



GC SWLA

A Green Coalition for Southwest Louisiana



The Path Forward Action Plan

An Action Plan to Reduce Area Ozone Pollution
and Particulate Matter in the Lake Charles MSA
(Calcasieu/Cameron Parishes)

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Created by the Southwest Louisiana Air Quality Task Force



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List of Frequently Used Acronyms

8-Hour Ozone Flex Program
APU: Auxiliary Power Units
AQTF: Air Quality Task Force
CAA: Clean Air Act
CFC: Chlorofluorocarbon
CO₂: Carbon Dioxide
EPA: U. S. Environmental Protection Agency
IMCAL/MPO: Imperial Calcasieu Regional Planning & Development Commission and Lake Charles Area Metropolitan Planning Organization
LAIA: Lake Area Industry Alliance
LDEQ: Louisiana Department of Environmental Quality
LDOTD: Louisiana Department of Transportation and Development
MOA: Memorandum of Agreement
MSA: Calcasieu-Cameron Parishes Metropolitan Statistical Area
NAAQS: National Ambient Air Quality Standards
NECO: Neighborhood Eco Pass
NMOG: Non-Methane Organic gases
NO_x: Oxides of nitrogen
O₃: Ozone
ppb: parts per billion
ppm: parts per million
RVP: Reid Vapor Pressure
SWLA: Southwest Louisiana
TPD: tons per day
tpy: tons per year
VMEP: Voluntary Mobile Source Emission Reduction Program
VMT: Vehicle Miles Traveled
VOC: Volatile organic compounds

Education: Air Quality 101 and History of This Program

What Is Ozone?

Ground Level Ozone: Ozone is not emitted directly into the air, but forms through the reaction of nitrogen oxides (NO_x) and volatile organic compounds (VOC) in the presence of sunlight.

Elevated ozone levels typically occur during the summer months.

What You Need To Know About Ozone And Your Health:

Ozone can

- Irritate the respiratory system
- Reduce lung function
- Aggravate asthma
- Aggravate chronic lung diseases, such as emphysema and bronchitis
- Inflammate and temporarily damage the lining of the lung
- Impair the body's immune system defenses

Who is sensitive to Ozone?

- Children
- Adults who are active in the outdoors
- People with respiratory diseases
- People with unusual susceptibility to ozone

What is Ozone?

- Ozone: "Good up high, bad nearby."
- In the stratosphere, ozone occurs naturally and screens out harmful ultraviolet rays from the sun.
- Ground-level ozone results from photochemical reaction of nitrogen oxides (NO_x) and volatile organic compounds (VOCs) while in the presence of sunlight.
- At ground-level, ozone is a principal component of smog and one of six "criteria pollutants" for which EPA has set national ambient air quality standards (NAAQS).

What is Particulate Matter (PM)?

- The term Particulate Matter (PM) includes both solid particles and liquid droplets found in the air. Many human-made and natural sources emit PM directly or emit other pollutants that react in the atmosphere to form PM. These solid and liquid particles come in a wide range of sizes. Particles less than 10 micrometers in diameter tend to pose the most significant health concern because they can be inhaled into and accumulate in the respiratory system.

What You Need To Know About Ozone And Your Health:

PM can...

- Premature death in people with heart or lung disease
- Nonfatal heart attacks
- Irregular heartbeat
- Aggravated asthma
- Decreased lung function
- Increased respiratory symptoms, such as irritation of the airways, coughing or difficulty breathing.

Who is sensitive to PM?

- People with heart or lung diseases
- Children
- Older adults

What is Particulate Matter (PM)?

- Particles can be carried over long distances by wind and then settle on ground or water.
- Making lakes and streams acidic
- Changing the nutrient balance in coastal waters and large river basins
- Depleting the nutrients in soil
- Damaging sensitive forest and farm crops
- Affecting the diversity of ecosystems
- Contributing to acid rain effects

Introduction

On April 4, 2012, EPA's Office of Air Quality Planning and Standards announced their new voluntary Ozone Advance Program. It continues and expands EPA's cooperative work with state, tribal, and local governments. The Program is patterned after earlier ozone mitigation programs such as Ozone Flex and Early Action Compacts, although divorced from ozone attainment regulatory requirements altogether. The overarching objective of the Ozone Advance Program is to encourage emission reductions in ozone attainment areas to help them to continue to meet the NAAQS. Program goals designed to help achieve the objective are:

1. Help attainment areas to ensure continued attainment of the ozone standard and health protection;
2. Better regions that will remain in achievement; and
3. Efficiently direct available resources toward actions to address ozone problems quickly.

It is believed that participating in the program would facilitate the area's efforts to achieve and maintain the ozone standard as well as provide for possible mitigation of consequences of failure to attain the standard.

On June 25, 2012, IMCAL prepared a letter with the Notice of Intent and requested to be accepted into the EPA's Ozone Advance Program. On July 13, 2012, IMCAL received a letter from EPA indicating that the Lake Charles MSA area met the eligibility criteria and was welcomed as a participant in this innovative program. See Attachment I for a map of the city.

In the summer of 2012, numerous air monitors ranging from Vinton, Carlyss, and Westlake reported levels of ozone or "smog" below, but close to the NAAQS. Southwest Louisiana (SWLA) is designated as an "Attainment Area," but the Louisiana Department of Environmental Quality has recommended that SWLA local government agencies reduce emissions to continue "Attainment" and not obtain "Non-Attainment" status by participating in the EPA Ozone Advance Program.

EPA announced the Particulate Matter Program in January 2013. The Ozone and the Particulate Matter Programs then joined and became the Advance Program. Since being approved into the EPA Advance Program, local government agencies in Southwest Louisiana created an Air Quality Task Force and charged it in developing a short and long-term plan of measures aimed at reducing ozone pollution in its Metropolitan Statistical Area (MSA), which includes Calcasieu and Cameron Parishes. This plan represents the collaborative effort of a group of governmental bodies and non-profit organizations dedicated to improving the air quality in several parishes including the villages, cities, and towns of Vinton, Sulphur, Westlake, Lake Charles, Cameron, Grand Chenier, and Iowa.

Participation in the Advance Program entails:

- Using best efforts to move quickly toward implementing measures that might reduce ozone levels and increase public awareness;

- Develop a plan (“path forward”) within a year of sign up;
- Implement forward path measures as soon as possible;
- Annual informal status check-ins.

The Lake Charles MSA area might benefit from participating in the Program through:

- Enhanced ozone attainment efforts and a higher probability for maintaining the NAAQS for ozone and PM_{2.5};
- EPA assistance;
- A rallying vehicle for public/stakeholder awareness and involvement;
- Recognition of the area’s efforts to maintain and achieve ozone attainment;
- Preference for the Diesel Emission Reduction Act program funding.

Who We Are

The metropolitan planning and economic development organizations, local governments, state environmental agencies, businesses, industries, educational institution, and other community collaborators are working in partnership with the Louisiana Department of Environmental Quality (LDEQ) to improve air quality in the Lake Charles MSA area. This coalition is called the Air Quality Task Force of Southwest Louisiana (AQTF of SWLA). A list of our members is located in Attachment II.

Our Mission

The AQTF of SWLA is committed to improving air quality in the Lake Charles MSA (Calcasieu and Cameron parishes) of Southwest Louisiana through voluntary actions and reasonable, practical regulatory actions.

Our Goals

- Improve air quality through voluntary actions;
- Create public awareness and promote individual responsibility through education; and
- Provide credible measures of air quality improvement efforts.

The AQTF of SWLA has determined that our “path forward” should include the following tasks:

1. Develop and implement an effective public awareness/outreach program;
2. Identification and documentation of ozone mitigation measures already implemented in the Lake Charles MSA;
3. Identification and documentation of ozone mitigation measures that are in the process of currently being implemented, including scheduled completion dates;
4. Research, analysis, and compilation of additional steps that would be feasible and
5. cost-effective for implementation in the Lake Charles MSA;
6. Selection of a suite of measures for which to pursue implementation;

7. Annual check-ins, to provide the status of local air quality, measure, and programs in place and lessons learned. Re-evaluate and revise path forward as necessary.

The AQTF of SWLA continually asks its members at each of its meetings to help identify, evaluate, and implement innovative ozone mitigation measures in the Lake Charles MSA area to help improve air quality and maintain attainment status in the NAAQSs for ozone and particulate matter. Information about the Advance Program and Ozone Action Days can be found on IMCAL's and the Chamber SWLA's websites.

To stimulate thinking about possible ozone reduction measures, our task force has compiled a preliminary list of innovative ozone mitigation strategies under the areas of alternative energy, energy efficiency, episodic controls, and urban heat island measures. Additionally, we feel it would be helpful to consider the various measures according to emissions sources categories:

- Area Source (e.g., homes, businesses, lawn care, agriculture)
- Mobile Sources
 - On-road (e.g., cars, trucks)
 - Off-road (e.g., trains, planes, marine vessels, construction equipment)
- Point Source (e.g., industrial facilities)

I. Overview

A. Growth in Southwest Lake Charles, Moss Bluff, and Carlyss Areas of Calcasieu Parish

According to Calcasieu Parish Census 2010 results, the population of the area was approximately 192,768 people. From 2000 to 2010, the Calcasieu Parish population growth percentage was 5.0% (or from 183,577 people to 192,768 people).

Areas grew in population increases by means of expansion and also growth, but some declines in the 2010 Census are evident from the 2000 Census. The areas with increases could be mainly equated to the housing explosion prior to Hurricane Rita of 2005. Moss Bluff/Gillis and Southwest Lake Charles continue to depict a stronger growth pattern adding to this region. Carlyss, Sulphur, and north Sulphur continue to have some increase in this region with additional growth. The state experienced an increase in population by 1.4% totally, while continuing to remain about 50% urban and 50% rural.

The area is composed of a mixture of land uses ranging from woodlands, marshes, swamps and vacant land to strip commercial uses, highly residential subdivisions, municipal buildings, and heavy industrial uses. Residential areas comprise a large portion of the land uses in this metropolitan area. Certain social and economic characteristics of the population are important links to understanding the transportation needs of the metropolitan area. Population and associated developments, particularly as a result of the booming petrochemical industry, is spreading further out from the parish centers, although ozone has remained relatively constant.

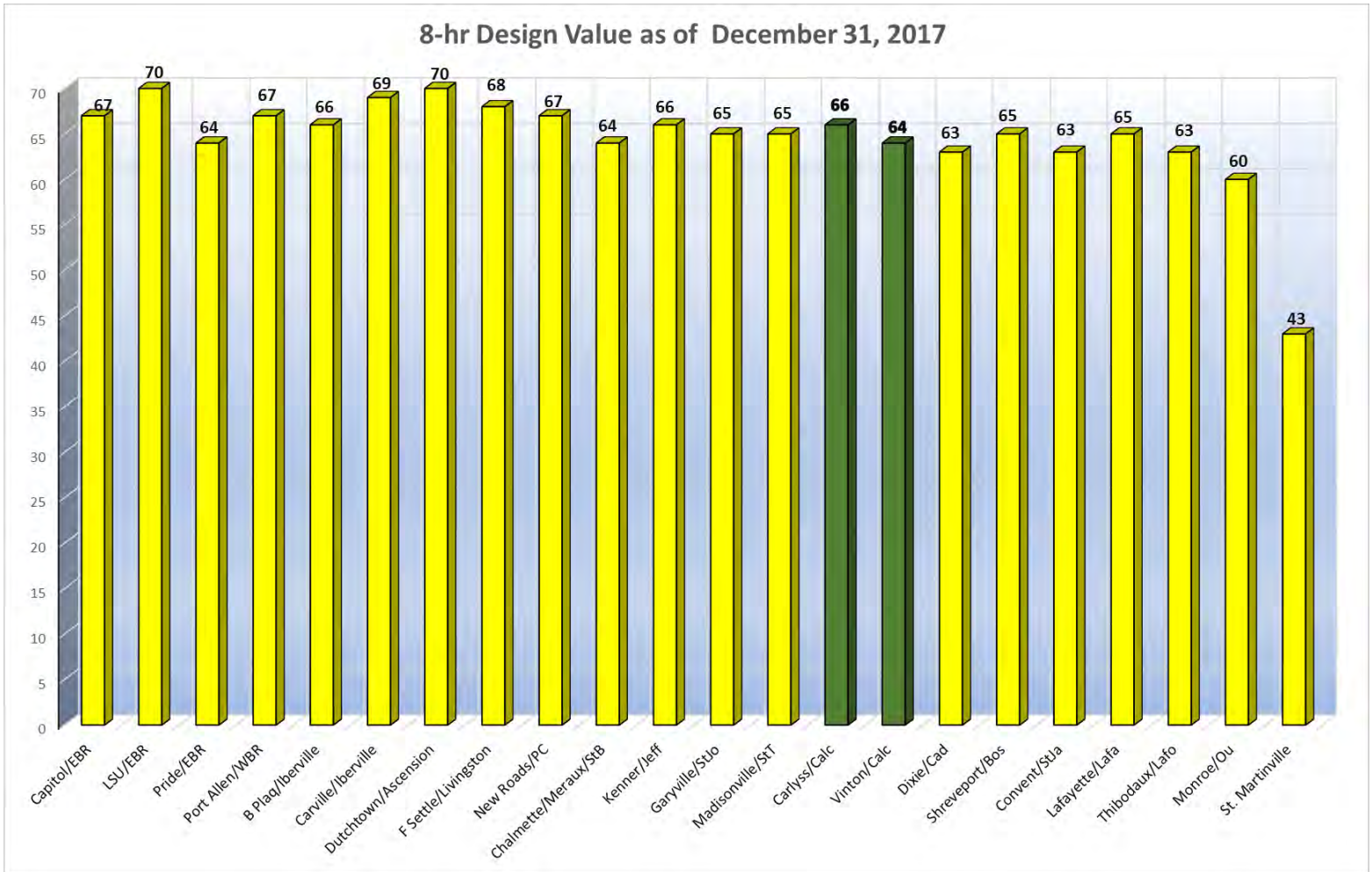
B. Ozone Chemistry

Ozone is formed when NO_x and VOCs found in the emissions from cars, power plants, and other sources react in the presence of sunlight. Hotter temperatures and increased sunlight during summer months create the perfect conditions for this reaction to occur.

How is attainment determined? The 3-year average of the fourth-highest daily maximum 8-hour average ozone concentration measured at each monitor within an area provides an ozone “design value or DV” for each monitor. The monitor with the highest DV becomes the DV for the area. The 8-hour primary ozone standard is 75 parts per billion (ppb). With these standards, air quality determinations are becoming more regional in character with the impacts of key pollutants like ozone and particulate matter pollution. See the graphs below for a view of how our ozone design values have changed over the past several years.

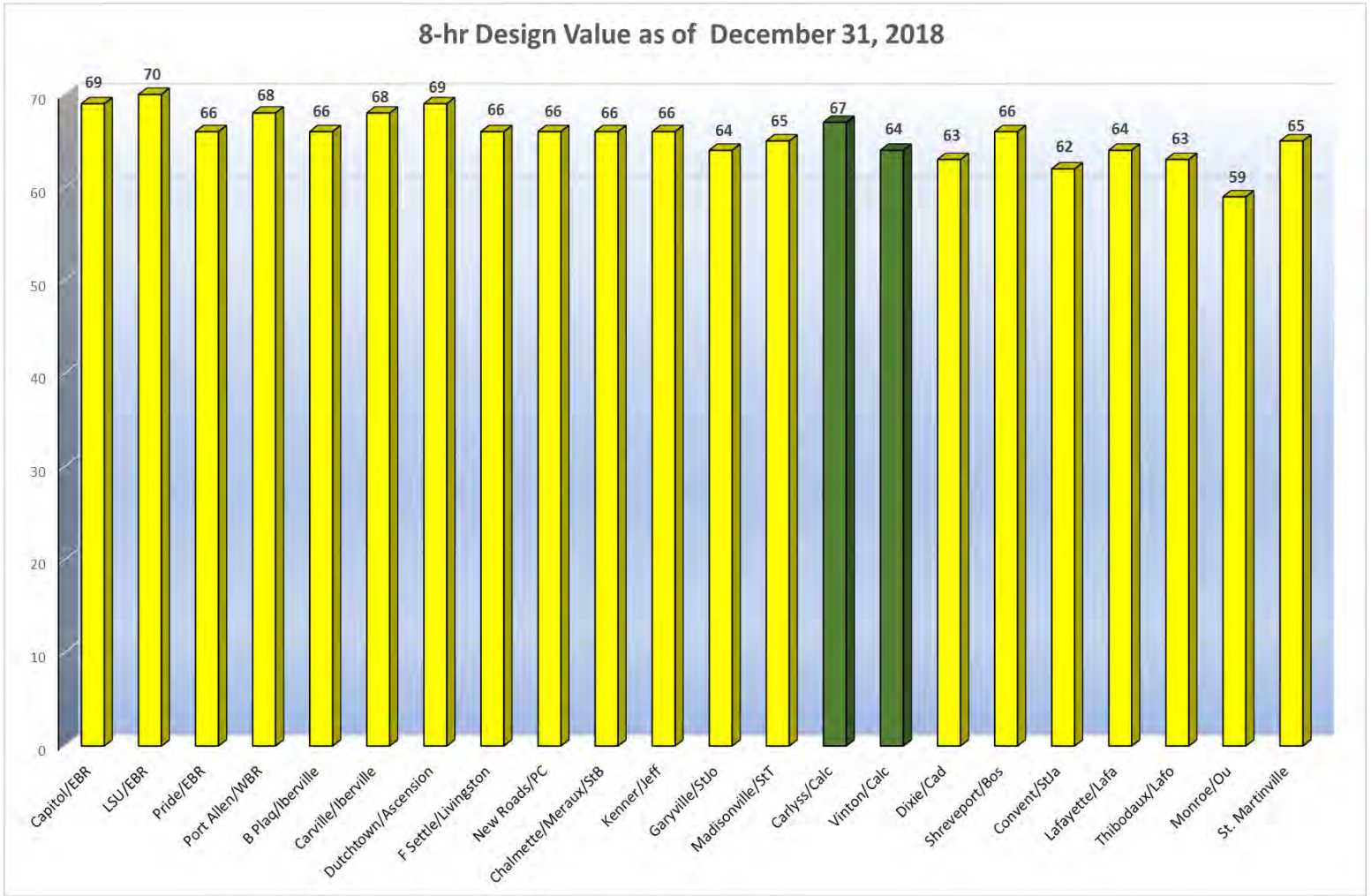
The graphs below show unfluctuating design values in the two area monitors results (Carlyss and Vinton)

2015-2017 Design Values



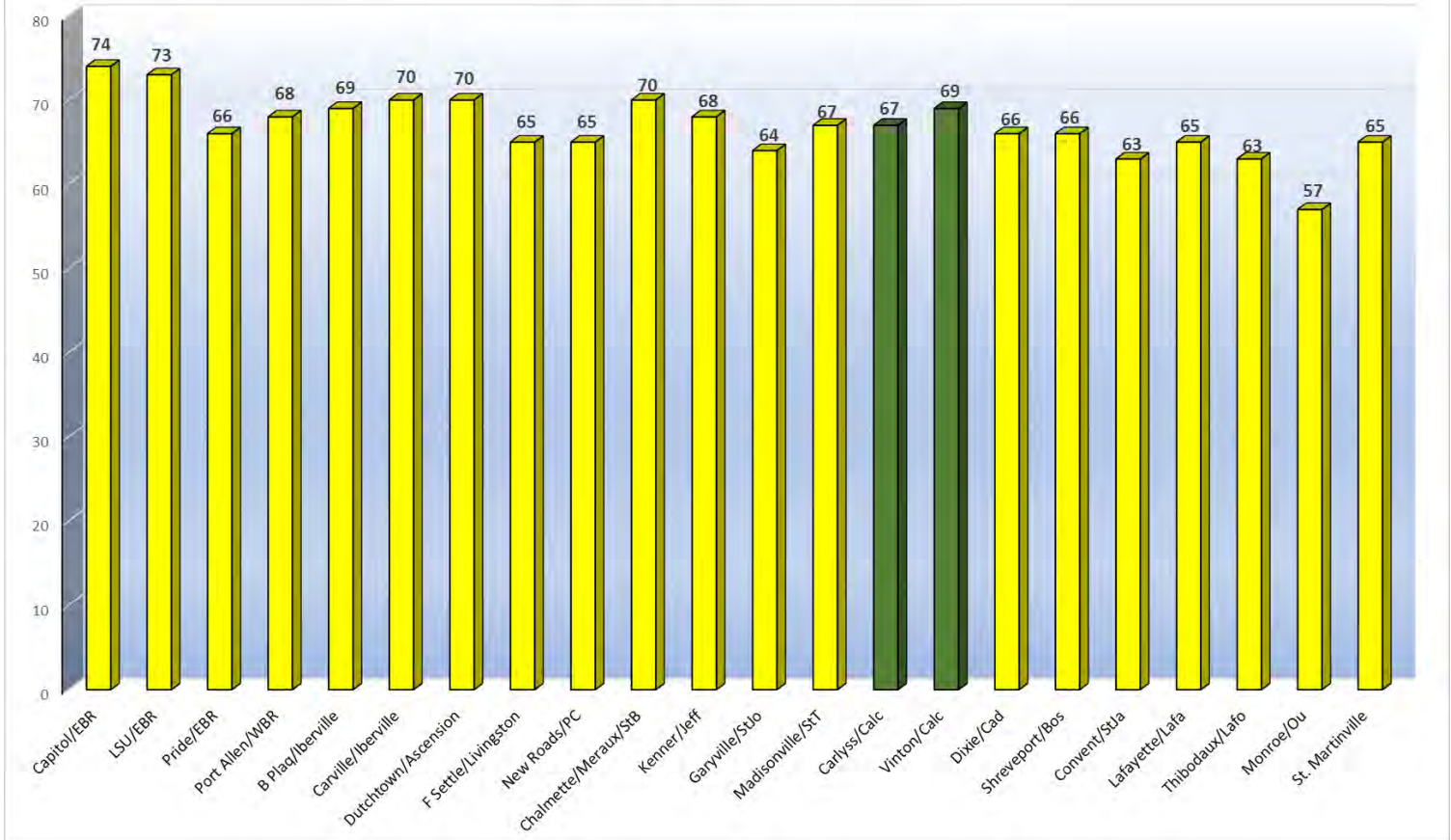
Source: DEQ

2016-2018 Design Values



2018 Design Values

8-hr Design Value as of 2018



Reductions in Ozone formation

To address the ozone problem the prudent approach is to seek reductions in the overall pollution burden, including potential reductions of NO_x and VOCs, the ozone precursors. A variety of studies have shown that both major precursors should be controlled to effectively reduce ozone pollution, their amounts based on local meteorological conditions and the chemistry of ozone formation.

As part of its efforts to better understand ozone formation in Louisiana, the DEQ completed its Technical Support Document (TSD) that documents current and modeled future emissions across the entire state. That document is available at

http://www.deq.louisiana.gov/portal/Portals/0/AirQualityAssessment/Engineering/Ozone/LDEQ_TSD_4Oct13.pdf.

Because ozone formation is so dependent on local concentrations of the precursors VOCs and NO_x (which vary spatially and temporally) as well as meteorological effects that affect mixing rates, a more detailed review of the TSD will be necessary to determine the appropriate controls necessary to achieve broad reductions over a wide area such as the Southwest Louisiana region.

Ozone Pollution in the Context of a Changing Climate

The formation of ozone is impacted by climate. The atmospheric chemical processes that control the production of ozone are determined largely by the volume of ozone-forming contaminants together with temperature and other factors such as sunlight and relative humidity. As the temperature and other meteorological factors change, production of air pollutants also will be affected. For example, as temperatures increase with larger amounts of sunlight, ozone levels also will rise. Strategies for improving air quality traditionally have been assessed by examining the relative benefits of different emission reduction strategies and assuming that changes in climate were not a factor. As predictions of changes in the climate over the next few decades are being increasingly acknowledged by the scientific community, the impacts of these changes in temperature and other meteorological factors on air quality need to be factored into air quality assessments. Many studies are already demonstrating the impacts of climate change on future air quality, in particular, the anticipated increases in ozone and particulate pollution production in many areas.

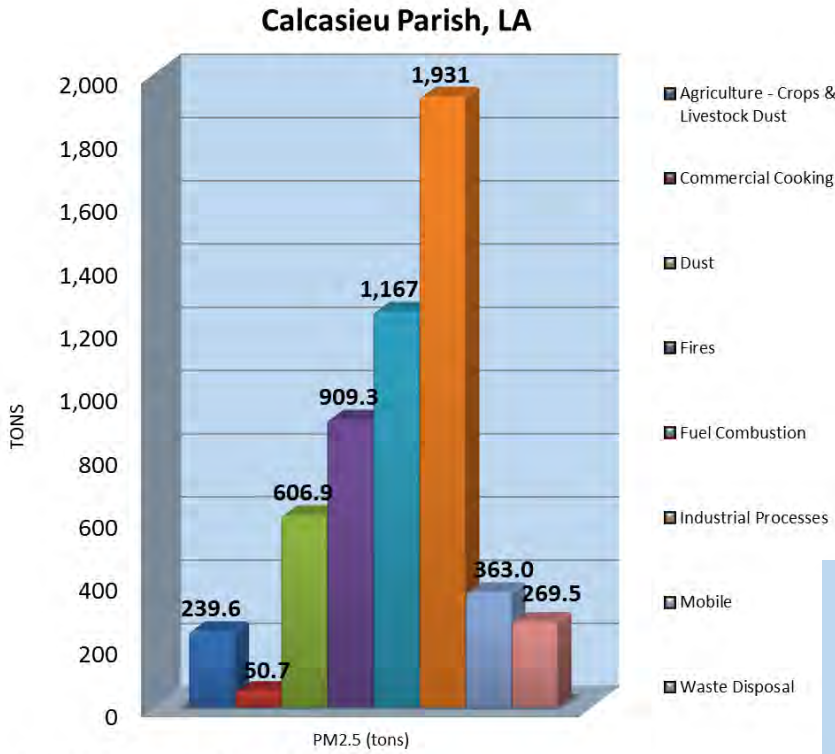
C. Particulate Matter (Air Pollutants)

The Air Quality Task Force also agreed to work toward reviewing and developing actions for PM. Canada and the United States continue to work toward instituting regulatory programs for reducing PM. The current NAAQS for Particulate Matter is 12 µg/m³. The Lake Charles area Design Value has been below 12 µg/m³ for the past several years. The Air Quality Task Force will continue to monitor these numbers very closely and will also continue to develop strategies for reducing PM pollution. The next section lays out possible strategies.

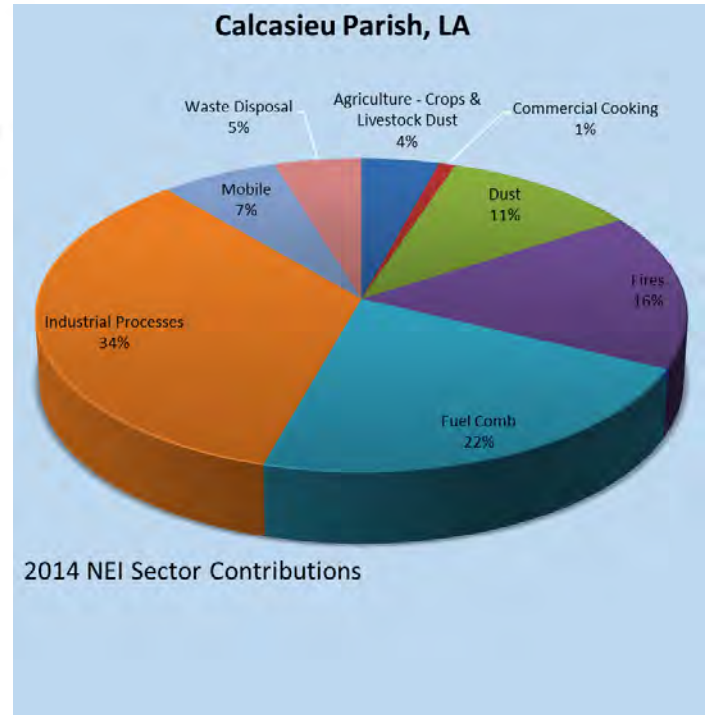
D. National Emissions Inventory Profiles

The National Emissions Inventory (NEI) is a comprehensive and detailed estimate of air emissions of criteria pollutants, criteria precursors, and hazardous air pollutants from air emissions sources. The NEI is released every 3 years, using the Emissions Inventory System (EIS) to compile data from State, Local, and Tribal air agencies, combined with additional data sources.

Calcasieu Parish, LA National Emission Inventory Contributions



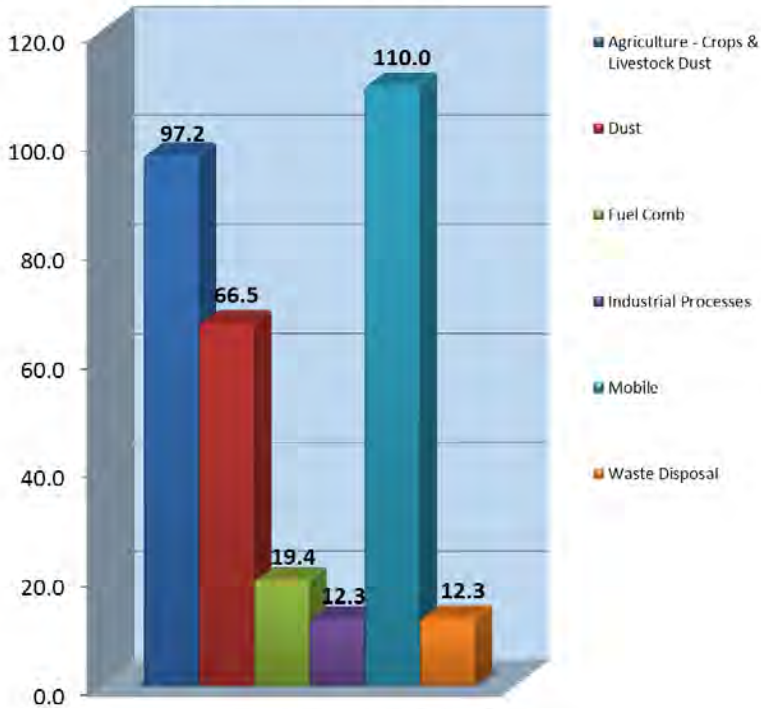
2014 NEI Sector Contributions



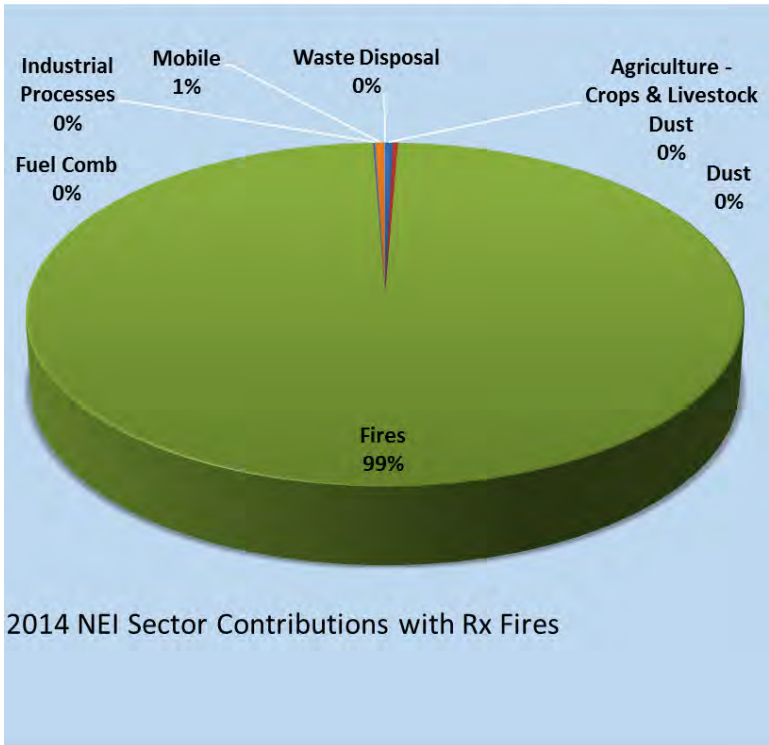
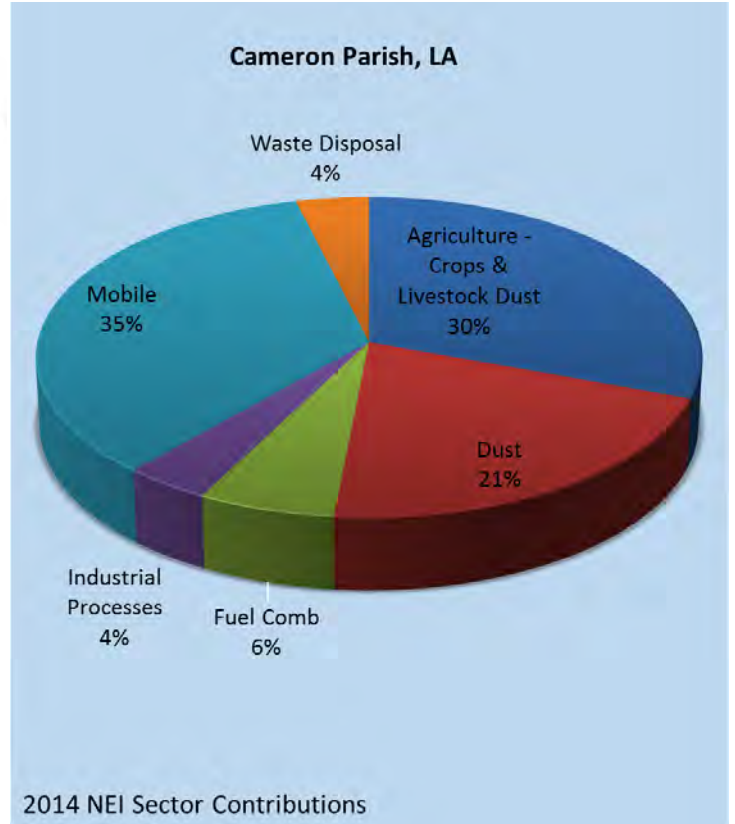
2014 NEI Sector Contributions

Cameron Parish, LA National Emission Inventory Contributions

Cameron Parish, LA



Cameron Parish, LA



II. Reduction Strategies

A. List of Innovative Pollution Mitigation Strategies

Alternative Energy

- Use of Renewable Energy in the Residential and Commercial Sector
- On-Road Fleet Vehicle Retrofitting/Alternative Energy Incentive Program
- Off-Road Vehicle Retrofitting/Alternative Energy Incentive Program (e.g. Tug Boats, Locomotives)
- Incentive Program for Use of Alternative Energy/Clean Fuels in Non-Road Source Category (e.g. Construction)
- Truck Idle Emission Reductions
- Locomotives Idle Emission Reductions
- Waste to Energy
- Tax Credit for Purchase of Alternative Fuel On-road Vehicles for Non-Commercial Use
- Renewable/Cleaner Energy in Oil and Gas Industries

Energy Efficiency/Renewable Energy

- Green Buildings
- Building Energy Management
- Energy Efficient Lighting
- Energy Star Program
- Combined Heat and Power (CHP)
- State EERS Standards
- Indirect Source Mitigation
- Public Outreach/Education
- Weatherization of Older Homes in Low Income Areas
- Expanded Research, Development, and Demonstration (RD&D)
- Indirect Source Mitigation for Mobile Sources

Episodic Controls

- Electric Demand Days (HEDD) Program
- Traffic Congestion Mitigation and Reduction
- Delay of Low priority Activities
- Use of Low Emission Fuel High

Urban Heat Island

- Reflective Roofs
- Increase in Vegetative and Tree Canopy Cover
- Environment Surface Albedo Changes – Public Sector
- Environment Surface Albedo Changes – Private Sector

B. Reduction of Vehicle Emissions

Clean Car Campaign

The Clean Cars Campaign is an informal alliance of dozens of state, local and national health and environmental organizations working together to promote cleaner motor vehicles, including vehicles that emit fewer greenhouse gas emissions. Each member organization has its own governing board and sets its own policies. Member groups do not pay to participate in the campaign. Currently Louisiana is not participating in this Campaign.

Anti-Idling Ordinances, Financial Incentives and Voluntary Measures

Measures to Reduce Truck Idling

EPA estimates that idling trucks consume, annually, over 950 million gallons of diesel fuel, and emit approximately 200,000 tons of NO_x and over 10 million tons of carbon dioxide (CO₂). The average emissions per a heavy duty diesel truck are 12 grams per hour of HC, 140 grams per hour of NO_x and 8200 grams per hour of CO₂. Heavy duty diesel trucks are also considerable fuel-guzzlers, consuming about 0.80 gallons per hour of idling. There are a number of ways to reduce truck idling: anti-idling regulation; voluntary measures; and financial incentive programs.

Anti-Idling ordinances can play an important role in reducing truck idling and emissions. The trucking industry has identified inconsistency in state and local idling laws as a barrier to greater implementation of idle reduction technologies and strategies. Approximately fifteen states and dozens of local jurisdictions currently have idling laws. Anti-Idling ordinances from other areas are being evaluated to determine their usefulness in this area.

A significant portion of the trucking industry has embraced various idling technology to save fuel and decrease emissions. A survey of local trucking companies and businesses with fleets will be contacted and encouraged to join the effort to reduce emissions.

Numerous technologies are currently available to help companies reduce fuel consumption and install idling technology. However, one of the major barriers to widespread adoption of retrofits, auxiliary power units (APUs) and other voluntary measures is a lack of investment capital. State loan programs can greatly assist trucking companies interested in doing the right thing to attain their idling reduction goals. State loan programs are being investigated to reduce investment capital requirements for small and medium firms. The National Clean Diesel Program offers a variety of funding sources to reduce diesel emissions. More information can be found at <http://www.epa.gov/cleandiesel/index.htm>.

Employer Trip Reduction Program

Employer-Based Trip Reduction Programs are designed to reduce vehicle miles traveled by single-occupancy commuters traveling to and from their place of employment. Through the program, large employers develop a “trip reduction program” and an annual report documenting methods

they have adopted for reducing single occupancy vehicle commuting commensurate with a pre-defined level. Local industries and businesses will be contacted for possible participation.

Actions included in the trip reduction plan can include but are not limited to the following:

- Subsidized bus passes
- Rideshare matching programs
- Vanpool leasing programs
- Telecommuting programs
- Compressed work week schedule programs and flexible work schedule programs
- Work site parking fee programs
- Preferential parking for rideshare participants
- Transportation for business related activities
- A guaranteed ride home program
- On-site facility improvements
- Soliciting feedback from employees
- On-site daycare facilities
- Coordination with local transit authorities for improved mass transit service and information on mass transit programs
- Recognition and rewards for employee participation

Consumer Incentive Programs

The public's awareness of the importance of issues such as climate change and ozone pollution is on the rise. Accordingly, programs that provide the public with relatively easy and inexpensive ways to reduce ozone pollution and help the environment are likely to be successful and cost effective.

Some such programs may include:

- Voluntary usage of electric lawn mowers and garden equipment during hot summer days or on weekends;
- Local store cash rebates or vouchers for the purchase of electric lawn mowers and garden equipment;
- Local tax breaks and energy efficiency rebates for the purchase of electric lawn mowers and garden equipment;
- Green certification for lawn care companies that primarily use electric and low-emission gas equipment and mowers;

Expanded Transit Alternatives

Reducing ozone precursors from on-road mobile sources can be accomplished through tightening vehicle emissions standards, emissions inspection programs, fuel reformulation, and reducing vehicle miles traveled (VMT). VMT reduction is perhaps the most challenging strategy yet brings important ozone and transit improvements that have multi-pollutant benefits. Given the challenge of developing a durable blueprint to restore healthy air, transportation plans designed to minimize on-road emissions are critical. Lake Charles Transit will be asked to review the following items and determine if they are applicable to their system

Neighborhood ECO-Pass Program

Transit Agencies could provide a deeply discounted annual bus pass to neighborhood organization for all members of participating households. Eco-Pass is a photo ID bus pass that entitles residents to one year of unlimited travel on all fixed transit routes. For example, this program has been implemented in the City of Boulder since 2005. To date, 24 neighborhoods in Boulder offer the Neighborhood Eco Pass (NECO) Pass to nearly 4,430 residents. With additional subsidies provided by the City of Boulder, the annual cost for this pass is \$56 to \$128 per household.

Free Rides on High Pollution Days

Offering a free ride can increase bus ridership on potentially high pollution days. This was the operating principle for transportation officials across Northern Virginia. Local bus routes across Fairfax, Arlington, and Loudon Counties offered free bus service on high pollution days through mid-September 2007. Free ride days can increase awareness of unhealthy air quality conditions and encourage more people to be aware of when high pollution day alerts are called. It would also introduce people who usually drive to the bus system so they will be more likely to use it in the future.

Local transit could consider offering three free passes to anyone who pledges to use alternative transportation at least once a week through the through a campaign initiative called something like “Drive Smart Day”

Alternatively, this program could be enhanced to provide bus passes to pledge participants that could be used for free rides on high pollution days during the summer.

Bus Smart Card

Smart Cards reduce the amount of time bus users have to wait in line, eliminate the need for correct change, and encourage ridership. Though costly, this action could substantially increase the ridership and allow more flexibility in billing structures.

One such card, being installed in the U.K., the “No W card” features a photograph of the holder and is loaded with data, which identifies the concessionary fare entitlement of the holder. When the holder presents his No W card to the ticket machine on the bus for the first time, the smart card automatically prompts the ticket machine to calculate the relevant

fare and any other incentives such as age or employer programs. Through this \$9 million program, 300,000 No W cards have already been issued with the aim of having all 1,800 buses in the region operating the smart ticketing technology by the autumn of 2007.

III. Initiatives Area Wide

A. Municipalities/Government Agencies

- City of Westlake continued steps to implement a Compressed Natural Gas station.
- IMCAL produced several strategies.
 - Promoted transit with more human service agencies, including a
 - Facilitated Complete Streets committee meetings to maximize use of highways for all users, including increased infrastructure for pedestrians and bicyclists, determine sidewalks and trail inventory, and create a metropolitan wide policy
- EPA School Flag Program.
(http://airnow.gov/index.cfm?action=school_flag_program.index)
 - St. Margaret Catholic School
 - Bishop Noland Episcopal Day School

B. Industry

- LAIA members implemented projects (Members listed in Attachment III).
 - Sasol North America, completed “1,000 Trees in 1,000 Days” tree planting program.
- Entergy
 - While demand for electricity in its service territory increases, Entergy has announced a goal to achieve a 50 percent reduction in emission rates (pounds of CO₂ per megawatt hour) from the 2000 level by 2030. As part of Energy’s sustainability strategy, the eTech program is a strategic electrification that promotes the adoption of electric-powered alternatives to many applications that traditionally require fossil fuels. The program provides customer support through dedicated field representatives and financial incentives to Entergy customers who purchase select electric equipment, such as electric forklifts, burden carriers, man-lifts, golf cars, floor scrubbers, car chargers, and many others. Electric equipment produces zero site emissions for a cleaner, healthier work environment. Through the project Entergy has assisted displacing 50,888 metric tons of CO₂ and 351 metric tons of NO_X from 2015-2018, which is the equivalent of removing 11,063 cars from the roads. More information is available at www.entergyetech.com.

C. Citizens

- IMCAL and Chamber Southwest websites offer online citizen guide for impactful tips to limit emissions.
- Promoting the use of EnviroFlash

D. Other Initiatives

- IMCAL and Chamber Southwest updated websites.
- IMCAL, as fiscal agent for Lake Charles Metropolitan Planning Organization (LCMPO), completed the 2045 Metropolitan Transportation Plan, the 25-year horizon long-range transportation plan for the Lake Charles Urbanized Area.
 - In conjunction with citizen, stakeholder and consultant input and analysis, LCMPO added bike/ped and transit projects the document, as ways to reduce air pollution.
- Featured speaker from University of Louisiana at Lafayette talked with Advance Program stakeholders about their campus wide sustainability program.

IV. Action Plan

The Action Plan largely consists of educating our members and the public of the local air quality issues, promoting awareness and strategies to reduce ozone and particulate matter. The following strategies will be used as a guide and will be continually updated as new ideas are formulated.

To address particulate matter, the air pollutant most commonly associated with premature mortality, based on comparable regulatory regimes in the two parishes.

Action Item 1: Review of Science

The first six months will focus on foundational work to develop and decide upon options for updating the scientific analysis of transboundary and to identify these MSA related regulatory actions. Additionally, technical review of regulatory development will take place along with regular information sharing among experts. Within 6 to 12 months, both sides under the auspices of the AQTF will assess and discuss possible scope and nature of commitments under the Advance program, including potential regulatory actions that could be considered as a basis.

- Beginning January 1, 2014: Within AQTF, select an option for updating the analysis and initiate technical review of the science assessment on boundary movement of PM, including:
 - a. Identification of sources
 - b. Magnitude and pattern of boundary flows
 - c. Health impact assessments.
 - d. Six to 12 months: Ongoing science assessment, and data-sharing
 - e. Assessment of boundary PM
 - f. Report progress and key findings to AQTF
 - g. 12 to 18 months: Finalize science assessment
 - h. AQTF recommendation on science elements of the Annex.

Action Item 2: Parishes Regulatory Actions to Reduce PM

- Beginning January 1, 2014: Within AQTF, identify parishes' PM-related regulatory actions
- Technical review and information sharing between experts on regulatory development in both parishes
- Six to 12 months: Assessment of potential regulatory actions, including timelines, entry into force and impacts on emissions.
- Within the AQTF, initiate discussion on possible scope and nature of commitments under the PM Annex.

Action Item 3: Engagement

- Beginning January 1, 2014: Information sharing on initiatives.

- Six to 12 months: Stakeholder updates and debriefs, as appropriate.
- 12 to 18 months: Stakeholder updates and debriefs, as appropriate.
- Beyond 18 months: Stakeholder updates and debriefs, as appropriate.

The work outlined above will be conducted by the relevant members of the Air Quality Task Force, who nominally constitute the Working Group. Both parishes envision that these members will conduct the work in their roles on the task force within the process. The following strategies will be used by the task force as part of their educational toolkit when engaging the public.

Limit Your Driving

- Avoid driving during peak traffic periods when stop-and-go traffic is at its worst.
- Try not to drive at all, especially during the morning and early afternoon.
- Plan ahead, organize your trips. Combine several errands into one trip.
- Take your lunch to work to avoid lunch trips.
- Consider other commute options such as public transit, shared-ride, and/or telecommuting.

Drive Emission Wise

- If you must drive, use the least polluting of your vehicles.
- Where available, use clean fuels. Avoid excessive idling, and areas of congestion.
- Stop and start evenly.
- Drive at a steady speed. Drive at medium speeds. Use your air conditioner wisely.
- Travel light.
- Consider fuel efficiency and emissions when buying a new car.

Refuel Carefully

- Refuel after 6:00 p.m., if possible and avoid spills. Try not to top off your gas tank.

Maintain Your Vehicle

- Engine performance, emission control systems, and tire inflation are important.
- Do not remove or tamper with pollution controls. Comply with the local auto inspection and emissions testing program.
- Follow your owner's manual.
- Get regular engine tune-ups and car maintenance checks.
- Use an energy-conserving (EC) grade of motor oil. An EC multi-grade can improve your mileage by 2-4 percent. Source: <http://www.articlesbase.com/cars-articles/using-synthetic-oil-to-improve-fuel-economy-569043.html>

Live Emissions Wise

- Buy low emission household products.
- Buy electric or fuel-efficient motorized equipment.

- Conserve electricity.
- Avoid spilling gas when refueling gasoline-powered lawn, garden, farm, and construction equipment and boats.
- Recycle waste. Team Green of Southwest Louisiana's mission is to enhance the appearance and quality of the environment in Southwest Louisiana. More information about materials they collect and drop-off sites can be found at <https://www.cityoflakecharles.com/department/board.php?fDD=6-47>.
- Seal containers tightly.
- Reduce waste.

Delay or Reschedule Lawn care

- Reschedule or delay lawn care employing gas-powered equipment until after 6:00 p.m. An old 2-cycle gas-powered lawn mower produces as much pollution as 70 new running cars.
- Consider trading your gas-powered lawn mower for a reel push mower – they are easy to push and great exercise. How about trading the gas-powered leaf blower for a broom and a rake?

Postpone Oil-Based Paint and Solvent Use

- Where possible, use aqueous (water) based products.
- Avoid oil-based paint and solvent use on days when elevated ozone levels are expected.
- Many zero- and low-VOC paints and solvents are readily available in local hardware and paint stores.

Barbecue with Electric or Chimney Starters

- Avoid the use of lighter fluid, since it vaporizes into the air and can contribute to ozone formation.
- Your food will also taste better.

Conserve Energy in Your Home

- Conserving electricity reduces air pollution caused by power plants.
- Purchase energy efficient heating and air-conditioning systems.
- Purchase energy efficient appliances.
- Make sure your home is well insulated.
- Be mindful of energy conservation when you set your thermostat.
- Purchase energy efficient lighting.
- When purchasing appliances and/or electronic office equipment, consider the Energy Star qualified products. Information about Energy Star appliances is located at http://www.energystar.gov/index.cfm?fuseaction=find_a_product.
- Where available, participate in your local energy conservation programs.

Spread the Word

- Learn about local efforts and issues.
- Learn what you can do to help clear the air.
- Share what you learn.
- Let people know you care.
- Join a community group that is working to improve air quality.
- Improve air quality through voluntary actions.
- Create a public awareness and promote individual responsibility through education.
- Provide credible measures of air quality improvement efforts.

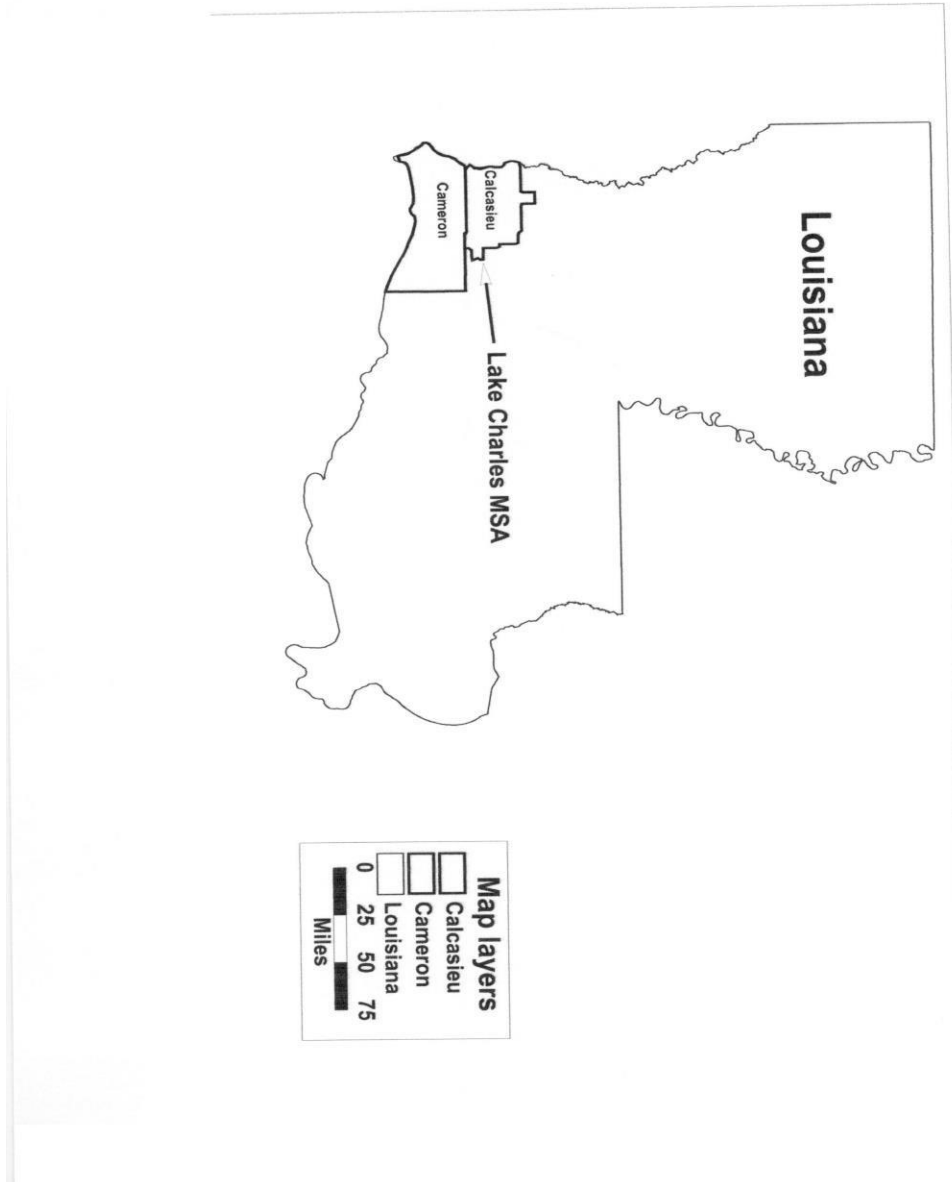
V. Conclusion

Ozone and PM pollution are serious public health and environmental problems. Our community is working to reduce these pollutants while expanding the quality of life in our area.

