

Bella Vista Bypass Traffic and Revenue Report



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Prepared for the:
Arkansas Highway Transportation Department

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LIST OF ACRONYMS

AADT	Annual Average Daily Traffic
AHTD	Arkansas State Highway and Transportation Department
ATR	Automatic Traffic Recorder
ETC	Electronic Toll Collection
GRP	Gross Regional Product
MoDOT	Missouri Department of Transportation
MSA	Metropolitan Statistical Area
PV	Passenger Vehicles
VOT	Value of Time
VPH	Vehicles Per Hour
WSA	Wilbur Smith Associates

1.0 Introduction

Carter & Burgess, Inc. (now doing business as Jacobs Engineering Group Inc. [Jacobs]) and Stantec Consulting were requested by the Arkansas State Highway and Transportation Department (AHTD) in spring 2007 and again in summer 2009 to develop an independent traffic and toll revenue estimate and to review the information and assumptions provided by others in previous reports for the proposed by-pass around the City of Bella Vista area in northwest Arkansas. The Missouri Department of Transportation (MoDOT) and the AHTD are considering the feasibility of constructing the US 71 City of Bella Vista Bypass (the “Bypass”), a highway corridor relocation project of US 71 from north of Bentonville, Arkansas to Pineville, Missouri, by using toll revenues to assist in the financing of the Arkansas portion of the project.

Two previous Bypass studies and reports were conducted for the AHTD by HNTB and Wilbur Smith Associates (WSA); one in 2004 and one in 2006. The “July 2004 Traffic, Revenue and Toll Feasibility Study Conducted for the US 71 Bella Vista Bypass Project” by HNTB/WSA was conducted as an investment-grade toll study for the purpose of determining the potential toll financing feasibility for the entire US 71 City of Bella Vista Bypass Project. The “2006 HNTB/WSA Bella Vista Bypass Toll Study Update” (subsequently referred to as the “2006 Update Report”) updated the 2004 study based on the assumption that the Missouri section of the Bypass would not be tolled.

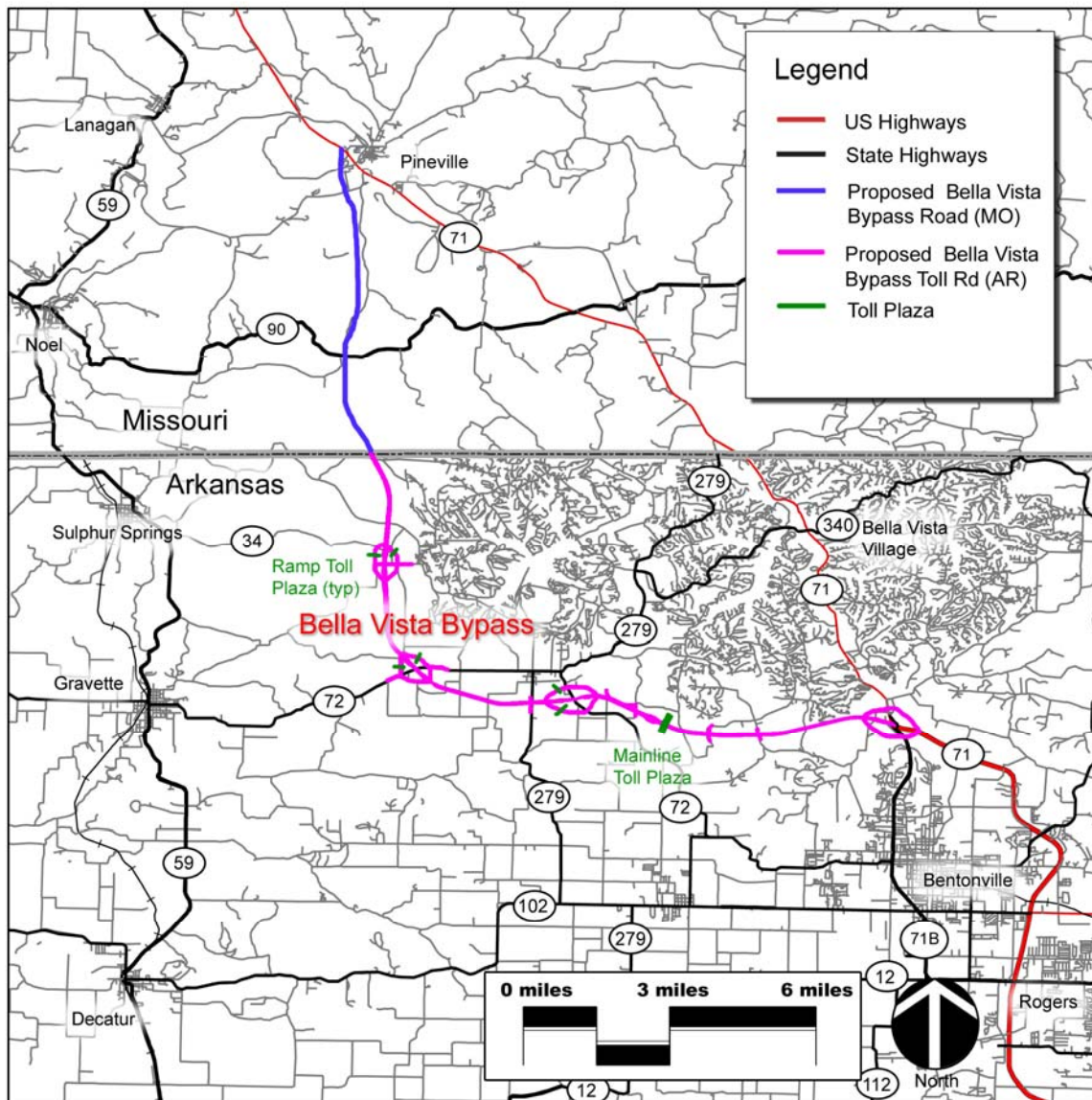
Jacobs’ work performed within this study (both in 2007 and in 2009) consisted of project management, data collection and review, report assembly, assessment of the 2006 Update Report and other efforts associated with proposed toll collection. Stantec Consulting (both in 2007 and in 2009) developed a traffic and toll revenue model and estimated the probable Bypass use and toll revenue for a 30-to-38-year time frame. This estimating effort relied on information in the 2006 Update Report as well as new data collected in June 2007 and update work in May 2009. Stantec Consulting also prepared sensitivity model runs to test various model inputs.

There are four main sections to this draft traffic and toll revenue report. The first section identifies key factors in the 2006 Update Report and assesses the magnitude of impact that each could have on the estimated traffic and toll revenues. The second section summarizes the 2007 and 2009 field work data collection made specifically for our estimates. The third section displays key socio-economic data and forecasts as applicable to our analyses. The fourth section discusses the 2009 traffic and toll revenue model and shows the base case traffic and toll revenue estimates along with sensitivity runs for key input parameters.

2.0 Identification of Key Factors from HNTB/WSA Traffic and Revenue Report, April 2006

US 71, as shown in Figure 1, is the main north-south route providing access to and through the Northwest Arkansas and Southwest Missouri regions. Within these areas are several cities and economic activity centers, including Neosho, Joplin and Carthage in Missouri, and Bentonville, Rogers, Springdale, and Fayetteville in Arkansas. The City of Bella Vista, Arkansas, which is an incorporated community, is also served by US 71. The study area in Arkansas includes most of the City of Bella Vista.

Figure 1: Location Map – US 71 Bella Vista Bypass and Toll Collection Points



The 2004 Study analyzed the financial feasibility of several different tolling scenarios for the Bypass. For the 2006 Update, the preferred scenario from the 2004 Study was assumed, but was modified to include tolling for the Arkansas portion of the Bypass only. The proposed length of the Bypass is 18.9 miles, of which 14.1 miles would be tolled as measured from the Arkansas – Missouri state line to the US 71/ US 71 Business interchange. The remaining 4.8 miles of the Bypass would be located in Missouri. The Bypass project consists of constructing a new, four-lane, fully-access-controlled toll road with toll collection points between the Arkansas – Missouri state line and the US 71 / US 71 Business interchange. The new facility is planned to be constructed to interstate standards, and would have two traffic lanes in each direction separated by a median. Paved shoulders would also be provided.

The assumed tolling plan for the Bypass, based on the 2006 Update Report, has one mainline toll collection point located in Arkansas between the Highway 72 and US 71/ US 71 Business interchanges, and ramp toll collection points to and from the north at the County Road 34, Highway 72 West, Highway 72 East interchanges (see Figure 1). According to the 2006 Update Report, “the site of the mainline toll collection point was located to capture the best possible number of toll facility customers and toll revenue, discourage diversion and offer good horizontal and vertical sight distance.” The mainline toll collection point would be designed to have two express lanes and two cash lanes per direction. The ramp toll collection points would have been designed to have one express lane and one cash lane per location.

To expedite the analysis, Jacobs/Stantec used several existing data sources and information contained in the 2006 Update Report. Historical traffic data and construction information were also collected for the area from independent research and other sources including the AHTD. Travel time runs were conducted and observations were made on US 71 and neighboring alternate routes for AM, midday, and PM peak hour periods during a weekday and a weekend day. These additional traffic surveys were conducted to identify and confirm the potential alternate routes and assess the relative travel time differences between each alternate route and the Bypass. These additional data were further used to supplement and update the travel time data collected by HNTB/WSA in 2006. Independent traffic counts, including vehicle classification counts for one week at six area locations (three on US 71, two on Highway 340 and one on Highway 279), were conducted to assess the types and percentage of vehicles currently using the existing roadway facilities in the area. In addition, video observations of trucks were performed to determine the percentage of owner-operator (those drivers who own their trucks) versus fleet (trucks owned by companies) trucks.

2.1 Factors Influencing Traffic and Revenue Estimates

As part of our review of the HNTB/WSA 2006 Update Report, we identified primary factors or assumptions that could influence or affect the overall traffic and toll revenue estimates. These factors, plus the potential magnitude of their impacts on the traffic forecast, are summarized in Table 1. The magnitude of the impacts are listed as ‘none’ (having no impact), ‘moderate’ (having some impact, but not in and of itself major), or ‘high’ (having a direct, measurable impact).

Table 1: Factors That Influence City of Bella Vista Bypass Traffic and Revenue Estimates

Factors Influencing Traffic Forecast	Relationship	Magnitude of Impact on HNTB/WSA Estimates
Toll Plaza Configuration	The location of the mainline toll collection point is such that local trips pay higher toll rates per-mile than long-distance trips.	Moderate
Effects of Congestion on Alternative Routes	The congestion on US 71 is for a few hours over a 24-hour time period and is directional.	High (Decrease in estimated revenues)
Toll Rates	Opening –year toll rates are set at levels that are higher than other suburban toll facilities for the local trips.	Moderate (Possible decrease in estimated revenues; does not provide much latitude to raise toll rates if needed)
Bypass Capture Rate	Captures almost 55% of total traffic near the Missouri State line and 27% near the southern end.	Moderate (Decrease in estimated revenues)
Truck Use	Assumes a high use of long-distance trucks for a 14-minute time savings on multiple-hour journeys.	High (Decrease in estimated revenues)
Projected Growth Rates	Moderate growth rates assumed throughout the time period	None
Ramp-up	The ramp-up period is 18 months (-25% loss the first year and -7% loss the second year)	Moderate (Decrease in estimated revenues in start-up years. 18-month ramp up is atypically short (should be some 5 years in length for a new start-up toll road in an area with no existing toll facilities) and impacts to yearly traffic estimates are low.

2.2 Toll Collection Point Configuration

Under the mainline tolling configuration as depicted in the 2006 Update Report, many motorists traveling between City of Bella Vista and Bentonville (or points south; which was estimated by WSA to be 25 percent of the mainline traffic) would pay a disproportionately high toll rate that would adversely impact ridership. The Bypass trip between City of Bella Vista and Bentonville is 6 miles. The mainline toll collection point’s toll rate is proposed at \$1.50. This \$1.50 toll for a 6-mile trip equates to approximately \$0.25 per mile. In comparison, this per-mile rate is higher than many urban, congestion-relieving toll facilities. The assumed time savings for this 6-mile trip according to the 2006 Update Report would be 6 minutes, which equates to a value of time (VOT) of \$15.00 per hour,

which is 50 percent higher than the assumed VOT of \$9.78 that was used in the 2006 Update Report analysis. The toll rate is at the upper end of the sensitivity curve (which is discussed in Section 5.4 of this report). This factor plus the higher than average VOT, has potentially two consequences: (1) fewer local residents using the Bypass; and (2) it seems unlikely that toll rates could be raised much higher in the ramp-up years if it were necessary to cover potential revenue deficits.

2.3 Effects of Congestion on Alternative Routes

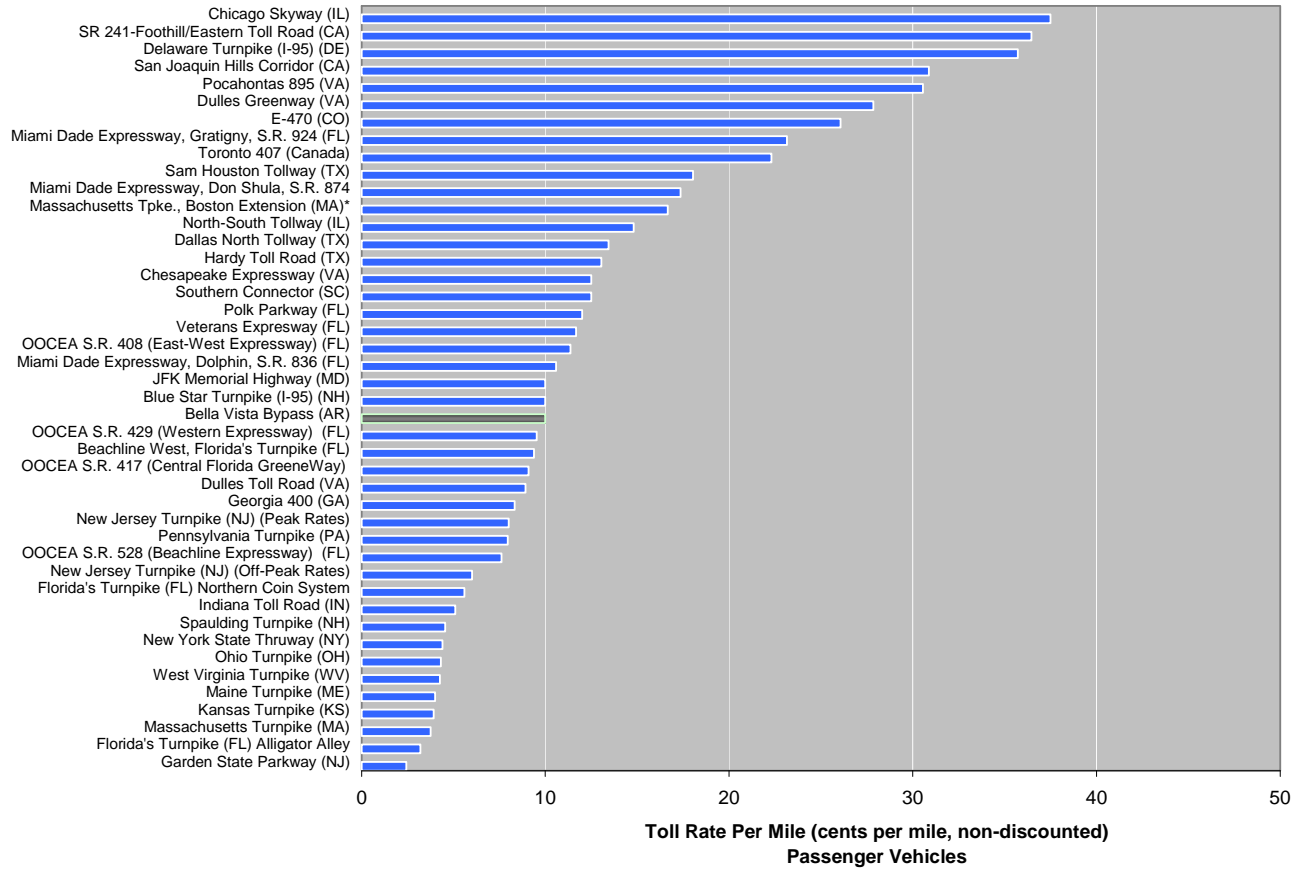
Additional traffic and speed data were collected along US 71 and on Routes 279 and 340 over a one-week period in 2007 by Jacobs/Stantec. This data collection effort was made for two purposes: to aid in the due diligence work effort on the HNTB/WSA analyses, and to assist in making new, independent toll traffic and revenue estimates. The analysis of the information collected suggests that levels of congestion exist for the peak hours, directionally southbound in the AM and northbound in the PM, along US 71 south of the City of Bella Vista. Speeds along US 71 fell below 55 mph for a few hours during the week in which data were being collected. Data further showed that speeds along US 71 northbound decreased when traffic volumes exceeded 1,300 vehicles per hour ('vph') (an average of 650 vehicles per lane). It should be noted that this US 71 area south of the City of Bella Vista currently has 9 signalized intersections.

Based on the data and observations made by Jacobs/Stantec for this 2007 assessment, very little or no congestion occurs presently on US 71 near to where the northern terminus of the future Bypass will be located in Missouri. Although it is estimated that traffic will continue to grow in this area, there is enough current and future capacity on US 71 that the level of congestion in this area will be minor for the majority of the day, until reaching some 1,500 vph. It should be noted that this US 71 area north of the City of Bella Vista currently has few signalized intersections.

2.4 Toll Rates

For the entire 14.6 mile tolled trip, the 2006 Update Report assumed an optimal toll rate for two-axle (passenger) vehicles of \$1.50 at the mainline toll collection point. This equates to approximately 10 cents per mile for a passenger vehicle for the entire length. The 2006 Update Report also estimated that 5,000 of the 12,000 (or some 40 percent) would be through trips or trips that would travel the full 14.1 miles in length in Arkansas. As discussed earlier, the remaining 60 percent (local traffic) would pay considerably higher per-mile rates of up to 25 cents per mile. As depicted in Figure 2, the rate of 10 cents per mile is a reasonable cost in comparison to other toll agencies; however the cost of 25 cents per mile is at the upper end of the spectrum of those toll facilities presented in the figure, with most of the comparable agencies experiencing considerably high peak-hour demand use or offering variably priced High Occupancy Toll Lanes.

