

Transportation Chapter

Introduction

This transportation chapter identifies how Tulsa's transportation building blocks will provide mobility choices to a broader group of users, diversify the economy, and aid in building a sustainable community. Implementing these transportation building blocks in Tulsa involves the introduction of some familiar transportation components as well as some new components.

The chapter goes into detail regarding the tools, or components, needed to implement the transportation building blocks. The main enhancement areas of the transportation chapter are:

- Street System Enhancements
- Transit System Enhancements
- Pedestrian Enhancements
- Bicycle Enhancements

Each of the enhancement sections contains its respective current use, future use, specific tools, and the plan priorities.

Chapter Contents

Part I: Tulsa's Transportation Vision and Challenges
Part II: The Route for Tulsa
Part III: Tools for the Transportation Building Blocks
Part IV: Conclusions
Part VI: Priorities, Goals and Policies

Transportation Appendices

A-1:Transportation Toolbox
A-2: Context Sensitive Solutions Process
A-3: Sustainable Network Initiative
A-4L Scenario Modeling Process and Results

Part I: Tulsa’s Transportation Vision and Challenges

Our Vision for Tulsa places an emphasis on coordinating transportation facilities’ design with the land uses they serve. Like many American cities, Tulsa’s transportation system has historically been oriented to support automobile traffic. While it is likely that cars will continue to play a big role in how Tulsans get around town in the future, the PLANiTULSA public input process found significant support for expanding the range of transportation options.

Traditional approaches to traffic congestion management consist of expanding automobile capacity, but usually overlook how land use can contribute to the solution. While Tulsa does not currently suffer from the severe traffic congestion found in Los Angeles, Houston or Dallas, The PLANiTULSA transportation and land use scenario process sought to illustrate how land use and transportation are related. The relationship between the design of a transportation facility - how often it accommodates driveways, how wide are its lanes, whether it has on street parking, whether it has street trees - and the land uses it serves is an increasingly important concept. When the emphasis is placed upon moving automobiles alone, the opportunities for creating sustainable places is reduced.

A major issue in Tulsa is the ability of tax revenues to pay for the operation and maintenance of the current network of city owned streets, alleys and other transportation facilities. Tulsa’s Complete our Streets Advisory Council in 2007 determined that approximately \$1.1 billion dollars are needed to return Tulsa’s streets to good repair as well as to keep them in good condition for the next decade. That figure does not include new construction street projects such as widening of arterial streets and significant improvements to numerous major intersections. Those additional capital projects – estimated to cost at least \$500 million – will have their own maintenance funding needs. The committee further found that Tulsa’s revenues have not kept pace with the cost of maintaining infrastructure.

Table **XX**: Lane Miles Added by Scenario

	Business as Usual	Tulsa 2030 Goal
Existing Lane Miles	1,526	1,526
Added Lane Miles	604	XXX
Total Lane Miles 2030	2,130	XXX
Lane Miles Added per 1000 New Residents	21.1	XXX

Source: Fregonese Associates

The committee recommended that the City Council and the Administration co-ordinate an effort to enable specific policies that encourage a growth of sales tax generating sales within the city limits. To enhance Tulsa’s fiscal sustainability and fulfill *Our Vision for Tulsa*, transportation

and land use planning and policy must be more intricately coordinated. The stark difference between the Trend and Tulsa 2030 Goal’s estimated sales tax impact illustrates this issue.

Table **XX**: Net Sales Tax Impact

Net Sales Tax Impact	Trend	Tulsa 2030 Goal
City of Tulsa 3%	\$ 22,400,000	\$ 46,600,000

Source: Fregonese Associates

The design of transportation facilities has a great impact on the marketability of an area and the type of land development forms that will occur. For example building new highways spurs single family subdivisions and strip commercial developments while multi-modal main streets enable townhouses and small businesses that can be served by many modes of transportation. Tulsa 2030 Goal would place a larger number of new homes and jobs near transit than if current trends were to continue.

Table **XX**: Lane Miles Added by Scenario

	Business as Usual	Tulsa 2030 Goal
Housing Units w/in 1/2 Mile of Transit	6,847	XXX
Share	52%	XXX
Jobs w/in 1/2 Mile of Transit	10,637	XXX
Share	45%	XXX

Source: Fregonese Associates

Analysis of the PLANiTULSA scenarios reveals that transit ridership would increase 500% percent over the next 25 years given multi-modal transport investments and sound land development policies that support transit and walkability. This means not only greater mobility choices, but a healthier community and increased tax base through denser development that utilizes existing infrastructure.

[Insert: Additional Scenario Model Indicators and Discussion]

Part II: The Route for Tulsa

The Transportation component of *Our Vision for Tulsa* envisions a more robust system with a variety of options for getting around town. Fundamental to achieving this vision will be the reinvestment in Tulsa's existing network to increase connectivity, enhance pedestrian, biking, and transit spaces, and maintain mobility. This plan focuses outlines two primary approaches to achieving these aims: enhancing the multi-modal quality of Tulsa's existing (and future) network, and expanding the transit system.

Getting more out of the existing street system and enhancing transportation options will be achieved by way of a process that seeks to unite public works with community and developers. This process is called Context Sensitive Solutions (CSS) and it will be a part of every small area planning effort. CSS is a collaborative, interdisciplinary approach that involves all stakeholders to develop a transportation facility that fits its physical setting and preserves scenic, aesthetic, historic and environmental resources, while maintaining safety and mobility for all users (bike, pedestrian, auto and transit).

A Multi-Modal Street Network

Tulsa is fortunate to have a well connected street network with an array of roadway sizes and characteristics. These right-of-ways assure that the transportation system can evolve as the city grows and travel modes mature. In the past the network absorbed increased traffic due to higher vehicular ownership levels and long-distance commutes. With changing community desires for transportation choices and sustainability, Tulsa's network can be adapted for transit priority and/or desire for more bicycle, pedestrian and placemaking initiatives. This can be accomplished in concert with improving freight, cargo and through traffic movement because of the duplicity in the roadway and highway network.

Expanded Transit System

Tulsans are very dependent on their personal automobile for daily travel. A combination of factors plays into the daily decisions of how people commute. The Association for Commuter Transportation (ACT) sites lack of choice as the number one reason people commute via private vehicle, which means if roads and cars are the only choices then the commuter's decision is obvious. The public opinions presented during the PlaniTulsa telephone survey support more transit alternatives such as rail and streetcar.

How we Get There: Context Sensitive Solutions (CSS) Approach

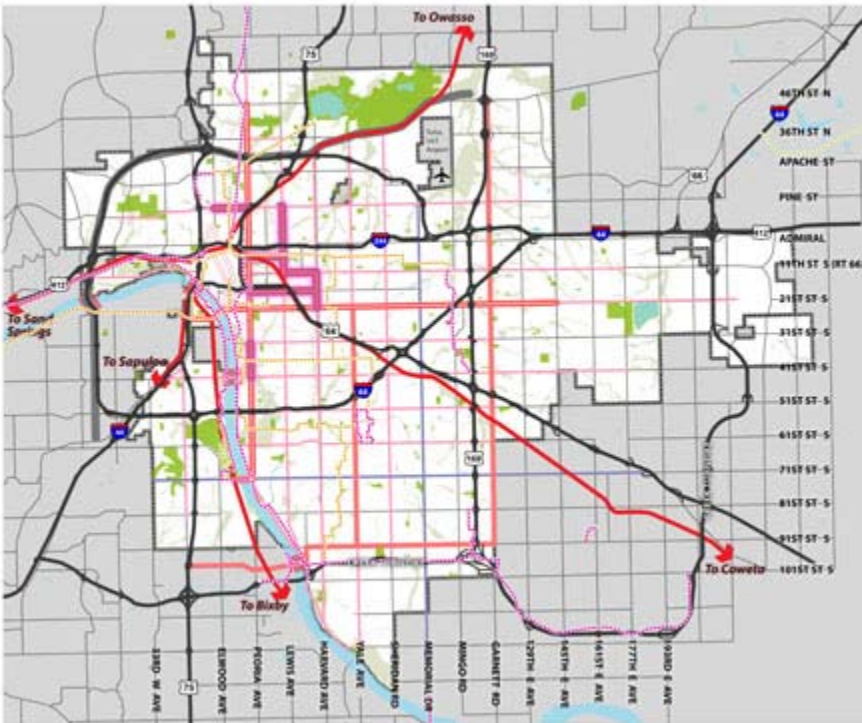
Currently Tulsa uses a conventional thoroughfare design process which is based primarily on functional class, design speed and often is governed by automobile travel demand and level of service criteria. In CSS these are still important criteria, but are balanced with other context-related criteria including community objectives, thoroughfare type and the type and intensity of the adjacent land uses. CSS will be a vital element to building public-private partnerships to

develop the new centers, multi-modal corridors, main streets and livable streets articulated in *Our Vision for Tulsa*. **Appendix XX** offers a sample CSS policy and process.

