

A. INTRODUCTION

1. Overview

The Indiana Department of Transportation (INDOT), in cooperation with the Federal Highway Administration (FHWA), is preparing an Environmental Impact Statement (EIS) to evaluate the US 31 Improvement from Plymouth to South Bend in Marshall and St. Joseph counties, Indiana. As shown in Figure 1, the US 31 improvement corridor is about 20 miles long, running from the southern terminus at US 30 near Plymouth to the northern terminus at US 20 near South Bend.

2. Project History

In the 107th Session of the Indiana General Assembly in 1991, legislation was passed directing INDOT to establish “Commerce Corridors” in the State of Indiana. These corridors were defined as “part of the recognized system of highways that:

- directly facilitates intrastate, interstate or international commerce and travel;
- enhances economic vitality and international competitiveness; or
- provides service to all parts of Indiana and the United States.”¹

The legislation also directed INDOT to “undertake, as soon as possible, studies that will be required to improve the transportation corridor between St. Joseph and Marion counties. The department will conduct an origin-destination study and may study the following:

- Any changes needed in the location of transportation facilities to improve the corridor, and
- The environmental impact of changes in the corridor.”²

In response to this legislation, INDOT initiated in 1992 and 1993 three US 31 Major Investment Studies (MIS) in the US 31 Corridor from Indianapolis to South Bend. Pursuant to the 1991 Intermodal Surface Transportation Efficiency Act (ISTEA), major investment studies were required in urbanized areas to examine transportation improvement options in corridors, and were intended to determine the preferred course of action.³ Completed in 1995, 1997 and 1998, these three studies focused on how best to improve US 31 through the urbanized areas along the corridor:

- Howard County in the greater Kokomo area from south of SR 26 to north of US 35 (north junction with US 31),
- Hamilton County between I-465 and 196th Street, and
- Marshall and St. Joseph counties from US 30 to US 20.

¹ Indiana Code (IC) 8-23-1-14.5

² IC 8-23-8-1.3 Section 5(a)

³ 23 Congressional Federal Record (CFR) 450.318

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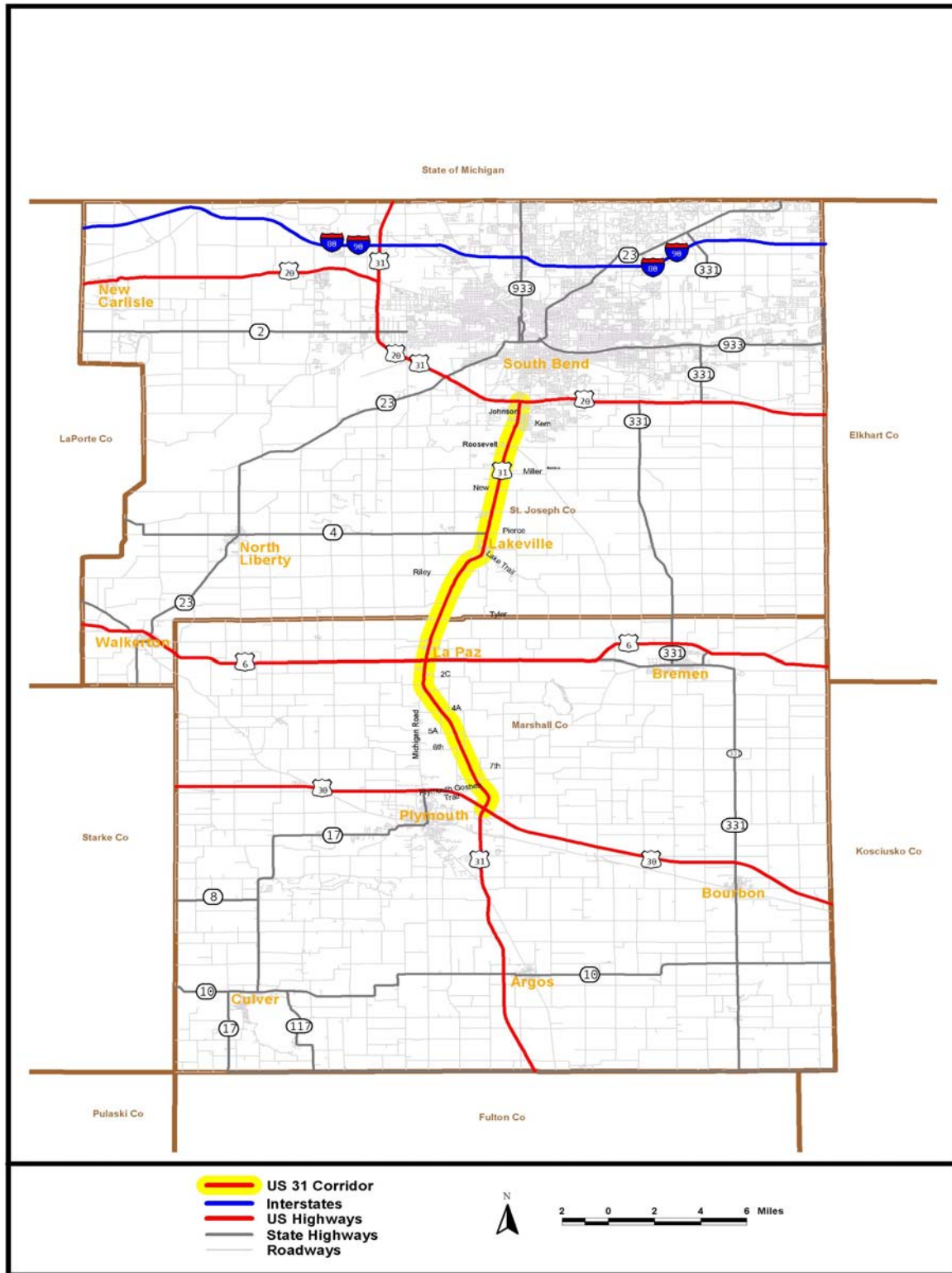


Figure 1: US 31 Regional Map

In 1998, INDOT also completed a study examining the economic impacts of improving US 31 from Indianapolis to South Bend.⁴ Following further legislative action by the Indiana General Assembly, INDOT completed the *Indianapolis to South Bend Toll Road Feasibility Study* in 1999, assessing the viability of funding US 31 improvements as a toll facility. This study found a toll road to be infeasible.

In accordance with the public notification requirements of the National Environmental Policy Act (NEPA) of 1969, INDOT initiated this EIS study in 2001 focusing on the urbanized area at the north end of the 122-mile US 31 corridor. This US 31 EIS study will adhere to all applicable environmental laws, regulations and guidelines including, but not limited to the:

- NEPA ,
- FHWA Technical Advisory T66-40.8A, “Guidance for Preparing and Processing Environmental and Section 4(f) Documents” (1987),
- FHWA regulations,
- Council of Environmental Quality (CEQ) regulations,
- INDOT’s Procedural Manual for Preparing Environmental Studies (1996), and
- Indiana’s Streamlined EIS Procedures (July 2001).

3. Existing Facility

Existing US 31 is functionally classified as a “principal arterial” on the National Highway System (NHS). The NHS consists of about 155,000 miles of interstate and principal arterial highways nationwide designated by the U.S. Congress as having national significance. US 31 is also designated a “Statewide Mobility Corridor” and “Commerce Corridor” in Indiana’s Long Range Transportation Plan. The *INDOT 2000-2025 Long Range Plan* and the Michigan Area Council of Governments (MACOG, South Bend Area Metropolitan Planning Organization, MPO) Transportation Plan identify the need to improve existing US 31.

National Context. The present function and character of US 31 from Plymouth to South Bend has been established by national and state transportation system decisions over many decades. Prior to the construction of the Interstate highway system, US 31 was the national highway facility (see Figure 2) running from Mobile, Alabama, on the Gulf of Mexico, and through Montgomery, Alabama, and Birmingham, Alabama, Nashville, Tennessee, Louisville, Kentucky, Indianapolis, Indiana, South Bend, Indiana, Benton Harbor-St. Joseph, Michigan, and Holland, Michigan to Sault Ste. Marie, Michigan on the Canadian border. When the Federal Aid Highway Act of 1944 called for the creation of a National System of Interstate Highways not to exceed 40,000 miles in length, states were given an opportunity to suggest additional routes before the official designation. The Indiana State Highway Commission submitted four additional routes, one being from Indianapolis through South Bend to Benton Harbor. However, because Benton Harbor was not a major urban area and the proposed route was close to the Indianapolis to Chicago route (now I-65), US 31 from Indianapolis to Benton Harbor was not made a part of the National System of Interstate Highways as designated in 1947.

⁴ Major Corridor Investment-Benefit Analysis System, MCIBAS (1998).

