

Chapter 7 Current System Strengths and Weaknesses

Introduction

This chapter addresses major strengths and weaknesses of the State’s intermodal transportation, as defined by current conditions, anticipated future needs, funding and other resource challenges, and the institutional and policy environment within which continued construction, operation, and maintenance of transportation infrastructure and services are and will be provided. The assessment of strengths and weaknesses has been developed through ODOT and other agency inventory information, and feedback from interviews with advisory group members. Physical and operational conditions and their contribution to transportation programs of national significance, such as the NHS, are considered. This assessment provides a baseline for developing future solutions and implementation strategies.

The context for evaluating the strengths and weaknesses of Oklahoma’s transportation system is found in the following concepts, which were used by ODOT as the starting point for development of the State’s 2035 Long Range Plan. These statements about the purpose of the Plan reflect consideration of federal guidelines and the State’s transportation needs:

- ▶ Adopt a “preservation first” strategy for investment priorities
 - ▶ Increase mobility and accessibility options
 - ▶ Provide sufficient revenue for the transportation system
 - ▶ Increase transportation system safety for automobiles, trucks and motorcycles, pedestrians, and bicyclists
 - ▶ Increase transportation system security
 - ▶ Improve the quality of life
- ▶ Enhance the transportation system to support economic activities
 - ▶ Protect and enhance the environment
 - ▶ Enhance integration and connectivity of the transportation system
- Objectives arising from these goals, and relevant to the identification of transportation system strengths and weaknesses, include:
- ▶ Orientation toward economic development goals and how the transportation system and ODOT can work in tandem with other state, local, and private interests to advance economic development possibilities
 - ▶ Encouragement of improvements to enhance and build on logistics, warehousing, and distribution center developments in southern Oklahoma and elsewhere in the state, and to improve the overall efficiency of goods movement for Oklahoma shippers
 - ▶ A corridor approach, continuing work on the Transportation Improvement Corridors identified in previous plans
 - ▶ Stakeholder outreach and public involvement, including updating contacts with selected stakeholders and involving advisory groups that represent transportation system providers and users for the movement of both passengers and goods
- Also, there are new, more recent objectives based on defined local needs and SAFETEA-LU requirements. A series of statewide planning factors, which are codified in 23 USC 135(c)(1) (A-G), address the following:
- ▶ Supporting the economic vitality of the United States, states, and metropolitan areas
 - ▶ Increasing the safety and security of the transportation system for motorized and non-motorized users
 - ▶ Increasing the accessibility and mobility options available to people and for freight



- ▶ Protecting and enhancing the environment, promoting energy conservation, and improving the quality of life
- ▶ Enhancing the integration and connectivity of the transportation system, across and between modes throughout the state for people and freight
- ▶ Promoting efficient system management and operation
- ▶ Emphasizing the preservation of the existing transportation system

Other factors include, but are not limited to, funding uncertainties, potential air quality concerns, and how best to address climate change and energy dependency. Also important are links between selected projects and other high-priority state and national initiatives.

ODOT initiated the 2035 Long Range Plan process by discussing the aforementioned priorities with the Advisory Committees and the public. After a series of meetings, the 2035 Plan goals solidified around the following themes: safety and security, travel options for people, new issues (environment, energy, and livability), system preservation and operation, and freight and the economy. Chapter 2 provides additional details about the public involvement process for the Plan. The Plan goals are stated as follows:

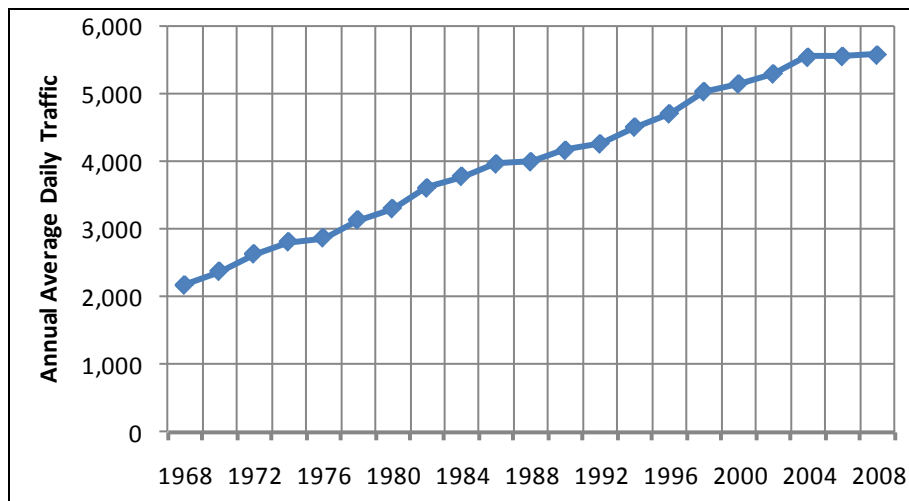
- ▶ Increase the safety of the transportation system for motorized and non-motorized users
- ▶ Improve safety for all modes
- ▶ Increase the security of the transportation system for motorized and non-motorized users
- ▶ Increase accessibility and mobility options available to people
- ▶ Enhance integration and connectivity of the transportation system
- ▶ Protect and enhance the environment
- ▶ Promote energy conservation

- ▶ Improve the quality of life
- ▶ Emphasize the preservation of the existing transportation system
- ▶ Promote efficient system management and operation
- ▶ Enhance integration and connectivity of the transportation system, across and between modes throughout the state for people and freight
- ▶ Support economic vitality

State Highway System and Designated State Corridors

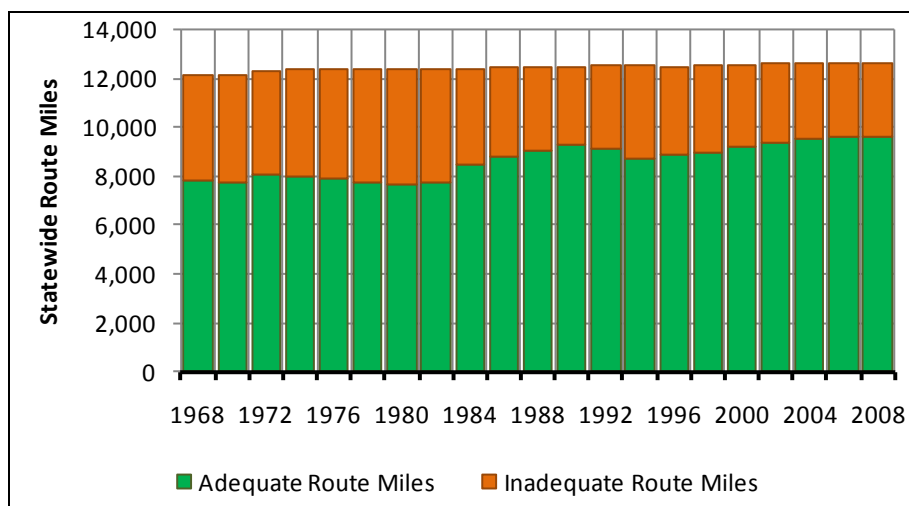
An understanding of the historic extent, use, and condition of the State Highway System (SHS) provides a first step in identifying its strengths and weaknesses. One source of this information is the biennial *Needs Study and Sufficiency Rating Report*. **Figure 7-1** illustrates the 1968 to 2008 record of traffic using the SHS and shows a strong, sustained growth trend with a gradually declining growth rate over this period. This growth leveled off in 2004. Annual traffic has changed little during subsequent years, but traffic volumes likely will resume growth upon national and state economic recovery.

The SHS itself has changed little in route length over this 40-year period, but the number of system lane-miles has grown as needed to support traffic growth. The percentage of inadequate miles has decreased from 30 percent in 1994 to 23.5 percent in 2008. Total route miles by sufficiency category are illustrated in **Figure 7-2**. In the 2009 *Needs Study and Sufficiency Rating Report*, the sufficiency rating reflects road design adequacy, physical condition, and level of service, with a maximum score of 100 points. A score below 70 results in the road being considered inadequate.



Source: 2009 Needs Study and Sufficiency Rating Report, Oklahoma DOT.

Figure 7-1. Annual Average Daily Traffic on the Oklahoma State Highway System



Source: 2009 Needs Study and Sufficiency Rating Report, Oklahoma DOT.

Figure 7-2. 1968-2008 Oklahoma State Highway System Route Miles, by Sufficiency Category



Types of State Highway System Improvements

According to the 2009 Needs Study, ODOT's experience in addressing SHS deficiencies has seen the average construction cost per mile increase approximately nine times between 1968 and 2008. The cost to construct a mile of two-lane highway with 8-foot paved shoulders on a new alignment is now nearly \$1.9 million compared to \$204,000 in 1968. A contributing factor to this increase is that the urban area proportion of deficient mileage has grown from 10 percent in 1968 to 20 percent in 2008, and the cost of improving urban roads is higher than the cost of improving rural roads.

Future Improvement Needs for the State Highway System

The Needs Study includes a 20-year projection of funding needs in light of the aforementioned deficiencies, together with proposed additions to the SHS. The 20-year funding need for identified deficient roads is \$27.5 billion, but only \$10.6 billion in known revenue sources for that purpose is forecasted, resulting in a shortfall of \$16.9 billion. After adding 20-year continuing SHS maintenance needs and the costs and funding sources for highway engineering and administration, the total cost becomes \$43.7 billion, offset by projected revenues of \$19.6 billion, leaving an unfunded balance of \$24.1 billion.

