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Transportation Policy Committee
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Connections
2035 REGIONAL TRANSPORTATION PLAN

INCOG

INCOG's mission is to provide 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, the environment and public safety.

CONTACTING INCOG

In developing the Connections 2035 Regional Transportation Plan, INCOG's Transportation Planning Division has concentrated on producing a document that is both useful and comprehensive. If during your review of this document you have any questions or need additional information, please feel free to contact the Transportation Planning Division using the contact information below.

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Introduction

Role of INCOG in the Transportation Planning process

The Indian Nations Council of Governments (INCOG) is a voluntary association of local governments and was designated by the governor as the area's Metropolitan Planning Organization (MPO). MPOs maintain the primary responsibility for developing transportation plans and programs for urbanized areas of 50,000 or more residents. Additionally, federal regulations recognize metropolitan areas with a population of 200,000 or more as Transportation Management Areas (TMA), which places further requirements on the MPO for congestion management (air quality attainment, increasing safety, and other issues.)

All TMA transportation plans and programs are based on a continuous, coordinated, and comprehensive planning process, conducted in cooperation with local and state governments. Representatives of each member community's principally elected officials are appointed to INCOG's Board of Directors, which serves as a forum for cooperative decision-making on issues of regional significance, including transportation.

The transportation planning process involves both long-term transportation system objectives and short-term implementation of projects. Long-term objectives are highlighted in the Regional Transportation Plan from which the implementation program is chosen. While the Tulsa Metropolitan Area Major Street and Highway Plan, which represents the ultimate street build out plan for the area guides the roadway classification for the local use, and the Long-Range Transportation Plan, which identifies planned transportation improvements to be implemented within the next 20 to 25 years, emphasizes a systematic approach to implementing the comprehensive plans for the region. Short-term projects are outlined in the Transportation Improvement Program, which identifies the projects to be undertaken during the upcoming four years.

All aspects of the process are overseen by the Transportation Policy Committee (TPC) and the Transportation Technical Committee (TTC). Committee members meet monthly and represent federal, state, tribal and local governments and agencies; state and local authorities; and modal interests. The TTC, an advisory group to the TPC, provides technical expertise related to development of urban transportation plans and programs for the TMA. The TPC is an ongoing forum for policy development and adoption related to urban transportation planning, programming, and operation. Upon TPC approval, transportation plans and programs are forwarded to the INCOG Board of Directors for endorsement.

Study Area

The 1,400 square-mile Tulsa Transportation Management Area (TMA) is comprised of Tulsa County and portions of the adjacent counties of Creek, Osage, Rogers, and Wagoner. It is a part of the greater seven county Tulsa Metropolitan Statistical Area (MSA), which also includes Okmulgee and Pawnee Counties. The TMA is predominately urban, with nearly 85% of its population being within the incorporated cities of Bixby, Broken Arrow, Catoosa, Claremore, Collinsville, Coweta, Fair Oaks, Glenpool, Jenks, Kiefer, Mounds, Owasso, Sand Springs, Sapulpa, Skiatook, Sperry, Verdigris and the core city, Tulsa.

As of 2010, the population of the TMA was 778,051, which accounts for 83% of the MSA population of 937,478. At just under 940,000, the Tulsa MSA is the 54th largest in the country and the primary city, Tulsa, is the 46th largest city in the country in terms of population.

The Regional Transportation Plan

The Long Range Transportation Plan (LRTP) anticipates transportation needs for the TMA predicated on demographic and economic assumptions and forecasts for the entire region. It identifies various elements of the desired transportation system for the metropolitan community and the interrelationship of various modes of transportation. To ensure financial feasibility, the LRTP summarizes implementation costs and presents practicable funding scenarios while addressing the resulting impacts of the investments on the

social and natural environments. The RTP will serve as a guide for the investment of local, state and federal resources and will become a component of the Oklahoma Statewide Intermodal Transportation Plan.

Federal regulations require that the RTP provide for a planning horizon of 20 years and must be updated not less than every five years. The most recent RTP, 2032 Update, adopted in January of 2011, was prepared using 2005 base year data, pending the outcome of 2010 Census. In the spirit of maintaining a continuous planning process, Connections 2035 was developed using the now available 2010 Census data.

In recent years, there were several significant community developments that directly impacted the long range transportation planning process. Those were:

- *Significant project funding through the American Recovery and Reinvestment Act (ARRA) and TIGER grant programs;*
- *New planning assumptions for land use adopted in July 2010 as part of PLANiTULSA the Comprehensive Land Use Plan for the City of Tulsa;*
- *Recommended roadway configurations, increased density and public transit proposals, also originating from PLANiTULSA;*
- *Completion of the Regional Transit System Plan: Fast Forward project started in October 2010, aimed at studying various high capacity Transit Corridors, and identifying feasible alternative transportation methods and funding sources.*

In addition, the decade from 2000 to 2010 was bracketed by two recessions dramatically impacting the local economy. What is clear at this point is that the region's employment growth has lagged behind the previous forecasts . With local employment at the current point in time virtually unchanged from a decade ago, job gains during periods of recovery were lost during the economic downturns. The strength of the local economy depended largely on the energy industry and its diverse investments that kept the Tulsa Metropolitan Area economy on the growth curve since 2008. The City of Tulsa population in 2010 virtually is unchanged from a decade ago.

The timing of these developments - the adoption of PLANiTULSA, the beginning of the Transit System Plan study, the impact of ARRA projects and the availability of 2010 census data, coupled with 2006-10 American Community Survey data - the development of Connections 2035 LRTP.

2035 Population and Employment projection show increases as a result of the growth scenario and the control totals available from Oklahoma Department of Commerce. The 2035 population projection of 1,030,735 represents an increase of nearly 33% from 2010. Likewise, the 2035 employment projection of 568,156 represents an over 23% increase in employment totals from 2010.

Table 1: Population and Employment Projections

	2010	2035	Change	Percent Change
Population	*778, 051*	*1, 030, 735*	*252, 684*	*32.5%*
Employment	*460, 917*	*568, 156*	*107, 239*	*23.3%*

The Regional Transportation Plan: Connections 2035 - Update will continue to ensure that a 20-year planning horizon is intact and that transportation planning and project implementation proceeds smoothly. Along with addressing federal regulations for long range transportation planning, this update addresses two new federal requirements enacted since the adoption of Connections 2035 in the areas of Operational and Management Strategies and Safety.

The Regional Transportation Plan: Connections 2035 - include the addition of specific performance measures to be tracked and uses continuous measurement tools to aid in evaluating the investments made to the regional transportation system.

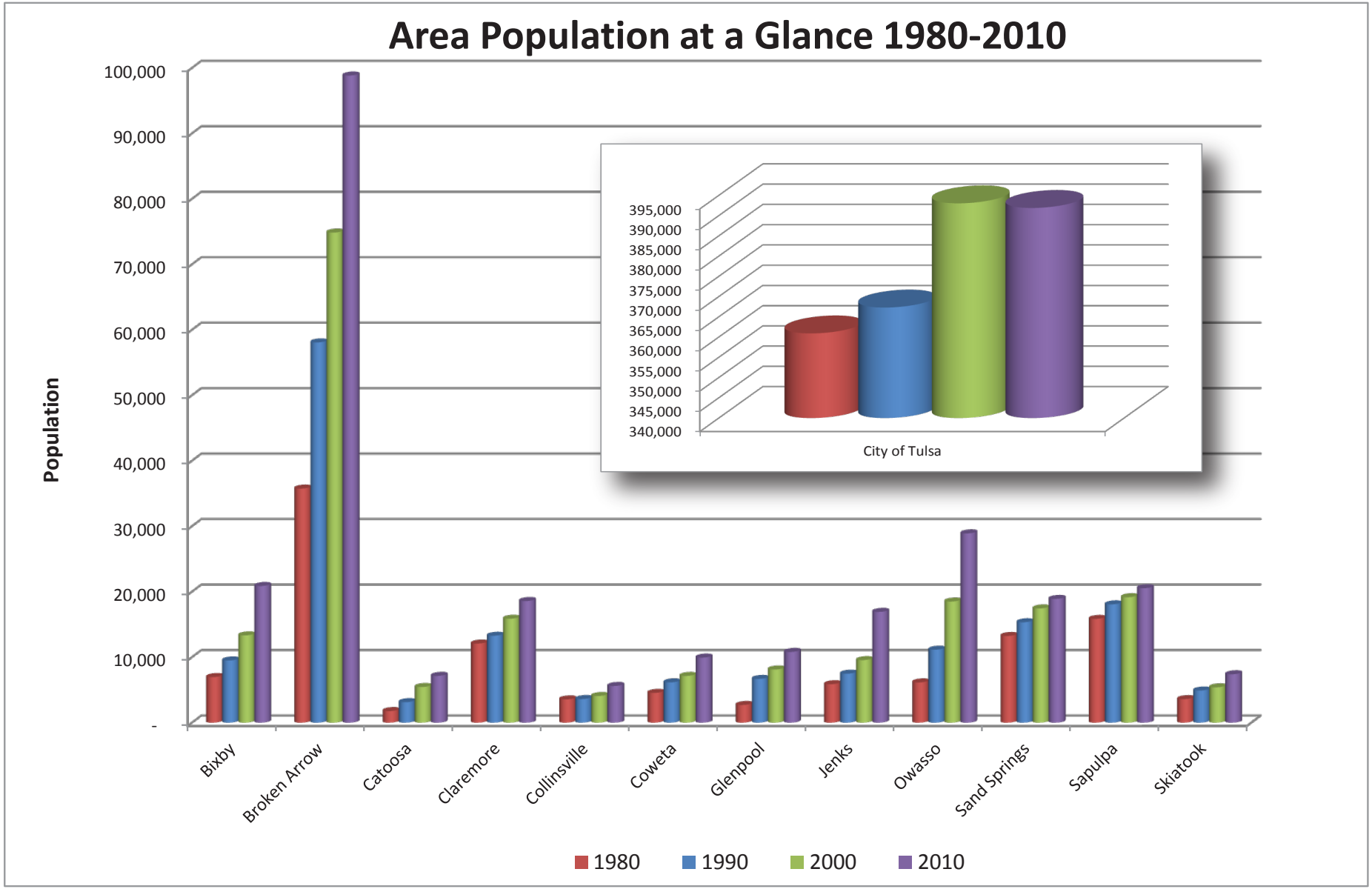


Figure 1: Tulsa Area Population, 1980-2010

Roadways

2035 Roadways Plan Highlights

- *Completion of Expressway System*
- *Expansion of Congested Roadways*
- *Maintenance of Bridges & Roads*
- *Expressway-to-Expressway Interchanges*
- *Freight Corridors and Linkages*

Performance Measures

- *Average system-wide speed*
- *Reduced Crashes*

The Indian Nations Council of Governments (INCOG)

The Indian Nations Council of Governments is designated under federal law as the regional planning organization for the Tulsa Transportation Management Area (TMA) and as the Metropolitan Planning Organization (MPO). The region encompasses Tulsa County and portions of four surrounding counties, Creek, Osage, Rogers and Wagoner Counties.

INCOG is committed to creating a vibrant future for the region through planning for regional transportation, land use and economic development, under authority embodied in state and federal laws.

INCOG seeks to maintain a common vision for the region's future, expressed through three connected major activities: Develop a Regional Transportation Plan (RTP) that articulates the scope, purpose and need for all modes of transportation; assisting communities within the INCOG region to attain specific objectives related to transportation through strategic initiatives and technical assistance; and advancing the economic vision for all communities in the TMA through the implementation of the plans. In addition, INCOG distributes about $13 million a year to transportation projects and provides regional data for planning.

2035 Plan: Roadways Element

All TMA transportation plans and programs are based on a continuous, coordinated, and comprehensive planning process, conducted in cooperation with local and state governments and modal agencies. Representatives of each member community (principally elected officials) are appointed to INCOG's Board of Directors, which serves as a forum for cooperative decision making on issues of regional significance, including transportation.

The transportation planning process involves both long-term transportation system objectives and short-term implementation of projects. Long-term objectives are realized through the implementation of various cities' comprehensive plans, such as Major Street and Highway Plans, which represent the ultimate roadway development, and the Regional Transportation Plan, which identifies planned transportation improvements to be implemented within the next 20 to 25 years. Short-term projects are outlined in the Transportation Improvement Program (TIP), which identifies the projects to be undertaken principally with federal funding assistance during the upcoming four years.

Roadways

The TMA roadway system is primarily comprised of expressways and arterial streets on a roughly one mile grid system. The roadway system is well served by Interstate highways (I-244 and I-44) and National Highway System routes (US-75, US-169, US-64, US-412, SH-51and SH-266), as well as numerous other state and federal highways in the region.

The Present Plus Committed roadway system is comprised of approximately 742 lane miles of expressways, 314 lane miles of turnpikes, 5,100 lane miles of arterials and other regionally significant streets, and numerous miles of local streets. Reflecting the Tulsa regional economy and the national economy, major expressway traffic counts in recent years have not changed in a significant manner, when compared to the previous decade.

Results of Regional Modeling

Roadways and automobiles continue to dominate travel in the Tulsa TMA. Ensuring safety and mobility has been a cornerstone for the regional transportation plan.

FEDERAL REQUIREMENTS FOR METROPOLITAN TRANSPORTATION PLANS

- *Plans must be for a period not less than 20 years into the future.*
- *Plans must reflect the most recent assumptions for population, travel, land use, congestion, employment and economic activity.*
- *Plans must be financially constrained, and revenue assumptions must be reasonable in that funds can be expected to be available during the time frame of the plan.*
- *Plans must conform to the Clean Air Act and its amendments, and to applicable State Implementation Plans for regional air quality.*
- *Plans must be developed through an open and inclusive process that ensures public input, seeks out and considers the needs of those traditionally under-served by existing transportation systems.*

THE EIGHT PLANNING FACTORS REQUIRED BY SAFETEA-LU

- *Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity and efficiency.*
- *Increase the safety of the transportation system for motorized and non-motorized users.*
- *Increase the security of the transportation system for motorized and non-motorized users.*
- *Increase the accessibility and mobility of people and for freight.*
- *Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and state and local planned growth and economic development patterns.*
- *Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.*
- *Promote efficient system management and operation.*
- *Emphasize the preservation of the existing transportation system.*

The 2035 Roadways Plan identifies the following goals with regard to the above planning factors as well as federal requirements:

- *Partner with all state and local agencies, trusts and tribal entities in the region to achieve goals and objectives to ensure safe and economic transportation for all people and goods;*
- *Support Oklahoma Department of Transportation and other state and local agencies under mutual agreements and partnership;*
- *Actively work with the Port of Catoosa, Tulsa International Airport Authority, Metropolitan Tulsa Transit Authority & public and private freight entities to advance regional connectivity, economic competiveness;*
- *Pursue public/private partnerships as appropriate, to advance regional transportation goals; and*
- *Advance the Regional Intelligent Transportation System deployment through annual work program, and planning support.*

The 2035 Roadways Plan identifies the following actions to implement goals identified in the Plan.

Roadway Maintenance

- *Maintain sufficiency rating of Adequate or higher per ODOT standards on all NHS routes in the region;*
- *Monitor and increase funding to sufficiently maintain area roadways that are deemed regionally significant per the LRTP; and*
- *Maintain pavement condition index on local roadways and seek funding solutions to enhance roadway maintenance.*

Freight Network

- *Maintain sufficiency rating of Adequate or higher per ODOT standards on all NHS routes;*
- *Improve access to freight terminals through Intermodal connectors and freight network that sufficiently advances regional and statewide goals to all modes of transportation; and*
- *Assess and advance intermodal transportation activity based on economic development needs and goals.*

Bridges

- *Reduce or eliminate structurally deficient bridges on state, county and local roadways in the Tulsa Transportation Management Area;*
- *Improve access across the region with additional river crossings;*

- *Pursue safer railroad crossings via grade separation, where possible and feasible; and*
- *Pursue funding for interchanges via flyovers over the key movements at regional bottlenecks across the freeway system.*

Intelligent Transportation Systems

- *Advance ITS and related activities to provide sufficient information to motorists and agencies to provide congestion relief;*
- *Implement systems based on regional architecture to provide implementing agencies sufficient tools to advance the usage of ITS with respect to travel monitoring; and*
- *Provide real time data access to the motoring public.*

Safety & Security

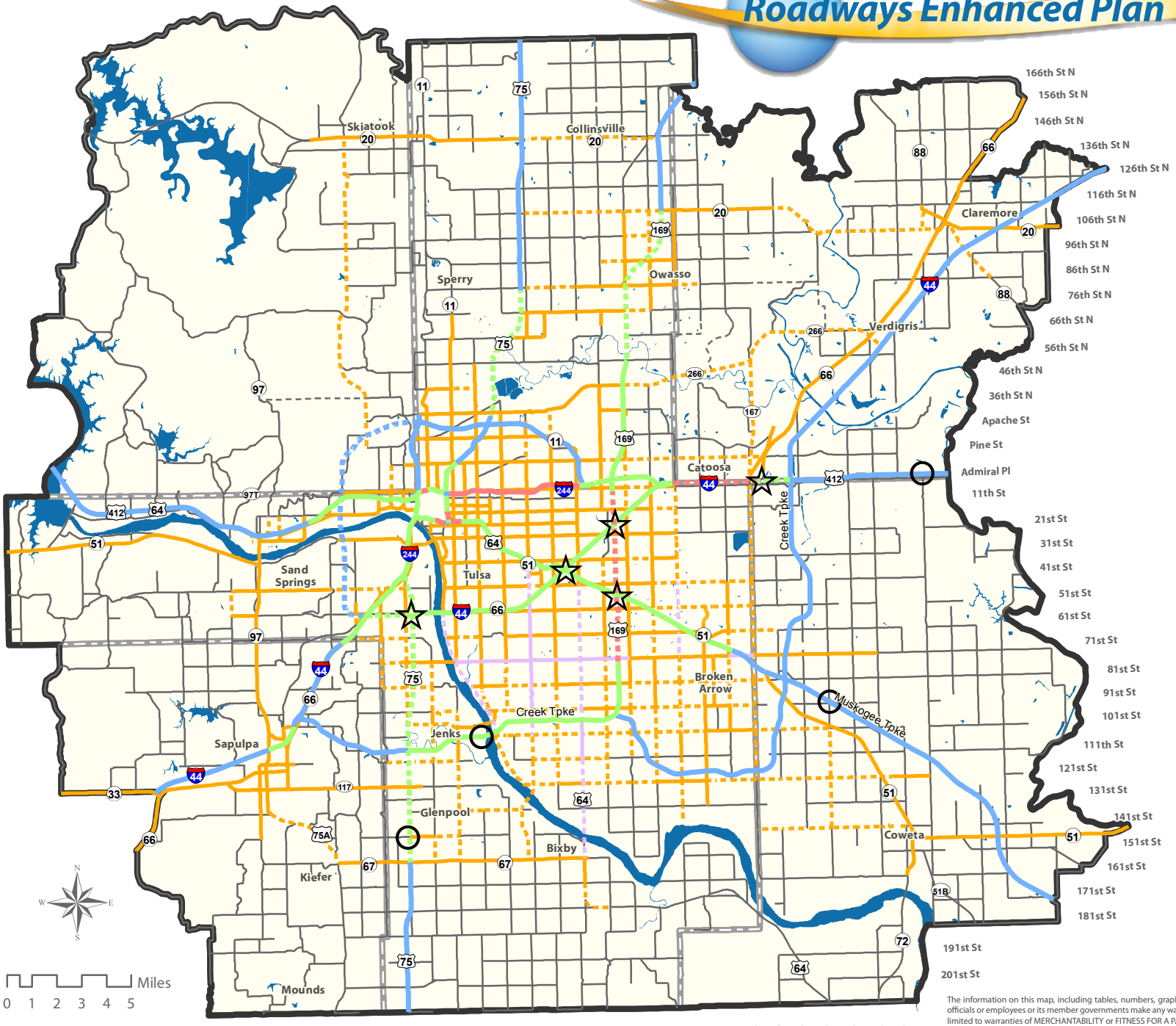
- *Explore and implement adequate level of Traffic Incident Management for the region involving various stakeholders;*
- *Ensure adequate safety in the region related to motorist traffic; and*
- *Implement plans to improve safety with respect to multimodal traffic where needed.*

Financial Feasibility & Coordination

- *Coordinate all implementation activities to ensure timely completion of committed projects with all implementing agencies; and*
- *Ensure a financially viable plan of action related to each project and across the transportation system, to maintain the system that is built during its lifecycle.*

Figure 2:

Roadways Enhanced Plan



Legend

- Expressway Interchange
- Grade-Separated Interchange
- Expressway 8-lane, Existing
- Expressway 8-lane, Planned
- Expressway 6-lane, Existing
- Expressway 6-lane, Planned
- Expressway 4-lane, Existing
- Expressway 4-lane, Planned
- Arterial 6-lane, Existing
- Arterial 6-lane, Planned
- Arterial 4-lane, Existing
- Arterial 4-lane, Planned
- Arterial 2-lane, Existing
- Arterial 2-lane, Planned
- Bodies of Water
- County Boundaries
- TMA Boundary

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Table 2:

Long Range Transportation Plan Modeling Summary

Functional Class	Vehicle Miles Traveled				Lane Miles			
	Year 2010	2035 Scenarios			Year 2010	2035 Scenarios		
		E+C	2032 Plan	2035 Plan		E+C	2032 Plan	2035 Plan
Interstate	12,017,000	14,134,000	15,028,000	15,083,000	742.3	756.5	875.8	875.8
Tollway	1,741,000	2,366,000	2,366,000	2,366,000	314.0	327.3	328.6	328.6
Arterials & Parkways	13,531,000	18,685,000	17,976,000	16,907,000	4,838	4,849	5,316	5,565
Other	1,804,000	2,334,000	2,126,000	2,248,000	498	503	503	503
Total	29,093,000	37,519,000	37,496,000	36,604,000	6,392	6,436	7,014	7,268