As the clean air strategies examined in this plan demonstrate, there are many available measures to reduce ozone. With a collective coalition of Southwest Louisiana local officials and concerned citizens, our

Advance Program can win the fight against these pollutants and their concomitant adverse human health and environmental impacts, provided we act with determination and immediacy.

ATTACHMENT I



ATTACHMENT II

Members of Our Coalition Include:

- Calcasieu Parish Policy Jury
- Calcasieu Parish School Board
- Cameron Parish Police Jury
- Chennault International Airport
- City of DeQuincy
- City of Lake Charles
- City of Sulphur
- City of Westlake
- EPA Region 6
- Imperial Calcasieu Regional Planning and Development Commission (IMCAL)
- Lake Area Industry Alliance (LAIA)
- Louisiana Department of Environmental Quality (DEQ)
- Providence Engineering & Environmental Group, LLC
- Southwest Louisiana Economic Development Alliance/Chamber SWLA
- Town of Iowa
- Town of Vinton

ATTACHMENT III

Members of Lake Area Industry Alliance (LAIA)

Air Liquide	Lonza
Air Products	Louisiana Pigment
Alcoa	LyondellBasell Polymers
BioLab	Phillips 66 Lake Charles Manufacturing Complex
Boardwalk	Sasol
Cameron LNG	Southern Ionics
CertainTeed	Targa
PPG	TDC LLC
Citgo Refinery	Lake Charles LNG
Entergy	Waste Management
Firestone	Westlake Chemical
Grace	Indorama



Lake Charles Urbanized Area (LCUA)

2045 Metropolitan Transportation Plan (MTP)



PROJECT MANAGER :
Walter Council

Date :
06.24.2019

A Plan to take Southwest Louisiana and Calcasieu Parish forward.



Acknowledgements

Many persons, agencies, and committees contributed to this planning process. Special thanks are extended to the following:

Survey respondents and meeting participants

MTP Advisory Committee members representing:

Calcasieu Parish

City of DeQuincy

City of Lake Charles

City of Sulphur

City of Westlake

Chennault Airpark

Lake Charles Airport

Louisiana State Police Troopers

Louisiana Department of Transportation and Development (LADOTD)

Port of Lake Charles

Focus Group Attendees

Imperial Calcasieu (IMCAL) Regional Planning and Development Commission staff

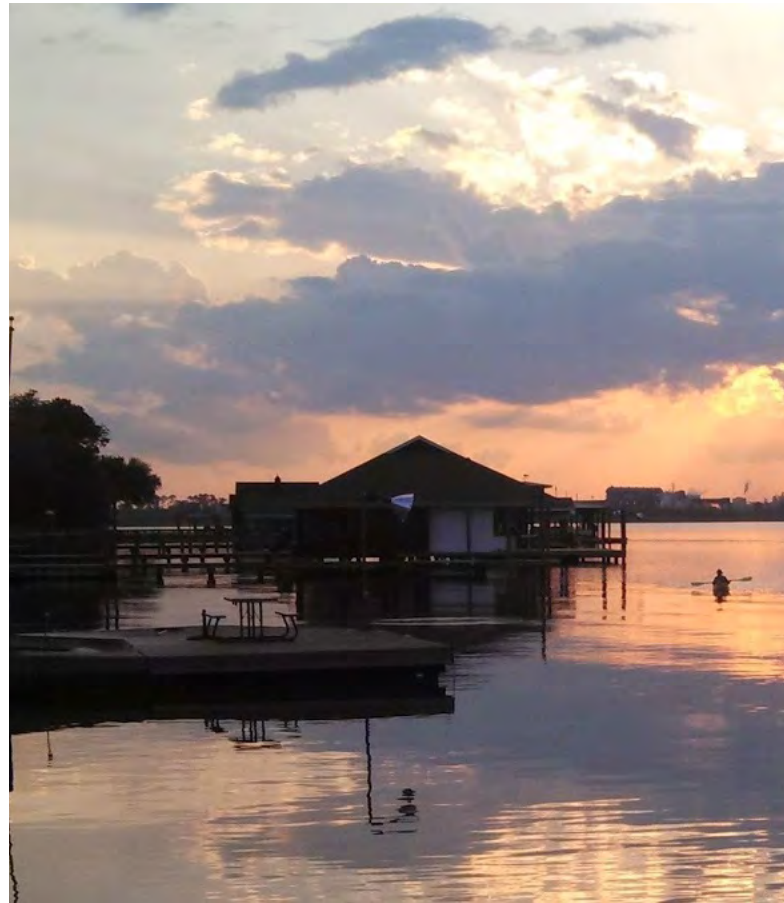
The Lake Charles Urbanized Area (LCUA) MTP was developed for the Lake Charles Metropolitan Planning Organization (LCMPO).

Production of the MTP was led by Stantec Consulting Services in collaboration with City-Explained, and Quest Corporation of America.





I think they've found us.



The era of Calcasieu Parish as a place that didn't change much through the years is over, at least for the foreseeable future. The influx of new opportunities, employment, and residents has placed a sense of urgency on this Lake Charles Urbanized Area Metropolitan Transportation Plan (MTP). Although part of a federal mandate carried out by the Lake Charles Metropolitan Planning Organization (LCMPO), the need for such a plan is evident in the changes that

have taken place: more people, more commuting to more jobs - and more traffic congestion.

The MTP has to accomplish the tasks of assessing this demand and understanding how the existing conditions and anticipated future conditions are likely to motivate the region to undertake major infrastructure improvements, develop land responsibly, and create places that can be accessed and enjoyed on foot and by bicycle.



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Digital Appendix

NOT EVERY TRIP IS MADE IN A HURRY.

A sunset over Prien Lake provides a near-perfect backdrop for kayakers to make their way back to port. The natural elements of Lake Charles and Calcasieu Parish are what makes these places stand out, and preserving them therefore makes it one of the key parts of the transportation plan.

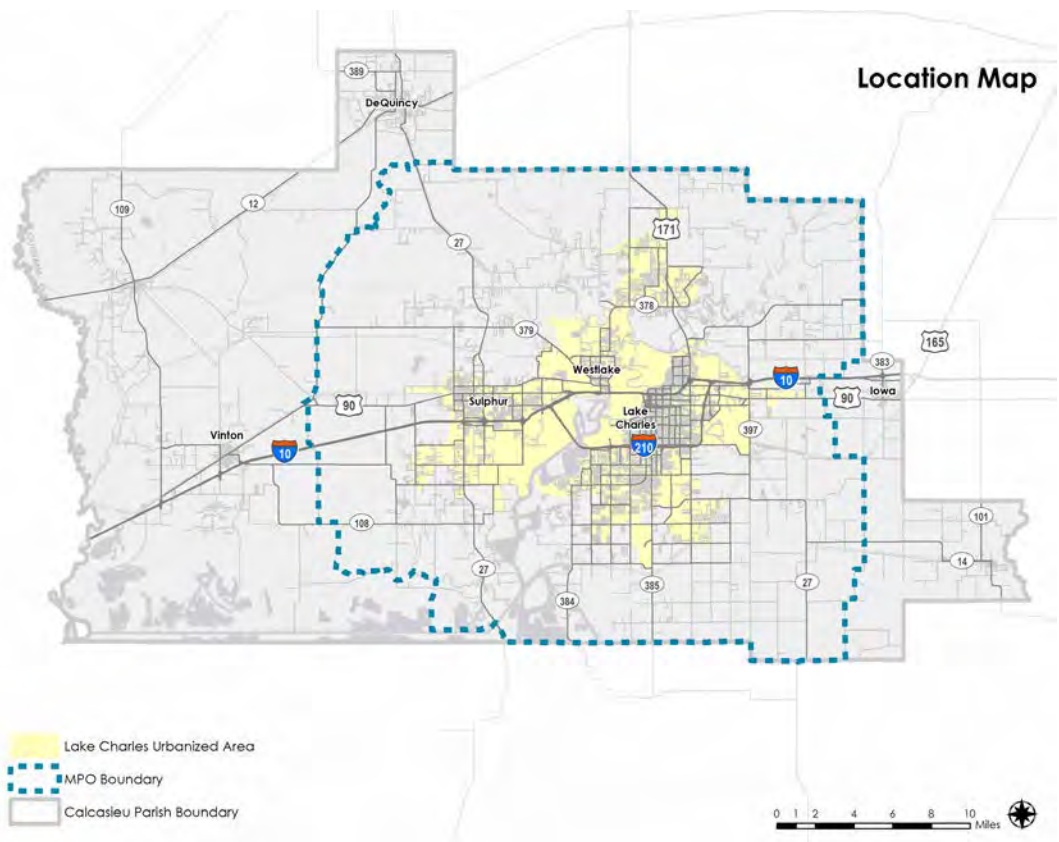
Executive Summary

Introduction

The Lake Charles Metropolitan Planning Organization (LCMPO) is responsible for coordinating with local, state, and federal transportation partners to produce an updated, metropolitan transportation plan every five years. This **25-year plan describes projects and priorities that respond to transportation needs** indicated by our steering committee, the public, and technical analysis.

This executive summary version is intended to *briefly* summarize the critical elements of this report, which represents the culmination of 18 months of research, analysis, discussion, outreach, and refinement. For additional description and details on specific items please review the representative section within the full report.

The 2045 MTP lists roadway, transit, bikeway/pedestrian, and transportation alternative projects that reflect the region's shared values from various stakeholders in the region, including local elected officials, planners, engineers, the business community, stakeholder groups, and the general public. The Plan also reflects current and projected area conditions and local/state/federal priorities.



Project Planning Area

The Imperial Calcasieu Parish Regional Planning and Development Commission (IMCAL) serves an agency oversight role for the **Lake Charles Metropolitan Planning Organization** (LCMPO), which is responsible for creating and maintaining a Metropolitan Transportation Plan (MTP) for its planning area.

The 630 square mile region includes cities, towns, and suburban communities.

MTP Process

The MTP initially identified **issues and concerns gathered from the public** through meetings and surveys as well as interpretations of crash data, traffic congestion, and other resources by the project team. This information, along with a review of the study area context and relevancy of past planning efforts, forms the crux of the existing conditions and plan recommendations.

Role of the Plan

Once the issues were reviewed, a set of important directions that the MTP used to help focus recommendations was developed. These plan directions are similar to design criteria used in the development of projects, answering questions that **help shape what success looks like** for different kinds of transportation facilities, travelers, and impacted elements of the natural and human environments.

This report provides the background, identifies and addresses the issues, and sets the Plan's directions - subsequent chapters will fully evolve the project **r e c o m m e n d a t i o n s**, financing, phasing, and other implementation ideas.

Some of the highlights from this MTP planning process include:

- Constructed a project website www.TransportPlanSWLA.com to share project information relating to events and plan progress
- Organized an automated telephone survey of more than 640 Parish residents in February 2018
- Hosted a project symposium on April 12th 2018
- Generated an email listserv with more than 143 subscribers
- Performed outreach to 91 Facebook groups in the Parish
- Formed a 15-person project steering committee and met on five occasions
- Coordinated and facilitated a series of focus group meetings that met on two occasions
- Presented interim results to the Transportation Advisory Committee (TAC) and Transportation Planning Committee (TPC)
- Incorporated feedback on project prioritization and future needs
- Held a Public Workshop on Tuesday June 11th 2019, in coordination with a 14-day Public Review/Hearing period, including newspaper advertisement, radio interview and digital flyers

Input from a diverse group of regional stakeholders and the general public helped to shape the vision and associated goals of this plan. To ensure consistency with and the collective advancement of national goals, the goals developed in the LCMPO MTP align with the national goal areas established under MAP-21 and the FAST Act, and also reflected in the 2015 Statewide Transportation Plan Update (STP). The goals of the Plan and performance measures (metrics) used to evaluate efficient project implementation are also tied to future year targets to track success over time. A table of goals, metrics and targets are summarized on the next page.

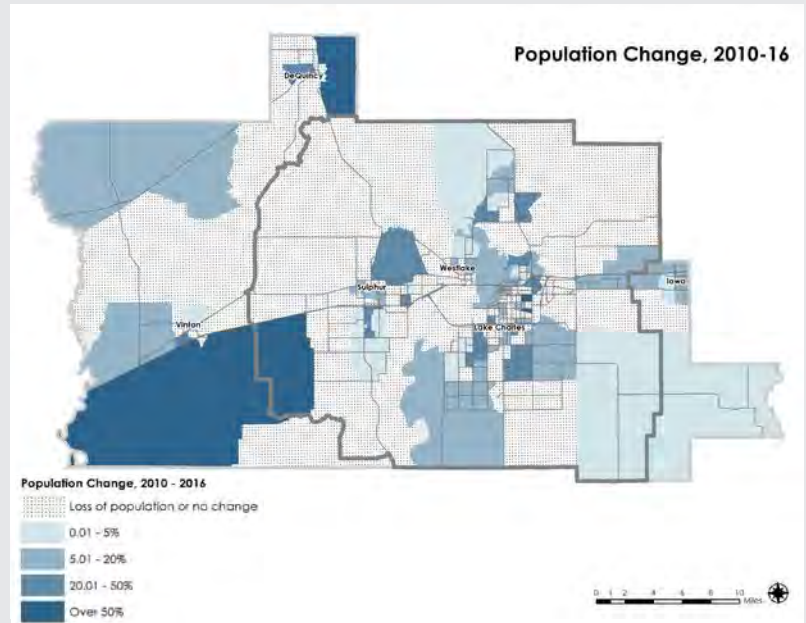
Steering Committee Members	
Heath Allen	Director of Lake Charles Airport
James Anderson	Louisiana State Troopers, Troop D-PIO
John Cardone	Lake Charles City Administrator
Wes Crain	Director of Planning for Calcasieu Parish
Don Duberville	LaDOTD District Administrator
Chris Duncan	Mayor of Sulphur
Gary Gobert	Lake Charles Trucking
Dick Gremillion	Calcasieu Parish Director of Office of Homeland Security and Emergency Preparedness
Bob Hardey	Mayor of Westlake
Nic Hunter	Mayor of Lake Charles
John O'Donnell	Southwestern Louisiana Area Health Education Center
William Rase	Director of Port of Lake Charles
Marshall Simian	North Lake Charles
Amanda White	Southwest Louisiana Economic Development Alliance

Goals for Roadway and Freight	Project Evaluation Metrics	Target
GRF.1 Improve Safety	MRF1.1 Crashes per mile MRF1.2 Severe crashes MRF1.3 Severe crashes involving a pedestrian or bicycle	TRF1.1 Reduction by 1% for the following by 2020: <ul style="list-style-type: none"> • Fatalities, • Serious injuries, • Rate of fatal crashes per 100M VMT, • Rate of serious injury crashes per 100M VMT, & • Non-motorized (bike/ped) fatal or severe injury crashes
GRF.2 Improve Mobility	MRF2.1 Volume-to-Capacity Base Year MRF2.2 Volume-to-Capacity Future Year MRF2.3 Pavement condition MRF2.4 Travel Time Reliability	TRF2.1 Reduce total miles traveled along congested roadways by 25% by 2045 TRF2.2 Reduce % of pavement or NHS bridges in "poor" condition below statewide targets by 2022 TRF2.3 Increase % of miles traveled along NHS "reliable" roadways above statewide targets by 2022
GRF.3 Improve Resiliency	MRF3.1 Facility access MRF3.2 Land Suitability MRF3.3 Connectivity nodes	TRF3.1 Increase connectivity ratio (nodes to roadway links) by 25% by 2045 TRF3.2 Increase % of total roadway miles within municipal areas
GRF.4 Improve Freight	MRF4.1 Freight volume MRF4.2 Freight destination	TRF4.1 Reduce or eliminate state-identified "bottleneck" locations by 2045 TRF4.2 Reduce Truck Travel Time Reliability (TTTR) index along NHS corridors below statewide targets for 2022
GRF.5 Improve Social Equity	MRF5.1 Poverty or Minority population MRF5.2 Vulnerability index	TRF5.1 Prioritize and construct roadway improvement projects within identified EJ communities
Goals for Transit	Project Evaluation Metrics	Target
GT.1 Smart Urban Growth	MT1.1 Population density MT1.2 Transit priority index	TT1.1 Increase frequency of service for communities with more than 4.0 units/acre TT1.2 Provide service to activity nodes with mixture of land uses (residential, retail, office)
GT.2 Make Transit Competitive	MT2.1 Congestion MT2.2 Service enhancements	TT2.1 Increase population within 0.5 miles of a transit stop by 20% by 2045
GT.3 Support Underserved Pop	MT3.1 Transit vulnerability index	TT3.1 Prioritize service enhancements within EJ communities
Goals for Pedestrian & Bicycle	Project Evaluation Metrics	Target
GPB.1 Improve Safety	MPB1.1 Severe crashes involve a pedestrian or bicycle	TPB1.1 Reduction by 1% for non-motorized (bike/ped) fatal or severe injury crashes by 2020
GPB.2 Complete the Network	MPB2.1 Connecting infrastructure MPB2.2 School proximity MPB2.3 Bus stop proximity	TPB2.1 Increase total sidewalk mileage by 20% by 2045 TPB2.2 Provide sidewalk connection to 100% of local schools along both sides of roadways by 2045
GPB.3 Serve limited-mobility populations	MPB3.1 Zero-car households MPB3.2 Youth population MPB3.3 Senior population	TPB3.1 Increase mileage of sidewalk and bicycle facilities by 20% by 2045 for limited-mobility population areas

Regional Conditions

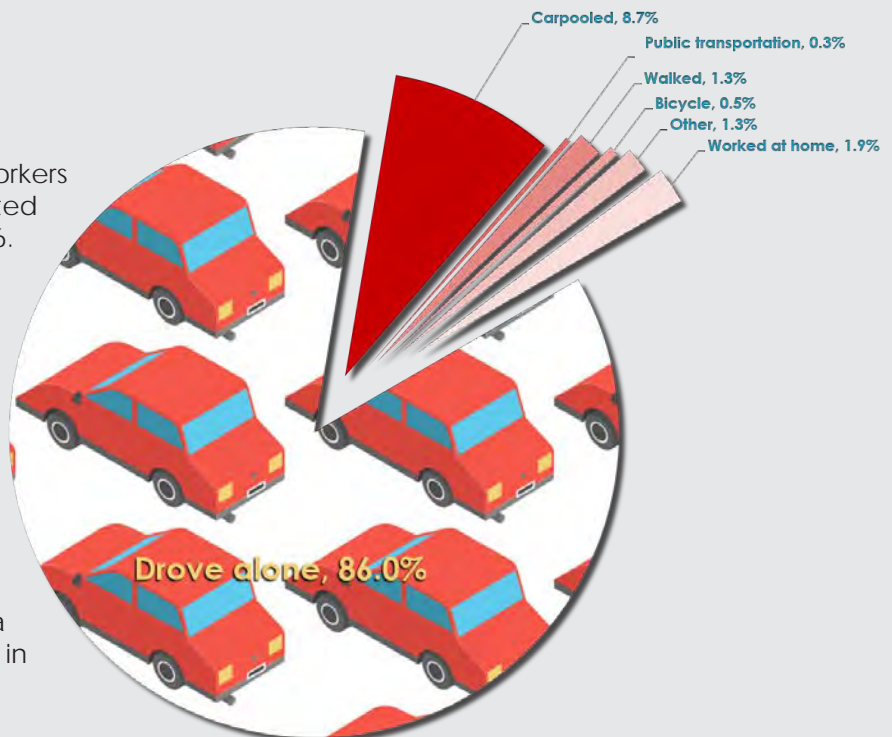
Population Growth

The Parish's population has grown faster (7.4%) than that of the state as a whole (4%) since 2000. The main difference in population change between the Parish and state is in-migration; while Louisiana as a whole continues to experience more out-migration than in-, in-migration is what continues to fuel the growth of Calcasieu Parish.



Travel Patterns

The vast majority (86%) of workers in Calcasieu Parish commuted alone in their own car in 2016. This rate was slightly higher than the statewide figure of 82.6%, and is up from the Parish's 2000 rate of 83.6%. Amongst localities within the Parish, DeQuincy and Vinton had the highest rates of driving alone to work (89%) while Lake Charles had the lowest at 81%. The majority of Calcasieu residents have a commute under 20 minutes in length.

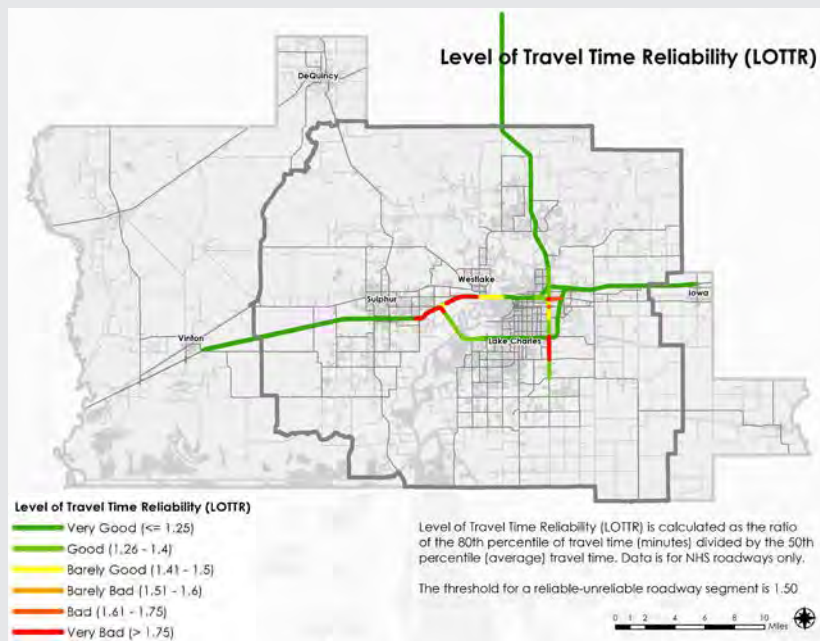
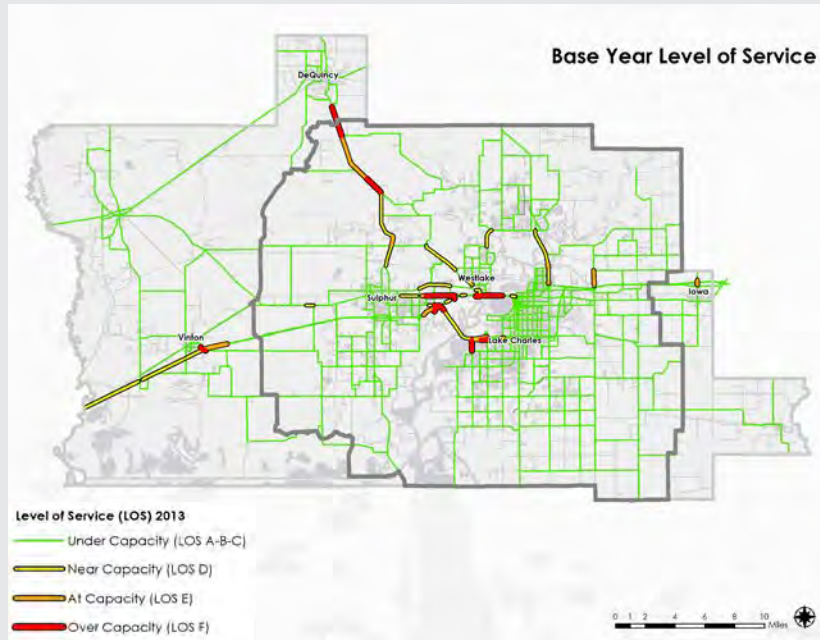


Roadways and Freight

Calcasieu Parish is traversed by a number of federal and state highways, including Interstate Highway 10 (I-10), which crosses the Parish from east to west, and Interstate Highway 210 (I-210), a bypass which interchanges with I-10 on either side of Lake Charles and the Calcasieu River. Maintaining efficient travel along these highways is critical to the economic success and livability of the region.

The regional travel demand model (TDM) indicates there is already a potentially high level of traffic congestion on some routes in Calcasieu Parish, particularly I-10, I-210, US 171, and LA 27.

Level of travel time reliability (LOTR) is another method to measure traffic congestion. This ratio is calculated along roadways that are part of the National Highway System (NHS). LOTTR measures the extent of an unexpected travel delay (minutes), also known as the 'buffer time' or planning time index. This metric reveals two corridors (I-10 and LA 14) that experience actual traffic delays that designate these corridors as unreliable.



What We Heard

Public outreach focused on creating an understanding of the issues that we face as a region, and to gain a better perspective on these issues - your perspective. Meetings with citizens, local businesses, officials and other stakeholders were held to understand the needs for the future of the region. Thoughts and opinions gathered through the meetings, surveys and discussions were used to develop the directions that guided the final recommendations in the report. A summary of what was heard and the directions for each mode are included on page 50 through to page 53.

Outreach

In an effort to reach as much of the Calcasieu Parish population as possible, we held an open house style Public Forum with mapping and push-button polling exercises, conducted a number of small focus groups, completed a Robocall phone poll, collected 593 responses to a ten-question survey both electronically and in person, and invited website visitors to contribute to a web map to show specific locations of concern. From a combination of these efforts, we were able to reach over 1,200 Calcasieu citizens, officials, and business representatives.

Major issues identified during this outreach centered on:

- Traffic congestion, particularly when local streets are impacted
- Coordination of land uses/development with transportation improvements
- Occasional street flooding
- Railroad crossing delays
- Funding for transportation projects, including public-private-partnerships



Top priorities moving forward involved:

- Safety of streets for all modes of travel
- Streetscaping enhancements
- Traffic capacity improvements for additional turn lanes
- Most bus stops and more frequent service
- Connectivity for sidewalk/bike lane infrastructure
- Crossing the Calcasieu river





Directions

The Lake Charles Urbanized study area is a large, diverse, and dynamic place, comprised of separate but connected communities. This Plan is based on a recognition of those facts, as well as a number of observations provided by the public and data described in the preceding pages. The five themes that follow provide specific directions for the project, policy, and program recommendations in subsequent chapters of this plan.



A changing - and expanding – population

New residents added through in-migration is a significant force driving change - including traffic. Moreover, the places these people work are changing, with important increases in retail-related sectors and decreases in manufacturing and arts / entertainment employment.



There is a lot of room left to grow, and it's crucial to get it right

The study region has a lot of room left to add greenfield-style development, low-density and highly car-dependent. A different style of development in high-activity areas that is higher-density, inclusive of low- and high-income families, and promotes alternative transportation is possible, but won't happen very often in a laissez-faire marketplace. Technology has an important role in creating responsive services.



Freight matters

Much of the recent economic gain in Calcasieu Parish is built around distribution, and this requires roadway capacity to be in place. Apart from big bridges, technology and intersection improvements are major players in the solution.



Where is walking & biking now, and where does it need to go

Like transit, the future role of walking and biking - active modes - represents a relatively small portion today and likely to expand. Every trip begins and ends this way, and for transit it is crucial to get walking connections in place to stops. While recreational trips and facilities are important to many people, they can also reduce car trips and provide options for some types of travel needs.



Focus on specific issues & hot spots

While big regional-scale projects will have a great impact, they are necessarily few in number and take a long time to happen, in part because of their cost relative to funding availability. The public provided a lot of ideas about specific "hot spots" like intersections, connections they would like to see made, or segments of congested roadway.

What This Plan Will Do

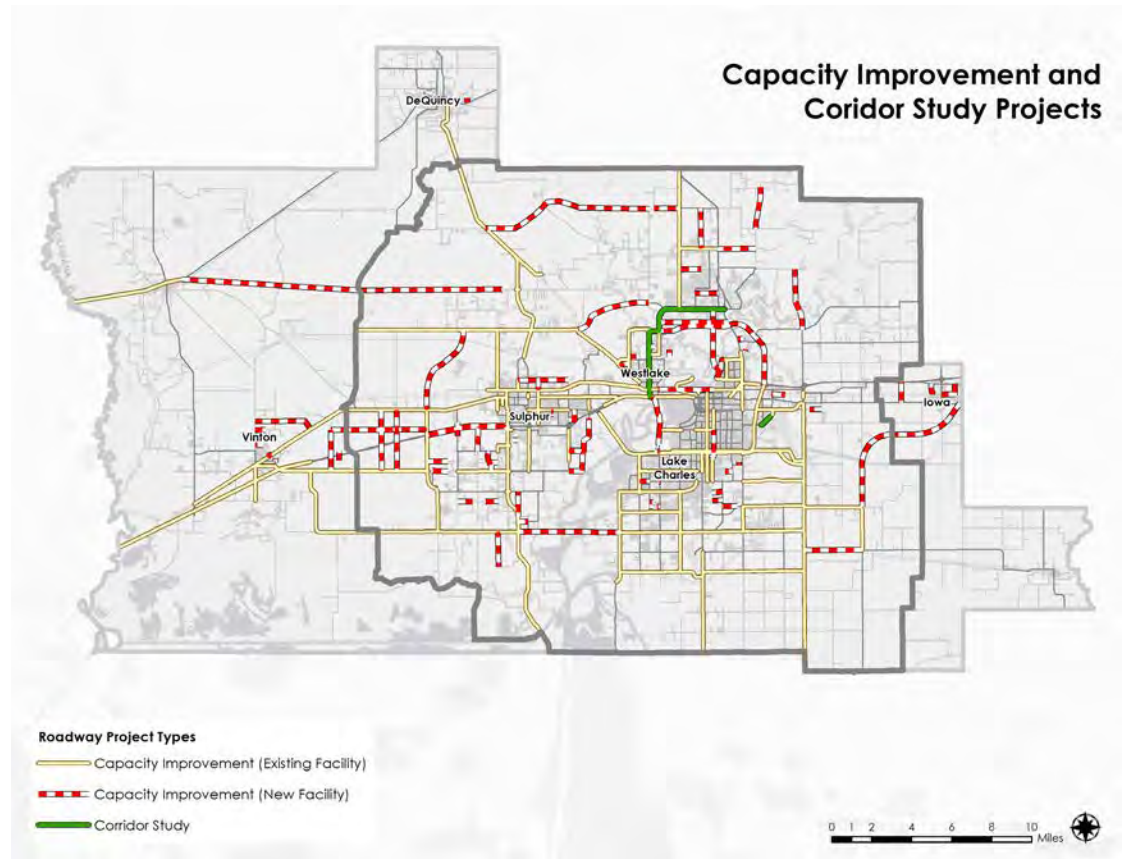
This portion of the Plan discusses mobility improvements by transportation mode: roadways and freight, transit, and pedestrian or bicycle.

Roadway and Freight Assessment

The vast majority of trips in Calcasieu Parish are made by private automobile and nearly all freight movements are highly dependent on roadways as well as rail and port (or intermodal) connections. Truck freight movements depend on essentially the same network of roads and are asked to share space with passenger vehicles.

The regional travel demand model helps identify which roadways are likely over-capacity and may need to be widened or have alternative facilities or technological improvements to make them operate better. A number of these roadway recommendations have particular benefit to existing freight terminals and networks, and the prioritization system for them does reflect that importance both to those projects and to freight movement for the economy of Calcasieu Parish and Southwest Louisiana.

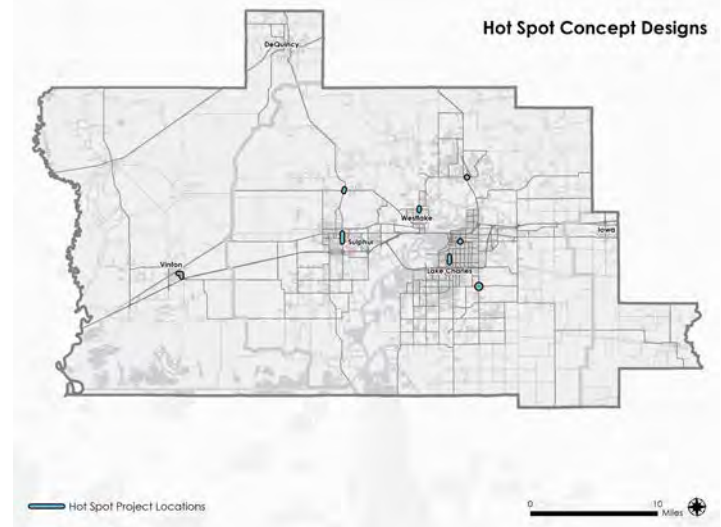
The map on the right highlights the proposed roadway capacity improvement projects, which cover improvements to existing or new roadway facilities, roadway realignments, and new interchanges. There are 293 miles of recommended capacity improvements to existing facilities, 138 miles of recommended improvements to new roadway facilities, and 8.6 miles of additional improvements and studies. More information on roadway prioritization can be found within the Plan Recommendations section.



All roadway recommendations were thoroughly vetted through the MTP Advisory Committee and IMCAL staff. Projects were evaluated according to the goals-metrics-targets identified earlier. Of these identified projects, certain corridor segments and intersections were selected for further study through conceptual designs. The projects included are:

- McNeese Street @ Highway 14 (Lake Charles)
- Ryan Street (Lake Charles)
- Beglis Parkway (Sulphur)
- Enterprise Boulevard @ Broad Street (Lake Charles)
- US 171 (N MLK Highway) @ Highway 378
- Highway 378 (Westlake)
- Highway 27
- Center Street (Vinton)

More information on these Hot Spot concept design locations can be found within the Policy & Implementation section.



Transit Assessment

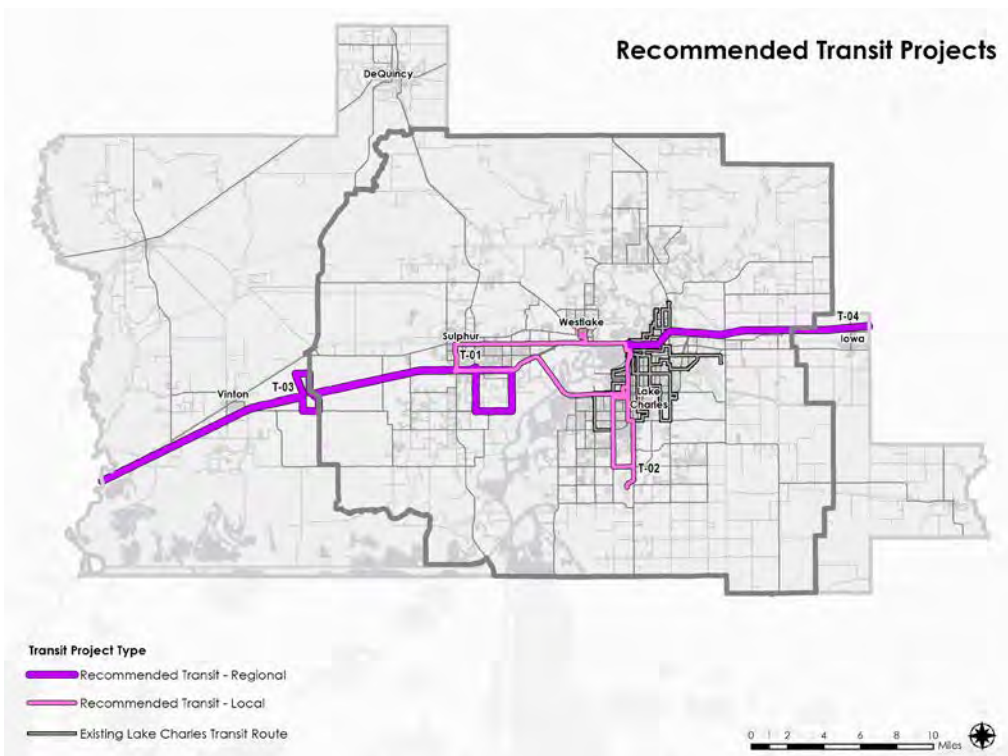
As the region continues to grow and evolve, it is essential that investments in transit be made to provide mobility alternatives for all residents and visitors. Closely coordinated transit and land use planning initiatives will help manage the region’s anticipated growth in a sustainable and equitable manner.

Currently there are five fixed-routes that provide service within the City of Lake Charles, but no fixed-route service extends beyond the municipal boundary or to the Lake Charles Regional Airport (south). Technology is continually changing rapidly so major investments in a specific technological solution should be done in conjunction with a more detailed study of the conditions and parameters necessary to create (and define) success.

This planning process identifies and evaluates four new routes (service improvements). Two will provided enhanced local service within the City of Lake Charles, and two will provide regional commuter service to

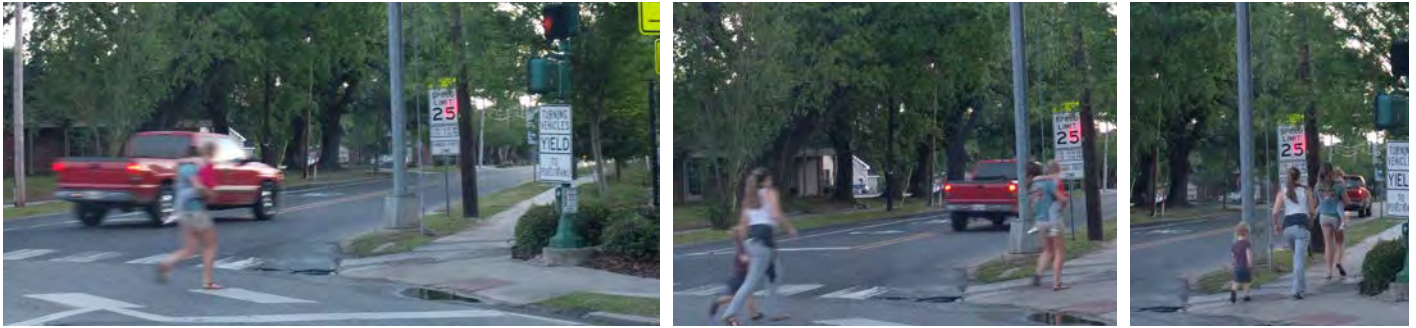
the east and west along the I-10 corridor. Complimentary enhancements are also identified and discussed that aim to:

- Consolidate trip service logistics through a single dispatch agency
- Extend service hours strategically based on ridership
- Explore micro-transit service for the Cities of Iowa, Sulphur, Victor, and Westlake
- Coordinate traffic signal prioritization efforts along high priority corridors



Pedestrian and Bicycle Assessment

Automobiles are the dominant mode of travel in the Parish, however, more densely developed nodes and corridors provide many opportunities for non-motorized travel, especially for short trips. Concern for personal safety near vehicles, the physical condition of aging sidewalks, periodic flooding, and the low-density pattern of development are all contributing factors that discourage more walking or biking. A good transportation network should accommodate travelers of all ages, abilities, and travel modes while eliminating or mitigating these discouraging factors.



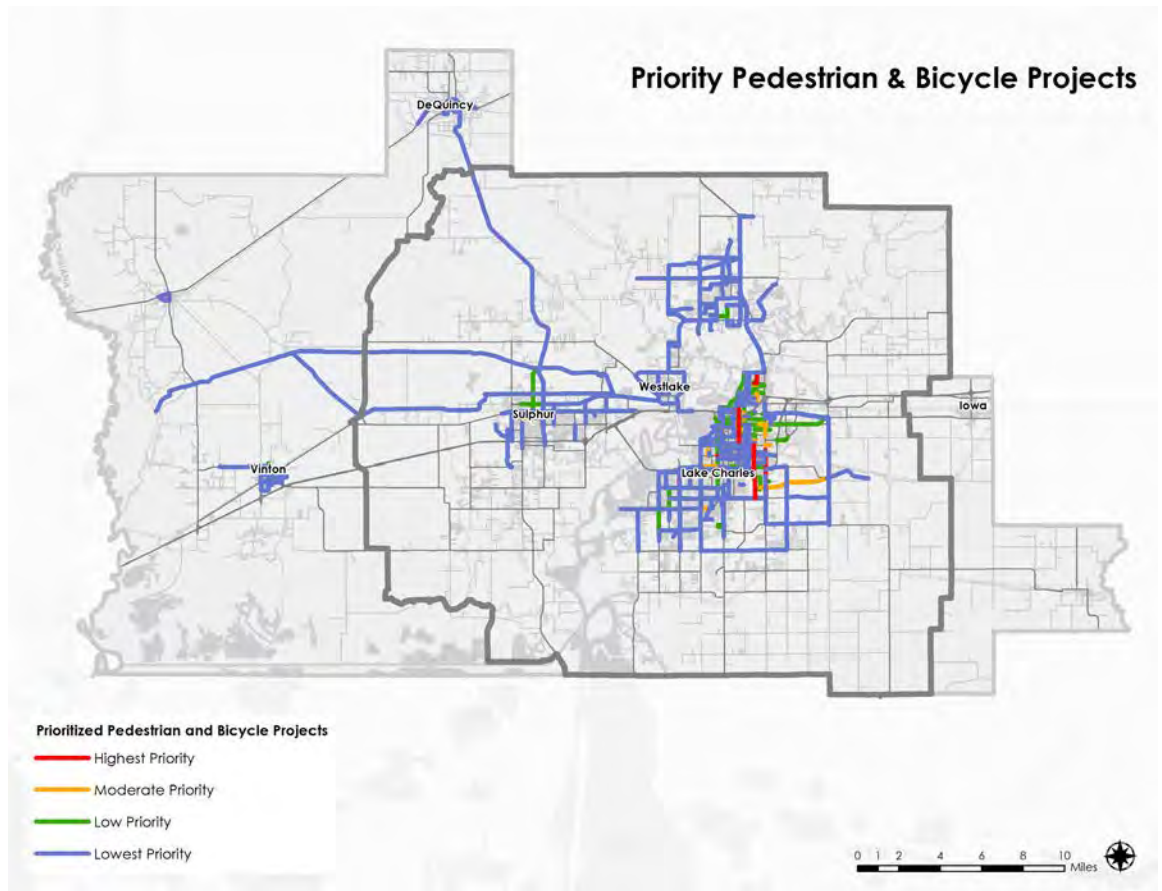
Non-Physical Infrastructure Improvements

This Plan focuses on creating new pedestrian and bicycle mobility options, improving safety and public education, and serving the needs of residents and visitors over the coming years. The recommendations reflect the Vision and Goals from the 2012 Lake Charles Bicycle and Pedestrian Master Plan: expanding the bike/pedestrian network and support facilities, enhancing quality of life, improving safety while encouraging alternative modes, aid traffic and growth management goals, and maximizing funding sources for implementation.

Physical Infrastructure Recommendations

Physical recommendations are also built upon the 2012 Bicycle and Pedestrian Master Plan for Lake Charles, which incorporates 146 sidewalk projects, 39 bike lane projects, and 10 trail projects. Projects from the previous MTP are likewise carried forward into this Plan. The map on the right highlights the prioritized sidewalk, bike lane, and trail improvement projects. In total, there are 123 miles of recommended sidewalk improvements, 415 miles of recommended bike lane improvements, and 78 miles of trail improvements. All of these enhancements aim to more than double the length of existing ped/bike infrastructure within the Parish. Many of these projects may be integrated into recommended roadway improvement projects to capitalize on design and construction costs.





Current Quantities of Active-Mode Transportation Facilities

Facility Type	City of Lake Charles (mi)	Lake Charles MPO (mi)	Rem ainder of Calcasieu Parish (mi)	Percent of Total Mileage
Sidewalks	334.1	362.1	14.0	81.3%
Bicycle Facilities	8.8	78.2	4.8	17.9%
Greenway / Off-Road Trails	1.8	3.7	----	0.8%
Total Existing Facilities	344.8	444.0	18.8	100.0%



Future Quantities of Active-Mode Transportation Facilities

Facility Type	City of Lake Charles (mi)	Lake Charles MPO (mi)	Rem ainder of Calcasieu Parish (mi)	Percent of Total Mileage
Sidewalks	407.7	465.7	33.7	46.2%
Bicycle Facilities	187.2	468.7	29.7	46.1%
Greenway / Off-Road Trails	16.7	66.8	15.6	7.6%
Total Future Facilities	611.6	1,001.2	79.0	100.0%

Implementation and Funding

The 2045 MTP evaluated 201 recommended roadway projects with input from the MTP Advisory Committee, public, and technical expertise provided by the consulting team. Projects were evaluated, scored, normalized and ranked against each other based on a data-driven process that integrates goals with metrics and targets. It was an extensive and collaborative process that brought together priorities of regional decision-makers with preferences by the general public. Projects were evaluated and ultimately prioritized across 14 project criteria. Each criterion was normalized to a 1-10 score, and the average score for each project was computed and again normalized on a 1-100 scale. The methodology used in determining the ranking was presented, reviewed and approved by the MTP Advisory Committee.

Translating high-priority projects into a fiscally-constrained implementation plan involves two elements: (1) projecting future revenues through the 2045 horizon year, and (2) estimating project costs, both of which need to be estimated in year of expenditure (YOE) dollars). Recommended projects that cannot be funding through 2045 are shown as illustrative projects that may proceed should additional funding become available. The final section presents implementation and financing. The total amount dedicated for roadway improvement projects for the 2020-2045 Horizon Year is approximately \$1.360B, of which \$297M is applied to the 2020-2025 period to fund 23 projects along 20 miles of roadways. The 2025-3035 period is allocated \$514M to fund 15 projects along 36 miles of roadways. The 2035-2045 period is allocated \$548M to fund 39 projects along 57 miles of roadway. This leaves 124 unfunded projects, totaling 327 miles for the beyond 2045 Horizon.

Table ES.1 | below identifies the projected future revenues for roadway funding, and a condensed list of prioritized projects by horizon year.

Horizon Year	Revenue Forecast (Cumulative)	Project Types	Length (miles)	Cost (\$)
2025	\$297,834,050	Capacity Improvement	15.7	\$128,212,750
		Maintenance	1.9	\$4,494,000
		New Location	1.8	\$45,824,293
		Study	0.6	\$374,500
2035	\$514,428,750	Capacity Improvement	33.1	\$328,840,296
		Maintenance	2.2	\$16,306,000
		New Location	0.5	\$3,762,300
		Study	-	\$-
2045	\$548,370,200	Capacity Improvement	47.7	\$379,420,979
		Maintenance	5.7	\$155,523,000
		New Location	3.8	\$45,920,288
		Study	-	\$-
Beyond 2045	Unfunded	Capacity Improvement	184.9	\$1,590,139,075
		Maintenance	2.4	\$2,000,000
		New Location	131.9	\$1,399,162,252
		Study	8.0	\$600,000

Table ES.1 | Projected Future Revenues

Note: Current TIP projects fall into 2025 Horizon Year. High priority projects begin in 2035 Horizon Year and descend accordingly to the Beyond 2045 Horizon.

Policy Framework

Beyond federal and state funding for infrastructure projects, a set of best practices are included to provide policies for local, regional, and state level review. These policies address the focus issues identified through the public engagement process, and to implement a more efficient transportation network to support an improved quality of life in the region. The policies are complementary to both the Louisiana DOTD (LaDOTD) and Lake Charles MPO (LCMPO) missions and strategic plans. Policies are organized into the following sections:

- Access Management (reducing taxes preserving capacity on existing roads)
- Complete Streets policy and guidance
- Biking, Walking, and Transit
- Resiliency, linking land use and transportation
- Vision Zero, an action-oriented take on safety

Future Updates

Updates of transportation and comprehensive plans occur at various intervals, often five years or longer. In between these major update cycles, agencies can continue building on the recommendations contained in the plan, not only in terms of funding, design, and construction, but working with their many partners to improve local practices that can make an even larger shift towards a healthy, vibrant, and active transportation system and community.





Existing Conditions

CHAPTER CONTENTS

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- 54 • Directions

Background & History



Calcasieu Parish Courthouse (Source: Carnival.com Studios)

Planning for the Lake Charles Urbanized Area is provided by the Lake Charles Metropolitan Planning Organization, under the Imperial Calcasieu Parish Regional Planning and Development Commission

Figure EC.1 | Right: Map Showing the MPO Boundary and the Lake Charles Urbanized Area within Calcasieu Parish

Lake Charles MPO Background

The federal requirement for urban transportation planning dates back to the early 1960s. As a response to the construction of the Interstate Highway System and the planning and construction of routes through urban areas, the Federal Highway-Aid Act of 1962 was passed. The legislation created a requirement for urbanized areas of 50,000 or more people to develop a continuing, comprehensive, and cooperative (3-C) planning process in order to receive federal funds

for transportation projects.

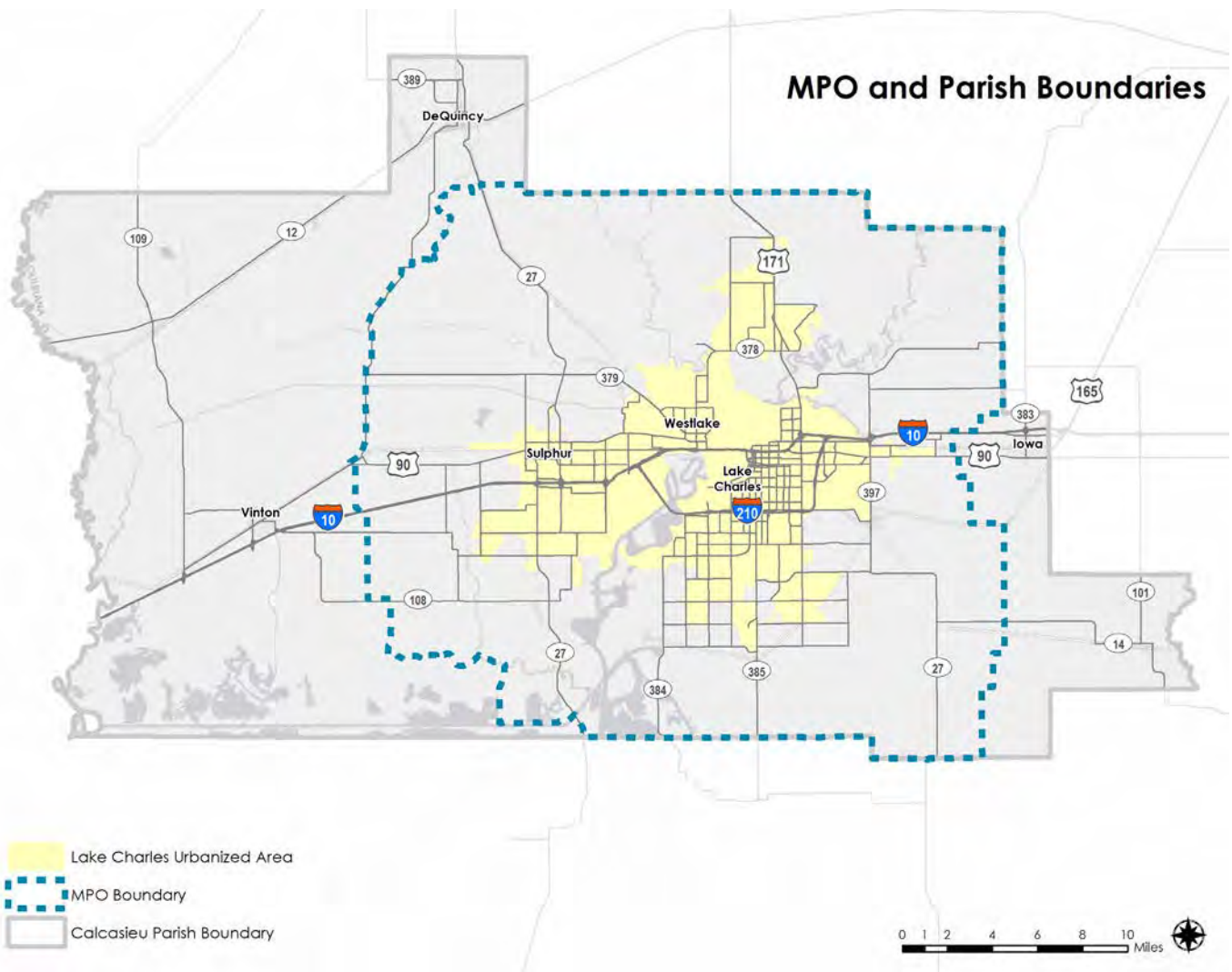
As qualified planning agencies were not present in many urbanized areas, the Bureau of Public Roads (later replaced by the Federal Highway Administration) required planning agencies be created which could carry out the 3-C (continuing, coordinated, comprehensive) planning process. Thus, Metropolitan Planning Organizations (MPOs) came to be.

Today, there are 409 MPOs in the United States, whose role has continued to evolve since the 1960s. The 1991 Intermodal Surface Transportation Efficiency Act (ISTEA) granted more funding to MPOs and increased their authority. At the same time, the new legislation promoted multi-modal transportation projects supporting an integrated system, rather than only projects supporting vehicular travel.

Several iterations of transportation planning have been passed in subsequent years, the most recent being the Fixing America's Surface Transportation (FAST) Act, signed on December 3, 2015, which carries forward the multi-modal focus. The newest iteration also increases the focus on intercity buses and commuter vans, as well as the resiliency of the overall transportation system.

The Lake Charles Metropolitan Planning Organization (LCMPO), under the blanket of the Imperial Calcasieu Parish Regional Planning and Development Commission (IMCAL) oversees the development of transportation plans for the MPO area, indicated in the map below.

