical definition, based on the amount of traffic it is anticipated to serve, as well as the access it allows to adjacent properties. Higher classifications serve greater amounts of traffic and allow for fewer access points. Each individual municipality typically defines their own classification system, depending on the local conditions. As part of the planning process, these existing classification systems were analyzed. A matrix showing the available existing classifications for each municipality is provided in [Appendix C](#).

The Brazoria County classification system is defined below. ROW dedication may be required where insufficient ROW currently exists. The developer, Cities, and the County will be responsible for verifying existing ROWs prior to construction or subdivision platting to determine if dedication is required. The proposed alignments on the BCTP map indicate a 500-foot wide corridor, allowing for property owners or municipalities some room to realign within the corridor, if needed.

### **Limited Access Highway** – *access-controlled, maximizes mobility, provides for long-distance travel*

Limited Access Highways are access-controlled, grade-separated intersections, and are characterized by multi-lane, median divided roadways. These roadways have four or more total travel lanes and require a minimum 300' ROW. They are devoted entirely to traffic movement, with little or no direct land service function. This class includes tollways that have limited access to on and off ramps. Limited access highways maximize mobility by serving large volumes of high-speed traffic and are intended to serve long trips, including vehicles entering, leaving, and passing through Brazoria County.

### **Principal Thoroughfare** – *access-managed, provides mobility, limited access to land use*

Principal Thoroughfares are access-managed roadways, characterized by considerable length roadways that provide continuity throughout the area. These roadways typically have six total travel lanes and require a minimum 150' ROW. A Principal Thoroughfare is typically devoted, in large part, to heavy, fast-moving traffic, with little direct land service function. Principal Thoroughfares are predominantly made up of Farm-to-Market (FM) roads or State Highways; as such, they are typically managed by TxDOT.

### **Major Thoroughfare** – *access-managed, provides mobility, limited access to land use*

Major Thoroughfares are designed for fast, heavy traffic and are generally provided in a grid system. These roadways have four to six total travel lanes and require a minimum 120' ROW. When access to adjoining properties is permitted, it is to serve several properties, rather than permitting each property owner to have his private driveway access point.

### **Major Collector** – *limited mobility, more access to land use, connects thoroughfares*

Major Collectors provide a greater balance between mobility and land access. These roadways typically have two to four total travel lanes and require a minimum 80' ROW. This class collects traffic from local roads for distribution to the higher-class roadways. Major Collectors provide shorter-distance mobility with more access to properties in residential, commercial, and industrial areas.

**Figures 28** and **29** show the required minimum ROW widths and proposed number of lanes roads identified on the Thoroughfare Plan map.

These minimum widths assume curb and gutter sections with underground drainage only. Accommodation of open shoulder sections with open ditch drainage will require additional ROW to be determined by an engineer.