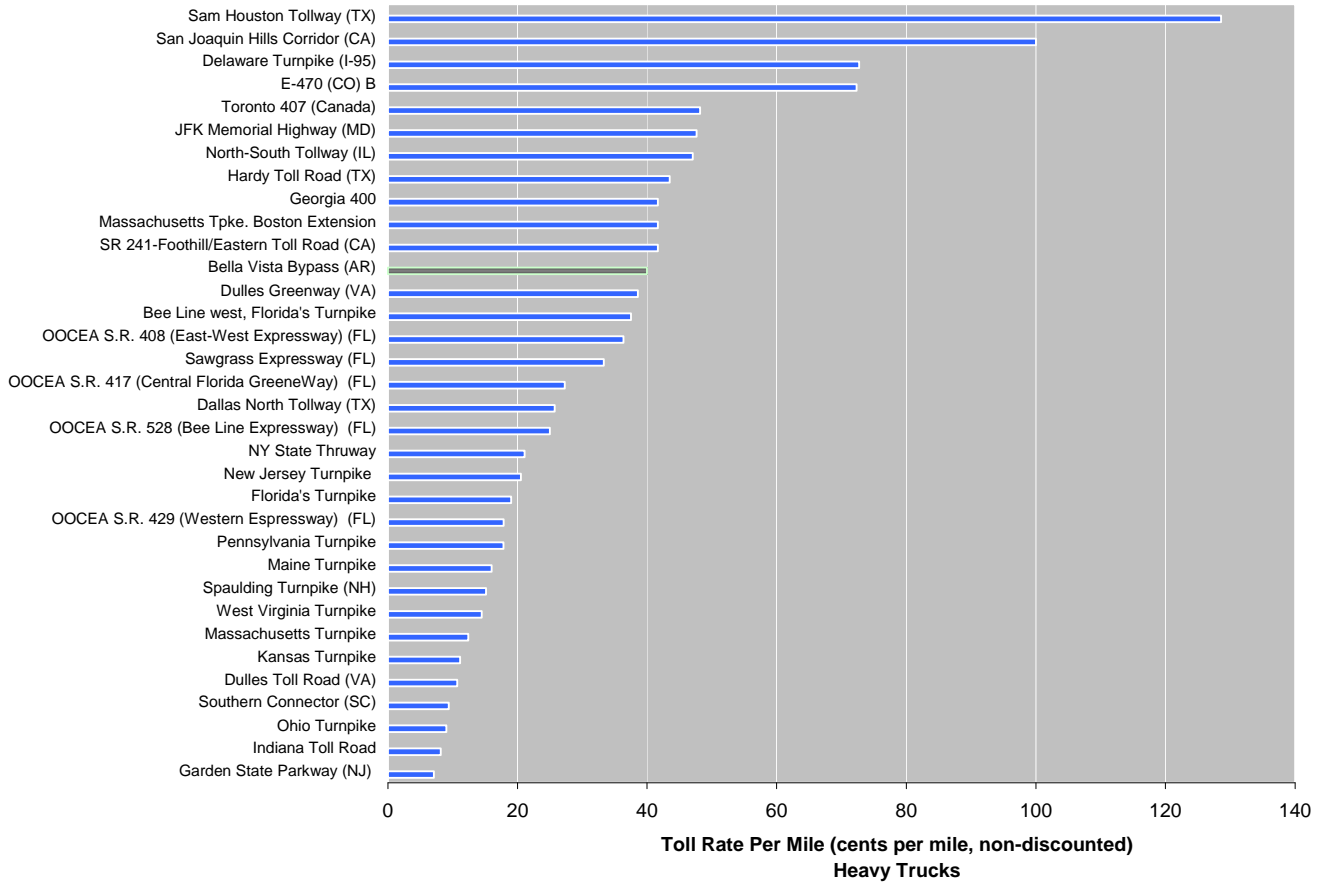
Figure 2: Toll Rate Per Mile Cost Comparison (\$0.10 per mile)



2.5 5-Axle Truck Tolls

The proposed toll pricing structure has a similar impact on truck traffic. Figure 3 shows similar data for 5-axle vehicles and compares the proposed Bypass tolls to other facilities. The Bypass is expected to charge \$6.00 for facility use by heavy trucks, equating to \$0.40 per mile for a full length trip and \$1.00 per mile for the shorter, City of Bella Vista to Bentonville trip. As depicted in Figure 3, the rate of 40 cents per mile is nearer to the higher end of the per-mile rates charged compared to other toll agencies.

Figure 3: Toll Rate Per Mile Cost Comparison (\$0.40 per mile)



2.6 Bypass Capture Rate

The capture rate represents the percent of toll customers compared to the total amount of travelers at a given screenline (a line drawn across an area at which total traffic passing through that line on each individual roadway is analyzed). The 2006 Update Report total capture rate for the toll facility was estimated by HNTB/WSA to be 56 percent in Missouri (where the facility is non-tolled) and 29 percent near the southern end of the facility near The City of Bella Vista. The passenger car capture rate for the toll facility was estimated by HNTB/WSA to be 55 percent in Missouri (where the facility is non-tolled) and 27 percent near the southern end of the facility near The City of Bella Vista. Capture rates in highly congested urban areas throughout the United States range on the order of 10-25 percent, with lower capture rates in small urban areas (like The City of Bella Vista) with competitive non-tolled facilities.

According to the Jacobs/Stantec estimates, the proposed Bypass would provide some 60 percent of total north-south roadway capacity near the State line (with four Bypass expressway lanes at 2,000 vehicles per lane per hour and four US 71 signalized lanes of signalized at 1,300 vehicles per lane per hour). South of The City of Bella Vista, some 75 percent of total north-south roadway capacity would be provided by the Bypass (with four Bypass expressway lanes at 2,000 vehicles per lane per

hour and four US 71 signalized lanes of signalized at 650 vehicles per lane per hour). From these capacity estimates, the HNTB/WSA estimated Bypass capture rate of potential tolled trips is high.

2.7 Truck Use

The truck capture rate for the toll facility was estimated by HNTB/WSA to be 58 percent in Missouri (where the facility is non-tolled) and 52 percent near the southern end of the facility near The City of Bella Vista. The truck use within the 2006 Update Report assumed that 20 percent of the total traffic at the mainline toll collection point would be truck traffic.

According to the origin destination surveys performed for the 2006 Update Report, long-distance trips would account for 69 percent of truck traffic at the mainline location, and the estimated travel time savings would be up to 14 minutes. Such a savings on a long-distance trip, assuming a trip of 3 hours or more, would not likely be a benefit for most long-distance truck drivers. Most long distance truck drivers desire a time savings that would permit them to make an extra run in a given day. As a result the long-distance truck driver is less inclined to pay a toll for limited or no benefit. There is the possibility that the HNTB/WSA estimated long-distance truck traffic diverting to the Bypass is overstated resulting in overstated potential revenue for this facility.

2.8 Projected Growth Rates

The 2006 Update Report projected growth rates for transactions and toll revenues on the Bypass, as shown on the following table, were investigated independently using updated socioeconomic characteristics of the area. The projected growth rates were compared to historic traffic growth rates in the area and other similar toll facilities, as well as forecasted population and employment growth in the region. In conjunction with the economic forecasts and historic patterns, the baseline growth rates are, in our opinion, reasonable, and have been applied to the Jacobs/Stantec feasibility model assessments.

Table 2: Transactions and Toll Revenue Growth Schedule; HNTB/WSA

Year	Transactions	Revenues	Year	Transactions	Revenues
2011	n/a	n/a	2029	1.5	1.5
2012	4.5	4.8	2030	1.0	1.5
2013	3.8	4.2	2031	1.0	1.0
2014	3.3	3.3	2032	1.0	1.0
2015	2.8	2.8	2033	1.0	1.0
2016	2.3	2.4	2034	1.0	1.0
2017	2.1	2.1	2035	1.0	1.0
2018	2.0	2.0	2036	1.0	1.0
2019	2.0	1.9	2037	1.0	1.0
2020	1.9	1.9	2038	1.0	1.0
2021	1.8	1.8	2039	1.0	1.0
2022	1.8	1.7	2040	1.0	1.0
2023	1.7	1.7	2041	1.0	1.0
2024	1.6	1.6	2042	n/a	1.0
2025	1.5	1.6			
2026	1.5	1.5			
2027	1.5	1.5			
2028	1.5	1.5			

Source: HNTB/WSA US 71 Bella Vista to Pineville Report; Table B-20.

2.9 Ramp-up

The traffic levels during the first few years of a toll road opening can be somewhat volatile, until certain equilibrium is reached. There are indicators that are used to help set expectations as to the anticipated time it will take for a toll road to reach its full potential. This period, without considering nominal growth, is considered the “ramp-up” period.

The 2006 Update Report shows a reduced revenue stream during a projected 18-month ramp-up: -25 percent for the first year and -7 percent for year two. Based on Jacobs’ and Stantec’s experiences from other toll roads, a typical toll road ramp-up period is two to five years and varies by facility type, projected growth, development, traffic characteristics, motorists’ familiarity with toll roads and other local considerations. New toll facilities, such as the Bypass, tend to reach equilibrium by year five (month 60), while other facilities, which are part of an existing, high-traffic roadway network, reached equilibrium much faster: some within two years. In consideration of these factors, it is our opinion that the ramp-up period for the Bypass would likely be slower than the 2006 Update Report suggests. Often times, signage and mapping indicating the presence of the new facility are delayed and do not occur at the time of a facility’s opening. This is particularly important when a facility will serve travelers coming from areas outside the project corridor. For the Bypass, characteristics are such that it is expected that the ramp-up period would more likely be four years; with revenue estimates reduced by 45 percent, 30 percent, 15 percent, and 10 percent for the first four years, respectively.

3.0 Socioeconomic Characteristics of Study Area

The socioeconomic factors that affect traffic patterns and growth are population and employment, while personal income and Gross Regional Product are factors influencing toll road use. Accordingly, the following discussion addresses these factors for the Fayetteville-Springdale-Rogers Arkansas – Missouri Metropolitan Statistical Area (Fayetteville MSA), the area to be served by The City of Bella Vista Bypass. The Fayetteville MSA includes Benton, Madison and Washington counties in northwest Arkansas and McDonald County in southwest Missouri. In addition to showing information for the Fayetteville MSA, data are also presented for Benton and McDonald counties since the proposed toll road passes through these counties.

3.1 Population

Population of the Fayetteville MSA has been growing at a faster rate than the United States and Arkansas, as can be seen in the following table. Since 1970, the population of the Fayetteville MSA has almost tripled, increasing from 151,000 to 448,000. The average annual rate of growth between 2000 and 2008 was 3.2 percent, making it the fifteenth fastest growing MSA in the country.

Table 3: Historical Population (1970 – 2008)

Area	Population (000s)				
	1970	1980	1990	2000	2008
United States	203,982	227,226	249,623	282,194	304,579
Arkansas	1,933	2,289	2,357	2,678	2,861
Fayetteville MSA	151	205	241	350	448
Benton County, AR	51	78	99	155	211
McDonald County, MO	13	15	17	22	23
	Average Annual Rate of Growth				
		'70 - '80	'80 - '90	'90 - '00	'00 - '08
United States		1.1%	0.9%	1.2%	1.0%
Arkansas		1.7%	0.3%	1.3%	0.8%
Fayetteville MSA		3.1%	1.6%	3.8%	3.2%
Benton County, AR		4.4%	2.3%	4.6%	4.0%
McDonald County, MO		1.8%	1.3%	2.5%	0.9%

Source: US Bureau of the Census

Benton County has been growing at a faster rate than the Fayetteville MSA during this period. Its share of the population in the Fayetteville MSA increased from 34 percent in 1970 to 47 percent in 2008. McDonald County accounts for 8 percent of the MSA and has been growing at a slower rate than the remainder of the area.

Population growth between now and 2040 is anticipated to slow down but continue in the same pattern, as shown in the following table.

Table 4: Projected Population (2008 – 2040)

Area	Population (000s)				
	2008	2010	2020	2030	2040
United States	304,579	310,603	342,020	374,704	407,819
Arkansas	2,861	2,915	3,197	3,491	3,790
Fayetteville MSA	448	474	602	733	865
Benton County, AR	211	228	312	399	488
McDonald County, MO	23	24	28	32	35
	Average Annual Rate of Growth				
		'08 - '10	'10 - '20	'20 - '30	'30 - '40
United States		1.0%	1.0%	0.9%	0.9%
Arkansas		0.9%	0.9%	0.9%	0.8%
Fayetteville MSA		2.8%	2.4%	2.0%	1.7%
Benton County, AR		3.8%	3.2%	2.5%	2.0%
McDonald County, MO		1.6%	1.5%	1.3%	1.1%

Source: Woods & Poole

The projections, prepared by Woods & Poole, a recognized firm with extensive experience in preparing forecasts of socioeconomic data, indicate that the population of the Fayetteville MSA is projected to increase from 448,000 in 2008 to 865,000 in 2040 and Benton County is forecast to more than double from 211,000 in 2008 to 488,000 in 2040.

3.2 Employment

Employment (non-farm) in the United States, Arkansas and the study area has been growing at a faster rate than population since the 1970s as shown in the following table.

Table 5: Historical Employment (1970 – 2008)*

Area	Employment (000s)				
	1970	1980	1990	2000	2008
United States	87,321	110,433	136,228	163,646	179,776
Arkansas	705	948	1,144	1,440	1,580
Fayetteville MSA	60	89	131	203	266
Benton County, AR	21	34	54	91	129
McDonald County, MO	4	4	6	8	10
	Average Annual Rate of Growth				
		'70 - '80	'80 - '90	'90 - '00	'00 - '08
United States		2.4%	2.1%	1.9%	1.2%
Arkansas		3.0%	1.9%	2.3%	1.2%
Fayetteville MSA		4.0%	3.9%	4.5%	3.4%
Benton County, AR		4.9%	4.7%	5.3%	4.5%
McDonald County, MO		0.0%	4.1%	2.9%	2.8%

Source: Woods & Poole

*Non-farm

Growth has been consistently strong in the Fayetteville MSA and, in particular, in Benton County. In 1970, Benton County had one-third of the jobs in the MSA; its share has increased to almost 50 percent of total employment.

As shown in the following table, Woods & Poole projects employment in the Fayetteville MSA and in Benton County to outpace the United States and the state through 2040.

Table 6: Projected Employment (2008 – 2040)*

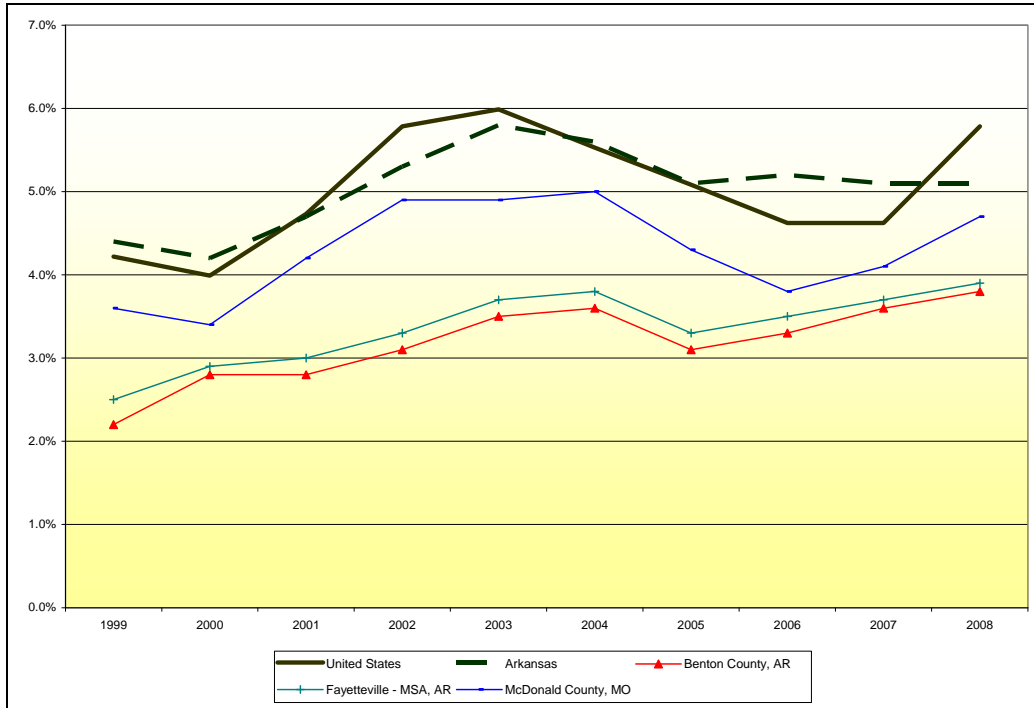
Area	Employment (000s)				
	2008	2010	2020	2030	2040
United States	179,776	184,193	207,947	234,743	264,966
Arkansas	1,580	1,619	1,830	2,072	2,351
Fayetteville MSA	266	277	341	420	518
Benton County, AR	129	136	178	231	301
McDonald County, MO	10	10	12	13	15
	Average Annual Rate of Growth				
		'08 - '10	'10 - '20	'20 - '30	'30 - '40
United States		1.2%	1.2%	1.2%	1.2%
Arkansas		1.2%	1.2%	1.2%	1.3%
Fayetteville MSA		2.0%	2.1%	2.1%	2.1%
Benton County, AR		2.7%	2.7%	2.6%	2.7%
McDonald County, MO		0.0%	1.8%	0.8%	1.4%

Source: Woods & Poole

*Non-farm

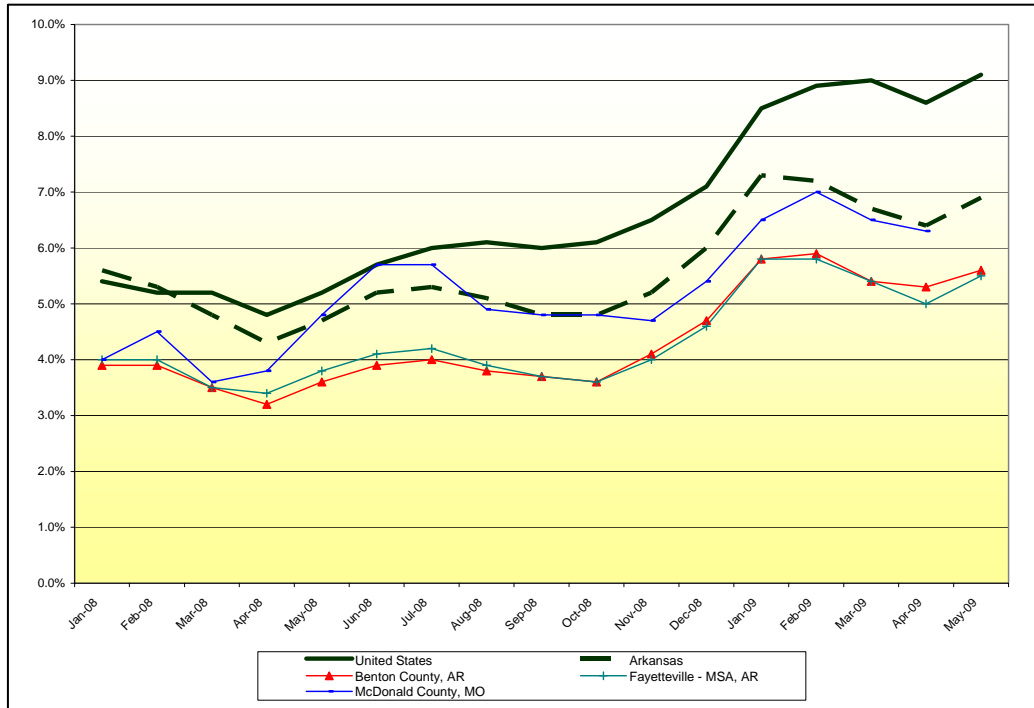
Between 1999 and 2008, the unemployment rate in Arkansas was generally similar to the rate in the United States and rates for the Fayetteville MSA and Benton and McDonald Counties were consistently lower than the rate for Arkansas during the period.

