

**FINAL
LAND USE, TRANSPORTATION, & RESILIENCE SCENARIO
PLANNING STUDY FOR EAST TANGIPAHOA, LOUISIANA**

**State Project No: H.013576
RPC Task: ETangi**

Prepared for

**New Orleans Regional Planning Commission
10 Veterans Memorial Boulevard
New Orleans, LA 70124-1162**

By



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ACRONYMS AND ABBREVIATIONS

| | |
|-----------|---|
| ACS | American Community Survey |
| ADT | Average Daily Traffic |
| DOTD | Louisiana Department of Transportation and Development |
| ELOS Team | ELOS Environmental, LLC, Gresham Smith, Meyer Engineers, Ltd, and Quality Counts, LLC |
| GIS | Geographic Information System |
| I-12 | Interstate 12 |
| LA 22 | Louisiana State Highway |
| LED | Louisiana Economic Development |
| LDOE | Louisiana Department of Education |
| LOS | Level of Service |
| PMC | Project Management Committee |
| RPC | New Orleans Regional Planning Commission |
| sf/ac | square feet per acre |
| TAZ | Traffic Analysis Zone |
| TMC | Turning Movement Count |
| TPG | Tangipahoa Parish Government |
| US 190 | U.S. Highway 190 |
| USCB | U.S. Census Bureau |
| USEIA | U.S. Energy Information Administration |

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1.0 INTRODUCTION

On August 9, 2016, the New Orleans Regional Planning Commission (RPC) amended and expanded the Metropolitan Planning Area for the South Tangipahoa Urbanized area to include the portion of Tangipahoa Parish south of Louisiana State Highway 40 (LA 40) and east of the Tangipahoa River in recognition of significant land use development occurring in that area of the parish. This land use, transportation, and resilience plan was prepared on behalf of the RPC for a Study Area in southeastern Tangipahoa Parish, Louisiana. The Study Area is focused on the portion of Tangipahoa Parish located east of the Tangipahoa River, west of the Tangipahoa-St. Tammany Parish Line, south of U.S. Highway 190 (US 190), and north of LA 22 (Figure 1). This area is projected to develop quickly over the next 20 to 30 years due to its desirable location.

The RPC contracted ELOS Environmental LLC, Gresham Smith, Meyer Engineers, Ltd, and Quality Counts, LLC (ELOS Team) to perform a study to identify land use scenarios that forecast future residential, commercial, and industrial development within the Study Area. The transportation network in the project area was studied to determine the need for capacity and connectivity projects. With the Tangipahoa River as the western boundary of the Study Area and the Parish's largest watershed, the study also considered flood resilience in the future land use scenarios.

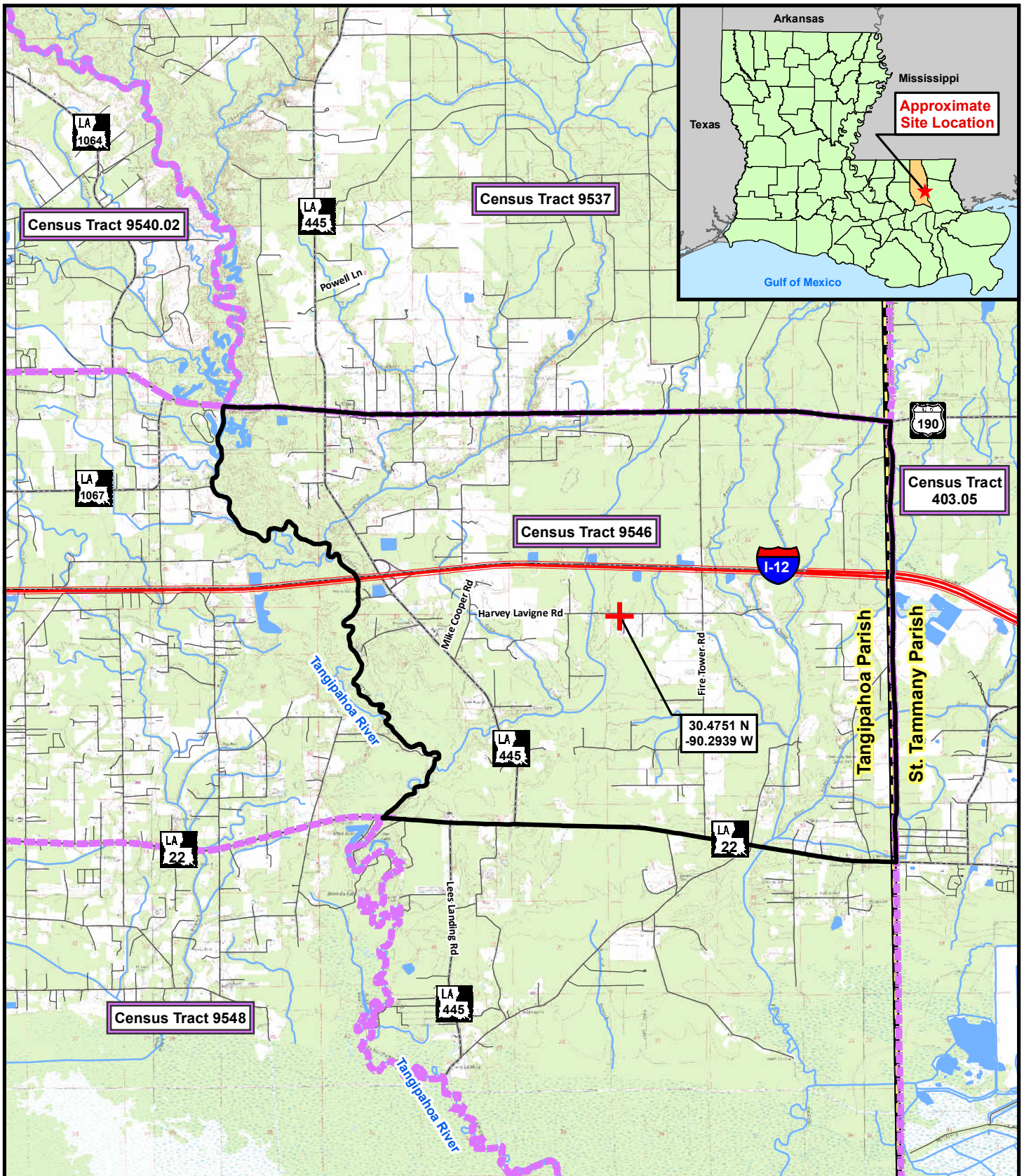
1.1 Project Management Committee (PMC)

The Project Management Committee (PMC) was formed to serve as a multidisciplinary team to provide input and guidance in the future use of the Study Area. The ELOS Team built the PMC with members from the Tangipahoa Parish Government, Tangipahoa Drainage District, Louisiana Department of Transportation and Development (DOTD) District 62 (Hammond), and the RPC. The PMC gathered throughout the study effort to review progress and provide feedback. Four PMC meetings were held (November 31, 2018, December 4, 2019, June 23, 2020, and September 11, 2020) and minutes are provided in Appendix A.

2.0 DEMOGRAPHIC AND ECONOMIC PROFILE

This demographic and economic profile summarizes existing demographic and economic conditions within the Study Area using available U.S. Department of Commerce census and economic data; identifies existing land use, any recent changes in land use, and any new or proposed residential and commercial developments within or adjacent to the study area; identifies existing and proposed "megsites" as identified by Louisiana Economic Development (LED); and identifies potential changes in population and economic growth by census tract or other appropriate analysis unit, i.e., traffic analysis zones or neighborhoods.

This section provides a context and baseline to assess the demographics of the current residents and the expected growth of the Study Area. Demographic data focuses on population, age, race,



0 5,000 10,000 Feet

Figure 1: TopoVicinity Map

Land Use, Transportation, & Resilience Scenario Planning Study for E. Tangipahoa

- Legend:**
- Study Area
 - Census Tract
 - Parish Boundary
 - Interstate
 - Highway
 - Roadway
 - Stream/River
 - Waterbody

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and family household classifications. In order to assess economic conditions within the Study Area, employment, median income, and household poverty data for the existing population are used as benchmarks. Future developments are identified in both the residential and commercial markets as measures for potential population and employment increases.

2.1 Demographics in the Study Area

2.1.1 Population

Demographics data reported here are based on five U.S. Census Bureau (USCB) Tracts, which cover the Study Area with overlap into adjacent residential areas in St. Tammany and Tangipahoa Parishes (see Figure 1). The boundaries of Census Tract 9546.00 closely mimic the boundaries of the Study Area. Census data is tabulated and reported at different geographic scales from the finest level of Census Block, to the larger aggregated Block Group, and up to the relatively coarser Census Tract (USCB 1994). Data from Census Tract 403.05 reflect residents in St. Tammany Parish, and the other four Tracts are wholly within Tangipahoa Parish. A description of the limits of each Census Tract is provided below.

- Tract 403.05, St. Tammany Parish: Tract is bound by the Tchefuncte River on the north, US 190 and LA 1077 on the east, Lake Pontchartrain on the south, and the Tangipahoa-St. Tammany Parish Line on the west.
- Tract 9537.00, Tangipahoa Parish: Tract is bound by LA 16 on the north, LA 445, LA 40, and Tangipahoa-St. Tammany Parish Line on the east, US 190 on the south, and the Tangipahoa River on the west.
- Tract 9540.02, Tangipahoa Parish: Tract is bound by LA 442 on the north, the Tangipahoa River on the east, US 190 on the south and LA 1065 (Cherry Street), LA 1064 (Natalbany Road), and Whiskey Lane on the west.
- Tract 9546.00, Tangipahoa Parish: Tract is bound by US 190 on the north, the Tangipahoa-St. Tammany Parish Line on the east, the Tangipahoa River and LA 22 on the south, and N. Hoover Road and S. Airport Road on the west.
- Tract 9548.00, Tangipahoa Parish: Tract is bound by LA 22 on the north, the Tangipahoa River on the east, Lake Pontchartrain on the south, and Interstate 55/US 51 on the west.

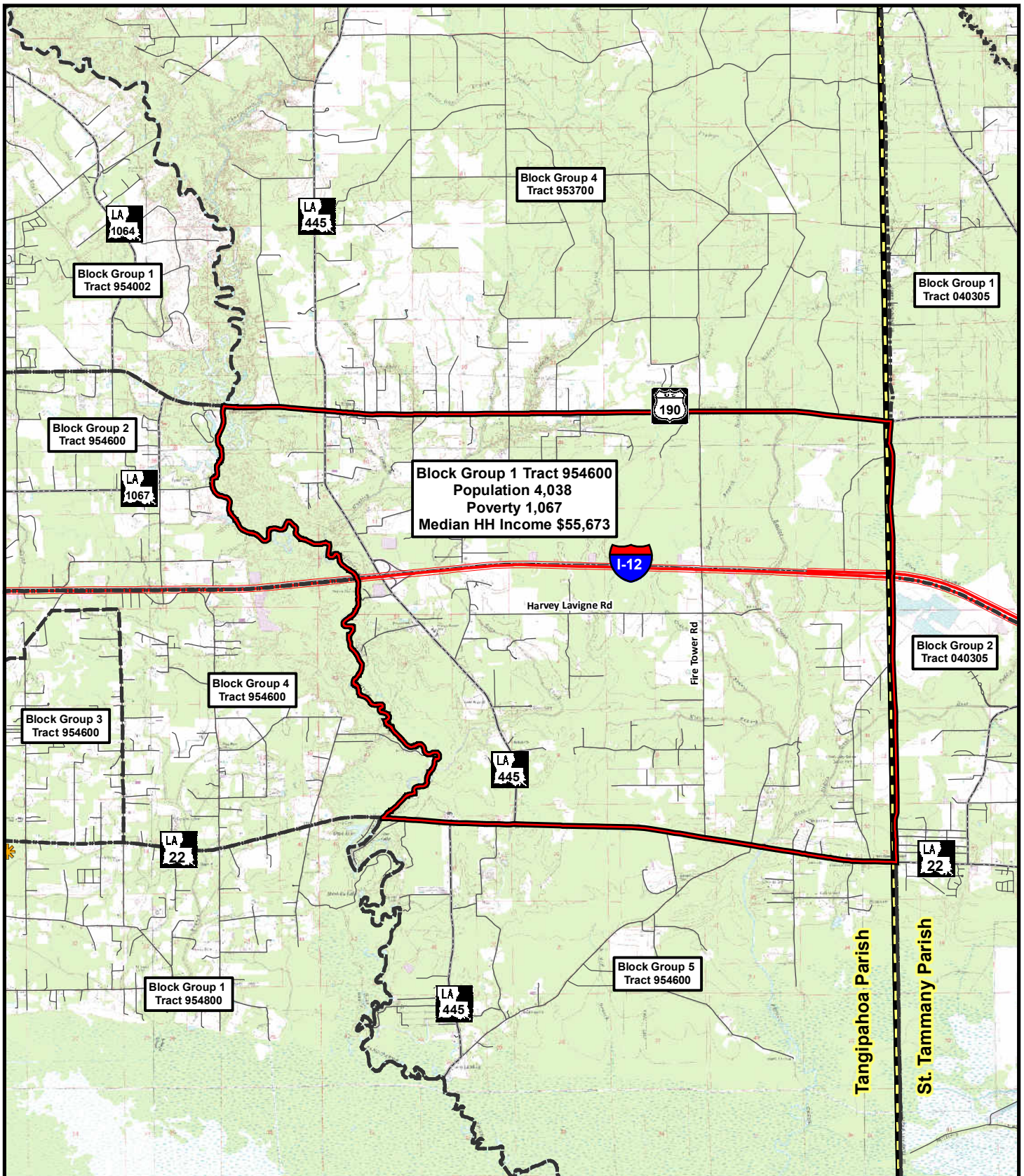
The USCB's American Community Survey (ACS) provides estimates of economic and social conditions at the Census Tract scale based on five-year estimates (2011 through 2016). The ACS data represent questions that were historically asked in the "long-form" decennial Census, but the questions were dropped from the decennial Census in favor of a 20 percent sample per year-based ACS. The ACS provides reasonable quality data at the Census Tract scale using five years of consecutive samples.


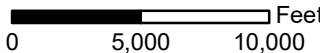

Based on the 2016 USCB ACS, there are 36,995 people who live within the Study Area (Table 1 and Figure 2) over five USCB Tracts. Census Tract 9546.00, which closely mimics the Study

Table 1. Comparison of 2016 and 2010 U.S. Census Bureau Data – Total Population and Households for Study Area by Tract and Block Group

| Tract No. | Block Group | 2010 Total Population | 2016 Total Population | % Change in Total Population | 2010 Total Households | 2016 Total Households | 2010 Total Males | 2016 Total Males | 2010 Total Females | 2016 Total Females |
|--------------------------|-------------|-----------------------|-----------------------|------------------------------|-----------------------|-----------------------|------------------|------------------|--------------------|--------------------|
| 403.05 | 1 | 1,845 | 2,181 | +18.2 | 648 | 646 | 948 | 1,155 | 897 | 1,026 |
| | 2 | 5,107 | 6,829 | +33.7 | 1,754 | 2,204 | 2,495 | 3,507 | 2,612 | 3,322 |
| | 3 | 3,518 | 3,703 | +5.3 | 1,287 | 1,319 | 1,715 | 1,766 | 1,803 | 1,937 |
| | Subtotal | 10,470 | 12,713 | +21.4 | 3,689 | 4,169 | 5,158 | 6,428 | 5,312 | 6,285 |
| 9537.00 | 4 | 3,796 | 3,264 | -16.3 | 1,376 | 1,157 | 1,895 | 1,633 | 1,901 | 1,631 |
| 9540.02 | 1 | 2,737 | 2,981 | +8.9 | 1,116 | 1,106 | 1,356 | 1,274 | 1,381 | 1,707 |
| 9546.00 | 1 | 3,556 | 4,038 | +13.6 | 1,322 | 1,626 | 1,765 | 1,920 | 1,791 | 2,118 |
| | 2 | 1,597 | 1,597 | 0 | 633 | 566 | 790 | 844 | 807 | 753 |
| | 3 | 2,073 | 2,227 | +7.4 | 734 | 724 | 1,007 | 1,098 | 1,066 | 1,129 |
| | 4 | 1,728 | 2,981 | +72.5 | 649 | 1,072 | 846 | 1,689 | 882 | 1,292 |
| | 5 | 1,257 | 2,109 | +67.8 | 488 | 798 | 611 | 1,061 | 646 | 1,048 |
| | Subtotal | 10,211 | 12,952 | +26.8 | 3,826 | 4,786 | 5,019 | 6,612 | 5,192 | 6,340 |
| 9548.00 | 1 | 2,336 | 1,775 | -31.6 | 896 | 793 | 1,125 | 884 | 1,211 | 891 |
| | 2 | 3,000 | 3,310 | +10.3 | 1,174 | 1,193 | 1,411 | 1,673 | 1,589 | 1,637 |
| | Subtotal | 5,336 | 5,085 | -4.9 | 2,070 | 1,986 | 2,536 | 2,557 | 2,800 | 2,528 |
| Study Area Totals | | 32,550 | 36,995 | +13.7 | 12,077 | 13,204 | 15,964 | 18,504 | 16,586 | 18,491 |

Sources: USCB 2010a, 2010b, 2016b



| | | |
|--|---|---|
|  <p>http://elosenv.com/</p> |   | <p>Legend:</p> <ul style="list-style-type: none"> Study Area ~16,840 Acres Interstate 2016 Census Block Group Highway Roadway |
| <p>Figure 2: Population, Income and Poverty by Census Block Group in the Study Area</p> | | |
| <p>Land Use, Transportation, & Resilience Scenario Planning Study for E. Tangipahoa</p> | | <p>This figure was prepared utilizing public and proprietary data. It should not be used to establish any legal boundaries or specific locations. ELOS Environmental, L.L.C., is not responsible for any usage of this figure contrary to its original, intended purpose.</p> |

Area boundaries, contains the largest percentage of the population (12,952) and two (Block Groups 4 and 5) of this Tract’s five Block Groups have the largest growth in population between 2010 and 2016 (+72.5% and +67.8%, respectively). Block Group 4 is generally located north of LA 22, east of Brown Road, south of Interstate 12 (I-12), and west of the Tangipahoa River. Block group 5 is generally north of Lake Pontchartrain, east of the Tangipahoa River, south of LA 22, and west of the Tangipahoa-St. Tammany Parish Line. A majority of the population in the Study Area is white (89%), with 8% African-American, and approximately 2% who identify as either Native American, Pacific Islander, or other racial group (USCB 2016b). The population is divided almost equally between females (18,491) and males (18,504) (USCB 2016b).