Table 3:

2035 Roadways Element: List of Proposed Capacity Improvements

EXPRESSWAYS	Roadway Segment	Planned Through Lanes
I-44 EAST	I-244 to SH-66	8 Lanes
I-44 EAST	SH-66 to Creek Turnpike	6 Lanes
I-44 WEST	I-244 to US-75	6 Lanes
US-169	I-244 to 71st St. South	8 Lanes
US-169	56th Street North to SH-20 (116th St. Norl	6 Lanes
US-75	I-44 to SH-67 (151st St. South)	6 Lanes
US-75	SH-11 (Gilcrease Exp.) to 86th St. North	6 Lanes
Gilcrease Expressway	I-44 to LL Tisdale Expressway	4 Lanes
Creek Turnpike	US-75 to Memorial Drive	6 Lanes

Grade Separated Interchanges/Reconstruction Projects
US-75 South & 141st Street S
Creek Turnpike & Elm Interchange
Creek Turnpike & 108th Street S. in Jenks
I-244 Bridge Across the Arkansas River
I-44 & BA Expressway
I-44 & US-169
BA Expressway & US-169 S.
US-412 & 305th E Ave
Muskogee Turnpike & 241st E Ave

Table 4: 2036 Roadways Element, List of Proposed Capacity Improvements

ARTERIALS	Roadway Segment	Planned Through Lanes
SH-20	225th E Ave I-44/Will Rogers Turnpike	4 Lanes
SH-20	SH-66 to SH-88	4 Lanes
SH-20	US-75 to 129th E Ave	4 Lanes
SH-72	SH-51 to 161st St. South	4 Lanes
SH-88	Blue Starr Rd./116th St. North to SH-20	4 Lanes
SH-97	Existing SH-97 to SH-20	2 Lanes
SH-97	2nd St. to 12th St.	4 Lanes
SH-97/Wilson Rd.	2nd St. to Morrow Rd.	6 Lanes
SH-167/193 East Ave.	I-44/US-412 to SH-266	4 Lanes
SH-266	US-169 to SH-167/193rd East Ave.	4 Lanes
SH-266	SH-167 to I-44/Will Rogers Turnpike	4 Lanes
11th St. South	129th East Ave. to 145th East Ave.	4 Lanes
25th West Ave.	Edison Rd. to Pine St.	4 Lanes
33rd West Ave.	61st St. South to 71st St. South	4 Lanes
33rd West Ave.	41st St. South to I-44	4 Lanes
41st St. South	129th E Ave to 177th East Ave.	4 Lanes
41st St. South	33rd West Ave. to 57th West Ave.	4 Lanes
41st St. South	Yale Ave. to Sheridan Rd.	6 Lanes
41st West Ave.	Apache St. to Newton Rd.	2 Lanes
43rd St. North	N. 41st - 52nd West Ave. to SH-97	2 Lanes
49th/41st West Ave.	Edison Rd. to Newton Rd.	4 Lanes
51st St. South	129th East Ave to 193rd East Ave.	4 Lanes
61st St. South	Peoria to Harvard Ave.	4 Lanes
61st St. South	145th East Ave. to 209th East Ave.	4 Lanes
61st St. South	US-75 to 49th West Ave.	4 Lanes
66th St. North	145th E Ave to 161st E Ave	4 Lanes
71st St. South	225th East Ave. to 273rd East Ave.	4 Lanes
71st St. South	33rd West Ave. to Union Ave	4 Lanes
71st St. South	US-75 to Arkansas River	6 Lanes
76th St. North	US-169 to 129th East Ave.	4 Lanes
81st St. South	Harvard to Sheridan Ave	4 Lanes
81st St. South	Garnett to SH-51	4 Lanes
81st St. South	SH-97 to SH-66	4 Lanes
86th St. North	US-75 to 145th E Ave	4 Lanes
86th/91st St. South/Canyon Rd.	49th West Ave. to SH-66	4 Lanes
91st St. South	Delaware Ave. to Memorial Drive	4 Lanes
91st St. South	Garnett to 193rd E Ave	4 Lanes
91st St. South	Elwood Ave. to Peoria Ave./Elm St.	4 Lanes
96th St. North	US-169 to 145th East Ave.	4 Lanes
96th St. North	Memorial Dr. to Garnett Rd.	4 Lanes
96th St. South	US-75 to Peoria Ave./Elm St.	4 Lanes
101st St. South	Riverside Drive to SH-51	4 Lanes
103rd/106th St. North	Osage Dr. to Cincinnati Ave.	2 Lanes
106th St. North	Garnett Road to 145th East Ave.	4 Lanes
111th St. South	Yale Ave. to Garnett Rd.	4 Lanes
116th St. North	US-75 to US-169	4 Lanes
121st St. South	Memorial Drive to 129th E Ave	4 Lanes
121st St. South	161st E Ave to 129th E Ave	4 Lanes
129th W Ave	41st St. South to 51st St. South	4 Lanes

ARTERIALS	Roadway Segment	Planned Through Lanes
131st St. South	Peoria Ave./Elm St. to Yale Pl.	4 Lanes
141st St. South	193rd East Ave. to SH-51	4 Lanes
141st St. South	Elwood Ave. to Peoria Ave./Elm St.	4 Lanes
129th East Ave	96th Street N to 106th Street N.	4 Lanes
129th East Ave	51 Street S. to 71st Street S.	4 Lanes
145th East Ave.	I-44 to 41st St. South	4 Lanes
145th East Ave.	71st St. South to 101st St. South	4 Lanes
145th East Ave.	111st St. South to 135th St. South	4 Lanes
145th East Ave.	106th St. North to 116th St. North	4 Lanes
145th East Ave.	41st St. South to 71st St. South	6 Lanes
153rd West Ave.	106th St. South to 111th St. South	2 Lanes
161st East Ave.	66th St North to 76th St North	4 Lanes
161st East Ave.	Admiral Pl. to Tiger Switch Rd.	4 Lanes
177th East Ave.	71st St. South to 91st St. South	4 Lanes
193rd East Ave.	I-44 to 121st St. South	4 Lanes
241st East Ave.	101st St. South to 141st St. South	4 Lanes
Adams Rd.	10th St. South to 12th St. South	4 Lanes
Admiral Pl.	Garnett Rd. to 129th East Ave.	4 Lanes
Admiral Pl.	145th East Ave. to Creek Turnpike	4 Lanes
Delaware Ave.	81st St. South to 91st St. South	4 Lanes
Elwood Ave.	SH-67/151st St. South to 141st St. South	4 Lanes
Elwood Ave.	96th St. South to 111th St. South	4 Lanes
North 41st Street to 52nd W A	Gilcrease Expressway to SH-20	4 Lanes
Garnett Rd.	11th St. South to Pine St.	4 Lanes
Garnett Rd.	81st St. South to 111th St. South	4 Lanes
Harvard Ave.	71st St. South to 91st St. South	4 Lanes
Lewis Ave.	81st St. South to 91st St. South	4 Lanes
Memorial Dr.	161st St. South to Mingo Rd.	4 Lanes
Memorial Dr.	I-44 to Creek Turnpike	6 Lanes
Memorial Dr.	111th St S. to 151st Street S.	6 Lanes
Mingo Rd.	21st St. South to 41st St. South	4 Lanes
Mingo Rd.	71st St. South to 121st St. South	4 Lanes
Peoria Ave./Elm St.	111 th to151st St. S	4 Lanes
Pine St.	Mingo Road to SH-66	4 Lanes
Pogue Airport Access Rd.	SH-97T to Airport Rd.	2 Lanes
Port Rd. Extension	SH-11 to Sheridan Rd.	4 Lanes
Riverside Dr.	101st St. South to 121st St. South	4 Lanes
Riverside Dr.	I-44 to 101st St. South	6 Lanes
Riverside Dr.	Houston Ave. to I-44	4 Lanes
Sheridan Rd.	Apache St. to 36th St. North	4 Lanes
Sheridan Rd.	81st St. South to 101st St. South	4 Lanes
Union Ave.	51st St. South to 91st St. South	4 Lanes
Wekiwa Rd.	SH-97 to 129th East Ave.	4 Lanes
Yale Ave.	101st St. South to 121st St. South	4 Lanes
Yale Ave.	Pine St. to Apache St.	4 Lanes
Yale Ave.	US-64/SH-51 (Broken Arrow Exp.) to I-44	6 Lanes
Yale Ave.	61st St. South to 81st St. South	6 Lanes
Yale Ave.	101st St. South to 111th St. South	6 Lanes
Yale Ave./Yale Pl.	121st - 151st St. South (incl. River bridge)	4 Lanes

Operational and Management Strategies

Congestion Management Process

The Tulsa Congestion Management Process (CMP) provides common performance measures to identify and monitor congestion as inputs into the Regional Transportation Plan (RTP) and the Transportation Improvement Program (TIP) processes.

The Tulsa CMP identifies the regional transportation network as defined by the RTP as the basis of the geographic extent for addressing congestion. Congestion is identified in two categories:

- *Recurring Congestion: Congestion experienced by the user on any travel mode.*
- *Non-Recurring: Congestion or delay due to crashes, construction and other unforeseen events.*

Each is addressed with a different set of strategies. Congestion is defined using the levels of performance identified in this document. Those transportation systems not meeting the level of performance are considered congested.

- *Roadway levels of service and intersection delay measured using traffic counts per lane and speed is proposed for measuring congestion.*
- *Transit level of service is based on ridership and seat availability as well as the travel delay due to other operating conditions.*

Various Transportation Control Measures grouped under Transportation Demand Management options and Transportation System Management options are identified specifically for implementation with specific schedules and responsibilities. Monitoring the implementation of strategies on a recurring basis is addressed, as well as seeking funding for those strategies through the project selection process.

The MAP-21 legislation and the previous SAFETEA-LU legislation mandated establishing a CMP in metropolitan areas with a population over 200,000, or Transportation Management Areas (TMA). The CMP should enable the Metropolitan Planning Organization (MPO) to measure congestion and identify recurring congestion as well as incident related congestion. The CMP identifies measures to alleviate congestion and provides a framework with implementation schedules, responsibilities, and possible funding sources for the proposed implementation strategy.

The CMP Document adopted by INCOG in April 2009 describes the congestion management process for the INCOG region and several on-going, short-range planning efforts.

Congestion Management in Metropolitan Context

A CMP, in general, provides linkages to the goals expressed within the Regional Transportation Plan, with operational objectives and strategies from the TIP, as identified by the MPO.

In order to do that, a CMP further provides analytical, systematic methods to monitor and evaluate system performance while attempting to deal with congestion in a holistic manner. Options related to land use, travel demand management, traffic or transit operations, as well as new capacity, are all considered and evaluated as a part of the process.

Added capacity projects (except safety improvements or bottleneck elimination) in non-attainment areas may not be programmed for funding unless the project is addressed through a CMP. In addition, The 1990 Clean Air Act Amendments require the Oklahoma Department of Environmental Quality (ODEQ) and MPOs that are in non-attainment areas to include Transportation Control Measures in the State Implementation Plan (SIP).

The Congestion Management Process Framework

Tulsa TMA adapted the framework suggested by the FHWA guidance and involved several stakeholders to further develop the guidelines based on local standards. The process of addressing congestion was developed through identification of the region and objectives, as well as system definition. This document describes this process in detail. The following table summarizes the short-listed strategies along with the linkages to the TIP and RTP for Tulsa TMA.

Table 5: TIP and RTP Strategies for Tulsa TMA

Implementation Strategy Summary	Implementation Term	Effectiveness	Funding Through TIP	Regional Plan Activity
Promote Trip Sharing	1-5 Years	Very Effective	Yes	Yes
Enable Telecommuting	1-5 Years	Effective	Yes	Yes
Promote Alternative Work Hours	1-5 Years	Very Effective	No	Yes
Enhanced Public Transit	5-10 Years	Very Effective	Yes	Yes
Non-Motorized Transportation Improvements	1-5 Years	Effective	Yes	Yes
Intersection Lane Improvements	1-10 Years	Very Effective	Yes	Yes
Traffic Signal Improvements	1-10 Years	Very Effective	Yes	Yes
Incident Detection and Management	1-10 Years	Very Effective	Yes	Yes
Land Use Strategies	1-10 Years	Effective	No	Yes
Access Management	1-10 Years	Effective	No	Yes
Roadway Improvement Strategies	1-10 Years	Effective	Yes	Yes
Parking Management	1-5 Years	Effective	No	Yes

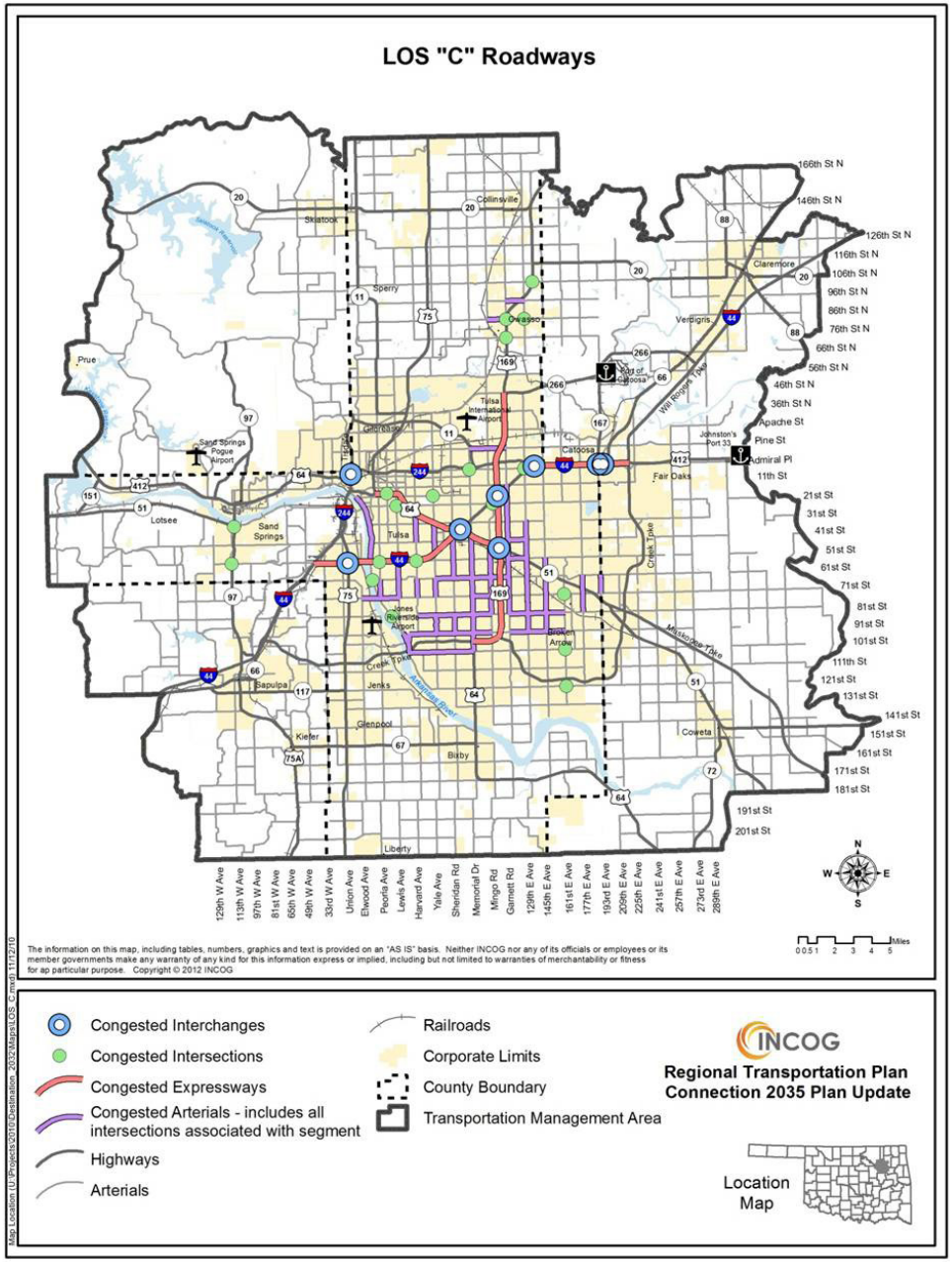


Figure 3: Regional Transportation Plan LOS "C" Roadways Map

Tulsa TMA Roadway Safety Plan & Regional Strategies

Safety Focus Area(s): Engineering/Planning

Safety is a specific goal of INCOG's transportation planning program, "Develop a transportation system that reduces fatalities and injuries and minimizes harm without compromising the benefits of the system." INCOG works with ODOT Division 8 headquarters, DPS, Oklahoma Highway Patrol, various other city and county entities to ensure safety and security of all users of transportation system. INCOG also coordinates and works with police departments and fire departments to conduct Incident Management Training. INCOG obtains crash data from ODOT during the project prioritization for future federal funding and during the TIP development.

As a participant and partner with ODOT, INCOG has adopted the goals and objectives of the Statewide Safety Goals and Objectives as a part of developing the Long Range Plan.

Vision Statement

"Provide and promote the safe and secure transportation system for all travelers that results in minimized risk for all travel, targeting to improve overall experience."

Mission Statement

"Develop, implement, and evaluate a data-driven, multidisciplinary process to maximize road safety through widespread collaboration, integrating Engineering, Enforcement, Education, and Emergency Services (The "4E" approach)."

Goals

- *Decrease traffic-related fatalities and injuries upon the implementation of the Oklahoma SHSP (toward zero fatalities and injuries);*
- *Achieve a 20 percent reduction in the fatality rate by the year 2020 from 2010 fataility rates; and*
- *Achieve a 20 percent reduction by the year 2020 from 2010, in the serious injury rate.*

Following SHSP, Emphasis Areas are adopted for the purpose of achieving the goals specified:

1. Unsafe Driver Behavior (addressing impaired, aggressive, and fatigued/distracted driving, and occupant protection);
2. Intersection Crashes;
3. Crashing involving Young Drivers; and
4. Lane Departure Crashes.

Emphasis Areas for Safety

The following Emphasis Areas are developed in detail with the coordination among various agencies including the MPO and ODOT. ODOT and DPS takes lead in several of these areas while the MPO monitors progress and conducts a periodic assessment of each strategy in partnership with State Agencies.

Unsafe Driver Behavior

Four primary areas are addressed in the Unsafe Driver Behavior Emphasis Area:

1. Impaired Driving
2. Aggressive Driving and Speed
3. Fatigued and Distracted Driving
4. Occupant Protection

Unsafe Driver Behavior Strategies

Objective: Impaired Drivers

1. Request the Governor's Task Force to review the adequacy of current alcohol and drug impaired driving legistlation and enforcement and to recommend enhancements where warranted.
2. Establish coordinated and targeted enforcement programs addressing aggressive driving and/or speeding.

3. Enhance public awareness programs addressing aggressive driving and/or speeding.
4. Develop and implement a judicial education plan addressing aggressive driving and/or speeding.

Objective: Fatigued and Distracted Driving

5. Increase driver awareness of the risks of drowsy and distracted driving and promote driver focus with special attention to high-risk populations.
6. Expand Seat Belt Campaigns to target high-risk populations.
7. Pursue occupant protection regulatory and legislative initiatives.
8. Expand Special Traffic Enforcement Patrols (STEP) enforcement of safety belt laws.

Intersection Crashes

Three primary objectives were addressed in the Intersection Crashes Emphasis Area:

1. Prioritize and Evaluate Problem Intersections;
2. Enforcement and Operational Issues at Intersections; and
3. Access Management in the Vicinity of Intersections.

Intersection Strategies

Objective: Prioritize and Evaluate Problem Intersections

1. Prioritize high crash lower volume, rural intersections.
2. Implement new technologies, including ITS, at problem intersections to support enforcement.
3. Establish multidisciplinary/interagency cooperation to address problem intersections.
4. Develop an access management policy and apply Access Management Principles and Design Guidelines.
5. Implement a Public Information and Education Program regarding dangers and right-of-way at unsignalized intersections.

Crashes Involving Young Drivers

Three objectives were addressed in the Young Driver Emphasis Area:

1. Driver Education and Behavior;
2. Judicial/Enforcement/Legislative; and
3. Public Awareness and Information.

Young Driver Strategies

Objective: Driver Education and Behavior

1. Review, evaluate, and improve standardized driver education curriculum with special attention to impaired driving.
2. Improve accessibility to driver education courses.
3. Pursue legislation resulting in reduced crashes involving young drivers.
4. Pursue efforts within the judicial and prosecuting communitites to reduce crashes involving young drivers.
5. Increase and enhance enforcement efforts to reduce crashes involving young drivers.

Lane Departure Crashes

Three objectives were addressed in the Lane Departure Crashes Emphais Area:

1. Keep vehicles in proper lane;
2. Minimize chance of crash upon lane departure; and
3. Reduce severity of crashes.

Lane Departure Strategies

Objective: Keep Vehicles in Proper Lane

1. Develop and deploy guidance for enhanced pavement markings for state, county, and local roads.
2. Develop and deploy guidance and implement program for centerline and shoulder rumble strips and rumble stripes.
3. Deploy enhanced highway signing and delineation.
4. Enhance and support existing efforts to widen and/or pave shoulders on rural two lane roads.
5. Develop and implement a plan to remove, relocate, and protect, or delineate structures and obstructions along the roadside and on the roadway.

6. Flatten slopes along roadway rights-of-way.
7. Develop and deploy plan for median barriers that encourages appropriate and cost effective technologies for conditions.

Crosscutting Strategies

As discussed above, crosscutting strategies provide potential benefits across all of the SHSP emphasis areas. Three objectives were addressed through these strategies:

1. Reduce Overall Fatalities and Injuries;
2. Improve Crash Data and its Availability; and
3. Facilitate a Safer Vehicle Fleet.

