

Area-Wide Improvements





Southeast Harris County Sub
Regional Planning Study

Freight Assessment Memo

Prepared for:

Houston Galveston Area Council

December 23, 2021

Submitted by



4828 Loop Central Drive, Suite 800
Houston, TX 77027
Tel 713.622.9264
Fax 713.622.9265
Firm Registration # 754



Contents

1	Introduction	1
2	Study Methodology	1
	2.1 Study Area	1
	2.2 Project Corridors	1
	2.3 Data Collection	2
	2.4 Freight Analysis Methodology	5
3	Freight Analysis Observations	7
	3.1 High Volume Freight Corridors.....	7
	3.2 High Truck Volume Intersections	10
	3.3 Crashes Involving Commerical Vehicles	10
	3.4 Pass Through Traffic Analysis	14
	3.5 Origin-Destination Summary.....	18
	3.6 Stakeholder and Public Input	20
4	Conclusions	23

Tables

No table of figures entries found.

Figures

Figure 2-1	Project Area Land Use.....	3
Figure 2-2	Project Corridors Functional Classification	4
Figure 2-3	FHWA Vehicle Classification.....	6
Figure 3-1	Total Truck Percentage on Project Corridors.....	8
Figure 3-2	Truck Percentage - Freight on Project Corridors.....	9
Figure 3-3	Percentage of Truck Volume Intersections PM – Peak	12
Figure 3-4	Crashes Involving CMV (2015-2019).....	13
Figure 3-5	Freight Network Map – TxDOT Statewide Planning Map	15
Figure 3-6	Pass Through Traffic – Originating from La Porte (Barbour’s Cut Terminal).....	16
Figure 3-7	Pass Through Traffic – Originating from Bay Port Industrial Terminal	17
Figure 3-8	ATRI Data – Trips from Barbours Cut Terminal	18
Figure 3-9	ATRI Data – Trips to Barbours Cut Terminal.....	19
Figure 3-10	ATRI Data – Trips from Bayport Terminal.....	19
Figure 3-11	ATRI Data – Trips to Bayport Terminal.....	20
Figure 3-8	Bang the Table – Summary of Comments.....	22

This page is intentionally left blank.

1 Introduction

HDR Engineering, Inc. (HDR) performed a freight assessment in the Southeast Harris County area as part of a Sub Regional Planning Study. HDR worked as a sub-consultant to Kimley-Horn Associates (KHA), who recommended the mobility and safety improvements in the study area for Houston-Galveston Area Council (H-GAC). This study identified multimodal transportation, development, and economic policy needs. One of the goals of the study was to facilitate the flow of truck traffic while providing mobility solutions for the residents.

The study area is in the eastern portion of Harris County; the western border of the study area is IH 610/IH 45 South, the eastern border SH 146, the northern border SH 225, and the southern border is Genoa-Red Bluff. The study area includes the cities of Houston, South Houston, Pasadena, Deer Park, and La Porte.

The purpose of the freight assessment memo is to document the existing and future freight activity within the study area. The memo describes freight impacts with regard to mobility, safety, and economic opportunity.

2 Study Methodology

This section describes the study area, project corridors, data collection, and analysis methodology to perform the freight assessment.

2.1 Study Area

The study area is located in the eastern portion of Harris County and extends from IH 45 on the West to SH 146 on the East and from SH 225 on the North to Genoa-Red Bluff Road on the South. As shown in Figure 2-1, the primary land use within the study area is residential, with commercial land use adjacent to the significant project corridors. There is major industrial land use north of SH 225 between IH 610 and SH 146 and South of Fairmont Parkway close to SH 146. It should also be noted that SH 225 serves as a primary access route to Port Houston's Barbour's Cut and Bayport Container Terminals and has a high level of truck traffic.

2.2 Project Corridors

In association with H-GAC, KHA identified major project corridors in the study area for identifying corridor and intersection level improvements on these major corridors. KHA also identified over a hundred major intersections ^[BB1] along the project corridors to perform additional analysis. The project corridors and their functional classification are shown in Figure 2-2. The corridors analyzed as part of this study are –

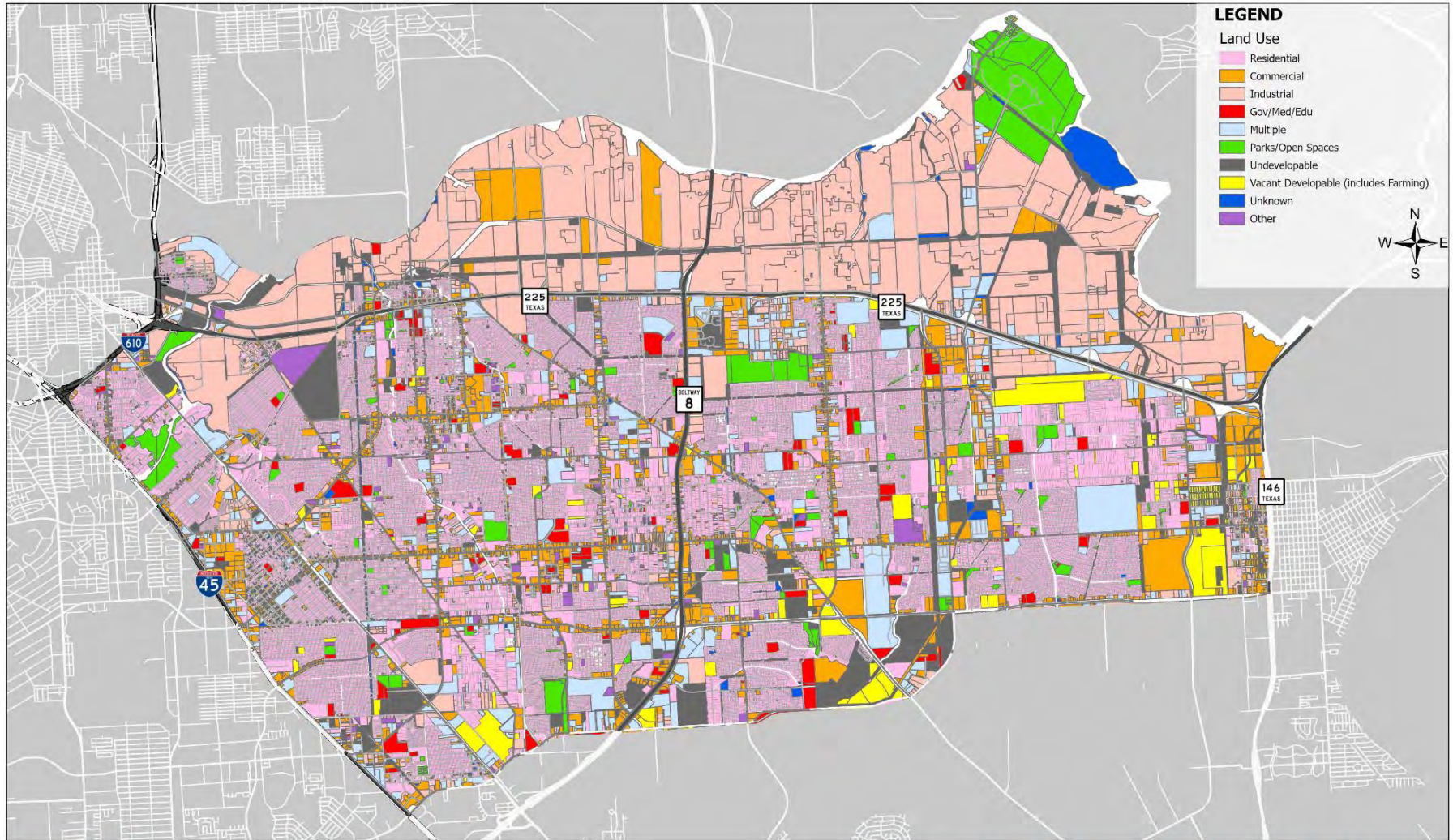
1. Broadway Street
2. Parkway Place Boulevard
3. Galveston Road

