TRANSPORTATION STRATEGIES
This chapter provides a description of the process used to develop a fiscally unconstrained plan for meeting the transportation needs of the community. Given the limited availability of funding to meet all of the needs identified in the Needs Identification chapter, both “build” and “no-build” strategies to address unmet needs are considered in the unconstrained plan. Applying fiscal constraints to the process and creating a financially constrained plan are described in Chapter 7.

No-Build Strategies for Addressing Unmet Needs

It is virtually impossible to build added capacity projects to address every need identified in the region. This is the case not only because of funding constraints, but also because some identified needs are best met through the adoption of “no-build” strategies. Therefore, the LRTP planning process included the consideration of no-build strategies – such as alternative growth scenario planning, travel demand management, and transportation system management and operations – in addition to facility construction projects.

Scenario Planning

The goal of scenario based planning is to provide policy makers, stakeholders, and interested parties – including the general public – with an understanding of the interaction between land use and transportation decisions. This practice helps to catalog the choices and tools available to the community to help realize an ultimate vision for the study area that incorporates a broad spectrum of regional goals. For the 2040 LRTP, scenario planning was accomplished through utilization of the travel demand model, which was used to test the outcomes of different potential land use and transportation improvement scenarios. The travel demand model produced a number of performance measures for each scenario that were compared to both the 2010 Base Year scenario and also to each other to forecast a conceptual picture of the possible conditions of the regional transportation network under different circumstances. These performance measures include vehicle miles traveled (VMT), vehicle hours traveled (VHT), average speed, total regional daily delay for the highway and arterial networks, and average regional congestion index (a measure of regional traffic density).
Regional measures of VMT, VHT, and delay quantify the total number of vehicle miles or hours traveled or the total vehicle delay (in vehicle-hours) in the region for an entire day (24 hours). The combination of the various measures provide insight into how the transportation system will perform under each scenario and allow decision-makers and stakeholders to compare alternative policy decisions related to the interaction of transportation and land use.

Alternative Growth Scenarios

Communities benefit when decisions about transportation and land use are made with the other in mind. Land use factors such as density, regional accessibility, and mix of land uses affect travel behavior, including how many trips people make, how far they travel, the mode they choose, and the way they get from Point A to Point B. Conversely, transportation infrastructure impacts land use demand, choices, and patterns. Compact development with a mix of land uses and a well-connected street network, including facilities for walking or biking, provides more transportation choices and may reduce the need for costly investments in larger scale transportation infrastructure. To better understand how land use policies that encourage certain land use patterns might improve the performance of the transportation system and reduce the need for investment, several growth scenarios were analyzed using the travel demand model, including a Current Growth Trends scenario, a Downtown High Growth scenario, and a Transit Oriented Development (TOD) scenario.

Current Growth Trends

Land use development patterns in Bossier and Caddo Parishes are similar to those in many regions across the nation, with most recent growth occurring outside the city centers in more suburban communities. Land uses outside the central business districts of Shreveport and Bossier City tend to be separated, with residential development concentrated in certain areas and commercial development in others. Development densities also tend to be lower in suburban areas, making public transportation services less viable. As a result of these factors, individuals living or working in these areas tend to be more reliant on a personal vehicle for the majority of their trips. Trip distances also tend to be longer, making it difficult for individuals to walk or bike to complete their daily activities.
Figure 5-1: 2010-2040 Population Growth
Smart Growth Alternatives

Smart growth generally refers to the protection and preservation of valuable natural and cultural resources through encouragement of more compact development patterns that optimize use of existing transportation infrastructure. Smart growth development is characterized by higher population and employment densities and a mix of land uses, which increases the viability of public transportation, walking, and biking as transportation modes. Since smart growth principles encourage redevelopment and infill development of existing areas, investment in the transportation system is focused on the maintenance and operation of existing roadway infrastructure and providing safe opportunities to travel by bike or foot, rather than on building costly new roadways in previously undeveloped areas.

It is important to note that smart growth does not mean building dense high-rise structures or pitting transit or any other modes against highways. Instead, smart growth is about tailoring choices for individual settings. For example, in a suburban or rural community, smart growth may mean building smaller detached homes on smaller lots within walking distance of schools and other amenities. Smart growth encourages the development of a balanced intermodal transportation system that allows for the efficient and economical movement of people and goods. In some areas that may mean more transit, in other areas it may entail roadway improvements.

Both the Downtown High Growth and the TOD scenario are based on smart growth principles. The Downtown High Growth scenario assumes higher than anticipated growth in both population and employment in the central business district over the next 25 years, while the TOD scenario assumes higher than anticipated growth along select transit corridors throughout the region. The project team designed and analyzed these scenarios to support multiple goals of this LRTP including:

- Identifying the need for land use policies that steer new development to areas with adequate/underutilized infrastructure; and
- Studying the need for and acceptability of smart growth and infill land use policies.
Downtown High Growth Scenario

In many cities across the nation, the vibrancy that once characterized downtown areas is returning today. Young people and “empty-nesters” are increasingly choosing to live downtown to take advantage of the abundance and proximity of amenities and the ease of getting around without a car. To test the impacts of a downtown high growth scenario on the existing transportation system, the demographic inputs to the travel demand model for the year 2040 were adjusted to reflect higher population and employment densities in select TAZs in the downtown core, which includes parts of both Shreveport and Bossier City. The population and employment in these TAZs was increased to reflect density levels characteristic of “high density mixed use.” The population and employment in the TAZs adjacent the central business district was increased to reflect density levels characteristic of “medium density mixed use” to simulate a tapering off of density going out from the core. To ensure the control totals for the NLCOG region remained the same, an across-the-board factor was applied to the remaining TAZs to reduce their population and employment to account for the increased growth in the downtown core. Figure 5-2 shows the TAZs that received increase population and employment densities to produce the Downtown High Growth Scenario.

Figure 5-2: Downtown Growth Scenario TAZs
Transit Oriented Development Scenario

Transit-oriented development (TOD) is a type of community development pattern that includes a mixture of housing, office, retail, and/or other amenities integrated into a walkable neighborhood with access to public transportation. This strategy is aimed at providing increased density and a mix of land uses in order to encourage transit ridership, walkability within the site itself, and a reduction in auto dependency. The TOD land use scenario was created to test the effects of this strategy on the transportation system in the NLCOG region. A method similar to that used in the creation of the Downtown High Growth Scenario was employed to create the TOD land use scenario – however, densities were increased for TAZs within close proximity to a hypothetical future transit system rather than in the downtown core. Because this scenario involved TAZs outside the downtown core, a range of employment densities were applied to impacted TAZs to provide more reasonable growth increments to the TAZs with low base year densities – i.e. TAZs with the lowest 2010 employment densities received a lower goal density than those that had higher 2010 employment densities. Figure 5-3 shows the hypothetical future regional transit system and the TAZs selected for increased density1.

Figure 5-3: TOD Growth Scenario TAZs

1 Note that two TAZs were removed from the selection, as they contain Barksdale Air Force Base and Shreveport Regional Airport, whose population and employment densities are unlikely to be significantly influenced by local or regional land use policies.
Results

Though to varying degrees, under all scenarios, VMT, VHT, and delay measures are expected to increase by 2040, while the regional congestion index is expected to decrease. Additionally, at a regional scale, average speed will change very little under all scenarios. The following sections summarize additional key findings of this analysis; more detailed results can be found in the Technical Supplement.

Current Growth Trends Scenario

By 2040, if land use development patterns remain the same and no transportation improvements are implemented beyond what is already committed, VMT and VHT are expected to increase by 29% and 44%, respectively. Additionally, total regional highway daily delay would increase by 130%, while delay on the arterial network would increase by 154%. This scenario also predicts the least reduction in the regional congestion index at 2.5%. These results indicate that more people will be driving and/or that people will be driving farther, and that, on the whole, trips will take longer. This means more congestion as a result of people driving longer distances to reach destinations that are farther apart and/or to avoid congestion-induced bottlenecks on the transportation system.

Alternative Land Use Scenarios

As described previously, the alternative land use scenarios tested the potential impacts of changes in land use development patterns on the future transportation system. These scenarios did not incorporate any additional transportation improvements beyond those already committed. Both the Downtown High Growth and TOD land use scenarios could support increased efficiencies in the transit system as a result of growth being concentrated in areas where transit service is within walking distance.

The following sections discuss the projected performance of the alternative land use scenarios, while Tables 5-1 and 5-2 provide an overview of the scenario results.

