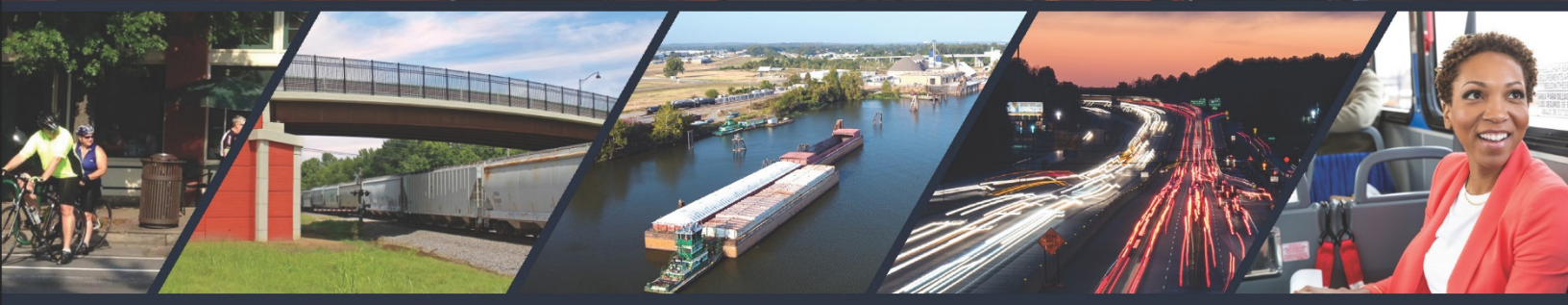
TRANSPORTATION 2040

WE MOVE ARKANSAS

ARKANSAS

Long Range Intermodal Transportation Plan



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ACRONYMS

AKMD	Arkansas Midland Railroad
AM	Arkansas Missouri Railroad
APHN	Arkansas Primary Highway Network
AR	Arkansas
ARDOT	Arkansas Department of Transportation
BNSF	Burlington Northern Santa Fe Railroad
BRAD	Black River Area Development Corporation
CADC/SCAT	Central Arkansas Development Council/South Central Arkansas Transit
CAP	Connecting Arkansas Program
CCTV	Closed-Circuit Television Camera
CMAQ	Congestion Mitigation and Air Quality
DMS	Dynamic Message Sign
DOT	US Department of Transportation
EPA	US Environmental Protection Agency
FAST Act	Fixing America's Surface Transportation (P.L. 114-94)
FHWA	Federal Highway Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
FY	Fiscal Year
GSP	Gross State Product
HAR	Highway Advisory Radio
HERS-ST	Highway Economics Requirements System, State Version
HPMS	Highway Performance Monitoring System
HSIP	Highway Safety Improvement Program
ILS	Instrument Landing System
IMPLAN	impact analysis for planning
IRI	International Roughness Index
ITS	Intelligent Transportation System

JET	Jonesboro Economical Transportation System
LIT	Little Rock National – Adams Field
LOS	Level of Service
LRITP	Long Range Intermodal Transportation Plan
MAP-21	Moving Ahead for Progress in the 21st Century Act (PL 112-141)
MKARNS	McClellan-Kerr Arkansas River Navigation System
mph	miles per hour
MPO	Metropolitan Planning Organization
NATS	North Arkansas Transportation Service
NAAQS	National Ambient Air Quality Standards
NBIAS	National Bridge Investment Analysis System
NCHRP	National Cooperative Highway Research Program
NEAT	Northeast Arkansas Transportation
NHS	National Highway System
NOx	Nitrogen Oxide
NPRM	Notice of Proposed Rulemaking
ORT	Ozark Regional Transit
OUCH	Ouachita Railroad
PCI	Pavement Condition Index
RCT	Roadway Clearance Time
RWIS	Roadway Weather Information System
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (PL 109-59)
SEAT	Southeast Arkansas Transportation
SGR	State of Good Repair
SHS	State Highway System
SHSP	Strategic Highway Safety Plan
STIP	Statewide Transportation Improvement Program
TAM	Transit Asset Management
TEA-21	Transportation Equity Act for the 21st Century (PL 105-178)
TIGER	Transportation Investment Generating Economic Recovery
TIP	Transportation Improvement Program
TDM	Travel Demand Management

T-PAG	Transportation Planning Advisory Group
TUTD	Texarkana Urban Transit District
TXK	Texarkana Regional Airport
UP	Union Pacific Railroad
V/C	volume to capacity ratio
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compounds
WTS	Western Transit System
XNA	Northwest Arkansas Airport

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1. INTRODUCTION

Transportation infrastructure is the backbone of a modern, competitive, and productive economy. Arkansans rely on the transportation system every day to access work, school, shopping, healthcare, etc. An interconnected transportation system supports the efficient movement of people, goods and services, supports trade and commerce, connects supply chains, and reduces operating costs for businesses and industries. Multimodal transportation refers to the various transportation modes, while intermodal transportation refers to the connections between those different modes allowing one to use multiple modes to complete one trip. In Arkansas, the intermodal transportation system has served us well, but it is deteriorating, worn down by age and stretched beyond capacity by the shifting demands of our economy and growing population.

Investing in Arkansas' intermodal transportation system will create jobs, increase productivity, improve travel time reliability, improve safety, increase mobility options, and in turn improve Arkansas' economic competitiveness. Well maintained, efficient and resilient transportation systems touch every community, business and household.

> ***"Planning is bringing the future to the present so that you can do something about it."***
>
> *-Alan Lakein*

While the challenges of preserving, maintaining, and modernizing Arkansas' vast intermodal transportation system are significant, reinvesting in Arkansas' transportation system to meet the demands of the 21st Century will support future economic growth and improve our regional and global competitiveness.

Over the last 18 months, Arkansas Department of Transportation (ARDOT) has been updating the Arkansas' Long Range Intermodal Transportation Plan (LRITP). This 25-year Plan outlines transportation goals and objectives, identifies the system's needs and future revenues, and details potential strategies and policies to guide future transportation investments to move Arkansas forward.

1.1 State and Federal Legislation and Requirements

Legislation enacted by the State of Arkansas and the federal government underlies the goals and strategies of the LRITP.

The Arkansas Highway and Transportation Act of 1977 (Act 192) added to the powers and duties of the State Highway Commission in Arkansas to include the development of a statewide, multimodal transportation plan including but not limited to airways, highways, railways, waterways, bicycling, mass transit, and other transportation facilities. It also changed the name of the Arkansas State Highway Department to the Arkansas State Highway and Transportation Department.

The United States Congress enacted MAP-21, the Moving Ahead for Progress in the 21st Century Act (P.L. 112-141), on July 6, 2012. Included in this legislation was an increased focus on performance management, which requires the use of performance data to guide decisions in the planning process for state departments of transportation (DOTs) and metropolitan planning organizations (MPOs).

Fixing America's Surface Transportation Act (FAST Act) (Pub. L. No. 114-94), signed into law on December 4, 2015, is the first law enacted in more than 10 years that provides long-term surface transportation funding. The FAST Act maintains the performance-based planning approach while streamlining project approval processes and providing long-term funding certainty and flexibility with annual increases. The FAST Act also emphasizes the importance of freight and designates that certain funding be used specifically on freight mobility projects.

With the signing of the federal surface transportation bills (MAP-21 in 2012 and the FAST Act in 2015), states are now required to develop performance-based long-range statewide transportation plans. The performance measures included in the long-range transportation plan should be related to assisting the state DOT to make progress in the national goal areas. The national goal areas identified in MAP-21 include safety, infrastructure condition, congestion reduction, system reliability, freight movement and economic vitality, environmental sustainability, and project delivery delays.

FHWA has finalized the rulemaking for transportation performance measures. Final rulemaking for the safety performance measures was released on March 15, 2016. Final rulemaking for bridge and pavement conditions was released on January 18, 2017. Final rulemaking for system performance, freight movement, congestion mitigation, and air quality was released on January 18, 2017. The bridge, pavement, system performance, freight movement, and congestion mitigation Final Rule became effective on May 20, 2017. After further consideration, FHWA determined that the Final Rule pertaining to the measure on the percent change in CO2 emissions from the reference year 2017, generated by on-road mobile sources on the National Highway System (the GHG measure) would benefit from further notice and comment procedures under the Administrative Procedure Act (APA). As such, FHWA delayed the effective date for these provisions and FHWA will publish a NPRM in the Federal Register at a later date pertaining to the GHG measure. Thus, the effective date is delayed until such rulemaking on the GHG measure is completed. FHWA is also developing guidance for state DOT implementation of the measures and coordination with MPOs.

The LRITP, which covers the 25-year period between 2016 and 2040, is the fourth long-range plan approved by the Arkansas Highway Commission as well as being ARDOT's first performance-based plan to address the performance areas in MAP-21 and the FAST Act. The LRITP provides a foundation for the use of transportation data and public and agency input to continually monitor the state's progress toward desired outcomes.

As the LRITP progresses, investment decisions and procedures will be fine-tuned to identify the most effective uses of capital, equipment, and staff.

The Arkansas LRITP is federally compliant and it specifically includes the following:

- Analysis of trends and the role of transportation in the economy
- Description of the existing multimodal transportation system and its condition
- Goals and objectives
- Performance measures aligned with the identified goals and objectives
- Multimodal transportation system needs through 2040
- Baseline revenue forecast through 2040
- Analysis of alternative future scenarios
- Policy recommendations and implementation strategies

The LRITP is aligned with ARDOT's strategic goals. These strategic goals are to provide safe and efficient transportation solutions, accomplish our mission with a focus on stewardship, champion transportation solutions that promote quality of life and economic development, continually improve through employee engagement, and maximize external and internal customer satisfaction.

1.2 Background

Since the development of the 2007 LRITP, many changes to transportation legislation and funding have been made. A greater emphasis is now placed on measuring and tracking performance of the transportation system over time. In addition, the demographics of Arkansas have changed dramatically over the last decade.

The 2010 U.S. Census recorded an Arkansas population of approximately 2.9 million people. Since then, the population of 52 of Arkansas' 75 counties has decreased. The decrease in population is concentrated in rural counties and is offset by the increase in population in counties near urban and suburban population centers. Overall, the population of Arkansas is increasing and is expected to surpass 3.35 million by 2040, growing 15.5 percent from 2010 to 2040.

The age distribution in Arkansas is expected to change over the next 25 years. The age group 25–64, which includes most of the employed, is expected to increase by only 10 percent, but the 65+ population is expected to increase by about 52 percent.

Employment is expected to grow at a rate of approximately 1.3 percent per year to over 1.8 million in 2040. In addition, the national transportation research group TRIP estimates that vehicle miles traveled in Arkansas will increase from 33.5 billion in 2010 to 47 billion by 2030, a 40 percent increase. The implications of demographic and travel changes are important to consider when identifying future transportation system needs in Arkansas.

In 2012, through a voter-approved constitutional amendment, the people of Arkansas passed a 10-year, half-cent sales tax to improve roadways throughout the state, including projects that widen and improve approximately 200 miles of highways and Interstate. These funds will be used to fund the Connecting Arkansas Program (CAP). CAP, one of the largest highway construction programs ever undertaken by ARDOT, provides additional funding for highways, county roads, city streets, bridges, and surface transportation. The design and construction of highway- and Interstate-widening projects will be funded with the estimated $1.8 billion

(comprising cash and bond proceeds) anticipated to accrue from 70 percent of the tax revenue. The remaining 30 percent of the tax revenue will be returned to local governments for road and street projects (15 percent each for cities and counties).

In April 2015, Governor Asa Hutchinson established a Working Group on Highway Funding to develop a menu of highway funding options. On January 19, 2016, Governor Hutchinson announced his recommendation for new highway funding based on the short-term recommendations report by the Working Group. On May 23, 2016, the Governor signed the Arkansas Highway Improvement Plan of 2016 into law, which involves using a combination of general-revenue, surplus, and rainy-day funds to help the state secure the $50 million per year needed to qualify for $200 million in annual federal matching funds that will be available under a five-year program.

Given ever evolving demographic, economic, and technological changes, it is evident that transportation needs will change by 2040. The LRITP provides a vision for the state, an analysis of transportation system needs, recommendations for monitoring the performance of the transportation system, and a 25-year revenue projection, as well as an analysis of four alternative future scenarios that reflect different priorities, expected outcomes, and investment levels based on the 25-year baseline revenue forecast.

Like most states, Arkansas faces a tremendous challenge to meet ever-increasing transportation needs. Although ARDOT is responsible for maintaining the majority of the transportation system, it recognizes that other agencies and the private sector must collaboratively work together to ensure the transportation system is preserved, modernized, integrated, and expanded to provide improved mobility options and access to all Arkansans, visitors, businesses, and industries.

1.3 ARDOT's Responsibilities and Partners

Amendment 42 of the Constitution of Arkansas established a five-member State Highway Commission and granted the authority of the Commission to administer Arkansas' State Highway System (SHS). In 1977, Act 192 created the Arkansas State Highway Transportation Department (AHTD) and added responsibilities to coordinate public and private transportation activities and to implement a safe and efficient intermodal transportation system. In March 2017, Act 707 changed the name of AHTD to the Arkansas Department of Transportation (ARDOT). Currently, ARDOT is divided into 10 districts with 85 county area maintenance headquarters and 31 resident engineer offices statewide overseeing maintenance and construction activities.

> ***Provide safe and efficient transportation solutions to support Arkansas' economy and enhance the quality of life for generations to come.***
>
> *-The mission of ARDOT*

ARDOT administers the planning, design, construction, operation, and maintenance of the Arkansas SHS, which includes the Interstate System, the National Highway System (NHS), the Arkansas Primary Highway Network (APHN), and non-APHN state highways. In total, ARDOT is responsible for 16,424 miles of highway. The Department is also responsible for the inspection of all 12,667 bridges on public roads and the replacement, maintenance, and preservation of 7,279[1] state-owned bridges.

ARDOT prepares the Statewide Transportation Improvement Program (STIP) to identify highway and transit improvement projects to be implemented in a four-year period. ARDOT coordinates with MPOs to include projects in the STIP that are listed in MPO Transportation Improvement Program (TIPs). Arkansas has eight MPOs, including the Central Arkansas Regional Transportation Study, Frontier MPO, Hot Springs Area Transportation Study, Jonesboro Area Transportation Study, Northwest Arkansas Regional Transportation Study, Pine Bluff Area Transportation Study, Texarkana Urban Transportation Study, and the West Memphis–Marion Area Transportation Study.

ARDOT not only partners with the MPOs in transportation planning and programming but also with numerous other federal, state, and local entities. These include the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA); the Arkansas Agriculture Department, Arkansas Department of Parks and Tourism, Arkansas Farm Bureau, Arkansas Game and Fish Commission, Arkansas Transit Association, Arkansas Trucking Association, Arkansas Department of Health, Arkansas Department of Heritage, and Arkansas Department of Human Services; and tribal nations, Planning and Economic Development Districts, counties, cities, bicycle and pedestrian advocacy groups, and land use practitioners. Members of these organizations were invited to participate in the LRITP planning process as part of the Transportation Planning Advisory Group (T-PAG).

1.4 Organization of the Long-Range Intermodal Transportation Plan

Chapter 2, Public and Stakeholder Outreach, summarizes the public and stakeholder participation process and results of the outreach activities of MetroQuest, an online engagement tool.

Chapter 3, Goals and Objectives, describes the process used to develop the LRITP's goals and objectives and presents how the LRITP goals align with MAP-21 national performance goal areas, eight planning factors, and MPO long range transportation plans.

Chapter 4, Trends, summarizes national and state trends and discusses safety, security, and the current mitigation efforts and opportunities relating to the natural and human environment.

Chapter 5, Existing Transportation System and Conditions, provides an inventory of the transportation system by mode and discusses current conditions.

[1] Value as per 2015 Needs Study. Arkansas State Highway and Transportation Department.

Chapter 6, Transportation System Needs, summarizes the state's 2040 transportation needs by mode and details the economic importance of the four-lane grid system.

Chapter 7, Baseline Revenue Forecast and Funding, summarizes the 2016–2040 baseline revenue projections, discusses the funding gap, and proposes funding options to close the gap.

Chapter 8, Performance Measures by Goal Area, discusses the criteria for selecting performance measures including coordination with MPOs; summarizes the development process; and outlines the recommended performance measures by LRITP and MAP-21/FAST Act goal areas.

Chapter 9, Alternative Future Scenarios, summarizes the results of the four alternative future scenarios and discusses trade-offs, risks, and consequences. It also considers the role transportation plays in the state's economy

Chapter 10, Policies and Implementation Strategies, provides recent accomplishments and challenges, policy recommendations, and implementation strategies.

2. PUBLIC AND STAKEHOLDER OUTREACH

A key component of the Arkansas Long-Range Intermodal Transportation Plan (LRITP) is stakeholder input. The development of the LRITP included an extensive engagement process that gave a variety of stakeholders the opportunity to provide input into the plan and its development. Input from stakeholders was collected through stakeholder interviews, a project website, the T-PAG, a series of public open house meetings, regional forums, online surveys, an online engagement tool, and targeted stakeholder meetings. Key feedback from these interactions were compiled and used as guidance during the development of the LRITP. Detailed information about specific outreach efforts and the input received is included in the LRITP technical memorandums.

2.1 Stakeholder Interviews

The development of the LRITP included an extensive engagement process that gave a variety of stakeholders the opportunity to provide input into the plan and its development.

As part of the stakeholder involvement process, interviews were conducted with transportation stakeholders across Arkansas. A series of eight interviews was conducted with stakeholders who represented a variety of interests, including transportation planning, economic development, transit, cities, and counties. Interviewees were asked about Arkansas' transportation system; changes and/or challenges the state, agency, and transportation system will face over the next 25 years; transportation needs, investment priorities; and what the LRITP should address.

Some of the key feedback from the interviews included:

- the need to prioritize maintaining the current transportation system,
- a need for a multimodal focus in the state, the importance of regional connectivity and the need to improve it,
- a recognition that safety is very important,
- a concern about long-term funding for transportation, a desire for the agency to focus on improving partnerships, and
- a recognition of transportation's role in the state's economy.

More detailed information from the stakeholder interviews is available in the Report of Stakeholder Interviews memorandum.

2.2 Project Website

As part of the outreach effort, a project website (http://www.wemovearkansas.com) was developed to provide stakeholders with updates throughout the development of the LRITP. In addition to background information on what an LRITP is and how it is developed, the website also provided information on upcoming meetings, electronic versions of the materials presented at those meetings, and an online comment card. Documents produced as part of the plan's development were made available on the website. A project-specific email address was created for people to ask questions and provide comments as well as a way to distribute project information.

2.3 Scenario Planning Workshop

To kick off the Long-Range Intermodal Transportation Plan (LRITP) process, ARDOT held a first-of-its-kind scenario planning workshop at its 2015 Arkansas Transportation Planning Conference, involving partners from across the state. The scenario planning workshop centered on the work completed in the NCHRP 20-83 research series called Foresight 750, which includes subjects as diverse and impactful as:

- Freight scenario planning.
- Climate change and extreme weather events.
- Technology for enhancing transportation system performance.
- Sustainability as an organizing principle for transportation agencies.
- Energy and fuels—our uncertain energy future.
- Demographics and their effect on future travel demand.

The four Foresight scenario examples that were presented during the meeting include the following:

- **Momentum Scenario**: concentration of wealth/activity in 'mega-regions', gradual technology changes, slow adoption of new funding mechanisms, aging and urbanized population, manageable environmental changes.

- **Global Chaos Scenario**: global financial instability, minimal technology advances, isolationist policies that hinder economic growth, slow population growth favoring urban areas, increasing impact to climate change.

- **Tech Triumphs Scenario**: rapid economic growth, autonomous vehicles create disruptive change, stable economy promotes political harmony, growth in population and dispersed development due to technology, and economic growth puts pressure on environment.

- **Gentle Footprint** Scenario: economic goals limited by efforts to make society more sustainable, reduced energy consumption, public and political consciousness shift toward action on climate change, substantial regulation, and droughts and super storms plague the country.

While every state faces its own set of unique challenges, the topics in this series represent big-picture, strategic thinking. Some major themes were identified through the scenario workshop. For example, participants thought that the importance of highway expansion would decrease significantly over the next 25 years and that the importance of highway preservation and maintenance and operations improvements would significantly increase. Similarly, when asked about issues that should be considered in the LRITP, participants said that collaboration with partners and how funding mechanisms may change were the most important, followed closely by the changing role of ARDOT (more multimodal, more maintenance and operations), interaction of transportation and land use, and the paradigm shift in reducing congestion by identifying more sustainable approaches rather than widening roadways.

2.4 Transportation Planning Advisory Group

The T-PAG was formed as an additional opportunity for partners to provide input, oversight, and direction throughout the development of the LRITP. T-PAG members are listed in Table 2.1.

Table 2.1: T-PAG Members

Name	Representing
Jessie Jones	ARDOT
Becky Keough	Arkansas Department of Environmental Quality
Kurt Nauman	Arkansas Economic Development Commission
Wes Ward	Arkansas Agriculture Department
Kane Webb	Arkansas Department of Parks and Tourism
Warren Carter	Arkansas Farm Bureau
Jeff Crow	Arkansas Game and Fish Commission
Ann Gilbert	Arkansas Transit Association
Shannon Newton	Arkansas Trucking Association
Bradley David Clark	American Society of Civil Engineers – Arkansas Section
Barbara J. O'Connor	Bicyclists and Pedestrians
Don Zimmerman	Arkansas Municipal League
Chris Villines	Arkansas Association of Counties
Stacy Hurst	Department of Arkansas Heritage

Name	Representing
Darcia Routh	Department of Health
Lyle Godfrey	Department of Health
John Selig	Department of Human Services
Valera McDaniel	FHWA, Planning
Craig Douglass	Arkansas Good Roads and Transportation Council
Troy Galloway	City of Bentonville
Dianne Morrison	Frontier MPO
Lou Tobian	AARP Outreach and Education
Melissa Rivers	Planning Development Districts/Economic Development Districts
Erin Gildner	Persons With Disabilities
Cary Martin	Private Transportation Providers
Donny McMillen	ARDOT Public Transportation
Bridget White	Governor's Highway Safety Office
Randal Looney	FHWA, Tribal Nations

T-PAG met in person three times at key points in the project development process. A synopsis of each meeting is presented in Appendix A.

2.5 Public Meetings

Five public meetings in an open house format were conducted throughout Arkansas in October 2015 between the first and second T-PAG meetings. The purpose of the meetings was to give stakeholders background information on the LRITP and offer them the opportunity to share comments and questions to help ARDOT as it continued to develop the plan. Stakeholders were notified about the meetings through informational flyers, letters, radio public service announcements, newspaper advertisements, a news release, and postings on the LRITP website. Meetings were held in North Little Rock, Monticello, Springdale, Jonesboro, and Hope from Monday, October 19, through Thursday, October 29.

Each meeting attendee signed in at a welcome table and received a handout that outlined general information about the LRITP and included a link to the website and project email address. Stakeholders were then encouraged to view an informal presentation that outlined the purpose of an LRITP and how performance measures could be implemented as ARDOT moves toward the development of the LRITP. After the presentation, stakeholders viewed display boards set up in the meeting space. One board included a timeline that began with the summer 2015 project kickoff meeting and outlined the process through the adoption of the LRITP. A "By the Numbers" display board provided Arkansas-specific statistics ranging from demographic information to details about transportation infrastructure. Other display boards outlined current LRITP goals and explained performance measures and how they applied to the LRITP.

In addition to receiving information about the LRITP, stakeholders had the opportunity to provide feedback by sharing their transportation priorities and filling out comment cards. Stakeholders shared their transportation priorities by participating in a short activity in which a consultant team member gave each stakeholder six stickers to allocate between the nine transportation priority categories.

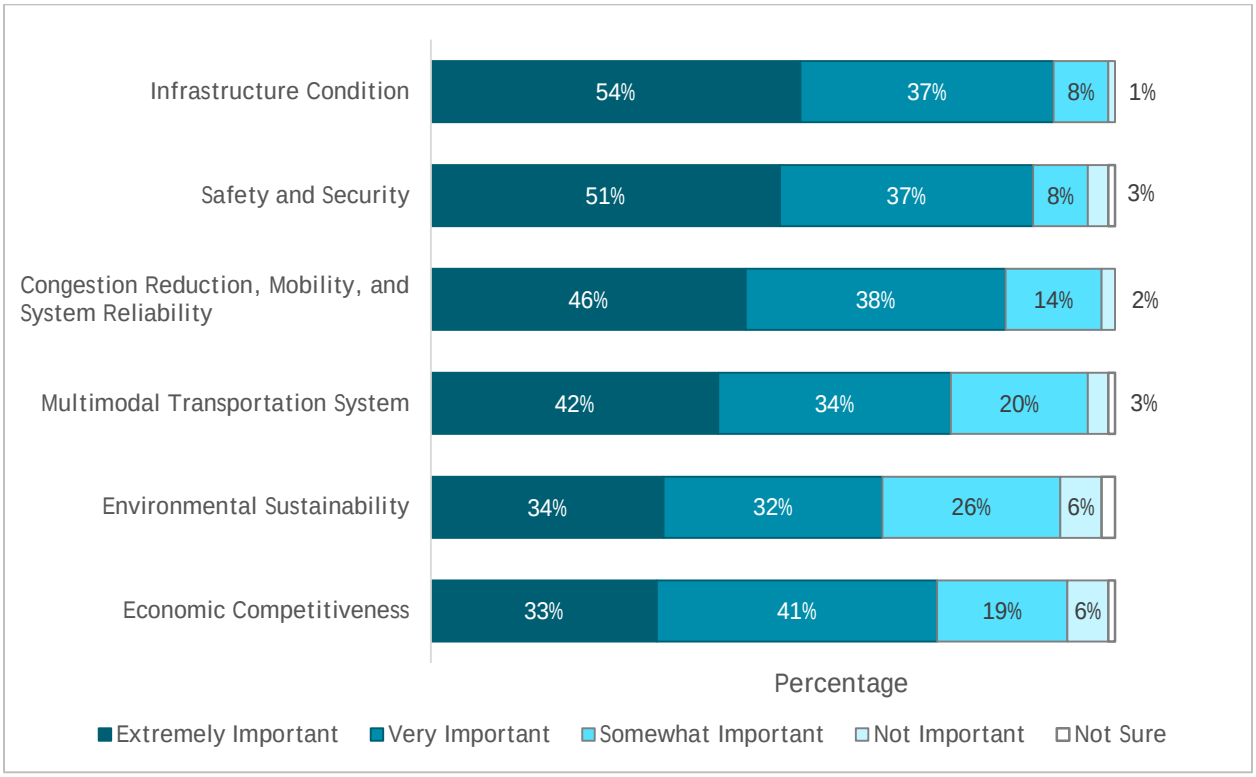
A high-level summary of input from the public meetings follows. A more detailed summary is available in the Summary of Public Meetings Technical Memorandum.

Input from stakeholders was collected through stakeholder interviews, a project website, the Transportation Plan Advisory Group, a series of public open house meetings and online surveys, an online engagement tool, and targeted stakeholder meetings.

2.5.1 Comment Form Summary

After viewing all the available information, stakeholders had the opportunity to complete a comment card either in hard copy or online. The comment cards allowed stakeholders to provide feedback on the LRITP goals, rate the importance of each proposed goal area and share any additional comments or questions about the LRITP. A total of 179 completed comment cards were received. Figure 2.1 shows how stakeholders rated the goal areas.

Figure 2.1: Goal Area Ratings by Stakeholders



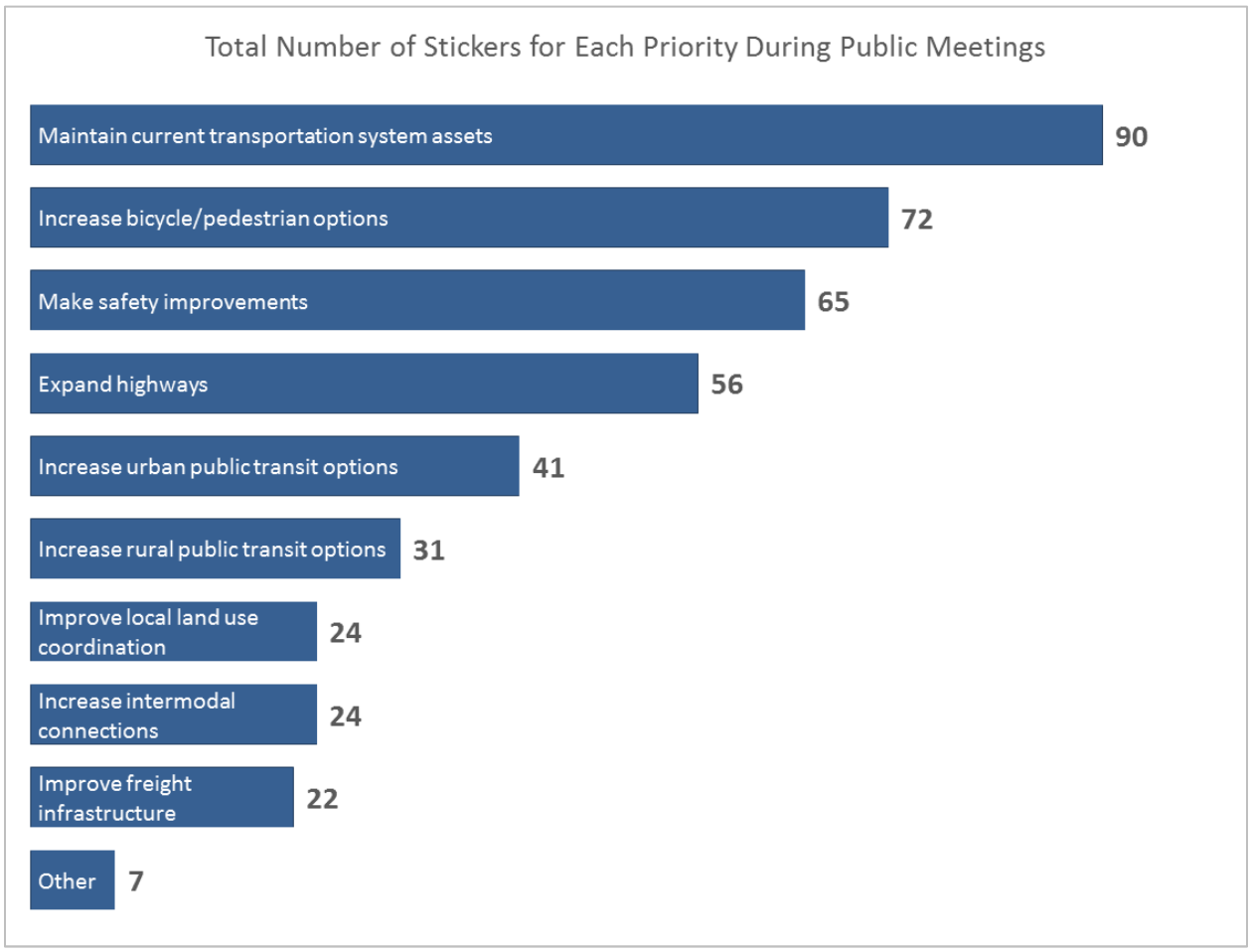
2.5.2 Reaction to Goals

The majority (84 percent) of stakeholders that participated indicated they were comfortable with the goals presented, 15 percent indicated they were uncomfortable with the goals presented, and 1 percent indicated they could not make a decision at the current time. Stakeholders also provided comments regarding their comfort level with the presented goals.

