Regional Transit System Plan

Executive Summary

OCTOBER 2011

FAST FORWARD

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INCOG

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The Indian Nations Council of Governments (INCOG) is a voluntary association of local and tribal governments in the Tulsa metropolitan area in northeast Oklahoma. Established in 1967, INCOG is one of eleven Councils of Governments in the State of Oklahoma, and one of several hundred regional planning organizations across the country. INCOG provides planning and coordination services to assist in creating solutions to local and regional challenges in such areas as land use, transportation, community and economic development, environmental quality, public safety, and services for older adults.

Regional Transit System Plan

Executive Summary

PREPARED FOR:

Indian Nations Council of Governments (INCOG)

PREPARED BY:

Jacobs

IN ASSOCIATION WITH:

Whitehouse Group, Connetics Transportation Group, BBP & Associates, ZigZag Planning and Design, Rex Public Relations, Xposure Communications, Collective Strength

Adopted by the INCOG Transportation Technical Committee **September 21, 2011**
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Adopted by the INCOG Board of Directors **October 13, 2011**

Special thanks to the Funder's Committee:

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Introduction

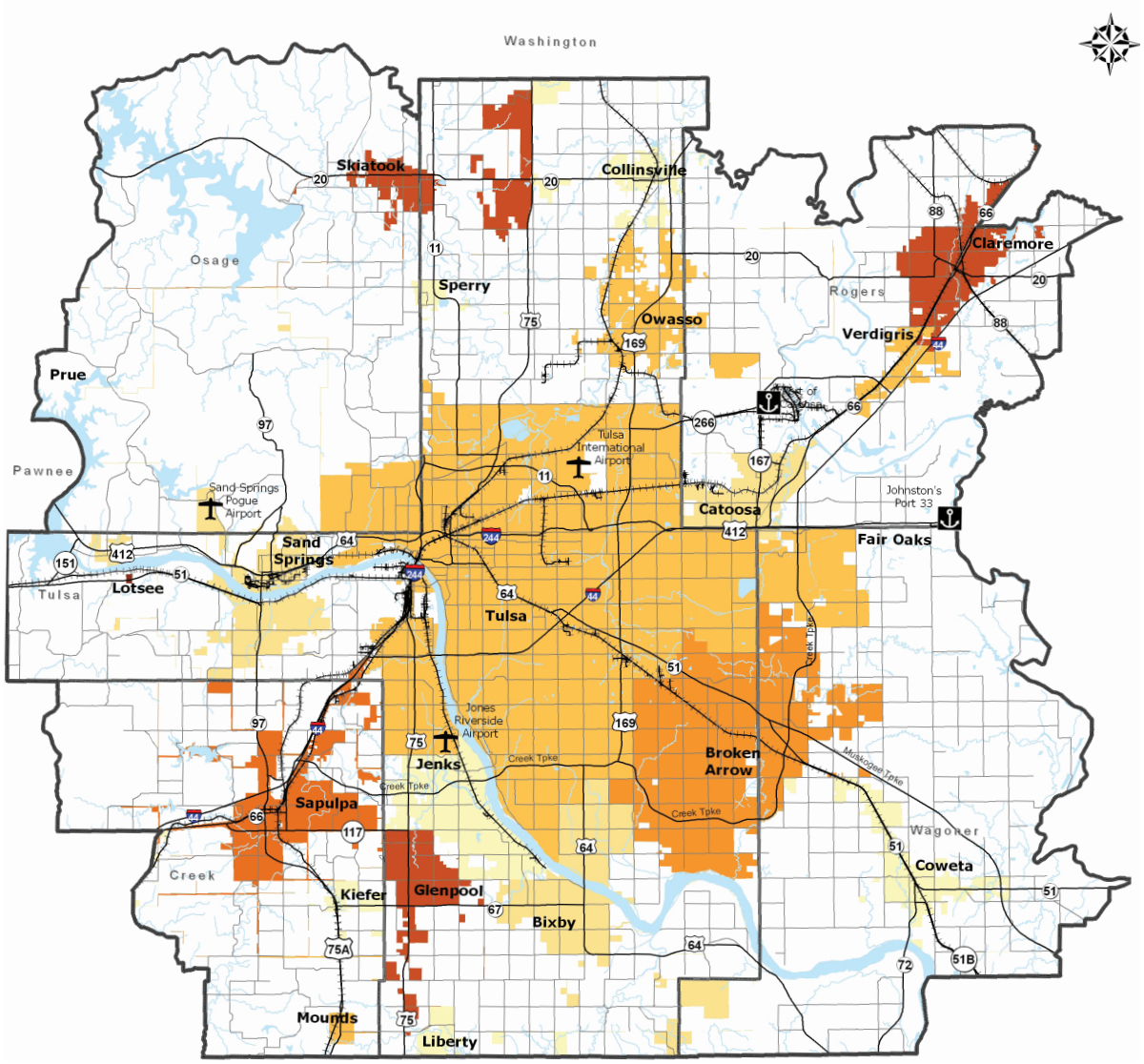


Figure 1 : Tulsa Transportation Management Area

INCOG Region & Study Area

Transportation investments throughout Tulsa's history have facilitated economic viability and growth patterns during decades of urbanization. The earliest transportation establishment, predating the city's incorporation in 1898, was the initial development of a freight rail line spurring new investment in 1882. The historical and existing networks of freight rail, streetcar tracks, arterial roadways, interstate highways, bridges, bus service, airports and river ports have helped support prosperity, development and growth in the Tulsa region.

Facing new and evolving challenges and opportunities, agencies and institutions have taken the opportunity to engage the public, study alternative transportation solutions and create community visions to help guide regional success. One such initiative, the Regional Transit System Plan (RTSP), directed by the Indian Nations Council of Governments (INCOG), provides the groundwork for establishing effective transit service within the region over the next 25 years.

The study area assessed during the RTSP process includes the entire area of the Tulsa Transportation Management Area (TMA), depicted by Figure 1. The TMA represents all of Tulsa County and portions of four other counties: Creek, Osage, Rogers and Wagoner. It contains 18 incorporated municipalities, including: Bixby, Broken Arrow, Catoosa, Claremore, Collinsville, Coweta, Glenpool, Jenks, Kiefer, Liberty, Mounds, Owasso, Sand Springs, Sapulpa, Skiatook, Sperry, Tulsa and Verdigris. All of these have been considered in the development of the RTSP.

Planning Process

In order to achieve a comprehensive transit vision for the community, the RTSP employed a multi-faceted planning process. The RTSP planning process included two major components, extensive public outreach and data-driven technical research.

Purpose and Guiding Principles

The RTSP institutes a comprehensive, long-range, realistic system of transit corridors to help meet the region's transportation needs over the next 25 years. The plan defines corridor priorities for the region and defines policy needs for feasible development. Throughout the study, the RTSP was centered on a technically sound, data supported planning process which enables the region to be well positioned for potential future grant funding. The RTSP plans to guide the region's transportation investments to meet the growing needs of the community.

Several guiding principles establish the framework of progress towards the final RTSP. The RTSP guiding principles include:

- Achieve Regional Consensus
- Enhance Mobility
- Ensure Fiscal Responsibility
- Consider Appropriate Technologies
- Examine Effects on Corridors
- Consider Economic Development

Public Outreach

Truly innovative in its scope and reach, the RTSP public involvement process, coined "Fast Forward," includes in-depth interviews, phone polling, a project kick-off symposium, a stakeholder retreat, an interactive website, a project blog and a mobile "Transit Lab." The project also benefited from two advisory committees, the Funders' Committee and the Regional Task Force.

To initiate the project and to gain a general understanding of perception about public transit, INCOG conducted research which included a 1,000 person general population poll and 111 in-depth interviews with regional leaders. The research provided background information on the overall perception of regional transportation issues affecting the public.

Beginning in January of 2011, Fast Forward launched its unique outreach strategies with a kick-off event that reached over 400 people and included a luncheon, public symposium and open house. The event featured several guest speakers including the former mayor of Charlotte, North Carolina, Pat McCrory. A stakeholder retreat was held in April of 2011 with the intent to gather elected leaders and staff from the greater Tulsa region's cities and counties, provide an update of the RTSP and to gain direction related to key community issues such as RTSP development, governance, finance and existing bus service. The session included presentations of research and analysis, interactive team discussions, dialogue with all stakeholders and the use of electronic keypad polling for stakeholder feedback.

The Transit Lab , a renovated City bus, served as a highly-visible mobile campaign unit intended to establish the project's presence and connect to a diverse range of community members. The Transit Lab was equipped with project visuals, audio, information and comment surveys. Appearing at over 100 locations and engagements such as community events, public meetings and workshops, the Transit Lab generated hype for the project and potential of transit within the region by reaching over 2,500 visitors. The project received over 718 e-mail and written comments and attained over 1,900 web hits on the project website.

Technical Process

In order to establish an accepted regional transit system plan which identifies corridors serving the regional travel patterns, the RTSP undertook a comprehensive technical analysis. As shown in Figure 2, the first step in the process was to recognize regional studies and plans which inform the development of the RTSP. The Tulsa region has been researching and strategizing about transit solutions during the past decade and the RTSP used previously conducted research to build the set of alternative corridors studied during the first phase of the project.

The next step of the RTSP technical process identified the travel demand and needs for the region in the future. Understanding potential centers of population and employment within the area, the RTSP adequately accommodates the growing community today and in the decades to come. With guidance from the Regional Task Force, a series of four goals were established during the Needs Assessment which aimed to:

- Enhance transportation mobility and accessibility;
- Improve transportation efficiency and safety;
- Promote environmental benefits; and
- Guide economic development

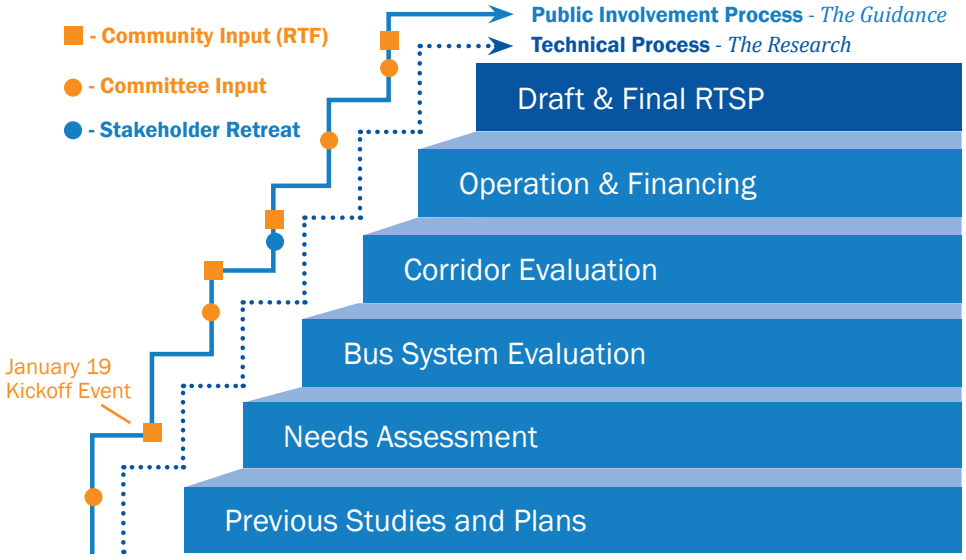


Figure 2 : RTSP Planning Process

One important component of the technical analysis includes an evaluation of the existing bus system operated by Metropolitan Tulsa Transit Authority (Tulsa Transit). The evaluation included a review of the existing service, a peer assessment, near-term improvement plan and a long-term vision plan specifically addressing bus service within the Tulsa Transit service area.

The corridor evaluation process assessed corridors identified by the public involvement process, previous plans or studies and others identified with regional needs. The RTSP distinguished corridors which best fulfill the goals established by the Needs Assessment. RTSP scenarios were established based on corridor combinations which served multiple jurisdictions, showcased established community support and demonstrated the highest probability of successfully supporting high-capacity transit service.

Relationship to Other Plans

Regional and local historical plans and studies provided important context into the increasing public demand for greater transit options. Numerous related studies and initiatives helped inform the RTSP process which facilitated a broad, regional transit vision for the entire regional community.

Accumulation of these documents provided the RTSP development team with resources and references to values, expectations and desires of the regional community for near-term and

long-term transit goals. These plans and studies continually influence land use, transportation, environmental development, and socioeconomic attributes of the Tulsa region. Identified high capacity corridors, as defined by numerous previous plans, were assessed and evaluated as part of the RTSP process. Areas of potential major activity and growth were also considered during the initial identification of transit corridors for study. Investigation of these documents allowed for consideration of future plans and objectives of regional entities as they pertained to transit-related investments.

