

# ARKANSAS HIGH-SPEED PASSENGER RAIL STUDY

TEXARKANA, AR TO MEMPHIS, TN



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News & Culture for Arkansas*

# ARKANSAS HIGH-SPEED PASSENGER RAIL STUDY

TEXARKANA, AR TO MEMPHIS, TN

## EXECUTIVE SUMMARY



Prepared by AECOM for  
Arkansas Department of Transportation  
In Cooperation with the Federal Railroad Administration and  
the Federal Highway Administration

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# INTRODUCTION

The South Central High-Speed Rail Corridor (SCHSRC), shown in Figure 1, is one of 10 high-speed rail corridors designated by the U.S. Department of Transportation. The SCHSRC, which includes a branch to Oklahoma from Texas, is intended to allow intercity passenger rail service operating at a relatively high rate of speed. The Federal Railroad Administration (FRA) defines high-speed rail as 110 to 150 miles per hour (mph). Current passenger rail speed between Dallas and Little Rock, part of Amtrak's "Texas Eagle" route, is no more than 79 mph. Between the Texarkana and Little Rock train stations, the Texas Eagle travels the 140 miles in approximately 2.9 hours, equivalent to a 48 mph average speed.

**Figure 1: South Central High-Speed Rail Corridor with Possible Extension to Memphis**



Source: 2015 Arkansas State Rail Plan



**Figure 2: Amtrak's Texas Eagle Route in Arkansas**



*Source: 2015 Arkansas State Rail Plan*

In 2008, Congress passed the Passenger Rail Investment and Improvement Act that, among other things, specifically required a feasibility study and to consider expanding the SCHSRC to include a connection to Memphis. Minute Order 2009-103 (Appendix A) authorized the Department to apply for FRA funds and to engage the service of a consulting firm to conduct the study if funds are received. Minute Order 2010-102 (Appendix A) further specified the development of a “service development plan” for the Arkansas portion of the existing SCHSRC. A service development plan is FRA’s term for a

planning study that develops a purpose and need for improvements, analyzes alternatives, and determines feasibility by examining impacts, costs, and projected ridership. The portion of the SCHSRC in Arkansas operates less than high-speed as defined by FRA. Therefore, a service development plan is required to determine the need and feasibility of improvements.

## **PURPOSE AND NEED**

To determine if high-speed passenger rail service is needed, a review of existing and projected future population, employment, and travel was conducted.

The population and employment within the Little Rock and Memphis metropolitan statistical areas have increased in recent years. The population of these two areas has grown 15 percent and nine percent, respectively, from 2000 to 2010. Likewise, from 2000 to 2010, the employment in these two areas has grown 10 percent and seven percent, respectively. The growth in population and employment is expected to continue through 2040.

To estimate future population and employment that may impact travel between Little Rock and Memphis, the Memphis Metropolitan Planning Organization's 2040 Metropolitan Transportation Plan (MTP) and the Arkansas Statewide Travel Demand Model (ARTDM), which contains population and employment forecasts statewide, were reviewed. Population in these areas is expected to grow 30 to 40 percent while employment is expected to grow over 50 percent by 2040.

Traffic along Interstate 30 between Texarkana and Little Rock, and Interstate 40 between North Little Rock and West Memphis, has also grown in recent years, showing an 11 percent increase in travel between these areas (see Table 1). Based on the