Objective: Reduce Overall Fatalities and Injuries

1. Improve EMS Estimated Time of Arrival at accident scene.
2. Identify "safety corridors" and increase fines for moving violations in these problem (high crash) corridors ("higher fines in safety corridor" concept).
3. Facilitate the availability of crash data and its utilization to identify and prioritize high crash corridors and locations.
4. Reinstate the State Vehicle Safety Inspection Program.

Transit

2035 Transit Plan Highlights

- *FASTFORWARD Plan long-term*
- *Bus Service Improvement Plan near-term*
- *Secure funding for near-term*
- *Implement high-frequency service*
- *Explore streetcar or other modes*

Performance Measures

- *Increased Ridership*
- *Implemented Headways*

Background

Transportation investments throughout Tulsa's history have facilitated economic viability and growth patterns during decades of urbanization. Facing new and evolving challenges and opportunities, agencies and institutions have made the decision 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), 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 established 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 Corridor
»» Consider Economic Development

NEED FOR TRANSIT

In 2010, Tulsa County's population was 78 percent of the Transportation Management Area (TMA). 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.

As with population, employment growth will also alter travel patterns resulting in similar, if not greater, declines in regional mobility. In 2005, Tulsa County's employment was 88 percent of the TMA. Approximately 80 percent of the employment growth is expected to occur within Tulsa County. 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.

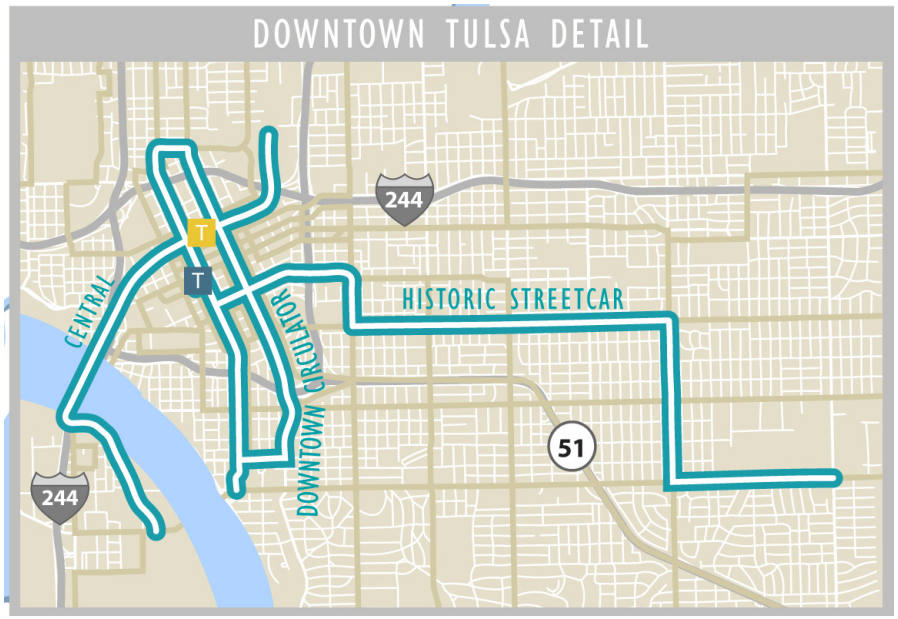


Figure 4: Regional Transit System Plan Downtown Tulsa Detail

While congestion currently is not a serious problem citywide, 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 grew only by approximately 0.3 percent. Congestion

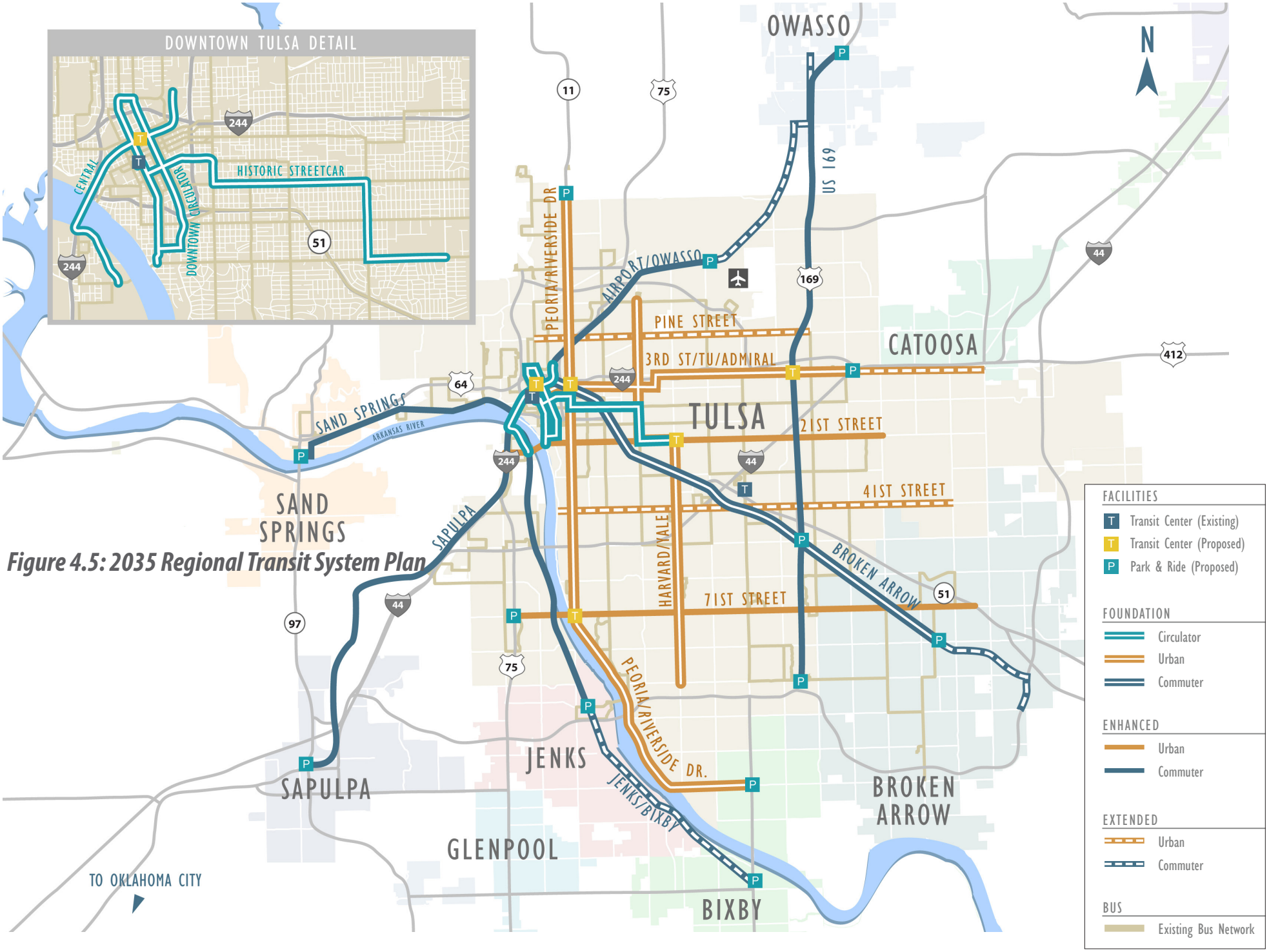


Figure 4.5: 2035 Regional Transit System Plan

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.

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.

STRATEGIES & ACTION

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. 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 shown in Table 1.

Table 6: RTSP Circulator Corridors

Rank	Description	Priority
1	Downtown Circulator	**Foundation**
2	Historic Streetcar	**Foundation**
3	Central Corridor	**Foundation**

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 based trips typically occurring during the peak AM and PM travel demand periods. Commuter Corridors identified through the preliminary needs assessment evaluation are as shown in Table 2.

Table 7: RTSP Commuter Corridors

Rank	Description	Priority
1	Broken Arrow	**Foundation**
2	Airport / Owasso	**Enhanced**
3	Jenks / Bixby	**Enhanced**
4	Sapulpa	**Enhanced**
5	US 169	**Enhanced**
6	Sand Springs	**Enhanced**

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 multipurpose 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 shown in Table 3.

Table 8: RTSP Urban Corridors

Rank	Description	Priority
1	3rd Street/TU/ Admiral Corridor	**Foundation**
2	Peoria Ave/ Riverside	**Foundation**
3	Harvard / Yale	**Foundation**
4	21st Street South	**Enhanced**
5	71st Street South	**Enhanced**
6	41st Street South	**Extended**
7	Pine Street	**Extended**

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 which it serves. In order to implement the RTSP, the region must determine the appropriate solutions for each corridor.

FoundationNetwork

The needs identified for the Foundation corridors may be addressed by implementing a high-capacity transit technology. 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 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 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 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. Both regional and local planning processes 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-existent 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 introducing fixed route or express service to the areas with 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 of beginning the study.

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 of 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.

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 Regional Transit System Plan will be reviewed every five years to update the findings and recommendations as updated data are available for assessment.

COST CONSIDERATIONS

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 as allowed by Oklahoma enabling legislation and consensus among regional stakeholders.*

»» *Identify and establish necessary interim steps to move forward with the recommended governance mechanism.*

»» *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.*

»» *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.*

»» *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.*

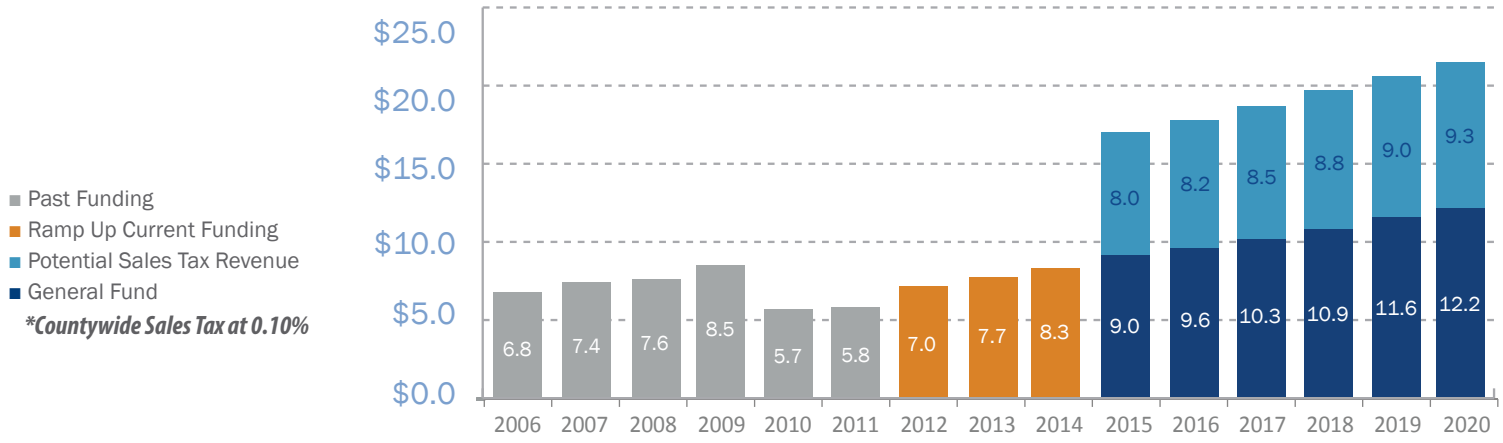


Figure 5: Prior and Proposed Local Funding (Millions)

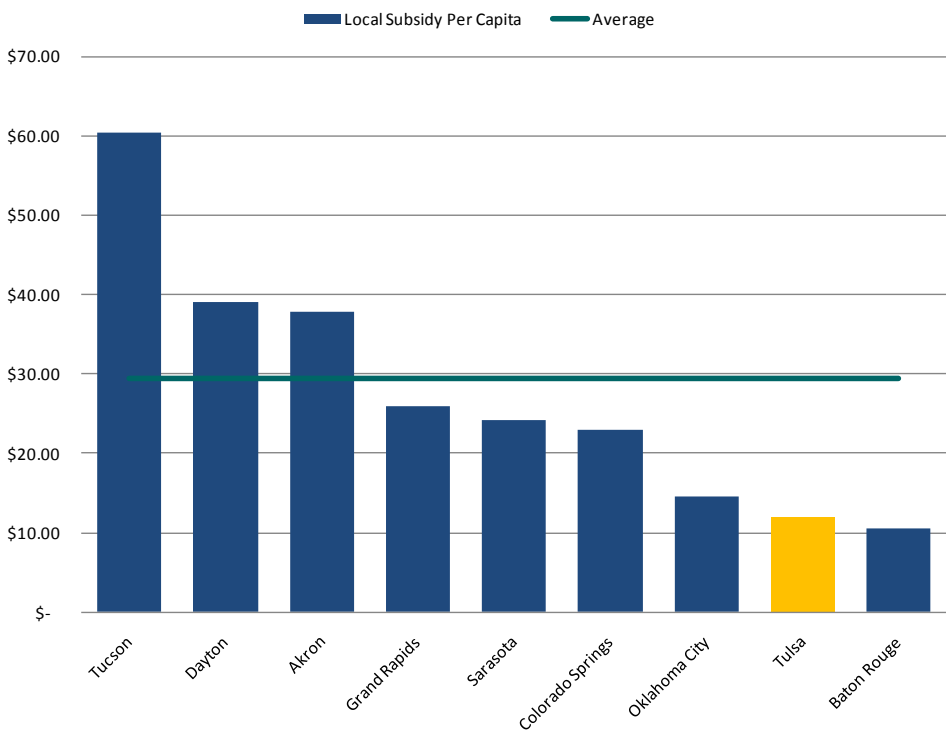


Figure 6: Local Funding Trips Per Capita, FY09
**Source: 2011 Bus Operations Plan*

Local and Federal Funding Opportunities

Local Funding

There is a need to maintain momentum for cost neutral transportation/bus enhancements prior to the availability of dedicated regional tax revenues. It is suggested that there be a 'ramp up' within 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.

Federal Funding

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 AA 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*
- *»» The Transit Investment in Greenhouse Gases and Energy reduction (TIGGER) III Program*

In order to adopt proposed transit improvements into the fiscally constrained Regional 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 4 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 the full RTSP.

Table 9: Transit Technology Cost Per Mile
**Source: 2011 Fast Forward RTSP*

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

PERFORMANCE MEASURES

The long-range plan proposes to establish and track the following performance measures:

1.Ridership

Annual ridership totals should be compiled for comparison against 2011 Bus Operations Plan prepared by Connetics Transportation Group. At that time, ridership was holding steady at 2.5 million annually. The demographic profile of riders depicted a largely transit dependent rider base. Ridership should be watched for increases in ridership totals, as well as increases in choice riders.

2. Revenue Service

Revenue service refers to the amount of time (either hours, miles or trips) a vehicle is available to the general public and there is an expectation of carrying passengers. Revenue service data should be compiled for comparison against the 2011 Bus Operations Plan analysis, which shows a 20% decrease in revenue hours over the years between 2002 and 2009.

3. Service Effectiveness

Measures used to evaluate service effectiveness include passengers per revenue hour and passengers per revenue mile. Both measures saw increases in 2004 before decreasing and stabilizing through 2009. Service effectiveness should be measured annually along with ridership and revenue service to determine the overall quality of transit service being provided.

Transit: Human Services Transportation

Human Service Transportation & Coordination

SAFETEA-LU, the federal transportation reauthorization act, required the establishment of a locally developed Coordinated Public Transit-Human Services Transportation Plan. The Federal Transit Administration (FTA) provides guidance and oversees certain funding programs to enable human services transportation programs. Under SAFETEA-LU, to receive program funding the federal program grantees must certify that approved projects were derived from the coordinated plan developed through a process that includes representatives of the general public as well as public, private, and non-profit transportation and human services providers.

The Coordinated Public Transit-Human Services Transportation Plan focuses on transportation services for the populations of older adults, persons with disabilities, and lower income. The plan was first developed by the Indian Nations Council of Governments (INCOG) with ongoing participation by representatives from public, private and agency transportation providers, Departments of Human and Social Services, Departments of Health, Mental Health, Rehabilitation Services Employment, Education, Area Agency on Aging, faith-based organizations, and private, non-profit organizations such as the United Way.

Human service transportation includes a broad range of transportation service options designed to meet the needs of a variety of populations. Choices range from the public transit fixed-route system, specialized dial-a-ride van programs, taxi vouchers, to volunteer drivers. The array of services often results in multiple, underutilized vehicles, inefficiently operated. At the same time there are often large numbers of people unable to access transportation services when and where they need them.

Coordination of transportation program services, appropriately implemented, reduces individual inefficiencies and encourages sharing of existing community resources. In communities where coordination is a priority, all citizens benefit from having more transportation choices through expanded service, lower costs, and easier access.

The Jobs Access and Reverse Commute (JARC) program (Section 5316) implemented under TEA-21 as a discretionary program will be merged with the traditional transit program under the new transportation legislation funding for 2013-14, the MAP-21. Under SAFETEA-LU the JARC became a formula program with the intent of providing transportation services to and from jobs and employment activities for low-income people. The reverse commute goal of the program is fulfilled by transporting low-income residents of urbanized areas and non-urbanized areas to suburban employment opportunities. All individuals served must be below 150 percent of the federal poverty level or less. Sixty percent of funds are allocated to areas with populations of 200,000 or more. Twenty percent is allocated to areas with fewer than 200,000 people with the balance going to non-urbanized areas. All projects must demonstrate compliance with the regional coordination plan. INCOG provided funding under the program to various agencies in the Metropolitan Area.

Included in these new programs created by SAFETEA-LU, the New Freedom program (Section 5317) has the purpose of providing new transportation services beyond those required by the Americans with Disabilities Act (ADA) to improve mobility for people with disabilities. While this is the newest of the two programs, it is also the smallest in terms of funding. The New Freedom program now has merged with the enhanced mobility for Seniors and Disabled population, implemented as a sub-allocation for the years 2013-14.

INCOG, in coordination with local officials, was designated by the Governor of Oklahoma as the organization responsible for developing and implementing the Coordinated Public Transit-Human Services Transportation Plan (CTP) and a competitive process to select and prioritize projects for the Tulsa Transportation Management Area (TMA).

The plan also endorsed the creation of an ongoing planning committee to promote adequate funding, inter-organization coordination, and oversee the implementation of all the recommendations presented in the Coordinated Public-Transit Human Services Transportation Plan. The Regional Council on Coordinated Transportation (RCCT) was established in February 2008 and has met every other month since its creation. It has representation from state and local organizations as well as tribal agencies.

INCOG developed and supported the implementation of the CTP prior to the current update. The first plan adopted in 2007 focused on engaging stakeholders and the public in the coordination process, develop an inventory of services provided in the region, determine transportation needs and gaps and establish strategies to be implemented in the future.

The 2009 Plan Update reviews the priorities for the region and reports on the progress of the strategies established in the 2007 CTP.

In 2011, the Plan was once again reviewed and a list of revised needs and gaps and strategies to be implemented in the future were established. The purpose of the Coordinated Public Transit-Human Services Transportation Plan is to identify the transportation needs of the target populations and develop alternatives to address these needs. These alternatives will be developed by INCOG in coordination with the region's transit providers and the Regional Council for Coordinated Transportation (RCCT). The list of actions will be updated at the direction of the RCCT and included in the Tulsa TMA Transportation Improvement Program (TIP).

To identify these needs, it was necessary to:

- *»» List all the transit providers in the Tulsa TMA*
- *»» Inventory service, equipment, and facilities available*
- *»» Assess service gaps, equipment, and facilities needs*

With that it was possible to:

- *»» Develop actions and strategies that address the gaps in service*
- *»» Identify coordination actions to eliminate or reduce duplication in services and strategies for more efficient utilization of resources*
- *»» Prioritize the implementation of strategies that address the area needs*

The transportation needs identified lie within portions of all five counties that make up the Tulsa TMA. Although there were three distinct groups (low-income, elderly, and people with disabilities) targeted in the planning process, their respective needs were similar if not identical. Further, the transportation needs of people living outside of existing transit service areas are due to limited mobility options while the needs of those living inside transit service areas are typically service related.

Gaps and Needs

- *»» Inadequate transit funding- lack of dedicated funding source, prohibits the expansion of services. Little or no service provided to Tulsa's surrounding communities.*
- *»» Funding sources restrict services to specific populations for specific purposes and therefore, under-capacity vehicles from different organizations can be traveling the same route at the same time unable to pick up additional riders.*
- *»» No transit service on holidays and Sundays.*
- *»» Limited service in the evenings.*
- *»» Human service agencies often limited by Federal requirements that restrict services to specific target population or destination type.*
- *»» Barriers to accessibility to routes such as lack of transit and pedestrian-friendly developments.*
- *»» Depending on the need and program, riders need to make different arrangements with different providers.*
- *»» Multiple operators have different phone numbers and operating procedures.*
- *»» Vehicles are not used efficiently (church buses, school buses, etc.)*
- *»» Some agencies can only provide services to people who are eligible for ADA and Medicaid programs.*
- *»» Different transit systems have different fares and policy, which can be confusing.*
- *»» Human service agencies need a better understanding of the transportation system infrastructure to accomplish coordination objectives.*

»» Lift service is not always on time, making it difficult to schedule pick-up from doctors' appointments.
»» Human service agencies have limited capacity for scheduled services (shortage of seats.)
»» Call centers are operated individually by each organization.
»» Different eligibility requirements for each program.
»» "Turfism" (concerns about loss of control over services, riders, funding.)
»» Safety at night and on-board.
»» Advanced scheduling singles people out and doesn't allow riders to be spontaneous about their trips.
»» Lack of transportation and planning for emergencies/disasters.
»» Due to limited funding for marketing, riders are not aware of the options available to them.
»» Lack of education and advertising to alleviate transit stigma and low usage.
»» Individual purchase of vehicles and equipment.
»» Skepticism about benefits.
»» Driver training programs are operated individually by each organization.
»» In-house vehicles maintenance programs are operated individually by each organization.
»» Agencies believe that cost of liability insurance will increase if they transport riders who are not their clients.
»» Confusion about how nightline systems work, what routes are available and calling for deviations.