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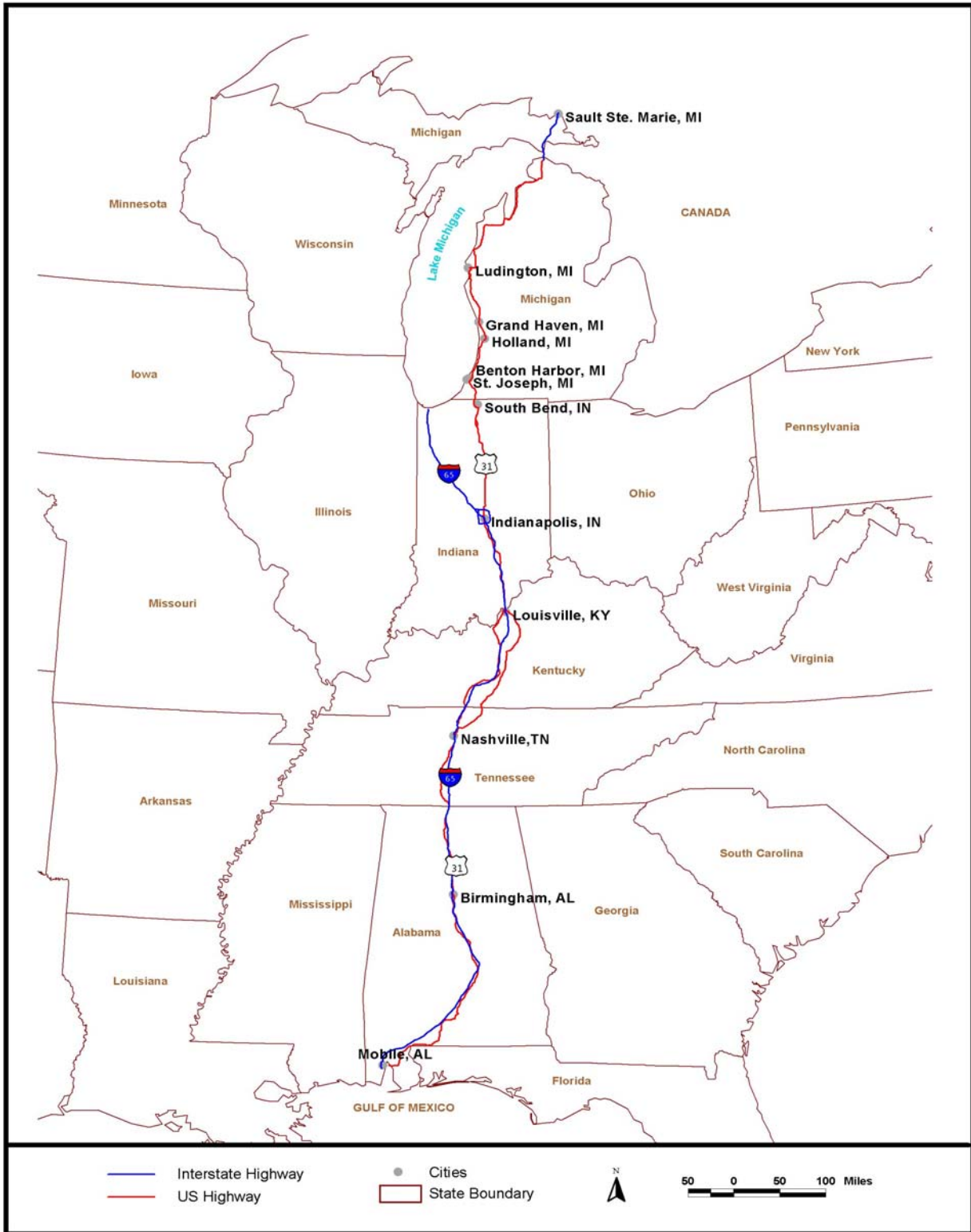


Figure 2: US 31 National Map

When I-65 was completed, it provided a more appealing route than existing US 31 from Mobile to Indianapolis. Northward from the north leg of I-465 in Indianapolis, US 31 remained part of the NHS as a “principal arterial” with varying access control standards. At present, US 31 has been improved to full access control standards from US 20 in South Bend, Indiana, to Holland, Michigan, and from Grand Haven, Michigan to Ludington, Michigan.

State Context. For statewide planning purposes, the *INDOT 2000-2025 Long Range Plan* establishes a corridor hierarchy of three levels: statewide mobility corridors, regional corridors and local access corridors. Referring to Figure 3, US 31 is among the “statewide mobility corridors” (see also Figure 8) which consist of the highest level of highway facilities such as interstates and most principal arterials.⁵ US 31 is also among Indiana’s “Commerce Corridors,” which consist of the major commercial routes supporting the state’s economy.⁶ As a result of the statewide highway needs analysis, the *INDOT 2000-2025 Long Range Plan* proposes the “US 31 Freeway Upgrade from Indianapolis to South Bend.”⁷ In particular, the Plan identifies the need to improve US 31 in St. Joseph and Marshall counties, and the associated Statewide Travel Demand Model (TDM) shows unacceptable congestion along portions of US 31 for the years 1998 and 2025 in these counties.

Regional Context. US 31 between Plymouth and South Bend is the primary north-south facility in the regional transportation network of north-central Indiana. Existing US 31 links the South Bend metropolitan area to Indianapolis and connects other communities (such as Lakeville, LaPaz, and Plymouth) in southern St. Joseph County and Marshall County. Referring to Figures 1 and 3, the primary east-west transportation facilities in the corridor are US 30 (running from Ft. Wayne through Plymouth to Northwest Indiana), US 6 (running from Kendallville to LaPaz to Northwest Indiana), and US 20 (running from Angola through Elkhart, Mishawaka and South Bend to Northwest Indiana). I-80/90 (Indiana Toll road) sits just north of the corridor, and runs across northern Indiana from Chicago, Illinois to Toledo, Ohio. Because US 30 and US 20 are principal arterials on the NHS and “statewide mobility corridors,” they serve as logical termini for examining the need to improve US 31 in between.

Existing US 31 provides four through lanes in the corridor. However, the character of the facility varies significantly along the 20-mile corridor with respect to the level of access control (frequency of drives or public road intersections), median width/type and shoulder treatment. The five-mile segment from US 30 to Michigan Road (Old SR 31) is a four-lane facility with a wide median and access limited to county public crossroads (i.e., partial access control). The remaining 15-mile segment from Michigan Road to US 20 has a narrow median ranging from four feet to sixteen feet wide (sufficient only for a left-turn lane) or no median width, and access is only controlled to adjacent property through driveway permits (i.e., no access control). On-street parking is permitted along US 31 through Lakeville. Through the towns of LaPaz and Lakeville and the south side of the South Bend urbanized area, existing US 31 is abutted by churches, cemeteries, historic structures, businesses, and homes.

⁵ *INDOT 2000-2025 Long Range Plan* (2001 Update), page 82.

⁶ *INDOT 2000-2025 Long Range Plan* (2001 Update), pages 93 and 96.

⁷ *INDOT 2000-2025 Long Range Plan* (2001 Update), pages 101 and 131.

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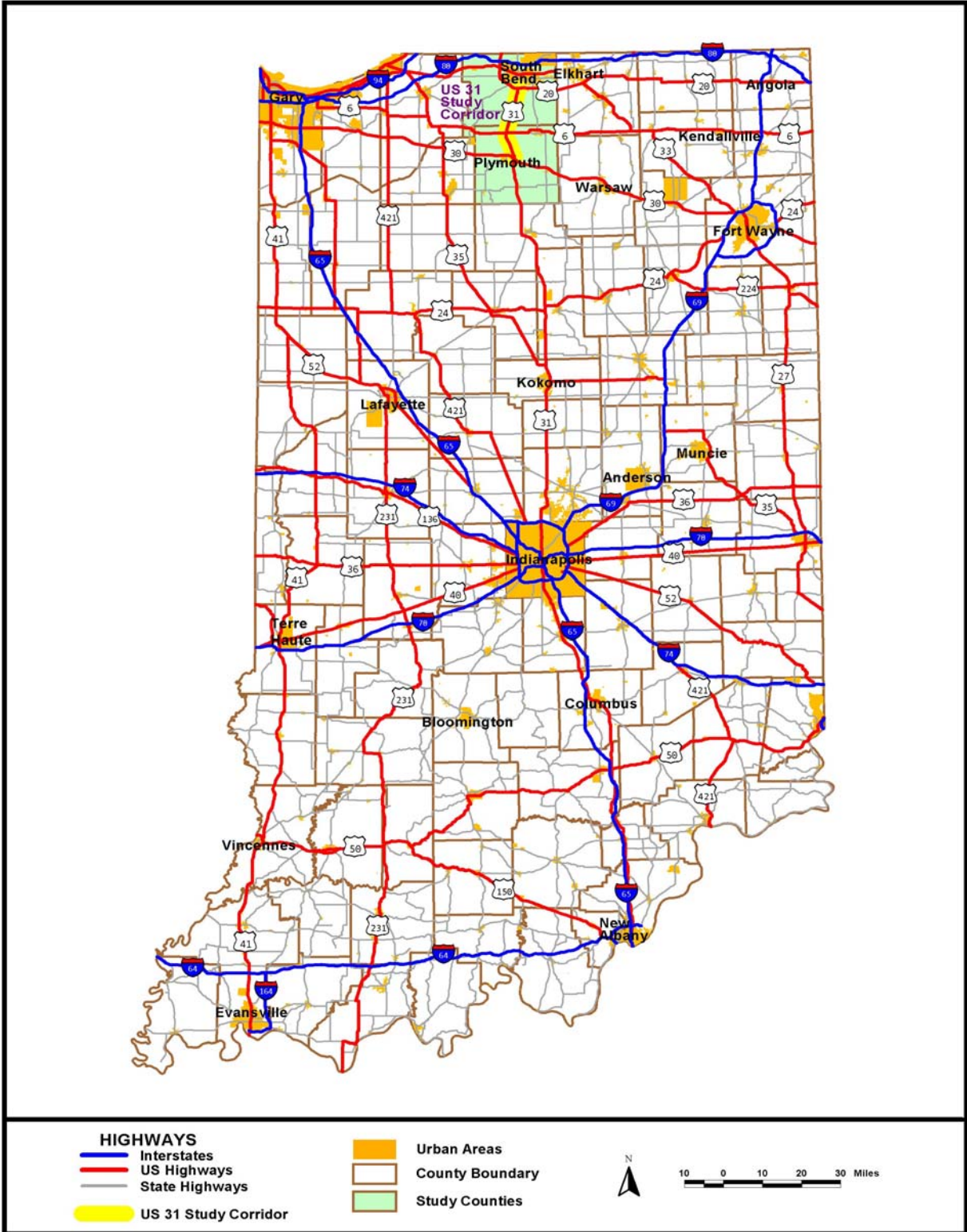


