

## 9. TRANSPORTATION SYSTEM NEEDS

This chapter identifies Oklahoma’s multimodal transportation needs in light of 2015-2040 L RTP goals, existing trends, and desired future performance. The needs were identified for transportation assets/functions that are not only under ODOT’s responsibility but also under the jurisdiction of partner entities or governmental agencies.

The transportation assets and functions that are under ODOT’s responsibility are:

- State Highway System – span bridge and bridge box structures;
- State Highway System – highways;
- State Highway System – interchanges; and,
- Transportation appurtenances
  - Safety,
  - Maintenance,
  - Ports of Entry,
  - Weigh stations and rest areas,
  - ITS, and
  - State owned freight rail.

The transportation assets and functions that are under the jurisdiction of partner entities or governmental agencies:

- Ports and waterways;
- Passenger rail;
- Public transportation;
  - Urban;
  - Rural;
  - Tribal;
- Intermodal facilities;
- Bicycle and pedestrian facilities; and,
- Locally owned federal aid system<sup>1</sup> and congestion management.

Additional information on the condition of the various modes in the existing transportation system is presented in **Chapter 6**.

### 9.1. BRIDGES

The needs for improvement to span bridges on Oklahoma’s State Highway System were assessed using the FHWA’s National Bridge Investment Analysis System (NBIAS) software tool. Span bridge improvement needs are identified based on criteria that are specific to Oklahoma and contain the standards for each bridge type, as defined by roadway functional class, NHS status, and annual average daily traffic (AADT).

The needs for bridge boxes on Oklahoma’s State Highway System were estimated using life-cycle analysis and input from ODOT Bridge Division engineers.

Several comments received from the public indicated a preference that higher priority be given for funding and replacing rural bridges that have been closed to traffic.

#### 9.1.1. Types of Bridge Needs

Bridge needs are presented in terms of three improvement categories in this report:

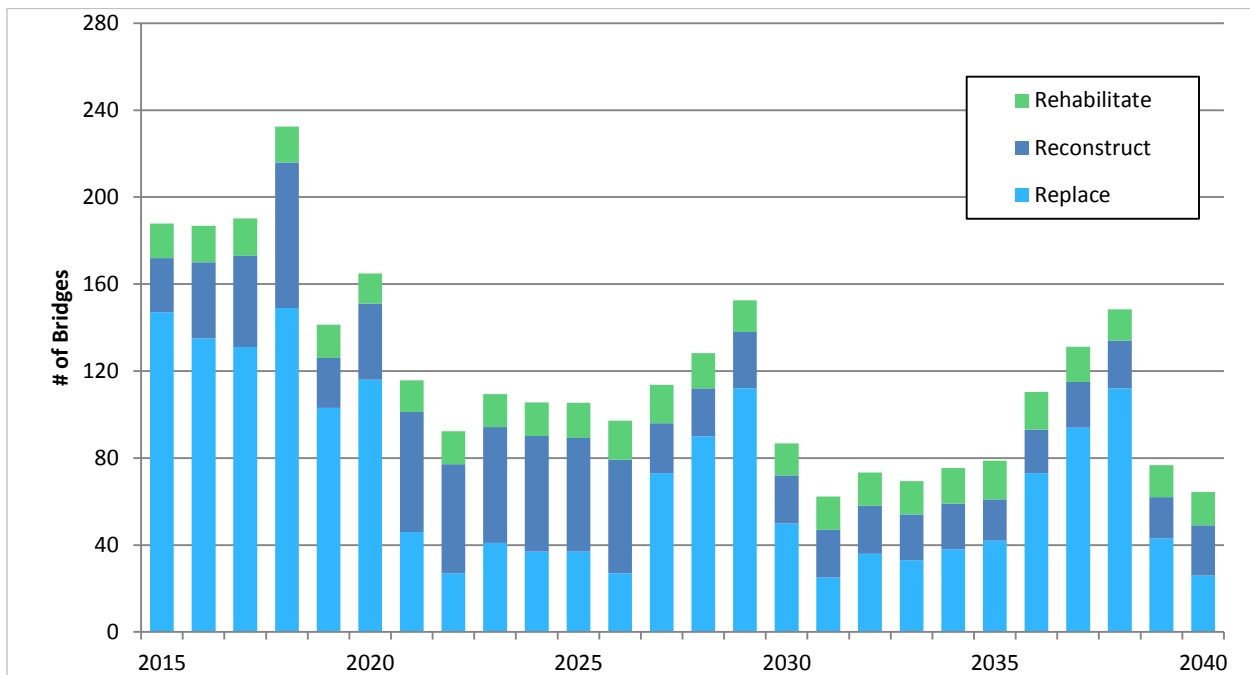
- **Rehabilitation** – involves work required to restore the structural integrity of a bridge as well as work necessary to correct major safety defects. Most rehabilitation projects include repairs to several bridge components, but rehabilitation can be limited to bridge deck replacement.
- **Reconstruction** – widening existing bridge lanes, raising bridges to increase vertical clearances, and strengthening bridges to increase load carrying capacity.
- **Replacement** – If needed functional improvement or reconstruction is infeasible because of the bridge design, or impractical because of its inferior structural condition, then the bridge is designated for replacement.

### 9.1.2. Bridge Needs

The 2015-2040 L RTP identified 3,101 bridges that will require some type of improvement which includes 1,843 bridge replacements, 846 bridge reconstructions, and 412 bridge rehabilitations. **Figure 9-1** illustrates an example of an annual bridge improvement schedule identifying the number of bridges that will require replacement, reconstruction, or rehabilitation.<sup>2</sup>

As shown in **Figure 9-1**, the number of bridges replacements between 2015 and 2020 is a high percentage of all bridge improvement projects. This suggested improvement schedule is consistent with the adopted Eight Year Construction Work Plan, and ensures meeting the ODOT performance target of less than 1 percent of structurally deficient bridges on the State Highway System by 2020. Most structurally deficient bridges are identified for replacement to meet the ODOT performance target.