Based on discussions of the Tulsa Area gaps and needs, the RCCT developed strategies and solutions to address the region's transportation problems and prioritized these strategies for implementation of the Coordinated Public-Transit and Human Service Transportation Plan.

Strategies and Actions

The strategies and solutions address the needs of a growing population of elders, low-income and people with disabilities. Nearly all new programs recommended are low-cost, non-traditional services to be implemented with new or additional state funding, New Freedom and JARC funding.

Goal 1: Safety and Accessibility

»» Increase transit service area to include regional medical facilities, employment centers and social activities.
»» Develop and implement Pedestrian Master Plan to assess sidewalks, safe routes to transit, and elimination of barriers.
»» Incorporate FHWA guidelines for new streets and highways that are accessible for aging and disabled populations.
»» Improve facilities and amenities at regional stops and transfer stations.
»» Implement policies and programs that address safety concerns at bus stops, transfer stations and on-board, especially at night.
»» Encourage provision of Travel Hosts to assist people making transfers, persons with disabilities, users needing door-to-door service, visitors, or those with other transit concerns.
»» Create and implement an emergency/disaster plan and an inclement weather plan that address the need of those without personal transportation.

Goal 2: Mobility

»» Increase transit frequency to allow users to make health care and other appointments, look for employment, and chain trips for both paratransit and fixed route service.
»» Increase service area to connect neighboring communities outside Tulsa Metro Area.
»» Develop a Mobility Management Center.
»» Extend transit service to evenings.
»» Provide transit service on holidays and Sundays.
»» Establish authority to oversee implementation and ongoing operations of Mobility Management Center.
»» Increase human service agencies' capacity for scheduled services.

Goal 3: Awareness

»» Educate transit providers and human service agencies about the benefits of coordination.
»» Provide human service agencies with travel information resources or tools and

help caseworkers and other appropriate agency representatives understand lowest cost transportation options for their clients.

»» Add transit links to human service 211 hotline.

»» Encourage projects that engage community members or other partners in spreading the word about available mobility options.

»» Develop innovative marketing and information partnerships and strategies that alleviate the "stigma" of riding transit and illustrates available services.

»» Add transit/mobility center links to sites for services provided to elderly, low-income, and people with disabilities.

»» Create transit options brochure and website that is user-friendly and details options available to potential customers.

»» Expand exposure of regional fixed routes and ride share programs to policy makers, funders, and "untapped" markets.

Goal 4: Funding

»» Develop funding strategy that includes a dedicated funding source for public transportation and allows expansion of the fixed-route and paratransit services.

»» Allow mixing of funding so agencies aren't restricted to serving specific target populations or specific destination types.

»» Diversity and expand funding sources by partnering with the private sector (both for-profit and non-profit.)

»» Promote mileage reimbursement for volunteer drivers, volunteer exchange to trade skills, Green Traveler (carpooling), taxi vouchers to reduce trip cost, rental cars for volunteer drivers.

Goal 5: Efficiency

»» Increase service efficiency to decrease delayed pick-ups.

»» Develop a unified policy that allows all providers to accept transit users regardless of their indvidual eligibility (ADA, Medicaid and other programs.

»» Incorporate Intelligent Transportation Infrastructure Technology options to integrate the use and function of each transportation mode.

»» Agree upon common fare structure for all agencies represented in the vehicle pool.

»» Decrease lead-time needed in scheduling for paratransit service.

»» Increase the ability of school districts and churches to be part of the community transportation provider pool.

Following adoption of the Plan by the INCOG Board of Directors, INCOG developed a competitive selection process and criteria. INCOG will solicit applications from eligible entities for disbursement of the funds allocated to our region and use the competitive selection process to evaluate applications and determine FTA funds grantees.

Bicycle Transportation

2035 Bicycle-Pedestrian Plan Highlights

- *Integrate Bicycle/Pedestrian elements into all capital projects*
- *Strategize and develop missing linkages to neighborhoods*
- *Implement ADA policies*
- *Pursue and implement 'complete streets' policies*
- *Expand regional trails and bicycle network*

Performance Measures

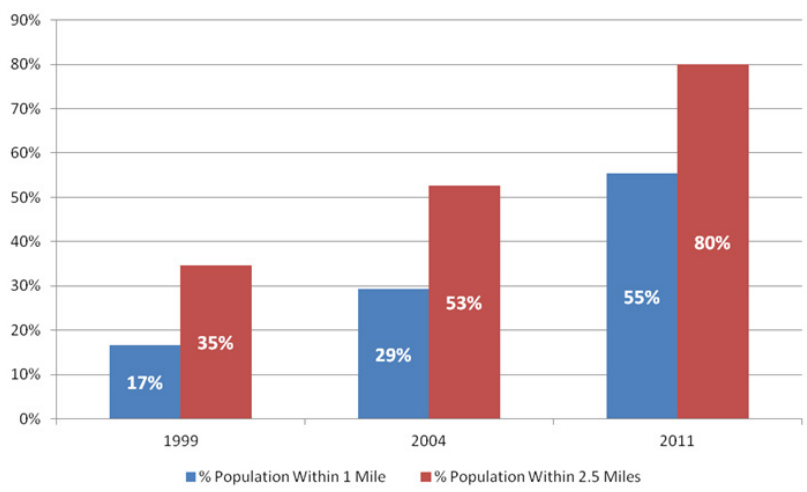
- *Total mileage of trails and bike networks*
- *Percent mode share using alternative transportation*

BACKGROUND: Trails Master Plan

In 1999, INCOG developed a Trails Master Plan for the Transportation Management Area (TMA) to delineate an interconnected system of trails and complementary bikeways with the goal of enhancing transportation choices. The resulting Trails Master Plan proposed a 283-mile network of off-street multipurpose trails and a 207 mile system of on-street bikeways throughout the TMA.

Access to the trails or bikeways was an important evaluation criterion in the development of the trail route plan. As prescribed by the Trails Master Plan, 98% of the population within the TMA will be served by a planned trail or bikeway within 2.5 miles of their homes, and 87% will be served by a trail or bikeway within one mile of their residence. The 283-mile network of multipurpose trails is extensive and comprehensive, and at the same time provides a realistic program for satisfying the needs of local residents regarding access to outdoor resources and transportation bikeways to many destinations. Table 11 depicts the population served within the TMA since the plan was adopted.

Table 10: Percent of TMA Population served by Multi-Use Trails and On-Street Bikeways



NEED FOR BICYCLE TRANSPORTATION

Over the past 12 years since the adoption of the plan, INCOG and local government agencies have worked in partnership with neighborhoods and private-sector organizations to develop trail projects.

The 207-mile system of on-road bikeways serves as the basis for a comprehensive region wide bikeway system. Tulsa's on-street bicycle route plan has been enthusiastically embraced by numerous members of the bicycling community and will be updated as new connections are warranted and traffic conditions change.

The Existing and Planned Multi-Use Trails and Bikeways Map, shown in Figure 8, is a composite of existing and planned bikeways and trails in the TMA.

As of 2012, approximately 35% (98 miles) of the total planned miles for the 283 mile trail system have been built or are funded, with many of the projects either in the design or construction phases. The Existing and Planned Multi-Use Trails Map illustrates existing and planned trail routes.

Figure 6: Fry Creek Trail, Bixby (completed 2010)

Encouragement of bicycling includes making sure cycling for transportation and for health is accessible even to those who cannot afford a bicycle.

Programs that encourage bike sharing should continue to be an integral part of alternative transportation options. More than 40% of trips made in the United States are less than two miles and in most cases could be completed with a bicycle. Currently, nationwide 90% of those trips are made by motor vehicle .[1]

In May 2009, the League of American Bicyclists announced that Tulsa was selected for the Bicycle Friendly Community Award. The award made Tulsa the first community in Oklahoma to be recognized as a Bicycle Friendly Community. The designation was based on Tulsa's commitment to engineering, education, encouragement, enforcement, and evaluation of bicycle facilities in the city. The League specifically lauded Tulsa's three bicycle sharing programs.

Tulsa has one of the best recreational trail systems in the country. In addition to the highly used River Parks trails, facilities have continued to be expanded which parallel the turnpikes in south Tulsa.

The League of American Bicyclists specifically recognized the development of the the Osage Prairie Trail which begins at OSU-Tulsa and terminates near downtown Skiatook.

Tulsa was awarded the BFC designation at the bronze level and there is hope that by the time renewal is due in 2013 Tulsa will be ready to move to the silver level with cities such as Denver, Austin, and Scottsdale, AZ.

1. *USDOT, May 16, 2011 http://fastlane.dot.gov/2011/05/2-mile-challenge.html*

2010 Trail and Bikeway Utilization Counts

In 2010, INCOG started the process of documenting trail usage statistics in an effort to identify priority needs and to measure success of programs like Bike to Work and alternative transportation programs like Green Traveler. These efforts led to a goal of biennial trail counts so that this data could be tracked over time and trends could be analyzed.

Counting and surveying existing trails is necessary to learn user habits and desires for future trails and on-street bikeways. Without the information that comes from this data, there is little evidence to justify expansion of a trail or multi-use trail network.

The trail network could benefit from increased access from abutting neighborhoods. The difficulty that pedestrians and cyclists face in accessing established trail system can be mitigated through additional linkages to the system.

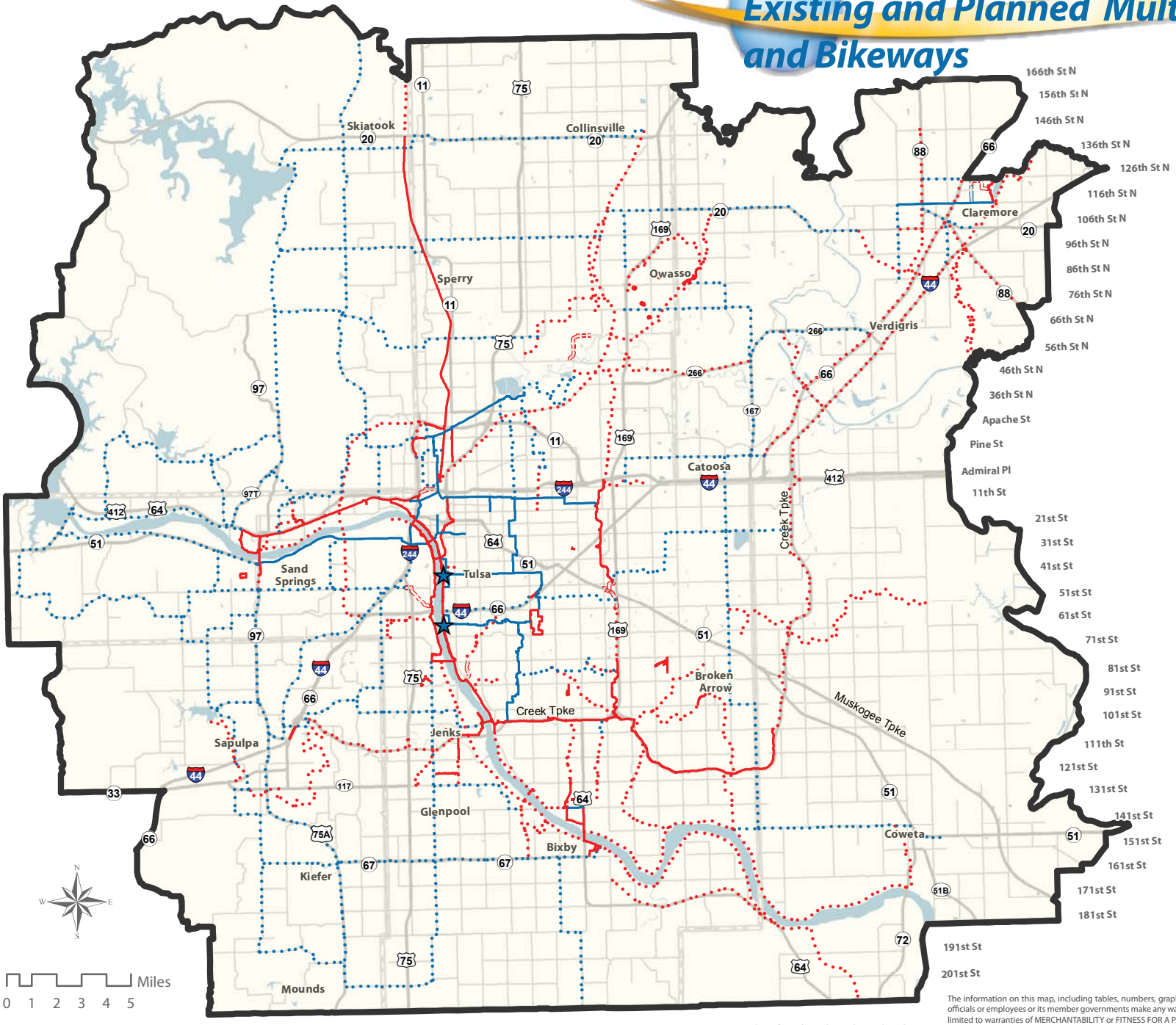
Figure 7: River Parks Dual Trail (Completed 2010)

Table 11: Bicycle Friendly Community Feedback

Green: Complete Yellow: Progress		
	Key Recommendation	***Status***
	Increase number of streets with bike lanes or wide shoulders	The city of Tulsa adopted a complete streets resolution and is designing streets with a CSS process.
	Provide ongoing training on accommodating bicyclists	INCOG provides training through webinars frequently for city engineers and planners
	Increase amount of secure parking for bicycles	Through a grant from INCOG, the city of Tulsa is installing bike racks in approx. 100 locations citywide
	Bicycle safety campaigns and public service announcements	In May 2012, PSAs will be aired on TGOV
	Visual detection cameras installed at intersections	Many on-street bike routes are equipped with visual detection
	Offer Traffic Skills 101 courses taught by League Certified Instructors	Several LCIs were certified in 2011 and continue to offer TS101 courses through the Tulsa Hub
	Implement Safe Routes to School Program	Several SRTS programs have been implemented by INCOG through the Tulsa Public and Union School system
	Expand encouragement efforts during Bike Month	The Training Wheels program has encouraged many people to start riding to work with courses leading up to Bike to Work week in May
	Consider Cyclovia or Summer Streets event	The Bicycle/Pedestrian Advisory Committee is considering this as an option
	Increase bicycle wayfinding signage	This is a priority in the Regional Transportation Plan
	Ensure that police officers are aware of share the road laws	The Tulsa Police Department and Sand Springs PD participates regularly in the BPAC
	Continue to collect data on bicycle usage and crash statistics	INCOG makes it a policy goal to update trail and on-street bikeway counts biennially
	Develop an updated bicycle master plan that has a multi-year vision of improvements	INCOG is pursuing funding of a bicycle master plan through the Tobacco Settlement Endowment Trust

Figure 8:

Existing and Planned Multi-Use Trails and Bikeways



Legend

Regional Trail System

Trail Type

- Existing - On-Street Bikeways
- Funded - On-Street Bikeways
- Planned - On-Street Bikeways
- Existing - Multi-Use Trail
- Funded - Multi-Use Trail
- Planned - Multi-Use Trail
- Neighborhood-Trail Access Safety Improvement
- Highways
- Arterial Streets
- Bodies of Water
- County Boundaries
- TMA Boundary

INCOG

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Table 12: Existing and Planned Trails

Multi-Use Trail	Miles Existing	Miles Funded	Miles Planned	Cost to Complete*
Adams Creek East Trail			9.0	$ 9,460,614
Adams Creek West Trail			4.4	$ 4,633,004
BA South Loop Trail 101st to 71st			3.4	$ 3,583,656
Bigheart Trail	0.8		0.7	$ 767,681
Bixby River Trail			11.1	$ 11,702,172
Bixby Trail	1.9			
Broken Arrow Creek Trail			7.2	$ 7,580,248
Cherry Creek Trail		1.4		
Chouteau National Trail			4.0	$ 4,197,209
Claremore Lake Trail	1.3			
Cooley Creek Trail			2.0	$ 2,108,184
Coweta Creek Trail			3.2	$ 3,417,817
Creek East/Will Rogers Trail			12.1	$ 12,771,837
Creek Turnpike Extension West			4.8	$ 5,071,825
Creek Turnpike Trail	4.3			
Elm Creek Extension			3.3	$ 3,481,603
Fry Creek Trail	2.0		6.2	$ 6,558,085
Gilcrease Northwest Trail			5.3	$ 5,605,478
Gilcrease West Trail			5.5	$ 5,816,952
Haikey Creek BA Tributary			3.3	$ 3,516,278
Haikey Creek Trail	0.6		9.5	$ 10,050,700
Haikey Creek Tulsa Tribut			3.7	$ 3,885,074
Howard Branch Trail				
Jenks Aquarium Trail	3.0		3.2	$ 3,379,200
Jenks Missouri Pacific Trail				
Jenks River Trail Elm to Elwood			3.2	$ 3,410,630
Joe Creek Linkage			1.8	$ 1,854,343
Joe Creek Trail		0.8	1.3	$ 1,344,131
Katy Downtown Trail		0.9		
Katy Trail	7.3			
LaFortune Trail	3.2			
Liberty Trail	9.5			
Midland Valley Trail	3.4			
Mingo Trail North	5.2		5.0	$ 5,300,898
Mingo Trail South	4.4	1.8	2.1	$ 2,192,208
Missouri Pacific Trail			15.5	$ 16,394,817
Mohawk/Port of Catoosa Trail			8.4	$ 8,905,186
Mooser Creek Trail			3.1	$ 3,308,545
Newblock Park Trail	1.5			
Osage Prairie Trail	14.5		2.9	$ 3,078,836
Osage Tall Grass Prairie Trail				
Owasso Trail	2.6		10.9	$ 11,463,727
Polecat/Rock Creek Trail			14.6	$ 15,377,470
River City Trail	1.8			
RP BA/Coweta Trail			9.6	$ 10,097,493
RP Bixby/BA Trail			8.1	$ 8,602,769
RP East Bank Trail	13.4			
RP Tulsa/Bixby Trail			2.3	$ 2,407,005
RP West Bank Trail	8.5			
Sandusky Multi-Use Trail			3.3	$ 3,439,078
SH 97 Bridge Trail	1.6			
Skelly By-pass Yale-Fulton	0.6			
SKO Spur Trail			5.0	$ 5,317,874
SKO Trail			18.6	$ 19,629,327
South River Parks Trail			2.7	$ 2,883,959
Tisdale Expressway Trail	1.2			
Wekiwa Linkage	0.8			
Total	**93.6**	**4.9**	**220.3**	**$ 232,595,916**

*Assume $200/L.F. construction cost

Table 13: Existing and Planned Bikeways

On-Street Bikeway/Bike Lanes	Miles Existing	Miles Planned	Cost to Complete*
36th St Linkage	5.7		$ -
41st Street Linkage		5.4	$ 161,033
46th St Linkage		3.3	$ 97,502
4th Street Linkage	6.6		$ -
56th St Linkage	4.6		$ -
76th St Linkage		4.9	$ 148,016
Avery Drive Linkage	3.9		$ -
Catoosa/Owasso Linkage		9.8	$ 292,719
Cherokee Linkage		3.6	$ 107,926
Coweta Linkage		8.7	$ 260,861
Eastland Linkage		9.6	$ 287,518
Elwood Linkage		10.1	$ 301,510
German Corner Linkage		4.4	$ 130,794
Greenwood/Mohawk Linkage	6.3	2.8	$ 83,397
Lake Keystone Linkage		9.5	$ 285,784
Lynn Lane Linkage		3.0	$ 89,750
Mohawk Trail	1.1	6.4	$ 193,102
Osage Linkage		8.5	$ 254,061
Pine Linkage		6.5	$ 195,953
Polecat/Rock Creek Trail		0.6	$ 17,064
SH 20 Linkage		10.4	$ 311,910
SH 266 Linkage		5.4	$ 162,520
SH 67 Linkage		10.9	$ 326,978
SH 75A Linkage		4.5	$ 134,195
SH 97 Linkage		9.4	$ 282,534
Skiatook Lake Linkage		4.8	$ 142,514
Sperry Linkage		7.3	$ 220,428
SW Blvd/Old Sapulpa Linkage	2.0	12.3	$ 369,397
Tulsa North/South Linkage	10.6	4.3	$ 129,664
Wekiwa Linkage		7.5	$ 223,674
West 23rd Linkage	3.5		$ -
Zink Ranch Linkage		17.4	$ 521,217
Total	**44.3**	**191.1**	**$ 5,732,021**

*Cost: $30,000/mile based on striping cost on recent traffic engineering projects

Bike Sharing

There are three bicycle sharing programs in Tulsa. The River Parks bicycle sharing program, known as the Tulsa Townies, allows users to check out a pink bicycle to use for up to 24 hours free of charge. They can be returned to any bicycle rack in the system.

Figure 9: Tulsa Townies Bike Sharing Program

The University of Tulsa also has a bicycle sharing program for students that provides free yellow bicycles and helmets for students. The program is intended to encourage students to ride their bicycles on campus. By adding this benefit to students, TU has been able to reduce the number of on-campus parking spaces without having a negative impact on student's ability to get to classes. The program is expected to have over 600 bicycles by the end of 2012.

Tulsa Transit also has a free bike sharing program at the Denver Avenue Station in Downtown Tulsa. The program, called Rack-n-Roll, is intended to increase rider mobility around downtown by using a bicycle checked out from the bus station. Users can keep the bicycle for 24 hours.