Age distribution within the study area is provided in Table 2. The 40- to 64-year-old age class is the largest population in 11 of the 12 Census Block groups in the Study Area (USCB 2016b). Approximately 60% of the Study Area’s population is of “working age” or within age classes from 18 to 64 years of age. There are approximately 3,026 pre-school aged children and 7,338 school aged children in the Study Area (USCB 2016b). The number of children affects, and is affected by, the school system.

Table 2. Summary of Age Distribution within Study Area

| Total Population | 5 years and Under | 5 to 17 Years Old | 18 to 24 Years Old | 25 to 39 Years Old | 40 to 64 Years Old | Over 65 Years Old |
|------------------|-------------------|-------------------|--------------------|--------------------|--------------------|-------------------|
| 36,995 | 3,026 | 7,338 | 2,238 | 7,739 | 12,263 | 4,391 |
| % of Total | 8.2% | 19.8% | 6.0% | 20.9% | 33.2% | 11.9% |

Source: USCB 2016b

2.1.2 Schools

Proximity to high-performing schools can be one of the most attractive qualities to prospective home buyers. There is one school within the Study Area, Champ Cooper Elementary, that serves children from Pre-K through 8th grade. Champ Cooper Elementary is part of the Tangipahoa Parish School System and is located at 42530 LA 445.

Since 1999, the State of Louisiana’s Department of Education (LDOE) has issued School Performance Scores for public schools. The School Performance Scores are based on different measures depending on the range of grade levels at the school. For elementary and middle schools, School Performance Scores area based on mastery of key skills in English language arts, math, science, social studies, and the successful transition of students into 9th grade (LDOE 2018a). Scores are reported as a number out of 100 possible points, and then the score is provided a “Letter Grade” in the typical educational A, B, C, D, or F system.

As shown below in Table 3, the School Performance Score for Champ Cooper Elementary is 77.2 out of 100, which falls within the B grade level (LDOE 2018b). Champ Cooper students can attend Ponchatoula High School which is approximately 8 miles away. Champ Cooper Elementary and Ponchatoula High schools are ranked higher by performance score than the Tangipahoa Parish average (65.3 or C) and the statewide average (76.1 or B) (LDOE 2018c). However, Champ Cooper Elementary and Ponchatoula High schools scored lower than nearby St. Tammany Parish average of 85.2 or B.

Table 3. Comparison of Louisiana Department of Education 2018 Performance Scores for Systems within Study Area

| School System | 2018 School or District Performance Score (out of 100) | 2018 Letter Grade |
|-----------------------------|--|-------------------|
| Louisiana Statewide Average | 76.1 | B |
| Tangipahoa Parish Average | 65.3 | C |
| Champ Cooper Elementary | 77.2 | B |
| Ponchatoula High School | 80.3 | B |
| St. Tammany Parish Average | 85.2 | B |

Sources: LDOE 2018b and LDOE 2018c

Post-secondary education options near the Study Area include Northshore Technical Community College Hammond Area Campus and Southeastern Louisiana University.

2.1.3 Households

Households are defined by the USCB as one or more people sharing living quarters regardless of familial relation. There are 13,204 households within the Study Area (Table 4). Median household income in the Study Area is generally above the parish medians; however, the statewide median household income is higher than the parish-wide median for Tangipahoa Parish.

Table 4. 2016 USCB Data – Number of Households, Median Household Income, and Percentage of Households in Poverty

| Tract No. | Block Group | 2016 Total Number of Households | Median Household Income | Percent of Households in Poverty |
|-----------|-------------------------|---------------------------------|-------------------------|----------------------------------|
| 40305 | 1 | 646 | \$ 116,056 | 0% |
| | 2 | 2,204 | \$ 98,027 | 5% |
| | 3 | 1,319 | \$ 62,792 | 9% |
| | Parish-wide St. Tammany | 91,353 | \$ 66,539 | 11.1% |

Table 4, Continued.

| Tract No. | Block Group | 2016 Total Number of Households | Median Household Income | Percent of Households in Poverty |
|-----------------|------------------------|---------------------------------|-------------------------|----------------------------------|
| 9537.00 | 4 | 1,157 | \$ 36,607 | 9% |
| 9540.02 | 1 | 1,106 | \$ 45,093 | 12% |
| 9546.00 | 1 | 1,626 | \$ 55,673 | 22% |
| | 2 | 566 | Not Reported | 17% |
| | 3 | 724 | \$ 54,500 | 8% |
| | 4 | 1,072 | \$ 64,796 | 20% |
| | 5 | 798 | \$ 96,859 | 3% |
| 9548.00 | 1 | 793 | \$ 65,020 | 20% |
| | 2 | 1,193 | \$ 43,240 | 21% |
| | Parish-wide Tangipahoa | 47,598 | \$ 45,901 | 20.9% |
| Study Area-wide | | 11,578 | \$ 67,151 | 13.3% |
| Statewide | | 1,737,645 | \$ 46,710 | 19.7% |

Source: USCB 2016a and USCB 2016b

The percentage of households in poverty in the Study Area range by Census Block. In the portion of the Study Area adjacent to St. Tammany, the percentage of households in poverty is exceptionally low, with a range from 0% to 9% (see Table 4). The poverty percentage data for the Tangipahoa Parish Census Block Groups vary greatly from 3% to 22%. Areas with 20% or higher of households in poverty are generally located in Census Tract 9546 (Block Groups 1 and 4) and Census Tract 9548 (Block Groups 1 and 2). Tract 9546, Block Group 1 is located east of Hammond, south of US 190, west of the Tangipahoa-St. Tammany Parish Line, north of LA 22, and east of the Tangipahoa River. Tract 9546, Block Group 4 is located generally northeast of Ponchatoula and is bound on the north by I-12, on the east by the Tangipahoa River, on the south by LA 22, and on the west by Brown Road. Census Tract 9548, Block Groups 1 and 2 are located in Ponchatoula and southeast of Ponchatoula. Block Group 1 is bound by LA 22 on the north, the Tangipahoa River on the east, Lake Pontchartrain on the south, and Interstate 55 on the west. Block Group 2 is located east of the incorporated limits of Ponchatoula south of LA 22, west of South Hoover Road, north of Weinberger Road, and east of US 51. These areas are generally rural with large areas of undeveloped forestland and few existing subdivision-style housing developments.

2.1.4 Jobs and Employment

A comparison of the employment data from the ACS from 2014 and 2017 for the Census Tracts within the Study Area is shown in Table 5. This table identifies the number of people who are older than 16 years of age that are employed in the civilian workforce. The data are further

Table 5. Employment by Industry in Census Tracts 403.05, 9537, 9546, and 9548

| | 2017 Census Tract 403.05 | 2014 Census Tract 403.05 | 2017 Census Tract 9537 | 2014 Census Tract 9537 | 2017 Census Tract 9540.02 | 2014 Census Tract 9540.02 | 2017 Census Tract 9546 | 2014 Census Tract 9546 | 2017 Census Tract 9548 | 2014 Census Tract 9548 | 2017 Totals | 2014 Totals |
|---|-----------------------------------|-----------------------------------|---------------------------------|---------------------------------|------------------------------------|------------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|-------------------------|----------------|
| Agriculture, Forestry, Fishing, Hunting, & Mining | 114 (-34%)* | 172 | 82 (-31%) | 119 | 13 (-48%) | 25 | 96 (-36%) | 151 | 62 (+5%) | 59 | 367 (-30%) | 526 |
| Construction | 654 (+33%) | 490 | 713 (-3%) | 736 | 197 (-14%) | 230 | 741 (+101%) | 369 | 247 (+123%) | 111 | 2552 (+32%) | 1936 |
| Manufacturing | 373 (-33%) | 558 | 276 (-40%) | 460 | 252 (-1%) | 254 | 536 (-30%) | 765 | 149 (-27%) | 205 | 1586 (-29%) | 2242 |
| Wholesale Trade | 387 (+69%) | 229 | 247 (+12%) | 220 | 0 (-100%) | 13 | 262 (-15%) | 309 | 18 (-55%) | 40 | 914 (+13%) | 811 |
| Retail Trade | 488 (-22%) | 627 | 587 (+8%) | 545 | 338 (-31%) | 491 | 1235 (+43%) | 866 | 374 (+61%) | 232 | 3022 (+9%) | 2761 |
| Transportation, Warehousing, & Utilities | 177 (+10%) | 161 | 264 (+12%) | 235 | 63 (+97%) | 32 | 438 (+51%) | 290 | 110 (+144%) | 45 | 1052 (+38%) | 763 |
| Information | 210 (+184%) | 74 | 20 (-77%) | 88 | 63 (+174%) | 23 | 81 (+47%) | 55 | 0 (NC) | 0 | 374 (+56%) | 240 |
| Finance, Insurance, & Real Estate | 431 (+25%) | 344 | 172 (-17%) | 2016 | 119 (+72%) | 69 | 436 (+134%) | 186 | 82 (-49%) | 161 | 1240 (+28%) | 966 |
| Professional, Scientific, Management, & Admin | 854 (+13%) | 753 | 499 (+69%) | 295 | 170 (+28%) | 133 | 646 (+46%) | 443 | 182 (-9%) | 200 | 2351 (+29%) | 1824 |
| Education, Health Care, & Social Assistance | 1799 (+33%) | 1353 | 741 (-11%) | 835 | 1059 (+9%) | 976 | 1260 (+35%) | 935 | 866 (+52%) | 568 | 5725 (+23%) | 4667 |
| Arts, Entertainment, Recreation, Food Service | 410 (+94%) | 211 | 253 (+2%) | 248 | 156 (+1%) | 155 | 436 (+91%) | 228 | 165 (+15%) | 144 | 1420 (+44%) | 986 |
| Other Services, except Public Admin | 364 (+208%) | 118 | 162 (-12%) | 185 | 132 (+6%) | 125 | 543 (+68%) | 324 | 61 (-52%) | 126 | 1262 (+44%) | 878 |
| Public Administration | 279 (+21%) | 231 | 336 (+2%) | 328 | 130 (-33%) | 195 | 316 (-25%) | 419 | 63 (-49%) | 124 | 1124 (-13%) | 1297 |
| Total Employed Population | 6540 (+23%) | 5321 | 4330 (-4%) | 4500 | 2692 (-1%) | 2721 | 7026 (+32%) | 5340 | 2379 (+18%) | 2015 | 22967 (+15%) | 19897 |

Source: USCB 2017

*Percent Change in Employment between 2014 and 2017.

classified by Census Tract and by industry type. The industries providing the highest number of jobs to people within the Study Area are: (1) Education, Health Care, and Social Assistance, which employed 5,725 people in 2017 and 4,667 people in 2014; (2) Retail Trade, which employed 3,022 people in 2017 and 2,761 people in 2014; (3) Construction, which employed 2,552 people in 2017 and 1,936 people in 2014; and (4) Professional, Scientific, Management, and Administrative and Waste Management Services, which employed 2,351 people in 2017 and 1,824 people in 2014.

Also shown in Table 5 is a comparison of the percentage of jobs gained or lost between 2014 and 2017. The percentage of jobs gained is shown in green, and the percentage of jobs lost is shown in red. Industries in the Study Area with the highest rate of growth are: (1) Information (i.e., Publishing, Motion Picture and Sound Recording, Broadcasting, Telecommunications, Data Processing), with an increase in Study Area employment of 56%; (2 tied) Arts, Entertainment, Recreation, Accommodation and Food Services and Other Service, Except Public Administration (i.e., Repair and maintenance, Personal and Laundry Services, Religious, Grantmaking, Private Households), which showed an increase in employment of 44%; and (3) Transportation, Warehousing and Utilities, which showed an increase of 38% in employment of people within the Study Area.

In Census Tract 9546, which closely mimics the Study Area's geographic limits, there was an overall gain of 1,686 jobs (+32%) between 2014 and 2017. This gain in the number of jobs was the highest percent gain over all Census Tracts included in this study. The highest percentage of jobs gained were in the Finance, Insurance and Real Estate sector, with an increase of 134%. The industry with the most jobs lost within this Census Tract was Agriculture, Forestry, Fishing, Hunting, and Mining. The reduction in jobs in this sector may be the result of many conditions. However, with a rapid increase in development in a rural area, it may be reasonable to assume that the number of available jobs in this sector would decrease or a portion of the population employed by this sector may have moved into a more rural location.

The USCB's OnTheMap web portal provides data from 2010 to 2015 for workers living in the Study Area (USCB undated). The estimated number of jobs in the Study Area has ranged from 1,600 to 2,050 from 2010 to 2015. With an estimated 8,400 people of working age (15 to 64 years of age) within the Study Area in 2010 (USCB 2010a), employment options for the Study Area's population that are close to home are limited. The USCB estimated that employment for people living within, but working outside the Study Area, has ranged between 2,350 to 3,000 jobs from 2010 to 2015 (USCB undated). On average through the survey data timeframe, only 65 residents both live and work in the Study Area. The most recent data provided from the OnTheMap web portal are from 2015; therefore, the current number of jobs and workers living in the Study Area are expected to be somewhat higher than reported in 2015.

2.1.5 Wages Rates in the Study Area

The growth of employment in the healthcare and social assistance, transportation and warehousing, manufacturing, and retail sectors led to a 24% increase in the overall number of

jobs in the Study Area between 2010 and 2015 (USCB undated). Within the same time frame, the percentage of workers being paid less than \$15,000/year has decreased by 4%, and the percentage of workers being paid \$15,000 to \$40,000 per year also decreased by approximately 1.5% (USCB undated). However, the percentage of workers in the Study Area who earn over \$40,000 per year has increased from 38.5% in 2010 to nearly 44% in 2015 (USCB undated). Job losses were particularly high in educational services; public administration; and professional, scientific, and technical services sectors (USCB undated).

2.1.6 Study Area Demographics Summary

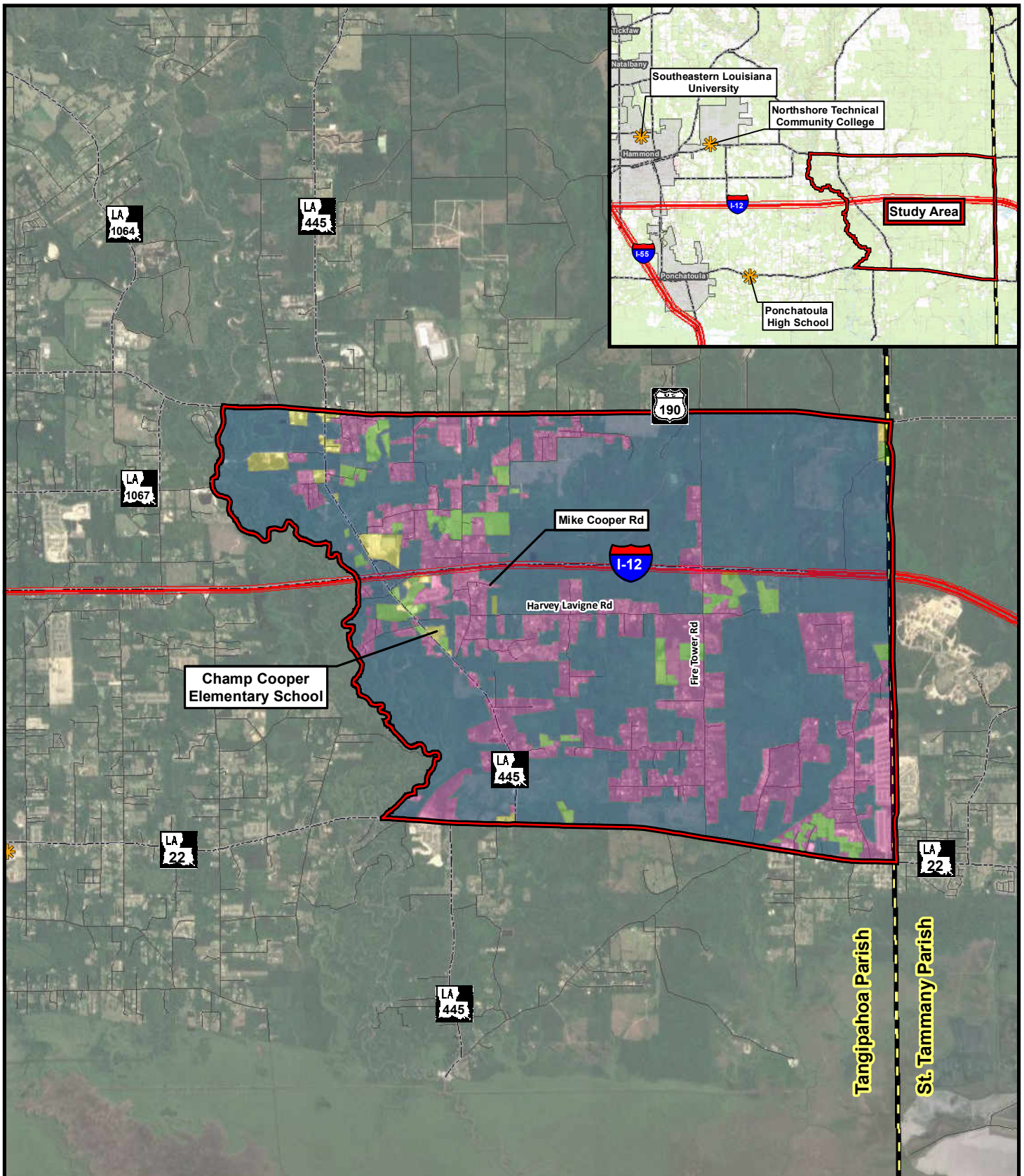
The socio-economic profile presented here that there are exceptional opportunities for growth in the Study Area; however, the existing transportation infrastructure may be a limiting factor, if development follows its current trend. The total population grew almost 14% between 2010 and 2017. Comparisons of aerial photography and permitted residential developments reinforce the evidence of this population growth trend. Many of the residents of the Study Area do not work within the Study Area. The rural nature of the Study Area impacts the number of jobs within it. With the increase of housing and proximity to a good school, the Study Area may become more attractive to commercial and industrial developers.

The location of residential and commercial developments follows the main transportation corridors throughout the Study Area. As shown on Figure 2, very few main local roadways connect through to two or more larger collector-sized roadways. For example, north of I-12, no local roads connect east-west from LA 445 to Firetower Road; and south of I-12, only the combination of Mike Cooper Road and Harvey Lavigne Road allow east-west connectivity from LA 445 to Firetower Road. Further traffic studies would be required to determine the demand for additional east-west routes.