**Figure 9-1. Proposed Number and Type of Bridge Improvements by Year**



Source: CDM Smith Bridge Needs Analysis using NBIAS

## 9.2. HIGHWAYS

State highway needs were analyzed using the Federal Highway Administration’s (FHWA) Highway Economics Requirements System, State Version (HERS-ST). The highway needs were identified based on criteria that were specific to Oklahoma which contain conditions for acceptable lane width, shoulder conditions, etc. for each functional class of roadway based on traffic volume and location (terrain type and rural/urban).

Comments at Open House meetings, advisory committee meetings, and through the web indicated that the commenters were aware of highway system issues such as the depleted state of the federal highway trust fund, increase in crashes due to congestion, deteriorating infrastructure, and the need for durable and longer lasting repairs.

### 9.2.1. Types of Highway Needs

The highway needs are presented in terms of three categories:

- **Preservation** refers to regular resurfacing of a road. When a road has pavement deteriorating to unacceptable levels, resurfacing is the improvement choice to maintain the integrity of the roadway. Resurfacing preserves the highway, and it is the most common type of improvement.
- **Reconstruction** is the improvement of an existing roadway by upgrading the geometrics and functionality of the segment. Improvements such as widening lanes and shoulders, and straightening curves, are examples of reconstruction. In addition, when roadways are so structurally deficient that they cannot be repaired by resurfacing

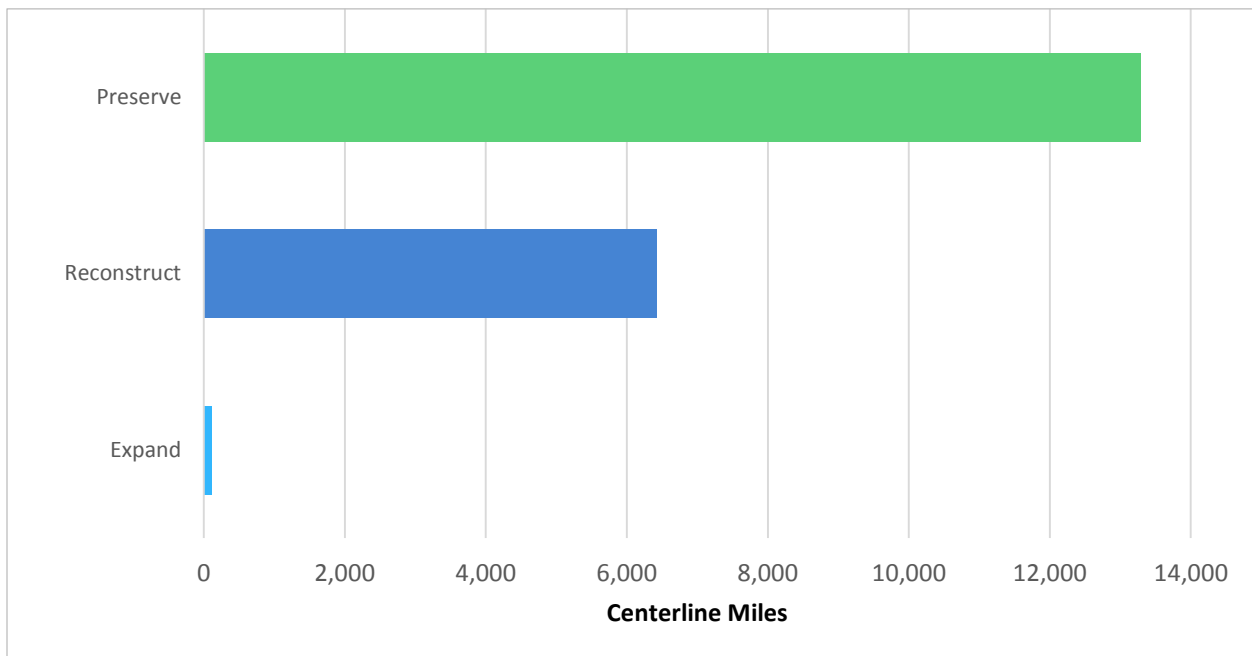
alone and must be rebuilt from the base, they are slated for reconstruction.

- **Expansion** deals with the need to provide additional capacity by adding lanes in order to alleviate congestion and maintain an acceptable level of service. Expansion is the most costly improvement type on average.

### 9.2.2. Highway Needs

The 2015-2040 LRTP identified that approximately 13,300 centerline miles of the State Highway System will require preservation (over the 25-year period some segments will require several treatments); 6,400 centerlines miles of the State Highway System will need reconstruction; and approximately 120 miles of expansion will be needed on the State Highway System.<sup>3</sup> **Figure 9-2** illustrates the 25-year highway needs by improvement type and centerline miles.

**Figure 9-2. State Highway System Needs by Centerline Miles**



Source: CDM Smith Highway Needs Analysis using HERS-ST

### 9.3. INTERCHANGES

Interchanges are another major category of highway needs which were considered for the 2015-2040 LRTP. The 25-year interchange needs were estimated by ODOT staff based on historical records of ODOT’s programming of such improvements.<sup>4</sup> Approximately 50 minor and seven major interchanges will require an improvement by 2040.