Transportation Building Blocks

The two overarching concepts for Tulsa’s transportation strategy are building the city’s multi-modal street system and enhancing transit. These make up the fundamental building blocks of the city’s future transportation system, and are designed to work hand-in-hand with land use policy by way of a Context Sensitive Solutions process.

Figure XX: Transportation Vision



Source: Fregonese Associates

Multi-Modal Street System

The first transportation building block is the multi-modal street system. A multi-modal street balances the needs of all modes of travel, giving people the option to walk, bike, ride transit or drive. The street types include Main Streets, Multi-Modal Streets, Commuter Streets and Livable Streets. These street types attempt to strike a balance between functional classification, adjacent land use, and the competing travel needs.

This approach diverges from conventional street designs that emphasize automobile mobility and speed to the exclusion of other users. At the same time, it retains the city’s existing classification

system of arterials, collectors and local streets. Instead, it presents criteria to better classify their function and guide the redevelopment of existing facilities and the design of new ones. The conversion to multi-modal streets will occur incrementally as roads are re-designed, small area plans recommend changes to the road character and on-street bicycle facilities are needed to link key destinations and connect the off-street trails to neighborhoods.

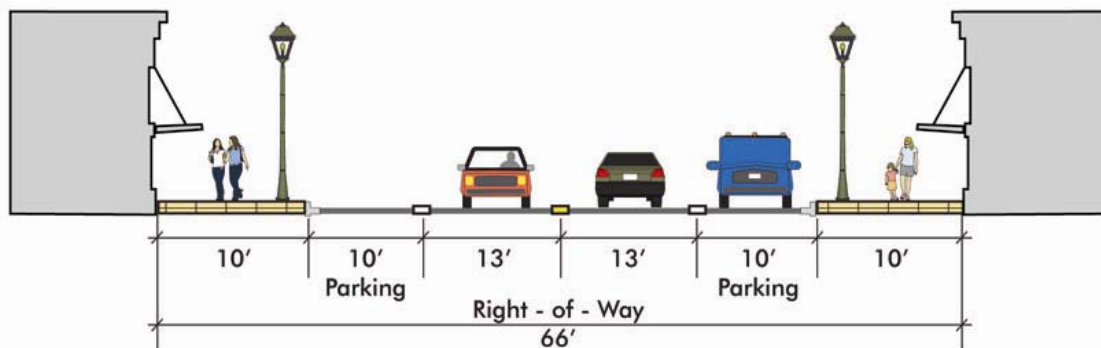
Main Streets

Main streets serve the highest intensity retail and mixed land uses in Tulsa’s areas such as downtown and in regional and neighborhood centers. Like multi-modal streets, main streets are designed to promote walking, bicycling, and transit within an attractive landscaped corridor. Generally, main street activities are concentrated along a two to eight block area, but may extend further depending on the type of adjacent land uses and the area served.

Main streets can be designed with two to four travel lanes, although typically have only two lanes. On street parking usually is provided to serve adjacent land uses. Unlike typical strip commercial developments, main streets offer the ability to park-once and walk amongst various destinations, thus reducing arterial trip making. The key is to create convenient parking that is on-street or provided in a shared public parking lot. Careful consideration must be made to the appropriate amount and design of parking lots or the walkability of a place is in jeopardy.

More emphasis should be placed on making the street frontage walkable and direct walking and biking connections to adjacent neighborhoods thus, tree lawns and detached walks are emphasized. Within the parking lane tree wells may be used to create a double row of street trees in combination with a tree lawn. To further create a pedestrian-friendly atmosphere, main streets have wide sidewalks, street furniture, outdoor cafes, plazas, and other public spaces.

Figure XX: Sample Main Street Cross Section



Urban Arterial, Main Street - 2 lane undivided road with parallel parking

Initial Priority Elements

- Wide sidewalks with transit access and pedestrian plazas
- Bicycle facilities
- Curb extensions
- Tree lawns
- On-street parking

Secondary Priority Elements

- Medians
- Width and number of travel lanes

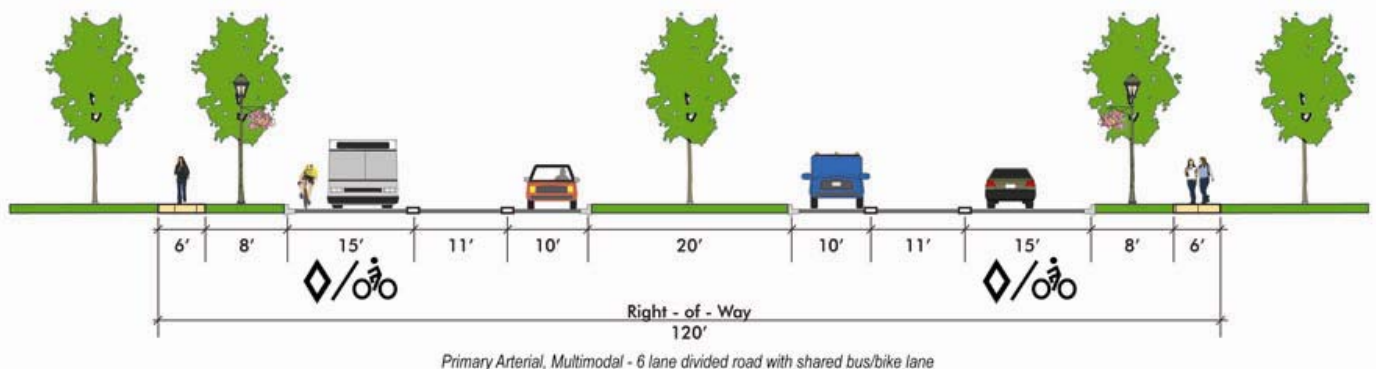
Examples of Traffic Management Features

- Narrower travel lanes
- Alternative paving material
- Tree planters in parking lane
- On-street parking
- Reduced pedestrian crossing distances at intersections, using curb extensions, traffic islands, and other measures
- Raised intersections
- High-visibility crosswalks

Multi-Modal Streets

Multi-modal streets emphasize plenty of travel choices such as pedestrian, bicycle and transit use. Multi-modal streets are located in high intensity mixed-use commercial, retail and residential areas with substantial pedestrian activity. These streets are attractive for pedestrians and bicyclists because of landscaped medians and tree lawns. Mixed-use streets can have on-street parking and wide sidewalks depending on the type and intensity of adjacent commercial land uses. Transit dedicated lanes, bicycle lanes, landscaping and sidewalk width are higher priorities than the number of travel lanes on this type of street. To complete the street, frontages are required that address the street and provide comfortable and safe refuge for pedestrians while accommodating automobiles with efficient circulation and consolidated-shared parking.

Figure XX: Sample Multi-Modal Street Cross Section



Initial Priority Elements

- Dedicated transit lanes
- Transit priority at intersections
- Wide sidewalks with transit access
- Bicycle lanes on designated bike routes
- Bicycle facilities
- Tree lawns
- On-street parking

Secondary Priority Elements

- Width and number of travel lanes (on collector and local streets)
- Medians

Examples of Traffic Management Features

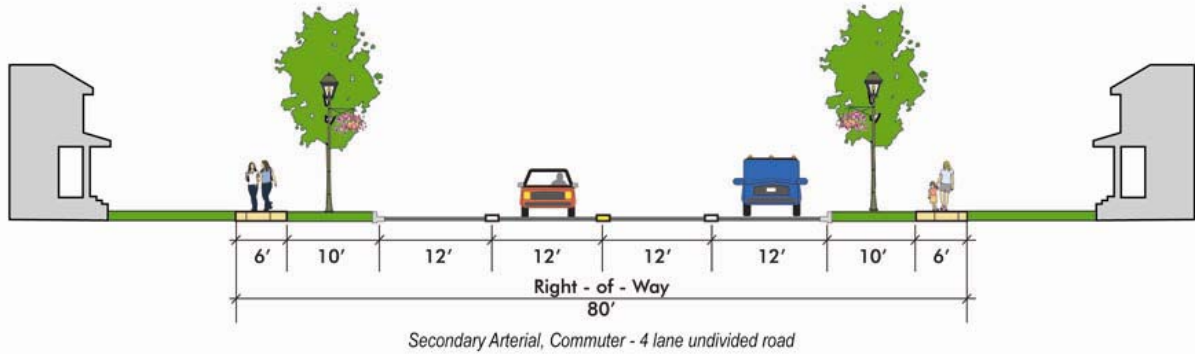
- Landscaped medians
- On-street parking
- Street trees
- Narrower travel lanes
- Traffic circles and roundabouts
- Reduced pedestrian crossing distances at intersections, using curb extensions, traffic islands, and other measures

Commuter Streets

The most widespread commercial street type is the strip commercial arterial. These arterials typically serve commercial areas that contain many small retail strip centers with buildings set back from front parking lots. Because of this, strip commercial arterials have many intersections and driveways that provide access to adjacent businesses. Historically, this type of street often is highly auto-oriented and tends to discourage walking and bicycling. On-street parking is infrequent.