### Table 5-1: Percent Difference between 2010 and Future Land Use Scenarios

<table>
<thead>
<tr>
<th>Scenario Group</th>
<th>VMT</th>
<th>VHT</th>
<th>Average Speed</th>
<th>Total Regional Hwy Daily Delay</th>
<th>Total Regional Arterial Daily Delay</th>
<th>Regional Congestion Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010 Base</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Current Trends</td>
<td>29.0%</td>
<td>44.1%</td>
<td>-0.1%</td>
<td>130%</td>
<td>154%</td>
<td>-2.5%</td>
</tr>
<tr>
<td>Downtown High Growth</td>
<td>27.2%</td>
<td>44.4%</td>
<td>-0.3%</td>
<td>140%</td>
<td>165%</td>
<td>-3.1%</td>
</tr>
<tr>
<td>TOD</td>
<td>15.5%</td>
<td>24.6%</td>
<td>-0.3%</td>
<td>112%</td>
<td>64%</td>
<td>-6.9%</td>
</tr>
</tbody>
</table>

### Table 5-2: Percent Difference between Current Trends and Alternative Future Land Use Scenarios

<table>
<thead>
<tr>
<th>Scenario Group</th>
<th>VMT</th>
<th>VHT</th>
<th>Average Speed</th>
<th>Total Regional Hwy Daily Delay</th>
<th>Total Regional Arterial Daily Delay</th>
<th>Regional Congestion Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Trends</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Downtown High Growth</td>
<td>-1.37%</td>
<td>0.18%</td>
<td>-0.15%</td>
<td>4.61%</td>
<td>4.26%</td>
<td>-0.58%</td>
</tr>
<tr>
<td>TOD</td>
<td>-10.46%</td>
<td>-13.56%</td>
<td>-0.19%</td>
<td>-7.69%</td>
<td>-35.37%</td>
<td>-4.58%</td>
</tr>
</tbody>
</table>
Downtown High Growth Land Use Scenario

The Downtown High Growth land use scenario produced similar results as those predicted for the current trends scenario. Based on TDM forecasts, this scenario would result in the highest increases in the delay measures from 2010 to 2040 predicting an increase in total regional highway daily delay of 140% and an increase in total regional arterial daily delay by 165%. However, the TDM does not account for the potential for people to switch to a non-motorized mode (bicycling or walking) as a result of supportive infrastructure, amenities such as grocery stores, and land uses described in the discussion about smart growth. As such, these results illustrate the potential regional congestion that is possible if growth is concentrated in the central business districts but no infrastructure and amenity improvements are made to support the shift in population density and use of non-motorized travel modes.

Transit Oriented Development Land Use Scenario

Among the alternative land use scenarios, the TOD scenario resulted in the least amount of increase in VMT, VHT, and total regional daily delay as well as the highest reduction to the average regional congestion index between 2010 and 2040. Based on these results, under this scenario total regional daily delay would be almost 8% less for highways and about 35% less for arterials than under the current trends scenario in 2040, while VMT and VHT would be over 10% less and over 13% less, respectively, than under the current trends scenario in 2040.

Multiple factors might contribute to these results: the scenario concentrates growth, but not in one area; it might concentrate the growth in areas with adequate/underutilized roadway capacity; it supports an increase in transit system ridership by concentrating growth within walking distance of transit service; and may result in an increase in intrazonal trips, i.e. trips with an origin and destination within the same TAZ.

Travel Demand Management

Travel demand management (TDM) strategies seek to reduce congestion on existing roadways by reducing the overall number of cars using roads or by redistributing cars away from congested areas and peak periods of travel. Encouraging the use of alternative modes of transportation (such as transit, biking, or walking) and increasing the number of travelers in each vehicle are the primary ways in which TDM strategies reduce single-occupant vehicle demand on existing roadways. Put otherwise, travel demand can be managed by providing travelers with a wide range of choices for reaching their destination.

With fewer funds available to address congestion through new roadway capacity, TDM is a cost effective means to improve the transportation system. TDM strategies are designed to accomplish the following:

- **Improve mobility and accessibility** by expanding and enhancing the range and quality of available travel choices;
- **Reduce congestion and improve system reliability** by decreasing the number of vehicles using the roadway system and by redistributing demand away from peak periods and existing bottlenecks;
- **Increase safety** by addressing congestion, which is generally related to higher occurrences of traffic incidents; and
- **Improve air quality** by reducing the number of vehicle miles traveled, thereby saving energy, and by decreasing the number of short trips that are largely responsible for the proportion of emissions generated from cold starts.
As revealed through the transit needs assessment performed in Chapter 4, there are several destinations outside the current fixed-route transit network where expanded transit service could be explored as a transportation demand management solution. Louisiana Tech Shreveport and Wiley College, both of which are located in west/southwest Shreveport and both of which have an enrollment greater than 1,000 students, would be well served by transit. Harrah’s Horseshoe Casino and Hotel in Bossier Parish employs nearly 2,000 workers and is located outside the transit coverage area. Promise Hospital of Louisiana – Shreveport and its 196 beds are located just outside the service coverage area. Finally, the State of Louisiana Department of Civil Service in Benton with 1,600 employees presents an opportunity to expand service to Benton (which is also the location of the administrative offices of the Bossier Parish School Board) and potentially serve commuters both leaving and coming into the town.

As a parallel effort to the LRTP, NLCOG and SporTran are developing a public transportation master plan that will completely restructure the regional fixed-route transit system, improve efficiency, and increase the frequency of buses on some of the most heavily traveled routes without significantly increasing cost. By increasing frequency along key routes, SporTran can improve the service reliability for individuals using transit to reach destinations, which could lead to higher ridership and overall enhancement of regional mobility without the need for additional roadway capacity. The results of that planning process can be found on the NLCOG Listens website.

Bicycle and Pedestrian

Conversations with local stakeholders and the public revealed a strong desire for improved and expanded pedestrian and bicycling opportunities in the region. Indeed, when given the opportunity to rank the importance of various transportation project evaluation criteria, the public ranked “increased multi-modal options” as their number one criterion. In the needs assessment phase of this plan, however, bicycling conditions in the NLCOG region were generally found to be of low quality, with a lack of bike lanes or other dedicated facilities and high posted speed limits, especially on rural roads. Similarly, pedestrian conditions were found to be of average quality, with missing, incomplete, or damaged sidewalks frequently observed, along with a lack of traffic calming features and crosswalks at intersections.

This section provides an overarching framework for creating a more robust pedestrian and bicycling network over time. This framework includes policy and programmatic recommendations, a strategy for prioritizing and selecting projects, and design guidance for implementing bicycle and pedestrian facilities that will contribute to a safer and more efficient regional active transportation network.
Policy and Program Strategies

This section outlines several policy and programmatic strategies for improving active transportation options in the NLCOG region. Recommended strategies are organized into six broad categories:

- Regional Safety Action Plan
- Regional Pedestrian Bicycle Master Plan
- Complete Streets Policies
- Education and Enforcement
- Engineering and Design
- Monitoring and Evaluation

Strategy 1: Adopt a Regional Safety Action Plan

After “increasing multi-modal options,” “improving safety” was rated by the public as the most important criterion by which transportation projects should be evaluated. Similarly, results from the NLCOG Listens online survey show that the top reason for why people don’t bike/walk more is, “Safety concerns.” These results suggest that addressing traffic safety concerns should be a top priority when seeking to make active transportation options more attractive for potential users in the region.

One strategy that states and cities are using to address traffic safety and reduce fatalities and serious injuries is the adoption of holistic safety action plans. Louisiana’s Strategic Highway Safety Plan (SHSP), for example, provides a “comprehensive, multidisciplinary approach to reducing the devastating effects of motor vehicle-related fatalities and injuries on Louisiana roadways.”

Included in Louisiana’s SHSP is the “Destination Zero Deaths” campaign, which promotes a vision of zero deaths on Louisiana roadways and a specific benchmark of halving traffic fatalities by 2030. This “Vision Zero” movement, as it is known, is being embraced by states and cities across the country. A core tenant of the movement is that all traffic deaths and injuries are preventable and therefore, none are acceptable. In addition, Vision Zero principles support the idea that because people will inevitably make mistakes on the road, the transportation system should be designed in ways that make serious injuries or fatalities less likely.

Adopting a Regional Safety Action Plan guided by Vision Zero principles may improve traffic safety, reduce or eliminate traffic fatalities and serious injuries, and make active transportation options a more viable option for users. While a plan of this type should focus on all road users, it should pay close attention to “vulnerable road users” such as pedestrians and bicyclists who are defenseless in crashes involving a motorized vehicle.