4. Howard Drive
5. Richey Street
6. Spencer Highway/ College Avenue
7. Fairmont Parkway/ Edgebrook Drive
8. Genoa-Red Bluff Road/ Fuqua Street
9. Lawndale Street
10. Allen Genoa Road
11. S Shaver Street/ Main Street
12. N Pasadena Boulevard
13. Southmore Avenue
14. Allendale Road
15. Garner Road
16. Pasadena Boulevard/ N Avenue L
17. Vista Road
18. Burke Road
19. Preston Road/ South Street
20. E 13th Street
21. Space Center Boulevard
22. Center Street
23. Luella Avenue/ Luella Boulevard
24. East Boulevard/ Canada Road
25. Independence Parkway/ Battleground Road/ Underwood Road
26. Sens Road

2.3 Data Collection

CJ Hensch & Associates (CJH) performed data collection (turning movement counts (TMCs), tube counts, and classification counts) on weekdays in May 2021 (in the second and third weeks). The TMCs were collected at intersections during the AM peak period between 7:00 AM to 9:00 AM and the PM peak period between 4:00 PM to 6:00 PM. The classification counts were performed on at least one location along the significant project corridors identified earlier for a 24-hr period. Additional tube counts were performed along longer corridors to identify variations in the traffic patterns.

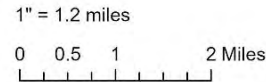
Figure 2-1 Project Area Land Use



LEGEND

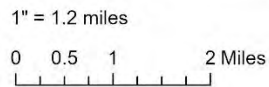
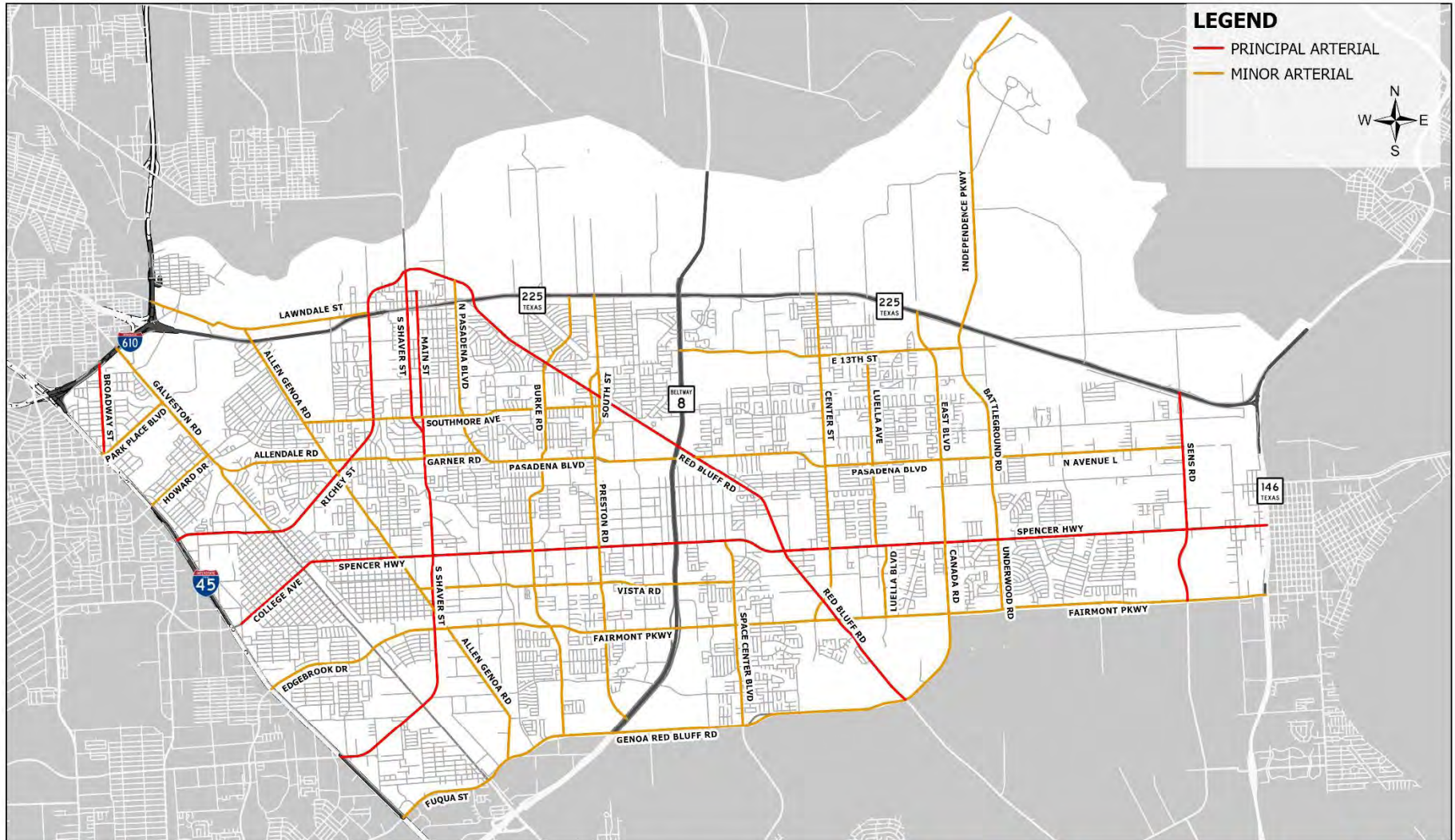
Land Use

- Residential
- Commercial
- Industrial
- Gov/Med/Edu
- Multiple
- Parks/Open Spaces
- Undevelopable
- Vacant Developable (includes Farming)
- Unknown
- Other



Southeast Harris County Sub Regional Study
Land Use Map

Figure 2-2 Project Corridors Functional Classification



Southeast Harris County Sub Regional Study
Functional Classification Map

2.4 Freight Analysis Methodology

Federal Highway Administration (FHWA) vehicular classification shown in Figure 2-3 was adopted for this study to classify truck traffic and freight truck traffic. All the vehicles in Class 5 to Class 13 were considered for the total truck traffic, while trucks with more than four axles, i.e., Class 7 or higher, were considered trucks utilized for freight operations.



































Based on the traffic counts (AADT), maps were created showing the total truck percentages and freight truck percentages along the project corridors. Truck percentages for the PM peak hour at the intersections were also calculated and mapped. This information would help us identify project corridors and intersections with higher levels of truck activity within the study area.

Crash Analysis was performed for five years between 2015-2019 in the study area to identify crash hotspots for freight-related crashes and fatalities involving freight. The analysis would help identify locations to recommend potential countermeasures to reduce crashes.

H-GAC performed additional analysis using Streetlight data to identify pass through truck traffic from major highways onto the arterials in the study area. This analysis would help identify corridors the trucks are using to pass through.

Stakeholders and public input were also considered to understand the freight-related issues in the study area.

Figure 2-3 FHWA Vehicle Classification

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

3 Freight Analysis Observations

3.1 High Volume Freight Corridors

The total truck percentage was evaluated on the project corridors and mapped in ArcGIS based on the classification counts. Figure 3-1 shows the percentage of trucks on the project corridors.