Commuter streets are designed with multiple lanes divided by a landscaped median or a continuous two-way left turn lane in the center. Commuter streets are designed to balance traffic mobility with access to nearby businesses. However, because there are so many intersections and access points on commercial streets, they often become congested. Improvements to these streets should come in the form of access management, traffic signal timing and creative intersection lane capacity improvements.

Figure XX: Sample Commuter Street Cross Section



Initial Priority Elements

- Number and width of travel lanes
- Medians
- Transit accommodations

Secondary Priority Elements

- Pedestrian facilities
- Bicycle facilities
- Tree lawns
- Two-way center left-turn lanes
- On-street parking

Examples of Traffic Management Features

- Medians
- Consolidated driveways
- Synchronization of traffic signals
- On-street parking
- Narrower travel lanes
- Reduced pedestrian crossing distances at intersections, using curb extensions, traffic islands, and other measures

Residential Streets

These streets work to strengthen neighborhood cohesion, promote alternative transportation, calm traffic and connect recreational destinations. Residential streets serve two major purposes in Tulsa's neighborhoods in new developments that are building homes with pedestrian frontages that demand a reduced buffer to create a complete street and when retrofitting overly-wide residential or downtown streets with on-streets parking, bicycle and pedestrian accommodations and traffic calming measures.

In both cases, livable streets tend to be more pedestrian-oriented than commuter streets, giving a higher priority to landscaped medians, tree lawns, sidewalks, on-street parking, and bicycle lanes than to the number of lanes.

Residential streets consist of two to four travel lanes, but place a much higher priority on pedestrian and bicycle friendliness than on auto mobility.

Figure XX: Sample Residential Street Cross Section

[Cross section TBD]

Initial Priority Elements

- Sidewalks
- Tree Lawns
- On-street parking
- Landscaped medians
- Bike lanes on designated bicycle routes

Secondary Priority Elements

- Number and width of travel lanes (especially collector and local streets)

Examples of Traffic Management Features

- Medians
- On-street parking
- Street trees
- Narrower travel lanes
- Traffic circles and roundabouts
- Reduced pedestrian crossing distances at intersections, using curb extensions, traffic islands, and other measures
- Diverters

How the Transportation Building Blocks Relate to Land Use

The overarching approach to integrating land uses and transportation facilities is known as Context Sensitive Solutions (CSS). This process provides more detailed direction for balancing or prioritizing the infrastructure for each mode of travel in the context of the adjacent land uses. CSS takes an interdisciplinary approach to street design that will further encourage coordination between traffic engineers, planners, urban designers, architects, emergency response officials, and the community when designing new streets or reconstructing existing streets. This approach fosters communication with those designing other elements of the community and results in better facilities and places.

Transportation building blocks	Land Use Building Blocks					
	Downtown	Centers	Corridors	New Residential	Exist Residential	Employment
Main Streets	Y	Y	Y	X	X	X
Multi-Modal Streets	Y	Y	Y	Z	Z	Y
Commuter Streets	X	Z	Z	X	Z	Y
Residential Streets	Y	Y	X	Y	Y	Z
X not applicable, Y Applicable, Z Acceptable						

Expanded Transit System

The current delivery of public transportation in the Tulsa region is provided by the Metropolitan Tulsa Transit Authority (MTTA). The fixed route service provides riders with access to regional shopping, health care and employment centers adequately. The existing routes of the MTTA bus system offer a safe, reliable and affordable transportation alternative for its current ridership. *Our Vision for Tulsa* envisions a greatly expanded transit network that provides a wider range of options than exist today.

Expanding ridership for the system should come mostly from new choice riders. These riders typically own cars, but can be enticed to use transit by quality of service and convenience. Choice riders in Tulsa may be attracted to transit because of an array of social values, such as their desire to reduce their “carbon footprint” and be “green” but mostly they will be attracted by the qualities of a good transit system, such as fast and frequent service, amenities like bike racks, comfortable and quiet vehicles, and good accessibility from stations and stops to work, home, or other destinations. The following tables illustrate how transit must respond in order to attract choice riders.

Car Attractions and Transit Needs	
Car Attractions	Transit Needs
Door-to-door service Goes anywhere Convenient for multiple-destination trips	Enhanced service coverage and multiple-trip fares
Ready when needed	Frequent service
Comfortable and private Protection from the elements	High-quality vehicles, seating and stations Protection from the elements
Carries personal goods	Room for parcels, bikes and strollers
Fosters family travel	Pleasant ambiance for families
Provides prestige, looks nice, conveys a sense of freedom and independence	Premium experience for travelers who travel in a more sustainable fashion

Source: Adapted from Metrolinx, Green Paper #7, March 2008

Car Problems and Transit Advantages	
Car Problems	Transit Advantage
Consumes land for roads and parking	Uses land and road space more efficiently
Slow and unreliable in high-traffic corridors	Rapid, frequent service in high-traffic corridors
Heavy traffic disrupts neighborhoods	High ridership helps build neighborhoods
Noisy and polluting	Relatively quiet and low polluting
Burns fossil fuel inefficiently	Uses cleaner energy sources more efficiently
Greater incidence of injuries and deaths for auto users and pedestrians	Fewer injuries and deaths for riders and pedestrians
Discourages walking and bicycling	Active modes feed/distribute transit trips
Creates health problems	Provides opportunities for exercise
High public costs for infrastructure and support	More capacity per dollar invested
High personal costs for ownership, insurance and use	More affordable for users

Source: Adapted from Metrolinx, Green Paper #7, March 2008

The purpose of the expanded transit system is twofold. First, it provides a reliable and convenient alternative to the automobile. Secondly, this new transit program will play an important role in influencing sustainable land development patterns. People living and working in and around transit corridors can rely less on the automobile and use enhanced pedestrian, transit, and bicycle facilities. Households who elect to live near transit can often reduce the number of cars they own, reducing the need for parking facilities.

The elements of the expanded transit system include rail (both light rail and commuter rail), Bus Rapid Transit (BRT) and a variation on BRT called High Frequency Bus. A streetcar system will also play a vital role in Tulsa’s future transit system.

Rail Transit

The rail transit element of the expanded transit system consists of streetcar, light rail and commuter rail service. While streetcars share existing right-of-ways, light rail and commuter rail

typically operate in designated rights of way separate from other forms of transportation (i.e. cars, bikes, pedestrians, and freight rail). In addition, connections with other forms of transportation sometimes are grade separated (e.g., rail crossing of a major street) to reduce conflicts. Commuter rail differs from light rail in that it typically serves longer distance trips, has fewer stops within a corridor, and uses diesel-powered vehicles. The operational characteristics of light rail include smaller vehicles and better acceleration, allowing it to function more efficiently on a multi-modal street mixed with other forms of transportation (i.e., cars, bikes, buses, and pedestrians).

Both commuter rail and light rail provide advantages over the automobile. As demand increases, light rail and commuter rail lines can easily be expanded by adding cars to the trains or by increasing the frequency of service. Thus, rail serves densely built areas such as downtown Tulsa more efficiently. Rail corridors also play a vital role in providing access to special events, sports and cultural facilities, and entertainment.

[Sidebar: The land use efficiency of transit compared to freeways: A typical light rail car handles 175 people during the peak hour operating conditions. Assuming 2 car trains and 5 minute headways, a light rail system can move roughly 8,400 people per hour within 40 feet of right-of-way including station locations. Thus, light rail can carry 210 persons per hour, per foot of right of way. In contrast, a four lane expressway with traffic moving in both directions (roughly 80 feet of right-of-way) can move roughly 9,600 people per hour, which equates 120 persons per hour, per foot of right of way.]

Bus Rapid Transit (BRT)

BRT is a relatively new technology that combines some aspects of rail transit with the flexibility of buses. It can operate on exclusive transit ways, HOV lanes, expressways, or ordinary streets. As compared to typical diesel bus technology, a BRT system can potentially combine new technology (using propane or other alternative non-diesel fuel), priority for transit, cleaner and quieter operation, rapid and convenient fare collection, and integration with land-use policy.