Figure 3: US 31 State Map

The entire region served by US 31 is experiencing considerable growth. The three-county area (including Marshall, St. Joseph, and Elkhart counties) added more than 48,000 people and 43,000 jobs over the past decade. The counties containing the South Bend-Mishawaka-Elkhart metropolitan area (St. Joseph and Elkhart counties) experienced higher population growth (13.6%) than Indiana as a whole (9.7%), and the City of Plymouth in Marshall County grew at nearly double the state's rate (18.5% versus 9.7%).⁸ Socioeconomic forecasts predict a strong growth trend (although at a slower rate) continuing in future years with the three-county area adding more than 81,600 people and more than 57,400 jobs by 2025.⁹

Tables 1 and 2 show historic and projected population and employment growth based on an analysis of thirty-year trends and comparison to county, state, and national forecasts prepared by the Indiana Data Center, Woods & Poole Economics, and the U.S. Bureau of the Census and Economic Analysis. Such increases in population and employment inevitably result in increases in travel demand above the state and national average. Historical traffic counts by INDOT document the rise of traffic volumes with population and employment over the past twenty years within the three-county area. As population and employment continue to grow in the area over the next 25 years, so will vehicle-miles of travel (VMT).

The *US 31 Major Investment Study for Marshall-St. Joseph Counties: "Summary Report"* for INDOT found poor levels of service (LOS) on segments through La Paz, Lakeville and from Roosevelt Road to US 20, and at some signalized intersections along US 31 in the year 1994.¹⁰ It also forecasted unacceptable LOS on all segments and three of four signalized intersections along US 31 from US 6 to US 20 in the year 2020. The level-of-service analyses of the *MACOG (MPO) 2025 Transportation Plan* for the South Bend Metropolitan Area identified operational failures along segments of US 31 from US 20 to Kern Road and New Road to Pierce Road in years 2005 through 2025. Accordingly, the MPO's *2025 Transportation Plan* recommended the improvement of US 31: "This project would be a new limited access road with interchanges at several locations and would continue [south] to US 30 in Marshall County."¹¹ In March of 2002, this recommendation to improve US 31 from US 20 to US 30 was reiterated in the MPO's *2025 Transportation Plan Update* for the South Bend metropolitan area.¹²

⁸ Historic population data is taken from U.S. Bureau of the Census; historic employment data is taken from the Indiana Department of Workforce Development for Indiana and counties, from the Bureau of Labor Statistics for the nation.

⁹ For more information on socioeconomic forecasts, the methodology employed and comparisons with other projections, see the Technical Memorandum on Travel Model Development prepared by Bernardin-Lochmueller & Associates.

¹⁰ *US 31 Major Investment Study for Marshall-St. Joseph Counties: "Summary Report"*; INDOT; December 1997; pages 13, 16, 32 and 33.

¹¹ *2025 Transportation Plan for South Bend/Elkhart/Goshen Transportation Management Area; Michiana Area Council of Governments*; April, 1999; pages 45-49 and 98.

¹² *2025 Transportation Plan Update*; Michiana Area Council of Governments (MACOG); March 18, 2002; page 39.

Table 1: Regional Population Growth

	1970	1980	1990	2000	2025	% growth 2000-2025
St. Joseph County	244,827	241,617	247,052	273,177	302,933	10.9%
Marshall County	34,986	39,155	42,182	45,128	54,312	20.4%
Elkhart County	126,529	137,330	156,198	182,791	217,842	19.2%
Two County Area	279,813	280,772	289,234	318,305	357,245	12.2%
Three County Area	406,342	418,102	445,432	493,478	575,087	16.5%
Indiana	5,195,392	5,490,224	5,544,159	6,080,485	6,558,900	7.9%
United States	203,302,000	226,546,000	248,710,000	281,422,000	335,871,000	19.3%

Source: Historic population data is taken from U.S. Bureau of the Census; 2025 county population by Bernardin-Lochmueller & Associates; Indiana 2025 population based on Indiana State Data Center projections; national 2025 population from Woods & Poole Economics.

Table 2: Regional Employment Growth

	1980	1990	2000	2025	% growth 2000-2025
St. Joseph County	93,932	111,589	128,178	159,200	24.2%
Marshall County	12,200	17,140	20,150	24,500	21.4%
Elkhart County	64,378	98,243	122,083	144,300	18.2%
Two County Area	106,132	128,729	148,328	183,700	23.8%
Three County Area	170,510	226,972	270,411	328,000	21.3%
Indiana	1,937,449	2,400,902	2,891,701	3,337,500	15.4%
United States	90,406,000	109,403,000	131,759,000	158,288,000	20.1%

Source: Historic population data is taken from U.S. Bureau of the Census; 2025 county population by Bernardin-Lochmueller & Associates; Indiana 2025 population based on Indiana State Data Center projections; national 2025 population from Woods & Poole Economics.

B. NEEDS ASSESSMENT

INDOT has assessed the needs for this project. This needs assessment identifies the problems that need to be solved regarding the deficiencies in present US 31. The assessment examined both existing (base) conditions and future conditions. The analysis of future conditions focused on the year 2025, as the horizon year for this study. (This horizon year ensures consistency with the current *INDOT 2000-2025 Long Range Plan*, the *MACOG 2025 Transportation Plan Update* and the current Indiana Statewide TDM.)

The needs assessment focused on three factors:

- (1) the need for an improved level of service (LOS) with respect to traffic congestion on US 31 between Plymouth and South Bend,
- (2) the need for improved safety on US 31 between Plymouth and South Bend, and
- (3) the need to address statewide mobility as explained in the *INDOT 2025 Long Range Plan*.

1. US 31 Congestion

One of the fundamental needs for the improvement of US 31 between Plymouth and South Bend is to reduce congestion on US 31. Many segments of US 31 are currently experiencing unacceptable congestion with significant travel delays. As traffic volumes increase in future years, operating conditions on US 31 will further deteriorate if no improvements are made.

Traffic operating conditions are typically described through a level-of-service (LOS) rating of six levels from “A” through “F”. The LOS rating scale is a qualitative method for describing traffic conditions. The scale ranges from LOS “A”, which corresponds to free-flowing traffic and minimal delays at intersections, to LOS “F”, which corresponds to a complete breakdown in traffic flow. Based on INDOT reconstruction (4R) standards outlined in the Indiana Design Manual, a LOS “C” is the minimum acceptable LOS for rural and suburban areas, and LOS “B” is desirable. In intermediate and built-up areas, a LOS “D” is the minimum acceptable LOS, and LOS “C” is desirable.¹³ The methods for calculating LOS are given in the Transportation Research Board’s (TRB) *Highway Capacity Manual (HCM)*, recently revised in year 2000.

US 31 and its major intersections were analyzed in accordance with the *Highway Capacity Manual* to determine their LOS. Between Plymouth and South Bend, US 31 was analyzed in eight segments, and a LOS was determined for each segment. For intersections, traffic counts were taken, and a LOS was calculated for all four signalized intersections and six notable two-way stop-controlled intersections (stop control for the crossroad approaches). The LOS in both the base and future year for the segments of US 31 and its major intersections are displayed in Figure 4 and Tables 3 and 4.

¹³ *INDOT Design Manual*; Part V – Roadway Design, Chapter 53 – Geometric Design Tables, pages 53-10 & 53-27, Chapter 41 – Highway Capacity, page 41-5(1), and Chapter 46 – Intersections At-Grade, page 46-1(9).

For highway segments, the LOS determination is based on the traffic density (passenger cars per mile per lane) and the volume to capacity (v/c) ratio. As the density and v/c ratio increase with congestion, the speed and the LOS rating decreases from a LOS “A” for v/c ratios near zero to a LOS “F” for v/c ratios greater than one. For intersections, the LOS determination is based on the “control” delay to vehicles caused by traffic control devices (signal or stop sign). As traffic volumes increase, the ability of the intersection to facilitate traffic diminishes and the delay to vehicles passing through the intersection increases.

Table 3: Present and Future Levels-Of-Service of US 31 Segments¹⁴

Termini	Area Type	2000 Base Year				2025 Horizon Year			
		AADT*	Daily Vehicle Capacity	v/c Ratio	LOS	AADT	Daily Vehicle Capacity	V/C Ratio	LOS
US 20 – Roosevelt Rd.	Urban	31,526	27,700	1.14	F	46,000	27,700	1.66	F
Roosevelt Rd. – Miller Rd.	Urban	26,419	27,700	0.95	E	37,500	27,700	1.35	F
Miller Rd. – SR 4	Rural	24,240	27,700	0.89	E	34,400	27,700	1.24	F
SR 4 – Lake Trail	Rural	27,217	22,300	1.22	F	40,300	22,300	1.81	F
Lake Trail – Tyler Rd.	Rural	21,400	39,800	0.54	C	29,300	39,800	0.74	D
Tyler Rd. – US 6	Rural	19,845	22,300	0.89	E	28,200	22,300	1.26	F
US 6 – Michigan Rd.	Rural	24,232	39,800	0.61	C	35,200	39,800	0.88	E
Michigan Rd. – US 30	Rural	16,989	39,800	0.43	B	23,500	39,800	0.59	C

Note: Shading denotes failure to meet INDOT minimum design standards for level-of-service.