2.5.3 Transportation Priorities

Stakeholders who participated in the public open houses were able to participate in an activity in which they could share the transportation priorities for Arkansas in the next 25 years. Each stakeholder was given six dots to place on the various categories. Stakeholders could place all their dots on a single category or divide them among many categories. Figure 2.2 shows the results from the five public meetings.

Figure 2.2: Public Meeting Results

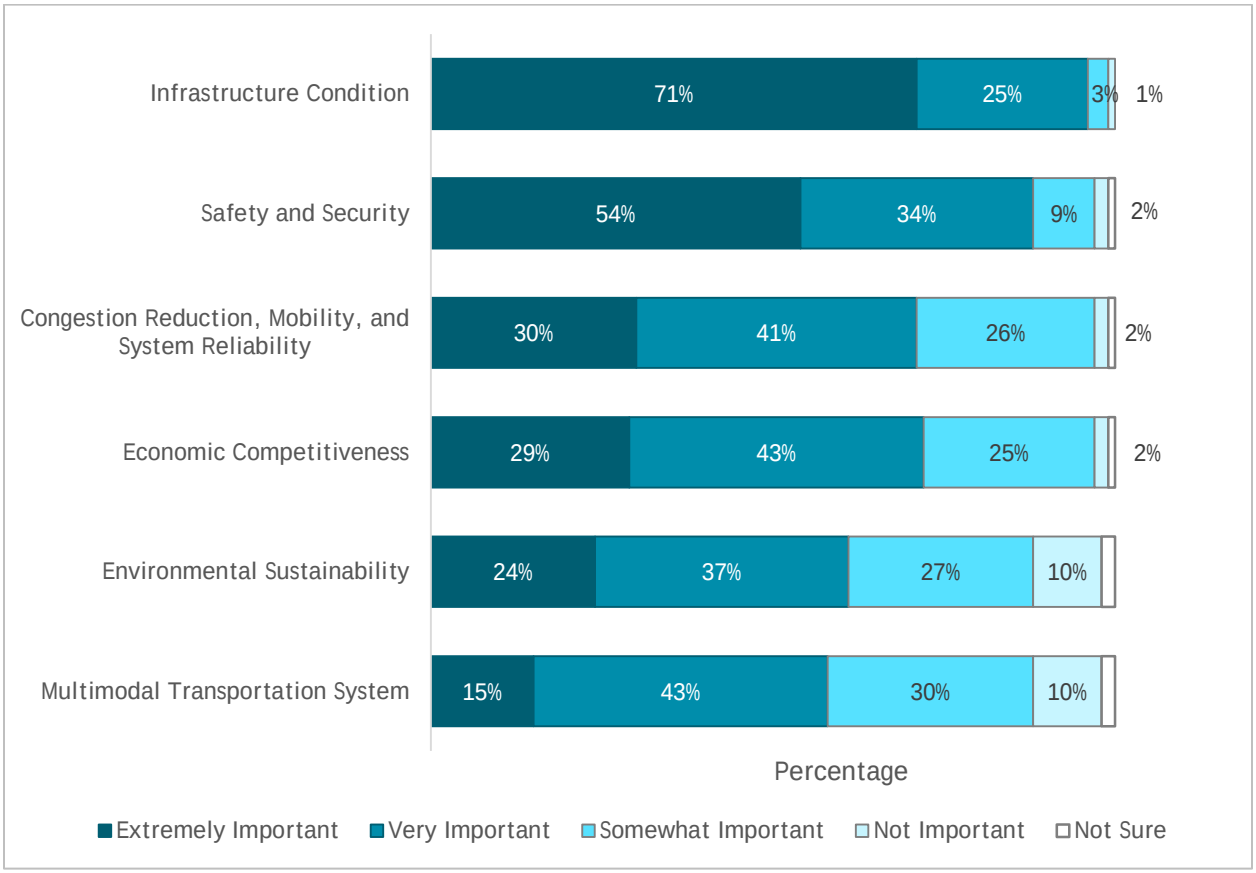


2.6 Internal ARDOT Input

As a part of the LRITP, ARDOT electronically distributed the public meeting comment cards to ARDOT employees; 195 employees completed this. Figure 2.3 displays how employees rated the importance of each goal area. The purpose of this activity was to determine the degree to which ARDOT employees statewide considered important the various goal areas. These results will be revisited during the implementation phase of the LRITP.

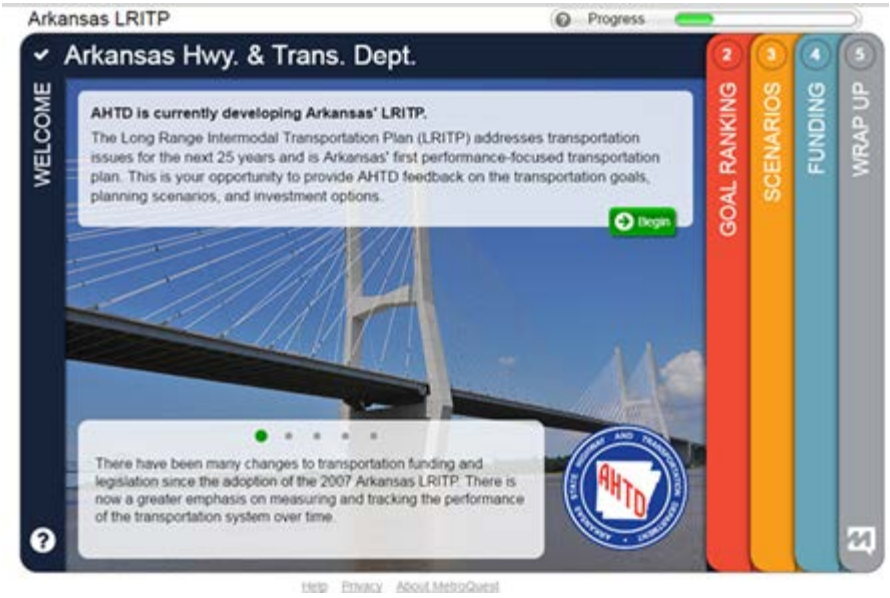
Additional details of the Internal ARDOT input can be found in the ARDOT Internal Input Technical Memorandum.

Figure 2.3: Internal ARDOT Survey Goal Area Rating Results



2.7 Online Engagement Tool

To reach a broad and diverse group of public stakeholders, an online engagement tool was employed to gather information. A link to the tool was distributed through various communication channels, including the ARDOT website, the LRITP project website, stakeholder meetings, news releases, social media, and emails to stakeholders and employees. The survey could be completed from any computer or mobile device and was available to stakeholders from June to September 2016. A total of 1,736 stakeholders had provided input through the tool.

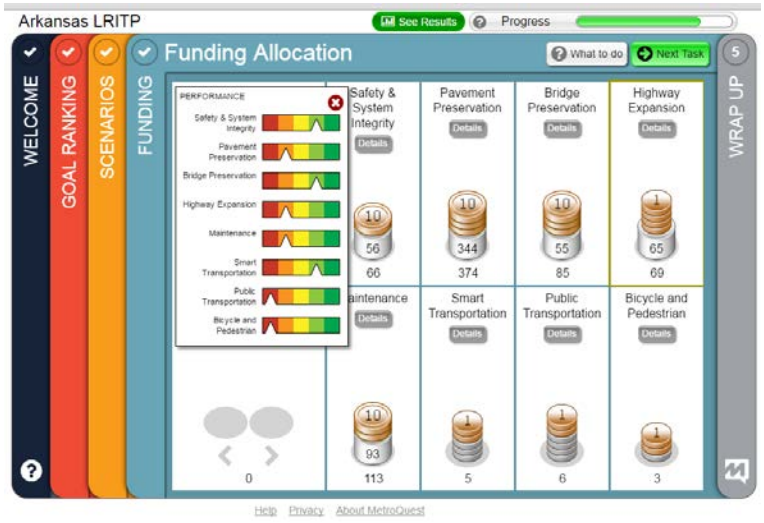


Stakeholders were first asked to rank their top three transportation goals as identified in the LRITP. The plan's goals were ranked in the following order:

1. Infrastructure Condition
2. Safety and Security
3. Multimodal Options
4. Mobility and Reliability
5. Environmental Impact
6. Economic Competiveness

Stakeholders were then asked to rate four future alternative scenario approaches on a scale of 1-5 stars with 5 stars being the highest rating. Following are the average ratings for each of the scenarios:

- Preserve to Serve **(3.71 stars)** – "Keep it smooth – preserve the investment" focused on the existing transportation assets to maintain the safe and efficient movement of people and goods.
- Making Connections **(3.62 stars)** – "Connecting communities – forging opportunities" increases roadway capacity to improve efficiency, connectivity, and economic competitiveness.
- On the Move **(3.61 stars)** – "Bigger cities – more mobility" focuses on the allocation of funds for multimodal investments to alleviate urban congestion.
- Local/Global Freight **(3.35 stars)** – "Think locally – trade globally" focuses on investments that support local industry retention and attraction.



In addition to rating goals and alternative scenarios, stakeholders were asked to share how they would invest an additional $100 million in construction funding if the ARDOT were to receive it. To make their selections, stakeholders could allocate up to 100 coins between several different funding categories. As stakeholders made their allocations, they could see how the increased investment would impact performance of each of the investment categories. The average dollar amount currently invested by ARDOT was shown and stakeholder's additional allocations appeared on top of the fixed values. The average percent of the additional investment for each category was:

- Maintenance – 16%
- Pavement Preservation – 15%
- Highway Expansion – 13%
- Bicycle and Pedestrian – 13%
- Bridge Preservation – 13%
- Safety and System Integrity – 11%
- Public Transportation – 11%
- Smart Transportation – 6%

Note – figures do not equal 100% because stakeholders were not required to allocate the full amount.

A common general comment from attendees was related to ARDOT's maintenance practices. Communities are concerned about ARDOT's mowing policies and practices. Although the main concern centered on how often the Department mows each year, some comments were made on how the mowing occurred.

2.8 Regional Stakeholder Meetings

In the summer of 2016, nine regional meetings were held throughout the state as a part of the second round of public involvement. The purpose of the meetings was to visit with decision-makers and stakeholders and discuss the future of transportation in Arkansas, including the development of the long-range plan, transportation needs that have been identified, the goals that have been developed, and the public input heard to date.

Meetings were held in Batesville, Conway, El Dorado, Greenwood, Harrison, Hot Springs, Pine Bluff, Pocahontas, and Wynne from June 27 –30, 2016. The Public Meetings and Regional Stakeholder Meetings are displayed on Figure 2.4 demonstrating the geographic distribution of the meeting location. The agenda included a presentation from the project team followed by attendees' participation in a facilitated discussion that included questions about feedback on the scenarios presented, opportunities for improving partnerships, and programs or initiatives that could be incorporated into the LRITP.

Attendees were provided handouts about the goals developed as part of the LRITP, the scenarios being developed for the plan, and information on a new outreach tool launched to collect feedback from the public.

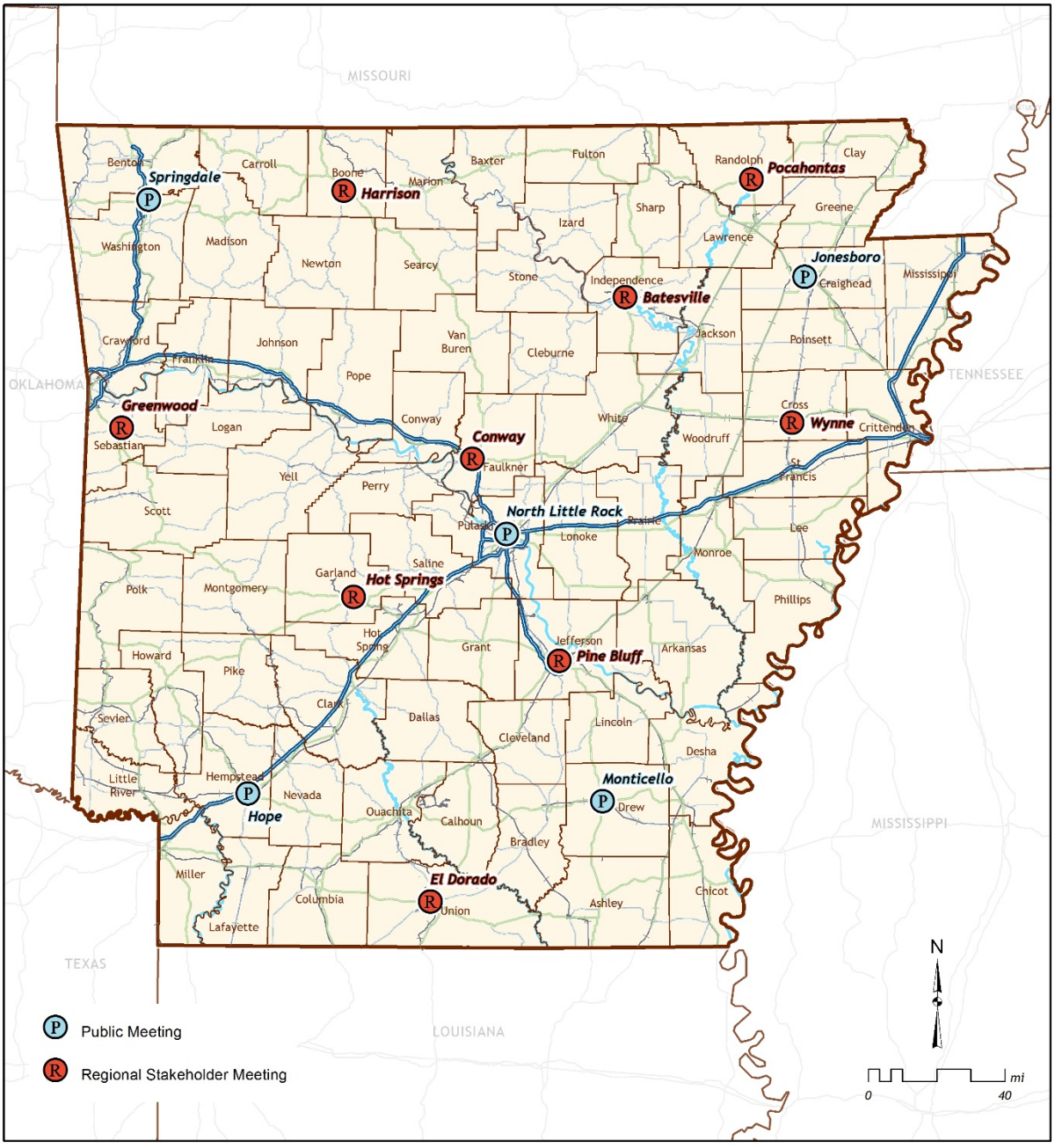
Of the scenarios presented, *Keep It Smooth – Preserve the Investment* had the most support. Attendees were clear that preserving the state's current infrastructure was the highest priority. Comments about the other scenarios included a need to focus on economic development and making sure that the needs of both urban and rural communities were considered.

The major themes that emerged from the meetings included the following:

- Attendees shared how critical the 70 – 15 – 15 funding split between the state, cities, and counties is to addressing local transportation needs and their concern if the local share were to decrease or disappear.

- The ability to support the transportation needs of existing businesses as well as address economic development opportunities is important. Many roadways are in poor condition due to the needs of current industries, and that situation will probably only get worse. Communities want these businesses and opportunities, but there are challenges in meeting the related transportation needs.

Figure 2.4: Public and Stakeholder Meeting Locations



- Cities and counties would like to see increased communication and coordination with ARDOT. Examples included being flexible and open to the consideration of context-sensitive design, consulting early and often during projects, and taking communities' existing plans into consideration.

- Finding a long-term funding solution is important. People support the half-cent sales tax and want to see it continue. In addition, there is concern about the increase in vehicle fuel efficiency and the resulting decrease in motor fuels tax revenue.

- Attendees shared concerns about mowing practices on state highways, this is an indication of the need for improved communication statewide.

A more detailed summary is available in the Summary of Public Meetings Technical Memorandum.

2.9 Summary of Input

With more than 3,000 Arkansans participating in the outreach efforts and providing valuable input, one theme clearly rose to the top as a priority for the state's transportation system: preservation. The condition of the transportation system, and the state's ability to preserve that system should be the highest priority, according to those who provided input. In addition, participants in the outreach process expressed a strong interest in the safety and security of the state's transportation system and many had an interest in increasing the multimodal options available, most specifically with more bicycle and pedestrian accommodations.

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3. GOALS AND OBJECTIVES

A key component of the performance-based planning process is the establishment of goals and objectives that create a framework for the performance-based plan. A *goal* is a broad statement that defines a desired end state. An *objective* is a specific, measurable statement that supports the achievement of a goal.[2] Goals and objectives provide a foundation for the development of performance measures and establish the strategic direction that will drive investment decisions over the life of the plan.

3.1 Development Process

A goal is a broad statement that defines a desired end state. An objective is a specific, measurable statement that supports the achievement of a goal.

The goals and objectives development process included a review of federal and state laws and regulations, guidance from ARDOT leadership and ARDOT staff, an examination of the existing ARDOT strategic goals, a review of existing ARDOT plans [the *Arkansas State Rail Plan*, *Arkansas State Bicycle and Pedestrian Plan*, and *Strategic Highway Safety Plan* (SHSP)], coordination with the concurrent development of the *Statewide Freight Plan* and the *Transportation Asset Management Plan*, and a peer review of goals and objectives from Arkansas MPOs and other states. Details of the process used to develop the goals and objectives can be found in the Goals and Objectives Technical Memorandum.

The seven national goals identified in MAP-21 are as follows:

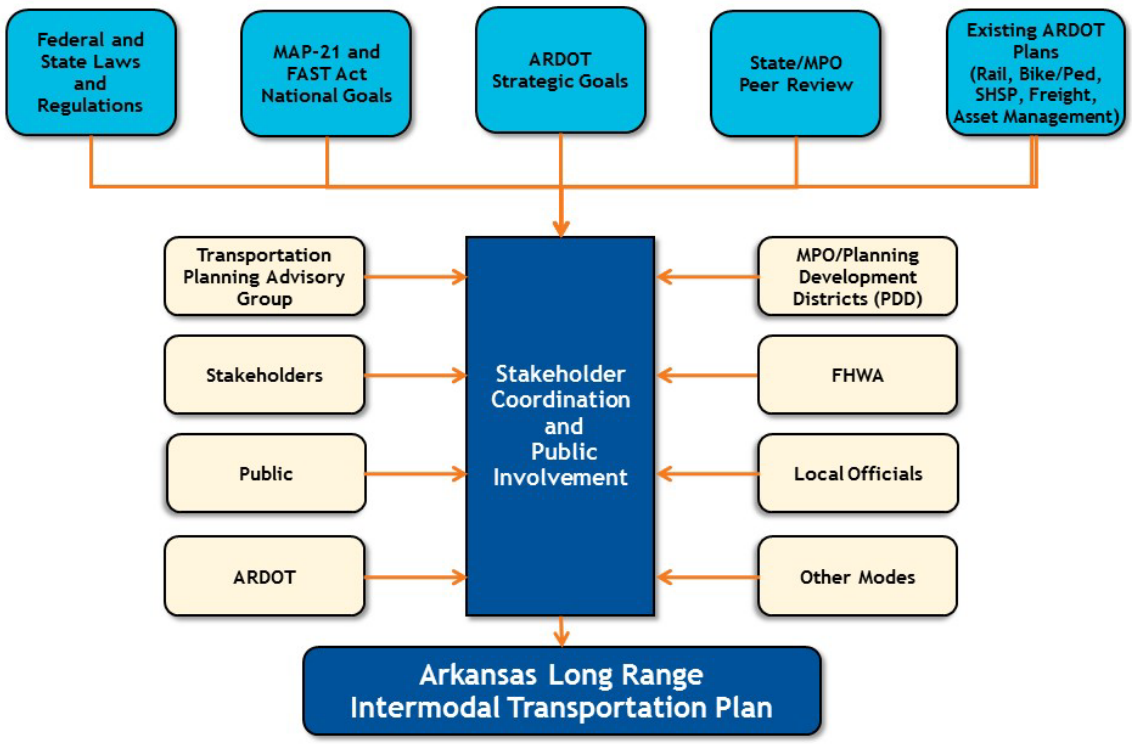
- **Safety** —To achieve a significant reduction in traffic fatalities and serious injuries on all public roads
- **Infrastructure Condition** — To maintain the highway infrastructure asset system in a state of good repair
- **Congestion Reduction** — To achieve a significant reduction in congestion on the National Highway System
- **System Reliability** — To improve the efficiency of the surface transportation system
- **Freight Movement and Economic Vitality** — To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development
- **Environmental Sustainability** — To enhance the performance of the transportation system while protecting and enhancing the natural environment
- **Reduced Project Delivery Delays** — To reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project

[2] FHWA, *Performance-Based Planning and Programming Guidebook*, September 2013.

completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practices

The flowchart in Figure 3.1 illustrates the coordination and involvement that were part of the goals development process. Because FHWA requires that all states and MPOs show progress in achieving the national goals, they were used as a starting point in developing the Arkansas LRITP goals.

Figure 3.1: Goals and Objectives Development Flow Chart



Details on the results of the public and stakeholder involvement meetings and outreach are included in Chapter 2, Public and Stakeholder Outreach.

3.2 LRITP Goals and Objectives

Table 3.1 includes the final LRITP goals and objectives that were developed and finalized through the process outlined in Figure 3.1.

The LRITP goals and objectives were considered in the development of the plan performance measures. Chapter 8 identifies the proposed plan performance measures by goal area and associated objectives.

Table 3.1: LRITP Goals and Objectives

LRITP GOALS	NATIONAL GOAL AREAS							OBJECTIVES & Actions
	Congestion Reduction	System Reliability	Safety	Infrastructure Condition	Freight and Economic Vitality	Environmental Sustainability	Project Delivery	
Safety and Security—Improve statewide safety by funding projects reducing fatal and serious injury crashes, reducing vulnerability (the magnitude of impact on the system due to events such as major traffic incidents, flooding, lane closures, bridge failures, and seismic activity), and improving resiliency of the system (the ability of the system to recover from these events).	✓	✓	✓	✓	✓			• Align safety goals with the goals of the ARDOT *Strategic Highway Safety Plan* (SHSP). • Partner with the Arkansas State Police, local governments, and federal agencies to administer comprehensive traffic safety programs related to driver, roadway, and railroad crossing safety. • Partner with counties and local governments to provide training on low-cost safety applications for local roads. • Identify roadways and bridges that are vulnerable to extreme weather events and other natural phenomena. • Improve the resiliency of the transportation system to meet travel needs in response to extreme weather events. • Work with emergency management agencies to expand emergency communications infrastructure across the state. • Work with emergency management agencies to ensure efficient and coordinated responses to emergency and disaster events.
Infrastructure Condition—Invest in existing highways and bridges to maintain and preserve the existing system.		✓	✓	✓	✓		✓	• Enforce weight and size restrictions to protect roads and bridges. • Improve ride quality on NHS roads. • Follow asset management principles to optimize preservation strategies on the SHS. • Identify potential freight corridors within which special attention is given to preempt commercial vehicle bottlenecks.

LRITP GOALS	NATIONAL GOAL AREAS							OBJECTIVES & Actions
	Congestion Reduction	System Reliability	Safety	Infrastructure Condition	Freight and Economic Vitality	Environmental Sustainability	Project Delivery	
Congestion Reduction, Mobility, and System Reliability—Invest in the multimodal transportation system to improve mobility, connectivity, accessibility, and reliability for people and goods.	✓	✓		✓	✓			• Provide predictable, reliable travel times. • Complete the Connecting Arkansas Program (CAP) which will improve transportation connections throughout the state by increasing roadway capacity. • Consider context-sensitive solutions in the transportation system design, as appropriate. • Implement ITS strategies to provide travelers with real-time information regarding weather conditions, travel times, emergencies, and delays. • Use technology advances to improve system performance. • Plan and prepare for autonomous and connected vehicles. • Use output from MPOs' Congestion Management Systems to identify and address congested areas on the NHS. • Work with partners to encourage travel demand management strategies to reduce the traffic demand during peak hours. • Support multimodal transportation alternatives and intermodal mobility.

LRITP GOALS	NATIONAL GOAL AREAS							OBJECTIVES & Actions
	Congestion Reduction	System Reliability	Safety	Infrastructure Condition	Freight and Economic Vitality	Environmental Sustainability	Project Delivery	
Economic Competitiveness—Improve intermodal transportation system connectivity, efficiency, and mobility to support existing industries and strengthen national and regional economic competitiveness.	✓	✓			✓			• Continue development of the four-lane economic development connectors (four-lane grid system) to improve connectivity to all citizens and promote economic development. • Prioritize and enhance intermodal connections for both passenger and freight movement by establishing an appropriate network of intermodal connectors. • Collaborate with the Arkansas Economic Development Commission to identify projects that will improve the state's economic competitiveness. • Use outputs from the *State Rail Plan* to identify rail improvement needs. • Support the maintenance and operation of state highways, bridges, transit, rail, ports, locks, and dams. • Identify key routes in need of long-term additional capacity to support Arkansas' and external trading partners. • Identify projects to address localized congestion and capacity issues that negatively affect freight movement.
Environmental Sustainability—Enhance the performance of the transportation system while avoiding, minimizing, and/or mitigating impacts to natural and cultural resources.						✓	✓	• Identify and reduce barriers to decrease delay and improve the project delivery process. • Minimize impacts to natural, historic, and cultural resources. • Support initiatives to reduce congestion and improve air quality. • Consider context-sensitive solutions in transportation system design, as appropriate.

LRITP GOALS	NATIONAL GOAL AREAS							OBJECTIVES & Actions
	Congestion Reduction	System Reliability	Safety	Infrastructure Condition	Freight and Economic Vitality	Environmental Sustainability	Project Delivery	
Multimodal Transportation System—Partner with responsible modal agencies, local jurisdictions, and planning organizations working to improve safety, accessibility, and connectivity for the movement of people and goods.	✓		✓		✓			• Develop and sustain efficient intermodal connections to allow for more efficient transfer of goods between modes. • Support multimodal transportation alternatives and intermodal mobility. • Use outputs from the *Arkansas Bicycle and Pedestrian Transportation Plan* to provide citizens with transportation lifestyle options. • Coordinate with MPOs' and local governments' land use planning and regional and local modal plans. • Partner with MPOs and local governments to consider implementing approved and adopted bicycle and pedestrian facilities on the SHS.

4. TRENDS

Identifying and analyzing demographic, socioeconomic, and travel data and projections are critical steps in understanding its existing and future transportation needs. Information about the population, employment, economic factors, and information about how the population chooses to travel, all suggest the needs of the future transportation system and provide needed insight to inform the long-range transportation planning process. The aging of the nation's population, the introduction of new transportation technology, and changes in the energy industry will affect the future transportation needs of Arkansas, as well as the ability to provide desired personal mobility.

In 2010, the first of the baby boomer generation turned 65. Although most people in this group will be leaving the work force, most will still travel, and many will become more dependent on public transportation, which is challenging to deliver in many areas of the state.

4.1 Population Trends and Estimates

Table 4.1 shows Arkansas' annual population estimates since 2010. The state is gradually approaching a population of 3 million, making it the 32nd most populous state in the nation. Population density is a measure of average population per square mile. While Arkansas is still a rural state, it population is becoming more dense. In 1990, Arkansas' population density was 45.2 per square mile which ranked 37th in the nation. By 2014, population density increased to 55.4 per square mile which ranked 35th in the in the nation.

Table 4.1: Arkansas Population, 2010-2014

U.S. Census 2010	July 1 Arkansas Population Estimates by Year			
	2011	2012	2013	2014
2,915,918	2,938,430	2,949,300	2,958,765	2,966,369

The Institute for Economic Advancement at the University of Arkansas at Little Rock estimates that the Arkansas population will surpass 3,350,000 by 2040, with a projected growth rate of just under one-half percent per year since 2010. Arkansas showed strong population growth in the 1980s, but the rate slowed significantly between 1980 and 1990. Since 1990, the rate of growth has slightly trailed the national average, as shown in Table 4.2.

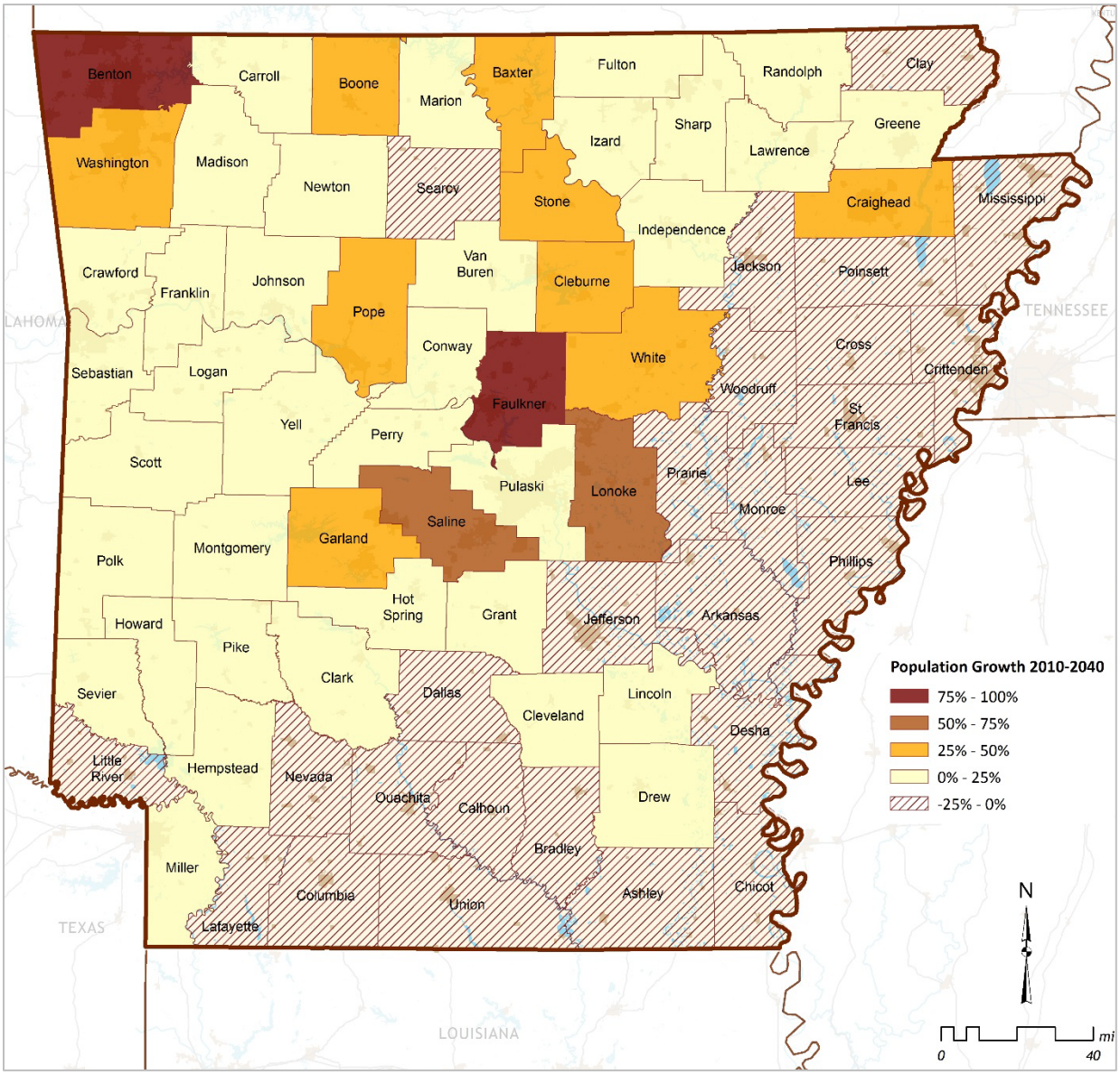
Figure 4.1 shows the projected percent population change for each of the 75 counties in Arkansas from 2010 to 2040. Since the 2010 U.S. Census, the population of 52 of Arkansas' counties has decreased. The decrease in population is concentrated in rural counties and is offset by the increase in population in counties near urban and suburban population centers in central and northwest Arkansas. This trend is attributed to a larger number of employment opportunities. This shift in population mimics the national trend of an urban population increase by 12.1 percent based on U.S. Census figures between 2000 and 2010.