State Highway System Strengths and Weaknesses

Strengths

- ▶ Despite funding challenges, ODOT has been able gradually to reduce the backlog of inadequate roads on the SHS. This includes work to date regarding widening, alignment improvements, and maintenance of roads and bridges, especially with GARVEE projects.

- ▶ Over 211 miles of interstate pavement have been rehabilitated or reconstructed since 2003, and an additional 90 miles are included in ODOT's 8-Year Construction Work Plan. The interstate system, which carries most of the vehicle miles of travel in the state, is 92 percent adequate.
- ▶ Between 2004 and 2010, ODOT reconstructed or rebuilt 111 of 150 load-posted bridges on the SHS.
- ▶ The installation of median barriers has reduced crossover collisions and fatalities on high-volume, high-speed four-lane highways. A before and after study of 50 miles of roadway where cable barriers were installed over the past decade revealed an 84-percent decrease in crashes (63 before, 10 after) and a 94-percent decrease in fatalities (18 before, one after). A total of four years of data (two years before cable barrier installation, two years after) were reviewed in the ODOT study.
- ▶ There were 646 fatal collisions on Oklahoma roadways in 2009. The number of fatalities on all public roadways in the State decreased by four percent from 2007 to 2009. Fatalities on the State Highway System (non-toll interstates, U.S., and State Highways) decreased 16 percent between 2007 and 2009.
- ▶ The SHS has a great deal of redundancy—particularly in the urban regions—allowing for rerouting of traffic during construction or incidents. This redundancy may be something to develop further on the rural system.
- ▶ Through the use of ITS, there have been multiple ways to communicate valuable information to roadway users, including weather conditions, wide load hazards, and potential traffic delays.

Weaknesses

- ▶ There is a large projected shortfall in funding future improvement needs. In addition, the

nature of SHS improvement needs may change over time.

- ▶ Maintenance and improvement or replacement of bridges is an ongoing major challenge, especially with regard to truss bridges, which typically have load and clearance restrictions that will be increasingly problematic.
- ▶ At the beginning of 2010, there were 796 structurally and 600 functionally obsolete bridges on the SHS. This represents about 20 percent of all the bridges on the SHS.
- ▶ Almost 4,700 miles of Oklahoma highways are rural two-lane highways without paved shoulders. (Total number of non-toll miles is 12, 280 miles.)
- ▶ Development along the SHS in urban and suburban areas can result in multiple commercial driveways (“curb cuts”), which create more travel demand and safety issues with conflicting turn movements. Without adequate access management, a proliferation of commercial driveways causes traffic congestion and the crash rates generally increase.
- ▶ Population shifts throughout the state are a challenge. Travel needs change as changes occur in the places where people live, work, shop, or travel. The current SHS reflects travel patterns of the past but must reflect future needs. Road connectivity and capacity will need to keep pace with these changes.

Transportation Corridors

Definitions

Three types of transportation corridors are identified in the 2035 Long Range Plan:

- ▶ **Transportation Improvement Corridors**
These are highway corridors where projected traffic volumes indicate additional capacity will be needed by 2035.
- ▶ **National High Priority Corridors** These are Congressionally identified corridors of national significance. Funding was provided either directly or indirectly for these corridors in the current (SAFETEA-LU) and the two previous (ISTEA and TEA-21) multi-year surface transportation authorizations. There are four National High Priority Corridors in Oklahoma:
 - US-287 (Ports-to-Plains Corridor) from Texas to Colorado in Cimarron County.
 - US-54 (SPIRIT Corridor) from Texas to Kansas in Texas County/Western Oklahoma.
 - I-35 from Texas to Kansas.
 - US-412 from Tulsa to Memphis, Tennessee.
- ▶ **Freight Operational Improvement Corridors**
These corridors represent highways with high truck traffic but do not indicate capacity needs by 2035. However, the efficiency of these corridors is compromised by conditions such as stops in towns and cities, bridge deficiencies, geometrics, urban speed zones, school zones, at-grade rail crossings, worn pavement, or other operating conditions that reduce the efficiency of freight movements. These highways can benefit from corridor studies and selective improvements, such as bypasses; ITS for driver information on traffic flows, weather conditions, etc.; bridge upgrades; rail grade separations; signal timing; and geometric roadway improvements. Freight Operational Improvement Corridors identified for Oklahoma include:
 - US-54 from Texas to Kansas in Texas County/Western Oklahoma.
 - US-69 in Eastern Oklahoma from the Oklahoma/Texas state line near Durant northeast to I-44 near Vinita.



Transportation Improvement Corridors

The Transportation Improvement Corridors (TIC) are highway corridors projected to need capacity upgrades by 2035. TICs were first identified in the *1995–2020 Statewide Intermodal Transportation Plan*. The 2000–2025 and 2005–2030 Statewide Intermodal Transportation Plans continued this policy. The 2030 Long Range Plan elaborated on the designation of the TICs by underscoring that additional consideration should be given to obtaining right-of-way for the ultimate corridor configuration.

Delineation of TICs in the 2035 Long Range Plan used the same methodology as applied for the 2030 LRP:

- ▶ Current traffic volume data (2008) by highway control section were used, along with historical traffic growth factors, to calculate future traffic volumes (2035).
- ▶ LOS C capacities were determined for each existing highway (two-lane, four-lane, four-lane divided) by terrain type (level, rolling, mountainous) for each highway control section.
- ▶ Calculated 2035 volumes were compared to the LOS C capacities for each existing highway control section. This resulted in a volume-to-capacity (v/c) ratio.
- ▶ LOS C has a v/c ratio of 1.0 and results in a satisfactory LOS. Highway sections exceeding LOS C (greater than 1.0) were considered as candidates for TICs.
- ▶ Final delineation of corridors also considered the following factors:
 - Judgment that congestion is resulting from a genuine capacity problem that would require more lanes rather than a capacity problem that could be alleviated by reconstruction and improvement of existing lanes with better geometrics and traffic management characteristics.

- Judgment on logical termini: corridors defined with lengths that could demonstrate independent utility and not result in a mixture of highway segments with differing lanes and transition points; connect from highway junction-to-highway junction or city-to-city. Thus, some non-congested segments are included in defined corridors.
- Judgment on constructability: some congested areas are scenic highways or have some other factor that would preclude addition of capacity.
- Judgment that some capacity problems could be alleviated with localized capacity additions and definition of a corridor was not needed.

As a result of these analyses, the 18 corridors identified as TICs in the 2030 Long Range Plan are retained for inclusion in this Plan. No new corridors were identified.

The TICs may coincide with National High Priority Corridors but generally are separate. With the exception of US-54 located in the Oklahoma panhandle, where they are the same, description and analysis is described under National High Priority Corridors. It is anticipated that selected portions of the identified corridors will need to be improved over the next 25 years.

The State Transportation Improvement Corridors for the 2035 Long Range Plan, as shown in **Figure 7-3**, include:

- ▶ **US-270/SH 3** from the junction with SH 34 in Woodward, Woodward County southeast to Watonga, Blaine County and continuing southeast on US-281 and US-281 Spur to the junction with I-40 in Canadian County, a total of 95 miles.
- ▶ **I-40** from the junction with US-81 Spur in Canadian County east to the junction with

SH 18 in Pottawatomie County, a partial total of 51 miles. Proposed improvements involve widening to six lanes. The mileage estimate excludes Oklahoma County, which is shown in the OCARTS area plan.

- ▶ **US-81** from I-40 in Canadian County, south to the junction with SH 9 in Chickasha, Grady County, a total of 31 miles.
- ▶ **SH 9** from the junction with I-35 in Norman, Cleveland County east to the junction with SH 99 in Seminole, Seminole County, a total of 48 miles.
- ▶ **US-270** from the junction with SH 9 in Seminole, Seminole County southeast to the east junction with US-270 Business in Holdenville, Hughes County, a total of 23 miles.
- ▶ **SH 33** from the junction with I-35 in Guthrie, Logan County east to the junction with SH 18 in Cushing, Payne County, a total of 29 miles.
- ▶ **US-177** from the junction with SH 9 in Tecumseh, Pottawatomie County south to the junction with SH 3W in Pontotoc County and continuing southeast on SH 3W to the junction with SH 19 in Pontotoc County, a total of 39 miles.
- ▶ **SH 99** from the junction with US-62 in Prague, Lincoln County, south to the junction with SH 1 in Ada, Pontotoc County, a total of 49 miles.
- ▶ **US-70** from the junction with I-35 in Carter County east to the Arkansas state line in McCurtain County, a total of 173 miles.
- ▶ **SH 20** from the junction with US-75 in Tulsa County east to the junction with SH 88 in Claremore, Rogers County, a total of 20 miles.
- ▶ **US-169** from Kansas state line in Nowata County, south to junction with SH 88 in Rogers County, then continuing on SH 88 southeast to junction with SH 20 (east) in Claremore, Rogers County, a total of 52 miles.