2.2 Land Use in the Study Area

2.2.1 Existing Land Use

The Study Area was delineated into general land use categories: commercial, residential, undeveloped, and undeveloped and cleared (Figure 3). The commercial category includes all business and industries that are operating out of a facility that is not a residence. Residential areas generally include planned residential developments and rural, low-density residential homes on large lots. The undeveloped land use includes property used in timber production, unmanaged forestland, or natural areas. The undeveloped and cleared land use includes areas cleared for future development, agricultural crops, managed pasture, or unmanaged open green space. Figure 2 provides a view of the expansive undeveloped areas within the Study Area. Of the 16,840 acres within the Study Area, 11,592 acres (68.8%) are currently undeveloped, 652



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Figure 3: Existing Land Use in Study Area

Land Use, Transportation, & Resilience Scenario Planning Study for E. Tangipahoa

Legend:

- Study Area ~16,840 Acres
- Undeveloped Cleared ~652 Acres
- Commercial ~261 Acres
- Undeveloped ~11,592 Acres
- Residential ~4,335 Acres

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acres (3.9%) are undeveloped and cleared, 4,335 acres (25.7%) are developed for residential use, and 261 acres (1.5%) are used for commercial or industrial uses (Table 6).

Table 6. Land Use by Category within the Study Area

| Land Use Category | Acres | Percent Coverage in Study Area |
|-------------------------|---------------|--------------------------------|
| Commercial | 261 | 1.5% |
| Residential | 4,335 | 25.7% |
| Undeveloped (Cleared) | 652 | 3.9% |
| Undeveloped | 11,592 | 68.8% |
| Total Study Area | 16,840 | 100% |

Existing residential and commercial uses are generally located along the frontage of US 190, LA 22, LA 445, and other local roadways, such as Mike Cooper Road, Firetower Road, Richoux Road, Crown Drive, Harvey Lavigne Road, and West Sam Arnold Road.

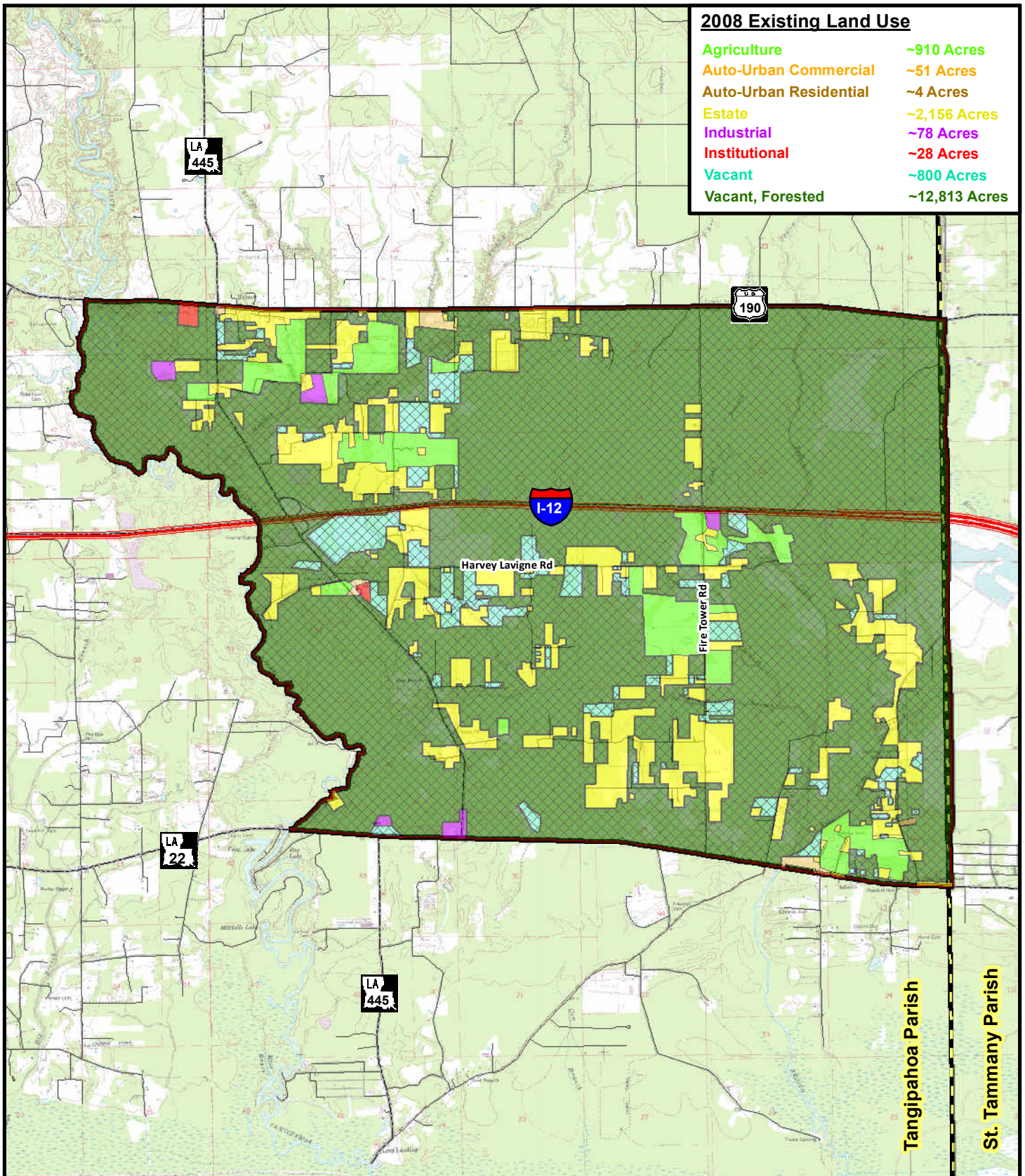
There are no zoning laws in Tangipahoa Parish. However, in 2008, Tangipahoa Parish Government (TPG) published the *Comprehensive Plan* to guide land use patterns while maintaining the existing rural character of the parish. The existing land use for the parish was mapped and a sample of that effort is provided as Figure 4.

Land use categories within the Study Area as identified in the 2008 Comprehensive Plan are: Vacant/Forested; Estate, Agriculture, Vacant, Auto-Urban Commercial, Industrial, Institutional (School), and Suburban. The Estate use type includes rural suburban areas with large lot sizes (typically more than three acres in size), rural street sections, rural fence types, and generous building setbacks (TPG 2008). The Auto-Urban Commercial use type are areas within commercial developments specifically designed to be accessed by people in cars.

2.2.1.1 Existing Transportation Network

The transportation network in the Study Area provides benefits and challenges. There are three main east-west corridors, I-12, US 190, and LA 22 (see Figure 3). These highways run through the entire Study Area. North-south corridors are provided by LA 445 and Firetower Road. North-south access and limited bridge crossings over the Tangipahoa River are the main challenges in the Study Area. I-12 is a four-lane divided and limited access facility. US 190, LA 445, and LA 22 are two-lane facilities. LA 445 provides the only access to I-12 in the Study Area. There are no active railroads in the Study Area.

Firetower Road is a local road that provides north-south access through the center of the Study Area. Firetower Road does not currently have an interchange at I-12; however, the roadway uses a 2-lane overpass for continuous north-south traffic flow. Other local roads (*i.e.*, Range Road, Lee’s Landing Road, Harvey Lavigne Road, Larpenter Road) provide access to residential developments within the Study Area.



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Figure 4: Sample of Existing Land Use as Defined in 2008 Comprehensive Plan

Land Use, Transportation, & Resilience Scenario Planning Study for E. Tangipahoa

Legend:

| | | |
|--------------------------|------------------|------------|
| Study Area ~16,840 Acres | Industrial | Interstate |
| Agriculture | Institutional | Highway |
| Auto-Urban Commercial | Vacant | Roadway |
| Auto-Urban Residential | Vacant, Forested | |
| Estate | | |

This figure was prepared utilizing public and proprietary data. It should not be used to establish any legal boundaries or specific locations. ELOS Environmental, L.L.C., is not responsible for any usage of this figure contrary to its original, intended purpose.

2.2.1.2 Existing Utilities

Utilities serving the Study Area were identified and mapped. Electrical service lines, water lines, sewer lines, cable television service, and fiber optic communications cable lines are shown on Figure 3. Electric power transmission and water lines follow many of the major highways and parish roads serving existing residential and commercial developments in the Study Area. Sewer and water lines are limited. Newly developed properties are connected to sewer treatment plants managed by the Parish. There are sewer lines along LA 445 south of I-12 and along LA 22 servicing residential developments south of LA 22 and along the Parish Line. Otherwise, sewer treatment is by individual septic systems, and water is provided by private wells. A CenturyLink fiberoptic line runs along the I-12 right-of-way. Spectrum (Charter Communications) maintains cable television, internet, and telephone service lines in the community of Robert and along US 190, LA 445 (north of I-12), Firetower Road, Harvey Lavigne Road, Larpenter Lane, and Bardwell Road.

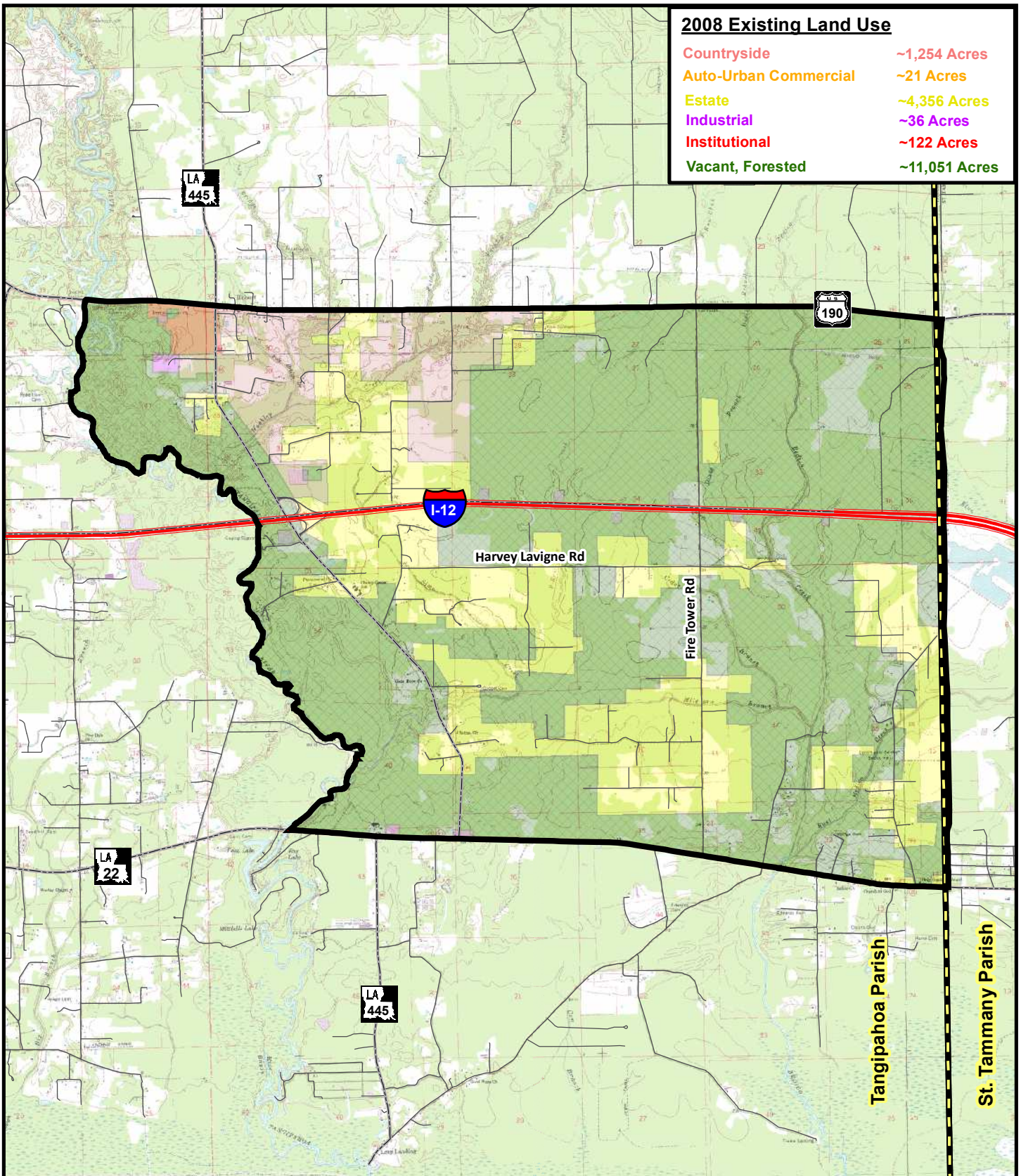
The northeast portion of the Study Area is primarily one continuous forested property. While there are electrical lines along the perimeter of the property, there are no utilities reaching the interior of that part of the Study Area.

2.2.2 Future Land Use

TPG's 2008 *Comprehensive Plan* identified a broad vision for the future growth of Tangipahoa Parish. The vision for the Parish includes a mix of traditional cities, towns, and villages with identifiable edges that are located within a rural setting (TPG 2008). In the Study Area, the 2008 Plan included large areas of Estate, Vacant/Forested, and Countryside land uses (Figure 5). Much of the northwest portion of the Study Area was identified as the Countryside land use type in the 2008 Comprehensive Plan. The Countryside component is meant to protect and reinforce the rural character of the unincorporated areas of the parish (TPG 2008).

Between 2006 and 2019, 34 residential developments with approximately 4,800 housing units within the Study Area have been proposed to the Tangipahoa Parish Planning Commission (Figure 6). The planned residential developments are generally located along major roadways with one main entrance roadway connecting to short, branched interior street systems. This locating and siting plan follows the trend established by large-scale developers. ACS data from 2000 estimated that 3,083 housing units were in Census Tract 9546, and as reported above, ACS estimated 5,578 housing units in 2017. The increase in housing units in the Census Tract accounts for approximately 81% over 17 years.

To project future land use in the Study Area, currently planned developments were overlaid onto the existing land use conditions using ArcGIS software. Planned developments include residential developments (subdivisions) approved through Tangipahoa Parish Government's Planning Office and Planning Commission and large-scale parcels that are either approved or in the approval process of the LED's Development-Ready Certified Sites program.



| 2008 Existing Land Use | |
|------------------------|---------------|
| Countryside | ~1,254 Acres |
| Auto-Urban Commercial | ~21 Acres |
| Estate | ~4,356 Acres |
| Industrial | ~36 Acres |
| Institutional | ~122 Acres |
| Vacant, Forested | ~11,051 Acres |

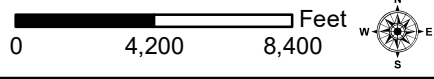


Figure 5: Sample of Future Land Use as Defined in 2008 Comprehensive Plan

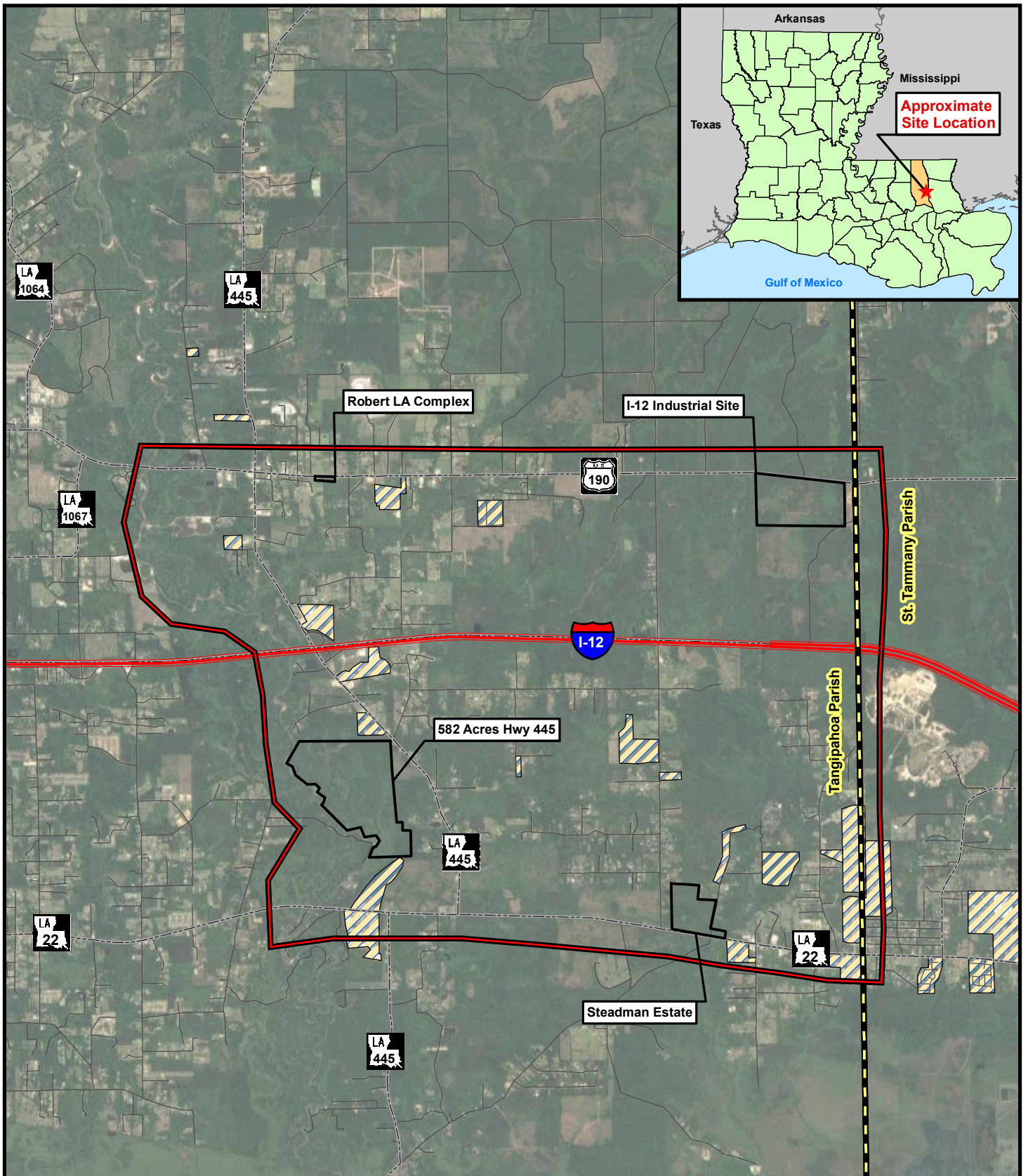
Land Use, Transportation, & Resilience Scenario Planning Study for E. Tangipahoa


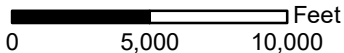








Legend:

- Study Area ~16,840 Acres
- Industrial
- Interstate
- Auto-Urban Commercial
- Institutional
- Highway
- Countryside
- Vacant, Forested
- Roadway
- Estate

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| | | | | |
|--|---|---|--|--|
|  <p>http://elosenv.com/</p> |   | <p>Legend:</p> <ul style="list-style-type: none">  Site Outline  Louisiana Economic Development (LED) Sites  Parish Boundary  Subdivisions | <ul style="list-style-type: none">  Interstate  Highway  Roadway | |
| | <p>Figure 6: Current Planned Developments</p> | | | |
| | <p>Land Use, Transportation, & Resilience Scenario Planning Study for E. Tangipahoa</p> | | <p>This figure was prepared utilizing public and proprietary data. It should not be used to establish any legal boundaries or specific locations. ELOS Environmental, L.L.C., is not responsible for any usage of this figure contrary to its original, intended purpose.</p> | |

LED's Certified Sites program was established to provide a listing of pre-approved sites, ready for commercial or industrial development. The site listing is provided on the LED website for developers to research characteristics of available sites, such as acreage; connectivity to major highways, railroads, or navigable waterways; etc. There are no Certified Sites in the Study Area; however, four sites are currently in the approval process (see Figure 6). The Robert LA Complex is a 7-acre site adjacent to US 190 east of LA 445 (LED undated). The I-12 Industrial Site is approximately 1,200 acres with frontage along US 190 in the northeast corner of the Study Area. The third proposed LED site is a 582-acre tract, with frontage on both the Tangipahoa River and LA 445 and is located south of I-12 (LED undated). The Steadman Estate is the fourth proposed LED site. It is approximately 132 acres with frontage along LA 22, east of LA 445 (LED undated). All four sites are currently undeveloped, forested, and depend on the existing transportation corridors within the Study Area. The future use of these four sites is unknown. LED provides data on sites in the Certified Sites program to prospective commercial or industrial developers.

