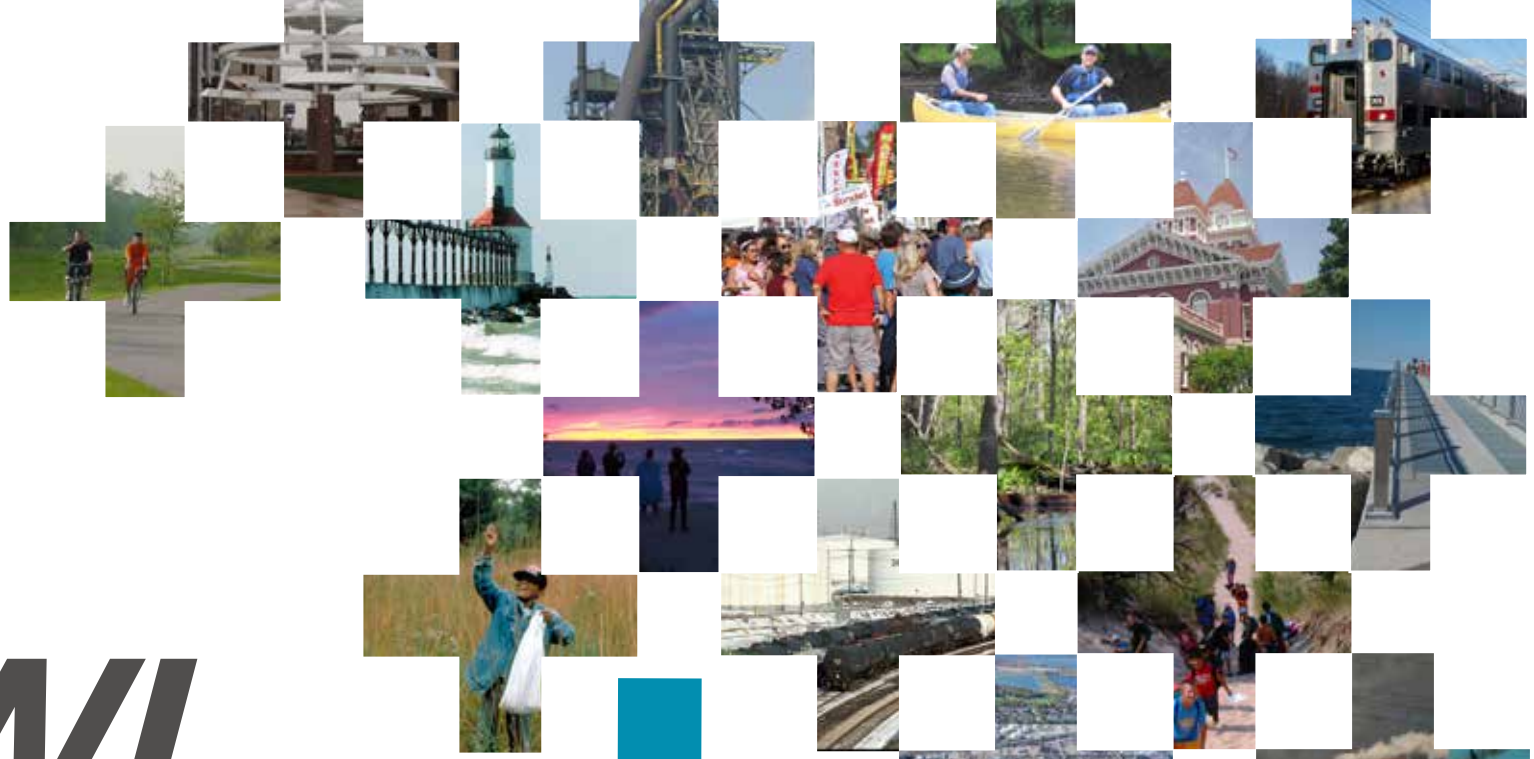


NWI 2055

METROPOLITAN TRANSPORTATION PLAN
FOR NORTHWEST INDIANA



NORTHWESTERN INDIANA REGIONAL PLANNING COMMISSION nirpc

PREPARED BY
Northwestern Indiana Regional Planning Commission

ADOPTED
July 20, 2023

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1 INTRODUCTION

Introduction

The Northwestern Indiana Regional Planning Commission, or NIRPC, serves as the Council of Governments (COG) and the Metropolitan Planning Organization (MPO) for Lake, Porter, and La Porte counties. As of the 2020 Census, the three counties of Northwest Indiana have about 785,000 residents spread across 41 cities, towns, and unincorporated area.

As an MPO, NIRPC is required by federal statute to develop and maintain an updated long-range transportation plan that addresses walking, bicycling, transit, and driving and considers people of all ages and abilities. This plan guides the use of the over $100 million in federal funding that is spent annually on transportation projects in Northwest Indiana.

Between now and 2050, that will total more than a $3 billion investment in the quality of life of the region's residents. Implementation of projects in the transportation plan is managed through the Transportation Improvement Program (TIP), a short-term planning document listing all federally funded and regionally significant transportation projects. All projects in the TIP must be consistent with the plan.

The three counties comprising the Northwest Indiana planning area are culturally and economically diverse. The region's 41 cities and towns range from cities such as Gary, Hammond, East Chicago, and Whiting, part of the Chicago area's vast industrial complex once known as the "Workshop of America," to quiet towns like Kouts and Hebron that dot its rural southeastern edge. The natural landscape ranges from the shore of Lake Michigan, protected by a network of local, state, and national parkland, to the scenic Kankakee river valley, and bisected by the hills of the Valparaiso Moraine which mark the continental divide.

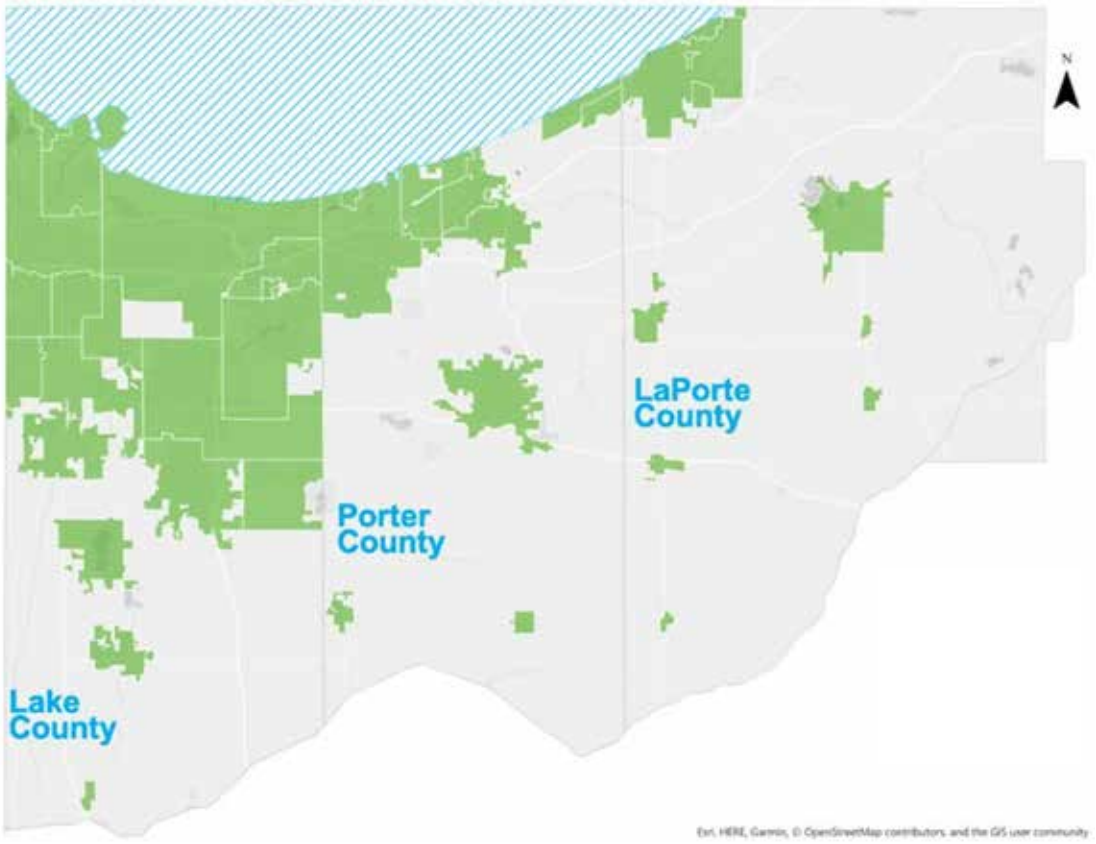


Figure 1-1: The NIRPC Region - Lake, Porter & La Porte Counties

Plan Overview

For decades, many transportation plans around the United States have focused on mobility at the expense of accessibility. One result of this focus is that the billions of dollars of investment into transportation infrastructure have succeeded in allowing people and goods to move farther and farther at higher and higher speeds. Over time, this investment in highway capacity enabled the expansion of metropolitan areas as residents and businesses spread out over a wider area. In keeping with this pattern, Northwest Indiana's population continues to migrate outside the main centers; however, employment growth is expected to remain within the established business locations supported by existing services and transportation access. Consequently, commute lengths and times will grow longer, roadways will become more congested because of increased travel demands, and vehicle emissions will degrade air quality. If these development patterns continue, they will threaten the region's natural areas and farmlands. Managing and directing growth effectively can help prevent these impacts and preserve Northwest Indiana's quality of life.

In 2019, NIRPC adopted *NWI 2050*. The plan is based on four Key Elements, envisioning Northwest Indiana as Connected, Renewed, United, and Vibrant. These elements are further analyzed using four Focus Areas: Economy and Place, Environment, Mobility, and People and Leaders. The results produced a number of future scenarios and action plans to bring to fruition these policies and identify the stakeholders best suited to implement them. *NWI 2050* did not include a land use and housing element. Building on *NWI 2050*, *NWI 2050+* addresses regional land use and housing issues, including population trends, growth patterns, regional policy, urban and rural design, and the relationship between transportation and land use. *NWI 2050+* updates *NWI 2050* and keeps the same horizon year and vision as *NWI 2050*.

NWI 2050+ has been developed to comply with the Infrastructure Investment and Jobs Act/ Bipartisan Infrastructure Law (IIJA/BIL) and consider the mandated planning factors from the transportation bill. These factors include:

1. Preserving the existing transportation systems
2. Planning for the safety of all transportation system users rather than just increasing the speed of cars and trucks
3. Connecting people to jobs, educational opportunities, shopping, and recreation
4. Efficient movement of freight to support the economy of the region
5. Identifying regional land use and housing concepts to help the Region attain that future in a connected, equitable, and environmentally sustainable way

NWI 2050+ also considers the IIJA/BIL's emphasis on incorporating sustainability and resiliency into the transportation plan through new programs. The new programs help communities prepare for and mitigate damage from extreme events. These programs include the Carbon Reduction Program (CRP), the Bridge Investment Program (BIP), and the Safe Streets and Roads for All (SS4A) discretionary program. More information on the funding programs can be found at https://www.fhwa.dot.gov/bipartisan-infrastructure-law/grant_programs.cfm.



NWI 2050+ Planning Elements

Federal regulations require a metropolitan transportation plan to include the following:

- Fiscal Constraint: Federal regulations require *NWI 2050+* to have a financial plan. This requirement means that the cost of the roadway, transit, and other transportation facilities and services must be covered by state, federal, local, private, and other transportation revenues that can be reasonably expected to be available.
- Air Quality Conformity Determination: The plan must demonstrate that the proposed transportation improvements will not result in air pollution that exceeds national air quality standards.
- Federal Transportation Performance Measures
- Land Use & Housing Strategies
- Public Participation
- A minimum 20-year planning horizon
- A multi-modal approach that considers walking, biking, transit, rail, cars, and trucks
- Environmental Justice
- Sustainability and Resiliency

NWI 2050+ addresses all required federal regulations within the following plan elements:

1. Economic Development
2. Fiscal Constraint
3. Active Transportation
4. Climate & the Environment
5. Freight
6. Land Use & Housing
7. Roads
8. Transit

NWI 2050+ Development

NIRPC has divided the plan development process into three general phases:

1. Finding Meaning
2. Creating Purpose
3. Purpose Driven Planning



Public Outreach

Open Houses: NIRPC staff kicked off the public engagement phase of *NWI 2050+* with three open houses in June of 2022, one in each of the counties of the region.

Website: NIRPC created a *NWI 2050+* page on NIRPC's website. People with access to the Internet were able to read, comment, and see the results. In addition, NIRPC staff created a comments map using Social Pinpoint. Comments could be added to the map by clicking on an icon at the top of the screen, dragging it to the desired position on the map, and providing a comment on the card appearing on the screen (Figure 1-2). The map included three categories of icons as inputs:

- Active transportation (biking and pedestrian)
- Transit (freight, trains, buses)
- Land use (development, housing, commercial)

This mapping exercise helped the planning team focus on drafting concerns and priorities.

Brochure: NIRPC distributed a brochure for *NWI 2050+* to encourage people to participate in the planning process online through the comments map and a survey, which helped NIRPC to identify issues, needs, and priorities to shape the future of Northwest Indiana (Figure 1-3). The brochure included a QR code which could be scanned to access the survey.

Survey: NIRPC developed an online survey seeking input from the public about their concerns and ideas for a future that's Connected, Renewed, United, and Vibrant into 2050. The survey included questions covering the plan elements and was supported by visual graphics and pictures to help people visualize their preferences for future development.

Social Media: NIRPC continuously updated the public about all opportunities to engage with plan feedback via their social media platforms: Twitter, Facebook, LinkedIn, Instagram, and YouTube.





Figure 1-2: Social Pinpoint Map Results

County Fairs: In the summer of 2022, NIRPC staff set up a booth at each of the three county fairs to inform the public about the plan development process and receive input. This was the first time NIRPC had space at a county fair for their long-range plan public engagement process. Staff was present every day at the La Porte County Fair from July 9th to 16th, the Porter County Fair from July 23rd to July 31st, and the Lake County Fair from August 5th to August 14th. NIRPC staff worked two three-hour shifts during the weekdays and three three-hour shifts on the weekends. In all, staff worked over 400 hours during all three fairs, and distributed over 2,000 brochures while engaging with over 500 people directly.

At each fair, staff set up a large aerial map of the entire three-county NIRPC region. This enabled county fair attendees to point out where they lived and for NIRPC staff to talk in detail about the importance of the planning effort to their quality of lives. The vast majority of those engaged had never heard of NIRPC.

Staff directed people to take the online survey via the brochure, which had a direct impact on the number of overall respondents. Participants at the county fair exhibits also were given the opportunity to submit written comments on note cards. These comments, along with those received through the online survey, were taken into consideration as the plan was developed.

Additionally, staff facilitated an interactive game for elementary school children to learn about the concept of the 15-minute neighborhood. Staff developed worksheets for every elementary school in the region and asked children from these schools to review their school grounds and the surrounding area and brainstorm ideas to make them more walkable and bikeable. In this exercise children learned how coordinated land use and transportation planning can improve safety.

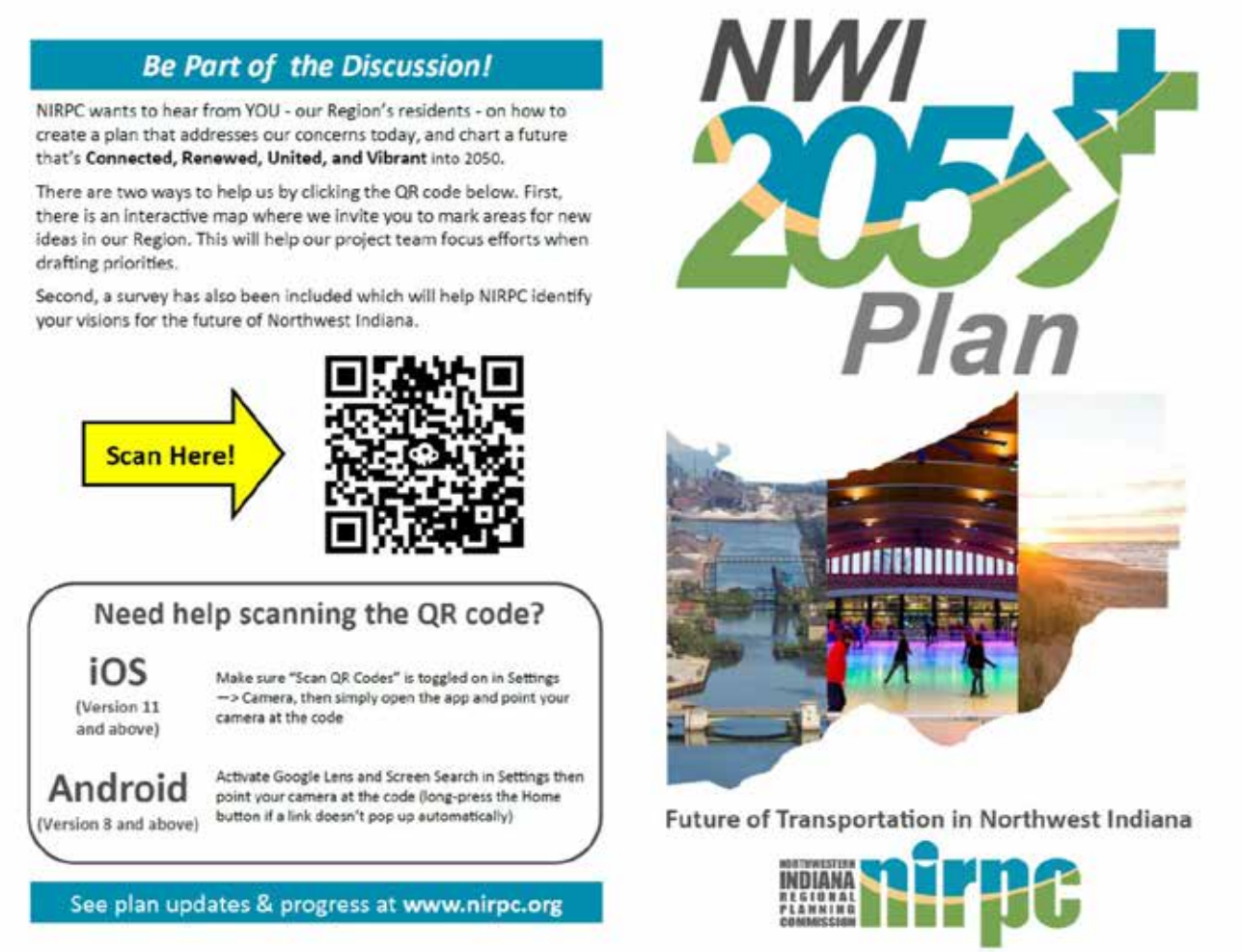


Figure 1-3: Outreach Brochure

Youth Outreach: In November of 2022 NIRPC staff was invited to the NWI Boys and Girls Club in Gary to work with youth on the aspects of the plan development. Staff prepared a "pop-up event" for the club members, displayed different boards highlighting aspects of the plan, and elicited feedback elicited from the participants.

Other Outreach: Staff attended a Juneteenth Event in Merrillville to review plan specifics with participants and receive feedback.







NIRPC staff attending county fairs during the summer of 2022 in Lake County, Porter County, and LaPorte County



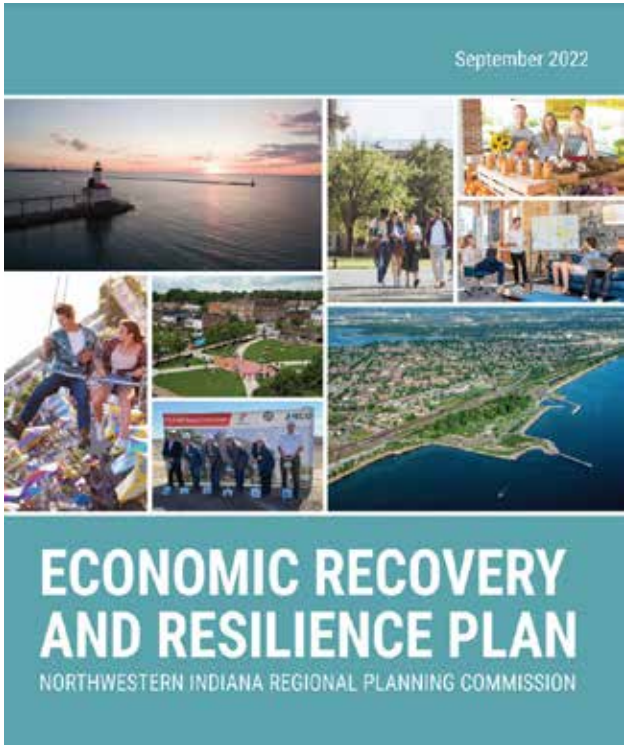
Economic Development

NIRPC was designated in September 2019 by the U.S. Economic Development Administration (EDA), a bureau of the U.S. Department of Commerce, as an Economic Development District (EDD). This EDD status makes the counties of Lake, Porter, and La Porte in Northwest Indiana eligible to receive certain types of federal funding.

The EDD designation was one of the collective goals within the strategic plan for regional economic development, Ignite the Region: A Regional Strategy for Economic Transformation, spearheaded by the Northwest Indiana Forum in collaboration with multiple regional partners which included NIRPC.

One of the functions of an EDD is the maintenance and implementation of the *Comprehensive Economic Development Strategy* (CEDS)[1] plan. The CEDS identifies goals and objectives for a five year period as well as specific projects for potential EDA and other grant funding.

An *Economic Recovery and Resilience Plan* (ER&R)[2] was completed in September 2022 in response to the COVID-19 Pandemic. The purpose of NIRPC's ER&R Plan is to address recovery actions needed in the short term after an economic disruption occurs to return the economy in Lake Porter and La Porte counties to its previous condition and to address how to build a future resilient regional economy. The Action Plan portion of the ER&R Plan includes strategies and actions for recovery and resiliency.



Fiscal Constraint

Both the long-range and short-range plans must be fiscally constrained. In *NWI 2050+*, any estimates are given for example purposes and are not intended for programming purposes. In the short-range plan, all estimates are carefully put together using recent cost estimates and watched closely. All future cost estimates are developed with the Indiana Department of Transportation's (INDOT) cost inflation calculator which looks at recent trends for individual items in recently awarded bids to calculate future costs for similar type projects. All projects are programmed using current future projected allocations of the Federal Highway Administration (FHWA) & the Federal Transit Administration (FTA) funds with discussions with INDOT and also using recent annual increases. No projects were programmed with assumptions of other funds; only the U.S. Department of Transportation (USDOT) or local funds were assumed in projecting allocation and cost estimates.

U.S. Department of Transportation

Federal Highway Administration

1 https://nirpc.org/wp-content/uploads/2019/06/2018-CEDS-Revision-for-NIRPC-Designation.pdf

2 https://nirpc.org/wp-content/uploads/2022-09-14-NIRPC-Economic-Recovery-and-Resilience-Plan-1.pdf

NWI 2050+ adheres to the regulations of section 23 of the Code of Federal Regulations (CFR) 450.324 as follows:

<u>Development and content of the metropolitan transportation plan (23 CFR 450.324)</u>
(b) The transportation plan shall include both long-range and short-range strategies/actions that provide for the development of an integrated multi-modal transportation system (including accessible pedestrian walkways and bicycle transportation facilities) to facilitate the safe and efficient movement of people and goods in addressing current and future transportation demand.

NIRPC's NWI 2050+ includes both long-range and short-range planning strategies and actions that provide an integrated and multi-modal transportation system. These are carried over from NWI 2050 which includes an action plan that lists thirteen investment programs and sixteen major planning initiatives supported by over three hundred discrete strategies. The action plan also includes a robust performance-based planning framework of measures to track progress and to indicate where adjustments in planning tasks and programming may be needed in the future.

(f) The metropolitan transportation plan shall, at a minimum, include:
(9) Design concept and design scope descriptions of all existing and proposed transportation facilities in sufficient detail, regardless of funding source, in non-attainment and maintenance areas for conformity determinations under the Environmental Protection Agency's (EPA) transportation conformity regulations (40 CFR part 93, subpart A). In all areas (regardless of air quality designation), all proposed improvements shall be described in sufficient detail to develop cost estimates;

The short-range and the long-range elements of the "Purpose Driven Planning" sections of NWI 2050+ as well as the Air Quality Conformity Report include descriptions and cost estimates.

(11) A financial plan that demonstrates how the adopted transportation plan can be implemented.
(i) For purposes of transportation system operations and maintenance, the financial plan shall contain system-level estimates of costs and revenue sources that are reasonably expected to be available to adequately operate and maintain the Federal-aid highways (as defined by 23 of the United States Code (U.S.C.) 101(a)(5)) and public transportation (as defined by title 49 U.S.C. Chapter 53).

The estimates for all projects in the short-range plan and the long-range plan were carefully put together using updated pricing and inflation and have been calculated on individual items in each project, using the assumption that each item and the labor for that item are subject to different factors in inflation. This is true for both local and INDOT projects. Allocated funds are shown to have conservative increases in the future, which are based on an average of the past 7 years (extended from typical 5-year average to account for the Covid-19 pandemic) and a discussion with INDOT officials concerning future projections of allocations.



(iii) The financial plan shall include recommendations on any additional financing strategies to fund projects and programs included in the metropolitan transportation plan. In the case of new funding sources, strategies for ensuring their availability shall be identified. The financial plan may include an assessment of the appropriateness of innovative finance techniques (for example, tolling, pricing, bonding, public private partnerships, or other strategies) as revenue sources for projects in the plan.

All projects listed within the plan can be funded with federal funds allocated to Northwest Indiana with the required minimum match. No project assumes additional funding support except for the Northern Indiana Commuter Transportation District (NITCD) two expansion projects.

(iv) In developing the financial plan, the MPO shall take into account all projects and strategies proposed for funding under title 23 U.S.C., title 49 U.S.C. Chapter 53 or with other Federal funds; State assistance; local sources; and private participation. Revenue and cost estimates that support the metropolitan transportation plan must use an inflation rate(s) to reflect "year of expenditure dollars," based on reasonable financial principles and information, developed cooperatively by the MPO, State(s), and public transportation operator(s).

Project estimates reflect "year of expenditure dollars." This is accomplished in the short-range element through project cost estimating using an INDOT developed inflation tool available to the MPO. This tool takes historic prices for each item in each project and forecasts an inflated price for assumed quantities and labor to install those items in a future time.

In 2022, the construction industry saw inflation in some items up to 160%. To accommodate this unexpected surge, NIRPC and its LPAs worked together in late 2022 to gather new inflated cost estimates and move selected projects out one year to be able to accommodate the projects in its short-range plan.

(v) For the outer years of the metropolitan transportation plan (i.e., beyond the first 10 years), the financial plan may reflect aggregate cost ranges/cost bands, as long as the future funding source(s) is reasonably expected to be available to support the projected cost ranges/ cost bands.

NWI 2050+ includes estimates in its "Purpose Driven Planning" for illustrative purposes only. All examples reflect anticipated FHWA and FTA funds available and require local match funds for the investment program that reflects the priorities of this plan.

(vi) For non-attainment and maintenance areas, the financial plan shall address the specific financial strategies required to ensure the implementation of TCMs in the applicable SIP.

The Indiana State Implementation Plans (SIP) does not contain any Transportation Control Measures (TCM).

(vii) For illustrative purposes, the financial plan may include additional projects that would be included in the adopted transportation plan if additional resources beyond those identified in the financial plan were to become available.

Any projects listed in NWI 2050+ are solely for example purposes and are not intended to suggest funding of these projects.

(viii) In cases that the FHWA and the FTA find a metropolitan transportation plan to be fiscally constrained and a revenue source is subsequently removed or substantially reduced (i.e., by legislative or administrative actions), the FHWA and the FTA will not withdraw the original determination of fiscal constraint; however, in such cases, the FHWA and the FTA will not act on an updated or amended metropolitan transportation plan that does not reflect the changed revenue situation.

This does not apply to this plan at adoption.



NIRPC is showing its compliance to be fiscally constrained with known FWHA and FTA funds. The amounts shown in the tables below show the expected amount of funds from both FHWA and the FTA and how NIRPC proposes spending these funds:

FHWA	Chicago UZA					Michigan City UZA				
	2024	2025	2026	2027	2028 Illustrative	2024	2025	2026	2027	2028 Illustrative
STBG Available	$15,189,165	$15,492,948	$15,802,807	$15,802,807	$24,244,022	$1,236,857	$1,263,959	$1,291,605	$1,291,605	$1,291,605
STBG Programmed	$8,812,660	$18,325,393	$10,653,981	$15,630,270	$21,037,474	$1,653,350	$1,495,030	$1,334,322	$1,165,810	$857,000
HSIP Available	$3,512,000	$2,839,505	$2,896,295	$2,934,886	$3,540,421	$420,166	$429,309	$439,365	$445,757	$452,264
HSIP Programmed	$125,000	$2,533,811	$2,276,300	$1,556,200	$6,075,000	$-	$688,000	$330,000	$369,349	$-
CMAQ Available	$2,698,431	$2,750,143	$2,805,146	$2,855,638	$3,473,290	$659,036	$668,745	$678,649	$690,865	$703,300
CMAQ Programmed	$4,618,613	$1,649,600	$6,181,470	$5,783,129	$8,221,334	$250,000	$358,975	$1,247,120	$690,000	$1,684,073
TA Available	$2,114,882	$2,157,179	$2,200,323	$2,200,323	$2,200,323	$236,501	$241,231	$246,056	$246,056	$246,056
TA Programmed	$7,414,334	$1,054,691	$4,929,065	$2,262,275	$2,238,388	$812,696	$200,000	$-	$663,946	$-
CRP Available	$1,845,276	$1,882,181	$1,919,825	$1,919,825	$1,919,825	$206,352	$210,479	$214,689	$218,553	$222,487
CRP Programmed	$976,124	$1,331,200	$1,610,240	$64,000	$589,680	$80,000	$125,735	$-	$-	$-
PROTECT Available	$681,916	$695,554	$709,465	$722,235	$735,236	$75,688	$77,202	$78,746	$80,163	$81,606
PROTECT Programmed	$310,000	$454,504	$-	$-	$-	$-	$-	$-	$-	$-
Total Available	**$26,041,670**	**$25,817,510**	**$26,333,861**	**$26,435,714**	**$36,113,117**	**$2,834,600**	**$2,890,925**	**$2,949,110**	**$2,972,999**	**$2,997,318**
(+/-)	**$3,784,939**	**$468,311**	**$682,805**	**$1,139,840**	**$(2,048,759)**	**$38,554**	**$23,185**	**$37,668**	**$83,894**	**$456,245**



FTA	Chicago UZA					Michigan City UZA				
	2024	2025	2026	2027	2028-Illus-trative	2024	2025	2026	2027	2028-Illus-trative
5307 Available	$16,473,065	$16,769,580	$17,071,433	$17,378,719	$17,691,536	$1,328,321	$1,352,231	$1,376,571	$1,401,349	$1,426,574
5307 Programmed	$16,473,065	$16,769,580	$17,071,433	$17,378,719	$17,691,536	$1,328,321	$1,352,231	$1,376,571	$1,401,349	$1,426,574
5310 Available	$702,620	$715,267	$728,141	$741,248	$754,590	$-	$-	$-	$-	$-
5310 Programmed	$702,620	$715,267	$728,141	$741,248	$754,590	$-	$-	$-	$-	$-
5337 Available	$25,090,658	$25,542,290	$26,002,051	$26,470,088	$26,946,550	$-	$-	$-	$-	$-
5337 Programmed	$25,090,658	$25,542,290	$26,002,051	$26,470,088	$26,946,550	$-	$-	$-	$-	$-
5339 Available	$527,929	$537,431	$547,105	$556,953	$566,978	$-	$-	$-	$-	$-
5339 Programmed	$527,929	$537,431	$547,105	$556,953	$566,978	$-	$-	$-	$-	$-
Total Available	**$42,794,272**	**$43,564,568**	**$44,348,730**	**$45,147,008**	**$45,959,654**	**$1,328,321**	**$1,352,231**	**$1,376,571**	**$1,401,349**	**$1,426,574**
(+/-)	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**	**$-**



Appendix 1A: Public Involvement Summary

County Fairs

In the summer of 2022, NIRPC staff set up a booth at each of the three county fairs to inform the public about the plan development process and receive input. This was the first time NIRPC had space at a county fair for their long-range plan public engagement process. Staff was present every day at the La Porte County Fair from July 9th to 16th, the Porter County Fair from July 23rd to July 31st, and the Lake County Fair from August 5th to August 14th. NIRPC staff worked two three-hour shifts during the weekdays and three three-hour shifts on the weekends. In all, staff worked over 400 hours during all three fairs, and distributed over 2,000 brochures while engaging with over 500 people directly.

At each fair, staff set up a large aerial map of the entire three-county NIRPC region. This enabled county fair attendees to point out where they lived and for NIRPC staff to talk in detail about the importance of the planning effort to their quality of lives. The vast majority of those engaged had never heard of NIRPC. Staff directed people to take the online survey via the brochure, which had a direct impact on the number of overall respondents. Participants at the county fair exhibits also were given the opportunity to submit written comments on note cards. These comments, along with those received through the online survey, were received for information and, where relevant, were taken into consideration as the plan was developed.

Additionally, staff facilitated an interactive game for elementary school children to learn about the concept of the 15-minute neighborhood. Staff developed worksheets for every elementary school in the region and asked children from these schools to review their school grounds and the surrounding area and brainstorm ideas to make them more walkable and bikeable. In this exercise children learned how coordinated land use and transportation planning can improve safety.

Comments received at the county fairs are listed below.

Roads- and Freight-related Comments

- *Would be nice if you could use reflective pavement markings or features like they use in Europe to better light country roads at night.*
- *Merrillville: 57th and Connecticut Need Stop Light.*
- *Whispering Sands & 6 Need Stop Light.*
- *Expand Willowcreek Road.*
- *Are they going to widen or fix the Samuelson Rd railroad underpass?*
- *Valpo: Salt Creek Commons- SR 149 No Stop Light. Very Dangerous. Study SR 149 @ 550.*
- *Division and Smoke Road, lots of crashes.*
- *94 and 49 has a tight on ramp.*
- *500 E in Jackson Township needs to be better maintained - the berms are overgrown with low hanging tree limbs.*
- *New Developments in Jackson Township have caused drainage issues. County needs to be more proactive in securing drainage plans from residential developers.*
- *La Porte: Trains stop on 2nd St. Crossing, cars love to go through the gate. The road is curvy and is utilized as a recreational area. Someone is going to be killed someday. The trains also park across the Weller St crossing. Some days the train won't move for 3 days. Please help!*
- *Johnson Road and 400 N has a safety issue.*
- *Johnson Rd is highly congested.*
- *Downtown La Porte is horrendous to get through.*
- *Roundabout at SR 2 and US 6 is good! Would like to see more roundabouts in La Porte County to facilitate traffic flow, since signalized intersections slow down traffic a lot more than roundabouts.*
- *1650 S between SR 39 and 250 W: there is an Ozinga quarry that generates 50-70 semis a day. County needs to spend more on improving the roads.*
- *Lots of potholes near LaLumiere School. 650 W and Wilhelm Rd have a lot of potholes.*
- *Hanna area lacks sidewalks and good curb features.*
- *I hate roundabouts.*
- *No on La Porte bypass. Fail Rd, Severs Rd should have been used.*
- *Truck stop locations around Michigan City are causing congestion issues. Lots of abandoned areas to use instead of new truck stops and developments.*
- *Convert abandoned areas to forest.*
- *More roundabouts in La Porte. I.e. Small Rd, 2nd & Ziegler.*
- *Curve is very dangerous on 35 & 39 & Waverly in La Porte.*
- *Michigan City 20 and Woodland is a bad intersection.*

- *Flooding issues in Michigan City.*
- *Need more sidewalks in Michigan City.*
- *Darlene Dr in unincorporated La Porte County has been unpaved for a while.*
- *County Acres neighborhood in La Porte heavy fast traffic on highway, would be good to have flashing lights or slow down.*
- *The intersection of Pine Lake Ave and Waverly Rd needs a stop light. It is extremely dangerous getting out from Waverly onto Pine Lake, especially going left.*
- *Range Rd (North) and Hwy 20 intersection is very dangerous. Traffic speed too high for no turn lanes.*
- *US 12 out of Michigan: run 20 and 12 together. Give 12 to parks district.*
- *Finish Illiana Corridor, not only east to I-65, but also all the way to I-94 near Michigan City.*
- *Stone Lake Dr and Clearwood side bike paths make it harder for locals to drive around.*
- *The walking path around Timber Ridge subdivision on Small Rd is a good example of a walking trail that gets used frequently, even though there were a lot of complaints before it went in that people would get robbed.*
- *Pahs Rd in Michigan City that runs between Johnson and Cleveland (or whichever road runs behind Meijer) would be a great place for a sidewalk. There are many pedestrians on that road.*
- *Rail line in Springfield.*
- *more stops.*
- *Merrillville needs better transportation from Gary through Merrillville to the mall.*

Transit-related Comments

- *Whispering Sands & 6 needs stop light.*
- *Disabled need ride. Valpo - Chicago Porter County Council of Aging booklet can't help.*
- *Repurpose old South Shore Freight line from MC to La Porte to Plymouth for commuter line. Similar was done for a South Bend section.*
- *Better bus shelters in Michigan City are needed - protection from the elements .*
- *La Porte Transit needs friendlier staff (Mike is friendly & Shelly too).*
- *Need more bus transit in La Porte - Like Michigan City's system.*
- *Price is right - keep steady.*
- *M.C. Pick up people @ door, Moblility Limitation.*
- *Need the triangle route back but need to get people @ home rather than @ courthouse.*
- *Wants less roads in rural La Porte and better connectivity between La Porte cities and Porter County cities. Smaller and more diverse transit in cities. A way to get to O'Hare.*
- *More public transit!*
- *Increased bus service in Michigan City, especially to medical complex. People have to wait hours at Woodland Medical complex on 400 in M.C.*
- *Try to keep open mind & hear both sides on bypass but aren't convinced its needed. Alternatives?*
- *Bus service from La Porte to MC, especially for elderly/low income for shopping.*
- *Aldi in La Porte closing. Need bus service or transport for elderly/low income to get to Kroger.*
- *Bus in La Porte should go later than 5, maybe 9 or 10.*
- *Holiday weeks should run through midnight. Fireworks, fair events etc.*
- *Have bus call when they come to pick you up.*
- *Michigan City should have pick up on 10.*
- *More transportation bus (sic) need to be able to link our community to needed resources.*

Active Transportation Comments

- *Crash data on NIRPC website.*
- *Get Marquette Greenway route info to IDEM re: Grand Cal remediation site mspinar@idem.in.gov.*
- *Bike maps.*
- *New Carlise is fishing destination.*
- *Riverwalk along Trail Creek in Michigan City like example in San Antonio, Indianapolis, OK City.*
- *The culvert under the Oak Savannah Trail west of County Line Rd. is 125 yrs old and failing.*
- *Barker Ave needs better sidewalks.*
- *More signage at the bike crossing at 53rd and Griffith Regional airport off Oak Savannah Trail. I have seen bikers almost hit at that intersection several times.*
- *No sidewalks on Hendricks 7200 No sewer septic no buses.*
- *The bike trail will be a good idea for different communities. There needs to be sidewalks in communities, for safety measures.*

- *There needs to (be) a walkway or bridge to connect Madison Street to the Community center.*
- *Need more bike trails around Valpo U.*
- *Joliet Rd in La Porte County is not safe for cyclists - traffic moves too fast, often 60 mph plus.*
- *Which trails can be used for horses is good info on the map.*
- *18th St in La Porte should not be designated green on the greenways and blueways map because it is not very bikeable.*
- *These are currently (?) poorly times and activated traffic signals.*

Land Use Comments

- *(Sogany Lake) [sic] Rolling Prairie is a quaint town and people should visit. It's warm and welcoming.*

2023 Regional Earth Day

NIRPC had a booth at the 2023 Regional Earth Day event held at the Porter County Expo Center on April 22 from 9 am until 1 pm. Approximately 1,138 people attended the event, and most visited the NIRPC table to receive a punch to their event card. Boards including *NWI 2050+* content from Active Transportation, Land Use, Housing, and Climate Change were displayed for public perusal. The Director of Environmental Programs answered questions from the public, explained graphics, and provided a QR Code for easy access to the *NWI 2050+* webpage.

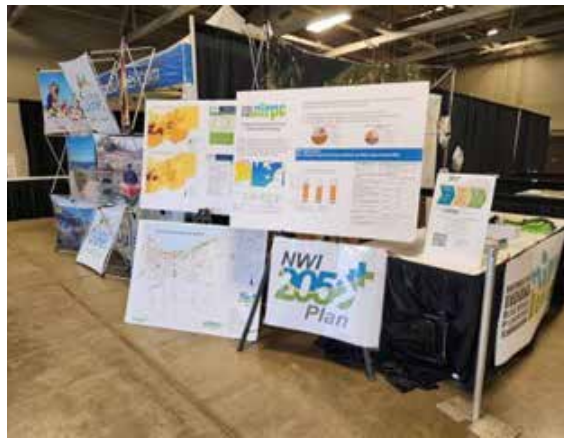
Town of Merrillville Juneteenth Celebration

The Town of Merrillville, Indiana hosted a Juneteenth celebration on Saturday, June 18th, 2022, between 12:00 to 5:00 pm at the Dean & Barbara White Center located at 6600 Broadway, Merrillville, IN. NIRPC staff attended the celebration and set up a vendor table with information about *NWI 2050+*.

The following comments were received:

- *Merrillville - 57th, and Connecticut needs a streetlight.*
- *More signage at lake crossing at 53rd and Griffith Regional Airport off of Oak Savannah trail. I have seen bikers almost hit at that intersection several times.*
- *No sidewalks on Hendricks 7200, No sewer septic, so buses.*
- *Merrillville needs better transportation from Gary through Merrillville to the mall.*
- *There needs to be a walkway or bridge to connect Madison Street to the community center.*
- *The bike trail will be a good idea for different communities. There need to be sidewalks in communities for safety measures. More transportation buses need to be able to link our community to needed resources.*








SUPER BOWL
CHAMPIONS



2 ACTIVE TRANSPORTATION

Finding Meaning

Introduction

Active transportation, encompassing pedestrian, bicycle, and lightweight, low-powered "micro-mobility" devices such as scooters, have an increasingly important role to play in Northwest Indiana's transportation network. The benefits of these modes are well-documented, ranging from their efficient use of space, extreme energy efficiency and very low environmental impact, and positive impact on individual health and wellbeing. The region has positioned itself to take advantage of these benefits and expand the role of active modes. Northwest Indiana has taken full advantage of the abandonment of duplicative rail corridors radiating from Chicago to create one of the nation's leading and most functional systems of shared use trails. These trails both serve internal community needs and link the region's cities and many of its central districts together. Preservation of corridors through railbanking and creative short- and long-term planning through NIRPC's *2020 Greenways+Blueways Plan* will ensure the extension of trails into more parts of the MSA and continue to connect communities. Finally, the recent awards of a RAISE grant in 2021 to complete the Marquette Greenway from Chicago to New Buffalo and in 2022 to implement a complete street program along Ridge Road from the Indiana State Line to Columbia Avenue in Munster, represent major investments in active transportation infrastructure and integration with major improvements and expansion of the South Shore Line. The region now has over 300 miles of local, regional, park, and multi-state trails.

On the other hand, aspects of development also pose significant challenges. While trail development has been visionary and robust, on-street infrastructure -- including ways to link trails together and to neighborhoods and major off-trail destinations has lagged. Land use patterns with large heavy industrial sites, mainline railroads, and three transcontinental interstate highways all create difficult barriers. And the auto-oriented environments of the eras that represented the most extensive growth made few if any accommodations for pedestrian or bicycle access. Filling these voids are the major focus of the Active Transportation Chapter of *NWI 2050+*.



The Scope of the Chapter

The Active Transportation chapter is part of the Northwest Indiana Regional Planning Commission's update of *NWI 2050.* It supplements the *2020 Greenways+Blueways Plan*, which is primarily focused on trails using separated rights-of-way, and *NWI 2050,* which recognized the role of both trails and complete streets and established a funding framework for both.

Individual communities also develop active transportation components of their comprehensive and/or transportation plans. For example, Hammond published a bicycle master plan in 2019 and Gary is developing a similar plan. Munster prepared a new comprehensive plan in 2022 and Merrillville is undertaking a similar project in 2022-23, both of which will incorporate local active transportation plans.

The overall goal of this effort is to build on the solid foundation of previous work to integrate existing and proposed trails, appropriate streets and roadways, and other corridor opportunities into a comprehensive regional network that connects and serves major destinations like city and town centers, the lake shore, Indiana Dunes National and State Parks, South Shore stations, major parks, commercial focuses, and other activity centers and access nodes.

This plan does not go to the level of detail of an active transportation plan for a specific city. The three-county region is approximately the size of the State of Delaware, and such place-specific plans are the prerogative of municipalities.

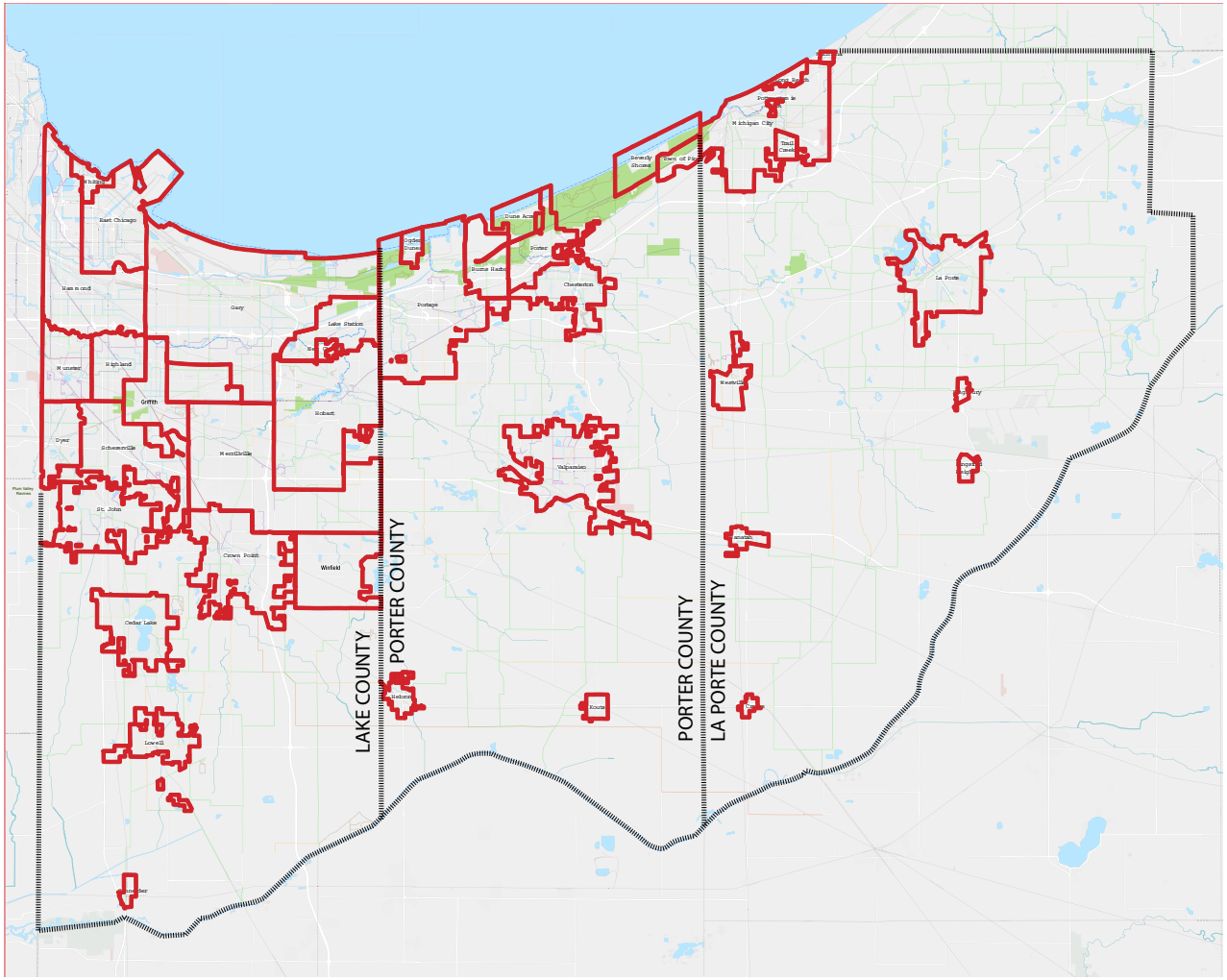


Figure 2-1: NWI 2050+ Study Area

But it will address components of the network within city boundaries It will also identify types of infrastructure that match the conditions of elements of the network and will provide specific guidance and concepts for individual problems, including street and highway barriers and creating better pedestrian/bicycle environments in major auto-oriented environments. It will also be integrated with other elements of *NWI 2050+* including land use, transit, roadways, and freight movements.

This chapter is based on extensive fieldwork in all parts of the study area and conversations with people who live, work, make policy, and develop projects in Northwest Indiana. Its preparation including several hundred miles of bicycling (and a smaller amount of driving) throughout the region, holding six public input sessions at six bike shops from August through October, 2022, and reviewing the results of a survey that attracted 214 respondents as of November, 2022.

It summarizes trends and relationships, and observations, allowing facts and observations to help frame directions and priorities of successive phases of the plan. It is conceived as an analytic atlas of the region that covers the following subjects:

Existing/proposed regional trails and bicycle infrastructure. This identifies major existing regional facilities on the ground and proposed trails included in the *2020 Greenways+Blueways Plan*. These exhibits also display areas within two miles of a regional trail corridor. Two miles typically corresponds to a 10-12 minute bicycle ride to a trail. In a sense, this analysis conceives of trails much like transit lines or the major arterials of a network, with streets, roads, and local trails functioning as the feeder routes.

The 15-Minute City Concept. This concept of a walkable/bikeable environment around a major focus like a city or town center, was also discussed in the Finding Meaning element of the Land Use Element and is repeated here for reference. The concept helps evaluate the adequacy of access routes and presence of barriers within the theoretical walking or biking distance to a town center or any other destinations.

Public Engagement Results. In the on-line survey, participants provided opinions about destinations and different types of facilities, among other items. Through interactive mapping, they also provided comments about specific locations. Finally, the six workshops provided valuable information and specific ideas, generally from experienced cyclists and bike shop staff.

Destinations. This display maps key destinations for active transportation, generally derived from both our experiences and fieldwork in the MSA and the opinions of survey respondents. Based on this information, this section will summarize the basic framework of a destination-based network – the specific features that it should serve and connect.



Road Typology. The major focus of this study will be the street and roadway system of the region. This section describes various roadway types observed in the region, their potential role in the network, and types of infrastructure necessary to make them useful for the largest number of potential users.

Network Candidates. This section presents overall principles that guide components of the network and a series of maps identifying candidate corridors for more detailed analysis and facility design in Part Two. It also identifies areas that require special study and detail for pedestrian and bicycle access during the next parts of the plan.

Regional Trails: Existing

Figure 2-2 on this page displays the reach of existing regional trails. The longest continuous facilities are the Oak Savannah/Prairie Duneland, Erie-Lackawanna, and Pennsy Greenway. Both the Marquette Greenway and Little Calumet have significant lengths of trail, but their full length is interrupted, and the north-south Monon Trail is officially closed with the construction of the South Shore Line's West Lake Corridor.

Shaded areas indicate catchment corridors that are two miles in each direction from the main trail, with darker shades representing areas served by multiple regional trails. Current trail service is concentrated in the northwest corner of the region, extending paralleling the lakefront to Michigan City by combining the Prairie Duneland and Calumet Trails, the latter an unpaved facility.

On-street bicycle infrastructure is limited to scattered locations in cities. These facilities include:

In Hammond:
- Hohman Avenue, with buffered bike lanes between Downtown and I-80
- Sohl Avenue, with buffered bike lanes from Douglas Street to Municipal Drive, at which point it continues north as a sidepath
- Douglas Street from Sohl to the Erie-Lackawanna Trail

In Munster:
- Fran-Lin Parkway from Calumet to West 45th
- White Oak Avenue from Ridge to Carmelia

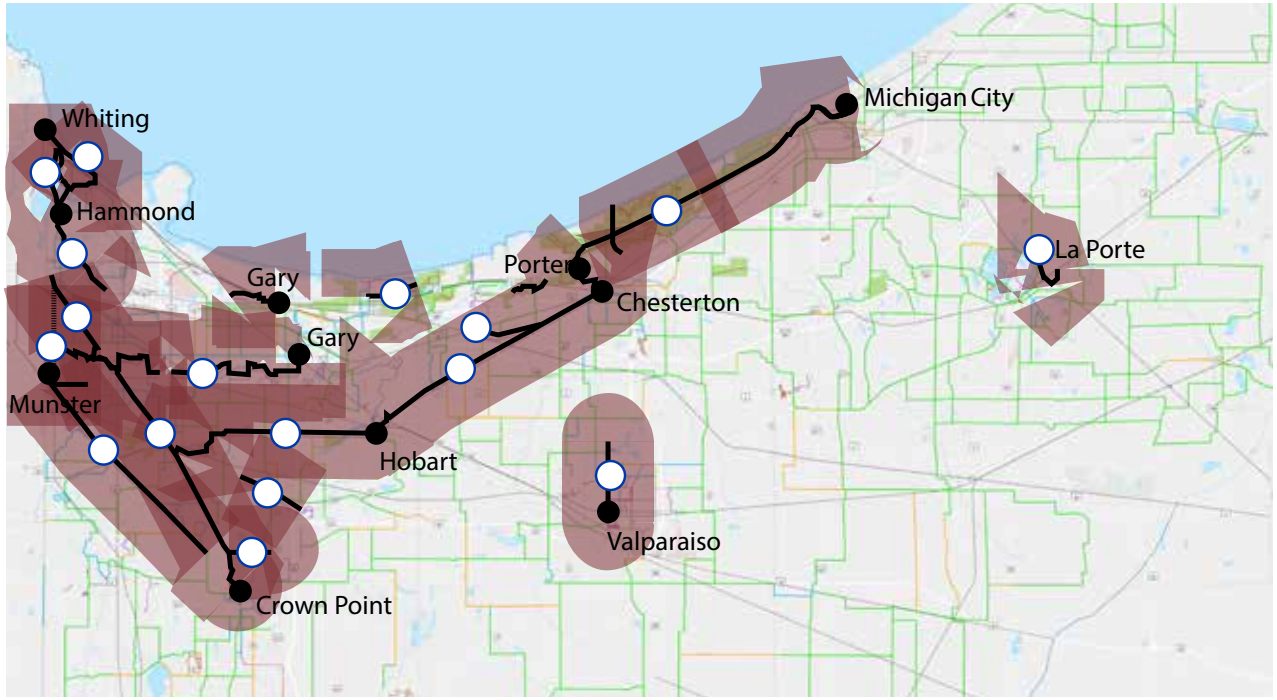


Figure 2-2: Extent and Service Coverage of Existing Trail System

In Crown Point:
- Court and West Street one-way pair from Summit and the Erie-Lackawanna trailhead to the Downtown Square

In Michigan City:
- Wabash Street, with buffered bike lanes from West 4th to West 11th Streets.
- Pine Street, with buffered bike lanes from East 11th Street to Michigan Boulevard, continuing on Franklin Street to the Harriet Colfax Bridge

1	Wolf Lake Loop
2	Whiting Beach Trail
3	Marquette Greenway
4	Erie-Lackawanna Trail
5	Little Calumet Trail
6	Pennsy Greenway
7	93rd Ave Spur
8	C&O Trail
9	Oak Savannah Trail
10	Prairie Duneland Trail
11	Iron Horse Trail
12	Lakewood Link (Dunes-Kankakee Trail)
13	Chessie Trail
14	Monon Trail

Regional Trails: Proposed

Figure 2-3 on this page displays the reach of proposed regional trails. These proposed facilities extend the trail network well into rural parts of the MSA, primarily to the east and south. Major new regional facilities include:

- Completion of the Marquette Greenway from the Chicago/Hammond boundary to New Buffalo, Michigan. The project includes paving the currently unpaved Calumet Trail segment from Dune Acres to Michigan City. This project is funded through a RAISE grant awarded in 2021.
- The Dunes Kankakee Trail, connecting Chesterton and the Prairie Duneland/Oak Savannah system to Valparaiso and south to Kouts and River's Edge Farm.
- The Veterans Memorial Trail, extending the Erie-Lackawanna to Hebron and part of the Great American Rail Trail system which continues west along SR 8 to La Crosse.
- The Iron Horse Memorial Trail, a strategic urban link between the Prairie Duneland and Little Calumet Trails through Portage and Lake Station.
- The C&O Trail connecting much of the existing trail network to the Merrillville/Hobart commercial complex at I-65 and US 30.
- The Lincoln Memorial Trail, linking Michigan City with the Purdue Northwest campus and Westville.
- The Wheeler Trail, connecting Valparaiso to the Prairie Duneland Trail at Hobart
- The South Shore Line Trail, paralleling the nation's last interurban railroad and eventually linking South Bend and Michigan City.

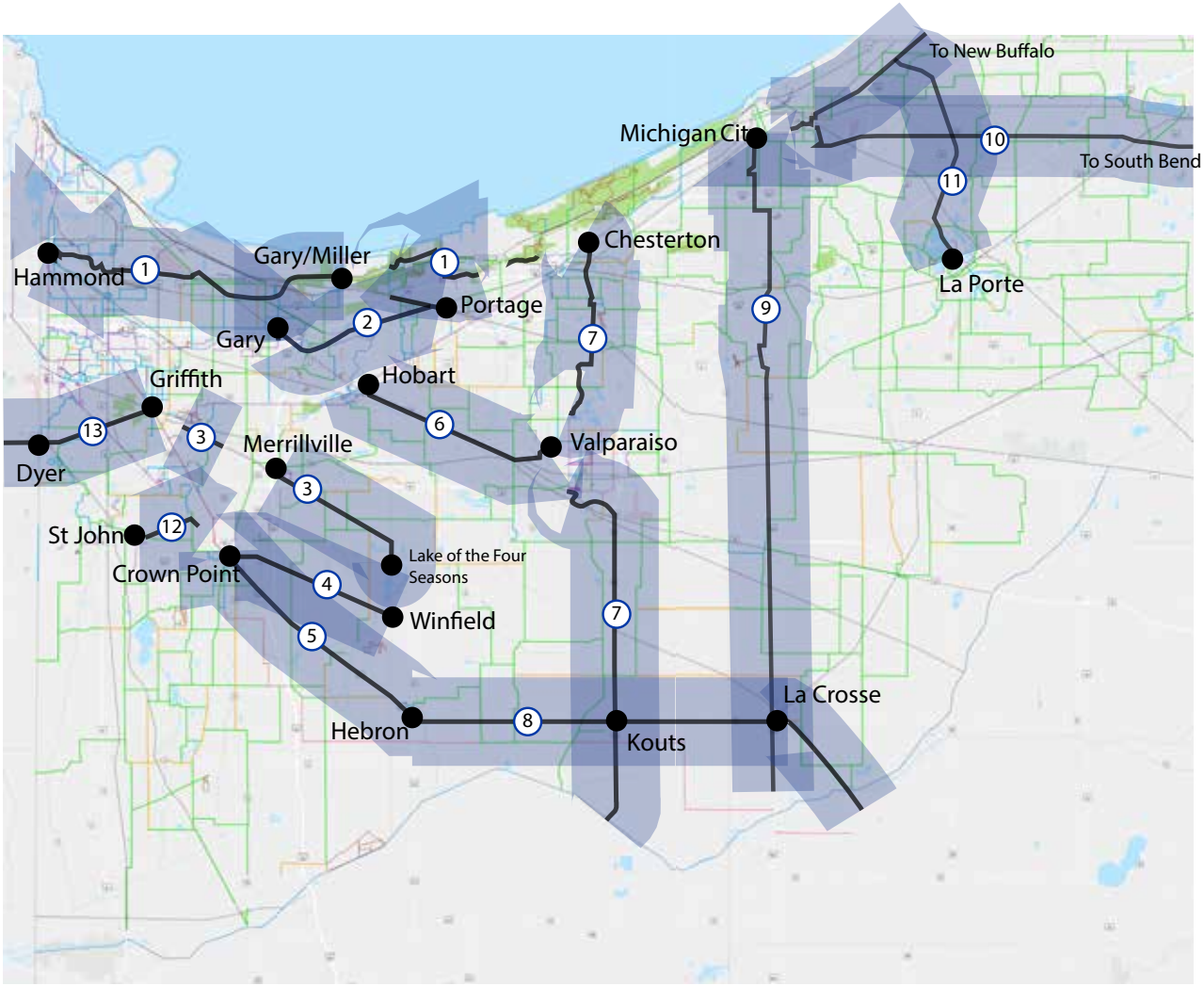


Figure 2-3: Extent and Service Coverage at Proposed Trails

1	Marquette Greenway
2	Iron Horse Memorial Trail
3	C&O Trail
4	Winfield Trail
5	Veterans Memorial Trail
6	Wheeler Trail

7	Dunes Kankakee Trail
8	SR 8/Great American Rail Trail
9	Lincoln Memorial Trail
10	South Shore Line Trail
11	Chessie Trail
12	St. John Link
13	Old Plank Road Trail

The Future Trail Network

Figure 2-4 illustrates the extent and service coverage of the future trail system, and helps direct the nature of a future network. The fully realized vision of the *2020 Greenways+Blueways Plan* produces an impressive result that places about one-third of the MSA within two miles of a regional trail and establishes connections between cities and towns reminiscent of European networks. Despite this, there are significant geographic gaps in service. These include the fast growing southwest quadrant, the focus of much of the region's housing development. This area lacked the mainline railroad abandonments that other parts of the region capitalized on. Other gaps include the central part of the region, southwest and directly east of Valparaiso and the rural and lake-oriented communities on the eastern edge of the MSA. While these areas have relatively small populations now, anecdotal information suggests growing developer interest for a market segment moving into Indiana from the Chicago area. In addition, these areas have significant visitor and recreational attractions.



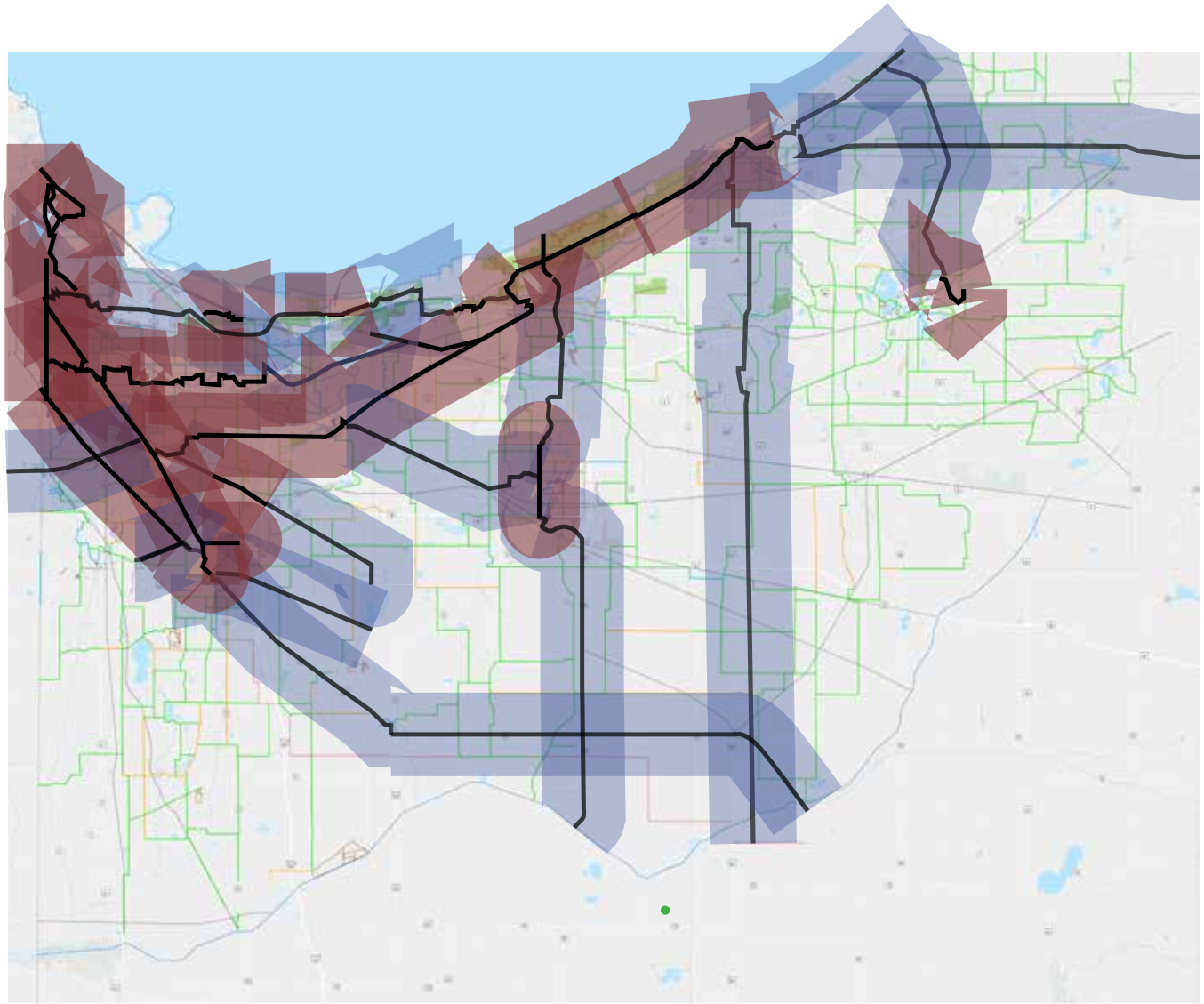


Figure 2-4: Extent and Service Coverage at Build-out of Planned Network

The 15-Minute City

The concept of a 15-minute city as a land use and urban design tool has significant antecedents. The early 20th Century planner Clarence Perry established the concept of a "neighborhood unit" with neighborhood institutions including a community center and elementary school at the center of a planned neighborhood. This concept, published in 1929 was itself derived from the Garden Cities movement and the work of new town planners such as Clarence Stein and Henry Wright's who applied the idea in their famous Radburn, New Jersey development. Its contemporary version was developed by Carlos Moreno, a professor at the Sorbonne in Paris. It envisions a city developed of districts in which people can perform six essential functions (living, working, commerce, health, education, and entertainment) within a 15-minute walk or bike from their home.

The concept is difficult to realize retroactively in American cities, where a number of these functions are both dispersed and, in many cases, concentrated in relatively distant areas. Examples relevant to Northwest Indiana are health care, given concentrations of services in large hospitals and commuting to work. But other aspects are more attainable from the perspective of facility planning, design of new projects, land use, and active transportation planning. To that end, NIRPC has applied the concept to Northwest Indiana's geography, using city centers as the focal point. Figure 2-5 illustrates the results of that study, using a 15-minute walking radius and a 5 minute biking radius as standards.

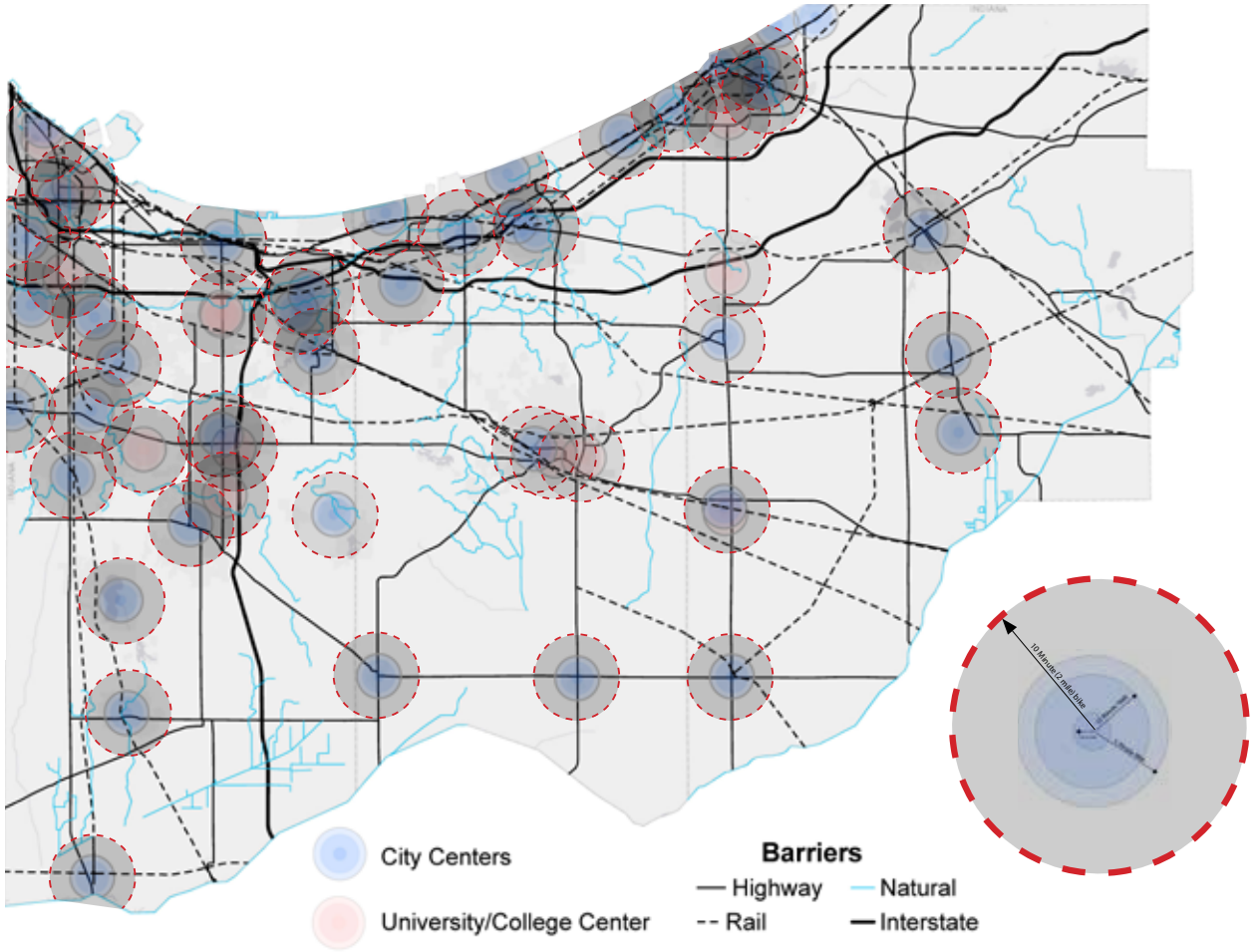


Figure 2-5: 15-Minute City Analysis with Barriers around City and Town Centers

For this study, we have amended that to include a 10 minute biking radius, corresponding to a two mile trip at a speed of 12 miles per hour. The 2010 National Household Travel Survey by the Federal Highway Administration and cited by the League of American Bicyclists indicated that 40% of all trips are two miles or less in length. Figure 2-6 on the following page superimposes this short trip radius standard on the existing land use map to help relate destinations and places of residence.

These maps show that overlapping access from city and higher education centers, with all of their attendant services and land uses, is very good in the northwestern corner of the region and much of the Duneland tier, thinning out in what are now rapid growth areas to the south. However, barriers such as the Interstates and major highways and railroads compromise or block access entirely. These barriers are especially concentrated in the northwest, suggesting the importance of addressing these barrier problems in addition to linear infrastructure and land use policy.

Integrate Alternative Travel Modes

Transportation and land use are highly related and alternative transportation facilities can be especially important, as historic photographs of the Chicago "L" being built in cornfields can attest. Dual mode transit and pedestrian/bicycle systems also expand the market and use of both modes. Dual mode bike/transit trips can expand the direct market radius from the generally accepted 1/4 mile to up to 2 miles. Integration means such actions as secure bicycle storage at transit stops and train stations; accommodations for bikes on vehicles; and safe and secure routes that encourage people to walk or bike to transit. Figure 2-6 shows the relationship between regional trails and existing transit lines, including the South Shore and West Lake corridors, Broadway BRT, V-Line express services from Valparaiso to the South Shore and Chicago, and local transit services. A comprehensive active transportation network should connect trails to transit.

The relationship of transit and bike/ped facilities also builds population density and the number of people served by active modes. The double tracking of the main line to Michigan City, now under construction, which will increase train frequency and reduce travel time to Chicago by 35%, has already catalyzed an $80 million Transit Oriented Development (TOD) in Downtown Michigan City. The new Westlake line now under construction, extending a branch from a junction station in Hammond to Dyer will also have a major impact on development patterns.

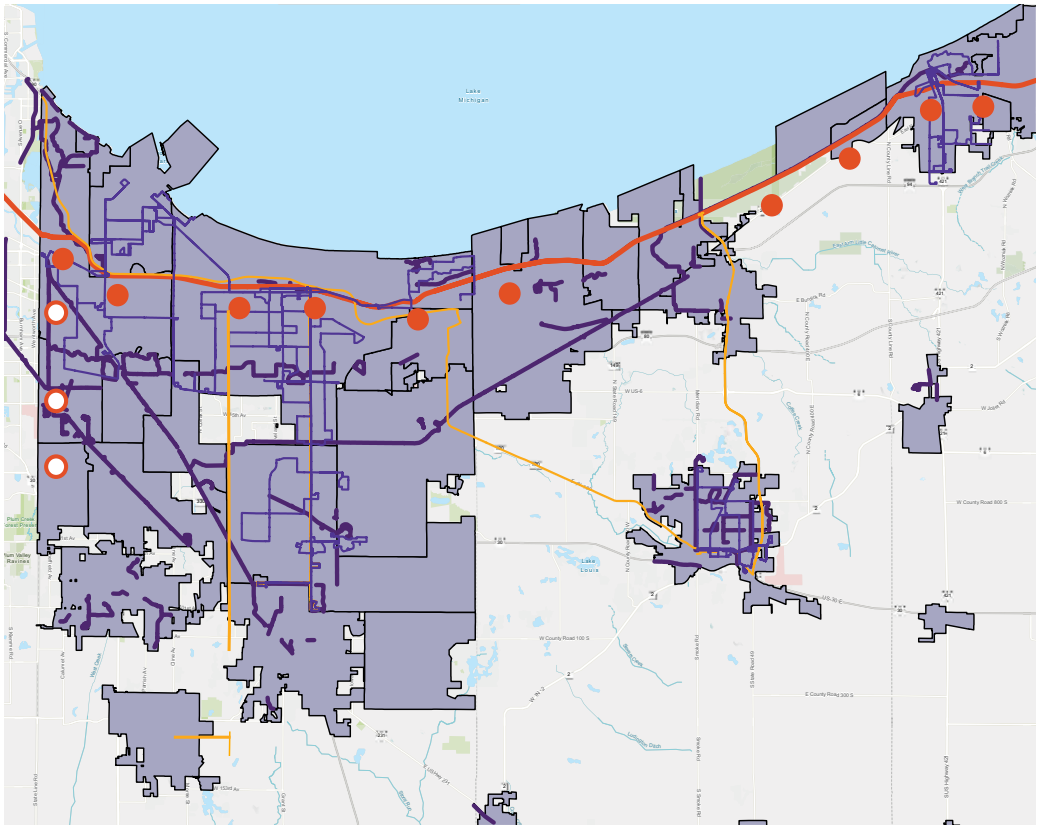


Figure 2-6: Alternative Transportation Facilities in the Northwest Indiana Region

The award of a large RAISE grant to Munster to develop a protected cycle track for 1.3 miles of Ridge Road between the state line and Columbia Avenue will demonstrate the development influence of this combination of modes.

Active transportation corridors also attract development by adding access to a dual purpose facility that combines transportation and recreation. In Minneapolis, for example, the Midtown Greenway, a grade separated crosstown trail, has generated about $1.44 billion in new investment along its 5.5 mile route. The regional Northwest Indiana trails have many of the characteristics that make the Greenway an effective land and economic development tool -- use of railroad right-of-ways that serve centers and are effective transportation facilities, limited interruptions by cars, and high development standards. The region's excellent trails have undoubtedly had a significant, if underappreciated, effect on land use and should be seen from a development as well as a recreational perspective. As an example, the Gary ELevated – an innovative and exciting concept to adapt an above grade abandoned railroad loop that surrounds the core of the city, combined with TOD potential created by the upgrading of South Shore service, can create conditions for transformation of the Metro Center district.

Community Input

No one, however much time he or she might spend learning about a region, can know as much about its fabric and character as its residents. The process that led up to this working paper included a survey summarized here. The survey also included an interactive mapping feature, on which 156 location-related notes and comments were posted and discussions started. These are recorded in an appendix to this document. As mentioned earlier, six workshops took place at bicycle and outfitting shops across the region and in-depth conversations with knowledgeable cyclists helped frame some of the ideas introduced here and to be developed in subsequent parts of the planning process. The survey results, exploring the transportation preferences of participants, their specific opinions, and their comfort levels with different types of facilities, are summarized graphically in the following pages.

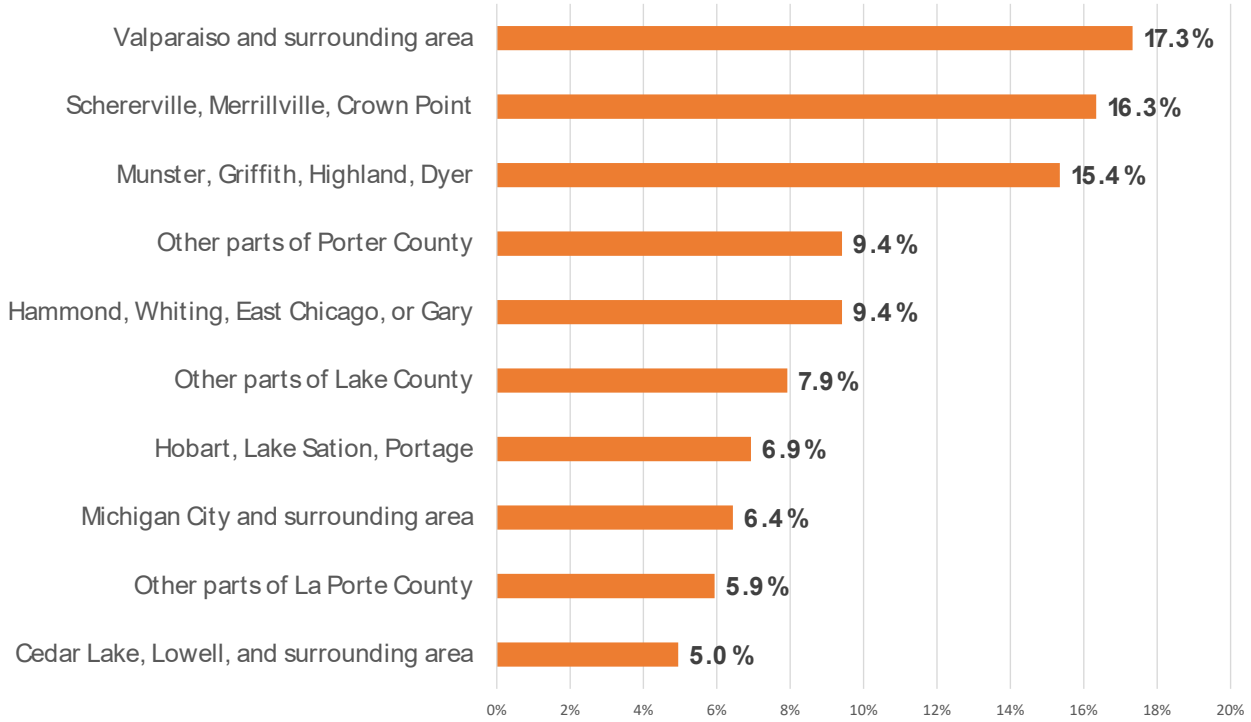


Figure 2-7: Place of Residence of Survey Respondents

Participants Characteristics

While a non-random survey does not have statistical significance, it does accurately relate opinions of people motivated to take the survey. Figures 2-7 and 2-8 on this page tell us something about these people. The largest groups were from the Valparaiso area, reflecting the interests of a university community and the older suburban cities in the central western part of the MSA. These are locations that also have some of the region's best trail service. Older industrial cities and the central lakeshore were relatively represented, although focused efforts increased participation in later stages. About 70% of respondents were between ages 30 and 65, not atypical of similar surveys.

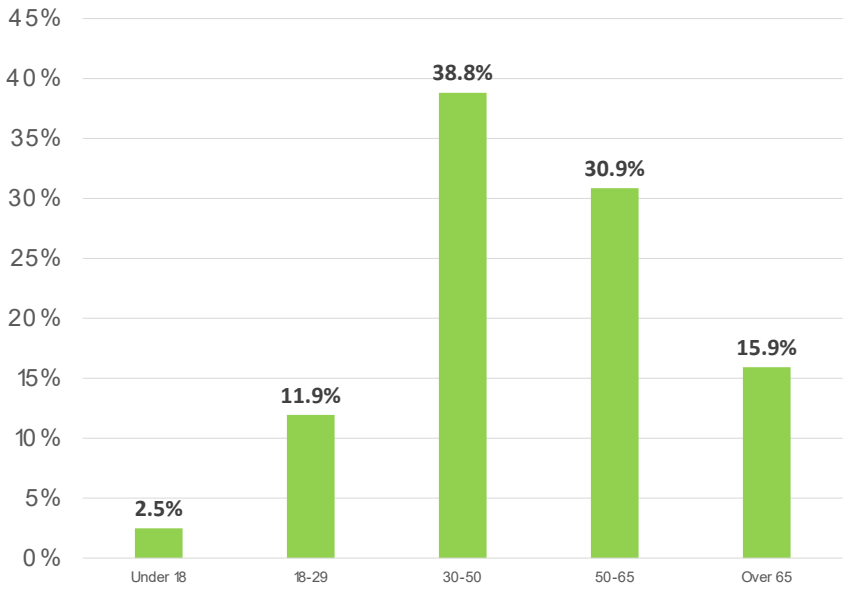


Figure 2-8: Age of Survey Respondents



Issues

Participants rated road safety and lack of side-walks and need for bike lanes or additional paths highest among a variety of transportation concerns listed in the survey. Issues related to trucks and freight movement ranked lowest on a 5 (highest) to 1 (lowest) scale.

15Minute City

Respondents tended to live close to a variety of community facilities, as noted in Figure 2-10. These may reinforce the relevance of a 15-minute concept within the types of neighborhoods that participants live in: generally characterized as suburban neighborhoods (40.5% of participants) and small towns (20.2%). Only 11% characterized themselves as living in an urban neighborhood.

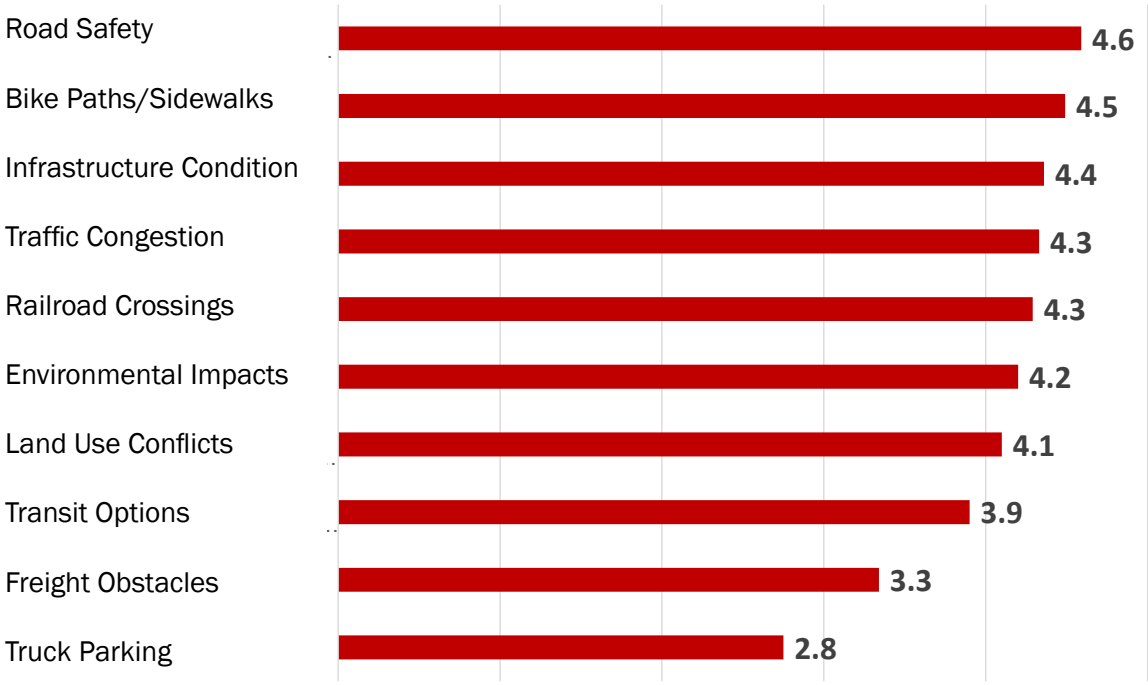


Figure 2-9: Transportation Issues of Greatest Importance

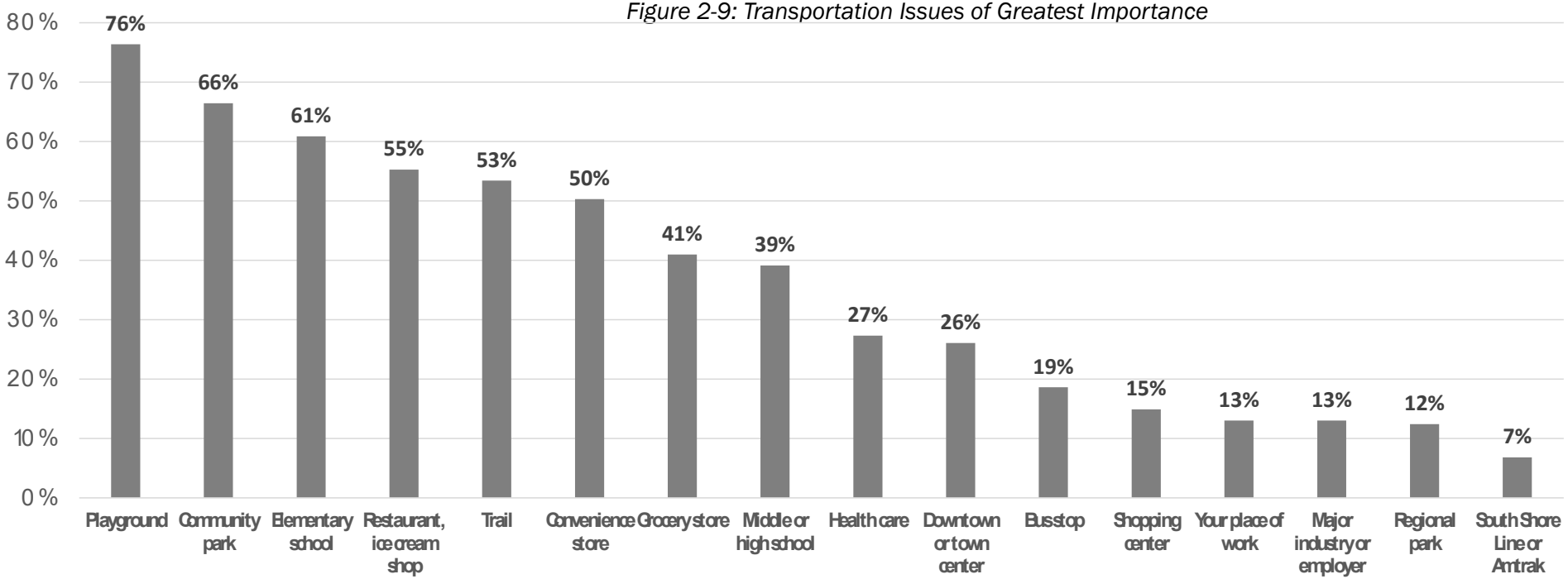


Figure 2-10: 15-Minute City: Features within a 15 Minute Walk from Home

Destinations

On a 10 to 1 scale of relative importance of good bike and pedestrian access to destinations, destinations identified in the survey all ranked above "5." But access to grocery stores and downtowns ranked highest, followed closely by parks and trails. Trails often are seen as discreet destinations, and travel for recreational purposes are still trips from a transportation planning perspective. Interestingly, schools ranked relatively low in comparison to other similar surveys, indicative of the dominance of kids being driven to school regardless of distance.

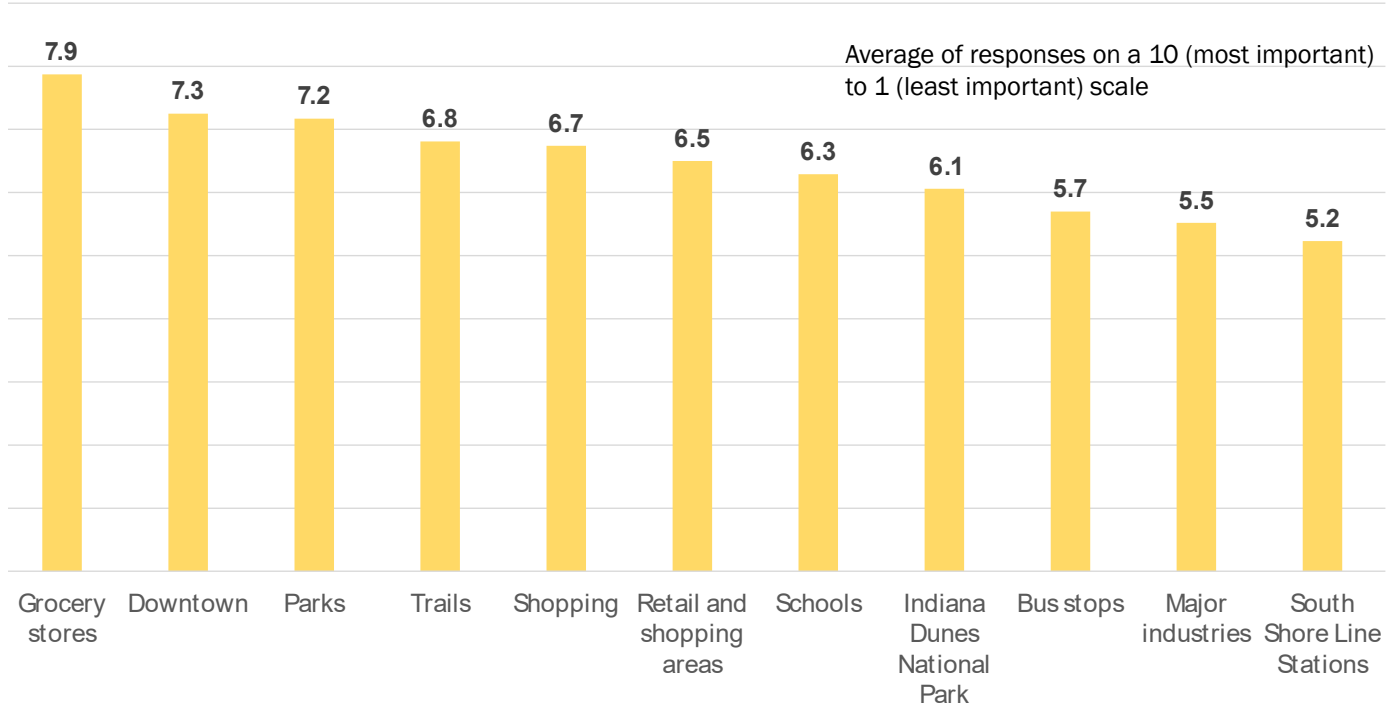


Figure 2-11: Important Destinations for Pedestrian or Bicycle Transportation

Frequency of Bicycle Use

Only about 25% of respondents reported regular use of bicycles for transportation or recreation – very high for the overall population but relatively low for a focused survey. On the other hand, later questions about infrastructure elicited responses from about four times the number of people who characterized themselves as regular or frequent bicyclists, and roughly equal to the "not never" responses to this question. This suggests a large number of survey participants in an "interested but concerned" category – people who would use bicycles more with better or more secure facilities.

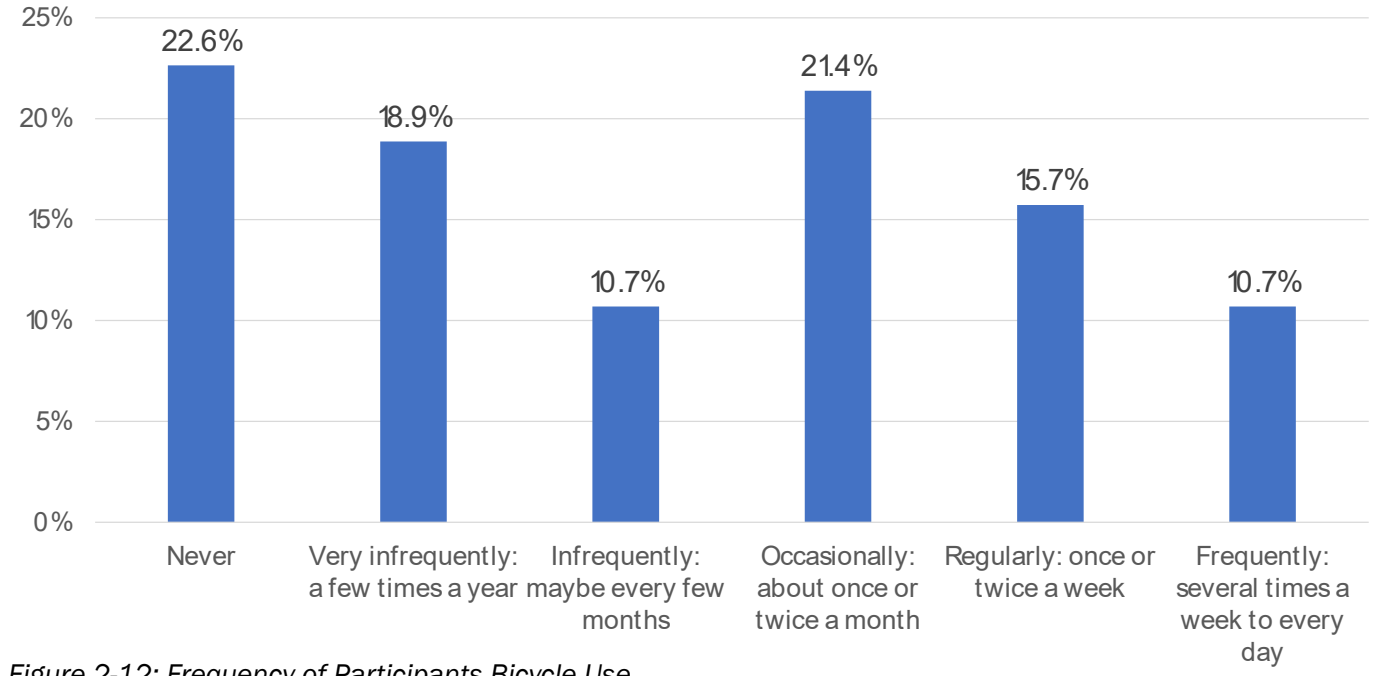


Figure 2-12: Frequency of Participants Bicycle Use

Purposes of Bicycle Trips

In line with the results of similar surveys, regular exercise and trips to park and recreation facilities lead the list of purposes for cycling. Only about 10% of respondents use bicycles for more utilitarian purposes – trips for work, errands, or community resources. School and shopping trips lag far behind, despite the results of an earlier question identifying grocery stores as an important destination for pedestrian and bicycle trips.

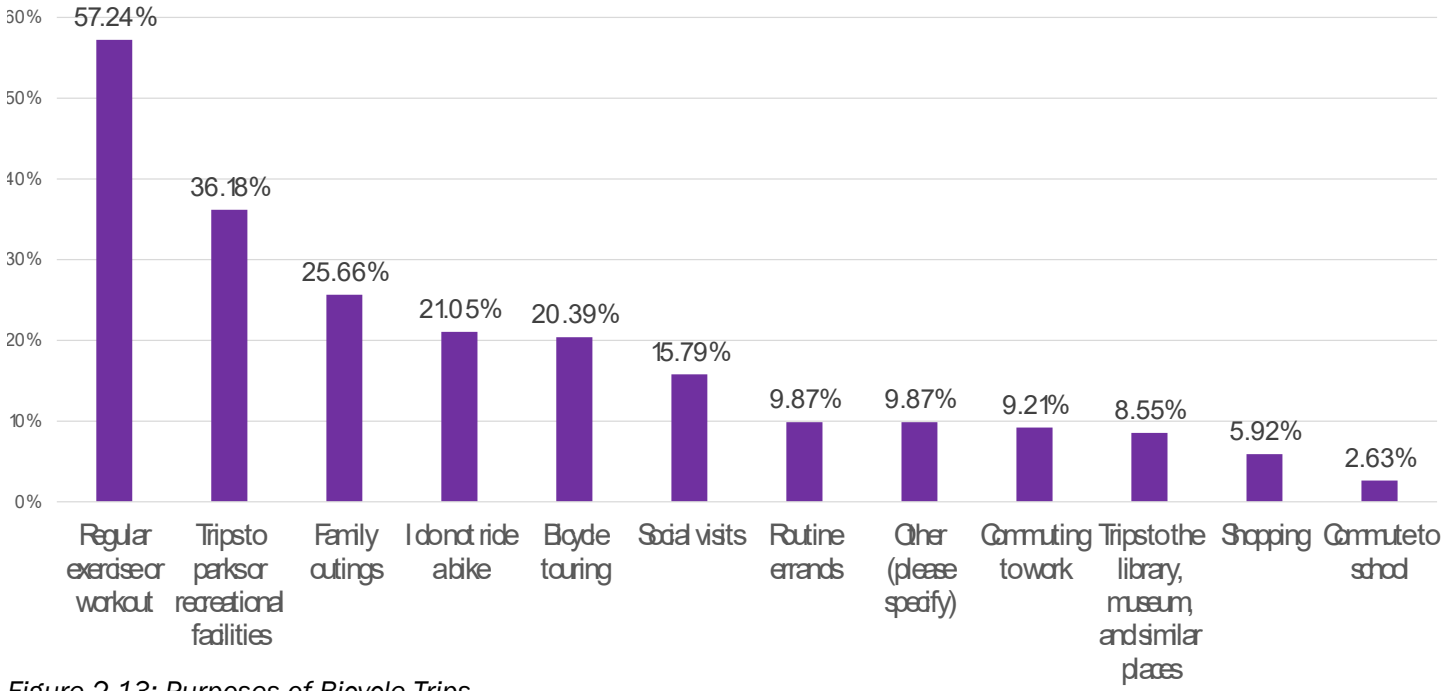


Figure 2-13: Purposes of Bicycle Trips

Use of Individual Trails

Of major regional trails in Northwest Indiana, survey respondents report most frequent use of the Erie-Lackawanna Trail, followed by the Prairie Duneland and Pennsy Greenway. All three are in the western parts of the MSA, and correspond to the place of residence of the largest participant groups. Interestingly, the Prairie Duneland appears to receive somewhat higher use than its western extension, the Oak Savannah. This may reflect the Valparaiso market, the survey's largest individual response group, which is relatively separated from the E-L and Pennsy. The C&O, now mostly a short section of a future trail, is likely to experience much heavier use with strategic extensions.

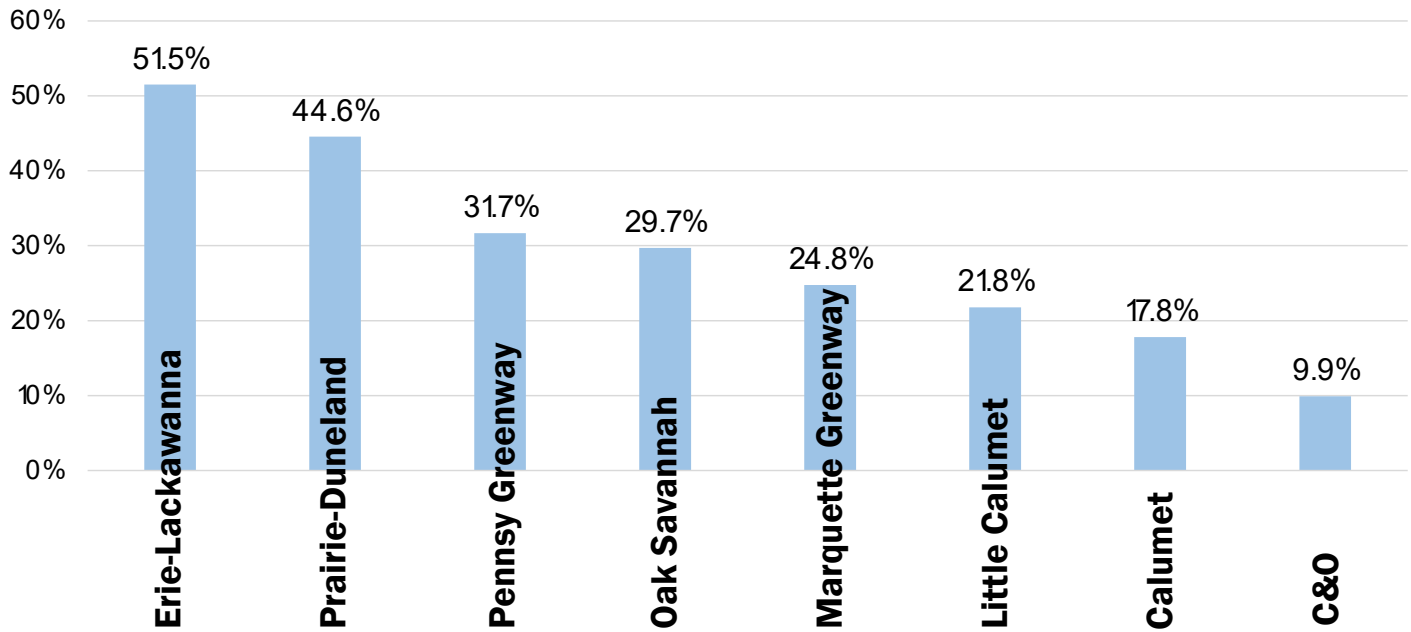


Figure 2-14: Participants Use of Individual Trails

Most Important Improvements

Participants rated better sidewalks, more trails, and connecting sidepaths along roads as the most important bicycle and pedestrian improvements, followed closely by additional bike lanes on city streets. This suggests a preference for separated facilities, although on-street infrastructure also had a significant number of advocates.

Evaluation of Infrastructure Solutions

The results shown in Figure 2-15 lead naturally into a series of questions through which participants assessed different types of physical facilities. The survey asked respondents to identify whether that facility was comfortable for all users, for most adult users, for the individual respondent but not for most people, for experienced cyclists only, or for no one – essentially an ascending order of exclusivity. This provides valuable input in evaluating candidate streets and roads and proposing design solutions that meet the needs of the greatest number of people. The following pages present the results of this evaluation.

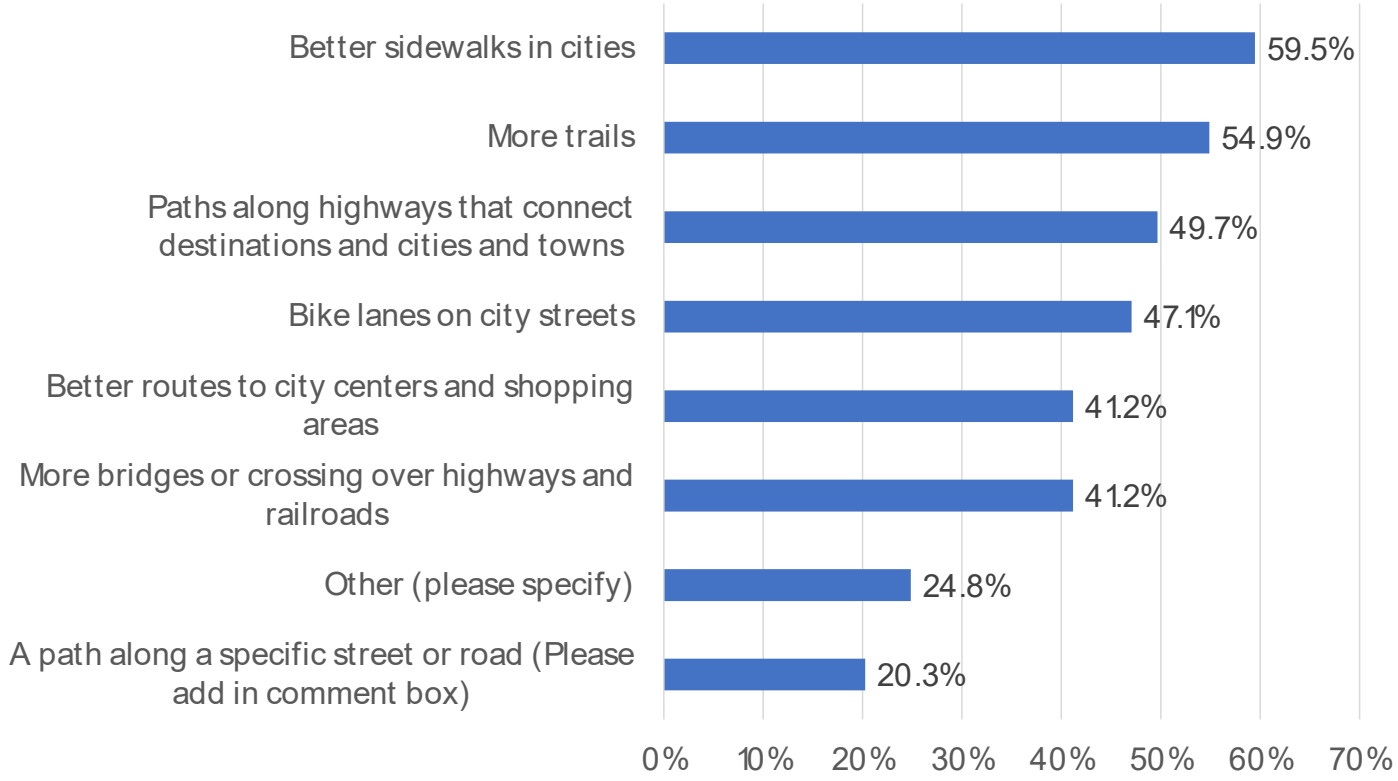


Figure 2-15: Most Important Improvements



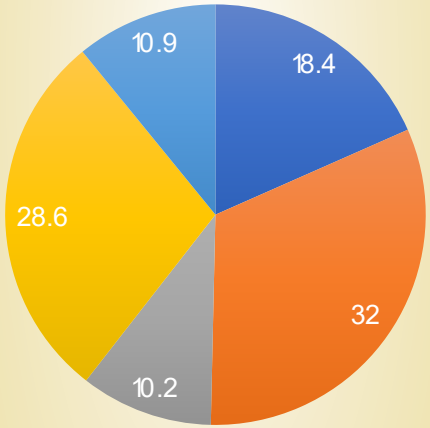
Lakewood Link in Valparaiso. This is an example of a sidepath along a major street, in this case Campbell Street leading to a major park. This would eventually be incorporated into the Dunes Kankakee Regional Trail

BICYCLE BOULEVARD

Low traffic street with features like markings, stop preferences, intersection improvements to increase bicycle and pedestrian safety



Example: Berkeley, CA



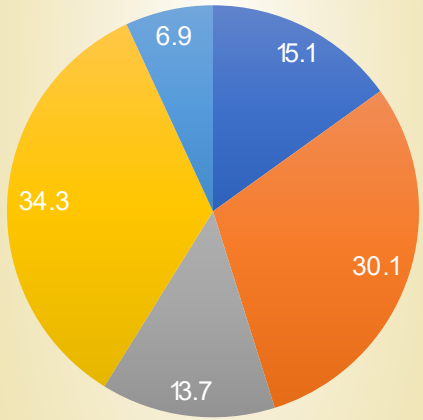
Positive Score: 68.4

STANDARD BIKE LANE

Moderate volume street with painted white line and bike lane pavement markings.



Example: Bettendorf, IA



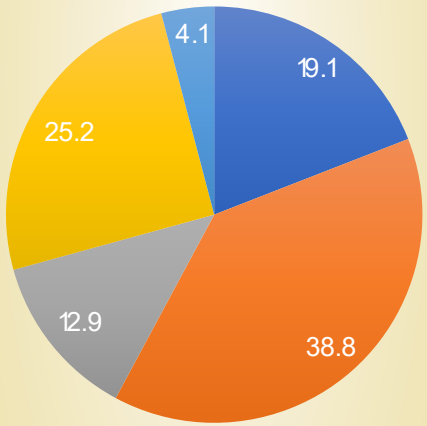
Positive Score: 60.2

GREEN BIKE LANE

Moderate volume mixed use street with green painted lane in conflict zones and through intersections.



Example: Wauwatosa. WI



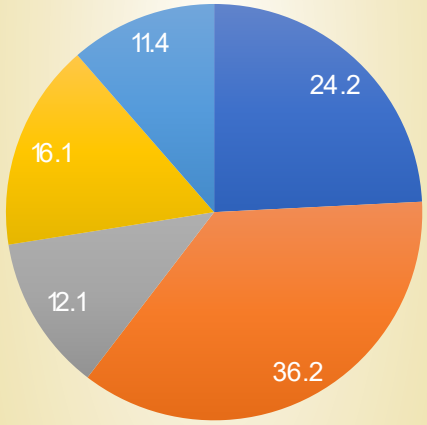
Positive Score: 77.0

NEIGHBORHOOD STREET

Low volume local street without other modifications. Occasional speed bump for traffic calming.



Example: Merriam, KS



Positive Score: 84.6

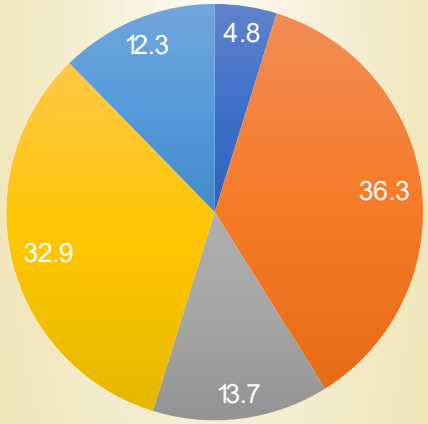
Positive score = (2*% reported good for all) + (% reported good for most adults)

BUFFERED BIKE LANE

Medium volume street with parking and painted buffer between bike lane and travel lane.



Example: Hammond, In



- Good for all
- Good for most adults
- Good for me but not all
- Experienced only
- No one

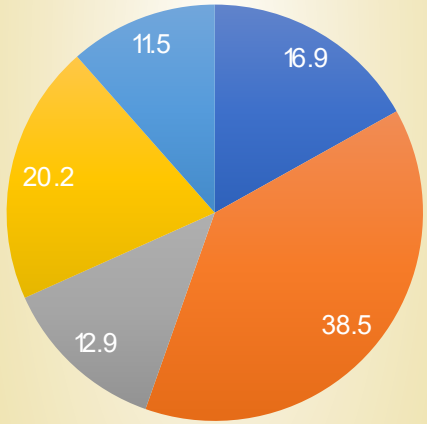
Positive Score: 45.9

CALMED STREET

Low volume street modifed with chicanes, bump outs and other features to slow traffic.



Example: Merriam, KS



- Good for all
- Good for most adults
- Good for me but not all
- Experienced only
- No one

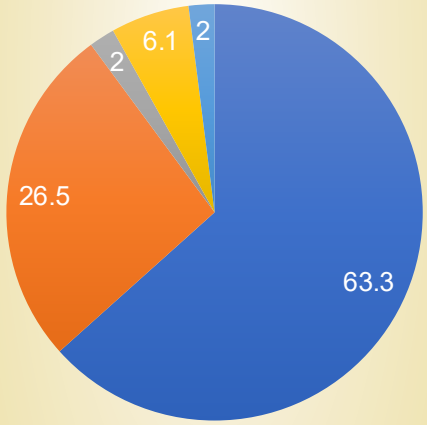
Positive Score: 72.3

OFF-STREET SEPARATED LANE

Medium volume street with bike lane above curb, adjacent to but differentiated from sidewalk.



Example: Conway, AR



- Good for all
- Good for most adults
- Good for me but not all
- Experienced only
- No one

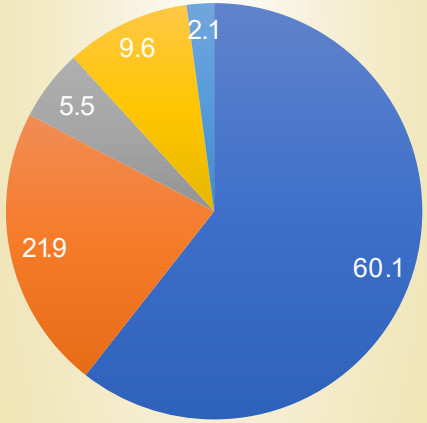
Positive Score: 153.1

SIDEPATH

Medium volume street with adjacent off-street shared use path and minimum driveway conflicts.



Example: Valparaiso, IN



- Good for all
- Good for most adults
- Good for me but not all
- Experienced only
- No one

Positive Score: 141.9

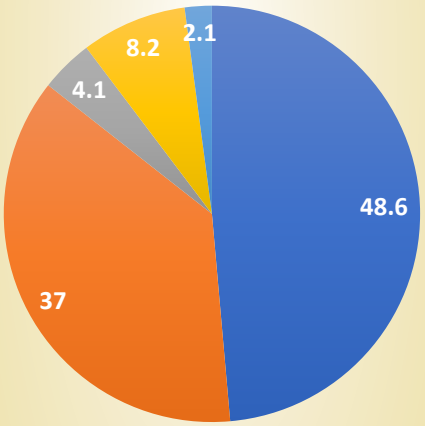
Positive score = (2*% reported good for all) + (% reported good for most adults)

SIDEPATH

Medium to high volume commercial street with adjacent off-street shared use path and pedestrian crossing refuge.



Example: Shawnee, KS



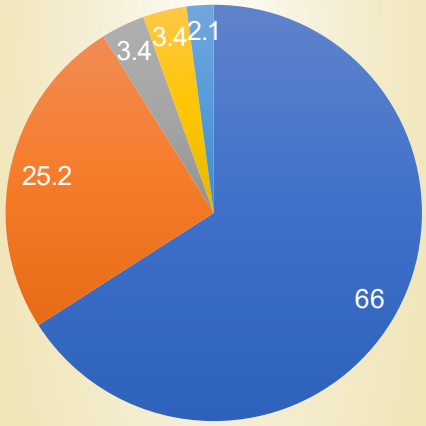
Positive Score: 134.2

SIDEPATH

Medium volume rural or low-density road with adjacent off-road shared use path and signed and enhanced crossings.



Example: Saint Louis County, MO



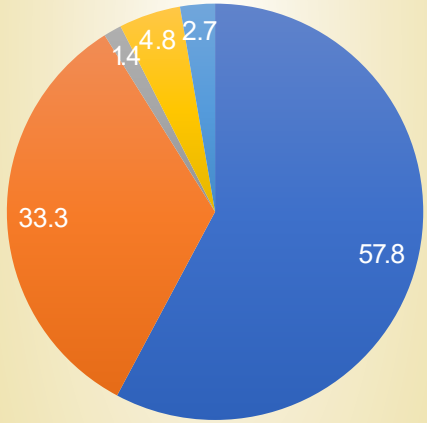
Positive Score: 157.2

CYCLE TRACK

Medium volume downtown street, two-way cycle track with physical separation.



Example: Lincoln, NE



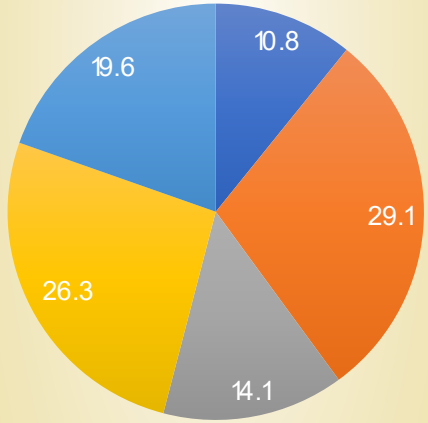
Positive Score: 148.9

WOONERF

Shared use neighborhood street with features that slow cars to pedestrian speed, designed for shared use.



Example: Delft, The Netherlands



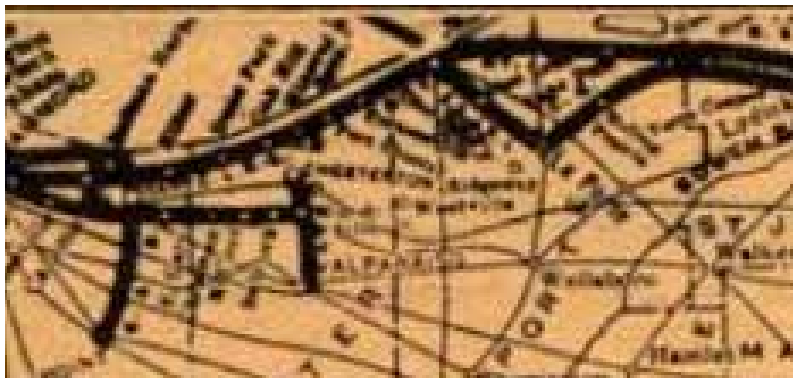
Positive Score: 50.7

Positive score = (2*% reported good for all) + (% reported good for most adults)

Destinations

The mission of a good transportation network is ultimately to get people where they want to go in a direct, safe, and hopefully pleasant fashion. Trails are something of an unusual component, because they have generally been viewed in the United States from a recreational perspective – hence the term "recreational trails" that causes grimaces from those who think about multi-modal transportation. But this is understandable – trail corridors are often opportunistic, using streams and lakes, abandoned rail corridors, utility corridors, parks, and occasionally the gifts of or exactions from developers. These opportunities may or may not serve destinations. Northwest Indiana is fortunate in this regard, because its railroads actually served and connected town centers and generated population density. Building a regional active network from this great resource should have recreational benefits, but the system should also have the ability to get people where they want to go.





Interurbans in Northwest Indiana , 1926

This section presents a series of maps that located a sample of destinations that appeared most important to survey respondents – city and town centers, where civic life is concentrated; grocery stores that signal places that have clusters of neighborhood and community-based retailing; and county parks, large community parks, and nature preserves, as well as Indiana Dunes National Park.

To these, the destination maps add high schools that frequently double as major community activity and sports centers and college and university campuses. This is not a complete list of destinations, but it does begin to suggest the structure of a destination-based network that connects destinations to Northwest Indiana's extensive and growing trail system.

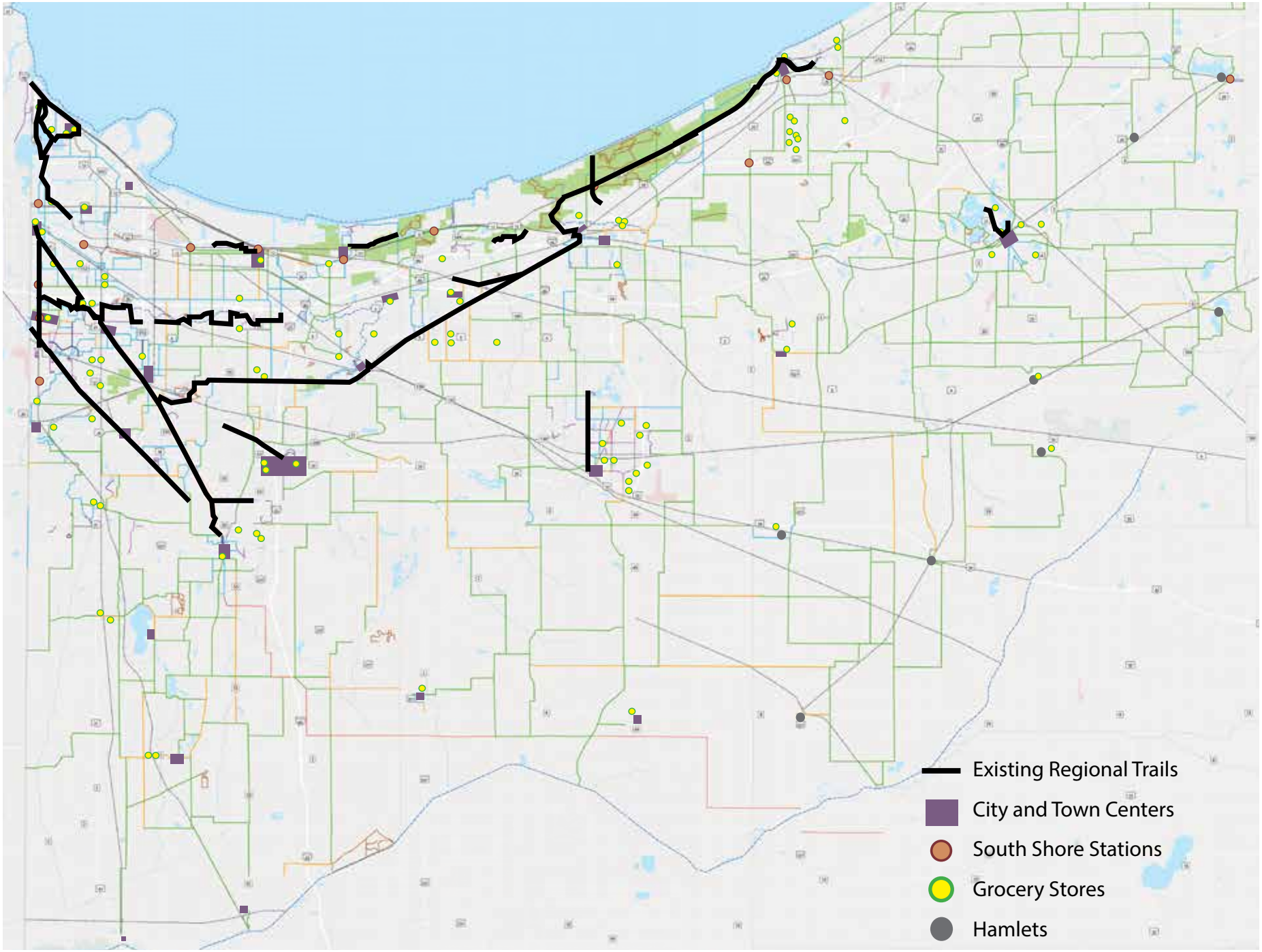


Figure 2-16: Destinations: Centers/Groceries/SSL Stations/Small Places

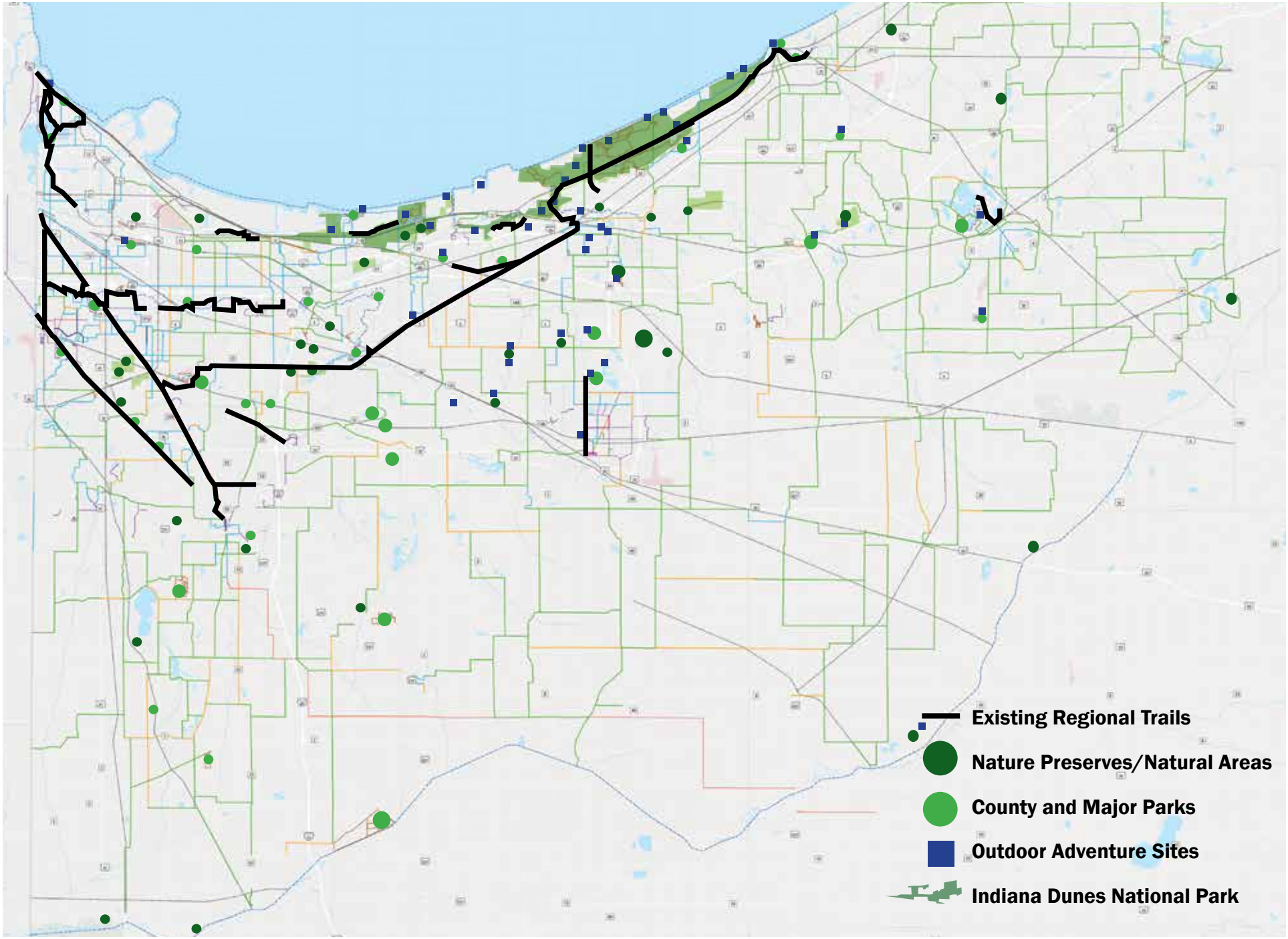


Figure 2-17: Destinations: Large Parks/Nature Preserves and Natural Areas

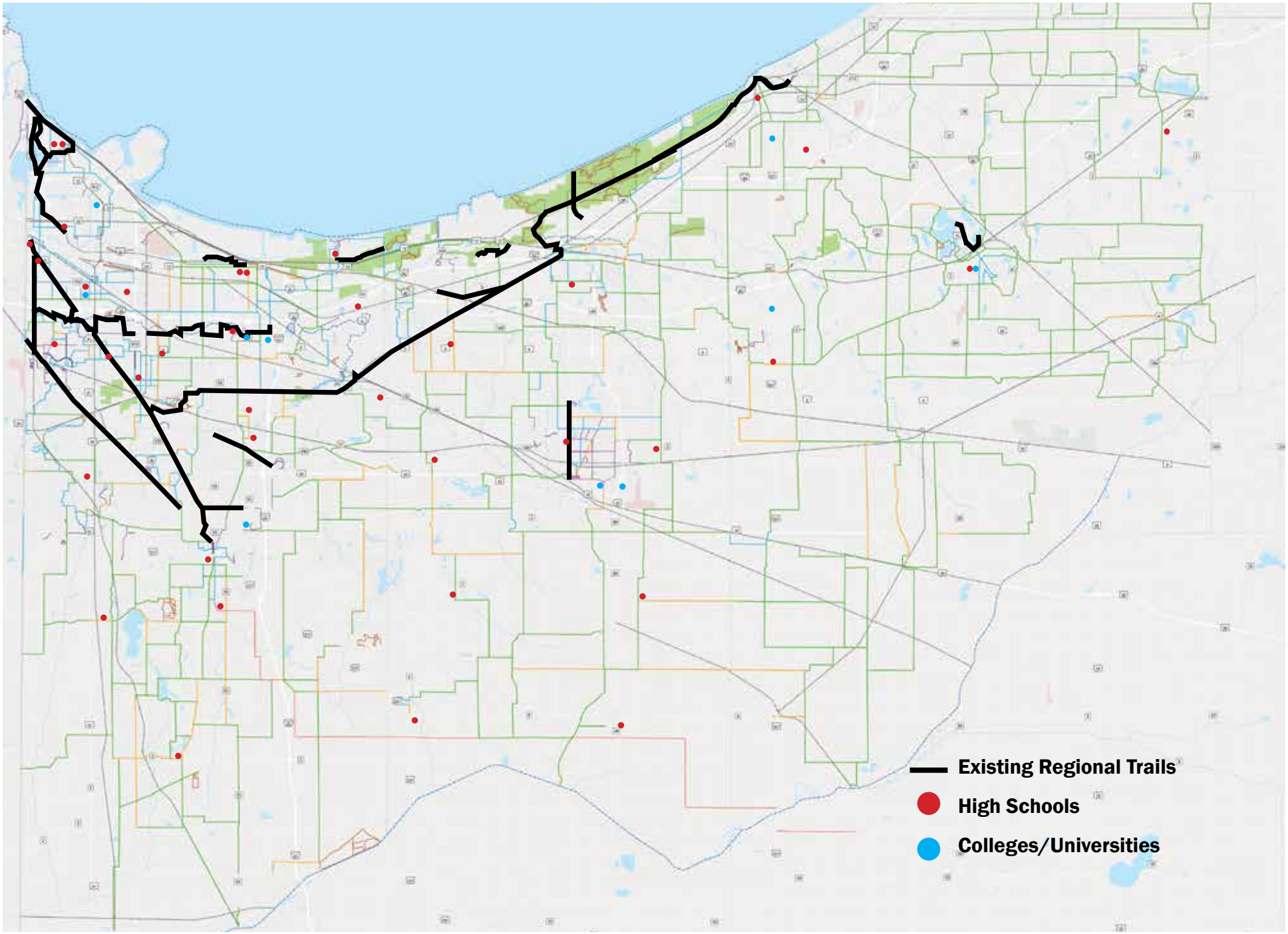


Figure 2-18: High School and College Campuses

Road Opportunities

Because the active transportation network will be composed of two major elements – trails and roadways – the character of Northwest Indiana's roads, including width, traffic volume, geometry, grades, and other factors will help determine routes and the framework of the network. This will also help define the nature and expense of projects needed to make them a functional and comfortable part of the network. For example, as traffic volumes increase on a road, the need for separation from vehicular traffic also increases.

The MSA's secondary and tertiary roads are a major asset in the formation of a network. Most section line roads are paved and some segments of half-section line roads are also hard surfaced. Inclusion in the active network will help ensure a level of maintenance appropriate to this role.

The roadway opportunities typology displayed in Figure 2-19 is the result of extensive fieldwork on both two and four wheels, and forms a system to both evaluate candidate roads and determine appropriate infrastructure and priorities. In many cases, these roads may parallel future trails, but may provide a low cost, short- to medium-term option that serves before the more costly but desirable trail facility is built. Road types in Northwest Indiana range from extremely low volume "lanes" to major arterials, some of which may be necessary when alternative ways to serve major destinations exist.





Figure 2-19 Network Road Opportunities Typology

Type	Characteristics	Infrastructure Direction	User Markets
Country Lane	• Narrow 2-lane • Very low volume • Tight landscape. Surface drainage close to the roadway • ADT less than 1,000 vpd	• Route designation • Advisory signage • Wayfinding	General use for most people
Rural County Road	• Standard two-lane, unshouldered • Moderate to low volume <3,000 vpd • Surface drainage, sometimes with space in the ROW	• Route designation • Shoulders or sidepath on critical segments with higher volumes • Advisory signage • Wayfinding	• General use at lowest volumes or with sidepaths • More experienced cyclists on high volumes without separated infrastructure
Principal County or Interurban Roads	• Standard two-lane, usually unshouldered but sometimes with shoulders • High to moderate volume <5-7,000 vpd • Surface drainage, often with space in the ROW	• Route designation • Shoulders or sidepath • Advisory signage • Wayfinding	• General use with sidepaths • Experienced cyclists only without separated infrastructure
Assembled Local Street Routes	• Urban 2-lane • Very low to low volume • Urban section with or without sidewalks • Parallel to major corridors • Continuous routes involve assembly of appropriate streets without direct continuity and little misdirection	• Route designation with combined street segments to provide continuity • Advisory signage • Wayfinding with line identification • “Bicycle boulevard” infrastructure – traffic calming, stop preference • Sidewalks • Intersection design for pedestrians and bikes at arterial crossings	General use for adults or families with supervision

Table 2-1: Network Road Opportunities Typology Descriptions









Figure 2-20: Network Road Typology

Type	Characteristics	Infrastructure Direction	User Markets
Urban Collectors	• Urban 2-lane, sometimes with wide street channels • Moderate volume < 7,000 vpd • Urban section, usually with sidewalks • Good continuity	• Enhanced standard or protected bike lanes • Sidepaths at higher volumes • Advisory signage • Wayfinding • Sidewalks • Intersection design for peds and bikes at arterial crossings	• General use with sidepaths or protected bike lanes • Street comfortable cyclists with standard lanes • Experienced cyclists without supportive infrastructure
Arterials with excess capacity	• Four or five-lane, usually unshouldered urban section • Moderately high volume <15,000 vpd • Signalized or 4-way stop intersections	• Route Designation • Road diet with bike lanes • Advisory signage • Wayfinding • Sidewalks • Intersection design for peds and bikes at arterial crossings	• General use with sidepaths or protected bike lanes • Street comfortable cyclists with standard lanes • Experienced cyclists without supportive infrastructure
Major Arterials	• Urban multi-lane, sometimes with medians • High volume > 15,000 vpd • Rural or urban section without side-walks • Sometimes necessary for access to destinations or continuity	• Shared use sidepaths • Special treatment at driveway and street intersections • Advisory signage • Wayfinding with line identification • Intersection design for peds and bikes using refuge medians	• General use for adults or families with supervision • No user group without infrastructure
Trails	• Exclusive off-road routes • Most regional rail trail opportunities have been identified • Gap fillers • Utility right of ways and other non-rail corridors	• Completion of planned trails • New regional trail development to serve southwest growth area • Trail segments to fill gaps in continuity	• General use

Table 2-1: Network Road Opportunities Typology Descriptions

Network Potential

The maps on the following pages present network concepts based on the analysis and research completed to date and summarized in this working paper. While the chapter has investigated most of these corridors, some will drop out as options receive further evaluation. However, this will serve as a starting point for further consideration and detailing in the Creating Purpose section.

From an overall policy point of view, the network concept focuses on these unifying principles:

The ultimate network should connect the central or downtown district of each community, large and small, and should be seen as a tool for their continued economic and quality of life development.

The regional network will focus on providing access to:

- County parks and major regional recreational and outdoor resources.
- South Shore Line stations, including both the existing South Bend line and the West Lake Corridor.
- Regional trails, acting as branches to the trunks that the trails constitute.
- Major destinations in Indiana Dunes National Park and public beaches.
- High school and college/university campuses. Middle schools are also significant destinations but are usually within the purview of local trail or active systems.
- Internal pedestrian and bicycle access to major commercial and mixed use nodes.
- 15-minute access to local family destinations such as elementary schools and neighborhood parks. This again is likely to be implemented by local communities. However, the Active Transportation Element will provide guidance to communities toward planning and implementing for access within fifteen minute rings.
- Major tourism facilities and connections to Illinois trails.
- The American Discovery Trail, Great American Rail Trail, and United States Bicycle Route corridors within the Northwest Indiana area.
- Growth and rural areas that are outside the reach of the existing trail network.

In addition to potential corridors and routes, the concept maps on the following pages display 2021 average daily traffic when available for the Indiana Department of Transportation, potential areas and corridors for detailed Part Two study, and other information.



Lake Street with cycle track in the Miller section of Gary

Creating Purpose

Building a Network

"Good roads are designed for safe speeds. We join national and international leaders ... when it comes to designing for the speed at which roads should be driven and setting speed limits for local streets. We know this will move us toward the new standard of Good Roads and Great Networks, where low-stress streets; streets with context sensitive, high quality bike facilities like bike lanes, protected bike lanes, and more; and paths and greenways will offer connected bike routes that serve all in a community. When combined with on-bike education for all and the vital programming that builds Bicycle Friendly Communities, everyone will have the opportunity to bike for transportation, good health, and the pure joy and freedom it brings."

- Bill Nesper, Executive Director
League of American Bicyclists

In the Winter, 2002 issue of American Bicyclist, the League of American Bicyclists set out new evaluation criteria for its popular Bicycle Friendly Community (BFC) program. In doing so, the League established two primary goals under the overall principle of Slow Roads and Strong Networks:

- To move from "piecemeal bike lanes to cohesive bike networks."
- To create "low-stress, high quality bike facilities for all."

To help accomplish this, the League "will now require applicants to provide a map of their bike network to show the layout of their facilities and Communities will be evaluated on how well-connected and how equitably distributed their bike network is."

While the League is principally concerned with the quality and equity of the bicycle environment, these goals and criteria are also highly relevant to the pedestrian environment. All active users benefit from good continuous facilities, street intersections that they can negotiate safely, and environments that, to paraphrase physicist Geoffrey West, maximize positive interaction and minimize distress." The image on this page, showing the Erie-Lackawanna trailhead in Crown Point and the crossing that links the trail to Court and West Streets, illustrates the benefit of good design to both user groups.

But Northwest Indiana, a national leader in trail development and effective transportation planning, has the opportunity to create something entirely new – the concept of a Bicycle Friendly Region. Its developed and developing intercity trails and greenways, headlined by the Erie-Lackawanna, Pennsy Greenway, Oak Savannah, Prairie Duneland, and Little Calumet Trails; its system of paved county roads; and its great diversity of environments and people provides the confluence of assets that can together make this idea a reality. This section establishes the basic network, based on the analysis of Part One and the continued input of field investigation, task force ideas, and community contacts.



Erie Lackawanna Trailhead at Summit St. in Crown Point with clear street markings.

Goals of a Network

The basic goals of the Northwest Indiana active transportation network are:

1. To connect and serve each community in Northwest Indiana as part of a regional network.
2. To increase the role of active transportation for purpose-driven trips to major regional destinations.
3. To reinforce routine social interaction and a sense of community and common purpose among Northwest Indiana's various constituencies.
4. To provide transportation equity to the various racial, ethnic, and income groups that make up the people of the Northwest Indiana community.
5. To use active transportation as a tool to encourage efficient land use and sustainable growth and development.
6. To provide physically safe and secure transportation environments for users of active modes.

Figure 2-21 presents a diagram built on a map of the region's municipalities, showing desirable connectivity patterns of an ultimate network, based on these goals. Building the actual network starts with these general goals, and uses the destinations and focuses identified in Part One as network determinants. By way of review these include:

- County parks and major regional recreational and outdoor resources.
- South Shore Line stations, including both the existing South Bend line and the West Lake Corridor.
- Regional trails
- Major destinations in Indiana Dunes National Park and public beaches.
- High school and college/university campuses.
- Major commercial and mixed use nodes.
- 15-minute access to local family destinations such as elementary schools and neighborhood parks.
- Major tourism facilities and connections to Illinois trails.
- National trails.