The urbanized area for which the MPO develops its plans includes the cities of Westlake, Sulphur, and Lake Charles, as well as adjacent urbanized portions of the parish, including Moss Bluff and Carlyss.





Previous Planning Efforts

Previous planning efforts in Calcasieu Parish are summarized in the following section. Portions of these plans will affect the development of the current MTP as much of the research, public input, and prioritization of actions which went into these plans are relevant to current planning efforts.

Lake Charles Urbanized Area 2040 MTP (2014)

The previous Metropolitan Transportation Plan (MTP) for the Lake Charles MPO area comprises the base document to be updated via the current planning effort. The 2040 MTP document fulfilled the Federal requirement for Metropolitan Planning Organizations, and represented a collaborative effort by the MPO, local governments, the public, and other stakeholders. It represented a comprehensive effort to coordinate the needs of all transportation system users across all modes.

The 2040 MTP forecasted demographic information and analyzed current transportation data to identify transportation needs of the Lake Charles urbanized area and Calcasieu Parish in the future and prioritize transportation improvements.

In addition to specific projects representing recommended improvements, the plan offers strategies to address roadway needs, including preservation and rehabilitation, transportation demand management, operational improvements, public transportation and non-traditional mode improvements, and intelligent transportation systems (ITS).

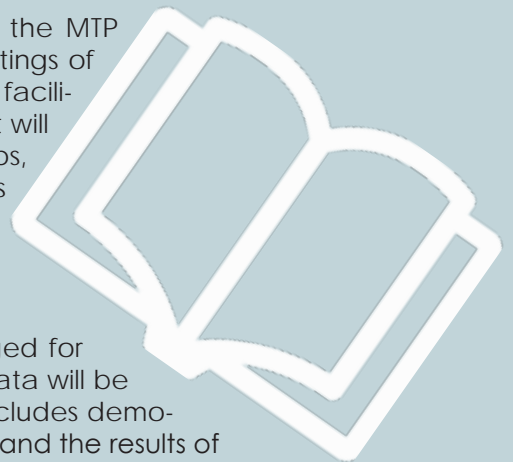
Coordination with the LCUA MTP

- **Past Public Comment**

The plan provides a detailed summary of public input during the MTP process. Results of surveys and workshops include satisfaction ratings of existing travel conditions, prioritization of bicycle and pedestrian facilities, and prioritization of transportation spending. This public input will be reviewed and supplemented with additional surveys, workshops, focus groups, and public input maps to assess how (and if) opinions and priorities of stakeholders have changed over the past few years.

- **Available Data**

Much of the same data utilized in the 2040 MTP will be leveraged for the purposes of preparing the recommendations of this report. Data will be updated to the most recent available, wherever possible; this includes demographics, transit ridership, crash and average daily traffic counts, and the results of public input surveys.





- **Potential for refinement**

The MPO's 2040 Plan stresses goals of multi-modality, but tangible recommendations are primarily vehicular in nature. Public input summarized in the plan indicated bicycle and pedestrian infrastructure, mode interconnectivity, and bus service were areas most in need of improvement, and that complete streets were a top funding priority. This report will build on the base provided by the 2040 plan, with expanded public participation, updated existing conditions, and a greater focus on multi-modal transportation.

- **Recommendations in need of coordination**

The 2040 MTP includes specific roadway projects with associated time frames and costs, which will be compared to other plans and carried forward in this plan. Other more general suggestions for sidewalks, bike lanes, trails, and overall strategies to improve the transportation network will be evaluated in the context of other plans and existing conditions, and will be integrated with the recommendations of this plan, as appropriate.

- **MTP Amendments I, II, and III**

Since the adoption of the 2040 MTP in July 2014, three amendments, one as recently as May 2018, have been approved to update that plan to include additional transportation improvement recommendations and address new federal requirements. Amendment I, adopted in January 2017, added the results of the 2016 Project Call to the list of Vision Projects in the 2040 plan. Amendment II, adopted in October 2017, added safety performance measures and targets to the plan, as required under the federal Fixing America's Surface Transportation (FAST) Act. Amendment III, adopted in May 2018, adjusted a proposed Vision Phase project (Sale Street at Ryan Street intersection) up to the Stage 1 project phase.

Coordination with the LCUA MTP

- **Available data**

Amendment I includes a list of transportation projects to be added to the original plan. As with the recommendations for road projects in that plan, this plan will consider and build upon all those recommendations. Metrics for safety improvements adopted with Amendment II provide a basis for safety recommendations presented in this plan, as those are fairly current, with incident reduction goals established 2016. In February 2019 the Lake Charles MPO adopted the LaDOTD's Transportation Safety Performance Measures and Targets. These specific performance measures were integrated into this planning process as roads and freight targets for prioritization (Table R.2).

- **Recommendations in need of coordination**

"Vision Projects" updated in these amendments will be coordinated with other recommended projects and strategies and evaluated for inclusion in this plan.

Calcasieu Parish Transportation Initiative (2016)

This plan, a joint effort with the Louisiana Department of Transportation and Development, proposes five specific transportation initiatives to address pressing capacity issues. With recent projections forecasting growth beyond what can be covered by local and state scheduled programmatic funding, this plan identifies projects for which Calcasieu Parish can perform necessary tasks typically managed by LaDOTD in order to expedite the most crucial projects.

Coordination with the LCUA MTP

- **Available Data**

The five projects identified in the CPTI are described in detail, complete with maps, phasing schedules, and anticipated costs/funding. Projects are tied back to the 2040 MTP. These projects will be taken into account in the recommendations of this document.

- **Recommendations in need of coordination**

The five projects discussed in detail in the CPTI will be evaluated against recommendations of related plans, and included in the current plan, as appropriate.

Coordination in Human Services Transportation Plan (2017)

The Imperial Calcasieu Regional Planning and Development Commission originally developed this plan in 2007 in order for human services transportation projects to be applicable for funding under the New Freedom, Elderly Individuals and Individuals with Disabilities, and Job Access Reverse Commute (JARC) programs under the umbrella of SAFETEA-LU. The plan seeks to establish a coordinated human services transportation plan for the IMCAL Region, and assesses the transportation needs of the elderly, disabled, and limited-income populations; existing services and strategies to address any service gaps; and priorities for action.

Coordination with the LCUA MTP

- **Past Public Comment**

At the time this plan was developed, a number of stakeholder groups were asked to participate, including transportation providers, government agencies, nonprofit organizations, employers, and elected officials. The general public was not included in the initial process due to the technical nature of knowledge needed, but would be invited to participate at a later time. From the participants who were invited to give input, survey results are provided which may help inform this plan.

- **Available Data**

The plan includes responses from stakeholder surveys, demographic data, and transit provider data. These data will be reviewed and updated, where possible, in the development of this plan.

- **Recommendations in need of coordination**

The plan include an appendix of potential projects, which will be assessed in developing the recommendations of this plan.

IMCAL Southwest Louisiana Comprehensive Economic Development Strategy (2016)

This plan, which covers the overall Southwest Louisiana Region (Allen, Beauregard, Calcasieu, Cameron, and Jeff Davis Parishes) was created to guide economic development in the greater region. It discusses strengths and weaknesses of the region, including those specific to the transportation system. Likewise, it lists goals, objectives, and implementation measures for a number of areas directly related to economic development, including the transportation network.

Coordination with the LCUA MTP

- **Recommendations in need of coordination**

The goals, objectives, and implementation measures related to transportation will need to be reviewed to determine how they relate to the 2040 MTP and other plans, and how they can be incorporated into this plan.

Lake Charles Regional ITS Architecture (2011)

This plan describes the Intelligent Transportation Systems (ITS) architecture for the Lake Charles MPO area (with the addition of I-10 west from the MPO boundary to the Texas border). Such projects use technology in roadway and transit applications to increase safety and mobility. The plan includes an inventory of existing ITS elements as well as planned ITS projects across the region, and a maintenance plan for the system. An addendum to the plan, completed in November 2015, updates the existing inventory, transportation issues and needs, and current/upcoming projects where ITS may be deployed.

Coordination with the LCUA MTP

- **Available Data**

The plan includes an assessment of problem areas in the MPO transportation network, including high accident locations and congested routes. It also provides detail of ITS phases, including timing and costs associated with each.

- **Recommendations in need of coordination**

ITS implementation phases/projects will be evaluated in the context of related plans and current conditions and considered when developing the recommendations of this plan.

City of Lake Charles Bicycle and Pedestrian Master Plan (2012)

The Bicycle and Pedestrian Master Plan was developed in accordance with the statewide Bike/Pedestrian Master Plan as a guide for planning for alternative transportation modes. It recognizes the ability of non-motorized modes to support mobility for all residents, enhance quality of life, improve safety, and help reduce congestion and energy consumption. The plan is comprised of an extensive existing conditions report, including an inventory of existing bike and pedestrian facilities, as well as both general policy recommendations and specific project recommendations for new sidewalks, bike lanes, and multi-use trails.

Coordination with the LCUA MTP

- **Past Public Comment**

The Bicycle and Pedestrian Master Plan includes comprehensive summaries of public input from various meetings, including rankings of general improvements, specific routes and projects recommended, and comments categorized by area of concern.

- **Available Data**

This plan has put together a large amount of data on existing conditions, including a conditions survey of existing sidewalks and bike lanes and details of the overall bike and pedestrian network. A recommended network is also detailed by needed facilities and prioritization. Potential funding sources for alternative transportation projects are also identified. Data related to existing conditions will be updated as much as possible as part of the current planning effort.

- **Potential for refinement**

The Bicycle and Pedestrian Master Plan, adopted in June 2012, stresses that recommendations of the plan are *illustrative only* and are meant only to be a guide, not an actual implementation plan. As part of the current MTP effort, these detailed recommendations should be considered in the development of recommendations for the overall transportation network.



Furthermore, this Master Plan indicates it is a work in progress that should be updated every year, but it appears an annual update has not taken place. This current planning effort is an opportunity to update bicycle and pedestrian needs and recommendations as part of the MTP.

- **Recommendations in need of coordination**

The Bicycle and Pedestrian Plan includes a detailed list of priorities for improving and completing a bicycle and pedestrian network for the City of Lake Charles. These projects should be incorporated with recommendations of other plans and evaluated in the context of existing conditions to determine how they might be integrated with recommendations of this plan.

Statewide Planning Efforts

Louisiana Statewide Bicycle and Pedestrian Master Plan 2009

This statewide plan outlines an effort to encourage a multi-modal transportation system for the state. It provides policy guidelines as well as actions to be taken for all projects involving state or federal funding or approval. It also encourages Louisiana localities to incorporate similar policies and actions into any other transportation projects. It identifies a number of challenges and opportunities for walking and biking in the state, and summarizes existing conditions of these non-motorized modes.

Coordination with the LCUA MTP

- **Available Data**

Some data contained in the plan may be able to point to current sources that can be updated and tailored, if available, for the purposes of this current plan.

- **Recommendations in need of coordination**

The Bicycle and Pedestrian Master Plan for the State of Louisiana sets out recommended policies for the accommodation of cyclists and pedestrians which can help give a basis for any alternative mode recommendations made in this plan. Lake Charles is the only locality within the MPO area or the larger Calcasieu Parish to develop a biking and walking plan per the suggestions of the statewide plan. In evaluating both the statewide and city bike and pedestrian plans, this plan will seek to find overlap as well as recommendations which might be applied to the planning area.



Complete Streets Policy (2016) & Work Group Report (2010)

The statewide adopted policy updated in 2016 and associated 2010 report on complete streets states an intent to “create a comprehensive, integrated, connected, transportation network for Louisiana that balances access, mobility, and safety needs of motorists, transit users, bicyclists, and pedestrians of all ages and abilities, which includes users of wheelchairs and mobility aids.” As with the statewide bike and pedestrian plan, the complete streets documentation states complete streets policies will be implemented by LaDOTD on projects with state or federal funding or approval. The plan outlines benefits of complete streets, and outlines policies to be implemented. Action steps include administrative measures on the LaDOTD side to update design guides and train staff on these policies, as well as other tools to be implemented in partnership with outside entities including legislative changes, development of resources for local governments, and creating partnerships with other groups and agencies.

Coordination with the LCUA MTP

- **Past Public Comment**

The plan summarizes the biggest concerns expressed by participants at public meetings. These comments will be reviewed for the current planning effort.

- **Recommendations in need of coordination**

The statewide complete streets policy primarily discusses policies, actions, and responsibilities at the state level, and is fairly high-level, rather than discussing specific strategies. General recommendations that can be gleaned from this report can be coordinated with local-level recommendations from the other plans discussed in this section and integrated into the recommendations of this plan.

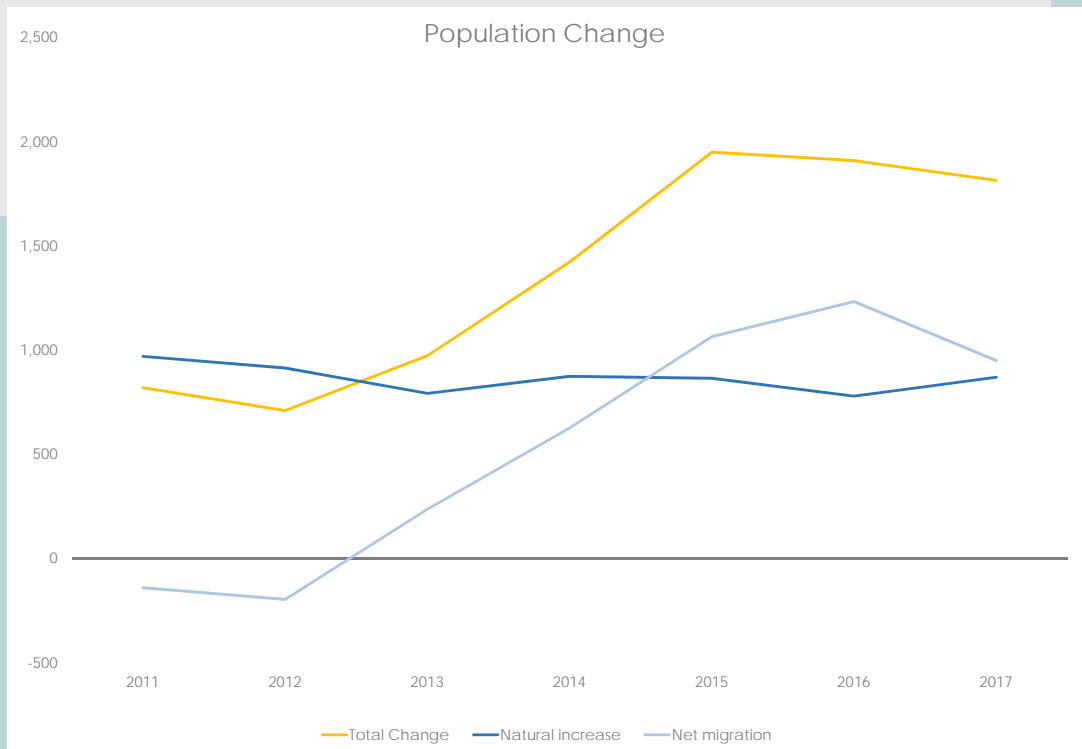
Socioeconomic Conditions



The population of Calcasieu Parish is approximately 200,000 people. The Parish’s population has grown faster than that of the state as a whole, having increased by 7.4% from 2000 to 2016 compared to 4% statewide. The greatest share of the Calcasieu population resides in the rural area of the Parish (44.5%), with the next largest portion of the population in the City of Lake Charles (38%), followed by the City of Sulphur (10.2%), the City of Westlake (2.3%), the Town of Vinton (1.7%), the City of DeQuincy, and the Town of Iowa (1.6% each).

While it represents the smallest share of the Parish population, the Town of Iowa has grown the fastest since 2000, by nearly 20%. The City of Lake Charles grew by just under 5% and the Town of Vinton by less than 1%, while DeQuincy, Sulphur, and Westlake all lost population.

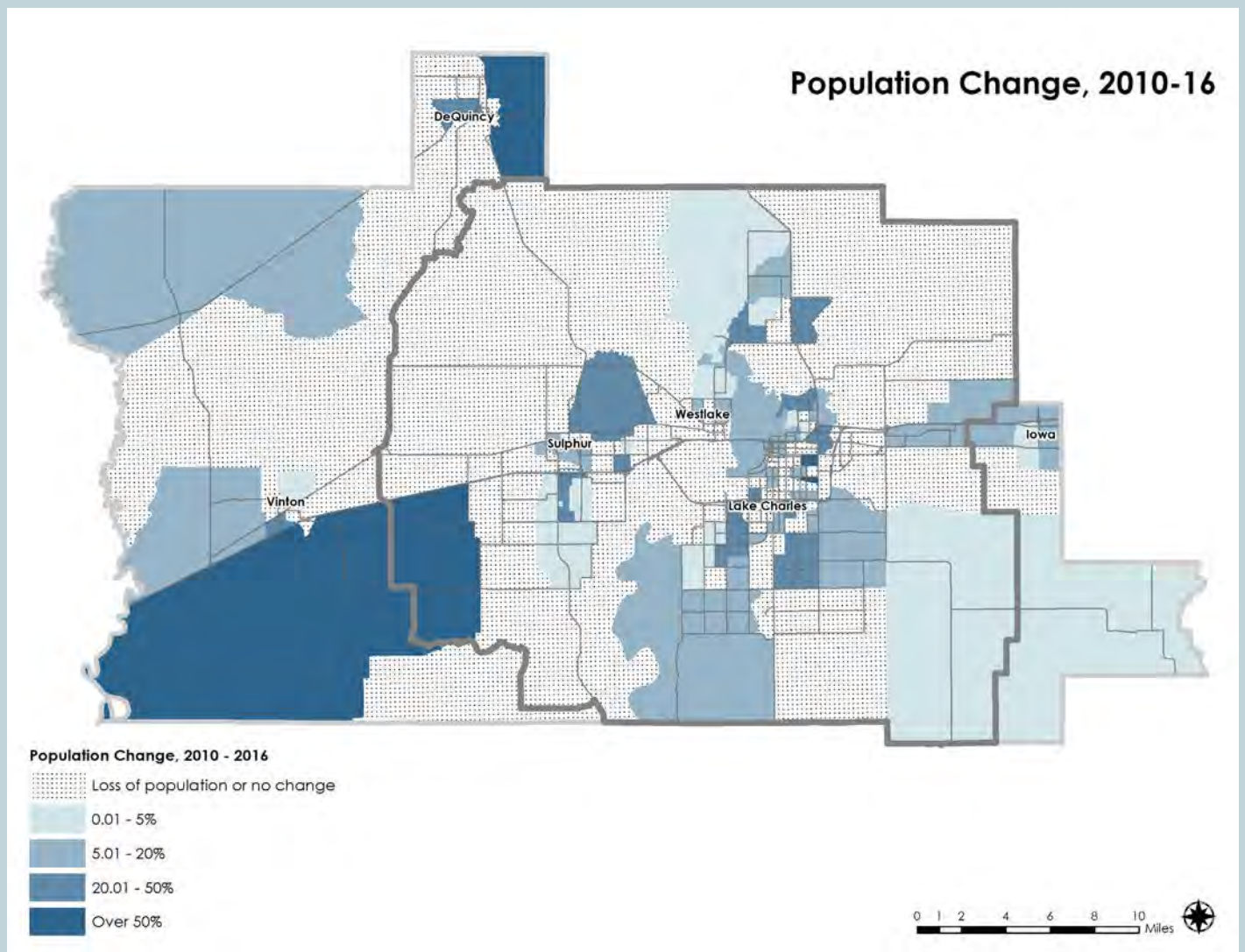
Looking at how the population has changed in recent years, Calcasieu Parish has added population in greater numbers every year from 2000 to 2016, with a slightly more modest increase from 2016 to 2017. In comparison, the state’s population change year-over-year since 2010 has continued to slow, with a slight loss in total population between 2016 and 2017. In looking at the components of this change, the natural population change (difference between births and deaths) has remained reasonably steady over the past seven years. The main difference in population change between the Parish and state is in migration; while Louisiana as a whole continues to see more outmigration than in, migration is what continues to fuel the growth of Calcasieu Parish. In recent years particularly, domestic migration has made up the bulk of the overall population growth of the Parish.





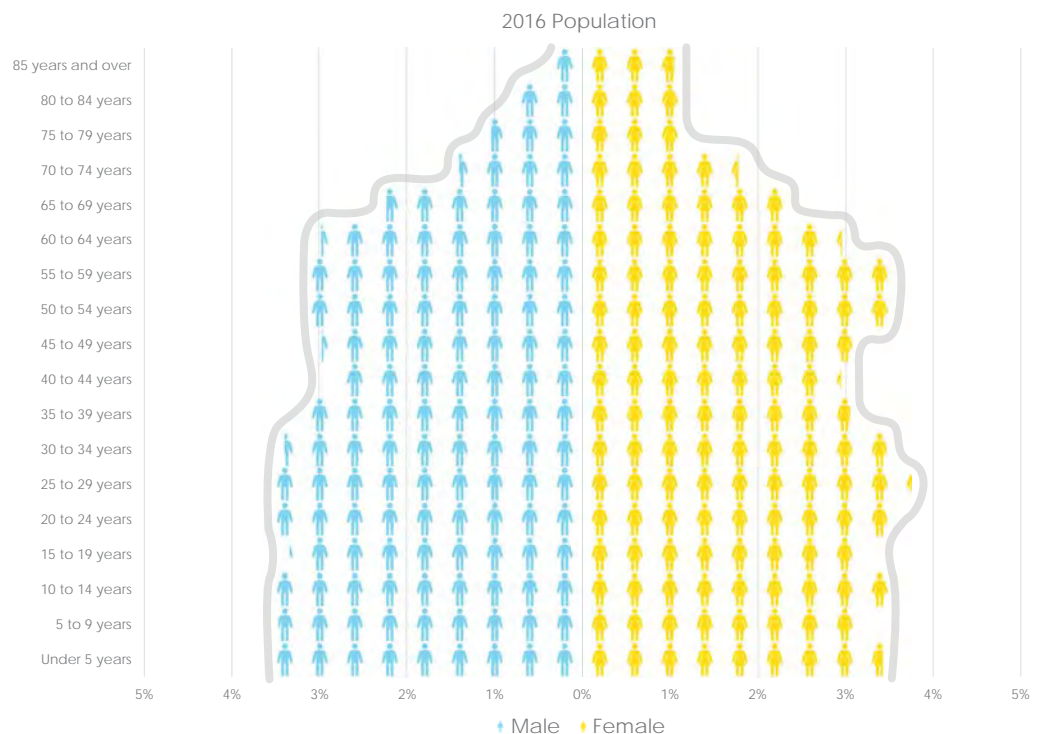
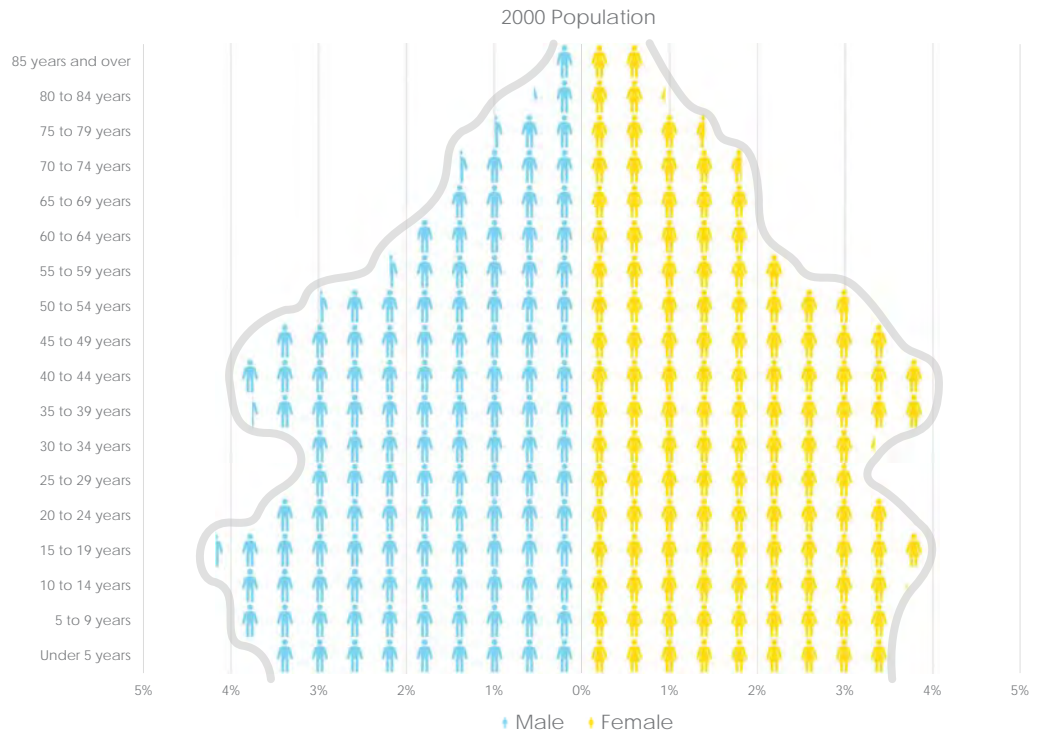
Population growth of the Parish has varied geographically, with many census block groups having lost population

between 2010 and 2016, as seen in the map below. At the same time, the population in the northwestern and southwestern corners of the Parish, at the Texas/Louisiana border, increased substantially. The northernmost area of the Parish to the east of DeQuincy, as well as many smaller block groups within the City of Lake Charles, also increased in population.



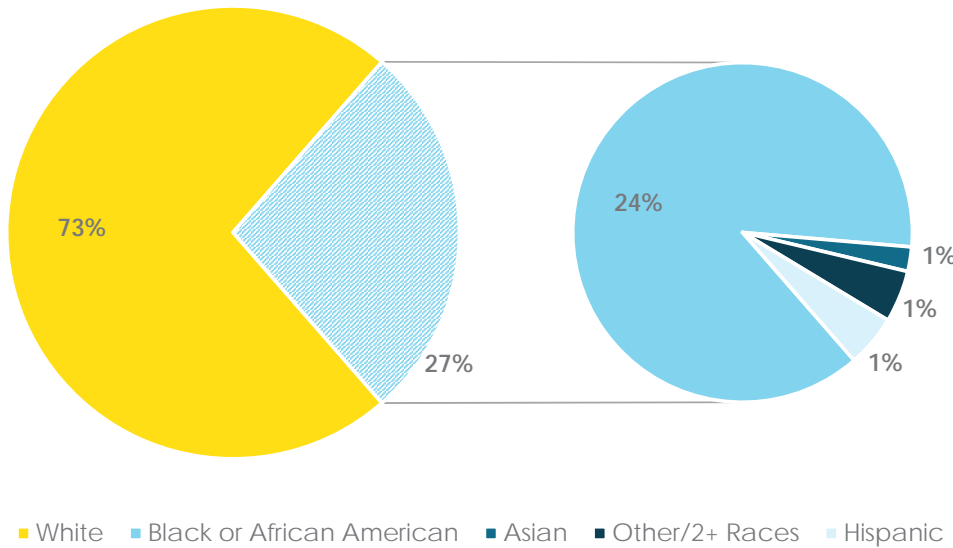
Age and Gender

In terms of age, Calcasieu Parish follows the state trend closely. In general, younger populations decreased their share of the overall population slightly from 2000 to 2016, and older populations became a slightly larger share. This fact is reflected in the population pyramids at right, which indicate an “evening out” of age groups in the Parish over the past 16 years, with the pyramid becoming more rectangular as children and young adults make up slightly less of the population, and those over 50 begin to make up a larger percentage.





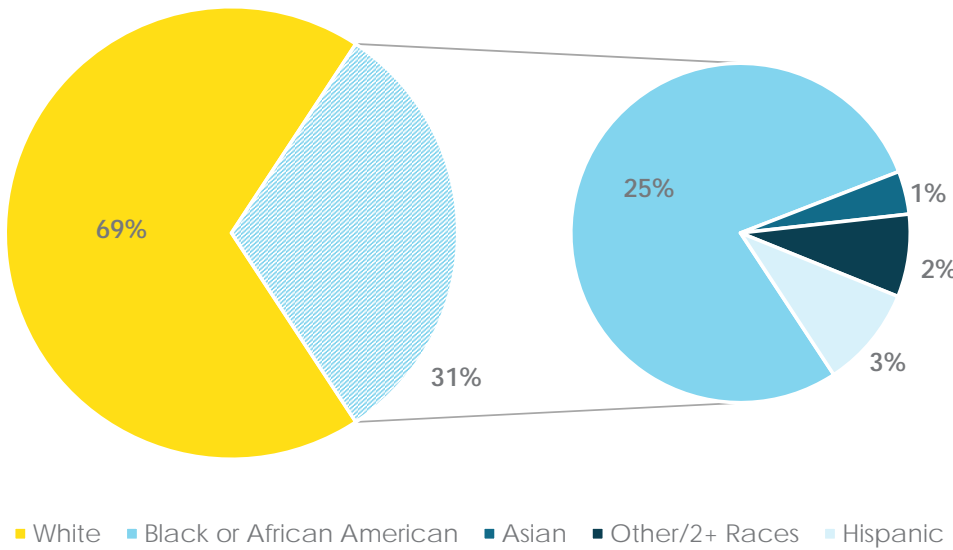
Race and Ethnicity, 2000



Race and Ethnicity

As compared to the State of Louisiana, Calcasieu Parish had a greater proportion of non-Hispanic white persons in 2016 (69%, compared to 59% statewide). However, like most of the country, the Parish did become more diverse between 2000 and 2016. While the total number of non-Hispanic, white persons held steady, all other minority groups grew at larger rates, with Asian and Hispanic populations both more than doubling over this time, even though they still make up a relatively small share of the whole.

Race and Ethnicity, 2016



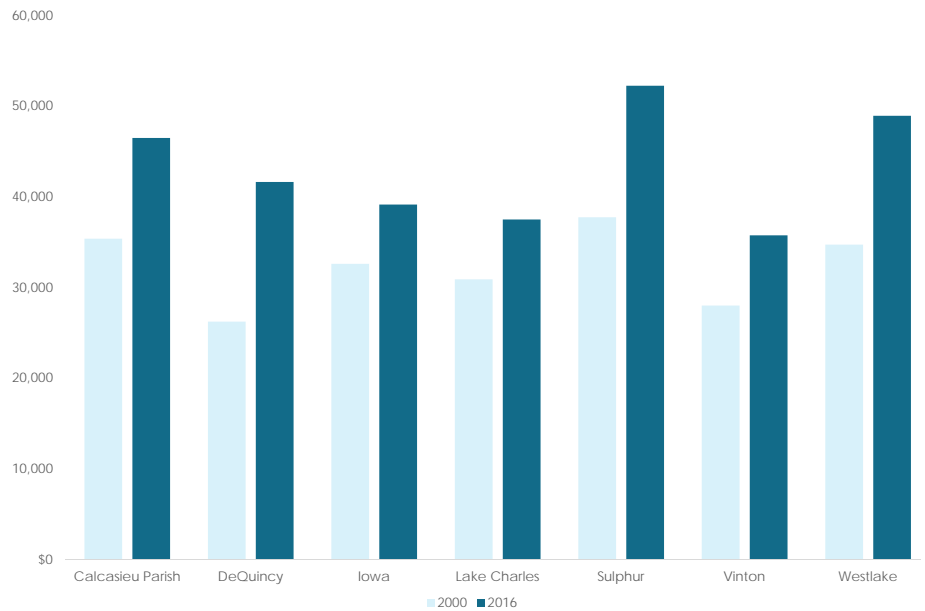
Sulphur and DeQuincy have the largest non-Hispanic white populations, followed by Vinton. Lake Charles had the largest proportion of Black and African American persons by far, with this demographic making up nearly half of the population. Lake Charles also has the highest proportion of Asians, while Vinton has the largest Hispanic share of the population.

Income, Education, and Employment

The median household income in Calcasieu Parish is slightly above the state median, at over \$46,000. While the median household income for the Parish only increased by 31% since 2000, compared to 41% statewide, income, Calcasieu income levels remain slightly higher than Louisiana on a Parish-wide level.

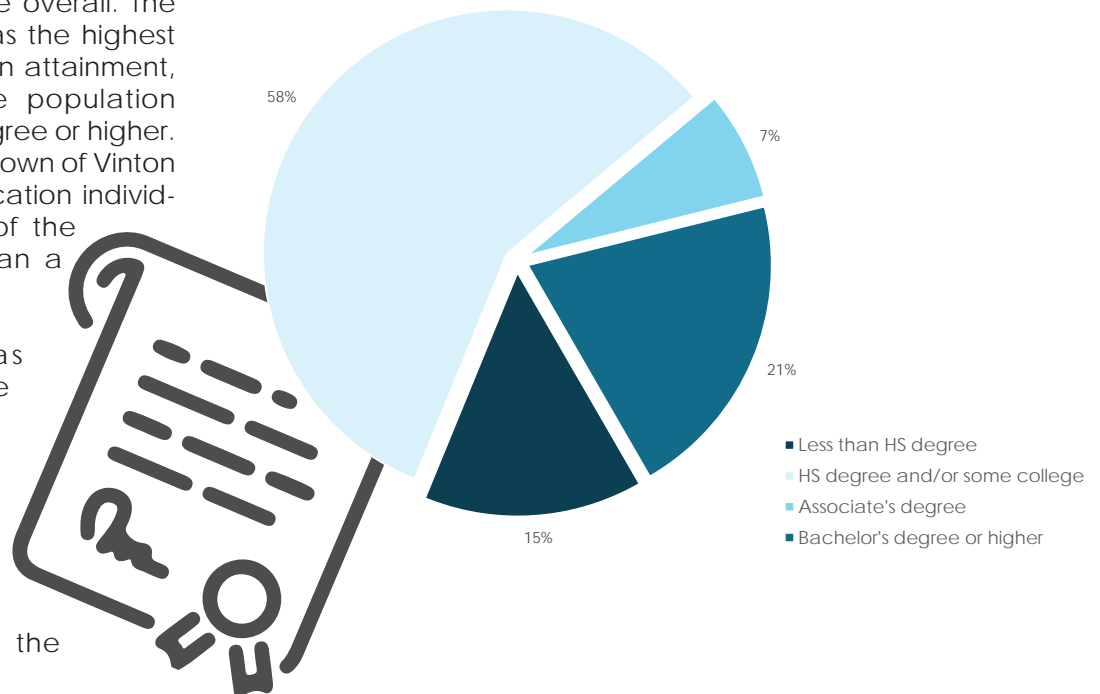
Among the individual localities, the Town of Vinton has the lowest median household income, followed by the City of Lake Charles. Sulphur and Westlake both exceed the overall Parish median household income. DeQuincy still trails the overall Parish income, but increased the most over this time period, by nearly 60%.

Median Household Income



The majority of the Parish population has at least a high school degree, and educational attainment in general follows that of the state overall. The City of Lake Charles has the highest rate of higher education attainment, with a quarter of the population having a Bachelor's degree or higher. On the other hand, the Town of Vinton has fewer college education individuals, and nearly 30% of the population has less than a high school education.

Educational Attainment

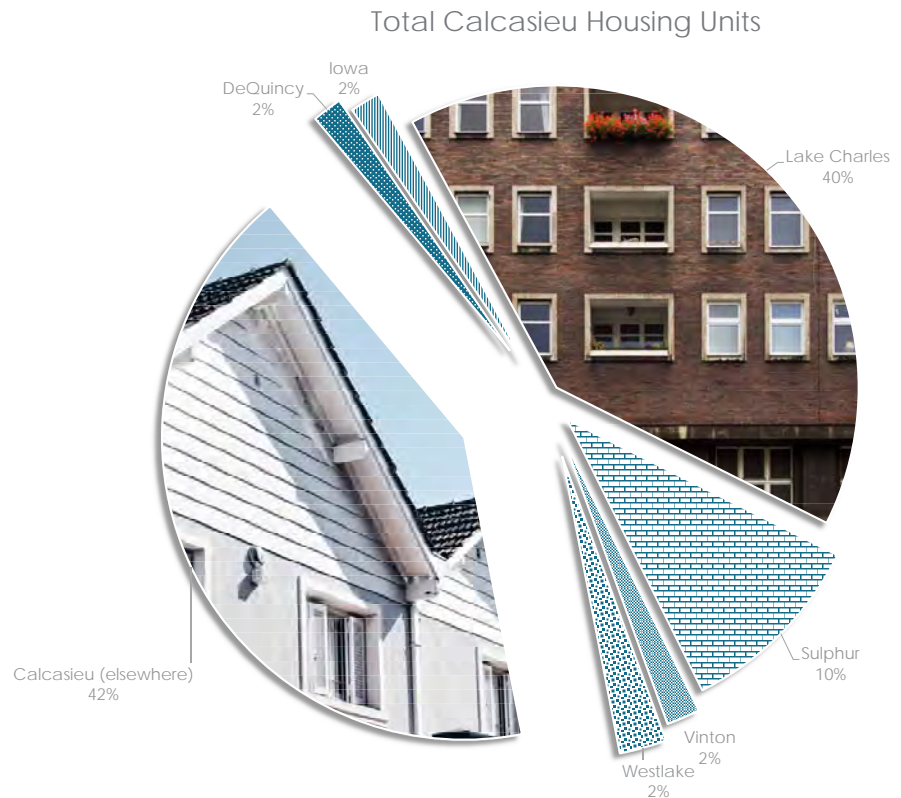


Unemployment has increased slightly since 2000, from 6.9% to 7.4% in 2016, but is still below the state rate of 7.7%. Among Calcasieu cities and towns, Vinton has the lowest unemployment rate, while Iowa had the highest.

Housing

Calcasieu Parish has nearly 90,000 dwelling units, an increase of 13% since 2000 (compared to 9% statewide). Iowa saw the largest increase in total housing units (over 30%) while on the opposite side of the spectrum, DeQuincy decreased its number of residential units over this time. Similarly, the Parish has lower vacancy rates than the state, around 11% with highest residential vacancies in DeQuincy.

The majority of the residential units in the Parish are located in either the City of Lake Charles, or the Parish outside of towns and cities (about 40% each). The remaining housing is located predominantly in Sulphur, with small amounts in each of the other Parish localities.



The State of Louisiana reflects national trends in homeownership, with a split of approximately 65% to 35% owner- to renter-occupied housing units. Calcasieu is slightly higher on the ownership side, at 68%. Other localities in the Parish follow similar own/rent household patterns, with Lake Charles, Iowa, and Vinton having larger proportions of renting households, at or exceeding 40%.

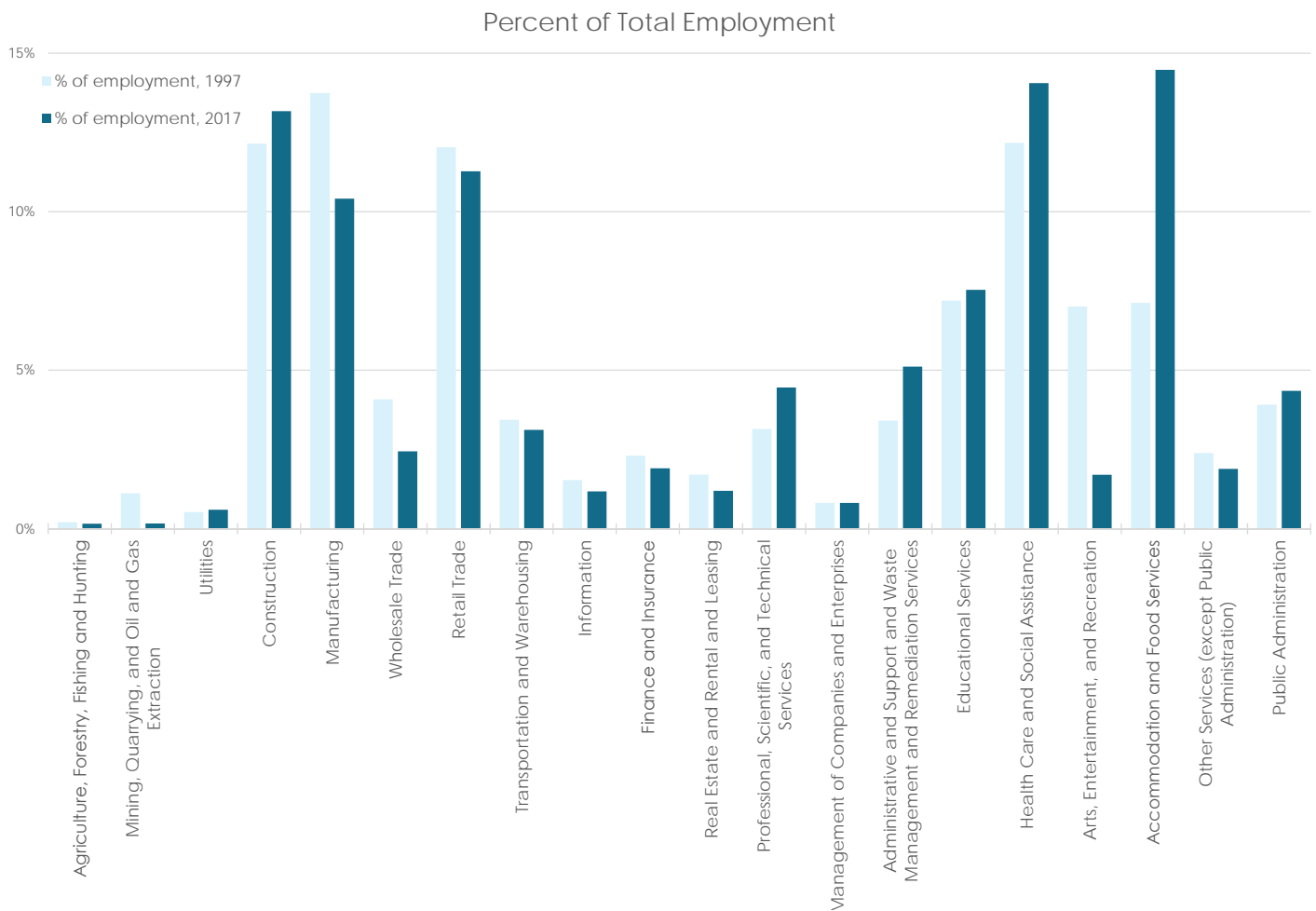




Employment

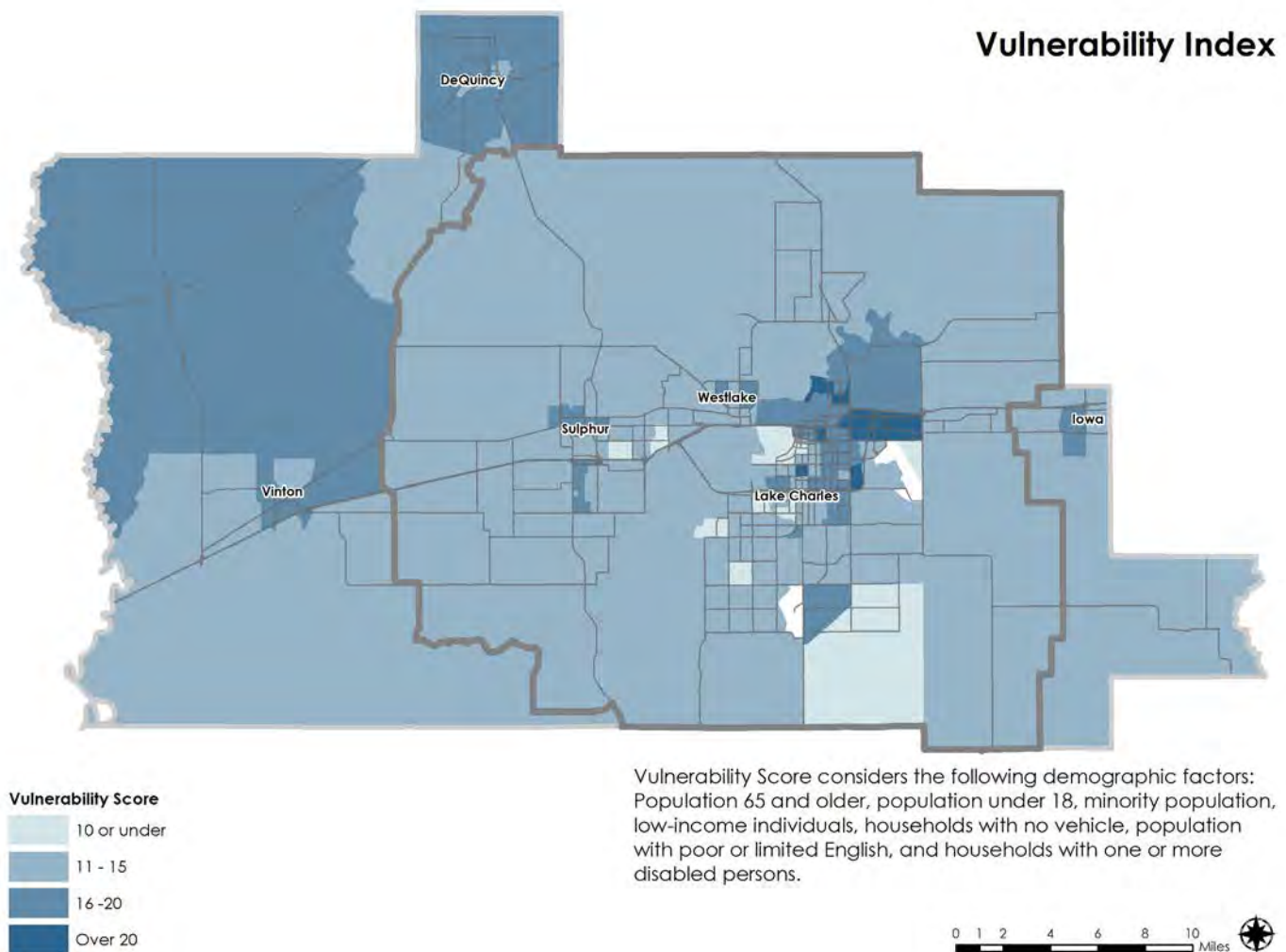
The chart below reflects past and current employment in Calcasieu Parish by industry. The composition of Parish industry has changed somewhat over the past 20 years; in 1997 the top three sectors by employment were *manufacturing*, *health care*, and *construction*, respectively. In 2017, **accommodation and food services** became the largest employer, increasing its overall employment by over 130%, still followed by **health care** and **construction**.

Industries including mining, arts and entertainment, and wholesale trade decreased substantially while administrative services, professional and technical services, health care, and utilities saw large increases.



Vulnerability

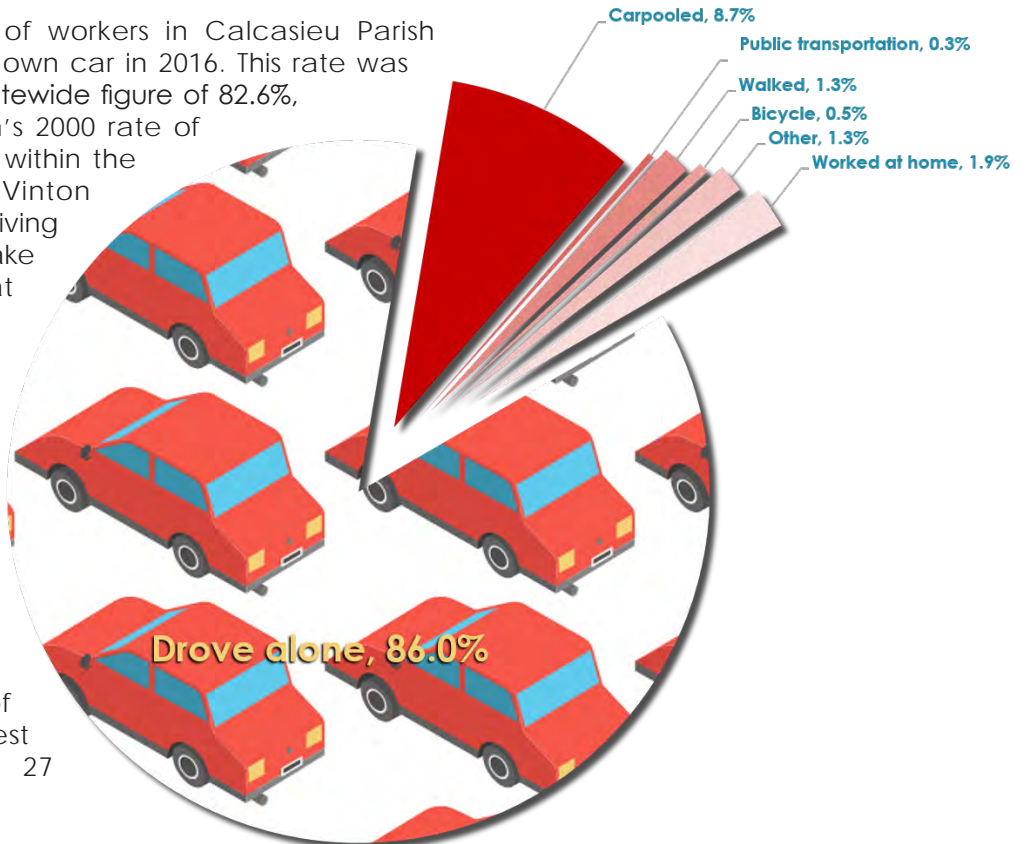
Some socioeconomic characteristics can help identify areas where the population has mobility and/or accessibility limitations. These variables may help identify areas where mobility and access improvements are needed, where alternative transportation options are critical, and where evacuation assistance may be needed during emergencies. The map below indicates areas with the largest number of “vulnerability” factors, including older and younger populations, low-income populations, minority populations, limited English speakers, zero-vehicle households, and households with disabled members. Census block groups within the City of Lake Charles tend to be the most vulnerable under this definition, as well as northwestern areas of the Parish and portions of Sulphur, Iowa, and DeQuincy.



Travel Patterns

The vast majority (86%) of workers in Calcasieu Parish commuted alone in their own car in 2016. This rate was slightly higher than the statewide figure of 82.6%, and is up from the parish's 2000 rate of 83.6%. Amongst localities within the parish, DeQuincy and Vinton had the highest rates of driving alone to work (89%) while Lake Charles had the lowest at 81%. Commuters residing in Lake Charles also had the highest instances of carpooling (13.2%) while residents of Westlake were most likely to walk (4.1%) or bike (1.7%).

The majority of Calcasieu residents have a commute under 20 minutes in length, with residents of the Town of Vinton having the longest average commutes, at 27 minutes.



Calcasieu workers in general stay within the parish to work, and the parish has a larger "daytime population" of people who work in the parish than its resident worker population. Amongst smaller localities, the working population in Lake Charles tended to work within the city, while residents of other towns and cities were more likely to work elsewhere in the parish, and in some cases outside of the parish or the state.

Seven percent (7%) of parish households do not have any vehicles available, compared to more than eight percent (8%) statewide. However, over ten percent of households in the municipalities of Iona, Vinton, and Lake Charles, do not have cars.

7% of households have no vehicles available



Roadways & Freight

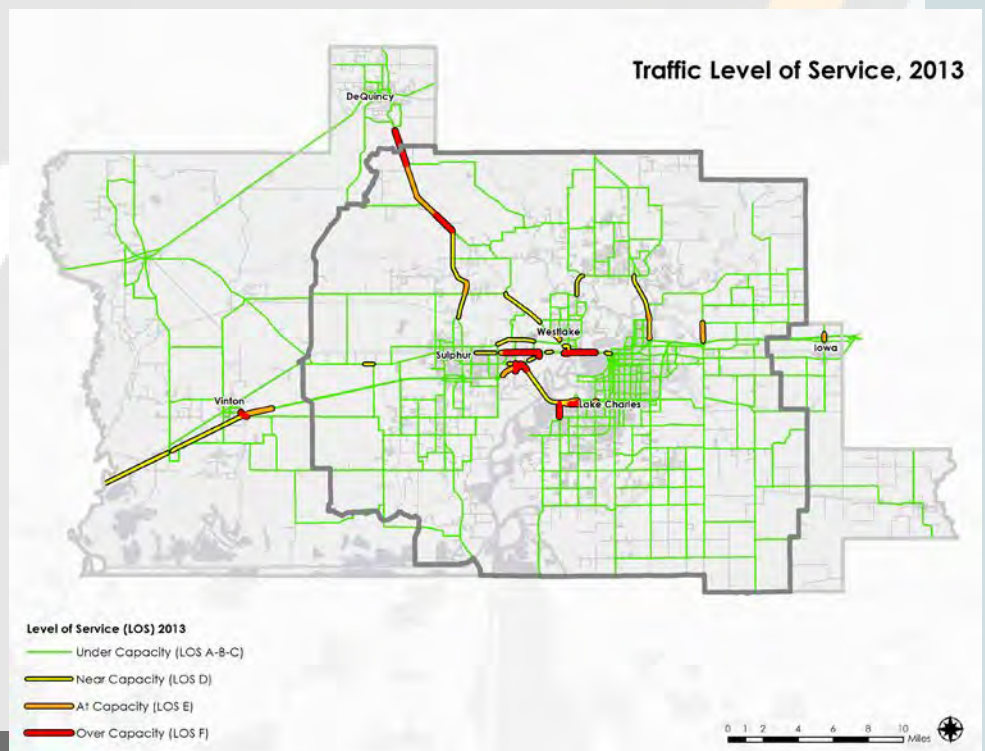
Calcasieu Parish is traversed by a number of federal and state highways, including Interstate 10, which crosses the parish from east to west, and Interstate 210, a bypass which interchanges with I-10 on either side of Lake Charles and the Calcasieu River. The table below indicates approximate miles of roadway within the parish by Functional Classification, according to the Louisiana Department of Transportation and Development (LaDOTD).