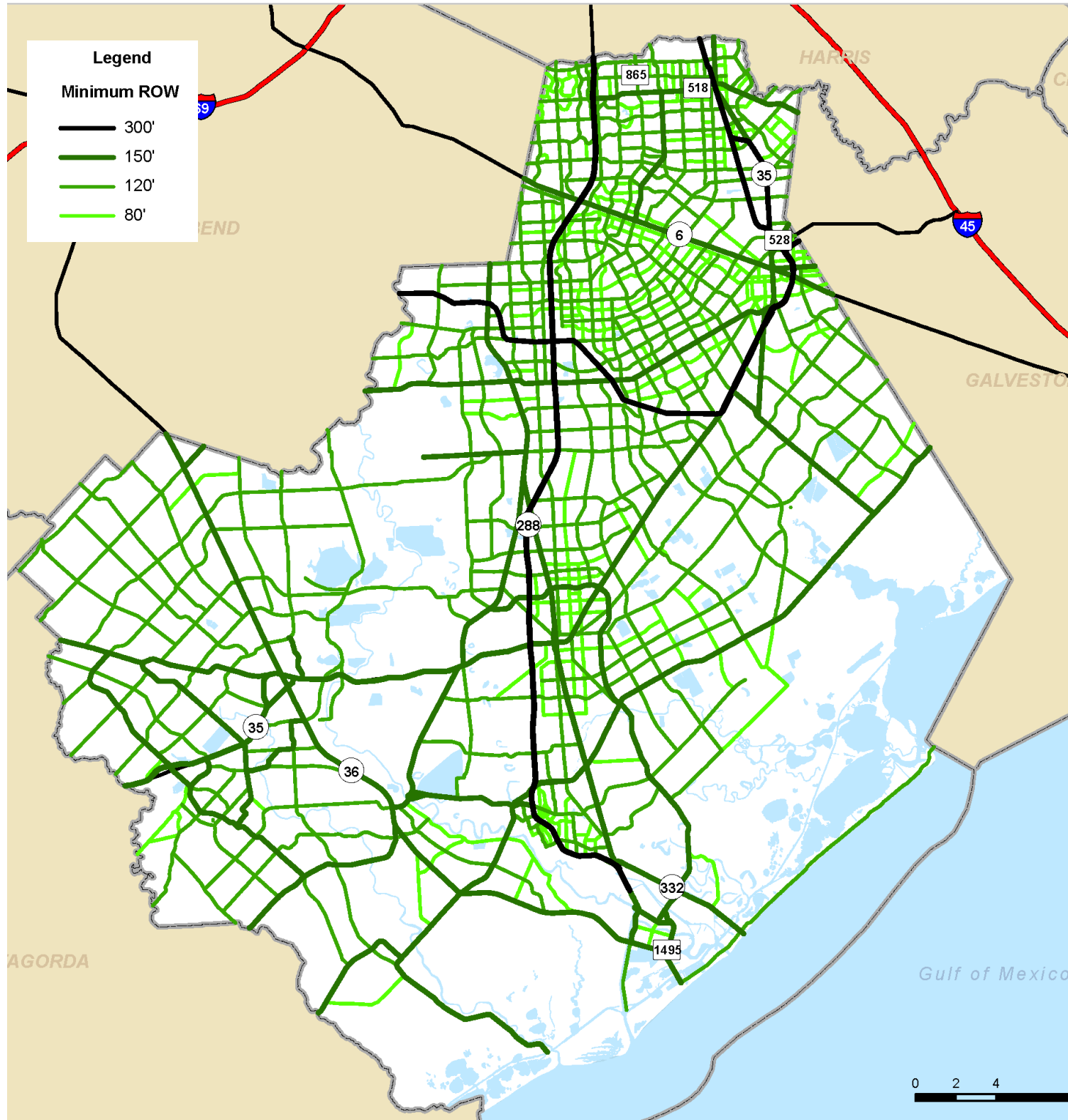


Figure 28 – Minimum ROW Widths

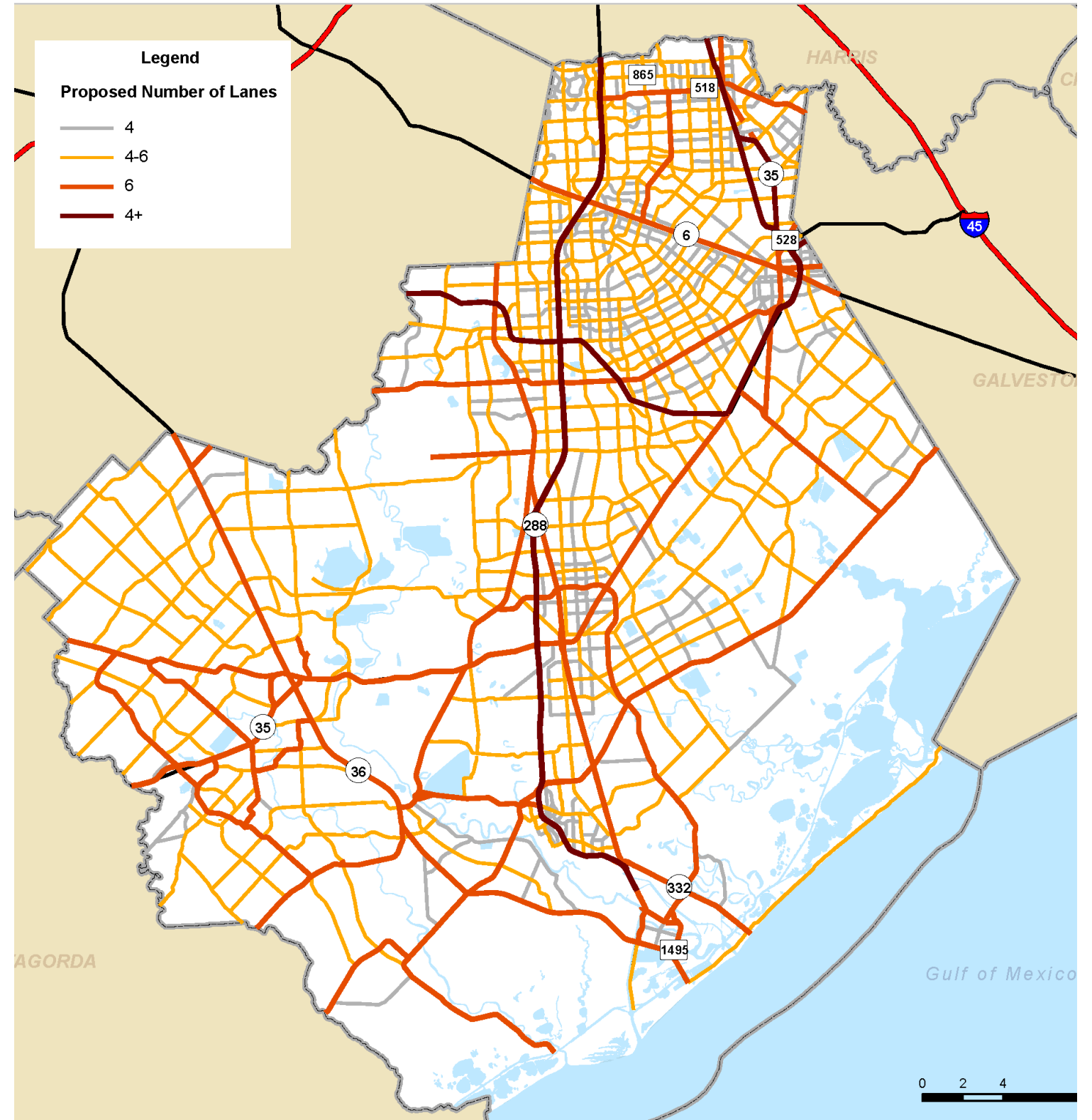


Figure 29 – Proposed Number of Lanes

## TYPICAL CROSS-SECTIONS

A typical cross-section is a graphical representation of the elements included in the right-of-way at a point along a roadway; a typical cross-section represents the predominant section of the roadway but may vary. As specified in the following section, additional ROW may be needed at key intersections and railroad crossings to allow for future construction. ROW is the area between property lines where roads are built. This area can include sidewalks, buffers, ditches, bike lanes, parking lanes, through (travel) lanes, turn lanes, medians, utilities, etc. **Figure 30** shows an example of what a ROW looks like along a constructed street. Cross-sections demonstrate the elements within a ROW for different roadway classifications.

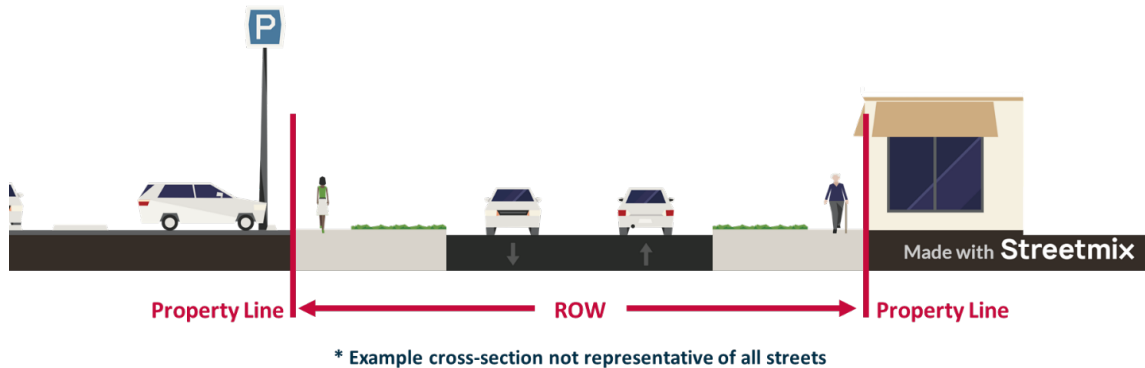


Figure 30 – Example Cross-Section

Where feasible, existing roadways are used to identify alignments, as at least partial ROW has been acquired and the roadway has been at least partially built. If a future roadway alignment is identified on a thoroughfare plan, it indicates to the current or prospective owner of the property that land will be required to be dedicated for roadway purposes if the property were ever to develop.