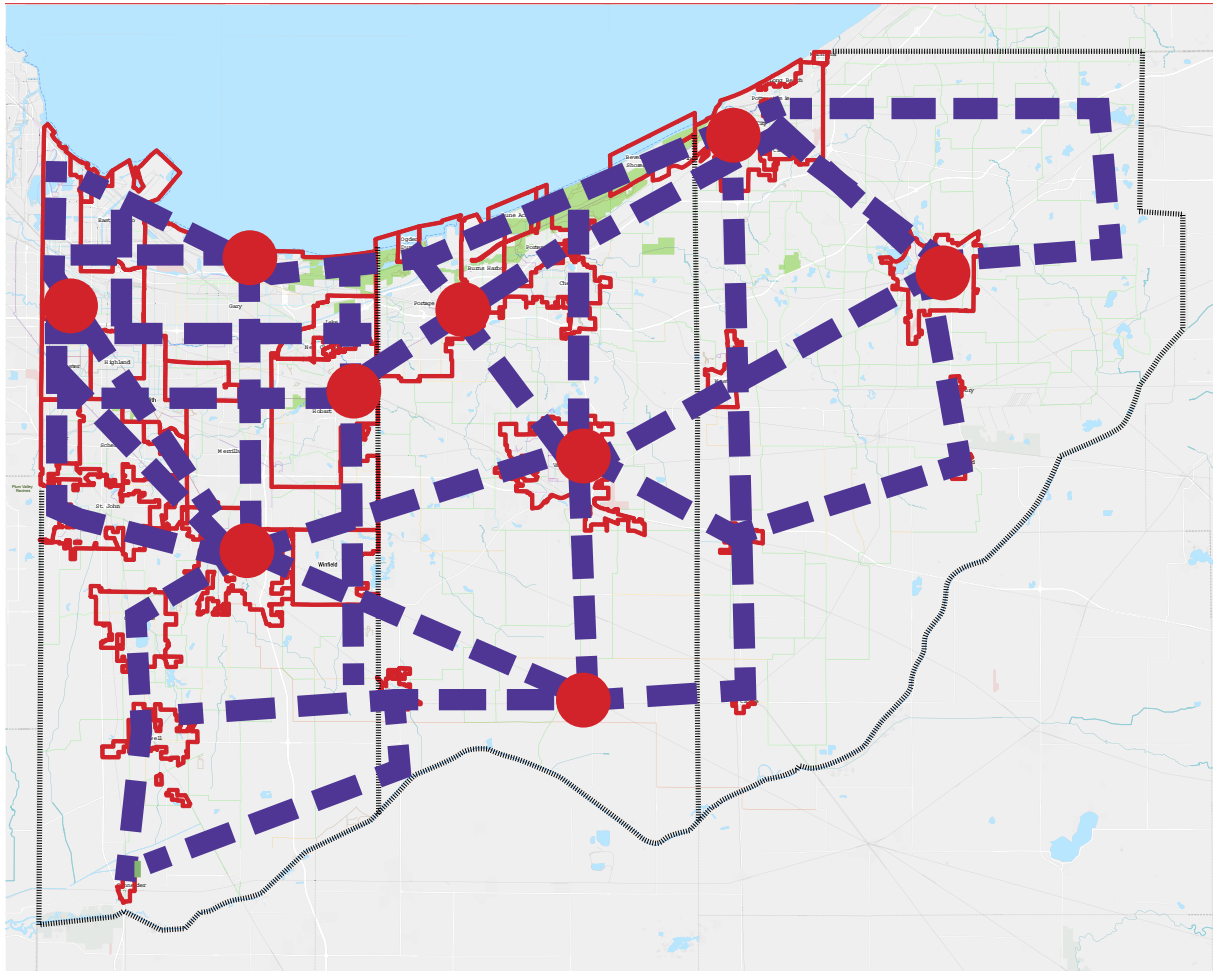


Figure 2.21: NWI 2050+ Study Area and Connection Patterns

Network Issues

Highly successful existing trails, reserved right-of-ways, major funded projects like the Marquette Greenway, the system of paved regional roads, major community and environmental assets, passenger rail, and effective regional planning all create a favorable climate for a quality regional network. But such a network also must address specific issues, including:

Discontinuities in both the bicycle and pedestrian environment. While sidewalks are present in most "traditional" development areas, they are often lacking in mid-century and later residential development. This complicates access to local parks, schools, and other destinations. In many cases where sidewalks exist, continuity is broken by missing segments or deterioration. In others, sidewalks are too narrow, compromised by obstructions, and/or located along the back of a curb without a comfortable setback.

Similarly, while major trails like the Erie-Lackawanna, the Oak Savannah-Prairie Duneland, and Pennsy Greenway (after current construction within Centennial Village is complete) have excellent continuity. others have significant gaps that reduce their utility. These include the Iron Horse, C&O, Fisher Street, and Little Calumet Trails. Several of these present significant design challenges which, while not insuperable, will require close inter-agency cooperation and substantial funding.

Major barriers. The combination of interstate highways and interchanges, active mainline railroads, and other arterial roads creates significant connectivity challenges. A planned network must make efficient use of the barrier crossings, including overpasses, underpasses, and signalized intersections without requiring people to go unacceptably far out of their way. Expansive intersections with wide roads like US 30 must be scaled to make pedestrian and bicycle crossings more comfortable and more visible to motorists.

Traffic speeds. While the region has an abundance of low volume county roads, these same conditions can also encourage higher speeds and more dangerous situations for bicyclists. As a result, roads that look statistically attractive from their AADT will be unacceptable to many users. A city street operating at 3,000 vehicles per day in the city and a rural road with similar volume but higher speeds will feel very different to potential users. Therefore, the network that maximizes user comfort will make greater use of well-designed sidepaths, lower speed limits, and speed management techniques and designs.

Wayfinding. Wayfinding in a regional network becomes extremely important and can be a significant (and relatively affordable) first step in developing a regional system. Currently, the region lacks a uniform wayfinding system. Trails are unique and a very effective system is being established along the Erie-Lackawanna and will extend to other trails. But wayfinding and bike route signage occurs on occasion in Porter and La Porte Counties, but is not consistent, does not direct people to destinations, and does not follow MUTCD standards. Additionally, in addition to increasing the utility of the network – it never feels good to feel lost -- wayfinding signage alerts motorists to the possible presence of bicyclists on a route.



Examples of active network challenges: From top down - pedestrian negotiating busy street with no sidewalks; obstacles located in sidewalk making accessible travel hazardous; lack of wayfinding at railroad crossing.

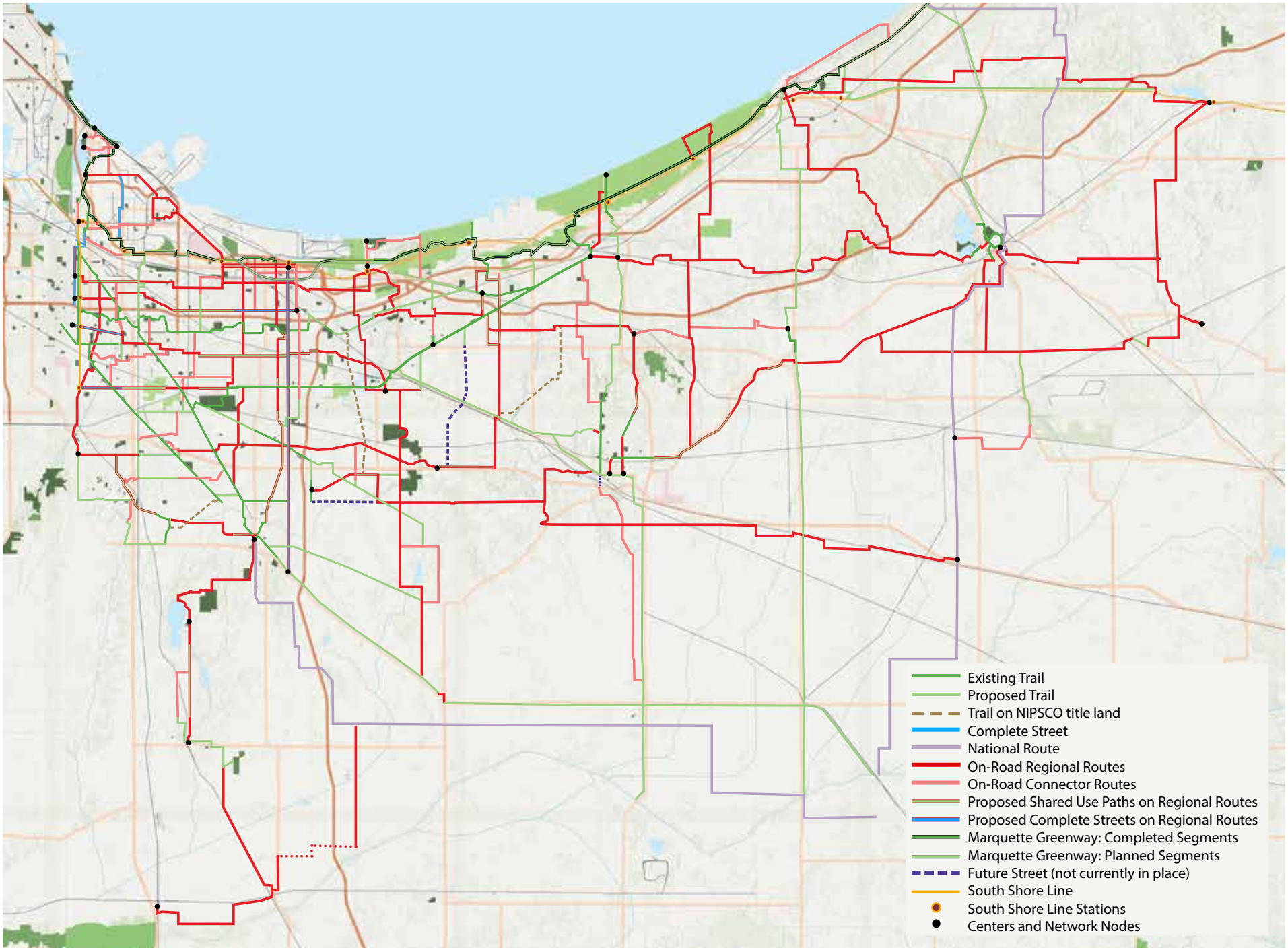


Figure 2.22: Proposed Active Network

Components of the Network

The network proposed in this plan is illustrated in Figure 2-22. It is a destination-based system that combines segments into distinct point to point regional routes. In effect, it is analogous to a major streets plan that establishes facilities that can fit into a STIP-like capital program for NIRPC. While these routes will provide local benefits, they are intended to speak primarily to regional needs and connections. As such, they complement rather than replace local area active transportation plans.

The network is composed of the following components:

Major inter-community or regional routes. These are the principal routes of the network, composed of combinations of low volume roads, trail segments, and sidepaths. They are point to point routes with distinct endpoints. As such, they lend themselves effectively to a regional wayfinding system. On the map, lines shown in red indicate on-street or on-road routes. These in themselves will use different types of infrastructure, presented in detail in Part Three.

Connector routes. These are shorter, point-to-point routes, usually within a single or adjoining municipalities. Their primary purpose is to connect longer routes together or to provide a necessary link to a trail from a long route.

Trails or shared use paths. These facilities are the spines of the network and will tend to be the most frequently used components because of both their recreational and, in this region, potential transportation function, especially when tied to destinations through the active network. Completed and proposed trails are differentiated in Table 2-2 and sectional enlargements on subsequent pages. In addition, the Network Plan distinguishes between proposed paths that are part of a point to point route. In many cases, these will be sidepaths along streets or roads with high traffic volumes or other traffic characteristics uncomfortable for most users.

Complete streets. These corridors either have protected bicycle facilities or have sufficient width to accommodate a protected bike lane or cycle track within their width. Existing complete streets include Hohman Street south of E. 165th Street in Hammond, and Ridge Road in Munster is programmed for a complete street conversion.

Proposed corridors. These are street connections that do not currently exist, but are proposed for development. They include the currently planned Willowcreek extension in Union Township between US 6 and US 30 and the Campbell Street extension between Lincolnway and US 30 in Valparaiso.

Utility corridor trails. This category envisions trail development along power line corridors. NIPSCO corridors are valuable candidates and other possibilities may emerge over time. The company states that:

> *Bike trails along our electric and gas corridors serve the purpose of community connectivity and provide families with the opportunity to enjoy a safe place for recreation throughout the region. NIPSCO is proud to support this initiative and our local communities.*

National routes. National routes include the region's two members of the United States Bike Route (USBR) system: US BR 35, running north and south through the eastern part of the region and passing through La Porte; and USBR 36, which makes an approximate V from Chicago along the Wolf Lake, Erie-Lackawanna, Oak Savannah, and Prairie Duneland Trails, and continuing east along the Marquette Greenway into Michigan.

Figure 2-22 summarizes the route included in the network, indicating their endpoints and the direct connections they provide to South Shore Line stations, trails, and city and town center districts. Part Three provides detailed, segment by segment infrastructure for each of these routes. Figures 2-23 to 2-26 expand the overall map for readability. Both figures provide reference material for Part Three to follow, addressing the nature of specific routes, trail and greenway priorities, policy recommendations, and wayfinding.

Route	Endpoints		Direct Connection to. . .		
	North/West	South/East	South Shore Line, Amtrak or BRT	Trails	Central Districts/TODs
Whiting/Hammond to Gary	Indiana-Illinois state line at the lakefront; 129th at Wolf Lake	Gary Metro Center	Gary Airport Station (SSL), Gary Metro Center, Whiting (Amtrak), Broadway BMX	Wolf Lake, Marquette Greenway	Whiting, East Chicago, Gary
Whiting Connector: 115th St	Forsythe Park	129-New York Ave	No	Wolf Lake, Whilhala Beach Trail	No
Whiting Connector: 119th St	Forsythe Park	Whiting Lakefront	No	Wolf Lake, Whilhala Beach Trail	Whiting
Hammond Connector: Hoffman Street	Hammond Gateway Station	Cline & Cesar Chavez	Hammond Gateway Station (SSL), East Chicago Station (SSL), Gary Airport, Gary Metro Center	Marquette Greenway	
Hammond Connector: Pulaski Park/Wabash	Sheffield south of I-90	Hammond Gateway Station	Hammond Gateway Station (SSL)	Marquette Greenway, Wolf Lake	Hammond
Hammond Connector: Marquette Greenway to Downtown Hammond	143-Baltimore	Douglas-Hohman	Hammond Gateway, Downtown Hammond Station (SSL)	Marquette Greenway, Erie-Lackawanna	Hammond
Michigan Connector	Sohl-Michigan	East Chicago SSL Station	East Chicago Station (SSL)	Sohl Complete Street	No
Hohman Complete Street	Hohman and Douglas	Hohman-Ridge (Munster)	Downtown Hammond Station (SSL), South Hammond Station (SSL), Munster Station (SSL)	Erie-Lackawanna, Monon, Little Calumet	Hammond, Munster
South Hammond to Miller	165-Hohman (Hammond)	3-Lake (Miller)	South Hammond Station (SSL), Miller Station (SSL), Broadway BMX	Monon, Erie-Lackawanna, Gary Elevated (future)	Miller
South Hammond to Gary/25th Ave	South Hammond Station	25-Ellis (Gary)	South Hammond Station (SSL), Broadway BMX	Monon	
Munster Center-Hobart Center	State Line & Ridge	10-Lincoln (Hobart)	Munster Station (SSL), Broadway BMX	Pennsy, Monon, Wicker Park, Erie-Lackawanna	Munster, Highland,
Fran-Lin Connector					
Dyer-Chesterton (via trail)	Dyer Station, Main & Calumet	Broadway & Calumet (Chesterton)	Dyer Station (SSL), Dyer Amtrak, Broadway BMX	Pennsy, Monon, Oak Savannah, Prairie Duneland	Griffith, Hobart, Portage, Chesterton, Porter
77th/ Lincoln Highway	77-Hart	Old Lincoln Highway and US 30	Broadway BMX	Pennsy, Erie-Lackawanna, C&O	Schererville
85th Ave Connector	86-Patterson (St. John)	Pine Island Dr and E-L Trail (Schererville)		Pennsy, Erie-Lackawanna,	St. John Corridor
St John-Crown Point	86-Patterson (St John)	Summit-Merrillville Rd (Crown Point)			St. John Corridor, Crown Point via Court/West bikeways

Table 2-2: Summary of Network of Routes

Route	Endpoints		Direct Connection to. . .		
	North/West	South/East	South Shore Line, Amtrak or BRT	Trails	Central Districts/TODs
Crown Point-Cedar Lake	Court/West & Summit	133-Lake Shore Dr			Crown Point Cedar Lakefront
Southlake Mall-Valparaiso	US 30 & Mississippi (Hobart)	Central Park Plaza (Valparaiso)	V-Line	C&O (future)	Mall area, Downtown Valparaiso
Portage Beach-Lake Station	Portage Beach	Lake Station Library, Jay & Fairview	Ogden Dunes Station (SSL)	Marquette Greenway, Iron Horse, Prairie Duneland	
Indianapolis Blvd	129-Indianapolis	East Chicago SSL Station	East Chicago Station (SSL)		
Columbia Ave	167-Columbia (Munster)	93-Bull Run (St. John)	Dyer Station (SSL)	Erie-Lackawanna, Little Calumet, Fisher St, Pennsy	Munster, Centennial Village
Northcote Connector	167-Northcote (Hammond)	Azalea Dr & Hawthorne (Highland)		Erie-Lackawanna, Little Calumet, Wicker Park, Fisher St with gap connection	Indianapolis/Kennedy & I-94 focus area
5th Street Connector	5th & Little Calumet Trail	5-Lincoln		Little Calumet, Porter St.	Highland
Gary-St John	9th-Colfax (Gary)	85th Ave. & Alexander (St John)		Erie-Lackawanna, Little Calumet, Pennsy	Griffith, Schererville, St. John corridor
Chase connector (Gary)	5th & Chase (Gary)	Erie-Lackawanna Trail at Whitcomb (Merrillville)		Little Calumet, Gary Elevated (future), Oak-Savannah	
Taft Connector (Gary)	2nd & Taft	25th Ave & Taft		Marquette Greenway	
Gary-Merrillville-Crown Point	4th & Harrison	Merrillville Rd & Summit	Gary Metro Center (SSL)	Marquette Greenway, Gary Elevated, Little Calumet, Oak-Savannah, C&O, Erie-Lackawanna	Gary, Century Plaza Area, Crown Point
Broadway Complete Street	Gary Metro Center	US 231 & Broadway (Crown Point)	Gary Metro Center (SSL), Broadway BMX	Marquette Greenway, Gary Elevated, Little Calumet, Oak-Savannah, C&O, Erie-Lackawanna, Veterans Memorial	Gary, IU-Gary, Crown Point
Virgina-Georgia Connector	Marquette Greenway at Virgina	56th Ave & Georgia, extended to Carolyn Drive & Broadway through Hidden Lake Park	Broadway BMX	Marquette Greenway, Gary Elevated, Little Calumet, Oak-Savannah	Gary, IU-Gary
Miller-Hobart	7th & Lake (Gary/Miller)	10th & Wisconsin (Hobart)	Miller Station (SSL)	Marquette Greenway, Iron Horse	Miller, New Chicago, Hobart
South Hobart Connector	10th & Wisconsin	10th & County Line Rd			
Hobart-Lake of the Four Seasons	10th and South Hobart Rd	County Line & US 231		Winfield (future), Veterans Memorial (future)	

Table 2-2: Summary of Network of Routes

Route	Endpoints		Direct Connection to. . .		
	North/West	South/East	South Shore Line, Amtrak or BRT	Trails	Central Districts/TODs
Miller to Lake Station	Lake and Old Hobart	Fairview & Pike (Lake Station)	Miller Station (SSL)	Marquette Greenway,	Miller, Lake Station
Chesterton to Valparaiso	Porter Beach	Campbell and Lincolnway (Valparaiso)	Dune Park Station (SSL)	Marquette Greenway, Prairie Duneland, Lakewood Link	Porter, Chesterton, Valparaiso
Valparaiso-Kouts	8th & Campbell	SR 49 at Kankakee River	V-Line	Dunes Kankakee (future)	Valparaiso, Kouts
Chesterton-La Porte	Broadway & Calumet Rd	US 35 & Weller (La Porte)		Lincoln (future), Chessie	Chesterton, La Porte
Valparaiso-La Porte	Morgan Blvd & Lincolnway	Michigan & Lincoln Highway (La Porte)	V-Line	Lincoln Memorial	Valparaiso, Westville, La Porte
Beverly Shore to Valparaiso	Beverly Shores South Shore Line Station/Broadway	SR 2 & N 400E			
Michigan City-La Porte	Wabash & Michigan Blvd	Wozniak and Small Road, continuing on common route to La Porte	Michigan City Station (SSL)	Marquette Greenway, Trail Creek	Michigan City, La Porte by connection
Michigan City to Hudson Lake	8th and Huron	Chicago Rd & E 700N	Michigan City Station (SSL), Hudson Lake Station (SSL)	South Shore Line Trail (fut), Marquette Greenway,	Michigan City, Hudson Lake
Hudson Lake to Fish Lake	Chicago Rd & E 700N	SR 4& S 800E	Hudson Lake Station (SSL)	South Shore Line Trail (fut),	Hudson Lake, Fish Lake
Westville to Fish Lake	Joliet Rd & CH 625W	SR 4& S 800E			Fish Lake
Kingsford Loop	W 800S & Long Lane (USBR 35)	18th & I (La Porte)			Kingsbury
US Bicycle Route 35 (USBR 35)	Michigan-Indiana state line at 150 E	S 650W at Kankakee River		South Shore Line Trail (fut)	La Porte
Aberdeen to Hanna	N 250W & W 100N	W 350S & Long Lane		Dune Kankakee (future), Lincoln Memorial (future)	Wanatah, Hanna
Chesterton to Westville	Tratebas Rd & Calumet	W 300S & Lincoln Trail (Westville)		Lincoln Memorial	Westville
Cedar Lake-Lowell	Lake Shore Dr & Cline (Cedar Lake)	235th & Pierce (Shelby)			Cedar Lake, Lowell, Shelby
Kankakee Valley	236th & Parrish (Schneider)	217th & Clay (Grand Kankakee March County Park)		Levee Trail	Schneider
Hebron-Grand Kankakee	S Main & Pratt (Hebron)	217th & Clay (Grand Kankakee March County Park)		Levee Trail	Hebron

Table 2.2: Summary of Network of Routes

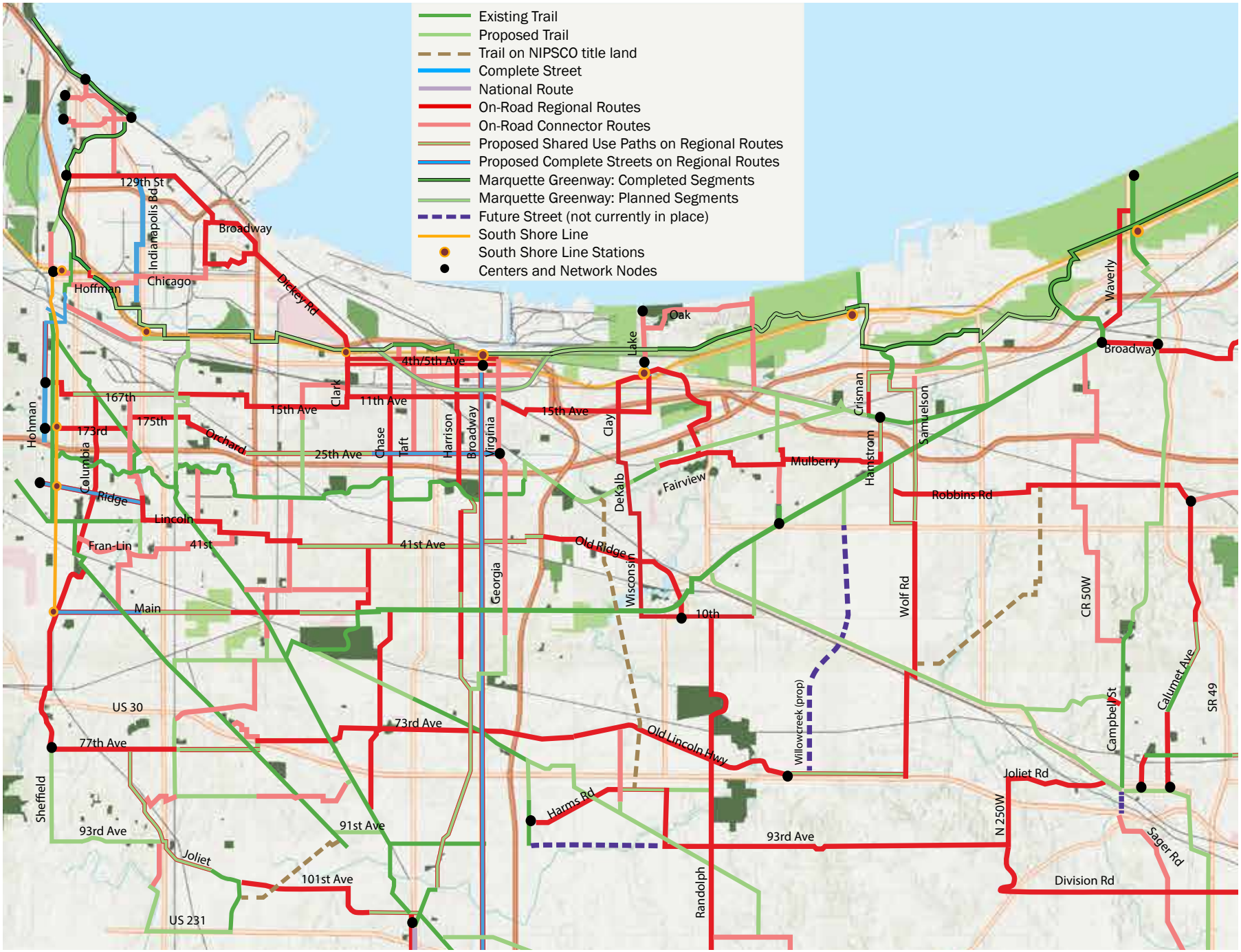


Figure 2-23: Proposed Active Transportation Network Enhancement

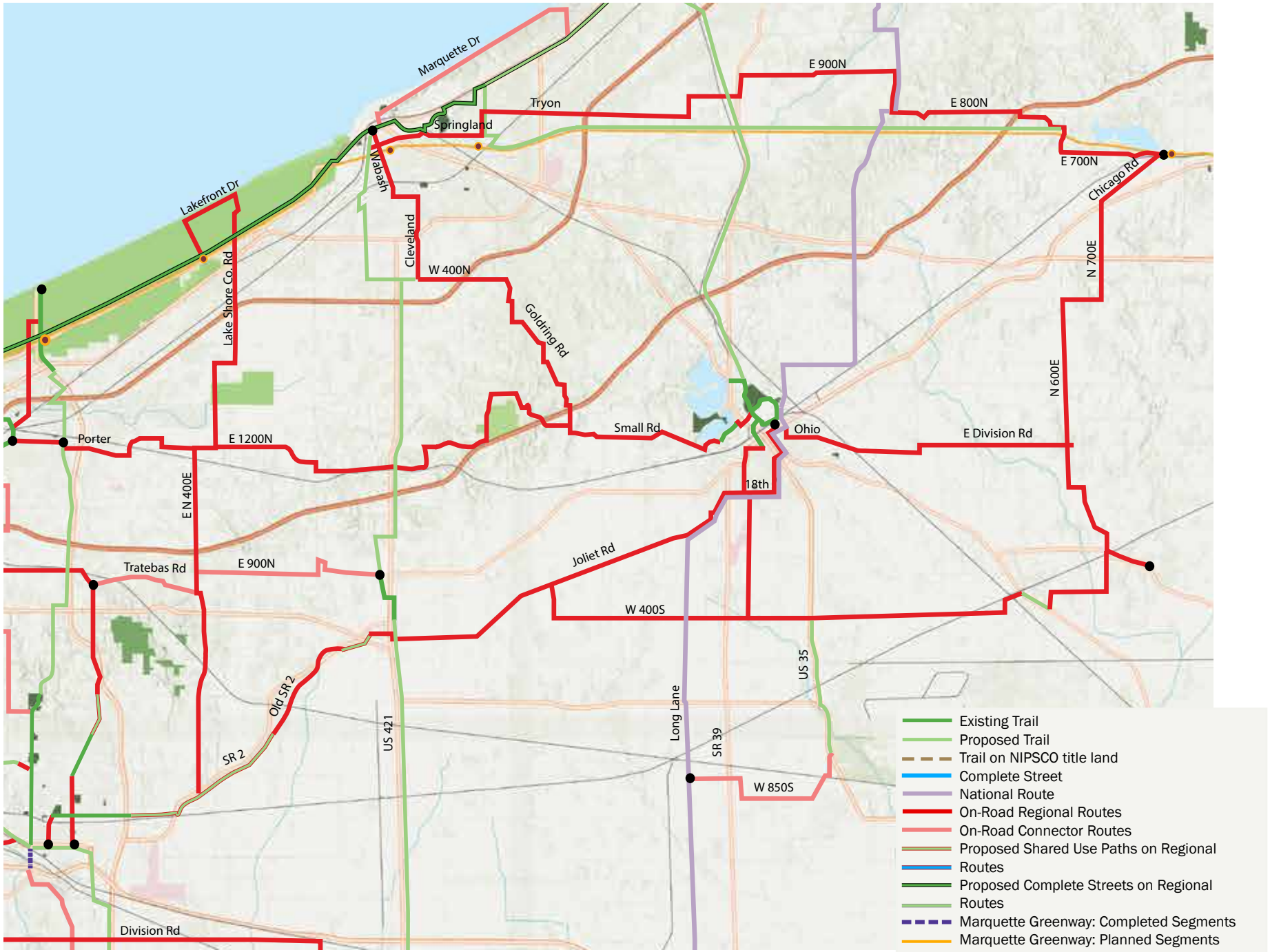


Figure 2-24: Proposed Active Transportation Network Enhancement

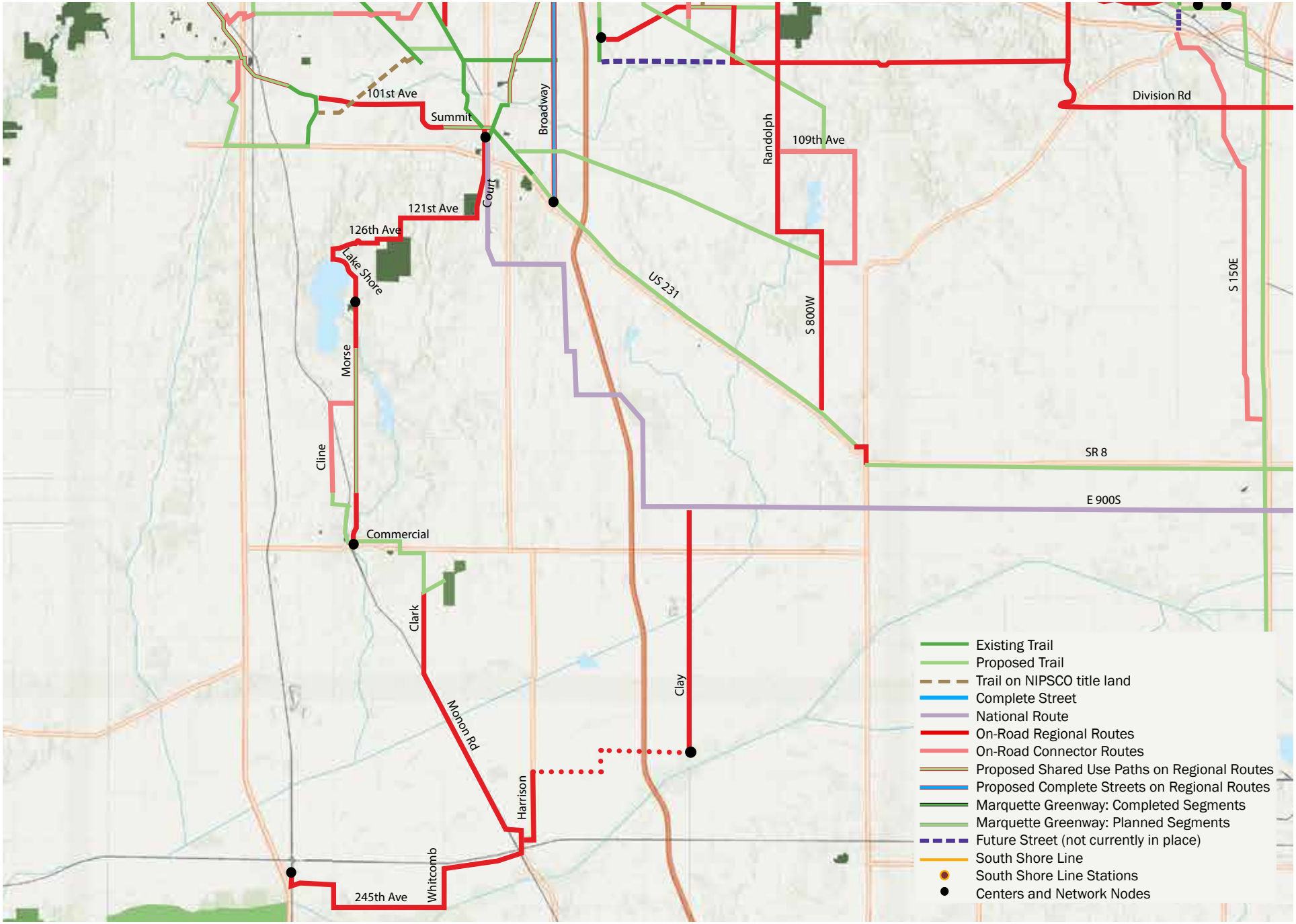


Figure 2-25: Proposed Active Transportation Network Enhancement

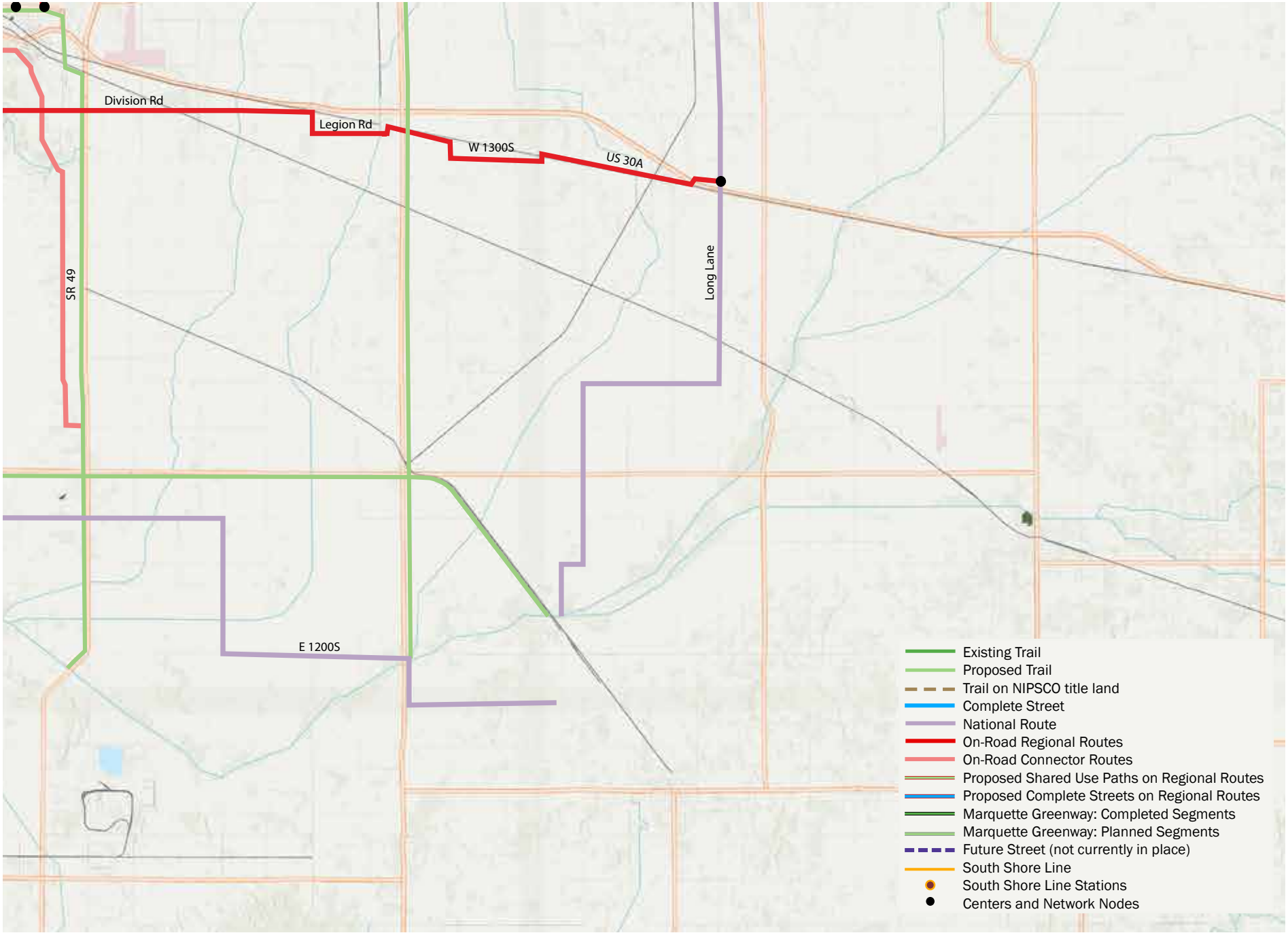


Figure 2-26: Proposed Active Transportation Network Enhancement

Purpose Driven Planning

Implementing the Network Program

This section of the chapter presents details – what types of facilities are needed to implement the network and what does each route offer its users. This will provide implementing agencies with guidance of facility design, a means to assess priorities and the ability to incorporate active transportation into both capital budgets and new transportation projects. The regional perspective and management of NIRPC is especially important because most of these routes are multi-jurisdictional. Maintaining route continuity and realizing a regional vision will require the cooperation of different governments and other agencies. The regional trail program clearly demonstrates that this level of cooperation exists, but these on-street facilities will require some degree of standardization and consistency.

This section contains several different parts. The most extensive presents a series of tables that provide details for each on-street route. This is consistent with the basic mission of this project, which rightly assumed that most planning for trails had been successfully concluded and that on-street connections were the subject that required the most planning attention. But the survey conducted during this planning process, consistent with other experiences, indicates that people and families are more likely to bike, or walk for that matter, when facilities separate them from cars and trucks.

As result, the network suggests separated facilities in situations that were not previously anticipated. In addition, on-street routes may change priorities for some trail segments by suggesting how trails and on-street facilitates can combine to create greater regional connectivity. Thus, this section also includes a summary of additional separated facilities like protected lanes, street reconfigurations and sidepaths. It also makes suggestions on priorities for these facilities, given the emphasis on both connectivity and equity that underlies much of the philosophy of *NWI 2050+*.

The previous section identifies the need for unified support systems. A particular focus here is wayfinding, necessary to provide information and orientation, as well as increasing driver awareness of vulnerable users on or around the road. Finally, there are a variety of policies that address roadway and intersection design and accommodate the often forgotten but largest single user group of all, namely pedestrians.

The On-Street System

Tables 2-4 to 2-49 in this chapter review each assembled route individually, with the analysis broken down segment by segment. The tables contain the following information:

- ***The range of the individual road section.*** In some cases where several consecutive road sections have the same character and treatment, they are grouped together. But these segments and ranges are differentiated when conditions like street width or traffic volume change.
- ***The jurisdiction that the route affects and benefits.*** This information is important to know for coordination of standards, phasing, and funding of regional routes.
- ***Street or road type.*** Normally streets and roads are classified in a hierarchy from freeways to local streets (freeway, expressway, major and minor arterial, major and minor collector, local). While generally using this typology, we have added some contextual comments that relate to land use, neighborhood or community role, and other factors that help define the relevance of that segment to an overall active network.
- ***The length of the segment,*** important in calculating planning level costs for different types of infrastructure. To this point, basic infrastructure types have relatively standard per mile costs that are helpful in establishing estimates for budgeting purposes. However, individual street or greenway projects can have unusual circumstances that can have a large impact on actual cost.

- ***Channel width.*** This is an estimated curb to curb width, important in determining what kind of infrastructure can be applied inexpensively to specific road. A minimum curb-to curb with for a two-lane road without parking is 32 feet, corresponding to two 11 foot lanes and five foot standard directional bike lanes. If 10 foot travel lanes are acceptable in low-speed settings, that minimum may be reduced to 30 feet. Estimated curb width was established by measuring each segment on Google Earth and may vary in the field.

- ***Lane configuration***. This relates to the number of lanes on the street, centerline striping, and parking conditions. On-street parking on a typical two lane section can preclude on-street bike lanes. On the other hand, a wide two-lane street with two-sided on-street parking can accommodate bicycle infrastructure, and the slower speeds that creates can discourage speeding. A typical minimum width for a street with single-sided parking, standard bike lanes, and two travel lanes is about 40 feet. Many of Gary's local or collector streets are 50 feet wide, and are excellent candidates for on-street infrastructure.



Applying the table Hoffman Street in Hammond. This is a comfortable mixed use street as a riding experience. It is rated E in the 2020 G+B Map, despite an ADT approaching 10,000 vehicles per day. However, its approximately 40' section is insufficient for bike lanes in both directions because of two-sided parking (probably necessary in its urban context). The network plan recommends a bicycle boulevard approach, using traffic calming methods to maintain slow speeds and considering low-cost infrastructure features.

- ***Adjacent ROW (right of way) conditions***. This generally applies to sidewalks, although in some cases we have included notes that address space to accommodate off-road improvements like sidepaths. As a general policy, all urban streets in the network should have sidewalk or path continuity on at least one side of the street and preferably on both sides. Exceptions can be made for planned neighborhoods or communities where a path network serves the same connectivity function as conventional sidewalks. Sidewalks should also be set back from the curb to provide space for street landscaping and greater pedestrian separation from cars.

- ***ADT (average daily traffic) if known***. This information was derived from the Indiana Department of Transportation's interactive website and represents 2021 volumes. Interestingly, these data included spot traffic counts on county roads and minor streets, a number of which were candidates for the network. This is a very important number for determining both inclusion in a network and appropriate infrastructure in its context. As mentioned earlier, a specific ADT means one thing on a city street with low speeds and a high speed highway. In assessing rural situations in Northwest Indiana, we generally applied a 2,000 vehicle per day threshold for recommending off-road infrastructure. "NA" on the table means that data were not available for that segment.

- ***Greenway map rating***. NIRPC's Greenways + Blueways Regional Map was an invaluable resource and includes a rating of mapped facilities. The map rates roads on an excellent/good/fair scale, and the assessment for road segments is shown on the tables. Ratings on the 2020 edition were furnished by the Active Transportation Alliance. "NR" indicates the segment was not rated, most often because the street involved is a local or neighborhood street (NR-L) or a major street that does not accommodate active users in its present state (NR-A).

- ***Destination/trails served***. We know that trails are used most frequently for recreational purposes, and that metropolitan planning organizations like NIRPC were initially established as part of regional transportation planning agencies. The active network proposed here is envisioned as a transportation initiative that gets people to places and destinations, one of which are recreational destinations (including trails). This item lists the features immediately adjacent to or within a very short distance from the road segment. Trails indicated here are primarily existing trails. When the connection is to a proposed trail, the table indicates it as "future."

- *Barriers and treatment.* As we have discussed earlier, Northwest Indiana, with a dense network of freeways, railroads, and freight movements radiating out of Chicago and its concentration of heavy industry, has more than its share of barriers. The active network proposed here attempts to make maximum use of existing grade separations and signalized intersections. This item identifies barriers along a specific segment and whether and how they have been addressed. If some additional action is needed, that is identified in the "recommended infrastructure" column.



- *Recommended infrastructure.* This identifies a general infrastructure approach for each segment, based on the other information assembled for the table. It is important to note that specific solutions should be unified and relatively consistent throughout a route. For example, users should not have to jump from one side of a street to another every few blocks. The actual design of facilities should provide continuity for users as they move through a route.

  These infrastructure recommendations fall within several overall categories: bike routes, bicycle boulevards, bike lanes (enhanced standard and protected), sidepaths, and trails. The context used to determine type of infrastructure are discussed at right.

  The tables are placed at the end of this document for ease of use.











BIKE ROUTE

TYPICAL CONTEXTS:

- Business district streets with slow traffic, parking, and no space for bicycle facilities
- Relatively short stretches of low volume streets that connect other system elements
- Rural county roads and lanes with low traffic volumes

RECOMMENDED TREATMENTS

- Route identification and wayfinding signage
- Reduced speed limits
- Sidewalks in urban settings
- High visibility crosswalks and traffic controls at major street and highway crossings

BICYCLE BOULEVARDS

TYPICAL CONTEXTS:

- Urban neighborhood local and collector streets
- Relatively long, continuous stretches, typically a one mile minimum
- Low/moderate traffic volume below 3,000 vpd but depends on local conditions

RECOMMENDED TREATMENTS

- Special identification and wayfinding signage
- Reduced speed limits
- Sidewalks in urban settings
- High visibility crosswalks and traffic controls at major street and highway crossings
- Stop preferences
- Possible traffic calming features such as corner nodes, chicanes, mini-traffic circles, striped parking





ENHANCED STANDARD BIKE LANES

TYPICAL CONTEXTS:

- Urban collector and arterial streets
- Moderate to moderately high traffic
- Moderate speeds < 35 mph

RECOMMENDED TREATMENTS

- Route identification and wayfinding signage
- Reduced speed limits
- Sidewalks in urban settings
- High visibility crosswalks and traffic controls at major street and highway crossings
- Enhancements include green paint at strategic locations (intersection entrances, conflict zones)
- 5' minimum, 6' desirable minimum lanes
- Lane reductions, typically on 4-lane streets operating at less than 16,000 vpd



PROTECTED (BUFFERED) BIKE LANES

TYPICAL CONTEXTS:

- Urban arterial streets
- Moderately high traffic
- Speeds < 40 mph
- Adequate street width to permit buffering

RECOMMENDED TREATMENTS

- Route identification and wayfinding signage
- Sidewalks in urban settings
- High visibility crosswalks and traffic controls at major street and highway crossings with separation of ped and bike tracks
- Separation
- Enhancements include green paint





CYCLE TRACKS

TYPICAL CONTEXTS:

- Urban streets, often in business districts or commercial corridors
- Settings with excessive street width
- Variety of speed and traffic environments

RECOMMENDED TREATMENTS

- Route identification with wayfinding signage
- One or two-way options
- Clear vertical separation from parking and moving traffic, through raised barrier, joint use with sidewalk, or delineators
- Protected intersections with separated pedestrian and bicycle tracks
- Enhancements may include streetscape
- Often seen as a redevelopment catalyst













SIDEPATHS

TYPICAL CONTEXTS:

- Major urban streets, including multilane settings
- Traffic speeds and volumes that require clear horizontal separation
- Major urban streets or corridors that lack necessary sidewalks where incremental cost of a shared use path is defensible
- Higher volume (> 2,500 vpd) two lane roads and state highways

RECOMMENDED TREATMENTS

- Route identification with wayfinding signage
- 10’ desirable width
- Clear crossing treatments at intersection
- Enhancements may include streetscape
- Often seen as a redevelopment catalyst

TRAILS

TYPICAL CONTEXTS:

- Continuing development of the rail-trails that are the region’s primary active transportation assets
- New corridors, including NIPSCO utility corridors
- Other connectors through parks and public spaces
- Highway sidepaths that are part of the panned regional trail network

RECOMMENDED TREATMENTS

- Continue current graphics with individual logos and unique signage on the trail network. Integrate this into the standard on-street system.
- 10’ desirable width
- Clear crossing treatments at intersections
- Continued installations of user amenities with new projects

Protected crossing on the Pennsy Greenway. safely negotiates a potential railroad mainline barrier; the unique graphic identification program implemented on regional trails recalls the Pennsylvania Railroad heritage of the Pennsy Greenway with its keystone form.

Trails and Sidepaths

Extensive planning has been done for the expansion of the current regional trail system and the initiation of new routes. However, as mentioned above, the development of a comprehensive network has added some new potential trail and sidepath segments and may have some impact on priorities. Figure 2-27 is NIRPC's current map of trail network staging and identifies as high priorities the eastward extension of the Iron Horse Trail, the Dunes Kankakee from Porter and Chesterton to Valparaiso, the NIPSCO/South Shore Line to the future Chessie (connecting Michigan City and La Porte), and the Lincoln Memorial south from Michigan City to the American Discovery Trail route. The award of an $18 million RAISE grant for the Marquette Greenway, formerly shown as a "State Visionary Trail" dramatically changes the status of that unique project.

Figure 3.2 on the following pages summarizes additional shared use path recommendations identified as priorities during this process. These include:

Indianapolis Boulevard between 129th Street and Columbus Drive. This is the only possible bike/ped conduit for three miles south of East Chicago. The roadway has adequate space and low enough traffic to support reconfiguration as a complete street.

Kennedy Avenue Corridor linking the East Chicago South Shore Station to the Little Calumet Trail. From the trail, concept proceeds north along trackage parallel to McCook Avenue. It turns east as a sidepath along 169th Street and north as a sidepath along west side of Kennedy Ave, continuing on alley trails to 167th Street. It continues on street on 167th to McCook Ave. Turns north parallel to McCook along power line corridor to 161st; east as a sidepath along 161st, crossing to east side of Kennedy Avenue. The Kennedy Avenue overpass would provide a protected pedestrian/bicycle track on Kennedy Avenue overpass under US 20 overpass, with a connection here to the Marquette Greenway. The idea is to follow the ramp to Carroll Street (US 20), adapting the shoulder as a two-way bikeway, going offstreet as a westbound path to East Chicago South Shore Line station.

The gap between the east end of the Fisher Street Trail and Lincoln Street. This provides important connectivity between the Calumet and West Lake corridor to Highland and ultimately the Little Calumet Trail.

Ridge Road Crossing. This short connection provides a safe access across Ridge to the park's main entrance. It's importance is enhanced by Munster's plan to convert Ridge to a complete street west to the South Shore station.

Main Street east from the Main Street/Dyer South Shore station. This connects directly to the Oak Savannah Trail and ties Dyer and the south part of Munster to Chesterton, Porter, and Porter Beach.

Joliet Street sidepath. This relatively short path enhances a connection between St. John and the regional trail system at Crown Point.

Power Line Path. This diagonal route links St John to the Pennsy Greenway and, together with the Joliet Street sidepath discussed above, provides an almost all-trail connection from the St. John growth area to the regional system.



91st Avenue Sidepath. This appears to be the shortest and most feasible way to provide a separated trail connection between the Pennsy Greenway and the Erie-Lackawanna Trail.

25th Avenue. This is a potentially important corridor for Gary's revitalization. This segment is a narrow two lane street with no sidewalks, and the project provides both transportation equity and a significant east-west route.

Gary ELevated. This is a potentially transformational project for Gary and, together with the South Shore improvements, can catalyze the rebirth of Downtown and the stabilization of adjacent neighborhoods



#	Corridor Name
1	Buffington
2	Hessville
3	Dyer
4	West Lake
5	St. John
6	Michigan Central
7	South Lake
8	I-65
9	East Lake
10	C&O
11	Winfield
12	Great American Rail-Trail
13	State Road 2

#	Corridor Name
14	West Porter
15	Wheeler
16	Little Cal River
17	Iron Horse
18	Dunes Kankakee
19	Wabash
20	East Porter
21	Lincoln Memorial
22	MC - La Porte
23	Chessie
24	South Bend
25	Kingsford
26	Kankakee River

Figure 2-27: Summary of Network of Routes

Little Calumet Trail Gap. Negotiating this railroad crossing and gap makes the underused LCT an extremely useful transportation corridor, especially with access to possible BRT, the IU-Gary campus, and potential TOD development in the surrounding area.

Merrillville Road. This would provide a strategic north-south connection through western Lake County and strengthens redevelopment potential in the Century Plaza area.

Hidden Lake Trail. This short path would connect North Merrillville and Gary neighborhoods to an important local park, a safe pedestrian crossing to Merrillville's White Community Center, and a link to the Merrillville Rd sidepath, linking to Crown Point.

C&O Trail from the Oak Savannah Trail to Harms Road south of Southlake Mall. This, in concert with a Merrillville Road project, makes trail access to and through the enormous Southlake area at US 30 and I-65 possible.

Wayfinding

A regional system in Northwest Indiana will benefit greatly from a clear and effective wayfinding program. In terms of implementation, this also becomes a relatively effective way to establish a far-ranging system that will continue to evolve. Finally, bicyclists from around the country have come to accept and recognize the standard system established by the Manual for Uniform Traffic Control Devices.

Specific Benefits of a Wayfinding Program

- Wayfinding signs will increase users' comfort and accessibility to the bicycle network.
- Signage can serve both wayfinding and safety purposes including:
  - » Helping to familiarize users with the bicycle network
  - » Helping users identify the best routes to destinations and understand the structure of the network
  - » Helping to address misperceptions about time and distance
  - » Helping overcome a "barrier to entry" for people who are not frequent bicyclists (e.g., "interested but concerned" bicyclists)
  - » Helping motorists recognize the presence of bicyclists in specific areas

Sign Components

- Confirmation signs indicate to bicyclists that they are on a designated bikeway. Make motorists aware of the bicycle route. Can include destinations and distance/time but do not include arrows.
- Turn signs indicate where a bikeway turns from one street onto another street. These can be used with pavement markings and include destinations and arrows.
- Decisions signs indicate the junction of two or more bikeways and inform bicyclists of the designated bike route to access key destinations. These include destinations, arrows and distances. Travel times are optional but recommended.

Other Factors

- Bicycle wayfinding signs also visually cue motorists that they are driving along a bicycle route and should use caution. Signs are typically placed at key locations leading to and along bicycle routes, including the intersection of multiple routes.
- Too many road signs tend to clutter the right-of-way. We recommend that signs be posted at a level most visible to bicyclists rather than per vehicle signage standards.
- A region-wide bicycle wayfinding signage plan would identify:
  - » Sign locations
  - » Sign type – what information should be included and design features
  - » Destinations to be highlighted on each sign – key destinations for bicyclists
  - » Approximate distance and travel time to each destination

Regional wayfinding. The Lewis & Clark trail signage program was installed over a 200 mile network of available county roads, trails, and city streets, very analogous to the Northwest Indiana concept. It also used a specific regional logo, in accordance with MUTCD requirements.





Policy Recommendations

This section concludes with several important policy principles that should apply uniformly throughout the region. While these principles will typically be applied on a local basis, it is a good idea to establish these directions in a regional plan.

Speed limits should be studied and generally reduced on streets and roads within the network that are shared with vulnerable users. Speeding has always been an issue, but it appears that COVID has actually made this behavior more prevalent. Lower speeds demonstrably reduce both the number and severity (and fatality) of crashes. Many of the rural roads in the proposed network have very low traffic and, while they are also very narrow, low volume in wide open areas can produce higher speeds.

New street and road projects should include accommodations for active users, especially when they are components of the regional active network. As an example, the proposed Willowcreek extension is intended to include an associated path. This road project will produce an important north-south connection between the lakefront and the interior of the region.





Good practice and policy in Schererville. Top: High visibility cross-walks and a comfortable roundabout splitter make an intersection relatively easy to negotiate. Bottom: Strong connection between trail and front door of City Hall.

Intersections of network components and major streets should be friendly to pedestrians and bicyclists. Techniques that accommodate active users include pedestrian refuge medians, traffic control devices like HAWK signals (already in use at some locations), sensing devices on signals that detect bicycles, signal push buttons that are accessible to people with disabilities, and high visibility crosswalks. We tend to think of network planning as a web of linear components, but intersections can defeat continuity.

Local site planning standards and development regulations should include standards for protected access from sidewalks and paths to the front entrances of major commercial developments. Parking lots are low-speed environments, but also present hazards to active users. Some cities provide clear, protected access routes from the public realm to the building; others actually locate bike lanes within parking lots to accommodate bicyclists. These requirements can actually generate better site planning and avoid large, undifferentiated paved areas.

Reasonable sidewalk networks should be present within a 15-minute walking radius of appropriate destinations. Part One discussed and evaluated the concept of a Fifteen Minute City, basically a reincarnation of Clarence Perry's estimable "Neighborhood Unit" concept of a century ago. Except in tightly planned new developments, it is very difficult to place all the essentials of life within a 15 minute radius of everyone. But the concept of being able to walk to certain destinations (trails, elementary schools, community centers, town centers, and neighborhood parks to name a few) at least within towns and cities, is important. Communities should identify "15 minute destinations" and conduct assessments of pedestrian access within a 15 minute walking radius of them. In addition, NIRPC and individual communities should identify funding mechanisms other than special assessments to finance sidewalk or path construction where necessary to serve broader areas. This is especially important because of the lack of sidewalks in an unusually large part of the urbanized area.

NIRPC should institute a "Great Streets" type corridor planning program, backed up with implementation funding. MPOs, including the East-West Gateway Council of Governments (EWG) in the Saint Louis metropolitan area and the Mid-America Regional Council (MARC) in Kansas City, both have great streets and/or sustainable places planning programs that place a priority on balanced transportation in corridors. Northwest Indiana would benefit from a similar planning program that addresses multiple factors, including transportation, land use, urban design, environmental considerations, and open space. (Note: This is also a recommendation of the Land Use Chapter).



Trail/Sidepath	Location	Endpoints		Notes	
		North/West	South/East		
Sheffield/Pulaski Park (Hammond)	Hammond	3200 Sheffield	Pulaski Park		
Torrence Median	Hammond	Torrence & Gostlin	Torrence and Hudson		
165th Sidepath	Hammond	165th & Hohman	165th & Harrison		
167th Sidepath	Hammond	167th & Indianapolis	165th & Osborn		
Indianapolis Boulevard	East Chicago	129th & Indianapolis	Columbus Dr & Indianapolis	Reconfiguration to provide a protected path for pedestrians and bicyclists	Priority
Kennedy Ave Corridor	East Chicago, Hammond, Highland	Indianapolis & Carroll, East Chicago South Shore station	Little Calumet Trail	Key north-south connection from high volume transit station to major trail, hospitality, park, and commercial node	Priority
Fisher Street Trail Gap	Munster, Highland	East terminus of Fisher St Trail	Parkway and Lincoln	Stream and utility crossing that closes a major gap in east-west continuity	Priority
Power Easement path	Highland	Fisher Street “gap” west of Willowood Dr	Azalea St, east of Hawthorne Dr		
Ridge Road crossing at Wicker Park	Munster	Ridge & Hawthorne	Ridge & Parkway	Short sidepath and protected pedestrian crossing at major park entrance	Priority
Monon South Extension	Munster/Dyer	45th & Superior	Main Street Dyer South Shore Line station	Trail along South Shore	
Main Street	Dyer, Highland	Main Street and Illinois state line	Main St & Wiggs Street	Complete street and/or sidepath, providing direct connection to Oak Savannah Trail from West Lake corridor	Priority
Old Plank Road	Dyer, Griffith	Illinois state line	Griffith Diamond at Broad Street	Trail-Oriented Development (TrOD) opportunity at Sheffield crossing	
W Avenue H	Highland, Griffith	Pennsy Greenway	Erie-Lackawanna Trail	Connection of major trails, possible connection with a South Broad sidepath to business district	
Sheffield Avenue Sidepath	St John	77th Avenue	93rd Avenue		
93rd Avenue Sidepath	St John	Sheffield Ave	Patterson Dr		
Patterson Dr Sidepath	St John	77th Avenue	93rd Avenue		
Bull Run Trail	St John	Bull Run and Hedwig	109th Ave & Park Place		

Table 2-3: Summary of Additional Trails and Greenways

Trail/Sidepath	Location	Endpoints		Notes	
		North/West	South/East		
Joliet St Siidepath	St John	US 41 & Joliet	Joliet & Parrish	Connection to growth area and Crown Point	Priority
NIPSCO Power Line Path	St John, Crown Point, Schererville	Park Place south of W 101st Pl	Pennsy Greenway south of W 91st Ave	Important system link to St John, reduces need for sidepaths	Priority
77th Ave Sidepath	Schererville	Alexander St	Cline Ave	Connection to Pennsy Greenway	
85th Ave Sidepath	Schererville	Alexander St	Cline Ave	Connection to Pennsy Greenway	
91st Avenue Sidepath	Crown Point	Pennsy Greenway	Erie-Lackawanna Trail	Most attainable transition from Pennsy to Erie-Lackawanna. With power line and existing 93rd Avenue sidepath, creates substantial east-west continuity to Broadway, Ivy Tech, and county complex	Priority
Lincolnwood/Alexander Path	Schererville	SR 330/Joilet St	85th Avenue & Alexander		
25th Ave Sidepath and Complete Street	Gary	Orchard Dr	Broadway	Street development could be a catalysis for development and reinforces a strong east-west connection	Priority
Gary Elevated	Gary	Marquette Greenway at West 2nd Place	Marquette Greenway north of I-90	Very ambitious but potentially transformational project from a reinvestment point of view. Can provide a seed for the revitalization of the city	Priority
41st Avenue Sidepath	Gary	41st Ave & Colfax	39th Ave & Howard		
Power Line Corridor	Hobart	E 33 Ave & Arizona	Clay and C&O Trail corridor	Promising north-south corridor that can replace on-street routes	
Little Calumet Trail Gap	Highland	West of Cine Ave	East of rail corridor terminating River Dr	Key railroad crossing to maintain east-west continuity of major trail	Priority
Gleason Park	Gary	Harrison Blvd split at Gleason Park	35th Ave & Harrison		
Merrillville Rd	Merrillville/Crown Point	61st Ave & Harrison	Merrillville Rd and Center Ross Rd		Priority for segments feeding C&O Trail: 61st Ave to US 30
Hidden Lake	Merrillville	56th Ave & Georgia	66th & Madison		Priority with associated segment of Merrillville Rd route

Table 2-3: Summary of Additional Trails and Greenways

Hammond/Whiting East Chicago-Gary

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/ Trails Served	Barriers and Treatment	Recommended Infrastructure
129th St, Wolf Lake to Sheffield	Hammond	Industrial minor arterial	0.24	32’	2-lane undivided, LT lane at intersection	Existing sidepath	NA	E	Barstow Trailhead, Wolf Lake Trail, Sheffield Sidepath,	Grade crossing of low-use rail spur	Existing
129th St, Sheffield to Indianapolis Blvd	Hammond/ Whiting	Industrial minor arterial	1.50	50’	4-lane undivided, 2-lane striping toward Indianapolis; channelized Calumet intersection	Narrow sidewalk, limited room for expansion	NA	E		Not a ped environment	Lane diet with protected directional bike lanes
129th, Indianapolis to Dickey Rd	East Chicago	Industrial minor arterial	0.83	52’	2-lane striping, 4-lane width	No sidewalk	NA	E		Not a ped environment	Lane diet with protected directional bike lanes
Dickey Rd, 129th to Hemlock St	East Chicago	Industrial minor arterial	1.13	48’	2-lane striping	No sidewalk and inadequate space for one, no parking	9100	E	Marktown historic district	signal at Michigan Ave	Protected directional bike lanes
Hemlock, Dickey to Broadway (NB)	East Chicago	Neighborhood local	0.21	36’	2-lane unstriped	Sidewalks, 2-sided parking	NA	NR-L		1-way NB	NB bike lane
Alley and Parrish to Broadway (SB)	East Chicago	Neighborhood local	0.25	42’	2-lane unstriped	Sidewalks, 2-sided parking	NA	NR-L		Use of alley to connect to Hemlock	SB bike lane, signage and maintenance of alley
Broadway, Euclid to Guthrie	East Chicago	Mixed use and city center street	0.7	36’, 48’ Pulaski to Guthrie	2-lane unstriped	Sidewalks, enhanced streetscape	NA	NR	Main St business district	Essential parking	Bicycle boulevard – signage, traffic calming; bike lanes east of Pulaski
Guthrie, Broadway to Cline	East Chicago	Neighborhood collector	0.56	53’	Recent road configuration with repaving – 3-lane with 2-side parking	Wide sidewalk on south side	3500	NR	Lakeside Gardens Apts	Recent land reconfiguration, Cline Ave intersection	Remove TWTL to install bike lanes, or revise south sidewalk to SUP, extended to Cline
Cline, Guthrie to Chavez Dr roundabout	East Chicago	Arterial, part of access system from SR 912 freeway	0.28	60’	4-lane with median and shoulder on east side	No sidewalk	NA	NR		Traffic, Roundabout, Penske Leasing driveways	Sidepath on west side, ties into possible adaptation of Guthrie sidepath
Industrial Highway, Cline to Clark Rd	Gary	Industrial and airport related arterial	2.92	60 to 70’	5-lane with TWTL, 4-lane with shoulders at bridges	No sidewalk	6927	G	Gary Airport, Airport SSL station	SR 912 ramps and Cline Ave roundabout	Lane diet to 3 lanes with protected bike lane or sidepath on south side. Possible relocation of the road should include bike/ped provisions
Clark Rd., Airport Rd to 15th Ave	Gary	Collector with significant open land	1.25	Varies, 42-60’ north of 11th, 30’ from 11th to 15th	2-lane, no parking in narrower section	Sidewalks with interruptions	NA	G from Airport to 11th; F 11th to 15th	SSL Airport Station, Marquette Greenway, Brunswick Park	SSL gated grade crossing	Sidepath with sidewalk reconstruction; bike route signage for street

Table 2-4: Hammond/Whiting-East Chicago-Gary

Hammond/Whiting East Chicago-Gary

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/Trails Served	Barriers and Treatment	Recommended Infrastructure
W 5th Ave, Clark to Bridge St	Gary	Arterial highway	1.13	85’	4-lane divided with shoulders	No sidewalks	13,000	G	Bowman Leadership Academy	Angled railroad crossing east of Chase St	Adapt wide shoulders as buffered directional bike lanes. Permit use of shoulder as a breakdown lane, defining the buffer zone with paint or an audible divider. Take directional lanes off road at the railroad crossing, require cyclists to walk bikes across tracks.
5th Avenue (US 20) Bridge to Virginia,	Gary	Mixed use/ High density residential and downtown arterial	2.20	57’	3-lane one-way EB with 2-side parking	Sidewalks	NA	G	Former high school site, Methodist Hospital, Rees Park, Downtown Gary, Metro Center SSL Station, Railcats Stadium		3 to 2 lane reduction, making room for a parking protected EB cycle track/buffered bike lane
4th Avenue (US 20), Virginia to Bridge	Gary	Mixed use and downtown arterial	2.20	43’	3-lane, one-way WB	Sidewalks	NA	G	Former high school site, Methodist Hospital, Rees Park, Downtown Gary, Metro Center SSL Station, Railcats Stadium		3 to 2 lane reduction, making room for a parking protected WB cycle track/buffered bike lane
Wabash Ave/7th Ave, 5th Avenue to Alabama St	Gary	Continuous local street	3.05	30-36’	2-lane unstriped, parking	Sidewalks	NA	NR-R	Methodist Hospital, Buffington Park		Bicycle boulevard

Table 2-5: Hammond/Whiting-East Chicago-Gary





Whiting Connectors

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/Trails Served	Barriers and Treatment	Recommended Infrastructure
115th Street											
Lake Avenue, Bike Trail to E 115th St	Whiting	Neighborhood local. Includes pedestrian/ bicycle crossing of railroad	0.33	32’	2-lane unpainted, parking	Sidewalks	NA	E	Whiting Amtrak, Casino, Lakefront Park, Whihala Beach		Bicycle boulevard
E. 115th , Caroline to Ohio	Whiting	Local Residential	0.24	32’	2-lane unpainted, parking	Sidewalks	NA	NR-L	Access from Wolf Creek Trail to lakefront via Lake Avenue, avoiding Casino Center Dr	Unsignalized crossings at Indianapolis and Calumet	Bicycle boulevard
Ohio Ave. 115th to 117th	Whiting	Residential Collector	0.44	22-26’	2-lane, no parking	No sidewalks	NA	NR-L	Sports Complex, connecting to Lakefront Park		Bicycle boulevard
Ohio/New York Avenue, 117th to 129th	Whiting/ Hammond	Residential Collector, some mixed uses	1.50	36’	2-lane, parking	Sidewalks, close building setbacks		E	Whiting HS, George Lake Trail, Calumet College		
119th Street											
119th/Maiden Lane/Caroline/ Warwick, Wolf Lake Trail to 120th	Whiting	Local Residential	0.30	28’ with some wider divided sections	2-lane, parking	Sidewalk shoulders	NA	NR-L	Wolf Lake, Forsythe Sq		Bicycle boulevard
120th, Warwick to Indianapolis	Hammond	Residential Collector	0.65	30’	2-lane, parking	Sidewalks	NA	NR-L	GR Clark HS	Offset signalized intersection at Indianapolis Blvd	Bicycle boulevard
Community Ct/Temple/ Clark loop, Indianapolis to 119th	Whiting	Business loop	0.16	35-45’	2-lane, parking from Indianapolis to Temple, 1-way EB Temple to Clark with diagonal parking; 1-way SB on Temple to Community Ct.	Sidewalks	NA	NR-L	YMCA, 119th St District	Circulation pattern	Signage
119th, Clark to Front	Whiting	Business district street	0.60	38’	2-lane striped, commercial parallel parking; sidepath east of New York	Sidewalks, extensive streetscape	3914	E west of New York	Downtown Whiting, Oil City Stadium, Mascot Hall of Fame	Mixed traffic in main street district	Signage, possible sidepath on south side between Bicycle Alley and Front Street
Community Ct/ Temple/Clark loop, Indianapolis to 119th	Whiting	Business loop	0.16	35-45’	2-lane, parking from Indianapolis to Temple, 1-way EB Temple to Clark with diagonal parking; 1-way SB on Temple to Community Ct.	Sidewalks	NA	NR-L	YMCA, 119th St District	Circulation pattern	Signage
119th, Clark to Front	Whiting	Business district street	0.60	38’	2-lane striped, commercial parallel parking; sidepath east of New York	Sidewalks, extensive streetscape	3914	E west of New York	Downtown Whiting, Oil City Stadium, Mascot Hall of Fame	Mixed traffic in main street district	Signage, possible sidepath on south side between Bicycle Alley and Front Street

Figure 2-6: Whiting Connectors

Hammond-East Chicago Connectors

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/Trails Served	Barriers and Treatment	Recommended Infrastructure
Hoffman/Chicago Ave											
Hoffman, Torrence to White Oak	Hammond	Mixed use neighborhood avenue	1.11	39’	2-lane striped	Sidewalks	9895	E	Irving Park, Marquette Greenway		Options: Bicycle boulevard, or one-sided parking with bike lanes, or striped parking lanes
148th St, White Oak to Bering	East Chicago	Residential collector	0.35	36’	2-lane, parking	Sidewalks	NA	E	Continuity		Bicycle boulevard
Bering, 148th to Chicago	East Chicago	Neighborhood local	0.13	29’	1-lane SB, parking both sides	Back of curb sidewalks-wide on west side	NA	E	Library	One-way traffic	Bicycle boulevard, using wide sidewalk or adjacent alley for NB counterflow
Chicago Ave, Baring to Euclid	East Chicago	Minor arterial	1.50	75’ from Baring to Railroad, 60’ east to Euclid	4-lane, parking though business district,	Sidewalks with streetscape from Baring to Railroad, sidewalk continuity on N. side to the east	10,000-12,300	NR-A	Library, Business District, Canal bridge	Traffic character	Lane diet to three lanes with protected bike lanes. Alternative local route uses Baring south to 151st, then Alexander/ Melville N. to 148th, then east to Euclid. Bike lanes on 151st outside of residential areas.
Euclid Ave, Broadway to Chicago	East Chicago	Neighborhood/ industrial edge collector	1.5	56’	2-lane with 2-side parking and bike lanes	Sidewalks	4400	E	Washington Park, Block Stadium	Railroad gated grade crossing N. of Chicago Ave	Existing, enhance bike lanes with green lanes at intersections.
E 144th/Franklin, Euclid to Cardinal Dr	East Chicago	Neighborhood/ civic collector	0.66	30-40’	2-lane unstriped, 2-side parking	Sidewalks	NA-L	NR	Washington Park, Block Stadium, St Catherine Hospital, Block Middle School, Washington Elem School, Library, Kenny Lofton Fields		Bicycle boulevard;
Cardinal Dr/ Butternut St/ Chavez Mem Dr, Euclid to Cline	East Chicago	Neighborhood collector	0.8	36’ on local streets	2-lane unstriped, parking	Sidewalks	NA-L	NR	Block Middle School, Washington Elem School, Library,		Bicycle Boulevard (0.5m); sidepath on south side of Chavez Dr to roundabout (0.3m)
Pulaski Park/Wabash to Hammond Gateway											
Sheffield, I-90 to 139th	Hammond	Mixed use collector	0.36	60’	5-lane with TWTL and right turn lanes	Sidewalk continuity on one side	NA	E	Pulaski Park	Hohman/137th intersection with merge lanes	Sidepath on west side, merging into Pulaski Park paths; or lane reduction to 3-lanes with protected bike lanes
Wabash Ave, 139th to Gostlin to Sheffield	Hammond	Neighborhood boulevard	0.86	50’	2-lane divided, parking	Sidewalks	NA	NR-L	Pulaski Park, Hammond Gateway SSL Station		Bicycle boulevard, with short sidepath connection to Sheffield on Gostlin, crosswalks through roundabout, sidepath to Hanover and SSL station
South Shore Line connection, Torrence to Sheffield	Hammond	Internal to TOD	NA	NA	Future	NA	NA	NA	New TOD project, Hammond Gateway		Incorporate into project design
Community Ct/ Temple/Clark loop, Indianapolis to 119th	Whiting	Business loop	0.16	35-45’	2-lane, parking from Indianapolis to Temple, 1-way EB Temple to Clark with diagonal parking; 1-way SB on Temple to Community Ct.	Sidewalks	NA	NR-L	YMCA, 119th St District	Circulation pattern	Signage
119th, Clark to Front	Whiting	Business district street	0.60	38’	2-lane striped, commercial parallel parking; sidepath E of New York	Sidewalks, extensive streetscape	3914	E west of New York	Downtown Whiting, Oil City Stadium, Mascot Hall of Fame	Mixed traffic in main street district	Signage, possible sidepath on south side between Bicycle Alley and Front Street

Table 2-7: Hammond-East Chicago Connectors

Hammond-East Chicago Connectors

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/Trails Served	Barriers and Treatment	Recommended Infrastructure
Marquette Greenway to Downtown Hammond											
Torrence, 143rd to Hoffman	Hammond	Neighborhood boulevard	0.63	72' on divided sections, 32' on undivided sections	2-lane with parking between Huehn and 143rd, 1-lane with 2-sided parking on east side of center median. Median includes shared use path.	Sidewalks	NA	NR-L	Existing SSL Hammond station, future TOD with station relocation	Street intersections that can be managed with four-way stops	Signage on undivided portion. New shared use path in median in gap between Gostlin and Hudson St. High visibility crossings of intersecting streets
Johnson Ave, 143rd to Hoffman	Hammond	Neighborhood avenue	0.63	34'	2-lane, parking	Sidewalks	NA	E	Existing SSL Hammond station, future TOD with station relocation	Chicago Street intersection	Bicycle boulevard – alternate route to Torrence, connecting to Sohl Avenue sidepath and bike lanes
Sohl Avenue, Municipal Dr to Douglas	Hammond	Compete street	0.64	60'	2-lane, striped with protected bike lanes	Sidewalk continuity on east side, both sides south of Michigan St	2195	E	¬People's Park, Renaissance Towers housing, City Baptist HS, Library		Existing
Sibley St, Sohl to Hohman	Hammond	Complete street	0.44	42-46'	2-lane striped with various bike lane types, 1-side parking	Sidewalks	NA	E	Library, Erie-Lackawanna Trailhead, Downtown Hammond		Existing
Douglas St, Sohl to Hohman	Hammond	Complete street	0.44	46'	2-lane striped with protected bike lane types, 1-side parking	Sidewalks	NA	E	Erie-Lackawanna Trail, Downtown Hammond		Existing
Hohman Complete Street											
Hohman, Douglas to 165th St	Hammond	Community arterial	1.32	58'	5-lane with TWTL, no parking	Sidewalks	8607	NR	Downtown, Harrison Park, Glendale Prk		Lane reduction to 3 lanes with protected bike lanes
Hohman, 165th to I-94	Hammond	Community arterial/complete street	1.41	58'	2-lane with parking, protected bike lanes	Sidewalks	9102	NR	South Hammond SSL Station (Future)	Hohman intersection	Existing

Table 2-8: Hammond-East Chicago Connectors

South Hammond to Miller via 167th and 15th Avenue

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/Trails Served	Barriers and Treatment	Recommended Infrastructure
165th, Hohman to Harrison	Hammond	Minor arterial	0.30	58’	4-lane, parking on south side	Back of curb sidewalks	NA	NR	Monon Trail	Narrow existing sidewalk, parking on south side	Restripe to 11’ lanes, extend curb to provide space for standard sidepath
Harrison, 165th to Locust	Hammond	Local residential	0.25	38’	2-lane, parking	Sidewalks	NA	E	Continuity		Bicycle boulevard
Locust (167th), Harrison to Calumet	Hammond	Residential collector	0.38	36’	2-lane, parking	Sidewalks	NA	E	Edison Park	Signalized intersection at Calumet	Bicycle boulevard
167th, Calumet to Osborn	Hammond	Mixed use and rural character collector	3.7	27-30’	2-lane, no parking in many cases, rural section segments	Disconnected sidewalks, adequate right of way in most cases for a sidepath	NA	E	Erie-Lackawanna Trail, Columbia Ave commercial node, Hammond Sportsplex,	Railroad junctions break continuity of 167th	Bicycle boulevard, Preferred solution would be major east-west sidepath, also serving pedestrian needs and connections to trails and commercial.
Osborn, 167th to 165th	Hammond	Local industrial	0.25	45’	2-lane unstriped	Sidewalks, 2-sided parking	NA	NR-L		Use of alley to connect to Hemlock	SB bike lane, signage and maintenance of alley
167th/Ohio, McCook to 169th	Hammond	Residential collector	1.80	28-36’	2-lane, parking	Sidewalks	3552	E	Kennedy Corridor, Phrommer Park, Soccer Complex		Bicycle boulevard Northcote
15th Avenue, Ohio to Clark Rd	Gary	Industrial and residential minor arterial	2.2	36’-42’	2-lane, parking not prohibited but little demand, typical rural section	Intermittent sidewalks, more continuity on north side	5841	NR	Westside HS, connection to Gary system	SR 912 interchange. Shoulders can function as bike lanes	Bike lanes
11th Ave, Clark to Central Ave	Gary	Neighborhood collector	3.2	50’	2-lane, parking	Sidewalks	3142	G	Continuity		Bike lanes
Central Ave, 11th to MLK/15th Ave	Gary	Collector parallel to railroad	0.76	50’	2-lane, limited parking demand	Sidewalk on one side with gaps	2054	G	Continuity		Bike lanes
15th Ave, MLK to Clay	Gary	Collector	2.07	27’	2-lane striped, no parking	No sidewalk	NA	E		Negotiates I-65/I-80/I-90 interchange	Bike route.
Clay, 15th to 7th Ave	Gary	Community avenue	0.65	58’	2-lane striped, parking	Sidewalks	3906	G	Services at US 20, continuity	US 20 and SSL crossing	Protected bike lanes
7th Ave, Clay to Lake	Gary	Collector paralleling SSL	0.66	38’	2-lane striped, no parking demand	1 side back of curb sidewalk	NA	E	Miller SSL station, Miller Business District		Protected bike lanes
Lake, 7th to 3rd Ave	Gary	Business district street	0.44	54’	2-lane striped, parallel parking, cycle track	Sidewalks, enhanced streetscape	2068	E	Miller business district		Existing

Table 2-9: South Hammond to Miller via 167th and 15th Avenue

South Hammond to Gary via 25th Avenue

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/Trails Served	Barriers and Treatment	Recommended Infrastructure
173rd, Hohman to Northcote	Hammond	Neighborhood avenue	1.8	36'-42'	2-lane striped, parking	Sidewalks	4924	G	South Hammond SSL Station, Monon Trail, O'Bannon ES, Erie-Lackawanna Trail, YMCA		Bicycle boulevard
171st, Northcote to Orchard	Hammond	Neighborhood local with campus path	1.4	28'	2-lane, parking. Alley access between 171st and Orchard	Sidewalks except along greenways		E	Purdue NW Campus, Morton ES, Baring and Knickerbocker Greenways		Bicycle boulevard
Orchard, 171st to 177th/25th Ave	Hammond	Neighborhood collector	1.4	30' north of 173rd, 48' south	2-lane north of 173rd, 4 lane with parking south of 173rd	Sidewalks, some back of curb	3367	E	Hessville Park, Dowling Park, Jean Shepherd Community Center via local streets, Hess ES	173rd intersection is signalized	Bicycle boulevard north of 173rd; lane reduction to 3 lanes with bike lanes south of 173rd to 177th
25th Ave, SR 912 to Clark Rd	Gary	Mixed use semi-rural arterial	2.25	24'; short segment of 117th St in Hammond is 36'	2-lane rural section	No sidewalks in rural section from SR 912 to Clark; significant amount of open ground	2628	E	Seberger Park, Truck Stop services at Burr St interchange, Casino south of interchange		Bicycle boulevard short term because of low traffic volume; sidepath
25th Ave, Clark to Grant	Gary	Minor arterial	2.0	67'	4-lane divided, no parking	Some sidewalk gaps. Substantial adjacent vacant land	4885	E	Methodist Hospital Mid-Lake campus		Complete street treatment – one travel lane on each side of median with buffered bike lane.
25th Ave, Grant to Broadway	Gary	Minor arterial	1.0	56'	4-lane, parking	Some sidewalk gaps. Scattered vacant lots	2027	E	Roosevelt Park, Michael Jackson House		Complete street treatment – Lane reduction to 2 lanes with protected left turns where needed, protected bike lanes
25th Ave, Broadway to Ellis Ave	Gary	Neighborhood collector	0.4	30'	2-lane striped, parking	Sidewalks		E	Continuity		Bicycle boulevard

Table 2-10: South Hammond to Gary via 25th Avenue



Munster Center to Downtown Hobart via Ridge Road

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/Trails Served	Barriers and Treatment	Recommended Infrastructure
Ridge Rd, Illinois state line to Parkway Dr	Munster	Minor arterial	2.4	50-60'	4-lane, no parking	Sidewalks	18422	NR-A; F for one segment	SSL Munster Station, Pennsy Trail, Monon Trail, Munster business district, Monon Trail, Arts Center, Town hall, Wicker Park		Lane reduction to 3 lanes with protected cycle track. First phase to Columbia Ave
Lincoln St, Parkway to Grace St	Highland	Neighborhood collector	1.7	30-36'	2-lane, parking	Sidewalks	3151	E	Brantwood Park, Lincoln Community Center, Erie-Lackawanna Trail, Highland Christian School, Main Square Park		Bicycle boulevard; Fisher Street Trail joins at Parkway and Lincoln
Grace St, Lincoln to Wirth Rd	Highland	Neighborhood collector	0.25	32	2-lane striped, parking	Sidewalks	NA	NR	Continuity	Signalized intersection at Calumet	Bicycle boulevard
Wirth Rd, Grace to Broad	Highland/ Griffith	Mixed use and rural character collector	1.0	32	2-lane, parking	Some sidewalk gaps, best continuity on south side	NA	E	Griffith YMCA	Signalized intersection at Cline	Bicycle boulevard
Broad, Wirth to Minter Dr	Griffith	Minor arteriaL	0.22	50'	4-lane, no parking	Sidewalks, with wide sidewalk on east side	8195	NA	Griffith YMCA	Wirth and Broad intersection crossing	Adapt wide sidewalk on east side for shared use
Minter/40th Pl, Broad to Colfax	Griffith	Residential collector	0.82	31'	2-lane, parking	Sidewalks. Sidewalk ends at Oakwood Ave	NA	E	Griffith YMCA, Calumet New Tech HS		Bicycle boulevard; sidepath needed on Colfax from 41st Ave to Ridge Road intersection far access to high school.
41st Ave, Colfax to Grant	Gary	Collector	3.0	24'	2-lane striped, no parking, rural section	No sidewalks	NA	G	Lake Ridge Tech MS, Lighthouse Charter School		Sidepath on one side for shared use because of lack of sidewalks
41st Ave, Grant to Broadway	Gary	Collector	1.0	30	2-lane striped, no parking,	Sidewalks generally present but deteriorated	NA	G west of Harrison, F east to Broadway	Lake Ridge Tech MS, Lighthouse Charter School		Reconstruct and upgrade sidewalk on one side to sidepath standard
40th Ave/MKL Dr, Broadway to 39th Ave	Gary	Local residential	1.5	24'	2-lane, no parking	Sidewalks are present in places, no continuity	NA. 4147 on 39th Ave	NR-L	Hidden Prairie Wetlands	Reroute from 41st Ave because of closure of RR crossing	Reconstruct and upgrade sidewalk on one side to sidepath standard
39th Ave/Old Ridge Rd, I-65 overpass to Hansen Blvd	Hobart	Rural collector	1.05	30'	2-lane rural section, no parking	Sidewalk continuity on south side	NA	G	Greiner Preserve, Ridge View ES, Hillman Park		Bike lanes on existing pavement with 10-11' travel lanes. Fill sidewalk gaps
Old Ridge Rd, Hanson Blvd to Main St	Hobart	Minor arterial	2.0	38'	2-lane with bike lanes, no parking	Sidewalks	7146	G	Hillman Park, Wisconsin Ave node, Festival Park, Downtown Hobart		Existing
Main St, Old Ridge to Prairie Duneland Tr	Hobart	Town center main street	0.47	34'-48'	2-lane striped with parallel parking in business district	Sidewalks	NA	G/NR	Downtown Hobart		Shared use street

Table 2-11: Munster Center to Downtown Hobart via Ridge Road

Fran-Lin Connector: Munster to Highland

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/Trails Served	Barriers and Treatment	Recommended Infrastructure
Fran-Lin											
Fran-Lin Pkwy, Calumet to Azalea Dr/45th St	Munster	Neighborhood parkway	1.68	63'	2-lane divided, parking and bike lanes	Sidewalks	2547	E	Calumet corridor, Hammond Park and ES, Stewart Park		Existing bike lanes
Azalea Dr/Southmoor Ave, Fran-Lin to Hart Rd	Munster. Highland	Neighborhood collector	0.73	30-36'	2-lane, parking	Sidewalks	NA	E	Medows Park		Bicycle boulevard
Hart Rd/Erie St, Southmoor to 41st St	Highland	Neighborhood collector	0.86	28-36'	2-lane parking	Sidewalks	3428	E	Highland Middle School	Signalized intersection at Indy Blvd	Bicycle boulevard
41st St, Liable St, Erie to Wirth Rd	Highland	Neighborhood collector	1.2	31'	2-lane parking	Sidewalks	3563	E	Erie-Lackawanna Trail, Southridge ES, Shep-pard Park		Bicycle boulevard. Joins With Rd/Hobart Route

Table 2-12: Fran-Lin Connector: Munster to Highland

Dyer-Chesterton via Main Street and Trails

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/Trails Served	Barriers and Treatment	Recommended Infrastructure
Main, State line to Munster city line (Cypress Dr)	Munster	Minor arterial	2.3	Varies, 22-24' wider at major intersections	2-lane rural section, no parking	No sidewalks in most places, some path segments	13600	NR-A	Dyer SSL Station, Centennial Park, Monon Trail (fut) Pennsy Trail,		Compete street. Sidepath or ped/bike infrastructure connected with street reconstruction or widening
Main St. Cypress Dr to RR crossing	Munster, Griffith	Minor arterial	2.0	24'	2-lane striped rural section	No sidewalks	NA	NR-A	Major commercial node at Indy Blvd, Hoosier Prairie State Preserve, RR grade crossing	Impact on Nature Preserve of any infrastructure development	Shared use sidepath
Main St, RR to Rensselear St	Griffith	Minor arterial	0.6	42'	2-lane striped with striped shoulders, no parking; bike lanes in Downtown	Sidewalks	7040	NR-A	Erie Lackawanna Trail, Downtown Griffith		Bike lanes using existing shoulders – possible definition of buffers. Existing bike lanes through town center. Reverse diagonal parking to back-in on Lafayette to Rensselaer block.
Main St, Rensselaer to Johnson Rd	Griffith, Lake County	Minor arterial with residential and industrial uses	1.86	24-40'	2-lane striped, with left turn lanes at some intersections. Painted shoulder on one side on western reaches, no parking	No sidewalks	NA	NR-A	Oak-Savannah		Sidepath
Oak-Savannah and Prairie Duneland Trails	Lake County, Hobart, Porter County, Portage, Chesterton	Trail	18.5	10'	NA	NA	NA	NA			Existing regional trail

Table 2-13: Dyer-Chesterton via Main Street and Trails

77th Ave/Lincoln Highway to Deep River

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/Trails Served	Barriers and Treatment	Recommended Infrastructure
77th Ave, Sheffield to Cline	Dyer, Schererville	Rural minor arterial	4.45	24' typical rural section, wider with turn lanes at major intersections	2-lane striped, no parking	No sidewalks	4509	G	Stephen Park, Schererville Soccer, Pennsy Greenway, Rohrman Park, Grimmer MS	Route continuity crossing US 30. Proposed sidepath along Cline from roundabout to 75th Ave	Compete street. Sidepath or ped/bike infrastructure connected with street reconstruction or widening
Heavier traffic east of Lincolnwood	Bike route (Exp), sidepath from Lincolnwood to Cline	Minor arterial	2.0	24'	2-lane striped rural section	No sidewalks	NA	NR-A	Major commercial node at Indy Blvd, Hoosier Prairie State Preserve, RR grade crossing	Impact on Nature Preserve of any infrastructure development	Shared use sidepath
75th Ave, Cline to Mallard Ln	Schererville	Rural residential, neighborhood collector	1.85	22-24' rural sections, 32-37'	2-lane, no parking on narrow rural sections, parking in urban subdivisions	No sidewalks in rural sections or with backyard on frontage; sidewalks in subdivisions	1005	E			
Mallard Ln, 75th Ave to 73rd Ave	Schererville	Residential collector	0.20	36'	2-lane and 2-lane divided, no parking	Sidewalks along residential lots	NA	E	Continuity		Bike route
73rd Ave (Old Lincoln Hwy) Mallard to Broadway	Merrillville	Rural/urban minor arterial	3.15	24'-36'	2-lane striped, no parking	Discontinuous sidewalks	NA	NR-A	Giddings ES, C&O Trail	Traffic and road width	Sidepath
Old Lincoln Hwy, Broadway to County Line Rd	Merrillville, Hobart	Rural collector		22-24'	2-lane striped, no parking	No sidewalks	NA	G	Veterans Mem Park, Woods ES, Deep River County Park		Bike route (Exp)

Table 2-14: 77th Ave/Lincoln Highway to Deep River



85th Ave: St. John to Schererville

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/Trails Served	Barriers and Treatment	Recommended Infrastructure
86th Ave/Ventura Trails Dr, Patterson to US 41	St John	Neighborhood local	0.57	16'-36'	2-lane, parking	Sidewalks	NA	NR-R	Lake Central HS	86th Ave is alley width, should be upgraded; Signalized crossing of US 41	Bike route, sidepath on US 41 to resolve 85th Ave jog
85th Ave, US 41 to Cline	St John	Rural collector	2.06	22-24'	2-lane striped, no parking	No sidewalks in rural section	4200	F	Continuity		Sidepath
85th Ave, Cline to Pennsy Greenway	Schererville	Neighborhood collector	1.00	34'	2-lane, parking	Sidewalks	NA	F	Pennsy Greenway		Bicycle boulevard
85th Ave, Greenway to Burr	Schererville	Neighborhood/ rural collector	0.66	32' in urban area, 22' in rural	2-lane, no parking on rural segment	No sidewalks	NA	F	Continuity		Bicycle boulevard
85th Place/Pine Island Dr, Burr to E-L Trail	Schererville	Neighborhood local		26'	2-lane rural section	No sidewalks	NA	E	Erie-Lackawanna Trail		E-L Trail access on Pine Island

Table 2-15: 85th Ave: St. John to Schererville

St John to Crown Point via Joliet Street

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/Trails Served	Barriers and Treatment	Recommended Infrastructure
Patterson, 77th to 86th Ave	**St John**	Neighborhood collector	1.3	24-40'	2-lane with turn lanes to north, 2-lane rural section to south, no parking	No sidewalks	7072	G south of 81st	Continuity	Pavement width	Sidepath to provide shared use access
Patterson, 86th Ave to 93rd Ave	**St John**	Collector	1.0	24'	2-lane striped, rural section. No parking	No sidewalks	7072	NR-A	US 41 commercial services		Sidepath
93rd Ave/US 41, 93rd Ave to Joliet St	**St John**	Major arterial	0.20	60'	5-lane with TWTL, no parking	Back of curb sidewalks	27958	NR-A	Commercial services	Signalized intersection at 93rd Ave	Sidepath with enhanced crosswalk
Joliet St, US 41 to Parrish Ave	**St John**	Collector	1.32	24-32'	2-lane striped, rural section, no parking	Intermittent sidewalks	5207	G	Continuity		Sidepath
101st Ave, Parrish to Park Pl	**St John**	Collector	0.64	24'	2-lane striped, rural section, no parking	No sidewalks	5207	G	Continuity		Existing path
101st Ave/Clark Rd/105th Ave, Park Pl to White Hawk Dr	**Crown Point**	Rural collector	3.30	22'	2-lane striped, rural section, no parking	No sidewalks	3290	G	Continuity		Bike route in short-term. Future upgrade should include bike/ped facility
Summit St, White Hawk to Merrillville Road	**Crown Point**	Collector	1.10	27-35'	2-lane striped, no parking	Sidewalks east of Timothy Ball ES		G	Timothy Ball ES, Erie-Lackawanna Trailhead, Main St commercial services		Sidepath; bike lanes on street when width permits

Table 2-16: St John to Crown Point via Joliet Street

Cedar Lake to Crown Point

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/Trails Served	Barriers and Treatment	Recommended Infrastructure
Lee St, Lake Shore to Vermillion Dr	Cedar Lake	Regional collector	0.20	28’	2-lane striped, rural section, no parking	No sidewalks	5128	G			Enhanced bike route
Vermillion Dr/ Colfax/125th Ave/, Lee to Burr	Cedar Lake, Lake County	Rural roads	1.77	24’	2-lane striped, rural section		745-1133	G			Enhanced bike route
Burr/121st Ave, 125th Ave to Court St	Crown Point	Rural collector	2.22	24’	2-lane striped, rural section	No sidewalks	1906-3528; 5500 at east end	G	Lake County Fairgrounds		
Court St/Main St 121st to South St	Crown Point	Community street-historic distict	1.03	35’	2-lane striped, one-way bike lane pair, limited on-street parking	Sidewalks	8429	G/E	City Center		Existing one-way bike lane pair
Court/West St, South to Summit St	Crown Pount	Neighborhood collectors	1.00	25-30’	1-lane one-way, 1 side parking, directional bike lanes	Sidewalks	NA	E	Courthouse Square, Erie-LackawannaTrailhead		Existing one-way pair

Table 2-17: Cedar Lake to Crown Point



Lake Station to Portage Beach/Valparaiso: Shared Route to Iron Horse Trail

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/ Trails Served	Barriers and Treatment	Recommended Infrastructure
Fairview, Howard to Knox	Lake Station	Local service road	0.34	30’	2-lane, striped parking lane on south side	Sidewalk on north side, terminates at library	NA	NR	Lake Station civic campus, library	Retaining wall between Fairview and Central Ave	Expand sidewalk to trail standard to Jay Street. Convert to bicycle boulevard with parking lane also used as an EB bike lane
Fairview, Knox to Ripley	Lake Station	Local service road	1.0	34’-39’	2-lane, variable configurations with EB bike lane and striped parking lanes	1 side sidewalk	NA	NR	Rearage for Central Ave businesses	Adjacency to Ripley and Central intersection requires diversion to Central signalized crossing	Standardize on dual purpose parking/bike lane on north side, bike lane on south
Fairview/St Joseph Place, Ripley to Union	Lake Station	Local service road	0.48	18-24’	2-lane and 1-lane alley	No sidewalk	NA	NR-L	Alley for Central Avenue frontage		Bicycle boulevard and alley
Union St, Fairview to 25th Ave	Lake Station	Collector	0.14	24’	2-lane striped, no parking	Intermittent sidewalk	NA				Bicycle boulevard
25th Ave/ Vanderburg St/26th Ave(Independence Ave), Union to Brown	Lake Station, Portage	Neighborhood local	1.27	Varies, 24-30’	2-lane, hybrid section, parking	Intermittent sidewalk	NA	NR-L	Continuity		Bicycle boulevard
Brown/Mulberry, Independence Ave to Vivian St	Portage	Neighborhood collector	1.72	24’	2-lane striped, no parking	Intermittent sidewalk	NA	NR-L	Continuity		Bicycle boulevard
Mulberry, Vivian St to Hamstrom Rd	Portage	Neighborhood collector	0.40	30’	2-lane divided section east of Vivian, 2-lane parking	Sidewalk	NA	NR-L	Founders Square, Prairie Duneland Trail		Bicycle boulevard
Hamstrom Rd, Prairie Duneland to Iron Horse Trails/Crisman Rd	Portage	Collector	1.08	26’ widens at Central Avenue	2-lane, parking south of Defiance Ave	Sidewalk	5302 (north of Central)	E/F	Two major trails, Founders Square		Bicycle boulevard, sidepath north of Defiance Ave

Table 2-18: Lake Station to Portage Beach/Valparaiso: Shared Route to Iron Horse Trail





Lake Station to Portage Beach/Valparaiso: Branches

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/Trails Served	Barriers and Treatment	Recommended Infrastructure
Portage Lakefront Branch											
Crisman Rd, Portage Ave/ Iron Horse Trail to Crisman Bypass bend	Portage	Neighborhood local	0.35	22’	2-lane rural section, no parking	No sidewalks	NA	NR-L	Iron Horse Trail	Railroad grade crossing. Right-of-way character does not support sidepath.	Bicycle boulevard.
Crisman Rd, Willowcreek Bypass to Melton Rd	Portage	Minor arterial	0.48	48’	4-lane, no parking	Sidewalk on east side	NA	NR-A	Continuity	Transition to local Crisman Rd south of the bypass bend	Upgrade sidewalk to sidepath
Melton Rd (US 20), Crisman Rd to Jensen Dr	Portage	Major arterial	0.50	60’ widening to 72’ at Crisman intersection	4-lane with narrow shoulders	No sidewalks	NA	NR-A	Interchange visitor services	US 20 and Crisman intersection	Sidepath. Adaptation of intersection to improve pedestrian crossing
Ameriplex Dr/ Daniel Burnham Dr/Jensen St, Crisman Rd to Melton Rd (US 20)	Portage	Shared use path along office park collectors	1.06	10’	NA	NA	NA	NR	Continuity	Jensen Dr underpass of I-94	Existing sidepaths
Crisman Rd, Burns Parkway to US Steel Bridge Road	Portage	Major arterial	0.57	110’	4-lane divided with paved shoulders	No sidewalks or paths	NA	G	Ameriplex		Sidepath
Riverwalk Trail, Marquette Greenway Bridge to Lakefront	Portage	Shared use path	0.66	8’	NA	NA	NA	PT	Portage Riverwalk and Lakefront		Existing. Follows planned Marquette Greenway route, crossing under US 12 and SSL tracks to Crisman Rd
Valparaiso Branch											
Airport Rd, Prairie Duneland Trail to Robbins Rd	Portage	Rural minor arterial	1.93	24’	2-lane rural section, no parking on Airport. 4 lane divided highway corridor on US 6	No sidewalks	6459	F	Prairie Duneland Trail, soccer complex, Portage HS campus		Sidepath
Robbins Rd, Airport Rd to Calumet Ave	Portage, Porter County	Rural collector	6.46	22’	2-lane rural	No sidewalks	1200-1800	G	Future Dunes Kankakee Trail, Chesterton services		Enhanced bike route
Calumet Ave, Robbins Rd to Edgewater Beach	Porter County, Valparaiso	Rural collector – local route to SR 49	3.38	24’	2-lane rural			NR	Northwest Health, Moraine Nature Preserve, connection to in-city trail on Calumet		Bike route (experienced).

Table 2-19: Lake Station to Portage Beach/Valparaiso: Branches

Indianapolis Boulevard

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/Trails Served	Barriers and Treatment	Recommended Infrastructure
Indianapolis Blvd, 129th to Columbus Ave	East Chicago	Major arterial/ US 20	1.56	65'	4-lane,	Sidewalls on one side, in some cases with a patterned setback	12500	NR-A	Wolf and George Lake, E. Chicago Central High School, main connecting route	Existing street section, surrounding heavy industrial environment with truck traffic	Reconfiguration of street, using width more effectively. Continuous sidepath, in some cases requiring move of curb; or reallocation to 3 lanes or four11-foot lanes and protected cycle track
Columbus Ave, Indianapolis to Baring	East Chicago	Minor arterial, Indianapolis to Baring	0.14	45'	2-lane, parking	Sidewalks, sidepath on north side	7891	NR-A	Central High School	Signal at Indy Blvd may make a protected crossing at Baring difficult	Improved ped crossing at Baring, or crossing to south side of Columbus, using local street access to Baring
Baring Ave/ Magoun Ave pair, Columbus to Kosciusko Park	East Chicago	Neighborhood local streets,	1.25	30'	1-lane one-way	Sidewalks	NA	NR-L	Harrison ES, Kosciusko Park, SSL East Chicago station		Bicycle boulevard

Figure 3.19. Indianapolis Boulevard

Columbia Avenue: Hammond to St. John

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/Trails Served	Barriers and Treatment	Recommended Infrastructure
Columbia Ave, 167th to 175th	Hammond	Neighborhood avenue	1.00	45'-48'	2-lane striped, parking	Sidewalks	NA	NR-A	Erie-Lackawanna Trail (bridge)		Bicycle boulevard. Bike lane in one direction
Columbia Ave, 175th to Little Calumet River	Hammond	Neighborhood avenue	0.81	30-36'	2-lane striped, no parking, I-94 bridge and approached	1 side sidewalk	7620	NR-A	Little Calumet Trail, Riverside Park, Optimist Park	I-94 bridge and narrow approaches	Bike lanes where width permits, 10.5' travel lanes
Columbia Ave, Little Cal to Fisher St	Munster	Neighborhood avenue	1.28	36'	3-lane with TWTL, no parking	Sidewalks	NA	NR-A	Wilbur Wright MS, Munster HS, Columbia sidepath, Fisher Street Trail, Pennsy Greenway/Centennial Park		Reconfiguration to 2 lanes and bike lanes. Connects to path south of Fisher St
Columbia, Sheffield, Centennial Park to Matteson St	Munster/ Dyer	Collector	2.79	36'	3-lane with TWTL, no parking	No sidewalk from Centennial Park to Old Farm Rd	4700-7800	NR-A	Centennial Park, SSL Dyer Station, Dyer Amtrak station, Old Plank Trail (fut)		Sidepath south of Main St. Alternatively, reconfiguration to 2 lanes with bike lanes south of Main
Hart St, Matteson to 77th Ave	Dyer, St John	Minor arterial	1.38	42' typical	3-lane with TWTL, no parking	Sidewalk continuity on one side	12100	NR-A	Dyer business district, Franciscan-Dyer, Pheasant Hills Park	US 30 intersection, multiple turn lanes	Reconfiguration with narrower travel lanes and bike lanes
Sheffield, 77th Ave to 93rd Ave	St John	Minor arterial	2.00	24-36'	2 and 3-lane rural section, no parking	Sidewalks between 77th and 81st	8225	NR-A	Mallard Grove Park, George Bibich ES, Eberly Park		Sidepath
93rd Ave, Sheffield to US 41	St John	Collector	2.45	24'	2-lane rural section, no parking	No sidewalks	6167	NR-A	Continuity with Joliet St-Crown Point route	US 41 crossing	Sidepath

Table 2-20: Columbia Avenue: Hammond to St. John

Northcote Connector

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/Trails Served	Barriers and Treatment	Recommended Infrastructure
Northcote, 167th to 175th	Hammond	Neighborhood collector	1.1	30', 42' section between 173rd and Southeastern	2-lane, parking	Sidewalks	NA	NR-L	Hammond Sportsplex/ Community Center, Jefferson ES, Hammond YMCA, Erie-Lackawanna Trail	Requires two short links to use existing HAWK signal at E-L trail crossing of 175th; 173rd intersection require high visibility crosswalk	Bicycle boulevard
Northcote, 175th to South River Dr	Hammond	Neighborhood local	0.8	25'	2-lane, parking. Alley access between 171st and Orchard	Sidewalks except along greenways	NA	NR-L	Little Calumet Trail access and bridge	Existing I-94 underpass	Bicycle boulevard
S. River and Hawthorne Dr, Little Cal to Ridge Rd	Munster	Neighborhood lane	0.8	20'	2-lane north of 173rd, 4-lane with parking south of 173rd	Sidewalk on east side, levee wall to west	NA	E	Wicker Park	Ridge Road crossing for connectivity. Requires sidepath to Parkway Dr and protected crosswalk at Ridge and Parkway	Bicycle boulevard
Parkway Dr, Ridge Rd to Lincoln	Highland	Neighborhood local	0.34	29'	2-lane, parking	Sidewalk back of curb on west side only	NA	NR-L	Brantwood Park, Fisher Street Trail with closing of gap connecting Fisher Trail and Lincoln	Creek and power line crossings between Fisher and Lincoln	Bicycle boulevard

Table 2-21: Northcote Connector

5th Street Connector: Highland

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/Trails Served	Barriers and Treatment	Recommended Infrastructure
5th Street, Little Calumet Trail to Lincoln St	Highland	Neighborhood collector	1.22	30'	2-lane, parking	Sidewalks	1325	NR-L	Little Cal Trail, Homestead Park, Johnston ES, Porter St Trail, Main Square Park, Downtown Highland, Highland Christian School		Bicycle boulevard

Table 2-22: 5th Street Connector: Highland

Gary-Griffith-Schererville-St John

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/Trails Served	Barriers and Treatment	Recommended Infrastructure
Colfax,9th Ave to 19th Ave	Gary	Collector	1.08	50’	2-lane striped, unrestricted parking but little demand	No sidewalks	3500	NR	West Side Academy		Bike lanes
Colfax, 19th Ave to Little Calumet Trail	Gary	Collector	1.5	26’	2-lane striped, no parking	No sidewalks	3584	F	Casino	Route includes overpass over I-94	Sidepath
Arbogast, Little Cal Trail to Ridge Rd	Gary, Griffth	Collector	0.67	32-34’	2-lane, rural section, no parking	East side sidewalks	NA	NR-L	Large multifamily developments, Ridge Rd commercial	Includes signalized crossing at Ridge	Bike lanes
Arbogast, Ridge to Elm	Griffith	Neighborhood local	1.06	32’	2-lane, parking	Sidewalks	NA	NR-L		45th Ave crossing requires high visibility crosswalks. Jay Ave to the west has a 4-way stop, but poorer connectivity	Bicycle boulevard
Elm, Arbogast to Broad	Griffith	Neighborhood collector	0.5	32’	2-lane, parking	Sidewalks	2189	E	Elsie Wadsworth ES, Sant Mary’s Soccer Fields, Central Park	Includes railroad grade crossing and signalized crossing at Broad	Bicycle boulevard
Elm, Broad to Erie-Lackawanna Trail	Griffith	Neighborhood collector	0.5	38’	2-lane, parking	Sidewalks	NA	E	Griffith Junior High, E-L Trail, Beiriger ES		Bicycle boulevard
Broad, Elm to Main	Griffith	Downtown main street	0.5	60’-63’	3-lane with parallel parking north of Lake; 2-lane with westside diagonal parking, Lake to Main	Business district sidewalks	8195	E	Downtown Griffith	Issue of parking demand versus bicycle accommodation.	Options: Shared use of roadway with reorientation to back-in diagonal parking; elimination of center turn lane and conversion of diagonal to parallel parking to accommodate bike lanes; modification of a sidewalk to a joint use facility with bicycle and pedestrian separation; or redirection of bicycle traffic to adjacent Lafayette St
Broad, Main to E Ave East	Griffith	Downtown main street, minor arterial	0.67	42’	2-lane with west side parking to Griffith Diamond	Sidewalks	NA	E	Downtown Griffith, Train Museum, Erie-Lackawanna Trail, Old Plank Trail (fut)	Griffith Diamond, crossing of two active railroads diagonal to the street	Bike lanes continued to Main Street, existing bike lanes south, which include protected lanes through the railroad corridors
Broad, E Avenue East to W Avenue H (61st Ave)	Griffith	Collector	0.40	27’	2-lane rural section, striped, no parking	No sidewalks	NA	E	Continuity		Initially bike route, ultimate upgrade to sidepath
Cline Ave, Ave H to Joliet St	Schererville/ Lake Co	Minor arterial (SR 912)	1.05	22’	2-lane rural section, striped, no parking	No sidewalks	NA	F	Continuity		Initially bike route, ultimate upgrade to sidepath
Joliet St, Cline to Junction Ave	Schererville	Minor arterial (SR 330)	0.95	27-36’	2-lane striped, no parking	Sidewalks	NA	G	Homan ES, Schereville town center, city hall, Pennsy Greenway		Bicycle boulevard. Sidepath is desirable but incompatible with street character
Joliet Street, Junction to Lincolnwood Rd	Schererville	Minor arterial (SR 330)	0.88	36-46’	2-lane striped, parking	Sidewalks east of Kennedy Ave	NA	G	Hammond Baptist School	US 30 intersection lacks crosswalks or pedestrian path connections	Bike lanes where possible, bicycle boulevard otherwise. Redesign of US 30 intersection for safe ped and bike access
Lincolnwood Rd, Alexander St, from Joliet to 85th Ave	Schererville/ St, John	Collector	1.73	25’	2-lane striped, rural section, no parking	No sidewalks	4948	G	Stephen Park, US 41 services		Shared use path on west side of road, using power line and street corridor. Parallel to railroad

Table 2-23: Gary-Griffith-Schererville-St John

Gary-Griffith-Schererville-St John

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/Trails Served	Barriers and Treatment	Recommended Infrastructure
Joliet St, Cline to Junction Ave	Schererville	Minor arterial (SR 330)	0.95	27-36’	2-lane striped, no parking	Sidewalks	NA	G	Homan ES, Schereville town center, city hall, Pennsy Greenway		Bicycle boulevard. Sidepath is desirable but incompatible with street character
Joliet Street, Junction to Lincolnwood Rd	Schererville	Minor arterial (SR 330)	0.88	36-46’	2-lane striped, parking	Sidewalks east of Kennedy Ave	NA	G	Hammond Baptist School	US 30 intersection lacks crosswalks or pedestrian path connections	Bike lanes where possible, bicycle boulevard otherwise. Redesign of US 30 intersection for safe ped and bike access
Lincolnwood Rd, Alexander St, from Joliet to 85th Ave	Schererville/St, John	Collector	1.73	25’	2-lane striped, rural section, no parking	No sidewalks	4948	G	Stephen Park, US 41 services		Shared use path on west side of road, using power line and street corridor. Parallel to railroad

Table 2-24: Gary-Griffith-Schererville-St John



Chase Street: Gary to Merrillville/Erie-Lackawanna Trail

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/Trails Served	Barriers and Treatment	Recommended Infrastructure
Chase St, 5th Ave to Little Calumet Trail	Gary	Minor arterial	2.46	50’	2-lane striped, parking with limited demand	Sidewalks north of 25th Ave	NA	G	Gary Elevated (fut), NILCO, Boys and Girls Club, Tolleston Park, Little Calumet Trail	I-94 negotiated with overpass.	Bike lanes, protected where possible
Chase St, Little Cal Trail to 41st Ave	Gary/Lake County	Collector	1.02	40-54’	2-lane striped, no parking demand between trail and Ridge; 2 lane divided south of Ridge, parking	No sidewalks	1018	G	Spring Park, city facilities		Bike lanes where possible
Whitcomb, 51st Ave, Johnson Rd, 41st Ave to Oak Savannah Trail	Lake County	Collector	1.71	22’	2-lane striped, rural section, no parking	No sidewalks	1190-3240	G	Connection to Oak Savannah Trail		Bike route with traffic calmers
Chase/Nicholson Rd/Hendricks Rd, Oak Savannah Tr to 73rd Ave	Lake County/	Neighborhood local	1.06	32’	2-lane, parking	Sidewalks	NA	NR-L		45th Ave crossing requires high visibility crosswalks. Jay Ave to the west has a 4-way stop, but poorer connectivity	Bicycle boulevard
Merrillville	Rural collector	2.78	24’	2 lane striped, rural section	No sidewalks	NA	G			Bike route	Bicycle boulevard
Noble, 73rd Ave to Whitcomb	Merrillville	Neighborhood local	0.34	30’	2-lane, parking	Sidewalks	NA	E			Bike route
Whitcomb, 73rd Ave to US 30	Merrillville	Collector	1.0	42’	4-lanes, no parking	Sidewalks		G			Lane reduction to 3-11’ lanes with bike lanes
Whitcomb, US 30 to Erie-Lackawanna Trail	Merrillville	Collector	0.67	22’	2-lanes, rural section	No sidewalks	NA	E	Erie-Lackawanna Trail and trailhead		Bike route. Infrastructure could change with area development

.Table 2-25: Chase Street: Gary to Merrillville/Erie-Lackawanna Trail

Taft Street Connector: Marquette Greenway to 25th Ave

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/Trails Served	Barriers and Treatment	Recommended Infrastructure
Taft Street, Marquette Greenway to 25th Ave	Gary	Neighborhood collector	2.38	36-48’	2-lane striped, parking	Sidewalks	NA	E	Marquette Greenway, Westbrook Apts,		Bicycle boulevard

Table 2-26: Taft Street Connector: Marquette Greenway to 25th Ave

Gary-Merrillville-Crown Point via Harrison and Merrillville Rd

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/Trails Served	Barriers and Treatment	Recommended Infrastructure
Harrison, 4th Ave to 11th Ave	Gary	Neighborhood local	0.83	27-32’	2-lane, parking	Sidewalks, with some missing segments	NA	NR-L	Marquette Greenway, Police Dept		Bicycle boulevard
Harrison, 11th to 19th Ave	Gary	Neighborhood collector	0.69	27-32’	2-lane, parking	Sidewalks, with some missing segments	NA	NR-L	Froebel Park		Bicycle boulevard
Harrison, 19th to Gleason Park	Gary	Collector	1.45	50’-60’	2-lane, parking, expanding to 4-lanes approaching and on the I-94 overpass	Sidewalks with condition deteriorating to the south	¬NA	NR-L	Roosevelt Park, Theodore Roosevelt College, Little Calumet Trail, IU-Gary Campus	I-94 crossed on a 4-lane overpass. Lane reduction can provide protected bike lanes	Bike lanes; route continues with a path around the edge of Gleason Park
Harrison, 35th Ave to 49th Ave	Gary	Neighborhood collector	1.76	30-42’	2-lane, striped, parking	Sidewalks with significant gaps	3808	G	Continuity	Ridge Rd intersection is signalized	Bicycle boulevard
Harrison, 49th Ave to Oak Savannah Trail	Gary	Collector	0.4	25’	2-lane striped, rural section, no parking	No sidewalks	NA	G	Oak Savannah Trail		Sidepath link from neighborhoods to trail
Harrison, Oak Savannah to 57th Ave	Merrillville	Collector	0.67	42’	2-lane striped, parking	Sidewalks with some gaps	NA	G	Oak Savannah Trail,		Striped dual use parking lanes
Harrison, 57th to 61st Ave	Merrillville	Collector	0.5	25’	2-lane striped, rural section, no parking	No sidewalks	NA	G	61st Ave services, Fieler ES	Signalized crossing at 61st Ave	Sidepath
Harrison and Madison, 61st Ave to 66th Pl	Merrillville	Collector	0.76	27’	2-lane striped, rural section, no parking	No sidewalks	c. 6000	G	Dean & Barbara White Community Center with path link	Railroad crossing at acute angle	Sidepath
Madison, 66th Pl to US 30	Merrillville	Collector	1.84	40’	3-lane with TWTL	Limited sidewalks	6018	G	C&O Trail, Merrillville HS via link, major commercial at US 30	US 30 intersection	Sidepath. Major redesign of US 30 intersection with intermediate refuge medians
Merrillville Rd, US 30 to 97th Place	Merrillville/ Crown Point	Collector	2.2	36’	3-lane with TWTL, no parking	Sidewalks south of 93rd Ave	5370	G	Collins Park, Eagle Park School, Russ Keller Park		Sidepath. Connects to Merrillville Rd Path in Crown Point

Table 2-27: Gary-Merrillville-Crown Point via Harrison and Merrillville Rd



Broadway Complete Street: Metro Center to Crown Point

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/ Trails Served	Barriers and Treatment	Recommended Infrastructure
Broadway, Metro Center to I-94	Gary	Major arterial	2.66	65'- 85' at interchange	4-lane, parking	Business center sidewalks	4687-12971	F	Marquette Greenway Metro Center SSL and transit station, Downtown Gary, 21st C Middle School, Gary Elevated (fut),	I-94 interchange	Complete street with three travel lanes, combination bus/bike lane, and parking. Directional cycle tracks on I-94 overpass, possibly in median with crossings at bridge approaches
Broadway, I-94 to 53rd Ave	Gary	Major arterial	5.10	65'	4-lane, parking	Business center sidewalks	18700	NR-A	Little Calumet Trail, IU-Gary campus, Oak Savannah Trail		Complete street with three travel lanes, combination bus/bike lane, and parking. Directional cycle tracks on I-94 overpass, possibly in median with crossings at bridge approaches. Alternative use of parallel Massachusetts Ave as a bicycle boulevard from 33rd to 53rd Ave
Broadway, 53rd to 61st Ave	Merrilliville	Major arterial	1.00	85-90'	5-lane with TWTL, no parking	No sidewalks for most of the segment	NA	NR-A	Commercial services		Maintaining 5-lane section with complete street redesign with sidepath and sidewalk, access management, and streetscape, BRT stations
Broadway, 61st Ave to 73rd Ave	Merrillville	Major arterial	1.50	60-65'. Turn lanes at some locations	5-lane with TWTL, no parking	Back of curb sidewalks typical condition	NA	NR-A	Dean & Barbara White Community Center, Merrillville HS, Pierce MS, C&O Trail		Maintaining 5-lane section with complete street redesign with sidepath and sidewalk, access management, and streetscape
Broadway, 73rd Ave to Century Plaza	Merrillville	Major arterial	1.42	70' typical	5-lane with TWTL, no parking	No sidewalks	NA	NR-A	Town Hall, US 30 commercial, Century Plaza with potential redevelopment	US 30 intersection	Maintaining 5-lane section with complete street redesign with sidepath and sidewalk, access management, and streetscape. Redesign of US 30 intersection to accommodate active transportation modes
Broadway, Century Plaza to US 231	Merrillville	Major arterial	1.27	65' mainline width with frontage roads	5-lane with TWTL, no parking, frontage roads	No sidewalks	NA	NR-A	Methodist Hospital, Ivy Tech, County Center via 93rd Ave		Sidepath/sidewalks along frontage road or in green area separating frontage and main roads. Sidepath south of 93rd Ave

Table 2-28: Broadway Complete Street: Metro Center to Crown Point

Virginia/Georgia Route: Gary to Dean & Barbara White Community Center

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/ Trails Served	Barriers and Treatment	Recommended Infrastructure
Virginia Ave, Marquette Greenway (fut) to Ellis	Gary	Neighborhood collector	2.15	42-46'	2-lane, parking	Sidewalks, with some missing segments	2700	G	Marquette Greenway, St John Homes,	Bicycle boulevard	Bicycle boulevard
Ellis Ave, Virginia to Georgia	Gary	Neighborhood collector	0.25	27'	2-lane, no parking demand	One side sidewalk with missing segment	2740	E	Continuity		Bicycle boulevard
Georgia St, Ellis to E 32nd Ave	Gary	Neighborhood collector	1.45	27' to I-94 overpass approach, 54' at overpass, 38' south to 38th Ave	2-lane north, 4-lane on overpass, 2-lane with shoulders, south	No sidewalks	2490	E	Little Calumet Trail	I-94 crossed on a 4-lane overpass. Lane reduction can provide protected bike lanes	Bicycle boulevard; lane reduction with protected bike lanes on overpass and approaches; adaptation of shoulders as protected bike lanes south of overpass.
Georgia St, 32nd to 53rd Ave	Gary	Neighborhood collector	2.6	27'-36' south to 45th Ave; 48-54' to 53rd Ave	2-lane, parking	Sidewalks with significant gaps	NA	E	Gary School Admin, Bailey Prep Academy, Oak Savannah Trail	Ridge Rd intersection is signalized	Bicycle boulevard, with bike lanes south of 45th Ave
Georgia St, 53rd to 56th Ave	Merrillville	Neighborhood local	0.37	28'	2-lane, parking	Sidewalk one side	NA	NR-L	Possible future trail connection to Hidden Lake Park and Community Center		Bicycle boulevard
Shared use path, 56th Ave to Dean and Barbara White Community Center and Madison Street	Merrillville	Proposed path	2.0	NA	NA	NA	NA	NA	Hidden Lake Park, Andrean High School, White Community Center	Pedestrian crossing at Broadway	Shared use path continuing alignment of Georgia St to Carolyn Dr and through Hidden Lake Park to Broadway. HAWK protected ped crossing of Broadway, with path continuing along Broadway and through community center to Madison Street

Table 2-29: Virginia/Georgia Route: Gary to Dean & Barbara White Community Center



Miller-New Chicago-Hobart via Clay/DeKalb/Wisconsin

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/Trails Served	Barriers and Treatment	Recommended Infrastructure
7th Ave, Lake to Clay	Gary	Local	0.65	36’	2-lane, no parking	Northside sidewalk	NA	E	Miller SSL station, Miller main street district		Bike lanes, possible TOD integration
Clay St, 7th to 15th Ave	Gary	Collector	0.65	48-58’	2-lane, parking sometimes off pavement	Sidewalks with some missing segments south to Toll Road underpass	3906	G	Continuity	Toll Road underpass	Bike lanes
Clay, 15th Ave to Marquette Rd	Gary/Lake Station	Collector	1.14	24’ rural section	2-lane, painted, no parking	No sidewalks	3906	G		I-94 underpass	Sidepath
Marquette, Clay to DeKalb	Lake Station	Local	0.20	22’	2-lane, parking	No sidewalks	NA	NR-L	Continuity		Bike route connector
DeKalb (Michigan) from Marquette to Jefferson St	Lake Station/ New Chicago	Business district street	0.30	58’	2-lane striped, parking	Sidewalks	2445	NR	Business district		Bike lanes
De Kalb, from Jefferson to McKinley	New Chicago	Neighborhood collector	0.69	24-30’	2-lane, striped, no parking in the street channel	Intermittent sidewalks	3937	G	Columbus Park, River Forest HS,	De Kalb, Jefferson/ Michigan to McKinley	Bicycle boulevard
McKinley, Michigan to Wisconsin	New Chicago	Neighborhood local	0.25	22’	2-lane, no parking	Northside sidewalk	NA	E	Continuity		Bicycle boulevard
Wisconsin, McKinley to Ridge	New Chicago	Neighborhood collector	0.31	22-24’	2-lane, no parking	Westside sidewalk	NA	E		Ridge Road intersection	Bicycle boulevard. Redesign of Ridge Road intersection to improve mike/ped accommodation
Wisconsin, Ridge to Old Ridge Rd	Hobart	Minor arterial	0.77	40’	2-lane, striped, no parking	Sidewalks	8501	E	Cressmoor Prairie Nature Preserve, services at Old Ridge, Old Ridge bikeway to central Hobart		Bike lanes
Wisconsin, Old Ridge to S. 10th	Hobart	Minor arterial	1.23	34-42’	2-lane, striped, parking south of 8th Street	Sidewalks	8174	NR-A	Veterans ES, Lakeview Park, Oak Savannah Trail, Hobart Community Pool, 10th Street bikeway		Bike lanes where parking conditions permit. High visibility crosswalk to sidepath link to pool

Table 2-30: Miller-New Chicago-Hobart via Clay/DeKalb/Wisconsin

South Hobart Connector

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/Trails Served	Barriers and Treatment	Recommended Infrastructure
South 10th St, Wisconsin to County Line Rd	Hobart	Collector	2.5	40'-42'	2-lanes with bike lanes	Sidewalk continuity on north side between lake Park Ave and County Line, and south side from Wisconsin to Lake Park	NA	G	Hobart Community Pool, Joan Martin ES, Trinity Lutheran School, Hobart HS	Lake Park Ave intersection	Existing bike lanes. Take bike lanes off-street and reroute through intersection to provide defined, high visibility crossing points
CR 600 N (S. 10th continuation), County Line to SR 130	Porter County	County section line road	0.56	22'	2-lane rural section	Drainage ditches	NA	NR	Wheeler Trail (fut)		Bike route

Table 2-31: South Hobart Connector

Hobart to Lake of the Four Seasons

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/ Trails Served	Barriers and Treatment	Recommended Infrastructure
S. Hobart Rd, Miller Ln, Ainsworth Rd, S. 10th to Randolph	Lake County	County collector	2.53	22'	2-lane rural section, striped	Drainage ditches	NA	G	Deep River County Park		Bike route for short term. Monitor area development for possible sidepath or road improvements. Incorporate path in any road widening projects
Randolph St, Ainsworth to US 30	Lake County, Merrillville	County collector	1.38	22'	2-lane rural section, striped	Drainage ditches	NA	NR north of 73rd, F south of 73rd	Continuity	US 30 intersection is signalized	Bike route (experienced) for short term. Monitor area development for possible sidepath or road improvements. Incorporate path in any road widening projects
Randolph, US 30 to 101st Ave	Merrillville	County minor arterial	2.5	22'	2-lane rural section, striped	Drainage ditches	5709	NR-A	Deep River Water Park, C&O Trail (fut)		Sidepath or roadway shoulders
Randolph, 101st Ave to 123rd Ave	Lake of the Four Seasons	Minor arterial	2.75	22'-32'	2-lane with turn lanes	Existing sidepath from 112th Ave to Jerry Ross ES	7117	F	Winfield Trail (fut), Randolph St Park, Jerry Ross ES		Extend existing sidepath. Future extension south of 123rd to Winfield Trail
123rd Ave, Randolph to County Line Rd	Lake of the Four Seasons	Collector	1.0	23'	2-lane, striped, rural section	Drainage ditches	NA	NR-L			Continuity
County Line Road, 123rd Ave to US 231	Lake & Porter Counties	County section line road	4.23	22'	2-lane, striped, rural section	Drainage ditches	NA	G	Stoney Run County Park via 142nd Ave link; Winfield and Veterans Trails (fut)		Bike route. Connection to Pratt St Trail and Hebron

Table 2-32: Hobart to Lake of the Four Seasons

Miller to Lake Station with I-94 underpass

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/Trails Served	Barriers and Treatment	Recommended Infrastructure
Miller Ave, Lake to Old Hobart Rd	Gary	Collector	0.28	26-31'	2-lane, no parking	Sidewalk on south side	NA	E	Continuity		Bicycle boulevard
Old Hobart Rd, Miller Ave to Melton Rd (US 20)	Gary/Lake Station	Industrial collector	0.64	22'	2-lane, no parking	No sidewalks	3448	NR	Charter School of the Dunes	Underpasses of South Shore Line and US 12. Triple track grade crossing	Bike route. Possible street widening with narrow shoulders
Old Hobart Rd, Melton to Ripley St	Lake Station	Industrial collector	0.74	22'	2-lane, no parking	No sidewalks	NA	NR	Wetlands environment	Underpass of I-90	Bike route.
Ripley St, Old Hobart to Levee Road	Lake Station	Major arterial	0.14	85'	6-lane major highway	No sidewalks	16601	NR-A	Extensive travel services	Lack of space to adapt current bridge over Little Calumet River	New trail segment and bicycle/ pedestrian bridge
Levee Road, west of US 6	Lake Station	Service road	0.5	15'	Paved lane		NA	NR-L		I-94 and US 6 interchange. No north-south pedestrian and bicycle access for 3.5 miles between Clay and Melton	Use of levee road
New I-94 underpass and trail connection, levee road to E. 21st Ave and Parke	Lake Station	NA	0.13	NA	NA	NA	NA	NR	Linkage of north and south parts of region, addressing freeway barrier, Edison JHS/HS	I-94 barrier	New trail link and tunnel or underpass under I-94
Parke/Pike, E 21st Ave to Fairview St	Lake Station	Neighborhood collector	0.50	28-42'	2-lane, parking in cut-outs	Sidewalk continuity on one side	NA	NR-L	Lake Station services	Central Avenue intersection is signalized	Bike lanes where possible; otherwise, bike route

Table 2-33: Miller to Lake Station with I-94 underpass



Porter Beach-Chesterton-Valparaiso Road Route

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/Trails Served	Barriers and Treatment	Recommended Infrastructure
Dunes Kankakee Trail, Porter Beach to State Park Road	Porter County	Shared use path	0.83	10’	NA	Sidepath along a park road	NA	Trail	Porter Beach, State and National Parks		Existing trail following N 25E
State Park Rd, Waverly Rd from trail to US 12	Porter County	Park road	0.98	18’	2-lane, no parking	No sidewalks	NA	G	State and National Parks, Dune Park SSL station; Calumet Trail (Marquette Greenway)	Offset intersection without signals at US 12 intersection	Bike route; Improved intersection at US 12, with short sidepath section to align with southbound Waverly Rd; HAWK signal or other protection, high visibility crossing
Waverly Rd, US 12 to Lincoln St	Porter (city)	Collector	1.57	21’ widening to 40’ at I-94 overpass	2-lane, no parking	No sidewalks. Short trail segment north of I-94, merging into pavement edge; boardwalk creek bridge and path to Hawthorne park south of I-94	1500	G	Hawthorne Park and Community Center	I-94 overpass without defined walkway. Signals but no marked crossings of US 20	Bike route. Extended trail segment on west side north to US 20. Extend trail segment south to I-94 overpass. Protected ped/bike domain on overpass using excess width. .Ped/bike shoulder to north edge of the boardwalk bridge and Hawthorne Park path. High visibility crosswalks across US 20
Lincoln St, Waverly to Wagner Rd (Porter Brickyard Trail)	Porter (city)	Town center main street	0.47	25’, widens to 48’ on business district blocks	2-lane, north side parallel, south side diagonal in business district	Sidewalk on north side	NA	E	Porter business district, library, Porter Brickyard Trail		Bike route
Wagner Rd/ Jackson Blvd to Prairie Duneland Trail	Porter/ Chesterton	Collector; street defined as part of trail connection	0.28	26’	2-lane, parking between street channel and sidewalk	Sidewalks	1506	Rated as trail	Prairie Duneland Trailhead; Downtown via Broadway	Multiple track rail crossing of CP line	Bike route. Define ped area across trackage, improve sidewalk connection
Prairie Duneland Trail from trailhead to 23rd Street	Chesterton	Shared use path	0.43	10’	NA	Trail	NA	Trail, part of USBR 36			Existing regional trail
23rd/W 1100N from trail to N 50W	Chesterton	Neighborhood collector	1.17	23’	2-lane, no parking	Sidepath on east side	2151	E	Dogwood Park, soccer fields, Chesterton HS	Defined crossing from W 1100N to southbound N 50W	On-street bike route with sidepath
County Routes on N 50W, W 1000N, CR 100W, W 850N, N 75W, CR 750N, N 50W, 550N from W 1100N to Lakewood Link	Porter County	Rural county roads or lanes	6.92	21-24’	2-lane, no parking	No sidewalks	NA	E for W 1000N and CR 100W segments; G for others	Liberty ES, Sunset Hill Farm County Park	Overpass over Toll Road; stop signs only at US 6 intersection	Crossing notification and painted crossing path at US 6
Lakewood Link Trail (Campbell St sidepath) from 550N to Lincolnway	Valparaiso	Minor arterial	3.25	32’	2-3 lanes, no parking	East side sidepath north of Vale Park, crossing to west side south. Discontinuous sidewalk on opposite side	7348	Trail	Rogers-Lakewood Park, Community Garden, Dog Park, Campbell St Bikeway, Valparaiso HS, Northview ES, Franklin MS, Downtown		Existing sidepath
New Campbell extension from Lincolnway to US 30	Valparaiso	Minor arterial (fut)	0.55	TBD	TBD	TBD	NA	TBD	V-Line Transit, TOD, US 30 commercial, Zao Island	New street; US 30 crossing must be resolved	Complete street

Table 2-34: Porter Beach-Chesterton-Valparaiso Road Route

Valparaiso to Kouts Road Route (parallels Dunes Kankakee Trail)

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/Trails Served	Barriers and Treatment	Recommended Infrastructure
Horse Prairie Ave, US 30 to City View	Valparaiso	Minor arterial after completion of Campbell extension	0.38	24’	2-lane, no parking	No sidewalks	NA	NR	Zao Island	US 30 intersection is signalized. Traverse crosswalk only on north side of US 30.for current sidepath segment from SR2 to Hayes Leonard Rd	Sidepath to SR2 with completion of Campbell Street project
City View/Sager Rd from Horse Prairie to S 150E	Porter County	Rural county road	3.25	20’’	2-lane,striped, no parking	Rural residential and rural setting	NA	G	Continuity		Bike route
S 150 E/ E 700S from Sager Rd to SR 49	Porter County	Rural county lane	6.22	20’	2-lane, no parking	Rural setting	NA	G	Continuity		Bike route. Interim alternative for Dunes Kankakee Trail
Dunes Kankakee trail segment from E 700S to Main & Indiana, Kouts	Porter County/ Kouts	Arterial state highway	1.0	30’	2-lane with narrow paved + gravel shoulders and rumble strips	No sidewalks. Drainage swales	NA	NR-A	Kouts town center and school campus, Rivers Edge Farm	SR 8/Indiana Street intersection is signalized	Future trail. This segment should be completed in an early stage of Dunes Kankakee Trail development

Table 2-35: Valparaiso to Kouts Road Route (parallels Dunes Kankakee Trail)

Chesterton-La Porte Route via County Roads

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/Trails Served	Barriers and Treatment	Recommended Infrastructure
Broadway, Prairie Duneland Trailhead to Calumet Rd	Chesterton	Community avenue	1.14	30’	2-lane striped, no parking on street	Sidewalk on south side with gaps	3600	G	Chesterton Town Center, City Hall		Street upgrade to complete street standards. Sidewalk continuity, streetscape, possible cycle track or sidepath linking Prairie Duneland Trail to Town Center
Calumet Rd, Broadway to E Porter Ave	Chesterton	Town center main street	0.30	40’	2-lane striped, parallel parking	Sidewalks	NA	F	Chesterton Town Center, Coffee Creek Park		Bike route prior to trail development
Porter Ave, Calumet to N CR 250E	Chesterton/ Porter County	Collector	1.71	22’	2-lane striped, no parking	Sidewalk on north side through historic Coffee Creek neighborhood	NA	G	Coffee Creek Park	SR 2 intersection is signalized	Highway crossing markings; possible sidewalk or sidepath extension to city limits as development occurs to the east
County road routes on E CR 1225N, N CR 325E, Burdick Rd (E CR 1200M), N Wozniak Rd, W 125 N, N Forrester Rd, and W Small Rd, from Porter Ave to Goldring Intersection.	Porter/ La Porte Counties	Rural county roads	13.9	21’ typical	2-lane rural	Drainage ditches typical condition	NA	G; F for Snyder Rd between US 421 and Red Mill Park	Red Mill County Park and MTB trails, Pinhook Bog; Lincoln Memorial Trail (future), USBR 35	US 421 intersection	Bike route; crossing markings and advisories at US 421

Table 2-36: Chesterton-La Porte Route via Country Roads

Valparaiso to La Porte via SR 2

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/Trails Served	Barriers and Treatment	Recommended Infrastructure
Morgan Blvd, Lincolnway to Calumet	Valparaiso	Collector	0.21	36’	2-lane, parking with traffic calmers	Sidewalks	NA	NR	Downtown, Library		Bicycle boulevard
Calumet Ave, Morgan to Evans	Valparaiso	Commercial minor arterial	0.23	36’	3-lane with TWTL, no parking	Sidewalks	NA	NR-A	Fairgrounds Park	Frequent curb cuts	Upgrade of one sidewalk to sidepath or lane reduction to 2 lanes with bike lanes
Evans Ave, Calumet to Emma Ct	Valparaiso	Minor arterial	1.85	24’	2-lane, no parking	Sidepath or sidewalk on north side	NA	Trail		SR 49 overpass over Evans	Complete gaps in sidepath
Evans Ave, Emma Ct to SR 2	Valparaiso	Collector	1.13	22’	2-lane, rural section, no parking	No sidewalks	NA	G			Sidepath
SR 2, Evans to Old SR 2	La Porte County	Arterial State Highway	3.08	30’	2-lane highway with rumble strip	NA	8493	NR-A	Regional access		Sidepath
Old SR 2 between highway intersections	La Porte County	Rural lane	2.67	20’	2-lane former highway route, rural section	NA	NA	NR	Regional access		Rural bicycle boulevard
SR 2, Old SR 2 to Main Street	La Porte County/ Westville	Arterial State Highway	0.97	30’	2-lane highway with rumble strip	NA	8493	NR-A	Regional access		Sidepath
Main St, SR 2 to Flynn Rd	Westville	Collector	0.60	24’-42’	2-lane, parking where street widens	Sidewalks east of Railroad St	NA	G	Library, Westville HS, Lincoln Trail (Fut)		
Valparaiso St. Flynn to Sandstone Dr	Westville	Collector	1.30	24’	2-lane, no parking	Sidepath on north side	1641	F	Westville HS		Existing sidepath
Joliet Rd, Sandstone Dr to S. Marquette St	La Porte County and City	Rural collector, USBR 35 from Long Lane into La Porte	7.50	22’	2-lane rural section, striped	Drainage ditches	988	G			Enhanced bike route
Marquette St, Joliet Rd to W 18th St	La Porte	Semirural local street, USBR 35	0.45	22’	2-lane rural section	Drainage ditches	NA	G			Bike route
18th St, Marquette to A Street	La Porte	Collector, USBR 35	1.27	25-30’	2-lane, limited parking	Sidewalk on north side	NA	G	Kesling Park and Intermediate School		Bicycle boulevard
A Street, 18th to Plummer St	La Porte	Neighborhood collector, USBR 35	0.80	25-30’	2-lane, parking	Sidewalk on east side	NA	E	La Porte HS		Bicycle boulevard
Plummer, A to Michigan	La Porte	Neighborhood local, USBR 35	0.23	31’	2-lane, parking	Sidewalks	NA	E	Continuity		Bicycle boulevard
Michigan, Plummer to Lincoln Hwy	La Porte	Community avenue, USBR 35		40-42’, 70’ downtown	2-lane, parking	Sidewalks		E	Historic district, YMCA, Downtown La Porte		Bicycle boulevard

Table 2-37: Valparaiso to La Porte via SR 2

Beverly Shores to Valparaiso

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/Trails Served	Barriers and Treatment	Recommended Infrastructure
Broadway, US 12 to Lake Front Dr	Beverly Shores	Neighborhood collector	1.04	22’	2-lane, rural section	Roadside sidewalks	NA	E	Beverly Shores SSL station, Calumet Greenway, Dunes Parks, Lakefront and beach		Bicycle boulevard
Lake Front Dr, Broadway to Lake Shore County Road	Beverly Shores	Lakefront lane	1.38	19’	Narrow 2-lane	No sidewalks	NA	NR-L	Lakefront		Bicycle boulevard
County Road, Lake Shore to US 12	Beverly Shores	Rural lane	1.2	20’	Narrow 2-lane	No sidewalks	NA	NR-L	Dunes Park		Bicycle route
N 500E/E 1400N/N 450E, US 12 to Burdick Rd	Porter County	Rural local	5.36	21’	2-lane, rural section	Drainage ditches	NA	G	Engquist Nature Preserve, Heron Rookery	I-94 crossed with overpass	Bicycle route. Connection to Chesterton via Burdick Rd route
N 400E, Burdick Rd to SR 2	Porter County	Rural collector	8.52	21’	2-lane, rural section	Drainage ditches	1499	G	Washington Township school campus	Toll Road crossed with overpass	Bicycle route. Connections into Valparaiso via Burlington Beach and Vale Park Roads

Table 2-38: Beverly Shores to Valparaiso





Michigan City to La Porte via Goldring Road

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/Trails Served	Barriers and Treatment	Recommended Infrastructure
Wabash, Michigan Blvd to W 11th St	Michigan City	City boulevard	0.6	64’	2-lane divided, parking and protected bike lanes	Sidewalks	NA	G	Marquette Greenway, Library, Downtown, Lighthouse Place, SSL station, Marquette HS		Existing bike lanes
Wabash, 11th St to Coolspring Ave	Michigan City	Neighborhood collector, signed bike route	1.14	25-31’	2-lane, parking on wider section north of Harrison St	Sidewalks	NA	G	Ames Field, Ivy Tech CC		Bicycle boulevard
Coolspring, Wabash to Cleveland Ave	Michigan City	Collector	0.57	28’	2-lane, no parking	Sidewalks	7173	G	Continuity	Signalized intersection at Franklin	Bicycle boulevard; possible narrow bike lanes or striped shoulder
Cleveland Ave, Coldspring to US 20	Michigan City	Minor arterial	1.0	27’	2-lane, no parking	Singe side sidewalk, gap between Coolspring and Garrettson	4016	G	Edgewood ES, Barker Woods, Barker MS	Signalized intersection at US 20	Bicycle boulevard. Redesign of US 20 intersection for improved pedestrian/bicycle access
Cleveland Ave, US 20 to W 400N	Michigan City	Minor arterial	1.04	66’	5-lane with TWTL, no parking	Back of curb sidewalk on east side	NA	G	Access to Franklin St commercial corridor	Signalized intersection at W 400N	Lane reduction to three lanes with protected bike lanes or sidepath
W 400N, Franklin to Wozniak Rd	Michigan City	Minor arterial	2.60	52-63’. 22’ east of I-94 overpass	4-5 lane, no parking; 2-lane east of I-94	No sidewalks	10700	G east of Cleveland	Major commercial, Creek Ridge County Park	I-94 crossed with overpass	Sidepath
Wozniak Rd, W 400N to W 350N	La Porte County	Rural collector	0.52	23’	2-lane, striped	Drainage swales	NA	NR	Continuity		Sidepath
W 300N/N 725 W, N Goldring Rd, Wozniak to Small Rd	La Porte County	Rural lanes		20’	2-lane rural section	Drainage swales	NA	G	Scenery	Toll Road crossed with overpass. Road curvature and grades	Rural bicycle boulevard. Small Rd connection to La Porte

Table 2-39: Michigan City to La Porte via Goldring Road



Michigan City to Hudson Lake via County Roads

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/Trails Served	Barriers and Treatment	Recommended Infrastructure
8th St, Huron to Michigan Blvd	Michigan City	Business district street	0.95	60' through downtown core, 34' to the west and 42' to east	2-lane, diagonal parking in core, parallel parking outside	Sidewalks	NA	G	Lincoln Mem. Trail (fut), Lighthouse Place, Downtown, Casino, Hansen Park, Marquette Greenway, Trail Creek Park	Michigan Blvd intersection is signalized.	Bicycle boulevard outside core. High visibility crossing at Michigan Blvd. Consider back-in diagonal parking between Wabash and Pine
8th Street, Michigan Blvd to Springland	Michigan City	Collector, edge between residential and industrial land use	0.45	32'	2-lane, 1 side parking	Parallel Trail Creek Greenway shared use path	NA	G	Trail Creek Greenway, Pottawattamie Park, Friendship Botanical Garden via connecting trail		Bicycle boulevard
Springland Ave, 8th St to Karwick Rd	Michigan City	Collector on edge of neighborhoods	1.44	32'	2-lane, parking on south side	Back of curb sidewalk on south side	NA	G	SSL Carroll Ave station, Winding Creek Cove Park		Bicycle boulevard
Karwick Rd, Springland to Tryon	Michigan City	Collector with beach access	0.50	32'	2-lane, no parking, paved shoulders	No sidewalk	NA	G	Continuity		Existing shoulders
Tryon Rd/W 800N, Karwick to N 300W	La Porte County	Rural section line road	5.0	21'	2-lane	Drainage ditches	NA	G	Springfield ES		Bike route
N 300W/W 850N	La Porte County	Rural local	1.76	21'	2-lane	Drainage ditches	NA	G	Chessie Trail (fut)		Bike route
SR 39, W 850N to W 900N	La Porte County	State Highway	0.50	36'	2-lane, paved shoulders		NA	G	Continuity		Existing shoulders
W 900N, SR 39 to Fail Rd	La Porte County	Rural section line road	3.78	21'	2-lane	Drainage ditches	NA	G	Hesston Steam Museum via N 125E		Bike route
Fail Rd (USBR 35), W 900N to E 800N	La Porte County	Rural collector	1.0	24'	2-lane, striped	Drainage ditches	NA	G	Heston Hills Event Center		Bike route
E 800N, Fail Rd to Novitiate Rd (N 500E)	La Porte County	Rural section line road	3.25	22'	2-lane, striped	Drainage ditches	NA	G	Hog Lake		Bike Route
E Saugana Trail/N Cherokee Trail/E Tioga Trail 600E from N 500E to South Shore Line crossing	La Porte County	Rural neighborhood local	1.43	22'	2-lane, rural section, no parking		NA	G	Hudson Lake facilities, SSL station		Bike route

Table 2-40: Michigan City to Hudson Lake via County Roads

Eastern Lakes Routes: Hudson Lake to Fish Lake

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/Trails Served	Barriers and Treatment	Recommended Infrastructure
Chicago Rd, Hudson Lake Station to N 700E	Hudson Lake, La Porte County	Rural collector	4.75	22’	2-lane, rural section	Drainage ditches	NA	G	SSL Hudson Lake	Underpass at SSL crossing. US 20 intersection	Bike route. Advisory signage at US 20 crossing
E 350N, N 600E from US 20 to Division Rd	La Porte County	Rural collector	6.71	22’	2-lane, rural section	Drainage ditches	NA	G	New Prairie HS/ JHS, Wills Township Community Center		Bike route. Connection to La Porte via Division Rd
S 600E/E 100S/S Taylor Rd from Division Rd to SR 4	La Porte County	Rural collectors	3.15	24’	2-lane, rural section, striping on the Taylor Rd segment	Drainage ditches	NA	G			Bike route
SR 4, Taylor Road to S 800E	La Porte County	State Highway	1.09	43’	2-lane highway with paved shoulders		NA	F	Fish Lake Conservation Area, services		Existing shoulders

Table 2-41: Eastern Lakes Routes: Hudson Lake to Fish Lake

Westville to Fish Lake

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/Trails Served	Barriers and Treatment	Recommended Infrastructure
CH 625W/W 400S, Joliet Rd to US 35	La Porte County/ Kingsbury	Rural County Road	7.10	20-24’	2-lane, some striped segments, rural section	Drainage ditches	NA	G	Luhr Park Nature Center, Kingsbury ES,		Bike route
E 400S, US 35 to E Hupp Rd	La Porte County	Rural County Road	4.63	22’	2-lane, some striped segments, rural section	Drainage ditches	NA	G			Bike route
E Hupp Rd, E 400S to SR 104	La Porte County	Rural County Road	0.78	22’	2-lane, rural section, striped		NA	NR			Bike route through village
SR 104, Hupp Rd to S 550E	La Porte County	Principal State Road	0.70	27’	2-lane	Surface drainage, no sidewalks	NA	NR-A			Sidepath
S 550E/E 350S/S 700E, SR 104 to SR 4	La Porte County	Rural County Road	3.00	22-24’	2-lane, striped, rural section	Drainage ditches	NA	G			Bike route

Table 2-42: Westville to Fish Lake

Kingsford Heights-Kingsbury-La Porte Loop

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/Trails Served	Barriers and Treatment	Recommended Infrastructure
W 800S/S 175W/W 850S from Long Lane (USBR 35) to Range Rd	La Porte County	Rural County Road	3.00	22-24'	2-lane, striped, rural section	Drainage ditches	NA	G	Kingsford Hts ES and Park, Union Mills Library, Mill Pond Park		Bike route
S Range Rd, W 850S to US 35	Kingsford Hts	Neighborhood local and rural county road	1.37	22-24'	2-lane, rural section, no parking	Sidewalk on one side in community area	NA	NR-L		Gated grade crossing of double track railroad	Bike route
US 35, Range Rd to W 400S	Kingsbury	Principal Interurban Road	3.22	80'	4-lane divided highway north of US 6 junction, 2-lane south	Surface drainage	6006	NR-A	Kingbury services		Sidepath. Connection to La Porte via W 400S and S 150W
S 150W, W 400S to 24th St	La Porte City and County	Rural/Urban Transition County Road	2.74	20'	2-lane, rural section	Drainage ditches	NA	G	Luhr Park, La Porte Airport		Bike route

Table 2-43: Kingsford Heights-Kingsbury-La Porte Loop

Division Road Route: Aberdeen-Wanatah-Hanna

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/Trails Served	Barriers and Treatment	Recommended Infrastructure
N 250W/Tower Rd, W 100N to Division Rd	Aberdeen	Rural County Road, Collector within Aberdeen	1.26	23' in rural area, 30' in development	2-lane, urban section in development	Sidewalks in Aberdeen	NA	G in rural section, E in Aberdeen			Bicycle boulevard
Division Rd, Tower Rd to SR 49	Porter County	Rural County Road	4.65	21'	2-lane	Drainage ditches	NA	G	Access to Valparaiso via Sager Road route, Fairgrounds	US 30 intersection is signalized	Bike route. Improve crossing signage at US 30
Division Rd, SR 49 to County Line Rd	Porter County	Rural County Road with some adjacent residential	5.04	33' at fairgrounds, 21' elsewhere	3-lane at fairgrounds, narrowing to 2 lane	Drainage ditches, managed conduit in some developed areas	NA	G		Complex rail crossing at 400 E intersection.	Bike route
County Line/Legion Rd from Division to Illinois St	La Porte County, Wanatah	Rural County Road	0.50	21'	2-lane	Drainage ditches	NA	E	Wanatah		
Illinois St/E 1st St from Legion Rd to US 421	Wanatah	Business district commercial street	0.62	21', 50' in town center	2-lane, diagonal parking on one side in center		NA	E	Public library, Town Hall, Public School, Ivy Tech, William Hunt Memorial Park	Overpass on US 421 over 1st Street and parallel railroad	Bicycle boulevard
Bailey Rd/S 900W/W 1300S/Volk Rd/W 1350S from US 421 to Long Lane	La Porte County, Hanna	Rural County Road	8.0	21'	2-lane	Drainage ditches	NA	G		US 30 intersection	Bike route. Provide clear markings and caution signage at US 30. Use median as a refuge area/

Table 2-44: Division Road Route: Aberdeen-Wanatah-Hanna

US Bike Route 35

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/ Trails Served	Barriers and Treatment	Recommended Infrastructure
150E/E 1000N from state line to Fail Road	La Porte County	Country Lane (150E), Rural County Road (E 1000N)	1.0	22’	2-lane, rural section	Drainage ditches	NA	G		Hesston Steam Museum	Bike route
Fail Rd, E 1000N to E 200N	La Porte County	Rural County Road	8.4	22-24’	2-lane, striped in some segments, rural section	Drainage ditches	NA	G	Heston Hills Event Center	Intersection of US 20 is signalized, Overpass over Toll Road	Bike route
W 200N, Fail Road to N Park Rd	La Porte	Collector at city edge	1.83	22’	2-lane, striped, rural section		NA	G			Bike route
Park Rd/Park St, W 200N to Bach St	La Porte		1.03	22’ widening to 26’ south of Cherry St	2-lane, rural section	One side sidewalk south of Cherry St	NA	G	Lindewald Park, City Park, Fox Memorial Park		Bicycle boulevard
Park St/Tipton St, Bach to Lincoln Hwy Pt/	La Porte	Neighborhood local	0.46	28-42’	2-lane, parking in wider areas	Sidewalks	NA	G	Downtown La Porte		Bike route. Continuation of USBR 35 follows Westville-La Porte Route to Long Lane Road (4.1 mi)
Follows La Porte-Westville-Valparaiso Route, Lincoln Hwy to Long Lane			4.1								
Long Lane Rd, Joliet Rd to W 1800S	La Porte County	Rural County Road	15.9	22-24’	2-lane, striped rural section	Drainage ditches, surface drainage	NA	G	Union Mills, Mill Pond Park, Hanna, Library	US 30 crossing with parallel railroad, ungated crossing	Bike route. Clear markings at highway crossing, warning signs for cross traffic

Table 2-45: US Bike Route 35

Chesterton-Westville Connection

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/Trails Served	Barriers and Treatment	Recommended Infrastructure
E Tratebas Rd, N Calumet Ave to N 400E	Porter County	Country Lane, some residential clusters	2.5	20’	2-lane, rural section	Drainage ditches	NA	G			Bike route
N 400 E, Tratebas to E 900N	Porter County	Rural County Road	0.5	21’	2-lane, rural section	Drainage ditches	NA	G			Bike route
E 900 N, N 400E to County Line Rd	Porter County	Rural County Road	3.0	21’	2-lane, rural section	Drainage ditches	NA	G between N 400E to N 550E, NR to the east		Substantial low density residential development corridor	Bike boulevard in the short term to Westville. Upgraded road if necessary should include sidepath or shoulders
County Line Rd, E 900N to W 300S	County line	Rural County Road	0.37	21’	2-lane, rural section	Drainage ditches	NA	NR		Substantial low density residential development corridor	Bike boulevard in the short term to Westville. Upgraded road if necessary, should include sidepath or shoulders

Table 2-46: Chesterton-Westville Connection

Cedar Lake-Lowell-Kankakee Valley

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/Trails Served	Barriers and Treatment	Recommended Infrastructure
Lake Shore Dr, Cline Ave to W 133rd Ave	Cedar Lake	Minor arterial	0.8	30-31'	2-lane, no parking	Intermittent sidewalks and gravel shoulders; very limited space for infrastructure	8210	F	Lakefront and businesses, Lemon Lake County Park	Constrained right of way	Road improvement with a shoulder upgrade and repair to create a rideable and walkable shoulder area.
Morse St, 133rd to 145th Ave.	Cedar Lake	Minor arterial	1.0	28'	2-lane, striped, rural section	No sidewalks, drainage swales beyond narrow shoulders	5231	G	Town Grounds, Lassen's Resort, public lake access		Continuation of road improvement with a shoulder upgrade and repair to create a rideable and walkable shoulder area.
Morse St, 145th Ave to 171st Ave	Lake County, Lowell	Minor arterial	3.25	27'	2-lane, striped, rural section	Drainage swales	3116	G to 159th Ave, NR south to Lowell			Sidepath. Alternative bike route is 155th Ave to Cline and through Freedom Park to the proposed trail to Main St. Continuing connection through on-street routes or proposed trail to Clark Street.
Morse St/Mill St, 171st Ave to Commercial St	Lowell	Collector	1.16	22-27'	2-lane, striped, no parking	Discontinuous sidewalks except between Commercial and Main	3828	NR	Lowell VFW, Christian Academy, Town Center		Sidepath south to Main
Clark, Commercial to Belshaw Road	Lowell	Collector	0.9	21'	2-lane, striped, rural section	Drainage ditches	2582	G	Buckley Homestead County Park		Sidepath
Clark/Old Monon Rd/231st Ave from Belshaw to Pierce St	Lowell, Shelby	Rural County Road	6.2	22'	2-lane, striped, rural section	Drainage swales	282 on 231st Ave	G	Shelby		Bike route
Pierce St, 231st to 235th Ave	Shelby	Community main street	0.5	32'	2-lane, striped, parking off the roadway	Isolated sidewalk segments	847	G	Shelby Library, Community Park, and services		Bike route

Table 2-47: Cedar Lake-Lowell-Kankakee Valley



Kankakee Valley Route

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/Trails Served	Barriers and Treatment	Recommended Infrastructure
Parrish Ave, 236th to 241st Ave	Schneider	Community main street	0.55	22’	2-lane, striped, no parking	Sidewalk on west side on central two blocks of town	NA	G	Local services, US 41 access		Bike route
W 241st Ave/Cline Ave/W 245th Ave/ Whitcomb St/235th Ave from Parrish Ave to Pierce St	Schneider. Shelby	Rural County Road	6.64	22’ typical	2-lane, rural section	Drainage ditches and swales	NA	G	Mohawk Campground, Badal Wildlife Refuge		Bike route
Pierce St, 235th to 231st Ave	Shelby	Community main street	0.5		2-lane, striped, no parking	Isolated sidewalk segments	847	G	Shelby Library, Community Park, and services		Bike route
231st Ave/Harrison St (SR 55)	Lake County	Rural County Road	1.5	22-24’	2-lane, striped, no parking	Drainage swales	NA	G			Bike route
221st Ave/ Mississippi/217th Ave	Lake County	Rural Gravel Lane	4.0	18-20’	2-lane	Drainage ditches	NA	F	Grand Kankakee Marsh County Park, River levee trail		Gravel bike route

Table 2-48: Kankakee Valley Route

Hebron-Kankakee Route

Street Segment	City or County	Street or Road Type	Length (mi)	Channel Width	Lane Configuration	Adjacent ROW Conditions	ADT if known	Greenway Map Rating	Destination/Trails Served	Barriers and Treatment	Recommended Infrastructure
S Main, Pratt to E 173rd Ave	Hebron	Community main street	1.55	50’ in town center, 38’ for turn lanes, 28’ basic	2-3 lane, no parking	Sidewalks through city	7096-10700	F	Town center, Hebron school campus, American Discovery Trail		Upgrade sidewalk on one side to sidepath standard, extending to 173rd
173rd Ave, Main St to Clay	Lake County	Rural county road	4.0	19’	2-lane, rural section	Drainage swales	NA	NR	American Discovery Trail route		Bike route. ADT signage
Clay, 173rd Ave to SR 2	Lake County	Rural collector	1.0	24’	2-lane, rural section	Drainage ditches	NA	G	Lodging and freeway services at SR 2 interchange with I-65		Bike route
Clay, SR 2 to County Park	Lake County	Rural collector	4.5	22-24’	2-lane, rural section	Drainage ditches	NA	G	Grand Kankakee Marsh County Park		Bike route

Table 2-49 Hebron-Kankakee Route







3 CLIMATE & ENVIRONMENT

Finding Meaning

Existing Conditions

Climate Context

Climate change is the greatest environmental challenge of the 21st century. It poses a serious threat to Northwest Indiana's economy, quality of life, and natural resources. Addressing this challenge is essential to creating a healthier, safer, and more equitable world. Climate scientists expect that with current trends in fossil fuel use, Americans will see more intense storms, flooding, extreme heat events, and droughts in the future. If not addressed, these impacts will impair our communities, residents, environment, and economy. Northwest Indiana has an unparalleled opportunity to make changes to mitigate climate change while also creating jobs and improving our quality of life. Action is required at all levels, and local governments have a unique role to play in building low-carbon communities.