An interchange is defined as a system of interconnecting roadways in conjunction with one or more grade separations that provides for the movement of traffic between two or more roadways or highways on different levels.<sup>5</sup>

- A simple or minor interchange as an interchange where traffic is very light, and connection is between a high volume and a local or land service access road. Diamond interchanges are the simplest type of interchange.
- A major or complex interchange is an interchange with another freeway or expressway, or an interchange with a high-volume multi-lane highway, principal urban arterial, or major rural route where the interchanging traffic is heavy. Full cloverleaf, or directional interchanges are typically considered as complex or major interchanges.<sup>6</sup>

### 9.4. TRANSPORTATION APPURTENANCES

In addition to the highway, bridge and interchange needs, transportation appurtenances (accessory items or items associated with the transportation system) require improvement. These include safety, maintenance, Ports of Entry, weigh stations, rest areas, ITS, and state rail including at-grade highway railroad crossings.<sup>7</sup>

Public comments received during the 2015-2040 LRTP development indicated concerns with safety, ITS, and Ports of Entry. Individuals provided input indicating they were concerned about the safety

impacts of distracted and drunk/impaired driving, and the safety needs of motorcycle and bicycle users and pedestrians. Additionally, commenters indicated the need to improve the usage of ITS and sharing of Ports of Entry information with adjacent states.

#### 9.4.1. Safety

The 25-year safety needs were developed by ODOT safety engineers and are consistent with the Oklahoma Strategic Highway Safety Plan.<sup>8</sup> Safety improvement examples include the following:

- Median cable barriers;
- Centerline rumble strips;
- Clear zones;
- Guardrail;
- J-Turns;<sup>9</sup>
- Roundabouts; and,
- Selected safety improvements at freeway ramps.

**Table 9-1. State Highway System Safety Needs, 2015 – 2040**

Category	Quantity Estimate
Median Cable Barrier	545 mi
Centerline Rumble Strip	5,000 mi
Clear Zones	250 mi
Guardrail	2,200 mi
J-Turns	20
Roundabouts at intersections	150
Selected safety improvements at freeway ramps	35

#### 9.4.2. Maintenance

The 25-year maintenance needs were developed by analyzing the ODOT maintenance budget from 2009 to 2013, and trend analysis to forecast maintenance needs and related costs for 2015-2040. Maintenance needs were defined for routine maintenance as well as special maintenance. Routine maintenance encompasses all aspects of maintenance including mowing,

snow removal, striping, painting, pothole repair, routine armor coats, etc. Special maintenance includes heavier construction overlays, etc.

### 9.4.3. Ports of Entry

The 25-year Ports of Entry needs were developed based on a collaborative analysis completed in the last few years by ODOT, the Oklahoma Corporation Commission, and the Oklahoma Turnpike Authority. ODOT Facilities Management is in charge of construction and maintenance and has completed two of the eight planned facilities in Beckham and Kay Counties. The six remaining Ports of Entry are identified for construction between 2015 and 2040.

### 9.4.4. Weigh Stations and Rest Areas

The 25-year weigh station and rest area needs were developed in coordination with ODOT Facilities Management staff. Oklahoma has 22 weigh stations and truck scale areas; and of these, four weigh stations are planned for renovation.

Oklahoma has eight rest areas – four along I-40, three along I-35, and one along US-69. Two of these rest areas were renovated in 2006-2007; and the remaining six rest areas are anticipated to need renovation in the next 25 years.

### 9.4.5. Intelligent Transportation System (ITS)

ODOT's Statewide ITS Implementation Plan (2004) identified short-term and long-term ITS needs and related costs. The needs include statewide fiber optic cable expansion, implementation/expansion of a regional traffic management center (RTMC) field devices, statewide transportation information center implementation, ITS central software purchase, ITS data archiving, statewide road weather information system (RWIS) deployment, and 5-1-1 traveler information system development. Of the above needs, work has been initiated on the following items in recent years – statewide fiber optic cable expansion, implementation/expansion of RTMC field devices, and statewide transportation information center implementation.

### 9.4.6. State Freight Rail

ODOT preserves and maintains state-owned rail infrastructure. At this time, the primary focus of the state's efforts has been to maintain the safety and condition of the existing system.

The State of Oklahoma also maintains approximately 3,800 railroad crossings. Rail crossing safety affects passenger and freight rail, highway vehicles, school buses, and bicyclists and pedestrians. The ODOT Rail Programs Division works to minimize risks to this mode through three primary focuses: single high-priority rail crossing locations, statewide minimum rail safety standards projects, and rail corridor safety improvements.

ODOT expects to implement about 750 rail crossing safety improvements over the next 25 years. Additionally, other needed improvements include items such as switching repairs, siding expansion or additions, and replacement of rail infrastructure.

## 9.5. PRIVATE FREIGHT RAIL

The State of Oklahoma has approximately 3,600 miles of rail line with over 90 percent of this being privately owned. Freight rail traffic is projected to experience significant growth and the number of trains on some corridors is expected to double over the next 25 years.<sup>10</sup> The largest growth in freight rail traffic per day is projected on the BNSF line in northern Oklahoma. Class I and Class III privately owned railroads are typically responsible for improvements associated with its railroads; and ODOT Rail Programs Division works with the private sector and affected local governments to facilitate this process. The Oklahoma Freight Study (2014) and stakeholders involved in the 2015-2040 LRTP process identified the following private freight rail issues and needs throughout Oklahoma.

### 9.5.1. Rail Capacity Improvements

In Oklahoma, expansion and growth in the energy sector along with other expected agricultural, industrial and manufacturing activities will

increase freight rail demand over the next 20 years. The Oklahoma State Rail Plan discussed several capacity improvements identified by the BNSF and Union Pacific Class I railroads.<sup>11</sup> Capacity improvements include yard expansion, siding expansion, double tracking of certain sections, and corridor extensions.