Functional Classification	Miles	Percent of total mileage
Interstate	144.5	5.9%
Principal Arterial	52.8	2.1%
Minor Arterial	163.6	6.6%
Major Collector	259.8	10.5%
Minor Collector	110.5	4.5%
Local Road	1,734.6	70.3%
Total	2,465.8	100.0%

The 2013 travel demand model (TDM) indicates there is already a potentially high level of congestion on some routes in Calcasieu Parish. Using the volume-to-capacity ratio (V/C), a measure that compares vehicles volume on a road segment with the carrying capacity of that segment, level of service categories could be applied to the 2013 road network. The level of service (LOS) represents how well traffic can flow on a given roadway. Generally, a ranking of A represents free flowing traffic, B is reasonably free flowing with little congestion, C is stable flow but nearing capacity, D is approaching unstable flow, E is unstable flow and a roadway that is at capacity, and F is forced or breakdown flow.

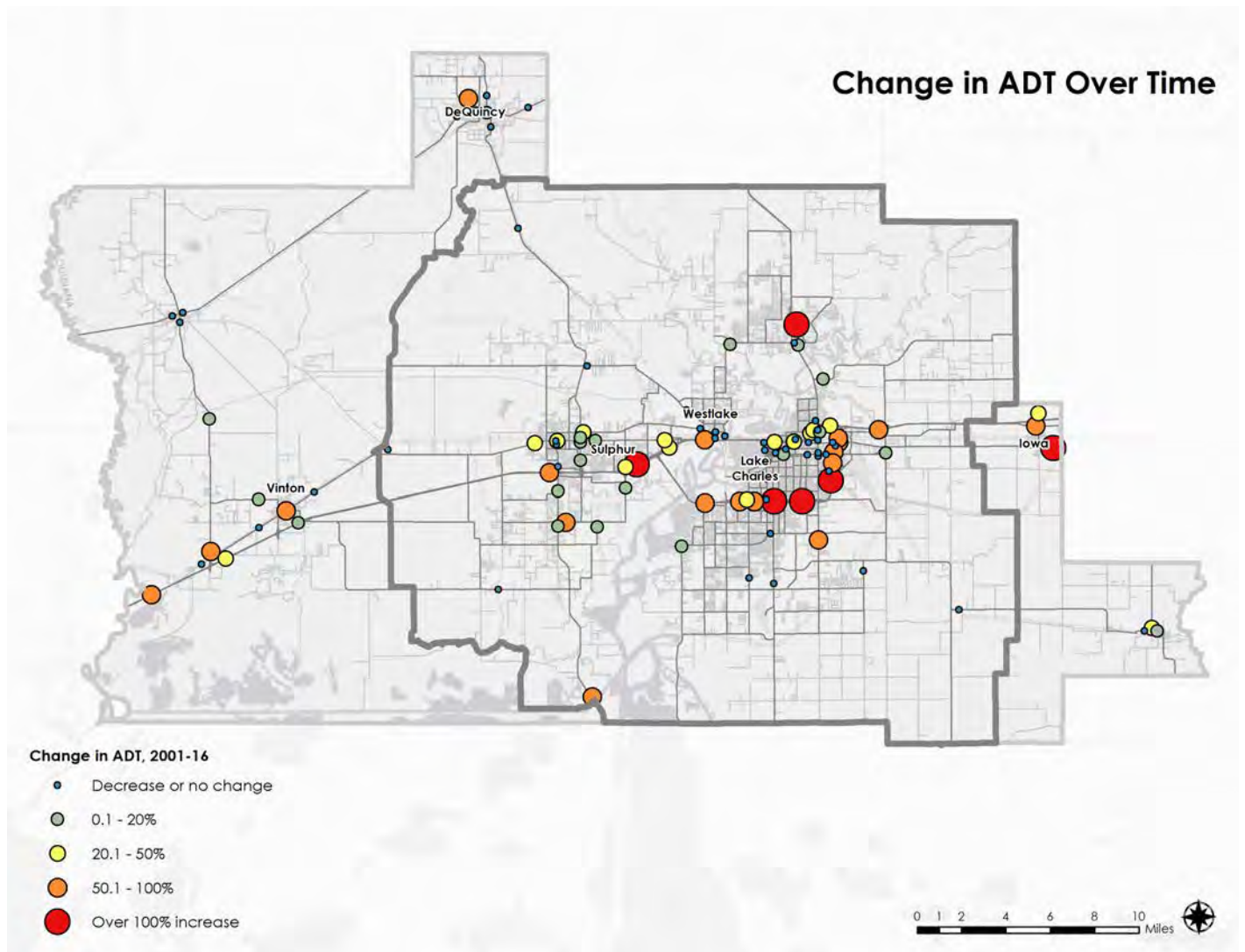
The level of service map for Calcasieu Parish indicates the majority of roadways operate at a reasonably free flow. A number of corridors do approach limited flow; the most congested roadway segments include the following:

- The western I-10 / I-210 interchange
- W Prien Lake Road north of W Sale Road
- LA 27 between Sulphur and Moss Bluff
- US 90 between PPG Drive and Center Ave
- PPG Drive
- Pete Manena Road
- I-10 and LA 108 in Vinton
- The I-10 bridge
- Nelson Road at I-210
- N Thompson Avenue at I-10 in Iowa

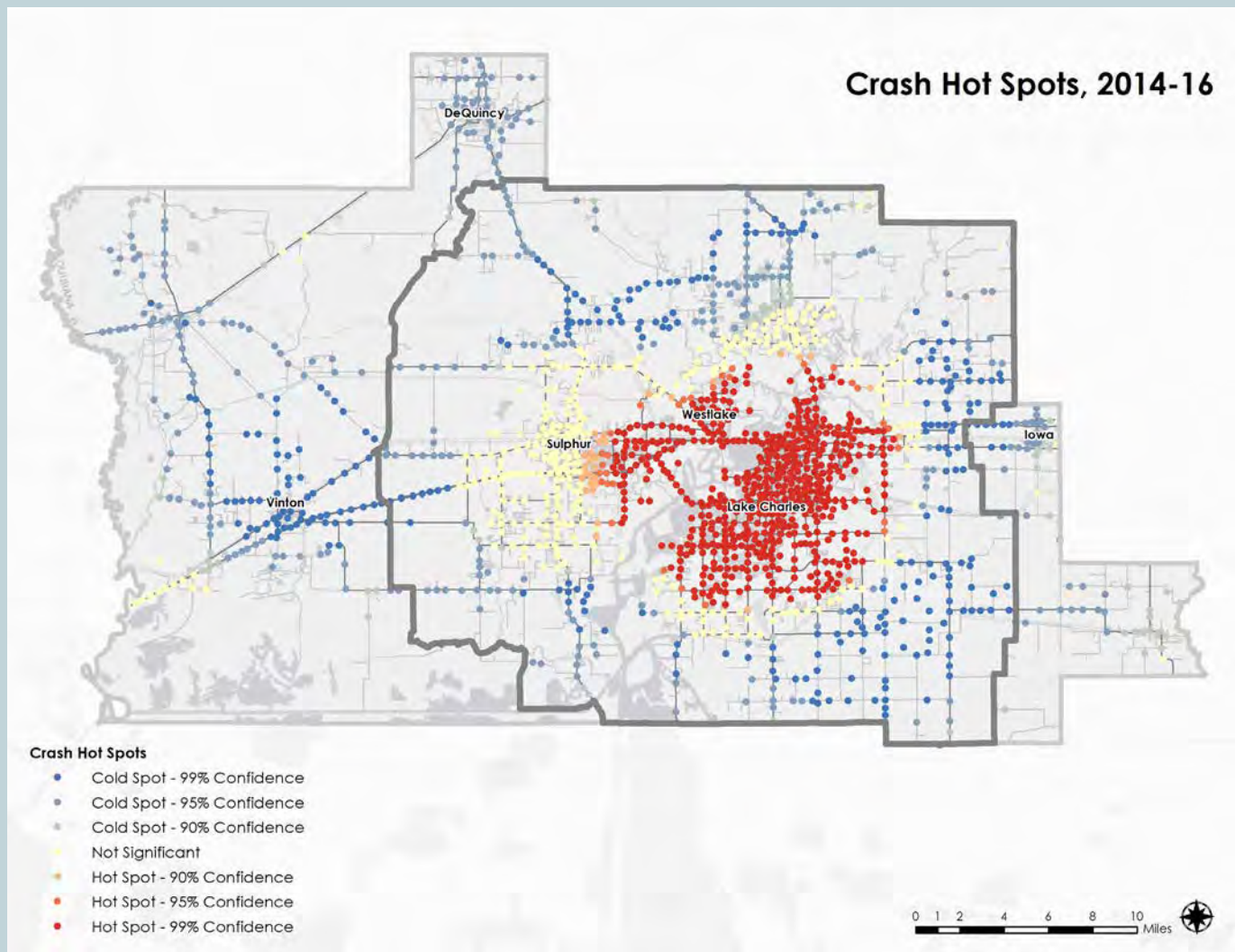


More recent average daily traffic (ADT) data was available for 2016 through LaDOTD. By calculating the change in ADT from 2001 to 2016, locations where traffic had greatly increased were identified. Road segments which increased by over 75% over the 15-year period included:

- US 171 north of Lake Charles
- I-210
- I-10 in Sulphur and at Pujol Road
- US 90
- LA 27 south of Carlyss
- LA 109 west of Vinton
- LA 389 in DeQuincy



Vehicular Accidents



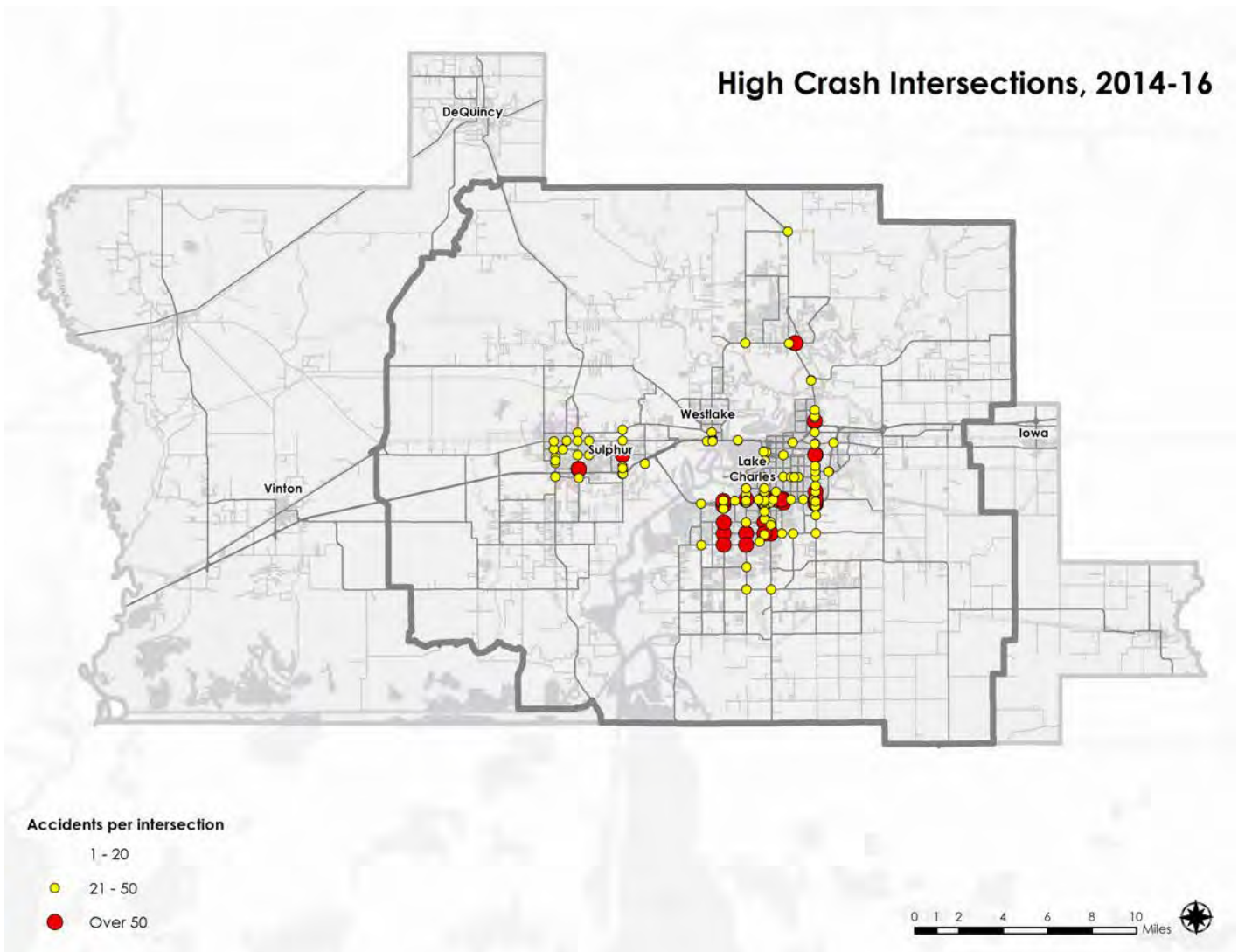
Running a “hot spot” analysis on the most recent three-year period of crash data, a process which weighs crashes by their proximity to other crash locations to identify critical event clusters, finds that Calcasieu Parish essentially has a large hot spot of crash events in the City of Lake Charles, with crashes becoming less frequent as distance from the city center increases. Over half of the total vehicular crashes from 2014 through 2016 occurred within the city limits.

Accidents in general increased over this three-year period, with an 11% increase from 2014 to 2015, and a 12% increase from 2015 to 2016. The total number of accident-related injuries and fatalities also increased from year to year, although at slower rates than total accidents.

Crash data was joined to the road network to highlight road segments with high crash rates per mile, and intersections with high total crash instances. From this analysis, “hot spot” road segments and intersections could be located. In general, the high-accident routes were within the cities of Lake Charles and Sulphur.

High crash intersections were primarily located within the City of Lake Charles, particularly along I-210 and areas south to Country Club Road. The intersections with highest crash rates during this three year period (more than 75 total crashes) include:

- Lake Street and W Prien Lake Road
- Gerstner Memorial Drive and E Prien Lake Road
- E McNeese Street and Common Street
- Enterprise Boulevard and E Prien Lake Road
- Ryan Street and Prien Lake Road
- Ryan Street and McNeese Street
- Ryan Street and College Street
- I-210 and Nelson Road
- Moeling Street and US 171
- Nelson Street and W Prien Lake Road
- Lake Street and W McNeese Street



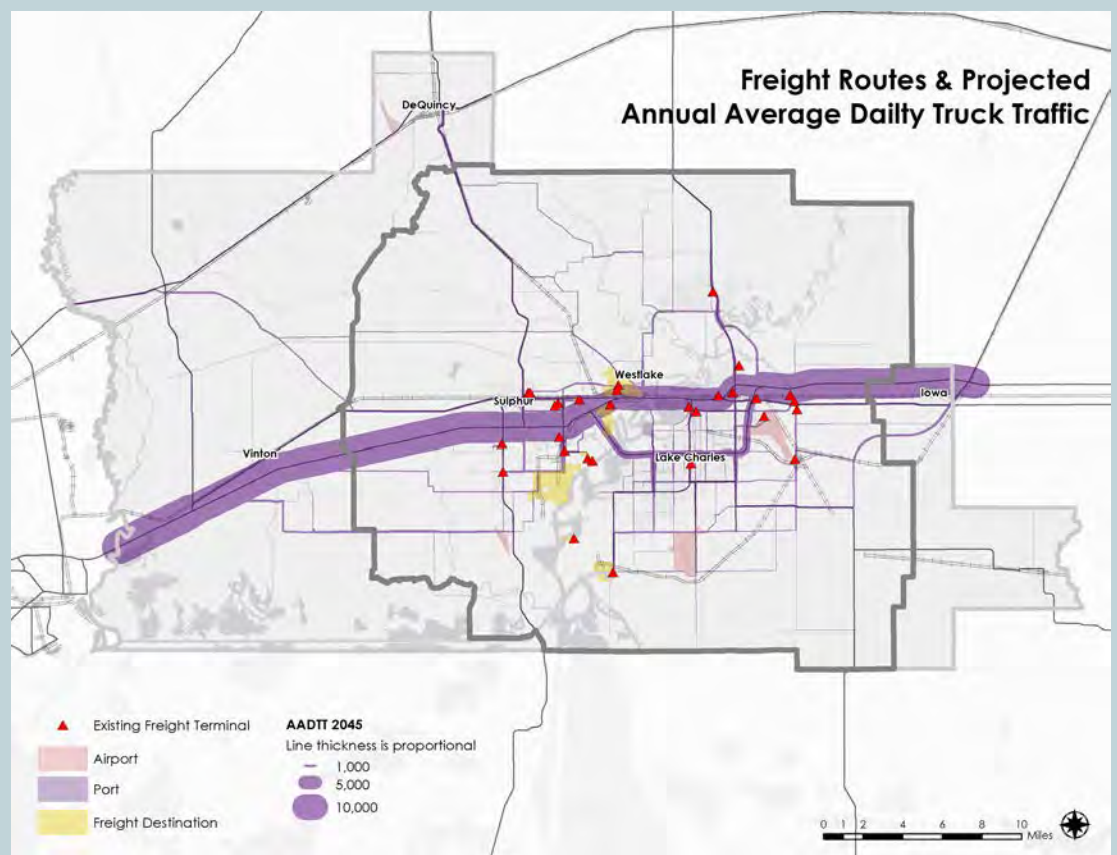
Freight Network

Over 400 miles of truck routes and 160 miles of railroad cross Calcasieu Parish. The map below indicates annual average daily truck traffic (AADTT) on highways, the only routes for which the Federal Highway Administration collects data. Interstate 10 is the most heavily travelled freight corridor, with well over 10,000 freight vehicles per day in 2012 (and over 20,000 in most areas).

Other heavily-traveled truck routes include Interstate 210, LA 14, US 171, LA 27, and Nelson Road (LA 1138-2) between Country Club Drive and I-210. The average AADTT on any given freight route segment in Calcasieu Parish was over 5,000, compared to just under 3,300 statewide. The freight network in Calcasieu also averaged just under the state average of 8,000 kilotons per year per section in 2012.

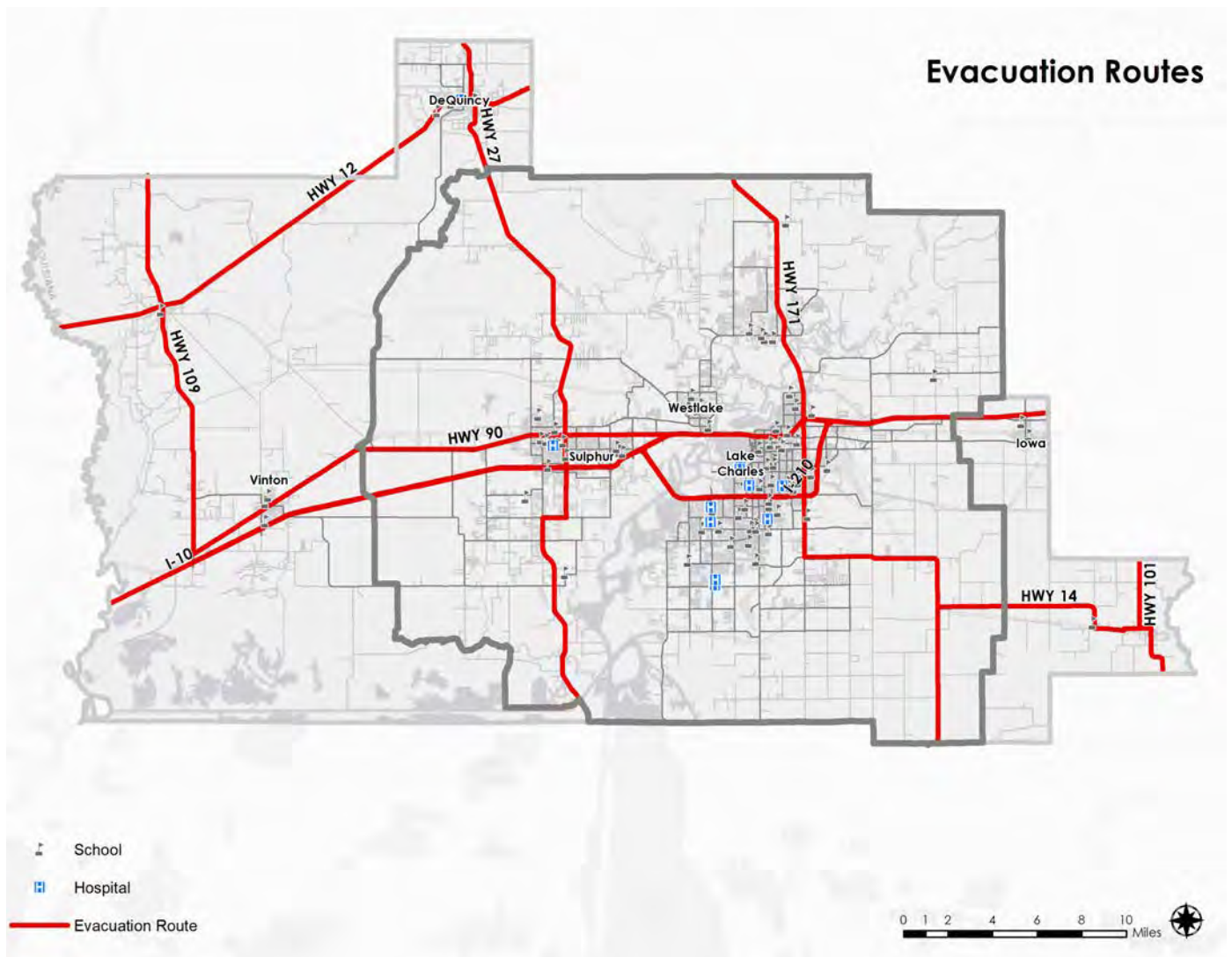
Calcasieu Parish is also home to the Port of Lake Charles, the 12th busiest port in the nation, and a crucial local tax and employment generator. A recent report projects a potential doubling of ship traffic over the next 20 years. The port is served by direct access to the roadway freight network as well as Class 1 rail service.

In looking at projected truck traffic, additional freight routes are expected to increase to over 5,000 AADTT by 2045, with LA 27 between Sulphur and DeQuincy to exceed 10,000 AADTT. Additional sections of I-210, US-90, LA 12 in DeQuincy, and Nelson Road are expected to have increased truck volumes by 2045.



Evacuation Routes

Parish evacuation routes follow national and state highways, as seen on the map below.

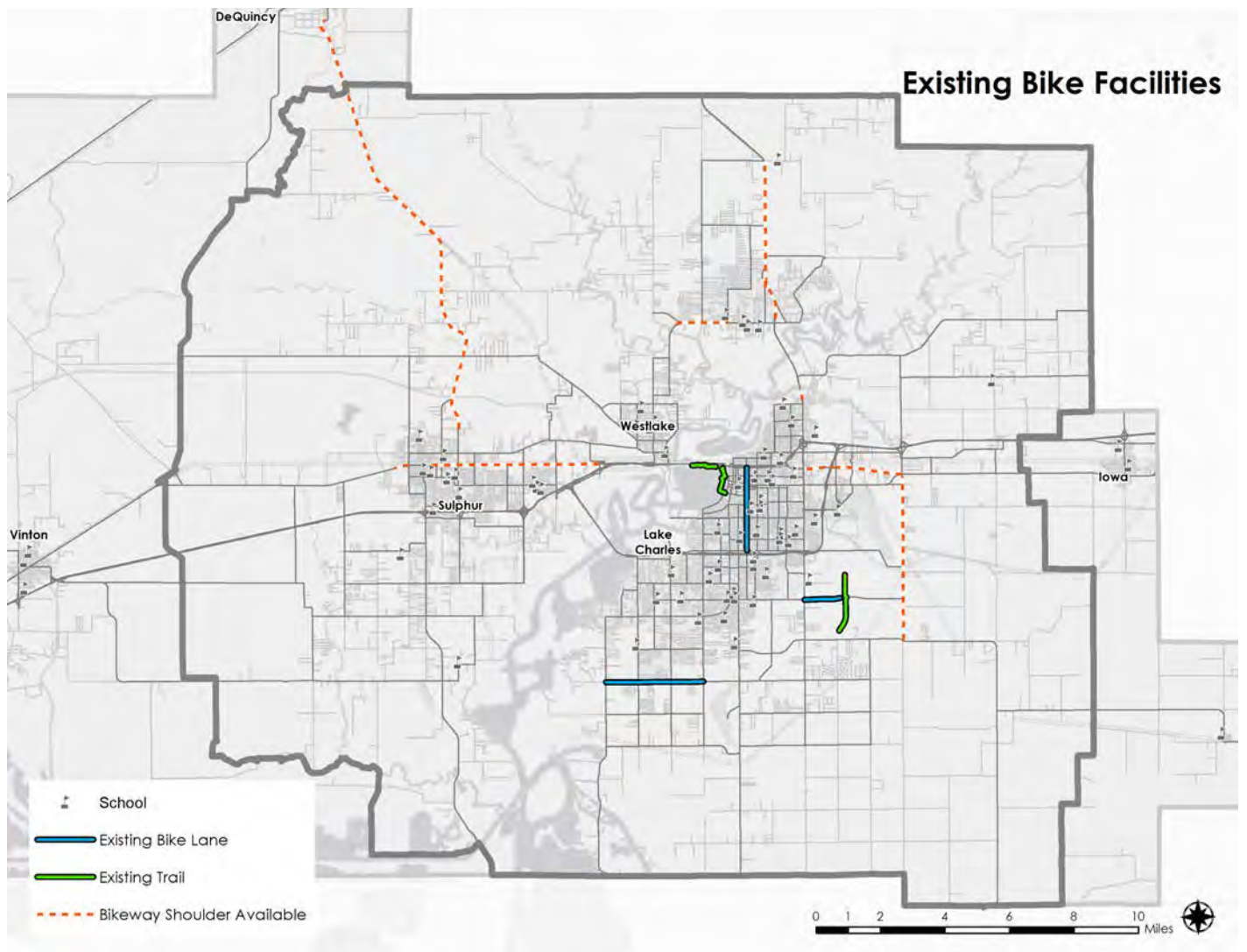


Alternative Transportation

Bicycle Facilities

Calcasieu’s existing bicycle facilities are somewhat limited, consisting of approximately eight miles of bike lanes, including lanes along Gauthier Road between Big Lake Road and Lake Street, East McNeese Street from LA 14 to the traffic circle at Corbina Road, and along Kirkman Street from E Prien Lake Road to I-10, newly added to the network in 2017. A multiuse path exists along Corbina Road from just north of Highway 14 to about 0.7 miles north of the traffic circle at East McNeese Street.

In addition to existing bicycle facilities, there is existing shoulder available on several major routes which could allow for marked bike lanes in the future.



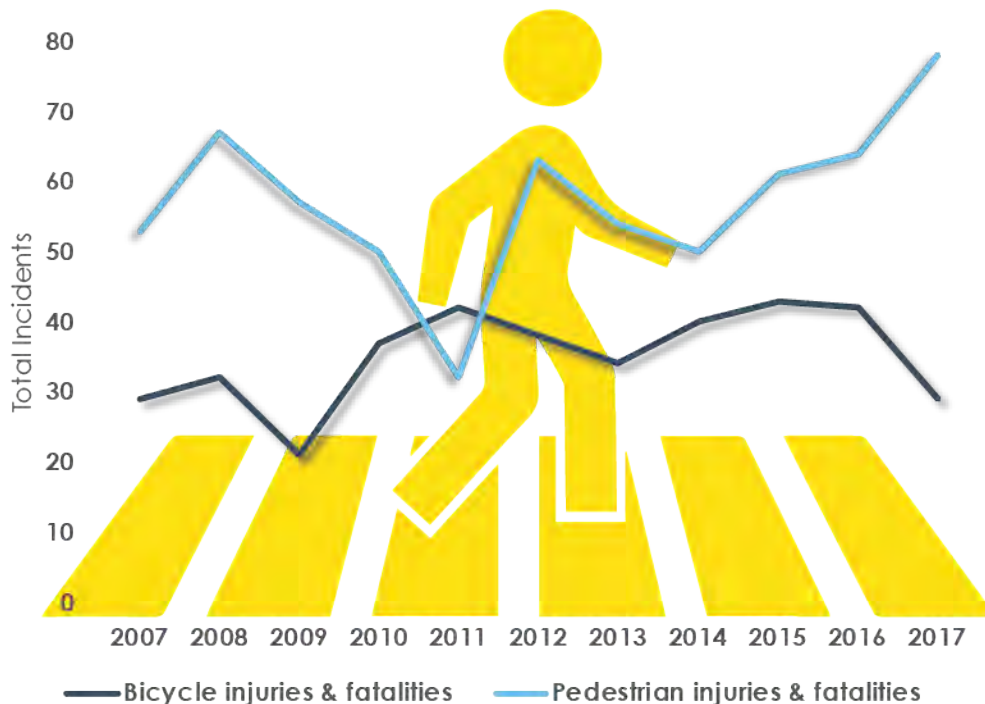
Pedestrian Facilities

Calcasieu Parish has a fairly extensive sidewalk network within the downtown areas of several local cities and towns, as seen on the opposite page. Lake Charles has the largest sidewalk network, which is not surprising given its denser development patterns and street grid. Sidewalks become more sparse in the southern portion of the city, where segments have been constructed with new residential development but do not connect to the rest of the sidewalk network. The City of DeQuincy and Town of Vinton also have sidewalk networks throughout their denser areas of development. Moss Bluff has sidewalks along two streets, but otherwise is lacking in pedestrian infrastructure, most likely a factor of the lower density style of development within the area. While the City of Westlake boasts the highest percentage of commuters who walk to work - more than triple the rate of the overall Parish - the city has little to no sidewalk network currently.

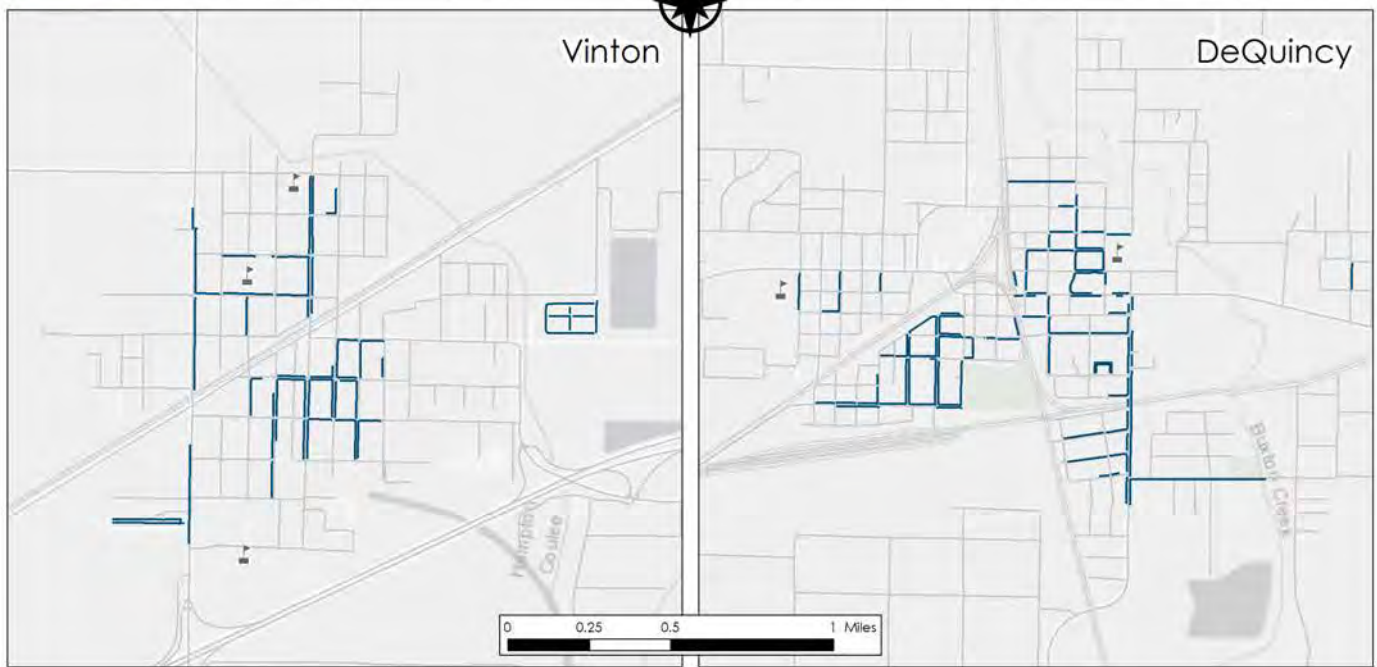
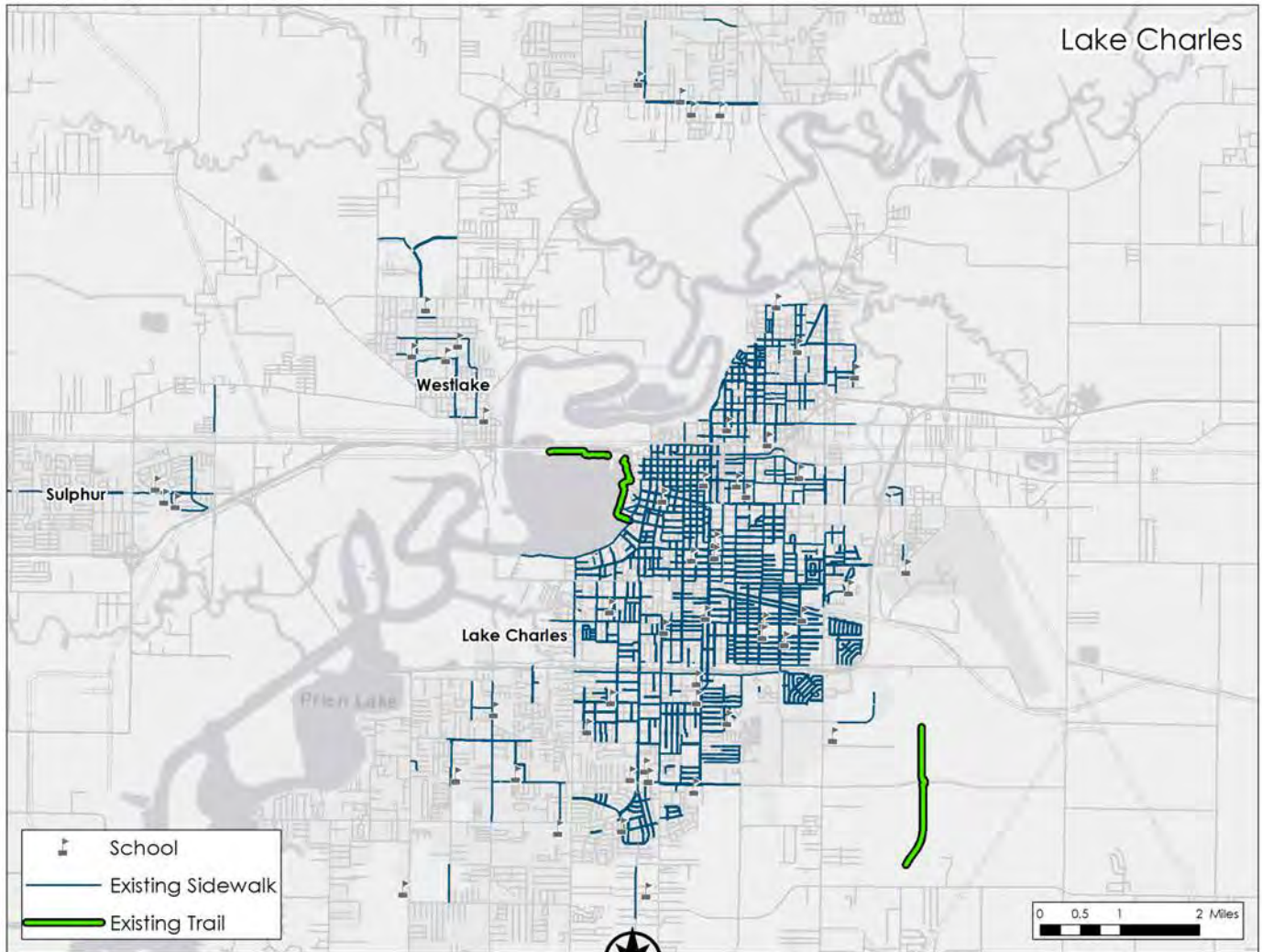
Bicycle and Pedestrian Safety

Parish-wide accidents involving cyclists and pedestrians have shown differing trends over the past ten years. Bicycle injuries and fatalities generally held steady over this time, with a decrease shown since a 2015 high of 43 total cyclist injuries and fatalities. Pedestrian incidents have shown an upward trend over this time, with an increase in combined pedestrian accidents and fatalities of 47% over ten years, compared to an eight percent increase in total licensed drivers. Looking at bicycle and pedestrian fatalities and injuries combined, the rate per 1,000 licensed drivers has also increased slightly over this time, from 0.64 incidents per 1,000 licensed drivers, to 0.77 (a 21% increase).

Out of all Louisiana Parishes, Calcasieu ranks sixth in terms of total number of crashes involving cyclists or pedestrians, with nearly 200 total bike and pedestrian crashes since 2005, accounting for over 5% of the total bike / pedestrian crashes in the state.



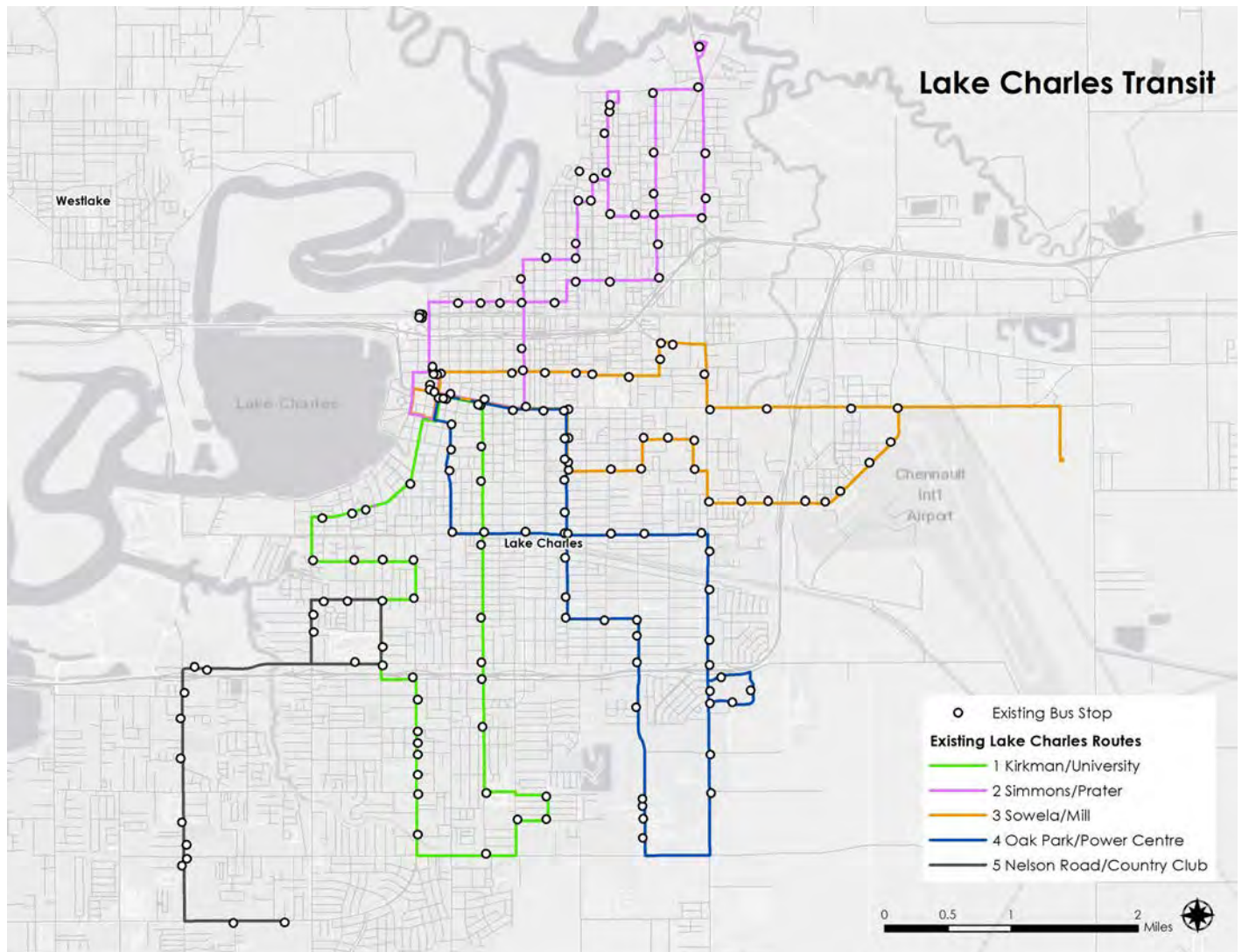
Existing Sidewalks



Public Transit

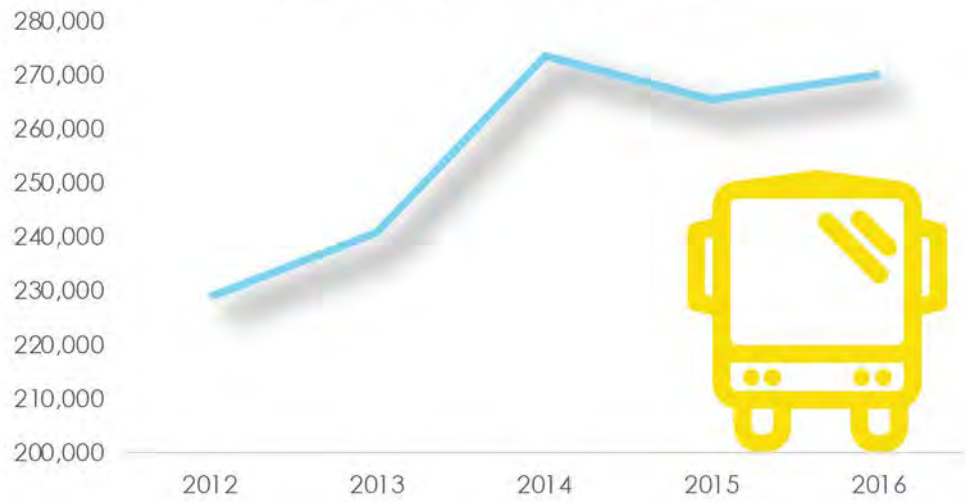
The Lake Charles Transit System is the only fixed-route public transportation in the Parish. Currently, five routes operate within the city. Routes and stops are shown on the map below. Lake Charles Transit also offers door-to-door para-transit service to qualifying disabled persons who need transportation to doctor's offices, grocery stores, pharmacies, and other destinations. Both the fixed-route and demand-response services operate from 5:45 a.m. to 5:45 p.m., Monday through Friday. Fares are priced at \$1.00 with free transfers for fixed-route service, and \$1.00 or \$2.00 for one-way or round-trip tickets, respectively, for the demand-response service.

Calcasieu Public Transit System also offers a curb to curbside transit service for those who meet certain income qualifications. Services provided include a rural program for anyone outside the City of Lake Charles, an urban program for those within the city, an elderly program, and a general public program on a first-come/first-served basis.

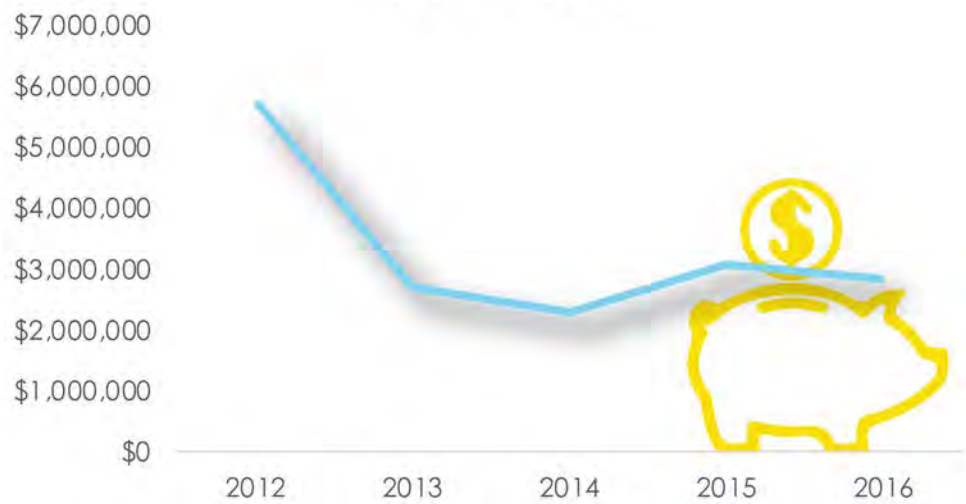


Transit data for Lake Charles Transit Service is available from 2012 forward, and indicates ridership has increased over the past five years. In fact, Lake Charles Transit ridership grew by nearly 20% over this five-year period, while many other Louisiana transit services lost ridership over the same period. However, operating expenses also increased over this time, at a rate faster than other Louisiana transit services (about 30% over this five-year period). During the same time, fare revenue increased by only 10%, which was slightly below that of other transit systems across the state. Total funding showed a general decrease over this time period, with an overall decrease of over 50%, although funding showed a slight increase since a low in 2014.

Unlinked Passenger Trips



Total Funding



Expenses and Revenue



What We Heard...

Figure EC.2 | Over 500 survey respondents largely agreed on the following:

53% of respondents think the transportation system in the region is **worse** now than 5 years ago

58% of respondents find **congestion** to be the biggest problem with the current system

69% of respondents were unsatisfied with the amount of street flooding in the area

- In an effort to reach as much of the Calcasieu Parish population as possible, we held an open house style Public Forum with mapping and push-button polling exercises, conducted a number of small focus groups, completed a Robocall phone poll, collected 593 responses to a ten-question survey both electronically and in person, and invited website visitors to contribute to a web map to show specific locations of concern. From a combination of these efforts, we were able to reach over 1,200 Calcasieu citizens, officials, and business representatives.

- The majority of contributors to the online, in-person, and Robocall surveys (based on those who completed the demographic questionnaire) lived in the City of Lake Charles (just under 60%), almost 20% were from Calcasieu Parish not within a city, 11% from Sulphur, 10% who did not live in the parish, and 2% from Westlake.

- Throughout our conversations with stakeholders, a common theme was congestion. The majority of electronic, phone, and in person survey-takers agreed congestion is the most critical transportation problem in the parish currently. Over half of survey respondents, along with a number of focus group and public forum participants, agreed that the transportation system has gotten increasingly worse over the past five or more years. Some stakeholders we spoke with in person commented new industrial projects have caused an explosion in commuting traffic, with many workers commuting in from elsewhere, often congesting local streets when major routes become too backed up. While some plants are running de facto rides sharing from parking lots, it has not been sufficient to curb the impacts of these large industrial projects on local commute times and traffic volumes.

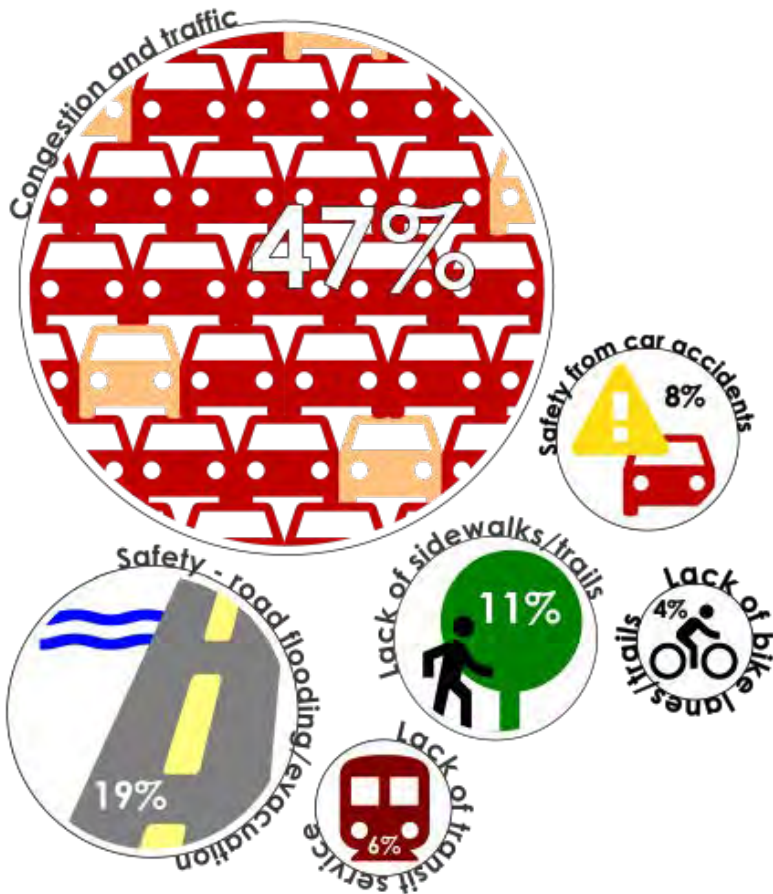
- The casinos in the area are also large economic drivers as well as large generators of traffic. Some commented on the need to better connect the casinos to the rest of the area, such as the many hotels on Prien Lake Road.

Figure EC.3 | RIGHT: Robocall survey responses

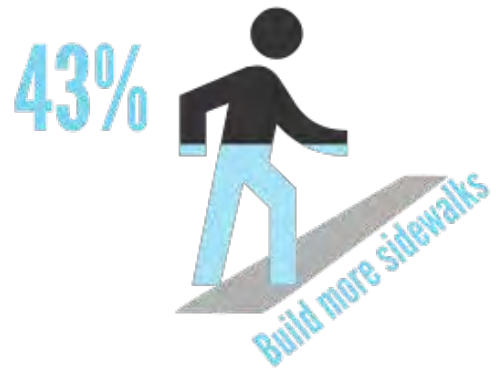
Over 600 Calcasieu Parish residents were surveyed by phone in February 2018, and told us the following:



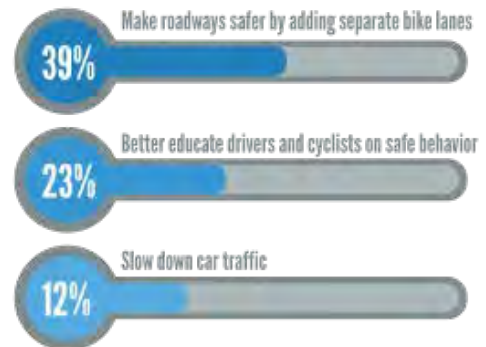
What is the most critical transportation problem in our community?



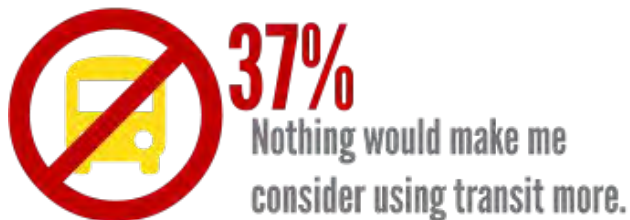
What is the best way to make walking a better experience...?



What is the best way to make biking a better experience...?



What would make you consider taking public transportation at least once per week...?



- Other answers:**
- 18%.....Bus stops closer to you/places you need to go
 - 15%.....More frequent bus service
 - 10%.....Cleaner or safer bus service
 - 10%.....More express bus service to nearby towns

What is the most important consideration in making transportation decisions?



- Other answers:**
- 18%.....Safer and more attractive streets
 - 15%.....Preserving existing neighborhoods
 - 13%.....More choices for walking and biking
 - 11%.....Taking advantage of new technology



Several stakeholders expressed further concerns regarding new large subdivisions being built in the parish without additional roadway capacity being provided. This could further increase congestion in the region. This leads to a related concern -- the coordination of land uses and new development with transportation improvements. A quarter of Robocall participants noted this as the most important consideration for future transportation decisions. Fourteen percent of online and paper survey respondents chose this answer (although there were more options in the online poll).

