



Memorandum

To: Matt Van Schouwen, City of Sioux Center
Murray Hulstein, City of Sioux Center

Date: November 24, 2014

From: Greg Karssen, Mark Perington – Snyder & Associates, Inc.

CC: Brian Catus, Iowa DOT District 3

RE: US 75 Traffic Forecasting
US 75 Corridor Study
Sioux Center, IA
CS-TSF-7055(625)—85-84
S&A Project No.: 113.0372

Future traffic forecasts are typically calculated based on historical traffic data or known land use changes. A planning “rule of thumb” is to review historical data as far back as one is projecting in the future. For the purposes of analyzing US 75 traffic volumes, historical traffic data is utilized as well as other available socioeconomic factors for the City and County surrounding area. While other factors play a determining role in population and traffic projections, these factors can corroborate traffic data.

Historic Traffic Volumes

Traffic along US 75 has exhibited a steady growth over the last 30 years. Table 1 shows Annual Average Daily Traffic (AADT, vehicles per day) along US 75 near 3rd Street N over the 35 years of available count history. Table 2 shows AADT traffic volumes along the US 75 corridor for the most recent count years 2011 and 2014. While there was a statewide drop in traffic volumes from 2003 to 2007, traffic has been on an increasing trend through years 2011 and 2014, and this is reflected in the Sioux Center traffic data.

Table 1
Historic US 75 Traffic Volumes Near 3rd Street N

Location	Year	AADT (vpd)
South of 3rd Street N	1979	7,230
South of 3rd Street N	1983	8,700
Between 1st Street W and 7th Street N	1987	8,350
Between 1st Street W and 7th Street N	1991	10,200
South of 3rd Street N	1995	11,195
South of 3rd Street N	1999	10,600
South of 3rd Street N	2003	13,400
South of 3rd Street N	2007	11,400
North of 1st Street N	2011	12,100
South of 3 rd Street N	2014	12,400

Table 2
US 75 AADT Comparison from 2011 to 2014

Location	2011 AADT (vpd)	2014 AADT (vpd)	% Change
North of 7 th St N	9,000	9,950	+10.5%
North of 5 th St N	10,100	11,600	+14.9%
North of 2 nd St N	12,100	12,400	+2.5%
South of 2 nd St S	12,000	12,800	+6.7%
South of 9 th St S	12,000	13,800	+15.0%

Iowa DOT Statewide Traffic Model (I-TRAM)

Iowa DOT Office of Systems was also consulted to check traffic forecasts for the larger northwest Iowa regional area to compare trends. Based on review by Iowa DOT staff the newly updated model represents a conservative growth to little growth in to the future. However with further review of the model, staff expressed some moderate amount of growth is likely with continued overall growth in the region.

Population / New Housing Permits

The City of Sioux Center has experienced a consistent growth rate over the past 40 years, growing at an annualized percentage of approximately 1.6-2.0% per year, as illustrated in Table 3 showing census population and percent change over the census decade.

Table 3
City and County Population

Year	Sioux Center		Sioux County	
	Population	% Change *	Population	% Change *
1970	3,450	--	27,996	--
1980	4,588	33%	30,813	10%
1990	5,074	11%	29,903	-3%
2000	6,002	18%	31,589	6%
2010	7,048	17%	33,704	7%

* Percent difference as comparison to prior 10 year period

Similar data that can be analyzed include housing construction. This provides additional information about future growth as they represent households with younger children who will likely remain in the community for a longer period of time. In addition, residents in new homes and/or with children will generate additional trips from home to work, school, and shopping.

Historic single family dwelling unit construction permits issued per year over the last 14 years vary from 18 to 43, with an average of 27 SF permits per year.

Sioux County Vehicle Registration Data

Iowa DOT data regarding vehicle registrations in Sioux County provides another source of data. Table 4 shows that there has been an increase in vehicle registrations over the available 16-year data period from 1998-2013.