Strategy 2: Adopt a Regional Pedestrian and Bicycle Master Plan

The pedestrian and bicycle element of the NLCOG Long Range Transportation Plan Update provides an overview of existing conditions and offers a framework for incrementally improving active transportation options in the region over time. However, a Regional Pedestrian and Bicycle Master Plan would allow the region to develop an overall vision for its bicycling and pedestrian system, and provide a detailed blueprint, tailored to local conditions, for improving active transportation options in the region. The planning process could also serve as a catalyst for improving engagement and collaboration with the active transportation community.
Strategy 3: Adopt a Regional Complete Streets Policy

Complete Streets policies consider all transportation modes in the planning, design, construction, operation, and maintenance of the transportation system to ensure that streets are safe for people of all ages and abilities, regardless of the mode they choose to use. Adopting a regional Complete Streets policy could promote active transportation options in the region. As of early 2015, fifty-eight regional planning organizations have adopted comprehensive Complete Streets policies in the U.S. The National Complete Streets Coalition has identified ten elements that should be included in a comprehensive Complete Streets Policy. While a regional Complete Streets Policy for the NLCOG study area should be tailored to local goals and objectives, it should integrate these ten elements in order to ensure that it is effective.

Elements of a Complete Streets Policy

Includes a vision for how and why the community wants to complete its streets.

Specifies that ‘all users’ includes pedestrians, bicyclists and transit passengers of all ages and abilities, as well as trucks, buses and automobiles.

Applies to both new and retrofit projects, including design, planning, maintenance, and operations, for the entire right of way.

Makes any exceptions specific and sets a clear procedure that requires high-level approval of exceptions.

Encourages street connectivity and aims to create a comprehensive, integrated, connected network for all modes.

Is adoptable by all agencies to cover all roads.

Directs the use of the latest and best design criteria and guidelines while recognizing the need for flexibility in balancing user needs.

Directs that Complete Streets solutions will complement the context of the community.

Establishes performance standards with measurable outcomes.

Includes specific next steps for implementation of the policy.

Source: National Complete Streets Coalition

Source: Rex Hammock (via Flickr)
Strategy 4: Promote Active Transportation Education and Enforcement

Public education and awareness campaigns are an effective strategy for promoting bicycling and walking as a safe, healthy, and fun means of getting around. Similarly, better enforcement of existing traffic laws – both for motorists and non-motorists – can lead to real and perceived safety improvements that make it easier for people to view bicycling and walking as safe transportation options. This section offers a number of strategies for improving people’s perception of bicycling and walking in the region through education and enforcement programs and policies.

Education Strategies

- Offer bicycling skill and safety classes to interested groups, including schools.
- Actively promote or sponsor programs that encourage people to bike or walk to school and work, such as “Bike to School Day” or “Walk to Work Week.”
- Implement promotional campaigns to encourage safe travel behavior. Examples include “Share the Road,” “Street Smarts,” or “Drive Kind, Ride Kind.”
- As part of the Regional Pedestrian and Bicycle Master Plan (Strategy 2), develop a Regional Bicycle Map that shows bike routes, key destinations, and resources for bicyclists.

Enforcement Strategies

Often times, law enforcement officers receive little or no training on pedestrian and bicycle laws and may be unaware of the safety concerns of these users. While the MPO does not have the authority to change or amend laws, it can serve an educational role in helping raise awareness of existing laws and how they affect vulnerable users such as pedestrians and bicyclists.

Strategy 5: Design and Engineering

This section presents a number of strategies that can be considered related to the design and engineering of pedestrian and bicycle facilities.

- Include design guidance and typical cross sections in the recommended Pedestrian and Bicycle Master Plan to ensure that all pedestrian and bicycle facilities comply with state and national design standards.
- Provide technical guidance to area planners and engineers on traffic control devices such as signs, markings, and traffic signals relevant to the pedestrian and bicycling environment.
- Provide policy guidance to local jurisdictions to ensure that adequate bicycle parking – both short and long-term – is available throughout the region. Policy guidance may also address strategies for promoting locker rooms and showers at the workplace in order to make bicycling a more attractive option for commuters.
- Provide policy guidance on technical training on strategies for improving areas surrounding public transportation stops, including adequate lighting, bicycle racks, accessible sidewalks, and other streetscape features that make public transportation a more attractive option for users.

Strategy 6: Monitoring and Evaluation

A comprehensive evaluation and monitoring program can measure pedestrian and bicycling activity over time in order to measure progress towards the region’s active transportation goals and to better understand areas in need of improvement. Regularly collecting bicycle/pedestrian count data and annual surveys on active transportation behaviors and attitudes in the region are examples of monitoring methods. An evaluation and monitoring program should also include an analysis of safety metrics, including the number crashes, injuries and fatalities involving pedestrians and bicyclists, as well as contributing factors in those crashes.
Strategies for Developing the Active Transportation Network

In addition to the policy and programmatic strategies discussed in the last section, improving pedestrian and bicycling conditions in the region also requires the identification and prioritization of active transportation investments to create a robust active transportation network. This section offers a number of guiding principles for selecting and prioritizing active transportation projects in the region and provides a high level, conceptual bicycling network comprised of major corridors connecting key destinations in the region. Projects recommended in the Caddo Parish Bicycle Plan, which is a parallel effort to this LRTP Update, were incorporated in the conceptual network outlined in this section. While this section offers a framework for incrementally improving active transportation options in the region over time, developing a comprehensive Pedestrian and Bicycle Master Plan could provide the region with a more detailed blueprint for prioritizing specific pedestrian and bicycling investments.

Guiding Principles

Develop an All Ages and Abilities Network

The first and most important guiding principle that should be followed is to prioritize projects that will contribute to the development of an “all ages and abilities” active transportation network that can be utilized safely and comfortably by both experienced and inexperienced users, regardless of age. Research has shown that the majority of the population is “interested but concerned” in bicycling more, but that traditional, low-cost treatments such as on-street bike lanes are not enough to entice them to bike. Therefore, creating an “all ages and abilities” network requires the implementation of a variety of facility types – from protected bike lanes to off-street trails (and bike lanes when appropriate) – to create a network that provides low-stress and direct connections to key destinations. In other words, the goal is to provide facilities that accommodate the full spectrum of active transportation users and potential users, from recreational cyclists to commuters to children walking to school. This approach has proven to be the most effective strategy for attracting the greatest number of active transportation users in cities around the world.

Connect Major Destinations

The second guiding principle that should be followed when prioritizing active transportation projects is to provide connections between major destinations. Behind “safety concerns,” the top response from the NLCOG Listens online survey for why people don’t walk or bike more was “availability and connectivity of bicycle/pedestrian facilities.” Creating a well-connected network requires identifying areas where people would like to travel at the regional, city, and neighborhood level. Projects that enhance pedestrian and bicycling conditions near major employers, schools and universities, and residential areas, for example, should be given highest priority, as these have the potential to attract the greatest number of trips. Projects that enhance pedestrian and bicycling conditions near transit stops should also be prioritized to take advantage of the complementary nature of these modes.

Focus On Major Corridors

The third guiding principle that should be followed in creating the active transportation network is to focus investments along major corridors to create a continuous and direct network of facilities. Rather than using a piecemeal approach to creating the network, efficiencies can be gained by focusing investments along major corridors that link multiple destinations in the region. The navigability of these routes can be enhanced through wayfinding and signage, as well as streetscape enhancements such as lighting, bicycle parking, and street trees.
Address Barriers

The final guiding principle that should be considered when prioritizing active transportation investments is the degree to which a given project addresses barriers in the network. Barriers can take the form of dangerous intersections, controlled access highways, railroad track crossings, bodies of water, gaps in the sidewalk or bike network, or topography, among other physical features of the region. Stakeholders mentioned the limited number of bridges across the Red River as a major impediment to bicycling in the region; this is especially a concern for those who live and work on opposite sides of the river.

Figure 5-4: Conceptual Regional Bicycle Network (Urban Area)

Conceptual Regional Bike Network

The map below represents a planning-level conceptual regional bicycle network that can be used as a starting point for prioritizing investments to create an all ages and abilities bicycling network. The network represents the guiding principles outlined above to form a conceptual bicycle network that provides active transportation options for all ages and abilities, connects key destinations along corridors, and addresses major barriers in the region. The network presented in Figures 5-4 and 5-5 also borrows from projects recommended in the Caddo Parish Bicycle Plan, which is a parallel effort to this plan.
Figure 5-5: Conceptual Regional Bicycle Network
TDM Best Practices

Although no coordinated TDM strategies are currently implemented in the Shreveport-Bossier City area, there are best practices that have been successful in managing demand on transportation facilities in similar areas. As the regional transportation planning organization for the Shreveport-Bossier City area, NLCOG can work to educate its planning partners on available TDM strategies and associated benefits to encourage strong consideration of TDM strategies before investing in new construction projects.

Strategies to Increase Vehicle Occupancy
Carpool, vanpool, and school-pool programs encourage travelers with common destinations, particularly employment and school destinations, to share vehicles. These can be based on informal arrangements between individuals or formally arranged through ride-matching services. Available research indicates that improving awareness, trust, and willingness to ride with strangers, as well as flexibility in scheduling, may help to increase carpool use. Incentives are another effective tool for encouraging ride-sharing.