NIRPC is joining an increasing number of regional governments committed to addressing climate change at both regional and local levels. NIRPC recognizes the risks that climate change poses to Northwest Indiana residents. It is critical to address the impacts of a changing climate, such as flooding and heat waves, and to adapt systems and infrastructure accordingly. Ultimately, local action is necessary to reduce Northwest Indiana's contribution toward the problem of climate change and adapt to its current and future effects.

Climate Action Northwest Indiana (CAN) will consist of three volumes making up the Northwestern Indiana Regional Climate Action Framework and the multi-stakeholder effort to encourage long term action, engagement, and implementation of climate actions. The three volumes of the Framework will include the Northwest Indiana Regional Greenhouse Gas Inventory, the Northwest Indiana Regional Climate Action Planning Framework, and a Northwest Indiana Regional Climate Resilience Plan. These regional documents will be utilized to guide and provide technical support for local government planning and action around carbon emission reduction and climate resiliency planning.

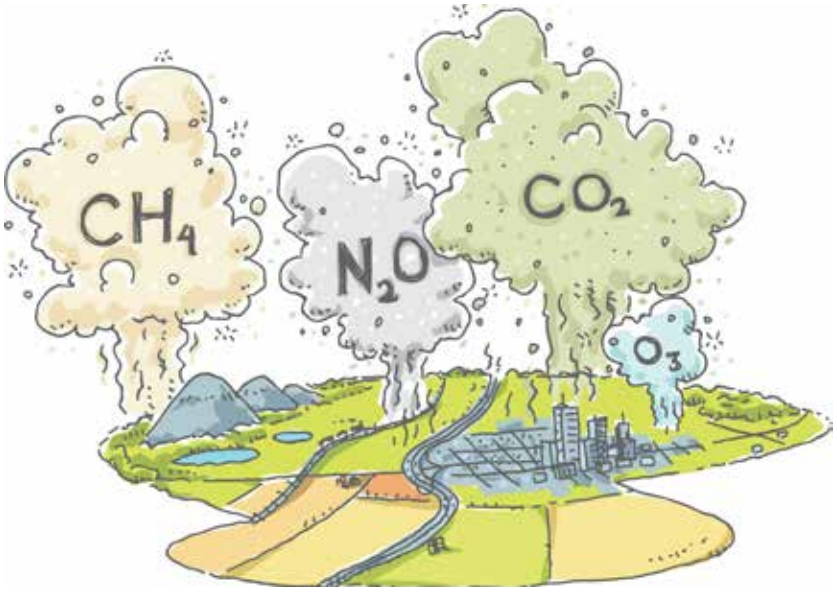
NWI 2050+ summarizes current predictions of climate change and risks to our region and provides a brief description of all major Greenhouse Gas (GHG) sources in our 2017 Baseline Inventory. A general forecast of future emissions in 2030 and 2050 with a business-as-usual scenario is developed. Greater detail is provided on transportation and mobile sources and their interdependence with land use, the sectors most relevant to *NWI 2050+* as the region's Metropolitan Transportation Plan. The remaining source sectors will be presented in greater detail in the completed NWI Regional Climate Action Planning Framework.

What is Climate Change?

Climate change is the result of the accumulation of greenhouse gases (GHG), such as carbon dioxide (CO2) and methane (CH4) in the atmosphere derived, primarily, from burning fossil fuels and land use changes. Although the greenhouse effect is natural and keeps the Earth warm, human activity has caused increased accumulation of GHG in the atmosphere, resulting in climatic changes.

The Intergovernmental Panel on Climate Change's (IPCC) Sixth Assessment Report confirms that human activities have unequivocally caused an increase in carbon emissions[1]. Between 2011 and 2021 concentrations of the three most significant greenhouse gases, atmospheric CO2, CH4, and nitrous oxide (N20) have increased 6.2%, 3%, and 3.2% respectively[2]. World-wide, there is high confidence that if these concentrations continue to increase at current rates, the average global temperature will increase 2.4°F between 2030 and 2052. In some parts of the globe, the average temperature increase will double or even triple.

1 IPCC, 2021: Summary for Policymakers. In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [MassonDelmotte, V., P. Zhai, A. Pirani, S. L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M. I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J. B. R. Matthews, T. K. Maycock, T. Waterfield, O. Yelekçi, R. Yu and B. Zhou (eds.)]. Cambridge University Press. In Press.
2 Climate Change Indicators: Atmospheric Concentrations of Greenhouse Gases | US EPA



Greenhouse Gas	GWP Factor	# Tons of CO2e per ton of individual GHG
Carbon Dioxide (CO2)	1	1
Methane (CH4)	25	25
Nitrous Oxide (N20)	298	298

Table 3-1: Global warming potential of major greenhouse gases

CO2, CH4, and N20 are the three greenhouse gases most emitted from human activity. They are not all created equal in terms of their climate change effect. The amount of time they remain in the atmosphere, their sources, and their reduction strategies there are vast differences. To simplify the discussion and provide a common denominator, methane, and nitrous oxide each have global warming potential factors expressed in terms of CO2 equivalents (CO2e). Table 3-1 compares the CO2e for these three most common compounds. Using this table, you can calculate a single CO2e value for an emission source based on its emissions of any combination of CO2, CH4, and N20.

GHG also include four classifications of fluorinated hydrocarbons that can contribute thousands of CO2e per unit. However these are not typically included in community inventories here because they are typically only released in measurable quantities by manufacturing facilities. You can find more information about fluorinated hydrocarbon emissions on EPA's Facility Level Information on Greenhouse Gases Tool (FLIGHT).

The energy production, industrial, and transportation sectors have dominated these emission increases. With the current trajectory of population growth, urbanization, and reliance on personal vehicles; global transportation emissions are expected to double by 2050. Given the critical impacts of climate change on humanity, the time to act to reduce GHG emissions and our carbon footprint is now.

With more than 80% of Americans living in urban areas, local governments can play a powerful role in addressing climate change. The design of cities—how we use our land, how we design our buildings, how we get around—greatly impacts the amount of energy we use and the volume of GHG emissions we produce. Within the next 20 years, we expect another 1.5 billion residents in the world's cities. It is critical that regions like Northwest Indiana demonstrate that it is possible to dramatically reduce GHG emissions while creating more vibrant and prosperous places to live, work, and play.

How will Climate Change impact Northwest Indiana?

The Purdue Indiana Climate Change Impacts Assessment predicts that average Indiana temperatures will increase 5 - 6°F by 2050[3]. Since 2020, the average warmest month temperature has been 78.4°F, and the average coolest month temperature has been 15.1 °F. By 2050 these averages will be more likely to be 84.4°F in summer and 21.1°F in winter. What does this mean for the region's already unpredictable weather? A doubling or tripling of the number of extreme high heat events (Table 3-2) and a 30-70% increase in the number of extreme rain or snow events (Table 3-3).



Figure 3-1: NIOSH-OSHA Heat Safety App

3 Indiana's Past & Future Climate: A Report from the Indiana Climate Change Impacts Assessment – Indiana Climate Change Impacts Assessment (purdue.edu https://docs.lib.purdue.edu/cgi/viewcontent.cgi?article=1000&context=climatetr)

What do these changes mean on the ground? Extreme heat events can cause increased emergency room visits and even deaths due to dehydration and heat stroke, especially for vulnerable populations such as children and the elderly. They can contribute to increased air conditioning costs in public facilities, lost learning days in schools without central air, and increased risks of fire. Extreme precipitation events can increase the risk of catastrophic flooding as well as the frequency of nuisance flooding leading to road closures, residential losses, and infrastructure failures.

Climate Equity in Northwest Indiana

Government action alone is not enough to address climate change; everyone must be a part of the solution. Currently, however, the benefits and burdens of climate impacts and actions to mitigate them are not equitably shared. Communities of color and low-income populations have historically been underserved by programs and investments and underrepresented in decision making on climate policy. Lack of low-carbon, safe, transportation options, inefficient housing, vulnerability to flooding and extreme heat, and lack of access to healthy food are examples of disparities experienced by some communities. If not addressed, these inequities could result in inequitable benefits from climate actions as well as inequitable burdens of the impacts of climate change. These inequities primarily result from ongoing institutional bias and historical practices that have resulted in the inequitable distribution of resources and access to opportunities.

Average Number of Extreme Heat Events per Year in Northwest Indiana				
Timeframe	**High Heat Days (High > 90 °F)**	**High Heat Nights (Low > 68 °F)**	**High Heat Days and Nights**	**Total Days with Extreme Heat Events**
Current	8	6- 8	5-7	19 -23
2050s - Medium Emissions Scenario	21-22	10-12	24- 27	56-60
2050s - High Emissions Scenario	24-26	11-13	34-37	70-73

Table 3-2: Current and forecasted average number of Extreme Heat Events per year

Average Number of Extreme Precipitation Events Per Year (> 2 inches rain per day or > 20 inches snow)	
Timeframe	**Number of Extreme Precipitation Events**
Current	10 - 13
2050s - Medium Emissions Scenario	12 - 16
2050s - High Emissions Scenario	13 - 17

Table 3-3: Current and forecasted average number of Extreme Precipitation Events per year



Culvert washout at Walker Brook in Becket, Massachusetts

Climate change is likely to amplify the impacts of these existing inequities, and if intentional action is not taken, frontline communities such as lower income, communities of color, unhoused, outdoor workers, the very young, and older residents will disproportionately bear the burdens of climate change impacts. In addition, the many economic and health benefits of carbon reduction investments may not be shared equitably across the region, especially among people of color and low-income communities.

All communities need the ability to shape their own present and future. Equity is both the means to healthy communities and an end that benefits us all. Equity should be a major concern for addressing climate change. Vulnerable populations, such as the elderly or chronically ill, low-income individuals, and people of color are more at risk of experiencing the impacts of climate change. These communities already experience institutional and systematic disadvantages that result in less access to resources, capital, and services. Climate change can exacerbate these gaps.

Climate equity ensures the just distribution of the benefits of climate protection efforts and alleviates unequal burdens created by climate change. This requires intentional policies and projects that simultaneously address the effects of and the systems that perpetuate climate change and inequity. By targeting programs and investments and making changes to services or infrastructure before extreme events happen, we can mitigate the most devastating impacts to already vulnerable populations.

Baseline Greenhouse Gas Emissions in Northwest Indiana

In 2021, NIRPC, working with Earth Charter Indiana, the Indiana University Environmental Resiliency Institute and six climate fellows, created the first regional GHG Emissions Inventory in Indiana. The inventory was completed using the Global Protocol for Community-Scale Green House Gas Emission Inventories (GPC), as assembled within ClearPath, an online tool of the Local Governments for Sustainability (ICLEI). In addition to the three-county inventory produced for the region, local community inventories were developed for 13 different municipalities to use as a baseline for a regional Climate Action Planning Framework. Because the cities of Gary and Michigan City had previously completed inventories for 2017, that year was chosen as the regional inventory baseline to align all efforts.



Overall GHG emissions in Lake, Porter, and La Porte counties in the base year of 2017 were estimated to be 54.5 million metric tons (Figure 3-2). Not surprisingly in an economy built on heavy industry, industrial energy and industrial process emissions totaled 43.3 million metric tons, 79.6% of Northwest Indiana's entire carbon footprint. Transportation and mobile sources were the next largest source category at 4.8 million metric tons per year, representing 15.6% of the annual baseline. Residential and commercial energy use generated 5.5% and 4.8% of the emissions respectively. Overall, solid waste management and water and wastewater treatment totaled less than 1% of the region's baseline GHG emissions.

At the regional scale, the top five source sectors generate 99.4% of regional GHG emissions. The top two source sectors, industrial energy use and industrial process and fugitive emissions, producing 79.6% of the regional climate impact, are largely out of regional or local government influence. Transportation and mobile sources, residential energy use, and commercial energy use are the most regionally significant source categories with the most potential to be influenced by regional strategies and local government actions and will receive the greatest focus. Solid waste management and water and wastewater management are relatively small sources regionally, but at the local level their contribution can be more significant, and local governments can have significant influence.

The mixed group of agriculture, forests, and other land use, referred to as AFOLU, will also be covered in some detail. Forests, non-forest tree canopy, and conversion of forest to other land use types can both generate and remove carbon from the atmosphere. These factors are calculated as a net change over time in a free online ICLEI mapping tool, which reports the difference between carbon absorbed by trees and that emitted by loss of trees or conversion of forests as results as a net flux of CO_2 over time. This net flux is then grouped with emissions from livestock manure management. AFOLU includes factors that can both generate carbon emissions and absorb them. As a result, the Global Protocol used for the inventory reports it as a net change over time rather than an annual emission. Northwest Indiana's AFOLU between 2011-2016 had a net result of reducing CO_2e by 40 metric tons.

At first glance, the heavy slant of the regional baseline inventory toward industrial energy and process emissions might lead local governments and residents to believe that efforts to reduce emissions from other sources are insignificant. However, the opposite is in fact true. The largest industrial employers in Northwest Indiana operate within "hard to abate" sectors. "Hard to abate" sectors are those energy intensive industries that produce basic materials such as steel, petrochemicals, aluminum, cement, and fertilizers[4]. A look at the region's Lake Michigan shoreline clearly shows that Northwest Indiana's economy is built on an interdependent foundation of those energy-intensive, hard to abate industries.

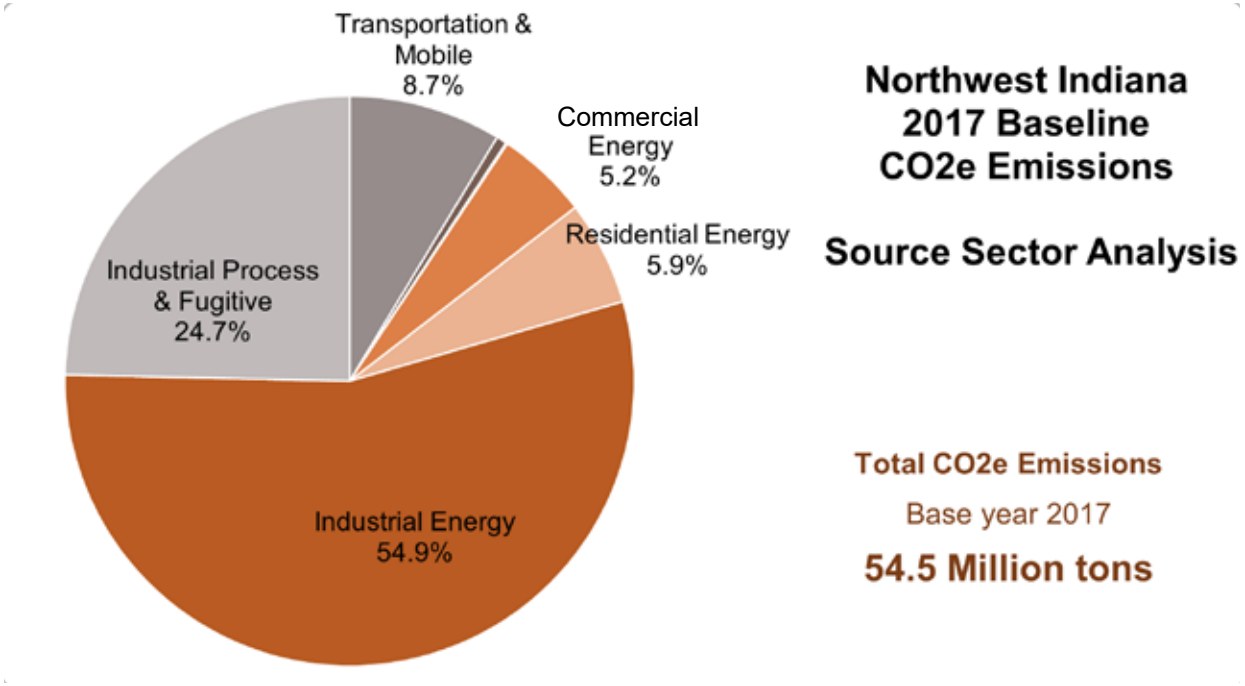


Figure 3-2: Northwest Indiana 2017 Greenhouse Gas Emissions by Source Sector

Many of the technological innovations needed to reduce emissions or remove and permanently sequester carbon from their energy sources or waste streams are still in research and development mode, not ready for full scale implementation.



4 Unlocking the "Hard to Abate" Sectors | World Resources Institute (wri.org)

In addition to the technical hurdles to decarbonization these industries face, operations are heavily regulated at the federal and state level. The economics of the commodities they produce are influenced by global scale economic factors and international trade agreements. Some discussion of research and pilot future control strategies will be discussed in the NWI Regional Climate Action Framework. Realistically, regional planning and local government action have very little ability to impact GHG emissions from these sectors. The technical reality of Northwest Indiana's "hard to abate" industries means that NIRPC, local governments, businesses and residents work even harder to reduce emissions from sectors we can influence with simple changes that are often the economically smart thing to do anyway.

Another important part of the GHG equation is the quantity of carbon, nitrogen, and methane absorbed by forests and trees. NIRPC used the Land Emissions and Removals Navigator (LEARN) interactive mapping tool to estimate removals by various land uses on a per acre basis, as well as emissions from deforestation per acre to provide the net impact of trees on the region's carbon footprint.

NWI 2050+ will first provide a brief overview of top four non-transportation source categories of GHG emissions in the region. The Transportation and Mobile Sources group will then be addressed in a more substantial way. Finally, we will discuss the impacts of land use changes, forest and tree canopy loss on our regional climate footprint.

For complete information regarding the emissions inventory and forecast, including methodology and supporting data, please reference the NIRPC 2017 Regional Emissions Inventory Report located at www.nirpc.org/climate/.

Industrial Energy Use

Energy usage at Northwest Indiana industrial facilities is by far the largest source of greenhouse gas emissions in the region. As shown in Figure 3-1, Industrial Energy usage generated close to 55% of the Northwest Indiana GHG emissions in 2017 Emissions from electricity use were built from NIPSCO and Kankakee Valley Rural Electric Membership Corporation (KVREMC) data for industrial customers. Emissions from natural gas usage were calculated from NIPSCO natural gas usage data for industrial customers. Lastly, fuel use and emission data reported to US EPA by large facilities was retrieved from the US EPA Facility Level Information on Greenhouse Gases Tool (FLIGHT) and incorporated into ClearPath's Combustion Emissions from Stationary Sources calculator. Fuels used in the "Other Fuel Combustion" section of Figure 3-3 include blast furnace and coke oven gas, residual fuel oil, distillate fuel oil, bituminous coal, propane, used oil, and other biomass gas, some of which would be waste products if not recycled for internal energy generation.

Emission reductions from this source category are already forecasted due to NIPSCO's conversion from coal fired electricity generation to natural gas and renewables. Many corporations also have publicly available energy efficiency and greenhouse gas emission reduction goals and strategies.

Potential for Hydrogen Fuel use in NWI Industries

Expanding production and uses of Hydrogen Fuel is an important strategy the Department of Energy is pursuing toward "Enabling A Low-Carbon Economy." Potential new uses for hydrogen includes replacing coke and natural gas as a reducing agent in iron and steel production, de-carbonization of cement, fertilizer, and petrochemical industries, long-haul and heavy-duty trucks, trains, ships, and on-road passenger transport, and energy storage. In 2020 Cleveland-Cliffs, owner of fully-integrated steel mills in both Burns Harbor and Indiana Harbor opened the Great Lakes region's first direct reduction iron plant in Toledo. The facility utilizes Hydrogen and Carbon Monoxide gases to reduce iron ore to hot-briquetted iron, with much fewer carbon emissions than traditional coke processing.



Carbon Capture and Storage (CCS)
CCS is a critical strategy in development for addressing carbon dioxide (CO_2) emissions from "hard to abate" industries.
Investments continue to grow in research and development of new or improving technologies and infrastructure to:

- Remove CO_2 from industrial emissions before it can reach the atmosphere,
- Transport compressed liquid CO_2 to safe long-term storage sites,
- Identify locations with the right geology and infrastructure to safely inject, store, and monitor CO_2 thousands of feet below active or potential drinking water sources.

The BP Whiting Refinery, NiSource, and Purdue University NW are all part of Midwest Alliance for Clean Hydrogen (MachH_2) which has recently submitted a full application for $1.5 billion to build a Midwest Regional Clean Hydrogen Hub with Northwest Indiana in its center. Removing the carbon dioxide from natural gas results in production of hydrogen gas, a clean fuel with no greenhouse gas impact.

Indiana has many geologic formations with potential to be ideal for long term liquid carbon storage. In 2022 the state passed HEA 1209, which enables landowners to capture the value of the carbon storage capacity of their property. Northwest Indiana has the BP Whiting Refinery which is preparing to invest in CO_{2e} capture technology.

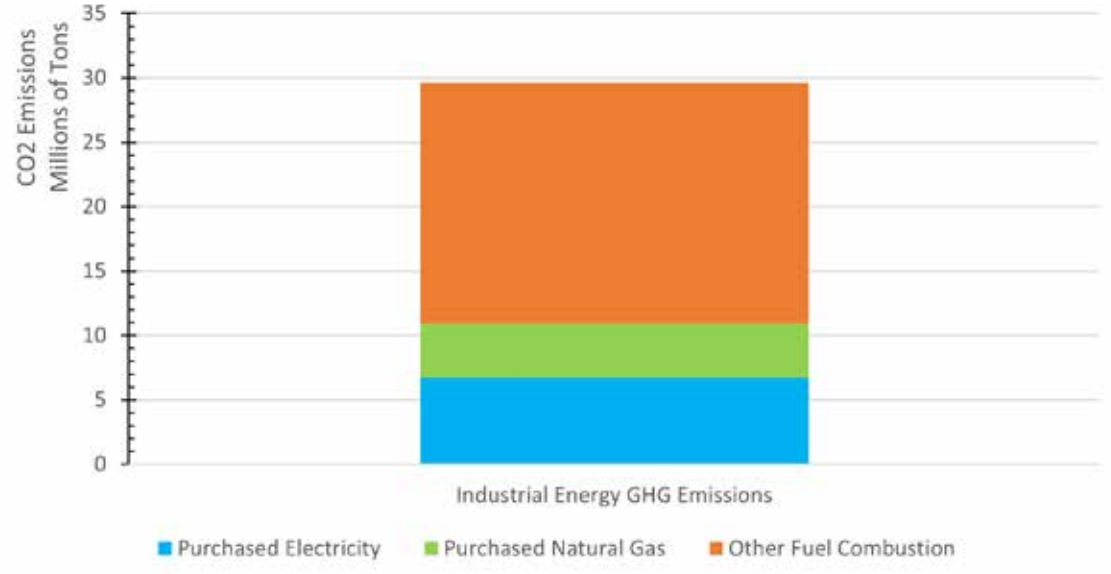


Figure 3-3: 2017 baseline greenhouse gas emissions from industrial energy

Industrial Process and Fugitive Emissions
Industrial Process and Fugitive Emissions are the second largest source of GHG emissions in Northwest Indiana. Process Emissions are those that originate from a manufacturing process unrelated to the energy used to do it. They can be generated by chemical processes involved in manufacturing, by chemicals used for refrigeration, or by petroleum products used for lubricants. These are separately inventoried because the Industrial Process emissions would occur regardless of how little carbon emission the energy input generates.

A good example for understanding industrial process versus industrial energy GHG emissions can be found in the process of producing cement from limestone. Cement, the powdery binder that holds gravel and sand together to form concrete, is made by baking limestone at very high temperatures in enormous kilns which converts it to lime and clinker, important ingredients in cement. The GHG emissions from generating the energy used to heat these kilns is in our inventory under Industrial Energy Use. The CO_2 released in the chemical reactions occurring as the heated limestone converts to lime and then to clinker is captured in the inventory as an Industrial Process emission.

Fugitive Emissions are also included in this category. In the context of climate protocol, these are emissions from the handling, storage, and movement of fossil fuels. Examples in Northwest Indiana might include emissions from natural gas pipeline leakage; coal storage piles; and processing, storing, and transporting gasoline. Fugitive Emissions are also part of the information industries must report to EPA and appear in FLIGHT.

Altogether, this category produced almost 25%, or 319,000 tons of CO2e generated in Northwest Indiana during our baseline year.

Residential Energy GHG Baseline Emissions

The residential energy portion of the GHG emissions inventory is derived primarily from electricity and natural gas usage of NIPSCO residential customers aggregated by zip code. KVREMC residential customer data aggregated energy use, as well as estimates of propane, wood, and other heating fuels used based on information in the US Census Bureau's 2017 American Community Survey. In 2017, residential energy use was responsible for 3.2 million tons of GHG emissions, almost 6% of the region's total. While residential energy is a small source of emissions compared to the industrial categories at the regional scale, in many local communities it is relatively more significant. Local climate action plans encouraged through the NWI Regional Climate Action Framework will include policy tools available to local governments to reduce them through encouraging energy conservation. Regionally, residential energy GHG emissions will benefit from NIPSCO's ongoing investments to reduce the carbon intensity of their energy production. Increasing extreme heat events could easily lead to an increase in electricity use for air conditioning during summer months.

Household energy costs can be an equity issue. While in most of Northwest Indiana, the average energy burden as a percentage of income is between 2% and 3%, 19 census tracts have been identified by the Climate and Economic Justice Screening Tool as energy cost disadvantaged. Energy cost disadvantaged is defined as being in the 90th percentile nationally of energy cost as a percent of household income and being in the 65th percentile for low income. Increasing home energy efficiency in pursuit of GHG emissions reduction can be an investment in not only strictly efficiency but also neighborhood equity.

Commercial Energy GHG Baseline Emissions

Commercial energy GHG emissions were inventoried in the same manner as residential energy, by aggregating NIPSCO and KVREMC commercial customer electricity and natural gas data. This source category generated 2.85 million tons of carbon dioxide equivalents in 2017, 5.2% of the regional total. Similar to the residential energy source, this category will be thoroughly addressed in the NWI Regional Climate Action Framework. The Framework will include tools governments can use to address these sources at the local level within their individual climate action plans.

Customers classified as commercial by the utilities may also include a variety of public facility types that are not traditionally thought of as "commercial." Examples include NICTD's South Shore Commuter Rail, local drinking water utilities, and wastewater treatment facilities. Strategies to address these institutional sources will be presented in Transportation or in Water and Wastewater Treatment. Although these facility types are further discussed in Transportation or Water and Wastewater source categories for purposes of local climate action planning, for the regional inventory they are captured under commercial energy to reduce any risk of double counting emissions across categories.

Transportation and Mobile Sources GHG Emissions

Nationally, the transportation sector represents about 29% of total U.S. GHG emissions each year. According to the results of the ClearPath activity-based emission models, transportation and mobile sources generated 3.8 million metric tons of CO2e in 2017, or 16% of Northwest Indiana's GHG emissions.



These emissions can be further broken down by generating activity and fuel source. Table 3-3 details mobile source carbon dioxide equivalents by category. Of the six major categories, commuter rail, aviation, and marinas together contribute less than 1% of the mobile source emissions.

These emissions can be further broken down by generating activity and fuel source. Table 3-4 and Figure 3-4 details mobile source CO2e by source category. On-road emissions are further broken down into gasoline and diesel fueled vehicles because emissions from each type of fuel can be significantly different. Of the six major categories, commuter rail, aviation, and marinas together contribute less than 1% of the mobile source emissions at the regional scale and will not receive further discussion here. For individual cities or towns, they may be more significant and receive additional attention.

Public Transit GHG Emissions for the various bus services within the region are captured here within the On-Road Gas and On-Road Diesel emissions shown in Table and Figure 3-4. Emissions from the South Shore Commuter Rail are included within the Commercial Electricity source category discussed above. Alltogether, Public Transit generated approximately 22 thousand metric tons of CO_{2e} in 2017, or approximately 0.4% of all transportation emissions in the region. Public Transit emissions ranged from 1.1 to 4.1 CO_{2e} tons per thousand revenue miles and between <1 and 13 tons per thousand passengers depending on fuel type, transit type, and other factors. This diversity will require emission strategies to be determined on an operator-by-operator basis.

Mobile Source Type	2017 CO2e Emissions (Metric Tons)
On-Road Vehicles- Gas	3,310,000
On-Road Vehicles-Diesel	1,900,000
Non-Road Mobile (Construction and landscaping equipment)	552,000
Freight Rail	212,000
Commuter Rail	17,114
Aviation	10,000
Marinas	4,200

Table 3-4: Greenhouse Gas emissions from mobile source types

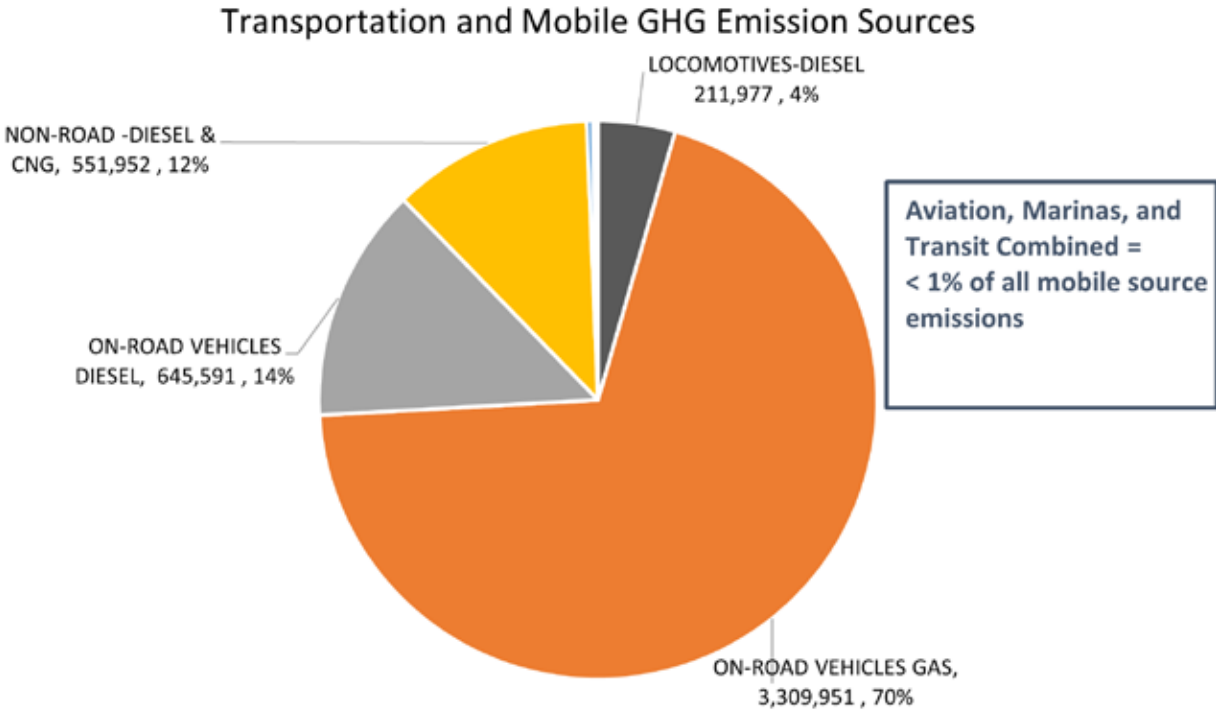


Figure 3-4: Relative contribution of significant mobile sources in Northwest Indiana

On-Road Gasoline Fueled Vehicle Emissions

On-Road Gasoline Fueled Vehicle GHG Emissions are essentially from passenger cars and trucks driven by residents and visitors throughout Northwest Indiana. This category is truly one in which every driver in the region contributes to the problem and can make a difference in the solution. In 2017, gasoline fueled vehicle emissions were by far the largest source of GHG in the transportation category, contributing 3.3 million tons of carbon dioxide equivalents. This represents 6% of the region's total carbon footprint, but 70% of NWI's transportation and mobile source category. It averages 4.2 tons per year of GHG per person per year, which is the same weight as two fully grown hippopotami.

On-Road Gasoline Fueled Vehicle Emissions were calculated within the ClearPath inventory module using vehicle miles traveled (VMT) developed for the *NWI 2050* Air Quality Conformity demonstration. 2017 vehicle registrations for the three counties were obtained from the Bureau of Motor Vehicles. ClearPath applies vehicle type percentages to annual vehicle miles traveled to arrive at annual emission totals for major greenhouse gases, which are reported here in CO2e. Table 3-6 shows the values entered into ClearPath for factors driving the GHG emissions inventory for this source are Annual VMT and light duty vehicle fleet mix. For purposes of this inventory, all VMT were considered to be In-Boundary Scope 1 Emissions. In future years, NIRPC will generate vehicle GHG emission inventories using the EPA MOVES model, which should result in more accurate division of emissions into Scopes 1 and 3.

Annual Vehicle Miles Traveled	Annual Energy Used MMBTU	Emissions Per Capita (MT CO2e)	Emissions per Mile (MT CO2e)	Percent Motorcycles	Percent Passenger Vehicles	Percent Light Trucks
8,716,745,286	46,683,966	4.33	380	3.58%	82.71%	9.40%

Table 3-5: 2017 Baseline Input Conditions for Gasoline Fueled Vehicle GHG

Mitigating GHG emissions from this source category will require the people of Northwest Indiana to make changes in everything, from each community's built environment, to each family's vehicle purchases, to each individual's daily traveling decisions. Driving less, sharing rides with neighbors, co-workers, or transit, and driving low or no emission vehicles are the key strategies to reduce climate changing pollution from gasoline fueled vehicles.

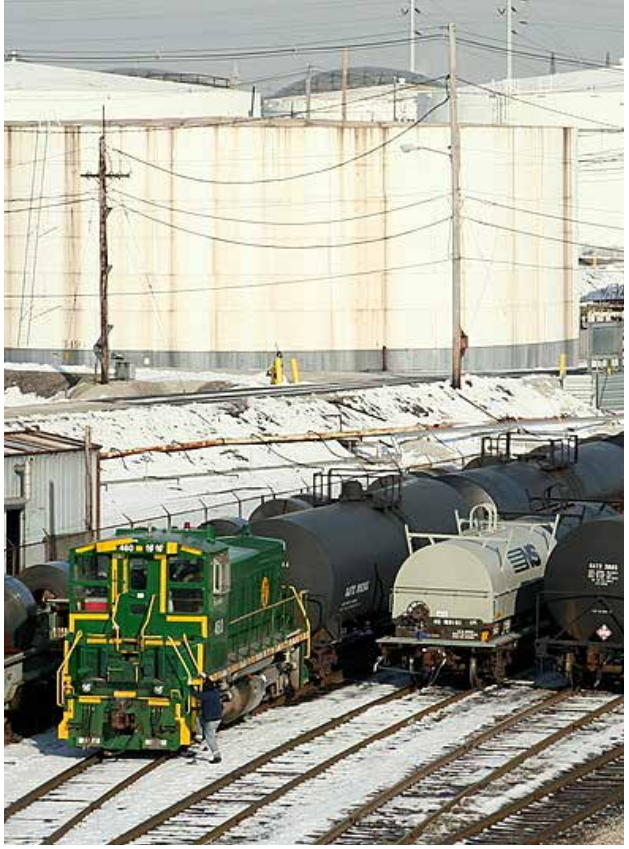


On-Road Diesel Fueled Vehicle Emissions

Heavy duty diesel vehicles make up 4.3% of the annual vehicle miles traveled in Northwestern Indiana, but in 2017 generated 14% of the GHG emissions from the transportation and mobile source sector, over 645,000 tons. Transportation in general, and trucking in particular, is an important growth sector in the region due to our transportation reliant industrial sector and location within a 24-hour drive of 80% of the US population. Truck transportation and warehousing is a growing economic sector in the region. Between 2010 and 2019, employment in transportation and warehousing grew by 46.4%.

On-Road transport makes up one third of freight movement in NWI by tonnage and more than half by economic value. In 2017 trucks carried 69 million tons of freight in the region. A detailed breakdown of the commodities trucked in the region is presented in Table 4-12 of the Freight Chapter. This table shows that activity in this emission category is closely tied to activity in the industrial facilities directly responsible for 75% of the region's GHG emissions.

While a significant segment of the heavy-duty truck traffic in the region serves our companies and employers, the confluence of four Interstates (I-65, I-80, I-90, and I-94) meeting in our region ensures that there is also a major segment without local origins or destinations.
In addition to heavy duty trucks, on-road diesel vehicle emissions also include a diverse assortment of other vehicles often used in the public sector such as school buses, larger transit buses, garbage trucks, and street sweepers.



Several recommendations in the Freight section of this plan would also have significant potential to reduce GHG emissions from this sector by reducing the carbon intensity and energy efficiency of the trucking industry in Northwest Indiana.

- Investments in additional truck parking and truck parking information systems to reduce the average hours per day truck drivers spend looking for parking, exacerbating congestion and wasting fuel.
- Expanding investments in the designated Alternate Fuel Corridors to ensure growing capacity for trucks fueled with Compressed Natural Gas, Propane, and ultimately Hydrogen fuel.

Rail Sources

Apart from direct heavy industry production, Northwest Indiana also sees heavy emissions from freight rail, which operates in high volumes in the region. The average freight train car carries 4,082 tons of material, and doing so requires heavy emissions from its diesel engines. The most realistic pathway to reducing carbon emissions in the region is to increase locomotive fuel economy. Fully 4,693,594 tons of Northwest Indiana's annual CO2 emissions come from the freight rail sector. Here again, the size of operations and energy demands inherent to the industry make decarbonization a difficult milestone to reach. But that is not to say that freight rail isn't improving in efficiency, or that plans don't exist to fully decarbonize. Since 1990, fuel economy in the industry has improved by more than 40%, and there are incremental efficiency improvements year over year (Figure 3-5).

The nature of freight rail in Northwest Indiana makes it the most difficult emission source to quantify and to distinguish between in-boundary and out-of-boundary scope. Indiana Department of Transportation (INDOT) data shows approximately 850 miles of active freight rail in Northwest Indiana, in addition to multiple switching yards, side rails, and multi-modal terminals[5]. Multiple eastern rail companies converge on Chicago around the southern tip of Lake Michigan, creating a highly congested rail pinch point in Northwest Indiana.

5 Indiana Department of Transportation. 2006. Rail System of Indiana

For the purposes of this document, aggregate emissions estimates, forecasting, and discussion for the rail sources are separated into Class I Passenger, Class I Freight, and Class II Railroads. The South Shore Line Commuter Rail system is discussed under Public Transit. Class I Railroads are defined by the Interstate Commerce Commission and governed by the Surface Transportation Board. The only Class I Passenger Rail source is Amtrak. Class I Railroads are currently defined as those with over $943.9 million in annual revenue. Class I Railroads with track miles in Northwestern Indiana include Amtrak, Norfolk Southern (NS), Canadian National (CN), and CSX Transportation (CSXT). Together these four rail companies own 628 miles of linear track in the region, 71% of the total.

The other rail carriers operating in Northwest Indiana are designated Class III or short-line railroads or they are switching and terminal railroads. These include Chicago, South Shore, and South Bend (CSSB) Railroad, Chicago, Ft. Wayne and Eastern Railroad (CFER), Gary Railway (GRW), and Indiana Harbor Belt (IHB). Together these rail companies own almost 200 linear miles of track, a figure which doesn't fully account for multi-line tracks at switching yards and industrial facilities throughout the region. NIRPC was unable to find GHG emissions data or fuel usage data for any of these specific rail carriers. However, the CFER is one of over one hundred owned by the Genesee and Wyoming Railroad (GWRR), which does provide an annual Sustainability Report. For purposes of developing emissions estimates, the GWRR data was applied to all local railways.

Rail Class	NWI Miles	% of Miles	NWI CO2e (Metric Tons)	% of Rail CO2e
Class I Passenger	20.4	2%	29	<1%
Class I Freight	628.1	71%	146,000	69%
Class III Freight	198.8	23%	66,000	31%

Table 3-6: Miles of rail and relative GHG emission in Northwest Indiana by Class. (Rail miles may not include rail leased from other carriers.)

Although the linear miles of track are fairly constant over time, the rail industry structure and corporate ownership of different rail operators change somewhat frequently. NIRPC was able to obtain corporate reports with GHG emissions and/or diesel fuel usage for Canadian National, Genesee & Wyoming (owners of CFE among many other short haul regional railroads), Anacostia Rail Holdings Company (owner of CSSB), and CSX. The Genesee and Wyoming GHG emission profile was applied to all listed Class III Railroads.

Within the context of community climate action planning, freight railroads are a source of emissions that local governments have little to no control over. However, all the Class I Railroads, as well as the Genesee and Wyoming (corporate owner of CFE) do include GHG emissions and emission reduction trends or goals in their 2017 sustainability or responsibility reporting. For example, CSX reported in 2017 that they had reduced GHG emission intensity by 5.1% and energy intensity by 4.7% between 2011 and 2017. NIRPC will build achievement of corporate carbon intensity goals into future emission reduction scenarios.



There is recognition among freight rail corporations that GHG reductions are critical over the coming decades. For example, Canadian Pacific, a Class I rail network operating in Northwest Indiana, released a Climate Strategy plan in 2021, establishing science-based targets for its Scope 1, 2, and 3 emissions. Using fuel-saving technologies like Trip Optimizer and its Locomotive Modernization program, Canadian Pacific plans to update its locomotive fleet and targets a 38.3% reduction in locomotive GHG emissions by 2030 (from a 2019 emissions baseline). Other Class I rail networks like CSX and Union Pacific have sustainability plans of their own targeting similar fuel efficiency reductions. Figure 3-4 shows that while business as measured in Gross Ton Miles (GTM) has increased almost 400% over the past 30 years, the amount of GHG emitted per GTM has decreased by 30%. NIRPC will incorporate future reductions in rail carbon intensity commitments in future climate planning scenarios.

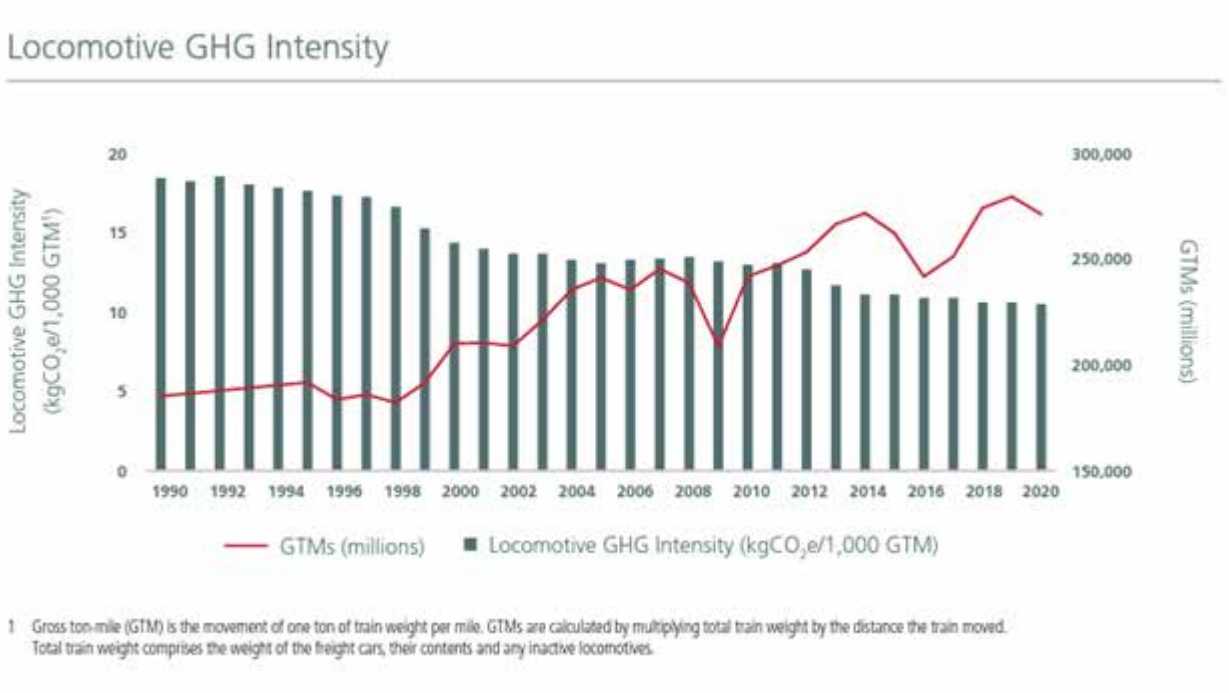


Figure 3-5: Locomotive greenhouse gas intensity

Indiana Harbor Belt Retrofit Project wins VW Settlement Funding

IHB VW Settlement Emission Reduction Project

With the support of NIRPC's Green Fleet Partner, Drive Clean Indiana, one regional Class III Railroad was awarded close to half a million dollars in VW Settlement funds for a project to retrofit 33 locomotives in Northwest Indiana with Auxiliary Power Units (APUs). The locomotives, ranging 45 to 57 years old typically idle their 1500-3000 horsepower engines on average 3,500 hours per year to keep the engines from freezing. The VW funds will retrofit the locomotives with APUs that can run air conditioning, heat, electric power, lights, other onboard equipment, and prevent frozen engines with a mere 28 horsepower instead of the entire engine during those idling hours. The project will reduce IHBs diesel fuel usage by 543,800 gallons per year, and eliminate 6,189 tons of CO2e emissions.



Ultimately, freight rail will have to move away from diesel locomotives to achieve full decarbonization, requiring new technologies for locomotive engines that can match the carrying capacity of diesel. There is currently no technology that can match diesel locomotives in this category, but there are several long-term pathways to achieve this goal. Hydrogen fuel cell engines are in the early stages of deployment in several small commuter scale scenarios. The San Bernadino County Transportation Authority in California plans to open a hydrogen rail line in the County by 2024, and the Alstom Coradia LINT model has several passenger locomotives operating in Germany. The main challenge to hydrogen fuel is that it provides significantly less energy by volume than diesel, and so its application in hauling typical freight payloads is currently limited. There is also the climate change concern that most hydrogen is captured and processed as a byproduct to natural gas drilling operations, making their effect on emissions greatly reduced. The Department of Energy has called for further investigations into hydrogen locomotive reliability, as well as fueling infrastructure needs before it will be ready for further innovation and commercialization into the freight rail sector.

Another decarbonized method for freight rail would include full electrification of all Class I freight rail lines. While there are no serious proposals for such a transformation at this time, advocacy groups like Solutionary Rail are pushing lawmakers to invest in rail electrification projects. Solutionary Rail sees this as an opportunity to not only address freight rail emissions, but also to reduce freight trucking emissions by moving them to expanded electric rail lines. More information about this pathway can be found at solutionaryrail.org.

Stakeholder and Public Involvement and Input

In 2023, NIRPC worked with diverse partners and stakeholders to develop the Northwest Indiana Climate Action (CAN) Planning Framework for Northwest Indiana. CAN Work Group members represented local government, multi-jurisdictional organizations, non-profit organizations, universities, and industry, with Northwest Indiana residents also participating. The Work Group met virtually on seven occasions between May 2022 and March 2023. Work Group meetings generally lasted for two hours and consisted of presenting relevant information and process in developing the framework, as well as interactive discussions and feedback.



Purpose Driven Planning

Purpose, Scope, and Goals of the Climate Action Framework

Purpose

The purpose of the Northwest Indiana Climate Action Framework is to suggest common-sense approaches and cutting-edge policies that our local governments are uniquely positioned to implement – actions that can reduce energy use and waste, create local jobs, improve air quality, preserve our local landscape and cultural history, reduce risk to people and property, and in many other ways, benefit Northwest Indiana for years to come. The Framework lays the groundwork for Northwest Indiana communities to work together to achieve regional climate and sustainability goals. The Framework coordinates local efforts to achieve a regional goal of 63.4% reduction in 2017 GHG emissions levels by 2030 and a carbon neutral region by 2050. These targets are based upon the One Planet City Challenge (OPCC) Methodology. This method was recommended by ICLEI, because it is the most compatible with those in usage with other local governments around the country. OPCC essentially takes the global target of 50% emission reduction by 2030 and adjusts by prescribed factors related to the country's level of economic development. This places all US cities on an even footing, yet at the global scale acknowledges the US role in the cumulative carbon emissions of the past century.

In addition to addressing carbon mitigation concerns, the Climate Action Framework highlights vulnerabilities to climate hazards and opens a dialogue for how local communities can further investigate local risks, respond to them, and increase resilience. An adaptation framework is provided to develop and implement actions to reduce the risk of climate impacts to Northwest Indiana's resources and infrastructure, while also increasing the social and economic resilience of the system. Reduction of risk is a far more complex undertaking than reducing emissions, as these challenges are interconnected with inequitable systems of economy, healthcare, education, transit, and others. Ultimately, no one strategy will undo these challenges, but the implementation of multi-faceted strategies can set Northwest Indiana on the right path.



Equity and inclusion concepts and components are interwoven throughout the Framework. Creating a resilient community means addressing the social inequities that cause disparities in health outcomes, income, educational attainment and more. Local communities should consider disproportionate and inequitable impacts of climate change as well as mitigation strategies, sharing both the burdens and benefits of mitigation measures on all residents. Diverse groups should be engaged in local planning for climate action and adaptation.

Scope

The Northwest Indiana Climate Action Framework covers objectives and strategies for reducing GHG emissions resulting from local government and community-wide activities in Northwest Indiana. It identifies major sources of community emissions and sets forth achievable objectives and strategies in these focus areas meant to achieve greenhouse gas reductions. While the larger Framework will cover additional sources and sectors (process and fugitive, transportation and mobile, industrial energy, residential energy, commercial energy, solid waste), this document focuses on transportation and mobile sources and their interdependence with land use, the sectors most relevant to *NWI 2050+*.

Goals

The NWI Regional Climate Action Planning Framework recommends a regional goal of 63.4% reduction in 2017 GHG emissions levels by 2030 and a carbon neutral region by 2050. The Framework outlines regional strategies to achieve these goals and recommends local strategies for community climate action that would cumulatively help the region to achieve these goals. Net Zero means that the amount of GHG emissions generated from regional sources is equal to the amount of GHG removed by region forests and carbon capture technology.

Northwest Indiana's GHG Reduction Target

NIRPC has set targets to reduce regional community emissions to 63.4% below 2017 levels by 2030. The combination of measures Northwest Indiana stakeholders have already implemented, and actions presented through this Climate Action Framework are designed to achieve the 2030 targets. Reductions in 2030 rely on the best information currently available pertaining to population forecasts, future changes to building codes, and vehicle fuel efficiency standards among other information. Table 3-8 translates these percentages into tons of reduction needed from the 2017 baseline.

Northwest Indiana's targets are based on the One Planet City Challenge method, which are more aggressive than those suggested by regional or state agencies or proposed in federal legislation. Almost all sources recommend a global reduction of 80% by 2050. Selecting Net Zero as the regional target is aspirational and highly dependent on the scale of advancement and investment in industrial process emission reduction and carbon capture.

Future Greenhouse Gas Emissions – Forecasting Business as Usual

To plan for future emission reductions needed to meet Scientifically Based Targets, NIRPC completed an emissions forecast based on projections of current data and expected future trends. The emissions forecast is a "Business as Usual" forecast, a scenario estimating future emissions levels if no further local action (i.e. projects within the Climate Action Framework) were to take place. For this forecast, planning assumptions for population growth and vehicle miles traveled were aligned with the land use, housing, and travel demand portions of *NWI 2050+*. Sources used for growth planning assumptions in different source sectors are shown in Table 3-7.

GHG Emission Source	Growth Factor Proxy	Planning Assumption Source
Residential Energy	Population Growth	*NWI 2050+* Planning Assumptions
On-Road Vehicle	Vehicle Miles Traveled	*NWI 2050+* Travel Demand Model
Commercial Energy	Commercial Employment Growth	*NWI IGNITE the Region*
Industrial Energy	Industrial Employment Growth	*NWI IGNITE the Region*
Industrial Process & Fugitive	Industrial Employment Growth	*NWI IGNITE the Region*
Freight Rail	Industrial Employment Growth	*NWI IGNITE the Region*
Aviation	Commercial Employment Growth	*NWI IGNITE the Region*
Forest and Land Use Change	Forest and Tree Canopy Change	LEARN Report 2011-2016

Table 3-7: Sources for growth planning assumptions

The "Business as Usual" forecast methodology does allow for incorporating future projects that are already underway. In Northwest Indiana, our "Business as Usual," or BAU, Forecast includes changes resulting from the Northern Indiana Commuter Transportation District (NICTD) Double Track and Westlake Corridor Projects. It also includes future renewable energy commitments by NIPSCO (Northern Indiana Public Service Company), which provides power to all Northwest Indiana. It does not include voluntary GHG emission or carbon intensity reduction goals by private industry. These are incorporated into one of the GHG planning scenarios.

Carbon intensity is a term often used in the private sector to measure greenhouse gas contributions and reduction efforts. Carbon intensity is the amount of CO2 or CO2e emitted per unit for some type of work or product generated depending on the industry. This method provides a way to distinguish between annual GHG emission fluctuations caused by business cycles or external market forces versus GHG changes attributed to improvements in processes or energy efficiency. For example, in electricity generation, carbon intensity is the amount of CO_{2e} released to produce one kWh of electricity. In the steel industry, it might be measured as the quantity of CO_{2e} emitted per ton of steel. In the rail industry, as shown in Figure 3-5, it is expressed units of amount of CO_{2e} emitted per ton of freight delivered one track mile or Gross Ton Miles.

As discussed later in this section, the BAU forecast indicates that committed transitions to renewable energy by NIPSCO will decrease GHG emissions over the coming decade in the Residential, Commercial, and Industrial Energy Use Emissions, even without additional actions.

It is essential to note that these reductions will not be enough on their own to meet regional reduction targets, and further action should be taken to put Northwest Indiana on the path to carbon neutrality by 2050.



	Baseline GHG Emission (Metric Tons)	NWI GHG Emissions with Business-as-Usual Forecast	NET GHG Reductions from Forests and Trees (2011-2016)	Northwest Indiana Net GHG Emissions Estimates (Tons CO2e)	Annual GHG Reduction Required to Achieve Goals
2017	54,500,000		-123,000	54,000,000	
2030					
(63.4% less than 2017)		48,000,000	- 119,000	49,000,000	14,900,000
2050 (Net zero)		53,600,000	-113,000	58,000,000	58,000,000

Table 3-8: Greenhouse Gas Reduction Targets and Business as Usual Emission Forecasts

Figure 3-6 shows forecasted emissions in 2030 and 2050 compared to the 2017 baseline. The benefits of NIPSCO's decarbonization efforts are clear in 2030, as GHG from residential, commercial, and industrial electricity use all show substantial declines. By 2050, we see that with no other action taken, predicted population, VMT, and economic growth combined with current rates of tree and forest loss cause emissions to rebound and rise above 2017 levels. For the BAU forecast, NIRPC held deforestation, reforestation, and tree canopy loss rates consistent with that between 2011-2016 as calculated in the ICLEI LEARN Tool. During that period the region lost forest at a rate of 0.29% per year. Reforestation occurred at a rate of 0.14% per year for a net annual deforestation rate of 0.15% For the same period trees outside forests decreased by 0.5% annually.

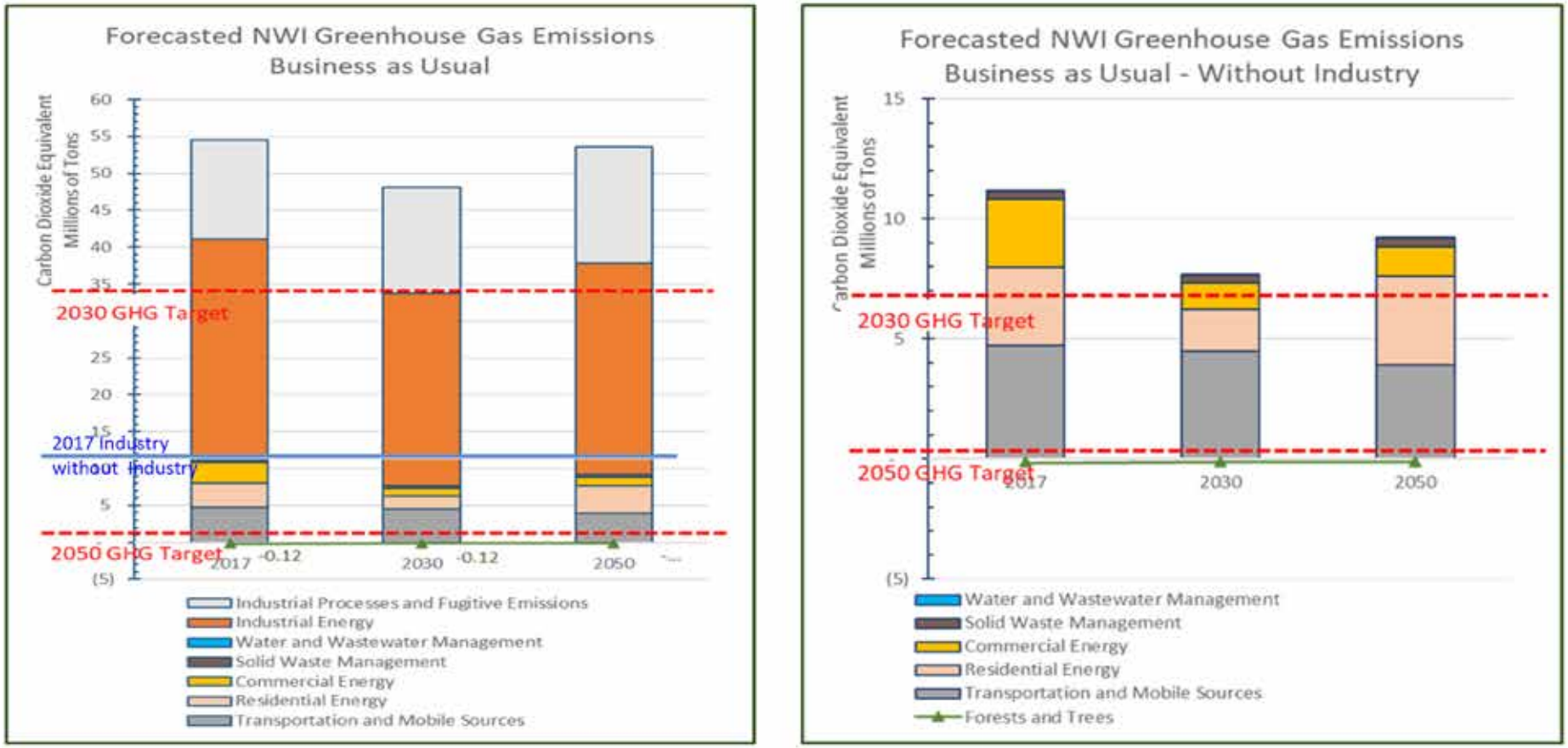


Figure 3-6: Comparison of NWI greenhouse gas emissions baseline, 2030, and 2050 forecasts with and without industrial emissions. Business as Usual

Planned Projects included in the "Business as Usual" Forecast

Future Commitments to GHG reductions in Northwest Indiana

Apart from the reduction strategies outlined in this plan, emissions reduction efforts have already begun in Northwest Indiana. Where possible, reduction effects of these plans have been incorporated in NIRPC's BAU Forecast. Three projects specifically incorporated into emission forecasts are briefly described below. By 2030, these projects bring all but the Industrial Process and Fugitive Emissions sector within reach of the regional target.

NIPSCO Coal-Free By 2026-2028

NIPSCO has made significant efforts in decarbonization of their energy generation and is committed to continued investment in renewable energy in their regulatory filings with the Indiana Utility Regulatory Commission. GHG emission reductions in their electricity generation sector by elimination of coal are incorporated into the BAU Forecast. Figure 3-7 and 3-8 shows the impact of NIPSCO investments in reducing the carbon intensity of their electricity generation on the Residential, Commercial, and Purchased Industrial Energy GHG Emissions.

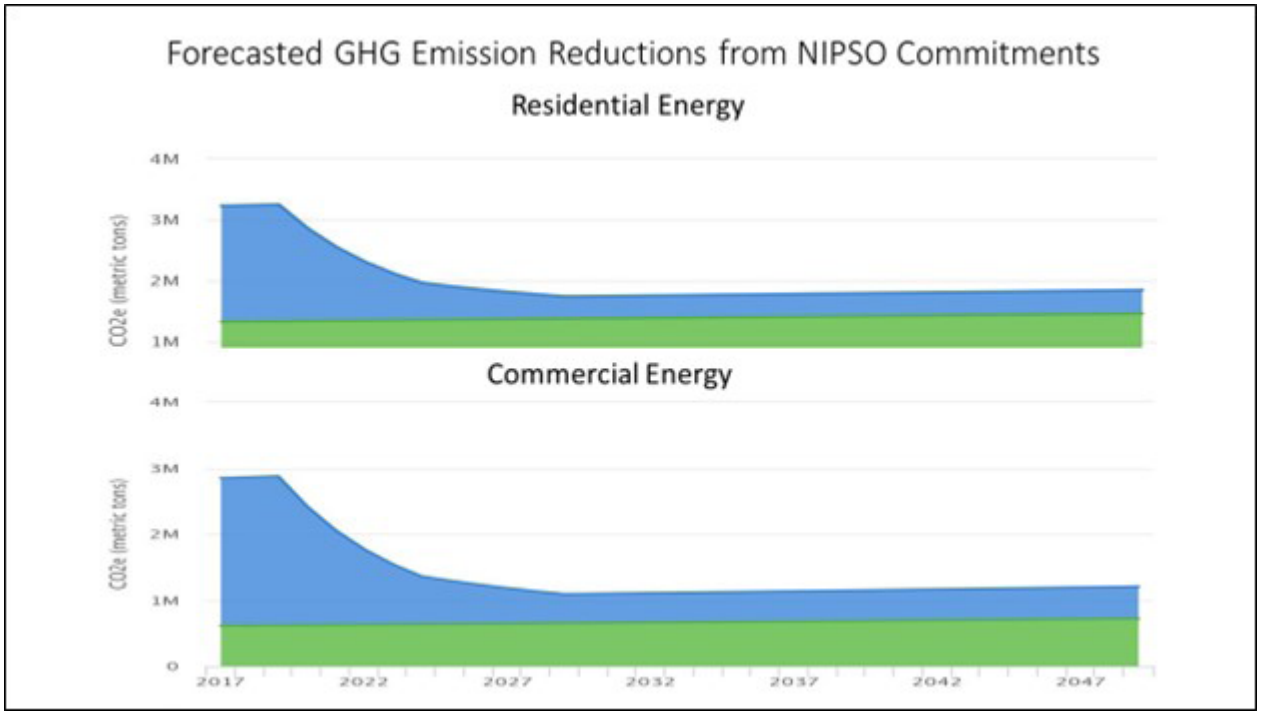


Figure 3-7: Forecasted greenhouse gas emission reductions from NIPSCO commitments



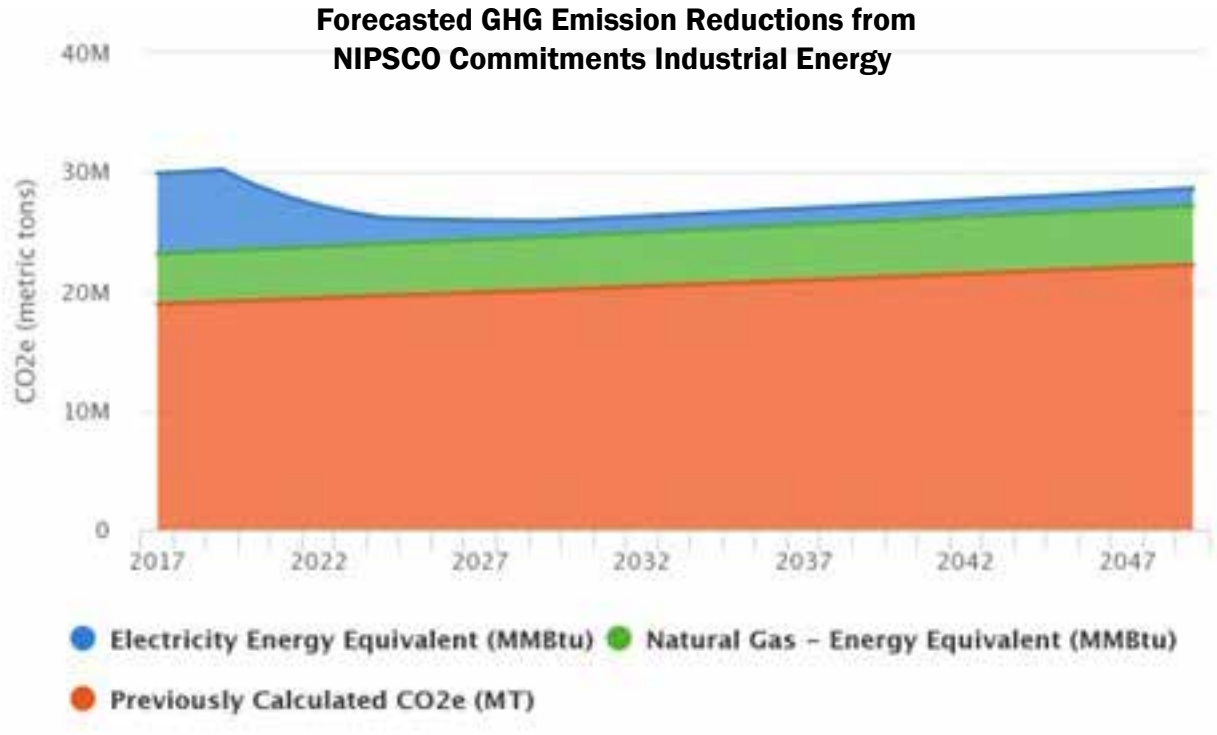


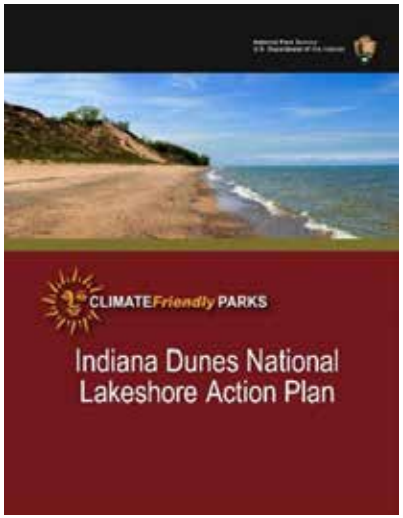
Figure 3-8: Forecasted greenhouse gas emission reductions from NIPSCO commitments



Industrial Energy Use Emissions from electricity also benefit from NIPSCO's decarbonization commitments. However, the "Business as Usual" picture is made more complicated by the significant portion of off-grid individual fossil fuel combustion emissions occurring at many facilities. GHG baseline emissions for large facilities in this sector are required to be reported to the US EPA in a proscribed format which can be found online in the EPA Facility Level Information on Greenhouse Gases Tool (FLIGHT).

Forecasting of BAU On-Road Vehicle Emissions utilized planning assumptions developed for *NWI 2050+* and annual VMT growth predictions in the new 2022 Travel Demand model. It also included default assumptions from US EPA CO_{2e} per mile or Carbon Intensity for vehicles will decrease by 1.8% annually based on changes in federal Corporate Average Fuel Economy (CAFE) standards. Despite this reduction in emissions per vehicle, the 4% annual VMT growth rate predicted in NIRPC's Travel Demand Model surpasses anticipated energy efficiency improvements for vehicles. If Northwest Indiana continues with BAU, this source category will increase from 70% of the Transportation emissions in 2017, to 74% in 2030, and 77% in 2050.

Plans and Projects Considered in Future GHG Reduction Scenarios, but not Business as Usual Forecasts



Indiana Dunes National Lakeshore Action Plan

Indiana Dunes National Park's 15,000 acres and 15 miles of shoreline represents the best Northwest Indiana has to offer. Like so many of our nation's natural monuments, climate change presents an existential threat to the long-term health and stability of the parkland. As part of the Climate Friendly Parks initiative by the National Parks Service, the Indiana Dunes National Park created the Lakeshore Action Plan, joining a network of parks putting climate friendly behavior at the forefront of sustainability planning. This comprehensive plan conducted an emissions inventory in and near the park, set reduction targets, and recommended strategies for promoting long-term sustainability of the park. The plan aims to reduce vehicular and waste related emissions in the park and provide robust educational programming to staff and visitors on sustainable park practices.

Voluntary Corporate Sustainability or Climate Initiatives that are Publicly Available

Many international or publicly traded companies have made public commitments to carbon emission reduction, energy efficiency, and other sustainability measures. Typically, these commitments are made at the corporate level and reported on annually with other mandatory business reports. It is not always possible to determine from published documents how these corporate goals and plans will specifically impact Northwest Indiana facilities or business activities. Nevertheless, many of these corporations are large contributors to Industrial Energy, Industrial Process and Fugitive, and Freight Rail Emissions, which together account for 84% of the regions GHG emissions baseline.

Table 3-9 identifies the focus areas within the Northwest Indiana Climate Action Framework, the number of strategies within each focus area, and the contribution of each focus area toward the GHG reduction goal. Each focus area has a dedicated section within the framework where specific actions (both new and those already employed) are described.

While Northwest Indiana's local governments cannot address climate change by themselves, government policies and practices can dramatically reduce greenhouse gas emissions from a range of sources and help prepare Northwest Indiana for the anticipated impacts of climate change. In addition, NIRPC will assist residents and businesses in their endeavors to reduce emissions through programs explained in the framework. By working together, Northwest Indiana can not only do its part toward achieving a stable climate, we can also reap the benefits of healthier air, lower costs for utilities and services, improved transportation and accessibility, a more vibrant local economy, and many other positive side effects of reducing our carbon footprint.



Focus Area	Description	Number of Distinct Strategies	Percentage of Total Reduction at 2020
Transportation	Policies and programs to reduce transportation related GHG emissions	16	11%
Commercial Buildings	Policies and programs to reduce commercial and municipal sector GHG emissions, also interfacing with key utility efforts	15	22%
Residential Buildings	Policies and programs to reduce residential sector GHG emissions, also interfacing with utility efforts	11	19%
Waste, Composting and Recycling	Policies and programs to reduce waste generation and landfill emissions, promote recycling	N/A	15%
Water and Wastewater Management	Policies and programs to reduce water demands and corresponding wastewater treatment needs	N/A	12%
Land Use	Policies and programs to sequester carbon and improve climate resilience	N/A	N/A

Table 3-9: Northwest Indiana Climate Action Plan Summary Table – Emission Reduction Focus Areas

for regional climate action planning using two primary metrics (see Figure 3-9):

- Relative Regional Contribution to climate change as measured by GHG Emissions
- Ability of regional planning and/or local government to influence GHG Emissions

Regional Emission Reduction Strategies are prioritized by three factors:

- Cost effectiveness
- Time-scale for meaningful change
- Co-benefits align NIRPC's Critical Paths to 2050

.

At the local municipal or county level source categories and priorities may stack up differently. NIRPC will provide climate action plan templates and technical support to cities and towns interested in pursuing local Climate Action Plans.

The following emission reduction focus areas are explored in the Northwest Indiana Climate Action Frameworks: Transportation; Commercial Buildings; Residential Buildings; Water and Wastewater Management; Waste, Composting, and Recycling; and Land Use. In each focus area, a series of objectives with supporting strategies are explored. An "Objective" is a goal, end result, or target that supports a focus area, and a "Strategy" is a means of realizing the objective. Each focus area draws on the actions of both the local government and Northwest Indiana residents and businesses, although some areas may be largely one or the other.

GHG emissions in general are a function of the amount of an activity and the amount of fossil fuel required to accomplish it. For example, the emissions from vehicles is the product of the number of vehicles, annual miles traveled, fuel type, and fuel quantity. Strategies to reduce VMT may focus on reducing the number of vehicles through encouraging carpooling or public transit. Encouraging walking and biking by building safer streets for all users can reduce VMT. Planning or retrofitting 15-minute cities with necessary services, amenities, and destinations within a 15-minute bike or walk can also reduce driving. Transitioning to low emission fueled vehicles, biofuels, and electric vehicles reduces the GHG emissions from VMT. This is an important distinction to make when the emitting activity is otherwise beneficial.

Government Operations & Community Objectives & Strategies

Government operations strategies are specific to the internal operations of units of government in Northwest Indiana. They apply to buildings governmental units own or lease, vehicles used to provide services such as police and fire, lighting of roadways, etc. Community strategies require involvement and participation from citizens. Each strategy is noted as one or both.

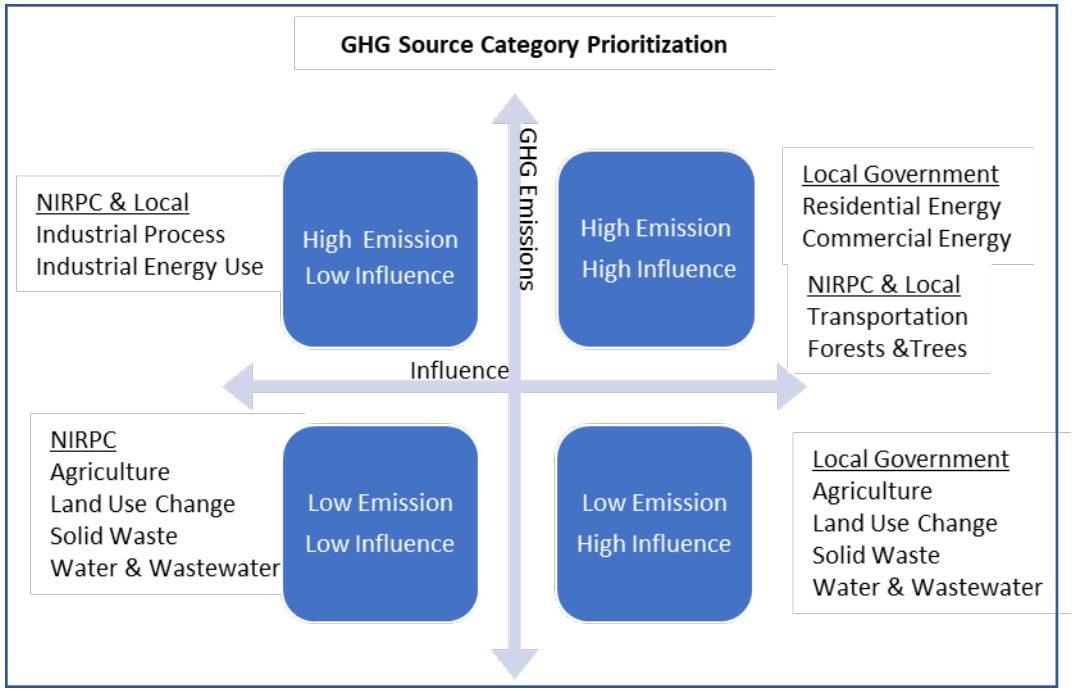


Figure 3-9: Greenhouse gas source category prioritization

Emissions Reduction Potential

Calculating expected emissions reductions for each objective requires making assumptions about the degree of implementation, technology, and individual behavioral changes several years into the future. The uncertainty associated with these assumptions makes it difficult to assign exact reduction totals to each objective or strategy. To address this uncertainty and provide a simple but useful reference for reduction potential, a series of symbols and percentage ranges have been devised to represent the emission reductions associated with each objective and its strategies:

Symbol	GHG Reduction
	Small Impact Range
	Medium Impact Range
	Large Impact Range

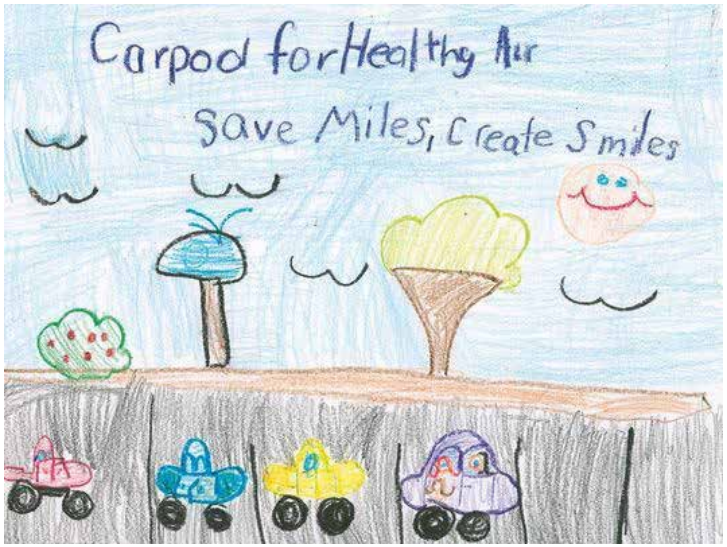
Specific implementation assumptions and GHG reduction estimates are listed in the Appendix, 3A and 3B.

Evaluation of Strategies and their Benefits

In addition to measuring the GHG reduction potential, each strategy is also evaluated for other benefits such as public health, equity and justice, jobs and prosperity, and environmental conversation. The symbols below will indicate which co-benefits a measure will generate.

This Climate Action Framework includes a combination of existing policies and programs as well as new ideas based on best practices from around the country. Whether a strategy is new or existing is noted in the strategy heading.

Symbol	Co-Benefit
	High potential to support jobs and prosperity
	High potential to advance equity
	High potential to improve local environmental quality
	High potential to improve health



Co-Benefits of Climate Protection Measures

Climate co-benefits are beneficial outcomes from action that are not directly related to climate change mitigation. Such co-benefits include cleaner air, the creation of green jobs, improved public health from active travel, and can support additional biodiversity due to the expansion of green space. Planning climate action that also delivers co-benefits can enable locales to bolster support from key stakeholders, mobilize scarce resources across governmental departments, and maximize opportunities to address multiple social, environmental, and economic challenges.

Co-benefits are not always well documented in GHG emission reduction initiatives. This underestimates their positive impact. The outcome of economic assessments can differ significantly once these co-benefits are factored in. The payoffs of particular projects change once these co-benefits are taken into account, which raises new financing possibilities. The choice between different mitigation strategies should involve not only the economic costs of implementation and the impact on GHG emissions reduction but also the value of these co-benefits.

Actions to reduce GHG emissions present an opportunity to improve Northwest Indiana communities in a number of ways. Accounting for up to 70% of global emissions and home to 55% of the global population, localities are at the forefront of this challenge and have a vital role to play in meeting global targets. By taking actions to cut emissions and reduce vulnerabilities, Northwest Indiana can realize multiple co-benefits from climate action measures.



With increasing energy prices and insecurities, transitioning away from fossil fuels can save our region money and ensure energy security and resilience. Many actions proposed in this plan make economic sense and can yield a return on investment by reducing direct and indirect costs. Emerging green sectors can create in-demand, high-paying jobs to strengthen our communities. Investments can also improve public health and quality of life in the region.

Saving Money

Climate mitigation policy can be considered as part of a larger strategy for low carbon development, where co-benefits play an important role in the motivation for action. In fact, in some cases, policies may seek the co-benefits as the primary target (for example, reducing pollution or tapping into new forms of energy to reduce costs) while climate change mitigation becomes a collateral effect.

Climate action that reduces GHG emission does have the potential for significant cost savings. Many of the measures in this plan “pay for themselves” quickly by reducing direct costs, such as fuel or energy used as well as indirect costs, such as maintenance, a “right-sized” vehicle fleet is, for example, less expensive to purchase and to fuel while also being less costly to maintain.

Encouraging energy efficiency, public transit use,

building improvements, and other measures will result in lower energy and water bills for residents and business owners. Acting now will save on the runaway costs of climate change, especially in the longer term. Examples of such costs range from infrastructure damage of extreme storms and pest control to industry losses, particularly for industries that rely on climate, such as winter sports. The costs of not acting to tackle climate change are much higher than the costs of taking action in every sector. The Global Commission on the Economy and climate concluded that transition to a low-carbon sustainable growth path could deliver a direct economic windfall of $26 trillion and create over 65 million new jobs by 2030 compared with BAU. Measures that help people adapt to these impacts also incur costs, but evidence shows that the future benefits of action overwhelmingly outweigh the future costs of inaction. For instance, for every $1 spent on protecting communities from flooding, around $9 in property damages and wider impacts can be avoided.

Creating Jobs

Switching to renewable energy is imperative but also a major opportunity. The new economic model required to address climate change will also drive rapid technological innovation and create jobs in new industries.

The solar industry estimates that it created more than 15,000 jobs in 2007 and 2008, and the wind industry boasts of having created more than 35,000 new direct and indirect jobs in 2008. Similarly, new green sectors such as sustainable tourism, green construction, and urban agriculture can provide new job opportunities. These climate protection measures can spur business and job growth during the design, manufacture, installation, and maintenance of energy efficient technologies and other green sectors. This presents a particular opportunity to reinvest in the local economy and generate green jobs within Northwest Indiana.

Enhancing Resource Security

A key strategic side benefit of climate change mitigation activities is enhanced energy security through reduction in total demand. This will put less strain on the energy system as we transition to clean renewable energy. Similarly, demand shifts can help improve water and food security.

Many of the actions identified here to mitigate GHG emissions will also help Northwest Indiana's government, businesses, and residents adapt to a changing climate. For example, extreme and prolonged heat waves can put considerable strain on the reliability of energy delivery in peak periods, possibly leading to service disruption during times when cooling is most needed. With increasing efficiency across Northwest Indiana, service disruptions will be less likely, and Northwest Indiana will be able to better cope with those situations. Similarly, climate strategies can secure food and water sources and prevent damage and service disruptions to these systems from drought, flooding, and fire.



Improving Public Health

Health co-benefits have attracted much attention as they are obvious and significant. The overall costs of air pollution, which can largely be attributed to the use of fossil fuels, is huge. The cost of these co-benefits, which can be locally captured, should be considered when assessing the impact of initiatives.

Health benefits related to transportation include reducing vehicle emissions. Overall, the cost of climate change mitigation is lowered by the benefits obtained from reducing air pollution. Short-lived climate pollutants, such as those found in vehicle emissions, have strong warming effects but they are also a major component of air pollution. Addressing this source of pollution contributes to both climate change mitigation and improved health outcomes.

Mitigation activities engender a greater degree of choice for Northwest Indiana residents. Increasing the feasibility and attractiveness of biking or walking improves health by both reducing air pollution and encouraging active lifestyles More transit options combined with transit-oriented development practices make for more vibrant, livable communities. This creates more connected and resilient neighborhoods.

Climate equity is included in the overall Climate Action Plan vision and objectives. Each of the strategies in this plan were evaluated on whether they help increase climate equity and/or reduce disparities. Some actions were called out explicitly in the strategies. The strategies that do address community health, safety and livability: access, prosperity and inclusive engagement are marked with a symbol.



Transportation & Development

Broadly speaking, the use of fossil fuels for transportation is the single largest contributor to GHG emissions and climate change. Emissions from transportation and land use are a common sight to nearly everyone in Northwest Indiana. Transportation accounts for 40% of Northwest Indiana's total GHG emissions. Besides emitting greenhouse gases, transportation fossil fuels also produce significant quantities of Clean Air Act criteria pollutants such as Ozone Precursors, Fine Particulates, Carbon Monoxide, Sulfur Dioxide, and Nitrogen Dioxide. Of the 6 criteria pollutants, Lead is the only one not currently produced from transportation emissions because of its historical removal from gasoline. These occur when gasoline or diesel fuels are combusted, reducing local air quality, and affecting our health. This chapter focuses on programs and policies to reduce emissions from transportation and includes design-oriented approaches as well as expansion of alternate modes such as walking, biking, or public transportation to and from the most common destinations in Northwest Indiana.

Electric Vehicles and Electric Vehicle Infrastructure

Dramatic increases in electric vehicle (EV) adoption are a critical component of our transportation decarbonization forecast. Drive Clean Indiana, in conjunction with Purdue University, developed a forecast for personal EV adoption rate scenarios for the state of Indiana[6].

6 Konstantinou, T., Chen, D., Flaris, K., Kang, K., Koo, D. D., Sinton, J., Gkritza, K., & Labi, S. (2022). A strategic assessment of needs and opportunities for the wider adoption of electric vehicles in Indiana (Joint Transportation Research Program Publication No. FHWA/IN/JTRP-2022/12). West Lafayette, IN: Purdue University. https://doi.org/10.5703/1288284317376

Year	Electric (EV)	Plug-In Hybrid Electric (PHEV)	Hybrid Electric (HEV)	Gas	Diesel	TOTAL Vehicles (Millions)
2016	0.023%	0.042%	0.963%	85.79%	2.77%	5.65
2017	0.033%	0.055%	1.035%	84.59%	2.80%	5.78
2018	0.058%	0.070%	1.097%	83.65%	2.88%	5.84
2019	0.086%	0.080%	1.167%	82.82%	2.98%	5.90
2020	0.117%	0.089%	1.260%	82.28%	3.07%	5.98
2021	0.172%	0.124%	1.461%	85.30%	2.51%	6.04

Table 3-10: Comparison of electric and hybrid vehicle registrations with gas and diesel Indiana statewide light duty vehicle fleet

The forecast indicates a moderate BAU case with an EV adoption rate of 6% by 2050.

Looking at statewide vehicle registrations, increasing the current EV adoption rate to 6% by 2050 requires 35 times more EVs than were registered in 2021, or approximately 12,000 more each year (Table 3-10).

An optimistic case assumes an adoption rate of 95% of the registered vehicles in Indiana by 2050. Under the more optimistic scenario, the net present value of cumulative net benefits statewide could exceed $32.2 billion by 2050.

The study notes that the latter scenario of adoption rates is not likely unless aggressive policy action is taken at the state and local levels.





Electric Vehicle Charging Infrastructure

While most EV charging takes place at home, growth in EV adoption increases in the public charging infrastructure[7]. There is a positive correlation between the availability of public DC Fast Charging (Level 3) stations and EV adoption rates. Municipal and regional actors can expedite EV adoption and meet this target by investing in EV charging infrastructure and structuring municipal code to encourage private actors to build EV charging infrastructure.

Figure 3-10 shows a map of currently active and eight near future public Level II or Level III electric vehicle charging stations with Level II or Level III Charging Stations. The eight new stations on the map are part of a larger Indiana Utility Group Fast Charging Station Plan being implemented as part of IDEM's VW Settlement Funding Program by 2024. An additional five stations are planned at major interstate intersections as part of Indiana's National Electric Vehicle Infrastructure Plan.

7 Update on electric vehicle adoption across U.S. cities. https://theicct.org/sites/default/files/publications/EV-cities-update-aug2020.pdf

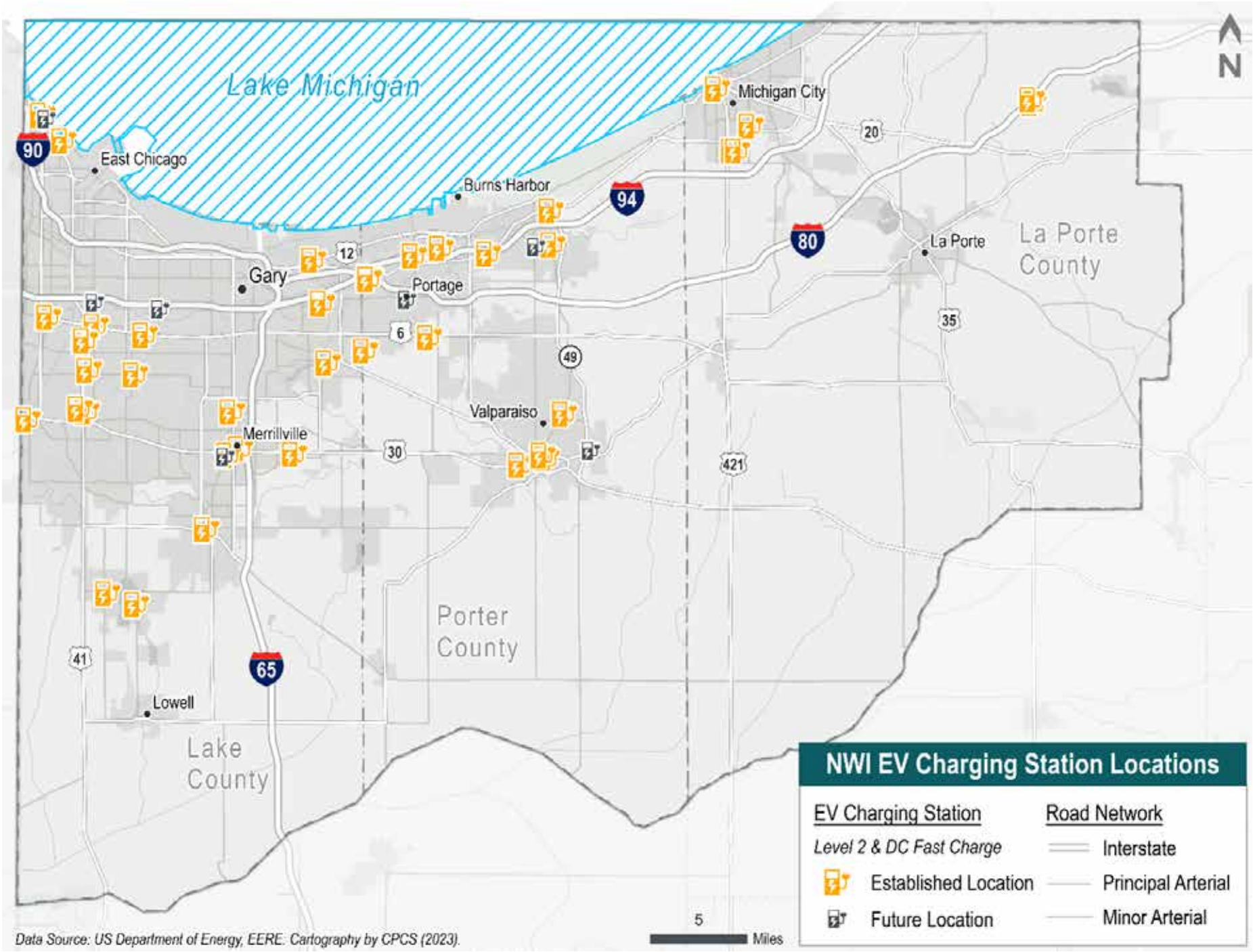


Figure 3-10: Currently active and future public Level II or Level III electric vehicle charging stations

Objective	Supporting Strategies	Reduction Potential	Co-Benefits
T&D 1 – Adapt development processes to accelerate investment in EV charging infrastructure	T&D-1A, T&D-1B, T&D-1C, T&D-1D		
T&D 2 – Collaborate to enhance regional transit and expand capacity	T&D-2A, T&D-2B, T&D-2C		
T&D 3 – Prioritize transit-oriented and transit-supportive development and curtail sprawl	T&D-3A		
T&D 4 - Promote compact community development and walkable communities	T&D-4A, T&D-4B, T&D-4C, T&D-4D, T&D-4E, T&D-4F, T&D-4G		
T&D 5 - Increase bike infrastructure	T&D-5A, T&D-5B, T&D-5C		



Objective T&D 1 – EV Promotion		
Adapt development processes to accelerate investment in EV charging infrastructure		

Strategy Number	Strategy	Benefits	Local Government Role	Examples
T&D-1A	Establish EV-ready code		1. Lead – Install electric vehicle charging stations at public buildings and facilities 2. Encourage – Offer grant funding to offset the cost of purchasing and installing electric vehicle charging stations, especially in equity zones 3. Enact - Amend building code to require EV-ready or EV-capable parking in new residential and commercial buildings	1. San Francisco 2. Irving TX 3. San Francisco 4. Columbus 5. Spokane 6. Atlanta 7. Denver
T&D-1B	EV Promotion - Lead		1. Lead – Purchase EVs for municipal fleets 2. Lead – Establish EV adoption goal for community	1. San Francisco 2. Columbus
T&D-1C	EV Promotion – Encourage		1. Encourage – offer grant funding to offset the cost of purchasing and installing electric vehicles charging stations, especially in equity zones 2. Encourage – Offer funding to transportation service providers to purchase EVs 3. Encourage – Offer funding to transportation service providers to purchase EVs 4. Encourage – Educate consumers about the benefits of EVs 5. Encourage – Waive fees for EV charging stations	Spokane
T&D-1D	Green Vehicle Purchasing		Lead – replace municipal vehicle fleet with electric vehicle alternatives	1. Minneapolis 2. Spokane

Additional Resources:

A Strategic Assessment of Needs and Opportunities for the Wider Adoption of Electric Vehicles in Indiana - https://docs.lib.purdue.edu/cgi/viewcontent.cgi?article=3345&context=jtrp
https://metroenergy.org/wp-content/uploads/2016/08/ehp-appendix-o.pdf

Update on electric vehicle adoption across U.S. cities - https://theicct.org/sites/default/files/publications/EV-cities-update-aug2020.pdf
DOE – EV benefits and considerations - https://afdc.energy.gov/fuels/electricity_benefits.html
EPA - EV Myths - https://www.epa.gov/greenvehicles/electric-vehicle-myths

EPA Federal Fleets - https://www.epa.gov/greenvehicles
Climate Mayors Electric Vehicle Purchasing Collaborative - https://driveevfleets.org/

Objective T&D 2 – Expand Regional Transit		
Collaborate to enhance regional transit and expand capacity		

Strategy Number	Strategy	Benefits	Local Government Role	Examples
T&D-2A	Commuter Incentives		1. Encourage – Offer vanpool lease agreements 2. Encourage – Encourage local businesses to adopt commuter incentives for employees	1. Austin, TX 2. Kansas City
T&D-2B	Increase Transit Coverage Area		Lead - Collaborate with transit agencies, regional and state partners and other municipalities to fund targeted expansions to transit service and implement policies and programs to increase transit ridership	Double Track West Lake Corridor
T&D-2C	Bus Rapid Transit Service		Lead – Collaborate with NIRPC, state, and municipal partners to establish a regional fixed route mass transit system	Indianapolis, IN

Additional information on policies and strategies to expand and improve access to transit in Northwest Indiana is presented in NWI 2050+ Chapter 7: Transit



Objective T&D 3 – Prioritize Transit-Oriented Development		
Increase jobs within transit service areas of fixed-route transit from 86,922 to 117,500 by 2035 and 160,000 by 2050 (region-wide. Source: NIRPC On To 2040 Goals)		

Strategy Number	Strategy	Benefits	Local Government Role	Examples
T&D-3A	Transit—Oriented Development		1. Lead - Position municipal development projects and services in transit-served locations instead of areas not served by transit 2. Enact - Incorporate Transit-Oriented Development (TOD) provisions into local zoning codes for development near transit stops	1. Puget Sound Regional Council 2. Chicago 3. Kansas City

In depth analysis and additional information on Northwest Indiana strategies and investments in Transit Oriented Development are presented in NWI 2050+ Chapter 5: Land Use.



Objective T&D 4 – Promote Compact development and Walkable Communities		
Promote Compact Community Development and Walkable Communities		

Strategy Number	Strategy	Benefits	Local Government Role	Examples
T&D-4A	Accessory Dwelling Units		1. Enact – allow all types of accessory dwelling units	Minneapolis
T&D-4B	Reduce Minimum on-site parking requirements		1. Lead – Study parking challenges and establish plans to address them 2. Encourage – Allow property owners to lease parking credits in public parking garages 3. Enact – Eliminate minimum on-site parking requirements	1.Overland Park, KS 2.Pasadena, CA 3.Sandpoint, ID
T&D-4C	Prioritize Infill Development		1. Lead – Designate upzone urbanizing locations 2. Lead – Establish infill plan guidelines	1. Minneapolis 2. Kansas City
T&D-4D	Update Zoning to Promote Walkability		1. Enact – integrate walkability enhancements into maintenance and infrastructure projects 2. Encourage – Complete an assessment of current community walkability and recommendations to enhance walkability.	1. Overland Park, KS 2. Amery, WI
T&D-4E	Complete Streets		Enact – review and adopt Complete Streets policies	1.Hennepin County, MN 2.Lewiston, ME
T&D-4F	Sidewalks		1. Lead – Initiate a sidewalk repair program 2. Enact - Implement development regulations that require sidewalks in new private developments or in significant rebuild projects	1. Ann Arbor, MI 2. Richardson, TX
T&D-4G	Walk-Friendly Community Designation		Lead - Earn the Walk Friendly Community designation. Once earned, look for ways to achieve the next level of designation for their community	Somerville, Mass
T&D-5G	Implement a NIRPC Creating Livable Communities Grant Project		Lead – Apply for and Implement a CLC Capital Projects Grant targeted at public pedestrian features like sidewalks, bike lanes, bike racks, crosswalks, and benches	1. Gary 2. Michigan City

In depth analysis and additional information on Northwest Indiana strategies and investments in Transit Oriented Development are presented in NWI 2050+ Chapter 5: Land Use.

Objective T&D 5 – Increase Bike Infrastructure		
Reduce Vehicle Miles Traveled by Increasing Bike Infrastructure and building a Regional Cycling Network		

Strategy Number	Strategy	Benefits	Local Government Role	Examples
T&D-5A	Bicycle-friendly community designation		Encourage – Encourage community and business designations	Arlington, VA
T&D-5B	Safe Routes to School		1. Lead - Incorporate Safe Routes to School engineering guidelines in municipal projects 2. Enact - Implement development regulations that require sidewalks in new private developments	1. Phoenix, AZ 2. Overland Park, KS
T&D-5C	Creating Cycling Networks		1. Encourage – Provide grants for bike parking in business districts or neighborhoods 2. Enact – Implement development requirement that minimum bicycle parking be provided in new private development projects	1. Cambridge, MA 2. Portland, OR



Land Use and Natural Areas

Land use patterns and decisions are inherently tied to GHG emissions as well as climate resiliency. Sprawling development can lead to increased vehicle travel as well as impacts to natural areas. Trees and natural areas can sequester carbon while also providing valuable co-benefits, such as flood control, improved air quality, and recreational opportunities. Natural areas are a net sink for carbon, for example Northwest Indiana's forests and trees cover approximately 20.3% of the region's land area. Together that area removes 133,000 tons of carbon per year from the atmosphere. The conversion of natural areas to developed land uses eliminates this carbon sequestration and often increases GHG emissions. For example, between 2011 and 2016 conversion of forest to other land uses generated 36,108 tons of CO2e annually between 2011 and 2016. Every acre of new urban trees planted removes approximately one ton of carbon from the per year.

Actions can be taken at the local and regional level to reduce transportation emissions and mitigate emissions through sequestration. This chapter focuses on programs and policies to reduce emissions from transportation, including design-oriented approaches as well as expansion of alternate modes such as walking, biking, or public transportation. Additionally, this chapter covers practices to mitigate or reduce GHG emissions by preserving and expanding natural areas and incorporating green infrastructure into our communities.

Critical Natural Resources in Northwest Indiana

Northwest Indiana is unique in its juxtaposition of industrial and developed areas alongside nationally and globally significant natural areas. Major natural assets include the Lake Michigan shoreline and associated ecosystems, the Valparaiso moraine forest, wetlands, and the region's abundant rivers, streams, and wetlands. The unique geography of the region also makes it incredibly biodiverse and home to many rare, threatened, and endangered species. Protection of these natural assets can help to make Northwest Indiana more resilient and vibrant by maintaining the valuable ecosystem services they provide, such as flood control, heat abatement, air quality improvement, beautification, and tourism.



Threats to Natural Areas

Despite conservation efforts, Northwest Indiana's incredible natural resources face constant and emerging threats. Development pressures often push development away from the urban core and into previously undeveloped areas, encroaching upon natural areas and farmland. Local and regional planning decisions have a significant impact on development patterns, and sound decisions can protect sensitive natural resources from sprawling or irresponsible development.

Climate change presents an unprecedented threat to our communities and natural resources. Climatic changes will significantly disrupt temperature and precipitation patterns. The changes will affect our quality of life and economy by increasing extreme heat events and flooding. Native plant and animal species have evolved under, and require, specific climatic conditions. A changing climate can stress these species by altering the conditions of their natural habitats. Habitat fragmentation can limit the ability of species to migrate and adapt to climate changes. Additionally, new pests, diseases, and invasive species can enter our region as the climate warms.

Lake Michigan Shoreline, Indiana Dunes, and Associated Ecosystems

Lake Michigan was formed as a result of glaciers retreating thousands of years ago. As the glaciers retreated, bands of glacial materials were deposited, forming our coastal dunes, as well as older, inland dunes and interdunal swales. Indiana dunes ecosystems are a dynamic system; the Lake Michigan shoreline and dunes are continuously changing. The dunes landscape in Indiana crosses several ecological transition zones, resulting in many habitat types and incredible biodiversity. The dunes region is home to oak savannas, swamps, bogs, marshes, prairies, rivers, and forests. Though much of Indiana's shoreline and associated dunes were lost to development, thousands of acres are protected in the Indiana Dunes National and State Parks as well as properties owned and managed by non-profit organizations and local government agencies. Remnants of the globally rare "dune and swale" ecosystem remain in the region.

Waterways

In addition to being home to Lake Michigan, Northwest Indiana has incredible inland lakes and rivers. From the highly industrialized Grand Calumet River to scenic stretches of the East Branch of the Little Calumet River to the Kankakee River which marks the region's southern border, Northwest Indiana's waterways each have unique characteristics, assets, and challenges. Major waterways include the Kankakee River, The Grand Calumet River, Trail Creek, and the Little Calumet River and its tributaries, including Deep River and Salt Creek. These waterways, as well as inland lakes, should be buffered and protected from development to preserve water quality and protect communities from flooding and erosion.

Wetlands

Northwest Indiana is home to nationally significant wetlands from the Great Marsh in the north to the Grand Kankakee Marsh in the South. The Great Marsh once paralleled the Lake Michigan shoreline from Gary to Michigan City. Largely drained and developed in the early 1900s, remnants of the marsh remain protected in the Indiana Dunes National Park and other properties owned and managed by the Indiana Department of Natural Resources and non-profit land trusts. The southern part of the three-county region was historically home to the Grand Kankakee Marsh. Once called "the Everglades of the North", the Kankakee River wetlands once drew waterfowl hunters from across the country. While less than 10% of the original Marsh remains today largely due to draining for agricultural and other land uses, important natural and cultural remnants remain, and conservation partners continue work to restore this natural treasure. Protecting wetlands and their function in the landscape is an important strategy for climate resiliency. Protecting Northwest Indiana's waterways, from small headwater streams to large downstream rivers helps to protect our region from hazards such as flooding and erosion while also keeping our aquatic resources clean for drinking, recreation, and more.

High Priority Conservation Areas

Conservation action planning provides a globally recognized framework for engaging in conservation work to benefit people and the environment. Partners and stakeholders have worked together to develop conservation action plans (CAPs) for high priority areas in the Calumet region of Northwest Indiana and Southeast Chicagoland. Conservation partners, including conservation organizations, land managers, planning organizations and other stakeholders contributed to the development of the fundamental aspects of each CAP, including a conservation vision, geographic scope, focus area map, conservation targets, human well-being targets, conservation threats and conservation strategies.



CAP's have been developed for the following geographies in Northwest Indiana: West Branch of the Little Calumet River, Hoosier Prairie, Moraine, Ambler Flatwoods, Heart of Calumet, Ecosystems of the Indiana Dunes, the East Branch of the Little Calumet River, Hobart Marsh, and Deep River in Northwest Indiana. Conservation partners, including NIRPC, continue to work together to strategically advance work toward the shared conservation goals detailed in the plans. The map in Figure 3-11 provides a high-level overview of these areas and how tributaries of the historic Calumet River connect them through the urban landscape.

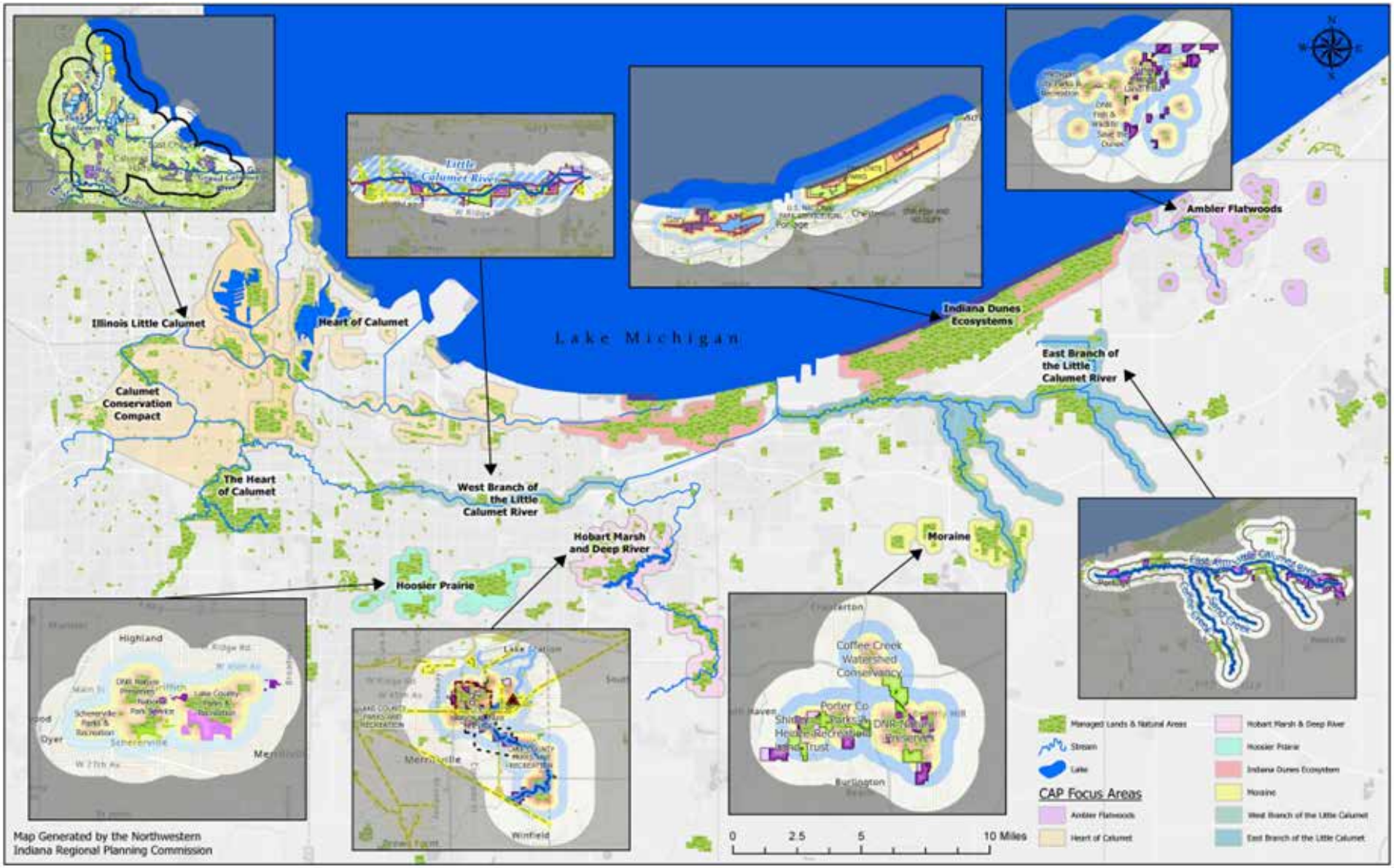


Figure 3-11: Consensus Based Map of High Priority Conservation Areas in the Calumet basin of Northwestern Indiana and Northeastern Illinois

Plans to Increase Resilience in Northwest Indiana

Northwest Indiana can take actions to prepare for and adapt to the impacts of climate change. Several plans have been developed to ensure Northwest Indiana's resilience.

LMCP Coastal Resilience Needs Assessment

In 2022, NIRPC worked with the Indiana Department of Natural Resources (IDNR) Lake Michigan Coastal Program to develop the Coastal Watershed Hazards Resiliency Needs Assessment. The self-assessment is intended to help local government staff and decision-makers of Indiana coastal watershed communities evaluate potential impacts of natural hazards and consider planning and mitigation actions to increase resilience. Resilience, in the context of the self-assessment, is the ability to respond to, withstand, and adapt to the impacts of natural hazards. A summary of assessment results will assist the Indiana Lake Michigan Coastal Program in identifying, developing, and delivering the technical resources needed by coastal watershed communities to reduce or prevent natural hazard risks.

Climate Friendly Parks: Indiana Dunes National Lakeshore Action Plan

As part of the Climate Friendly Parks initiative by the National Parks Service, the Indiana Dunes National Park created the Lakeshore Action Plan, joining a network of parks putting climate friendly behavior at the forefront of sustainability planning. This comprehensive plan conducted an emissions inventory in and near the park, set reduction targets, and recommended strategies for promoting the long-term sustainability of the park. The plan aims to reduce vehicular and waste related emissions in the park and provide robust educational programming to staff and visitors on sustainable park practices.

IDNR Wetland In-Lieu Fee Program

IDNR instituted an in-lieu fee program for mitigation of impacts to aquatic resources. Advance credits are purchased by permittees in lieu of performing mitigation themselves. The legal obligation to provide compensatory mitigation is then transferred to the sponsor or IDNR. The program allows IDNR to complete and maintain higher quality mitigation projects.

A watershed management plan is a strategy and work plan for achieving water resource goals. It includes the analyses, actions, participants, and resources related to development and implementation of the plan. The primary purpose of a watershed management plan is to guide watershed coordinators, resource managers, policy makers, and community organizations to restore and protect the quality of lakes, rivers, streams, and wetlands in a given watershed. The plan is intended to be a practical tool with specific recommendations on practices to improve and sustain water quality. These are also "living documents", meaning that as conditions change over time in a watershed, the plan must be reexamined and revised to reflect goals that have been achieved or not met.

In Northwest Indiana, watershed management plans exist for Coffee Creek, Deep River- Portage Burns Waterway, Dunes Creek, the East Branch of the Little Calumet River, Galena River, Salt Creek, Trail Creek, the West Branch of the Calumet River. Additionally, NIRPC developed a region-wide watershed framework. The critical areas and recommendations in these watershed management plans should be consulted in local land use planning and decision-making.



Invasive Species Management

An invasive species is a species that does not naturally occur in a specific area and whose introduction does or is likely to cause economic harm, environmental harm, or harm to human health. In late 2017, Southern Indiana Cooperative Invasives Management (SICIM) and the USDA Natural Resources Conservation Service (NRCS) entered into a contribution agreement for the purpose of developing local Cooperative Invasive Species Management Areas (CISMAs) (https://www.sicim.info/) throughout Indiana. Both SICIM and the NRCS have been working for many years to combat invasive plants and raise public awareness of the devastation being caused by these non-native pests, and both have come to the realization that we will not begin to make much headway until the problem is addressed at the local level by local people using local resources. As of 2023, Porter and LaPorte counties have a joint CISMA, and Lake County is in the process of organizing a CISMA.

NIRPC Green Infrastructure Policy and Guidance

Green infrastructure utilizes vegetation, soil, and engineered systems to mimic natural processes of slowing or storing stormwater. These practices can improve water quality and reduce flooding by intercepting, infiltrating, filtering, and evapotranspiring stormwater. Green infrastructure can provide additional ecological services that traditional gray infrastructure does not, such as improving air quality, reducing the urban heat island effect, providing pollinator habitat, and beautifying communities.

In 2022, NIRPC developed green infrastructure (GI) guidelines to complement NIRPC's Living Streets Policy within roadway public rights-of-way for Lake County, Porter County, and La Porte County. This policy requires sponsors of local projects selected for funding to scope the feasibility of including functional green infrastructure and complete streets features up to 15% of the project costs. The developed GI guidelines are to be used by applicants to select and plan for appropriately functional GI elements for proposed transportation projects. NIRPC envisions incorporating demonstration of appropriately planned GI technologies into the evaluation criteria for project selection. The goal of the policy is that while Northwest Indiana's highway funds improve the transportation infrastructure, they can also improve the natural and built environment using more ecologically friendly and sustainable management practices. Integrating GI into projects will provide more resilient stormwater runoff management and additional benefits that improve community quality of life.

Although there are many green infrastructure practices to consider, NIRPC's guidance focuses on some of the best practices to apply in transportation settings including:

- Bio-infiltration
- Flow-Through Planters
- Vegetated Swales
- Urban Street Trees
- Pervious Pavements
- Hydrodynamic Separators

The guidelines identify critical design parameters for GI facilities within transportation settings that focus on reducing stormwater quantity and improving water quality for the Northwest Indiana counties. These guidelines focus on strategies to achieve maximum function based on common site constraints and requirements.



Roadway classification is a primary consideration in determining eligibility for the dollars that NIRPC allocates to local road projects. Because it is also useful when initially evaluating and selecting GI practices, NIRPC's guidelines are organized by roadway classification. Other considerations for GI selection include location, site constraints, and performance objectives. The guidelines do not address all potential GI available, but highlight the most common GI and provide a basic overview of benefits and ecological functions, applications, typical design considerations, and maintenance associated with the GI practice. The guidelines are intended to provide early planning guidance and a tool for planners and designers when considering the inclusion of GI into right-of-way development and retrofit projects. They are not a substitute for appropriate project engineering and design. The guidelines do not supersede regulatory requirements and should always be considered in conjunction with code requirements of authorities having jurisdiction.



In 2023 and 2024 NIRPC will be taking a closer look at how and where region communities and infrastructure might be vulnerable to the climate change induced increases in high heat events and extreme precipitation events. The US Federal Highway Administration Vulnerability Assessment and Adaptation Framework provides guidance on key steps to follow, some of which have begun through ongoing climate planning efforts.

- ***Articulate Objectives and Define Study Scope*:** This process has begun with input from the Climate Action Northwest Indiana working group, local governments, and non-profit partners. Initial objectives include understanding where and to what extent roads, sidewalks, bridges, and culverts are vulnerable to an increase in the frequency and intensity of storms and precipitation, learning how increasing frequency of high heat events might influence regional efforts to normalize active transportation habits in the region, investigating if it is possible to predict whether potential changes in heat/thaw cycles might impact pavement longevity.

- ***Obtain Asset Data*:** Collecting data from local governments on road flooding complaints and mapping infrastructure and waterway intersections will provide an initial screening for flooding vulnerability. Mapping of heat islands and gaps in street tree canopies will be needed to understand those places with little protection from extreme heat events.

- ***Obtain Climate Data*:** Fortunately, the Indiana Climate Impacts Assessment at Purdue University has produced nine reports detailing how climate change will impact many aspects of the natural and built environment. The statewide Climate Impact Assessment does include the range of future conditions in northern, central, and southern Indiana. It captures potential climate change impacts on the coastal hazards unique to NWI within the state. Using recent experiences of high and low lake level extremes may provide additional data to bring to this study.

- ***Assess Vulnerability:*** Is the next step needed and will be undertaken in 2023-2025.

Forests

Trees help to sequester carbon and provide other benefits, such as flood control and cooling. Much of Northwest Indiana was forested prior to development, and large amounts of forested areas remain, from morainal forests to boreal flatwoods. Between 2011 to 2016, the annual net GHG balance of forests and trees was -421,644 t CO2e in Northwest Indiana.

Urban forests refer to the trees in urban areas, such as street trees, trees in parks, and trees on private property. In addition to offsetting GHG emissions, urban forests deliver social, economic, and environmental benefits. These benefits are often needed in urban or underserved communities, which may experience poor air quality and heat island effects. Protecting existing, mature trees is critical to maintaining these valuable ecosystem services, as mature trees provide substantially more benefits and the removal of mature forests itself increases GHG emissions. Investments in urban forests should be equitably distributed throughout Northwest Indiana.

Trees in a community help to reduce air and water pollution, alter heating and cooling costs, and increase real estate values. Urban areas are typically 1-2°C (but as much as 10°C) warmer than rural areas, and this "heat island" effect can be exacerbated by climate change. Urban areas may also be more prone to climate impacts, such as increased flooding. Urban trees can mitigate these impacts by shading communities and absorbing stormwater.

Objective	Supporting Strategies	Reduction Potential	Co-Benefits
LU 1 - Increase Urban Canopy and Urban Green Infrastructure	LU-1A, LU-1B, LU-1C, LU-1D, LU-1E		
LU 2 - Increase Open Spaces and Improve Open Space Management	LU-2A, LU-2B		



LU 1 – Increase Urban Canopy and Urban Green Infrastructure		
Increase Percent Urban Tree Canopy from 17.1% to 23% by 2035 and 30.0% by 2050. (region wide. Source: NIRPC On To 2040 Plan)		

Strategy Number	Strategy	Benefits	Local Government Role	Examples
LU-1A	Protect and increase urban and suburban forests		1. Lead - Complete an assessment of current urban forests and develop a master plan to fund, maintain and improve them through capital improvement programs, public works and parks budgets 2. Enact - Adopt ordinances to require tree preservation, replacement and planting for private development, including enhanced inspection and enforcement capabilities	1. Oxford, MS 2. Cleveland, OH 3. Smyrna, GA 4. New Brunswick, NJ 5. Fayetteville, AK 6. Atlanta, GA
LU-1B	Plan and protect street trees		1. Lead - Ensure city planning master plan incorporates increased street tree plantings, and that tree planting is funded 2. Encourage - Fund a community tree program that provides residents with free street trees and information about their planting and care 3. Enact – Require street trees to be planted in new developments	1. Miami, FL 2. Kansas City, MO 3. Austin, TX 4. Vancouver, WA
LU-1C	Earn recognition for urban forest stewardship with a Tree City USA Growth Award		Lead – Earn a Tree City USA Growth Award	Boulder, CO
LU-1D	Plant shade trees		Encourage – Provide cost-sharing for planting of shade trees	1. Washington, D.C. 2. San Antonio, TX
LU-1E	Harvest and utilize high-value wood products from trees that must be removed		1. Lead - Create an urban wood utilization program for trees cut down by the city 2. Encourage - Create educational materials or programs to make arborists and homeowners aware of alternate options for disposing of harvested wood	1. Davenport, IA 2. Wisconsin Urban Wood

Additional Resources:

Protect and increase urban and suburban forests

Heartland Tree Alliance - https://bridgingthegap.org/heartland-tree-alliance/

US Forest Service, Urban Forests - https://www.fs.usda.gov/ccrc/topics/urban-forests-and-climate-change

Vibrant Cities Lab - https://www.vibrantcitieslab.com/toolkit/plan-the-total-program/

International Society of Arboriculture - https://www.isa-arbor.com/Credentials/Types-of-Credentials/ISA-Certified-Arborist-Municipal-Specialist/Tree-Ordinance-Guidelines

Plant and protect street trees

EPA Heat Island Database - https://www.epa.gov/heatislands/heat-island-community-actions-database

EPA Urban Street Trees - https://www.epa.gov/water-research/urban-street-trees-and-green-infrastructure

22 benefits of urban street trees - https://ucanr.edu/sites/sjcoeh/files/74156.pdf

Univ. or Washington Safe Streets - https://depts.washington.edu/hhwb/Thm_SafeStreets.html

Earn recognition for urban forest stewardship with a Tree City USA Growth Award

Arbor Day Foundation - https://www.arborday.org/programs/treecityusa/

Plant shade trees

DOE Landscaping for Efficiency - https://www.energy.gov/energysaver/energy-efficient-landscaping

Energy Savings from the Tree Shade - https://www.auburn.edu/academic/forestry_wildlife/forest_policy_ctr/documents/energy-savings-ecol-econ.pdf

Harvest and utilize high-value wood products from trees that must be removed

Colorado State Forest Service Urban Wood Utilization - https://csfs.colostate.edu/cowood/

LU 2 – Increase Open Spaces and Improve Open Space Management		
Increase Acres in Manages Lands by USGS from 49,032 acres to 58,000 acres by 2035 to 70,000 acres by 2050 (region wide. Source: NIRPC On To 2040 Plan)		

Strategy Number	Strategy	Benefits	Local Government Role	Examples
LU-2A	Conserve key natural assets and open space, including working lands (agriculture)		1. Lead – Acquire land to be conserved as open space 2. Encourage – Use conservation easements to protect key areas 3. Enact - Create vegetation protection zones	1. Kansas City 2. Wayland, MI
LU-2B	Fully fund parks and recreation systems		Lead – Provide funding to enhance existing green space and parks	Indianapolis, IN

For more information on land conservation and open space, refer to NWI 2050+ Chapter 5: Land Use



APPENDIX 3A

Inventory Methodology

The first step toward achieving tangible GHG emissions reductions requires identifying baseline emissions levels, sources, and activities generating emissions in a community. This report presents emissions from the communities of Cedar Lake, Chesterton, East Chicago, Highland, Hobart, Lake Station, La Porte, Merrillville, Munster, Valparaiso, Schererville, Lake County, La Porte County, and Porter County. Subsequently Hammond and Portage were also inventoried. These joined previous inventories completed by the cities of Gary and Michigan City in 2019.

As local governments continue to join the climate protection movement, the need for a standardized approach to quantify GHG emissions has proven essential. This inventory uses the approach and methods provided by the Global Protocol for Community-Scale Emissions (GPC)[8].

Three greenhouse gases are included in this inventory: carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). Many of the charts in this report represent emissions in "carbon dioxide equivalent" (CO_{2e}) values, calculated using the Global Warming Potentials (GWP) for CH_4 and N_2O from the IPCC 5th Assessment Report.

Greenhouse Gas	Global Warming Potential
Carbon Dioxide (CO2)	1
Methane (CH4)	28

Community Emissions Protocol (GPC)

The GPC is the official protocol specified by the Global Covenant of Mayors and defines what emissions must be reported and how. In addition, this inventory draws on methods from the U.S. Community Protocol which provides more detailed methodology specific to U.S. communities. Inventory calculations were performed using ICLEI's ClearPath tool.

The community inventories in the GHG emissions inventory include emissions from the following sectors: Stationary Energy, Transportation, Waste, Water & Wastewater, Industrial Processes and Fugitive Emissions. In addition, the net emission or removal of GHG from Agriculture, Forestry, and Other Land Use (AFOLU) changes are calculated.

CO_2 represents the vast majority (99.5%) of the region's emissions and is produced from burning fossil fuels such as coal, gasoline, diesel, and natural gas. N_2O emissions were primarily from grid electricity (from fuel combusted to create electricity) and gasoline used for passenger vehicles. CH_4 accounts for the smallest percentage of region-wide emissions and resulted primarily from grid electricity, gasoline used for passenger vehicles, solid waste generation, flaring of digester gas, and leakage from local natural gas distribution systems.

In Northwest Indiana, forested areas and urban trees sequester enough carbon that the net result from these calculations was 406,347 tons of Carbon Dioxide Equivalents (CO_{2e}) removed from the atmosphere. This is more than the estimated emissions from solid waste management, wastewater and drinking water treatment combined.

8 GHG Protocol for Cities: An Accounting and Reporting Standard for Cities (n.d.) Retrieved from https://ghgprotocol.org/greenhousegas-1protocol-accounting-reporting-standard-cities

Quantifying Greenhouse Gas Emissions

Scopes

Communities contribute to GHG emissions in many ways. The three central categorizations of emissions used in the GPC community inventory are outlined below. By reporting on these three different scopes of emissions, local governments can develop and promote a deeper understanding of GHG emissions associated with their communities. Figure 3A from the GPC GHG Protocol for Cities, depicts the differences and relationships between the scopes.

Scope 1: GHG emissions from sources located within the community boundary.

Scope 2: GHG emissions occurring because of the use of grid-supplied electricity, heat, steam and/or cooling within the community boundary.

Scope 3: All other GHG emissions that occur outside the city boundary because of activities taking place within the community boundary.