*-Annual Average Daily Traffic (AADT)

From US 30 to the south side of Lakeville, the average daily traffic (ADT) volumes in the year 2000 ranges from 17,000 to 25,000 vehicles per day (vpd) with a LOS “B” or “C” in undeveloped areas, but a LOS “E” (capacity) through LaPaz. From the south side of Lakeville to US 20, the ADT volumes in the year 2000 ranges from 24,000 to 32,000 vpd with a LOS “E” in undeveloped areas and a LOS “F” (failure) in others areas (the developed segments consisting of US 31 through Lakeville and from Roosevelt Road to US 20).

Three of the four signalized intersections along the existing US 31 currently operate at a LOS “E” (capacity) or “F” (failure). For traffic entering US 31 at two-way stops, three of the six crossroads experienced a LOS below “C”, an indication of a lack of adequate gaps in the mainline traffic stream.

¹⁴ 2000 AADT generated by factoring 1998 INDOT counts by historic growth factors; Daily Vehicle Capacity developed from *Highway Capacity Manual*, Special Report 209; 2025 AADT produced by applying historic growth factors to 1998 counts.

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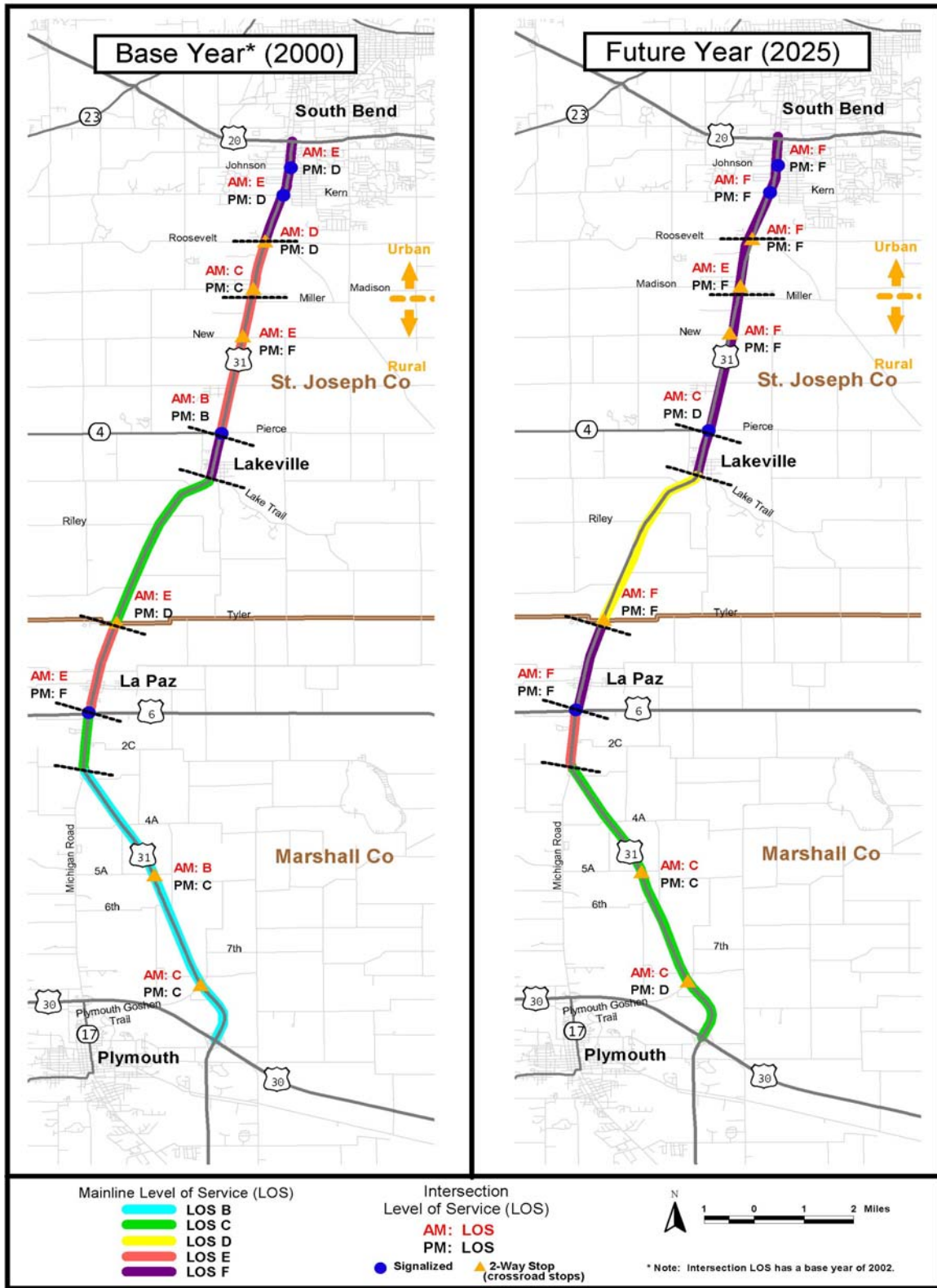


Figure 4: Existing and Future Level-of Service

Table 4: Present and Future Levels-of-Service for US 31 Intersections

Year	2002	2002	2025	2025
Peak Hour	AM	PM	AM	PM
Signalized Intersections				
Johnson Road	E	D	F	F
Kern Road	E	D	F	F
SR 4	B	B	C	D
US 6	E	F	F	F
Major Unsignalized Intersections (Two-way stop-controlled)				
Roosevelt Road	D	D	F	F
Madison Road	C	C	E	F
New Road	E	F	F	F
Tyler Road	E	D	F	F
W 5A Road	B	C	C	C
Plymouth-Goshen Trail	C	C	C	D

Note: Shading denotes failure to meet INDOT minimum design standards for level-of-service.

Based on historic traffic growth rates and the Indiana Travel Demand Model, the year 2025 daily traffic volumes between US 30 and the south side of Lakeville will increase to between 23,000 and 36,000 vehicles per day with a levels-of-service from “C” to “E” (reaching or at capacity) in undeveloped areas, but a LOS “F” (failure) through LaPaz. The average daily traffic volume in the year 2025 for the segment of US 31 through Lakeville (Lake Trail to SR 4) will grow to more than 40,000 vehicles per day, which corresponds to a LOS “F”. From the north side of Lakeville to US 20, the average daily traffic volumes in the year 2025 will range from 34,000 to 46,000 vehicles per day with a LOS “F” in both undeveloped and developed areas. Three of the four signalized intersections along the existing US 31 will operate at a LOS “F”. For traffic entering US 31 at notable two-way stops, five of the six crossroads will experience a LOS below “C”.

As shown in Figure 5, five of the eight segments of US 31 between Plymouth and South Bend, as well as three of the four signalized intersections and three of the six analyzed unsignalized intersections already fail to meet INDOT design standards. If no improvements are made, seven of the eight highway segments, all four signalized intersections and five of the six unsignalized intersections will fail to meet INDOT minimum design standards for LOS by the year 2025.

US 31 from Plymouth to South Bend carries significant traffic volumes (particularly heavy truck volumes) to and from points north and south of the corridor, as well as serving as the primary route for thousands of people who commute each day into the South Bend-Mishawaka-Elkhart metropolitan area from southern St. Joseph County and Marshall County. Over 6,000 people, which is more than ten percent of the entire population of Marshall County, commute between Marshall and St. Joseph or Elkhart County each day.¹⁵ Long delays and high congestion along

¹⁵ Data on commuting patterns is taken from the 2000 Census.

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US 31 between Plymouth and South Bend adversely impact thousands of commuters, impede freight movements, and increase travel times. Any proposed alternative must improve the level-of-service on US 31 between Plymouth and South Bend.