It was observed that the majority of the project corridors had between 10% to 20% trucks in their daily traffic. A few corridors listed below have over 20% of trucks in their daily traffic:

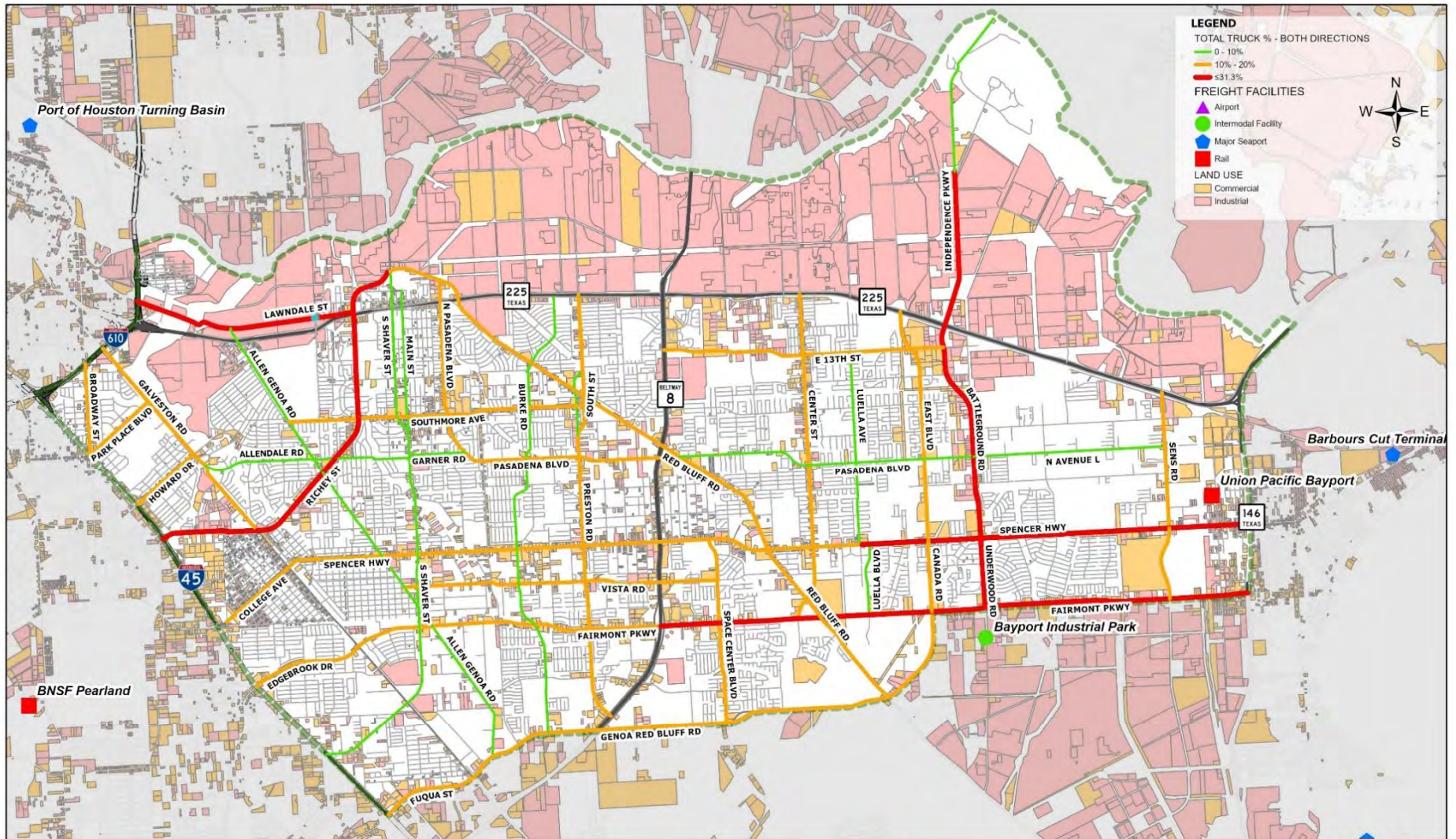
1. Lawndale Street
2. Richey Street
3. Spencer Highway (between Underwood Road and SH 146)
4. Fairmont Parkway (between Beltway 8 and SH 146)
5. Independence Parkway/ Battleground Road/ Underwood Road

Additional analysis was performed to identify project corridors with a higher percentage of truck traffic attributed to freight operations. The trucks with more than 4-Axles were attributed to freight operations. Figure 3-2 shows the percentage of trucks attributed to freight operations.

It was observed that majority of the project corridors had less than 5% of traffic attributed to freight. A few corridors listed below have over 5% of trucks in daily traffic that can be attributed to freight operations:

1. Lawndale Street
2. Richey Street
3. Red Bluff Road
4. Spencer Highway (between Underwood Road and SH 146)
5. Fairmont Parkway (between Beltway 8 and SH 146)
6. Independence Parkway/ Battleground Road/ Underwood Road

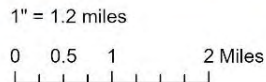
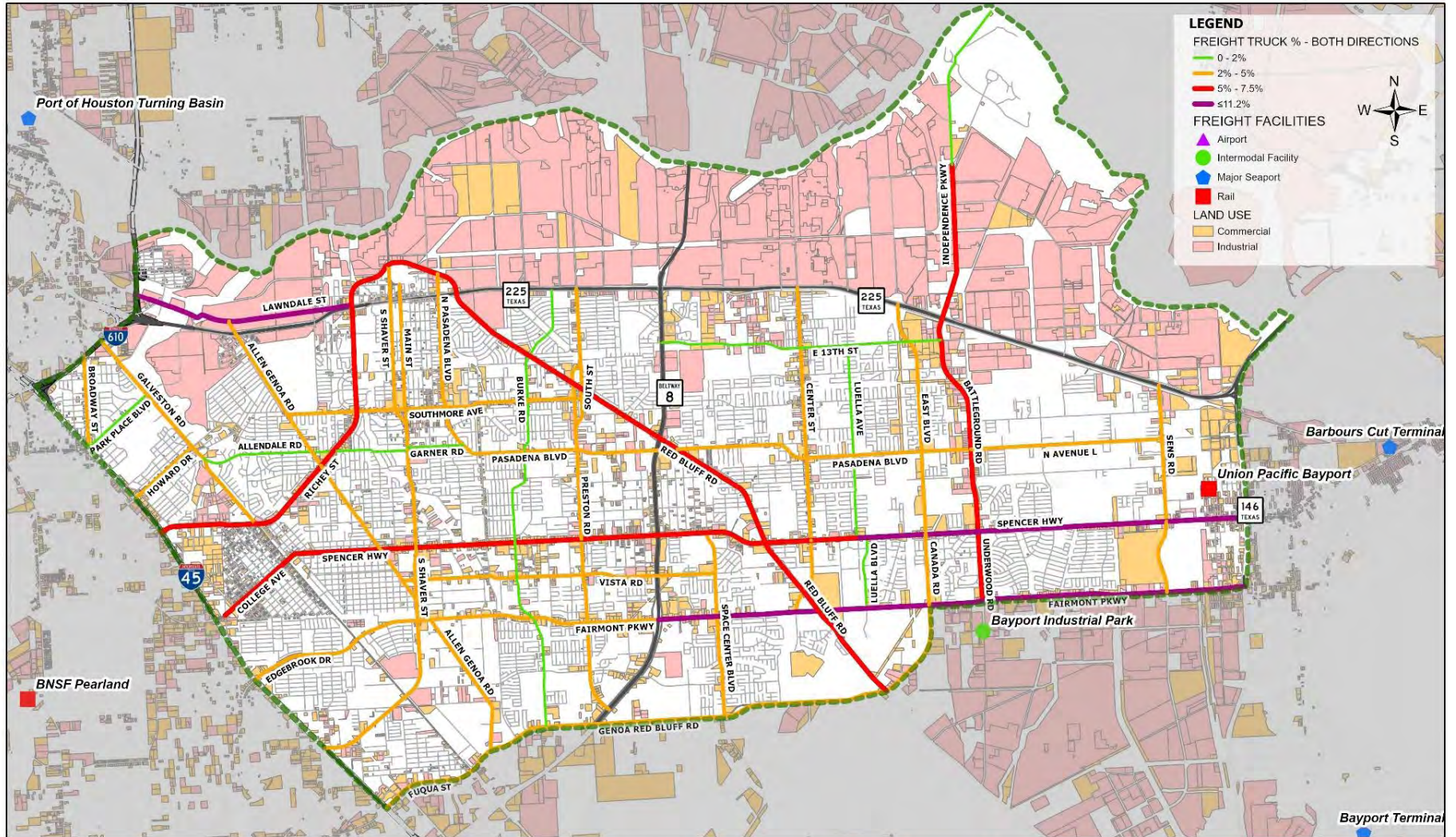
Figure 3-1 Total Truck Percentage on Project Corridors



1" = 1.2 miles
 0 0.5 1 2 Miles

Southeast Harris County Sub Regional Study
Total Truck Percentage

Figure 3-2 Truck Percentage - Freight on Project Corridors



Southeast Harris County Sub Regional Study
Truck Percentage - Freight

3.2 High Truck Volume Intersections

Based on evaluating the intersection TMCs during the PM peak hour conditions, the following intersections experienced a high volume ($\geq 5\%$) of trucks -

1. E 13th Street at Luella Avenue
2. E 13th Street at Independence Parkway
3. Sens Road at N Avenue L
4. Fairmont Parkway at Driftwood Drive
5. Fairmont Parkway at Sens Road
6. Fairmont Parkway at S 16th Street

Figure 3-3 shows the percentage of trucks at the intersections where data was collected in the study area during the PM peak. All the intersections with greater than or equal to 5% truck traffic are located to the east or north of the study area where the land use is predominately industrial/commercial.