Provide Ride-Sharing Resources for the Public on the MPO Website
Resources that may help to increase the use of carpooling, vanpooling, and school-pooling include “Frequently Asked Questions” (FAQs) that address the benefits of carpooling, tips for finding other carpoolers, advice on how to organize pick-ups and drop-offs, carpooling etiquette, and safety concerns, among others.

Additionally, the MPO may wish to provide resources that facilitate matching of individuals with other carpoolers by either hosting their own free ride-matching service on their website, using programs like AlterNet Rides, or publicizing ride-matching applications available to the public, such as the Carma carpooling smartphone app.

Work With SporTran and Member Jurisdictions to Implement Ride-Sharing Programs
The MPO can coordinate with SporTran and its member jurisdictions to educate its planning partners on the benefits of carpooling, vanpooling, and school-pooling and explore the feasibility of developing and implementing locally-operated ride-sharing programs.

Encourage Employers to Incentivize Ride-Sharing
The MPO can play a valuable role in working with area employers and schools to develop employer-based incentives to encourage ride-sharing, such as tax incentives and preferential parking. A variety of employer-based incentives for carpooling are discussed in greater detail later in this section.

Explore the Implementation of Transportation Management Associations (TMAs)
Transportation Management Associations (TMAs) are non-profit organizations voluntarily created by a group of businesses – often with local government support – to coordinate transportation services in a defined area (typically a commercial district, medical center, or industrial park). Because they tend to serve a small geographic area and constituency, these groups can be very responsive to members' needs. TMAs provide a variety of TDM services that encourage more efficient use of transportation and parking resources, particularly through commute trip reduction strategies and ridesharing.
Employer-based Tools and Incentives

The commute to and from work is a significant contributor to traffic congestion along area roadways, particularly during peak travel times. TDM strategies that focus on employer-based tools and incentives can be an effective way to reduce travel by single occupant vehicles by coordinating ride-sharing among employees, encouraging the use of alternative modes for work trips, shifting work trips from peak hours, and reducing work travel times and the number of overall trips. The Shreveport-Bossier City area has several large employment centers that generate significant travel on the area’s roadways, and which make employer-based tools and incentives an attractive strategy for reducing demand on existing roadways in the Shreveport-Bossier City area.

Employer-based TDM strategies fall into four separate categories:

- Encouraging employees to travel by alternative modes;
- Shifting trips from peak periods of travel and reducing the total number of trips;
- Providing route information to divert commuters from congested routes; and
- Using location-specific solutions to shorten the work commute and reduce the need for midday trips.

As the regional transportation planning entity, NLCOG can actively work with area employers to reduce congestion by expanding the transportation options available to their employees. The MPO may wish to provide information on its website or develop a “speaker series” for educating area employers regarding options available and their benefits to employers, employees, and the community as a whole.

Alternative Modes

Employers can influence employees’ mode choice through a variety of supporting services aimed at making the alternative travel options easier and/or cheaper to use.

Commuter Choice Tax Benefits

The Internal Revenue Code allows employers to offer the employees tax free commute benefits under the Commuter Choice tax benefits provisions, which provides a financial incentive for employees who switch from driving alone to transit or vanpool. Transit agencies often provide discounted fare passes to employers seeking to provide this benefit in the form of transit passes.

Rideshare Matching

Employers can help facilitate carpooling among their employees by 1) creating a “ride-match” bulletin board at the worksite or online where employees can post riders- or rides-wanted cards, 2) matching potential riders using their home zip codes, or 3) utilizing ride-matching software to facilitate carpooling of employees with nearby home addresses.

On-Site Transit Pass Sales

An employer can increase the convenience of using transit by selling transit passes on-site to its employees.
On-Site Facilities
Employers can provide on-site facilities, which refers to physical improvements to accommodate alternative modes of travel, including bicycle racks or storage facilities, showers and lockers, transit stop improvements adjacent to the worksite, and sidewalks between transit stops and facility entrances.

Shuttle Services
For employment sites not within walking distance of transit stops, shuttle services to and from nearby transit facilities can make using transit more convenient. Additionally, shuttle services can be provided between buildings on large campuses or for midday lunch trips.

Shift in Travel Time
By providing flexibility in the work schedule, employers can help shift some trips away from peak periods or even reduce the number of total trips necessary during the work week.

Flextime
Flextime generally allows employees to choose when they work, within a certain timeframe. Typically, a company will set core work hours, and employees can arrive before and depart after these core hours as long as they work the appropriate number of hours required for their position. Flextime allows commuters to avoid peak periods of high congestion and reduces the demand on the roadways during these times.

Alternative Work Schedules
Alternative work schedules reduce the number of trips necessary during the work week by allowing employees to work longer, but fewer, days, or by staggering shifts. It should be noted that compressed work weeks can also have an impact on an employee’s ability to use public transportation, depending on the transit provider’s hours of operations.

Telecommuting
Telecommuting reduces the number of trips on area roadways by allowing employees to work remotely from home, either full-time or for a specified number of days each week.

Route Information
Commuters typically travel to work at the same time every day, using the same mode and route to get there. However, delays due to traffic collisions, bad weather, road construction, or unexpected traffic congestion may cause commuters to look for alternative routes. Employers can facilitate the provision of real-time commute information to employees that will help them select the best route given current traffic conditions. This information can be disseminated through technology such as e-mail or text message alerts, which can also suggest alternative routes.

Location-Specific Solutions
The location of an employee’s residence and workplace can have a significant impact on their mode choice, commute time, and may even impact where an employee chooses to work. Businesses are increasingly aware of the implications of worksite location, and there are several strategies available to shorten the work commute and encourage the use of alternative modes.

Live Near Work
Employers can develop materials that encourage employees to live near the worksite by providing information to new employees.
regarding areas with reduced commute times or with good access to transit. Another option is called “proximate commuting,” which allows employees to work at branch locations near their homes.

**Worksite Location and Design**

Employers can select employment sites that are close to transit or located near services that reduce their employees’ need for cars. For example, Transit-Oriented Development (TOD) encourages residential and commercial development near transit stops and provides access to shopping, restaurants, and other services within walking distance. Locating in a TOD gives a company’s employees the option to live within walking distance of work and provides walkable lunch and errand destinations to employees regardless of whether they choose to live in the development or not, reducing the overall number of automobile trips generated by the worksite.

**On-Site Employee Services**

On-site services for employees are intended to reduce the need for midday trips by car. The need to complete these errands may discourage some employees from using alternative modes for their work commute. Examples of on-site services include cafeterias, cafes, postal services, dry cleaning, health care, child care, fitness facilities, and ATMs.

**Parking Management and Incentives**

Parking management strategies and incentives encourage the use of alternative modes and can be implemented by both local jurisdictions and employers. These strategies typically rely on dis-incentivizing travel by single occupant vehicle by passing along more of the cost of parking to employees and/or limiting the availability of parking.

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**Parking Cash-Out**

Parking cash-out is an employer-based strategy in which employers provide employees with a bonus or pay increase rather than guaranteeing a parking space, which they may then choose to spend either on parking located at the worksite or to “pocket” the difference by using an alternative mode of transportation.

**Park-And-Ride Lots**

Park-and-ride lots encourage the use of transit, especially in areas with few local transit options, by allowing travelers that are not within walking distance of a transit stop to drive their vehicles to a transit stop and park there during the day. Park-and-ride lots can also provide a meeting point for carpools and vanpools. The trip to the park-and-ride lot must be a shorter distance than the trip to the final destination, as park-and-ride lots are generally less effective the closer the lot is to the final destination.

Source: SounderBruce (via Flickr)

**Parking Management**

Parking management refers to various policies and programs that result in more efficient use of parking resources. Improved management of parking facilities can result in potential savings to communities and reduce parking requirements by 20 to 40 percent compared with conventional planning requirements. Examples of parking management strategies available include the following:
Provide shared parking that serves multiple users or destinations, which is most efficient when the destinations have varied peak periods of activity.

Implement parking regulations that control who, when, and how long vehicles may park at a particular location.

Develop more accurate and flexible standards that take into account factors such as residential density, employment density, land use mix, transit accessibility, and income, among other factors, to establish parking requirements for a particular development or area.

Reduce residential street width requirements to encourage the development of neighborhoods with narrower streets and less parking to encourage the use of alternative modes.

Provide remote parking and shuttle service to encourage the use of off-site parking facilities that are often shared facilities, served by special shuttle buses or free transit service.

Limit on-street parking of large vehicles (e.g., vehicles over 22 feet long or trailers) to ease traffic flow and discourage use of public parking for storage of commercial vehicles.

Prohibit on-street parking on certain routes at certain times (such as on arterials during rush hour) to increase the number of traffic lanes and peak capacity. ³

**Traveler Information Systems**

Traveler information systems use technology to detect, analyze, and disseminate traffic and transit conditions to travelers so that they may choose the best means for reaching their destination. Traditional traveler information systems such as radio and TV broadcasts are now being supplemented by websites, real-time roadside and transit displays, and e-mail and text message alerts.