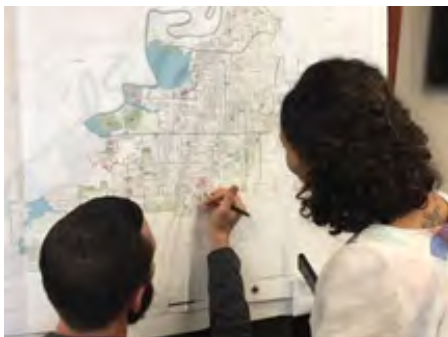
In all surveys, safer and more attractive streets were a top priority, and a large number of stakeholders expressed concerns with the amount of street flooding. Many comments we received also spoke to the need for turn lanes, especially at intersections, but also as a third lane along major routes, to help curb congestion.

Connectivity was also reported as an important goal across all travel modes. Many citizens would like to see more sidewalks, particularly to connect existing pedestrian facilities and destinations. Many respondents also desired more bike lanes. Transit in general was not considered to be important to the transportation system of the region, and most stakeholders expressed little or no desire to see it improved.

Concerns were also expressed regarding freight in the region. While a critical part of the Calcasieu Parish economy, stakeholders often told us there are issues with railroad crossing countywide, both in terms of safety and the additional vehicular traffic they cause. Others noted safety concerns overall, citing an increasing number of traffic violation tickets year after year.

Crossing the Calcasieu River is a major issue for those traveling across the parish: many citizens commented on the poor condition and heavy traffic of both the I-10 and I-210 bridge. Another comment heard many times was a need for a third crossing, potentially north or south of the existing bridges, close to Carlyss. Additional, smaller bridges across the parish were also called out as needing repair, and on these smaller crossings, the need for bike and pedestrian infrastructure was often noted. Some noted that the possibility of a water tax would be positive, although others commented it would do little to make a dent in traffic.

Particularly in our conversations with elected officials and local government staff, the issue of funding for transportation projects was raised many times. Some spoke to the opposition to any tax increases, while others proposed tolling or public-private-partnerships (PPP) as possible alternatives. The PPP option was further supported by citizens who responded to the survey, with this being the top preference for transportation funding. Public forum participants actually leaned toward tolls and/or fuel taxes as the best way to fund projects.



Directions



The Lake Charles Urbanized study area is a large, diverse, and dynamic place, comprised of separate but connected communities. The Metropolitan Transportation Plan for this area is based on a recognition of those facts, as well as a number of observations provided by the public and data described in the preceding pages. The following points provide specific directions for the project, policy, and program recommendations in subsequent chapters of this plan. Each direction point is supplemented by its source (e.g., survey, data collection, or focus group / public meeting).



A CHANGING - AND EXPANDING - POPULATION

The rate of “natural increase” in Calcasieu Parish has been, and remains, fairly steady. However, new people added through in-migration is a significant force driving change - including traffic levels. Moreover, the places these people work are changing, with important increases in retail-related sectors and decreases in manufacturing and arts / entertainment employment.

- More people = more trips, most of which are car-based now
- Shift to retail employment from manufacturing implies lower incomes and greater reliance on public transportation, biking, and walking for more people



THERE IS A LOT OF ROOM LEFT TO GROW, AND IT'S CRUCIAL TO GET IT RIGHT

While the current study isn't a land use-focused, how and where development occurs is perhaps the single-greatest factor in the long-term success of transportation mobility. The study region has a lot of room left to add greenfield-style development, low-density and highly car-dependent. Many commuters now are left out of regular transit service areas.

A different style of development in high-activity areas that is higher-density, inclusive of low- and high-income families, and promotes alternative transportation is possible, but won't happen very often in a *laissez-faire* marketplace. Transit, which has a ridership that's been increasing inside Lake Charles even as the price-per-rider has declined, can better serve more integrated development. Technology has an important role in creating responsive services.

- Best practice policy should include development guidance
- Consider supporting land planning through the MPO
- Address commuters coming from outside of Calcasieu Parish
- Technology can make bus service more time-competitive

Where did the Directions shown below come from?



FREIGHT MATTERS

Much of the recent economic gain in Calcasieu Parish is built around distribution, and that requires roadway capacity to be in place. Apart from big bridges, technology and intersection improvements are major players in the solution.

- Consider developing a detailed regional freight plan addressing water port and rail (including 286k weight) limitations
- Think about technology providing information and improving traffic flows
- Don't forget bridge issues but include low-capital solutions to intersections



WHERE IS WALKING & BIKING NOW, AND WHERE DOES IT NEED TO GO

Like transit, the future role of walking and biking - active modes - is small now and likely to expand. Every trip begins and ends this way, and for transit it is crucial to get walking connections in place to stops. While recreational trips and facilities are important to many people, they can also reduce car trips and provide options for some types of travel needs.

- Support a few, large "trunk" regional multiuse paths/trails
- Focus on small improvements to existing routes in areas where people walk now, especially near schools and other destinations
- Best practice policy guidance is important here as well



FOCUS ON SPECIFIC ISSUES & HOT SPOTS

While big regional-scale projects will have a great impact, they are necessarily few in number and take a long time to happen, in part because of their cost relative to funding availability. People gave us a lot of ideas about specific "hot spots" like intersections, connections they would like to see made, or segments of congested roadway.

- Identify specific focus areas and projects in the plan
- Develop concept designs specific to the issues
- Incorporate complete street and best practice principles into the conceptual designs



The Plan Recommendations

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The Plan: Roadway & Freight

Roadway and Freight Assessment

Congestion bottlenecks are a primary concern for both private (auto) roadway users as well as freight shipments. As the region grows in population and employment, these bottlenecks pose a threat not only to mobility, but to health/human safety and future economic growth. Figure R.1 illustrates the highest priority roadways and freight projects in the region.

In addition to the assessment of volume-to-capacity ratios, freight volumes, and crash data, the 2018 Freight Transportation Study conducted by Louisiana DOT figured prominently in the development of performance criteria and project selection. Based on that plan, the following are freight recommendations that the LCMPO and its partners can reasonably achieve in the next five-year planning cycle.



The reliability of travel - today's trip taking about the same amount of time as the same trip next week - is important in general but critical to many industries.

F R E I G H T W O R K I N G G R O U P



The LCMPO would appoint a new, standing freight working group (stipulated in updated bylaws) to meet quarterly to help identify key priorities and initiatives, including the regional freight plan element.

R E G I O N A L F R E I G H T P L A N & P R O C E S S



The LCMPO will create a regional freight plan to address key infrastructure priorities and development policies on behalf of municipal and parish governments. The Freight Working Group would steer the process.

E V O L V E D A T A C O L L E C T I O N C A P A B I L I T Y



The LCMPO should subscribe to third-party data providers to enhance the available federal data, potentially hiring a new GIS / data management position to assist with this and other data management activities.

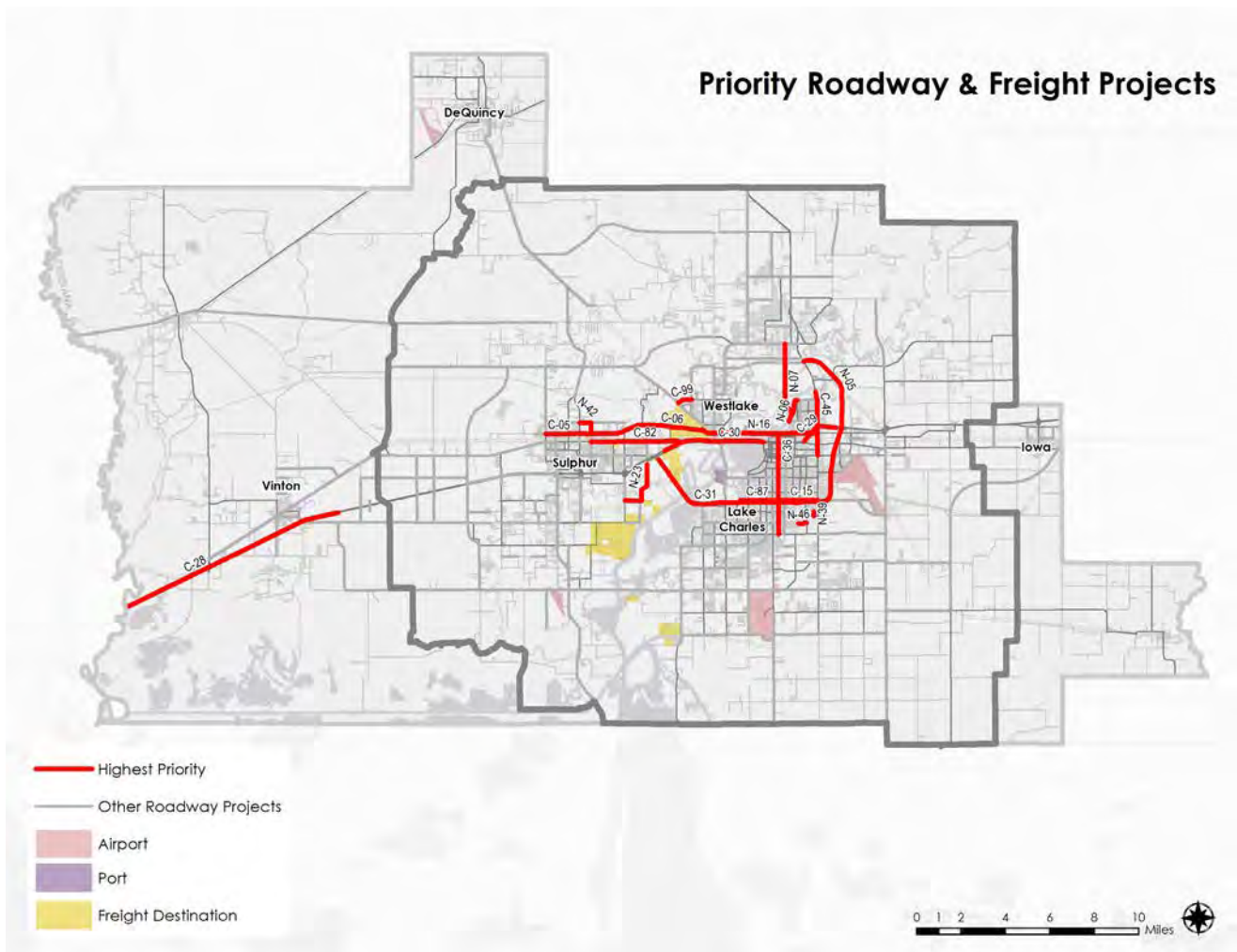
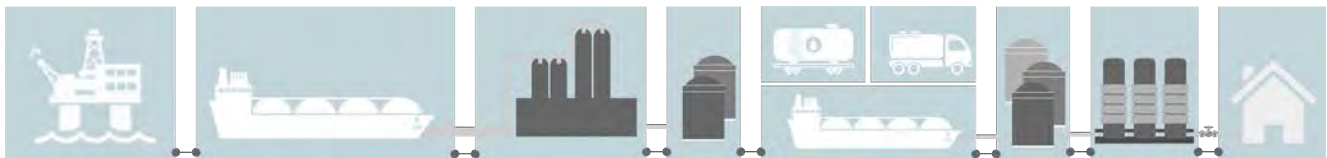


Figure R.1 | Highest Priority Roadway & Freight Projects



Supply Chain for Liquefied Natural Gas (LNG). Even a simplified model of the LNG supply chain illustrates how dependent it is on various aspects of the transportation system: from exploration/drilling to shipping, conversion to liquids to storage, and from regasification to distribution to homes, LNG can use nearly every form of ground transportation. Living-wage jobs are created at almost every step of the process, from exploration science to distribution line maintenance and repairs.

Established as a grid-based system, the existing network of streets in Calcasieu Parish is bisected by I-10 east and west but is without a comparable, direct north-south travel corridor. A typical surface street exhibits little access controls for driveway spacing (and often individual driveway design) and may also have a four-lane, undivided cross-section (an undesirable design from a safety perspective).

Pedestrian, and especially bicycle, facilities are few alongside the roadways, particularly outside of the core areas of municipalities. The area consists of the following street centerline miles (not factoring the number of lanes) as described in Table R.1.

Comments received from the Steering Committee and public, as well as information obtained from the travel demand model (a computer model that simulates current and future on-road traffic conditions based on assumptions about future growth and transportation networks) to develop a proposed future roadway network. The travel demand model helps identify which roadways are likely over-capacity and may need to be widened or have alternative facilities or technological improvements to make them operate better.

A number of these roadway recommendations have particular benefit to existing freight terminals and networks, and the prioritization system for them does reflect that importance both to those projects and

to freight movement for the economy of Calcasieu Parish and Southwest Louisiana. For this plan, a survey of freight terminals (distributors and end-user manufacturing as well as port terminals) was conducted and refined based on local input to help ensure completeness and accuracy.

Additionally, eight concept areas (found with the Policy and Implementation section of this plan) were identified and proposed to create concept-level design treatments for roadway, walking/biking, and land use relationship improvements based on this report's policy guidance. These eight concept areas were reviewed on multiple occasions by the Steering Committee as well as individual meetings conducted with local government staff.

Functional Classification	Miles	Percent Congested Now*	Percent Congested 2045*
Interstate	144.5	1%	10%
Principal Arterial	52.8	0%	1%
Minor Arterial	163.6	1%	2%
Collector and Local	2,104.9	1%	4%
Total	2,465.8		

* Based on travel demand model outputs.

Table R.1 | Current and Future Congested Roadway Mileage

Roadway and Freight Priorities

The vast majority of trips in Calcasieu Parish are made by private automobile and nearly all freight movements are highly dependent on roadways as well as rail and port (or intermodal) connections. Truck freight movements depend on essentially the same network of roads and are asked to share space with passenger vehicles. Key differences are (a) emphasis on reliability of travel times, and (b) additional infrastructure like ports and pipelines. The MTP contemplates these

similarities and differences between general-purpose roadway and freight travel, primarily with respect to the identification of projects and how those projects are evaluated for prioritization.

A total of 14 metrics were incorporated into the roadway and freight prioritization process. To balance scoring, each metric was normalized on a 1-10 scale, and the average score was computed to rank projects.

map id	Project Name	Location	Type	Evaluation Score						
				MRF1	MRF2	MRF3	MRF4	MRF5	Total	Prioritization
C-30	I-10 Bridge	Calcasieu River	New bridge	12	23	13	10	10	68	100
C-45	LA 171	Broad St to English Bayou Ct	Road widening and ATS signal system additions	16	29	10	2	10	67	98
C-82	US 90 (Napoleon St)	Post Oak Ave to I-10	Widen to 4 lanes	12	17	12	11	1	53	92
C-29	I-10	UPRR Overpass (Lake Charles)	Widen 4 to 6 lanes	12	19	10	11	10	62	89
C-31	I-210	W I-10 to E I-10	Widen to 6 lanes	12	18	11	11	10	62	89
N-06	Enterprise Blvd	Moeling St to Fitzenreiter Rd	New 4 lane roadway	0	0	12	1	18	31	89
N-16	LA 379 Ext	Westlake Ave to N Enterprise Blvd	New local bridge	0	0	14	1	16	31	89
N-42	Brimstone Rd Ext E	LA27 (Beagle Pkwy) to Burton St	New 2 lane roadway	0	0	12	10	9	31	89
N-05	Eastern Corridor Phase IV	US 171 to E I-10	New 4 lane roadway, bridges, and interchange	0	5	15	1	14	35	85
N-46	Sunset Dr Ext	Dead End to 5th Ave	New 2 lane roadway	0	0	10	1	19	30	85
C-28	I-10	Sabine River to Fabacher Rd	Widen to 6 lanes	12	18	11	8	5	54	83
C-106	W Prien Lake Rd Bridge	Contraband Bayou	Bridge replacement	17	9	12	2	10	50	83
N-07	Enterprise Blvd Ext	Moeling St to Sam Houston Jones Pkwy	New 4 lane roadway and bridge	0	0	12	1	16	29	81

Table R.2 | Highest Priority Roadway & Freight Projects

map id	Project Name	Location	Type	Evaluation Score						Prioritization
				MRF1	MRF2	MRF3	MRF4	MRF5	Total	
C-15	<i>E Prien Lake Rd</i>	Ryan St to Gerstner Memorial Blvd	Center turn lane	17	13	11	2	10	53	81
C-71	<i>Opelousas St</i>	Enterprise Blvd to US-171 (MLK Hwy)	Widen to 4 lanes	8	12	12	11	10	53	81
N-23	<i>Prater Rd Ext</i>	LA 108 (Cities Service Hwy) to I-10 Service Rd	New 2 lane roadway, bridge and reconstruction	0	0	15	10	4	29	81
N-39	<i>Roosevelt St Ext</i>	Power Centre Pkwy to Dead End	New 2 lane roadway	0	0	10	1	18	29	81
C-06	<i>Burton St/Old Spanish Trl</i>	LA 108 (Cities Service Hwy) to Miller Ave	Widen to 4 lanes	12	15	9	11	1	48	81
C-36	<i>Kirkman St</i>	McNeese St to Jackson St	Widen to 4 lanes	14	9	17	2	10	52	79
C-87	<i>W Prien Lake Rd</i>	Lake St to Ryan St	Center turn lane	19	7	9	2	10	47	79
C-99	<i>John Stine Rd</i>	Houston River Rd to Myrtle Springs Rd	Widening	7	6	13	11	10	47	79
C-05	<i>Burton St</i>	Claiborne St to LA 108 (Cities Service Hwy)	Widen to 4 lanes	7	9	14	11	5	46	76

Table R.2 | Highest Priority Roadway & Freight Projects (continued)

Goals	Project Evaluation Metrics	Target
<p>Goal GRF.1 Improve Safety. Safer roads not only improve quality of life, but also reduce delays from non-recurring events. The most-vulnerable users are those that walk and bike, and should be considered independently.</p>	<p>MRF1.1 Crashes per mile MRF1.2 Severe crashes MRF1.3 Severe crashes involving a pedestrian or bicycle</p>	<p>TRF1.1 Reduction by 1% for the following by 2020:</p> <ul style="list-style-type: none"> • Fatalities, • Serious injuries, • Rate of fatal crashes per 100M VMT, • Rate of serious injury crashes per 100M VMT, & • Non-motorized (bike/ped) fatal or severe injury crashes
<p>Goal GRF.2 Improve Mobility. Reducing recurring congestion is a function of trips being generated from nearby land uses as much as roadway capacity.</p>	<p>MRF2.1 Volume-to-Capacity Base Year MRF2.2 Volume-to-Capacity Future Year MRF2.3 Pavement condition MRF2.4 Travel Time Reliability</p>	<p>TRF2.1 Reduce total miles traveled along congested roadways by 25% by 2045 TRF2.2 Reduce % of pavement or NHS bridges in “poor” condition below statewide targets by 2022 TRF2.3 Increase % of miles traveled along NHS “reliable” roadways above statewide targets by 2022</p>
<p>Goal GRF.3 Improve Resiliency. Higher levels of connectivity and de-emphasizing access and capacity in areas that are hard to serve with utilities or subject to flooding are important long-term success factors. Additionally, projects that improve access to shelters, first-responders, and medical facilities should be prioritized.</p>	<p>MRF3.1 Facility access MRF3.2 Land Suitability MRF3.3 Connectivity nodes</p>	<p>TRF3.1 Increase connectivity ratio (nodes to roadway links) by 25% by 2045 TRF3.2 Increase % of total roadway miles within municipal areas</p>
<p>Goal GRF.4 Improve Freight Movements. While freight and general-purpose travel often share roadways, some project locations and types would clearly benefit freight centers and routes more than others.</p>	<p>MRF4.1 Freight volume MRF4.2 Freight destination</p>	<p>TRF4.1 Reduce or eliminate state-identified “bottleneck” locations by 2045 TRF4.2 Reduce Truck Travel Time Reliability (TTTR) index along NHS corridors below statewide targets for 2022</p>
<p>Goal GRF.5 Improve Social Equity. Low-income and minority populations are specifically identified as communities that are traditionally underserved by transportation. Projects that occur within these communities have a higher priority.</p>	<p>MRF5.1 Poverty or Minority population MRF5.2 Vulnerability index</p>	<p>TRF5.1 Prioritize and construct roadway improvement projects within identified EJ communities</p>

Table R.3 | Roadway & Freight Goals and Priorities

Roadway and Freight Evaluation

Safety (Goal GRF.1)

Achieving a significant reduction in traffic fatalities and serious injuries is paramount, aligning with Federal performance management goals established under MAP-21 guidance and continued under the current FAST Act legislation. Roadway projects were evaluated using three safety metrics: crashes per mile, fatal and serious injury

crashes per mile, and bicycle or pedestrian crashes. Projects with a higher crash per mile value are assumed to represent a larger crash *mitigation* potential, and therefore scored higher. Engineering-level project development phases will further develop the purpose and need statement as well as consider engineering feasibility and safety for all users on a project-by-project basis.

Projects were also assigned a score based on the severity of crashes along the segment, specifically crashes with fatalities (K), incapacitating (A), or evident (B) injury categories, and normalized by overall project length. Bicycle or pedestrian crashes were also calculated and scored for capacity improvement projects along existing roadways.

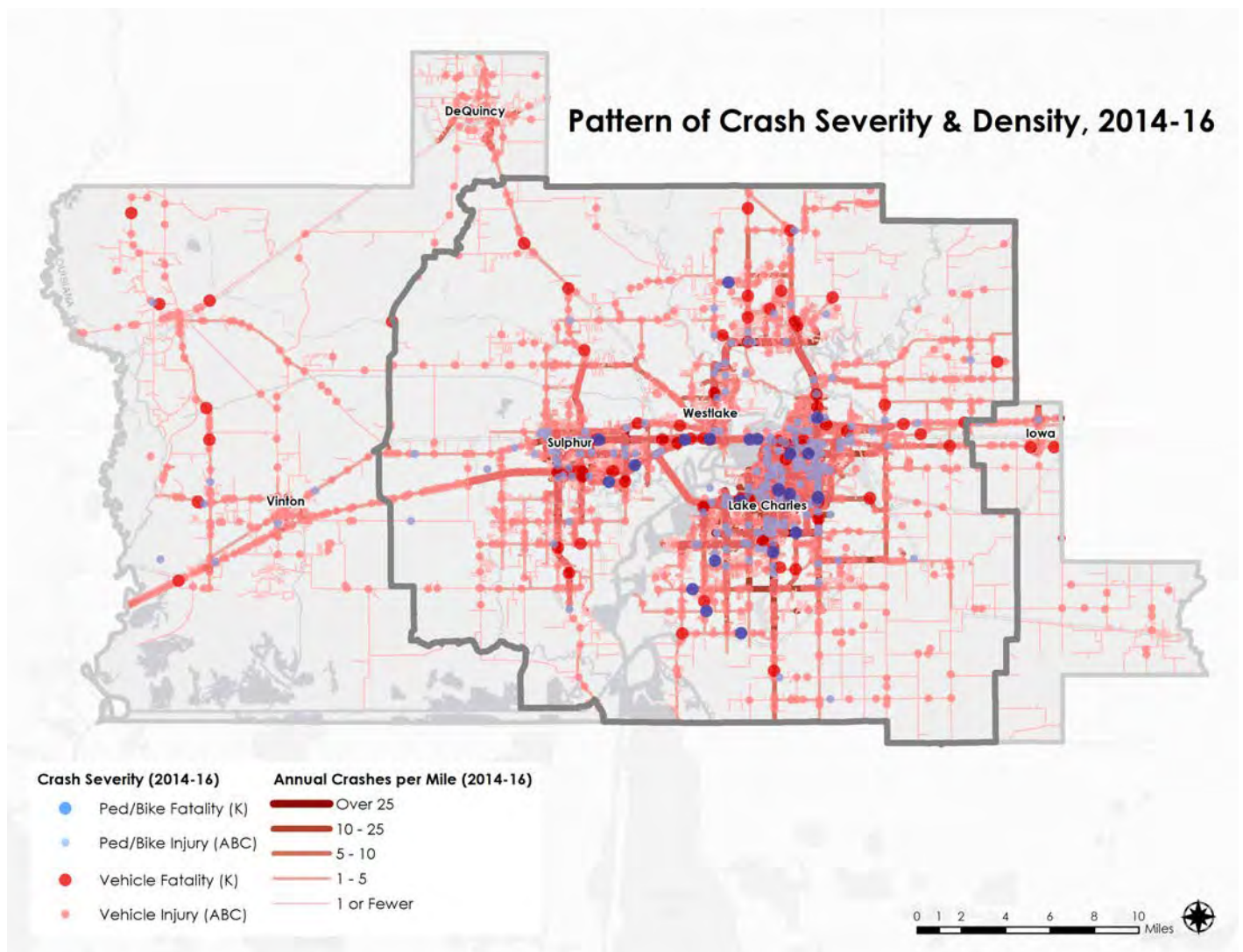


Figure R.2 | Pattern of Severe Crashes and Crash Density

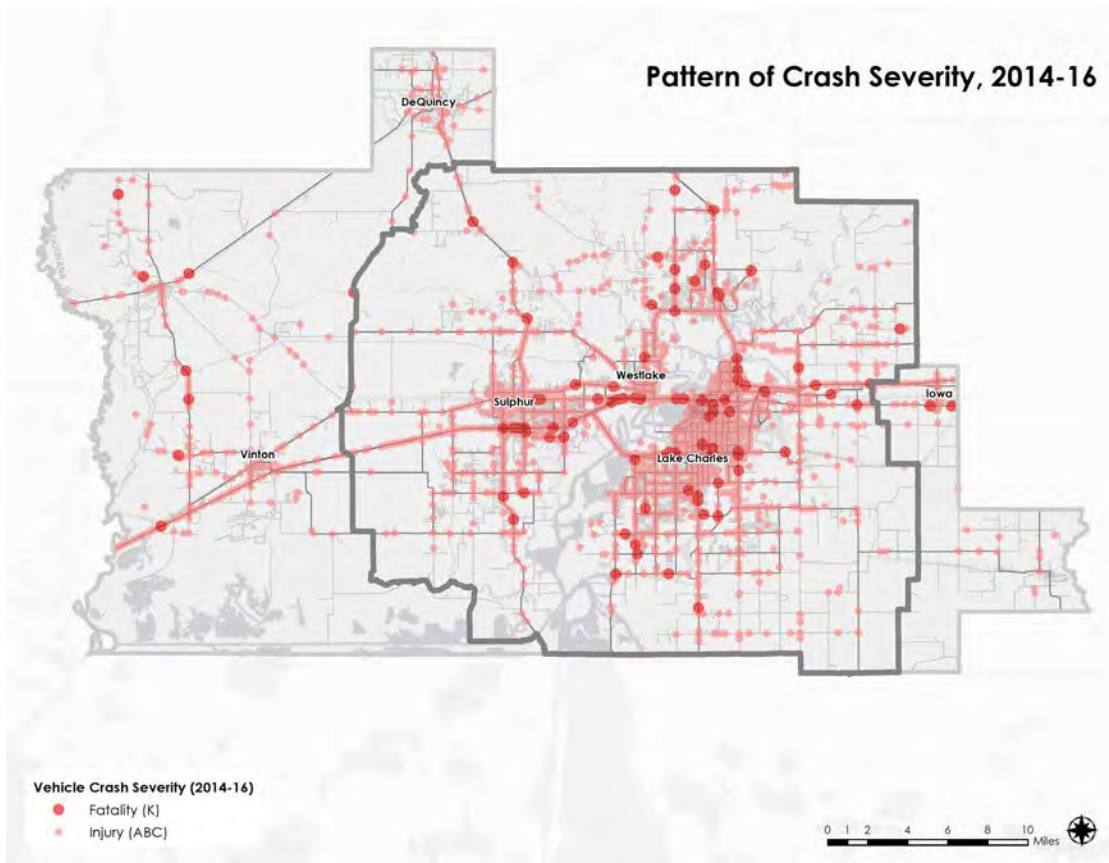


Figure R.3 | Pattern of Severe Vehicular Crashes

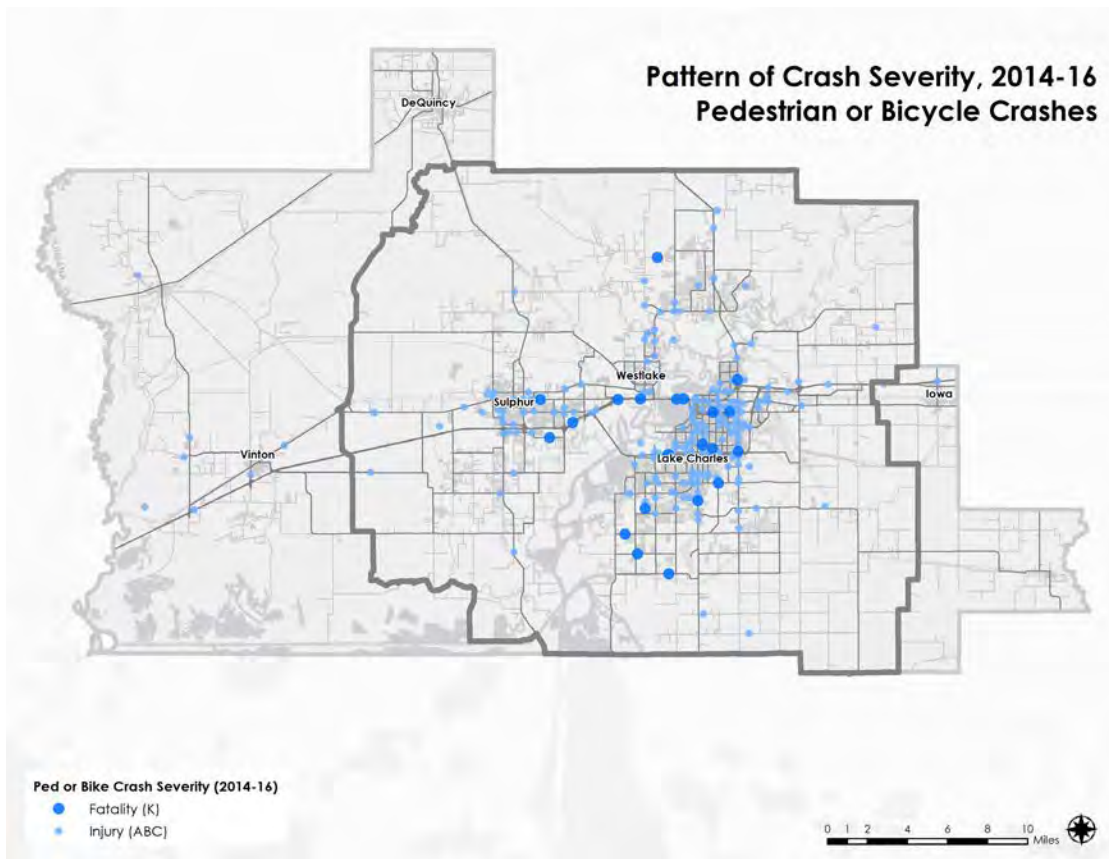


Figure R.4 | Pattern of Severe Pedestrian & Bike Crashes

Mobility (Goal GRF.2)

Traffic congestion, infrastructure condition, and travel time reliability are incorporated into the second goal of improving mobility. Projects were evaluated in the context of their potential impact on current and future traffic volumes. The regional travel demand model was utilized to calculate the ratio of traffic volume to its capacity (volume over capacity, or V/C) for the base year (2013) and future year (2040). An average V/C ratio was calculated, and normalized scores were applied to recommended projects accordingly. A higher average V/C ratio translated to a higher normalized score, and therefore higher priority for both the base year and future year.

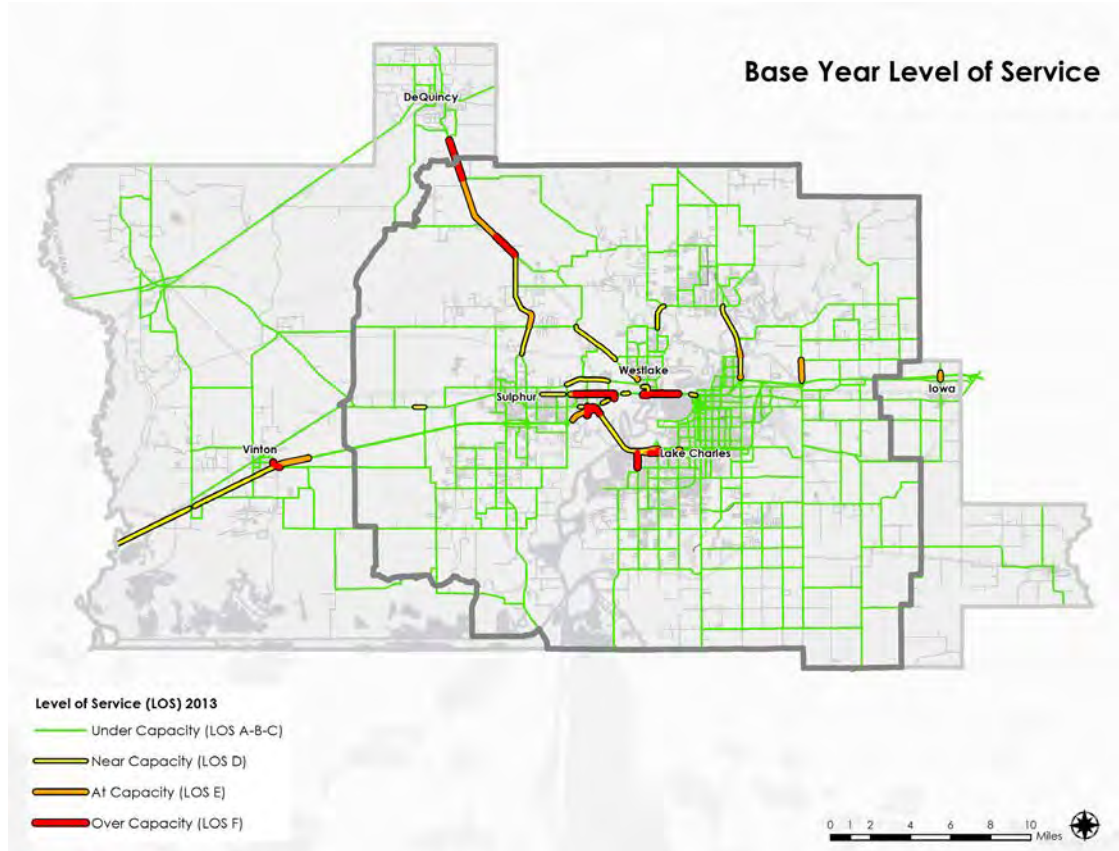


Figure R.5 | Base Year Level of Service

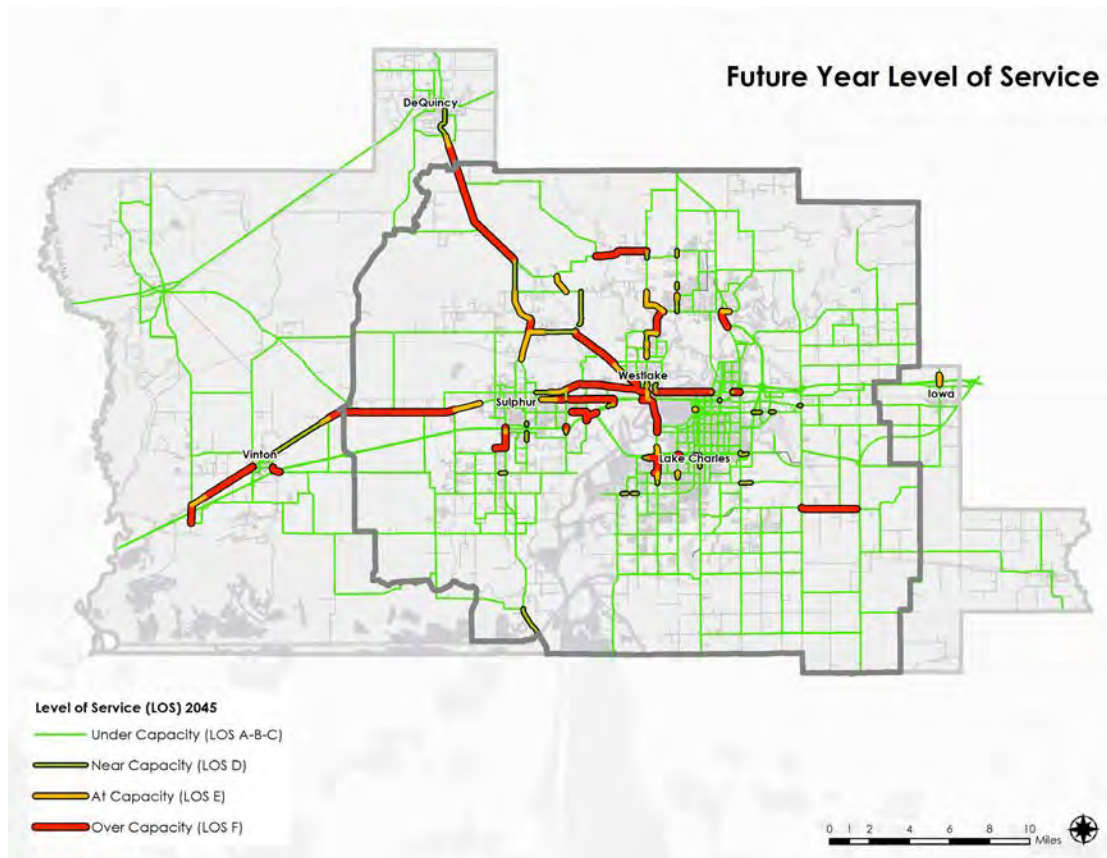
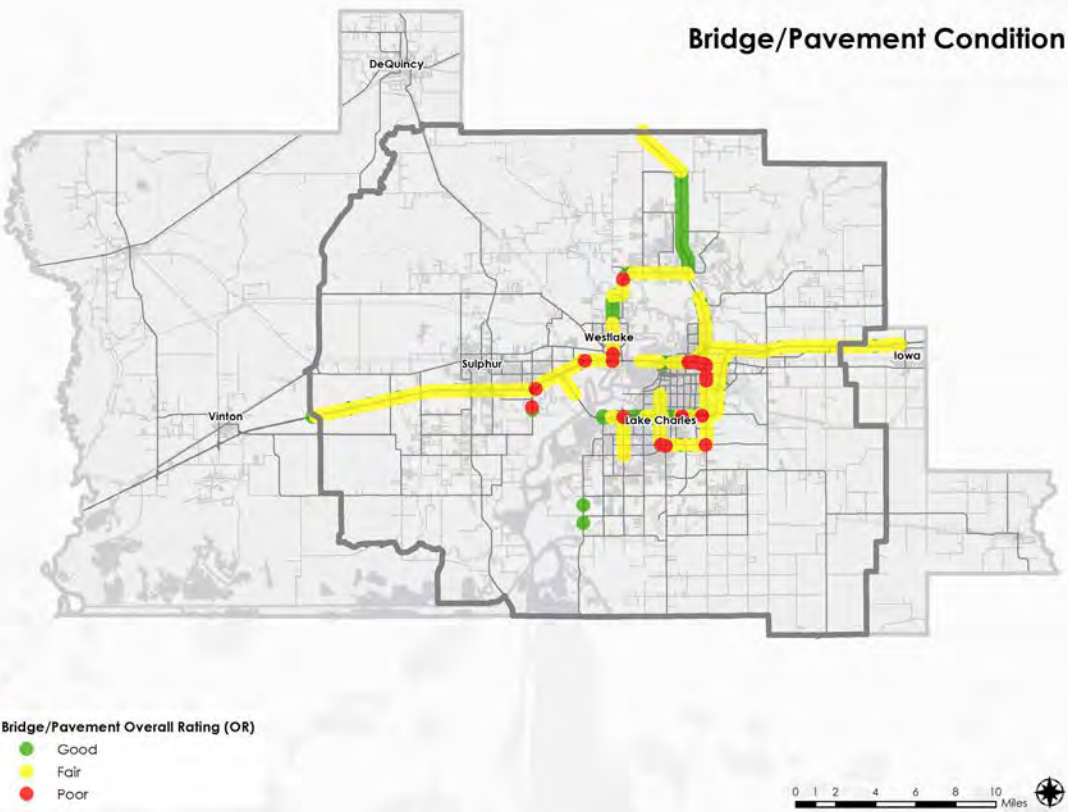


Figure R.6 | Future Year Level of Service



Federal performance measures for a) pavement condition rating and b) travel time reliability were incorporated for roadways within the National Highway System (NHS). The minimum overall rating (OR) was utilized for pavement condition. Level of Travel Time Reliability (LOTR) is the ratio of the 80th percentile travel time (minutes) divided by the 50th percentile (average) travel time. Higher ratios of LOTTR translate to worse reliability. Roadway improvement projects that would improve an existing pavement deficiency or travel time reliability received a higher normalized score.

Figure R.8 | Bridge/Pavement Condition - Overall Ratings

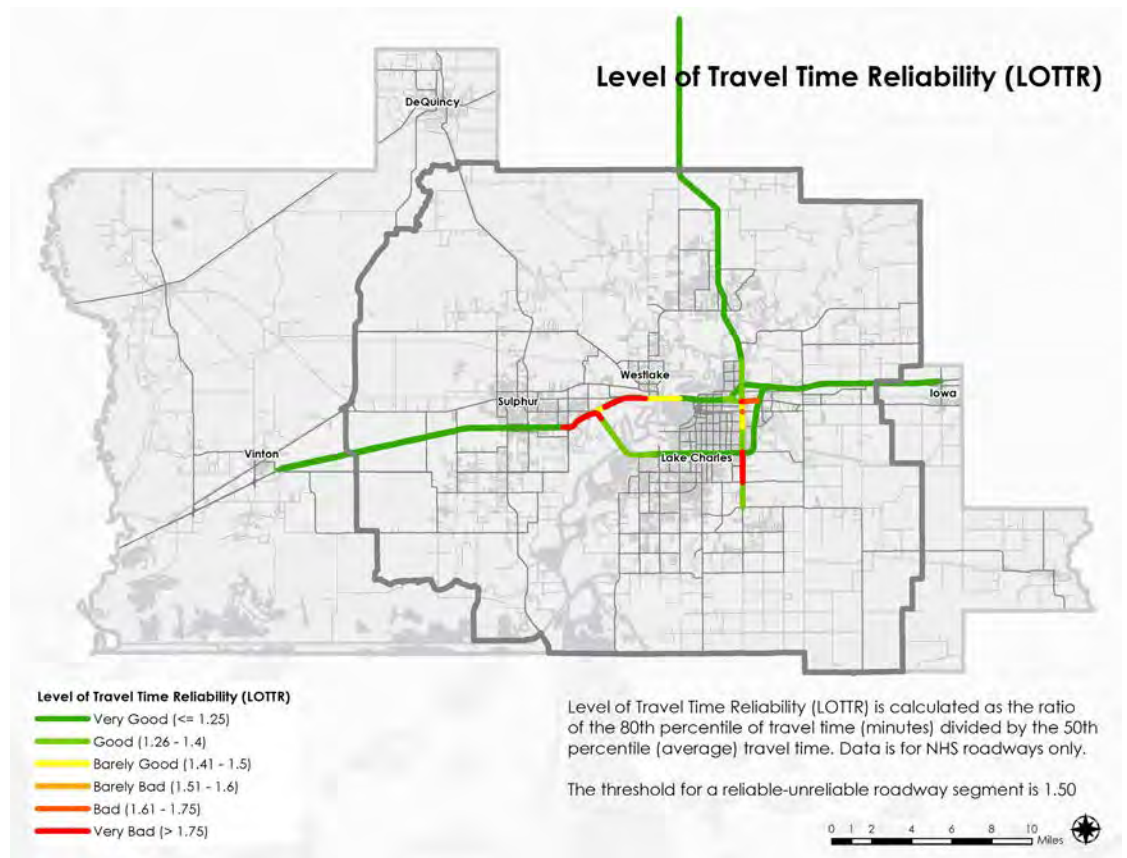


Figure R.7 | Level of Travel Time Reliability (LOTR)

Resiliency (Goal GRF.3)

Resiliency relates to continued economic vitality while considering and planning for environmental sustainability. All roadway project types, including new alignments, were evaluated on three resiliency-based metrics: accessibility, connectivity, and land suitability. Proximity to hospitals, schools (which often serve as emergency shelters), and evacuation routes translated to a higher normalized score.

Projects located within or improving access to areas with higher development suitability were assigned a higher score. Low-lying areas are vulnerable to flooding and storm surge events, such as waterways and wetlands, were considered to have low development potential. Parks and protected conservation areas were also considered to have low suitability and assigned a lower score. Existing residential, commercial, and industrial areas, as well as existing rights-of-way, were considered to have limited

potential for development. Average suitability values ranged between 15 and 81, and normalized scores between 1-10 were applied.

Lastly, roadway projects were scored based on connectivity with the roadway network. Projects with a higher number of intersecting routes were considered to have better connectivity and were therefore assigned a higher normalized score.

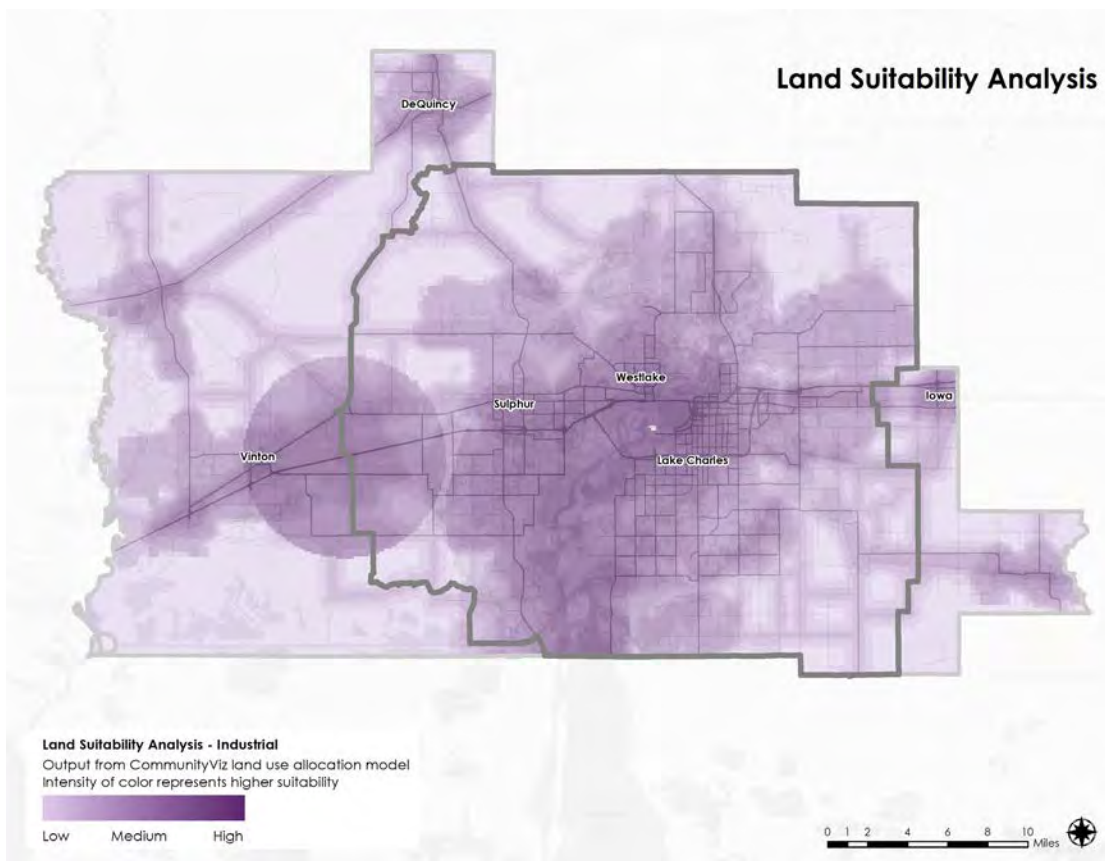


Figure R.9 | Land Suitability (Industrial)

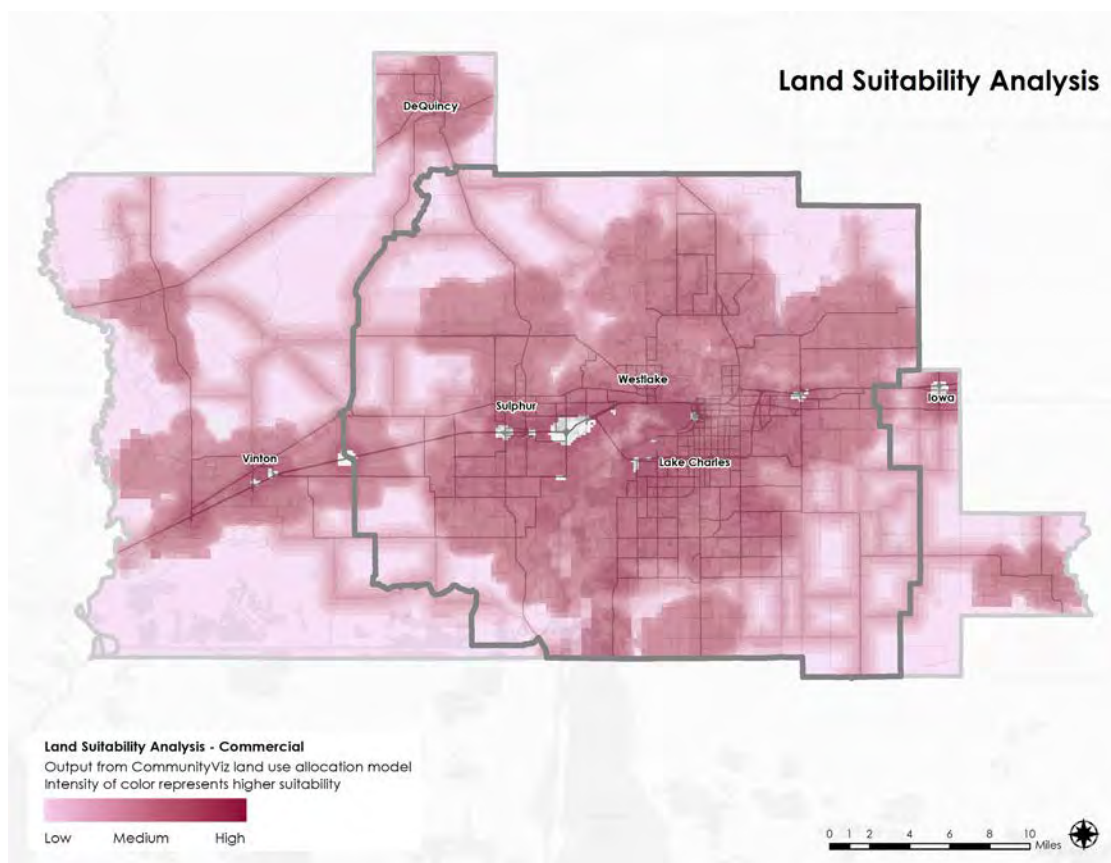
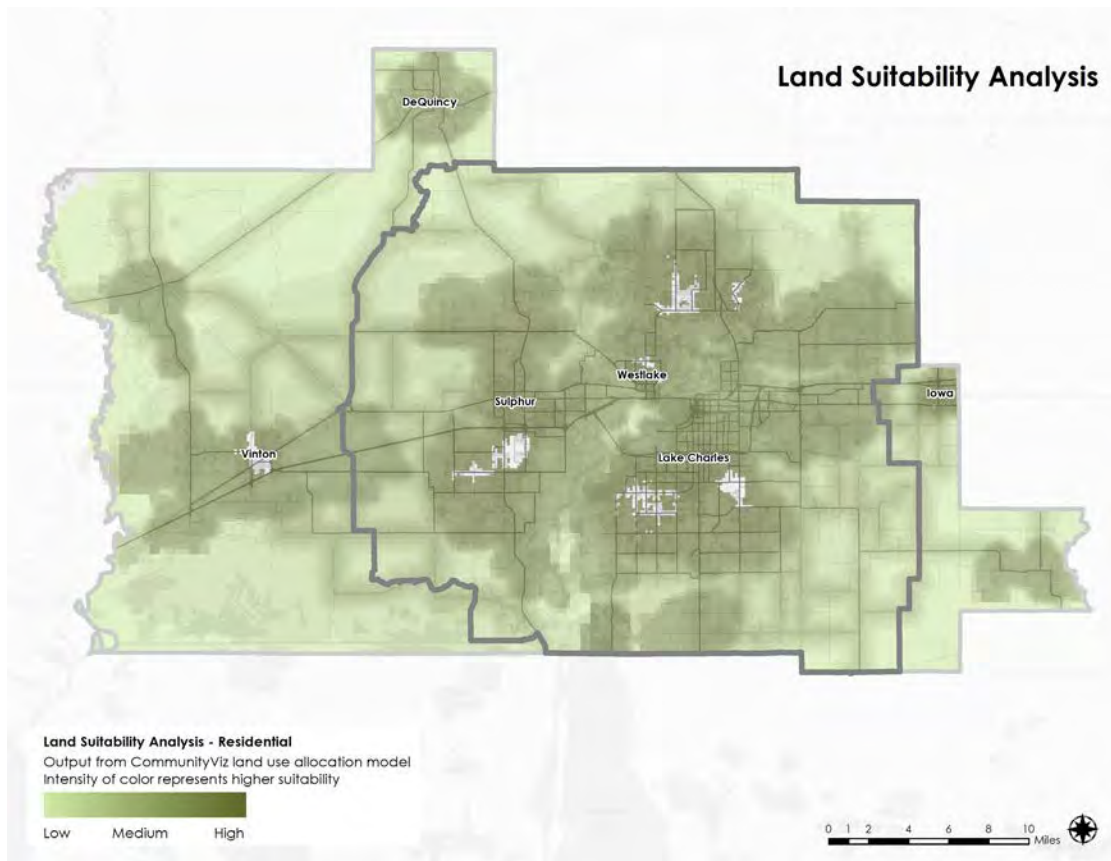


Figure R.10 | Land Suitability (Residential and Commercial)

Freight (Goal GRF.4)

Improving the roadway network that provides access to ports and freight destinations is a significant goal of this long-range plan. This goal also relates to economic vitality and resiliency goals (GRF.3). Identified freight routes were evaluated

based on two metrics: existing freight volume (AADT), and number of connections to freight destinations (nodes). The project Steering Committee identified more than 30 freight terminal locations to aid prioritization. Projects that would improve freight capacity are important to the region, and therefore received higher normalized scores.