Figure 10: University of Tulsa Yellow Bike Program

Figure 11: Rack-n-Roll Bicycles at the Tulsa Transit Denver Ave. Station

Table 14: Tulsa TMA Commute to Work, 2006-2010

Mode used to commute to work (Tulsa TMA Totals - estimate)		
Mode	**Total**	**Percent**
Car, Truck, or Van	340,461	92.8%
Drove alone	300,477	88.3%
Carpooled	39,984	11.7%
In 2-person carpool	32,241	80.6%
In 3-person carpool	4,492	11.2%
In 4-person carpool	3,251	8.1%
Public Transportation (excluding taxicab)	2,156	0.6%
Bus or Trolley	2,142	99.4%
Streetcar or Trolley Car	9	0.4%
Railroad	5	0.2%
Bicycle	524	0.1%
Walked	5,247	1.4%
Taxicab, motorcycle, or other means	4,810	1.3%
Worked at home	13,579	3.7%
Total:	366,777	

Source: American Community Survey

Table 15: River Parks Trail Usage Counts
March 2011-February 2012

Month	15th and Riverside	31st and Riverside	68th and Riverside	96th and Riverside	Ped Bridge West	Turkey Mountain
Mar-2011	42,936	23,333	8,885	10,746	4,407	7,168
Apr-2011	19,570	18,776	9,683	12,525	5,280	5,506
May-2011	21,765	14,795	12,929	13,454	5,644	7,358
Jun-2011	55,198	13,750	14,667	6,695	5,041	5,932
Jul-2011	31,189	4,145	9,704	7,741	6,543	4,236
Aug-2011	43,193	4,409	9,507	29,381	6,416	4,047
Sep-2011	46,809	8,333	19,850	12,223	8,533	7,363
Oct-2011	38,344	7,011	19,742	11,515	6,848	6,848
Nov-2011	17,601	5,236	10,295	6,570	4,037	6,689
Dec-2011	20,778	6,487	8,980	6,873	3,660	7,843
Jan-2012	28,465	9,874	12,670	10,232	5,062	12,012
Feb-2012	21,841	6,216	9,424	7,490	4,014	6,515

Source: River Parks Authority

Safe Routes to School

The Tulsa Area Safe Routes to School (SRTS) Program is a two-part program including an infrastructure project building sidewalk connections and non-infrastructure portion conducting an education program. The Infrastructure portion of the project was managed and implemented by the City of Tulsa and INCOG partnered to implement the non-infrastructure portion of the project. A primary goal of the education program was to effectively impact as many children in the Tulsa Area as possible with quality education about bicycle safety. A summary of the program's goals and achievements was documented.

The non-infrastructure grant from the Oklahoma Department of Transportation for the Tulsa Area SRTS Program produced five 6-week bike workshops where students learned critical safety skills. The program was developed by Tulsa HUB, a bicycle education non-profit organization based in Tulsa.

Figure 12: Spring 2010 McClure Elementary Safe Routes to School Program

Thirty students from each of the five schools (total of 150 students) learned bicycle safety through interactive skill drills taught by a League of American Bicyclists Certified Instructor (LCI). Parents also participated and gained confidence with allowing their children to ride to school. Over the course of six weeks the Tulsa HUB team taught skills to 150 students in the 3rd, 4th, and 5th grades.

The Tulsa Area SRTS program was designed to be sustainable beyond the 6-week bike club. A key element of sustainable programs is partnership. New partnerships were created among the schools, the Community Service Council, YMCA staff, INCOG, private corporations, a bicycle race team, the Tulsa HUB and others.

Safety

Safety is a major concern for bicyclists. Table 17 and Table 18 show data from the Oklahoma Department of Transportation regarding injury and fatality collisions involving bicyclists from 2005-2009 (the most recent data available). Collisions involving cyclists have trended downward over recent years, but fatalities have increased.

The following actions are identified to improve safety:

»» *To address this issue, the Oklahoma Department of Transportation, Tulsa local governments in the Tulsa metro should explore options for creating safe places for cyclists to ride.*

»» *A specific safety issue is connecting neighborhoods with the Regional Trail System.*

Table 16: Oklahoma and Tulsa County Bicycle Collisions 2005-2009 from the Oklahoma Department of Transportation

Bicycle Collision Location and Type	2005	2006	2007	2008	2009
Statewide Injury Collision Total	362	319	474	357	305
Tulsa County Injury Collision Total	72	76	96	66	69
Tulsa County Non-OHP Injury Collision Total	68	71	90	63	63
City Streets Injury Collision Total	62	67	79	61	58
Statewide Fatality Collision Total	7	5	3	4	11
Tulsa County Fatality Collision Total	1	0	0	0	3

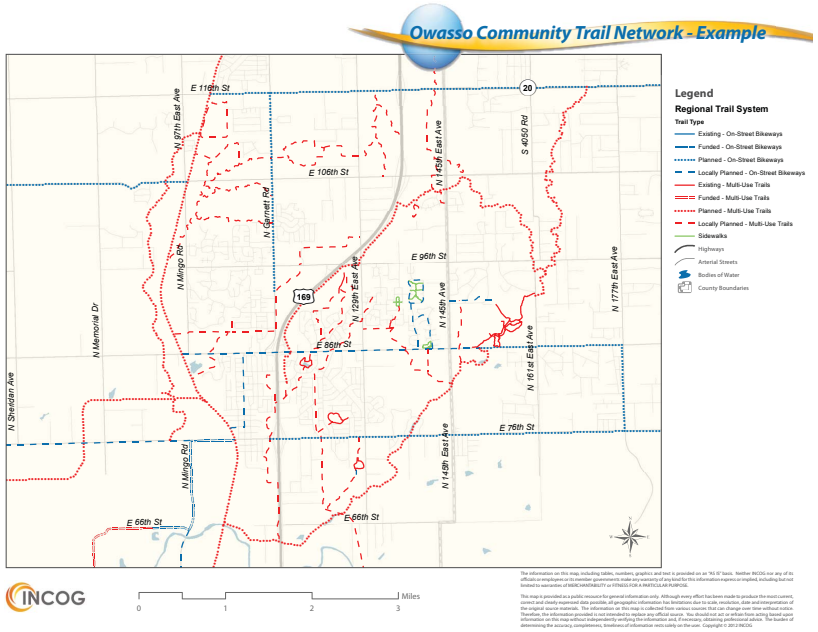


Figure 13: Owasso Community Trail Network Example

EXISTING POLICY

Local Ordinances

A summary of local ordinances related to cycling has been compiled and is being evaluated by the Bicycle/Pedestrian Advisory Committee for revision. Some local ordinances require that bicycles use a bike-path if a designated path is available. A recommended 'model ordinance' will be compiled by the BPAC in the near future.[1]

Table 18: State Law and Local Ordinance Summary
Source: Oklahoma State Statutes Title 47 and local ordinances

Policy / Jurisdiction	Mandatory Sidepath[1]	Two Abreast	Bicycles considered vehicles	Passing requirement	Use of permanent seat	Ride as far to the right as practicable	Helmet Required	Signal Device	Light Required at Night	Brakes
Oklahoma		X	X	3 feet	X	X			X	X
Tulsa		X	X	Safe distance	X	As close as is safe to right curb			X	X
Broken Arrow	X	X	X	Cannot interfere with overtaken vehicle	X	X		X	X	X
Sand Springs		X	X	3 feet	X	X			X	X
Jenks	X	X	X	Safe distance	X	X			X	X
Owasso	X	X	X	Safe distance	X	X		X	X	X
Bixby	X	X	X	Safe distance	X	X			X	X

1. Mandatory sidepath ordinances require that wherever a usable path for bicycles has been provided adjacent to a roadway, bicycle riders shall use such path and shall not use the roadway.

FUNDING SOURCES

Transportation Enhancements (TE)

The Transportation Enhancement program has been a successful funding source for much needed bicycle and pedestrian projects in the Tulsa metro since the program's creation in 1991. The program has funded the vast majority of Tulsa's trail system and has resulted in 51 projects representing over **$18 million** in Federal funds matched with **$6 million** in local dollars to build trails, sidewalks, and on-street bikeways. These investments led to Tulsa's designation as a Bicycle Friendly Community in 2009 by the League of American Bicyclists. Local communities seeking to be connected to this regional trail network are relying on this funding source to continue so that their citizens have an opportunity to use active transportation in their daily lives.

The MAP-21 bill enacted in July 2012 eliminates the TE program in favor of a slightly different Transportation Alternatives program. INCOG expects that the amount coming to the Tulsa TMA will be reduced by approximately 20-30% as a result of this programmatic change.

Other Funding Sources

- *»» TIGER Grants*
- *»» Recreational Trails Program (RTP)*
- *»» Rural Economic Action Program (REAP)*
- *»» Local Funding (Ex: 3rd Penny, Vision 2025)*
- *»» Private Funding (Ex: George Kaiser Family Foundation)*

Urbanized Surface Transportation Program

INCOG administers project selection for the Urbanized Surface Transportation Program funds which are sub-allocated to MPOs. The selection process for these funds include an assessment of livability factors such as the provision of sidewalks, bike paths/lanes, safety improvements for pedestrians, and the provision of public transportation amenities within a project. Points are given to projects that incorporate these elements to encourage implementing agencies on their federally funded arterial programs.

PROJECT LIST

The primary project list for the bicycle portion of the RTP has historically come from the 1999 Tulsa Area Trails Master Plan. This plan included 283 miles of networked trails and 207 miles of on-street bikeways linking the trail system to neighborhoods. To date, 93 miles of trails have been constructed and 44 miles of on-street bikeways have been implemented. The project list located in Tables 12 and 13 details the projects that are considered part of the Trails Master Plan and provides updated cost estimates based on current bid prices on similar projects.

In addition to these projects, a number of other projects have been proposed to enhance the areawide provision of bicycling infrastructure and supporting programs. They are outlined below.

Bicycle/Pedestrian Master Plan

A region-wide Bicycle/Pedestrian Master Plan that would address facilities, education, encouragement, evaluation, and enforcement issues related to bicycle and pedestrian accommodation. The plan will be used to aid effective decision-making, planning, design, and implementation of bicycle and pedestrian facilities including sidewalks, bicycle lanes, bicycle parking, multi-use trails, and hiking trails. Once completed, the Master Plan will provide a roadmap for a comprehensive network of pedestrian facilities, on-street bicycle systems, and off-street recreational trails. In addition, ancillary services and education programs will be considered to complete a plan for a transportation network that serves cyclists and pedestrians with a goal to increase regional mobility. This work will build on the now 12-year old Trails Master Plan by adding a pedestrian element as well as incorporating education, enforcement, evaluation, and encouragement elements.

The assessment process will identify and evaluate short-, medium- and long-term transportation system needs to enhance bike and pedestrian mobility while maintaining vehicular and bus transit operations. All existing and proposed connecting pedestrian and

bicycle paths, transit stops/routes, and activity centers such as schools, businesses and parks/open space should be considered to transform the corridor into a multi-modal environment. This will balance the needs of all modes and is sensitive to evolving land use and development plans.

Specific Project Focus Areas

In addition to the projects listed in Tables 12 and 13, several project focus areas have been identified that would add significant value to the overall trail network by increasing safety and accessibility to population and employment centers. Those are:

- *Connection from Bixby to Creek Turnpike Trail and River Parks Trails*
- *Completion of the Mingo Trail from 51st to 71st*
- *Safe connections to River Parks from adjacent neighborhoods, and other locations where cyclists and/or pedestrians seek to access River Parks*
- *Comprehensive bicycle wayfinding and kiosk system*

Uniform Policy Framework

Bicycle policy is primarily determined by state and local governments through statute and ordinances related to how a bicycle can be used. Oklahoma's laws treat a bicycle as a vehicle, which is accepted by most in the cycling community as a positive treatment. However, much more can be done to encourage the use of a bicycle as a means of transportation beyond laws and ordinances. The League of American Bicyclists recommends looking at policy through the lens of the 5 Es: Engineering, Education, Encouragement, Enforcement and Evaluation. Below are recommendations made by the League of American Bicyclists during their review of Tulsa's Bicycle Friendly Community application in 2009.

Regional Priorities for Developing Bicycle Infrastructure

Previous plans identified several priorities based on input from citizens at public meetings. These priorities are listed here and updates to them have been incorporated into this description:

- *Fund and execute the development of a regional Bicycle & Pedestrian Master Plan. The master plan should go beyond recreational uses for trails and address commuting and pedestrian priority areas where safety statistics show a need for pedestrian improvements.*

- *Improve pedestrian circulation and multimodal connections in the land development process by acquiring trail access easements, creating additional sidewalk connections, and incorporating planned transit stops. As part of the subdivision review process, Transportation Planning Division staff review subdivision plans for possible trail connectivity opportunities as well as for transit stops. Recommendations are made to incorporate these amenities into subdivisions when and where applicable.*

- *Continue development of the multi-use regional trail system. Since the adoption of the Trails Master Plan in 1999, the number of trail miles in the Tulsa metro has increased from 25 miles to over 100 miles.*

- *Finance the development and maintenance of bicycle/pedestrian facilities including sidewalks, trails, and bikeways. Many bicycle and pedestrian facilities are constructed using Transportation Enhancement (TE) funding, which is funding set aside for projects such as trails and sidewalks. These facilities are maintained by the various jurisdictions in which facility or portion thereof lies. The Map-21, new transportation legislation has created a new funding mechanism through: Transportation Alternatives (TA), modifying the earlier TE.*

- *Provide connectivity between the trail system and neighborhoods. As part of the subdivision review process (recommendation #1). INCOG strives to ensure that new neighborhoods are connected to the trail system, if feasible. Priority should be focused on providing safe neighborhood access from neighborhoods along Riverside Dr. to the River Parks Trail System.*

»» *Ensure that trail and on-street bikeway design standards are implemented consistently. Trails and bikeways are designed in accordance with the recommendations made in the Tulsa Transportation Management Area's Trails Master Plan (1999) and AASHTO's Guide for The Development of Bicycle Facilities (2012).*

»» *Provide additional trail lighting. Where appropriate, lights have been added to trails, such as the new dual River Parks East Bank Trail along the east bank of the Arkansas River and in more populated areas of the Osage Prairie Trail. Trail lighting should be considered along the Creek Turnpike and Mingo Trails.*

»» *Improve maintenance along the trails. Municipal revenues have declined, due to the economic downturn, putting pressure on maintenance budgets.*

»» *Provide for directional, location, and safety signage throughout the trail system. River Parks has provided signage along its trails, however, system-wide signage has not been implemented beyond the River Parks system.*

The City of Tulsa adopted a Complete Streets Policy that supports a policy of designing streets to accommodate all types of transportation modes including pedestrians, bicyclists, public transit riders, freight providers, emergency responders, and motorists. This policy serves to lead the way in determining context sensitive approaches to street design.

This policy aligns with the March 2010 USDOT policy that encourages all transportation agencies to adopt similar policies. Other cities in the Tulsa metro should consider adopting similar policies to ensure that all modes of transportation are considered when designing roadways.

These attitudes, shown in Figure 14, should be considered when implementing Complete Streets Policy

USDOT Policy on Bicycle and Pedestrian Accommodation (Adopted 3/11/2010). The DOT policy is to incorporate safe and convenient walking and bicycling facilities into transportation projects. Every transportation agency, including DOT, has the responsibility to improve conditions and opportunities for walking and bicycling and to integrate walking and bicycling into their transportation systems. Because of the numerous individual and community benefits that walking and bicycling provide — including health, safety, environmental, transportation, and quality of life — transportation agencies are encouraged to go beyond minimum standards to provide safe and convenient facilities for these modes.

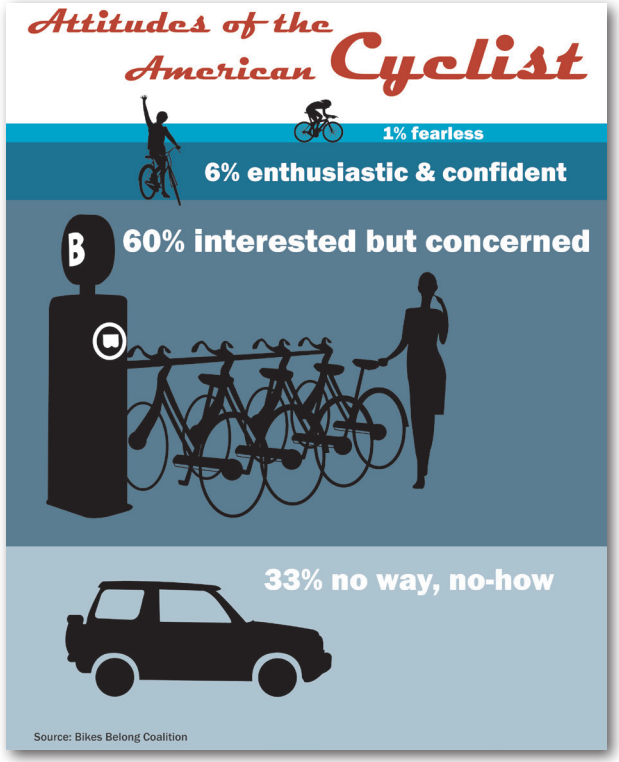


Figure 14: Attitudes towards bicycling

BICYCLE/PEDESTRIAN ADVISORY COMMITTEE

INCOG formed a Bicycle and Pedestrian Advisory Committee which began meeting in July 2011.

The mission of the BPAC is to promote Engineering, Education, Encouragement, Enforcement and Evaluation & Planning (5-E's) concepts pertaining specifically to bicycling and pedestrian modes, and to provide input into the planning processes at the MPO.

The BPAC provides input on a future Bicycle/Pedestrian Master Plan, for which funding is currently pending. The BPAC also serves as a resource to other cities and agencies requiring public input pertaining to the bicycle and pedestrian environment.

The BPAC is comprised of 19 members representing both citizens and representatives from key organizations involved in building and maintaining bicycle and pedestrian infrastructure.

The BPAC has three sub-committees that meet on an as needed basis. Those committees are: 1) Engineering/Evaluation, 2) Education/Encouragement, and 3) Enforcement. The purpose of these sub-committees is to focus in on problems and solutions related to bicycling and pedestrian transportation and suggest best practice solutions and policies for the larger BPAC to consider.

PERFORMANCE MEASURES FOR BICYCLING

1. Number of bicyclists observed at counting stations established in 2010 bicycle/pedestrian counts

Bicycle counts should be taken at the 13 established locations throughout the region every other year to benchmark the amount of bicycling in the region. Count locations include the established 13 count locations from the 2010 survey plus any additional locations as new trails and on-street facilities are completed. The official counts for this performance measure should be completed in the summer under good weather conditions. In other cases, one-time before and after counts should be taken to measure increases in bicycle use related to a specific bicycle lane, shared lane marking, or trail project.

Counts should also include observations of important bicyclist behaviors, such as wearing helmets, riding on the correct side of the street, obeying traffic controls, and using lights at night. In addition, pneumatic tubes may be used. Bicycle counting technologies, such as video and infrared detection should be explored for counts in all types of locations

2. Number of police reported bicycle crashes per total number of bicyclists observed during the biennial bicycle count.

This measure would compare bicycle crash trends (as reported in police records) in terms of bicycle exposure. Exposure would approximate the biennial bicycle counts at locations throughout the region. Note that police-reported crashes do not represent all bicycle collisions.

Pedestrian Transportation

BACKGROUND

In 2010, there were 366,777 commute trips made in the Tulsa Transportation Management Area (TMA). Nearly all of these trips involved someone walking or using non-motorized transportation from one point to another for at least part of the trip. For the purposes of this plan, "pedestrian travel" is defined as a person moving by foot, wheelchair or other forms of slow moving device. Pedestrian travel trips include:

- *Walking from home to the grocery store;*
- *Walking home from school;*
- *Using a wheelchair from a bus stop to an office, shop, or residences;*
- *Walking to the bus stop after work.*

Pedestrians travel on sidewalks, along roadway shoulders, through parking lots, across lawns, or on multipurpose trails (*e.g.*, bike paths) to go places. Walking is the most flexible mode of travel. Although pedestrian trips cover much shorter distances than other travel modes, they play a very important role in the transportation system and contribute to the creation of more livable and sustainable communities.

Development of the Pedestrian Element of Connections 2035 to serve as guidance for ensuring quality facilities and encouraging pedestrian travel in the TMA involves the review of several factors, including:

- *Identification of policies, such as Complete Streets, to be strongly considered in the planning and design of roadway facilities and in the approval of land developments;*
- *Research factors that influence people to use various modes of travel;*
- *Travel characteristics such as average trip distance, purpose, and data on crashes involving motor vehicles;*
- *Best practice examples of facility design and land development practices that enhance safety and comfort for pedestrians;*
- *Review of inventories of existing sidewalks and multi-use trails throughout the TMA;*
- *Identification of pedestrian facilities existing, planned or discussed for the area based on accepted local government policies such as the City of Tulsa's ADA Self-Evaluation and Transition Plan Update and PLANiTULSA.*

Resulting new and improved facilities will offer safer and more convenient routes, complete gaps in the system, provide needed extensions, make key connections to transit services, and/or serve entirely new areas.