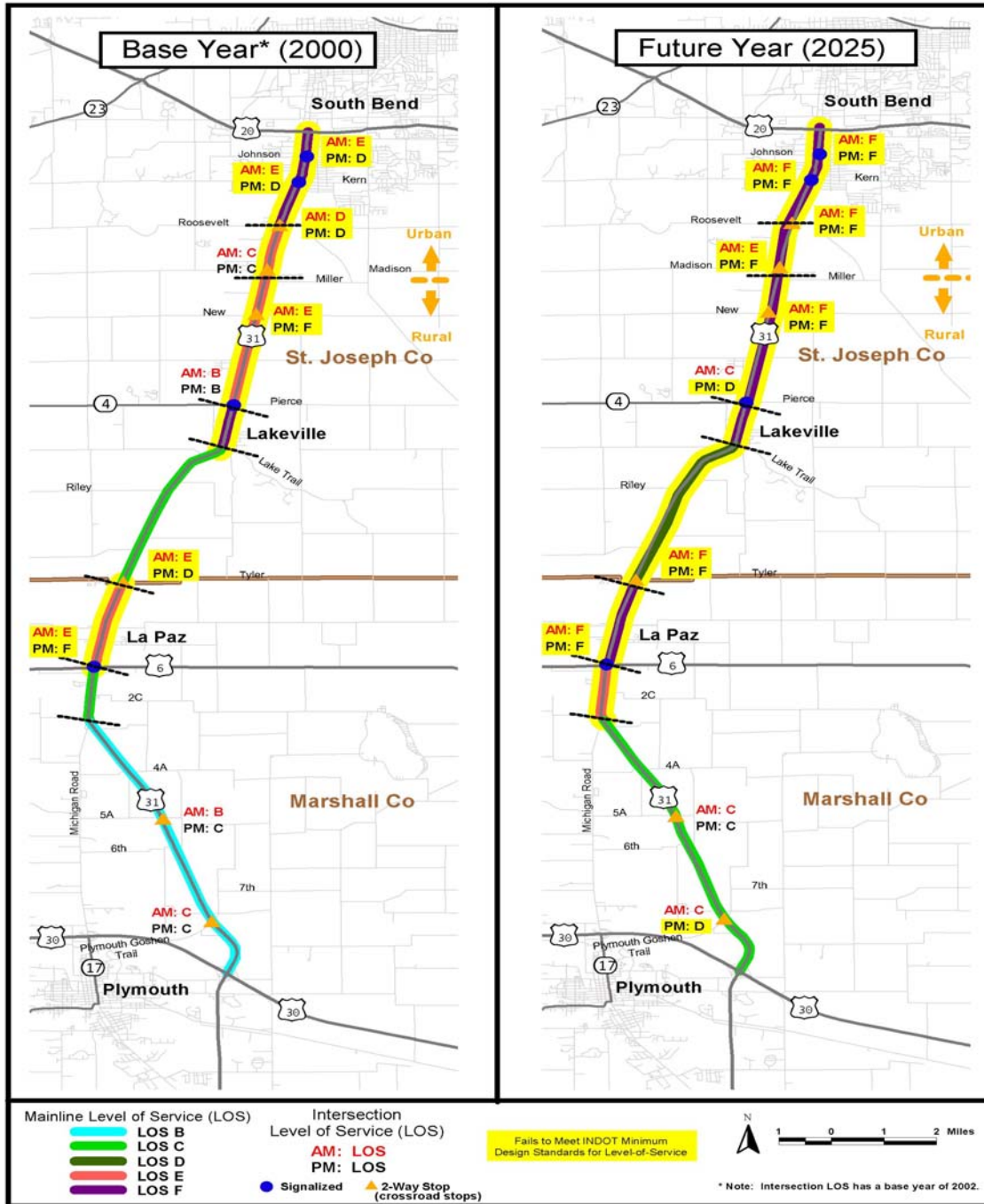


Figure 5: US 31 Segments and Intersections Failing to Meet INDOT Minimum Design Standards for Level-of-Service

2. Safety

Traffic crash (accident) statistics for the three-year period from 1997 to 1999 for US 31 between Plymouth and South Bend were analyzed and compared to Indiana statewide average crash rates for “principal arterial” roadways. (Data are not yet available in useable form for the years 2000 and 2001.) The analysis found that US 31 through the corridor has accident rates above Indiana statewide averages for both injury accidents and fatal accidents. These findings reveal that crash rates on US 31 exceed those of comparable facilities throughout the state. Table 5 below shows the contrast between crash rates for US 31 with the average rates for similar “principal arterials” in Indiana and with national averages for rural “principal arterials.”

Table 5: Crash Rate Comparison of US 31 from US 30 to US 20

Route	Injury Crashes (1997-1999)	Injury Crash Rate*	Fatal Crashes (1997-1999)	Fatal Crash Rate*
US 31 Plymouth-South Bend	204	50.39	9	2.22
Indiana Rural Principal Arterials	8,485	47.15	353	1.96
U.S. Rural Principal Arterials ¹⁶	349,047	50.87	15,128	2.12

Notes: * Per 100 million annual vehicle-miles of travel; the crashes used in this chart are investigated crashes only.

Source: For US 31, Bernardin, Lochmueller & Associates, Inc. analysis of INDOT Division of Program Development Crash Location Report for St. Joseph and Marshall counties; for Indiana and U.S. Rural Principal Arterials, INDOT Division of Program Development Indiana Motor Vehicle Fatalities and Injuries, 1997-1999. Averages, revised 1/22/02.

While the injury and fatal crash rates through the entire corridor are a cause for concern, three sections of US 31, through the towns of Lakeville and LaPaz and from Lakeville north to US 20, have especially high crash rates from 1½ to 2½ times the statewide averages for “principal arterials” for several accident types. In Lakeville the injury, property damage only (PDO), and total crash rates were more than twice the statewide averages for “principal arterials”. The section from Lakeville north to US 20 has both injury and fatal rates more than 1 ½ times the statewide average. Table 6 compares the crash rates for five segments of US 31 with the average rates for similar facilities in Indiana for 1997 through 1999. Future crashes in Table 6 are based on the assumption that existing crash rates remain the same in the future and that the increase in crashes is related only to traffic growth. These are displayed in Figure 6. Those segments of US 31 having crash rates above the statewide average are displayed in Figure 7.

¹⁶ National injury crash data estimated based on 1997 data alone, as 1998 and 1999 data is unavailable.

Table 6: Crash Rate Comparison of US 31 Segments¹⁷

Segments	Injury Crashes	Injury Crash Rate*	Fatality Crashes	Fatality Crash Rate*	PDO Crashes	PDO Crash Rate*	Total Crashes	Total Crash Rate*
Existing Conditions Annual Average for Years 1997 to 1999								
Lakeville N to US 20	46	86.69	2.0	3.77	79	149.52	127	239.98
through Lakeville	11	120.60	0.0	0.00	30	335.43	41	456.04
LaPaz to Lakeville	2	8.76	0.0	0.00	10	36.28	12	45.04
through LaPaz	1	45.60	0.3	11.40	6	193.81	7	250.82
LaPaz S to US 30	8	17.33	0.7	1.51	33	75.34	42	94.17
Rural Principal Arterials	2,828	47.15	118	1.96	8,244	137.45	11,190	186.57
Future Conditions in Year 2025								
Lakeville N to US 20	66	86.69	2.9	3.77	114	149.52	183	239.98
through Lakeville	16	120.60	0.0	0.00	44	335.43	60	456.04
LaPaz to Lakeville	3	8.76	0.0	0.00	14	36.28	17	45.04
through LaPaz	1	45.60	0.4	11.40	8	193.81	10	250.82
LaPaz S to US 30	11	17.33	1.0	1.51	47	75.34	60	94.17
Rural Principal Arterials	3,554	47.15	148	1.96	10,361	137.45	14,064	186.57

Notes: * Per 100 million annual vehicle-miles of travel; the crashes used in this chart are investigated crashes only. Shading denotes rates exceeding Indiana statewide average for Rural Principal Arterials.

Source: For US 31, Bernardin, Lochmueller & Associates, Inc. analysis of INDOT Division of Program Development Crash Location Report for St. Joseph and Marshall counties; for Indiana Rural Principal Arterials, INDOT Division of Program Development Indiana Motor Vehicle Fatalities and Injuries, 1997-1999 Averages, revised 1/22/02.

Referring to Table 6, upon reviewing the *types* of accidents (i.e., rear-end, head-on, angle, etc.) within the US 31 corridor, data shows that the portions of US 31 through developed areas (LaPaz and Lakeville) have much higher than average accident rates attributable to congestion, on street parking, frequent public crossroads, and driveway cuts. If no improvements are made to US 31, the number of crashes and the crash rates are expected to increase as traffic volumes and congestion on the facility increase in future years. Any proposed alternative must, therefore, reduce the crash frequency on US 31 between Plymouth and South Bend.

¹⁷ All crash rates are given per 100 million annual vehicle miles of travel. Crash totals and rates reflect investigated crashes only. US 31 is classified as a rural principal arterial on all of the segments except from Lakeville north to US 20; part of this segment of US 31 is classified as an urban principal arterial (north of Miller Road is urban).