3.0 DEVELOPMENT OF LAND USE & TRANSPORTATION SCENARIOS

Much of the Study Area is undeveloped and is poised for significant growth. However, the RPC and Tangipahoa Parish Government intend deliberate and planned growth in the area. Goals were established for development in the Study Area: enhance economic development, use existing infrastructure wisely, consider the natural environment for resilience and storm protection, consider cultural and natural resources, provide for a wide range of housing costs and living styles, and enhance and create recreation opportunities.

Working with the PMC, the ELOS Team developed three land use and transportation scenarios for the Study Area. The land use scenarios include:

- 1) High-density development;
- 2) Medium-Density development; and
- 3) Low-Density development.

Exhibit 1 outlines the criteria used for delineating the three development scenarios. These criteria were based on the broad guidelines from the 2008 Tangipahoa Parish Government Comprehensive Plan, Tangipahoa Parish Planning Regulations, and concepts of resilience planning.

Exhibit 1. General Criteria Used to Delineate Three Development Scenarios for the East Tangipahoa Parish Study Area

HIGH-DENSITY

Residential:

- Smallest lot size common
- Larger developments
- Multi-family housing common

Commercial/Industrial:

- Identify connected areas for development
- Mixed use: commercial/high density residential

Institutions:

Plan for additional schools and recreation facilities.

Transportation:

Improve road network:

- more collectors from neighborhood streets
- establish grid of arteries
- complete streets
- inclusion of bike/ped connections from residential to other land uses

MEDIUM-DENSITY

Residential:

- Larger single lots, some estate-style developments
- Some multi-family housing options

Commercial/Industrial:

- Commercial hubs for residential convenience
- Light industry mix

Institutions:

Plan linkages from residential areas to recreation, commercial land uses.

Transportation:

- Establish linkages from existing road network to areas with development
- Include traffic calming features and “complete streets” in design
- Establish network of bike/ped facilities

LOW-DENSITY

Residential:

- Fewest homes per acre
- More Estate-style developments
- Few multi-family housing options

Commercial/Industrial:

- Limit industrial development to adjacent to large rural arterials
- Commercial hubs for residential convenience

Transportation:

- Establish linkages from existing road network to areas with development
- Include traffic calming features and “complete streets” in design
- Establish network of bike/ped facilities

3.1 Scenario Development

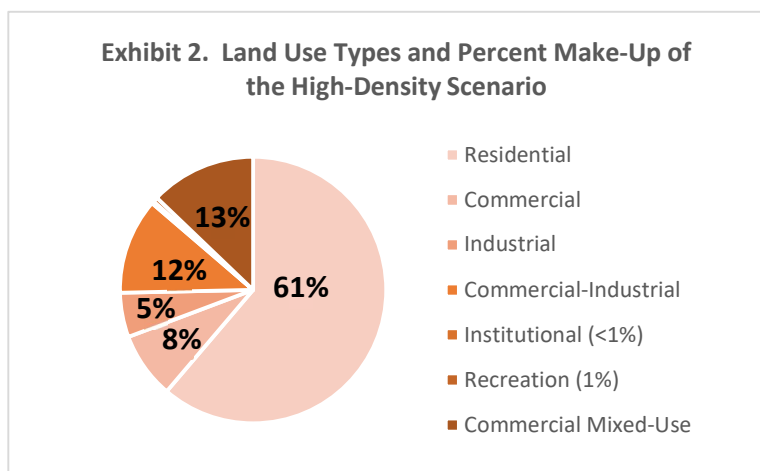
Initially, the three development scenarios were established for the Study Area by reviewing current land uses, identifying existing transportation and utilities networks, identifying the extents of mapped FEMA flood zones, and overlaying existing data in a geographic information system (GIS) mapping application. The criteria outlined in Exhibit 1 guided the delineation process of areas projected to be commercial hubs; industrial zones; mixed-use areas; and high-, medium-, and low-density residential developments.

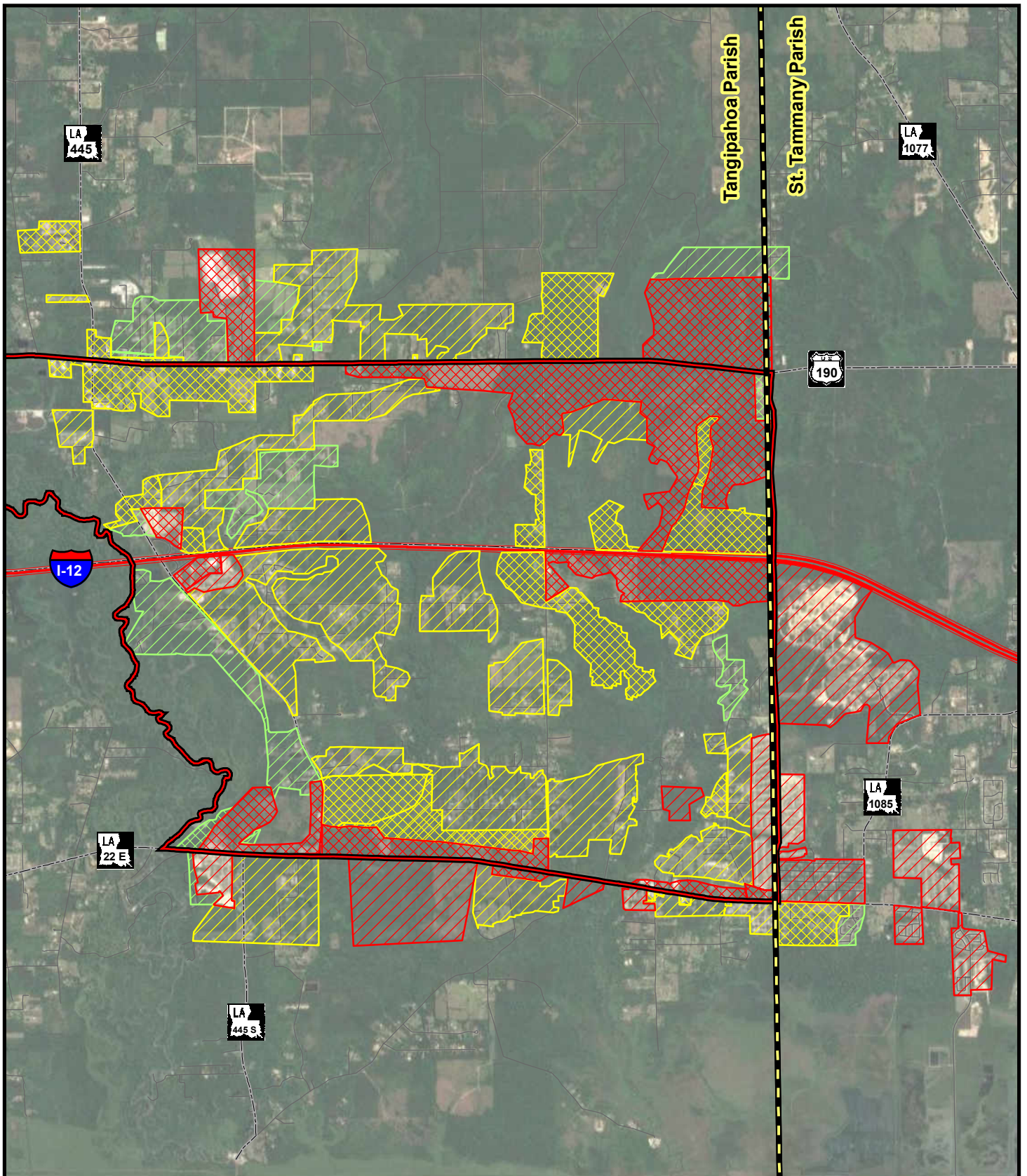
In general, industrial zones were mapped with frontage along U.S. 190 and Firetower Road. Commercial hubs were mapped along existing state and federal highways and adjacent to existing commercial developments. Residential areas with high- or medium-density lots were drawn with frontage along highways or rural collector roads. Residential areas with lower densities were set further from main roadways in efforts to maintain a rural feel in the estate-type or agricultural areas. Each development scenario can include variable residential density subdivisions. Allowing variable density within each subdivision provides for different architectural styles and sizes, different home prices, and varied non-homogenous overall aesthetic in the Study Area.

In an effort to minimize the siting of developments in areas known to flood in extreme weather events, early delineation of land uses excluded development within the 100-year flood zones and minimized encroachment into the 500-year flood zones of the rivers and creeks within the Study Area. Approximately 51 percent of the Study Area is within the 100-year flood zone.

Preliminary scenario maps were presented and reviewed by the PMC. The PMC requested changes to the flood zone limitations. Residential development lines which had originally been mapped to minimize encroachment into the 500-year flood zones were moved to avoid or minimize encroachment on the 100-year flood plain. Figures 7, 8, and 9 represent the revised preliminary development scenarios depicting high-density, medium-density, and low-density development in the Study Area, respectively.

Land use projections for the High-Density Scenario are presented in Exhibit 2 and include 61% residential, 13% commercial with mixed-use residential, and 12% commercial-industrial use. Further classification of the residential use acreage shows 28% in high-density residential (5 housing units per acre), 56% in medium-density residential (3.4 housing units per acre), and 16% in low-density residential (2 or fewer housing units per acre). Mixed-Use areas can also include high-density multi-family housing.





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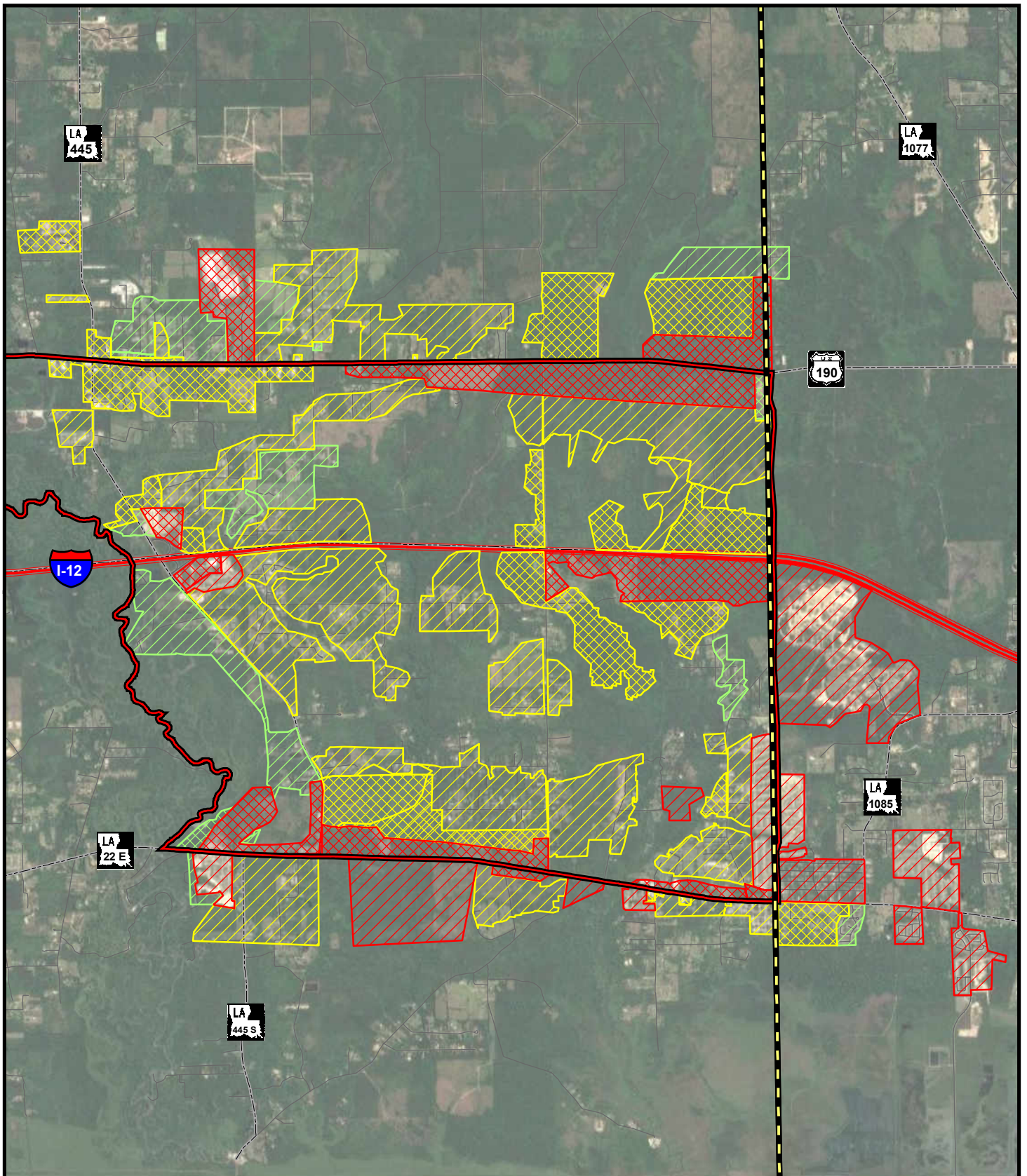
Figure 7: Development Scenario High-Density

Land Use, Transportation, & Resilience Scenario Planning Study for E. Tangipahoa

Legend:

| | | |
|-------------------|--------------------|------------|
| Study Area | Medium Residential | Interstate |
| High Commercial | Low Commercial | Highway |
| High Residential | Low Residential | Local Road |
| Medium Commercial | Parish Boundary | |

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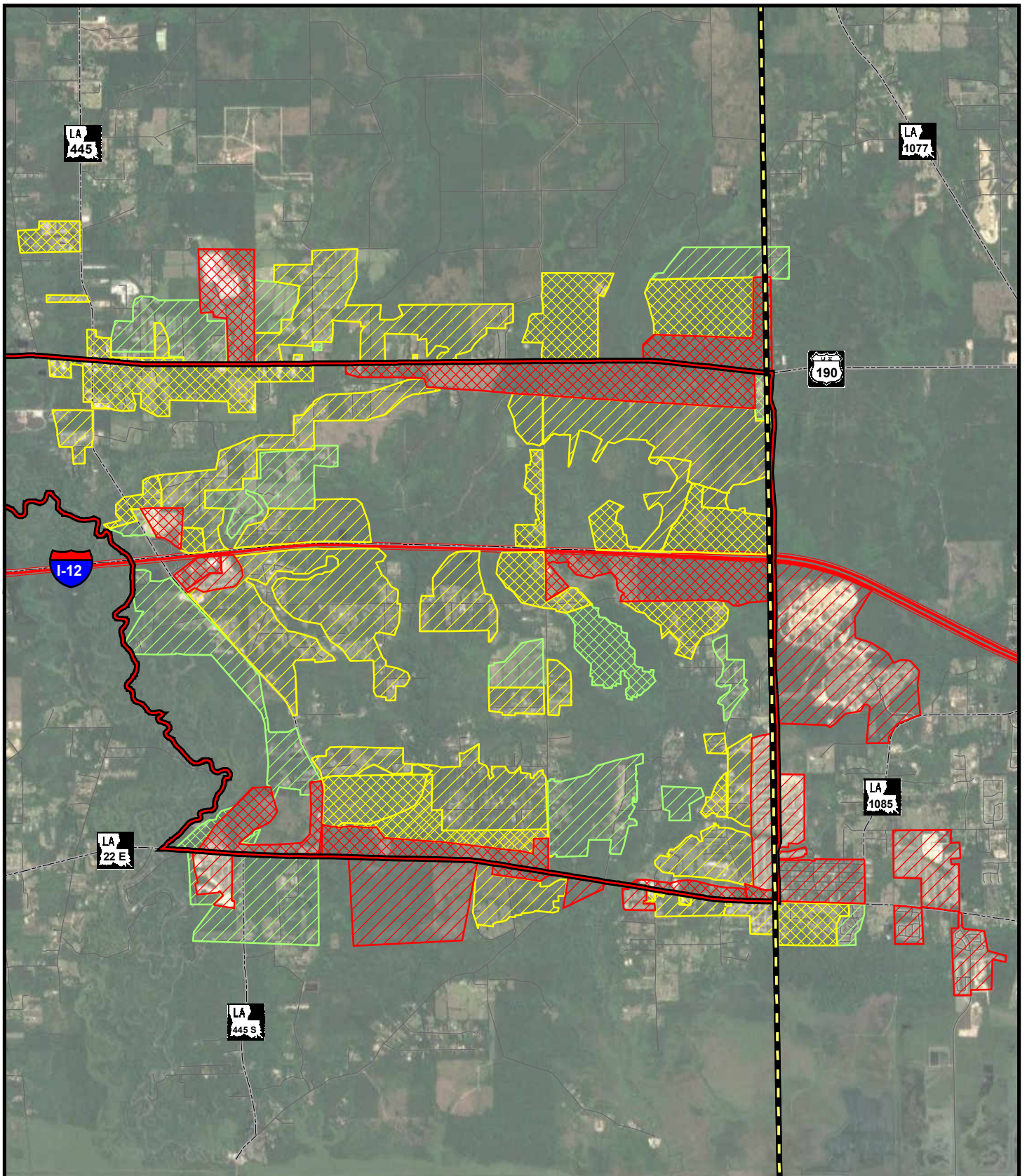
**Figure 8: Development Scenario
Medium-Density**

**Land Use, Transportation,
& Resilience Scenario Planning
Study for E. Tangipahoa**

Legend:

| | | |
|-------------------|--------------------|------------|
| Study Area | Medium Residential | Interstate |
| High Commercial | Low Commercial | Highway |
| High Residential | Low Residential | Local Road |
| Medium Commercial | Parish Boundary | |

This figure was prepared utilizing public and proprietary data. It should not be used to establish any legal boundaries or specific locations. ELOS Environmental, L.L.C., is not responsible for any usage of this figure contrary to its original, intended purpose.