Previous Plans and Studies reviewed for relevance to the Regional Transit System Plan include:

- **Regional Transportation Plan 2032** - INCOG (2011)
- **Tulsa Transit Bus Service Needs Assessment** - Metropolitan Tulsa Transit Authority (2010)
- **PLANiTULSA: Tulsa Comprehensive Plan** - City of Tulsa (2010) (Figure 3)
- **Downtown Area Master Plan** - City of Tulsa (2010)
- **Rail Transit Strategic Plan** - INCOG (2008)
- **Transportation Planning Capacity Building Peer Exchange: The Land Use and Transportation Connection** - INCOG (2008)
- **Owasso Demographic and Economic Base Study** - City of Owasso (2008)
- **Tulsa Regional Coordinated Public Transit-Human Services Transportation Plan -** INCOG (2007)
- **Broken Arrow to Tulsa Mass Transit Feasibility Study** - Metropolitan Tulsa Transit Authority (2007)

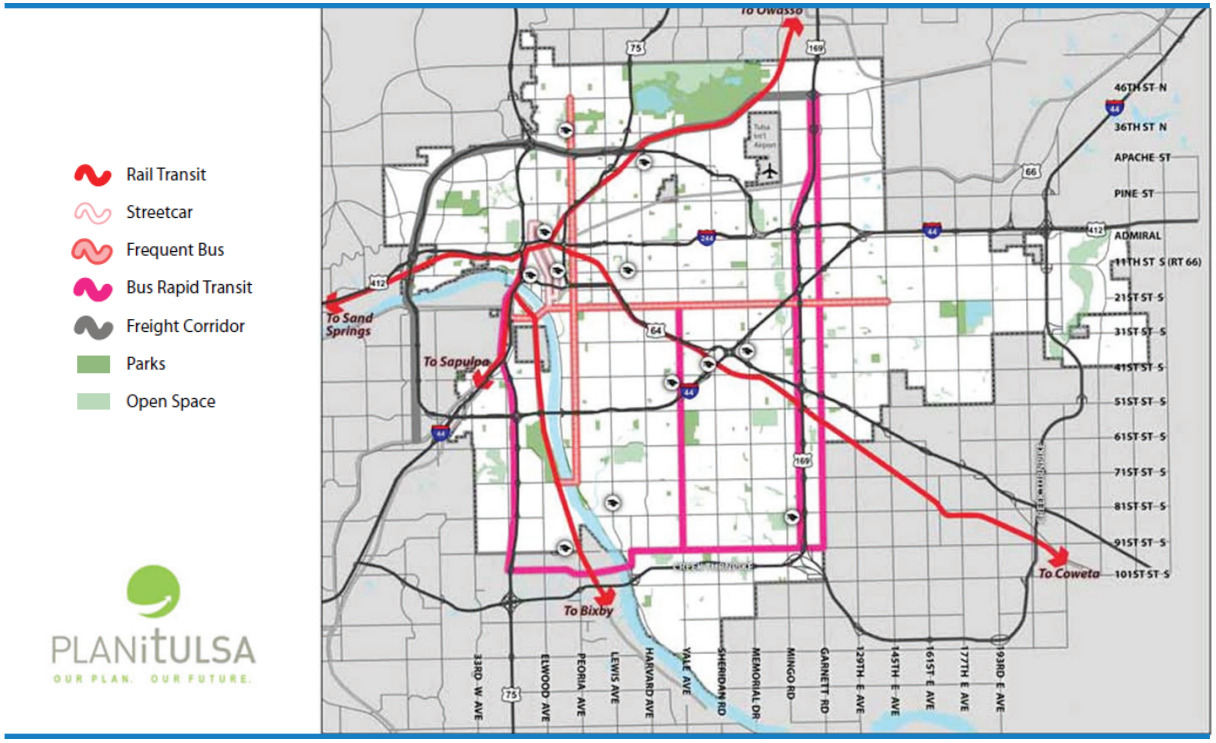


Figure 3 : Tulsa Comprehensive Plan Transit Vision (July 2010)

- **Sand Springs Strategic Plan** - City of Sand Springs (2006)
- **Jenks Comprehensive Plan** - City of Jenks (2006)
- **Destination 2030 Long Range Transportation Plan** - INCOG (2005)
- **Broken Arrow Downtown Master Plan** - City of Broken Arrow (2005)
- **Tulsa Regional Intelligent Transportation Systems (ITS) Implementation Plan** - Oklahoma Department of Transportation (2003)
- **Bixby Comprehensive Plan** - City of Bixby (2001)

Future Changes and Updates

The RTSP was developed by considering existing conditions and long-term projected regional needs. Due to the nature of long-range planning, not all elements of growth and decline can be predicted, therefore, INCOG will review the RTSP and associated plan recommendations every five years as updated data and information becomes available. This periodic update will allow INCOG to prioritize and align transit investment decisions to coincide with other regional projects and priorities.

Regional Growth, Transportation Systems & Performance Trends

Table 1 : County-level Population and Densities Growth (2010-2035)

Demographic	County*	Persons				Density (persons per sq. mile)		
		2010	2035	Yearly Growth	% Increase	2010	2035	Yearly Growth
Population	Creek	39,639	52,685	522	1.3%	256.56	341.00	3.38
	Osage	24,485	33,197	348	1.4%	95.39	129.34	1.36
	Rogers	57,826	94,164	1,454	2.5%	282.38	459.82	7.10
	Tulsa	603,403	771,381	6,719	1.1%	1,028.01	1,314.20	11.45
	Wagoner	52,698	79,044	1,054	2.0%	218.83	328.23	4.38
	TOTALS	**778,051**	**1,030,471**	**10,097**	**1.3%**	**538.92**	**713.75**	**6.99**

** Represents the Transportation Management Area (TMA), which includes all of Tulsa County and part of Creek, Osage, Rogers and Wagoner counties.*

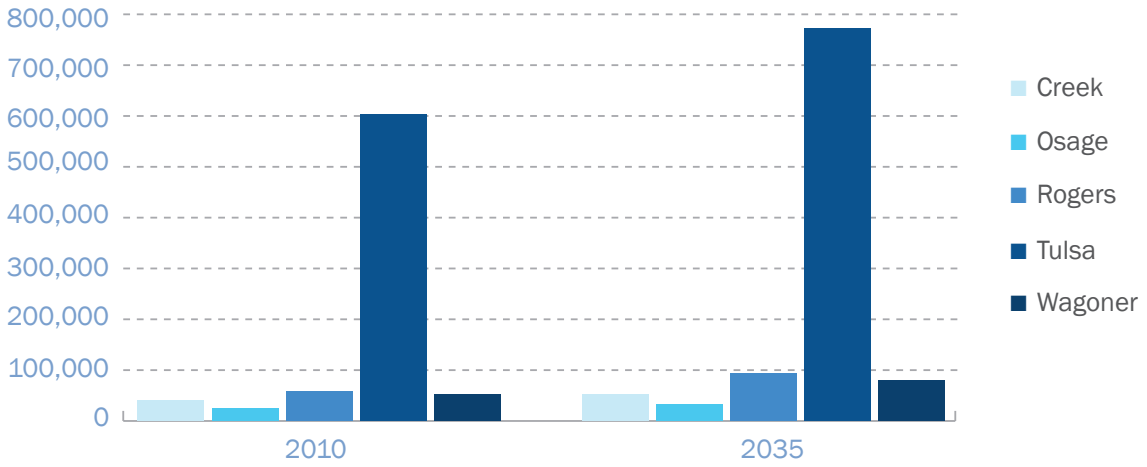
The Tulsa region is located in the northeastern corner of Oklahoma, approximately 100 miles northeast of Oklahoma City. The Tulsa Transportation Management Area (TMA) is comprised of 1,400 square miles, including all of Tulsa County and the adjacent urbanized parts of Creek, Osage, Rogers and Wagoner counties. With a 2010 population of 778,051 the TMA is predominately urban with approximately 85% of its population within incorporated cities. With approximately 1,102 persons per square mile, Tulsa County is the most densely populated county in Oklahoma. Recent diversification efforts have transformed Tulsa's regional economy from one heavily dependent on the oil industry to an economic base centered on a multitude of sectors, including: energy, finance, aviation, telecommunications and technology. Four major highways connect the region to the interstate highway system: I-44, US412, US75 and US169, but only I-44 connects to Oklahoma City, which provides direct access to both I-35 and I-40. This unique geography influences regional development patterns, which in turn impacts the region's population, economic and mobility trends.

Population

The TMA population grew from 705,994 in 2000 to 778,051 in 2010, an increase of 1.02 percent per year. This is faster than the annual rate of Oklahoma's population growth during the same period (.87 percent) and makes the Tulsa TMA one of the fastest growing regions in the State. By 2035, the population with the TMA is expected to grow to 1,030,471, an increase of 1.3 percent per year. This is an increase of approximately 0.28 percent per year than that observed between 2000 and 2010 (1.02 percent), which is consistent with the rates utilized by the Oklahoma Data Center. Table 1 displays the projected population growth and increases in densities for each county within the TMA.

More than 67 percent of the overall population growth projected in the TMA is anticipated to occur in Tulsa County (167,978), while 14 percent (36,338) is expected in Rogers County, ten percent (26,346) in Wagoner County, five percent (13,046) in Creek County and three percent (8,712) in Osage County. Tulsa and Rogers counties are expected to experience the highest yearly increases in densities (11.45 and 7.10 persons per square mile) while Wagoner and Creek counties are anticipated to experience less than one half (4.38 and 3.38 persons per square mile) of the yearly increase experienced by Tulsa County. Osage County is estimated to experience only a slight increase in densities (1.36 persons per square mile). Figure 4 illustrates the historic and projected population growth of Creek, Osage, Rogers, Tulsa and Wagoner counties.

Figure 4 : County-level Population Growth (2010-2035)



While most of the additional people will be in Tulsa County, the other four counties are forecast to grow more rapidly, and some of the heaviest concentrations of growth are expected to occur in those counties. In 2010, Tulsa County's population was 78 percent of the TMA; while in 2035 it is projected to be 74 percent. This stems largely from the slightly higher anticipated rate of population growth in the surrounding four counties. In addition, 65 percent of the total TMA population growth is expected to occur within Tulsa County. It should also be noted that although Tulsa County has the lowest percent of population growth (31 percent) when compared to the other four counties, it is expected to experience the highest growth in population density adding approximately 202 persons per sq. mile.

In terms of changing travel patterns, as the population increases, trip patterns will become more dispersed and concentrated. This growth translates into comparable, if not greater, increases in vehicle miles traveled (VMT), vehicle emissions, fuel consumption, and accidents. This means that the planned transportation improvements will not keep pace with the population growth or accommodate the resulting levels of congestion.

Employment

The Tulsa metropolitan area has grown consistently over recent years. According to the United States Bureau of Economic Analysis, the Tulsa region's gross domestic product, a measure of the value of all goods and services produced, grew from $31 billion in 2001 to $47 billion in 2009 (a six percent yearly increase). The Tulsa area's expanding economy has created employment opportunities for its growing labor force.

Employment within the Tulsa TMA grew from 420,021 in 2000 to 421,387 in 2005, an increase of 0.07 percent per year. This is a fairly slow rate of growth, but it does indicate a stable regional economy. By 2035, employment within the TMA is expected to grow to 568,194, an increase of 1.2 percent per year. This is an increase of approximately 1.09 percent per year than that observed between 2000 and 2005 (0.07 percent). Table 2 displays the projected growth in employment and increases in densities for each county within the TMA.

More than 81 percent of the overall employment growth projected within the TMA is anticipated to occur in Tulsa County (118,471), while eight

Table 2 : County-level Employment and Densities Growth (2005-2035)

Demographic	County*	Jobs				Density *(jobs per sq. mile)*		
		2005	2035	Yearly Change	% Change	2005	2035	Yearly Growth
Population	Creek	15,045	19,908	162	1.1%	97.38	128.85	1.05
	Osage	3,044	5,638	86	2.8%	11.86	21.97	0.34
	Rogers	26,207	38,245	401	1.5%	127.97	186.76	1.96
	Tulsa	371,650	490,121	3,949	1.1%	633.18	835.02	6.73
	Wagoner	5,441	14,282	295	5.4%	22.59	59.31	1.22
	TOTALS	**421,387**	**568,194**	**4,894**	**1.2%**	**291.87**	**393.56**	**3.39**

** Represents the Transportation Management Area (TMA), which includes all of Tulsa County and part of Creek, Osage, Rogers and Wagoner counties.*

Figure 5 : County-level Employment Growth (2005-2035)

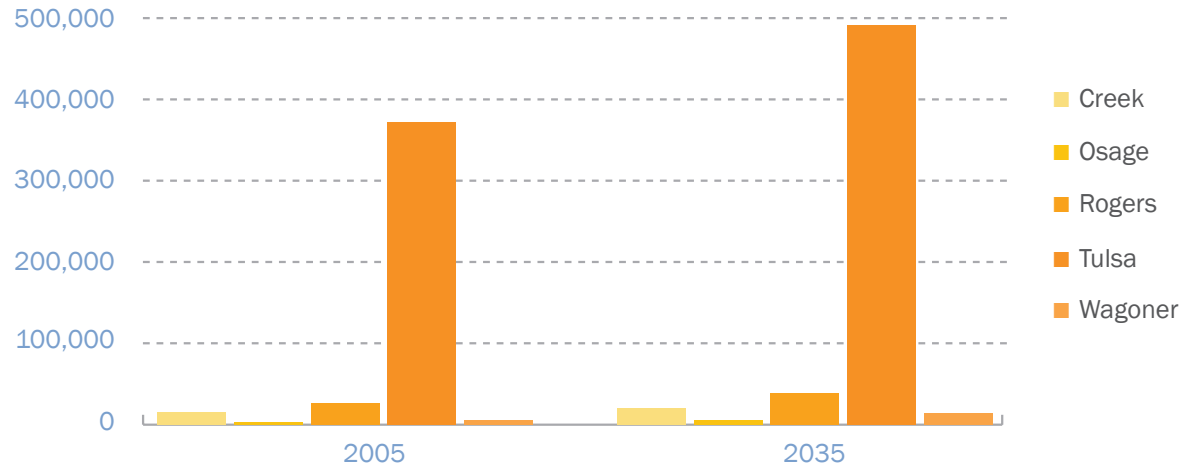


Table 3 : Tulsa TMA Roadway System Characteristics

Characteristics	Classification/ Performance	2000	2032	Yearly Growth	% Change
Lane Miles	Expressway	872	966	2.9	.33%
	Turnpikes	286	320	1.1	.37%
	Arterial Streets	8,815	10,015	37.5	.43%
	Totals	**9,973**	**11,301**	**41.5**	**.42%**
Travel	Vehicle Miles/Day	21,209,000	26,068,000	151,800	.72%
	Vehicle Hours/Day	576,000	701,000	3,900	.68%
	Average Speed (mph)	36.8	37.2	.01	.03%

Source: Oklahoma Department of Transportation and INCOG

percent (12,038) is expected in Rogers County, six percent (8,841) in Wagoner County, three percent (4,863) in Creek County and two percent (2,594) in Osage County. Tulsa County is expected to experience the highest yearly increases in densities (6.73 jobs per square mile) while Rogers, Wagoner and Creek counties are anticipated to experience less than one third (1.96, 1.22 and 1.05 jobs per square mile) of the yearly increase experienced by Tulsa County. Osage County is estimated to experience only a slight increase in densities (0.34 jobs per square mile). Figure 5 illustrates the historic and projected growth in employment of Creek, Osage, Rogers, Tulsa and Wagoner counties.

While most of the additional jobs will be in Tulsa County, the other four counties are forecast to grow more rapidly, and some of the heaviest concentrations of growth are expected to occur in those counties. In 2005, Tulsa County's employment was 88 percent of the TMA; while in 2035 it is projected to be 86 percent. This decline in the overall percent is largely due to high percentage of employment growth within the other four counties; however, approximately 80 percent of the employment growth is expected to occur within Tulsa County.

As with population, employment growth will also alter travel patterns resulting in similar, if not greater, declines in regional mobility. These trends support the possibility that expanding the capacity of the transportation system to meet these demands is perhaps one of the greatest economic and political challenges the region faces.

Roadway System

The highway and arterial network is the primary mode of transportation within the TMA. In 2000, the TMA had approximately 872 lane miles of expressways, 286 lane-miles of turnpikes, 8,800 lane-miles of arterial streets and numerous miles of local streets. The system is composed of interstate highways (I-244 and I-44) and US and state routes.

As part of its designated responsibilities, INCOG develops the Tulsa region's Long Range Transportation Plan (LRTP), which identifies financially feasible transportation improvements and programs their implementation. Table 3 displays the current LRTP's, *Regional Transportation Plan* 2032, planned growth in the roadway system and its predicted usage.