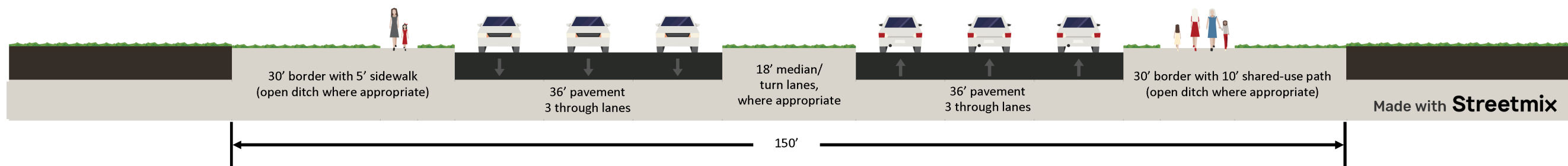
As Brazoria County is projected to experience major population and employment growth, new roadway alignments will be necessary to accommodate additional traffic growth. As the County continues to develop, a thoroughfare plan will allow for land to be preserved for future construction of roadways. The BCTP allows for future construction of roadways in a process that is transparent to the public, developers, and responsible municipalities.

Per the roadway classifications defined in the above section, typical cross-sections have been provided in **Figures 31-33**. These are provided as a general guide and should be reevaluated at the time of design to determine context-specificity. Elements shown in these cross-sections are suggestions rather than requirements. Individual cross-sections should be developed in collaboration with, and under the review of, Brazoria County and applicable municipalities. If Federal funding is used to design or construct a roadway, specific design details will need to be adhered to, per the Federal Highway Administration's guidance at time of design and construction.

Existing and future public transportation service (e.g. local fixed-route bus service in urban areas, regional and intercity bus service in rural areas) operates on the thoroughfare network. The provision of transit facilities such as bus shelters or bus pull-outs within thoroughfare ROW is not addressed in this document and should be determined as needed by discussion between Brazoria County, applicable municipalities, and the county's transit providers.

In addition, thoroughfares that are heavily used by large industrial complexes that serve the petrochemical industries should undergo further study for specific construction-related recommendations. Petrochemical industries have been making significant investments in plant expansions along the Brazoria County Gulf Coast region over the last 10 years. The increase of petrochemical and Port Freeport activity is projected to continue. More information on planned development projects related to Port Freeport can be found in **Appendix C**. These thoroughfares require unique design and construction methods to allow the life cycle costs for implementation of the thoroughfares to endure the weight of heavy truck traffic associated with Port Freeport, trucking & rail patterns that serve the petrochemical industrial growth overall.

# Principal Thoroughfare - 150' - Option 1



# Principal Thoroughfare - 150' - Option 2

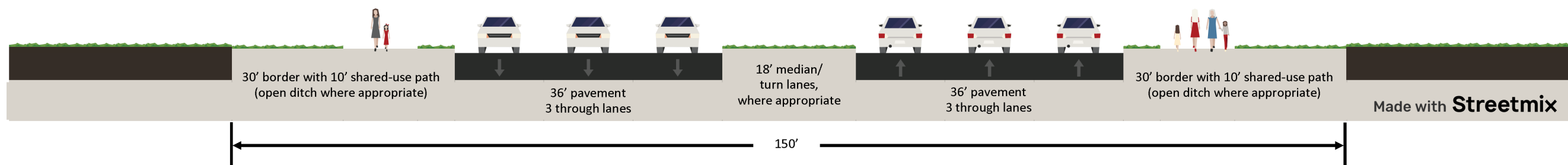
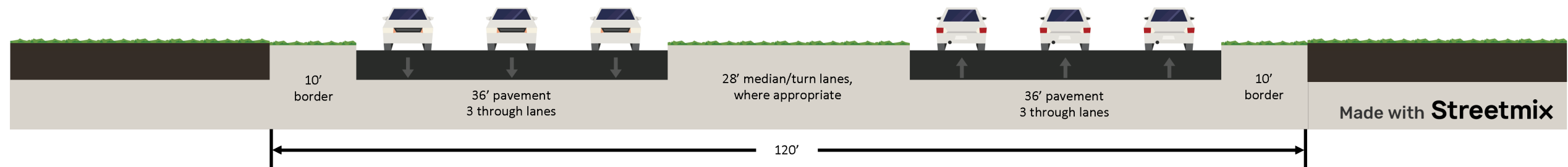


Figure 31 – Principal Thoroughfare Cross-Section Options 1 & 2

# Major Thoroughfare (6-lane) - 120'



# Major Thoroughfare - 120'

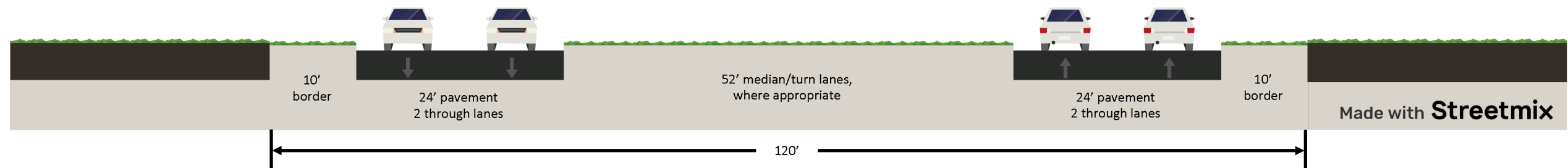


Figure 32 – Major Thoroughfare Cross-Sections

# Major Collector - 80'

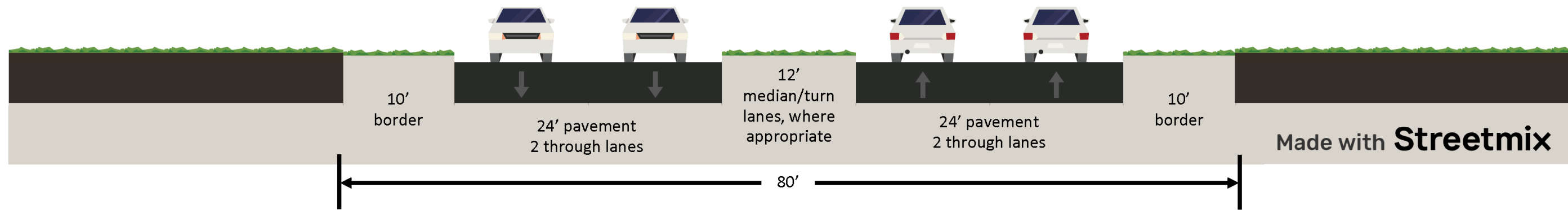


Figure 33 – Major Collector Cross-Section



## ADDITIONAL ROW CONSIDERATIONS

Where alignments on the map are identified as “Proposed”, this indicates that no ROW exists for that portion of the proposed roadway. Alternatively, where alignments on the map are identified as “Existing”, this indicates that some amount of ROW exists; the amount of existing ROW is not indicated by the map document or this report. Required ROW should be examined at the time of design/construction or dedication by development and depends on the classification for the roadway.