The Class III railroad<sup>12</sup> industry in Oklahoma has a significant portion of its rail system that is unable to accommodate industry-standard 286,000 pound gross weight railcars. Railroads that are not capable of these loads put shippers at a disadvantage by removing some of the efficiencies and advantages of rail freight shipments. According to *the 2012 Oklahoma Freight and Passenger Rail Plan*, approximately 130 miles of track and at least 230 structures need to be upgraded in order to handle 286,000 pound loads.

### 9.5.2. Modal Connections to Rail

Oklahoma's freight rail system includes access to grain elevators, industrial park locations, and connections to the inland waterway system. Oklahoma businesses have continually expressed interest in transload facilities and their effectiveness in the movement of freight.

Transloading is a term describing product transportation that typically involves transfer of non-containerized freight from one mode to another. Transload facilities are concentrated in the eastern and central part of the state; and the need for this type of facility to allow interaction between freight modes is present in the western part of the state as well. One very unique facility is the Port of Catoosa on the MKARNS where goods can be transferred from both water and truck to rail. Development of industrial parks or transload facilities could provide assistance to customers that do not have the volume to support a unit train facility (110+ cars).

Current Class I rail business practices require short line<sup>13</sup> railroads and other customers to provide longer trains, i.e. 110+ cars, which is difficult for shortline railroads that do not have

adequate volumes of storage facilities. As a result, the most common type of connection is where customers utilize trucks to send goods directly to a railroad facility.

### 9.5.3. Railroad Crossing Safety

ODOT and its state, local and private sector partners have made progress through cooperative efforts to improve signage and safety at railroad crossings, but the needs continue to far outweigh the resources available.

At-grade railroad crossings (discussed earlier under the State Freight Rail section 9.4.6), apart from being a safety factor, also contribute to traffic congestion and traffic issues. The current trend of railroads utilizing longer "unit trains" places pressure on facilities/communities served, such as increasing bottlenecks at railroad crossings.

### 9.5.4. Other Rail Safety Issues

The increased use of rail tank cars for carrying crude oil has heightened attention to the need to strengthen rules regarding labeling of hazardous material, tank car specifications, and potential route and/or speed restrictions. Other concerns include derailment and release of hazardous materials. Positive train control (PTC), a technology improvement designed to automatically stop or slow a train before certain types of accidents occur will assist greatly with addressing train-to-train collisions, derailments caused by excessive speed, and movement of a train through a track switch left in the wrong position. All the Class I railroads are required to implement PTC systems by the federally mandated deadline of December 31, 2015.

## 9.6. PASSENGER RAIL

Passenger rail returned to Oklahoma in 1999 after a 20-year absence. Amtrak, the national passenger rail company, operates the Heartland Flyer which is a daily passenger service that follows a 206 mile route between Oklahoma City and Ft. Worth, Texas. AMTRAK is currently the sole provider of intercity passenger rail service in

Oklahoma, although private railroad companies have expressed interest in entering this market.

Ridership on the Heartland Flyer has steadily increased annually to the point of counting the one millionth rider in 2013; the Heartland Flyer averages approximately 82,000 riders per year. The historic ridership is presented in **Figure 9-3**.

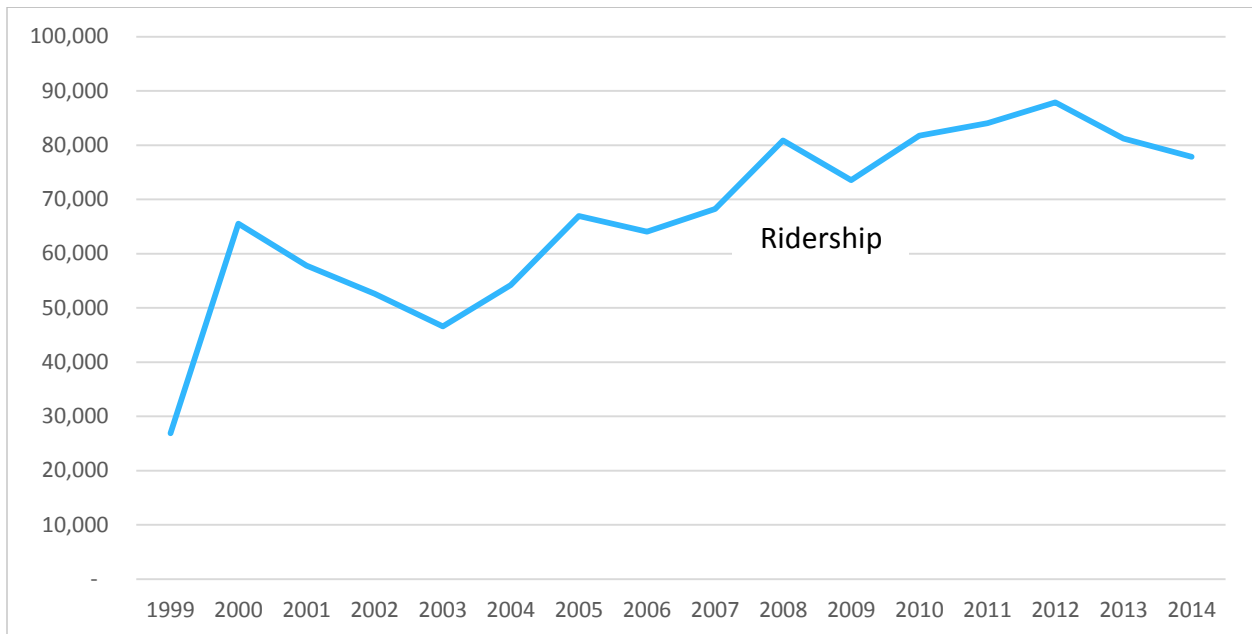
Public sentiment about the existing passenger rail service in Oklahoma is positive. The Amtrak Heartland Flyer from Oklahoma City to Ft. Worth is popular, and stakeholders expressed a desire for more than the current one-trip-per-day frequency between the two cities.