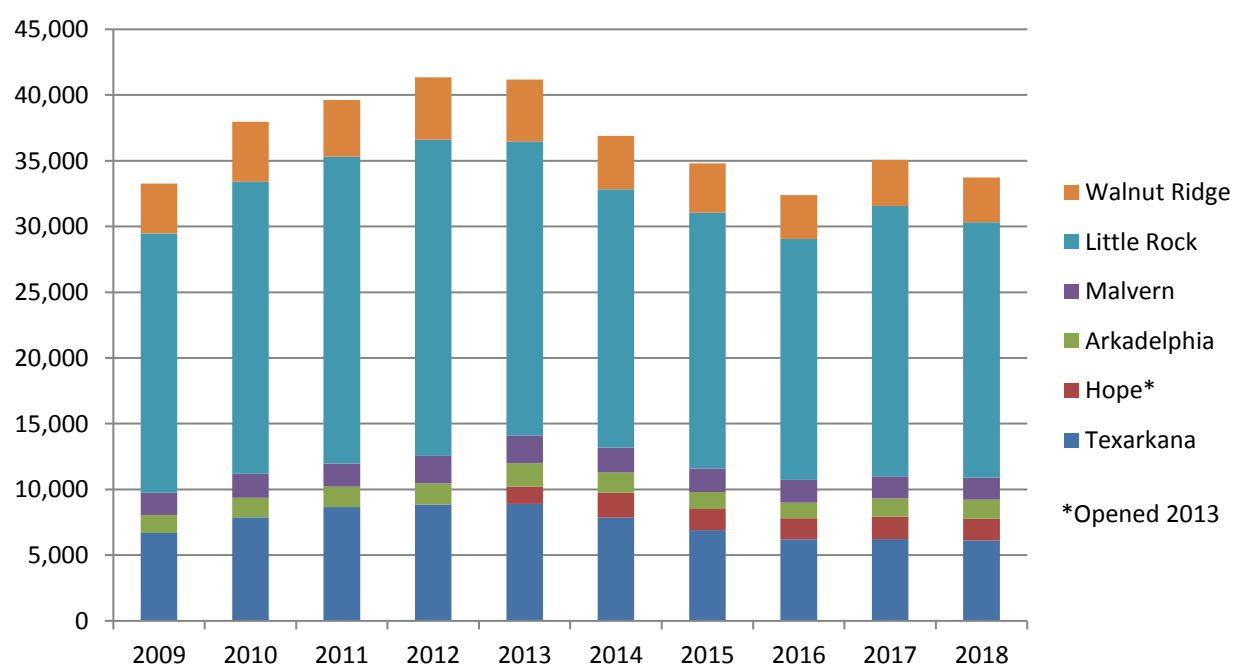
ARTDM, traffic is expected to continue growing, with an expected increase between 21 to 23 percent in these two corridors by 2040.

**Table 1: Historic Traffic Growth - Interstate 30 and Interstate 40**

Corridor	Average Daily Traffic		
	2010	2018	Percent Change
Interstate 30: Texarkana to Little Rock (Saline County; Traffic Count Station 620202)	57,000	63,000	11%
Interstate 40: North Little Rock to West Memphis (Crittenden County; Traffic Count Station 180026)	35,000	39,000	11%

Despite the documented increase in highway travel, ridership along the Texas Eagle has decreased in recent years, mirroring a nationwide trend of travel by rail becoming less favorable than travel by automobile. As shown in Figure 3, arrivals and departures at Arkansas train stations along the Texas Eagle have decreased the last six years. The most recent annual data, Federal Fiscal Year 2018, reports 33,736 arrivals and departures at Texas Eagle stations in Arkansas, or approximately 92 passengers per day.

**Figure 3: Amtrak Arrivals and Departures in Arkansas (2009-2018)**



Scheduled stops at the Arkansas Amtrak stations are during overnight hours, which are inconvenient but necessary to reach larger cities on the route such as Dallas, St. Louis, and Chicago. Passenger rail travel between Texarkana and Little Rock is slower than driving by automobile. The travel time between Texarkana and Little Rock during the off-peak is approximately two hours by automobile versus nearly three hours by the Texas Eagle (see Table 2).

**Table 2: Travel Time between Texarkana and Little Rock**

Route	Approximate Travel Time (Average Speed)*		
	By Train	By Automobile	Difference
Texarkana – Little Rock (approximately 140 miles)	2.9 hours (48 mph)	2.1 hours (67 mph)	28%
* Based on Amtrak information and posted speed limits			

In 2018, Amtrak reported an overall on-time performance for 73 percent of its movements. When there was delay, nearly 60 percent of the delay was attributed to conflict with host railroad operations<sup>1</sup>. In Arkansas, all of Amtrak operations are on non-Amtrak owned railways.

In summary, there is a growing demand for travel along the Interstate 30 and Interstate 40 corridors. The current passenger rail service between Texarkana and Little Rock, part of the Amtrak Texas Eagle route, is slow, inconvenient, and relatively unreliable. There currently is no passenger rail service between Little Rock and Memphis.