In some specific locations, additional ROW, i.e. more than what is typically required per the classification definitions, may be required.

### Key Intersections

Key intersections have been identified as locations that may need additional ROW in the future. These locations include potential grade-separation, major accident locations, and high-volume roadways during peak periods. To identify these locations, the existing crash and fatality data was used along with traffic counts taken to identify high-volume locations throughout the County. Additionally, intersection geometry and land use were examined to identify potential safety and mobility issues at these intersections. Features such as skewed intersection, complicated configuration, high commercial development, and school zones also contributed to the selection of intersections that require additional ROW. All raw data and maps summarizing the count data are provided in [Appendix C](#). A map identifying the resulting locations that should be considered for additional ROW is provided in [Figure 34](#). More notes on these intersections can be found in [Appendix E](#).

### Existing Barrier Crossings

According to the US Census Bureau, the Texas port system consistently ranks as the second-largest port system in the United States. The Port relies heavily upon the Union Pacific Railroad (UPRR) and truck travel. Thus, improving thoroughfares and highways is critical to the growth of the Port expansion. Rail crossings, in general, need additional ROW to provide a safe vehicle buffer zone or accommodate the future need to construct grade-separated crossings at certain locations. Proposed rail crossing locations and existing at-grade railroad crossings have been identified in [Appendix E](#). It is recommended that these locations receive additional ROW dedication to accommodate future grade-separated rail crossings at locations with high traffic volumes and significant delays or safety concerns.

Similarly, the locations of stream crossings are shown in [Appendix E](#) to indicate where the proposed thoroughfares cross existing water bodies and would require a bridge structure. Some of these crossings may require additional ROW to accommodate future expansion based on the growth patterns.

Additionally, proposed highway interchanges along State Highway 288 are listed in [Table 7](#). These interchanges are included in the Regional Transportation Plan (RTP) as part of the SH 288 toll lane construction and grade separation project.

*Table 7 – Proposed SH 288 Interchanges*

Highway	Cross Street
SH 288	CR 48
SH 288	CR 57
SH 288	CR 64
SH 288	CR 63
SH 288	SH 99/ CR 60

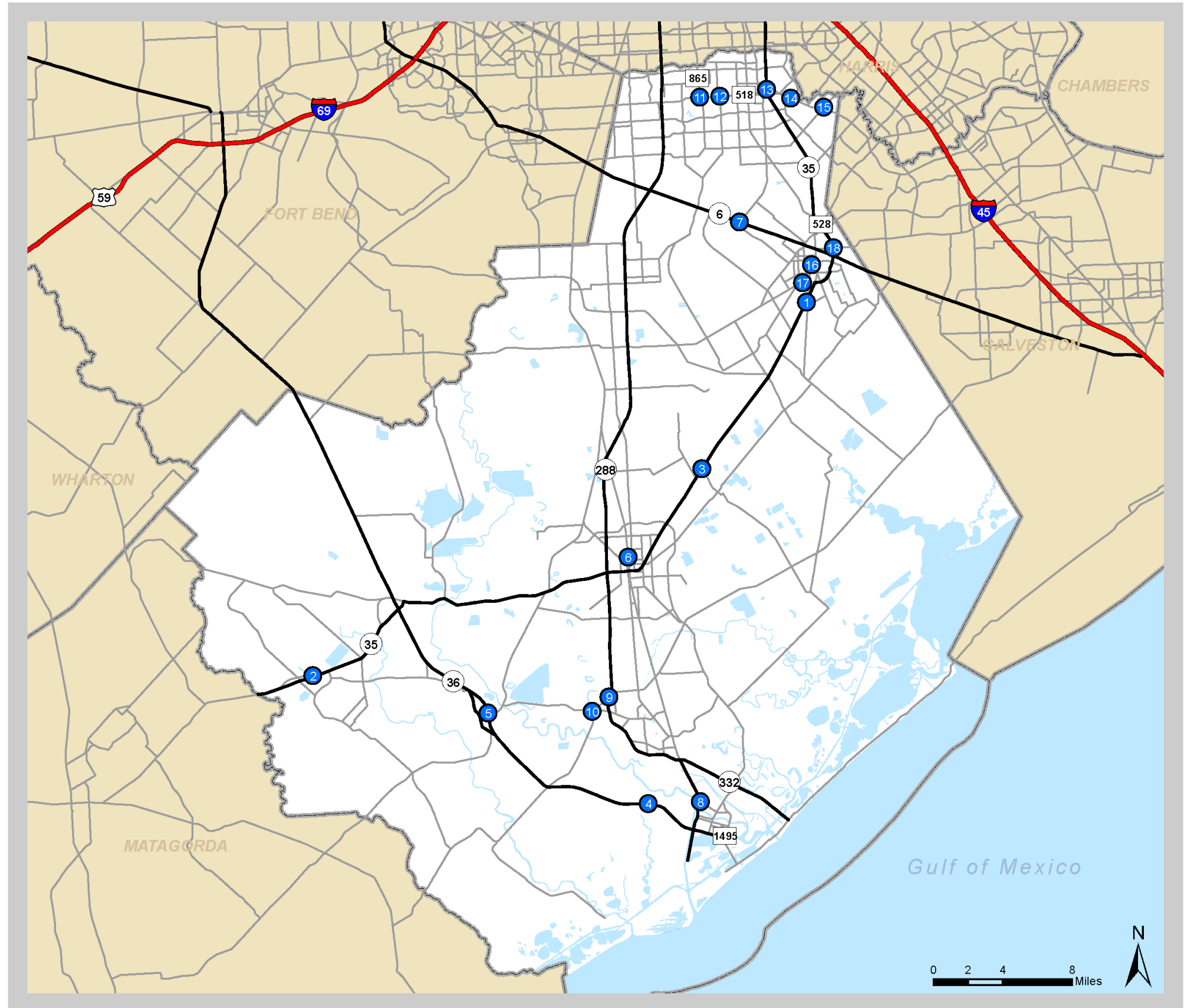


**Brazoria County Thoroughfare Plan:**  
**Key Intersections**  
*with additional ROW needs*

**Legend**

Critical Intersection

Intersection No.	Location
1	SH 35 at FM 2403
2	SH 35 at LP 419
3	SH 35 at TX 28 Spur
4	SH 36 at CR 400
5	SH 36 at TX 332
6	Velasco St N at Lorraine St
7	SH 6 at Pearland Sites Rd
8	SH 288 at FM 523
9	SH 288 at FM 2004
10	FM 2004 at TX 332
11	FM 518 at Cullen Pkwy
12	FM 518 at FM 1128
13	FM 518 at SH 35
14	FM 518 at Pearland Pkwy
15	FM 518 at Dixie Farm Rd
16	SH 35 at South St
17	SH 35 at FM 1462
18	FM 517 at SH 35 Alvin Bypass



