

# Kansas City-Wichita-Oklahoma City-Fort Worth Corridor Passenger Rail Service Development Plan



Prepared for:



*With the cooperation and assistance from:*

*Texas Department of Transportation*

*Missouri Department of Transportation*

*BNSF Railway Company*

*AMTRAK*

*Federal Railroad Administration*



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## Executive Summary

### Purpose

The corridor between Kansas City, MO and Fort Worth, TX passes through the heart of a region that has experienced significant and sustained growth over the past three decades. The region has long been associated with agriculture, and retains its roots in the fertile Great Plains, but is also becoming a region known for energy production, manufacturing, and higher education. The cities along the corridor are centers of commerce and finance for the central and south central plains. To facilitate further economic development opportunities and growth, the states of Kansas and Oklahoma, in cooperation with Texas and Missouri, have embarked on the initial stages of examining the potential for expanding passenger rail service from Kansas City to Fort Worth.

This Service Development Plan (SDP) is a document stipulated by the Federal Railroad Administration (FRA) and is required for any state DOT applying for federal assistance for state supported passenger rail capital projects. The SDP and environmental clearance, under the National Environmental Protection Act (NEPA), are prerequisites to receiving federal project funding. Of course, funding is dependent on availability of federal passenger rail capital projects funds, and that an application has been submitted and approved by the federal agency administering the program. In the case of passenger rail capital projects, the agency would be the Federal Railroad Administration (FRA).

At the present time, the states of Oklahoma and Texas co-sponsor state supported daily rail passenger service between Oklahoma City and Fort Worth, the *Heartland Flyer*. The train travels southbound from Oklahoma City in the morning hours and returns to Oklahoma City in the evening, with an afternoon layover in Fort Worth. The schedule facilitates a connection with both the eastbound and westbound sections of Amtrak's *Texas Eagle*, operating between Chicago and San Antonio. Three days per week, the *Texas Eagle* has through cars to Los Angeles.

### Proposed Passenger Rail Service

The state supported passenger rail project under consideration connects Kansas City, MO with Fort Worth, TX using conventional passenger rail equipment operating at a top speed of 79 MPH. Other key cities served along the route are Lawrence, KS; Topeka, KS; Wichita, KS; and Oklahoma City, OK. Several smaller cities and towns also are served. The proposed services would operate under agreement with, and on tracks owned by the BNSF Railway Company.

Two options for service are evaluated in this SDP. The first is overnight service that extends the existing *Heartland Flyer* north to Newton, KS where it connects with Amtrak's *Southwest Chief*

(*Heartland Flyer Extension*).<sup>1</sup> The second option is standalone daytime service between Kansas City and Fort Worth via Wichita and Oklahoma City (*KC-OKC-FW Daytime Service*).<sup>2</sup> The daytime service would provide a second daily train between Oklahoma City and Fort Worth in each direction. Complete descriptions of the services can be found in Section 5.3 and estimates of ridership and revenues in Section 6.

In addition to considering the options separately, the plan also presents a combined services option. The extension of the *Heartland Flyer* would offer a convenient connection to both the westbound and eastbound sections of Amtrak's *Southwest Chief* at Newton. The *Southwest Chief* operates daily between Chicago and Los Angeles via Kansas City. The existing *Heartland Flyer* schedule would remain with the train turning around at Newton instead of its current overnight layover at Oklahoma City. The transfers at Newton would occur in the very early morning hours (See Figure 5 for timetable).

The second service proposed would depart both Kansas City and Fort Worth early in the morning, arriving at the opposite ends in the evening. The daytime train does not connect with other national Amtrak trains but presents a convenient schedule for regional travelers (See Figure 6 for timetable).

### **Service Development Process**

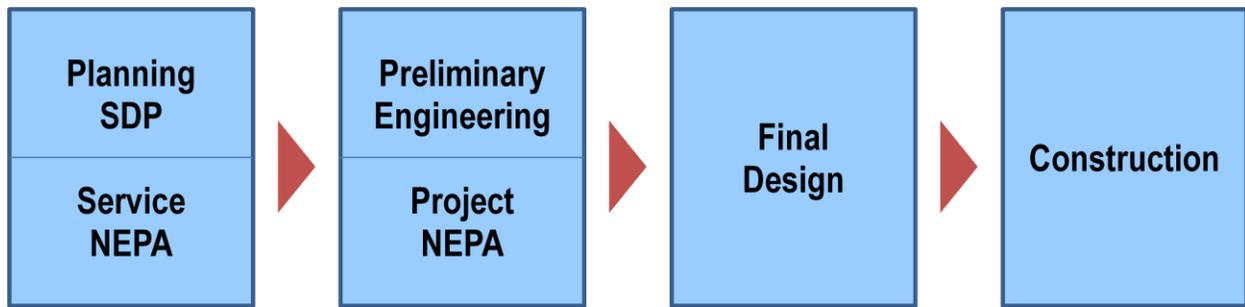
In 2010, Amtrak conducted a feasibility study on the potential for establishing state supported passenger service along the corridor. This study identified four alternative approaches to the service development. This plan examines two of those approaches in detail.

The Federal Railroad Administration has defined the project development process illustrated below. This SDP is part of the first step in the process. Following completion of the SDP, a Service-Level environmental document can be prepared. In this case where all of the service will be located on existing railroad right-of-way, an Environmental Assessment, rather than an Environmental Impact Statement, may suffice. The FRA has recommended that the Service- and Project-level environmental documents be combined into a single effort for the proposed services addressed in this SDP. That being the case, the next step could include Preliminary Engineering and the Project NEPA analysis.

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<sup>1</sup> Feasibility Report of Proposed Amtrak Service Kansas City, Missouri – Oklahoma City, Oklahoma to Fort Worth, Texas Alternative 1.

<sup>2</sup> Feasibility Report of Proposed Amtrak Service Kansas City, Missouri – Oklahoma City, Oklahoma to Fort Worth, Texas Alternative 3.



### **Ridership**

The Oklahoma City – Fort Worth *Heartland Flyer* has experienced steady growth in ridership, setting a new ridership record in 2010 in excess of 81,500 passengers. Forecasts prepared by the Amtrak/AECOM ridership model in 2011 projected ridership for the *Heartland Flyer Extension* northward to Newton, KS with the connection with the *Southwest Chief* of 200,500 annually. This includes ridership on the existing Oklahoma City-Fort Worth segment (See Tables 5 and 6).

The annual ridership projection for the Kansas City-Oklahoma City-Fort Worth daytime train is 270,500 (See Tables 5 and 7).

### **Capital Investment**

The BNSF rail line serving the route is a vital north-south freight route, connecting Mexico and the Gulf Coast ports to the industrial Midwest. BNSF is aggressively marketing service in this corridor, and with the active intermodal freight operation at Alliance, TX and a new intermodal yard coming on line at Edgerton, KS. Freight traffic in this corridor will continue to grow into the foreseeable future. Part of the route is also on BNSF's main Transcon Route running from southern California through Kansas City and onto Chicago.

In this high traffic density environment, certain capital infrastructure improvements to the track structure would be required to maintain the flow of freight traffic and protect the on-time performance of the proposed passenger services. Additionally, modifications to the highway grade crossing protection system would be required to account for the higher operating speeds of passenger trains. The improvements would provide drivers with adequate warning time of an approaching passenger train. Details on capital improvements are found in Tables 9, 10 and 11.

**Table i – Capital Improvements**

Type	Location	Service		
		Heartland Flyer Extension	KC-OKC-FW Daytime Service	Combined Services
DT 4.5 mi	Peabody-Homer		✓	✓
DT 4.5 mi	Newton-Walton		✓	✓
DT 2.5 mi	Newton-McGraw	✓	✓	✓
DT 4.0 mi	Mulvane-Bender	✓		✓
Sx2 4.5 mi	Arkansas City-Newkirk	✓	✓	✓
DT 4.5 mi	Otoe-Red Rock		✓	✓
DT 4.0 mi	OKC-Britton	✓	✓	✓
DT 7.9 mi	Thackerville-Marietta		✓	✓
Sx1 2.5 mi	Krum		✓	✓
DT 5.0 mi	Justin-Ponder		✓	✓
DT 4.4 mi	Fort Worth-Alliance		✓	✓
Grade Crossing Improvements		✓	✓	✓
Newton Layover Facility		✓		✓
Rolling Stock – 1 Standard Coach		✓		✓
Rolling Stock – 2 Trainsets			✓	✓
<b>TOTAL CAPITAL COST w/ Contingencies and Soft Costs</b>		<b>\$136.5M</b>	<b>\$436.2M</b>	<b>\$475.0M</b>

- DT – Double Track
- S - Siding

Train equipment used for the existing *Heartland Flyer* would serve the needs of the extended service to Newton. The Kansas City-Oklahoma City-Fort Worth daytime service would require two new trainsets. In addition to the siding and double track sections, some short service tracks would also need to be installed to hold and service the trains at their terminals.

Development and operation of station facilities is left to the local communities, as is the normal practice in the case of Amtrak services. The station acts as the ‘front door’ to a community and the station becomes a matter of community pride. During the service development, the states would work with the local communities to assure an adequate facility is provided for the rail passengers. It would be the responsibility of the local communities to fund station improvements and operating costs.

Equipment cost for the Heartland Flyer Extension is estimated to be \$4 million. The equipment cost for the KC-OKC-FTW service is estimated to be \$68 million. (See Table 12 for equipment cost details).

**Table ii -Financial Estimates (\$millions)**

	<b>Annual Operating Cost</b> Incremental over existing <i>Heartland Flyer</i>	<b>Annual Revenues</b> Incremental over existing <i>Heartland Flyer</i>	<b>Capital Cost</b> Includes infrastructure and rolling stock	<b>Benefit/Cost Ratio</b> Based on incremental costs and benefits Contingency: 30%/15%
<b><i>Heartland Flyer Extension</i></b>	<b>\$4.4</b>	<b>\$3.0</b>	<b>\$136.5</b>	<b>0.88/0.93</b>
<b><i>KC-OKC-FW Daytime Service</i></b>	<b>\$10.0</b>	<b>\$9.5</b>	<b>\$436.2</b>	<b>0.61/0.64</b>
<b><i>Combined Services</i></b>	<b>\$13.7</b>	<b>\$12.5</b>	<b>\$475.0</b>	<b>0.83/0.87</b>

**Analysis of Benefits**

Benefits to both travelers and the public were analyzed using the Benefit/Cost Analysis (BCA) method and guidelines prepared and required by the FRA. This analysis results in a ratio that is the present value of the allowed benefits divided by the present value of capital and operating costs. The result of this analysis is the ratio of benefits to the costs of the service.

Under the FRA-defined BCA, benefits considered are direct benefits to the passengers such as time savings and improved reliability, vehicle cost savings and productivity benefits. Benefits to the general public considered are reductions in automobile emissions and noise pollution, improved safety, and a reduction in the economic costs of imported oil. The introduction of a new travel mode will induce a certain number or persons to make a trip that otherwise would not have been made. Benefits from these induced trips are also included.

Not all monetizable benefits are considered under the FRA guidelines. Travel time differences are disallowed. Also not considered are land use changes or land value changes, or economic productivity not directed attributed to the passengers, effects of construction-related delays, or the value of fares.

Not all monetizable benefits are considered under the FRA guidelines. The result is a conservative Benefit/Cost Ratio (B/C). Benefits derived from potential economic development may arise, particularly around selected stations and from some additional visitor spending, but are not included as such impacts are likely to be small, are not readily predictable, or can (as in the case of visitor spending) be regarded as transfers from one location to another.

Benefits derived from economic development around station are also disallowed. Economic development is not considered because: 1) It is difficult to predict, 2) It can constitute double counting of benefits, and 3) It may not be totally attributed to the new transport mode.

The restrictions in FRA's BCA result in a very conservative Benefit/Cost Ratio (B/C). It is important to note that, at this planning level analysis, inputs such as ridership and even cost are subject to change once more detailed analysis is complete, therefore the BC ratios, while being the best information available at this time, should only be considered to be approximate values.

### **Schedule**

The extended service to Newton (*Heartland Flyer Extension*) is estimated to require six years to implement, including environmental reviews, preliminary engineering, construction and commissioning. The development of the *KC-OKC-FW Daytime Service* or the long term possibility of *Combined Services* is expected to approach seven years from the start of the environmental studies.

Several elements associated with potential project implementation are subject to great variation in time to complete. Environmental reviews are the element that can present the most variability, taking from one year under optimal conditions to as many as five years, depending on environmental difficulties uncovered during the process. The ordering and delivering of train equipment also presents great variability. The American equipment industry does not have standing orders for passenger equipment and must gear up when orders are made. The concept of piggybacking small orders, such as would be required for these services, onto larger orders can result in very significant savings.

## **1. Introduction**

A Service Development Plan (SDP) is the first in a series of steps to be eligible to apply for federal funding for expanding existing or establishing new state-supported passenger rail service. It is mandated by the Federal Railroad Administration (FRA), which also has stipulated its content.

This SDP documents the rationale for proposed state-supported service, describes the operation, identifies the required infrastructure improvements to accommodate the proposed expansion of state-supported passenger service and their estimated costs, and presents the estimated ridership and revenues for both a new and expanded passenger rail service in the Kansas City, Wichita, Oklahoma City, and Fort Worth corridor. The SDP is a planning level document that provides the State of Kansas, and its partner states, Oklahoma, Texas, and Missouri, as well as the Federal Railroad Administration, with the necessary information to assess the utility of establishing the proposed passenger rail transportation services. In addition, the SDP provides planning-level information to develop the scope of subsequent environmental reviews, a prerequisite for a federal action such as the provision of funding.

Over the last two years, the Kansas Department of Transportation (KDOT), at the request of numerous legislators, public officials, and private citizens, began evaluating the potential for expansion of passenger rail service in the Kansas City to Fort Worth corridor. The State of Oklahoma, through its Department of Transportation (ODOT), has joined Kansas for this evaluation. The States of Missouri and Texas have also cooperated in the effort. The assessment has focused on reestablishment of north-south service connecting stations in Kansas with Oklahoma City, OK, Fort Worth, TX, and Kansas City, MO.

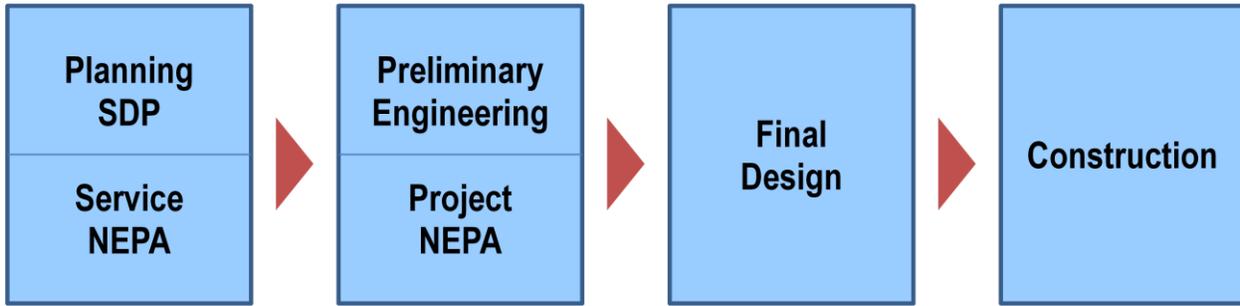
The SDP for the potential service expansion refines the ridership and revenue forecasts, and the capital and operating cost estimates from the March 2010 Amtrak Feasibility Study. The SDP describes the necessary steps, requirements, and costs involved in expanding passenger rail service. Additionally, it summarizes the existing conditions and operations along the corridor, describes connectivity with surrounding communities, provides a rationale for the service, and summarizes the challenges, opportunities, and regional effects of corridor development.

### **1.1 FRA Passenger Rail Development Process**

The Federal Railroad Administration has defined certain steps to implement new state-supported passenger rail service. The process starts with the development of a Service Development Plan (SDP). This report has been prepared to satisfy the SDP requirement.

Figure 1 shows the elements of the FRA Passenger Development Process.

**Figure 1: FRA Passenger Rail Development Process Elements**



A possible next step in the passenger rail development process following the development of the SDP is the preparation of a Service Level Environmental Assessment as defined by the National Environmental Policy Act (NEPA). The Service NEPA is an environmental review of the project as a system. It evaluates the affect of alternative routes and locations, the service being provided, technologies being employed, ridership levels, and any significant infrastructure components on the environment. In many instances, (the proposed service addressed by this plan being one), the FRA has encouraged combining the Service NEPA and Project NEPA analyses to reduce development costs and time. The Project NEPA is a more detailed examination of the environmental impacts at the infrastructure project level. Preliminary engineering is required to develop the information necessary for the Project NEPA. Final design takes place following the preliminary engineering and approval of the Project NEPA, after which construction can begin.

The entire sequence of activities required to fulfill FRA’s and EPA’s requirements, and to complete preliminary engineering, final design and construction typically can take seven to eight years depending upon the size and complexity of the project. It will typically take three to four years before the project is to the point at which final design can begin with another two years before the project is shovel-ready. Once the preliminary engineering and environmental work is complete, at least two more years would likely be required for track construction and systems installation and testing. Acquisition of new rolling stock is also a time-consuming process depending on the availability of new or used locomotives and passenger cars.

## **1.2 History of Passenger Rail in the Corridor**

Kansas and Oklahoma have a rich railroad history that has included extensive passenger service connecting the states to major population centers throughout the U.S. Throughout the years, these services have provided citizens with economic development opportunities that come from an effective and efficient multimodal transportation system. The system has provided mobility for people and goods within the states as well as connectivity to surrounding regional,

national, and international markets. However, the network of passenger service has been greatly reduced since the 1950s. The potential for expanded passenger rail service provides an opportunity for sustaining and continuing economic growth opportunities, providing an additional transportation option and serving the needs of people in local communities along the corridor.

Amtrak<sup>3</sup>, and prior to its creation, the former Atchison, Topeka, and Santa Fe Railway (ATSF)<sup>4</sup>, provided passenger rail service in the Kansas City-Wichita-Oklahoma City-Fort Worth Corridor until 1979. Initially branded as the *Texas Chief*, then as the *Lone Star*, the route also connected this corridor with Chicago and Houston. In the late 1970s, Congress recommended that Amtrak develop a plan to reduce operating costs. As a result, in October 1979, the *Lone Star* service, along with other routes across the nation, was discontinued. The line segment between Kansas City, MO and Newton, KS continues to be a part of the route of Amtrak's *Southwest Chief*. Amtrak maintains one daily (eastbound and westbound), long distance round trip through Kansas via the *Southwest Chief* between Chicago, Kansas City and Los Angeles. Stations in Kansas include Topeka, Lawrence, Newton, Hutchinson, Dodge City, and Garden City. However, service to Kansas stations is currently scheduled for late night/early morning and is not attractive to many travelers, especially for shorter intrastate trips.

It was not until just prior to the turn of the 21st century that portions of the previous *Lone Star* service were reestablished. In June 1999, the State of Oklahoma, assisted by a grant from the Federal 1997 Taxpayer Relief Fund, provided funding to begin the *Heartland Flyer* service, establishing passenger operations between Oklahoma City, OK and Fort Worth, TX<sup>5</sup>. Service along this corridor continues with joint funding by Oklahoma and Texas to provide the necessary operating subsidies.

### **1.3 Discussions Related to Potential Rerouting of the *Southwest Chief***

The segment of the *Southwest Chief* route west of Newton through western Kansas, Colorado, and New Mexico has come up for discussion in recent years due to the relative poor condition of the track in western Kansas and eastern Colorado. There is little freight traffic on these tracks so there is not an incentive for the host railroad (BNSF) to maintain this rail to a standard that would support passenger rail speeds. While Amtrak has stated that it wants to continue to route the *Southwest Chief* through western Kansas, it may eventually become financially

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<sup>3</sup> Amtrak, formally named the National Railroad Passenger Corporation, was created by congress in the Rail Passenger Service Act of 1970. It is owned jointly by the federal government and the various railroad companies.

<sup>4</sup> ATSF, commonly known as the 'Santa Fe', merged with the Burlington Northern Railway to form the present day BNSF Railway Company.

<sup>5</sup> Section 403(b) of the Passenger Rail Service Act of 1970 provides a mechanism for a state, regional or local entity to establish a passenger rail service using local funds but benefiting from the operating authorities granted to Amtrak under the law.

infeasible to continue on this route. If that were to occur, it is likely that the *Chief* would be rerouted south at Newton through Wichita and then west to Amarillo, Texas. Currently, any discussions regarding this topic have only been exploratory and no decision to reroute the *Chief* has been made. If a rerouting as described were to occur, there would not be a negative impact to the potential services that are the subject of this SDP. However, a rerouting of the *Southwest Chief* would leave areas in Kansas west of Newton without passenger rail service. No implementation schedule or even the inevitability of the reroute has been discussed.

## 1.4 Speed of Operation

The term “High Speed Rail” or HSR has been widely used but the definitions of HSR vary and are not well understood. Internationally, HSR is generally regarded as the class of passenger trains operating at speeds higher than 270 km/Hr (170 MPH). These operations include the Shinkansen in Japan, the TGV in France, the ICE in Germany, and the new network under development in China. HSR represents advanced steel-wheel-on-steel-rail technology, generally on new exclusive rights-of-way. Some of these trains operate in regular passenger service at speeds up to 220 MPH.

The slow development of HSR in the United States, and America’s unique relationship to its private railroad industry has led to a wide range of definitions for high-speed rail. As the result of federal safety regulations, conventional passenger trains are restricted to 79 MPH when operating over the tracks of any railroad unless special (and expensive) adjuncts have been added to the train control signal system. In the United States, these operations are not considered high-speed rail.

While Amtrak’s Northeast Corridor (NEC) has been called HSR, only some 30 miles allow speeds of 135 mph, and only 19 miles is suitable for the 150 MPH top speed of the Acela. Most of the Washington-New York-Boston route is rated for 125 MPH operations. The NEC hosts some freight traffic, and for that reason, its top speeds will be limited in the future. The Federal Railroad Administration has recently funded a project to upgrade a 30-mile portion of the NEC for 160 MPH.

The Midwest HSR Initiative includes projects with 110 MPH top speed, referred to by some as HrSR, or “higher speed rail.” Projects underway include Chicago-St. Louis and Chicago–Detroit. The routes are generally shared with freight operations. These upgrades to the freight system will also be limited in their development into true high-speed rail systems due to the high cost of grade separating the numerous at-grade road crossings.

The California High-Speed Train Project is the only US passenger rail service under development planned for the top speeds of 220 mph, connecting Los Angeles with the Bay Area including San Francisco, Oakland, and San Jose on primarily new, exclusive rights-of-way. As of the fall of

2011, California has issued draft Environmental Impact Statements for segments between Merced and Bakersfield. The initial test track section is expected to be built along these segments when a Record of Decision<sup>6</sup> is issued as early as the spring of 2012.

The SDP prepared for KDOT and ODOT considers the feasibility and cost of intercity passenger operations with a maximum speed of 79 MPH as this type of operation would provide passenger rail service without the need for the significant infrastructure investments and system changes required by higher speed operations. With the twenty-one station stops between Kansas City and Fort Worth, higher speeds would only be possible for relatively short distances and the benefits of the much higher capital investment would only be minimal savings in trip time and possibly reduced on-time performance due to increased passenger-freight interference caused by a higher differential between freight train and passenger train speeds.

The safety features alone required by FRA for higher speed passenger rail present a large escalation in overall price for any service over 79mph. Service at 80 mph or higher would require the installation of 'cab signals,' a system that displays the train control indication in the locomotive engineer's control panel. It would also require sealed corridors for public crossings, and special safety features at private crossings, which in rural areas are quite numerous. Above 110 MPH, highway grade crossings are not allowed and all at-grade road crossings would have to be grade separated. Farm crossings would have to be closed. Over 125 MPH, a higher level of rolling stock safety features are mandated, and over 150 MPH, special system-specific safety requirements must be negotiated and accepted by the Federal Railroad Administration.

In addition to the safety costs, other infrastructure costs would escalate due to the increased passenger-freight interference caused by faster passenger rail operating speeds. First, higher speed trains use a larger amount of the available rail capacity requiring greater spacing between trains to provide for safe stopping distances. Added double track and longer passing sidings would have to be installed. (At 150 MPH and higher, the passenger service would require an entirely separate rail line dedicated to its operation). More costly design of passenger rail equipment including energy-absorbing elements would also be required for 150 MPH passenger rail operations.

In short, conventional passenger rail service with speeds up to 79 MPH will economically and adequately meet the projected ridership demand without triggering numerous escalations in facility and equipment costs and will avoid the need to expand the existing privately owned freight rail infrastructure beyond the infrastructure additions noted in the SDP. While future corridor growth may someday trigger increased demand requiring the investigation of higher

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<sup>6</sup> A Record of Decision (ROD) is a federal agency's final approval of an Environmental Impact Statement. The ROD outlines the conditions and requirements to be met in implementing the project analyzed.

speed operation, the proposed service expansion does not warrant its use in the near term based on the results of the Benefit Cost Analysis and Ridership Forecast in this service development plan.

## 2. Purpose and Need

The Kansas City-Wichita-Oklahoma City-Fort Worth corridor passes through the heart of a region that has experienced significant and sustained growth over the last three decades. According to US Census data for the period from 2000 through mid-2008, the population in counties along this corridor grew from 5.9 million to 6.7 million people or 14.7 percent. By comparison, US population grew 8.5 percent over the same period. An efficient and well-maintained transportation system is critical to the economic success and long-term sustainability of the entire region.

Travel along the corridor today is predominantly by automobile on I-70, the Kansas Turnpike, and I-35. Intercity bus service exists between the major cities (see Section 4). Where intercity bus services once served many smaller towns, evolution of this business now has the buses staying close to the interstate highways with limited stops, leaving numerous locales with no service at all. While air service between Dallas/Fort Worth and Kansas City consists of fourteen daily flights, air service between other corridor locations is limited. There are only two daily flights between Kansas City and Oklahoma City in each direction. There are no direct flights between Wichita, the largest city in Kansas, and either Kansas City or Oklahoma City. Regional jet service is available between Manhattan and Dallas-Fort Worth with two daily round trips.

For these reasons, the Departments of Transportations in Kansas, as well the Missouri, Oklahoma, and Texas view renewed passenger rail service as an important travel alternative to link the numerous and growing communities along the corridor. Demonstrating the potential value of a passenger rail investment along this corridor, the existing *Heartland Flyer* service between Fort Worth and Oklahoma City is one of Amtrak's highest growth routes.

This Kansas City-Wichita-Oklahoma City-Dallas/Fort Worth corridor contains a rapidly growing population approaching 10 million. The corridor links several major population and commercial centers of the four-state region. Kansas City is located at the approximate center of the contiguous 48 states, making it a critical hub for the national highway, rail, and waterway transportation networks. Kansas City is a stop on Amtrak's *Southwest Chief* route, and is the terminus for the *River Runner*<sup>7</sup>, operating twice-daily roundtrips between Kansas City and St. Louis. Initiation of passenger rail service has the potential to meet the broad needs of the traveling public by providing a safe and cost-effective alternative that will ease the demand on other transportation modes.

The Kansas City metropolitan area, including portions in both Kansas and Missouri, currently houses nearly a dozen Fortune 1000 companies including Sprint/Nextel, Hallmark Corporation,

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<sup>7</sup> Both the *Heartland Flyer* and *River Runner* are examples of trains operating under the provisions of Section 403(b).

H&R Block, Interstate Bakeries Corporation, and Great Plains Energy. Warehousing, manufacturing, and distribution services abound in Kansas City as a result of its central location. In addition to asset-based companies in the area, Kansas City is also home to several third party logistics providers. The metropolitan area has an estimated population of around 2 million residents. According to a 2010 report from the Brookings Institute, the Kansas City area, as well as other cities in the region, suffered less during the recession of 2008 than most of its North American peers. The Kansas City region today has an unemployment rate (December 2010: 8.6 percent) that is less than the nation's average (9.1 percent).

Other key Kansas metropolitan areas along this corridor are Topeka, Lawrence, and Wichita. Wichita is the state's largest city. The combined population of these three cities and the counties in which they are located is just over 750,000 people. In December 2010, Topeka's unemployment rate was 6.6 percent while unemployment in Wichita was at 7.7 percent, and as with the Kansas City area, less than the national average.

As the seat of state government, Topeka generates a significant volume of travel between the capital and Kansas City, and between the capital and Wichita. Several major companies have operations in Topeka. These include BNSF, Payless Shoe, Frito-Lay, Goodyear, Hallmark, Hills Pet Products, Blue Cross-Blue Shield of Kansas, Westar Energy, and AT&T. Washburn University with a student body of 7,300 is also located in Topeka. Topeka has a busy general aviation airport, Forbes Field. However, there are no scheduled daily commercial flights. Forbes is frequently used by major corporations located in Topeka and others for business travel on private or charter aircraft, up to and including jet aircraft. Air travelers desiring scheduled air service must drive to Wichita or Kansas City.

Lawrence is the home of the University of Kansas with a student population of over 30,000. Haskell Indian Nations University (enrollment of 1,000) is also located in Lawrence. Besides the universities, Hallmark and the Kmart distribution center are major employers in Lawrence. Universities have long proven to be a source of riders for rail passenger operations. Both students and faculty find the train a comfortable and safe means of transportation. Depending on schedules, passenger rail can reduce the need for student-owned automobiles in densely populated university campuses and surrounding neighborhoods, many of which were not designed around accommodating large numbers of cars.

Wichita, the largest city in Kansas, is another significant economic center to be served by the proposed passenger rail operation. Major employers include Boeing, Koch Industries, Bombardier, Cessna/Beechcraft, Raytheon, Coleman Industries, and McConnell Air Force Base. Also located in Wichita are Wichita State University (14,000 students), Friends University (2,600 students), and Newman University (2,700 students).

Oklahoma City, the state capital of Oklahoma, is the largest city in Oklahoma. The City's population is estimated at 551,789 and the region's population is approximately 1.2 million. Between 2000 and mid-2008, the Oklahoma City/Norman area grew about 10 percent. Norman is home to the University of Oklahoma with a student population of 30,000. Currently, travel options to the north are limited to automobile and some intercity bus service.

Oklahoma continues to serve as headquarters for many large energy-related firms, but has also diversified its economic base. Agriculture, energy, aviation, government, military, health care, and manufacturing, are all important to the Oklahoma City economy. That diversification has served the region well; in 2008, Forbes magazine selected Oklahoma City as the most recession proof city in America.<sup>8</sup> That designation has proven to be true, with Oklahoma City ranked 20<sup>th</sup> lowest unemployment rate among the 372 Metropolitan Statistical Areas in America.<sup>9</sup> Major Companies headquartered in Oklahoma City include DEVON Energy, Chesapeake Energy, OGE Energy, Love's Travel Stops & Country Stores, and Hobby Lobby. Both AT&T and Cox Enterprises have regional headquarters in Oklahoma City.

The corridor is anchored to the south by the Dallas-Fort Worth metroplex. Dallas-Fort Worth is the fourth largest Metropolitan Statistical Area (MSA) in the United States, and the fourth fastest growing of the 25 largest areas as estimated by the U.S. Census Bureau. With an estimated 2009 population of almost 6.5 million, the Dallas-Fort Worth area is the largest metropolitan area in Texas. The Dallas-Fort Worth metroplex added more new residents in 2009 than any metropolitan region in the country. According to the Census Bureau, Rockwell County is the third fastest growing county in the U.S. and Collin County is the 13<sup>th</sup> fastest growing county in America – both are in the Dallas-Fort Worth MSA.

Over 10,000 companies are headquartered in the Dallas-Fort Worth metroplex. Twenty five of these companies are Fortune 500 companies and include: Exxon Mobil, AT&T, Fluor, AMR, Kimberly-Clark, J.C. Penney, BNSF Railway, Dean Foods, Texas Instruments, Southwest Airlines, and Energy Future Holdings. Four major colleges, Southern Methodist University, Texas Christian University, University of North Texas, and the University of Texas at Arlington, and 18 smaller four-year schools are located in the metropolitan area. The region's four-year educational institutions are attended by approximately 156,000 students.

In addition to the major economic centers, the smaller communities are also integrated into the regional economy. The strength of these ties is evidenced by the success and high ridership growth on the existing *Heartland Flyer* rail service between Fort Worth and Oklahoma City. A new passenger rail service, as any improvement in mobility, has the potential to generate economic opportunities for these communities and their business, education and tourism

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<sup>8</sup> "America's Recession-Proof Cities," Forbes, April 9, 2008

<sup>9</sup> US Department of Labor, June 2011.

sectors. The passenger rail service would offer travelers a viable alternative to the highway and air modes and would connect with existing public and private transportation systems along the corridor to transport persons to their final destination.

## 2.1 Recent History of Rail Passenger Efforts

In 2008, KDOT requested Amtrak to study options for the potential expansion of state-supported passenger rail service along a route between Kansas City, MO, Oklahoma City, OK, and Fort Worth, TX, running via Lawrence, Topeka, Newton, and Wichita. KDOT stated:

*“...the primary purpose of expanded rail passenger service would be to carry travelers along a potentially 606 mile rail corridor in Kansas, Oklahoma, and Texas that connects to the National Passenger Rail System.”*

During the 2009 session, the Kansas legislature expressed interest in expanding passenger rail service. Through concurrent resolutions, KDOT was urged to move forward with passenger rail planning in the state. In summary, the legislature used the concurrent resolutions to direct:

- KDOT to take immediate action to apply for funds provided by the American Recovery and Reinvestment Act of 2009 (ARRA) and that KDOT be enabled to prepare an application for ARRA funding.
- The State of Kansas to develop further its multi-modal transportation plan incorporating supplemental funding contingent on the findings of the Amtrak Expansion Feasibility Study.
- The State of Kansas to enhance economic development opportunities in its communities through supplemental passenger rail operations.
- KDOT to encourage Amtrak to expedite completion and delivery of the Amtrak Expansion Feasibility Study.

During the 2010 legislative session, several actions were taken in support of passenger rail service. K.S.A. Supp. 75-5089 established a passenger rail program for the state and created a passenger rail service revolving fund. However, no funds were appropriated. K.S.A. Supp. 75-5090 granted Kansas the authority to join the Midwest Interstate Passenger Rail Compact (MIPRC). The State of Kansas joined MIPRC that year.

In response to KDOT's 2008 request, Amtrak produced a Feasibility Study completed in March 2010, which evaluated four service options for potential passenger rail service between Fort Worth, Oklahoma City and Kansas City. Following the publication of the Amtrak Feasibility Study, KDOT held a series of public meetings to discuss the four alternatives. It was determined from input provided at those meetings that two of the alternatives should be studied further. The first alternative is the extension of the *Heartland Flyer* to Newton Kansas to connect with

Amtrak's *Southwest Chief*. The second is new daytime service between Kansas City and Fort Worth. Discussion of these alternatives in detail is found in Section 4.

As will be demonstrated in this SDP, improvements in passenger rail service and an investment along the corridor rail network has the potential to contribute to economic, environmental and energy conservation benefits. Additionally, there is the potential to assist in helping meet the economic growth opportunities and mobility goals of the corridor states. An investment in expanded passenger rail service would increase travel mode options, but also would provide travel options for citizens in smaller communities not currently served or under-served by intercity bus lines, and will connect with the regional and national transportation networks, with close connections to intercity bus and long-distance Amtrak trains at certain stations. A significant byproduct of improvements to the rail infrastructure for passenger service would be improved conditions for freight customers by improving delivery capacity for inbound raw materials and outbound shipments of finished products destined to regional, national, and international markets.

In parallel with the exploration of expanding passenger rail service along this corridor, and preparing this SDP, the Oklahoma DOT and Texas DOT have received FRA funding and are proceeding with planning studies for the Tulsa-Oklahoma City-Fort Worth high speed rail corridor including a potential extension to Austin, San Antonio and the border region. TxDOT is also proceeding, using federal ARRA funds, with grade crossing signal timing design and construction between Fort Worth and Oklahoma to permit increased operating speeds on the *Heartland Flyer*. Oklahoma DOT has also received FRA funding for track extension, new signals and power operated switches at the Oklahoma City station to facilitate more efficient operation of the *Heartland Flyer*. Missouri DOT has received a series of ARRA grants through FRA for final design and construction of a new bridge and grade crossing improvements for the Kansas City-St. Louis corridor where MoDOT provides state support for the Missouri *River Runner* rail passenger services. MoDOT has also received funding for preliminary engineering and environmental studies for added double track and passing sidings for the *River Runner* rail corridor.

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### 3. Rationale

This section demonstrates how potential expanded state supported passenger rail service would address the region's transportation needs in the context of the entire passenger transportation system along the corridor. It outlines the alternative travel modes, their roles in the corridor system, their capabilities, the segments of market demand each addresses, and the underserved market segments

#### 3.1 General Costs, Benefits, Risks, Impacts

Providing convenient, reliable, safe, energy-efficient, and environmentally-friendly passenger transportation is critical to meeting the growing need for travel within the region while enhancing the quality of life and economic opportunity for those who live and work along this corridor.

Connectivity, other than by highway, between the communities along the corridor is limited. Reestablishment of passenger rail service along the corridor would greatly improve connectivity, and expand transportation options for communities along the corridor, offering citizens and visitors additional transportation choices.

As an important by-product, improvements to the rail infrastructure required to establish passenger service would enhance the speed and reliability of freight service along the corridor as well. This would improve rail freight service to shippers and improve the competitiveness of rail for freight transportation.

Recent state-supported intercity passenger rail service expansion in other states such as Illinois, North Carolina, Washington, and California using existing rail lines has improved connectivity between key cities and metropolitan areas. Corridors that are well served by regional intercity rail improvements generally contain two or more metropolitan areas approaching one million person populations and are in the 100 to 600 mile length range. The results have been enhanced mobility and have led to greater economic development opportunities and vitality to communities along the routes. With 225 miles between Kansas City and Wichita, 175 miles between Wichita and Oklahoma City and 200 miles between Oklahoma City and Fort Worth, these major metropolitan areas are in that favorable range where intercity passenger rail is an effective and competitive transportation mode.

The *Heartland Flyer* is a representative example of a successful passenger rail service in the region. The *Heartland Flyer* began service in 1999. During the first full year of operation, it carried 65,529 passengers, nearly four times the ridership that had been projected. In 2008, the train transported 80,892 passengers with uninterrupted growth since startup. Following a

recession-induced ridership dip in 2009, ridership set a new record with 81,749 passengers in 2010.

Besides its success in attracting riders, the *Heartland Flyer* has also received several awards. In November 2010, the service won Amtrak's annual President's Award for Safety and Service. Also in 2010, the *Heartland Flyer* made Time Magazine's list of the "The 50 Best Inventions of 2010" for its use of a locomotive fueled by biodiesel.

Railroads are capital intensive businesses, that is investment in infrastructure and equipment is high, but recurring operating costs are low. The use of existing routes will reduce required investment. However, improvements to support reliable passenger and freight service are not insignificant.

The establishment of a new passenger service bears risks. Changing economic environments always subject rail operations, as with any fare collecting transportation service, to uncertainty. Changes in these environments can affect the cost of providing service or the revenue collected. The cost of energy and fuel has shown to have an impact on rail ridership, both positive and negative. Although, the cost of energy can be expected to increase over time, short term fluctuations have proven to move quickly either up or down. The price movements will have an influence on how travelers make their mode choice. In addition, there is the risk that ridership will not match the model predictions. The Amtrak model used to estimate ridership has been developed and calibrated through years of experience and use, and can be expected to be reasonably accurate. Rail ridership has shown a steady growth trend with minor bumps and dips over the years. Amtrak's first full year of operation in FY1972 had total ridership of 15.8M. By FY2010, it had grown to 28.7M. Ridership on Amtrak in general, and on the *Heartland Flyer* in the south central region, set records in 2010, recovering from the recession-induced slumps of the previous two years. The introduction of passenger service along the Kansas City-Wichita-Oklahoma City-Fort Worth corridor will benefit from an already established economically-connected corridor with enhanced mobility.

### **3.2 Synergies with Established Plans and Goals**

The two potential passenger rail service alternatives that are under consideration could address the corridor's transportation needs in the multi-modal passenger transportation system framework in the corridor. The proposed services are planned to complement existing transportation modes, and their roles and capabilities in the corridor. Moreover, the proposed services have the potential to meet the long-range transportation goals of the states along the Kansas City-Oklahoma City-Fort Worth corridor.

The Kansas Long-Range Transportation Plan identifies three Guiding Principles to meet the state's future transportation needs:

- **Preserve the transportation system** - In the last two decades, Kansas has upgraded its transportation network. Accomplishments include smoother roads and safer bridges, modern highways, expanded bus transit service, new facilities for bicyclists and pedestrians, improved rail freight lines and safer airports. KDOT must protect the state's investment in its transportation infrastructure.
- **Promote safer travel** - The highway fatal crash rate in Kansas is falling but is persistently higher than the national rate. Some 2,331 people lost their lives on Kansas roads in the last five years. KDOT must continue to work closely with stakeholders and the public to make state highways and local roads safer and to promote safe driving.
- **Support economic growth** - Transportation often supports economic opportunities that benefit all Kansans. Windows of opportunity, however, may open and close rapidly. If the Kansas economy is to grow, our approach to transportation must be more flexible and responsive, and we must be ready to make strategic investment choices among various transportation modes – choices that ensure wise use of limited resources.