Table 4.2: History of Population Growth, Arkansas and United States, 1970-2040

Census Year	Total Population		Increase over Previous Period (%)		Numeric Increase over Previous Period
	AR	US	AR	US	AR
1970	1,923,322	203,302,031	******	******	******
1980	2,286,435	226,542,199	18.9%	11.4%	363,113
1990	2,350,725	248,709,873	2.8%	9.8%	64,290
2000	2,673,293	281,421,906	13.2%	13.2%	322,568
2010	2,915,918	308,745,538	9.1%	9.7%	242,625
2014	2,966,369	318,857,056	1.7%	3.3%	50,451

Sources: Population counts for 1970 through 2010 are from the U.S. Census count as of April of each year. For 2014, the count is from the U.S. Census Intercensal estimate as of July 1, 2014.

Figure 4.1: Population Growth by County, 2010-2040

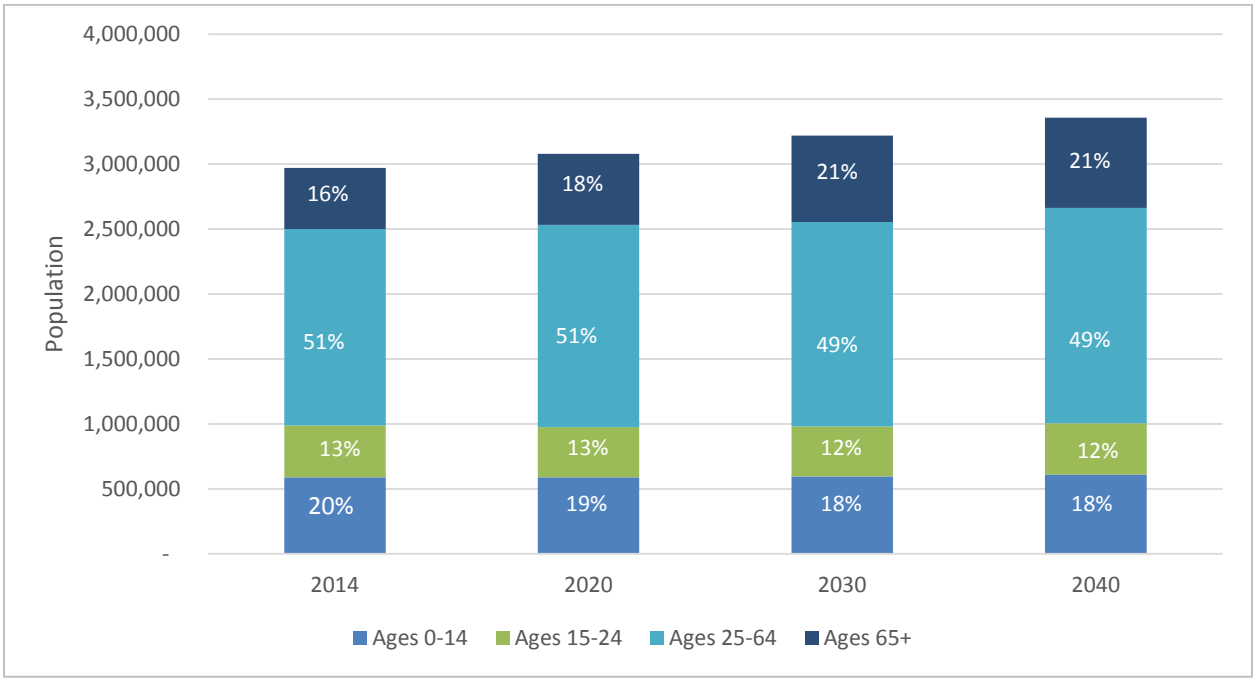


Source: Woods and Poole (2014).

4.2 Age Distribution

The population in Arkansas is projected to increase by over 30 percent from 2014 to 2040. Figure 4.2 shows the expected change in the age distribution over the next 25 years.

Figure 4.2: Arkansas Change in Population by Age Group



Source: Woods and Poole (2014).

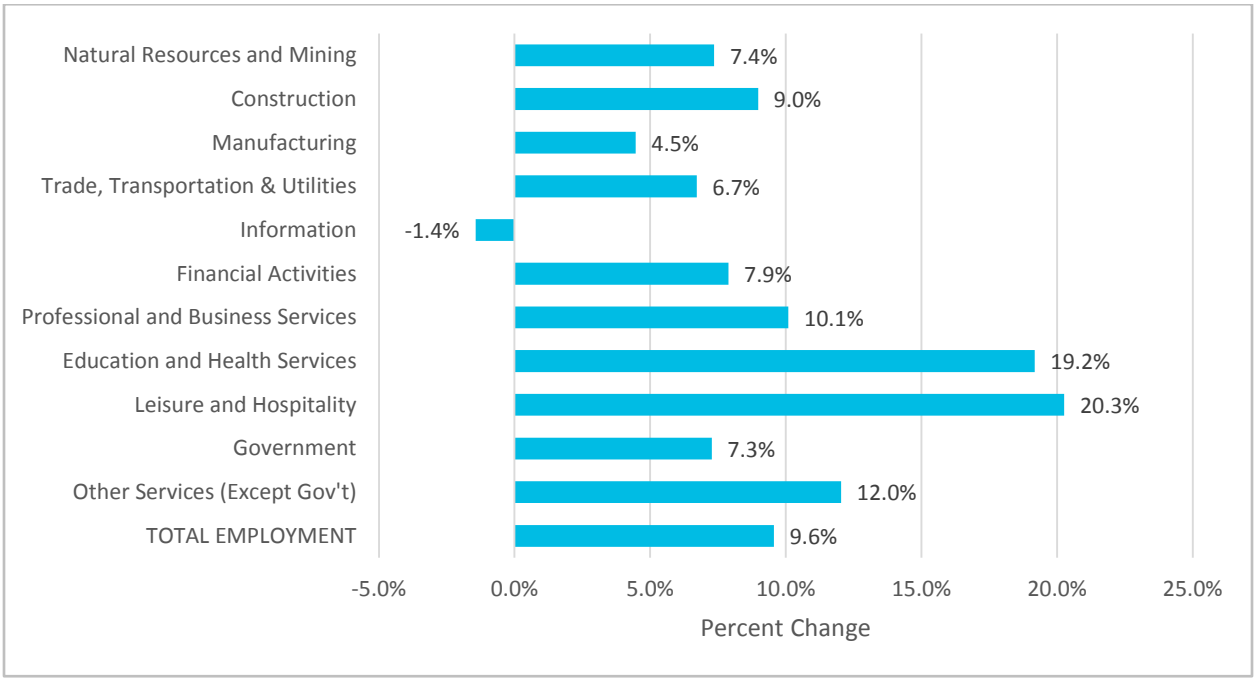
The population of residents under the age of 25 will remain relatively constant through 2040, and the 25–64 age group, which comprises most of the employed, will increase by about 10 percent. The 65+ age group is projected to have the largest projected increase at approximately 52 percent. In 2010, the first of the baby boomer generation turned 65, the age at which it is generally accepted that vision, hearing, and reaction time begin to deteriorate. Although most people in this group will be leaving the work force, most will still travel, and many will become more dependent on public transportation, which is challenging to deliver in many areas of the state.

4.3 Economic Projections

Industry employment projections provide an understanding of the trends related to emerging and sustaining industries in Arkansas. In Arkansas, total employment is expected to grow from 1.42 million to 1.55 million (a 9.6 percent increase) between 2012 and 2022 according to the Arkansas Department of Workforce Services. Figure 4.3 shows the percent change for major employment industries between 2012 and 2022. The leisure and hospitality industries and education and health services industries are expected to see the largest increases in employment at 20.3 and 19.2 percent, respectively, through the year 2022. The expected increases in the number of employees in the natural resources and mining, construction, manufacturing and trade, and transportation and utilities industries indicate these industries

will continue to grow and add increased stress on the transportation system due to their heavy loads.

Figure 4.3: Arkansas Industry Employment Predictions, 2012-2022



Source: Arkansas Department of Workforce Services.

Only one sector, the information industry, is expected to decrease. According to the North American Industry Classification System defines the information sector as comprising establishments engaged in the following processes: (a) producing and distributing information and cultural products, (b) providing the means to transmit or distribute these products as well as data or communications, and (c) processing data.

4.3.1 Income and Poverty Status

Per capita personal income in Arkansas has grown 53 percent since 2002, from $23,512 to $36,086 in 2013. This was the third-highest growth rate when compared to neighboring states, trailing only Louisiana and Oklahoma. Although the growth in income has been good, Arkansas still trails the national average by a significant amount. In 2013, Arkansas ranked 48th in the nation, with a median household income of $40,457, which was about 22 percent less than the U.S. median income of $52,176.

National studies by the Transportation Research Board have demonstrated a strong relationship between rising income and workers who choose to drive alone as part of their journey to work.

As shown in Table 4.3, almost 15 percent of all families in Arkansas and nearly 39 percent of all Arkansas households with a single female parent are living in poverty. Almost 20 percent of all people in Arkansas and 29 percent of all children are living below the federal poverty level. Arkansans have higher poverty levels than the national average in all areas.

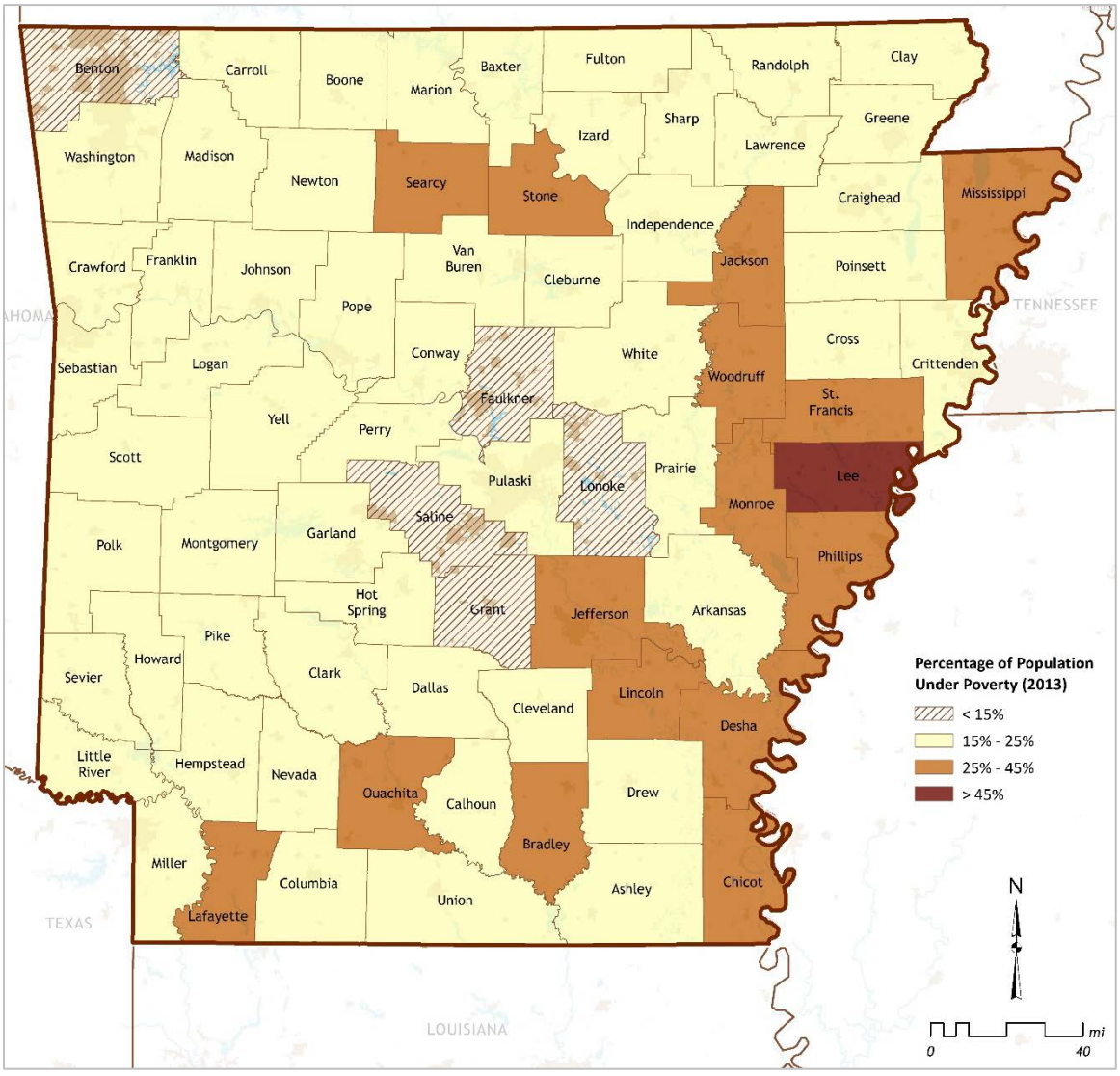
Table 4.3: Arkansas Poverty Rates for Families, 2013 Estimate

Population Segment	Poverty Rate (%)	
	Arkansas	United States
All families	14.6%	11.7%
Married couples with families	7.3%	5.8%
Female householder with families, no husband present	38.6%	31.3%
All people	19.6%	15.9%
Under 18 years	28.4%	22.4%
18 to 64 years	18.3%	14.8%
65 years and over	10.5%	9.5%

Source: U.S. Census 2013 American Community Survey 3-Year Estimate, Table S0201.

Figure 4.4 shows the percent of the population by county living below the federal poverty level. Poverty leads to fewer transportation options due to fewer vehicles being available, which in turn leads to people using other modes of transportation such as bicycle, walking, and public transit.

Figure 4.4: Percent of Population Below the Federal Poverty Level, by County (2013)



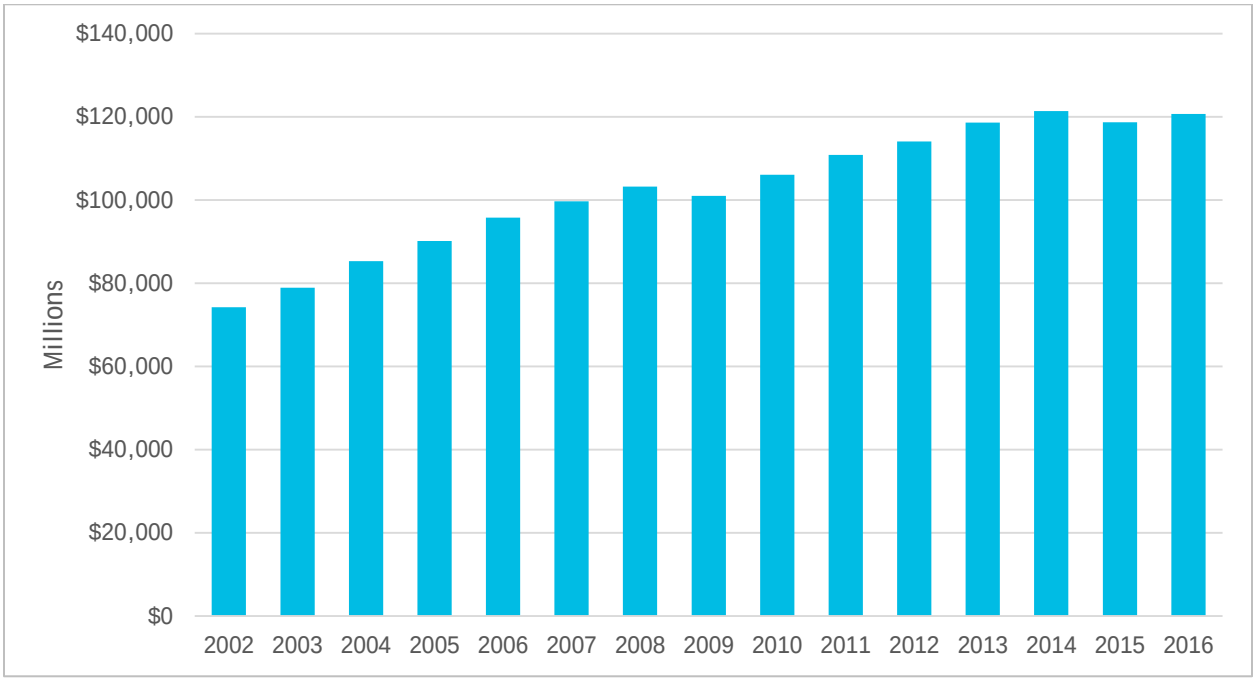
Source: Woods and Poole (2013).

4.3.2 Gross State Product

The gross state product (GSP) is the output of goods and services produced by labor and property and is the broadest measure of economic activity. U.S. Bureau of Economic Analysis GSP data for the State of Arkansas are presented below.

As shown in Figure 4.5, Arkansas' GSP increased steadily from 2002 to 2008, followed by a slight decrease in 2009 that coincided with the Great Recession. In 2016, Arkansas current-dollar GSP was $120.7 billion and ranked 34th in the United States. In 2006, Arkansas GSP was $94.8 billion and ranked 34th in the United States. In 2016, Arkansas real GSP grew 0.8 percent; the 2015-2016 national change was 1.5 percent. The 2006-2016 compound annual growth rate for Arkansas real GSP was 0.7 percent; the compound annual rate for the nation was 1.1 percent.

Figure 4.5: Arkansas Gross State Product, 2002-2016, in Current Dollars (millions)



Source: Bureau of Economic Analysis, U.S. Department of Commerce.

4.4 Transportation and the Environment

A critical aspect of the transportation planning process is ensuring that transportation infrastructure improvements do not adversely affect the surrounding environment. Additionally, in the recent past there has been increased awareness of the impact of natural and man-made circumstances on the safety, resiliency, and efficiency of the transportation system. The Department is actively working to anticipate and minimize these impacts while at the same time striving to ensure projects are advanced in a timely manner. This is reflected in the results of the goal setting for this plan, which emphasize system safety and security as it relates to resiliency and the impact of seismic, flood, and winter weather events on the system.

In a more project-specific context, the Department is implementing a Strategic Highway Research Program (SHRP2) Product: Expediting Project Delivery (C19). This product is a capacity solution for accelerating planning and environmental review of transportation projects through a series of strategies that result in improved decision making, better projects, and expedited project delivery. In Arkansas, the following strategies have been employed to expedite project delivery: integration of GIS information with Public Involvement, streamlined permitting process, coordinated tribal consultation activities, restoration and relocation of endangered species, and funded positions with resource agencies to expedite transportation projects.

The following sections elaborate on some of the strategies that the Department utilizes to ensure timely project delivery while preserving natural and man-made environments.

4.4.1 Wetland and Stream Mitigation

To facilitate the transportation needs of a growing population and to maintain existing infrastructure, impacts to wetlands and streams are not always avoidable. ARDOT has relied on a variety of mitigation strategies as an effective way to preserve, enhance, and restore environmental resources. These mitigation strategies include the acquisition of credits from commercially operated mitigation banks, the development of ARDOT-owned mitigation banks and mitigation areas, and on-site mitigation. The determination of need and the identification of appropriate mitigation—as early as possible in the transportation planning process—are critical to ensuring projects can be completed on schedule.

Mitigation banks are sites where credits are generated through the preservation, enhancement, and/or restoration of wetlands and streams specifically to provide compensatory mitigation for unavoidable impacts resulting from a variety of activities, including highway construction and maintenance. Mitigation areas function similarly to mitigation banks, with the exception that the credits generated are used for a single project, while credits generated from mitigation banks can be used for multiple projects. On-site mitigation compensates for impacts by preserving, enhancing, or restoring wetlands and/or streams directly adjacent to the impact site.

ARDOT has established and manages 11 mitigation banks, 16 mitigation areas, and numerous on-site mitigation areas across the state. Nearly 5,000 acres of wetlands, streams, associated vegetated buffers along streams, and adjacent uplands have been preserved, enhanced, and restored through the ARDOT's mitigation banks and areas. However, the service areas of all ARDOT banks and the currently approved private mitigation banks do not provide statewide coverage, leaving some projects with limited mitigation options.

In response to these mitigation needs, ARDOT has sought partnerships with the state's resource agencies, including the Arkansas Natural Heritage Commission, the Arkansas Game and Fish Commission, and the Arkansas Natural Resources Commission. This type of collaboration among state agencies has the potential to streamline ARDOT's mitigation process, provide higher-quality mitigation, and increase continuity with the other publicly owned conservation areas in the state.

4.4.2 Threatened and Endangered Species Mitigation

The definition for threatened and endangered species is that they are potentially at risk of becoming extinct across most or all of their range in the foreseeable future. To protect threatened and endangered species and to minimize loss to existing populations, the Endangered Species Act of 1973 places strict guidelines on interactions with listed species. These guidelines are intended to prevent further declines in populations with the intention of restoring populations to a sustainable level. Section 7(a)(2) of the Endangered Species Act requires federal action agencies to consult with the U.S. Fish and Wildlife Service to ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat.

In Arkansas, 37 species (five plants and 32 animals) are listed as threatened and endangered. Five of these are native to Arkansas, including the yellowcheek darter (*Etheostoma moorei*), Arkansas fatmucket (*Lampsilis powellii*), speckled pocketbook (*Lampsilis streckeri*), Benton County cave crayfish (*Cambarus aculabrum*), and Hell Creek crayfish (*Cambarus zophanastes*).

The primary threat to listed species in Arkansas is habitat degradation, which is typically associated with development and other human activities. Perhaps Arkansas' largest threat is to the state's streams, rivers, and springs, which may explain why 23 aquatic species account for nearly two-thirds of the state's 37 listed species, including 14 species of mussels, five fish, two crayfish, one amphibian, and one plant. The majority of the Endangered Species Act listing determinations cited habitat alteration and water quality degradation as reasons for the population declines. Although aquatic organisms are by far the most at risk, threats to terrestrial species include the loss of forest and prairie lands as well as the emergence of white-nose syndrome, a disease threatening colonial cave-dwelling bat species.

ARDOT coordinates closely with all environmental agencies with jurisdiction over these species, including the Arkansas Natural Heritage Commission, Arkansas Game and Fish Commission, and Arkansas Natural Resources Commission, in the project planning process. The project area is evaluated for the potential of threatened and endangered species as part of the environmental assessment. Avoiding or minimizing impacts to these species is the ultimate goal. When avoidance is not feasible, the impacts are mitigated.

4.4.3 Cultural Resources

Arkansas is rich in cultural resources and ARDOT has been actively involved in identifying and preserving them for decades. ARDOT has an extensive process that begins early in the planning process of highway projects. The process includes reviewing a number of documents and databases for information on known resources as well as an on-the-ground survey to identify the possibility of unknown resources. The process also includes consultation with the State Historic Preservation Officer, appropriate Native American Tribes, and other interested parties. All cultural resources 50 years or older are considered in the process, including archeological sites, historic buildings, bridges, and landscapes. When significant resources are identified in a project area, avoidance is the preferred alternative, however, data recovery and architectural documentation are other mitigation options considered as appropriate.

4.4.4 Air Quality

The Clean Air Act requires the Environmental Protection Agency (EPA) to set National Ambient Air quality standards (NAAQS) for six common air pollutants (particulate matter, ozone, carbon monoxide, nitrogen oxides, sulfur dioxide, and lead). Arkansas currently meets the standards for all six pollutants. The Office of Air Quality of the Arkansas Department of Environmental Quality is responsible for reporting and modeling air quality in the state.

The Congestion Mitigation and Air Quality Improvement (CMAQ) program is jointly administered by FHWA and the Federal Transit Administration. The CMAQ program provides funding for projects or programs that support the attainment or maintenance of a national ambient air quality standard. The FAST Act continued the CMAQ program with just over $2 billion per year estimated national funding through 2020.[3]

Currently, Crittenden County, which is part of the West Memphis MPO, is the only county considered a maintenance area in Arkansas. Crittenden County was listed as being in nonattainment in 2015; however, the EPA redesignated the county as attaining the ozone standard in 2016.[4] Long Range Planning activities in this region leveraged successful and long-standing inter-agency cooperation activities between ARDOT, the West Memphis MPO, the Arkansas Department of Environmental Quality, FHWA – Arkansas Division, and EPA – Region 6. Coordination efforts in the region began more than 15 years ago in an effort to be prepared for anticipated NAAQS designations in the area.

With a successful inter-agency agreement in place, and cooperative efforts by all parties, the West Memphis MPO has successfully exhibited conformity to the NAAQS of three Metropolitan Transportation Plans and numerous Transportation Improvement Programs. This effective process has allowed projects in the area to advance without undue delay related to environmental handling.

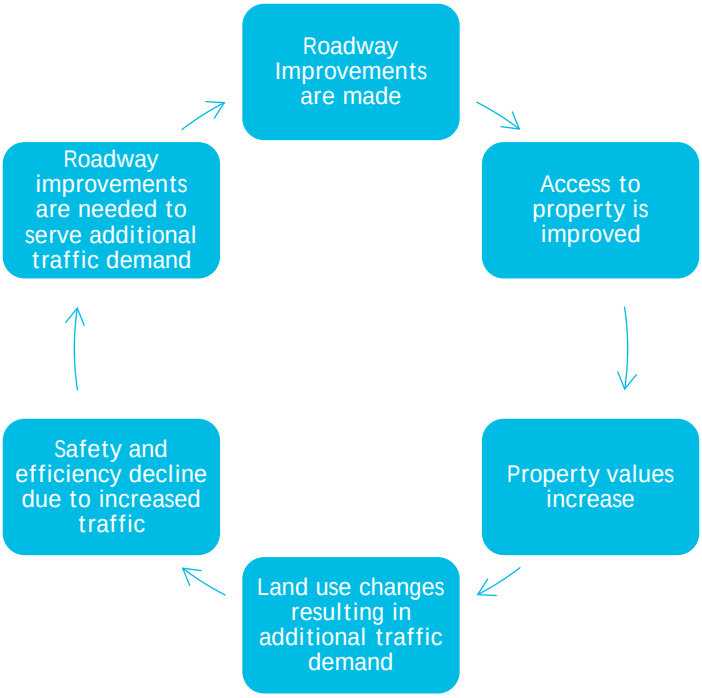
ARDOT administers the CMAQ program for the state. Of the funds directed to Arkansas for the CMAQ program, a portion is set-aside for use in Crittenden County due to its status as a maintenance area. Those particular funds are restricted as to the type of projects that may be funded. The remainder of the funds have been used for a number of different projects including funding apportion of the Northwest Arkansas Travel Demand Model and the central Arkansas Ozone Action Days program. It is anticipated if other areas fall into designation as nonattainment, the Crittenden County model of cooperation will be used to navigate the process and ensure the progress of transportation investments statewide.

4.4.5 Land Use and Transportation System Management

Transportation-planning decisions affect land use, and land-use decisions affect transportation demand. Poor coordination of transportation and land-use decisions typically results in the cycle shown in Figure 4.6. This cycle of roadway improvements is not only costly, but may also adversely impact natural and man-made environments.

[3] FHWA, U.S. DOT. "Congestion Mitigation & Air Quality Improvement Program (CMAQ) Fact Sheet." March 2016. http://www.fhwa.dot.gov/fastact/factsheets/cmaqfs.pdf.
[4] U.S. EPA news releases from Region 6, January 2016. https://www.epa.gov/newsreleases/epa-proposes-redesignate-crittenden-county-ark-attaining-ozone-standard

Figure 4.6: Land Use and Transportation Poor Coordination Cycle

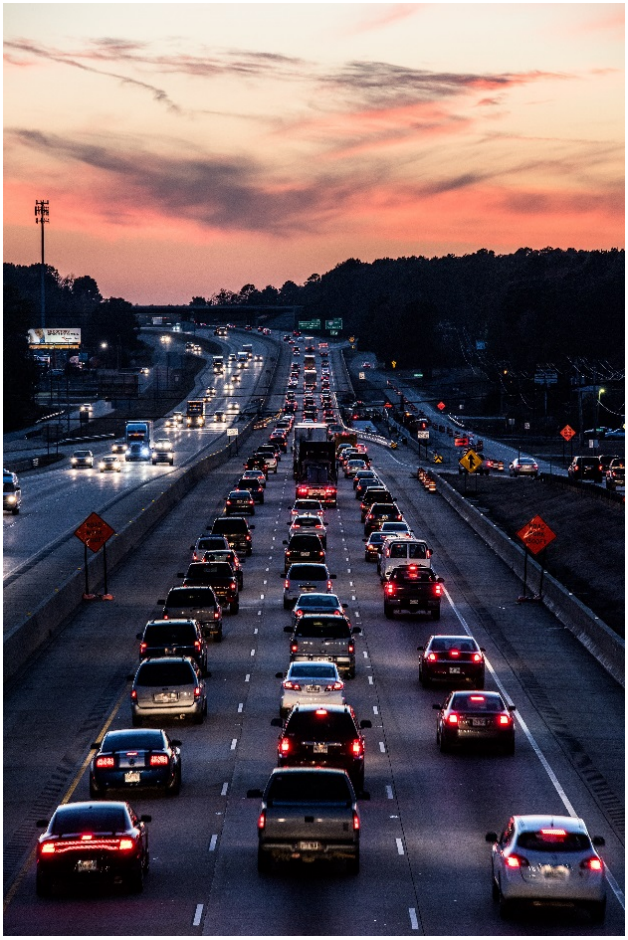


To break this cycle, maximize the safety and efficiency of the highway system, minimize environmental impacts, and provide reasonable land use and land access, transportation and land-use plans must be carefully coordinated. As a state agency, ARDOT is not vested with the authority to regulate land use – that is reserved for local jurisdictions. However, ARDOT encourages local officials to implement sustainable land-use strategies – strategies that promote prosperous and harmonious community development, such as nodal, multi-modal and mixed-use development, while minimizing impacts to the highway system. ARDOT also sees opportunities for municipalities to benefit from the knowledge and experience of regional planning partners (such as MPOs and PDDs) in the development and coordination of transportation and land-use plans.