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Figure 9: Development Scenario
Low-Density

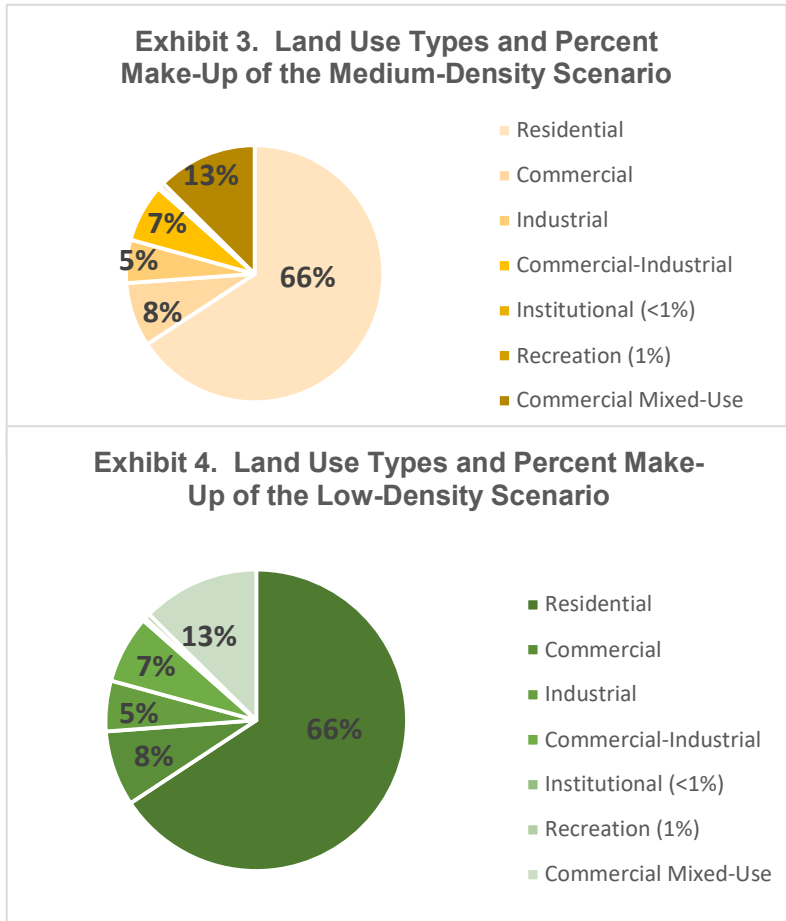
**Land Use, Transportation,
& Resilience Scenario Planning
Study for E. Tangipahoa**

- Legend:**
- Study Area
 - High Commercial
 - High Residential
 - Medium Commercial
 - Medium Residential
 - Low Commercial
 - Low Residential
 - Parish Boundary
 - Interstate
 - Highway
 - Local Road

This figure was prepared utilizing public and proprietary data. It should not be used to establish any legal boundaries or specific locations. ELOS Environmental, L.L.C., is not responsible for any usage of this figure contrary to its original, intended purpose.

Land use projections for the Medium-Density Scenario are presented in Exhibit 3 and include 66 percent residential, 13 percent commercial with mixed-use residential, 8 percent commercial use, 7 percent a mix of commercial and industrial, and 5 percent industrial use. Further classification of the residential use acreage shows 26% in high-density residential (5 housing units per acre), 59% in medium-density residential (3.4 housing units per acre), and 15% in low-density residential (2 or fewer housing units per acre).

Land use projections for the Low-Density Scenario are presented in Exhibit 4 and include 66 percent residential, 13 percent commercial with mixed-use residential, 8 percent commercial use, 7 percent a mix of commercial and industrial, and 5 percent industrial use. These percentages are the same as for the Medium-Density scenario; however, the density of homes per acre overall is lower. Further classification of the residential use acreage shows 25% in high-density residential (5 housing units per acre), 50% in medium-density residential (3.4 housing units per acre), and 25% in low-density residential (2 or fewer housing units per acre).



4.0 TRAFFIC DATA COLLECTION AND ANALYSES

4.1 Traffic Data Collection and Baseline Analysis

The ELOS team collected existing traffic volumes and assessed the levels of service (LOS) for each intersection listed below in the data collection list. LOS is a scoring system used to grade how well roadways operate according to the traveler’s speed, volume of cars per mile, and delay time. The scores are presented on a scale of A to F, much like the grades we earned in school, with A being the best or highest functioning roadway and F being the worst or lowest functioning roadway.

The results of the existing data collection and preliminary analyses are included in Appendix B and summarized in this section. The RPC included the following data collection types and locations in the Scope of Work. The ELOS Team and the PMC reviewed the locations and with

the RPC's approval, count locations were added and changed as shown below in **green text**. to establish baseline traffic volumes (existing conditions) for the study area. The traffic network was established by the RPC in consultation with the PMC and based on the region's federal-aid system and pertinent parish roadways.

The ELOS Team collected:

- Three-day, 24-hour, bi-directional automated traffic counts at the following locations:
 - 1) Lee's Landing Road between LA 22 and Collins Road;
 - 2) Firetower Road between LA 22 and Harvey Lavigne Road;
 - 3) Firetower Road between Harvey Lavigne Road and US 190; and
 - 4) Mike Cooper/Harvey Lavigne Road between LA 445 and Firetower Road.
 - 5) LA 445 between LA 22 and I-12;
 - 6) LA 445 between I-12 and US 190;
 - 7) LA 445 between US 190 and Powell Lane;
 - 8) LA 22 between Tangipahoa River and LA 445;
 - 9) LA 22 between LA 445 and Firetower Road;
 - 10) LA 22 **at the** St. Tammany Parish Line;
 - 11) US 190 between Tangipahoa River and LA 445;
 - 12) US 190 between LA 445 and Firetower Road;
 - 13) US 190 between Firetower Road and St. Tammany Parish Line; and
 - 14) Two additional locations to be determined by PMC
 - a. **Parkway Boulevard North of US 190**
 - b. **LA 445 Between I-12 ramps and Mike Cooper Road.**

The ELOS Team coordinated with DOTD and RPC to secure recent vehicle class and volume data for:

- 1) I-12 between LA 3158 and LA 445
- 2) I-12 between LA 445 and LA 1077

Based on 24-hour count data collected, the ELOS Team discerned peak AM and PM traffic hours. Peak period turning movement counts were conducted for the following intersections:

- LA 445 at I-12 (two intersections);
- LA 445 at US 190;
- LA 445 at LA 22;
- Firetower Road at LA 22;
- Firetower Road at US 190;
- Lee's Landing Rd at LA 22;

After delaying traffic counts until construction on LA 22 and LA 445 was completed and school was in session, the ELOS Team collected traffic data on Tuesday, August 27, 2019 through August 29, 2019. Average Daily Traffic (ADT) counts are provided on Figure 10. ADTs for I-12 were provided by DOTD. These counts indicate that I-12 between LA 3158 and LA 445 had an ADT of 72,600 vehicles in 2019. I-12 between LA 445 and LA 1077 had an ADT of 72,000 vehicles in 2018. The three highest bidirectional traffic volumes collected were:

- 1) LA 445 between US 190 and I-12 - 10,100 vehicles ADT;
- 2) US 190 west of LA 445 – 9,950 vehicles ADT; and
- 3) LA 22 at the St. Tammany Parish Line – 8,400 vehicles ADT.

The 3-day, 24-hour counts collected were used to determine the peak periods for collection of turning movement counts (TMC). The ELOS Team collected TMCs on Wednesday, August 28, 2019 during the AM peak period from 6:45 AM to 8:45 AM and the PM peak hour 3:30 PM to 6:30 PM.

The intersection peak hours were determined from the TMCs. The existing peak hour turning movement volumes are shown in Figure 11. The AM and PM peak hours, LOS, and seconds per vehicle delay for each of the intersections are summarized in Table 7 below. Analyses are included in Appendix B.

Table 7. Intersection AM and PM Peak Hours

| Study Area Intersections/Approach | AM Peak | PM Peak | AM Peak LOS/Delay* | PM Peak LOS/Delay* |
|--|----------------|----------------|--|--|
| LA 445 at I-12 EB Ramps Westbound Southbound Left | 7:00 - 8:00 AM | 5:00 - 6:00 PM | D/26.5 B/10.4 | C/19.9 A/7.9 |
| LA 445 at I-12 WB Ramps Westbound Southbound Left | 7:00 - 8:00 AM | 4:45 - 5:45 PM | B/10.5 A/8.8 | B/10.8 A/8.5 |
| LA 445 at US 190 Eastbound Westbound Northbound Southbound | 7:00 - 8:00 AM | 4:45 - 5:45 PM | B/18.8 C/23.6 C/20.3 B/16.0 B/15.8 | C/21.2 C/25.4 C/21.6 B/19.7 B/14.3 |
| LA 445 at LA 22 Eastbound Left Southbound | 7:00 - 8:00 AM | 5:15 - 6:15 PM | B/10.8 D/28.4 | A/8.2 D/25.4 |
| Firetower Road at LA 22 Eastbound Left Southbound | 7:00 - 8:00 AM | 5:15 - 6:15 PM | A/8.7 C/17.5 | A/8.2 C/15.8 |
| Firetower Road at US 190 Westbound Left Northbound Southbound | 7:15 - 8:15 AM | 4:30 - 5:30 PM | A/7.8 B/11.4 A/0.0 | A/8.1 B/12.0 C/15.2 |
| Lee's Landing Road at LA 22 Westbound Left Northbound | 7:00 - 8:00 AM | 4:45 - 5:45 PM | A/8.2 B/13.8 | A/8.2 B/14.4 |

EB = Eastbound WB = Westbound

*Delay is shown in seconds/vehicle

LEGEND
 XX ADT (AVERAGE DAILY TRAFFIC)

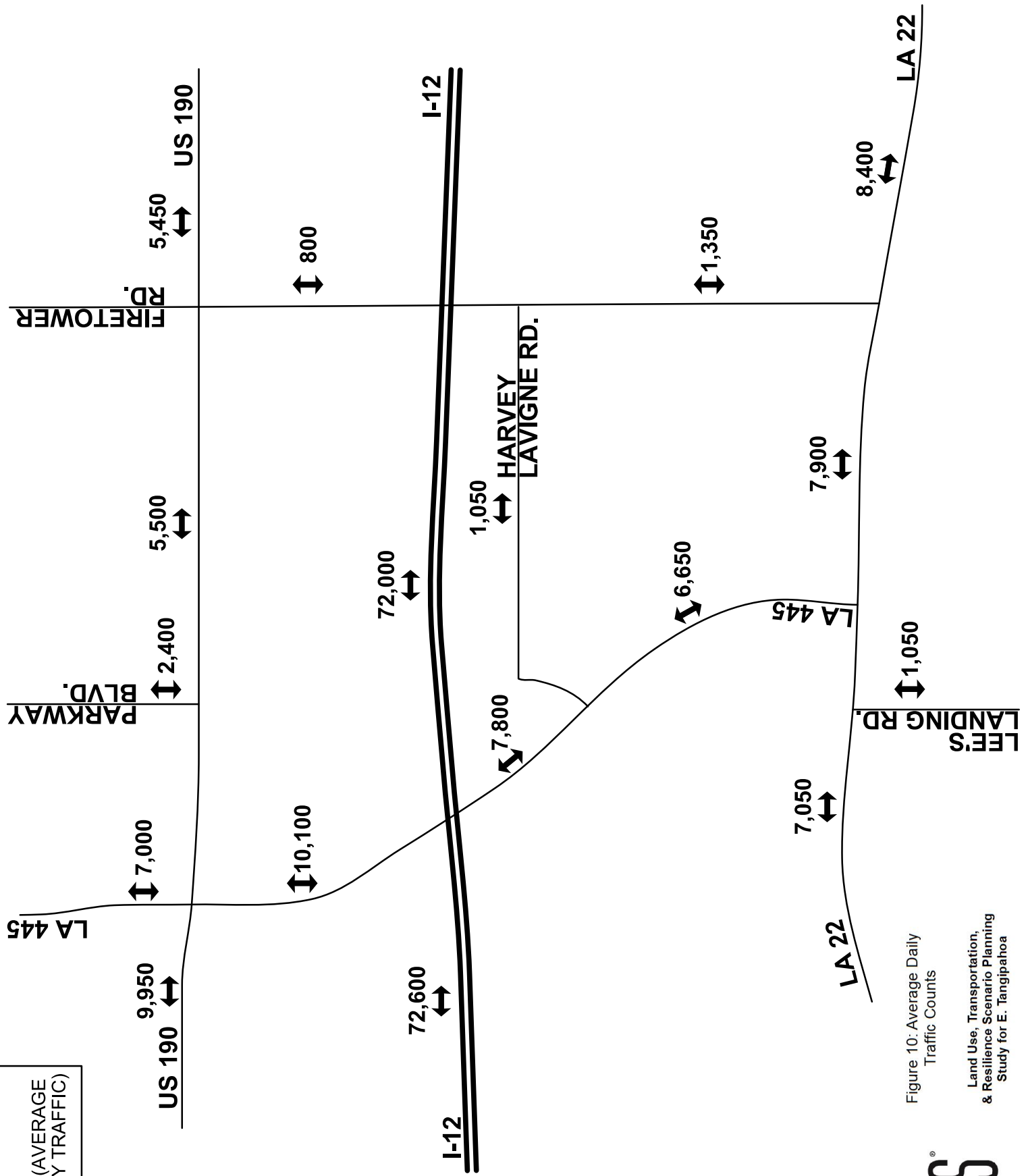


Figure 10: Average Daily Traffic Counts

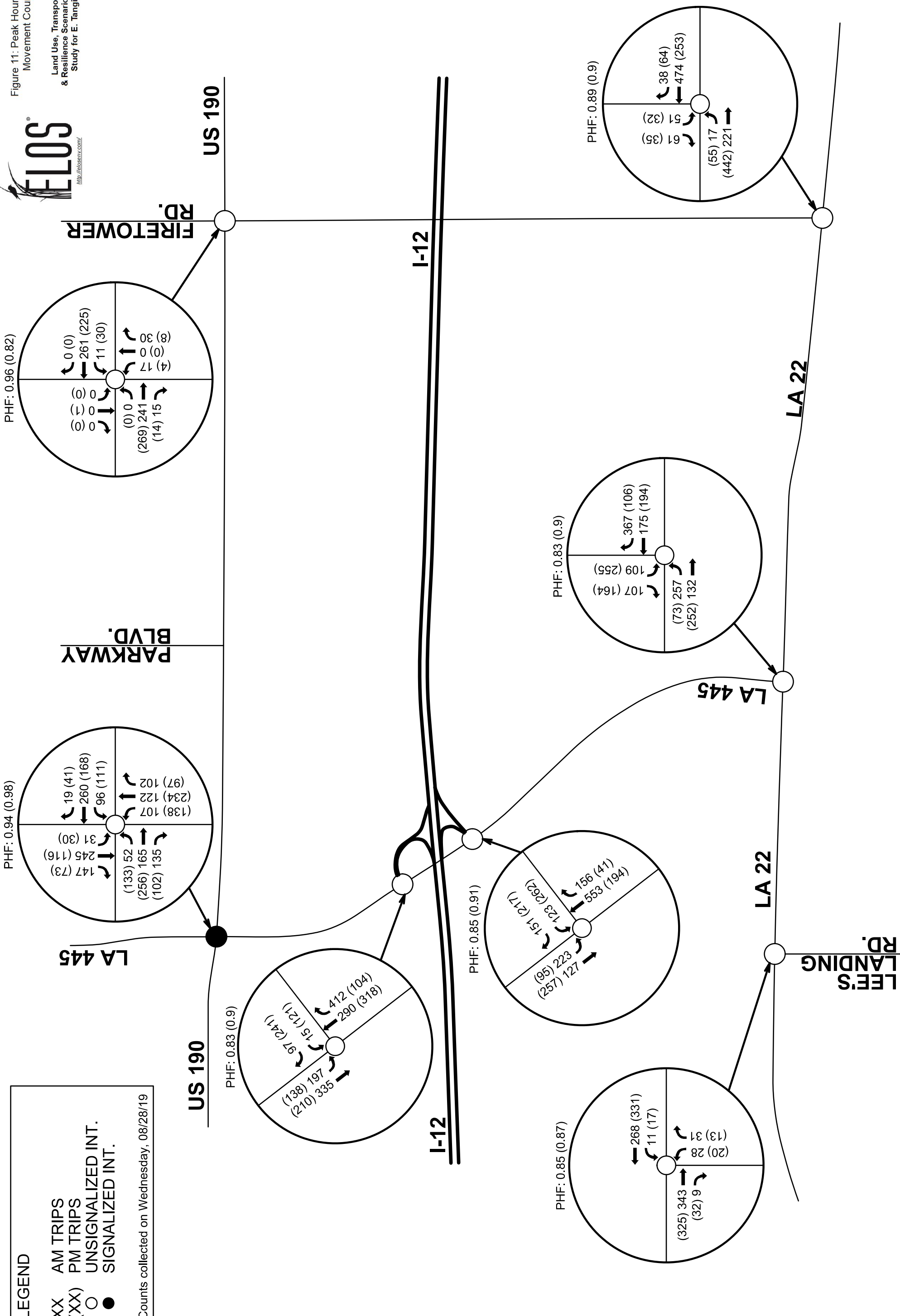
Land Use, Transportation, & Resilience Scenario Planning Study for E. Tangipahoa



Figure 11: Peak Hour Turning Movement Counts



Land Use, Transportation, & Resilience Scenario Planning Study for E. Tangipahoa



The analysis for existing traffic during peak hours indicates that four of the intersections operate at acceptable LOSs with no significant delays:

- LA 445 at US 190
- Firetower Road at LA 22
- Firetower Road at US 190, and
- Lee’s Landing Road at LA 22.