**Figure 4: Annual Unemployment Rate
 1999 – 2008**



Source: United States Bureau of Labor Statistics

**Figure 5: Monthly Unemployment Rate
 January 2008 – May 2009**



Source: United States Bureau of Labor Statistics

3.3 Personal Income

Per capita personal income in Arkansas in 2000 was \$21,926, 73 percent of the national level. By 2008, it had increased to \$30,384, 78 percent of the United States value. By 2020, it is estimated by Woods & Poole that it will gain an additional slight edge and be 79 percent of the national level, as shown in the following table.

Table 7: Per Capita Personal Income - 2000, 2008, 2020 – in Current Dollars

Area	Personal Income per Capita (Current \$)			Percent of US		
	2000	2008	2020	2000	2008	2020
United States	\$29,845	\$39,097	\$66,914	100%	100%	100%
Arkansas	\$21,926	\$30,384	\$52,719	73%	78%	79%
Fayetteville MSA	\$22,826	\$31,506	\$53,797	76%	81%	80%
Benton County, AR	\$25,018	\$33,387	\$55,741	84%	85%	83%
McDonald County, MO	\$17,401	\$24,370	\$41,634	58%	62%	62%

Source: Woods & Poole

On the local level, personal income in the Fayetteville MSA and in Benton County is slightly higher than the state and projected to remain higher through 2020.

3.4 Gross Regional Product

Gross Regional Product (GRP) measures the level of economic activity in an area based on the dollar value of the total output of goods and services. GRP data for the United States., Arkansas and the study area for 2000, 2008 and 2020 are presented in the following table. Data for the years are shown in terms of 2004 dollars to remove the effects of inflation.

Table 8: Gross Regional Product - 2000, 2008, 2020 – in Millions of 2004 Dollars

Area	Gross Regional Product (in millions of 2004 \$)			Average Annual Rate of Growth	
	2000	2008	2020	'00 - '08	'08 - '20
United States	\$10,567,249	\$12,948,940	\$16,826,316	2.6%	2.2%
Arkansas	\$72,407	\$89,742	\$117,987	2.7%	2.3%
Fayetteville MSA	\$10,726	\$16,209	\$24,536	5.3%	3.5%
Benton County, AR	\$5,124	\$8,205	\$13,200	6.1%	4.0%
McDonald County, MO	\$292	\$395	\$532	3.8%	2.5%

Source: Woods & Poole

Since 2000, the GRP of the Fayetteville MSA has been increasing at an average annual rate of 5.3 percent, much higher than the growth rates of 2.6 percent for the United States and 2.7 percent for Arkansas. Benton County, which accounts for approximately half the economic activity of the MSA, has been increasing at the higher average annual rate of 6.1 percent. The forecast prepared by Woods & Poole of 2020 GRP indicates that growth in the study area is anticipated to continue at an average annual rate of 3.5 percent. While this is a lower level than the last eight years, growth will continue to outpace both the United States and Arkansas as a whole.

4.0 Summary of 2007 / 2009 Field Work Data Collection

In 2007, Jacobs conducted travel time runs and observations on US 71, US 71B, and State Route 340 for AM, midday, and PM peak hour periods during a weekday and a weekend day. The purpose of this survey was to identify the relative travel time differences between each alternate route and the Bypass. These travel time runs were used to supplement the travel time data collected by HNTB/WSA. Additionally, independent traffic counts using automatic traffic recorders (ATR) for one week at six area locations (three on US 71, two on Highway 340 and one on Highway 279); vehicle classification counts; and video observations of trucks were conducted to determine the percentage of owner-operators (those drivers who own their rigs) versus fleet (rigs owned by companies).

As a follow-up in 2009, AHTD made various traffic counts and travel time runs on our behalf. As in 2007, the travel time runs were made on the US 71 route itself, and one-week automatic traffic counts were made at various locations throughout the corridor. Additionally, turning movement counts were made at the intersection of US 71 and State Route 340.

4.1 2007 Traffic Counts

Locations for the traffic counts that were made in 2007 are shown in Figure 6. The ATR traffic data for a week in June 2007 along US 71 in Arkansas and Missouri were collected and compiled. Data were summarized into 15-minute and rolling hour totals for passenger vehicles, light trucks, heavy trucks and total vehicles. In the northbound direction, volumes typically remained low throughout the day, peaking at almost 2,000 vph during the PM peak period. In the southbound direction, traffic volumes peaked in the AM at just over 1,500 vph. Other than these two peaks, traffic volumes remained in the range of 1,000 to 1,200 vph throughout the remainder of the day. AADT traffic can be seen in Figure 7.

Speed data were also summarized and the weighted average speeds in each direction for both 15-minute intervals and rolling hours were calculated. The southbound direction during the AM peak hour experienced congestion with the average speeds decreasing to almost 30 mph. This condition lasted for approximately one hour, after which speeds returned to free-flow conditions. A similar condition occurred in the northbound direction during the PM peak hour. In this case, speeds decreased to almost 40 mph for one hour before returning to free-flow conditions.

Figure 6: Traffic Count Locations, 2007

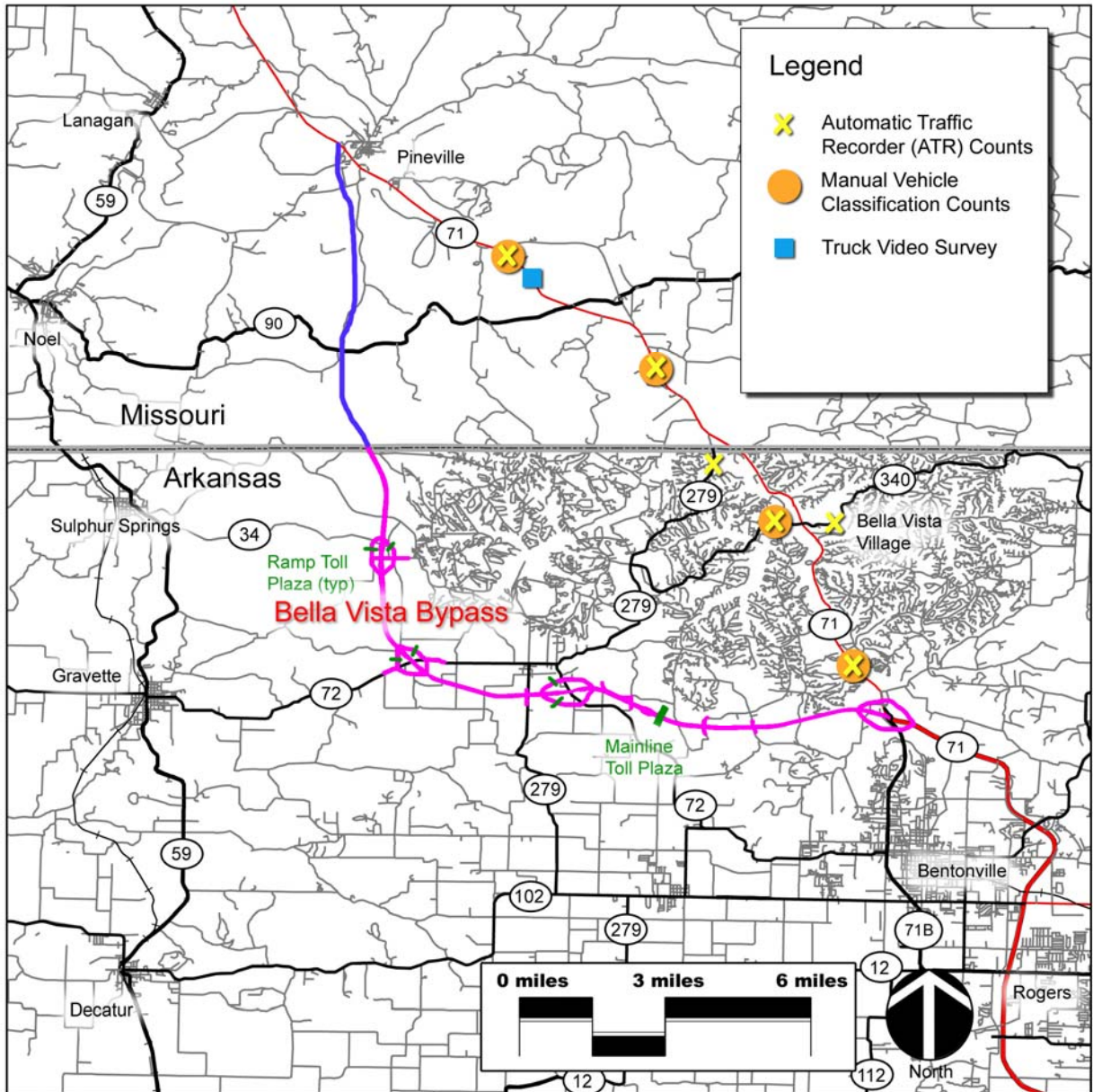
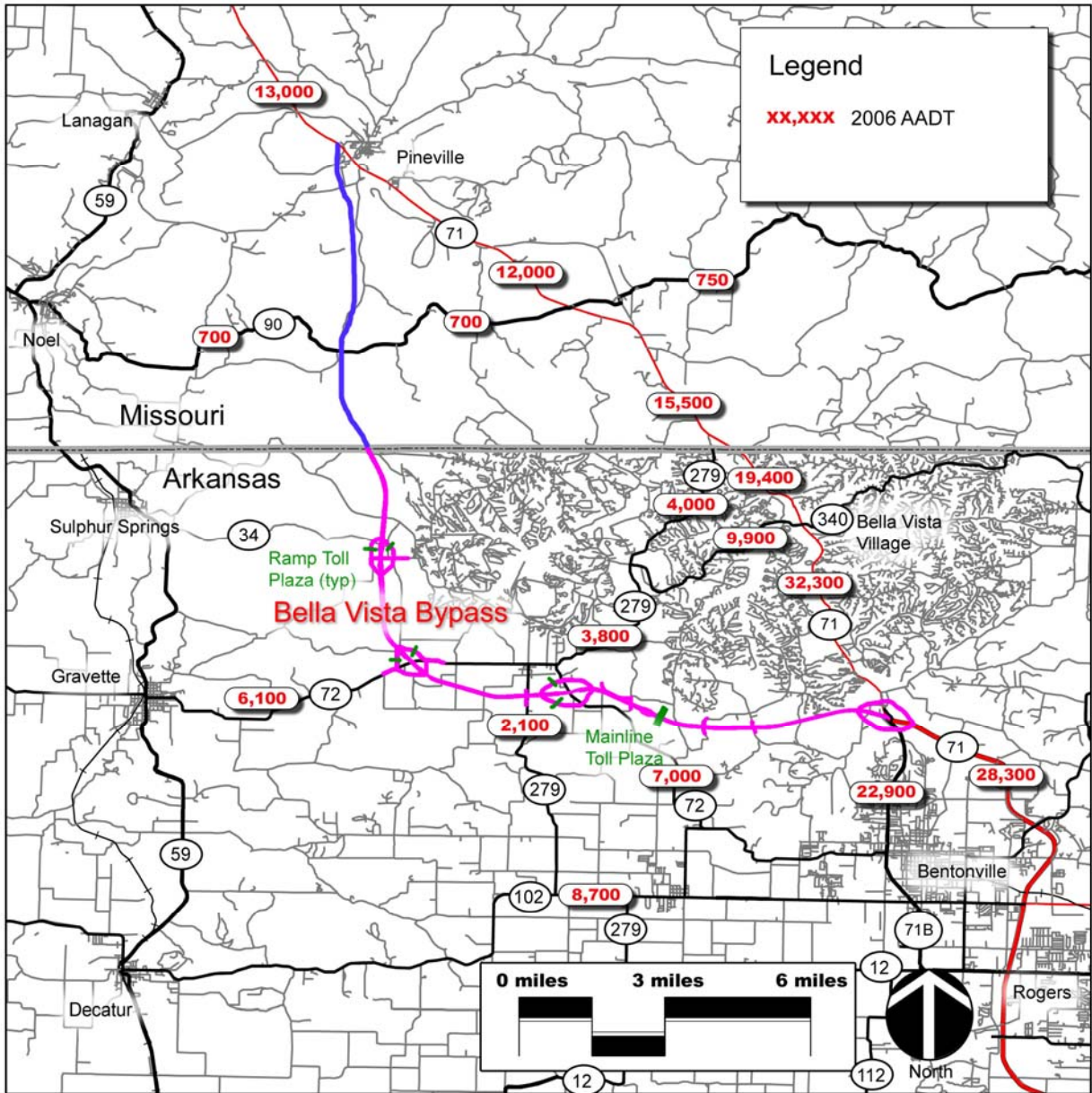


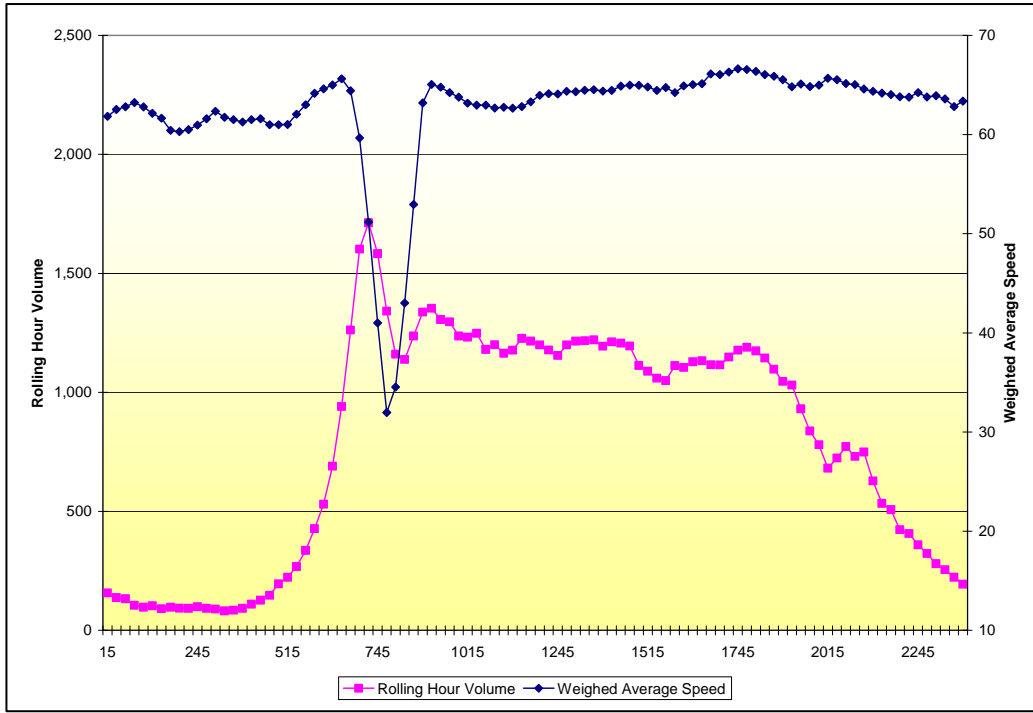
Figure 7: Average Annual Daily Traffic, 2006



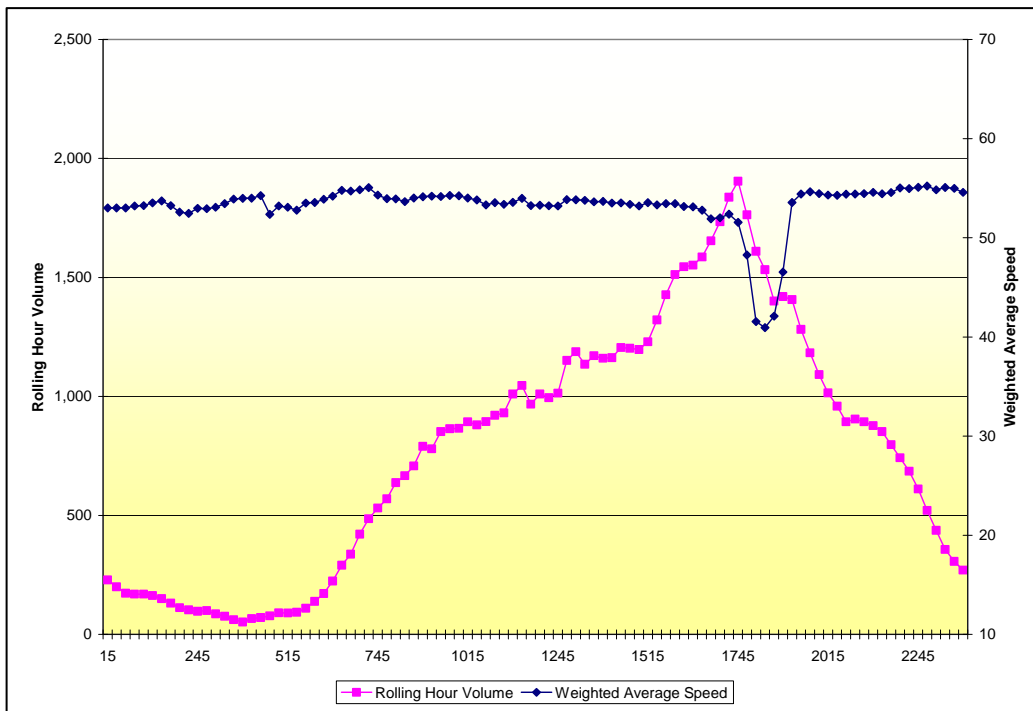
Traffic volumes on Saturday and Sunday were marginally lower than during the week, with traffic volumes never exceeding 1,500 vph. Free-flow conditions were maintained throughout the day, which provided for consistently high speeds.

As shown in the accompanying graphs, when traffic levels exceeded 1,500 vph per direction, congestion began, causing a decrease in the average vehicle speed. However, this decrease in speed was for approximately one hour during both the weekday AM peak in the southbound direction and the PM peak in the northbound direction. Figures 8 and 9 depict the average weekday traffic and speeds; with Figures 10 and 11 depicting similar data for an average weekend day.