In addition to encouraging more sustainable local land-use patterns, ARDOT is working with local officials to implement access management practices along state highways. Managing access has proven to be among the most cost-effective and lowest-impact strategies for maintaining highway safety and efficiency. Examples of successful access management implementations in Arkansas include Highway 60 (Dave Ward Drive) in Conway and Highway 265 (Crossover Road) in Fayetteville. ARDOT is also pursuing an access management implementation study through its Transportation Research Committee to review existing practices, develop standards and guidelines for implementation, and produce educational materials for various stakeholders.

Taken together, efforts to manage highway access and improve the coordination of land-use and transportation have the potential to significantly improve the sustainability of highway systems in urban areas.

5. EXISTING TRANSPORTATION SYSTEM AND CONDITIONS



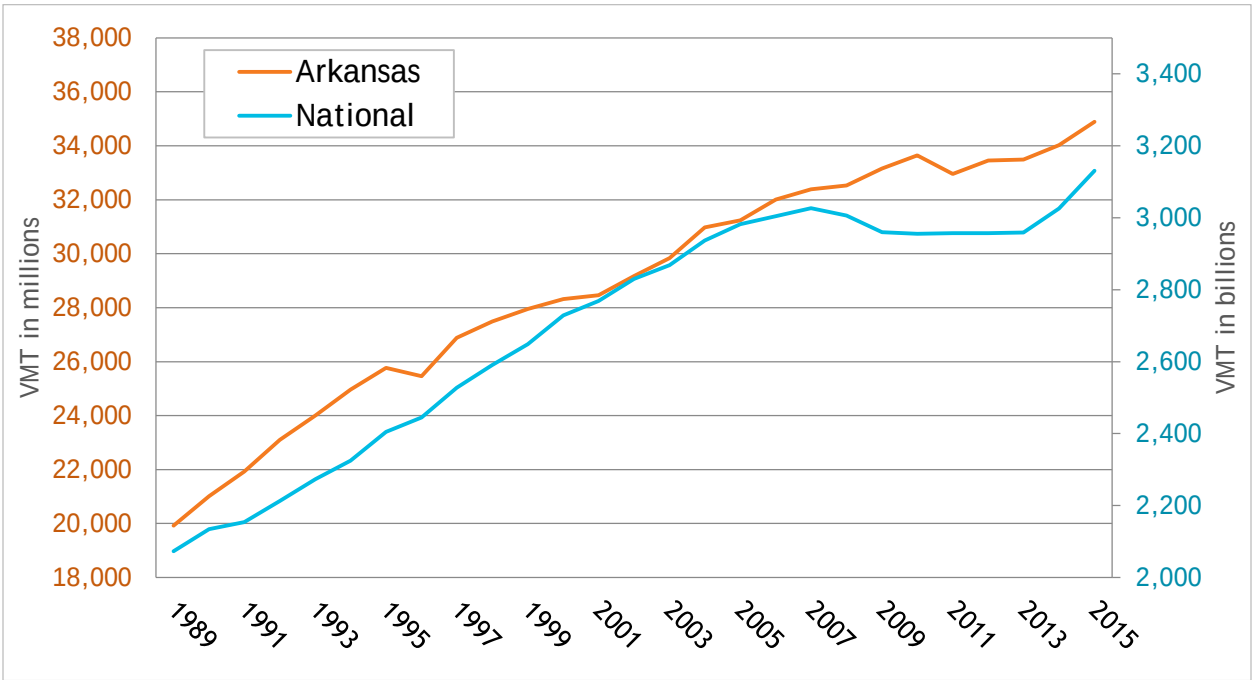
Every day Arkansans rely on our transportation system to get to work, school, shopping, and beautiful lakes and mountains for recreation. At the same time, the transportation system drives our economy, making connections to local, regional and global markets. Seventy percent of freight by ton is moved by truck and the total tonnage of freight that moved through Arkansas in 2012 is expected to grow by 47 percent by 2040. Arkansas' roads, bridges, rails, waterways and ports, airports, public transit systems, and bicycle and pedestrian systems remain the backbone of the Natural State's economy. Arkansas' transportation system also provides for a high quality of life and makes the state a desirable place to live and visit.

5.1 State Highway System

The State Highway System (SHS) in Arkansas is composed of several elements that together form an extraordinarily large network. It is the 12th largest SHS in the nation (comparable in mileage to California, New York, Louisiana, Georgia, and Illinois). Inside this network are various subsystems that are important for safety, economic development, tourism, and statewide mobility. The Arkansas SHS comprises the Interstate Highway System, the non-Interstate National Highway System (NHS), the Arkansas Primary Highway Network (APHN), and non-APHN routes. The off-system routes include but are not limited to city streets and county roads. In 2015, the combination of the SHS and off-system routes supported over 34 million vehicle miles traveled (VMT) in the state of Arkansas. Figure 5.1 compares national with Arkansas VMT trends.

ARDOT is responsible for maintaining and improving the SHS, which includes 16,424 miles of highway and 7,279 bridges. The heavy use of the SHS belies its relatively small size. Although the SHS constitutes only 16 percent of the total public roadway miles (102,609), it carries 75 percent of the total traffic and 95 percent of all heavy truck traffic. Within the SHS, the NHS constitutes 3,339 miles (20 percent); the APHN non-NHS totals 4,564 miles (28 percent); and the non-APHN totals 8,521 miles (52 percent).

Figure 5.1: National versus Arkansas VMT Trends



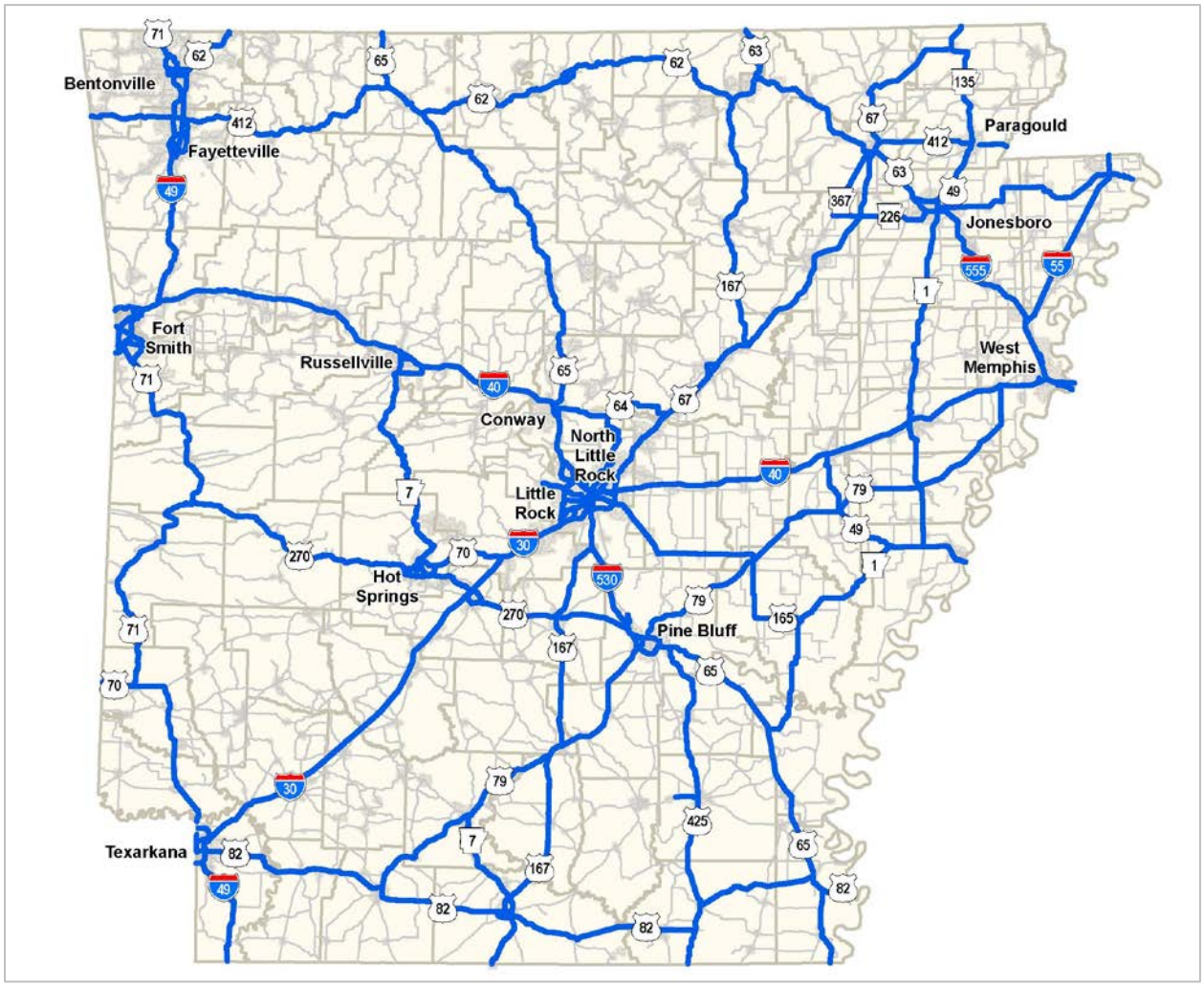
5.1.1 National Highway System

The NHS includes the Interstate Highway System as well as other roads important to the nation's economy, defense, and mobility. The NHS includes the following subsystems of roadways:

- Interstate—The Dwight D. Eisenhower System of Interstate and Defense Highways retains its separate identity within the NHS.
- Other Principal Arterials—These are highways in rural and urban areas that provide access between an arterial and a major port, airport, public transportation facility, or other intermodal transportation facility.
- Strategic Highway Network—This is a network of highways that are important to U.S. strategic defense policy and which provide defense access, continuity, and emergency capabilities for defense purposes.
- Major Strategic Highway Network connectors—These are highways that provide access between Strategic Highway Network routes and major military installations.
- Intermodal connectors—These routes, which are both on or off the SHS, provide access between major freight and passenger intermodal facilities and the other four subsystems that make up the NHS.

The NHS was developed by the U.S. Department of Transportation in cooperation with the states, local officials, and MPOs. Figure 5.2 shows the 3,339 NHS miles in Arkansas, which serve as the backbone of the APHN. In Arkansas, the Interstate portion of the NHS includes the entire 747-mile Interstate Highway System.

Figure 5.2: National Highway System in Arkansas

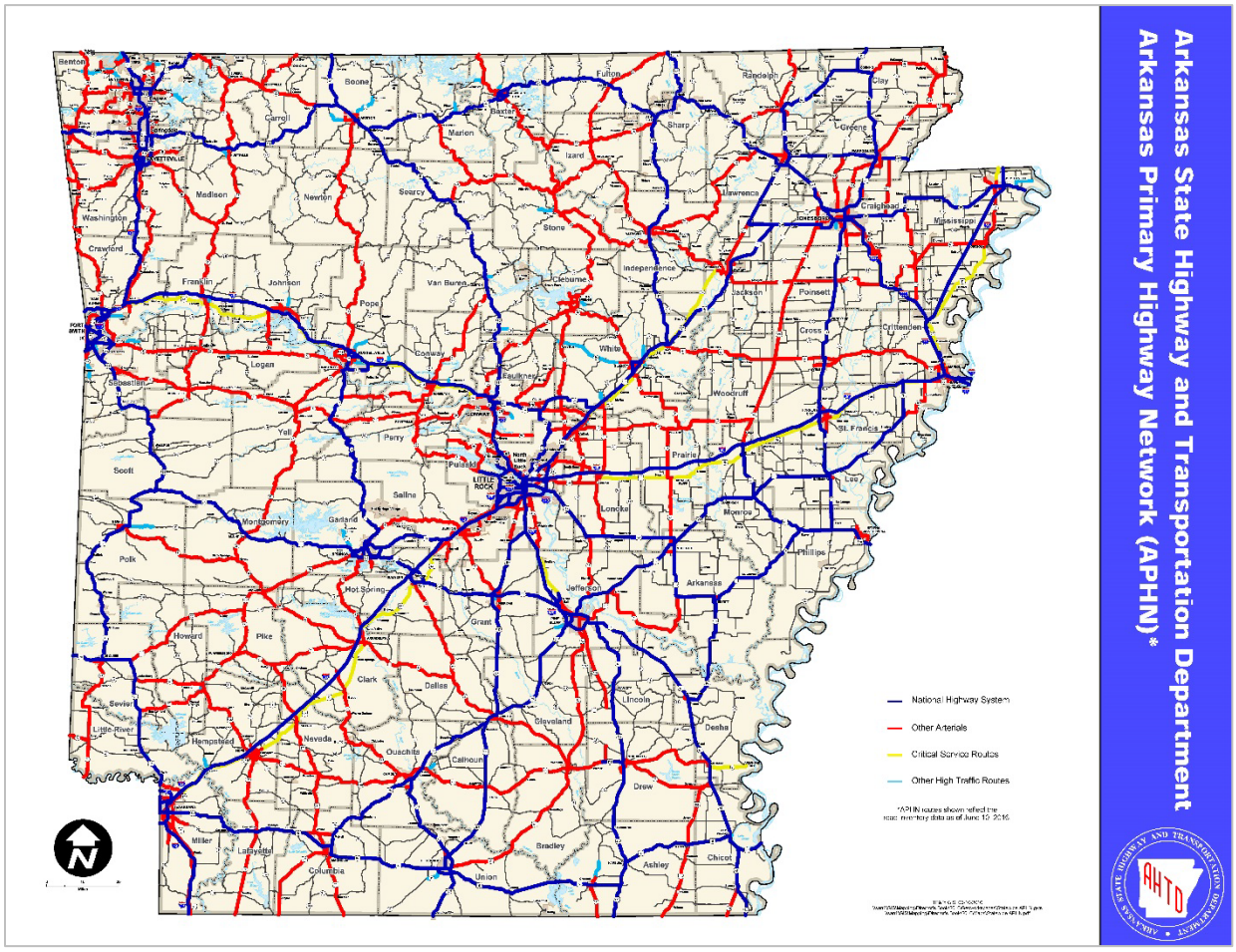


5.1.2 Arkansas Primary Highway Network

The APHN was identified as a tool for long-range transportation planning. As shown in Figure 5.3, the APHN totals 7,903 miles (3,339 NHS miles + 4,564 non-NHS miles) and serves approximately 90 percent of all travel on the SHS. The APHN carries no official signing or designation, nor does it receive any special or additional funding. However, the APHN was adopted by the Commission by Minute Order 2004-049 on April 14, 2004, as a system to provide interstate and regional movement, link population centers, and provide critical service.

Since that time efforts have been made to ensure the condition, connectivity, and reliability of the APHN through capacity investments, prioritization, and maintenance practices.

Figure 5.3: Arkansas Primary Highway Network



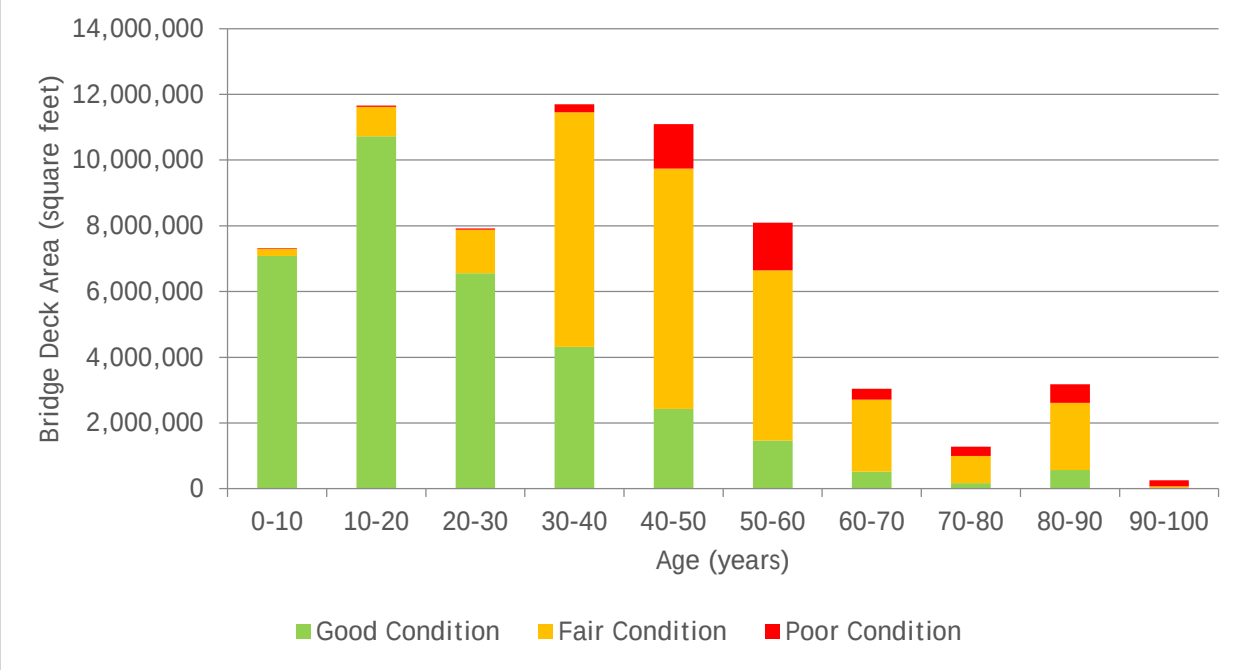
5.2 Bridges

Arkansas has the 23rd largest bridge system in the nation. ARDOT is responsible for inspecting all 12,667 bridges on public roads and for replacing, maintaining, and preserving the 7,279 state-owned bridges that are on the SHS. The average age for all state bridges is 45 years, and the majority of these bridges were designed for a 50-year design life. Thus, not only are many of the bridges in Arkansas reaching the end of their service lives, but most are

deteriorating at an accelerating rate because of increased travel, especially truck traffic, on the SHS.

Approximately 84 percent of the state-maintained bridges are located in rural areas; the remaining 16 percent are located in urban locations. Figure 5.4 illustrates the current condition (as of 2015) of bridges by deck area by age in Arkansas.

Figure 5.4: Bridge Condition by Age (as of 2015)



5.3 Intelligent Transportation System

Intelligent Transportation Systems (ITS) improve transportation safety and mobility and enhance productivity by integrating advanced communications technologies into the transportation infrastructure and in vehicles. ARDOT's ITS infrastructure includes Dynamic Message Signs (DMS), Closed Circuit Television Cameras (CCTVs), Highway Advisory Radio (HAR), Roadway Weather Information Systems (RWIS), and bridge de-icing systems.

5.3.1 Dynamic Message Signs

ARDOT operates 70 DMSs at various locations around the state. DMSs provide information to the public for various reasons including unplanned incidents, travel delay resulting from maintenance or construction activity, travel times, Amber Alerts, weather advisories, and travel delays due to special events. One of the benefits of DMSs is that they can be operated remotely and changed at any time.

5.3.2 Closed-Circuit Television Cameras

ARDOT operates 41 CCTVs at various locations around the state. They are used to monitor and observe traffic flows, and they can also be used to verify if a traffic slowdown is due to congestion or an incident. If an incident has occurred, law enforcement or first responders can be notified. The CCTVs are currently monitored by the Maintenance Division. In the future, CCTVs will be monitored from a future Traffic Management Center.

5.3.3 Highway Advisory Radios

Highway Advisory Radios, which can disseminate more detailed information than DMSs, are installed at 12 locations around the state. They are usually installed around larger work zones and provide updates to the public regarding traffic delays associated with the work zone. Some of the more detailed information they relay are alternate routes, information on the length of delay or the traffic queue, weather warnings, and a detailed description of the work zone. HARs can also be used with an Amber Alert to give more detail of the missing victim or the suspect.

5.3.4 Road Weather Information Stations

ARDOT operates Road Weather Information Stations in remote locations around the state. These stations collect real-time atmospheric and roadway conditions such as air temperature, wind speed and direction, relative humidity, precipitation, visibility and fog detection, pavement surface temperature, subgrade temperature, and pavement surface (e.g., wet, dry, frozen). The real-time weather data are used by ARDOT to determine roadway treatment plans to mobilize crews to address roadway conditions.

5.3.5 Bridge De-Icing Systems

The Department plans to install 10 bridge de-icing systems around the state generally at remote locations which are difficult to reach during severe winter weather. Bridge de-icing systems significantly increase the safety of winter travel because bridge decks tend to freeze before the surrounding roadway freezes and tend to re-freeze faster after a treatment has been applied. Most of the de-icing systems will be located near a RWIS station to provide real-time pavement surface temperatures. Bridge de-icing systems offer the benefit of automatic or remote operation when needed, and they can be retrofitted after bridge construction.

5.3.6 Traveler Information – IDrive Arkansas

ARDOT has developed and maintains a travel and construction information portal (IdriveARKANSAS) in an effort to provide enough data to the motoring public so that informed decisions can be made about navigating the state highway system. This is designed to be a one-stop source. It is provided free to the public and is available anywhere a connection to the Internet exists. While IdriveARKANSAS is designed with the motorist in mind, accessing the portal while operating a motorized vehicle is prohibited.

IDrive provides motorists an interactive map that provides the following information:

- Live traffic
- Construction work zone locations
- Alternate routes
- Welcome centers and rest area locations
- Commuter park and ride lot locations
- Weight restricted state Highways
- Weight restricted state Bridges
- Weather radar
- Weather warnings
- Current weather conditions

IDrive also provides the following:

- Closure report that provides current information on Arkansas highway routes, structures, and facilities
- Lane closure report that provides current information, such as county, route, length, and approximate days, on lanes closures throughout Arkansas
- Flooded roadways map that shows roadways closed due to high water

IDrive is accessed at http://www.idrivearkansas.com.

5.4 Public Transportation

Act 192 of 1977, designated ARDOT to administer public transportation programs in Arkansas. Today, eight urbanized and nine rural transit systems provide service in Arkansas. Additionally, approximately 200 human service agencies provide transportation services for seniors, persons with disabilities, and persons seeking employment opportunities. State and local funding supplements Federal Transit Administration funding for public transportation.

The total cost of operating the eight urban transit systems for calendar year 2013 was approximately $29 million, with the Central Arkansas Transit Authority (now Rock Region Metro) having the largest share ($16.7 million).

The total cost of operating the nine rural transit systems for calendar year 2013 was approximately $17 million, with the Central Arkansas Development Council and South Central Arkansas Transit having the largest share (approximately $6.8 million).

Table 5.1 and Table 5.2, respectively, show the operating characteristics of urban and rural transit systems in Arkansas.

Table 5.1: Urban Transit Characteristics

Transit Agency	Operating Characteristics					
	Ridership	Vehicles in Service	Personnel (Operating)	Annual System Miles	Annual Vehicle Hours	Total Operating Cost ($)
Central Arkansas Transit Authority (CAT)[a]	2,946,784	88	188	3,263,314	260,850	16,700,000
Fort Smith Transit	287,015	15	34	461,977	N/A	2,176,180
Hot Springs Intracity Transit	174,451	12	15	214,764	27,440	1,443,215
Jonesboro Economical Transportation System (JET)	80,086	9	25	261,652	16,280	825,474
Ozark Regional Transit (ORT)[b]	231,108	26	65	612,531	40,554	2,536,399
Pine Bluff City Transit	91,280	10	24	219,611	16,324	1,056,109
Razorback Transit	1,930,956	31	38	476,470	50,053	2,592,100
Texarkana Urban Transit District (TUTD)[c]	321,504	31	19	376,585	23,639	1,656,376
Total	**6,063,184**	**222**	**408**	**5,886,904**	**435,140**	**28,985,853**

Source: Arkansas Public Transportation Directory, 2014.
N/A = not available
[a] *Central Arkansas Transit Authority recently changed its name to Rock Region Metro.*
[b] *Ozark provides both urban and rural service. Operating statistics reflect urban services only.*
[c] *TUTD operates in two states; data are for Arkansas service only.*

Table 5.2: Rural Transit Characteristics

Transit Agency	Operating Characteristics					
	Ridership	Vehicles in Service	Personnel (Operating)	Annual System Miles	Annual Vehicle Hours	Total Operating Cost ($)
Black River Area Development (BRAD)	21,677	14	7	54,549	4,852	265,212
Central Arkansas Development Council/ South Central Arkansas Transit (CADC/SCAT)	453,725	166	210	4,723,696	311,745	6,785,174
Eureka Springs Transit	118,576	14	25	158,796	11,098	743,298
Mid-Delta Transit	82,608	39	121	1,217,520	56,072	1,346,300
North Arkansas Transportation Service (NATS)	146,166	64	48	724,305	N/A	1,344,534
North East Arkansas Transportation (NEAT)	17,966	8	8	180,858	N/A	247,576
Ozark Regional Transit (ORT)[a]	3,592	18	49	30,524	2,616	232,783
Southeast Arkansas Transportation (SEAT)	246,481	103	140	3,713,762	221,944	5,876,562
Western Transit System (WTS)	2,638	10	13	84,016	4,898	204,350
Total	**1,093,429**	**436**	**621**	**10,888,026**	**613,225**	**17,045,789**

Source: Arkansas Public Transportation Directory, 2014.
N/A = not available
[a] *Ozark provides both urban and rural service. Operating statistics reflect rural services only.*

5.5 Passenger Rail

As shown in Figure 5.5, passenger rail service in Arkansas is provided by Amtrak's Texas Eagle service, a long-distance train that operates between Chicago and Los Angeles with a transfer at San Antonio, Texas. A single train in each direction passes through Arkansas each day, making six nightly stops. The northbound train makes its first stop in Arkansas at Texarkana at 8:43 PM and makes its last stop in Arkansas at Walnut Ridge at 1:41 AM. The southbound train makes its first stop in Arkansas at Walnut Ridge at 12:37 AM and its last stop in Texarkana at 5:58 AM. The Little Rock station was the most heavily used Arkansas station on the Texas Eagle route in 2013, with 56 percent of passengers starting or ending their trips there.

Figure 5.5: Amtrak's Texas Eagle in Arkansas

Source: Arkansas State Rail Plan, Figure 3-2, Amtrak's Texas Eagle, April 2015.

In addition to having inconvenient arrival and departure times, the Texas Eagle is slower and less reliable than automobile travel. However, Amtrak by some measures is less expensive than automobile travel, at least when compared with single-occupancy automobiles. Despite Amtrak's limitations, the total number of Amtrak passengers in Arkansas increased from 20,789 in 2003 to 41,358 in 2013.

Currently, there is a study underway by ARDOT in partnership with FRA to examine the need for enhanced passenger rail service in Arkansas (along the Texas Eagle) as well as the need and feasibility of establishing passenger rail service between Little Rock and Memphis. This would connect to the City of New Orleans operating between Chicago and New Orleans through Memphis.

5.6 Private Freight Rail

Arkansas' approximately 2,662 miles of active rail lines are predominantly owned by private companies. Several industrial spurs owned by port authorities or municipalities and a segment of rail line owned by the Southeast Arkansas Economic Development District are the exceptions. Railroads continue to be an important component of the transportation system as rail freight volumes continue to grow.

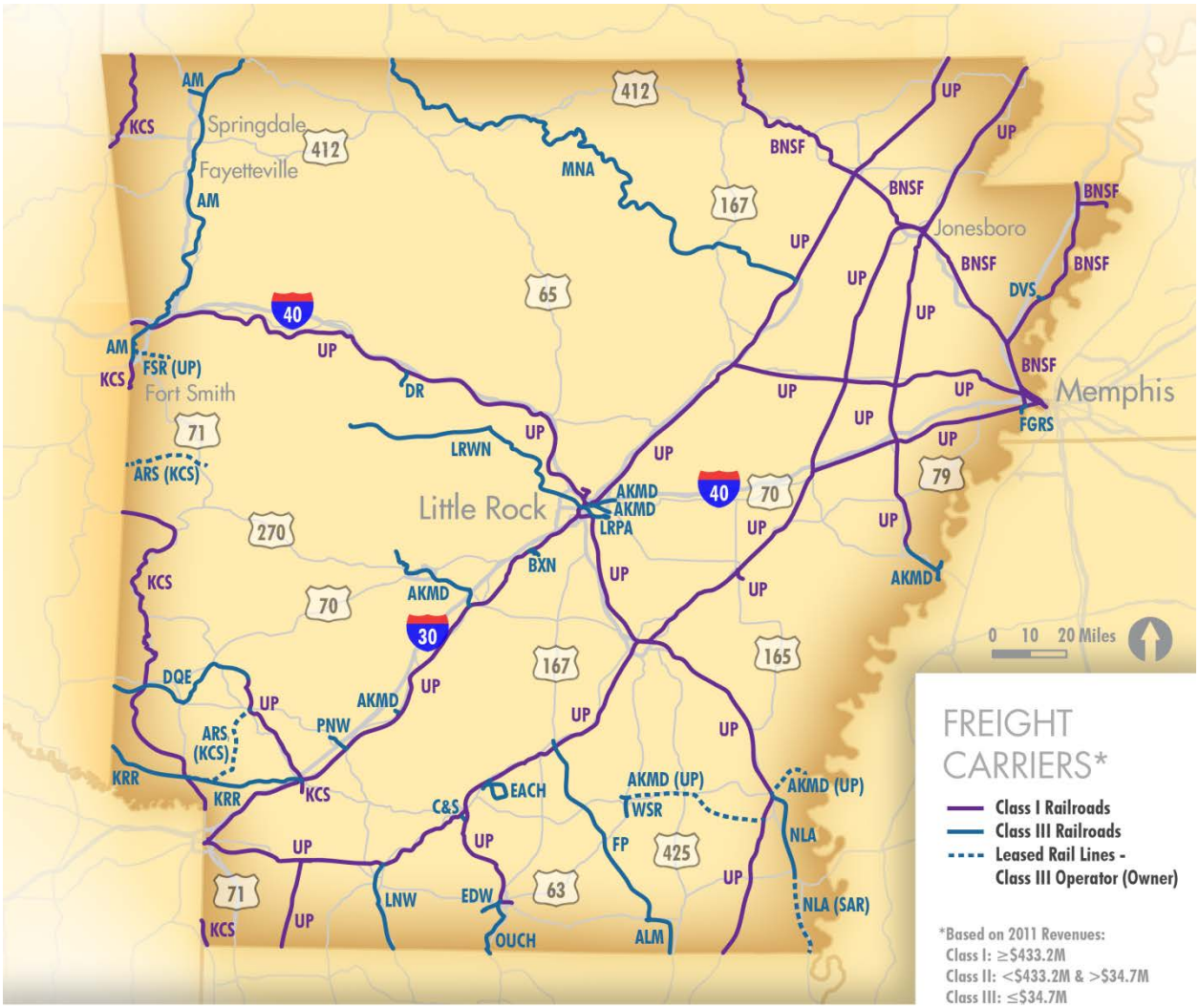
Freight rail transportation in Arkansas is provided by private corporations through three major (Class I) railroads and 23 short line (Class III) railroads. The U.S. Surface Transportation Board defines Class I railroads as those with revenues of $467.0 million or more and short line railroads as those railroads with annual operating revenues $37.4 million or less. No regional railroads (Class II carriers, with revenues between $37.4 and $467.0 million) currently operate in Arkansas. Short line railroads play important gathering roles in the freight rail system. These roles include dependable and low-cost railcar pickup and delivery and feeder railcar services to the Class I railroads for long-haul freight delivery. Many short lines railroads also offer a full range of logistics services such as warehousing and transloading, product marketing, and trucking. Figure 5.6 shows the current freight rail system in Arkansas.