Figure 15: Roadway and trail access under the bridge

Figure 16: Inviting, wide, clearly-marked and signed crosswalk facing north across interstate exit ramp

Figure 17: Art deco design and lighting underneath interstate bridge overpass, conveys inviting and safe place to walk

Pedestrian Transportation System Goals

The following are the system goals to ensure planning and implementation of pedestrian access and travel:

»» *System Preservation. Assure the preservation and maintenance of existing facilities.*

»» *Rights-of-way Preservation. Reserve adequate rights-of-way in newly developing and redeveloping areas for pedestrian, bicycle, transit, and roadway facilities.*

»» *Safety. Develop and maintain a safe transportation system for all users. Prioritize projects on existing and future facilities that will reduce the likelihood or severity of crashes involving motor vehicles, bicycles, and pedestrians.*

»» *Bicycle and Pedestrian Access. Require the provision of adequate sidewalks or pedestrian accommodations along all roadways and within private developments in the region's urbanized area, suburban cities, and densely developed rural communities.*

»» *Interconnections. Improve interconnection of the transportation system within modes, between different modes, and among the communities within the TMA. Provide safe and convenient access for pedestrians and bicyclists to park-n-ride lots and bus stops.*

With the primary emphasis on destination-oriented trips, two important overall regional transportation goals are directly related to pedestrian travel:

»» *Reduce the percentage of trips to work by single-occupant-vehicles (SOV), and*
»» *Reduce the regional per capita Vehicle Miles Traveled (VMT).*

EXISTING CONDITIONS

According to the U.S. Census, American Community Survey (ACS) 2006-2010 estimate, 5,247, or 1.4% of the population aged 16 and older, walked to work, showing a decrease of .3% since the 2000 Census. Table 15 on page 39, in the Bicycle Element chapter shows the most recent data available from the American Community Survey on the "mode used to commute to work in the Tulsa TMA". While .3% is a small decrease in residents walking to work, planning efforts have been implemented in recent years to increase the use of walking to work as an alternative mode of transportation.

REGIONAL PROGRAMS AND POLICIES

Ozone Alert!

The Ozone Alert! Program is a voluntary program that began in 1992 in an effort to lower ozone and particulate matter in the air. Efforts focus on strategies to encourage commuters to ride the bus, carpool, and walk to work during the ozone season from mid-May to the end of September. Not only do these efforts contribute to supporting the goal of the Tulsa area to remain in attainment of EPA air quality standards, they serve to provide a healthier environment for the residents in the Tulsa TMA.

Green Traveler

Since 2006, INCOG has sponsored an online website, www. Green-Traveler.org, that provides registered users with information on carpooling, taking the bus, riding bicycles, and walking to work. There are two primary goals of the program:

- *Increase awareness of transportation options*
- *Reduce the number of single-occupant vehicles on the highway*

This program provides expanded options to commuters that do not own automobiles and it offers opportunities to lower transportation expenses for anyone who participates. A very important additional benefit is reduced congestion on the roadways and lower automobile emissions, supporting the goals of the Ozone Alert! Program.

Safe Routes to School

The Safe Routes to School Program (SRTS) is a 100% federally funded reimbursement program established by the August 2005 Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users Act (SAFETEA-LU) Transportation Bill. The legislation provided funding (for the first time) for State Departments of Transportation to create and administer SRTS programs which allows communities to compete for funding for local safety projects and educational initiatives. These funds, administered by the Federal Highway Administration (FHWA) Office of Safety, are available for sidewalk construction and improvements, as well as educational and safety training on walking and biking to school, and for the administration of the SRTS programs that benefit elementary and middle school children in grades K-8.

The intent of the program is:

- *To enable and encourage children, including those with disabilities, to walk and bicycle to school.*
- *To make bicycling and walking to school a safer and more appealing transportation alternative, thereby encouraging a healthy and active lifestyle from an early age.*
- *To facilitate the planning, development, and implementation of projects and activities that will improve safety and reduce traffic, fuel consumption, and air pollution in the vicinity of schools.*

The Tulsa TMA has received $1,763,592 in SRTS funding for 10 projects distributed throughout four counties and six municipal areas since its inception in 2007. All the projects have contributed to safety for school children, whether through improved sidewalks, pavement marking, signage, and/or training/educational materials promoting public awareness of safety in school zones.

Public/Private Partnership

A public/private partnership focusing on pedestrian/bicycle amenities in the TMA was the key factor in making improvements to the popular Tulsa River Parks Trail system along the Arkansas River. In 2007, privately funded George Kaiser Family Foundation committed $12.4 million for upgrades along the 11-mile trail route. The donation to the River Parks Authority resulted in the building of a dual-trail system for pedestrians and bikers, benches, fixed lighting, and several other much-needed amenities.

Sidewalk Policies

When Destination 2030 Long Range Transportation Plan was adopted in August 2005, most suburban communities required concrete sidewalks on both sides of arterial and collector streets, usually with a minimum of width of 4 feet on collectors and as much as 8 feet on arterials.

1. Sidewalks shall be required on both sides of residential streets and shall be established in the covenants or on the related privately funded public improvement (PFPI) project and on both sides of parkways, arterials and all residential collector streets. The relationship to existing and planned collector streets, trails, topography conditions, public convenience and safety, and the proposed uses of the land shall be considered in determining the requirement, arrangement, character, extent, width, grade and location of all sidewalks.

2. Sidewalks shall be within the dedicated right-of-way and constructed in accordance with specifications and standards of the City Public Works and Development Department or County Engineer or their designee as appropriate.

3. The Planning Commission may require, in order to facilitate pedestrian access to schools, parks, trails, playgrounds, churches, shopping centers or nearby streets, perpetual unobstructed easements of not less than ten (10) feet or more than 15 feet to provide adequate pedestrian circulation. Such easements shall be indicated on the plat.

Source: City of Tulsa

The City of Tulsa's street rehabilitation projects have endeavored to include a minimum construction of concrete sidewalks on at least one side of arterial streets. Although sidewalk requirements are present in subdivision regulations, the enforcement of the regulations has not always been universal. For those communities strictly enforcing sidewalk regulations, it has been the responsibility of the developer to construct the sidewalks.

Sidewalks, or access to trails, have been viewed as an amenity by the public. Neighborhoods with sidewalks and trails usually improve property values due to the presence of these facilities. In commercial and office districts, a public sidewalk generally abuts the adjacent street. Internal sidewalks to commercial or office development often provide access to and from parking areas. Many times, these sidewalk designs are not connected and do not accommodate pedestrians from the public sidewalk to the building.

Figure 18: 91st & Memorial, major arterial with no sidewalk at the intersection

To this end, the RTP encourages transportation and area city planners to ensure the continued construction of more sidewalks as well as the elimination of sidewalk gaps between public sidewalks and commercial or office developments, which can be efficiently achieved through the land development process in each of the communities.

Special attention should be paid to access to transit stops, park and ride lots, and other transportation connections.

FASTFORWARD, the Regional Transit Plan, October 2011, identified "transit system walk accessibility as limited", as one of its major findings. Corridor based planning for a multimodal, context sensitive approach to incorporate transit, bicycle and pedestrian facilities is recommended.

Figure 19: 61st & Lewis, easier access but multiple improvements still needed

Regional Trails Master Plan (1999)

The Regional Trails Master Plan completed in 1999 recognized sidewalks as a critical need in the Tulsa TMA:

> *Sidewalks are a critical need in the Tulsa Metro Area. They not only encourage walking, but they also improve the safety of pedestrians. An individual's decision to walk is as much a factor of convenience as it is the perceived quality of the experience.*

General recommendations were:

- *Sufficient width: Sidewalks should accommodate two adults to walk abreast (5' min.).*
- *Protection from traffic. Physical (and perceptual) separation can be achieved through a combination of methods: a grassy planting strip with trees, a raised planter, bicycle lanes, on-street parallel parking, and others.*
- *Street trees: Street trees are an essential element in a high quality pedestrian environment. Not only do they provide shade, they also give a sense of enclosure to the sidewalk environment which enhances the pedestrian's sense of security.*

Additional design guidelines recommended included: pedestrian-scaled signage and lighting; continuity of facilities to link on-site and adjacent developments and street corners; removal or relocation of sidewalk obstacles, such as street furniture and utility poles; and conformance with national standards, including American with Disabilities Act (ADA), ANSI, AASHTO.

Partnership for Sustainable Communities

In 2009, the Department of Housing and Urban Development (HUD), the Department of Transportation (DOT), and the Environmental Protection Agency (EPA) formed the Partnership for Sustainable Communities. The three large federal agencies agreed to collaborate to help communities become economically strong and environmentally sustainable.

Through the Partnership and guided by six Livability Principles, the three agencies are coordinating investments and aligning policies to support communities that want to give Americans more housing choices, make transportation systems more efficient and reliable, reinforce existing investments, and support vibrant and healthy neighborhoods that attract businesses. Each agency continues to incorporate the principles into its funding programs, policies, and future legislative proposals. The six livability principles are:

»» *Provide more transportation choices; promote equitable, affordable housing; enhance economic competitiveness; support existing communities; coordinate policies and leverage investment; and value communities and neighborhoods.*

The expanded definitions of the first and last principles apply more directly to transportation planning. "Provide more transportation choices" is explained further as: Develop safe, reliable and economical transportation choices to decrease household transportation costs, reduce our nation's dependence on foreign oil, improve air quality, reduce greenhouse gas emissions and promote public health. "Value communities and neighborhoods" is expanded as: Enhance the unique characteristics of all urban, suburban and rural communities by investing in healthy, safe and walkable neighborhoods.

FUNDING

Historically, multipurpose trails were funded primarily with local sales tax revenue and city bond issues as a part of park development. Sidewalks are included in new development, construction, and expansion projects. In recent years Transportation Enhancement funds, made available through SAFETEA-LU, have funded bicycle/pedestrian facilities and, to a much more limited degree, sidewalk renovation. Transportation Enhancement funds have provided improved opportunities for new sidewalk development, construction and expansion projects. In recent years, there has been a marked increase in the incorporation of sidewalk construction in private development projects, both commercial and residential. Neighborhood residents continue to be strong advocates for sidewalk construction or repairs.

The proposed system for 2035 should be funded by continued aggressive use and pursuit of available local, state, and federal funds; incorporating bicycle/ pedestrian needs into the design of future construction and expansion projects; coordination with land use planning; and seeking public/private partnership opportunities, including national and local foundations. Specific dollar estimates will be included as a part of the overall financial strategies for the RTP.

PEDESTRIAN SYSTEM ELEMENTS

The inclusion of pedestrian facilities should be specifically addressed in the design and planning phases for all new transportation projects. Arterial roadway projects selected for inclusion in the Transportation Improvement Program (TIP) within the TMA must show consideration of the appropriate provision of sidewalks or adjacent multipurpose trails. Local governments should adopt and enforce policies that address the provision of pedestrian facilities in conjunction with all new development and redevelopment.

Pedestrian elements that should be considered include:

»» *Sidewalks (width dependent on activity and adjacent buildings, must accommodate wheelchairs);*
»» *Multipurpose trails (bike paths);*
»» *Trail overpasses or underpasses of major roadways, railroads, or rivers;*
»» *Cut-through paths at the end of culs-de-sac;*
»» *Intersection and mid-block crosswalks (striping, raised or lighted pavement, signing, signal buttons/actuation, audible messages, and adequate crossing-time);*
»» *Curb ramps for wheelchairs or other mobility devices;*
»» *Tactile detectable warning surfaces for visually impaired persons;*
»» *Warning signs for drivers; and*
»» *Convenient access to bus stops and transit stations.*

Regional Sidewalk System

It is envisioned that in 2035 sidewalks or multipurpose trails will be provided along all major arterial roadways within the TMA. Convenient pedestrian access to urban centers and transit stops will be thoughtfully incorporated into all transportation projects.

As projects on existing roads throughout the region are implemented and adjacent development occurs, sidewalks should be constructed. Strong consideration should be given to complete missing sidewalk links where there is clear evidence of pedestrian activity, such as a

footpath through the grass. Sidewalks should be incorporated in plans for all new road construction.

Mission Statement

A comprehensive, coordinated approach to sound pedestrian facility planning is to identify needs and address those needs as an integral part of every transportation decision made, including all construction and rehabilitation work.

The primary method for planning and implementing sidewalks is through local rules and ordinances that require developers to construct sidewalks along new residential streets and within non-residential/mixed-use development sites. Local plans may also list specific locations for major pedestrian projects (such as under/overpasses or for new sidewalks along existing major roadways). Analysis of the gaps in the system should be conducted by local governments to identify specific sidewalk projects to include in plans or capital funding programs. Projects should be planned and constructed with consideration of the sidewalk.

Performance measures to enhance the system:

Develop and/or implement a Regional Pedestrian ADA Accessibility Action Plan

»» *Performance Measure: Complete plan or prioritize projects and begin implementation of plan by January 1, 2013.*

Identify missing gaps in the sidewalk networks and prioritize for construction

»» *Performance Measure: Number of miles of existing network gaps and number of miles constructed or scheduled for construction by 2035.*

Identify sidewalks in poor condition for rehabilitation and prioritize for repair

»» *Performance Measure: Number of miles of existing sidewalks in need of rehabilitation and number of miles repaired or scheduled for repair by 2035.*

Examples of Progress Made

Figure 20: Welcoming and attractive access to bike/ped bridge

Figure 21: Context sensitive design in Brady District accommodating bicycle parking, foot and wheelchair traffic

Figure 22: Improved handicapped access in Brookside on Peoria Avenue

Examples of Improvements Still Needed

Figure 23: Bus stop bench on Peoria Avenue, arterial with heavy commercial traffic

Figure 24: 61st Street arterial – no shelter or sidewalk at bus stop

Figure 25: 101st & Yale, major arterial intersection with elementary school and no sidewalks in any direction

Figure 26: Worn pedestrian footpath on arterial in 61st & Peoria area

Figure 27: Pedestrians in commercial/multifamily area on Peoria Avenue

BEST PRACTICE PRINCIPLES AND POLICY RECOMMENDATIONS FOR PEDESTRIAN FACILITIES

A. "Bicycling and walking will be incorporated into all transportation projects unless exceptional circumstances exist." (Federal Highway Administration (FHWA) Policy Statement on Accommodating Bicyclists and Pedestrians in Transportation).

»» Require and enforce the provision of pedestrian and bicycle facilities in all new and redeveloped areas, including commercial and residential areas, arterial and collector roads, transit stops, shopping facilities, schools, employment sites, and recreation facilities. Building and zoning ordinances should require and enforce bicycle parking at all major trip attractors.

»» In all urban and suburban areas, continuous sidewalks should be provided on at least one side of major streets and roadways (except freeways) and where possible, on both sides, detached from the roadway (preferred). Connections through developments and to the entrances of businesses, stores, schools, parks and other activity centers need to be established and maintained.

»» Where pedestrian volumes tend to be low- such as rural areas-wide, paved shoulders should be provided along arterials with adequate width (in accordance with local, state and national guidelines) to buffer the pedestrian from the traveled roadway.

»» Sidewalks and multi-use trails should be built to accommodate the needs of all pedestrians and shall adhere to all Americans with Disabilities Act (ADA) design and accessibility guidelines.

B. Limited-access highways can create barriers to bicycle and pedestrian travel. Bicycling and walking should be accommodated near or adjacent to limited–access highways through the provision of facilities along parallel roadways or within the highway right-of-way.

» Specific attention should be given to pedestrian needs in the design of intersections and traffic signalization.

»» Right turn on red should be prohibited where high pedestrian volumes exist.

»» Roadway lighting should be provided at pedestrian crossings and other locations where conflicts could arise between drivers and pedestrians.

C. Overpasses and underpasses to accommodate pedestrian and bicycle travel should be constructed to cross major obstacles such as freeways, rivers, or railways. As roadway overpasses and underpasses are constructed or reconstructed, accommodations should be made for pedestrians and bicyclists, in accordance with national standards.

D. Pedestrian and bicycle connections should be explicitly addressed as communities plan for transit services. All pedestrian or bicycle capital projects receiving federal funds should require the recipient to provide regular maintenance as outlined in a plan, ordinance or agreement.

»» Multi-use facilities should have: (a) connections to the local street system and with residential, employment, commercial, recreational, and school sites; (b) explicit signage regarding proper use of the facilities; (c) a minimum width to meet national standards; and (d) adequate lighting in underpasses and other dark areas.

»» Maintain existing pedestrian and bicycle linkages within development areas and provide new ones where appropriate and feasible. Cut through sidewalks/ trails at the end of culs-de-sac or unpaved footpaths are viable components of the transportation system.

»» Use the principles of context sensitive design solutions when designing, rebuilding, or restriping streets to incorporate pedestrian and bicycle facilities into existing and planned land use development. Traffic calming techniques should be considered where appropriate to improve safety for pedestrian and bicycle travel.

E. Educational, encouragement, and advocacy opportunities should be available to the community to gain support for pedestrian facilities and promote confidence in the use and safety of these facilities.

- *School districts are encouraged to develop a consistent and comprehensive bicyclist and pedestrian education program for children and parents.*
- *Bicycle clubs, bicycle shops, transportation-related activist groups, community colleges, health clubs, and other organizations are encouraged to provide education programs on how to ride a bicycle safely, including pedestrian rights and safety. School districts and senior centers are encouraged to develop and provide classes regarding the pedestrian aspects of traffic signal operations.*
- *Driver's license exams should continue to include questions on the legal rights and responsibilities of motorists, bicyclists, and pedestrians.*
- *The state is encouraged to develop and implement training programs and/or materials for motorists, pedestrians, and bicyclists on roadways and off-street, multi-use trails.*
- *Local governments, school districts, bicycle advocacy groups, and others should develop and disseminate maps to serve bicycling and pedestrian interests.*
- *Each local government should designate a bicycle and pedestrian coordinator.*

Sources include: American Association of State Highway Transportation Officials (AASHTO), Federal Highway Administration (FHWA), Department of Transportation (DOT), Federal Transit Administration (FTA, Regional plans in Denver, CO (DRCOG); Southeast Michigan (SEMCOG), and Washington, DC (Metropolitan Washington Council of Governments)

Bicycle & Pedestrian Plan Recommendations

INCOG Bicycle & Pedestrian Advisory Committee met over the past year and finalized their recommendations. Following is a short summary of objectives to be incorporated in area plans and programs.

- *Add 50 miles of on-street bikeways and 10 miles of multi-use trails.*
- *Implement innovative bicycle infrastructure as seen in AASHTO Bike Guide and NACTO Urban Bikeway Design Guide, including shared lane markings, bike lanes, cycle tracks, neighborhood greenways/bicycle boulevards.*
- *Provide convenient and secure bike parking throughout the city. (bike station, ordinances).*
- *Identify top 10 bike/pedestrian accident-prone areas and develop improvement plans that address safety issues.*
- *Install "Yield for Pedestrians in Crosswalk" (MUTCD R1-6) signs or rectangular rapid flash beacons in areas of high pedestrian activity where needed.*
- *Implement uniform ordinances to comply with state statutes.*
- *Establish a data collection program of Bike/Pedestrian traffic for all trips.*
- *Complete Bicycle & Pedestrian Master Plan for the region.*
- *Encourage biking/walking to Tulsa Transit with appropriate bike parking.*
- *Establish a transportation-oriented bike share system.*
- *Encourage public education component related to Bike/pedestrian safety on all transportation related information.*
- *Encourage Transportation Alternatives funding and related programs.*
- *Involve enforcement agencies on biking/walking law and implementation.*
- *Partner with health departments to provide physical education with bicycle and pedestrian safety lesson plans.*

Source: INCOG Bicycle & Pedestrian Advisory Committee Recommendations

Freight

2035 Freight Plan Highlights

- *Secure funding for Port of Catoosa Infrastructure*
- *Deepen/Widen navigation channel to in-land Port(s)*
- *Upgrade rail infrastructure*
- *Develop Multi-modal and Trans-modal infrastructure*
- *Maintain intra-regional freight network*

Performance Measures

- *Heavy/Wide load in Tonnage*
- *Employment in Freight sector*

Goods Movement: Transportation System

The Tulsa Region's freight system supports the basic functions of every resident and business in the area, carrying manufactured goods to local businesses, delivering food to grocery stores for local consumption, and providing the mobility necessary for the region's prosperity. The Connections 2035 Regional Transportation Plan (RTP) Freight Transportation Element examines the importance of freight and goods movement to the economy and quality of life of the Tulsa Region. It also highlights the multimodal aspects of the infrastructure that facilitates freight movement in the region, including two internal water-ports, an international airport, two Class I railroads, several short-line railroads, and trucking. These strategic regional facilities are well connected to one another and to the National Highway System (NHS). MAP-21 legislation further expanded the scope of goods movement with the recognition for intermodal connectors and principal arterials to enhance the NHS. The 2035 Freight Movement Plan map shows the enhanced NHS in the Tulsa TMA.

The Connections 2035 Freight Element takes a close look at the current state of the freight system and examines how this system may look in the future with the adoption of the strategies and investments detailed in the Connections 2035 RTP. Recommendations are developed acknowledging the importance of freight and goods movement and establishing the region's commitment to supporting economic development, comprehensive growth pattern, and environmental protection.

Tulsa is Oklahoma's second largest city. Railroad companies started operating services in the region in 1871, when the Atlantic and Pacific railroads extended their lines into Vinita and Muskogee. With the acquisition of the Atlantic and Pacific Rail Company by the Frisco Railroad, the first train crossed the Arkansas River to Tulsa, resulting in easy access to the city and, consequently, rapid growth. The implementation of the Santa Fe Railway in 1905 had a profound impact on the development of the city, which can be seen in the expansion of the city including several businesses established along the rail tracks and the alignment of downtown streets oriented in northeast-southwest and northwest-southeast directions at right angles, parallel and perpendicular to the Frisco railroad tracks. Later, new streets and blocks were added but still conformed to the rectangular system established by the rail tracks.

Rail Corridors

The Regional rail system includes two Class 1 rail facilities, Burlington Northern Santa Fe Railway Company (BNSF) and Union Pacific (UP). Together they operate on approximately 200 miles of track in the region, providing vital long-haul rail capacity to feed the needs of international and regional businesses. Five short lines operate approximately 66 miles of track in the area, supporting key regional industries and connecting markets within and beyond the Tulsa Region: Southern Kansas and Oklahoma Railroad (SKO), Tulsa-Sapulpa Union Railroad (TSU), Sand Springs Railroad (SS), Port of Catoosa (PC) and Stillwater Central. The two major commodities transported by the railroads in Oklahoma are coal and grain, with coal terminating in the state and grain being shipped beyond Oklahoma. The short-line railroads serve primarily as the connection between shippers and Class I rail carriers.