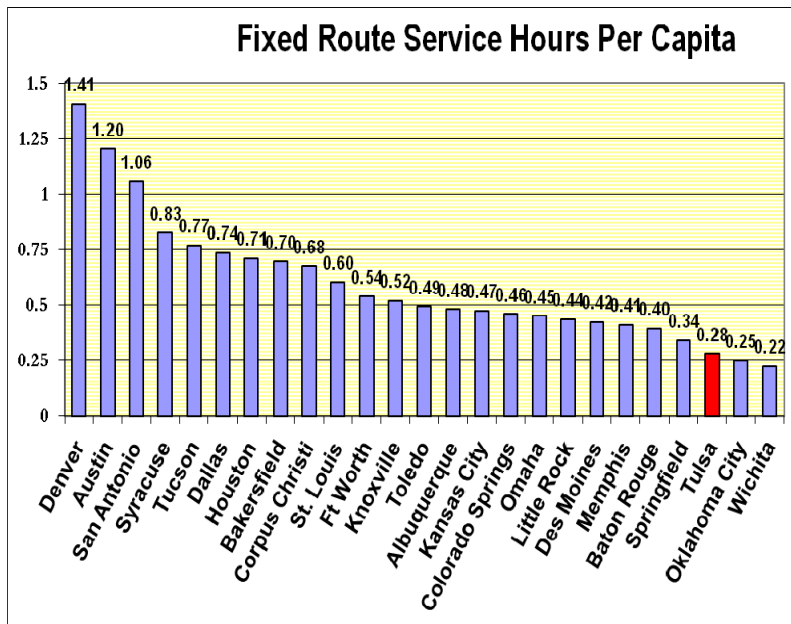
High Frequency Bus

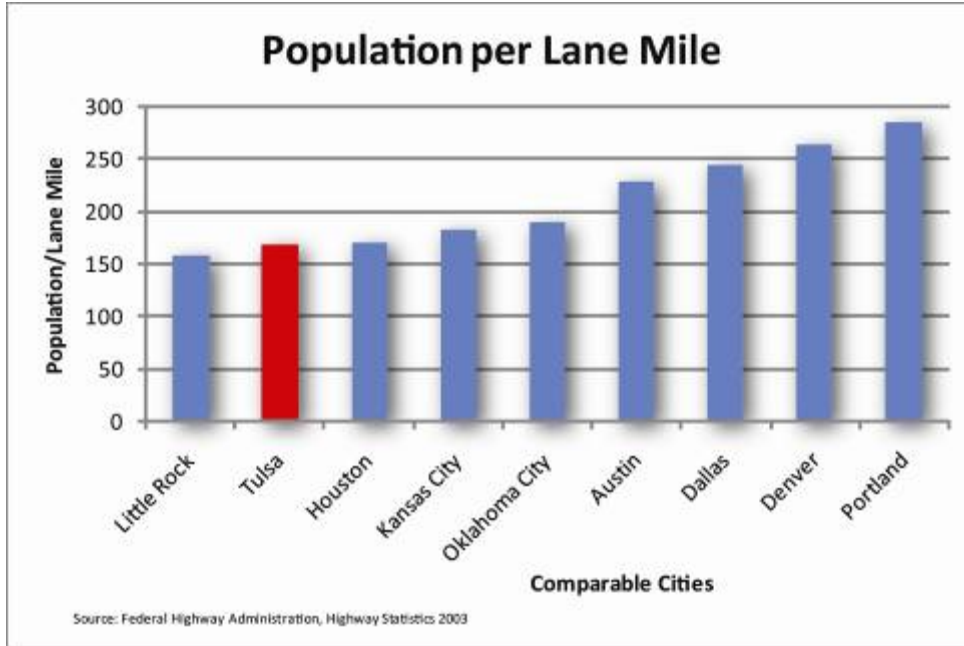
This new form of service operates in mixed traffic and has short stop spacing. Increased efficiency of this service comes from intelligent system operations. Priority and preemption is used at intersections and real-time information is given at stops through the utilization of GPS technology.

Part III: Tools for the Transportation Building Blocks

Tulsa’s transportation system consists of many components that must work together to make *Our Vision for Tulsa* a reality. These components include: the transit system, pedestrian facilities, bicycle facilities, the system-wide tools of access management, intelligent transportation systems, context sensitive solutions and sustainable network. This section provides a description of each component, identifies how the component currently is being used and how it can be modified to accomplish the vision.

Unlike land-use policies that guide the development of private property outside of the public right-of-way, transportation policies primarily address the public infrastructure of streets, alleys, bikeways, sidewalks, and transit services. However, the transportation policies recommend tools and strategies that also affect how private development contributes to the transportation system. Directly, that occurs via physical improvements (e.g., management of auto access across city rights-of-way, or the construction of streets as part of new development). Indirectly, City policies affect development through tools that reduce travel demand and encourage alternatives to the automobile. Most of the tools require implementation actions by the City since the design, operation, maintenance and approval of transportation facilities are public agency responsibilities.





Sidebar: While Tulsa has an abundance of roadway capacity it has limited transit system in terms of vehicles and especially service hours. MTTA runs a quality service, but is unable to meet the needs of a 24 hour 7 day a week economy because of operational funding limitations. Equitably funding all modes of transportation in Tulsa will create a more sustainable transportation system and reduce the demand for costly roadway maintenance and construction.

Multi-Modal Street System

Our Vision for Tulsa emphasizes the need to manage the effectiveness of Tulsa's street system, including building a sustainable network, first by investing in operational and reconstruction improvements, and then by increasing new roadway capacity at key locations that best serve the city as a whole.

This approach will assure that Tulsa achieves a more sustainable population per lane ratio. Currently, Tulsa's abundance of lane miles is creating a maintenance and operation crisis for the city and is reducing its bonding capacity for new transportation infrastructure.

One of the strategies toward achieving a fiscally sustainable system supports major improvements to the street system based on detailed sub-area or corridor studies, which use a Context Sensitive Solutions process to coordinate sustainable land development patterns with street, transit, pedestrian and bicycle improvements to create a complete street. **Appendix XX** explores this process further and highlights several catalyst corridors.

Public investment in both on-street and off-street facilities to accommodate alternative modes of travel will allow the City to provide a vital and efficient multi-modal network of streets. These investments should be preceded by small area planning efforts that uses a context sensitive solutions process and sustainable network modeling.

Therefore, the maintenance and reconstruction of existing infrastructure and the findings of sub-area, corridor and small area planning should be used to prioritize infrastructure investments. This plan defines a number of tools to increase the durability, sustainability and livability of Tulsa's streets. **Appendix XX** provides a quick reference for these tools.

Current Use of Streets as a Tool

The City's CIP process currently addresses priorities related to funding for infrastructure investments. The process addresses both capacity improvements as well as maintenance and reconstruction activities. The Complete our Streets Advisory Council in 2007 determined that approximately \$ 1.1 billion dollars are needed to return Tulsa's streets to good repair as well as to keep them in good condition for the next decade. That figure does not include new construction street projects such as widening of arterial streets and significant improvement of numerous major intersections in response to sprawling residential and commercial growth. Those new projects – estimated to cost an additional \$500+ million – will also have an undetermined amount of maintenance needs that will need to be addressed. The committee further pointed out that Tulsa's revenues have not increased in the same fashion that have the costs of maintaining our infrastructure. This describes a very unsustainable growth pattern in-which the city is subsidizing poor development patterns with expensive public works projects and having to borrow to maintain them.

The committee also recommends that the City Council and the Administration co-ordinate an all out effort to enable specific policies that encourage a growth of sales tax generating sales within our city limits.

Future Use of Multi-Modal Streets as a Tool

The Tulsa 2030 Goal demonstrates a **XX** increase in tax revenues over the Business as Usual scenario. This growth in sales tax is a product of wise re-development and infill policies and the development of new communities that are serviced by context sensitive designed streets, multi-modal corridors and expanded transit service.

To increase tax revenues and make *Our Vision for Tulsa* a reality, an emphasis must be placed on coordinating transportation facilities' design with the land uses they serve. Like many American cities, Tulsa's transportation system has historically been oriented to support automobile traffic. While it is likely that cars will continue to play a big role in how Tulsans get around town in the future, the PLANiTULSA public input process found significant support for expanding the range of transportation options.

The intent of this plan is to view all transportation improvements as opportunities to create safer, more accessible streets for all users, including pedestrians, cyclists, and public transportation passengers. Under this approach, even small projects can be an opportunity to make meaningful improvements. In repaving projects, for example, an edge stripe can be shifted to create more room for cyclists. In routine work on traffic lights, the timing can be changed to better accommodate pedestrians walking at a slower speed. The multi-modal streets in *Our Vision for Tulsa* should integrate multi-modal planning into many public works projects, including new construction, reconstruction, rehabilitation, repair, and maintenance.

Access Management

Access management means the planning, design and implementation of land-use and transportation strategies that control the location and flow of vehicular traffic into and out of businesses and residential developments. Access management currently is dealt with on a case-by-case basis through the development review process. Where it is feasible, commercial driveways are consolidated as redevelopment occurs in high traffic corridors.

In order to improve access management, a coordinated and consistent access management policy is needed. Such a policy should address the different street types and functional designation of streets, including the nature and intensity of the adjacent land use. Traffic impact studies should be required during the development review process when the data provided by such studies is necessary to evaluate access point locations and operations. In specific problem areas on existing commercial roadways, corridor access management plans should be developed and implemented.

Tulsa should incorporate a range of strategies and techniques for access management in its zoning, subdivision, development review, and transportation design standards and guidelines.

Intelligent Transportation Systems

Auto delay and transit headways can be improved by optimizing traffic signal equipment, using high speed communication to alert drivers and transit riders of travel information and improving coordination amongst emergency response agencies during unforeseen interruptions to the transportation system. The current ITS plan for Tulsa should be updated to reflect Our *Vision for Tulsa*'s emphasis on multi-modal travel. The revised plan should shift the focus from highway video surveillance and digital message boards to arterial street traffic management and transit coordination.