Analysis of the existing traffic during peak hours also indicates that three intersections operate with significant delays, especially along the minor street approaches. The westbound approach at LA 445 and I-12 Eastbound ramps, the southbound approach at LA 445 and LA 22, and the eastbound approach at LA 445 and US 190 all showed delay times of over 25 seconds per vehicle in the queue.

Field observations showed that drivers created turn lanes where none exist by using wide pavement aprons at intersections as right turn lanes, sometimes allowing for both right and left turns from the same approach at the same time. These intersections were re-analyzed with flared minor street movements. Three intersections then resulted in acceptable LOSs without significant delays:

- LA 445 at I-12 Eastbound Ramps
- LA 445 at I-12 Westbound Ramps, and
- LA 445 at LA 22.

4.2 Flood Resilience Challenges

Over the last five years, the Study Area has experienced extensive river flooding. The main watershed within the Study Area is the Tangipahoa River which had record high-water events in March and August of 2016. Many of the same residents who flooded during the March 2016 storm event, flooded again in August. The Tangipahoa River is designated as a Scenic River by the Louisiana Department of Wildlife and Fisheries Scenic Rivers Program. Subwatersheds of the Tangipahoa River include Washley Creek, Sims Creek, P-Kaw-Shun Creek, and Bedico Creek, which cover the Study Area.

The ELOS Team was tasked with identifying transportation assets where stormwater drainage is inefficient, where pooling occurs, and where stormwaters rise onto the roadways. Through consultation with the PMC; referencing FEMA floodplain maps and the 2016 Flood inundation maps; and preliminary HEC-RAS model coverage, the following areas along or adjacent to roadways have historically flooded or show signs of potential flood risk:

- I-12 at Sims Creek
- I-12 at P-Kaw-Shun Creek
- I-12 near Dixie Branch
- US 190 at Washley Creek
- LA 445 south of Robert at Washley Creek

- LA 22 approximately 1700 feet east of LA 445
- LA 22 near intersection of Byers Rd/Traino Rd
- LA 22 in Bedico near W Sam Arnold Loop
- Beyers Rd at Bedico Creek
- CC Road at East Bedico Creek
- Doc Hyde Rd at Washley Creek
- Firetower Road south of the communications tower

4.3 Travel Demand Model Inputs

4.3.1 TAZ Socioeconomic Modifications

The RPC’s travel demand model uses socioeconomic data to estimate the number of vehicle trips made between Traffic Analysis Zones (TAZ). When a significant change in land use is expected over a 25-year planning period, the data categories for each TAZ would also increase. For example, the rate at which the population in a TAZ increases directly correlates to the density of residential development projected for the TAZ. In order to get model results to estimate vehicle trips in the Study Area in the planning year 2044, the existing socioeconomic data must be modified for each Traffic Analysis Zone (TAZ) to reflect the expected changes in land use for each development scenario. Five TAZs cover the Study Area, each with socioeconomic and demographic data specific to the residents in that TAZ. The ELOS team used the criteria for delineating development density scenarios (see Exhibit 1), the acreage of each land use type in the three development scenarios as presented in Section 3.1, and the existing TAZ data covering the Study Area to estimate future conditions of the datasets identified below. Data input projections were estimated for the following socioeconomic data classifications:

- | | |
|---------------------------------------|-------------------------------------|
| • Population | • University Enrollment (total) |
| • Housing Units | • University Enrollment (residents) |
| • Average Income | • Retail Employment |
| • Primary/Secondary School Enrollment | • Non-Retail Employment |

Projected socioeconomic datasets over five TAZs were established for each of the three density development scenarios: High-Density, Medium-Density, and Low-Density. In the High-Density Scenario, of course, the highest levels of population and employment increases were estimated. The following sections will describe the processes and assumptions used to estimate growth for each data set in each scenario for the Study Area.

The Study Area is approximately 70 percent undeveloped, is covered by five TAZs, and is projected to grow significantly in the future. TAZ model attributes provided by RPC include socioeconomic and demographic projections which follow the expectation of growth within each TAZ without including many of the transportation system improvements or proposed land use scenarios included in this study. The TAZ demographic data is used in this study as the baseline or No-Build alternative for comparison. The projections included here are based on existing

Census, data, existing TAZ projections, examples from similar fast-growing areas along the I-12 corridor in Louisiana, and the full build-out of the proposed land uses by the year 2044.

4.3.1.1 Population, Housing, and School Enrollment

Existing population data for the Study Area was provided in the TAZ demographic data as well as projected growth through the year 2050. The TAZ population was compared to the population reported by the Census Bureau in 2010 and 2016 estimates presented previously in Section 2.1.1 and Table 1. Growth rates were determined for the two data sets by estimating percent growth per year and compared. The baseline percent growth for population within the Study Area from the Census data was shown above in Table 1 as 13.7% and approximately 10% from the TAZ data.

For comparison to the Census data, population was also projected to Planning Year 2044 by determining the number of housing units expected per acre of residential developments and mixed-use developments and expanding by the average household size (2.65 people per housing unit). Census records for the Study Area and comparable areas along the I-12 corridor provided a range of people per housing unit from 2.5 to 2.9. The ELOS Team determined that a conservative household size (2.65 people) would be used for the estimate.

Housing-unit data for the Study Area were developed for each of the Development Scenarios. The number of houses per acre for high-density developments is 5 (1 housing unit/0.2 acre), medium-density is 3.3 (1 housing unit/0.3 acre), and low-density is 2.5 (1 housing unit/0.4 acre) is based on the Tangipahoa Parish Subdivision Regulations.

2044 High Density Scenario: 54,970 housing units
2044 Medium Density Scenario: 39,978 housing units
2044 Low-Density Scenario: 26,538 housing units

Table 8. Population Estimates for Planning Year 2044 by Traffic Analysis Zone and Development Density Scenario

| TAZ ID | High Density Scenario | Medium Density Scenario | Low-Density Scenario |
|----------------------------------|------------------------------|--------------------------------|-----------------------------|
| 80690 | 2,372 | 1,693 | 1,187 |
| 80700 | 49,555 | 35,396 | 20,940 |
| 80840 | 16,417 | 11,726 | 8,210 |
| 80850 | 36,332 | 25,951 | 18,166 |
| 80860 | 43,646 | 31,175 | 21,823 |
| Total for Study Area 2044 | 148,322 | 105,941 | 70,326 |

The Study Area falls within four school districts in the parish. With all the new development, it is anticipated that by 2044, an additional 1,017 students will be attending these schools.

Champ Cooper Elementary School is within TAZ 80700. For No-Build Scenario there is no school data input within this TAZ. Currently there are 852 students enrolled in this school. For all build scenarios, school enrollment for TAZ 80700 is determined to be 1,092 (852 existing students and 240 students, which is a portion of the additional 1,017 students). The distribution of 1,017 new student enrollments to the four schools is based on the existing enrollment distribution. Student enrollment for TAZs home to the other three schools were increased accordingly.

4.3.1.2 Average Income and Retail and Non-Retail Employment

Over the past 8 years, the median income in Tangipahoa Parish has increased by approximately 29 percent. In the TAZ data provided by the RPC, the median income from 2010 to 2050 increased by approximately 47 percent. The ELOS Team again chose conservative estimates for projecting to Planning Year 2044. ELOS estimated that the Low Scenario would increase in median household income by approximately 30 percent, the Medium Scenario would increase by 38 percent; and the High Scenario would increase by 45 percent.

The TAZ data provided the same median income across all zones for each projected year.

High estimate Median Household Income 2044 \$58,278
Medium estimate Median Household Income 2044 \$55,465
Low estimate Median Household Income 2044 \$52,250

In order to estimate a factor of retail and non-retail employment by development square footage or acreage, the ELOS Team conducted a series of measurements within other rapidly developing areas along the I-12 corridor. From aerial photography, the ELOS Team was able to identify commercial and industrial developments and collect the following data on each development: the size of the building, the size of the land parcel, and the type of commercial development.

Examples of collected measurements of commercial properties:

- 10,600 square feet per acre (sf/ac) – Walmart or large strip mall
- 7,100 sf/ac – moderate strip mall
- 5,000 sf/ac – small strip mall
- 3,500 sf/ac – rural gas station/convenience store

The measurements were then grouped according to type of development (retail, non-retail, industrial) and building square footage per acre. The ELOS Team then developed thresholds to identify the development density levels:

- High Density Commercial = 10,000 + sf/ac of commercial floorspace
- Medium Density Commercial = 5,000 to 9,999 sf/ac of commercial floorspace
- Low-Density Commercial = below 4,999 sf/ac of commercial floorspace

Because the Study Area is mostly undeveloped, the ELOS Team made the following assumptions based on the measurements collected. We assumed that 25 to 30 percent of a lot or parcel would be used for retail or office space. For Industrial/warehouse developments, we assumed that 30 to 40 percent of lot or parcel is building square footage so we could identify the likely size of the buildings to be developed on parcels within the Study Area. Then the ELOS Team compared the building size with the U.S. Energy Information Administration’s (USEIA) data on average numbers of employees by square footage and building use. The USEIA’s data shows that an average of 7 employees work in a 10,000-square foot building. For example, in warehousing and large-scale retail, the number of employees per square foot are 1,500 and 1,450. The ELOS Team used the USEIA’s estimates for employees per square foot with the acreage of each use proposed in the Study Area.

For comparison, the ELOS Team also manipulated the existing retail and non-retail employment totals provided in the TAZ datasets. The number of employees when divided by the acreage of commercial or industrial land use in the Study Area was exceptionally similar to the calculations of employment by acreage using the USEIA’s data.

Land use acreage proposed in the three density development scenarios for commercial properties was the same for TAZ 80690, 80840, 80850, and 80860. The same numbers of new retail and non-retail jobs for these TAZs were used for each scenario. Land uses proposed in the High Density Scenario were different from the proposed uses in the Medium and Low-Density Scenarios for TAZ 80700, so the medium and low number of new jobs were the same. The ELOS Team’s projected employment data are provided below in **Table 9**.

Table 9. Retail and Non-Retail Employment Estimates for Planning Year 2044 by Traffic Analysis Zone and Development Density Scenario

| TAZ ID | High Density Scenario | | Medium Density Scenario | | Low-Density Scenario | |
|--------|-----------------------|------------|-------------------------|------------|----------------------|------------|
| | Retail | Non-Retail | Retail | Non-Retail | Retail | Non-Retail |
| 80690 | 6 | 53 | 6 | 53 | 6 | 53 |
| 80700 | 447 | 2,655 | 198 | 1,907 | 198 | 1,907 |
| 80840 | 14 | 106 | 14 | 106 | 14 | 106 |
| 80850 | 242 | 2,641 | 242 | 2,641 | 242 | 2,641 |
| 80860 | 94 | 187 | 94 | 187 | 94 | 187 |

4.4 Preliminary Traffic Demand Model Results

This section summarizes the results from the initial run of the RPC's travel demand model following TAZ socioeconomic data modification. The expected changes to employment and population due to expected development in the Study Area were submitted to the RPC. The RPC

planners ran the model six times. Results were specific to data for each of the density development scenarios with and without the addition of an I-12 interchange at Firetower Road.

4.4.1 Traffic Impact of Development

The preliminary results of the Travel Demand Model clearly show major increases in vehicle trips along every roadway in the Study Area (Table 10). The traffic volume increase is driven by the difference between the mostly rural, 70 percent undeveloped current state to the full build-out of the Study Area expected by 2044. The number of vehicle trips expected with each of the development scenarios are shown below by roadway segment of interest. These volumes represent the Study Area as modeled without an interchange on I-12 at Firetower Road.

Table 10. Preliminary Travel Demand Model Results: Comparison of Baseline and Development Density Scenarios (in Vehicles/Day)

| Roadway Segment | Baseline Model Results | High Density Scenario | Medium Density Scenario | Low-Density Scenario |
|--|------------------------|-----------------------|-------------------------|----------------------|
| I-12: LA 445 to Firetower Rd Eastbound | 37,534 | 42,606 | 38,188 | 40,300 |
| I-12: LA Firetower Rd to LA 445 Westbound | 37,415 | 42,774 | 38,546 | 39,983 |
| I-12: LA Firetower Rd to St. Tammany Parish Line Eastbound | 37,109 | 43,712 | 37,365 | 39,605 |
| I-12: St. Tammany Parish Line to Firetower Rd Westbound | 37,360 | 44,961 | 38,396 | 39,956 |
| US 190: LA 445 to Doc Hyde Rd | 21,848 | 39,219 | 31,245 | 30,847 |
| US 190: Doc Hyde Rd to Firetower Rd | 19,065 | 15,429 | 28,071 | 13,792 |
| US 190: Firetower Rd to Parish Line | 22,151 | 45,226 | 36,111 | 35,399 |
| LA 445: US 190 to I-12 | 14,539 | 22,177 | 18,723 | 18,880 |
| LA 445: I-12 to Larpenter Lane centroid | 11,746 | 40,427 | 32,117 | 26,433 |
| LA 445: Larpenter Lane centroid to LA 22 | 10,238 | 20,703 | 17,373 | 15,552 |
| LA 22: LA 445 to Firetower Rd | 22,471 | 25,898 | 23,173 | 23,434 |
| LA 22: Firetower Rd to Parish Line | 26,657 | 50,408 | 43,005 | 42,442 |
| Firetower Rd: US 190 to Doc Hyde Rd centroid | 3,574 | 30,576 | 9,770 | 22,633 |
| Firetower Rd: Doc Hyde Rd centroid to Harvey Lavigne Rd | 2,556 | 25,325 | 19,520 | 15,935 |
| Firetower Rd: Harvey Lavigne Rd to Crawford Dr | 2,805 | 22,753 | 18,059 | 15,831 |
| Firetower Rd: Crawford Dr to LA 22 | 2,079 | 9,521 | 6,931 | 8,018 |

The highlighted cells in Table 10 indicate projected volumes that have an expected LOS of C or worse and may require capacity improvements on that roadway segment. The largest changes in expected volume are along Firetower Road and LA 22 where most of the residential development is projected.

Upon review of the preliminary model results, the PMC suggested refinements, including centroid connectors which would extend existing roadways to improve east-west or north-south access through the Study Area and capacity improvement projects. Suggested model refinements include:

- Centroid connectors (roadway extensions)
 - Harvey Lavigne Road to Meadow Wood Drive
 - Memory Lane to Crown Drive
 - Larpenter Lane to Harvey Lavigne Road
 - Byers Road to E.A. Hoover Road
 - Byers Road to Firetower Road
 - I-12 Service Road: LA 445 to Firetower Road (north and south of Interstate)
 - Foy Cemetery Road to Pasqua Road to Crown Drive
 - Cooper Cemetery Road to April Lane
 - Richoux Road to Byers Road
 - Richoux Road to LA 445
 - Richoux Road to LA 22
 - Connector over the Tangipahoa River south of I-12
- Capacity Improvements
 - LA 22: LA 1085 to Ponchatoula – widen from two to four lanes
 - US 190: St. Tammany Parish Line to LA 3158 – widen from two lanes to four lanes
 - Firetower Road: LA 22 to US 190 – widen from two lanes to four lanes
 - LA 445: LA 22 to US 190 - widen from two lanes to four lanes
 - Thibodeaux Road: LA 22 to I-12 Service Road - widen from two lanes to four lanes
 - Lee’s Landing Road: Public Boat Launch to LA 22 - widen from two lanes to four lanes
 - I-12: LA 1077 to LA 445

4.5 Secondary Traffic Demand Model and the Proposed Firetower Road Interchange

The PMC also requested that the RPC run the models a second time with all of the above suggested improvements and with and without inclusion of an I-12 interchange at Firetower Road. The comparison of the system with and without the Firetower Road interchange served as the Build 1 (with interchange) and the Build 2 (without interchange) alternatives for the Study Area.

The second run of the Traffic Demand Model produced results that considered the suggested transportation system improvements and the transportation network’s reactions to the I-12 interchange at Firetower Road. Table 11 presents comparative data results of the primary and secondary model runs for the same roadway segments presented in Table 10.