The City of Tulsa reports that the following routes experience Average Annual Daily Traffic

(AADT) volumes greater than 40,000 vehicles per day and INCOG predicts they will continue to experience increases in traffic and thus greater levels of congestion:

- US-64/SH-51 Broken Arrow Exp. from 21st St. to Harvard Ave. (112,400)
- US-169 from 51st St. South to 61st St. South (108,600)
- I-244 from SH-11 to US-169 (103,100)
- I-44 from Harvard Ave. to Yale Ave. (80,900)
- I-44 from 177th E Ave. to 193rd E Ave. (76,200)
- US-412/US-64 from 33rd W Ave. to Downtown Tulsa (61,400)
- US-75 from I-44 to 61st St. South (48,900)
- US-75 from 36th St. North to 56th St. North (40,800)

These forecasts indicate that the expansion of roadway capacity will not keep pace with demand. Between 2000 and 2032, daily VMT on major roadways will grow by 22.9 percent (4,859,000), while capacity will only grow by 13.3 percent (1,328 lane miles).

Table 4 : Regular Bus Service Growth (2005-2009)

	2005	2009	Growth	%
Annual Ridership	2,260,301	2,657,071	396,770	17.6%
Daily Avg. Ridership	8,864	9,557	693	7.8%
Total Vehicle Miles	2,574,291	2,837,572	263,281	10.2%
Total Passenger Miles	12,291,251	15,349,413	3,058,162	24.9%

Source: National Transit Database, Federal Transit Administration

Table 5 : Nightline Bus Service Growth (2005-2009)

	2005	2009	Growth	%
Annual Ridership	21,074	31,896	10,822	51.4%
Daily Avg. Ridership	83	115	32	38.6%
Total Vehicle Miles	76,586	125,115	48,529	63.4%
Total Passenger Miles	176,045	267,926	91,881	52.2%

Source: National Transit Database, Federal Transit Administration

Table 6 : Lift Program Bus Service Growth (2005-2009)

	2005	2009	Growth	%
Annual Ridership	200,696	231,979	31,283	15.6%
Daily Avg. Ridership	787	825	38	4.8%
Total Vehicle Miles	1,735,321	2,266,530	531,209	30.6%
Total Passenger Miles	1,494,013	1,591,376	97,363	6.5%

Source: National Transit Database, Federal Transit Administration

Public Transportation System

Public transportation in the Tulsa region is provided exclusively by bus, paratransit and taxi operators. Greyhound Bus Lines and Jefferson Lines provide interregional bus service to approximately 3,100 destinations throughout the United States. The Metropolitan Tulsa Transit Authority (MTTA or Tulsa Transit) provides intraregional bus and paratransit services within the Cities of Tulsa, Jenks, Broken Arrow and Sand Springs. Independent taxi operators provide demand-response transportation throughout the Tulsa Metropolitan Area.

Greyhound Bus Lines and Jefferson Lines operate from a terminal located in downtown Tulsa at 319 South Detroit Avenue, which is open 24 hours a day, seven (7) days a week. Greyhound provides direct access to the AMTRAK station in downtown Oklahoma City, which provides access to over 500 destinations throughout the United States and Canada. Ridership data for both Greyhound and Jefferson Lines is currently unavailable; however, both operators indicate they have experienced growth since 2008.

Tulsa Transit operates a dual-hub system with its main terminal located in downtown Tulsa at 319 South Denver Avenue (Denver Avenue Station) and a smaller station just east of Memorial Drive on 33rd Street (Memorial Midtown Station). The fixed route system is based on a modified grid network. While routes primarily serve either east-west or north-south arterials, some routes may cover more than one corridor. Tulsa Transit operates 18 all-day routes, five Nightline routes, and two weekday

express routes. Tulsa Transit also operates a few special event shuttles in connection with major events at the BOK Center, as well as a seasonal once-a-month service to the Tulsa Air & Space Museum and Tulsa Zoo.

Regular service runs from 5:00 a.m. to 8:00 p.m. Monday through Friday and 7:00 a.m. to 7:00 p.m. on Saturday. Table 4 summarizes the growth in regular bus service between 2005 and 2009.

Limited late-night route deviation service (Nightline) is offered on weekdays and Saturdays, which operates until 12:00 midnight. There is no service on Sundays. Table 5 summarizes the growth in late-night bus service between 2005 and 2009.

Complementary ADA paratransit service (the Lift Program) is offered concurrent with regular service. Table 6 summarizes the growth in Lift Program between 2005 and 2009.

Tulsa Transit continues to implement improvements to meet the increasing demand; revitalize public transportation within the Tulsa Metropolitan Area; and, provides environmental and safety benefits to the region by reducing regional emissions, fuel consumption, and accidents.

Performance Trends

While congestion is not a serious problem currently, Tulsa's transportation system must be ready for the future. Between 2000 and 2009 traffic on major roadways has grown by nearly 7 percent, while roadway capacity has only grown by approximately 0.3 percent.

Table 7 : Tulsa Area Historic Performance Trends (2000-2009)

		2000	2009	Yearly Growth	Yearly % Increase
Daily VMT (1000s)	Freeways	6,500	6,997	55	0.8%
	Arterials	8,365	8,820	51	0.6%
	TOTALS	**14,865**	**15,817**	**106**	**0.7%**
Public Transportation	Annual Psgr Miles (millions)	18.9	13.9	-0.6	-2.9%
	Annual Psgr Trips (millions)	3.3	2.7	-0.1	-2.0%
Congested Travel	% of peak VMT	25	21	0	-1.8%
	% of lane miles	31	31	0	0.0%
Fuel Consumed	Total Fuel (1000 gallons)	8,306	8,434	14	0.2%
	Fuel per Peak Commuter (gallons)	19	17	0	-1.2%
Annual Delay	Total Delay (1000s person hrs)	6,756	8,621	207	3.1%
	Delay per Peak Commuter (person hrs)	15	18	0	2.2%
Travel Time	Average Time per Peak Commuter	21.2	21.4	0.0	0.1%
Congestion Cost	Total Cost ($ millions)	138	202	7	5.2%
	Cost per Peak Commuter ($)	413	407	-1	-0.2%

Source: Texas Transportation Institute Urban Mobility Report, 2010

Congestion comes at a cost. Not only is it a nuisance for Tulsa commuters, but congested roadways worsen air pollution, waste fuel and time, and decrease productivity. The 2010 Urban Mobility Report, published by the Texas Transportation Institute, estimates that congestion costs Tulsa area residents $202 million each year in wasted fuel and lost time, a cost of $407 per peak hour traveler. Table 7 summarizes the historic mobility and performance trends within the Tulsa region.

The 2010 Urban Mobility Report reports that the average commuter in the Tulsa region was spending an extra 18 hours a year on the highway due to delay in 2009. With the projected growth in population and employment the Tulsa Metropolitan Area congestion will continue to emerge as a problem. Regional mobility will continue to drive economic development opportunities and in an economy where energy prices continue to fluctuate, it is imperative to have choices where transit investment makes sense.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How do you want to move?
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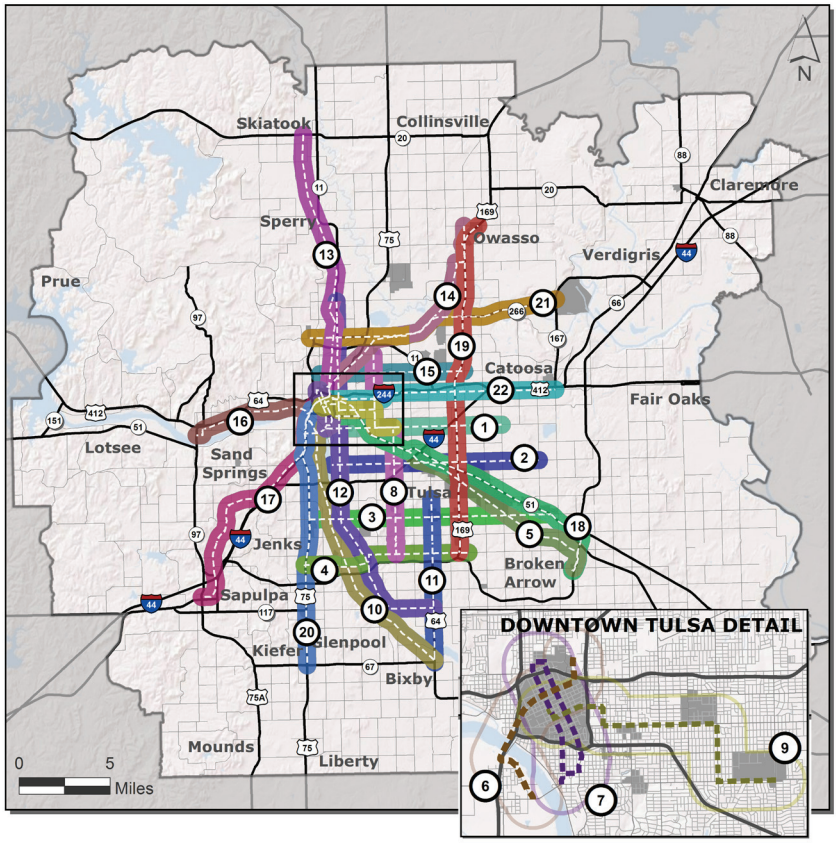
System Plan Development



Representative Corridors

1. 21st Street Corridor
2. 41st Street Corridor
3. 71st Street Corridor
4. 91st Street Corridor
5. Broken Arrow Corridor
6. Central Corridor
7. Downtown Circulator
8. Harvard/Yale Corridor
9. Historic Streetcar Corridor
10. Jenks/Bixby Corridor
11. Memorial Drive Corridor
12. Peoria/Riverside Dr Corridor
13. Osage Prairie Trail Corridor
14. Airport/Owasso Corridor
15. Pine Street Corridor
16. Sand Springs Corridor
17. Sapulpa Corridor
18. State Highway 51 Corridor
19. US 169 Corridor
20. US Highway 75 Corridor
21. 36th St North Corridor
22. 3rd Street/TU/Admiral Corridor

Figure 6 : Representative Study Corridors

System Plan Process

The 2035 INCOG Regional Transit System Plan (RTSP) seeks to actively engage and interact with the Transportation Management Area (TMA) citizens, agencies and community stakeholders. Community feedback gathered from the intense public involvement process was used to assist in the development of transit solutions that can be successfully implemented and accepted by the people of the region.

A rigorous needs assessment analysis was conducted to guide the development of the RTSP according to the principles established. It provides the basis and rationale for major transportation improvements in the Greater Tulsa TMA. The purpose of the needs assessment was to identify the regional transportation needs that may be addressed through public transportation and high capacity transit improvements. The need for improved transit services in the TMA is supported by the following RTSP transportation goals:

- Enhance Transportation Mobility & Accessibility
- Improve Transportation Efficiency & Safety
- Promote Environmental Benefits
- Guide Economic Development

Each municipality included within the RTSP provides unique resources, attractions and amenities for the region. A control set of potential representative study corridors was developed out of previous plans and studies as well as preliminary demographic analysis and regional travel demand forecasting results. The lists were then refined and presented to the Regional Task Force and Funders' Committee members for discussion and comment. The results

Table 8 : Representative Study Corridors

Corridor Number	Name	Length (Miles)	Extent A	Extent B	Right of Way
1	21st Street South Corridor	10.9	US Highway 75	145th East Ave	Roadway
2	41st Street South Corridor	11.4	Riverside Dr	Lynn Lane Rd	Roadway
3	71st Street South Corridor	12.1	US Highway 75	SH-51	Roadway
4	91st Street South Corridor	9.5	US Highway 75	Garnett Rd	Roadway
	Segment A	*5.9*	*Riverside Dr*	*Garnett Rd*	
	Segment B	*3.6*	*US Highway 75*	*Riverside Dr*	
5	Broken Arrow Corridor	17.8	Union Station	NSU-Broken Arrow	Rail
	Segment A	*13.9*	*Union Station*	*Main Street, Broken Arrow*	
	Segment B	*3.9*	*Main Street, Broken Arrow*	*NSU-Broken Arrow*	
6	Central Corridor	3.3	OSU-Tulsa	23rd and Jackson	Rail
7	Downtown Circulator	4.8	John Hope Franklin Blvd	21st St	Roadway
8	Harvard/Yale Corridor	12.1	91st St South	Apache St	Roadway
	Segment A	*7.0*	*21st St South*	*91st St South*	
	Segment B	*5.1*	*21st St South*	*Apache St*	
9	Historic Streetcar Corridor	5.4	Downtown (DAS)	Expo Square (21st & Yale)	Roadway
10	Jenks/Bixby Corridor	17.4	Union Station	Memorial Dr	Rail
	Segment A	*10.2*	*Union Station*	*Main Street, Jenks*	
	Segment B	*7.2*	*Main Street, Jenks*	*Memorial Dr*	
11	Memorial Drive Corridor	8.0	61st St	151st St	Roadway
12	Peoria/Riverside Dr Corridor	20.2	56th St North	Memorial Dr	Roadway
	Segment A	*6.0*	*56th St North*	*11th St*	
	Segment B	*14.2*	*11th St*	*Memorial Dr*	
13	Osage Prairie Trail Corridor	14.6	OSU-Tulsa	Skiatook (Rogers Blvd)	Trail
	Segment A	*5.0*	*OSU-Tulsa*	*56th St N*	
	Segment B	*9.5*	*56th St North*	*Skiatook (Rogers Blvd)*	
14	Airport/Owasso Corridor	14.0	Union Station	96th St N	Rail
	Segment A	*6.4*	*Union Station*	*Airport*	
	Segment B	*7.6*	*Airport*	*96th St N*	
15	Pine Street Corridor	8.0	Cincinnati Ave	Garnett Rd	Roadway
16	Sand Springs Corridor	7.9	Union Station	State Highway 97	Rail
17	Sapulpa Corridor	14.5	Union Station	State Highway 97	Rail
18	State Highway 51 Corridor	17.8	SE Leg of IDL	NSU-Broken Arrow	Roadway
19	US 169 Corridor	18.5	91st St S	96th St N	Roadway
20	US Highway 75 Corridor	14.3	SW Leg of IDL	SH 67 (151st St)	Roadway
	Segment A	*6.2*	*SW Leg of IDL*	*71st St*	
	Segment B	*8.1*	*71st St South*	*SH 67 (151st St)*	
21	36th St North Corridor	14..3	Osage Million Dollar Casino	Tulsa Port of Catoosa	Roadway
	Segment A	*6.2*	*Osage Million Dollar Casino*	*Sheridan Rd*	
	Segment B	*8.1*	*Sheridan Rd*	*Tulsa Port of Catoosa*	
22	3rd Street/TU/Admiral Corridor	13.4	Downtown (DAS)	193rd East Avenue	Roadway
	Segment A	*9.4*	*Downtown (DAS)*	*129th East Avenue*	
	Segment B	*4.0*	*129th East Avenue*	*193rd East Avenue*	

of input received from these stakeholders saw the addition of several new regional corridors for evaluation. The final list of representative corridors identified is shown in Table 8 and illustrated by Figure 6.