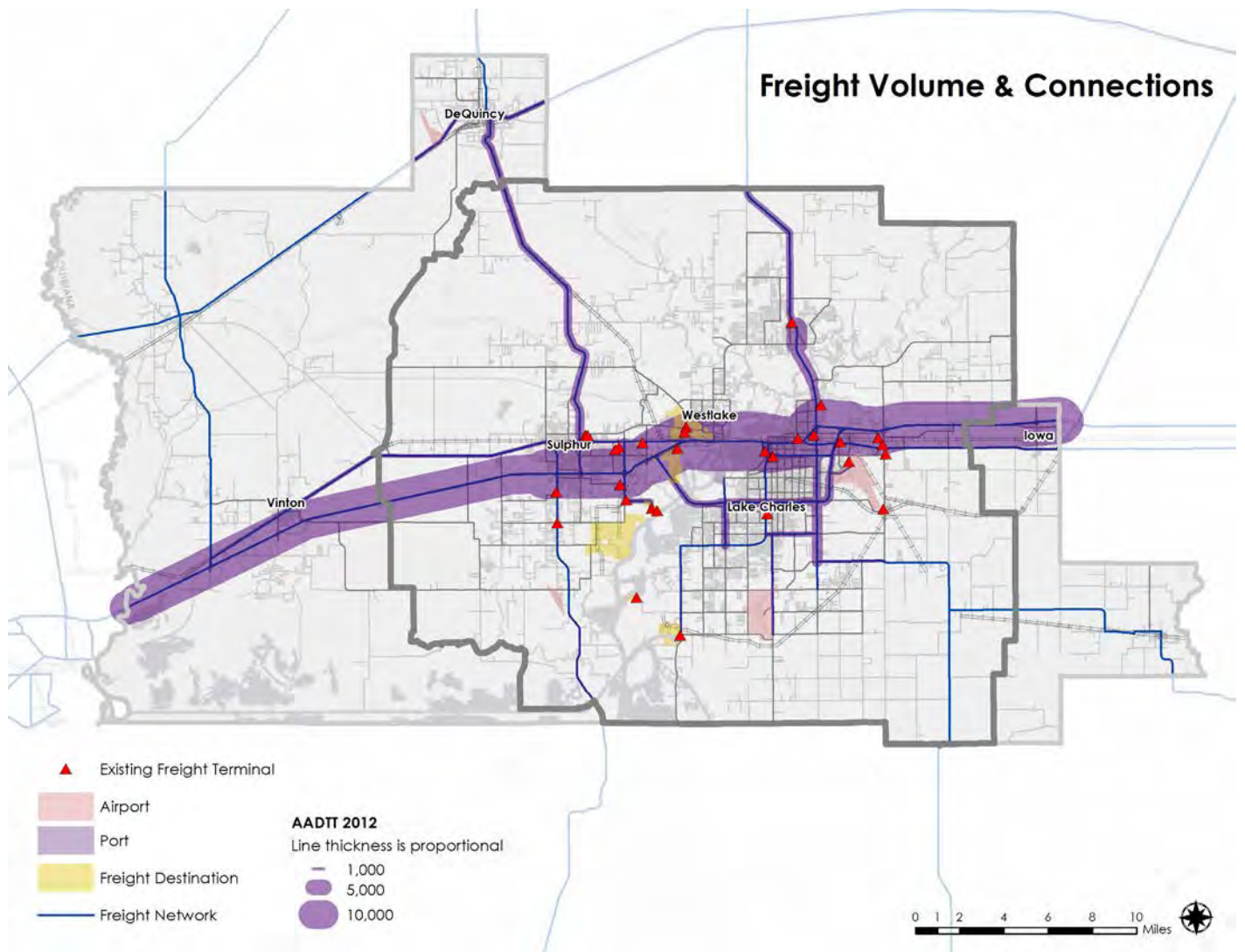


Figure R.11 | Existing freight volumes and destinations

Social Equity (Goal GRF.5)

Strategic planning for social equity means promoting opportunities for development and improving access in areas that have been historically under-served. This translates to higher prioritization scores for projects that are located

within block-groups with higher densities of vulnerable populations. For this prioritization process, low income households and minority population densities were scored for all roadway projects (MRF5.1), and a vulnerability index (MRF5.2) was generated for new location projects.

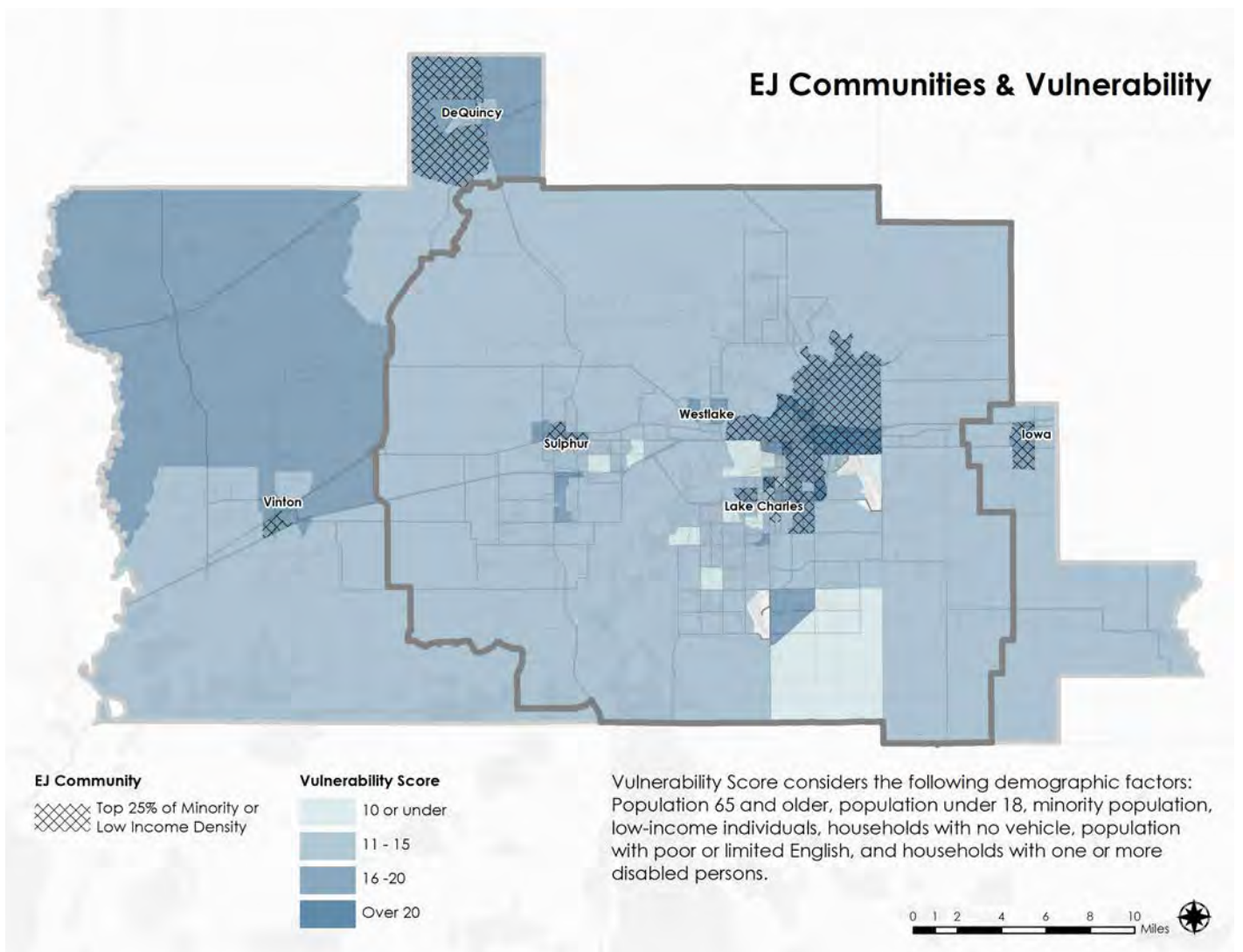


Figure R.12 | Pattern of vulnerability

The Plan: Public Transportation

Public Transportation Assessment

Although more people are using public transportation in Lake Charles and costs per rider have declined in recent years relating to fuel prices, the ability of people to make transit trips outside of Lake Charles is limited in comparison to those persons making trips that begin and end near one of the five fixed-route lines within the City. The principle concern expressed by the public was the provision of long-distance trips from the edge of the parish to job sites within the interior, followed by the need to expand transit service hours and amenities.

While specific, route-oriented recommendations such as extensions, changes to routes, or changes to service hours are generally the purview of local transit operators, a number of recommendations are possible that would help attract more riders and create a favorable environment for regional public transportation. These are listed below and are the foundation of the transit recommendations shown on the following pages.



The Top Reasons People Stop Using Public Transit:

1. Delays incurred riding on the bus
2. Waiting at transfer points
3. Waiting for first or only bus
4. Mechanical failure
5. Stuck in auto traffic

- Forbes (U.C.-Berkeley Dept. of Civil and Environmental Engineering)



EMPHASIZE TECHNOLOGY



LOGO & IDENTITY DESIGN



CREATIVE CONTENT MARKETING



CORPORATE TASK MANAGEMENT



DEVELOP PEER-TO-PEER



WEBSITE INTERFACE DESIGN



CREATIVE CONCEPT DEVELOPMENT



PUBLIC AWARENESS CAMPAIGN



New Advances in Public Transit Technology and Access

Adelaide, Australia uses an [all-electric, full-size bus powered 100% by solar energy](#).

With the path cleared by peer-to-peer, car-sharing (“ride-hailing”) services like Lyft and Uber as well as app-based traveler information for fixed-route bus locations/time of arrival, more integration is occurring like the [mobile app created by Transit](#), a Canadian company that integrates transit service, bike share, and ride-hailing companies together to create a more seamless multi-modal experience.

Columbus, Ohio is [developing a mobile app](#) that will go even further, linking various transportation services from scooters to buses with parking availability to allow its citizens to compare various travel options in terms of cost and time.

GoTriangle (Triangle Region of North Carolina) is experimenting with a [microtransit service](#) covering the Research Triangle Park vicinity, breaking away from the fixed-in-place routing that has posed barriers to many riders; similar efforts are underway in [Wilson, NC](#); [St. Louis, MO](#); [Pinellas County, FL](#), and [other places that were awarded grants](#) in 2016 by the Federal Transit Administration.

Originally brought into public view by improving emergency vehicle response times, signal preemption promises to cut between 10% and 30% off of the travel time for routes with intersections using this technology – Eugene, OR has a hybrid system utilizing dedicated bus lanes (like BRT) and signal preemption at intersections called the Emerald Express, [a service that has continued to expand](#) since its inception in 2007. It’s important to note that intelligent routing doesn’t have to occur in a “straight line” along a single corridor, or that it is in operation all the time – buses that are behind schedule can get a time boost while those that are within a normal operating window travel without any signal preemption benefit.

Existing Service

As defined earlier, the existing public transit system is comprised of human service agencies providing Medicaid- and disabled-eligible door-to-door shuttle service in Calcasieu Parish. Five fixed-route buses cover a portion of Lake Charles, but no fixed-route service extends beyond the municipal boundary or to the Lake Charles Regional Airport (south).

Public transportation systems are undergoing a significant upheaval brought about by changing (recently, declining) fuel prices and encroachment of technology-driven and peer-to-peer (or "ride-hailing") private transit services. The low-density and spread-out nature of development and population in Calcasieu Parish and the Lake Charles MPO planning area

is by design, but it is hard to serve efficiently with traditional transit operations that rely on nodal development patterns and densities of higher than 10 households per acre to generate ridership potential and generate trip-making.

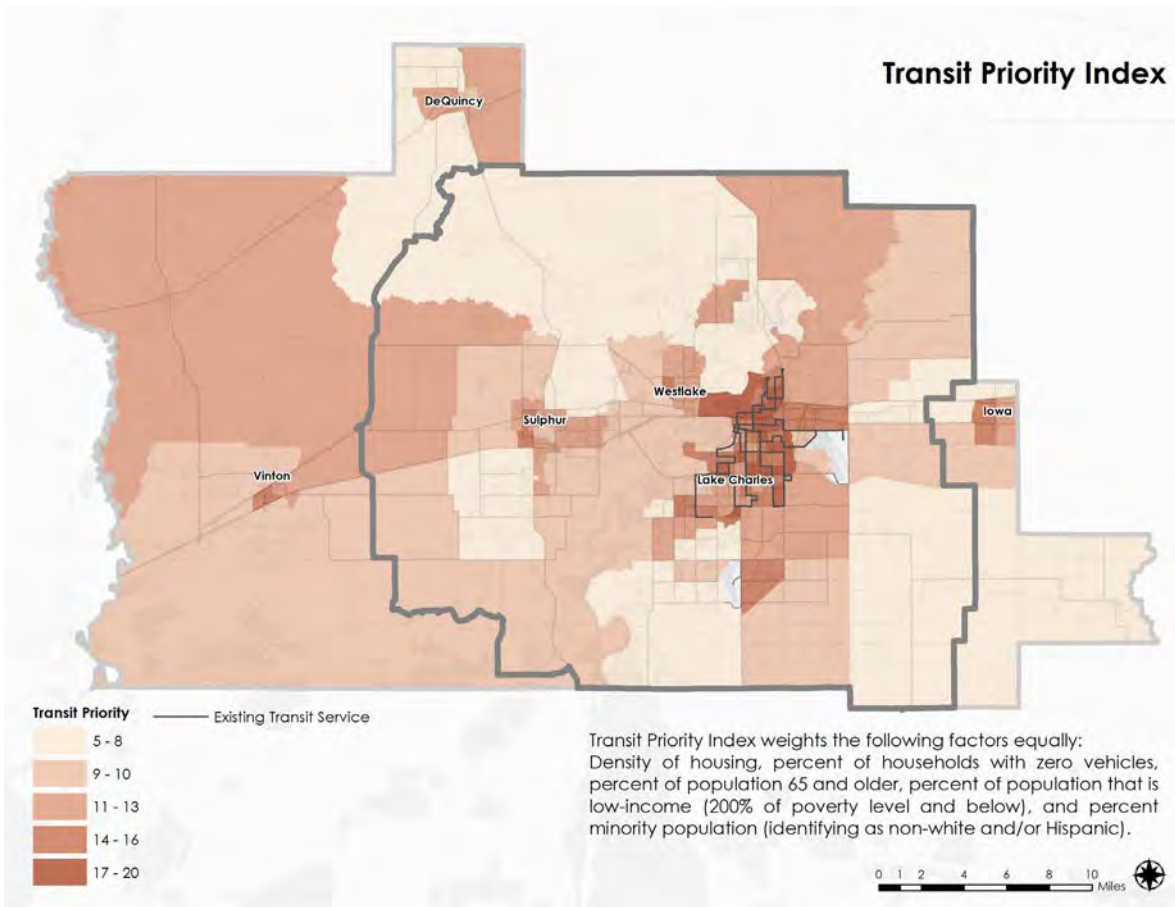


Figure T.1 | Transit Priority and Existing Service

This map in Figure T.1 | was developed by giving equal weight to the following factors assigned to populations within Census Block Groups that fall within the top quartile (25%) of their respective categories.

- **Age:** percentage of population who are 65 years or older
- **Population Density:** housing units per acre
- **Car Ownership:** percentage of zero vehicle households
- **Social Equity:** percentage of people that are low-income or minority

Public Transportation Priorities

Recommendations that follow consider interviews conducted with transit providers, the public's input, and changing conditions both within Calcasieu and the LCMPO as well as national trends. However, technology is continually changing rapidly so major investments in a specific technological solution should be done in conjunction with a more detailed study of the conditions and parameters necessary to create (and define) success. Unlike other modes, the following are generally actionable by term (near- or long-term), but prioritization was applied to each recommendation using factors and criteria developed during the update of the Metropolitan Transportation Plan.

T.1 New Local Bus Commuter Service connecting Westlake and Sulphur to downtown Lake Charles. This 27-mile loop route would serve potential park-&-ride facilities and provide weekday transit options for daily commuters. Further study is needed to estimating ridership potential, evaluate potential routing options (i.e., clockwise, counter-clockwise, hybrid), and help identify detailed costs and funding partnership potential.

T.2 New Local Bus Service to Lake Charles Regional Airport, optionally conducted jointly with area hotels (West Prien Lake Road) that service casinos, downtown Lake Charles, and "hotel strip." The hotels along West Prien Lake Road either do not have shuttle service or conduct a limited service on weekend evenings, that, apart from the Hampton

Inn that offers service anywhere inside Lake Charles, is limited to the casinos (e.g., Springhill Suites and Holiday Inn). Working with the hotels, casinos, and airport may prove to be a blended funding solution that makes the project more practical in the shorter term.

T.3 New Regional Express Route Bus Service both west to the Town of Vinton and vicinity of the Texas state line, as well as east to the Town of Iowa, LA. Developing a corridor study to determine primary technology as well as supporting technologies and station locations / characteristics should be completed to help identify detailed costs and funding partnerships.

T.4 Consolidation of Multiple Human Service Agencies, incorporating single dispatch, single vehicle fleet, and technology improvements in the dispatch and rider management areas to identify and assign riders to different funding-eligibility pools. The current human service provider agencies are at or near-capacity in terms of the service offerings that they provide, and they are providing similar services (albeit to different customer user groups and sometimes different kinds of destinations and trips). The initial step would be to conduct a *consolidated services plan* that includes public outreach, an assessment of the costs and benefits of consolidation, and identify additional service gaps that may be addressed.

T.5 Extend Service Hours (selectively) to increase evening and

weekend service inside the higher-density, higher-ridership routes within Lake Charles municipality. Ultimately, fixed-route bus service faces steep challenges from an intrusive private sector market (ride-hailing companies), unstable or declining fuel prices, and a generally low-density built environment that ill-favors transit use in most parts of the study areas. Adapting the existing service to be more responsive, such as dynamic deviated routing, can help address costs and stabilize ridership for some time. The long-term prognosis will trend towards more granular transit services represented by the first waves of micro-transit services as this responsive, low-cost option becomes more popular for localized trips.

T.6 Coincident with establishment of Regional Express Service (T.3), create micro-transit service covering Westlake, Sulphur, Iowa, and Victor as well as a two-mile "buffer" area in the vicinity of any express route stop. Micro-transit should be explored initially to support the regional express routes, but ultimately may also serve even more valuable roles (post-2025) as a first- or last-mile supplement to existing fixed-route service; extensions of service connecting Westlake, Sulphur, and Lake Charles; and creating opportunities for guaranteed-ride-home service or replacement for complementary paratransit operations along fixed-route services.

Public Transportation Priorities

While the recommendation is housed in the Roadway Section, developing and improving signal coordination and developing signal prioritization along key transit corridors and emergency vehicle routes for first-responder and transit vehicles should be a very high priority for the

region. Signal route prioritization for transit vehicles would substantially improve on-time performance and reliability of transit, thereby making this mode more comparable to the convenience of driving a personal vehicle.

map id	Project Name	Project Type	Evaluation Score				
			MRF1	MRF2	MRF3	Total	Prioritization
T-04	Calcasieu-Jeff Davis Commuter Route	Regional	11	10	10	31	100
T-01	Lake Charles-Westlake-Sulphur Commuter Route	Local	5	11	2	18	24
T-02	Lake Charles Airport Route	Local	14	2	1	17	18
T-03	Texas-Vinton-Sulphur Commuter Route	Regional	2	11	1	14	1

Table T.1 | Top 4 Public Transportation Project Priorities

Goals	Project Evaluation Metrics	Target
<p>Goal GT.1 Support Smart Urban Growth. Achieving denser and more diverse land use patterns inside municipalities creates more traffic congestion in those areas, but also more opportunities for alternative-mode trips like transit and walking. Infrastructure costs / taxes are reduced as well, and new housing and employment options typically follow.</p>	<p>MT1.1 Population density MT1.2 Transit priority index</p>	<p>TT1.1 Increase frequency of service for communities with more than 4.0 units/acre TT1.2 Provide service to activity nodes with mixture of land uses (residential, retail, office)</p>
<p>Goal GT.2 Make Transit Competitive. Actions like parking pricing and travel time equity in major corridors make transit modes more competitive with private automobile travel.</p>	<p>MT2.1 Congestion MT2.2 Service enhancements</p>	<p>TT2.1 Increase population within 0.5 miles of a transit stop by 20% by 2045</p>
<p>Goal GT.3 Support Underserved Populations. Transit should offer viable transportation solutions to those who are socioeconomically disadvantaged and may not have easy access to a vehicle.</p>	<p>MT3.1 Transit vulnerability</p>	<p>TT3.1 Prioritize service enhancements within EJ communities</p>

Table T.2 | Public Transportation Goals and Priorities

Smart Growth (Goal GT.1)

The first of three goals for improving transit service in the region is to support principles of smart growth. This would include the encouragement of higher densities, with a greater diversity of land uses that promote alternative transportation modes. Evaluation of recommended transit projects involved scoring routes based on the average

population density of their service area (Figure T.2). Transit service through higher density blockgroups received higher average scores.

A Transit Priority Index was also calculated (Figure T.3), which weighted five factors equally: density of housing, percent of households with zero vehicles, percent of population 65 and older, percent of population that

is low-income (200% of poverty level and below), and percent minority population (identifying as non-white and/or Hispanic). Values ranged between 5-20 and were normalized for prioritization scoring between 1-10. Visualizing the pattern of Transit Priority Index suggests that service to nearby towns of Westlake, Sulphur and the Lake Charles Regional Airport would be favorable.

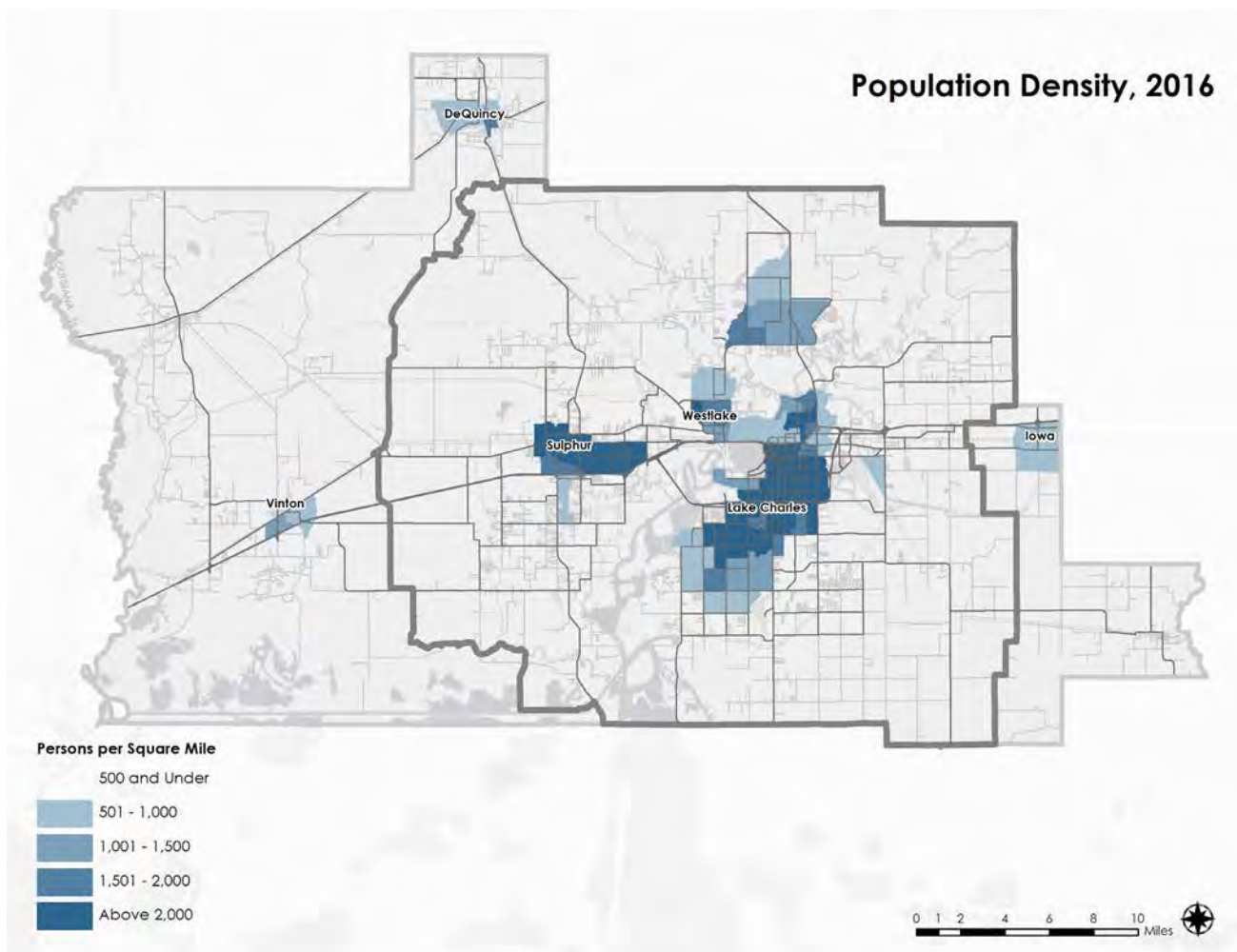
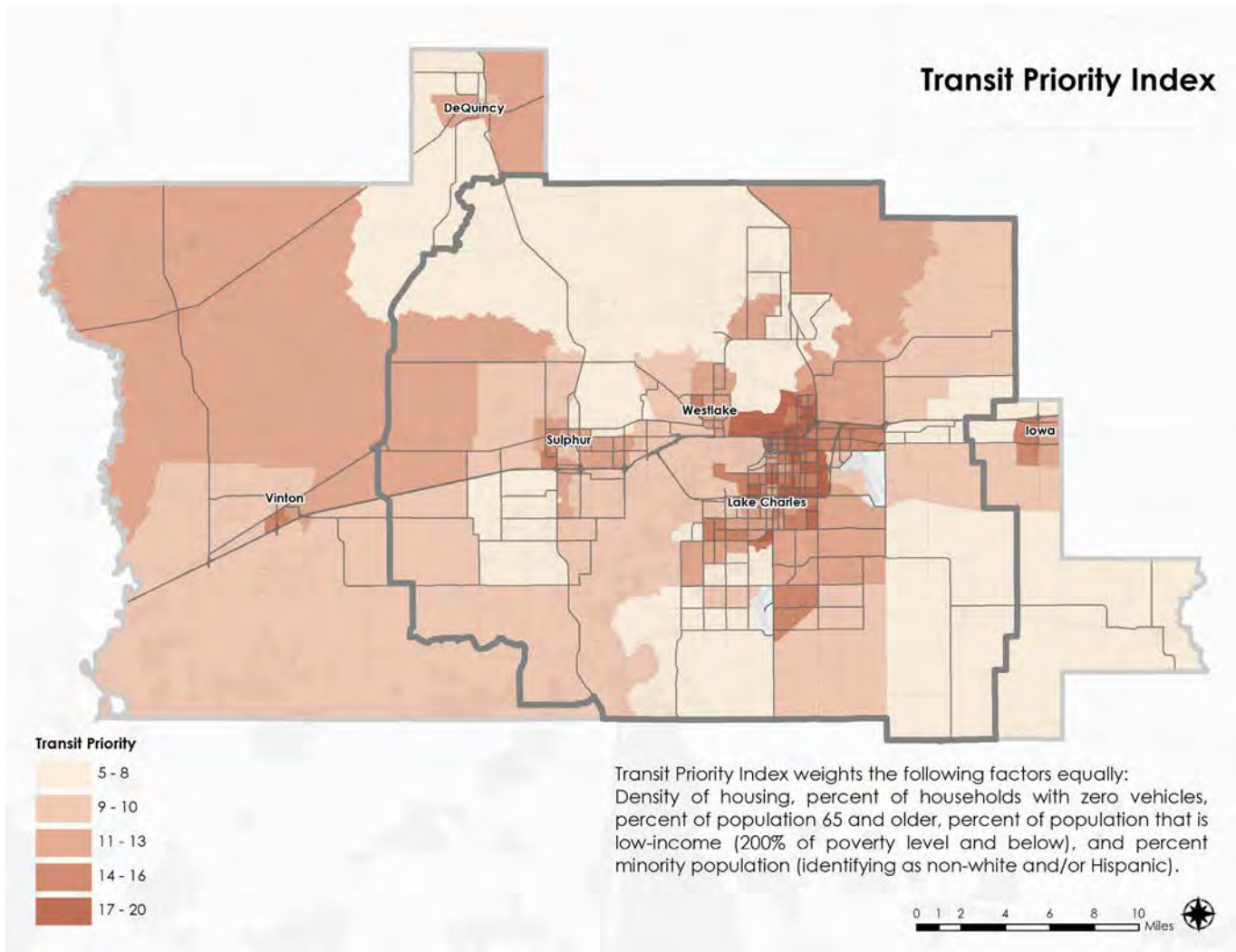


Figure T.2 | Population Density Map



Make Transit Competitive (GT.2)

Riding transit may not often be viewed as favorably as driving a personal vehicle for reasons of convenience, reliability, or cost. Implementing paid parking within central business districts or employment centers, or development of signal prioritization for transit along major commuter

corridors are two examples of efforts to make transit modes more competitive with private automobile travel. Prioritizing transit service along congested corridors (higher V/C roadways) and improving service amenities (e.g. traveler information, reducing delay, or improving bus stop characteristics) were both incorporated into the project evaluation process.

Support Underserved Populations (GT.3)

Public Transportation must provide service for populations with limited mobility choices, including seniors (65 and over), children (under 18), minorities, low income or zero vehicle households, populations with limited-English proficiency (LEP), or households with one or more disabled persons.

For project evaluation purposes, a transit Vulnerability Index was calculated using these demographics at the blockgroup level. Values ranged between 4-22 and were normalized for scoring between 1-10. The pattern of Vulnerability suggests that local transit service within Lake Charles and Westlake would yield higher scores than service to rural destinations within the region.

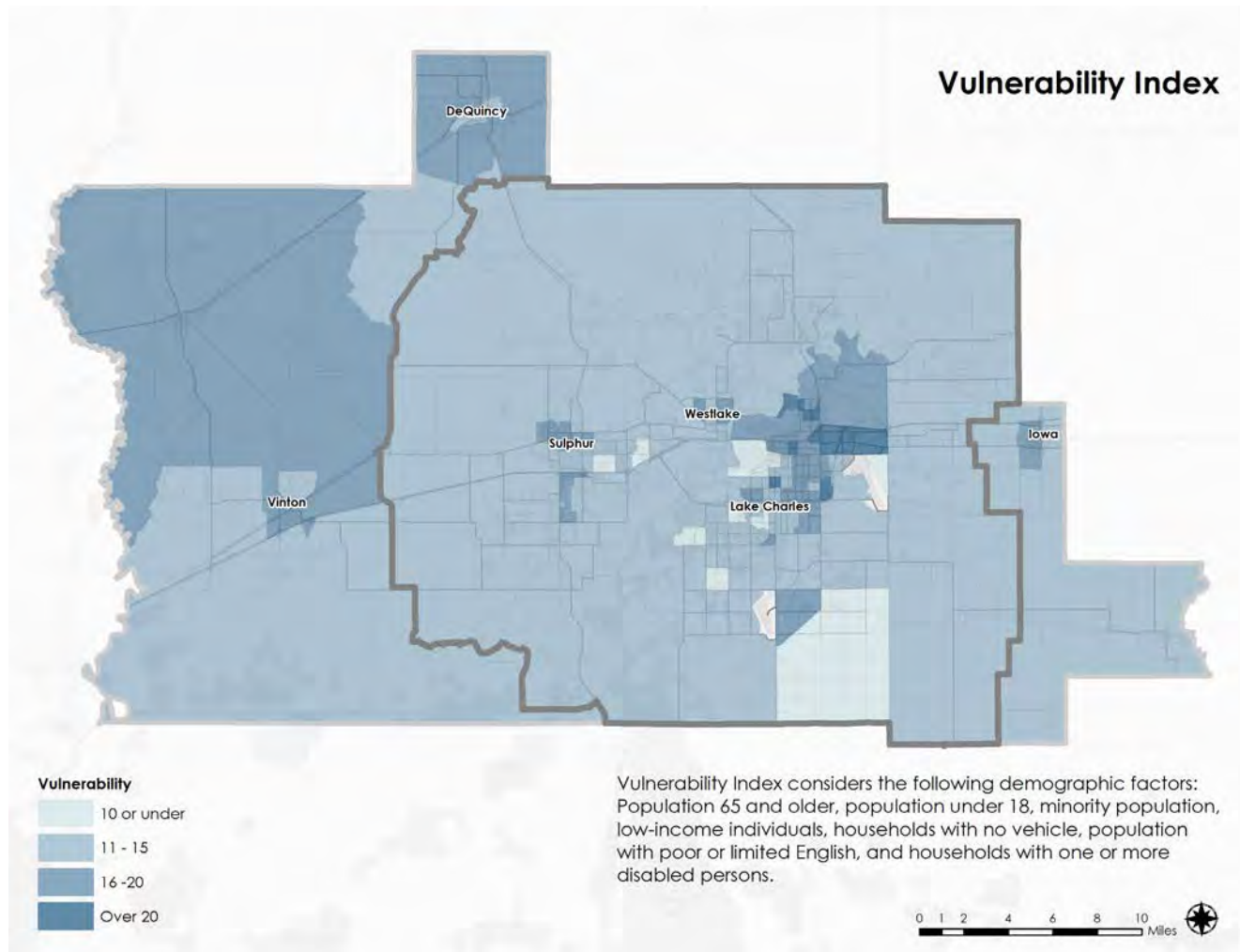


Figure T.3 | Vulnerability Index

The Plan: Pedestrians & Bicyclists

Bicycle and Pedestrian Assessment

While the large geographic area and rural/suburban nature of much of Calcasieu Parish makes automobiles the dominant mode of travel, more densely developed nodes and corridors provide many opportunities for alternative modes of travel, especially for short trips. Active mode facilities in Lake Charles MPO and Calcasieu Parish in general were previously described. Issues include sidewalks that are likely to have minimal or no buffer areas between the slow-moving, vulnerable pedestrians and automobile traffic on the adjacent roadway. The physical condition of the sidewalks may also vary, and some locations are susceptible to flooding. Connectivity in an area that has been growing, and continues to grow, in a low-density pattern creates long distances between complementary pedestrian destinations.

Cycling in this environment would help fill network gaps, but typical roadway widths and the lack of an underlying regional network of greenway trails present a daunting context for creating new bicycle facilities. Wide shoulders on some corridors also present opportunities for bike lanes.

The following table (Table PB.1 |) illustrates the location and quantity of existing (and future) walking and biking facilities in Calcasieu Parish and the Lake Charles MPO planning area.



“Lack of sidewalks and bicycle lanes leads to safety/accident problems.”

“I would love to see the whole parish become more pedestrian/bicycle friendly.”

“The low hanging fruit in encouraging people to walk to bike is to start enforcing laws.”

- SWLA Transportation Plan Online Survey responses

Facility Type	City of Lake Charles (mi)	Lake Charles MPO (mi)	Remainder of Calcasieu Parish (mi)	Percent of Total Mileage
Sidewalks	334 (408)	362 (466)	14 (34)	81% (46%)
Bicycle Facilities	9 (187)	78 (469)	5 (30)	18% (46%)
Greenway / Off-Road Trails	2 (17)	4 (67)	---- (16)	1% (8%)
Total Existing (Future)	345 (612)	444 (1,001)	19 (80)	

Table PB.1 | Ped/Bike Facilities by Mileage for Existing (and Future)

A good transportation network should accommodate travelers of all ages, abilities, and travel modes. The following recommendations, like those created for other modes of travel, are based on the inputs of the public, Steering Committee, and professional recommendations of staff including the prior metropolitan transportation plan. In general, bicycle and pedestrian infrastructure should be considered concurrent with any roadway project, whenever feasible.

An important aspect of bicycle and pedestrian travel is that, like public transportation, its form, shape, and success depend disproportionately on the contextual site design and proximity of complementary land uses. Therefore, the policy guidance contained in this plan (Policy & Implementation section) should be used to help local governments make land use planning, ordinance update, and other related decisions that can support walking and biking. Enhancing the bicycle and pedestrian network throughout the Parish should involve the following elements:

Sidewalks and Marked Crossings

Sidewalks should be provided on both sides of the street along major roadways, at least on segments of those roads which traverse a city or town, are near a school, or are in other densely developed areas. Sidewalks on one side of the street only may be more appropriate on minor arterials, collector roads, and local streets. Many of the sidewalks throughout Calcasieu Parish are at grade with the roadway, which leaves little to no separation between vehicles and people. Instead, new and upgraded sidewalks should be raised and separated from the road by curb and gutter. Where feasible, a landscaped planting strip can provide additional separation from traffic.

Marked crosswalks should be provided at intersections and may also be appropriate at certain midblock locations where schools, parks, or other community facilities are located. Crossing locations should be clearly visible, compliant with ADA Standards for accessibility needs, and engineered with accessible pedestrian signals that function as part of a signalized intersection, where such traffic control equipment is present.

Design of sidewalks within the public rights-of-way should follow Accessibility Guidance provided by the United States Access Board (USAB), which focuses on equality for persons with disabilities <https://www.access-board.gov/guidelines-and-standards/streets-sidewalks/public-rights-of-way>

Bike Lanes

On collector or arterial roads, particularly those traversing or connecting areas of commercial activity or residential densities greater than two units per acre, bike lanes should be provided where the right-of-way and topography allow. Separation of bicycle facilities from vehicles should be considered for roadways with a posted speed greater than 35 MPH, or support more than 12,000 vehicles per day (vpd).

Design of bicycle facilities along public roadways should incorporate guidance and best practices from a variety of sources identified in the Federal Highway Administration's (FHWA) facility design flexibility memorandum, https://www.fhwa.dot.gov/environment/bicycle_pedestrian/guidance/design_flexibility.cfm, including the following agencies:

- National Highway Traffic Safety Administration (NHTSA)
- Manual on Uniform Traffic Control Devices (MUTCD)
- American Association of State Highway and Transportation Officials (AASHTO)
- National Association of City Transportation Officials (NACTO)
- Institute of Transportation Engineers (ITE)

Multiuse Paths and Trails

Separated multiuse paths can greatly enhance a pedestrian and bicycle network, while providing recreational amenities to a community. Multiuse paths are physically separated from streets by an open space or physical barrier, which differentiates them from sidewalks. Not only are separated sidepaths shown to improve safety for walkers and bikers, they can also increase the relative use of these alternate modes of transportation. Trails are considered separate from multiuse paths because trails are intended purely for recreational purposes.

Design of multiuse paths (or roadway sidepaths) that are located within the public rights-of-way should follow guidance provided by the United States Access Board (USAB), which establishes design standards for all users, including persons with disabilities, <https://www.access-board.gov/guidelines-and-standards/streets-sidewalks/shared-use-paths>

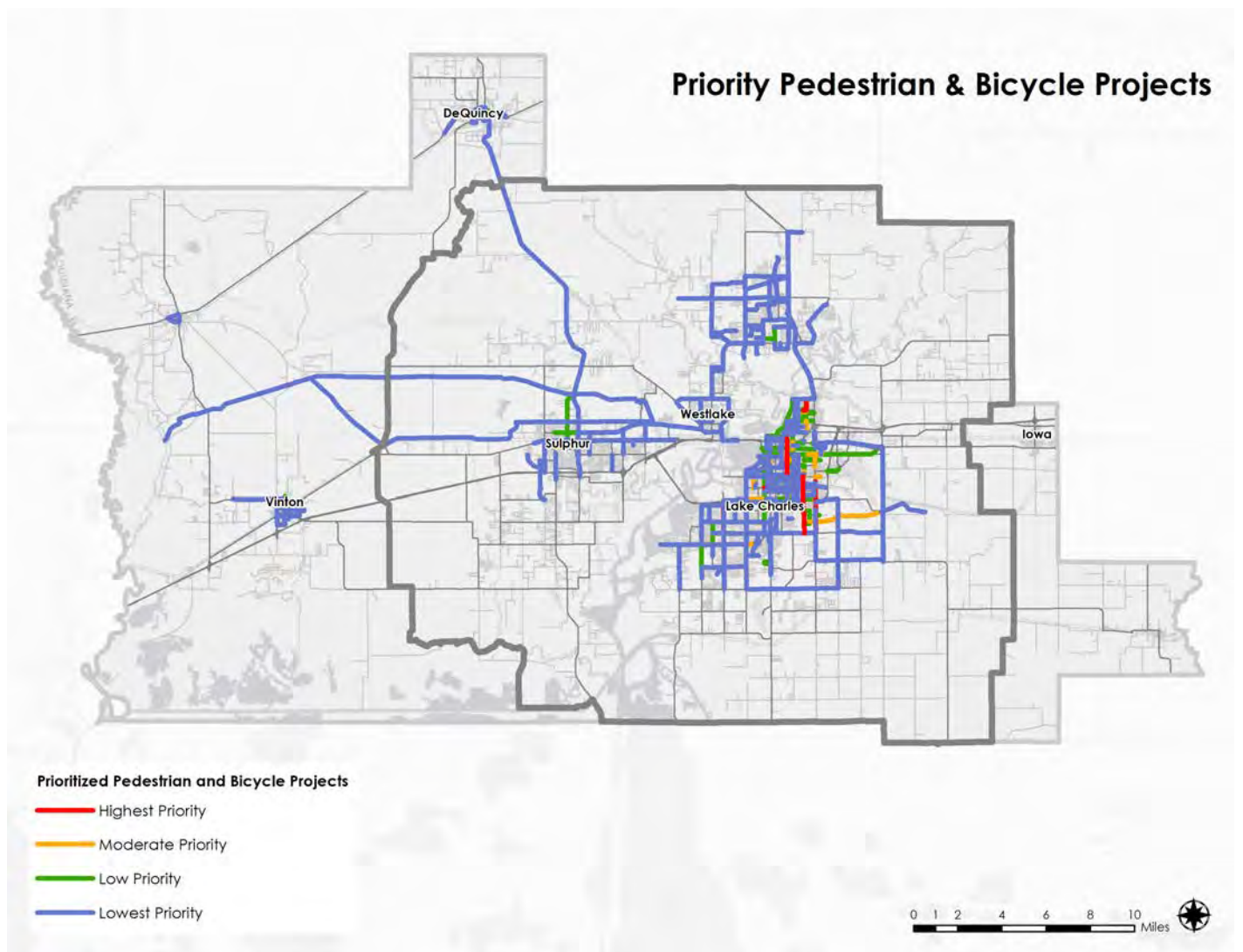


Figure PB.1 | Prioritized Pedestrian & Bicycle Projects

Pedestrian and Bicycle Priorities

Projects for alternative modes include sidewalks, bike lanes, and separated multiuse paths/trails. Projects identified in the Lake Charles Bicycle and Pedestrian Master Plan, as well as additional needs identified by IMCAL in the 2040 MTP, are

reflected in this list. Additional deficiencies and opportunities have been identified based on steering committee inputs, GIS data, and aerial photography. These include projects to fill gaps where an extensive sidewalk route already exists,

additional sidewalk links around schools, where lacking, and bike lane opportunities where wide shoulders are present.

map id	Project Name	Location	Length	Type	Evaluation Score				
					MRF1	MRF2	MRF3	Total	Prioritization
BP-438	1st Ave Trail	Lake Charles	1.72	Trail	2	29	13	44	100
BP-144	LA 14 (East Side)	Lake Charles	2.32	Sidewalk	10	21	11	42	94
BP-049	Medora St (North Side)	Lake Charles	0.11	Sidewalk	1	21	20	42	94
BP-441	5th Avenue Trail	Lake Charles	2.55	Trail	2	30	8	40	89
BP-134	N Simmons St (East Side)	Lake Charles	0.50	Sidewalk	1	23	14	38	83
BP-125	18th St (North Side)	Lake Charles	0.27	Sidewalk	1	23	13	37	80
BP-100	Nelson Rd (West Side)	Lake Charles	1.76	Sidewalk	3	21	12	36	77
BP-136	LA 14 (West Side)	Lake Charles	0.59	Sidewalk	2	21	12	35	74
BP-111	W McNeese St (South Side)	Lake Charles	0.49	Sidewalk	1	21	13	35	74
BP-025	Shattuck St (East Side)	Lake Charles	0.31	Sidewalk	1	23	11	35	74
BP-063	University Dr (North Side)	Lake Charles	3.65	Sidewalk	3	21	10	34	71
BP-084	LA 14 (West Side)	Lake Charles	0.46	Sidewalk	1	21	12	34	71
BP-013	Cypress St (West Side)	Lake Charles	0.29	Sidewalk	1	22	10	33	69
BP-014	Cypress St (East Side)	Lake Charles	0.29	Sidewalk	1	22	10	33	69
BP-019	Woodring St (North Side)	Lake Charles	0.11	Sidewalk	1	12	20	33	69
BP-020	Woodring St (South Side)	Lake Charles	0.11	Sidewalk	1	12	20	33	69
BP-435	LA 14 - LA 397 Trail	Lake Charles	3.06	Trail	1	21	10	32	66
BP-032	Kirkman St (West Side)	Lake Charles	1.02	Sidewalk	1	24	7	32	66
BP-035	Kirkman St (East Side)	Lake Charles	0.89	Sidewalk	1	23	8	32	66
BP-445	5th Ave Connector	Lake Charles	0.26	Trail	1	21	10	32	66

Table PB.2 | Highest Priority Pedestrian and Bicycle Projects

Goals	Project Evaluation Metrics	Target
<p>Goal GPB.1 Improve Bicycle and Pedestrian Safety. <i>Of utmost importance is ensuring projects make it safer for alternative mode users to travel from point A to point B.</i></p>	<p>MPB1.1 Severe crashes involving a pedestrian or bicycle</p>	<p>TPB1.1 Reduction by 1% for non-motorized (bike/pedestrian) fatal or severe injury crashes by 2020</p>
<p>Goal GPB.2 Complete the network. <i>Sidewalks, and sometimes bike lanes, are of little use when they dead end along busy roads, leaving travelers no safe method to continue. Projects should be prioritized when they fill gaps or otherwise connect to the existing network.</i></p>	<p>MPB2.1 Connecting infrastructure MPB2.2 School proximity MPB2.3 Bus stop proximity</p>	<p>TPB2.1 Increase total sidewalk mileage by 20% by 2045 TPB2.2 Provide sidewalk connection to 100% of local schools along both sides of roadways by 2045</p>
<p>Goal GPB.3 Serve limited-mobility populations. <i>A transportation network that is complete should consider all users, regardless of vehicle ownership. Projects should be prioritized to serve those who may have limited mobility choice.</i></p>	<p>MPB3.1 Zero-car households MPB3.2 Youth population MPB3.3 Senior population</p>	<p>TPB3.1 Increase mileage of sidewalk and bicycle facilities by 20% by 2045 for limited-mobility population areas</p>

Table PB.3 | Pedestrian and Bicycle Goals and Priorities

Bicycle and Pedestrian Safety (Goal GPB.1)

Improving safety for all users, especially vulnerable users that are walking or bicycling, was previously mentioned in the Roads and Freight section (GRF1.3), and is included as the first goal of the Pedestrian and Bicycle section. Integrating mobility needs for all users into the LADOTD seven-stage project delivery process is a critical element to

reinforce this goal. Recommended facility improvement projects that have the potential to mitigate future pedestrian or bicycle crashes were assigned prioritization scores according to the same bike/pedestrian crashes dataset that was utilized for roadway projects. Higher scores represent projects with a higher number of prior bike/pedestrian crashes.

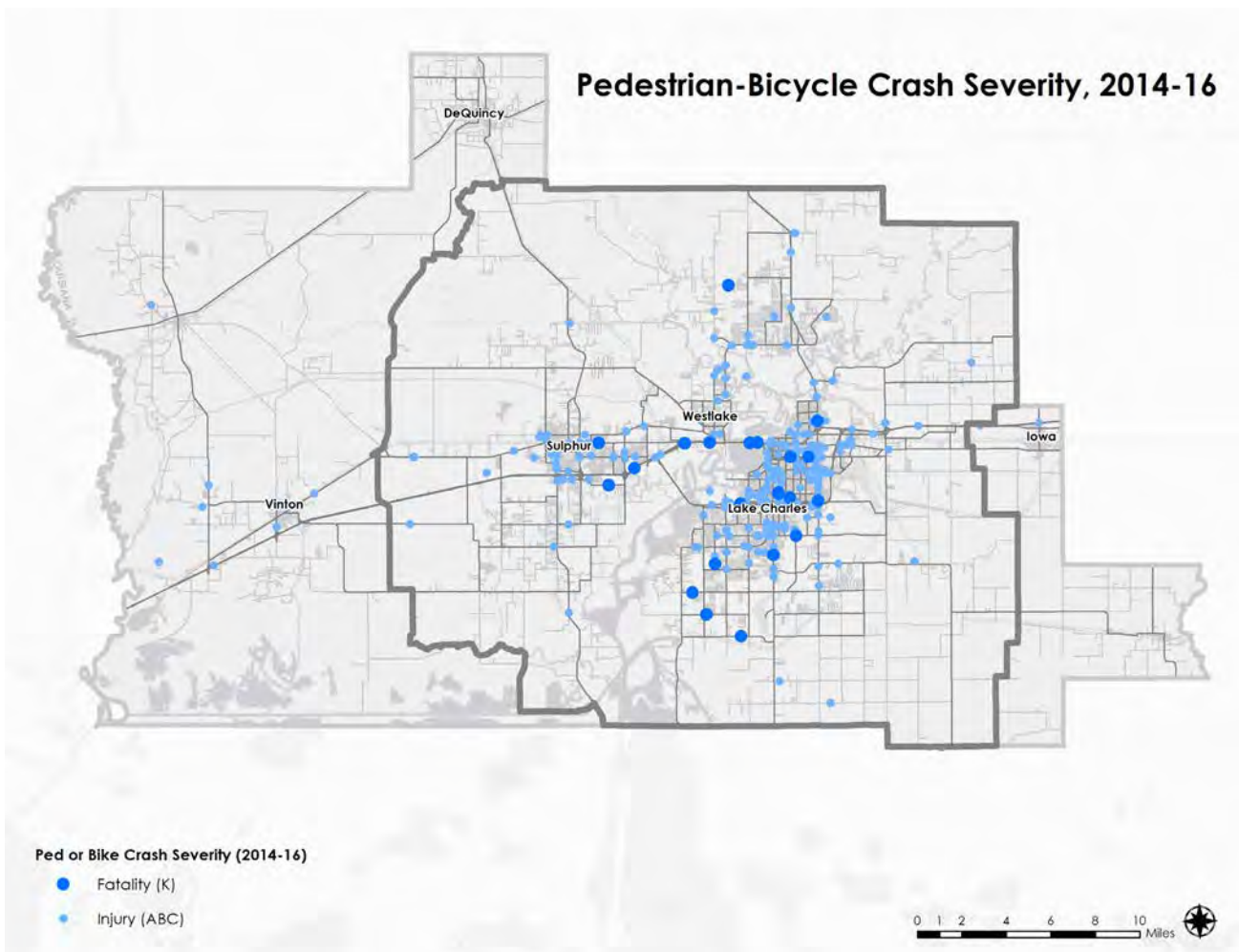


Figure PB.2 | Pedestrian-Bicycle Crashes by Severity

Connectivity (Goal GPB.2)

Connected networks promote more walking or biking by limiting physical or psychological barriers. Some barriers may be relative to an individual’s perspective, physical capability, or level of comfort. Common pedestrian barriers may include walking through grass/mud, along a roadway shoulder, or lack of marked crosswalk locations at an intersection. Common barriers to cycling may include high-speed or high-volume roadways, lack of a striped bicycle lane, or lack of physical separation from vehicles.

With more than 400 identified pedestrian or bicycle projects to prioritize, projects were assigned a higher score if they: a) directly connect with an existing sidewalk, multiuse trail, or bicycle facility; b) were located within 100 feet of an existing school; or c) were located within 200 feet of an existing (Lake Charles) bus stop.