Sources: BCAD, Brazoria County, HGAC, TxDOT  
 Data is current as of 2019; Prepared on 3/17/2020

Figure 34 – Key Intersections with Additional ROW Needs

## DISCREPANCIES WITH MUNICIPALITIES

Municipalities within Brazoria County were invited to attend the stakeholder meetings as well as the public meetings, to provide input on the proposed BCTP recommendations. Minor discrepancies between the BCTP and individual municipality plans still exist. These discrepancies can be summarized into several categories. The BCTP made changes to municipal thoroughfare plans for the following reasons:

- Where the BCTP extended a municipal collector, the designation was upgraded to a thoroughfare; where municipal thoroughfares served a local purpose, the designation was downgraded to a collector
- Where a proposed alignment was shown through acreage on a municipal plan, but had the ability to utilize an existing roadway, the alignment was modified on the BCTP
- Avoidance of closely spaced intersections and stubbing thoroughfares into other thoroughfares
- Avoidance of loose-hanging collectors or thoroughfares that did not connect to another collector/thoroughfare

Where BCTP recommendations differed from existing thoroughfare plans, coordination was sought with individual municipalities. Individual meetings were had with the City of Iowa Colony and the City of Alvin, to discuss differences between plans and possible resolutions. Summaries and notes from these meetings can be found in [Appendix A](#).

Two stakeholder meetings were held on February 25, 2020; municipalities were invited to attend. The draft map was presented, and all stakeholders were given the opportunity to comment. Meeting attendance and notes can be found in [Appendix A](#).

All feedback that was provided at these meetings was considered and incorporated, where appropriate.



## 5. RECOMMENDATIONS

The 2020 Brazoria County Thoroughfare Plan provides a long-term template upon which the County's transportation system can be developed. This Plan gives the Commissioner's Court, County staff, the Houston-Galveston Area Council, and municipal staff an understanding of the long-term transportation needs while making short-term decisions related to roadway funding and new development approvals.

To accomplish the goals of the thoroughfare plan, a coordinated set of recommendations are included in this section. The plan identifies future roadways so that land can be preserved as the County continues to develop, and makes recommendations on transportation policy, funding, and implementation to help guide the plan.

### TRANSPORTATION POLICY

Existing transportation policies are contained within the Brazoria County Subdivision Regulations, the Brazoria County Roadway Safety and Road Preservation Standards for Work Conducted in Brazoria County Rights of Way, and the Brazoria County Drainage Criteria Manual. Changes to the current policies are based on the goals, as established in **Chapter 1** of this report, as well as the outcome of the public engagement process, as detailed in **Chapter 3**.

These standards should be encouraged for use by all municipalities within Brazoria County to ensure ease of implementation and predictability for both the residential development community and industrial growth of the County, as it applies to the BCTP. **Table 8** provides a summary of the recommendations; more detailed information is provided below.

Potential funding mechanisms and steps for implementation for all recommendations are outlined in the following sections. Specific recommendations are listed below and address the following categories:

- Changes to roadway classifications
- Drainage/detention
- Access considerations
- Heavy truck/freight traffic
- Coordination with municipalities

#### Changes to Roadway Classifications

Previous roadway classifications for Brazoria County included Minor and Major Arterials, Major Collectors, and Residential Local and Residential Collectors. To simplify the roadway classifications and assign appropriate ROW widths, the 2020 Brazoria County Thoroughfare Plan changes the classifications to Limited Access Highway, Principal Thoroughfare, Major Thoroughfare, and Major Collector. Streets within Brazoria County that are not given one of these designations are considered local streets.

Many municipalities in Brazoria County have their own roadway classifications. A list that compares roadway classifications for each municipality, according to their various attributes is provided in **Appendix C**. These roadway classifications should be encouraged for use by all municipalities within Brazoria County to ensure ease of implementation and predictability for both the development community and industrial growth of the County, as it applies to the BCTP.

As the previous roadway classifications have been changed with the update to the BCTP, all policy documents where they are referenced need to be updated as well. A list of these required changes is provided as **Table 8**. As indicated in the table, access considerations and building setback requirements should also be re-evaluated as part of the subdivision regulation update.

Regulation Document	Location in Document	Item	Recommended Change	Reason for Change
<b>Brazoria County Subdivision Regulations</b>	Article 6, Section B	Minor and Major Arterial Streets	Minor and Major Arterial Streets should be changed to Major Thoroughfare	Match new roadway typology
		Arterial and Collector Intersections	1. "Arterial and Collector Intersections" should be changed to "Thoroughfare and Collector Intersections" 2. County Engineer should review access considerations and add to the Design Standards. Generally, fewer access points should be allowed along higher classification roadways	1. Match new roadway typology 2. Update access considerations; improved safety and accessibility
		Thoroughfares and Planned Thoroughfares	1. Regulations should be divided into separate categories for "Major Thoroughfares" and "Principal Thoroughfares" 2. Change specific requirements to match the new typologies, proposed ROW widths, and proposed lane designations	1. Match new roadway typology 2. Different requirements are needed for each type; proposed roadway sections are different than existing
		Building and Setback Lines	1. Change "Residential Local and Residential Collector" to "Local", change "Minor Arterial" to "Major Thoroughfare" and change "Major Arterial" to "Principal Thoroughfare" 2. Re-evaluate required building and setback requirements	1. Match new roadway typology 2. Update requirements to reflect the diversified needs throughout the County
	Article 7, Section A	Pavement Design Requirements	1. Change "Major Collectors, Minor and Major Arterial Streets" to "Major Collectors, Major Thoroughfares, and Principal Thoroughfares" in body of text. Change roadway typologies in table to "Local, Major Collector, Major Thoroughfare, and Principal Thoroughfare" 2. Add minimum design traffic requirements to roadways based on actual truck traffic percentages	1. Match new roadway typology 2. Many roadways experience high truck traffic, given their proximity to industrial plants. These roadways should be evaluated for design standards that can better accommodate high percentages of heavy truck traffic
	Article 7, Section F	Overall Site Plan	1. Change all classifications and required ROW 2. Change "...for roads other than local (or minor)..." to "...for roads other than local..." and "...as shown in the County's Comprehensive Plan..." to "...as shown in the Brazoria County Thoroughfare Plan..."	1. Match new roadway typology 2. Refer to BCTP
	Article 7, Section H	Acceptable Types of Surface Pavement	1. Change all classifications 2. Re-evaluate requirements for each roadway type, depending on location proximate to a water feature or 100-year floodplain	1. Match new roadway typology 2. Ensure standards are up-to-date for roadways that are within flood-prone areas
Appendix N	Brazoria County Street Classification Standards	Update all classifications using new roadway typology and changes made based on all other recommendations	Match new roadway typology	
<b>Brazoria County Roadway Safety and Road Preservation Standards for Work Conducted in Brazoria County Rights of Way</b>	N/A	Design Standards	Design Standards should be updated to include design and construction specifications that are currently located in the Subdivision Regulations.	All design and construction specifications located in one document; easier to update; non-duplicative
		Design Standards	Special design criteria should be implemented to address heavy freight corridors; specific focus should be pressed upon the routes with higher truck traffic.	Construction and maintenance accommodations for roadways that have particularly high volumes of heavy truck traffic
<b>Brazoria County Drainage Criteria Manual</b>	General		Provide full update to sections that apply to roadway construction and development within floodplain	To ensure regulations are updated to sufficiently accommodate future growth