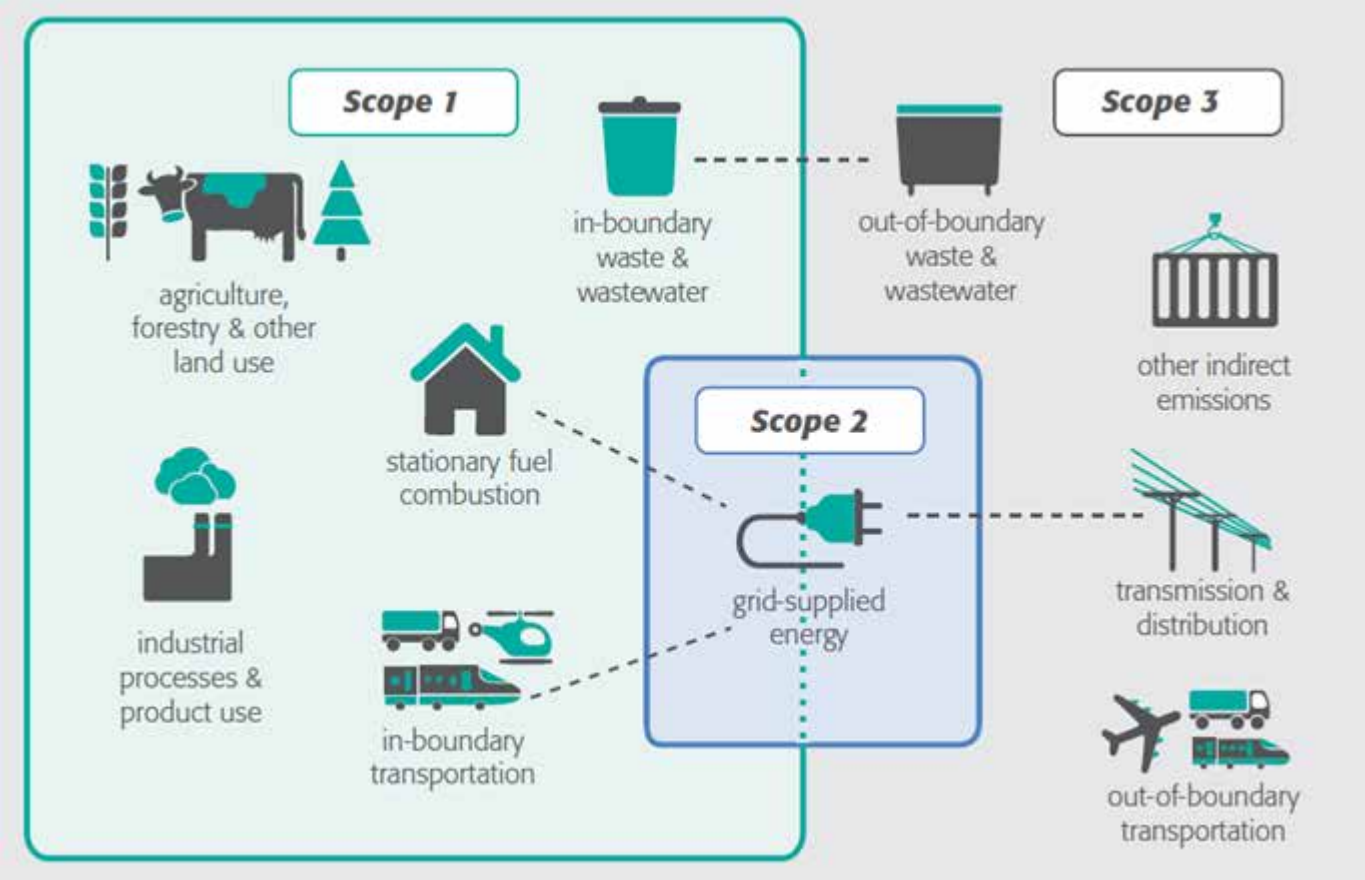


Figure 3A: Community Emissions Protocol Scope Diagram

By reporting on these three different scopes of emissions, local governments can develop and promote a deeper understanding of GHG emissions associated with their communities. To aggregate community inventories into a region-wide inventory, such as the aggregation of the Lake, Porter, and La Porte County inventories, all Scope 1 emissions from each community are totaled. This calculation prevents double counting of emissions between communities.

Base Year

The inventory process requires the selection of a base year with which to compare current emissions. These communities' inventories utilize 2017 as their baseline year because Gary and Michigan City completed their initial GHG emissions inventories in 2017. Using the same year as these other inventories allows for greater comparison of emissions between communities.

Quantification Methods

GHG emissions can be quantified in two ways. Measurement-based methodologies refer to the direct measurement of greenhouse gas emissions (from a monitoring system) emitted from a flue of a power plant, wastewater treatment plant, landfill, or industrial facility. Calculation based methodologies calculate emissions using activity data and emissions factors. To calculate emissions accordingly, the basic equation below is used:

Activity Data x Emission Factor = Emissions

Most emissions sources in this inventory are quantified using calculation-based methodologies. Activity data refer to the relevant measurement of energy use or other greenhouse gas generated processes such as fuel consumption by fuel type, metered annual electricity consumption, and annual vehicle miles traveled. Direct measurements were used when necessary, most often for emissions reports from industrial facilities. Please see appendices for more detailed information for emissions activities and factors for each community inventory.

Known emission factors are used to convert energy usage or other activity data into associated quantities of emissions. Emissions factors are usually expressed in terms of emissions per unit of activity data (e.g. lbs CO_2/kWh of electricity). For this inventory, calculations were made using ICLEI's ClearPath tool.

APPENDIX 3B

Summary Report

GHG Inventory for Forests and Trees Outside Forests, 2011 to 2016
Northwest Indiana

Forests and trees play a key role in mitigating climate change, yet they are often not included in local greenhouse gas (GHG) inventories or Climate Action Plans. Northwest Indiana has taken the first step towards understanding how local changes in land use and tree canopy have contributed to the county's net GHG profile. Unlike other sectors, land uses (in this case, forests and trees) not only emit GHGs, they also remove CO_2 from the atmosphere through photosynthesis, and play a critical role in regulating the planet's climate. The information contained in this summary report can be useful when designing climate actions that reduce GHG emissions and/or increase removals of GHGs from the atmosphere.

Key Findings

- Over the period 2011 to 2016, emissions from forests and trees were 40,069 t CO2e per year.
- Over the period 2011 to 2016, the Net GHG balance of forests and trees was -421,644 t CO2e per year.
- Roughly 17% of Northwest Indiana's total land base of 395,942 hectares (978,392 acres) is forest. Many areas outside of forests are also covered by trees, including an average of nearly 3.3 percent tree canopy on lands outside of forest areas.
- Over the same period, annual CO_2 removals from forests and trees were -461,713 t CO2e per year. (Carbon removals are represented by negative values.)
- Total GHG emissions for Northwest Indiana across all sectors could be reduced if additional forests/trees were added to its land base, and/or if losses of trees were reduced further.

	Removals(t CO2e/yr)	Emissions(t CO2e/yr)
Undisturbed Forest	-347,698	
Forest Disturbances		19,305
Non-Forest to Forest	-6,832	
Forest to Settlement		2,960
Forest to Grassland		2,064
Forest to other non-forest lands		11,779
Trees outside of forests	-107,184	3,961
Harvested Wood Products	0	
TOTAL	-461,713	40,069
Net GHG balance	**-421,644**	

Table 3B-1: Northwest Indiana's GHG fluxes from forests and trees for inventory period 2011 - 2016, all values reported in t CO2e per year

Data Inputs

Data used as inputs into the GHG emission and removal calculations are described below.

Land and Forest Cover

GHG inventories for lands are reported in six "land use" categories which were defined by data on land cover—forest land, grassland, cropland, wetland, settlement, and other land (barren, snow, ice). Northwest Indiana's total land base is approximately 395,942 hectares (978,392 acres), with nearly 23.6% Settlement (i.e. developed areas of varying intensity), around 17% forest, 7.6% Grassland (which includes hay/pasture, shrub/scrub, and other herbaceous cover), 49.1% cropland, 2.3% wetland and 0.4% other land.

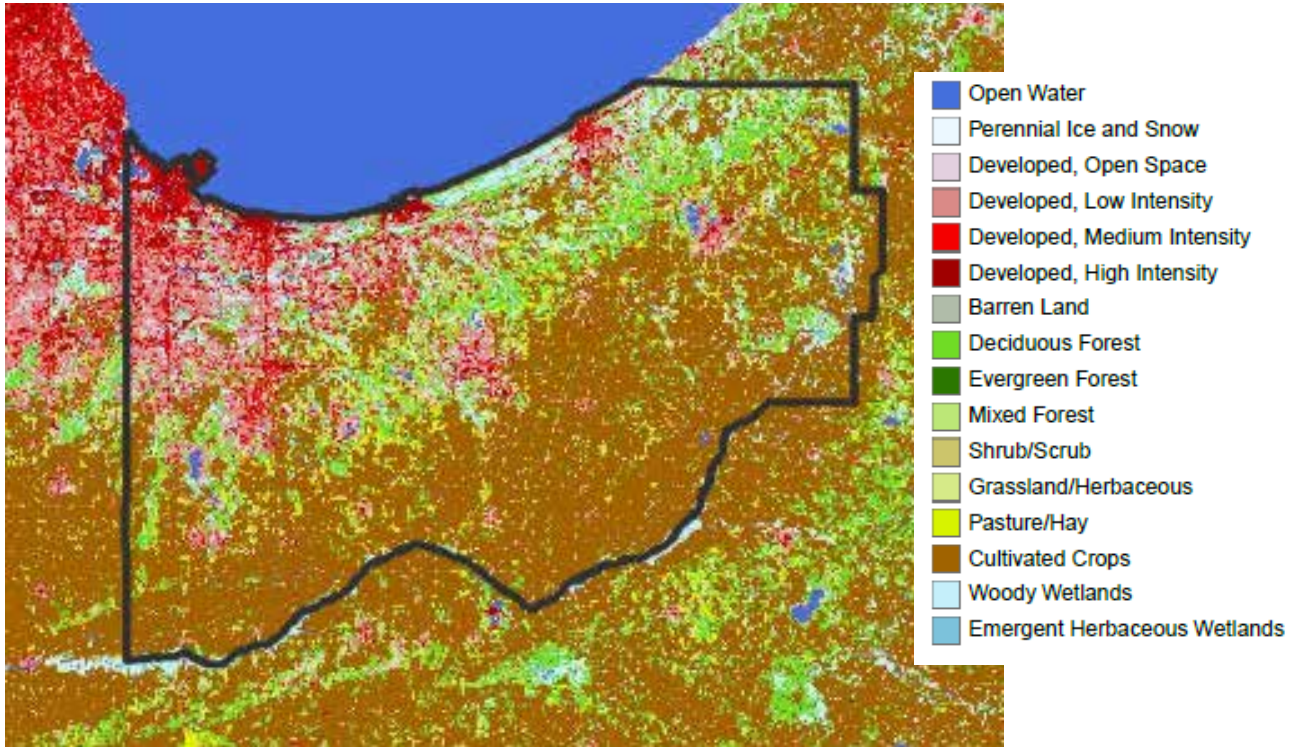


Figure 3B-2: Land cover in Northwest Indiana from the National Land Cover database, 2016

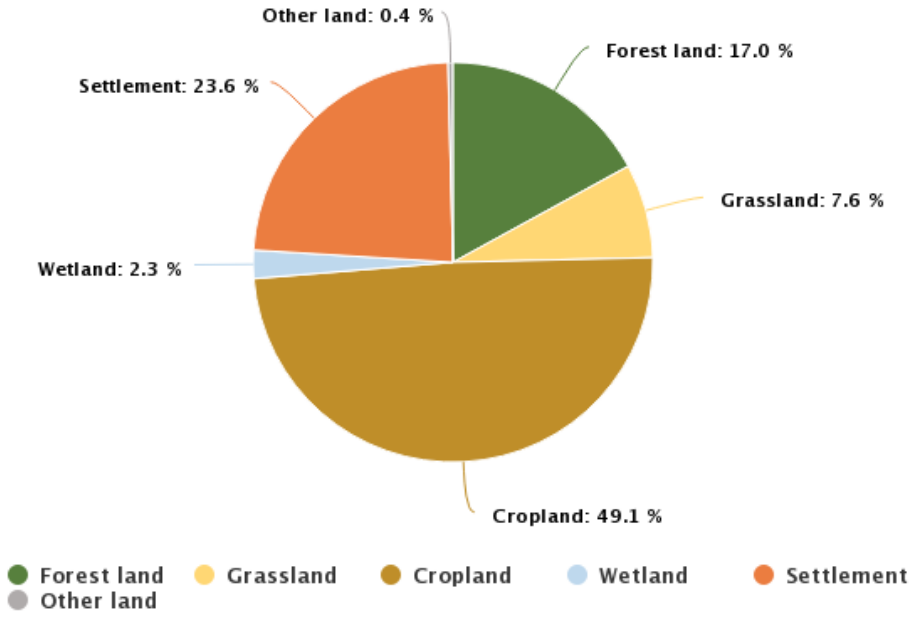


Figure 3B-1: Land cover in Northwest Indiana from the National Land Cover database, 2016

Forest Cover Change

Generating GHG estimates requires data not just on areas of land use, but also data on how land use has changed over time. Between 2011 and 2016, the county lost around 959 hectares (2,369 acres) of forest land, largely conversion to wetland. Over the same period, the county gained around 1,157 hectares (2,860 acres) of forest land, largely from Wetland.

Forest Disturbances

Over the inventory period 2011 to 2016, forest disturbance from insects was the most significant in Northwest Indiana, affecting 2296.9 hectares (5675.8 acres), followed by harvests, which affected 126 hectares (311.4 acres) and fires, which affected 0 hectares (0.0 acres).

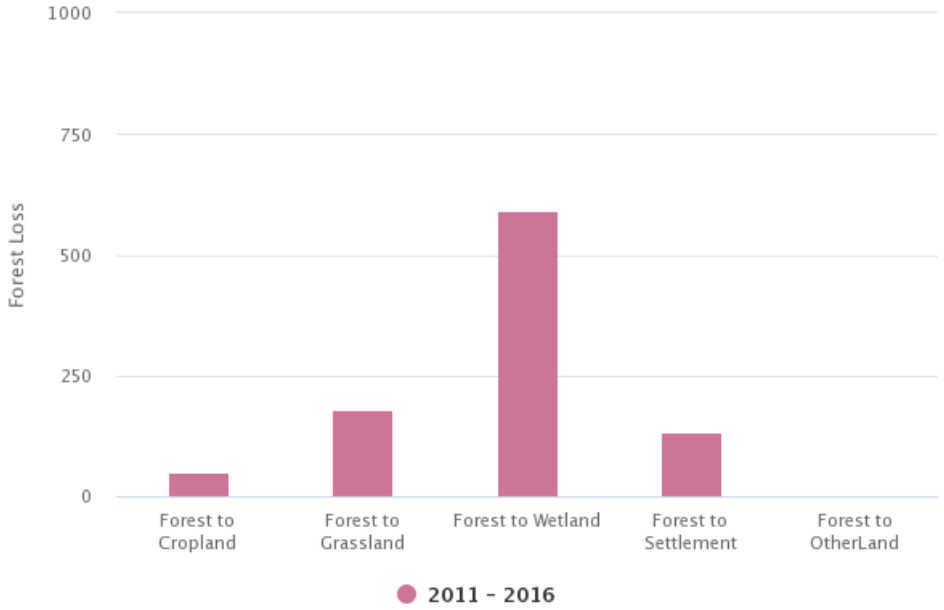


Figure 3B-3: Loss of forest to other land use types between 2011 and 2016 (ha)

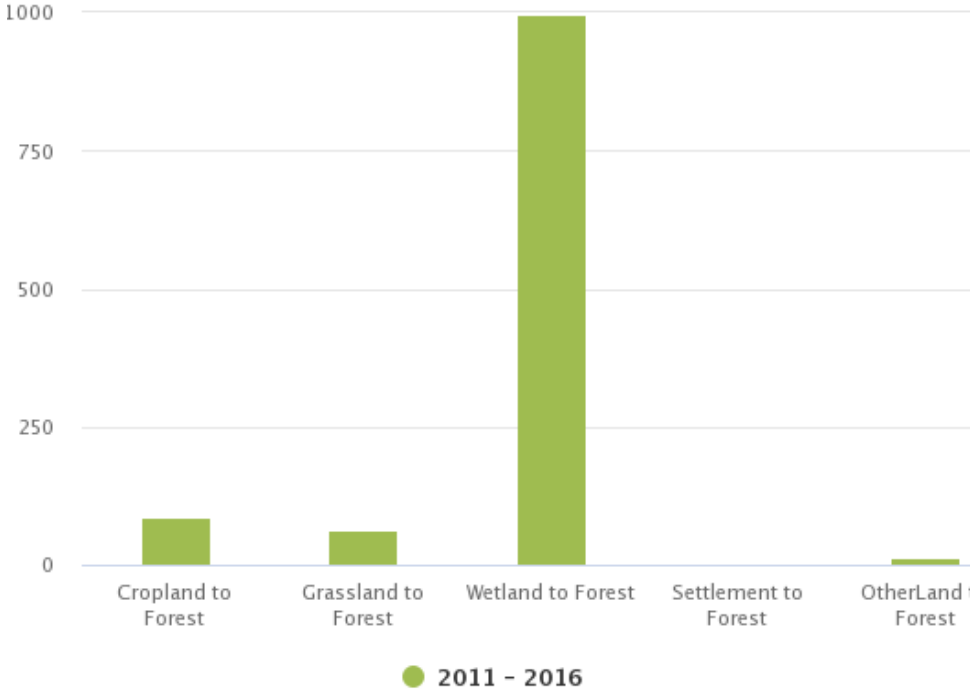


Figure 3B-4: Gain of forest from other land use types between 2011 and 2016 (ha)

Trees Outside Forests

Figure 5 shows tree canopy captured by the NLCD tree canopy data. (Note that some areas with high tree canopy in Figure 3B-5 overlap with the NLCD forest class shown in Figure 3B-2.)

This data is only available for the years 2011 and 2016. Over this time period, Northwest Indiana had an average of 10,659 hectares (26,338 acres) of tree canopy outside forests. Between 2011 and 2016, 11 hectares per year of tree canopy were lost, for a total of 57 hectares (142 acres) of tree canopy loss over the 5-year period. Most of this loss occurred within the Settlement class.

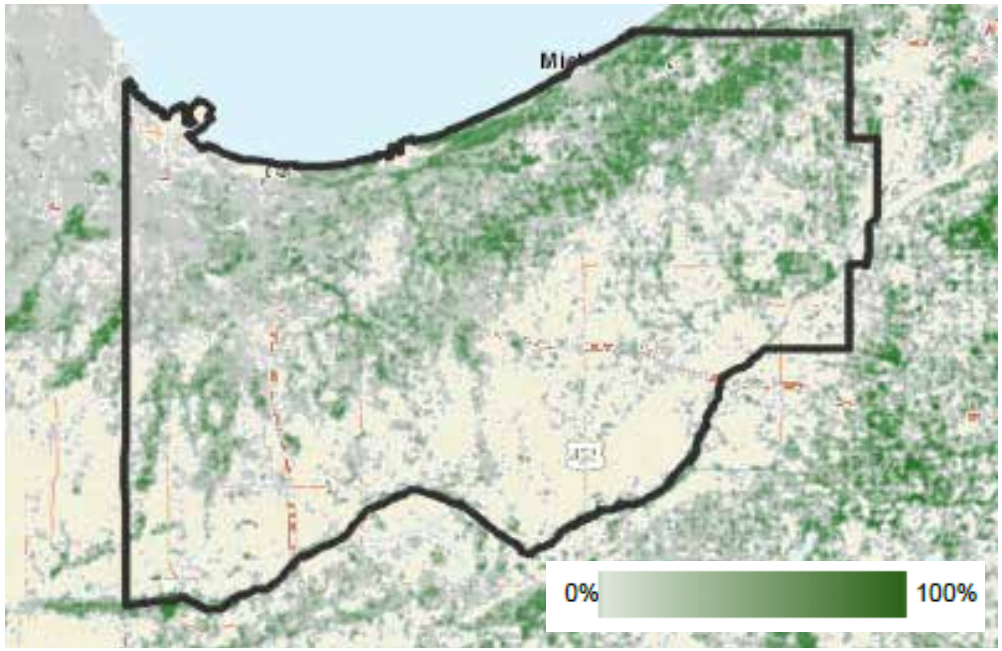


Figure 3B-5: Tree canopy 2016 (Source: National Land Cover Database)

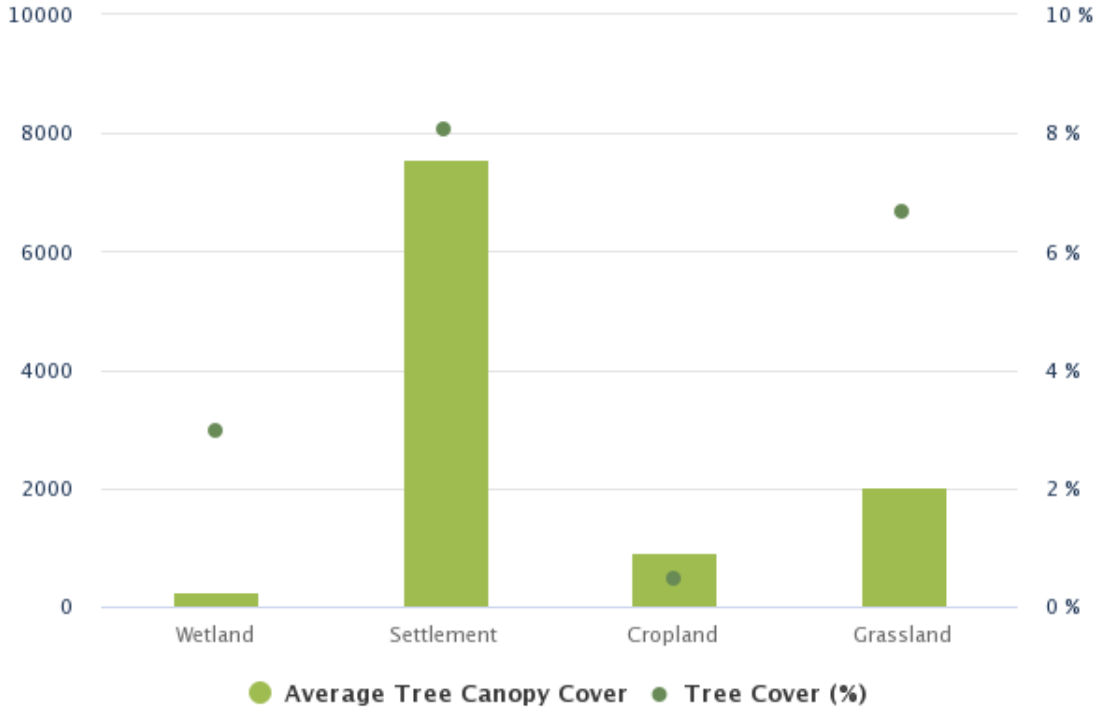


Figure 3B-6: Average tree canopy (in hectares) and % tree canopy in different non-forest land use categories in Northwest Indiana for the period 2011-2016.
Note: bars relate to tree canopy area (left vertical-axis, hectares) and dots are the % tree cover per land use category (right-vertical axis). "Other" category not shown due to very low area.

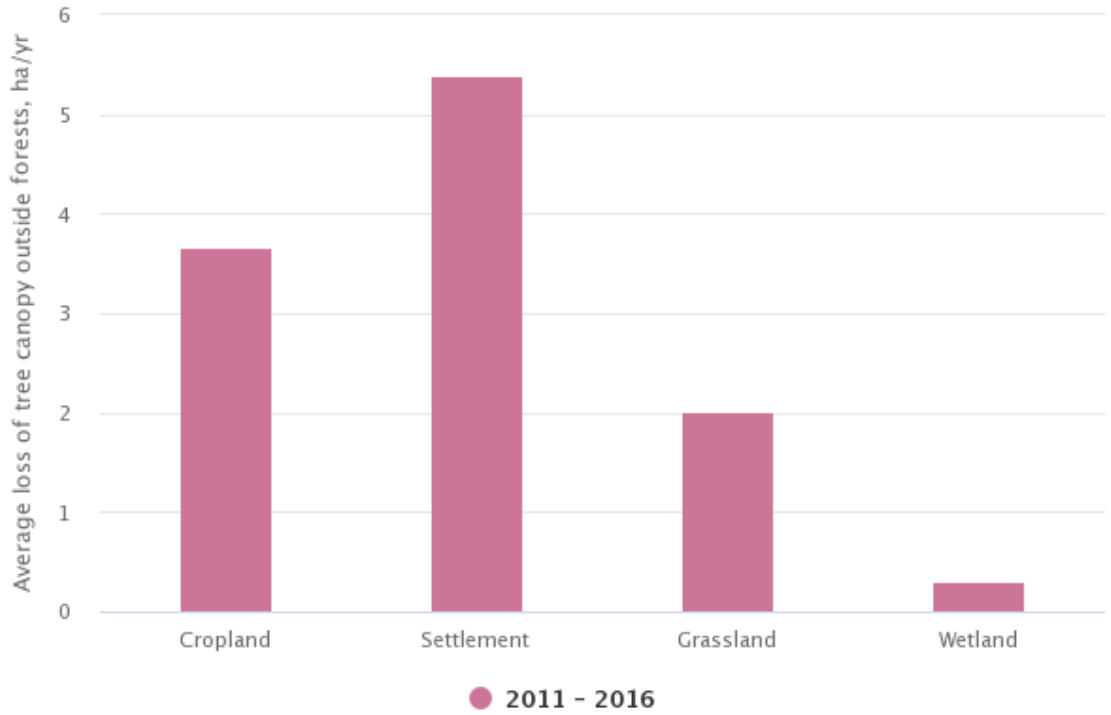


Figure 3B-7: Average area of tree canopy loss in different non-forest land use categories in Northwest Indiana over the period 2011 to 2016 (hectares per year).
Note: "Other" category not shown due to very low area.

Land Cover Change Matrix

2016: Top 2011: Left	Deciduous Forest	Evergreen Forest	Mixed Forest	Woody Wetlands	Cultivated Crops	Pasture/Hay	Grassland/Herbaceous	Shrub/Scrub	Open Water	Emergent Herbaceous Wetlands	Developed, Open Space	Developed, Low Intensity	Developed, Medium Intensity	Developed, High Intensity	Barren Land	Perennial Ice/Snow	Total
Deciduous Forest	37,636	0.3	0.3	21	26	4	91	55	8	39	26	21	22	8	0.3	0	37,957
Evergreen Forest	0.4	697	2	2	0.2	0.2	6	5	4	3	0.4	0.1	0.2	0	0	0	718
Mixed Forest	1	0.3	1,966	0.9	0.8	0	2	1	0.4	0.6	2	0.6	2	0.5	0	0	1,981
Woody Wetlands	2	0.2	0.2	25,897	23	5	6	4	42	695	22	12	10	8	5	0	26,531
Cultivated Crops	37	4	3	41	193,836	126	54	25	31	291	91	110	170	75	4	0	194,899
Pasture/Hay	4	0.1	0.4	7	105	17,082	19	10	5	38	53	45	41	14	0.4	0	17,422
Grassland/Herbaceous	11	0.3	1	12	34	23	9,403	8	43	25	20	35	30	12	2	0	9,659
Shrub/Scrub	18	0.2	0.8	9	39	11	5	3,097	3	14	7	12	15	11	0	0	3,243
Open Water	9	1	0.9	146	8	3	30	2	4,027	235	0.2	4	6	14	14	0	4,501
Emergent Herbaceous Wetlands	16	1	0.7	820	234	24	23	12	147	3,484	2	3	5	5	8	0	4,786
Developed, Open Space	0	0	0	0	0	0	0	0	0	0	20,020	120	358	61	0	0	20,558
Developed, Low Intensity	0	0	0	0	0	0	0	0	0	0	0	36,002	160	162	0	0	36,323
Developed, Medium Intensity	0	0	0	0	0	0	0	0	0	0	0	0	24,232	22	0.2	0	24,254
Developed, High Intensity	0	0	0	0	0	0	0	0	0	0	0	0	0	11,534	0.3	0	11,535
Barren Land	7	0.7	3	3	0	0	2	0.1	26	3	2	3	6	15	1,516	0	1,587
Perennial Ice/Snow	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**37,741**	**705**	**1,981**	**26,959**	**194,306**	**17,279**	**9,642**	**3,219**	**4,337**	**4,627**	**20,245**	**36,356**	**25,058**	**11,942**	**1,549**	**0**	**0**

Table 3B-2 Full NLCD land cover change matrix for 2011 to 2016. All areas are in hectares.

2016: Top 2011: Left	Forest Land	Cropland	Grassland	Wetland	Settlement	Other Land	Total
Forest Land	66,228	50	179	591	134	5	**67,187**
Cropland	85	193,836	205	322	446	4	**194,899**
Grassland	63	177	29,660	127	286	2	**30,315**
Wetland	995	243	95	7,894	39	22	**9,287**
Settlement	0	0	0	0	92,669	0.5	**92,670**
Other Land	14	0	2	29	26	1,516	**1,587**
Total	**67,386**	**194,306**	**30,141**	**8,963**	**93,601**	**1,549**	**0**

Table 3B-3: Simplified land cover change matrix for 2011 to 2016. All areas are in hectares.

Emission and Removal Factors

A summary of the emission and removal factors used in the calculations is provided in Table 3B-4.

	Emission Factor (t C/ha)	Removal Factor (t C/ha/yr)
Forest Change		
Deforestation		
To Cropland	17.70	
To Grassland	15.76	
To Settlement	30.11	
To Wetland	25.44	
To Other	25.88	
Reforestation (Non-Forest to Forest)		-1.61
Forest Remaining Forest		
Undisturbed		-1.48
Disturbed		
Fire	0	
Insect/Disease	7.95	
Harvest/Other	63.88	
Trees Outside Forest		
Tree canopy loss	93.80	
Canopy maintained/gained		-2.74

Table 3B-4: Emission and removal factors

Harvested Wood Products

Harvested wood products (HWP) temporarily store carbon from the forest ecosystem as the wood goes through a series of production processes and end-uses, with eventual disposal (and emission to the atmosphere). The delay represents a net benefit to the atmosphere. The period of storage varies from long-lived solid wood products that remain in use for long periods of time to products that are quickly disposed of in landfills.

In the web tool, the HWP Calculator tracks carbon in harvested wood through four different "fates," from harvest to timber products to primary wood products to end-use to disposal, applying best estimates for product ratios and half-lives at each stage. Based on user inputs entered about annual harvest volumes in Northwest Indiana, the change in the harvested wood pool over the inventory period 2011 to 2016 is estimated as 0 t CO2e per year.

Caveats

Information presented in Table 3B-4 represents a snapshot in time of the net GHG balance and many of the factors contributing to that balance. The estimates can help identify where policies may be designed to reduce net GHG emissions. This inventory currently uses a simplifying assumption that a loss of forest or trees results in immediate emissions to the atmosphere (rather than delayed emissions in the case of various use cases from long-term storage to shorter decay timelines if sent to landfills). In general, it is important to consider that these estimates represent a relatively short period of time compared with the long-term consequences of policy decisions and land management actions. For example, a forest converted to settlement represents a permanent loss of removal capacity. Over the long term, maintaining forests will sustain a higher rate of carbon removal, depending on age-related growth rates and occurrence of disturbances. There are significant uncertainties in the estimates. Although not quantified here, typical GHG inventories of forests using similar approaches, including the national GHG inventory, report uncertainties in the net GHG balance that can be as high as ±45% (with 95% confidence). In the results presented here, the most uncertain estimates involve emissions from land-use change which are based on well-documented remote-sensing products, but relatively few field observations from a statistical sampling of county forests. While uncertainties can be high, the estimates can still provide useful information on the relative magnitude and importance of such GHGs; subsequent analyses can also provide information on the directionality of emissions and removals from land management.

Finally, it is recommended that additional analyses be done using models that project impacts of alternatives over coming decades. Such models are available and have been used in other studies at county scale. The GHG inventory presented here is only the first step to providing science-based information to support policy decisions. To explore the potential impacts of alternate policies, projection models can be used to compare long-term results among the alternatives which typically include a BAU (i.e. no change in policy) alternative. This feature may be added into the web tool in the future.


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4 FREIGHT

Introduction

The Northwestern Indiana Regional Planning Commission (NIRPC) is the designated Metropolitan Planning Organization for the Northwest Indiana region. NIRPC is responsible for investing federal transportation funds in highways, transit, active (non-motorized) transportation, and other modes of people and goods movement in Northwest Indiana. *NWI 2050+*, is a Metropolitan Transportation Plan (MTP) – which encompasses transportation modal elements, including a freight element. The purpose of the Freight Chapter is to emphasize:

- preserving the existing transportation systems,
- planning for the safety of all transportation system users,
- providing the freight industry with access to the workforce,
- efficiently moving freight to support the economy of the region, and
- ensuring equity in allocating federal, state, and local transportation dollars to benefit all users.

The Freight Chapter was developed in three phases (as shown in Figure 4-1) and builds upon key findings and relevant content from previous related studies, plans, and formal documents, including the Indiana Department of Transportation (INDOT)'s *State Rail Plan*, Long-Range Transportation Plan (LRTP), and Statewide Transportation Improvement Program (STIP); NIRPC's *E-Commerce in Northwest Indiana,* and Air Quality Conformity Determination Report, and other statewide, regional, and local documents. The full list of the reviewed literature and the takeaways of this process can be found in Appendix 4A: Review of the Existing Studies, Plans, and Other Relevant Documents.



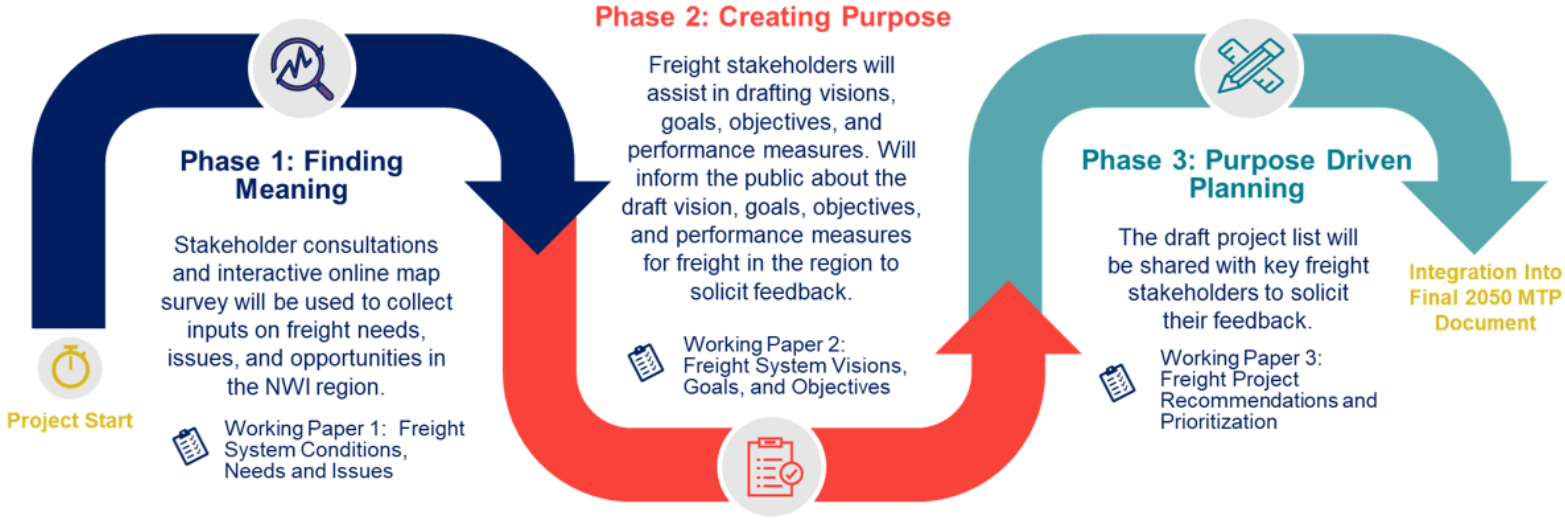


Figure 4-1: Work Plan Summary

Source: CPCS, 2022.

Methodology

This section of the Freight Chapter provides a synthesis of the extent of current freight operations in Northwest Indiana and the characteristics of the existing freight transportation system that supports the movement of goods to, from, and through the region. First, a high-level assessment of freight mode shares in the region and a description of freight-dependent industries provide the regional economic context. Next, freight systems and operations in the region are examined using a modal approach informed through data analysis and triangulation as well as stakeholder outreach. The same modal approach is also used to present a high-level overview of expected growth in freight activities and potential impacts on the transportation system performance.



Stakeholder Outreach Activities

The primary purpose of stakeholder outreach was to meaningfully engage Northwest Indiana's public and private sector freight stakeholders to:

- Guide the development of *NWI 2050+* – Freight Chapter,
- Provide perspectives on the freight system usage, needs, issues, and potential opportunities, and
- Participate in the freight planning process and influence recommendations.

The following is a summary of outreach activities that inform the development of *NWI2050+* – Freight Chapter:

- *Freight Steering Committee (FSC) meetings:* FSC is comprised of individuals representing key freight stakeholder groups in the region. Members are identified by NIRPC and include representatives from local governments, economic development agencies, industry associations, ports, airports, and private sector stakeholders. Four meetings took place with the FSC, in July, September, December 2022, and February 2023.

- *Stakeholder Consultations:* one-on-one consultations with key stakeholders were conducted to inform Phase 1 and Phase 2 efforts. The consultation outreach efforts started in June 2022. A full list of stakeholders consulted as part of this planning effort can be found in Appendix 4B: Stakeholder Consultation List.

- *Public Sessions and Surveys:* public open houses were used throughout *NWI 2050+* development to communicate findings and recommendations with Northwest Indiana residents and transportation system users. The first public session was held in June 2022, introducing the Plan elements to the members of the public and launching an online survey of regional transportation needs, issues and opportunities.

Northwest Indiana's Economic Context

Northwest Indiana's Economy

This section provides an overview of the economic characteristics of Northwest Indiana, focusing on socio-economic aspects such as population, education, employment, and income. Additionally, a review of employment and income in freight-dependent industries provides context for understanding the general transportation needs of businesses in Northwest Indiana, as well as a foundation for further discussions of freight transportation needs and issues in the region.

Population

Economic development, labor force availability, and the current demand and future needs for transportation infrastructure are all influenced by population trends. Between 2010 and 2020, the region's population increased by about 1.62 percent to about 784,000. However, Figure 4-2 shows that this decade-long trend masks a pronounced dip between 2014 and 2017. Lake County has by far the largest population (about 498,000 in 2020), followed by Porter (about 173,000) and La Porte (about 111,000).

Figure 4-3 shows that all three counties saw increases in population over the decade but were below Indiana's overall population growth. Historically, the largest city in the region was Gary, whose population has declined over the last five decades or so. Between 2010 and 2020, the city's population fell by about 14 percent. Hammond replaced Gary as the largest city in Lake County in the last decade, but its population has also been declining over the last fifty years.

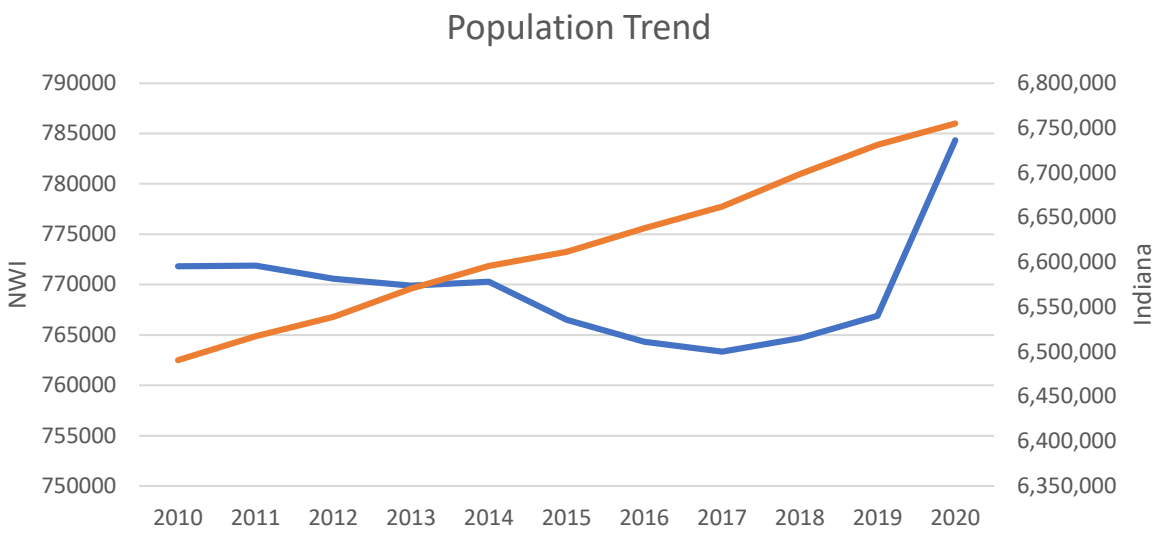


Figure 4-2: Northwest Indiana and Indiana Population Trends, 2010-2020

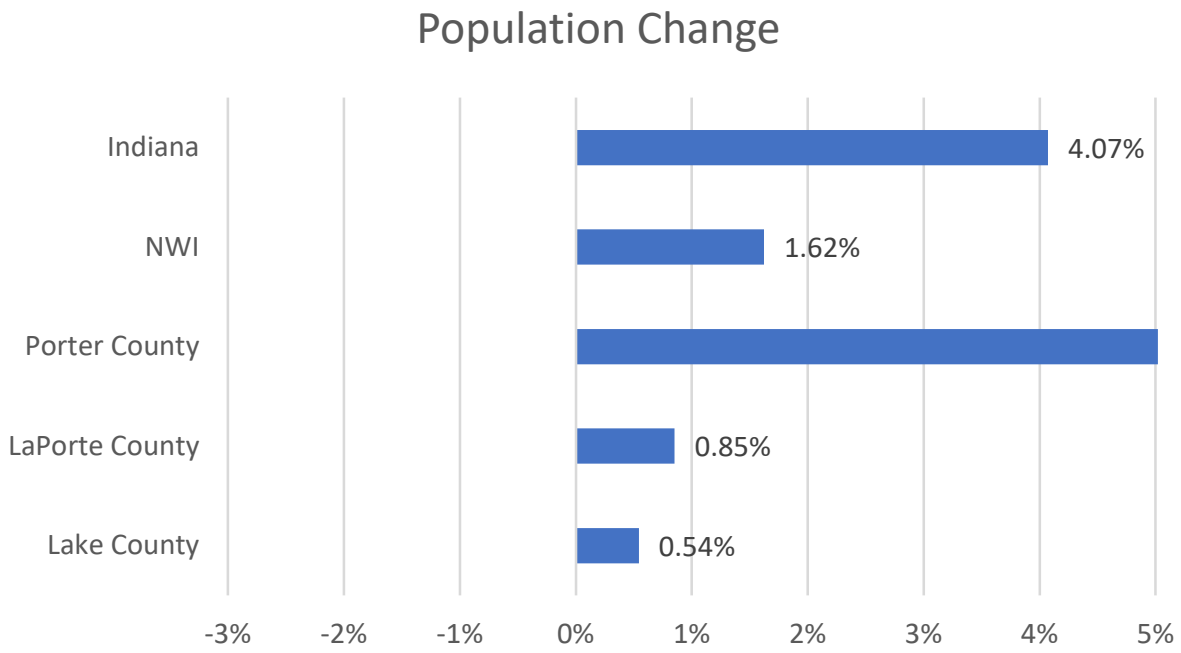


Figure 4-3: Population Trends, 2010-2020

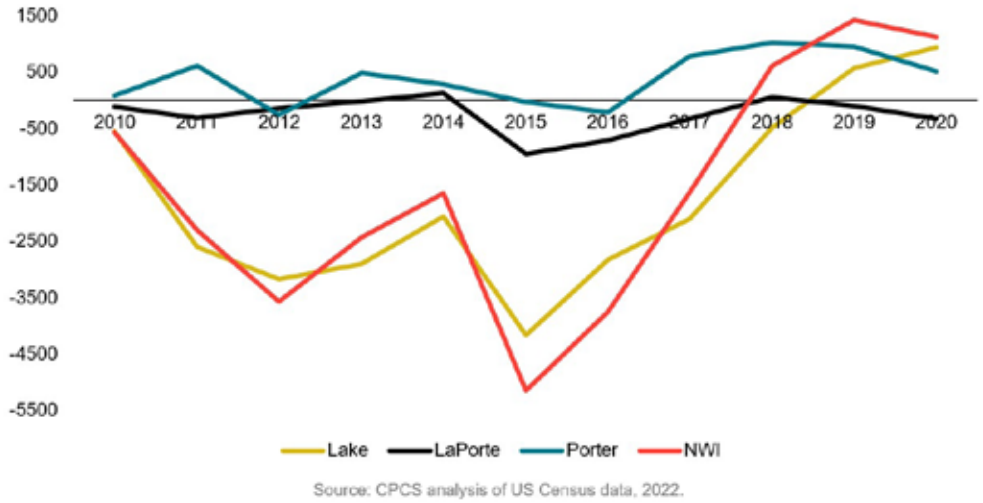


Figure 4-4: Northwest Indiana Net Migration, 2010-2020



Figures 4-5 and 4-6 display changes in Northwest Indiana's population in two age brackets: working-age individuals between 25 and 64 and seniors 65 and over. These figures reveal that Northwest Indiana is seeing a decades-long decline in its working-age population, from roughly 410,000 individuals in 2010 to just over 390,000 in 2020. Meanwhile, the region is seeing steady growth in its senior population, rising from just over 100,000 in 2010 to over 130,000 in 2020. This indicates that the region might face issues with workforce availability or labor shortages. It also hints at a broader struggle in the region to attract and retain younger workers.

Figure 4-7 makes clear that the pace with which Northwest Indiana's population is aging is not mirrored in the rest of the state or country. Indeed, not only has the median age in Northwest Indiana's three counties been rising steadily since 2010, but it has remained above the median age of the state and nation throughout the decade. Again, these trends threaten to induce labor shortages and hint that the region is struggling to retain younger workers. Due to the rising ranks of older residents, industry growth may occur in sectors complementary to aging consumers, including healthcare and e-commerce.

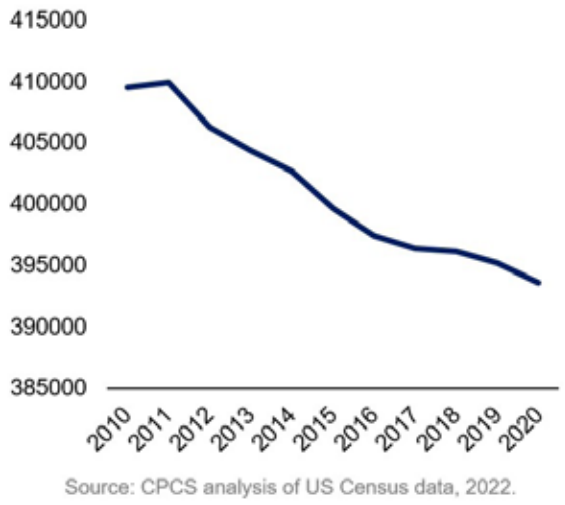


Figure 4-5: Northwest Indiana Working Age Population (25-64), 2010-2020

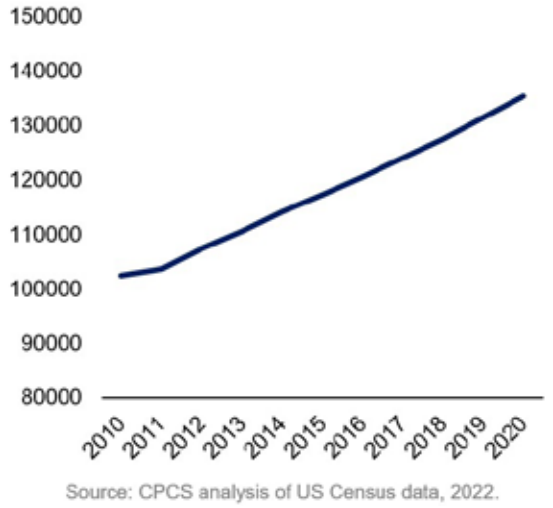


Figure 4-6: Northwest Indiana Senior Population (65+),

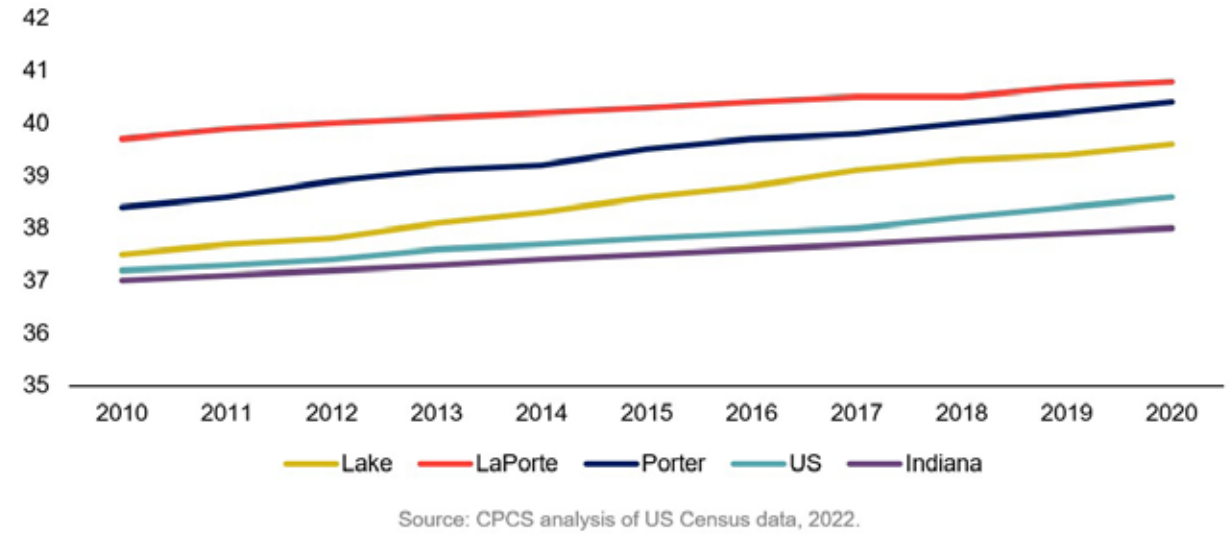


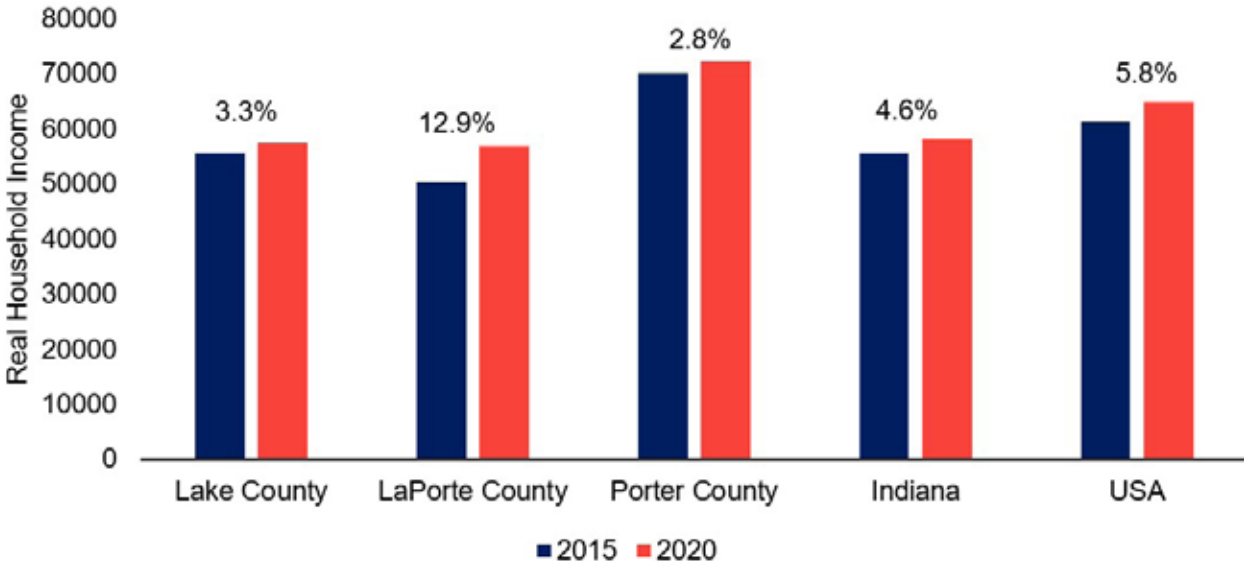
Figure 4-7: Median Age, 2010-2020

Income and Education

An individual's level of education influences their career opportunities and earning potential. Therefore, education and income levels are often closely connected, as educational attainment level can be a determining factor in workforce development to support different industries. Analysis of the income and education levels of the region provides a better understanding of its economic well-being, as well as the ability of its workforce to support relatively higher-paid medium- and high-skill jobs. A workforce with both medium and high-skilled labor may be necessary to support some freight-dependent industries like advanced manufacturing.

Figure 4-8 shows the median real household income in Northwest Indiana's three constituent counties, Indiana, and the US overall. Household income in Lake and La Porte Counties lies at or below the state's overall in 2020, $57,530 and $57,010, respectively. Lake and Porter counties' real income growth lags Indiana and the rest of the country, at 3.3 percent and 2.8 percent, respectively. Porter County, though, has a median household income above the state and national average, at $72,255 in 2020. And La Porte County saw real income growth of nearly 13 percent between 2015 and 2020, which is more than double the national average.

Northwest Indiana's overall educational attainment increased between 2010 and 2019. A smaller share of the population in Northwest Indiana lacks a high school diploma than in the state or nation overall. Moreover, Northwest Indiana has a greater share of high school graduates and of individuals attending some college or receiving an Associates degree than the state and US overall. However, where Northwest Indiana falls behind is in the proportion of the population with a Bachelor's degree or higher, where it lags the state by about 4 percent and the US overall by about 10 percent.



Source: CPCS analysis of US Census data and US Bureau of Labor Statistics CPI Inflation calculator, 2022.

Figure 4-8: Median Real Household Income, 2015 and 2020 in 2020



Table 4-1 lists the highest level of education attained by Northwest Indiana residents in 2010 and 2019 and shows how educational attainment is improving.

These relatively high levels of mid-range educational attainment suggest the labor market in Northwest Indiana may be suitable for middle-income jobs that require some prior training or experience, many of which are concentrated in freight-dependent industries such as agriculture and manufacturing.

Highest Level of Education Attained	NWI 2010	NWI 2019	Indiana 2019	US 2019
No high school diploma	12.10%	9.30%	10.40%	11.40%
High school graduate (includes equivalency)	35.80%	37.00%	33.90%	26.90%
Some College or an Associate's degree	30.70%	30.70%	28.70%	28.60%
Bachelor's degree or higher	21.40%	23.00%	26.90%	33.10%

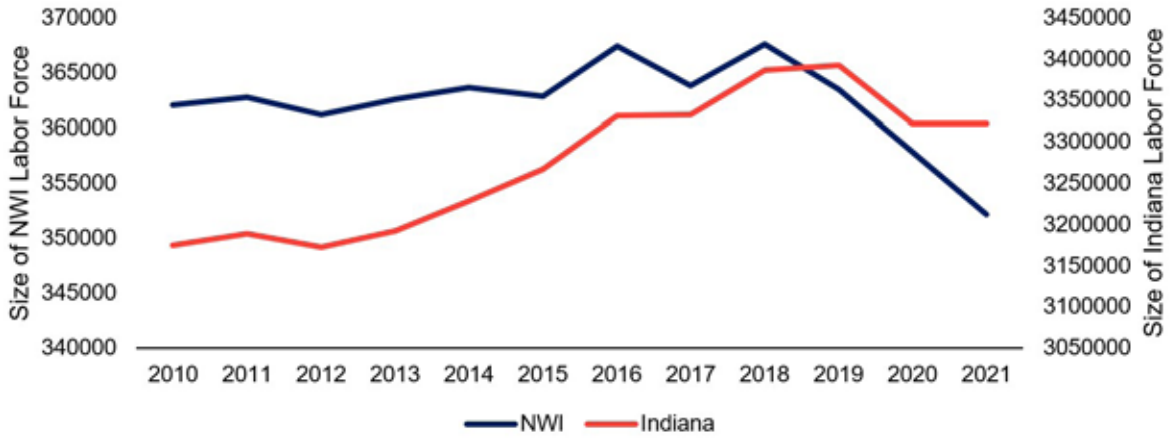
Source: CPCS analysis of US Census data, 2022

Table 4-1: Educational Attainment

Employment

Employment is an important measure of economic well-being as it indicates the availability of labor to support the region's economy. Conversely, unemployment can signal a mismatch between the level or the quality of labor supply and demand. Lastly, examining employment by industry indicates which sectors are the largest employers in the region with an outsized impact on the region's economy.

Figure 4-9 graphs the labor force in Northwest Indiana and Indiana between 2010 and 2021. Whereas Indiana's labor force grew substantially between 2010 and 2019, Northwest Indiana saw much more modest growth. Moreover, the pandemic took a significant toll on its labor force, with numbers falling below 2010 levels. The decline in the labor force in Indiana resulting from the pandemic was far less extreme.



Source: CPCS analysis of US Bureau of Labor Statistics data, 2022.

Figure 4-9: Labor Force in Northwest Indiana and Indiana, 2010-2021



Figure 4-10 graphs the labor force in each of Northwest Indiana's constituent counties between 2010 and 2021. Mirroring relative population size, Lake County has the largest labor force in the region, followed by Porter County and La Porte County. Figure 13 also reveals that only Porter County saw growth in its labor force, with numbers in Lake and La Porte counties contracting.

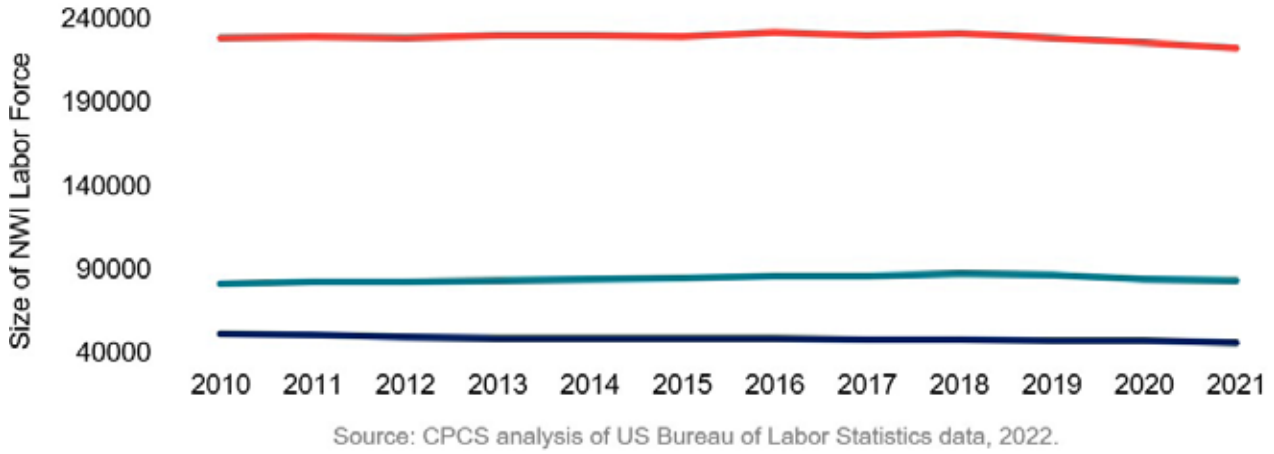


Figure 4-10: Labor Force in Northwest Indiana Counties, 2010-2021

Figure 4-11 shows the change in the unemployment rate from 2010 to 2021 in Northwest Indiana's three constituent counties, Indiana, and the US. Both La Porte and Lake counties had unemployment rates above Indiana's in 2010 and 2021. Porter County's unemployment rate was below Indiana's in 2010 but above it in 2021. In 2021, unemployment rates in Porter and La Porte counties were below the national average of 5.35 percent, while Lake County's unemployment rate was above the national average.

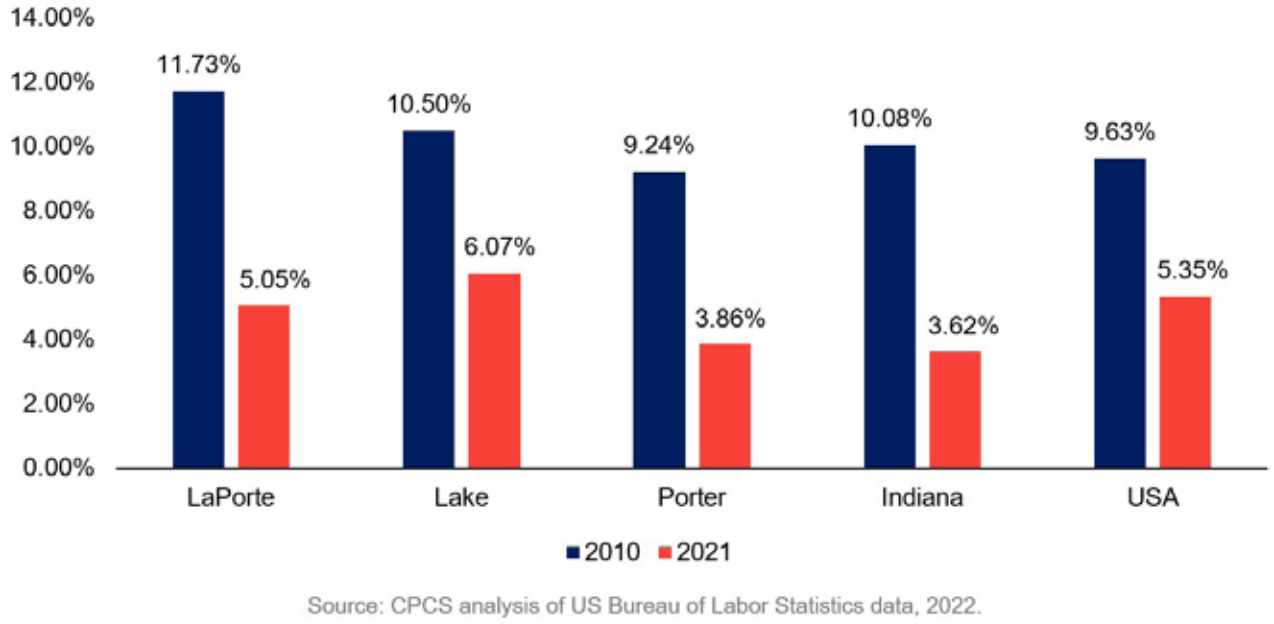


Figure 4-11: Unemployment Rates, 2010 and 2021

Workforce Shortages

Stakeholder consultations confirmed that many industries are struggling to find and hire new workers in Northwest Indiana. Conexus Indiana, which supports industry and cultivates talent in Indiana, noted that in some cases job openings per person approach a ratio of 10 to 1. Several workforce programs, including Catapult Indiana, the Modern Apprenticeship Program, Ivy Tech Community College workforce training solutions, and Center of Workforce Innovations initiatives, strive to address this issue by providing entry-level training and connect potential workers to employers. Also, there has been an ongoing transition to automation across many freight-dependent industries to address ongoing workforce shortages. Indiana's Manufacturing Readiness Grant offers manufacturers funds to invest in automation technologies that perform tasks for which there is an insufficient supply of human labor.

Source: CPCS consultations, July 2022.

	Industry	Employment	% of Total
Private Non-Farm	Forestry, fishing, and related activities	181 (D)	0.05% (D)
	Mining, quarrying, and oil and gas extraction	302	0.08%
	Utilities	(D)	N/A
	Construction	24,144	6.27%
	Manufacturing	42,499	11.04%
	Wholesale trade	4,175 (D)	1.08% (D)
	Retail trade	42,995	11.17%
	Transportation and warehousing	13,507 (D)	3.51% (D)
	Information	2,717	0.71%
	Finance and insurance	11,334	2.94%
	Real estate and rental and leasing	14,629	3.80%
	Professional, scientific, and technical services	15,449	4.01%
	Management of companies and enterprises	2,866	0.74%
	Administrative & support & waste management & remediation services	21,945	5.70%
	Educational services	8,210	2.13%
	Health care and social assistance	53,582	13.92%
	Arts, entertainment, and recreation	10,360	2.69%
	Accommodation and food services	32,358	8.40%
	Other services (except government and government enterprises)	26,760	6.95%
Government and government enterprises		40,787	10.59%
Total Non-Farm Employment		383,305	99.54%
Total Farm Employment		1,755	0.46%
All industry total		385,060	100%

Table 4-2 lists Northwest Indiana's employment among different industries, with freight-dependent industries highlighted in gray. Retail trade and manufacturing both employ among the largest shares of the region's population, at over 11 percent each. The health care and social assistance sector is also an important industry, employing almost 14 percent of the region's total working population. Government and government enterprises and accommodation and food services also employ large proportions of the workforce.

Table 4-2: Northwest Indiana Employment by Industry, 2019

Source: CPCS analysis of Full-Time and Part-Time employment by NAICS Industry, US Bureau of Economic Analysis, 2022. (D) = Not disclosed or data incomplete because some is not disclosed. Note that 3.8% of regional employment is unavailable to avoid disclosure of confidential information. The missing information comes from the agriculture, forestry, fishing, hunting, Utilities; Wholesale trade; and Transportation and warehousing industries among the three counties that make up NWI.

	Industry	GDP, Thousands of 2019$	% of Total
Private	Agriculture, forestry, fishing, and hunting	(D)	N/A
	Mining, quarrying, and oil and gas extraction	22,255	0.06%
	Utilities	197,829 (D)	0.56% (D)
	Construction	2,186,796	6.14%
	Manufacturing	10,114,468	28.40%
	Wholesale trade	557,310 (D)	1.57% (D)
	Retail trade	2,167,770	6.09%
	Transportation and warehousing	1,035,056 (D)	2.91% (D)
	Information	361,071	1.01%
	Finance and insurance	1,197,632	3.36%
	Real estate and rental and leasing	3,345,943	9.40%
	Professional, scientific, and technical services	1,042,648	2.93%
	Management of companies and enterprises	311,283	0.87%
	Administrative & support & waste management & remediation services	1,029,634	2.89%
	Educational services	295,534	0.83%
	Health care and social assistance	3,635,998	10.21%
	Arts, entertainment, and recreation	713,986	2.01%
	Accommodation and food services	1,116,782	3.14%
	Other services (except government and government enterprises)	955,136	2.68%
Government and government enterprises		3,020,826	8.48%
All industry total		35,608,158	100%

Source: CPCS analysis of Full-Time and Part-Time GDP by NAICS Industry, US Bureau of Economic Analysis, 2022. (D) = Not disclosed or data incomplete because some is not disclosed. Note that 6.5% of regional GDP is unavailable to avoid disclosure of confidential information. The missing information comes from the agriculture, forestry, fishing, hunting, Utilities, Wholesale trade, and Transportation and warehousing industries among the three counties that make up NWI.

Figure Table 4-3: Northwest Indiana's GDP by Industry, 2019



Gross Domestic Product

Gross Domestic Product (GDP) is a measurement of the monetary value of the services produced in a country, state, or county. Investigating periodic GDP trends provides insight into the health and growth of an economy and can reveal which industries are most important or productive.

Table 4-3 lists GDP in the different industries in Northwest Indiana. This reveals that manufacturing is by far the most important industry to Northwest Indiana's economy, contributing about 28.4 percent of the region's GDP. The health care and social assistance sector also ranks highly, as do real estate and rental and leasing and government and social assistance. Manufacturing, health care and social assistance, and government and social assistance were also major employers in Northwest Indiana. This suggests that these three industries are of utmost importance to the region's socio-economic landscape. Retail trade is a major employer but contributes a smaller share of GDP. Conversely, real estate and rental and leasing do not place as a significant employer but contribute a large share to the region's GDP.

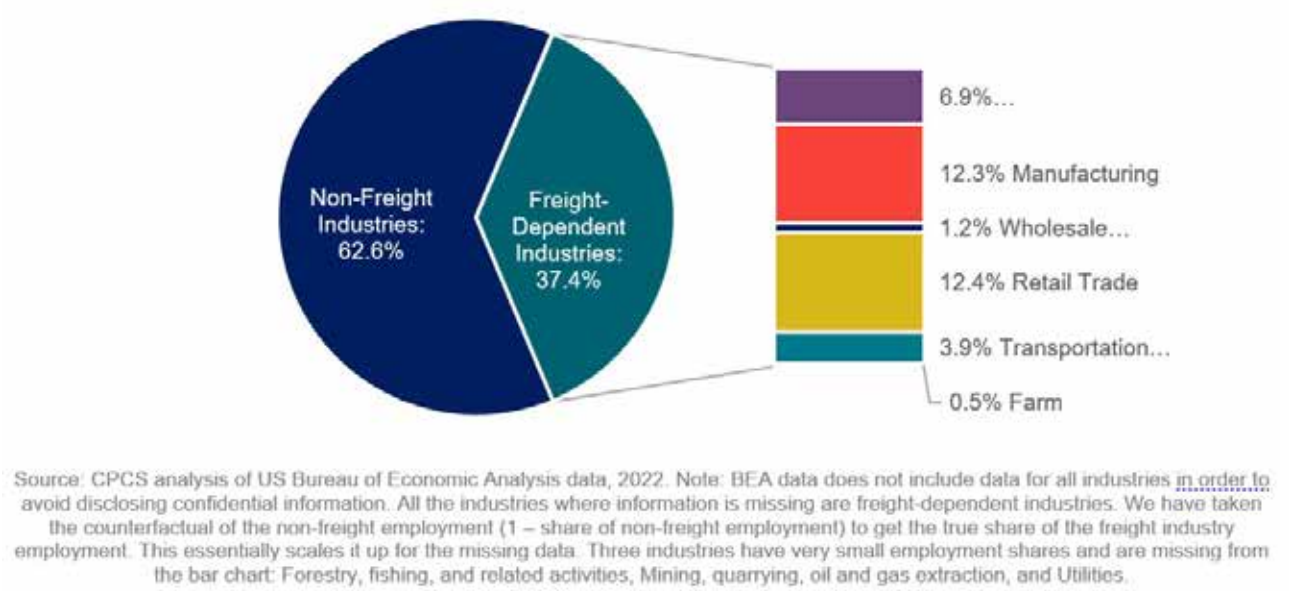
Freight-Dependent Industry

Freight-dependent industries are those that rely heavily on the freight system for their operations and include the following eight industries:

1. Agriculture, forestry, fishing, and hunting
2. Mining, quarrying, and oil and gas extraction
3. Utilities
4. Construction
5. Manufacturing
6. Wholesale trade
7. Retail trade
8. Transportation and warehousing

These industries are identified from economic data using North American Industry Classification System (NAICS) codes, which is a standard system for classifying business statistics for analysis and reporting. High-level economic sectors are represented by two-digit NAICS codes, while subsectors and industry groups are classified using three, four, five, and six-digit codes. For instance, NAICS codes 44 and 45 represent the retail trade industry, while code 441 represents motor vehicle and parts dealing businesses. NAICS codes of the freight-dependent industries and some of their sub industries are listed in Figure 4-14.

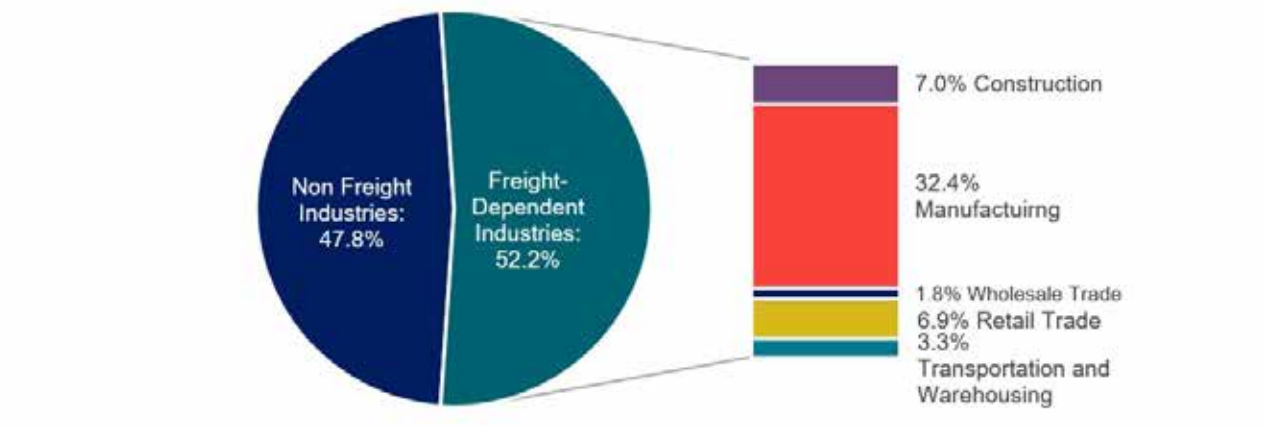
Using the employment data presented earlier, Figure 4-12 reveals that more than 37 percent of those employed in Northwest Indiana work in freight-dependent industries. Similarly, Figure 4-13 shows that over 52 percent of Northwest Indiana's GDP is generated by freight-dependent industries. These figures highlight the importance of the freight system for Northwest Indiana's economy.



Source: CPCS analysis of US Bureau of Economic Analysis data, 2022. Note: BEA data does not include data for all industries in order to avoid disclosing confidential information. All the industries where information is missing are freight-dependent industries. We have taken the counterfactual of the non-freight employment (1 – share of non-freight employment) to get the true share of the freight industry employment. This essentially scales it up for the missing data. Three industries have very small employment shares and are missing from the bar chart: Forestry, fishing, and related activities, Mining, quarrying, oil and gas extraction, and Utilities.

Figure 4-12: Northwest Indiana Employment Share by Industry, 2019





Source: CPCS analysis of US Bureau of Economic Analysis data, 2022. Note: BEA data does not include data for all industries in order to avoid disclosing confidential information. All the industries where information is missing are freight-dependent industries. We have taken the counterfactual of the non-freight GDP (1 – share of non-freight GDP) to get the true share of the freight industry GDP. This essentially scales it up for the missing data. Three industries have very small employment shares and are missing from the bar chart: Agriculture, forestry, fishing, and hunting, Mining, quarrying, oil and gas extraction, and Utilities.

Figure 4-13: Northwest Indiana GDP Share by Industry, 2019



Table 4-4 presents data on the location quotients (LQs) of the eight two-digit NAICS code freight-dependent industries and select three-digit NAICS code industries. A location quotient indicates the proportion of the workforce employed in an industry relative to the national average. Therefore, analyzing LQs is a quick way to understand a local region's economic base specialization relative to the national norm. Industries that have higher LQ values are typically more export-oriented[1] and, therefore, greater contribution to the regional economy. The data reveals that certain types of manufacturing are particularly competitive in Northwest Indiana, namely primary metal manufacturing, non-metallic mineral product manufacturing, and fabricated metal product manufacturing. Truck transportation and gasoline stations also have high LQs.

Another method of determining the importance of an industry is to analyze the change in its employment over time.

Table 4-5 presents percent employment changes among freight-dependent industries between 2010 and 2019 and reveals that transportation and warehousing is the freight-dependent industry with the fastest-growing employment in Northwest Indiana, whereas the mining, quarrying, and oil and gas extraction industry has the fastest shrinking employment.

1 EMSI Resource Library "Understanding Location Quotient", 2007.

Industry	Lake	La Porte	Porter	NWI
NAICS 11 Agriculture, forestry, fishing, and hunting	0.14	0.67	0.11	0.20
NAICS 21 Mining, quarrying, and oil and gas extraction	0.13	0.11	0.11	0.12
NAICS 23 Construction	1.18	0.95	1.52	1.23
NAICS 236 Construction of buildings	1.1	1.37	1.77	1.30
NAICS 31-33 Manufacturing	1.44	2.32	1.85	1.65
NAICS 311 Food manufacturing	0.58	2.85	0.36	0.83
NAICS 313 Textile mills	NC	5.7	NC	NC
NAICS 326 Plastics and rubber products manufacturing	0.46	4.24	1.45	1.19
NAICS 327 Nonmetallic mineral product manufacturing	2.15	1.11	1.27	1.80
NAICS 331 Primary metal manufacturing	22.58	13.14	30.42	23.22
NAICS 332 Fabricated metal product manufacturing	1.23	1.74	2.43	1.59
NAICS 333 Machinery Manufacturing	0.57	6.56	1.03	1.47
NAICS 42 Wholesale trade	NC	0.8	0.87	NC
NAICS 44-45 Retail trade	1.18	1.2	1.19	1.19
NAICS 447 Gasoline stations	1.49	1.72	2.1	1.67
NAICS 448 Clothing and clothing accessories stores	0.96	2.22	0.48	1.01
NAICS 451 Sports, hobby, music instrument, book stores	1.31	1.11	1.88	1.42
NAICS 48-49 Transportation and warehousing	1.06	NC	NC	NC
NAICS 484 Truck transportation	2.2	1.09	1.71	1.94
NAICS 486 Pipeline Transportation	3	NC	NC	NC

Source: CPCS analysis of US Bureau of Labor Statistics QCEW 2019 Private Average Annual Employment Location Quotient data, 2022. NC = not calculable, either because the data does not exist, or it is zero. Note: NWI LQs are calculated as the average of constituency LQ scaled to each county's relative employment level.

Table 4-4: Location Quotient for Freight Industries Among Northwest Indiana Counties, 2019



Industry	% Employment Change, 2010-2019	
	NWI	US
NAICS 11 Agriculture, forestry, fishing, and hunting	-12.9%	+11.7%
NAICS 21 Mining, quarrying, and oil and gas extraction	-33.4%	+3.9%
NAICS 23 Construction	+6.1%	+35.0%
NAICS 31-33 Manufacturing	+6.2%	+11.2%
NAICS 42 Wholesale trade	+5.2%	+7.7%
NAICS 44-45 Retail trade	+0.4%	+7.8%
NAICS 48-49 Transportation and warehousing	+46.4%	+37.4%

Source: CPCS analysis of US Bureau of Economics Analysis data, 2022.
Note: Utilities data is not provided for the counties in NWI. Comparisons in employment between 2010 and 2019 were only conducted between data that was available for the same industry and counties in both years. If employment data was not available for a particular county in one year, it was excluded from the analysis for the other year. The data here should be viewed as approximations only.

Table 4-5: Change in Northwest Indiana Employment Among Freight Industries, 2010-2019

Although LQs reflect the competitiveness of different regional industries compared to the national averages, a Shift Share Analysis is a more dynamic economic indicator used to understand changes in a region's industrial competitiveness over time compared to the national average.
A shift-share analysis estimates regional job growth based on three factors:

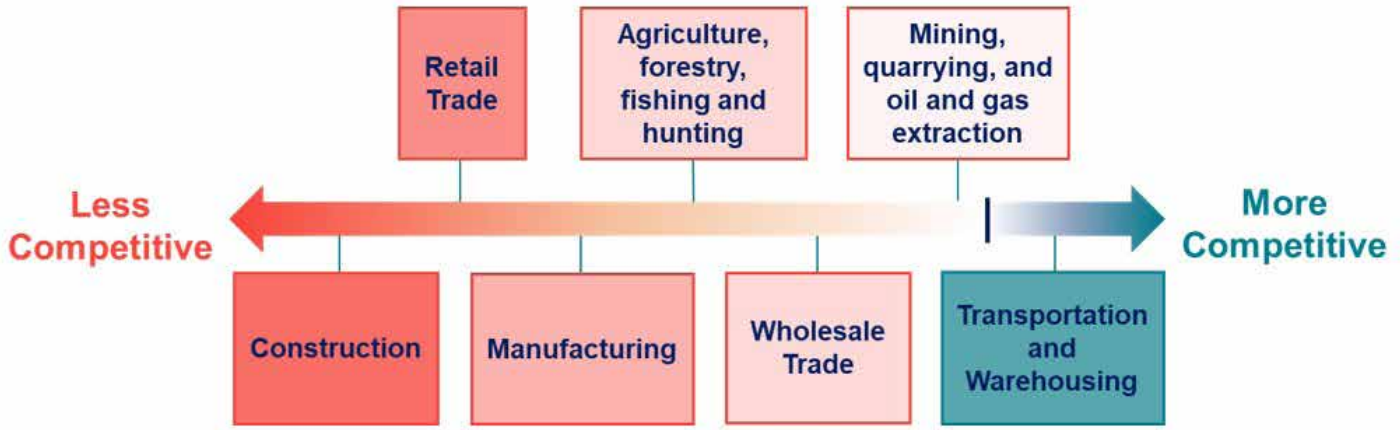
- Industrial mix effect: the growth of a specific industry at the national level. This effect is calculated through analysis of industry-level employment data for the desired time frame.
- National growth effect: the regional industry growth that is impacted by the national level growth rates for the desired time frame.
- Regional competitive effect: the growth (or any change) in regional industry employment due to the unique characteristics of that region.

The resulting shift-share analysis is based on the following formula:

Actual Employment Change = National Share + Industrial Mix + Regional Shift

Figure 4-14 illustrates the change in employment due to the above-mentioned factors for Northwest Indiana's freight-dependent industries. Strikingly, only the transportation and warehousing industry saw a positive regional shift, suggesting that this industry is uniquely competitive in the region. This competitiveness is likely the result of Northwest Indiana housing a nexus of numerous transportation and infrastructure assets that yield Indiana the nickname the "Crossroads of America." This "special formula" includes four major Interstates, three Class I railroads, seven airports, a major Great Lakes port, and numerous terminals, all proximate to Chicago and within a 24-hour drive to 80 percent of the US population. As a result, Northwest Indiana has seen spiking demand for industrial properties like warehouses and distribution centers in recent years, mirroring ongoing growth in e-commerce.[2,3]

2 https://Northwest Indianandianabusiness.com/article/untapped-potential-october-november-2021/
3 https://rejournals.com/northwest-indianas-industrial-boom-only-expected-to-continue-despite-low-supply/



Source: CPCS analysis of US Bureau of Economic Analysis data, 2022. Note: The shift-share analysis uses the same data as earlier, which was subject to certain limitations. The analysis followed the following process for each industry: 2010 Employment in NWI * (2019 Employment in NWI / 2010 Employment in NWI – 2019 US Employment / 2010 US Employment).

Figure 4-14: Northwest Indiana Freight-Dependent Industry Regional Shift, 2010-2019

Industry Profiles

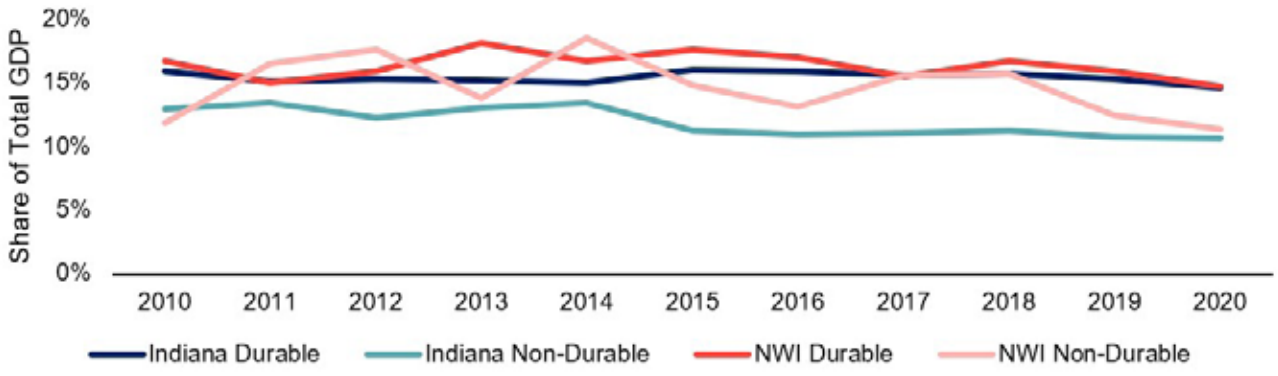
Manufacturing

The manufacturing industry accounted for over 11 percent of the region's total employment and contributed over 28 percent of Northwest Indiana's total GDP in 2019. Manufacturing in both Northwest Indiana and Indiana has seen a very slight decline in importance relative to the overall economy between 2010 and 2020.

Figure 4-15 shows that in Indiana, the manufacturing industry is concentrated more on durable goods production (such as metals and vehicles) than non-durable goods (like food and other disposable items). In Northwest Indiana, neither durable nor non-durable goods clearly make up the majority. The GDP share of non-durable goods, though, appears to fluctuate more widely than durable goods, and these fluctuations largely explain the slight overall decline in the manufacturing industry's GDP contribution.

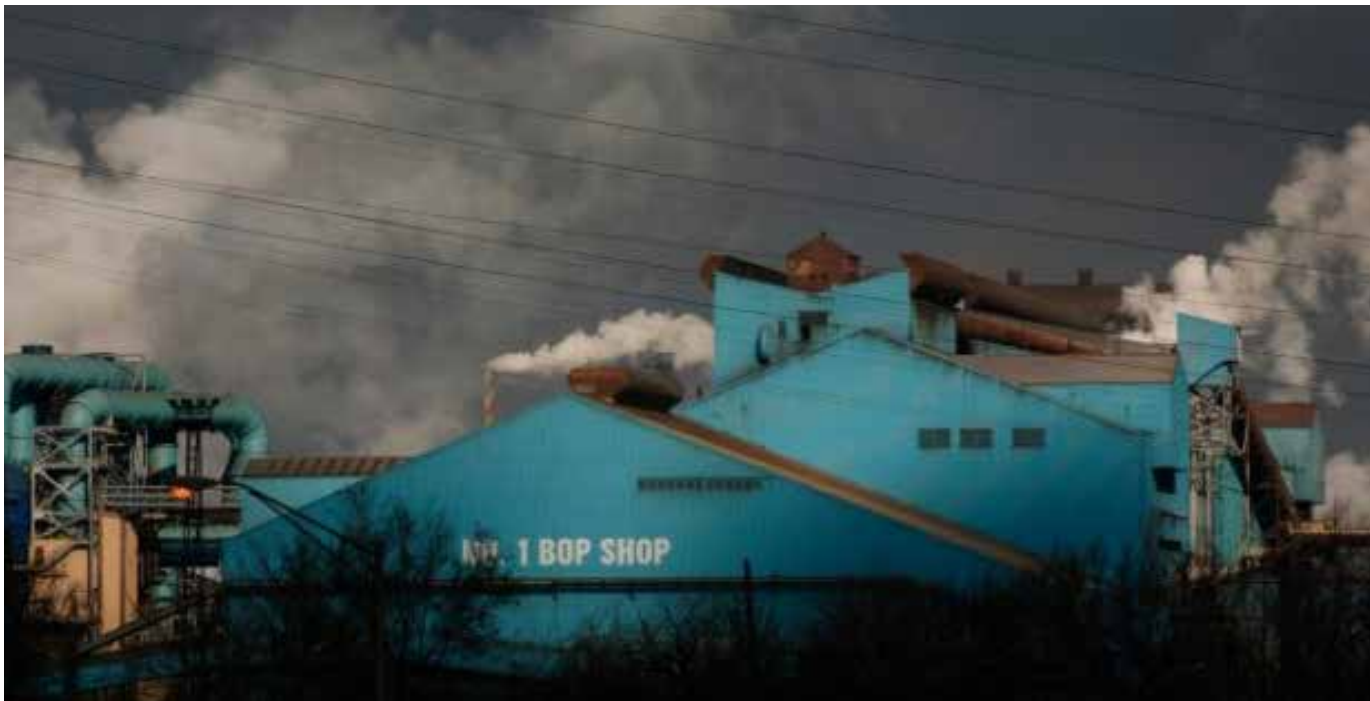
Over $10 billion, or roughly 30 percent of NWI's GDP, comes from the manufacturing industry.	Lake and Porter Counties account for half of the nation's blast furnace capacity.	Michigan City is the largest producer of air compressors in the Midwest.

Source: CPCS analysis, 2022.



Source: CPCS analysis of US Bureau of Economic Analysis data, 2022.

Figure 4-15: Manufacturing Share of GDP by Type of Goods, 2010-2020



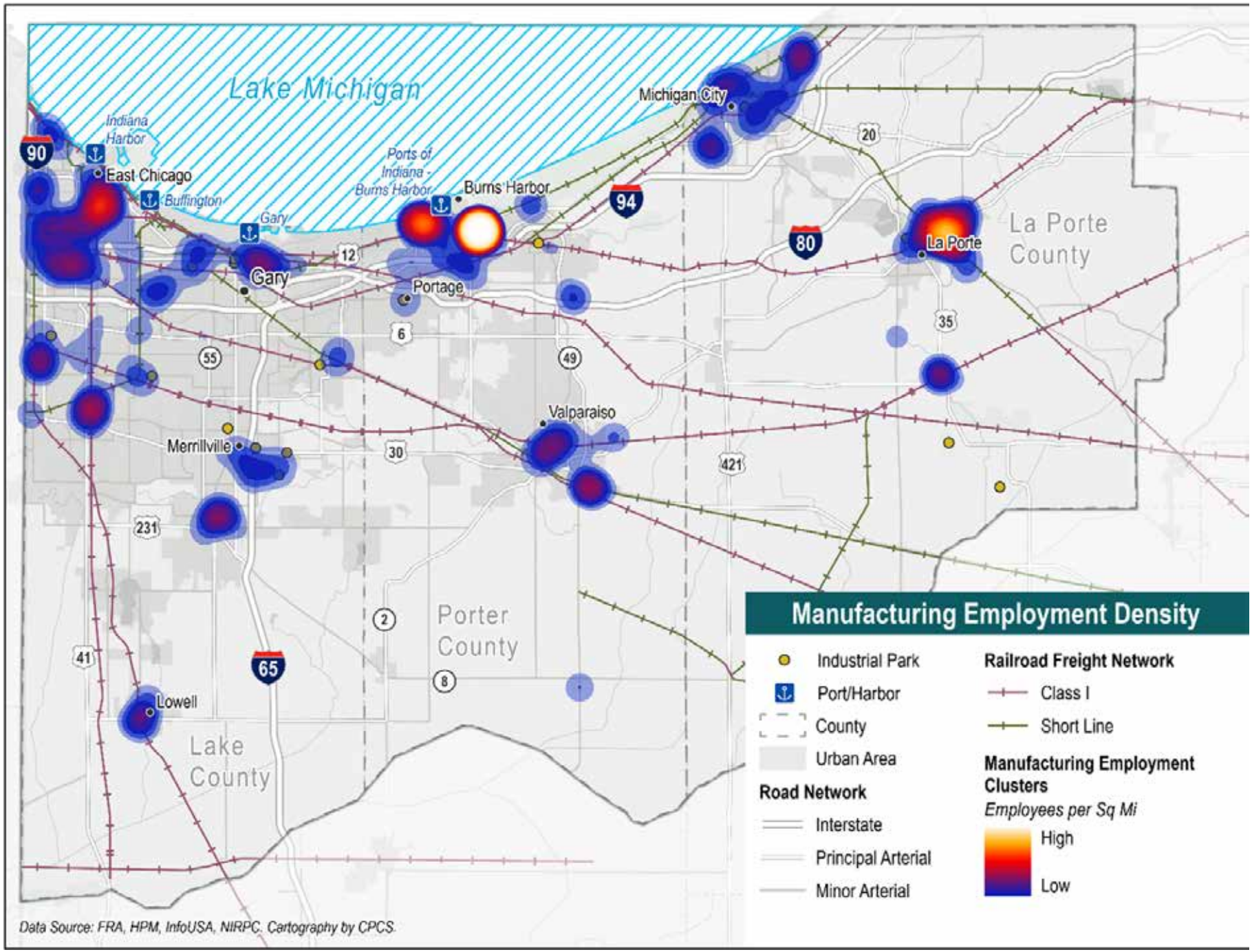


Figure 4-16: Manufacturing Employment Clusters in Northwest Indiana, 2018

The Freight Analysis Framework (FAF) offers a comprehensive picture of freight movements between states and major metropolitan areas by all modes of transportation. FAF constitutes the best publicly available multi-modal commodity flow data set available in the US. The 2017 Commodity Flow Survey, which serves as one of the foundational data sets used to develop FAF, was last released in 2021, marking this the fifth iteration of FAF (hence, the term FAF5). FAF data is critical to freight planning because it identifies the volume and value of goods moving on the freight transportation system. This information helps planners analyze and illustrate the relationship between the economy and the freight system.

The location quotient analysis from the previous section identified certain manufacturing sectors as being particularly important in Northwest Indiana. These included metals manufacturing, non-metallic mineral manufacturing, machinery manufacturing, gas and oil manufacturing, and to some extent, food manufacturing (largely in La Porte County). Using Federal Highway Administration's (FHWA's) Freight Analysis Framework 5 (FAF5) data, we can examine 2017 freight flow trends for some of the commodities related to these manufacturing sectors. Note that this FAF analysis uses FAF Zone 181 for the Indiana portion of the Chicago Metro area. This zone includes not only Lake, Porter, and La Porte Counties but also Newton and Jasper. However, this FAF zone is a good estimate of the commodity flows in Northwest Indiana.

National Level Freight Flows: Manufacturing

The preceding analysis focused on manufacturing commodities that were somehow originating from or destined for Northwest Indiana. This FAF analysis revealed the importance of the freight system, especially the roads, in the movement of these goods. However, this does not capture all of the commodities using the region's freight system. Indeed, many commodities traveling on its roads, rail, or other systems neither originate in nor are destined for the region. FAF provides national-level freight flow maps for the National Highway System in 2017. These demonstrate the high level of demand placed on Northwest Indiana's infrastructure for the movement of goods, not just those originating or terminating in the region, but also pass-through traffic.

As shown in Figure 4-17, manufactured commodities rely heavily on the roads in Indiana, including Northwest Indiana. Similar freight system demand is mirrored among other modes and all manufacturing commodities.

Metals Manufacturing

Metals manufacturing refers to the production of base metals and metal articles using metallic ores. Metals manufacturing is a key industry in Northwest Indiana, with over 45 million tons worth almost $22 billion moving into, out of, or within Northwest Indiana in 2017, according to FAF5 data. Over a quarter of the nation's steel is produced in Indiana, and a significant proportion of this is produced in Northwest Indiana[4]. In fact, Lake and Porter Counties account for over half of the nation's blast furnace capacity, and the Indiana Harbor complex is the largest integrated steel making facility in North America[5]. US Steel and Cleveland-Cliffs have operations in the region.



4 Indiana led nation in steel production again in 2020, maintaining reign of more than 40 years, Northwest Indiana Times, Joseph S. Pete, April 2021.

5 INDOT 2021 State Rail Plan



Note: Major flows include domestic and international freight moving by truck on highway segments with more than 25 FAF trucks per day and between places typically more than fifty miles apart.
Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework (FAF), version 5.1.
Flows include Chemical prods (SCTG23), Plastics/rubber (SCTG24), Wood prods (SCTG26), Newsprint/paper (SCTG27), Paper articles (ACTG28), Printed prods (SCTG29), and Textiles/leather (SCTG30) commodities represented in FAF.

Figure 4-17: National Freight Flows for Consumer Manufacturing Commodities, 2017

Idled Blast Furnaces

Although Lake and Porter Counties account for over half of the nation's blast furnace capacity, Northwest Indiana only produces about a quarter of the nation's steel. The cause of this disparity may be that some share of the region's blast furnace capacity is being kept idle. In fact, in the last few years, both Cleveland Cliffs and US Steel idled blast furnaces in Northwest Indiana.

Source: Indiana again led the nation in steel production despite 7.4% drop, Northwest Indiana Times, Joseph S Pete, March 2022.

Most commodities related to metals manufacturing travel by truck, both in terms of tonnage and value. However, the rail and multiple modes and mail modes also handle large quantities of these metal commodities in terms of both tonnage and value. In addition, the vast majority of metal manufacturing commodities moving through Northwest Indiana travel domestically. More information on commodity flows can be found in Appendix 4C: Industry-Level FAF analysis.

The ***multiple modes and mail mode*** is the term used in the FAF database to refer to intermodal commodity movements—shipments using more than one mode. This includes a variety of modal combinations such as a container moving from a cargo ship to rail to a truck, or bulk cargo moving from rail to barge. The term "mail" is included here because the mode used to transport goods by a parcel delivery service is often unknown and may involve multiple modes.

Source: Freight Analysis Framework Version 5 User's Guide for Release 5.1, USDOT, 2021.

Nonmetal Minerals Manufacturing

Nonmetal minerals manufacturing refers to the production of mineral products using raw minerals. Northwest Indiana saw over 6 million tons of mineral products worth over $1 billion move into, out of, or within the region in 2017, according to FAF5 data. One of the major nonmetal mineral manufacturing establishments is Carmeuse at Buffington Harbor, where lime and stone are processed for cement production.

Most commodities related to nonmetal minerals manufacturing travel by truck, both in terms of tonnage and value. The water and rail modes move significant quantities of these commodities by tonnage but much less by value. This suggests that nonmetal mineral products moving by truck tend to be of higher value than those moving by rail or water. In addition, most nonmetal mineral commodities moving through Northwest Indiana travel domestically. However, there is a sizeable volume of these commodities that are international imports. More information on commodity flows can be found in Appendix 4C: Industry-Level FAF analysis.

Machinery Manufacturing

Machinery manufacturing includes the production of goods, including engines, fans, or hand tools. Northwest Indiana saw over 500,000 tons of machinery products worth over $4 billion move into, out of, or within the region in 2017, according to FAF5 data. Northwest Indiana produces a variety of machinery goods, including air compressors, of which Michigan City is the largest producer in the Midwest[6]. A variety of machinery manufacturing establishments have operations in Northwest Indiana, including Howmet Engine Systems for aero engines and Hitachi Sullair for air compressors.



6 CPCS consultation with Michigan City EDC, 2022

Most commodities related to machinery manufacturing travel by truck, both in terms of tonnage and value. The water and multiple modes and mail modes also move significant quantities of these commodities by tonnage and value. The highest value goods appear to travel by multiple modes and mail. In addition, most machinery manufacturing commodities moving through Northwest Indiana travel domestically. However, there is a sizeable volume of these commodities that are international imports and exports. More information on commodity flows can be found in Appendix 4C: Industry-Level FAF analysis.

Oil and Gas

Oil and gas manufacturing refers to the production of crude petroleum, gasoline, and fuel oils. Oil and gas is a major commodity group in Northwest Indiana, both in terms of production and freight movement. Over 76 million tons of oil and gas products worth over $33 billion moved into, out of, or within the region in 2017, according to FAF5 data. BP's Whiting Refinery is the largest in the Midwest and the sixth largest in the US. It is capable of processing 440,000 barrels of crude oil every day, and it produces about 7 percent of all US asphalt[7].

Most oil and gas commodities travel by pipeline, both in terms of tonnage and value. However, the truck mode also handles significant quantities of these commodities in terms of both tonnage and value. In addition, most oil and gas commodities moving through Northwest Indiana travel domestically. However, a sizeable quantity is imported both in terms of tonnage and value. More information on commodity flows can be found in Appendix 4C: Industry-Level FAF analysis.

Food Manufacturing

Food manufacturing refers to the production of meat, seafood, alcoholic beverages, tobacco products, milled grain products, and other foodstuffs using live animals and fish, cereal grains, and other agricultural products. Northwest Indiana saw over 9 million tons of food manufacturing products worth almost $6 billion move into, out of, or within the region in 2017, according to FAF5 data. A number of food manufacturers have operations in the region, including Hearthside Food Solutions and Green Sense Farms, the latter of which operates the country's largest vertical indoor farm[8].

Most commodities related to food manufacturing travel by truck, both in terms of tonnage and value. The rail and multiple modes and mail modes also move significant quantities of these commodities. In addition, the vast majority of food manufacturing commodities moving through Northwest Indiana travel domestically. More information on commodity flows can be found in Appendix 4C: Industry-Level FAF analysis.

7 Indiana, BP's Economic Investment, BP. | Crude Oil Refineries, Indiana Office of Energy Development.

8 Food and Beverage Manufacturing, Northwest Indiana Forum, (n.d.).

Transportation and Warehousing

Transportation and warehousing is an important industry in Northwest Indiana, making up over 4 percent of Lake County's total GDP in 2019. The shift-share analysis from earlier revealed that this is the only freight-dependent industry in Northwest Indiana that is more competitive than the national average. In particular, the shift-share analysis showed that the transportation and warehousing industry is more important to Lake County's economy than Indiana overall.

Stakeholders confirmed the relative competitiveness of the transportation and warehousing industry and reported that this is largely due to the region's concentration of freight-dependent industries and proximity to Chicago. There is strong demand for industrial land to support transportation and warehousing operations in the region, which has been heightened by the e-commerce boom brought about by the pandemic. However, Northwest Indiana is highly developed and is running out of vacant or developable land, especially in the northwest corner closer to Chicago. As a result, many new freight-dependent industrial projects are employing adaptive reuse strategies or redeveloping old properties. Examples of recent such projects include:

- ***East Chicago Logistics Center***: The former DuPont industrial site at 5215 Kennedy Ave is undergoing brownfield remediation before plans to one-million-square-foot logistics center.[9]

- ***Majestic Star Casino Move and Buffington Harbor Redevelopment:*** The Majestic Star Casino has moved from its present location on Lake Michigan in Gary next to Buffington Harbor to make way for an expansion of port operations. The goal is to potentially develop an intermodal facility on the lakefront, an asset that Northwest Indiana currently lacks.[10]

- ***Former Cleveland-Cliffs Steel Mill Site***: In 2021, Speedwagon Capital Partners purchased the former steel mill at 3300 Dickey Road in East Chicago and plans to develop the industrial site, making use of the logistics and supply chain assets available in the site's vicinity.[11]

Indiana is one of the few locations in the US that manufactures railroad locomotives	Transportation and warehousing is the most competitive freight-dependent industry in NWI, based on a shift-share analysis	Employment in the transportation and warehousing industry grew by over 46 percent between 2010 and 2019

Source: INDOT State Rail Plan 2021, NIRPC E-Commerce in Northwest Indiana Fall 2020, US Bureau of Economic Analysis data.

Figure 4-18 shows the transportation and warehousing industry employment clusters in Northwest Indiana as of 2018. As shown, the greatest concentrations of these industries are located in western Northwest Indiana in Hammond, Munster, East Chicago, and Gary. There is an especially pronounced cluster of trucking-related activities along the CN railroad in western Munster. There are also employment clusters in Michigan City, Valparaiso, and Merrillville.



9 Remediation work underway on East Chicago site intended for massive logistics center, Northwest Indiana Times, Andrew Steele, November 2019.

10 Plans for Majestic Star casino move, Buffington Harbor redevelopment progressing in Gary, Chicago Tribune, Craig Lyons and Karen Caffarini, April 2019.

11 Shuttered Cleveland-Cliffs steel mill site in East Chicago purchased by Chicago investment firm, Northwest Indiana Business Magazine, Larry Avila, December 2021.

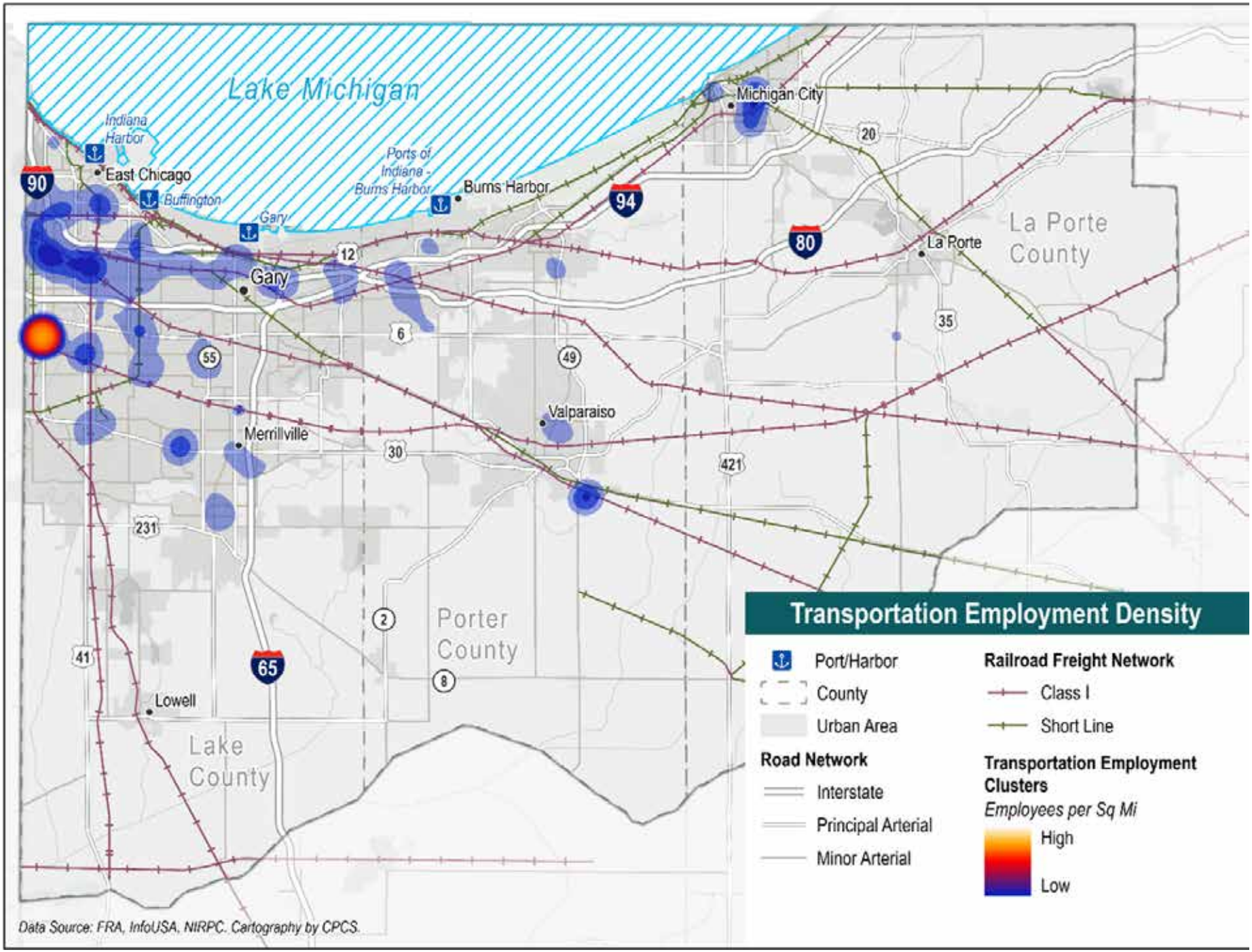
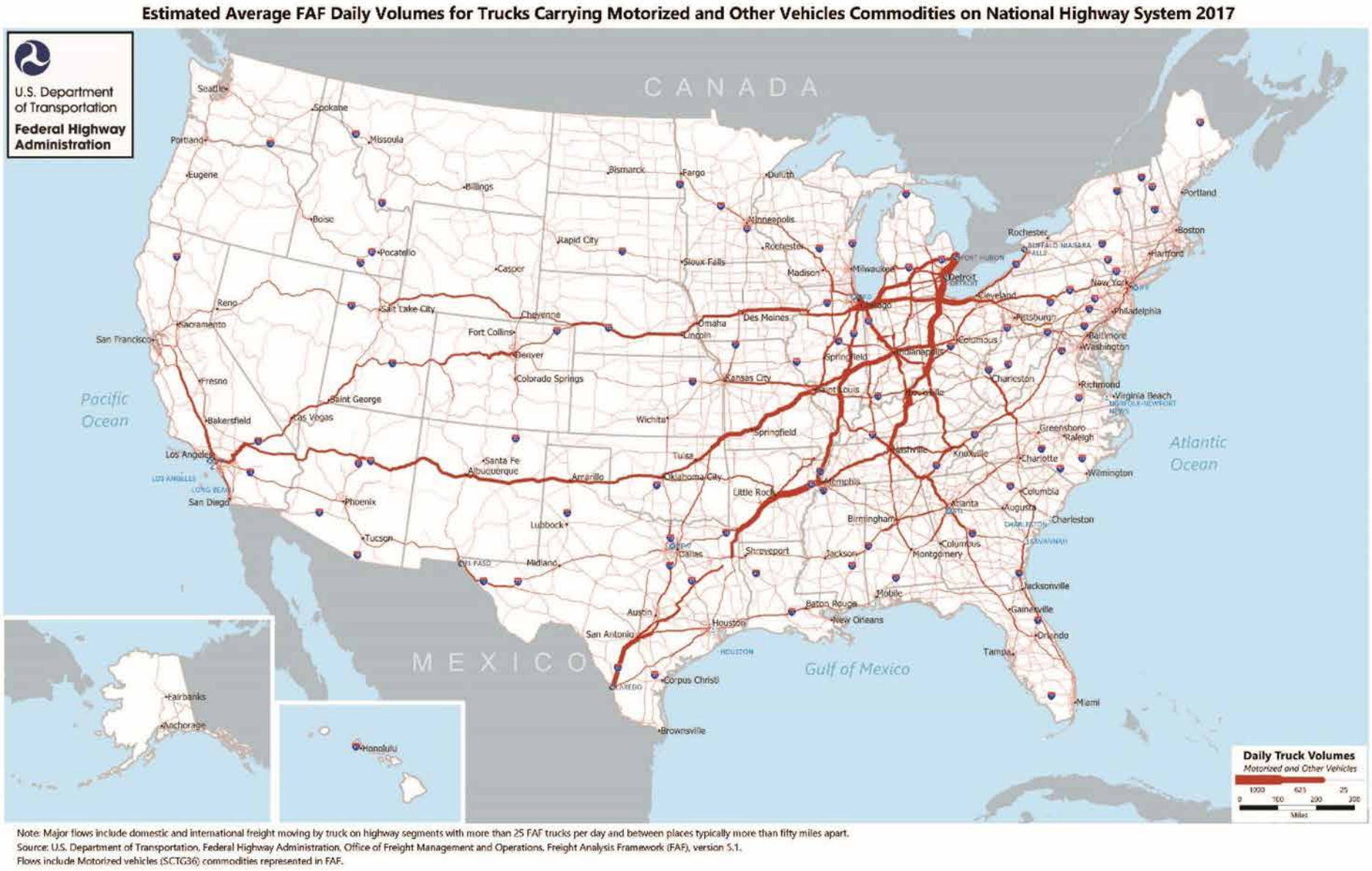
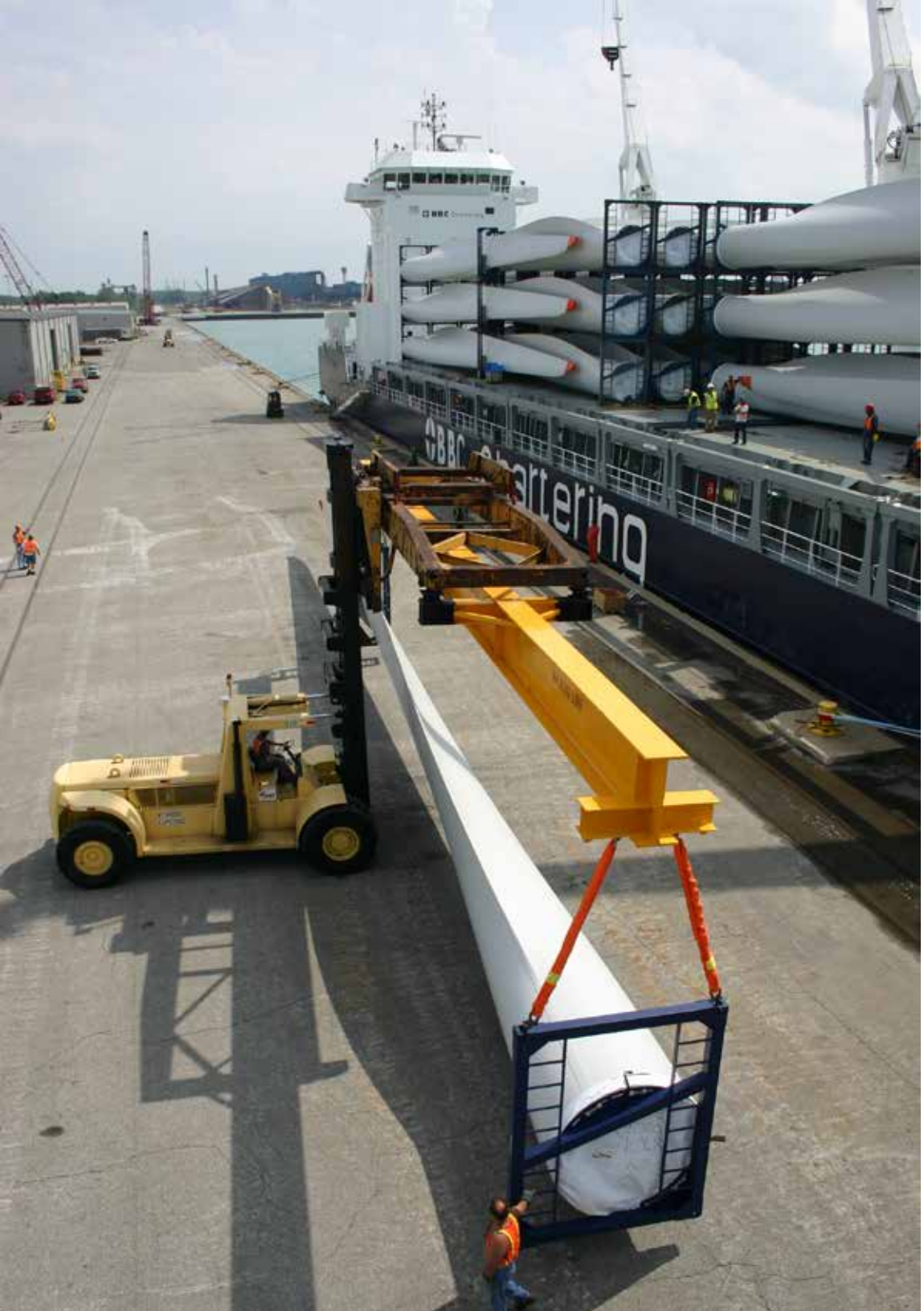


Figure 4-18: Transportation and Warehousing Employment Density in Northwest Indiana, 2018



Note: Major flows include domestic and international freight moving by truck on highway segments with more than 25 FAF trucks per day and between places typically more than fifty miles apart.
Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework (FAF), version 5.1.
Flows include Motorized vehicles (SCTG36) commodities represented in FAF.

Figure 4-19: National Freight Flows for Motorized and Other Vehicle Commodities, 2017



National Level Freight Flows: Transportation Equipment

As shown in Figure 4-19, transportation equipment commodities rely heavily on the roads in Indiana, including Northwest Indiana. Similar freight system demand is likely mirrored among other modes.

The transportation equipment industry refers to the production of motorized vehicles and other transportation equipment. Northwest Indiana saw over 500,000 million tons of transportation equipment products worth over $5 billion move into, out of, or within the region in 2017 according to FAF5 data.

Most transportation equipment commodities travel by truck, both in terms of tonnage and value. However, the rail and multiple modes and mail modes also handle significant quantities of these commodities in terms of both tonnage and value. The data also reveal that these commodities tend to be high in value per unit of weight. In addition, most transportation equipment commodities moving through Northwest Indiana travel domestically. However, a large quantity is also imported and exported. More information on commodity flows can be found in Appendix 4C: Industry-Level FAF analysis.

Northwest Indiana's Multimodal Freight System

Freight System Overview

The Northwest Indiana region is serviced by a network of four Interstates, which is supplemented by national and state highways such as US 12, US 20, US 6, US 30, and SR 49. Rail service is provided by three Class I railroads and four short lines in Northwest Indiana. In addition to road and rail, Northwest Indiana is served by four maritime ports and two key airports. Also, 772 miles of pipeline in the region provide high-volume and low-cost shipping options for crude oil, natural gas, and other petroleum products.

227	558	930	997	7	4	772
Miles of Interstate	Miles of US and State Highways	Miles of rail	Bridges	Public airports	Maritime ports	Miles of pipeline

Source: CPCS analysis, 2022.

For the region to remain economically prosperous, these transportation systems need to be connected and efficient to provide key freight services to Northwest Indiana.

Figure 4-20 shows the integrated freight system in Northwest Indiana. As shown, public and private truck parking facilities, industrial parks, refineries, and pipeline terminals also serve Northwest Indiana's freight activities. There are also several truck-rail transload facilities and grain rail-served elevators in Northwest Indiana, but the stakeholders consulted for this analysis noted a lack of rail-transload intermodal facilities in the region, affecting the competitiveness of many freight-dependent businesses in the region. Moreover, the lack of intermodal services in Northwest Indiana is a contributing factor to the high volumes of truck and train traffic through the region to move intermodal containers to and from the intermodal facilities in the Greater Chicago area on the Illinois side.

The sections of this chapter present more detail on the components of Northwest Indiana's freight system.



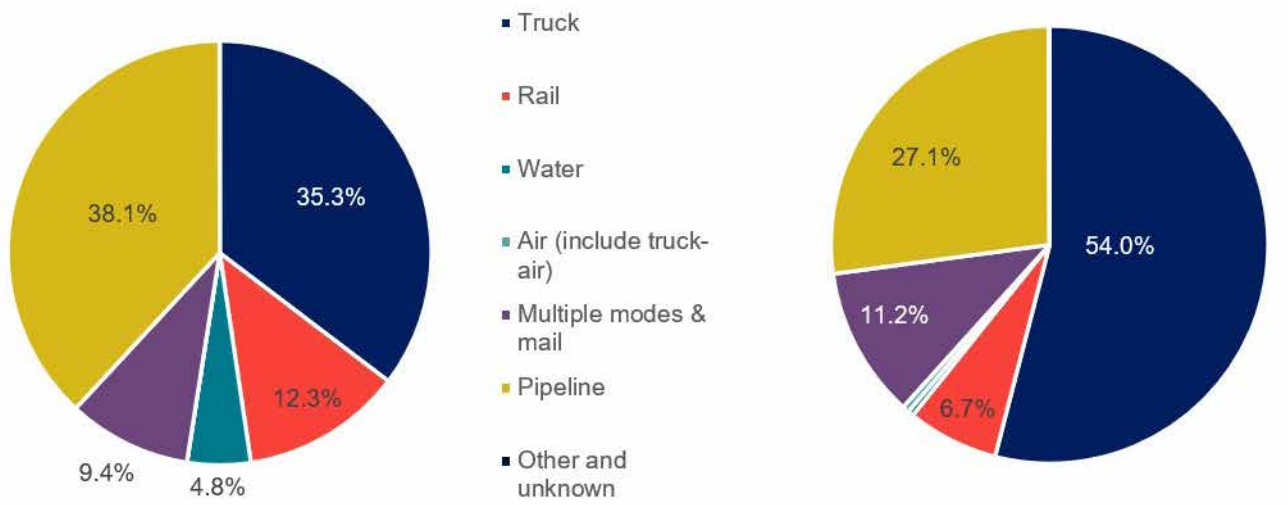


Figure 4-20: Northwest Indiana Freight System

Statewide Freight System Trends

Figures 4-21 and 4-22 present the results of a FAF analysis in the Northwest Indiana region. In 2017, Northwest Indiana's freight system moved over 195 million tons of freight with an estimated value of more than $110 billion. The majority of freight moving into, out of, or within Northwest Indiana in 2017 traveled via truck or pipeline, both in terms of tonnage and value. There was also a sizeable share of freight moving by rail. Maritime and pipeline freight tended to be made up of low-value goods, whereas trucks moved higher-value goods. The air mode moved a negligible amount of freight relative to the other modes.

By 2050, the total tonnage moved on Northwest Indiana's freight system is expected to increase by about 13 percent to more than 221 million tons. The total value of these goods is also expected to increase by about 42 percent to almost $156 billion. As shown in Table 4-6, trucks are expected to make up a growing share of total freight both by tonnage and value by 2050. The water mode will see an increased share of total tonnage but a lower share of value. The rail mode is expected to see a decrease in its share of total tonnage and value in Northwest Indiana (although the multiple modes & mail mode, which often includes rail intermodal, is expected to see increases in total value). The pipeline mode will see a steady share of total tonnage but a significant reduction in relative freight value. And the air mode will see a minor rise in its share of freight value.



Source: CPCS analysis of FAF5 data, 2022. For international flows, only modes for domestic segments are examined here.

Figure 4-21: Tonnage Modal Split for Northwest Indiana *Figure 4-22: Value Modal Split Northwest Indiana*



Freight Mode	Tonnage		Value	
	2017	2050	2017	2050
Truck	35.3%	40.6%	54.0%	61.8%
Rail	12.3%	7.7%	6.7%	4.9%
Water	4.8%	6.3%	0.4%	0.2%
Air	0.0%	0.0%	0.5%	0.8%
Multiple Modes & Mail	9.4%	7.3%	11.2%	13.7%
Pipeline	38.1%	38.1%	27.1%	18.6%
Other/Unknown	0.0%	0.0%	0.1%	0.0%

Source: Freight Analysis Framework 4.5 and Freight Analysis Framework 5, 2021

Table 4-6: Freight Modal Split in Northwest Indiana, 2017 vs. 2050

Northwest Indiana's total freight tonnage is expected to increase by 13 percent between 2017 and 2050. Total freight value is expected to increase by 42 percent.

2017 Top Commodities by Tonnage	Share	2050 Top Commodities by Tonnage	Share
Gasoline	16.8%	Crude Petroleum	21.9%
Crude petroleum	16.2%	Base metals	11.6%
Base metals	14.7%	Coal-NEC	9.4%
Coal-NEC	7.2%	Gasoline	8.8%
Metallic Ores	7.2%	Basic chemicals	8.1%

Source: CPCS analysis of FAF5 data, 2022

Table 4-7: Top Five Current Commodity Shares by Tonnage, 2017 vs. 2050

As shown in Table 4-7, the top five commodities in 2017 by volume were gasoline, crude petroleum, base metals, coal-NEC, and metallic ores. By 2050, this ranking will be rearranged, with gasoline falling from first to fourth place due to an 8 percent decrease in tonnage share. Crude petroleum will rise by 5.7 percent to first place. Metallic ores will be replaced in the fifth-ranked position by basic chemicals.

2017 Top Commodities by Value	Share	2050 Top Commodities by Value	Share
Base metals	18.2%	Base metals	21.9%
Gasoline	16.0%	Crude petroleum	10.0%
Crude petroleum	9.2%	Mixed freight	8.7%
Mixed freight	6.7%	Pharmaceuticals	7.7%
Fuel oils	5.4%	Gasoline	6.7%

Source: CPCS analysis of FAF5 data, 2022.

Table 4-8: Top Five Current Commodity Shares by Value, 2017 vs. 2050

As shown in Table 4-8, the top five commodities in 2017 by value were base metals, gasoline, crude petroleum, mixed freight, and fuel oils. By 2050, the base metals sector will solidify its position in first place, with its share of total freight value rising by 3.7 percent. However, the remaining rankings will be rearranged, with gasoline falling from second to fifth place due to a 9.3 percent decrease in value share. Crude petroleum will rise by 0.8 percent to second place. Pharmaceuticals will enter the rankings in the fourth-place position.

Trading Partners

The top domestic trading partners by tonnage for goods originating in Northwest Indiana in 2017 were Indiana, Illinois, Michigan, Ohio, and Wisconsin (Table 4-9). For goods destined for Northwest Indiana, the top domestic trading partners were Indiana, Illinois, North Dakota, Minnesota, and Michigan (Table 4-10).

The top international trading partner for Northwest Indiana in 2017 by both tonnage and value was Canada (Table 4-11). Europe, Eastern Asia, and Mexico are also significant international origins and destinations for goods moving through Northwest Indiana.

State	Tonnage	Share
1. Indiana	40,156.9	46.2%
2. Illinois	16,987.9	19.5%
3. Michigan	7,738.77	8.9%
4. Ohio	4,370.4	5.0%
5. Wisconsin	4,238.6	4.9%
6. Iowa	3,404.8	3.9%
7. Alabama	1,652.4	1.9%
8. Kentucky	1,228.3	1.4%
9. Texas	797.1	0.9%
10. California	676.0	0.8%
All other states	5,696.4	6.6%
Total	86,947.6	100%

Source: CPCS analysis of FAF5 data, 2022. Note: Indiana includes goods moving entirely within NWI.

Table 4-9: Top Domestic Trading Partners by Tonnage for Goods Originating in Northwest Indiana

State	Tonnage	Share
1. Indiana	34,961.5	25.7%
2. Illinois	26,119.6	19.2%
3. North Dakota	18,884.5	13.9%
4. Minnesota	13,351.5	9.8%
5. Michigan	8,953.2	6.6%
6. Texas	5,452.8	4.0%
7. Ohio	4,848.4	3.6%
8. Wyoming	4,266.7	3.1%
9. West Virginia	4,097.6	3.0%
10. Colorado	2,332.6	1.7%
All other states	12,514.7	9.2%
Total	135,782.9	100%

Source: CPCS analysis of FAF5 data, 2022. Note: Indiana includes goods moving entirely within NWI.

Table 4-10: Top Domestic Trading Partners by Tonnage for Goods Destined for Northwest Indiana

By Tonnage		By Value	
Region	**Share**	**Region**	**Share**
Canada	95.5%	**Canada**	58.6%
Mexico	1.4%	**Europe**	15.5%
Eastern Asia	1.2%	**Eastern Asia**	12.4%
Europe	0.67%	**Mexico**	6.5%
Everywhere else	1.2%	**Everywhere else**	7.0%

Source: CPCS analysis of FAF5 data, 2022

Table 4-11: Top International Trading Partners by Tonnage and Value, 2017

Road Network

The Northwest Indiana region's road network supports more than a third of all freight movement by tonnage and more than half by value. This network is made up of roughly 5,884 miles of public roadways. This includes nearly 227 miles of Interstates, accounting for over 17 percent of Indiana's total Interstate mileage. Northwest Indiana's Interstate system is supplemented by about 302 miles of US highways, 256 miles of State Routes (SR), and an integrated network of county and local routes.

In 2017, trucks on Northwest Indiana roads carried 35.3 percent of the total freight tonnage and 54.0 percent of the value in Northwest Indiana, highlighting the importance of this mode for the movement of freight in the region. As shown in Table 4-12, the top commodities moved by truck by tonnage included base metals, gasoline, gravel, basic chemicals, waste/scape, and fuel oils.

In 2017, the top domestic trading partners by tonnage for truck movements originating in Northwest Indiana, in descending order, were Indiana, Illinois, Michigan, Ohio, and Wisconsin. The top partners for truck movements destined for Northwest Indiana were Indiana, Illinois, Ohio, Michigan, and Wisconsin.

227	558	4,472	997
Miles of Interstate	Miles of US and State Highways	Truck parking spaces	Bridges

Commodity	Tonnage	Share of Total
Base metals	17,871,181	25.9%
Gasoline	6,568,345	9.5%
Gravel	5,694,105	8.2%
Basic chemicals	4,963,956	7.2%
Waste/scrap	4,412,234	6.4%
Fuel oils	4,104,573	5.9%
Nonmetal mineral products	3,912,794	5.7%
Cereal grains	3,538,039	5.1%
Other foodstuffs	2,987,038	4.3%
Articles-base metal	2,417,973	3.5%
Mixed freight	1,743,543	2.5%
Other ag prods.	1,076,533	1.6%
Natural sands	916,311	1.3%
Coal-NEC	911,714	1.3%
Animal feed	801,871	1.2%
Wood products	774,544	1.1%
Chemicals products	723,754	1.0%
All others	5,605,322	8.1%
Total	69,023,827	100%

Source: CPCS analysis of FAF5 data, 2022.

Table 4-12: Major Commodities by Tonnage Carried by Trucks in Northwest Indiana, 2017



Key Corridors

Trucking activities in Northwest Indiana are served by four Interstates: I-65, I-80, I-90, and I-94. Although the region carries four Interstates by name, the region only houses three Interstate routes in practice. I-80 runs concurrently with I-94 west of Lake Station and concurrently with I-90 east of Lake Station. These Interstates offer access south to the Gulf of Mexico, west to the Pacific Northwest and Bay Area, east to New York and New England, and north to the Michigan peninsula. The region is also served by several US Highways and State Routes, primarily US 12, US 20, US 30, and SR 49.

Key roads for truck movement are presented in the truck share map shown in Figure 4-23 and the truck AADT map shown in Figure 4-24. As shown, I-80/I-90 east of SR-49 experiences the highest share of truck traffic in Northwest Indiana. Unsurprisingly, the region's four Interstates handle the highest levels of truck AADT. Of note is the relatively high truck shares of all vehicle traffic on segments of US 12 south of Burns Harbor and on SR 249, which connects US 12 with I-94. While there are no officially designated truck routes in Northwest Indiana, these roadways are preferred by truck drivers because of their geometric compatibility with truck maneuvers and their location relative to freight origins and destinations.

According to Northwest Indiana stakeholders, the high volume of truck traffic and the incompatibility of truck movements with other roadway modes, especially active transportation modes, create mobility, safety, and air quality issues. Also, heavy trucks that move to and from major freight establishments contribute to pavement and bridge infrastructure damage. Formal designation of truck routes in Northwest Indiana can address these concerns; however, a detailed truck impact assessment is required to identify optimal routes and restriction points that can improve efficiency and safety for all road users. The specific issues are assessed in Appendix 4A.



I-65

Interstate 65 is the only north-south Interstate operating in Northwest Indiana and runs entirely within Lake County. The northern end of the Interstate interchanges with I-80 and I-94 and terminates at an interchange with I-90, US 12, and US 20 in Gary. In 2019, the highest Annual Average Daily Traffic (AADT) on I-65 was experienced between its interchange with Ridge Road in Lake Station and its interchange with I-80/94 (Borman Expressway) in Gary. Along this segment, I-65 saw an AADT of roughly 111,757 vehicles, of which 10.5 percent, or 11,766, were combination trucks. More information about AADT on I-65 through Northwest Indiana can be found in Appendix 4D.



I-80

Interstate 80 travels east-west through Northwest Indiana. Between the Illinois state line and Lake Station, it operates concurrently with I-94, a section of highway that is also called the Borman Expressway. East of Lake Station it travels concurrently with I-90, along the Indiana Toll Road. From the west, I-80 enters Northwest Indiana from Illinois on the border of Munster and Hammond. It then travels alongside the Little Calumet River, interchanging with I-65, before its switch from I-94 to I-90. I-80 then travels south of Michigan City and north of La Porte before exiting Northwest Indiana through the northeast corner of La Porte County. In 2019, the highest Annual Average Daily Traffic (AADT) on I-80 was experienced concurrently with I-94 roughly between Burr St and SR 53 (Broadway) in Gary. Along this segment, I-80 saw an AADT of roughly 185,482 vehicles, of which 10.5 percent, or 19,528, were combination trucks. More information about AADT on I-80 through Northwest Indiana can be found in Appendix 4D.

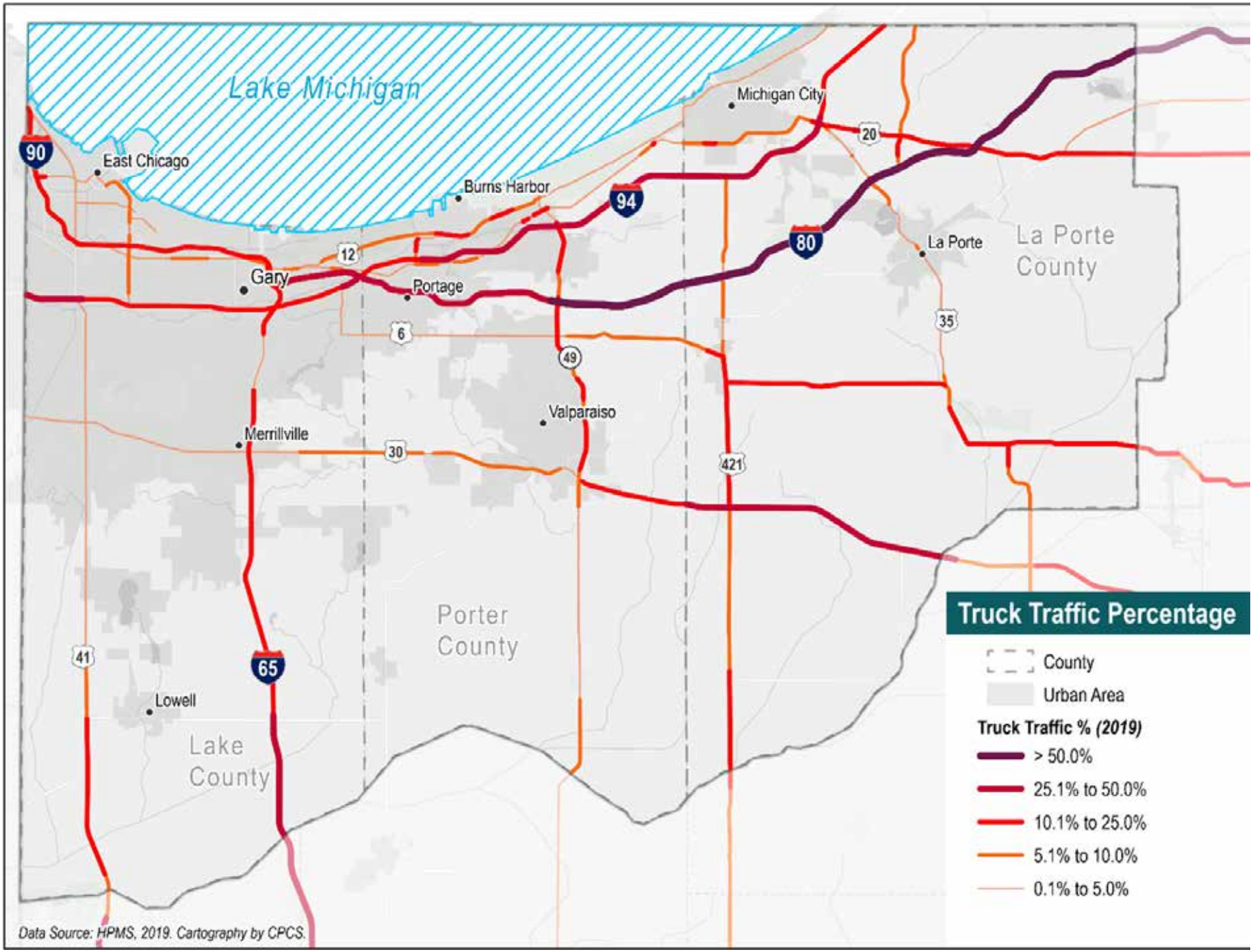


Figure 4-23: Truck Traffic Share in Northwest Indiana, 2019

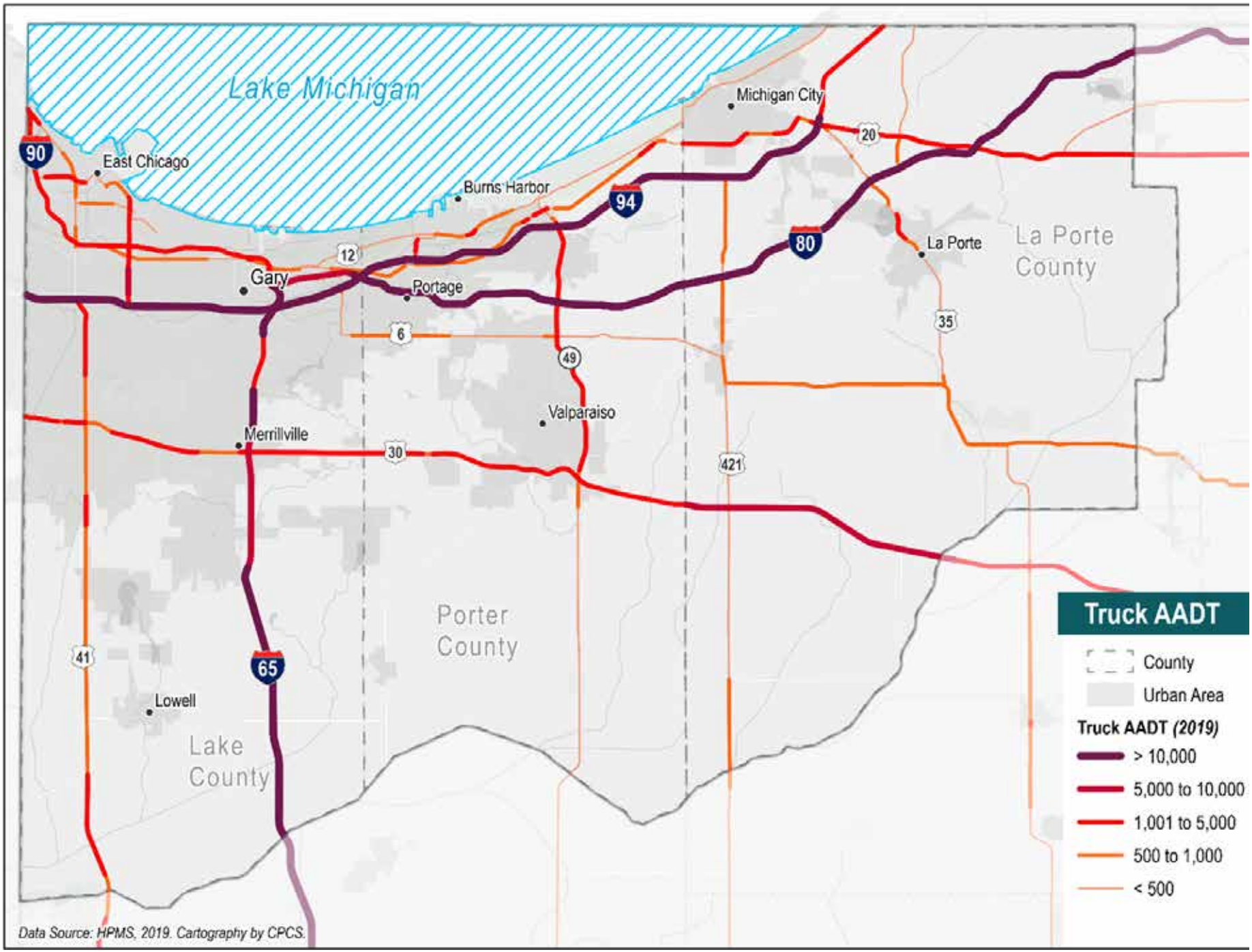


Figure 4-24: Truck Annual Average Daily Traffic in Northwest Indiana, 2019

I-94

Interstate 94 travels from the Illinois state line on the border of Hammond and Munster, alongside the Little Calumet River, to the Michigan state line northeast of Michigan City. The portion of I-94 in Northwest Indiana that lies west of Lake Station is also called the Borman Expressway and runs concurrently with I-80. In 2019, the highest Annual Average Daily Traffic (AADT) on I-94 was experienced concurrently with I-80 roughly between Burr St and SR 53 (Broadway) in Gary. Along this segment, I-94 saw an AADT of roughly 185,482 vehicles, of which 10.5 percent, or 19,528, were combination trucks. More information about AADT on I-94 through Northwest Indiana can be found in Appendix 4D.

I-90

Interstate 90, 157 miles in its entirety, is owned by the Indiana Finance Authority and operated by the Indiana Toll Road Concession Company (ITRCC). The ITRCC was acquired by Australia-based IFM Investors in 2015 for over $5.7 billion.[12] According to its website, the ITRCC has invested over $200 million in the road since 2016. The Indiana Toll Road generally travels east-west through Northwest Indiana. From the west, it enters Northwest Indiana through the region's northwest corner at the Illinois state line, traveling north-south to the Grand Calumet River, then turning to travel east-west alongside US 20. In Gary, the Indiana Toll Road interchanges with I-65, US 20, and US 12, and in Lake Station, it interchanges with I-80/94 (Borman Expressway), running concurrently with I-80 for the rest of its length. In 2019, the highest Annual Average Daily Traffic (AADT) on I-90 was experienced between its interchange with I-65 in Gary and its interchange with I-80/94 (Borman Expressway) in Lake Station. Along this segment, I-90 saw an AADT of roughly 28,570 vehicles, of which 30.9 percent, or 8,842, were combination trucks. More information about AADT on I-90 through Northwest Indiana can be found in Appendix 4D.

US 12

US 12 is an important highway in Northwest Indiana that runs east-west from the Illinois border in the region's northwest corner, along the Lake Michigan coast, and then northeast to the Michigan border. It frequently runs concurrently with US 20 in Lake County and otherwise runs parallel to US 20 until Michigan City. Many portions of the route are divided highways, though the width of the road frequently changes. The route traverses a number of city centers, including Gary and Michigan City, as well as Indiana Dunes National Park as a two-lane rural road. In 2019, the highest AADT on US 12 was experienced in East Chicago. Here, AADT reached roughly 44,786 vehicles, of which 10.9 percent, or 4,891, were trucks.

Truck Restrictions on US 12

Because US 12 travels through the Indiana Dunes National Park and is used extensively for recreational purposes, there has been discussion among regional stakeholders and the public of potential solutions for improving safety and environmental concerns associated with conflicting uses of the road, with heavy duty freight traffic on the one hand and environmental recreational activity on the other. The portion of US 12 between SR 49 and Michigan City experiences relatively low truck share and truck AADT (Figure 40 and Figure 41), meaning potential truck route designation would not impose exorbitant demand on surrounding roads or significant disruptions to truck traffic. These effects would be outweighed by the potential safety, environmental, and quality of life benefits in the Indiana Dunes area. Truck route designation and truck-only lanes are among methods that might also be appropriate on other roads in Northwest Indiana with relatively low truck traffic, nearby route redundancy, and conflict issues between freight, recreational, and other road uses.



12 Down-under consortium claims victory in Toll Road bidding | Lake County News | www.nwitimes.com



US 20

US 20 is another important highway in Northwest Indiana that runs east-west from the Illinois border in the region's northwest corner, along the Lake Michigan coast, before turning east and continuing towards Ohio. It frequently runs concurrently with US 12 in Lake County and otherwise runs parallel to US 12 until Michigan City. Many portions of the route are divided highways, though the width of the road frequently changes. The route traverses many city centers, including Gary and Michigan City. US 20 is the primary INDOT-designated Heavy Duty highway traversing the region. In 2019, the highest AADT on US 20 was experienced in Porter. Here, AADT reached roughly 25,421 vehicles, of which 16.4 percent, or 4,172, were trucks.