NLCOG can work with local jurisdictions to implement traveler information systems for both predictable settings, such as work zones, planned special events, tourism, and parking management, as well as unpredictable settings, such as a major highway incident, inclement weather, or other unforeseen catastrophic events.

Traveler information systems rely on traffic sensors, aerial surveillance, automatic transit location detection, incident detection, and weather monitoring by both the public and private sectors to inform travelers of delays, incidents, weather conditions, bus arrival times, travel times, emergency alerts, and alternate routes. In response, travelers may change their route, mode of travel, departure time, or destination.

³ Ibid.

Source: Wikimedia Commons
Transportation Systems Management and Operations

Transportation System Management and Operations (TSM&O) strategies seek to improve the performance of existing roadways through increased efficiency and throughput of vehicles on roadways. TSM&O strategies not only rely on traffic engineering solutions – such as signal synchronization and access management – to optimize the existing system, but also rely on resource utilization, infrastructure, personnel, and data management strategies to extend the useful life of the existing transportation system and improve its reliability.

TSM&O Best Practices

In addition to the TSM&O strategies implemented by various agencies in the MPO planning area, there are other strategies that have been successfully implemented in other cities, which serve as best practices for optimizing the performance of the existing transportation system. As the MPO for Bossier and Caddo Parishes, NLCOG can work to educate its planning partners on available TSM&O strategies and associated benefits to encourage strong consideration of TSM&O strategies before investing in costly new construction projects.

Maintenance

Infrastructure maintenance is a critical aspect of transportation system management and operations. Most infrastructure management agencies prefer to schedule routine repairs and inspections instead of embarking on ad-hoc patching and repairing. Managing the schedule for inspection and street repairs will enable city and parish personnel to efficiently use limited resources. A calendar for repairs and reviews will also provide valuable information to concerned citizens.

Regularly scheduled roadway resurfacing is necessary to provide uniform improvements to the existing roadways and to extend their useful life. Older roads, especially those built according to discontinued standards, should be reviewed with an eye towards upgrading deficient sections to modern criteria. Overlays and patches should be carefully constructed to help prevent uneven transitions and excessive wearing, particularly near new or existing grates and inlets. In locations with bicycle lanes (or anticipated bicycle usage), bicycle compatible grates should be installed to avoid accidents and pinched tires.

Traffic Signal and Intersection Improvements

Roadway users encounter traffic control signage and intersection signals on nearly every route they travel. While the primary function of intersection traffic control is to improve safety at intersections, it is also often a significant source of delay. Improper signage and poor signal timing results in unnecessarily long queues and impacts the reliability of the transportation system. Improving signage, signal timing, and equipment is a very cost-effective way to facilitate traffic flow along a corridor. NLCOG can work with its planning partners to identify corridors which would benefit from traffic signal improvements and prioritize projects.

Effective Signage and Markings

Signage and markings are critical to conveying intersection information to drivers. Stop bars,
crosswalks, signal heads, and movement prohibitions should be well-marked, and routinely inspected and retouched. In locations with high volumes of pedestrians, bicyclists, or school age children, special signage should be placed to alert drivers. Signage and street markings should adhere to the guidelines of the national Manual on Uniform Traffic Control Devices (MUTCD). It is advisable to develop a regional comprehensive street marking and striping policy to address areas of concern, such as school zones and pedestrian crosswalks.

**Electronic Infrastructure**

Transportation infrastructure is no longer limited to concrete pavement and asphalt. Recent improvements in operations and data collection methods have led to digital controls and integrated computer networks that require maintenance and management. Older technologies are being systematically replaced with newer options. For example, in-pavement magnetic loops are being phased out, while video detection and automatic detection devices for pedestrians and bicycles are gaining popularity. Advances in camera technology such as Gridsmart allow traffic engineers to monitor intersection conditions more efficiently than ever before. Traditional incandescent bulbs for signal heads have been replaced with more efficient light emitting diodes (LEDs). These new technologies offer increased durability and lower overall maintenance costs.

**Traffic Signal Optimization**

The timing and phasing of signalized intersections should be reviewed periodically, especially in areas of rapid development or increased commercial activity. Most intersections should be reviewed for appropriate timing and phasing every six months, while more heavily traveled intersections could be reviewed more frequently. Whenever possible, the signal heads and controls should be uniform to facilitate ease of coordination and servicing of hardware. In locations of due east or due west travel, back plates and directional signal heads may be advantageous. In locations with significant wind and severe weather concerns, mast arm and pole dimensions should be designed appropriately.

Traffic signals can also be coordinated along a corridor or throughout an entire system. As traffic volumes increase, signal coordination can be used to optimize high priority traffic corridors and increase the throughput of critical thoroughfares.

Adaptive signal control, which adjusts the timing of traffic lights based on real-time travel conditions, can also provide significant relief to congested corridors and cut costs associated with traffic signal timing data collection and computation.

**Signal Pre-Emption**

On busy roads with highly used transit routes, transit signal priority or pre-emption can improve the operations of the transit system. Transit signal priority refers to technology that reduces dwell time for transit vehicles at signalized intersections, typically by holding green lights longer or shortening the duration of the red light cycle. The same kinds of technology can also be employed for emergency vehicles. Equipping all intersections to accommodate signal prioritization can facilitate the deployment of such systems commensurate with demand.

**Access Management**

Access management refers to the regulation of the number of access points between development and the adjacent roadway network. Most discussions of access management involve the placement and number of driveway curb cuts, although the application can also include the location, size, and function of interior service roads.

Effective access management has significant implications for mobility, accessibility, and safety by reducing crashes, increasing capacity,
reducing travel time and delay, extending the life of the roadway, and reducing vehicular emissions. NLCOG can work with local jurisdictions to identify roadways with congestion and/or safety issues that may be effectively addressed using one of the following access management strategies:

Medians

Raised medians on collector and arterial roadways decrease the potential for accidents by restricting turning movements. Raised medians also provide a refuge area for pedestrians or turning vehicles and reduce mid-block accidents. Medians can also be used as part of an overall corridor access management strategy to reduce vehicle conflicts, increase capacity, and reduce accidents at intersections.

It is important to provide for left turn maneuvers at downstream intersections or through strategically-placed median breaks when medians are used for access management. Medians, which restrict left turn movements, can be relatively narrow and still provide the necessary channelization. Medians at critical intersections can have a specialized dropped, low curb to ensure access for emergency services equipment and personnel.

Landscaped medians provide an aesthetic separation between travel lanes. Adequate room for tree growth must be provided. The width of landscaped medians is variable, depending on the varieties of trees and shrubs planted. Prior to the construction of extensively landscaped medians, the maintenance and upkeep of the shrubbery should be evaluated.

Driveway Location and Design

Residential driveways along major roadways can cause critical conflicts between fast-moving traffic and slower traffic entering and exiting the driveways. If the number of residential driveways increases, the roadway will function as a high-speed residential street – which can be extremely dangerous. This situation can be avoided if subdivisions are designed so that lots which face a major roadway have access provided by a residential street at the back of the lot, or by incorporating a reverse frontage road. Residential driveways with shared access to the major roadway provide another method of managing access in this situation.

Driveway Spacing

When too many access points are allowed, especially near an intersection, conflicting vehicle movements result. In the interest of providing safe and reasonable access to a site, planners and engineers should review the impacts of a development with respect to the entire corridor, not just the site itself. Wherever possible, cooperation and consultation between adjacent landowners is encouraged to avoid conflicting designs. Limiting the number of access points per parcel and enforcing minimum lot frontages encourage proper driveway spacing along busy roads.
Internal Site Circulation
Most access management strategies are limited to the roadway right-of-way, but movement of traffic into and out of properties can be dramatically affected by the design of on-site circulation. Typical designs for internal circulation are concerned with the orientation of the buildings, the parking areas, and the highway access points. The optimal internal circulation design approach includes:

- Providing safe and reasonable access to and from the street to motorists, bicyclists, and pedestrians; and
- Providing a reasonable transition between the access and the internal circulation, especially by ensuring that driveways are wide and long enough.4

Targeted Traffic Enforcement
Consistent and reliable enforcement of traffic laws helps address public concerns about traffic issues. In areas with complaints about speeding and reckless or inconsiderate driving, responsive law enforcement staff can do much towards gaining the public’s trust and compliance. Focused speed studies (using radar trailer and traffic counters) can be employed to discourage speeding on residential streets. NLCOG can work with local law enforcement to identify corridors of concern or crash hotspots in order to maximize the impact of enforcement activities.