Similarly, the Oklahoma Long-Range Intermodal Plan identifies six key goals:

- Protect our investment in transportation by seeking to establish new and/or dedicated funding mechanisms for all modal systems.
- Improve efficiency, economic vitality, and intermodal connectivity by developing a comprehensive multimodal Freight Plan.
- Promote personal travel modal choice by improving intermodal connectivity for public transportation, intercity bus, passenger rail, airline, automobile, bicycle, and walking.
- Protect the environment by promoting clean fuels and energy conservation practices within the agency and to the traveling public.
- Promote standards and guidelines in all modes that protect air quality and address climate change.
- Improve security through adoption of emergency preparedness protocols for managing natural and man-made threats to human resources, transportation capital assets, and information.

Improvements in passenger rail service and an investment in the region's rail network could produce multiple benefits that specifically address the region's transportation goals. Based upon existing conditions, it is evident that intercity travel currently relies almost exclusively on the state highway system and the private vehicle. Alternative modes of travel are limited along the study corridor, although air transportation does provide significant service for the Kansas City to Dallas-Fort Worth market. An investment in passenger rail service would increase the

options available and would improve access to additional communities not currently served by commercial intercity bus. Additionally, improvements to the rail infrastructure will also improve conditions for freight customers.

Benefits specifically include:

- **Infrastructure preservation:** Movements of people and goods share the transportation infrastructure along this corridor today. Improvements to the rail infrastructure along this corridor would enhance the carrying capacity of both passenger and freight operations. Investments could improve the reliability of rail travel along the corridor thus enhancing the attractiveness of rail transportation in the transportation market. While the shift of persons from the highway to rail will have little effect on highway maintenance demand, the improved facilities could have a positive effect on the attractiveness of freight transport on rail rather than highway, and have a positive effect on highway maintenance demand as more freight should be moved by rail rather than truck.
- **Multi-modal enhancement:** Enhancing alternative transportation options for persons in the corridor states reduces reliance on low-occupancy private vehicle travel. Convenient passenger rail service would provide an additional viable travel alternative. Additionally, network enhancements that improve speed and service reliability for passengers would also improve the reliability of rail freight movements. These improvements would enhance attractiveness of timely and cost-competitive delivery to existing and potential rail customers.
- **Safety:** By offering alternatives to driving and trucking over long distances, highway safety should improve for the traveling public in the corridor states by reducing VMT<sup>10</sup> on the roads. Rail transportation has shown to be safer than highway travel based on ton-miles for freight or person-miles traveled for passengers. Highway fatalities occur at approximately four times the rate as rail passenger fatalities based on person-miles traveled. Trucks engines release approximately 16 times the amount of hazardous emissions as rail locomotives although the ton-miles of hazardous emissions carried by the two modes are approximately equal.<sup>11</sup>
- **Economic development:** Improvements to this rail corridor would permit increased rail speeds and capacity. This enhances the viability of rail options for both intercity travelers and freight customers. In addition, the access to new destinations along the corridor, in particular Wichita, would increase accessibility and present the opportunity

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<sup>10</sup> VMT – Vehicle Miles Traveled

<sup>11</sup> “Hazmat Transportation by Rail: An Unfair Liability”, Association of American Railroads, Policy & Economics Dept., January, 2009, pp 1-2.

for greater economic activity along the corridor. The degree to which any particular town or station area benefits from the economic potential will largely depend on local government policies and entrepreneurs that take advantage of the new transportation mode. Improved mobility could potentially have a negative impact on localities by making it easy for shoppers to leave home and spend their money elsewhere. Historically, this concern has not shown to be borne out as improved mobility has an overall positive effect on economic activity.

Attendance at major league and college sports events in Kansas City, Lawrence, Oklahoma City, Norman and Dallas would likely attract riders. This effect has been seen in other rail corridors.

BNSF Railway (BNSF) has also identified this corridor as part of one of its key freight arterials, going as far as branding it as the Mid-Continent Corridor (MidCon). The MidCon is planned to connect the Gulf Coast ports and Canada through the corridor states. BNSF is optimistic that this north-south corridor will attract significant intermodal traffic. The new BNSF intermodal facility in Edgerton, KS is a key element of this plan. BNSF is planning to launch its marketing of the MidCon service within the year. The new intercity passenger service between the Fort Worth and Kansas City would share the trackage with MidCon corridor freight trains.

- **Environmental Stewardship:** KDOT has recognized in its long-range planning that it is difficult to predict how current environmental trends will affect the evolution of the Kansas transportation system. While trucks and cars emit pollutants that can harm air and water quality, they remain an essential mobility option for Kansans. However, KDOT prides itself on always meeting or exceeding applicable federal and state regulations intended to manage the environmental impacts of transportation. In achieving its environmental goals, Kansas has actively managed and targeted limited financial resources. Investments such as the Kansas Turnpike have placed Kansas in a good financial position, recognizing that users must also be a part of the solution.

As knowledge about environmental concerns and strategies for managing them grows, KDOT and its stakeholders are developing new options for avoiding, minimizing, or mitigating environmental impacts. These options should include how the existing transportation network is being used and include discussion, evaluation, and investment in multi-modal solutions. In Oklahoma City, a major transportation hub study is underway to maximize the ability to connect an array of transportation options for both local and intercity transport, improving the convenience and usefulness of multi-modal transportation investments. Multi-modal services are already available at the Fort

Worth Intermodal Transportation Center including the Trinity Express rail service to Dallas and local Fort Worth buses.

As such, the long-range transportation plans of the corridor states recognize that multiple strategies must be considered in the development of the transportation network. One strategy identified indicates that Kansas environmental policy should include, “Systems-relative roles, priorities, and the integration of different transportation systems to provide the best performance and promotion of environmental sustainability.” As such, the review of rail investments as part of a comprehensive transportation network serving the Kansas Turnpike and I-35 corridors is an essential element of meeting this goal.

## 4. Identification of Alternatives and Base Case

### 4.1 Base Case

Although limited, travelers in the Kansas City-Wichita-Oklahoma City-Fort Worth corridor currently have travel choices. In addition to the highway system, air and bus service is available between certain destinations. Passenger trains operate over segments of the corridor, but the services are not connected. Amtrak's Los Angeles to Chicago train, the *Southwest Chief*, serves stations on the Corridor between Newton and Kansas City, operating during the nighttime hours in both eastbound and westbound directions. Regional passenger rail service is available in Oklahoma and Texas via the *Heartland Flyer* with one round trip daily between Oklahoma City and Fort Worth. In Fort Worth, connections can be made with Amtrak's *Texas Eagle* national route service.

#### 4.1.1 State Highways and Turnpikes

The corridor includes a quality highway network. I-70, the Kansas Turnpike, and I-35 follow the entire route between Kansas City, Wichita, Oklahoma City, and Fort Worth. Typical driving time between Kansas City and Oklahoma City is six hours, including a break. The cost of a one-way trip for an auto driver is estimated at \$57.36.<sup>12</sup>

Driving time between Kansas City and Fort Worth is nine and one-half hours, including breaks. The one-way trip cost for the single driver is estimated at \$84.13.<sup>13</sup>

The Kansas Turnpike is a toll road that serves the same corridor as the potential new passenger rail service in Kansas, serving the Kansas City-Lawrence-Topeka-Wichita areas in particular and continuing south to the Oklahoma border. Passenger vehicle traffic has increased significantly on the Turnpike, in terms of both passenger vehicle trips and passenger-vehicle miles.

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<sup>12</sup> Fuel cost of \$46.61 is based on 12.9 gallons consumed at \$3.68 per gallon (Source: Costtodrive.com); toll cost is \$10.75 for Kansas Turnpike

<sup>13</sup> Fuel cost of \$73.38 is based on 19.6 gallons consumed at \$3.75 per gallon (Source: Costtodrive.com); toll cost is \$10.75 for Kansas Turnpike

**Table 1: 2008/2009 Kansas Turnpike Traffic Comparison**

	2008	2009	2009 Increase (Decrease)
<b>Number of Vehicles</b>			
Passenger cars	28,173,512	29,037,552	3.07%
Commercial vehicles	4,287,495	3,961,623	(7.60)%
<b>Number of Miles</b>			
Passenger cars	1,121,500,985	1,171,552,369	4.46%
Commercial vehicles	270,710,506	248,365,031	(8.25)%
<b>Miles Per Trip</b>			
Passenger cars	39.81	40.35	1.35%
Commercial vehicles	63.14	62.69	(0.71)%

Motor vehicle travel along the corridor through Oklahoma is also significant. In 2008, 5.8 to 6.6 million motor vehicle trips were made on I-35 north of Oklahoma City, depending on specific location. South of Oklahoma City, annual traffic ranged from 8.7 to 11 million vehicles annually.<sup>14</sup>

#### **4.1.2 Corridor Amtrak Services**

Amtrak operates one daily eastbound and westbound train through Kansas, via the *Southwest Chief*. The passenger service through Kansas is a segment of the long distance route between Chicago and Los Angeles, and serves the corridor cities of Newton, Topeka, Lawrence, and Kansas City (MO), plus Garden City, Dodge City, and Hutchinson, off the Kansas City - Wichita - Oklahoma City - Fort Worth corridor and west of Newton. Although the service operates through Kansas at night, passenger activity has increased at every station as shown in Table 2.

<sup>14</sup> ODOT 2008

**Table 2: Amtrak Station On/Off Counts<sup>15</sup> 2005 & 2010**

City	2005	2010	Percent Change
Dodge City	3,559	4,248	36%
Garden City	5,523	7,075	28%
Hutchinson	3,632	4,519	24%
Lawrence	3,347	5,096	52%
Newton	12,580	13,926	11%
Topeka	6,112	8,618	41%
<b>All Stations</b>	<b>34,753</b>	<b>44,081</b>	<b>27%</b>

Newton has the greatest passenger activity. It serves the Wichita regional market, the largest Kansas market adjacent to the *Southwest Chief* route.

### 4.1.3 Corridor Intercity Bus Service

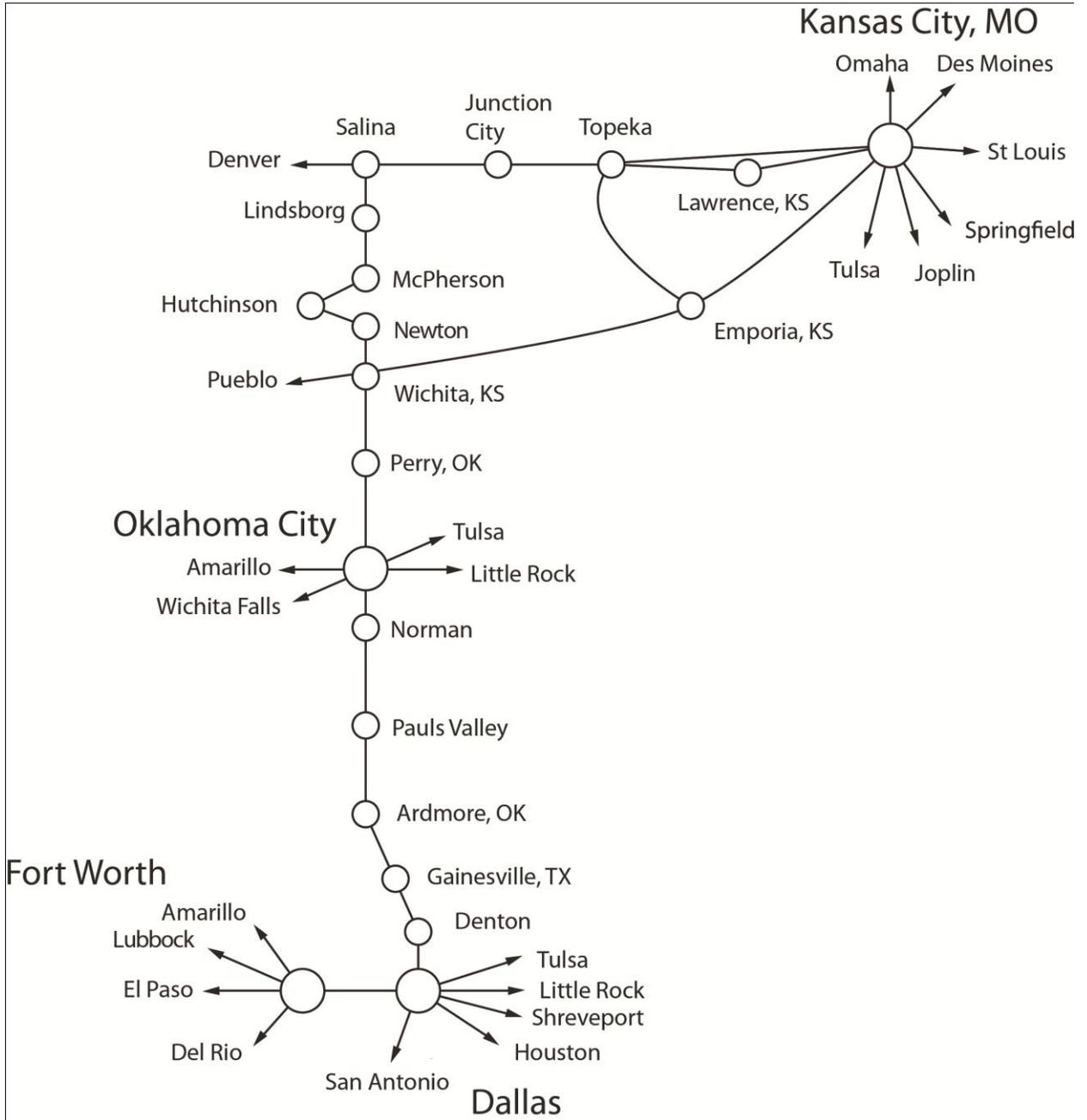
Intercity bus services operate in the study corridor. Greyhound and Jefferson Lines are the primary service providers along this corridor. Other ‘curb-side’ intercity bus services, usually marketed to specific market segments or ethnic communities, have appeared in recent years but schedules and locations of stops are not widely published. KDOT is currently conducting a comprehensive study on intercity bus services that will be complete in the summer of 2012.

There are typically four northbound and four southbound bus frequencies each weekday with service offered in Kansas at Emporia, Lawrence, Topeka, Wichita, and Kansas City (MO). Bus service from Salina to Wichita with a stop at Newton as well as Lindsborg, McPherson and Hutchinson, was instituted in 2010, with two round trips daily. KDOT participates in the support of intercity bus service connecting Wichita to Salina, KS, and from Wichita to Pueblo, CO<sup>16</sup>. A Kansas City connection is available at Salina with a one-hour wait. In Oklahoma, Greyhound serves Perry, Oklahoma City, Norman, Pauls Valley, and Ardmore. Texas bus locations along the corridor are Gainesville, and Fort Worth. The current or proposed rail-served locations of Arkansas City, KS; Purcell, OK; and Strong City, KS do not have intercity bus service.

<sup>15</sup> On/Off counts are the number of passenger getting on or off the train at a particular station. In general, increased on/off activity indicates growing ridership.

<sup>16</sup> The Wichita-Pueblo service is a single daily round trip with intermediate stops at Kingman, Pratt, Greenburg, Dodge City, Garden City, and Syracuse, KS, and Granada, Lamar, Las Animas, La Junta, Rocky Ford and Fowler, CO.

Figure 2: KC-Wichita-OKC-FW Corridor Bus Routes



**Table 3: Profile of Representative Corridor Bus Services**

<b>City Pair</b>	<b>Trip Time H:M</b>	<b>One Way Fare</b>	<b>Service</b>
Kansas City-Oklahoma City	6:20-7:30	\$64.24- \$83.00	Direct
Kansas City-Fort Worth	12:30-15:50	\$74.80- \$96.00	Transfer
Oklahoma City-Fort Worth	5:00-7:55	\$44.88- \$59.00	Transfer

Train trip time between Kansas City and Oklahoma City would be approximately eight hours. By comparison, bus trip times between the two cities are between six and eight hours with 75 MPH speeds allowed on the Turnpike. Rail trip time between Kansas City and Fort Worth would be 12 hours 20 minutes. Bus trip time is between 12 and 16 hours with a transfer required as there is no direct service between Kansas City (or Oklahoma City) and Fort Worth<sup>17</sup>. Including access and station wait times, bus and rail trip times along the corridor would be competitive with each other, however, the train would offer a significant traveler comfort advantage. Passengers would have the freedom to walk around and would have the opportunity to purchase food.

#### 4.1.4 Air Travel

While many general aviation airports are located in the region, airports with scheduled air service are limited. The scheduled service airports are: Kansas City International in Kansas City, MO; Manhattan Regional Airport in Manhattan, KS; Mid Continent Airport in Wichita, KS; Will Rogers World Airport in Oklahoma City, OK; Dallas-Fort Worth International Airport, and Dallas Love Field in the Dallas-Fort Worth area. Commercial air travelers to and from Topeka must use airports at Kansas City, Manhattan, or Wichita. While Topeka has an active airport, it is dedicated to general aviation purposes, including corporate aircraft. There are no direct flights between Wichita and either Kansas City or Oklahoma City.

While air travel is fast, fewer flights, higher costs, and the limited number of scheduled service airports makes the mode attractive mainly to the businessperson traveling between the major city pairs. Compared to other modes, airfares for the relatively short flights within the corridor tend to be expensive. For security purposes, the Transportation Security Administration

<sup>17</sup> Bus transfer occurs at Dallas.

recommends arriving at the airport two hours before scheduled departure for domestic flight. Waits at baggage claim, usually 20 to 30 minutes, could add additional time (and cost) to the trip. Extended time at the airport and security procedures reduce the attractiveness of short-hop air travel.

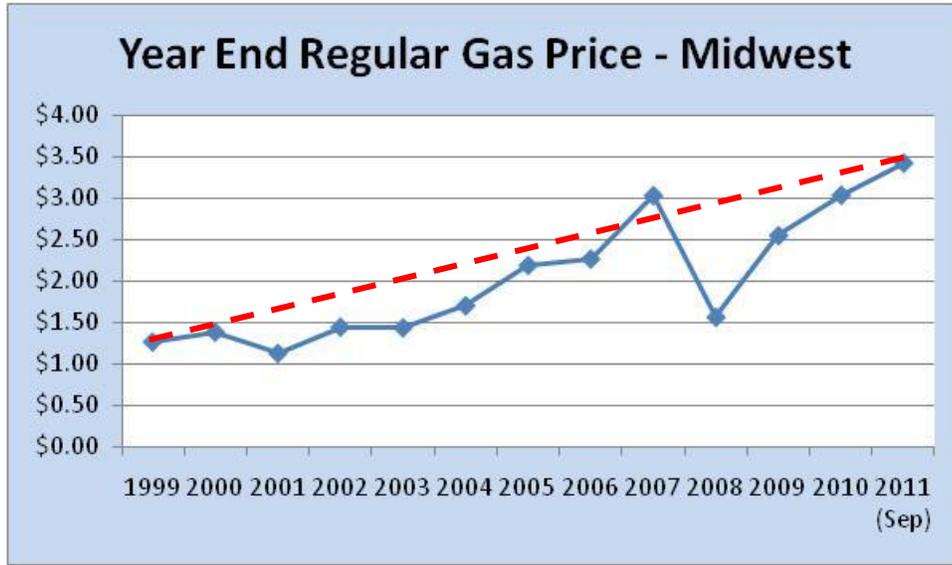
**Table 4: Profile of Corridor Air Services**

City Pair	'In the air' Trip Time H:M	Estimated Total Trip Time H:M	Weekday Roundtrip Direct Flights
Fort Worth, TX-Wichita, KS	1:10	3:40	4
Kansas City, MO-Oklahoma City, OK	1:05	3:35	2
Kansas City, MO-Fort Worth, TX	1:20	4:50	17

#### 4.1.5 Future Corridor Travel Demand Patterns

The private automobile is the dominant mode of passenger transportation along the corridor today. Shifts in preferences, however, can be expected to occur as fuel prices increase. From the end of 1999 to May 2011, the price of regular gasoline has more than tripled. Even before the dramatic price increases in the first half of 2011 occurred, passenger vehicle fuel costs grew by 140 percent from \$1.26 in December of 1999 to \$3.03 in December of 2010.

Figure 3: Midwest Gasoline Prices 1999-2011



Source: Energy Information Administration, US Department of Energy

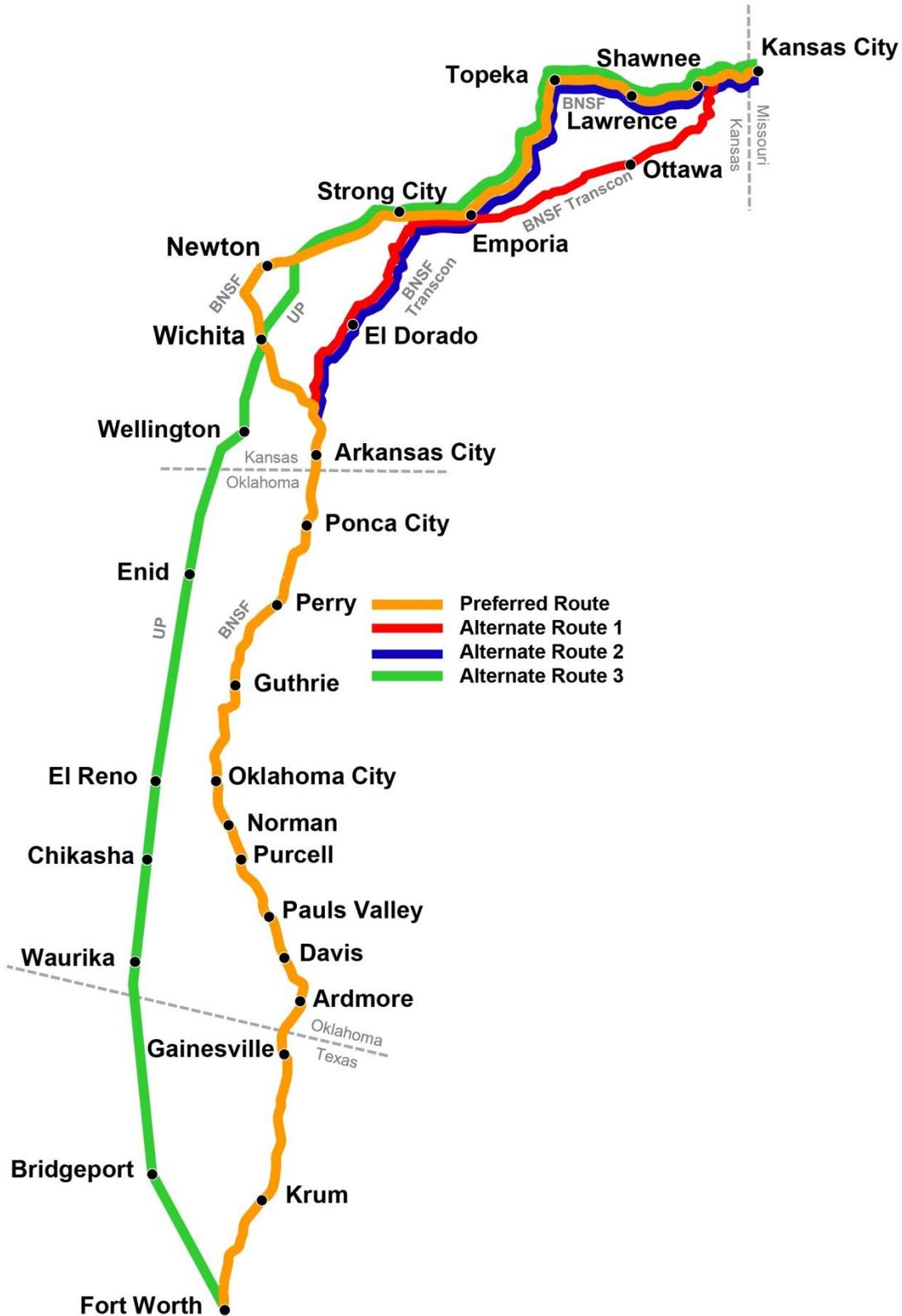
Although gasoline prices are volatile, the general upward trend in energy prices is expected to continue in future years as worldwide demand grows. This trend will increase the demand for more energy efficient modes of transportation. The steel-wheeled railway is the most energy efficient powered transportation mode and expanded passenger rail service would help the balance between energy use and cost. Without the availability of more energy efficient modes of transportation along the corridor, mobility will diminish and limit economic growth opportunities in the region.

## 4.2 Alternatives

### 4.2.1 Route Alternatives

Route alternatives considered for passenger service in the Kansas City-Fort Worth corridor were limited by the need to provide passenger rail service to the major population and economic centers in the four states. These include Wichita, the largest city in Kansas and the two state capitals, Topeka and Oklahoma City. The route between Oklahoma City and Fort Worth on the BNSF has already been established by the current *Heartland Flyer* operation.

Figure 4: KC-Wichita-OKC-FW Route Alternatives



Union Pacific (UP) has a line between Kansas City and Fort Worth. While this route serves Topeka and Wichita, it bypasses Oklahoma City, passing through El Reno to the west. The Chicago, Rock Island, and Pacific Railroad, a prior owner of the line, once operated passenger trains on this route. However, it has been over forty years since any passenger trains have been active on the line. The extensive infrastructure improvements needed to restore passenger service on the line and its bypass of Oklahoma City eliminates this route as a practical option. While UP has trackage from El Reno to Oklahoma City, the routing between UP and BNSF would not be possible since UP does not have a connection at Oklahoma City to the BNSF station.

While the BNSF Transcon route would have been a shorter route, connecting Mulvane and Emporia and then through Ottawa to Kansas City, this route would not serve Wichita, Topeka, or Lawrence. It would also introduce numerous opportunities for conflict with the significant freight traffic on the Transcon. Approximately 40 trains per day operate over this section of the Transcon with future volumes expected to reach 50 daily trains

The route through Newton, once used by Amtrak between Kansas City and Fort Worth through Wichita and Oklahoma City over BNSF lines is the preferred alternative as it meets the market requirements for the service. In addition, line operations are provided by a single railroad, avoiding potential delays when separate dispatchers must “hand off” control.

## 4.2.2 Service Alternatives

The SDP comprises two proposed passenger service alternatives along the corridor. These two service alternatives, plus two others, were evaluated in detail in the Feasibility Report of Proposed Amtrak Service; Kansas City, Missouri – Oklahoma City, Oklahoma, to Fort Worth, Texas (Amtrak, March 2010). The alternatives selected by the partner states<sup>18</sup> for inclusion in the SDP were Alternative 1 (herein called *Heartland Flyer Extension*) and Alternative 3 (herein called *KC-OKC-FW Daytime Service*) as described in the March 2010 Amtrak study.

The four alternatives services identified and evaluated by Amtrak and the BNSF were:

**Alternative 1**-Fort Worth, TX-Newton, KS (*Heartland Flyer Extension*): this scenario is an overnight extension of the existing *Heartland Flyer* service from Oklahoma City to Newton. Both northbound and southbound service would be provided connecting in Newton with both the eastbound and westbound *Southwest Chief*. This alternative is referred to as the *Heartland Flyer Extension* in this document.

**Alternative 2**-Fort Worth, TX-Kansas City, MO: this scenario is new northbound and southbound overnight services connecting Fort Worth, Oklahoma City and Kansas City,

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<sup>18</sup> Kansas and Oklahoma

effectively an extension of the *Heartland Flyer* to Kansas City. The two services would provide connections with the Southwest Chief at Newton. This alternative was eliminated from further consideration.

**Alternative 3**-Fort Worth, TX-Kansas City, MO (*KC-OKC-FW Daytime Service*): this scenario is a new daytime service in each direction between Fort Worth and Oklahoma City, and on to Kansas City. This alternative would not provide a reasonable connection at Newton with Amtrak's Southwest Chief service. This alternative is referred to as the *KC-OKC-FW Daytime Service* in this document.

**Alternative 4**-Oklahoma City, OK-Kansas City, MO: this scenario is a new daytime service in each direction between Oklahoma City and Kansas City. Neither the northbound nor the southbound service would conveniently connect with any of the existing Amtrak services. This alternative was eliminated from further consideration.

When Alternates 1 and 3 are considered together, they are referred to as the *Combined Services*.

Based on input received from the public, as well as local governmental officials, through an extensive outreach effort held in cities that KDOT identified as potential station stops, the *Heartland Flyer Extension* and *KC-OKC-FW Daytime Service* were selected for further analysis, specifically to be included in this Service Development Plan.

The *Heartland Flyer* currently operates between Fort Worth and Oklahoma City. The *Heartland Flyer Extension* would continue this service northward from Oklahoma City to Wichita and Newton KS. This option would provide a connection to existing eastbound and westbound *Southwest Chief* trains operating between Los Angeles and Chicago and well as the current connection to Amtrak's *Texas Eagle* at Fort Worth (Chicago-San Antonio with continuation to Los Angeles 3 days per week via the *Sunset Limited*). The service would operate one trip in each direction daily, with nighttime arrival and early morning departure at Newton. This alternative would be expected to generate 111,300 annual passenger trips over and above the existing *Heartland Flyer* ridership based on current Amtrak forecasts. With one of the principal purposes being to provide a connection with Amtrak's long-distance Chicago-Los Angeles train, 100 percent on-time performance will be required for the *Heartland Flyer Extension*. With this new connection to the *Southwest Chief*, persons travelling between Oklahoma City and Chicago could save a day of travel in comparison to using the *Texas Eagle* connection in Fort Worth.

The *KC-OKC-FW Daytime Service* is new daytime service running from Fort Worth, through Oklahoma City, and on to Wichita and Kansas City. This alternative would provide a second frequency between Fort Worth and Oklahoma City while opening a new route segment between Oklahoma City and Kansas City. The new service is expected to generate 256,700 new passenger trips per year per current Amtrak forecasts. As a comparison, ridership on the

*Heartland Flyer* in FY 2010 was 81,749<sup>19</sup> and is projected by Amtrak to be 89,200 in FY 2012.

As part of the Amtrak Feasibility Study, Amtrak and BNSF identified the need for significant infrastructure improvements along the corridor to ensure that on-time performance standards for passenger trains are met and that the projected ridership materializes. For the *Heartland Flyer Extension*, \$114 million (2009 dollars) were estimated to be needed for infrastructure improvements. This would include 26.6 miles of new mainline double track<sup>20</sup>. For the *KC-OKC-FW Daytime Service* (Fort Worth-Kansas City), \$413 million (2009 dollars) in improvements were estimated, which included 92.2 miles of new mainline track. These improvements, which were developed in coordination with BNSF, were proposed to ensure that future freight service on the corridor will continue at its current high level of performance. According to BNSF, the investment for new passenger services is beyond the improvements that BNSF will be making to expand its MidCon freight train capacity between Fort Worth and Kansas City. As part of the Service Development Plan, these infrastructure costs are further evaluated in Section 7.

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<sup>19</sup> ODOT 2011

<sup>20</sup> Double Track consists of two parallel tracks serving the same route and is the most effective method of permitting trains traveling in opposite direction to pass each other. With the use of turnouts to form 'crossovers,' double track can also be effective to allow slower trains to be overtaken by faster trains. When a line consists of Single Track, a parallel track with turnouts at both ends is constructed to provide for trains passing either in the same or opposite directions. These are sometimes referred to as sidings but more properly termed Passing Tracks. Passing tracks can range from around 1 mile in length up to about 10 miles in length. The longer passing tracks can allow the passing moves to take place without either train having to stop. Most railroads consist of single track as double track has greater construction and maintenance costs.

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## 5. Planning Methodology

The service planning process included the following:

- Evaluating alternative routes to connect the major cities along the corridor
- Understanding present freight operations on the rail lines to determine the “fit” of passenger operations with the current owner of the route, BNSF
- Optimizing operations to minimize infrastructure investment
- Coordinating with BNSF in using the Rail Traffic Controller (RTC) operations simulation model to assess infrastructure needs with different schedule assumptions
- Evaluating equipment, stations, and maintenance facility requirements
- Developing infrastructure, equipment, operating and maintenance cost estimates
- Developing and evaluating an implementation strategy including an initial “start-up” service with staged capital investment to permit an early introduction of the new service
- Identifying opportunities for outsourcing some elements of operations and maintenance

### 5.1 Stakeholder Participation

#### 5.1.1 Evaluation of Physical Plant

The BNSF and Amtrak staff conducted a physical inspection of the potential route through Newton to evaluate the infrastructure conditions and capital needs as part of the March 2010 Amtrak Feasibility Study. The operational challenges of adding additional passenger trains onto BNSF’s freight rail network were then evaluated by BNSF using RTC model simulations. BNSF provided the SDP consultant team with detailed track charts showing the track alignment, signal system characteristics, locations of double track and passing sidings, as well as age and weight of rail.

The corridor between Oklahoma City and Newton is maintained by BNSF for 55 MPH freight train operations. Between Newton and Kansas City, much of the route currently permits 79 MPH passenger train operations. Applicable track safety regulations for 55 MPH freight train speeds (FRA Class 4) generally allow for 79 MPH passenger operations although specific local conditions may not support this higher passenger speed. These speed limitations were addressed on a case-by-case basis.

### 5.1.2 Amtrak Coordination

The SDP consultant team met with Amtrak in Chicago in August 2010 and the following assumptions used in its initial analyses were identified relevant to subsequent planning:

- Priority for passenger trains over all freight trains (to be incorporated into RTC simulations)
- One hundred percent on-time performance target assuming that Federal requirements under PRIIA would be in place
- Incremental infrastructure improvements included some speed increases on certain route segments; however, 79 MPH<sup>21</sup> is the maximum operating speed. “High Speed” scenarios were not considered
- All at-grade railroad highway crossings upgraded with constant warning times (CWT<sup>22</sup>) appropriate for passenger train speeds
- Ridership and revenue forecasts developed by AECOM using Amtrak’s proprietary model reflecting current population figures, employment forecasts, and recent demographic changes
- Ridership modeling considered service factors including travel times, time of day, frequency of service and on-board amenities and food service
- Station locations for the proposed services provided by KDOT and ODOT
- Competing modes considered through highway travel times

KDOT directed Amtrak for the original feasibility study to consider an expedited service implementation schedule with start-up in 2012.

### 5.1.3 BNSF Coordination

A preliminary coordinating meeting was held in Fort Worth at BNSF’s headquarters in August 2010 to discuss the SDP and the need for additional Rail Traffic Controller (RTC) simulations to test incremental infrastructure improvements along the corridors. KDOT and ODOT staff and

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<sup>21</sup> Speeds higher than 79 MPH require the use of a signal system that has a display in the locomotive cab. All trains operating on the territory must be equipped regardless of the speed operated by that train. This requirement for ‘cab signal’ equipment would be very expensive since all freight trains, as well as passenger trains, would need to be equipped.

<sup>22</sup> CWT or Constant Warning Time is a modification to the system controlling crossing gates at highway crossings. It adapts the time the gates are lowered to correspond to the speed of the approaching train. Research has found about 20 seconds before train arrival the optimum for safety. Shorter times did not give motorists on the tracks enough time to get clear and longer encourages drivers to drive around the gates. Along this corridor, passenger trains will operate at speeds higher than freight trains.

members of the consultant team participated in the Fort Worth meeting with BNSF officials. The following is a summary of the meeting:

- BNSF provided the SDP consultant team with data for their lines in Kansas, Oklahoma, and Texas including track charts, listings of current slow orders, and employee timetables for the study corridors, including the Fort Worth, Red Rock, Arkansas City, La Junta, Emporia, and Topeka subdivisions.
- The detailed track charts included information on locations of double track, passing sidings, type of signal system, year and weight of rail, degree of curves, and the locations of grade crossings and major bridges.
- BNSF noted its concern with the FRA's latest requirements based on PRIIA-stipulated on-time performance and the consequences on freight operations
- Freight train interference causing passenger train delay is a key FRA metric, which is of concern to BNSF
- The BNSF's planned north/south MidCon freight service focuses on BNSF's Kansas City new intermodal terminal under development in Edgerton, Kansas, located in southern Johnson County of the metropolitan Kansas City area. Marketing and infrastructure plans for expanded freight services in the MidCon corridor are still under development and not available for inclusion in the SDP
- The MidCon includes the same route as the potential new passenger services. (The MidCon also includes a second north-south route between Dallas and Kansas City passing through Tulsa).
- BNSF advised that the BNSF-UP Tower 55 Project in Fort Worth would potentially benefit new and existing passenger service by reducing freight operational delays at this high volume railroad crossing.<sup>23</sup>
- Issues related to liability will need to be resolved. BNSF's policy is to permit passenger services on its mainline tracks only if the railroad is free of any liability and its compensation needs are met. Amtrak would have the rights to operate the service under existing agreements.
- Considerable infrastructure improvements will be needed to eliminate potential freight train delays caused by additional passenger services now and into the future. For *KC-OKC-FW Daytime Service*, operational conflicts with the *Heartland Flyer (Extension)*

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<sup>23</sup> A funding agreement has been executed by the FRA for the planned improvements at Tower 55 in Fort Worth. While the proposed passenger service in this SDP does not operate through the Tower 55 crossing, trains delayed by congestion at Tower 55 can contribute to passenger train delays north of Fort Worth.

would also have to be addressed. The northbound *KC-OKC-FW Daytime Service* would encounter the southbound *Heartland Flyer (Extension)* between Fort Worth and Oklahoma City in the morning hours. Likewise, the return trips of both these trains will meet and pass each other in the early evening hours between these two cities.

The Amtrak Feasibility Study developed schedules for Alternate 3 (*KC-OKC-FW Daytime Service*), the new daytime service, for a total trip time of 12 hour 20 minutes between Kansas City and Fort Worth. To evaluate the potential for fewer operational conflicts and thus reduced initial infrastructure needs for a start-up operation with a slower schedule, the consultant team examined extended schedules that could potentially reduce the number of instances where the new passenger trains would overtake freight trains traveling in the same direction.

Schedules were also tested with varying dispatching priorities for the new passenger service and BNSF's different classes of freight operation. The only significant reduction in freight train delay resulted from assigning the new passenger trains the same priority as BNSF unit freight trains<sup>24</sup>. This downgraded priority would have resulted in a run time of approximately 15 hours between Fort Worth and Kansas City.

Although providing the potential for a lower-cost start-up of the passenger services, an extended schedule faces implementation constraints:

- Would result in the slower average train speed compared with other Amtrak service on BNSF.
- Would be much longer compared to a trip by auto between Kansas City and Fort Worth.
- Dispatching parity between Amtrak trains and freight trains is not allowed under federal law.<sup>25</sup>
- Amtrak is opposed to accepting a reduced dispatching priority as it may set a precedent for other potential services.

Based on these factors, slower KC-OKC-FTW service scenarios were not considered viable.

Currently the line has several speed restrictions due to track conditions. In addition, grade crossing signals between Oklahoma City and Newton are only set for a maximum speed of 55 MPH, the current maximum speed allowed for BNSF freight trains.

Where temporary track conditions do not permit maximum train speeds, Amtrak schedules can be lengthened temporarily until repairs are completed.

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<sup>24</sup> Unit trains carry a single commodity between a single origin and destination. Coal and grain are common commodities that use unit trains. Unit trains of intermodal shipping containers are also common.

<sup>25</sup> Rail Passenger Service Act of 1970

## 5.2 Public Involvement

As part of the initial feasibility study conducted by Amtrak, several public meetings were held throughout Kansas to survey the concerns and interests of the citizens of Kansas. Meetings were held in spring of 2010:

1. May 18, 2010 in Lawrence: 30 people in attendance
2. May 19, 2010 in Wichita: 115 people in attendance
3. May, 25 2010 in Arkansas City: 25 people in attendance.
4. May 26, 2010 in Newton: 58 people in attendance.
5. May 27, 2010 in Emporia: 42 people in attendance.
6. June 8, 2010 in Topeka: 38 people in attendance.
7. June 9, 2010 in Shawnee: 25 people in attendance.

The attendees overwhelmingly supported the establishment of new passenger service in the state connecting its major metropolitan areas with Fort Worth. Respondents to the surveys overwhelmingly supported new passenger service even if rail travel times were longer than driving times or costs were higher than other modes. They also indicated that they would be willing to pay additional taxes to fund the service. The respondents also selected two services for further consideration, the proposed extension of the Heartland Flyer to Newton and a new daylight service between Fort Worth and Kansas City.

## 5.3 Service Descriptions

### 5.3.1 Heartland Flyer Extension

#### Service

The *Heartland Flyer Extension* would be an expansion of the current *Heartland Flyer* service north from Oklahoma City to Wichita and Newton, KS using the BNSF line and connecting with Amtrak's *Southwest Chief* at Newton. The existing BNSF Fort Worth, Red Rock, and Arkansas City subdivisions, the route of the former Amtrak *Lone Star*, provide the only direct rail route between Oklahoma City and Newton and pass through Wichita, the largest city in Kansas. The *Southwest Chief* connection at Newton would provide eastbound service to Kansas City and Chicago, and westbound service to Albuquerque and Los Angeles. Numerous other stops are served in both directions. The eastbound and westbound *Southwest Chiefs* meet at Newton between 2:45AM and 2:59AM.

Operating features of the *Heartland Flyer Extension* include:

- Service would operate daily.

- The existing *Heartland Flyer* schedule between Oklahoma City and Fort Worth would be maintained, including the connections with the *Texas Eagle*.
- The extended *Heartland Flyer* would arrive in Newton at 1:41 AM, with about a one hour connecting time to both the eastbound and westbound *Southwest Chief*
- The return southbound trip would leave Newton at 4:25 AM providing a longer connecting time window to accommodate potential delays in the long distance trains.
- The two and one half hour layover time at Newton would be sufficient to fuel the locomotive, restock the snack bar car, and clean the interior of the coaches.