3.3 Crashes Involving Commercial Vehicles

Figure 3-4 shows freight related crashes between 2015 – 2019 in the study area. It can be observed that the majority of the crashes occurred on the interstates, major highways, and intersections along the frontage road of interstates and major highways, including IH 45, IH 610, SH 225, SH 146, and BW 8. A few locations listed below in the study area have a relatively higher number of Commercial Motor Vehicle (CMV) related crashes:

1. Galveston Road at Howard Drive
2. Galveston Road at Fuqua Street
3. Edgebrook Drive at Allen Genoa Road
4. Spencer Highway at Strawberry Road
5. Spencer Highway at S 16th Street
6. Red Bluff Road at Burke Road
7. Red Bluff Road at South Street
8. Red Bluff Road at Genoa-Red Bluff Road
9. Fairmont Parkway at Preston Road
10. Fairmont Parkway at Space Center Boulevard
11. Fairmont Parkway at Underwood Road
12. Fairmont Parkway at Farrington Street
13. Fairmont Parkway at Bay Park Road
14. Fairmont Parkway at Sens Road

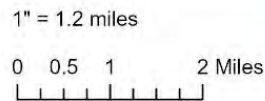
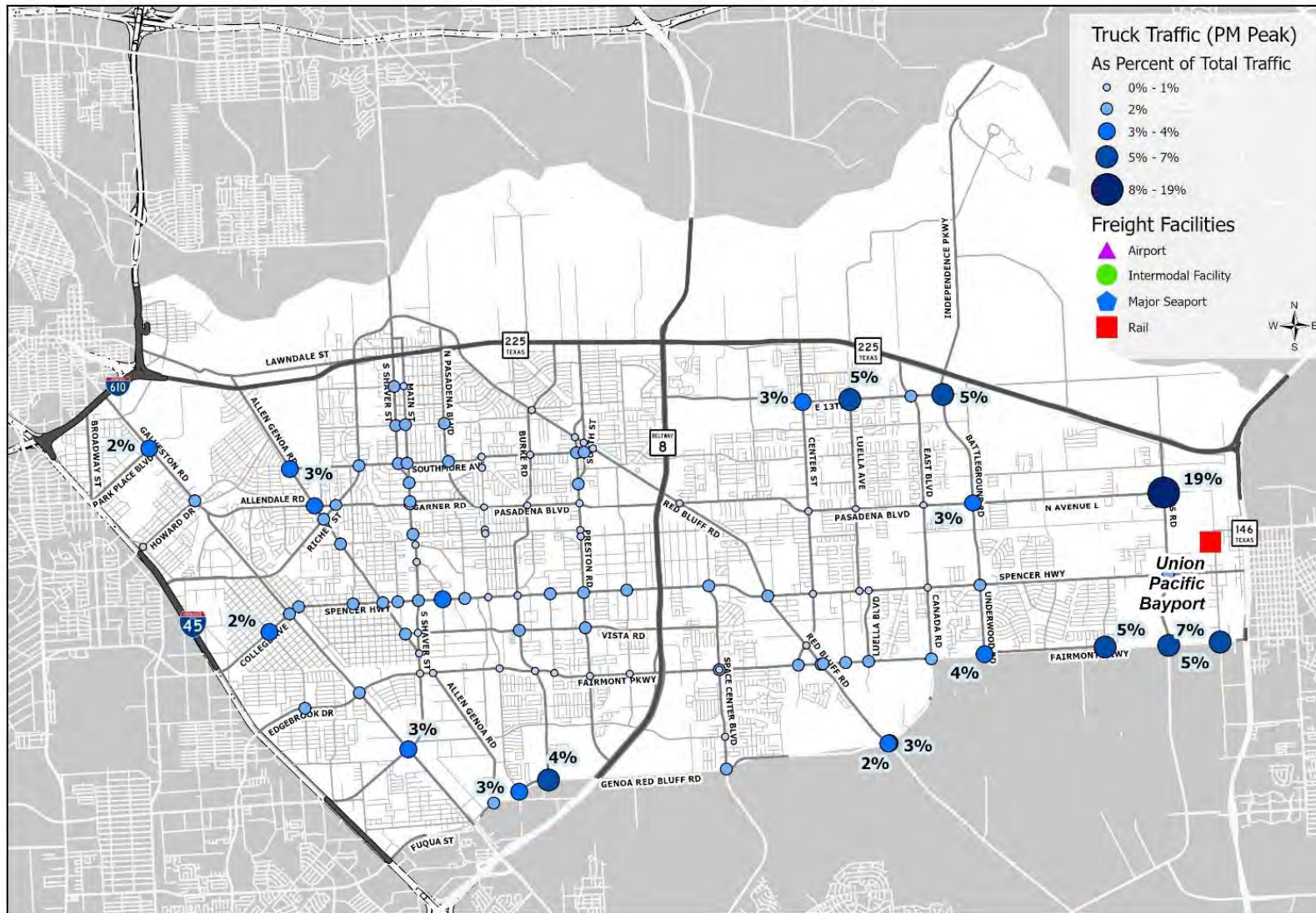
15. Fairmont Parkway at S 16th Street

16. Underwood Road at Pasadena Boulevard

Additionally, fatal crashes involving a CMV were identified in the study area to identify potential hotspots. It was observed that the majority of the fatal crashes occurred along interstates, major highways, or intersections along the frontage roads of interstates and major highways. There were a few fatal crashes observed in the study area at