There is interest in expanding passenger rail service to include Oklahoma City to Tulsa, and

between Oklahoma City and Newton, Kansas. Some residents expressed the desire for high speed rail service to be set as a goal, particularly routes to connect major metropolitan areas, by the year 2040. Oklahoma leaders and ODOT continue to consider how it can maximize the efficiency of the Heartland Flyer Amtrak service, and to evaluate the possibilities for extension of passenger rail service into new markets.

The FRA is initiating work on software that will aid in the development of ridership estimates and performance information, but this is still in the early phases of development. This Plan document recognizes that there is an interest in passenger rail service in Oklahoma, but the level of need cannot be quantified at this time.

**Figure 9-3. Historic Heartland Flyer Ridership**



Source: AMTRAK, Oklahoma Department of Transportation Rail Programs Division



Following are the other rail routes that are undergoing evaluation, and that may be more suitable for implementation beyond the scope of this Plan period.<sup>14</sup>

- Extend Heartland Flyer to Newton, Kansas;
- New Daytime Service between Kansas City – Oklahoma City – Fort Worth;
- Intercity Passenger Rail between Tulsa and Oklahoma City; and,
- Passenger Rail from South Texas to Oklahoma.

Other local projects such as the ACOG sponsored Oklahoma City–Edmond, Oklahoma City–Norman and Oklahoma City–Midwest City corridor studies are also in the evaluation phase.

## 9.7. PUBLIC TRANSPORTATION

The past decade has seen increased growth in national transit ridership and the same trend also occurred in Oklahoma. Urban transit ridership grew at a rate of 4.4 percent between 2009 and 2013. In that same time frame, rural transit ridership increased by 8.7 percent.

Oklahoma has 20 rural public transportation providers, five urban public transit providers and 14 tribal transit providers.<sup>15</sup> The type of public transportation service (fixed route, demand response, and paratransit) that each agency provides varies, but most agencies provide some combination of the three types of service.

- Fixed route transit offers service on a fixed schedule on a specific route with vehicles stopping at specific locations along the route.
- Demand response transit is a service provided on an as-needed (or demand) basis, where the user calls the transit operator to dispatch a vehicle or pick up a passenger. Small buses and vans are frequently used to transport passengers.
- Paratransit is a flexible means of passenger transportation with wheelchair accessible

vehicles that can include demand response, shared ride taxis, and carpooling.

Additionally, Oklahoma is served by two intercity private bus companies, Greyhound Lines and Jefferson Bus Lines.

The 2015-2040 LRTP public transportation needs include capital and operational improvements, for rural, urban, and tribal transit systems in Oklahoma. The needs identified are based on existing services and future needs identified by public input, information from individual transit providers, feedback from the local Council of Governments (COGs), and needs identified in the following:

- Rural Transit 5311 Data 2009-2013, ODOT Transit Programs Division;
- Lawton MPO 2035 Long Range Transportation Plan;
- ACOG (Oklahoma City Area) MPO Long Range Transportation Plan 2035; and,
- INCOG (Tulsa Area) 2035 Regional Transportation Plan.

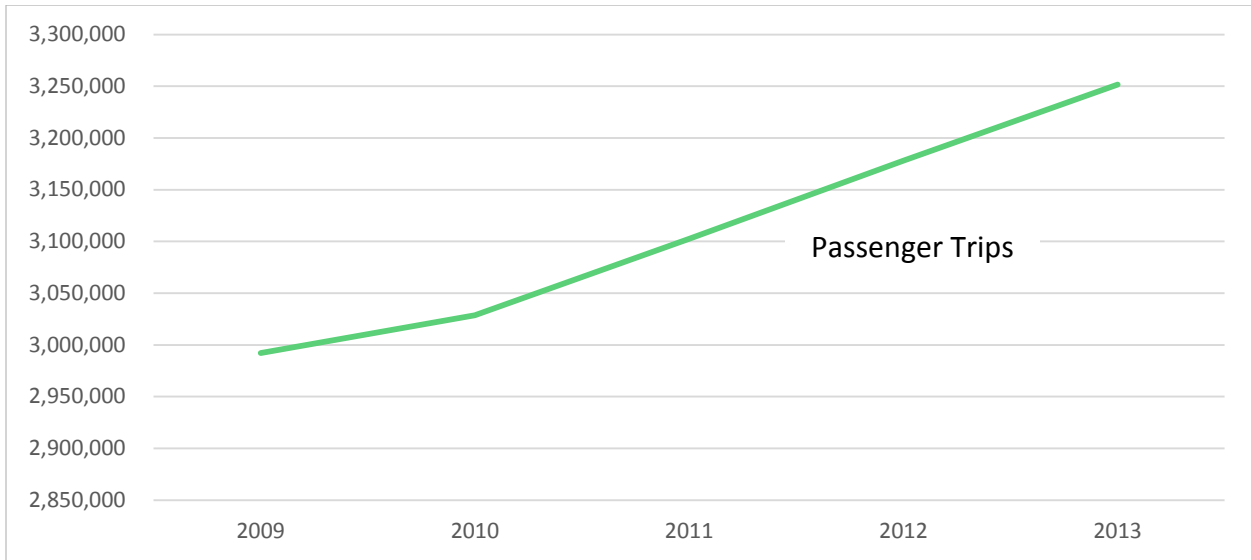
### 9.7.1. Rural Public Transit Needs

The rural transit program is instrumental in providing needed transportation to Oklahoma citizens all across the state. The rural transit providers operate in 73 of the 77 counties geographically spread across the entire state. **Figure 9-4** illustrates the ridership level for the past five years.