The proposed schedule is shown in Figure 5.<sup>26</sup> This schedule would permit the service to be operated with a single set of equipment, retaining the current practice of Amtrak furnishing a spare locomotive when the State-owned locomotive requires maintenance<sup>27</sup>. The station dwell time at Oklahoma City has also been reduced to minimize freight conflicts.

**Figure 5: *Heartland Flyer* Extension  
Proposed Schedule**

Read Down	Mile		Station		Read Up
4:20 AM	0	Dp	Newton, KS	Ar	1:46 AM
4:49 AM	24		Wichita		1:01 AM
5:54 AM	78		Arkansas City, KS		11:56 PM
6:17 AM	104		Ponca City, OK		11:30 PM
6:51 AM	137		Perry		10:57 PM
7:19 AM	168		Guthrie		10:29 PM
7:36 AM	185		Edmond		10:12 PM
8:15 AM		Ar		Dp	9:49PM
8:25 AM	199	Dp	Oklahoma City	Ar	9:39PM
8:49 AM	219		Norman		9:01 PM
9:06 AM	234		Purcell		8:44 PM
9:31 AM	256		Pauls Valley		8:19 PM
9:54 AM	274		Davis		7:59 PM
10:26 AM	301		Ardmore, OK		7:27 PM
11:08 AM	340		Gainesville, TX		6:45 PM
11:48 AM	373		Krum/Denton		6:05 PM
12:40 PM	405	Ar	Fort Worth, TX	Dp	5:25 PM

<sup>26</sup>This schedule developed for the 2010 Amtrak Feasibility Study has been modified to include the two stations proposed to be added at Davis OK and Krum TX.

<sup>27</sup> The *Heartland Flyer* equipment is currently available for servicing and minor repairs during its overnight layover in Oklahoma City. The extended operation to Newton will reduce this available repair window.

- The *Heartland Flyer Extension* would provide connections with the eastbound and westbound *Southwest Chief* (Amtrak train numbers 3 and 4).
- Includes proposed added stations at Davis, OK and Krum, TX.
- Both northbound and southbound trains connect with #3 and #4 at Newton, Kansas.
- The existing connections with the *Texas Eagle* at Fort Worth would be continued.

### Stations

New stations on the *Heartland Flyer Extension* would be Wichita, KS; Arkansas City, KS; Ponca City, OK; Perry OK; Guthrie, OK; and Edmond, OK, each requiring new facilities. Stations currently served along the *Heartland Flyer* route (Oklahoma City, OK; Norman, OK; Purcell, OK; Paul's Valley, OK; Ardmore, OK; Gainesville, TX; and, Fort Worth, TX) would continue to be served. Two new stations would be added to the existing *Heartland Flyer* segment at Davis, OK and Krum, TX. The existing station at Newton would be used, but a layover facility<sup>28</sup> would have to be added for crew support, fueling and cleaning and spot maintenance of the coaches. In many cases, the previous stations used by Amtrak before the *Lone Star* was discontinued in 1979 are still in existence and potentially could be refurbished. The local communities input would be important in deciding the best station locations. Local communities would be responsible for providing station improvements (refurbishment or construction), services, operations, ongoing maintenance, and parking.

### Other Improvements

The BNSF tracks between Oklahoma City and Newton are currently maintained to permit freight speeds of up to 55 MPH. Grade crossing signals would have to be upgraded to constant warning time systems to provide for up to 79 MPH passenger train operations. Much of the track alignment would permit higher speeds as were operated prior to discontinuance of the *Lone Star*, but this would require signal improvements to support 79 MPH. Curves would also require modification to provide added superelevation or banking for higher speeds since superelevation has been reduced to match the lower freight train speeds.

## 5.3.2 KC-OKC-FW Daytime Service

### Service

The *KC-OKC-FW Daytime Service* is a new daytime service leaving both Kansas City and Fort Worth in the morning and arriving in the evening at Fort Worth and Kansas City, respectively. This new round trip service would provide a second frequency of service between Oklahoma City and Fort Worth, complementing the existing *Heartland Flyer* service. All services for this

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<sup>28</sup> A layover facility is generally a side track where an idle train can be moved out of the flow of traffic and receive servicing. Standby electrical power is also provided to permit the diesel locomotive to be shut down.

alternative would be operated over trackage of the BNSF except for two miles of operation over the Kansas City Terminal Railway Company (KCT) in Kansas City, MO and for 1.5 miles of trackage shared with UP in Wichita, KS that is part of the Wichita Union Terminal Railway jointly owned by BNSF and UP. The trackage in Wichita is dispatched by the BNSF, so a seamless passage through Wichita would be facilitated.

*KC-OKC-FW Daytime Service* would operate over segments of the Topeka, Emporia, and La Junta Subdivisions. South of Newton, the Fort Worth, Red Rock, and Arkansas City subdivisions would be used similar to the *Heartland Flyer Extension*. Between Newton and Kansas City, the new service would follow the route of the *Southwest Chief*.

**Service Schedule**

Figure 6 shows the proposed final schedule for *KC-OKC-FW Daytime Service* developed in the Amtrak Feasibility Study and modified to add three new station stops (Shawnee/Johnson County KS, Davis OK, and Krum TX). The schedule provides a travel time of 12 hours and 20 minutes between endpoints (a later southbound departure from Oklahoma City could make the service more attractive for business travel but would result in a later arrival time in Fort Worth).

**Figure 6: KC-OKC-FW Daytime Service  
 Proposed Schedule**

Read Down	Mile		Station		Read Up
7:00 AM	0	Dp	Kansas City, MO	Ar	7:25 PM
7:28 AM	17		Shawnee/Johnson Co, KS		6:15 PM
7:56 AM	40		Lawrence	↑	5:44 PM
8:29 AM	66		Topeka		5:08 PM
9:31 AM	127		Emporia		4:08 PM
9:48 AM	149		Strong City		3:50 PM
10:35 AM	201		Newton		3:02 PM
11:04 AM	225		Wichita		2:36 PM
12:09 PM	279		Arkansas City, KS		1:29 PM
12:32 PM	305		Ponca City, OK		1:05 PM
1:07 PM	338		Perry		12:32 PM
1:34 PM	369		Guthrie		12:03 PM
1:51 PM	386	↓	Edmond	↑	11:47 AM
2:54 PM		Ar	Oklahoma City	Dp	11:24 AM
3:04 PM	400	Dp	Oklahoma City	Ar	11:14 AM
3:28 PM	420		Norman	↑	10:33 AM
3:45 PM	435		Purcell		10:15 AM
4:10 PM	457		Pauls Valley		9:49 AM
4:32 PM	475		Davis		9:30 AM
5:04 PM	502		Ardmore, OK		8:58 AM
5:46 PM	541		Gainesville, TX		8:17 AM
6:26 PM	574	↓	Krum/Denton	↑	7:40 AM
7:20 PM	606	Ar	Fort Worth, TX	Dp	7:00 AM

Major segments of the line consist of a single track with infrequent passing sidings. The portion of the route between Mulvane KS and Emporia KS is used for eastbound BNSF Transcon<sup>29</sup> high-priority intermodal trains<sup>30</sup>. This will require that the infrastructure improvements be in place to avoid impacts to BNSF freight services and to minimize passenger train delays.

Improved running times could be achieved when key elements of the added infrastructure are in place. Again, because of the cost of capital improvements and the time required for implementation, an incremental approach may permit service to commence as improvements are completed. Such incremental development has proven successful with the Cascade Service in the State of Washington.

### **Stations**

*KC-OKC-FW Daytime Service* would be routed through Wichita and Oklahoma City. Stations currently served by the *Southwest Chief* at Kansas City, MO, Lawrence, Topeka and Newton, KS would also be served by the new service. Additional stations have been identified for Shawnee/Johnson County in the Kansas suburbs of Kansas City, Strong City, and Emporia, KS. From Newton to Fort Worth, the stations would be the same as those for the *Heartland Flyer Extension*.

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<sup>29</sup> Transcon is BNSF's California to Chicago mainline. Both traffic flows to/from southern California and the Bay Area are concentrated on this route.

<sup>30</sup> Intermodal trains are generally unit trains of shipping containers carrying high value manufactured goods.

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## 6. Demand and Revenue Forecasts

Amtrak, using its proprietary Long Distance Train Model, developed ridership and revenue forecasts for the two new services. The forecasts reflect the service schedules that would be in effect during full operation of both alternatives as presented earlier. *The Heartland Flyer Extension* would operate on an eight-hour schedule between Fort Worth and Newton. The *KC-OKC-FW Daytime Service* would operate on a 12-hour schedule between Kansas City and Fort Worth.

Rather than use its own ridership model, the SDP development team elected to use the Amtrak model. In doing so, the assumptions and results would be consistent with the forecasts developed for the earlier feasibility study. The Amtrak Long Distance Train Model is used for passenger train ridership forecasting throughout the US. The model estimated ridership giving consideration to the following parameters:

- Station Locations
- Passenger Rail Timetable, providing departure/arrival times by train and station and thus defining:
  - Travel time
  - Frequency
  - Departure/arrival time-of-day slots
- Average fares, based on observed average yields per mile in existing Amtrak markets
- Population, employment, and income of each market served
- Service characteristics of competing modes – auto, air, and bus

Table 5 summarizes the ridership estimates.

**Table 5: KC-Fort Worth Corridor Ridership Estimates**

Route	Ridership and Revenue Forecast New Kansas/Oklahoma Service Options								
	Annual Totals			Annual Increments					
	Current Service (FY12 Baseline)*			Alternative 1 (HF Extension)		Alternative 3 (New Service)			
	Ridership	Ticket Revenue	Passenger Miles	Ridership	Ticket Revenue	Passenger Miles	Ridership	Ticket Revenue	Passenger Miles
New Kansas Service	NO SERVICE			200,500	\$4,885,000	40,600,000	270,500	\$9,255,000	81,690,000
Heartland Flyer	89,200	\$2,093,000	15,480,000	(89,200)	(\$2,093,000)	(15,480,000)	(13,800)	(\$319,000)	(2,350,000)
Southwest Chief	367,300	\$46,440,000	330,340,000	62,200	\$2,789,000	26,100,000	(1,000)	(\$32,000)	(120,000)
Texas Eagle	305,900	\$25,191,000	177,360,000	2,100	(\$288,000)	(1,990,000)	0	\$0	0
<b>TOTAL</b>	<b>762,400</b>	<b>\$73,724,000</b>	<b>523,180,000</b>	<b>175,600</b>	<b>\$5,293,000</b>	<b>49,230,000</b>	<b>255,700</b>	<b>\$8,904,000</b>	<b>79,220,000</b>
Heartland Flyer Only Alternative 1 (Extension of HF)	NO SERVICE			200,500	\$4,885,000	40,600,000	270,500	\$9,255,000	81,690,000
New Kansas Service	NO SERVICE			(89,200)	(\$2,093,000)	(15,480,000)	(13,800)	(\$319,000)	(2,350,000)
Heartland Flyer Only	89,200	\$2,093,000	15,480,000						
Net - Alternative 1				<b>111,300</b>	<b>\$ 2,792,000</b>		<b>256,700</b>	<b>\$8,936,000</b>	
Projected Incremental Results per March 2010 Feasibility Study				92,500	\$2,700,000		174,000	\$ 6,100,000	

These forecasts were prepared by AECOM 8/30/11.

**Notes:**

\* FY12 Forecast (based on new FY11 Estimate prepared July 2011) and current timetables

\*\* Proposed Kansas Service Alternatives 1 & 3 (provided by Amtrak 8/08/11), as follows:

Alternative 1 extends the Heartland Flyer with new service between Newton, KS and Oklahoma City, connecting to the Chief at Newton

Alternative 3 retains the Heartland Flyer and introduces new daytime service between Kansas City and Fort Worth, via Wichita and Oklahoma City.

Ridership on the *Heartland Flyer Extension* is projected to be 200,500 trips producing ticket revenue of \$4,885,000. This alternative would be expected to introduce 111,300 new passenger rail trips along the corridor. The inclusion of the two new stations would generate 18,000 annual trips above the patronage estimated in the March 2010 Feasibility Study. This travel would produce \$2.8 million in additional fare revenue.

Annual ridership on the *KC-OKC-FW Daytime Service* is projected to be 270,000 with total fare revenues of \$9.2 million, \$8.9M additional over existing *Heartland Flyer*. This service introduces 256,700 new trips in the corridor; 13,800 trips diverted from the *Heartland Flyer*.

Tables 6 and 7 describe the passenger rail ridership estimates at each station. The new station stops at Shawnee/Johnson County, KS, Davis, OK and Krum, TX were added after the other stops between Kansas City and Oklahoma City were identified, and hence, referred to as the 'new stops.'

**Table 6: Station Forecasts – Heartland Flyer Extension**

**Summary of Station Forecasts for New Kansas Service Options**

**Alternative 1**

**Extension of Current Heartland Flyer from Oklahoma City to Newton, Kansas  
 Projected Passenger On's & Off's By Station (2 Events per Rider)**

		<b>Alternative 1</b>		
<b>Ridership Events (On's &amp; Off's)</b>		<b>Ridership On &amp; Off's Alternative 1 Extend the HF to Newton w/2 New Stops <u>New Route Only</u></b>	<b>Ridership On &amp; Off's Alternative 1 Extend the HF to Newton w/2 New Stops <u>All Routes</u></b>	
Kansas City, MO		N/A	45,572	Southwest Chief
Shawnee/Johnson Co, KS		N/A	N/A	
Lawrence, KS		N/A	557	Southwest Chief
Topeka, KS		N/A	977	Southwest Chief
Emporia, KS		N/A	N/A	
Strong City, KS		N/A	N/A	
<b>Newton, KS</b>		64,049	126,188	W/B served by HF and SW Chief
Wichita, KS		28,166	28,166	
Arkansas City, KS		1,741	1,741	
Ponca City, OK		6,415	6,415	
Perry, OK		2,801	2,801	
Guthrie, OK		6,865	6,865	
Edmond, OK		21,663	21,663	
<b>Oklahoma City, OK <sup>(1)</sup></b>		85,993	25,821	
Norman, OK <sup>(1)</sup>		22,682	7,201	
Purcell, OK <sup>(1)</sup>		3,511	1,005	
Pauls Valley, OK <sup>(1)</sup>		9,181	2,805	
Davis, OK <sup>(2)</sup>		2,932	2,932	
Ardmore, OK <sup>(1)</sup>		14,843	4,577	
Gainesville, TX <sup>(1)</sup>		12,754	3,284	
Krum-Denton, TX <sup>(2)</sup>		6,024	6,024	
<b>Fort Worth, TX <sup>(1)</sup></b>		111,380	39,361	
Other Affected Stations		-	17,245	
Total Passenger On's & Off's		401,000	351,200	
Events per Passenger		2	2	
Projected Ridership		200,500	175,600	
<b>Ridership (Passenger Trips)</b>				
Total Projected Ridership		200,500	175,600	
Less: HF Baseline		89,200	-	
Projected Incremental Ridership		111,300	175,600	

<sup>(1)</sup> Current HF Service Locations

<sup>(2)</sup> Proposed New Station Stop

**Table 7: Station Forecasts – KC-OKC-FW Daytime Service**

**Summary of Station Forecasts for New Kansas Service Options  
 Alternative 3**

**Operation of New Daily Daytime Service between Kansas City, MO and Ft. Worth, Texas  
 Projected Passenger On's & Off's By Station (2 Events per Rider)**

	Alternative 3		
	Ridership On & Offs Alternative 3 New Daytime Service w/3 New Stops <u>New Route Only</u>	Ridership On & Offs Alternative 3 New Daytime Service w/3 New Stops <u>All Routes</u>	
<b>Ridership Events (On's &amp; Off's)</b>			
<b>Kansas City, MO</b>	140,060	139,268	W/B served by HF and New Service
Shawnee/Johnson Co, KS <sup>(2)</sup>	1,298	1,298	
Lawrence, KS	4,509	4,284	W/B served by HF and New Service
Topeka, KS	7,872	7,516	W/B served by HF and New Service
Emporia, KS	870	870	
Strong City, KS	392	392	
Newton, KS	5,870	5,211	W/B served by HF and New Service
Wichita, KS	73,073	73,073	
Arkansas City, KS	2,930	2,930	
Ponca City, OK	8,857	8,857	
Perry, OK	3,897	3,897	
Guthrie, OK	8,240	8,240	
Edmond, OK	29,220	29,220	
<b>Oklahoma City, OK <sup>(1)</sup></b>	92,132	83,256	
Norman, OK <sup>(1)</sup>	23,285	20,819	
Purcell, OK <sup>(1)</sup>	3,130	2,731	
Pauls Valley, OK <sup>(1)</sup>	7,815	6,749	
Davis, OK <sup>(2)</sup>	2,748	2,748	
Ardmore, OK <sup>(1)</sup>	11,869	10,077	
Gainesville, TX <sup>(1)</sup>	10,217	8,581	
Krum-Denton, TX <sup>(2)</sup>	5,688	5,688	
<b>Fort Worth, TX <sup>(1)</sup></b>	97,028	85,695	
Other Affected Stations	-	-	
Total Passenger On's & Offs	541,000	511,400	
Events per Passenger	2	2	
Projected Ridership	270,500	255,700	
<b>Ridership (Passenger Trips)</b>			
Total Projected Ridership	270,500	255,700	
Less: HF Baseline	N/A	N/A	
Projected Incremental Ridership	270,500	255,700	

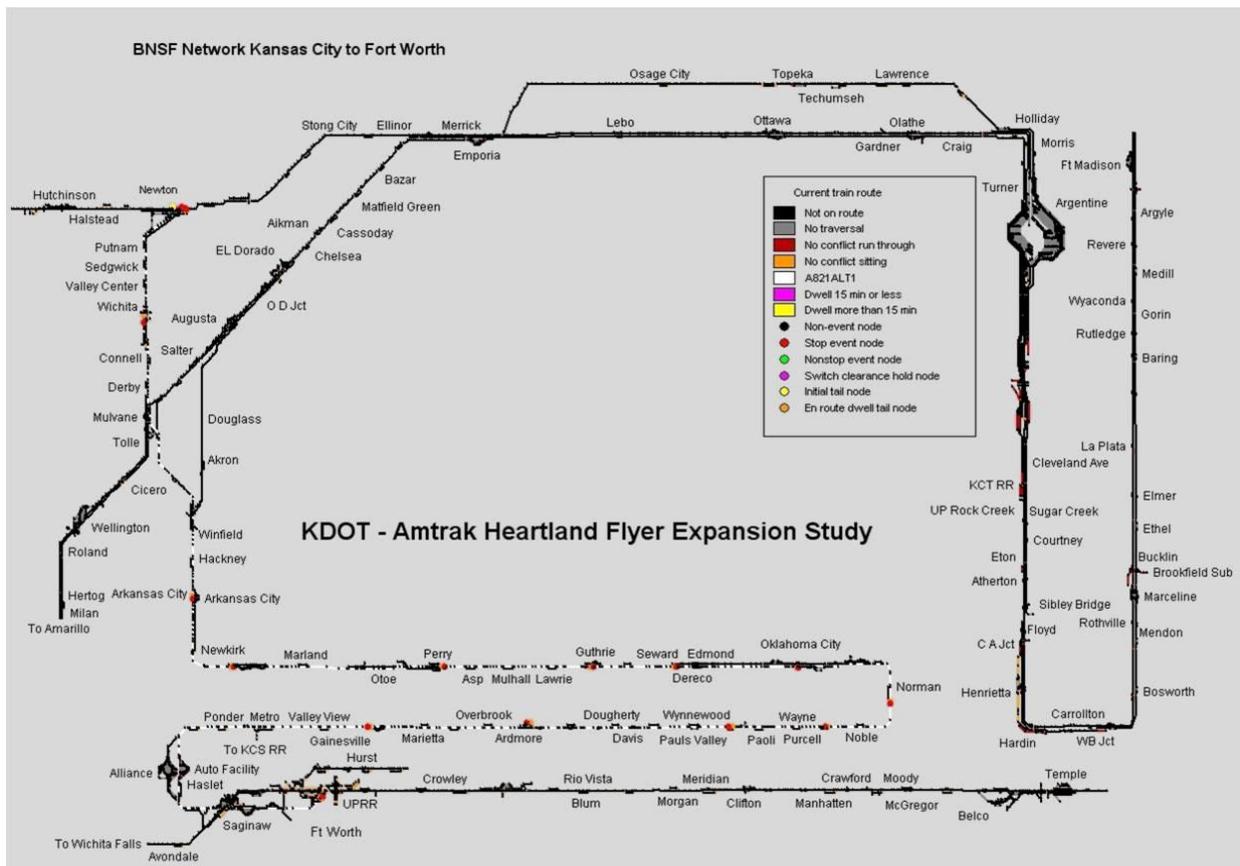
<sup>(1)</sup> Current HF Service Locations

<sup>(2)</sup> Proposed New Station Stop

## 7. Infrastructure and Operations Analysis

BNSF conducted extensive operations simulations of alternative new passenger services in the Kansas City-Wichita-Oklahoma City-Fort Worth corridor as part of the 2010 Amtrak Feasibility Study to evaluate the capability of the existing infrastructure to accommodate new passenger rail services. The modeling extended from Temple, Texas to Fort Madison, Iowa to examine the potential impacts on BNSF freight operations. A schematic representation of the model network is shown in Figure 7, showing the complexity of the rail network that was evaluated. A series of string line charts were also produced using the Rail Traffic Controller (RTC) simulation model showing the current freight operations as well as the added passenger trains under various scenarios.

Figure 7: RTC Rail Operations Simulation Network



## 7.1 Infrastructure Characteristics

As identified in the operations simulation, several infrastructure and operations issues will need to be addressed in order to establish a reliable passenger rail service along the corridor for either the *Heartland Flyer Extension* or the *KC-OKC-FW Daytime Service* while avoiding conflicts with BNSF freight operations. Since Amtrak's *Lone Star* operations ceased in 1979, new federal regulations have been implemented including the requirement to install Positive Train Control (PTC) on tracks used for passenger service or carrying certain hazardous materials. BNSF is currently installing PTC on much of the route that would be used for passenger service. Additionally, BNSF freight operations have greatly increased since 1979 along segments of the corridor. In particular, the portion of the route in Kansas between Mulvane and Emporia, through Wichita, is now used for eastbound traffic along BNSF's Transcon route, which includes 23 high-priority intermodal unit trains daily, typically exceeding 120 cars in length. Most of the route between Fort Worth and Kansas City will be part of the BNSF MidCon Corridor that will expand service for north-south freight traffic. The introduction of passenger train service presents both infrastructure and operational challenges over the heavily used routes. However, the proposed new passenger rail service could be made compatible with expanding freight operations with added capacity at critical locations in the corridor.

Except for a two-mile segment on the Kansas City Terminal Railroad (KCT) at Kansas City (Kansas and Missouri), the balance of the route (604 miles) from Kansas City to Fort Worth operates over six subdivisions of the BNSF, including a 1.5 mile segment in Wichita that is shared with the Union Pacific Railroad (UP) but is dispatched by BNSF.

The following summarizes the general operating characteristics. (Key infrastructure issues that need to be addressed are underscored)

### **Emporia Subdivision, Kansas City, MO to Holliday, KS (13.5 miles)**

An average of 67 trains per day operate between Kansas City and Holliday. Over half of the trains are intermodal, some of which are high-priority, and the balance are manifest, local and unit trains<sup>31</sup>. This route is currently used by the *Southwest Chief*. The line has three and four main tracks and is controlled by Centralized Traffic Control (CTC) between Kansas City Union Station and the Argentine Yard, the largest yard on the BNSF system.<sup>32</sup> West of Argentine to Holliday, the route consists of three and four main tracks with a short section with two tracks. It is also controlled by CTC.

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<sup>31</sup> Manifest trains consist of mixed freight in a variety of car types (boxcars, hoppers, gondolas, flatcars, etc). Local trains are short operations generally switching cars to or from industries in the vicinity.

<sup>32</sup> Centralized Traffic Control is a train control system where train movements are permitted by signal indications. The system is operated from a centralized facility. Train crews are required to comply with the signal indications to assure safe operation.

This segment traverses the Argentine freight yard area, 4.6 miles southwest of downtown Kansas City and is the highest volume switching yards on the BNSF System. This 24/7 facility also has complete car and locomotive servicing facilities. Additionally, several unit freight trains receive fueling, and inspection services, as well as change crews at Argentine. The new BNSF intermodal yard (KCIMF) and logistics park being built at Edgerton, Kansas will divert much of the intermodal traffic from Argentine yard.<sup>33</sup> The KCIMF is expected to be operational sometime during the second quarter of 2013.

### **Topeka Subdivision, Holliday, KS to Emporia, KS (113 miles)**

Between Holliday and Emporia, the passenger route leaves the Transcon mainline to serve Lawrence and Topeka, KS. This segment is single track, controlled by Track Warrant Control (TWC)<sup>34</sup> with Automatic Block Signals (ABS)<sup>35</sup> and Automatic Train Stop (ATS)<sup>36</sup> between De Soto through Lawrence, Topeka, and Pauline to Emporia, where CTC again begins. Between Holliday and Emporia, only three BNSF freight trains operate on the average day, plus the *Southwest Chief*. The Topeka yard is the largest freight yard on the segment and is the location of a major BNSF freight car repair shop. Passenger train speeds up to 79 MPH are permitted, with numerous permanent speed restrictions due to curve limitations. These speed restrictions reduce the average operating speed and affect fuel consumption, as more frequent acceleration cycles are required.

The major operational constraints on this segment are the short siding lengths and the long distances between sidings, up to 15 miles. Short sidings require passing trains to come to a complete stop and the long spacing could force trains to wait longer for opposing trains to arrive. However, the low freight use of this line segment greatly reduces the potential for conflicts with opposing movements.

### **Emporia Subdivision, Emporia, KS to Ellinor, KS (13.4 miles)**

The Emporia to Ellinor segment reconnects with the Emporia Sub-Division at Emporia “N.R. Junction.” This segment picks up the BNSF main Transcon route carrying an average of 70 trains per day, including several priority intermodal trains. This section is primarily double track, with three track segments at both ends. Operations are controlled by CTC.

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<sup>33</sup> Traffic volumes cannot be quantified until operating and marketing plans for the new MidCon service is initiated.

<sup>34</sup> Track Warrant Control is a system where a train is authorized to enter and operate in a section of track by a dispatcher. Once in the section, train movements are further controlled by automatic signals or by operating rules.

<sup>35</sup> Automatic Block Signals is a train movement control system that through the automated detection of a train on a certain section of track (a Block), other trains are not permitted to enter that block by means of signal indications.

<sup>36</sup> Automatic Train Stop is an adjunct to the train control system that brings a train to a stop if a signal indication is violated. It is not as sophisticated as Positive Train Control as the location of other trains is not detected, only the violation of a signal.

Trains from the Newton route and the Augusta route merge between Ellinor and Emporia requiring the sorting out of the opposing directional movements that must cross. However, the three-track section provides operational flexibility to minimize delays.

**La Junta Subdivision, Ellinor, KS to Newton, KS (60.4 miles)**

This segment is single track except through Newton. There are five sidings on the segment. The segment averages 25 to 30 trains per day, mostly intermodal and manifest trains. Newton has a rail yard that handles nearly 250 cars per day. Train operations on this segment are primarily eastbound Transcon intermodal trains. Transcon trains heading westward operate primarily on the Emporia subdivision. UP also has trackage rights over this segment and in prior years has operated up to 20 daily trains. Passenger train speeds are permitted up to 79 MPH, with lower speeds in segments including a 25 MPH limit at the Union Pacific (UP) diamond crossing<sup>37</sup> east of Peabody. Portions of this segment still have jointed rail, (16 miles) some dating back to 1948 and are subject to more frequent slow orders and added track maintenance work.

Managing train movements on a single track line that operate against the current flow of freight traffic moving toward Kansas City (such as the current westbound *Southwest Chief*) requires precise dispatching to avoid delays. Working against opposing traffic requires every train meet to utilize a passing track. In situations where trains operate in the same direction but at different speed, and passing facilities are only used when one train finally is ready to overtake another.

**Arkansas City Subdivision, Newton, KS to Arkansas City, KS (78.1 miles)**

Over half of this subdivision is single track and the majority is controlled by CTC. The segment through Wichita is double track including the portions of the downtown grade separation. An average of 20 to 25 trains that includes a mix of eastbound Transcon intermodal unit and manifest trains mixed with locals operate between Newton and Mulvane. Ten trains per day operate between Winfield and Mulvane, with twice that number of trains operating between Winfield and Arkansas City, consisting of intermodal, unit, manifest and local trains. The segment north of Mulvane has primarily eastbound Transcon trains with most westbound freight trains using the Emporia subdivision. There are 11 sidings of varying lengths on the segment. Maximum authorized speed on the line is 55 MPH for both passenger and freight trains. However, in prior years when the Santa Fe operated the *Texas Chief* on this route, a 90 MPH speed was allowed for much of the segment. The Automatic Train Stop (ATS) equipment, which permitted the higher speed, has been removed. However, the basic alignment is still in place that could permit speeds higher than 55 MPH. CTC controls the operations.

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<sup>37</sup> A diamond crossing is where two railroad tracks cross each other at the same grade. Switching from one track to the other is not provided by the crossing.

Between Arkansas City and Oklahoma City, nine miles of lighter rail (119 lb) are still in place, much of it installed from 1957 through 1969. In Arkansas City, some mainline rail dates back to 1941.<sup>38</sup> North of Winfield to Mulvane, for 22 miles, much of the rail is 115 lb dating back to 1948 and some is still jointed rail. Through Wichita BNSF is just completing installation of new 136 lb welded rail on both of the double tracks.

New southbound passenger trains would operate against the primarily northbound (eastbound Transcon) directional flow of traffic on this segment. Integration of the UP trains on the route through the Wichita area on the shared 1.5 mile double track segment also adds to the operational complexity and potential for conflicts. UP train movements operating to/from Wellington, Kansas, are integrated by cooperative dispatching control.

The following segments in Oklahoma and Texas currently used by the *Heartland Flyer* also have operating constraints that will need to be removed to reestablish service between Kansas City and Fort Worth under the *KC-OKC-FW Daytime Service*.

**Red Rock Subdivision, Arkansas City, KS to Gainesville, TX (260.2 miles)**

The entire subdivision is single track with CTC, except for a 7-mile double track segment through and just south of Oklahoma City. The major rail yards on the subdivision are at Ponca City serving a large refinery and Flynn Yard in Oklahoma City. There are 31 sidings (not counting sidings and station tracks at Oklahoma City) of various lengths between Arkansas City and Gainesville. Oklahoma City is the current north terminus of the Fort Worth – Oklahoma City *Heartland Flyer* that operates over the segment. The subdivision handles a mix of high-speed intermodal, medium speed manifest, and slower speed unit train traffic. A number of the freight trains branch off the Red Rock Sub at Black Bear to use the Avard Sub enroute to the Cherokee Yard in Tulsa. Managing train movements that have widely disparate service priorities and speeds on single track will likely require added passing sidings to accommodate added passenger trains.

**Fort Worth Subdivision, Gainesville, TX to Fort Worth, TX (65 miles)**

The most southerly segment of the route is single track from Gainesville to Lambert, then double track to South Haslet, then single track the balance of the route to Fort Worth. The entire Gainesville – Fort Worth segment is controlled by CTC. The subdivision includes nine sidings of various lengths on the segment. Major yards are in the Fort Worth/Saginaw area and Alliance just north of Fort Worth. Freight train density is between 23 and 38 trains per day between Gainesville and Fort Worth. The greatest numbers of trains operate between Alliance

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<sup>38</sup> When applied to rail, weight indicates the weight per yard (3 feet) of rail. New installations on mainline track use 132 pound and higher rail today. However, lighter sections of 110 pounds or greater have adequate strength for passenger train operations, these section are generally older and special attention must be paid as the rail may be nearing their end of service life.

and Saginaw/Fort Worth. The subdivision serves a mix of intermodal, unit, and manifest trains on the subdivision.

This is a medium density (approximately 23 trains per day) single track CTC segment with several passing sidings between Gainesville and Alliance. Sidings on the single track segment are spaced from five to 9.4 miles apart, except between Metro and Valley View, where sidings are 11.5 miles apart. The segment becomes a high-density route from Alliance through Saginaw to Fort Worth (approximately 38 trains per day). Alliance is a major intermodal facility for BNSF. There are 7 miles of double track through the Alliance area, and three more miles of double track in the north Fort Worth area. At Saginaw, large numbers of trains operating to and from Amarillo enter and exit the line. The UP, Fort Worth and Western (FWWR), and Trinity Railway Express (TRE) railroads all come together with BNSF in the Fort Worth area. Each of these railroads have their own unique operating rights to access one another. There is a significant amount of freight interchange traffic with BNSF/UP in the Fort Worth terminal area.

Managing all of the train flows converging and crossing in the Fort Worth area from different routes, and having to meter trains through the Tower 55 interlocking, which is controlled by UP can result in significant operational delays. This is a major railroad junction with at-grade diamond crossings and operations frequently exceed the capacity of the plant. A major upgrade project is beginning with Federal funding assistance. The impacts of the Tower 55 improvements will require further RTC operations modeling to determine the service improvements and delay reductions. Preliminary assessments indicate that the improvements will result in at least a 30 percent increase in capacity.

## 7.2 Operations Analysis

For the 2010 Amtrak Feasibility Study, BNSF used the Rail Traffic Controller (RTC) simulation model using detailed records of actual freight operations in 2009. The model included a detailed representation of the subdivision configurations including permitted speeds, speeds through turnouts, grades, and curves, passing siding locations and lengths, signal spacing, and yard layouts. The model was the designed to replicate the existing operations. (See Figure 7)

The rail operations analyzed extended well beyond the corridor to assess all train movements that could affect the study area. For purposes of preparing this SDP, BNSF conducted some additional operating simulations to evaluate the reduction in freight train delays if different dispatching priorities were considered.<sup>39</sup>

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<sup>39</sup> Due to a need to dedicate its modeling resources to evaluate and respond to system-wide service disruptions caused by this year's wide-spread flooding and the need to develop plans to most efficiently reroute trains, additional operating scenarios could not be modeled.

### 7.2.1 Network Improvements – Amtrak Feasibility Study

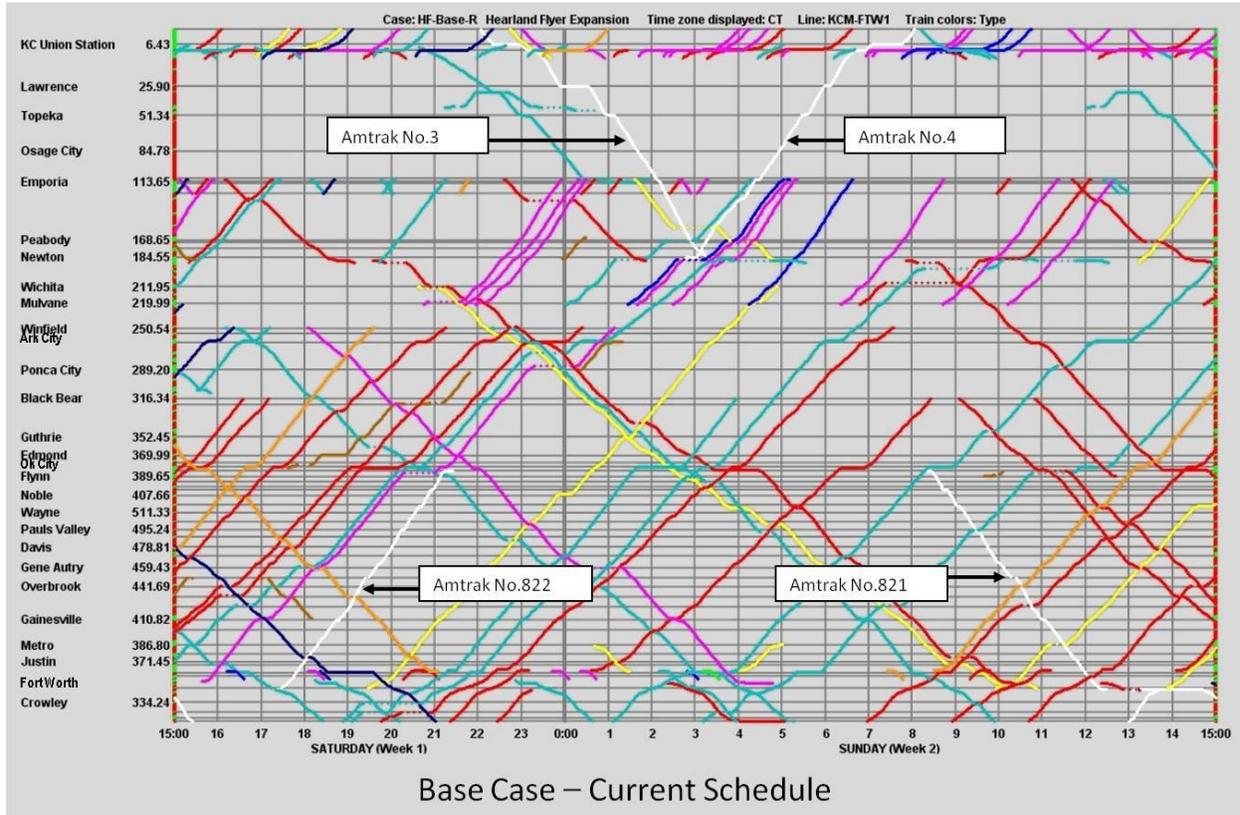
Using the RTC model, BNSF examined several track arrangements to determine passenger and freight train delays. This iterative approach eventually produced a track configuration that included infrastructure improvements that preserved freight train service levels while meeting required passenger rail schedules. No adjustments to the freight operations were considered such as minor changes in train departure times to minimize freight/passenger conflicts. A governing assumption was that the present freight operation must be operated with no added delays.

Analyses were conducted for both the *Heartland Flyer Extension* and the *KC-OKC-FW Daytime Service*. For the *Heartland Flyer Extension*, the operations analysis leads to a recommended addition of 26.6 miles of double track line between Oklahoma City and Newton. The estimated cost is \$106 million in 2009 dollars. For the new *KC-OKC-FW Daytime Service* the BNSF RTC model analysis recommends adding 92.2 miles of new double track at a cost of \$405 million. An additional \$8 million is also required by both alternatives for upgrading the at-grade crossing signal systems to permit higher speeds. All the costs are in 2009 dollars.

### 7.3 RTC Outputs of Base and Alternatives

The RTC operations simulation model results developed by BNSF were provided to KDOT and ODOT in August 2010. The material included “stringline” charts graphically describing the existing freight and passenger operations in the Fort Worth-Kansas City corridor. Figure 8 shows the rail operations for a typical day. The existing *Heartland Flyer* is shown by white lines on the lower portion of Figure 8. Train # 822 is the northbound Flyer; train # 821 is the southbound *Heartland Flyer*. Note that the times shown along the bottom of the chart are on a 24 hour clock.

Figure 8: Stringline Chart - Existing Rail Operations for 24 Hours

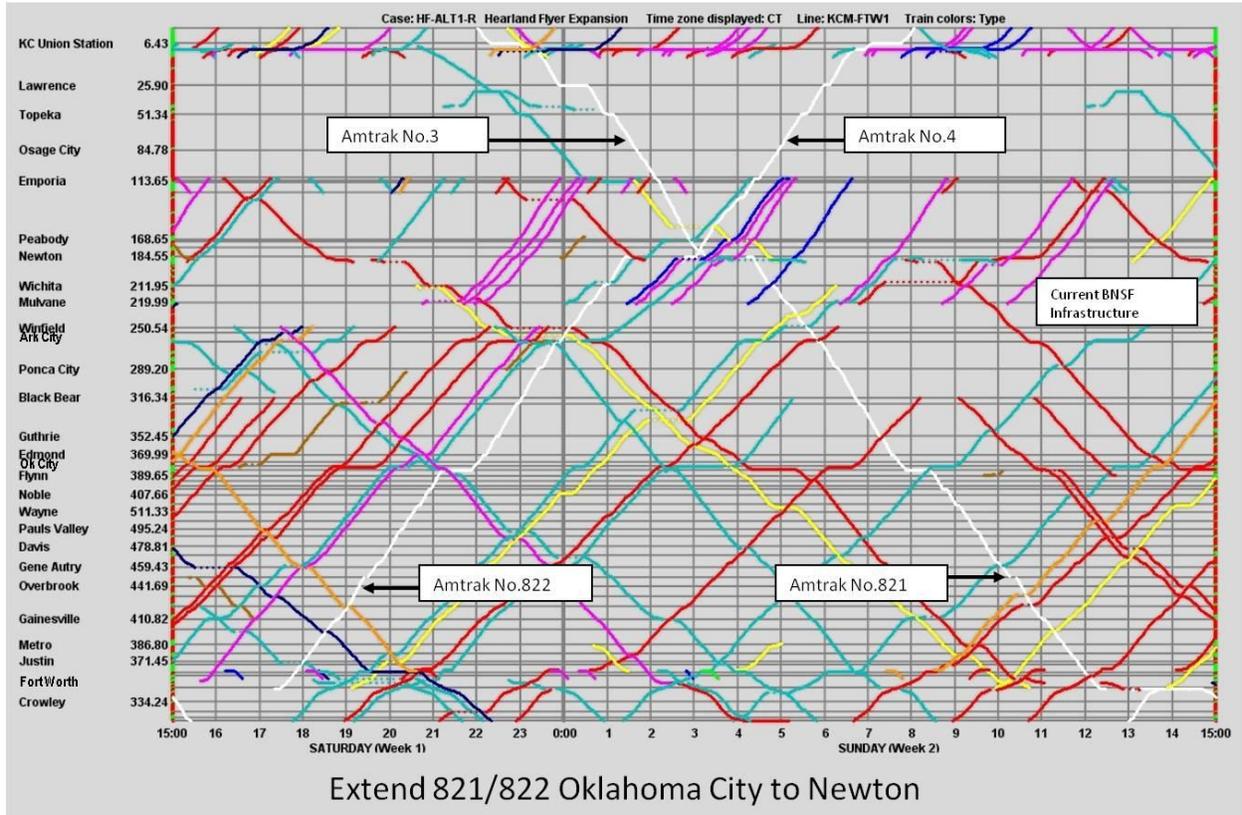


Given the inability of BNSF to provide additional modeling support, due to operational challenges resulting from the Summer 2011 Missouri River flooding, railroad operating and engineering experts on the consultant team used the RTC stringline charts provided by BNSF to further examine the new passenger operations along the corridor. Figure 9 shows the simulation results for the *Heartland Flyer Extension*. Note that the extended service would connect in Newton with Amtrak trains # 3 and #4, the *Southwest Chief*.