- ▶ **US-59** from the junction with I-44 in Ottawa County, south to junction with US-412 in Delaware County, a total of 47 miles.
- ▶ **US-59** from the junction with US-412 in Delaware County, south to junction with SH 51 in Stilwell, Adair County, a total of 26 miles
- ▶ **SH 51** from the junction with SH 72 in Coweta, Wagoner County east to the Arkansas state line in Adair County, a total of 75 miles.
- ▶ **SH 9** from the junction with SH 2 in Haskell County east to the junction with US 59 in LeFlore County, a total of 28 miles.
- ▶ **US-59** from the junction with I-40 in Sallisaw, Sequoyah County, south to junction with SH 128 in Heavener, LeFlore County, a total of 47 miles.
- ▶ **SH 112** from the junction with US-59 in Poteau, LeFlore County northeast to the junction with US-271 in LeFlore County, a total of 17 miles.
- ▶ **US-54** Texas Co., Oklahoma Panhandle, from junction with SH 95, Texas state line, north-east to Kansas state line, a total of 56 miles

Table 7-1 presents data for each TIC, such as the length of each corridor, miles constructed at four lanes, and estimated construction costs for projects in the *8-Year Construction Work Plan*. Approximately \$436 million was programmed for TIC projects in the *2010–2017 Construction Work Plan*. Projects at locations currently experiencing capacity problems are generally scheduled first.

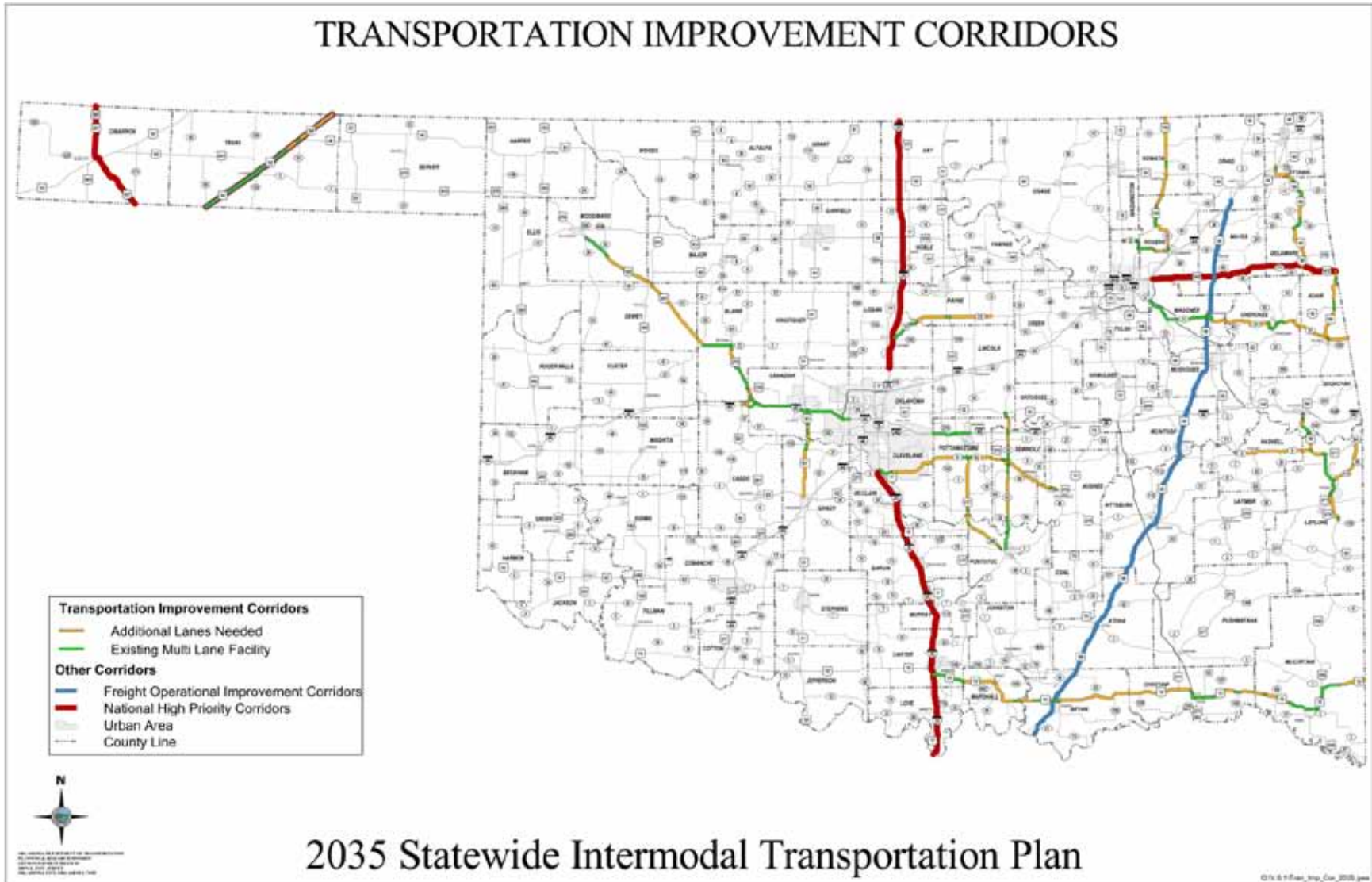


Figure 7-3. Transportation Improvement Corridors

Table 7-1. 2035 Long Range Plan, Transportation Improvement Corridors

	State Transportation Improvement Corridor	Corridor Miles	Miles w/4 lanes	Construction Status			Construction Cost Estimates		
				Awarded/ Underway	Planned 2010-2017	Remaining	Awarded/ Underway	Planned 2010-2017	Remaining
1	US 270 / SH 3 from the junction with SH 34 in Woodward, Woodward County southeast to Watonga, Blaine County and continuing southeast on US 281 and US 281 Spur to the junction with Interstate 40 in Canadian County, a total of 95 miles.	95	36	3.5	15	40.5	\$8,605,794	\$49,220,865	\$162,000,000
2	Interstate 40 from the junction with US 81 Spur in Canadian County east to the junction with SH 18 in Pottawatomie County, a partial total of 51 miles: 4-lane to 6-lane improvement. (Estimates exclude Oklahoma County -see Oklahoma City regional transportation study (OCARTS) area plan)	51	51	0	5	46	0	\$126,900,000	\$184,000,000
3	US 81 from I-40 in Canadian County, south to the junction with SH 9 in Chickasha, Grady County, a total of 31 miles.	31	7	0	0	24	0	\$0	\$96,000,000
4	SH 9 from the junction with Interstate 35 in Norman, Cleveland County east to the junction with SH 99 in Seminole, Seminole County, a total of 48 miles.	48	7.5	0	6.25	34.25	0	\$27,544,572	\$137,000,000
5	US 270 from the junction with SH 9 in Seminole, Seminole County southeast to the east junction with US 270 Business in Holdenville, Hughes County, a total of 23 miles.	23	1	0	1.4	20.6	0	\$10,093,235	\$82,400,000
6	SH 33 from the junction with Interstate 35 in Guthrie, Logan County east to the junction with SH 18 in Cushing, Payne County, a total of 29 miles.	29	12	0	4	13	0	\$14,953,819	\$52,000,000
7	US 177 from the junction with SH 9 in Tecumseh, Pottawatomie County, south to the junction with SH 3W in Pontotoc County, and continuing southeast on SH 3W to the junction with SH 19 in Pontotoc County, a total of 39 miles	39	2.5	0	1	35.5	0	\$14,376,021	\$142,000,000
8	SH 99 from the junction with US 62 in Prague, Lincoln County, south to the junction with SH 1 in Ada, Pontotoc County, a total of 49 miles.	49	22	0	0	27	0	\$0	\$108,000,000



	State Transportation Improvement Corridor	Corridor Miles	Miles w/4 lanes	Construction Status			Construction Cost Estimates		
				Awarded/ Underway	Planned 2010-2017	Remaining	Awarded/ Underway	Planned 2010-2017	Remaining
9	US 70 from the junction with Interstate 35 in Carter County east to the Arkansas State Line in McCurtain County, a total of 173 miles.	173	57	5	13	98	\$36,912,203	\$68,877,712	\$392,000,000
10	SH 20 from the junction with US 75 in Tulsa County east to the junction with SH 88 in Claremore, Rogers County, a total of 12 miles.	12	7.5	0	8.8	3.7	0	\$47,315,924	\$14,800,000
11	US 169 from Kansas Stateline in Nowata County, south to junction with SH 88 in Rogers County, then continuing on SH 88 southeast to junction with SH 20 (east) in Claremore, Rogers County, a total of 52 miles.	52	8	0	0.1	43.9	0	\$2,546,938	\$175,600,000
12	US 59 from the junction with I-44 in Ottawa County, south to junction with US 412 in Delaware County, a total of 47 miles.	47	11	0	0	36	0	0	\$144,000,000
13	US 59 from the junction with US 412 in Delaware County, south to junction with SH 51 in Stilwell, Adair County, a total of 26 miles	26	4	2	10.5	9.5	\$5,233,975	\$45,931,340	\$38,000,000
14	SH 51 from the junction with SH 72 in Coweta, Wagoner County east to the Arkansas State Line in Adair County, a total of 75 miles.	75	26	0	0	49	\$0	\$0	\$196,000,000
15	SH 9 from the junction with SH 2 in Haskell County east to the junction with US 59 in LeFlore County, a total of 28 miles.	28	0	0	0	28	0	0	\$112,000,000
16	US 59 from the junction with I-40 in Sallisaw, Sequoyah County, south to junction with SH 128 in Heavener, LeFlore County, a total of 47 miles.	47	22	5	0	20	\$27,209,489	\$0	\$80,000,000
17	SH 112 from the junction with US 59 in Poteau, LeFlore County northeast to the junction with US-271 in LeFlore County, a total of 17 miles.	17	1	0	0	16	0	0	\$64,000,000
18	US 54 Texas Co., Oklahoma Panhandle, from junction with SH 95, Texas Stateline northeast to Kansas Stateline, a total of 56 miles	56	37	5	9	5	\$16,456,896	\$27,891,678	\$20,000,000
Total 2035 Plan		906	313	21	74	550	\$94,418,357	\$435,652,104	\$2,199,800,000

National High Priority Corridors

Congress has specified 45 routes on the NHS as “High Priority Corridors.” These designations were made based on the importance of the route in serving regional, national, and international freight and vehicle movements. Designation of these routes began with the Intermodal Surface Transportation Efficiency Act of 1991 and continued with subsequent federal legislation.