Rail operations on the 2,662 miles of active rail lines in Arkansas are as follows:

- 1,327 miles operated by Union Pacific (UP) Railroad (Class I)
- 198 miles operated by BNSF Railway (Class I)
- 158 miles operated by Kansas City Southern Railway (Class I)
- 979 miles operated by 23 short line railroads

Freight rail has proved to be vital in maintaining and improving both the state and national economy. Approximately 70 percent of Arkansas rail traffic is through traffic without an Arkansas origin or destination. Coal has been by far the highest tonnage commodity carried on the Arkansas rail network. It is projected to account for 57 percent of tons terminating in the state in 2015 and 36 percent of tons passing through the state. Arkansas' largest export destinations are Texas, Louisiana, and California. The majority of the freight shipped to California is containerized freight from the UP intermodal facility in Marion, and much of the freight shipped to Texas and Louisiana consists of gravel. Arkansas' top rail imports originate from Wyoming (coal); California (intermodal containers to Marion); Iowa, Nebraska and Illinois (grain and food); and Texas (chemicals and plastics).

Figure 5.6: Arkansas Freight Rail System



RAILROADS

AKMD	Arkansas Midland Railroad	DVS	Delta Valley & Southern Railway	LRWN	Little Rock & Western Railway
ALM	Arkansas, Louisiana & Mississippi Railroad	EACH	East Camden & Highland Railroad	MNA	Missouri & Northern Arkansas Railroad
AM	Arkansas & Missouri Railroad	EDW	El Dorado & Wesson Railway	NLA	North Louisiana & Arkansas Railroad
ARS	Arkansas Southern Railroad	FGRS	Friday-Graham Rail Spur	OUCH	Ouachita Railroad
BNSF	BNSF Railway	FP	Fordyce & Princeton Railroad	PNW	Prescott & Northwestern Railroad
BXN	Bauxite & Northern Railroad	FSR	Fort Smith Railroad	SAR	Southeast Arkansas Economic Development District
C&S	Camden & Southern Railroad	KCS	Kansas City Southern Railway	UP	Union Pacific Railroad
DQE	DeQueen & Eastern Railroad	KRR	Kiamichi Railroad	WSR	Warren & Saline River Railroad
DR	Dardanelle & Russellville Railroad	LNW	Louisiana & North West Railroad		
		LRPA	Little Rock Port Authority Railroad		

Source: Arkansas State Highway and Transportation Department, Arkansas State Rail Plan, September 2016.

5.7 Rail-to-Truck Intermodal Facilities

Rail-to-truck movements of either containers or trailers using flat cars (commonly referred to as container-on-flatcar or trailer-on-flatcar) require intermodal facilities. The sole intermodal terminal in Arkansas is the UP terminal in Marion; the major UP train operations in Little Rock do not include a container–trailer intermodal facility. The Marion terminal has the capacity to handle 375,000 containers per year.

5.8 Ports and Waterways

The nation's inland navigable waterways provide a viable system for transporting bulk commodities within the United States and for accessing deepwater ports for overseas shipments. Arkansas is linked to this transportation system via its navigable waterways. As Arkansas' business sectors become more involved with the global marketplace, especially in Latin American countries, water access to the ports of the Gulf of Mexico become increasingly important. Arkansas' waterway system consists of four commercially active waterways and one river (the Red River) designated as a future navigable waterway.

Arkansas' riverports and slackwater harbors are located as shown in Figure 5.7.

5.8.1 Ports and Harbors

As Arkansas' business sectors become more involved with the global marketplace, especially in Latin American countries, water access to the ports of the Gulf of Mexico become increasingly important.

In Arkansas, city and/or county port authorities govern public ports and harbors, and private stevedore companies lease the cargo-handling facilities and operate the public use terminal. All public ports in Arkansas are classified as general-purpose terminals, which, in most cases, handle a wide variety of bulk commodities in large bags, coils, bundles, and loose, voluminous forms. The primary function of ports is to act as a center for intermodal transportation and product distribution. A secondary activity is industrial production and processing.

Figure 5.7 and Table 5.3 list ports and harbors in Arkansas, their railway access, and the commodities handled. Some ports, such as Osceola or Fort Smith, are fairly specialized, and others, such as the Port of Little Rock, handle a broader range of cargo.

Rail access has been proposed for Yellow Bend Harbor and the Ports of Crossett and West Memphis. In West Memphis, funding from a TIGER grant will fund rail access to the base of the levee adjacent to the port facilities. A conveyor system over the levee will allow bulk freight to be transported between the port and a rail transloading area. The Port of Yellow Bend has selected a preferred alternative for gaining rail access but is seeking funding for environmental, construction, and engineering work. Rail access to the Port of Crossett is in the early planning stages.

Figure 5.7: Current and Future Commercially Navigable Waterways, Public Ports, and Harbors

Source: Arkansas State Highway and Transportation Department, Arkansas State Rail Plan, September 2016.

Table 5.3: Ports and Harbors in Arkansas

Port or Harbor[a]	Rail Access	Commodities Handled
McClellan-Kerr Arkansas River Navigation System		
Port of Van Buren	Union Pacific (UP), Arkansas & Missouri (AM)	Nonmetallic minerals, other
Port of Fort Smith (located on the Poteau River)	AM, Fort Smith Railroad	Iron ore, iron and steel waste and scrap, primary iron and steel products (ingots, bars, rods, etc.), other
Little Rock Port and Harbor	UP, BNSF, Little Rock Port Authority	Distillate, residual and other fuel oils; lube oil and greases, building cement and concrete; lime; glass, fertilizers, iron ore, iron and steel waste and scrap, paper and allied products, primary iron and steel products (ingots, bars, rods, etc.), food and farm products, other
Port of Pine Bluff	UP, BNSF	Fertilizers, forest products, lumber, logs, woodchips, paper and allied products, primary iron and steel products (ingots, bars, rods, etc.), food and farm products, other
Mississippi River		
Helena Harbor	Arkansas Midland	Coal, lignite and coal coke, primary iron and steel products (ingots, bars, rods, etc.), food and farm products, other
Port of Osceola	None (BNSF nearby)	Food and farm products
Port of West Memphis	Friday-Graham Rail Spur (expected 2015 or 2016)	Food and farm products, oilseeds (soybean, flaxseed, and others), primary iron and steel products (ingots, bars, rods, etc.), other
Yellow Bend Harbor	None	Various
Ouachita River		
Port of Camden	UP	Various
Port of Crossett	None	Various

Source: U.S. Army Corps of Engineers.
[a] *Harbor refers to a facility located at an inlet away from the primary river flow.*

5.8.2 Waterways

Arkansas' waterway system consists of four commercially active waterways and one river (the Red River) designated as a future navigable waterway. The active waterways are the McClellan-Kerr Arkansas River Navigation System and the Mississippi, Ouachita, and White Rivers. In tems of transportation, the waterways in Arkansas provide option for the move of goods and materials. There are no scheduled passengers services.

5.8.2.1 McClellan-Kerr Arkansas River Navigation System

The McClellan-Kerr Arkansas River Navigation System (MKARNS) was the largest civil works project ever undertaken by the U.S. Army Corps of Engineers at the time of its opening in 1970. The MKARNS is part of the inland waterway system and it begins at the Port of Catoosa in Oklahoma runs southeast through Oklahoma and Arkansas and flows into the Mississippi around 600 miles noth of New Orleans. The MKARNS is a valuable marie highway and it is responsible for $1 to $2 billion in trade transportation in Arkansas each year and $100 million to $1 billion in trade transportation in Oklahoma.

In 2010, MKARNS was given "connector" status by America's Marine Highway Program, a program established in 2008 and led by the U.S. Department of Transportation. This designated MKARNS as a secondary system connecting to the Mississippi River. In March 2015, the Army Corps of Engineers redefined MKARNS from a moderate-use to a high-use system and in May 2015 it was upgraded to "corridor" status by the Marine Highway Program and designated Marine Highway 40. This redisignation increased the opportunities for federal assistance for system maintenance and improvements.

The Arkansas part of the system starts at the Oklahoma state line near Fort Smith and extends a distance of 308 miles.The waterway system has a width of 250 to 300 feet and a minimum maintained depth of nine feet. It is designed for eight barge tows, but it can accommodate up to 15 barge tows by using double lockage. A feasibility study is underway by the Little Rock District of the Corps of Engineers to determine the possible impacts of expanding the Arkansas River channel to 12 feet instead of maintaining it at its currently authorized nine feet. Funding for the study has been authorized by Congress. On the Arkansas segment of the river, public river terminals are located at the Port of Fort Smith, Port of Van Buren, the Little Rock Riverport–Slackwater Harbor Complex, and the Port of Pine Bluff.

5.8.2.2 Mississippi River

The Mississippi River is is the second longest river in North America, flowing 2,350 miles from Minnesota to the Gulf of Mexico. The agricultural products and the agribusiness industry that has developed in the Mississippi River basin produce 92 percent of the nation's agricultural exports, 78 percent of the world's exports in feed grains and soybeans, and most of the livestock and hogs produced nationally. Sixty percent of all grain exported from the US is shipped on the Mississippi River through the Port of New Orleans and the Port of South Louisiana.[5] The Mississippi River is linked to the 25,000 mile inland waterway system includes 38 states and stretches from northwest Montana to the Great Lakes to northeart Pennsylvania. The inland waterway system provides an efficient means to transport large volumes of bulk commodities on tow barges over long distances at a economical price. Due to its critical importance, the Mississippi River between Illinois and New Orleans is designed Marine Highway 55.

The Arkansas segment of the Mississippi River starts at the Missouri state line in the vicinity of Blytheville and extends south to the Louisiana state line near Eudora, a length of 321 miles. This segment of the Mississippi River is maintained to a width of 300 feet for barge traffic. The absence of locks and dams and unrestrained water flow during the winter months are significant advantages for barge transportation on the lower Mississippi River, allowing tows of 40 or more barges. On the Arkansas side of the Mississippi River, public use terminals are located at the Port of Osceola, the Port of West Memphis, the Helena Harbor, and the Yellow Bend Harbor.

5.8.2.3 Ouachita River

Arkansas' commercially navigable portion of the Ouachita River begins at Camden and flows southeast to the Arkansas–Louisiana state line. The Ouachita joins the Black and Red Rivers in Louisiana and eventually flows into the Mississippi River, a distance of 371 miles. The navigable segment in Arkansas is 116 miles long and is maintained to a depth of nine feet, with a channel width of 100 feet. Two public riverports are located on the Ouachita River in Arkansas: the Port of Camden and the Port of Crossett.

5.8.2.4 White River

The White River is navigable from Newport south to the Mississippi River, a length of 254 miles. The river has a nine-foot approved depth, but this draft is not maintained throughout the year.

5.8.2.5 Red River (J. Bennett Johnson Waterway)

The Red River is classified as a future navigable waterway from Index, Arkansas (at the Miller County–Texas state line) to the Louisiana state line, a length of 97 miles. There is no official designation of its depth or width and, as a result, there are no public ports or private terminals on this segment of the river. The Red River is now commercially navigable from Shreveport, Louisiana, to the Mississippi River, a length of 225 miles

[5] U.S. National Park Service

5.9 Airports

Arkansas is home to 92 public use airports: four primary airports, four nonprimary airports, and 84 general aviation and public use airports. **Figure 5.8** shows the locations of the 11 regional airports in Arkansas which are also general aviation airports. The Arkansas economy benefits greatly from aviation, with the 92 airports performing a vital role as gateways to their communities. When all economic impacts of Arkansas' airports and Little Rock Air Force Base are summed, over 39,700 jobs can be traced to aviation. These employees annually receive $1.3 billion in payroll and benefits. In total, nearly $3.1 billion in economic activity can be attributed to aviation activity in the state. In addition to economic benefits, the airport system provides numerous critical services to enhance the quality of life, health, safety, and welfare of Arkansas citizens.

When all economic impacts of Arkansas' airports and Little Rock Air Force Base are summed, over 39,700 jobs can be traced to aviation. These employees annually receive $1.3 billion in payroll and benefits. In total, nearly $3.1 billion in economic activity can be attributed to aviation activity in the state.

Figure 5.8: Arkansas Regional Airports

The Bill and Hillary Clinton National Airport in Little Rock is also known by its previous name, Little Rock National–Adams Field (LIT). Clinton National has a full-service fixed-base operator

and is Arkansas' largest commercial service airport, with nearly 2.2 million passengers annually. It hosts six airlines with dozens of daily departures and nonstop service to 18 cities using one of two parallel runways 8,273 and 7,200 feet in length or the 5,124-foot crosswind runway. The parallel runways are equipped with instrument landing system (ILS) precision instrument approaches. Nonprecision approaches are available for all runways. Clinton National Airport recently completed a $20 million terminal renovation.

The Northwest Arkansas Airport (XNA) is operated by the Northwest Arkansas Regional Airport Authority. The Authority comprises five cities (Bentonville, Fayetteville, Rogers, Siloam Springs, and Springdale) and Benton and Washington Counties. XNA is one of the newest airports in the country and has one 8,800-foot runway with both ILS precision and nonprecision instrument approach guidance available. This airport is centrally located within close proximity to all the communities of northwest Arkansas, but its distance from other populated areas minimizes any adverse impact from aircraft operations.

The Fort Smith Regional Airport (FSM), a commercial service airport in western Arkansas, is governed by the Fort Smith Airport Commission with a fixed-base operator. Fort Smith Regional Airport provides regional passenger air service to over 100,000 passengers a year, with flights to Dallas-Fort Worth and Memphis with connections from these locations to anywhere in the world. In addition to airline service, Fort Smith Regional Airport is home to the Arkansas Air National Guard with over 300 full-time employees and nearly 1,000 reservists, which emphasizes the significant role the military plays in the region. Fort Smith has an 8,000-foot runway and a complementary 5,002-foot crosswind runway. An ILS precision approach is available for the primary runway, and a combination precision and nonprecision approach is available on the crosswind runway.

The Texarkana Regional Airport (TXK) is a commercial airport in southwest Arkansas and managed by the Texarkana Airport Authority with a fixed base operator providing the daily airport operations. Texarkana Airport Authority is comprised of two cities (Texarkana, AR and Texarkana, TX). TXK offers two runways with the primary measuring 6,601 feet and a crosswind runway at 5,200 feet in length. The primary runway is equipped with ILS precision instrument approach and all runway ends have nonprecision instrument approaches.

5.10 Bicycle and Pedestrian Facilities

Bicycle and pedestrian facilities throughout Arkansas consist of multi-use trails, shared-use paths, bicycle routes, and sidewalks. The planning and implementation of bicycle and pedestrian improvements predominantly take place at the local level. Thus, municipal and county governments and MPOs are the key agencies for the planning and implementation process. Funding for these bicycle and pedestrian improvements is almost always from a combination of federal, local, and private and/or nonprofit sources.

Statewide initiatives for bicycle and pedestrian facilities have been implemented through federal transportation funding programs such as Safe Routes to School, the Transportation Enhancement Program–TE Funding (through TEA-21 and SAFETEA-LU), and subsequently through the MAP-21 Transportation Alternatives Program.[6]

The Arkansas Highway Commission recently adopted the Arkansas Bicycle and Pedestrian Transportation Plan. This Plan, prepared in cooperation with the Arkansas Department of Health, Arkansas Department of Parks and Tourism, Arkansas State Police, and the Arkansas Commission on Law Enforcement Standards and Training, identifies eight broad objectives listed below. Specific strategies and the entity more likely to affect a change were also identified. The Plan is available at http://web/Trans_Plan_Policy/statewide_planning/bicycle_pedestrian_planning/bicycle_pedestrian_planning.aspx

[6] Arkansas State Highway and Transportation Department, *Arkansas Bicycle and Pedestrian Plan*, August 2015.

6. TRANSPORTATION SYSTEM NEEDS

An understanding of Arkansas' transportation needs is a critical component to the long-range planning process. Multiple methods were used to identify the multimodal transportation needs from 2016 through 2040. This section provides details about these methods and describes the overall needs for the following transportation assets that are the responsibility of ARDOT:

- State Highway System (SHS)
  - Bridge Structures
  - Highways
  - Interchanges
- Transportation System Support
  - Safety
  - Maintenance
  - Intelligent Transportation System (ITS)

In addition to considering the transportation assets owned, operated, and maintained by ARDOT, this analysis also includes estimated needs for transportation systems in which ARDOT is a partner agency and works in cooperation with other agencies to address mobility needs. The following are included in the facility analysis for which ARDOT is a partner agency:

- Ports and Waterways
- Rail Facilities
- Public Transportation
  - Urban
  - Rural
- Bicycle and Pedestrian Facilities
- Aviation Access

6.1 Bridge Needs

Needed improvements to bridges on Arkansas' SHS were assessed using FHWA's National Bridge Investment Analysis System (NBIAS) software tool using input from ARDOT staff.

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

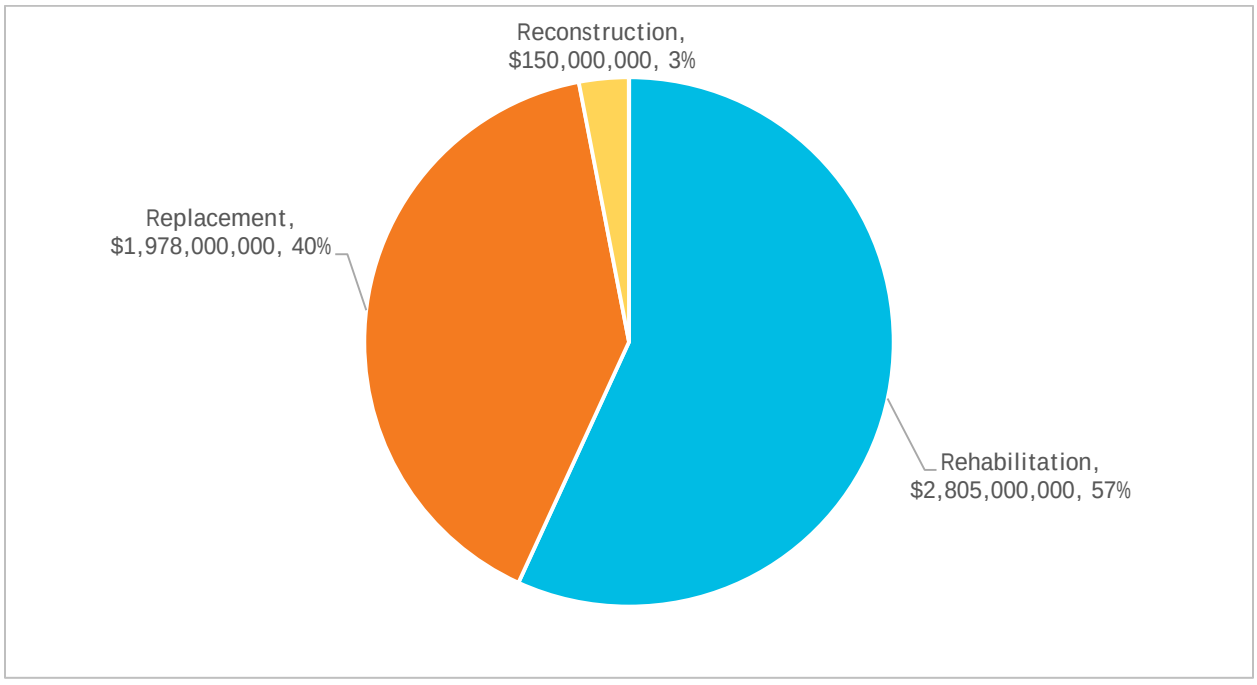
- *Rehabilitation*, including maintenance and repair and rehabilitation
- *Reconstruction*, such as widening existing bridge lanes, raising bridges to increase vertical clearances, and strengthening bridges to increase load-carrying capacity

- *Replacement*, which is designated when needed functional improvement is infeasible because of the bridge design or impractical because of the bridge's inferior structural condition

When the age and recurring maintenance of a given bridge overshadow the cost to replace it, a bridge replacement is recommended because the long-term benefit–cost ratio is favorable. When a potential action is determined (e.g., raising a bridge with clearance deficiencies), NBIAS will also consider the long-term impacts and the potential benefits that could be realized if the bridge were to be replaced. If the long-term benefit–cost ratio of replacement is just as viable (or better) than the long-term benefit–cost for the respective reconstruction of major maintenance action, NBIAS will recommend replacing the bridge.

The estimated cost of meeting Arkansas' SHS bridge needs for 2016–2040 is $4.9 billion. As shown in Figure 6.1, rehabilitation needs total $2,805 million (57 percent); reconstruction needs total $150 million (3 percent); and replacement needs total $1,978 million (40 percent).

Figure 6.1: State Highway System Bridge Needs, 2016-2040



6.2 Highway Needs

State highway needs were analyzed using FHWA's Highway Economics Requirements System, State Version (HERS-ST). This model simulates highway conditions and performance levels and identifies existing and future deficiencies by using engineering principles and Arkansas-specific design standards and unit costs. The HERS-ST model is designed to analyze the effects of funding on highway performance. In selecting improvements for implementation, the model is designed to select only enhancements whose benefits exceed costs.

In addition to FHWA's HERS-ST model, information from ARDOT's latest *Statewide Transportation Improvement Program* was also used to determine highway needs.

6.2.1 Types of Highway Needs

Highway needs are presented in three categories:

- *Preservation* refers to regular resurfacing of a road, as well as crack sealing, joint repair, diamond grinding, etc. 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* improves safety 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 safety improvements. 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 to address congestion issues and this is done through widening existing roadways or constructing new location roadways. When future traffic volumes exceed a minimum tolerable condition, HERS-ST identifies additional lanes to alleviate the congestion and maintain an acceptable level of service (LOS) in urban areas (LOS D) and in rural areas (LOS C). Expansion is the costliest improvement type on average.

6.2.2 Other Highway Needs

In addition to the highway needs analyzed using HERS-ST, the needs for a four-lane grid system were considered.

In 2009, the Arkansas State Highway Commission adopted a four-lane grid system as part of the SHS for future highway development. The four-lane grid system was established to provide for safe and efficient interstate and intrastate movement of people and goods, including connectivity to population centers and to other regional transportation facilities within Arkansas and in neighboring states, thereby enhancing the state's economic competitiveness and quality of living and working environments. The four-lane grid system comprises four subsystems: high-priority corridors, remaining four-lane grid, other regional connectors, and economic development connectors. Figure 6.2 illustrates the four-lane grid system.

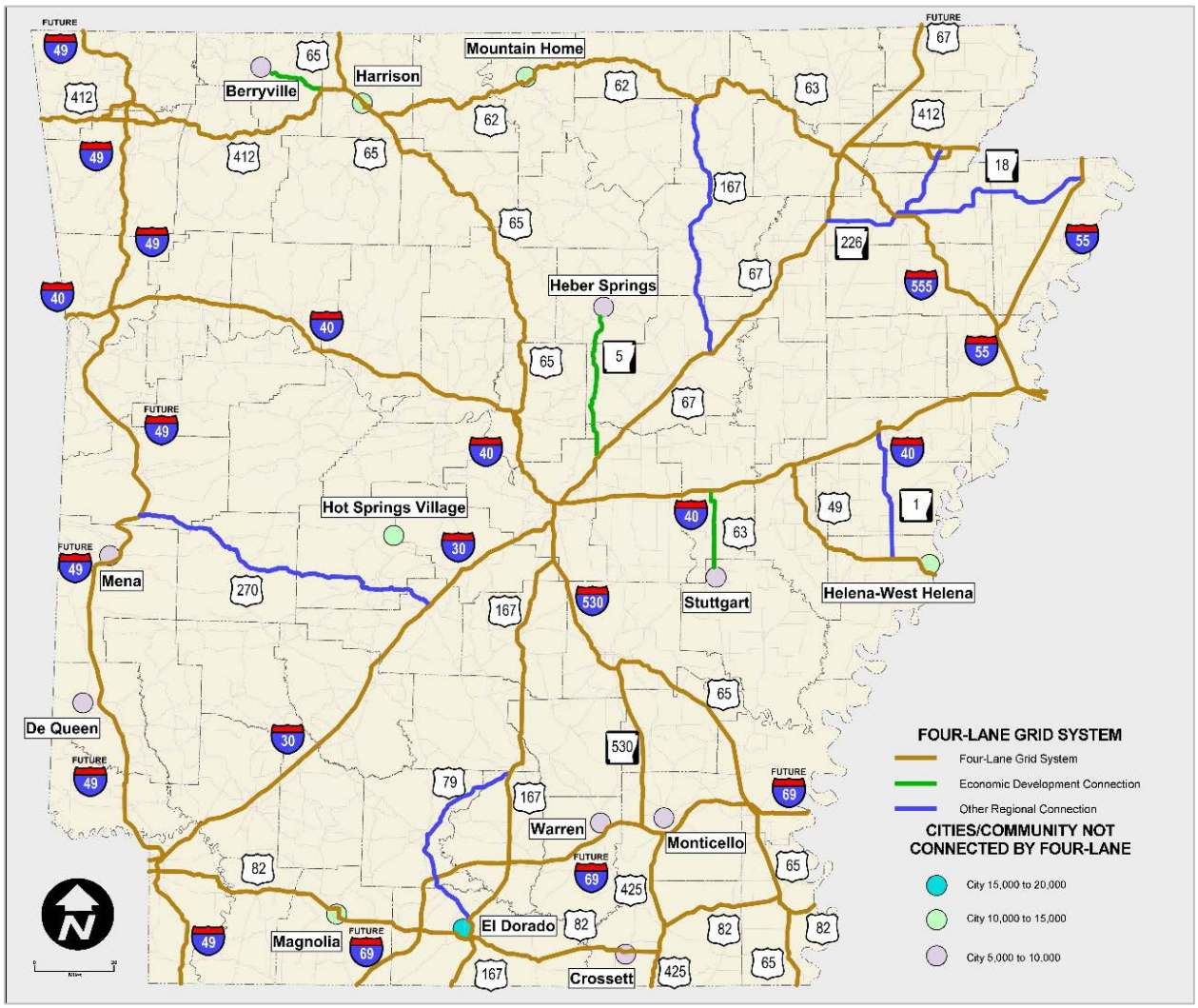
The four-lane grid system was established to provide for safe and efficient interstate and intrastate movement of people and goods, including connectivity to population centers and to other regional transportation facilities within Arkansas and in neighboring states, thereby enhancing the state's economic competitiveness and quality of living and working environments.

The four-lane grid system will require widening improvements for approximately 955 miles of highway, with the specific routes to be determined through appropriate planning studies and public involvement. The total cost for the four-lane grid system is estimated at $10.8 billion. Table 6.1 provides a breakdown of the costs in 2016 dollars of the various subsystems.

Table 6.1: Four-Lane Grid System Needs and Estimated Costs

Subsystem	Miles Widened	Estimated Cost ($M)
High-priority corridor	470	$7,022
Remaining four-lane grid	308	$2,528
Other regional connectors	91	$562
Economic development connectors	53	$337
Other widening	33	$258
TOTAL four-lane grid system	955	$10,797

Figure 6.2: Four-Lane Grid System



6.3 Highway Interchanges

Interchanges are another major category of highway needs that were considered in the development of the LRITP. Highway interchanges help in minimizing delays, improving traffic flow and safety. As such, they are considered as a separate category in the needs analysis.

The 25-year interchange needs were estimated based on historical programming records. After interchange improvements were identified, a unit cost was applied to estimate the cost of interchange needs on the SHS. An approximate unit cost for right-of-way and utilities

for the interchanges was also taken into account. These projects would add or modify six major interchanges within fast-growing corridors. Based on this review and analysis, state-maintained interchange needs total $820 million.

6.4 Transportation System Support

In addition to the highway, bridge, and interchange needs, transportation system support (accessory items or items associated with the transportation system) requires improvement. Support improvements include safety, maintenance, and ITS improvements. Maintenance needs include pavement profiling and marking, such as striping and minor overlays; facilities management, such as drainage maintenance; maintenance management, including snow removal and mowing; traffic services, such as installation of new signs; communications/ITS, such as maintaining radio towers; heavy bridge, including maintaining, repairing, and inspecting 62 of the largest bridges in the state. ITS needs include dynamic message signs, closed circuit television cameras, highway advisory radios, road weather information stations, and bridge de-icing systems. These needs total $6.4 billion for the next 25 years and are summarized in Table 6.2.

Table 6.2: Transportation System Support Need

Need Category	Estimated Cost ($M)
Safety	$1,750
Maintenance	$4,540
ITS	$88
TOTAL	$6,378

6.5 Nonhighway Needs

Although ARDOT is involved in multiple aspects of planning and developing the Arkansas transportation system, there are many occasions where ARDOT works in cooperation with partner agencies to address transportation and mobility needs. Based on available information, the following sections describes the needs and estimated costs for the following transportation assets that are under the jurisdiction of partner entities or governmental agencies:

- Freight rail
- Passenger rail
- Public transportation
  - Urban
  - Rural
- Ports and waterways

- Intermodal facilities
- Bicycle and pedestrian facilities
- Aviation Access

6.5.1 Private Freight Railroad Needs and Estimated Costs

As described in the *Arkansas State Rail Plan, 2016*, five funded freight rail projects are currently being completed in Arkansas. Table 6.3 outlines currently funded projects with associated costs and funding mechanisms. These projects are classified as short-term investment programs because they will be completed within the next four years. Arkansas does not have any designated revenue for investment in rail infrastructure but are responsible for rail planning to ensure eligibility of Federal Railroad Administration (FRA) funds.

Safety improvements include highway rail-crossing upgrades, yard rehabilitation, grade separation, and power switches. These improvements are in addition to the FHWA Section 130 Railway-Highway Crossing Program administered by ARDOT.

As Table 6.3 shows, $45.27 million has been earmarked for the five funded projects. In addition, 91 projects worth $1.72 billion are planned to be undertaken within the life of this plan, but funds have not yet been apportioned to them. Projects include transload facilities, turnouts, storage and marshalling yards, bridge upgrades, rail line extensions, signals, and so forth. For additional details, the Arkansas State Rail Plan is available at http://www.arkansasrailplan.com.