US 6

US 6 is a key east-west highway in Northwest Indiana that runs concurrent to the Borman Expressway until Lake Station, where it turns south before continuing east again towards the Ohio border. The width of US 6 is variable in Northwest Indiana, sometimes operating as a four-lane divided highway and other times as a two-lane rural road. In 2019, the highest AADT on US 6 was experienced in Lake Station near its interchange with the Borman Expressway. Here, AADT reached roughly 23,998 vehicles, of which 4.7 percent, or 1,118, were trucks.



US 30

US 30 is a key highway in Northwest Indiana that runs east-west south of other major east-west routes in Northwest Indiana from the Illinois border in Dyer, east through Valparaiso, and slightly southeast towards Ohio. It operates almost entirely as a four-lane divided highway in Northwest Indiana. While US 30 traverses several communities in Northwest Indiana, it avoids municipal centers, except for Dyer. In 2019, the highest AADT on US 30 was experienced in Merrillville at the interchange with I-65. Here, AADT reached roughly 60,028 vehicles, of which 5.9 percent, or 3,537, were trucks.



SR 49

SR 49 is a key north-south highway in Northwest Indiana that operates east of the I-65 route. It begins south of Indiana Dunes State Park and interchanges with US 12, US 20, I-94, I-80, I-90, US 6, and US 30 as it travels south towards the Kankakee River. Between its interchange with I-94 in Chesterton and its interchange with US 30 in Valparaiso, SR 49 operates as a four-lane divided highway. In 2019, the highest AADT on SR 49 was experienced near its interchange with US 6. Here, AADT reached roughly 36,382 vehicles, of which 13.2 percent, or 4,811, were trucks.

National Highway System

The National Highway System (NHS) consists of federally designated highways and major arterials that are critical components of the national and statewide transportation systems and important to the economic vitality of states, regions, and local communities. NHS includes the interstate highways, principal arterials that connect origins and destinations with the interstate system, the Strategic Highway Network (STRAHNET), which is key to the US's defense policy and emergency response capability, and Strategic Highway Network Connectors, which provide access to the STRAHNET highways, and Intermodal Connectors.

All four Interstates in Northwest Indiana (I-65, I-80, I-90, and I-94) are part of the National Highway System. In addition, there are four US highways (US 6, US 30, US 35, and US 41) and four Indiana state highways (SR 2, SR 49, SR 912, and portions of SR 39) that are included in the NHS designation.[13] All Interstates in Northwest Indiana are included in the STRAHNET network.[14]

13 Indiana National Highway System, USDOT FHWA, 2021.

14 Indiana, US Army Transportation Engineering Agency, 2015.

National Highway Freight Network

In line with Fixing America's Surface Transportation Act (FAST Act) requirements, FHWA has established the National Highway Freight Network (NHFN). The NHFN consists of interstate and Primary Highway Freight System (PHFS) segments that are critical to the movement of goods. The NHFN also includes Critical Urban and Critical Rural Freight Corridors (CUFCs/CRFCs), which are key public routes connecting freight facilities to PHFS routes and interstates. A CUFC is an urban arterial that fosters connections between intermodal freight facilities to the interstate system, while a CRFC is a rural arterial where more than 25 percent of the AADT is truck traffic.[15] CRFC/CUFC designation provides access to Federal resources for investment in freight performance improvements.

Within Northwest Indiana, I-65, I-80, and I-94 are designated PHFS routes. In 2019, NIRPC recommended that 34.73 miles be allotted for CRFC, and 16.38 miles be allotted for CUFC mileage in Northwest Indiana.[16] NIRPC convinced INDOT and FHWA to designate the approximately 1.3 mile stretch of Crisman Rd/Willowcreek Bypass from US 20 to the Indiana Toll Road entrance in the City of Portage as a CUFC. Indiana DOT is in the process of updating its state freight plan. However, the state is currently not planning to update NHFN designations, including additional critical freight corridors.

15 USDOT, FAST Act, Section 1116 National High way Freight Program (NHFP) Guidance: Designating and Certifying Critical Rural Freight Corridors and Critical Urban Freight Corridors, 2016.

16 https://www.nirpc.org/wp-content/uploads/2019/08/Critical-Urban-Freight-Corridors-Presentation.pdf

Key Structures and Facilities

Bridges

There are nearly 1,000 road bridges in Northwest Indiana, accounting for about 5.2 percent of Indiana's 19,337 bridges despite making up only 4.2 percent of the state's total land area.[17] Indeed, Northwest Indiana houses over three times more bridges per square mile than the US overall.[18] Significant concentrations of Northwest Indiana bridges are located in the northern and western parts of the region. Indeed, there are 495 bridges in Lake County, 276 in Porter County, and 226 in La Porte County.

Movable Bridges

Northwest Indiana has three bascule bridges (movable bridges). Two are located in the Indiana Harbor complex in East Chicago. One is located on Dickey Road over the Indiana Harbor Canal, and the other is located on Indianapolis Boulevard (US 12/US 20) over the Lake George Canal. The third movable bridge is located on Franklin Street in Michigan City over Trail Creek.

17 Based on the number of bridges identified in the UDSOT National Bridge Inventory. Assumes that the land area of Indiana is 35,868 square miles and that the land area of Northwest Indiana is 1,515.4 square miles.

18 Based on the number of bridges identified in the UDSOT National Bridge Inventory. Assumes that the land area of the US is 3,531,905 square miles and that the land area of Northwest Indiana is 1,515.4 square miles.



Figure 4-25: Dickey Street Movable Bridge



Figure 4-27: Franklin Street Movable Bridge



Figure 4-26: Indianapolis Boulevard Movable Bridge

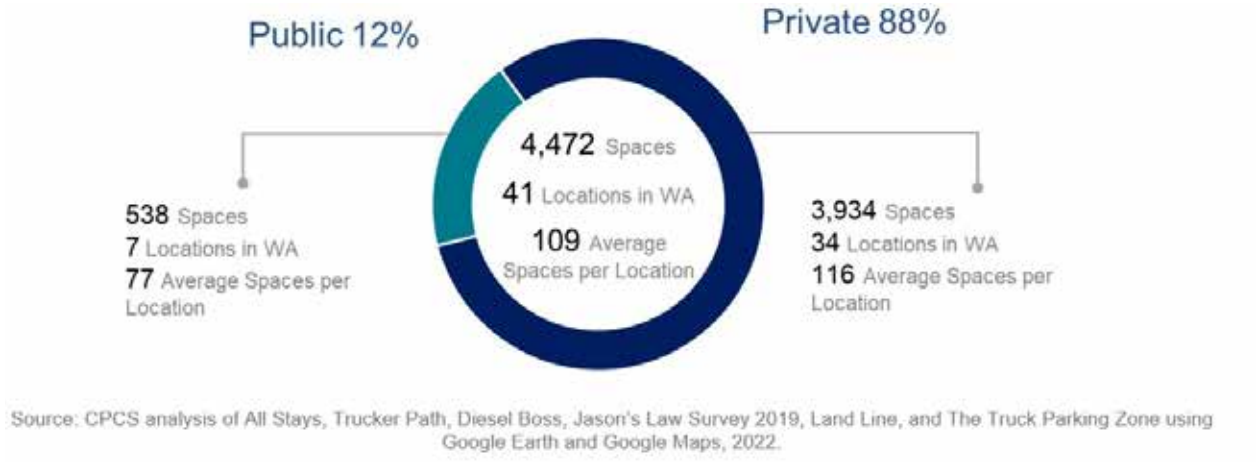


Figure 4-28: Truck Parking in Northwest Indiana

Truck Parking

On average, truck drivers spend 56 minutes every day searching for parking, which exacerbates existing road congestion and reduces the efficiency of the trucking mode.[19] Moreover, this inability to quickly find truck parking costs drivers roughly $5,000 a year in lost wages.[20] Sufficient truck parking availability is critical to improve trucking safety and efficiency and reduce overall traffic mobility. Stakeholders consulted repeatedly reported issues in Northwest Indiana regarding the availability of truck parking in the region. Currently, there are about 41 truck parking locations in Northwest Indiana. Together, these sites provide just under 4,500 truck parking spaces. The majority of these spaces are in private locations. Transport Properties in Gary alone provides over 570 truck parking spaces. An overview of truck parking in Northwest Indiana is shown in Figure 4-28, but a comprehensive truck parking inventory can be found in Appendix 4E.

Truck Parking Information Systems (TPIMS) are another effective method to make it easier for truck drivers to safely and quickly find truck parking. TPIMS provides real-time information on the number of available trucking parking spaces at participating sites. This information can be shared online or using dynamic roadside signs. Indiana is part of the MAASTO TPIMS project, which jointly establishes a single system between eight states in the Midwest. Indiana has installed TPIMS systems at 19 locations in the state, with another six planned. There are currently no TPIMS sites in Northwest Indiana, although a site is planned for 2026 at the Indiana Welcome Center on I-94 in La Porte County.[21]

19 ATRI 'parking diaries' reveal ELDs make finding parking more difficult, Overdrive, James Jaillet, November 2021.

20 Ibid.

21 Indiana TPIMS Lots, INDOT, (n.d.).

Railroad Network

Railroads provide an efficient means of goods movement, saving consumers and freight-dependent industries billions of dollars in shipping costs and reducing energy consumption and emissions. Rail freight is often used to carry high-volume and relatively low-value cargo such as fossil fuels and agricultural products over long distances.

Rail traffic in Northwest Indiana is largely composed of heavier-bulk cargo, which is generally fossil fuels and steel manufacturing products transported to and from industrial establishments. Northwest Indiana has a high-density rail network and is served by over 674 miles of Class I railroad operation and 258 miles of short line operation, accounting for 23 percent of Indiana's freight rail system. The region's rail network crosses the public road system at 675 at-grade crossings, 64 rail bridges, and 107 rail underpasses. The rail network is also supported by multi-modal connection points such as ports, transload facilities, and grain elevators that link the region to national and global markets.

In 2017, the rail mode carried 12.3 percent of the total freight tonnage and 6.7 percent of the value in Northwest Indiana, indicating higher weight and lower value goods. As shown in Table 4-13, the top commodities by tonnage were coal, base metals, coal-NEC., metallic ores, and nonmetal mineral products.

In 2017, the top domestic trading partners by tonnage for rail movements originating in Northwest Indiana, in descending order, were Indiana, Alabama, Ohio, California, and Illinois. The top partners for rail movements destined for Northwest Indiana were West Virginia, Indiana, Wyoming, Illinois, and Wisconsin.



Commodity	Tonnage	Share of Total
Coal	10,012,977	41.6%
Base metals	7,307,020	30.4%
Coal-NEC	2,511,505	10.4%
Metallic ores	806,026	3.4%
Nonmetal mineral products	702,580	2.9%
Basic chemicals	651,925	2.7%
Nonmetallic minerals	540,897	2.2%
All others	1,519,245	6.3%
Total	69,023,827	100%

Source: CPCS analysis of FAF5 data, 2022.

Table 4-13: Major Commodities by Tonnage Transported by Rail in Northwest Indiana, 2017

Key Corridors, Structures, and Facilities

Railroads are classified by the Surface Transportation Board (STB) according to their annual revenues; Class I railroads have annual revenue of $943.9 million or more, Class II or regional railroads have an annual revenue lower than the Class I railroads threshold but more than $42.4 million, and Class III railroads or short lines have annual operating revenues below $42.4 million.[22] Northwest Indiana is served by three Class I railroads and four short lines that operate over 930 miles of track and trackage rights combined.[23]

As Table 4-14 shows, *CSX Transportation railroad (CSXT)* operates on nearly 205 miles of track in Northwest Indiana, which is about 22 percent of the region's total rail freight operations mileage. CSXT's rail operations are anchored in Chicago, New York, and Atlanta, with trains serving major markets in the northwest, northeast, and southeast parts of the US. CSXT's Garret and Barr subdivisions provide east-west connections across the northern parts of the country. Both of these subdivisions pass through Northwest Indiana and are among the railroads' most heavily trafficked lines, carrying 50 to 100 million tons of cargo per mile annually.[24] The railroad's Porter and Grand Rapids subdivisions are also located in Northwest Indiana, providing Class I rail connection to the industrial facilities located along Lake Michigan's shoreline. CSXT's major intermodal facility in Indiana is in Avon. The railroad also has several intermodal yards within the Greater Chicago Area on the Illinois side, including in Bedford Park and Forest Hill areas and on 59th St. in Chicago.

Norfolk Southern Railway (NS) operates on over 240 miles of track in Northwest Indiana, accounting for 26 percent of the region's total rail freight operations. The railroad's Chicago Line and Chicago District subdivisions run east-west through Northwest Indiana, while the Kankakee Line subdivision runs south-north through Lake County. The Chicago Line is one of the railroad's busiest lines in the US and the most heavily trafficked rail line in Indiana and Northwest Indiana, carrying over 100 million tons of cargo per mile annually.[25] NS has a significant intermodal facility in Elkhart, IN, as well as several facilities in the Greater Chicago Area on the Illinois side, such as the Calumet and Ashland Ave facilities.[26]

Canadian National Railway (CN) is also a Class I railroad operating on 229 miles of track in Northwest Indiana, serving trains that run between Chicago and eastern Canada. The CN trains carry between 10 and 50 million tons per mile in Northwest Indiana annually. [27] CN's largest railyard in the US is Kirk Yard, located in Gary, IN. Kirk Yard primarily serves US Steel's Gary Works mill and consolidates CN's switching operations in the Greater Chicago Area.[28]



22 STB, Rail Service Data, Accessed August 2022.
23 Includes private switching railroad mileage. Source: STB North American Rail Lines, 2022.
24 Indiana State Rail Plan, 2021.
25 Ibid.
26 Intermodal of Chicago Website, Chicago Area Intermodal Rail Terminals & Depots, accessed July 2022.
27 Indiana State Rail Plan, 2021.
28 CN Transportation Website, Fact Book, accessed July 2022.

Short Lines active in the Northwest Indiana region serve a wide range of industries and provide connections between various businesses and the Class I rail operations. The Chicago, Ft. Wayne & Eastern Railroad (CFE) is a Genesee & Wyoming Inc. short line that operates on 49 miles of track between Crestline, OH, and Blue Island, IL, through Valparaiso and Gary in Northwest Indiana. The Chesapeake & Indiana Railroad (CKIN) short line operates over 29.6 miles of track in Northwest Indiana, interchanging with CSXT in Wellsboro/Union Mills, IN, and with NS in Thomaston, IN. The Chicago South Shore & South Bend Railroad (CSS) short line trains run over 96.5 miles of track in Northwest Indiana, along Lake Michigan's shoreline. CSS trains interchange with NS and CN railroads in South Bend, IN, with CN railroad in Stillwell, IN, and with CN, CSXT, and Union Pacific (UP) railroads at the Kensington Interchange in Chicago, IL. Finally, the Indiana Harbor Belt Railroad (IHB) short line operates over 83 miles of track in Northwest Indiana. IHB is the largest switching railroad in the US, serving 160 customers between Gary and Franklin Park, IL.

Additionally, Amtrak and Northern Indiana Commuter Transportation District (NICTD) provide passenger rail service in Northwest Indiana. Amtrak operates on tracks also operated by CSXT and NS, while NICTD's South Shore Line trains operate on dedicated tracks between South Bend and downtown Chicago. Construction began in 2021 on the $491 million South Shore Line Double Track project between Michigan City and Gary, with completion slated for 2024. As its name suggests, the project will add 16.9 miles of the second track to this NICTD corridor in order to reduce travel times by over 30 minutes. Although these improvements will mainly benefit passenger rail service, the increased transit use spurred by the project has the potential to reduce congestion on roadways. The project will also eliminate 21 at-grade crossings in Michigan City, which will improve safety and mobility for all modes in the area.[29]

29 Double Track Northwest Indiana Project Overview, NICTD South Shore Line.

Railroad	Type	Miles Owned in NWI*	Miles Trackage Right	Total Operating Miles
CSX Transportation (CSXT)	Class I	151.4	53.5	204.9
Norfolk Southern Railway (NS)	Class I	211.5	29.0	240.5
Canadian National Railway (CN)	Class I	209.3	19.8	229.0
Chicago, Ft. Wayne & Eastern Railroad (CFE)	Short Line	38.0	11.0	49.0
Chesapeake & Indiana Railroad (CKIN)	Short Line	29.6	-	29.6
Chicago South Shore & South Bend Railroad (CSS)	Short Line	38.0	58.5	96.5
Indiana Harbor Belt Railroad (IHB)	Short Line	71.3	12.0	83.3

Source: CPCS analysis of rail profile data provided by NIRPC, 2022; Indiana State Rail Plan, 2021; American Association of Railroads, 2022; STB North American Rail Lines Data, 2022.
*In addition to the Class I and short line railroads, three switching railroads operate in NWI; Gary Railway Company, Lake Michigan & Indiana Railroad Company, and Plate Valley Trolley serving US Steel's Gary Works, ArcelorMittal USA, and Buzzi Unicem Cement companies, respectively.

Table 4-14: Freight Railroads Serving Northwest Indiana

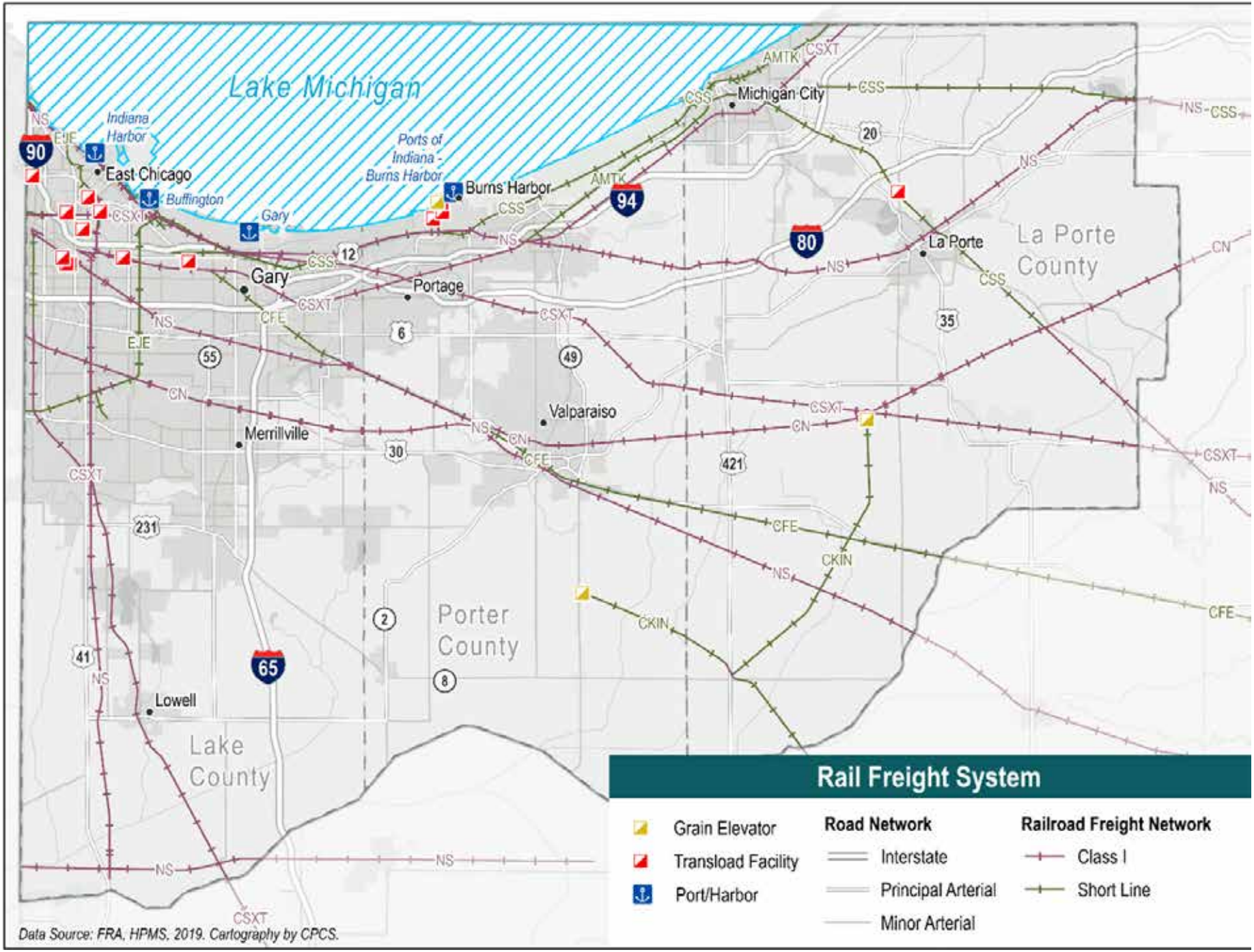


Figure 4-28: Northwest Indiana Freight Rail System, 2019

Rail-Served Multi-modal Facilities

There are 17 transload facilities and three grain elevators in Northwest Indiana. Transload facilities enable the handling and transfer of goods between truck and rail modes. Rail-served grain elevators transfer grains between railcars and grain storage bins.

A list of the transload facilities in Northwest Indiana is provided in Table 4-15, and the region's rail-served grain elevators are listed in Appendix 4F.

In addition to the truck/rail transload facilities and grain elevators, three of the maritime facilities in Northwest Indiana are served by rail:[30]

- ***Port of Indiana – Burns Harbor*** is served by NS railroad along 7 miles of track with the harbor and a railyard owned and operated by NS. The railyard handles over 9,000 railcars annually, primarily carrying manufactured steel products and steel scraps.
- ***Indiana Harbor*** is served by IHB short line, primarily handling railcars carrying steel products.
- ***Port of Gary*** is served by the Gary Railway general carrier line, which interchanges with CN's operations. Railcars served at the Port primarily carry steel products.

Facility	Location	Serving Railroad	Commodities
L&M Storage	East Chicago	IHB	Construction Material
Buckeye Partners	East Chicago	IHB	Industrial Liquid
Steel Warehouse	East Chicago	IHB	Metals
CSXT Transflo East Chicago	East Chicago	CSXT	Liquid Bulk
United Transportation Group	East Chicago	IHB	General Transloading, Car Cleaning
National Industrial Lumber	Gary	IHB	Construction Material
Partners Metals Warehouse	Gary	IHB	Metals
Savage Services	Hammond	IHB, INRD	Food Grade, Industrial Liquids, Dry Bulk
Midwest Terminal Services	Hammond	IHB	Metals
Kinder Morgan	Hammond	IHB	Metals
Wolf Lake Terminal	Hammond	IHB	Metals
Watco Transload	Hammond	NS, IHB	Climatic Steel
KL Chempak Inc	La Porte	Multiple	Liquid Bulk
Frick Services	Portage	IHB	Industrial Dry Bulk
Tanco Terminals	Portage	IHB	Industrial Liquid
Lakes & Rivers Transfer	Portage	IHB	Metals

Source: INDOT, State Rail Plan, 2021.

Table 4-15: Transload Facilities in Northwest Indiana



30 Indiana State Rail Plan, 2021.

Rail Movable Bridges

There are two rail movable bridges in Northwest Indiana, both of which travel over the Indiana Harbor Canal and along the Elgin, Joliet, and Eastern line (miles 0.68 and 1.89) owned and operated by the Canadian National (CN) Railroad. These bridges used to open on signal and were staffed by draw tenders at each bridge. However, due to a decline in the number of trains on the line (less than three trains per week) and CN's request, the movable bridges operate only when there is train traffic.[31] There is also one rail swing bridge in Northwest Indiana over Trail Creek in Michigan City, owned by Amtrak but also used by Norfolk Southern.

Rail Crossings

Table 4-16 presents the number of rail crossings in Northwest Indiana by position and type. A roadway-rail crossing can be at-grade or grade separated, in which case the rail tracks either pass over the roadway or under it. In terms of type, public crossings are located along the rail tracks crossing public roadways, while private crossings are with roads on private properties. A small portion of roadway-rail crossings may have an unknown status.

There are 1,050 rail crossings in the region, of which over 80 percent are public. Moreover, about 82 percent of all rail crossings in the region are at-grade, which is lower than in both Indiana and the US overall.[32] Nevertheless, Northwest Indiana still has a significantly greater concentration of at-grade crossings mile than both Indiana and the US. Measured in terms of crossings per roadway miles, Northwest Indiana has one public at-grade crossing for every 8.8 miles of the public roadway, while the concentration of at-grade crossings in Indiana is one per every 17 miles of public road, which is the highest across all US states.[33] Lake County houses roughly half of all rail crossings in Northwest Indiana, followed by La Porte County with about 31 percent and Porter County with about 19 percent. About 46 percent of the at-grade crossings in Northwest Indiana are in Lake County, 35 percent are in La Porte County, and 19 percent are located in Porter County.

FHWA provides guidance on equipping at-grade crossings with warning devices in the Manual of Uniform Traffic Control Devices (MUTCD). According to the MUTCD, all public grade crossings should at least be equipped with passive warning devices to mitigate conflict between rail and other modes, which will lead to safety incidents. Traffic control devices such as signs and markings located at or in advance of grade crossings to indicate the presence of a rail crossing are known as passive warning devices. In contrast, active warning devices such as flashing lights and gates change their aspect at the approach or passing of a train. Typically, a combination of passive and active warning devices are installed at grade crossings to improve safety.[34]

Crossing Position	Private	Public	Unknown*	Total
At-Grade	186	675	2	863
Railroad Over the Road	8	64	0	72
Railroad Under the Road	7	107	1	115
Total	201	846	3	1,050

Source: CPCS analysis of FRA Rail Crossing Inventory data, 2022.
*Some crossings are keyed as neither private nor public.

Table 4-16: Northwest Indiana Railroad Crossings by Position and Type

31 Federal Register, Drawbridge Operation Regulation; Indiana Harbor Canal, East Chicago, IN, 2020.

32 FRA Rail Crossing Inventory data showed that roughly 90% of rail crossings in Indiana and 88% in the US overall are at-grade.

33 CPCS analysis of FRA crossing inventory data, 2022; INDOT, Indiana State Rail Plan, 2021.

34 Indiana MUTCD, 2011. https://www.in.gov/dot/div/contracts/design/mutcd/mutcd.html

Although FHWA's estimates show that active crossing devices can reduce the risk of incidents at at-grade crossings by about 88 percent,[35] 5-year analysis of statewide rail-related incidents shows that over 50 percent of the at-grade crossing incidents happen at locations equipped with gates. This is likely because active devices such as gates are more likely to be installed where high-volume rail lines cross roadways that serve relatively high vehicle traffic volumes. Indiana and other states are implementing additional safety measures such as full-barrier (or four-quadrant) gates and roadway medians at actively-protected at-grade crossings with a high incident rate.[36] Currently, eight public at-grade crossings in Northwest Indiana are equipped with full-barrier gates (Table 4-18).

35 FHWA, Railroad-Highway Grade Crossing Handbook – 5 Selection of Alternatives, 2007.

36 INDOT, Indiana State Rail Plan, 2021.



Safety Device Type	Public	% of Total Public Crossings	Private	% of Total Private Crossings
Active	551	81.6%	7	3.8%
Passive	120	17.8%	11	5.9%
None	4	0.6%	15	8.1%
Not Specified	-	0.0%	153	82.3%
Total	675	100.0%	186	100.0%

Source: CPCS analysis of FRA Rail Crossing Inventory data, 2022.

Table 4-17: At-Grade Crossing Safety Devices in Northwest Indiana

Crossing Location	Railroad	Roadway
Griffith	CN	45th Ave
Michigan City	Amtrak-Michigan Line	Michigan St/ US 12
Chesterton	CSX	Calumet
Hammond	IHB	165th St
Portage	CSX	Crocker St/SR 149
Gary	CN	Buffington Harbor Dr
Portage	CSX	Tratebas Rd
Westville	NS	US 421

Source: CPCS analysis of FRA Rail Crossing Inventory data, 2022.

Table 4-18: At-Grade Crossings Equipped with Full-Barrier Gates in Northwest Indiana

Maritime Network

Northwest Indiana sits along 42 miles of the Lake Michigan coast. From here, ships can access the St. Lawrence River seaway to the northeast, offering access to Canada and other international destinations. Ships can also access the Chicago canal system to the west, which offers connections to the Mississippi River System, and the Gulf of Mexico. The Indiana Harbor Canal in East Chicago provides access to the Indiana Harbor complex.

In 2017, the maritime mode carried 4.8 percent of the total freight tonnage and 0.43 percent of the value in Northwest Indiana, indicating higher weight and lower value goods. As shown in Table 4-19, the top commodities by tonnage were gravel, coal-NEC, nonmetallic minerals, metallic ores, crude petroleum, and cereal grains.

In 2017, the top domestic trading partners by tonnage for maritime movements originating in Northwest Indiana, in descending order, were Indiana, Louisiana, and California. The top partners for maritime movements destined for Northwest Indiana were Michigan, Indiana, Minnesota, Illinois, and Louisiana.

4 in 1	31 million	11th	~#1
Four ports are included in one consolidated port district	Approximate tonnage handled at NWI ports in 2019	National ranking for domestic tonnage handled by the consolidated port district in 2019	Indiana Harbor is one of the largest integrated steelmaking facilities in North America

Commodity	Tonnage	Share of Total
Gravel	5,561,999	58.8%
Coal-NEC	1,155,672	12.2%
Nonmetallic minerals	1,297,592	13.7%
Metallic ores	1,063,573	11.2%
Crude petroleum	247,301	2.6%
Cereal grains	131,657	1.4%
Total	9,457,793	100%

Source: CPCS analysis of FAF5 data, 2022.

Table 4-19: Major Maritime Commodities by Tonnage in Northwest Indiana, 2017

Key Structures and Facilities

Indiana has six major ports. Four of these ports are located along the 42 miles of Lake Michigan coastline in Northwest Indiana, as shown in Figure Table 4-20.

Ports of Indiana – Burns Harbor is one of the three maritime ports that make up the Ports of Indiana. At just 600 acres, the port handles a significant amount of cargo given its small size. Roughly 350,000 trucks come and go from the port every year. Except for a route traversing a working steel mill, there is only a single access road to the port. This entrance bridge that travels over several railroad tracks is in desperate need of maintenance and repairs and cannot currently handle the port's freight needs. The port plans to build a redundant entrance bridge, then close and fix the original bridge. There are also plans to build a truck marshaling yard to reduce truck idling and delays. Burns Harbor is also in Phase 1 of a multi-phase study to become a microgrid with renewable energy resources.

Port Name	2019 tonnage	National ranking 2019	Commodities	NHS road connection	Railroad connection	Notable assets
Indiana Harbor	12,213,768	43	Steel, waste, gypsum	SR 912, US 12, US 20	Indiana Harbor Belt Railroad (IHB)	One of the largest integrated steelmaking facilities in North America
Burns Harbor	9,189,391	55	Steel, agricultural products, construction materials	I-80, I-90, I-94, I-65, I-12, SR 20	NS, connection to all Class I railroads	Designated FTZ; RORO dock; 15 steel-related and 3 steel mills located at the port; more than 12 miles of track on port property
Gary	7,978,004	63	Steel, minerals	I-90, US 12, US 20	Gary Railway	Open storage area
Buffington	1,570,196	134	Lime, construction materials	SR 912, US 12, I-90	NS Chicago Line	
Total	**30,951,359**	**22**				

Source: CPCS analysis of USACE waterborne commerce data, Google Maps, Ports of Indiana website, 2022.

Table 4-20: Indiana's Maritime Ports

Lake Michigan Ports District Consolidation

Although the four maritime ports in Northwest Indiana abut one another, they were counted as separate maritime assets until 2020. According to the Ports of Indiana, the consolidation of the four maritime ports on Lake Michigan into a single port district not only serves as an awareness tactic, but also makes these maritime assets eligible for additional funding. Had these ports been consolidated in 2019, they would have ranked as the 22nd largest port in the US by total tonnage. When looking at domestic tonnage only, the port district would have ranked 11th nationally. In 2020, after the consolidation, the Northern Indiana Port District ranked 28th nationally in terms of total tonnage and 13th for domestic tonnage.

Source: CPCS consultations with Ports of Indiana, 2022.

Although the port is making significant investments itself, there are other needs for which it must rely on support from other agencies, including USACE. For example, stakeholders noted a critical need for dredging improvements, investments in icebreaking, additional funding for maintenance, pilotage reform, navigation issues, and policy regarding the invasive species, Asian carp, in Chicago's canals.

Figure 4-29 shows the combined tonnages of Indiana's four Lake Michigan maritime ports, all of which are located in Northwest Indiana. The figure shows that, despite modest increases between 2010 and 2012, tonnage handled at these four ports has remained roughly stable over the last decade.[37]

Figure 4-30 provides a map of the maritime system in Northwest Indiana. The port symbols are scaled based on tonnage, with Indiana Harbor leading the way. The four ports are situated along Lake Michigan, with direct access to the M-90 marine highway. The M-90 consists of the Great Lakes, the Erie Canal, and connecting waterways. It offers access to the East Coast via the St. Lawrence Seaway system. The ports also have access to the Gulf Coast via the M-55 marine highway which travels through the Chicago Canal to the Inland Waterway system. [38]

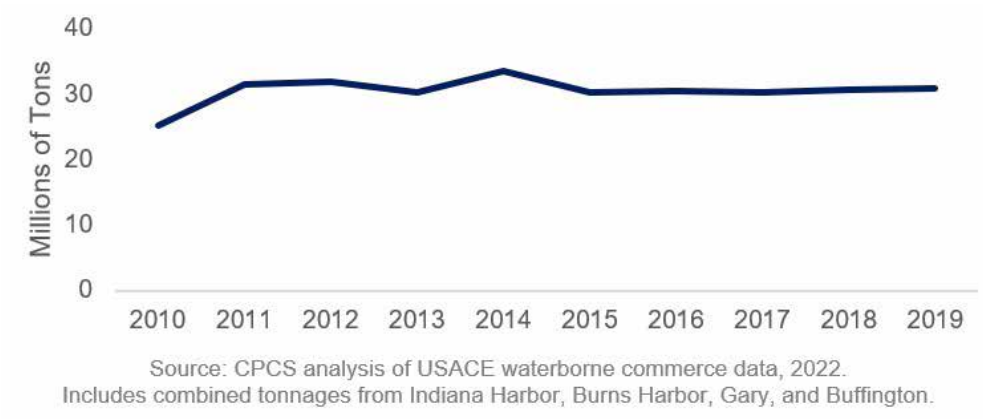


Figure 4-29: Indiana's Lake Michigan Ports Tonnage, 2010-2019



37 CPCS consultation with the Ports of Indiana, 2022.
38 America's Maritime Highway Route Designations, USDOT.

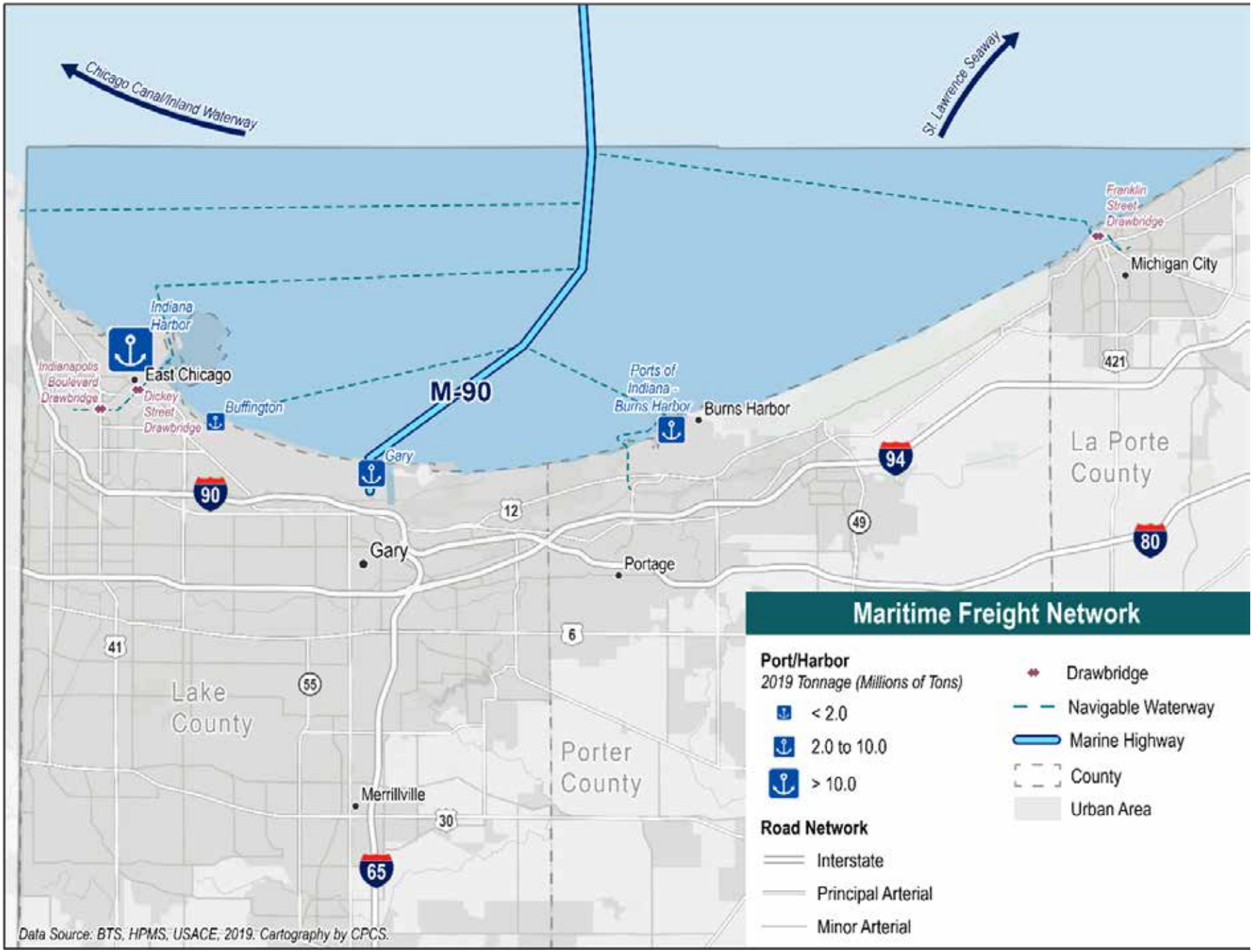


Figure 4-30: Map of Northwest Indiana Maritime Ports, 2019

Air Cargo Network

Despite representing less than 0.1 percent of the state's freight tonnage, air cargo is an important transportation mode for moving Indiana's time-sensitive and higher-value goods, including chemicals, pharmaceuticals, and electronics.

There are thirteen airports in Indiana equipped to handle cargo, of which the third largest is in Northwest Indiana: Gary/Chicago International Airport (GYY). There are an additional 6 non-cargo airports in Northwest Indiana (Table 4-21).

The latest FAF5 data shown in Table 4-22 show that electronics accounted for the largest share of air cargo in 2017 at 24.3 percent, with over 1,000 tons moving into, out of, or within Northwest Indiana. This was followed by machinery, plastics/rubber, base metals, and precision instruments. The latest data does not include landed weight at GYY, as UPS's mixed freight cargo services began in 2020.

In 2017, the top domestic trading partners by tonnage for air movements originating in Northwest Indiana, in descending order, were Florida, Alaska, Tennessee, Pennsylvania, and California. The top partners for air movements destined for Northwest Indiana were Tennessee, Ohio, California, Florida, and Alaska.

2	10	51,803
Cargo airports	Number of runways	Landed all-cargo weight tonnage for Gary/Chicago Airport in 2021

Source: CPCS analysis of FAA ADIP data, 2022.

Airport Name	City	Number of Runways	Cargo Handled
Gary/Chicago International Airport	Gary	2 (8,859 feet and 3,604 feet)	57,103 tons
Porter County Regional Airport	Valparaiso	2 (7,001 feet and 4,001 feet)	On-demand
Michigan City Municipal-Phillips Field Airport	Michigan City	1 (4,099 feet)	None
La Porte Municipal Airport	La Porte	2 (5,000 feet and 2,797 feet)	None
Lowell Airport	Lowell	1 (3,041 feet)	None
Hobart Sky Ranch Airport	Hobart	1 (3,125 feet)	None
Griffith-Merrillville Airport	Griffith	1 (4,899 feet)	None

Source: CPCS analysis of FAA ADIP data, 2022.

Table 4-21: Major Northwest Indiana Airports



Gary/Chicago International Airport (GYY) provides general aviation and charter services and is the largest cargo airport in Northwest Indiana. GYY added cargo facilities in late 2020 when UPS launched service from the airport.[39] As shown in Table 4-23, within a year of designating cargo facilities on site, GYY became the third largest cargo airport in the state, with a landed weight of 51,803 tons in 2021.

The lease with UPS stipulates that UPS must improve the terminal's condition and construct truck staging and parking sites.[40] UPS operates an Airbus A300 daily between Gary and Louisville, carrying up to 120,000 lbs. and 14,000 next-day packages.[41] The facility's 150,000-square-foot ramp, however, is enough to accommodate two A300 airbuses and leaves room for expansion of future UPS or third-party cargo operations.[42]

GYY serves as an important strategic airport to offload demand from the Chicago region's other airports. In 1995 the City of Chicago and the City of Gary established the Gary/Chicago International Airport Authority (GCIAA) with a Board of Directors comprised of individuals from both cities and states.

This agreement allows Passenger Facility Charges (PFC) collected at O'Hare to be used to fund projects at GYY. In 2014, Gary and the GCIAA entered a public-private partnership with AFCO/Avports for the management and development of the airport.[43] In the years following, the airport succeeded in expanding its runway, adding a US customs facility, building new terminals and hangars, and attracting UPS cargo service. However, the two entities agreed to end this partnership in 2022, with full control returning to the GCIAA.[44]

GYY's current slate of projects includes working to improve roadway access to the airport by extending the southeast service road and widening the Chicago Avenue cul-de-sac.[45] GYY's development plan details the possibility of expanding air cargo facilities through a third-party developer in the longer term. GYY also plans to construct a new terminal to accommodate rising cargo and passenger demands.

39 Gary airport lands cargo tenant UPS; Next Day Air growth cited in decision, Chicago Tribune, Carole Carlson, May 2020.
40 Ibid.
41 Ibid.
42 UPS to Launch Air Service from Gary/Chicago International Airport, UPS, May 2020
43 Gary/Chicago International Airport Master Plan Update, Gary Chicago International Airport, February 2021, pg. 2-3.
44 Gary airport cuts ties with private manager, developer, Northwest Indiana Times, AndSteele, June 2022.
45 Gary/Chicago International Master Plan Update, Gary Chicago International Airport, February 2021, pg. 6-7.

Commodity	Tonnage	Share of Total
Electronics	1,156.4	24.3%
Machinery	644.9	13.5%
Plastics/Rubber	387.1	8.1%
Base Metals	305.0	6.4%
Precision Instruments	300.4	6.3%
Motorized Vehicles	279.3	5.9%
Articles-Base Metals	245.2	5.1%
Printed Products	226.6	4.8%
Pharmaceuticals	224.8	4.7%
Textiles/leather	214.8	4.5%
Chemical Products	207.5	4.4%
All Others	574.7	12.1%
Total	4,766.7	100%

Source: CPCS Analysis of FAF5 data, 2022.

Table 4-22: Major Commodities by Tonnage Transported by Air in Northwest Indiana, 2017

Airport Name	Landed Weight (Tons)
Indianapolis International	2,424,235
Fort Wayne International	86,836
Gary/Chicago International	**51,803**
South Bend International	46,814
Total	2,609,688

Source: Preliminary CY2021 All-Cargo Rank Order, FAA

Table 4-23: Landed Weight for Indiana Cargo Airports, 2021

Pipeline Network

Pipelines offer a high-volume, low-cost option for transporting large amounts of liquids and gases, making pipelines a key element of the transportation network for liquid fuels. Pipelines are a major mode of transportation for freight in Northwest Indiana, both in terms of tonnage and value.

Table 4-24 summarizes the tonnage of major commodities that are transported via pipelines in Northwest Indiana. About 70 percent of this tonnage is inbound, arriving from other states or countries. Canada is the only international origin for commodities traveling by pipeline into Northwest Indiana.

In 2017, the top domestic trading partners by tonnage for pipeline movements originating in Northwest Indiana, in descending order, were Indiana, Illinois, Michigan, Iowa, and Wisconsin. The top partners for pipeline movements destined for Northwest Indiana were North Dakota, Illinois, Indiana, Texas, and Ohio. Figure 4-31 provides a map of the pipeline network in Northwest Indiana. Pipelines are concentrated in Lake County, especially in the northwest region, alongside the majority of refineries. Table 4-25 provides pipeline mileages by commodity type. Petroleum pipeline is by far the most prevalent type in Northwest Indiana, which is also evident in the map of the network.

BP Whiting Refinery

There are two crude oil refineries in Indiana, one of which is in Northwest Indiana – the BP Whiting refinery located in Whiting. The BP Whiting is the 6th largest refinery in the US and the largest facility of its kind in the Midwest. The facility processes over 440,000 barrels of oil on a daily basis and contributes 7 percent of the total asphalt produced in the US. The refinery directly employs 1,400 individuals and generates an additional 58,000 support and service jobs.



Source: BP's Economic Investment, 2020; Crude Oil Refineries, Indiana Office of Energy Development. Accessed 2022: Image Source: Superior Construction, accessed 2022.

Commodity	Tonnage	Share of Total
Coal-NEC	9,250,629	12.4%
Crude Petroleum	31,224,660	42.0%
Gasoline	26,108,540	35.1%
Fuel Oils	7,684,809	10.3%
All others	139,073	0.2%
Total	74,407,710	100%

Source: CPCS analysis of FAF5 data, 2022.

Table 4-24: Major Commodities by Tonnage Carried through Northwest Indiana's Pipelines, 2017

Commodity	Length (Miles)	Percent of Total
Crude Oil	77.8	10.1%
Hydrocarbon Gas Liquids (HGL)	32.3	4.2%
Natural Gas	161.8	21.0%
Petroleum Products	499.6	64.8%
Total	771.5	100%

Source: US EIA, 2020.

Table 4-25: Northwest Indiana Pipeline Coverage

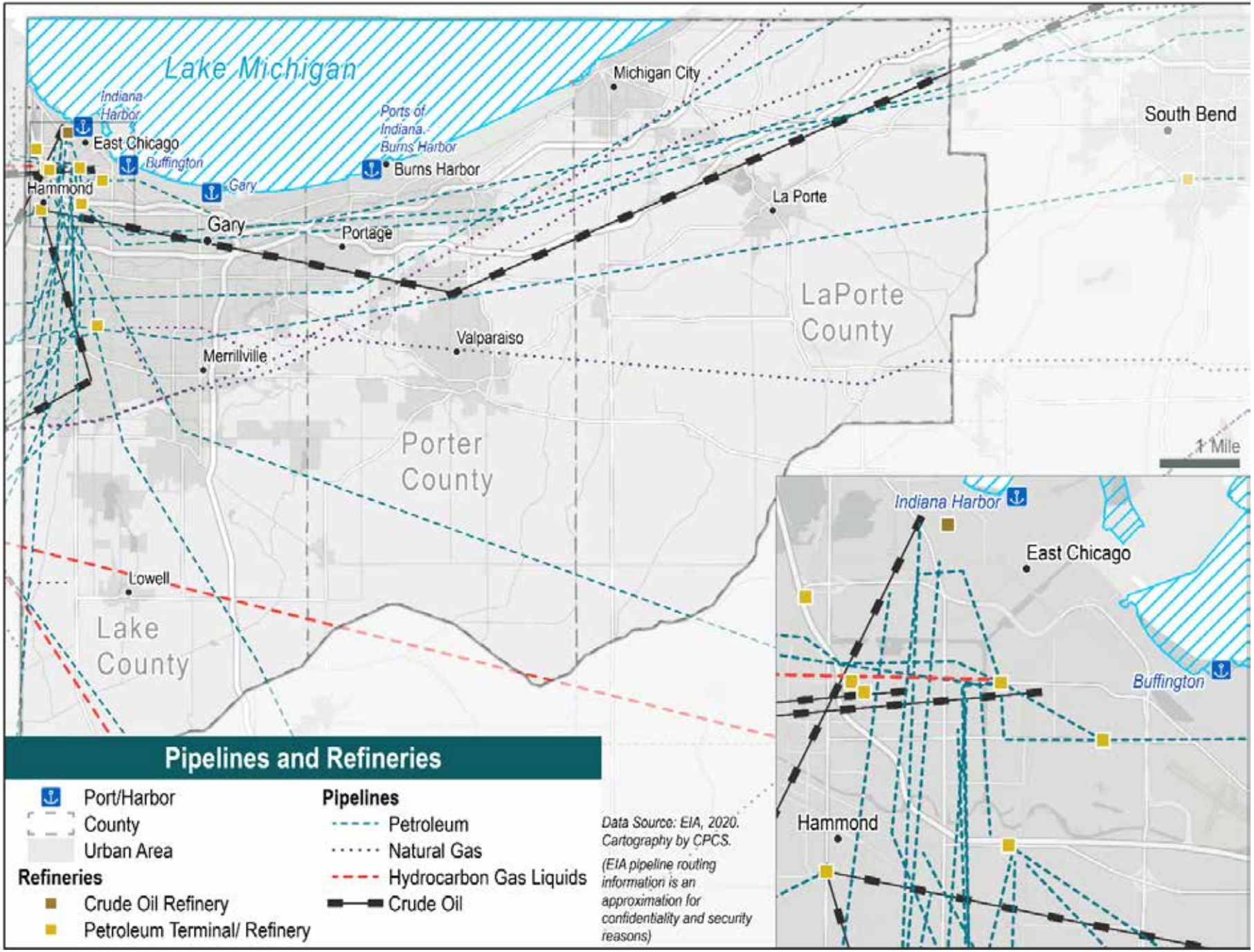


Figure 4-31: Pipeline Network in Northwest Indiana, 2020

Northwest Indiana's Freight System Condition and Performance

Linking System Evaluation to Statewide and Regional Goals

INDOT's *Multi-modal Freight Plan* was last published in 2018 to guide the statewide transportation system investments that benefit goods movement.[46] The statewide freight goals established by INDOT aligned with the national freight policy goals and objectives and, along with other statewide freight planning efforts, such as the Indiana State Rail Plan, guided the vision for the transportation system in Northwest Indiana and their associated goals and objectives.

To support these goals, *NWI 2050* adopted in 2019 established performance measures in the following topic areas to inform investments in the multi-modal freight system.

- ***Economy and Place:*** focusing on the economy and quality of place. Socio-economic factors as they relate to freight activities are assessed earlier in this chapter.
- ***Environment:*** focusing on the region's environmental quality. This section discusses measures related to transportation pollution and noise emission contributions and hazardous material spills that happen during material shipping, handling, and storage.
- ***Mobility:*** focusing on the quality of people and goods movement and modal options available to the transportation system users. Measures related to freight transportation safety, speed profiles, delays, reliability, and impediments to freight movements are analyzed in this section.
- ***People and Leaders:*** focusing on communities and their leaders. Measures related to workforce characteristics in Northwest Indiana are analyzed in Northwest Indiana's Economic Context section.

These topic areas served as the starting point for the data analysis presented in this chapter, using data available at the region, state, and federal levels, consultations with freight industry stakeholders, and building on previous relevant studies that have been conducted by NIRPC, INDOT, and other regional and statewide organizations. The performance of Northwest Indiana's freight system will be further analyzed and compared against the regional goals and objectives in Phase 2 of this project.

Safety

Road Safety

Between 2017 and 2021, over 11,200 truck-involved crashes occurred in Northwest Indiana, the majority of which (86%) were property-damage-only (PDO) crashes. As Figure 4-32 shows, 13 percent of these crashes involved injuries, and 1 percent involved fatalities. A total of 1,932 persons suffered injuries with various severity levels and 105 persons died as a result of truck-involved crashes in Northwest Indiana.



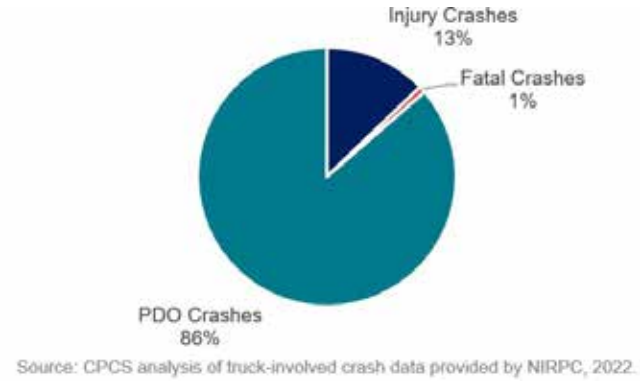


Figure 4-32: Truck-Involved Crashes in Northwest Indiana, 2017-2021

46 INDOT is currently in the process of updating the Indiana Multi-modal Freight Plan to be adopted in 2023.

On average, the number of truck-involved crashes in Northwest Indiana decreased by about 1 percent over the five study years. The largest reduction in the number of crashes happened in 2020, with a 14 percent drop from 2,221 crashes in 2019 to 1,908 crashes in 2020. This significant reduction in the number of crashes is correlated with relatively lower truck miles traveled during the second quarter of 2020. As Table 4-26 shows, daily truck miles traveled in the Northwest Indiana counties declined by over 13 percent in 2020 when compared to 2019 numbers. Of note is that while the regional daily truck miles traveled declined by 13.4 percent in 2020, the number of truck-involved crashes had a significant increase.

As shown in Figure 4-33, truck-involved crashes were primarily clustered along high-volume corridors, including I-90, I-65, I-94, and segments of I-80. The I-90/I-94 interchange in Portage and the segment of I-94 between SR 249 in Portage and the Indiana-Illinois border saw the highest concentration of truck-involved crashes, which is again correlated with truck traffic volumes.
The primary contributing factors for truck-involved crashes in Northwest Indiana between 2017 and 2021 included distracted driving, unsafe lane-changing maneuvers, and crashes due to obstruction in the drivers' lines of sight (Figure 4-34). Pedestrians and cyclists were involved in 46 of the truck-involved crashes between 2017 and 2021 and were partly at fault in about 43 percent of these.

Year	Daily Truck Miles Traveled	% Annual Change	Truck-Involved Crashes	% Annual Change
2017	3,938,100	-	2,451	-
2018	3,548,000	-9.91%	2,216	-9.59%
2019	3,872,000	9.13%	2,221	0.23%
2020	3,365,000	-13.09%	1,908	-14.09%
2021	2,914,000	-13.40%	2,417	26.68%

Source: CPCS analysis of NIRPC truck crash data and INDOT's VMT data, 2022.

Table 4-26: Truck-Involved Crashes and Daily Truck Miles Traveled in Northwest Indiana

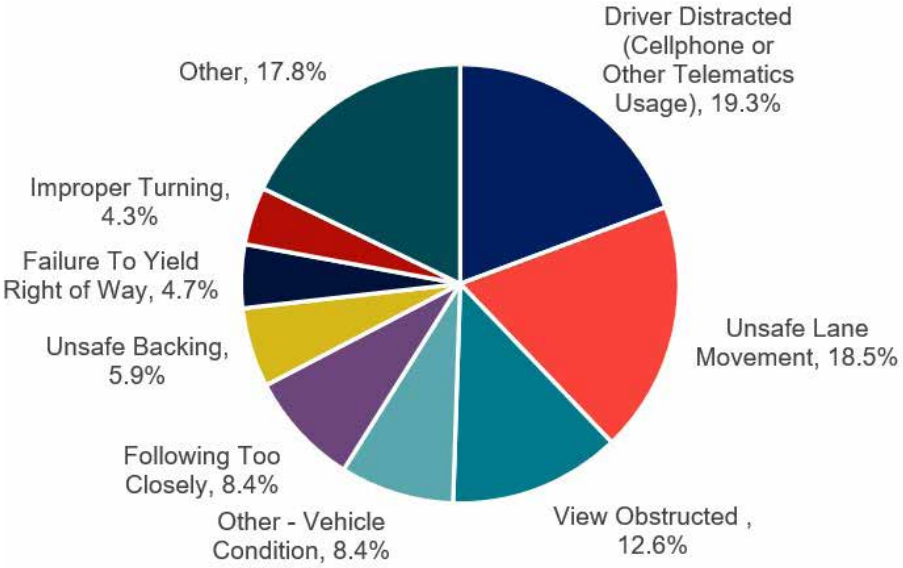


Figure 4-34: Primary Factors Contributing to Truck-Involved Crashes, 2017-2021

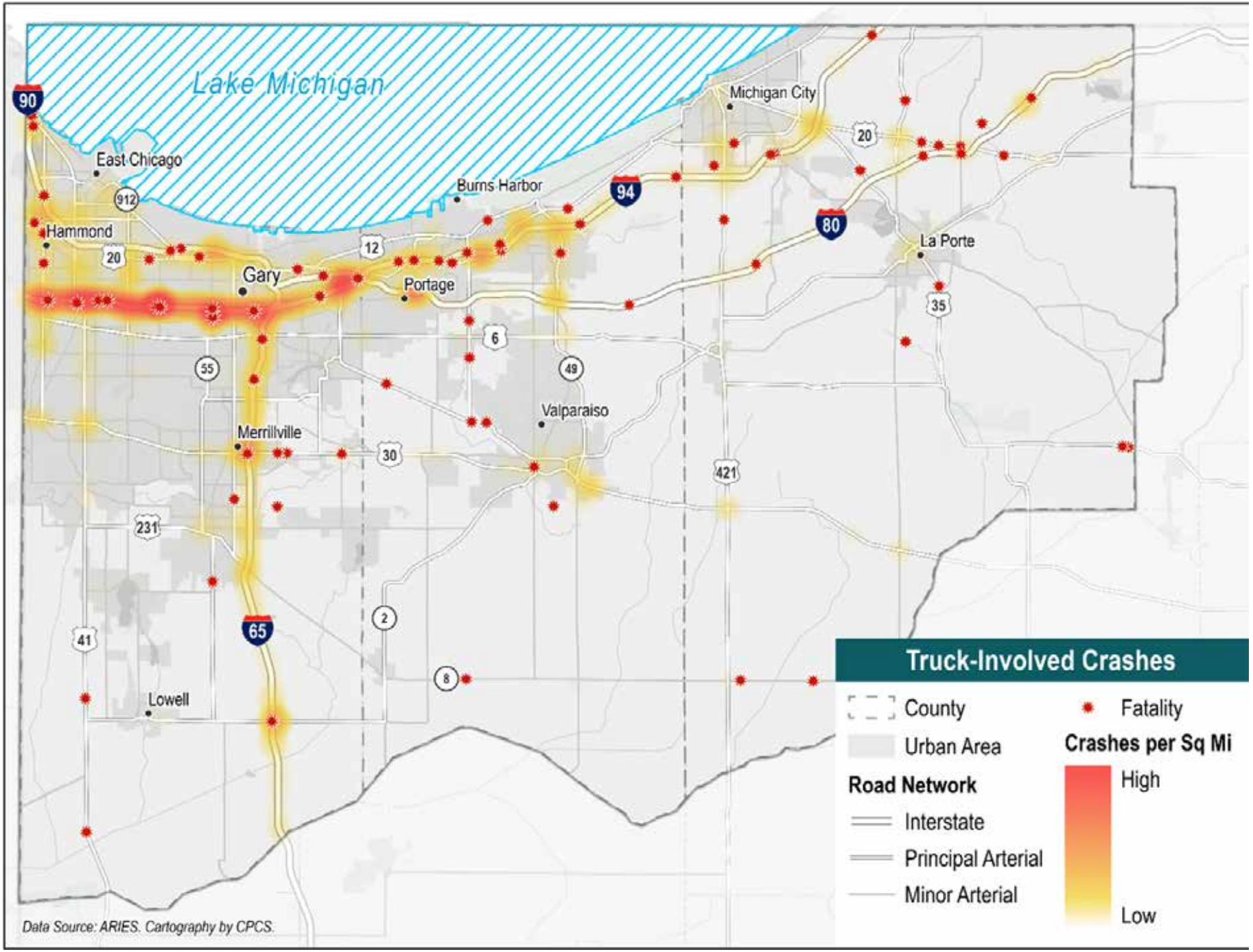


Figure 4-33: Truck-Involved Crash Locations in Northwest Indiana, 2017-2021

Rail Safety

The analysis presented in this section uses rail incident databases provided by the Federal Railroad Administration (FRA). Railroads are required[47] to submit monthly reports of "accidents and incidents resulting in injury or death to an individual or damage to equipment or a roadbed arising from the carrier's operations" to the Secretary of Transportation, which delegates the authority for prescription and enforcement of rail safety standards and regulations to the FRA.

The rail safety incident types considered in the railroad's reports to FRA include:

- Highway-rail grade crossing incidents;
- Rail equipment incidents, including train collisions, derailments, fires or explosions, and other events that happen during rail operations;
- Rail-related casualties include deaths, injuries, and railroad worker occupational illnesses that result in medical treatment, significant diagnosis by a health professional, or loss of consciousness.

47 Initially by the Accident Reports Act (ARA), signed into law in 1910 and later through the provisions and amendments introduced in the 1970 Federal Railroad Safety Act (FRSA). For more information, see: Title 49 Code of Federal Regulations (CFR) Part 225.

Year	Equipment Incidents	Crossing Incidents	Trespassing Incidents	Total	% Annual Change	Fatalities	Injuries
2017	18	24	10	52	-	4	26
2018	19	34	17	70	34.6%	9	32
2019	21	24	8	53	-24.3%	4	32
2020	20	21	6	47	-11.3%	2	26
2021	18	30	19	67	42.6%	8	29
Total	96	133	60	289	-	27	145

Source: CPCS analysis of FRA safety data, 2022.

Table 4-27: Freight Rail Safety Incidents in Northwest Indiana

Between 2017 and 2021, 157 at-grade rail crossing incidents occurred in Northwest Indiana, 133 involving freight trains and the rest involving Amtrak or Northern Indiana Commuter Transportation District (NICTD) passenger trains. Single-unit trucks and tractor-trailers were involved in 14 percent of the at-grade crossing incidents that happened over the five study years.

Over 52 percent of the time, the trucks involved in the crossing incidents were moving over the crossings while the trains were approaching. During the same period, freight trains were involved in 96 equipment incidents in Northwest Indiana, including 54 derailments and 13 side collisions.

In terms of casualties, freight-dependent rail incidents led to 145 injuries and 27 fatalities. Trespassing (whether at road-rail crossings protected by barriers or other locations along the rail tracks)[48] is the primary cause of freight rail-related fatalities and injuries in Northwest Indiana.

Table 4-27 shows the number of freight rail safety incidents in Northwest Indiana by type and provides the total number of fatalities and injuries.

48 A person or vehicle that enters an at-grade crossing without a physical barrier (e.g., gates in a lowered position) is not considered a trespasser, even when the crossing lights or other warning systems are activated. For more information, see FRA's Guide for Preparing Accident Incident Reports.

Figure 4-35 shows the freight rail safety hotspots in Northwest Indiana. As shown, rail safety incidents are primarily clustered along the high-volume Class I rail corridors such as CSXT's Barr subdivision between Portage, IN, and Blue Island, IL, and NS's Chicago District subdivision in Lake County. The following are the top rail safety hotspots in Northwest Indiana:

- ***CSXT's Barr subdivision at-grade crossing with Lake St in Gary***: seven incidents happened at this crossing between 2017 and 2021, leading to four fatalities and three injuries.
- ***NS's Chicago Line subdivision at-grade crossing with Clark Rd in Gary*:** seven incidents happened at this crossing between 2017 and 2021, leading to nine injuries.
- ***NS's Chicago District subdivision at-grade crossing with Grant St in Gary:*** six incidents happened at this crossing between 2017 and 2021, leading to one injury.
- ***CSXT's Barr subdivision at-grade crossing with Calumet Ave in Hammond:*** four incidents happened at this crossing between 2017 and 2021, leading to one injury.
- ***CSS's at grade crossing with Carroll Ave in Michigan City*:** four incidents happened at this crossing between 2017 and 2021, leading to one injury.

Movable Bridge Safety

Safety considerations for vehicles approaching movable bridges are often compared with safety aspects of rail crossings. Therefore, FHWA's Manual on Uniform Traffic Control Devices (MUTCD) specifies various measures and devices that ensure movable bridge safety, including metal signs, pavement markings, and other warning systems.

All three road movable bridges in Northwest Indiana use signs, crossing arms, and stoplights to warn motorists that the bridge is in motion. Roughly 300 feet from the Franklin Street movable bridge is an at-grade rail crossing, which amplifies potential safety concerns and delays. Moreover, bicycle lanes that make up part of the La Porte County Bikeways are located on both sides of Franklin Street.

The three rail movable bridges in Northwest Indiana only operate when there is train traffic. To announce the train passage and lowering of the moveable bridge, a train crew member initiates a secure call on a marine radio channel 10 minutes in advance and gives the last warning five minutes in advance of the train passage. The draw tender visually monitors vessel traffic before lowering the bridge. [49]



49 Federal Register, Drawbridge Operation Regulation; Indiana Harbor Canal, East Chicago, IN, 2020.

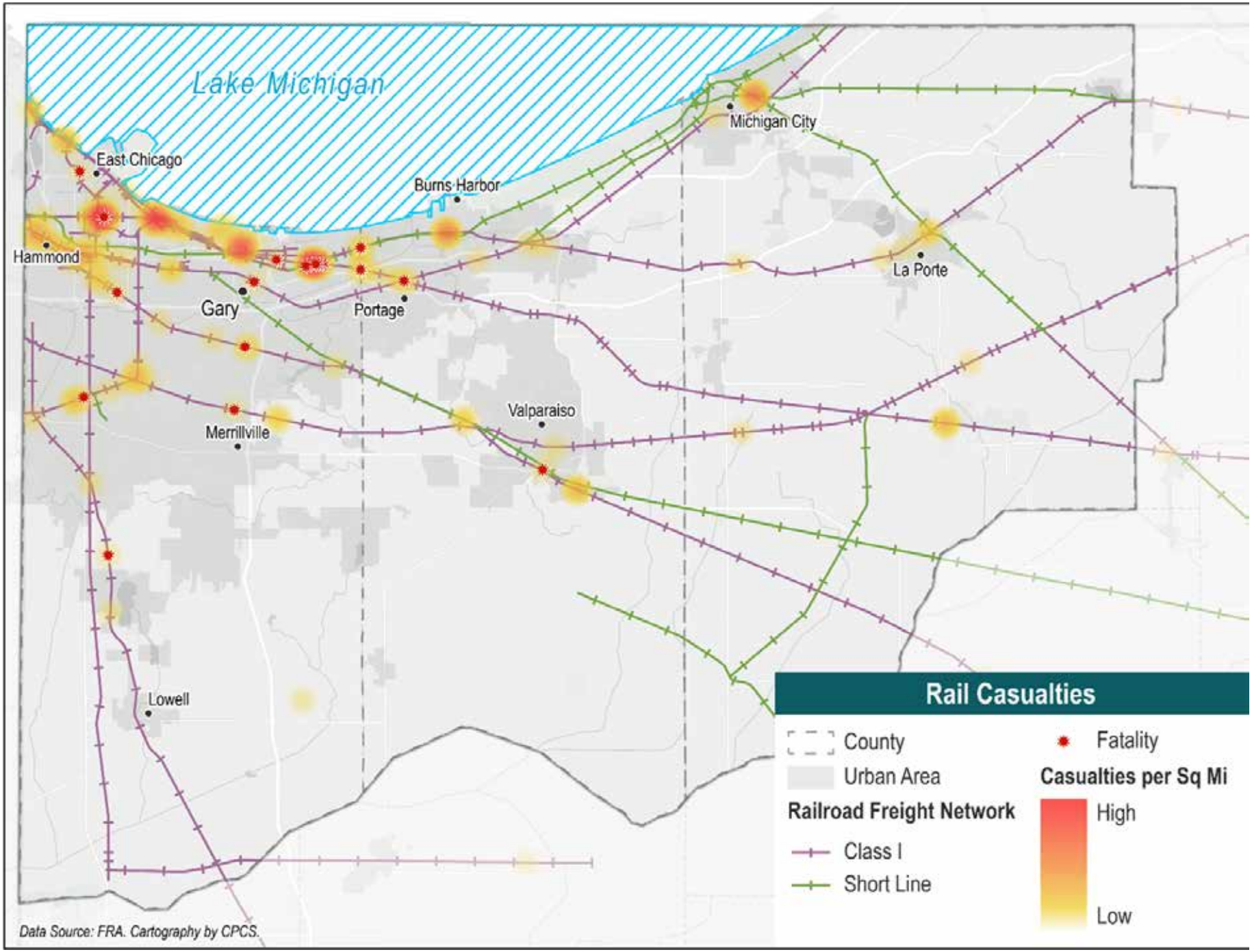


Figure 4-35: Rail Safety Hotspots in Northwest Indiana, 2017-2021

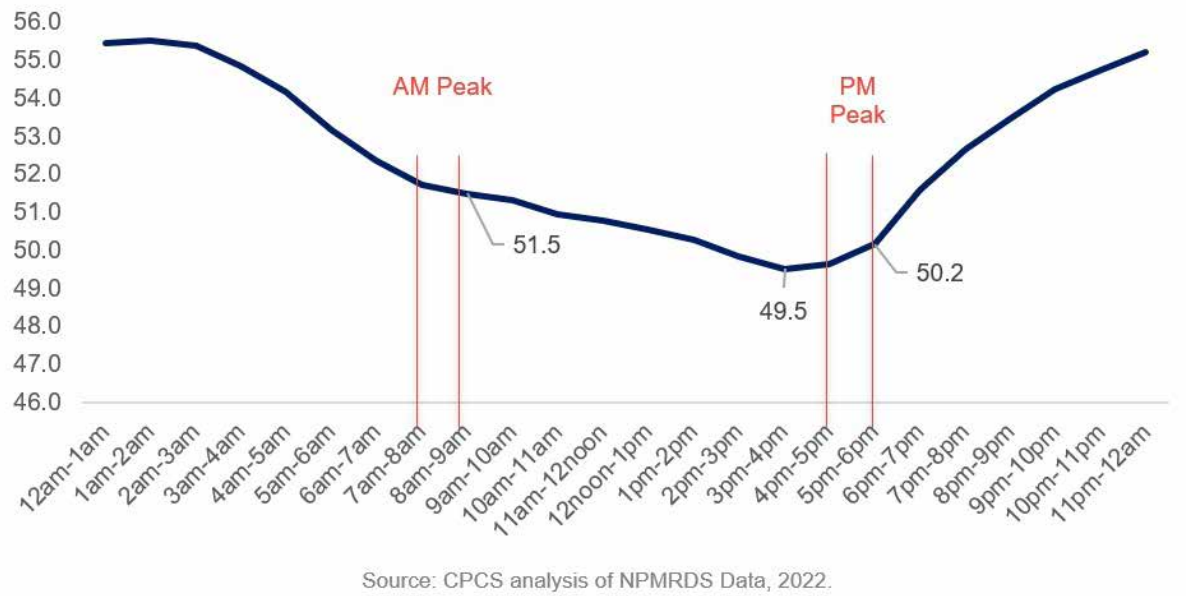
Mobility

Freight system mobility refers to the ability of goods to move effectively throughout the freight network. A high level of mobility indicates an efficient network that is capable of transporting freight quickly and economically. Mobility is affected by the dynamics of supply and demand; excessive system demand or insufficient system capacity can provoke mobility issues.

Freight mobility also interacts with safety and environmental impacts. Safety issues can generate mobility issues, as the incidents force temporary closures of lanes or tracks, which effectively decreases system supply. For example, safety incidents and poor incident clearance times can induce non-recurring congestion and mobility issues. Mobility issues also exacerbate the environmental impacts of freight transportation. Travel slowdowns increase travel times, leading vehicles to emit additional air emissions.

Truck Speed Profile

Figure 4-36 demonstrates the daily profile of average truck speeds along the NHS network in Northwest Indiana. As shown, average truck speeds steadily decrease starting at around 4 AM and reach their lowest levels at around 4 pm at 49.5 mph. After 4 pm, average speeds in the region increased slightly to 50.2 mph during the PM peak (4 pm-6 pm). Because average truck speeds consistently remain at or above 50 mph in Northwest Indiana, the speed profile suggests that congestion is not a glaring concern for truck movement in the region as a whole. However, this speed profile likely averages out specific sections of the road that do experience mobility issues. Indeed, there are a number of road segments with high traffic volumes that experience bottlenecks in Northwest Indiana, as discussed in the "Truck Bottlenecks" section.



Source: CPCS analysis of NPMRDS Data, 2022.

Figure 4-36: Average Truck Speeds along the NHS by Time of Day in the Northwest Indiana Region

Truck Travel Time Reliability Index

The Bipartisan Infrastructure Law (BIL) requires that states report several performance measures to FHWA, including the Truck Travel Time Reliability (TTTR) index for Interstates, which evaluates the reliability (or variability) of travel times experienced by trucks along a roadway. A TTTR equal to 1 indicates that the roadway of interest experiences practically no unexpected delays, meaning there is almost no variability in experienced travel times. The higher the TTTR value is above 1, the more unexpected delays occur on the roadway, meaning there is significant variability in experienced travel times. For instance, a TTTR index of 4.5 implies that 5 percent of the time, travel times are 4.5 times longer than the median travel time.

Using the 2019 National Performance Management Research Data Set (NPMRDS) provided by the FHWA, TTTR indices were calculated for the NHS road segments within Northwest Indiana[50], as shown in Figure 4-37. The segments with the highest TTTR indices are SR 912 in East Chicago, US 12 west of the Gary/Chicago International Airport, the US 30 and US 421 interchange in Wanatah, the US 35 interchanges with US 6, I-80/I-90, and US 20, and I-80/94 (Borman Expressway) near the interchange with I-65. A few key truck corridors, including I-94, I-80, US 6, US 12, US 30, and SR 49, also have segments with higher TTTR indices, indicating that trucks traveling on these roadways also experience variable travel times and more unpredictable delays.

50 When data was missing for a particular segment, the average speeds on roads in a 3-mile vicinity with the same functional class were used to determine the missing TTTR value. Data was only filled in for routes with a road type of 1 or 2 (one-way and two-way roads) meaning other road types like ramps are excluded from this data cleaning process.

Truck Travel Time Delay

Truck travel time delay per mile (DPM) is another mobility performance measure calculated by dividing the difference between free-flow travel time and observed travel time for each road segment of interest by the segment's length.[51] Figure 4-38 highlights the segments with high annual DPM values in the Northwest Indiana region. In general, the Borman Expressway—the portion of I-94/I-80 from just east of the state line to the Interchange with I-65—and SR 912/ US 12 in Gary experience the most severe delay. Segments on US 12, US 41, and I-94 also show increased truck travel time delays.

51 Again, when data was missing, the average speeds on roads in a 3-mile vicinity with the same functional class were used to fill in the missing DPM value. This process was only performed for segments with road types of 1 or 2.



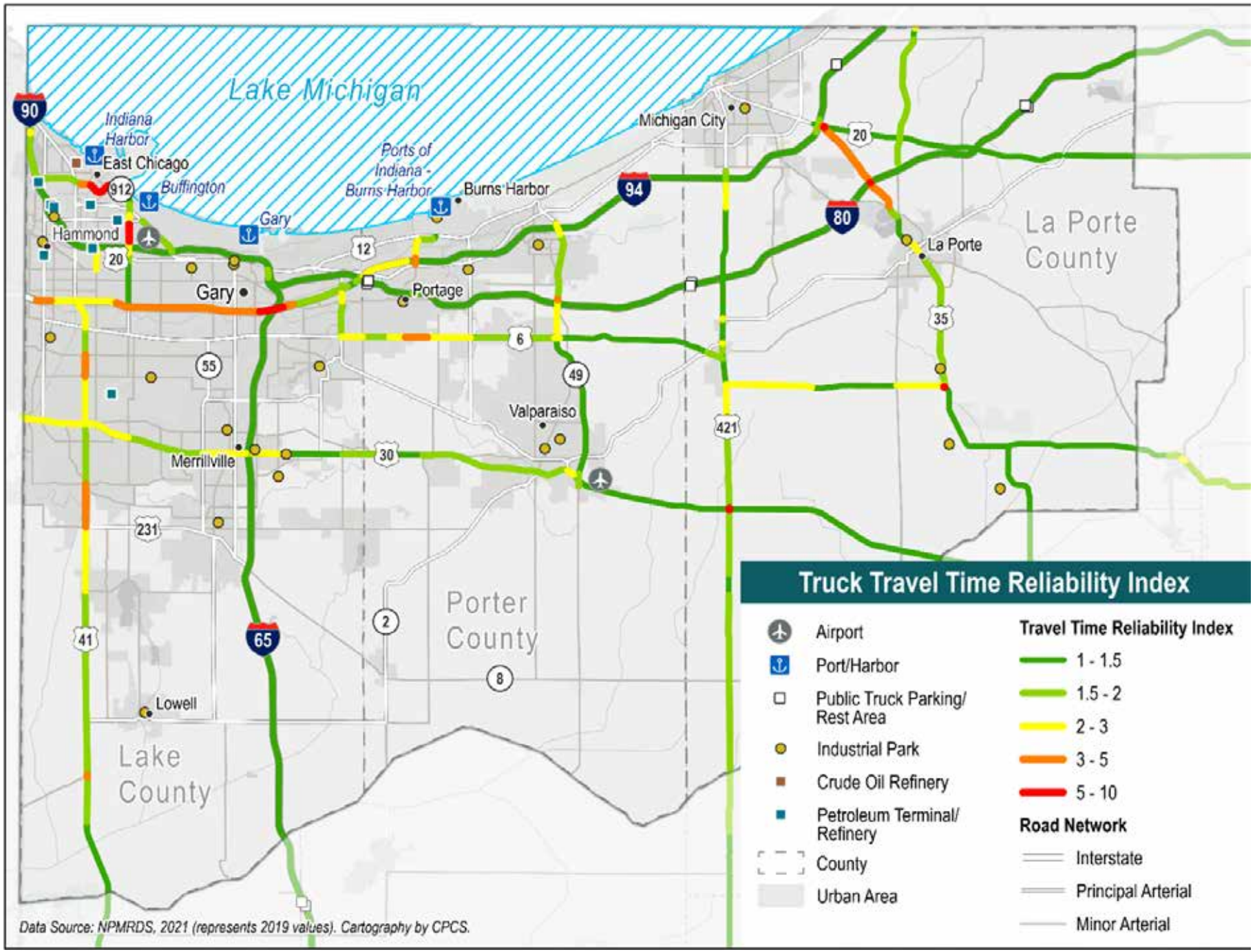


Figure 4-37: Truck Travel Time Reliability Index, 2019

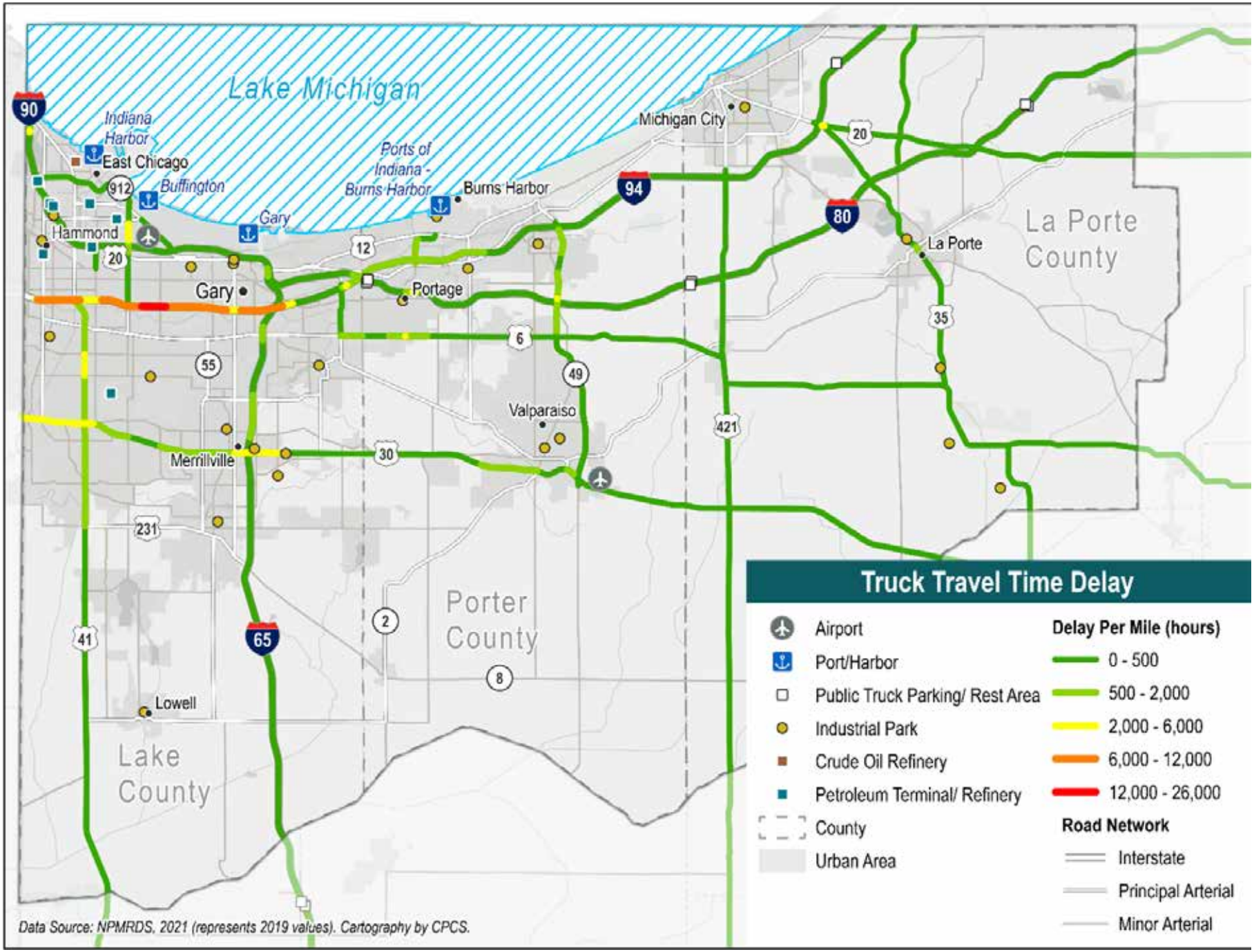


Figure 4-38: Truck Travel Time Delay, 2019

Truck Bottlenecks

A truck bottleneck refers to a segment of the roadway system that frequently experiences a significant decrease in truck speeds. While a bottleneck may cause congestion, congestion is not always the result of a bottleneck. Therefore, a combined DPM-TTTR Index is used in this study to identify truck bottlenecks that are representative of both delay and reliability challenges. The total hours of delay per mile (DPM) is multiplied by the TTTR ratios for each segment to calculate the TTTR-TDPM Index values.

Table 4-39 lists the top truck bottlenecks in Northwest Indiana, and Figure 4-69 shows the ranges of DPM-TTTR Index values along the NHS roads in the region. As shown, Borman Expressway—the portion of I-80/94 (Borman Expressway) between the Illinois-Indiana state line and Lake Station—as well as the segments of US 12 next to the Gary/Chicago International Airport experience the most elevated levels of DPM-TTTR Index values. Unsurprisingly, these two roads round out the top seven bottlenecks in Northwest Indiana.

Bottleneck Rank	Route Name	From	To	Weighted Average DPM-TTTR	Average Truck AADT
1	I-80/I-94 W	Burr St/Exit 6	IN-912/Cline Ave/ Exit 5	0.3791	18,523
2	I-80/I-94 W	I-65/Exit 12	I-65/Exit 11	0.3282	16,657
3	I-80/I-94 E	US-41/Calumet Ave/ Exit 1	US-41/Indianapolis Blvd/Exit 2	0.1892	46,124
4	I-80/I-94 W	IN-53/Broadway/ Exit 10	Grant St/Exit 9	0.1818	17,504
5	SR 912 S	Cline Ave/Exit 7	US 20/Exit 8	0.1538	2,277
6	I-80/I-94 W	Kennedy Ave/Exit 3	US-41/Indianapolis Blvd/Exit 2	0.1519	20,175
7	I-80/I-94 W	Central Ave/Exit 13	I-65/Exit 12	0.1452	16,657
8	IN 49	I-80/I-90/Indiana Toll Rd	I-80/I-90/Indiana Toll Rd	0.0883	2,716
9	I-80/I-94 W	US-41/Indianapolis Blvd/Exit 2	US-41/Calumet Ave/ Exit 1	0.0801	46,124
10	US 20 E	US 35 Intersection	US 35 Intersection	0.0631	2,383

Source: CPCS analysis of NPMRDS data, 2022. Truck AADT is for combination trucks.

Table 4-28: Top 10 Truck Bottlenecks in Northwest Indiana, 2019



The American Transportation Research Institute (ATRI) collects and analyzes truck GPS data in support of numerous USDOT freight mobility projects. Each year, ATRI performs an analysis of 300 freight-significant highways identified by USDOT, state DOTs, and trucking industry stakeholders, calculating the congestion values[52] and rankings for each highway. One bottleneck in Northwest Indiana, I-65 at I-80/94 (Borman Expressway) in Gary, is ranked 55th among ATRI's 2022 list of the top 100 truck bottlenecks in the nation. The TTTR-Delay analysis above identified this as the second worst bottleneck in the region.

52 The congestion value is an index calculated by multiplying the hourly vehicle volumes and the average truck speed deviations from the free-flow speeds. ATRI average the truck volumes and speeds across all days in a year, including weekends and holidays.

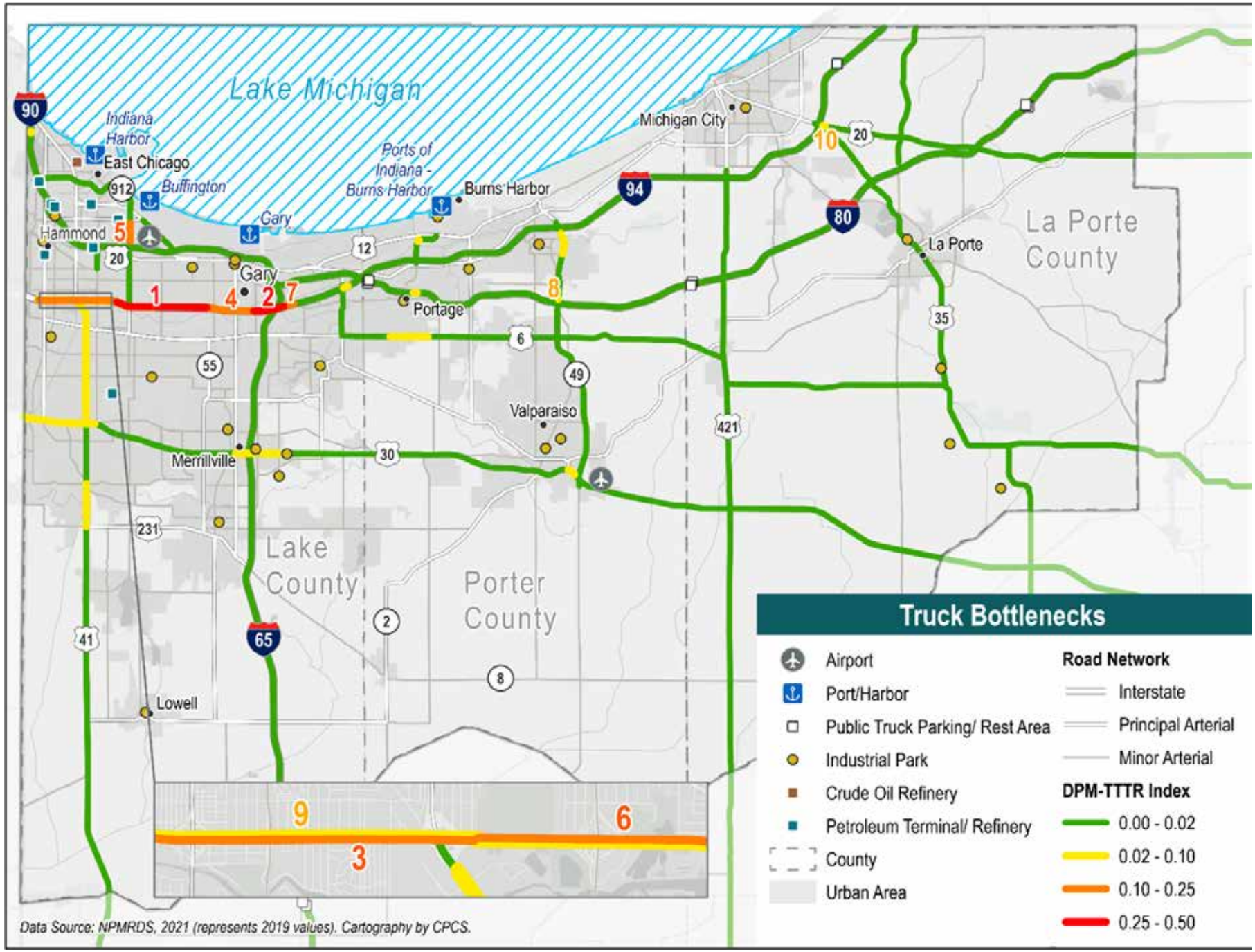


Figure 4-39: Truck Bottlenecks in Northwest Indiana, 2019

Bridge Clearance

Truck movements can be affected by the roadway's geometric design elements, such as the dimensions of curves, roadside elements, and bridges. Low bridge clearances create a localized barrier to trucking activities and, in particular, the movement of trucks carrying oversize/overweight (OS/OW) loads, which may exceed the dimensions of a normal truck.

The FHWA recommends that all bridges should be constructed with at least one foot of additional clearance above maximum truck height. The maximum truck height allowed without a permit per Indiana Size and Weight Laws is 13'6". The FHWA also recommends that bridges have a minimum clearance of 16' on Interstates and 14' on public roads to ensure that the majority of trucks can pass safely underneath.[53]

INDOT separates bridge clearance into five categories:

- *Less than or equal to 13'6"*: These bridges present a significant barrier to all truck movements.
- *Greater than 13'6" but less than or equal to 14'*: These bridges present a significant barrier to truck movements.
- *Greater than 14' but less than or equal to 15':* These bridges pose fewer barriers to truck movements.
- *Greater than 15' but less than or equal to 16':* These bridges pose few barriers to truck movements beyond OSOW operations.
- *Greater than 16'*: These are unlikely to impact truck movements.

53 FHWA, Vertical Clearance, Webpage accessed July 2022

I-80/94 Borman Expressway Planning and Environmental Linkages (PEL) Study

In July 2022, the Indiana Department of Transportation released a PEL study report on the Borman Expressway between the Illinois/Indiana border and the I-65 interchange. The report recognizes the high levels of traffic congestion and safety concerns that exist on this segment of roadway. There is urgency in addressing these issues, as traffic volumes are only forecast to increase—up to 18% by 2040. The report finds that trucks and pass-through traffic make up a significant portion of the travel on this roadway; trucks constitute up to 31% of daily traffic, and through-traffic comprises roughly 60% of westbound afternoon peak-period travel. The study proposes a number of strategies to mitigate existing and future congestion, including:

- Interchange modifications
- Sign enhancements
- Lane merge warning signs
- Dynamic shoulder lanes
- Event management, including a towing incentive program
- Ramp metering
- Variable speed limits
- Dynamic lane control, and
- Queue warnings

Source: Study details strategies for Borman congestion relief, Northwest Indiana Times, Andrew Steele, July 2022.

Table 4-29 presents the counts of each bridge clearance category for the 781 bridge overpasses that pass over roadways in Northwest Indiana. Of these, roughly 60.8 percent, or 475 bridges, provide more than 16 feet of clearance. Another 19.5 percent, or 152 bridges, offer between 15 and 16 feet of clearance. About 19.7 percent or 154 bridges leave less than 15 feet of clearance space for vehicles. These bridges pose mobility concerns for trucks in Northwest Indiana. Of these low clearance bridges, 126, or 82.8 percent, carry roads, and 24, or 15.8 percent, carry railroads.

Figure 4-40 maps the clearance category of each bridge overpass in Northwest Indiana. The majority of the most critical bridge clearance concerns lie along the I-90 corridor. In fact, almost all of the bridge overpasses that are less than or equal to 13'6" in clearance height sit on I-90. There also appear to be several bridge clearance issues along I-94 east of Lake Station and the northern section of I-65. Most of these issues obstruct traffic on Interstate crossroads, although a few obstruct traffic on the Interstates themselves, as discussed below.

A total of about 76 bridges passing over Interstates or Interstate ramps have clearances of less than 16 feet. About 92 percent of these have clearances between 15 and 16 feet. The remaining six have clearances below 15 feet:

- SR 149 over I-94 EB near Burns Harbor[54]
- SR 149 over I-94 WB near Burns Harbor [55]
- I-90 EB over the ramp to I-90 in Gary
- Bleck Road over I-94 WB near Michigan City
- Johnson Road over I-94 WB near Michigan City
- County Line Road over I-94 EB near Michigan City

These bridge clearance issues pose safety and mobility concerns for truck movements in the region and should be addressed.

54 This bridge has a clearance above 15 feet on all of its driving lanes. However, the shoulders have a minimum clearance below 14 feet.
55 Ibid.

Type	Less than or equal to 13'6"	Greater than 13'6" but less than or equal to 14'	Greater than 14' but less than or equal to 15'	Greater than 15' but less than or equal to 16'	Greater than 16'
Road	16	29	81	147	416
Rail	0	11	13	3	5
Other/Unknown	2	0	2	2	54
Total	18	40	96	152	475

Source: CPCS analysis of INDOT Bridge Clearance data, 2022.
Note: Data has been cleaned to only include bridges over roadways.

Table 4-29: Bridge Clearance Category Counts by Type in Northwest Indiana

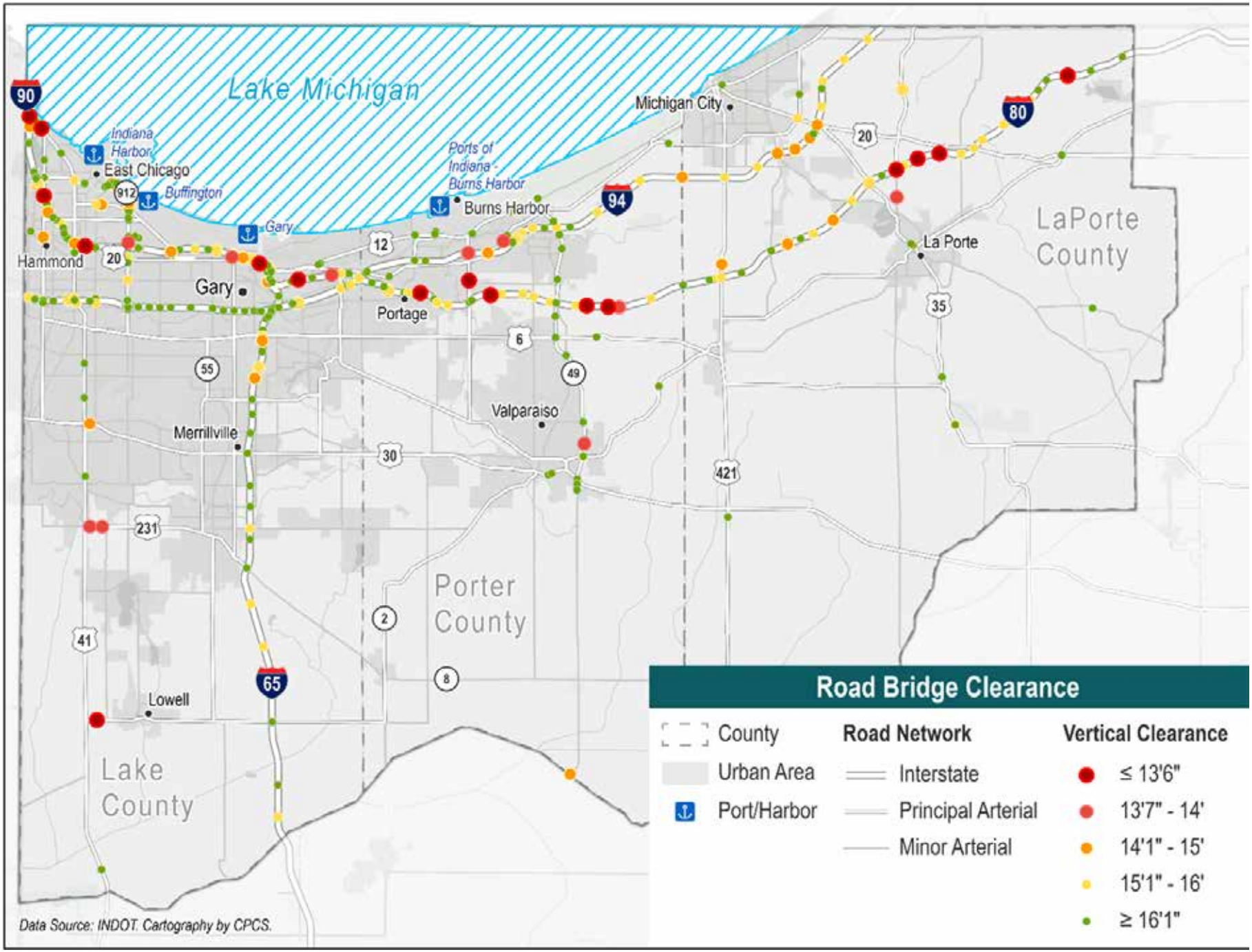


Figure 4-40: Northwest Indiana Bridge Clearance, 2021

OS/OW Operations

Regulating when and where oversize and/or overweight (OS/OW) trucks travel is necessary to preserve and maintain roads in a state of good repair while still supporting the movement of goods. The weights of OS/OW vehicles can accelerate pavement deterioration, according to a study by the American Association of State Highway and Transportation Officials (AASHTO).[56] Moreover, oversized trucks need to be wary of bridge clearance and other geometric limitations on the roadway to ensure that they can operate safely. Usually, OS/OW vehicles are regulated at the state level by issuing permits and imposing fees.

Most Indiana OS/OW permits are issued by the Indiana Department of Revenue's Motor Carrier Services (MCS) department, under the guidance and rules set by INDOT and Indiana law. Drivers must obtain an oversize and/or overweight vehicle permit before traveling on Indiana roads if their vehicle exceeds:

- 13 feet 6 inches in height;
- 8 feet 6 inches in width;
- 53 feet (semi-tractor-semi-trailer combination) in length; or
- 80,000 pounds gross vehicle weight (subject to axle weights).

In addition to obtaining a permit, drivers must follow signage, escort, and other requirements. According to INDOT's 2018 State Freight Plan[57].in Northwest Indiana, I-80 west of I-65, segments of I-94 between I-65 and US 421, and segments of SR 8 between Hebron and Kouts have permanent OS/OW restrictions. US 41 north of I-80 has an overweight restriction. Several state routes in the south part of the region have permanent oversize restrictions. Extra heavy-duty vehicles accessing the Indiana Harbor Works, the Midwest Steel Plant, and the Port of Indiana-Burns Harbor can be accommodated by SR 312, SR 912, US 12, US 20, and SR 39. In Northwest Indiana, the maximum weight on designated extra heavy-duty highways is 134,000 lbs.

Blocked Crossings

The need to mitigate safety and mobility issues at roadway-rail at-grade crossings can increase or decrease depending on the frequency and configuration of trains traveling along a specific section of track. The recent increase in the number of trains and train lengths is a national trend primarily associated with Precision Scheduled Railroading (PSR). The PSR operating model is now used by almost all North American Class I railroads, allowing them to assign the trains to fixed schedules rather than using a minimum or a maximum number of loaded cars to determine when a train should depart. The result is a greater number of trains, longer train configurations along major lines, and the elimination or abandonment of unprofitable lanes. These factors can slow down rail operations, with trains having to sit for long periods at or near busy rail yards and transload facilities and, therefore, block vehicle and pedestrian access at grade crossings.

2022 Indiana OS/OW Fee Increase

During the 2021 legislative session through House Enrolled Act 1190, INDOT was charged with reviewing and instituting a new fee for OS/OW permits. INDOT subsequently implementing an increase in the fee for overweight divisible load permits from $0.07 per Equivalent Single Axle Load (ESAL) mile to $0.25 per ESAL mile effective January 1st, 2022.

A number of stakeholders consulted noted that trucking associations have expressed concerns about this fee increase. However, INDOT noted that the state has not seen a decrease in permit volume, indicating that carriers have been able to absorb the cost so far.

Source: Revised Fees for Overweight Divisible Load Permits, INDOT October 2021.

56 Carpenter, S.H., 1992. Load equivalency factors and rutting rates: The AASHTO road test. Transportation Research Record, (1354). The study found that the damage of an overweight vehicle on the pavement can be as large as fourth power of the loads, meaning if the weight on an axle is doubled, the vehicle does sixteen times the damage to the road.

57 Indiana Extra Heavy Duty Highways, North West Indiana.

The Northwest Indiana region frequently experiences long delays at blocked rail crossings. Since the 2018 Indiana Supreme Court ruling that prevents municipalities from fining trains for blocked crossings, local communities have observed the issue of trains blocking at-grade crossings has only become worse[58]. From January to September 2019, 348 incidents were observed where a crossing warning system was activated.[59] One-third of those incidents were classified as blocked crossing incidents, meaning the crossings were closed to road traffic for more than 10 minutes. On average, it took trains 20 minutes to clear the blocked crossings.

The delays generated by blocked crossings create mobility concerns for all travelers, especially freight trucks facing tight schedules and hours-of-service requirements. In addition to excessive roadway delays, blocked crossings also increase response time for emergency services. Nearly half of all schools, fire stations, and hospitals in Northwest Indiana are within a half-mile distance of an at-grade crossing.[60] Moreover, blocked crossings can lead to safety issues, such as frustrated drivers or pedestrians attempting to clear the crossing while trains are approaching or drivers choosing to detour onto local streets.

Figure 4-41 shows the number of trains (passenger and freight combined) passing at-grade crossings in the region each day, based on 2022 FRA data. Of the 675 public at-grade crossings in the region, approximately 20 percent, or 176 crossings, have 25 trains or more passing through daily. Of these 176 busy crossings, daytime trains account for 46 percent of the trains, indicating the risk for significant modal conflict during the busiest times of the day. Figure 76 also shows the location of blocked crossing incidents observed between April to September 2019. Locations with the highest number of crossing issues include NS Chicago District in the City of Hammond and Indiana Harbor Drive (Michigan Avenue) between the IHB Rail crossing and CN rail crossing.

Blocked Crossing Safety Issues

Studies have shown that drivers will attempt to clear the crossings in front of arriving trains at locations where crossings are routinely blocked for extended periods. Pedestrians may also attempt to cross the blocked crossings by crawling between stopped railcars.

To address such safety issues, the FRA started collecting inputs from the road users and communities living near grade crossings in 2018, in order to identify the priority locations and offer effective solutions.

Source: FRA Newsroom, FRA Launches Web Portal for Public to Report Blocked Railroad Crossings, 2019.



58 Indiana Supreme Court ruling stops communities from finding trains for blocked streets, South Bend Tribune, September 2018.| The ruling argued that the fines violated the 1995 Interstate Commerce Commission Termination Act which prohibits states from managing or governing railroads.

59 EME Rail Solutions on-site evaluation of rail crossing incidents in 2019.

60 Northwest Indiana Rail Crossing Task Force Summary Report.

Recognizing the importance of addressing blocked crossings, regional organizations, including the Northwest Indiana Rail VISION Group and the Northwest Indiana Rail Crossings Task Force, have conducted many studies and reports on this topic in recent years.[61] These reports, in addition to stakeholder consultations, identified a variety of causes for the high number of blocked crossings in the region:

- A significant number of at-grade rail crossings in the region.
- Train dispatching decisions in line with PSR and other operating protocols.
- Speed restrictions on the railroad.
- Mechanical failures and other equipment issues that require the train crew to stop and inspect the train and make repairs, if needed.
- Insufficient double tracking or siding. Short segments of double tracking or siding mean long trains performing a "rolling meet," or traveling towards each other, must coordinate their timing in order to safely pass one another. When the timing is not perfect, one train must wait for the other, leading to blocked crossings and delays.
- Congestion at rail facilities in Chicago forces trains to wait in Northwest Indiana.

Blocked Crossing Safety Issues Northwest Indiana Rail Crossings Task Force

On October 18, 2018, the NIRPC Executive Board established a Northwest Indiana Rail Crossings Task Force to examine how local units of government could approach railroads to remedy the issues posed by blocked crossings. The task force convened four times from December 2018 to October 2019, identifying the need to get the Surface Transportation Board to hold railroads accountable for blocked crossings as well as sources of better data and crowd-sourced tools to report on blocked crossings.



61 Regional At-Grade Crossing Study and Northwest Indiana Rail Crossing Task Force Summary Report

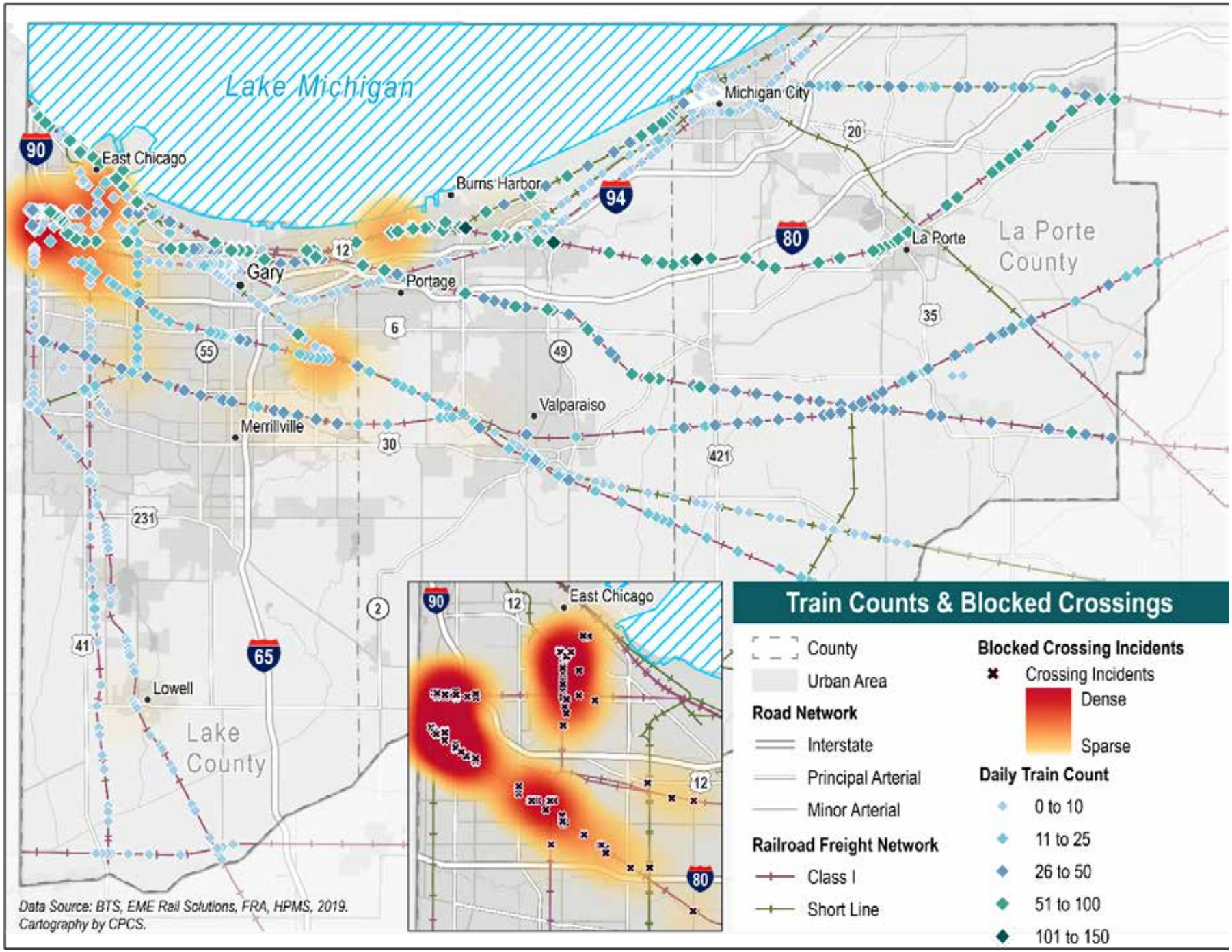


Figure 4-41: Daily Train Counts and Blocked At-Grade Crossing Incidents in Northwest Indiana, 2019

Infrastructure Condition

Pavement Condition

Adequate pavement condition is critical for the safe, comfortable, and efficient travel of vehicles on a region's roadways. The FHWA uses data from the Highway Performance Monitoring System (HPMS) to calculate the condition of pavement on NHS routes. This data considers a variety of road factors, including roughness, rutting, cracking, and faulting, to assign the pavement an overall condition rating of good, fair, or poor. States are required to set targets and assess the performance of road pavement using this data.[62]

Table 4-30 displays the share of Interstate and non-Interstates NHS routes in good, fair, and poor condition. The majority of both Interstate and non-Interstate NHS routes in Northwest Indiana are in fair condition. Figure 4-42 shows a map of pavement conditions on NHS routes in Northwest Indiana. Roads in poor condition are scattered throughout the region with a noticeable concentration in northern Lake County.

Road Bridge Condition

Table 4-31 provides a summary of road bridge inventory and condition in Northwest Indiana. Interstate bridges are clustered in Lake County. Lake County also has the highest number of road bridges, accounting for almost half of the total bridges in the region. La Porte County has a significant number of rural bridges. The average age of bridges in the region is 46 years, with bridges in Porter County being the oldest and bridges in Lake County being the youngest, on average.

62 Overview of Performance Measures: Pavement Condition to Assess the National Highway Performance Program, FHWA, 2017

Segment Type	Good	Fair	Poor
Interstate	5.79%	92.70%	1.51%
Non-Interstate NHS	7.67%	89.84%	2.49%

Source: CPCS analysis of HPMS data, 2022.

Table 4-30: NHS Pavement Condition in Northwest Indiana, 2019

County	Interstate	Other Principal Arterial	Minor Arterial	Collector	Local	Rural	Urban	Total	Average Year Built	Average Age
Lake	177	102	68	61	87	103	392	495	1983	39
Porter	48	56	27	63	82	141	135	276	1968	54
La Porte	38	31	9	64	84	196	30	226	1972	50
Total	263	189	104	188	253	440	557	997	1976	46

Source: CPCS analysis of USDOT National Bridge Inventory data, 2022.

Table 4-31: Count and Average Age of Road Bridges in Northwest Indiana





Figure 4-42: NHS Pavement Conditions in Northwest Indiana, 2019

Table 4-32 demonstrates the number of bridges in poor condition in Northwest Indiana by roadway system. There are a total of 52 bridge structures in poor condition in Northwest Indiana, making up just over 5 percent of all bridges in the region. The remaining 95 percent of bridges are in fair to good condition. Four of the bridges in poor condition are located on an Interstate. Lake County has the greatest number of bridges in poor condition, followed by Porter and La Porte Counties.

Figure 4-43 presents a map of overall road bridge conditions in Northwest Indiana using USDOT National Bridge Inventory data. Bridges in poor condition are located throughout the region with no clear pattern, although the higher concentration of such bridges in Lake County is evident.

Road Bridges in the Worst Condition in Northwest Indiana

- The worst scoring bridge in Indiana is the Kankakee River Stateline Bridge in southwest Lake County which is in critical/ serious condition. This bridge has been closed since 2000.
- The worst scoring bridge that is still in use is the W 117th Ave bridge over West Creek near Cedar Lake in Lake County. This is followed by the 125th Ave bridge over West Creek in Lake County.
- Other bridges in poor condition include 153rd Ave over Lake Dalecarlia in Lake County, S Wisconsin St over Lake George in Lake County, and SR 2 over Hutton Ditch in Porter County.

Source: CPCS analysis of USDOT National Bridge Inventory data and Google Maps, 2022. Note: Worst condition refers to bridges with the lowest scores on any bridge component, either the deck, superstructure, substructure, channel, or culvert.

County	Rural	Urban	Interstate	Other Principal Arterial	Minor Arterial	Collector	Local	Total	Share of Total Bridges
Lake	6	22	4	1	4	7	12	28	5.7%
Porter	11	5	0	0	5	7	4	16	5.8%
La Porte	7	1	0	1	0	4	3	8	3.5%
Total	24	28	4	2	9	18	19	52	5.2%

Source: CPCS analysis of USDOT National Bridge Inventory data, 2022.

Table 4-32: Counts of Road Bridges in Poor Condition by System and County in Northwest Indiana



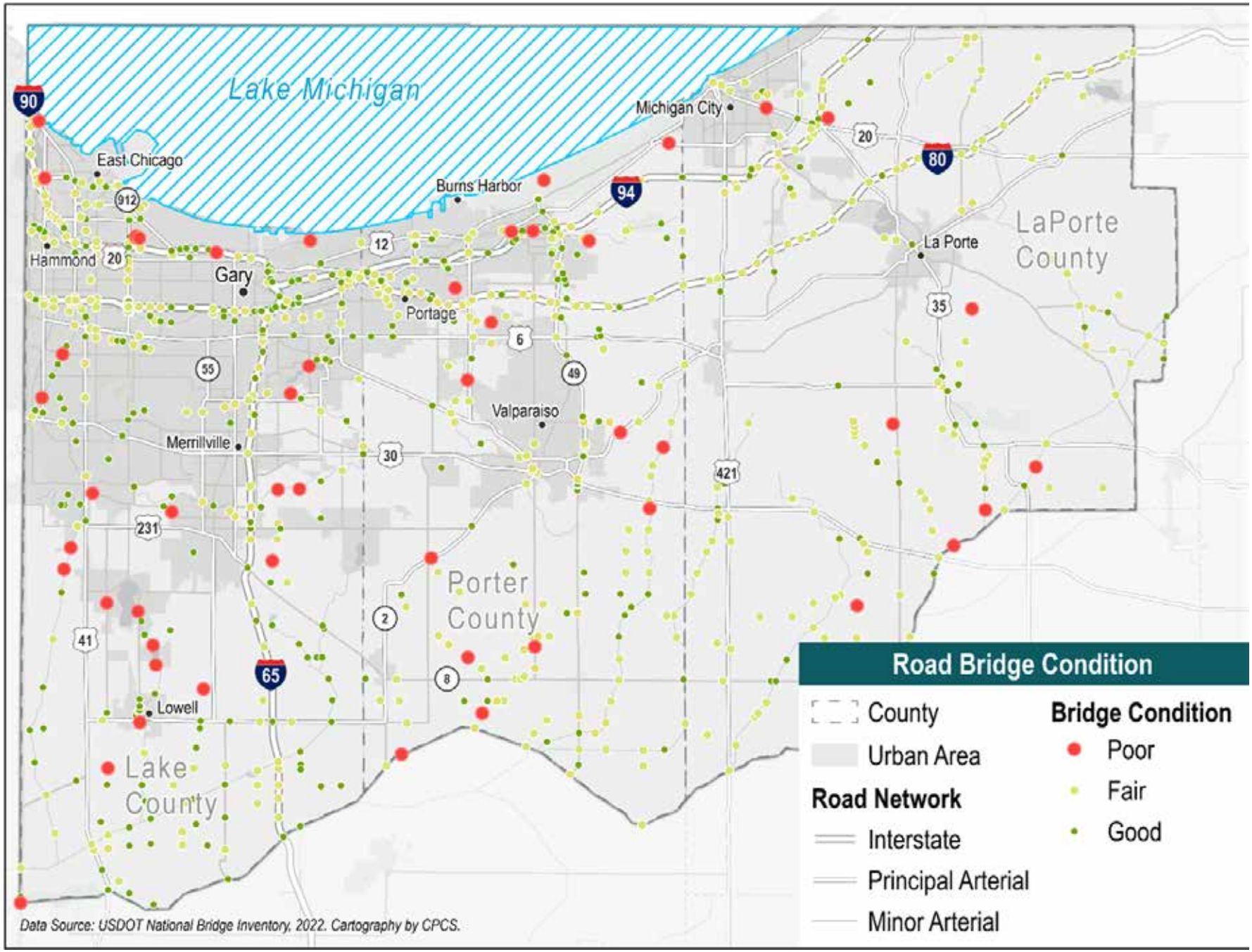


Figure 4-43: Overall Road Bridge Conditions in Northwest Indiana, 2022

Movable Bridges

There are three road movable bridges in Northwest Indiana, two in Lake County and one in La Porte County. As shown in Table 4-33, all three bridges are in fair condition. There are also two rail movable bridges in Northwest Indiana, which are operated by Canadian National and are not included in this data.

Rail Track Condition

The industry standard maximum weight shifted from 263,000 pounds to 286,000 in the 1990s, which required investments in railroad infrastructure. All rail tracks serving Class I railroads in Northwest Indiana are 286K capable, as is the Chicago, Fort Wayne, & Eastern Railroad (CFE). [63]

Track class speed dictates how quickly a train can move along a particular section of track. These classes are often dictated by geometric characteristics and the condition of the track. Table 4-34 presents statewide track class information for railroads in Northwest Indiana.

Movable Bridge	County	Condition	Year Built
Dickey Road	Lake	Fair	1992
Indianapolis Boulevard	Lake	Fair	1987
Franklin Street	La Porte	Fair	1932

Source: CPCS analysis of Bureau of Transportation Statistics National Bridge Inventory data

Table 4-33: Movable Bridge Condition and Year Built

Railroad	Subdivision	Track/Speed Class
CSXT	Barr	Max 60mph
	Garrett	Max 50-60mph
	Porter	Max 40mph
	Grand Rapids	Max 50mph
NS	Chicago Line	Max 50mph
	Chicago District	Max 50mph
	Kankakee	Max 35-45mph
CFE	N/A	Excepted on 17.4 miles; Class 2 or higher on 141.8 miles
CKIN	N/A	Class 1
CSS	N/A	Class 1 on 50 miles; Class 2 or higher on 75 miles
IHB	N/A	Class 2 or higher

Source: 2021 INDOT Rail Plan.
Note: Speed classes are for the state overall. The maximum allowed speed on Class 1 track is 10 mph. On Class 2 it's 25 mph [64]

Table 4-34: Statewide Track Class Information for Railroads in Northwest Indiana

63 INDOT State Rail Pna 2021; Chicago, Fort Wayne & Eastern Railroad (CFE), Genesee and Wyoming Railroad.

64 49 CFR § 213.9 – Classes of track: operating speed limits., Legal Information Institute, Cornell Law School.

Environmental Impacts

The transportation sector both acts on the environment and is acted on by the environment. This section discusses this important interplay between the freight system and the natural and human settings that it occupies. The freight system generates air emissions, noise pollution, and hazardous spills, which all affect the natural and human environment. Conversely, the natural environment strains the resiliency of the freight system's physical infrastructure through natural wear and tear and climate disasters.

Air Emissions

Air emissions can have profound impacts on quality of life, health, wildlife, and the climate. According to the US Environmental Protection Agency (EPA), the transportation sector contributed 27 percent of the greenhouse gas emissions in the US in 2020. Of these transportation-related emissions, trucks, including light-duty vehicles and medium- and heavy-duty trucks, contributed 83 percent.[65] The freight transportation sector thus plays a major role in mitigating air emissions and their impacts.



Nonattainment

Of the six pollutants regulated by the Clean Air Act, all three counties in Northwest Indiana were classified as Ozone nonattainment areas based on the 1997 National Ambient Air Quality Standard (NAAQS). By 2010, these three counties had been reclassified for attainment with maintenance plans according to the 1997 standard. However, Lake and Porter Counties were redesignated as nonattainment areas according to the updated 2008 Ozone NAAQS and were denied a redesignation request in 2015. In 2018, the townships of Calumet, Hobart, North, Ross, and St. John in Lake County were designated as nonattainment for the 2015 Ozone NAAQS. The transportation sector is a major contributor to ground-level Ozone production.[66] Internal combustion engines release nitrogen oxides (NOx) and volatile organic compounds (VOCs), which react under the presence of sunlight to produce Ozone.[67]

Figure 4-44 shows the annual fourth-highest daily maximum 8-hour average ozone concentrations for each Northwest Indiana county. The figure also presents the standard during each year, which is met at each air quality monitor if the three-year average of the annual ozone metric is below the standard. The figure makes clear that the Northwest Indiana region hovers right around the standard, and Ozone emissions have been increasing slightly in recent years.

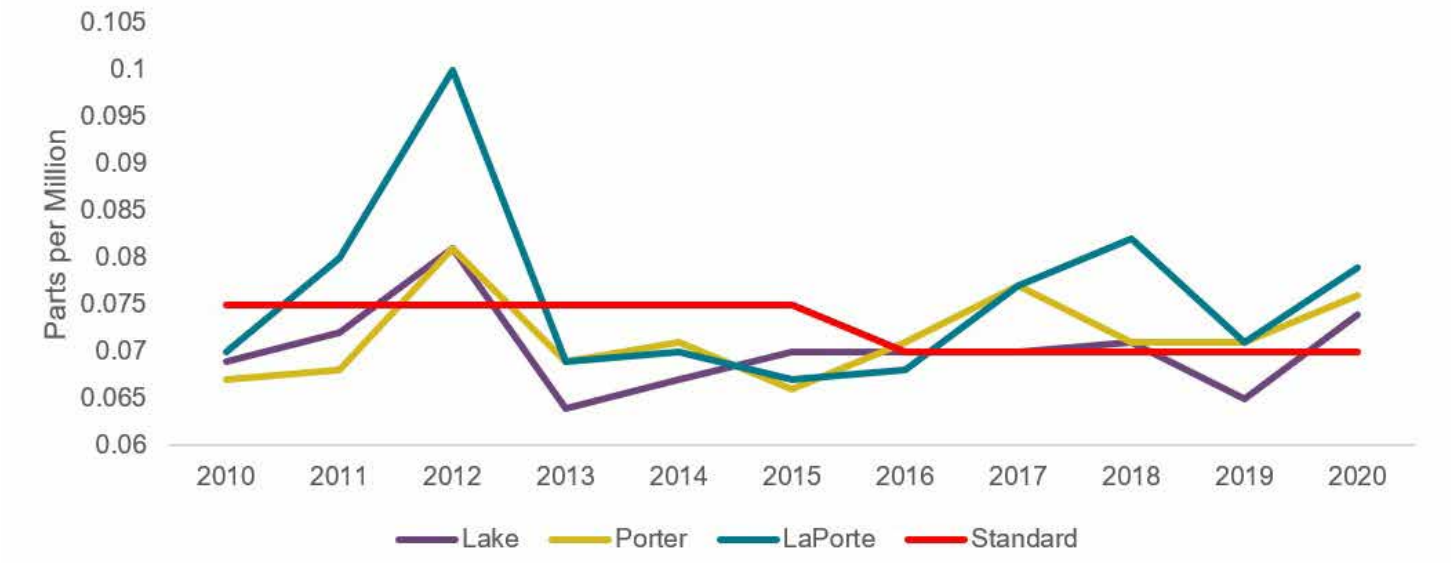
65 Fast Facts on Transportation Greenhouse Gas Emissions, US EPA, (n.d.).

66 Air Quality Conformity Determination Report, NIRPC, April 2021.

67 Ground-level Ozone Basics, EPA, June 2022

NIRPC's Air Quality Conformity Determination Report includes an analysis of forecasted NOx and VOC emissions through 2050. These forecasts suggest that Lake and Porter Counties will emit levels of NOx and VOC that are below the motor vehicle emissions budgets set out in the Indiana State Implementation Plan. This indicates that Northwest Indiana will conform with national Ozone emissions standards.[68]

East Chicago in Lake County has been designated a maintenance area for Particulate Matter less than 10 microns in diameter (PM10) and Carbon Monoxide (CO). However, the transportation sector is not a major contributor of this type of pollution.[69]



Source: CPCS analysis of US EPA Statistics Reports, 2022. https://www.epa.gov/outdoor-air-quality-data/air-quality-statistics-report | Timeline of Ozone National Ambient Air Quality Standards (NAAQS), US EPA. https://www.epa.gov/ground-level-ozone-pollution/timeline-ozone-national-ambient-air-quality-standards-naaqs
Note: Includes exceptional events. The EPA 8-hour ozone air quality standard changed in 2015.

Figure 4-44: Ozone 4th Maximum 8-Hour in Northwest Indiana

68 Air Quality Conformity Determination Report, NIRPC, April 2021.

69 Ibid.

Major Emitters

Table 4-35 presents the top 10 highest greenhouse gas emitting industrial point sources in Northwest Indiana as of 2019. The facility that generated the greatest amount of greenhouse gas emissions was the US Steel Corporation in Gary, which released the equivalent of over 9 million metric tons of CO2. Of the top 10 polluting industrial facilities in 2019, seven were in Lake County, two were in Porter County, and one was in La Porte County. All the industrial facilities are freight dependent.

Noise Pollution

Noise pollution can have serious impacts on both surrounding wildlife and human health and quality of life. As shown in Figure 4-45, transportation-related noise pollution in Northwest Indiana is concentrated around major roads, railways, and airports. According to the US Bureau of Transportation's Noise Map data, the largest contributors to noise pollution are Gary/Chicago International Airport, Porter County Regional Airport, the region's four Interstates, especially I-94, and railroads along Lake Michigan.

Facility	Parent Company	City	County	GHG (metric tons CO2e)
US Steel – Gary Works	US Steel Corp	Gary	Lake	9,015,960
Cleveland-Cliffs Burns Harbor LLC	Cleveland Cliffs Indiana Harbor LLC (formerly ArcelorMittal)	Burn Harbor	Porter	7,739,921
Cleveland-Cliffs Steel LLC (3210 Watling St)	Cleveland Cliffs Indiana Harbor LLC (formerly ArcelorMittal)	East Chicago	Lake	6,200,942
BP Whiting Business Unit	BP America Inc	Whiting	Lake	4,984,462
Cleveland-Cliffs Steel LLC (3001 Dickey Rd)	Cleveland Cliffs Indiana Harbor LLC (formerly ArcelorMittal)	East Chicago	Lake	4,509,626
Linde Whiting	Praxair Inc	East Chicago	Lake	1,656,904
Michigan City Generating Station	NiSource Inc	Michigan City	La Porte	1,158,966
Indiana Harbor Coke Company	Suncoke Energy Inc and DTE Energy Co	East Chicago	Lake	979,203
Carmeuse Lime Inc. Buffington	Carmeuse Lime Inc.	Gary	Lake	872,063
Portside Energy	Perc Holdings 1 LLC	Portage	Porter	224,194

Source: CPCS analysis of US EPA Facility Level Information on Greenhouse Gases Tool (FLIGHT) data, 2022.

Table 4-35: Top 10 Major Emitter Industrial Point Sources in Northwest Indiana, 2019



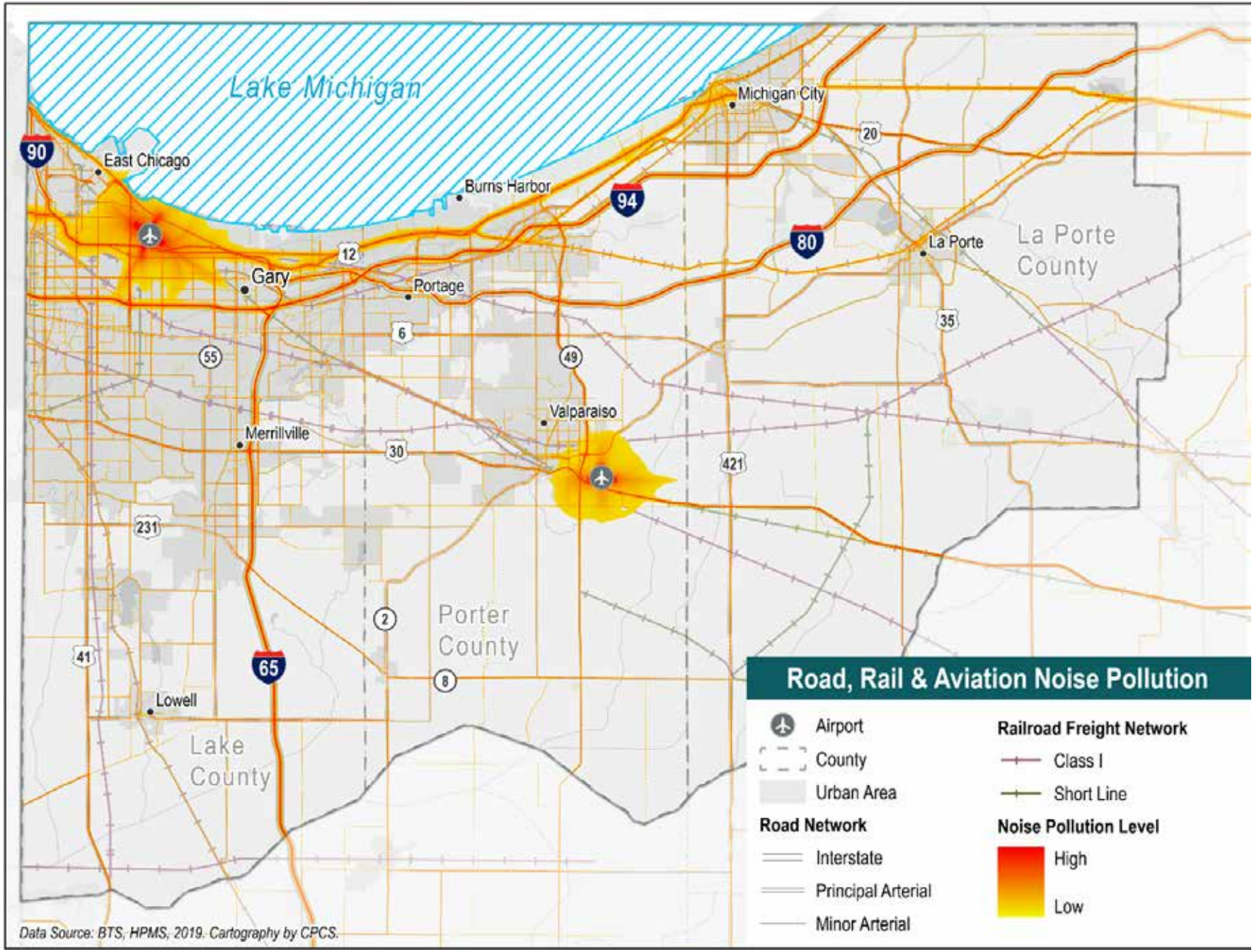


Figure 4-45: Transportation-Related Noise Map in Northwest Indiana

Hazardous Spills

A hazardous material spill refers to the accidental leak of any toxic element into the environment. The most common type of spill involves petroleum products, although other materials may be spilled as well, including sewage, pesticides, paint, firefighting foam, and other chemicals. Not only do such spills threaten the health of wildlife and the natural environment, but they also risk polluting critical human water resources. The transportation sector can be a major source of hazardous spills, not only because they tend to carry fuel oils but also because freight transportation often transports hazardous commodities.

Figure 4-46 provides a snapshot of the number of hazardous spills in Northwest Indiana reported to the Indiana Department of Environmental Management from transportation-related sources between 2011 and 2021. The railroad and roadway modes lead in terms of this metric. However, Figure 4-47 makes clear that in terms of the total volume of spills reported over this period, pipeline far exceeds the other transportation modes. This suggests that the average volume of hazardous materials released during each spill is, on average, much lower for railroad and roadway modes than for pipelines.

It is important to note that the Indiana Department of Environmental Management data does not differentiate between freight-related spills and non-freight-related spills. The data here should be viewed as an approximate proxy for the frequency of freight-related hazardous spills.

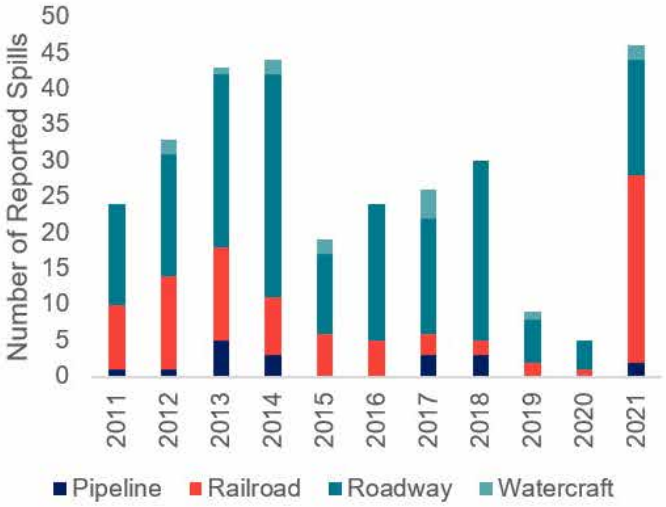


Figure 4-46: Number of Reported Spills in Northwest Indiana, 2011-2021

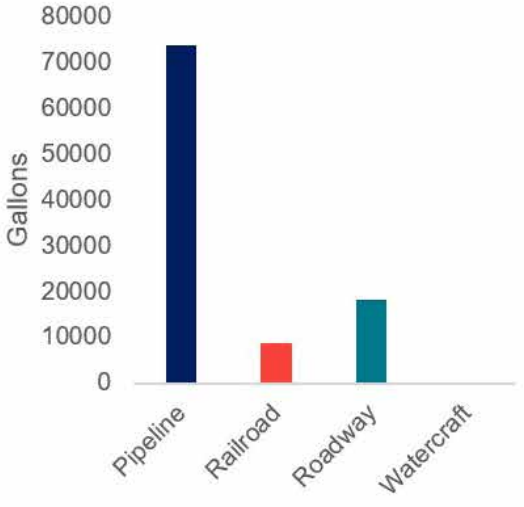


Figure 4-47: Reported Volume of Hazardous Spills in Northwest Indiana, 2011-2021

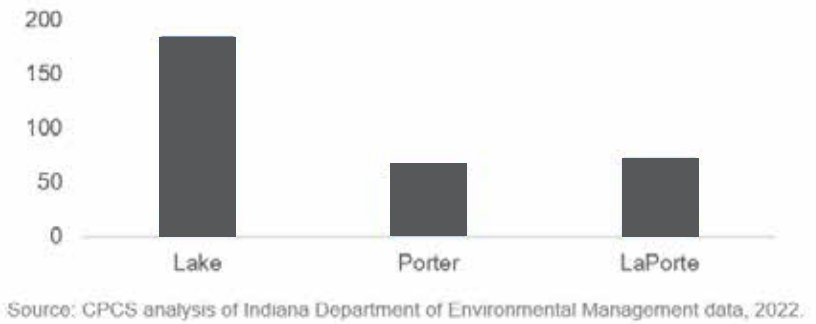
Source: CPCS analysis of Indiana Department of Environmental Management data, 2022.



Table 4-36 shows that the majority of hazardous spills in Northwest Indiana between 2011 and 2021 occurred in Lake County.

One way of assessing pipeline safety performance, in particular, is to examine the number of pipeline incidents per pipeline mile. Figure 4-48 shows the number of hazardous liquid incidents scaled by hazardous liquid pipeline miles between 2010 and 2021 in Indiana and the US overall. Indiana experiences a roughly similar rate of incidents per pipeline mile compared to the country overall. Figure 4-49 shows the number of gas incidents scaled by gas pipeline miles between 2010 and 2021 in Indiana and the US overall. Here, Indiana tends to perform better than the country overall. Although this data is for the entire state of Indiana, it is fair to assume that similar trends may exist in Northwest Indiana.





Source: CPCS analysis of Indiana Department of Environmental Management data, 2022.

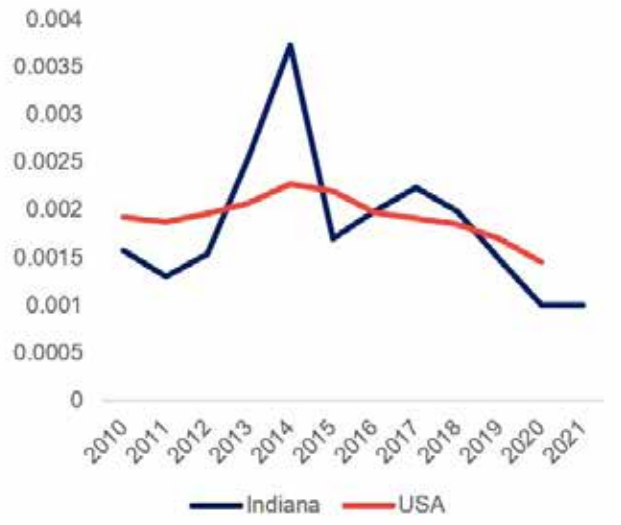
Table 4-36: Number of Hazardous Spills by County, 2011-2021

The USDOT Pipeline and Hazardous Materials Safety Administration defines a **pipeline incident** as:

(1) An event that involves a release of gas from a pipeline, gas from an underground natural gas storage facility (UNGSF), liquefied natural gas, liquefied petroleum gas, refrigerant gas, or gas from an LNG facility, and that results in one or more of the following consequences:
(i) A death, or personal injury necessitating in-patient hospitalization;
(ii) Estimated property damage of $122,000 or more, including loss to the operator and others, or both, but excluding the cost of gas lost. For adjustments for inflation observed in calendar year 2021 onwards, changes to the reporting threshold will be posted on PHMSA's website. These changes will be determined in accordance with the procedures in appendix A to part 191.

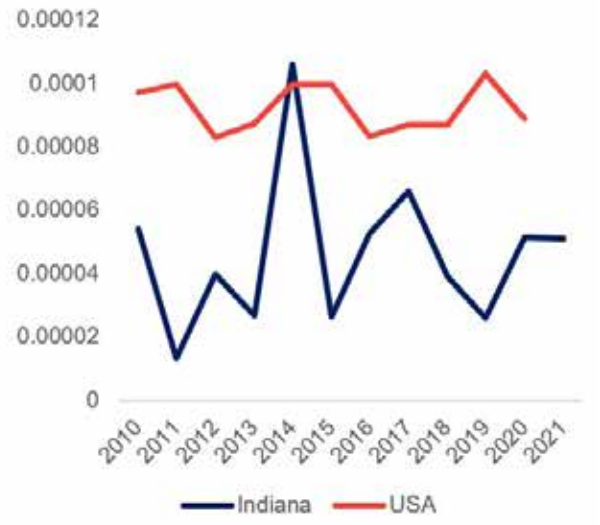
(iii) Unintentional estimated gas loss of three million cubic feet or more.
(2) An event that results in an emergency shutdown of an LNG facility or a UNGSF. Activation of an emergency shutdown system for reasons other than an actual emergency within the facility does not constitute an incident.
(3) An event that is significant in the judgment of the operator, even though it did not meet the criteria of paragraph (1) or (2) of this definition.

Source: 49 CFR § 191.3 – Definitions.



Source: CPCS analysis of USDOT Pipeline and Hazardous Materials Safety Administration's Pipeline Miles and Facilities 2010+ and All Reported Incidents data, 2022.
Note: Pipeline miles and incidents are for hazardous liquids only (Crude Oil, Refined PP, H.V.L. Flamm Toxic, CO2, Biofuel). Values are calculated by year and then averaged.

Figure 4-48: Hazardous Liquid Incidents per Mile of Pipeline in Indiana and US, 2010-2021



Source: CPCS analysis of USDOT Pipeline and Hazardous Materials Safety Administration's Pipeline Miles and Facilities 2010+ and All Reported Incidents data, 2022.
Note: Pipeline miles and incidents are for gas pipelines only (gas distribution, gas gathering, gas transmission). Values are calculate by year and then averaged.

Figure 4-49: Natural Gas Incidents per Mile of Pipeline in Indiana and US, 2010-2021

Infrastructure Resiliency

Environmental events – both extreme weather events and changes in long-term environmental conditions – have the potential to damage infrastructure and disrupt freight and passenger movements. The need to prepare and respond to these events has become increasingly important, with agencies planning and preparing to avoid, adapt to, and recover from – in other words, remain resilient to – these environmental disruptions.

Resiliency refers to the ability to recover from or adjust easily to misfortune or change. In the case of the freight system, this misfortune or change may be caused by a variety of factors (Figure 4-50), including but not limited to environmental and climate factors. A resilient transportation network has the ability to avoid, adapt to, and recover from the stressors on physical infrastructure and operations (both users and organizations) caused by this misfortune or change.