One significant feature of a designated National High Priority Corridor is that it allows National Corridor Planning and Development (NCPD) Funds, a discretionary fund administered by the U.S. Secretary of Transportation in cooperation with Congress, to be spent to plan, construct, or maintain these corridors. The NCPD funds were available from 1991–2005 but were suspended with SAFETEA-LU legislation. The Corridors can also ultimately be designated Interstate routes if built to Interstate standards. Designation and improvements may prove useful for economic development and for enhancing safety for the movement of freight and other vehicles.

Oklahoma has four routes designated as National High Priority Corridors (location of

these corridors is shown on the Transportation Improvement Corridor map in Figure 7-3):

- ▶ **National High Priority Corridor #51** US-54, the SPIRIT Corridor extends from El Paso, Texas, through New Mexico, Texas, and Oklahoma to Wichita, Kansas.
- ▶ **National High Priority Corridor #8** US-412 East-West Corridor extends from Tulsa, Oklahoma, eastward through Arkansas to Nashville, Tennessee.
- ▶ **National High Priority Corridor #23** The I-35 Corridor extending from Laredo, Texas, northward to Duluth, Minnesota. The I-35 Corridor bisects Oklahoma from north to south.
- ▶ **National High Priority Corridor #38** The Ports-to-Plains Corridor from Laredo, Texas, northward through Oklahoma, New Mexico, to Denver, Colorado traverses several highways. In Oklahoma, US-287 in Cimarron County from the Texas state line northward to the Colorado state line is included.

Programmed Improvements

The *FFY 2010-FFY 2017 Construction Work Plan* has approximately \$238 million in improvements programmed for Oklahoma’s NHS High Priority Routes as shown by **Table 7-2**.

Table 7-2. Oklahoma’s National High Priority Corridor Programming by Federal Fiscal Year

Federal Fiscal Year	#51 (US-54 Texas County)	#38 (US-287 Cimarron County)	# 8 (US-412 Eastern Oklahoma)	#23 (I-35 in Oklahoma)
2010	\$16,465,740	\$11,440,976	\$0	\$29,249,792
2011	\$974,384	\$0	\$0	\$27,460,000
2012	\$0	\$692,999	\$0	\$42,830,863
2013	\$1,931,187	\$91,947	\$0	\$10,949,527
2014	\$1,722,300	\$872,877	\$3,627,800	\$48,692,400
2015	\$3,300,000	\$0	\$300,000	\$39,400,000
2016	\$7,525,000	\$0	\$0	\$14,233,431
2017	\$0	\$0	\$5,700,000	\$25,000,000
TOTAL	\$31,918,611	\$13,098,799	\$9,627,800	\$238,306,003

Source: *FFY 2010-FFY 2017 Construction Work Plan, Oklahoma Department of Transportation*. Includes amounts for right-of-way purchase, utility relocation, resurfacing, bridge rehabilitation, bridge replacement, and highway construction. Routine maintenance for both roadways and bridges excluded.



National High Priority Corridor Upgrades and Construction Cost Estimates

Studies for the National High Priority Corridors have been completed for two corridors in Oklahoma: the Ports-to-Plains Corridor in Cimarron County and the I-35 Corridor. The US-54 SPIRIT Corridor will be essentially complete to four lanes in Oklahoma by 2017 given current funding estimates. The US-412 Corridor is already four lanes in Oklahoma and does not need additional lane capacity.

- ▶ **US-287 Ports-to-Plains Corridor** Estimated construction costs to provide for a four-lane facility are \$177 million for Oklahoma. As noted above, approximately \$13 million is currently programmed for this facility. The *Ports-to-Plains: Corridor Development and Management Plan*, which was completed in 2004, is the basis for these costs. No funding has been identified for the remainder of the estimated construction costs.
- ▶ **I-35 Corridor** The *I-35 Trade Corridor Study* completed in 1999 made the following recommendations for I-35 in Oklahoma:
 - From the Kansas/Oklahoma Border to northern transition of Oklahoma City: six lanes
 - From the northern transition of Oklahoma City to the Oklahoma City core: eight lanes
 - For the Oklahoma City Core: eight lanes with additional construction of a relief route
 - From the Oklahoma City Core to southern transition of Oklahoma City: six lanes with additional construction of a relief route
 - From the southern transition of Oklahoma City to the Oklahoma/Texas border: eight lanes
 - Construction costs were estimated at \$880 million for Oklahoma

As noted, \$238 million is programmed for I-35 through 2017 and most of this is for rehabilitation of the existing facility. No funding has been identified for the additional capacity upgrades from the *I-35 Trade Corridor Study*.

National Corridor Planning and Development Program

As previously noted, the NCPD is a discretionary fund of the U.S. Secretary of Transportation that is used to plan, design, construct, and maintain the National High Priority Corridors. Oklahoma, through its Congressional Delegation, has received approximately \$6 million in NCPD funds (\$3 million for I-35; \$1.5 million for US-412; \$1.5 million for US-287).

Freight Operational Improvement Corridors

These corridors represent highways with high truck traffic but do not indicate capacity needs (beyond those identified in the Construction Work Plan) by 2035. However, the efficiency of these corridors is compromised by conditions such as stops in towns and cities, bridge deficiencies, geometrics, urban speed zones, school zones, at grade rail crossings, or other operating conditions that reduce the efficiency of freight movements. These corridors can benefit from corridor studies and improvements from a menu of improvements, such as bypasses; ITSs for driver information on traffic flows, weather conditions, etc.; bridge upgrades; rail grade separations; signal timing; and geometric roadway improvements.

Two highway segments have been identified as Freight Operational Improvement Corridors. The following corridors are shown in Figure 7-3:

- ▶ **US-69 Freight Operational Improvement Corridor** This corridor extends from the Texas state line northeastward approximately 215 miles to I-44 near Vinita. This corridor experiences significant truck delays

because of reduced speeds and stops through cities and towns along the route and lack of access control in several segments along US-69.

- ▶ **US-54 Freight Operational Improvement Corridor** This corridor extends from the Texas state line northeastward to the Kansas state line in Texas County. US-54 is classified as both a TIC and a National High Priority Corridor, and 90 percent of the corridor is scheduled to be completed as a four-lane highway by 2017. However, it will be important to continue to monitor traffic and use system management tools to avoid delays associated with heavy truck traffic along this route.

The only study along a Freight Operational Improvement Corridor was undertaken in 2001 by OTA for US-69 to analyze improvements to make US-69 a turnpike. Many of the improvements required to meet turnpike standards would likely be necessary to improve freight movements. This study included bypasses, environmental costs, local access road costs, reconstruction costs, and right-of-way costs. Total cost for improvements (including toll plaza costs) was \$449 million.

Studies on US-54 would be necessary to determine the appropriate measures to improve freight movements since capacity upgrades for the facility are already built or programmed.

Oklahoma Turnpike System

The Oklahoma Turnpike Authority manages 602 route miles of toll roads that are financed by tolls.

Turnpike Strengths

- ▶ OTA has the ability to respond rapidly to system deficiencies, and rapidly develop projects, because it is not governed by the

rules and regulations associated with federal-aid highway funding.

- ▶ OTA has one of the highest bond ratings of any turnpike authority. This reduces the cost of debt and allows the issuance of new debt rather efficiently, thus reducing the time it takes to fund capital improvement projects.

Turnpike Weaknesses

- ▶ The Turnpike Authority has identified the need for significant bridge rehabilitation or replacement. The Authority is in the process of developing a long range bridge replacement program.
- ▶ Turnpikes in the Oklahoma City and Tulsa areas are expected to experience serious congestion by the year 2035, and the OTA has requested capacity expansion studies on the Creek, Kilpatrick, and Turner Turnpikes accordingly. These studies are scheduled to commence before 2016.

Commercial Vehicle Operations

This section summarizes the strengths and weaknesses of the highway system in Oklahoma from a trucking industry perspective. Strengths and weaknesses have been gathered from Advisory Committee Interviews, Advisory Committee meeting summaries, public meeting minutes, Chapter 6, Transportation Mode Inventory and Utilization, and websites for ODOT, the American Trucking Association (ATA), and the National Highway Safety Council.