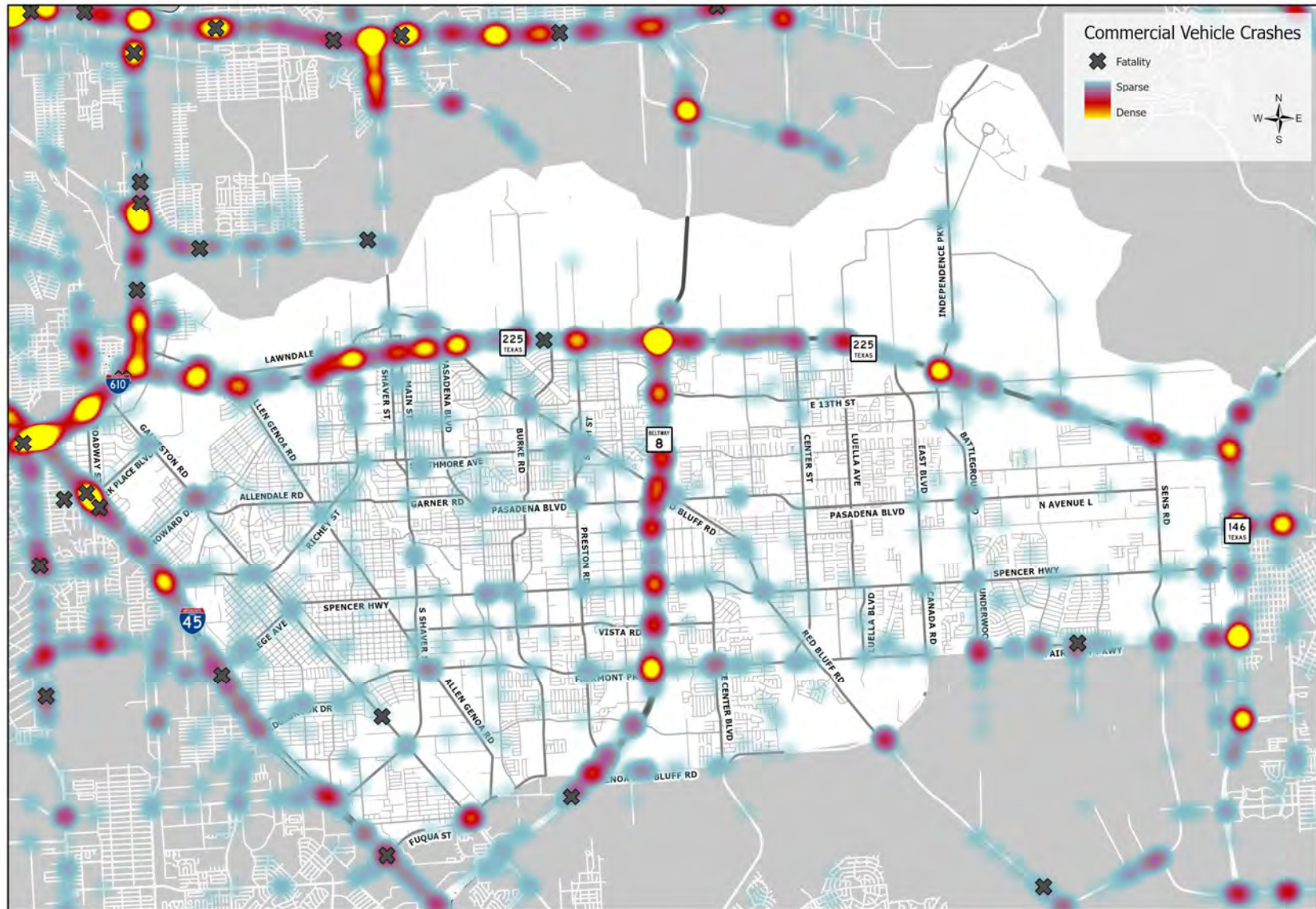
1. Galveston Road at Gilpin Street
2. Fairmont Parkway at Bay Park Road

Figure 3-3 Percentage of Truck Volume Intersections PM – Peak



Southeast Harris County Sub Regional Study
Truck Traffic (from TMC - PM Peak)

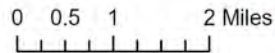
Figure 3-4 Crashes Involving CMV (2015-2019)



Kimley»Horn
Expect More. Experience Better.



1" = 1.2 miles



Southeast Harris County Sub Regional Study

Commercial Vehicle Crashes

3.4 Pass Through Traffic Analysis

An analysis was performed to identify routes utilized by the trucks in the study area and identify any project corridors that the trucks are using as pass-throughs. Figure 3-5 shows the Texas Highway Freight Network and National Highway Freight Network based on the TxDOT Statewide Planning map. As shown in the figure, all the interstates and major highways in the study area are identified as truck routes. However, there are a few project corridors that are identified as truck routes as well, including -

1. Richey Street between IH 45 and Galveston Road
2. Spencer Highway between Sens Road and SH 146
3. Fairmont Parkway between Beltway 8 and S Broadway Street

Streetlight data was utilized to identify routes used by the trucks originating from La Porte (Barbour's Cut Terminal) and Bayport Industrial District. The filters were applied on several project corridors to identify the percentage of trucks originating from La Porte (Barbour's Cut Terminal) and Bayport Industrial District utilizing the project corridors.

Figure 3-6 shows the trucks originating from La Porte (Barbour's Cut Terminal) utilizing the various roadways in the study area. As can be seen in the figure, nearly 98% of trucks are using SH 225, and the other corridors account for the other 2% of truck traffic. This map indicates that cut-through traffic is not an issue at this point of origin.

Figure 3-7 shows the trucks originating from Bayport Industrial District utilizing the various roadways in the study area. As shown in the figure, about 63% of trucks use SH 225. However, it was observed that about 16% of the trucks utilized Underwood Road, which is not a designated truck route. The other project corridors account for about 3% of trucks, with Sens Road accounting for nearly 2% of that traffic. Underwood Road was identified as a pass-through route by the stakeholders. The field visit conducted in May 2021 also identified Underwood road as a corridor with high truck volumes.

Figure 3-5 Freight Network Map – TxDOT Statewide Planning Map

Maps Measure Query LRS
Sketch Legend About

Map Legend

Texas Highway Freight Network



National Highway Freight Network

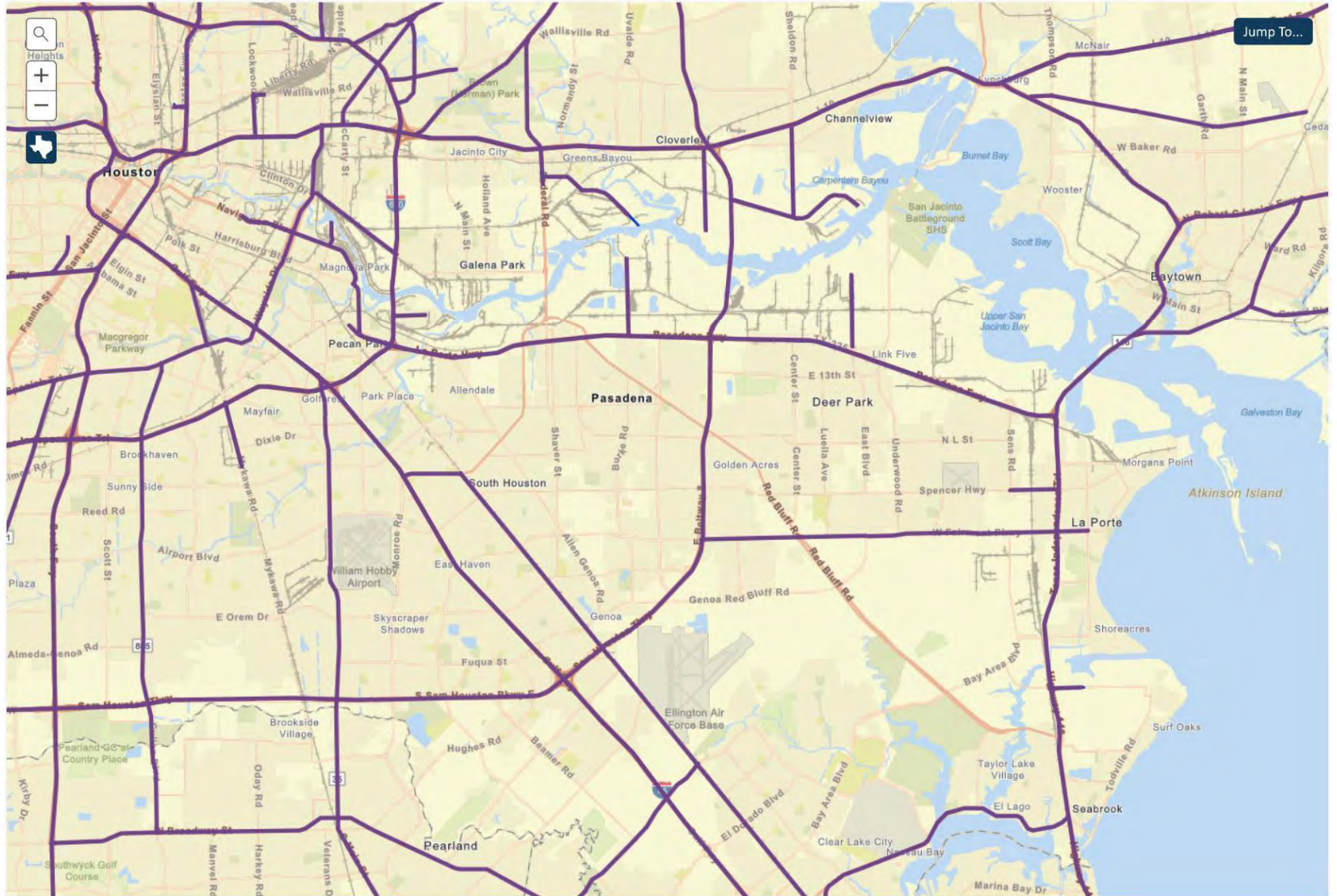


NOTES:

The National Highway Freight Network (NHFN) was developed by the Federal Highway Administration under the FAST Act, and replaces the National Freight Network previously developed under MAP-21.