**Table 11. Preliminary and Secondary Travel Demand Model Results:
Comparison of Development Density Scenarios with and without
an I-12 Interchange at Firetower Road (in Vehicles/Day)**

| Roadway Segment | Baseline Model Results | High Density Scenario | | Medium Density Scenario | | Low-Density Scenario | |
|--|------------------------|-----------------------|---------------------------|-------------------------|---------------------------|----------------------|---------------------------|
| | | Build 1 | Build 2* | Build 1 | Build 2* | Build 1 | Build 2* |
| I-12: LA 445 to Firetower Rd Eastbound | 37,534 LOS B | 40,644 LOS B | 49,738 42,606 LOS B | 35,992 LOS B | 41,603 38,188 LOS B | 41,459 LOS B | 45,025 40,300 LOS B |
| I-12: LA Firetower Rd to LA 445 Westbound | 37,415 LOS B | 41,554 LOS B | 50,195 42,774 LOS B | 36,854 LOS B | 42,041 38,546 LOS B | 41,967 LOS B | 45,189 39,983 LOS B |
| I-12: LA Firetower Rd to St. Tammany Parish Line Eastbound | 37,109 LOS B | 57,453 LOS B | 49,738 43,712 LOS B | 48,965 LOS B | 41,603 37,365 LOS B | 51,029 LOS B | 45,025 39,605 LOS B |
| I-12: St. Tammany Parish Line to Firetower Rd Westbound | 37,360 LOS B | 58,248 LOS B | 50,195 44,961 LOS B | 49,675 LOS B | 42,041 38,396 LOS B | 50,956 LOS B | 45,189 39,956 LOS B |
| US 190: LA 445 to Doc Hyde Rd | 21,848 LOS B | 31,279 LOS B | 31,745 39,219 LOS B | 23,384 LOS B | 22,847 31,245 LOS B | 22,546 LOS B | 21,835 30,847 LOS B |
| US 190: Doc Hyde Rd to Firetower Rd | 19,065 LOS B | 7,870 LOS B | 6,851 15,429 LOS B | 5,305 LOS B | 4,701 28,071 LOS B | 9,484 LOS B | 8,949 13,792 LOS B |
| US 190: Firetower Rd to Parish Line | 22,151 LOS B | 31,308 LOS B | 36,572 45,226 LOS E | 23,184 LOS B | 28,064 36,111 LOS B | 24,754 LOS B | 27,683 35,399 LOS B |
| LA 445: US 190 to I-12 | 14,539 LOS B | 18,788 LOS B | 18,294 LOS B | 14,916 LOS B | 15,491 LOS B | 16,957 LOS B | 17,100 LOS B |
| LA 445: I-12 to Larpenier Lane centroid | 11,746 LOS B | 12,468 LOS B | 24,584 LOS B | 9,508 LOS B | 20,394 LOS B | 10,036 LOS B | 16,128 LOS B |
| LA 445: Larpenier Lane centroid to LA 22 | 10,238 LOS B | 15,077 LOS B | 19,080 LOS B | 11,917 LOS B | 16,982 LOS B | 12,282 LOS B | 15,967 LOS B |
| LA 22: LA 445 to Firetower Rd | 22,471 LOS B | 16,997 LOS B | 16,807 25,898 LOS B | 13,386 LOS B | 14,450 23,173 LOS B | 16,993 LOS B | 18,236 23,434 LOS B |
| LA 22: Firetower Rd to Parish Line | 26,657 LOS B | 26,016 LOS B | 31,980 50,408 LOS E | 18,883 LOS B | 23,975 43,005 LOS B | 22,191 LOS B | 27,295 42,442 LOS B |
| Firetower Rd: US 190 to Doc Hyde Rd centroid | 3,574 LOS B | 23,466 LOS B | 30,560 30,576 LOS B | 17,879 LOS B | 23,363 9,770 LOS B | 15,269 LOS B | 18,733 22,633 LOS B |
| Firetower Rd: Doc Hyde Rd centroid to I-12 interchange | -- | 16,969 LOS B | 11,813 -- LOS B | 10,709 LOS B | 9,048 -- LOS B | 9,841 LOS B | 8,722 -- LOS B |
| Firetower Rd: Doc Hyde Rd centroid to Harvey Lavigne Rd | 2,556 LOS B | -- | -- 25,325 LOS B | -- | -- 19,520 LOS B | -- | -- 15,935 LOS B |
| Firetower Rd: I-12 interchange to Harvey Lavigne | -- | 26,109 LOS B | 13,619 -- LOS B | 21,399 LOS B | 9,407 -- LOS B | 15,662 LOS B | 8,644 -- LOS B |
| Firetower Rd: Harvey Lavigne Rd to Crawford Dr | 2,805 LOS B | 24,960 LOS B | 17,563 22,753 LOS B | 22,742 LOS B | 14,273 18,059 LOS B | 17,853 LOS B | 13,159 15,831 LOS B |
| Firetower Rd: Crawford Dr to LA 22 | 2,079 LOS B | 8,398 LOS B | 15,384 9,521 LOS B | 6,041 LOS B | 11,125 6,931 LOS B | 5,137 LOS B | 10,443 8,018 LOS B |

* Build Scenario 2 Column provides Secondary traffic volume stacked above Preliminary traffic volume results in same cell.

Highlighted cells in Table 11 reflect roadway segments where even with the proposed capacity improvement projects, the segments have a C or worse LOS score. The daily volume for LA 22 from Firetower Road to the Parish Line is actually scored as a low B; however, this volume (~32,000 vehicles per day) was determined by averaging volumes from short segments. Due to the loss of reliability of the averaged data, the ELOS Team prefers to lump this segment in the lower scoring class (C scores for 4-lane roadway with 35,500+ vehicles per day) than to assume the lower average volume and better LOS score. When comparing the model results from Table 10 to Table 11 and the poorly performing roadways highlighted in each, it is apparent that the improvements proposed to the transportation system would greatly improve the overall quality of traffic operations within the Study Area.

Table 11 allows for direct comparisons of expected traffic volumes by segment with and without the proposed Firetower Road interchange at I-12. The southern approach to the I-12 interchange at LA 445 shows a two-fold increase in volume without the interchange at Firetower Road, but the northern approach remains nearly constant with only a 2.6 percent difference in volumes with and without the Firetower Road interchange. With the Firetower Road interchange, volumes substantially increase on I-12 between Firetower Road and the Parish Line, on US 190 west of Firetower Road, and on Firetower Road from LA 22 to I-12. Without the Firetower Road interchange, volumes increase on I-12 west of Firetower Road, on US190 between Firetower Road and the Parish Line, on LA 445 south of I-12 (as mentioned above), and on LA 22 between Firetower Road and the Parish Line.

The inter-parish traffic has been and will continue to produce higher traffic volumes along LA 22 and US 190 in the vicinity of the Parish Line. The two nearest I-12 interchanges to the Parish Line area are LA 445 and LA 1077. There is approximately 9.5 miles between the two interchanges. Commuters that must access I-12 are forced across the Parish Line on LA 22 or US 190 to access the nearest interchange. The location of an interchange at Firetower Road would provide an I-12 access point 6.25 miles west of LA 1077 and 3.25 miles east of LA 445. Additional analysis of the Firetower Road interchange should be conducted to determine its feasibility and further develop its impact on the transportation system it would serve.

4.6 Proposed Transportation Infrastructure Improvements and Changes

The preliminary model run showed traffic volume increases that would overwhelm the existing transportation network. The PMC determined that there should be roadway improvement projects planned and included in a secondary model run. The PMC suggested the following projects which include capacity improvements and new roadways to serve as connectors to or extensions of existing roadways.

4.6.1 Proposed Capacity Improvements

Except for I-12, DOTD classifies the main roadways within the Study Area as two-lane rural collectors or arterials:

- US 190 is a Rural Principal Arterial with two, 12-foot lanes and 11-foot shoulders. There are 2-lane bridges over Pole Bridge Branch, Holden Branch, Washley Creek, an unnamed tributary of Washley Creek, Dixie Branch, Bedico Creek. There are large box culvert cross drains at an unnamed tributary of Washley Creek, P-Kaw-Shun Creek, an unnamed tributary of P-Kaw-Shun Creek, an unnamed tributary of Dixie Branch, and at three unnamed tributaries of Bedico Creek.
- LA 445 is a Rural Major Collector with two, 11-foot lanes and gravel shoulders on embankment. There is a 2-lane interstate overpass and 2-lane bridges over Washley Creek and Sims Creek. Culvert cross drains occur south of Oschner Rd, north of the Robert Post Office, south of Holmes Lane, and at Memory Lane.
- LA 22 is a Rural Minor Arterial with two, 11-foot lanes and 6-foot shoulders on embankment. There are 2-lane bridges over an un-named tributary of the Tangipahoa River and Bedico Creek. Culvert cross drains occur east of Kelly Wood Road, west of Stanga Cemetery Road, east of Sticker Cemetery Road, and west of E Sam Arnold Loop.
- Firetower Road is a Rural Minor Collector with two, 9-foot lanes with 1- or 2-foot shoulders on embankment. There is a 2-lane interstate overpass and 2-lane bridges over Cedar Branch and Mile Branch. Culvert cross drains occur approximately 3600 feet north of I-12, approximately 2650 feet north of I-12; north of Fayette Lane, and north of LA 22,

With the expected development within the Study Area, the existing transportation system would quickly become inadequate, regardless of the development density scenario. The following projects were identified to alleviate the additional volume of traffic expected with future development. With the construction of these projects, LOS of C or better could be expected over a 25-year period.

- LA 22: LA 1085 to Ponchatoula – widen from two to four lanes
- US 190: St. Tammany Parish Line to LA 3158 – widen from two lanes to four lanes
- Firetower Road: LA 22 to US 190 – widen from two lanes to four lanes
- LA 445: LA 22 to US 190 - widen from two lanes to four lanes
- Thibodeaux Road: LA 22 to I-12 Service Road - widen from two lanes to four lanes
- Lee’s Landing Road: Public Boat Launch to LA 22 - widen from two lanes to four lanes
- I-12: LA 1077 to LA 445 – widen from four lanes to six lanes
- LA 445 at I-12 Eastbound Ramps – install turning lanes
- LA 445 at I-12 Westbound Ramps – install turning lanes, and
- LA 445 at LA 22 – install turning lanes.

Bridges would be widened and cross drains would be extended with the proposed roadway improvements. Table 12 in Section 4.7 presents the Opinion of Probable Cost for the transportation system improvement projects. DOTD Stage 0/Feasibility Study Checklists were prepared for the LA 445 widening project and included as Appendix D.

4.6.2 Proposed New Connector Roadways

As development increases, traffic within the Study Area would quickly overwhelm the existing roadway network. Additional connector routes were identified by the PMC to create through streets to improve north-south and east-west connectivity within the Study Area.

The process for identifying new connector roadways included studying the layout of existing roads in the Study Area; matching roadways that could be connected with relatively minor roadway extensions; identifying the potential for service roads along the interstate, and potential locations for an additional crossing over the Tangipahoa River.

The following new connector roadways were determined to be the most cost effective for the existing transportation network.

- Harvey Lavigne Road to Meadow Wood Drive
- Memory Lane to Crown Drive
- Larpenter Lane to Harvey Lavigne Road
- Byers Road to E.A. Hoover Road
- Byers Road to Firetower Road
- I-12 Service Road: LA 445 to Firetower Road (north and south of Interstate)
- Foy Cemetery Road to Pasqua Road to Crown Drive
- Cooper Cemetery Road to April Lane
- Richoux Road to Byers Road
- Richoux Road to LA 445
- Richoux Road to LA 22

4.6.3 Proposed Resilience Improvements

As avoidance of the 100-year floodplain was a goal of the development scenarios, resilience planning has been included into the fundamental design of this study. Subwatersheds of the Tangipahoa River cover the Study Area, including Washley Creek, Sims Creek, P-Kaw-Shun Creek, and Bedico Creek. Areas with transportation assets where stormwater drainage is inefficient, where pooling occurs, and where stormwaters rise onto the roadways were identified in Table 12.

Table 12. Roadways with Drainage Crossings and Proposed Improvements in the Study Area.

| Location | Existing Type of Crossing | Proposed Improvement | Improvement Included in Proposed Road Projects |
|---|---------------------------|---|--|
| I-12 at Sims Creek | Box Culvert | Larger or Additional Culvert | ✓ |
| I-12 at P-Kaw-Shun Creek | Box Culvert | Larger or Additional Culvert | ✓ |
| I-12 near Dixie Branch | Box Culvert | Larger or Additional Culvert | ✓ |
| US 190 at Washley Creek | 2-lane Bridge | Widen Bridge, Improve Roadside Drainage | ✓ |
| LA 445 south of Robert at Washley Creek | 2-lane Bridge | Widen Bridge, Improve Roadside Drainage | ✓ |
| LA 22 approx 1700 feet east of LA 445 | 2-lane Bridge | Widen Bridge, Improve Roadside Drainage | ✓ |

Table 12, continued.

| Location | Existing Type of Crossing | Proposed Improvement | Improvement Included in Proposed Road Projects |
|--|--------------------------------|---|--|
| LA 22 in Bedico near W Sam Arnold Loop | Roadside ditches | Improve Roadside Drainage | ✓ |
| Byers Road at Bedico Creek | 2-lane Bridge (Weight Limited) | Widen Bridge, Improve Roadside Drainage | |
| CC Road at East Bedico Creek | 2-lane Bridge (Weight Limited) | Widen Bridge, Improve Roadside Drainage | |
| Doc Hyde Road at Washley Creek | 2-lane Bridge | Widen Bridge, Improve Roadside Drainage | |
| Firetower Road south of communications tower | Roadside Ditches | Install Crossdrain, Improve Roadside Drainage | ✓ |

In Table 12, column four indicates the areas which are on roadways that are included in the proposed transportation system improvements for this study. As part of the capacity improvements, the drainage structures nearest these areas would also be extended, replaced, or improved. Costs associated with the drainage structures are included in the opinions of probable cost.

Beyers Road at the Bedico Creek crossing is a 2-lane, 20-foot wide bridge. CC Road at the East Bedico Creek crossing is a 2-lane, 22-foot wide bridge. Doc Hyde Road at Washley Creek crossing is a 2-lane, 24-foot wide bridge. These crossings may require improvement as development increases in the area. A Hydraulics and Hydrology studies should be conducted for the sub watersheds near the crossings to ensure adequate flow through the channel.

4.7 Opinion of Probable Cost

The ELOS Team was tasked with providing opinions of probable cost for each infrastructure project proposed in this study. Table 13 provides a summary of the costs for each project. Line item costs for each project are included in Appendix C. The proposed projects are needed to maintain an acceptable LOS.

Table 13. Probable Construction Costs for Proposed Transportation Projects in Study Area

| Project Description | Quantity | Unit Cost | Cost | Total Project Cost |
|--|------------|-------------|--------------|--------------------|
| LA 22 Widening LA 1085 to 3 rd St., Ponchatoula Intersection Modification | 11.7 miles | \$7,072,758 | \$82,751,269 | |
| LA 3158/N. Hoover Road Bridge Widening | 1 LS* | \$100,000 | \$100,000 | |
| Tangipahoa River (+/- 500 feet) | 1 LS | \$5,500,000 | \$5,500,000 | \$88,351,269 |

Table 13, continued.

| Project Description | Quantity | Unit Cost | Cost | Total Project Cost |
|--|------------|--------------|--------------|----------------------|
| US 190 Widening Parish Line to Morris/Thomas Intersection Modification | 11.7 miles | \$7,072,758 | \$86,287,648 | |
| Tiffany Lynn Court | 1 LS | \$100,000 | \$100,000 | |
| LA 3158/S. Airport Road | 1 LS | \$100,000 | \$100,000 | |
| LA 445 | 1 LS | \$100,000 | \$100,000 | |
| Bridge Widening Tangipahoa River (+/- 1,000 feet) | 1 LS | \$11,000,000 | \$11,000,000 | \$97,587,648 |
| Firetower Road Widening US 190 to LA 22 | 4.5 miles | \$7,072,758 | \$31,827,411 | |
| Roadway Bridge Modification I-12 | 1 LS | \$2,000,000 | \$2,000,000 | \$33,827,411 |
| LA 445 Widening US 190 to LA 22 | 5.1 miles | \$7,072,758 | \$36,071,066 | |
| Roadway/Bridge Modification I-12 | 1 LS | \$2,000,000 | \$2,000,000 | |
| Intersection Modification US 190 | 1 LS | \$100,000 | \$100,000 | \$38,171,066 |
| N. Thibodeaux Road Widening Southeimer Road to LA 22 | 3.5 miles | \$7,072,758 | | \$24,754,653 |
| Lee's Landing Road/LA 445 Widening Public Boat Launch to LA 22 | 3 miles | \$7,072,758 | | \$21,218,274 |
| I-12 Widening LA 1077 to LA 445 | 10 miles | \$6,826,974 | \$68,269,740 | |
| Roadway Bridge Modification LA 445 | 1 LS | \$2,000,000 | \$2,000,000 | |
| LA 1085 | 1 LS | \$2,000,000 | \$2,000,000 | |
| LA 1077 | 1 LS | \$2,000,000 | \$2,000,000 | \$74,269,740 |
| I-12 Service Road on North & South LA 445 to Firetower Road | 3.5 miles | \$11,652,102 | | \$40,782,357 |
| Harvey Lavigne Extension to Meadow Wood Drive | 1 mile | \$4,181,562 | | \$4,181,562 |
| Byers Road Connection to E.A. Hoover Road | 0.1 mile | \$4,181,562 | | \$418,156 |
| Byers Road Connection at Crown Drive to Firetower Road | 0.75 mile | \$4,181,562 | | \$3,136,172 |
| Memory Lane Connection to Crown Drive | 0.3 mile | \$4,181,562 | | \$1,254,469 |
| Larpenter Lane Connection to Harvey Lavigne Rd | 0.3 mile | \$4,181,562 | | \$1,254,469 |
| Foy Cemetery Road to Pasqua Road and Crown Drive | 0.5 mile | \$4,181,562 | | \$2,090,781 |
| Cooper Cemetery Road Connection to April Lane | 1.5 miles | \$4,181,562 | | \$6,272,343 |
| Richoux Road Connection to Byers Road | 0.75 mile | \$4,181,562 | | \$3,136,172 |
| Richoux Road Connection to LA 445 | 1 mile | \$4,181,562 | | \$4,181,562 |
| Richoux Road Connection to LA 22 | 0.5 mile | \$4,181,562 | | \$2,090,781 |
| I-12 Interchange at Firetower Road | 1 LS | \$19,028,625 | | \$19,028,625 |
| Total Construction Cost for All Projects** | | | | \$466,007,507 |
| Total Project Costs (Including Engineering, Testing, Survey, etc.)** | | | | \$535,989,133 |

* LS = Lump Sum

** Costs do not include real estate acquisition.

5.0 EVALUATION OF ALTERNATIVES

This section will provide a comparison of the expected impacts of the three development scenarios and the No-Build Alternative over various criteria. Each of the evaluation criteria is described and analyses are provided for each scenario and the No-Build Alternative. The analyses provide scores for each criterion, either qualitative or quantitative, depending on the criteria type. A matrix is provided for easy comparison in Section 5.3. A preferred scenario is determined as a result of the evaluation.

5.1 Evaluation Criteria

Criteria were established to compare the relative benefits, impacts, and costs associated with each development scenario. Comparison criteria include alignment with the project's purpose and need, economic (tax) benefits to the Parish, amount of developable versus non-developed acreage, consistency with Parish's Comprehensive Plan, traffic impacts on local and major streets, access alternatives, Study Area traffic circulation and parking, alternative modes (bike/ped), potential mitigation measures (wetlands and water retention, etc.), infrastructure costs, and innovative financing of infrastructure, and potential timeline for development.

5.2 Evaluation and Scoring

5.2.1 Criteria: Project Purpose and Need

All three alternatives meet the project purpose and need, which is the preparation of a land use, transportation, and resilience study for southeastern Tangipahoa Parish. As such, there is no differentiating scores among the three development scenarios. All three scenarios receive a positive score, while the No-Build Alternative receives a null score.

5.2.2 Criteria: Economic Benefits to the Parish

Currently, the site is approximately 70% undeveloped. Undeveloped properties return the lowest property tax per acre. Other land uses within the Study Area were sampled to provide the following example average property taxes:

- \$1,024/unit – residential
- \$1,500/acre – industrial (warehouse)
- \$1,100/acre – commercial
- \$1.50/acre – undeveloped forested
- \$5.43/acre – undeveloped cleared

All three development scenarios would develop large amounts of the site acreage into active use, in separate categories: industrial, residential, and commercial. The expected tax benefit increases with development density for residential properties, where the estimate is based on a per-unit basis. The residential acreage proposed in each development scenario is further classified into densities for the subdivision. High-density subdivisions can have up to 5 homes per acre, whereas low-density subdivisions may have three or fewer homes per acre. For the No-

Build Alternative, the expected tax receipts from residential units was based on an assumption of 2 homes per acre of current residential land use and for 60 percent of the currently undeveloped cleared land not in flood zones an assumption of 3.5 homes per acre. Tax benefits for other land use categories are based on per acre estimates.