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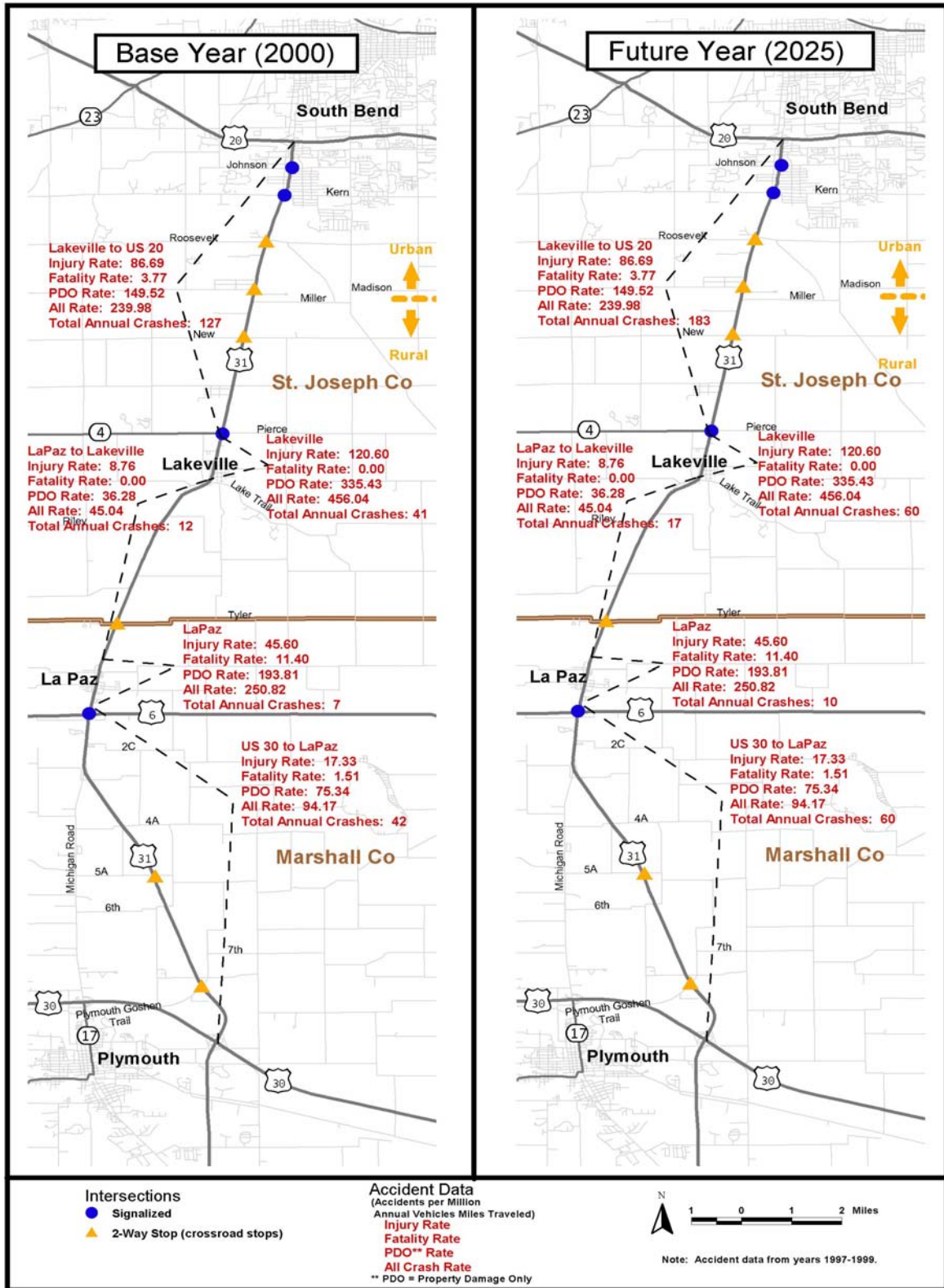


Figure 6: Existing and Future Accident Conditions

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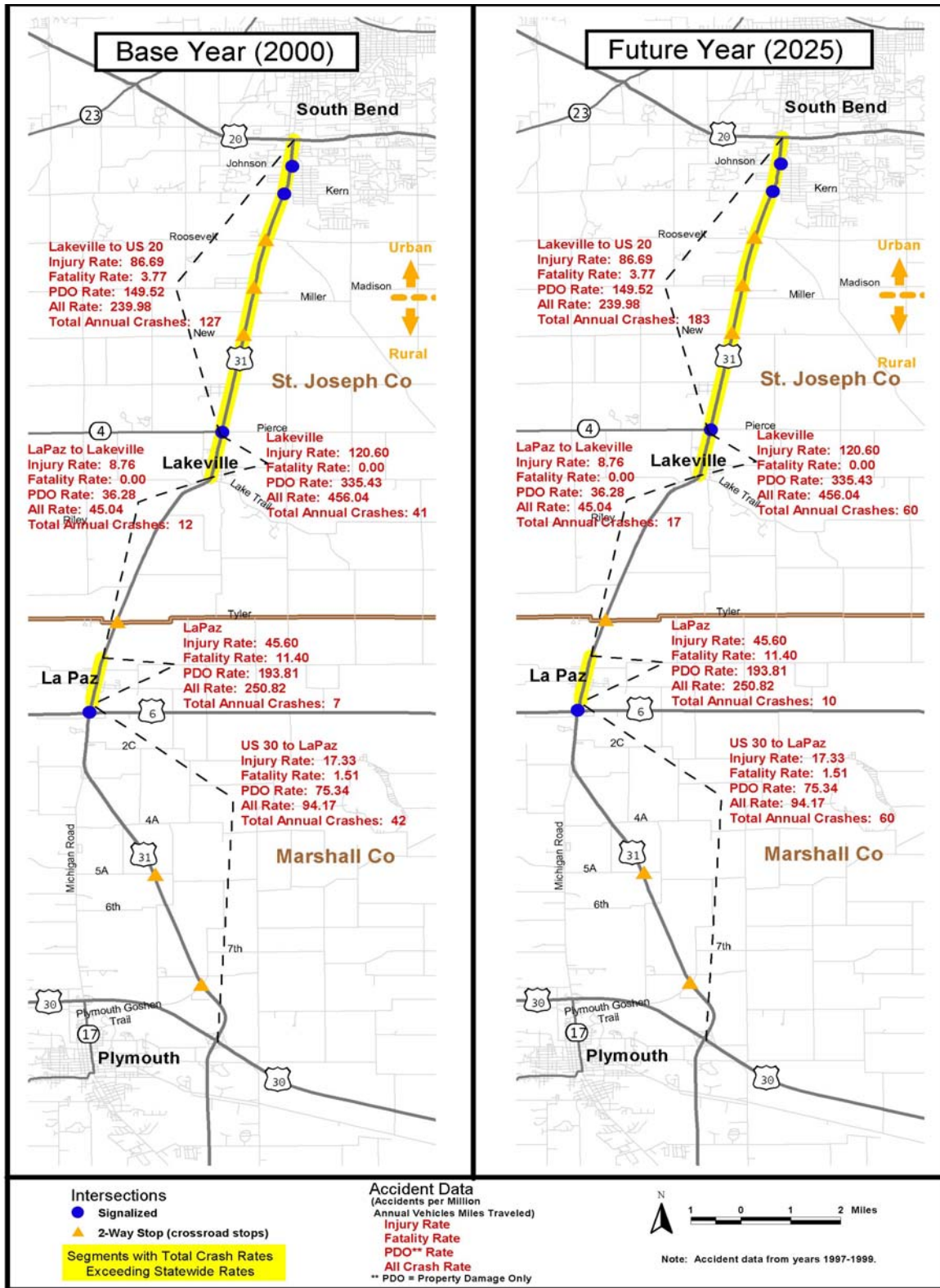


Figure 7: Crash Rates Exceeding Statewide Rates

3. Address Statewide Mobility

In the *INDOT 2000–2025 Long Range Plan*, US 31 between Indianapolis and South Bend is designated as both a “Statewide Mobility Corridor” and a “Commerce Corridor”.¹⁸ “Statewide Mobility Corridors” are the highest tier of INDOT’s three-tiered planning-level corridor hierarchy.¹⁹ “Commerce Corridors” are the commercial routes that support the state’s economy by connecting Indiana’s major centers of economic activity to their major markets.²⁰ The statewide corridor hierarchy and “Commerce Corridors” are displayed in Figure 8 and Figure 9, respectively.

According to the *INDOT 2000–2025 Long Range Plan*, a “Statewide Mobility Corridor” should “provide safe, free-flowing, high-speed connections between the metropolitan areas of the state and surrounding states . . . [and] serve as the freight arteries of the state.” The characteristics of “Statewide Mobility Corridors” are defined as “upper level design standards; high speed; free-flowing conditions; serves long distance trips; large through volumes of traffic; heavy commercial vehicle flows; carry longer distance commuter traffic; generally multi-lane, divided; full access control desirable, no less than partial access control; railroad and highway grade separations desirable; desirable to by-pass congested areas; no non-motorized vehicle/pedestrian interaction; major river crossing.”²¹

In order for US 31 between Plymouth and South Bend to satisfy the characteristics required of “Statewide Mobility Corridors” by the *INDOT 2000–2025 Long Range Plan*, US 31 must, at the very least, be improved to reduce congestion (in order to obtain free-flowing conditions), reduce travel time (particularly through developed segments with posted speed limits as low as 30 mph), establish partial access control, and eliminate non-motorized vehicle/pedestrian conflicts (such as those presently occurring through Lakeville and LaPaz). According to the state’s long range plan, it would further be “desirable” if US 31 were improved to eliminate at-grade intersections with railroads and highways, establish full access control, and by-pass congested areas. Therefore, any proposed improvement alternative should reduce congestion, reduce travel times, and minimize non-motorized/pedestrian conflicts on US 31 throughout the corridor. Proposed improvement alternatives which eliminate at-grade intersections with railroads and highways, establish full access control, and by-pass congested areas are desirable.