[FHWA Website](#)

[Texas Freight Mobility Plan Website](#)



Jump To...



Level: 12, 29.614230, -95.094203

Download Data

Esri

Figure 3-6 Pass Through Traffic – Originating from La Porte (Barbour’s Cut Terminal)

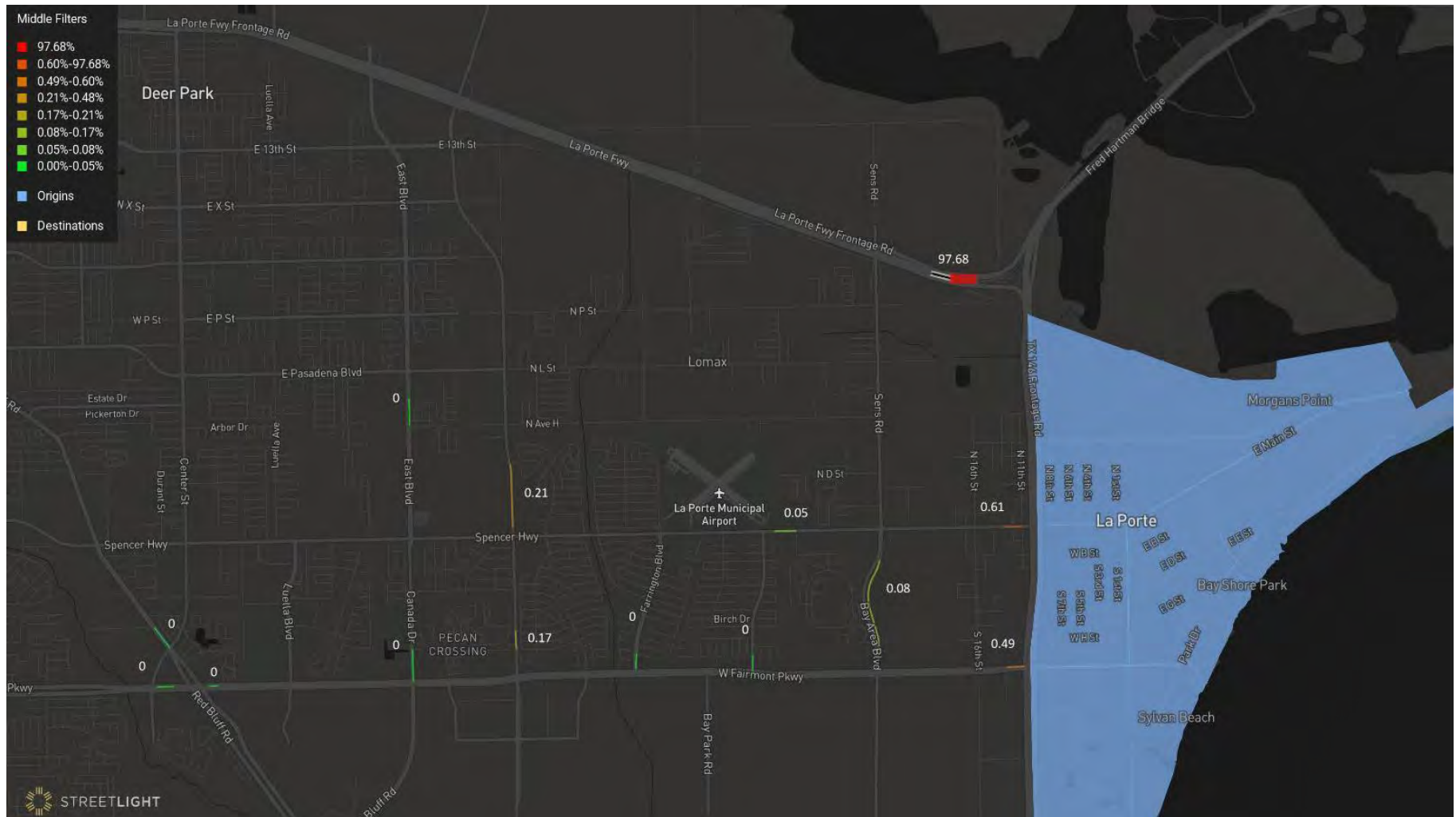


Figure 3-7 Pass Through Traffic – Originating from Bay Port Industrial Terminal



3.5 Origin-Destination Summary

The 2017 origin-destination data sourced from American Transportation Research Institute (ATRI) provided in H-GAC's Ports Area Mobility Study (PAMS) was reviewed to understand the trip patterns from and to the Barbours Cut and Bayport container terminals located just east of the study area. As shown in Figures 3-8 and 3-9, while significant number of trips from and to Barbours Cut terminal travel outside Houston area, a considerable number of them stay within Houston region with destinations including the industries located along SH 225 and SH 146. A lot of the trips end or begin at industries and warehouse/distribution centers located within Pasadena, La Porte and Deer Park regions within the study area.

Similarly, a review of trips generated from and to the Bayport terminal (shown in Figures 3-10 and 3-11) indicate that a considerable number of trips serve the industries located in Pasadena and Deer Park with more trips generated traveling to/from La Porte and Bayport industrial area (located just south of the study area).