Specific objectives, as well as qualitative and quantitative measures, were established to evaluate each corridor's potential to meet the goals of the RTSP with high capacity transit. More detailed information summarizing the goals, objectives and measures by which the regional transportation system was evaluated may be found in the RTSP Needs Assessment Evaluation (June 2011).

A multi-step needs evaluation process was applied to all proposed transit corridors to develop a "Cumulative Needs Score." This score was used to make a comparative distinction of high capacity transit need among the proposed corridors. Corridor extents were selected based on existing land use, activity/employment centers, transit service area travel demand and proposed development opportunities. The needs assessment measures evaluated several proposed representative corridors as individual segments to determine if there were any corridors with underperforming segments or if a natural terminus existed within the full extent of the corridor. Transit corridors with potentially underperforming segments (A or B) were identified and truncated to include only the higher performing segment before re-evaluating.

Upon inspection, five corridors were impacted by this preliminary Segmentation Filter evaluation process, having been identified to have underperforming segments. The results of this

evaluation led to the modification of the end-of-line extents as shown in Table 9.

The lower ranking corridor segment will be included as a potential future extension of the recommended transit service improvements along the corridor in the final Regional Transit System Plan. After application of the Segmentation Filter, the modified corridors were then re-evaluated to rank their relative high capacity transit needs. Lower cumulative needs scores signify greater high capacity transit needs.

Transit Market Groups – Circulator, Urban and Commuter

When reviewing the cumulative needs scores calculated for the proposed high capacity transit corridors, several observations were made:

- Three (3) of the top six (6) performing corridors (Downtown Circulator, Historic Streetcar and Central Corridor) provide similar circulator services to the greater downtown Tulsa area.
- Proposed high capacity transit corridors providing overarching regional connectivity among the City of Tulsa and surrounding communities and municipalities (excluding Broken Arrow and SH 51 Corridors) were found to score similarly.

For simplified and efficient analysis, three Transit Market Groups were established in order to discern the relative difference in high capacity transit need among corridors with like characteristics. Transit Market Groups established were Circulator, Commuter and Urban Corridors.

Table 9 : Preliminary Needs Assessment Evaluation Results

Description	Segment	Score	Rank
Downtown Circulator	full	100	**1**
Broken Arrow	A	112	**2**
Peoria / Riverside Drive	full	115	**3**
Historic Streetcar	full	116	**4**
3rd Street/TU/ Admiral Corridor	A	128	**5**
Central Corridor	full	133	**6**
Harvard / Yale Avenue	full	142	**7**
State Highway 51	full	147	**8**
21st South Street	full	153	**9**
Airport/Owasso	A	159	**10**
Osage Prairie Trail	A	164	**11**
71st South Street	full	175	**12**
41st South Street	full	183	**13**
US Highway 169	full	188	**14**
Sapulpa	full	189	**15**
Jenks / Bixby	A	193	**16**
Pine Street	full	194	**17**
Sand Springs	full	202	**18**
Memorial Drive	full	229	**19**
91st South Street	full	231	**20**
US Highway 75	full	237	**21**
36th Street North	full	285	**22**

Typical travel demand, built environment and operating characteristics of each market group are described below:

Circulator Corridors

Potential high capacity transit corridors identified as Circulator Market Corridors primarily provide transit service to the downtown central business district (CBD) area only. Circulator transit service generally connects major activity centers and distribution points around the downtown, CBD, and/or entertainment districts of a metropolitan area. Due to the limited service area however, passenger trips are limited to downtown-to-downtown trips only. Travel demand is also more consistent throughout the day, having less distinguishable peak vs. off-peak periods, since passenger trips are predominantly non home-based and activity driven. Circulator services are also seen as support to commuter and urban transit networks to distribute users upon arrival to the CBD. Circulator Corridors identified through the preliminary needs assessment are as follows:

- **Central Corridor**
- **Historic Streetcar**
- **Downtown Circulator**

Commuter Corridors

Proposed Commuter Market Corridors were often observed to be established highway or rail corridors through suburban or rural environments. Corridors are identified by natural urban concentrations at termini, with high population and employment densities at terminal “anchors” accompanied by a low concentration of trip generators and activity centers in between “anchors”. As a result, the majority of transit demand is for inter-urban, work

Table 10 : Needs Assessment Evaluation Results (Circulator Market Group)

Description	Segment	Score	Rank
Downtown Circulator	Full	28	**1**
Historic Streetcar	Full	31	**2**
Central Corridor	Full	34	**3**

Table 11 : Needs Assessment Evaluation Results (Commuter Market Group)

Description	Segment	Score	Rank
Broken Arrow	A	39	**1**
State Highway 51	Full	56	**2**
Airport / Owasso	A	63	**3**
Jenks / Bixby	A	75	**4**
Sapulpa	Full	78	**5**
US 169	Full	80	**6**
Sand Springs	Full	81	**7**
US 75	Full	99	**8**

Table 12 : Needs Assessment Evaluation Results (Urban Market Group)

Description	Segment	Score	Rank
3rd Street/TU/Admiral Corridor	A	62	**1**
Peoria Ave/Riverside	Full	64	**2**
Harvard / Yale	Full	69	**3**
21st Street South	Full	80	**4**
Osage Prairie Trail	A	84	**5**
71st Street South	Full	85	**6**
41st Street South	Full	98	**7**
Pine Street	Full	106	**8**
Memorial Drive	Full	121	**9**
91st Street South	Full	121	**9**
36th Street North	Full	151	**11**

based trips typically occurring during the peak AM and PM travel demand periods. Commuter Corridors identified through the preliminary needs assessment evaluation are as follows:

- **Airport / Owasso**
- **Broken Arrow**
- **Jenks / Bixby**
- **Sand Springs**
- **Sapulpa**
- **State Highway 51**
- **US 75**
- **US 169**

Urban Corridors

The characteristics identified as typical of Urban Market Corridors are characterized by geographically compact, developed metropolitan and suburban areas. Urban Corridors were found to serve high population and employment density corridors having multiple concentrations of activity centers. There is a high demand for multi-purpose intra-urban trips to local employment and activity centers resulting in more evenly distributed peak and off-peak travel demand. Urban Corridors identified through the preliminary needs assessment evaluation are as follows:

- **21st Street S**
- **36th Street N**
- **41st Street S**
- **71st Street S**
- **91st Street S**
- **3rd Street/TU/Admiral**
- **Harvard / Yale**
- **Memorial Drive**
- **Osage Prairie Trail**
- **Peoria /Riverside Drive**
- **Pine Street**

The needs assessment evaluation methodology was applied to each Transit Market Group independently. After application of the Segmentation Filter, Transit Market Groups were then re-evaluated using the modified full alignment extents of corridors. The results of the evaluation are shown in Table 10 through Table 12.

A review of cumulative needs scoring was performed for all Transit Market Group evaluations to verify results and continue to refine trends in performance. Evaluation results were reviewed for redundancy and underperformance in order to more efficiently identify prime corridors for inclusion into the RTSP and receive further study.

Regional Transit System Plan

2035 Regional Transit System Plan

Transit Corridor Prioritization

One of the goals of RTSP is the prioritization of the most appropriate transit corridor upon which to conduct an Alternatives Analysis study for major capital investment. Results of the needs assessment evaluation were moved forward and incorporated into additional screening processes for the development of conceptual transit system plans. Transit corridor market groups were categorized into one of three potential priority levels for implementation. Priority categories were identified by natural groupings, or breaks, in the cumulative needs assessment scores and are listed below. The prioritization of Foundation, Enhanced and Extended Network Corridors by transit market group is shown in Table 13 through Table 15 with under performing and redundant corridors removed.

Strategies for deployment of transit services are further discussed in the next chapter.

Prioritization by corridors with the highest probability of successfully supporting high capacity transit service selected only those corridors identified within the RTSP as Foundation Network Corridors for advancement into an Alternatives Analysis. It should be noted that all proposed Circulator corridors will be included in the Foundation Network improvements of the RTSP due to catalytic potential and development opportunities within the greater Downtown Tulsa area. Commuter and Urban corridor needs assessment evaluation results showed a clear delineation in the most likely corridors to support implementation of high capacity transit services.

Figure 7 illustrates the final RTSP high capacity transit corridors, proposed extents and prioritization results.

Transit Facilities

Currently, Tulsa Transit operates two major transit centers: the Denver Avenue Station (DAS) in downtown Tulsa, and the Memorial Midtown Station (MMS) near the junction of Broken Arrow Expressway and I-44 as shown on Figure 7. All but two routes connect to one or both of these transit centers. Fourteen of the 18 existing daily bus routes serve DAS, as well as both express routes and all Nightline routes. Eight routes serve MMS.

The DAS facility consists of 10 bus bays, restroom facilities, and an indoor passenger waiting area. The MMS facility is designed with 12 bays (9 of which are currently active), and also includes a customer service desk, restroom facilities and an indoor waiting area. Three park and ride lots serve the two express routes and are located in Broken Arrow. Additionally, Tulsa Transit has arrangements to provide free parking for transit users at 13 “park and save” locations along local routes, usually churches or community facilities.

Table 13 : RTSP Circulator Corridors

Rank	Description	Score	Priority
1	Downtown Circulator	28	Foundation
2	Historic Streetcar	31	Foundation
3	Central Corridor	34	Foundation

Table 14 : RTSP Commuter Corridors

Rank	Description	Score	Priority
1	Broken Arrow	39	Foundation
2	Airport / Owasso	63	Enhanced
3	Jenks / Bixby	75	Enhanced
4	Sapulpa	78	Enhanced
5	US 169	80	Enhanced
6	Sand Springs	81	Enhanced

Table 15 : RTSP Urban Corridors

Rank	Description	Score	Priority
1	3rd Street/TU/ Admiral Corridor	62	Foundation
2	Peoria Ave/ Riverside	64	Foundation
3	Harvard / Yale	69	Foundation
4	21st Street South	80	Enhanced
5	71st Street South	85	Enhanced
6	41st Street South	98	Extended
7	Pine Street	106	Extended