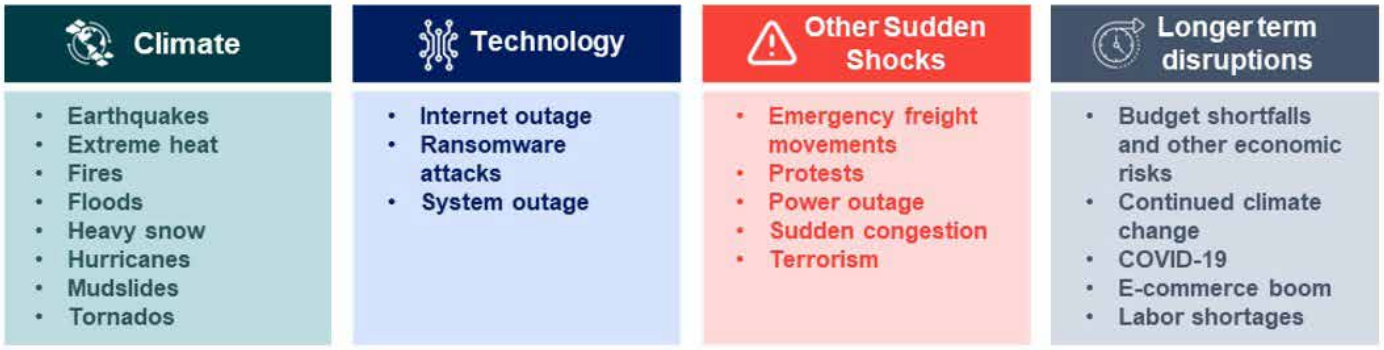


Figure 4-50: Freight System Disruptions

If infrastructure and operations are not prepared for sudden shocks or long-term changes, there may be serious impacts on safety and security, transportation system management, asset preservation, and freight and economic vitality. Strategic investments in tactical improvements to infrastructure (e.g., incorporate more hard-wearing design and construction practices where needed, develop strategic system redundancies) will help improve freight system resiliency. Investing in mitigating strategies yields significant savings in terms of safety, preventing property loss, and minimizing disruption of day-to-day life.

The US Federal Emergency Management Agency (FEMA) produces a National Risk Index (NRI) for each community in the country. The NRI identifies the relative risk faced by a community for 18 natural hazards. This incorporates expected annual economic loss from natural hazards, social vulnerability, and community resilience, which includes infrastructure. Although these scores identify general risk, it is nevertheless a useful indicator for where freight infrastructure is at the highest risk to different disasters.

Figure 4-51 shows that Lake County sees a higher composite risk index than the other two counties in Northwest Indiana. In fact, almost 94 percent of counties in the US have a lower risk index than Lake County. Meanwhile, La Porte County and Porter County have risk indices below the US average. Lake County's high-risk index is the result of above-average component scores for social vulnerability and expected annual loss, which indicate that the county houses valuable economic resources and populations that are uniquely susceptible to disaster. Lake County is particularly vulnerable to certain hazard types, including cold waves, heat waves, flooding, strong winds, winter weather, and tornadoes.[70] As a result of temperature changes, stakeholders consulted noted observable changes in the frost and thaw season, with impacts on road conditions and maritime navigation.



70 National Risk Index, FEMA.

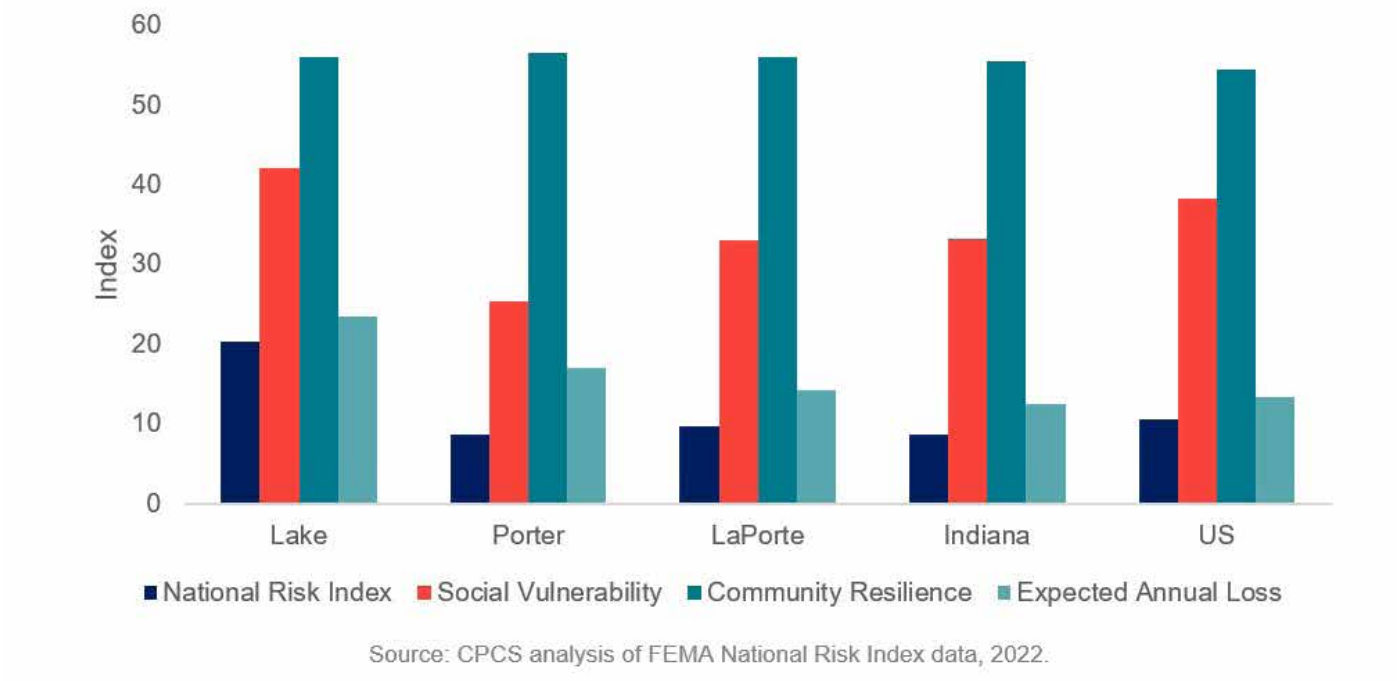


Figure 4-51: Composite National Risk Indices and Component Indices for Northwest Indiana Counties

Borman Expressway Flooding

The portion of I-80/I-94 between the Illinois state line and the Interstate's intersection with I-90 in Lake Station is known as the Borman Expressway. The Borman Expressway lies in the Little Calumet River watershed, which occasionally floods, sometimes forcing sections of road to be closed. In 2008, a disastrous Little Calumet River flood cost the region $88 million and forced the Expressway to shut down in both directions for four days, including a 16-mile stretch eastbound between Ripley Street and Indianapolis Boulevard.

Since then, the Indiana DOT has installed a stormwater pumping station near the Kennedy Avenue interchange. Levees have also been constructed to control the Little Calumet River, supervised by the US Army Corps of Engineers and the Little Calumet River Business Development Commission.

Sources: Northwest Indiana Times, 2022.



Conclusions and Next Steps

Conclusions

Northwest Indiana's robust freight network is a critical source of economic vitality in the region. A variety of freight-dependent industries rely on this system for their operations, including manufacturing, which is among the most prominent industries in the region. The freight system is itself an important component of the economy, with a notable transportation and warehousing industry that is growing faster than the national average. Nevertheless, freight-dependent industries in Northwest Indiana face serious demographic challenges. The region's working age population is shrinking, driving workforce shortages for many industries in Northwest Indiana. In response, workforce training programs and automation are being implemented.

The mobility of goods is the essential role of the freight system. Mobility, however, is an issue on many of Northwest Indiana's roads. Truck congestion and a lack of reliability are experienced along segments of I-94, US 6, US 30, and US 41. Some local roads also experience significant truck traffic. Bridge clearance restricts truck movements along the I-90 corridor, I-94 east of Lake Station, and the northern section of I-65. Moreover, highway-rail at-grade crossings cause delays, especially along high-volume corridors such as CSXT's Barr subdivision and NS's Chicago Line. More than 82 percent of rail crossings in Northwest Indiana are at-grade, and the region has almost doubled the number of at-grade crossings per public roadway mile as Indiana, which already ranks first among all states.

The freight system is also responsible for ensuring the safety of its users. Truck-involved crashes have seen increases in Northwest Indiana recently, as have rail safety incidents. Truck safety hotspots are primarily clustered along I-90, I-65, I-94, and segments of I-80, whereas rail safety issues are concentrated along high-volume Class I railroads like CSXT Barr's subdivision. The region's high concentration of at-grade crossings not only poses mobility issues but also introduces considerable safety concerns.

Northwest Indiana's freight infrastructure yields Indiana the nickname the "Crossroads of America." With this title, though, comes significant pass-through truck and rail traffic. This issue is in part due to the lack of an intermodal facility in Northwest Indiana, causing trucks and trains carrying intermodal containers to travel to and from Chicago facilities through the region. Even the intermodal cargo destined to or originated from Northwest Indiana has to be shipped to Chicago area facilities, often by trucks. These pass-through users exacerbate maintenance needs along the highway system. Unfortunately, the major roadways in the region are generally failing to meet state pavement condition performance targets. As of 2019, the majority of NHS roads in Northwest Indiana are in fair condition, with just 5.8 percent of Interstates and 7.8 percent of non-Interstates routes in good condition.

Infrastructure projects in Northwest Indiana must address infrastructure condition issues and more broadly prioritize ongoing safety and mobility improvements. Infrastructure projects should also advance resilience, both from environmental and human sources, and mitigate environmental impacts like pollution and hazardous spills. These priorities will allow Northwest Indiana's freight system to continue efficiently moving goods and serving as the nation's "Crossroads" into the future.

Other freight needs and issues identified through data analysis and stakeholder outreach are shown in Figure 4-52.

Issues		Needs
	Workforce shortages threaten freight-dependent industries	Consider developing workforce training programs to connect workers with key industries facing shortages. Encourage and support investments in automation technologies when human labor shortages are unavoidable.
	Pavement condition does not meet state performance targets	Invest in road infrastructure, especially pavement condition, as truck freight tonnage and value are expected to increase by 2050
	Truck parking is either in short supply or hard to find	Expand truck parking capacity and introduction of systems to help drivers find parking, perhaps through TPIMS
	The frequency of truck-involved crashes has been increasing recently	Consider solutions that prevent unsafe lane movements and driver distraction in order to reduce truck-involved crashes. Perhaps investigate truck-only lanes to separate passenger and freight movements and reduce weaving.
	Some bridges with low clearance cause mobility concerns	Consider increasing minimum clearances to prevent impediments to the smooth flow of traffic, especially clearances below 15 feet on the Interstate
	At-grade crossings cause delays and safety concerns	Investigate the elimination or grade separation of the at-grade rail crossings that pose the most serious mobility and safety concerns. Also, an opportunity to install additional active warning devices at crossings where they are lacking
	Blocked crossings cause significant delays	Potential to invest in additional siding or double tracking, or to grade-separate crossings
	Some movable bridges are in poor condition	Upgrades to movable bridges

Figure 4-52: Northwest Indiana Freight Needs and Issues

Issues		Needs
	Maritime navigation is impacted by underinvestment and certain policy	Invest in port infrastructure maintenance, ice-breaking equipment, dredging, and environmental issues
	A lack of international destinations at NWI airports means that high-value cargo bound for international destinations has to be shipped by trucks to the Chicago O'Hare International Airport, which exacerbates road congestion in NWI.	Potentially expand air cargo operations at NWI's airports. Currently, high-value cargo bound for international destinations has to be shipped by trucks to the Chicago O'Hare International Airport, which exacerbates road congestion in NWI
	Pipelines are the largest source of hazardous spills by volume	Explore solutions that reduce the frequency and volume of pipeline-related hazardous spills
	Congestion caused by freight traffic traveling to or from Chicago intermodal facilities	Opportunity to investigate the viability of intermodal operations in NWI
	Extreme weather and other disruptive events damage infrastructure, cause delays and pose safety concerns	Resilience improvements against extreme weather events like extreme cold and heat, changing freezing and thawing patterns, and seasonal floods
	Air emissions, especially Ozone, remain a problem in the region	Investigate solutions that reduce air emissions, including the NOx and VOC emissions that contribute to Ozone production
	Some areas experience significant freight-related noise pollution	Consider conducting outreach to gauge community concerns regarding freight-related noise pollution. Problem sites might benefit from noise barriers

Figure 4-52: Northwest Indiana Freight Needs and Issues

Vision for Improving Freight Transportation in the Northwest Indiana Region

Background & Approach

The Northwestern Indiana Regional Planning Commission (NIRPC) is the designated Metropolitan Planning Organization for the Northwest Indiana region. NIRPC is responsible for investing federal transportation funds in highways, transit, active (non-motorized) transportation, and other modes of people and goods movement in Northwest Indiana.

The purpose of the Freight Chapter is to emphasize:

- preserving the existing transportation systems,
- planning for the safety of all transportation system users,
- providing the freight industry with access to the workforce,
- efficiently moving freight to support the economy of the region, and
- ensuring equity in allocating federal, state, and local transportation dollars to benefit all users.

The Freight Chapter builds upon key findings and relevant content from previous related studies, plans, and formal documents, analysis of relevant data, and information collected through public and stakeholder engagement.

NWI 2050+ needs to provide a clear, simple, and broadly accepted vision and associated goals and objectives to effectively guide freight transportation investments and improvements in the region. The critical underpinnings of the regional freight vision and its associated goals and objectives are the broad vision and guiding principles established in *NWI 2050*:

"NWI 2050 envisions a connected, renewed, united and vibrant region by 2050."

Connected: Provide accessible, safe, and equal opportunities for working, playing, living, and learning.

United: Celebrate diversity and work together as a community across racial, ethnic, political, and cultural lines for the mutual benefit of the region.

Renewed: Make Northwest Indiana's urban and rural centers places that people want to come to and live in and ensure our environment is safe and healthy.

Vibrant: Support a thriving economy, a well-educated population, planned growth, and protection of natural and agricultural areas.

As a result of discussions with internal staff and external stakeholders, NIRPC has expanded this vision to include the following additional guiding principles:

Equitable: Seek fairness in access to resources and opportunities to meet the needs of all community members.

Safe: Reduce and mitigate freight safety and security risks.

The Connected, United, Renewed, Vibrant, Equitable, and Safe (CURVES) guiding principles provide a foundation for setting the goals, objectives, and performance measures for the region's freight system. However, the definitions for each of the principles should be adapted to freight needs based on freight-related themes and overarching transportation policy goals at the national and state levels.



Establishing Regional Freight Planning Principles

Figure 4-53 summarizes the sources and the process for establishing the region's freight vision, goals, and objectives. As shown, Northwest Indiana's freight vision is informed by overarching federal, state, and regional transportation policy goals. Federal freight planning goals are outlined in the Fixing America's Surface Transportation (FAST) Act, Bipartisan Infrastructure Law (BIL) Act, and the US Department of Transportation's (DOT's) National Freight Strategic Plan. The state-level freight goals and objectives are established in Indiana's Long-Range Transportation Plan (2045 LRTP), Indiana State Freight Plan,[71] and the Statewide Rail Plan.



Figure 4-53: Process for Aligning the Regional Freight Vision and Associated Goals and Objectives



71 INDOT's Multimodal Freight Plan was published in 2018 as an update to the 2014 Freight Plan to guide the statewide transportation system investments that benefit goods movement. As of November 2022, INDOT is in the process of updating the Statewide Multimodal Freight Plan.

Using this process, the explicit freight-related goals, requirements, and recommendations identified in each of the federal and state-level guiding documents are compared with the vision, guiding principles, and regional goals provided in *NWI 2050*. Table 4-37 provides a summary of the review results. As shown:

- Freight-related goals in the key guiding documents primarily focus on ***mobility.*** Accordingly, these goals relate to the transportation system's condition, efficiency, and reliability in serving shippers, carriers, consumers, and other stakeholders who directly or indirectly impact, or are impacted by, goods movement.

- The national and statewide freight planning principles also focus on the significance of the freight system to ***economic vitality and competitiveness***. Since transportation is a derived demand, economic competitiveness goals often relate to strategic investments in economically-critical assets.

Protecting the ***environment and serving all communities*** are other focus areas in the key guiding documents. These include goals that commit to eliminating barriers to accessibility, implementing transportation systems that serve the needs of diverse users, and mitigating adverse impacts of freight activity on the natural resources and communities' quality of life.

Together, these goals inform a simple statement to guide freight planning in Northwest Indiana. This statement facilitates the process of analyzing investments and freight system improvement priorities:

Support and strengthen regional economic growth and competitiveness with an accessible, connected, safe, and efficient freight transportation system while reducing environmental and community impacts.

Using this statement, the CURVES guiding principles can be adapted to freight planning needs as follows:

- ***Connected:*** Provide an integrated freight transportation system to seamlessly connect and provide access to multimodal options for goods movement in Northwest Indiana.

- ***United:*** Mitigate the environmental and community impacts of freight activities.

- ***Renewed:*** Prioritize investments in critical infrastructure improvements to ensure a resilient freight system that is minimally disrupted due to unplanned events and sudden changes.

- ***Vibrant:*** Support deployment of innovative data and technologies to enhance the efficiency of goods movement and enable a flourishing economy.

- ***Equitable:*** Seek fairness in providing access to freight transportation options to meet the needs of all community members.

- ***Safe:*** Reduce and mitigate freight safety and security risks.

Focus Areas	NWI 2050 Plan Goals	FAST Act/BIL	National Multi-modal Freight Policy	National Freight Strategic Plan	INDOT State Freight Plan 2018 & Rail Plan 2021	2045 INDOT LRTP
Connected: Provide accessible, safe, and equal opportunities for working, playing, living, and learning.						
Economy & Place	Update land development policies & strategies to emphasize accessibility between people & opportunities.		*			*
Environment	Connect fragmented natural areas and integrated links between people and green spaces to increase resiliency and health outcomes.	*				
Mobility	Complete roadway, bicycle, sidewalk, and transit networks across municipal and county lines to enhance safe and efficient access to opportunities for all.	*	*	*	*	*
People & Leaders	Commit to removing barriers and obstacles to guarantee equal and accessible opportunities.	*				*
United: Celebrate diversity and work together as a community across racial, ethnic, political, and cultural lines for the mutual benefit of the region.						
Economy & Place	Maximize growth in existing centers to enhance civic and economic life and to protect natural areas and farmland.					*
Environment	Clean and protect the air, land, water, and natural habitats to sustain and enhance the environment's safety and health for all.	*	*			*
Mobility	Improve roadways, bicycle, sidewalk, and transit networks to revitalize existing urban and rural centers and enhance equity.	*	*		*	*
People & Leaders	Focus educational and workforce development initiatives on expanding skills that the modern economy requires.					
Renewed: Make NWI's urban and rural centers places that people want to come to and live in and ensure our environment is safe and healthy.						
Economy & Place	Collaborate regionally to welcome a diversity of people and talent to achieve mixed and balanced growth.					
Environment	Build region-wide coalitions to advance environmental sustainability for the benefit of future generations.					
Mobility	Prioritize transformative investments to elevate the position of the region and to attract a diversity of residents and high-quality economic opportunities.	*	*	*	*	*
People & Leaders	Foster better communications, cooperation , and coordination to bring people together across the lines that divide us.					*
Vibrant: Support a thriving economy, a well-educated population, planned growth, and protection of natural and agricultural areas.						
Economy & Place	Promote initiatives and policies to ensure healthy living, sustainability, quality of life, and prosperity.					*
Environment	Endorse innovative energy and environmental strategies to achieve a balance that protects diverse and unique ecological treasures while fostering a sustainable economy.	*				
Mobility	Adopt technological innovation that enhances the safe and fluid movement of people and goods to enable a flourishing economy.	*	*	*		*
People & Leaders	Embrace a dynamic, diversified and sustainable economy that attracts and retains talent, enhances quality of life, and increases personal and household income.					

Source: CPCS analysis, 2022 .

Table 4-37: Review of Explicit Freight-Related Goals in Key Guiding Documents

Table 4-38 lists five overarching goals developed based on the freight-specific CURVES principles. These goals are complemented by supporting objectives, which closely align with the freight-related needs and challenges identified earlier in this chapter.

Goal 1: Enhance freight system's contribution to economic competitiveness and growth
Northwest Indiana's robust freight system is a critical source of economic vitality in the region. A variety of freight-dependent industries rely on this system for their operations, including manufacturing, which is among the most prominent industries in the region. Notably, the warehousing and distribution industry is growing faster than the national average. Nevertheless, freight-dependent industries in Northwest Indiana face challenges including a shrinking working-age population, driving workforce shortages for many industries.

A number of freight-related objectives can help Northwest Indiana stimulate continued economic competitiveness and growth, including:

- ***Coordinate with economic development agencies, Northwest Indiana Forum, and Conexus Indiana to provide freight-related industries with relevant resources, including freight data, planning resources, and funding opportunities.*** To support the economic competitiveness and growth of freight-related industries, NIRPC should ensure that they have access to the resources required to make informed planning and investment decisions. This means making requisite data available, sharing funding opportunities, and partnering with other organizations to achieve ongoing engagement with relevant freight stakeholders.
- ***Collaborate with economic development agencies and educational institutions to advance training programs with a focus on freight industry workforce development.*** NIRPC can collaborate with partners to foster proactive labor development programs with an eye toward the future. This demands conscientious data tracking and collaboration with partners ranging from economic development agencies to educational institutions.
- ***Identify and promote the development of land that is appropriate for freight-related industries.*** This entails not only assisting interested developers or private stakeholders find and assemble parcels appropriate for their needs, but to gatekeep development away from incompatible land uses like wildlife habitats or residential and mixed-use areas.

Freight Transportation Goals	Connected	United	Renewed	Vibrant	Equitable	Safe
Goal 1: Stimulate economic competitiveness and growth	✓	✓	✓	✓	✓	
Goal 2: Reduce and mitigate freight safety and security risks				✓		✓
Goal 3: Reduce and eliminate barriers to efficient mobility			✓	✓		
Goal 4: Maintain, preserve, and extend the service life of existing infrastructure			✓	✓		
Goal 5: Preserve natural and community resources by reducing the negative environmental impacts of freight activities		✓			✓	

Source: CPCS analysis, 2022.

Table 4-38: Freight Transportation Goals

Goal 2: Reduce and mitigate freight safety and security risks

NIRPC and its partners are responsible for ensuring the safety not just of freight system users, including truck drivers and railroad engineers, but all users of the infrastructure from bicyclists to pedestrians to drivers. Some of the largest and heaviest equipment is transported by freight operators, using the region's road, rail, air, and water networks. As a major infrastructure crossroads for the country, Northwest Indiana is particularly at-risk for safety issues.

A number of freight-related objectives can help to reduce and mitigate freight safety and security risks, including:

- ***Reduce the incidence and severity of truck-involved crashes.*** This might involve reducing modal conflicts, improving sight lines, reducing travel speeds in dangerous areas, improving emergency response, or improving infrastructure design.

- ***Reduce highway-rail grade crossing safety and trespass risks.*** The most obvious solution is to grade separate crossings to eliminate the problem. When this isn't feasible, safety warning devices should be implemented, some crossings closed, and safety awareness campaigns introduced.

- ***Reduce conflict between freight and active transportation modes.*** Ensuring that the proper protections are in place to reduce risks to bicycles and pedestrians that share the road with trucks and other vehicles is paramount. Certain roads can be closed to trucks, protected bike lanes introduced, and infrastructure design improved for better visibility and to reduce travel speeds in high-density crash locations.

- ***Ensure that safety concerns are not disproportionately clustered in disadvantaged communities.*** Infrastructure improvements should focus on improving safety in these historically under-invested communities. Often, the poorest and most marginalized communities are disproportionately affected by adverse impacts of freight and industrial activity, including safety impacts.

Goal 3: Reduce and mitigate barriers to efficient mobility

Moving goods from point A to point B is an essential role of the freight system. Barriers to mobility, including congestion, delay, and bottlenecks impact the freight system's ability to do its job. While mobility is a goal in itself, it is intimately related to Goal 2: Safety and Goal 5: Environmental Impacts. Safety issues can generate mobility problems, as incidents force temporary closures of lanes or tracks, and travel slowdowns increase travel times, leading vehicles to emit additional emissions.

A number of freight-related objectives can help to reduce and eliminate barriers to efficient mobility, including:

- ***Reduce the number and duration of blocked crossings***. When trains travel across at-grade crossings, vehicles traveling to the other side of the tracks must wait, introducing travel delays. This is a particular issue with trains of excessive length, or when trains are impacted by rail congestion and are either traveling slowly or stopped completely.

- ***Eliminate truck bottlenecks.*** Certain sections of roadways are particularly prone to travel slowdowns and congestion. These bottlenecks introduce disproportionate mobility issues and are important targets of mobility improvement strategies. Infrastructure design, ramp queues, demand management, dynamic lanes, and sometimes capacity expansion are all strategies that can improve bottlenecks.

- ***Eliminate bridge clearance issues.*** Low bridges that prevent vehicles from passing below them force route detours and can slow down travel.

- ***Support dredging and ice-breaking activities at maritime facilities.*** The waterway depths near Northwest Indiana ports must be maintained through dredging. Moreover, in winter, the Great Lakes can freeze, which, unless ice breaking ships create navigable waterways, prevents other ships from traveling. Thus, both investments in dredging and ice-breaking are crucial for maritime mobility.

- ***Support the development of intermodal, transload, and other multi-modal facilities to handle goods.*** Investments in the freight system should help to improve multi-modal connectivity throughout the freight system, including facilities that transfer goods

between road and rail, maritime and rail, or long-distance truck trailers to local delivery vehicles. These facilities move freight to the mode most suitable for each leg of its journey to ensure efficiency and reliability

Goal 4: Maintain, preserve, and extend the service life of existing infrastructure

It is critical that infrastructure be maintained and preserved. Sometimes, bare minimum maintenance is all that can be performed, but usually, it is best to pair maintenance projects with improvements to the asset's service life, safety, environmental impacts, and overall design.

A number of freight-related objectives can help to maintain, preserve, and extend the service life of existing infrastructure, including:

- ***Maintain pavement and bridge condition in a state of good repair.*** Currently, over 98 percent of Northwest Indiana's Interstates, over 97 percent of non-Interstates, and roughly 95 percent of the bridges are in good or fair condition. Regular and strategic investment in transportation system maintenance is the key to preserving this quality and ensuring cost efficiency in the long run.

- ***Increase capacity and accessibility of truck parking.*** Sufficient truck parking is critical to improve trucking safety and efficiency and reduce overall traffic congestion. Parking capacity must be expanded and systems introduced to help drivers find parking.

- ***Identify and address infrastructure condition issues disproportionately clustered in disadvantaged communities.*** As discussed earlier, poorer, or marginalized populations are more likely to live in communities where infrastructure has experienced chronic underinvestment. Infrastructure maintenance must focus on improving conditions in these communities and ensuring that this equity is retained.

Goal 5: Preserve natural and community resources by reducing negative environmental impacts

NIRPC and its partners have a responsibility to address and reduce the impacts of the freight system on the environment while at the same time mitigating the impacts of climate change and natural disasters on the infrastructure.

A number of freight-related objectives can help to preserve natural and community resources by reducing negative environmental impacts, including:

- ***Support demonstration and deployment of technologies and strategies to reduce environmental impacts associated with freight activity.*** According to the US Environmental Protection Agency (EPA), the transportation sector contributed 27 percent of the greenhouse gas emissions in the US in 2020. Freight system operations also emit noise. These air and noise pollutions can have profound impacts on the quality of life, health, wildlife, and climate. It is crucial to reduce these impacts through tactics including electrification, the use of alternative fuels, anti-idling technology, congestion reduction, or noise barriers.

- ***Conduct a hazardous materials commodity flow study to identify and mitigate the risks of spills on supply chain flows, communities, and the environment.*** The freight system moves all kinds of goods, including hazardous materials. Sometimes these toxic materials spill or leak into the environment, which can have disastrous consequences for wildlife habitat, community health, and safety. Hazardous commodity flow studies can help identify and reduce the risks and mitigate the impacts of these kinds of accidents.

- ***Conduct a regional infrastructure vulnerability study to identify and mitigate threats to system resiliency.*** Resiliency refers to the ability to recover from or adjust easily to disruptions. In the case of the freight system, disruptions may be caused by a variety of factors, including environmental risks like floods, extreme heat, winter storms, and human-made disasters such as cyber attacks and sudden shifts in demand. Any such threat has the potential to damage infrastructure, threaten community safety, and disrupt supply chains. It is crucial to conduct a study to identify vulnerabilities to system resiliency and identify strategies to mitigate these risks, either through emergency response systems, hardened infrastructure, or system redundancies.

Performance-Based Freight Planning

Background and Analysis Framework

The regional transportation performance measures identified in *NIRPC 2050* are organized according to the plan's four vision components: connected, renewed, united, and vibrant. Table 4-39 summarizes the freight-related performance measures under each of these vision terms, along with a proposed analysis.

Generally, NIRPC proposed that the "Connected" term be measured using trip times and transportation safety, the "Renewed" term be measured using reported emissions and infrastructure conditions, and the "Vibrant" term be measured using the number of vehicles with advanced technologies (alternative fuels and CAVs) and travel time reliability.[72] There are no freight-related performance measures under the "United" term proposed in NIRPC's *NWI 2050.*

Vision Term	Performance Measure	Analysis Proposed
Connected	Average Trip Time	Trip times from the Household Travel Survey
	Number of fatalities Rate of fatalities per 100 million VMT Number of serious injuries Rate of serious injuries per 100 million VMT	Crashes from ARIES crash database
Renewed	Number of annual ozone emission critical value exceedances	8-hour Ozone Air Quality Action and Exceedance Days Summary from Indiana Department of Environmental Management
	Carbon Monoxide (CO) reduction from Congestion Mitigation Air Quality (CMAQ)-funded projects (kg/day) Particulate Matter less than 10 microns in diameter (PM10) reduction from Congestion Mitigation Air Quality (CMAQ)-funded projects (kg/day)	Emissions are claimed in the CMAQ project applications for CMAQ-funded projects.
	Percent of Interstate pavements in good and poor condition Percent of non-Interstate National Highway System (NHS) pavements in good and poor condition	For asphalt pavements: International Roughness Index (IRI), percent cracking, and percent rutting; for jointed concrete pavements: IRI, percent cracking, percent faulting; for continually reinforced concrete pavements: IRI, percent cracking
	Percent of National Highway System (NHS) bridge area in good and poor condition	Deck condition, superstructure condition, substructure condition, approach roadway width, structure length, and deck width from National Bridge Inventor

Table 4-39: NIRPC Vision Terms and Associated Performance Measures

72 NIRPC, *NWI 2050* Plan.



Under the FAST Act guidelines, INDOT is required to track the Truck Travel Time Reliability (TTTR) Index to measure freight system performance. Additionally, INDOT maintains detailed highway safety records that include truck crashes. However, no specific freight safety performance measure is currently benchmarked by the DOT. The following is a summary of the freight performance measures recommended by INDOT in the 2018 Freight Plan:

- ***Capacity to Meet Demands:*** recommended performance measures are the percentage of lane miles at the level of service C or better, reduction in the hours of truck delay, and improvement in Truck Travel Time Reliability Index.

- ***Multi-modal Integration and Synergy*:** performance measures include the percentage of intermodal connectors with "fair" or better pavement conditions and the number of intermodal or multi-modal projects completed.

- ***Access to National and International Markets:*** the performance measure recommended under this goal is the hours of delay on roadways within 5 miles of ports and cargo airports.

- ***Quality of Life:*** performance measures to benchmark under this goal focus on freight safety and specifically reducing truck-involved crashes and fatalities and the removal of rail-highway grade crossings.

- ***Economic Impact:*** includes tracking of percent growth in jobs in freight-intensive industries and percent growth in export value (domestic or foreign).

These freight planning measures are used to inform this plan's performance measure development.

Vision Term	Performance Measure	Analysis Proposed
United	None	N/A
Vibrant	Number of alternatively fueled/ powered vehicles registered	Number of alternatively fueled/powered vehicles registered from South Shore Clean Cities and/or the Indiana Bureau of Motor Vehicles
	Number of Connected or Automated Vehicles (CAVs) registered plus the fleet size of CAVs licensed to operate in NW Indiana	Vehicle registrations from the Indiana Bureau of Motor Vehicles when data becomes available
	Percent of person miles traveled on the Interstate and non-Interstate NHS that is reliable	Travel time from the National Performance Measure Research Data Set (NPMRDS), Annual Average Daily Traffic (AADT) from Highway Performance Monitoring System (HPMS), vehicle occupancy factors from the US Department of Transportation
	Truck Travel Time Reliability (TTTR) Index	Travel time from the National Performance Measure Research Data Set (NPMRDS)
	Peak Hours of Excessive Delay per capita in the Chicago, IL-IN Urbanized Area	Travel time from the National Performance Measure Research Data Set (NPMRDS), Annual Average Daily Traffic (AADT) and speed limits from Highway Performance Monitoring System (HPMS), vehicle occupancy factors from the USDOT

Source: CPCS analysis of NIRPC NWI 2050 Plan.

Table 4-39: NIRPC Vision Terms and Associated Performance Measures

Evaluation of Freight Performance Measures

This plan recommends aligning regional and statewide freight performance measures with freight planning vision and goals. Each freight-related goal works to attain various vision terms while also informing performance measure classifications. For example, “Goal 5: Preserve natural and community resources by reducing negative environmental impacts” comprises both the United and Equitable vision terms, and the region’s performance in attaining this goal can be measured by examining environmental-related data points.

As shown in Table 4-40, many performance measures are either carried over from or inspired by those in *NIRPC 2050* (2019). The selected measures generally align with those discussed in Phase 1 of this planning effort. Moreover, each performance measure is paired with information that will assist with ongoing performance reporting and monitoring, including data required, data update frequency, data accessibility, and other additional considerations. Recommended performance measures are intended to be simple to track and update while still providing an accurate account of the region’s freight system.

The following ranking system is used to categorize measures based on data accessibility and the level of in-house or outsourced effort required for analysis. The highest rank is assigned to measures that use readily available data and minimal in-house analysis, while the lowest rank is given to measures that require outsourcing for both data access and analysis.

1. Data is readily available and can easily be analyzed using in-house resources.

2. Data can be obtained with some effort and may require substantial in-house resources to analyze.

3. Data access and analysis is complicated and may require assistance from outside resources.



NIRPC Freight Planning Goal	Measure	Data Required	Data Update Frequency	Data Accessibility & Level of Analysis	Notes
Goal 1: Enhance freight system's contribution to economic competitiveness and growth	Freight-dependent industry employment (total and share)	Total Full-Time and Part-Time employment by NAICS Industry, US Bureau of Economic Analysis	Yearly	1 Data is readily available and can easily be analyzed using in-house resources	Freight-dependent industries include Farm employment, Forestry, fishing, and related activities, Mining, quarrying, oil and gas extraction, Utilities, Construction, Manufacturing, Wholesale Trade, Retail trade, and Transportation and warehousing. Pulled for Lake, Porter, and La Porte Counties. Can be compared to total employment among all industries.
	Shift-Share Industry Competitiveness	Comparison of regional and US employment growth among different industries, using US Bureau of Economic Analysis data	Yearly	2 Data can be obtained with some effort and may require substantial in-house resources to analyze	The analysis should follow the following process for each industry: 2010 Employment in NWI * (2019 Employment in NWI / 2010 Employment in NWI – 2019 US Employment / 2010 US Employment). Data gaps can make comparisons complicated.
	Volume and Value of Goods Moved by Each Mode	All modes: Freight Analysis Framework (FAF) data.	Every 5 years	1 Data is readily available and can easily be analyzed using in-house resources	A FAF5 network analysis tool is available to analyze disaggregated freight flows. A visualization tool is also in development and should be released in 2023. FAF Zone 181: Chicago IL-IN-WI (IN Part) should be used. This includes Jasper and Newton Counties but is a good approximation for the NIRPC region.
		Maritime: United States Army Corps of Engineers (USACE) Waterborne Commerce Statistics Center (WCSC) Commerce Data.	Yearly	1 Data is readily available and can easily be analyzed using in-house resources	WCSC data should be analyzed for Indiana Harbor, Burns Harbor, Gary, and Buffington.
		Air: Federal Aviation Administration (FAA) All-Cargo Airports by Landed Weight	Yearly	1 Data is readily available and can easily be analyzed using in-house resources	FAA data should be analyzed for Gary/Chicago International Airport.

Table 4-40: Performance Measures Analyzed in Phase 1

NIRPC Freight Planning Goal	Measure	Data Required	Data Update Frequency	Data Accessibility & Level of Analysis	Notes
Goal 2: Reduce and mitigate freight safety and security risks	Truck-Involved Crashes	ARIES (Automated Reporting Information Exchange System)	Unclear	2 Data can be obtained with some effort and may require substantial in-house resources to analyze	NIRPC can request ARIES data free of charge. Should measure number and severity of truck-involved crashes by filtering the crash data by types of vehicles involved. There is also an option to separate out serious injury crashes and fatal crashes.
	Rail Crossing Incidents	FRA rail safety data	Monthly	1 Data is readily available and can easily be analyzed using in-house resources	NIRPC can obtain the data free of charge. Should measure number and severity. FRA's rail crossing safety data can be downloaded at the county level and individual incident reports are available at crossing level.
Goal 3: Reduce and mitigate barriers to efficient mobility	Interstate TTTR Index	National Performance Management Research Data Set (NPMRDS)	Yearly	2 Data can be obtained with some effort and may require substantial in-house resources to analyze	Requires truck speed data that is available to NIRPC free of charge through FHWA's National Performance Management Research Data (NPMRDS). The Regional Integrated Transportation Information System (RITIS) tool provides summary mobility reports. NIRPC has existing access to this data through INDOT and regularly monitors the TTTR index for the region on the Interstate.
	Interstate Delay per Mile – TTTR Combined Index	HPMS; NPMRDS	Yearly	3 Data access and analysis is complicated and may require assistance from outside resources	FHWA' HPMS manual provide details and steps to analyze delay per mile and TTTR measures separately. These measures then can be combined for each link.
	Number of Bridge Clearances Under 16' on Interstates and 14' on Other Public Roads	INDOT Bridge Clearance data	Ongoing updates	2 Data can be obtained with some effort and may require substantial in-house resources to analyze	Data must be cleaned to include only bridges over roadways.

Table 4-40: Performance Measures Analyzed in Phase 1 (continued)

NIRPC Freight Planning Goal	Measure	Data Required	Data Update Frequency	Data Accessibility & Level of Analysis	Notes
	Blocked Crossing Duration and Frequency	FRA Blocked Crossing Crowdsourced Database	Ongoing	1 Data is readily available and can easily be analyzed using in-house resources	NIRPC can access the data free of charge. Alternatively, NIRPC can collaborate with the NWI Rail Crossings Task Force to regularly collect detailed data of crossing blockage across the region, similar to the efforts in 2019. The information is provided at the crossing level and can be filtered by date, location, and duration of blocking. This blocked crossing data could also be used to identify the share of blocked crossings by duration bucket (i.e., 0-15 min, 15+ min).
Goal 4: Maintain, preserve, and extend the service life of existing infrastructure	Percent of Pavement in Good, Fair, and Poor Condition	HPMS	Yearly	2 Data can be obtained with some effort and may require substantial in-house resources to analyze	FHWA is in charge of collecting and publishing pavement condition data along the NHS routes. The information is reported in the HPMS database. This database provides detailed measures such as IRI, rutting, and cracking by road segment. FHWA's method can be used to translate these measures into overall condition ratings (poor, good, and fair). FHWA is in charge of collecting and publishing pavement condition data along the NHS routes. The information is reported in the HPMS database. This database provides detailed measures such as IRI, rutting, and cracking by road segment. FHWA's method can be used to translate these measures into overall condition ratings (poor, good, and fair). INDOT establishes statewide 2- and 4-year targets for non-Interstate NHS and 4-year targets for the Interstate system.
	Number of Road Bridges in Poor Condition	USDOT National Bridge Inventory	Ongoing	1 Data is readily available and can easily be analyzed using in-house resources	INDOT may have additional bridge performance data

Figure 4-40: Performance Measures Analyzed in Phase 1 (continued)

NIRPC Freight Planning Goal	Measure	Data Required	Data Update Frequency	Data Accessibility & Level of Analysis	Notes
Goal 5: Preserve natural and community resources by reducing negative environmental impacts	Ozone, NOx, and VOC Emissions	US EPA Air Quality Statistics Report; Outdoor Air Quality Data	Yearly	2 Data can be obtained with some effort and may require substantial in-house resources to analyze	The transportation sector is a major contributor to ground-level Ozone production and portions of NWI remain in nonattainment.
	Number and Volume of Reported Hazardous Spills	Indiana Department of Environmental Management Spills Data	Ongoing	2 Data can be obtained with some effort and may require substantial in-house resources to analyze	Data can be split by year and according to mode.
	National Risk Index	FEMA National Risk Index	Yearly	1 Data is readily available and can easily be analyzed using in-house resources	The annual indices are updated on an ongoing basis as new data becomes available.

Source: CPCS analysis, 2022.

Table 4-40: Performance Measures Analyzed in Phase 1 (continued)

Recommended Freight Performance Measures

Based on the evaluation presented in the previous section, Table 4-41 presents the recommended list of freight performance measures for NIRPC to consider. The rationale for inclusion is included and generally considers the accessibility of the data and the importance of the measure to have a comprehensive understanding of freight system performance.

Additional freight-related measures that can provide context and inform NIRPC's various planning efforts (but are not necessary to regularly update) include:

- Freight-dependent industry employment,
- Volume and value of goods moved across the region, and
- Ozone, NOx, and VOC emissions from freight-related activities.

Also, since workforce shortage is a major issue highlighted by both data analysis insights and stakeholder inputs, NIRPC can collaborate with economic development agencies in Northwest Indiana to track job openings and labor turnovers in freight-dependent industries. This measure is currently provided by the US Bureau of Labor Statistics but at the national and state levels.



Goal	Performance Measure	Rationale
Goal 1	Freight-dependent industry employment	Data is highly accessibly and helps to assess the size and condition of the freight workforce.
	Volume and Value of Goods Moved by Each Mode	Data is highly accessible and is necessary to understand the relationship between the freight system and the economy.
Goal 2	Truck-Involved Crashes	Data is less accessible, but is crucial to understand road safety.
	Rail Crossing Incidents	Data is highly accessible and is crucial to understand rail and road safety.
Goal 3	Interstate TTTR Index	Data is less accessible but offers the federal standard of understanding on freight mobility. State DOTs are required to report the TTTR Index on Interstates annually.
	Blocked Crossing Duration and Frequency	Data is highly accessible and provides a crucial understanding of rail and road mobility.
Goal 4	Percent of Pavement in Good, Fair, and Poor Condition	Data is less accessible but is the best method to understand road condition.
	Number of Road Bridges in Poor Condition	Data is highly accessible and provides an understanding of bridge condition which is distinct from pavement condition.
Goal 5	National Risk Index	Data is highly accessible and provides a general understanding of resiliency risks that is useful in planning. .

Source: CPCS analysis, 2022.

Table 4-41: Recommended List of Freight Performance Measures

Project Funding and Prioritization Processes

The Northwestern Indiana Regional Planning Commission (NIRPC) is the Metropolitan Planning Organization (MPO) for the counties of Lake, Porter, and La Porte in Indiana. One goal of this plan is to develop a process for identifying and ranking freight investment needs in Northwest Indiana. Before doing so, it is important to clarify NIRPC's role in project funding and to document existing project prioritization methods in the region.

NIRPC's Role

NIRPC is established in state statute by Indiana Code (IC) 36-7-7.6. NIRPC is governed by a Commission of 53 elected officials from the region's municipalities and counties and a Governor appointee[73]. This Commission oversees and approves NIRPC activities, which are generally carried out by dedicated staff. These groups work together to achieve "comprehensive planning and programming processes for transportation, economic development, and environmental policies" and management processes.[74]

In this role, NIRPC serves as an intermediary between the local and the State governments—coordinating communication between smaller and larger levels of government, facilitating conversation with the public, advocating for Northwest Indiana, developing impactful regional plans and studies, and identifying solutions to regional problems. The local coordination that NIRPC facilitates is paramount to bottom-up planning that synthesizes the nuanced interests and needs of constituents into more comprehensive regional objectives.

To fund these objectives, NIRPC is often beholden to the state, namely the Indiana Department of Transportation (INDOT). Indeed, much of NIRPC's funding, including the money to finance objectives uncovered in the planning process, is apportioned at the discretion of INDOT in coordination with other Metropolitan Planning Organizations in the state through the Indiana MPO Council, though the funds come from federal sources. NIRPC's regional planning and other activities are often crucial inputs to state-level decision-making, including project prioritization and investment.

73 NIRPC, Executive Board/Full Commission, accessed February 2023

74 2017 Indiana Code Title 36, Article 7-7.6-12: Purpose of commission, via Justia US Law, accessed February 2023

Effective planning at the regional level has multiple benefits for NIRPC: it accurately integrates local needs into comprehensive objectives, and it helps to secure the funding needed to accomplish those very objectives.

Formula Funding

Several transportation funding programs are distributed to states as formula funding. States are then tasked with distributing this funding throughout the state for planning, capital, or operating projects, as necessary. Federal formula funding is allocated to NIRPC, and the Commission has the authority over how to spend this funding by adopting a Transportation Improvement Program (TIP), for most categories of federal formula funding, and a Unified Planning Work Program (UPWP), for PL and 5303 funding. NIRPC also has an important role as a regional advocate and facilitator. The planning that NIRPC conducts often serves as a resource for INDOT as it prioritizes where to spend the funding.

For instance, Indiana's State Transportation Improvement Program (STIP) is a federally required budget document that outlines how federal and state funds will be used to invest in surface transportation projects. While INDOT oversees the STIP, the decision-making process relies on recommendations from regional Transportation Improvement Programs (TIPs) and other local inputs. NIRPC ultimately leads the contents of the regional TIP, synthesizing local interests and multimodal transportation needs into a comprehensive list of objectives.[75] NIRPC also serves as a liaison between the region and the state, sharing local inputs and priorities with the state-level decision-making body.

A facilitator of	An advocate for	A steward of
Local grant applications. Regional data collection and sharing. Impactful regional plans and studies. Communication between different levels of government.	The importance of the region's transportation system to the state. Regional needs and potential solutions.	Funding for which MPOs are eligible applicants. Effective planning practices among constituent municipalities.

Figure 4-54: Overview of NIRPC's Role

Case Example: I-80/94 FlexRoad (Borman Expressway)

The I-80/94 FlexRoad project is an effort to improve mobility and safety on I-80/94 in Indiana using various Transportation Systems Management and Operations (TSMO) strategies like dynamic shoulder lanes, variable speed limits, and ramp metering.

The first phase of the project, a Planning and Environment Linkages (PEL) study was jointly conducted by INDOT and Illinois DOT (IDOT) and approved by Federal Highway Administration (FHWA) in April 2022. Indiana FlexRoad is now moving onto a National Environmental Policy Act (NEPA) study to assess the environmental benefits and costs of different project alternatives. The NEPA study will make INDOT eligible for federal funding in the project's eventual implementation.

The I-80/94 FlexRoad project is an example of a state-sponsored project conducted in the NIRPC region. While INDOT is funding and overseeing the project, NIRPC is in an advisory role. NIRPC staff has served on advisory committees related to the FlexRoad project. Additionally, NIRPC's Executive Board Meetings frequently include updates from INDOT on regional projects, including the FlexRoad project, which serves to both keep the public informed and ensure state accountability.

75 The results of this very freight planning process, including any recommendations, will inform NIRPC's efforts for documenting local investment needs in the next TIP.

Indiana STIP

The current Indiana STIP covers the years 2022 through 2026.[76] The STIP allocates a number of federal formula funding dollars for local use, coming from current-year apportionments plus carry-over. Local apportionments derive from the following federal programs:[77]

- Metropolitan Planning (PL) funds, which along with Federal Transit Administration (FTA) 5303 apportionments, are suballocated to MPOs for planning projects as spelled out in their UPWPs.
- Surface Transportation Block Grant Program (STBG), which provides flexible funding for projects that preserve and improve Federal-aid highways, bridges, and tunnels.[78]
- Transportation Alternatives (TA) program, a standalone sub-allocated apportionment that funds bicycle and pedestrian facilities, trails, and other projects.[79]
- Highway Safety Improvement Program (HSIP), which works to reduce traffic fatalities and injuries.[80]
- Rail/Highway Crossings (hazard elimination and protective devices).
- Congestion Mitigation and Air Quality (CMAQ) Program, which funds projects and programs that help to reduce congestion and improve air quality in accordance with the Clean Air Act.[81]
- Federal Transit Administration (FTA) apportionments, including 5307 (Urbanized Area Formula Funding [82]), 5310 (Enhanced Mobility of Seniors & Individuals with Disabilities[83]), 5311 (Rural Formula Funding), 5337 (State of Good Repair Grants[84]), and 5339 (Grants for Buses and Bus Facilities[85]).
- Carbon Reduction Program (CRP), which NIRPC has sub-allocated spending authority beginning in FY 2023.
- Promoting Resilient Operations for Transformative, Efficient & Cost Saving Transportation (PROTECT) formula program, which works to make transportation infrastructure more resilient to climate change and other extreme weather events, over which NIRPC has sub-allocated spending authority beginning in FY 2023.

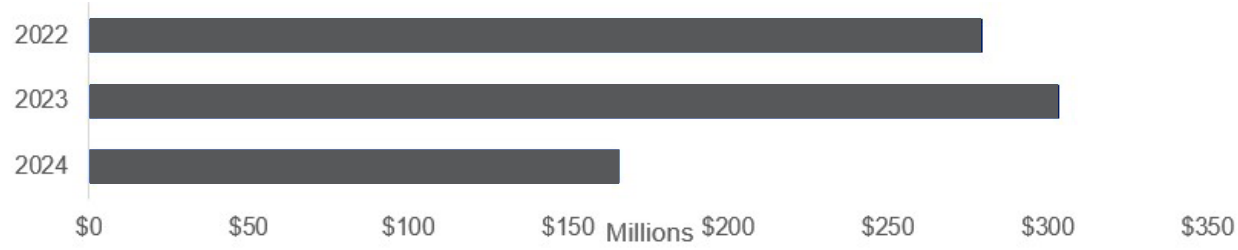
76 INDOT, STIP FY 2022 to FY 2026, accessed February 2023,
77 INDOT, STIP FY 2022 to FY 2026 Appendix A, accessed February 2023,
78 USDOT Federal Highway Administration, Federal-aid Program and Special Funding: Surface Transportation Block Grant Program (STBG), updated October 2022.
79 INDOT, STIP FY 2022 to FY 2026, accessed February 2023
80 USDOT, Federal Highway Administration, Highway Safety Improvement Program (HSIP), updated June 2022
81 USDOT Federal Highway Administration, Bipartisan Infrastructure Law: Congestion Mitigation and Air Quality (CMAQ) Improvement Program, updated February 2022
82 Federal Transit Administration, Urbanized Area Formula Grants – 5307, accessed February 2023.
83 Federal Transit Administration, Enhanced Mobility of Seniors & Individuals with Disabilities – Section 5310, accessed February 2023,
84 Federal Transit Administration, State of Good Repair Grants – 5337, accessed February 2023.
85 Cornell Law School Legal Information Institute, 49 U.S. Code § 5339 – Grants for buses and bus facilities, accessed February 2023,



Beyond these formula programs, STIP funding is generated from:[86]

- Federal-aid FHWA funds and earmarks, some of which are specifically set aside for local governments.
- COVID relief funds (only in FY 2022).
- State Highway Funds from motor fuel taxes and registration fees.
- State Highway Road Construction Improvements Fund.[87]
- Crossroads Fund, which funds the construction or reconstruction of state highways.[88]
- Section 164 Penalties, which in states that do not enforce laws that penalize repeat intoxicated drivers (such as Indiana), transfers a portion (2.5%) of the National Highway System Performance Plan and the Surface Transportation Program funds to a reserve.[89] The reserved funds can then be allocated by the states to eligible projects such as highway safety improvement activities.

NIRPC's estimated 2022 STIP allocation was about $20 million, broken down into the programs shown in Table 4-42.[90]



Source: INDOT, STIP Plan 2022-2026: Appendix A.

Figure 4-55: Estimated STIP Uses for Local Projects (MPO and non-MPO)

Program	Amount
STBG	$13,571,357
HSIP	$2,598,944
CMAQ	$4,341,855
TA	$1,161,357
Section 164 Penalty	$666,398
Total FY 2022 Target	$22,339,911
Total Spending Authority	$22,391,650**

Source: INDOT, STIP Plan 2022-2026: Appendix A.

*Note 1: The amounts shown here are summed totals for "Northwest" in Group I and "Michigan City" in Group II. "Northwest" is part of the Chicago UZA and covers Lake and Porter Counties. "Michigan City" covers La Porte County.

**Note 2: The spending authority is 100.2316% of the target.

Table 4-42: NIRPC STIP Suballocated Spending Authority by Program, 2022 Estimates

86 INDOT, STIP FY 2022 to FY 2026, accessed February 2023,

87 Indiana Code, Title 8. Utilities and Transportation Article 14. Highway Finances Chapter 10. State Highway Road Construction and Improvement Fund, 2015.

88 Ibid

89 National Highway Traffic Safety Administration, Final Rule for Section 164: 23 CFC Part 1275, accessed February 2023,

90 INDOT, STIP FY 2022 to FY 2026 Appendix A, accessed February 2023,

Discretionary Funding

Discretionary funding refers to grants that are awarded to eligible entities based on a competitive application and review process. Discretionary funding is often available to both states and MPOs, as well as counties and municipalities. Therefore, NIRPC can work with counties, municipalities, and sometimes private sector players such as railroads and developers to secure discretionary funding for various investments in the regional transportation system.

In the case of discretionary grants that are available to local municipalities or other regional entities, NIRPC can help to support successful grant applications (e.g., conducting related planning, sharing relevant data, supporting application development, or offering letters of support).

Rail Grade Crossings

The Section 130 Railway Highway Crossing Program has been in place since 1987[91] and apportions formula funds to States for use on improvements to rail-highway crossings.[92] Thus, historically, NIRPC was beholden to statewide project prioritization to improve the regional safety and mobility issues associated with grade crossings.

However, the Bipartisan Infrastructure Law (BIL) introduced a new discretionary grant program called the Railroad Crossing Elimination (RCE) grant program. Eligible recipients include state DOTs, MPOs, and local governments.[93] The RCE program allows NIRPC or constituent municipalities to bypass state project prioritization processes and directly apply for federal funding. The Town of Schererville applied for an RCE grant in 2022 with NIRPC's support.



Economic Development District

In 2019, NIRPC secured for the region a designation as an Economic Development District from the Economic Development Administration (EDA) of the US Department of Commerce. The designation, which is the result of a decades-long effort by NIRPC, makes the region eligible for unique federal funding assistance intended for economic development.[94] Among the funding opportunities now available to NIRPC is the Planning Partnership Program, which offers designated Economic Development Districts funding for economic development and other short-term planning activities,[95] and the Public Works Program, which assists communities in upgrading their physical infrastructure.[96] With this designation, NIRPC has an important new responsibility of leading or supporting EDA grant applications for regional investment.

91 Association of American Railroads, Section 130 Grade Crossing Funding

92 USDOT Federal Highway Administration, Railway Crossing Program Overview, updated July 2022,

93 USDOT Federal Railroad Administration, Railroad Crossing Elimination Grant Program, updated November 2022,

94 Northwestern Indiana Regional Planning Commission, New from NIRPC – For Immediate Release, NIRPC Receives Economic Economics Development District Designation from the U.S. Department of Commerce, September 2019.

95 Economic Development Administration, Planning Program, accessed February 2023.

96 Economic Development Administration, Planning Program, accessed March 2023,

Other Federal Funding Opportunities
NIRPC is eligible for a variety of additional discretionary federal funding programs. There are also some discretionary funding programs that NIRPC is not directly eligible for but is in a position to help partners apply for. Many of these are new or expanded under BIL.

- ***National Infrastructure Project Assistance (Mega)***: MPOs are eligible applicants for Mega grants, which can be used on various highway, bridge, freight intermodal, and grade separation projects.[97]

- ***National Significant Multi-modal Freight and Highway Projects Program (INFRA)***: MPOs serving urbanized areas with a population greater than 200,000 are eligible for funding.[98] NIRPC is an eligible MPO.[99] Funding can be used on projects that, as USDOT puts it, "improve safety, generate economic benefits, reduce congestion, enhance resiliency, and hold the greatest promise to eliminate freight bottlenecks and improve critical freight movements."[100]

- ***Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transport (PROTECT):*** MPOs are eligible for PROTECT grants to improve infrastructure resiliency against severe weather and other natural disasters.[101] Note that there is also a separate PROTECT formula program.[102]

- ***Grants for Charging and Fueling Infrastructure (Corridor and Community)*:** MPOs are eligible to apply for grants to develop and install electric charging and hydrogen, propane, and natural gas fueling infrastructure.[103]

- ***Railroad Crossing Elimination (RCE) Program*:** MPOs are eligible for RCE grants, which can be used on improvements to rail-highway and pathway-rail crossings.[104]In June 2023, it was announced that the Town of Schererville was awarded RCE funding.

- ***Advanced Transportation Technologies & Innovative Mobility Deployment (ATTIMD or ATTAIN)***: MPOs are eligible for ATTAIN grants, which can be used to "deploy, install, and operate advanced transportation technologies that improve safety, mobility, efficiency, system performance, intermodal connectivity and infrastructure return on investment."[105]

- ***Bridge Investment Program*:** MPOs are eligible for BIP grants to improve bridge and culvert condition, safety, efficiency, and reliability.[106]

- ***Congestion Relief Program*:** MPOs serving urbanized areas with a population greater than 1 million are eligible for funding.[107] NIRPC is an eligible MPO. Funding can be used to reduce congestion and associated economic and environmental costs.[108]

- ***Consolidated Rail Infrastructure and Safety Improvements (CRISI)*:** CRISI grants fund safety, efficiency, and reliability improvements to passenger and freight rail. Railroads are eligible applicants.[109]

- ***Rebuilding American Infrastructure with Sustainability and Equity (RAISE)*:** RAISE grants fund a wide variety of surface transportation projects that improve safety, sustainability, quality of life, mobility, economic competitiveness, infrastructure condition, and innovation. Local governments are eligible applicants.[110]

97 USDOT, The Mega Grant Program, updated January 2023.
98 USDOT, The INFRA Grants Program, updated October 2022.
99 USDOT, INFRA Urbanized Area, updated April 2020.
100 USDOT, The INFRA Grants Program, updated October 2022.
101 USDOT Federal Highway Administration, Bipartisan Infrastructure Law: Competitive Grant Program Funding Matrix, updated February 2023.
102 USDOT Federal Highway Administration, Biden Administration Announced New PROTECT Formula Program, $7.3 Billion form Bipartisan Infrastructure Law to Help Communities Build Resilient Infrastructure, July 2022..
103 ibid.
104 USDOT Federal Railroad Administration, Railroad Crossing Elimination Grant Program, updated November 2022.
105 Grants.gov, Advanced Transportation Technologies and Innovative Mobility Deployment (ATTIMD) Program 2022 NOFO, September 2022.
106 USDOT Federal Highway Administration, Bridges & Structures: Bridge Investment Program (BIP) Question and Answers (Q&As), updated October 2022.
107 USDOT Federal Highway Administration, Bipartisan Infrastructure Law: Competitive Grant Program Funding Matrix, updated February 2023.
108 USDOT Federal Highway Administration, Bipartisan Infrastructure Law: Competitive Grant Program Funding Matrix, updated February 2023.
109 USDOT Federal Railroad Administration, Consolidated Rail Infrastructure and Safety Improvements (CRISI) Program, updated December 2022.
110 USDOT, Notice of Funding Opportunity for the Department of Transportation's National Infrastructure Investments (i.e., the Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant Program),

The Freight Chapter aims to offer NIRPC the tools to be an effective advocate for solutions—capital or other—to the most pressing regional freight system needs. This starts with the identification of freight investment needs in Northwest Indiana and identifying a prioritization process. Project need prioritization then informs policy and strategy recommendations to address some of the needs and helps identify project concepts that can move to high-level planning and cost estimates.

To begin this process, it is important to first document existing project prioritization methods.



Existing Project Prioritization and Selection Methods in Northwest Indiana

NIRPC *NWI 2050* Metropolitan Transportation Plan (MTP)

The previous MTP[111] assigned projects a score from 1 to 100 according to their direct and indirect impacts on sixteen "critical paths." These critical paths included a combination of topics like economy and place, environment, mobility, and people and leaders, each of which was further broken down by the overall vision for Northwest Indiana: connected, renewed, united, and vibrant. The scoring process also considered the project's impacts on future scenarios and the anticipated investment difficulty.

NWI 2050 explored and scored 77 project types eligible for FHWA or FTA funds. These project types were concepts that could potentially be implemented rather than being specific applications. Similar project types were also grouped into broader investment programs. The higher-scoring project types were targeted for more funding. Total targeted funding was summed into respective investment programs. The purpose of this practice was to enable local public agencies and transit operators to identify the region's most pressing needs and apply for funding available under various programs. This prioritization strategy stayed at a high level and did not drill down into data-driven regional needs or project concepts. However, Invest Northwest Indiana, NIRPC's FY 22-26 TIP, explains this prioritization strategy in more detail.[112]

111 Northwestern Indiana Regional Planning Commission, *NWI 2050*, 2019.

112 Northwestern Indiana Regional Planning Commission, Invest Northwest Indiana 2022-2026 Transportation

E-Commerce in Northwest Indiana

NIRPC released the *E-commerce in Northwest Indiana* study in 2020.[113] The study considered various criteria to identify high-priority locations for land development to accommodate e-commerce. The prioritization framework used in this effort considered negative and positive impacts of potential development using criteria such as proximity to major transportation nodes, proximity to major suppliers, producers, and consumers, environmental impacts, location of omni stores, regional centers, and industrial parks, and population employment. This data-informed framework helped NIRPC to identify regional development opportunities and translate them into concrete project recommendations.

Incorporation Into This Plan

The project prioritization process used for this Freight Chapter incorporates aspects of both *NWI 2050* and the *E-commerce in Northwest Indiana* study. Like *NWI 2050*, this methodology is organized around NIRPC's vision and goals (namely, safety, mobility, and infrastructure condition) and considers high-level project types. And like the *E-commerce in Northwest Indiana* study, this methodology uses a robust set of data to progressively narrow in on system gaps most appropriate for project investment. However, unlike both *NWI 2050* and the *E-commerce in Northwest Indiana* study, this prioritization methodology does not start with projects. Rather, it starts with a data-driven identification of system needs and uses these to inform project concept recommendations.



The development of the Freight Chapter carefully outlined existing freight system conditions, high-level needs, and planning goals. The data gathered as part of this process fed into an analysis of freight issues in the region, focusing on safety, mobility, and condition. This process resulted in the development of three maps of safety, mobility, and condition issues, as shown in Figures 4-56, 4-57, and 4-58.

From here, the process turned to a gap analysis. Programmed or proposed freight-related projects in the region, identified with NIRPC's assistance, were classified by the issue type they were expected to address. Overlaying these projects with the relevant system issues revealed those issues "covered" by a current or future project and those issues that were not. This gap analysis process resulted in a final map of safety, mobility, and condition gaps, as shown in Figure 4-59. In effect, these are all those issues from the previous maps that are not being addressed by programmed or proposed projects. The freight project gap analysis was supplemented by internal needs identification meetings at NIRPC to inform the development of recommendations.

Improvement Program, accessed February 2023.

113 Northwestern Indiana Regional Planning Commission, E-Commerce in Northwest Indiana, 2020.

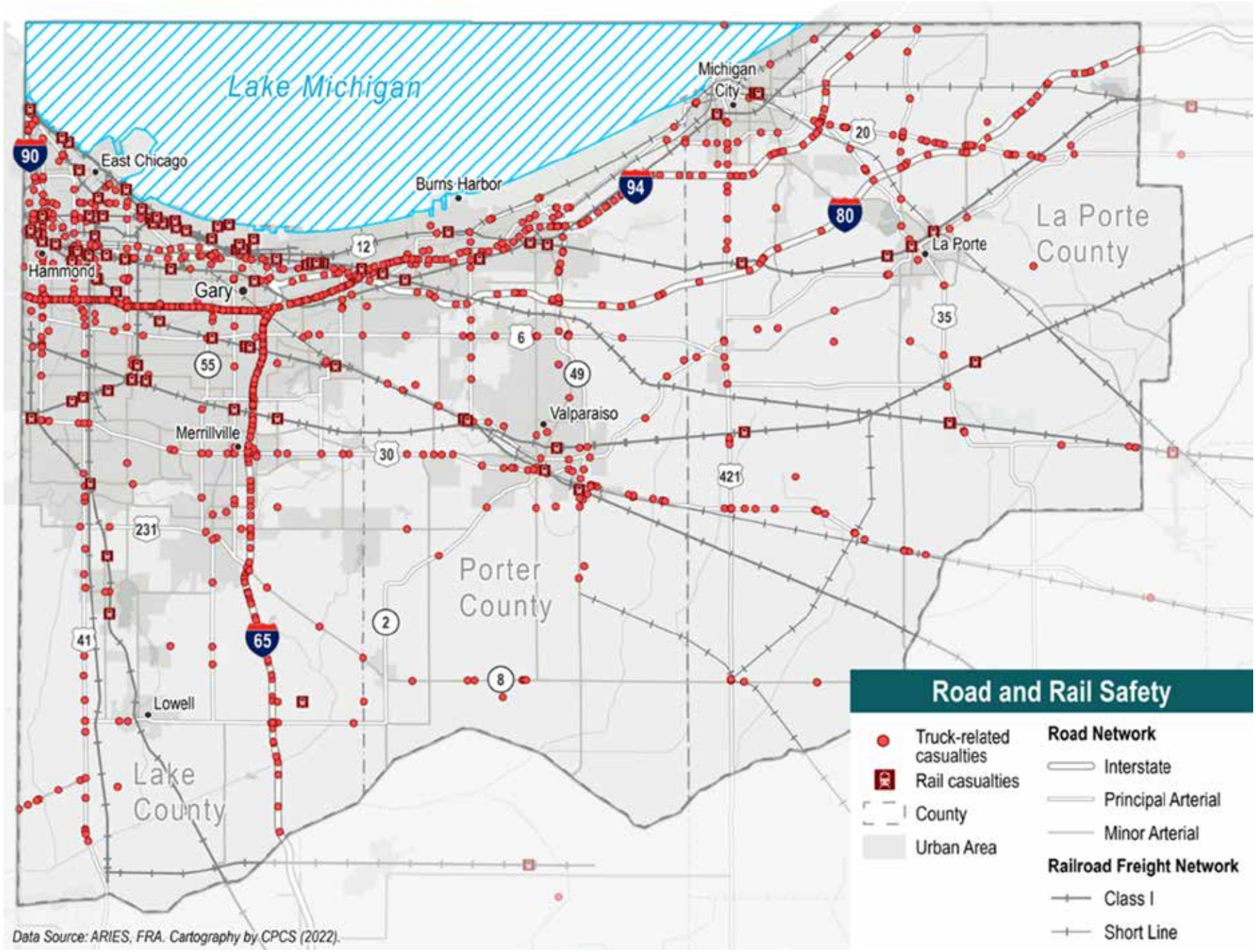


Figure 4-56: Safety Issues

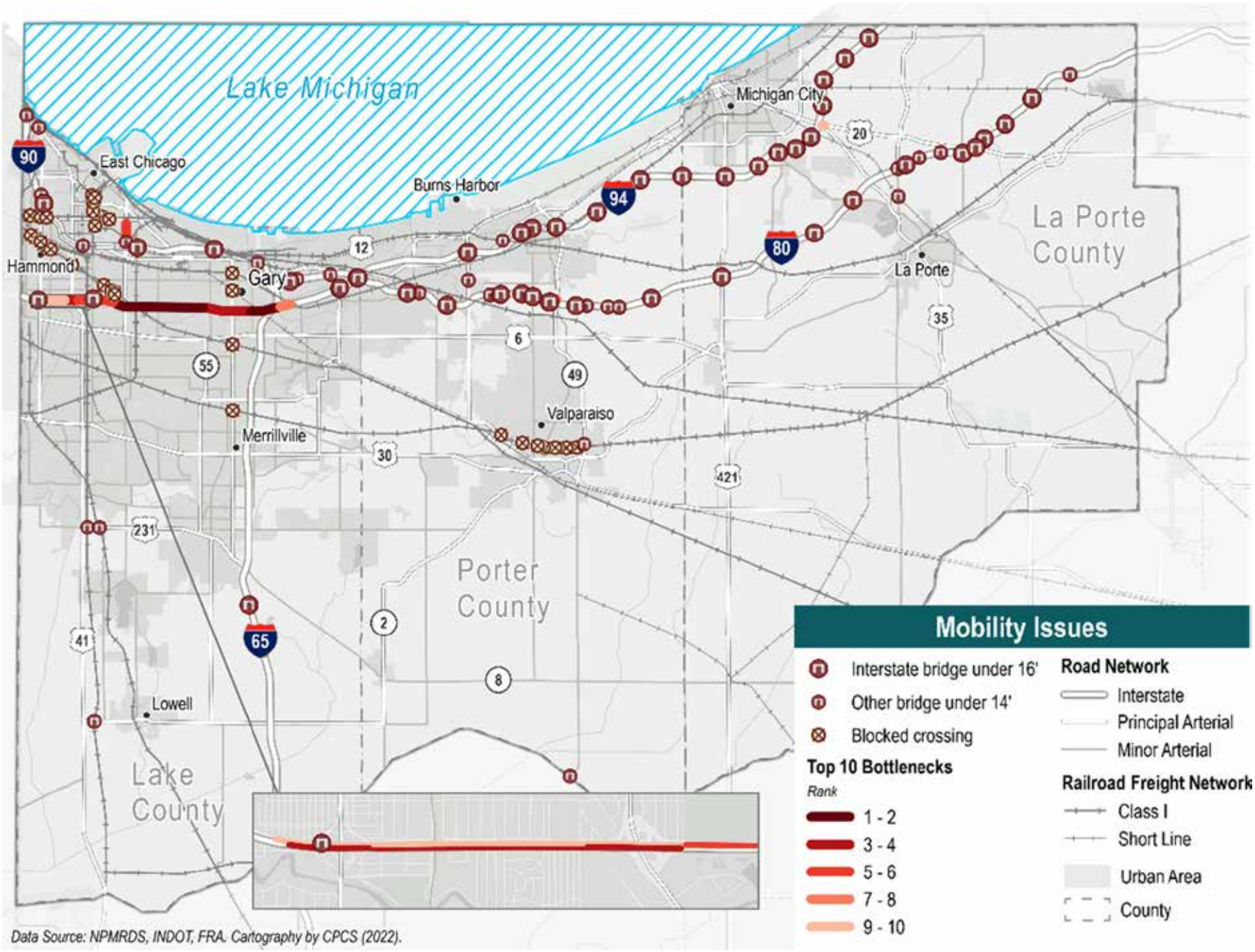


Figure 4-57: Mobility Issues

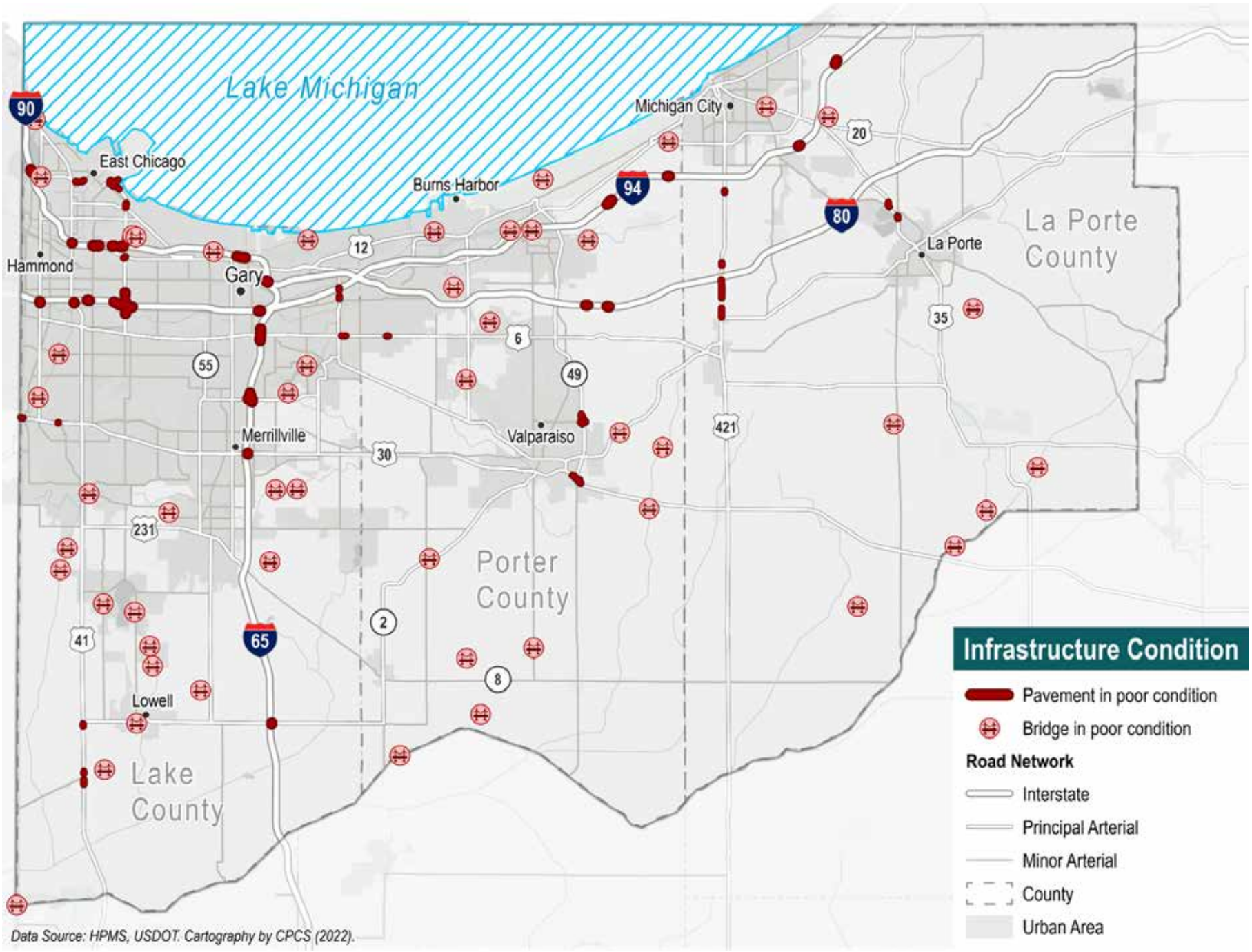


Figure 4-58: Condition Issues

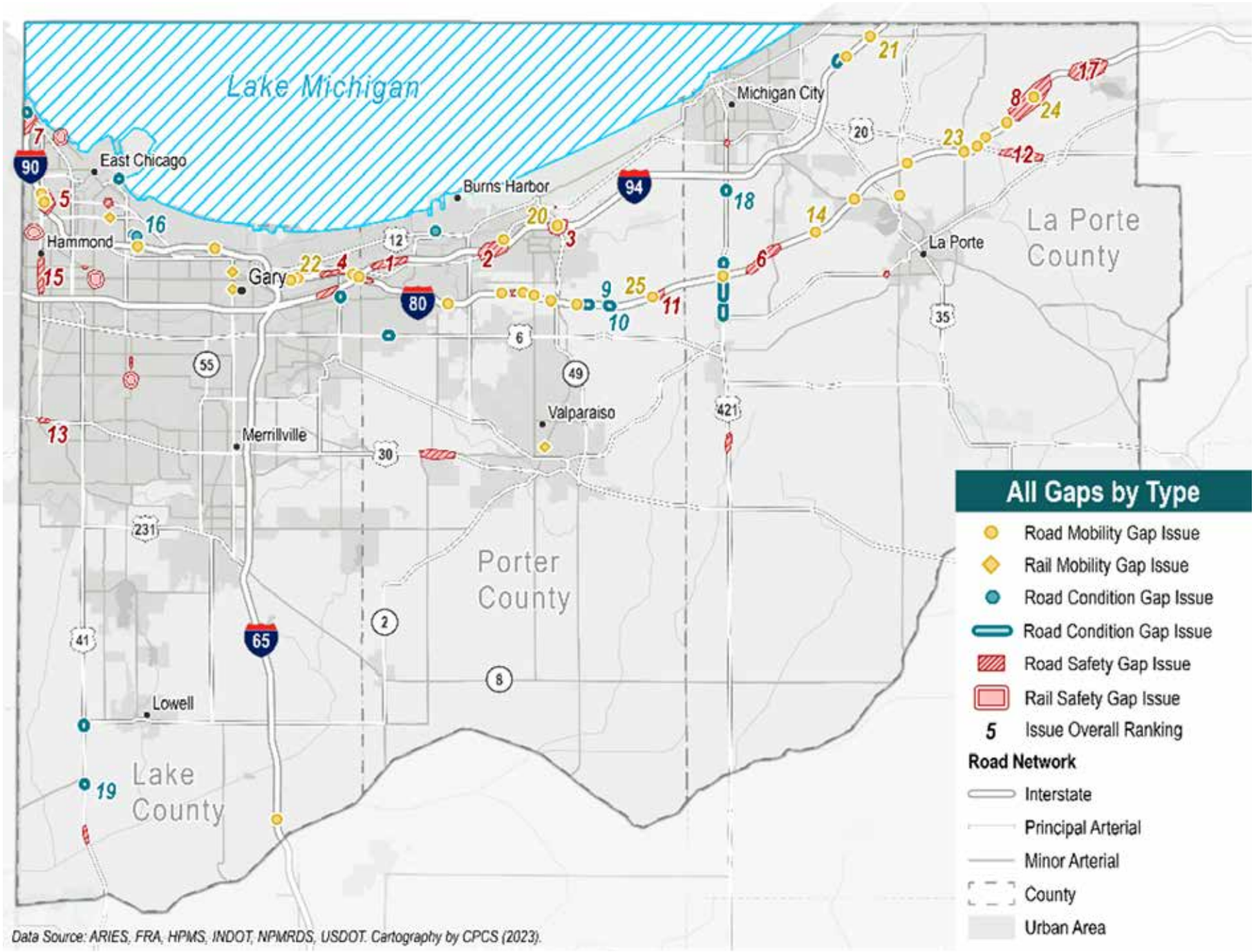


Figure 4-59: All Gaps

Strategy and Project Recommendations

Overview

Phase I of this project made use of a combination of data analysis, stakeholder consultations, and a public survey to identify a set of the most pressing needs in the NIRPC freight system. These needs are summarized in Table 4-43.

To address these gaps, a number of recommendations are developed and discussed with the project team and the Freight Steering Committee members throughout the planning process for the *NWI 2050+* Freight Chapter. These are presented in the following sections and range from policy and research study recommendations to planning-level cost assessments for freight project gap concepts.

Type	Need/Issue	Description
Truck Mode	Truck traffic congestion	Along NWI's primary arterials and on some small local roads, leading to delays and air quality impacts.
	Environmental impacts of trucking activity	This is a concern, and shipping companies and truck stop operators are considering technologies such as computer optimization routing and auxiliary power units to reduce emissions.
	Pavement condition	Only about 5.8 percent of Interstate and 7.7 percent of non-Interstate NHS routes are in good condition.
	Safety issues	Analysis of truck-involved crashes between 2017 and 2021 showed an upward trend in the frequency of these crashes in NWI.
	OS/OW loads	High volumes of OS/OW loads begin/end at Burns Harbor, and sometimes these loads move on local roads. Recent increases in OS/OW permit fees are a concern for the trucking industry.
	Bridge clearance	Some bridges with low clearance cause mobility issues.
	Truck parking	In short supply or hard to find.

Table 4-43: Overview of Freight System Needs Identified in Phase I



Type	Need/Issue	Description
Rail, Air, and Maritime Modes	Rail grade crossings	At-grade crossings cause delays due to relatively long blockage durations and also pose safety concerns.
	Single-track rail bridges	Cause rail traffic congestion and delays.
	Drawbridge condition	Two rail drawbridges are located in the region that are both in poor condition.
	Maritime investment	Need for developing policies and investing in icebreaking equipment, dredging, pilotage reform, and other physical system improvements to address environmental issues.
	Lack of intermodal facility	Congestion caused by freight traffic traveling to or from Chicago intermodal facilities.
	Limited air cargo operations	A lack of international destinations at NWI airports means that high-value cargo bound for international destinations has to be shipped by trucks to the Chicago O'Hare International Airport, which exacerbates road congestion in NWI.
Other	Workforce shortages	Workforce shortages threaten freight-dependent industries.
	Significant pass-through traffic	NWI's infrastructure bears the burden of very high levels of pass-through traffic.
Environment	Extreme weather	Extreme weather and other disruptive events damage infrastructure, cause delays and pose safety concerns, especially extreme cold, and heat, changing freezing and thawing patterns, and seasonal floods.
	Air emissions	Air emissions, especially Ozone, remain a problem in the region.
	Noise pollution	Some areas experience significant freight-related noise pollution.

Source: CPCS analysis and inputs solicited from stakeholders, 2022.

Table 4-43: Overview of Freight System Needs Identified in Phase I

Policy, Study, and Research Recommendations

Workforce Training Programs

Conexus Indiana estimates that in some industries, job openings per person approach a ratio of 10 to 1.[114] This is in line with FHWA's findings from inputs provided by the state DOTs and MPOs across the country. By training workers with in-demand skills and connecting them with relevant industries, workforce training programs would help to proactively address labor shortages that threaten key freight-dependent industries in the region. Vocational programs can be offered as a viable alternative to post-secondary education options. Some programs exist already, including Catapult Indiana, the Modern Apprenticeship Program, Ivy Tech Community College workforce training solutions, and Center of Workforce Innovations initiatives.

NIRPC can collaborate with the stakeholders involved in such programs to develop customized programs targeting freight-related skills. NIRPC can use FHWA's Freight Professional Development (FPD) program as a starting point. The FPD program consists of training courses, seminars, a resource library, guidance establishing university-based, freight-related degree programs, and technical assistance offered to state DOTs and MPOs. [115]

Key partners: Economic development corporations, community colleges, high schools freight industry, Conexus Indiana, Northwest Indiana Forum, Center of Workforce Innovations

Technology Deployment Opportunities

A variety of technologies can help improve the region's freight system. These range from Truck Parking Information Management Systems (TPIMS) to identifying and communicating truck parking availability, gate management strategies like appointment systems and automated scanning, and the implementation of freight signal priority.

NIRPC can coordinate with universities and other research institutions as well as the private sector to investigate innovative solutions that can improve the safety, condition, and efficiency of the transportation system and operations in Northwest Indiana. As an MPO, NIRPC is also eligible for a number of federal grant opportunities related to transportation technologies, including Advanced Transportation Technologies & Innovative Mobility Deployment (ATTIMD or ATTAIN) grants.[116] NIRPC can leverage these programs to sponsor studies focused on technologies that can improve freight issues (such as truck parking shortage, roadway congestion, and port access challenges) and also coordinate or provide financial support for testing, evaluating, and deploying emerging freight-related technologies.



114 CPCS consultation with Conexus Indiana, July 2022.
115 USDOT Office of Operations, Freight Professional Development Program Website.
116 USDOT Office of Operation, Bipartisan Infrastructure Law Key Programs under the Federal Highway Administration Office of Operations Website.

Truck Parking Study

Truck parking is a critical need for the trucking industry, often cited as a top priority.[117] Inadequate truck parking directly impacts safety, freight efficiency, and quality of life. Stakeholders consulted repeatedly reported a lack of truck parking. To address these issues, NIRPC might consider funding a new truck parking study that inventories existing capacity, identifies parking gaps and needs, and offers pertinent recommendations. This study can also investigate the opportunity to expand a TPIMS at additional locations, as there are currently none in Northwest Indiana.[118] Finally, the Indiana State Freight Plan is investigating truck parking issues and will propose recommendations that cover the Northwest Indiana region.[119]

Key partners: INDOT, MAASTO private truck parking providers (Love's, Pilot, Flying J, TravelCenters of America, etc.)

Comprehensive Corridor Analysis

Corridor analysis studies are an effective tool to investigate a specific area, assess its needs, and consider potential solutions. These studies are often effective for corridors facing pronounced safety or mobility issues. Planning efforts should incorporate community and stakeholder input, consider environmental concerns, and offer a range of possible alternatives.

Corridors in the Northwest Indiana region might very well benefit from strategies such as road diets, complete streets, truck-only lanes or truck access permitting systems, and other solutions, but corridor analysis studies are crucial to determine if and where these are appropriate. In particular, the stakeholder inputs and data analyses highlighted the need for comprehensive corridor-level assessments focused on the following issues in Northwest Indiana:

MAASTO TPIMS

In 2015, a group of eight states in the Mid-American Association of State Transportation Officials (MAASTO), including Indiana, partnered to apply for a $25 million TIGER grant for the purpose of creating a regional Truck Parking Information Management System (TPIMS).[120] The award of the grant allowed the eight participating states to install TPIMS technology at about 150 locations. The technology identifies stall availability at truck parking locations in real-time and communicates it to drivers through a variety of technologies. Indiana was awarded over $4 million[121] to install TPIMS at 19 locations covering over 1,200 truck stalls. There is currently no truck parking in locations in Northwest Indiana with TPIMS. There are also no TPIMS locations on I-94, I-90, or I-80 anywhere in the state [122]

117 ATRI-Top-Industry-Issues-2021.pdf (truckingresearch.org)
118 Trucks Park Here, Indiana TPIMS, accessed February 2023.
119 Indianapolis Metropolitan Planning Organization, Central Indiana Regional Freight Plan, approved August 17, 2022.

120 Trucks Park Here, Parking Information, accessed February 2023.
121 Trucks Park Here, TIGER Proposal 2015 Regional Truck Parking Information and Management System (TPIMS), accessed February 2023,
122 Trucks Park Here, Indiana TPIMS, accessed February 2023.

1. ***Truck movements along the US 12/20 corridor:*** NIRPC released its Porter County US 12/20 Transportation Corridor Plan in 2008.[123] The plan involved extensive field analysis, ten public meetings, and input from over 100 stakeholders, and aimed to direct future development of US 12/20 in a way that would "create a livable lakefront." In particular, the plan recognized that there is a mix of passenger traffic, recreational activity, industrial operations, and freight travel that is "not presenting a safe and quality traveling experience for visitors." The plan recommended considering rerouting truck traffic away from US 12. While restricting truck traffic on US 12 has proven infeasible, NIRPC continues to strive for reduced conflict on US 12 between freight and recreational activities.

   Improvements to the US 12/20 corridor remain an ongoing conversation. An INDOT Notice of Project Advancement in 2020 identified a preferred alternative for the US 12/20 corridor that would realign the US 12 to create an improved intersection with US 20 and would introduce new pedestrian and bicycle infrastructure.[124]

2. ***Truck access to the Cleveland Cliffs-Burns Harbor facility:*** Both NIRPC and stakeholders mentioned a need to improve freight access to and from the Cleveland Cliffs Facility at Burns Harbor along US 12. NIRPC's involvement on this topic stretches back over a decade when a group of stakeholders convened to discuss improvements to the facility's entrance and landed on a proposed Intelligent Transportation Systems (ITS) solution to improve signaling and reduce truck queuing on US 12.

   Today, the discussion has been resurrected between NIRPC and key stakeholders, with proposed improvements at the western access point or closure of the easternmost access point. However, any solution will require close collaboration with Cleveland Cliffs and requires further investigation.

   Key partners: INDOT, Indiana Department of Natural Resources, City/county engineers, Indiana Dunes - National Park Service, Businesses and facilities located along the corridors, Community representatives, Economic Development Agencies, and Non-profit environmental groups.

Rail Grade Crossing Improvements

Of the 846 public railroad crossings in Northwest Indiana, 675 (or almost 80 percent) are at-grade, resulting in one at-grade rail crossing for every 8.8 miles of public roadway.[125] This density is double that of Indiana overall, despite Indiana ranking first nationally.[126] As a result, at-grade crossings remain a prevalent issue in the Northwest Indiana region.

NIRPC has an opportunity to continue working with local authorities and communities to identify candidate rail crossing locations for grade separation, closure, or improved active warning safety devices. In this role, NIRPC can also help to identify appropriate funding opportunities related to grade crossings and support the application process.

123 Microsoft Word - Porter County Trans Plan_ Final_030708.doc (nirpc.org)
124 Notice-of-Project-Advancement-for-US-12-Road-Reconstruction-and-Realignment-Project.pdf (in.gov)
125 CPCS analysis of FRA crossing inventory data, 2022; INDOT, Indiana State Rail Plan, 2021. Public road mileage calculated using 2021 Indiana Jurisdictional Mileage data,
126 Ibid

Rail Crossing Task Force

Recognizing the importance of addressing safety concerns and blocked-crossing problems at grade crossings, the Northwest Indiana Rail VISION Group and the Northwest Indiana Rail Crossings Task Force collected field data and conducted several studies over the past few years. The Rail Crossing Task Force last met in 2019, but the data collected by the Task Force informed the analysis conducted in this Freight Chapter.

Reconvening the Task Force can be valuable as NIRPC continues working to improve safety and mobility at grade crossings. NIRPC may also consider sponsoring another round of data collection led by the Rail Crossing Task Force with a focus on blocked crossing issues and hotspots identified in the Federal Railroad Administration (FRA's) crowdsourced Blocked Crossing database. The Task Force can also support and inform NIRPC's and INDOT's regular discussions with the rail industry stakeholders, which are especially important right now for a number of reasons, including extensive new funding for rail-related projects under BIL and ongoing operational changes in the rail industry such as precision-scheduled railroading, struggling short lines, labor issues, the potential for reciprocal switching requirements, and a likely case before the Supreme Court in 2023 about allowing states to hold railroads accountable for blocked crossings.[127]

127 Reciprocal switching refers to arrangements between competing railroads to allow customer access to a facility or business served by only one railroad. The Surface Transportation Board is proposing to adopt a set of rules for reciprocal switching to address high rates and service access concerns. Source: Sarah Zimmerman, STB poised to decide reciprocal switching rules as shippers, railroads remain at odds, Supply Chain Dive March 30, 2022

Air Cargo Study

Gary/Chicago International Airport (GYY) is the third largest air cargo facility in Indiana. GYY serves as an important strategic airport to carry time-sensitive and higher-value goods and offload some of the demand from the air cargo facilities in the Greater Chicago area. As the Airport is planning for new development and air cargo service expansions,[128] NIRPC may consider conducting a study to investigate strategies to strengthen the economic competitiveness of air cargo operations at GYY, which can help shift some of the traffic to and from the greater Chicago area from trucks to the air cargo mode. Such a study should involve close coordination with the City of Gary and the GYY representatives and include considerations regarding the environmental and community impacts of airport-related growth.

Key partners: Gary/Chicago International Airport, City of Gary, Community representative groups, Non-profit environmental groups, Freight industry stakeholders

128 NIRPC stakeholder inputs collected during a Freight Steering Committee Meeting, January 2023.

Expanded Resiliency Study

Northwest Indiana's economy heavily relies on its freight infrastructure, as freight-reliant industries such as manufacturing and transportation, and warehousing account for about 40 percent of the region's employment. While the majority of the Interstate and non-Interstate NHS roadways in Northwest Indiana are in fair condition, timely maintenance and effective planning are required to maximize pavement infrastructure life cycles. The substantial pass-through freight traffic to move cargo to and from the freight facilities in the Chicago area can also exacerbate the maintenance needs along the region's highway system. Finally, Northwest Indiana's Lake Michigan Ports District, which ranks among the top 30 ports nationally, relies on regular investments, including icebreaking, dredging, and improved access roads, to handle demand and remain resilient against weather fluctuations.



In addition to maintaining the transportation system in good or fair condition, investment and policy actions are required to advance systemwide resilience related to both natural and human-made risks. According to the US Federal Emergency Management Agency's (FEMA's) measures of risks faced by communities (which includes infrastructure resilience considerations), Lake County has a higher risk index than the other two counties in Northwest Indiana, and almost 94 percent of other counties in the US. This high-risk index indicates that the County houses valuable economic resources and populations that are uniquely susceptible to hazards, especially cold waves, heat waves, flooding, strong winds, winter weather, and tornadoes.[129] Stakeholders in Northwest Indiana have also confirmed the need for regional and statewide resilience planning due to the now observable impacts of climate change on the frost and thaw seasonal cycles and, as a result, on road, rail, bridge, and port infrastructure.

NIRPC adopted the Northwest Indiana Economic Recovery and Resiliency Plan in December 2022.[130] This plan features an Action Plan goal about Infrastructure. NIRPC can expand upon the infrastructure goal to benchmark infrastructure resiliency, identify risks, and highlight opportunities to make more informed investment decisions. The additional effort can also build upon the findings from the 2019 State of Indiana Standard Multi-Hazard Mitigation Plan and other relevant efforts at the national, state, and regional levels.

Key partners: INDOT, City/County engineers and other local representatives, Community representative groups, Non-profit environmental groups.

Future Planning Support

NIRPC can use the freight system needs and gap areas identified in this project in future transportation planning efforts. By making the list of gaps available to local jurisdictions and to project managers across NIRPC, freight needs have the opportunity to be considered in all aspects of transportation planning across Northwest Indiana. Moreover, NIRPC should continue to tap the expertise represented on the Freight Steering Committee to keep the list of freight gaps and needs updated, coordinate ongoing and future improvements, and establish a platform for ongoing collaboration on freight activities and operations.

Freight Project Gap Areas

To identify freight-related gaps areas, robust data analysis was used to filter out the freight needs identified in Phases I and II that are expected to be addressed with programmed or planned projects. The remaining needs were expanded and refined through internal discussions among NIRPC staff and vetted with project stakeholders. This careful analysis and collaboration allowed the team to group freight needs into seven priority gap areas for planning level cost estimates:

1. Bridge Clearance
2. Tollbooth Inefficiency
3. Noise Pollution
4. At-Grade Rail Crossing Safety
5. Bridge Condition
6. Safety Issues with Low-Cost Solutions
7. Traffic Signals

These high-level gap areas were supplemented with a collection of case examples to ground the analysis. For these gap areas, the project team has developed high-level cost estimates. This information can be used by NIRPC and its partners as a resource to advance sensible investment decisions moving forward but should not be used to assume any on-the-ground or engineering level assessment.

129 National Risk Index, FEMA

130 NIRPC and TIP Strategies, Northwest Indiana Economic Recovery and Resiliency Plan, September 2022.

Planning Level Layouts and Estimated Costs

Gap 1: Bridge Clearance

Low bridge clearances can interfere with the efficient movement of trucks and are susceptible to being hit, which poses safety concerns. This planning effort has identified a number of bridges with low clearance that might benefit from being raised. NIRPC has highlighted a bridge on US 30 in Schererville as a case example for improved height clearance, which the agency is considering pairing with road widening to improve active transportation access.

Case Example: Norfolk Southern Railroad Bridge on US 30 in Schererville

The clearance height of this bridge, located east of US 41, is 15 feet in the westbound direction and 14 feet 9 inches in the eastbound direction (Figure 4-105 and 4-106). In 2019, the average daily traffic volume was 41,117 vehicles, including 823 combination trucks, and the truck travel time reliability was 2.3 for westbound trucks and 2.2 for eastbound trucks. In addition to challenges associated with truck traffic traveling under the bridge, the current width clearance does not allow for the addition of sidewalks or bike lanes, which is an accessibility concern raised by the public. Addressing the height and width clearance challenges at this bridge will require coordination with Norfolk Southern railroad.



Figure 4-60: Eastbound Bridge View



Figure 4-61: Westbound Bridge View

Figure 4-62 shows the overall concept for increasing the height and width clearance of this Norfolk Southern bridge. The bridge deck needs to be reconstructed with the roadway surface lowered to provide adequate height clearance (16 feet). The typical roadway section would include four lanes (two eastbound and two westbound) with accommodations for bicycles and pedestrians. The estimated cost for such a project would be around $25M, assuming that a pump station will not be needed for this location, as the grade difference is less than two feet.

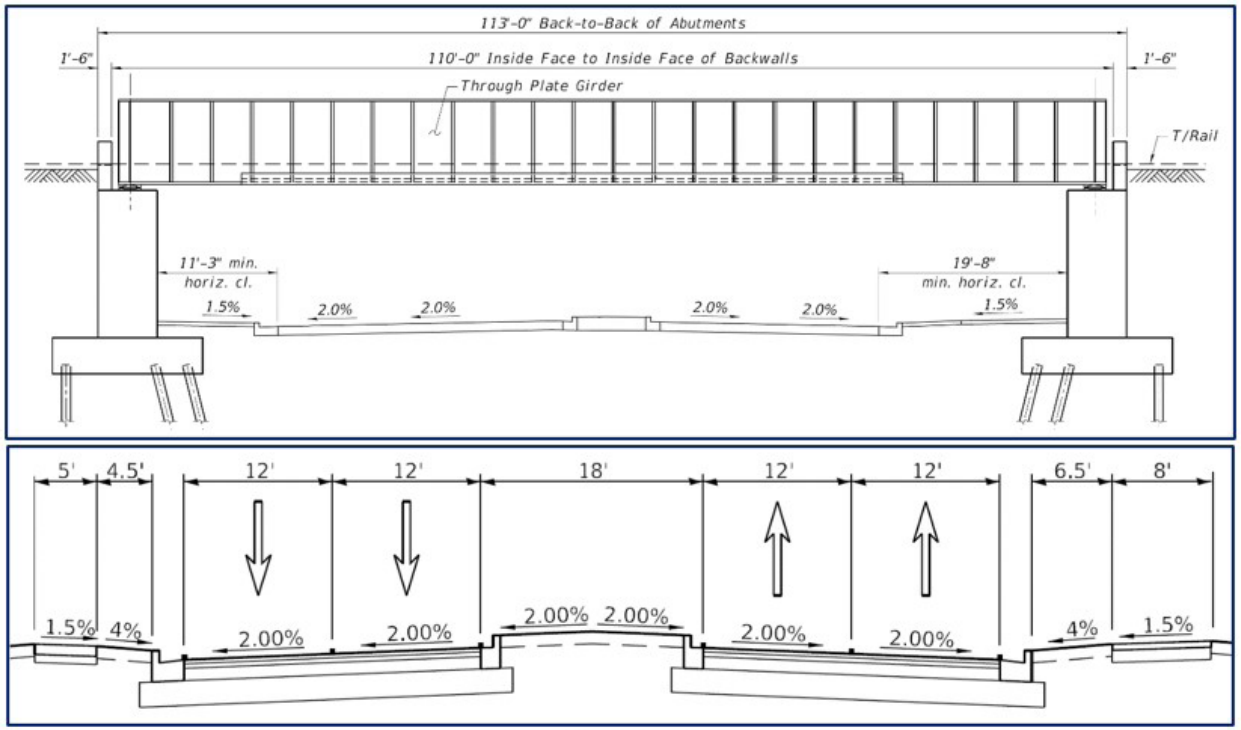
Gap 2: Tollbooth Inefficiency

Tollbooths obstruct the traffic flow; in particular, cash-only tollbooths can cause idling and vehicle queues along their feeder roads. New technologies, such as electronic toll collection or open-road tolling (ORT), can address these problems; they streamline the toll collection process by allowing road users to drive through the toll collection zone at highway speed without having to stop or slow down. NIRPC stakeholders have highlighted the inefficiencies at toll collection zones in Northwest Indiana, particularly along high-volume routes such as the Indiana Toll Road (I-90). Analysis of road congestion issues across the region also revealed truck bottlenecks located along the segment of I-90 within Northwest Indiana.

Case Example: Tollbooths Located Along I-90

I-90, which runs east-west through the Northwest Indiana region, is a toll road operated by a concessionaire. The nine tollbooth locations on I-90 in Northwest Indiana introduce delays as vehicles slow down to pass through. Of the nine tollbooths on I-90 in NIRPC's jurisdiction, four are mainline toll systems, and the remaining five are entry/exit tolling systems. Upgrades to mainline tollbooths are typically a priority because they have the highest traffic volume flow, can be difficult for toll booth employees to navigate, and require a large number of employees. Upgrades might also be prioritized where toll collectors are more difficult to hire—often in rural areas. Because I-90 spans the entire state of Indiana, this opportunity would require extensive collaboration with other regions and stakeholders, as well as with the Indiana Toll Road itself. NIRPC is taking the first step here by calling attention to the opportunity and identifying high-level planning considerations.





Source: TranSystems, 2023.

Figure 4-62: Example Roadway Typical Section - Railroad Clearance



Source: Traffic Technology Today, 2019.

Figure 4-63: Existing Mainline Tollbooths

Table 4-44 outlines planning level cost estimates for different elements of the tollbooth elimination gap area. Of note is that operating costs for different tolling technologies vary significantly. To reduce operating costs, NIRPC should encourage users to have an E-ZPass tag (FRID chip). The Indiana Toll Road has established reciprocity with other toll road systems, increasing the usefulness of a roadway user owning a tag chip. System leakage may also occur with license plate processing when a vehicle has covered, dirty, missing, or hard-to-read license plates.



Source: WTAE, Pennsylvania Turpike Tolling system, 2021.

Figure 4-64: Open Road Tolling

Element	Cost
Existing Tollbooth Removal	$50,000 per tollbooth
Mainline Open Road/Toll-by-plate tolling installation	$1.5 million per tollbooth
Operating costs for tag processing	$0.07-0.10 fee per transaction
Operating costs for license plate processing	$0.35-0.40 fee per transaction

Source: TranSystems, 2023.

Table 4-44: Tollbooth Elimination Planning Level Cost Estimates

Gap 3: Noise Pollution

Highway traffic, especially truck traffic, can be loud and polluting, which can upset the quality of life and health of surrounding communities. Research has found that living within 500 feet of a major highway is linked to asthma, heart disease, stress, sleep disturbances, and dementia.[131] Moreover, these negative externalities are not equitably distributed; communities living next to major highways are often disadvantaged communities. Noise barriers are effective tools to mitigate noise and may reduce the dispersion of dangerous pollutants at a relatively low cost and without major disruption to either traffic or communities.[132]

131 USDOT, Proximity To Major Roadways, updated August 2015, and Bilodeau, Kelly, Exposure to traffic noise linked to higher dementia risk, Havard Heath Publishing: Harvard Medical School, December 2021.

132 Baldauf, R., et al., Impacts of noise barriers on near-road air quality, Atmospheric Environment 42:32, October 2008.

Case Example: Protecting Residential Neighborhoods Located Near I-94

Figure 4-65 identifies five locations along I-94 that lack a noise barrier but where many residences are located within 500 feet of the highway. These locations, shown in Figures 18 to 21, would be appropriate for the installation of noise barriers and are presented as case examples.

A noise barrier costs approximately $4.5 million per mile per side or $840 per linear foot. This assumes a standard 14-foot noise wall within the existing right-of-way at a flat $60 per square foot. These prices translate to the costs per location shown in Table 4-45. Constructing noise barriers at all five locations would cost approximately $10 million.

Location	Approximate Length	Cost
1	1,500 feet	$1.3 million
2	3,500 feet	$3.0 million
3	2,800 feet	$2.4 million
4	1,400 feet	$1.2 million
5	2,300 feet	$1.9 million
Total	**11,500 feet**	**$9.8 million**

Source: TranSystems, 2023.

Figure 4-45: Noise Barrier Planning Level Cost Estimates

Figure 4:65: Potential Noise Barrier Projects





Source: TranSystems, 2023.



Figure 4-66: Location 1 – North of I-94 in Gary along W 27th Ave



Figure 4-67: Location 2 – South of I-94 in Portage East of I-90 Interchange



Figure 4-68: Locations 3 and 4 – Southwest and Northeast of I-94/SR 149 in Burns Harbor



Figure 4-69: Location 5 – North of I-94 in Chesterton West of SR 49

Gap 4: At-Grade Rail Crossing Safety

At-grade crossings pose safety and mobility risks for travelers. These risks can be addressed through grade separation or with improved warning devices. Grade separation is more costly than warning devices and is thus more appropriate at crossings with high traffic volumes or with a significant number of crossing incidents. However, by physically removing the crossing, grade separation eliminates the original safety and mobility risks. While warning devices do not entirely eliminate safety risks or solve mobility issues, they are less costly than grade separation and are still effective at improving rail crossing safety. A number of crossings in the region are equipped with passive-only or limited active warning devices and may benefit from upgrades.

As a result of stakeholder engagement, prior planning efforts, and careful safety and mobility data analysis, the project team has identified two crossings as case examples for grade separation as well as a third collection of crossings that serves as a case example for upgrading grade crossing warning devices.

Case Example 1: Norfolk Southern Crossing 117th Street in Whiting

Two at-grade crossings span six tracks along 117th Street between Center Street and Whiting Lakefront Park. Between 2016 and 2020, this crossing saw four highway-rail crossing incidents, two of which involved a pedestrian. These safety concerns were identified as an unaddressed gap as a result of this planning effort's data analysis. Details on these two crossings are provided in Table 4-45 and Figures 70 and 71.

Crossing #	Owner	AADT (2019)	Daily Train Volumes (2022)
156098N	Norfolk Southern	2,126 vehicles (10% trucks)	58 through trains (12 passengers) and 2 switching trains
260690U	Wisconsin Central LTD		3 through trains

Source: FRA Crossing Database, 2022; HPMS, 2019.

Table 4-45: 117th Street At-Grade Rail Crossing

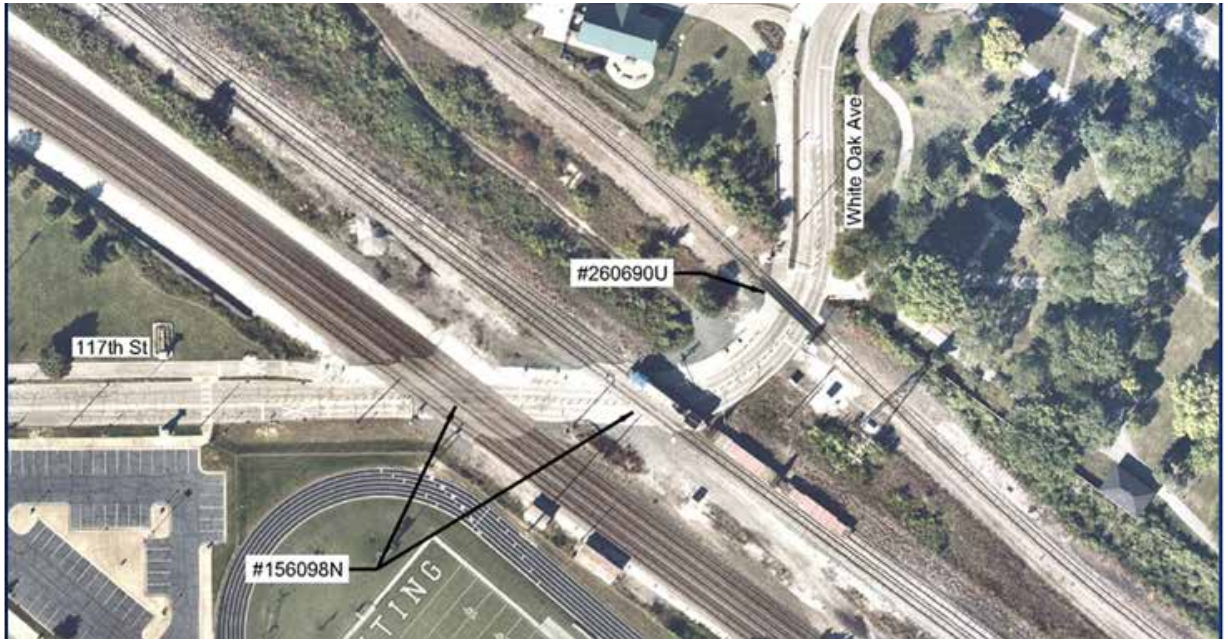


Figure 4-70: 117th Street At-Grade Rail Crossings Imagery

A complete realignment of the roadway will be needed in order to accommodate the grade separation. Typically, 30 feet of grade difference is needed for a roadway overpass, and 5% grades are the maximum allowable for accessible sidewalk and street crossing. This requires more than 600 feet of runout on both the east and west sides of the tracks, plus additional distance needed for the curves to get back to the existing grade. The white line on the aerial image below (Figure 4-72) is the approximate straight-line distance needed to get back to the existing grade. The total cost associated with the road realignment and grade separation is estimated to be around $60M.



Figure 4-71: 117th Street At-Grade Rail Crossing Looking East (left) and West (right)



Figure 4-72: Whiting Aerial

Case Example 2: CSX Rail Line Crossing US 41 in Hammond

Two at-grade crossings appropriate for separation in Hammond span four tracks along US 41 south of Gostlin Street. NIRPC identified this grade separation at this crossing as an ongoing regional need. Details on these two crossings are provided in the following figures.

Crossing #	Owner	AADT (2019)	Daily Train Volumes (2022)
163627L	CSX	17,927 vehicles, including 1,128 combination trucks	29 through and 6 switching trains
870916M	Northern Indiana Commuter Transportation District (NICD)		47 through trains (37 passenger trains)

Source: FRA Crossing Database, 2022; HPMS, 2019.

Table 4-46: US 41 At-Grade Rail Crossing

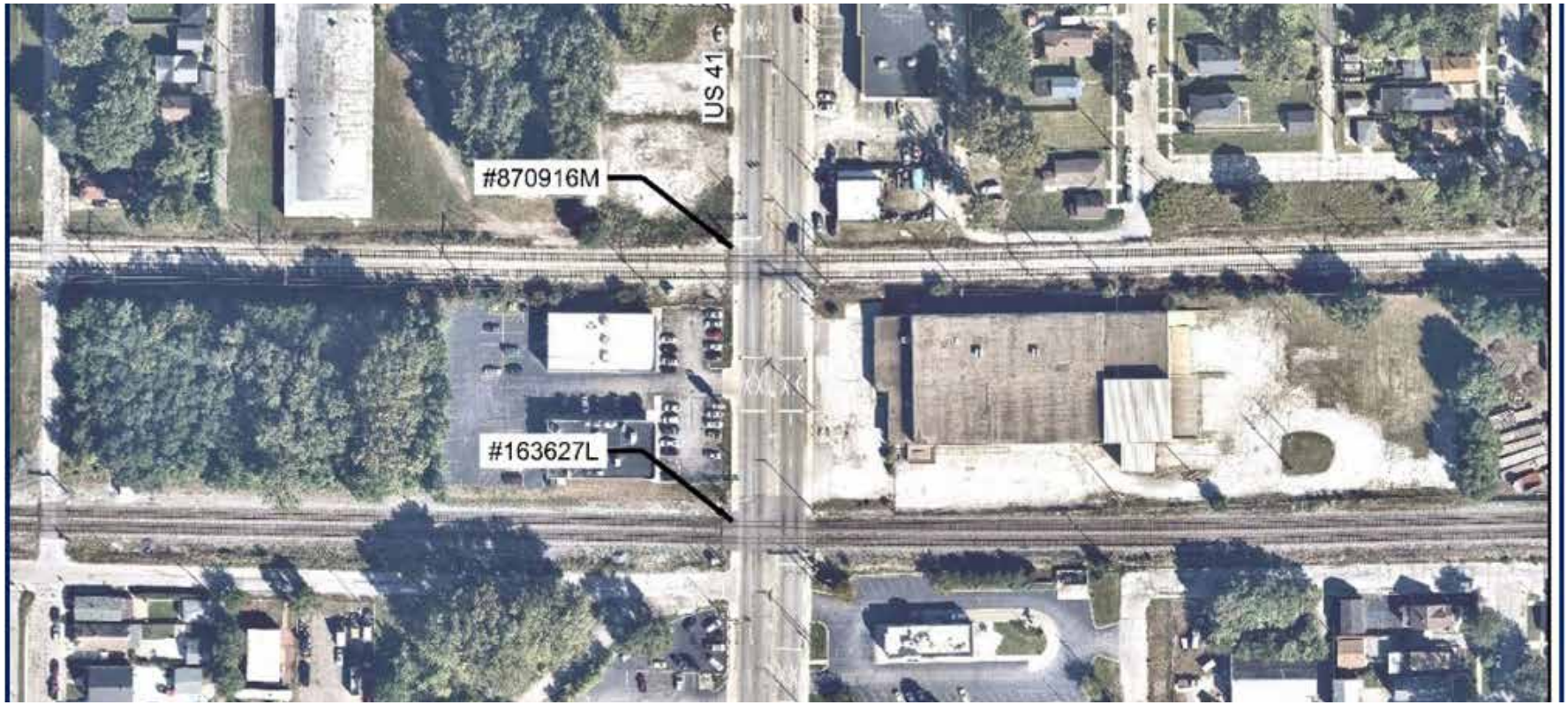


Figure 4-73: US 41 At-Grade Rail Crossing Imagery

Two separate bridges will be required, and more than 1000 feet of retaining wall will be needed for grade separating this crossing. Typically, 20 feet of grade difference is needed for a roadway underpass with 5% max grades allowable for accessibility standards. This requires more than 400 feet of run out on both the east and west sides of the tracks, plus additional distance needed for the curves to get back to the existing grade. The Gostlin intersection is less than 400 feet from the north set of tracks, so modifications to that intersection grade would likely be needed. A pump station is also likely needed here due to the 20 feet cut for the underpass. The total cost associated with these activities is estimated to be around $50M.



Figure 4-74: US 41 At-Grade Rail Crossing Looking South

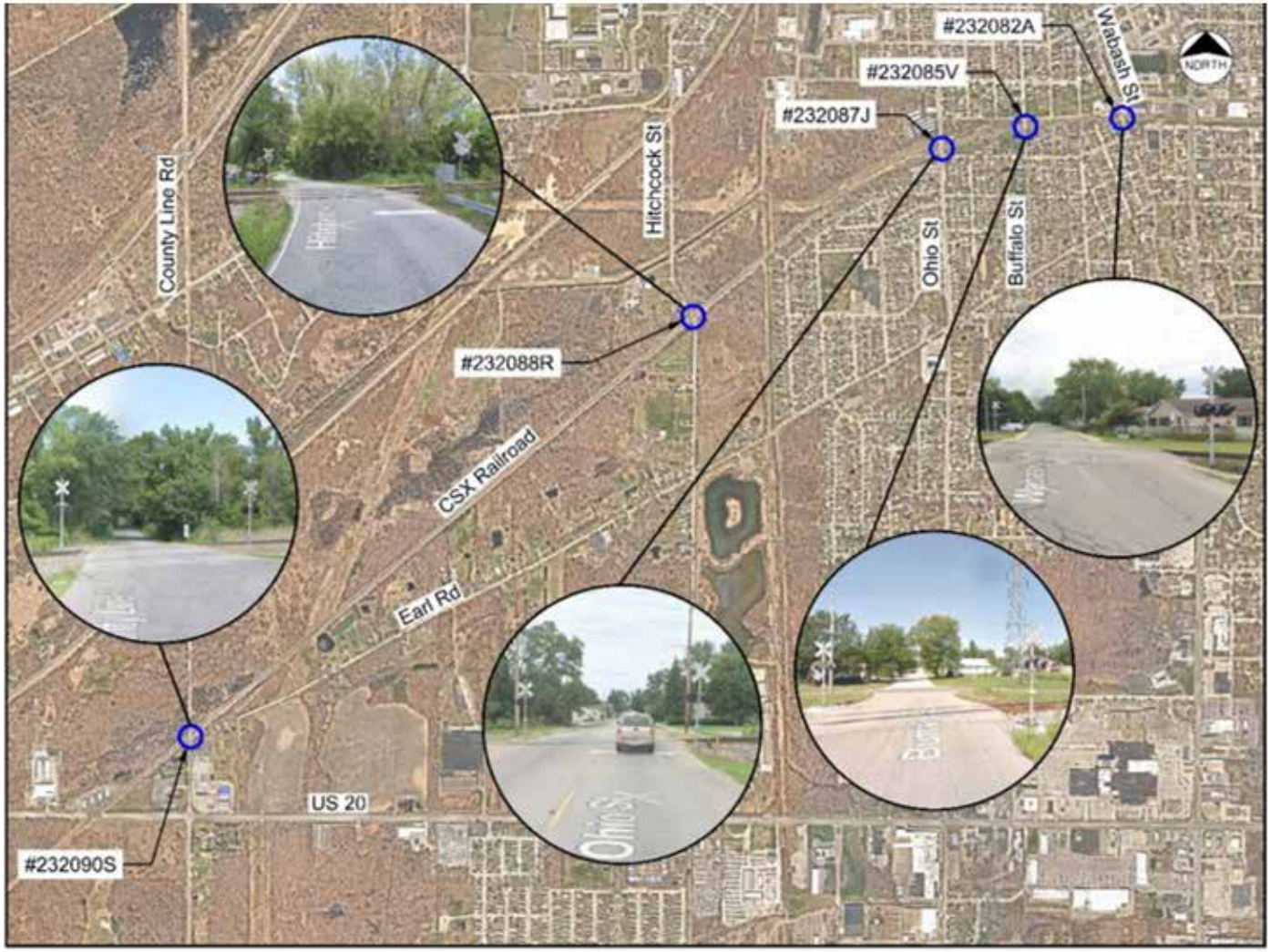
Crossing	Cost
117th Street in Whiting	≈ $60 million
US 41 in Hammond	≈ $50 million

Source: TranSystems, 2023.

Table 4-47: Rail Crossing Grade Separation Planning Level Cost Estimates

Case Example 3: Upgraded Warning Devices for CSX Corridor In and Near Michigan City

Upgrades to warning devices might be appropriate along the CSX corridor in and near Michigan City at the five at-grade highway-rail crossings between County Line Road and Wabash Street (Figure 4-75). These five crossings are currently active with roadside-mounted lights and not gates.



Source: FRA Crossing Database and Google Maps Street View, 2023.

Figure 4-75: At-Grade Crossings Proposed for Active Warning Devices

Table 4-48: Rail Crossing Upgraded Warning Devices Planning Level Cost Estimates

Arrangement	Cost
Gates only	≈ $400,000 per crossing
Gates and cantilever light	≈ $500,000 per crossing

Source: TranSystems, 2023.

Gap 5: Bridge Condition

Data analysis from Phase 1 of this planning effort revealed that only about 5.8 percent of Interstate and 7.7 percent of non-Interstate NHS routes in Northwest Indiana are in good condition. Moreover, more than 50 bridges in the region are in poor condition. It is important for NIRPC to prioritize the rehabilitation of and other improvements to infrastructure conditions to maintain a state of good repair and reduce the risk of disastrous infrastructure failure. An analysis of bridge condition data identified a set of bridges in poor condition on Gary Road between US 12 and I-90 that serves as a useful case example.

Case Example: Bridges on Gary Road between US 12 and I-90

Four adjacent bridges (two eastbound and two westbound) along Gary Road between US 12 and I-90 in Gary are in poor condition (Figure 32). The 2019 average daily traffic volume over the two bridges was 9,283 vehicles, with 1,024 combination trucks. The Gary Road tollbooth is also located south of the bridges.

These four bridges have a superstructure condition rating of 4, which indicates poor condition per the National Bridge Inspection Standards (NBIS) rating system. The substructure is rated 7. This indicates good condition, while the deck is rated 6, meaning it is in satisfactory condition. These ratings show that significant repairs are needed for the superstructure, while the substructure may only require minor repairs. Table 4-49 shows the planning level costs estimated for repairs to the piers and abutments and the replacement of the beams and decks of the bridges.

Element	Cost
Superstructure Replacement	Deck area* x $200/sf = 19,620 sf x $200/sf = $8,748,000 **Deck Area = 268' x 90' + 218' x 90' = 19,620 sf*
Engineering Phase 1, 2 and 3	0.25 x $8,748,000 = $2,187,000
Total Estimated Cost	$10,935,000

Source: TranSystems, 2023.

Table 4-49: Bridge Rehabilitation Planning Level Cost Estimates

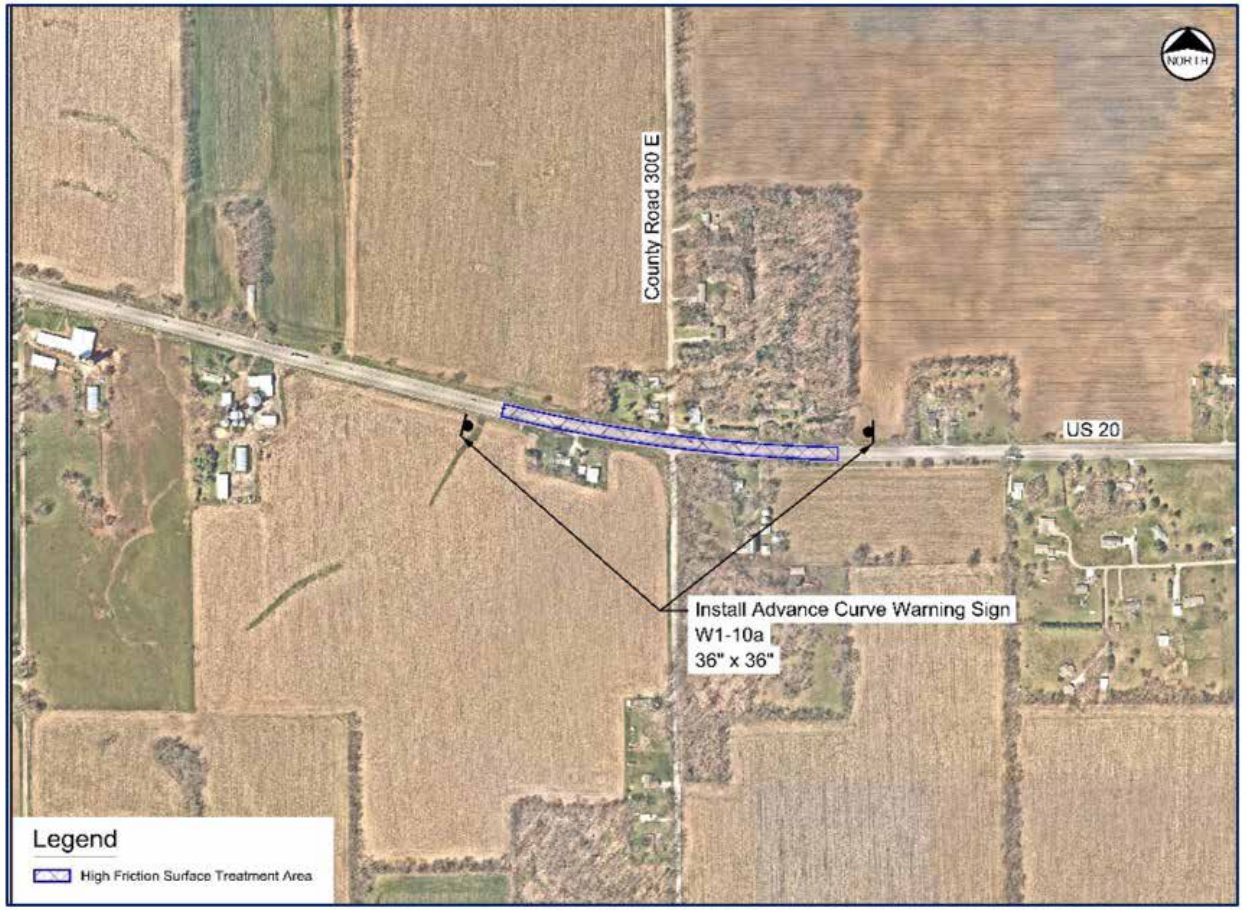


Source: TranSystems, 2023.

Figure 4-76: Bridges in Poor Condition Along Gary Road between US 12 and I-90

Gap 6: Low-Cost Safety Improvements
Certain segments of roadway with clusters of safety issues can be improved with low-cost, high-impact investments. This is especially true at curves where signage or improved pavement materials can alert drivers and improve traction to reduce the risk of a crash. An analysis of safety data identified a cluster of crashes on US 20 near Rolling Prairie that serves as a use case example.

Case Example: US 20 in La Porte County
US 20 in La Porte County, just west of Rolling Prairie near the intersection with County Road 300, saw five crashes within a five-year period, of which two resulted in fatalities. The speed limit along this stretch of road is 55 miles per hour and is defined by a slight curve. As shown in Table 4-50, safety can be improved along this dangerous stretch of US 20 for little cost. These strategies to improve safety might include introducing advance curve warning signs, installing high friction surface treatment, and clearing and grubbing the land near the intersection with County Road 300.



Source: TranSystems, 2023.

Figure 4-77: US 20 Safety Improvement

Element	Cost
High friction surface treatment	$40,000-50,000 per curve
Advance curve warning signs	$350 per sign
Clearing and grubbing of intersection	$5,000 per intersection

Source: TranSystems, 2023.

Table 4-50: Safety Improvements Planning Level Cost Estimates

Gap 7: Traffic Signals

Many intersections in the region may benefit from signaling to improve mobility and safety. NIRPC is interested in understanding the important planning and cost considerations that go into new traffic signals as the agency works to identify opportunities for installation.

Intersections must usually meet traffic signal warrants based on the Manual on Uniform Traffic Control Devices (MUTCD) for a new signal to be installed. These warrants are often based on vehicular traffic volume thresholds but may also be appropriate for intersections with a significant crash history or pedestrian traffic volume.

Table 4-51 outlines the approximate cost of a traffic signal based on standard equipment assumptions. Costs can fluctuate for a variety of reasons, including variations in roadway width and mast arm length, quantity and type of radar or camera equipment, the presence of pedestrian accommodations, and the number of signal heads.

Assumed Equipment	Cost
Four poles with mast arms One controller Cable communications Other standard equipment	$350,000 – 500,000 per traffic signal

Source: TranSystems, 2023.

Table 4-51: Safety Improvements Planning Level Cost Estimates



Appendix 4A: Review of Studies, Plans, and Other Relevant Documents

Plan Name	Publishing Agency	Year Published
Statewide Freight-Related Studies		
Statewide Transportation Improvement Program (STIP)	INDOT	2022
Investing in the "Crossroads of America" Indiana Infrastructure Report	Conexus Indiana	2021
State of the Logistics Industry	Conexus Indiana	2021
2021 Indiana State Rail Plan	INDOT	2021
INDOT's Customer Satisfaction Survey	INDOT	2020
2020 Indiana Manufacturing Survey: COVID Special Edition	Katz, Sapper, & Miler, Indiana University Kelley School of Business, Indiana Manufacturers Association	2020
Transportation Asset Management Plan	INDOT	2019
Long-Range Transportation Plan	INDOT	2019
2018 Indiana Multimodal Freight Plan Update	INDOT	2018
Indiana's 2013-2035 Future Transportation Needs Report	INDOT	2013
Highway-Rail Grade Crossing Safety Action Plan	INDOT	2010
MPO and Regional Level Studies		
Air Quality Conformity Determination Report	NIRPC	2021
Local and Regional Economic Impacts of the Ports of Indiana	Ports of Indiana	2020
Local and Regional Economic Impacts of the Indiana Maritime Industry	Ports of Indiana	2020
E-Commerce in Northwest Indiana	NIRPC	2020
NWI Rail Crossing Task Force: Summary Report	NIRPC	2019
Critical Urban Freight Corridors Committee Meeting Presentation	NIRPC	2019
NWI 2050 Plan	NIRPC	2019
NWI Rail Crossing Task Force Summary Report	NIRPC	2019
NWI Rail Crossing Task Force Presentations	EME Rail Solutions, LLC	2019
Ignite the Region: NWI's Strategy for Economic Transformation	NWI Forum Regional Economic Development Organization	2018
Comprehensive Economic Development Strategy	NIRPC	2016
Regional At-Grade Crossing Study	NIRPC	2013
Freight Study	NIRPC	2010

Source: CPCS, 2022.

Table 4A-1: Plans and Studies Reviewed

Summary of Key Takeaways

The high concentration of freight activities in Northwest Indiana region poses significant issues. Common findings include congestion on the region's highways, conflict between road and rail modes resulting from at-grade crossings, and emissions nonattainment. However, with the right vision and goals, the region's infrastructure can become an asset. *NWI 2050+* was developed in alignment with regional goals brought forward from *NWI 2050*. In addition to this guidance, implementation strategies and performance measures from the relevant statewide studies will be used to aid in the identification and evaluation of new strategies and performance measures needed for the region.

Current Conditions

This section summarizes the current conditions of the freight system in Northwest Indiana. Some data are presented at the statewide level and need to be identified at the regional level for Northwest Indiana. These are separated into four sections, consistent with the components identified in Phase 1 of the work plan.

The Physical System Profile:

- Northwest Indiana has 5,800 linear miles and 13,000 total lane miles of roadway.
- The Port of Indiana-Burns Harbor provides barge access to more than 20 states via the Inland Waterway System as well as many international locations by transshipment in the Gulf of Mexico or through the Great Lakes. The Port has more than 7 miles of track which handle 9,000 railcars annually. The Indiana Harbor complex is the largest integrated steelmaking facility in North America.
- Class I railroads in Northwest Indiana are Norfolk Southern, CSX, and CN. Almost all rail in Northwest Indiana is 286K compatible.
- There are 1,086 rail crossings in Northwest Indiana, of which 82 percent (886) are at grade. About half of schools, fire stations, and hospitals are within half a mile of a rail crossing.
- Seven airports in Northwest Indiana: the largest is Gary/Chicago International; others are in Griffith, Hobart, Lowell, Valparaiso, Michigan City, and La Porte.

The Economic Profile:

- Northwest Indiana has an economy valued at about $35 billion.
- There is a concentration of minority census blocks in Lake County.
- Manufacturing and logistics are key to Indiana's economy, generating a third of the state's GDP and employing over 13 percent of the state. Northwest Indiana will likely remain a global center of steel production.
- Gary-Chicago International Airport approved a lease with UPS in May 2020.
- The Port of Burns Harbor generated almost 31,000 jobs (6,454 of which were direct) in 2019 and offered over $5 billion in economic activity. The Northern Indiana Maritime District generated 98,465 jobs (18,430 of which were direct) and offered over $17 billion in economic activity.
- The Indiana Harbor complex is the largest integrated steelmaking facility in North America.

The Freight System Demand and Key Corridors:

- 80 percent of manufactured goods travel by truck in Indiana.
- Indiana ranks #1 in the nation for the number of pass-through highways (13 interstates).
- More than half of the freight traveling on Indiana highways is passing through one of the state's PHFS interstates.
- Indiana ranks #1 in rail-tons of primary metals originated and terminated.
- Lake County is the primary county of origin for outbound rail tonnage in Indiana.
- More than 1.5 billion tons of freight are moved in Indiana annually, making it the 5th busiest state for commercial freight traffic.
- The Port of Burns Harbor has more than 7 miles of track and handles 9,000 railcars annually.

Multi-modal Freight Issues in the Region:

- A 2019 Customer Satisfaction Survey found that almost 70 percent of respondents in the La Porte District had experienced a delay due to construction/maintenance.
- Staff resources and labor shortages pose a significant risk to the transportation operations, including goods movement operations.
- Lake and Porter Counties are nonattainment areas for Ozone. Portions of Lake County are maintenance areas for PM10 and CO.
- Indiana is tied with Louisiana for the most at-grade crossing-related fatalities in the US. Between 2007 and 2016, there were 133 deaths, of which five were in Northwest Indiana.
- I-65 experiences significant congestion statewide. US 30 sees significant truck traffic and congestion.
- Vertical bridge clearance remains an issue throughout Indiana, mostly on non-Interstates
- Key highway bottlenecks include: I-80/94 (Borman Expressway) in Lake County (state line to I-65), SR 49 in Porter County (I-80/I-90 to I-94), US 20 in La Porte County (SR 2 junction to I-94), US 30 in La Porte County (various locations), and US 41 in Lake County (I-84/I-94 to I-90).

Vision

Regional Vision

NWI 2050 guides the future of the Northwest Indiana region over the next 30 years. The Plan identifies a broad vision for the region:

1. ***Connected:*** Provide accessible, safe, and equal opportunities for working, playing, living, and learning.
2. ***Renewed:*** Make Northwest Indiana's urban and rural centers place people want to come to and live in and ensure our environment is safe and healthy.
3. ***United:*** Celebrate diversity and work together as a community across racial, ethnic, political, and cultural lines for the mutual benefit of the region.
4. ***Vibrant:*** Support a thriving economy, a well-educated population, planned growth, and protection of natural and agricultural areas.

This vision informs the MTP's focus areas and will be used as the basis and structure for developing performance measures for benchmarking freight movement and improving freight mobility and safety in Northwest Indiana.

The vision is further associated with four themes, as indicated in Table 4A-2.

	Economy and place	Environment	Mobility	People and Leaders
Connected	Update land development policies and strategies to emphasize accessibility between people and opportunities	Connect fragmented natural areas and integrate links between people and green spaces to increase resiliency and health outcomes	Complete roadway, bicycle, sidewalk, and transit networks across municipal and county lines to enhance safe and efficient access to opportunities for all	Commit to removing barriers and obstacles to guarantee equal and accessible opportunities
Renewed	Maximize growth in existing centers to enhance civic and economic life and protect natural areas and farmland	Clean and protect the air, land, water, and natural habitats to sustain and enhance the environment's safety and health for all	Improve roadway, bicycle, sidewalk, and transit networks to revitalize existing urban and rural centers and enhance equity	Focus educational and workforce development initiatives on expanding skills that the modern economy requires
United	Collaborate regionally to welcome a diversity of people and talent to achieve mixed and balanced growth	Build region-wide coalitions to advance environmental sustainability for the benefit of future generations	Prioritize transformative investments to elevate the position of the region and attract a diversity of residents and high-quality economic opportunities	Foster better communications, cooperation, and coordination to bring people together across the lines that divide us
Vibrant	Promote initiatives and policies to ensure healthy living, sustainability, quality of life, and prosperity	Endorse innovative energy and environmental strategies to achieve a balance that protects diverse and unique ecological treasures while fostering a sustainable economy	Adopt technological innovation that enhances the safe and fluid movement of people and goods to enable a flourishing economy	Embrace a dynamic, diversified, and sustainable economy that attracts and retains talent, enhances the quality of life, and increases personal and household income

Source: CPCS analysis of NIRPC NWI 2050 Plan.

Table 4A-2: NIRPC Vision Terms and Themes

Statewide Goals

In addition to the guidance provided in the regional plan, the statewide freight goals will be used in developing the Northwest Indiana freight vision and performance measures to ensure synergy between statewide and regional transportation planning. INDOT's FAST Act[133] compliant Multi-modal Freight Plan was published in 2018 as an update to the 2014 Freight Plan to guide the statewide transportation system investments that benefit goods movement. The 2018 Plan incorporates goals and content from other statewide efforts, including the State Rail Plan, State Aviation System Plan, Future Transportation Needs Report, and Joint Transportation Research Program Report. INDOT is currently updating the Statewide Multi-modal Freight Plan.

To develop and track meaningful freight performance measures, the INDOT Freight Plan sets strategic goals that are in alignment with the National Freight Policy Goals and Objectives. Table 4A-3 summarizes the relationship between INDOT's goals and national goals for freight performance.

INDOT's Goal	National Goal
Capacity to Meet Demand – Reduce bottlenecks to improve the reliability and efficiency of freight movement, leading to less congestion, fewer infrastructure repairs, and lower emissions	• Identify infrastructure improvements to reduce congestion and eliminate bottlenecks • Achieve and maintain a state of good repair • Improve the reliability of freight transportation
Multimodal Integration and Synergy – Develop and implement transportation networks that support direct multimodal freight expansion, leading to the improvement and establishment of multimodal/intermodal facilities	• Improve safety, security, efficiency, and reliability of the National Multimodal Freight Network • Use innovation and technology to improve safety, efficiency, and reliability
Access to National and International Markets – Support better connectivity between all modes of freight transportation, including between Indiana's water ports and highway and rail modes	• Improve short- and long-distance movement of goods through rural areas and gateways • Improve flexibility of states to support multi-state corridor planning
Quality of Life – Identify opportunities to improve and maintain Indiana's transportation infrastructure, supporting the safe movement of freight through the State	• Reduce the adverse environmental impacts of freight movement • Pursue the goals described without burdening state and local governments
Economic Impact – Cultivate a strong and diverse economy by growing Indiana as a magnet for jobs	• Improve economic efficiency and productivity of the National Multimodal Freight Network

Source: INDOT Multimodal Freight Plan, 2018.

Table 4A-3: INDOT's Goals Compared to the National Goals for Freight Performance

133 Fixing America's Surface Transportation (FAST) Act is a funding and authorization bill passed into law in 2015. States are required to develop State Freight Plans to become eligible for receiving funds under various FAST Act programs.

Performance Measures

The following sections summarize the regional and statewide freight-related performance measures that will be considered in the development of the Freight Element.

Regional Freight Performance Measures

The regional transportation performance measures identified in *NWI 2050* are organized according to the plan's four vision components: connected, renewed, united, and vibrant. Table 4A-4 summarizes the freight-related performance measures under each of these vision terms, along with a proposed analysis.

Generally, NIRPC proposes that the "Connected" term be measured using trip times and transportation safety, the "Renewed" term be measured using reported emissions and infrastructure conditions, and that the "Vibrant" term be measured using the number of vehicles with advanced technologies (alternative fuels and CAVs) and travel time reliability.[134] There are no freight-related performance measures under the "United" term proposed in *NWI 2050*.

Vision Term	Performance Measure	Analysis Proposed
Connected	• Average Trip Time	Trip times from the Household Travel Survey
	• Number of fatalities • Rate of fatalities per 100 million VMT • Number of serious injuries • Rate of serious injuries per 100 million VMT	Crashes from ARIES crash database
Renewed	• Number of annual ozone emission critical value exceedances	8-hour Ozone Air Quality Action and Exceedance Days Summary from Indiana Department of Environmental Management
	• Carbon Monoxide (CO) reduction from Congestion Mitigation Air Quality (CMAQ)-funded projects (kg/day) • Particulate Matter less than 10 microns in diameter (PM10) reduction from Congestion Mitigation Air Quality (CMAQ)-funded projects (kg/day)	Emissions are claimed in the CMAQ project applications for CMAQ-funded projects.
	• Percent of Interstate pavements in good and poor condition • Percent of non-Interstate National Highway System (NHS) pavements in good and poor condition	For asphalt pavements: International Roughness Index (IRI), percent cracking, and percent rutting; for jointed concrete pavements: IRI, percent cracking, percent faulting; for continually reinforced concrete pavements: IRI, percent cracking
	• Percent of National Highway System (NHS) bridge area in good and poor condition	Deck condition, superstructure condition, substructure condition, approach roadway width, structure length, and deck width from National Bridge Inventor

Table 4A-4: NIRPC Vision Terms and Associated Performance Measures

134 NIRPC *NWI 2050* Plan.

Vision Term	Performance Measure	Analysis Proposed
United	None	N/A
Vibrant	Number of alternatively fueled/ powered vehicles registered	Number of alternatively fueled/powered vehicles registered from South Shore Clean Cities and/or the Indiana Bureau of Motor Vehicles
	Number of Connected or Automated Vehicles (CAVs) registered plus the fleet size of CAVs licensed to operate in NW Indiana	Vehicle registrations from the Indiana Bureau of Motor Vehicles when data becomes available
	Percent of person miles traveled on the Interstate and non-Interstate NHS that is reliable	Travel time from the National Performance Measure Research Data Set (NPMRDS), Annual Average Daily Traffic (AADT) from Highway Performance Monitoring System (HPMS), vehicle occupancy factors from the US Department of Transportation
	Truck Travel Time Reliability Index (TTTRI)	Travel time from the National Performance Measure Research Data Set (NPMRDS)
	Peak Hours of Excessive Delay per capita in the Chicago, IL-IN Urbanized Area	Travel time from the National Performance Measure Research Data Set (NPMRDS), Annual Average Daily Traffic (AADT) and speed limits from Highway Performance Monitoring System (HPMS), vehicle occupancy factors from the USDOT

Source: CPCS analysis of NIRPC NWI 2050 Plan

Table 4A-4: NIRPC Vision Terms and Associated Performance Measures

Statewide Freight Performance Measures

Under the FAST Act guidelines, INDOT is required to track the Truck Travel Time Reliability Index performance measure. Additionally, INDOT maintains detailed highway safety records that include truck crashes. However, no specific freight safety performance is currently benchmarked by the DOT. The following is a summary of the freight performance measures recommended by INDOT in the 2018 Freight Plan:

- ***Capacity to Meet Demands:*** recommended performance measures are the percentage of lane miles at the level of service C or better, reduction in the hours of truck delay, and improvement in Truck Travel Time Reliability Index.

- ***Multi-modal Integration and Synergy:*** performance measures include the percentage of intermodal connectors with "fair" or better pavement conditions and the number of intermodal or multi-modal projects completed.

- ***Access to National and International Markets:*** the performance measure recommended under this goal is the hours of delay on roadways within 5 miles of ports and cargo airports.

- ***Quality of Life:*** performance measures to benchmark under this goal focus on freight safety and specifically reducing truck-involved crashes and fatalities and the removal of rail-highway grade crossings.

- ***Economic Impact:*** includes tracking of percent growth in jobs in freight-intensive industries and percent growth in export value (domestic or foreign).

These freight planning goals and performance measures will be integrated into the current and future freight condition assessment, performance measure development and analysis, and implementation strategy development steps of this present freight planning effort. The goals and measures will be reviewed by the NIRPC staff and the regional freight stakeholders and redefined or expanded if needed.