Figure 3-8 ATRI Data – Trips from Barbours Cut Terminal

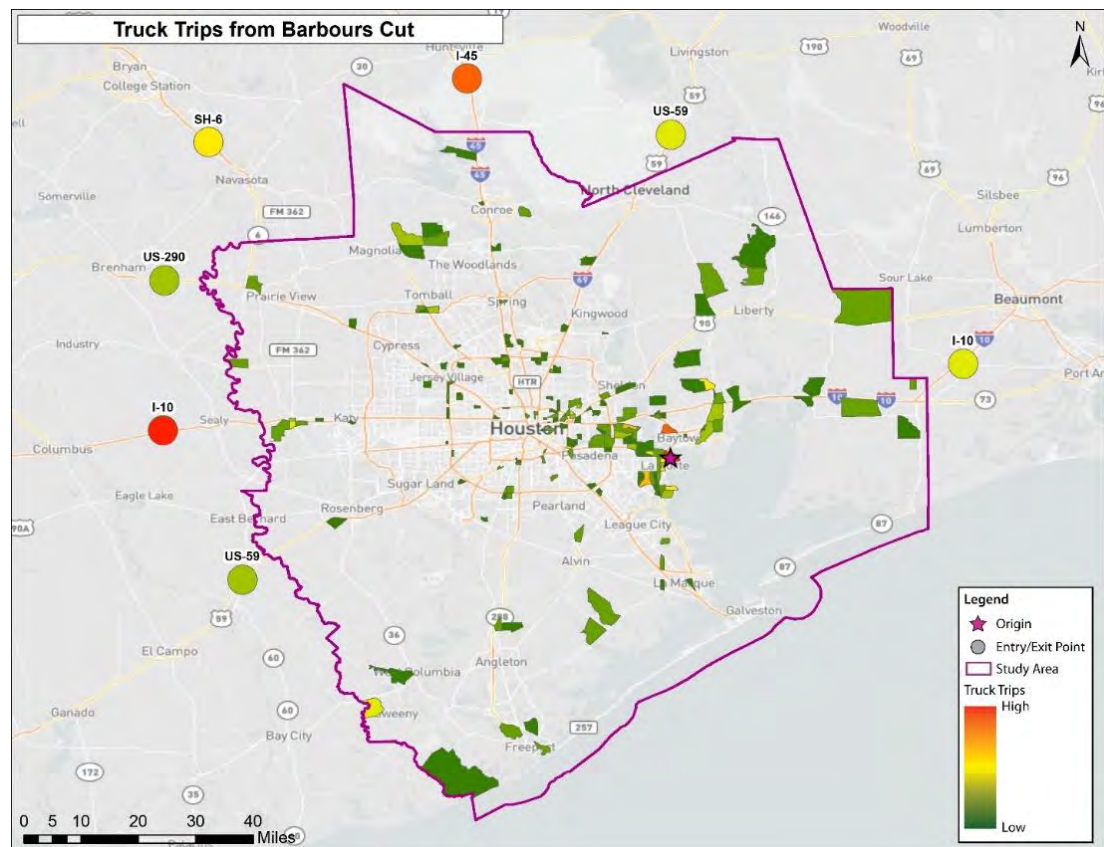


Figure 3-9 ATRI Data – Trips to Barbours Cut Terminal

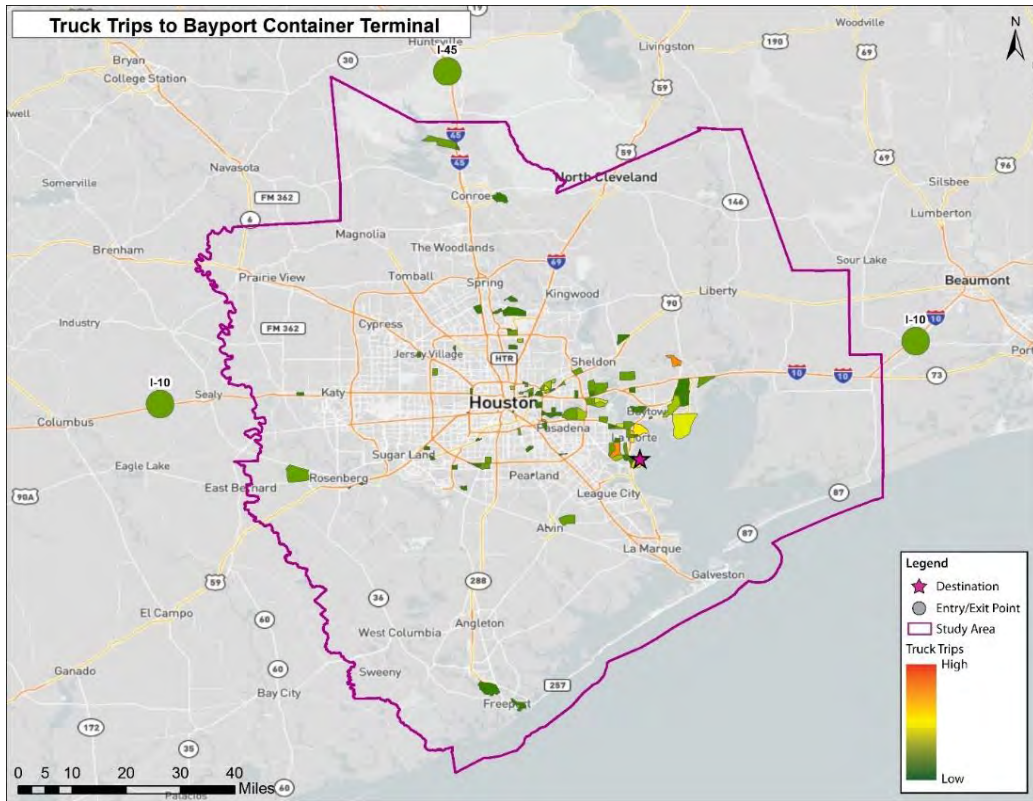


Figure 3-10 ATRI Data – Trips from Bayport Terminal

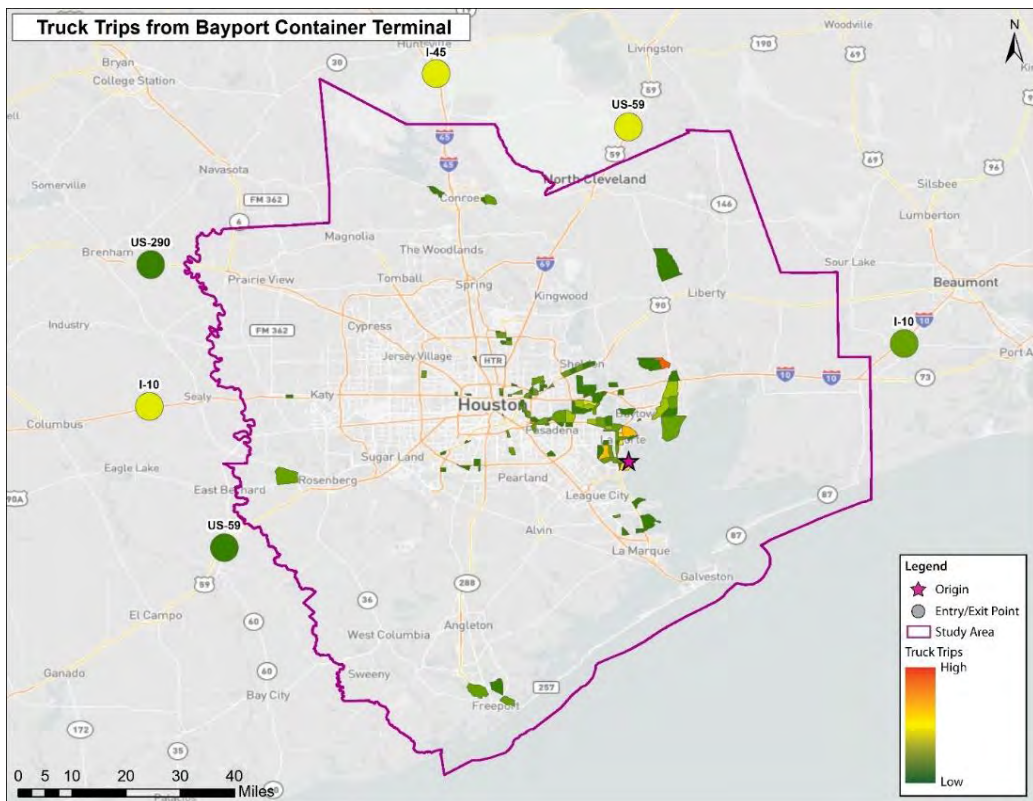
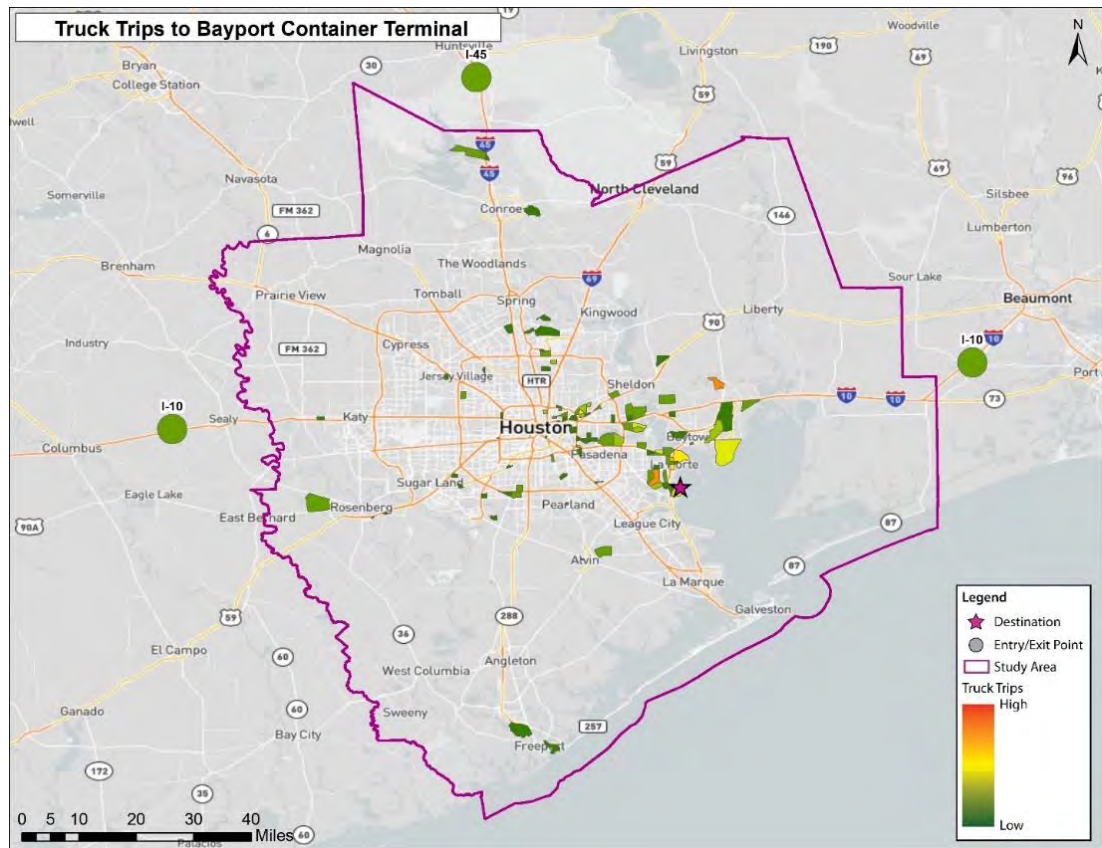