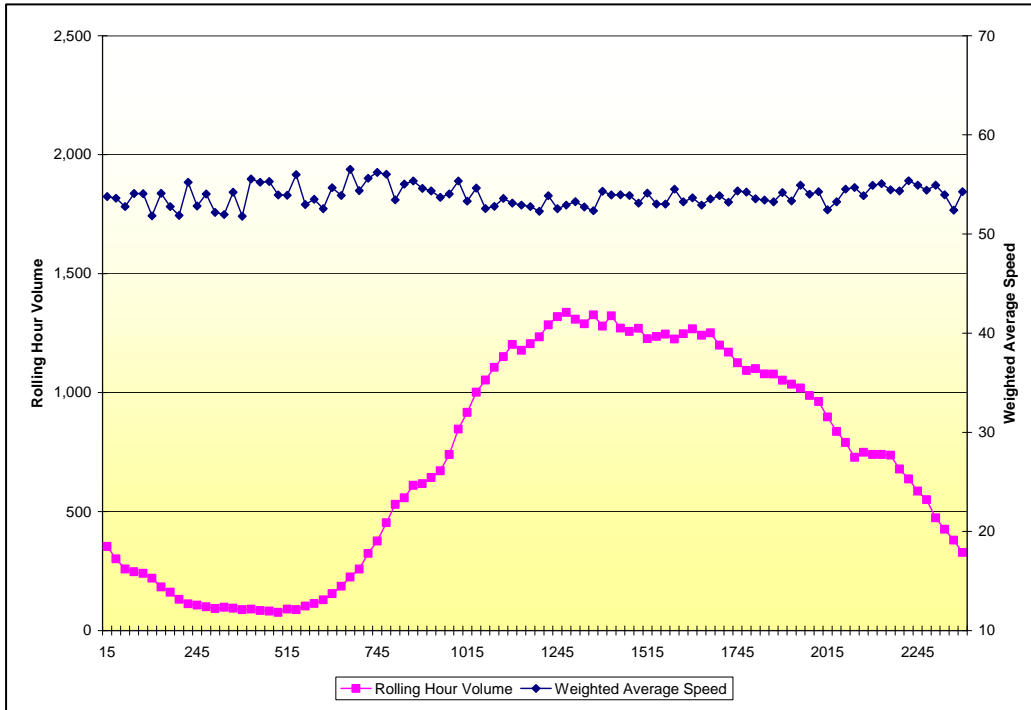
**Figure 8: Rolling Hour Volume and Weighted Average Speed – Typical Weekday –
Route 71 Southbound – South of The City of Bella Vista – 2007**



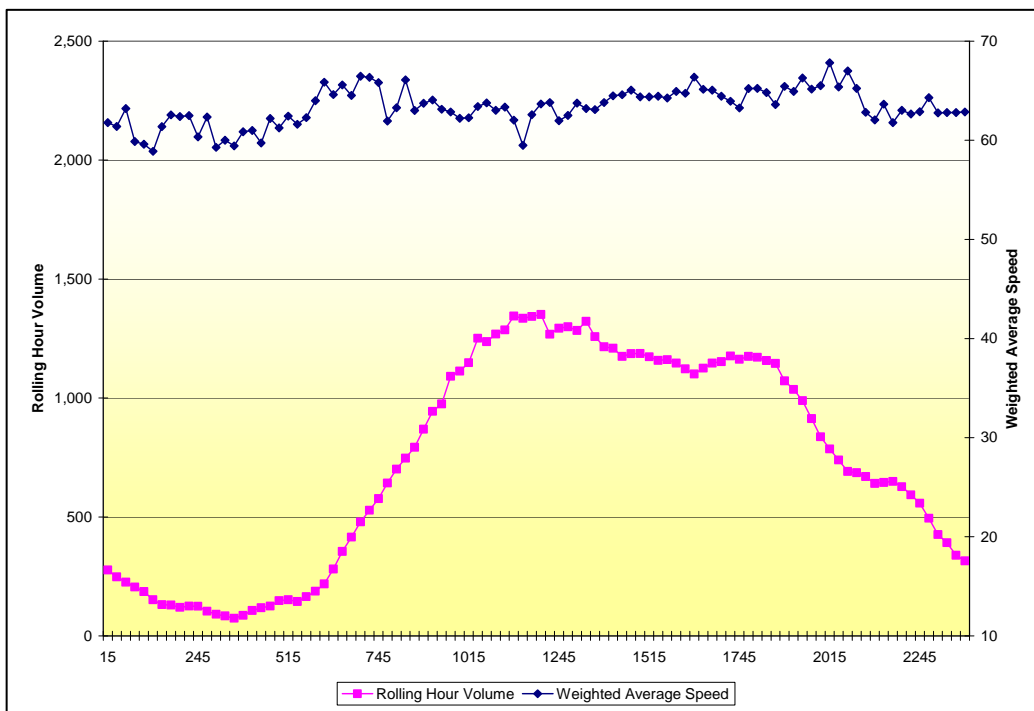
**Figure 9: Rolling Hour Volume and Weighted Average Speed – Typical Weekday –
Route 71 Northbound – South of The City of Bella Vista – 2007**



**Figure 10: Rolling Hour Volume and Weighted Average Speed – Typical Weekend –
Route 71 Southbound – South of The City of Bella Vista – 2007**



**Figure 11: Rolling Hour Volume and Weighted Average Speed – Typical Weekend –
Route 71 Northbound – South of The City of Bella Vista – 2007**

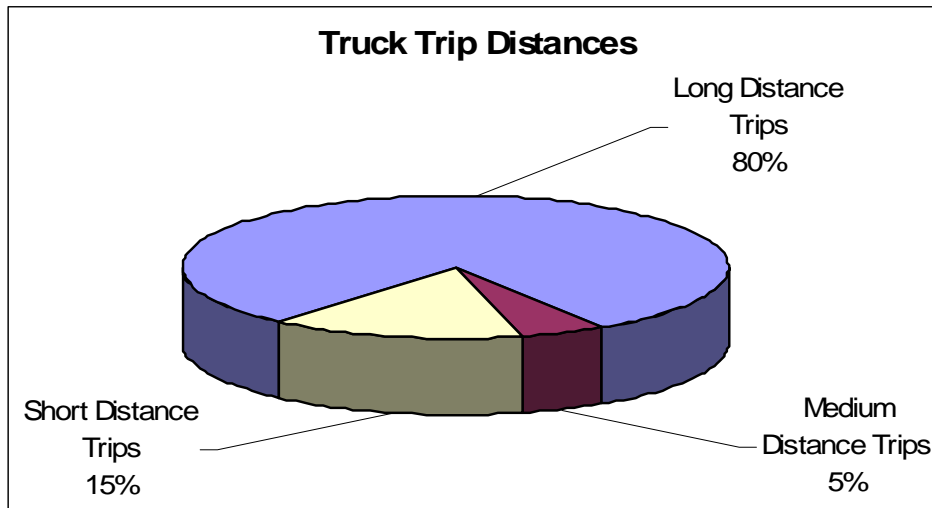


4.2 2007 Video Survey of Trucks

A video survey of trucks was taken for northbound traffic along US 71 near the State line (shown on Figure 12). The videos were filmed on Sunday, June 10, 2007 and Tuesday, June 12, 2007. Each truck was reviewed and data were collected regarding vehicle size, ownership and range (sleepers and/or large fuel tanks). These characteristics are indicators of whether the truck is being used for a long or short. Detailed survey results can be found in the Appendix.

The high percentage of trucks with sleeper compartments and large gas tanks suggests that at least 80 percent of the trucks in the corridor on a weekday are likely to be on long-distance trips, as shown in Figure 12. Five percent and fifteen percent of truck trips are medium and short distance trips, respectively.

Figure 12: Truck Trip Distances



4.3 2009 Field Work, Traffic Counts and Travel Time Runs

Traffic counts were updated in May 2009. The ATR traffic data were collected and compiled along US 71 in Arkansas and Missouri and at three other locations: two on Highway 340 and one on Highway 279. Updated speed data and vehicle classification counts were collected and this information was incorporated into the model.

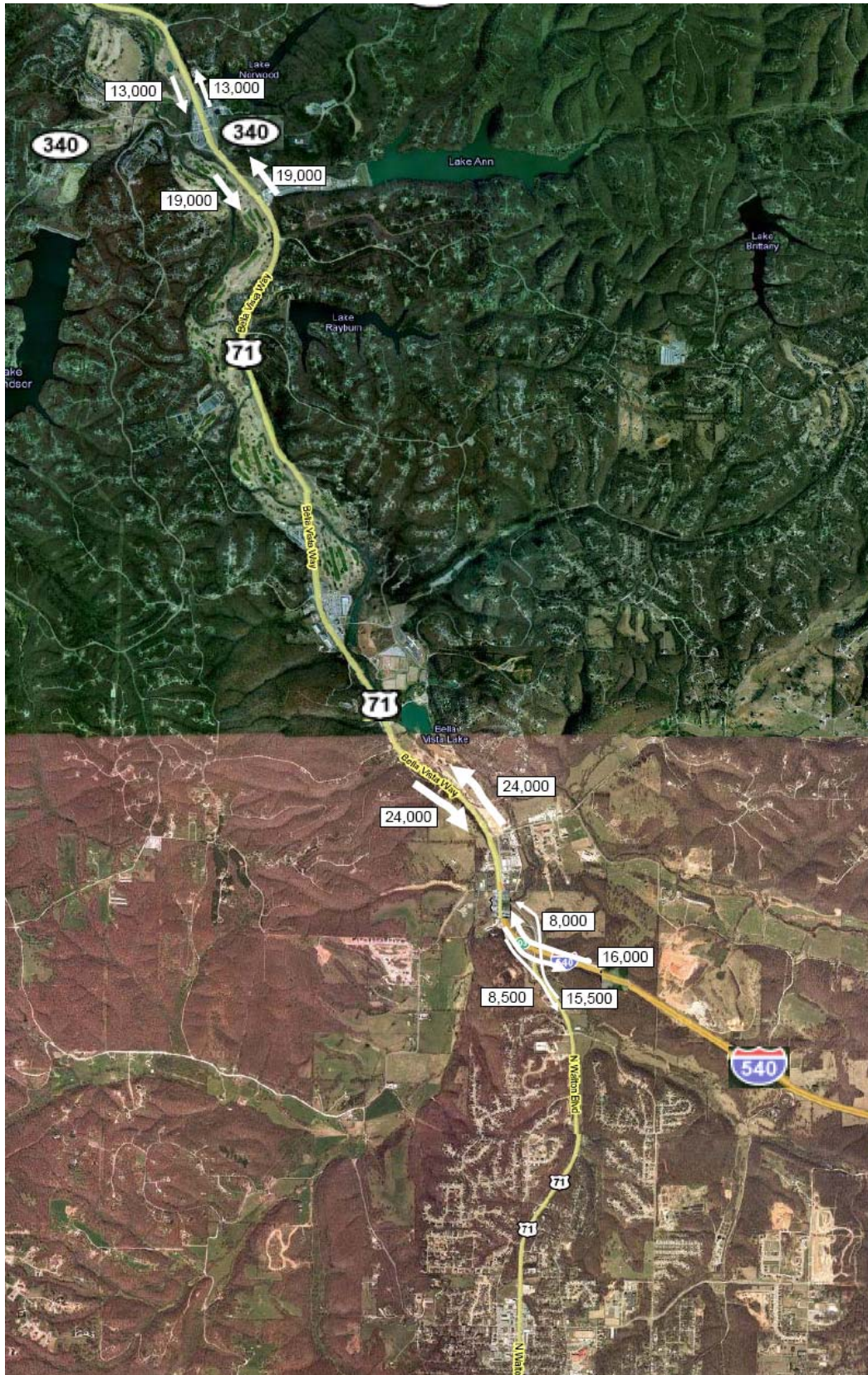
Data were summarized into 15-minute and rolling hour totals for passenger vehicles, light trucks, heavy trucks, and total vehicles. Traffic volumes on US 71 increased from 2007, peaking at over 2,800 vph. However, traffic volumes decreased near the Missouri border, denoting less long-distance traffic.

Based on the turning movement counts made by AHTD specifically for this project in May 2009, the trip origin and destination patterns were assumed to still be consistent with those described in the 2006 Update Report by HNTB/WSA.

Traffic counts were summarized for an average weekday and for Saturday and Sunday. Classification counts were used to determine the percentage of passenger vehicles, light trucks, and heavy trucks. The current proposed toll schedule calls for separate toll rates for the three classifications. The toll model was constructed to forecast traffic and toll revenue accordingly. Actual traffic count data are shown in Figure 13.

Traffic count data and travel time run data used in the toll model were derived from the most recent sources available, which includes the May 2009 AHTD field work data; the 2008 AHTD AADT data; truck surveys, traffic counts, and travel time runs from 2007 made by Carter Burgess; and origin and destination patterns from the 2006 Update Report from HNTB/WSA.

Figure 13: Traffic Count Summary, 2009



Travel time runs were conducted by AHTD to determine average speeds along US 71. A sample result from the travel time runs is shown in Figure 14 for southbound traffic and Figure 15 for northbound traffic. In this example, during the AM peak period, congestion exists along southbound US 71 just south of Riordan Road. A similar pattern emerges in the northbound direction during the PM peak period. No congestion exists along US 71 north of CR 340.

Figure 14: Southbound AM Travel Times in the Corridor, May 2009

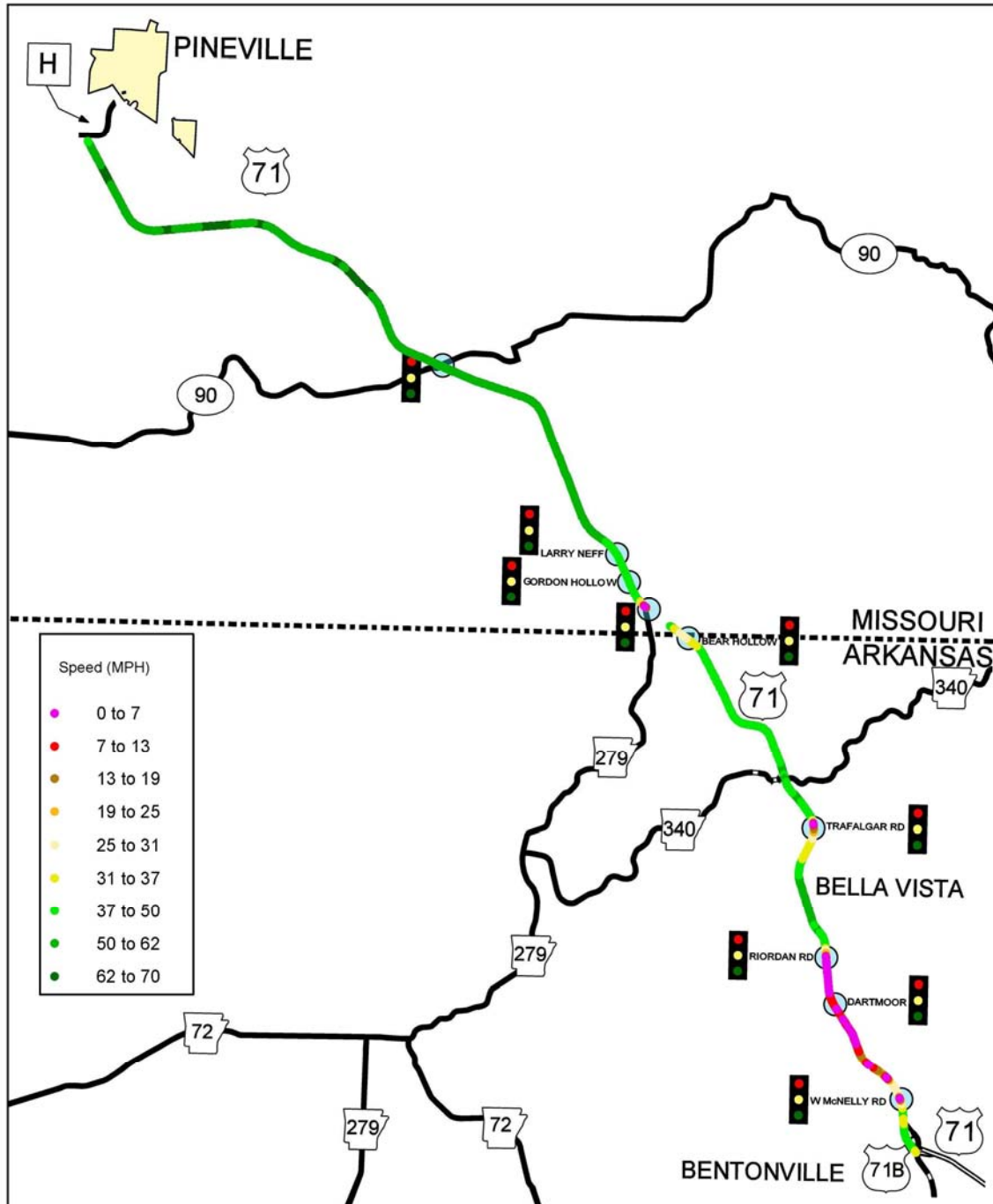
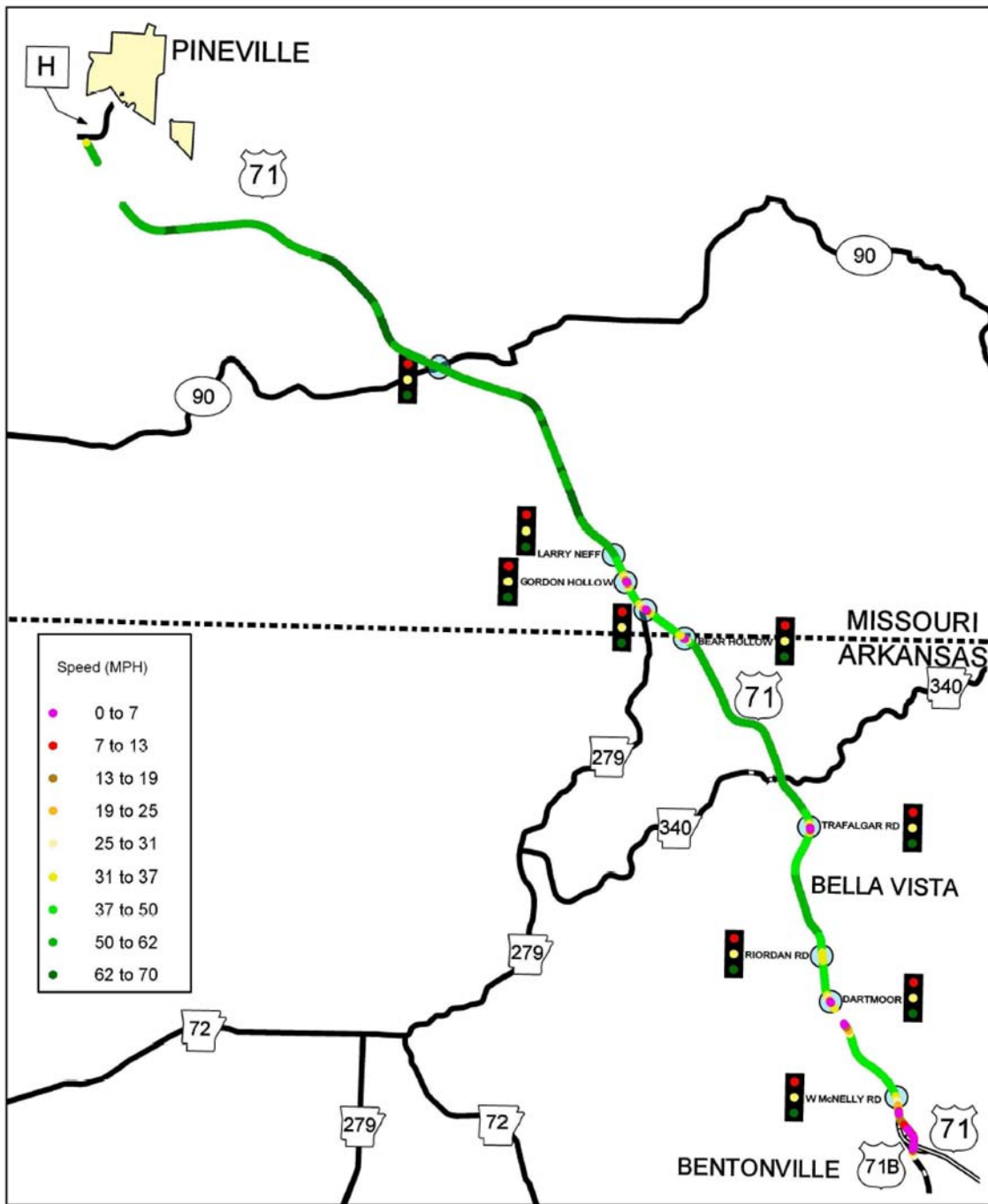


Figure 15: Northbound PM Travel Times in the Corridor, May 2009



5.0 Traffic and Revenue Model and Traffic and Toll Revenue Estimates

The following section summarizes Stantec Consulting's traffic and toll revenue model constructed to prepare an independent forecast of traffic volumes and toll revenues for the Bypass.