The *INDOT 2000–2025 Long Range Plan* also states that a “Commerce Corridor” should: “link Indiana’s major population concentrations to the National Highway Network; provide good accessibility to Indiana’s major manufacturing concentrations; provide good accessibility to Indiana’s major trade service concentrations; and improve access to Indiana’s major tourism and recreation areas, regional economic concentrations and those areas with demonstrated and anticipated potential for growth.”²²

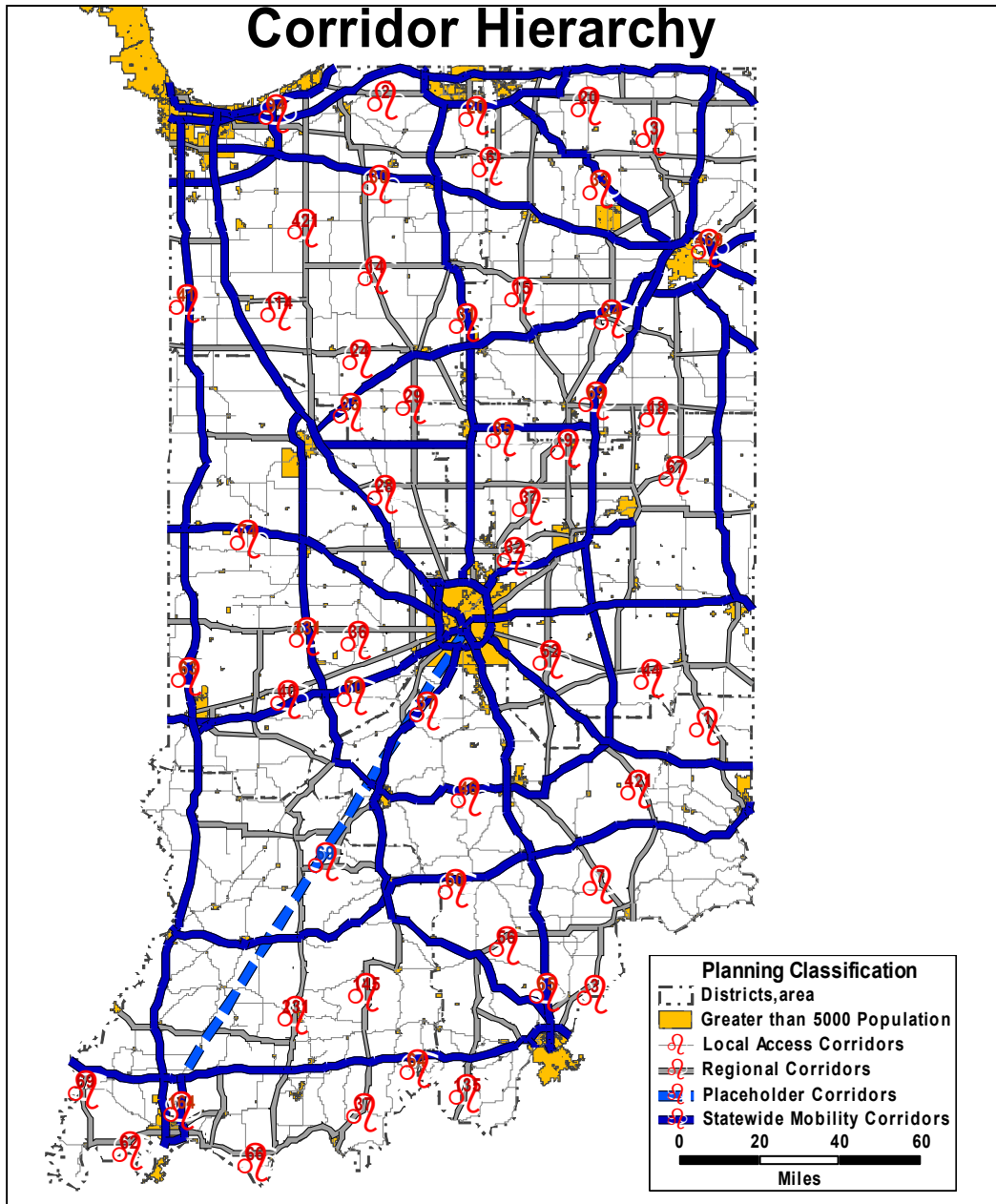
¹⁸ *INDOT 2000-2025 Long Range Plan* (2001 Update), pages 87 and 96.

¹⁹ *INDOT 2000-2025 Long Range Plan* (2001 Update), page 82.

²⁰ *INDOT 2000-2025 Long Range Plan* (2001 Update), page 93.

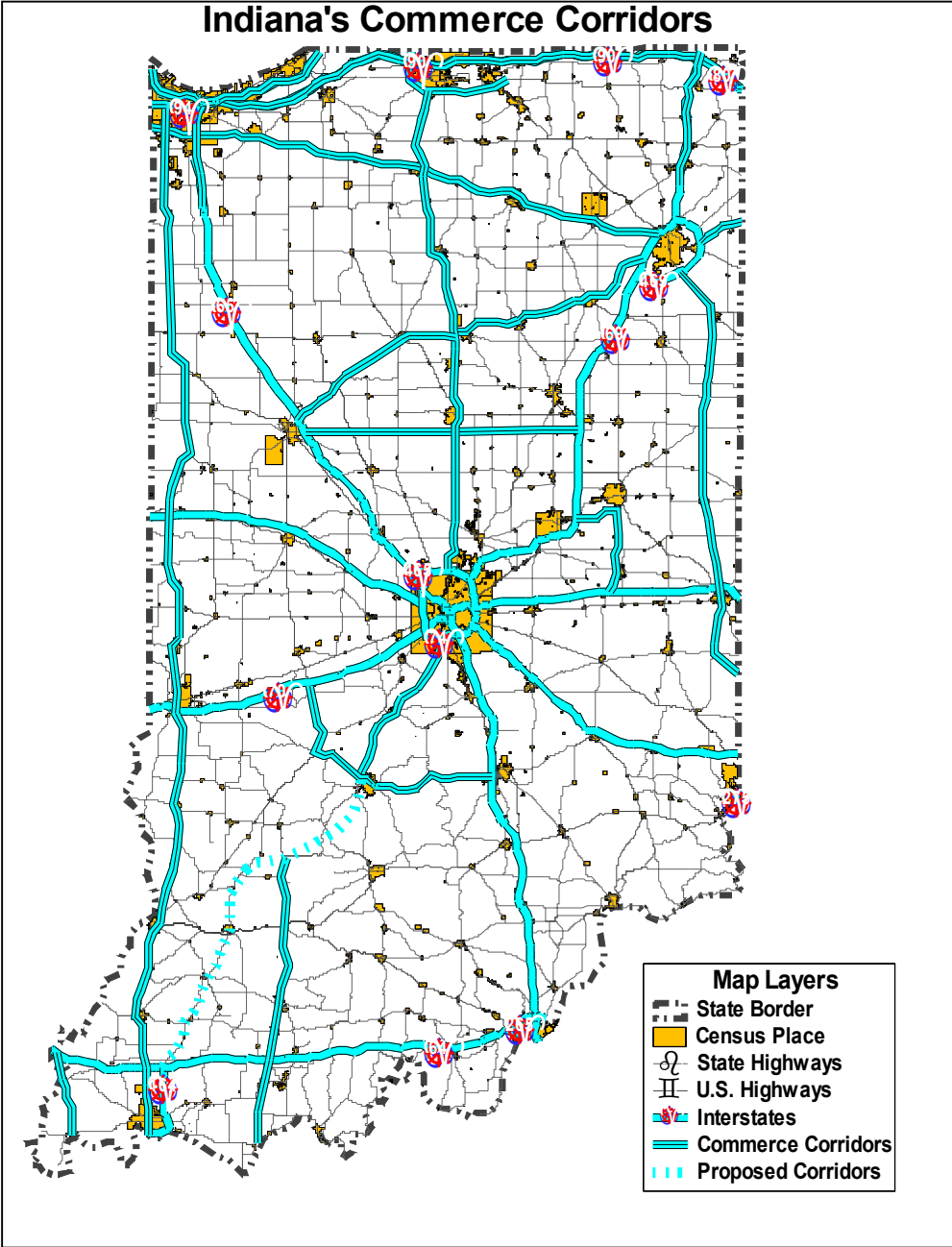
²¹ *INDOT 2000-2025 Long Range Plan* (2001 Update), pages 82 and 83.

²² *INDOT 2000-2025 Long Range Plan* (2001 Update), page 93.



Source: *INDOT 2000 – 2025 Long Range Plan.*

Figure 8: Indiana Statewide Corridor Hierarchy



Source: *INDOT 2000 – 2025 Long Range Plan.*

Figure 9: Indiana Commerce Corridors

In this specific case, US 31 between Plymouth and South Bend is part of the “Commerce Corridor” running from Indianapolis to South Bend. Thus, US 31 between Plymouth and South Bend not only accommodates travel associated with commerce through the Plymouth-South Bend area, but also connects concentrations of manufacturing, trade, service, tourism and recreation opportunities inside the South Bend-Mishawaka-Elkhart metropolitan area to similar concentrations in the state and nation. The congestion and poor levels-of-service on US 31 between Plymouth and South Bend (see Tables 1 and 2) result in delays and increased travel times in the “Commerce Corridor.” These increased travel times degrade the level of accessibility provided by the “Commerce Corridor” that is specifically designated to provide good accessibility. Due to congestion and poor levels-of-service on US 31 between Plymouth and South Bend, the performance of the commerce corridor is not consistent with the goals prescribed by *INDOT 2000–2025 Long Range Plan* for “Commerce Corridors.”

By designating the Plymouth-South Bend corridor as part of both a “Statewide Mobility Corridor” and a “Commerce Corridor,” INDOT has recognized the importance of the corridor’s role in the statewide transportation network. Because of this significance in the larger statewide network, the deficiencies of the existing US 31 Plymouth-South Bend corridor adversely impact the statewide highway network as a whole, and statewide mobility in general. The need for improved mobility between Plymouth and South Bend, or specifically US 30 to US 20, therefore, depends not only on the needs of the corridor region but also reflects the broad transportation needs of the state of Indiana. It is because of these statewide needs served by US 31 that the *INDOT 2000–2025 Long Range Plan* proposes a “US 31 Freeway Upgrade from Indianapolis to South Bend.”²³ Therefore, it is desirable that alternatives to improve US 31 be consistent with the *INDOT 2000-2025 Long Range Plan* that was formulated in response to the needs of the entire state.