<sup>1</sup> <https://www.bts.gov/content/amtrak-time-performance-trends-and-hours-delay-cause>

## ALTERNATIVES ANALYSIS

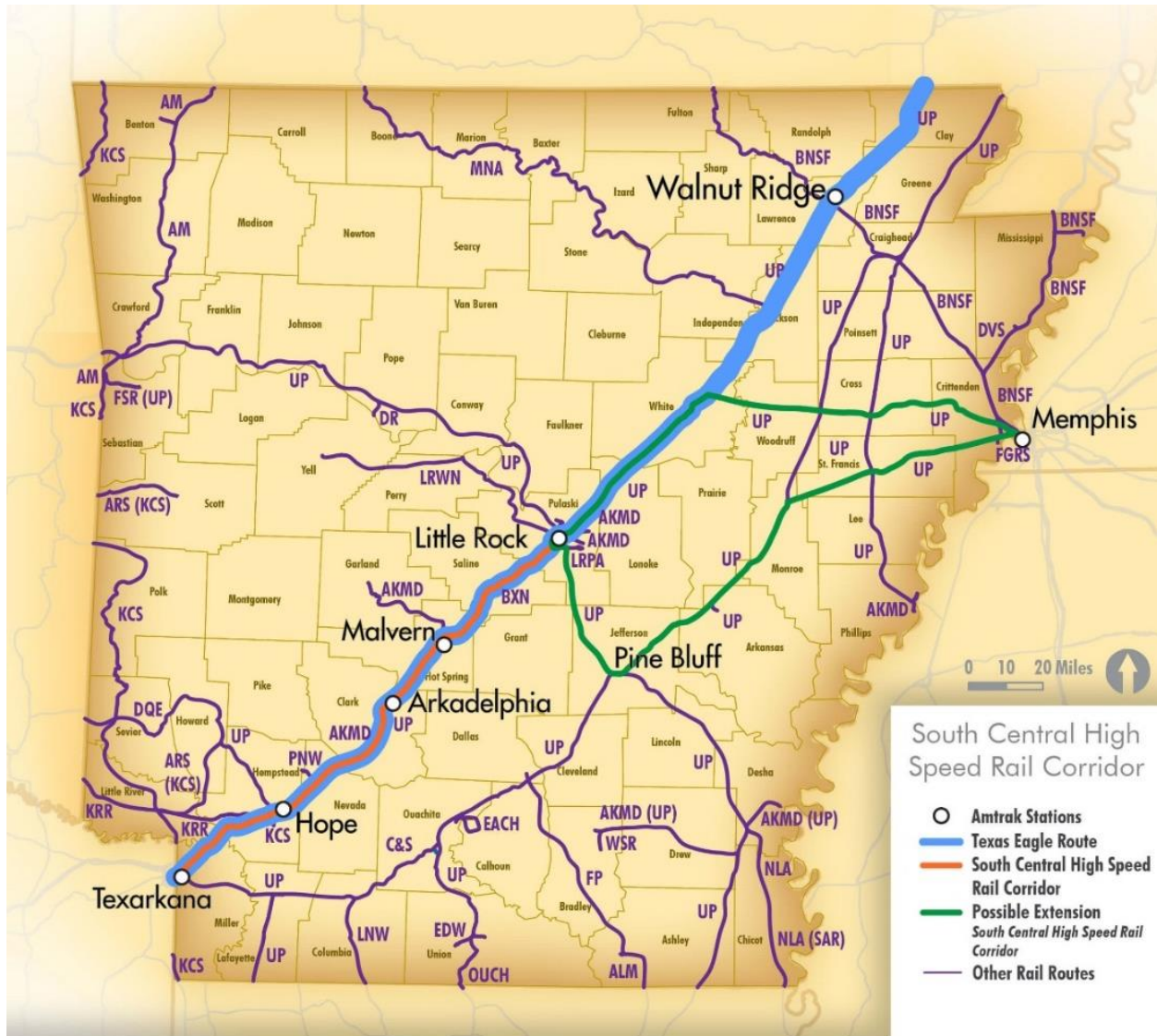
The forecast benefits of upgraded passenger rail travel were compared to estimated costs to determine the feasibility of high-speed passenger rail travel along an upgraded existing rail line used by Texas Eagle between Texarkana and Little Rock and an upgraded existing rail line between Little Rock and Memphis.