In the case of the *Heartland Flyer Extension* between Oklahoma City and Newton, the analyses suggested that the 26.6 miles of new double track improvements identified by BNSF in the Amtrak Feasibility Study could be reduced and still provide the added operating flexibility to maintain fluid freight operations. The revised estimate comprises 15 miles of additional track: 10.5 miles of double track and 4.5 miles for two new passing sidings at an estimated construction cost of \$75 million in 2011 dollars.<sup>40</sup>

<sup>40</sup> A more detailed description of the infrastructure improvement costs is provided in Section 9.

Figure 9: Stringline Chart - Added *Heartland Flyer* Extension



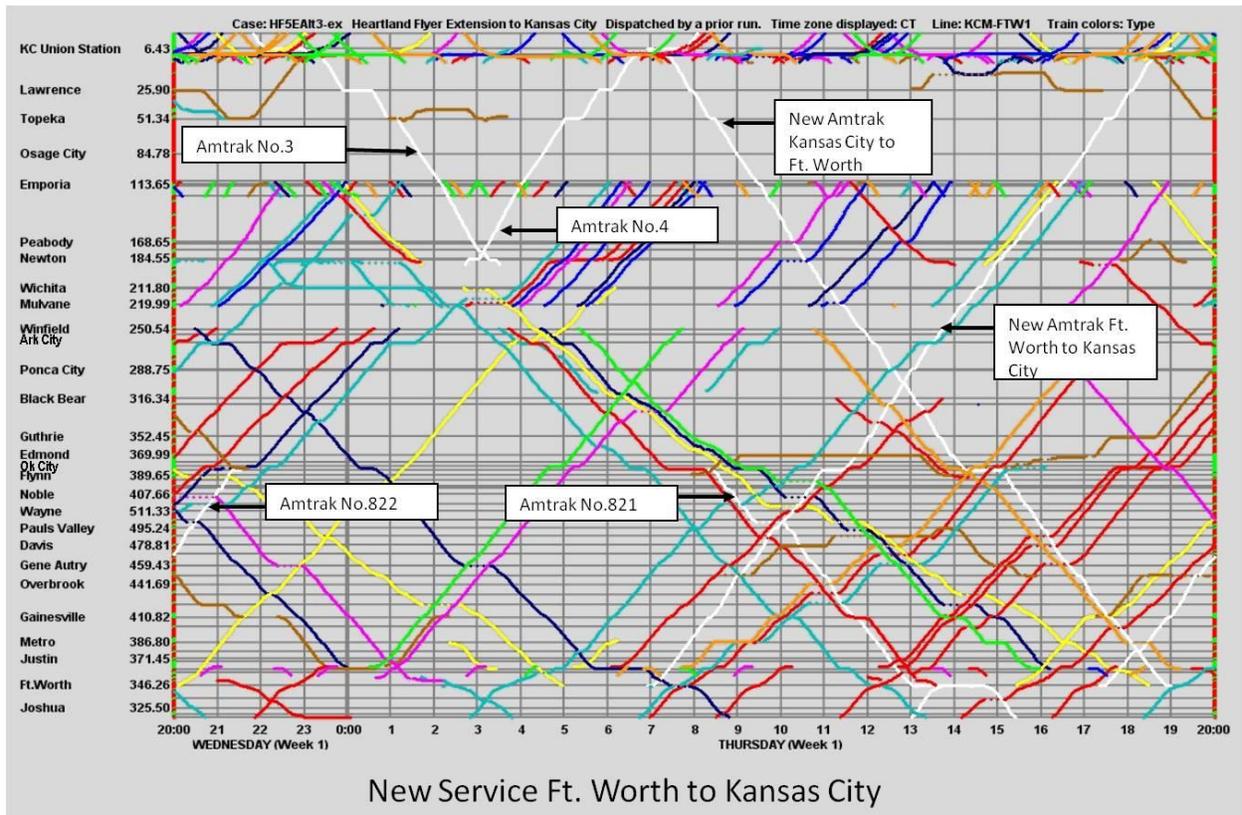
In the case of the new daytime service between Kansas City, Oklahoma City and Fort Worth, it is illustrated by the stringline chart shown in Figure 10. BNSF had identified the need for 92.2 miles of new double track at an estimated capital cost of \$405 million (2009 dollars). In reviewing the operating conflicts, the consultant team developed an alternative set of improvements:

- By adding a second main track in two sections, totaling 4.4 miles between Fort Worth and Alliance, double track will be available for approximately 17 miles
- By extending double track for 4.5 miles, a continuous double track would be available between Newton and Walton on the La Junta Subdivision used by the eastbound BNSF Transcon freight service
- A second long passing siding totaling 4.5 miles would be provided east of Peabody
- The two new daylight trains would pass between Oklahoma City and Arkansas City, and pass the two directional trains of the *Heartland Flyer* between Oklahoma City and Fort Worth. Added passing tracks or additional double track will be needed in each of these sections.

A total of 44.3 miles of new track including 37.3 miles of new double track and 7.0 miles of added passing tracks are proposed at an estimated construction cost of \$235.5 million.

One of the areas of significant freight operational delay occurs in the Fort Worth area. The Tower 55 improvement project is expected to reduce delays and increase capacity in this area by approximately 30 percent. Federal funding for the Tower 55 project was recently awarded. Detailed design is now progressing but the project is likely two or more years from being operational. The analyses completed to date do not consider the Tower 55 improvements.

**Figure 10: Stringline Chart -KC-OKC-FW Daytime Service**



The infrastructure improvements outlined above developed by analyzing the operational conflicts identified by the stringline diagrams stem only from interference attributable to passenger trains conflicting with freight trains or with each other. Conflicts between freight trains presented in the stringline diagrams do not appear to be related to the new passenger services.

### 7.3.1 Heartland Flyer Extension – Capital Needs

Operation of the extended *Heartland Flyer* between Oklahoma City and Newton KS would share the single main track between Mulvane KS and Newton with the BNSF eastbound Transcon

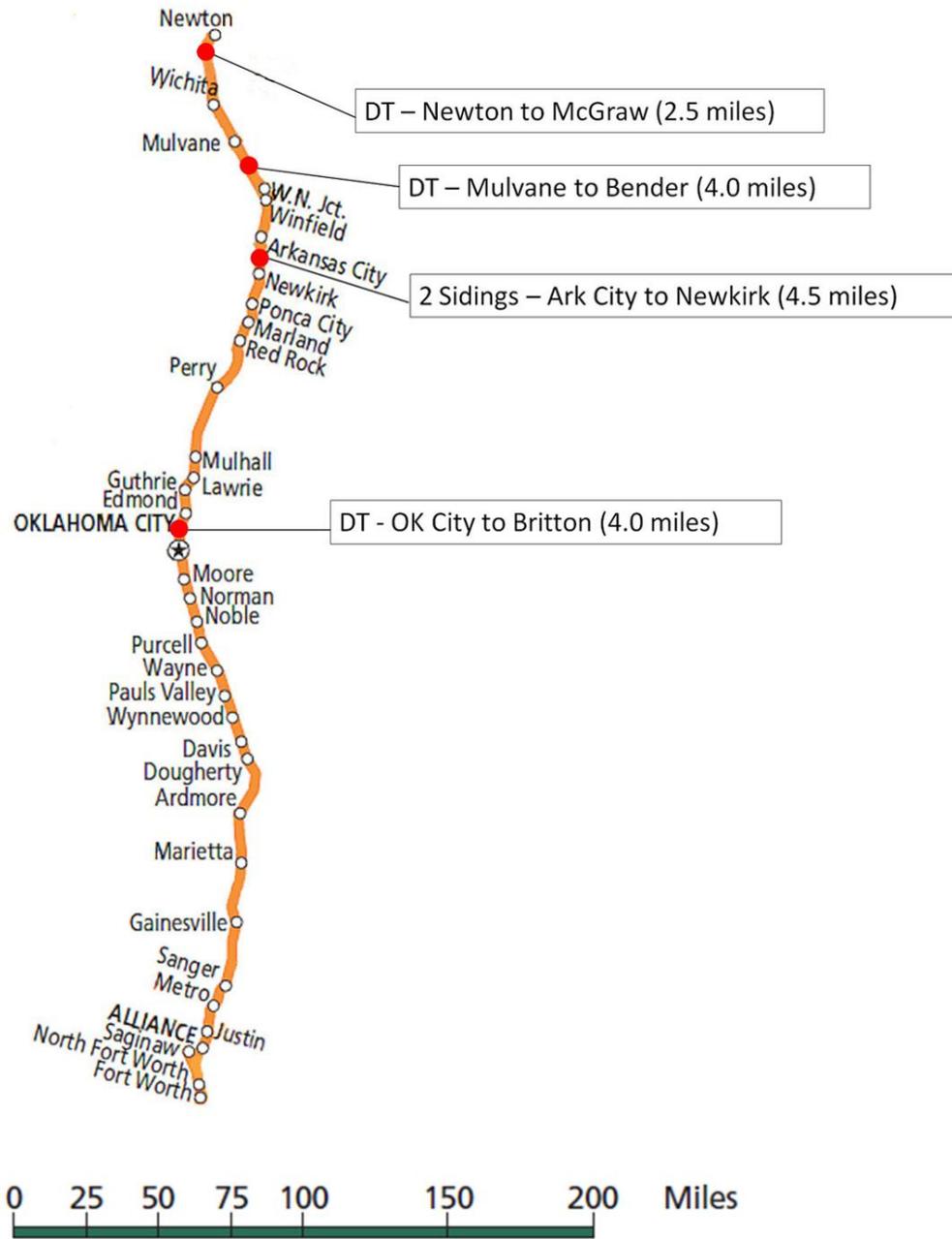
intermodal trains. Of the 23 trains per day on this segment in 2010, 19 were northbound (eastbound Transcon) and only four southbound. While the northbound Flyer extension would be moving with the predominate flow of traffic, the southbound Flyer would pose a number of conflicts.

The segment between Arkansas City, KS and WN Junction, where Texas -Kansas City freight traffic join the Transcon, has potential conflicts. Another area of potential interference is the Newton terminal. The *Heartland Flyer Extension* equipment will require a turn-around or layover track for servicing off the mainline to permit the passage of the *Southwest Chief* in each direction and five eastbound freight trains between 2:00 AM and 4:00 AM.

To provide necessary capacity for the *Heartland Flyer Extension*, Figure 11 shows the recommended added trackage based on evaluation, by the consultant team, of conflicts shown on the RTC stringlines.

Figure 11: Infrastructure Requirements for *Heartland Flyer Extension*

# Heartland Flyer Extension Oklahoma City to Newton, KS Added Infrastructure



### 7.3.2 KC-OKC-FW Daylight Service – Capital Needs

The new *KC-OKC-FW Daylight Service* option presents another set of conflicts with BNSF freight operations. The added passenger train round trip between Fort Worth and Oklahoma City would also have to pass each direction of the existing *Heartland Flyer* train. The new northbound and southbound trains would also have to pass each other between Oklahoma City and Newton. Additionally, The *KC-OKC-FW Daylight Service* trains would have conflicts with the eastbound Transcon freight trains and conflicts between Newton and Emporia where the passenger trains diverge to the Topeka Sub.

To provide for meeting trains between the southbound *Heartland Flyer* (or *Heartland Flyer Extension*) and the northbound *KC-OKC-FW Daylight Service* to Kansas City, a 7.9 mile long section of double track is recommended between Thackerville, OK and Marietta, OK. This would add flexibility for freight operations as well as provide for meeting passenger trains. To accommodate meets between the southbound *KC-OKC-FW Daylight Service* and the northbound *Heartland Flyer (Extension)*, another 2.5 mile long passing siding is recommended at Krum, TX, plus five miles of double track between Justin, TX and Ponder, TX. Adding 4.4 mile of double track would fill the gaps between existing double track sections to provide 17 miles of double track in the section between Fort Worth and Alliance, TX to avoid conflicts with the frequent freight movements.

The opposing new daylight service trains would normally pass between Oklahoma City and Arkansas City, KS. Two passing sidings totaling 4.5 miles and 8.5 miles of double track are recommended for this segment. A total of 11.5 miles of double track are recommended between McGraw, KS and Homers, KS to permit the westbound daylight train to pass eastbound Transcon trains.

Figure 12: Infrastructure Requirements for KC-OKC-FW Daylight Service

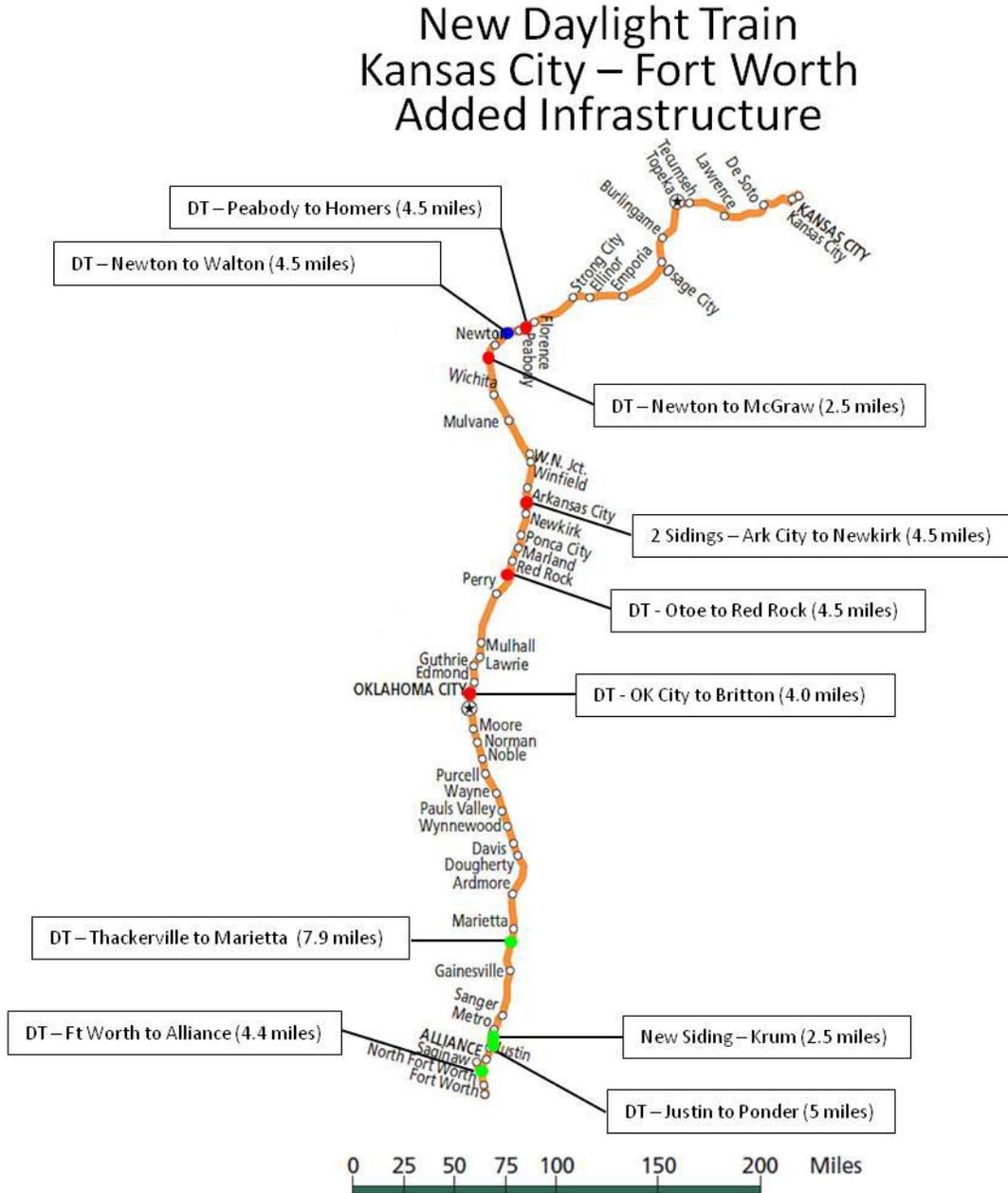
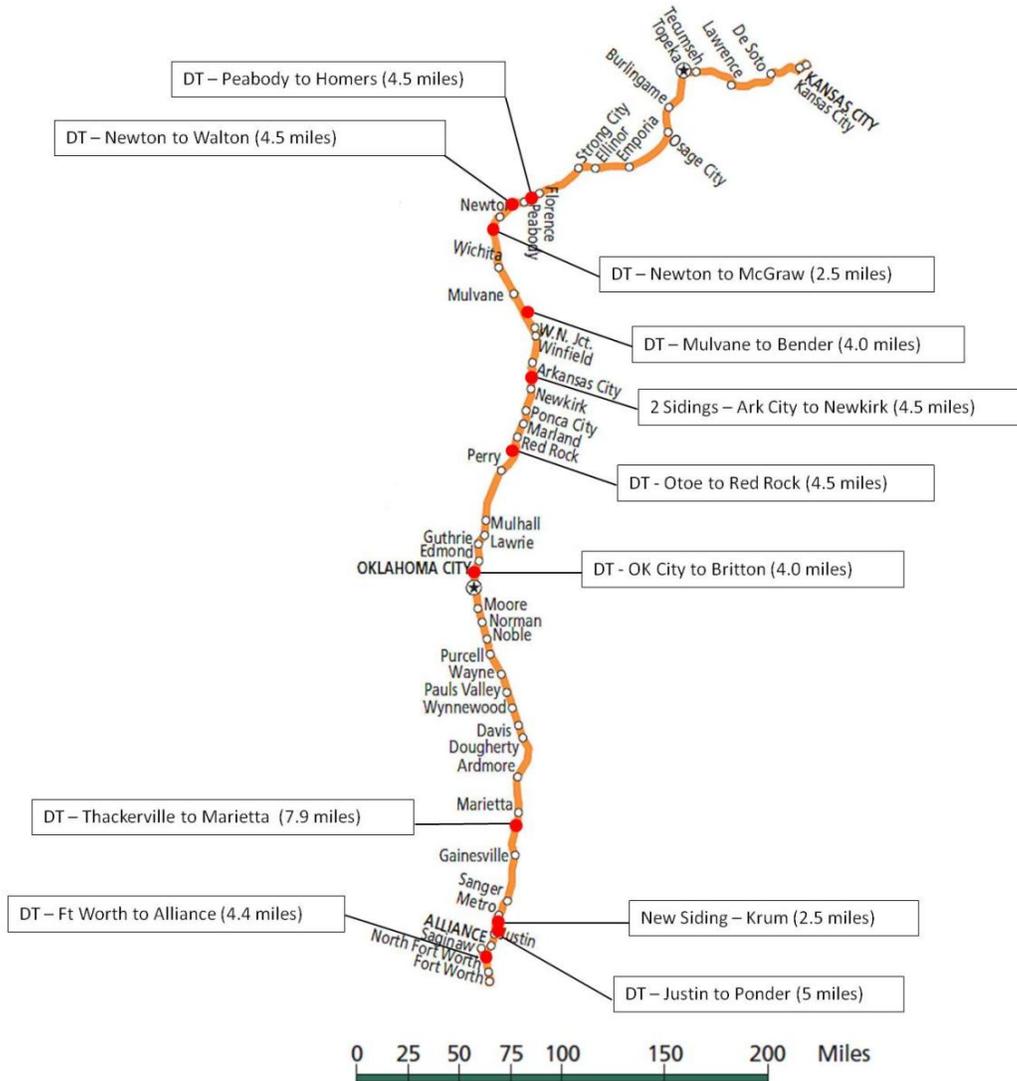


Figure 13: Infrastructure Requirements for potential future *Combined Services*

# Combined Extension of Heartland Flyer and New Daylight Train Kansas City – Fort Worth Added Infrastructure



## 7.4 Equipment Consists

### 7.4.1 Equipment

Under Section 305 of PRIIA, the American Association of State Highway and Transportation Officials (AASHTO) assembled a committee to develop specifications for a new generation of American style conventional (79 MPH) and intermediate high-speed (125 MPH) rail cars and locomotives. FRA is requiring new equipment purchases that utilizes federal assistance to meet the “305” specifications, which have been published for both single and double deck cars and for diesel locomotives.

An issue with shorter length, regional passenger rail projects, such as that proposed for the Kansas City-Wichita-Oklahoma City-Fort Worth corridor, is that small-quantity train acquisitions are more expensive, regardless of whether the equipment is ultimately owned or leased<sup>41</sup>. This proposed service would benefit by piggybacking on other, larger vehicle procurements. FRA recently announced grants to five states (California, Illinois, Iowa, Michigan, Missouri) for the acquisition of 120 new bi-level passenger cars and 33 new locomotives. Should this project progress to the implementation stage, it may be possible to join with other passenger service sponsors in coordinated equipment procurement to obtain lower unit prices. ODOT and TxDOT are considering the replacement of the aging Amtrak equipment leased for the existing *Heartland Flyer*. Purchase of replacement equipment is a possibility<sup>42</sup>.

Eighty-five foot long, double deck cars, being acquired for both new and updated passenger services in California and the Midwest (Chicago-St. Louis) under the FRA grants would be suitable for the Kansas City-Wichita-Oklahoma City-Fort Worth corridor. The Kansas City to Fort Worth corridor does not present dimensional restrictions limiting the use of this type of car.

Standard conventional American-type equipment is the most suitable for this service for the following reasons:<sup>43</sup>

- Track constructed for freight train loadings is sufficiently capable for American-type passenger loads.
- Dynamic characteristics and durability of this equipment has been tuned for freight track alignment and maintenance characteristics.

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<sup>41</sup> Equipment procurement can be made using a number of financial vehicles. The method selected should be held in abeyance until both the equipment and financial market conditions can be determined at the time of acquisition.

<sup>42</sup> If this equipment is replaced similar to the recommendations in this SDP but with one coach less the full route Kansas City to Fort Worth trains, The estimated cost would be estimated as \$23 million in 2011\$.

<sup>43</sup> Trains capable of 79 MPH schedule operation are considered conventional. While much of this equipment is rated at 103 or 110 MPH top-speed, achieving those speeds against timetable requirements is not practical.

- The probability of piggybacking on an equipment order from other purchasers is high.
- The performance requirements of 79 MPH operations are within the capability of all commonly available equipment.
- Locomotives and cars can be interchanged with other equipment meeting the universal Amtrak standards.
- A secondary market for this equipment would likely exist if terminating a service proved necessary. In the current market, used equipment of high quality is not likely available.

Outside of the clearance restrictions posed by tunnels in the Washington to Boston Northeast Corridor, Amtrak and other operators of conventional passenger trains in North America have shown a preference for double deck cars. Double deck car offers the advantage of greater passenger capacity relative to train length. This allows for shorter platforms at stations and closer spacing of at-grade crossing in the immediate vicinities of stations. Shorter platform requirements increase the availability of suitable station locations. Shorter trains reduce the probability of blocking road grade crossings during station stops.

Newer designs have accounted for ADA requirements.<sup>44</sup> Station platform designs must be made to match the chosen passenger equipment to take full advantage of ADA features. Amtrak is currently upgrading station platforms at Kansas stations served by the *Southwest Chief*, including those on portions of the proposed *KC-OKC-FW Daytime Service*.

Rolling stock requirements have been estimated based on updated ridership forecasts provided by Amtrak and the round trip travel times for each proposed service. The equipment used for the *Heartland Flyer* can continue to serve the *Heartland Flyer Extension* as only a single trainset is required, however, the increased ridership will require the addition of a standard coach car to the train. For the *KC-OKC-FW Daytime Service*, two additional trainsets would be needed. The normal train consist is two locomotives (one at each end of the train, one food service car, and three standard coaches. The train is configured with a locomotive at each end, allowing the train to be operated in either direction without being turned. The second locomotive also assures reliability as the train can operate in the event one of the locomotives becomes inoperative.

Capital equipment costs are discussed in Section 9.

## 7.4.2 Performance Characteristics

A single 4200 horsepower locomotive hauling three, and occasionally four, conventional double-deck passenger cars has proven sufficient on the *Heartland Flyer* service. This consist achieves 79 MPH and meets the requirements of the timetable. On the current *Heartland*

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<sup>44</sup> Americans with Disabilities Act

*Flyer*, the locomotive is afforded an 11-hour layover nightly in Oklahoma City. This period provides a window for maintenance in the overnight hours. When the service is extended to Newton, KS, this maintenance window will no longer be available. The afternoon layover in Fort Worth will remain unchanged to facilitate light maintenance.

Locomotives for this service should be sized and geared to optimize running times at 79 MPH top speed, for four coaches and to support 21 start/stop cycles.

The Kansas City to Fort Worth route has proven to be subject to extremes of both winter and summer temperatures and can be subjected to both heavy snow and ice storms. Extreme summer temperatures can require trains to slow due to the potential of 'sun kinks', a buckling of the track due to heat expansion of the rails. Climate control equipment and insulation must be capable of meeting both of these demands to assure cabin comfort. Modern passenger equipment also uses 'head-end' power<sup>45</sup> for passenger cabin lighting and climate control. Every locomotive should be equipped to handle the entire load for the train in case of a locomotive failure.

### 7.4.3 Other Key Issues

#### **Positive Train Control (PTC)** <sup>46</sup>

FRA has recently issued proposed regulations in response to Federal legislation that require PTC on virtually all rail lines over which scheduled passenger trains operate by 2015. At this time, the scope, costs, and funding requirements for PTC are still to be determined, and the rules are in flux. However, BNSF is currently installing PTC on this route since it also carries freight categories for which FRA also requires PTC. The system is currently being tested.

#### **Branding**

The creation of a recognizable brand for a passenger service can prove the key to keeping its availability and the quality of the service in the public's mind. Kansas, Oklahoma, Texas, and Missouri (depending on the service alternative) may consider creating an identity for this proposed service. If a positive reputation is earned, the recognition factor will be of great benefit to the continuing success of the service. This is an area of discussion that will include coordination with Amtrak, Oklahoma and Texas to see if a "*Heartland*" identity would encourage increased use. Rights to the service mark *Heartland Flyer* is controlled by Amtrak. Branding could include a distinctive color scheme such as used on the successful Cascade Services in Washington State.

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<sup>45</sup> Although other arrangements and configuration exist, current American practice is for electricity to power lighting, food service and climate control equipment in the passenger cars to be generated in the locomotive (hence 'head end').

<sup>46</sup> Positive Train Control is an adjunct to the dispatching signal system that provides for automatic stopping of trains if interfering traffic is detected.

### **On-board services**

A variety of on-board services, including Wi-Fi, would make the train travel experience more pleasant and potentially productive for both the leisure and business traveler.

While the length of the journey does not require a full-service sit down dining car, convenient store fare of prepackaged microwave food is not adequate for a satisfactory journey of 6 to 12 hour duration. Delicatessen quality and type of fare would be suitable for this trip duration. The *Heartland Flyer Extension* would require availability of breakfast and light lunch southbound and light dinner and evening snack northbound. *KC-OKC-FW Daytime Service* would require light breakfast, lunch, and dinner options.

## **7.5 Terminal, Yard, and Support Operations**

The existing terminal facilities, yards and support operations at Fort Worth and Kansas City, currently used by Amtrak operations, would be used for the new services. These facilities include crew quarters, locomotive servicing and fueling, and car cleaning. Added crew costs and maintenance costs are developed in Section 10. In the case of the *Heartland Flyer Extension*, new facilities would be required at Newton for storage and turn-around of the equipment. The existing BNSF fueling facility at Newton could potentially be utilized if needed. Standby power would be installed.

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## 8. Station and Access Analysis

In addition to the rail infrastructure and train operations issues along the corridor, there are additional elements necessary to implement passenger service. These are associated with accommodating passengers' access to the service and are focused in and around stations. These issues are summarized below around two general areas:

- Access to and from the station and circulation options available in the communities served.
- Issues related to the development of stations and customer accessibility to the service.

Currently active stations exist for those points served by the *Heartland Flyer* between Fort Worth and Oklahoma City. Newton, Topeka, Lawrence, KS, and Kansas City, MO, also have active stations for the *Southwest Chief*. Additional stations have been proposed at Edmond, Guthrie, Perry, and Ponca City in Oklahoma, and Arkansas City and Wichita in Kansas. These cities are common to both *Heartland Flyer Extension* and *KC-OKC-FW Daytime Service*. For *KC-OKC-FW Daytime Service* only, new stops are proposed in Kansas at Strong City, Emporia, and Shawnee along the portion of the corridor also used by the *Southwest Chief*. *KC-OKC-FW Daytime Service* would serve the current *Southwest Chief* stations at Kansas City, MO, Lawrence, Topeka, and Newton, KS. South of Oklahoma City, added stations are proposed in Davis, OK and Krum, TX to be served by either *Heartland Flyer Extension* or *KC-OKC-FW Daytime Service*.

There is no existing Amtrak service in Wichita, the largest city in Kansas and a major city in both alternatives. The existing rail line travels through downtown on an elevated double track. A new station may have to be located either north or south of the elevated section.

New stations will require basic facilities including waiting areas, parking and basic information services. Basic passenger amenities to be provided will be consistent with services provided at similar size/type of national Amtrak stations. KDOT has met with local officials outlining the local responsibilities for station improvements, and future operations and maintenance of stations and facilities. Provisions for ticketing on-board the train will not require intermediate stations to employ agency personnel although local preference may desire an active agency.

Costs to be shouldered by local entities include building or refurbishing of the station and parking facilities and the on-going maintenance, operations, insurance and utilities for those facilities, provisions for ticketing, either by agent or machine, and provision of any personnel to attend the station prior to train time. Some localities have used volunteer help to staff their stations.

Given the community size and anticipated level of passenger activity, it is expected that a major station would be required in Wichita. This potentially could include customer services such as

ticketing, information and other amenities associated with a destination type location. Given this, additional coordination with the City of Wichita would be necessary to provide for these services.

A critical component of successful implementation of new service is circulation to and from stations at each location. This provides passengers the ability to reach their final destinations. As is noted below, there are varying levels of transportation options available in each community. The right mix of parking versus other options will need to be assessed on a station by station basis. This would require extensive coordination with local cities and transportation providers.

## 8.1 Station Location Analysis

**Kansas City:** Kansas City Union Station has been redeveloped into a multi-purpose cultural center with exhibit space, theaters, retail space, and restaurants. It is also Amtrak station for greater Kansas City. Additional services or station development will not be required.

Location:	30 W. Pershing Boulevard, Kansas City, MO.
Parking:	A four-level paid parking garage is located at the station.
Major Highways:	East-West I-70, US 24 North-South I-35, I-29, I-435, US 71, US 69
Intercity Rail:	Amtrak <i>Southwest Chief</i> Chicago-Los Angeles daily Departs westbound 10:45 PM Departs Eastbound 7:43 AM  Missouri <i>River Runner</i> St. Louis-Kansas City daily Arrivals 2:55 PM, 9:40 PM Departures 8:15 AM, 4:00 PM
Intercity Bus:	Greyhound and Jefferson Lines serve Kansas City with service to destinations in all quadrants. The bus station is located approximately 2 miles northeast of Union Station.
Aviation:	Kansas City International Airport (KCI) serves 8 major airlines with approximately 178 scheduled departures daily. KCI is located approximately 22 miles north of Union Station.
Public Transit:	The Kansas City Area Transit Authority operates 'The Metro' bus services in both the Missouri and Kansas metropolitan area. Six of the bus routes serve Kansas City Union Station directly. Plans have been discussed for 6 commuter rail lines in the area that converge on Union Station but no implementation has begun. A tax for financing a light rail system was defeated by the voters in 2008. Most routes operate from 5 AM to 11 PM on weekdays with reduced service on Saturday and Sundays.
Rental Car:	Yes, with station pickup during normal business hours
Taxi:	Yes Numerous taxi providers 24/7

**Shawnee/Johnson County:** Shawnee is a proposed new station site adjacent to Kansas Route 7, a major north-south multi-lane highway serving the Kansas City, KS suburbs including Overland Park, Olathe, Lenexa, Bonner Springs, Leavenworth, and Lansing, as well as Shawnee. The station is envisioned to include a major parking facility and will provide an alternative for Kansas passengers to avoid the congested drive into downtown Kansas City, MO. The station is within four miles of the Kansas Speedway and the Legends shopping and entertainment district.

Location:	Near K-7
Parking:	Not developed
Major Highways:	K-7, north-south limited access route, east-west I-70, I-435
Intercity Rail:	None
Intercity Bus:	None
Aviation:	No airports nearby
Public Transit:	Johnson County has transit service in the county but currently not in the general vicinity of where the station may be located.
Rental Car:	Yes with pickup available during normal business hours
Taxi:	Yes Community Cab 6AM-10PM 7 days AAA Luxury Taxi 24/7

**Lawrence:** Lawrence is the home of the University of Kansas with just over 30,000 students and the Haskell Indian Nations University with 1,000 students.

Location:	The Amtrak station, located at 413 East 7 <sup>th</sup> Street, is five blocks east of the main retail and downtown corridor.
Parking:	There is limited parking at the station with more extensive public short- and long-term parking within a few blocks of the existing station. Numerous parking lots are located in between Rhode Island and Vermont Streets, starting three blocks east of the station. Vacant land in the immediate vicinity of the stations could expand parking opportunity.
Major Highways:	North-South US 59 East West I-70 (co-located with Kansas Turnpike to the east), US 40, US 24
Intercity Rail:	Amtrak <i>Southwest Chief</i> Chicago-Los Angeles daily Departs westbound 11:52 PM Departs Eastbound 5:47 AM
Intercity Bus:	Greyhound operates intercity bus service at Lawrence. The bus station is located approximately 2 miles from the existing Amtrak station. Per day, two westbound buses operate toward Wichita, three westbound toward Denver and one eastbound schedule to Kansas City.
Aviation:	Lawrence Municipal Airport is a general aviation facility with no scheduled service
Public Transit:	The city's transit system, The T, operates bus service within Lawrence. While no T route serves the existing Amtrak station directly, several routes are within two to four blocks of the station. These include 1, 3, 4, 6, 10, and 11. These routes connect to all parts of the Lawrence area, including the University of Kansas. Most buses run every 30 minutes to one hour, from morning until evening. Most routes operate from 6 AM to 8 PM, Monday through Saturday.
Rental Car:	Yes, with station pickup available during normal business hours
Taxi:	Yes Ground Transportation Inc. 24/7 Two other providers with limited services

**Topeka:** As the capitol of Kansas, Topeka has many modes of transportation that access downtown. Topeka is home to Washburn University, with a student population of 5,400.

Location:	The existing Amtrak station along the <i>Southwest Chief</i> line in Topeka, KS is just off SE Adams Street at SE 5 <sup>th</sup> Street, immediately east of the Central Business District.
Parking:	There are four hourly public parking garages or lots just west of I-70 near the station. There is not on-street parking near the station.
Major Highways:	North-South US 75 East-West I-70 (U.S. 40 co-located) Kansas City-Denver. Other I-335 (KTA) southwest to Wichita.
Intercity Rail:	Amtrak <i>Southwest Chief</i> Chicago-Los Angeles daily Departs westbound 12:29 AM Departs Eastbound 5:18 AM
Intercity Bus:	Greyhound operates intercity bus service through Topeka. The bus station is located approximately 0.5 miles from the existing Amtrak station. Per day, three buses operate eastbound toward Kansas City and four operate westbound toward Wichita on I-35 or toward Denver on I-70.
Aviation:	Philip Ballard Municipal Airport: general aviation facility with no scheduled service; Forbes Field: general aviation with no scheduled service
Public Transit:	Topeka Transit is the city's bus service. Approximately half of the system's 15 bus routes operate near but not to the station. Service typically runs Monday through Friday, with limited Saturday service, every 30 minutes or hourly. Most routes operate 6 AM to 6 PM. There is no Sunday service.
Rental Car:	Yes with station pickup available during normal business hours.
Taxi:	Yes Numerous taxi providers 24/7

**Emporia:** There is no existing Amtrak service in Emporia, though the *Southwest Chief* route passes through the city. The city hosts the Emporia State University with approximately 5500 students.

Location:	No former station building exists in the central business area although abundant vacant land exists adjacent to the railroad for potential station sites.
Parking:	N/A without station location
Major Highways:	North-South Kansas Turnpike (as I-335 north and I-35 south), Kansas City-Wichita via Topeka) East-West US 50, I-35 to Kansas City via Olathe.
Intercity Rail:	None
Intercity Bus:	Greyhound operates intercity bus service through Emporia. The bus station is located approximately 2 miles from the existing rail line. One eastbound and two westbound buses serve Emporia daily.
Aviation:	Emporia Airport is a general aviation facility, with no scheduled service
Public Transit:	Lyon County Area Transit offers general public demand response transit from 7:30 AM to 5:00PM and Deviated Fixed Route service from 6:45 AM to 6:00 PM weekdays only.
Rental Car:	Yes, with station pickup available during normal business hours.
Taxi:	Yes Watt Cab 24/7

**Strong City:** Strong City sits between Topeka and Wichita, approximately 20 miles west of Emporia, with a small population and limited services. The Tallgrass Prairie National Preserve, operated by the National Park Service, is located immediately north of the city. The Flint Hills Rodeo is also held annually in Strong City.

Location:	Former station facility exists on Chestnut Street.
Parking:	Vacant land in immediate vicinity of former station as well as paved areas associated with station building.
Major Highways:	North-South K-177 East-West US 50
Intercity Rail:	None
Intercity Bus:	None
Aviation:	Chase County Airport general aviation facility, with no scheduled service
Public Transit:	None
Rental Car:	Yes, with pickup available from Emporia during normal business hours
Taxi:	Yes Bestmark Express 24/7

**Newton:**

Location:	North Main Street at E. 5 <sup>th</sup> St. in central business district
Parking:	There are several city-owned public parking lots within a few blocks of the existing station, as well as on-street parking on some streets.
Major Highways:	North-South I-135 Salina to Wichita (co-located with US 81) East-West US 50
Intercity Rail:	Amtrak <i>Southwest Chief</i> Chicago-Los Angeles daily Departs westbound 2:45 AM Departs Eastbound 2:59 AM
Intercity Bus:	Greyhound and Prestige Bus Lines provide intercity bus service north to Salina and south to Wichita. Three buses operate in each direction daily.
Aviation:	Newton City-County Airport general aviation facility, with no scheduled service
Public Transit:	Harvey County Transportation offers general public demand response service from 8:00 AM to 5:00 PM weekdays only.
Rental Car:	Yes with station pick-up during normal business hours.
Taxi:	Yes OT Cab Company M-F 6AM-5PM; Sa 8AM-1PM Several Wichita taxis will serve 24/7 with surcharge.

**Wichita:** The existing rail line for the proposed service travels through downtown. Therefore, a station could present the opportunity to have many intermodal connections. The former railway station in Wichita had been repurposed and is in private ownership, but is currently for sale. In its original configuration, Wichita station tracks were elevated over the adjacent roadways but the through freight tracks were located at grade. The through tracks have since been elevated as well. The stations platforms and canopy are still in place but tracks have been reconfigured. Even with the changes, this station location may prove still viable. The central location of the historic station would give convenient access to central Wichita.

If the original site proves not viable, a new station will likely be required at a location north or south of the elevated track section although some possibilities in the elevated track segment can be evaluated. In general, the elevated tracks away from the historic station may be difficult because provisions for a station were not built into the section. Regardless, a station location will need to be coordinated with the local government.