Rural residents in Oklahoma need transit services to assist them in reaching vital services such as health care, education, employment, and social and recreational services. Over the past five years, the revenue miles increased by 18 percent and passenger trips increased by 8.7 percent. Over one-quarter of the trips in the last five years were made by elderly and disabled persons, and this group of patrons is growing three times the rate of passengers as a whole.



**Figure 9-4. Historic Rural Transit Ridership**

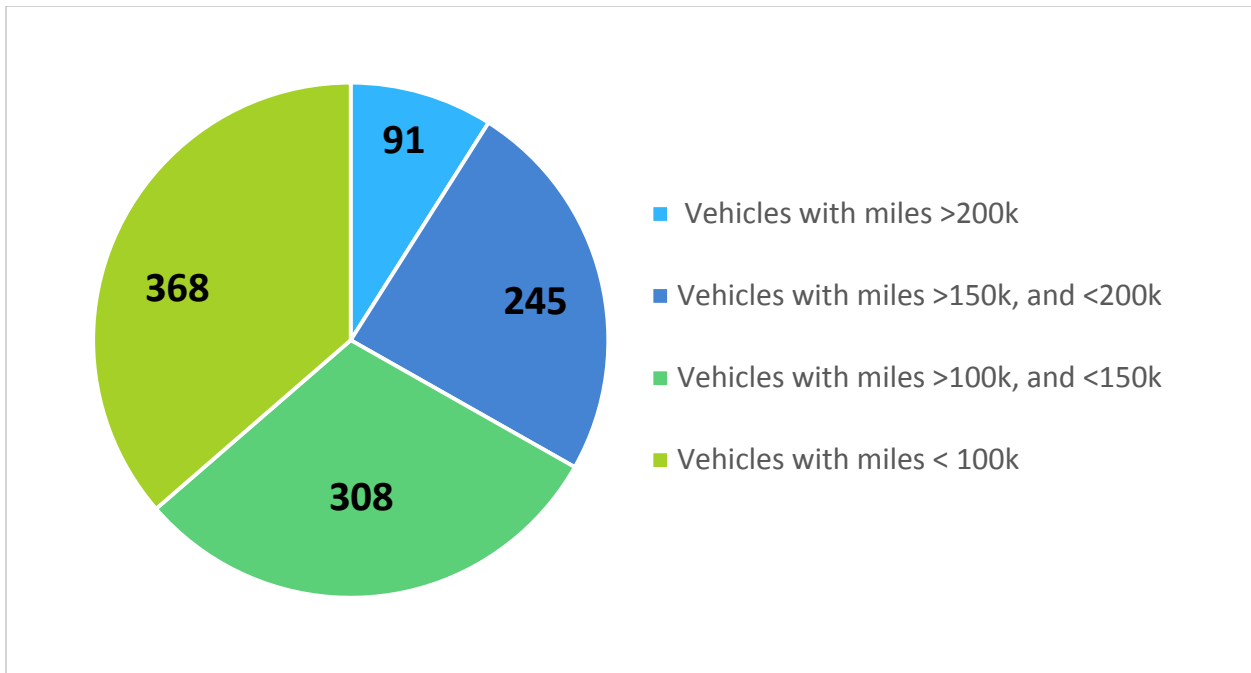


Source: Oklahoma Department of Transportation Transit Program

An analysis of the rural transit fleet data revealed that 64 percent (644 vehicles) of the system’s current fleet (1,012 vehicles) has more than 100,000 miles. The remaining 36 percent (368 vehicles) of the system’s current fleet has less

than 100,000 miles (**Figure 9-5**). The entire fleet will need to be replaced over the next 25-years, and some vehicles likely need two or more upgrades.

**Figure 9-5. Rural Transit Fleet Condition**



Source: Oklahoma Department of Transportation Transit Program

Comments received through the public involvement process indicated a strong concern for unmet rural transit needs. People noted that public transit in rural areas is a vital service for people who cannot drive or do not own a car.

Stakeholders pointed out that transit (trends) will only increase with the growing number of baby boomers who no longer want to drive or are able to drive. Previous routes tailored to provide journey-to-work rides have ended and/or service hours have been reduced. The declining investment in public transportation over the previous decade directly affects the ability of people to remain healthy, age in place, and seek employment across town or in another community where there are employment opportunities.

The 2015-2040 LRTP Personal Travel Advisory Committee raised the issue of the need for better communication, coordination, and connections between rural, urban, tribal, and intercity bus and train services.

### 9.7.2. Urban Public Transit Needs

Urban public transportation systems serve communities with populations of 50,000 or more. In Oklahoma, urban transit providers serve the Lawton region, the Oklahoma City metropolitan area in Central Oklahoma, and the Tulsa metropolitan area. Providers in all three areas offer transport for the general public and specialized services for the elderly and persons with disabilities. The future demand for transit service is evident from the increase in ridership from 7.4 million in 2009 to 7.8 million passengers in 2013.

Residents of urban areas identified needs for greater service frequency and longer hours of service, weekend service, as well as more routes to serve employment and retail hubs. Urban transit needs are largely planned and met within the context of metropolitan area transit services and metropolitan planning areas through the metropolitan area long range transportation plans.