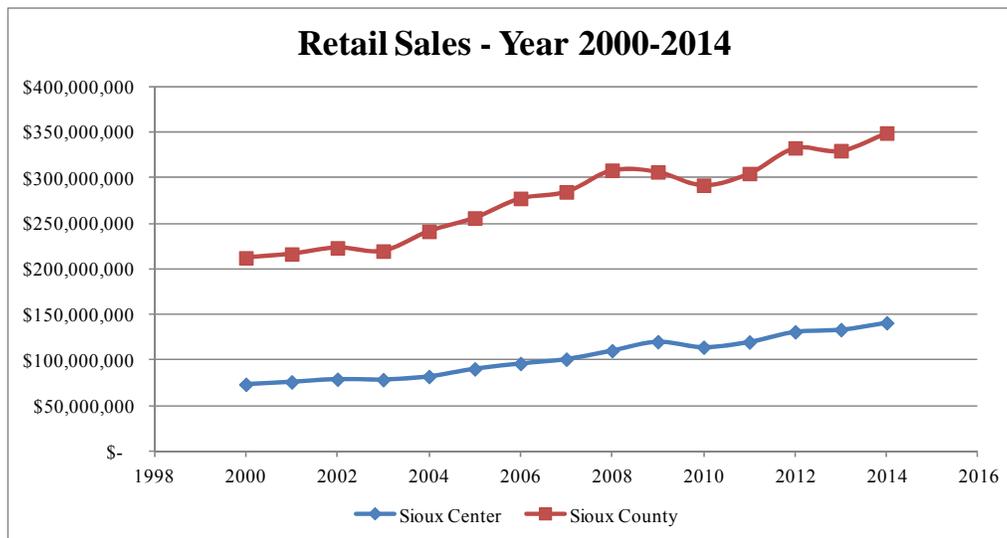
Table 4
Sioux County Vehicle Registrations

Year	Total Registrations	% Change
1998	37,052	---
2006	46,906	+27%
2013	51,572	+10%

Local and Regional Economic Data

Retail sales data provided by the City indicate a steady growth in retail sales in the City of Sioux Center and Sioux County, with City Retail sales growing from approximately \$73 million in year 2000 to \$140 million in 2014, as seen in Figure 1. While this chart does not account for inflation/CPI, it does indicate a general upward trend for the City and County area.