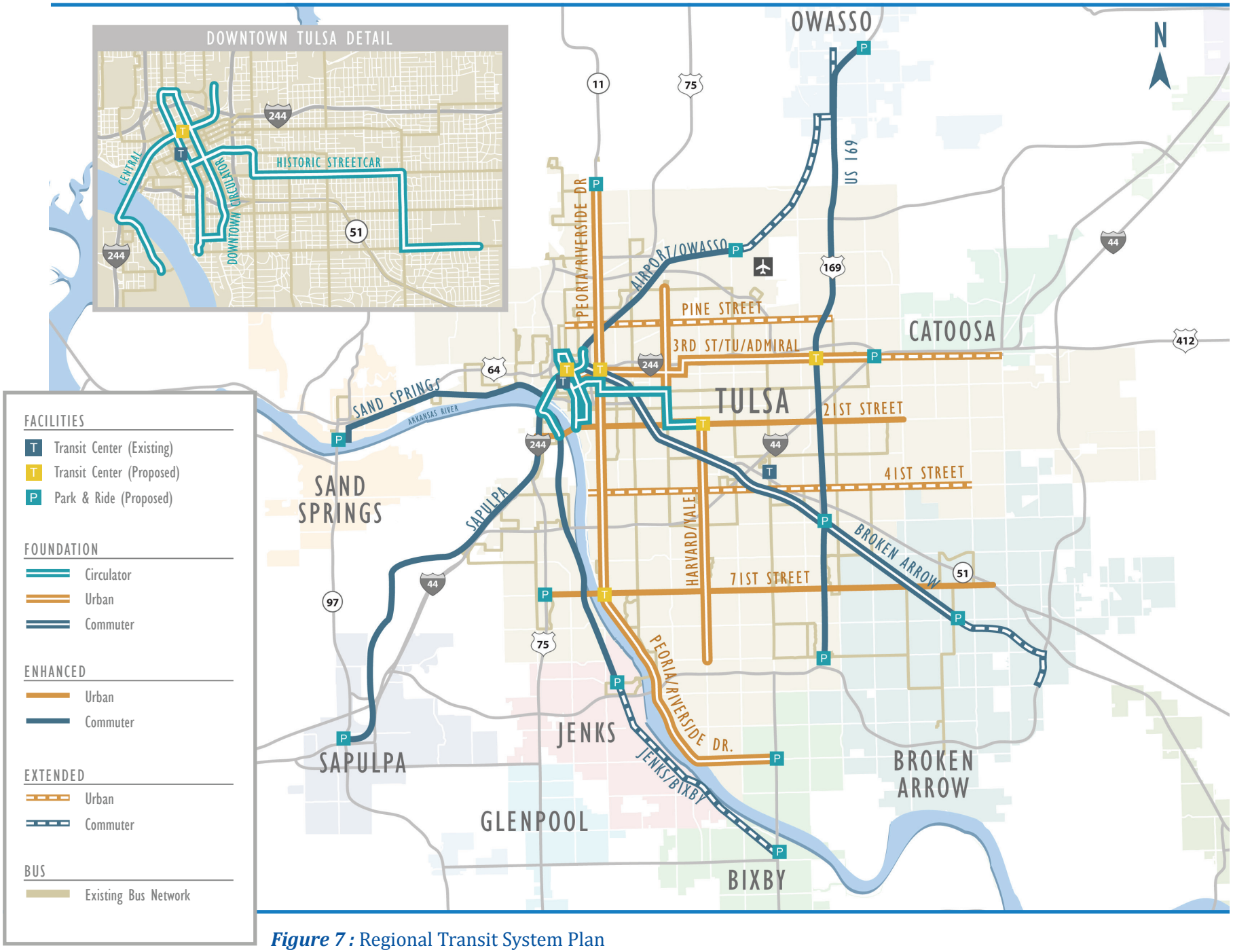


Figure 7 : Regional Transit System Plan

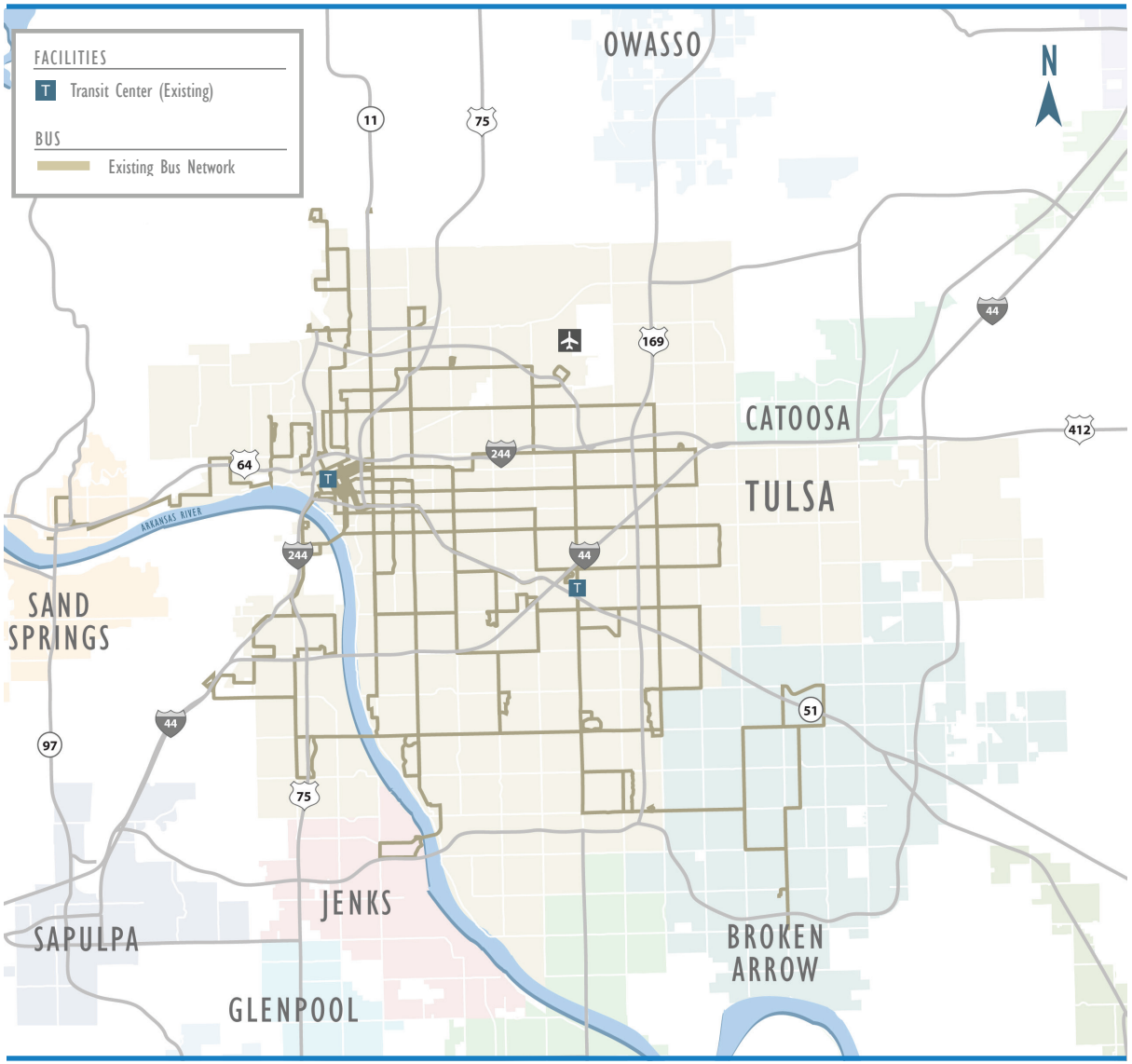


Figure 8 : Existing Bus Service, Tulsa Transit

Park and ride service and facilities have the potential to become a fundamental component of the regional transportation system, especially with the ability to extend services beyond the urban core of the Tulsa region. The RTSP recommends 13 additional park and ride and five transit center location to correspond with the corridor recommendations. These additional facilities will facilitate commuter trips from out-lying communities into the Tulsa Central Business District and other regional activity centers.

Bus Service Improvement Strategies

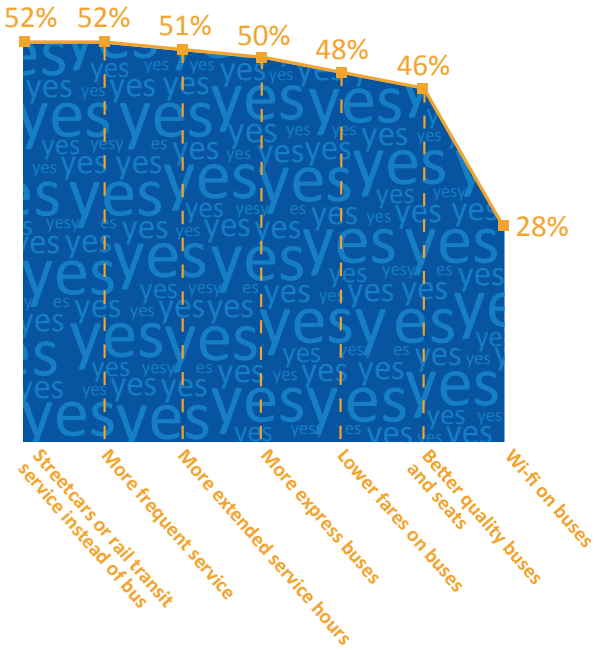
One major component of the RTSP planning process included an evaluation of existing regional transit services. Addressing the needs of the existing transit service is the most efficient manner to improve public transportation within the region in the near-term.

A well-functioning bus system is the backbone of any successful transit system plan. The bus system improvement plan identifies specifics of routes, service levels, and associated bus transit improvements that can be implemented in the near-term, mid-term, or long-term timeframe. As a part of the general population poll conducted by INCOG, Figure 9 shows a range of near-term and long-term transit improvements the public recognizes as potential strategies to increase usage.

Near-term strategies focus on improvements that are essentially cost-neutral and seek to maximize scant existing resources by making the current route system more efficient, streamlined and easier to understand for both existing and

Figure 9 : Poll - Strategies to Increase Usage

"Of the following choices, which would help you use public transportation more often?"



potential new riders. This effort has identified key strategies that can be pursued immediately:

- Set standard service frequencies system-wide (e.g., every 30 minutes, 45 minutes or 60 minutes) to facilitate bus connections as well as improve schedule comprehension for riders.
- Implement timed transfers at transit centers to minimize connection times between routes. A system similar to the airlines hub system with timed connections would decrease passenger wait time between buses.
- Simplify circuitous routings to improve travel time and route comprehension for riders.
- Replace separate Nightline route service with evening and night service hours on key regular routes to improve system integration and reduce customer confusion.

- Develop downtown detail transit map for inclusion in Tulsa Transit Route Guide.
- Pursue aggressive rebranding, marketing, and education of Tulsa Transit and the system changes to existing riders and the general public to highlight the economy, efficiency, and environmental benefits of riding the new Tulsa Transit.

Other potential near-term improvements depend on securing additional funding, possibly through grants:

- Develop “Super Stop” or “Sub-Hub” locations and improved facilities such as kiosks, shelters and bus turn-outs at key transfer locations (beyond the existing two major transit centers).
- Provide schedule and route information at bus stops.
- Introduce real-time passenger information at key bus stops.

Mid-term and long-term strategies assume that more funding becomes available. Ultimately, the bus system is envisioned to provide improved geographic coverage, better service frequencies, strong customer service/information, and coordinated connections with high capacity projects and transfer centers.

Phasing & Implementation

Table 16 : Performance of Optional Governance Mechanisms

	Sources	Ease of Implementation	Ease of Operations	Equity	Legal Authority	Acceptability
1	Continue as City of Tulsa Municipal Trust	High	High	Medium	High	Medium
2	Create a City of Tulsa Municipal Department	Medium	High	Medium	Medium	Medium
3	Create Transportation Authority					
	A. Combination of Cities/Towns	Medium	High	High	High	Medium
	B. Tulsa County	Medium	High	High	High	Medium
	C. Multi-County	Low	High	Medium	High	Low

High Medium Low

Table 17 : Performance of Alternative Local and Regional Public Transportation Funding Sources

Sources	Ease of Implementation		Ease of Operations	Equity	Economic Efficiency	Legal Constraints	Acceptability
	Adequacy	Stability					
General Revenue	Medium	Low	High	Low	Medium	High	Medium
Dedicated Sources							
Sales Tax	High	Medium	High	Low	Medium	Medium	Medium
Property Tax	Medium	High	High	Low	Medium	Low	Low
Contract/Purchase-of-Service Revenue	Low	Medium	Medium	Medium	Medium	High	Medium
Advertising Revenue	Low	Medium	Low	High	High	High	High
Vehicle Fees	Low	High	Medium	Medium	Medium	Low	Low
Special Assessment Districts	Low	High	Medium	Medium	Medium	Low	Medium
Parking Fees	Low	Medium	Medium	Medium	Medium	Low	Low
Donations	Low	Low	Medium	High	High	Medium	High
Utility Fees	Medium	High	Medium	Low	Medium	Low	Low
Gas Tax	Medium	Medium	Medium	Medium	Medium	Low	Medium

High Medium Low

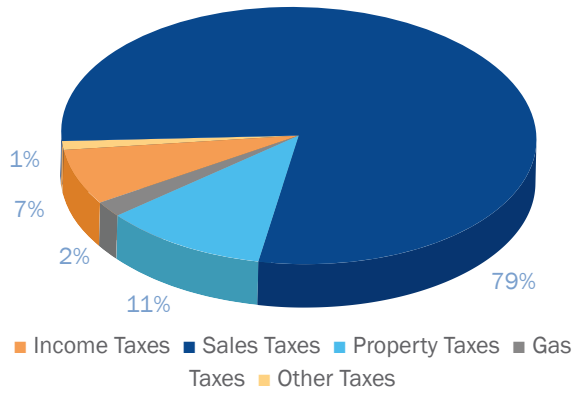
Addressing Governance and Finance

In order to establish effective implementation of regional transit improvements recommended by the RTSP, the region must address institutional and funding issues to adequately support public transportation. Tulsa Transit, the regional transit provider, is currently structured as a municipal trust of the City of Tulsa. As a municipal trust, Tulsa Transit depends upon annual local general fund contributions for operational and capital expenditures. Decreasing local funding, limited state funding and competitive federal funding make it difficult for Tulsa Transit to meet the regional transit demand with existing resources. A range of alternative governance options may provide the region with a more efficient and effective structure to provide services.

Oklahoma statutes accommodate a range of governance options including municipal trusts and regional authorities. The Tulsa region has three feasible governance options for a regional transportation provider which includes: continuing as a City of Tulsa Municipal Trust, creating a City of Tulsa Municipal Department or creating a Regional Transportation Authority. A regional transportation authority is defined as any combination of cities, towns and counties. Table 16 depicts a matrix of the performance of each governance option.

Currently, Tulsa Transit spends approximately the same operating expenses per passenger miles as cities without dedicated funding. It spends less, however, than those transit operators with dedicated funding. The region, in comparison

Figure 10 : Local Dedicated Funding Sources for Operations: Nationwide Totals (2009)

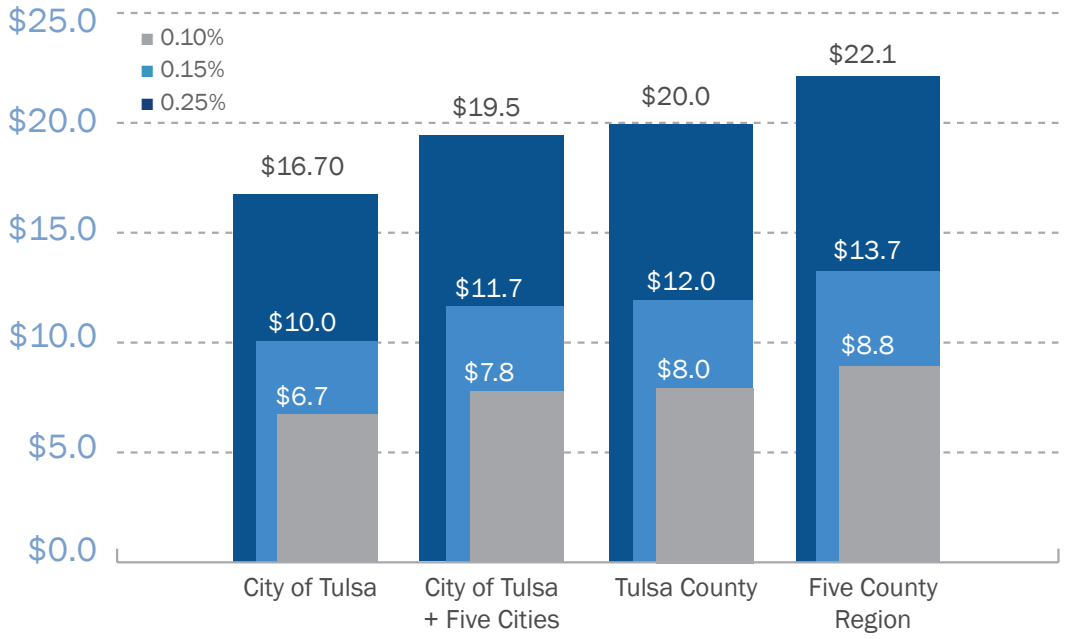


Source: National Transit Database 2009

to similar cities, is more dependent on federal funding sources and less dependent on state funding sources. Figure 10 shows the type of local dedicated funding sources typically utilized nationwide for operations.

The Tulsa region has a range of funding mechanisms to help fund operations and capital expenses of basic transit services and future RTSP corridors. Table 17 depicts a review of alternative local and regional public transportation funding sources as they relate to the Tulsa region. It is clear that general fund revenues alone are not sufficient to support implementation of the RTSP. Table 17 suggests that the best currently available single source of revenue adequate for implementation of the RTSP is the sales tax.