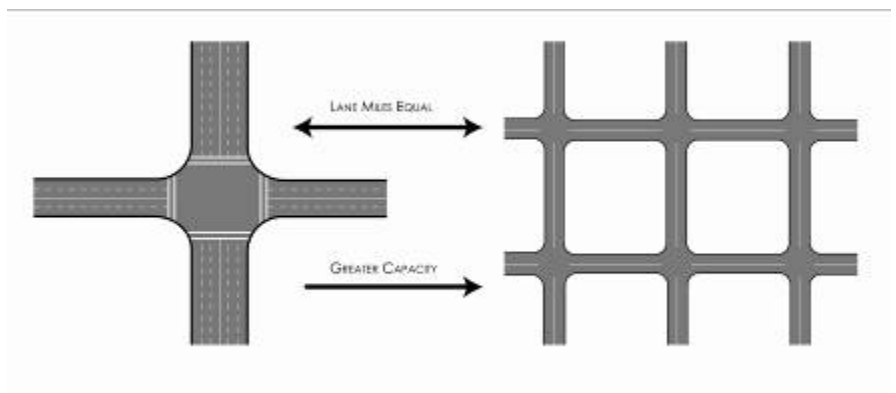
Context Sensitive Solutions

Properly planning for the size, alignment and character of new roads and the retrofit of existing roads to compliment sustainable land development patterns, cultural, historical and natural resources of the community is essential to realizing Our Vision for Tulsa. Currently roads are sized based upon maximizing capacity for the automobile, aligned to meet the desired speed determined by functional classification and little regard is had for complimenting the adjacent land use. Request for exceptions to the current roadway design standards from neighborhoods and developers is handled on a case by case basis and are approved at the discretion of the engineering department. Similar to the access management recommendation above, a coordinated and consistent CSS policy is needed. **Appendix XX** offers a sample CSS policy and process.

Sustainable Network Initiative

A network is a structure of streets and highways that serves and connects multiple places and people via multiple modes of travel. Sustainable networks represent a cost effective alternative to expensive grade separations, interchanges and corridors that require extensive right-of-way purchases. Sustainable networks also require local streets to be highly connected with the arterial system. This connectivity increases the opportunities for and performance of other modes of travel, such as walking, bicycling, and taking transit and improves emergency response times. Sustainable networks take a

greater level of planning and creative design to build, but there result is sustainable in terms of capital and maintenance costs. Appendix **XX** describes several planning and modeling processes that INCOG and City should consider with major roadway



widening, grade separation or new functionally classified street are being planned.

Modernize Street Funding

Partnerships with local business groups and community organizations are essential to ensure that special streetscaping associated with context sensitive streets and other infrastructure, once constructed in local business and activity areas, is properly maintained. The City should institute a variety of tools to allow business and residential property owners to assist in constructing and maintaining the infrastructure and amenities developed.

Local Improvement Districts (LIDs), Local Maintenance Districts, Business Improvement Districts (BIDs) and other special districts can be used to construct and maintain infrastructure such as streets, adjacent streetscaping, curb and gutters, water and drainage utility systems, sidewalks, and alleys.

Perhaps the biggest advantages to those desiring or needing improvements are that property owners are able to apportion the cost of improvements to more than just one property owner and that the cost of improvements can be spread over time. In addition, these districts may be able to take advantage of the City's ability to borrow money at lower interest rates than individuals. A public vote may be required for the City to incur debt through bonds. The larger, more expansive LIDs and BIDs also allow property owners not familiar with construction, contracting, engineering, or financing to rely on the City to undertake the process for them. The City can act as an agent to manage the project's design and construction.

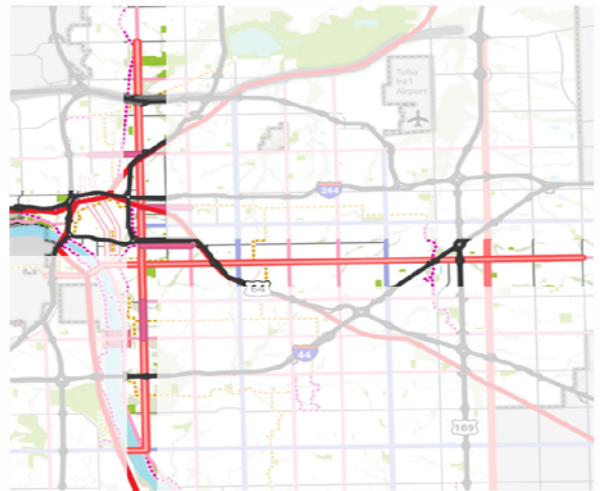
In addition to these voluntary measures, demands for capacity improvements can be fulfilled through developer impact fees. This funding mechanism is commonly used to offset the costs required to serve new development. When new development comes to a community, a number of services are required to serve them; including roadways, water lines, sewer facilities, schools, parks, fire stations, libraries and police stations. Within the State of Oklahoma, a number of Cities are considering the implementation of an impact fee, including Oklahoma City.

Transit System Enhancements

As a tool, transit represents opportunities to provide expanded transit services, including streetcar, light-rail transit (LRT), bus rapid transit (BRT), commuter rail and high-frequency bus. Such improvements may result in new bus routes including circulator routes, higher frequencies on existing routes, appropriately-sized buses for the type of service required, increasing transit access through park-n-rides, better pedestrian connections and amenities, and improved bike access and amenities. Transit improvements should also be coordinated with roadway design projects and the programming and installation of Intelligent Transportation Systems (ITS) such as bus priority signalization, real-time bus route and transfer information at user-friendly kiosks, and information from variable message signs. These tools not only enhance transit in terms of competing with the automobile for convenience and travel times, but act as a solid public investment that stimulates private interest in development and re-development of Tulsa.

Current Use of Transit as a Tool

The Metropolitan Tulsa Transit Authority (MTTA) currently provides the only fixed-route transit service in the Tulsa Region. The routing and operation of its approximately 128 buses provides a high quality ride experience and does an admiral job of servicing transit dependant populations. As mentioned previously the current system is not attractive to choice riders and businesses and employers that seek to be transit supportive. The system's growth is severely hampered due to the automobile oriented design of new residential and employment areas and general lack of density and supporting pedestrian and bicycle infrastructure needed to support healthy transit ridership.



The "Big T" represents the spine of a new expanded form of transit that is coordinated with roadway design, traffic signal operation and sustainable land development patterns.

Future Use of Transit as a Tool

Our Vision for Tulsa articulates the opportunity for transit expansion and defines a strategy for the delivery of transit in coordination with improvements to land development patterns, designs of roadways to be context sensitive and addition of high-capacity fixed route transit corridors. Transit is a key to realizing *Our Vision for Tulsa* because it enables the City to increase tax revenues without extending infrastructure and enables denser development because of a reduced need for parking and wide roadways. Equitable and sustained funding for transit must be identified for the transit system to grow. Transit fares should not be expected to sustain the system, rather it should be considered a part of the economic strategy to create new centers and neighborhoods in Tulsa that are sustainable and livable.

Regional Rapid Transit System

Connecting Tulsa to the region through a rapid transit system will further position it as the regional employment leader. Regional rapid transit comes in the form of using existing freight rail corridors to provide commuter rail service or re-purposing existing traffic lanes for dedicated transit use. In Tulsa, some of the most congested freeway corridors have parallel rail facilities or roadways that could be used for passenger rail and bus rapid transit, respectively. The map below highlights traffic congestion in the Tulsa region. The Mingo and Broken Arrow Expressways experience the highest peak hour traffic congestion in the region. Our Vision for Tulsa builds upon the previous work done to explore commuter rail in the Union Pacific right-of-way adjacent to the Broken Arrow Expressway and determined projected ridership levels are within range of receiving Federal Transit Authority consideration for funding. The Oklahoma Department of Transportation is also currently pursuing the possibility of self financing this project. PlaniTulsa addressed the need for future growth in the corridor to be transit oriented to support the long term viability of the corridor.

Traffic congestion in the Mingo Valley Expressway corridor represents an opportunity for transit to provide a safe, reliable and efficient alternative for commuters seeking to access Tulsa's employment centers. PlaniTulsa explored the application of Bus Rapid Transit using Garnett Road. This parallel arterial street not only provides a direct link to many employment destinations in the corridor, but the introduction of transit would facilitate an increase in the density of future developments.