### 9.7.3. Tribal Public Transit Needs

The tribal transit services have been initiated since 2006 using federal funds from the FTA Tribal Transit Program, Section 5311(c), which helps promote public transportation in tribal communities. Tribal transit in rural areas is a vital service to people who cannot drive or do not own a car. Transit service is needed to reach employment and educational, medical, and social services.

The tribal transit programs are the newest participants in the transit service process. While tribal participation in the transit process has grown in the last five years, further growth and refinement of the needs assessment and planning process is anticipated in the future.

## 9.8. INTERMODAL FACILITIES

An intermodal transportation hub or facility is a place where passengers and/or cargo are exchanged between vehicles or between transport modes. Intermodal public transport hubs include passenger rail stations, transit stations, bus stops, airports and ferry slips. Intermodal freight transportation centers include airports, rail classification yards, rail and waterway connection infrastructure and truck terminals, or combinations of these. Intermodal freight facilities typically handle containerized traffic that moves on the road, rail, or waterway systems.

The need for intermodal transportation hubs has been expressed by various governmental and private entities, along with stakeholders within the State of Oklahoma.<sup>16</sup> The Oklahoma City area intermodal passenger transportation hub, which is planned to be situated at the Santa Fe Depot on E.K. Gaylord Boulevard in downtown Oklahoma City, is expected to serve as the centerpiece of the future regional transit system and accomplish multiple goals for multiple client groups.

The State of Oklahoma is in the early stages of exploring intermodal facilities. Capitalizing on Oklahoma's central location, intermodal freight

facilities could be developed to benefit the different industrial sectors. These sectors include agricultural commodity processing, industrial livestock production, aerospace and electronics manufacturing, and warehouse and distribution. Intermodal and inter-state coordination should be considered as part of the process of developing and advancing viable options for intermodal facilities. The 2015-2040 LRTP recognizes that there is an interest in creating intermodal facilities in Oklahoma, but the level of need cannot be quantified at this time.

### 9.9. PORTS AND WATERWAYS

The MKARNS is the nation’s most inland waterway and Oklahoma’s primary navigable waterway originating from the Tulsa Port of Catoosa and flowing southeast through Arkansas to the Mississippi River. The Ports of Muskogee and Catoosa are the state’s two public ports, and both are designated as Foreign Trade Zones. In addition, there are several other private port operations along the MKARNS.

There are a number of initiatives that would be helpful in advancing the capabilities of the Oklahoma waterways. The primary needs for the MKARNS are:<sup>17</sup> proceeding with critical maintenance, deepening the channel to 12 feet, addressing the navigation channel overflow issue at the confluence of the Arkansas, White, and Mississippi Rivers, and adding tow haulage to the locks. The USACE is responsible for the operation and maintenance of the system and defines “critical maintenance” projects as having a 50 percent or greater probability of failure within the next five years.

The deepening of the MKARNS channel to 12 feet draft (current navigable draft is 9 feet) would allow barges to carry increased weights, thereby saving shipper costs and making the system more competitive with similar waterway systems and other modes of transportation. Increased tonnage on the system would decrease the burden placed on railroads and highways, thereby reducing pavement deterioration and potentially improving air quality.

### 9.10. BICYCLE AND PEDESTRIAN FACILITIES

Bicycle and pedestrian facilities throughout Oklahoma consist of multi-use trails, bicycle routes, and sidewalks. The planning and implementation of bicycle and pedestrian improvements are typically completed at the local government level, in cooperation with a regional COG, and/or through a MPO.

The public’s appetite for bicycle and pedestrian facilities has sharpened in Oklahoma and elsewhere. Bicycle and pedestrian facilities are important for commuting, public health and safety, and environmental reasons. A need for incorporating design guidelines for bicycle and pedestrian facilities in the ODOT roadway design manual was also identified by bicycle advocates and citizen commenters.

The bicycle and pedestrian needs were examined for each metropolitan area by reviewing the regional bicycle plans and/or bicycle-pedestrian elements of the latest MPO Long Range Transportation Plans. Bicycle and pedestrian needs for rural communities were assessed based on public input, communication with the rural Councils of Government, and on historical needs and implemented projects.<sup>18</sup> **Table 9-2** summarizes the total bicycle and pedestrian estimated improvements needed/planned for the next 25 years by lane miles.

**Table 9-2. Planned Bicycle and Pedestrian Improvements, 2015-2040**

Facility Type	Lane Miles
Multi-Use Trails	1,035
Signed Bike Routes/Lanes	989
Sidewalks	1,100

## 9.11. AIRPORT ACCESS

Air transportation plays an important role in economic competitiveness and the access to airports and surrounding infrastructure is important for quality of life, tourism, and commerce. The various cities, town, and counties in Oklahoma that have public airports within their political boundaries work with the Oklahoma Aeronautics Commission and the Federal Aviation Administration to ensure that the aviation needs of commerce and communities across Oklahoma are met.

As the manufacturing base shifts to high value and high tech products, the importance of efficiency and reliability in transportation has increased to support just-in-time supply chains. Airport services are integral to this component of the freight supply chain. Convenient airport access is also important to local residents and businesses.

The public expressed the importance of providing access to the airport by transit. It was understood that good surrounding infrastructure and network connectivity<sup>19</sup> is vital for personal and business travel.