Class-I Carriers

Burlington Northern Santa Fe Railroad (BNSF)

BNSF has the largest rail yard in the area, located in Southwest Tulsa. Access to the BNSF yard is from I-244. Cherokee Yard is an intermediate classification yard handling industrial products that send traffic to all areas of the country. It has routes to Springfield, MO – Enid, OK – Madill, OK – Oklahoma City, OK – Ft. Scott, KS. The trains generally run east-west with bulk industrial products being the primary cargo. BNSF provides rail access to the Port of Catoosa and the manufacturing plants near the Tulsa International Airport. BNSF operates on about 150 miles of track in the Tulsa region with traffic consisting of mineral ore (15%), chemicals (30%), autos/metals (15%), forestry (5%), consumer (10%), agricultural (15%), and general

products (10%). Thirty-four trains are operated in a typical 24-hour period with fifteen trains originating and sixteen trains terminating in the Tulsa area.

Union Pacific (UP)[1]

The Union Pacific runs between Muskogee and Tulsa. They have a regional terminal facility located in Muskogee and a warehouse located near 51st Street South and Mingo, in Tulsa. Four trains per day are operated on about 40 miles of track at two train yards in the Tulsa area. The local UP cargo consists of sand, lime and dolomite, pulp, wood, lumber, plastics and miscellaneous products including syrup and sugar. In addition, the UP transports most of the coal utilized at electric generating plants outside the Tulsa Metropolitan Area in Chouteau, Muskogee, and Oologah.

Short-Line Carriers

Sand Springs Railroad[2]

The Sand Springs Railroad is owned by Gerdau Steel, which is also their primary customer. It operates service between downtown Tulsa and Sand Springs with 32 miles of track connecting freight cars daily with the BNSF, UP, and the South Kansas & Oklahoma Railroad (SKO). Their covered storage facility is multimodal and is 68,000 square feet. The primary commodities transported are silica sand, steel, pulp board, scrap iron, scrap paper, petroleum products, chemicals, plastic, lumber, and other merchandise.

The South Kansas and Oklahoma Railroad[3]

The SKO is a segment of the former Santa Fe line to Kansas City. The Company warehouse is located in Owasso between 76th Street North and 86th Street North, 1 mile west of Highway US-169. The trains run north out of Owasso and south to Tulsa connecting with BNSF and UP. It also serves the Port of Catoosa daily via an 8-mile track that goes from Owasso to the Port.

1 *Data used from Destination 2030 Plan.*
2 *ibid*
3 *ibid*

Tulsa-Sapulpa Union Railroad

The Tulsa-Sapulpa Union Railroad (TSU) is primarily a switch carrier between Class I carriers (BNSF and UP) and customers located on TSU railway. It serves the Metropolitan area, running from Sapulpa to West Tulsa to Jenks on a total of 23 miles of track. It is considered one of Oklahoma's oldest and smallest operating railroads. Ninety-five percent of rail traffic is inbound to customers.

The railroad serves St. Gobain Glass Plant, Prescor Inc. (maker of steel tank ends), Greenbay Packaging Inc, Atlantis Plastics, C.G. Martin Company (steel fabricator), Asphalt and Fuel Supply, Nalco, Premier Steel, and Technotherm Corporation (produces boilers and heatrecovery equipment). In January 2001, TSU became operator of UP track connecting Tulsa and Jenks and serving Holly Frontier East Refinery, Kentube, Pepsi Cola Co., and Kimberly Clark Corporation. TSU also has connection with the BNSF railroad at Sapulpa. With about 6,700 cars per year, the primary commodities transported are silica sand, pulpboard, limestone, and sodium carbonate.

Table 18: Characteristics of TSU in the TMA

Location	Sapulpa
Highway Access	SH-66 – Access from I-44 and local streets
Truck Service	Yes – truck to rail
Miles of Track in the Tulsa region	23 miles
Number of Rail Cars Daily Average	17
Primary Destination of Trains	Sapulpa – West Tulsa – Jenks Industries
Tons of Freight Daily	1,750
Inbound traffic to Tulsa metro area	95%
Outbound traffic from the Tulsa metro area to other points in U.S	5%
Average annual loaded car count	4,500
% of Traffic Routed Through Tulsa	None

Stillwater Central[4]

Stillwater Central operates a 97-mile line between Sapulpa and Oklahoma City. In Sapulpa, it interchanges the cars to BNSF, which then distributes the cars accordingly. In cases where Stillwater Central interchanges cars with SKO, SKO carries the traffic across to Tulsa.

Port Facilities: Assets and Operations

The Tulsa Port of Catoosa is located at the head of the navigation channel for the McClellan-Kerr Arkansas River Navigation System. The 445-mile waterway links Oklahoma and the surrounding five-state area with other ports in the U.S., and foreign and domestic ports beyond, by way of New Orleans and the Gulf Intra-coastal Waterway. The Port is owned jointly by the City of Tulsa and Rogers County and operated through a public trust authority appointed by both governments. The Port complex encompasses a 1,500-acre industrial park, offering fully developed sites for prospective industry, and five public terminal areas for public and private barge handling operations. The Port is accessible from I-44 and US-169 via SH-266 (Port Road), and SH-167, and is located about 8 miles northeast of Tulsa International Airport.

Figure 28: Tulsa Port of Catoosa Aerial View

4 *Data used from Destination 2030 Plan*

The 2,500-acre Port complex offers industrial sites for lease, and its Riverview Business Park, adjacent to the Port, offers property for sale. Together they are home to more than 60 companies employing more than 3,700 employees. The Port is served by most of the Nationwide contract carriers and averages over 450 trucks per day. Truck shipments are usually "next-day" requirements and average 20 short tons (400 cwt). Most truck shipments are to or from bulk storage at he Port's terminals or for plants in the general industrial park. Located near the geographic center of the U.S., truck traffic can reach either coast in just two days.

Figure 29: McClellan Kerr Arkansas River Navigation System

A wide range of dry bulk commodities, from fertilizer to pig iron, can easily be transferred between modes of transportation. Inbound and outbound systems can load or unload up to 400 tons per hour. Covered storage is available for 80,000 tons of material and open storage for 50,000 tons. The terminal is equipped with two pedestal cranes and an outbound loading conveyance system. The major product handled by these terminals is outbound hard red winter wheat, but inbound or outbound soybeans, oats, milo and millet can also be handled. Many types of bulk liquids, including chemicals,

asphalt, refined petroleum products and molasses are transferred and stored at seven private terminals at the Port.

Inbound shipping at the Port increased by nearly 30,000 tons in March 2012, as shipments of steel and fertilizer to the Port were substantially higher than in February 2012. Overall, total barge shipping at the Port in February 2012 was 274,162 tons, higher than one year ago -- March, 2011 -- by almost 52,000 tons.

In the first quarter of 2012, total shipping at the Port was 787,049 tons - 127,000 tons higher than the same period of time in 2011. It was also the best first quarter since the Port opened in 1971.

Outbound shipments of wheat also increased and the number of barges that travelled through the Port was higher in March 2012 also -- 153, compared to 136 in February 2012.

Barges hold as much as sixty semi-tractor trailers worth of cargo, or fifteen jumbo-hopper rail cars. The amount of barge cargo shipped through the Port on the waterway in March 2012 would have required an equivalent of 9,180 trucks. If these trucks had been placed bumper to bumper, they would stretch from Tulsa to Oklahoma City. The result is, of course, less congestion and therefore safer driving conditions. This also reduces wear and tear on our nation's roadways.

Total shipping for the Navigation System in March 2012 was 914,101 tons. Oklahoma's share of that total was 484,100 tons. Fifty-seven percent of the freight shipped through Oklahoma was handled by the Port.

Air Transportation

The Tulsa International Airport (TIA) is owned by the City of Tulsa and operated by the Tulsa Airport Authority. It was established in 1928 on a 390-acre tract but today it encompasses more than 4,000 acres just 10 minutes northeast of downtown Tulsa. The airport complex employs more than 17,000 people and is classified as a medium hub, primary commercial service airport by the FAA's National Plan for Integrated Airport Systems (NPIAS). It presently operates with 3 runways, along with parallel and connecting taxiways that provide aircraft access to the airport terminal and other airport facilities. Air Carrier, General Aviation, Military, and Air Taxi aircraft utilize these runways.

For 2011, total passengers were 2,794,290, a decrease of 467, 270 from 2008. The net decrease can be attributed to the slowdown in the economy and the presence of other competing airports.

For most of 2009, the airline industry struggled with a loss of revenue due to the recessionary economy. One of the cargo operators, Airborne/DHL, ceased operations in Tulsa during 2008. They vacated Cargo Building #1 which resulted in a significant decrease in cargo revenue. The number of available seats has fallen for the last several years, but remained stable throughout 2009 at around 5,000 seats per day. During 2009, United reinstated service to Los Angeles, and Frontier returned, serving Tulsa with service to Denver.

Richard L. Jones Jr., Airport (RVS) saw a drop in air traffic activity due to the economic recession. Both Riverside Flight Center and the Spartan School of Aeronautics experienced reduced flight training activity, which is the primary source of takeoffs and landings at RVS. The Authority continues to work with the Oklahoma Air National Guard (OKANG) on the development of a weapons depot and fuel farm facility. The Runway 8/26 repair project was completed in 2009 and includes the replacement of the two (2) arresting gear units on the runway used by the OKANG. During 2009 several large aircraft hangars were under construction or completed at TUL. The 80,000 square foot hangar for American Airlines was completed at Taxiway November and Aircraft Turbine Support finished their hangar on the west side of the airport. In addition, both Premier Jet Center and Omni Air began construction of aircraft hangars.

Plan Effectiveness

Financial Plan

The Connections 2035: Regional Transportation Plan is financially constrained. This fiscal constraint is designed to ensure that revenue will be available to build the planned improvements as well as fund the maintenance and asset management of the existing system across all modes of transportation.

Cost Considerations

Cost considerations were given to estimate the plan expenditure utilized costs estimates that were currently available based on year of expenditure. These estimates are based on several inputs from member entities.

- *ODOT 8-year Construction Program*
- *City of Tulsa Capital Improvement Program*
- *Estimates outside the 8-year Construction Program for critical pieces of infrastructure*
- *Cost of Operations as available from the existing transit service provider, MTTA*
- *All additional costs associated with Transit System Plan and High Capacity Transit Alternatives are assumed to have matching revenue streams, as identified in those plans.*

Expressways and Highway Interchanges are estimated to cost 32% of the total cost of maintaining and reconstructing the system. Arterials would cost approximately 28% of the total cost of Transportation Plan. Current Public Transportation represents 11% of total cost of the plan where as 1.3% of the plan expenditure is estimated to be toward pedestrian and bicycle linkages. These costs do not include costs incurred for residential streets or linkages outside of the significant transportation facilities. Table 10 illustrates the total cost and cost estimates.

TABLE 19: 2035 Cost Estimates Summary (In Thousands)

Facility/Source	Operating AND Maintenance Costs	Construction and Capital Costs	Total Costs	Percent of Total
Expressways	$161,040	$807,000	$968,040	23.39%
Turnpikes	$48,000	$164,000	$212,000	5.12%
Artierials	$751,560	$377,900	$1,129,460	27.29%
Highway Interchanges	$0	$370,000	$370,000	8.94%
Subtotal	$960,600	$1,718,900	$2,679,500	64.75%
Percent	36%	36% 64%	$5,359,000 64%	$5,359,000
Public Transportation (Current System)	$396,000	$55,000	$451,000	10.90%
Dedicated Public Transportation*	$400,000	$500,000	$900,000	21.75%
Bicycle/Pedestrian Links	$22,000	$86,000	$108,000	2.61%
Subtotal	$818,000	$641,000	$1,459,000	35.25%
Total	$1,778,600	$2,359,900	$4,138,500	100.00%
Percent	43%	57%	100%	

Revenue Estimates

The revenue was estimated using the most recent available information from local, state and federal agencies and organizations that have historically provided funding for TMA improvements. Following sources for Revenue Estimates are used:

- *ODOT State and Federal Budget Estimates*
- *City of Tulsa Public Works Operations and Capital Budget Estimate*
- *City of Tulsa Sales Tax and Bond Program*
- *City of Broken Arrow Bond Program*
- *Other municipal and County estimates*
- *FTA support for Tulsa Transit program*
- *Oklahoma Turnpike Authority*
- *INCOG Federal Obligation Report*
- *Enhancement Projects Revenue*

In addition, the revenue available for future transit expansion in the areas of corridor-based improvements as well as potential high-capacity improvements and the turnpike portions of spending is assumed to come from the respective entities through dedicated monies.

Local resources (cities and counties) are estimated to provide 30% of the total revenue. About 22% of the total is estimated for implementation of the Public Transportation System Plan, which is contingent upon that revenue stream. Table 11 illustrates the total revenue estimates.

Table 20: 2035 Revenue Estimates Summary

2010-2035 Cost and Revenue Estimates Summary in '000s

Revenue Source	Estimated Revenue in '000s
Local	$1,233,940
ODOT (State/Federal)	$1,123,175
Federal/Urbanized Area	$312,500
OTA	$212,000
Public Transportation (Current System)	$451,000
Dedicated Transit/City/Federal	$900,000
TOTAL	$4,232,615

Environmental Review

The 2035 Long Range Plan Update continues strategies employed for the 2032 Plan update as well as the Destination 2030 Plan to mitigate social and environmental impacts of proposed improvements. The 2010 Census based demographic baseline is used for mapping the block group level for social and environmental regions.

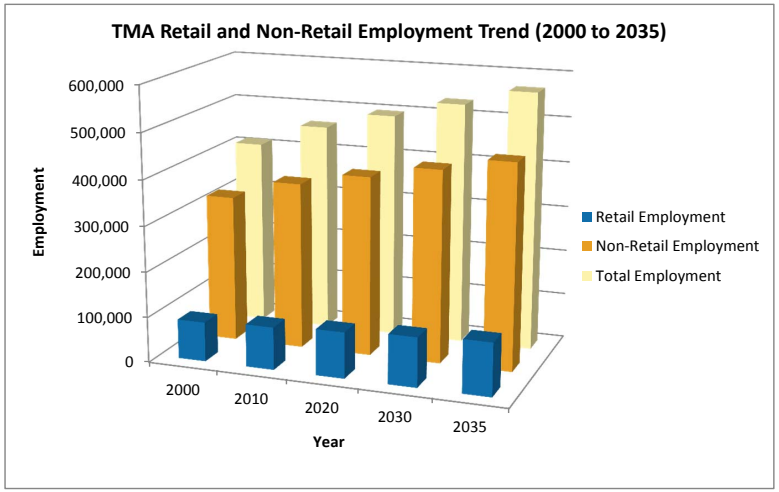


Figure 30: Tulsa Metro Area Retail and Non-Retail Employment

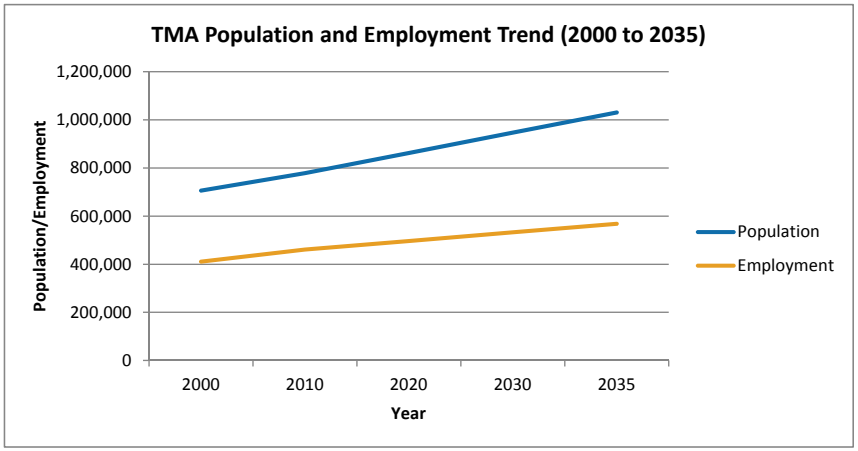


Figure 31: Tulsa Metro Area Population and Employment Trend

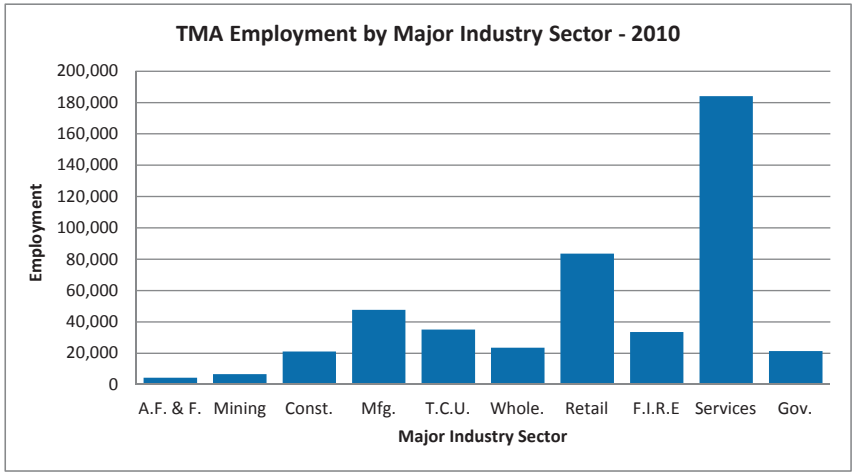


Figure 32: Tulsa Metro Area Employment by Industry

Social Sensitivity

Regionally significant roadway projects that are deemed to have any potential impact toward socially sensitive areas are listed in Table 19. The following significant projects from that list are committed, under construction or in design stage, having completed the majority of required environmental documentation. They are:

- *US-169: I-244 to SH-20 (6 Lanes)*
- *Gilcrease Expressway: I-44 to Tisdale Expressway Environmental Assessment Completed*

Environmental Sensitivity

In addition to the list of roadway projects in Tables 3 and 4 on pages 11 and 12 of the Roadways Element, Table 21 below lists roadway projects that have potential impact on Environmentally Sensitive Areas (ESAs):

Table 21: List of Roadway Projects Impacting Environmentally Sensitive Areas

Project	Project Description
I-44 (East)	SH-66 to Creek Turnpike
I-44 (West)	I-244 to US-75
SH-20	US-75 to US-169
SH-72	SH-51 to 161st St. South
US-169	I-244 to 71st St. South
US-169	I-244 to SH-20 (116th St. North)
US-169	91st St. South to Memorial Drive
US-75	I-44 to SH-67 (151st St. South)
US-75	SH-11 (Gilcrease Expressway) to 86th St. North
Gilcrease Expressway	I-44 to LL Tisdale Ave.
11th St. South	129th East Ave to 145th East Ave.
12th Street	SH-97 to Adams Rd.
31st St. South	Garnett Rd. to 129th East Ave.
36th St. North	Cincinnati Ave. to Osage Drive
61st St. South	Riverside Drive to Harvard Ave.
61st St. South	US-75 to 49th W. Ave.
76th St. North	US-169 to 129th East Ave.
81st St. South	Lewis Ave. to Sheridan Rd. and Garnett to SH-51
91st St. South	Delaware Ave. to Memorial Dr. & Garnett to 193rd E. Ave.
145th East Ave.	I-44 to 41st St. South
177th East Ave.	51st St. South to 101st St. South
193rd East Ave.	I-44 to 121st St. South
Admiral Place	Garnett Rd. to 129th East Ave.
Garnett Rd.	11th St. South to Pine St.
Memorial Drive	I-44 to 151st St. South
Peoria Ave.	61st St. South to Riverside Drive.
Pine St.	SH-11/Gilcrease Expressway to SH-66
Pine St.	25th West Ave to Union Ave.
Port Road Extension	SH-11 to Sheridan Rd.
Riverside Drive	Houston to 121st St. South
Sheridan Rd.	Apache St. to 36th St. North (Port Road)
Union Ave.	51st St. South to 91st St. South
Yale Ave.	Pine St. to Apache St.
SH-97/Wilson Rd.	2nd St. to Morrow Rd.
41st St. South	Union to 33rd West Ave.
71st St. South	US-75 to Arkansas River
91st St. South	Elwood Ave. to Peoria Ave./Elm St.
101st St. South	Riverside Drive to SH-51
Harvard Ave.	91st St. South to 101st St. South
Lewis Ave.	81st St. South to 91st St. South
Memorial Drive	I-44 to 151st St. South
Peoria Ave.	61st St. South to Riverside Drive
Riverside Drive	Houston to 12st St. South
Yale Ave./Yale Place	121st to 131st St. South (include River Bridge)

Air Quality

Primary Pollutants, Hydrocarbons (HC), Nitrogen Oxides (NOx) and Carbon Monoxide (CO) have not exceeded the 2010 base year modeled estimates for the plan year 2035.