Figure 11 : Potential Sales Tax Revenue (Millions)



Dedicated Transit Sales Tax Potential

Note: Based on Oklahoma Tax Commission FY 2010 Sales Tax Collection Data and Rates.
Five Cities include: Bixby, Broken Arrow, Jenks, Owasso, and Sand Springs

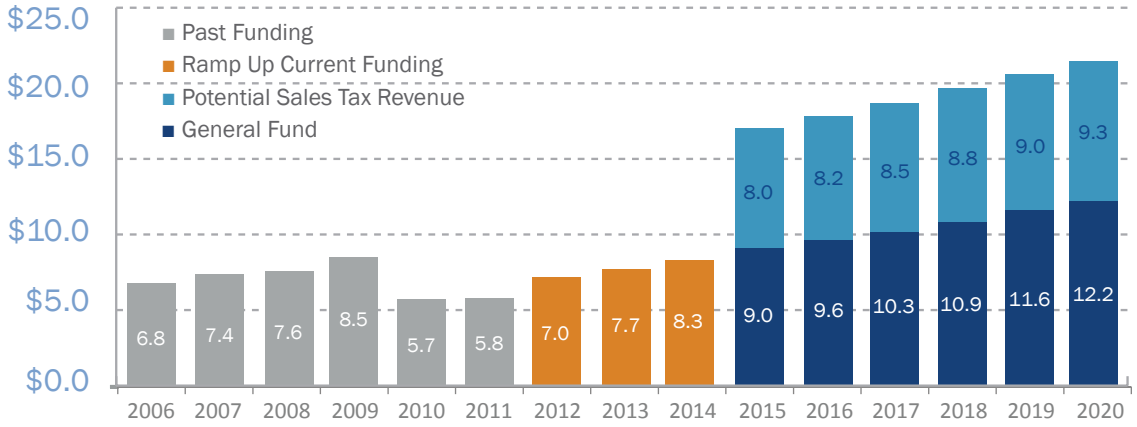
Both governance and finance decisions are important to the success of the RTSP to ensure the sustainability of any agency, authority or department to maintain the level of service demands of the public. As shown on Figure 11, a range of potential sales tax revenue could be made available depending on the size and scope of governance of any future agency.

Recommendations

The RTSP recommends regional action on critical issues pertaining to governance and finance of the transit system, including both high capacity and fixed route bus services. Below are recommendations established throughout the technical process in consultation with input from regional stakeholders.

- Create a Regional Transit Authority based on options presented in Table 16 as allowed by Oklahoma enabling legislation and consensus among regional stakeholders.
- Establish necessary interim steps to move forward with the recommended governance mechanism. These steps would likely include:
  - Create a broad and diverse regional task force to address governance structure and membership options for a regional transit authority
  - Generate additional funds to maintain and improve existing transit service, as recommended by Figure 12
  - Develop a specific plan and program of investments for which additional funding is needed and demonstrate the benefits that are expected from the proposed investments

Figure 12 : Prior and Proposed Local Funding (Millions)



* Countywide Sales Tax at 0.10%

- Clearly identify established roles, responsibilities, and procedures for executing the funding and investment strategy and implementing the proposed improvements
- Design and carry out a public education and advocacy plan and campaign
- Develop sustained leadership and demonstrable, sustained support

- Explore amending enabling legislation to allow for alternative financing mechanisms, which include property taxes, vehicle fees, car rental fees, vehicle lease fees, parking fees, utility fees, motor fuel taxes, and battery taxes

Fiscal History and Timeline

There is a need to maintain momentum for costs neutral transportation / bus enhancements prior to the availability of dedicated regional tax revenues. Below is a fiscal year timeline of potential local funding.

There was a significant increase in local funding provided by the City of Tulsa which occurred between FY 2006 and FY 2009, from $6.8 M to $8.5 M.

- FY 2006: $6.8 M
- FY 2007: $7.4 M
- FY 2008: $7.6 M
- FY 2009: $8.5 M

However, a decrease in City generated funds occurred between FY 2009 and FY 2010, decreasing from $8.5 M to $5.7 M, with funding remaining relatively low at $5.8 M in FY 2011.

- FY 2009: $8.5 M
- FY 2010: $5.7 M
- FY 2011: $5.8 M

For FY2012 Tulsa Transit obtained an 18% increase over their 2011 general fund allocation from the City of Tulsa. Due to increases in fuel costs, much of this increase was consumed by fuel. Tulsa Transit was able to add additional service on three routes.

- FY 2012: $7.0M (Requested)

It is suggested that there be a 'ramp up' with in local funding from the City of Tulsa, other neighboring jurisdictions and the County, and aggressively seek federal funding. It is suggested local funding be increased to $8.3M by FY 2014.

- FY 2013: Estimated $7.7 M
- FY 2014: Estimated $8.3 M

Federal Funding Opportunities

Pursuing all federal funding sources is highly recommended. Any local commitment of resources toward capital and operations can be successfully leveraged and complimented with all federal avenues for funding of capital projects. In addition to future potential capital intensive projects, it is recommended that various categories of funding be pursued including:

- The State of Good Repair Initiative, which will finance capital projects to replace, rehabilitate, and purchase buses and related equipment and to construct/rehabilitate bus-related facilities
- The Livability Expansion Initiative, which includes two programs:
  - The Alternatives Analysis program, which can assist potential sponsors of New Starts and Small Starts projects in the evaluation of all reasonable modal and multimodal alternatives and general alignments options to address transportation needs in a defined travel corridor
  - Bus and Bus Facilities, which can fund the purchase or rehabilitation of buses and vans, bus-related equipment (including ITS, fare equipment, communication devices), construction and rehabilitation of bus-related facilities (including administrative, maintenance, transfer, and intermodal facilities)

- The Sustainability Initiative, which includes two programs:
  - The Clean Fuels Program, which can fund

    1) Purchasing or leasing clean fuel buses, including buses that employ a lightweight composite primary structure and vans for use in revenue service;

    2) Constructing or leasing clean fuel bus facilities or electrical recharging facilities and related equipment; and

    3) Projects relating to clean fuel, biodiesel, hybrid electric, or zero emissions technology buses that exhibit equivalent or superior emissions reductions to existing clean fuel or hybrid electric technologies

  - The Transit Investment in Greenhouse Gases and Energy Reduction (TIGGER) III Program, which can assist in the reduction of the energy consumption of a public transportation system and/or the reduction of greenhouse gas emissions of a public transportation system

Implementation

The 2035 RTSP will be reviewed with the Federal Transit Administration (FTA), congressional and state legislators, the Oklahoma Department of Transportation (ODOT) and other local governments. Establishing relationships and coordination among multiple agencies will be critical as individual projects are developed. Implementation of successful transit projects often require policy coordination with other regional institutions to establish transit-supportive policies regarding parking, bicycle and pedestrian infrastructure and land use.

Coordination with municipal jurisdictions is important to establish supportive land use in areas of future transit investment. Urban development patterns have a large influence on the success and safety of transit use. Concentrating development in Transit-Oriented Developments (TOD) is one effective tool many communities have utilized to support transit operations and to develop nodes of high-intensity development. Strong regional planning and inclusion of both citizens and developers in the planning process are necessary elements of successful TOD and joint development programs. To accommodate future TOD sites, municipalities can ensure the development codes and zoning are inclusive and allow for mixed use or form-based zoning principles.

The RTSP, designed to serve various travel markets throughout the region, contains corridors with a range of patron demand. The needs of each corridor identified in the RTSP are unique to the communities in which it serves. In order to implement the RTSP, the region must determine the appropriate solutions for each corridor.

Foundation Network

The needs identified for the Foundation corridors may be addressed by implementing a high-capacity transit technology. As such, an Alternatives Analysis (AA) is the most appropriate planning process to

determine what type of technology best resolves the corridor's needs. High-capacity technologies include commuter rail, light rail, streetcar rail and bus rapid transit with supportive infrastructure such as enhanced station areas, regional transfer centers as well as dedicated fixed guideway construction. These higher investment improvements may be used in conjunction with or in lieu of improvements identified for potential deployment within Enhanced or Extended Network corridors.

High capacity transit infrastructure may require significant capital investment, project development and construction resources to implement. Thus, major capital investment projects often take extended timetables to complete. Smaller scale improvements often have lower capital requirements and can be implemented more quickly. Although these "light" improvements may not resolve all service needs identified, they can often provide appreciable efficiency or customer service benefits in a precursory role to high capacity improvements. As these are already high usage corridors with high transit demand, one or more of the alternative transit improvements identified for deployment along Enhanced or Extended network corridors may be appropriate. An AA tests these options using a variety of criteria including capital costs, operating and maintenance costs, local financial commitment, economic development effects, service levels, user benefits, etc. and is typically completed within a one to two year timeframe.

Enhanced Network

The needs identified for the Enhanced Network corridors may be addressed by deployment of a variety of transit and/or roadway improvements. As such, regional or local planning processes or special studies are the most appropriate planning methods to determine what set of alternatives best resolves the corridor's needs. High capacity technologies include commuter rail, light-rail, streetcar rail and bus rapid transit. Other transit and roadway alternatives include express bus, local bus, extended fixed route service areas and hours of operation, improved service frequencies, real-time vehicle location and arrival equipment, transit facility construction, high occupancy vehicle (HOV) lanes, ramp metering, signal optimization, etc. Proven, low cost solutions may even be deployed in advance of more significant investment projects to improve operating efficiency or customer service along the corridors as needed. These improvements may be tested and compared using a variety of criteria including capital costs, operating and maintenance costs, levels of service (LOS), measures of effectiveness (MOE), etc. with a recommendation determined within a three to six month timeframe.

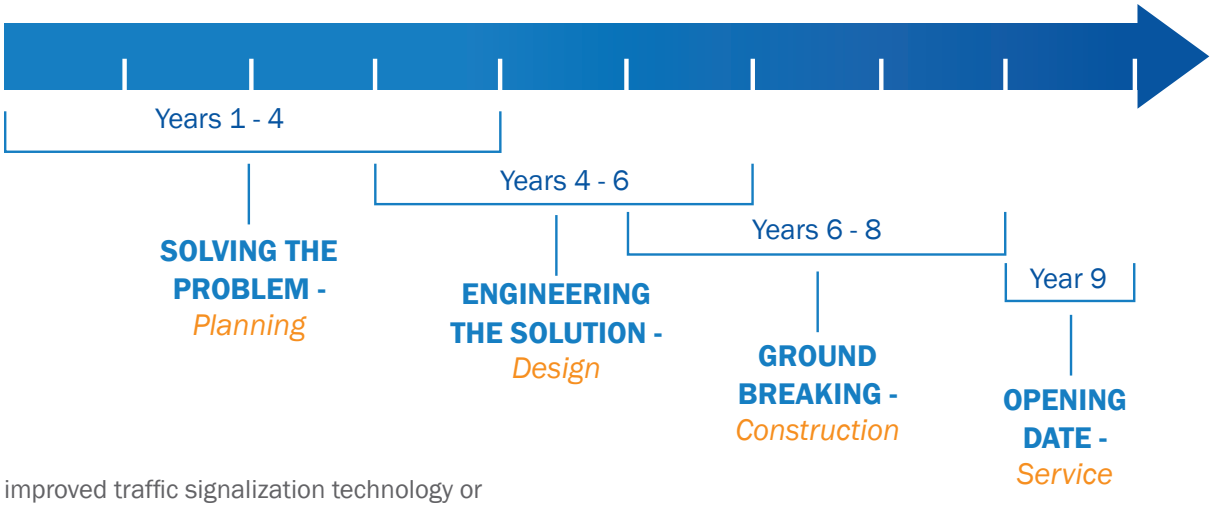
Extended Network

The needs identified for the Extended Network corridors may be addressed by implementing a variety of transit and/or roadway improvements. As such, both regional and local planning processes

are the most appropriate planning methods to determine what set of alternatives best resolves the corridor's needs. The needs assessment evaluation identified a decreased need for high capacity transit improvements for these corridors than that of Foundation or Enhanced corridors. The results suggest that high investment improvements will not likely be needed until beyond the planning horizon year (2035) of this study. As such, many of the proposed Enhanced Network improvements may be appropriate for deployment on Extended Network corridors along a longer timeline.

Since existing transit service may be sparse or non-existing along these corridors, Tulsa Transit may look at these areas when planning for the next expansion of their service area. Immediate improvement may be as simple as the introducing fixed route or express service to the areas with

Figure 13 : Example High Capacity Transit Development Timeline



improved traffic signalization technology or providing bus stop locations with passenger information, basic shelters and amenities as identified the Enhanced Network description. These improvements may be tested and compared using a variety of criteria including capital costs, operating and maintenance costs, levels of service (LOS), measures of effectiveness (MOE), etc. with a recommendation determined within a three to six month timeframe.

As previously identified, the application of the Segmentation Filter resulted in the underperforming corridor segments being recommended as potential future extensions of the recommended transit service improvements. Broken Arrow (Seg B), Jenks/Bixby (Seg B), Airport/Owasso (Seg B), Osage Prairie (Seg B) and 3rd St/TU/Admiral (Seg B) are included as "extended network" in the final RTSP. If high capacity transit services are deployed along the "starter segment" of these extensions, they may galvanize the potential transit market in the future extents and warrant greater investment in transit service to the Extended Network areas.

Corridor Development

Foundation corridors will be advanced to planning, environmental review, and engineering and design before they reach construction. The first phase of advanced planning is established in the form of an Alternatives Analysis (AA). An AA evaluates transit technology and alignment options for a particular corridor. Informing local officials and community members on the benefits, costs and impacts of transportation options, enables the community to identify a preference. This phase is complete when local and regional decision makers select a locally preferred alternative, that is adopted by INCOG into the region's long range transportation plan.

The second phase of project development concerns the preliminary engineering and environmental review. During the preliminary engineering (PE)

phase of project development for transit projects, consideration for all design options is established to refine the locally preferred alternative and complete the National Environmental Policy Act (NEPA) process. Preliminary engineering improves estimates of project costs, benefits, and impacts. In addition, during the PE phase of project development, the region's management plans are finalized, technical capabilities to develop the project are demonstrated, and local funding sources are committed.

Final design is the third and last phase of project development and includes preparation of final construction plans, detailed specifications and bid documents.

As shown on Figure 13, development timelines fluctuate depending on the total length of the corridor, the transit technology mode and the funding sources. As corridors are individually studied, they will be assessed to verify projected transit demand and needs. The RTSP will be reviewed every five years to update the findings and recommendations as updated data are available for assessment.

Transit Technology Costs

As the region begins to look to implement high capacity transit improvements along its priority corridors, this study has identified the Alternatives Analysis, or similar, evaluation process as a logical and responsible method for determining the transit technology mode, alignment and operating parameters that will best serve transit corridors. Figure 14 depicts the complete AA process and milestones.

Figure 14 : Alternatives Analysis Process

Identify Purpose and Need - The AA is initiated with a comprehensive understanding of the transportation problems in need of resolution for the selected corridor study.

Define Alternatives - A range of low to high cost capital investment alternatives are identified and defined to meet the AA purpose and need. Several different modes and alignments are included in the alternatives.

Evaluate Alternatives - All alternatives are evaluated using a wide variety of performance measures including but not limited to ridership forecasts, capital costs, operations and maintenance costs, environmental impacts, and land use analysis.

Select Locally Preferred Alternative (LPA) - The costs, benefits and impacts of each alternative are analyzed and the locally preferred alternative is selected to be continued for further development.