Trucking is critical to the State's economy. There are approximately 50,000 trucks going through Oklahoma every day. A large portion of these trucks travel through the State on I-35 or I-40 and do not stop. Approximately 30,000 trucks cross the I-35 and I-40 intersection daily.

The trucking industry has traditional transportation concerns: safety, congestion, pavement condition, and bridge adequacy. In



addition, the industry has economic concerns revolving around issues of taxation and size and weight regulation. Finally, specialty haulers require permits to carry oversize or overweight loads, so ODOT maintains an extensive permitting operation to ensure the smooth operation of this critical business. **Figure 7-4** shows designated Oklahoma highways for conventional commercial vehicles.

Commercial Vehicle Operations Strengths

- ▶ The highway system is in fair condition. Interstate routes, which carry the most commercial vehicle traffic, are also in the best condition of any of the roadways in the state.
- ▶ The establishment of bulk transfer facilities has resulted in cutting the highway miles for many of the commercial vehicle bulk carriers in half. Historically, trucks would run 500–1000 miles with bulk commodities; however, with the new trans-loads, the average miles per load for these products have decreased to 250 miles. Fewer miles equate to less wear-and-tear on the highway system.
- ▶ Longer combination vehicles—53-foot double trailers or triple trailers not exceeding 100 feet in length—are allowed on a network of Oklahoma roads, which allows for more productivity for the trucking industry.
- ▶ Oklahoma has made progress in rehabilitation or reconstruction of functionally obsolete and structurally deficient bridges. In January 2005, there were 150 load-posted bridges on the Oklahoma SHS. As of early 2010, there were 42. The *8-Year Construction Work Plan* calls for replacing the remaining load-posted bridges.
- ▶ ODOT has been able to accelerate bridge replacement work through a concerted effort made possible by funding provisions of State Legislation passed in 2005 and 2006.

Between 2006 and 2010, the Department replaced or completed major rehabilitation of 530 bridges, over 105 annually. This is notable in comparison to the previous five years, where the rate of replacement was 30 per year.

- ▶ Trucks and passenger vehicles in Oklahoma have the same speed limit, rather than a “differential” speed limit (higher for cars than trucks) as is found in some other states. The higher speed limit promotes greater productivity for the industry.
- ▶ Trailers with triple axles can weigh up to 90,000 pounds on the Interstate System, again contributing to productivity.
- ▶ Oklahoma is a leader in alternative fuels, and this benefit should be shared in terms of lower fuel costs for Oklahoma truckers.

Commercial Vehicle Operations Weaknesses

- ▶ With the closure of the automotive and intermodal multi-modal terminals, Oklahoma trucking has lost access to global trade corridors. There was not enough density within the state to support these terminals. However, there are a number of trans-load operations for bulk materials; and newer facilities in Shawnee, Oklahoma City, Woodward, and Elk City have been developed.
- ▶ Meeting requirements related to air quality attainment legislation can be costly for commercial motor carriers.
- ▶ Other modes of transportation may gain share if trucks cannot economically attain new air quality standards.

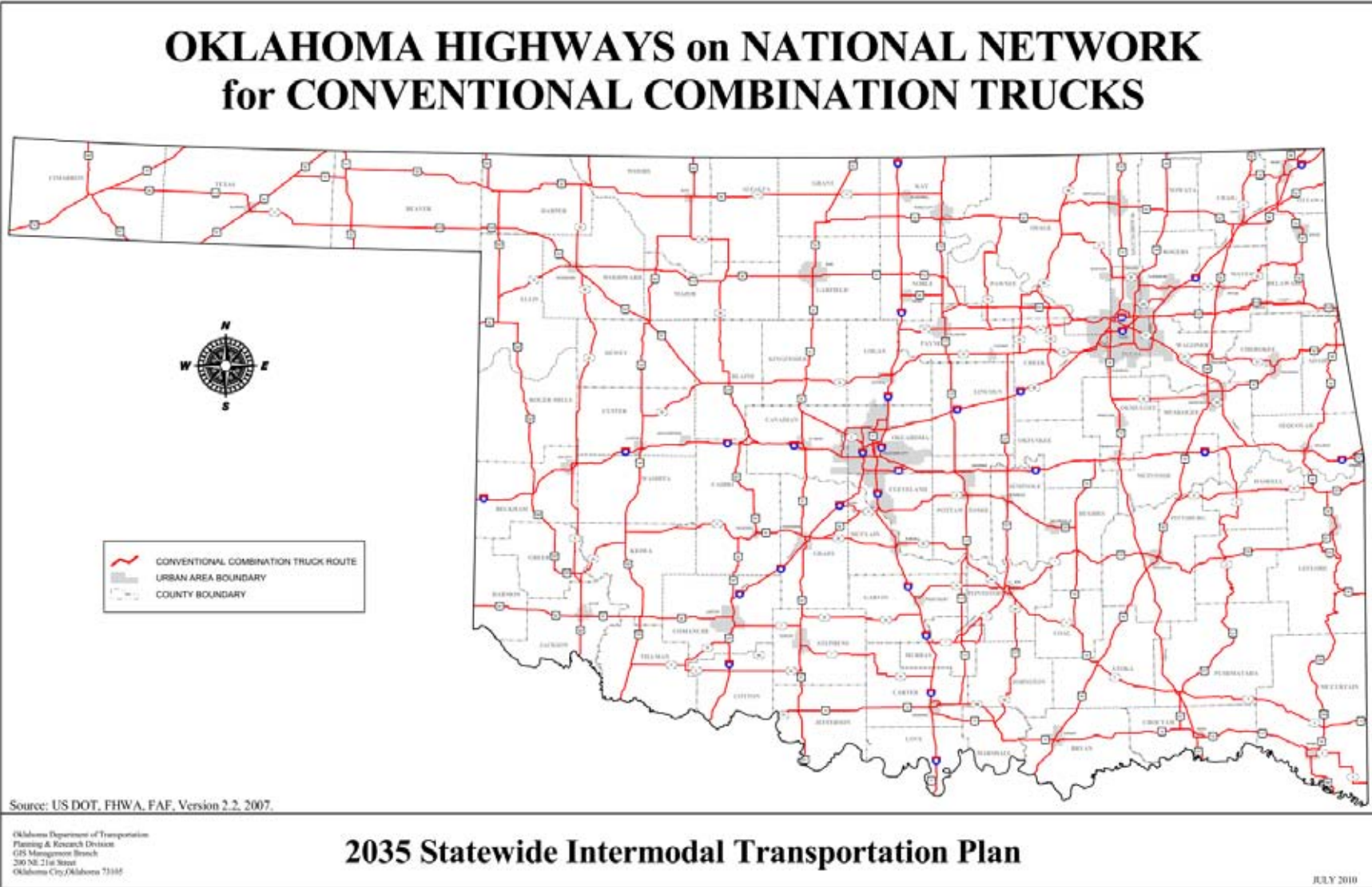


Figure 7-4. Oklahoma Highways on National Network for Conventional Combination Trucks



- ▶ Bridge conditions are a weakness for some truck cargos in Oklahoma. Bridges must conform to the weight standards for the class of highway. Some drilling rigs bring their own portable bridges to the job sites.
- ▶ Some drilling rigs weigh as much as 120,000 to 180,000 pounds. If bridges are posted or weight restricted, trucks must be re-routed, which often results in extra miles, extra transit time, and puts trucks on smaller rural roads where traffic and turning issues are aggravated.
- ▶ Permitting issues pose a problem for many oversize carriers. A blanket permit system similar to the approach in Texas would reduce delays and labor required to keep oil drilling rigs moving. The current process is slow and manual; and the internet system is not reliable in getting quick turnaround for permits. Internet software is being developed to cover 90 percent of the loads in Oklahoma. It is anticipated that Oklahoma's implementation of the second phase of this software (which is currently deployed in 18 states) will be operational in 2011.
- ▶ Many rural and two-lane roads lack wider shoulders, which allow vehicles that are turning, exiting, or entering a highway to reduce speed to turn safely or to merge into traffic safely.
- ▶ Motor carriers in Oklahoma lack timely information about congestion and delays. If carriers know where congestion or choke points occur, they can route around them. Variable signs and telecommunication messages can help truckers avoid congestion. San Antonio, Texas, is a model for communicating highway congestion and delays.

Freight Rail Systems—Class I and Short Lines

The freight railroad system in Oklahoma is the lifeline for much of the freight moving through the State, as well as into and out of the State. The State's railroads, along with the trucking companies, waterways, and air cargo carriers that also move the State's products and materials, are critical to a healthy Oklahoma economy. The unique efficiency of the railroads as bulk commodities carriers keeps millions of tons of freight off the State's highway and road network. Also, the railroads effectively move time-sensitive trailers and containers as a key component of intermodal transportation in which the final delivery is made by truck.

Rail is the primary mode of freight products moving through the State (those freight movements that have neither an origin nor a destination within Oklahoma). Approximately 70 percent of these through-freight movements in Oklahoma occur by rail. Also, rail is the primary transportation mode for the grain and stone products shipped out of Oklahoma. Rail is the mode of choice for all of the coal and a great majority of the grain that is imported into Oklahoma. Chapter 5 provides additional freight and goods movement information.