Location:	Former station is located on E. Douglas Avenue in the Wichita Central Business District
Parking:	A parking lot of adequate size appears part of the historic station property.
Major Highways:	North-South I-135 passes through Wichita north to Salina connecting to I-70. The Kansas Turnpike (co-located with I-35 travels northeast to Kansas City and south to Oklahoma City and Texas. East-West US 54
Intercity Rail:	None
Intercity Bus:	Greyhound operates intercity bus service through Wichita. The bus station is located approximately 6 blocks from the historic station. Greyhound operates routes north to Newton, Hutchinson, and Salina, northeast to Emporia, Topeka and Kansas City and south toward Oklahoma City. Prestige Bus Lines operates a route north to Newton, Hutchinson and Salina and west to Pratt, Dodge City, and Garden City, terminating at Pueblo Colorado. A total of 10 intercity buses serve Wichita each day <sup>47</sup> . Prestige Bus Lines ticketing is handled through Greyhound.
Aviation:	The Wichita Mid-Continent Airport is served by six commercial airlines. Nonstop service is offered to Atlanta, Las Vegas, Phoenix, Los Angeles, Chicago, Denver, Dallas-Fort Worth, Houston Memphis, and Minneapolis. Many of these airports are major hubs offering national and international connections.
Public Transit:	Wichita Transit operates 17 bus routes in the metro area, as well as wheelchair lift vans and paratransit service. Most bus routes connect to downtown Wichita. The scheduled service is scheduled from 6 AM to 6:45 PM Monday through Friday with reduced hours on Saturday. There is no Sunday or Holiday service.
Rental Car:	Yes, with station pickup available during normal business hours.
Taxi:	Yes Numerous taxi providers 24/7

<sup>47</sup> All intercity bus operations noted were derived from published schedules for August 16, 2011, a randomly selected weekday.

**Arkansas City:** Arkansas City is south of Wichita, near the Kansas-Oklahoma border.

Location:	A building that may have been a station is located on the west side of the railroad at E. 5 <sup>th</sup> Ave. This building is being used by BNSF. Vacant land a block north at E. Central Ave may be suitable for a station.
Parking:	Sufficient vacant land is in the area of the railroad and E. Central Avenue to accommodate parking.
Major Highways:	North-South US 77. The Kansas Turnpike (co-located with I-35) is located 17 miles west of the city East West US 166
Intercity Rail:	None
Intercity Bus:	None
Aviation:	There are two general aviation airports near Arkansas City but no scheduled service
Public Transit:	None
Rental Car:	Closest rental agencies are in Winfield, KS, 15 miles north.
Taxi:	Yes A Cab – listed but no information available

**Ponca City:**

Location:	A building that appears to have once been the Ponca City station is located on the west side of the railroad at W. Oklahoma St. The building does not appear active
Parking:	There is on-street parking near this potential station as well as vacant land in the immediate vicinity
Major Highways:	North South US 77 East West US 60
Intercity Rail:	None
Intercity Bus:	None
Aviation:	Ponca City Regional Airport is a general aviation facility without scheduled service
Public Transit:	Cimarron Public Transit System offers public demand response transport from 5:00 AM to 6:00 PM on weekdays only. No service on weekends and holidays.
Rental Car:	Yes with station pickup available during normal business hours
Taxi:	Yes Gene's Cab Company 24/7

**Perry:**

Location:	A historic station structure is located approximately 200 feet north of Cedar Street. The building appears to be occupied and in use.
Parking:	The historic station structure is surrounded by underutilized vacant land.
Major Highways:	North South I-35, US 77 East-West US 64
Intercity Rail:	None
Intercity Bus:	Greyhound operates on a north south route along I-35 with a stop at Perry. There are two buses in each direction daily. The bus station is located at 2812 W. Fir Street, US 64 adjacent to I-35, approximately 3 miles west of the railroad.
Aviation:	Perry Municipal Airport is a general aviation facility without scheduled service.
Public Transit:	Cherokee Strip Transit is a demand/response public transit system serving Perry. It operates on weekdays only from 8:30 AM to 5:00 PM.
Rental Car:	Yes with station pickup available during normal business hours
Taxi:	Yes Cowboy Country Cab of Stillwater serves Perry 24/7

**Guthrie:**

Location:	A historic station is located on the east side of the track at W. Oklahoma Ave. The building is occupied and operates as a restaurant and meeting hall..
Parking:	The historic station building has some limited parking (approximately 10 spaces). There is street parking adjacent along W. Oklahoma Avenue and W. Harrison Avenue. A vacant lot is immediately south of the station.
Major Highways:	North South I-35, US 77 East West O-33
Intercity Rail:	None
Intercity Bus:	None
Aviation:	Guthrie-Edmond Regional Airport is a general aviation facility without scheduled service.
Public Transit:	First Capital Trolley offers on-demand transportation services. A scheduled shuttle to Langston University, approximately 10 miles east of Guthrie is also offered.
Rental Car:	Rental car agencies are located in Edmond but station pickup is available during normal business hours.
Taxi:	Yes Edmond Taxi Cab of Edmond serves Guthrie 24/7

**Edmond:**

Location:	No historic station site is apparent in Edmond
Parking:	N/A
Major Highways:	North South I-35 East West Turner Turnpike (I-44 co-located), O-66
Intercity Rail:	None
Intercity Bus:	None
Aviation:	Edmond is served by Will Rogers World Airport in Oklahoma City.
Public Transit:	Citylink operates fixed route transit system and paratransit in Edmond. Most routes operate from 7 AM to 6PM weekdays with some limited Saturday service. There is no fare charge.
Rental Car:	Yes with station pickup during normal business hours.
Taxi:	Yes Edmond Taxi 24/7

**Oklahoma City:** The Santa Fe Depot is located on the eastern edge of downtown Oklahoma City, within easy walking distance of the Bricktown entertainment district and the basketball/hockey arena. The station is open from 7:30 to 8:45 AM and again from 9:00 to 11:00 PM. Ticketing is available through an automated kiosk, at the station. Tickets may be purchased in advance over the internet, at another full service Amtrak station or on the train. No checked baggage is handled at OKC.

The Santa Fe Depot is privately-owned by a third party. Access to the station is through a lease agreement between the owner and the State of Oklahoma. There is retail space available at the station. A new retail establishment commenced operations at the station in 2011.

Location:	Santa Fe Depot is located at 100 S. E.K. Gaylord Boulevard.
Parking:	There are 47 parking spaces available at a fee of \$6 per day.
Major Highways:	North South I-35, US 77 East West I-40, US 62 Northeast-Southwest I-44,
Intercity Rail:	The <i>Heartland Flyer</i> operates one round trip daily between Oklahoma City and Ft. Worth. The train departs in the morning, returning in the evening.
Intercity Bus:	Greyhound and Jefferson Lines offer intercity buses along north south routes along I-35 and east-west along I-40. A diagonal route from Wichita Falls TX to Tulsa and beyond operates along I-44. The intercity bus station is located approximately 2000 feet west of the depot.
Aviation:	Will Rogers World Airport is served by 5 major airlines with direct service to 20 destinations, many of which are hub airports with connection throughout the world. The airport is located approximately 6 miles southwest of the Central Business District
Public Transit:	Central Oklahoma Transit and Parking Authority operates bus and paratransit services in Oklahoma City. Direct connections at the Oklahoma Santa Fe Depot are scarce. METRO local bus routes #1 and #24 pass near the station and both serve the Oklahoma City Transit Center, which will afford transfers to most parts of the city. Routes operate Monday through Friday with some route offering Saturday service. Most route commence around 6 AM and terminal service by 7:30 PM.
Rental Car:	Yes with station pickup available during normal business hours
Taxi:	Yes Numerous taxi providers 24/7

**Norman:** The Norman station has an enclosed waiting area but no other amenities or services. No checked baggage is handled. The station is owned by the City of Norman and has shared space with the Community Art Center.

Location:	200 S. Jones Street.
Parking:	Free parking is available across the tracks from the station. There are also provisions for bicycle parking.
Major Highways:	North-South I-35, US 77 East-West O-9
Intercity Rail:	Yes, the <i>Heartland Flyer</i> operates one round trip daily between Oklahoma City and Ft. Worth. The train departs southbound in the morning, returning in the evening.
Intercity Bus:	Greyhound operates at Norman with a station at 506 N. Porter. The bus route operates along the I-35 corridor with transfers available to other destinations at Oklahoma City.
Aviation:	University of Oklahoma Max Westheimer Airport is a general aviation facility without scheduled service. Norman is in the service area of Oklahoma City's Will Rogers World Airport for scheduled services.
Public Transit:	CART (Cleveland Area Rapid Transit) passes 1 block to the east of the Norman station. The N21 bus on St. Peters Avenue proceeds to the South Loop transfer station on the Oklahoma University campus for connections to all quadrants of the city. The buses run 7 AM to 8 PM Monday through Friday with reduced Saturday service.
Rental Car:	Yes with station pickup available during normal business hours
Taxi:	Yes Numerous taxi providers 24/7

**Purcell:** The Purcell station has an enclosed waiting area but no other amenities or services. No checked baggage is handled. The station is owned by the City of Purcell.

Location:	E. Main Street and N. Santa Fe Ave.
Parking:	Twenty-seven spaces of free parking are available at the station property.
Major Highways:	North-South I-35, US 77 East-West O-39
Intercity Rail:	Yes, the <i>Heartland Flyer</i> operates one round trip daily between Oklahoma City and Ft. Worth. The train departs southbound in the morning, returning in the evening.
Intercity Bus:	None
Aviation:	Chandler Field is a general aviation facility without scheduled service.
Public Transit:	Delta Public Transit operates a demand/response rural transit system serving Purcell.
Rental Car:	Yes, with the agencies located in Norman. Station pickup available during normal business hours.
Taxi:	Yes Several Norman taxi providers will serve Purcell for surcharge.

**Pauls Valley:** The Pauls Valley station has an enclosed waiting area but no other amenities or services. No checked baggage is handled. The station is owned by the City of Pauls Valley. It is a new facility built in 2002 and is adjacent to the former Santa Fe station.

Location:	S. Santa Fe Street at E. Paul Street.
Parking:	Fifty-seven space of free parking are available at the station.
Major Highways:	North-south I-35, US 77 East-West O-19
Intercity Rail:	Yes, the <i>Heartland Flyer</i> operates one round trip daily between Oklahoma City and Ft. Worth. The train departs southbound in the morning, returning in the evening.
Intercity Bus:	Greyhound operates intercity buses along the I-35 north-south route. The station is located at 215 W. Paul Street, co-located with Delta Public Transit.
Aviation:	Pauls Valley Municipal Airport is a general aviation facility with scheduled service.
Public Transit:	Delta Public Transit operates a demand/response rural transit system serving Pauls Valley.
Rental Car:	Yes with station pickup available during normal business hours.
Taxi:	Yes Taxis from Norman or Ardmore will serve Pauls Valley for surcharge.

**Davis:**

Location:	The historic station is located at the tracks on W. Main Street. The City Museum operates in the building.
Parking:	there is limited free parking at the historic station.
Major Highways:	North-South I-35 US 77 East-West O-7
Intercity Rail:	None
Intercity Bus:	None
Aviation:	Crazy Horse Municipal airport is a general aviation facility without scheduled service.
Public Transit:	Davis is in the demand-response service area of Southern Oklahoma Rural Transit
Rental Car:	Yes with pickup available during normal business hours
Taxi:	Yes Taxis from Norman or Ardmore will serve Davis for surcharge.

**Ardmore:** The Ardmore station has an enclosed waiting area but no other amenities or services. No checked baggage is handled. The station is located in the former Santa Fe station and shares space with the Community Police and the Main Street Coalition.

Location:	251 E. Main Street
Parking:	There are 48 spaces of free parking at the station.
Major Highways:	North-South I-35, US 77 East-West US 70
Intercity Rail:	Yes, the <i>Heartland Flyer</i> operates one round trip daily between Oklahoma City and Ft. Worth. The train departs southbound in the morning, returning in the evening.
Intercity Bus:	Greyhound operates buses on the north-south route along I-35. The bus station is located at 2501 W. Broadway, near the interstate. This is approximately 2 miles west of the train station.
Aviation:	Ardmore Downtown Executive Airport is a general aviation facility without scheduled service
Public Transit:	Southern Oklahoma Rural Transportation System operates a demand/response transit operation that serves Ardmore and Carter County.
Rental Car:	Yes , with station pickup during normal business hours
Taxi:	Yes Aa Cab Company 24/7

**Gainesville:** The Gainesville station has an enclosed waiting area but no other amenities or services. No checked baggage is handled. The station is the former Santa Fe station and houses the Santa Fe Museum.

Location:	605 E. California Street
Parking:	There are 15 spaces of free parking at the station.
Major Highways:	North-South I-35 (co-located with US 77) East-West US 82
Intercity Rail:	Yes, the <i>Heartland Flyer</i> operates one round trip daily between Oklahoma City and Ft. Worth. The train departs southbound in the morning, returning in the evening.
Intercity Bus:	Greyhound operates buses on the north-south route along I-35. The bus station is located at 1934 N. I-35. This is approximately 2 miles northwest of the train station
Aviation:	Gainesville Municipal Airport is a general aviation facility without scheduled service
Public Transit:	The Texoma Area Paratransit Service operates both demand/response transit services in the Gainesville region. Fixed route bus service is in planning stages.
Rental Car:	Yes with station pickup during normal business hours
Taxi:	Yes Safeway Transportation 24/7

**Krum/Denton:**

Location:	No historic station site is apparent in Krum. Vacant land is plentiful near the tracks.
Parking:	N/A
Major Highways:	North-South FM 156, I-35 is 3 miles east of town. East-West FM 1173, US 380 is 1 ½ miles south of town
Intercity Rail:	None
Intercity Bus:	Greyhound serves Denton on their north-south I-35 route with their station located along I-35 near the intersection with FM 1173, approximately 3 miles from Krum.
Aviation:	Denton Municipal Airport is a general aviation facility without scheduled service.
Public Transit:	Denton County Transit Authority operates fixed route public transportation in Denton County but does not serve Krum. The new Denton A-train is a new interurban rail system that connects Denton to the DART system at Carrollton, for continuing service to Dallas.
Rental Car:	Yes, with station pickup during normal business hours.
Taxi:	Yes Denton County Taxi serve Krum 24/7

**Fort Worth:** The Fort Worth Amtrak station is the city-owned Fort Worth Intermodal Transit Center (ITC). The ITC joins several public transportation options together in the Fort Worth Central Business District. Connections are afforded to the Amtrak *Texas Eagle*, the Trinity Railway Express commuter train, commercial intercity buses, and local transit bus routes

The station is located immediately adjacent to the east edge of downtown Fort Worth. The station is open from 8:00 AM until 6:00 PM with the ticket window and checked baggage counter operating from 10:00 AM until 5:30 PM. The ticket kiosk is available from 8:30 AM until 10:00 PM. The station features an enclosed waiting area with payphones and an ATM. Fort Worth handles checked baggage for the *Texas Eagle*. The *Heartland Flyer* does not have checked baggage. Passengers transferring from the *Eagle* to the *Flyer* with checked bags must claim those bags before boarding.

Location:	1001 Jones Street
Parking:	There is no parking directly associated with the station but on-street metered parking is available as well as commercial parking adjacent to the station site.
Major Highways:	North-South I-35W, US 81 and US 77 co-located with I-35W), US 287 East-West I-20, US 80
Intercity Rail:	The <i>Heartland Flyer</i> schedule is timed to make a convenient transfer to the <i>Texas Eagle</i> . The <i>Texas Eagle</i> is a daily operation between Chicago and San Antonio. The eastbound (toward Chicago) and the westbound (toward San Antonio) trains meet at Ft. Worth, affording transfers in either direction. On Monday, Wednesdays and Fridays, the westbound <i>Texas Eagle</i> continues to Los Angeles after a 7-hour layover in San Antonio. The eastbound <i>Texas Eagle</i> returning from Los Angeles arrives at Ft. Worth on Tuesday, Friday, and Sunday.
Intercity Bus:	Greyhound Lines, Kerrville Bus Company and Americanos USA motorcoach operators serve the ITC. Buses to points east or north almost universally require a transfer at Dallas. Direct buses are available to several points west, mostly via the I-20 or U.S. 287 corridors. Train and bus schedules are not coordinated
Aviation:	Dallas-Fort Worth (DFW) Airport is a major hub facility serving 191 domestic and international destinations by 19 air carriers.

Public Transit:	<p>Trinity Railway Express - The Trinity Railway Express (TRE) is a commuter train that operates between Dallas and Ft. Worth. A shuttle connection to the Dallas/Ft. Worth Airport is also afforded from the CentrePort station. The TRE operates their full schedule on weekdays and an abbreviated schedule on Saturdays. No Sunday service is offered. TRE offers convenient connection to the DART light rail system at Dallas Union Station. There are 17 departures and 22 arrivals at the ITC weekdays. The first train departs at 5:02 AM and the last arrival at 10:14 PM. There is reduced Saturday service but no service on Sunday.</p> <p>The 'T' operates 18 local and 5 express bus routes directly from the ITC. The routes extend to all quadrants of the 'T' service area. Most buses operate from around 5:30 AM until 10:00 PM Monday through Friday. There is reduced Saturday service but no Sunday service.</p> <p>Two blocks to the west of the ITC on Commerce Street where <i>Molly the Trolley</i> operates a loop route throughout the Ft. Worth downtown from 10 AM to 10 PM daily. On Saturday, a shuttle directly from the ITC to the Ft Worth stockyard district operates from 9 AM to 10:30 PM</p>
Rental Car:	Yes, with station pickup during normal business hours
Taxi:	Yes Numerous taxi providers 24/7

**Americans with Disabilities Act (ADA)**

Amtrak, over time, has been upgrading its stations and service to meet ADA requirements. All new stations are required to meet these standards. The American Recovery and Reinvestment Act of 2009 (ARRA) provided Amtrak with \$1.3 billion for capital investments, including \$446 million for security and life safety improvements and \$842 million for rebuilding and modernizing infrastructure and equipment. Included in the latter category is the Mobility First program, designed as an immediate-action program to reduce many accessibility barriers prior to Amtrak’s ADA compliance deadline of July 26, 2010. Mobility First investments include wheelchair lifts, connecting walkways, and designated parking spaces.

Existing stations along the *Southwest Chief* corridor have been identified for improvement. Investments to the Newton, Topeka, and Lawrence stations, which are in common with KC-OKC-FW Daytime Service, are planned as identified below.

**Table 8: ARRA Funded ADA Station Improvements**

Location	Improvement	Cost
Lawrence	Information kiosk	\$ 10,000
Lawrence	Mobility First	\$ 9,000
Lawrence	new 550-foot platform	\$ 600,000
Newton	Information kiosk	\$ 11,000
Newton	Mobility First	\$ 70,000
Topeka	Information kiosk	\$ 11,000
Topeka	Mobility First	\$ 14,000
Topeka	platform tactile edge	\$ 100,000
<b>Total ARRA funds:</b>		<b>\$ 825,000</b>

### 8.3 Intermodal Connectivity

Fort Worth already has developed an intermodal center where the new service would connect with existing commuter rail service as well as local and intercity buses. Fort Worth is currently planning a second commuter rail line known as the Southwest-to-Northeast Rail Corridor (sw2ne). This commuter rail line would link southwestern Tarrant county communities to the Dallas-Fort Worth airport through downtown Fort Worth, stopping at the intermodal center.

Oklahoma City is planning to introduce modern streetcar service as part of their downtown redevelopment plan. The line is anticipated to connect nearby inner-city neighborhoods to downtown and will operate at or near the Amtrak station in downtown. The City of Oklahoma City has launched a multimodal hub study that will result in the identification and a tentative model for a new public facility that will bring together all of Oklahoma City’s planned mass transit and rail transportation modes. The recommended alternative positions the station as a transit center served by streetcar and commuter rail service, as well as intercity trains and buses.

## 9. Capital Programming

### 9.1 Costing Methodology Summary

Section 9 summarizes the estimated cost of the principal elements of the two alternatives under evaluation. The costs shown are in 2011 dollars with no provision for inflation. All costs are planning level with no detailed engineering performed to date. Costs per mile or per track element such as turnouts have been based on current consultant experience with the Illinois DOT passenger rail program between Chicago and St. Louis adding new sidings and sections of double track.

For programming purposes, a 20 percent allowance for “soft costs” for planning and NEPA environmental studies, preliminary engineering, final design and construction oversight has been included. In addition, a 30 percent contingency has been included since no detailed engineering has been undertaken.

### 9.2 Project Cost Estimates

#### 9.2.1 Infrastructure Costs

Infrastructure cost estimates are based on the following:

- Inclusion of track and signal improvements
- Grading and track construction will provide 25-foot track center spacing between adjacent tracks.
- Cost elements include 136# continuous welded rail (CWR) with concrete ties.
- Refurbishing existing bridges, build new bridges and new or extended culverts – if necessary
- At-grade highway crossings will be extended and upgraded crossing signals
- Standard ditches and maintenance access roads
- New #24 power operated turnouts<sup>48</sup> will be provided at the ends of new double track segments and at the ends of passing sidings
- Industry turnouts impacted by the new tracks will be replaced with #11 hand-thrown turnouts<sup>49</sup> with 141# rail

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<sup>48</sup> Turnout is the proper name for what is generally called a 'switch', a track appliance that permits a train to move from one track to another when desired. A 'switch' is a component of a turnout. The number (#24) indicates how sharp the turn. #24 is a high speed turnout allowing approximately 50 MPH in a switching move. Power-operated indicates that the Dispatcher at the central control center can operate the turnout.

- Split point derails<sup>50</sup> will be provided
- Additions to the CTC signal system will include new control points/interlocking at the ends of double track and at the ends of passing sidings
- The following tables summarize the infrastructure cost estimates based on the consultant analysis.

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<sup>49</sup> A hand-thrown turnout must be operated by a member of the train crew at the site of the turnout. #11 is a lower speed turnout allowing train moves in the 20 MPH range.

<sup>50</sup> A derail is a track appliance that will derail a car or locomotive that tries to pass over it when engaged. They are generally used as a safety device to prevent a car on side track to inadvertently roll onto a main track and into the path of traffic. A split-point is a particular type of very effective derail appliance.

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**Table 9: Heartland Flyer Extension - Estimated Infrastructure Costs (2011\$)**

<b>BNSF Subdivision</b>	<b>Improvement Location(s)</b>	<b>New Main Track and Passing Sidings (Track Miles)</b>	<b>Cost per Track Mile (\$ millions)</b>	<b>Estimated Total Cost (\$ millions)</b>	<b>Location State</b>
Red Rock	Double Track Oklahoma City to Britton	4.0	\$5	\$20	OK
Red Rock	Two Passing Sidings Newkirk to Arkansas City	2.5 OK 2.0 KS	\$5	\$12.5 \$10.0	OK KS
Arkansas City	Double Track Mulvane to Bender	4.0	\$5	\$20.0	KS
Arkansas City	Double Track McGraw to Newton	2.5	\$5	\$12.5	KS
	<b>Subtotal</b>	<b>15.0 Miles</b>		<b>\$75 Million</b>	
	Grade Crossing Improvements between Newton and Oklahoma City			\$10	\$4M KS \$6M OK
	Layover Facility in Newton			\$2.5	KS
	<b>OK Share</b> <b>KS Share</b>	<b>6.5Miles</b> <b>8.5 Miles</b>		<b>\$38.5 Million</b> <b>\$49.0 Million</b>	
	<b>Subtotal Infrastructure</b>	<b>15.0 Miles</b>		<b>\$87.5 Million</b>	
	<b>Soft Costs<sup>51</sup>:</b> <b>OK Share</b> <b>KS Share</b>			<b>\$8 Million</b> <b>\$10 Million</b>	

<sup>51</sup> See Section 9.1

<b>BNSF Subdivision</b>	<b>Improvement Location(s)</b>	<b>New Main Track and Passing Sidings (Track Miles)</b>	<b>Cost per Track Mile (\$ millions)</b>	<b>Estimated Total Cost (\$ millions)</b>	<b>Location State</b>
	<b>Total Soft Costs</b>			<b>\$18 Million</b>	
	<b>Contingencies: OK Share KS Share</b>			<b>\$12 Million \$15 Million</b>	
	<b>Total Contingencies</b>			<b>\$27 Million</b>	
	<b>Grand Total</b>			<b>\$132.5 Million</b>	

- Track Improvements include #24 power operated turnouts and signals / interlocking.
- Layover facilities in Newton include a new turnout to connect to track #8504, and standby power.
- Contingencies include inaccuracies in the estimates and unanticipated cost increases for all cost elements. The contingency figures here will be reduced as planning and engineering are refined and costs can more accurately be defined.

**Table 10: KC-OKC-FW Daytime Service - Estimated Infrastructure Costs (2011\$)**

<b>BNSF Subdivision</b>	<b>Improvement Location(s)</b>	<b>New Main Track (Track Miles)</b>	<b>Cost per Main Track Mile (\$ millions)</b>	<b>Estimated Total Cost (\$ Millions)</b>	<b>Location State</b>
Ft. Worth	Double track *Ft. Worth to Alliance, TX	4.4	\$8	\$35	TX
Ft Worth	Double track Justin-Ponder	5.0	\$5	\$25	TX
Ft. Worth	New Siding at Krum, TX	2.5	\$5	\$13	TX
Ft. Worth	Double track Thackerville to Marietta	7.9	\$5	\$40	OK
Red Rock	Double track Oklahoma City to Britton	4.0	\$5	\$20	OK
Red Rock	Double track Otoe to Red Rock	4.5	\$5	\$22.5	OK
Red Rock	Two passing sidings Newkirk to Arkansas City	2.5 OK 2.0 KS	\$5	\$12.5 \$10.0	OK KS
Arkansas City	Double track McGraw to Newton	2.5	\$5	\$12.5	KS
La Junta	Double track **Newton to Walton	4.5	\$5	\$22.5	KS
La Junta	Double track Peabody to Homers	4.5	\$5	\$22.5	KS
	<b>Sub Total</b>	<b>44.3 Miles</b>		<b>\$235.5 Million</b>	

<b>BNSF Subdivision</b>	<b>Improvement Location(s)</b>	<b>New Main Track (Track Miles)</b>	<b>Cost per Main Track Mile (\$ millions)</b>	<b>Estimated Total Cost (\$ Millions)</b>	<b>Location State</b>
	Grade Crossing Improvements between Newton and Oklahoma City			\$10.0	\$4M KS \$6M OK
	<b>Subtotal TX</b>	<b>11.9 Miles</b>		<b>\$73 Million</b>	
	<b>Subtotal OK</b>	<b>18.9 Miles</b>		<b>\$101 Million</b>	
	<b>Subtotal KS</b>	<b>13.5 Miles</b>		<b>\$71.5 Million</b>	
	<b>Subtotal Infrastructure</b>	<b>43.3 Miles</b>		<b>\$245.5 Million</b>	
	<b>Soft Costs<sup>52</sup>:</b>				
	TX Share			\$14.6 Million	
	OK Share			\$20.2 Million	
	KS Share			\$14.2 Million	
	<b>Total Soft Costs</b>			<b>\$49 Million</b>	
	<b>Contingencies<sup>***</sup>:</b>				
	TX Share			\$21.9 Million	
	OK Share			\$30.3 Million	
	KS Share			\$21.5 Million	
	<b>Total Contingencies</b>			<b>\$73.7 Million</b>	
	<b>Grand Total</b>			<b>\$368.2 Million</b>	

- \* Note – New second track MP 353.8 to 355.6, and 358.3 – 360.9 provides double track for 17 miles
- \*\* Connects with existing siding at Walton. Provides 9 miles of double track Newton to Doyle.
- \*\*\* Contingencies include inaccuracies in the estimates and unanticipated cost increases for all cost elements. The contingency figures here will be reduced as planning and engineering are refined and costs can more accurately be defined.

<sup>52</sup> See Section 9.1

**Table 11: Combined Services Estimated Infrastructure Costs (2011\$)**

<b>BNSF Subdivision</b>	<b>Improvement Location(s)</b>	<b>New Main Track (Track Miles)</b>	<b>Cost per Main Track Mile (\$ millions)</b>	<b>Estimated Total Cost (\$ Millions)</b>	<b>Location State</b>
Ft. Worth	Double track *Ft. Worth to Alliance, TX	4.4	\$8	\$35	TX
Ft Worth	Double track Justin-Ponder	5.0	\$5	\$25	TX
Ft. Worth	New Siding at Krum, TX	2.5	\$5	\$13	TX
Ft. Worth	Double track Thackerville to Marietta	7.9	\$5	\$40	OK
Red Rock	Double track Oklahoma City to Britton	4.0	\$5	\$20	OK
Red Rock	Double track Otoe to Red Rock	4.5	\$5	\$22.5	OK
Red Rock	Two passing sidings Newkirk to Arkansas City	2.5 OK 2.0KS	\$5	\$12.5 \$10.0	OK KS
Arkansas City	Double Track Mulvane to Bender	4.0	\$5	\$20.0	KS
Arkansas City	Double track McGraw to Newton	2.5	\$5	\$12.5	KS
La Junta	Double track **Newton to Walton	4.5	\$5	\$22.5	KS
La Junta	Double track Peabody to Homers	4.5	\$5	\$22.5	KS
	<b>Track Sub Total</b>	<b>48.3 Miles</b>		<b>\$255.5 Million</b>	

<b>BNSF Subdivision</b>	<b>Improvement Location(s)</b>	<b>New Main Track (Track Miles)</b>	<b>Cost per Main Track Mile (\$ millions)</b>	<b>Estimated Total Cost (\$ Millions)</b>	<b>Location State</b>
	Grade Crossing Improvements between Newton and Oklahoma City			\$10.0	\$4 KS \$6 OK
	Layover Facility in Newton			\$2.5	KS
	<b>TX Share</b> <b>OK Share</b> <b>KS Share</b>	<b>11.9 Miles</b> <b>18.9 Miles</b> <b>17.5 Miles</b>		<b>\$73 Million</b> <b>\$101 Million</b> <b>\$94 Million</b>	
	<b>Total Infrastructure</b>	<b>48.3 Miles</b>		<b>\$268 Million</b>	
	<b>Soft Costs<sup>53</sup>:</b> <b>TX Share</b> <b>OK Share</b> <b>KS Share</b>			<b>\$14.5 Million</b> <b>\$20.5 Million</b> <b>\$19.0 Million</b>	
	<b>Total Soft Costs</b>			<b>\$54 Million</b>	
	<b>Contingencies:</b> <b>TX Share</b> <b>OK Share</b> <b>KS Share</b>			<b>\$22.0 Million</b> <b>\$30.5 Million</b> <b>\$28.5 Million</b>	
	<b>Total Contingencies</b>			<b>\$81Million</b>	
	<b>Grand Total</b>			<b>\$403 million</b>	

Summarizing the total estimated costs including soft costs and contingencies, the *Heartland Flyer Extension* from Oklahoma City to Newton is estimated to cost \$132.5 Million in 2011 dollars. For the daytime service between Kansas City, Wichita, Oklahoma City and Fort Worth,

<sup>53</sup> See Section 9.1

the combined incremental cost of \$270.5 Million including soft costs and escalation is \$438.5 Million.

### 9.2.2 Rolling Stock Costs

Capital equipment costs are shown in Table 12. Spare equipment is included in the table.

**Table 12: Estimated Cost of Equipment (2011\$)**

	Unit Price (\$millions)	Units Required	Cost (\$millions)
Locomotives	\$5	2	\$10
Standard Coach	\$4	3	\$12
Food Service Car	\$5	1	\$5
TOTAL PER TRAINSET			\$27
Spare Standard Coach	\$4	1	\$4
Spare Food Service Car	\$5	1	\$5
Spare Locomotive	\$5	1	\$5
TOTAL SPARES			\$14
ROLLING STOCK <i>Heartland Flyer Extension (Alt 1)</i> <i>(1 additional standard coach for existing HF consist)</i>			\$4
ROLLING STOCK <i>KC-OKC-FW Daytime Service (Alt 3)</i> <i>(2 trainsets plus 1 set spares)</i>			\$68
TOTAL ROLLING STOCK <i>Combined Services</i>			\$72

Amtrak-standard intercar electrical and braking connections should be specified so that the new equipment would be interchangeable with other Amtrak cars.

For the *Combined Services*, the total costs of infrastructure and rolling stock including soft costs<sup>54</sup> and contingencies is \$475 Million in 2011 dollars.

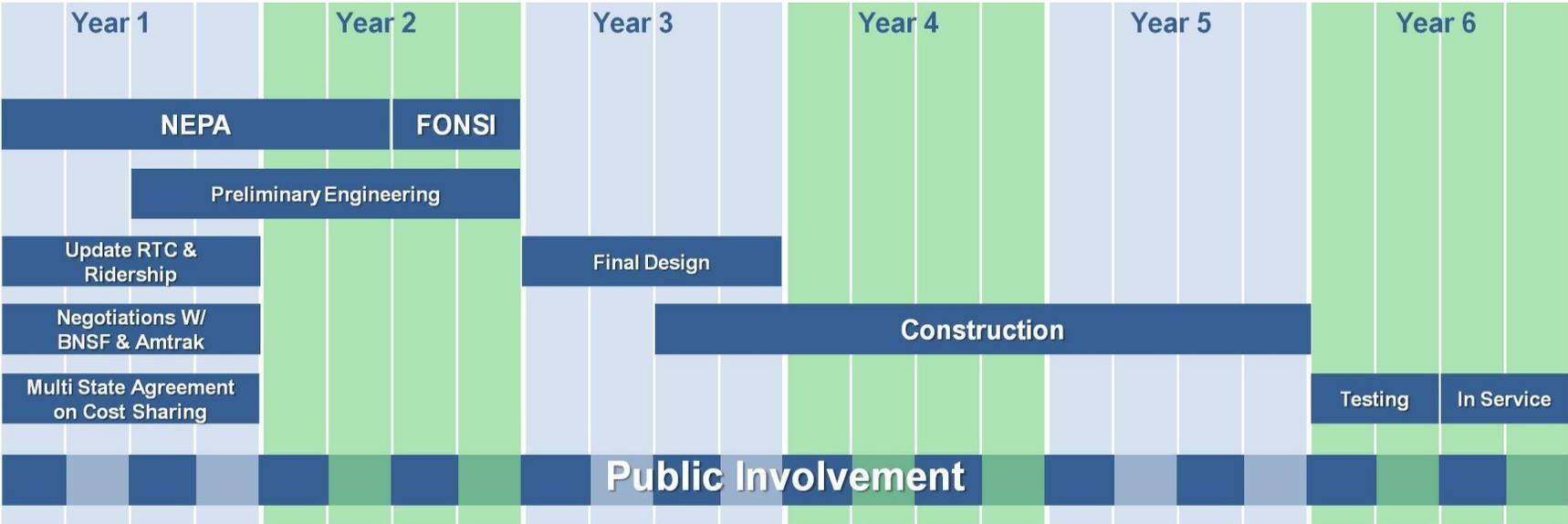
### 9.3 Preliminary Project Schedule and Annual Expenditures

Following is a projected timeline

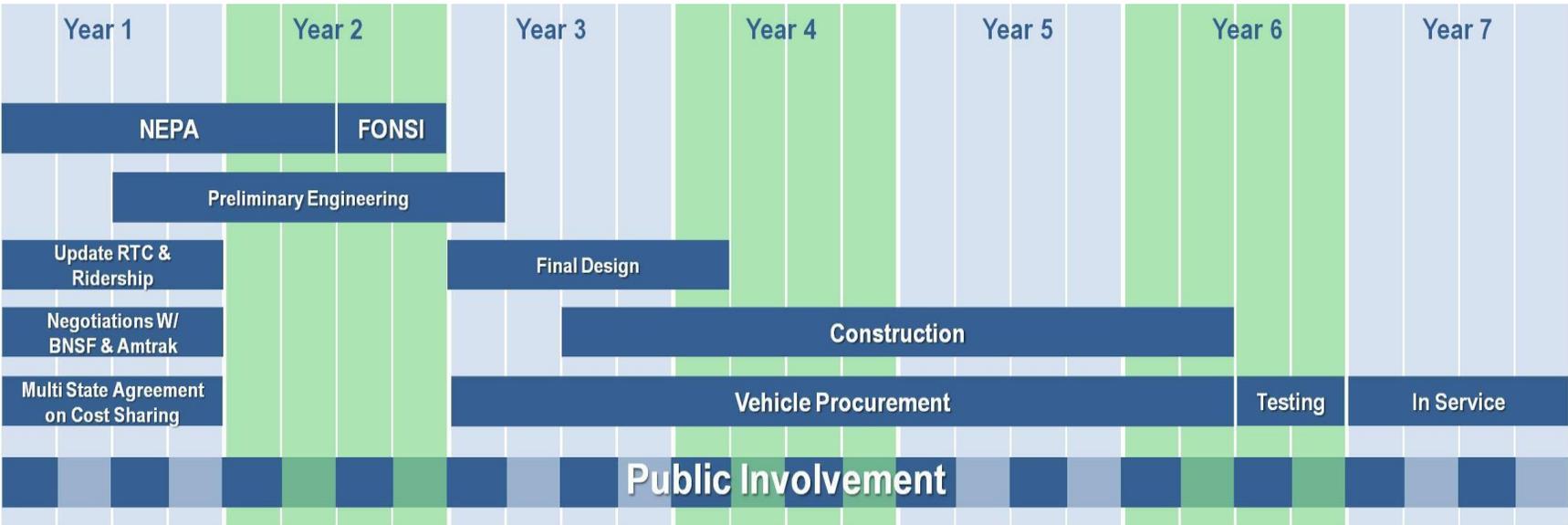
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<sup>54</sup> See Section 9.1

**Figure 14: Projected Timeline – Heartland Flyer Extension**



**Figure 15: Projected Timeline – KC-OKC-FW Daytime Service (or Combined Services)**



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## 10. Operating and Maintenance Costs and Capital Replacement Forecast

### 10.1 Introduction

This section describes the projected operating and maintenance costs of the proposed services: the *Heartland Flyer Extension* and the *KC-OKC-FW Daytime Service* between Fort Worth, TX and Kansas City, MO. This section provides detail on the operation of the *Heartland Flyer Extension* and the *KC-OKC-FW Daytime Service* as stand-alone services, and the operation of both services together as the *Combined Services*. The costs presented represent the expenses over and above those required to operate the current *Heartland Flyer* service.

### 10.2 Methodology

The Oklahoma Department of Transportation, which has been operating the *Heartland Flyer* since 1999, and has historical operating, and maintenance costs by category, as well as costs projected by Amtrak under pending Section 209<sup>55</sup> allocations. The latter represents the reallocation of costs from Amtrak to the States as required by PRIIA Section 209 governing cost sharing arrangements between the States and Amtrak. This Section 209 data is the basis for estimating operating and maintenance costs.

Figure 16 provides a comparison of the most proposed Section 209 allocation scheme with the current procedure expressed as unit costs. For the purpose of evaluating the two new services, the Section 209 unit costs were used as they better represent the future cost structure of Amtrak operated passenger service in the this corridor.

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<sup>55</sup> CR PRIIA 209 Rt29 Heartland Flyer v0 4 12mos.pdf

**Figure 16: FY2010 Existing *Heartland Flyer* Unit Operating Cost Comparison**

Unit Costs - Car Mile	Existing (RPS) <sup>1</sup>	Section 209
Host Railroad MOW	\$0.46	\$0.69
Car & Locomotive Maintenance and Turnaround	\$2.05	\$2.20
<b>Unit Costs - Train Mile</b>		
Fuel and Power	\$3.68	\$4.08
Train & Engine Crew Labor	\$6.80	\$7.87
On Board Service Labor and Support	\$1.97	\$2.89
Yard Operations	\$0.28	\$0.21
T&E Overhead and Operations Management	\$1.36	\$1.05
MOE Supervision, Training, and Overhead	\$1.46	\$2.31
Connecting Motor Coach	-	\$0.09
MOW Support	-	\$0.07
Utilites	-	\$0.00
<b>Unit Costs - Rider</b>		
Commissary Provisions and Management	\$3.40	\$2.20
Reservations and Call Centers	\$4.80	\$7.56
Police/Environmental and Safety	\$1.98	\$2.93
General & Administrative - State	-	\$0.72
General & Administrative - Amtrak	\$9.48	\$6.75
<b>Unit Costs - Station / Shared Station</b>		
Stations - Route	-	\$3,581.71
Stations - Shared	\$311,281.00	\$233,425.00
<b>Unit Costs - Delay Minute</b>		
Passenger Inconvenience	\$1.08	\$0.38
<b>Fixed Costs</b>		
Marketing and Distribution	\$107,007.00	\$81,169.00
Direct Advertising	-	(\$13,604.00)
Host Railroad Performance Incentives	\$349,920.00	\$349,920.00
<b>Percentage of Revenue Based</b>		
Commissions	1.99%	2.37%

1) Existing Service unit costs estimated from Amtrak RPS 2009

Service metrics such as car miles, train miles, riders, stations, and delay minutes, as well as fixed costs are underlying parameters of operating costs, and therefore provided the basis for cost projections. Figure 17 shows the most recent values for the current *Heartland Flyer*.

**Figure 17: Existing *Heartland Flyer* Level of Service Assumptions (Base)**

<b>Service Parameter</b>	<b>FY2010</b>
Annual Ridership	81,749
Existing Heartland Flyer Route Miles	206
Directional Trains Per Day Total	2
Annual Train Miles	150,380
Annual Trips	730
Average Ridership Per Train	112
Annual Passenger Miles	16,840,294
Cars Per Train	3
Annual Car Miles	451,140
Stations	7
Annual Delay Minutes	22,169

To calculate unit costs, the Section 209 operating costs<sup>1</sup> were divided by the total units of the relevant service parameter.

### **10.3 Existing *Heartland Flyer* Service**

To determine the incremental costs of the new services, a base case was established that adjusted the existing *Heartland Flyer* operating costs to reflect the new Section 209 costs. Compared to the current costs, operating costs are expected to increase with the proposed Section 209 cost allocation formula.