5.1 Growth Rates

Corridor growth and trends in population and employment provide the foundation for estimating future growth rates in traffic volumes and toll revenue. The projected growth rates presented in the 2006 Report were reviewed, as well as other economic and population data. Historical population and employment data were obtained from the US Bureau of the Census for the year 2000. County-level population, employment and household income projections were obtained from existing local and national sources (see Chapter 3 for details).

The projected traffic growth rates were compared to historic traffic growth rates in the area, as well as forecasted population and employment. Growth that would occur between today's existing conditions and the opening of the toll facility was not provided in the 2006 Update Report. A potential growth for that period was calculated based on traffic count data supplied in the 2004 and 2006 Reports, along with our independent counts made in 2007 and 2009. Growth rates for light trucks are the same as for passenger vehicles. As detailed in Chapter 3, Gross Regional Product (GRP) in Benton County is projected to grow more slowly in the future than in recent years. Since heavy truck traffic has shown a historical correlation with GRP, assumed growth rates for heavy trucks were calculated at slightly less than those of passenger vehicles.

The growth rates that we used for the project can be seen, by year and by vehicle class, in the Appendix, attached.

5.2 Existing Traffic Data and Future Growth

As a portion of the incentive to use the Bypass is time savings due to the avoidance of congestion, a model was constructed that divided the week into eight time periods. After examining traffic count data along US 71, weekday traffic volumes were divided into four separate periods:

- AM peak (7-10 AM)
- midday (MD) peak (Noon-2 PM)
- PM peak (2-7 PM), and
- off-peak (Midnight -7 AM, 10 AM – Noon, 7 PM – Midnight).

Saturday and Sunday were divided into two periods, peak (10 AM – 7 PM) and off-peak (Midnight - 10 AM, 7PM – Midnight). Growth rates for each vehicle class were applied and traffic volumes for

each of the eight periods were projected for every year until 2050. These volumes represent the total “capturable” traffic for the Bypass.

5.3 Time Savings Calculations

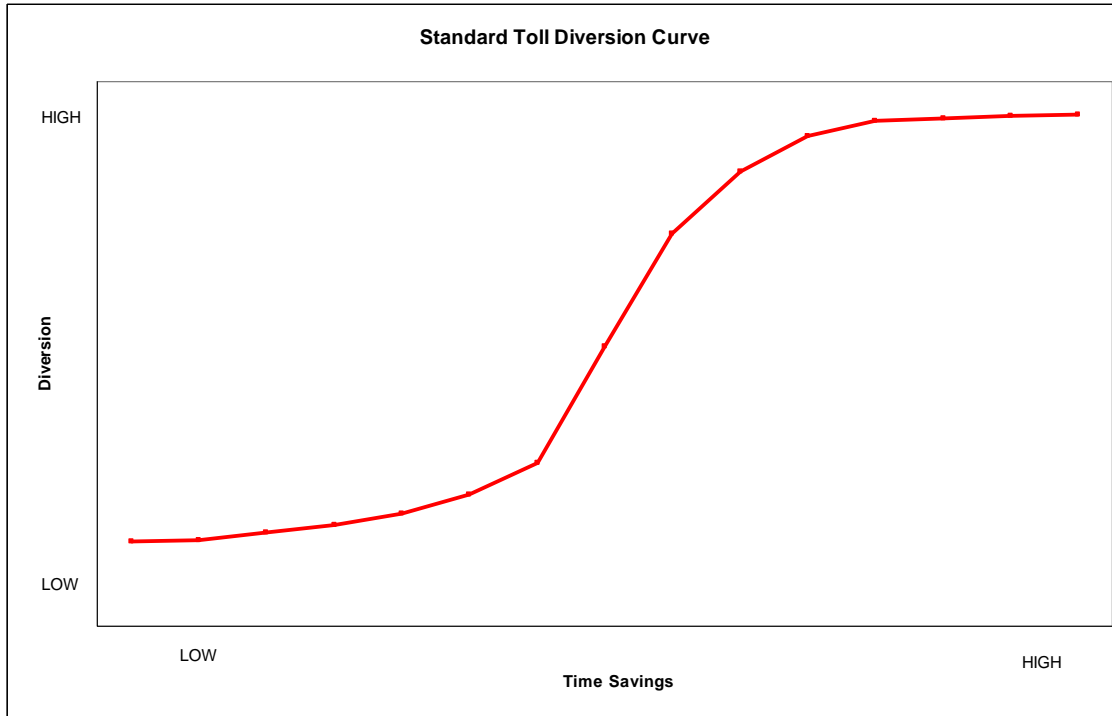
The 2006 Update Report contains time and distance savings estimates for four separate origin-destination movements. While these four movements cover the “short,” “medium,” and “long” trip categories that would use the bypass, each origin-destination pair contains a segment of US 71 south of the decision point where vehicles must decide whether to take the free US 71 or the tolled Bypass. To more fairly compare the two route choices, an independent estimate of the time-distance savings for the three trip categories for both peak travel conditions where congestion may exist on US 71 and off-peak conditions where free-flow speeds on US 71 are likely was developed. These travel time estimates include average speeds in the corridor, average delays due to traffic lights, and effects of congestion in the peak periods.

The 2006 Update Report also contained a US 71 Corridor Management Plan. After examining this Corridor Management Plan, delays due to traffic signals were estimated for “short,” “medium,” and “long” trips through the corridor for both peak and off-peak hours. Since speed run data collected in 2009 showed uncongested speeds between 62 and 70 mph, free-flow speeds were assumed to be 65 mph on the Bypass and between 45 and 55 mph on US 71. Stantec’s travel time estimates calculated for the time saved by using the Bypass vary slightly from the HNTB/WSA 2006 Update Report estimates. During peak hours, it was estimated that time saved for “short” trips was the same as HNTB/WSA - 6 minutes; time saved for “medium” trips was estimated at 10 minutes compared to HNTB/WSA’s 7 minutes; and time saved for “long” trips was estimated at 12 minutes compared to HNTB/WSA’s 14 minutes. Due to slower speeds for trucks during congestion, an additional time savings of 1 minute for light trucks and 2 minutes from heavy trucks were added to the time savings estimates. Diversion curves based on time savings were applied using the new estimates for each trip length.

5.4 Traffic Diversion Curves

Toll diversion curves, which mathematically define the amount of traffic likely to divert from a given facility to a tolled facility based on individual time savings were developed based on previous efforts made by Stantec Consulting for other toll facility projects. The economic data supplied in the 2006 Update Report and 2008 Woods & Poole data on median income were used to adapt the curves for use in Benton County, Arkansas. A sample diversion curve is shown in Figure 16. As time savings for a toll facility increases, the percentage of vehicles willing to pay the toll and divert to the toll facility increases.

Figure 16: Sample Diversion Curve



Trip purpose information from the 2006 Update Report was used to calculate a weighted average diversion curve. The desire of drivers of passenger vehicles to use a toll facility depends on time savings versus the toll rate, trip purpose and value of time. During the peak hours, work trips represented a large portion of the volume on US 71, and the average value of time is generally the highest. Based upon our experience from other toll facilities around the nation, the off-peak periods typically have less work trips than the peak periods. The resulting peak percentage was reduced to represent better the off-peak periods; trip purposes were normalized and the weighted average was recalculated. This reflected the lower value of time associated with non-work trips.

Likewise, trip pattern information for both passenger vehicles and trucks from the 2006 Update Report was used. Trip patterns were applied to the “short,” “medium,” and “long” trips to determine the total amount of “potential” traffic for the Bypass. Passenger vehicles destined for The City of Bella Vista, a “short” trip, comprised 44 percent of the total passenger vehicle trips. Seven percent represent “medium” trips and 19 percent represent “long” trips, destined for points north of the Bypass. Passenger vehicles destined for points east of US 71 (30 percent of the total passenger vehicle trips) were considered non-potential users of the Bypass. The majority of truck trips were categorized as “long” trips, with almost 70 percent destined for points north of the proposed project area. Seventeen percent of truck trips were considered non-potential users because their destinations were east of US 71. The remaining 12 percent were “short trips” and one percent were “medium trips.”

One adjustment to the trip pattern information was made for passenger vehicle “short” trips. Traffic volumes collected in 2009 show the daily volume on US 71 decreases from 24,000 per direction just south of CR 40 to 19,000 per direction just south of CR 340 to 13,000 per direction just north of CR 340. These data, in conjunction with turning movement counts conducted at CR 340, led to an increase in the number of non-potential trips from 30 to 40 percent, as compared to previous reports and analyses.

Table 9: Trip Length by Vehicle Class

	Potential Trips			Non-Potential Trips (%)
	Short Trips (%)	Medium Trips (%)	Long Trips (%)	
Passenger Vehicles (PV)	34%	7%	19%	40%
Off-peak PV	34%	7%	19%	40%
Light Trucks	12%	2%	69%	17%
Heavy Trucks	12%	2%	69%	17%

The video survey of trucks traveling along US 71, along with the origin and destination surveys made by HNTB/WSA showed that more than 69 percent of trucks traveling on a typical weekday were long distance trips. The estimated time savings of 12-14 minutes over a maximum eleven hour trip does not carry the same importance to these types of truck drivers. Based on a day of driving, a time savings of 14 minutes is unlikely that a long haul truck driver will pay an estimated fee of \$6.00 per trip to utilize the Bypass until this time savings becomes more. Truck owner-operators usually receive a fixed fee per load, with fuel, lodging and tolls paid by the driver out of the fee. In this case, many of the drivers would likely avoid paying tolls wherever possible, unless time and distance savings fully offset the toll cost.

5.5 Congestion along US 71

As mentioned previously, the collected speed data suggested that in the northern areas of US 71 near the state line (north of The City of Bella Vista) there is no congestion. In The City of Bella Vista and points south, some congestion exists along US 71 today during the peak periods, southbound in the AM and northbound in the PM, during which time speeds drop below the free-flow speed of about 45 - 55 mph. Using the collected data, it was estimated that speeds along US 71 northbound decreased when traffic volumes exceeded an average of 800 vehicles per lane per hour. As a result, whenever forecasted traffic volumes exceeded 800 vehicles per lane per hour, additional traffic was shifted onto the tolled Bypass.

5.6 Traffic and Toll Revenue Estimates

Ramp Tolls

An independent estimate of the traffic and toll revenue that would be generated by the ramp toll collection points along the Bypass was not reevaluated, as the ramp tolls were expected to generate less than 10 percent of the total revenues. A ratio of the estimated mainline traffic (2006 Update Report) to the estimated ramp traffic (2006 Report) was calculated, and those factors were applied to the Jacobs/Stantec estimated mainline toll collection point transactions to estimate transactions and toll revenues for the ramp toll collection points.

Base Case Traffic and Toll Revenues

Based on the aforementioned information, and with an assumed mainline toll collection point toll rate for passenger cars of \$1.50 (and correspondingly higher tolls for trucks), Stantec's traffic and revenue estimates in the opening year of 2012 were 1.9 million transactions yielding \$3.5 million in revenue. By 2050 transactions were estimated to increase to 6.4 million yielding revenue up to \$11.3 million. These estimates are shown in Table 10. Detailed information on the traffic and revenue estimates are shown in the Appendix tables and figures. Additional scenarios for alternative operations and design were also developed and the corresponding traffic and revenue estimates are shown in the Appendix with each scenario summarized subsequently.

Figures 17 and 18 show graphically the percent of traffic, by vehicle class and by trip length, along the existing US 71. The graphs also show the percent of each of these categories that is estimated to divert to the Bypass. The left-hand bar on each graphic displays the existing traffic, broken down by "short," "medium," and "long" trip, along with a category of "non-potential." The "non-potential" trips are those current trips on the roadway that have either one or both trip end(s) (either an origin or a destination) that would not make the Bypass a viable alternative; for example, trips between the eastern end of The City of Bella Vista and Bentonville or farther south would not see a time savings or benefit of using the Bypass. Approximately 40 percent of the passenger vehicles and 17 percent of the commercial vehicles have such demographics and are "non-potential" to diverting to the Bypass. The right-hand bar on each graphic shows the percentage of traffic by category estimated to divert to the Bypass. Obviously, the right-hand bar has no "non-potential" trips category, as those trips are by definition not potential to divert to the Bypass.

Figure 17: Passenger Vehicles Diversion to Tolled Bypass

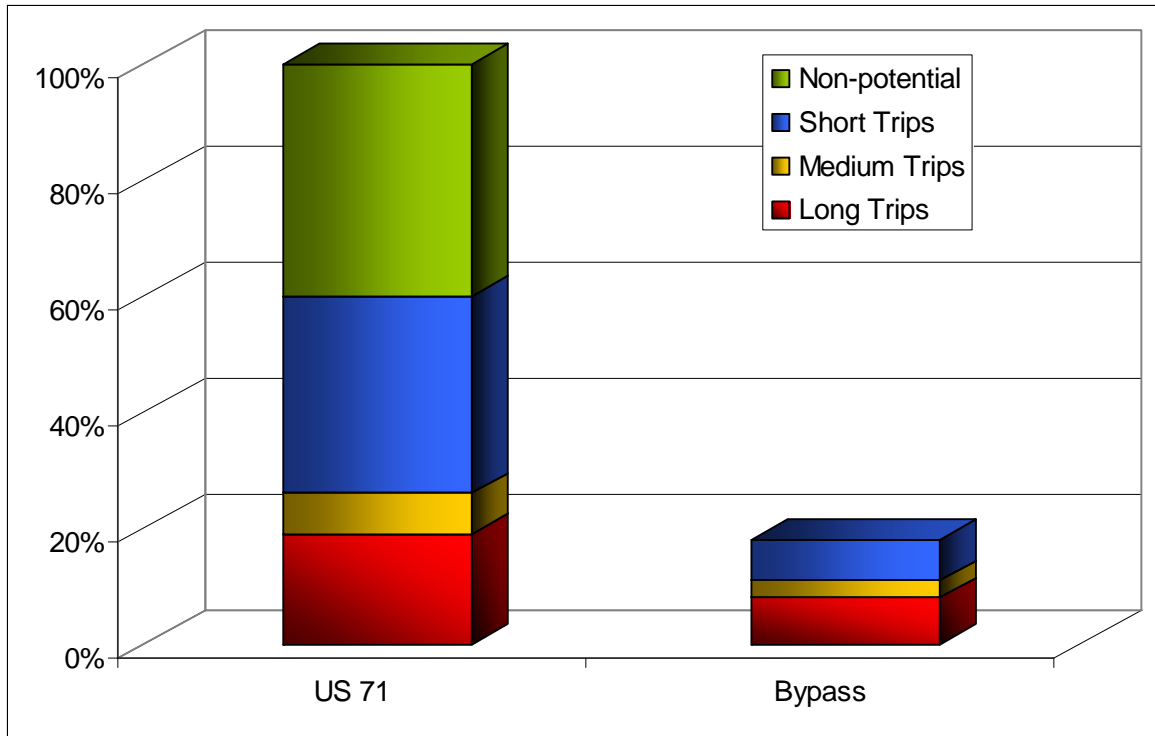
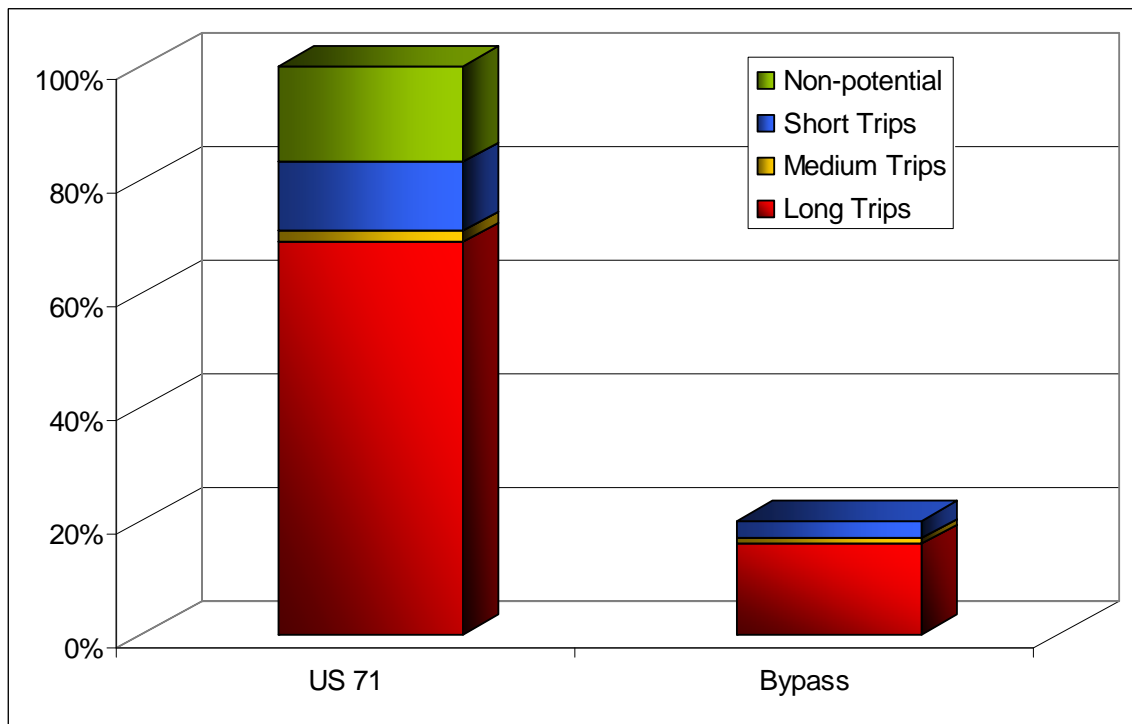


Figure 18: Commercial Vehicles Diversion to Tolled Bypass



All Electronic Toll Facility

Traffic and revenue projections were also calculated for an alternative in which the Bypass operates as an electronic toll collection (ETC) facility. No provisions were made for collecting revenues via license plate images and it was assumed that only vehicles with transponders would be allowed on the roadway. Because there are no other toll facilities in the area, 35 percent of passenger vehicle trips identified in the base case revenue projection were estimated to be made by vehicles equipped with appropriate electronic devices in the opening year of 2012, increasing gradually to 70 percent by 2023. The long distance and repetitive nature of commercial trips make them more likely to possess a transponder; a higher ETC share was therefore assumed: 50 percent for light trucks and 60 percent for heavy trucks in 2012. The ETC truck traffic was projected to reach 80 percent for both light and heavy trucks by 2021.