Table 6.3: Five Funded Rail Projects in Arkansas (Short-Term Investment Program)

Project Description	Cost	Funding Mechanism	Project Benefits
Rail extension and rehabilitation at the Port of West Memphis	$27.0 million	$10.9 million from 2012 TIGER grant, other local and private funds	Economic development and modal connectivity
Rail rehabilitation of the North Louisiana and Arkansas Railroad	$13 million (includes work within Louisiana)	U.S. Economic Development Administration, State of Arkansas Southeast Arkansas Economic Development District, Lake Providence Port Commission, State of Louisiana, Delta Regional Authority, Arkansas Short Line Railroads, Inc.	Economic development, rail system preservation, state of good repair, freight system efficiency
City of Jonesboro Railroad Corridor Highway 18/BNSF crossing - planning for environmental phase and designs	$1.5 million	$1.2 million from 2014 TIGER grant, $0.3 million in local match	Safety, reduction of community impacts
Arkansas Midland (AKMD) Warren Branch Rail Line rehabilitation	$3.4 million	$2.7 million from FRA Rail Line Relocation and Improvement program, $0.7 million from AKMD	Rail system preservation, state of good repair, freight system efficiency
Ouachita Railroad (OUCH) Bridge rehabilitation	$370,000	$330,000 from FRA Rail Line Relocation and Improvement program, $40,000 from Ouachita Railroad	Rail system preservation, state of good repair, freight system efficiency

Source: Arkansas State Rail Plan, Table 12-1, Funded Rail Projects in Arkansas, September 2016.

6.5.2 Passenger Rail Needs

The need for improved Arkansas intercity passenger rail service is demonstrated by

- increasing intercity and regional travel demands
- a lack of direct passenger rail connectivity between Little Rock and Memphis
- limited rail system capacity, which causes conflicts between freight and passenger rail services
- the identified need to reduce roadway congestion between Little Rock and Memphis

Union Station Square, Little Rock
Photo credit: www.texaseagle.com

Based on the *Arkansas State Rail Plan, 2016*, stakeholders also recommended new passenger rail services, with the most prominent being

- rail service between central and northwest Arkansas
- rail access within the northwest Arkansas region
- rail service between Hot Springs and Little Rock
- new services at existing stations, such as enclosed passenger waiting areas in those stations which currently have only platforms or shelters

Over the next five years Amtrak plans to upgrade stations around the nation to ensure a path of travel from the public right-of-way through stations to trains that is compliant with the Americans with Disabilities Act. This work will include Arkansas stations that are not publicly owned.

6.5.3 Public Transportation Needs

The 2015–2040 public transportation needs in Arkansas include capital improvements, operations, and administration and planning services for rural and urban transit systems.

According to the 2012 *Arkansas Statewide Public Transportation Needs Assessment* report, only 36 percent of the estimated overall need of over 13 million annual trips is currently being met. Compared to the eight urban areas, smaller cities and rural areas have a smaller portion of their needs being met: the assessment report estimated a currently unmet need for 8.4 million annual trips, with a little over 7 million of those trips in rural areas. The same report projects 9.6 million trips and 560,000 people to serve by 2020.

In addition, the report indicates a potential annual need for over 11.2 million human service agency program trips, with only 40 percent (4.4 million) of that need served. The need for these additional trips (6.8 million) is dependent on expanded funding for the agencies' non-

transportation programs, because those programs create the need for the supporting transportation services. Therefore, expanded funding for transportation-related expenses will only be effective if agencies are able to expand their overall programs with additional non-transportation funding.

At present approximately 99,000 intercity bus trips are taken annually in the state, but there is a need to serve an additional 250,000 trips. Serving the unmet need will likely require expanding feeder services from rural areas connecting to the national and regional bus carriers serving the Interstate corridors in the state.[7]

Extrapolating from the 10-year estimates provided in the 2012 *Arkansas Statewide Public Transportation Needs Assessment*, this study estimates the total general transit needs for this plan will be approximately $5.7 billion, with the majority ($4.3 billion) needed for operating costs. This extrapolation, using historical trend analysis, shows a 1.7 percent annual growth in the estimated cost of needs. Approximately three-quarters of this estimate will be for rural areas.

For the 25-year life span of this plan, general public transit ARDOT staff needs are estimated to be approximately $240,000 every year. Capital needs would primarily consist of vehicles, but they would also include new facilities and technology for improving the efficiency of operations. Capital ($642 million) and administrative ($6 million) needs for the entire life of this plan have been estimated at $648 million, with an urban–rural split of $63 million and $578 million, respectively. Human and intercity services were estimated to need $515 million and $201 million, respectively. Table 6.4 summarizes these needs.

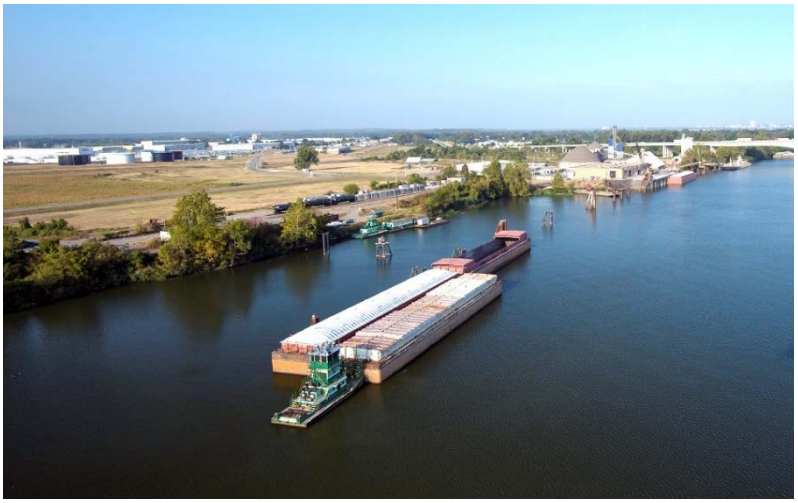
Table 6.4: 2016-2040 Transit Needs Summary

Transit Needs	Total (2016-2040)	Urban	Rural
Total ARDOT Staff Costs	$6,000,000	-	-
Total Operating Costs	$4,321,500,000	$663,400,000	$3,658,000,000
Total Capital Costs	$642,000,000	$63,600,000	$578,500,000
Intercity Transportation			
Total Operating Costs	$201,900,000	-	-
Human Service Agency Program–Related Transportation			
Total Vehicle Cost (state share)	$515,500,000	-	-
Total	**$5,687,000,000**	**$726,900,000**	**$4,236,600,000**

Source: Projections using 10-year estimates from the Arkansas Statewide Public Transportation Needs Assessment Report, 2012.
- = not applicable

[7] Arkansas State Highway and Transportation Department, *Arkansas Statewide Public Transportation Needs Assessment*, July 2012.

6.5.4 Ports and Waterways Needs



Using needs estimated by the 2005 *Arkansas State Public Riverport Study and Needs Assessment* and updated 2015 estimates from the ports and harbors, approximately $194 million is needed to satisfy all identified infrastructure, equipment, and support facility needs. Costs for long term needs along Arkansas' waterways include deepening the channel and maintenance backlogs on the Arkansas River, and statewide ongoing routine maintenance and dredging. Table 6.5 summarizes estimated costs for ports and waterways.

Table 6.5: Port and Waterway Needs

Ports	Long-Term Needs
Port Needs	
Port of Osceola	$3,960,000[a]
Port of West Memphis	$1,779,300
Port of Helena Harbor	$8,320,500
Port of Yellow Bend Harbor	$53,782,500[a]
Port of Fort Smith	$11,392,800
Port of Little Rock	$78,354,000
Port of Pine Bluff	$7,443,000[a]
Port of Crossett	$28,929,900
Port of Camden[b]	-
Sub-Total	*$193,962,000*
Arkansas Waterway Long Term Needs	
Arkansas River: Deepen to 12-feet	$104,000,000
Arkansas River: Maintenance Backlog	$78,000,000
Statewide Maintenance Needs	$95,000,000
Statewide Routine Dredging	$272,500,000
Sub-Total	*$549,500,000*
Total	**$743,962,000**

Source: Arkansas State Public Riverport Study and Needs Assessment, 2005.
[a] *Updated needs obtained from ports in 2015.*
[b] *At the time of publication, the Port of Camden did not have needs identified.*

6.5.5 Intermodal Facility Needs

Multimodal transportation involves the use of two or more modes of transportation for a single freight movement from origin to destination. Shippers benefit from the unique advantages of each mode. For example, the transportation cost of rail is lower than the cost of trucking over longer distances, but many shippers and their receiving customers do not have direct access to rail at their facilities. Rail–truck transfers allow shippers to benefit from the favorable long-haul economics of rail as well as the local flexibility of trucking. Similarly, shippers may have access to railroad transportation but are not located near a navigable waterway. Multimodal transloading allows these shippers to use inexpensive long-haul maritime transportation with rail providing the link to the port facility. Multimodal transportation within Arkansas is categorized in three ways: rail–truck intermodal, non-containerized rail–truck intermodal, and rail–barge intermodal. There is no total cost provided for Intermodal Facility Needs. These are based on the private sector investment, the current economy, and other intangible factors related to economic development.

The transportation cost of rail is lower than the cost of trucking over longer distances, but many shippers and their receiving customers do not have direct access to rail at their facilities. Rail-truck transfers allow shippers to benefit from the favorable long-haul economics of rail as well as the local flexibility of trucking.

Examples of projects specifically focused on multimodal improvements include the following:

- The Port of Little Rock could benefit from an expanded marshalling yard in the harbor area, which would enable the Port to more easily handle unit trains.
- Rail and warehousing infrastructure at the Port of Fort Smith needs to be upgraded, including upgraded rail, repairs to spur lines, and an extension of the rail line into the Port.
- Several short line railroads have proposed transload projects.
- In the future, Union Pacific Railroad (UPRR) may need to expand its intermodal terminal in Marion.
- Some shippers have expressed a desire for containerized intermodal service within Arkansas outside of the UPRR Marion facility. Shippers would need to coordinate better by consolidating movements, which would help railroads justify the volume required for establishing this intermodal service.

6.5.6 Bicycle and Pedestrian Needs and Estimated Costs

Bicycle and pedestrian needs were examined for each metropolitan area by reviewing the regional bicycle plans and/or bicycle–pedestrian elements of the latest long-range transportation plans of the eight MPOs. Table 6.6 summarizes the bicycle–pedestrian plans currently envisioned by each MPO in Arkansas. The MPO metropolitan plans are updated every five years, so the information provided in the table is evolving and changing.

Table 6.6: Cost of Bicycle and Pedestrian Needs by MPO

Metropolitan Planning Organization	Cost
Central Arkansas	$354,100,000
Frontier	$15,177,353
Tri Lakes	$71,449,632
Jonesboro	$19,402,693
Northwest Arkansas	$534,057,111
Pine Bluff	$6,980,000
Texarkana	$637,632
West Memphis	$8,200,000
Total	$1,001,804,421

Source: Arkansas MPOs' metropolitan plans.

In rural areas, the recently adopted Arkansas Bicycle-Pedestrian Transportation Plan did not identify specific statewide capital projects. The recommendations included in the Plan emphasize agency collaboration for implementation. As more communities develop and adopt local Bicycle and Pedestrian Plans (both urbanized and non-urbanized) more project-specific information will become available.

6.5.7 Airport Access Needs

Air transportation plays an important role in economic competitiveness, and access to the airports and surrounding infrastructure is important for quality of life, tourism, and commerce. The cities, towns, and counties in Arkansas that have public airports within their political boundaries work with the Arkansas Aeronautics Commission and the Federal Aviation Administration to ensure the aviation needs of commerce and communities across Arkansas 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. It is understood and preferred by airport users that good surrounding infrastructure and network connectivity are vital for personal and business travel.

Although no major deficiencies exist, continued investment in Arkansas' airports is necessary to keep the aviation sector in excellent condition and well-positioned to meet future aviation demand.[8] Some of the key elements include access, signage, terminal upgrades, and operational and functional projects.

[8] http://www.fly.arkansas.gov/Airports. Accessed December 2, 2015.

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7. BASELINE REVENUE FORECAST AND FUNDING

The baseline revenue forecast includes state revenues and federal funding that is focused on surface transportation infrastructure investment over the 25-years. To develop the forecast, historic revenues and funding were documented, and growth rates for each source were projected over the 25-year forecast period.

The 25-year forecast includes state highway and transit funds as well as federal highway and transit funds. The forecast does not include local funding unless local funds are required as matching funds to receive certain federal transit funds.

The baseline revenue forecast *does not* assume the following:

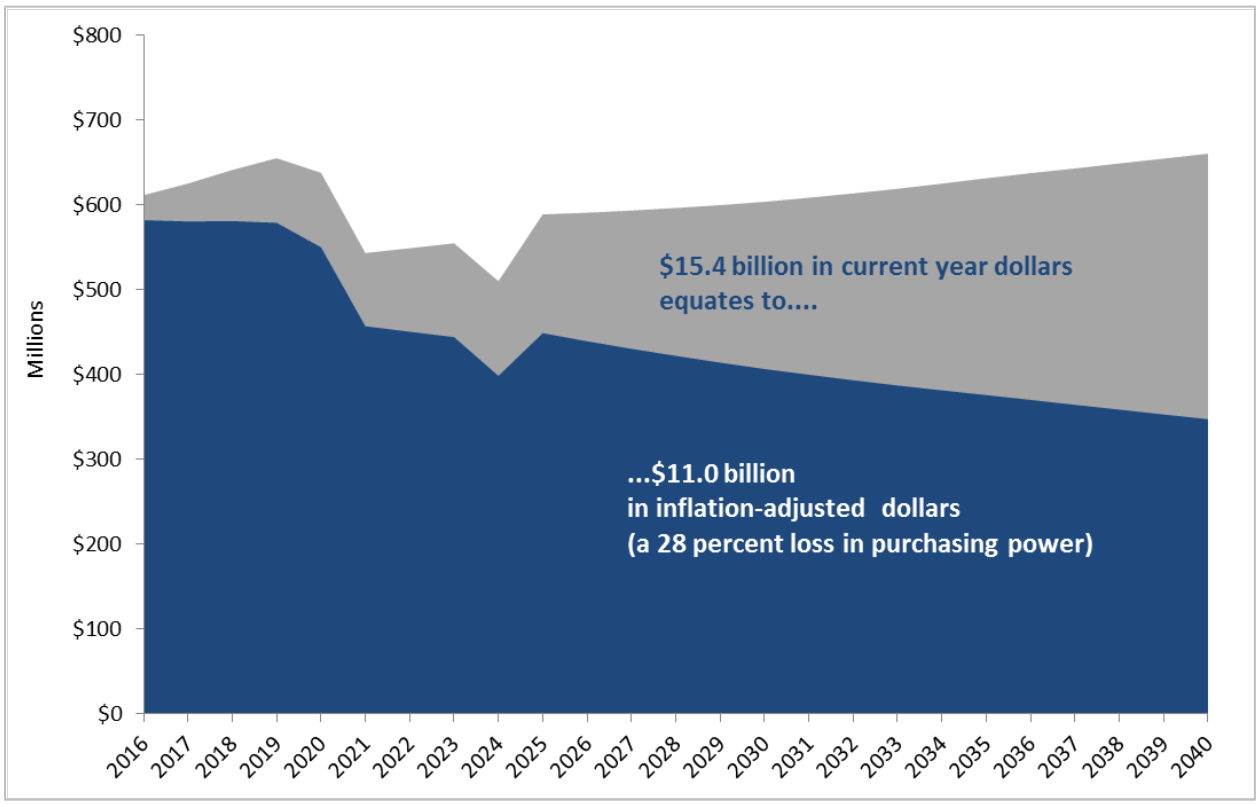
- Changes to state or federal legislation that stipulate the amount of revenues ARDOT receives
- Changes in tax rates, fee levels, or existing revenues
- Receipt of any new revenue sources
- Receipt of any proceeds from newly issued debt, general revenue appropriations from the state, or other special one-time funding
- Ratios of distribution of state motor fuel revenues

As shown in Figure 7.1 over the forecast period, transportation revenue and funding are projected to total $15.4 billion in current-year dollars, which equates to $11.0 billion in 2014 inflation-adjusted dollars. Of the total ARDOT (inflation-adjusted) revenue expected to be available, $10.5 billion is the amount available for ARDOT bridges, highways, interchanges, and appurtenances. The remaining $0.5 billion will fund public transportation investments by transit agencies.

Over the forecast period [2016-2040] transportation revenue and funding are projected to total $15.4 billion in current-year dollars, which equates to $11.0 billion in 2014 inflation-adjusted dollars. Of the total ARDOT (inflation-adjusted) revenue expected to be available, $10.5 billion is the amount available for ARDOT bridges, highways, interchanges, and appurtenances. The remaining $0.5 billion will fund public transportation investments by transit agencies.

The adjustment for inflation assumes a 2.5 percent annual inflation factor (beginning with the FY2014 base year) based on recent trends in the consumer price index published by the Bureau of Labor Statistics. The $4.4 billion difference, or 28 percent cost of inflation, is shown in Figure 7.1 as the light gray area. The $15.4 billion current-year dollar amount is the total dark blue and light blue area, and the $11.0 billion inflation-adjusted amount is the dark blue area only.

Figure 7.1: Baseline Revenue Forecast, FY2016-FY2040



The declines in FY2021 and FY2024 shown in Figure 7.1 are related to an increase in debt service on the Connecting Arkansas Program (CAP) bonds combined with the sunset of the CAP half-cent sales tax in FY2023. The increase in FY2025 is related to the final debt service payment on outstanding grant anticipation revenue vehicle (GARVEE) bonds in FY2024.

7.1 Federal Funding

Federal funding for FY2016 through FY2020 is based on Arkansas' apportionments from the Fixing America's Surface Transportation (FAST) Act, signed into law on December 4, 2015; the revenue forecast incorporates these amounts. From FY2021 through FY2040, federal funding is assumed to grow 2.0 percent annually, which aligns with the average annual growth rate of federal funding under the five-year term of the FAST Act.

As with prior federal surface transportation funding legislation, it is anticipated that specific amounts of the primary federal funding programs will be set aside for specific uses. These set-aside amounts, however, were not available at the time the baseline revenue forecast was finalized. Set-aside amounts in the forecast, therefore, are estimated based on the FY2015 actual set-aside amounts.

7.2 State Revenue Forecast

ARDOT state revenues are projected according to specific growth rates for each revenue source. Total ARDOT revenues are projected to decrease 1.3 percent annually on average between FY2016 and FY2040, from $583 million to $401 million, which is a total decrease of 31 percent before adjusting for inflation. After adjusting for inflation, ARDOT revenues decline 3.7 percent annually on average between FY2016 and FY2040, from $555 million to $211 million, a total decrease of 62 percent.

Additional deductions from the revenue forecast are made to account for required debt service payments on currently outstanding debt; the State Public Transportation Fund monies that are distributed for use by transit agencies; and an estimate of projected funds that will pay for non-infrastructure-related costs, such as ARDOT administration, research, and planning. After accounting for these deductions, the net revenues available for the LRITP decline from $229 million to a net loss of $59 million, or 126 percent. This shortfall means that the non-infrastructure-related costs such as administration of ARDOT will exceed available revenues.

Federal funding generally requires a 20 percent state match. The baseline revenue forecast identified that ARDOT would receive insufficient funds to match federal highway funding as soon as FY2016. The shortfall was estimated to be roughly $50 million annually in the next few years, with the funding gap increasing over time as state funding declines. The vast majority of state funding declines are primarily due to decreases in motor fuel tax revenue. Not meeting federal matching requirements will result in leaving federal funding unused. On May 23, 2016, the Governor signed the Arkansas Highway Improvement Plan of 2016 into law, which involves using a combination of general revenue, surplus, and rainy-day funds to help the state secure the $50 million per year needed to qualify for $200 million in annual federal matching funds that will be available under a five-year program.

7.3 Partnerships

Due to the lack of federal and state funding, many counties and cities in Arkansas have partnered with ARDOT to fund important local projects, without local funding support, many projects would not be open to traffic today. Partnerships are extremely important to ARDOT and transportation investments in Arkansas will likely be shared by all partners (federal, state, and local) in the future. With needs traditionally outpacing available funds, any additional contributions from non-traditional sources will accelerate project development. Along with the partnership activities, consideration will be given to SHS mileage reductions.

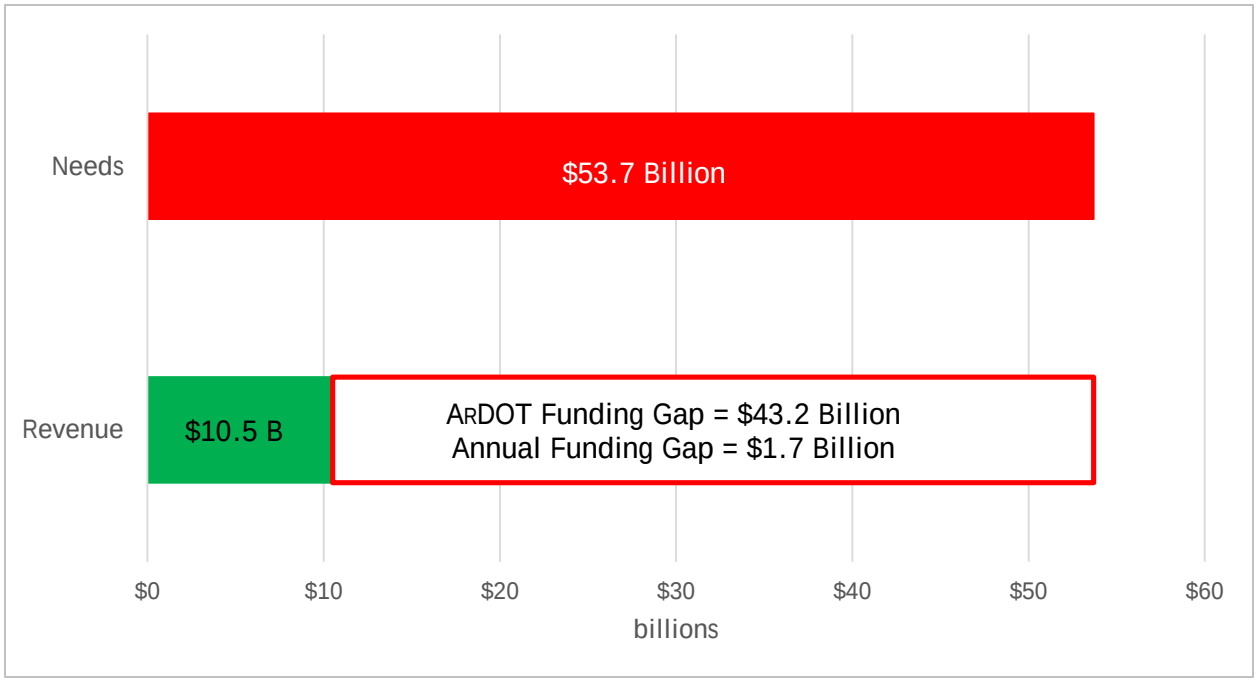
7.4 Funding Gap

As noted above, ARDOT is responsible for maintaining and improving 16,418 miles and 7,346 bridges in Arkansas' highway system, which is the 12th largest SHS in the United States. Travel across this network totaled 25 billion VMT in 2014. ARDOT's responsibilities include the following:

- Bridges (rehabilitation, reconstruction, and replacement)
- Highways (preservation, reconstruction, expansion, and new location roadways)
- Interchanges (rehabilitation and new location)
- Transportation support (safety, maintenance, and ITS)

Arkansas faces a challenge to meet ever-increasing transportation needs, a common problem facing many states. Based on the 2040 needs analysis conducted for the LRITP and shown in Figure 7.2**,** the estimated costs of ARDOT -assigned functions (highways, bridges, interchanges, and transportation support) total **$53.7 billion** (2014 dollars), and the projected 25-year revenue totals **$10.5 billion** in inflation-adjusted 2014 dollars. The resulting **$43.2 billion** funding gap equates to a $**1.7 billion** average annual funding gap. The 25-year projected state public transportation revenue of **$0.5 billion** that is directly provided to transit agencies to address their needs is not included in Figure 7.2**.**

Figure 7.2: 25-Year Funding Gap for Highway System Needs



8. PERFORMANCE MEASURES BY GOAL AREA

In the context of a long-range plan, *performance measurement* describes the process of establishing and regularly reviewing key data to help gauge an agency's effectiveness in fulfilling one or more major elements of its mission, as described by the goals in Chapter3. Regularly updated dashboards or other reporting techniques are often a highly visible part of communicating performance measurement.

Performance management describes a wider framework, based around measures, in which senior leaders use measurement data to support decision making, manage their organization, and provide external accountability. Performance management in the context of a long-range plan often includes setting performance targets, regular reporting, and even projecting performance outcomes under alternative performance scenarios.

The following criteria guided the development of performance measures for the LRITP. The ARDOT performance measures reflect a practical and useful set of measures which:

- **Are easy to understand**—Useful measures should be easy to understand and intuitive both to practitioners in the field and to a wider audience of stakeholders.
- **Are relevant to decision makers**—Effective measures should help provide decision makers with information that supports the choices and trade-offs they make on behalf of the public. To be relevant, data should be strongly connected with the goals and objectives in which decision makers are interested.
- **Minimize additional staff burden**—Measures should draw on existing data collection practices when possible, not reinvent them. The measures should ensure that any burdens imposed on staff to collect and report performance data are manageable within existing resources.
- **Are within ARDOT's influence**—Good measures should track data that AHT can influence through available policy, budgeting, and programmatic tools.
- **Are compliant with MAP-21**—Measures developed as part of the LRITP should support compliance with national MAP-21 requirements.

Performance measures in Arkansas have been developed to reflect each of the goal areas and relevant objectives. Details related to the performance measure development process as well as specific details related to the implementation of the measures can be found in Performance Measures Technical Memorandum.

8.1 Goal Area: Safety and Security

A safe and secure transportation system is crucial for ARDOT. The number of people killed in crashes on Arkansas roadways is trending down. Nonetheless, 466 people were killed on Arkansas roads in 2014, and the state's fatality rate per hundred million VMT, which was 1.39 in 2014, is among the highest in the nation.[9] The primary goal of the state's *Strategic Highway Safety Plan* (SHSP) is to reduce the annual number of roadway fatalities to 400 or fewer by 2017. Providing a safe transportation system is an important goal of ARDOT.

The primary goal of the state's Strategic Highway Safety Plan is to reduce the annual number of roadway fatalities to 400 or fewer by 2017.

Resiliency of the transportation system is another important aspect of the safety and security of the Arkansas transportation system. Infrastructure is critical for healthy economies and stable communities. It enables commerce, and helps move people and goods. Societies rely on transportation networks for their daily economic and social well-being. The ability of the transportation system to function during adverse conditions and quickly recover to acceptable levels of service after a disruptive emergency event is fundamental to the wellbeing of communities and quality of life. Furthermore, the risks to critical infrastructure from hazards are, according to research, increasing globally. These hazards can include natural, technological, social, and political hazards, each of which can occur with a varying degree of predictability.

System resilience is considered the ultimate objective in the context of risk mitigation. Resilience means the ability to reduce the possibility of failure, recover from a disruptive event, and adapt to gradual external changes over time. Adapting to gradual changes implies transformation, so not only is the infrastructure service able to survive or recover from adverse events, but it can adapt to the changing environment in which it operates.

System resilience is considered the ultimate objective in the context of risk mitigation.

For these reasons, safety and security are a high priority goal area for ARDOT (see Goals and Objectives Technical Memorandum, for a variety of objectives related to safety and security). The Department currently collects considerable amounts of safety data and uses this information to forecast trends and identify safety-related targets in its SHSP. The primary goal of the state's 2013 SHSP is to reduce the annual number of roadway fatalities in Arkansas to 400 or fewer by 2017. Any LRITP-related safety measures must build on the SHSP's established goals. Objectives related to the resiliency of the system are also critical. One of the LRITP safety objectives is to improve the resiliency of the transportation system to meet travel needs in response to extreme weather events.

[9] From analysis of Fatality Analysis Reporting System (FARS) data posted by the Insurance Institute for Highway Safety and Highway Loss Data Institute, February 2016. http://www.iihs.org/iihs/topics/t/general-statistics/fatalityfacts/state-by-state-overview.

8.1.1 Measuring Safety and Security Performance

Table 8.1 lists recommended objectives and performance measures for safety and security. Measurements are made of the number of fatalities, serious injuries, non-motorized fatalities serious injuries, and Roadway Clearance Time (RTC). Roadway Clearance Time is the time between the first recordable awareness of the incident by a responsible agency and the first confirmation that all lanes are available for traffic flow (based on NCHRP study of traffic operations performance measures used by state DOTs).

Table 8.1: Recommended Objectives and Performance Measures for Safety and Security

Objective	Performance Measure
• Align safety goals with the goals of the ARDOT Strategic Highway Safety Plan (SHSP). • Partner with the Arkansas State Police, local governments, and federal agencies to administer comprehensive traffic safety programs related to driver, roadway, and railroad crossing safety. • Partner with counties and local governments to provide training on low-cost safety applications for local roads. • Identify roadways and bridges that are vulnerable to extreme weather events and other natural phenomena. • Improve the resiliency of the transportation system to meet travel needs in response to extreme weather events. • Work with emergency management agencies to expand emergency communications infrastructure across the state. • Work with emergency management agencies to ensure efficient and coordinated responses to emergency and disaster events.	1. Fatalities on all public roads (5-year rolling average) 2. Fatalities/100M VMT (5-year rolling average) 3. Serious injuries on all public roads (5-year rolling average) 4. Serious injuries/100M VMT (5-year rolling average) 5. Non-motorized fatalities and serious injuries (5-year rolling average) 6. Roadway clearance time (RCT)

8.1.2 Safety and Security Performance Targets

ARDOT sets targets for safety performance as part of its Highway Safety Improvement Program (HSIP) and SHSP, and the LRITP should align with the HSIP and SHSP safety-related targets. For reference, the 2017 SHSP's performance goals are shown below.

1. Reduce the number of fatalities in Arkansas to 485 by 2022.
2. Reduce the fatality rate in Arkansas to 1.43 fatalities/100M VMT by 2022.
3. Reduce the number of serious injuries in Arkansas to 3.055 by 2022.
4. Reduce the serious injury rate in Arkansas to 9.82/100M VMT by 2022.
5. Reduce the number of non-motorized fatalities and serious injuries to 131 by 2022.

FHWA's final rule for safety performance measures requires states to set annual performance targets beginning with their August 2017 HSIP for calendar year 2018. Based on the coordination between ARDOT and the MPOs, MPOs can either agree to support ARDOT's target, or they can establish a numerical target specific to their MPO planning area. Measure #6,

Roadway Clearance Time is not currently measured or tracked. According to recent National Cooperative Highway Research Program (NCHRP) research, "Open Roads" policies in Atlanta, Georgia; Indianapolis, Indiana; Minneapolis, Minnesota; and Miami, Orlando, and Tampa, Florida, included a roadway clearance target of "less than 90 minutes." This research and information could serve as a reference for ARDOT to set their own target once they have established a benchmark.