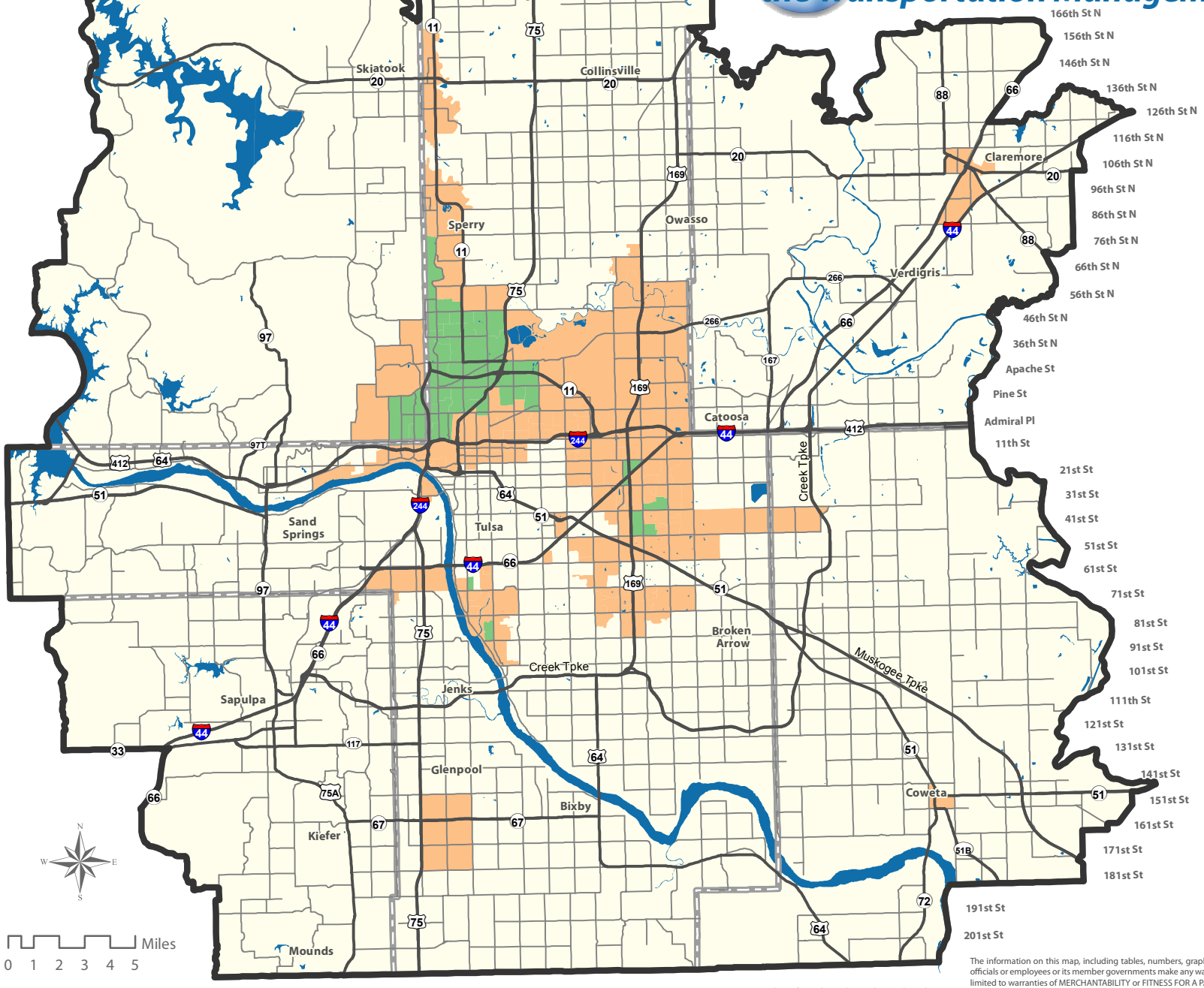
INCOG has transitioned to the Environmental Protection Agency (EPA) recommended MOVES Model that is used as the basis for Connections 2035. However the national setting for vehicle mix is used because of lack of complete inventory of vehicles by type and use at the present time. Over the next planning period, INCOG will develop the local vehicle mix for further analysis. Hence the pollutant estimates are to be used for guidance purpose only and not for the SIP purpose. A SIP level of analysis shall be conducted before any estimates are used for conformity or SIP purpose if the area is designated as a non-attainment area under any NAAQS.

Table 21: Three Primary Pollutants from Mobile Sources - 2010 and 2035

Pollutant	2010	2035	Change in Tons	Change in Percent
HC in tons/day	*26.5*	*5.7*	*-20.8*	*-78.4 %*
NOx in tons/day	*59.5*	*6.9*	*-52.6*	*-88.4 %*
CO in tons/day	*339.5*	*127.5*	*-212.0*	*-62.4 %*

Figure 33:

All Minority Population Concentrations within the Transportation Management Area



Legend

Total All Minority Groups

Index Score

- Less than 1.00
- 1.01 to 1.99
- Greater than 2.00
- Highways
- Arterial Streets
- Bodies of Water
- County Boundaries
- TMA Boundary

Total Population for TMA = 778,051

Total of All Minority Groups within the TMA = 228,344

Percent All Minorities within TMA = 29.35%

Index Score is the comparison of the percent of the minority population for the block group to the same percentage of minority population for the whole TMA. The higher the number the greater the concentration of minority population

Geography - 2010 block groups
Data 2010 Census SF-1 data file

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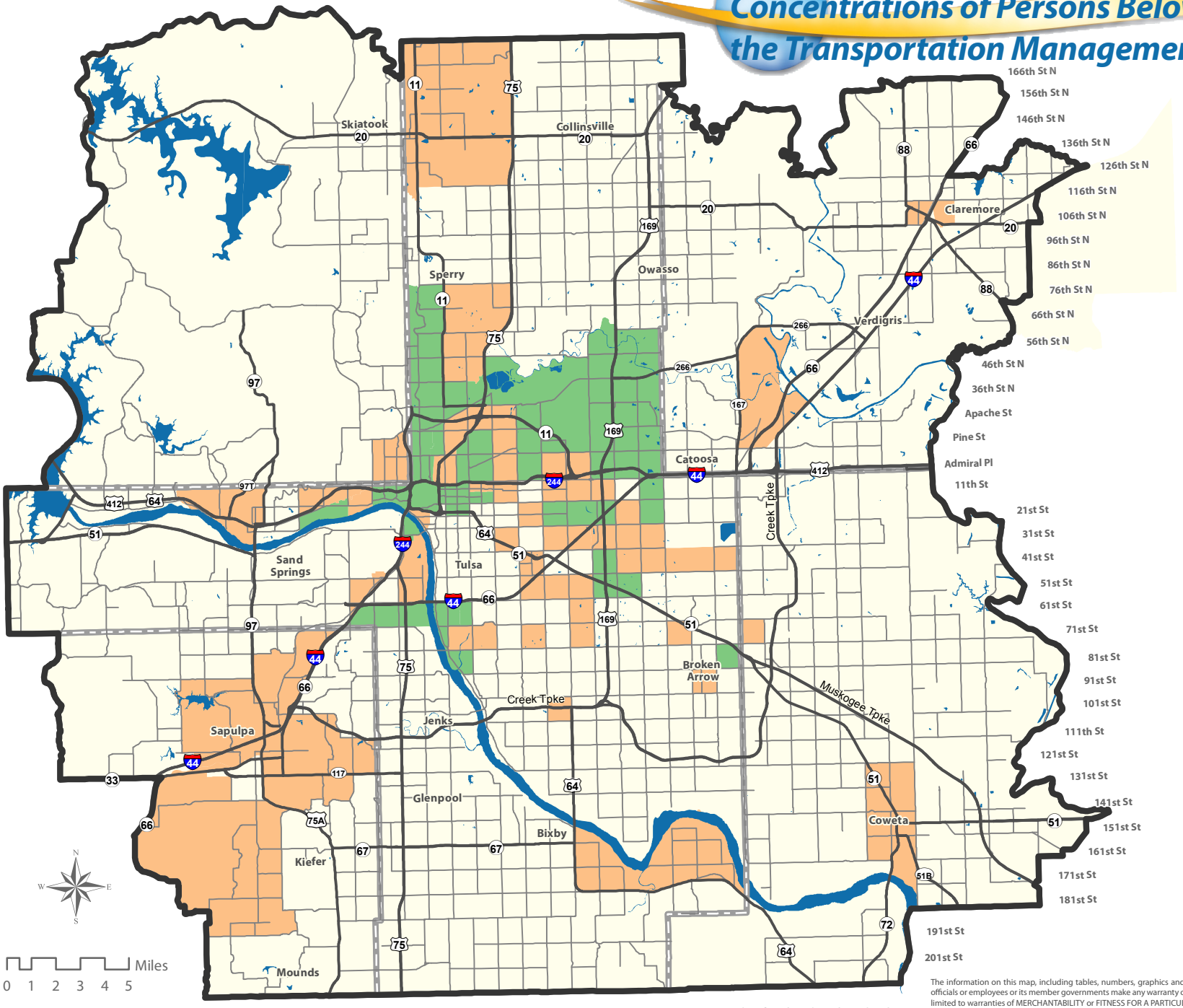
Figure 34:

Concentrations of Persons Below Poverty within the Transportation Management Area



Legend

Persons Below Poverty

Index Score

- Less than 1.00
- 1.01 to 1.99
- Greater than 2.00
- Highways
- Arterial Streets
- Bodies of Water
- County Boundaries
- TMA Boundary

Total Population for whom poverty status is determined within the TMA = 752,096

Total Population below poverty within the TMA = 104,525

Percent Population below poverty within the TMA = 13.9%

Index Score is the comparison of the percent of the population below poverty for the block group to the same percentage of the population below poverty for the whole TMA. The higher the number the greater the concentration of the population below poverty.

Geography - 2010 Census Tracts, Data 2006-2010 ACS

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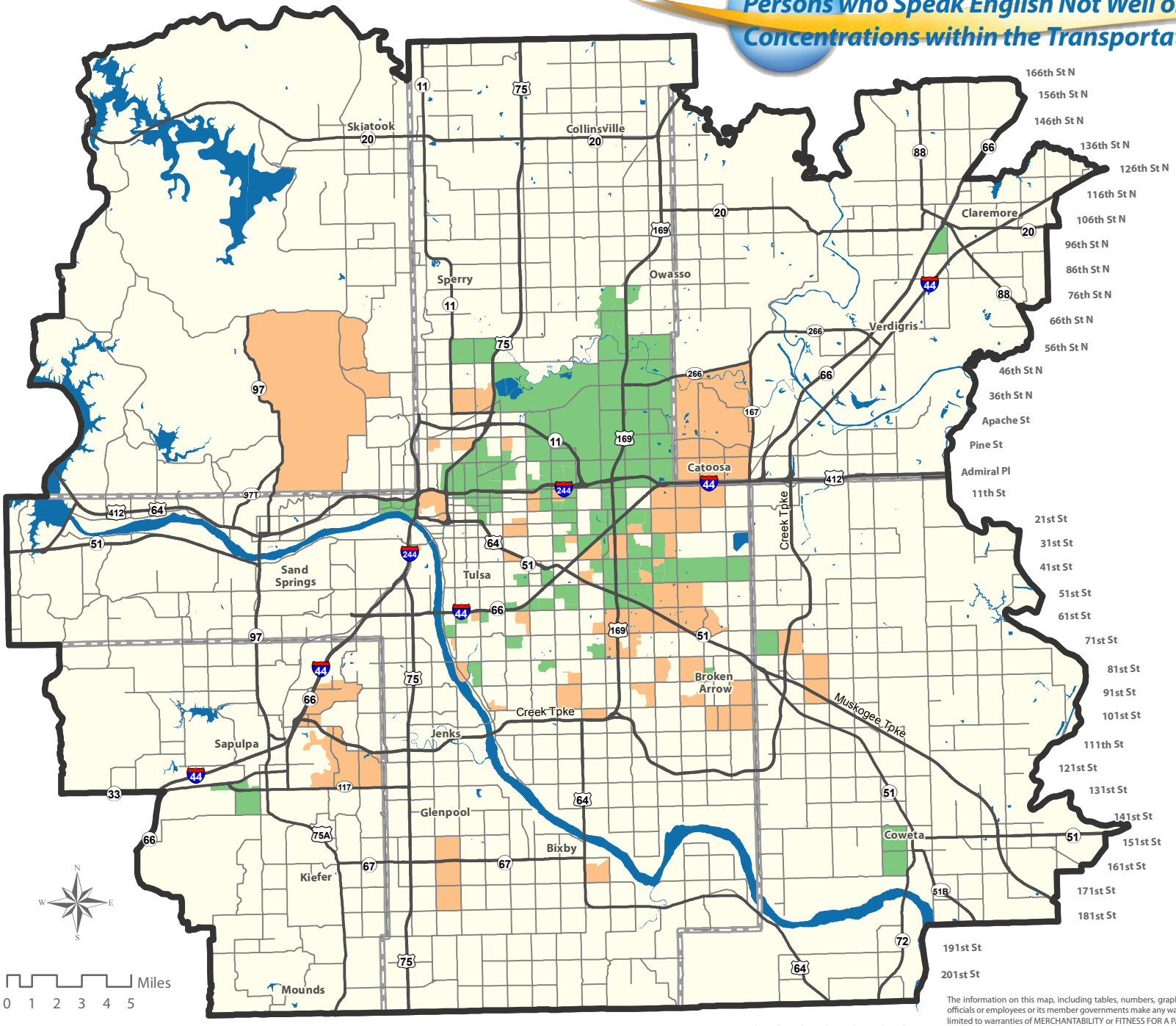
Figure 35:

Persons who Speak English Not Well or Not at All Concentrations within the Transportation Management Area



Legend

Persons who Speak English not well or not at all

Index Score

- Less than 1.00
- 1.01 to 1.99
- Greater than 2.00
- Highways
- Arterial Streets
- Bodies of Water
- County Boundaries
- TMA Boundary

Total Population within the TMA 5 Years & Older = 706,997

Total Population 5 years and older that speak English not well or not at all within the TMA = 17,519

Percent Population 5 years and older that speak English not well or not at all within the TMA = 2.48%

Index Score is the comparison of the percent of the population 5 years and older that speak English not well or not at all for the block group to the same percentage of the population 5 years and older that speak English not well or not at all for the whole TMA. The higher the number the greater the concentration of the population 5 years and older that speak English not well or not at all.

Geography - 2010 block groups, Data 2006-2010 ACS

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Public Involvement

Public Participation Process

Public Participation is the process by which interested and affected individuals, organizations, agencies, and government entities are consulted and included in the decision-making process.

Mission Statement

Public participation is a continuous effort to collect input and meaningful information from the users of the transportation system. Public participation processes inform interested and affected individuals, groups, agencies and organizations about specific decisions likely to affect their lives, ensure that planning and decision-making consider views and inputs from stakeholders, and resolve issues and problems taking into consideration multiple interests and concerns.

Above all, public participation processes encourage citizens and organizations to take an active participation in their community-related transportation issues, building a relationship for better communication and cooperation.

Public Participation Procedures

INCOG maintains a website where citizens can review posted information and send comments via online forms and email. The website hosts information of interest to the public: meeting schedules and agendas, the Regional Transportation Plan (RTP), the updated Transportation Improvement Program (TIP), planning products available from INCOG, and demographic and traffic data. A brochure with a brief description of the regional transportation planning process is also published and distributed as widely as possible. In addition, the INCOG database will be used to provide citizens, affected public agencies, emergency response agencies, representatives of public transportation employees, freight shippers, providers of freight transportation services, private providers of transportation, representatives of users of public transportation, representatives of users of pedestrian walkways and bicycle transportation facilities, representatives of persons with disabilities, and other interested parties with a reasonable opportunity to comment on the RTP and TIP and become involved with the transportation planning process, as per federal regulations.

Specific Environmental Justice (EJ) and Limited English Proficiency (LEP) Considerations

State and Federal policies and regulations, including EJ initiatives, reinforce the need of agencies to focus attention on reaching low-income and minority households. To include traditionally underserved communities in the decision-making process, it is necessary to identify key stakeholders that have low or no participation, what is preventing them from participating, and what can be done to overcome barriers and increase the levels of participation. Some explanations for the lack of participation include cultural and language barriers, disabilities, economic constraints, and lack of participation opportunities. To ensure that cultural and language barriers are overcome, LEP procedures will be implemented, such as making information readily available and having documents translated and public notices broadcasted for Spanish-speaking populations. Meetings and/or public hearings shall be made accessible and user-friendly for all stakeholders, taking into consideration convenient locations and schedules. In addition, INCOG will provide appropriate accommodations for citizens with hearing and/or sight impairment. Effective participation, education and communication shall be tailored to specific non-traditional transportation stakeholders and problems.

"According to 2006-10 American Community Survey data, 17,519 people (2.5%) in the Tulsa TMA do not speak English well or not at all." To reach the LEP population, an analysis outlined in the Department of Transportation policy guidance will be followed:

The number or proportion of LEP persons eligible to be served or likely to encounter by a program, activity, or service of the recipient or grantee.

1. The frequency with which LEP individuals come in contact with the program.
2. The nature and importance of the program, activity, or service provided by the recipient to people's lives.
3. The resources available to the recipient and costs.

Various provisions of SAFETEA-LU, the federal transportation law, require expanded consultation and cooperation with Federal, State, Local and Tribal agencies responsible for land use, natural resources, and other environmental issues. Throughout the planning process INCOG will seek to engage and will incorporate comments from such agencies.

Regional Transportation Plan

The Regional Transportation Plan (RTP) has at least a 20-year horizon and is necessary for the effective programming and implementation of transportation improvements. The RTP is predicated on demographic and economic assumptions and forecasts for the region. It identifies the various transportation systems: roadways, public transportation (or transit), bicycle/pedestrian, and freight systems desired for the metropolitan community, as well as how the transportation modes interrelate with each other. The RTP summarizes the costs of the investments that will be needed and the resources necessary and expected to achieve the recommended improvements. The RTP also summarizes the resulting effects or impacts such investments will produce. The RTP serves as a guide for the investment of local, state, and federal resources and becomes a component of the Oklahoma Statewide Intermodal Transportation Plan. The RTP serves as the foundation for plans to improve the overall transportation system. Public participation is an integral part of the RTP, and the plan itself must reflect the desires of the communities within the region to help them attain their transportation goals. To this end, INCOG, in addition to its outreach efforts as required by federal and state laws, will seek to interact with specific groups through the following means:

Neighborhood/Homeowners' Associations – Speak during neighborhood meetings with particular groups that are directly affected by a proposed project.

Business Professionals – Meet with Young Professionals of Tulsa, local business leaders, Tulsa Transportation Club and similar organizations, Chambers of Commerce, etc. to gain insight into needs/desires of the particular group.

Schools – Attend events at Tulsa Community College, Tulsa Technology Center, public and private schools (elementary, middle, and high schools), and others as appropriate to discuss plans, projects or general awaress of programs.

Churches/Religious Institutions – Visit neighborhood and/or community religious venues located in the impacted areas to create awareness and gain feedback from attendees.

Media Representatives – Launch a media campaign that targets reporters who have worked with INCOG in the past and forms new relationships with representatives from various media types including television, newspaper, and radio.

Elected Officials/Community Representatives – Engage local elected officials, community planners and planning commissions on a regular basis .

Civic/Focus Groups and Emergency Response Agencies – Speak with organizations at their regularly scheduled meetings. Also host focus retreats, as in the past, to encourage participation from particular organizations and businesses with a vested interest in transportation.

As a part of the RTP development process, INCOG will prepare a detailed list of objectives and procedures to obtain public participation as it relates to the RTP. This detailed list will be based upon these general guidelines:

Early and Continuing Public Participation – INCOG will educate the public on the process from the beginning and continue the educational process throughout the transportation plan development. A visioning session will start the process to establish broad-based goals for the region that will reflect what is important to local residents for the future. Additionally, a contact list based upon previous public participation efforts, including civic groups, neighborhood associations, Chambers of Commerce, special interest groups, and other interested parties will be updated on a continual basis. When appropriate, INCOG will conduct PowerPoint and descriptive presentations as well as other visualization techniques to describe plans.

Timely Information – INCOG will provide information about transportation issues and processes to interested parties and citizens affected by the transportation plan. Possibilities include but are not limited to: providing news releases to local media outlets, producing and mailing newsletters that will also be made available at local libraries, publishing a Web-based newsletter, attending area community group meetings (Rotary Club, Kiwanis, etc.) to disseminate information, and talking with area public officials to encourage them to reach out to local civic groups within their districts.

Reasonable Public Access – INCOG will seek out opportunities to participate in existing meetings or events to educate and/or involve the public. INCOG will further provide citizens and interested parties affected by the transportation plan opportunities to view technical and policy information used in the development of the plan. This will include holding focus group sessions to review information, providing a summary of detailed demographics, and disseminating demographic details in a newsletter to be available at area libraries. Adequate Public Notice – INCOG will provide public notice of public participation activities and public review and comment periods at key decision points. Notices of public meetings will be posted in area newspapers, libraries and on the INCOG website. Invitations will also be sent to the established contact list.

Explicit Consideration and Response – INCOG will follow the process as defined in the respective plan or program for demonstrating to the public that their input during the planning and development process was received. All comments received will be documented along with specific responses to significant comments. The comments and responses will be made available via website, newsletter, and the final document.

Seeking Out and Considering the Needs of Those Traditionally Underserved – INCOG will identify concentrations of traditionally underserved households (such as low-income and minority households that face challenges for accessing employment and other amenities) within the region and pursue opportunities to encourage public participation from these communities. INCOG will provide interpreters to overcome language barriers as needed, publish educational materials about the process in bilingual formats, and submit news releases to local media outlets that serve these groups. Other activities will be defined on a plan-by-plan basis.

Periodic Review –The effectiveness of the Public Participation Plan will be reviewed to ensure it provides full and open access to all, and portions of the process that are not meeting the needs of our constituency will be revised. After a public participation activity has taken place, INCOG will evaluate its effectiveness and incorporate desired changes based upon that evaluation.

As part of these general guidelines, there will be a 30-day comment period before the RTP will be formally adopted or amended. In addition, public notices will be published in local newspapers, and press releases will be sent to local media prior to public review periods and hearings. All INCOG Transportation Technical Committee, Policy Committee, and Board of Directors meetings are open to the public, and all public meetings are held at handicap-accessible locations.

Documentation Process

In accordance with federal regulations, INCOG documents all aspects of the public participation process. This information includes:

- *»» Sign-in sheets;*
- *»» Meeting minutes;*
- *»» Outreach materials; and*
- *»» Various other essential meeting details and data*