The existing *Heartland Flyer* base case projects total operating costs of \$6.5 million. With revenues of approximately \$2.0 million, the operating loss, thus, required subsidy is \$4.5 million as shown in Figure 18. Per the current agreement, the operating subsidy is divided equally between Oklahoma and Texas, the two states in which the train operates.

**Figure 18: Existing *Heartland Flyer* Operating Cost Projection FY2010 (2010 \$)**

<b>Existing Heartland Flyer</b>	<b>FY2010</b>
<i>Revenue</i>	
Ticket Revenue	\$1,808,809
Food & Beverage Revenue	\$165,837
Other Revenue	\$8,692
<b>Total Revenue</b>	<b>\$1,983,338</b>
<i>Direct Labor</i>	
Train & Engine Crew Labor	\$1,183,904
On Board Service Labor and Support	\$434,204
<b>Total Direct Labor</b>	<b>\$1,618,108</b>
<i>Other Direct Costs</i>	
Host Railroad MOW	\$313,377
Host Railroad Performance Incentives	\$349,920
Fuel and Power	\$613,326
Commissary Provisions and Management	\$179,924
Car & Locomotive Maintenance and Turnaround	\$990,841
Direct Advertising	(\$13,604)
Commissions	\$42,885
Reservations and Call Centers	\$618,427
Passenger Inconvenience	\$8,347
Connecting Motor Coach	\$12,817
Stations - Route	\$25,072
<b>Total Other Direct Costs</b>	<b>\$3,141,332</b>
<b>Total Direct Costs</b>	<b>\$4,759,440</b>
<i>Shared Costs</i>	
Stations - Shared	\$233,425
MOE Supervision, Training, and Overhead	\$346,642
MOW Support	\$9,955
Yard Operations	\$31,010
Marketing and Distribution	\$81,169
Police/Environmental and Safety	\$239,193
T&E Overhead and Operations Management	\$158,043
Utilites	\$8
General & Administrative - State	\$58,820
General & Administrative - Amtrak	\$551,873
<b>Total Shared Costs</b>	<b>\$1,710,138</b>
<b>Total Existing Heartland Flyer Operating Cost</b>	<b>\$6,469,578</b>
<b>Total Heartland Flyer Revenue</b>	<b>\$1,983,338</b>
<b>Heartland Flyer Subsidy Required</b>	<b>(\$4,486,240)</b>

## 10.4 Heartland Flyer Extension

Operating costs for the *Heartland Flyer Extension* were estimated using the PRIIA Section 209 unit costs for the *Heartland Flyer* presented above. Fare revenue and ridership projections for the extension were developed by Amtrak using its proprietary model as described in Section 6. Service parameters reflect the operation of the train between Oklahoma City and Newton. Figure 19 shows an estimate of the service parameters used to calculate incremental operating costs for this alternative. Like the existing *Heartland Flyer*, the new extended service operates one train per day in each direction using a single trainset.

**Figure 19: Heartland Flyer Extension Estimated Operating Statistics (Incremental above existing Heartland Flyer)**

<u>Service Parameter</u>	<u>FY2010</u>
Annual Ridership	111,300
Route Miles	200
Directional Trains Per Day Total	2
Annual Train Miles	146,000
Annual Trips	730
Average Ridership Per Train	152
Annual Passenger Miles	22,260,000
Cars Per Train	4
Annual Car Miles	584,000
Stations	9
Annual Delay Minutes	22,169

Note: The two trains are an extension of the existing Heartland Flyer Service and not two new trains. The stations include 7 stations north of Oklahoma City and Davis, OK and Krum, TX stations south of Oklahoma City.

The Figure 20 shows that extended service produces an estimated incremental operating loss of nearly \$4.4 million based on an estimated \$7.4 million in incremental costs, and \$3.0 million in incremental revenue. The entire *Heartland Flyer Extension, including the existing segment*, results in an operating loss or required state subsidy of \$8.9 million.

For purposes of this presentation of the financial operation of the service, the subsidy has been allocated to the states based on route miles. Should expanded passenger rail service come to fruition, the allocation methodology would be subject to agreement among the states.

**Figure 20: Heartland Flyer Extension Operating Cost Projection FY2010 (2010 \$)  
(Incremental over existing Heartland Flyer)**

<b>Heartland Flyer Extension</b>	<b>FY2010</b>
<i>Revenue</i>	
HF Extension Ticket Revenue	\$2,792,000
Food & Beverage Revenue	\$225,785
Other Revenue	\$11,834
<b>Total Revenue</b>	<b>\$3,029,619</b>
<i>Direct Labor</i>	
Train & Engine Crew Labor	\$1,149,421
On Board Service Labor and Support	\$421,557
<b>Total Direct Labor</b>	<b>\$1,570,979</b>
<i>Other Direct Costs</i>	
Host Railroad MOW	\$405,666
Host Railroad Performance Incentives	\$349,920
Fuel and Power	\$595,462
Commissary Provisions and Management	\$244,964
Car & Locomotive Maintenance and Turnaround	\$1,282,642
Direct Advertising	(\$13,604)
Commissions	\$66,195
Reservations and Call Centers	\$841,979
Passenger Inconvenience	\$8,347
Connecting Motor Coach	\$12,444
Stations - Route	\$32,235
<b>Total Other Direct Costs</b>	<b>\$3,826,250</b>
<b>Total Direct Costs</b>	<b>\$5,397,229</b>
<i>Shared Costs</i>	
Stations - Shared	\$233,425
MOE Supevision, Training, and Overhead	\$336,546
MOW Support	\$9,665
Yard Operations	\$30,107
Marketing and Distribution	\$81,169
Police/Environmental and Safety	\$325,658
T&E Overhead and Operations Management	\$153,440
Utilites	\$8
General & Administrative - State	\$80,083
General & Administrative - Amtrak	\$751,367
<b>Total Shared Costs</b>	<b>\$2,001,466</b>
Total HF Extension Revenue	\$3,029,619
Total HF Extension Operating Cost	(\$7,398,695)
<b>Incremental Operating Cost</b>	<b>(\$4,369,076)</b>
Existing Heartland Flyer Contribution	(\$4,486,240)
<b>Total HF Extension Operating Subsidy</b>	<b>(\$8,855,316)</b>

Given that both the current service and the extension between Oklahoma City and Newton, both operate over similar length routes, operating costs for the new segment are expected to be comparable. The extension also includes the costs of two new stations along the current route, Davis, OK and Krum, TX.

## 10.5 KC-OKC-FW Daytime Service (stand alone)

Operating costs for the *KC-OKC-FW Daytime Service* were estimated using the PRIIA Section 209 unit costs for the *Heartland Flyer* presented above. Fare revenue and ridership projections for the extension were developed by Amtrak using its proprietary model as described in Section 6. The service parameters for the *KC-OKC-FW Daytime Service* reflect the operation of a new train between Kansas City and Fort Worth.

This would be a standalone service running in addition to the existing *Heartland Flyer*, and not an extension of the existing service as in the previous case. Figure 21 shows an estimate of the service parameters used to calculate incremental operating costs for this alternative. The *KC-OKC-FW Daytime Service* would operate with an entirely new trainsets incremental to the existing *Heartland Flyer*.

**Figure 21: KC-OKC-FW Daytime Service Estimated Operating Statistics (Incremental above existing *Heartland Flyer*)**

<u>Service Parameter</u>	<u>FY2010</u>
Annual Ridership	256,700
Route Miles	600
Directional Trains Per Day Total	2
Annual Train Miles	438,000
Annual Trips	730
Average Ridership Per Train	352
Annual Passenger Miles	154,020,000
Cars Per Train	4
Annual Car Miles	1,752,000
Stations	15
Annual Delay Minutes	22,169

Figure 22 below shows that the *KC-OKC-FW Daytime Service* produces an estimated incremental operating loss of around \$10.0 million based on an estimated \$19.5 million in incremental costs, and \$9.5 million in incremental revenue. The entire *KC-OKC-FW Daytime Service*, including the existing *Heartland Flyer*, results in an operating loss or required state subsidy of \$14.5 million.

**Figure 22: KC-OKC-FW Daytime Service Operating Cost Projection FY2010 (2010 \$)  
(Incremental over existing Heartland Flyer)**

<b>KC-OKC-FW Daytime Service</b>	<b>FY2010</b>
<i>Revenue</i>	
Daytime Service Ticket Revenue	\$8,936,000
Food & Beverage Revenue	\$520,745
Other Revenue	\$27,294
<b>Total Revenue</b>	<b>\$9,484,038</b>
<i>Direct Labor</i>	
Train & Engine Crew Labor	\$3,448,264
On Board Service Labor and Support	\$1,264,672
<b>Total Direct Labor</b>	<b>\$4,712,936</b>
<i>Other Direct Costs</i>	
Host Railroad MOW	\$1,216,998
Host Railroad Performance Incentives	\$349,920
Fuel and Power	\$1,786,386
Commissary Provisions and Management	\$564,979
Car & Locomotive Maintenance and Turnaround	\$3,847,926
Direct Advertising	(\$13,604)
Commissions	\$211,863
Reservations and Call Centers	\$1,941,922
Passenger Inconvenience	\$8,347
Connecting Motor Coach	\$37,331
Stations - Route	\$53,726
<b>Total Other Direct Costs</b>	<b>\$10,005,795</b>
<b>Total Direct Costs</b>	<b>\$14,718,731</b>
<i>Shared Costs</i>	
Stations - Shared	\$466,850
MOE Supevision, Training, and Overhead	\$1,009,637
MOW Support	\$28,995
Yard Operations	\$90,320
Marketing and Distribution	\$81,169
Police/Environmental and Safety	\$751,090
T&E Overhead and Operations Management	\$460,319
Utilites	\$23
General & Administrative - State	\$184,701
General & Administrative - Amtrak	\$1,732,936
<b>Total Shared Costs</b>	<b>\$4,806,041</b>
<b>Total Daytime Service Revenue</b>	<b>\$9,484,038</b>
<b>Total Daytime Service Operating Cost</b>	<b>(\$19,524,772)</b>
<b>Incremental Operating Cost</b>	<b>(\$10,040,734)</b>
Existing Heartland Flyer Contribution	(\$4,486,240)
<b>Total Daytime Service Operating Subsidy</b>	<b>(\$14,526,974)</b>

## 10.6 KC-OKC-FW Daytime Service and Heartland Flyer Extension (Combined Services)

The *Combined Services* would include the *Heartland Flyer Extension*, and the new *KC-OKC-FW Daytime Service*. The projected service parameters for the *Combined Services* are shown below in Figure 23.

The *Heartland Flyer Extension* operates one train in each direction daily but only requires a single trainset. The *KC-OKC-FW Daytime Service* also operates one train in each direction daily but requires two trainsets. With two frequencies in each direction, there are a total of four directional trains per day.

The statistics are incremental to the base case, the existing *Heartland Flyer*.

**Figure 23: *Combined Services* Estimated Operating Statistics  
 (Incremental over existing *Heartland Flyer*)**

<u>Service Parameter</u>	<u>FY2010</u>
Annual Ridership	368,000
Route Miles	800
Directional Trains Per Day Total	4
Annual Train Miles	584,000
Annual Trips	1,460
Average Ridership Per Train	291
Annual Passenger Miles	176,280,000
Cars Per Train	4
Annual Car Miles	2,336,000
Stations	15
Annual Delay Minutes	22,169

The same methodology used to determine the incremental costs of *Heartland Flyer Extension* projections was applied to the *Combined Services*. Figure 26 shows the financial impact of the *Combined Services*.

**Figure 24: Combined Services Operating Cost Projection FY2010 (Nominal<sup>56</sup> \$)  
(Incremental over existing *Heartland Flyer*)**

<b>Combined Services</b>	<b>FY2010</b>
<i>Revenue</i>	
Combined Service Ticket Revenue	\$11,728,000
Food & Beverage Revenue	\$746,529
Other Revenue	\$39,128
<b>Total Revenue</b>	<b>\$12,513,657</b>
<i>Direct Labor</i>	
Train & Engine Crew Labor	\$4,597,685
On Board Service Labor and Support	\$1,686,229
<b>Total Direct Labor</b>	<b>\$6,283,915</b>
<i>Other Direct Costs</i>	
Host Railroad MOW	\$1,622,664
Host Railroad Performance Incentives	\$349,920
Fuel and Power	\$2,381,849
Commissary Provisions and Management	\$809,943
Car & Locomotive Maintenance and Turnaround	\$5,130,568
Direct Advertising	(\$13,604)
Commissions	\$278,059
Reservations and Call Centers	\$2,783,901
Passenger Inconvenience	\$8,347
Connecting Motor Coach	\$49,775
Stations - Route	\$53,726
<b>Total Other Direct Costs</b>	<b>\$13,455,147</b>
<b>Total Direct Costs</b>	<b>\$19,739,062</b>
<i>Shared Costs</i>	
Stations - Shared	\$466,850
MOE Supevision, Training, and Overhead	\$1,346,183
MOW Support	\$38,660
Yard Operations	\$120,427
Marketing and Distribution	\$81,169
Police/Environmental and Safety	\$1,076,747
T&E Overhead and Operations Management	\$613,759
Utilites	\$31
General & Administrative - State	\$264,783
General & Administrative - Amtrak	\$2,484,303
<b>Total Shared Costs</b>	<b>\$6,492,913</b>
<b>Total Combined Service Revenue</b>	<b>\$12,513,657</b>
<b>Total Combined Service Operating Cost</b>	<b>(\$26,231,974)</b>
<b>Incremental Operating Cost</b>	<b>(\$13,718,317)</b>
<b>Existing Heartland Flyer Contribution</b>	<b>(\$4,486,240)</b>
<b>Total Combined Services Operating Subsidy</b>	<b>(\$18,204,557)</b>

<sup>56</sup> Sometimes referred to as Year of Expenditure \$

The figure above shows that the *Combined Services* case has an estimated incremental operating loss \$13.7 million based on an estimated \$26.2 million in incremental costs, and \$12.5 million in incremental revenue. The total operating loss for the passenger operations on the corridor is \$18.2 million.

## 10.7 Summary Financial Projections

Figure 25 summarizes the incremental and total costs for each alternative outlined above in 2010 dollars, along with the operating subsidy required for each system. The operating subsidy would be shared among the States in an allocation that has not yet been negotiated.

**Figure 25: Summary of Operating Financial Performance by Alternative (2010 \$000s)**

Alternative	Total Revenue	Total O&M	Operating Subsidy Required
Existing Service	\$1,983	\$6,470	(\$4,486)
Heartland Flyer Extension	\$5,013	\$13,868	(\$8,855)
KC-OKC-FW Daytime Service	\$11,467	\$25,994	(\$14,527)
Combined Services	\$14,497	\$32,702	(\$18,205)

## 10.8 Long-Term Financial Projections

Detailed operating and maintenance cost forecasts for each year out to 2029 for each scenario are located in Appendix 'A'.

Escalation for operating costs in years following 2010 was assumed at an average of approximately 2.0 percent based on IHS Global Insight Consumer Price Index (CPI) projections for the West North Central and West South Central census regions. Ridership growth was based on the compound annual growth rate of ridership on the *Heartland Flyer* from 2000 to 2010, approximately 2.4 percent annually.

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## 11. Economic Impact Analysis

When evaluating an investment, decision makers must determine if the benefits outweigh the costs. To help make this determination, a form of economic analysis known as Benefit Cost Analysis (BCA) is utilized. BCA compares the economic benefits to society arising from the investment over the full life cycle of the investment, versus all of the costs that are incurred during that same period of time. Societal benefits include both general public benefits, such as reduced air emissions, benefits to transportation system users themselves, and in some cases private benefits, such as increased worker productivity. Worker productivity benefits arise as long distance business travelers are not occupied driving, as they would be without the train, and also due to a work-conducive passenger environment (e.g., Internet access) on the train. In the case of passenger rail services, virtually all of the measureable benefits included in a BCA are public – either benefits available to all citizens generally, or to rail and other transportation system users.

Benefits and costs are also adjusted in a BCA to account for the “time value of money” through a method known as “discounting”. Discounting is done by reducing (discounting) the value of future benefits and costs by means of a discount rate. The discount rate measures what investments could earn in the future in their next best use, such as by buying risk free government securities. For example, if an individual, firm, or government entity can invest money now and earn 5 percent on that money next year, the discount rate would be 5 percent, and \$105 dollars next year would be valued at \$100 today. In BCA all costs and benefits are discounted to a Present Value following this basic logic and procedure. To maintain apples to apples comparisons, a “real discount” rate is applied to “real” dollar benefits and costs -- i.e., costs and benefits that set aside the effects of inflation.

A benefit-cost ratio is a primary indicator of the efficiency of proposed infrastructure investments. The benefit-cost ratio is a comparison of the discounted present value of quantifiable societal benefits versus project costs. It is measured by comparing the societal impacts of building the system to a no-build scenario. A benefit-cost ratio in excess of 1.0 indicates that a project will generate more benefits to society than its costs, and is justified within the limits of BCA. Other related measures produced by a benefit-cost analysis, which are also reported, include the net present value, and the economic rate of return. Of course, other factors and criteria must also be used in conjunction with a BCA to make a broad decision as to the merits of an investment.

The BCA described below follows industry methodology best practices adopted by the U.S. Department of Transportation, including PRIAA guidance, FRA guidance, and guidelines for BCA promulgated by the US DOT in connection with its TIGER discretionary grant program. The BCA methodology also reflects consensus among transportation economists. These methods are

conservative in their assumptions, and are intended to produce results which do not overstate or double count benefits.

The benefit components of the benefit-cost analysis are largely driven by the ridership forecasts provided by Amtrak. In this case, while travel time savings are minimal, other cost savings to riders are incurred, primarily reductions in automobile operating and maintenance costs. In addition, new riders who simply would not have made trips without the new service, also receive a benefit from this new travel opportunity.

Other benefits primarily derive from the reductions in vehicle miles of automobile travel. These reductions produce benefits -- in addition to direct user cost savings -- resulting from less road maintenance, less vehicle emissions, and fewer highway crashes. Since intercity passenger rail has fewer negative environmental impacts than automobile or air travel (e.g. less pollution, fewer accidents, etc.), the more riders on the passenger rail system, the more benefits are realized for the public.

It is important to distinguish between the benefit-cost analysis and wider, or indirect, economic impacts. The benefit-cost analysis measures the societal benefits that are most readily quantifiable. Benefit-cost analysis adheres to formal definitions that are conservative in nature. In particular, the analysis does not include any range of indirect economic benefits that can be forecast and which could arise, such as increased state and regional competitiveness, increased employment from new business attractions or startups, or increased real estate development and property values around new or enhanced rail stations. These effects, to the extent they could occur, could lead to increased economic output and employment in Kansas as well as Oklahoma and the other corridor states.

It is also important to note that, at this planning level analysis, inputs such as ridership and even cost are subject to change once more detailed engineering work is completed, therefore the BC ratios, while being the best information available at this time, should only be considered as approximate values. Further study and more precision in the input data will be needed to increase the precision of the BC ratios.

A more detailed template for BCA based on Federal guidelines, including information on what benefits are typically included in a BCA, and how these relate to broad benefit categories (e.g., livability, economic competitiveness, sustainability, etc.) is attached as Appendix 'B.'

## **11.1 Key Analytic Assumptions**

### **Discount Rate**

For evaluating the proposed passenger rail investments, dollar figures are expressed in constant first-half 2011 dollars. In instances where certain cost or benefit estimates were expressed in dollar values in other (historical) years, the U.S. Bureau of Labor Statistics' Consumer Price

Index for Urban Consumers (CPI-U) for the first-half of the respective year were used to adjust. First-half figures are used because the calendar year 2011 has not yet completed.

The discount rate used in the analysis is 4.0 percent. This discount rate is consistent with US DOT guidance for TIGER III grants and with OMB Circular A-4 and A-94 (Office of Management and Budget, 1992, 2003) which permits the use of lower discount rates when projects are being financed with public funds.<sup>57</sup>

### **Evaluation Period**

Benefits and costs are typically evaluated for a timeframe that includes the length of construction and an operating period of 30 years after the initial project investments are completed. For the purpose of analyzing the service alternatives for this corridor, the evaluation period includes the projected construction period for the required infrastructure, plus 30 years of operations during which the benefits of the services materialize.

### **Travel Demand Sources & Forecast Years for Highway Benefits**

Amtrak provided estimates of ridership, revenue, and passenger-miles traveled for each of the new and existing services in the region. They represent the total demand in 2012 if the new service was operational and provides a baseline from which future years were calculated.

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<sup>57</sup> The discount rate is the acceptable return on investment and reflects the amount of risk associated with an investment, i.e., the higher the risk the greater the required return. Public entities tend to participate in investments that are conservative in returns more in line with that of government bonds than can be contemplated with private investments. While a discount rate as low as 3 percent is justifiable, this BCA utilizes a slightly more conservative 4 percent discount rate.

**Table 13: Amtrak Ridership, Revenue, and Passenger-Mile Estimates, 2012**

<b>2012</b>	<b>Existing Service / No Build</b>	<b>Heartland Flyer Extension</b>	<b>KC-OKC-FW Daytime Service</b>
<b>Ridership</b>			
New Kansas Service	-	200,500	270,500
Heartland Flyer	89,200	-	75,400
Southwest Chief	367,300	429,500	366,300
Texas Eagle	305,900	308,000	305,900
Total	762,400	938,000	1,018,100
<b>Ticket Revenue</b>			
New Kansas Service	-	4,885,000	9,255,000
Heartland Flyer	2,093,000	-	1,774,000
Southwest Chief	46,440,000	49,229,000	46,408,000
Texas Eagle	25,191,000	24,903,000	25,191,000
Total	73,724,000	79,017,000	82,628,000
<b>Passenger-Miles</b>			
New Kansas Service	-	40,600,000	81,690,000
Heartland Flyer	15,480,000	-	13,130,000
Southwest Chief	330,340,000	356,440,000	330,220,000
Texas Eagle	177,360,000	175,370,000	177,360,000
Total	523,180,000	572,410,000	602,400,000

Source: Amtrak

Future years were projected based on historical data from 2000-2010. Existing *Heartland Flyer* service grew at a compound annual growth rate of 2.24 percent during this period. This growth rate was carried through 2050 to develop estimates for ridership, revenue, and passenger-miles for all alternatives.

For all benefit calculations, only ridership estimates attributable to the new services were used for calculations. This avoids counting benefits for riders that were already riding on the existing service.

#### **Average Vehicle Occupancy Assumption**

One type of benefit is the avoided use of motor vehicles, which affect emissions and safety, for example. Consequently, it was necessary to translate passengers into eliminated vehicle-miles.<sup>58</sup>

In order to do this, this analysis assumes an average vehicle occupancy (AVO) rate of 2.0 persons per vehicle for interstate trips. This AVO rate is adopted from the National Household

<sup>58</sup> Based on prior experience, it was assumed that 80 percent of the ridership came from automobiles, 10 percent from bus or air, and 10 percent from new trip making.

Travel Survey 2009 data, using the average occupancy across the three states of interest, Kansas, Oklahoma and Texas.

## 11.2 Included Economic Benefits

The following identifies and groups the benefits that are included in the BCA for the *Heartland Flyer Extension* and *KC-OKC-FW Daytime Service*.

### 11.2.1 Economic Competitiveness

#### Reductions in Vehicle Operating Costs

Both alternatives would reduce vehicle operating and ownership costs. They would do so because travelers could shift towards the rail service, reducing the total amount of VMT on the roadway system relative to the “no build” situation.

As a consequence, vehicle operating costs that are linked to mileage will decrease. That is to say, by driving fewer miles owners experience lower vehicle operating costs.

#### Vehicle Operation Costs –Fuel

One operating cost reduction is the expenditure for fuel. To assess this, the Energy Information Administration’s (EIA) Annual Energy Outlook 2011 projections for auto and truck as well as the price of gasoline and diesel fuel.

The EIA only projects consumption to 2035, so it was necessary to further project for years 2036 to 2050. Based on the EIA’s “reference case,” fuel efficiency and prices were estimated based on the compound annual growth rate (CAGR) in the EIA’s model for 2010 to 2035. Further, because the EIA expresses fuel prices in 2009 dollars, CPI was used to adjust fuel prices to 2011 dollars. Table 14 outlines the range utilized.

**Table 14: Fuel Economy and Fuel Prices – 2011 (Estimated) and 2040 (Projected)**

	2011 (estimated)	2040 (projected)
Auto Fuel Economy	20.8 miles per gallon	29.1 miles per gallon
Gasoline Price	\$2.94 per gallon (2011 \$)	\$4.29 per gallon (2011 \$)

Source: U.S. Energy Information Administration

#### Vehicle Operating Costs Non-Fuel

Non-fuel operating costs include the cost of operations and maintenance to vehicles, the cost of tires, and vehicle depreciation. A reduction in VMT due to project investments results in cost savings in these categories. The per-mile values of these categories were derived from a study conducted by Barnes and Langworthy. This analysis uses their “baseline costs” which reflect the most conservative estimate of operating costs because it assumes highway conditions and

smooth pavements (see Table 15). This analysis uses these average costs per mile values to calculate variable non-fuel vehicle operating costs.

**Table 15 Non-fuel Operating Cost Assumptions**

Operating Cost Category	Cost per Vehicle-mile Traveled (2011 \$)
Auto - Maintenance/Repair	3.9 cents per VMT
Auto – Tires	1.1 cents per VMT
Auto – Depreciation	7.6 cents per VMT

*Source: Barnes and Langworthy, 2003.*

**Reductions in the Economic Cost of Oil Imports**

Fuel consumption has a cost beyond the actual operating costs or the environmental costs of the consumption, which is expressed as the economic cost of oil imports. The economic cost considers the impact of increasing U.S. oil demand on fuel prices and the impact of reduced oil supplies on higher oil prices, both reducing the level of U.S. economic output. The National Highway Traffic and Safety Administration suggests that each gallon of fuel saved reduces total U.S. imports of refined fuel or crude oil by 0.95 gallons. The analysis uses NHTSA’s estimate for the per gallon cost of oil imports, which is \$0.33 per gallon in real 2011 dollars after CPI-U adjustment.

**Productivity Benefits**

Productivity benefits refer to the concept that business travelers are capable of being significantly more productive on public transportation such as a train or plane than when driving. For example, an automobile traveler who diverts a five-hour trip to the train is then capable of using a laptop and performing other business tasks on the train. While driving, conducting work would be nearly impossible. To estimate this benefit, it was assumed that ten percent of the ridership was business travelers, given the schedule, of which 30 percent are productive in transit. In train time was calculated from the proposed schedules and distances traveled. The additional hours of traveler were then monetized based on value of time.

**Value of Time Assumptions**

The standard measure of value of time accepted by USDOT is wage rate, which can be obtained from the Bureau of Labor Statistics. The average wage rate for all private sector employees in Kansas, Oklahoma, and Texas during the first-half 2011 average was \$20.90 per hour.

### **Induced Traveler Benefits**

Both alternatives would induce travel, meaning that passengers would take the service when they otherwise would not have made a trip at all. The benefits enjoyed by these travelers are thus different from those who switch modes.

The benefits to these passengers are difficult to measure. They are not travel time based, as these travelers otherwise would not have made the trip and are incurring time traveling. Similarly, they are incurring an expense that they otherwise would not have.

However, a trip is made because the traveler perceives that the costs (fare, time, etc.) to be at least equal to the benefit of making the trip. Consequently, the value of the benefit is some multiple of fare or in total, of passenger revenues.

The benefit of induced travelers is assumed to be 30 percent<sup>59</sup> of price, meaning that on average, induced travelers experience an economic benefit that is 30 percent above the price that they pay. Using this methodology allows for an estimate of the benefits that the new induced riders receive.

## **11.2.2 Safety**

### **Accident Savings**

Reductions in automobile travel lower the incidence of traffic accidents. The cost savings from reducing the number of accidents include direct savings (e.g., reduced personal medical expenses, lost wages, and lower individual insurance premiums) as well as significant avoided costs to society (e.g., second party medical and litigation fees, emergency response costs, incident congestion costs, and litigation costs). The value of all such benefits – both direct and societal – can be approximated by using the cost of service disruptions to other travelers, emergency response costs to the region, medical costs, litigation costs, vehicle damages, and economic productivity loss due to workers inactivity.

The state-of-the-practice in B/C analyses is to estimate accident cost savings for each of three accident types (fatal accidents, injury accidents, or property damage only accidents) using the change in highway VMT. Some studies perform more disaggregate estimates of the accident cost savings, applying different accident rates to different types of roadways (e.g., interstate, highway, arterial).

The accident avoidance related benefits for each of the services were based on 2009 accident data reported by the Kansas Department of Transportation. The accident counts are statewide averages and represent accidents on interstate highways, state highways, county roads, and

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<sup>59</sup> The 30% assumption is an approximation of a more complex calculation known as the 'rule of half' which is commonly applied in these types of estimations. Review of the assumption indicated that any difference was very small, especially when compared to the margin of error. Any effect on the B/C proves negligible.

arterials. Injury producing accident rates were determined and translated into Maximum Abbreviated Injury Scale (MAIS) categories based on the share of nationwide accident data reported by the National Highway Traffic Safety Administration. Below is the accident rate data used for this study.

**Table 16 Accident Rate Assumptions**

Category	Accident Rate (per million VMT)
MAIS 6 (fatal)	0.011798
MAIS 5 (critical)	0.000848
MAIS 4 (severe)	0.003272
MAIS 3 (serious)	0.011283
MAIS 2 (moderate)	0.039073
MAIS 1 (minor)	0.417570
Property Damage Only	1.589747

*Source: Kansas Department of Transportation*

This BCA assumes constant accident rates across the no-build and the service scenarios. Thus, changes in the number of accidents will result only from changes in VMT, not from a structural change to the safety conditions on the roadway network.

The benefits resulting from accident reduction are converted to monetary values using the cost of fatal and injury highway accidents recommended by the U.S. DOT. The value of “property damage only” accidents is derived from a Federal Highway Administration technical advisory. The following table outlines the values used as expressed in real 2011 dollars after CPI-U adjustment.

**Table 17: Value of a Statistical Life and of Accidents by MAIS Category**

Category	Value
Value of a Statistical Life	\$ 6,200,000
MAIS 6 (fatal) – cost	\$ 6,200,000
MAIS 5 (critical) – cost	\$ 3,767,600
MAIS 4 (severe) – cost	\$ 1,649,200
MAIS 3 (serious) – cost	\$ 651,000
MAIS 2 (moderate) – cost	\$ 291,600
MAIS 1 (minor) – cost	\$ 18,600
MAIS 0 (property only) –cost	\$ 3,377

*Source: U.S. Department of Transportation*

### 11.2.3 Sustainability

Both new service alternatives would create environmental and sustainability benefits by reducing air and noise pollution associated with automobile travel, as there is a reduction in vehicle-miles travel from mode shifts. For air pollution, six types of emissions to measure and monetize benefits from their reduction were identified: carbon monoxide, nitrous oxide, particulate matter, sulfur dioxide, volatile organic compounds, and carbon dioxide.

#### Auto-Emissions

The amounts of emissions differ depending on vehicle, fuel efficiency, average speed, and driving conditions. The BCA used the California Department of Transportation’s emissions factors from the California Life-Cycle Benefit-Cost Analysis Model (Cal B/C), which provides emissions factor estimates for automobiles and trucks at varying speeds for 2007 and 2027.

This analysis used the year 2027 emissions factors provided for autos at an assumed highway speed of 50 miles per hour shown in Table 18. These 2027 emissions rates were used as a conservative simplifying assumption since anticipated rates in preceding years are higher although declining. The 2027 rates were used throughout because of greater uncertainties in later years.

**Table 18: Emissions Factors from Cal B/C Model, Autos at 50mph, 2027**

Emissions type (grams per VMT)	Passenger Cars
CO	0.9308
NOX	0.0841
PM10	0.0324
SOX	0.0034
VOC	0.1003
CO2	341.66

*Source: California Department of Transportation, Cal B/C*

Emissions costs were obtained from the National Highway Traffic Safety Administration’s report “Corporate Average Fuel Economy for MY 2011-2015 Passenger Cars and Light Trucks.” These costs are on a per-ton basis and are as follows (Table 19):

**Table 19: Cost of Emissions – NHSTA**

Emissions Type	Cost per ton (2011 \$)
CO	\$ 68
NOX	\$ 4,347
PM10	\$ 182,802
SOX	\$ 17,834
VOC	\$ 1,895
CO2	Varies by Year

*Source: National Highway Traffic Safety Administration*

The cost of CO2 emissions are allowed to vary by year, forecasts are taken from the U.S. Department of Energy, Energy Efficiency & Renewable Energy’s Report on the Social Cost of Carbon Dioxide Emissions.

**Auto-Noise Pollution**

By reducing VMT, both rail services would also contribute to reductions in noise pollution. This BCA assumes a cost of noise of \$0.0007 per VMT as expressed in real 2011 dollars (after CPIU-adjustment), consistent with the National Traffic Highway and Safety Administration’s figures as an average of urban and rural driving.

**11.3 Excluded Economic Benefits**

The following is a summary of other potential benefits that are excluded from the BCA. The ensuing discussion describes these possible benefits and explains the rationale for their exclusion.

**Travel Times**

Travelers who divert a trip from auto to rail may experience different travel times. This analysis, however, assumes that for the same trip, the distance and travel time is the same via car or rail. Thus, there are no travel time savings, or losses, calculated for passengers.

**Fares**

Fares are an economic transfer from users to the service provider. As such, they represent neither an economic benefit nor an economic cost of the project. Revenues have been excluded from both the benefit and O&M cost tabulations.

**Construction Related Delays**

During the period of project construction there are expected to be some impacts on the capacity of the roadway network, especially in and around urban areas. This would result in

automobile delays partially offsetting travel time savings. These impacts are not included in this analysis, and are assumed to be negligible.

### **Land Use Impacts/Land Value Impacts**

This BCA does not incorporate or monetize the land use impacts that the new services may cause. Because of the improved connectivity between urban areas, and the impacts that new stations may have on their surrounding environments, it is possible that land values may change to reflect the improvements in accessibility. Changes in travel times may influence employment and housing patterns having land-use impacts along the corridor.

### **Economic Development Opportunities around Stations**

This BCA does not incorporate land development or business activity impacts that the changes in service from the *Heartland Flyer Extension*, *KC-OKC-FW Daytime Service* or the *Combined Services* (which includes the *KC-OKC-FW Daytime Service*) could induce. Such potential impacts could include increased real estate values, increased new commercial and residential development, and higher employment densities. Such increases can occur for a variety of reasons, for example because of increased visitor and other spending by rail passengers, or because the stations, together with other transportation linkages, simply provide a magnet for the development of a cluster of commercial, retail, or residential developments. It must be remembered, however, that the degree of potential economic development opportunities around stations is dependent on the degree to which the local communities would promote the opportunity to local businesses, developers and the community at large. Additionally, local communities would need to devote staff time and budget resources towards promotion and marketing.

Experience with international intercity passenger rail systems indicates that major metropolitan rail hubs and intermediate stations can see significant economic development around stations. Thus, connections to the major cities – Dallas Ft. Worth and Kansas City in particular -- will be important if any significant station area development is to occur. For example, the proposed Shawnee/Johnson KS station on the periphery of Kansas City could be an important catalyst for development, as it would be more fully integrated into the metropolitan economy. Experience suggests that such stations, when well served also by highway access and other public actions, can provide excellent environments for major office park development, including developments which focus on one or more major clusters, such as hospital and other health services campuses, or technology campuses.

Such potential changes were not evaluated in this BCA. They were not included for three basic reasons: 1) they are extremely difficult to predict, and are dependent on a whole range of public actions in addition to rail development; 2) because they can entail double counting of benefits; and 3) because the majority of these development impacts cannot be attributed solely to the rail stations or rail service. Other factors which must be in place for development to

occur include availability of developable land, passenger demand at the station, interconnections with local transit services and proximity to interstate highway interchanges, local planning and zoning policies, and most important, the underlying strength of local real estate markets.

Federal guidelines do not yet encourage inclusion of these types of benefits in BCA.

### **Improved Economic Productivity**

Improved transportation connectivity can create shifts in employment patterns and provide workers access to more job markets. As a result, people may seek employment in higher output work. This has the effect of increasing overall economic productivity in the region as workers are capable of reaching employment to maximize their earnings, and employers can reach a larger labor pool. Induced business trips can also stimulate economic activity by increasing personal interactions for economic purposes.

However, it is not expected that the additional services would either produce significant reductions in travel times or expand feasible commuting distances. Furthermore, the proposed schedules are not conducive to a regular commutation, making it unlikely that employees would shift jobs as a result of new or expanded service as with a commuter service<sup>60</sup>.

## **11.4 Economic Costs Included and Assumptions**

In the benefit-cost analysis, the term “cost” refers to the additional resource costs or expenditures required to implement, perpetuate, and maintain the investments associated with the potential *KC-OKC-FW Daytime Service* or the *Heartland Flyer Extension*.

The BCA uses project costs that have been estimated for both options on an annual basis. All costs were converted to real 2011 dollars based on CPI-U adjustments.

### **Construction Costs**

Construction costs include track work, grade crossing improvements, and a layover facility in Newton, KS.

### **Rolling Stock**

Costs for rolling stock were included, including locomotives, coaches, and food service. These costs were included as a one-time cost in the first year of operation, and as a recurring cost commensurate with the life cycle of the rolling stock.

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<sup>60</sup> The services examined in the SDP are intercity in nature and not designed to accommodate persons traveling to or from a job. Commuter rail is designed to take persons to their place of employment and return home. Compared to intercity rail, commuter rail is usually limited to 30 to 50 miles from a core city, tends to have several departures per day with more concentrated around rush hours, and is priced, like local transit, as a public service. The phrase that typifies commuter service is “In in the morning, Out in the afternoon.”

Locomotives typically have a life cycle of 20 years, while coaches and food service cars have a life cycle of 30 years. When the life cycle is completed, it is assumed that the rolling stock would be re-purchased at the same cost that it was originally purchased for, in real dollars. This in effect is a conservative assumption as many instances locomotives and cars are refurbished at a much lower cost.

### **Mobilization Costs**

One-time mobilization costs were included in the last year of construction. These costs represent the training and other soft costs related to starting the new service.

### **Annual Operating & Maintenance Costs**

The annual cost of operating and maintaining the proposed *Heartland Flyer Extension* or *KC-OKC-FW Daytime Service* are included in the analysis. Operations and maintenance activities apply to several assets, including track, rolling stock, stations, overhead, customer service, staff, and other operations. Operating and maintenance costs are assumed to begin at the start of the year immediately following the completion of a sub-phase. This is consistent with benefits beginning at that time.

### **Residual Value**

For assets aside from real estate (discussed above), this BCA assumes that the tangible assets depreciate on a straight-line over their life cycle. Further, the value of the asset is increased every time there is major rehabilitation work by the cost of the rehabilitation work.

Since this analysis ends in year 2050, any remaining asset value is attributed as a one-time cost-offset (or negative cost).

## **11.5 Key Benefit-Cost Evaluation Measures**

The benefit-cost analysis converts potential gains (benefits) and losses (costs) from the project into monetary units and compares them. The following three common benefit-cost evaluation measures are included in this BCA, each tailored to compare benefits and costs from different perspectives.

**Net Present Value (NPV):** NPV compares the net benefits (benefits minus costs) after being discounted to present values using the real discount rate assumption. The NPV provides a perspective on the overall dollar magnitude of cash flows over time in today's dollar terms.

**Economic Rate of Return (ERR):** The ERR is the discount rate that makes the present value of all benefits just equal to the present value of all costs (i.e., the real discount rate at which the project's NPV is zero and its benefit-cost is unity). Note that the ERR is interpreted as a real rate of return (after accounting for inflation), since the assumption is that benefits and costs are expressed in constant dollars. As such, it should not be

directly compared with investment returns calculated from inflated or nominal future year dollars.

**Benefit Cost (B/C) Ratio:** The evaluation also estimates the benefit-cost ratio; where the present value of incremental benefits divided by the present value of incremental costs yields the benefit-cost ratio. The B/C Ratio expresses the relation of discounted benefits to discounted costs as a measure of the extent to which a project’s benefits either exceed or fall short of their associated costs.

## 11.6 Benefit-Cost Analysis Results

### 11.6.1 Results in Brief

Three alternatives were evaluated. They are:

- *Heartland Flyer Extension:* Extending the *Heartland Flyer* service from Oklahoma City to Newton, Kansas
- *KC-OKC-FW Daylight Train:* Introduction of a daily northbound and southbound train between Kansas City and Fort Worth departing each location in the morning
- *Combined Services:* Operation of both the *Heartland Flyer Extension* and the *KC-OKC-FW Daylight* service in the Corridor

The results for each alternative are outlined below in Table 20.