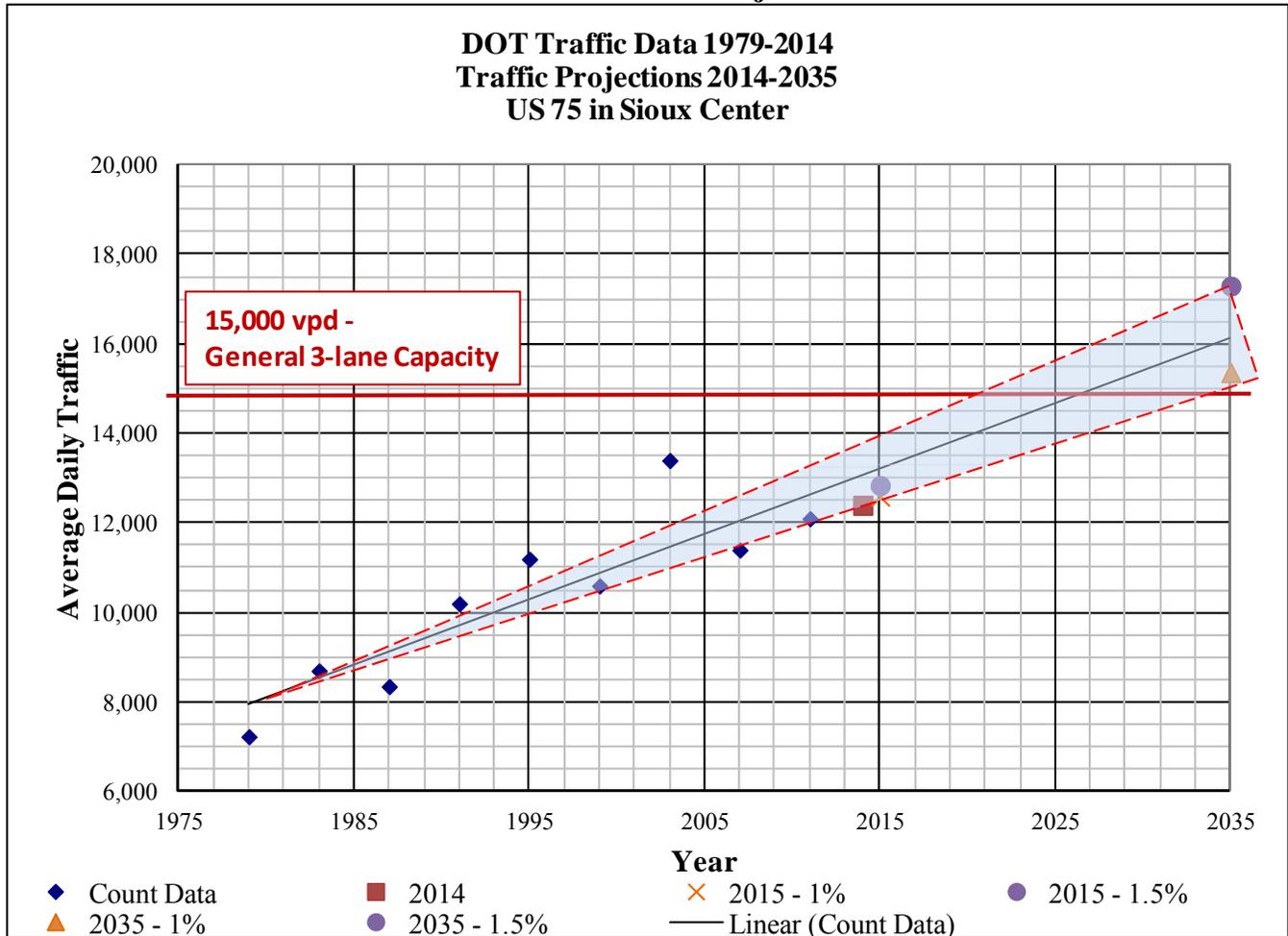
Figure 1
Annual Retail Sales



Analysis of Growth

The preceding US 75 traffic data as well as other available socioeconomic data for the Sioux Center all indicate steady growth in the immediate area. Looking ahead 20 years based on the last 15-35 years of data indicates a consistent population growth and traffic growth of 1-2%. Future traffic based on a 1.0%-1.5 % trendline is shown in Figure 2 below. This indicates a range of potential year 2035 AADT traffic volumes between 15,000-17,000 vehicles per day.

Figure 2
Historical Recorded and Future Projected Traffic Data



In consideration of hourly volumes north/south in the corridor, current peak hour demand is at its greatest amount between 4th St S and 3rd St N, and typically in range of 1,100 -1,200 vph traveling north/south on US 75. During this PM peak hour, traffic has a greater demand southbound with an approximate split of 58% southbound to 42 % northbound or 700 vph to 510 vph respectively.

If the growth trends in traffic demand continue, the potential peak hour demand for US 75 traffic in the corridor could increase in the 1% to 1.5% growth per year, thus overall increases in range of 10-16% in the next 10 years, and 22 to 35% in the next 20 years. If an average growth rate is applied to the peak hour volumes approximate total demands in the peak hour would approach 1,300 vph in 10 years, and 1,500 vph in 20 years, or given current demand splits as many as 750 to 870 vph in the peak direction in the next 10 to 20 years. This demand is most noticeable at the signalized intersections such as 3rd St N, or 9th St S, where the available time for flow is restricted due to the traffic signal providing right of way for movements on the cross streets, and thus out of every minute, only 40-45 seconds may be provided

for flow on US 75 north/south. This in turn will relate to the vehicle delay and stacking at these key intersections and the “capacity” of the current lane configuration of the corridor to accommodate traffic flow consistent with the general expectations of the citizens of the community, and users of the corridor.

Conclusion

Given 35 years of traffic growth history in the US 75 corridor (1.6% per year) which is a similar value but slightly less than the growth rate for the population over a similar 40 year time span (1.8% per year), and in consideration of various other demographic factors in the City and County, it is reasonable to assume that over the next 10-20 years a similar growth rate in traffic demand in the corridor can be expected and utilized to understand traffic operations and functional lane needs or traffic control.

This current projected annual growth rate is slightly less, a few tenths of a percentage, than per previous studies and reports prepared for the City and Iowa DOT. Thus the end result being the rate at which volume will grow or “by which design year” would traffic demand begin to exceed functional corridor capacity given existing lane configurations and signal timings is a few years farther into the future than prior reports. However, the principle of planning for continued traffic demand is still valid based on these measures.