As shown in Figure 4, there are two existing rail lines that connect Little Rock and Memphis, both of which are owned and operated by the Union Pacific Railroad. The southern route (approximately 190 miles), which travels through Pine Bluff, was eliminated early in the study process from further consideration due to a 20 percent longer travel time, 25 percent less in ridership, 50 percent more at-grade crossings, and higher estimated capital costs.

The northern route (approximately 149 miles) between Little Rock and Memphis (SCHSRC Extension), as well as the existing route between Texarkana and Little Rock (existing SCHSRC), was evaluated under two service improvement alternatives. Service Alternative 1 upgrades the rail lines to allow a maximum speed of 79 mph, while Service Alternative 2 upgrades the rail lines to allow a maximum speed of 110 mph. Both alternatives would provide two new daily round trips between Dallas and Memphis, as well as construction of side tracks to allow passing of freight trains. Service Alternative 2 requires significantly more track replacements and upgrades compared to Service Alternative 1. See Table 3 for a comparison of the two improvement alternatives.



**Figure 4: Alternative Analysis Region with Existing and Potential Passenger Rail Service in Arkansas**



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	Fordeyce & Princeton Railroad	PNW	Prescott & Northwestern Railroad
BNX	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: 2015 Arkansas State Rail Plan

**Table 3: Service Alternatives Comparison**

	No-Build	Service Alternative 1 (79 mph)	Service Alternative 2 (110 mph)
<b>Estimated Travel Times</b>			
Texarkana – Little Rock	2.9 hours	2.4 hours	2.2 hours
Little Rock – Memphis	NA	2.9 hours	2.6 hours
<b>Forecasted Annual Ridership and Revenue (2040)</b>			
Arrivals and Departures	NA	89,000	130,000
Ticket Revenue	NA	\$4.2 million	\$6.2 million
<b>Cost Estimates (2016 dollars)</b>			
Capital	NA	\$171 million	\$402 million
Annual Operation & Maintenance	NA	\$26.7 million	\$37.2 million

Ridership estimates were developed based on forecast traffic volumes from the ARTDM. Consideration was made for vehicle occupancy and trip and vehicle type (commercial, long-haul freight, passenger, etc.) to determine which trips could feasibly be diverted from the roadway to the railway.

Forecasted ticket revenue was based on the number of anticipated passenger rail trips developed in the previous step, multiplied by the cost of a typical Texas Eagle ticket. Capital costs include improvements such as additional side tracks to allow passing, geometric improvements at multiple curves, crossing upgrades, and bridge improvements. Most of these improvements are located between Little Rock and Memphis. Operation and maintenance costs, including train, track, station, and administrative costs, were estimated based on similar high-speed rail operations in the United States.

Service Alternatives 1 and 2 bring the passenger rail travel times closer to that of automobile travel. While the analyses of the alternatives considered two daily round trips between Little Rock and Memphis, there is no indication of any service time adjustments for the existing Arkansas Amtrak stations, resulting in a mixed impact to

potential passenger rail service in Arkansas. Other outstanding needs are related to the reliability of departure and arrival times with passenger rail service remaining on non-Amtrak owned railways.

Additionally, there are other improvements outside the scope of the study that would be required, resulting in costs that are not reflected in Table 3. These improvements include track upgrades between Texarkana and Dallas, station upgrades, new grade separations, and other necessary railroad equipment and facilities.

## FINDINGS

The creation of a high-speed passenger rail service through Arkansas could provide a means of travel between Texarkana, Little Rock, and Memphis comparable to automobile travel. However, even at a top speed of 110 mph, high-speed passenger rail service would only draw approximately 130,000 passengers per year, or approximately 356 passengers per day, by 2040. This figure equates to about one percent of current traffic on Interstate 30 between Texarkana and Little Rock, and Interstate 40 between Little Rock and Memphis. In both cases, this is a negligible impact.