Oklahoma has a vested interest in rail transportation, with the State having purchased nearly 900 miles of track. Class I or Class III railroads operate 88 percent of the State-owned miles.

Class I System

The Class I railroads include BNSF, UPRR, and KCS. These three railroads carry most of the rail freight tonnage moved within the State. These major railroads operate over approximately 2,500 miles of track in Oklahoma and carry nearly 300 million tons of freight in the State

each year. Chapter 6 provides detailed information on these facilities.

BNSF’s east-west “Transcon” line, connecting Chicago and Los Angeles, passes through northwest Oklahoma and, in recent years, has been expanded to a double-track mainline within Oklahoma. Additional Centralized Traffic Control (CTC) on the Class I railroads has also provided railroads with the ability to move additional freight. The BNSF north-south mainline operating through Oklahoma City between Kansas City and Fort Worth also carries Amtrak’s Heartland Flyer passenger service between Oklahoma City and Fort Worth. Additional capacity on this single-track line would be very desirable.

BNSF is in the process of expanding its intermodal traffic off the “Transcon” line through Enid and Tulsa as part of BNSF’s increased emphasis on its Memphis Gateway. Also, BNSF is proposing the expansion of its Cherokee Yard within Tulsa.

Rails for National Defense

The Strategic Rail Corridor Network (STRACNET) is a series of rail routes in the United States designated as being critical for the movement of military goods and equipment. STRACNET includes 38,800 miles of railroad providing rail service to 193 defense installations whose missions require rail service. The military places heavy and direct reliance on railroads to integrate bases and connect installations to predominantly maritime ports of embarkation. Mainlines, connectors, and clearance lines must all combine to support movement of heavy and oversized equipment.

STRACNET routes in the State include BNSF’s “Transcon” line, which passes through northwestern Oklahoma, connecting Chicago and Los Angeles. Another STRACNET route is BNSF’s

north-south mainline through Oklahoma City, connecting Kansas City to Fort Worth. The KCS line along the eastern edge of the State is a STRACNET route. In addition, as part of 5,000 miles of track nationwide essential to connecting one facility to another, there are “Connector” rail routes in Oklahoma as well. These include the UPPR north-south line connecting BNSF’s “Transcon” Line to the Army Ammunition Depot in McAlester, and the Stillwater Central Railroad connecting to both Altus Air Force Base in Altus and Fort Sill in Lawton.

Short Line Railroads

The 19 Class III railroads own and operate over 1,000 miles of rail line within Oklahoma and also have trackage rights and operate over many Class I railroads as well. These Class III railroads provide many of the critical pick up, delivery, and other customer service capabilities that are integral to the overall movement of freight by rail within Oklahoma. As in other states, the ability to maintain the track and bridge infrastructure of these short line railroads is a real challenge because of the often marginal revenues generated.

The *FFY-2008 through FFY-2015 State Owned Rail Construction and Maintenance Work Plan* indicates that the six railroads operating on the state-owned rail lines are projected to spend almost \$19.3 million on the state-owned lines in the next five fiscal years (2011–2015). The five-year amounts are Wichita, Tillman and Jackson (\$6.83 million); Farmrail Corporation (\$4.43 million); Stillwater Central Railroad (\$4.08 million); Arkansas-Oklahoma Railroad (\$2.59 million); Blackwell Northern Gateway Railroad (\$1.94 million); and South Kansas and Oklahoma (\$270,000). These construction and maintenance projects primarily include tie replacement, ballast improvements, bridge



improvements, vegetation control, and drainage improvements.

The State provides these funds to the operators of its short lines for the ongoing rehabilitation and maintenance of track and structure. Most operators maintain their track to Class 2 FRA (maximum 25 miles per hour) track standards, but some are limited to Class 1 (maximum 10 miles per hour).

About 88 percent of the 862 miles of rail lines owned by the State are in operation. ODOT may wish to partner with the Oklahoma Department of Commerce to promote additional economic development along State-owned rail lines.

Freight Rail Strengths

- ▶ Oklahoma is served by three major Class I competitors—UPRR, BNSF, and KCS. This is very positive competition that helps to keep costs down. The good relationships between Class I railroads and some of the short lines have been very beneficial.
- ▶ The State's ownership of nearly 900 miles of branch lines has been a positive step in preserving rail availability for customers served by branch lines that would have been discontinued by Class I operators.

Freight Rail Weaknesses

- ▶ There is a lack of funding for improvements and maintenance on the State-owned lines. The State had acquired the former Rock Island line (north-south through El Reno), and UPRR has been operating through a lease-purchase agreement. The payment cycle is nearly complete, and UPRR will actually own the line starting in 2011. This annual lease payment of \$1.8 million to the State has been used as a "revolving fund" to maintain other short-lines throughout the State. This money will disappear once UPRR

gains full ownership of the line, and funding for future short lines will cease.

- ▶ The infrastructure on many short lines is deteriorating, especially short lines with weight limitations. These lines are insufficient to handle the new 286,000-pound freight cars. Infrastructure needs are increasing, while funds are decreasing.
- ▶ There are no rail-served intermodal facilities currently operating in Oklahoma. BNSF closed its truck and rail intermodal facility in the Oklahoma City area in May 2005 because of insufficient intermodal volumes. The primary reason for a lack of intermodal business potential in Oklahoma is the proximity to very large truck and rail intermodal facilities in both Fort Worth and Kansas City. BNSF's Alliance intermodal facility in Fort Worth and UPRR's Intermodal facility in Dallas, as well as several intermodal facilities in the Kansas City area owned by BNSF, UPRR, and KCS, provide sufficient intermodal capacity within proximity to Oklahoma's truck/rail intermodal needs. While Oklahoma is adequately served by these intermodal facilities from a transportation perspective, the State loses out on some of the economic benefits associated with intermodal hubs—namely, warehousing, distribution, and manufacturing facilities that locate in close proximity to hubs.

Airports

Oklahoma has good air service connections—the Will Rogers World Airport in Oklahoma City and the Tulsa International Airport are the two major airports in Oklahoma. The three regional airports are located in Lawton-Fort Sill, Enid (Woodring), and Ponca City while the State is served by an extensive network of small airports. In 2008, there were 97 general

aviation and 37 other public-use airports registered with the Federal Aviation Administration (FAA).

Aviation System Strengths

- ▶ Oklahoma has a good regional airport system. There is not a location in the State that is more than an hour away from a jet-capable airport.
- ▶ The Oklahoma State government is focusing more on what facilities are needed at current airports, instead of expanding airports to each county in the State.
- ▶ The State government recognizes the positive economic impact of aviation.

Aviation System Weaknesses

- ▶ Larger airports, such as Will Rogers and Tulsa, are financially sustained by on-site lease revenue and airport ticket fees. General Service airports, however, require public subsidies. There is a lack of State funding to upgrade such airports, in spite of their economic benefit to local communities.
- ▶ Stakeholders find that there is inadequate transit access from downtown areas to airports.
- ▶ Transshipment and intermodal options are not located within the State.

Inland Waterways

Inland waterways in Oklahoma are defined as the 440-mile segment of the MKARNS, which connects the Port of Catoosa and Port of Muskogee to the Mississippi River and the Gulf of Mexico.

Waterways are able to handle large bulk items traveling into or out of the State of Oklahoma. On a ton-mile basis, it is estimated that commodity and project cargo (especially heavy or oversized) can be moved by barge at 33 percent of the cost of railroad transportation

and 20 percent of the cost of truck shipping. Also, a full “tow” of eight barges can hold the equivalent of the weight borne by 480 semi-trailer trucks with a significantly lower carbon footprint than either truck or rail. The cost savings of using waterways to transport items clearly outweighs using other modes. Both the Port of Catoosa and the Port of Muskogee offer multi-use facilities with many attractive features. Although the MKARNS could be widened and deepened to accommodate more barge traffic, it is currently meeting the basic demands for waterway shipping in Oklahoma.

Overall, interaction between shipping modes in Oklahoma could be improved. The public supports the development of intermodal freight facilities (for highways, roads, rail, and waterways). The feasibility, cost, and environmental concerns of this development have not been assessed. The State has not embraced an intermodal access roads plan. Until joint facilities are built or roadways, bridges, and railroads leading to ports are improved, transferring goods between modes will be inefficient.

The strengths and weaknesses following have been gathered from Advisory Committee interviews, Advisory Committee meeting summaries, public meeting minutes, Chapter 6, Transportation Mode Inventory and Utilization, and websites for the Tulsa Port of Catoosa, the Port of Muskogee, the U.S. Census Bureau, and ODOT. Phone interviews were conducted with the Directors at the Port of Catoosa and Port of Muskogee.

Inland Waterways Strengths

- ▶ Waterway shipments are cost effective and environmentally friendly compared to other modes.



- ▶ There is future potential of containerized and bulk cargo coming into/out of Oklahoma because of Panama Canal expansion.
- ▶ Waterways can handle heavy and overweight loads that railroads and highways cannot handle.
- ▶ The Army Corps of Engineers is considering deepening the channel to 12 feet.