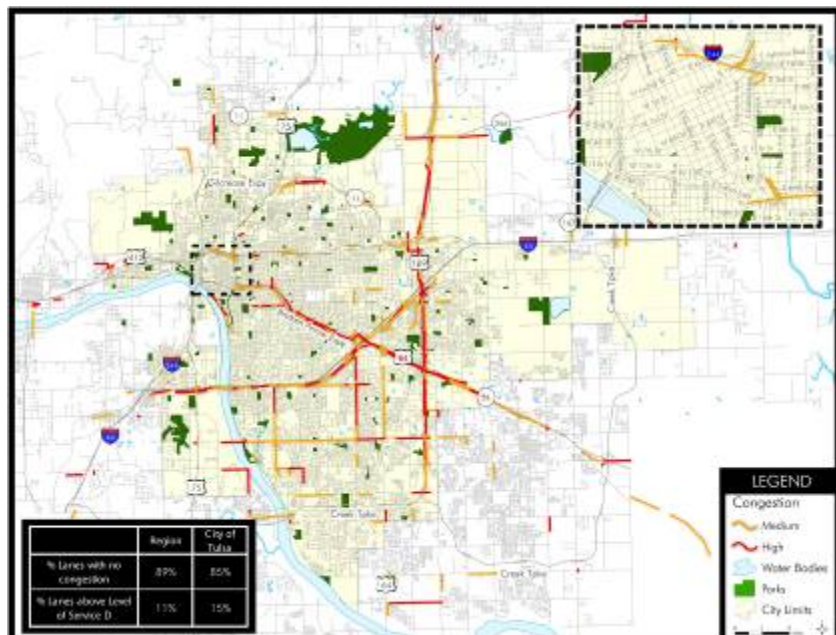
Commuter Rail

Commuter rail service connects the large master planned communities around the region, the surrounding towns and villages, and even nearby cities, with the urban core.



Bus Rapid Transit (BRT)

Bus Rapid Transit has the unique ability to function in either an exclusive right-of-way or in mixed traffic, however, the most common application assumes an exclusive right-of-way for operational efficiency and safety.



Transit Access

The City has initiated a new public works effort to establish the need for persons with disabilities access to public facilities such as bus shelters and civic facilities. The ADA transition plan should be expanded upon to include a comprehensive look at infrastructure needed to link bus stations and stops to retail, employment, educational, medical, civic and residential areas. In partnership with the private sector the Transit Access Program should be further developed with an emphasis on:

- Improving the doorstep to transit stop experience
- Encouraging the integration of transit stops and stations into new and existing developments
- Enhancing the appearance and character of transit stops in neighborhoods and business areas
- Improving the level of maintenance at stops in response to complaints from the community
- Creating a bike rack and permit program to accommodate bikes on all buses.

High Frequency Bus

Transit priority improvements should be completed in certain areas to improve the operation of transit travel in congested areas by using priority green phases, exclusive bus lanes and special bus stops that decrease passenger loading times and improve the ability of the bus to reenter the traffic stream. These measures should be implemented on key arterial streets and major bus transit corridors beginning with Peoria Avenue and 21st Street as depicted in the Vision Map. The concept of timed-transfers should be tested and implemented. A timed-transfer station should be implemented at the intersection of 21st and Utica. The primary purpose of a timed-transfer system is to synchronize all or select transit routes so that they meet almost simultaneously at the same location during regular intervals. This will help minimize wait times between transfers. 21st at Utica Avenue is also a prime location for the application of Transit Oriented Development and creation of a park-
once district.

Development Oriented Transit



High Frequency Bus

High Frequency bus service operates in mixed traffic and has short stop spacing. Increased efficiency of this service comes from intelligent system operations. Priority and preemption is used at intersections and real-time information is given at stops through the utilization of GPS technology.



Light Rail (LRT)

Light Rail Transit refers more to this mode's relative simplicity and operational flexibility than to actual vehicle weight or cost. With an overhead power supply, light rail systems can operate in mixed traffic and widely ranging alignment configurations.

This program seeks to expand transit for the purpose of promoting economic development in areas that formerly were underserved and lacked adequate access to transportation. Similar to how the streetcar suburbs of the past defined areas like Sand Springs, the provision of new transit into areas of change as defined by Our Vision for Tulsa can promote a land development pattern that is much more dense, livable and sustainable from a fiscal and environmental standpoint. PlaniTulsa has defined development oriented transit opportunities in the form of streetcar and light rail (see map). The implementation of these transit lines should be explored through public-private partnerships with property owners, private developers, foundations and civic groups.

Transit Oriented Development

In response to future rail, BRT and streetcar service growth should be encouraged around transit facilities by supporting Transit-Oriented Development (TOD). TOD is a way for Tulsa to make long-range coordinated transportation and land use decisions that will provide a variety of housing and mobility options and create active places where people can live, work, shop, interact and recreate. The program will address: transportation access for pedestrians, bicycles, transit and automobiles; the type and density of land use; urban design; and parking. The program also works with private property owners and potential developers to help implement and develop incentives for TODs. Potential TOD incentives include reductions in parking requirements for mixed-use zone districts and tax increment financing to assist with operating and maintain the transit facility



Transit-Oriented Development

Creates a higher density residential development within walking distance of transit, in particular light rail and bus rapid transit. Costs of these developments can be taken on by developers, but cities can introduce incentives to promote TOD development. In time, tax revenues from these developments can contribute back to local infrastructure, making them value-added projects.

Streetcar

Fun to ride, clean-running, and chock-full of charm, streetcars will generate a big community pay-off, both in terms of development dollars and enhanced livability for Tulsa. Streetcars work best to spur development and stabilize neighborhoods by connecting current destinations, such as Downtown Tulsa with emerging eclectic neighborhoods like those around 18th and Boston and areas that have potential to infill and gain character such as the vacant land near OSU. Our Vision for Tulsa describes a streetcar that would revitalize Boulder Avenue and Cincinnati Avenue through downtown and into immediately adjacent neighborhoods.



Streetcar

Streetcars function as a hybrid between buses and light rail transit. Oftentimes, streetcars are implemented in downtown areas and other large activity centers.

Pedestrian Enhancements

As a tool, pedestrian enhancements become the primary transportation element that connects all travel modes. Increased pedestrian amenities and well-planned pedestrian connections enhance walking as a viable form of transportation, especially when integrated into transit-oriented developments.

A “pedestrian-friendly” environment is essential to the success of many of the other concepts defined in Our Vision for Tulsa including mixed-use centers, increased transit use, main streets and park once districts.

Benefits of pedestrian enhancements and travel include:

- Reduced vehicle miles traveled and less environmental pollution.
- Increased community and social interaction and potentially less crime because of increased activity and observation by pedestrians.
- Improved health due to exercise and stress reduction.
- Additional open space, park trails, view corridors, visual relief and aesthetics in business areas and other neighborhood districts.
- Interconnections and access to for all citizens to parks, campus districts, entertainment and public facilities (including museums, zoos, sports stadiums, entertainment facilities and special events among others).
- Reduction of individual travel costs (auto maintenance, parking, fuel).



Multi-Use Path

A multi-use path is a route separated from other roads by a barrier or open space, that is designed to accommodate a mix of non-automotive users (e.g. walkers, runners, strollers, wheelchair users, roller skaters, and cyclists).

Current Use of Pedestrian Enhancements as a Tool

Pedestrian enhancements currently are addressed on an individual basis through Tulsa’s development review process. Standards are applied to projects as related to issues such as building placement, building entryway location and pedestrian connections.

Tulsa constructs new and improved pedestrian facilities through the use of a Capital Improvement Program (CIP). Special attention has been paid to providing curb ramps and other facilities to accommodate persons with disabilities. Tulsa is actively pursuing a transition plan that will move the city to full compliance with the American with Disabilities Act (ADA). Tulsa has over 100 miles of off-street multi-use paths that are used for recreational walking and jogging. The City anticipates expanding this system by another 100 mile over the next twenty years.

Future Use of Pedestrian Enhancements as a Tool

The multi-modal and livable streets described in *Our Vision for Tulsa* must apply to everyone traveling along the road. A sidewalk without curb ramps is useless to someone using a wheelchair. A street with an awkwardly placed public transportation stop without safe crossings is dangerous for transit riders. At the same time, a road with heavy freight traffic must be planned with those vehicles in mind and pedestrian access should be limited. Older adults and children face particular challenges as they are more likely to be seriously injured or killed along a roadway.

The future use of pedestrian enhancements will focus on improving non-vehicular access to new centers and existing destinations. Priority locations for enhancements should be transit stations and stops, routes from neighborhoods to schools and along multi-modal corridors, livable and main streets. These enhancements come in the form of better coordination between public works and private development to create a cohesive pedestrian environment, complete sidewalk connections, reduce neighborhood street speeds with traffic calming and slow speed design and enhance and improve location and coordination of transit stops into new developments and public works projects.

Bicycle Enhancements

Bicycle enhancements help provide a viable alternative to driving for the commuter cyclist and facilitate bicycle travel for the recreational cyclist. Successful enhancements emphasize adequate, well-maintained, continuous and secure facilities. Connection of the bicycle system to other modes consists of connections to the travel system itself and to the end of the trip. Many bicycle facilities, especially trails, have multiple commuter and recreational users and should be designed for this multiple use. A bicycle-friendly environment consists of significant regional trails linked to a network of major streets with striped bicycle lanes and signed bicycle routes. The system maximizes connections to other modes such as pedestrian routes and transit, and minimizes unsafe interactions with auto traffic at intersections.