As part of the detailed evaluation of alternatives, engineering and design, conceptual capital cost estimates are developed to guide local decision makers in selecting the most cost effective method of transit to implement. The locally preferred mode selected will have significant bearing on the potential costs of construction and operations. Potential high capacity transit modes identified for deployment of enhanced transit services on study area corridors include:

Table 18 : Transit Technology Costs Per Mile

Mode	Capital Cost Range
Bus Rapid Transit (BRT) – mixed traffic	$2 M - $5 M
Bus Rapid Transit (BRT) – dedicated busway*	$10 M - $20 M
Modern Streetcar	$20 M - $30 M
Commuter Rail*	$15 M - $30 M
Light Rail Transit (LRT)*	$40 M - $80 M

** Excluding right of way*

- Bus Rapid Transit (BRT)
- Modern Streetcar
- Light Rail Transit (LRT)
- Commuter Rail

In order to adopt proposed transit improvements into the fiscally constrained Long Range Transportation Plan, conceptual cost estimates must be developed to the greatest extent possible to allow for accurate projection of cost, as well as identification of revenues and funding sources. Table 18 identifies the proposed high capacity transit modes and potential capital costs of implementation per mile. Transit technology modes and service operating characteristics are discussed in greater detail within this Regional Transit System Plan.

Local and Regional Benefits

Many of the country's most vibrant cities use transit as one strategy to create and sustain a high standard of living for their citizens. Transit services, even at the most basic level, can have important impacts to the region's health, mobility, urban development and economic stability. As demonstrated during the general population poll and illustrated in Figure 15, the majority of the Tulsa region's residents view the transportation system as an important component to the success of the local economy.

Mass transit provides the opportunity for municipalities to accomplish goals outside of the reach of traditional transportation investments. Compact, walkable and mixed use communities and neighborhoods envisioned by the PlaniTulsa Comprehensive Plan can be spurred by well-designed transit initiatives and, in turn, can help the regional transportation system become more efficient. This type of development supports transit systems and municipality goals of reinvestment and infill development.

Transit infrastructure can facilitate increased active transportation like walking and cycling. Realizing other modes of transportation as viable alternatives, the community can achieve healthful and more active lifestyles. Potential impacts on physical activity and public health may indirectly benefit the local economy. By accommodating all types of transportation, rather than auto-centric design, municipalities can create safer street environments with Context Sensitive Design and Complete Street policies to accommodate all users, regardless of age, transportation mode or ability.

The statistically valid survey of 1000 Tulsa area residents in 2010 asked how they would like transportation dollars spent with $100 to allocate between modes. The results demonstrated strong support for public transportation as shown on Figure 16. An obvious advantage of transit improvements is the increased mobility by non-drivers. A recently released report, *Aging in Place: Stuck Without Options, 2011,* indicated that 65% of Tulsa area senior citizens will live in places without access to transit by 2015. The RTSP, however, also has the capability to demonstrate a concentrated commitment of the region to broaden the transit market to those who choose to ride. A comprehensive, high frequency transit system can attract commuters and tailor services to meet the demand of peak travel conditions.

Figure 15 : Poll - "A Better Transportation System in Tulsa Would Help Our Economy"

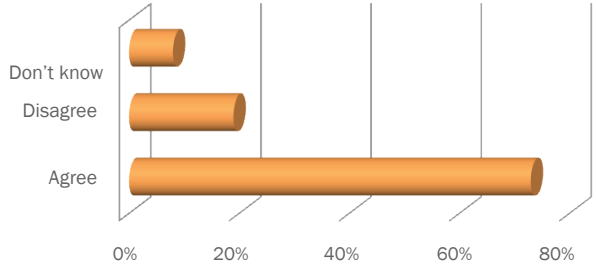
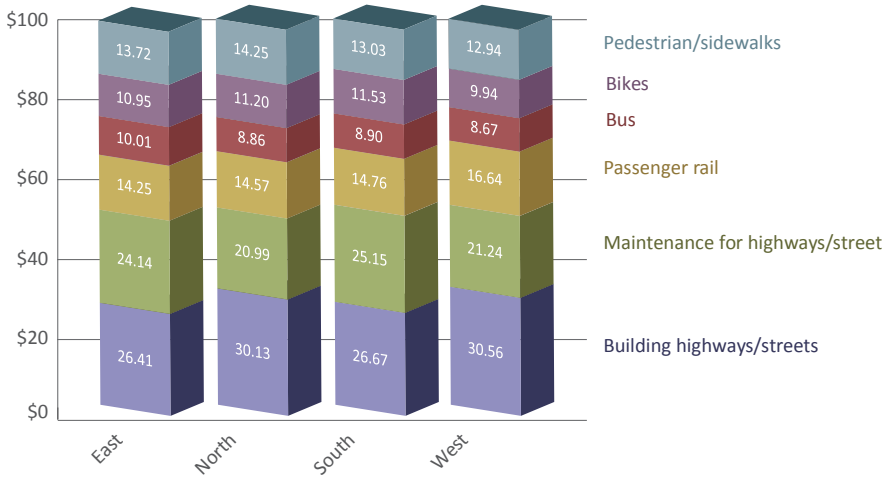


Figure 16 : Poll - "100 Dollar Question"



The comprehensive RTSP network will allow the region to meet the needs of commuter traffic, urban movement and circulation in the next 25 years. This plan allows the region to position itself to compete to attract more jobs and a diverse set of industries. Creating vibrant communities and completing the comprehensive transportation network will help the Tulsa region fast forward to a more livable and economically competitive metropolitan area.

Glossary

These terms are used throughout the Transit System Plan document and its appendices. These terms are commonly used within the transit industry.

A

Above Grade — The location of a structure or transit guideway above the surface of the ground (also known as elevated or aerial).

Accessible Service — Buses operating in regular service with wheelchair lifts, kneeling functions or other devices that permit disabled passengers to use the service.

Accessibility — (1) The extent to which facilities are barrier free and useable by disabled persons, including wheelchair users. (2) A measure of the ability or ease of all people to travel among various origins and destinations.

Activity Center — An area with high population and concentrated activities which generate a large number of trips (e.g., CBD, shopping centers, business or industrial parks, recreational facilities (also known as trip generator).

Alight — To get off a transit vehicle. Plural: "alightings".

Alignment — The horizontal and vertical ground plan of a roadway, railroad, transit route or other facility.

Allocation — An administrative distribution of funds, for example, federal funds among the states; used for funds that do not have legislatively mandated distribution formula.

Alternative Fuel — A liquid or gaseous nonpetroleum fuel, used to power transit vehicles. Usually refers to alcohol fuels, mineral fuels, natural gas, and hydrogen.

AM Peak — The morning commute period, about two hours, in which the greatest movement of passengers occurs, generally from home to work; the portion of the morning service period where the greatest level of ridership is experienced and service provided.

Synonyms: AM Rush, Early Peak, Morning Peak, Morning Rush, Morning Commission, Hour

AMTRAK (National Railroad Passenger Corporation) — A quasi-public corporation created by the federal Rail Passenger Service Act of 1970 to improve and develop intercity passenger rail service throughout the United States. Operates a depot in downtown Sacramento.

Americans with Disabilities Act of 1990 (ADA) — The law passed by Congress in 1990 which makes it illegal to discriminate against people with disabilities in employment, services provided by state and local governments, public and private transportation, public accommodations and telecommunications.

APP AR — An abbreviation for "approximate arrival" time point. RT's operating policy permits driver discretion to depart these time points up to three minutes earlier than specific time noted in the schedule.

Appropriation — An act of Congress that permits federal agencies to incur obligations and make payments for specific purposes.

Arterial Street — A major thoroughfare, used primarily for through traffic rather than for access to adjacent land, that is characterized by high vehicular capacity and continuity of movement.

At Grade — The location of a structure or transit guideway at the same level as the ground surface.

Authorization — Basic, substantive federal legislation that established or continues the legal operation of federal program agencies, either indefinitely or for a specific period of time.

Automatic Passenger Counts (APC) (predates "smart technology") — A technology installed on transit vehicles that counts the number of boarding and alighting passengers at each stop while also noting the time. Passengers are counted using either pulse beams or step treadles located at each door. Stop location is generally identified through use of either global positioning systems (GPS) or signpost transmitters in combination with vehicle odometers.

Synonyms: Smart Counters

Automatic Vehicle Location (AVL) — A system that senses, at intervals, the monitors the real-

time location of transit vehicles carrying special electronic equipment that communicates a signal back to a central control facility, locating the vehicle and providing other information about its operations or about its mechanical condition.

B

Board — To go onto or into a transit vehicle. Plural: "Boardings".

Branch — One of multiple route segments served by a single route.

Bus — A rubber-tired road vehicle designed to carry a substantial number of passengers (i.e., 10 or more), commonly operated on streets and highways for public transportation service.

Bus Bay — Bus berthing area in a facility such as a transit center or rail station.

Bus Hours — The total hours of travel by bus, including both revenue service and deadhead travel.

Synonyms: Vehicle Hours

Bus Lane — A lane of roadway intended primarily for use by buses, either all day or during specified periods.

Synonyms: Transit Priority Lane

Bus Stop — A curbside place where passengers board or alight transit.

Bus Miles — The total miles of travel by bus, including both revenue and deadhead travel.

Synonyms: Vehicle Miles

Bus Shelter — A structure constructed near a bus stop to provide seating and protection from the weather for the convenience of waiting passengers.

Bus Turnout — Cutout in the roadside to permit a transit vehicle to dwell at a curb.

Busway — A special roadway designed for exclusive use by buses. It may be constructed at, above, or below grade and may be located in separate rights-of-way or within highway corridors.

C

Capital — Long-term assets, such as property, buildings, roads, rail lines, and vehicles.

Capital Costs — Costs of long-term assets of a public transit system such as property, buildings, vehicles, etc.

Capital Improvement Program — The list of capital projects for a five to seven year programming period.

Capital Project — Construction and/or procurement of district assets, such as transit centers, transit vehicles and track.

Car Pool — An arrangement where people share the use and cost of a privately owned automobile in traveling to and from pre-arranged destinations.

Central Business District (CBD) — An area of a city that contains the greatest concentration of commercial activity, the "Downtown". The traditional downtown retail, trade, and commercial area of a city or an area of very high land valuation, traffic flow, and concentration of retail business offices, theaters, hotels and services.

Commuter Rail — Local and regional passenger train service between a central city, its suburbs and/or another central city, operating primarily during commutes hours. Designed to transport passengers from their residences to their job sites. Differs from rail rapid transit in that the passenger cars generally are heavier, the average trip lengths are usually longer, and the operations are carried out over tracks that are part of the railroad system.

Corridor — A broad geographical band that follows a general directional flow or connects major sources of trips. It may contain a number of streets and highways and many transit lines and routes.

Crosstown Route — Non-radial bus service that normally does not enter the Central Business District (CBD).

Crush Load — The maximum passenger capacity of a vehicle, in which there is little or no space between passengers (i.e., the passengers are touching one another) and one more passenger cannot enter without causing serious discomfort to the others.

D

Deadhead — There are two types of deadhead or non-revenue bus travel time:

(1) Bus travel to or from the garage and a terminus point where revenue service begins or ends;

(2) A bus' travel between the end of service on one route to the beginning of another.

Synonyms: Non-Revenue Time

Deboard — To get on or into a transit vehicle.

Disabled — With respect to an individual, a physical or mental impairment that substantially limits one or more of the major life activities of such an individual; a record of such an impairment; or being regarded as having such an impairment.

Discretionary — Subject to the discretion of legislators or an administrator. The federal Section 5309 New Starts Program is an example of a discretionary program.

E

Express Service — Express service is deployed in one of two general configurations:

(1) A service generally connecting residential areas and activity centers via a high speed, non-stop connection, e.g., a freeway, or exclusive right-of-way such as a dedicated busway with limited stops at each end for collection and distribution. Residential collection can be exclusively or partially undertaken using park-and-ride facilities.

(2) Service operated non-stop over a portion of an arterial in conjunction with other local services. The need for such service arises where passenger demand between points on a corridor is high enough to separate demand and support dedicated express trips.

Synonyms: Rapids (1 or 2), Commuter Express (1), Flyers (1)

Exclusive Right-of-Way — A right-of-way that is fully grade separated or access controlled and is used exclusively by transit.

Extra Board — Operators who have no assigned run but are used to cover runs deliberately left open by the scheduling department (extra runs), or runs that are open because of the absence of regularly assigned operators.

F

Fare — Payment in the form of coins, bills, tickets and tokens collected for transit rides.

Fare Box — A device that accepts the coins, bills, tickets and tokens given by passengers as payment for rides.

Farebox Recovery Ratio — A measure of the proportion of transit operating expenses covered by passenger fares. It is calculated by dividing a transit operator's fare box revenue by its total operating expenses.

Synonyms: Fare Recovery Ratio

Farebox Revenue — The value of cash, tickets and pass receipts given by passengers as payment for public transit rides.

Fare Box Revenue — Total revenue derived from the payment of passenger fares.

Synonyms: Passenger Revenue

Fare Collection System — The method by which fares are collected and accounted for in a public transportation system.

Fare Elasticity — The extent to which ridership responds to fare increases or decreases.

Fare Structure — The system set up to determine how much is to be paid by various passengers using the system at any given time.

Federal Transit Administration (FTA, formerly UMTA, Urban Mass Transit Administration) — A part of the U.S. Department of Transportation (DOT) which administers the federal program of financial assistance to public transit.

Feeder Service — Service that picks up and delivers passengers to a regional mode at a rail station, express bus stop, transit center, terminal, Park-and-Ride, or other transfer facility.

Fixed Cost — An indirect cost that remains relatively constant irrespective of the level of operational activity.

Fixed-Guideway System — A system of vehicles that can operate only on its own guideway constructed for that purpose (e.g., rapid rail, light rail). Federal usage in funding legislation also includes exclusive right-of-way bus operations, trolley buses, and ferryboats as "fixed-guideway" transit.

Fixed Route — Transit service provided on a repetitive, fixed-schedule basis along a specific route, with vehicles stopping to pick up passengers at and deliver passengers to specific locations.

Frequency — The amount of time scheduled between consecutive buses or trains on a given route segment; in other words, how often the bus or train comes (also known as Headway).

Full Funding Grant Agreement (FFGA) — An agreement executed by the federal government with a public transit operator that assures the operator of the federal government's intention to fully fund the federal share of a New Starts project.

FY (Fiscal Year) — A yearly accounting period designated by the calendar year in which it ends (e.g. FY 2000). The fiscal year for the federal government runs from October 1 to September 30.

G

Garage — The place where revenue vehicles are stored and maintained and from where they are dispatched and recovered for the delivery of scheduled service.

Synonyms: Barn, Base, Depot, District, Division, O/M Facility (ops/maint), Yard

Grade Separated — A crossing of two forms of transportation paths (e.g., light rail tracks and a highway) at different levels to permit unconstrained operation.