Figure 3-11 ATRI Data – Trips to Bayport Terminal



3.6 Stakeholder and Public Input

Stakeholder input was considered for understanding the freight needs of the project area. Based on the meeting held in early May, the following is a summary of freight-related issues –

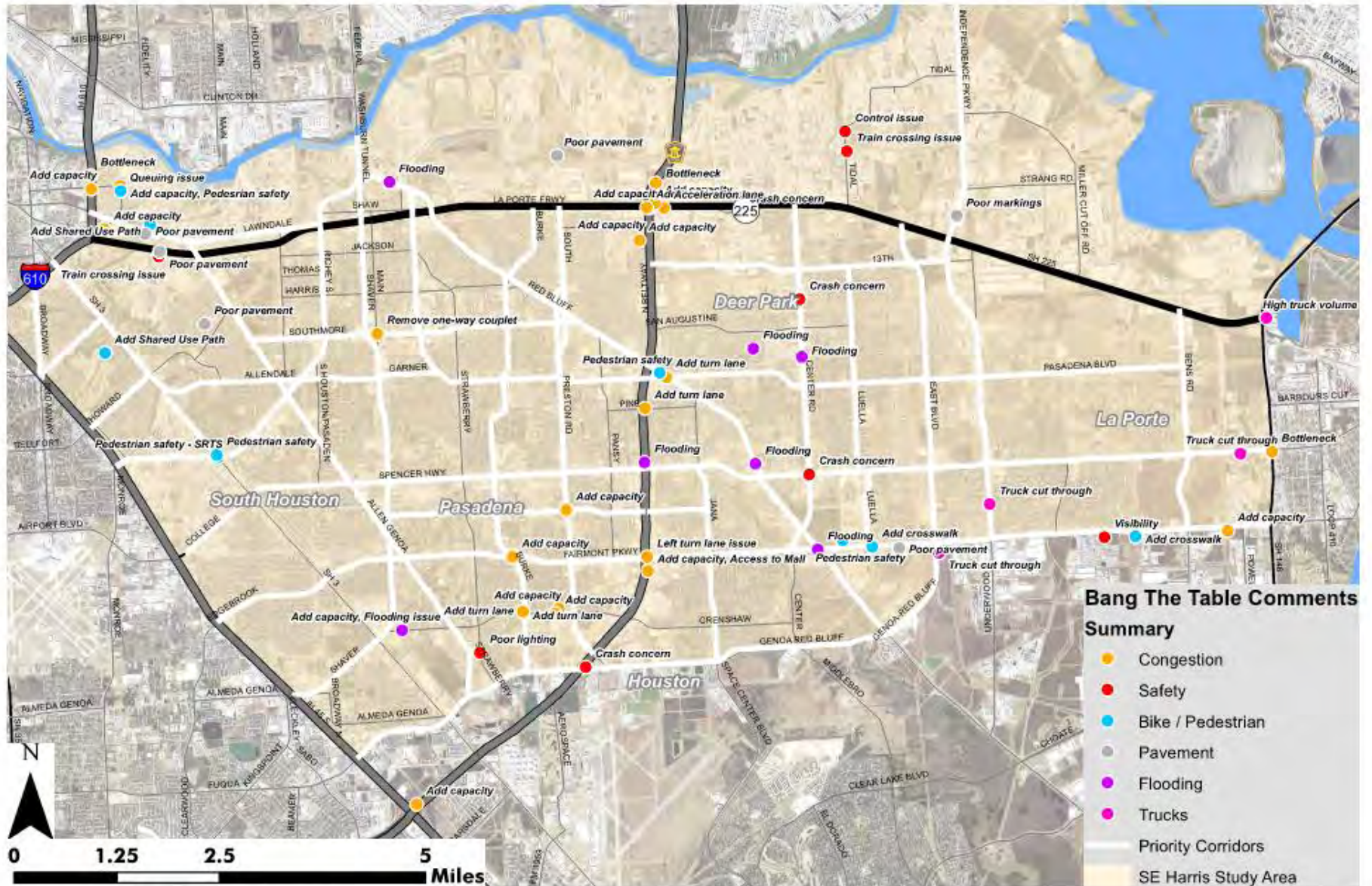
1. Managing traffic while roadways are under construction – SH 146 is under construction, and Fairmont Parkway is at the schematic phase.
2. Underwood Road is being used as a cut-through route.
3. Improve freight operations – Prepare for and manage increased truck traffic.
4. Separate the freight traffic from other modes of traffic.
5. Improve safety along roadways with high truck volumes and keep trucks on truck routes. Truck rollovers are identified as another challenge.
6. A high volume of trucks/trailers carries chemicals or hazardous materials. Hazardous material routes include SH 225, SH 146, and Fairmont Parkway east of 16th Street.
7. Improve mobility along SH 225 (required for serving north Pasadena) and improve BW 8/ SH 225 interchange for increasing truck traffic.

Additionally, the public had the option to give their concerns at specific locations of the project area. Figure 3-12 shows the locations in the study area and their concerns.



Based on the public comments, the truck cut-throughs are identified on Underwood Road, Genoa-Red Bluff Road, and Spencer Highway. Additionally, the interchange between SH 225 and SH 146 is identified as having very high truck volumes.

Figure 3-12 Bang the Table – Summary of Comments



Southeast Harris County Subregional Study Area

4 Conclusions

Based on a review of the information provided in the previous sections, the following east-west and north-south corridors within the study area expect high truck activity and as a result congestion and safety issues:

East-West corridors:

- Lawndale Street
- E 13th Street
- Spencer Highway
- Fairmont Parkway

North-South corridors:

- Richey Street
- Red Bluff Road
- Independence Parkway/Battleground Road/Underwood Road
- Sens Road

These corridors are primarily consisted of commercial and industrial land uses including minor industries, warehouses, logistics and distribution centers. While Streetlight data helped establish that Independence Parkway/Battleground Road/Underwood Road is used as a pass through route by trucks traveling north-south between Bayport Industrial District and SH 225, it is suspected that Richey Street is used as a pass through route between IH 45 and SH 225 to avoid the congested IH 610 interchanges. However, this assumption is not verified using streetlight data in this study.

The remaining corridors listed above are primarily destinations with businesses attracting some of the freight traffic from Bayport and Barbours Cut terminals. With the expected increase in Port Houston's tonnage and a rise of resin packaging facilities within and around the study area, the freight activity is expected to significantly rise along the study area corridors listed above.

These corridors shall be widened and upgraded to accommodate the current and expected growth in truck traffic. The improvements to these corridors will improve 80% of the intersections with crashes involving commercial vehicles (see Sec 3.3).