The *2025 Transportation Plan* published by MACOG for the South Bend Metropolitan Area’s MPO, also called specifically for the improvement of US 31 as a result of traffic operational failures identified in the level-of-service analysis of the plan. Failures were identified along segments of US 31 from US 20 to Kern Road and New Road to Pierce Road in years 2005 through 2025. Therefore, the MPO’s plan proposed that US 31 should be improved to “a new limited access road with interchanges at several locations and would continue [south from US 20 in St. Joseph County] to US 30 in Marshall County.”²⁴ This recommendation to improve US 31 from US 20 to US 30 was reiterated in March of 2002, in MACOG’s *2025 Transportation Plan Update*.²⁵ Therefore, it is desirable that alternatives to improve US 31 should, therefore, also be consistent with the improvements called for in the MPO’s *2025 Transportation Plan* for the South Bend Metropolitan Area that was formulated in response to needs of the metropolitan area.

²³ *INDOT 2000-2025 Long Range Plan* (2001 Update), pages 101 and 131.

²⁴ *2025 Transportation Plan for South Bend/Elkhart/Goshen Transportation Management Area*; Michiana Area Council of Governments (MACOG); April 1999; pages 45-49 and 98.

²⁵ *2025 Transportation Plan Update*; Michiana Area Council of Governments (MACOG); March 18, 2002; page 39.

C. PROJECT PURPOSE AND NEED

(Project Goals and Performance Measures)

1. Project Need Statement

The needs assessment found that the following three demonstrated needs should be addressed by proposed alternatives for US 31 between South Bend and Plymouth:

NEED 1: REDUCE TRAFFIC CONGESTION ON US 31 BETWEEN PLYMOUTH AND SOUTH BEND.

All urban segments of US 31 are currently experiencing high levels of congestion with unacceptable operating conditions (based on INDOT's roadway design policies on level-of-service). Many intersections contribute to significant travel delays along the route. As continued growth fuels increasing traffic volumes on US 31, the level-of-service provided by US 31 will further deteriorate.

Referring to Table 3 and Figure 5, five of the eight segments of US 31 between Plymouth and South Bend currently fail to meet INDOT minimum design standards for LOS – US 20 to Roosevelt Road, Roosevelt Road to Miller Road, Miller Road to SR 4, SR 4 to Lake Trail and Tyler Road to US 6. By the year 2025, two more segments will fail to meet INDOT minimum design standards for LOS – Lake Trail to Tyler Road and US 6 to Michigan Road.

Referring to Table 4 and Figure 5, three of the four signalized intersections along US 31 currently fail to meet INDOT minimum design standards for LOS – Johnson Road, Kern Road and US 6. By the year 2025, the fourth signalized intersection will also fail during the evening peak hours. Currently three of the six major two-way stop-controlled intersections also fail to meet INDOT minimum design standards for LOS – Roosevelt Road, New Road and Tyler Road. With the increase in traffic on US 31 by the year 2025, two more major two-way stop-controlled intersections will fail to meet INDOT minimum design standards for LOS – Madison Road and Plymouth-Goshen Trail.

If no action is taken, most of the segments of US 31 and its major intersections will fall below an acceptable level-of-service by the year 2025. There is an immediate and pressing need for reduced traffic congestion on US 31 in the corridor. Any proposed alternative must address the increasingly severe congestion on US 31 within the corridor and achieve acceptable operating conditions.

NEED 2: IMPROVE SAFETY ON US 31 BETWEEN PLYMOUTH AND SOUTH BEND.

Several sections of US 31 in the corridor currently experience accident rates as much as two and half times that of the statewide average for similar facilities. US 31 between Plymouth and South Bend has fatal and injury accident rates above that of the statewide average for similar facilities. These elevated accident rates can only be expected to further increase with rising congestion along the route.

Referring to Table 6 and Figure 7, statewide crash rates are exceeded on segments of US 31 through LaPaz and Lakeville and from Lakeville northward to US 20.

There is a need for improved safety on US 31 within the Plymouth-South Bend corridor. Any proposed alternative must address the increasingly severe safety problems on US 31 between Plymouth and South Bend.

NEED 3: ADDRESS STATEWIDE MOBILITY.

Referring to Figures 8 and 9, US 31 between Plymouth and South Bend has been designated by INDOT as a “Statewide Mobility Corridor” and a “Commerce Corridor;” however, improvements are necessary in order for US 31 to meet the characteristics established by the state’s long range plan for such corridors. In order to minimally attain these characteristics, any proposed alternative must reduce congestion, raise speeds, reduce travel times, establish partial access control, and eliminate non-motorized/pedestrian conflicts on US 31 throughout the corridor. In order to fully attain the desirable characteristics stated by INDOT, a proposed alternative must also eliminate at-grade intersections with railroads and highways, establish full access control, and by-pass congested areas. South Bend’s Long Range Plan called for a new limited access facility with interchanges, and Indiana’s Long Range Plan called for the improvement of US 31 to a freeway facility. Any proposed alternative should also be consistent with these long range transportation plans that were formulated in response to the needs of the greater metropolitan area and the entire state.

By designating the Plymouth-South Bend corridor as part of both a “Statewide Mobility Corridor” and a “Commerce Corridor,” INDOT has recognized the importance of the corridor’s role in the statewide transportation network. Because of this significance in the larger statewide network, the deficiencies of the existing US 31 Plymouth-South Bend corridor adversely impacts the statewide highway network as a whole, and statewide mobility in general. Improvements, therefore, must address the needs of the state as articulated in its long range plan. Likewise, consideration must also be given to the needs of the South Bend metropolitan area that have been expressed in its long range plan.

2. Project Purpose Statement

Based on the identified transportation needs, three overall project purposes (goals) have been established with associated objectives and performance measures: (1) ensure US 31 is capable of accommodating the forecasted future traffic flows at an acceptable level of service, (2) improve traffic safety on US 31, and (3) ensure statewide mobility. The performance measures represent the proposed criteria used to evaluate achievement of these objectives. The specific objectives and performance measures for each of these purposes (goals) are detailed below.

PURPOSE 1 (CONGESTION): REDUCE CONGESTION ON US 31 BY PROVIDING THE CAPACITY TO MEET THE FORECASTED TRAVEL DEMAND FOR 2025 AT AN ACCEPTABLE LEVEL-OF-SERVICE (LOS).

Performance Measures: Achievement of a desirable level-of-service (LOS) in rural and suburban areas of C (B is preferable) and in intermediate/built-up areas of no less than D (C is preferable) on US 31 between US 30 and US 20. Reduction in the amount of congested vehicle-miles of travel and congested vehicle-hours of travel in the South Bend metropolitan area.

PURPOSE 2 (SAFETY): IMPROVE SAFETY ON US 31 BETWEEN US 30 AND US 20.

Performance Measures: Reduction in number of fatal, injury, and property damage only (PDO) accidents associated with travel on US 31 between US 30 and US 20. Reduction in fatal, injury, and PDO accidents in the South Bend metropolitan area.

PURPOSE 3 (STATEWIDE MOBILITY): DEVELOP A CONNECTION BETWEEN PLYMOUTH AND SOUTH BEND THAT ATTAINS THE REQUIRED CHARACTERISTICS OF A “STATEWIDE MOBILITY CORRIDOR” AND “COMMERCE CORRIDOR” AS DESCRIBED IN THE INDOT LONG RANGE PLAN.

Performance Measures: Increase in average vehicle speeds between Plymouth and South Bend. Reduction in travel time between Plymouth and South Bend. Reduction of non-motorized/pedestrian conflicts between Plymouth and South Bend.

SUMMARY OF NEEDS, GOALS, AND PERFORMANCE MEASURES		
Need	Purpose	Performance Measures
<p>Need 1:</p> <p>Reduce traffic congestion on US 31 between Plymouth and South Bend.</p>	<p>Purpose 1 (Congestion):</p> <p>Reduce congestion on US 31 by providing the capacity to meet the forecasted travel demand for 2025 at an acceptable Level of Service (LOS).</p>	<p>Achievement of a desirable level-of-service (LOS) in rural / suburban areas of C (B is preferable) and in intermediate / built-up areas of no less than D (C is preferable). Reduction in congested vehicle-miles of travel in the South Bend metropolitan area. Reduction in congested vehicle-hours of travel in the South Bend metropolitan area.</p>
<p>Need 2:</p> <p>Improve safety on US 31 between Plymouth and South Bend.</p>	<p>Purpose 2 (Safety):</p> <p>Improve safety on US 31 between US 30 and US 20.</p>	<p>Reduction in the number of fatal, injury, and PDO accidents associated with travel on US31. Reduction in the number of fatal, injury, and PDO accidents associated with travel in the South Bend metropolitan area.</p>
<p>Need 3:</p> <p>Address Statewide Mobility.</p>	<p>Purpose 3 (Mobility):</p> <p>Develop a connection between Plymouth and South Bend that attains the required characteristics of a "statewide mobility" and "commerce corridor" as described in the INDOT Long range Plan.</p>	<p>Increased average vehicle speeds between Plymouth and South Bend. Reduced travel time between Plymouth and South Bend. Reduction of non-motorized vehicle/pedestrian conflicts.</p>