Table 8 – Policy Recommendations

## Drainage/Detention

As alignments on the Thoroughfare Plan map are funded for implementation in the future, engineering studies and drainage reports should be provided prior to construction. Given the prevalence of flooding within the County, it is recommended that these reports be provided regardless of whether the roadway is proposed through the floodplain. If these alignments are included through a proposed development, the development should be responsible for the study, as it affects the development and the surrounding areas.

The Drainage Criteria Manual was last updated in 2003. Since that time, the flooding in Brazoria County has increased significantly; the mapped NEPA floodplain has been updated to include more territory within the floodplain area. It is recommended that Brazoria County perform a full study to update this document, where roadway construction is addressed, to ensure that latest regulations are sufficient to accommodate future growth, as projected by the BCTP.

## Access Management/Building Lines

As subdivision regulations are being updated to include the new roadway classifications, the County should reanalyze current policy considerations for access and building lines along thoroughfares and collectors. As growth occurs and roadways are expanded and repurposed, it is a good time to plan for future context. Higher classifications of roadway should typically have fewer access points and larger setbacks, however, the individual recommendations should be specific to the context of the surrounding area.

## Heavy Truck Traffic

The County is facing unprecedented growth in commercial and industrial development, much of it associated with Port Freeport. The construction standards for heavy haul thoroughfare corridors, particularly that serve port industries and Port Freeport, should continue to be outlined as specialty design criteria for thoroughfares that accommodate heavy haul trucks for the petrochemical industries. The County is actively doing this already; this provides specific requirements for roadways that experience above-average heavy truck traffic for long-term roadway investment near port areas.

**Appendix C** provides heavy truck traffic counts for 23 locations in Brazoria County.

Heavy truck traffic, for the purposes of this study, are defined as having three axles or more. Guidance for classifications of truck traffic was provided by the Federal Highway Administration (FHWA). See **Figure 35**.

## COORDINATION WITH MUNICIPALITIES

Future implementation should focus on the transition of roadways between municipalities. Currently, roadway classifications, design specifications, and ROW widths differ across all municipalities, including cities, their extraterritorial jurisdictions, unincorporated areas, and adjacent counties. For a better user experience within the transportation system, Brazoria County should coordinate closely with these municipalities to ensure smoother transitions between jurisdictional boundaries. This will require year-round coordination, especially as jurisdictions update plans or change roadway-related regulations.

One method to ensure smooth transitions and continuous coordination would be to establish a quarterly meeting with all jurisdictions under the leadership of Brazoria County. The agenda for this meeting could include items such as roadway




































<b>Class 1</b> Motorcycles		<b>Class 7</b> Four or more axle, single unit	
<b>Class 2</b> Passenger cars		<b>Class 8</b> Four or less axle, single trailer	
			
			
<b>Class 3</b> Four tire, single unit		<b>Class 9</b> 5-Axle tractor semitrailer	
			
			
<b>Class 4</b> Buses		<b>Class 10</b> Six or more axle, single trailer	
			
			
<b>Class 5</b> Two axle, six tire, single unit		<b>Class 11</b> Five or less axle, multi trailer	
			
			
<b>Class 6</b> Three axle, single unit		<b>Class 12</b> Six axle, multi-trailer	
			
			
		<b>Class 13</b> Seven or more axle, multi-trailer	
			
			

Figure 35 – FHWA Vehicle Classifications, 2014

project updates; future/ongoing planning efforts; national, statewide and local transportation policy updates; and potential funding opportunities. This coordination will lead to more effective conversations with adjacent counties and the development community to better prepare for regional growth.

## Funding

The funding programs listed below in **Table 9** are intended as a toolbox to assist in the implementation of the 2020 BCTP. These programs are related to development, redevelopment, and general transportation improvements, including general roadway improvements, overpasses, freight corridors, transit, and trails. The toolbox can be used by Brazoria County, its partnering local government entities, and H-GAC. The toolbox provides a wide variety of potential funding mechanisms for future improvements. Individual improvements that are identified in the local CIP processes should be analyzed for which toolbox funding items will be applicable.

It is recommended that all entities work in coordination when applying for state and federal funding, to more effectively leverage funding. Brazoria County should work with all potential funding partners to create a funding plan for the next several years, with the first item being an application to the H-GAC Transportation Improvement Program (TIP) Call for Projects for 2021/2022.

More specific information on funding implementation methods is included in **Appendix D**. Also included in this appendix is specific information on funding for freight and port activity that may be helpful in future planning.