Multi-Modal Street Design

Multi-modal streets emphasize bicycle, pedestrians and transit infrastructure. They can be located in a number of different areas such as town centers, commercial districts, regional centers, employment centers and residential neighborhoods. Multi-modal streets can be a main street or a large arterial, but the focus remains on moving people and not just automobiles.

Benefits of bicycling include:

- Fewer vehicle miles traveled and less environmental pollution.
- Reduced land and financial resources devoted to vehicle parking and travel lanes.
- Improved health through exercise and stress reduction.

- Reduced individual travel costs (auto maintenance, parking, fuel).

Current Use of Bicycle Enhancements as a Tool

Current efforts to enhance the bicycle system are focused on providing off-street trails to which Tulsa has a superb system of over 100 miles and plans to double the size over the coming years. The use of bicycles is a key component to meeting *Our Vision for Tulsa*. They are seen as an extension of the transit system, an alternative to private, single-occupancy vehicles and important factor in the health and livability of the population.

Future Use of Bicycle Enhancements as a Tool

The multi-modal streets defined in *Our Vision for Tulsa* will enhance the existing off-road multi-use path system and will result in the creation of a network for all modes of travel including bicycles, pedestrians and transit users. A network approach helps to balance the needs of all users. Instead of trying to make each street perfect for every traveler, Tulsa should create an interwoven array of streets that emphasize different modes and provide quality accessibility for everyone. This means in some instances auto travel lanes should be repurposed for bicycle and/or transit priority. *Our Vision for Tulsa* should be referenced during any public works project to lead design and enhance the bicycle network.

Exceptions should be made, but in general bicycles should be accommodated in all new construction and rehabilitation projects. The Federal Highway Administration's guidance on accommodating bicycle and pedestrian travel named three exceptions that have become commonly used in multi-modal streets: 1) accommodation is not necessary on corridors where non-motorized use is prohibited, such as interstate freeways or commuter streets as designated by *Our Vision for Tulsa*; 2) cost of accommodation is excessively disproportionate to the need or probable use due to existing connected neighborhoods or plans for new centers as defined by *Our Vision for Tulsa*; 3) a documented absence of current or future need.

Part IV: Conclusions

Even before PLANiTULSA began, there has been a sustained effort to recast local and national transportation systems, so they deliver more choices while maintaining financial and environmental sustainability. The transportation engineering and planning community has reacted with ways to make the facilities we create more context sensitive, multi-modal and supportive of land use goals. Federal funding is transitioning from a rigid formula basis that awarded projects for completing the functional classification system, increasing vehicular capacity and serving transit dependant populations to a proposal based system that awards communities for using transportation to shape livable communities. The principles that guide these new funding criteria are:

1. Providing more transportation choices;
2. Expanding access to affordable housing, particularly housing located close to transit;
3. Enhancing economic competitiveness—giving people access to jobs, education and services as well as giving businesses access to markets;
4. Targeting federal funds toward existing communities to spur revitalization and protect rural landscapes;
5. Increasing collaboration among federal, state, and local governments to better target investments and improve accountability;
6. Valuing the unique qualities of all communities--whether urban, suburban, or rural.



The transportation officials in Tulsa have done an admirable job attracting and securing federal transportation dollars in the past. For this to continue, Tulsa must begin to reform its transportation decision making process to address these new livability principles. The City of Tulsa, Indian Nations Council of Governments INCOG, Metropolitan Tulsa Transit Authority (MTTA) and some programs of the Oklahoma Department of Transportation (ODOT) will need to be more deliberate in coordinating housing, transportation and environmental planning for the region to be successful in qualifying for future federal dollars.

Summary

Today Tulsans enjoy relatively low travel congestion and a high degree of auto-mobility. As mentioned above the planners and engineers of Tulsa have built a roadway system that moves automobiles very well. However, this emphasis on the automobile has come at the expense of other transportation choices. Thus the reasons for modifying the planning, programming and implementation of transportation programs in Tulsa are less a matter of mitigating traffic congestion and more about equity for all users and new economic development opportunities that can be realized with transit and unique street designs.

The six livability principals introduced at the beginning of this chapter and the subsequent changes to the federal funding mechanism bode well for the implementation of Our Vision for Tulsa. The priorities of this plan not only align with new federal initiatives, but they address the desire of residents to improve the transport system. The PLANiTULSA public input process registered support for expanded choices in the form of transit, bicycling and walking. Transition to these forms of travel will take the courage of today's leaders and officials to resist the temptation to react to traffic congestion with roadway capacity fixes and look toward a long-term solution using the tools formed during this public visioning process.

Part VI: Priorities, Goals and Policies

This section is organized into priorities, goals and policies that if followed will move Tulsa towards the community's Transportation vision.

- Priorities are the big idea topical areas that address the guiding principles. They capture big picture changes that must occur to implement the plan.
- The Goals establish specific, measurable, attainable and realistic objectives that guide plan implementation by ensuring that the community and stakeholders have a clear awareness of what must happen to move Tulsa toward the Vision.
- Policies delineate the steps needed to achieve the goals.

In addition to priorities, goals and policies, the Plan recommends the Strategic Actions that should be taken in the first 3 to 5 years following plan adoption. These strategic actions are found in the Implementation and Action plan.

Transportation Priorities

Transportation decisions should be focused on improving the range and quality of Tulsa's travel options, supporting land use goals and maintaining fiscal sustainability. *Our Vision for Tulsa* provides an overview of the top transportation priorities. This section includes detailed priorities, goals and polices that build on the transportation priorities described in the Vision.

Transportation Priority 1: Provide a wide range of reliable transportation options so every Tulsan can efficiently get where they want to go.

Goal 1: All Tulsans have a variety of transportation options for getting around the city.
Policies to support this goal include:

- 1.1 Coordinate closely with MTTA to provide for transit-supportive enhancements in the high frequency bus, bus rapid transit and commuter rail corridors.
- 1.2 In coordination with INCOG, establish a grant program to fund small area and neighborhood transit-oriented development planning efforts
- 1.3 Prioritize infrastructure investments for high capacity transit corridors

Goal 2: Tulsa has a sustainable network of roadways, trails and transit infrastructure that is well maintained and not a burden on future generations to operate.
Policies to support this goal include:

- 2.1 Adopt a network approach to transportation projects that focuses on connecting people to places—ultimately allowing places to become more intense centers of economic development.
 - Explore an addition to the local roadway project development process that includes the examination of a street network alternative.
 - Re-tool the regional travel demand model to be sensitive to transit and internal capture factors.
 - Refine the regional project selection criteria to consider multi-modal measures of effectiveness.
 - Require a roadway connectivity index to be applied to all future subdivisions and developments.
 - Encourage development of an interconnected and diverse street pattern to ease congestion, more evenly distribute traffic, and offer flexibility of routes.

Transportation Priority 2: Maintain and enhance Tulsa’s existing transportation system through strategic investments.

Goal 3: The City’s transportation system is cost-effective and adequate to meet the needs of the current and projected population. Policies to support this goal include:

- 3.1. Develop transportation projects using a context sensitive solutions process that involves stakeholders early in the process.
- 3.2. Use a mixture of quantitative and qualitative measures to prioritize transportation infrastructure projects and monitor the system for operational and maintenance issues.
- 3.3. In coordination with INCOG, create a robust region-wide travel demand modeling system that estimates transit and internal capture trip capture based upon land use sensitivities.
- 3.4. In coordination with INCOG, calibrate the region-wide travel demand model with a periodic travel survey that provides detailed travel information for motorists, transit users, pedestrians, and cyclists.
- 3.5. In coordination with INCOG, Develop a survey based system to prioritize and track the City’s street pavement program performance.
- 3.6. Investigate optimization and intelligent transportation options prior to capacity improvements.
- 3.7. Work with INCOG and adjacent cities and counties and the state to maintain and/or expand the transportation system.

Goal 4: Tulsa has high performance operations for all modes of travel; this is achieved by preserving and optimizing the current transportation system using the latest technology and programs. Policies to support this goal include:

- 4.1 Prioritize transportation system optimization, transportation demand management and transit enhancements over roadway widening.
- 4.2 Create a transportation demand management program that promotes travel choices using a business to business outreach model that is incentivized with a means of recognizing businesses and individuals within the community.
- 4.3 Conduct traffic and transit modeling to compare capacity additions to system optimization measures and prioritize projects accordingly.
- 4.4 In coordination with INCOG, invest in a transportation operations center to serve the region with intelligent transportation system tools and report traffic and transit conditions in real-time.

Goal 5: The allocation of transportation funds is modernized to align with the vision.
Policies to support this goal include:

- 5.1. In partnership with INCOG, develop a program that will administer new federal grants aimed at sustainable development and livable communities.
- 5.2. Leverage new federal funds with private investment to achieve a positive land use-transportation connection, which will improve mobility, enhance air quality, support economic growth, and ensure the financial stability of the transportation system.
- 5.3. Explore transportation funding sources including user fees, development impact fees and public-private partnerships.