Traffic Calming
While targeted traffic enforcement can be an effective strategy for changing driver behavior, it is limited by the resources of law enforcement. Therefore, many municipalities throughout the country have implemented various “self-enforcing” speed and volume control devices. The majority of these measures are referred to as “traffic calming.” These physical devices can assist law enforcement in influencing driver behavior.

Traffic calming is often controversial and can be challenging to discuss. Most traffic calming measures are applied to residential streets, but can be applied to higher volume roadways as well. Broadly defined, the goals of traffic calming measures are:

- To slow down the average vehicle speeds for a particular roadway;
- To address excessive volumes for a particular roadway; and
- To remind drivers of or reinforce the residential nature of specific roadways.

Traffic calming measures impact all vehicles. As a result, this can lead to reduced access and response times for emergency and law enforcement personnel. Careful consideration must be given to any proposed traffic calming device, especially if the roadway under review provides critical access for emergency personnel. Representatives of fire, police, and

emergency services departments should be involved in the review of proposed traffic calming devices. NLCOG can work with its planning partners and emergency response agencies to identify locations suitable for traffic calming implementation. The following are several common traffic calming measures.

**Forced Turn Islands**

Forced turn islands require vehicles entering an intersection to perform a designated movement.

**Roundabouts**

Roundabouts force traffic to yield to vehicles already in the intersection and to travel counter-clockwise around the device. Roundabouts have proven effective in reducing neighborhood speeds and discouraging through traffic without compromising throughput. They can also lead to enhanced safety at previously signalized intersections.

**Centerline Medians**

Medians are designed to reinforce lane assignments, especially along constrained roadways. These medians can serve as general speed reduction devices, or to discourage speeding in specific areas. Medians can be placed near or at intersections to enhance pedestrian accessibility. For wide intersections, the location of a dividing median in combination with a crosswalk can play a large role in reducing the risk associated with pedestrian crossings.

**Speed Humps**

Speed humps are designed to cause driver discomfort when traversed at speeds higher than the posted speed limit. The hump approaches can be altered to create more or less severe slopes, resulting in greater reduction in travel speeds.

**Curb Extensions**

Sometimes referred to as “bulb-outs,” curb extensions both physically and visually narrow the street space, leading to a reduction in vehicle speeds, as well as shorter crossing distances and heightened visibility for pedestrians. They can be implemented at intersections of streets with on-street parking, mid-block (to provide additional pedestrian crossings), at transit stops, or alternating in a way that forces vehicles to move laterally (also referred to as “chicanes.”)

**High Occupancy Vehicle Lanes**

High Occupancy Vehicle (HOV) lanes are dedicated for use by vehicles with more than one occupant and thereby serve to increase the total number of people that move through a congested corridor. HOV lanes offer substantial travel time savings and reliable, predictable travel times. HOV lanes move significantly more people during congested periods, even if the number of vehicles that use the lane is lower than on adjoining general purpose lanes. In general, carpoolers, vanpoolers, and bus patrons are the primary beneficiaries of HOV lanes. In coordination with its planning partners, the NLCOG can identify corridors that would benefit from the implementation of HOV lanes.

**Traffic Incident Management**

Traffic Incident Management (TIM) consists of a planned and coordinated process to detect, respond to, and quickly clear traffic incidents so that traffic flow may be restored as safely and quickly as possible. Effective TIM strategies reduce the duration and impacts of traffic incidents and improve the safety of motorists, crash victims, and emergency responders.
Traffic incident management involves coordination among a number of public and private sector partners, including:

- Law enforcement;
- Fire and rescue;
- EMS;
- Transportation departments;
- Public safety communications;
- Emergency management/preparedness;
- Towing and recovery;
- Hazardous materials contractors; and
- Traffic information media.

NLCOG can facilitate coordination among the various TIM stakeholders.

**Traffic Data Collection**

As transportation technology grows increasingly sophisticated, obtaining the amount of data required by new traffic optimization interfaces presents significant challenges to cash-strapped public agencies. Automated traffic data collection creates an opportunity for transportation management agencies to receive a continuous supply of traffic data at a low cost. Because automated traffic data collection gathers data in real-time, it facilitates many of the demand-responsive TSM&O strategies discussed earlier in this chapter (such as traffic signal optimization). New types of traffic data collection, such as Bluetooth and Wi-Fi detectors, are particularly appealing due to their lower operational and maintenance costs compared to in-road loop detectors. These types of detectors have the added benefit of being able to gather traveler information beyond the traditional scope of the private vehicle to include bicycle and pedestrian roadway users.

**Safety and Security**

Strategies to address safety and security will at times differ significantly from one another and require coordination between different agencies but will more often overlap and involve members of the same agencies. Therefore, the 2040 LRTP considers safety and security both simultaneously and individually.

NLCOG is responsible for addressing safety and security through the programming of transportation improvements. The MPO’s role in implementing specific safety and security measures may be more limited, but its role in coordinating regional transportation needs between the various local, state, and federal transportation agencies is vital to creating successful safety and security policies. By integrating the safety and security goals and objectives of regional stakeholders into the transportation planning process, the MPO can ensure that its plans and studies are consistent with and help support safety and security planning in Bossier and Caddo Parishes.

The following sections discuss the various agencies involved in safety and security planning in the NLCOG region, and present recommendations for improving safety and security in the area. Parallel safety and security
planning efforts that have been completed for the region are documented in Chapter 2.

Safety

“Safety” in the transportation planning context typically refers to the mitigation of traffic crashes, transit accidents, and other unintentional events resulting in fatalities, injuries, or loss of property on the transportation network. MAP-21 identifies a national goal for safety to significantly reduce fatalities and injuries on all public roadways. The U.S. Department of Transportation (USDOT) published a related Notice of Proposed Rulemaking (NPRM) in March 2014 proposing that safety targets and progress towards achieving those targets should be measured as 5-year rolling averages for fatalities and serious injuries, as well as the respective rates for every 100 million vehicle miles traveled (VMT).

Safety planning, reducing the number of crashes, and decreasing the amount of fatalities and injuries on the transportation network involve several different projects and programs, ranging from improving the operational efficiency of the transportation network to influencing driving behavior. LADOTD and NCLOG play the lead roles in transportation safety planning, but several non-traditional stakeholders should be included in the transportation safety planning process, including:

- State agencies responsible for safety data collection and management (LADOTD, Louisiana Highway Safety Commission);
- First responders, fire and rescue, and EMS;
- State and local law enforcement;
- Transit agencies;
- Motor vehicle departments;
- Federal agencies; and
- The non-governmental highway safety community (e.g. AAA).

Recommendations

Under MAP-21, states and MPOs are required to adopt a performance- and outcome-based approach to transportation planning that relies heavily on existing and projected data to evaluate the effectiveness of strategies in addressing goals and objectives, including those related to safety. The crash analysis provided in Chapter 4 provides a basis for the safety planning element, and the following recommendations will help the MPO comply with final safety performance management requirements:

Safety Recommendations

- Identify measureable safety goals and objectives;
- Transition to a more data-driven, strategic approach to safety planning;
- Collaborate with key safety stakeholders;
- Coordinate closely with the State in the development, evaluation, and reporting of performance targets that support the statewide safety goals and objectives, as well as regional and local safety goals; and
- Provide training opportunities for MPO staff to increase their knowledge related to transportation safety planning.

Security

Planning for transportation security seeks to mitigate or avoid harm to the transportation network inflicted either intentionally by people (such as terrorist acts or criminal activities), or circumstantially through natural disasters such as hurricanes, earthquakes, or other weather events. Security planning is carried out by multiple levels of government and involves all
four phases of emergency management: preparedness, response, recovery, and mitigation.

In support of state, regional, and local security goals and objectives, the primary role of the MPO is to facilitate coordination between agencies responsible for transportation security, including law enforcement, emergency response, transit agencies, and homeland security departments.

Recommendations

Countermeasures to reduce the risk of specific and systematic hazards from occurring can fall into three categories: preventative, detective, or responsive. Preventative measures seek to reduce or eliminate the risk of occurrence. Detective measures provide notification that a hazard has occurred. Finally, responsive measures correct and respond to an emergency. The following recommendations are based on regional findings and national best practices in security planning, and are listed in no particular order:

Security Recommendations

- Conduct vulnerability assessments frequently to allocate preventative, detective, and responsive resources;
- Establish communication protocols and ensure entire population will be reached;
- Anticipate equipment needs and store near critical locations;
- Prepare signal-timing plans for evacuation or emergency scenarios;
- Implement TSM&O best practices where possible;
- Identify lessons learned following each response through after action reports;
- Prepare cost accounting methods to ensure reimbursement from states through the Emergency Management Assistance Compact (EMAC);
- Develop Mission Ready Packages (MRPs) for more rapid aid through EMAC; and
- Prepare redundancies in all security measures.
Build Strategies for Roadways
This section builds upon the work completed as part of the needs analyses, discussed in Chapter 4, to identify deficiencies in the transportation network in Caddo and Bossier Parishes. This section outlines the steps taken to address or mitigate the deficiencies identified by developing an unconstrained list of possible improvements to the transportation network, developing a project prioritization process and ranking those improvements according to community values, and testing different combinations of possible improvements to compare the effectiveness of future transportation network scenarios on addressing deficiencies in the system.