Program Type	Program Function	Statutory Authority	Applicable Jurisdiction	Transportation and Mobility Project Type
<b>Texas Enterprise Zone</b>	State sales and use tax refund program designed to promote business development.	CH 2303 Local Government Code	Governor's Office, but requires municipal application	It encourages job creation and capital investment in areas of economic distress by removing governmental regulatory barriers to economic growth and provides tax incentives and economic development benefits.
<b>Texas Port Capital Program</b>	Future funding requested to fund port-related projects	Port Authority Advisory Committee (PAAC) and The Maritime Division of TxDOT	Port Authorities	Port-related transportation improvements
<b>Port Authority Advisory Committee</b>		Texas Transportation Code 55.006	Port Authorities	Provides a direct line of communication between the Ports and Texas Transportation Commission. The Port Authority Advisory Committee is responsible for reviewing prospective projects for funding via the Port Access Account Fund.
<b>Transportation Infrastructure Zone (TIZ)</b>	Public Improvement Finance	CH 173 Transportation Code	City	Local match for right-of-way acquisition in local government's territory or design, construction, operation, or maintenance of transportation facilities.
<b>Neighborhood Empowerment Zone</b>	Redevelopment	CH 378 Local Government Code	City	Project types include revitalization, relocation, job creation and retention, affordable housing. It may include waiving development and permit fees related to the construction of buildings, including impact fees. It may refund municipal sales tax related to improvements, which can include transportation-related improvements.
<b>County Assistance District (CAD)</b>	Public Service and Improvement Finance	CH 387 Local Government Code	County	Funds can be used for construction, maintenance or improvement of roads or highways. It can also be used for public benefit: law enforcement, maintenance or improvement of libraries, museums, parks or recreational facilities, economic development, and tourism and services.
<b>Chapter 380/381 Development Agreements</b>	It can be used to reimburse property owners, developers who advance funding for property improvements including on site and off site improvements (to be reimbursed from new real property increment generated by increased new real property values).	CH 380 & CH 381 Local Government Code	Municipality/County	Project types include programs to promote business development and commercial activity to promote local economic development.
<b>Tax Increment Reinvestment Zone (TIRZ)</b>	Tax Increment Reimbursement Zones ( TIRZ or TIF) allows for a portion of city or county tax revenue increment to be applied to an area or project improvement.	CH 311 Tax Code	City or County	Public improvements promote new or redevelopment of specifically designated zones or projects; can include transportation and any public improvement a city or county can fund.

Table 9 – Funding Toolbox 1; Function and Application



Program Type	Program Function	Statutory Authority	Applicable Jurisdiction	Transportation and Mobility Project Type
<b>Public Improvement District (PID)</b>	PID is created over an area similar to an MMD, or MUD; Assessments are not taxes in this tool and cost-benefit must be proven to level assessments.	CH 372 Local Government Code	City or County	Public improvements in a specifically designated district, including transportation, mobility, landscape architecture, landscape architecture and public art.
<b>Tax Abatement</b>	Functions as an abatement of real property taxes for private businesses in support of the development and redevelopment based on new increments.	CH 312 Tax Code	City or County	Project types include redevelopment and new development for business retention and business attraction.
<b>Community Development Block Grant (CDBG)</b>	Funds can be used for public improvements for Low and Moderate Income Areas and should be part of the city or county CDBG Program. It can be used to implement roads, paving, water, sewer, parks, and trails, Imposes an assessment or tax depending on the creation documents. Cover large areas geographically and are typically approved by bracketed legislation. Public improvements include intersections and all mobility improvements, as well as water, sewer, drainage, landscape architecture, and monuments.	Housing and Community Development (HCD) Act of 1974, Part 570	City or County	Project types include infrastructure, ROW, road improvements, as well as social programs, affordable housing, and economic development programs
<b>Municipal Management Districts (MMD)</b>	The LGC is an entity that acts as a counterpart to the city and county that allows a separate board to be created to administer the approval of public improvements. It is typically used in the Gulf Coast Region to complement TIRZ/TIF operations.	CH 375 Local Government Code	City or County	All lawful public improvements in a specifically designated district.
<b>Local Government Corporation (LGC)</b>	MUDs function as public improvement financier, which can include transportation if Road Utility District (RUD) powers are also created.	Subchapter D of Chapter 431 Transportation Code	City or County	The LGC acts as the Board to implement a plan, which can include public works implementation, transportation improvements, and acquisition. Improvements are not subject to public bidding requirements. Board-appointed creation entity can be either the city council or county.
<b>Municipal Utility District (MUD)</b>	To implement recommended H-GAC mobility projects that leverage DOT funding, along with other State of Texas and local funding programs.	Chapters, 47, 49, 51, 53, 54 of Water Code	Cities, County or ETJ that includes the city.	TCEQ or Legislatively created authority for water, sewer, drainage and park improvements. If RUD powers are granted, it can be used for transportation improvements.
<b>H-GAC Transportation Improvement Plan (TIP)</b>	Funding includes multiple sources under State of Texas and Federal Transportation Programs, including FHWA, FTA, and other lawful funding from local sources.		H-GAC	All forms of transportation projects including roads, overpasses, underpasses, rail, transit, pedestrian trails, etc.

Table 9 – Funding Toolbox 1; Function and Application, continued

Program Type	Uses for Lawful Purposes Including Transportation	Benefits	Challenges
<b>Texas Enterprise Zone</b>	Must apply and receive a nomination by the City for designation. The State Office of Economic Development designates Enterprise Projects.	Enterprise Projects receive priority for Smart Job Funds. As an Enterprise Project, a business is eligible for both state and local incentives for a five-year period. Local incentives include a property tax abatement and a small business revolving loan fund.	It's not a locally administered program and has a highly competitive state-wide applicant pool.
<b>Texas Port Capital Program</b>	\$125M appropriated for FY2020/2021	New program created to improve Texas Ports Funding and should be submitted with leveraged local funding including H-GAC TIP Match	Competitive submission
<b>Port Authority Advisory Committee</b>	Potential funding through the State of Texas and the Texas Transportation Commission	New program created to improve Texas Ports Funding	New program
<b>Transportation Infrastructure Zone (TIZ)</b>	District may enter an interlocal agreement with local government member(s) for financing transportation infrastructure.	TIZ funding may include up to 30% of captured assessed value.	The use of TIZ can be implemented over areas.
<b>Neighborhood Empowerment Zone</b>	It's much like a TIRZ or development agreement and may include tax abatement.	Limited to 10 year term	It may fund a wide variety of economic development projects and can support transportation, but it's not used exclusively for transportation improvements.
<b>County Assistance District (CAD)</b>	Any county may adopt this sales tax, in all or part of the county if the new combined local sales tax rate does not exceed 2 percent at any location within the district. The Commissioner's Court is the Board.	It funds a wide array of public projects and services, including roads. This tool should be explored for area transportation improvements.	It can't be created over a limited purpose annexation area, such as the Strategic Partnership Agreement, SPA.
<b>Chapter 380/381 Development Agreements</b>	Developer Agreements pursuant to Sec. 380 of the Local Government Code (Sec 381 for Counties)	It's ordinarily limited to "public" improvements.	Tools are needed to establish additional sources of revenue
<b>Tax Increment Reinvestment Zone (TIRZ)</b>	Can be used to create an ordinance, a Project & Financing Plan, or appointment of a Board. Project tax increment is available from all participants in the Zone. If it is created with sales tax powers, other revenue streams can be applied to the eligible project funding.	It works best with an active developer and catalyst project. The city or county may participate as an incentive for creating new development. Municipalities create and counties can participate through interlocal agreements.	It's limited to public works projects that cities and counties can fund. The timeframe to create meaningful revenue is generated from real property or sales tax income that is a result of new development. Functions best when partnered with an active Tax Increment growth, leveraged with other sources of project income, active developers and/or catalyst projects. It typically takes 5 years to create meaningful increments due to the timing of design, construction, real property evaluation and ultimately collection one year in arrears.