Inland Waterways Weaknesses

- ▶ The Port of Catoosa is a valued waterborne freight terminal but is located well up river, behind many locks. The resulting extended transit times for bulk commodities inhibit the competitiveness of some waterborne shipments.
- ▶ There is a lack of intermodal connections from ports to the ultimate destinations.
- ▶ In some instances, bridges cannot handle the volume and weight of loads from the ports, and/or the roads are too narrow. Oklahoma should increase highway capacity to/from ports as they are improved and developed.

Public Transportation

Public transportation, encompassing bus, passenger rail, and paratransit services, is an essential element of the urban, rural, and intercity transportation resources of the State. The importance of public transportation outweighs its relatively small share of person trips made within any of these three environments, because it is available at low cost and provides the following functions:

- ▶ An alternative to the private automobile for those who otherwise face driving on congested roads, expending time as a driver that can be better used for other purposes during time required for travel, avoiding tying up the use of an automobile that may be needed for other purposes, or reducing personal expenditures for travel.

- ▶ The only available mode of travel for persons who do not have access to an automobile or who are unable to drive.
- ▶ In most cases, an efficient mode of travel in terms of road capacity used, fuel consumed, and air pollutants emitted.

Although the use of public transportation in the United States, including Oklahoma, has in most cases declined percentagewise during the last 50 or 60 years, the absolute number of passengers carried has been rising. The upward trend in need, and in the supply of needed services, can be expected to accelerate in response to policies addressing energy independence and reduced emission of greenhouse gases. In Oklahoma's larger cities, urban public transportation will also be an important means of responding to rising traffic congestion.

A challenge routinely face by public transportation in Oklahoma, as elsewhere throughout the nation, is funding. For a number of reasons, fares paid for public transportation are commonly perceived by passengers as being greater than the cost of travel by automobile, an exception being the taxi. This perception arises mainly from the fact that the cost of travel by private automobile is spread quite broadly among multiple sources ranging from the cost of housing or business property to income taxes, car payments, and finally, more directly trip-related expenditures such as fuel and tolls.

Even though fare levels may be keenly felt by passengers, they are well below the level necessary to cover the costs of the required facilities, vehicles, and their operation and maintenance. Furthermore, public transportation systems do not have the same access to funding as the highway system, and in many cases the systems do not have dedicated source of funds other than fares. With the possible

exception of intercity bus lines, public transportation requires public funding; urban transit systems typically recover 20 to 40 percent of their operating and maintenance costs from fares paid by passengers and rely entirely on other sources for capital expenses. Intercity rail is operated by Amtrak, which is supported by federal funding.

Urban Transit

Urban public transportation systems serve communities with populations of 50,000 or more. There are four urban public transportation agencies in Oklahoma: Oklahoma City METRO Transit, which is part of the Central Oklahoma Transportation and Parking Authority (COTPA); CART for the Norman area; the Metropolitan Tulsa Transit Authority (MTTA); and the LATS. COTPA and MTTA have both directly-operated and contracted fixed-route

service, although the contracted service is only about one-tenth the amount operated directly. COTPA also splits demand response operation, while MTTA contracts all of its demand response service. LATS and CART services, both fixed route and demand response, are entirely directly operated.

Using the most recent available *National Transit Database* (2008), the fixed-route directly operated services of the two largest of these systems, COTPA and MTTA, were compared with the average of a selected directly operated fixed-route service sample of 77 systems operating in the United States. The sample selection was made on the basis of the maximum number of vehicles operated in fixed-route weekday service, and included 77 systems that operate from 30 to 100 buses in weekday service. **Table 7-3** summarizes the comparison.

Table 7-3. Comparison of Transit System Characteristics for Oklahoma City and Tulsa and an Averaged Sample of U.S. Transit Systems

Transit System and Characteristics	Oklahoma City COTPA	Tulsa MTTA	Averaged National Sample
Population Served	650,221	486,665	260,473
Service Area (square miles)	244	261	224
Maximum Number of Buses in Operation	45	51	53
Directional Route Miles	602	575	324
Weekday Bus Revenue Miles	9,156	9,060	7,050
Weekday Bus Revenue Hours	547	560	529
Weekday Passenger Boardings	8,881	9,307	13,895
Total Annual Operating & Maintenance Cost	\$15,663,468	\$12,138,126	\$13,948,330
Total Annual Fares Earned	\$1,728,136	\$1,853,808	\$2,846,718
Population Density (persons per square mile)	2,665	1,865	1,164
Directional Route Miles per Capita	0.0009	0.0012	0.0012
Directional Route Miles per Square Mile	2.47	2.20	1.45
Weekday Bus Miles per Directional Route Mile	15.22	15.76	21.73
Average Speed of Revenue Service (miles per hour)	16.7	16.5	13.3
Annual Passenger Boardings per Weekday Boarding	279.6	270.3	290.6
Annual Passenger Boardings per Capita	3.8	5.2	15.5
Passenger Boardings per Bus Revenue Hour	16.0	16.6	25.7
Total Operating & Maintenance Cost per Boarding	\$6.31	\$4.83	\$3.45
Average Fare per Passenger Boarding	\$0.70	\$0.74	\$0.70
Farebox Recovery Ratio	11.0%	15.3%	20.4%

Source: Parsons Brinckerhoff from 2008 National Transit Database.



Key findings include:

- ▶ Route miles relative to area and density: In Oklahoma City, the transit system operates fewer-than-average route miles per capita. The Tulsa transit system operates at the national average of route miles per capita.
- ▶ Bus miles per route mile: Both Oklahoma City and Tulsa transit systems operate fewer bus miles per route mile than the average of the sample, indicating that service is less frequent or operated fewer hours per day.
- ▶ Boardings per capita and per bus hour: Both of the transit systems are under-used, in terms of passengers per hour of service operated.
- ▶ Cost per passenger boarding: Low use of the service results in higher-than-average

operating cost per boarding; operating cost is not far from the average value.

- ▶ Fare per boarding: Fares for the Oklahoma City and Tulsa systems are about average.
- ▶ Farebox recovery: Because of low service utilization, passengers pay a below-average share of transit operating cost.

The Lawton (LATS) and Norman (CART) fixed-route services were similarly compared (see **Table 7-4**) with a directly-operated sample drawn from the 2008 *National Transit Database*. A sample of 74 transit systems was generated based on a range of maximum vehicles between 8 and 25 buses. LATS serves the city of Lawton and adjacent Fort Sill. CART service and use is affected by the University of Oklahoma’s location in Norman.

Table 7-4. Comparison of Transit System Characteristics for LATS and CART and an Averaged Sample of U.S. Transit Systems

Transit System and Characteristics	Lawton - LATS	Norman - CART	Averaged National Sample
Population Served	70,177	96,782	196,258
Service Area (square miles)	42	178	393
Maximum Number of Buses in Operation	10	13	12
Directional Route Miles	145.0	127.0	161.4
Weekday Bus Revenue Miles	1,913	1,335	1,842
Weekday Bus Revenue Hours	130	114	123
Weekday Passenger Boardings	1,354	4,312	2,018
Total Annual Operating & Maintenance Cost	\$1,810,790	\$1,613,727	\$2,613,813
Total Annual Fares Earned	\$199,616	\$85,997	\$572,987
Population Density (persons per square mile)	1,670.9	543.7	499.4
Directional Route Miles per Capita	0.0021	0.0013	0.0008
Directional Route Miles per Square Mile	3.45	0.71	0.41
Weekday Bus Miles per Directional Route Mile	13.19	10.51	11.41
Average Speed of Revenue Service (miles per hour)	14.7	11.7	15.0
Annual Passenger Boardings per Weekday Boarding	297.5	264.5	283.6
Annual Passenger Boardings per Capita	5.7	11.8	2.9
Passenger Boardings per Bus Revenue Hour	10.4	37.8	16.4
Total Operating & Maintenance Cost per Boarding	\$4.50	\$1.41	\$4.57
Average Fare per Passenger Boarding	\$0.50	\$0.08	\$1.00
Farebox Recovery Ratio	11.0%	5.3%	21.9%

Source: Parsons Brinckerhoff from 2008 *National Transit Database*.

Key findings include:

- ▶ Area and density: Lawton has a relatively small area but a much higher-than-average population density. Norman is average in population density. Both systems serve lower-than-average populations.
- ▶ Bus miles per route mile: Both systems are near average in route use intensity.
- ▶ Boardings per capita and per bus hour: The Lawton system passenger boardings are high per capita but low per bus hour while Norman, because of its large university, is very high relative to both population and bus hours.
- ▶ Cost per boarding: Lawton is at the average. Norman is very low, a consequence of high productivity. Both systems have lower-than-average operating cost.
- ▶ Fare per boarding: Lawton is low; Norman very low.
- ▶ Farebox recovery: Lawton is low; Norman is very low.

Rural Transit

There are presently 19 community public transportation providers in Oklahoma.

Table 7-5 provides summary data from FY2003 to FY2008 for these rural transit systems.

Urban and Rural Public Transportation Strengths

- ▶ Transit demand, both fixed route and demand response, is strong with the State’s aging population.
- ▶ Transit coverage is good, although there is always a frequency issue, especially in non-urban areas. Mobility options do exist and demand exists.
- ▶ Reasons for strong transit demand include low auto ownership in some areas, the incidence of elderly or disabled persons, and the need in congested travel corridors for an alternative to travel by private car.
- ▶ The increase in demand for public transportation will bring opportunities to replace demand response service, which has high cost per passenger carried, with expanded use of fixed-route service. There will also be opportunities to implement employee shuttles.