## 9.12. LOCALLY OWNED FEDERAL AID HIGHWAY SYSTEM

The State Highway System does not include all federal aid miles in Oklahoma. In addition to the State Highway System, arterial streets and roads, and some collector facilities locally owned by counties, cities and towns, are eligible for federal aid. The federal aid miles under the jurisdiction of cities, towns, and counties in Oklahoma total nearly 19,000 miles.<sup>20</sup> To help address local government owned federal aid system improvement needs,<sup>21</sup> ODOT provides annual funding to counties, cities, and to the ACOG and INCOG MPOs.

## 9.13. CONGESTION MANAGEMENT

The Congestion Mitigation and Air Quality Improvement (CMAQ) Program was implemented by FHWA and FTA to support surface transportation projects and other related efforts that contribute air quality improvements and provide congestion relief.<sup>22</sup> ODOT uses these funds to improve air quality levels by passing through funds to ACOG, INCOG, and Lawton MPOs for use in promoting carpools, transit ridership, bicycle and pedestrian transportation, and the use of clean fuels.

## 9.14 SUMMARY

Oklahoma's 25-year multimodal transportation needs includes improvements that are ODOT's responsibility as well as improvements addressed by private railroads, and federal and local governments or partner agencies. The estimated cost of the improvements identified and the anticipated revenue to address those improvements are presented in **Chapter 10**.

Oklahoma's federal, state, and local partners must coordinate and collaborate to ensure the transportation challenges of today and tomorrow are addressed through strategic policies and adequate funding levels. The process of developing the 2015-2040 LRTP needs resulted from considerable coordination among a variety of statewide stakeholders.

## 9.15. ENDNOTES

<sup>1</sup> An example of a Locally Owned Federal Aid System facility is Davis Avenue on the west side of the City of Weatherford. This street, splits off of I-40 as the Interstate veers southwest in the center of town. Another example would be NW 50<sup>th</sup> Street in Oklahoma City. Typically the streets on the federal aid system that are locally owned are important streets within the community, but do not extend throughout the county or state.

<sup>2</sup> Additional information about bridge needs is contained in the Modal Needs Technical Memorandum. 2015-2040 LRTP Tech Memo Modal Needs.

<sup>3</sup> Additional information about highway needs is contained in the Modal Needs Technical Memorandum. 2015-2040 LRTP Tech Memo Modal Needs.

<sup>4</sup> Additional information about interchange needs is contained in the Modal Needs Technical Memorandum. 2015-2040 LRTP Tech Memo Modal Needs.

<sup>5</sup> Interchange definition developed by American Association of State Highway and Transportation Officials (AASHTO).

<sup>6</sup> Definitions of simple and complex interchanges are based on information from the 2009 Oklahoma Manual of Uniform Traffic Control Devices (MUTCD) Supplement.

<sup>7</sup> Additional information about appurtenance needs is contained in the Modal Needs Technical Memorandum. 2015-2040 LRTP Tech Memo Modal Needs.

<sup>8</sup> The first Oklahoma Strategic Highway Safety Plan (SHSP) was developed in 2007. An update is slated for publication in 2015.

<sup>9</sup> A J-Turn requires side road movements to be made indirectly by making a right turn, traveling about a quarter-mile (pending speed and curves) on the divided main road, and then making a U-turn to proceed in the opposite direction on the main road toward the intended destination.

<sup>10</sup> Additional information about private freight rail needs is contained in the Modal Needs Technical Memorandum. 2015-2040 LRTP Tech Memo Modal Needs.

<sup>11</sup> Class I railroads- The Surface Transportation Board defines Class I railroads as having annual revenues of \$467 million nationwide and provide a majority of the freight movement through the country.

<sup>12</sup> Class III railroads- The Surface Transportation Board defines Class III railroads as those that have total national yearly revenues below \$37.4 million, and that make up most of the local, switching, and terminal railroads. Generally, Class III carriers are referred to as short lines.

<sup>13</sup> Short line railroads, also as defined by the American Association of Railroads (AAR), fall into two categories: local railroads and switching & terminal railroads are railroads that are either jointly owned by two railroads for the purpose of transferring cars between railroads or operate solely within a facility or group of facilities. Generally, Class III carriers are referred to as short lines.

<sup>14</sup> Additional information about passenger rail needs is contained in the Modal Needs Technical Memorandum. 2015-2040 LRTP Tech Memo Modal Needs.

<sup>15</sup> Additional information about public transportation needs is contained in the Modal Needs Technical Memorandum. 2015-2040 LRTP Tech Memo Modal Needs.

<sup>16</sup> Additional information about intermodal facility needs is contained in the Modal Needs Technical Memorandum. 2015-2040 LRTP Tech Memo Modal Needs.

<sup>17</sup> Additional information about ports and waterway needs is contained in the Modal Needs Technical Memorandum. 2015-2040 LRTP Tech Memo Modal Needs.

<sup>18</sup> Additional information about bicycle and pedestrian facility needs is contained in the Modal Needs Technical Memorandum. 2015-2040 LRTP Tech Memo Modal Needs.

<sup>19</sup> Additional information about airport access needs is contained in the Modal Needs Technical Memorandum. 2015-2040 LRTP Tech Memo Modal Needs.

<sup>20</sup> According to the 2013 "Federal Aid Highway, Miles by Ownership" publication, cities, towns, and counties in Oklahoma own 18,989 miles in the aggregate. <http://www.fhwa.dot.gov/policyinformation/statistics/2013/pdf/hm14.pdf>

<sup>21</sup> Additional information about needs on the local government owned federal aid system is contained in the Modal Needs Technical Memorandum. 2015-2040 LRTP Tech Memo Modal Needs.

<sup>22</sup> Additional information about needs related to congestion management and improved air quality is contained in the Modal Needs Technical Memorandum. 2015-2040 LRTP Tech Memo Modal Needs.

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