NCFRP Report 10: Performance Measures for Freight Transportation

The Transportation Research Board National Cooperative Freight Research Program (NCFRP) Report 10 provides guidelines on developing freight transportation performance measures to support investment strategies, as well as operations and policy decisions for both public agencies and private entities. The performance measures recommended in the report are designed to reflect the local, regional, national, and global perspectives on major freight needs and challenges, including efficiency, effectiveness, capacity, safety, security, infrastructure condition, congestion, energy, and environmental impacts.

As shown in Table 4A-5, the report summarizes the measures ranked by the public and private sector stakeholders based on expected and emerging freight industry trends. The project team used the guidelines provided in this report as a starting point for refining the performance measures for the Freight Element.

Topic Area	Trend	Recommended Measure
Freight Demand	Increasing volumes	• Freight Volumes, All Modes • Containerized Imports/Exports
Freight Efficiency	Decreases in overall average speed are expected	• Interstate Highway Speeds • Class I RR Operating Speed
	Congestion on interstates will increase	• Interstate Highway Reliability • Trend Line of Top Interstate Bottlenecks
	Growing market	• Rail Freight Market Share of Ton Miles • Logistics as a Percentage of GDP
Freight System Condition	Uncertain performance trend	• NHS Bridge Structural Deficiencies • NHS Pavement Conditions
Freight Environmental Impacts	Continued decline in overall emissions	• Truck Emissions (Particulate Matter, Nitrogen Oxides, Green House Gas, Volatile Organic Compound) • Rail-Produced Emissions • Water-Produced Emissions
Freight Safety	General decline	• Truck Injury and Fatal Crash Rates • Highway-Rail At-Grade Incidents
Freight Investment	Increasing investments	Investment to Sustain NHS
	Uncertain	Rail Industry Cost of Capital
	Increasing	• Estimated Capital to Sustain Rail Market Share • Investment to Sustain Inland Waterway System

Source: TRB, NCFRP 10, 2011.

Table 4A-5: Performance Information for National Report Card Performance Summaries

Appendix 4B: Stakeholder Consultation List

Name	Position	Entity
Clarence Hulse	Executive Director	Michigan City Economic Development Corporation
Bryce Carpenter	Vice President, Industry Engagement	Conexus Indiana
Jody Peacock	Senior Vice President	Ports of Indiana – Central Office
Ryan McCoy	Port Director	Ports of Indiana – Burns Habor
Leslie Morgan	Freight Manager	INDOT
Brandon Burgoa	Statewide Bicycle Pedestrian Coordinator	
Casandra Bajek	Northwest Indiana Communications Director	
Kristin Brier	Multimodal Director	
William Moore	CEO, EME Rail Solutions LLC	Rail Crossing Task Force
Duane Alverson	Lake County Engineer	Lake County Government
Robert Thompson	Director, Development & Storm Water Management	Porter County Government
Matt Saltanovitz	Northwest Region Indiana Economic Development Corporation Director	Indiana Economic Development Corporation
Kay Nelson	Environmental Affairs Director	Northwest Indiana Forum
Beth Shrader	City Planner	City of Valparaiso

Source: CPCS, 2022.

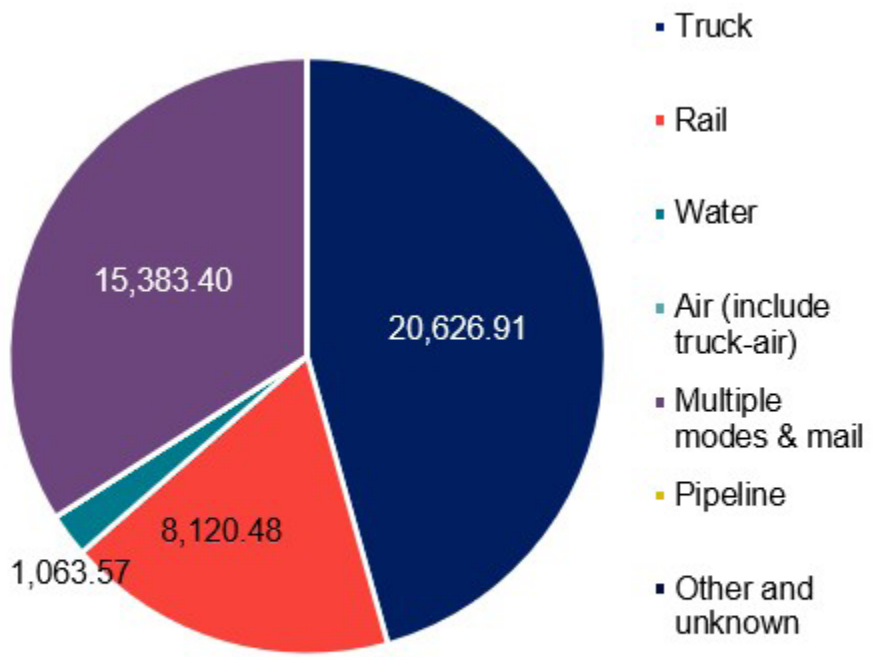
Table 4B-1: Stakeholder Consultation List

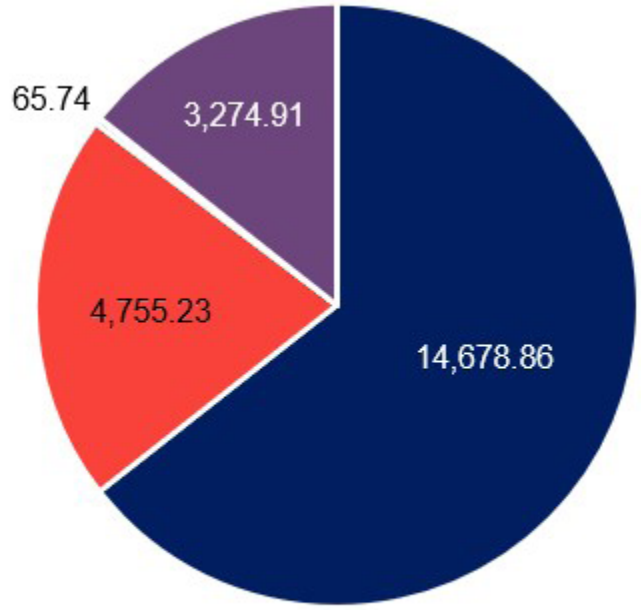
Appendix 4C: Industry-Level FAF Analysis

Metals Manufacturing

SCTG Code	SCTG Name	Description
14	**Metallic ores**	Raw ore used to produce metals
32	**Base metals**	Primary metals like steel
33	**Articles-base metal**	Fabricated metal products like pipes, nails, or hand tools

Table 4C-1: Commodities Considered in Metals Manufacturing FAF Analysis





Source: CPCS analysis of FAF5 data, 2022. For international flows, only modes for domestic segments are examined here.

Figure 4C-1: Tonnage Modal Split for Metals Manufacturing

Figure 4C-2: Value Modal Split for Metals Manufacturing

Mode	Volume		Value	
	Thousands of Tons	Share	Millions of Dollars	Share
Truck	20,626.91	45.64%	14,678.86	64.41%
Rail	8,120.48	17.97%	4,755.23	20.87%
Water	1,063.57	2.35%	65.74	0.29%
Air	0.55	0.00%	14.62	0.06%
Multiple modes and mail	15,383.4	34.04%	3,274.91	14.37%
Pipeline	0.0	0.00%	0.0	0.00%
Other/Unknown	0.21	0.00%	0.43	0.00%
Total	45,195.13	100%	22,789.79	100%

Source: CPCS analysis of FAF5 data, 2022. For international flows, only modes for domestic segments are examined here.

Table 4C-2: Modal Split for Metals Manufacturing Commodities in Northwest Indiana

Mode	Volume		Value	
	Thousands of Tons	Share	Millions of Dollars	Share
Domestic	43,950.23	97.25%	21,913.89	96.16%
Import	365.45	0.81%	525.15	2.30%
Export	879.45	1.95%	350.74	1.54%
Total	45,195.12	100%	22,789.79	100%

Source: CPCS analysis of FAF5 data, 2022

Table 4C-3: Flow Type for Metals Manufacturing Commodities in Northwest Indiana

Nonmetal Mineral Manufacturing

SCTG Code	SCTG Name	Description
13	**Non-metallic minerals**	Raw minerals
31	**Nonmetal mineral products**	Fabricated mineral products like cement or asphalt

Table 4C-4: Commodities Considered in Non-Metallic Minerals Manufacturing FAF Analysis

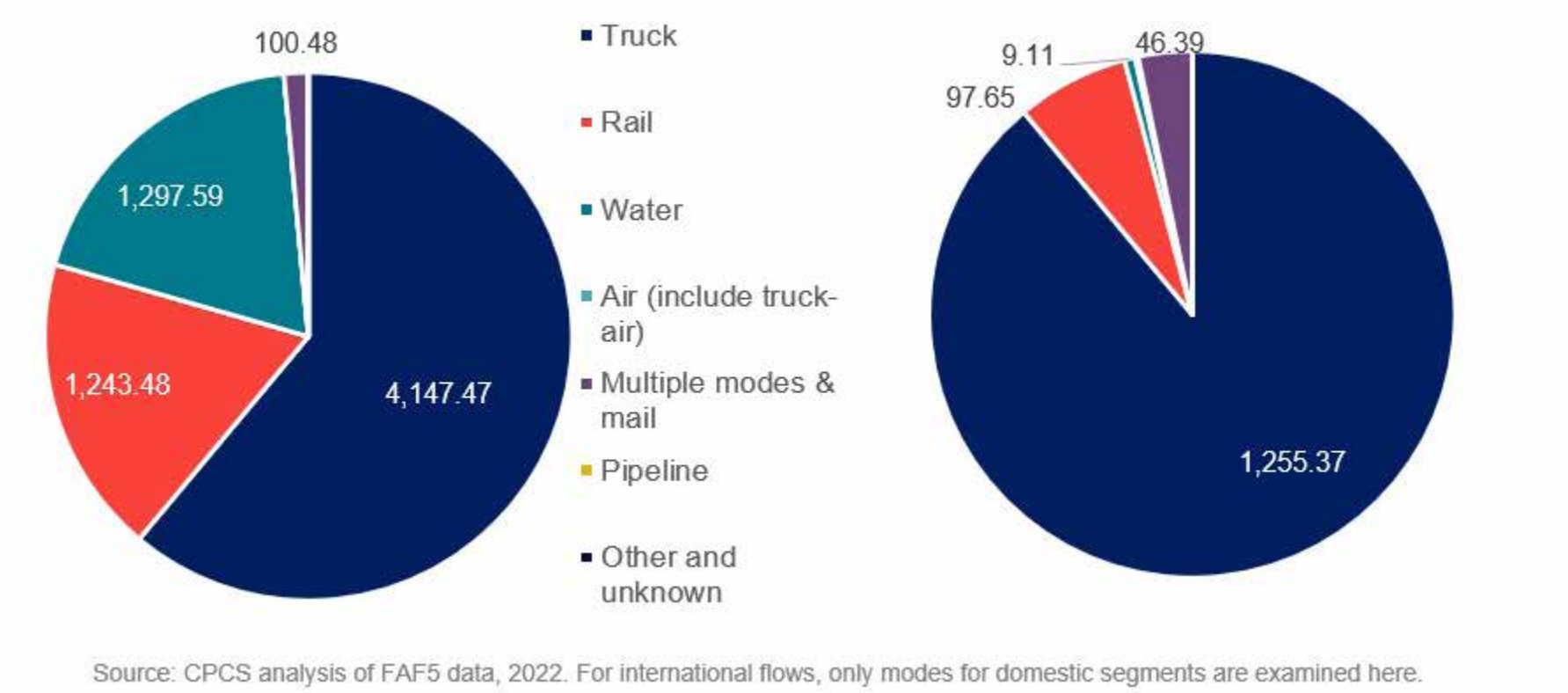


Figure 4C-3: Tonnage Modal Split for Non-Metallic Minerals Manufacturing

Figure 4C-4: Value Modal Split for Non-Metallic Minerals Manufacturing

Mode	Volume		Value	
	Thousands of Tons	Share	Millions of Dollars	Share
Truck	4,147.47	61.09%	1,255.37	88.94%
Rail	1,243.48	18.32%	97.65	6.92%
Water	1,297.59	19.11%	9.11	0.65%
Air	0.05	0.00%	2.93	0.21%
Multiple modes and mail	100.48	1.48%	46.39	3.29%
Pipeline	0	0.00%	0	0.00%
Other/Unknown	0.14	0.00%	0.03	0.00%
Total	6,789.21	100%	1,411.48	100%

Source: CPCS analysis of FAF5 data, 2022. For international flows, only modes for domestic segments are examined here.

Table 4C-5: Modal Split for Nonmetal Minerals Manufacturing Commodities in Northwest Indiana

Mode	Volume		Value	
	Thousands of Tons	Share	Millions of Dollars	Share
Domestic	5,948.15	87.61%	1,216.61	86.19%
Import	663.85	9.78%	67.61	4.79%
Export	177.21	2.61%	127.25	9.02%
Total	6,789.21	100%	1,411.47	100%

Source: CPCS analysis of FAF5 data, 2022

Table 4C-6: Flow Type for Nonmetal Minerals Manufacturing Commodities in Northwest Indiana

Machinery Manufacturing

SCTG Code	SCTG Name	Description
34	**Machinery**	Machinery like engines, fans, or hand tools

Table 4C-7: Commodities Considered in Machinery Manufacturing FAF Analysis

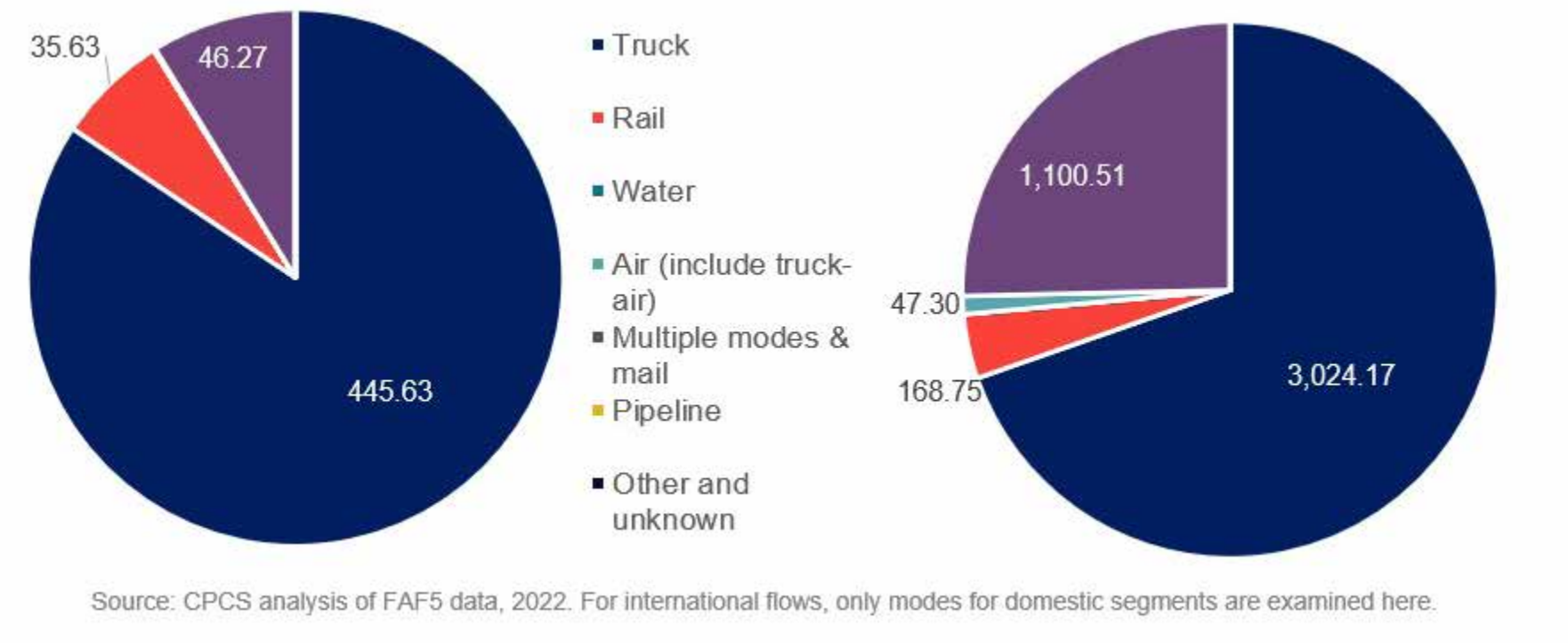


Figure 4C-5: Tonnage Modal Split for Machinery Manufacturing

Figure 4C-6: Value Modal Split for Machinery Manufacturing

Mode	Volume		Value	
	Thousands of Tons	Share	Millions of Dollars	Share
Truck	445.63	84.37%	3,024.17	69.67%
Rail	35.63	6.75%	168.75	3.89%
Water	0	0.00%	0	0.00%
Air	0.64	0.12%	47.30	1.09%
Multiple modes and mail	46.27	8.76%	1,100.51	25.35%
Pipeline	0	0.00%	0	0.00%
Other/Unknown	0.00	0.00%	0.02	0.00%
Total	528.18	100%	4,340.74	100%

Source: CPCS analysis of FAF5 data, 2022. For international flows, only modes for domestic segments are examined here.

Table 4C-8: Modal Split for Machinery Manufacturing Commodities in Northwest Indiana

Mode	Volume		Value	
	Thousands of Tons	Share	Millions of Dollars	Share
Domestic	389.78	73.79%	2,815.42	64.86%
Import	79.10	14.98%	749.77	17.27%
Export	59.32	11.23%	775.56	17.87%
Total	528.18	100%	4,340.74	100%

Source: CPCS analysis of FAF5 data, 2022

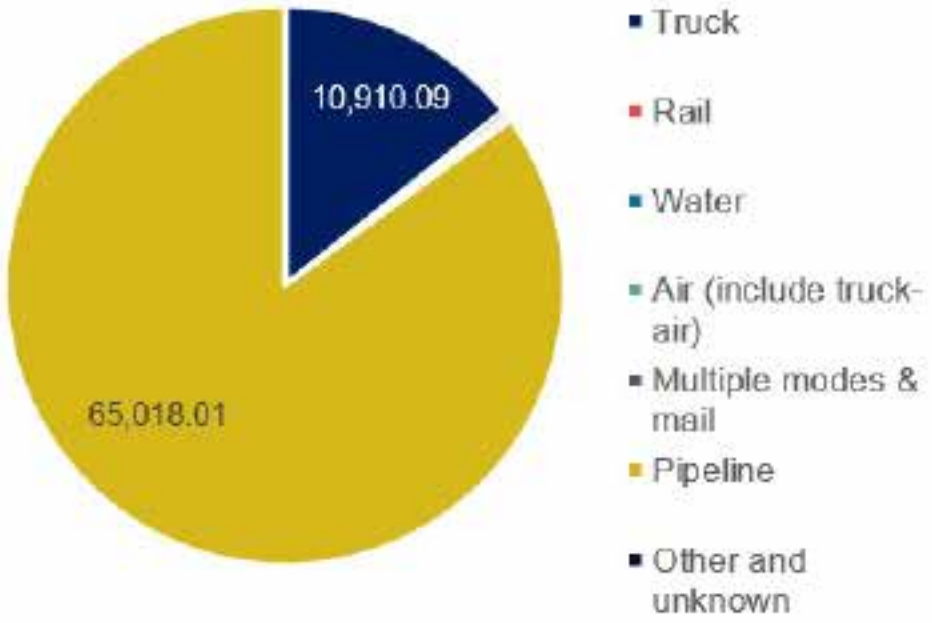
Table 4C-9: Flow Type for Machinery Manufacturing Commodities in Northwest Indiana

Oil and Gas

SCTG Code	SCTG Name
16	**Crude petroleum**
17	**Gasoline**
18	**Fuel oils**

Table 4C-10: Commodities Considered in Oil and Gas FAF Analysis

Figure 117: Tonnage Modal Split for Oil and Gas



Source: CPCS analysis of FAF5 data, 2022. For international flows, only modes for domestic segments are examined here.

Figure 4C-7: Tonnage Modal Split for Oil and Gas

Figure 118: Value Modal Split for Oil and Gas

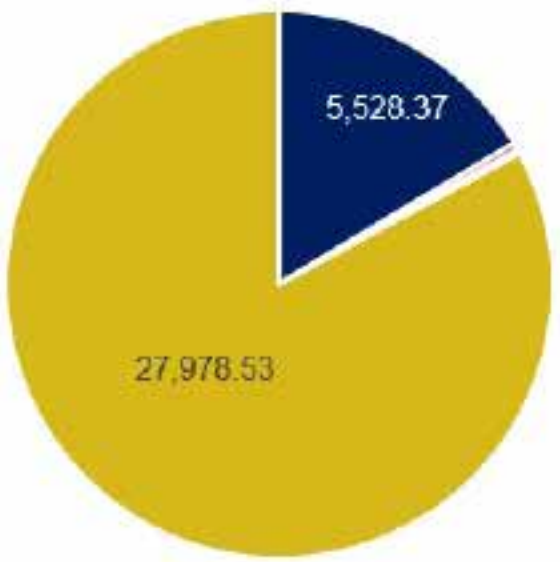


Figure 4C-8: Value Modal Split for Oil and Gas

Mode	Volume		Value	
	Thousands of Tons	Share	Millions of Dollars	Share
Truck	10,910.09	14.27%	5,528.37	16.39%
Rail	289.24	0.38%	146.87	0.44%
Water	247.30	0.32%	78.46	0.23%
Air	0	0.00%	0	0.00%
Multiple modes and mail	0.63	0.00%	0.26	0.00%
Pipeline	65,018.01	85.03%	27,978.53	82.94%
Other/Unknown	0.01	0.00%	0.01	0.00%
Total	76,465.28	100%	33,732.5	100%

Source: CPCS analysis of FAF5 data, 2022. For international flows, only modes for domestic segments are examined here.

Table 4C-11: Modal Split for Oil and Gas Commodities in Northwest Indiana

Mode	Volume		Value	
	Thousands of Tons	Share	Millions of Dollars	Share
Domestic	59,788.28	78.19%	28,353.94	84.06%
Import	16,653.58	21.78%	5,372.05	15.93%
Export	23.42	0.03%	6.52	0.02%
Total	76,465.28	100%	33,732.50	100%

Source: CPCS analysis of FAF5 data, 2022

Table 4C-12: Flow Type for Oil and Gas Commodities in Northwest Indiana

Food Manufacturing

SCTG Code	SCTG Name
01	**Live animals/fish**
02	**Cereal grains**
03	**Other agricultural products**
05	**Meat/seafood**
06	**Milled grain products**
07	**Other foodstuffs**
08	**Alcoholic beverages**
09	**Tobacco products**

Table 4C-13: Commodities Considered in Food Manufacturing FAF Analysis

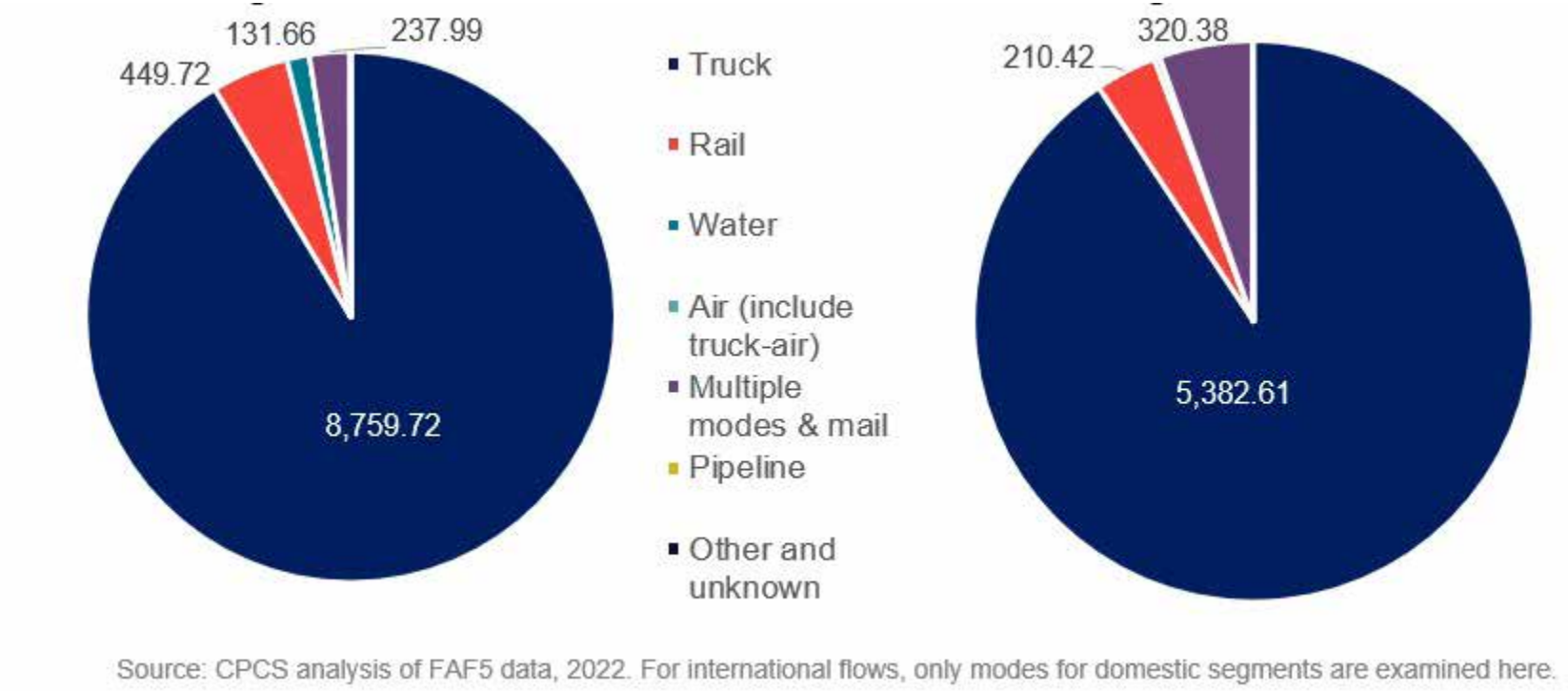


Figure 4C-9: Tonnage Modal Split for Food Manufacturing

Figure 4C-10: Value Modal Split for Food Manufacturing

Mode	Volume		Value	
	Thousands of Tons	Share	Millions of Dollars	Share
Truck	8,759.72	91.43%	5,382.61	90.69%
Rail	449.72	4.69%	210.42	3.55%
Water	131.66	1.37%	18.94	0.32%
Air	0.14	0.00%	1.33	0.02%
Multiple modes and mail	237.99	2.48%	320.34	5.40%
Pipeline	0	0.00%	0	0.00%
Other/Unknown	1.46	0.02%	1.59	0.03%
Total	9,580.69	100%	5,935.27	100%

Source: CPCS analysis of FAF5 data, 2022. For international flows, only modes for domestic segments are examined here.

Table 4C-14: Modal Split for Food Manufacturing Commodities in Northwest Indiana

Mode	Volume		Value	
	Thousands of Tons	Share	Millions of Dollars	Share
Domestic	9,226.57	96.30%	5,563.43	93.74%
Import	73.86	0.77%	115.63	1.95%
Export	280.25	2.93%	256.21	4.32%
Total	9,580.69	100%	5,935.27	100%

Source: CPCS analysis of FAF5 data, 2022

Table 4C-15: Flow Type for Food Manufacturing Commodities in Northwest Indiana

Transportation and Warehousing

SCTG Code	SCTG Name
36	**Motorized vehicles**
37	**Transportation equipment**

Table 4C-16: Commodities Considered in Transportation Equipment FAF Analysis

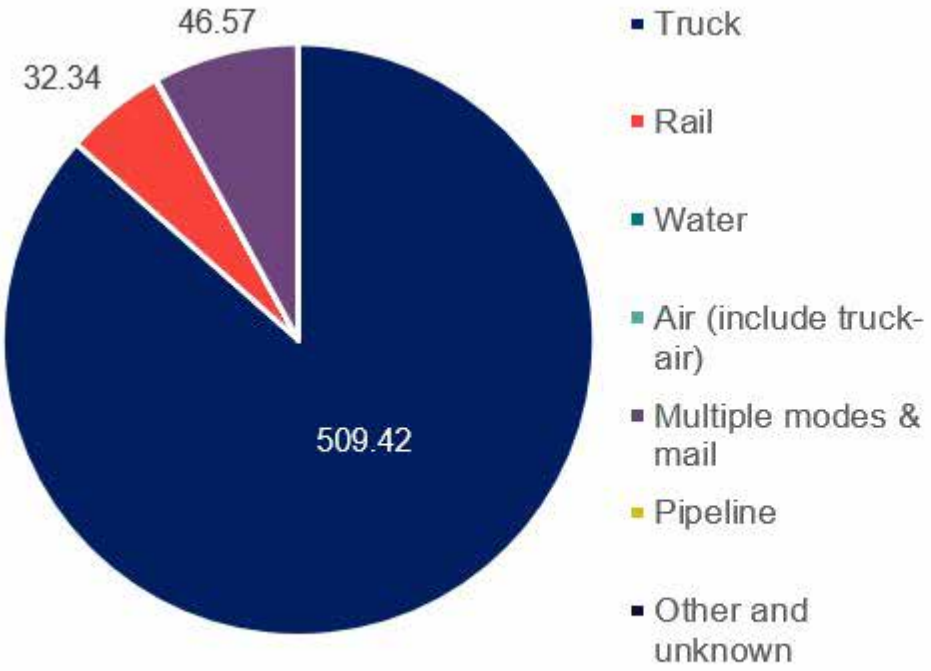


Figure 4C-11: Tonnage Modal Split for Transportation Equipment

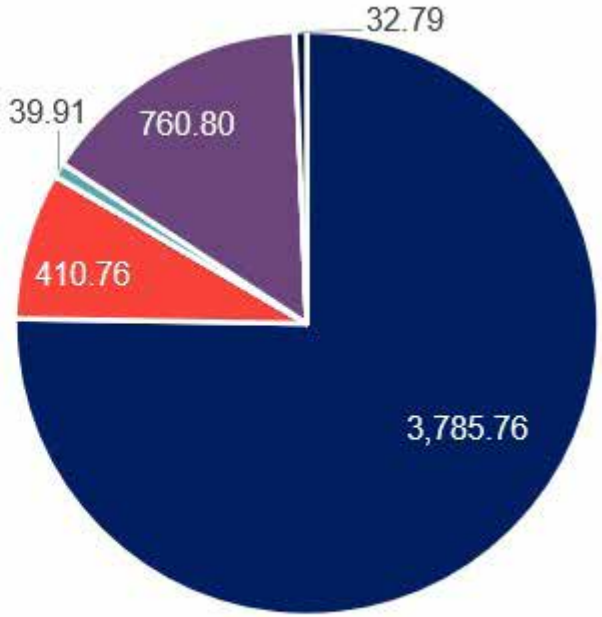


Figure 4C-12: Value Modal Split for Transportation Equipment

Source: CPCS analysis of FAF5 data, 2022. For international flows, only modes for domestic segments are examined here.

Mode	Volume		Value	
	Thousands of Tons	Share	Millions of Dollars	Share
Truck	509.42	86.51%	3,785.76	75.26%
Rail	32.34	5.49%	410.76	8.17%
Water	0	0.00%	0	0.00%
Air	0.33	0.06%	39.91	0.79%
Multiple modes and mail	46.57	7.91%	760.80	15.13%
Pipeline	0	0.00%	0	0.00%
Other/Unknown	0.19	0.03%	32.79	0.65%
Total	588.85	100%	5,030.02	100%

Source: CPCS analysis of FAF5 data, 2022. For international flows, only modes for domestic segments are examined here.

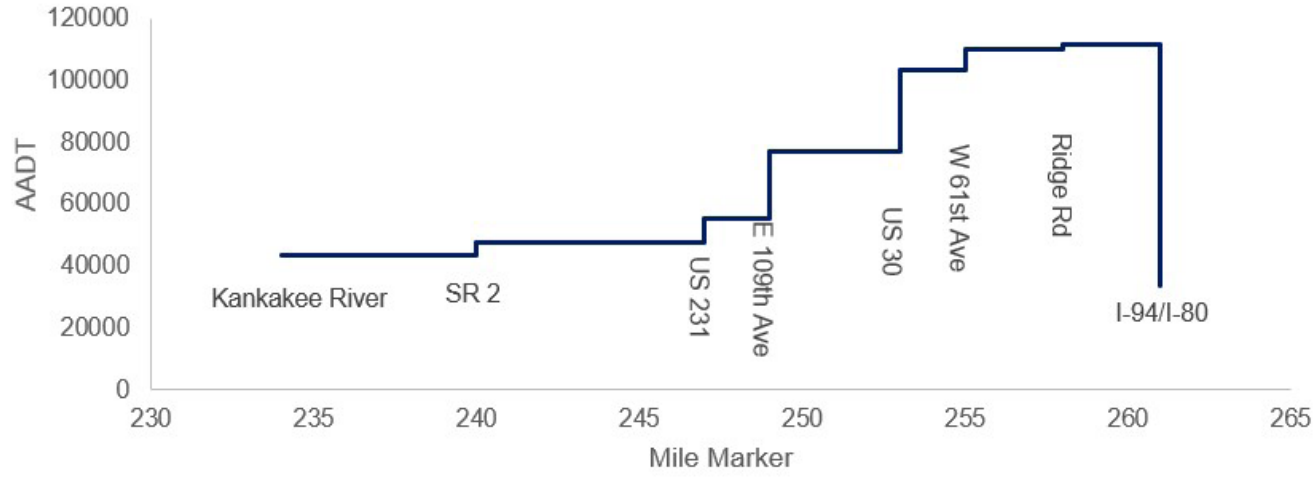
Table 4C-17: Modal Split for Transportation Equipment in Northwest Indiana

Mode	Volume		Value	
	Thousands of Tons	Share	Millions of Dollars	Share
Domestic	376.15	63.88%	2,964.94	58.94%
Import	80.56	13.68%	657.06	13.06%
Export	132.14	22.44%	1,408.02	27.99%
Total	588.85	100%	5,030.02	100%

Source: CPCS analysis of FAF5 data, 2022

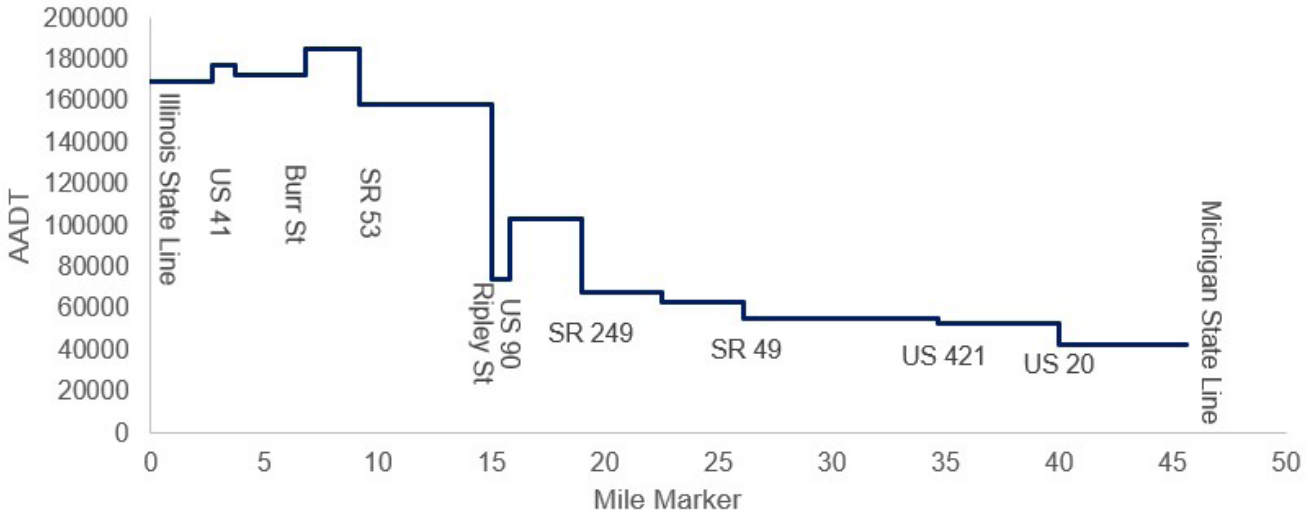
Table 4C-18: Flow Type for Transportation Equipment in Northwest Indiana

Appendix 4D. AADT Profile



Source: CPCS of HPMS 2019 data. Mile Markers – System 1 Roads (INDOT) 2012, Indiana.edu, 2022.

Figure 4D-1: I-65 AADT in Northwest Indiana, 2019



Source: CPCS of HPMS 2019 data, 2022. Mile Markers – System 1 Roads (INDOT) 2012, Indiana.edu, 2022.

Figure 4D-2: I-94 AADT in Northwest Indiana, 2019

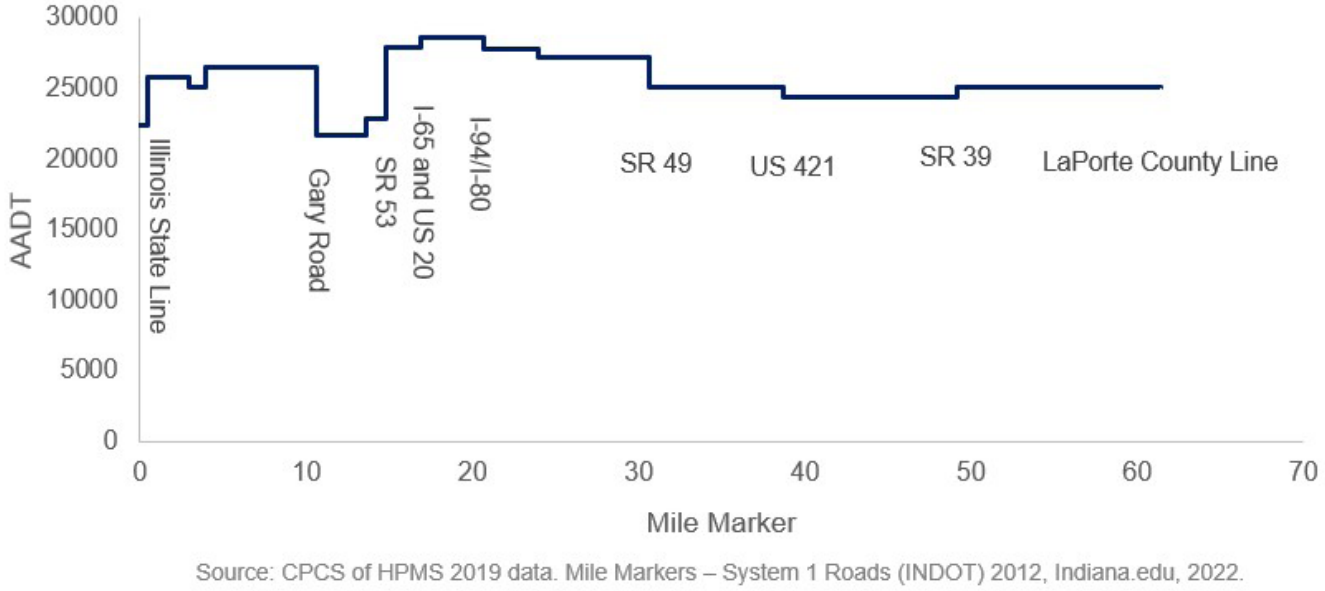


Figure 4D-3: I-90 AADT in Northwest Indiana, 2019

Appendix E. Truck Parking Inventory

City	County	Name	Number of spaces*	Type	Address
Burns Harbor	Porter	Pilot's Travel Center #445	120	Private	243 Melton Road, Burns Harbor, IN 46304
Dyer	Lake	Speedway	8	Private	US30, 630 E. Joliet St, Dyer IN 46311
Gary	Lake	Love's Travel Shop #417	150	Private	I-94, Exit 9, 3150 Grant St., Gary IN 46408
Gary	Lake	Petro Travel Center #369	405	Private	I-90/I-84, Exit 9, 3001 Grant Street, Gary IN 46408
Gary	Lake	Pilot Travel Center #271	236	Private	I-80/94 Exit 6, 2501 Burr Street, Gary IN 46406
Gary	Lake	TA Travel Center #010	318	Private	I-80/ I-94, Exit 6, Burr St., 2510 Burr St, Gary IN 46408
Gary	Lake	Mr. Fuel Travel Center #719	19	Private	I-94 Exit 6, 2945 Burr Street, Gary IN 46406
Gary	Lake	Speedway	16	Private	3201 Grant Street, Gary IN 46408
Gary	Lake	Colfax Parking	360	Private	1500 Colfax St, Gary, IN 46406
Gary	Lake	Transport Properties	571	Private	8121 US 20, Gary, IN 46403
Hammond	Lake	IMK Marina Fuel Stop	20	Private	I-90 Ex 5 (US41), 4705 Calumet Ave, Hammond IN 46327
Hammond	Lake	Shell	10	Private	3350 Calumet Avenue, Hammond IN 46320
Hammond	Lake	Cabela's	27	Private	7700 Cabela Dr, Hammond, IN 46324
Hanna	La Porte	Hank's Truck Stop	6	Private	1799 US 30, Hanna, IN 46340
Hebron	Porter	Flying J Travel Center #653	385	Private	3231 E 181ST AVE Hebron, IN 46341

Table 4E: Truck Parking Inventory Northwest Indiana

City	County	Name	Number of spaces*	Type	Address
Highland	Lake	Pilot Travel Center #31	10	Private	I-80/94 Exit 2, 8150 Indianapolis Boulevard, Highland IN 46322
Hobart	Lake	Speedway	20	Private	4733 W 61st Ave, Hobart, IN 46342
Lake Station	Lake	Flying J Travel Center #650	385	Private	I-94 & Exit 15b, 1401 Ripley Street, Lake Station IN 46405
Lake Station	Lake	Mr. Fuel Travel Center #1020	8	Private	I-80 I-94 Exit 15B, 1235 Ripley Street, Lake Station IN 46405
Lake Station	Lake	Road Ranger	15	Private	I-80 Exit 15A, 2151 Ripley Street, Lake Station IN 46405
Lake Station	Lake	TA Travel Center #219	252	Private	I-80/I-94, Exit 15B, 1201 Ripley Street, Lake Station IN 46405
La Porte	La Porte	Speedway	4	Private	I-94 Ex 40a, 5905 N US 35, La Porte IN 46350
La Porte	La Porte	Gallops La Porte	18	Private	1877 US 20, La Porte, IN 46350
La Porte	La Porte	Family Express	4	Private	1874 US 20, La Porte, IN 46350
Merrillville	Lake	Speedway	10	Private	6325 East Lincoln Highway, Merrillville IN 46410
Michigan City	La Porte	Michigan City Welcome Center Westbound I-94	31	Public	I-94 Westbound, Michigan City, IN 46360
Michigan City	La Porte	Speedway	50	Private	2884 N US Hwy 421, Michigan City IN

Table 4E: Truck Parking Inventory Northwest Indiana

City	County	Name	Number of spaces*	Type	Address
Porter	Porter	TA Travel Center #220	212	Private	I-94, Exit 22B, 1600 West US Hwy 20, Porter IN 46304
Porter	Porter	TA Travel Center #250	25	Private	I-94, Exit 22B, 1441 US Hwy 20, Porter, IN 46304
Rolling Prairie	La Porte	Indiana Toll Road Travel Plaza Three Eastbound I-80	40	Public	3 S Knute Rockne Plaza, Rolling Prairie, IN 46371
Rolling Prairie	La Porte	Indiana Toll Road Travel Plaza Three Westbound I-80	70	Public	1 N Wilbur Shaw Plaza, Wilbur Prairie, IN 56371
Valparaiso	Porter	Pilot Travel Center #36	25	Private	US 30 & SR 49, 4105 US 30 East, Valparaiso IN 46383
Wanatah	La Porte	Marathon Gas	14	Private	6352 W Us Highway 30, Wanatah, IN 46390
Westville	La Porte	Truck parking rest area WB I-90	119	Public	I-90 Westbound Rest Area, Westville, IN
Westville	La Porte	Truck parking rest area EB I-90	174	Public	I-90 Eastbound Rest Area, Westville, IN
Westville	La Porte	USA Truck Stop	25	Private	9954 US 6, Westville IN 46391

Source: CPCS analysis of All Stays, Trucker Path, Diesel Boss, Jason's Law Survey 2019, Land Line, and The Truck Parking Zone using Google Earth and Google Maps, 2022.

*Approximate count only.

Table 4E: Truck Parking Inventory Northwest Indiana

Appendix 4F: Acronyms & Abbreviations

AADT	Annual Average Daily Traffic
AASHTO	American Association of State Highway and Transportation Officials
ATRI	American Transportation Research Institute
BIL	Bipartisan Infrastructure Law
CFE	Chicago, Fort Wayne, & Eastern Railroad
CKIN	Chesapeake & Indiana
CN	Canadian National
CO	Carbon Monoxide
CRFC	Critical Rural Freight Corridor
CSS	Chicago South Shore & South Bend
CSXT	CSX Transportation
CUFC	Critical Urban Freight Corridor
DOT	Department of Transportation
DPM	Delay per Mile
EPA	Environmental Protection Agency
ESAL	Equivalent Single Axle Load
FAF	Freight Analysis Framework
FAST	Fixing America's Surface Transportation (Act)
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FRA	Federal Railroad Administration
FSC	Freight Steering Committee
GCIAA	Gary/Chicago International Airport Authority
GHG	Greenhouse Gas
HGL	Hydrocarbon Gas Liquid
HPMS	Highway Performance Monitoring System
IHB	Indiana Harbor Belt
INDOT	Indiana Department of Transportation
ITRCC	Indiana Toll Road Concession Company
GDP	Gross Domestic Product
GYY	Gary/Chicago International Airport

LNG	Liquid Natural Gas
LRTP	Long-Range Transportation Plan
LQ	Location Quotient
MAASTO	Mid America Association of State Transportation Officials
MCS	Motor Carrier Services
MUTCD	Manual of Uniform Traffic Control Devices
MTP	Metropolitan Transportation Plan
NAAQS	National Ambient Air Quality Standard
NAICS	North American Industry Classification System
NHFN	National Highway Freight Network
NHFP	National Highway Freight Program
NHS	National Highway System
NICTD	Northern Indiana Commuter Transportation District
NIRPC	Northwest Indiana Regional Planning Commission
NOx	Nitrogen Oxide
NPMRDS	National Performance Management Research Data Set
NTAD	National Transportation Atlas Database
NWI	Northwest Indiana
OS/OW	Oversize/Overweight
PDO	Property Damage Only
PFC	Passenger Facility Charge
PHFS	Primary Highway Freight System
PHMSA	Pipeline and Hazardous Materials Safety Administration
PM10	Particulate Matter less than 10 microns in diameter
PSR	Precision Scheduled Railroading
SR	State Route
STB	Surface Transportation Board
STIP	Statewide Transportation Improvement Program
STRAHNET	Strategic Highway Network
TPIMS	Truck Parking Information Management System
TTTR	Truck Travel Time Reliability
UNGSF	Underground Natural Gas Storage Facility
USACE	United States Army Corps of Engineers
VOC	Volatile organic compound


ATM
HOTEL



5 LAND USE & HOUSING

Finding Meaning

The three counties that make up the Northwest Indiana study area are incredibly diverse and incredibly beautiful. The region's 42 cities and towns range from the industrial cities of Gary, Hammond, and Whiting that make steel for America and were an integral part of Chicago's "big shoulders" that Carl Sandberg wrote about, to the quiet towns like Kouts and Hebron that dot its rural south. The landscape begins in the north with the shore of Lake Michigan and one of the country's newest national parks and extends south to the scenic Kankakee River Valley, with a wealth of forests and wetlands in between. Northwest Indiana is also defined by transportation resources, including four interstate highways, every railroad that radiates out of Chicago to the east, and America's last interurban railroad, the South Shore Line, which is not only surviving, but is building a new nine mile branch serving communities along the Indiana-Illinois state line.

This chapter addressing land use is part of the Northwestern Indiana Regional Planning Commission's update of 2019's *NWI 2050*. That document provides extensive information and insight, but does not include a Land Use element as such. Typically, land use planning is the province of local jurisdictions. In Northwest Indiana, individual city and county comprehensive plans have been completed that cover about half of the region's 1,761 square miles, an area 45% larger than the State of Rhode Island. But this element will address regional issues that include population trends, growth patterns, region policy, urban and rural design, and the all-important relationship between transportation and land use. Active transportation, public transit, freight movement and facilities, and the roadway network are all part of *NWI 2050+*.



The first part of this chapter is called "Finding Meaning," particularly appropriate for a regional land use element in an area as diverse as Northwest Indiana. This chapter is based on extensive fieldwork in all parts of the study area and conversations with people who live, work, make policy, and develop projects in Northwest Indiana. It summarizes trends, relationships, and observations, allowing facts and observations to help frame directions and priorities of successive phases of the plan. It is conceived as an analytic atlas of the region that covers the following subjects:

Existing land use patterns. This identifies major existing patterns on the ground. This provides the starting point for a regional plan and addresses the relationship between all modes of transportation and development. It also introduces the concept of a "15-minute city" - defined as an asset rich area within easy walking or bicycling distance of the center of town. While not new, this concept in contemporary times introduces the relationship between land use and active transportation.

Population trends. Regional land use policy begins with understanding population dynamics -- where growth is and is not occurring. It also investigates changes in growth over time, revealing different stages in the life of the region's communities.

Past planning efforts of communities. City and county plans are largely statements of goals and policies, and express perspectives of communities. Jurisdictions in an area as diverse as Northwest Indiana have differences, but also have significant shared goals, derived from a mutual desire to create better communities that offer a better life for their citizens.

Housing trends. While this is not a housing plan, residential development is the largest single consumer of urban land in Northwest Indiana. Affordable housing has also emerged as a universal concern, common to almost every city and county in the nation. This section will examine housing development, regional affordability, and provide the basis for scenario analysis in the second phase of this planning project.

Policy areas. This section groups communities that identify with each other and share similar trajectories into regional policy areas, understanding their individual differences and characteristics.

Focus transportation and commercial corridors. Corridors cross jurisdictions in an area as inter-related as Northwest Indiana. This analysis identifies areas of strategic interest for more detailed planning during subsequent phases of this plan element.

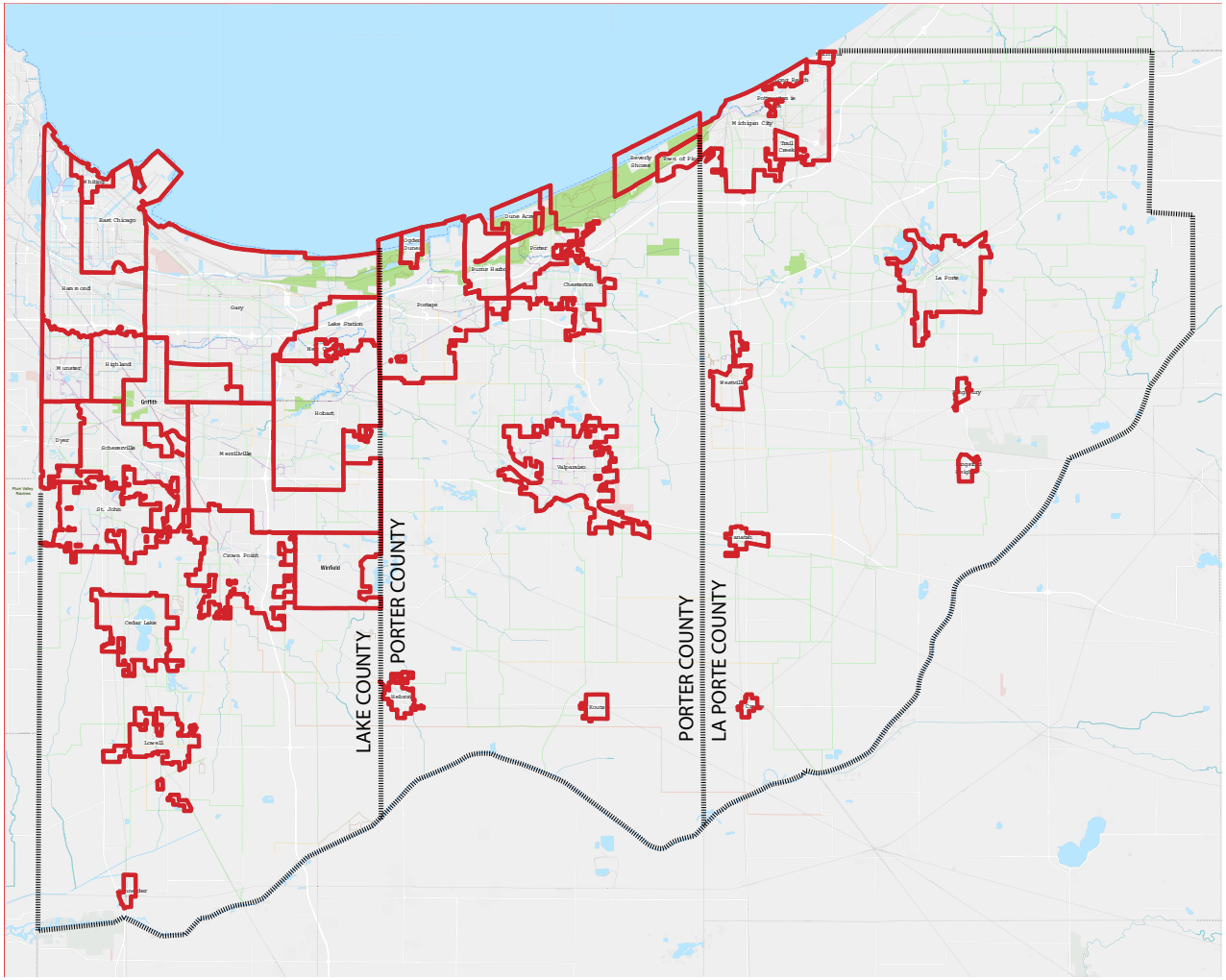


Figure 5-1: NWI 2050+ Study Area

Land Use Patterns

Figure 5-2 displays existing land use and development patterns in the three-county study region. Major patterns include:

Continuation of the industrial primacy of the northwestern and northern section of the region. Heavy industrial uses, including energy and steel production remain dominant in the area north of I-90 and west of SR 912 (Cline Avenue), surrounding predominantly residential neighborhoods in East Chicago and Whiting. US Steel and other related industries line the lakefront in Gary and Burns Harbor as well. Some vacant or obsolete industrial uses are in the process of redevelopment, including the Digital Crossroads development on a former utility site near the state line and west of the Horseshoe Hammond Casino. Other pockets of smaller scale industries are present throughout the area, but are primarily clustered in industrially zoned property along railroads or I-65.

The most contiguous residential development occurs along the western edge of the region. Continuous development occurs north of US 30 and west of SR 53 (Broadway), including cities built around traditional grid street networks; first tier suburbs along the West Lake corridor; and traditional neighborhoods in cities like Crown Point, Valparaiso, Michigan City, and La Porte. Suburban development is accelerating in the southwestern part of the region, including St. John, the southern edge of Dyer, Crown Point, and Cedar Lake.

This development pattern tends to suggest a layering (or transect) of growth that will be relevant to future regional land use policy. These include so-called "urban core" industrial communities; first tier suburbs that developed before World War II with commuters who worked either in Chicago or at industries to the north or east; post-war suburbs now reaching a mature state; a contemporary, low-density development layer that includes growth in unincorporated areas; free-standing towns, increasingly becoming the nuclei for new development around them; and the rural environment that makes up about half the area of the NIRPC region. Of particular interest from a regional perspective are:

- ***The size of Gary relative to its population.*** The land use map suggests a large amount of vacant land in the city, the result of disinvestment, demolition, and housing deterioration. While we discuss residential density later in this paper, Gary's gross density is among the lowest of all of the region's cities and towns. This places a heavy economic burden on a largely low-income city as it struggles to serve a large area.

- ***The large amount of land developed outside of current municipal limits***. Figure 5-3 blocks the areas of cities to emphasize development in unincorporated areas. This band of growth is about 70% of the total area of cities, but represents a much smaller component of the overall population.

Commercial development in established cities tends to focus on centers and nodes, including traditional city or town centers and major intersections. It also occurs along business strips with relatively shallow lot depths. In these communities, a major intersection may include one big box retailer, often serving a local or community-scale market. Examples of these kinds of commercial corridors include Calumet Avenue and Indianapolis Boulevard north of US 30 and Kennedy Avenue between 165th Street and I-94.

On the other hand, post-1980 commercial growth occurred in corridors with deeper commercial lots, and in larger intersection nodes where land intensive uses like big boxes and power centers located together according to regional access patterns. The largest of these is the Intersection of I-65 and US 30, a logical site that provided regional access while avoiding the freight congestion of the I-80/90/94 corridors to the north. This area, effectively the retail "downtown" of Northwest Indiana, covers about 2.1 square miles from Merrillville Road to South Colorado Street and includes Southlake Mall. Other examples of large commercial intersection clusters include Main and Indianapolis Boulevard in Highland and US 30 (Joliet Street) and US 41 (Wicker Avenue) in Schererville.

Major open spaces, including Indiana Dunes National Park and permanent environmental preserves are significant parts of the region's land use framework. While historically, preservation of the Indiana Dunes have competed with industrial and residential development and major transportation projects, the creation of the national park will secure the future of this major natural asset. Wetlands preserves related to the Calumet River, Deep River, and Kankakee River systems (including the Oak Savannah Trail, Oak Ridge Prairie Park, Hobart Marsh and Prairie Grove, and Grand Kankakee Park among others) will protect these important scenic and ecologically important greenbelts. Figure 5-4 illustrates environmental assets in the study area. A comparison of Figures 5-3 and 5-4 indicates that this belt of residential development beyond city limits follows a hilly topographic region and the watershed divide between Lake Michigan and the Kankakee River.

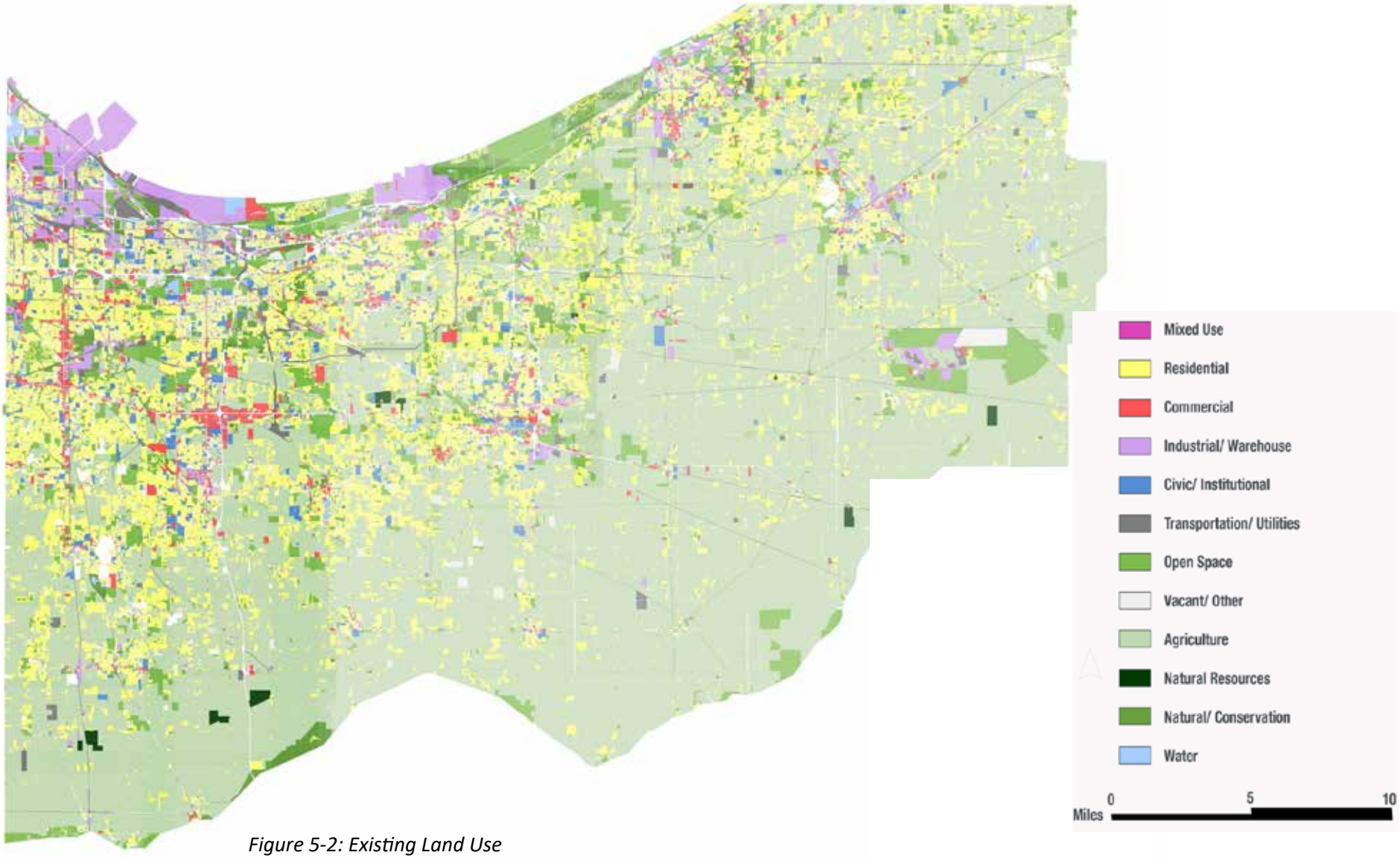


Figure 5-2: Existing Land Use







The Visual Transect. *Photographs on this and the facing page trace the gradation of development types and densities, moving from older urban environment to the north to the largely rural environment to the south and southeast.*



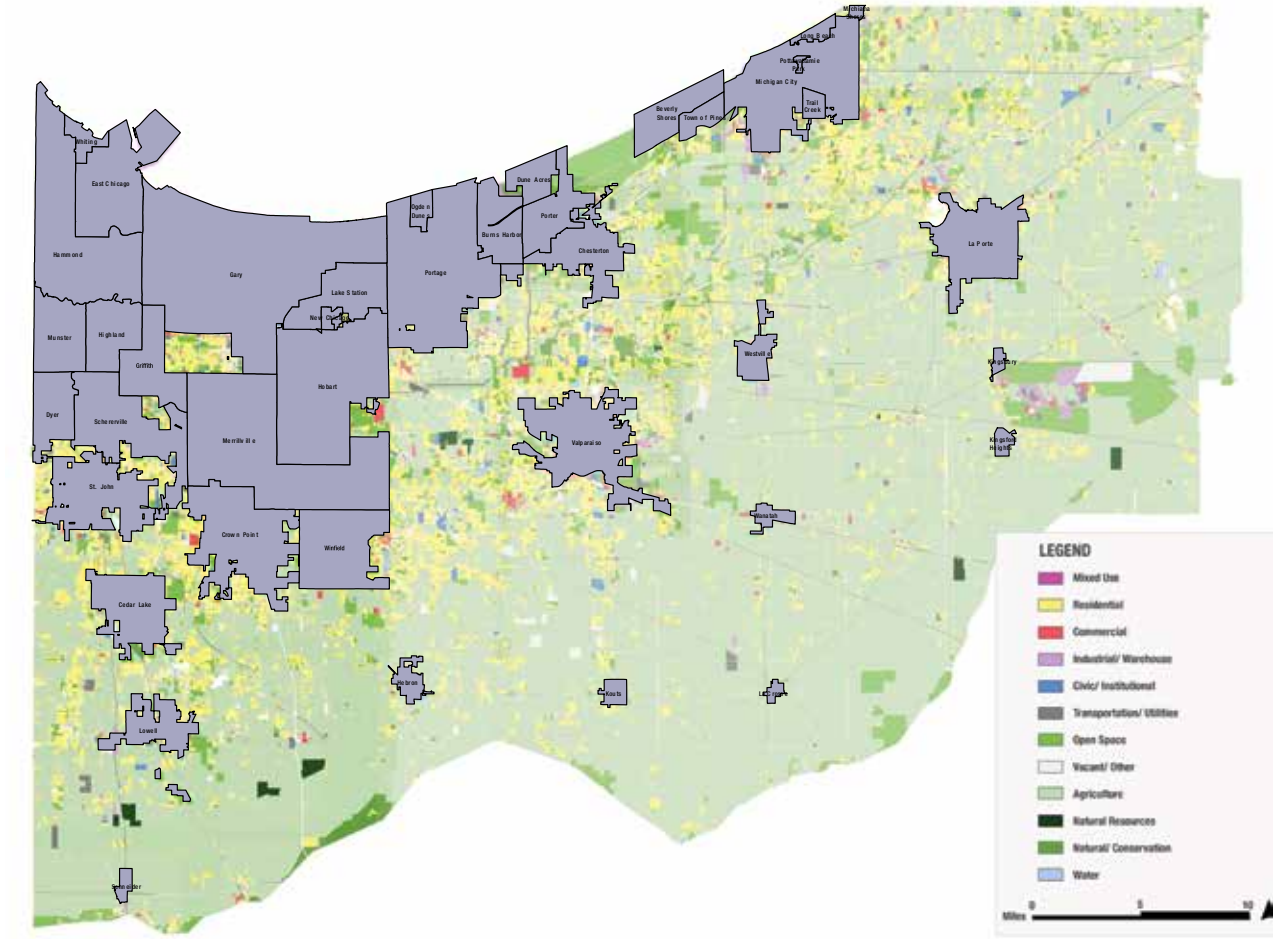


Figure 5-3: Developed Land Outside City Limits Note the relationship between this belt of low-density residential development and the line of slopes in Figure 5-4.







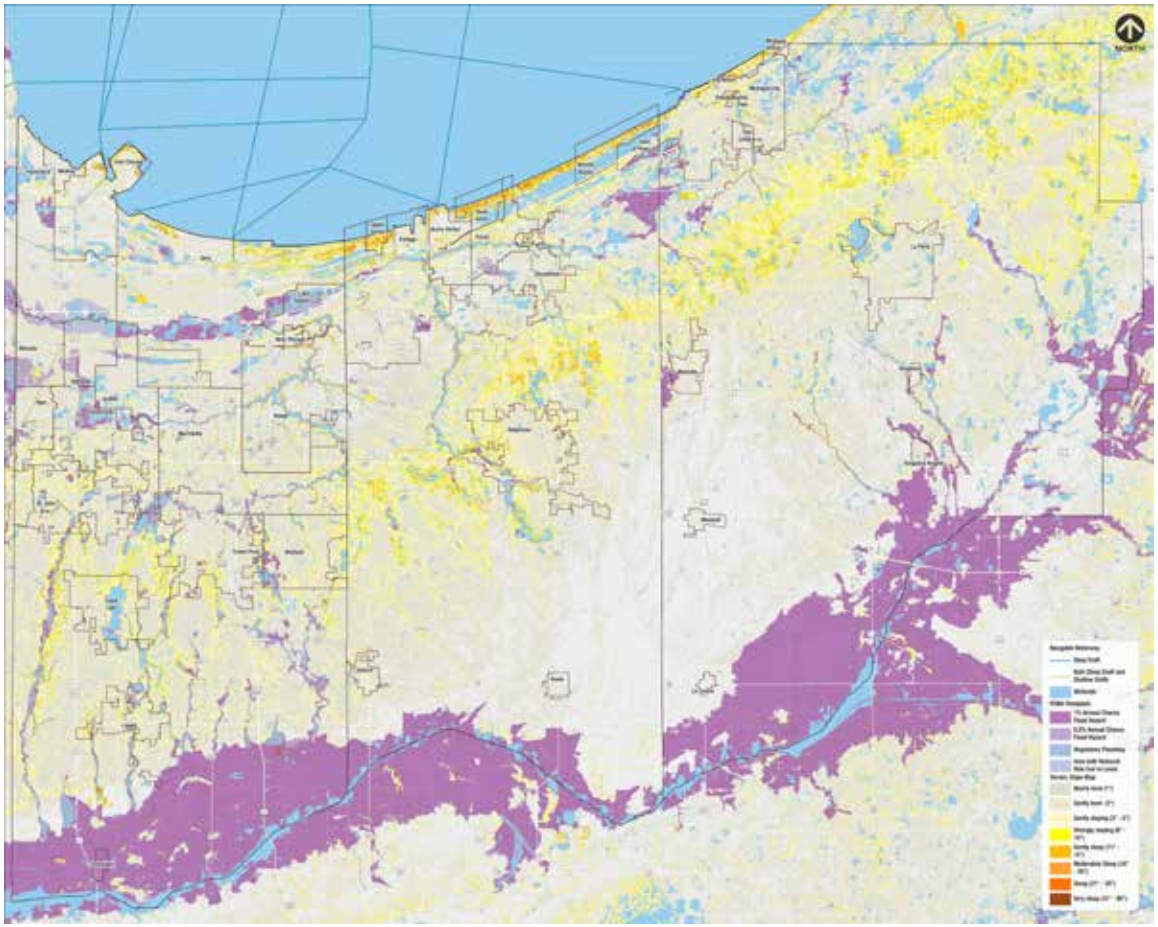




Figure 5- 4: Environmental Resources and Constraints

The 15-Minute City

The concept of a 15-minute city as a land use and urban design tool has significant antecedents. The early 20th Century planner Clarence Perry established the concept of a "neighborhood unit" with neighborhood institutions including a community center and elementary school at the center of a planned neighborhood. This concept, published in 1929, was itself derived from the Garden Cities movement and the work of new town planners such as Clarence Stein and Henry Wright who applied the idea in their famous Radburn, New Jersey development. Its contemporary version was developed by Carlos Moreno, a professor at the Sorbonne in Paris. It envisions a city with districts in which people can perform six essential functions (living, working, commerce, health, education, and entertainment) within a 15-minute walk or bike ride from their home.

The concept is difficult to realize retroactively in American cities, where a number of these functions are both dispersed and in many cases concentrated in relatively distant areas. Examples relevant to Northwest Indiana are health care, given concentrations of services in large hospitals and commuting to work. But other aspects are more attainable from the perspective of facility planning, design of new projects, land use, and active transportation planning. To that end, NIRPC has applied the concept to Northwest Indiana's geography, using city centers as the focal point. Figure 5-5 illustrates the results of that study, using a 15-minute walking radius and a 5-minute biking radius as standards. For this study, we have amended that to include a 10-minute biking radius, corresponding to a two mile trip at a speed of 12 miles per hour. The 2010 National Household Travel Survey by the Federal Highway Administration and cited by the League of American Bicyclists indicates that 40% of all trips are two miles or less in length. Figure 5-6 superimposes this short trip radius standard on the existing land use map to help relate destinations and places of residence.

These maps show that overlapping access from city and higher education centers, with all of their attendant services and land uses, is very good in the northwestern corner of the region and much of the Duneland tier, thinning out in what are now rapid growth areas to the south. However, barriers such as the Interstates and major highways and railroads compromise or block access entirely. These barriers are especially concentrated in the northwest, suggesting the importance of addressing these barrier problems in addition to linear infrastructure and land use policy.

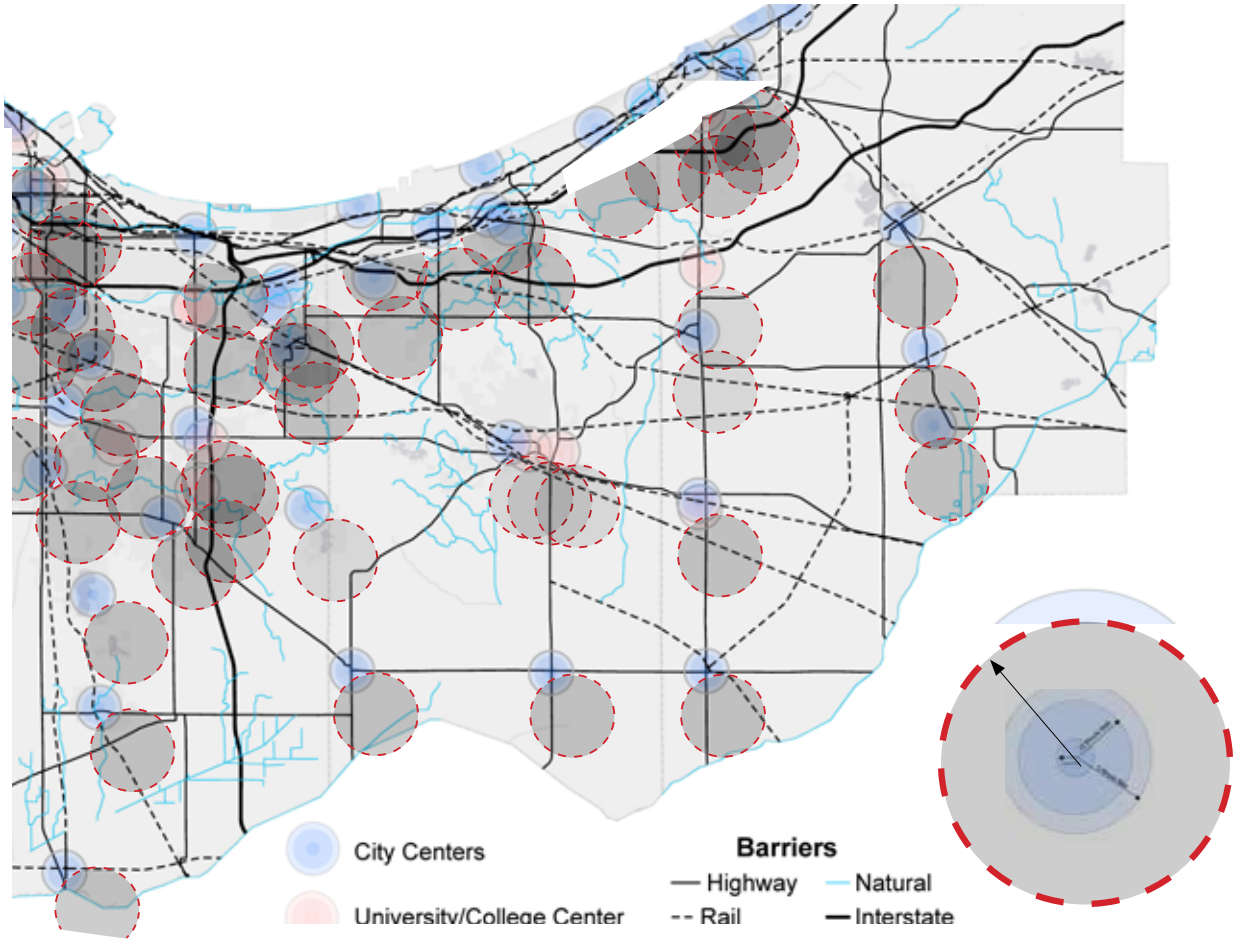


Figure 5-5: 15-Minute City Analysis with Barriers

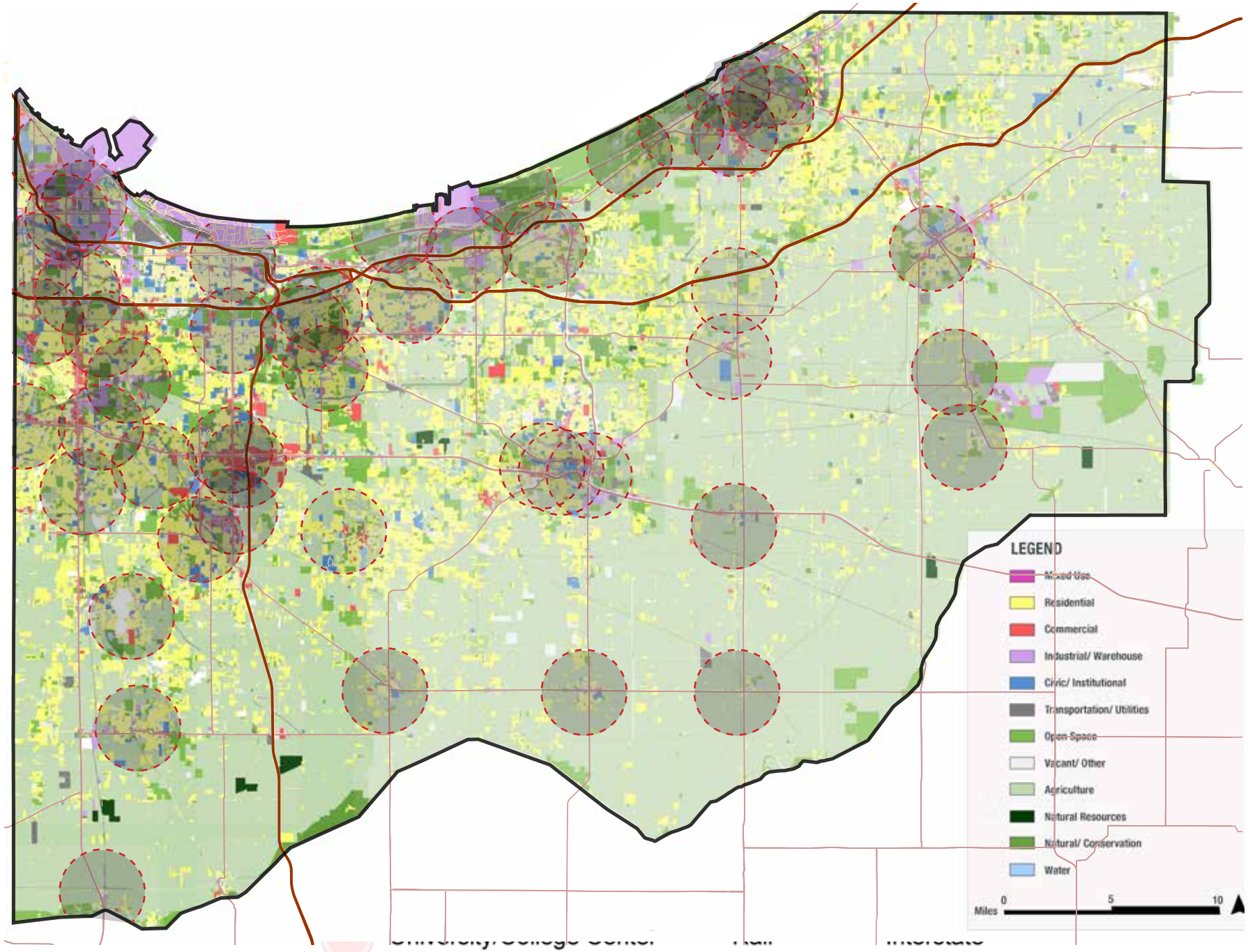


Figure 5-6: Two-mile (10 to 15 minute bike ride) Analysis with Land Use

Alternative Transportation and Land Use

Transportation and land use are highly related and alternative transportation facilities can be especially important, as historic photographs of the Chicago "L" being built in cornfields can attest. Clearly road networks are important as well, but the nature of automobile transportation (whether conventional, electric with enough charging stations, or autonomous) makes different destinations equally accessible. Therefore, automobiles tend to decentralize development, while active modes tend to build density and produce new land use patterns.

Projects now underway by the Northern Indiana Commuter Transportation District (NICTD) on the South Shore Line will have a major impact on development. The double tracking of the main line to Michigan City, now under construction, which will increase train frequency and reduce travel time to Chicago by 35%, has already catalyzed an $80 million Transit Oriented Development (TOD) in downtown Michigan City that will include a train station, 208 apartments, retail space, and a parking structure. The new Westlake line now under construction, extending a branch from a junction station in Hammond to Dyer will also have a major impact on development patterns.

In September of 2022, NIRPC released its Transit Oriented Development Program Funding Report, intended as a guide for new or evolving land uses at 18 transit nodes, including nine existing South Shore stations, four Westlake stations (including the relocated Hammond station), and five bus stations, three of which are on the Gary Transit Broadway BRT. The most significant land use transitions include major redevelopment around the new Hammond station and in the nearby Downtown district; new growth around the East Chicago station, the railroad's busiest; potential development at Gary's Metro Center; new transit oriented developments (TODs) at each of the Westlake stations; and a proposed TOD at Valparaiso's downtown transit node.

Trails also can generate significant development by adding access to a dual purpose facility that combines transportation and recreation. In Minneapolis, for example, the Midtown Greenway, a grade separated crosstown trail, has generated about $1.44 billion in new investment along its 5.5 mile route. Northwest Indiana's regional trails have many of the characteristics that make the Greenway an effective land and economic development tool -- use of railroad right-of-ways that serve centers and are effective transportation facilities, limited interruptions by cars, and high development standards. The region's excellent trails have undoubtedly had a significant, if underappreciated, effect on land use and should be seen from a development as well as a recreational perspective. As an example, the Gary ELevated – an innovative and exciting concept to adapt an above grade abandoned railroad loop that surrounds the core of the city, combined with TOD potential created by the upgrading of South Shore service, can create conditions for transformation of the Metro Center district.



Proposed TOD for Downtown Michigan City



TOD Concept for Munster/Dyer Station on Westlake Line Source: NIRPC



Trailhead on Erie-Lackawanna Trail

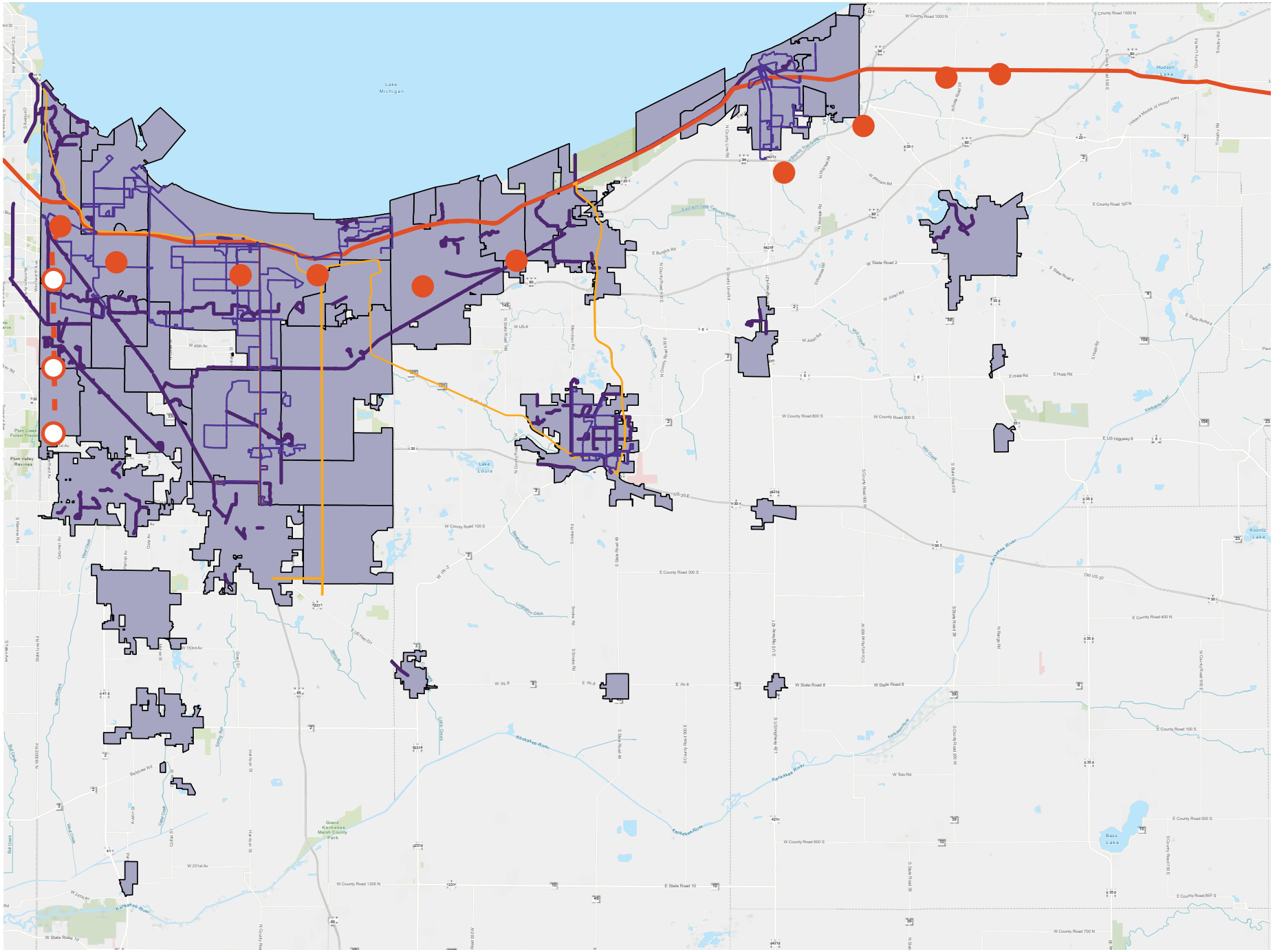


Figure 5-7: Alternative Transportation Facilities in the Northwest Indiana Region

Population Analysis

Examining the dynamics of population change can reveal much about the past and provide valuable information for the future. The approach here looks at both the long-term - the changes that have occurred over the last 40 years - and the short-term - how trends may have subtly changed during the decade between 2010 and 2020. Taken over a long period, changes in certain places have been dramatic. Some places that have experienced rapid growth did not exist in 1980. On the other hand, Gary was a large city that lost over half its population during that period.

We start by considering overall population change. Figure 5-8 below breaks population for three census years by county, separated by urban (within an incorporated municipality) and rural (potentially in a subdivision but in unincorporated areas).

Figure 5-9 looks at annual rate of change over time. A reasonable benchmark for a soundly growing city is about 1% (or more appropriately stated, a range that brackets 1%). Fast growing communities, including many metropolitan suburbs, will grow at annual rates over 2%. We must also note that growth rates for rapidly growing cities will naturally decrease because 1) the base on which the growth rate is calculated gets larger and 2) maturity brings a level of stability and very rapid growth almost inevitably slows a little.
These tables together display the following:

Overall growth in the three-county area would appear to be very slow. Over 40 years, the annual growth rate of the entire region is only about a tenth of one percent. But each county has a different story to tell.

Lake County predictably lost population as its older industrial cities (and especially Gary) declined substantially. But over the last ten years, countywide population loss has ended and the urban sector actually gained slightly, while rural

Location	1980		2010		2020	
	Population	% of Total	Population	% of Total	Population	% of Total
Lake County						
Urban	481,732	92.37%	451,196	90.97%	456,252	91.49%
Rural	39,793	7.63%	44,810	9.03%	42,448	8.51%
Total	**521,525**		**496,006**		**498,700**	
Porter County						
Urban	70,016	58.32%	94,809	57.69%	101,961	58.86%
Rural	50,043	41.68%	69,534	42.31%	71,254	41.14%
Total	**120,059**		**164,343**		**173,215**	
La Porte County						
Urban	70,663	65.01%	67,027	60.13%	66,689	59.32%
Rural	38,032	34.99%	44,440	34.99%	45,728	40.68%
Total	**108,695**		**111,467**		**112,417**	
Total NIRPC Area						
Urban	622,411	82.96%	613,032	79.43%	624,902	79.67%
Rural	127,868	17.04%	158,784	20.57%	159,430	20.33%
Total	**750,279**		**771,816**		**784,332**	

Figure 5-8: Population Change by County, 1980-2020

population declined at an average annual rate of about half a percent.

Over the long term, Porter County has experienced significant growth, with about 53,000 more people than the 1980 count, or a gain of just over 44%. However, taken over a 40 year period, that represents an average annual growth rate of just under 1% – a solid, manageable, but not extraordinary, number. Over the last ten years, Porter's growth rate has slightly underperformed its long-term average, at about half a percent per year. But its urban rate remained relatively constant, while growth outside of incorporated boundaries slowed.

La Porte County's population has remained almost constant over the last four decades. The net growth that it has experienced has occurred mostly outside city limits. However, in common with the trend in other counties, population in urban La Porte has leveled off over the last decade and rural population growth has slowed somewhat.

From an overall regional perspective, most of the region's population lives within municipal limits. About 160,000 people, or just over 20% of the population are in unincorporated county areas, or growth of about 31,000 people during the last twenty years. Municipal population has remained almost exactly the same in 2020 as in 1980. The 80/20 split in 2020 compares with an 83/17 split in 1980, with only La Porte registering a significant proportionate increase in non-municipal residents. Again, incorporated areas have grown more than unincorporated areas during the last ten years.

But these overall numbers mask significant dynamics in various parts of the region. The following pages look at these geographic differences in greater detail.

Location	1980-2020			2010-2020		
	Number	% Change	Average Annual Growth (Loss) Rate	Number	% Change	Average Annual Growth (Loss) Rate
Lake County						
Urban	-25,480	-5.29%	-0.14%	5,056	1.12%	0.11%
Rural	2,655	6.67%	0.16%	-2,362	-5.27%	-0.54%
Total	**-22,825**	**-4.38%**	**-0.11%**	**2,694**	**0.54%**	**0.05%**
Porter County						
Urban	31,945	45.63%	0.94%	7,152	7.54%	0.73%
Rural	21,211	42.39%	0.89%	1,720	2.47%	0.24%
Total	**53,156**	**44.27%**	**0.92%**	**8,872**	**5.40%**	**0.53%**
La Porte County						
Urban	-3,974	-5.62%	-0.14%	-338	-0.50%	-0.05%
Rural	7,696	20.24%	0.46%	1,288	2.90%	0.29%
Total	**3,722**	**3.42%**	**0.08%**	**950**	**0.85%**	**0.08%**
Total NIRPC Area						
Urban	2,491	0.40%	0.01%	11,870	1.94%	0.19%
Rural	31,562	24.68%	0.55%	646	0.41%	0.04%
Total	**34,053**	**4.54%**	**0.11%**	**12,516**	**1.62%**	**0.16%**

Figure 5-9: Rate of Population Change by County, 1980-2020

The Geography of Population Change

The maps on these pages compare the relative population history of census tracts in the region for the 1980-2020 and 2010-2020 periods. These maps break regions into statistical groups rather than fixed categories, so they are useful in comparing the relative performance of census tracts to one another. The lighter colors experienced both substantial absolute decline and the greatest statistical decline relative to other areas.

Taken over four decades, the fastest population growth occurred in the southwestern part of urban Lake County, specifically in the St. John, Winfield, eastern Crown Point, Cedar Lake, and eastern Schererville tracts. Outside of these areas, high relative growth occurred in three directions around Valparaiso and in scattered parts of Hammond and Munster.

Biggest population losses occurred in the northern industrial areas, including the southern and western tracts of Gary, and parts of Hammond and East Chicago. The map suggests what has been termed the “white flight” phenomenon, the migration of population south from Gary to Merrillville, Hobart, and farther south to high growth areas. Michigan City also experienced high relative loss, although not as dramatic as the northwest area.

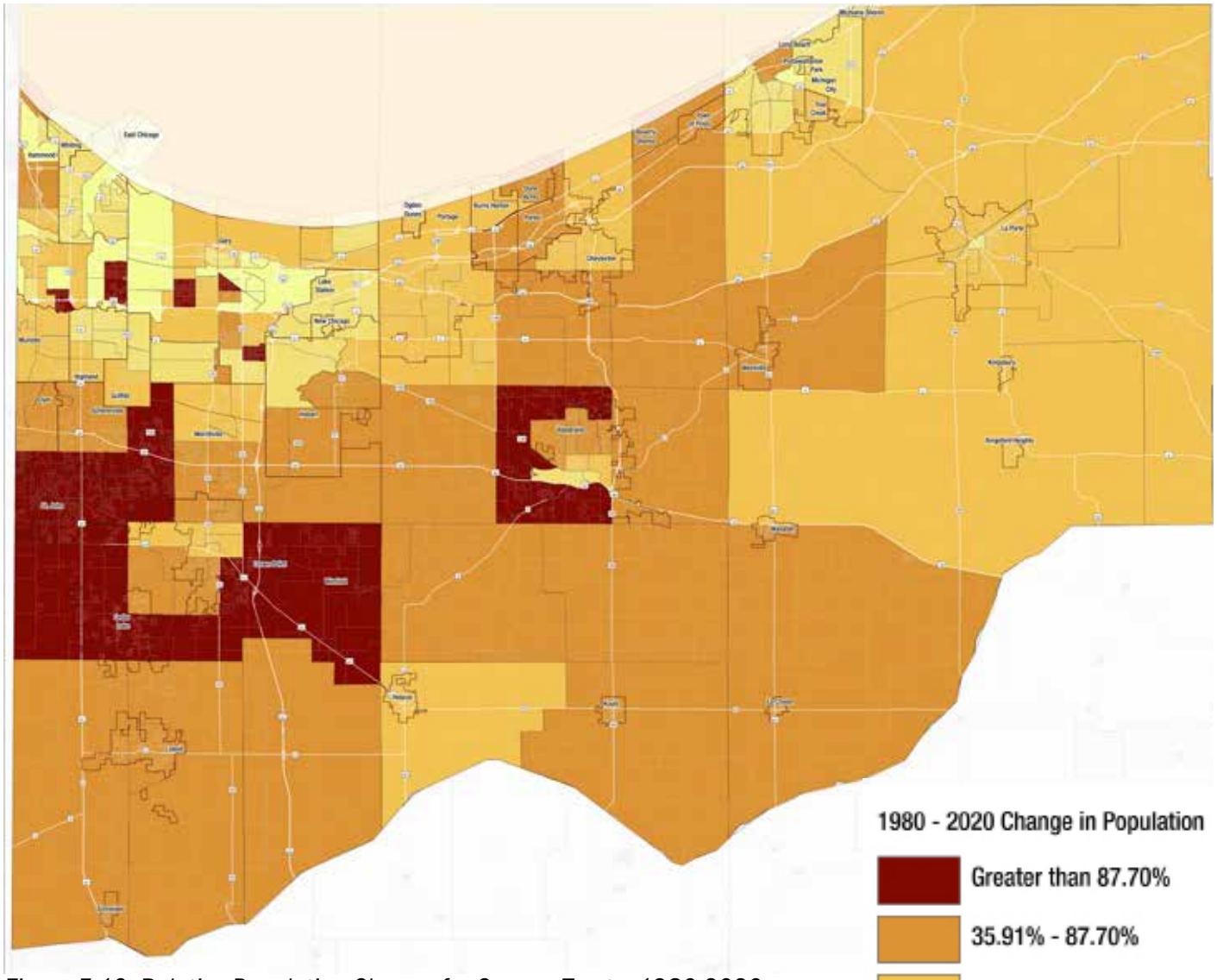


Figure 5-10: Relative Population Change for Census Tracts, 1980-2020

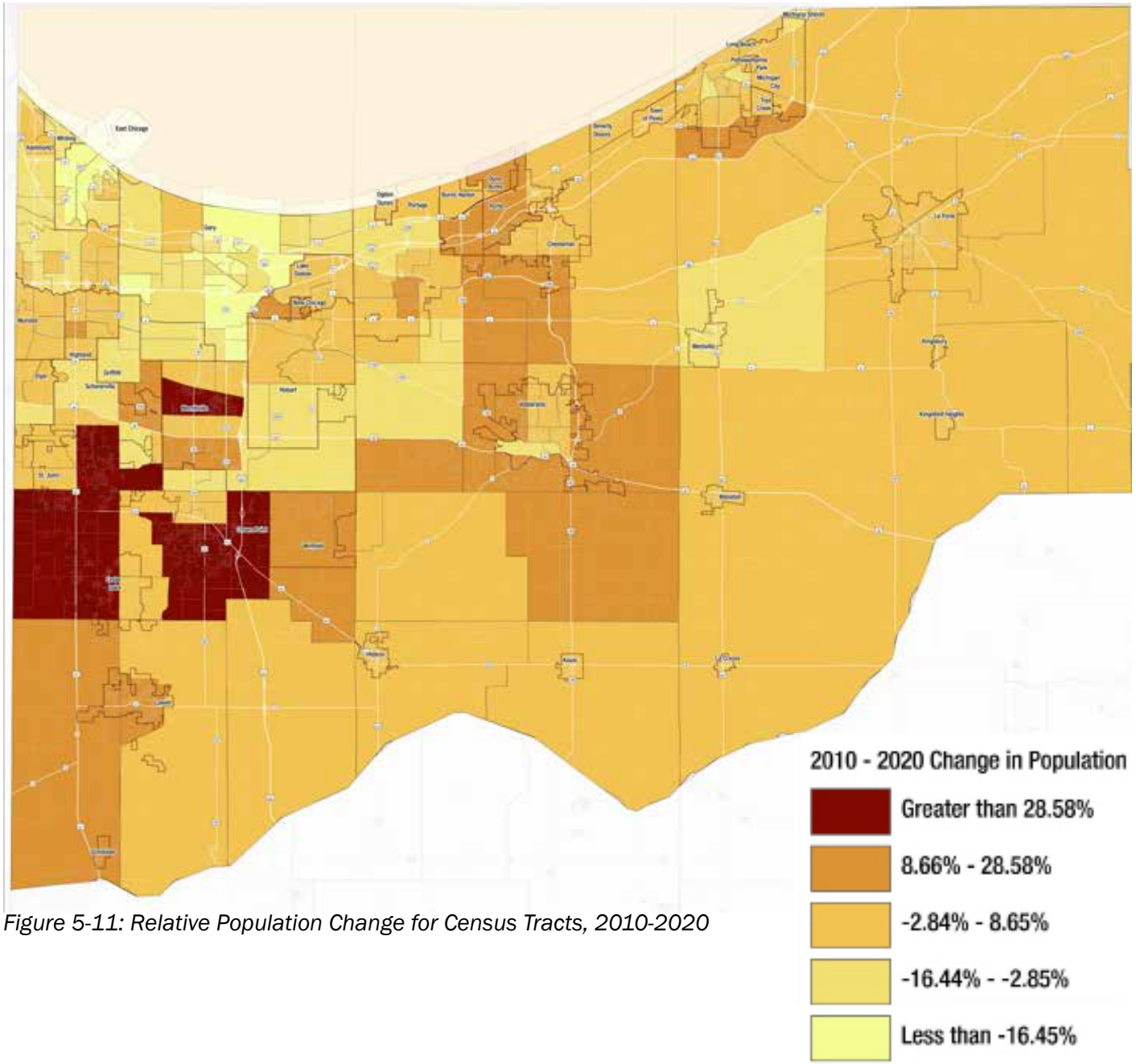


Figure 5-11: Relative Population Change for Census Tracts, 2010-2020

Figure 5-11 displays the same statistical relationships for regional census tracts for the 2010 to 2020 period and displays some interesting differences. The area of fastest growth has shifted west slightly, toward Crown Point and continuing in the St. John area. Population also grew substantially in the Merrillville census tract immediately northwest of the I-65/ US 30 commercial focus. The Michigan City area's performance improved significantly during the last decade (note the greater preponderance of the middle color shades) and Hammond and Lake Station's proportionate population loss also moderated somewhat. On the other hand, parts of Hammond along the Illinois border lost population, although some of these losses could be attributed to household change (smaller families or empty nesters in stable neighborhoods) rather than outmigration. Consistent with our previous discussion, relative population gain in rural areas and outside municipal limits ratcheted down a category.

The following section goes a step deeper into understanding changing populations, and examines the actual rate of population change for individual cities.

Annual Growth Rates

Figures 5-12 and 5-13 display the average annual rate of population change for 1980-2020 and 2010-2020 respectively. Growth rates are important for both evaluating trends and future population scenarios and determining land and housing development needs. During this long period, Winfield, St. John, and Schererville have demonstrated the highest sustained growth rate, in excess of 2% per year. Burns Harbor is also in this high growth group but is a less typical community. Other central Lake County cities as well as Valparaiso, Porter, and Chesterton in Porter County also demonstrated substantial annual growth. On the opposite end of the scale, the industrial cities along the lakefront lost population, with Gary losing an average of 2% of its population per year over the past four decades.

Lake County did not grow outside of its cities, while rural Porter and La Porte Counties have experienced moderate positive growth since 1980.

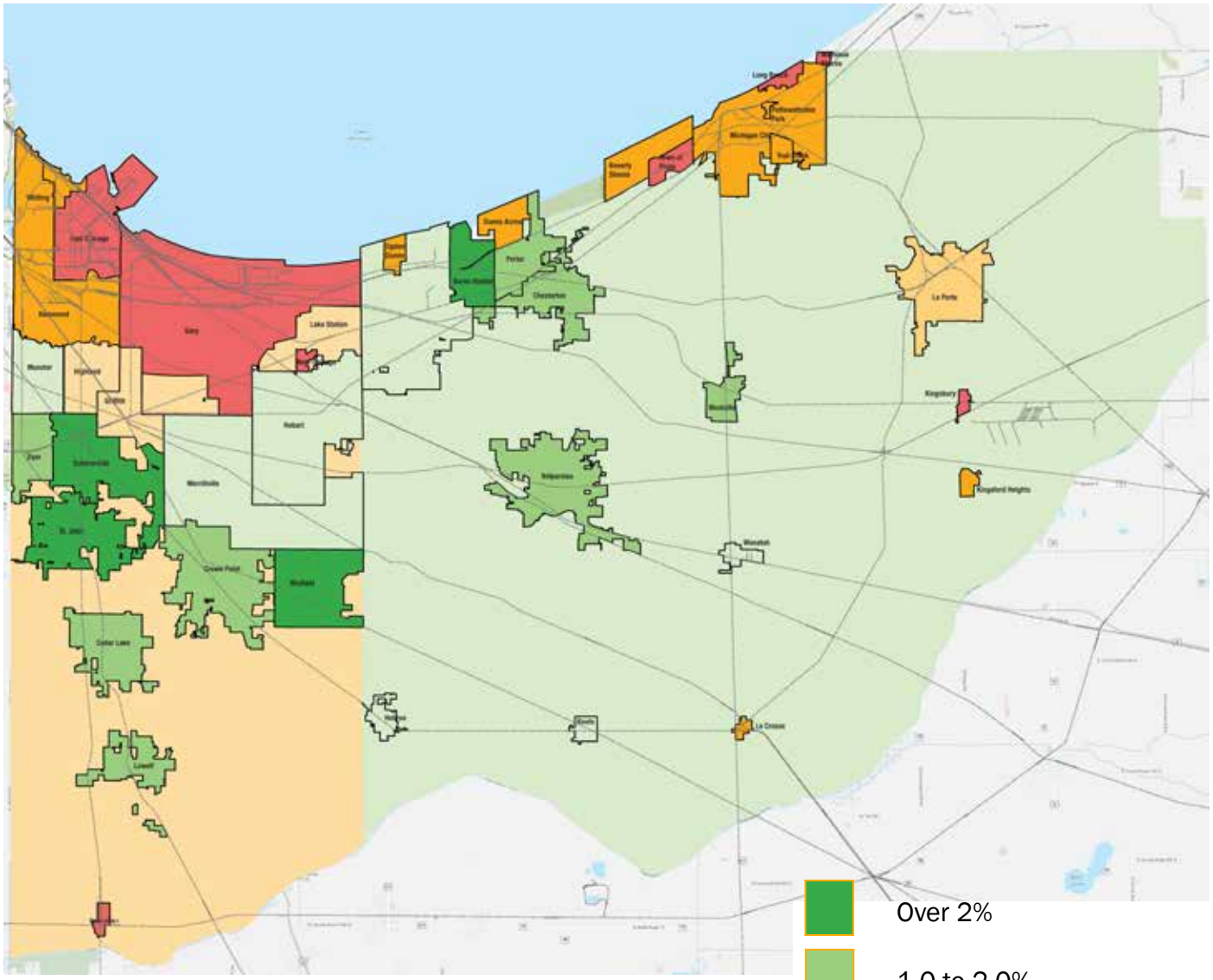


Figure 5-12: Average Annual Growth Rate for Cities and Rural Areas, 1980-2020

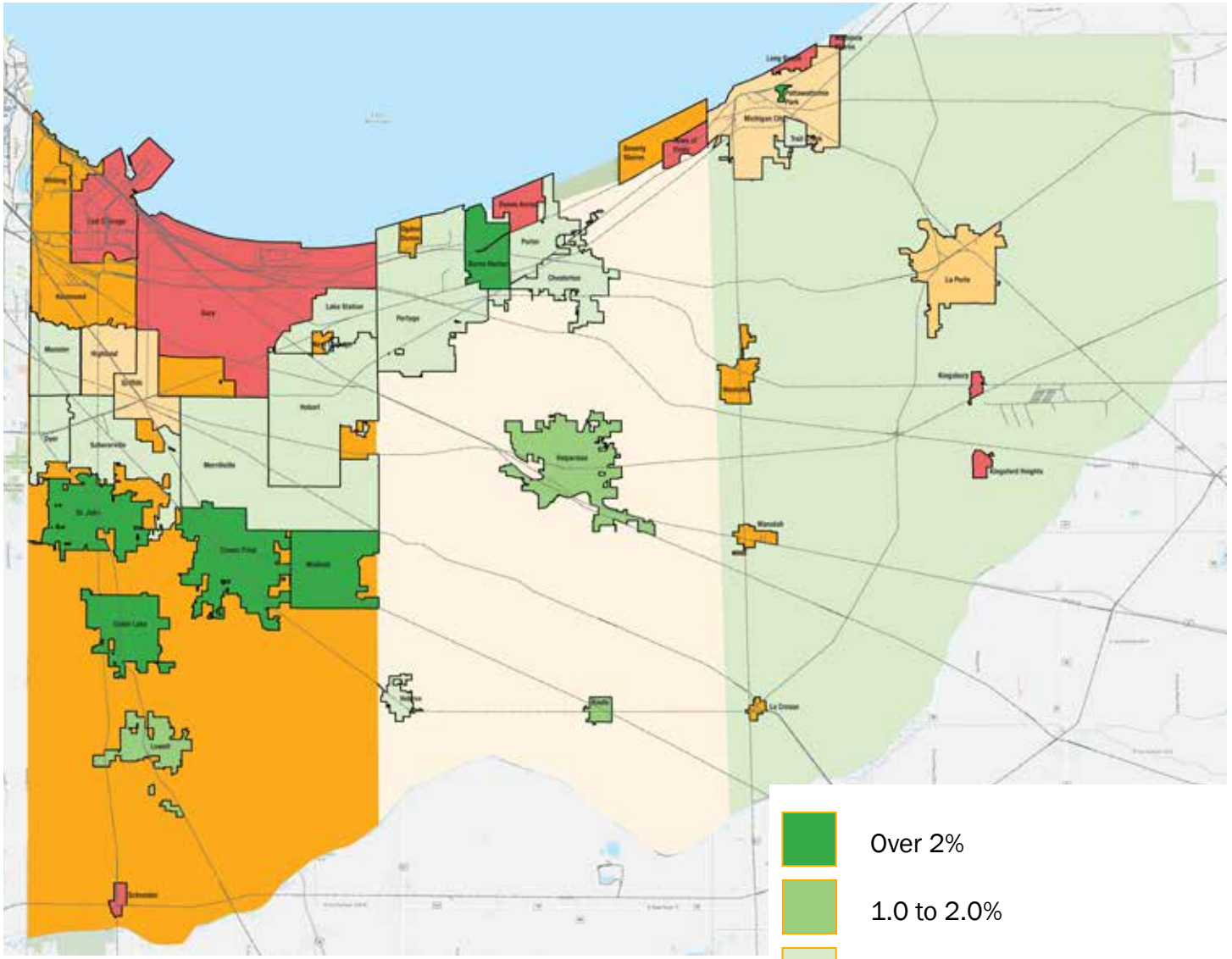


Figure 5-13: Average Annual Growth Rate for Cities and Rural Areas, 2010-2020

Figure 5-13 displays average annual change rates for the recent past, 2010 to 2020. Comparing the two maps shows continuing rapid growth in the central west cluster, with Cedar Lake and Crown Point emerging as high growth cities. Schererville and Dyer both dropped into the moderate growth category, suggesting that these two towns are entering a more mature growth phase. Other notable changes included Michigan City and Lake Station moving into the stable growth group, a very interesting development for a city that has experienced long term if moderate population declines; and Kouts' emergence as a relatively high-growth town. Growth rates in the rural counties outside of municipal limits also slowed or went negative during the most recent complete decade.

Comparing Recent and Past Performance

A direct comparison of long and recent term growth rates at least suggests a modest resurgence in some cities that have experienced steady and escalating population declines. Lake Station and Michigan City both went from negative to positive change rates. Highland went from slightly negative to slightly positive. Hammond's moderately negative rate stabilized, and Gary's very high negative rate has at least leveled out, offering some promise for the future.

Other interesting growth rate trends include

- Lowell's emergence as a relatively high growth center, joining the development cluster of south Lake County cities.
- A moderate but steady increase in growth rate in La Porte, less dramatic than Michigan City's transition but still a positive development.

A consistent theme is a level of cautious optimism for older cities and a sense that major initiatives for redevelopment are beginning to meet their goals.

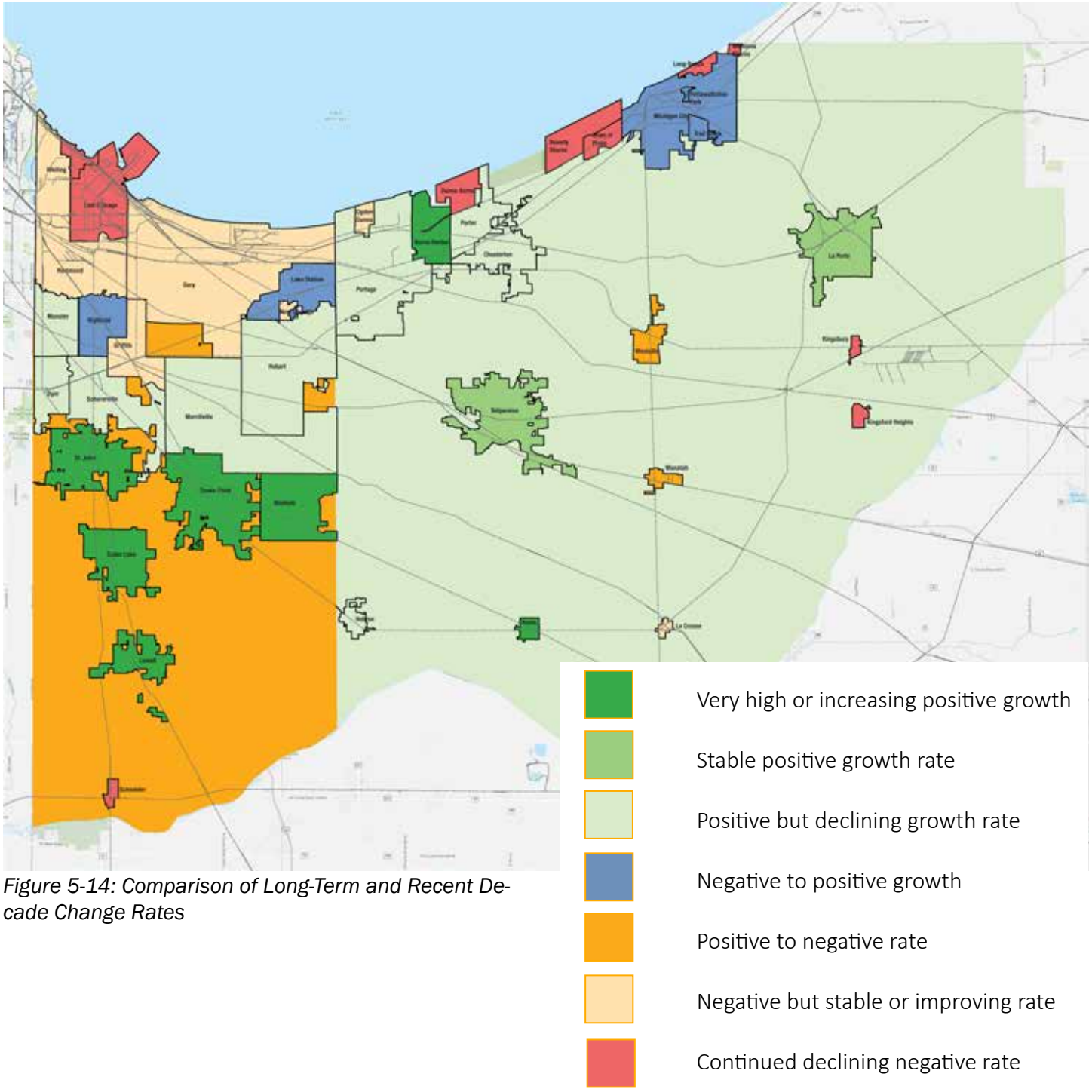


Figure 5-14: Comparison of Long-Term and Recent Decade Change Rates

Population Density

Population density (typically measured in people per square mile) and residential density (measured in units per acre) are good indicators of land use patterns and housing development types in specific areas and are also a major variable in considering alternative growth scenarios. Density is also a critical factor in measuring ability to support local public transportation service. Citywide average density for parts of the study area, especially the industrial cities along the lakefront, can be misleading because of the large amounts of land in non-residential use. Figure 5-15 displays population per square mile for the Metropolitan Statisical Area's (MSA) census tracts.

In general, Northwest Indiana is a low-density region. Population density is highest (in excess of 8,000 people/square mile) in the extreme northwestern parts of Hammond and Whiting and some parts of East Chicago. Areas with moderate urban density (between 4,000 and 8,000 people per square mile) include the Westlake corridor in Hammond and Munster, along and north of Ridge Road in Highland and Munster; census tracts in Whiting, Hammond, and East Chicago; southwest areas of Merrillville; central areas in La Porte and Michigan City; and eastern and southern parts of Valparaiso. Most other non-rural areas display relatively low density in the range of typical single-family development.

Density remains moderate to high in census tracts along the Broadway corridor in Gary, important because of the city's investment in more frequent bus rapid transit service and because of Metro Center and the Broadway corridor's importance in potential community development initiatives.

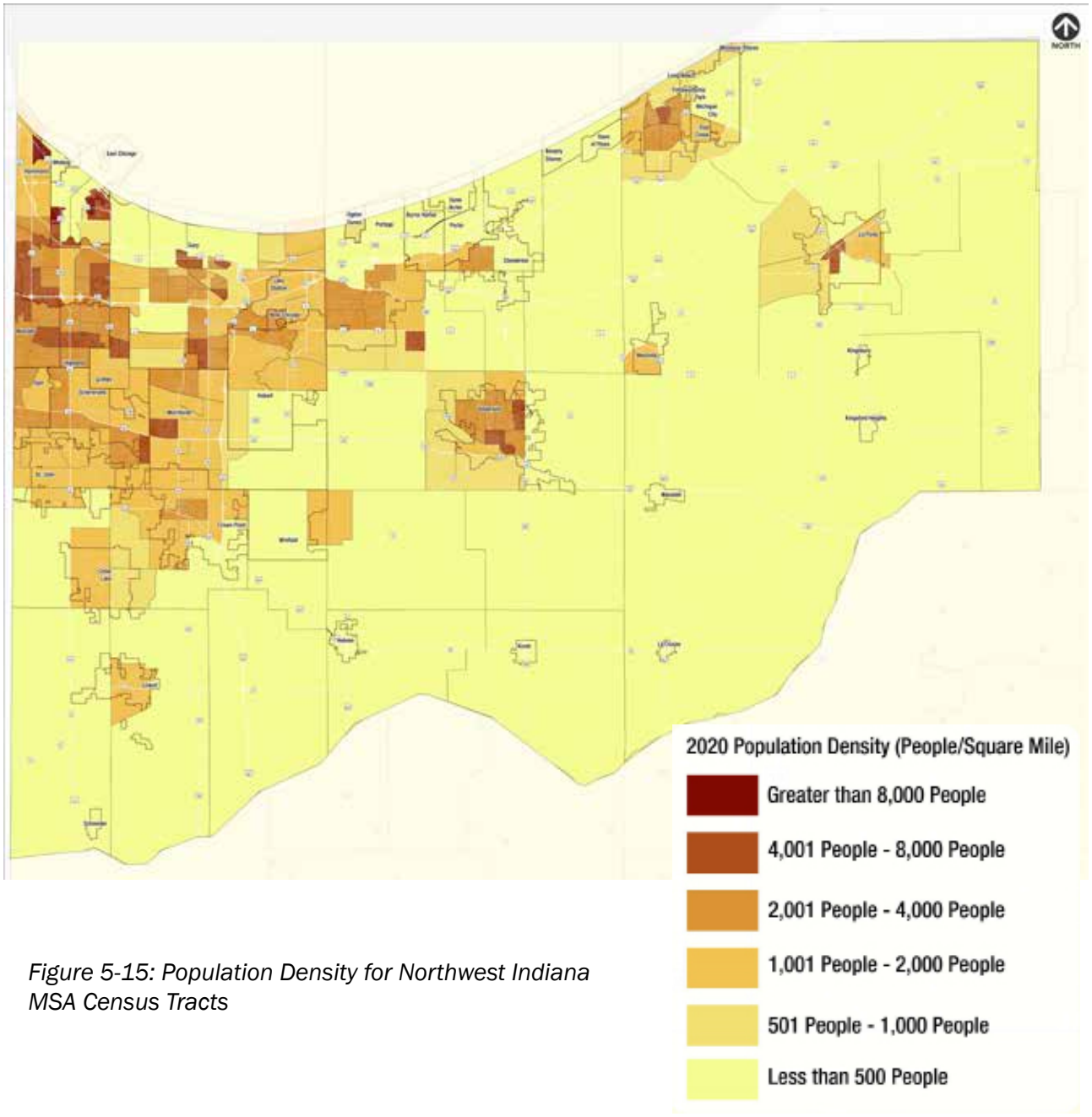


Figure 5-15: Population Density for Northwest Indiana MSA Census Tracts

Residential Density

Residential density (typically measured in housing units per square mile) is strongly related to population density but also has significant variations. For example, areas with a substantial number of small apartments may have a high number of units per acre but a relatively low population density because of small household size. Conversely, a single-family neighborhood with large families may have a high population density but a relatively low number of units per acre. Also, areas with high vacancy can have both relatively high residential density but relatively few people. Figure 5-16 displays residential density for census tracts in the three-county MSA. Consistent with the population density analysis, low residential densities predominate in the region. Areas with density over 6.5 units per acre (generally consistent with attached units, rowhouses, and low-density multifamily types) are limited to two census tracts in Whiting and East Chicago. Urban density tracts with density between about 3.5 and 6.5 units (small lot single-family, attached units, and occasional multi-family) occur in southwest Hammond, central and eastern Gary, and core districts of La Porte and Michigan City. Most census tracts within city limits display density in a range of 2 to 3.5 units per acre, typical of single-family housing on lots with urban services.

Most of these urban tracts fall below the threshold necessary to support local transit service on an economic basis. However, the South Shore Line improvement projects and the TODs that they are likely to encourage could have a significant effect on density around these corridors, especially where there is space for redevelopment or new construction. As mentioned earlier, Michigan City is beginning to experience this type of opportunity.

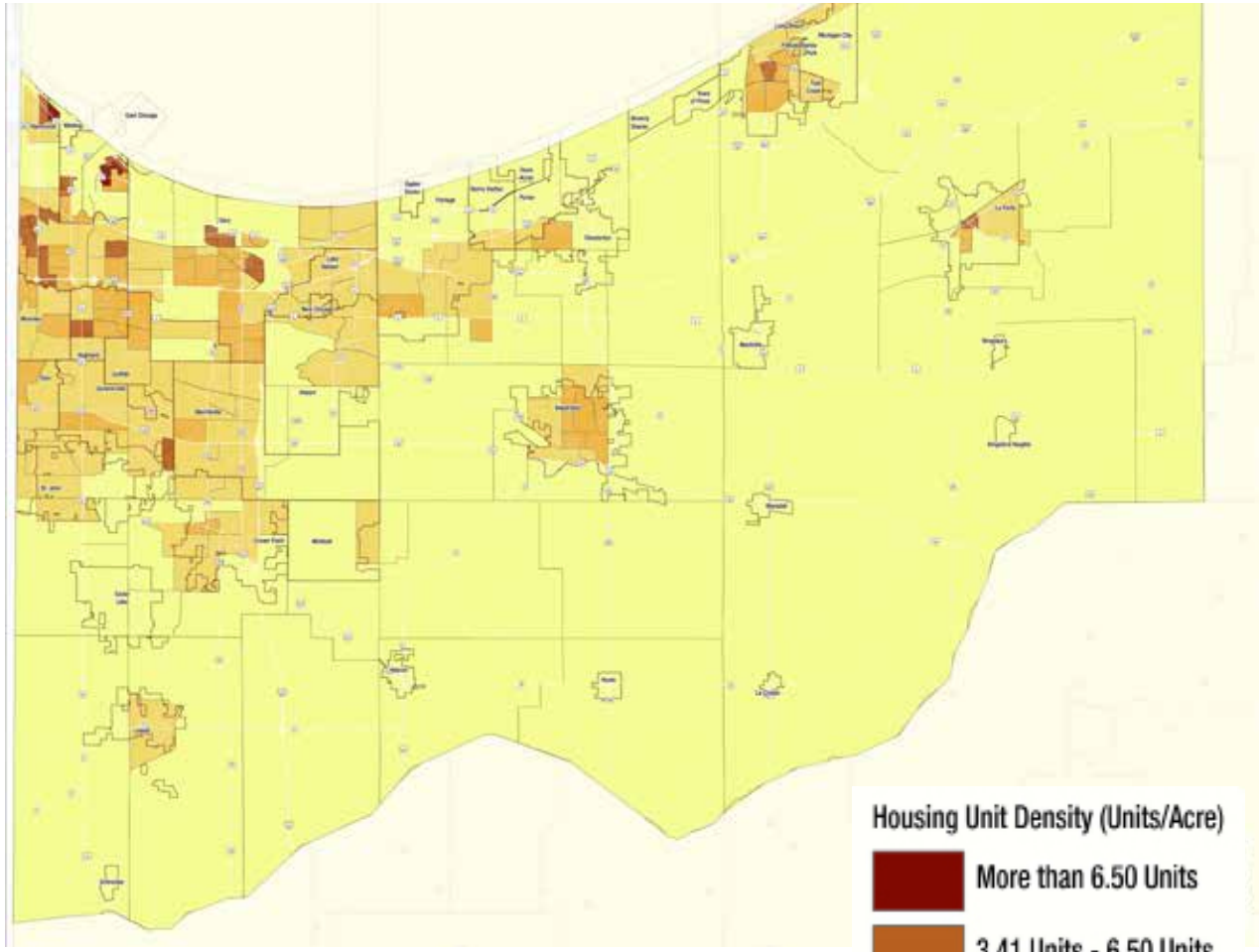


Figure 5-16: Residential Density for Northwest Indiana MSA Census Tracts

New Demand and Housing Location

The planning process included a potential population and land needs scenario for the Northwest Indiana MSA based on this population and growth rate analysis. This model requires substantial refinement and is based on growth rate assumptions to 2050, based on a modified version of historic rates. It should be seen as an early step in a more nuanced calculation of potential conversion needs from rural to urban residential uses. The model modifies historic growth rates by factoring in the differential between historic and recent rates and applying a rounded result as an average annual growth rate to 2050. The model includes the following:



- Reduces the 30-year growth rate substantially for the fastest-growing communities. Cities that have registered a very high rate as a percentage of a very small base population will inevitably see that rate diminish as the base population grows.

- Factors in some increase in growth rates for cities that have demonstrated aggressive development policies. For example, Hammond and Michigan City have major ongoing initiatives which are likely to attract new residents. This has been evident in their recent change rate calculations.

- Moderately increases growth rates for cities along the Westlake or double track corridor of the South Shore Line.

- Assumes that cities with high rates of population loss will stabilize and begin the process of reversing decline. This would apply most significantly to Gary and East Chicago.

- Significantly reduces the growth rate of cities that have reached a mature growth state after very rapid growth in the early part of the historical period. As an example, Schererville's historic average annual growth rate (1980-2020) was a high 2.04%. It's 2010 to 2020 rate dropped to 0.4%, characteristic of a mature suburban city that is approaching a more fully built out state.

- Maintains a high growth rate for cities that have sustained that rate with a relatively large population base and have additional room to grow within their city limits. Crown Point is an example of this type of city.

This methodology yields a projected 2050 municipal population of about 740,000, compared to a 2020 municipal population of about 625,000, or a 30 year increase of about 125,000 people. This represents an average annual growth rate of 0.55%, substantially more than the municipal growth rate of the last 40 years but certainly attainable. We must note that the region's population history absorbed Gary's population loss of over 80,000 during that period. Controlling for Gary, the annual long-term average annual growth rate for the rest of the municipal MSA was 0.8%, or about seven times the actual rate. Assuming a relatively constant population in the rural part of the MSA, the regional population would grow to about 900,000 by 2050.

Calculating Housing and Land Development Needs

While a regional land use plan does not dictate either developer or local community planning and decision making, it should identify the amount of land that should be planned for conversion to residential use. Part 2 of the Land Use Element will present alternative scenarios based on such variables as density, development types, and geographic distribution. But this discussion should provide a clear and understandable method for developing alternatives.

This method includes the following steps with a graphic example illustrated in Figure 5-17:

- Establish a population projection for 2050 and interim milestones. The population model described above is based on an average annual growth rate of 0.55%, a relatively conservative projection that produces an incremental municipal population of about 125,000 people.
- Calculate a projected number of housing units needed, based on projecting an average number of people per household. An average of 2.5 people per household is used in this example. This is an increase over the current level, substantiated by the probability that the large millennial cohort will establish households with children during the next 15 years. This indicates a 30 year housing production of about 50,000 units.
- Assign an average residential density. For simplicity, this example assumes a net density of 5 units per acre. Net density is land actually placed in residential use, to which we add streets and neighborhood related open space to calculate the gross density. Five units per acre is a step above the density level of most of the region's cities. This suggests a net demand for about 10,000 acres of new or redeveloped residential land, or about 15.6 acres.
- Distribute this demand across geographies. Each square in Figure 5-17 represents one net square mile of new residential development on currently vacant land. The squares are in scale with the actual base map. In Figure 16, the "square miles" are distributed according to project growth rates for communities, moderated by the apparent availability of vacant land.

Different scenarios could include varying growth and density projections or development policies, such as assigning more growth to redevelopment within existing city limits.



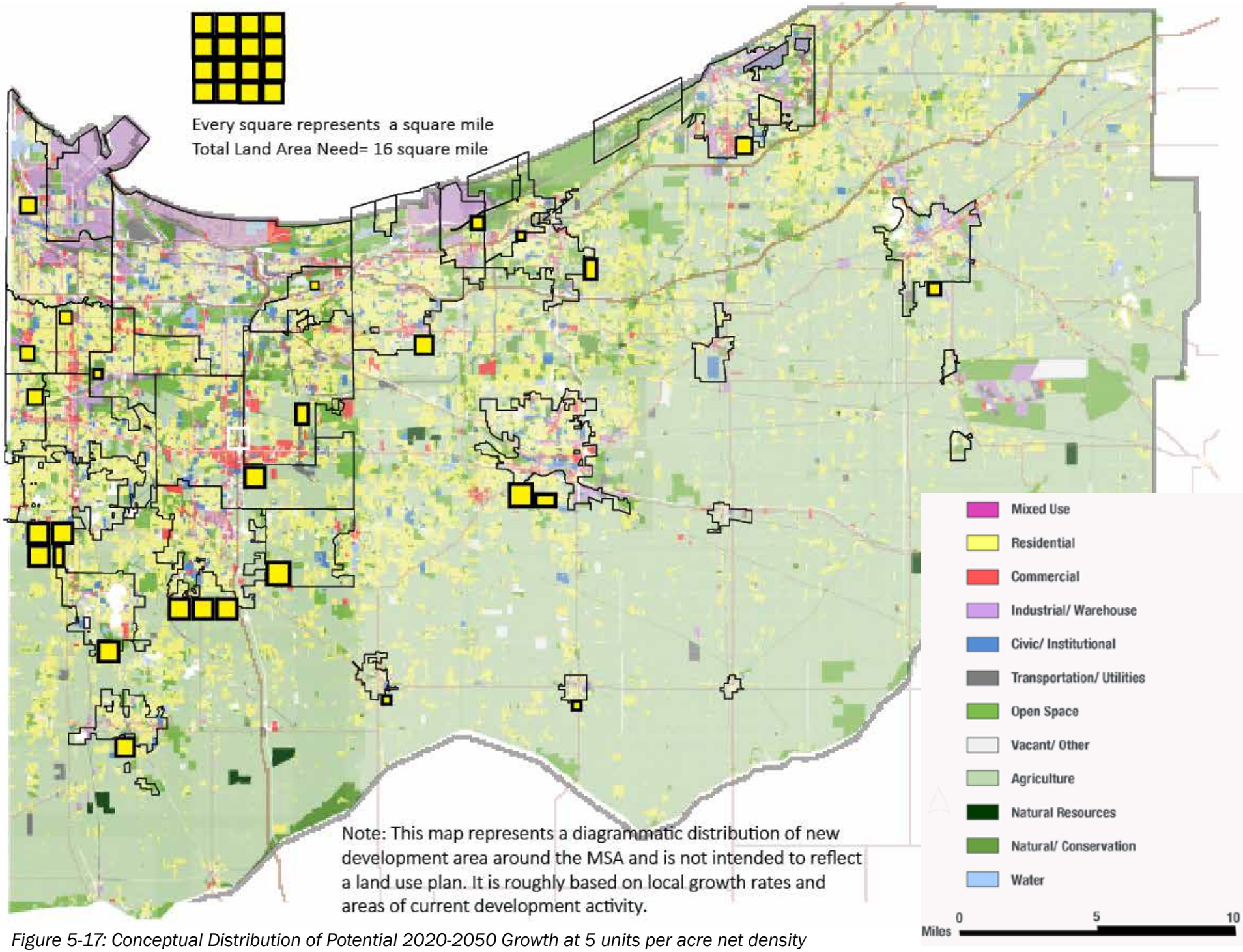


Figure 5-17: Conceptual Distribution of Potential 2020-2050 Growth at 5 units per acre net density

Existing Community Plans

NWI 2050+ is a regional plan, but it is formally a Metropolitan Transportation Plan that will inform policy on how people and goods move to and through the region as well as project funding. Transportation has both a formative and reactive face relative to land use. Major transportation investments open or expand access to areas, creating forces that frame or change land use. They also respond to demands created by increasingly intensive uses of land and heavier traffic loads. Similarly, transportation systems themselves have two dimensions – regional and local. But specific decisions on land use are made at the local rather than regional level. Therefore, the policies and plans of individual communities and counties are especially important to the regional planning process.

The Finding Meaning process included a review of local plans in the three-county MSA. This section summarizes some key themes in these local planning efforts and concludes with impressions of themes and priorities common to most of these jurisdictions. Some cities, including Munster and Merrillville, are undertaking new comprehensive plan efforts. Other documents summarized here, such as the Hammond downtown plan, involve major district plans that will have regional land use and development implications.

Cedar Lake (2021)

- Expansion westward towards Chicago
- Most future land use designated towards low-density residential
- Many new single-family medium-density subdivisions
- Identifies infrastructure needed to support its future land use plan
- Heavy emphasis on improving transportation and utilities (including pedestrian and biking)

Crown Point North Street Vision (2017)

- Focus on redeveloping existing city character rather than more expansion
- Following NIRPC Livable Centers objectives
- Future land use development to occur within Crown Point limits
- Public transportation not available to Crown Point residents and should be considered
- North Street corridor has a mix of land uses that are not necessarily compatible
- Priority on increasing density in the city

Hammond Downtown Master Plan (2019)

- Emphasis on walkability
- Capitalize on Westlake corridor to transform downtown and adjacent areas
- Increase downtown residential development
- Major downtown public space as a catalyst

Dyer Comprehensive Plan (2020)

- Limited vacant land left for new residential development
- Focus on redevelopment of four districts: Downtown, Sheffield/Main, Calumet, Route 30
- Strengthen small town identity
- Capitalize on TOD potential of Westlake South Shore extension

East Chicago Comprehensive Plan (2008)

- Highly diverse population
- Potential to accommodate a large portion of residential growth in NW Indiana
- Create more open green space
- Improve quality buildings and space design
- Work with regional planning agencies to improve transportation and open spaces
- Redevelop underutilized land and create more mixed-use development

Gary Livable Centers Plan (2014-15)

- Focus on three contiguous areas on the north side of the city: Horace Mann, Downtown, and Emerson
- Promote walkability
- Mixed uses while coordinating transportation and land use, focusing on an east-west corridor
- Livable center plan will build on top of other ongoing planning efforts
- Model development neighborhoods with “city beautiful” open spaces
- Taking advantage of Marquette Greenway and Gary ELevated opportunity

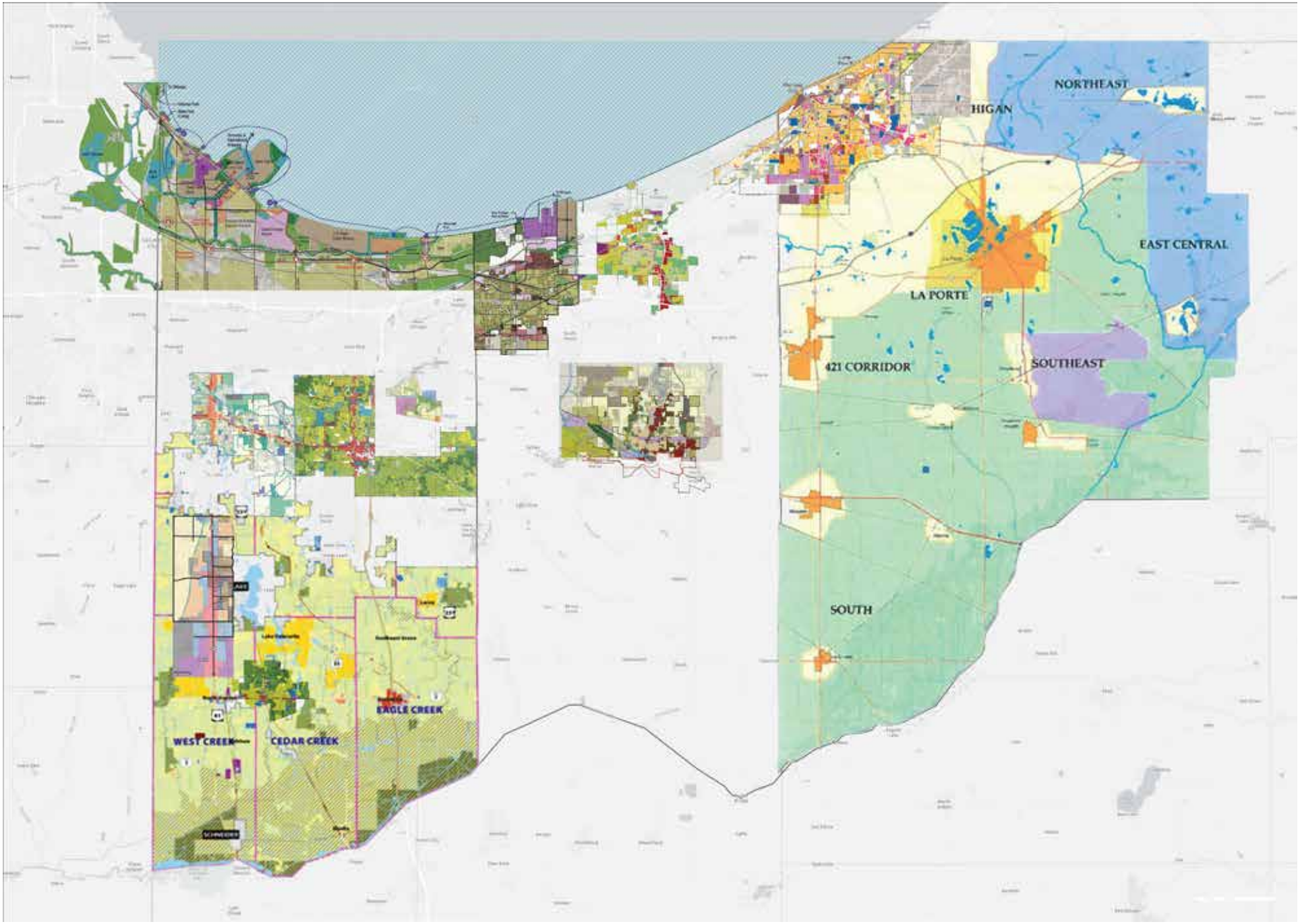


Figure 5-18: Compendium of Existing Community Land Use Plans

Highland Corridor Plan (2016)

- Focus on triangle defined by Kennedy Avenue and Erie-Lackawanna and La Porte Trail corridors.
- Major emphasis on Kennedy Avenue
- Mixed use development with improved streetscape and walkability
- Upgraded building design standards
- Note and maintain success of Downtown Highland

Hobart Conservation Zoning and Subarea Plan (2019)

- Primary focus on using land development regulations to protect environmental resources
- Connectedness of resources
- Low impact development techniques and best practices
- Future land use with increasing conservation areas to improve water quality
- Expand park areas

Lowell Comprehensive Plan

- Primary residential and agricultural uses in city limits
- Downtown revitalization
- Community marketing to attract permanent residents
- Economic development focus

Merrillville Comprehensive Plan (1999)

- Plan prepared in 1999. Town is undertaking a new comprehensive plan effort
- Primary focus on residential development
- Restrictions on agricultural use to remove obstacles to residential and commercial development

Michigan City Comprehensive Plan (2018)

- More equity and cultural expression
- Preserve community character and natural resources
- Promote more mixed use and redevelopment
- Increase transportation efficiency
- Enhance community identity

Munster Comprehensive Plan (2010)

- City in process of updating the plan in 2022
- Create a vibrant new district with connections to downtown
- Build upon current regional transit efforts
- Develop older areas into walkable, mixed-use centers

Portage Comprehensive Plan (2009)

- Encourage more pedestrian traffic
- Expand low to medium residential areas to west
- Improve district character, street design, and connectivity
- Develop parks and recreation areas

Porter Downtown Plan (2016)

- Lack of land to continue developing single-family housing
- Develop more move-up housing opportunities
- Strengthen community retailing
- Parks and recreation land is limited

Schererville Comprehensive Plan (2009)

- Create a more attractive urban center
- Expand development of professional offices with pedestrian-friendly streets
- Maintain existing housing stock and promote neighborhood character
- Improve natural environment and create more open space
- Promote connections to regional transportation

Valparaiso Comprehensive Plan 2030 (2013)

- Coordinate with community schools on campus locations
- Ensure school locations are close to residential neighborhoods
- Preserve historic neighborhoods
- Create more effective transitions and buffers between different land uses
- Maintain strong city center

Westville Comprehensive Plan (2017)

- Address compatibility between land uses
- Preserve farmland
- Transform brownfield site to solar farm

Whiting Comprehensive Plan (2010)

- Improve housing inventory and maintain single-family character
- Continue lakefront and revitalization area plan implementation
- Diversify commercial properties
- Improve urban design

Winfield Comprehensive Plan (2006)

- Maintain small town atmosphere and community identity
- Design quality of commercial and industrial development
- Variety of housing choice
- Expand park and recreation resources
- Develop a walkable downtown around 109th Avenue and Randolph intersection

Lake County Unincorporated Area Plan (2018)

- Protect the agricultural and industrial economy with managed growth policies
- Protect and enhance environmental assets
- Coordinate with municipalities on land use plans
- Promote mixed-used development

La Porte County Land Development Plan (2008)

- Diversify economic base of manufacturing, tourism, and agriculture
- Encourage full use of land
- Encourage location of new development nearby existing towns
- Protect natural resources
- Expand and improve county road system
- Expand parks system
- Promote mixed-use development

Porter County Land Use Plan (2001)

- Develop around existing cities and towns that are also contiguous
- Create higher housing and business density
- More mixed-use development
- Promote transition and buffers between land uses
- Conserve open space by clustering housing
- Discourage commercial strip and residential development along county roads

Common Themes

- **Avoidance of sprawl, focusing development and redevelopment within existing city limits**
- **Improved public transit for both communities and the region, better connection to South Shore Line and other regional rail**
- **Desire for more mixed-use development**
- **More development of multi-modal transportation facilities, including alternative modes**
- **Improved access to recreational areas, including more regional access to the lakefront**
- **Better transitions between conflicting land uses**
- **Improved urban design and neighborhood appearance**
- **Promotion of sustainable and lower impact development**
- **Creation of local and regional economic development opportunities to create more local jobs, reducing dependence on commuting to Chicago**
- **Preserve agricultural lands in more rural areas**

Housing Trends

Many of the community comprehensive plans spoke to housing issues, with priorities ranging from maintaining a primarily single family inventory, characteristic of older documents, to promoting greater housing diversity and density, more typical of newer plans and reflecting increasing preferences for settings such as small lot single-family and attached units. This evolution also affects the increasing cost of new development and the current, almost universal concern about housing affordability.

Figure 5-19 indicates changes in the number of housing units by census tract between 2010 and 2020. Areas of substantial new growth follow the same pattern as population gain, focusing on areas in the central west of the MSA. More established communities along the Westlake corridor show housing gains, but at a significantly slower rate. Areas of secondary housing gain include a central corridor that includes Portage, Hobart, Chesterton/Porter, and Valparaiso, and some surrounding sections; and much of Michigan City. Housing unit loss continues in Gary and older cities in the northwest, although southern Hammond, Lake Station, and New Chicago have gained units during the last census period.