**Table 20 Benefit Cost Analysis Summary  
 30% Contingency**

Scenario	Net Present Value (NPV)	Economic Rate of Return (ERR)	Benefit Cost Ratio (B/C)
<i>Heartland Flyer Extension Only</i>	-\$27.1 million	2.57%	0.88
<i>KC-OKC-FW Daylight Service Only</i>	-\$261.1 million	N.A.	0.61
<i>Combined Services</i>	-\$137.6 million	1.71%	0.83

Source: Parsons Brinckerhoff

## 11.6.2 Benefits and Costs by Category

**Table 21 Summary of Benefits and Costs by Scenario (Present Value)  
(over life of project)**

	<i>Heartland Flyer Extension</i>	<i>KC-OKC-FW Daylight Service Only</i>	<i>Combined Service</i>
<b>Benefits</b>			
Roads and Highways			
Highway User Fuel Savings	\$58,510,901	\$94,154,652	\$152,665,553
Highway User Non-fuel O&M Savings	\$42,024,754	\$67,625,452	\$109,650,205
Oil Import Savings	\$4,781,012	\$7,693,516	\$12,474,528
Reduction in Pavement Damages	\$534,131	\$859,514	\$1,393,645
CO2 Emissions Savings	\$12,872,701	\$20,714,511	\$33,587,213
Non CO2 Emissions Savings	\$2,418,260	\$3,891,419	\$6,309,679
Noise Savings	\$480,718	\$773,563	\$1,254,281
Road Fatality Reductions	\$29,844,124	\$48,024,610	\$77,868,734
Road Injury Reductions	\$14,284,920	\$22,987,028	\$37,271,948
Vehicle Property Damage Reductions	\$2,190,131	\$3,524,318	\$5,714,449
Mode Shift Benefits			
Productivity Increases from Transfers to Rail	\$26,456,659	\$127,720,690	\$207,090,667
Induced Passenger Benefits			
Induced Passenger Benefits	\$3,378,238	\$5,345,664	\$8,503,445
<b>Total Benefits</b>	<b>\$197,776,549</b>	<b>\$403,314,937</b>	<b>\$653,784,347</b>
<b>Costs</b>			
Infrastructure Costs	\$92,516,175	\$258,145,018	\$285,337,906
Rolling Stock	\$3,379,341	\$43,578,723	\$42,032,593
Net O&M Costs	\$108,086,950	\$285,221,242	\$383,220,849
Mobilization Costs	\$1,218,513	\$2,518,259	\$3,736,772
Residual Value (offset)	(\$3,933,225)	(\$1,545,582)	(\$5,743,551)
Contingency Costs (30% of infrastructure and rolling stock)	\$23,634,269	\$76,540,183	\$82,807,992
<b>Net Costs</b>	<b>\$224,902,023</b>	<b>\$664,457,843</b>	<b>\$791,392,561</b>

Source: Parsons Brinckerhoff

To be conservative, a 30 percent contingency was factored in the analysis as the cost estimates are only at the planning level. It is a standard Parsons Brinckerhoff practice to use a 30 percent contingency factor when no engineering has been performed to account for potential variance between the planning level estimate and engineered costs.

Because Oklahoma DOT uses a lower contingency factor for its rail projects, a sensitivity analysis was conducted at the 15 percent level. Table 22 shows the benefits and cost with a lower contingency factor. With this assumption, the *Heartland Flyer Extension* benefits nearly equal its costs. Both contingency factors have been acceptable to USDOT.

**Table 22 Summary of Benefits and Costs by Scenario with 15% Contingency Costs (Discounted 2011 \$)**

	<i>Heartland Flyer Extension</i>	<i>KC-OKC-FW Daylight Service Only</i>	<i>Combined Service</i>
<b>Benefits</b>			
Roads and Highways			
Highway User Fuel Savings	\$58,510,901	\$94,154,652	\$152,665,553
Highway User Non-fuel O&M Savings	\$42,024,754	\$67,625,452	\$109,650,205
Oil Import Savings	\$4,781,012	\$7,693,516	\$12,474,528
Reduction in Pavement Damages	\$534,131	\$859,514	\$1,393,645
CO2 Emissions Savings	\$12,872,701	\$20,714,511	\$33,587,213
Non CO2 Emissions Savings	\$2,418,260	\$3,891,419	\$6,309,679
Noise Savings	\$480,718	\$773,563	\$1,254,281
Road Fatality Reductions	\$29,844,124	\$48,024,610	\$77,868,734
Road Injury Reductions	\$14,284,920	\$22,987,028	\$37,271,948
Vehicle Property Damage Reductions	\$2,190,131	\$3,524,318	\$5,714,449
Mode Shift Benefits			
Productivity Increases from Transfers to Rail	\$26,456,659	\$127,720,690	\$207,090,667
Induced Passenger Benefits			
Induced Passenger Benefits	\$3,378,238	\$5,345,664	\$8,503,445
<b>Total Benefits</b>	<b>\$197,776,549</b>	<b>\$403,314,937</b>	<b>\$653,784,347</b>
<b>Costs</b>			
Infrastructure Costs	\$92,516,175	\$258,145,018	\$195,918,814
Rolling Stock	\$3,379,341	\$43,578,723	\$47,286,221
Net O&M Costs	\$108,086,950	\$285,221,242	\$383,220,849
Mobilization Costs	\$1,218,513	\$2,518,259	\$3,058,580
Residual Value (offset)	(\$3,933,225)	(\$1,545,582)	(\$5,743,551)
Contingency Costs (15% of infrastructure and rolling stock)	\$11,817,134	\$38,270,091	\$41,403,996
<b>Net Costs</b>	<b>\$213,084,888</b>	<b>\$626,187,751</b>	<b>\$665,144,909</b>

With the lower contingency requirement, the results are marginally improved (Table 23).

**Table 23: Benefit Cost Analysis Summary  
15% Contingency**

Scenario	Net Present Value (NPV)	Economic Rate of Return (ERR)	Benefit Cost Ratio (B/C)
<i>Heartland Flyer Extension</i>	-\$15.3 million	3.14%	0.93
<i>KC-OKC-FW Daylight Service Only</i>	-\$222.8 million	N.A.	0.64
<i>Combined Services</i>	-\$96.2 million	2.29%	0.87

## 11.7 Summary

This analysis shows that the anticipated quantifiable benefits from the *Heartland Flyer Extension* are approximately equal to their anticipated costs while the anticipated quantifiable benefits from *KC-OKC-FW Daytime Service* are less than the forecasted costs.

It is important to note that, at this planning level analysis, inputs such as ridership and even cost are subject to change once a more detailed analysis is completed, therefore the BC ratios, while being the best information available at this time, should only be considered approximate values.

## 12 Program Management

### 12.1 Marketing

#### **Customer Expectations**

A successful passenger rail corridor service, and the protection of the public investment to construct and operate it, depends on outstanding customer service to grow and retain ridership. The goal is to attract not only riders' dependent on public transport but the broader market of those that have a choice about their travel. Meeting customer expectations is both designed into the system, and is maintained and improved through competent management of the service.

Designed into the system is the ability to provide convenient schedules with appropriate frequencies, trip time commiserate with the trip purposes, and the infrastructure required to reliably meet those schedule requirements. Customers also expect to reach their final destinations without undue difficulty. Convenient intermodal connections such as convenient walking distances, curbside pickup, availability of taxis, rental cars, and local transit would need to be provided. In addition, origin stations should assure that adequate parking is available.

Other customer service provisions are the result of competent management. The passengers expect courteous personnel, accurate information regarding their passage, straight forward ticketing and adequate signage for those unfamiliar with train travel, on-board amenities appropriate to the trip length and hours of travel, comfortable seating and temperature control, and clean surroundings.

The success and growth experienced by the Oklahoma and Texas-sponsored *Heartland Flyer* brand is a result of constant attention to customer service. In the public's eye, the brand and the service are closely associated. The branding and marketing plans of these new services would need to be addressed early in the implementation stage.

#### **State Coordination**

Meeting customers' expectations requires extensive coordination among all state sponsors. To formulate the services described in this SDP, Kansas DOT and Oklahoma DOT staffs have established a close relationship and have frequently communicated with their counterparts at the Missouri DOT and Texas DOT as plans have developed, including conducting a regional rail summit of the four states. Should service implementation come to fruition, a formalized structure for decision making and promotion of the multi-state operation will need to be put in place.

## 12.2 Passenger Rail Service Promotion Models

### Midwest Regional Rail Initiative

Since 1996, the Midwest Regional Rail initiative has advanced from a series of individual corridor service concepts into a well defined, integrated vision to create a 21<sup>st</sup> century regional passenger rail system. This vision has been transformed into a transportation plan known as the Midwest Regional Rail System (MWRRS). The primary purpose of the MWRRS is to help meet future regional rail travel needs within the nine Midwestern states that are members including the State of Missouri. The key elements of the MWRRS plan include:

- Upgrading existing rail of way to permit frequent, reliable, higher speed passenger operations
- Introducing new equipment with improved amenities
- Enhancing multimodal connections to improve system access
- Introducing passenger rail contracted operations to improve efficiency and on-time reliability

### Midwest Interstate Passenger Rail Compact

The Midwest Interstate Passenger Rail Compact, which the State of Kansas joined in 2010 becoming the eleventh state to do so, is another example. The MIPR Compact is focused on jointly developing both high speed and intercity rail within the Midwest multi-state region. The compact is an important opportunity for promoting the development and implementation of long range plans and to enhance coordination with neighboring states. Both the State of Oklahoma and the State of Missouri are also members.

While these efforts certainly help the individual states and the region to gain perspective and a better understanding of the collective challenges they face, it is clear that no one model or approach works best under all circumstances. Regional consensus is critical for the operation of a multi state rail corridor; however, regional coordination should not attempt to replace the need for strong individual state rail programs. Individual states are responsible for funding the capital and operating requirement of the service and must play an active role in both establishing the program goals and in monitoring performance.

## 12.3 Rail Service Management Models

### State DOT Program Management Models

There are sixteen states currently contracting for the operation of intercity passenger rail corridor service, including Oklahoma and Texas, which jointly contract for the operation of the *Heartland Flyer*. In most of these sixteen states, the management of the passenger rail program is the responsibility of the state department of transportation. In some cases, the passenger rail program is managed by a separate department or authority.

The Kansas and Oklahoma rail programs are managed by the respective transportation departments. Texas and Missouri also follow this model.

### **Rail Authority Models**

**Maine Passenger Rail Authority:** The State of Maine created a state passenger rail authority (Northern New England Passenger Rail Authority or NNEPRA) to be responsible for the development, management and operation of the state's intercity passenger program. The service that operates between Portland, Maine and Boston and is known as the "*Downeaster*" is one of the best run intercity corridor services in the country and recognized for outstanding customer service and efficient operations.

One of the principal issues that influenced the creation of the separate rail authority was the liability associated with the operation of passenger rail service. The principle was that having separation between the Maine DOT and the Authority would limit the state's liability in event of an accident.

**California Regional Passenger Rail Authority:** In California, the choice of model centered on the desire for local control of the corridor service and that regional management would produce rail service suited to the needs of the region and the service could be better coordinated with local transit and land use planning.

California law provides for a region to create a Joint Power Authority (JPA) and to assume the day to day management of the rail program from the state. The Capitol Corridor service, which currently comprises 32 intercity passenger rail corridor trains per day between San Jose-Oakland and Sacramento, started under the management of the California Department of Transportation Division of Rail. After several years, the jurisdictions served by the Capitol Corridor passenger rail service petitioned the state to allow creation of the JPA. The Capitol Corridor JPA has successfully managed the service for more than thirteen years. During this timeframe, the service grew from a start up to having the third largest corridor ridership in the entire country behind only the Northeast Corridor (NEC) between Washington DC and Boston and the Surfliner Corridor in Southern California.

Regardless of how a passenger rail program is institutionally organized, a workable balance must be struck between the visibility to compete for resources afforded by independence and the need for support services that stems from being a part of a large established organization. Several states have attempted to balance this relationship by elevating the rail program within their DOT by creating a separate division. The State of Texas recently created a Division of Rail within TxDOT.

As part of the service development program, the states will evaluate the rail management models and develop the management program.

## 12.4 Program Delivery Requirements

The complexity of the proposed project and the involvement of multiple partners would require an integrated approach to project delivery. While premature to develop a detailed program delivery plan, the parties would begin to outline the agreements that are required to be developed should the program move forward.

There are three types of agreements that would need to be established:

- Agreements between the state agencies and the Federal Railroad Administration related to federal funding.
- Agreements between state agencies and local jurisdictions for improvements and operation of stations.
- Operating agreements between the state agencies and the host railroad concerning terms of access and operation of passenger rail service. This will involve an agreement with BNSF and the selected operator.

The state agencies may act independently; however, their efforts will be closely coordinated.

### 12.4.1 Coordination Among the States: Memorandum of Understanding

Once there is general agreement of the states on advancement of the passenger rail corridor project, a memorandum of understanding (MOU) between the departments of transportation that will represent an Agreement in Principle (AIP) would be developed. The AIP will describe how the states will coordinate decision making throughout the project development and implementation. It will specifically address:

- **Establishment of a Program Management Team (PMT):** A PMT, comprised of the representative state DOTs, would manage decision making in the corridor. In addition, one of the DOTs would be formally designated as the **Lead Agency**. This agency serves as the contracting agency for the multi-state operating and host railroad agreements based upon the direction received from the PMT. Capital contribution or route miles are potential criteria for leadership. Oklahoma's central location within the corridor and experience in initiating the *Heartland Flyer* are also factors to consider. The AIP will address the appointment of the lead agency and how that lead agency responsibilities may rotate among the states.
- **Cost Sharing:** Several approaches have been successful for sharing the cost of capital and operating expenses among states involved in multistate passenger rail service. Passenger ridership, revenue and route mileage have all been used as the basis for sharing costs as well as different combinations of these factors. The important thing

however, is not the formula that is ultimately used, but that the agreement exists among all the states and that the cost sharing arrangement is fully documented as part of the AIP.

- **Assignment of Rights:** The agreement would address failure of states in meeting their obligations and continuance of service if the access agreements were signed separately between each DOT and the host railroad without provisions for assignment of the access rights to the other states within the multi-state corridor.

### 12.4.2 Operating Agreements

Operating Agreements are between Amtrak and the host railroad for the operation of Amtrak trains. The *Heartland Flyer* service for which Oklahoma and Texas share the operating costs is currently operated by Amtrak, which in turn, has agreements with the two states. While Amtrak could certainly operate the proposed *Heartland Flyer Extension* as well as the proposed *KC-OKC-FW Daytime Service*, it should not be assumed that Amtrak would be selected as the operator.

One of several private firms could be an alternative to Amtrak as the service provider: TransitAmerica, a Missouri-based firm; Veolia, a French multi-national company; and Keolis a French-based company owned by the SNCF (the French national railroad). These firms have been successful in operating major commuter rail systems in this country (San Francisco Bay Area, Boston area and Northern Virginia respectively) and would likely compete for operating passenger rail corridor service for the states in the central and south central regions. Not to be overlooked is the owner of most of the rail infrastructure within the Kansas City to Fort Worth corridor, BNSF. BNSF is the operator of the Seattle Sounder commuter rail service and the North Star commuter rail system in Minneapolis.

The agreement between the PMT and the operator will address the quality and cost of the service including the specific service outcomes (frequency of service, trip times, on time performance objectives, costs) and flow downs to the host railroad regarding relevant contract provisions such as on-time incentives.

Operating Agreements may also have provisions for the maintenance of equipment unless the decision is made to contract for maintenance services separately. Depending on ownership and maintenance arrangements, the Operating Agreement may address equipment availability and reliability issues.

### 12.4.3 Host Railroad Agreement

The Lead Agency (or alternatively each state) would negotiate an agreement with the host railroad in conjunction with the negotiations with the selected operator of the service. This

contract would include an agreed upon level of service, schedule of trains, cost of service and the liability arrangements between the parties.

### **Liability Issue**

Amtrak has negotiated national agreements with each individual Class 1 freight railroad that specify how the liability will be shared in the event of an accident. These agreements are complex and have evolved over many years. Irrespective of any negligence or fault of the host railroad, Amtrak agrees to indemnify and hold harmless the freight railroad for many types of risk (Amtrak's employees, their equipment, their contractors, their passengers including property damage, persons at stations who are there in connection with the Amtrak service and collisions with vehicles and pedestrians). This is referred to as the "but for" clause. This simply means that the freight railroads have no additional risk of liability as a result of Amtrak operating passenger rail service over the freight's right of way. While there are exceptions to this "but for" approach to apportioning risk and the freights do indemnify Amtrak for all liability for injury or death of any freight railroad employees, the basic assumption of risk by Amtrak for the operation of passenger rail service is fundamental to the relationship between Amtrak and the freights and has set the standard for the rail industry.

Amtrak also fully indemnifies states from any liability when contracting with Amtrak to operate intercity rail service. Amtrak has been able to indemnify the states by pooling the risk and purchasing insurance at favorable rates. Until recently, this was not an issue as the states were indemnified, protecting the state's faith and credit, at an affordable cost. However, as the full cost of Amtrak's operating services are beginning to be passed through to the states, liability risks and the cost to the public has become a significant issue.

The FRA insists that the host railroad agreement address the maintenance of the infrastructure improvements when the railroad is the recipient of federal construction funds. This is to ensure that the level of utility established under the construction agreement is provided. When the construction agreement provides for the improvements to be owned by the host railroad, there must be provisions to ensure that the public receives the benefits from the passenger rail service that are anticipated and funded.

### **Stakeholder Terms**

The FRA has articulated certain minimum requirements for stakeholder agreements, which include compliance with applicable Federal laws, and agreement on performance outcomes. These requirements are to ensure that proposed infrastructure projects are implemented as planned and that the performance of the federally-funded projects is realized and sustained.

The FRA expects the states and host railroad to reach agreement on appropriate modeling and other processes necessary to determine the specific amount of trip time savings, the number of

additional frequencies and reliability, and that the approach consistent with the basic operating agreement between the host railroad and the operator.

### **Proposed Steps for Developing a Stakeholder Agreement**

1. The Lead Agency must reach agreement with the host railroad that modeling and empirically supported operations analysis is necessary to define the final project list and the attainable performance outcomes. Prior to modeling implementation, the parties and the FRA will decide upon the appropriate modeling assumptions, outputs and the scenarios to be incorporated in the modeling and also the scope, schedule and cost for modeling.
2. Finalize the project list based on the modeling performed and subject to further modification and reanalysis of modeling as a result of findings, conclusions and mitigation plans from the project's environmental assessment or budget limitations.
3. Develop concurrence on the cost estimates for each project.
4. Establish a project design and implementation schedule with responsibilities assigned among the parties. Performance outcomes must be aligned with the implementation.
5. Reach agreement on the method of construction oversight, roles and responsibilities. The parties must agree on what is the useful life in the final project development.
6. Negotiate with the host railroad to ensure agreement related to data accumulation for compliance with FRA reporting requirements. The responsibility for federal reporting requirement, assuming federal funding, will be the responsibility of the Lead Agency or the individual states.
7. Develop agreement with the host railroad on the roles, responsibilities, and processes by which the performance outcomes will be monitored and managed over the useful life of the projects.

The Lead Agency and host railroad must obtain written acceptance from the FRA prior to signing any corridor improvement stakeholder agreement.

### **Adequate Enforcement Remedies**

The FRA places significant importance on defining performance outcomes and their enforcement. Any future grant applications for improvements to the corridor must satisfy FRA that the applicant(s) will have sufficient continuing control through provisions of the corridor improvement stakeholder agreements or through a tri-party agreement with the operator to ensure the performance outcomes.

## 12.4.4 Enabling Legislation

Each state must have enabling legislation that fully contemplates the long term commitment to rail passenger transportation service. The enabling legislation needs to account for the anticipated level of capital, operating and maintenance funding, organizational leadership and management resources that the passenger rail program will require.

### **State of Kansas**

With the enactment of SB 409, the State of Kansas established a passenger rail program. Under the legislation, the Secretary of Transportation is authorized to implement a passenger rail program and is granted permission to provide assistance and to enter into agreements with local jurisdictions along proposed passenger routes in Kansas. These agreements could include cost-sharing provisions associated with initiating service, capital costs, and operating subsidies. The legislation also established the Passenger Rail Service Revolving Fund (PRSRF). The Secretary would be authorized to provide loans or grants from this fund to provide assistance for the restoration, conservation, improvement, and construction of railroad lines, yards, sidings, connections, highway grade separations, and other railroad related improvements.

The Kansas Department of Transportation is responsible for coordinating contract negotiations and authority to enter into agreements with the host railroad for use of the rail line, the service provider for operating the passenger rail service and local jurisdictions for the development of stations and terminals. KDOT is granted authority to negotiate with other states for passenger rail service. Additionally, the law authorizes the Secretary to provide loans and grants for a variety of railroad infrastructure improvements, allows for the acquisition of passenger locomotives and rolling stock, costs associated with the initiation of annual operation, the ongoing maintenance of passenger rail service and station improvement and development.

The Kansas statute is broad enabling legislation that provides the necessary flexibility to develop and manage corridor passenger rail service. The legislation provided a mechanism for financing the activities authorized, although no funding was appropriated. This will need to be addressed in future legislative sessions should the corridor state legislatures desire to move forward with the implementation of expanded passenger rail service.

### **State of Oklahoma**

Oklahoma law includes provisions for railroad activities and date back to the earliest laws on record in the state. Laws enacted during the 1970's, 1980's and 1990 assigned responsibility for coordination of railroad improvements throughout to the Oklahoma Department of Transportation.

Statutes empower ODOT to acquire, construct, reconstruct, repair, replace, operate, and maintain railroad rights-of-way and to provide a funding source for rail related improvements.

The Railroad Revitalization Act and legislation enacted to establish the Railroad Revolving Maintenance Fund Program is currently being administered through the Rail Programs Division.

Recently enacted legislation deals with funding or improvements for passenger rail service. The initial funding for the Oklahoma Tourism and Passenger Rail Act came from provisions included in the Taxpayer Relief Act of 1997 and focused on the implementation of Amtrak service for states without passenger rail service. Most of the 1990's legislation was focused on the implementation and continued service of the *Heartland Flyer*.

Oklahoma has demonstrated ongoing support for passenger rail by the enactment of innovative legislation including recent revisions to the Oklahoma Tourism and Passenger Rail Act, which provides empowerment of passenger rail, defines passenger rail service, grants ODOT broad powers and duties, and provides funding for the operation of the *Heartland Flyer*. The Rebuilding Oklahoma Access and Driver Safety Fund created a continuing fund not subject to fiscal year limitations. Beginning in FY 2007 and for each year thereafter \$2.0 million will be allocated to the Oklahoma Tourist and Passenger Rail Revolving fund to be use for capital and operating costs for the *Heartland Flyer*.

## **12.5 Organization Options for Coordinating a Multi-State Corridor**

### **12.5.1 Centralized versus Decentralized Model**

Several factors that should be considered in developing the organizational structure best suited for development and management of a multi-state passenger rail service.

Decisions must be made in a reasonable time and not be subjected to multiple reviews and possible revision. Decision-making must be both responsive to local concerns and address multi-state issues at the same time. The decision-making process must have the confidence of both state institutions and the federal funding agency in order to attract and retain support. The organizational structure must be able to effectively manage the project during all phases.

The advantage of creating a PMT comprised of the representative states is that the structure recognizes that the project will cross state boundaries and that the decision-making process is capable of handling multi-state issues and complex contracting relationships.

There is some loss of control by the individual states to the PMT and that decision-making would be occurring in a new untested environment. A PMT is a centralization of decision making and may not be as accountable to the individual states.

Alternatively, if there is no shared decision-making, it would be hard to produce the seamless passenger rail corridor service that the customers would come to expect.

There may be concerns about the role of the Lead Agency as the contracting agent for the host railroad agreement, operating agreement and rolling stock acquisition. The lead agency is not a free agent, but will be working on behalf of the states and with the consensus of the PMT. While a part of the decision-making process is centralized in the PMT and Lead Agency, all the states have equal say and access on the PMT. The individual DOTs remain responsible for the infrastructure improvements within their state. The PMT-designated Lead Agency is a hybrid approach with both centralized and decentralized decision-making combined with oversight from the four states.

## 12.5.2 Policy Considerations for the Multi-State Corridor

### Liability Risk

In response to industry concerns, Congress enacted the Amtrak Reform and Accountability Act of 1997 (ARAA), which limited overall damages from passenger claims from a single rail accident to \$200 million and explicitly authorized passenger rail providers to enter into indemnification agreements. Questions remain about indemnifying an entity for its own gross negligence and willful misconduct. The ARAA cap does not cover third-party claims. Resulting from the deadly 2008 crash involving a Metrolink train and a freight train in Chatsworth, California, there are now concerns about the adequacy of the cap and the rising cost of insurance.

In regard to the appropriateness of indemnifying an entity for its own gross negligence, some have argued, including the Surface Transportation Board (STB), that it is not consistent with good public policy and is contrary to provisions in federal rail transportation policy which requires the STB to promote a safe and efficient transportation system and to operate in a manner not detrimental to the public health and safety.

Amtrak absorbs the risk of passenger operations when states contract with them for service, as well as assuming most of the financial risk for the freight railroads as part of the host railroad – Amtrak access agreements. Under Section 209 of PRIIA, Amtrak now passes through to the states a higher percentage of their operating costs and the cost of indemnification is a real concern. For some passenger rail programs, insurance costs are approaching 20 percent of the operating budget.

If an operator other than Amtrak is selected, the operator will not have Amtrak’s statutory right to operate over tracks owned by the freight railroads at incremental cost. Nor will the service fall under Amtrak’s existing operating agreement with the freight railroads covering liability and indemnity. Therefore, the liability and indemnity provisions that allocate responsibility for liability risk would have to be a part of the negotiated host railroad agreement. This means that the states would be in the same position as commuter agencies in the country on these issues. The indemnity provisions cannot be considered in isolation because they are negotiated in the

context of the broader agreement for the shared use of infrastructure that addresses train dispatching, infrastructure maintenance, capital improvements, and access fees.

### **Legislative Options to Address Risk**

The Kansas City to Fort Worth passenger rail corridor covers part of four states and each state has its own approach to handle liability risk. This fact makes it difficult to address the liability issue but a good starting point is to identify the types of state law that influence negotiations of liability and indemnity.

**Liability caps for railroads:** These state laws limit commuter rail agencies liability exposure for accidents.

**Sovereign immunity caps:** These laws limit the types of claims that may be filed against public agencies and limit the amount of the liability to which the agencies are exposed.

**Prohibition against public indemnification of private entities:** Some state laws prohibit public agencies from agreeing to any indemnification provisions and other states prohibit indemnification against its own negligence of gross negligence.

**Punitive damages:** Some state laws prohibit insuring against punitive damages and in other states, passenger rail agencies are immune from paying punitive damages because they are public entities.

Recently several states have been active in enacting legislation to address specific problem areas in their state that were affecting the ability to provide passenger rail service. For example:

- North Carolina set its liability cap at \$200 million to mirror the amount in ARAA, but included third-party claims as well.
- In New Mexico, the constitution prohibits state government from subsidizing a private entity and as a result prohibits indemnification of a private entity. State laws were changed to allow the state to purchase insurance covering BNSF Railway's liability associated with the New Mexico Rail Express service by listing them as a named insured.
- Minnesota state law prohibited a public agency from indemnifying a private company for exposure that the private company could face in the event of a catastrophic loss. Legislation was enacted to treat the planning, operation, and maintenance of commuter rail facilities and services as a government function serving a public purpose. The statute allows the public agency to provide indemnification and to procure insurance that will protect both itself and BNSF for claims and damages.

- In Colorado, legislation was enacted concerning the liability of railroads that make their property available for the provision of public passenger rail service. Under the state statute, such railroads shall not be liable either directly or by indemnification for punitive or exemplary damages or for outrageous conduct to any person for any accident or injury arising out of the operation and maintenance of the public passenger rail service by a public entity.

The subject of liability risk and indemnity is complex. Ample time needs to be allowed for the negotiations, both between the states and the host railroad, and the states and the service operator on these issues.

### **Station Development**

The development or redevelopment of a rail station is an opportunity for the community to leverage their investment and take advantage of the increased activity that would occur in and around the station. The existing land use and zoning should be reviewed along with parking availability and the anticipated circulation patterns for autos, local transit, and taxi.

For many communities the initial questions will be more basic. Who will own the station? How will the station be maintained and how will the basic operating cost of the station such as electricity, heating and janitorial service be covered? These issues can be addressed in different ways but in most cases across the country, the rail station is in public ownership and is operated by a city or town. This makes sense since a train station becomes the front door to a community and city officials want to make a good first impression. The financial burden of owning and operating a rail station usually falls to the local community since federal and state resources are devoted to operating the service. Many communities have addressed the limited funding by getting creative with how they utilize the station space. By co-locating compatible uses in the station such as a rental car office, or coffee shop it is possible to create a revenue stream to help offset a portion of the operating costs while improving the safety of stations.

## Appendix A

**Figure A-1: Heartland Flyer Operating Cost Projection (Nominal \$ 000s)**

Existing Heartland Flyer	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
<i>Revenue</i>																				
Ticket Revenue	\$1,809	\$1,852	\$1,897	\$1,942	\$1,989	\$2,037	\$2,085	\$2,135	\$2,187	\$2,239	\$2,293	\$2,348	\$2,404	\$2,462	\$2,521	\$2,582	\$2,644	\$2,707	\$2,772	\$2,839
Food & Beverage Revenue	\$166	\$170	\$174	\$178	\$182	\$187	\$191	\$196	\$200	\$205	\$210	\$215	\$220	\$226	\$231	\$237	\$242	\$248	\$254	\$260
Other Revenue	\$9	\$9	\$9	\$9	\$10	\$10	\$10	\$10	\$11	\$11	\$11	\$11	\$12	\$12	\$12	\$12	\$13	\$13	\$13	\$14
<b>Total Revenue</b>	<b>\$1,983</b>	<b>\$2,031</b>	<b>\$2,080</b>	<b>\$2,130</b>	<b>\$2,181</b>	<b>\$2,233</b>	<b>\$2,287</b>	<b>\$2,342</b>	<b>\$2,398</b>	<b>\$2,455</b>	<b>\$2,514</b>	<b>\$2,575</b>	<b>\$2,636</b>	<b>\$2,700</b>	<b>\$2,764</b>	<b>\$2,831</b>	<b>\$2,899</b>	<b>\$2,968</b>	<b>\$3,039</b>	<b>\$3,112</b>
<i>Direct Labor</i>																				
Train & Engine Crew Labor	\$1,184	\$1,206	\$1,229	\$1,254	\$1,280	\$1,307	\$1,334	\$1,361	\$1,386	\$1,411	\$1,437	\$1,464	\$1,491	\$1,519	\$1,547	\$1,576	\$1,606	\$1,636	\$1,666	\$1,697
On Board Service Labor and Support	\$434	\$442	\$451	\$460	\$470	\$479	\$489	\$499	\$508	\$517	\$527	\$537	\$547	\$557	\$567	\$578	\$589	\$600	\$611	\$622
<b>Total Direct Labor</b>	<b>\$1,618</b>	<b>\$1,648</b>	<b>\$1,680</b>	<b>\$1,714</b>	<b>\$1,750</b>	<b>\$1,787</b>	<b>\$1,823</b>	<b>\$1,859</b>	<b>\$1,895</b>	<b>\$1,928</b>	<b>\$1,964</b>	<b>\$2,001</b>	<b>\$2,038</b>	<b>\$2,076</b>	<b>\$2,115</b>	<b>\$2,154</b>	<b>\$2,194</b>	<b>\$2,235</b>	<b>\$2,277</b>	<b>\$2,320</b>
<i>Other Direct Costs</i>																				
Host Railroad MOW	\$313	\$319	\$325	\$332	\$339	\$346	\$353	\$360	\$367	\$373	\$380	\$387	\$395	\$402	\$410	\$417	\$425	\$433	\$441	\$449
Host Railroad Performance Incentives	\$350	\$356	\$363	\$371	\$378	\$386	\$394	\$402	\$410	\$417	\$425	\$433	\$441	\$449	\$457	\$466	\$475	\$483	\$492	\$502
Fuel and Power	\$613	\$625	\$637	\$650	\$663	\$677	\$691	\$705	\$718	\$731	\$744	\$758	\$772	\$787	\$802	\$817	\$832	\$847	\$863	\$879
Commissary Provisions and Management	\$180	\$183	\$187	\$191	\$195	\$199	\$203	\$207	\$211	\$214	\$218	\$222	\$227	\$231	\$235	\$240	\$244	\$249	\$253	\$258
Car & Locomotive Maintenance and Turnaround	\$991	\$1,009	\$1,029	\$1,050	\$1,071	\$1,094	\$1,116	\$1,139	\$1,160	\$1,181	\$1,203	\$1,225	\$1,248	\$1,271	\$1,295	\$1,319	\$1,344	\$1,369	\$1,394	\$1,420
Direct Advertising	(\$14)	(\$14)	(\$14)	(\$14)	(\$15)	(\$15)	(\$15)	(\$16)	(\$16)	(\$16)	(\$17)	(\$17)	(\$17)	(\$17)	(\$18)	(\$18)	(\$18)	(\$19)	(\$19)	(\$20)
Commissions	\$43	\$44	\$45	\$46	\$47	\$48	\$49	\$51	\$52	\$53	\$54	\$56	\$57	\$58	\$60	\$61	\$63	\$64	\$66	\$67
Reservations and Call Centers	\$618	\$630	\$642	\$655	\$669	\$683	\$697	\$711	\$724	\$737	\$751	\$765	\$779	\$793	\$808	\$823	\$839	\$854	\$870	\$887
Passenger Inconvenience	\$8	\$9	\$9	\$9	\$9	\$9	\$9	\$10	\$10	\$10	\$10	\$10	\$11	\$11	\$11	\$11	\$11	\$12	\$12	\$12
Connecting Motor Coach	\$13	\$13	\$13	\$14	\$14	\$14	\$14	\$15	\$15	\$15	\$16	\$16	\$16	\$16	\$17	\$17	\$17	\$18	\$18	\$18
Stations - Route	\$25	\$26	\$26	\$27	\$27	\$28	\$28	\$29	\$29	\$30	\$30	\$31	\$32	\$32	\$33	\$33	\$34	\$35	\$35	\$36
<b>Total Other Direct Costs</b>	<b>\$3,141</b>	<b>\$3,199</b>	<b>\$3,262</b>	<b>\$3,329</b>	<b>\$3,398</b>	<b>\$3,470</b>	<b>\$3,541</b>	<b>\$3,611</b>	<b>\$3,680</b>	<b>\$3,745</b>	<b>\$3,815</b>	<b>\$3,886</b>	<b>\$3,959</b>	<b>\$4,034</b>	<b>\$4,109</b>	<b>\$4,186</b>	<b>\$4,265</b>	<b>\$4,345</b>	<b>\$4,426</b>	<b>\$4,509</b>
<b>Total Direct Costs</b>	<b>\$4,759</b>	<b>\$4,847</b>	<b>\$4,943</b>	<b>\$5,043</b>	<b>\$5,147</b>	<b>\$5,256</b>	<b>\$5,364</b>	<b>\$5,471</b>	<b>\$5,574</b>	<b>\$5,673</b>	<b>\$5,779</b>	<b>\$5,887</b>	<b>\$5,997</b>	<b>\$6,110</b>	<b>\$6,224</b>	<b>\$6,340</b>	<b>\$6,459</b>	<b>\$6,580</b>	<b>\$6,703</b>	<b>\$6,829</b>
<i>Shared Costs</i>																				
Stations - Shared	\$233	\$238	\$242	\$247	\$252	\$258	\$263	\$268	\$273	\$278	\$283	\$289	\$294	\$299	\$305	\$311	\$317	\$322	\$329	\$335
MOE Supervision, Training, and Overhead	\$347	\$353	\$360	\$367	\$375	\$383	\$391	\$398	\$406	\$413	\$421	\$429	\$437	\$445	\$453	\$461	\$470	\$479	\$488	\$497
MOW Support	\$10	\$10	\$10	\$11	\$11	\$11	\$11	\$12	\$12	\$12	\$12	\$13	\$13	\$13	\$13	\$14	\$14	\$14	\$14	\$14
Yard Operations	\$31	\$32	\$32	\$33	\$34	\$34	\$35	\$36	\$36	\$37	\$38	\$38	\$39	\$40	\$41	\$41	\$42	\$43	\$44	\$44
Marketing and Distribution	\$81	\$83	\$84	\$86	\$88	\$90	\$91	\$93	\$95	\$97	\$99	\$100	\$102	\$104	\$106	\$108	\$110	\$112	\$114	\$116
Police/Environmental and Safety	\$239	\$244	\$248	\$253	\$259	\$264	\$270	\$275	\$280	\$285	\$290	\$296	\$301	\$307	\$313	\$318	\$324	\$330	\$337	\$343
T&E Overhead and Operations Management	\$158	\$161	\$164	\$167	\$171	\$175	\$178	\$182	\$185	\$188	\$192	\$195	\$199	\$203	\$207	\$210	\$214	\$218	\$222	\$227
Utilities	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
General & Administrative - State	\$59	\$60	\$61	\$62	\$64	\$65	\$66	\$68	\$69	\$70	\$71	\$73	\$74	\$75	\$77	\$78	\$80	\$81	\$83	\$84
General & Administrative - Amtrak	\$552	\$562	\$573	\$585	\$597	\$609	\$622	\$634	\$646	\$658	\$670	\$682	\$695	\$708	\$721	\$735	\$748	\$762	\$777	\$791
<b>Total Shared Costs</b>	<b>\$1,710</b>	<b>\$1,742</b>	<b>\$1,776</b>	<b>\$1,812</b>	<b>\$1,849</b>	<b>\$1,888</b>	<b>\$1,927</b>	<b>\$1,965</b>	<b>\$2,002</b>	<b>\$2,038</b>	<b>\$2,076</b>	<b>\$2,114</b>	<b>\$2,154</b>	<b>\$2,194</b>	<b>\$2,235</b>	<b>\$2,277</b>	<b>\$2,319</b>	<b>\$2,363</b>	<b>\$2,407</b>	<b>\$2,452</b>
<b>Total Existing Heartland Flyer Operating Cost</b>	<b>(\$6,470)</b>	<b>(\$6,589)</b>	<b>(\$6,718)</b>	<b>(\$6,855)</b>	<b>(\$6,997)</b>	<b>(\$7,145)</b>	<b>(\$7,291)</b>	<b>(\$7,436)</b>	<b>(\$7,577)</b>	<b>(\$7,710)</b>	<b>(\$7,854)</b>	<b>(\$8,001)</b>	<b>(\$8,151)</b>	<b>(\$8,304)</b>	<b>(\$8,459)</b>	<b>(\$8,617)</b>	<b>(\$8,778)</b>	<b>(\$8,943)</b>	<b>(\$9,110)</b>	<b>(\$9,281)</b>
<b>Total Heartland Flyer Revenue</b>	<b>\$1,983</b>	<b>\$2,031</b>	<b>\$2,080</b>	<b>\$2,130</b>	<b>\$2,181</b>	<b>\$2,233</b>	<b>\$2,287</b>	<b>\$2,342</b>	<b>\$2,398</b>	<b>\$2,455</b>	<b>\$2,514</b>	<b>\$2,575</b>	<b>\$2,636</b>	<b>\$2,700</b>	<b>\$2,764</b>	<b>\$2,831</b>	<b>\$2,899</b>	<b>\$2,968</b>	<b>\$3,039</b>	<b>\$3,112</b>
<b>Heartland Flyer Subsidy Required</b>	<b>(\$4,486)</b>	<b>(\$4,558)</b>	<b>(\$4,639)</b>	<b>(\$4,726)</b>	<b>(\$4,816)</b>	<b>(\$4,912)</b>	<b>(\$5,004)</b>	<b>(\$5,095)</b>	<b>(\$5,179)</b>	<b>(\$5,255)</b>	<b>(\$5,340)</b>	<b>(\$5,427)</b>	<b>(\$5,515)</b>	<b>(\$5,604)</b>	<b>(\$5,695)</b>	<b>(\$5,787)</b>	<b>(\$5,880)</b>	<b>(\$5,975)</b>	<b>(\$6,071)</b>	<b>(\$6,168)</b>