Table 7-5. Rural Transit Information, Statistics and Trends

Fiscal Year	Revenue Miles	Passenger Miles	All Passenger Trips	Elderly Trips ¹	Disabled Trips ²	Elderly & Disabled Trips ³	Other ⁴
2003	10,411,000	18,194,621	1,983,854	350,948	236,681	126,323	1,269,902
2004	10,816,238	18,111,865	2,182,222	358,286	266,037	125,782	1,432,117
2005	12,407,985	21,053,792	2,618,931	369,014	276,553	136,824	1,836,540
2006	13,582,154	22,031,773	2,843,067	369,172	267,166	140,714	2,066,015
2007	14,424,574	22,199,032	2,891,260	333,254	264,791	136,085	2,157,130
2008	15,556,263	30,059,708	3,125,884	342,962	278,468	150,673	2,353,781

Source: ODOT.

¹Elderly Trips are passengers who are 55 or older;

²Disabled Trips are passengers who are disabled;

³Elderly & Disabled Trips are passengers who are both elderly and disabled;

⁴Other trips are all passenger trips not including elderly, disabled, and elderly and disabled trips.



Urban and Rural Public Transportation Weaknesses

- ▶ Because all the public transportation modes require separate modes of access, connections between modes are essential (bus, Amtrak, fixed-route to airports, routes to service feeders, etc.). It is critical to look for opportunities for transit services to be expanded including development of vanpools and park-and-ride facilities.
- ▶ A perennial issue is transit service coordination between many human service agencies.

Tribal Transit

There are several tribal transit services in operation that have been funded since 2006 by the FTA Tribal Transit Program, Section 5311 (c), which helps promote public transportation on Indian reservations. These transit agencies include FasTrans, Cherokee Nation Health Department, Choctaw Nation of Oklahoma, Comanche Nation Transit, Mosque Creek Nation Transit, and Wichita and Affiliated Tribes.

Tribal Transit Strengths

- ▶ The tribal systems provide access for jobs, and for elderly and disabled individual's access to activity centers and transportation for medical care.

Tribal Transit Weaknesses

- ▶ Long commutes for employees to work sites.
- ▶ Lack of coordination with other transit providers.

Intercity Bus Transit

Oklahoma is served by two intercity bus companies: Greyhound Lines and Jefferson Bus Lines. Chapter 6 provides operating information on both intercity bus lines.

Passenger Rail

Amtrak, the national passenger rail company, operates the Heartland Flyer which is a daily passenger rail service that follows a 206-mile route between Oklahoma City's Santa Fe train station and Fort Worth, Texas. Oklahoma communities served along the way include Norman, Purcell, Pauls Valley, and Ardmore. Ridership aboard Heartland Flyer trains increased nearly 19 percent during fiscal year 2008, to 80,892 passengers.

The Heartland Flyer Route is designated as a part of the USDOT's *Vision for High Speed Rail (HSR) in America*. There are 11 HSR Corridors nationwide, and the Tulsa to Oklahoma City and Oklahoma City to Fort Worth corridors are a part of the greater South Central Corridor.

Passenger Rail Strengths

- ▶ The Heartland Flyer's scheduled connections with Amtrak's Texas Eagle in Fort Worth provide service to Chicago and San Antonio, with continued service to Los Angeles.
- ▶ The Heartland Flyer provides a high quality of customer service. The consumer service index has been high for this passenger route, and the Heartland Flyer has received Amtrak's "Champion of the Rails" award.
- ▶ Railroads, such as UPRR, are often constructing a second track when implementing rail grade separations.
- ▶ High speed rail and commuter rail are receiving more attention than they attracted five years ago. At the federal level, funding is becoming available to implement improvements.
- ▶ One of the nation's 11 High Speed Rail Corridors, the South central Corridor, crosses through Oklahoma.

Passenger Rail Weaknesses

- ▶ Rail congestion is definitely a problem with Class I railroads. Although double tracking the lines could address passenger and freight issues, this approach is very expensive to build and maintain. Other solutions include building selective siding extensions, which are less expensive, and more advanced signal/dispatching systems, such as Positive Train Control (PTC). PTC is mandated on all passenger lines by 2015.
- ▶ Passenger rail activities are occurring at regional, rural, high speed and Amtrak passenger levels; but there is a lack of coordination on these issues.
- ▶ Grade crossing safety is important for high speed rail passenger service, with grade separations (overpasses, or underpasses) providing the ideal level of safety. Most passenger rail routes, however, lack grade separation.
- ▶ The Heartland Flyer’s connection times with the Texas Eagle at Fort Worth are long—there is an hour and half wait in either direction. On a long trip, these layover times are acceptable. For shorter distance trips, the waits become an issue and discourage passenger rail use.
- ▶ The lack of frequent service on the Heartland Flyer also discourages use. There is one train down to Texas in the morning and one back in the evening. Implementation of a mirror image schedule, northbound in morning and southbound in evening, would make the service more attractive. The current schedule hampers ridership because it is geared towards longer trips and stays.
- ▶ The Heartland Flyer station in Oklahoma City lacks local transit connections. Greyhound serves the location, but the company does not provide tickets at the train station.

Pedestrian and Bicycle Transportation

Bicycling and walking are environmentally friendly, healthy, and the least costly transportation choices, yet they have often been overlooked as viable transportation modes. Bicycling and walking can be excellent choices for short trips. Some factors that influence walking and bicycling mode choices are the distance between the start of the trip and the destination, climate, a person’s health, and the safety and availability of infrastructure.

The State’s Role in Bicycle and Pedestrian Infrastructure

The direction that Oklahoma has taken in developing its bicycle and pedestrian infrastructure is to focus attention on funding projects in urban areas and local communities, where there is the most population and, by proxy, the most need. The State relies primarily on the Transportation Enhancements and Safe Routes to Schools programs to support local community improvements. Project selection for the Transportation Enhancements program is made by a committee, as are decisions for the Safe Routes to Schools program. The Transportation Enhancements program usually commits about half or slightly more than half of available funds to bicycle and pedestrian projects. The Safe Routes to Schools program is dedicated to providing infrastructure and education projects that make walking and bicycling to school safer for students in elementary or middle school.

A recent additional opportunity occurred with the ARRA funding. The State committed \$26 million to local communities to revamp sidewalks throughout the state, primarily to bring sidewalks into compliance with Americans with Disability Act (ADA) standards.



It should be noted that the State does not have a stand-alone bicycle and pedestrian plan or any specific goals, such as improving pedestrian and bicyclist safety or increasing the rate of bicycling and walking as modes. There are no specific design guidelines available that address bicycle and pedestrian accommodation on State roads, nor any policies such as ‘routine accommodation’ that would ensure bicycle and pedestrian infrastructure was evaluated during all phases of the road project planning process.

Pedestrian safety on the road network is one issue that should receive attention. 2008 crash statistics¹ show that the pedestrian fatality rate was 21st worst in the nation (out of 50 states and the District of Columbia) with a fatality rate of 1.4 per 100,000 residents. Based on the potential level of walking in the State, pedestrians are over-represented in the statistics, as pedestrian deaths make up 6.8 percent of all crash fatalities. Making roads safer for pedestrians has the additional benefit of making roads safer for all users.

Trails

Trails that can be used as transportation routes are the result of work completed by the MPOs, cities, or towns. Trails, also referred to as multi-use paths, are physically separated facilities (from the road network) that are used by bicyclist and pedestrians and other non-motorized modes.

Trails differ from bikeways and sidewalks, as that infrastructure is generally immediately adjacent to (or in the case of bicycle lanes, on) a road. Sidewalks differ from trails in that sidewalks are most often for pedestrians only,² whereas multi-use paths accommodate a wide variety of non-motorized modes. Trails are often used for recreational purposes (running, hiking, skating) in addition to serving as transportation routes.

The State has a number of trails located in urbanized areas. Funding for these has come from the Transportation Enhancements program and other local sources. Opportunities for additional trails exist, and as evidenced in the regional transportation plans, the MPOs are planning for additional trails in their communities.

Pedestrian and Bicycle Transportation Strengths

- ▶ Since the inception of the Enhancement program in Oklahoma in 1993, approximately 200 projects, including sidewalks, downtown lighting and landscaping, and multi-use bicycle and pedestrian trails, have been funded to facilitate bicycle and pedestrian activity.
- ▶ The recent investment of stimulus funding to local communities for ADA requirements will help with sidewalks and accessibility.

Pedestrian and Bicycle Transportation Weaknesses

- ▶ Pedestrian and bicycle issues have not been a priority in overall State planning. ODOT has neither a full-time bicycle and pedestrian transportation coordinator, nor a statewide pedestrian and bicycle advisory committee. There are selection committees for projects funded through the Transportation Enhancement and the Safe Routes to School programs, but there is no statewide pedestrian and bicycle plan to guide discussions or investments.

Chapter 7 Endnotes

¹ National Highway Traffic Safety Administration National Center for Statistics and Analysis, publications 811 163 and 811 156.

² Skateboards, in-line skates, non-motorized scooters and Segways are also often allowed on sidewalks even though they have wheels. Persons using wheelchairs are considered as pedestrians.