

**APPENDIX A:**

**TRAFFIC FORECAST METHODOLOGY  
REPORT**

**Traffic Forecast Methodology Report  
Jefferson County Traffic Forecasts  
Billtown Road (KY 1819)  
Item No. 5-8203.00**

The purpose of this document is to outline the methodology proposed by PB Americas, Inc. (PB) to prepare traffic forecasts for Billtown Road (KY 1819) in Jefferson County, Kentucky as part of the Billtown Road Scoping Study for the Kentucky Transportation Cabinet (KYTC). The Billtown Road study area extends from Ruckriegel Parkway in the north to the Gene Snyder Freeway (I-265) ramps in the south. Traffic forecasts will be prepared for a No-Build scenario as well as multiple Build alternatives.

### Traffic Volumes

The average daily traffic (ADT) volumes used for this project included traffic counts provided by the KYTC. The counts provided by the KYTC were conducted during the years of 2003 - 2006, and included the following count stations:

- Billtown Road (KY 1819): Station 323 – 2005
- Billtown Road (KY 1819): Station 325 – 2005
- Billtown Road (KY 1819): Station 498 – 2003
- Billtown Road (KY 1819): Station 496 – 2004

The count locations are shown in **Figure 1** attached to the end of this report. Each of the counts will be forecasted to a base year of 2006 using historical trends.

In addition, turning movement counts were required at the 14 study intersections for both AM peak (7:00 AM – 9:00 AM) and PM peak (4:00 PM – 6:00 PM) periods. KYTC provided counts for seven key intersections within the study area, which included:

- Billtown Road (KY 1819) / Ruckriegel Parkway
- Billtown Road (KY 1819) / Saint Rene Road
- Billtown Road (KY 1819) / Michael Edward Drive
- Billtown Road (KY 1819) / Mary Dell Lane
- Billtown Road (KY 1819) / Fairground Road
- Billtown Road (KY 1819) / Shaffer Lane
- Billtown Road (KY 1819) / Gellhaus Lane

PB conducted turning movement counts at the remaining seven intersections in August 2006. These intersections included:

- Billtown Road (KY 1819) / Colonnades Place
- Billtown Road (KY 1819) / Vintage Creek Drive
- Billtown Road (KY 1819) / Shady Acres Lane
- Billtown Road (KY 1819) / Lovers Lane
- Billtown Road (KY 1819) / Easum Road
- Billtown Road (KY 1819) / I-265 (Northbound / Eastbound)
- Billtown Road (KY 1819) / I-265 (Southbound / Westbound)

Growth Rate

Growth rates for this study are based upon a historical traffic growth analysis along Billtown Road within the study area. The analysis utilized traffic counts obtained from the KYTC's 'CTS' traffic count program which includes counts from 1963 to 2006.

The historical counts were entered into a spreadsheet provided by KYTC. The spreadsheet calculates growth rates using both exponential and trendline analyses. The growth rates are then averaged for each count station. Based on this, the growth rates identified for each segment within the study area are shown in **Table 1**. For reference, **Figure 2** illustrates the various roadway segments.

**Table 1: Proposed Growth Rates**

Segment	Route	From	To	Historic Growth Rate	Proposed Growth Rate
A	KY 1819	South of Study Area	I-265	6.6%	7.5%
B	KY 1819	I-265	KY 1065	7.5%	7.5%
C	KY 1819	KY 1065	Shady Acres Lane	0.8%	7.5%
D	KY 1819	Shady Acres Lane	North of Study Area	8.0%	7.5%

It should be noted that there is limited historical count data for Segment C. Therefore, it was assumed that this segment would have similar growth as the sections before and after. As the growth rates were similar in magnitude, a common growth rate of 7.5% was assumed for the corridor.

Also, it should be noted that the growth rates reflect historical trends along each segment and do not include specific developments that may be constructed within the project area. PB met with Louisville Metro Planning and Design Services on October 24, 2006 to discuss known developments within the study area.

K Factor

K factors for this study were based upon field data as well as data collected by the Kentucky Transportation Cabinet. Where possible, the known K Factor was taken directly from the collected data. For routes without known K Factors, a systemwide average was used. Proposed K factors for the study area routes are shown in **Table 2**.

**Table 2: Proposed K Factors**

Segment	Route	From	To	Proposed AM K Factor	Proposed PM K Factor
A	KY 1819	South of Study Area	I-265	11.0%	13.3%
B	KY 1819	I-265	KY 1065	9.2%	10.8%
C	KY 1819	KY 1065	Shady Acres Lane	10.0%	11.2%
D	KY 1819	Shady Acres Lane	North of Study Area	9.3%	10.6%

Truck Percentages

Vehicle classification data was obtained from two sources:

- Traffic count data obtained through the data collection task (road tube counts from KYTC and intersection turning movement counts); and
- Vehicle classification data available from KYTC's Vehicle Classification (VCR) Viewer.