Public transit systems are not present within adjacent Towns or Villages, and therefore projects beyond the City of Lake Charles received the same normalized score (1).

Mobility (Goal GPB.3)

Similar to providing public transportation to populations in need (GT.3), the third goal for improving pedestrian and bicycle conditions is to identify the communities with limited mobility choices. The three metrics used to prioritize projects were: a) density of zero vehicle households, b) children (under 18), and c) seniors (65 and over).

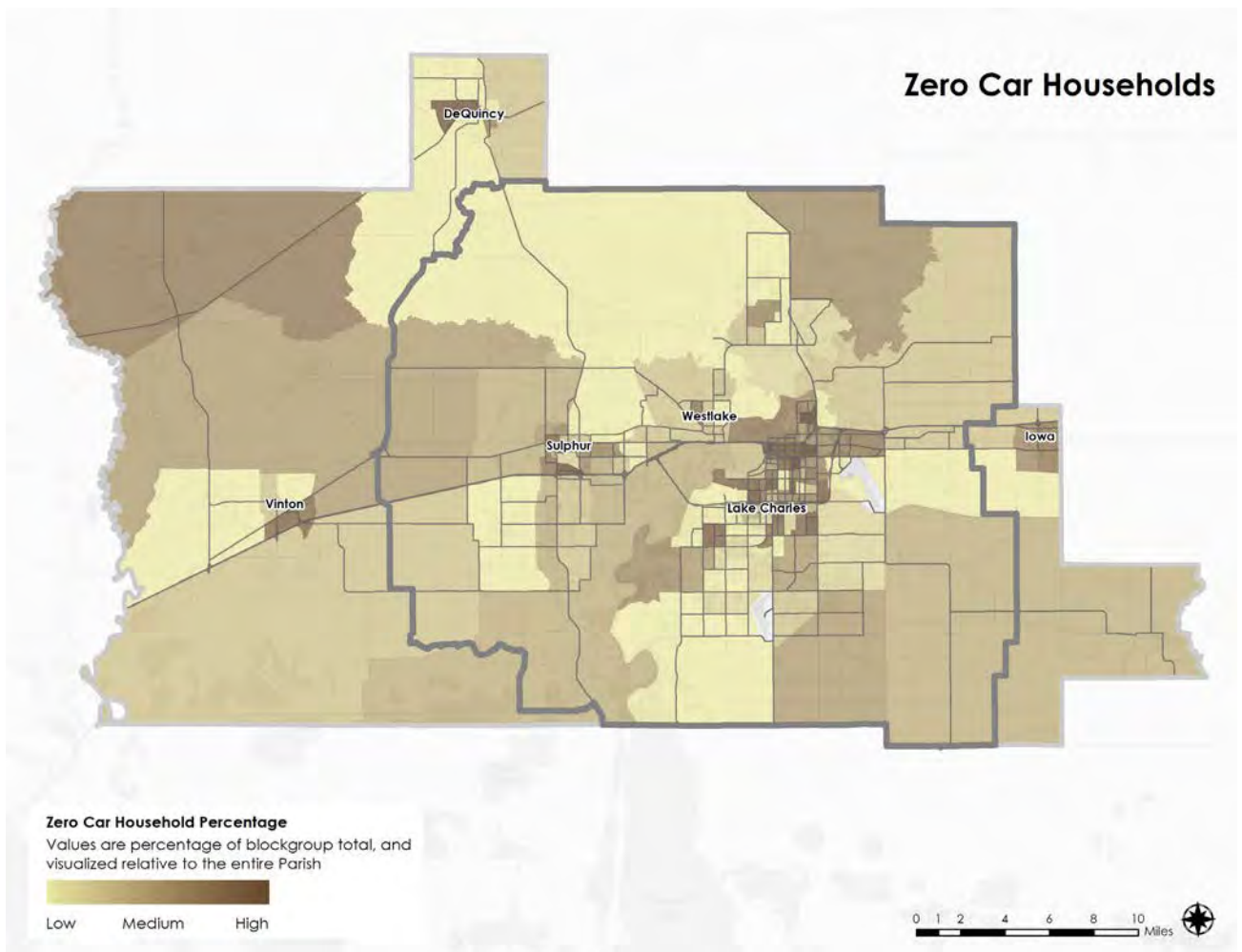


Figure PB.3 | Zero Vehicle Households by Block Groups

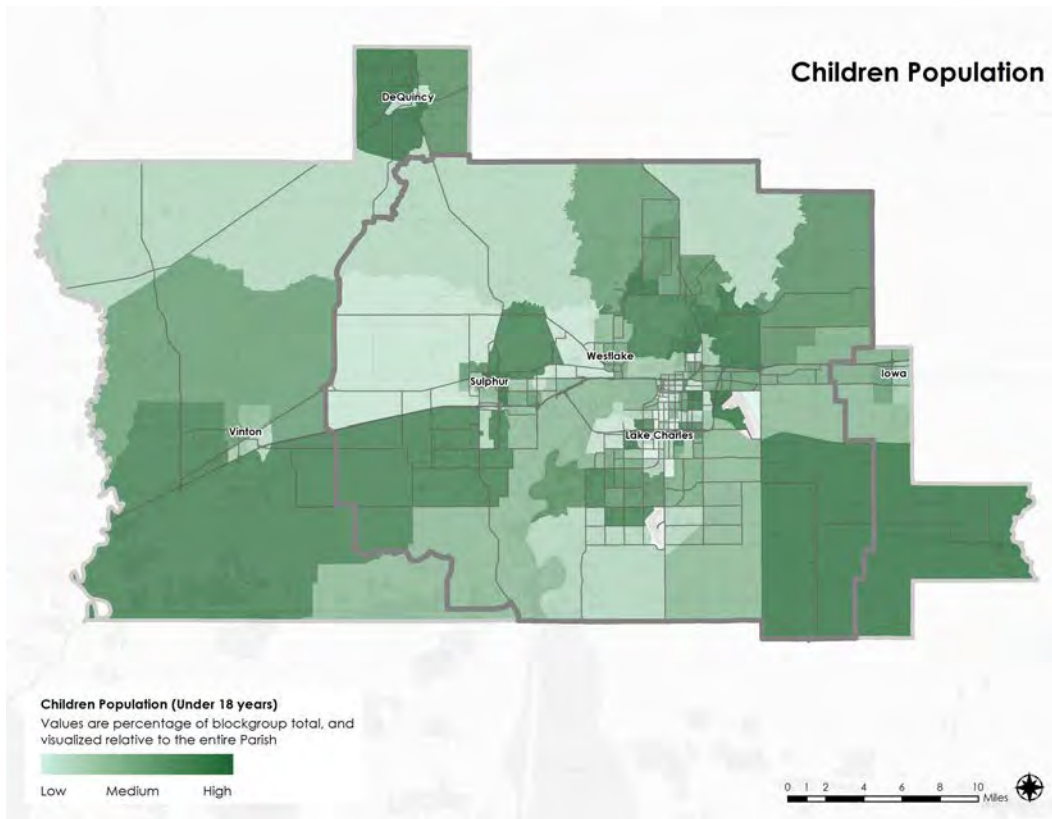


Figure PB.4 | Population Ages 5-14 by Block Groups

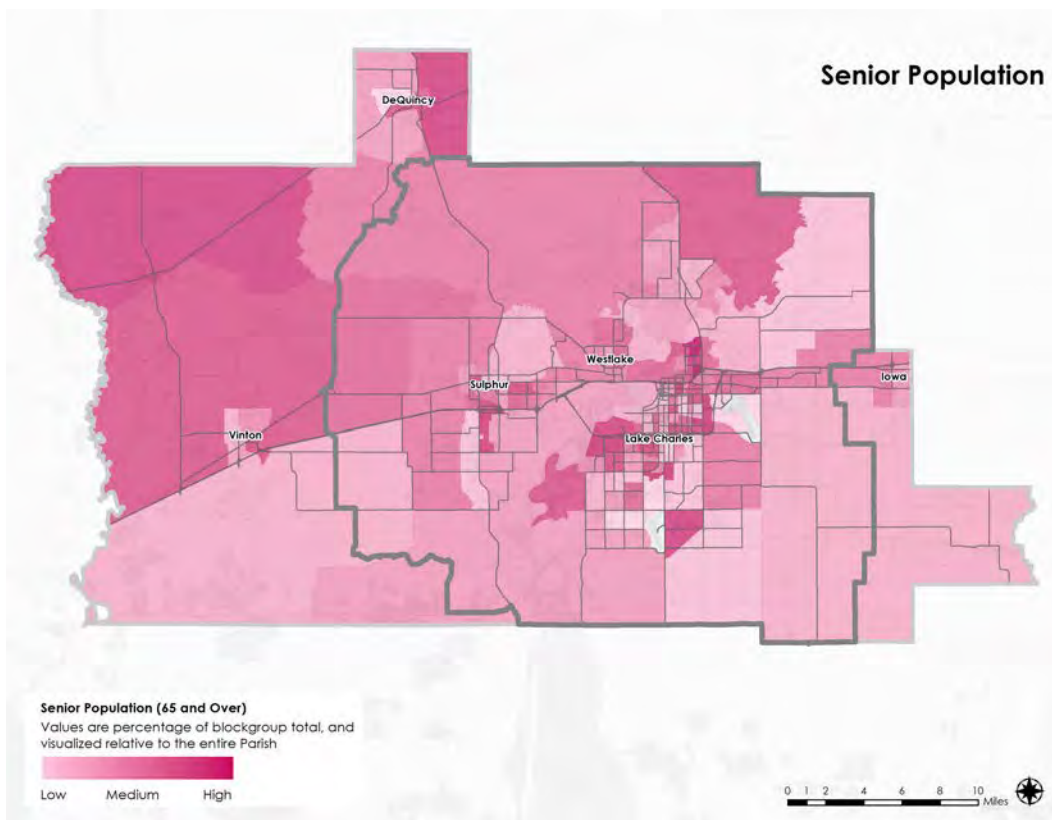


Figure PB.5 | Population Ages 65+ by Block Groups





Policy & Implementation

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Policy Guidebook

The Importance of a Strong Policy Framework

This chapter outlines a set of principles based on best practices to guide transportation and development related decisions in Calcasieu Parish to achieve the recommendations and strategies proposed in the Lake Charles MPO Comprehensive Transportation Plan. It provides policies for local, regional, and state level review to address the focus issues identified through the public engagement process, and to implement a more efficient transportation network to support an improved quality of life in the region. The policies described in this chapter are complementary to both the Louisiana DOTD (LaDOTD) and Lake Charles MPO (LCMPO) missions and strategic plans.

This chapter organizes the policies into the following sections:

- **Access Management (reducing taxes preserving capacity on existing roads)**
- **Complete Streets policy and guidance**
- **Biking, Walking, and Transit**
- **Resiliency, linking land use and transportation**
- **Vision Zero, an action-oriented take on safety**

Over the lifetime of a 25-year plan in a growing and dynamic area like the Lake Charles MPO study area and Calcasieu Parish the most important component of success is not an individual project or program, but rather the way in which transportation and other public infrastructure is - or is not - designed in tandem with new developments of homes and businesses. In many places a mindset of “development first” has translated into longer-term problems associated not only with traffic congestion, but also with a loss of community character. In the Lake Charles / Calcasieu Parish communities there is still time to create a policy framework that values the existing communities as much as the new neighbors and opportunities that the future will bring.

Reading the Legend



Congestion Relief



Multi-modal / Complete Streets



Land Use & Connectivity

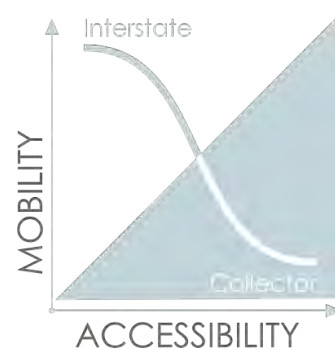


Stormwater & Environment

Most traffic engineers are very familiar with the chart at right, which displays the relationship between mobility (moving many cars fast) and accessibility (getting individual cars to many destinations). As one trait goes up, the other one declines. This relationship holds true for people in cars, but not necessarily for public transportation, people walking, or people riding bicycles.

Still, many of the failures ascribed to moving cars and trucks across a roadway system can be blamed on a road that has stopped fulfilling one function (e.g., mobility) and started to fulfill the other function too often (access). When too many interchanges are placed too close together on a freeway, for example, or when a neighborhood complains of too much “cut-through” traffic, these are examples of roads that started off doing one thing well and then were forced over time to do two things poorly. Hence, preserving roadway capacity on major arterials is important because so many people and industries depend on them to move vehicles reliably. Collector-level roadways are associated with moving people over shorter distances, usually two to eight miles, at moderate speeds. Local roads are usually two or three lanes in width and move traffic at speeds of less than 35 miles per hour between neighborhood-scale shopping or employment locations less than two miles away.

The following pages describe policies that communities can undertake to **preserve a road’s primary function - and avoid costly improvements later**. These recommendations also improve safety (and delays from crashes) and enhance other community objectives like economic vitality and aesthetics.



Access Management



Purpose. Access management is the systematic control of location, spacing, design and operation of driveways, median openings, interchanges, and street connections. It also encompasses roadway design treatments such as median and auxiliary lanes, and the appropriate spacing of traffic signals. Implementing an access management program based on the policies described below will encourage smooth and safe traffic flow on the region's roadways and will help communities avoid some of the existing traffic congestion problems. Good access design helps to preserve roadway capacity and reduce crashes, which in turn enhances community and economy while saving tax dollars.

Success. Access management policies fall into three categories: limiting driveway numbers, removing slower moving traffic from major roadways, and general strategies.

- **Sight distance requirements.** One of the most important actions a community can take to assure that major roadways will be safe for motorists and pedestrians is to require a safe sight distance for residential and non-residential development. Sight distance is the length of roadway visible to a driver entering the traffic stream from a driveway or sidestreet. A safe sight distance is the distance needed by a driver on a roadway, or a driver exiting a driveway or street, to verify that the road is clear and to avoid conflicts with other vehicles.
- **Minimum distance between driveways.** Frequent and direct property access should be from local and collector roadways. In cases where driveway access from a major roadway is unavoidable, site design should consider driveway consolidation through unified property access, and adequate spacing between driveways. Spacing requirements should consider a balance between traffic and engineering conditions and needs, local development objectives, and existing land-use characteristics (such as lot sizes, land-use type, and frontage requirements) and be based on speed limits, classification of the roadway, and/or the amount of traffic generated by a development.



Impacts of Access Management

The public investment in roadways is protected by the application of access management techniques, and those using the abutting land and every driver using the roads where these techniques are applied benefit as well. Five business vitality case studies conducted in Iowa (Iowa Access Management Handbook, Iowa State University, for Iowa DOT) indicated that businesses located within access-managed corridors generally performed better in terms of sales activities than their surrounding communities. Another benefit of access management is that property values remain stable or may increase along roadways where the traffic flows smoothly with minimum congestion and conflicting movements that generate the potential for crashes. Each driver on access-managed roadways benefits with lower vehicle operating costs. Finally, fewer conflict points, connectivity, and rear access to properties help biking, walking, and transit users.

- **Maximum number of driveways per lot.** Regulating the maximum number of driveways per property frontage limits the number of conflict points and provides drivers more time and distance to execute their maneuvers. This allows access to the properties without reducing the roadway capacity to move traffic.
- **Corner clearances.** Corner clearance guidelines preserve good traffic operations at intersections, as well as the safety and convenience of access to corner properties. Establishing a minimum distance on a roadway between a driveway and an intersection can decrease the likelihood of crashes and minimize the interruptions to the flow of traffic. Ideally, corner clearances on major roadways should be the same as driveway spacing requirements.
- **Shared access and shared driveways.** Prohibit residential driveways on major roads and instead require residential subdivisions to design interior roads to provide access to lots. Similarly require developers of new businesses, shopping centers, and mini-malls to provide a common service road parallel to the major roadways, so the business frontage is on this common service road rather than the major roadway. Vehicles can move between the major roadway and the service road at one or two points controlled with a traffic signal if necessary. If there is more than one developer, or if development proceeds piecemeal over time, the community may allow smaller sites to be served by an individual entrance until adjacent lots are developed. When the service road is constructed, the temporary commercial driveways can be closed or consolidated into one or two access points. Another way to limit driveways is to require shared driveways for new residential and non-residential developments fronting on major roadways.
- **Corner lot access.** Require access to proposed developments to be limited to local roads on corner lots that abut both a major roadway and a local road. This will reduce conflict frequency and severity by diverting some vehicles to roads where traffic volumes and speeds are lower.
- **Turn radius, driveway width and driveway slope.** Requirements for turn radii, driveway width, and driveway slope can all help slower, turning traffic move off the major roadway more quickly, and help the traffic leaving a driveway turn and enter the stream of traffic more efficiently. Requirements for turn radii, driveway width, and driveway slope are generally applied to non-residential developments and subdivisions. A larger turn radius results in an “easier” entrance or exit movement for vehicles. The preferred turn radius depends on the type of vehicles to be accommodated, the number of pedestrians crossing the access road, and the operating speeds of the accessed roadway. Since larger vehicles require larger turn radii, the turn radius should be designed to accommodate the largest vehicle generally expected to use the driveway. For example, a driveway to a gas station should be designed to accommodate a gasoline delivery truck. Similarly, it is important to regulate the maximum width of non-residential driveways. If the driveway is too wide, it is unsafe to drivers, who may have a hard time deciding where to position themselves, and to pedestrians, who will have a greater distance of pavement to cross. On the other hand, if the driveway is too narrow, the access speed to and from the driveway will be slow, impinging on through traffic. The slope (vertical alignment) of the driveway should not be overly steep. Steep driveways force motorists to unduly slow their speed when entering or exiting the driveway.
- **Deceleration lanes and Turn Lanes.** Right turn lanes and tapers help to get turning vehicles out of the through traffic lanes. A municipality can require that a developer install a right turn, or deceleration lane. A deceleration lane should be used when a specific threshold of turning traffic is reached or when a traffic impact study indicates that a right turn lane is needed. The turn lane should be sufficient length to allow the turning vehicle to leave the through lane at the posted speed limit, decelerate, and negotiate the turn. On lower-volume driveways in areas with limited rights-of-way, tapers may be used to help remove turning vehicles from the roadway more quickly. Tapers may be most

useful in rural areas, where speeds are high and volumes low. Dedicated turn lanes help reduce queues and improve service on major corridors. The left turn lane separates the turning vehicle from through traffic and provides a storage area where a number of left turning vehicles can wait to make a turn. Left turns can also be controlled through median strips that allow left turns at certain controlled points.

- **Driveway throat length.** The depth of the formal entrance way to the property is referred to as the "throat length." Commercial driveway entrances should be designed to prevent a back-up of waiting vehicles on the roadway. Throat length generally varies according to the number of trips generated by the land use on the property. A traffic impact study based on peak hour demand is the best way to determine the extent of potential queuing problems and how best to resolve them.

ID	Measurement	Speed (mph)		
		<26	26-44	>44
A	Intersection to Opposite Side of Street	100'	100'	500'
B	Intersection to Same Side of Street	100'	100'	500'
C	Intersection to Signalized Intersection	125'	125'	500'
D	Between Full Median Openings	300'	600'	1,000'
E	Driveway Length to Regional Mall / Office Park	250'	250'	250'
E	Driveway Length to Community Shopping Center	120'	120'	120'
E	Driveway Length to Single Commercial Site	30'	30'	30'

Derived from NCHRP Web-Only Document 151: Geometric Design of Driveways, Submitted July 2009

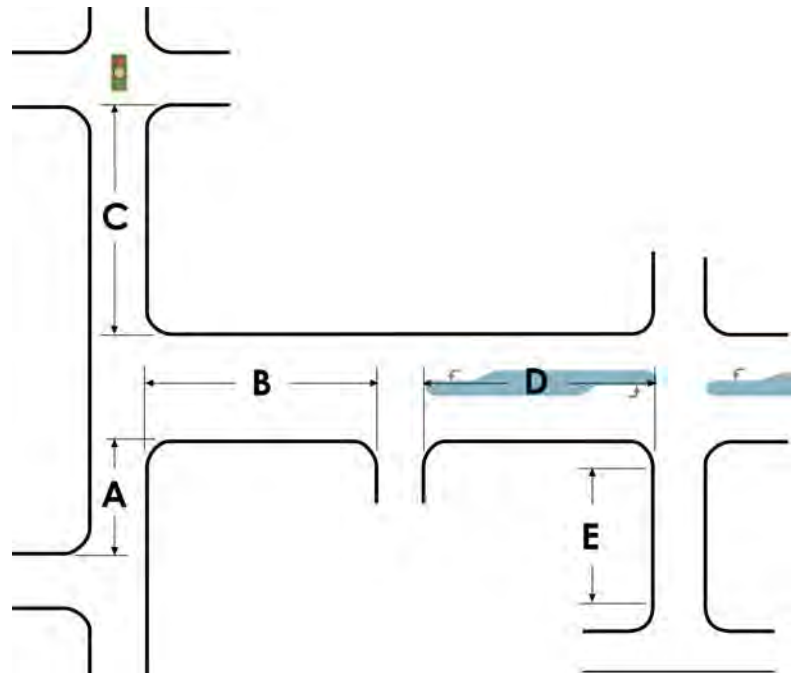


Figure Pl.1 | Spacing Standards

Actions that Can be Taken Now...



Encourage communities to adopt/update their thoroughfare plans to include the 2045 LCMPO MTP street classifications and related street sections that follow the access management principles provided in this section both on major roadways and on the supporting network of local and collector streets to accommodate traffic and development efficiently.

1

Communities could require the following as a part of their engineering design manual, subdivision/zoning ordinance, or development/site plan review process:

- minimum sight distance requirement;
- minimum distance between driveways and design standards;
- a traffic impact assessment to determine signal locations, access connections, and median design and openings;
- minimum distance of driveway locations from the intersections; and
- cross-access provisions requiring internal connections between adjacent development sites to allow for internal street access to the businesses or subdivisions on these sites.

2

Various levels of local jurisdictions in the region can also require developments to design their sites compatible with the various access management strategies through economic development incentives and other funding assistance/partnerships. One key to ensure consistency in TIAs: developers should pay for TIAs that are then subcontracted to consultants that work for the jurisdiction, not the developer.

3

Other access management policies: communities can consider the following general policies for access management.

Traffic impact assessment (TIA). A traffic impact assessment (TIA) is a report that analyzes how traffic generated by a proposed project will impact traffic conditions on the adjacent roadways and the general area. It identifies access management needs to improve traffic circulation in and around a proposed development. A community uses a traffic impact assessment to identify and address access management issues - including transit, walking, and biking to the site - to ensure that the proposed development will be safe and for avoiding or minimizing costly corrective actions after the project is built.

Interconnections—subdivisions and commercial development. To reduce the multiple points of access that occur when each subdivision has its own separate access to the roadway, communities should require both residential and commercial subdivisions to provide access points for future internal connections to adjacent, undeveloped land. This can reduce traffic on major roadways while creating a sense of community continuity, rather than isolation.

Driveway turn-around area. In areas where residential properties have direct access onto major roadways requiring a driveway turn around area eliminates the need to back out onto the major roadway, which can be a potentially hazardous maneuver and slow the flow of traffic.

Parking. The capacity and safety on a roadway can be compromised by the lack of off-street parking or by poorly designed parking facilities. In downtown areas, municipal off-street parking facilities in conjunction with on-street, parallel parking reduces conflicts between vehicles parked on the roadway and vehicles moving on the roadway. A municipality can also limit on-street parking during peak traffic hours to eliminate slowing traffic flow on the roadway when parked vehicles pull in or out of an on-street parking spot. In all other areas, a municipality can require that businesses provide off-street parking.

Loading/Unloading. Truck loading/unloading operations can have a negative impact on traffic flow if any portion of the major roadway is blocked, if backing movements take place on the major roadway, or if the truck blocks or impedes the entrance to a commercial business. A city can include guidelines for loading bays and on-site maneuvers in its regulations to counter these negative impacts. When on-street deliveries are the only alternative, such as in an old downtown area, cities can restrict peak hour deliveries and pickups.

Landscaped buffers. Landscaped buffers can be an important access management tool because they can help define commercial driveway points and make them safer by clearly identifying the possible points of conflict for vehicle and pedestrian movements. The width of the buffer can vary, depending upon the building setback and the function the buffer serves. It is important that buffers not interfere with sight distances from the exit.

Complete Streets



Purpose. Standout communities show that you don't have to travel far away to see how an interconnected, multi-modal, and beautiful transportation system that supports every type of user can work. Young, old, zero-car, and disabled/mobility-challenged users can still move around, go shopping, go to work, and go home again. Complete streets is the umbrella term that has come to represent transportation networks that support every type of user and mode of travel. According to Smart Growth America Complete Streets are known for bringing transportation choices to vulnerable users, spurring economic development, reducing traffic fatalities and injuries, providing recreation options for people, and improving public health outcomes.

Success. While the cost of providing transit services, sidewalks, bicycle facilities, greenways, and safety countermeasures is real, often the biggest challenge is internal. Successfully developing a mindset in the people that have to execute plans, designs, and construction is crucial. For example, many agencies think of a corridor improvement from a vehicular need standpoint, then work earnestly to provide pedestrian, cycling, safety, and transit improvements as best they can. Instead, the starting position should be to assume that every mode is in the street design, then eliminate them only if they cannot be accommodated at all.



Safety: An Ally of Complete Street Design

Louisiana ranked third-worst for pedestrian danger according to the National Complete Street Coalition (2016). Communities around the world have started to recognize that the long-standing devotion to traffic throughput (measured in terms of vehicular delay) isn't always the most important measure of success and ignores delays due to crashes. As a result, the adoption of a Vision Zero policy, whereby planning, design, and funding decisions place the reduction of injuries and fatalities first, has become commonplace. Like complete streets, a Vision Zero policy first requires a mindset shift. Traffic deaths are preventable (not unavoidable); countermeasures are relatively inexpensive (not costly); and human failing should be included in design decisions (not ignored or placed second).

The Vision Zero Network is a great starting point, offering training and other resources.

The creation of a complete streets policy could be explored initially during a detailed process, preferably embedded within a transportation plan update or as an individual effort focused on complete streets and related policies. The effort ideally requires the inputs of citizens, technical staff, elected/appointed officials, business interests, real estate developers, and other members of the community to ensure a policy tailored to the specific interests and needs of the community. A “study team” comprised of municipal staff and (possibly) private consulting staff is assumed to be present and technically competent to perform the necessary work that the policy implies. Note also that, since complete streets are part of an overall design objective that includes land use and other elements of the public realm the study team should represent public works, planning/zoning, law enforcement, and other departments within the city.

The National Complete Streets Coalition (a subsidiary of Smart Growth America) notes that the following are ten vital components of a policy framework to ensure that streets are designed for everyone, at every age, at every level of physical ability.

1. **Vision:** The policy establishes a motivating vision for why the community wants Complete Streets: to improve safety, promote better health, make overall travel more efficient, improve the convenience of choices, or for other reasons.
2. **All users and modes:** The policy specifies that “all modes” includes walking, bicycling, riding public transportation, driving trucks, buses and automobiles and “all users” includes people of all ages and abilities.
3. **All projects and phases:** All types of transportation projects are subject to the policy, including design, planning, construction, maintenance, and operations of new and existing streets and facilities.
4. **Clear, accountable exceptions:** Any exceptions to the policy are specified and approved by a high-level official.
5. **Network:** The policy recognizes the need to create a comprehensive, integrated and connected network for all modes and encourages street connectivity.
6. **Jurisdiction:** All other agencies that govern transportation activities can clearly understand the policy’s application and may be involved in the process as appropriate.
7. **Design:** The policy recommends use of the latest and best design criteria and guidelines, while recognizing the need for design flexibility to balance user needs in context.
8. **Context sensitivity:** The current and planned context—buildings, land use, transportation, and community needs—is considered in when planning and designing transportation solutions.
9. **Performance measures:** The policy includes performance standards with measurable outcomes.
10. **Implementation steps:** Specific next steps for implementing the policy are described.

The common elements of successful complete streets policies are: a network of connected, integrated system that provides transportation options to many potential destinations in and around the community; agency partnerships with regional planning organization, the public health department, and neighboring communities are important to creating a truly multi-modal network within and between communities; design guidance and flexibility in complete streets policy can be achieved by amending existing design manuals to include design standards that also recognize the need for some roads to offer greater or lesser degrees of accommodation for each type of user, while still ensuring basic accommodation is provided for all permitted users; context sensitivity to the neighborhood and the land uses along roadways to help align transportation and land-use planning goals, creating livable, strong neighborhoods; and performance measures to ensure compliance with the policy, but also enable more informed decision-making by providing clarity to planners, designers, and engineers on expected outcomes.

The development of a Complete Streets policy should consider existing policy, practice, and politics and take time to better understand how decisions regarding transportation projects are made in the community. But Complete Streets can be implemented in a variety of ways besides a dedicated policy. Some methods of incorporating Complete Streets are described in the following paragraphs.

Resolutions. A community's governing body issues resolutions, which are statements of support for applying Complete Streets principles to transportation projects. Resolutions are *non-binding official statements* and do not require action, so they may be forgotten or neglected if an implementation plan is not created. Resolutions are often a very helpful first step, providing the political support for a Complete Streets approach.

Plans. Complete Streets policies can be found within community comprehensive plans and/or transportation plans. The process of updating a plan, or adopting a new one, provides an excellent opportunity to engage all sectors of the community. Plans are a good home for basic Complete Streets policies, most often listed among the community's goals for the future, and they can provide some implementation guidance by identifying specific corridors in particular need of increased multi-modal planning

and design. To be truly effective within a plan, the Complete Streets approach must touch all aspects of the plan, not just be mentioned in one chapter, or restricted to one mode. For example, a policy should not be restricted to only the bicycle elements or applied only to streets included on a bicycle and pedestrian plan. Plans must also be well-regarded by the community and inform the budget process, or else they risk gathering dust.

Ordinance. Ordinances are *legally binding* and are an implementation tool for policies and practices. Ordinances provide developers with guidance for goal driven growth by identifying zoning regulations, subdivision requirements, and design standards. Ordinances and design guidelines usually require strong support from the community and elected officials, as they are enforceable by law. Community engagement/education workshops and resolution supporting complete streets policies are a good way to gauge support before spending resources on changing ordinances.

Tax referendum. A community can pursue an additional tax to fund transportation improvements which is usually approved by a general vote of residents. Such referendums impose specific requirements and goals, which can include provisions to ensure Complete Streets: pavement maintenance; sidewalk development and repair; tree planting and care; transit enhancements; bicycle network implementation; improved pedestrian crossings; and other needed work. This type of policy is best considered in communities that have used such measures (special districts) in the past or if a broad-based advocacy campaign can support the initiative.

Ballot measure. Ballot measures are a citizen-led campaign for a Complete Streets law enacted not by a body of elected officials but by direct ballot by the general voting public. These measures, like ordinances are *enforceable by law* and more difficult to ignore. Campaigns in favor of ballot measures create a high level of community support for Complete Streets. If a community's governing body is unwilling to pass an ordinance, a network of activated citizen advocates can explore this option.

Actions that Can be Taken Now...



Encourage communities to offer workshops and other educational opportunities to staff, community leaders, and the general public so that everyone understands the importance of the Complete Streets vision and how they can aid implementation.

1

Local jurisdictions can also require complete streets design to be incorporated as a part of private developments through economic development incentives and other funding assistance/partnerships.

4

Encourage communities to incorporate complete streets principles/guidelines into other metropolitan plans such as long-range plans, comprehensive plans, pedestrian and bicycle master plans, and other associated plans, manuals, checklists, decision trees, rules, regulations, and programs as appropriate.

2

Promote project coordination among municipal departments and outside agencies with an interest in the activities that occur within the public right-of-way.

5

Encourage communities to review current design standards, including subdivision regulations that apply to new roadway construction, to ensure that they reflect the best available design guidelines, and effectively implement Complete Streets.

3

Encourage communities to adopt complete streets policies to reflect National, State, LaDOTD, and LCMPO complete streets design guidelines/current best practices. This would incorporate a Complete Streets approach into all transportation projects as routine practice by allowing for Federal and State funding for complete streets projects. See next page for details.

6

Sample Complete Streets Policy Guidance

(adapted from Charlotte, NC; Nashville, TN); Complete Streets Coalition)

The purpose of the following steps is to ensure that planning, design, and other processes contemplate all users and all modes of travel. This process will reflect the ten concepts identified previously and is intentionally condensed to make it as simple and as broadly applicable as possible.

Step 1.0: Technical Inventory of the Street and Surroundings. The study team will develop a description of the project area/corridor that includes at a minimum the building types, densities, character, setbacks, and historic properties on adjacent lands as well as nearby and connected side streets. The subject corridor will be described in terms of geometry (lane widths, speed limits, design speed, cross-section(s), volumes of users by mode, signalization, crossing treatments, accommodations / demand for public transportation, walking, and bicycle users), crash histories from the most recent three-year period, and a conditions analysis that includes safety/security, mobility/performance, and maintenance elements. A brief synopsis of the demographics of workers and residents in the corridor that includes comparisons to the larger geography (e.g., municipality or parish) will also be included, mentioning age, race/ethnicity, language spoken at home, and income levels, at a minimum.

Step 2.0: Community Context. The study team will work with representatives of the community, preferably in a collaborative process (e.g., workshop or charrette) to enhance the understanding of the corridor and its strengths, challenges, and opportunities.

The output of this public exercise will include the following:

- Barriers, including poor access, lighting, inadequate street crossings, dangerous conditions, and lack of capacity for users such as transit stops, turning lanes, and pedestrian crossing distances greater than 1,000' apart;
- Opportunities and Resources, such as parks, schools, office complexes, shopping centers, underutilized spaces, and underutilized parking areas; and
- Aesthetics, especially elements that support alternative modes of travel as well as businesses/customers, such as streetscaping, street furniture, pedestrian-scale lighting, wayfinding.

The public forum will also work to identify and weight community objectives that reflect the importance of answering concerns about mobility, access, safety, security, environment, economics, and other impact areas that the street may directly or indirectly influence through its design.

Step 3.0: Selection of a Preferred Option. Unlike other practices narrowly defined by the street itself, the preferred option in a complete street study should (1) include actions outside the street right-of-way, including development, zoning, and other policy actions; and (2) clearly identify options that were considered and why they were not chosen based on performance measures, alignment with current plan/policy, and/or alignment with public/stakeholder input from Step 2.0. At a minimum, documentation describing the selection process should answer the following questions:

- How does the preferred option compare to other considered options in terms of the performance measures selected for the project and public inputs?
- What were the public comments on the preferred option, and how did the study team respond to each of the main categories of commentary? How did the comments change the design, policy, or other recommendations contained in the project plan? [In order to answer this question a public forum has to be held specifically to review the preferred option, effectively and inclusively getting public input from the affected communities.]
- A conceptual corridor map should be created on an aerial map (1"=200') describing the structures, design features, resources, aesthetic/streetscape improvements, and multi-modal treatments throughout the corridor. A separate map and accompanying text may contain descriptions of cross-access between properties and other access management treatments; suggested land use/design recommendations/policies; wayfinding/gateway treatments, and other suggestions that support identified economic and community goals.
- Any changes to adopted plans, policies, ordinances, or other existing documentation to bring them into compliance with the recommendations should also be briefly identified.

Biking, Walking, & Transit Accessibility



Purpose. Walking and biking are not just lifestyle choices. They complete a community's transportation system and are the first and last leg of almost every trip. Expanded access to multi-modal options can improve the economic and social well-being of a community. Safer and more convenient access to these affordable transportation methods means that residents are all better connected to their communities, to essential services, and to new job and education opportunities. These transportation options provide both health benefit and cost savings for a community but are also environmentally superior to multiple single-occupancy car trips.

Currently in Calcasieu Parish walking and biking is mainly occurring in recreational capacity in this area. Viewed from a twenty-five-year perspective, bicycling and walking can provide alternate means of transportation and have the potential to help reduce roadway congestion and air pollution in some urban areas of Calcasieu Parish such as the Lake Charles downtown area. The greatest opportunity for bicycle and pedestrian mobility in rural areas is to serve touring routes, while transit mobility would assist in providing affordable commuting for the older and younger population to and within urban areas for employment and shopping/entertainment purposes. Therefore, creating a multi-modal transportation system by adding bicycle, pedestrian, and transit infrastructure can enhance the region's future employment and tourism opportunities.

Success. The current transit system for fixed-route service does not address weekend or evening travel, but also is confined to Lake Charles. Multiple companies provide "human service," door-to-door transportation using shuttle vans, but could streamline their efficiency if they were consolidated. Walking and biking facilities, particularly outside of downtowns and Lake Charles, are infrequent or in need of some repair. Creating a holistic network is daunting in terms of cost, but key routes can be constructed or improved now, allowing future private

actions to gradually fill in gaps in the pedestrian and cycling networks.

On-Road Bike Facilities. These can be included as a part of a community's Complete Streets design Guidelines. The cross sections for roadways that have been identified for bicycle facilities should be organized by the functional classification of the street or roadway and by prevailing community characteristics (main street, urban, suburban, rural). On-road bike facilities in urban areas can be created using existing shoulder and road diets, while the on-street bike facilities on rural corridors could use the paved shoulder for a bicycle zone.

Pedestrian and Multiuse Path Planning. Multiuse paths/trails (Greenways) and pedestrian plans establish the appropriate tools for each individual community. Once adopted, they also provided the necessary basis for many policies. Greenway recommendations through undeveloped areas are more likely to be built with development if they are shown in an adopted plan. Greenways can provide a desirable facility for pedestrians and cyclists of all types preferring separation from traffic, particularly for recreation. Greenways should generally provide directional travel and recreational opportunities not provided by existing roadways. Facilities should include amenities such as lighting, signage, and fencing (where appropriate).

Transit. Currently the study area is largely of a rural nature, but if the economic trends in Southwest Louisiana Region continue, parts of the study area could become much more urbanized. The design and location of development will largely determine if transit (including bus, express bus, light rail or commuter rail) will be feasible in the future. High-density, vertical mixed-use development around transit facilities, also known as Transit-Oriented Development (TOD), may be warranted in parts of the study area along rail or express bus lines. Transit services and infrastructure provision is most

cost effective when paired with compact land use planning to concentrate appropriate land uses around activity centers. In rural areas transit programs such as ride-sharing/van-pool and park-n-ride locations should be pursued. Along major corridors, enhanced express bus service should be pursued.

Sidewalk Design. Sidewalks are the most fundamental element of the pedestrian network. Well-designed, context-sensitive sidewalks allow and encourage walking for transportation and recreation. Sidewalks should include a planted buffer called a “green zone.” Buffer options include bioretention swales, rain gardens, tree box filters, plant materials, and pervious pavements (pervious concrete, asphalt and pavers). Bioswales provide multiple benefits by offering natural landscape elements that also manage water runoff from a paved surface. In addition to the aesthetic and environmental value of a green zone, planting strips can slow traffic and improve safety and comfort for pedestrians. The width and design of sidewalks depends on street context, functional classification, and pedestrian demand. Standardizing sidewalk guidelines for different areas of a community ensures a minimum level of quality for all sidewalks.

Right-of-Way Preservation. Adopting right-of-way (ROW) preservation policies will assist communities

in keeping up with population shifts and the resulting shifts in demand for different transportation modes. ROW preservation policies provide communities with a cost-effective approach to meet the land requirements for future development of safe and efficient multi-modal infrastructure.

Pedestrian-Scale Design. Pedestrian-scale environments encourage residents to walk to destinations, sustain appealing retail and business districts, and enable residents without alternatives to access destinations safely on foot. There are low-income communities in the Parish where pedestrians are currently cut off from grocery stores, jobs, and other destinations because of disconnected networks and high-traffic roadway corridors. New developments that are planned with the pedestrian scale in mind, and retrofits to existing developments, will serve these residents. Encouraging pedestrian activity across cities and parishes will require coordinated land use and transportation planning. Walkability requires origins and destinations within walking distance of each other, which is influenced by roadway connectivity, distribution of land uses, and streetscape design. Successful pedestrian-oriented business districts, or nodes, are more economically viable as opposed to “commercial strips,” and depend upon making pedestrian circulation more convenient and attractive than motor vehicular circulation.

Residential Sidewalk



- Design for a buffer of equal width to the sidewalk
- Standard is five feet in width
- Use colors or textures to demarcate conflict points, intersections
- Pervious pavements and plantings help mitigate stormwater runoff

Buffered Bike Lanes



- Helps to mitigate sideswipe crashes - including with other cyclists
- Nearly 9 in 10 cyclists prefer buffered lanes, and these treatments appeal to a wide range of cyclists with varying skill levels
- Needs adequate right-of-way to avoid door opening-related conflicts with on-street, parked vehicles

Intersection Crossings



- On-Street bicycle facilities need specialized intersection treatments
- “Elephant's Feet” markings (shown here) or green paint highlighting conflict points with through and turning vehicles reinforce space sharing
- Increases visibility of cyclists and provides additional assurance to cyclists in the delineated space for their travel

Actions that Can be Taken Now...



Encourage and help communities apply for Louisiana DOTD’s Safe Routes to Public Places Program funding for bike, pedestrian, and transit connection projects to popular walking destinations like transit stops, schools, parks, shopping/food retailers, and civic buildings.

Adopt a road design policy with cross-sections in local thoroughfare and comprehensive plans to help balance street space between vehicles, pedestrians, bicyclists and transit with the goal of improving people, not vehicle, mobility and access for all road users, reduce crashes and injuries, and improve quality of life.

Include the following in future transit plans funded entirely or in part by the MPO:

- opportunities for public-private partnerships, incentives / vouchers for employers,
- Descriptions of the ways that technology can make short- and long-term services more productive and efficient
- Coordinating shuttle services with local employers like hotels and casinos, and
- Develop transit-oriented land use planning guidelines, design standards, and development regulations for interested communities (see #4, below).

1

2

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Local governments play a central role in managing new development. The following are basic concepts for ensuring that bicycle, pedestrian, and transit patrons are considered in local development regulations.

- Preserve or reserve the appropriate ROW setback per the adopted cross-sections if the parcel or development is located on a roadway that is designated on the State Transportation Plan, or on a MPO’s MTP, or on a community’s thoroughfare plan.
- Dedicate greenway easements based on the proposed greenway corridors identified in adopted Plans. This can also be done in form of ROW dedication as a part of roadway or park impact fee requirement. A community could also define greenway development requirements and development standards as a part of such ordinance amendments.
- All new and infill developments during the design review (private development) and planning (public projects) phases to be approved and held to the local connectivity and design/ spacing standards that improve bicycle, pedestrian, and transit mobility such as sidewalks, safe crossings, corridor continuity, and ensuring all projects public and private comply with accessibility guidelines.
- All new developments to design stub-out streets to connect to adjacent communities to allow for improved mobility by reducing distance and travel time; these need to be effectively marked so that neighborhoods are aware that the street will be connected in the future.
- Revise local design standards to include: block length maximums; street furniture, lighting, and wider-than-minimum sidewalk widths in high-activity areas; building facade and solid/void requirements; and incorporate Crime Prevention through Environmental Design reviews of new developments.

4

Resiliency and Transportation



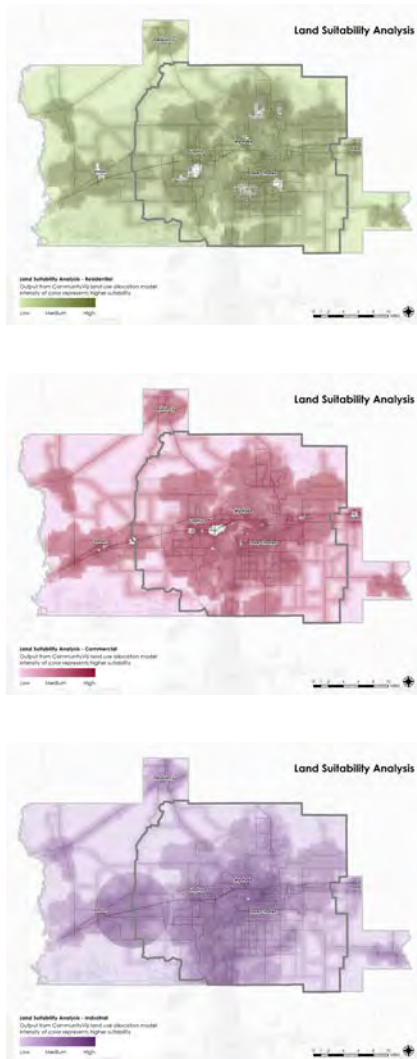
Purpose. Calcasieu Parish and its communities are at-risk to natural and man-made hazards. While the parish's low-lying topography and many waterways, proximity to the Gulf of Mexico, and prosperous liquefied natural gas industry make it attractive in many ways, these same features make Calcasieu Parish vulnerable to flooding, hurricanes and storm surge, pipeline incidents, and hazardous materials spills. Roads in low-lying areas are susceptible to inundation from floodwaters, and natural gas pipelines often run adjacent to roadways or railroads. Impeded transportation systems can result in congestion, traffic, and delayed shipment of goods. Even more devastating, inaccessible roads can disrupt evacuation routes or cut off access to entire neighborhoods. These vulnerabilities create a need for incorporating resiliency into transportation planning, design, and construction.

Everyday lives depend on people and goods being able to get where they need to go – to work, to school, to retail stores, and so on. When transportation systems become disrupted, so do the day-to-day activities that make a community function. That is why it is important transportation systems can quickly bounce back from natural and technological shocks and stressors. Resilience, in the planning context, is just that – the capacity of a community and the systems within, as well as individuals, institutions, and businesses, to recover, survive, and adapt no matter what acute shocks and chronic stressors they experience (100 Resilient Cities). Shocks to a community can include a variety of natural and non-natural hazards, such as hurricanes, flood events, or hazardous materials spills. To be resilient, planning efforts must holistically address these

potential hazards in the context of chronic stressors undermining a community, such as aging infrastructure, poverty, and environmental degradation.

Success. A transportation plan has an important role to play integrating resiliency principles into an interconnected framework of actions that includes policies, infrastructure, and programmatic efforts across a broad array of public and private institutions. Calcasieu Parish and its communities recognize the importance of resilience, adopting it as a theme to be integrated throughout the plan early in the planning process.

Planning for future development and emergency management can be complex, especially when considering almost 39% of the parish is within FEMA designated 100-year floodplain, called special flood hazard areas. Significant flood events occur often, from flash flooding in urban areas to waterways rising out of their banks during hurricanes and heavy rain storms. Barriers to making progress on resiliency measures typically stem from trade-offs when allocating limited resources (e.g., staff capacity and available funding) between short-term projects of compliance that have an immediate, visible impact, and the long-term, often intangible projects for mitigating a serious disaster having the potential to affect thousands of people. In addition, complicating factors such as limited data and information, especially in regard to climate change and other future conditions, as well as siloed departments and decision-making, further delay the implementation of resiliency measures.



Development and Transportation

A land suitability analysis (LSA) measures the attractiveness of individual land areas to accommodate new development. The LSA completed for this plan incorporated multiple factors, including the locations of existing centers of development, areas of growth or decline as suggested by US Census counts, current land use, and proximity to infrastructure such as roads, railroads, port facilities, and sanitary sewer. Open water, wetlands and wooded swamps were considered to have little development potential. While exceptions exist, most would suggest that development in these areas would risk significant expense and risks. These low lying areas continue to be the most vulnerable areas to storms, storm surge and other flooding events. While building in these areas would likely occur on a limited basis, the scenario model assumed that these areas would be off limits to future development. Parks and protected conservation areas were also considered off-limits to development. Further, existing neighborhoods, transportation rights of way, commercial and industrial areas were considered to have limited development potential. While infill development and redevelopment occur in the scenario model, it is largely limited to vacant parcels within the urban context.

As mentioned, resiliency is not only about rebounding from acute natural hazards, but also addressing the underlying chronic conditions that make the impacts of hazard events more devastating. As exemplified through previous natural disasters, such as Hurricane Katrina in New Orleans or the 2018 Camp Fire in Paradise, California, vulnerable populations are disproportionately impacted by disasters, especially when vulnerable persons are unable to evacuate or adequately prepare before disaster strikes (e.g., zero-vehicle households, low-income households, minority households, elderly or disabled persons). Therefore, a community's resiliency is heightened when social vulnerability is considered in decision-making. This plan addressed social vulnerability by developing a vulnerability index that was incorporated into the ranking and scoring of potential projects as its own metric.

Figure Pl.2 | Land Suitability Maps.

The land use suitability factors were developed and weighted based on input gathered during public engagement sessions conducted in July 2018, and draw on information from both public and private sector individuals on development suitability and risk. The LSA uses a numeric score between 0 and 100 to rank 10-acre grid cells in the study area from least- to most-suitable for development. Despite limiting factors, the model found that only 26.6%, or 291 square miles, of the Lake Charles MPO Region are constrained. Separate LSA maps were created for three major types of development: residential (top), commercial (middle), and industrial (bottom).

Risk of a disaster event stems from the presence of a hazard, such as a hurricane or heavy rains, combined with the community's exposure to that hazard, or the people and infrastructure in harm's way. The Disaster Management Cycle is designed to help communities reduce risk to hazards through four processes.

The *Lake Charles Urbanized Area MTP* is focused on Mitigation and Preparedness, helping prevent the creation of worse problems through integrated project selection as well as recommendations for project and development design.

- **Mitigation:** Actions taken to reduce losses prior to a disaster occurring, such as zoning and building code regulations.
- **Preparedness:** Measures taken prior to a disaster, such as evacuation planning and emergency exercises.
- **Response:** Actions taken during a disaster to address immediate threats, such as emergency operations centers and search and rescue missions.
- **Recovery:** Short- and long-term actions taken after a disaster occurs to rebuild a community, such as securing grants and reconstruction of damaged infrastructure.

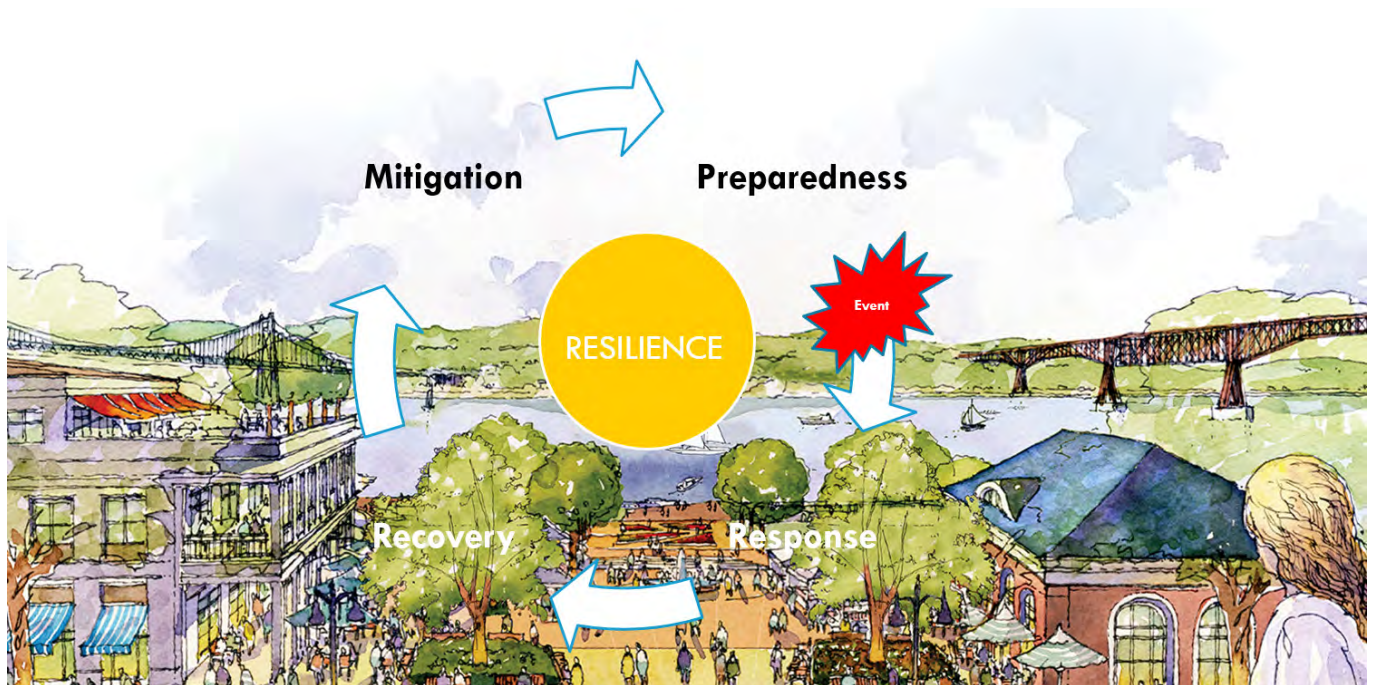


Figure Pl.3 | Disaster Recover Cycle.

Actions that Can be Taken Now...



Pursue scenario-based modeling when planning and designing future transportation projects. Scenarios can model flood depths based on climate change projections and future land uses to determine appropriate elevations through a project’s estimated life cycle.