**Figure A-2: Heartland Flyer Extension Operating Cost Projection (Nominal \$ 000s)**

Heartland Flyer Extension	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
<i>Revenue</i>																				
HF Extension Ticket Revenue	\$2,792	\$2,859	\$2,928	\$2,998	\$3,070	\$3,144	\$3,219	\$3,296	\$3,375	\$3,456	\$3,539	\$3,624	\$3,711	\$3,800	\$3,891	\$3,985	\$4,081	\$4,178	\$4,279	\$4,381
Food & Beverage Revenue	\$226	\$231	\$237	\$242	\$248	\$254	\$260	\$267	\$273	\$280	\$286	\$293	\$300	\$307	\$315	\$322	\$330	\$338	\$346	\$354
Other Revenue	\$12	\$12	\$12	\$13	\$13	\$13	\$14	\$14	\$14	\$15	\$15	\$15	\$16	\$16	\$16	\$17	\$17	\$18	\$18	\$19
<b>Total Revenue</b>	<b>\$3,030</b>	<b>\$3,102</b>	<b>\$3,177</b>	<b>\$3,253</b>	<b>\$3,331</b>	<b>\$3,411</b>	<b>\$3,493</b>	<b>\$3,577</b>	<b>\$3,663</b>	<b>\$3,750</b>	<b>\$3,840</b>	<b>\$3,933</b>	<b>\$4,027</b>	<b>\$4,124</b>	<b>\$4,223</b>	<b>\$4,324</b>	<b>\$4,428</b>	<b>\$4,534</b>	<b>\$4,643</b>	<b>\$4,754</b>
<i>Direct Labor</i>																				
Train & Engine Crew Labor	\$1,149	\$1,171	\$1,194	\$1,218	\$1,243	\$1,269	\$1,295	\$1,321	\$1,346	\$1,369	\$1,395	\$1,421	\$1,448	\$1,475	\$1,502	\$1,530	\$1,559	\$1,588	\$1,618	\$1,648
On Board Service Labor and Support	\$422	\$429	\$438	\$447	\$456	\$465	\$475	\$484	\$494	\$502	\$512	\$521	\$531	\$541	\$551	\$561	\$572	\$582	\$593	\$604
<b>Total Direct Labor</b>	<b>\$1,571</b>	<b>\$1,600</b>	<b>\$1,631</b>	<b>\$1,664</b>	<b>\$1,699</b>	<b>\$1,735</b>	<b>\$1,770</b>	<b>\$1,805</b>	<b>\$1,839</b>	<b>\$1,872</b>	<b>\$1,907</b>	<b>\$1,942</b>	<b>\$1,979</b>	<b>\$2,016</b>	<b>\$2,053</b>	<b>\$2,091</b>	<b>\$2,131</b>	<b>\$2,170</b>	<b>\$2,211</b>	<b>\$2,252</b>
<i>Other Direct Costs</i>																				
Host Railroad MOW	\$406	\$413	\$421	\$430	\$439	\$448	\$457	\$466	\$475	\$483	\$492	\$502	\$511	\$520	\$530	\$540	\$550	\$560	\$571	\$582
Host Railroad Performance Incentives	\$350	\$356	\$363	\$371	\$378	\$386	\$394	\$402	\$410	\$417	\$425	\$433	\$441	\$449	\$457	\$466	\$475	\$483	\$492	\$502
Fuel and Power	\$595	\$606	\$618	\$631	\$644	\$658	\$671	\$684	\$697	\$709	\$723	\$736	\$750	\$764	\$778	\$793	\$808	\$823	\$838	\$854
Commissary Provisions and Management	\$245	\$249	\$254	\$260	\$265	\$270	\$276	\$282	\$287	\$292	\$297	\$303	\$309	\$314	\$320	\$326	\$332	\$338	\$345	\$351
Car & Locomotive Maintenance and Turnaround	\$1,283	\$1,306	\$1,332	\$1,359	\$1,387	\$1,416	\$1,445	\$1,474	\$1,502	\$1,528	\$1,557	\$1,586	\$1,615	\$1,646	\$1,676	\$1,708	\$1,740	\$1,772	\$1,805	\$1,839
Direct Advertising	(\$14)	(\$14)	(\$14)	(\$14)	(\$15)	(\$15)	(\$15)	(\$16)	(\$16)	(\$16)	(\$17)	(\$17)	(\$17)	(\$17)	(\$18)	(\$18)	(\$18)	(\$19)	(\$19)	(\$20)
Commissions	\$66	\$68	\$69	\$71	\$73	\$75	\$76	\$78	\$80	\$82	\$84	\$86	\$88	\$90	\$92	\$94	\$97	\$99	\$101	\$104
Reservations and Call Centers	\$842	\$857	\$874	\$892	\$910	\$930	\$949	\$968	\$986	\$1,003	\$1,022	\$1,041	\$1,060	\$1,080	\$1,100	\$1,121	\$1,142	\$1,163	\$1,185	\$1,207
Passenger Inconvenience	\$8	\$9	\$9	\$9	\$9	\$9	\$9	\$10	\$10	\$10	\$10	\$10	\$11	\$11	\$11	\$11	\$11	\$12	\$12	\$12
Connecting Motor Coach	\$12	\$13	\$13	\$13	\$13	\$14	\$14	\$14	\$15	\$15	\$15	\$15	\$16	\$16	\$16	\$17	\$17	\$17	\$18	\$18
Stations - Route	\$32	\$33	\$33	\$34	\$35	\$36	\$36	\$37	\$38	\$38	\$39	\$40	\$41	\$41	\$42	\$43	\$44	\$45	\$45	\$46
<b>Total Other Direct Costs</b>	<b>\$3,826</b>	<b>\$3,897</b>	<b>\$3,974</b>	<b>\$4,055</b>	<b>\$4,139</b>	<b>\$4,226</b>	<b>\$4,313</b>	<b>\$4,399</b>	<b>\$4,483</b>	<b>\$4,562</b>	<b>\$4,647</b>	<b>\$4,735</b>	<b>\$4,824</b>	<b>\$4,914</b>	<b>\$5,006</b>	<b>\$5,100</b>	<b>\$5,196</b>	<b>\$5,294</b>	<b>\$5,393</b>	<b>\$5,494</b>
<b>Total Direct Costs</b>	<b>\$5,397</b>	<b>\$5,497</b>	<b>\$5,605</b>	<b>\$5,719</b>	<b>\$5,837</b>	<b>\$5,961</b>	<b>\$6,083</b>	<b>\$6,204</b>	<b>\$6,322</b>	<b>\$6,434</b>	<b>\$6,554</b>	<b>\$6,677</b>	<b>\$6,802</b>	<b>\$6,930</b>	<b>\$7,060</b>	<b>\$7,192</b>	<b>\$7,327</b>	<b>\$7,464</b>	<b>\$7,604</b>	<b>\$7,746</b>
<i>Shared Costs</i>																				
Stations - Shared	\$233	\$238	\$242	\$247	\$252	\$258	\$263	\$268	\$273	\$278	\$283	\$289	\$294	\$299	\$305	\$311	\$317	\$322	\$329	\$335
MOE Supervision, Training, and Overhead	\$337	\$343	\$349	\$357	\$364	\$372	\$379	\$387	\$394	\$401	\$408	\$416	\$424	\$432	\$440	\$448	\$456	\$465	\$474	\$482
MOW Support	\$10	\$10	\$10	\$10	\$10	\$11	\$11	\$11	\$11	\$12	\$12	\$12	\$12	\$13	\$13	\$13	\$13	\$13	\$14	\$14
Yard Operations	\$30	\$31	\$31	\$32	\$33	\$33	\$34	\$35	\$35	\$36	\$37	\$37	\$38	\$39	\$39	\$40	\$41	\$42	\$42	\$43
Marketing and Distribution	\$81	\$83	\$84	\$86	\$88	\$90	\$91	\$93	\$95	\$97	\$99	\$100	\$102	\$104	\$106	\$108	\$110	\$112	\$114	\$116
Police/Environmental and Safety	\$326	\$332	\$338	\$345	\$352	\$360	\$367	\$374	\$381	\$388	\$395	\$403	\$410	\$418	\$426	\$434	\$442	\$450	\$458	\$467
T&E Overhead and Operations Management	\$153	\$156	\$159	\$163	\$166	\$169	\$173	\$176	\$180	\$183	\$186	\$190	\$193	\$197	\$201	\$204	\$208	\$212	\$216	\$220
Utilities	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
General & Administrative - State	\$80	\$82	\$83	\$85	\$87	\$88	\$90	\$92	\$94	\$95	\$97	\$99	\$101	\$103	\$105	\$107	\$109	\$111	\$113	\$115
General & Administrative - Amtrak	\$751	\$765	\$780	\$796	\$812	\$830	\$847	\$863	\$880	\$895	\$912	\$929	\$946	\$964	\$982	\$1,000	\$1,019	\$1,038	\$1,057	\$1,077
<b>Total Shared Costs</b>	<b>\$2,001</b>	<b>\$2,038</b>	<b>\$2,078</b>	<b>\$2,121</b>	<b>\$2,164</b>	<b>\$2,210</b>	<b>\$2,255</b>	<b>\$2,300</b>	<b>\$2,343</b>	<b>\$2,385</b>	<b>\$2,429</b>	<b>\$2,475</b>	<b>\$2,521</b>	<b>\$2,568</b>	<b>\$2,616</b>	<b>\$2,665</b>	<b>\$2,714</b>	<b>\$2,765</b>	<b>\$2,817</b>	<b>\$2,869</b>
<b>Total HF Extension Revenue</b>	<b>\$3,030</b>	<b>\$3,102</b>	<b>\$3,177</b>	<b>\$3,253</b>	<b>\$3,331</b>	<b>\$3,411</b>	<b>\$3,493</b>	<b>\$3,577</b>	<b>\$3,663</b>	<b>\$3,750</b>	<b>\$3,840</b>	<b>\$3,933</b>	<b>\$4,027</b>	<b>\$4,124</b>	<b>\$4,223</b>	<b>\$4,324</b>	<b>\$4,428</b>	<b>\$4,534</b>	<b>\$4,643</b>	<b>\$4,754</b>
<b>Total HF Extension Operating Cost</b>	<b>(\$7,399)</b>	<b>(\$7,535)</b>	<b>(\$7,683)</b>	<b>(\$7,840)</b>	<b>(\$8,002)</b>	<b>(\$8,171)</b>	<b>(\$8,339)</b>	<b>(\$8,504)</b>	<b>(\$8,665)</b>	<b>(\$8,818)</b>	<b>(\$8,983)</b>	<b>(\$9,152)</b>	<b>(\$9,323)</b>	<b>(\$9,497)</b>	<b>(\$9,675)</b>	<b>(\$9,856)</b>	<b>(\$10,041)</b>	<b>(\$10,229)</b>	<b>(\$10,421)</b>	<b>(\$10,616)</b>
<b>Incremental Operating Cost</b>	<b>(\$4,369)</b>	<b>(\$4,433)</b>	<b>(\$4,507)</b>	<b>(\$4,587)</b>	<b>(\$4,671)</b>	<b>(\$4,760)</b>	<b>(\$4,846)</b>	<b>(\$4,928)</b>	<b>(\$5,003)</b>	<b>(\$5,068)</b>	<b>(\$5,143)</b>	<b>(\$5,219)</b>	<b>(\$5,296)</b>	<b>(\$5,374)</b>	<b>(\$5,453)</b>	<b>(\$5,532)</b>	<b>(\$5,613)</b>	<b>(\$5,695)</b>	<b>(\$5,778)</b>	<b>(\$5,861)</b>
Existing Heartland Flyer Contribution	(\$4,486)	(\$4,558)	(\$4,639)	(\$4,726)	(\$4,816)	(\$4,912)	(\$5,004)	(\$5,095)	(\$5,179)	(\$5,255)	(\$5,340)	(\$5,427)	(\$5,515)	(\$5,604)	(\$5,695)	(\$5,787)	(\$5,880)	(\$5,975)	(\$6,071)	(\$6,168)
<b>Total HF Extension Operating Subsidy</b>	<b>(\$8,855)</b>	<b>(\$8,991)</b>	<b>(\$9,145)</b>	<b>(\$9,313)</b>	<b>(\$9,486)</b>	<b>(\$9,671)</b>	<b>(\$9,850)</b>	<b>(\$10,022)</b>	<b>(\$10,182)</b>	<b>(\$10,323)</b>	<b>(\$10,483)</b>	<b>(\$10,646)</b>	<b>(\$10,811)</b>	<b>(\$10,978)</b>	<b>(\$11,147)</b>	<b>(\$11,319)</b>	<b>(\$11,493)</b>	<b>(\$11,669)</b>	<b>(\$11,848)</b>	<b>(\$12,029)</b>

**Figure A-3: KC-OKC-FW Daytime Service Operating Cost Projection (Nominal \$ 000s)**

KC-OKC-FW Daytime Service	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
<i>Revenue</i>																				
Daytime Service Ticket Revenue	\$8,936	\$9,150	\$9,370	\$9,595	\$9,825	\$10,061	\$10,303	\$10,550	\$10,803	\$11,062	\$11,328	\$11,600	\$11,878	\$12,163	\$12,455	\$12,754	\$13,060	\$13,373	\$13,694	\$14,023
Food & Beverage Revenue	\$521	\$533	\$546	\$559	\$573	\$586	\$600	\$615	\$630	\$645	\$660	\$676	\$692	\$709	\$726	\$743	\$761	\$779	\$798	\$817
Other Revenue	\$27	\$28	\$29	\$29	\$30	\$31	\$31	\$32	\$33	\$34	\$35	\$35	\$36	\$37	\$38	\$39	\$40	\$41	\$42	\$43
<b>Total Revenue</b>	<b>\$9,484</b>	<b>\$9,712</b>	<b>\$9,945</b>	<b>\$10,183</b>	<b>\$10,428</b>	<b>\$10,678</b>	<b>\$10,934</b>	<b>\$11,197</b>	<b>\$11,465</b>	<b>\$11,741</b>	<b>\$12,022</b>	<b>\$12,311</b>	<b>\$12,606</b>	<b>\$12,909</b>	<b>\$13,219</b>	<b>\$13,536</b>	<b>\$13,861</b>	<b>\$14,194</b>	<b>\$14,534</b>	<b>\$14,883</b>
<i>Direct Labor</i>																				
Train & Engine Crew Labor	\$3,448	\$3,512	\$3,581	\$3,654	\$3,729	\$3,808	\$3,885	\$3,963	\$4,037	\$4,108	\$4,185	\$4,263	\$4,343	\$4,424	\$4,507	\$4,591	\$4,676	\$4,764	\$4,853	\$4,943
On Board Service Labor and Support	\$1,265	\$1,288	\$1,313	\$1,340	\$1,368	\$1,396	\$1,425	\$1,453	\$1,481	\$1,507	\$1,535	\$1,564	\$1,593	\$1,623	\$1,653	\$1,684	\$1,715	\$1,747	\$1,780	\$1,813
<b>Total Direct Labor</b>	<b>\$4,713</b>	<b>\$4,800</b>	<b>\$4,894</b>	<b>\$4,993</b>	<b>\$5,096</b>	<b>\$5,204</b>	<b>\$5,311</b>	<b>\$5,416</b>	<b>\$5,518</b>	<b>\$5,615</b>	<b>\$5,720</b>	<b>\$5,827</b>	<b>\$5,936</b>	<b>\$6,047</b>	<b>\$6,159</b>	<b>\$6,274</b>	<b>\$6,392</b>	<b>\$6,511</b>	<b>\$6,633</b>	<b>\$6,756</b>
<i>Other Direct Costs</i>																				
Host Railroad MOW	\$1,217	\$1,239	\$1,264	\$1,289	\$1,316	\$1,344	\$1,371	\$1,399	\$1,425	\$1,450	\$1,477	\$1,505	\$1,533	\$1,561	\$1,591	\$1,620	\$1,650	\$1,681	\$1,713	\$1,745
Host Railroad Performance Incentives	\$350	\$356	\$363	\$371	\$378	\$386	\$394	\$402	\$410	\$417	\$425	\$433	\$441	\$449	\$457	\$466	\$475	\$483	\$492	\$502
Fuel and Power	\$1,786	\$1,819	\$1,855	\$1,893	\$1,932	\$1,973	\$2,013	\$2,053	\$2,092	\$2,128	\$2,168	\$2,209	\$2,250	\$2,292	\$2,335	\$2,378	\$2,423	\$2,468	\$2,514	\$2,561
Commissary Provisions and Management	\$565	\$575	\$587	\$599	\$611	\$624	\$637	\$649	\$662	\$673	\$686	\$699	\$712	\$725	\$738	\$752	\$766	\$781	\$795	\$810
Car & Locomotive Maintenance and Turnaround	\$3,848	\$3,919	\$3,996	\$4,077	\$4,161	\$4,249	\$4,336	\$4,422	\$4,505	\$4,585	\$4,670	\$4,757	\$4,846	\$4,937	\$5,029	\$5,123	\$5,219	\$5,316	\$5,415	\$5,516
Direct Advertising	(\$14)	(\$14)	(\$14)	(\$14)	(\$15)	(\$15)	(\$15)	(\$16)	(\$16)	(\$16)	(\$17)	(\$17)	(\$17)	(\$17)	(\$18)	(\$18)	(\$18)	(\$19)	(\$19)	(\$20)
Commissions	\$212	\$217	\$222	\$227	\$233	\$239	\$244	\$250	\$256	\$262	\$269	\$275	\$282	\$288	\$295	\$302	\$310	\$317	\$325	\$332
Reservations and Call Centers	\$1,942	\$1,978	\$2,016	\$2,058	\$2,100	\$2,144	\$2,188	\$2,232	\$2,274	\$2,314	\$2,357	\$2,401	\$2,446	\$2,491	\$2,538	\$2,585	\$2,634	\$2,683	\$2,733	\$2,784
Passenger Inconvenience	\$8	\$9	\$9	\$9	\$9	\$9	\$9	\$10	\$10	\$10	\$10	\$10	\$11	\$11	\$11	\$11	\$11	\$12	\$12	\$12
Connecting Motor Coach	\$37	\$38	\$39	\$40	\$40	\$41	\$42	\$43	\$44	\$44	\$45	\$46	\$47	\$48	\$49	\$50	\$51	\$52	\$53	\$54
Stations - Route	\$54	\$55	\$56	\$57	\$58	\$59	\$61	\$62	\$63	\$64	\$65	\$66	\$68	\$69	\$70	\$72	\$73	\$74	\$76	\$77
<b>Total Other Direct Costs</b>	<b>\$10,006</b>	<b>\$10,191</b>	<b>\$10,392</b>	<b>\$10,604</b>	<b>\$10,824</b>	<b>\$11,053</b>	<b>\$11,280</b>	<b>\$11,505</b>	<b>\$11,723</b>	<b>\$11,931</b>	<b>\$12,155</b>	<b>\$12,384</b>	<b>\$12,617</b>	<b>\$12,854</b>	<b>\$13,095</b>	<b>\$13,341</b>	<b>\$13,592</b>	<b>\$13,847</b>	<b>\$14,108</b>	<b>\$14,373</b>
<b>Total Direct Costs</b>	<b>\$14,719</b>	<b>\$14,991</b>	<b>\$15,286</b>	<b>\$15,598</b>	<b>\$15,920</b>	<b>\$16,257</b>	<b>\$16,591</b>	<b>\$16,921</b>	<b>\$17,242</b>	<b>\$17,546</b>	<b>\$17,875</b>	<b>\$18,211</b>	<b>\$18,552</b>	<b>\$18,900</b>	<b>\$19,255</b>	<b>\$19,616</b>	<b>\$19,984</b>	<b>\$20,358</b>	<b>\$20,740</b>	<b>\$21,129</b>
<i>Shared Costs</i>																				
Stations - Shared	\$467	\$475	\$485	\$495	\$505	\$515	\$526	\$536	\$547	\$556	\$567	\$577	\$588	\$599	\$610	\$622	\$633	\$645	\$657	\$669
MOE Supervision, Training, and Overhead	\$1,010	\$1,028	\$1,048	\$1,070	\$1,092	\$1,115	\$1,138	\$1,160	\$1,182	\$1,203	\$1,225	\$1,248	\$1,272	\$1,295	\$1,320	\$1,344	\$1,369	\$1,395	\$1,421	\$1,447
MOW Support	\$29	\$30	\$30	\$31	\$31	\$32	\$33	\$33	\$34	\$35	\$35	\$36	\$37	\$37	\$38	\$39	\$39	\$40	\$41	\$42
Yard Operations	\$90	\$92	\$94	\$96	\$98	\$100	\$102	\$104	\$106	\$108	\$110	\$112	\$114	\$116	\$118	\$120	\$122	\$125	\$127	\$129
Marketing and Distribution	\$81	\$83	\$84	\$86	\$88	\$90	\$91	\$93	\$95	\$97	\$99	\$100	\$102	\$104	\$106	\$108	\$110	\$112	\$114	\$116
Police/Environmental and Safety	\$751	\$765	\$780	\$796	\$812	\$829	\$846	\$863	\$879	\$895	\$912	\$929	\$946	\$964	\$982	\$1,000	\$1,019	\$1,038	\$1,057	\$1,077
T&E Overhead and Operations Management	\$460	\$469	\$478	\$488	\$498	\$508	\$519	\$529	\$539	\$548	\$559	\$569	\$580	\$591	\$602	\$613	\$624	\$636	\$648	\$660
Utilities	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
General & Administrative - State	\$185	\$188	\$192	\$196	\$200	\$204	\$208	\$212	\$216	\$220	\$224	\$228	\$233	\$237	\$241	\$246	\$250	\$255	\$260	\$265
General & Administrative - Amtrak	\$1,733	\$1,765	\$1,799	\$1,836	\$1,874	\$1,913	\$1,953	\$1,991	\$2,029	\$2,065	\$2,103	\$2,143	\$2,183	\$2,223	\$2,265	\$2,307	\$2,350	\$2,394	\$2,439	\$2,484
<b>Total Shared Costs</b>	<b>\$4,806</b>	<b>\$4,895</b>	<b>\$4,991</b>	<b>\$5,092</b>	<b>\$5,197</b>	<b>\$5,307</b>	<b>\$5,415</b>	<b>\$5,523</b>	<b>\$5,627</b>	<b>\$5,726</b>	<b>\$5,833</b>	<b>\$5,942</b>	<b>\$6,053</b>	<b>\$6,166</b>	<b>\$6,281</b>	<b>\$6,398</b>	<b>\$6,518</b>	<b>\$6,640</b>	<b>\$6,764</b>	<b>\$6,890</b>
<b>Total Daytime Service Revenue</b>	<b>\$9,484</b>	<b>\$9,712</b>	<b>\$9,945</b>	<b>\$10,183</b>	<b>\$10,428</b>	<b>\$10,678</b>	<b>\$10,934</b>	<b>\$11,197</b>	<b>\$11,465</b>	<b>\$11,741</b>	<b>\$12,022</b>	<b>\$12,311</b>	<b>\$12,606</b>	<b>\$12,909</b>	<b>\$13,219</b>	<b>\$13,536</b>	<b>\$13,861</b>	<b>\$14,194</b>	<b>\$14,534</b>	<b>\$14,883</b>
<b>Total Daytime Service Operating Cost</b>	<b>(\$19,525)</b>	<b>(\$19,886)</b>	<b>(\$20,277)</b>	<b>(\$20,690)</b>	<b>(\$21,117)</b>	<b>(\$21,564)</b>	<b>(\$22,006)</b>	<b>(\$22,444)</b>	<b>(\$22,869)</b>	<b>(\$23,273)</b>	<b>(\$23,709)</b>	<b>(\$24,153)</b>	<b>(\$24,605)</b>	<b>(\$25,066)</b>	<b>(\$25,536)</b>	<b>(\$26,014)</b>	<b>(\$26,502)</b>	<b>(\$26,998)</b>	<b>(\$27,504)</b>	<b>(\$28,019)</b>
<b>Incremental Operating Cost</b>	<b>(\$10,041)</b>	<b>(\$10,174)</b>	<b>(\$10,332)</b>	<b>(\$10,507)</b>	<b>(\$10,689)</b>	<b>(\$10,886)</b>	<b>(\$11,072)</b>	<b>(\$11,247)</b>	<b>(\$11,403)</b>	<b>(\$11,532)</b>	<b>(\$11,686)</b>	<b>(\$11,842)</b>	<b>(\$11,999)</b>	<b>(\$12,157)</b>	<b>(\$12,317)</b>	<b>(\$12,478)</b>	<b>(\$12,641)</b>	<b>(\$12,804)</b>	<b>(\$12,970)</b>	<b>(\$13,136)</b>
Existing Heartland Flyer Contribution	(\$4,486)	(\$4,558)	(\$4,639)	(\$4,726)	(\$4,816)	(\$4,912)	(\$5,004)	(\$5,095)	(\$5,179)	(\$5,255)	(\$5,340)	(\$5,427)	(\$5,515)	(\$5,604)	(\$5,695)	(\$5,787)	(\$5,880)	(\$5,975)	(\$6,071)	(\$6,168)
<b>Total Daytime Service Operating Subsidy</b>	<b>(\$14,527)</b>	<b>(\$14,732)</b>	<b>(\$14,971)</b>	<b>(\$15,232)</b>	<b>(\$15,505)</b>	<b>(\$15,797)</b>	<b>(\$16,076)</b>	<b>(\$16,342)</b>	<b>(\$16,582)</b>	<b>(\$16,787)</b>	<b>(\$17,026)</b>	<b>(\$17,267)</b>	<b>(\$17,513)</b>	<b>(\$17,761)</b>	<b>(\$18,011)</b>	<b>(\$18,265)</b>	<b>(\$18,520)</b>	<b>(\$18,779)</b>	<b>(\$19,040)</b>	<b>(\$19,304)</b>

**Figure A-4: Combined Services Operating Cost Projection (Nominal \$ 000s)**

<b>Combined Services</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>
<i>Revenue</i>																				
Combined Service Ticket Revenue	\$11,728	\$12,009	\$12,298	\$12,593	\$12,895	\$13,205	\$13,521	\$13,846	\$14,178	\$14,519	\$14,867	\$15,224	\$15,589	\$15,963	\$16,346	\$16,739	\$17,140	\$17,552	\$17,973	\$18,404
Food & Beverage Revenue	\$747	\$764	\$783	\$802	\$821	\$841	\$861	\$881	\$902	\$924	\$946	\$969	\$992	\$1,016	\$1,041	\$1,065	\$1,091	\$1,117	\$1,144	\$1,172
Other Revenue	\$39	\$40	\$41	\$42	\$43	\$44	\$45	\$46	\$47	\$48	\$50	\$51	\$52	\$53	\$55	\$56	\$57	\$59	\$60	\$61
<b>Total Revenue</b>	<b>\$12,514</b>	<b>\$12,814</b>	<b>\$13,122</b>	<b>\$13,436</b>	<b>\$13,759</b>	<b>\$14,089</b>	<b>\$14,427</b>	<b>\$14,774</b>	<b>\$15,128</b>	<b>\$15,491</b>	<b>\$15,863</b>	<b>\$16,244</b>	<b>\$16,634</b>	<b>\$17,033</b>	<b>\$17,441</b>	<b>\$17,860</b>	<b>\$18,289</b>	<b>\$18,728</b>	<b>\$19,177</b>	<b>\$19,637</b>
<i>Direct Labor</i>																				
Train & Engine Crew Labor	\$4,598	\$4,682	\$4,774	\$4,871	\$4,972	\$5,077	\$5,181	\$5,284	\$5,383	\$5,478	\$5,580	\$5,684	\$5,791	\$5,899	\$6,009	\$6,121	\$6,235	\$6,352	\$6,470	\$6,591
On Board Service Labor and Support	\$1,686	\$1,717	\$1,751	\$1,787	\$1,823	\$1,862	\$1,900	\$1,938	\$1,974	\$2,009	\$2,047	\$2,085	\$2,124	\$2,163	\$2,204	\$2,245	\$2,287	\$2,330	\$2,373	\$2,417
<b>Total Direct Labor</b>	<b>\$6,284</b>	<b>\$6,400</b>	<b>\$6,525</b>	<b>\$6,658</b>	<b>\$6,795</b>	<b>\$6,939</b>	<b>\$7,081</b>	<b>\$7,221</b>	<b>\$7,358</b>	<b>\$7,487</b>	<b>\$7,627</b>	<b>\$7,769</b>	<b>\$7,914</b>	<b>\$8,062</b>	<b>\$8,213</b>	<b>\$8,366</b>	<b>\$8,522</b>	<b>\$8,681</b>	<b>\$8,843</b>	<b>\$9,009</b>
<i>Other Direct Costs</i>																				
Host Railroad MOW	\$1,623	\$1,653	\$1,685	\$1,719	\$1,755	\$1,792	\$1,828	\$1,865	\$1,900	\$1,933	\$1,969	\$2,006	\$2,044	\$2,082	\$2,121	\$2,160	\$2,201	\$2,242	\$2,284	\$2,326
Host Railroad Performance Incentives	\$350	\$356	\$363	\$371	\$378	\$386	\$394	\$402	\$410	\$417	\$425	\$433	\$441	\$449	\$457	\$466	\$475	\$483	\$492	\$502
Fuel and Power	\$2,382	\$2,426	\$2,473	\$2,524	\$2,576	\$2,630	\$2,684	\$2,737	\$2,789	\$2,838	\$2,891	\$2,945	\$3,000	\$3,056	\$3,113	\$3,171	\$3,230	\$3,291	\$3,352	\$3,415
Commissary Provisions and Management	\$810	\$825	\$841	\$858	\$876	\$894	\$913	\$931	\$948	\$965	\$983	\$1,001	\$1,020	\$1,039	\$1,059	\$1,078	\$1,098	\$1,119	\$1,140	\$1,161
Car & Locomotive Maintenance and Turnaround	\$5,131	\$5,225	\$5,328	\$5,436	\$5,548	\$5,665	\$5,781	\$5,896	\$6,007	\$6,113	\$6,227	\$6,343	\$6,462	\$6,582	\$6,705	\$6,830	\$6,958	\$7,088	\$7,220	\$7,355
Direct Advertising	(\$14)	(\$14)	(\$14)	(\$14)	(\$15)	(\$15)	(\$15)	(\$16)	(\$16)	(\$16)	(\$17)	(\$17)	(\$17)	(\$17)	(\$18)	(\$18)	(\$18)	(\$19)	(\$19)	(\$20)
Commissions	\$278	\$285	\$292	\$299	\$306	\$313	\$321	\$328	\$336	\$344	\$352	\$361	\$370	\$378	\$388	\$397	\$406	\$416	\$426	\$436
Reservations and Call Centers	\$2,784	\$2,835	\$2,891	\$2,950	\$3,010	\$3,074	\$3,137	\$3,199	\$3,260	\$3,317	\$3,379	\$3,442	\$3,506	\$3,572	\$3,638	\$3,706	\$3,775	\$3,846	\$3,918	\$3,991
Passenger Inconvenience	\$8	\$9	\$9	\$9	\$9	\$9	\$9	\$10	\$10	\$10	\$10	\$10	\$11	\$11	\$11	\$11	\$11	\$12	\$12	\$12
Connecting Motor Coach	\$50	\$51	\$52	\$53	\$54	\$55	\$56	\$57	\$58	\$59	\$60	\$62	\$63	\$64	\$65	\$66	\$68	\$69	\$70	\$71
Stations - Route	\$54	\$55	\$56	\$57	\$58	\$59	\$61	\$62	\$63	\$64	\$65	\$66	\$68	\$69	\$70	\$72	\$73	\$74	\$76	\$77
<b>Total Direct Costs</b>	<b>\$13,455</b>	<b>\$13,704</b>	<b>\$13,975</b>	<b>\$14,260</b>	<b>\$14,555</b>	<b>\$14,863</b>	<b>\$15,168</b>	<b>\$15,471</b>	<b>\$15,765</b>	<b>\$16,044</b>	<b>\$16,345</b>	<b>\$16,653</b>	<b>\$16,965</b>	<b>\$17,284</b>	<b>\$17,609</b>	<b>\$17,940</b>	<b>\$18,277</b>	<b>\$18,620</b>	<b>\$18,970</b>	<b>\$19,327</b>
<i>Shared Costs</i>																				
Stations - Shared	\$467	\$475	\$485	\$495	\$505	\$515	\$526	\$536	\$547	\$556	\$567	\$577	\$588	\$599	\$610	\$622	\$633	\$645	\$657	\$669
MOE Supervision, Training, and Overhead	\$1,346	\$1,371	\$1,398	\$1,426	\$1,456	\$1,486	\$1,517	\$1,547	\$1,576	\$1,604	\$1,634	\$1,664	\$1,695	\$1,727	\$1,759	\$1,792	\$1,826	\$1,860	\$1,894	\$1,930
MOW Support	\$39	\$39	\$40	\$41	\$42	\$43	\$44	\$44	\$45	\$46	\$47	\$48	\$49	\$50	\$51	\$52	\$53	\$54	\$55	\$55
Yard Operations	\$120	\$123	\$125	\$128	\$130	\$133	\$136	\$138	\$141	\$143	\$146	\$149	\$152	\$155	\$157	\$160	\$163	\$166	\$169	\$173
Marketing and Distribution	\$81	\$83	\$84	\$86	\$88	\$90	\$91	\$93	\$95	\$97	\$99	\$100	\$102	\$104	\$106	\$108	\$110	\$112	\$114	\$116
Police/Environmental and Safety	\$1,077	\$1,097	\$1,118	\$1,141	\$1,164	\$1,189	\$1,213	\$1,237	\$1,261	\$1,283	\$1,307	\$1,331	\$1,356	\$1,381	\$1,407	\$1,434	\$1,460	\$1,488	\$1,515	\$1,544
T&E Overhead and Operations Management	\$614	\$625	\$637	\$650	\$664	\$678	\$692	\$705	\$719	\$731	\$745	\$759	\$773	\$787	\$802	\$817	\$832	\$848	\$864	\$880
Utilities	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
General & Administrative - State	\$265	\$270	\$275	\$281	\$286	\$292	\$298	\$304	\$310	\$315	\$321	\$327	\$333	\$340	\$346	\$353	\$359	\$366	\$373	\$380
General & Administrative - Amtrak	\$2,484	\$2,530	\$2,580	\$2,632	\$2,686	\$2,743	\$2,799	\$2,855	\$2,909	\$2,960	\$3,015	\$3,071	\$3,129	\$3,187	\$3,247	\$3,307	\$3,369	\$3,432	\$3,496	\$3,561
<b>Total Shared Costs</b>	<b>\$6,493</b>	<b>\$6,612</b>	<b>\$6,742</b>	<b>\$6,879</b>	<b>\$7,021</b>	<b>\$7,169</b>	<b>\$7,316</b>	<b>\$7,462</b>	<b>\$7,602</b>	<b>\$7,736</b>	<b>\$7,880</b>	<b>\$8,028</b>	<b>\$8,177</b>	<b>\$8,330</b>	<b>\$8,486</b>	<b>\$8,644</b>	<b>\$8,806</b>	<b>\$8,970</b>	<b>\$9,138</b>	<b>\$9,308</b>
<b>Total Combined Service Revenue</b>	<b>\$12,514</b>	<b>\$12,814</b>	<b>\$13,122</b>	<b>\$13,436</b>	<b>\$13,759</b>	<b>\$14,089</b>	<b>\$14,427</b>	<b>\$14,774</b>	<b>\$15,128</b>	<b>\$15,491</b>	<b>\$15,863</b>	<b>\$16,244</b>	<b>\$16,634</b>	<b>\$17,033</b>	<b>\$17,441</b>	<b>\$17,860</b>	<b>\$18,289</b>	<b>\$18,728</b>	<b>\$19,177</b>	<b>\$19,637</b>
<b>Total Combined Service Operating Cost</b>	<b>(\$26,232)</b>	<b>(\$26,717)</b>	<b>(\$27,242)</b>	<b>(\$27,797)</b>	<b>(\$28,371)</b>	<b>(\$28,971)</b>	<b>(\$29,565)</b>	<b>(\$30,154)</b>	<b>(\$30,725)</b>	<b>(\$31,267)</b>	<b>(\$31,853)</b>	<b>(\$32,449)</b>	<b>(\$33,057)</b>	<b>(\$33,676)</b>	<b>(\$34,307)</b>	<b>(\$34,950)</b>	<b>(\$35,605)</b>	<b>(\$36,272)</b>	<b>(\$36,951)</b>	<b>(\$37,644)</b>
<b>Incremental Operating Cost</b>	<b>(\$13,718)</b>	<b>(\$13,903)</b>	<b>(\$14,121)</b>	<b>(\$14,361)</b>	<b>(\$14,612)</b>	<b>(\$14,882)</b>	<b>(\$15,138)</b>	<b>(\$15,380)</b>	<b>(\$15,597)</b>	<b>(\$15,776)</b>	<b>(\$15,990)</b>	<b>(\$16,206)</b>	<b>(\$16,424)</b>	<b>(\$16,644)</b>	<b>(\$16,866)</b>	<b>(\$17,090)</b>	<b>(\$17,316)</b>	<b>(\$17,544)</b>	<b>(\$17,774)</b>	<b>(\$18,006)</b>
Existing Heartland Flyer Contribution	(\$4,486)	(\$4,558)	(\$4,639)	(\$4,726)	(\$4,816)	(\$4,912)	(\$5,004)	(\$5,095)	(\$5,179)	(\$5,255)	(\$5,340)	(\$5,427)	(\$5,515)	(\$5,604)	(\$5,695)	(\$5,787)	(\$5,880)	(\$5,975)	(\$6,071)	(\$6,168)
<b>Total Combined Services Operating Subsidy</b>	<b>(\$18,205)</b>	<b>(\$18,461)</b>	<b>(\$18,759)</b>	<b>(\$19,087)</b>	<b>(\$19,428)</b>	<b>(\$19,793)</b>	<b>(\$20,142)</b>	<b>(\$20,475)</b>	<b>(\$20,779)</b>	<b>(\$21,031)</b>	<b>(\$21,330)</b>	<b>(\$21,627)</b>	<b>(\$21,938)</b>	<b>(\$22,248)</b>	<b>(\$22,560)</b>	<b>(\$22,876)</b>	<b>(\$23,196)</b>	<b>(\$23,519)</b>	<b>(\$23,845)</b>	<b>(\$24,174)</b>

**Appendix B**

<b>HSR PUBLIC BENEFITS ANALYSIS - BENEFIT CATEGORIES</b>				
FRA Guidelines Source Citations: 1) Federal Register Vol 75, No. 126, July 1, 2010 Notices, Appendix 2, 2.10; 2) Federal Register Vol. 74, No. 119 June 23, 2009, Section 5)				
	<b>Representative Measures</b>	<b>Should be included in Benefit Cost Analysis?</b>	<b>Quantifiable for Benefit Cost Analysis?</b>	<b>Comments</b>
<b>General Description of Public Benefits Analysis from FRA Federal Register Guidelines</b>	should include operational, transportation and output benefits			calls for "particular focus on job creation and retention, green environmental outcomes, potential energy savings, and community livability" (2010 FRA notice)
<b>User Benefits</b>				
	travel time savings for "existing" rail passengers	yes	yes	from rail travel demand and operational modeling
	travel reliability improvements for existing rail passengers	yes	yes	from rail travel demand and operational modeling
	travel time savings, diverted from other modes	yes	yes	depends on availability and quality of information about travel times of competing modes
	travel reliability and other benefits, diverted from other modes	yes	yes	depends on availability and quality of information about travel reliability of competing modes
	vehicle operating cost savings for diverted auto users	yes	yes	estimated based on highway VMT reductions
	travel productivity benefits	not specifically mentioned in FRA guidelines	yes	benefits from amenities such as internet access and comfortable working environment; applicable to business travel market segment only
	newly induced trips	not specifically mentioned in FRA guidelines	yes (if estimated by Travel Demand Modeling)	trips that are not made in the absence of the rail service (e.g., for transit dependents or where other modes are excessively costly and time consuming)

<b>Non User Benefits</b>				
	emissions reductions	yes	yes (TIGER guidelines applicable)	would include local emissions for AQ attainment (e.g., NOX, particulates) and also carbon emissions (GHG or CO2)
	other environmental benefits: noise, water pollution and runoff, etc.	yes	yes	would result mainly from auto to rail shifts
	community development	mentioned in 2010 FRA guidance, but probably best related to Livability Benefits		
	safety - crash reductions	not specifically mentioned in FRA guidelines	yes - TIGER guidelines applicable)	standard in BC analysis, and could be estimated based on reduced VMT and crash data
	reduced oil imports	cited in 2009 FRA guidance,	yes, from research	cost of fuel saved would already be included in vehicle operating cost savings, but an additional social benefit could be assigned and monetized
<b>Livability Benefits</b>				
	metrics mentioned in FRA guidelines are illustrative, and include "integration with existing high density livable development (e.g., central business districts with public transportation, pedestrian and bicycle distribution networks, and incorporation of transit oriented development)" (2009 FRA guidelines, 5.1.1.3, p. 29918)	would need strong justification	monetizing benefits very difficult	primarily qualitative, although some research has been done to monetize some impacts, such as improved mode choice and increased use of non-motorized transportation, more compact forms of development, aesthetic enhancements of downtown areas, and possibly benefits to low income or non auto owners

<b><u>Long Term Economic Development Impacts</u></b>				
FRA guidelines do not specifically mention these, but can be inferred as possible for inclusion: examples could include:				
	additional tourism or other spending by visitors (out of state for a state impact analysis)	no	no	OK for a regional or state BC analysis, but spending may just be shifted from other locations (e.g., from Oklahoma to Kansas, or from Texas to Oklahoma)
	increased commercial development and real estate value around new stations	would need strong justification		
<b><u>Agglomeration Benefits</u></b>	increased labor/business productivity, increased worker wages, increased output, possible increased employment			

<b>Economic Recovery Benefits</b>				
	construction and O&M related jobs and income	no, although cited as important evaluation criteria in 2009 FRA guidance, but no longer present in 2010 announcement' FRA		
	permanent economic development benefits	yes, but very difficult to quantify, and only benefits due to improvement productivity, and not shifted from other locations		
				only applicable if jointly operated rail freight services see operational improvements; cost savings to freight RRs themselves would not be considered public benefits unless passed on to consumers or producers
<b>Freight Related Benefits</b>				
	freight rail travel time savings	partly (public portion only)		
	shifts from truck to rail	partly (public portion only)		
<b>OTHER IMPORTANT INPUTS NOT ADDRESSED IN FRA GUIDELINES</b>				
				Can vary depending on public vs. private considerations, interest rate expectations, cost of capital, and preference for long term vs. short term benefits. TIGER guidelines prescribe 7% but permit 3% as an alternative, especially for benefits; OMB establishes discount rates for federally funded projects which differ and are currently in the 3-4% range.
	Real Discount Rate	essential and critical to result	variable	
	Period of analysis (years) for discounted present value		variable but no less than 20 years for infrastructure	
<b>PROJECT COSTS</b>				
	initial capital costs			
	ongoing operations and maintenance			
	periodic major rehab or replace costs			