Goal 6: The amount of taxable land is increased and the burden of providing parking on a parcel by parcel basis is reduced. Policies to support this goal include:

- 6.1. Adopt parking maximums and make park once districts available.
 - In coordination with Tulsa’s zoning code update, define parking maximums for each land development zoning classification.
 - Create a park once zoning overlay that enables property and business owners to share parking.
 - For redeveloping areas, investigate the availability of parking and seek means to provide new parking through on-street or public parking lots.

Transportation Priority 3: Ensure that transportation investments enhance the land uses they serve.

Goal 7: Transportation facilities fit their physical setting and preserve scenic, aesthetic, historic and environmental resources, while maintaining safety and mobility.
Policies to support this goal include:

- 7.1 Enhance transportation right-of-ways so that they may serve as the greatest public place in Tulsa and promote multi-modal travel.
- Enhance current roadways with a combination of light fixtures, signs, and sidewalks to make the City's roads unique, and to help residents and visitors recognize that they are in Tulsa.
 - Provide comfortable and attractive pedestrian and bicycle facilities within existing and new developments.
 - Build upon the connectivity concepts in INCOG's 2030 Bicycle and Pedestrian Plan by expanding the scope of Public Works' current ADA Transition plan to address studying and prioritizing the need for connections to off-street trails with conversion of auto-dominated arterials to multi-modal corridors with a concentration on connecting homes and neighborhoods to schools, retail, employment and recreation.
 - Correlate a mixed use land use development strategy to minimize auto trips and roadway congestion through internal capture of vehicular trips.
 - Prioritize sidewalk, curb ramp and crosswalk rehabilitation and construction projects according to ranking that takes into account concentrations of persons with disabilities, public facilities, mixed use development and transit stop locations.
- 7.2 Consider aesthetic needs as an equal to vehicular capacity demands when planning and designing transportation right-of-ways.
- 7.3 Institute a context sensitive solutions approach to transportation infrastructure by recognizing that flexibility in project development and design is necessary to balance safety, mobility, economic development, and environmental issues for new and redesigned urban transportation facilities.
- Adopt the Institute of Transportation Engineer's Recommended Practice for Designing Major Urban Thoroughfares for Walkable Communities.
 - Re-define the project design process to consider community objectives and plans prior to capacity and level of service determinations are made.
 - Adopt a broad set of roadway right-of-way types and functions and define streets as building-face to building-face.
 - Establish a process for soliciting, analyzing and funding requests for context sensitive design treatments to existing roadways.

Goal 8: Traffic safety and mobility are improved. Policies to support this goal include:

- 8.1 Adopt an access management policy for major thoroughfares and create a traffic safety review panel that will identify and seek solutions to reoccurring collision sites.
- Conduct an incident management analysis and define crash hotspots.
 - Create a model access management policy and apply to critical thoroughfares.

- Fund an access management and traffic safety program to address reoccurring collision sites with appropriate corrective actions.
- Form and proceed with a monthly meeting of the traffic safety review panel.

Goal 9: Disentangle freight and local traffic to improve safety and mobility for both users. Policies to support this goal include:

- 9.1 Address freight movements from both the land use and transportation perspectives and actively manage them for superior operation and safety.
- 9.2 Conduct a freight movement study and identify bottlenecks and critical local destinations.
- 9.3 Plan and seek partners to develop an air, rail, land and sea intermodal facility.
- 9.4 Design future major highway right-of-ways to accommodate freight rail and seek a by-pass of the current downtown route.

Transportation Priority 4: Provide multiple transportation choices to all Tulsans.

Goal 10: Streets contribute to the urban environment.

- 10.1 Adopt the Institute of Transportation Engineer's Recommend Practice for Designing Walkable Urban Thoroughfares in addition to its roadway design manual and adopt a Context Sensitive Solutions Process
- 10.2 Adopt a coordinated access management policy
- 10.3 Expand funding for maintaining and reconstructing existing infrastructure needed for both Areas of Change and Areas of Stability
- 10.4 Pursue main street, livable and multi-modal enhancements using a context sensitive solutions process on the following catalyst corridors:
 - Main Street- Cherry and Harvard
 - Residential- 6th Street
 - Multi-modal- Pine Street
- 10.5 Design and Re-design sections of the following roads for accommodating BRT:
 - Garnet Road
 - 91st Street
 - Yale Avenue
- 10.6 Revise the Regional ITS Architecture and focus resources on corridors programmed for transit integration, specifically Peoria, 21st, 91st, Yale and Garnett

- 10.7 Provide assistance to local community organizations and business groups to form local improvement districts and business improvement districts to ensure adequate funding for construction and maintenance of streetscaping and other infrastructure
- 10.8 Ensure annual funding through CIP and Transportation Improvement Program processes, coordinated with INCOG, MTTA and ODOT

Goal 11: Tulsans can rely on a variety of transit options to take them to jobs, shopping and entertainment.

- 11.1 Consistently support the improvement of the system with additional local funding and continue identification and application for State and Federal dollars.
- 11.2 Enhance bus transit services with higher frequency bus service, improved stations/stops and priorities for intelligent transportation systems (ITS) investments (including bus priority signalization) on the Big T route, which includes Peoria Avenue and 21st Street as portrayed in the Vision Map.
- 11.3 Establish a timed transfer point at Utica and 21st streets and promote transit oriented development and park-once districts.
- 11.4 Design and Re-design the following roads for accommodating BRT:
 - Garnet Road
 - 91st Street
 - Yale Avenue
- 11.5 Develop a transit-oriented development program incentives, including: promotion of shared parking; creation of new zone districts and/or overlays that allow for reduced parking requirements and support a mix of transit-supportive land uses; and development of dedicated funding to “land bank” key land parcels near stations to preserve future development opportunities.
- 11.6 Develop a development-oriented transit program to explore public-private partnerships to create transit programs that do not currently meet the Federal Transit Authorities program funding.

Goal 12: Pedestrians have easy access to jobs, shopping and recreation.

- 12.1 Support the ADA Transition plan’s to perform a calculated sidewalk inventory of key civic and private destinations and neighborhoods and expand it to develop a pedestrian master plan for the entire city that will include:
 - A workshop to elicit the public’s pedestrian priorities and concerns
 - A review of pedestrian elements recommended in other city plans and a review of public feedback from the pedestrian workshops

- Creation of a tool to prioritize improvements by identifying important pedestrian corridors and destinations in the city (i.e. arterial and collector streets served by transit, neighborhood destinations, downtown, TODs, pedestrian shopping corridors, schools, parks and large entertainment facilities)
 - Identification and prioritization of improvements
 - Creation of pedestrian amenity guidelines for Areas of Change and Areas of Stability
 - Continue program for providing curb ramps and other facilities to accommodate persons with disabilities and improve access to transit
 - Development of partnerships that are coordinated with Tulsa's Parks and Recreation Department to enhance pedestrian connections between parks and other recreational facilities
 - Investigation of funding opportunities.
- 12.2 Revise the City's current sidewalk maintenance policy. Currently, adjacent property owners are responsible for sidewalk improvements. A new policy needs to be developed concerning the extent of the City's involvement in and funding for maintaining and enhancing sidewalks. This may include developing a dedicated funding source for sidewalk maintenance and enhancement.
- 12.3 Coordination with MTTA, INCOG and ODOT and adjacent municipalities to invest in pedestrian infrastructure to support transit ridership in expanded transit corridors.
- 12.4 Ensure the continued development of sidewalk improvements with other improvements on major arterial corridors where opportunities to enhance the pedestrian environment exist.

Goal 13: Tulsans safely and efficiently use bicycles to go to work, shop and recreation areas.

- 13.1 Revise the INCOG Bicycle and Pedestrian Master Plan to focus on connecting neighborhoods with destinations, such as employment, shopping and recreation. The revised master plan should include priorities to:
- Improve integration of on-street bicycle facilities with Tulsa parks and off-street trail system through the use of road diets, traffic calming, signage, bike lanes and sharrows lane markings.
 - Improved circulation into and around downtown. This includes additional on-street pavement markings and exploring a bicycle boulevard concept using a lane of existing traffic.

- Continued efforts to expand bicycle advocacy, education and enforcement.
- Adopt a complete streets policy and add coordinate funding and simultaneous construction of bike facilities with street, drainage and other infrastructure improvements..
- Review of private and public development projects to ensure adequate bicycle parking and access. Amend Tulsa's zoning ordinance to require bicycle parking in non-residential, office or retail areas. The number of bike parking spaces required by the ordinance should be determined based on the total off-street parking spaces required. Specific rules and regulations governing the dimensions and design of bicycle parking should be adopted.
- Develop detailed inventory of bike facilities (routes, parking, amenities) and bicycle plans as part of the small area planning process.
- Establish dedicated funding for construction of bicycle facilities prioritized in the revised Bicycle and Pedestrian Master Plan.