Daily truck percentages obtained from the road tube counts or from the VCR Viewer were used as a primary source. **Table 3** provides base year daily truck percentages for this project.

**Table 3: Truck Percentages**

Segment	Route	From	To	Proposed ADT Truck Percentage	Proposed DHV Truck Percentage
A	KY 1819	South of Study Area	I-265	5.4%	3.3%
B	KY 1819	I-265	KY 1065	4.6%	3.1%
C	KY 1819	KY 1065	Shady Acres Lane	4.6%	3.1%
D	KY 1819	Shady Acres Lane	North of Study Area	4.6%	3.1%

Population

Population data was obtained from the Kentucky State Data Center for both Jefferson County and Kentucky. **Table 4** displays the historical population growth while **Table 5** displays population projections.

**Table 4: Historical Population Growth**

Area	1970	1980	1990	2000	% Growth (1990-2000)
Kentucky	3,220,711	3,660,334	3,686,892	4,041,769	9.7%
Jefferson County	695,055	684,648	665,123	693,604	4.3%

Source: Kentucky State Data Center

**Table 5: Population Forecasts**

Area	2000	2010	2020	2030	% Growth (2000-2030)
Kentucky	4,041,769	4,326,490	4,660,703	4,912,621	21.5%
Jefferson County	693,604	710,120	738,732	763,393	10.1%