Project Identification
One of the ways NLCOG identified potential projects for inclusion in the LRTP was through its annual call for projects. This project call was sent to all member governments in the NLCOG MPO study area. To this call, sponsoring agencies submitted projects for evaluation and prioritization. In addition to the project call, potential projects were identified as a result of technical reviews, available planning studies, highway and corridor studies, and consultation with local traffic engineers, planners, and other stakeholders. All projects identified through this process were combined into a list of candidate projects slated for review and evaluation.

Project Review and Evaluation
The project evaluation process used a project scoring tool which combined input gathered from the public during the visioning process, outputs from the roadway deficiencies analysis (volume to capacity (V/C) ratios), and the expertise of the Transportation Coordinating Committee members to assess the community benefits of proposed transportation projects.

The process resulted in a prioritized list of short-term, mid-term, and long-term transportation improvements planned for implementation. Based on this multi-faceted process, the listing of transportation projects is not only reflective of the community’s vision, responsive to mobility needs, and technically sound, but it also complies with federal requirements for metropolitan transportation planning.

Project Selection Process
Once the no-build strategies were considered, potential projects to expand or build new facilities were examined using NLCOG MPO’s Project Selection Process, which consists of five (5) steps:

1. Project Call
2. Project Submission
3. Project Review and Evaluation
4. Technical Coordinating Committee Approval and Recommendation
5. Transportation Policy Committee Review and Approval
Planning Factors and Evaluation Criteria

MAP-21 requires the transportation planning process for metropolitan areas to consider strategies and projects that address eight planning factors:

1. Support the economic vitality of the metropolitan area, especially by enabling global competitiveness;
2. Increase the safety of the transportation system for motorized and non-motorized users;
3. Increase security of the transportation system for motorized and non-motorized users;
4. Increase accessibility and mobility of people and freight;
5. 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;
6. Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight;
7. Promote efficient system management and operation; and
8. Emphasize the preservation of the existing transportation system.

Based on these planning factors, a set of project evaluation criteria was developed to ensure each aspect of the factors was taken into consideration in assessing the merits of proposed projects. Additional qualitative measures applicable to the following criteria categories were also utilized during project scoring where applicable. These criteria and measures are listed below.

**Improve Safety and Security** – protect against unintentional (e.g. traffic collisions) and intentional (e.g. security threats) harm

- Specifically improves safety and security
- Reduces automobile crashes/improves roadway safety
- Significantly increases roadway pavement condition index (PCI)

**Protect the Environment** – reduce air and noise pollution, protect critical habitats, avoid developing in flood-prone areas, protect historical and cultural resources, etc.

- Impacts any wetlands, flood protection areas, or culturally/historically significant sites
- Improves air quality

**Reduce Congestion** – minimize the time spent in traffic congestion

- Improves V/C of a roadway or LOS of an intersection
- Expected to reduce congestion on corridor or region-wide

**Support Land Use and Economic Development Goals** – coordinate plans for the transportation system with plans for land development; and improve or build transportation infrastructure that increases access to market, attracts employers, makes business more accessible, etc.

- Has positive impact on economic development/land use
- Part of regional program or economic development strategy

**Increase Connections** – improve circulation within the community and to external destinations by connecting roads to provide multiple options for reaching destinations

- Increases connectivity and reduce travel times
**Improve Access** – balance access to land uses with the efficient flow of traffic

- Improves mobility and accessibility without increasing vehicle miles traveled (VMT) and average daily traffic (ADT)
- Addresses any of the Strategic Highway Safety Plan’s (SHSP) Emphasis Areas

**Increase Multi-Modal Options and Energy Conservation** – provide travelers with more options for reaching their destinations, such as biking, walking, riding the bus, or driving a car; and reduce the use of natural resources

- Complies with LADOTD complete streets policy
- Identified as a need in a local or state bicycle/pedestrian plan
- Impacts fuel consumption or reduces use of single-occupancy vehicles

**Improve Quality of Life** – ensure the transportation system has a positive impact on the community’s standard of living (e.g. safe routes to schools, recreation, etc.)

- Improves visual environment with context-sensitive solution

**Cost Sharing** – The (STP Urban Mobility/Rehabilitation) funding category requires a mandatory 20% local match. If the project has more than 30% local match, it was awarded full points for this criterion.

**Promote Efficiency** – maximize the potential of the existing transportation system (e.g. improved signal timing, limiting the number of driveways on certain roads, preserving the existing system through overlays, etc.)

**Connect Modes of Travel** – improve the ease with which people can use multiple modes of travel to reach destinations (e.g. ride a bike to a bus stop)

- Facilitates the transfer of passengers and goods between modes
- Improves access to existing/proposed transportation terminal facility

**Preserve Right-Of-Way** – plan ahead for the future expansion of the transportation system and guarantees land will be available before development occurs to reduce future costs

**Visioning Workshop Rankings of Evaluation Criteria**

During the visioning process the public was asked to rank the criteria based on their personal preferences. The results were combined to assign a final ranking of the evaluation criteria based on community values. The following table presents the final criteria ranking and the resulting weighting value used to compute the final project prioritization list.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Rank</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase Multi-Modal Options</td>
<td>1</td>
<td>2.0</td>
</tr>
<tr>
<td>Improve Safety</td>
<td>2</td>
<td>1.9</td>
</tr>
<tr>
<td>Improve Quality of Life</td>
<td>3</td>
<td>1.8</td>
</tr>
<tr>
<td>Connect Modes of Travel</td>
<td>4</td>
<td>1.7</td>
</tr>
<tr>
<td>Improve Access</td>
<td>5</td>
<td>1.6</td>
</tr>
<tr>
<td>Support Economic Development Goals</td>
<td>6</td>
<td>1.5</td>
</tr>
<tr>
<td>Increase Connections</td>
<td>7</td>
<td>1.4</td>
</tr>
<tr>
<td>Reduce Congestions</td>
<td>8</td>
<td>1.3</td>
</tr>
<tr>
<td>Promote Efficiency</td>
<td>9</td>
<td>1.2</td>
</tr>
<tr>
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<td>Protect the Environment</td>
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<td>1.0</td>
</tr>
<tr>
<td>Support Land Use Goals</td>
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<tr>
<td>Preserve ROW</td>
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<td>0.8</td>
</tr>
<tr>
<td>Improve Security</td>
<td>14</td>
<td>0.7</td>
</tr>
</tbody>
</table>

**Project Scoring**

The project scoring process combined the results of the deficiencies analysis with the weighted evaluation criteria to arrive at a final list of prioritized projects that resulted from both qualitative and quantitative evaluation metrics.
Travel Demand Scoring

Each project was assigned a “reduces congestion” criterion score based on the project’s location in relation to roadways that have a high V/C ratio according to the roadway deficiencies analysis results.

Projects with a high direct correlation to the criterion were assigned four or five points;
Projects with medium influence on the criterion were assigned two to three points; and
Projects with minimal to no impact on the criterion were assigned zero to one points.

Transportation Coordinating Committee Scoring

To evaluate the candidate list of projects for inclusion in the LRTP, NLCOG staff coordinated and conducted meetings with the Transportation Coordinating Committee (TCC) work group and provided technical guidance. The TCC work group systematically evaluated each project, fairly and clearly, based on evaluation criteria ranked during outreach to the public and local transportation stakeholders during the visioning process.

Each member of the TCC was asked to score each project based on how well it aligns with, or contributes to, achieving the community’s transportation vision. Members assigned one to five points per criterion for every project based on the degree to which they felt the project addressed the criteria (see scoring sheet example).

For example, if a project was thought to have a significant impact on safety, the project would be assigned four or five points for the “Improves Safety” criterion. If the project did nothing to increase multi-modal options, it would be assigned one point for that criterion. Short-, mid-, and long-term projects were scored at the same time and then divided into separate, ranked lists.

Committee members were able to use their technical expertise and local knowledge to adjust the criteria weights to best meet regional transportation goals and needs.

Policy Committee Adoption of the Prioritized Project List

The projects selected and prioritized by the TCC work group were presented to the NLCOG Transportation Policy Committee (TPC). After vetting the list, the TPC adopted the recommendations. The prioritized list of projects that resulted from this process did not incorporate financial factors or policy constraints. Those elements were analyzed later in the planning process and will be discussed in Chapter 7.
Alternative Transportation Scenarios

In addition to creating scenarios that would explore how variations in land use could affect the transportation network, NLCOG tested three different roadway scenarios (No-Build, Limited Investment, and High Investment) to compare how different levels of transportation funding and investment would impact activity on the transportation system. The three scenarios only reflect projects that add capacity to the transportation network.