Table 10 – Funding Toolbox 2; Benefits and Challenges

Program Type	Uses for Lawful Purposes Including Transportation	Benefits	Challenges
<b>Public Improvement District (PID)</b>	Additional overlapping assessments are approved and can be used to pay for transportation, development, and redevelopment budget items that are considered public works. Overlapping assessments are typically in the .10/\$100 to .15/\$100 range in the Gulf Coast Region.	Fund any public works including ongoing maintenance of projects, including landscape architecture and signal maintenance.	Funded by overlapping assessments which means not suitable for the workforce or affordable housing.
<b>Tax Abatement</b>	Requirements for investment and job creation are established by the city and granted to individual business interests.	It is created by city and /or county for a term of 10 years	It targets individual business, not a larger area.
<b>Community Development Block Grant (CDBG)</b>	Program competes with other priorities and must benefit 51% low-moderate Census tracts.	A properly structured application may provide wide benefits.	It must meet Federal oversight requirements and not all cities or counties have CDBG entitlement funding; therefore, grants may be competitive.
<b>Municipal Management Districts (MMD)</b>	Created by Legislature and can be implemented by special legislation, or follow TCEQ process. It provides for overlapping taxing authority and appointment of a Board.	Districts are created with "any lawful purposes" powers of cities and counties. MMD's can be leveraged with 380/381 districts.	The legislative process for creation is preferred as it creates most flexibility over TCEQ, but can only be submitted every two years during normal legislative sessions.
<b>Local Government Corporation (LGC)</b>	Powers, as granted by the city or county, can be used for any lawful purpose, including all transportation improvements. It can be created over large geographic areas.	It's flexible within the scope of the City Charter or within County Statute.	It does not provide additional sources of revenue unless created with other overlapping economic development entities. It's most powerful when coupled with TIRZ, or PID, or MMD districts.
<b>Municipal Utility District (MUD)</b>	It can be used for TCEQ or special legislation. Minimum acreage is necessary to realistically use MUD tools. It's not as effective for developed areas, but very good for greenfield.	The eligible costs are fully reimbursed, typically advanced by the developer subject to an overlapping tax and reimbursed by bond issues of the MUD.	Overlapping tax rate and typically requires legislative creation to be the most effective versus TCEQ administrative process of approval.
<b>H-GAC Transportation Improvement Plan (TIP)</b>	It may also include related infrastructure and be leveraged across multiple partners such as MMD's, MUD's, 381/380 LGC agreements, etc.	All of these tools can be leveraged with other funding sources and allow projects to be accelerated.	Projects are generally in a 5-year funding cycle, so projects would be at least 5 years out from the start date.

Table 10 – Funding Toolbox 2; Benefits and Challenges, continued

## IMPLEMENTATION

The Brazoria County Thoroughfare Plan (BCTP) was adopted by the Brazoria County Commissioner’s Court on August 11, 2020. Going forward, parcels that redevelop and contain a thoroughfare alignment will require coordination with Brazoria County, appropriate municipalities, and, if necessary, TxDOT to determine the ultimate design and construction of each roadway. The BCTP map serves as a template for future roadway network expansion; the lines on the map represent general connections and should not be considered as ultimate alignments.

Future build-out of this proposed network depends on continued coordination among local government agencies. This plan may be used for future funding opportunities or continuations for other local or regional transportation planning efforts. Projections were used to identify areas of future growth and local conditions. Although the projections were done using the best data available, actual future conditions will vary. This plan should be updated consistently to ensure that what is shown on the map reflects the actual transportation needs as conditions change.

As conditions change in the future due to development and policies, the County should adopt an amendment process to keep the thoroughfare plan up to date. This amendment process should analyze the following:

- Alignments – changes to alignments should be updated every one to two years based on the level of development activity.
  - o As development occurs, the as-built roadway alignments should be reflected on the thoroughfare plan. Additionally, coordination will be required with local and adjacent municipalities to ensure that as roadway alignments are approved by these agencies, their updated alignments are reflected on the thoroughfare plan to ensure regional cohesion.
  - o Should a developer desire to amend a specific alignment outside of a 500-foot range of where the alignment is currently identified, a public process should be implemented prior to a decision being delegated. This public process should engage local municipality staff and officials, as well as effected property owners and the general public.
- Policies – an assessment of local policies should be reevaluated approximately every five years.
  - o As elected officials and economic conditions change, resulting policies may need to be added to, updated, or removed from the Thoroughfare Plan.

## NEXT STEPS

To ensure successful long-term implementation of the 2020 BCTP, action items are required to be completed by Brazoria County, including:

- Update the Brazoria County regulatory documents to incorporate changes;
- Implement policies to optimize transportation investments in the County;
- Lead coordination of municipalities to ensure that roadway investments provide regional benefits while accommodating existing and future growth;
- Present the 2020 Brazoria County Thoroughfare Plan to potential funding partners (Port Authority Advisory Committee, Federal Highway Administration, adjacent municipalities, etc.) so all parties are aware of future plans and can be ready to receive future funding requests;
- Prepare a grant submission for the 2021 /2022 H-GAC TIP Call for Projects; and
- Develop an amendment process for the thoroughfare plan.

## SUMMARY

The 2020 BCTP is a long-range plan that identifies the general location and type of transportation corridors, preserves right-of-way for future infrastructure, establishes consistent county design guidelines, and organizes future development. The plan does not change ownership or land use, require the County or its cities to build proposed roadways, identify funding or prioritize roadway projects or alignments, nor include survey, design, cost estimate, or schedule of roadway projects.

The BCTP promotes a safe, well-connected and efficient county-wide transportation system that provides adequate mobility for people, goods and services and promotes orderly growth and redevelopment throughout the County.

This report and complementing map, attached as **Appendix E**, provide guidance for Brazoria County in future roadway network planning. Close coordination with internal and adjacent municipalities will be required for the successful implementation of the recommendations. As the County continues to grow, the BCTP should be updated to ensure the roadway network is proactive in planning for future issues, rather than reactive as problems arise.