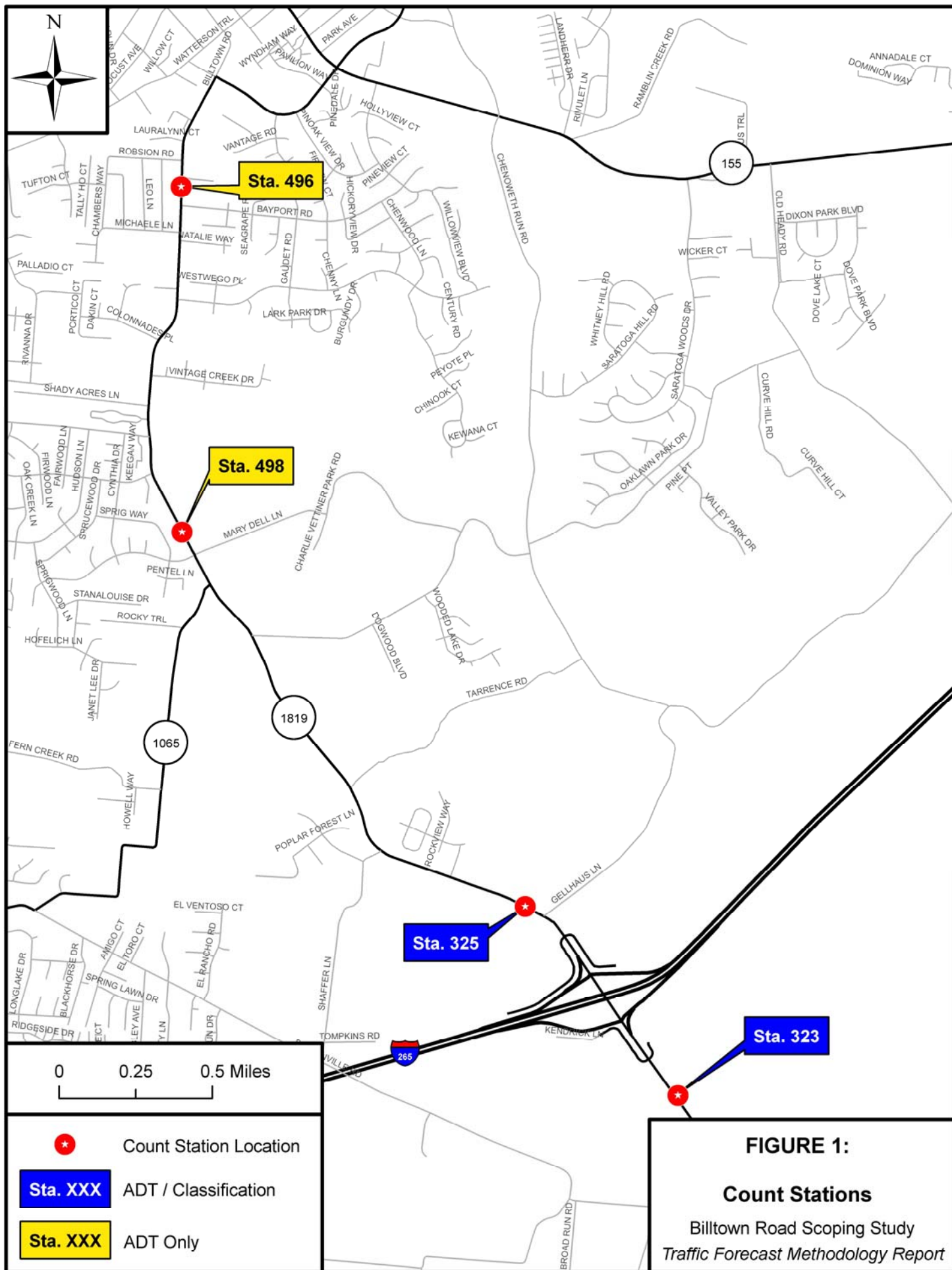
Source: Kentucky State Data Center

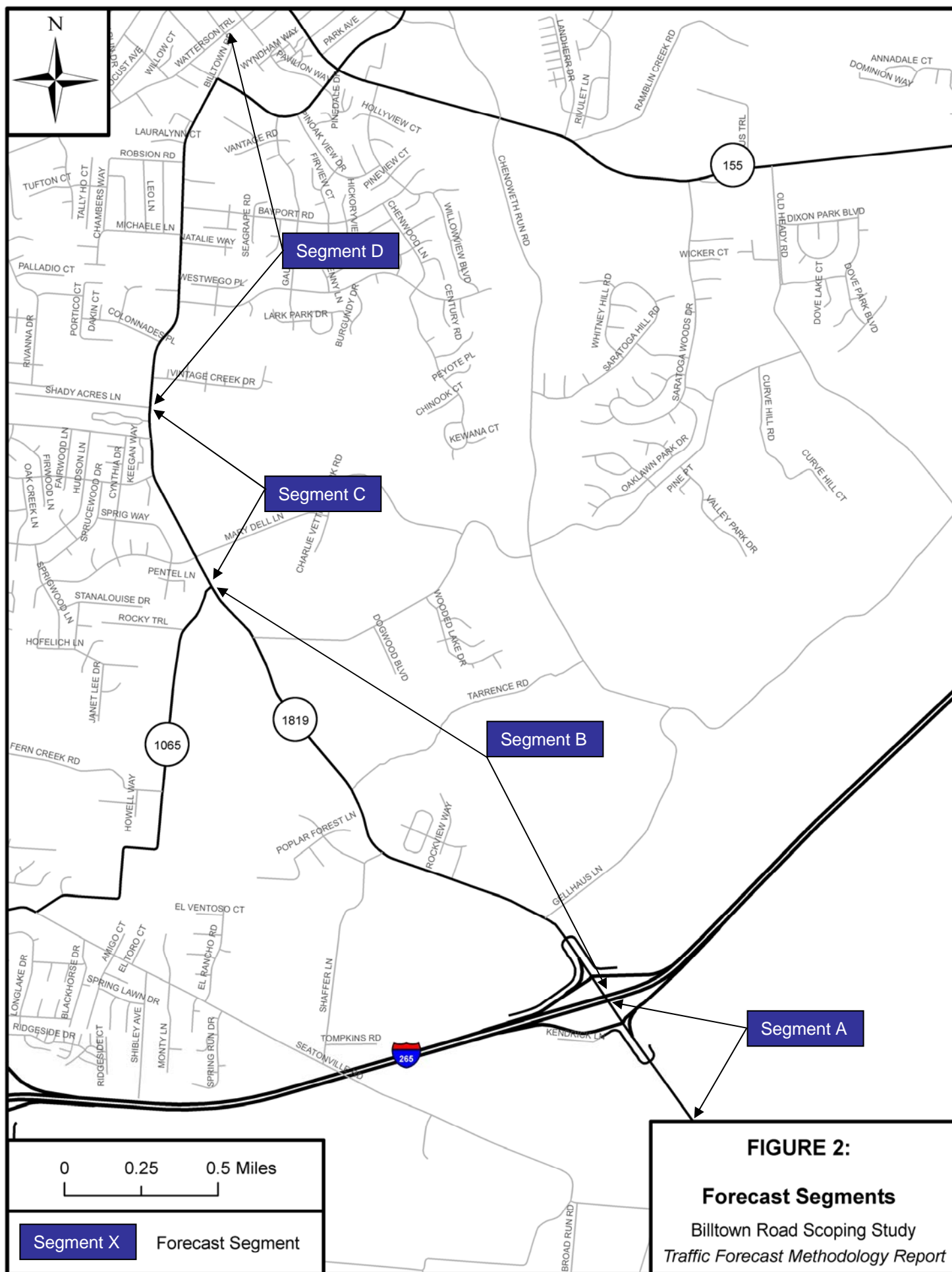
As shown in **Table 4**, the population of Jefferson County increased 4.3% from 1990 to 2000 compared to 9.7% for Kentucky during the same time period. The population of Jefferson County is expected to increase by 10.1% between 2000 and 2030, at a rate of nearly 0.32% per year. This compares to a growth of 21.5% in Kentucky at a rate of 0.65% per year.