The forecast ticket revenue for high-speed rail would cover approximately 16 to 17 percent of the estimated operation and maintenance costs. The capital costs, ranging from \$171 million to \$402 million, far outweigh the benefits. Without a dedicated funding source, creating a high-speed passenger rail service from Texarkana through Little Rock to Memphis is cost prohibitive at this time.

# APPENDIX A

ARKANSAS STATE HIGHWAY COMMISSION

## MINUTE ORDER

District: Statewide

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County: Statewide

Category: Miscellaneous

**WHEREAS**, the U.S. Department of Transportation has a national vision for high-speed and intercity rail that includes ensuring safe and efficient transportation choices, building a foundation for economic competitiveness, promoting energy efficiency, enhancing environmental quality and supporting interconnected, livable communities; and

**WHEREAS**, in Arkansas there is a high-speed passenger rail corridor from Little Rock to Texarkana designated as the South Central High-Speed Rail Corridor; and

**WHEREAS**, the Passenger Rail Investment and Improvement Act of 2008 required a feasibility study to consider extending high-speed passenger rail service from Little Rock to Memphis; and

**WHEREAS**, the Federal Railroad Administration (FRA) will conduct the feasibility study; and


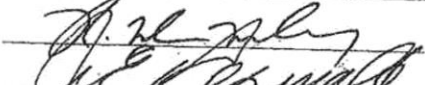

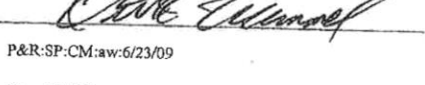
**WHEREAS**, the FRA is accepting applications for funding under the High-Speed Intercity Passenger Rail Program established by the American Recovery and Reinvestment Act of 2009; and

**WHEREAS**, funding under this program is available for planning activities.

**NOW THEREFORE**, the Director is authorized to apply for funds for appropriate studies in the Texarkana to Memphis corridor.

**FURTHERMORE**, if funds are received, the Director is authorized to take the necessary actions to engage the services of a consulting firm to conduct the study, which should include the impacts of high-speed rail on Arkansas' highway system.

Approved:

 Chairman  
 Vice-Chairman  
 Member  
 Member

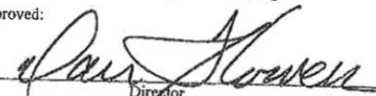
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Form 19-456  
Rev. 11/02/2005

Submitted By:

 Assistant Chief Engineer - Planning

Approved:

 Director  
Minute Order No. **2009 103**  
Date Passed **JUL 8 2009**



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## ARKANSAS STATE HIGHWAY COMMISSION

### MINUTE ORDER

District: Statewide  
County: Statewide  
Category: Miscellaneous

Page 1 of 1 Page

**WHEREAS**, the Fiscal Year 2005 Consolidated Appropriations included Next Generation High-Speed Rail program funds in the amount of \$396,800 for a Memphis Region High-Speed Rail Study; and

**WHEREAS**, the Department has coordinated with the Federal Railroad Administration to determine that these funds could be used to study the feasibility of extending the South Central High-Speed Rail Corridor from Little Rock to Memphis and to develop a study of needed improvements to the Corridor from Little Rock to Texarkana; and

**WHEREAS**, these funds require an equal amount of matching funds.

**NOW THEREFORE**, the Director is authorized to enter into the necessary agreements with the Federal Railroad Administration and any other states as appropriate to conduct the feasibility study for extending high-speed intercity passenger rail service from Little Rock to Memphis and to develop a service development plan from Little Rock to Texarkana.

**FURTHERMORE**, the Director is authorized to take the necessary actions to engage the services of a consulting firm to conduct the feasibility study and to develop the service development plan, which should include the impacts of high-speed rail on Arkansas' highway system.

Approved: Carl S. R. J. Chairman  
John M. [Signature] Vice-Chairman  
[Signature] Member  
[Signature] Member  
[Signature] Member

P&R-SP:PS:7-6-10

Form 19-456  
Rev. 05/11/2010

Submitted By: Scott D. Bennett  
Assistant Chief Engineer - Planning  
Approved: Alan [Signature] Director  
Minute Order No. 2010 10  
Date Passed JUL 13 2010





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## TEXARKANA, AR TO MEMPHIS, TN