Opening year 2012, ETC transactions were estimated to be 760,000 yielding revenue of \$1.5 million. By 2050 ETC transactions were estimated to increase to 4.6 million yielding revenue up to \$8.3 million. These numbers are shown in Table 10. Detailed information, including assumed ETC capture rates by vehicle class, are shown in tables and figures in the Appendix.

Table 10: Base Case Traffic and Revenue Estimates

	Stantec Estimates			
	Full Service Toll Facility		All ETC Toll Facility	
	Transactions	Revenue	Transactions	Revenue
2012	1,930,000	\$3,540,000	760,000	\$1,510,000
2013	2,500,000	\$4,610,000	1,070,000	\$2,090,000
2014	3,110,000	\$5,720,000	1,420,000	\$2,760,000
2015	3,410,000	\$6,260,000	1,670,000	\$3,210,000
2016	3,880,000	\$7,100,000	2,010,000	\$3,850,000
2017	3,970,000	\$7,250,000	2,150,000	\$4,150,000
2018	4,060,000	\$7,400,000	2,330,000	\$4,450,000
2019	4,190,000	\$7,610,000	2,530,000	\$4,800,000
2020	4,390,000	\$7,920,000	2,770,000	\$5,230,000
2021	4,470,000	\$8,060,000	2,960,000	\$5,560,000
2022	4,550,000	\$8,190,000	3,130,000	\$5,830,000
2023	4,630,000	\$8,320,000	3,280,000	\$6,060,000
2024	4,700,000	\$8,460,000	3,360,000	\$6,170,000
2025	4,790,000	\$8,590,000	3,440,000	\$6,290,000
2026	4,860,000	\$8,700,000	3,490,000	\$6,380,000
2027	4,930,000	\$8,820,000	3,530,000	\$6,470,000
2028	5,000,000	\$8,950,000	3,590,000	\$6,560,000
2029	5,070,000	\$9,070,000	3,640,000	\$6,650,000
2030	5,140,000	\$9,190,000	3,700,000	\$6,730,000
2031	5,190,000	\$9,280,000	3,730,000	\$6,800,000
2032	5,250,000	\$9,380,000	3,770,000	\$6,870,000
2033	5,300,000	\$9,480,000	3,800,000	\$6,930,000
2034	5,350,000	\$9,570,000	3,850,000	\$7,020,000
2035	5,400,000	\$9,660,000	3,880,000	\$7,090,000
2036	5,460,000	\$9,770,000	3,920,000	\$7,150,000
2037	5,510,000	\$9,860,000	3,960,000	\$7,220,000
2038	5,570,000	\$9,960,000	4,000,000	\$7,290,000
2039	5,620,000	\$10,050,000	4,030,000	\$7,370,000
2040	5,680,000	\$10,160,000	4,080,000	\$7,440,000
2041	5,740,000	\$10,250,000	4,130,000	\$7,510,000
2042	5,800,000	\$10,360,000	4,150,000	\$7,600,000
2043	5,860,000	\$10,460,000	4,200,000	\$7,660,000
2044	5,990,000	\$10,680,000	4,290,000	\$7,830,000
2045	6,040,000	\$10,790,000	4,340,000	\$7,900,000
2046	6,110,000	\$10,900,000	4,390,000	\$7,980,000
2047	6,170,000	\$11,010,000	4,430,000	\$8,060,000
2048	6,230,000	\$11,130,000	4,470,000	\$8,140,000
2049	6,300,000	\$11,230,000	4,510,000	\$8,230,000
2050	6,360,000	\$11,340,000	4,560,000	\$8,300,000

5.7 Sensitivity Analyses

The 2006 Update Report assumed a certain toll rate, growth rates and value of time. Vital to such an assessment and subsequent recommendations is also assessing the users' sensitivities. Sensitivity analyses were performed by Stantec Consulting for the following scenarios:

- Passenger car toll rate lowered to \$0.75 at Mainline Toll Collection Point
- Passenger car toll rate lowered to \$1.00 at Mainline Toll Collection Point
- Passenger car toll rate lowered to \$1.25 at Mainline Toll Collection Point
- Passenger car toll rate raised to \$1.75 at Mainline Toll Collection Point
- Passenger car toll rate raised to \$2.00 at Mainline Toll Collection Point
- Value of Time Increased
- Value of Time Decreased
- Aggressive Traffic Growth Rates
- Programmed Toll Rate Increases

Toll Rate Changes

The first sensitivity run decreased the toll rate at the Mainline toll collection point to \$0.75 for passenger vehicles, \$1.50 for light trucks, and \$3.00 for heavy trucks. In addition to reducing the mainline toll, ramp tolls were reduced proportionately. With the lowering of the toll rates, more vehicles were likely to use the Bypass. Since this proposed mainline toll rate of \$0.75 for passenger vehicles is 50 percent lower than the base case scenario, the average toll rates given in the 2006 Update Report for the ramp toll collection points were reduced by 50 percent. Consequently, although transactions increased by nearly 32 percent per year from our base case scenario, due to the lower toll rate the revenues generated decreased approximately 27 percent per year.

The second sensitivity run decreased the toll rate at the Mainline toll collection point to \$1.00 for passenger vehicles, \$2.00 for light trucks and \$4.00 for heavy trucks. Average ramp toll rates were reduced proportionately, as discussed previously. Similarly to the first sensitivity run, transactions increased by 21 percent per year, but revenue decreased by 15 percent per year compared to the base case scenario.

The third sensitivity run decreased the toll rate at the Mainline toll collection point to \$1.25 for passenger vehicles, \$2.50 for light trucks and \$5.00 for heavy trucks. Average ramp toll rates were reduced proportionately, as discussed previously. Transactions increased by 11 percent per year, but revenue decreased by 5 percent per year compared to the base case scenario.

The toll rate at the Mainline toll collection point was increased to \$1.75 for passenger vehicles, \$3.50 for light trucks and \$7.00 for heavy trucks to determine whether raising the toll rate would have a positive impact on revenue. In this scenario, average ramp toll rates were increased by approximately 16 percent to remain consistent with the increase for the mainline toll. Even though transactions decreased by 8 percent per year, revenues increased by 5 percent over the base case scenario.

The final toll rate sensitivity run analyzed increased the Mainline toll rate to \$2.00 for passenger vehicles, \$4.00 for light trucks, and \$8.00 for heavy trucks. With the increased toll rates, the number of vehicles using the Bypass decreased. Average ramp toll rates were increased 33 percent to reflect the increase to the mainline toll. Transactions on the Bypass decreased 18 percent while revenues increased 6 percent compared to the base case scenario.

Value of Time

The value of time (VOT) was increased to reflect a higher income in the area, which would increase a user's likelihood to pay a toll to save time. The value of time, however, only has a major influence over work-based trips and has little impact on light and heavy trucks. Based on trip purpose information from the 2006 Update Report, approximately 75 percent of northbound passenger vehicle trips were work-related trips and 80 percent of southbound passenger-vehicle trips were work-related. The increased VOT was added to these users causing an increase in passenger vehicles trips on the proposed Bypass. The increase in trips, however, only has a minor impact on overall transactions and toll revenues. Transactions increased approximately 4 percent per year over the base case scenario and toll revenues increased by 3 percent per year over the base case scenario.

Conversely, a sensitivity analysis was performed for a decrease in the VOT. Again, this decrease in VOT was only applied to work-related trips. With a decreased value of time, transactions were reduced by 3 percent per year and toll revenues decreased by approximately 3 percent per year over the base case scenario.

Aggressive Growth

Since the Bentonville area has shown strong growth over the last decade, a sensitivity analysis was performed for a continuation of strong growth into the near future. With the aggressive growth rates, transactions increased by nearly 8 percent per year with revenue increasing by over 8 percent per year when compared to the base case scenario.

Table 11 summarizes the sensitivity analyses and their impacts on toll transactions and revenues.

**Table 11: Factors That Influence The City of Bella Vista Bypass
 Traffic and Revenue Estimates**

Sensitivity Analysis	Impact on Transactions	Impact on Revenue
Toll rate lowered to \$0.75	Increase 32 percent	Decrease 27 percent
Toll rate lowered to \$1.00	Increase 21 percent	Decrease 15 percent
Toll rate lowered to \$1.25	Increase 11 percent	Decrease 5 percent
Toll rate raised to \$1.75	Decrease 8 percent	Increase 5 percent
Toll rate raised to \$2.00	Decrease 18 percent	Increase 6 percent
Value of Time increased	Increase 4 percent	Increase 3 percent
Value of Time decreased	Decrease 3 percent	Decrease 3 percent
Aggressive growth rates	Increase 8 percent	Increase 8 percent

Programmed Toll Rate Increases

The toll rates were increased by \$0.25 for passenger vehicles, \$0.50 for light trucks, and \$1.00 for heavy trucks every five years after opening year. With the programmed toll rates, 2025 transactions decreased by 3 percent per year with revenue increasing by over 26 percent per year when compared to the base case scenario. In 2050, transactions decreased by 12 percent per year with revenue increasing by over 80 percent per year when compared to the base case scenario.

Table 12 summarizes the sensitivity analyses for programmed toll rates and their impacts on toll transactions and revenues.

Table 12: Programmed Toll Rate Increases Sensitivity Analyses

Sensitivity Analysis	Impact on Transactions	Impact on Revenue
Programmed toll rates – 2025	Decrease 3 percent	Increase 26 percent
Programmed toll rates – 2050	Decrease 12 percent	Increase 80 percent

6.0 2009 Analyses, Estimated Revenues as Compared to HNTB/WSA

The estimated gross toll revenues prepared by Stantec Consulting in 2009 are approximately 60 to 65 percent of those estimated by HNTB/WSA. The main reason for the differences is the estimated diversions of traffic to move to the tolled Bypass, both for the local passenger vehicle traffic traveling between The City of Bella Vista and Bentonville / Fayetteville and for the long-distance trucks. Table 13 compares the gross toll revenue estimates for the years 2020 and 2030.

Table 13: Comparison on Forecasted Revenues

Year	CB/Stanec 2007	Jacobs/Stanec 2009	HNTB/WSA 2006
2020	\$6.5 million	\$7.9 million	\$12.4 million
2030	\$7.5 million	\$9.2 million	\$14.5 million

The toll collection points were developed such that those passenger vehicles traveling between The City of Bella Vista and Bentonville / Fayetteville would pass through the mainline toll collection point and pay \$1.50; this results in a per-mile toll rate of \$0.25, a toll rate that is at the upper end nationally.

LIST OF REFERENCES

- 2008 Woods & Poole Economics, Inc. <http://www.woodsandpoole.com/>
- US Bureau of Labor Statistics - <http://www.bls.gov/data/#employment>
- US Bureau of the Census - <http://www.census.gov/>
- “US 71 Bella Vista to Pineville, April 2006;” HNTB/WSA

APPENDIX A

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Table 1
Transactions and Revenue - WSA Forecast 2004 and 2006

2006 REPORT						2004 REPORT					
	WSA Transactions	WSA Revenue	\$ / Transaction	% Change			Transactions	Revenue	\$ / Transaction	% Change	
				Transactions	Revenue					Transactions	Revenue
2011	3,641,000	\$7,222,000	\$1.98	-	-	2007	4,737,000	\$7,672,000	\$1.62	-	-
2012	4,741,000	\$9,385,000	\$1.98	30.2%	30.0%	2008	4,879,000	\$7,892,000	\$1.62	3.0%	2.9%
2013	5,327,000	\$10,515,000	\$1.97	12.4%	12.0%	2009	5,025,000	\$8,118,000	\$1.62	3.0%	2.9%
2014	5,530,000	\$10,862,000	\$1.96	3.8%	3.3%	2010	5,175,000	\$8,351,000	\$1.61	3.0%	2.9%
2015	5,712,000	\$11,166,000	\$1.95	3.3%	2.8%	2011	5,330,000	\$8,591,000	\$1.61	3.0%	2.9%
2016	5,872,000	\$11,434,000	\$1.95	2.8%	2.4%	2012	5,490,000	\$8,838,000	\$1.61	3.0%	2.9%
2017	6,007,000	\$11,674,000	\$1.94	2.3%	2.1%	2013	5,654,000	\$9,092,000	\$1.61	3.0%	2.9%
2018	6,133,000	\$11,908,000	\$1.94	2.1%	2.0%	2014	5,823,000	\$9,353,000	\$1.61	3.0%	2.9%
2019	6,256,000	\$12,134,000	\$1.94	2.0%	1.9%	2015	5,997,000	\$9,621,000	\$1.60	3.0%	2.9%
2020	6,378,000	\$12,358,000	\$1.94	2.0%	1.8%	2016	6,177,000	\$9,897,000	\$1.60	3.0%	2.9%
2021	6,499,000	\$12,581,000	\$1.94	1.9%	1.8%	2017	6,362,000	\$10,181,000	\$1.60	3.0%	2.9%
2022	6,616,000	\$12,795,000	\$1.93	1.8%	1.7%	2018	6,552,000	\$10,473,000	\$1.60	3.0%	2.9%
2023	6,732,000	\$13,006,000	\$1.93	1.8%	1.6%	2019	6,748,000	\$10,774,000	\$1.60	3.0%	2.9%
2024	6,846,000	\$13,214,000	\$1.93	1.7%	1.6%	2020	6,951,000	\$11,083,000	\$1.59	3.0%	2.9%
2025	6,958,000	\$13,422,000	\$1.93	1.6%	1.6%	2021	7,055,000	\$11,249,000	\$1.59	1.5%	1.5%
2026	7,062,000	\$13,623,000	\$1.93	1.5%	1.5%	2022	7,161,000	\$11,418,000	\$1.59	1.5%	1.5%
2027	7,168,000	\$13,827,000	\$1.93	1.5%	1.5%	2023	7,268,000	\$11,589,000	\$1.59	1.5%	1.5%
2028	7,276,000	\$14,034,000	\$1.93	1.5%	1.5%	2024	7,377,000	\$11,763,000	\$1.59	1.5%	1.5%
2029	7,385,000	\$14,245,000	\$1.93	1.5%	1.5%	2025	7,488,000	\$11,939,000	\$1.59	1.5%	1.5%
2030	7,496,000	\$14,459,000	\$1.93	1.5%	1.5%	2026	7,563,000	\$12,058,000	\$1.59	1.0%	1.0%
2031	7,571,000	\$14,604,000	\$1.93	1.0%	1.0%	2027	7,639,000	\$12,179,000	\$1.59	1.0%	1.0%
2032	7,647,000	\$14,750,000	\$1.93	1.0%	1.0%	2028	7,715,000	\$12,301,000	\$1.59	1.0%	1.0%
2033	7,723,000	\$14,898,000	\$1.93	1.0%	1.0%	2029	7,792,000	\$12,424,000	\$1.59	1.0%	1.0%
2034	7,800,000	\$15,047,000	\$1.93	1.0%	1.0%	2030	7,870,000	\$12,548,000	\$1.59	1.0%	1.0%
2035	7,878,000	\$15,197,000	\$1.93	1.0%	1.0%	2031	7,949,000	\$12,673,000	\$1.59	1.0%	1.0%
2036	7,957,000	\$15,349,000	\$1.93	1.0%	1.0%	2032	8,028,000	\$12,800,000	\$1.59	1.0%	1.0%
2037	8,037,000	\$15,502,000	\$1.93	1.0%	1.0%	2033	8,108,000	\$12,928,000	\$1.59	1.0%	1.0%
2038	8,117,000	\$15,657,000	\$1.93	1.0%	1.0%	2034	8,189,000	\$13,057,000	\$1.59	1.0%	1.0%
2039	8,198,000	\$15,814,000	\$1.93	1.0%	1.0%	2035	8,271,000	\$13,188,000	\$1.59	1.0%	1.0%
2040	8,280,000	\$15,972,000	\$1.93	1.0%	1.0%	2036	8,354,000	\$13,320,000	\$1.59	1.0%	1.0%
2041	8,363,000	\$16,132,000	\$1.93	1.0%	1.0%	2037	8,438,000	\$13,453,000	\$1.59	1.0%	1.0%
2042	8,447,000	\$16,293,000	\$1.93	1.0%	1.0%						

WITHOUT RAMP-UP				
	Transactions	Revenue		
2011	4,854,667	\$9,629,333	-	-
2012	5,097,849	\$10,091,398	5.0%	4.8%
2013	5,327,000	\$10,515,000	4.5%	4.2%

Table 2
Estimated Tolloed Transactions and Revenue - Stantec Consulting Forecast
04 August 2009
Bella Vista Bypass, Arkansas
Base Case Scenario, Electronic and Cash (Full Service) Toll Facility