Future estimated tax benefit for the entire site under each development scenario is presented below:

- Estimated Parish Property Tax Benefit, No-Build: \$17,224,560
- Estimated Parish Property Tax Benefit, High-Density Scenario: \$27,708,525
- Estimated Parish Property Tax Benefit, Medium-Density Scenario: \$36,556,751
- Estimated Parish Property Tax Benefit, Medium-Density Scenario: \$34,573,682

The High-Density Scenario has a lower estimated property tax benefit than the Medium- and Low-Density Scenarios due to fewer acres of residential development. The High-Density Scenario has a higher concentration of commercial and industrial uses projected; therefore, higher sales taxes are expected. Other retail and commercial centers along I-12 were researched. Juban Crossing in Livingston Parish collects approximately \$6 million in sales taxes annually (Hannis T. Bourgeois, 2019). In 2017, St. Tammany Parish reported \$1.47 million in sales tax collections at the Pinnacle Nord du Lac shopping center at LA 21 and I-12 (St. Tammany Parish Sheriff's Office, 2017).

5.2.3 Criteria: Amount of Developable Versus Non-Developable Acreage

The Study Area is approximately 16,850 acres. This acreage only includes the Study Area as defined by its boundaries (US 190, Tangipahoa-St. Tammany Parish Line, LA 22, and Tangipahoa River). In each of the scenarios developed, the delineated expected land use areas were expanded beyond the Study Area boundaries to include the existing and planned developments adjacent to the boundary highways. Each density development scenario projects approximately 14,300 acres of the Study Area to be developed, albeit at decreasing densities of homes or businesses per acre. The development is expected to occur over a 25-year period.

Amount of Developable Acreage by Scenario:

High-Density Scenario: 14,332
Medium-Density Scenario: 14,288
Low-Density Scenario: 14,275

The amount of non-developable land in the Study Area differs for each development scenario. The 100-year flood zone covers 8,550 acres of the Study Area. Approximately 1,870 acres of the 100-year flood zone are already developed. This study suggests avoidance of the remaining 6,677 acres of floodplain for future siting of permanent housing, institutional, and some commercial developments.

The evaluation of developable vs. non-developable acreage over the three development scenarios does not show an appreciable difference. A null score will be given to the three development scenarios.

The Study Area under the No-Build Alternative would develop without protections proposed herein, but in adherence to Tangipahoa Parish's guidelines for residential and commercial development. The potential for development in higher densities and for encroachment into the flood zone may be more likely. Therefore, the score for the No-Build Alternative shows more developable than non-developable acreage (+).

5.2.4 Criteria: Consistency with Parish Master Plan

Tangipahoa Parish does not use zoning as a land use planning control measure. Instead, guidelines are published according to the type of development proposed. The Department of Community Development and the Planning Commission review and approve proposals. As-Built documents are reviewed by the Parish Engineer or the Department of Public Works and the Drainage District.

In 2008, the Comprehensive Plan prepared for TPG identified the future land use in the Study Area to be large areas of Estate, Vacant/Forested, and Countryside land uses. The current use and scenario projections developed as part of this project identify the Study Area's future land use with more high-density suburban developments than large-lot suburban estates.

Much of the northwest portion of the Study Area was identified as the Countryside land use type in the 2008 Comprehensive Plan. The Countryside component was meant to protect and reinforce the rural character of the unincorporated areas of the parish (TPG 2008). However, an 81% increase in the number of housing units in the Study Area over the last 17 years is primarily from high-density, small-lot suburban developments.

While development has not followed the guidance of the 2008 Comprehensive Plan, the Parish's development guidelines have been employed for the new subdivisions established in the Study Area. We can assume that the existing development guidelines as well as additional guidance will continue to guide the overall development within the Parish and the Study Area. Evaluation scores for this criterion reflect improved development quality by following the scenarios developed in this project when compared to the No-Build Alternative.

5.2.5 Criteria: Traffic Impacts to Local/Major Streets

Traffic volumes are expected to increase with each development scenario and with the No-Build Alternative. The LOS for state highways and local roads within the Study Area sharply decrease as population and traffic volumes increase. Without the proposed transportation system improvements, LOS along US 190, LA 22, and LA 445 fall below a C score along seven roadway segments in the High-Density Scenario and five roadway segments each for the Medium- and Low-Density Scenarios.

If the proposed transportation network improvements are constructed, only two roadway segments (within the High-Density Scenario and without the construction of the Firetower Road interchange at I-12) are expected to perform at a C-level LOS or worse. The two roadway segments are: US 190 (from Firetower Road to the Parish Line) and LA 22 (from Firetower Road to the Parish Line).

Criteria scoring for traffic impacts is provided for each Build Alternative and each Density Scenario. Scenarios and alternatives for roadway segments maintaining a LOS of B or better receive a criterion score of 3, LOS C segments receive a criterion score of 2, LOS D segments receive a criterion score of 1, and LOS E or worse segments receive a criterion score of 0. These scores will be given for each of up to 18 roadway segments modeled then averaged and presented in Section 5.3.

5.2.6 Criteria: Access Alternatives and Study Area Traffic Circulation

The Planning Year traffic volumes modeled for the Study Area in all three scenarios is significantly greater than expected in the baseline model. Proposed transportation system improvement projects for increased capacity and improved connectivity by connecting existing roadways will alleviate delays and poor LOSs.

The largest change to the transportation network would be the addition of an interchange on I-12 at Firetower Road. The Travel Demand Model evaluated each development scenario with and without the proposed interchange at Firetower Road. The model showed an increase in traffic volume along Firetower Road with the interchange and a shift of traffic volume to LA 445 without the Firetower interchange. The interchange at Firetower Road distributes travel demand more equitably over the Study Area and alleviates poor LOS at the intersections of US 190 and LA 445 and LA 445 and I-12.

The three development scenarios with the Build 1 Alternative would provide comparable access throughout the Study Area and receive a positive criterion score. The three development scenarios with the Build 2 Alternative receive a null score, because access to the interstate would not be improved but access within the Study Area would improve through additional connective local streets. The No-Build Alternative would neither improve access to the interstate nor improve access within the Study Area. The No-Build Alternative receives a negative score.

5.2.7 Criteria: Alternative Transportation Modes (Bicycle/Pedestrian)

The three development scenarios and the two build alternatives include the transportation network improvements including road widening and establishing new roadways to improve access within the Study Area. Each of the roadway projects, except for the interstate widening, are presented with multi-use paths for non-motorized bicycle and pedestrian access. The multi-use paths provide recreation opportunities as well as functional and safe transportation for residents choosing to walk or bicycle to work, schools, or shopping. The multi-use paths would also extend

existing and planned bicycle trails from the north shore of Lake Pontchartrain, such as the Ring around the Lake trail and the Manchac Greenway.

For improving bicycle and pedestrian transportation, the three scenarios and build alternatives would receive a positive score and the No-Build Alternative would receive a null score.

5.2.8 Criteria: Potential Mitigation Measures (Wetlands, Water Retention, etc.)

When the PMC created the development scenarios, one of the main goals was to avoid, minimize, or limit encroachment into the 100-year floodplain. Maintaining a natural state in the floodplain will allow natural water movements within the watersheds to collect from natural drainages and point sources. Roadway projects would take into account the changing hydrology in a quickly developing area and allow for adequate flow capacity through cross drains and at bridges.

As development of the Study Area progresses, the Tangipahoa Parish Community Development Department would review and approve development plans according to Parish Guidelines. Each development should account for stormwater management and wetlands avoidance. Retention ponds, wetlands avoidance and creation, and other green infrastructure techniques are favored by the Parish to decrease the overall impact of development within the watersheds.

While all of the development scenarios cover approximately the same acreage, the density of development planned for each is different. In the most general terms, the higher the density of development, the higher the percentage of the Study Area which would be covered in non-pervious materials. Thence, the greater the impacts to watershed hydrology. The Parish's planning oversight of developments should mitigate or control adverse impacts to the watershed. However, a developed watershed will usually have a more negative response to storm events than an un-developed watershed. Scoring each scenario for this criterion is difficult. The level or rate of development in the No-Build Alternative is unknown. We expect a rate similar to the medium- or high-density scenarios. The scores are all negative to denote the expected difference between developed and un-developed watersheds. The scale for the scores correlates to expected densities on a scale of -1 to -3 with a score of -3 denoting the most impact from the highest density of development.

5.2.9 Criteria: Infrastructure Costs

The Opinion of Probable Costs task (see Section 4.7), provided estimated costs for the proposed improvements to the transportation system for both state and local roadways. Costs for other infrastructure improvements would be covered by the developers, such as interior roadways in commercial and residential area and utilities connections to existing infrastructure. Scoring will show the total cost of each scenario with and without the I-12 interchange as referenced by Build 1 and Build 2. Scoring the No-Build Alternative will include the costs for capacity improvement projects.

Infrastructure Costs by Scenario:

High-Density Scenario: \$443,978,882
Medium-Density Scenario: \$443,978,882
Low-Density Scenario: \$443,978,882
I-12 Interchange at Firetower Road: \$19,028,625

5.2.10 Criteria: Innovative Financing of Infrastructure

The Development Scenarios all have the same transportation infrastructure costs. These costs are exceptionally high and with the current budget for projects at DOTD, the RPC, and Tangipahoa Parish, the likelihood of using traditional funding sources for the proposed projects and have the roadways in service by the planning year 2044 would be impossible. Funding for these projects will depend on alternate means. Recently in Louisiana, the DOTD has used innovative financing opportunities such as public-private partnerships and freight corridor grants for interstate projects.

Each of the three Development Scenarios have equal costs and equal opportunities to seek alternative funding sources, so each Scenario receives a positive score in the comparison matrix. The No-Build Alternative has a slightly lower total cost of infrastructure; however, much of the proposed infrastructure is needed for the foreseeable No-Build future condition. The No-Build Alternative also receives a positive score.

5.2.11 Criteria: Potential Timeline for Development

The Development Scenarios all have the footprint and transportation infrastructure costs. These costs are exceptionally high and will require innovative financing. For this planning exercise, the PMC used the planning year 2044 to assume full build-out completion. The comparison matrix shows that same year for all Development Scenarios and the No-Build Alternative.

5.3 Alternatives Comparison Matrix

The analyses described above provide scoring schema for each criterion, either qualitative or quantitative, depending on the criteria type. Table 14 provides a matrix for easy comparison of the scores by criterion and scenario.

Table 14. Alternatives Comparison Matrix by Evaluation Criteria and Development Scenario

| Criteria | No-Build | High-Density Scenario | | Medium-Density Scenario | | Low-Density Scenario | |
|---|--------------|-----------------------|---------|-------------------------|---------|----------------------|---------|
| | | Build 1 | Build 2 | Build 1 | Build 2 | Build 1 | Build 2 |
| Purpose and Need | 0 | + | | + | | + | |
| Economic Benefit to Parish | \$17,224,560 | \$27,708,525 | | \$36,556,751 | | \$34,573,682 | |
| Developable vs. Non-Developable Acreage | + | 0 | | 0 | | 0 | |

Table 14, continued.

| Criteria | No-Build | High-Density Scenario | | Medium-Density Scenario | | Low-Density Scenario | |
|-------------------------------------|-------------------|-----------------------|---------|-------------------------|---------|----------------------|---------|
| Consistency with Parish Master Plan | - | + | | + | | + | |
| Traffic Impacts | 3.0 | 3.0 | 2.7 | 3.0 | 3.0 | 3.0 | 3.0 |
| Access Alternatives | - | + | 0 | + | 0 | + | 0 |
| Alternative Transportation Modes | 0 | + | | + | | + | |
| Potential Mitigation Measures | -2.5 | -3.0 | | -2.0 | | -1.0 | |
| Infrastructure Costs | \$378 Million (M) | \$466 M | \$444 M | \$466 M | \$444 M | \$466 M | \$444 M |
| Potential Timeline for Development | 2044 | 2044 | | 2044 | | 2044 | |

The ELOS Team suggests a hybrid of the Low- and Medium- Density Scenarios with the I-12 interchange at Firetower Road as the most beneficial option for the Study Area. While economic benefit to the parish is greater from property taxes with the higher density of residential development in the Low- and Medium Scenarios, the High-Density Scenario will also produce sales taxes for the Parish. Large scale retail developments already exist within 10.5 miles of the Study Area along I-12 in Madisonville and Hammond. Traffic impacts and infrastructure costs are similar across all scenarios and Build Alternatives. Lower density of development can mitigate for wetlands and floodplain protection.

6.0 NEXT STEPS

6.1 Policy Suggestions

In order to support the goals of this study, the ELOS Team suggests the following policies to enhance economic development, use existing infrastructure wisely, consider natural environment for resilience and storm protection, consider cultural and natural resources, provide for wide range of housing costs and living styles, and enhance and create recreation opportunities.

- Work with developers to prioritize smart development practices such as, fewer housing units per acre, maintaining green space as a buffer from highways, waterways, and adjacent developments; including sidewalks or multi-use paths from neighborhood streets to main collector routes; using green infrastructure such as water gardens, vegetated swales, and pervious pavement for stormwater collection and control.
- Develop land use controls to consider impacts of new developments on the transportation system and encourage development patterns that make efficient use of and improve the system.
- Work with the Federal Highway Administration (FHWA), DOTD, and RPC to pursue an interchange on I-12 at Firetower Road to increase access to the Study Area, entice investors and developers to the Study Area, and provide future roadway functional capacity for foreseeable traffic volumes.

- Work with FHWA, DOTD, and SHPO to get proposed projects on state-system roadways into the DOTD Project Delivery Process. Capacity projects along I-12, US 190, LA 22, and LA 445 are integral to maintaining acceptable traffic LOSs within the Study Area.
- Explore financing opportunities for local roadway improvements and new connection roadways in the Study Area. Capacity improvements on Firetower Road and Harvey Lavigne Road may be equally important prior to the quick surge of development within the Study Area. The I-12 Service Road should also be a priority.
- Work with DOTD to propose Firetower Road as a roadway to be transferred into the State Highway System.
- Develop a Local Road Comprehensive Plan that would have developers design interconnecting subdivision roadways with wider rights-of-way or boulevards to allow for improved roadway connectivity with rural collector roads and state highways.
- Develop an interactive mapping tool for Parish Planners to use that models the watershed's response to proposed developments. The tool should consider development type, density, and materials. The tool should provide suggestions for improving designs such as the inclusion of green infrastructure or other stormwater management techniques.

7.0 REFERENCES

Gresham Smith. 2019. Traffic Data Collection Report for the Land Use, Transportation and Resilience: Scenario Planning Study, RPC Task: ETangi, H.013576. Gresham Smith, 10000 Perkins Rowe, Suite 280, Baton Rouge, LA. 74 pp.

Hannis T. Bourgeois, LLC. 2019. Livingston Parish School Board, Report on Audit of Basic Financial Statements. June 30, 2019. Livingston, LA. Available online: [http://app.la.state.la.us/PublicReports.nsf/0/CDC0091C40BC69F7862584F00056EB4C/\\$FILE/0001F0EE.pdf](http://app.la.state.la.us/PublicReports.nsf/0/CDC0091C40BC69F7862584F00056EB4C/$FILE/0001F0EE.pdf)

Louisiana Department of Education (LDOE). 2018a. School and Early Childhood Program Performance. Available online: <https://www.louisianabelieves.com/measuringresults/school-and-center-performance>

LDOE. 2018b. 2018 School Performance Scores and Letter Grades. Updated December 10, 2018. Available online: <https://www.louisianabelieves.com/resources/library/performance-scores>

LDOE. 2018c. 2018 District Performance Scores and Letter Grades. Updated December 10, 2018. Available online: <https://www.louisianabelieves.com/resources/library/performance-scores>

Louisiana Economic Development (LED). Undated. Site Selection Center. Web application available online: <https://louisianasiteselection.com/led/Search>

- St. Tammany Parish Sheriff's Office. 2017. Comprehensive Annual Financial Report for the Year Ended June 30, 2017. St. Tammany Parish, LA. Available online: [http://app.la.state.la.us/PublicReports.nsf/0/D8C0F758D7354AB786258212005374BB/\\$FILE/00017185.pdf](http://app.la.state.la.us/PublicReports.nsf/0/D8C0F758D7354AB786258212005374BB/$FILE/00017185.pdf)
- Tangipahoa Parish Government. 2008. *Comprehensive Plan*. Prepared by Kendig Keast Collaborative in cooperation with Tangipahoa Parish Government and the Land Use Steering Committee. July 2008. Available online: <https://tangipahoa.org/Portals/0/Planning/2008-Comprehensive-Plan-Final-Adopted-Copy.pdf>
- Tangipahoa Parish Government. 2020. Parish Code of Ordinance: Chapter 17 – Planning and Development. No.20-45. October 14, 2020. Available online: <https://tangipahoa.org/Portals/0/Planning/Chapter-17-Codified-Land-Development-Standards-2020.pdf>
- U.S. Census Bureau (USCB). Undated. OnTheMap Application and LEHD Origin-Destination Employment Statistics (Beginning of Quarter Employment, 2nd Quarter of 2002-2015). Web application available at: <https://onthemap.ces.census.gov>
- USCB. 1994. Geographic Areas Reference Manual. U.S. Department of Commerce, Economics and Statistics Administration, Bureau of the Census. Available online: <https://www.census.gov/geo/reference/garm.html>
- USCB. 2010a. 2010 Census Demographic Profile, selected Tracts and Block Groups, Tangipahoa and St. Tammany Parishes, LA. Web application available online: <https://www.census.gov/popfinder/?#>
- USCB. 2010b. American FactFinder Application. Data collected from 2010 Decennial Census for Louisiana, Block Groups in St. Tammany Parish, and Tangipahoa Parish. Web application available at: <http://factfinder.census.gov>
- USCB. 2016a. American FactFinder Application. Data collected from American Community Survey (2002-2015) for Louisiana, St. Tammany Parish, and Tangipahoa Parish. Web application available at: <http://factfinder.census.gov>
- USCB. 2016b. American Community Survey 5-Year Estimate. Geodatabase file clipped to Study Area by New Orleans Regional Planning Commission and provided to ELOS Environmental, LLC.
- USCB. 2017. American FactFinder Application. Data collected from American Community Survey (2013-2017) for Census Tracts 403.05, 9537, 9540.02, 9546, and 9548. Web application available at: <http://factfinder.census.gov>
- U.S. Energy Information Administration. 2016. Commercial Buildings Energy Consumption Survey. Available online: <https://www.eia.gov/consumption/commercial/data/2012/bc/cfm/b2.php>