8.2 Goal Area: Infrastructure Condition

Safe, well-maintained highways and bridges are a vital component of any transportation system. Smoother roads and bridges that serve all traffic safely can reduce fuel consumption and vehicle operating costs, and they provide a safer and more comfortable driving experience. Yet the high cost, complexity, and inconvenience to the traveling public of maintaining, replacing, or rehabilitating bridges and pavement in a timely manner to ensure road users have uninterrupted access to a safe and efficient transportation system make bridge or pavement work among the most challenging infrastructure investments transportation agencies undertake. Data about infrastructure condition help ARDOT make sound investment decisions that ensure scarce resources are used wisely. ARDOT is examining ways to create more data-driven decision-making processes for investments both as part of its *Transportation Asset Management Plan*, which is under development, and through an initiative to better integrate bridge condition information into statewide bridge investment choices.

8.2.1 Measuring Bridge Performance

Bridge conditions across the United States have been measured since the late 1960s. Congressionally mandated National Bridge Inspection Standards were first passed into law with the Federal-Aid Highway Act of 1968. Standards now apply to all bridges over 20 feet in length on all public roads. The inspection standards not only provide for an inventory of bridges, but also for reliable condition information and a high level of standardization in inspection practices and the information recorded during these inspections. Data from bridge inspections are maintained in FHWA's National Bridge Inventory, a centralized database that houses basic descriptive and condition data for all bridges over 20 feet in length on public roads in the United States. The National Bridge Inventory includes an assessment of each bridge's physical condition based on three separate 0–9 numeric scores for a bridge's deck (the riding surface), superstructure (the main element supporting the deck – usually beams, girders, or trusses), and substructure (which supports the deck and superstructure – usually abutments and piers). Table 8.2 lists recommended objectives and performance measures for bridge conditions.

Table 8.2: Recommended Objectives and Performance Measures for Bridge Conditions

Objective	Performance Measure
• Enforce weight and size restrictions to protect roads and bridges. • Follow asset management principles to optimize preservation strategies on the SHS. • Identify potential freight corridors within which special attention is given to preempt commercial vehicle bottlenecks.	7. Percent of bridge deck area on NHS in good condition
	8. Percent of bridge deck area on NHS in poor condition

Measure #7, percent of bridges on the NHS in good condition, relates to the percent of bridges on Arkansas NHS routes by deck area that have National Bridge Inventory ratings of at least 7 out of 9 for all deck, superstructure, and substructure (and culverts where applicable) rating items.

Measure #8, percent of bridges on the NHS in poor condition, relates to the percent of bridges on Arkansas NHS routes by deck area that have National Bridge Inventory ratings of 4 or lower out of 9 for any one of National Bridge Inventory deck, superstructure, and substructure (and culverts where applicable) rating items. (This definition is equivalent to the term *structurally deficient*.)

8.2.2 Bridge Condition Performance Targets

FHWA's final rule language for bridge performance measures requires states to set statewide two- and four-year performance targets for projected bridge condition by 2020 and 2022, respectively. According to the proposed federal rule, MPOs must set bridge targets within 180 days of the state. Based on the coordination between ARDOT and the MPOs, MPOs can agree to support their state DOT's target, or they can establish a numerical target specific to their MPO planning area.

For FHWA's national bridge condition performance measure, the minimum threshold for bridge performance is no more than 10 percent of all bridges (by deck area) in poor condition.

8.2.3 Measuring Pavement Performance

Pavement condition measurement is less rigidly enforced at the national level than measurement of bridge conditions. However, FHWA's Highway Performance Monitoring System (HPMS) has evolved since 1978 into a robust national repository of data on the extent, condition, performance, use, and operating characteristics of the nation's highways. States report a variety of pavement condition statistics to HPMS each year for all roads on the NHS, including (but not limited to) international roughness index (IRI) information, cracking, rutting, and faulting data. Although variation in measurement and reporting practices from state to state raises concerns, consistency in HPMS data across states has been improving over the past several years. Table 8.3 lists the recommended objectives and performance measures for Interstate and non-Interstate NHS pavement conditions.

Table 8.3: Recommended Objectives and Performance Measures for Pavement Condition

Objective	Performance Measure
• Enforce weight and size restrictions to protect roads and bridges. • Follow asset management principles to optimize preservation strategies on the SHS. • Improve ride quality on NHS roads.	9. Percent of pavement on Interstate in good condition
	10. Percent of pavement on non-Interstate NHS in good condition
	11. Percent of pavement on Interstate in poor condition
	12. Percent of pavement on non-Interstate NHS in poor condition

The performance measures in Table 8.3 all involve the percent of pavement in good or poor condition. A designation of *good condition* is based on the percent of miles for which all scores for IRI, cracking, rutting, and/or faulting (as applicable) are within thresholds

established in the final rule as shown in Table 8.4. A designation of *poor condition* is based on the percent of miles for which two or more scores for IRI, cracking, rutting, and/or faulting (as applicable) exceed thresholds established in the FHWA final rule.

Table 8.4: Pavement Condition Thresholds

Pavement Condition	Good	Fair	Poor
All nonurbanized or urbanized with <1M population pavement sections: IRI (inches/mile)	<95	95–170	>170
Cracking (for flexible asphalt)	<5%	5%–20%	>20%
Cracking (for jointed concrete pavement)	<5%	5%–15%	>15%
Cracking (for continuously reinforced concrete pavement)	<5%	5%–10%	>10%
Rutting (asphalt only)	<0.20 in.	0.20–0.40 in.	>0.40 in.
Faulting (jointed concrete only)	<0.05 in.	0.05–0.15 in.	>0.15 in.

8.2.4 Pavement Condition Performance Targets

According to the *2015 Arkansas State Highway Needs Study*, 12 percent of the NHS and 7 percent of the Interstate system are considered pavement condition index (PCI) Level F. PCI is a measure calculated by ARDOT that incorporates IRI, rutting, and cracking for asphalt pavement; and IRI, faulting, and number of fractured slabs for concrete pavement. Table 8.5 and Table 8.6 illustrate the range of values for PCI Levels A to F for asphalt and concrete pavements, respectively.

Table 8.5: Determination of PCI Levels for Asphalt Pavements

PCI Level	IRI (in./mi)	Rutting (in.)	Cracking (%)
A	<60	<0.1	>1
B	60-95	0.1-0.2	1-5
C	95-120	0.2-0.4	5-10
D	120-170	0.4-0.5	10-20
F	>170	>0.5	>20

Table 8.6: Determination of PCI Levels for Concrete Pavements

PCI Level	IRI (in./mi)	Faulting (faults >0.25 in/0.1 mi)	Fractured Slabs (%)
A	<60	0	0
B	60–95	0	0–5
C	95–120	1–10	5–15
D	120–170	10–20	15–25
F	>170	>20	>25

FHWA's final rule language for pavement performance measures requires states to set two- and four-year statewide performance targets for projected pavement condition in 2020 and 2022, respectively. MPOs must also set pavement targets within 180 days of their state according to the proposed federal rule. Based on the coordination between ARDOT and the

MPOs, MPOs can agree to support their state DOT's target, or they can establish a numerical target specific to their MPO planning area.

For the national Interstate-related pavement measure, the minimum condition standard for pavement performance is that no more than 5 percent of all Interstate lane-miles are classified as poor condition for the first reporting period (2018–2022). FHWA expects to reassess this minimum condition level after the first reporting period. Note that this minimum standard only applies to pavement conditions on Interstates, not on the non-Interstate NHS.

8.3 Goal Area: Congestion Reduction, Mobility, and System Reliability

For planners, *mobility* means the ease with which users can move around segments of a transportation network. Congestion occurs when the number of users traveling on a section of a network approaches or exceeds its capacity to carry them. Consequences include travel delays, added costs for users, and unpredictable travel times. Recurrent congestion occurs routinely during peak hours. Nonrecurring congestion occurs temporarily at traffic incidents, work zones, during bad weather, or special events.

Through a visioning exercise at the Arkansas Transportation Planning Conference in 2015, participants [suggested] that although the importance of operational improvements and highway preservation will increase over the next 25 years, the importance of highway expansion will either remain the same or decrease. This exercise illustrated the paradigm shift from solving congestion problems with expansion to a more sustainable approach.

Mobility is a concern for businesses and personal users of the transportation system, particularly those traveling on urban corridors or heavily used rural corridors that experience heavy congestion. Decreased mobility imposes economic costs on users who must pay more for vehicle operating expenses like fuel costs, which cumulatively may impose a measurable drag on regional or statewide economies. Congested traffic also contributes to environmental problems and detracts from the overall community quality of life.

Through a visioning exercise at the Arkansas Transportation Planning Conference in 2015, participants expressed the opinion that although the importance of operational improvements and highway preservation will increase over the next 25 years, the importance of highway expansion will either remain the same or decrease. This exercise illustrated the paradigm shift from solving congestion problems with expansion to a more sustainable approach. ARDOT can maintain or improve mobility via a blend of adding more capacity across all modes, operating existing roads more efficiently, and supporting travel and land use patterns that result in lower travel demand at peak hours.

8.3.1 Measuring Mobility Performance

Historically, transportation engineers have measured mobility in one of two ways: by level of service (LOS) or volume-to-capacity ratio (V/C). LOS, as defined in the *Highway Capacity Manual* (first published by the Transportation Research Board in 1950 and regularly updated

since then), provides a qualitative scale for gauging congestion that rates traffic flow A through F, with A being least congested and F being most congested. V/C compares the actual number of users on a roadway segment to the designed capacity for the same roadway; congestion worsens as V/C approaches or exceeds 1.0.

Over the last two decades, as congestion has worsened in all major urban areas across the United States, planners and engineers have sought more precise and informative measures of mobility. Consensus has emerged around travel time as a primary metric for gauging congestion because it can be used to quantify travel speed, delay, or predictability of travel, which are all intuitively easily understood by the public, particularly compared to either LOS or V/C metrics.

Under the FHWA final rule, there are three performance measures to assess the performance National Highway System for the purpose of carrying out the National Highway Performance Program. Two of the measures used to assess reliability of the Interstate and non-Interstate NHS systems are referred to as the Travel Time Reliability measures. The third measure is related to Interstate Freight Reliability and is discussed in Section 8.4. Table 8.7 lists the objectives and performance measures associated with mobility and system reliability.

Table 8.7: Recommended Objectives and Performance Measures for Congestion Reduction, Mobility, and System Reliability

Objective	Performance Measures
• Provide predictable, reliable travel times. • Implement ITS strategies to inform and provide travelers with real-time information regarding weather conditions, travel times, emergencies, and delays. • Use technology advances to improve system performance. • Use output from MPOs' congestion management systems to identify and address congested areas on the NHS. • Work with partners to encourage travel demand management strategies to reduce traffic demand during peak hours. • Support multimodal transportation alternatives and intermodal mobility.	13. Percent of person-miles traveled on the Interstate system that are reliable
	14. Percent of person-miles traveled on the non-Interstate NHS that are reliable

Measure #13, percent of person-miles traveled on the Interstate system that are reliable measures the Level of Travel Time Reliability (LOTTR) on the Interstate, defined as the ratio of the 80th percentile travel time to a "normal" travel time (50th percentile). The data used in this measure is obtained from the National Performance Management Research Data Set (NPMRDS) or equivalent data set.

Measure #14, percent of person-miles traveled on the non-Interstate NHS that are reliable measures the LOTTR on the non-Interstate NHS, defined as the ratio of the 80th percentile travel time to a "normal" travel time (50th percentile). The data used in this measure is obtained from the NPMRDS or equivalent data set.

Travel times above the 80th percentile are widely considered to be indicative of nonrecurring extreme congestion events (e.g., a severe weather situation or a major crash) that cannot easily be managed with any reasonable public policy response. The 50th percentile travel time is assumed to reflect "normal" peak hour travel conditions that are reasonably reliably predicted by users.

8.3.2 System Performance Targets

FHWA's final rule language on system performance measures requires states to set two- and four-year performance targets for 2020 and 2022, respectively. Under the final rule MPOs can agree to support their state DOT's target or they can establish a numerical target specific to their MPO planning area.

8.4 Goal Area: Economic Competitiveness

Good road, rail, port, transit, and air connections across Arkansas help businesses access the materials, labor and equipment they need to produce goods and services for local, regional and international markets and those connections also help workers get to jobs. Communities often cite desire for economic growth as a reason for seeking additional transportation improvements and public officials frequently justify transportation spending on its economic merits. Evidence of economic impacts directly caused by transportation infrastructure, however, is difficult to measure. The measures proposed in this section reflect both new federally-proposed direction for measures to manage freight networks effectively and emerging practices among states in measuring access to jobs:

- **Freight Movement -** Shippers and businesses that depend on transportation often indicate truck speed and truck trip time reliability are their most important transportation system-related performance issues. Efficient truck movements reduce logistics costs in Arkansas and help Arkansas businesses respond with flexibility to changing market conditions, such as demand for next day delivery. Improvements to the freight network in Arkansas help make the state a more appealing location for businesses in which to grow or relocate, which boosts job creation and retention opportunities.

- **Access to Jobs –** The ease with which workers can access jobs, either by auto or transit, helps depict how well transportation supports economic prosperity. States are increasingly tracking ease of access to jobs and the *Accessibility Observatory at the University of Minnesota,* which is in part funded by a multi-state FHWA Transportation Pooled Fund study, defines job accessibility as "the number of job destinations reachable within a given travel time." This measure is easily understood by lay audiences and is comparable across locations; it can also be measured for various transportation modes and different times of day. The Department is participating in a phase of this Pooled Fund Study to determine measures of accessibility in a rural state and how to improve accessibility.

The Department can help maintain or improve economic competitiveness via a blend of actions, including added capacity across all modes, operating existing systems more efficiently, and supporting travel and land use patterns that result in lower travel demand at

peak hours. These actions, however, require a high degree of partnership between ARDOT and local level government and other state agencies.

8.4.1 Measuring Economic Competitiveness Performance

Measurement of economic competitiveness is a complex and highly studied topic. A major challenge for transportation agencies is that transportation is one of many variables that affect economic competitiveness; yardsticks like statewide changes in jobs, income or gross state product, offer a way to assess overall economic health, but offer no specific insight on transportation's role. At the national level and across states, FHWA and others are focusing on performance measurement efforts that reveal progress in transportation-related aspects of economic competitiveness, such as efficient freight movement or access to jobs.

Under the final rule, there is one freight movement measure. Table 8.8 lists the objectives and performance measures associated with freight reliability.

Table 8.8: Recommended Objectives and Performance Measures for Freight and Accessibility Performance

Objective	Performance Measure
• Identify projects to address localized congestion and capacity needs. • Identify key routes between Arkansas' and external trading partners in need of long-term additional capacity. • Collaborate with the Arkansas Economic Development Commission to identify projects that will improve the state's economic competitiveness.	15. Percentage of the Interstate System Mileage providing for Reliable Truck Travel Times, or Truck Travel Time Reliability (TTTR) Index, (which is referred to as the Freight Reliability measure)
	16. Year-to-year change in statewide average job accessibility (auto and transit)

Measure #15, percentage of the Interstate system mileage providing for reliable truck travel time, or Truck Travel Time Reliability (TTTR) Index is the percent of Arkansas Interstate routes, by length, for which the 95th percentile truck travel time is less than 50 percent greater than the 50th percentile time. This measure highlights how much of the Arkansas Interstate system, where truck traffic is concentrated, operates without wide and hard-to-predict swings in travel time. Low variability in travel time means freight operators can avoid adding wasteful amounts of buffer time to ensure their journeys are on time. This measure features a higher percentile than the general mobility measure because freight operators place a higher premium than other users on on-time arrival. By using the 95th percentile travel time for this measure, only extreme outlier travel times are excluded. The 50th percentile travel time is assumed to reflect normal peak hour travel conditions that are reasonably reliably predicted by freight operators. In addition, this reliability measure is limited to Interstates, on which a higher level of performance is expected.

Measure #16, year-to-year change in statewide average job accessibility (separate measures for auto and transit modes) *is the average number of jobs reached within a set commute time (e.g. 30 minutes) from each Census block using auto or transit.* This measure highlights how well Arkansas highway and transit systems serve workers seeking to access jobs. Longer travel times, due to congestion or lack of service, reduce the number of jobs that can be accessed from a given location. ARDOT recently participated in a Pooled Fund Study, which

resulted in development of 2015 data for these measures that could serve as the basis for monitoring changes in the future. This measure is not a requirement of the federal rulemaking.

8.4.2 Freight and Accessibility Performance Targets

FHWA's final rule language on freight performance measures requires states to set 2 and 4-year performance targets for 2020 and 2022 respectively. MPOs must also set freight targets within 180 days of the state, according to the federal rule. Based on the coordination between ARDOT and the MPOs, MPOs can either agree to support the state DOT's target, or they can establish a numerical target specific to their MPO planning area. The work performed to review Arkansas statewide accessibility performance does not include any target setting.

8.5 Goal Area: Environmental Sustainability

Crittenden County, which is part of the West Memphis MPO, is the only designation maintenance area for the NAAQS in Arkansas. Table 8.9 shows the three performance measures in the final rule related to assessing the CMAQ program. Water quality measures were not considered because roadway runoff and water quality issues are addressed in every construction project during the permitting process and within the construction standards.

Table 8.9: Recommended Objective and Performance Measure for Environmental Sustainability

Objective	Performance Measure
• Support initiatives to reduce congestion and improve air quality.	17. Annual Hours of Peak-Hour Excessive Delay Per Capita (the PHED measure)
	18. Percent of Non- Single Occupancy Vehicle (SOV) Travel
	19. Total Emissions Reduction

Measure #17 is a CMAQ traffic congestion measure that refers to the annual hours of peak-hour excessive delay per capita. The measure is limited to peak hours and the speed threshold is 60 percent of the posted speed limit with a minimum of 20 mph. The CMAQ measures will initially apply to urbanized areas with a population of more than 1 million that contains any part of nonattainment or maintenance areas. The measure will be expanded to medium-sized urbanized areas through a phase-in process.

Measure #18 refers to a measure of the single occupancy vehicle mode share. FHWA provides three data options for use in calculating this measure, including the American Community Survey, local survey, or local counts.

Measure #19 refers to the 2-year and 4-year cumulative reported emission reductions for all projects funded by CMAQ funds, of each criteria pollutant and applicable precursors under the CMAQ program for which the area is in nonattainment or maintenance.

8.5.1 Environmental Sustainability Performance Targets

FHWA's final rule language on performance measures requires states to set 2 and 4-year performance targets for 2020 and 2022 respectively. MPOs must also set targets within 180 days of the state, according to the federal rule. The West Memphis MPO is the only MPO in Arkansas that is listed as a maintenance area. Because this MPO region covers multiple states, ARDOT will coordinate with Tennessee DOT, Mississippi DOT, and the Memphis MPO in order to set targets and report on the environmental performance measures.

8.6 Multimodal Transportation System

Public transportation, especially in rural areas, is a lifeline for much of Arkansas' population. The state's seven urban transit systems receive direct funding from FTA and require only minimal state oversight as the agencies plan and operate their transit systems. Federal funds are provided for capital outlays (e.g., buses, terminal construction or rental, office furnishings and equipment including computers), planning for transportation services, and system operations. Discretionary funds for capital equipment and buses for urban transportation systems are still administered by ARDOT's Public Transportation Programs staff.

ARDOT also administers FTA's program for the Enhanced Mobility of Seniors and Individuals with Disabilities, or the 5310 Program. The purpose of this program is to enhance transportation services to seniors and individuals with disabilities to fill gaps in service. The program provides grant funds to subsidize capital purchases for public transportation projects for the special needs of seniors and the disabled population.

In addition, ARDOT administers FTA's Rural Area 5311 Formula Program funding, which provides planning, operating, capital, training, and project administration assistance for public and private nonprofit agencies that provide transportation services to the general public in rural areas. Seven rural public transportation operators and three private intercity transportation operators currently receive funding under this program.

Critical to the safety and performance of any public transportation system is the condition of its capital assets, particularly its rolling stock, including the buses, vans, and cars used for transit service. When transit assets are not in a state of good repair, the consequences include increased safety risks, decreased system reliability, and higher maintenance costs.

8.6.1 Measuring Transit Performance

Industrywide, there is no uniformity in how transit performance is evaluated. Each agency, depending on its capabilities and needs, tends to adopt different methodologies in the collection, measurement, analysis, and assessment of transit performance data.

In July 2016, FTA published the transit asset management final rules, described as intending to establish "a National Transit Asset Management (TAM) System to monitor and manage public transportation capital assets to achieve and maintain a state of good repair, improve safety, and increase reliability and performance." The final rule includes transit asset management performance measures for all recipients of FTA funds. In particular, the final rule describes a process by which states and Tier II direct recipients work together to develop group transit asset management plans. Tier II providers are transit operators with 100 or fewer vehicles in revenue service that do not operate rail fixed-guideway public transportation systems. All transit providers in Arkansas are Tier II providers. Table 8.10 shows the single objective and performance measure for this category.

Table 8.10: Recommended Objective and Performance Measure for Transit Performance

Objective	Performance Measure
• Support multimodal transportation alternatives and intermodal mobility.	20. Percent of revenue vehicles within a particular asset class that have either met or exceeded their useful life benchmark (ULB)

8.6.2 Transit Performance Targets

Each of Arkansas's Tier II transit providers, in coordination with the state, would be accountable for setting annual performance targets based on the new national state of good repair (SGR) measures established by FTA. How a state and its transit providers set these performance targets would be an entirely state and local process and decision. However, FTA would strongly encourage transit providers, states, and MPOs to set meaningful progressive SGR targets based on creative and strategic leveraging of all available financial resources. Although the law does not provide FTA with the authority to reward transit providers for meeting an SGR performance target or impose penalties for missing an SGR performance target, the process of setting targets and measuring progress reflects the FTA's increased expectations.

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9. ALTERNATIVE FUTURE SCENARIOS

This chapter provides information about the alternative future scenarios developed for the LRITP. The scenario planning process evaluates the performance outcomes of different investment strategies to help inform decision-makers. A preferred alternative is not selected. Rather, the results of each of the scenarios are analyzed to provide information on the different investment strategies and related performance. Four alternative future scenarios were developed internally and were presented to the T-PAG for feedback.

The four alternative future scenarios reflect different priorities, expected outcomes, and investment levels based on the 25-year baseline revenue forecast. The scenarios were evaluated with the Arkansas Statewide Travel Demand Model; the Highway Economics Requirements System, State Version (HERS-ST; pavement); the National Bridge Investment Analysis System (NBIAS; bridges); and qualitative evaluation based on annual incremental budgets associated with peak, optimal, and moderate percent of needs met. The outputs used measure performance outcomes by the following seven program investment areas:

1. Safety
2. Smart transportation and intelligent transportation systems (ITS)
3. Maintenance
4. Bridge
5. Pavement
6. Capacity and congestion
7. Nonhighway (urban and rural public transportation, bicycle and pedestrian)

Four alternative future scenarios were selected to understand the trade-offs, consequences, and outcomes of potential planning scenarios representing changes in travel and investment decisions. Brief descriptions for the four selected scenarios follow:

1. **Keep It Smooth — Preserve the Investment.** The focus of this scenario is on maintaining and preserving the existing highway and bridge system in a state of good repair. A higher priority is given to maintaining highway and bridge assets on the National Highway System (NHS). A balance is struck between the Arkansas Primary Highway Network (APHN) and non-APHN assets to ensure equity in meeting systemic performance goals by roadway classification.

2. **Think Locally — Trade Globally.** This scenario uses enhanced infrastructure investments to support industry retention and attraction, with resources focused on existing major Interstates, major four-lane highways, and other freight corridors as identified in the *State Freight Plan*. The focus of this scenario emphasizes adding capacity to alleviate freight bottlenecks on the Interstate.

3. **Connecting Communities — Forging Opportunities.** This scenario analyzes the results of allocating resources to complete the four-lane grid system and emphasizes increasing capacity to improve economic competitiveness throughout the state. System preservation and freight movement investments on existing roadways would be less emphasized in this scenario than in the previous two scenarios.

4. **Bigger Cities — More Mobility.** This scenario emphasizes allocating funds to alleviate urban congestion by focusing on demand management and intelligent transportation systems in congested corridors increasing transit operations, preserving the existing urban system, and addressing gaps in the bicycle and pedestrian network. Rural system preservation, rural freight movements, and economic competitiveness investments would be lower in this scenario than in those previously defined.

9.1 Investment Programs and Performance Areas

Creating the alternative future scenarios required developing a set of quantitative and qualitative performance measures for each investment program. The measures were used to test and evaluate the results of allocating resources (baseline revenue versus forecast revenue scenarios) to each of the scenarios across the seven investment programs. The performance measure impacts of the investments were analyzed. Based on the results, the accomplishments, risks, and trade-offs for each scenario were identified. No preferred alternative was identified from this planning exercise.

Table 9.1 through Table 9.4 provide descriptions of the performance measures used for the analysis of each of the seven investment programs. The criterion identified for measuring bridge condition performance are based on the federal performance measure rulemaking for bridge infrastructure. The measures related to safety, smart transportation, maintenance, and nonhighway needs are related to the ability to meet a certain percent of the needs identified as part of this LRITP process. In order to reflect the ideology that ARDOT will continue to meet the safety needs and the maintenance needs to preserve the existing system, the investment level for these two investment areas for all four scenarios is consistent.

Table 9.1: Safety, Smart Transportation, and Maintenance Investment Program Performance Measures

Investment Program and Performance Areas	Criteria Description
Safety	This criterion is used to evaluate the LRITP investment level for funding projects and programs aimed at reducing fatal and serious injury crashes, reducing vulnerability (the magnitude of impact on the system due to events such as major traffic incidents, flooding, lane closures, bridge failures, and seismic activity), and improving system resiliency (the ability of the system to recover from these events). The measure is based on the percent of safety needs met.
Smart transportation	This criterion is used to evaluate the LRITP investment level's ability to invest in and expand the existing ITS. The measure is based on the percent of ITS needs met.
Maintenance	This criterion is used to evaluate for the state and the 10 Districts the LRITP 25-year investment level's ability to invest in highway maintenance that addresses pavement profiling and marking, facilities management, maintenance management, traffic services, communication and ITS maintenance, and bridge maintenance.

Table 9.2: Bridge and Pavement Investment Program Performance Measures

Investment Program and Performance Areas	Criteria Description
Infrastructure condition	This criterion is used to evaluate the LRITP investment level's ability to invest in existing highways and bridges to maintain and preserve the system.
Bridge	This criterion is used to evaluate the LRITP investment level's ability to invest in the existing bridges to maintain and preserve the system.
Pavement	This criterion is used to evaluate the LRITP investment level's ability to invest in the existing highways to maintain and preserve the system.

Table 9.3: Congestion and Capacity Improvement Investment Program Performance Measures

Investment Program and Performance Areas	Criteria Description
Congestion reduction, mobility, and system reliability	This criterion is used to evaluate the LRITP investment level's ability to invest in the multimodal transportation system to improve mobility, connectivity, accessibility, and reliability for movement of people and goods.
Capacity	This criterion is used to evaluate the LRITP investment level's ability to invest in the multimodal transportation system to improve system capacity and reduce travel delays.
Economic competitiveness	This criterion is used to evaluate the LRITP investment level's ability to improve intermodal transportation system connectivity, efficiency, and mobility to support existing industries and strengthen national and regional economic competitiveness.

Table 9.4: Nonhighway Investment Program Performance Measures

Investment Program and Performance Areas	Criteria Description
Multimodal transportation system	This criterion is used to evaluate the LRITP investment level for funding intermodal transportation system improvements resulting from the partnership of responsible modal agencies, local jurisdictions, and planning organizations working to improve safety, accessibility, and connectivity for the movement of people and goods. All measures are based on percent of needs met in each investment program.
Nonhighway rural public transportation	State Transit Trust Fund — This Program distributes state funds from the rental tax on short-term rentals of vehicles. Funds are distributed to nonurban, urbanized, and human service organizations for operating and capital assistance. The ARDOT receives approximately $3.5 million per year.
Nonhighway urban public transportation	State Transit Trust Fund — This Program distributes state funds from the rental tax on short-term rentals of vehicles. Funds are distributed to nonurban, urbanized, and human service organizations for operating and capital assistance. The ARDOT receives approximately $3.5 million per year.
Nonhighway bicycle and pedestrian	Accommodation of bicycles will be given due consideration when a proposed highway project is on a route that has been designated as a bicycle route by a locally adopted bicycle plan or master street plan and the Department concurs that the route should be a designated bicycle route. This process is presented in more detail in the 2016 Arkansas State Bicycle and Pedestrian Plan.

9.2 Performance Analysis

Based on the analysis of the assumed investment levels for each of the four alternative scenarios and the performance measures associated with those investment levels, performance results for each of the measures were calculated for each scenario. Appendix B illustrates the results of this analysis, which was completed using Decision Lens software.

Appendix B provides the performance outcomes for each of the investment areas and depicts the performance of each investment area for each of the four future scenarios. The travel demand model metrics were used to compare performance among the four scenarios. Peak, optimal, and moderate impact levels were identified for each of these investment areas to identify what level of investment or performance would result in each of the three levels of performance. These levels are identified with the green, yellow, and red shading in the table, with green illustrating the best performance and red illustrating low levels of performance.

As illustrated in Appendix B, it was determined that safety and maintenance spending would remain at the current performance for all alternative future scenarios due to funding limitations and a desire to maintain similar performance in both of those areas in each scenario. As expected, bridge and pavement conditions perform best in the Keep It Smooth — Preserve the Investment scenario which focuses on preservation of the existing system. The performance of public transportation and bicycle and pedestrian is best in the Bigger Cities — More Mobility scenario which focuses on urbanization of population and increased public transportation and non-motorized transportation facility investment to support the denser population this scenario assumes.

9.3 Transportation and the Economy

Trends in transportation and their associated economic impacts are an important consideration in the analysis and long-range planning of the state's transportation system. IMPLAN economic impact analysis software was used to analyze the potential economic impacts of the four alternative future scenarios. IMPLAN uses a set of databases which include economic factors and demographics to model economic impact. Both costs and benefits associated with the construction and operation of the state highway system were considered and evaluated. Details of this analysis can be found in the Travel Demand Trends and Analysis Technical Memorandum. Investments in other modes such as rail, water, and air were not examined. Many of these investments will be made by the private sector.

Transportation investments can not only provide mobility, but they also shape land use, create jobs, and generate economic activity. A new road could affect the surrounding community in terms of transportation costs and efficiencies, but it could also affect production cost, industry output, and consumer spending. The economic analysis indicated a direct correlation between the total monetary investment for constructed lane-miles and the resulting total economic impact effect, which is the sum of direct, indirect, and induced effects.

Economic impacts were analyzed to evaluate the short- and long-term effects on jobs, income, population, and other economic variables as a result of the construction, operation and maintenance (O&M), and vehicle operation resulting from transportation projects.

Economic impacts were analyzed to evaluate the short- and long-term effects on jobs, income, population, and other economic variables as a result of the construction, operation and maintenance (O&M), and vehicle operation resulting from transportation projects. The construction of transportation projects resulted in an overall positive economic impact in the state under each scenario. The Keep It Smooth—Preserve the Investment, Connecting Communities—Forging Opportunities, and Think Locally—Trade Globally alternative futures all showed positive economic impacts during the operation phase. However, the Bigger Cities—More Mobility scenario did not show the same positive economic impacts because its focus was directed toward demographic shifts and not additional transportation network improvements.