Year	Mainline Transactions Northbound	Mainline Transactions Southbound	Ramp Transactions	Total Transactions	Total Transactions (with Ramp-up)	Mainline Revenue Northbound	Mainline Revenue Southbound	Ramp Revenue	Total Revenue	Total Revenue (with Ramp-up)	Average Mainline Toll Northbound	Average Mainline Toll Southbound	Average Toll Total
2013*	130,000	130,000	50,000	310,000	170,000	\$260,000	\$250,000	\$60,000	\$570,000	\$310,000	\$2.00	\$1.92	\$1.82
2014	1,590,000	1,530,000	540,000	3,660,000	2,010,000	\$3,100,000	\$2,950,000	\$680,000	\$6,730,000	\$3,700,000	\$1.95	\$1.93	\$1.84
2015	1,680,000	1,560,000	550,000	3,790,000	2,650,000	\$3,250,000	\$3,010,000	\$690,000	\$6,950,000	\$4,870,000	\$1.93	\$1.93	\$1.84
2016	1,720,000	1,600,000	560,000	3,880,000	3,300,000	\$3,320,000	\$3,080,000	\$700,000	\$7,100,000	\$6,040,000	\$1.93	\$1.93	\$1.83
2017	1,760,000	1,640,000	570,000	3,970,000	3,570,000	\$3,390,000	\$3,150,000	\$710,000	\$7,250,000	\$6,530,000	\$1.93	\$1.92	\$1.83
2018	1,800,000	1,680,000	580,000	4,060,000	4,060,000	\$3,460,000	\$3,210,000	\$730,000	\$7,400,000	\$7,400,000	\$1.92	\$1.91	\$1.82
2019	1,840,000	1,760,000	590,000	4,190,000	4,190,000	\$3,530,000	\$3,340,000	\$740,000	\$7,610,000	\$7,610,000	\$1.92	\$1.90	\$1.82
2020	1,870,000	1,910,000	610,000	4,390,000	4,390,000	\$3,590,000	\$3,580,000	\$750,000	\$7,920,000	\$7,920,000	\$1.92	\$1.87	\$1.80
2021	1,910,000	1,940,000	620,000	4,470,000	4,470,000	\$3,650,000	\$3,640,000	\$770,000	\$8,060,000	\$8,060,000	\$1.91	\$1.88	\$1.80
2022	1,940,000	1,980,000	630,000	4,550,000	4,550,000	\$3,710,000	\$3,700,000	\$780,000	\$8,190,000	\$8,190,000	\$1.91	\$1.87	\$1.80
2023	1,980,000	2,010,000	640,000	4,630,000	4,630,000	\$3,770,000	\$3,760,000	\$790,000	\$8,320,000	\$8,320,000	\$1.90	\$1.87	\$1.80
2024	2,010,000	2,040,000	650,000	4,700,000	4,700,000	\$3,830,000	\$3,820,000	\$810,000	\$8,460,000	\$8,460,000	\$1.91	\$1.87	\$1.80
2025	2,040,000	2,080,000	670,000	4,790,000	4,790,000	\$3,890,000	\$3,880,000	\$820,000	\$8,590,000	\$8,590,000	\$1.91	\$1.87	\$1.79
2026	2,070,000	2,110,000	680,000	4,860,000	4,860,000	\$3,940,000	\$3,930,000	\$830,000	\$8,700,000	\$8,700,000	\$1.90	\$1.86	\$1.79
2027	2,100,000	2,140,000	690,000	4,930,000	4,930,000	\$4,000,000	\$3,980,000	\$840,000	\$8,820,000	\$8,820,000	\$1.90	\$1.86	\$1.79
2028	2,130,000	2,170,000	700,000	5,000,000	5,000,000	\$4,050,000	\$4,040,000	\$860,000	\$8,950,000	\$8,950,000	\$1.90	\$1.86	\$1.79
2029	2,160,000	2,200,000	710,000	5,070,000	5,070,000	\$4,110,000	\$4,090,000	\$870,000	\$9,070,000	\$9,070,000	\$1.90	\$1.86	\$1.79
2030	2,190,000	2,230,000	720,000	5,140,000	5,140,000	\$4,160,000	\$4,150,000	\$880,000	\$9,190,000	\$9,190,000	\$1.90	\$1.86	\$1.79
2031	2,210,000	2,260,000	720,000	5,190,000	5,190,000	\$4,200,000	\$4,190,000	\$890,000	\$9,280,000	\$9,280,000	\$1.90	\$1.85	\$1.79
2032	2,240,000	2,280,000	730,000	5,250,000	5,250,000	\$4,250,000	\$4,230,000	\$900,000	\$9,380,000	\$9,380,000	\$1.90	\$1.86	\$1.79
2033	2,260,000	2,300,000	740,000	5,300,000	5,300,000	\$4,290,000	\$4,280,000	\$910,000	\$9,480,000	\$9,480,000	\$1.90	\$1.86	\$1.79
2034	2,280,000	2,320,000	750,000	5,350,000	5,350,000	\$4,330,000	\$4,320,000	\$920,000	\$9,570,000	\$9,570,000	\$1.90	\$1.86	\$1.79
2035	2,300,000	2,350,000	750,000	5,400,000	5,400,000	\$4,370,000	\$4,360,000	\$930,000	\$9,660,000	\$9,660,000	\$1.90	\$1.86	\$1.79
2036	2,330,000	2,370,000	760,000	5,460,000	5,460,000	\$4,420,000	\$4,410,000	\$940,000	\$9,770,000	\$9,770,000	\$1.90	\$1.86	\$1.79
2037	2,350,000	2,390,000	770,000	5,510,000	5,510,000	\$4,460,000	\$4,450,000	\$950,000	\$9,860,000	\$9,860,000	\$1.90	\$1.86	\$1.79
2038	2,370,000	2,420,000	780,000	5,570,000	5,570,000	\$4,510,000	\$4,490,000	\$960,000	\$9,960,000	\$9,960,000	\$1.90	\$1.86	\$1.79
2039	2,400,000	2,440,000	780,000	5,620,000	5,620,000	\$4,550,000	\$4,540,000	\$960,000	\$10,050,000	\$10,050,000	\$1.90	\$1.86	\$1.79
2040	2,420,000	2,470,000	790,000	5,680,000	5,680,000	\$4,600,000	\$4,590,000	\$970,000	\$10,160,000	\$10,160,000	\$1.90	\$1.86	\$1.79
2041	2,450,000	2,490,000	800,000	5,740,000	5,740,000	\$4,640,000	\$4,630,000	\$980,000	\$10,250,000	\$10,250,000	\$1.89	\$1.86	\$1.79
2042	2,470,000	2,520,000	810,000	5,800,000	5,800,000	\$4,690,000	\$4,680,000	\$990,000	\$10,360,000	\$10,360,000	\$1.90	\$1.86	\$1.79
2043	2,500,000	2,540,000	820,000	5,860,000	5,860,000	\$4,740,000	\$4,720,000	\$1,000,000	\$10,460,000	\$10,460,000	\$1.90	\$1.86	\$1.78
2044	2,600,000	2,570,000	820,000	5,990,000	5,990,000	\$4,900,000	\$4,770,000	\$1,010,000	\$10,680,000	\$10,680,000	\$1.88	\$1.86	\$1.78
2045	2,620,000	2,590,000	830,000	6,040,000	6,040,000	\$4,950,000	\$4,820,000	\$1,020,000	\$10,790,000	\$10,790,000	\$1.89	\$1.86	\$1.79
2046	2,650,000	2,620,000	840,000	6,110,000	6,110,000	\$5,000,000	\$4,870,000	\$1,030,000	\$10,900,000	\$10,900,000	\$1.89	\$1.86	\$1.78
2047	2,680,000	2,640,000	850,000	6,170,000	6,170,000	\$5,050,000	\$4,920,000	\$1,040,000	\$11,010,000	\$11,010,000	\$1.88	\$1.86	\$1.78
2048	2,700,000	2,670,000	860,000	6,230,000	6,230,000	\$5,100,000	\$4,970,000	\$1,060,000	\$11,130,000	\$11,130,000	\$1.89	\$1.86	\$1.79
2049	2,730,000	2,700,000	870,000	6,300,000	6,300,000	\$5,150,000	\$5,010,000	\$1,070,000	\$11,230,000	\$11,230,000	\$1.89	\$1.86	\$1.78
2050	2,760,000	2,720,000	880,000	6,360,000	6,360,000	\$5,200,000	\$5,060,000	\$1,080,000	\$11,340,000	\$11,340,000	\$1.88	\$1.86	\$1.78

* opening 01 December 2013

2013 / 2014	Ramp-up 55%
2015	70%
2016	85%
2017	90%

Table 3
Annual Traffic by Vehicle Class by Direction
04 August 2009

Bella Vista Bypass, Arkansas
Base Case Scenario, Electronic and Cash (Full Service) Toll Facility

Route 71 Northbound Annual Traffic					Bella Vista Bypass Northbound Annual Traffic					Total Traffic Northbound Annual Traffic				
	PV	LT	HT	Total		PV	LT	HT	Total		PV	LT	HT	Total
2013	640,000	10,000	40,000	690,000	2013	60,000	0	10,000	70,000	2013	700,000	10,000	50,000	760,000
2014	7,520,000	100,000	510,000	8,130,000	2014	770,000	20,000	80,000	870,000	2014	8,290,000	120,000	590,000	9,000,000
2015	7,450,000	90,000	500,000	8,040,000	2015	1,050,000	30,000	100,000	1,180,000	2015	8,500,000	120,000	600,000	9,220,000
2016	7,390,000	90,000	480,000	7,960,000	2016	1,300,000	30,000	130,000	1,460,000	2016	8,690,000	120,000	610,000	9,420,000
2017	7,340,000	80,000	470,000	7,890,000	2017	1,410,000	40,000	140,000	1,590,000	2017	8,750,000	120,000	610,000	9,480,000
2018	7,500,000	80,000	470,000	8,050,000	2018	1,600,000	40,000	160,000	1,800,000	2018	9,100,000	120,000	630,000	9,850,000
2019	7,670,000	90,000	480,000	8,240,000	2019	1,640,000	40,000	160,000	1,840,000	2019	9,310,000	130,000	640,000	10,080,000
2020	7,820,000	90,000	480,000	8,390,000	2020	1,670,000	40,000	160,000	1,870,000	2020	9,490,000	130,000	640,000	10,260,000
2021	7,970,000	90,000	490,000	8,550,000	2021	1,700,000	40,000	160,000	1,900,000	2021	9,670,000	130,000	650,000	10,450,000
2022	8,110,000	90,000	500,000	8,700,000	2022	1,770,000	40,000	160,000	1,970,000	2022	9,840,000	130,000	660,000	10,630,000
2023	8,260,000	90,000	500,000	8,850,000	2023	1,800,000	40,000	170,000	1,980,000	2023	10,030,000	130,000	670,000	10,830,000
2024	8,400,000	90,000	510,000	9,000,000	2024	1,820,000	50,000	170,000	2,020,000	2024	10,200,000	140,000	680,000	11,020,000
2025	8,560,000	100,000	510,000	9,150,000	2025	1,850,000	50,000	170,000	2,040,000	2025	10,360,000	150,000	680,000	11,190,000
2026	8,790,000	100,000	520,000	9,410,000	2026	1,880,000	50,000	170,000	2,070,000	2026	10,510,000	150,000	690,000	11,350,000
2027	8,930,000	100,000	520,000	9,550,000	2027	1,880,000	50,000	170,000	2,100,000	2027	10,670,000	150,000	690,000	11,510,000
2028	8,930,000	100,000	530,000	9,560,000	2028	1,910,000	50,000	170,000	2,130,000	2028	10,840,000	150,000	700,000	11,690,000
2029	9,060,000	100,000	530,000	9,590,000	2029	1,940,000	50,000	180,000	2,170,000	2029	11,000,000	150,000	710,000	11,860,000
2030	9,200,000	100,000	540,000	9,840,000	2030	1,970,000	50,000	180,000	2,200,000	2030	11,170,000	150,000	720,000	12,040,000
2031	9,290,000	100,000	540,000	9,930,000	2031	1,980,000	50,000	180,000	2,220,000	2031	11,280,000	150,000	720,000	12,150,000
2032	9,380,000	110,000	550,000	10,040,000	2032	2,010,000	50,000	180,000	2,240,000	2032	11,390,000	160,000	730,000	12,280,000
2033	9,470,000	110,000	550,000	10,130,000	2033	2,030,000	50,000	180,000	2,260,000	2033	11,500,000	160,000	730,000	12,390,000
2034	9,570,000	110,000	560,000	10,240,000	2034	2,050,000	50,000	180,000	2,280,000	2034	11,620,000	160,000	740,000	12,520,000
2035	9,660,000	110,000	570,000	10,340,000	2035	2,070,000	50,000	190,000	2,310,000	2035	11,730,000	160,000	740,000	12,650,000
2036	9,760,000	110,000	570,000	10,440,000	2036	2,090,000	50,000	190,000	2,330,000	2036	11,850,000	160,000	750,000	12,760,000
2037	9,860,000	110,000	580,000	10,550,000	2037	2,110,000	50,000	190,000	2,350,000	2037	11,970,000	160,000	770,000	12,900,000
2038	9,960,000	110,000	580,000	10,650,000	2038	2,130,000	50,000	190,000	2,370,000	2038	12,090,000	160,000	770,000	13,030,000
2039	10,060,000	110,000	590,000	10,760,000	2039	2,150,000	50,000	190,000	2,390,000	2039	12,210,000	160,000	780,000	13,150,000
2040	10,160,000	110,000	590,000	10,860,000	2040	2,170,000	50,000	200,000	2,420,000	2040	12,330,000	160,000	790,000	13,280,000
2041	10,260,000	120,000	600,000	10,980,000	2041	2,190,000	60,000	200,000	2,450,000	2041	12,450,000	180,000	800,000	13,430,000
2042	10,360,000	120,000	610,000	11,090,000	2042	2,220,000	60,000	200,000	2,480,000	2042	12,580,000	180,000	810,000	13,570,000
2043	10,460,000	120,000	610,000	11,200,000	2043	2,240,000	60,000	200,000	2,500,000	2043	12,710,000	180,000	810,000	13,700,000
2044	10,490,000	120,000	620,000	11,340,000	2044	2,340,000	60,000	200,000	2,600,000	2044	12,830,000	180,000	820,000	13,830,000
2045	10,600,000	120,000	620,000	11,340,000	2045	2,360,000	60,000	210,000	2,630,000	2045	12,960,000	180,000	830,000	13,970,000
2046	10,700,000	120,000	630,000	11,450,000	2046	2,380,000	60,000	210,000	2,650,000	2046	13,080,000	180,000	840,000	14,100,000
2047	10,810,000	120,000	640,000	11,550,000	2047	2,410,000	60,000	210,000	2,680,000	2047	13,220,000	180,000	850,000	14,250,000
2048	10,920,000	120,000	640,000	11,680,000	2048	2,430,000	60,000	210,000	2,700,000	2048	13,350,000	180,000	850,000	14,380,000
2049	11,030,000	120,000	650,000	11,800,000	2049	2,460,000	60,000	210,000	2,730,000	2049	13,490,000	180,000	860,000	14,530,000
2050	11,140,000	130,000	660,000	11,930,000	2050	2,480,000	60,000	220,000	2,760,000	2050	13,620,000	190,000	880,000	14,690,000

Route 71 Southbound Annual Traffic					Bella Vista Bypass Southbound Annual Traffic					Total Traffic Southbound Annual Traffic				
	PV	LT	HT	Total		PV	LT	HT	Total		PV	LT	HT	Total
2013	610,000	10,000	30,000	650,000	2013	60,000	0	10,000	70,000	2013	670,000	10,000	40,000	720,000
2014	7,250,000	70,000	480,000	7,800,000	2014	750,000	20,000	70,000	840,000	2014	8,000,000	90,000	550,000	8,640,000
2015	7,230,000	80,000	460,000	7,770,000	2015	980,000	20,000	100,000	1,100,000	2015	8,210,000	100,000	560,000	9,050,000
2016	7,190,000	70,000	440,000	7,700,000	2016	1,210,000	30,000	120,000	1,360,000	2016	8,400,000	100,000	560,000	9,260,000
2017	7,140,000	70,000	430,000	7,640,000	2017	1,320,000	30,000	130,000	1,480,000	2017	8,460,000	100,000	560,000	9,480,000
2018	7,300,000	70,000	440,000	7,810,000	2018	1,500,000	30,000	140,000	1,670,000	2018	8,800,000	100,000	580,000	9,480,000
2019	7,420,000	70,000	440,000	7,930,000	2019	1,580,000	30,000	150,000	1,760,000	2019	9,000,000	100,000	590,000	9,690,000
2020	7,450,000	70,000	450,000	7,970,000	2020	1,720,000	40,000	150,000	1,910,000	2020	9,170,000	110,000	600,000	9,880,000
2021	7,590,000	70,000	450,000	8,110,000	2021	1,760,000	40,000	150,000	1,950,000	2021	9,350,000	110,000	600,000	10,060,000
2022	7,730,000	80,000	460,000	8,270,000	2022	1,790,000	40,000	150,000	1,980,000	2022	9,520,000	120,000	610,000	10,250,000
2023	7,870,000	80,000	460,000	8,410,000	2023	1,820,000	40,000	150,000	2,010,000	2023	9,690,000	120,000	610,000	10,420,000
2024	8,000,000	80,000	470,000	8,550,000	2024	1,850,000	40,000	150,000	2,040,000	2024	9,850,000	120,000	620,000	10,590,000
2025	8,130,000	80,000	470,000	8,680,000	2025	1,880,000	40,000	160,000	2,080,000	2025	10,010,000	120,000	630,000	10,760,000
2026	8,250,000	80,000	480,000	8,810,000	2026	1,910,000	40,000	160,000	2,110,000	2026	10,160,000	120,000	640,000	10,920,000
2027	8,370,000	80,000	480,000	8,930,000	2027	1,940,000	40,000	160,000	2,140,000	2027	10,310,000	120,000	640,000	11,070,000
2028	8,500,000	80,000	490,000	9,070,000	2028	1,970,000	40,000	160,000	2,170,000	2028	10,470,000	120,000	650,000	11,240,000
2029	8,630,000	90,000	490,000	9,210,000	2029	2,000,000	40,000	160,000	2,200,000	2029	10,630,000	130,000	650,000	11,410,000
2030	8,760,000	90,000	500,000	9,350,000	2030	2,030,000	40,000	160,000	2,230,000	2030	10,790,000	130,000	660,000	11,580,000
2031	8,840,000	90,000	500,000	9,430,000	2031	2,050,000	40,000	170,000	2,260,000	2031	10,890,000	130,000	670,000	11,690,000
2032	8,930,000	90,000	510,000	9,530,000	2032	2,070,000	40,000	170,000	2,280,000	2032	11,000,000	130,000	680,000	11,810,000
2033	9,020,000	90,000	510,000	9,620,000	2033	2,090,000	40,000	170,000	2,300,000	2033	11,110,000	130,000	680,000	11,920,000
2034	9,110,000	90,000	520,000	9,720,000	2034	2,110,000	40,000	170,000	2,320,000	2034	11,220,000	130,000	690,000	12,040,000
2035	9,200,000	90,000	520,000	9,810,000	2035	2,130,000	40,000	170,000	2,340,000	2035	11,330,000	130,000	690,000	12,150,000
2036	9,300,000	90,000	530,000	9,920,000	2036	2,150,000	40,000	170,000	2,360,000	2036	11,450,000	130,000	700,000	12,280,000
2037	9,390,000	90,000	530,000	10,010,000	2037	2,170,000	40,000	180,000	2,390,000	2037	11,560,000	130,000	710,000	12,400,000
2038	9,480,000	90,000	540											