No-Build

This scenario was designed to explore the effects on the transportation system if funding for future projects does not materialize as anticipated. Although this scenario is unlikely, it is important to understand how the system would perform with just the current existing plus committed – or “E+C” – network (i.e. roadways that currently exist plus roadway projects already under development with committed funding that ensure they will be built in the near future). This scenario, shown in Figure 5-6, represents the transportation network as is, and serves as a no-build baseline scenario to compare the various levels of transportation investment. This scenario is identical to the Current Growth Trends land use scenario.

Limited Investment

This transportation scenario was designed to reflect a level of transportation investment that roughly corresponds to the level of funding anticipated to be available over the course of the 2040 LRTP. Funding is considered to be limited and does not cover the costs of all transportation projects from the unconstrained project list, but it does allow for investment in projects with identified funding sources. The transportation network in this scenario, shown in Figure 5-7, includes the E+C network as well as capacity expansion projects anticipated to cost less than $50 million taken from the unconstrained project list.

High Investment

This scenario assumes a dramatic increase in available transportation funding. In this case, there is very high investment in the transportation network. Funding is no longer limited and is available to match the costs of all projects listed in the unconstrained project list. The transportation network in this scenario, shown in Figure 5-8, consist of the E+C network and all capacity expansion projects included in the unconstrained project list developed for the 2040 LRTP.
Figure 5-6: No-Build Transportation Scenario
Figure 5-7: Limited Investment Transportation Scenario
Results

While some of the projects included in these scenarios are centrally located within the urban area, the majority are located at the edge of incorporated areas and/or in unincorporated areas within Caddo and Bossier Parishes. Beyond the potential traffic implications, these transportation scenarios may also have environmental and economic implications that warrant discussion. All these potential impacts will be discussed further in the following sections. Tables 5-3 and 5-4 provide an overview of all the scenario results.

Table 5-3: Percent Difference between 2010 and All Future Scenarios

<table>
<thead>
<tr>
<th>Scenario Group</th>
<th>VMT</th>
<th>VHT</th>
<th>Average Speed</th>
<th>Total Regional Hwy Daily Delay</th>
<th>Total Regional Arterial Daily Delay</th>
<th>Regional Congestion Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010 Base</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Current Growth Trends/No-Build</td>
<td>29.0%</td>
<td>44.1%</td>
<td>-0.1%</td>
<td>130%</td>
<td>154%</td>
<td>-2.5%</td>
</tr>
<tr>
<td>Downtown High Growth</td>
<td>27.2%</td>
<td>44.4%</td>
<td>-0.3%</td>
<td>140%</td>
<td>165%</td>
<td>-3.1%</td>
</tr>
<tr>
<td>TOD</td>
<td>15.5%</td>
<td>24.6%</td>
<td>-0.3%</td>
<td>112%</td>
<td>64%</td>
<td>-6.9%</td>
</tr>
<tr>
<td>Limited Investment</td>
<td>28.6%</td>
<td>42.1%</td>
<td>0.0%</td>
<td>121%</td>
<td>138%</td>
<td>-3.8%</td>
</tr>
<tr>
<td>High Investment</td>
<td>32.6%</td>
<td>36.7%</td>
<td>0.1%</td>
<td>73%</td>
<td>85%</td>
<td>-24.1%</td>
</tr>
</tbody>
</table>

Table 5-4: Percent Difference between Current Trends and All Alternative Future Scenarios

<table>
<thead>
<tr>
<th>Scenario Group</th>
<th>VMT</th>
<th>VHT</th>
<th>Average Speed</th>
<th>Total Regional Hwy Daily Delay</th>
<th>Total Regional Arterial Daily Delay</th>
<th>Regional Congestion Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Growth Trends/No-Build</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Downtown High Growth</td>
<td>-1.37%</td>
<td>0.18%</td>
<td>-0.15%</td>
<td>4.61%</td>
<td>4.26%</td>
<td>-0.58%</td>
</tr>
<tr>
<td>TOD</td>
<td>-10.46%</td>
<td>-13.56%</td>
<td>-0.19%</td>
<td>-7.69%</td>
<td>-35.37%</td>
<td>-4.58%</td>
</tr>
<tr>
<td>Limited Investment</td>
<td>-0.35%</td>
<td>-1.36%</td>
<td>0.17%</td>
<td>-3.76%</td>
<td>-6.32%</td>
<td>-1.40%</td>
</tr>
<tr>
<td>High Investment</td>
<td>2.77%</td>
<td>-5.13%</td>
<td>0.21%</td>
<td>-24.79%</td>
<td>-27.06%</td>
<td>-22.13%</td>
</tr>
</tbody>
</table>

Limited Investment Transportation Scenario

The transportation system under the Limited Investment scenario is predicted to perform slightly better than under the current trends scenario in 2040, according to the TDM analysis. Under this scenario, VMT and VHT are predicted to increase by about 29% and 42%, respectively from 2010 to 2040. These results represent a difference from the current trends scenario of less than 1% for VMT and less than 1.5% for VHT in 2040. The difference between this scenario and the current trends scenario for total regional daily delay is greater, relatively speaking, with the limited investment scenario resulting in almost 4% less regional delay on the highway network and over 6% less delay on the arterial network.
This scenario could also lead to environmental and economic impacts. Sprawling land use patterns may be encouraged as a result of many of the projects being concentrated at the edges of incorporated areas as well as in unincorporated areas of the region. Environmental implications of suburban growth may include negative impacts on air quality and encroachment on sensitive lands. Additionally, while the region maintains a large service industry supported by economic activity generated by BAFB, increasingly spread out development could make it harder for people with low-paying service jobs to get to work and could also make it harder for employers to find employees.

High Investment Transportation Scenario

The High Investment scenario was the only scenario under which VMT increased beyond the level predicted for the current trends scenario, producing a 2040 VMT over 444,000 more than the 2040 current trends scenario. However, VHT results are significantly lower than those predicted for the current trends scenario, indicating that more people will be driving and/or drivers will be traveling farther, but at faster speeds. The analysis indicates that this scenario would result in the least amount of increase in regional highway daily delay among all scenarios, at 73%, and the second lowest increase in regional arterial daily delay, at 85%, from 2010 to 2040. It also resulted in the largest decrease in the average regional congestion index.

The analysis indicates this scenario will increase average speed and reduce regional delay more than the limited investment scenario. However, it will also induce demand on the transportation system as reflected in the higher VMT result. Additionally, the potential environmental and economic impacts described in the limited investment scenario are also potential outcomes of this scenario. Furthermore, this investment scenario comes with a high price tag, which may not be realistic based on historical transportation funding trends.

Conclusion

The regional results of the 2010 Base and 2040 Future Year land use and transportation scenarios, produced from the scenario planning TDM analysis, are provided in Table 5-5. The various outcomes of these scenarios, as well as the other no-build and build strategies discussed in this chapter can provide policy makers with tools to balance transportation system performance with regional needs, goals, and constraints.

Table 5-5: Base and Future Scenario Results

<table>
<thead>
<tr>
<th>Scenario Group</th>
<th>VMT</th>
<th>VHT</th>
<th>Average Speed</th>
<th>Total Regional Hwy Daily Delay</th>
<th>Total Regional Arterial Daily Delay</th>
<th>Regional Congestion Index</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2010 Base</strong></td>
<td>12,446,217</td>
<td>289,493</td>
<td>46.7</td>
<td>16,781</td>
<td>19,937</td>
<td>0.487</td>
</tr>
<tr>
<td><strong>Current Growth Trends/No-Build</strong></td>
<td>16,057,737</td>
<td>417,164</td>
<td>46.64</td>
<td>38,511</td>
<td>50,606</td>
<td>0.475</td>
</tr>
<tr>
<td><strong>Downtown High Growth</strong></td>
<td>15,837,583</td>
<td>417,912</td>
<td>46.57</td>
<td>40,287</td>
<td>52,760</td>
<td>0.472</td>
</tr>
<tr>
<td><strong>TOD</strong></td>
<td>14,377,347</td>
<td>360,611</td>
<td>46.55</td>
<td>35,549</td>
<td>32,707</td>
<td>0.453</td>
</tr>
<tr>
<td><strong>Limited Investment</strong></td>
<td>16,002,282</td>
<td>411,496</td>
<td>46.72</td>
<td>37,064</td>
<td>47,409</td>
<td>0.468</td>
</tr>
<tr>
<td><strong>High Investment</strong></td>
<td>16,501,776</td>
<td>395,757</td>
<td>46.74</td>
<td>28,966</td>
<td>36,909</td>
<td>0.370</td>
</tr>
</tbody>
</table>
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