Vulnerable populations are disproportionately impacted by disasters, especially when vulnerable persons are unable to evacuate or adequately prepare before disaster strikes. This plan prioritizes projects serving zero-car households, for example; decision-making should include representation from these communities.

Include a Lake Charles MPO / IMCAL representative on the stakeholder committee for the next hazard mitigation plan update and emergency management plan update for Calcasieu Parish. Coordinate with Calcasieu Parish Homeland Security and Emergency Management to participate in emergency training.

1

Establish formal memorandums of understanding (MOUs) for existing shared resources between departments and agencies, and identify new ways to leverage and share resources, whether it be data, staff knowledge and expertise, or physical resources (e.g., buses, equipment).

2

If development does go into a high-risk area, mitigating measures can be taken to reduce risk, but they are often more expensive than the costs of preserving or avoiding development. Often, mitigation measures are implemented by local and state governments through future land use plans, zoning ordinances, and building codes.

3

- Preserve lands considered unsuitable for development due to the existence of special flood hazard areas and/or wetlands. Not only will preservation prevent development on lands prone to flooding, it will preserve storage for floodwaters, helping to protect existing development. Tools that can be used to preserve natural areas include riparian buffers, designation of natural resource overlay districts, and use of conservation easements.
- Work with local jurisdictions to adopt and maintain a floodplain management ordinance that specifies requirements for building in the floodplain.
- Consider requiring new development to maintain stormwater on-site for a “no net increase” stormwater volume policy.
- Allow for land use design that encourages avoidance of hazard areas, such as cluster development and density transfers.
- Consider land suitability when prioritizing and assigning funding for transportation projects.

4

5

Vision Zero (Safety)

Purpose. Metropolitan Planning Organizations have a opportunities to create, support, and implement measures to reduce injuries, fatalities, and expenses from crashes. An important resource for IMCAL and the Lake Charles MPO in this effort is the Vision Zero Network ([link](#)), which contains resources for both municipal and MPO entities to implement safety objectives in their work.

Success. The current version of the Lake Charles and Calcasieu Parish Transportation Plan already incorporates safety measures in project evaluation and target-setting, not only on the large roadways prescribed recently by LaDOTD Performance Metric (PM) efforts, but on all roadways in the transportation system. Furthermore, the bicycle-pedestrian projects

are also separately evaluated for their potential for improving safer travel for cyclists and pedestrians. The Vision Zero movement, which began in Sweden in the 1990s and has since spread to a number of U.S. cities and counties, posits safety as the number-one goal in planning, design, operation, and maintenance of transportation facilities. It's important to understand that Vision Zero is not simply a single program, but a fundamental shift of mindset to incorporating safety at every stage of the transportation planning and design process.

The Vision Zero Network mentioned previously proposes the following representation of this shift in mindsets in the following graphic. A local resource that the Lake Charles MPO and

	<p>TRADITIONAL APPROACH</p> <ul style="list-style-type: none"> • Traffic deaths are inevitable • Perfect human behavior • Prevent collisions • Individual responsibility • Saving Lives is Expensive
<p>VISION ZERO APPROACH</p> <ul style="list-style-type: none"> • Traffic deaths are preventable • Integrate human failing • Prevent severe and fatal crashes • Systems approach • Saving lives is not expensive 	

adapted from: Vision Zero Network (<https://visionzeronetwork.org>)

its parent organization of IMCAL are fortunate to have available is the SWLA Regional Safety Coalition. Its current coordinator, Amber Ashworth, provided information on the work of the Regional Safety Coalition that helped in developing these action items on the following page. The Coalition's emphasis areas, which are facilitated through collaborative efforts with law enforcement and other

agencies, include distracted and impaired driving, infrastructure and operations, occupant protection, and improving the abilities of young drivers. Additionally, the Coalition has set a 1% reduction target annually in the number of serious, fatal, and bicycle/pedestrian crash types. These targets are in alignment with the project priorities and goals established in this Plan.

Actions that Can be Taken Now...



One of the principle work efforts of the Regional Safety Coalition, as well as a topic heard repeatedly during the plan development, is the need to regulate handheld cellphones and driving. The Lake Charles MPO and its members should adopt, by resolution, support of draft legislation in this regard.

The Regional Safety Coalition’s 2017 Regional Safety Coalition’s Local Road Safety Profile, notes that Calcasieu ranks 5th in number of parish crashes, and has rates of crashes from 1.02 to 1.33 times the state average. Alcohol and run-off (the roadway) are especially high. Education efforts, and maintenance of clear zones or expansion of shoulder areas, should be incorporated in every instance.

Conduct corridor studies - one per year - to develop conceptual redesigns of roadways that (1) conform to downstream planning and design requirements, and (2) incorporate safety measures, engagement, and design criteria that support safer streets. Developing a scope of work in partnership with safety-oriented partners is a good first step.

1

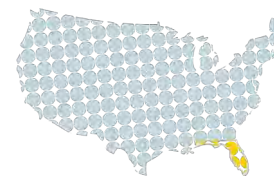
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By establishing safety and crash prevention as premier measures in the Metropolitan Transportation Plan, the Lake Charles MPO has taken an important step in getting safety incorporated into its project development processes from the earliest stages.

An important step is to collaboratively work with the SWLA Regional Safety Coalition, LaDOTD, law enforcement, and other partners (likely already represented in the actions and meetings of the Coalition) to develop a parish-wide or MPO-wide Vision Zero Action Plan (V-ZAP). The plan would identify additional actions to incorporate into the planning process, specific changes to standard designs, and outline education and low-cost actions.

They Did it Here...



Florida’s cities and MPOs have been challenged with high rates of pedestrian and bicyclist crashes. They have responded with developing good examples of Safety Action Plans. One of these is the Hillsborough (Tampa) Plan ([link](#)).

4

The Plan: Implementation

Implementing and Financing Transportation

This final chapter provides the required insights into how projects are scheduled in the MTP, based in part on technical scoring and in part on the insights of the Transportation Advisory and Policy Committees that form the working structure of the Lake Charles MPO.

The first section describes this “fiscally constrained” planning element, and identifies anticipated revenues for transportation projects (based on past revenue collections) as well as planning-level project cost estimates.

The second section describes how the Lake Charles MPO and its partners can potentially improve their planning process and even project delivery. MPOs are evolving organizations that are rare example of formalized, inter-governmental cooperation to guide services and infrastructure to meet the needs of more than just one local government. Therefore, they are in a position to not only see the “big picture,” but to work with their members, the public, and partner agencies to take real action to meet the future needs of the communities that each MPO serves.

Fiscal Constraint

Simply developing a list of all possible transportation projects, while daunting in its own right, does not meet the requirements of the federal regulations governing the development to the metropolitan transportation plan. Two things need to happen to satisfy the fiscal constraint element of the MTP: (1) revenues, typically from past expenditures, are developed through the plan horizon year - 2045, in this instance, and (2) project costs have to be developed for every project in the MTP. These two elements - forecasted revenues and forecasted project costs - are created in year of expenditure (YOE) dollars for the horizon years of 2025, 2035, and 2045. As noted in the US Federal Code of Regulations, projects that cannot be incorporated inside of the fiscal constraint portion of the MTP are still able to be shown and included as illustrative projects that can proceed should more funding become available for their completion.

Revenues. Revenues were developed from information obtained from both LaDOTD and Calcasieu Parish (an important developer of transportation projects) for the most recent 10 years available. These expenditures were used to formulate projected trends for future revenue streams, which were adjusted to account for the effects of inflation to produce YOE estimates used in the funding tables in this report.

Project Costs. The costs of individual projects were determined based on the best-available costs, either from the Transportation Improvement Program (TIP) or developed independently to increase consistency among the many projects (over 200 for roadway and over 450 for bicycle and pedestrian projects). However, caution should be used when using these cost figures outside of their intended, aggregate purpose in this MTP since they will not include many project-specific cost elements that are likely to elevate or change the costs during subsequent design, right-of-way acquisition, and construction.

Relevant U.S. Federal Code for Developing the Metropolitan Transportation Plan

For purposes of transportation system operations and maintenance, the financial plan shall contain system-level estimates of costs and revenue sources that are reasonably expected to be available to adequately operate and maintain the Federal-aid highways (as defined by 23 U.S.C. 101(a)(5)) and public transportation (as defined by title 49 U.S.C. Chapter 53).

For the purpose of developing the metropolitan transportation plan, the MPO(s), public transportation operator(s), and State shall cooperatively develop estimates of funds that will be available to support metropolitan transportation plan implementation, as required under §450.314(a). All necessary financial resources from public and private sources that are reasonably expected to be made available to carry out the transportation plan shall be identified.

The financial plan shall include recommendations on any additional financing strategies to fund projects and programs included in the metropolitan transportation plan. In the case of new funding sources, strategies for ensuring their availability shall be identified. The financial plan may include an assessment of the appropriateness of innovative finance techniques (for example, tolling, pricing, bonding, public private partnerships, or other strategies) as revenue sources for projects in the plan.

In developing the financial plan, the MPO shall take into account all projects and strategies proposed for funding under title 23 U.S.C., title 49 U.S.C. Chapter 53 or with other Federal funds; State assistance; local sources; and private participation. Revenue and cost estimates that support the metropolitan transportation plan must use an inflation rate(s) to reflect "year of expenditure dollars," based on reasonable financial principles and information, developed cooperatively by the MPO, State(s), and public transportation operator(s).

For the outer years of the metropolitan transportation plan (i.e., beyond the first 10 years), the financial plan may reflect aggregate cost ranges/cost bands, as long as the future funding source(s) is reasonably expected to be available to support the projected cost ranges/cost bands.

For illustrative purposes, the financial plan may include additional projects that would be included in the adopted transportation plan if additional resources beyond those identified in the financial plan were to become available.

- USC 23 Part 450.324

	Year	Sum of Letting Cost (Federal+State)	CPI Adj.	CPI Adj. Amount (Round)
Historic Data (LaDOTD)	2009	\$40,545,646	1.19	\$48,249,000
	2010	\$23,763,414	1.16	\$27,566,000
	2011	\$22,501,890	1.14	\$25,652,000
	2012	\$5,126,195	1.11	\$5,690,000
	2013	\$49,005,861	1.09	\$53,416,000
	2014	\$3,426,081	1.08	\$3,700,000
	2015	\$9,846,417	1.08	\$10,634,000
	2016	\$19,862,242	1.06	\$21,054,000
	2017	\$27,550,389	1.04	\$28,652,000
	2018	\$72,708,355	1.02	\$74,163,000

Table IM.1 | Historic Revenue Funding from LaDOTD

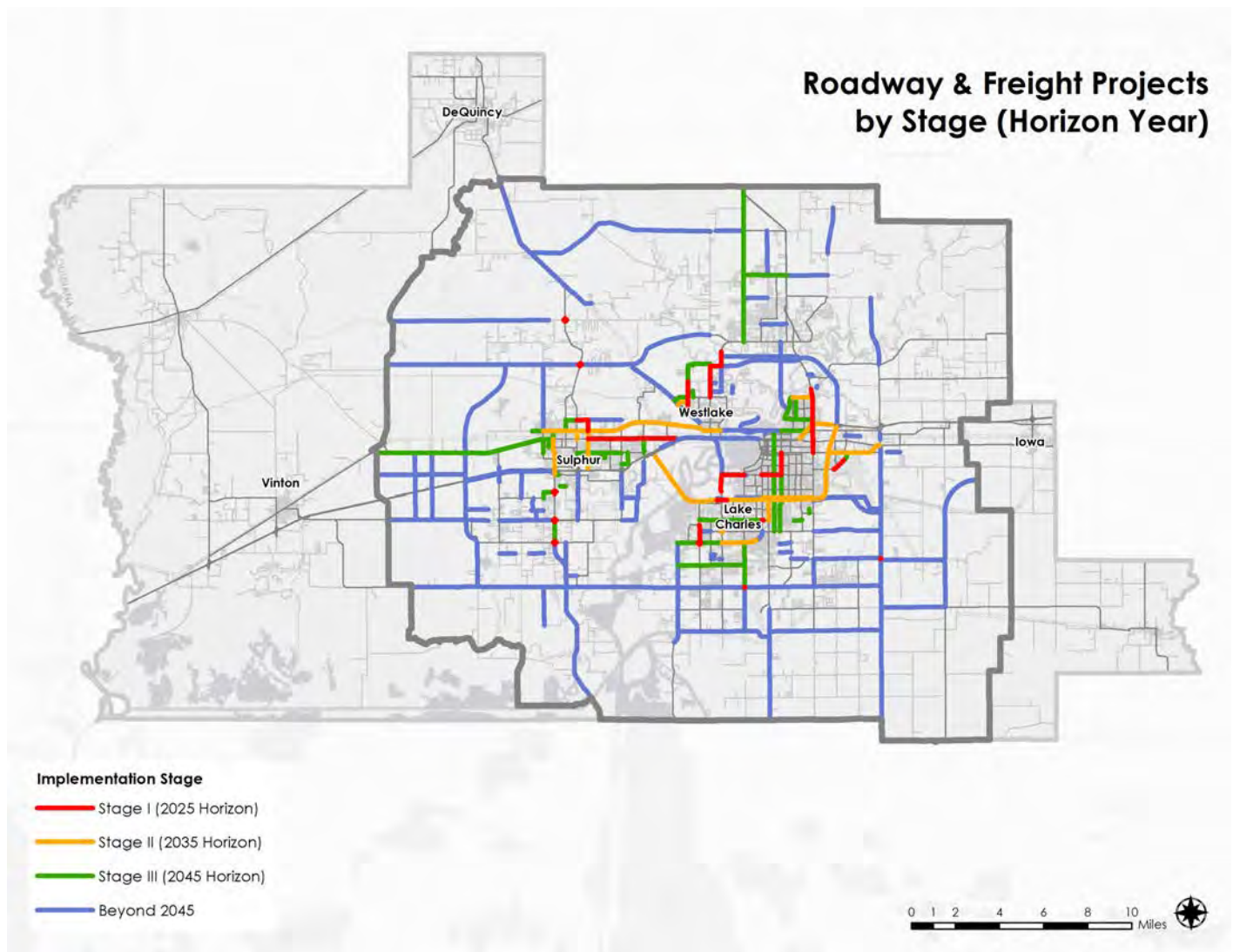


Figure PI.4 | Fiscally-Constrained Roadway & Freight Projects

Horizon Year		Year	CPI Adj. Amount (Round)	Inflation Adj: 2.5%	Infl. Adj. Amount (Rounded)	Horizon Year Totals
Forecast Data (Stantec, from Historic Trend)	Base Year NPV	2019	\$35,976,067	1.00	\$35,976,000	
		2020	\$43,314,493	0.98	\$42,232,000	
		2021	\$48,891,020	0.95	\$46,477,000	
		2022	\$55,137,857	0.93	\$51,105,000	
		2023	\$57,010,961	0.90	\$51,520,000	
		2024	\$69,063,716	0.88	\$60,852,000	
	Horizon Year 1	2025	\$72,440,309	0.86	\$62,231,000	\$350,393,000
		2026	\$74,659,025	0.84	\$62,534,000	
		2027	\$76,423,474	0.82	\$62,411,000	
		2028	\$77,346,167	0.80	\$61,586,000	
		2029	\$87,589,439	0.78	\$67,998,000	
		2030	\$91,534,627	0.76	\$69,285,000	
		2031	\$95,573,912	0.74	\$70,533,000	
		2032	\$99,501,309	0.72	\$71,596,000	
		2033	\$103,553,295	0.70	\$72,649,000	
		2034	\$106,768,006	0.68	\$73,032,000	
	Horizon Year 2	2035	\$111,379,848	0.67	\$74,281,000	\$685,905,000
		2036	\$116,223,232	0.65	\$75,574,000	
		2037	\$120,999,658	0.63	\$76,713,000	
		2038	\$125,386,227	0.62	\$77,506,000	
		2039	\$128,801,730	0.60	\$77,627,000	
		2040	\$133,112,303	0.59	\$78,220,000	
		2041	\$137,451,668	0.57	\$78,750,000	
		2042	\$141,832,077	0.56	\$79,228,000	
		2043	\$146,220,105	0.54	\$79,638,000	
	2044	\$150,621,822	0.53	\$79,984,000		
Horizon Year 3	2045	\$154,797,029	0.52	\$80,146,000	\$783,386,000	
TOTAL FORECAST			\$2,661,609,375		\$1,819,684,000	\$1,819,684,000

Table IM.2 | Revenue Forecast

Methodology. The revenue forecasts assume a consistent trend from historic expenditures (February 2008 to January 2019) obtained from LaDOTD. Trends assumed:

1. floating trend amount (i.e., not locked to historic data), and
2. CPI- and inflation (2.5%) adjustment factors to bring these values to Net Present Value.

Per federal requirements, the final figures must be shown in “year of expenditure” (YOE) amounts, implying that proposed project costs would incur adjustment factors of 1.07 for Stage I (107% of their current year cost estimate), 1.24 for Stage II, and 1.41 for Stage III projects. Amounts were totaled for two interim and the one plan horizon year (2045) and projects were assigned to near or longer term horizons based on current projects in development (impacting the 2025 horizon year primarily) and project priorities.

How did we do? A comparison of the ten planning factors in US Federal Code and the LCUA Metropolitan Transportation Plan.

There are 10 “planning factors” identified in federal law (USC 23 Part 450.360) that, while not required to be addressed in the Metropolitan Transportation Plan still provide a “guiding light” for many MPOs. Here’s how the Lake Charles Urbanized Area Metropolitan Transportation Plan addressed each planning factor, in brief.

Planning Factor	How was it Addressed in MTP?
Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency	Major road improvements on NHS streets and bridges
Increase the safety of the transportation system for motorized and non-motorized users	Integrated safety performance in project selection, policies that emphasize crash reduction (Vision Zero)
Increase the security of the transportation system for motorized and non-motorized users	Safety measures, crash studies (by mode), CPTED security recommendations as well as safety
Increase accessibility and mobility of people and freight	All infrastructure recommendations, focused freight priority factor
Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns;	Resiliency priority factor in project selection derived from a land use suitability analysis, recommendations to avoid or mitigate development in less-suitable areas
Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight	Connectivity project factor included in project prioritization
Promote efficient system management and operation	Several recommendations for policy and bottleneck projects
Emphasize the preservation of the existing transportation system	Land suitability project factor, maintenance project funding assumed
Improve the resiliency and reliability of the transportation system and reduce or mitigate stormwater impacts of surface transportation	Resiliency factor specifically included, several policy recommendations included
Enhance travel and tourism	Destinations and regional transit service recommendations included

Table IM.3 | Planning Factors in LCUA Metropolitan Transportation Plan

Implementation Strategies

This section of the Metropolitan Transportation Plan deals extensively with project revenues, but project revenues are not fixed. Major projects being funded can make the revenues spike; some years have relatively few larger projects so the totals look much lower at those times. Implementing transportation projects requires both prioritization of available funds as well as implementation strategies that are effective for the context and time in which those expenditures are to occur. This page describes several implementation strategies going forward for the Lake Charles MPO to explore with its partnering agencies.

Maintain and Explain. The MTP is required to be updated every five years, implying that a new update cycle will begin in 2022 or even sooner. However, the Steering Committee has recommended that a clear process for amending the TIP be instituted and that an accurate database of both MTP and TIP-specific projects be maintained and transparently available to the public (e.g., on-line mapping).

The I-10 Dilemma. The I-10 bridge replacement and accompanying widening is a massively expensive but necessary proposed project. Whether it be funded through a public-private partnership or some other mechanism, the I-10 improvements should not unnecessarily delay other important projects as large diversions of funds are moved to support its construction.

Prepare and Preserve. The Calcasieu Parish has purchased properties for right-of-way of future road corridors. This idea is an excellent one, as right-of-way acquisitions are typically the fastest-escalating cost in growing urban areas - and potentially the most contentious and time-consuming action taken.

Plan Now, Pay (Less) Later. Projects that might draw from federal or state funds should follow clear guidelines during corridor planning to help minimize delays from environmental reviews and permitting later.

Alternative Revenue Sources. A number of factors, including more fuel-efficient vehicles, fewer newly licensed drivers, and rising costs translate into less resource being applied to transportation projects over time in many areas.

Bonding. The TIMED program, while plagued with delays, was nevertheless successful in generating revenues for transportation projects from 1989 to 2016. Financing was conducted through two bond lettings in that time period backed by a four-cent gas tax increase.

State Fuel Tax Increase. Louisiana has the 43rd-highest gas tax (\$.2001) as of mid-2018, and a figure that has remained unchanged for decades. With low fuel prices generally (approximately \$2.30/gallon as of this writing), the state legislature could support an inflation-adjusted fuel tax in line to a rate comparable with other Southeastern states like Florida, Tennessee, Georgia, North Carolina. This action would require a consolidated effort to brave the likely backlash by anti-tax-at-any-cost interests. Some have also noted the possibility of not being able to take advantage of federal funds due to a lack of matching dollars from the state - giving back federal money that belongs to Louisiana further decreases needed resources.

Grants. Both INFRA and BUILD (formerly TIGER) grants have had success in Louisiana, although typically for projects in the \$5million to \$45million range. Project design needs to contemplate what these grant requirements and criteria focus on to optimize an award in a very competitive marketplace.

Other Opportunities. Improving the capital input to the recent (2015) State Infrastructure Bank, TIFIA loans, and greater participation by the private sector during site development are other options in use now that can be enhanced to increase revenues and accelerate transportation project delivery.

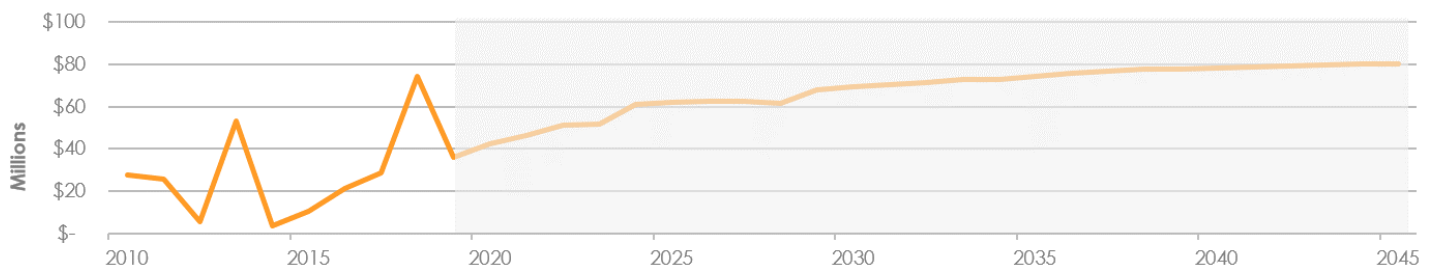


Figure Pl.5 | Federal and State Expenditures, 2010-2045 (shaded area is trend)

Hot Spot Concept Design

Recommendations and Policy in Action

Concept-level design treatments for roadway, walking/biking, and land use relationship improvements have been prepared to demonstrate a higher level of detail for specific high priority projects. The intent is to highlight specific projects within the planning area that were selected by Steering Committee and staff as “High Priority.” These eight concept areas were reviewed on multiple occasions by the Steering Committee as well as individual meetings conducted with local government staff.

Information contained in the concept designs could be used by local champions to lobby for future funding and ultimately, full implementation.

This innovative program leverages alternative funding sources to administer and implement smaller type projects that are less likely to compete for significant at the level of major mobility type projects.

Hot Spot Concepts Designs

1. Beglis Parkway
2. US Highway 171/N MLK Highway and LA Highway 378/Theriot Road
3. Highway 378 and John Stine Road
4. Highway 27/Beglis Parkway and West Houston River Road
5. Enterprise Boulevard and Broad Street
6. Ryan Street
7. McNeese Street and Highway 14/Gerstner Memorial Boulevard
8. Center Street (Vinton, outside of the MPO)

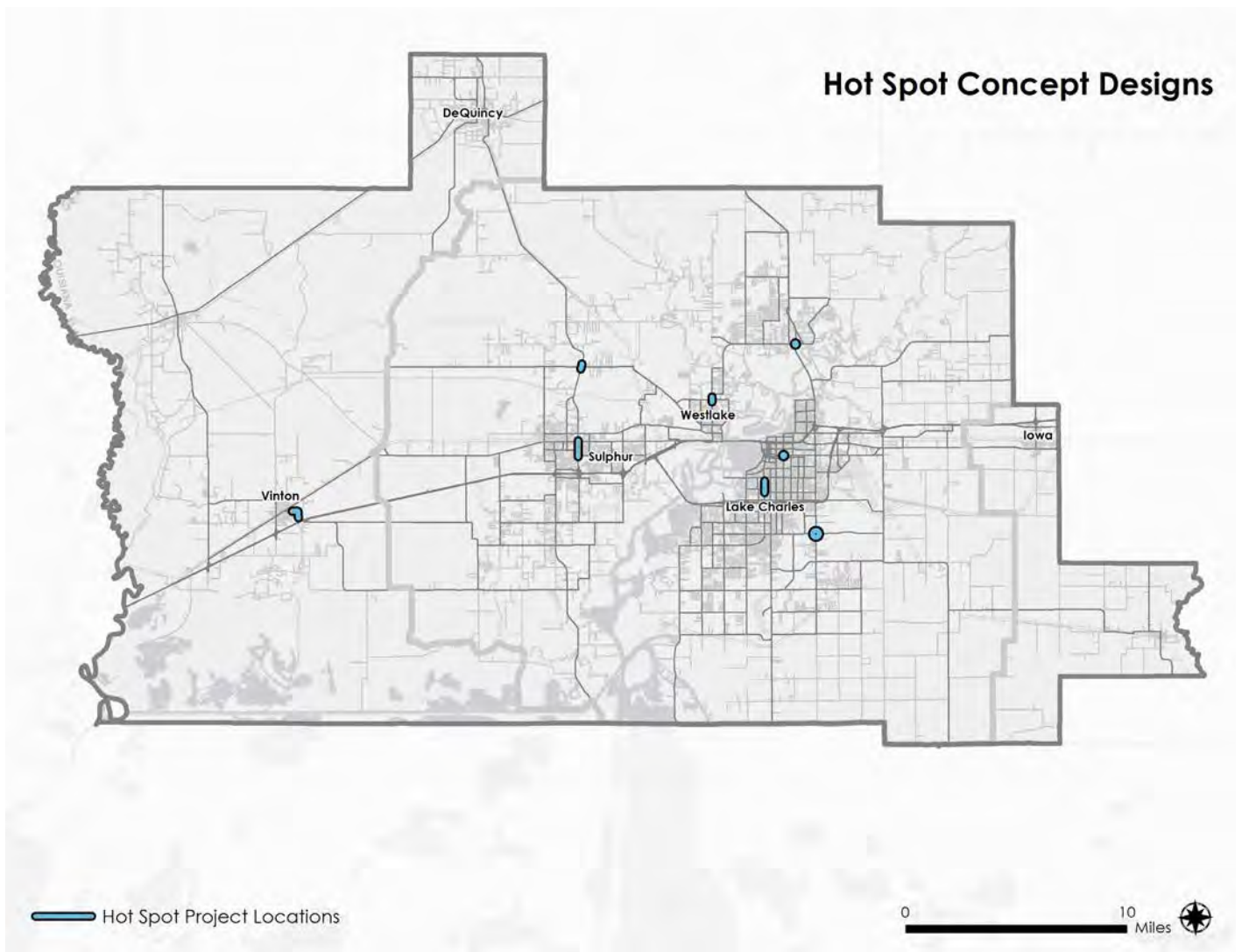


Figure Pl.6 | Hot Spot Location Map

Beglis Parkway Corridor Improvements

City of Sulphur



Problem Statement	Design Considerations	Recommendations
<p>Beglis Parkway is a 5-lane arterial that serves a middle school, residential neighborhoods, and commercial/retail uses. Beglis Parkway needs capacity upgrades at key intersections to provide safe crossing for pedestrians and students.</p>	<ul style="list-style-type: none"> • Reduce vehicle speeds and limit left turns • Improve safety for students crossing Beglis Parkway • Connect gaps within sidewalk network • Integrate bicycle lanes • Connect with potential future transit service to the north (US 90) • Designated evacuation and freight route 	<ul style="list-style-type: none"> • Consolidation of driveways without limiting access • High-visibility crosswalk locations, with pedestrian-phased signals at intersections and improved lighting • Planted median to limit left turning movements and reducing vehicle speed

Project Length:

0.75 miles

Probable Construction Costs:

\$4.1 million

Note: Assumes no Right-of-Way acquisition





Figure PI.7 | Beglis Parkway Existing Conditions

Legend

- ADA Ramp
- Pedestrian Signal
- Planted Median
- Overhead Lighting
- Pedestrian Lighting

Design Features

- A. Pedestrian-Scale Lighting – Supporting economic development and security objectives



Figure PI.8 | Beglis Parkway Proposed Improvements

US Highway 171/N MLK Highway and LA Highway 378/Theriot Road Intersection Improvements



Moss Bluff

Problem Statement	Design Considerations	Recommendations
<p>The intersection of N. Martin Luther King Hwy and Highway 378 lacks pedestrian facilities to safely cross this intersection or walk along it.</p>	<ul style="list-style-type: none"> • Reduce vehicle speeds • Improve pedestrian visibility and safety at the intersection • Marked crosswalks with pedestrian refuge islands to decrease total length of crossing • Integrate bicycle lanes along US 171 and connect with River Bluff Park trail along Theriot Road • Designated evacuation and freight route 	<ul style="list-style-type: none"> • High visibility crosswalks and pedestrian signals • Planted medians adjacent to left turn lanes • ADA ramps at all crossings • Sidewalk connections • Consolidation of driveways without limiting access • Improved lighting

Probable Construction Costs: \$2.2 million
Note: Assumes no Right-of-Way acquisition



Figure PI.9 | US 171 and LA 378 Existing Conditions

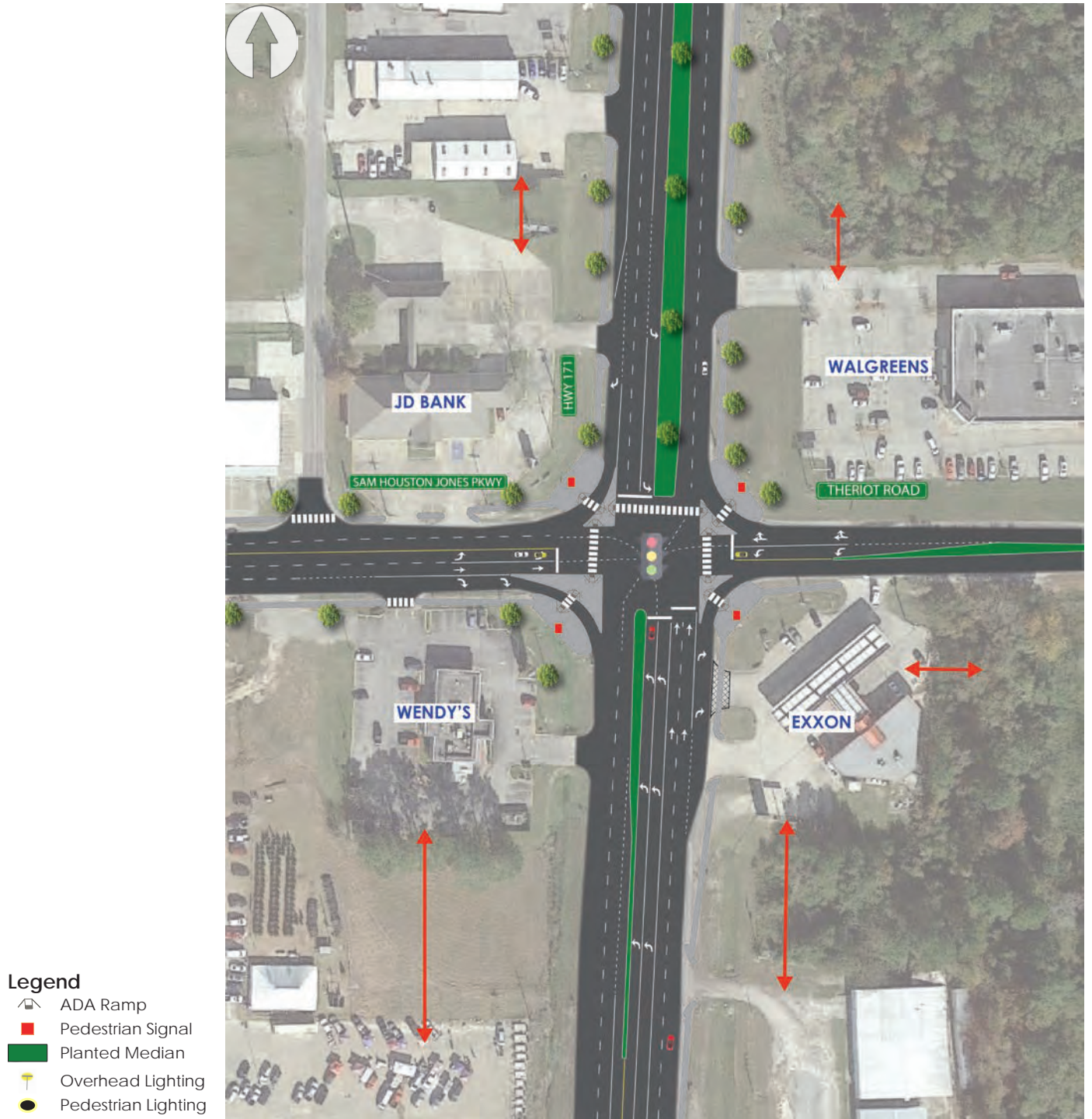


Figure PI.10 | US 171 and LA 378 Proposed Improvements

Highway 378 and John Stine Road Intersection Improvements



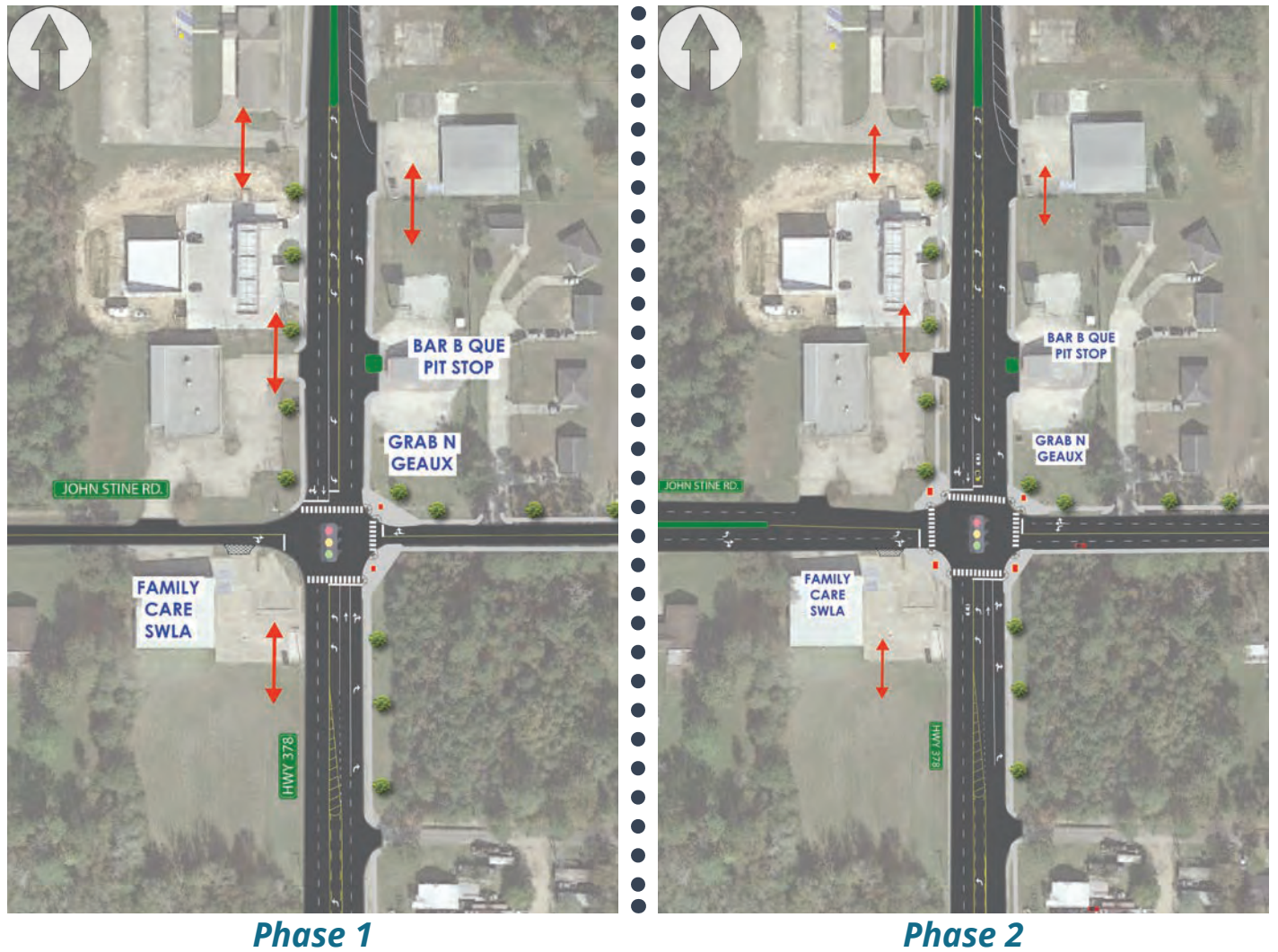
City of Lake Charles

Problem Statement	Design Considerations	Recommendations
<p>The intersection of Highway 378 and John Stine Road is located within unincorporated Calcasieu Parish and has different needs than an urban intersection.</p>	<ul style="list-style-type: none"> • Two-phase approach, with initial focus on mobility, safety, and connectivity between developments • Second phase improves roadway capacity along John Stine Road and provides additional pedestrian facilities on all four corners • Integrate bicycle lanes along John Stine Road 	<ul style="list-style-type: none"> • High visibility crosswalk markings at intersections • Permeable pavement sidewalks to mitigate stormwater runoff • Driveway consolidation of Family Care SWLA • Internal driveway connections between adjacent properties

Probable Construction Costs: \$1.1 million
Note: Assumes no Right-of-Way acquisition



Figure PI.11 | US 171 and LA 378 Existing Conditions



Legend






-  ADA Ramp
-  Pedestrian Signal
-  Planted Median
-  Overhead Lighting
-  Pedestrian Lighting

Figure PI.12 | US 171 and LA 378 Proposed Improvements

Highway 27/Beglis Parkway and West Houston River Road Intersection Improvements

City of Sulphur



Problem Statement	Design Considerations	Recommendations
<p>The intersection of Highway 27 and W Houston River Road is located in an unincorporated area, north of the City of Sulphur.</p>	<ul style="list-style-type: none"> • Planning for future roadway capacity needs • Improved turning movements and intersection geometry • Reduce vehicle speeds through intersection • Integrate bicycle lanes along Highway 27 • Designated evacuation and freight route 	<ul style="list-style-type: none"> • Planted medians • Improved lighting and safety • Multiuse sidepath along west side of N Beglis Parkway, with marked crosswalk • Additional westbound turn lane on Houston River Rd

Probable Construction Costs: \$1.3 million
Note: Assumes no Right-of-Way acquisition



Figure PI.13 | Beglis Pkwy and West Houston River Rd Existing Conditions

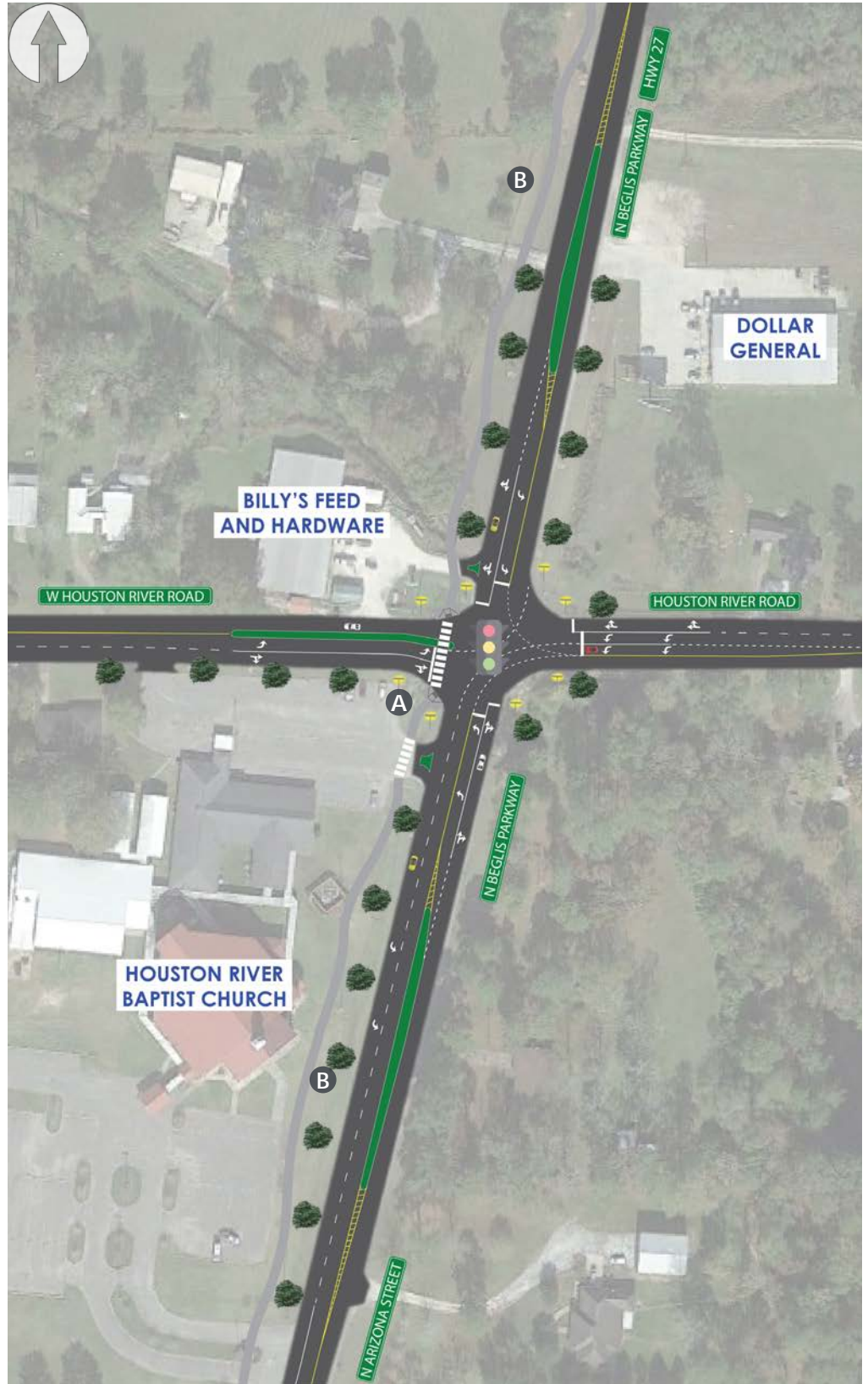


Figure PI.14 | Beglis Pkwy and West Houston River Rd Proposed Improvements

Enterprise Boulevard and Broad Street Intersection Improvements



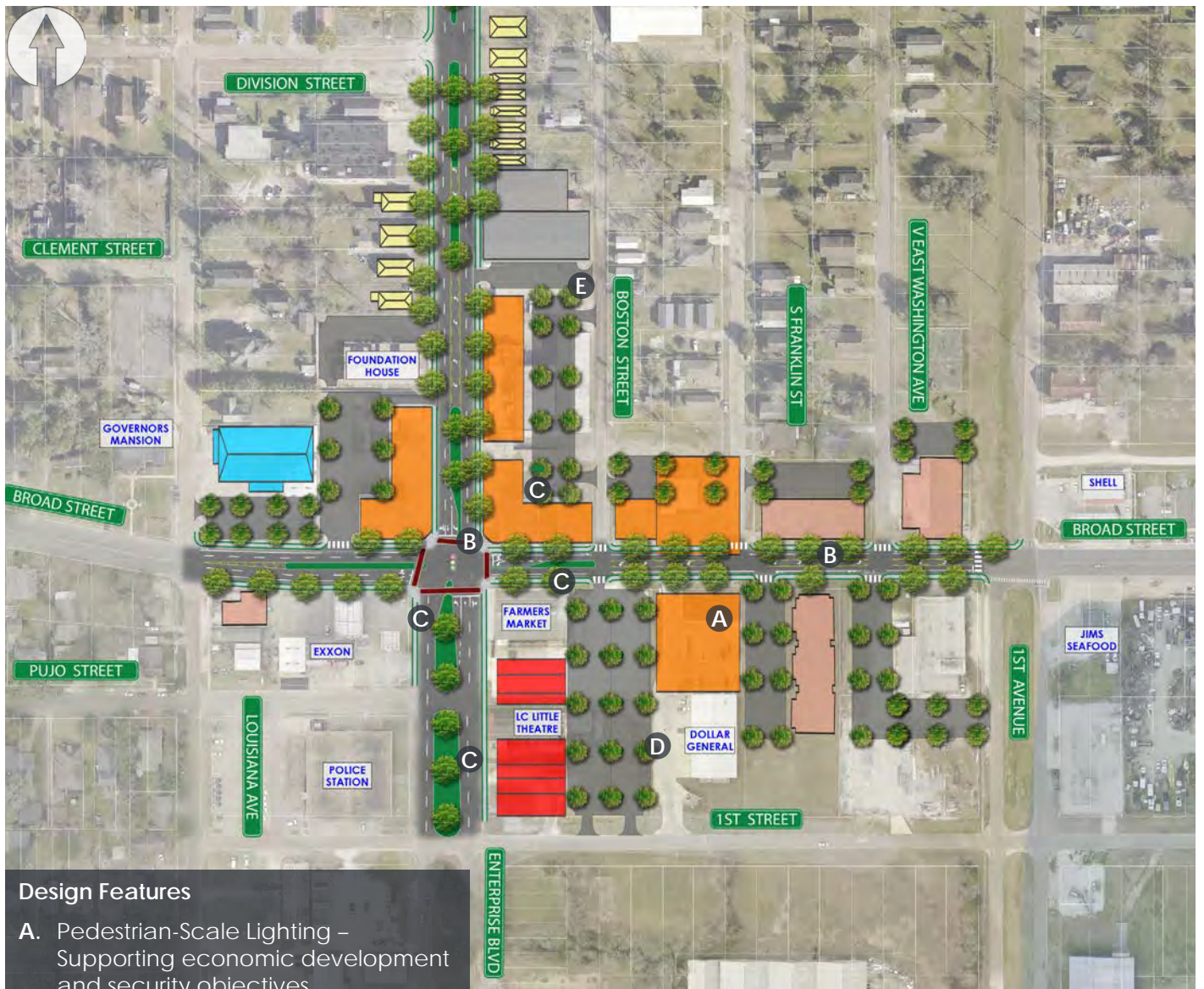
City of Lake Charles

Problem Statement	Design Considerations	Recommendations
<p>The intersection of Enterprise and Broad Street located in the heart of Lake Charles is prime for a mixture of redevelopment opportunities that increase density.</p>	<ul style="list-style-type: none"> • Improved visibility for pedestrians at crossing locations • Served by three existing transit routes • Integrate bicycle lanes along Broad Street • Opportunity for increased density of development and transit ridership potential 	<ul style="list-style-type: none"> • Promote walkability with streetscape beautification • Contribute to resiliency through permeable pavement and/or raingarden for stormwater infiltration • Vertical mixed-use development (residential/office over ground floor retail) • Planted medians and brick stamped marked crosswalks

Probable Construction Costs: \$1.7 million
Note: Assumes no Right-of-Way acquisition



Figure PI.15 | Enterprise Blvd and Broad St Existing Conditions



Design Features

- A. Pedestrian-Scale Lighting – Supporting economic development and security objectives
- B. Zero Lot-Line Buildings / Rear Access Parking – Designing for Pedestrians and Cyclists
- C. Transit Stop Furniture / Lighting – Connecting community with better transit
- D. Landscaping in Parking Areas – supports resiliency and stormwater management objectives
- E. Redevelopment of Existing Buildings

Legend

- ADA Ramp
- Pedestrian Signal
- Planted Median
- Overhead Lighting
- Pedestrian Lighting
- Single Family Home
- Commercial/Office
- Commercial/Retail
- Library/Institution

Figure PI.16 | Enterprise Blvd and Broad St Proposed Improvements

Ryan Street Corridor Improvements

City of Lake Charles



Problem Statement	Design Considerations	Recommendations
<p>Ryan Street is a 4-lane arterial and commuter route with retail, restaurants, and commercial uses that supports the residential neighborhoods adjacent to it. Ryan Street lacks basic pedestrian amenities, speed control measures, and streetscaping elements.</p>	<ul style="list-style-type: none"> • Potential road diet to reduce vehicle speeds and provide bicycle lanes • Add multi-modal facilities such as bicycle lanes and improved sidewalks • Improve pedestrian safety at intersection crossings • Opportunities for redevelopment along the corridor • Integrate with potential future transit service 	<ul style="list-style-type: none"> • Road diet with planted medians and bike lanes • Pedestrian-scale lighting and pedestrian crossing signals • Access management of commercial driveways • Vehicle-scale lighting • Mixed use development in key locations

Probable Construction Costs: \$3.4 million
Note: Assumes no Right-of-Way acquisition



Design Features

- A. Pocket Park – Opportunity for stormwater infiltration
- B. Pedestrian-Scale Lighting – Supporting economic development and security objectives
- C. Zero Lot-Line Buildings / Rear Access Parking – Designing for Pedestrians and Cyclists
- D. Transit Stop Furniture / Lighting – Connecting community with better transit
- E. 8th Street Realignment
- F. Townhome Infill



Figure Pl.17 | Ryan Street Existing Conditions



- Legend**
- ADA Ramp
 - Pedestrian Signal
 - Planted Median
 - Overhead Lighting
 - Pedestrian Lighting
 - Townhomes
 - Mixed Use/Multifamily
 - Commercial/Office
 - Commercial/Retail

Figure Pl.18 | Ryan Street Proposed Improvements

McNeese Street and Highway 14/ Gerstner Memorial Boulevard Intersection Improvements

City of Lake Charles



Problem Statement

The intersection of McNeese and Highway 14 is located in the southeast portion of the City of Lake Charles, which is anticipating rapid growth upon the completion of a new water plant to add capacity for new development. Adjacent to elementary school and multi-sport complex.

Design Considerations

- Primarily development will be housing
- Improved pedestrian safety at marked crosswalks
- Resiliency elements for stormwater infiltration
- Potential development that faces the roadway, with rear parking and internally-connected driveways
- Integrate bicycle lanes along Highway 14
- Phased future development opportunities
- Designated evacuation and freight route

Recommendations

- Quadrant intersection design to limit left turning movements and improve safety
- Roadway capacity improvements
- High visibility crosswalks, lighting, and pedestrian signals at intersections
- Commercial and residential development with protected green space
- Permeable pavement sidewalks and 10 ft multiuse path on south side of E. McNeese.

Probable Construction Costs:

\$10.1 million

Note: Assumes no Right-of-Way acquisition



Figure PI.19 | McNeese St and Gerstner Memorial Blvd Existing Conditions



Design Features

- A. Proposed Zoning – Opportunity for planned residential development and protected green space
- B. Pedestrian-Scale Lighting – Supporting economic development and security objectives
- C. Zero Lot-Line Buildings / Rear Access Parking – Designing for Pedestrians and Cyclists
- D. Transit Stop Furniture / Lighting – Connecting community with better transit
- E. Landscaping in Parking Areas – supports resiliency and stormwater management objectives
- F. Permeable Pavement / Raingarden
- G. Greenway / Trail / Multiuse Path
- H. Grocery Store

Legend

- ADA Ramp
- Pedestrian Signal
- Planted Median
- Overhead Lighting
- Pedestrian Lighting
- Single Family Home
- Townhomes
- Commercial/Office
- Commercial/Retail

Figure PI.20 | McNeese St and Gerstner Memorial Blvd Proposed Improvements



Appendix

APPENDIX CONTENTS - DIGITALLY AVAILABLE

- A* • Public Outreach Survey Results
- B* • Prioritized Roadway and Freight Projects
- C* • Prioritized Pedestrian and Bicycle Projects
- D* • Fiscally-Constrained Project List
- E* • Public Comments on Draft MTP

LAKE CHARLES MPO

Founded in 1972, IMCAL serves as the Regional Planning Commission for Southwest Louisiana. To spend federal funds on local roads, federal legislation requires “urbanized areas” with populations over 50,000 to have a continuing, cooperative, and comprehensive transportation planning process managed by a Metropolitan Planning Organization (MPO). An “urbanized area” can often include multiple municipalities. The Lake Charles MPO includes the City of Westlake, the City of Sulphur, the City of Lake Charles, and the surrounding urbanized portions of Calcasieu Parish such as Moss Bluff, Carlyss, and other development occurring in adjacent to the incorporated cities just mentioned.

MORE INFORMATION



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Quest Corporation