Table 4
AADT by Vehicle Class by Direction
04 August 2009
Bella Vista Bypass, Arkansas
Base Case Scenario, Electronic and Cash (Full Service) Toll Facility

Route 71 Northbound AADT					Bella Vista Bypass Northbound AADT					Total Traffic Northbound AADT				
Year	PV	LT	HT	Total	Year	PV	LT	HT	Total	Year	PV	LT	HT	Total
2013	1,800	0	100	1,900	2013	200	0	0	200	2013	2,000	0	100	2,100
2014	20,600	300	1,400	22,300	2014	2,100	100	200	2,400	2014	22,700	400	1,600	24,700
2015	20,400	300	1,400	22,000	2015	2,900	100	300	3,300	2015	23,300	300	1,700	25,300
2016	20,200	200	1,300	21,700	2016	3,600	100	400	4,100	2016	23,800	300	1,700	25,800
2017	20,100	200	1,300	21,600	2017	3,900	100	400	4,400	2017	24,000	300	1,700	26,000
2018	20,500	200	1,300	22,000	2018	4,400	100	400	4,900	2018	24,900	300	1,700	26,900
2019	21,000	200	1,300	22,500	2019	4,500	100	400	5,000	2019	25,500	300	1,700	27,500
2020	21,400	200	1,300	22,900	2020	4,600	100	400	5,100	2020	26,000	300	1,700	28,000
2021	21,800	200	1,300	23,300	2021	4,700	100	400	5,200	2021	26,500	300	1,700	28,500
2022	22,200	200	1,400	23,800	2022	4,700	100	400	5,200	2022	26,900	300	1,800	29,000
2023	22,600	200	1,400	24,200	2023	4,800	100	500	5,400	2023	27,400	300	1,900	29,600
2024	23,000	200	1,400	24,600	2024	4,900	100	500	5,500	2024	27,900	300	1,900	30,100
2025	23,400	300	1,400	25,100	2025	5,000	100	500	5,600	2025	28,400	400	1,900	30,700
2026	23,700	300	1,400	25,400	2026	5,100	100	500	5,700	2026	28,800	400	1,900	31,100
2027	24,100	300	1,400	25,800	2027	5,200	100	500	5,800	2027	29,300	400	1,900	31,600
2028	24,500	300	1,500	26,300	2028	5,200	100	500	5,800	2028	29,700	400	2,000	32,100
2029	24,800	300	1,500	26,600	2029	5,300	100	500	5,900	2029	30,100	400	2,000	32,500
2030	25,200	300	1,500	27,000	2030	5,400	100	500	6,000	2030	30,600	400	2,000	33,000
2031	25,500	300	1,500	27,300	2031	5,500	100	500	6,100	2031	31,000	400	2,000	33,400
2032	25,700	300	1,500	27,500	2032	5,500	100	500	6,100	2032	31,200	400	2,000	33,600
2033	25,900	300	1,500	27,700	2033	5,600	100	500	6,200	2033	31,500	400	2,000	33,900
2034	26,200	300	1,600	28,000	2034	5,600	100	500	6,200	2034	31,800	400	2,000	34,200
2035	26,500	300	1,600	28,400	2035	5,700	100	500	6,300	2035	32,200	400	2,100	34,700
2036	26,700	300	1,600	28,600	2036	5,700	100	500	6,300	2036	32,400	400	2,100	34,900
2037	27,000	300	1,600	28,900	2037	5,800	100	500	6,400	2037	32,800	400	2,100	35,300
2038	27,300	300	1,600	29,200	2038	5,800	100	500	6,400	2038	33,100	400	2,100	35,600
2039	27,600	300	1,600	29,500	2039	5,900	100	500	6,500	2039	33,500	400	2,100	36,000
2040	27,800	300	1,600	29,700	2040	5,900	100	500	6,500	2040	33,700	400	2,100	36,200
2041	28,100	300	1,700	30,000	2041	6,000	200	500	6,700	2041	34,100	500	2,100	36,700
2042	28,400	300	1,700	30,400	2042	6,100	200	500	6,800	2042	34,500	500	2,200	37,200
2043	28,700	300	1,700	30,700	2043	6,100	200	500	6,800	2043	34,800	500	2,200	37,500
2044	28,700	300	1,700	30,700	2044	6,400	200	500	7,100	2044	35,100	500	2,200	37,800
2045	29,000	300	1,700	31,000	2045	6,500	200	600	7,300	2045	35,500	500	2,300	38,300
2046	29,300	300	1,700	31,300	2046	6,500	200	600	7,300	2046	35,800	500	2,300	38,600
2047	29,600	300	1,800	31,700	2047	6,600	200	600	7,400	2047	36,200	500	2,400	39,100
2048	29,900	300	1,800	32,000	2048	6,700	200	600	7,500	2048	36,600	500	2,400	39,500
2049	30,200	300	1,800	32,300	2049	6,700	200	600	7,500	2049	36,900	500	2,400	39,800
2050	30,500	400	1,800	32,700	2050	6,800	200	600	7,600	2050	37,300	600	2,400	40,300

Route 71 Southbound AADT					Bella Vista Bypass Southbound AADT					Total Traffic Southbound AADT				
Year	PV	LT	HT	Total	Year	PV	LT	HT	Total	Year	PV	LT	HT	Total
2013	1,700	0	100	1,800	2013	200	0	0	200	2013	1,900	0	100	2,000
2014	19,900	200	1,300	21,400	2014	2,100	100	200	2,400	2014	22,000	300	1,500	23,800
2015	19,800	200	1,300	21,300	2015	2,700	100	300	3,100	2015	22,500	300	1,600	24,400
2016	19,700	200	1,200	21,100	2016	3,300	100	300	3,700	2016	23,000	300	1,500	24,800
2017	19,600	200	1,200	21,000	2017	3,600	100	400	4,100	2017	23,200	300	1,600	25,100
2018	20,000	200	1,200	21,400	2018	4,100	100	400	4,600	2018	24,100	300	1,600	26,000
2019	20,300	200	1,200	21,700	2019	4,300	100	400	4,800	2019	24,600	300	1,600	26,500
2020	20,400	200	1,200	21,800	2020	4,700	100	400	5,200	2020	25,100	300	1,600	27,000
2021	20,800	200	1,200	22,200	2021	4,800	100	400	5,300	2021	25,600	300	1,600	27,500
2022	21,200	200	1,300	22,700	2022	4,900	100	400	5,400	2022	26,100	300	1,700	28,100
2023	21,600	200	1,300	23,100	2023	5,000	100	400	5,500	2023	26,600	300	1,700	28,600
2024	21,900	200	1,300	23,400	2024	5,100	100	400	5,600	2024	27,000	300	1,700	29,000
2025	22,300	200	1,300	23,800	2025	5,200	100	400	5,700	2025	27,500	300	1,700	29,500
2026	22,600	200	1,300	24,100	2026	5,200	100	400	5,700	2026	27,800	300	1,700	29,800
2027	22,900	200	1,300	24,400	2027	5,300	100	400	5,800	2027	28,200	300	1,700	30,200
2028	23,300	200	1,300	24,800	2028	5,400	100	400	5,900	2028	28,700	300	1,700	30,700
2029	23,600	200	1,300	25,100	2029	5,500	100	400	6,000	2029	29,100	300	1,800	31,100
2030	24,000	200	1,400	25,600	2030	5,600	100	400	6,100	2030	29,600	300	1,800	31,700
2031	24,200	200	1,400	25,800	2031	5,600	100	500	6,200	2031	29,800	300	1,900	32,000
2032	24,500	200	1,400	26,100	2032	5,700	100	500	6,300	2032	30,200	300	1,900	32,400
2033	24,700	200	1,400	26,300	2033	5,700	100	500	6,300	2033	30,400	300	1,900	32,600
2034	25,000	200	1,400	26,600	2034	5,800	100	500	6,400	2034	30,800	300	1,900	33,000
2035	25,200	200	1,400	26,800	2035	5,800	100	500	6,400	2035	31,000	300	1,900	33,200
2036	25,500	200	1,500	27,200	2036	5,900	100	500	6,500	2036	31,400	300	2,000	33,700
2037	25,700	200	1,500	27,400	2037	5,900	100	500	6,500	2037	31,600	300	2,000	33,900
2038	26,000	200	1,500	27,700	2038	6,000	100	500	6,600	2038	32,000	300	2,000	34,300
2039	26,200	200	1,500	27,900	2039	6,100	100	500	6,700	2039	32,300	300	2,000	34,600
2040	26,500	300	1,500	28,300	2040	6,100	100	500	6,700	2040	32,600	400	2,000	35,000
2041	26,800	300	1,500	28,600	2041	6,200	100	500	6,800	2041	33,000	400	2,000	35,400
2042	27,000	300	1,500	28,800	2042	6,200	100	500	6,800	2042	33,200	400	2,000	35,600
2043	27,300	300	1,600	29,200	2043	6,300	100	500	6,900	2043	33,600	400	2,100	36,100
2044	27,600	300	1,600	29,500	2044	6,400	100	500	7,000	2044	34,000	400	2,100	36,500
2045	27,900	300	1,600	29,800	2045	6,400	100	500	7,000	2045	34,300	400	2,100	36,800
2046	28,100	300	1,600	30,000	2046	6,500	100	500	7,100	2046	34,600	400	2,100	37,100
2047	28,400	300	1,600	30,300	2047	6,600	100	500	7,200	2047	35,000	400	2,100	37,500
2048	28,700	300	1,600	30,600	2048	6,700	100	500	7,300	2048	35,400	400	2,100	37,900
2049	29,000	300	1,600	30,900	2049	6,700	100	500	7,300	2049	35,700	400	2,100	38,200
2050	29,300	300	1,700	31,300	2050	6,800	100	500	7,400	2050	36,100	400	2,200	38,700

Note: These numbers include ramp-up

Table 5
Growth Rates by Year by Vehicle Class
04 August 2009
Bella Vista Bypass, Arkansas
Base Case Scenario, Electronic and Cash (Full Service) Toll Facility

	Passenger Vehicles	Light Trucks	Heavy Trucks
2010	0.5%	0.5%	1.2%
2011	1.0%	1.0%	1.1%
2012	1.5%	1.5%	1.6%
2013	2.5%	2.5%	2.0%
2014	2.5%	2.5%	1.9%
2015	2.5%	2.5%	1.8%
2016	2.4%	2.4%	1.7%
2017	2.4%	2.4%	1.6%
2018	2.3%	2.3%	1.4%
2019	2.2%	2.2%	1.3%
2020	2.0%	2.0%	1.3%
2021	1.9%	1.9%	1.2%
2022	1.8%	1.8%	1.2%
2023	1.8%	1.8%	1.1%
2024	1.7%	1.7%	1.1%
2025	1.6%	1.6%	1.0%
2026	1.5%	1.5%	1.0%
2027	1.5%	1.5%	1.0%
2028	1.5%	1.5%	1.0%
2029	1.5%	1.5%	1.0%
2030	1.5%	1.5%	1.0%
2031	1.0%	1.0%	1.0%
2032	1.0%	1.0%	1.0%
2033	1.0%	1.0%	1.0%
2034	1.0%	1.0%	1.0%
2035	1.0%	1.0%	1.0%
2036	1.0%	1.0%	1.0%
2037	1.0%	1.0%	1.0%
2038	1.0%	1.0%	1.0%
2039	1.0%	1.0%	1.0%
2040	1.0%	1.0%	1.0%
2041	1.0%	1.0%	1.0%
2042	1.0%	1.0%	1.0%
2043	1.0%	1.0%	1.0%
2044	1.0%	1.0%	1.0%
2045	1.0%	1.0%	1.0%
2046	1.0%	1.0%	1.0%
2047	1.0%	1.0%	1.0%
2048	1.0%	1.0%	1.0%
2049	1.0%	1.0%	1.0%
2050	1.0%	1.0%	1.0%

Assumed Weekday Diversion Rates and Trip Savings

Route 71 Northbound

	Potential Trips									Non-Potential Trips (%) ¹
	Short Trips			Medium Trips			Long Trips			
	%	Time Savings (min)	% Diversion ²	%	Time Savings (min)	% Diversion ³	%	Time Savings (min)	% Diversion ³	
Passenger Vehicles	34%	6	25%	7%	10	46%	19%	12	51%	40%
Off-peak PV	34%	5	17%	7%	8	32%	19%	9	34%	40%
Light Trucks	12%	7	41%	2%	11	44%	69%	13	39%	17%
Heavy Trucks	12%	8	32%	2%	12	35%	69%	14	29%	17%

Route 71 Southbound

	Potential Trips									Non-Potential Trips (%) ¹
	Short Trips			Medium Trips			Long Trips			
	%	Time Savings (min)	% Diversion ²	%	Time Savings (min)	% Diversion ³	%	Time Savings (min)	% Diversion ³	
Passenger Vehicles	34%	6	25%	7%	10	47%	19%	12	51%	40%
Off-peak PV	34%	5	19%	7%	8	33%	19%	9	35%	40%
Light Trucks	12%	7	41%	2%	11	44%	69%	13	39%	17%
Heavy Trucks	12%	8	32%	2%	12	35%	69%	14	29%	17%

¹ Trips East of Route 71 were excluded from calculations since these trips will not be captured on the toll facility

² Shifted diversion curves for passenger vehicle and truck short trips to account for short distance of trip and high toll rate per mile

³ Truck trips reduced by 20% and 10% for long and medium trips respectively due to high counts of trucks with sleeper cabs reducing the value of time savings

Trip Purpose - Passenger Vehicles⁴

	Peak		Off-Peak ⁵	
	Route 71 NB	Route 71 SB	Route 71 NB	Route 71 SB
Work	73.40%	81.30%	64.78%	59.17%
School	3.60%	2.30%	4.77%	5.02%
Shopping	14.20%	3.50%	18.80%	7.64%
Recreation	4.30%	5.20%	5.69%	11.35%
Other	3.70%	7.70%	4.90%	16.81%
Social	0.80%	0.00%	1.06%	0.00%
Total	100.00%	100.00%	100.00%	100.00%

⁴ Trip Purpose data taken from WSA Report

⁵ % of Work trips reduced by 2/3 and trip purposes reweighted for off-peak trips

% Diversion by Trip Purpose - Trucks

	Time Savings (min)		
	7	11	13
Light Trucks	46%	54%	59%

	Time Savings (min)		
	8	12	14
Heavy Trucks	37%	45%	49%

% Diversion by Trip Purpose - Passenger Vehicles

	Peak Trip Time Savings (min)			Off-Peak Trip Time Savings (min)		
	6	10	12	5	8	9
Work	37%	47%	52%	24%	31%	33%
School	35%	42%	46%	23%	28%	29%
Shopping	36%	43%	47%	25%	30%	32%
Recreation	44%	48%	50%	38%	42%	43%
Other	44%	48%	50%	38%	42%	43%
Social	44%	48%	50%	38%	42%	43%
Weighted Average NB⁶	37%	46%	51%	26%	32%	34%
Weighted Average SB⁶	37%	47%	51%	28%	33%	35%

⁶ Weighted average calculated using diversion %s and trip purpose %s

Assumed Weekend Diversion Rates and Trip Savings

Route 71 Northbound

	Potential Trips									Non-Potential Trips (%) ¹
	Short Trips			Medium Trips			Long Trips			
	%	Time Savings (min)	% Diversion ²	%	Time Savings (min)	% Diversion ³	%	Time Savings (min)	% Diversion ³	
Passenger Vehicles	34%	6	25%	7%	10	46%	19%	12	50%	40%
Off-peak PV	34%	5	19%	7%	8	33%	19%	9	35%	40%
Light Trucks	12%	7	41%	2%	11	44%	69%	13	39%	17%
Heavy Trucks	12%	8	32%	2%	12	35%	69%	14	29%	17%

Route 71 Southbound

	Potential Trips									Non-Potential Trips (%) ¹
	Short Trips			Medium Trips			Long Trips			
	%	Time Savings (min)	% Diversion ²	%	Time Savings (min)	% Diversion ³	%	Time Savings (min)	% Diversion ³	
Passenger Vehicles	34%	6	27%	7%	10	47%	19%	12	51%	40%
Off-peak PV	34%	5	22%	7%	8	37%	19%	9	38%	40%
Light Trucks	12%	7	41%	2%	11	44%	69%	13	39%	17%
Heavy Trucks	12%	8	32%	2%	12	35%	69%	14	29%	17%

¹ Trips East of Route 71 were excluded from calculations since these trips will not be captured on the toll facility

² Shifted diversion curves for passenger vehicle and truck short trips to account for short distance of trip and high toll rate per mile

³ Truck trips reduced by 20% and 10% for long and medium trips respectively due to high counts of trucks with sleeper cabs reducing the value of time savings

Trip Purpose - Passenger Vehicles⁴

	Peak		Off-Peak ⁵	
	Route 71 NB	Route 71 SB	Route 71 NB	Route 71 SB
Work	36.70%	40.65%	32.39%	29.59%
School	0.00%	0.00%	0.00%	0.00%
Shopping	39.08%	12.67%	41.74%	15.03%
Recreation	11.83%	18.82%	12.64%	22.33%
Other	10.18%	27.87%	10.88%	33.06%
Social	2.20%	0.00%	2.35%	0.00%
Total	100.00%	100.00%	100.00%	100.00%

⁴ Trip Purpose data taken from WSA Report

⁵ % of Work trips reduced by 1/2 of weekday, school trips were set at 0%, and other trip purposes reweighted accordingly.

% Diversion by Trip Purpose - Trucks

	Time Savings (min)		
	7	11	13
Light Trucks	46%	54%	59%

	Time Savings (min)		
	8	12	14
Heavy Trucks	37%	45%	49%

% Diversion by Trip Purpose - Passenger Vehicles

	Peak Trip Time Savings (min)			Off-Peak Trip Time Savings (min)		
	6	10	12	5	8	9
Work	37%	47%	52%	24%	31%	33%
School	35%	42%	46%	23%	28%	29%
Shopping	36%	43%	47%	25%	30%	32%
Recreation	44%	48%	50%	38%	42%	43%
Other	44%	48%	50%	38%	42%	43%
Social	44%	48%	50%	38%	42%	43%
Weighted Average NB ⁶	38%	46%	50%	28%	33%	35%
Weighted Average SB ⁶	40%	47%	51%	32%	37%	38%

⁶ Weighted average calculated using diversion %s and trip purpose %s