H

Headway — The scheduled time interval between any two revenue vehicles operating in the same direction on a route. Headways may be LOAD driven, that is, developed on the basis of demand and loading standards or, POLICY based, i.e., dictated by policy decisions such as service every 30 minutes during the peak periods and every 60 minutes during the base period.

Synonyms: Frequency, Schedule, Vehicle Spacing

Heavy Rail — An electric railway with capacity for a "heavy volume" of traffic, and characterized by exclusive rights-of-way, high speed and rapid acceleration. Heavy rail is different from commuter rail and light rail.

Synonyms: Subway, elevated railway, rapid transit

High Occupancy Vehicle (HOV) — Vehicles that can carry more than two persons. Examples of high occupancy vehicles are a bus, vanpool and carpool.

HOV — See High Occupancy Vehicle.

HOV Lane — A traffic lane in a street or highway reserved for high occupancy vehicles, which may include two person vehicles in some applications.

I

Incident — Traffic or passenger accident that include collisions with other vehicles, pedestrians or fixed object, and passenger accidents while boarding, on-board, or disembarking the transit vehicle.

Indian Nation Council of Governments (INCOG) — A voluntary association of local and tribal governments in the Tulsa metropolitan area in northeast Oklahoma. Established in 1967, INCOG is one of 11 Councils of Governments in the State of Oklahoma, and one of several hundred regional planning organizations across the country. INCOG provides planning and coordination services to assist in creating solutions to local and regional challenges in such areas as land use, transportation, community and economic development, environmental quality, public safety, and services for older adults.

Intercity Rail — A long distance passenger rail transportation system between at least two central cities that traditionally has been provided by AMTRAK.

Interlining — Interlining is used in two ways: Interlining allows the use of the same revenue vehicle and/or operator on more than one route without going back to the garage. Interlining is often considered as a means to minimize vehicle requirements as well as a method to provide transfer enhancement for passengers. For interlining to be feasible, two (or more) routes must share a common terminus or be reasonably proximate to each other (see DEADHEAD).

Synonyms: Through Routes, Interlock Routes, Interlocking

Intermodal — Switching from one form of transportation to another.

Intermodal Facility — A building or site specifically designed to accommodate the meeting of two or more transit modes of travel.

J

Joint Development — Development of land or airspace by a public or private entity at publically owned property where there are excess property rights and the proposed development will not interfere with the existing or planned transit use of the property.

K

Kiss and Ride — A place where commuters are driven and left at a station to board a public transportation vehicle.

L

Layover — Layover time serves two major functions: recovery time for the schedule to ensure on-time departure for the next trip and, in some systems, operator rest or break time between trips. Layover time is often determined by labor

agreement, requiring “off-duty” time after a certain amount of driving time.

Synonyms: Recovery

Light Rail Transit (LRT) — An electric railway with a “light volume” traffic capacity compared with heavy rail.

Synonyms: Streetcar, trolley car and tramway

Light Rail Vehicle (LRV) — Modern-day term for a streetcar type of transit vehicle, e.g., tram or trolley car.

Limited Service — Higher speed train or bus service where designated vehicles stop only at transfer points or major activity centers, usually about every 1/2 mile. Limited stop service is usually provided on major trunk lines operating during a certain part of the day or in a specified area in addition to local service that makes all stops. As opposed to express service, there is not usually a significant stretch of non-stop operation.

Linked Passenger Trips — A linked passenger trip is a trip from origin to destination on the transit system. Even if a passenger must make several transfers during a one way journey, the trip is counted as one linked trip on the system. Unlinked passenger trips count each boarding as a separate trip regardless of transfers.

Load Factor — The ratio of passengers actually carried versus the total passenger seating capacity of a vehicle. A load factor of greater than 1.0 indicates that there are standees on that vehicle.

Local Service — A type of operation that involves frequent stops and consequent low speeds, the purpose of which is to deliver and pick up transit passengers as close to their destinations or origins as possible.

M

Maximum Load Point — The location(s) along a route where the vehicle passenger load is the greatest. The maximum load point(s) generally differ by direction and may also be unique to each of the daily operating periods. Long or complex routes may have multiple maximum load points.

Minibus — A rubber-tired road vehicle designed to carry a small number of passengers (i.e., 12 or less), commonly operated on streets and highways for public transportation service.

Missed Trip — A schedule trip that did not operate for a variety of reasons including operator absence, vehicle failure, dispatch error, traffic, accident or other unforeseen reason.

Mode — A particular form of travel (e.g., bus commuter tail, train, bicycle, walking or automobile.

Mode Split — The proportion of people that use each of the various modes of transportation. Also describes the process of allocating the proportion of people using modes. Frequently used to describe the percentage of people using private automobiles as opposed to the percentage using public transportation.

Model — An analytical tool (often mathematical) used by transportation planners to assist in making forecasts of land use, economic activity, and travel activity.

Monthly Pass — A prepaid farecard or ticket, valid for unlimited riding within certain designated zones for one-month period.

Multidestinational Network — A bus route network that is designed to make it easy to travel by transit between any two points in the service area.

Multimodal — A form of travel which includes the transportation of goods or people that is performed with at least two different means of transport.

N

Network — The configuration of streets or transit routes and stops that constitutes the total system.

New Starts — Federal funding granted under Section 5309 (B) of the United States Code. These discretionary funds are made available for the construction of new fixed guideway systems or extensions of existing fixed guideway systems.

O

Off-Peak — Non-rush periods of the day when travel activity is generally lower and less transit service is scheduled.

Operating — Maintaining the ongoing functions of an agency or service. “Operating expenses” include wages, benefits, supplies, and services. “Operating assistance” is used to pay for the costs of providing public transit service.

Operating Cost — The total costs to operate and maintain a transit system including labor, fuel, maintenance, wages and salaries, employee benefits, taxes, etc.

Operating Expense — Monies paid in salaries and wages; settlement of claims, maintenance of equipment and buildings, and rentals of equipment and facilities.

Operating Ratio — A measure of transit system expense recovery obtained by dividing total operating revenues by total operating expenses.

Operating Revenue — Revenue derived from passenger fares. See also Farebox Revenue.

Operating Speed — The rate of speed at which a vehicle in safely operated under prevailing traffic and environmental conditions.

Operator — An employee of a transit system who spends his or her working day in the operation of a vehicle, e.g., bus driver, streetcar motorman, trolley coach operator, cablecar gripman, rapid transit train motorman, conductor, etc.

Origin — The location of the beginning of a trip or the zone in which a trip begins. Also known as a "Trip End".

Origin-Destination Study — A study of the origins and destinations of trips made by vehicles or passengers.

Owl — Service that operates during the late night/early morning hours or all night service, usually between 10:00 p.m. and 6:00 a.m.

Synonyms: Hawk

P

Paratransit — Transportation service required by ADA for individuals with disabilities who are unable to use fixed-route transit systems. The service must be comparable to the fixed-route service.

Park and Ride — A parking area for automobile drivers who then board vehicles, shuttles or carpools from these locations.

Pass — A means of transit prepayment, usually a card that carries some identification that is displayed to the driver or conductor in place of paying a cash fare.

Passenger — A person who rides a transportation vehicle, excluding the driver.

Passenger Check — A check (count) made of passengers arriving at, boarding and alighting, leaving from, or passing through one or more points on a route. Checks are conducted by riding (ridecheck) or at specific locations (point check). Passenger checks are conducted in order to obtain information on passenger riding that will assist in determining both appropriate directional headways on a route and the effectiveness of the route alignment. They are also undertaken to meet FTA Section 15 reporting requirements and to calibrate revenue-based ridership models.

Synonyms: Tally

Passenger Miles — A measure of service utilization which represents the cumulative sum of the distances ridden by each passenger. It is normally calculated by summation of the passenger load times the distance between individual bus stops. For example, ten passengers riding in a transit vehicle for two miles equals 20 passenger miles.

Passenger Revenue — Fares paid by passenger traveling aboard transit vehicles.

Synonyms: Farebox Revenue

Peak Hour/Peak Period — The period with the highest ridership during the entire service day, generally referring to either the peak hour or peak several hours (peak period).

Synonyms: Commission Hour

Pick — The selection process by which operators are allowed to select new work assignments, i.e., run or the Extra Board in the next (forthcoming) schedule.

Synonyms: Bid, Mark-up, Line-up, Shake-up, Sign-up

Program — (1) verb, to assign funds to a project; (2) noun, a system of funding for implementing transportation projects or policies.

Pull-In Time — The non-revenue time assigned for the movement of a revenue vehicle from its last scheduled terminus or stop to the garage.

Synonyms: Turn-In Time, Deadhead Time, Run-off Time

Pull-Out Time — The non-revenue time assigned for the movement of a revenue vehicle from the garage to its first scheduled terminus or stop.

Synonyms: Deadhead Time, Run-on Time

R

Radial Service — Local or express service designed primarily to connect the Central Business District with outlying areas.

Revenue — Receipts derived from or for the operation of transit service including farebox revenue, revenue from other commercial sources, and operating assistance from governments. Farebox revenue includes all fare, transfer charges, and zone charges paid by transit passengers.

Recovery Time — Recovery time is distinct from layover, although they are usually combined together. Recovery time is a planned time allowance between the arrival time of a just completed trip and the departure time of the next trip in order to allow the route to return to schedule if traffic, loading, or other conditions have made the trip arrive late. Recovery time is considered as reserve running time and typically, the operator will remain on duty during the recovery period.

Synonyms: Layover Time

Revenue Vehicle Hour — The measure of scheduled hours of service available to passengers for transport on the routes, equivalent to one transit vehicle traveling in one hour in revenue service, excluding deadhead hours but including recovery/ layover time. Calculated for each route.

Revenue Service — When a revenue vehicle is in operation over a route and is available to the public for transport.

Revenue Miles — Miles operated by vehicles available for passenger service.

Revenue Passenger — A passenger from whom a fare is collected.

Reverse Commute — Movement in a direction opposite to the main flow of travel, such as from the Central City to a suburb during the morning commute hour.

Ridesharing — A form of transportation, other than public transit, in which more than one person shares in the use of the vehicle, such as a van or car, to make a trip.

Ridership — The number of rides taken by people using a public transportation system in a given time period.

Right-of-Way (ROW, R/W) — The land over which a public road or rail line is built. An exclusive right-of-way is a road, lane, or other right-of-way designated exclusively for a specific purpose or for a particular group of users, such as light rail vehicles or buses.

Road Call — A mechanical failure of a bus in revenue service that causes a delay to service, and which necessitates removing the bus from service until repairs are made.

Road Supervisor — The individual who is responsible for keeping buses or trains on schedule.

Rolling Stock — The vehicles used in a transit system, including buses and rail cars.

Synonyms: Fleet

Route — A specified path taken by a transit vehicle usually designated by a number or a name, along which passengers are picked up or discharged.

Synonyms: Line

Route Miles — The total number of miles included in a fixed route transit system network.

Running Time — The time assigned for the movement of a revenue vehicle over a route, usually done on a [route] segment basis by various time of day.

Synonyms: Travel Time

S

Schedule — From the transit agency (not the public timetable), a document that, at a minimum, shows the time of each revenue trip through the designated time points. Many properties include additional information such as route descriptions, deadhead times and amounts, interline information, run numbers, block numbers, etc.

Synonyms: Headway, Master Schedule, Timetable, Operating Schedule, Recap/ Supervisor's Guide

Scheduling — The planning of vehicle arrivals and departures and the operators for these vehicles to meet consumer demand along specified routes.

Service Area — A geographic area which is provided with transit services. Service area is now defined consistent with ADA requirements.

Service Span — The span of hours over which service is operated, e.g., 6 a.m. to 10 p.m. or 24 hr (owl). Service span often varies by weekday, Saturday, or Sunday.

Synonyms: Span of Service, Service Day

Service Standards — A benchmark by which service operations performance is evaluated.

Subsidy — Funds granted by federal, state or local government.

T

Time Point — A designated location and time that a bus or light rail vehicle can arrive before – but not leave earlier than – the stated time as indicated in the route schedule.

Timed Transfer — A point or location where two or more routes come together at the same time to provide positive transfer connections. A short layover may be provided at the timed transfer point to enhance the connection. Timed transfers have had increasing application as service frequencies have been reduced below 15 to 20 minutes and hub-and-spoke network deployment has grown.

Synonyms: Pulse Transfer, Positive Transfer

Transfer — A slip of paper issued to a passenger that gives him or her the right to change from one transit vehicle to another according to specified limitations.

Transit Center — A fixed location where passengers transfer from one route to another.

Transit Corridor — A broad geographic band that follows a general route alignment such as a roadway of rail right-of-way and includes a service area within that band that would be accessible to the transit system.

Transfer Passenger — A passenger who transfers to a line after paying a fare on another line.

Transit Dependent — Someone who must use public transportation for his/her travel.

Transit Priority — A means by which transit vehicles are given an advantage over other traffic, e.g., preemption of traffic signals or transit priority lanes.

Transit Priority Lane — See Bus Lane

Transportation Equity Act for the 21st Century (TEA-21) — The 1998 law that reauthorizes federal surface transportation programs for six years (FY 1998 to FY 2003). TEA-21 preserves much of the basic programmatic structure of its predecessor, the Intermodal Surface Transportation Efficiency Act (ISTEA).

Travel Time — The time allows for an operator to travel between the garage and a remote relief point.

Synonyms: Relief Time, Travel Allowance

Trip — The one-way operation of a revenue vehicle between two terminal points on a route. Trips are generally noted as inbound, outbound, eastbound, westbound, etc. to identify directionality when being discussed or printed.

Synonyms: Journey, One-Way Trip

Total Miles — The total miles includes revenue, deadhead, and yard (maintenance and servicing) miles.

Tulsa Transit — A public trust of the City of Tulsa, established in 1968. Tulsa Transit's General Manager reports to a 7-member board of trustees appointed by the mayor. Tulsa Transit has approximately 170 employees including bus drivers, mechanics and administrative staff.

U

Unlinked Passenger Trips — The total number of passengers who board public transit vehicles. A passenger is counted each time he/she boards a revenue vehicle even though the boarding may be the result of a transfer from another route to complete the same one-way journey. Where linked or unlinked is not designated, unlinked is assumed.

Synonyms: Passengers, Passenger Trips

Unlinked Trip — A trip taken by an individual on one specific mode. A linked trip may involve two or more unlinked trips.

Urban Mass Transportation Administration — See Federal Transit Administration

V

Van — See Minibus.

Variable Cost — A cost that varies in relation to the level of operational activity.

Vehicle Miles — The number of miles traveled by a vehicle, and are usually calculated by mode.

W

Wheelchair Lift — A device used to raise and lower a platform in a transit vehicle for accessibility by handicapped individuals.

Y

Yard — An area in a system used for maintenance, storing or holding trains.

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