The impacts resulting from the construction, O&M, and vehicle operation costs of each alternative future were translated into direct costs to be measured in the quantitative analysis.

- The direct costs for the construction and O&M costs of the transportation project were representative of increased spending in the construction sector and resulted in positive economic impacts.
- The increased transportation costs (vehicle operating cost) were reflective of the increased statewide VMT resulting from improved mobility. The increased transportation costs were representative of increased retail gasoline sales, automotive maintenance, tire production, and trucking industry, and also indicated a positive impact.

In addition to the direct cost impacts that can be measured in IMPLAN, the travel time costs and safety impacts were also examined. The specific IMPLAN impacts for each alternative future scenario are shown in Table 9.5 and summarized below.

Table 9.5: IMPLAN Impacts

	Keep It Smooth – Preserve the Investment	Bigger Cities – More Mobility	Connecting Communities – Forging Opportunities	Think Locally – Trade Globally
Estimated Cost During Construction ($M)	2,851	2,851	11,065	3,929
2040 annual O&M Cost ($M)	0.9	0.9	5.6	1.4
Construction Phase Total Output ($M)	5,014	5,014	19,442	6,908
Operation Phase Total Output ($M)	94	-16	197	135
Construction Phase Total Employment	32,239	32,239	126,285	44,417
Operation Phase Total Employment	648	-132	1,415	988
Potential Number of Crashes	41,900	42,560	42,280	41,984
Estimated change in Travel Time Cost ($M)	-56	+206	-111	-67

- **Keep It Smooth—Preserve the Investment**
  - This scenario produced the highest total output per dollar investment during the operation phase and the highest employement per lane-mile constructed during both the construction and operation phases.
  - This scenario produced the least number of potential crashes, but it also produced a higher estimated per crash cost than the Connecting Communities—Forging Opportunities and Think Locally—Trade Globally alternative futures.

- **Bigger Cities—More Mobility**
  - This scenario produced the same total impacts during the construction phase as Keep It Smooth—Preserve the Investment, but the added congestion as a result of demographic shifts resulted in negative impacts during the operation phase.
  - This scenario produced the highest number of potential crashes with the lowest total annual crash cost, which indicates this alternative future produced the lowest cost per crash because less severe crashes were occurring.

- **Connecting Communities—Forging Opportunities**
  - This scenario produced the highest total impacts during both the construction and operation phases. However, it produced lower output and employment per lane-mile during the operation phase compared to the Keep It Smooth—Preserve the Investment and Think Locally—Trade Globally alternative futures.
  - This scenario produced the largest number of potential crashes and the highest estimated per crash cost. Connecting Communities—Forging Opportunities also produced the highest statewide annual time savings, but it produced lower time savings per lane-mile constructed during the operation phase than either Keep It Smooth—Preserve the Investment or Think Locally—Trade Globally.

- **Think Locally—Trade Globally**
  - This scenario produced results that consistently fell between the Keep It Smooth—Preserve the Investment and Connecting Communities—Forging Opportunities alternative futures.
  - This scenario produced comparable results in efficiency compared to the Keep It Smooth—Preserve the Investment future. It also produced a higher level of overall impacts compared to the Keep It Smooth—Preserve the Investment future due to the increased investment level.

As expected, the top two industries affected during the construction phase were the construction industry and architectural/engineering services. The sector with the third-highest impact was wholesale trade, which was a reasonable outcome considering the construction of highways is highly correlated to wholesaling merchandise. These sectors were found to be the top three affected industries in all four alternative futures. The top industries affected during the operation phase varied between the alternative futures, but truck transportation, automotive repair and maintenance, and retail – gasoline stores consistently saw the largest positive impacts.

Top two industries affected during construction phase were construction industry and architectural/engineering services. The top industries affected during the operation phase in all scenarios were truck transportation, automotive repair and maintenance, and retail-gasoline stores.

Additionally, the improvements found in the Connecting Communities—Forging Opportunities future exhibited the largest benefit regarding direct travel demand management output performance measures, such as travel speed, annual hours of delay, congestion, and reliability as determined by LOS. This result was expected due to the total investment and extent of work associated with this alternative future. Interestingly, the Think Locally—Trade Globally future compared well with the Connecting Communities—Forging Opportunities future, and the Think Locally—Trade Globally future even surpassed the Connecting Communities performance in urban areas.

The Think Locally—Trade Globally future added additional lanes to interstate highways that increased usage from both passenger and freight vehicles. The result provided a new optimal route for traffic as a result of increased mobility and improved delay; however, the freight congestion cost increased slightly compared to the Keep It Smooth—Preserve the Investment scenario. This result was counterintuitive, but the result could be explained by congestion

still existing on the expanded roadway. The widening increased mobility and the total freight volume traveling on the roadways, but because the roadways were still experiencing some congestion, the resulting freight congestion grew slightly.

The results of the economic impact analysis of the four alternative futures described in the Travel Demand Trends and Analysis Technical Memorandum provide an evaluation of the comparative economic benefit to the State of Arkansas under various combinations of land use development patterns and transportation infrastructure investments.

10. POLICIES AND IMPLEMENTATION STRATEGIES

10.1 Policy Issues Driving Change

Arkansas' transportation system assets are the state's largest capital investment. The majority of these transportation system investments were constructed over the last century. They have connected Arkansas' cities and towns to local, regional, national, and global economies. Today, numerous policy issues are driving change in how transportations systems are planned and built. For instance, rapidly changing technological advancements affect how and where people commute to work and how goods are moved to and from markets. In the last three to five years, technological advancements have become more widespread, and companies like Uber have transformed how people move. Change is here now, and more advances are coming soon. Although the extent of technological change and its impact on the transportation system are not entirely known, state transportation planners must be prepared to adapt 21st century technology into Arkansas' transportation system and continue to prepare and plan for investments that will meet the demand of the 21st century population and economy.

ARDOT and its partners face the following significant challenges and opportunities over the next few decades to increase the safety and security of the transportation system, preserve and maintain the state's transportation infrastructure assets, improve the efficiency and reliability of travel, and provide more transportation choices to meet future needs.

- Keeping Arkansas' bridges and pavement in good condition is the most effective way to extend the life of its aging transportation system.
- Arkansas will experience population and employment growth in urban areas, while the rural parts of the state will continue to follow an outmigration trend.
- Growth in the number of older individuals in Arkansas will lead to increased needs for expanded and enhanced urban and rural public transportation services.
- Technologies such as automated vehicles and connected vehicles will transform how people and goods move through and within Arkansas.
- Growth in truck traffic and the size and weight of these trucks will increase roadway congestion and adversely affect bridge and pavement conditions.
- The lack of federal aid and state highway funds will limit how Arkansas preserves, modernizes, and expands its transportation system and services.

Addressing these challenges and opportunities will require partnerships across public agencies and active support from the private sector.

The six LRITP goals described in this report provide a strategic vision for the future of Arkansas' transportation system. To accomplish this long-term vision, internal and external strategies have been identified to improve and maintain system performance across the LRITP goal areas. The LRITP strategies are intended to inform ARDOT decision makers and their partners about how the system is preserved, maintained, modernized, and expanded to meet 21st century needs in the era of performance-based planning. Implementing the strategies will help the state meet its performance measurement requirements and manage its transportation system and in turn improve safety, mobility, and accessibility for all users of the Arkansas transportation system.

The following sections list the six primary goals, their objectives and performance measures, and the policies and strategies that will help ARDOT to achieve the goals.

10.2 Safety and Security

Goal: Improve statewide safety by funding projects reducing fatal and serious injury crashes, reducing vulnerability (the magnitude of impact on the system due to events such as major traffic incidents, flooding, lane closures, bridge failures, and seismic activity), and improving resiliency of the system (the ability of the system to recover from these events).	
Objectives	• Align safety goals with the goals of the *Strategic Highway Safety Plan* (SHSP). • Partner with the Arkansas State Police, local governments, and federal agencies to administer comprehensive traffic safety programs related to driver, roadway, and railroad crossing safety. • Partner with counties and local governments to provide training on low-cost safety applications for local roads. • Improve the resiliency of the transportation system to meet travel needs in response to extreme weather events. • Work with emergency management agencies to expand emergency communications infrastructure across the state. • Work with emergency management agencies to ensure efficient and coordinated responses to emergency and disaster events.
Performance measures	• Number and rate of vehicle fatalities • Number and rate of vehicle serious injuries • Number and rate of non-motorized fatalities and serious injuries • Roadway clearance time
What policies and strategies will help achieve this goal?	• Pursue low-cost, high-impact improvements. – Implement enhanced signing and delineation and high-friction pavements as needed. – Install median cable barriers as needed. – Properly maintain cable median barriers as needed. – Consider installing rumble strips as needed and review their relevance, effectiveness, and implementation along state bicycle routes. – Consider improving sight distance, visibility, lighting, pavement friction, signing, and other traffic control devices, particularly at unsignalized intersections. – Consider eliminating edge drop-offs by implementing Safety Edge on rural roadway projects where appropriate. – Consider providing minor shoulder widening where possible. – Consider traffic calming techniques as appropriate. • Partner with public and private entities to better address the safety needs of stakeholders. – Consider a "corridor planning" approach to address highway–rail grade crossing interferences in some areas. – Provide training opportunities to local governments on low-cost safety improvements. – Meet with State Police, local governments, and federal agencies to administer comprehensive traffic safety programs. – Meet with emergency management agencies and discuss ways to communicate and coordinate more efficiently. • Consider "Best Practice" solutions from other states and metropolitan planning organizations (MPOs) to optimize the safety and security of the transportation system. – Implement roundabouts and median treatments as appropriate. – Explore and implement emerging technologies (ITS, transportation system management and operations) to improve safety and security for all transportation modes. – Conduct a vulnerability assessment on the Arkansas Primary Highway Network transportation assets to improve system resiliency and redundancy. – Incorporate climate risks into design and asset management processes. – Use technology, information, and operations strategies to improve transportation security and emergency preparedness and response. – Identify critical transportation assets that require a retrofit to reduce vulnerability to extreme weather events and environmental conditions.

10.3 Infrastructure Condition

Goal: Invest in existing highways and bridges to maintain and preserve the existing system.	
Objectives	• Bridges – Enforce vehicle weight and size restrictions to protect roads and bridges. – Follow asset management principles to optimize preservation strategies on the SHS. – Identify potential freight corridors within which special attention is given to preempt commercial vehicle bottlenecks. • Pavement – Enforce vehicle weight and size restrictions to protect roads and bridges. – Follow asset management principles to optimize preservation strategies on the SHS. – Improve ride quality on National Highway System (NHS) roads.
Performance measures	• Bridges – % of bridge deck area on NHS in good condition – % of bridge deck area on NHS in poor condition • Pavement – % of pavement on Interstate in good condition – % of pavement on non-Interstate NHS in good condition – % of pavement on Interstate in poor condition – % of pavement on non-Interstate NHS in poor condition
What policies and strategies will help achieve this goal?	• Optimize the use of available funds to provide a high-quality, sustainable transportation system. – Per MAP-21 requirements, develop a risk-based asset management plan to improve or preserve the condition of the assets and the performance of the system. – Evaluate, adjust, and enforce vehicle weight and size restrictions on roads and bridges to balance the competing needs of infrastructure preservation and freight mobility. – Provide training to districts and local governments for the efficient use of asset management principles to maximize the life-cycle costs for managing and maintaining transportation infrastructure assets. – Rely on the Infrastructure Management Systems to identify infrastructure needs. • Bridges – Use asset management strategies to minimize the life-cycle cost for state-maintained bridges. – Prioritize the use of funds to ensure the long-term preservation of fracture-critical bridges. – Prioritize the use of funds to implement scour countermeasures to remove the designation of scour critical designation from such structures. – Identify the minimum amount of annual funding required to keep deficient bridge deck area to less than 10 percent. • Pavement – Optimize the use of maintenance funds to provide a smooth riding surface on all roads. – Use asset management strategies to minimize the life-cycle cost for state-maintained roads. – Promote the proper use of low-cost measures such as overlays and seals to prolong pavement life. – Identify the minimum amount of annual funding required to maintain pavement in good condition.

10.4 Congestion Reduction, Mobility, and System Reliability

Goal: Invest in the multimodal transportation system to improve mobility, connectivity, accessibility, and reliability for people and goods.	
Objectives	• Provide predictable, reliable travel times. • Complete the Connecting Arkansas Program (CAP), which will improve transportation connections throughout the state by increasing roadway capacity. • Consider context-sensitive solutions in the transportation system design, as appropriate. • Implement ITS strategies to provide travelers with real-time information regarding weather conditions, travel times, emergencies, and delays. • Use technology advances to improve system performance. • Plan and prepare for autonomous and connected vehicles. • Use output from MPOs' congestion management systems to identify and address congested areas on the NHS. • Work with partners to encourage travel demand management (TDM) strategies to reduce traffic demand during peak hours. • Support multimodal transportation alternatives and intermodal mobility.
Performance measures	• Percent of person-miles traveled on the Interstate system that are reliable • Percent of person-miles traveled on the non-Interstate NHS that are reliable
What policies and strategies will help achieve this goal?	• Implement emerging technologies (e.g. Connected Vehicle Technologies and prefabricated bridge elements and systems (PBES)) to optimize the efficiency and reliability of the transportation system. – Explore operational and demand management strategies to address congestion before obligating scarce financial resources to widen existing roadways. – Update the existing ITS architecture to allow for the transmission of real-time travel information statewide. – Establish a Traffic Management Center to serve as the ITS headquarters for the state. • Coordinate with MPOs and planning and development districts (PDDs) to identify feasible transportation system management and operations strategies to implement. – Continue to promote the IDrive Arkansas webpage to partners and the general public. – Coordinate with MPOs to identify and address bottlenecks through the use of MPO congestion management systems. • Partner with government and nongovernment entities to educate stakeholders and promote corridor preservation and TDM strategies. – Identify corridors and work with local governments and MPOs to establish corridor management plans to protect existing assets and identify cost-effective transportation systems management and operational solutions. – Develop access management policies and work with MPOs and PDDs to assist in educating local officials on the importance of protecting roadway access. – Coordinate with MPOs to implement rideshare and other strategies to reduce travel demand. – Provide District Engineers information to communicate the benefits of TDM techniques to local businesses and developers. – Coordinate with other agencies to support and promote intermodal connectivity. – Consider multimodal transportation options and choices in all project development in the context of the Bicycle/Pedestrian Plan, Rail Plan, Freight Plan, etc. • Implement low-cost solutions when possible to improve mobility. – Implement roundabouts as more efficient alternatives to four-way stops. – Where appropriate, implement minor intersection improvements and turning lanes to increase system capacity. – Continue to implement context-sensitive solutions to provide transportation facilities that blend with the existing environment. • Develop a Traffic Incident Management Program.

10.5 Economic Competitiveness

Goal: Improve intermodal transportation system connectivity, efficiency, and mobility to support existing industries and strengthen national and regional economic competitiveness.	
Objectives	• Continue development of the four-lane economic development connectors (four-lane grid system) to improve connectivity to all citizens and promote economic development. • Prioritize and enhance intermodal connections for both passenger and freight movement by establishing an appropriate network of intermodal connectors. • Collaborate with the Arkansas Economic Development Commission to identify projects that will improve the state's economic competitiveness. • Use outputs from the *State Rail Plan* to identify rail improvement needs. • Support the maintenance and operation of state highways, bridges, transit, rail, ports, locks, and dams. • Identify key routes in need of long-term additional capacity to support Arkansas and external trading partners. • Identify projects to address localized congestion and capacity issues that negatively affect freight movement.
Performance measures	• Percentage of the Interstate system mileage providing for reliable truck travel times or Truck Travel Time Reliability (TTTR) Index (referred to as the Freight Reliability Measure) • Year-to-year change in statewide average job accessibility (auto and transit)
What policies and strategies will help achieve this goal?	• Establish an on-going dialogue with government and nongovernment entities to ensure that ARDOT is aware of economic development needs across the state. – Meet with the Arkansas Economic Development Commission and other statewide economic development stakeholders to identify transportation projects or improvements required to support local and regional economies. – Continue meeting as the Freight Advisory Committee (FAC) to educate the public and lawmakers regarding the importance of multimodal cooperation for planning, funding, and implementation of improvements. – Work with the FAC to develop a multimodal inventory for economic development recruiting to identify upcoming nonhighway needs (for funding purposes) and to identify infrastructure improvements that are important to improving economic competiveness for Arkansas companies.

10.6 Environmental Sustainability

Goal: Enhance the performance of the transportation system while avoiding, minimizing, and/or mitigating impacts to natural and cultural resources.	
Objectives	• Support initiatives to reduce congestion and improve air quality. • Identify and reduce barriers to minimize delay and improve the project delivery process. • Minimize impacts to natural, historic, and cultural resources. • Consider context-sensitive solutions in the transportation system design, as appropriate.
Performance measures	• Annual Hours of Peak-Hour Excessive Delay Per Capita (the PHED measure) • Percent of Non-Single Occupany Vehicle travel • Total Emissions Reduction
What policies and strategies will help achieve this goal?	• Consider the environmental effects of all transportation projects and strive to implement sustainable solutions. – Continue to identify potential stream and wetland impacts early in project planning in order to identify the most appropriate mitigation. – Expand the service areas of the state's mitigation banks and mitigation areas to provide more state coverage. – Foster partnerships with resource agencies to streamline mitigation, permitting, and approval processes. – Fund CMAQ projects that will improve air quality, specifically in Crittenden County. – Consider PBES and accelerated bridge construction (ABC) methods to improve project delivery by minimizing construction activity and duration in environmentally sensitive areas.

10.7 Multimodal Transportation System

Goal: Partner with responsible modal agencies, local jurisdictions, and planning organizations working to improve safety, accessibility, and connectivity for the movement of people and goods.	
Objectives	• Support multimodal transportation alternatives and intermodal mobility. • Develop and sustain efficient intermodal connections to allow for more efficient transfer of goods between modes. • Use outputs from the *State Bicycle and Pedestrian Plan* to provide transportation lifestyle options for citizens. • Coordinate with MPOs' and local governments' land use planning and regional and local modal plans. • Partner with MPOs and local governments to consider implementing approved and adopted bicycle and pedestrian facilities on the State Highway System.
Performance measures	• Percent of revenue vehicles with a particular asset class that have either met or exceeded their useful life benchmark (ULB) • Number of communities with adopted bicycle and pedestrian plans
What policies and strategies will help achieve this goal?	• Coordinate with other entities to provide all Arkansans access to an interconnected multimodal transportation network and reliable capital equipment. – Coordinate with MPOs and PDDs to implement multimodal transportation infrastructure improvements that improve connectivity between bicycle, pedestrian, and public transit modes. – Continue meeting as the FAC to educate the public and lawmakers regarding the importance of multimodal cooperation for planning, funding, and implementation of improvements. – Continue to provide capital assistance for vehicle purchase through the 5310 program or a similar state-provided program and allow agencies to continue to operate services using their own agency operating budgets. – Enhance and build upon existing relationships with planning organizations to continue and improve transportation planning for all areas of the state. – Develop and implement a stakeholder satisfaction survey to be completed before and after development of major projects or studies.

APPENDIX A: SUMMARY OF T-PAG MEETINGS

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- **Meeting 1 – September 3, 2015**
  - The presentation provided an overview of the LRITP and how it would be developed, the role and purpose of T-PAG, and a recap of project kickoff meetings held with ARDOT staff.
  - After viewing trends in Arkansas and feedback that the project team received during a meeting with Arkansas' MPOs, T-PAG looked at the goals and objectives being developed for the plan.
  - As a part of an interactive exercise, T-PAG members were asked to consider issues and questions that were vital to developing the LRITP.
    - T-PAG members identified the following issues as being important to Arkansas and to transportation within the state:
      - economic growth
      - safety
      - enhanced community
      - mobility of an aging population and a younger population
      - options to create a more mobile society as an economic development tool
      - access to a safe and affordable food supply
      - smooth, free-flowing Interstates; a competitive system
      - preservation of the existing transportation system
      - an adequately and fairly funded system
    - T-PAG members identified various areas for improvement and made the following recommendations:
      - diversify beyond highways (i.e., think more multimodally)
      - improve partnerships with local government
      - enhance capacity building among stakeholders
      - focus on maintenance of the existing system to serve the whole state
      - increase public transportation support in all areas

- **Meeting 2 – March 8, 2016**
  - This meeting was preceded by the first round of public meetings. The goals and objectives were presented to the public, and comments were addressed prior to the second T-PAG meeting. The presentation provided an overview of LRITP goals and performance measures, public and stakeholder engagement, pairwise goal results, a baseline revenue forecast, highway and non-highway needs, and alternative investment options.
  - As part of an interactive exercise, attendees were asked to discuss the steps ARDOT or other organizations should take to meet LRITP goals and objectives. Below are the comments shared by the groups:
    - Goal: Safety and Security
      - work with MPOs and state police directly on bicycle and pedestrian issues
      - develop new data-sharing memoranda of understanding
      - tie safety to roadway conditions: shoulders, surface, and so forth

- coordinate with clearing hazardous-materials crashes
- establish a Traffic Incident Management System
- consider signing and striping for senior drivers
- plan for senior transportation to critical services, such as hospitals, shopping, etc.

- Goal: Infrastructure Condition
  - focus on the four-lane grid system and the Arkansas Primary Highway Network (APHN), which is about 7,000 miles
  - consider how money should be spent on the existing system
  - consider different performance targets for the National Highway System, APHN, and other major roadway systems

- Goal: Congestion Reduction
  - increase access management for new or redeveloped businesses areas and major corridors
  - implement operational improvements
    - new technology
    - ramp metering
  - increase transportation demand management
    - coordinate strategies in urban areas
    - increase rideshare
    - provide incentives
  - emphasize communities more and through traffic less
  - connect transportation requirements and land use

- Goal: Economic Competitiveness
  - consider local land use and zoning when prioritizing investments
  - strengthen rural voice
  - better define and create a common definition of what economic development means
  - recognize that economic development is not just highways (e.g., consider community development and quality of life)
  - define local responsibility for facilities, which could include
    - decision making
    - maintenance
    - finance
  - create a statewide access management plan
  - improve and increase strategic communications between ARDOT and local jurisdictions

- Goal: Environmental Sustainability
  - don't build what you can't maintain
  - improve leadership capacity
  - communicate more effectively with customers (e.g., communicate with parents about school drop-off habits)

- foster cohesive decisions and common sense versus "check the box" (e.g., sidewalk to nowhere)
- remember that decision making often circles back to land use

▪ Goal: Multimodal Transportation System
- have form-based standards and codes
- create rails-to-trail program and repurpose to other needs
- provide good rail and road access to ports
  - o first and last mile connections
  - o not through town
- support Complete Streets, but not without a plan
- carefully consider transit issues when ARDOT develops corridor management framework
  - o assess right of way, which causes issues with logical placement of transit shelters
  - o rethink state funding formula
  - o target accessibility
- adopt a regional approach (look at the big picture)
- develop a multimodal corridor management framework
- establish and maintain strong relationships with state and federal partners
- improve communication with other modal agencies and planning partners.

- **Meeting 3 – August 25, 2016**
  – The presentation provided an overview of the public engagement results to date, information on the alternative future scenarios, a review of the performance results and the LRITP document being prepared.

  – As part of an interactive exercise, attendees provided feedback on how the performance results could be displayed as well as reviewed the plan's proposed policies and strategies and provided input. Recommendations, included:

    ▪ Adding a quality of life measure either under the Economic Competitiveness goal or the Environmental Sustainability goal.
    ▪ Revising the policies/strategies under the Environmental Sustainability goal to reflect not only identification of waterways, but protection of them.
    ▪ Under the Multimodal Transportation System goal, include language that specifically calls out that strategies/policies should be inclusive of those using mobility aides, such as wheelchairs, scooters, etc.
    ▪ Under the Safety and Security goal, clarify the resiliency objective.

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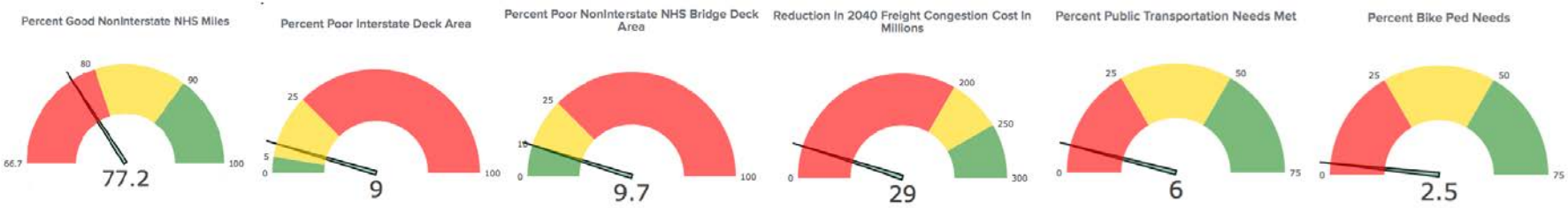
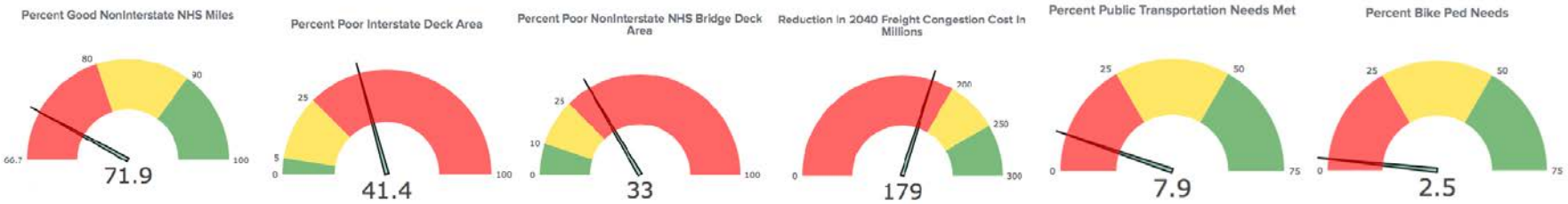
APPENDIX B: SCENARIO ANALYSIS RESULTS

Performance Results

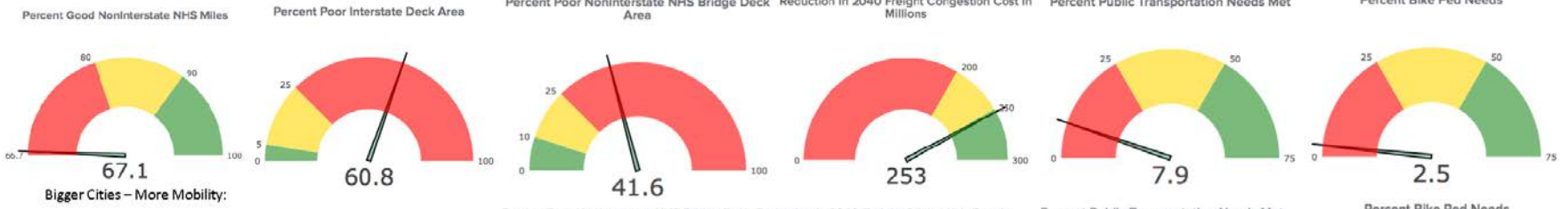
Keep it Smooth – Preserve the Investment:



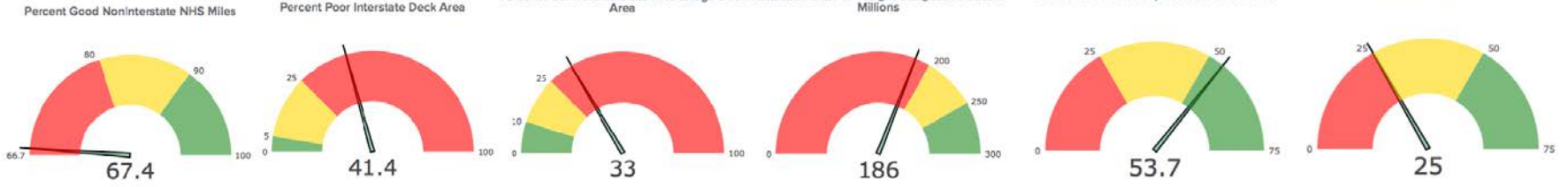
Think Locally – Trade Globally:



Connecting Communities – Forging Opportunities:



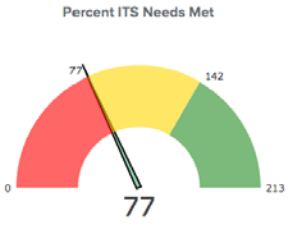
Bigger Cities – More Mobility:



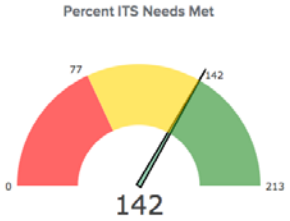
Performance Results

ITS Performance:

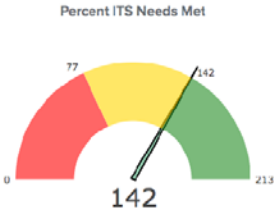
Keep it Smooth – Preserve the Investment



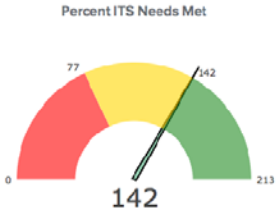
Think Locally – Trade Globally



Connecting Communities – Forging Opportunities

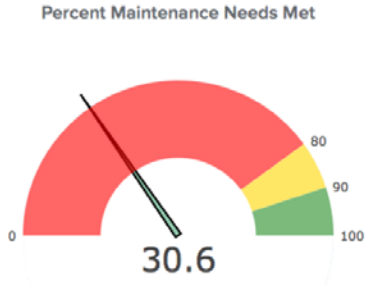


Bigger Cities – More Mobility



Safety Performance (across all scenarios):

Maintenance Performance (across all scenarios):



Acknowledgements

Arkansas Department of Transportation Staff

Partners

AARP
Arkansas Agriculture Department
Arkansas Association of Counties
Arkansas Department of Environmental of Quality
Arkansas Department of Health
Arkansas Department of Human Services
Arkansas Department of Parks and Tourism
Arkansas Economic Development Commission
Arkansas Farm Bureau
Arkansas Game and Fish Commission
Arkansas Good Roads and Transportation Council
Arkansas Municipal League
Arkansas Transit Association
Arkansas Trucking Association
American Society of Civil Engineers – Arkansas Section
Arkansas State Police
Central Arkansas Planning and Development District
City of Bentonville
Department of Arkansas Heritage
East Arkansas Planning and Development District
Federal Highway Administration – Arkansas Division
Frontier MPO
Hot Springs Area Transportation Study
Jonesboro Area Transportation Study
Little Rock Tours
Metroplan
Northwest Arkansas Economic Development District
Northwest Arkansas Regional Planning Commission
Pine Bluff Area Transportation Study
Southeast Arkansas Economic Development District
Southwest Arkansas Planning and Development District
Texarkana Urban Transportation Study
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