Other Items

Other items to be considered in the traffic forecast include:

- The base year for the forecasts is Year 2006.
- Both intersections and segments will be forecasted to Year 2010 using the applied growth rates.
- Only segments will be forecasted to Year 2030. The Kentuckiana Regional Planning and Development Agency (KIPDA) travel demand model will be utilized to develop growth factors and volumes for 2030 in both the No-Build and Build scenarios.





**To:** File

**From:** Scott Walker

**Date:** February 28, 2007

**Subject:** Short-term Traffic Forecasting Growth Rates

The purpose of this memo is to briefly discuss the near-term (2010) growth rates used for the Billtown Road Scoping Study. Growth rates were necessary for this study in order to forecast intersection turning movement volumes to the Year 2010. Alternate analyses were then conducted for each intersection in order to identify possible short-term improvement alternatives that could reduce or eliminate the current or anticipated traffic operational issues at each intersection. It should be noted that the growth rates were applied only to short-term forecasts. All long-term (i.e., Year 2030) forecast information was provided by KIPDA.

The growth rate used by PB for this study was 7.5% per year. This is higher than the growth rate of 5.0% per year suggested by KYTC Division of Planning, following a review of the Billtown Road Traffic Forecasting Methodology. On Monday, February 26, PB spoke with KYTC via telephone regarding the development of the growth rates. The discussion included a look at historical growth rates and the methodology used by each to calculate the growth rates.

As a follow-up to the telephone call, PB calculated the impact of using a 5.0% growth rate versus a 7.5% growth rate. Over four years, a 7.5% growth rate yields a total increase of 33.5% from 2006 volumes while a 5.0% growth rate yields a total increase of 21.6% increase from 2006 volumes. If the 5.0% growth rate is grown two additional years (i.e., Year 2012), the cumulative growth would be 34%, which is just above the 7.5% grown over four years. Therefore, based on these calculations, approximately two years separate the realization of the expected traffic when using the different growth rates. Refer to the attached table for a more detailed comparison of these growth rates and the resulting differences.

Based on this review, it is recommended that changes to the growth rate used by PB (7.5%) are not necessary at this time, for the following reasons:

- The difference in the growth rate is not expected to have an impact on the recommendations for each intersection since the majority of the traffic operational issues exist both in the base year (2006) and the short-term future year (2010).
- Funding is relatively limited for this project. Many of the alternatives recommended for this study will not be implemented by the year 2010. It may take several more years before some of the near-term projects or an ultimate reconstruction of the corridor is funded and constructed.
- The forecasts were not developed for design purposes.

The above analysis will be included in the final report to ensure proper documentation of all technical analysis.

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## Billtown Road Growth Rates

The purpose of this sheet is to explore the difference between using a 5.0% growth rate along Billtown Road compared to a 7.5% growth rate.

Step 1: Calculate growth for 2010 using different ADTs and different growth rates.

Year	Growth Rate	Test Volumes					
		1000	2000	3000	4000	5000	10000
2006	5.00%	1,216	2,431	3,647	4,862	6,078	12,155
2010	7.50%	1,335	2,671	4,006	5,342	6,677	13,355

Step 2: Calculate 5.0% growth to determine year when volumes match 7.5% growth rate.

Year	Growth Rate	Test Volumes					
		1000	2000	3000	4000	5000	10000
2010	5.00%	1,216	2,431	3,647	4,862	6,078	12,155
2011	5.00%	1,276	2,553	3,829	5,105	6,381	12,763
2012	5.00%	1,340	2,680	4,020	5,360	6,700	13,401
2013	5.00%	1,407	2,814	4,221	5,628	7,036	14,071
2014	5.00%	1,477	2,955	4,432	5,910	7,387	14,775
2015	5.00%	1,551	3,103	4,654	6,205	7,757	15,513
2016	5.00%	1,629	3,258	4,887	6,516	8,144	16,289

As shown, the higher growth rate for 2010 is equal to using a 5.0% growth rate until Year 2012.