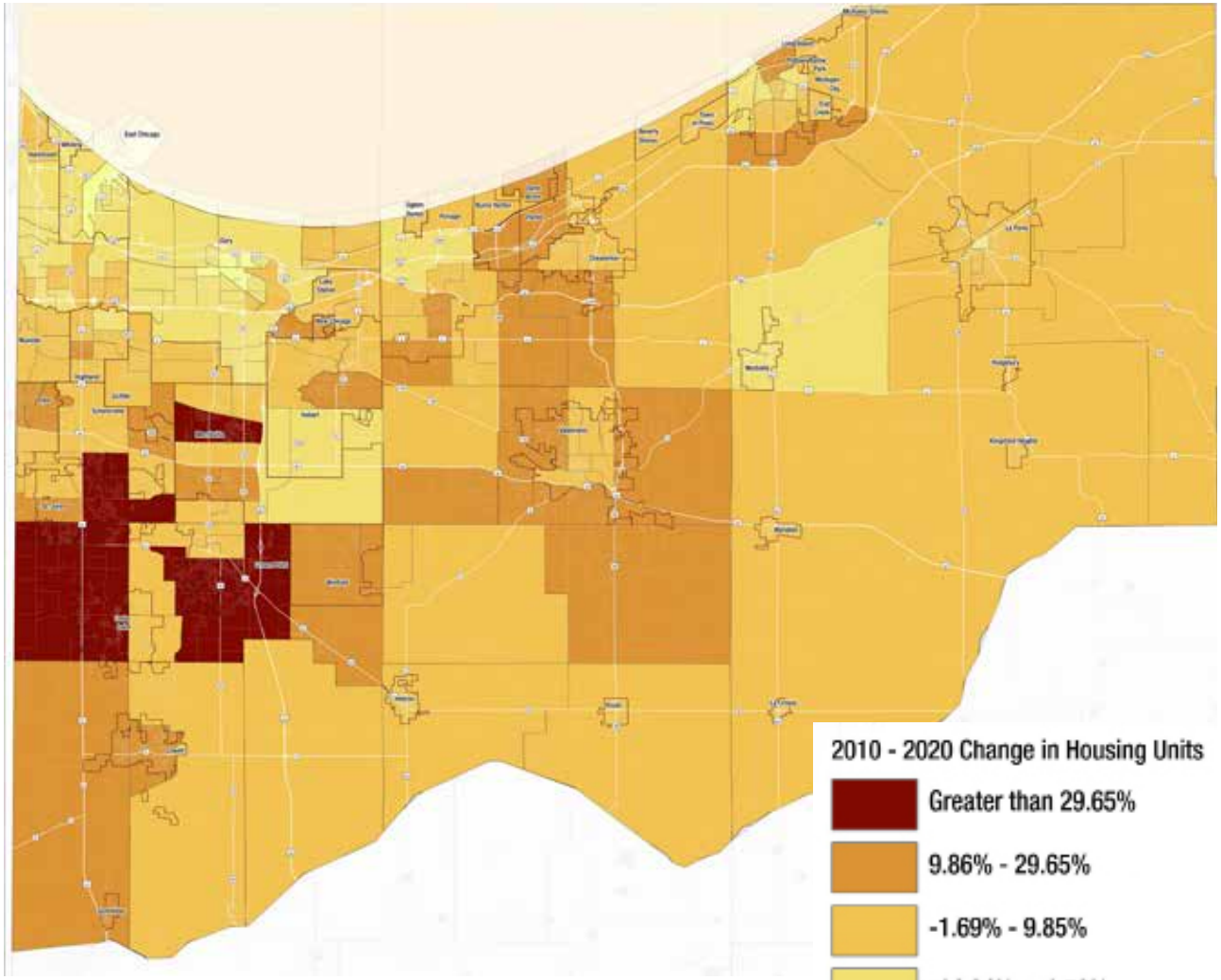


Figure 5-19: Housing Unit Change by Census Tract, 2010-2020

Housing Affordability

Figure 5-20 displays median home values by municipality according to the 2020 Census. These values suggest a very moderately priced housing market. These city-level values would be expected in neighborhoods with significant housing deterioration, but they seem relatively low for even more stable neighborhoods.

According to these values, only St. John and Winfield, and to some extent Dyer and Munster, display citywide averages consistent with more typical expectations. However, Census Tract data for 2020 paint a significantly different picture that, while still indicating a moderately priced market, is more in line with expectations.

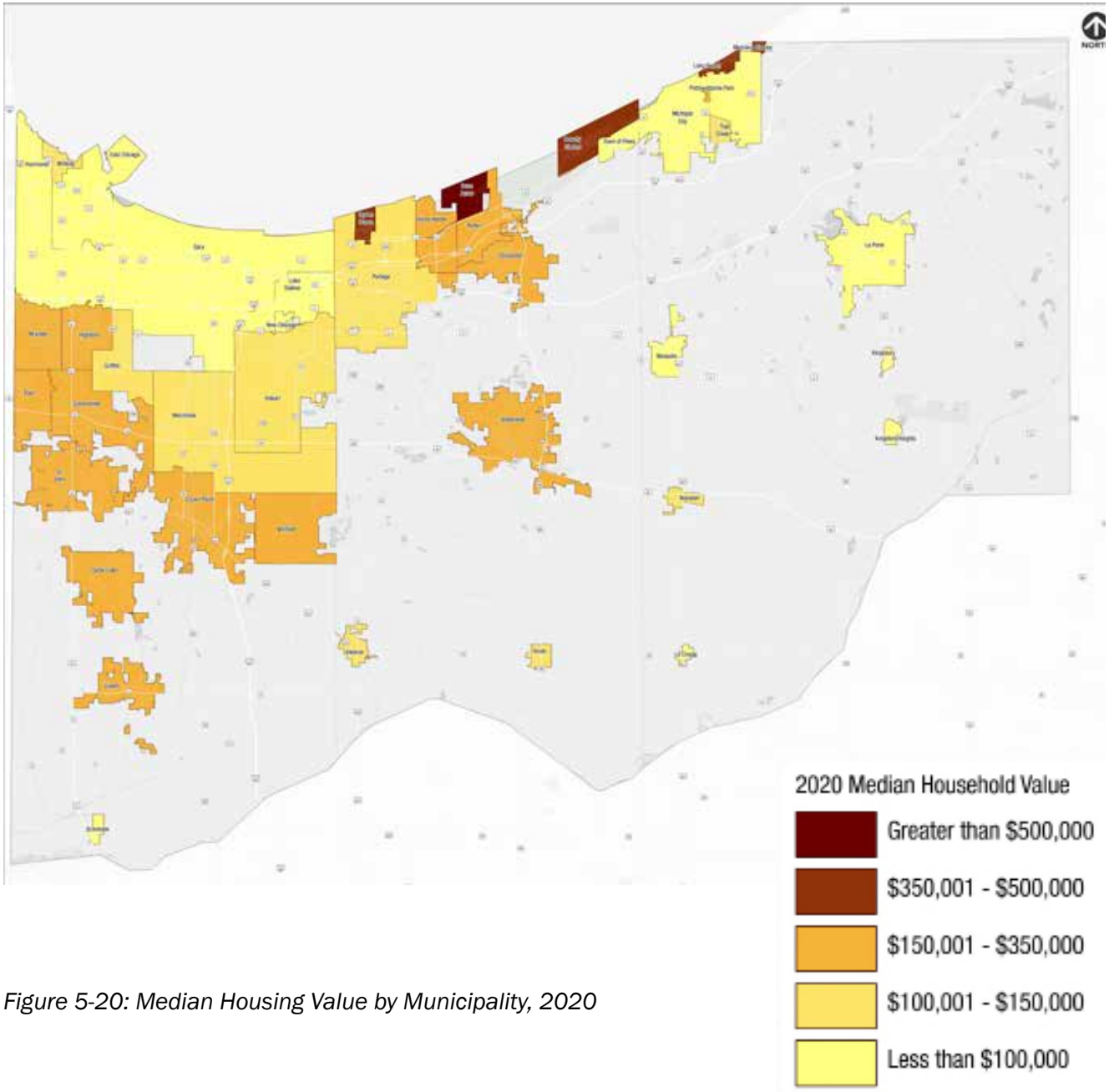


Figure 5-20: Median Housing Value by Municipality, 2020

Median home values in the $200-300,000 range dominate the central part of the MSA and the communities along the Illinois border, with pockets of higher values along the lakeshore and in some tracts in the central tier. Figure 5-21 displays median values by Census Tract.

Rents on the other hand seem more typical of expectations, with gross monthly rents clustering in the $800 to $1,200 range. Figure 5-22 displays median contract rents by Census Tract, providing a more specific geographic perspective on rent ranges. Low rents are concentrated in the northwestern industrial cities and in rural areas with relatively few rental units. Relatively higher rents follow a similar locational pattern to owner-occupied units.

Figures 5-23 through 5-25 analyze countywide housing affordability by comparing the number of households in specific income groups with the number of units affordable to that group, based on a typical affordability standard of income. A positive balance indicates more units in a cost range than people who fit that range. This suggests a move-up market for people who might be theoretically "underburdened." A negative balance indicates more people in an income range than housing units affordable to the range, indicating a shortage in that group. General results of this analysis for all three counties indicate:

- A large deficit of units is for households making less than $25,000. These needs cannot be met through new construction.
  - › This price point is not usually supplied by the market and requires substantial subsidies to construct.
  - › It is important to note households making less than $25,000 includes some retirees living on fixed incomes with no mortgages remaining and students receiving assistance with housing from family, loans, or grants.
- There are many units affordable to households making between $25,000 and $49,999. This correlates to the older housing stock in each county's inventory.
- Gaps exist for households making more than $75,000, especially the $75,000-$150,000 range. These households are living in homes less expensive than their income would permit. This phenomenon of minimizing housing burden helps explain the deficit of owner-occupied housing in lower price points. Expanding the supply of higher priced housing might encourage some of these households to "move up." Some may not be able to move up due to other expenses such as school loans or other personal debt, but greater product variety that meets their evolving lifestyle needs may have an impact.

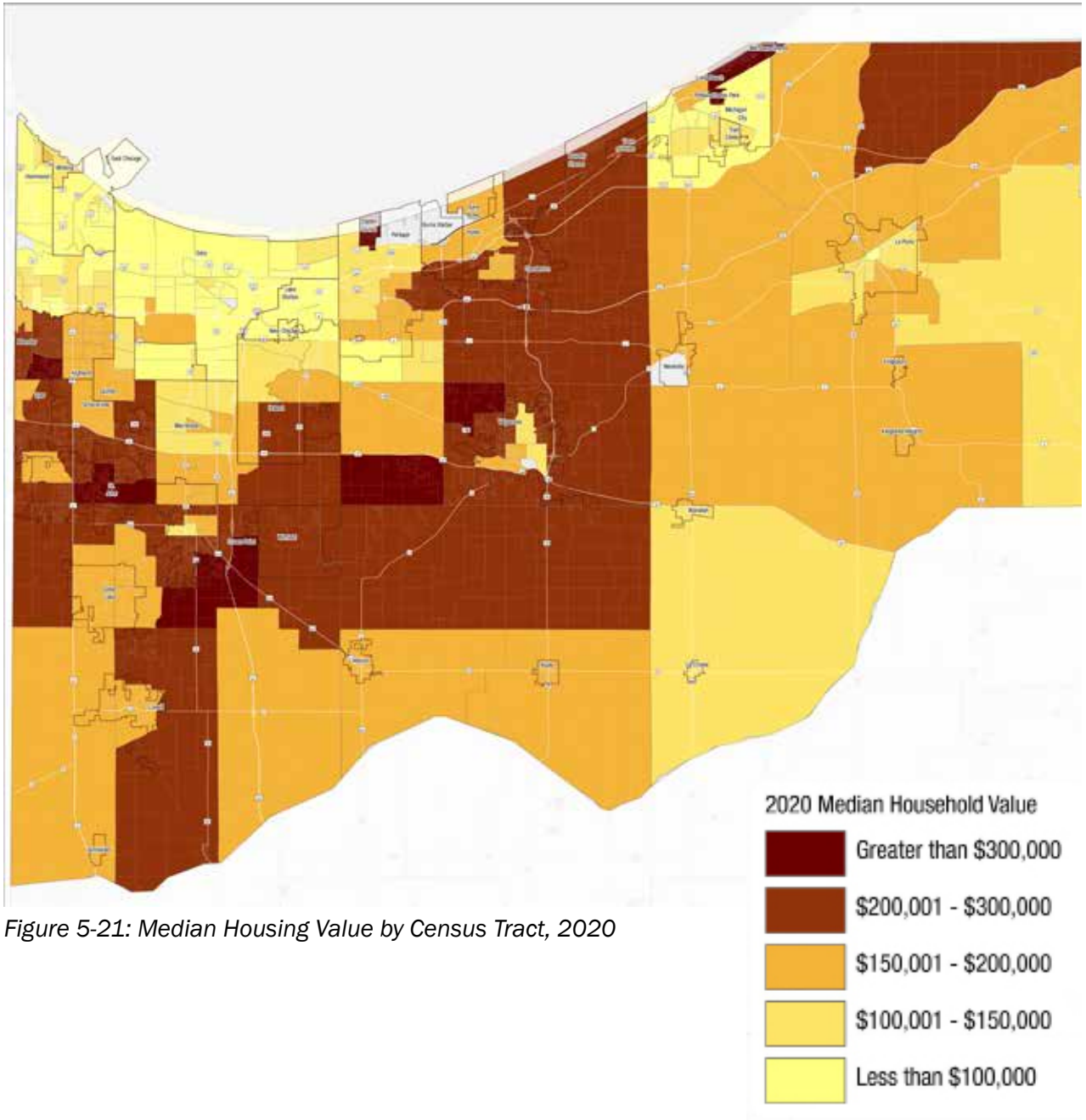


Figure 5-21: Median Housing Value by Census Tract, 2020

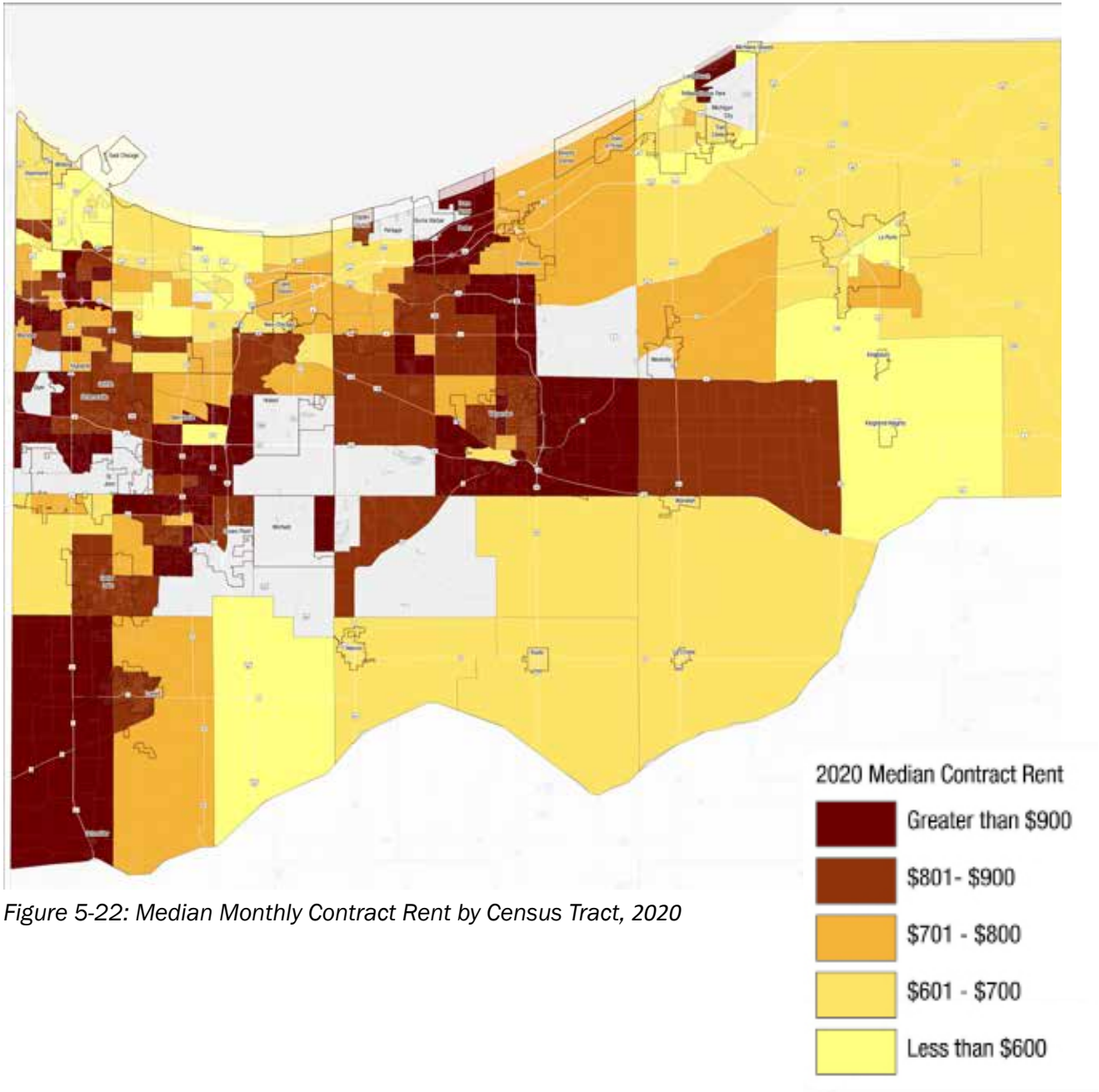


Figure 5-22: Median Monthly Contract Rent by Census Tract, 2020

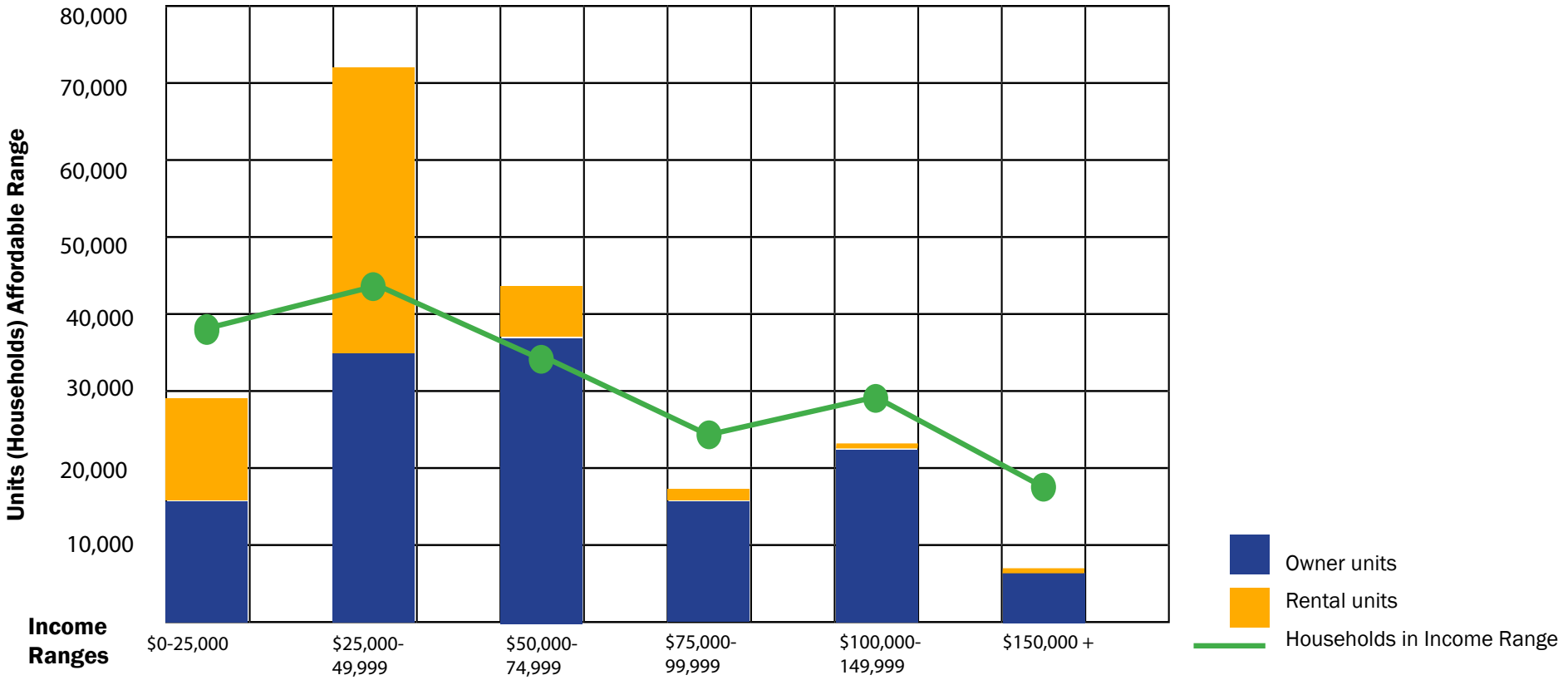
All of these calculations continue to suggest a somewhat undervalued housing market in the Northwest Indiana region as well as a persistent need to assist very low income households.

Affordability Analysis by Community

While these overall patterns hold true for the region and the markets in communities are interdependent, individual communities are likely to have somewhat different characteristics that may require different policies. To investigate this for the Creating Purpose section of the Land Use Chapter, *NWI 2050+* includes an affordability analysis for all municipalities in the MSA with a population over 10,000. In some cases, the analysis combines two adjacent municipalities and/or Census Designated Places such as Lake of the Four Seasons. The Appendix contains the results of these individual calculations.

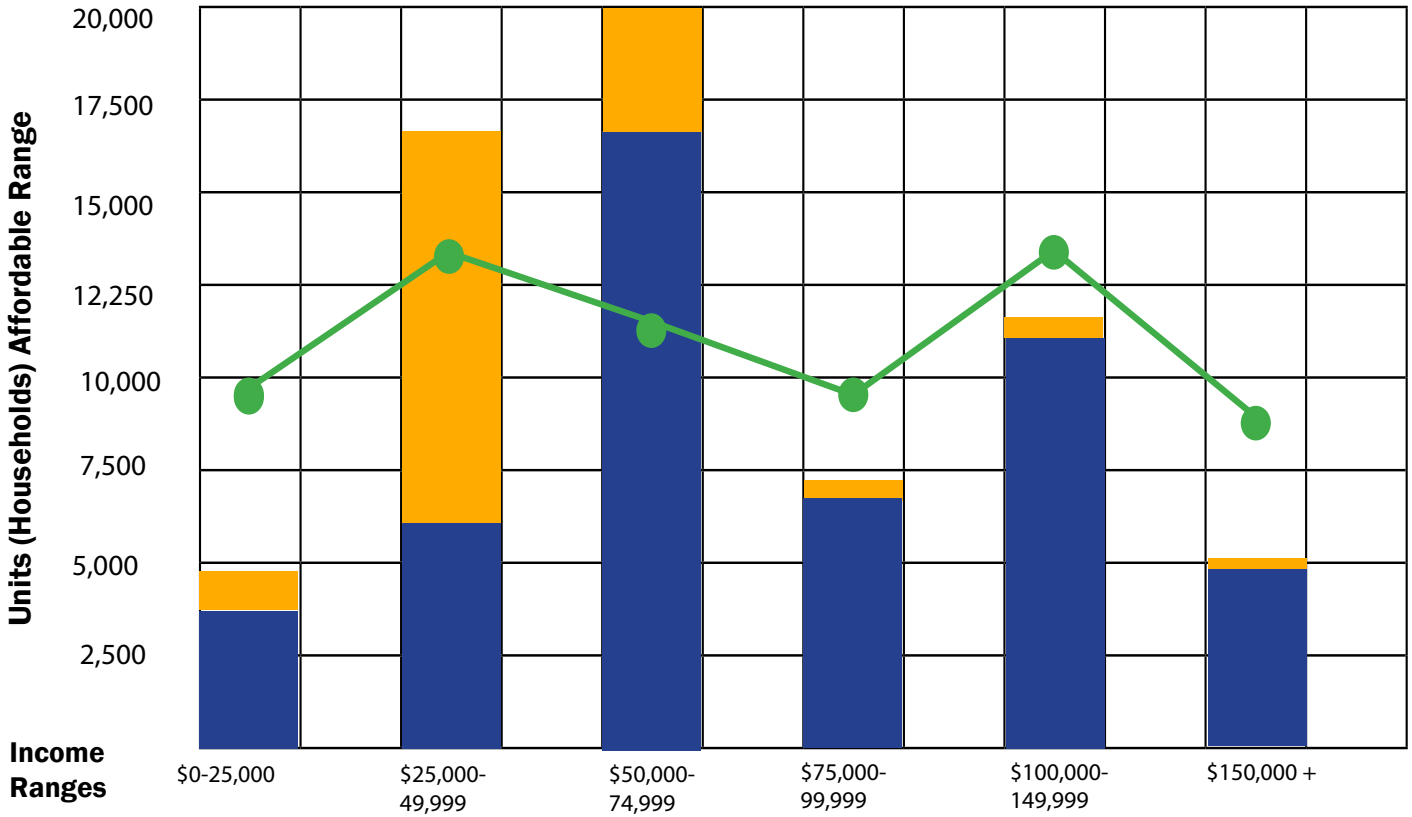
Income Range	% of County Median	% of Households	Number of Households in Group	Affordable Range for Owners	Number of Units	Affordable Range for Renters	Number of Rental Units	Total Affordable Units for Income Group	Balance
$0-25,000	Under 44%	21.05%	39,712	>$60,000	15,037	$0-499	11,798	26,835	-12,877
$25,000-49,999	44-87%	22.79%	42,994	$60,000-124,999	35,094	$500-999	35,458	70,552	27,558
$50,000-74,999	88-130%	18.09%	34,128	$125,000-199,999	37,717	$1,000-1,499	7,768	45,485	11,357
$75-99,999	131-174%	12.94%	24,409	$200,000-249,999	16,287	$1,500-1,999	1,112	17,399	-7,010
$100-150,000	175-261%	15.52%	29,282	$250,000-399,999	20,723	$2,000-2,999	149	20,872	-8,410
$150,000+	Over 261%	9.61%	18,121	$400,000+	7,314	$3000+	188	7,502	-10,619
Total		**100.00%**	**188,646.00**		**132,172**		**56,474**	**188,646**	**0**

Figure 5-23: Housing Affordability Analysis for Lake County



Income Range	% of County Median	% of Households	Number of Households in Group	Affordable Range for Owners	Number of Units	Affordable Range for Renters	Number of Rental Units	Total Affordable Units for Income Group	Balance
$0-25,000	Under 36%	15.14%	9,863	>$60,000	3,001	$0-499	1,759	4,760	-5,103
$25,000-49,999	36-69%	19.09%	12,439	$60,000-124,999	5,717	$500-999	10,605	16,322	3,883
$50,000-74,999	70-104%	17.42%	11,348	$125,000-199,999	16,944	$1,000-1,499	3,366	20,310	8,962
$75-99,999	105-138%	14.78%	9,631	$200,000-249,999	6,956	$1,500-1,999	283	7,239	-2,392
$100-150,000	139-208%	19.95%	13,001	$250,000-399,999	11,340	$2,000-2,999	250	11,590	-1,411
$150,000+	Over 208%	13.62%	8,871	$400,000+	4,830	$3000+	101	4,931	-3,940
Total			**100.00%**	**65,153.00**		**48,788**		**16,365**	**65,153**

Figure 5-24: Housing Affordability Analysis for Porter County

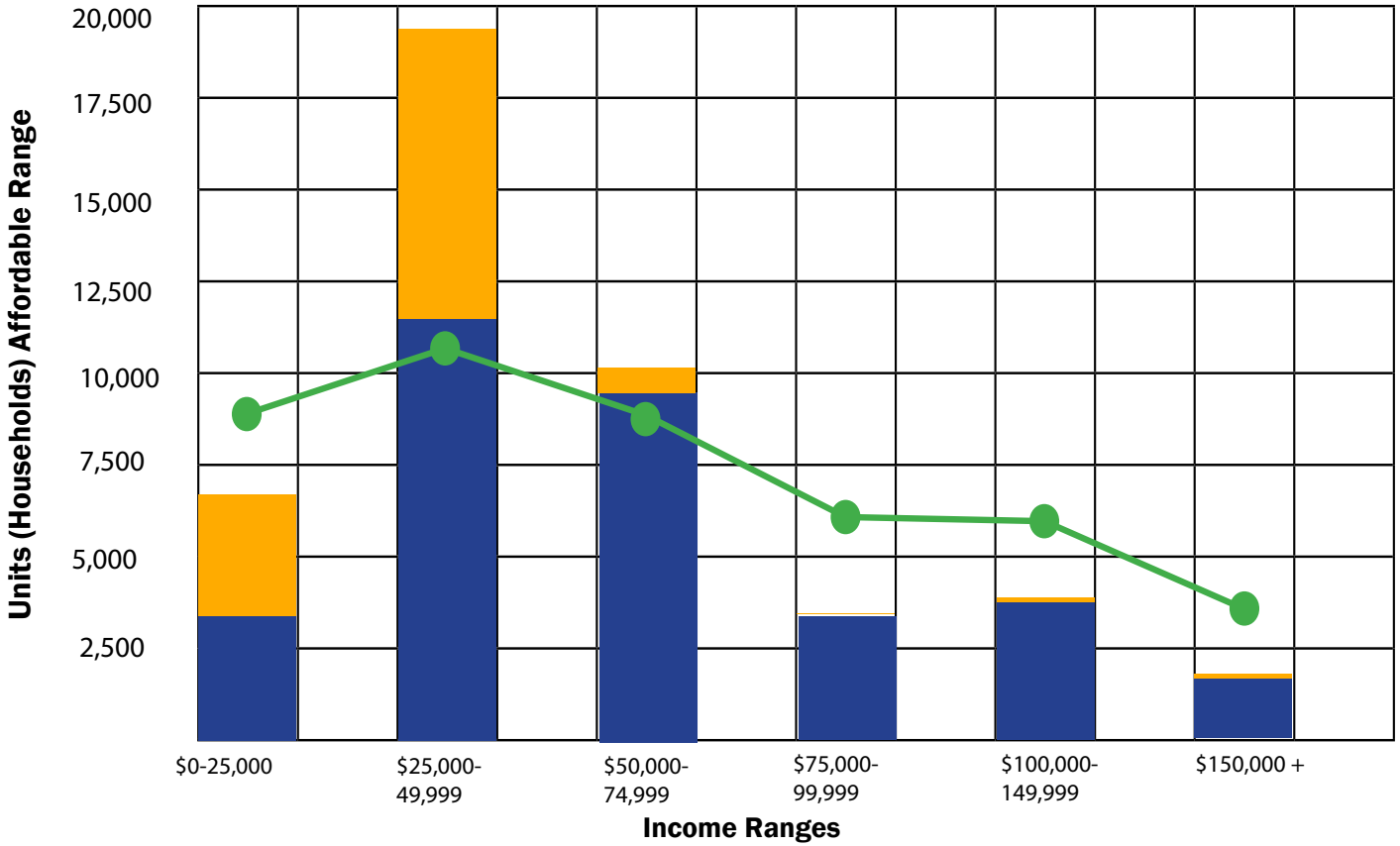




Owner units
Rental units
Households in Income Range

Income Range	% of County Median	% of Households	Number of Households in Group	Affordable Range for Owners	Number of Units	Affordable Range for Renters	Number of Rental Units	Total Affordable Units for Income Group	Balance
$0-25,000	Under 45%	20.20%	8,630	>$60,000	2,626	$0-499	3,030	5,656	-2,974
$25,000-49,999	45-88%	24.05%	10,274	$60,000-124,999	11,042	$500-999	7,631	18,673	8,399
$50,000-74,999	89-132%	19.76%	8,444	$125,000-199,999	9,495	$1,000-1,499	596	10,091	1,647
$75-99,999	133-175%	14.01%	5,985	$200,000-249,999	2,913	$1,500-1,999	38	2,951	-3,034
$100-150,000	176-263%	13.85%	5,918	$250,000-399,999	3,555	$2,000-2,999	68	3,623	-2,295
$150,000+	Over 263%	8.13%	3,474	$400,000+	1,666	$3000+	65	1,731	-1,743
Total		**100.00%**	**42,725.00**		**31,297**		**11,428**	**42,725**	**0**

Figure 5-25: Housing Affordability Analysis for La Porte County





Owner units
Rental units
Households in Income Range

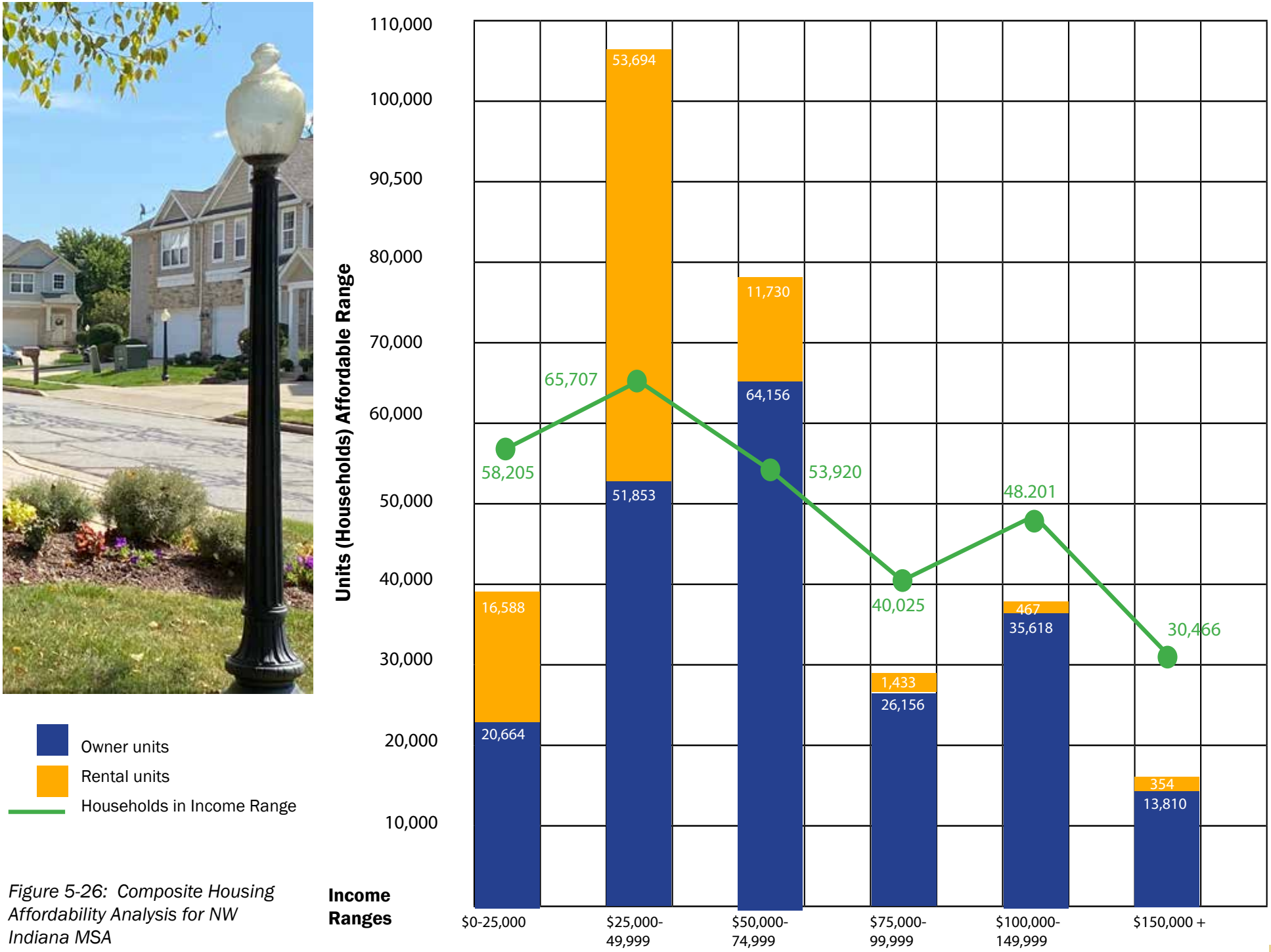


Figure 5-26: Composite Housing Affordability Analysis for NW Indiana MSA

Policy Regions

Figure 5-27 identifies policy regions, areas of common character, and potential issue concerns that help the visioning process contemplated for the Creating Purpose section.

Northwest

These older industrial cities have experienced population decline and disinvestment but have made major progress in recent years. Reinvestment, redevelopment, and taking advantage of new initiatives like the Marquette Greenway and the South Shore Line enhancements will be important to their future.

Westlake Corridor

These mature, high quality inner suburbs will benefit from their urban quality and the multi-modal transportation projects of the Westlake extension of the South Shore and Monon Trail. These projects will help produce new development forms along the corridor.

Central

These communities grew directly south from the industrial north and generated some of the patterns typical of post World War II development. Hobart, originally more separated from Gary, also has a traditional center that has benefited from a major park project. Re-envisioning the Southlake commercial nucleus may be an important part of a community vision.

Duneland

Cities along the lake will take advantage of connections north to the Marquette Greenway and a major improvement in South Shore service. Both open new possibilities for innovative land uses and rethinking major local service corridors. Growth between the shore cities and Valparaiso presents challenges for management of the city edges and exurban development.

East Shore

Michigan City and surrounding resort towns are experiencing a resurgence and will need to sustain that momentum. Managing the linkage between MC and La Porte, which is developing its own major walkable community project at Newport Landing, will be a significant task.

Central West

This is the MSA's fastest growth area with both traditional and water-oriented communities and substantial growth around the edges and between towns. Policies that manage and direct growth effectively and maintain community character will be on the agenda for these cities.

Urban Resource Areas

These areas are tending to experience large lot, exurban residential development. Managing potential agricultural/residential conflicts, maintaining sound contiguous growth of municipalities and managing environmental resources may be important focuses.

Rural Resource Areas

These areas, many in the Kankakee River watershed, will maintain rural and agricultural character. They also contain important recreational, environmental, and recreational resources. Maintaining a balance of these forces – agriculture, economic development, and community quality - may be issues for the next stage of the plan.

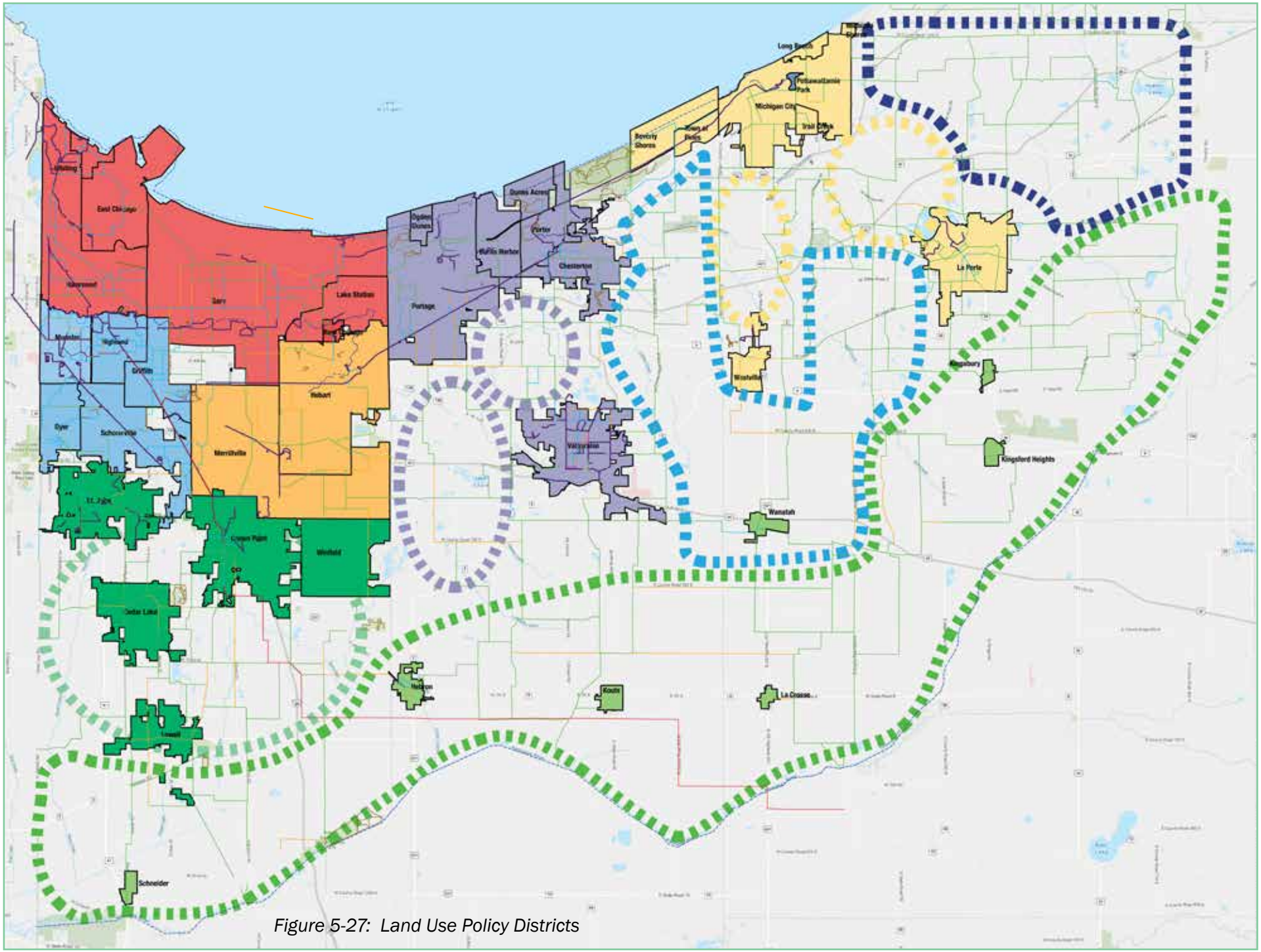


Figure 5-27: Land Use Policy Districts

Commercial Environments and Corridors

While the region's commercial environments represent a small percentage of its total land use, they represent an outsized share in defining image, character, and overall residents' satisfaction. These environments have evolved with changes in transportation and, more recently, with changing preferences and economic trends in the market. In the early 20th century, commercial development focused on traditional downtowns (such as Gary, Hammond, East Chicago, Michigan City, La Porte, and Valparaiso) and town centers or Main Street districts (Crown Point, Chesterton, Lowell). These were often served by "steam"railroads or Indiana's extensive interurban network of which the South Shore Line is the sole national survivor. Neighborhood business clusters (Miller, Broadway, and Ridge) and transit-oriented corridors (Broadway) supplemented the central districts. These corridors typically accommodated strip development with relatively shallow lot depths and limited parking.

As automobile transportation grew dominant during the mid-20th century, public and human-powered transportation became less important. Most public transportation funds were (and continue to be) invested in roadways. Commercial development provided more parking, larger and deeper lots, and more decentralization. A new regional "downtown" developed at the crossroads of I-65 and US 30, punctuated by Southlake Mall. Unlike the traditional downtowns that thrived on "foot traffic," this new downtown grew with little regard for the pedestrian environment, including travel from the parking space to the front door.

Now we are experiencing another retail revolution that is virtual as well as physical. Large brick and mortar retailers and regional malls are struggling nationwide against the dual threats of on-line sales and dominant mega-box retailers, and in many locations in Northwest Indiana, the supply of available space exceeds the demand. Older strip centers built with few amenities are vacant or filled with marginal or non-retail uses. More successful districts have been able to adapt by providing more experiential environments, as potential customers state preferences for more walkable, human-scaled environments (while often not acting on these preferences).

These trends in Northwest Indiana have led to several policy and development directions:

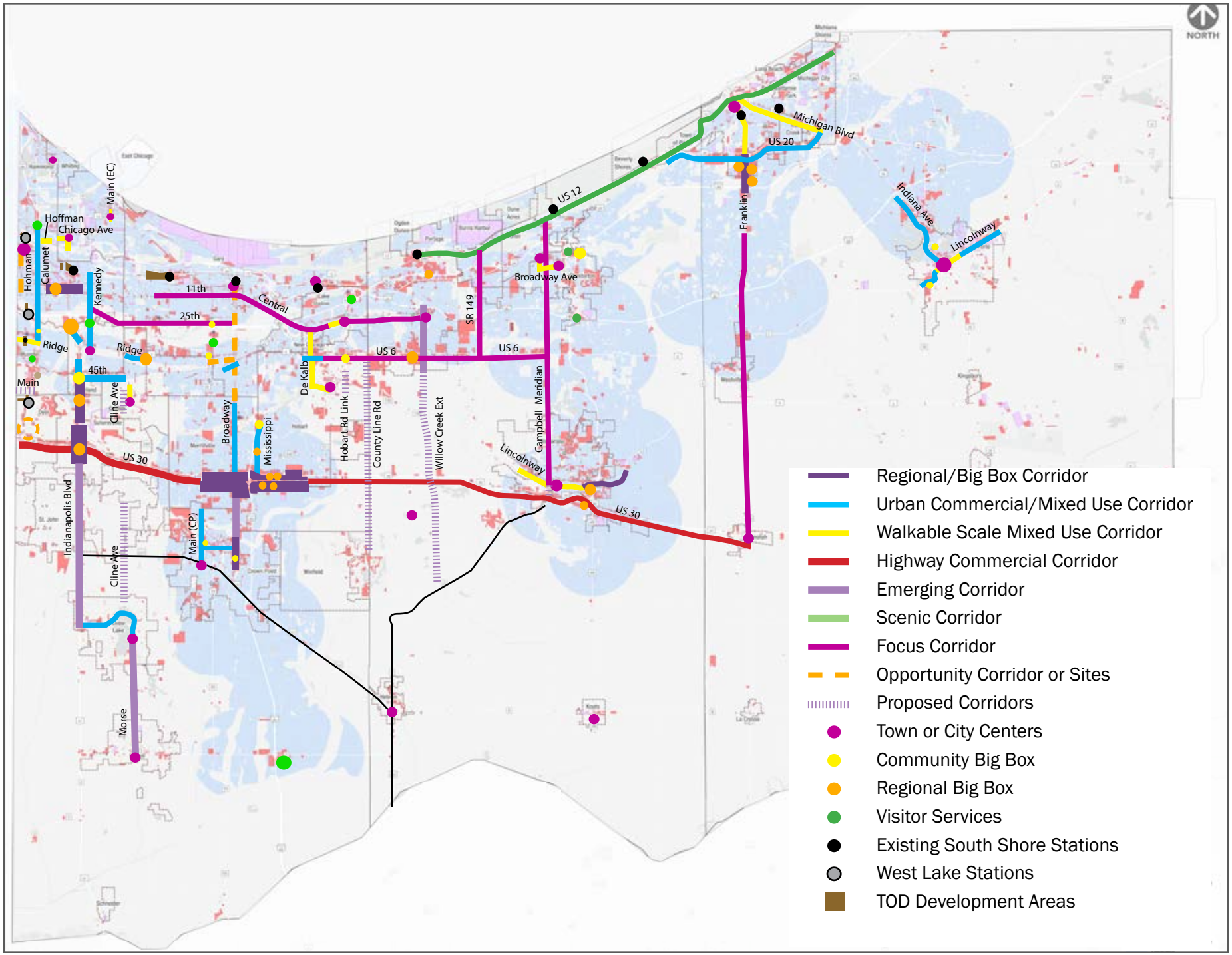
Reinvestment in traditional downtowns. Hammond's ambitious program of downtown redevelopment is a foremost example of this trend. Michigan City has used a combination of its lakefront and the South Shore double track project to help revitalize its center, which also introduced a large, pedestrian-oriented center. Whiting has successfully revitalized its 119th Street district with a quality public environment and connection to an iconic lakefront park.

Transit-oriented developments, discussed earlier.

Trail connections. Railroads that once served city and town centers are now abandoned, but the trails that have replaced them remain major carriers of customers. Crown Point, Schererville, Highland, and potentially Munster are examples of cities that have used trails effectively to sustain their traditional centers.

Development of new mixed use city center districts. These include Founders Square in Portage, developing a mixed use center around a civic commons, and the Centennial Village development in Munster.




NORTH
Main (EC)
Hoffman
Chicago Ave
Hohman
Calumet
Kennedy
11th
25th
Central
Ridge
Ridge
45th
Main
Cline Ave
Broadway
Mississippi
De Kalb
US 6
US 6
SR 149
Broadway Ave
US 12
Hobart Rd Link
County Line Rd
Willow Creek Ext
Campbell
Meridian
Lincolnway
US 30
US 30
Indianapolis Blvd
Main (CP)
Cline Ave
Morse
Michigan Blvd
US 20
Franklin
Indiana Ave
Lincolnway
Regional/Big Box Corridor
Urban Commercial/Mixed Use Corridor
Walkable Scale Mixed Use Corridor
Highway Commercial Corridor
Emerging Corridor
Scenic Corridor
Focus Corridor
Opportunity Corridor or Sites
Proposed Corridors
Town or City Centers
Community Big Box
Regional Big Box
Visitor Services
Existing South Shore Stations
West Lake Stations
TOD Development Areas

Corridor planning
These efforts, still largely in planning stages, envision converting auto-oriented corridors with reasonable scale into more pedestrian-friendly districts by introducing new uses, improved streetscape and pedestrian crossings, and redeveloping obsolete commercial sites. Several of the "livable centers" plans focus on corridor redevelopment.

This chapter includes development, design, and regulatory policies focused on corridors and image centers. Figure 5-28 displays a typology, based on field investigations, that both categorizes these image centers and provides locations for further concept development that can be replicated in other parts of the region.

These typologies include:

Regional Big Box Corridors: These regional centers typically include more than one mass retail establishment and large surrounding multi-tenant centers, serving a multi-community region. Examples include the Southlake area in Hobart/ Merrillville and Main and Indianapolis Boulevard in Highland.

Urban Commercial/Mixed Use Corridors: These include linear districts and intersections, generally with one community-oriented big box or major local retailer like a supermarket. Lot depths are frequently relatively shallow and are adjacent to residential uses. Examples are Kennedy Avenue north of Ridge, Calumet Avenue, and Broadway in Merrillville.

Walkable Mixed Use Corridors: These are typically smaller-scaled corridors with individual buildings or small multi-tenant structures with limits on parking lot size and dominance. These corridors generally have sidewalks. Examples are Broad Street in Griffith, De Kalb Street in New Chicago, Broadway Avenue in Chesterton, and Lincolnway outside of Downtown Valparaiso.

Highway Commercial. These are high volume, high speed commercial corridors with a variety of commercial building types. US 30 is the pre-eminent example.

Emerging Corridors. These include commercial corridors that are not fully developed and, with appropriate policy, can avoid repeating past mistakes or becoming major community barriers. Indianapolis Boulevard in St. John is an example.





Scenic Corridor. These are roads that have substantial scenic and recreational value. Examples include US 12 (Duneland Highway) and potentially State Route 149.

Focus Corridor. These are corridors that are difficult to categorize and take on different characteristics along their route. They provide significant opportunities for multi-modal transportation and innovative development. Examples include Central Avenue in several cities, 25th Street in Gary, and Meridian Avenue between Valparaiso and Chesterton.

Opportunity Corridors. These mixed use corridors provide possibilities for comprehensive redevelopment and may serve as anchors for urban reinvestment efforts. Examples include Broadway in Gary and the commercial section of Hohman Street south of Downtown Hammond.

Town and City Centers. These include downtowns, traditional town centers, and new downtown-like development.



Creating Purpose

The first section of this chapter explored important influencers of land use within the three counties of the Northwest Indiana Metropolitan Statistical Area (MSA). These factors included existing land use patterns; population and growth trends within the region and its 42 cities and towns; past planning efforts in individual cities, towns, and counties; and housing trends and market gaps. Based on this information and extensive community consultation and field work, the second section identified eight policy areas that grouped MSA communities and subregions together based on common characteristics, relationships, and periods of development. It also identified and presented a typology of major corridors, recognizing their importance as both transportation facilities and focuses of development and community character. This section builds on that foundation to develop a regional land use vision and policy directions for the next twenty-five years. This vision recognizes that each community has control of its own future. But regional policy has a strong role to play in a multi-county, multi-community area like Northwest Indiana, where economic development, transportation, and environmental issues and interests do not stop at municipal borders or county lines.

Whereas the last section of this chapter was largely quantitative, presenting and analyzing facts on the ground, Creating Purpose is largely qualitative, interpreting and evaluating those facts and using them to form regional guidance and policy. Of special importance to this plan and the regional mission of NIRPC is the close relationships of transportation, land use, economic health, and community quality.

To the end of creating a land use vision and policy for Northwest Indiana, this plan component includes the following:

A population future based on regional trends and the potential of Northwest Indiana. While industrial uses can follow their own imperatives, residential uses constitute the largest single consumer of land by far, and population change drives the conversion of land from rural to urban use. This section projects a population target for the planning period and explains the reasons that make this target likely.

Issues and Uncertainties. This section will discuss outstanding problems and questions that affect both the ability of Northwest Indiana to evolve for the benefit of its citizens and that frame future policy and projects.

A Development Vision. This presents a projected land use future for the policy areas identified in Part One, derived from the potential population future discussed in the next section.

Land Use Principles, macro-scale guidelines and programs that, taken together, will help move the region toward achieving its full potential.

Focus Areas, to be considered in detail as case studies and demonstrations of possibilities and implementation in the Purpose Driven Planning section of this chapter.



A Population Future

The Finding Meaning section presented a methodology based largely on observed growth rates in stable and growing communities, relative stability in cities that had been in historic decline, continuation of positive trends in several municipalities, and relative population stability in rural and exurban areas. This analysis yielded a target Northwest Indiana population of about 900,000, with an approximate split of 740,000 urban and 160,000 rural/exurban. This equates to an average annual growth rate within the MSA of about 0.55%. However, Northwest Indiana's overall population change during the last forty years has been flat, with increases in growing "suburban" areas canceled by declines in the older "industrial" cities.

This discussion takes a somewhat different analytical approach, looking at the dynamics on the Illinois side of the Chicago metropolitan area and comparing the population history of Cook, Lake, and DuPage Counties to that of the three Northwest Indiana counties. Taken together, the three primary Chicago area counties displayed an average annual growth rate of 0.21%, relatively similar to Northwest Indiana's 0.11% annual rate. However, controlling for Chicago, the remainder of the Illinois metropolitan area displays a 0.55% average annual rate. The more distant suburban counties have rates ranging from 0.8% to 1.2%.

This pattern is analogous to Northwest Indiana. When the larger industrial cities (Gary, Hammond, and East Chicago) are separated out, the three county area has an average annual rate of 0.67%. The projected growth rate of 0.55% in Part One struck a midpoint between the slower and faster

Location	1980-2020		
	1980	2020	Average Annual Growth (Loss) Rate
Cook County	5,253,655	5,275,541	0.01%
Chicago	3,005,072	2,746,388	-0.23%
Outside of Chicago	2,248,583	2,529,153	0.29%
Lake County, IL	440,372	714,342	1.22%
DuPage County, IL	658,835	932,877	0.87%
3 County IL Total	6,352,862	6,922,760	0.21%
3-County excluding Chicago	3,347,790	4,176,372	0.55%

Figure 5-29: Chicago Metropolitan Area Growth History, 1980-2020 for Illinois

Location	1980-2020		
	1980	2020	Average Annual Growth (Loss) Rate
Lake County, IN	521,525	498,700	-0.12%
Industrial Cities	283,739	173,342	-1.23%
Outside of Industrial Cities*	237,786	325,358	0.79%
Porter County	120,059	173,215	0.92%
La Porte County	108,695	112,417	0.08%
3 County IN Total	750,279	784,332	0.11%
3-County excluding Industrial Cities	466,540	602,118	0.67%
** Industrial cities include Gary, Hammond, and East Chicago*			

Figure 5-30: Northwest Indiana Metropolitan Area Growth History, 1980-2020

growing counties in the Chicago metropolitan area. Furthermore, it is exactly the same as the three-county growth rate excluding Chicago on the Illinois side. This projection, then, appears to be highly consistent with the experience of the wider Chicago metropolitan region and appears to represent a highly defensible projection for the future.

Trends that Support a New Population Model

The model makes two overall reasonable and positive assumptions:

- "Suburban" growth centers in Northwest Indiana will grow at a relatively robust rate, at least consistent with the experience of suburban Illinois counties outside of Cook.

- The population decline of older cities will slow down and future population totals will stabilize. A fundamental question, then, is what are the assets and opportunities that are making this long-term outcome increasingly likely; and how can regional policy capitalize on them. We think these significant emerging assets include the following.

Commuter Transportation

Major investments on the South Shore Line will help stabilize central cities and generate manageable growth in developing areas. Double tracking will bring faster and more frequent service to Chicago, including better off-peak schedules. Speed primarily benefits potential commuters between Gary and Michigan City, increasing the ability of Duneland cities to attract Chicago-bound commuters. This attraction would be enhanced by good transit, bicycle, or park and ride access to the railroad. But frequency benefits everyone, and can support redevelopment efforts in Hammond, East Chicago, and perhaps most significantly, Gary.

The completion of the West Lake Corridor will be at least as important a factor in influencing the development and land use future of Northwest Indiana. The new line puts approximately 170,000 people within a 15-minute commuter-shed of stations. This, coupled with other assets, is likely to help stabilize built-up areas and encourage significant new development in growth centers around and south of the Dyer terminal.

Transit-Oriented Development

Related to the continued transformation of the South Shore Line are the opportunities for higher density development around stations. NIRPC's Transit Oriented Development Program Funding Report (2022) identified three different types of TODs: TOD 1 in urban core or downtown districts; TOD 2 in suburban communities; and TOD 3 in commuter communities. The report's analysis included both rail and enhanced bus transit nodes. From a land use planning perspective, the different settings of potential TODs creates different development and population opportunities:

- TOD 1s, including the downtown districts of Hammond, Gary, and Michigan City, will tend to generate high density, mixed use projects. One such project is already in progress in Michigan City as of 2023, and a new Downtown Hammond Station, added to the original West Lake Corridor, will advance efforts to develop major residential projects in that district.





South Shore Line improvements. From top: Right-of-way clearance and grading for new, double track right of way in Michigan City; rendering of new Miller station

- TOD 2s, typically in urbanized transit nodes outside of city centers, actually include a variety of settings with different potential outcomes. The East Chicago station is the busiest single station on the South Shore and, given its surrounding land use context and access, should also be capable of attracting high density, "city center" scale development. Stations like South Hammond and Munster in largely built up urban neighborhoods are more likely to generate medium-density infill projects. The Dyer terminal station, with substantial adjacent vacant sites and amenities like Centennial Park, will open possibilities for medium- to high-density residential and mixed use.

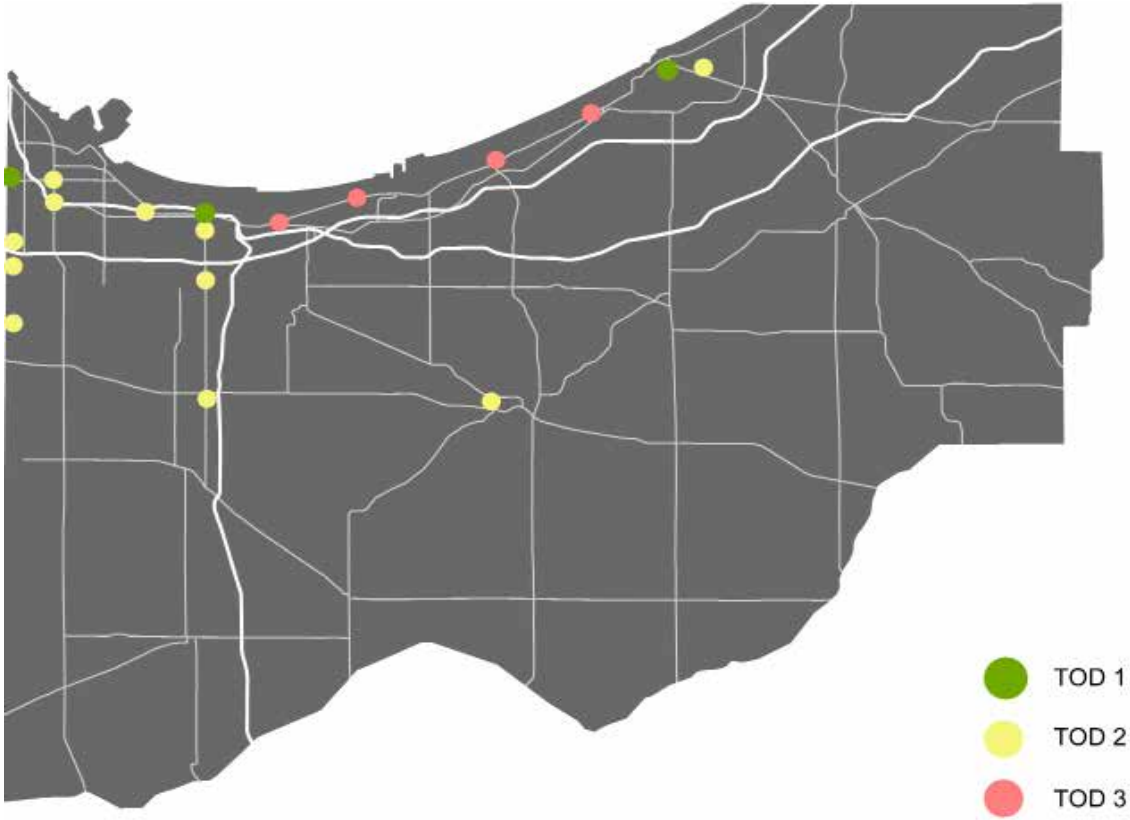


Figure 5-31. NWI Transit-Oriented Development Sites from the Transit-Oriented Development Program Funding Report (NIRPC, 2022)



Transit oriented development outside of a city center. Along the Expo Line light rail in Los Angeles.



Repopulating Downtown. The Banks development in in the NewPort Landing development area in La Porte. The project's density is nearly 50 units/acre.

In the NIRPC report, the Broadway corridor – currently served by Gary Public Transportation's Broadway Metro Express – includes two potential TOD nodes: University Park at the Indiana University Gary Campus and Century Plaza (US 30 and I-65) in Merrillville. Both of these sites present substantial possibilities for high-density residential development – the IU site on adjacent vacant land and the Century Park area through redevelopment of unnecessary large surface parking lots and other underused land. A third bus-related TOD site in Downtown Valparaiso is currently under development. The nature of service for potential residents at the Valparaiso node might be most significant for Chicago commuters. The other two TOD 2 sites (Carroll Avenue in Michigan City and Gary Airport) are on the edge of single family urban neighborhoods and near industrial uses, and would be less likely to attract substantial new, higher-density development.

- The identified TOD 3s are related to commuters and follow the lakefront. The Miller site and the US 12/20 corridors, with adjacency to an attractive neighborhood business district and the National Park, present important possibilities for infill residential. The other three sites, within the national and state parks, are very limited from the perspective of adjacent TODs. However, the corridors that lead to them - SR 49 and Waverly Road to Dune Acres, Crisman and Willowcreek Roads to Ogden Dunes, and North 500E to Beverly Shores– could emerge as "Transit-Oriented Corridors" with higher permitted densities encouraged by improved South Shore commuter service.





Trails and Development. From top: Trail-oriented development along the Midtown Greenway in Minneapolis; New construction underway

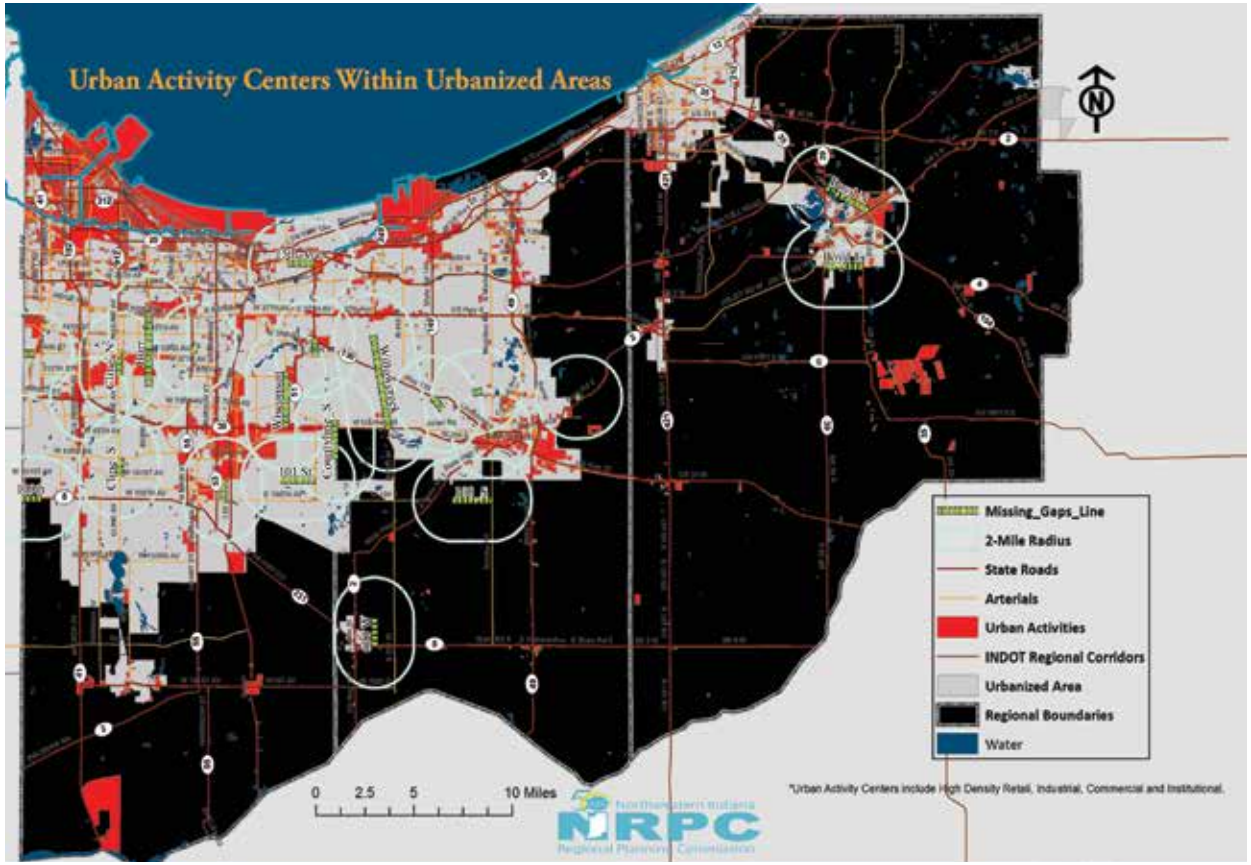


Figure 5-32: Road System Gaps. Urban activity centers and missing road links from NIRPC's Regional Corridor Study (2016)

Significant City and Town Center Development

The variety and character of the region's city and town centers are distinct assets, and downtown development can have a significant impact toward stabilizing the population of older cities and adding density to newer ones. Hammond's ambitious downtown development program, which will be advanced by public realm investments and the addition of a downtown South Shore station, will add residents and enhance the image of the city. Public projects in Hobart, Portage, Crown Point, Valparaiso, and La Porte create the foundation for further urban development, including higher density residential and new businesses. Additionally, cities that developed without traditional central districts are in the process of developing or planning them in strategic locations. The developing Founders Square district in Portage is an example of such a project. Merrillville, beginning the process of a creating a new comprehensive plan, also aspires to establishing a new central district.

Outdoor and Environmental Assets

The Dunelands environment has attracted visitors to Northwest Indiana for many years and this unique and uniquely accessible outdoor environment is a growing asset for Northwest Indiana. Continued investment at Indiana Dunes National Park is creating a major asset that

will have significant land use and development implications. Similarly, the award of RAISE funding to complete the Marquette Greenway will advance implementation of the Marquette Action Plan. Because of its relationship to the lakefront and transportation access, the trail network functions and effectively operates in some ways like a transit system, especially as gaps in major corridors like the C&O and Iron Horse are filled and priority links between the lakefront and Valparaiso (Dunes Kankakee) and La Porte (Chessie) are executed. Nationwide, trails have demonstrated the ability to attract urban density development in much the same way as fixed transit lines do, and "trail-oriented development" can be an important part of Northwest Indiana's land use policy.

New Corridors

Previous plans, most notably the Northwest Indiana Regional Corridors Plan (2016), identify significant corridors and missing links necessary to provide better connectivity in all four directions. The 2016 study takes a highly strategic approach, focusing on incremental street extensions and better north-south circulation in the more urbanized western half of the MSA. These proposed projects will open new areas to development and, combined with other assets, will attract a larger share of metropolitan growth. The most imminent of these is the extension of Willow Creek Road south to US 30. In common with other proposed road projects, much of the Willow Creek project takes place outside of municipal boundaries and will require a regional approach to use land efficiently, respect pre-existing land use patterns, and conserve environmental assets.

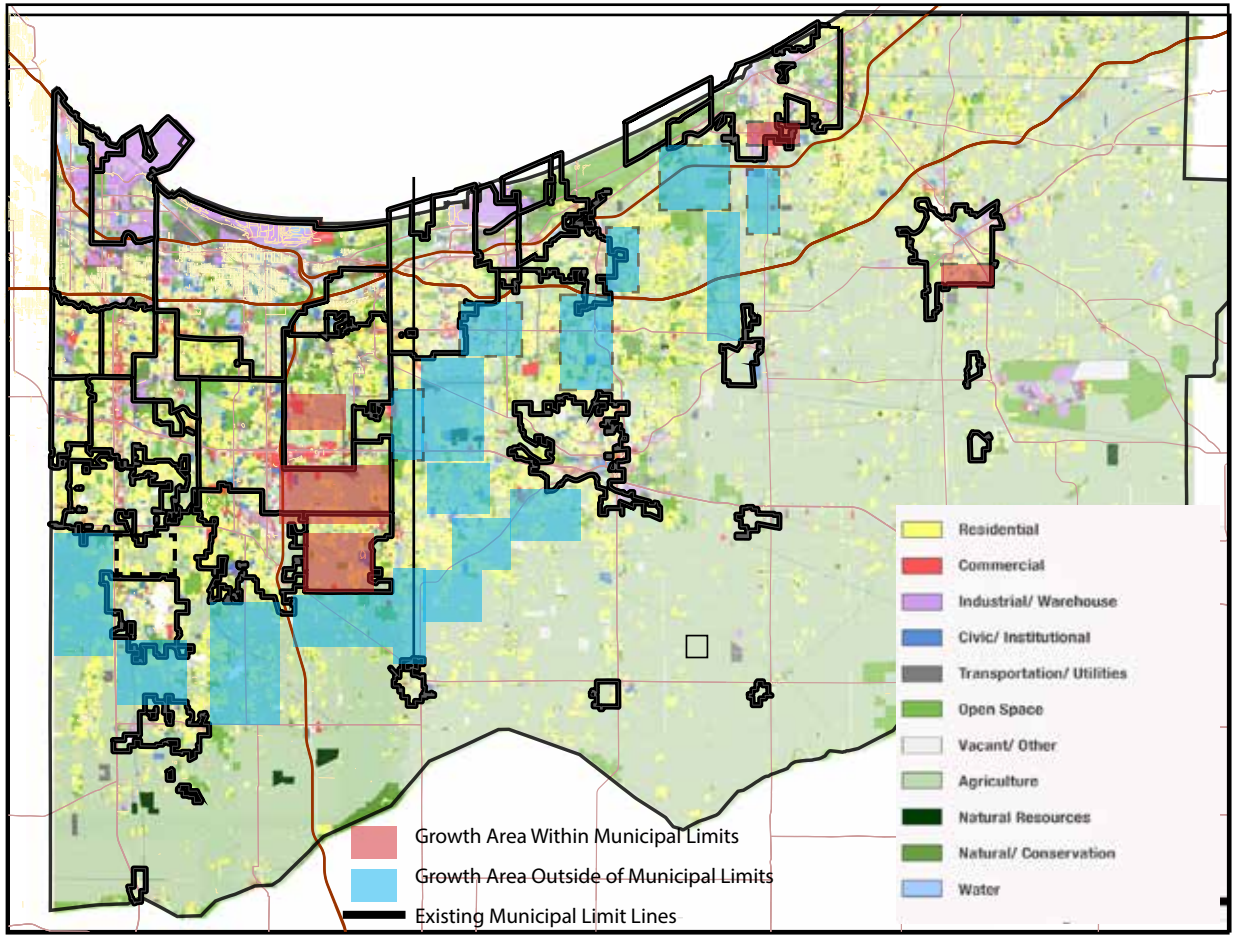


Figure 5-33. Potential Urban Development Areas. Potential areas for urban growth both in and out of existing municipal limits.

Relative Housing Affordability

Part One included a detailed analysis of housing affordability in Northwest Indiana. This analysis, based on 2020 Census data, concluded that typical housing values and rents in the region were very affordable relative to population. This appears to remain true, and a cursory review of average sales information done for this working paper using three sources (Zillow, Redfin, and Realtors.com), indicated that average prices in the three Northwest Indiana counties was about 77% that of the three metropolitan Illinois counties (Cook, DuPage, and Lake). On the other hand, year to year comparisons for summer months in 2022 and 2021 indicate an increase in values of 11% for the Northwest Indiana counties compared to 3.8% for the Illinois counties. Nevertheless, it appears that the more moderate overall prices in Northwest Indiana do seem to be having an effect on the market.

Available Land
While large areas of Northwest Indiana are environmentally sensitive, the region continues to have large areas for potential development that are accessible to community services. For example, some of these potential sites are very close to the regional commercial core at I-65 and US 30. With some significant exceptions such as the Merrillville "panhandle," most of them are outside existing city limits and will require infrastructure extensions and probable annexations to provide municipal services.

Economic Factors
Northwest Indiana's favorable tax environment compared to Illinois (lower state personal, property and business income taxes) is a significant attractor of people in the metropolitan Chicago market. The region's continued diversification from a reliance on heavy industry to other industrial sectors may ultimately provide more sources of local employment, with a consequent reduction of commuting time.

Issues and Uncertainties
While the characteristics described above tend to move Northwest Indiana toward an attractive goal of manageable growth, the region also faces some specific issues and questions that should be addressed by regional land use and transportation policy, some of which are discussed below.

The Future of Gary
In a very important way, the future health and economic viability of Gary is fundamental to the image and quality of Northwest Indiana. Within 57 square miles, the city has the largest









Resources in Gary to build from. From top: Broadway near the IU-Gary campus; a Marquette Greenway segment.

New residential development in industrial cities. From top: Lakefront homes in Whiting; rental townhouses in East Chicago

municipal land area in Northwest Indiana to serve in the face of a steadily declining population and revenue base, and the consequences of this challenge are highly visible. The city's dramatic population loss from its 1960 peak of about 180,000 to today's 70,000 has left large areas of vacant land and distressed and vacant buildings. And the city itself has experienced the concentrated impact of a variety of outside forces – environmental pollution, the closing or shrinking of major industries, white flight and financial disinvestment, and the effects on neighborhoods of major highway corridors.

This history of population decline, industrial contraction, and disinvestment must be reversed – but the question is how? Gary cannot solve these problems alone. Because of the connection of the city to the region, strategies and projects to reverse this history of decline must of necessity also be regional. While a land use element is certainly not sufficient to address these issues, it can point the way to physical development strategies that will make a difference.

Industrial Northwest Cities and Land Use Impact

Heavy industry built Northwest Indiana's older cities over a century ago and continues to have an influence, but has been their major challenge in a still new century. More than the more suburban cities and towns of the MSA, they have had to deal with environmental impact, economic transition, and population change, and each have addressed challenges in different ways.

East Chicago and Whiting are both heavily affected and somewhat isolated by heavy industries. Whiting's relative isolation, limited interface with adjacent industries, strong 119th Street business district, lakefront access and recreation, and adjacency to Wolf Lake have reduced visual impact and reinforced its sense of community. This has produced both the will and resources to make significant amenity investments. It is also linked to both Chicago and the rest of Northwest Indiana by US 41, US 20, and I-90 and excellent trail connections.



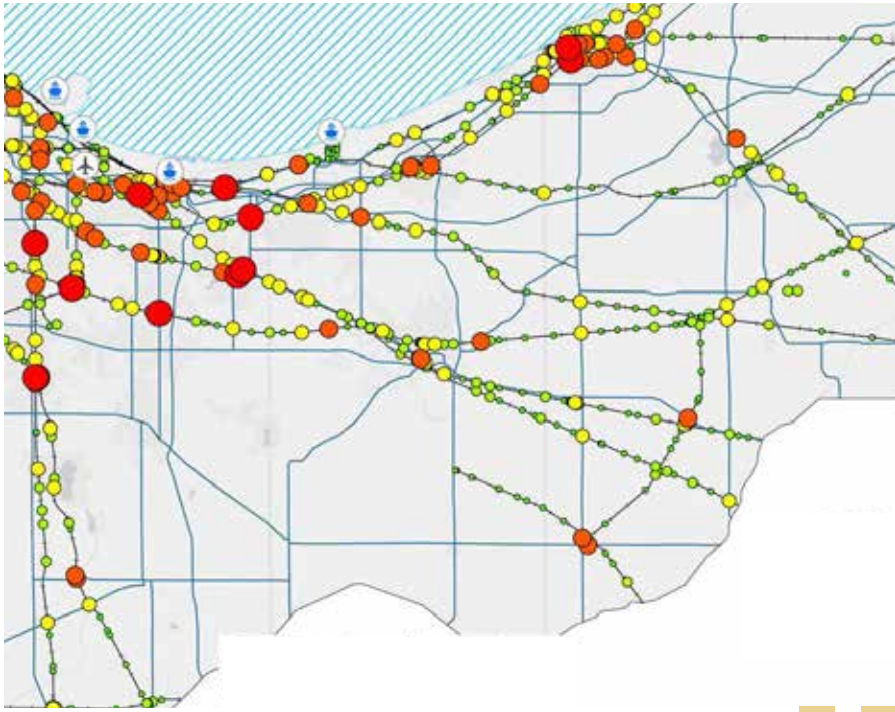
Downtown Hammond Revitalization Plan

East Chicago, divided into three parts by industries, canals, and railroads, has more complicated physical challenges. While this division reinforces neighborhood identity, it also complicates access from one part of the city to another and tends to create sectionalism, including two central business districts. The city is fully built up and land use changes will depend largely on redevelopment. A major potential land use focus is transit oriented development around its South Shore station, the busiest on the railroad. The city is already in the process of preparing a plan for this strategic focus. Another important priority will be improving multi-modal connections between East Chicago's separate neighborhoods.

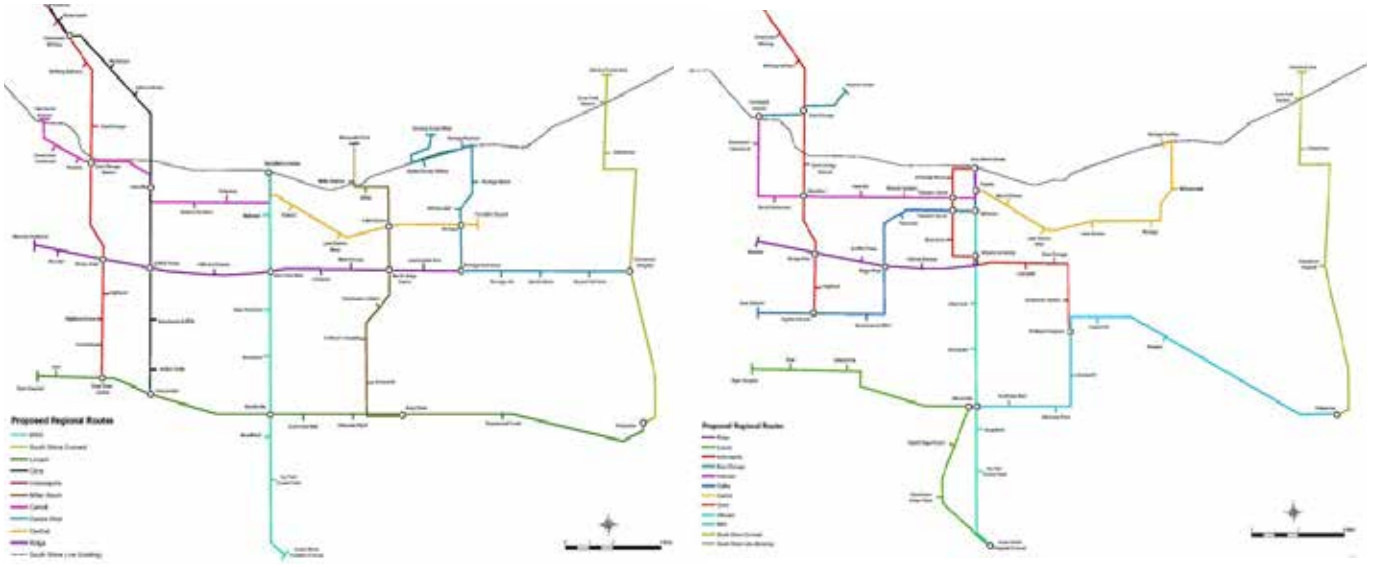
Hammond, now the largest city in the MSA, has instituted a variety of innovative incentive and population retention programs to stabilize its population. These efforts have substantially slowed (and possibly reversed) the rate of population decline. A substantial growth focus of this largely built-up city is its downtown district, the subject of a major 2018 master plan and a subsequent Urban Land Institute Advisory Services Panel in 2021. A planned downtown station on the South Shore's West Lake line is seen as a major development catalyst for both new construction and adaptive reuse. A further challenge and opportunity will be the eventual reuse of the Franciscan Hospital site following the 2023 announcement that most services will be consolidated at its Munster facility. Another land use focus may be the eventual future of the industrial triangle between East 165th Street and the Hammond Yard.

Transportation: Freight

Freight transportation policy serves conflicting goals. Freight movement should be smooth and efficient, but smooth and efficient freight movement comes at the cost of frequently creating barriers that challenge the connected, united, renewed, equitable, and safe aspects of the CURVES vision. Land use and transportation policies must be coordinated to unite communities, minimize externalities, and reduce the impact of barriers. This can sometimes entail substantial capital investments on a regional scale. It also requires cooperation among agencies and companies that are not always sympathetic with local interests.







Transit Service Alternatives. From left: Grid (or corridor) based network and hub (or node)- based system

Transportation: Highways

Highway congestion is almost inevitable in Northwest Indiana because of its geography as conduit from Chicago and the west to the east. A confluence of four major interstate routes – Interstates 80, 90, 94, and 65, all among the busiest in the country and carrying heavy truck and automobile loads – almost inevitably causes congestion and substantial delays. Here again, land use and transportation policies must be closely coordinated to provide transportation alternatives and to separate local and regional traffic streams. This requires additional local corridors that keep unnecessary trips off the interstate system.

Transportation: Transit

The *NWI 2050+* public survey that was part of this process indicated very light use by respondents of local public transportation. The South Shore is likely to be a very important land use (and residential/commercial choice) determinant in the future. While conventional local bus service is very important from a service and equity point of view, it is almost never a determinant of major land use patterns, tending to respond to rather than create demand.

Bus rapid transit (BRT) service can have some impact on density, depending on service frequency and amenity, but is usually not enough of a factor to catalyze development alone. GPTC's BMX has some aspects of bus rapid transit (limited stops, positive marketing, direct service, significant traffic generators, and electric buses in the future), but other characteristics, including low on-line population density and 30-minute frequency reduce its actual land use impact. Essentially, BRT service is a feature that helps market high-density development, but it usually does not create it. On the other hand, a direct rapid bus service on Broadway connecting to an enhanced South Shore Line could be beneficial to a TOD at the IU-Gary campus. Similarly, Valparaiso's V-Line, with direct commuter services to Chicago and the South Shore, reinforces development in a highly active downtown.

The *NWI 2050+* transit component considers two new network components: a corridor-oriented grid and a hub system. Both concepts substantially clarify and unify the region's local transportation systems. However, to the degree that local transit influences land use patterns, the alternatives have different impacts. The grid system encourages a more linear pattern and generates more frequency on each line, favoring point-to-point riders headed for a one destination. The hub (or time-transfer) system may encourage development around the hub by providing more choices to people whose trip originates there. But with limits on funding, it increases headways and trip time for people traveling to other destinations.





Southlake. While the mall remains an important retail center, vacant big box stores and parking lots designed for another era are exceedingly difficult to fill.

Commercial Development

Changes in the commercial environment have significant impacts on land use and present both challenges and opportunities with older, automobile-intensive centers. On-line retailing, the decline and bankruptcy of some big box and mall retailers, the COVID pandemic, reduced demand and higher operating costs in regional malls, and changing preferences are nationwide trends that have affected commercial land use. On the other hand, some retailers have successfully weathered the storm and some information suggest some resurgence for the experience of brick-and-mortar retailing. It seems clear, though, that two types of land-intensive developments are suffering: older large strip centers and regional malls.





Two Commercial Corridors: From top: Main Street in Crown Point, Broadway in Gary.

Obsolete Centers

Many older strip centers in the region present significant problems but occupy real estate with significant reuse opportunities. Many of these centers have high vacancies or marginal occupancy, excessively large parking lots, few pedestrian and user amenities, and poor relationships to surrounding streets or sidewalks. These older projects do not compete successfully with more contemporary development and do not generate the capital necessary for major upgrades.

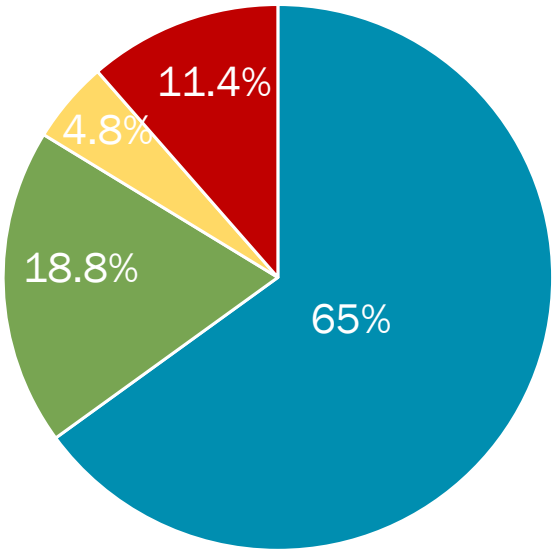
Southlake and Century Plaza District

Southlake Mall and surrounding retailers around the US 30 and I-65 interchange have been and still are Northwest Indiana's retail center. However, vacancies in the mall, closure of anchor stores and the vast amount of parking in relation to even peak demand suggests a redesign to use this important site more productively. The entire district, covering over two square miles, has poor connectivity and virtually no safe pedestrian access. The evolution of this district to create a more appealing and productive mixed-use environment should be viewed as a technique to keep this area both economically vital and more attractive to its customer base.

Commercial Corridors

Older commercial corridors, including sections of such streets as Calumet Avenue, Kennedy Avenue, Indianapolis Boulevard, Central Avenue, and Main Street (Crown Point) have many of the same problems as the strip centers that often occur along them or at major intersections with other arterials. Issues with older corridors include inefficient use, poor connectivity to the street or sidewalk, access management and conflicts, marginal uses and some vacancy, outdoor storage, and other problems that affect the city environment.

These issues also pertain to new or emerging corridors as well, although the scale of buildings is typically larger. In addition, newer corridors (like Indianapolis Boulevard in Highland and St. John) developed when access controls were in place. But again, these corridors create inefficiencies in land use, exhibit poor pedestrian access both within and to the development, and relate poorly to surrounding neighborhoods.



Large Lot 1-Family Detached

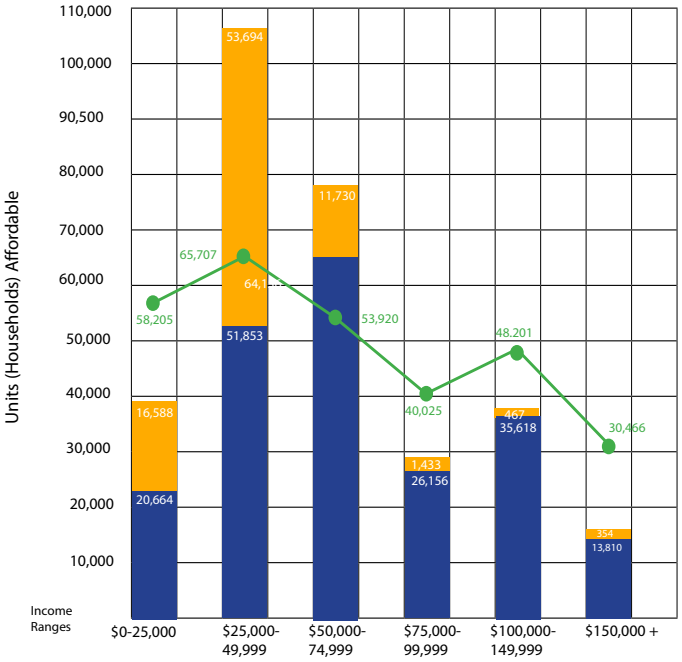
Small Lot 1-Family Detached

1-Family Attached

Multi-Family

Source: Urban Footprint, 2022

Figure 5-34: Housing Unit Distribution in Northwest Indiana, 2020



Owner units

Rental units

Households in Income Range

This analysis compares the number of households requiring housing with costs in a specific range supply of units available in that range.

Source: US Bureau of the Census American Community Survey 2022, RDG Planning & Design

Figure 4: Northwest Indiana Affordability Analysis





Innovative Urban Development Forms. From top: Townhomes in East Chicago, Street-oriented apartments in the Village at Burns Harbor.

Housing Deficits

Part One included an extensive analysis of housing issues, with a particular emphasis on both supply and affordability. Both these areas identified significant issues that affect regional land use policy.

Multifamily Development

Nationally, the ratio of single-family to multi-family housing starts in the United States has been approximately 60% to 40%. This fluctuates with specific conditions. In late 2022, for example, increasing mortgage interest rates affected single-family starts more severely than multi-family, and the ratio moved toward the 50/50 range. But in any case, single-family housing dominates Northwest Indiana, despite changing preferences and continued demand for multi-family development.

As of 2020, the housing stock of the region was about 84% single-family detached. Multi-family units made up only about 11% of the total inventory. This reflects a significant number of housing units in semi-rural settings, but also a prevalence of single-family housing within communities. Given post-2008 shifts in attitudes about homeownership and current housing development cost, a substantial demand is likely to exist for multi-family, especially in areas with convenient services.

A particular area of shortage is "high-end" multi-family units with monthly rents over $1,500. This is a problem because our experience finds a typical required rent for feasibility is in the range of $1.80 to $2.00/square foot for monthly rent. The lack of comparable residential rents discourages developers from moving into the market because of a perception of increased risk. It also concentrates higher income households with the ability to support market rate rents in lower cost, more affordable housing units.

Ownership Development

The affordability analysis in Part One indicates that more affluent households are occupying relatively affordable units. Therefore, these units are not available to new or more moderate-income households. At current construction and development costs, it is very difficult to build new units affordable to moderate-income households. There are several potential solutions to this problem including:

- Development of move-up housing for higher-income residents.
- Incentives that reduce the cost of new housing development.
- Nonprofit or limited profit development entities, focused on moderate cost housing.
- Increased emphasis on new forms of owner-occupied construction, including small-lot single family, owner-occupied duplexes and other attached forms, townhomes and rowhouses, and condominiums.

Exurban Development-Beyond Municipal Limits

Anecdotal information, gained through discussions with individuals involved in development, suggests that open land in Northwest Indiana is being acquired on either a speculative basis, anticipating future development demand, or for more immediate development. In a way, this tends to confirm the conclusions discussed earlier – that the region is becoming increasingly attractive to people in the greater Chicago metropolitan area and that environment, housing and land cost, environment, and transit improvements are reinforcing this emerging trend. A significant amount of this development may occur outside existing limits and may involve people looking for large-lot or semi-rural settings. The relative availability and affordability of large parcels of land without urban services might encourage short-term, large-lot residential development for people seeking to "live in the country."

This creates additional challenges for municipalities and the region as a whole. Large-lot development on individual wastewater systems can constrain logical city growth and extension of municipal services. Residents of these areas, coming from cities, bring the expectation of city services with them. Providing these basic services is very expensive because of the low density and consequent low value per acre of semi-rural subdivisions. Finally, low density development, if unmanaged, converts more land to development, increases the interface with natural resources and environments, and reduces the efficacy of transportation alternatives to the car.

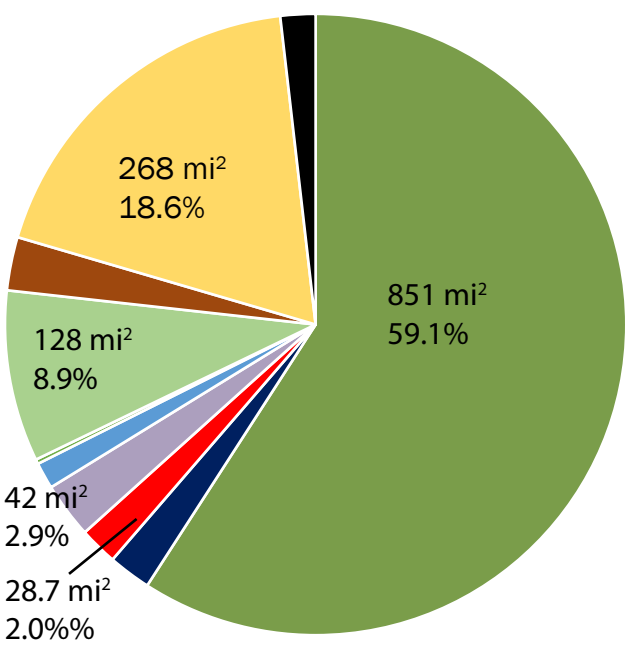
There will likely always be a market for low density residential uses in areas of Northwest Indiana, and a policy framework that accommodates and manages this demand is required. Some potential development areas are unlikely to receive urban services and well-designed large-lot and acreage development will not impede urban growth. In areas where public service extension is feasible but premature, concepts that both allow some limited amount of "rural" development in the short term but maintain the local prerogative to extend services economically in the future can be a useful solution.

Toward a Development Vision: Constructing Development Scenarios

Despite Northwest Indiana's national reputation as being largely occupied by heavy industry, agriculture and residential are the region's dominant land uses. Agriculture accounts for 851 square miles, or 59% of the total land area, while about 268 square miles, or about 18.6%, are in residential use. Residential is the dominant use of developed or otherwise assigned land, representing 58.3% of the total. Therefore, residential use will largely determine how much agricultural or open land will be converted to urban development between 2023 and 2050.

Because of the dominance of residential use, the variables for developing regional growth scenarios will largely involve housing, and will include density and building configuration. The base scenario will be a continuation of the current condition. As of 2020, the region included 335,647 housing units on 268.26 square miles or 171,686 acres. This indicates a net residential density of 1.96 units/acre, or a gross density (including street and internal open space) of about 1.63 units/acre. This reflects several factors, notably:

- The preponderance of large lot single family development throughout the region, including a large amount of acreage in low-density residential use.
- The very low density of Gary, by far the largest municipality in the region which would normally be expected to generate high population density.



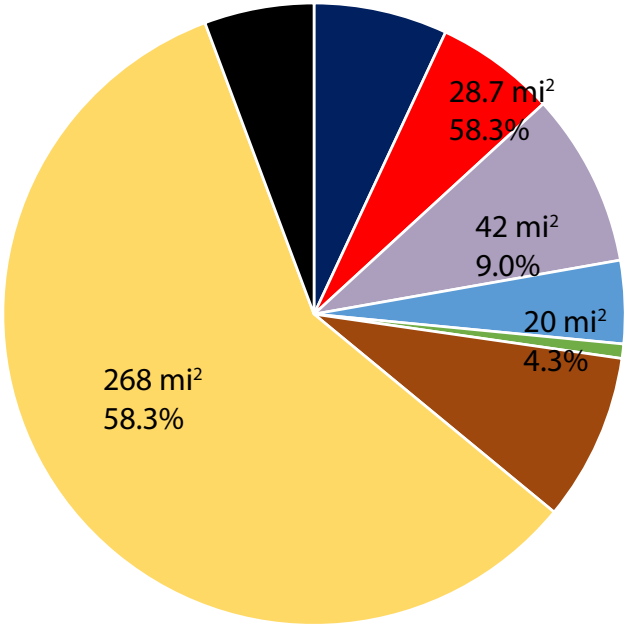


Figure 5-36: Land Use Distribution in NWI: Developed Uses

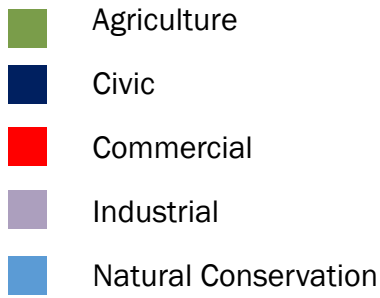


Figure 5-35: Land Use Distribution in NWI: All Uses



Figure 5-37 displays a model that describes a distribution of unit densities and types that are relatively consistent with available data for numbers of units in each category and overall density for Northwest Indiana. This model provides a baseline for alternative scenarios that display different housing mixes and land conversion requirements. The scenarios illustrated here include:

- Continuation of the current housing mix, yielding a new density of 1.96 units/acre for 30-year growth.
- New development at a net overall density of three units/acre. This net density is similar to conventional residential development in American suburbs, but a significant increase over current housing density.
- New development at a net overall density of four units/acre. This housing mix reflects the mix of single-family to multifamily development prevalent in the United States today.
- New development at a net density of five units/acre, a significant density increase and an average density that some cities are targeting as a more sustainable average residential density. This scenario places a major emphasis on medium density development – the so-called "missing middle" that includes small-lot single-family, single-family attached, and townhome/rowhouse environments.

All scenarios use a 0.55% annual average growth rate, generating a 30-year total of 50,000 new units.

To consider these alternatives more fully, the model breaks projections into four residential development types:

- *Large-lot single-family*, here considered to be detached units in three subcategories: small acreages averaging one unit per two acres; large lots, averaging about 1/2 acre per unit; and standard subdivision lots, averaging about 12,000 square feet per unit.
- *Small-lot single-family,* detached units in urban subdivisions, existing neighborhoods, and urban development and cluster configurations. Typical small lot residential is in the range of 5,000 to 7,000 square feet per unit.

Unit Type	Area/ Unit (SF)	Area/ Unit (Acres)	Net du/A	% of Units in Category	Total # of Units	Total Area (A)	Net total du/A
Large-Lot 1-Family							
Acreage	87,120	2.00	0.67	20%	43,627.	87,254.80	
Large-Lot	21,780	0.75	2	20%	43627.	32,720.55	
Standard Lot	12,000	0.30	4.35	60%	130,882.	39,264.66	
Total for Category					**218,137**	**59,240.01**	**1.370**
Small-Lot 1-Family							
Small-Lot 1	7,500	0.172	5.8	50%	31502.	5418.43	
Small-Lot 2	5,000	0.114	8.7	50%	31502.	3591.29	
Total for Category					**63,005**	**9,009.72**	**6.993**
1-Family Attached							
Duplex	4,000	0.092	12.44	80%	13,008	1,194.4	
3-4 units TH	2,500	0.057	17.42	20%	3,252	185.36	
Total for Category					**16,260**	**1,239.01**	**12.123**
Multi-family							
Low Density	1,500	0.034	29.04	75%	28,683.	987.73	
Medium	1,000	0.023	43.56	20%	7,649	175.60	
High	500	0.011	87.12	5%	1,912.	21.95	
Total for Category					**38,245**	**1,185.28**	**32.267**
Total					**335,647**	**170,815**	**1.96**

Figure 5-37: Base Model for Existing Density and Housing Types: 2020

Unit Type	Area/ Unit (SF)	Area/ Unit (Acres)	Net du/A	% of Units in Category	Total # of Units	Total Area (A)	Net total du/A
Large-Lot 1-Family							
Acreage	87,120	2	0.67	20%	6,500		
Large Lot	21,780	0.75	2	20%	6,500	4875.00	
Standard Lot	12,000	0.3	4.35	60%	19,500	5850.00	
Total for Category					32,500	23,725	1.370
Small-Lot 1-Family							
Small-Lot 1	7,500	0.172	5.8	50%	4,700	808.40	
Small-Lot 2	5,000	0.114	8.7	50%	4,700	535.80	
Total for Category					9,400	1344.20	6.993
1-Family Attached							
Duplex	4,000	0.092	12.44	80%	1,920	176.31	
3-4 units TH	2,500	0.057	17.424	20%	480	27.36	
Total for Category					2,400	203.67	11.783
Multi-family							
Low Density	1,500	0.034	29.04	75%	4,275	147.21	
Medium	1,000	0.023	43.56	20%	1,140	26.17	
High	500	0.011	87.12	5%	285	3.27	
Total for Category					5700	176.65	32.267
Total					**50,000**		**1.965**
Urban Conversion Area in Square Mile							**39.76**

Figure 5-38: 30-Year Housing and Land Conversion Scenario for Status Quo Density Mix

- *Single-family attached*. This category includes attached units, duplexes, and small townhome and rowhouse developments and can be built to relatively high densities. Typical site area per unit ranges from 2,500 to 4,000 square feet with net densities between eight and 16 units per acre.
- *Multi-family*. Multi-family residential types can vary significantly, from small buildings to very large apartment blocks. The model uses three density steps, ranging from 20 to over 80 units per acre, with a typical average net density of about 30 units/acre.

Comparing Scenarios

Figures 5-38 through 5-41 display the four alternative development scenarios in detail, with common assumptions about overall housing development and population growth. Table 8 distributes the projected 50,000 unit program continuing the unit distribution of the status quo. In this scenario, about 40 square miles of currently open land (either greenfield or redevelopment) will be needed to accommodate growth. At the other end of the scale, the five units/acre scenario, placing a significant emphasis on "missing middle" housing types requires just under 16 square miles to meet these growth assumptions. Figure 5-42 compares the four scenarios and Figure 5-43 uses transect drawings to show a spatial comparison of the alternatives. Figure 5-44 illustrates the incremental land needs for the various scenarios, as land requirements increase as overall density decreases.

The more land intensive alternatives raise a number of issues for the region and its communities:

- Higher land demands locate new development farther away from municipal boundaries and public services. This requires utility extensions that are either accommodated by existing infrastructure or can be managed by incremental extensions. This adds substantial capital cost to development. The alternative is that more prospective residents find homes in dispersed locations without community services – for many people, not a desirable option.
- Lower density development is in many cases more expensive to build and to maintain. Therefore, it tends to reduce economic



Village at Burns Harbor (small lot single-family): Net density – 9 du/acre; gross density – 7.6 du/A



Bungalows at Prairie Queen (multifamily): Gross density – 23 du/A



Townhouses at Gray's Station (single-family attached) Net density – 15.5 du/A

Unit Type	Area/Unit (SF)	Area/Unit (Acres)	Net du/A	% of Units in Category	Total # of Units	Total Area (A)	Net total du/A
Large-Lot 1-Family							
Acreage	87,120	2.000	0.67	20%	3,750	7,500.00	
Large-Lot	21,780	0.750	2	20%	3,750	2,812.50	
Standard Lot	12,000	0.300	4.35	60%	11,250	3,375.00	
Total for Category					18,750	13,687.50	1.370
Small-Lot 1-Family							
Small-Lot 1	7,500	0.172	5.8	50%	8,125	1,397.50	
Small-Lot 2	5,000	0.114	8.7	50%	8,125.	926.25	
Total for Category					16,250	2,323.75	6.993
1-Family Attached							
Duplex	4,000	0.092	12.44	80%	4,000	367.31	
3-4 units TH	2,500	0.057	17.424	20%	1,000	57.00	
Total for Category					5,000	424.31	11.784
Multi-family							
Low Density	1,500	0.034	29.04	75%	7,500	258.26	
Medium	1,000	0.023	43.56	20%	2,000	45.91	
High	500	0.011	87.12	5%	500	5.74	
Total for Category					10,000	309.92	32.267
Total					**50,000**	**16,745.48**	**2.986**
Urban Conversion Area in Square Mile							**26.16**

Figure 5-39: 30-Year Housing and Land Conversion Scenario for 3 du/acre

Unit Type	Area/Unit (SF)	Area/Unit (Acres)	Net du/A	% of Units in Category	Total # of Units	Total Area (A)	Net total du/A
Large-Lot 1-Family							
Acreage	87,120	2.00	0.67	0.2	2,500	5,000.00	
Large-Lot	21,780	0.75	2	0.2	2,500	1,875.00	
Standard Lot	12,000	0.30	4.35	0.6	7,500	2,250.00	
Total for Category					12,500	9,125.00	1.370
Small-Lot 1-Family							
Small-Lot 1	7,500	0.17	5.8	0.8	10,000	1,720.00	
Small-Lot 2	5,000	0.11	8.7	0.2	2,500	285.00	
Total for Category					12,500	2,005.00	6.234
1-Family Attached							
Duplex	4,000	0.09	12.44	0.8	6,000	550.96	
3-4 units TH	2,500	0.06	17.424	0.2	1,500	85.50	
Total for Category					7,500	636.46	11.784
Multi-family							
Low Density	1,500	0.03	29.04	0.75	13,125	451.96	
Medium	1,000	0.02	43.56	0.2	3,500	80.35	
High	500	0.01	87.12	0.05	875	10.04	
Total for Category					17,500	542.36	32.267
Total					**50,000**	**12,308.82**	**4.062**
Urban Conversion Area in Square Mile							**19.23**

Figure 5-40: 30-Year Housing and Land Conversion Scenario for 4 du/acre (High MF)

diversity and limits the potential market for the region.

- The areas of interface between established agricultural uses and urban development, raising potential land use and operational conflicts and encroachment issues on farmland.
- Lower density development uses land less efficiently than higher density forms. In the status quo scenario, 93% of the land development area is used for 65% of the housing units required. The disparity grows with the higher density options. In the 5 du/acre, "Missing Middle" scenario, low density single family would use 63% of the land for 20% of the housing units.
- More dispersed urban development increases the possibility of impact on the region's plentiful and important conservation areas.

On the other hand, a substantial market will continue to exist for low-density residential and well-designed, low-impact developments can minimize impervious surface coverage, buffer environmental resources, minimize impact on habitat, and increase the range of regional housing offerings. As with many things, balance is important, and housing policy in Northwest Indiana should provide a range of options.



Unit Type	Area/Unit (SF)	Area/Unit (Acres)	Net du/A	% of Units in Category	Total # of Units	Total Area (A)	Net total du/A
Large-Lot 1-Family							
Acreage	87,120	2.00	0.67	15%	1,500	3,000.00	
Large-Lot	21,780	0.75	2	18%	1,800	1,350.00	
Standard Lot	12,000	0.30	4.35	67%	6,700	2,010.00	
Total for Category					10,000	6,360.00	1.572
Small-Lot 1-Family							
Small-Lot 1	7,500	0.17	5.8	40%	7,000	1,204.00	
Small-Lot 2	5,000	0.11	8.7	60%	10,500	1,197.00	
Total for Category					17,500	2,401.00	7.289
1-Family Attached							
Duplex	4,000	0.09	12.44	80%	8,000	734.62	
3-4 units TH	2,500	0.06	17.424	20%	2,000	114.00	
Total for Category					10,000	848.62	11.784
Multi-family							
Low Density	1,500	0.03	29.04	70%	8,750	301.31	
Medium	1,000	0.02	43.56	20%	2,500	57.39	
High	500	0.01	87.12	10%	1,250	14.35	
Total for Category					12500	373.05	33.508
Total					**50,000.00**	**9,982.67**	**5.009**
Urban Conversion Area in Square Mile							**15.60**

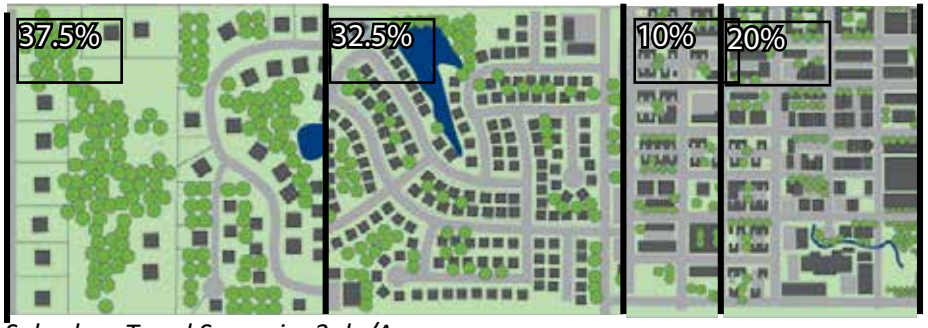
Figure 5-41: 30-Year Housing and Land Conversion Scenario for 5 du/acre

Unit Type	Average Site Area/Unit (SF)	% of Total Unit Growth	Net du/A	Land Area (Sq Mi)
Scenario 1: Status Quo Trend				
Large-Lot 1-Family	28,980	65%	1.37	37.07
Small-Lot 1-Family	6,250	18.8%	6.99	2.10
1-Family Attached	3,700	4.8%	11.78	0.31
Multi-family	1,350	11.4%	32.27	0.28
Total	22,171	100.0%	1.965	39.76
Scenario 2: 3du/A Trend: Suburban Single-Family				
Large-Lot 1-Family	28,980	37.5%	1.37	21.39
Small-Lot 1-Family	6,250	32.5%	6.99	3.63
1-Family Attached	3,700	10%	11.78	0.66
Multi-family	1,350	20%	32.27	0.48
Total	13,538	100%	2.99	26.16
Scenario 3: 4 du/A Trend: National Trend				
Large-Lot 1-Family	28,980	25%	1.37	14.26
Small-Lot 1-Family	7,000	25%	6.23	3.13
1-Family Attached	3,700	15%	11.78	0.99
Multi-family	1,350	35%	32.27	0.85
Total		100.0%	4.06	19.23
Scenario 4: 5du/A Trend: High Small-Lot and Attached Single-Family				
Large-Lot 1-Family	25,028	20%	1.57	9.93
Small-Lot 1-Family	6,000	35%	7.29	3.75
1-Family Attached	3,700	20%	11.78	1.33
Multi-family	1,300	25%	33.51	0.58
Total	9,607	100%	5.01	15.60

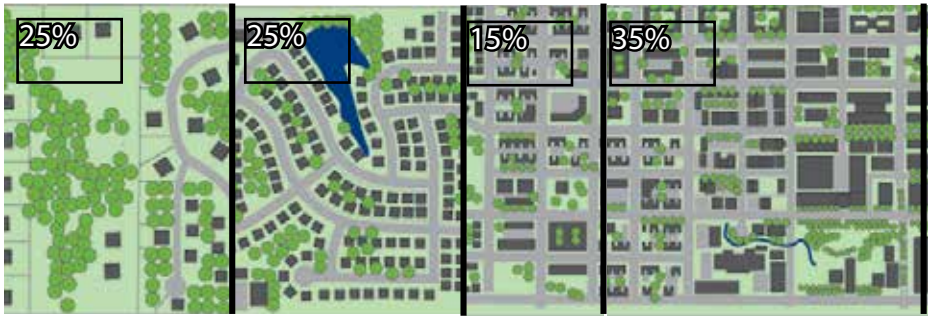
Figure 5-42: Scenario Comparison for Land Consumption



Current Trend Scenario: 1.96 du/A



Suburban Trend Scenario: 3 du/A



National Multifamily Trend Scenario: 4 du/A



Missing Middle Scenario: 5 du/A

Figure 5-43: Transect graphics

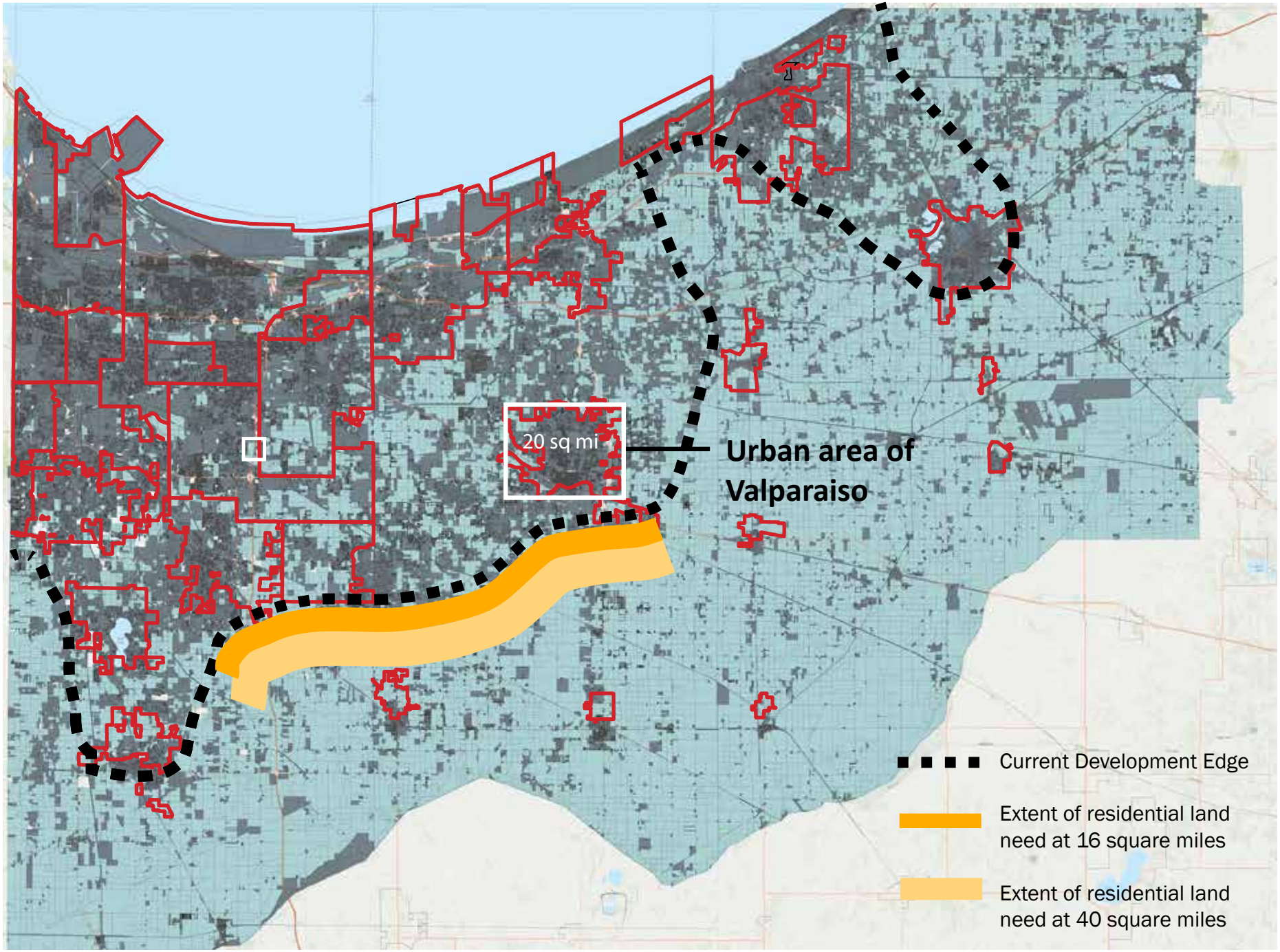


Figure 5-44: Incremental Land Needs for Different Development Scenarios

A Land Use Future: The Preferred Scenario

Based on the analysis contained in this section and the previous Part One, a desirable and attainable land use future for the Northwest Indiana region includes the following:

- A long-term average annual growth rate of 0.55%, achieving a regional population of about 900,000 by 2050.
- A requirement for about 50,000 new residential units over the 30-year planning period.
- An increase in the density of urban development, with new construction achieving a net density in the range of four to five units/acre. This will require between 15 and 20 square miles of additional residential land specifically for housing purposes. Street, parks, common areas, and other features add between 25 and 30% to that total, increasing land need to between 19 and 25 square miles.
- Using the current ratio of industrial and commercial lands to residential lands (6.38:1 and 9.33:1 respectively), the region should plan for about 3.9 square miles of industrial land and 2.6 square miles of commercial land. Some of this demand can be met through redevelopment or repurposing vacant property.

This section outlines land use assumptions and strategies to help achieve this land use future, followed by basic principles to be developed further in Part Three. They are categorized by individual policy areas and geographies identified in Part One.

Northwest Industrial Cities

Continued stabilization and strategic infill in "post-industrial" cities, specifically Hammond, East Chicago, and Whiting. Each of these cities has made significant progress toward reversing a long period of population decline with the contraction of the heavy industries that built their employment base. Effective strategies will involve:

Development and population of city centers and transit nodes in Hammond and East Chicago. Both cities have major opportunities for TOD development related to the two major projects on the South Shore Line (SSL). The probable closing of Franciscan Hospital's Downtown Hammond site is a real challenge, but the redevelopment of this large parcel also presents a major opportunity for populating downtown Hammond.

The revitalization of Gary. The rate of population decline in Gary is also stabilizing and the city has major opportunity areas that will require regional focus and assistance. The city cannot do everything at once, but its significant assets provide a solid foundation. Important projects that can lead to a rebirth of Metro Center include the improvement of speed and frequency of the SSL in both directions, the visionary Gary ELevated trail project and its connection to the Marquette Greenway.

A neighborhood development program begins with identifying focused "villages" - strong neighborhood cores that can be stabilized and built out from for the advantage of both existing and prospective residents. In addition, the combination of available land, an airport, and unique rail and highway access make Gary a major prospective location for contemporary industry.

TODs

Medium to high-density at urban SSL stations and transit hubs. These include Hammond, Munster, Dyer, East Chicago, Michigan City, and Valparaiso. Michigan City will be a pioneer in the process of developing a major TOD. NIRPC's TOD report provides an important guide to taking advantage of the possibilities inherent in the area's transit improvement.

In addition to Metro Center, the IU Gary campus and vacant land around it provide an important TOD opportunity, with the emergence of BRT service along Broadway and its direct, rapid link to the SSL at Metro Center.



Medium to high-density development corridors from adjacent cities to stations in the National Park. These cities include Portage, Chesterton, Valparaiso, and La Porte. The Duneland stations east of Miller are either in the national or state parks or are in or near significant conservation areas that would be threatened by intensive development. However, the corridors leading to them could become more significant development centers and multi-modal transportation corridors. An example of such a corridor is Crisman Road in Portage and the linkage of Founders Square to the Ogden Dunes station. Road development and enhancement and regional transit policy can be catalysts for transit-oriented corridor development.



Trail-oriented development with higher densities adjacent to or within ½ mile of regional trails. Northwest Indiana's superb and growing regional trail system can create the same impetus for investment as transit projects. Trails should be evaluated and extended for their development and transportation importance as well as their recreational roles. Land use policies should encourage family-oriented urban development along these corridors.

Town Centers

Higher density residential development in and around city centers, with density scaled to the character of individual districts. In addition to the traditional downtowns of the larger cities in Northwest Indiana, the region has an enviable collection of smaller town centers. Many of these have experienced high quality community investment projects that make these centers excellent, walkable living environments.

The areas outside of but linked to these Downtown districts also present major growth opportunities. An important example is the Newport Landing district in La Porte. Projects like paths and barrier removal developments can contribute to the synergy between these areas and the traditional city center.

Emergence of mixed-use centers in cities and towns without an historic core. Founders Square in Portage is an example of a city building a new center at Founders Square. Developing a city center is also high on Merrillville's agenda as it begins the process of developing its first comprehensive plan in 25 years. Other important possibilities include the Willow Creek corridor and the Old Plank Road node on the south edge of Dyer.

Development in Built-Up Areas

Increased density and yield of built-up areas currently served by urban infrastructure. In the preferred scenario, new development would not be limited to greenfield sites. Infill development on sites in built-up environments can accommodate significant projected regional growth. In most cases, these sites are vacant or underused but are served by existing urban infrastructure. Successful redevelopment has several key advantages, including reducing the necessity of converting open land to urban uses, saving the growing cost of new infrastructure and transportation improvements, and increasing the local customer base for local businesses and many small enterprises. In Northwest Indiana, most proposed TOD areas are infill sites where development is permitted, but major opportunities are not limited to these transit-related environments.

Some categories of potential infill sites in Northwest Indiana include:

- Properties left vacant or deteriorating because of disinvestment and major population decline. With its extreme population loss over a long period, Gary has the largest number of these sites.
- Sites that have been skipped over by development for various reasons, including ownership, access, visibility, or other reasons.
- Large commercial sites that are underused or have been demolished. An example is the Star Plaza site in Merrillville.
- Vacant land and sites along commercial corridors typically involve underused land, large parking lots, or marginal commercial uses.

- Initiatives addressing some of these settings are discussed further in Part Three. But actions that will help realize the role that infill development will be full in the preferred scenario include:

Identification of priority areas and strategies for infill development. Often, underused potential infill sites are justifiably viewed as liabilities but should also be seen as potential assets because of their size or ability to create a critical mass of development. Northwest Indiana cities and towns should inventory potential infill sites with infrastructure in place, along with possible reuse programs and financing and marketing strategies.

Plan and execute a special development strategy in Gary. Gary's very large amount of vacant property gives it the capacity to absorb significant regional growth within its 57 square miles. In addition to residential lots, former school sites present large assemblages of properties for redevelopment. But Gary also has significant challenges, including image, comparable appraisals and property values, visible deterioration, and municipal economic issues. A revitalization program must build critical mass and must focus efforts, and this approach will take regional support, creativity, investment, and risk abatement programs. Part Three suggests potential focus areas and regional transportation investment policies that can help catalyze redevelopment in these areas.

Direct transportation infrastructure funding and policies to support infill development and new land uses. Transportation and community development are interrelated and do not exist in silos. For example, a large site may be served by sewers but will likely require significant investments in internal streets, paths, and sidewalks. Without a way to fund these needs, the project becomes unfeasible and remains vacant. Alternatively, aesthetic and functional improvements along or adjacent to a corridor can increase the development potential of unused or underused properties in that area. Investments that address transportation in specific areas can reduce the demand to make major investments along new corridors and should be considered part of the regional transportation network.

Growth Areas

Moderate growth in mature suburbs. Municipalities that experienced rapid growth before 2000 have continued to grow but at a more moderate rate. These cities and towns are located along the Westlake and Central regions identified as policy districts in Part One. They include Merrillville, Schererville, Chesterton, Hobart, and Dyer. Their growth rate inevitably goes down because their population base increases and the amount of open land within their corporate limits decreases. Our projections suggest annual population growth from 0.25% to 0.75%. Other communities in the same region, including Munster, Highland, Griffith, and others, are essentially built out and will continue to have stable populations.

Substantial development in areas with urban services or logical expansions to them. These opportunity areas include the Merrillville Panhandle, St. John, and the Crown Point-Cedar Lake-Lowell triangle. The region around Valparaiso is also likely to experience substantial growth because of the city's assets and its relatively direct access to the lakefront. Michigan City and La Porte have also successfully slowed and even reversed histories of population loss, and both will benefit from the South Shore's double tracking project.

Commercial Repurposing

Medium/high-density residential in underused commercial corridors and obsolete commercial sites. Older corridors with marginal or vacant commercial occupancy can be brought back to life as mixed-use districts. Most of these corridors retain important convenience, retail, services, and restaurants, making them attractive and convenient living environments for a market sector.

NWI 2050+ adopts the concept of Corridor Urbanism to help revitalize these corridors. This concept has a set of principles that fall under five categories:

- Reality and Respect: provide an environment that understands and supports the needs of existing businesses.
- Resident Population: increasing the number of people living along or near the corridor.
- Opportunity and Orientation: taking advantage of vacant sites, oversized and unused paved areas, parking lots, and other overlooked but available sites.
- Transportation Function and Choice: fixing functional problems and establishing a corridor that works well and encourages access for all modes of travel.
- Quality Urban Environment: with scale and features, it creates a positive experience for users at all speeds and for all purposes.

Southlake is a mixed-use district. The 1 1/2 square mile district around the I-65 and US 30 interchange remains the most expansive commercial concentration in Northwest Indiana, but it has gaps and a large amount of underused land. This creates a major opportunity for the evolution of a true regional center that is something more than the disconnected aggregation of major retailing that exists today. A plan for active transportation in this highly auto-dominant area has been completed, and the C&O Trail will eventually serve the area. But incorporating housing, reusing, adding scale to vast parking lots, and comprehensively re-imagining opportunity sites can restore the Southlake district as a major attraction.

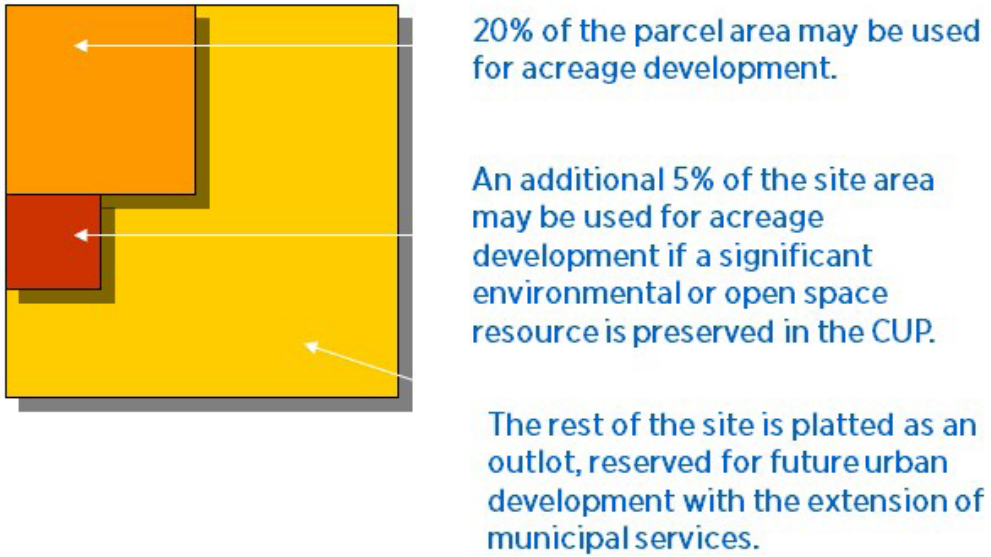


Figure 5-45: Build-Through Acreage concept

Very Low-Density Development and Rural Conservation

Conservation rural density development in areas where urban service extensions are unfeasible. People seeking acreages and large lot settings will continue to seek homes in Northwest Indiana and regional land use policy should both recognize and manage this market. Ideal sites for this kind of development are areas that 1) cannot feasibly expect to receive urban services; 2) are outside of areas where agriculture is the dominant land use; 3) are outside of natural growth or annexation areas of municipalities; and 4) do not adversely affect protected conservation areas. Wherever possible, end-point low density development should employ conservation design techniques – clustering lots in relatively buildable areas and maintaining common open space in more sensitive areas, including slopes, wooded areas, watercourses, wet areas, and other similar features.

Transitional development (Build through acreage concept) within feasible urban service areas where extensions are feasible but premature. In areas where infrastructure extension is feasible but premature, property owners may want to develop in a way that makes future extensions impossible or unfeasible. Transitional development techniques allow partial development of the parcel in a way that gives owners a reasonable return on their property without blocking sound community growth. Figure 5-45 illustrates a concept for “Build-Through Acreages,” that can successfully address this issue.

Purpose Driven Planning

Regional Land Use Policy

Land use planning and policy on a regional basis is a difficult but important task, especially in such a diverse environment as Northwest Indiana. Each municipality and county are responsible for planning and the adoption and enforcement of land development regulations. A number of jurisdictions have adopted their own comprehensive plans or are in the process of developing new ones. *NWI 2050+* clearly is not intended to supersede these local prerogatives. But what this plan can do is identify priorities and focuses that are regional in nature, suggest policies in areas that cross municipal boundaries, and encourage projects and initiatives that support those policies.

The previous parts of this Land Use Chapter explored demographic and growth patterns in the region and evaluated different aspects of the region's urban and suburban environment, with a particular emphasis on two areas of regional concern – housing supply and affordability and development patterns and types along major regional and community corridors. Finding Meaning established an attainable population future for Northwest Indiana, based on the experience of other parts of Chicago's sphere of influence and identified basic assumptions and concepts that would help the region attain that future in a connected, equitable, and environmentally sustainable way. In doing so, it identified four broad, but inter-related policy areas:



- Overall Development (including housing and environmental focuses)
- Exurban Areas and Agricultural Conservation
- Transportation Corridors
- Built-Up Areas: Redevelopment and Infill Policies

This concluding section of the land use report will complete those policy areas with actionable initiatives that will require regional cooperation. They will also illustrate how a transportation program interfaces with significant regional development initiatives.



Overall Development

- ***Environment***
- ***Population and Density***
- ***Contiguous Community Growth***
- ***Housing Variety***

Environment

Northwest Indiana will conserve and expand protection of its unique environmental resources.

The uniqueness of Northwest Indiana, with its lakefront, dunes, wetlands, woods, prairies, and streams, is well known to its citizens and attracts both residents and visitors to the region. The Conservation Action Plan (CAP) for the Calumet region, released in 2022, establishes goals, priorities, and good management practices for eight focus areas in the MSA. While much of the document addresses the character and benefits of each of these areas, several specific recommendations are of particular importance for regional land use policy:



Figure 5-46. Environmental Focus Areas from Calumet Conservation Action Plan

Acquire and/or arrange for management of parcels identified as Conservation Priorities in the CAP. In most cases, these parcels are adjacent to existing managed lands and represent needed expansion of these resource areas.

Connect major managed land resources to create connected corridors for habitat, and in some cases, public access. These include streams, wooded areas, and other resources. This concept has been implemented in the Dunes area with state and national acquisitions. In the interior, these corridors could establish continuous "green rings" by assembling relatively separated or isolated resource areas.

Establish development standards within designated buffer areas. The CAP identifies tiers of buffers up to one mile around managed areas. Many of these areas are built up, while others may develop in the future. Standards should be established to minimize impact of new development and encourage retrofits of existing development on these managed resources.

Population and Density

By 2050 Northwest Indiana will achieve a population of about 900,000. New growth will exhibit a gross density of about four units per acre.

Part Two included an extensive consideration of population growth opportunities and development scenarios. It showed that continuation of current residential density of just under two units per acre would consume about 40 square miles of land between 2023 and 2050, or an area about twice the size of Valparaiso. A projected net density of about five units/acre would consume only about 40% of that total. While it is difficult to force higher density development, there are actions that can be encouraged to help achieve this goal.

Continue to support and fund alternative transportation modes that encourage higher density development. The West Lake Corridor and improvement of service on the existing mainline of the South Shore are likely to have a significant impact on density, recognized by the NIRPC's TOD/TDD study. Improved bus transit and trail development can also produce amenities and access nodes that build density. Partnerships of municipalities, NIRPC, and the RDA can provide both regulatory and incentive packages to encourage higher density at these points.

Develop favorable planning and regulatory practices for middle and high-density development at appropriate locations. One of the most important factors discouraging middle and high-density development is local opposition to proposals. Communities should include location criteria and designate appropriate locations for higher density housing in their comprehensive plans and expedite approval processes for quality projects that meet those standards.

Provide support for transportation infrastructure that supports development of walkable districts and "town centers." Town center districts, both existing and new (like Founders Square in Portage), often include higher housing densities in their plans, but require infrastructure, including transportation facilities. The summary diagram (Figure 3.4) shows a 15-minute radius around town centers. Redevelopable property within these circles can be especially attractive locations for medium and high-density housing products.

Contiguous Community Growth

Municipalities in Northwest Indiana should have room to extend urban services and grow incrementally and efficiently in their urban service areas.

Most of the region's municipalities have boundaries relatively tightly drawn around developed areas, with limited room to grow -- Merrillville being a noticeable exception to this rule. There are areas around but outside of corporate limits that are within "urban services areas" – the peripheral area feasibly served by urban infrastructure such as gravity flow sewers. As discussed in Part Two, if these areas are hemmed in by development on individual systems, they are unable to grow. This then reinforces a pattern of low-density dispersed development that is not in the interest of many of the development and transportation goals of the *NWI 2050+* effort.

Establish urban service boundaries for each municipality, the areas within which would be reserved for urban density development on city services. If necessary, provide a mechanism for short-term development on a portion of a site, reserving the balance for denser development when services are extended. One such mechanism, for Build-Through Acreages, is described in the Creating Purpose section. Another is a land plan designed specifically for eventual connections when infrastructure is extended and available, along with a contractual commitment to connect at that time.

Housing Variety

Northwest Indiana will provide a variety of housing choices, including so-called "missing middle" products.

About 85% of Northwest Indiana's housing stock is some form of single-family detached housing, and about 3/4 of that is in large lot settings. Yet around the country, the cost of single-family homes is increasing beyond the price that a majority of potential buyers can afford. This is leading to greater interest in small-lot and attached housing forms. In addition, the region has generally lagged in the production of multi-family development, and most Northwest Indiana communities have virtually no inventory in the rent ranges that contemporary development commands. This poses a significant problem for the region as it seeks to attract new market groups. The desirable five unit/acre scenario proposes a significant increase in the production of medium-density housing-small lot and attached single family, townhouses, and small footprint apartment projects.

On a regional basis, promote the potential for alternative housing settings to metropolitan area developers. Metropolitan Chicago has many builders and development organizations who do innovative development. These regional developers should be actively recruited to participate in the region's emerging opportunities.



Exurban Development and Agricultural Conservation

- ***Development Interface***
- ***Distinct Rural Residential Areas***
- ***Conservation Development***

Development Interface

Establish a boundary between exurban residential development and agricultural areas.

Exurban development frequently creates conflicts between residents moving out from the city to enjoy life in the country and farmers doing their work. Additionally, developments will occur in scattered areas, increasing the possibility of conflict. Northwest Indiana is a true development transect, from major agriculture to major urban development. To paraphrase Robert Frost, sometimes "good (virtual) fences make good neighbors" and one way of managing this issue is establishing a regional boundary, based on existing development. The line in Figure 5-47 establishes an idea for this kind of agricultural conservation line. Development south of the line would still take place adjacent to towns like Kouts, Shelby, Wanatah, and others – benefiting those communities.

Distinct Rural Residential Areas

Channel new rural and acreage residential development to areas with an established pattern.

Figure 5-47 displays the geography of three different types of development in Northwest Indiana

- Traditional development: characterized by smaller lots, grid street patterns, and typically pre-1950 development.
- Suburban development: characterized by curvilinear street patterns, somewhat lower densities, and urban services. These include contemporary urban subdivisions.
- Rural residential/exurban development: characterized by very large lots and individual sanitary systems like septic or internal community systems.

Northwest Indiana's land availability and proximity to Chicago will undoubtedly make it an attractive option for people moving out of the city, and anecdotal evidence suggests this may occur. Many of these markets may seek very large lots or rural residential settings. Notably, these very low-density development forms use the greatest amount of land and serve the smallest number of households. The preferred development scenario recognizes that this market will continue in Northwest Indiana but that its total share of housing production will decrease.



Where rural residential development does occur, it should be directed to:

- Areas outside the future urban service areas of municipalities and in places that will not obstruct future extension of urban infrastructure.
- Sites within areas currently dominated by rural or large lot residential development, making conventional urban development with services unfeasible. These areas are generally indicated in the salmon color in Figure 5-47.
- Areas that are outside buffer zones of major environmental assets.

Conservation Development

When possible, use conservation development techniques for rural residential development, especially within Priority Conservation Area buffers.

The conservation process involves lot clustering in a way that achieves a low density but preserves local environmental assets as common space. It begins with defining important assets on the development sites (including drainage ways, wooded areas, slopes, ponds and other stormwater management facilities, wetlands and wet areas, and so forth) and preserves them in the project design. This can be especially important in buffer areas around managed conservation areas. Even within existing cities and suburbs, conservation development should be considered for redevelopment and in-fill projects so that significant natural resources are protected. Many urban and suburban communities in Northwest Indiana contain significant natural resources and rare habitat types that should be protected.

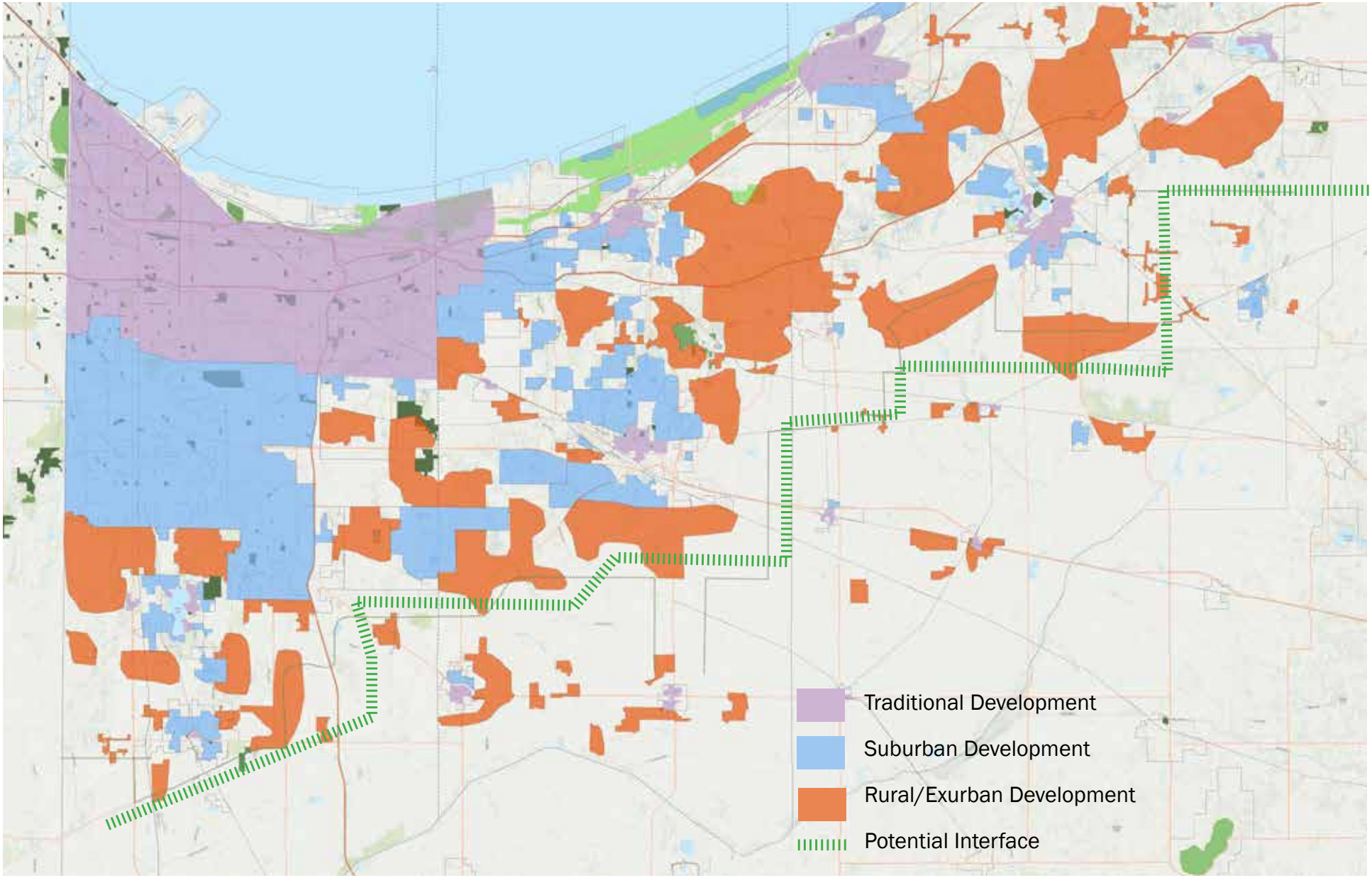


Figure 5-47: Scenario Comparison for Land Consumption

Transportation Corridors

- ***Corridor Urbanism***
- ***Corridor-Specific Solutions***
- ***Transit and Trail Oriented Development***
- ***Commercial Retrofits***
- ***New Centers***

Corridor Urbanism

Apply the concept of Corridor Urbanism to both new and existing/emerging corridors.

Part Two introduced the concept of corridor urbanism as a way of re-envisioning urban corridors. The concept was originally designed for existing contexts, but its mixed use, circulation, and street quality concepts are relevant to new corridors as well. From a transportation perspective, parallel secondary circulation is a particularly important element, creating a safer and more comfortable environment along major corridors like US 41 by separating through and local traffic. But the introduction of housing and walkability are very important components of an overall land use policy of using land more effectively, while supporting the business environment of these often unloved parts of the cityscape.

Corridor Specific Solutions

Develop context sensitive programs for specific corridors.

Institute a Great Streets planning and implementation program. We tend to see urban corridors as generic environments, largely devoted to one task – moving motor vehicles. But they are more than that – they are business and customer environments that may either divide or unite neighborhoods. Pedestrians and bicyclists are also typically forgotten in the process. Part One defined eight different types of corridors in the region, each of which is different in scale and context. Each deserves individual attention through participatory planning processes that involve their diverse stakeholder groups.



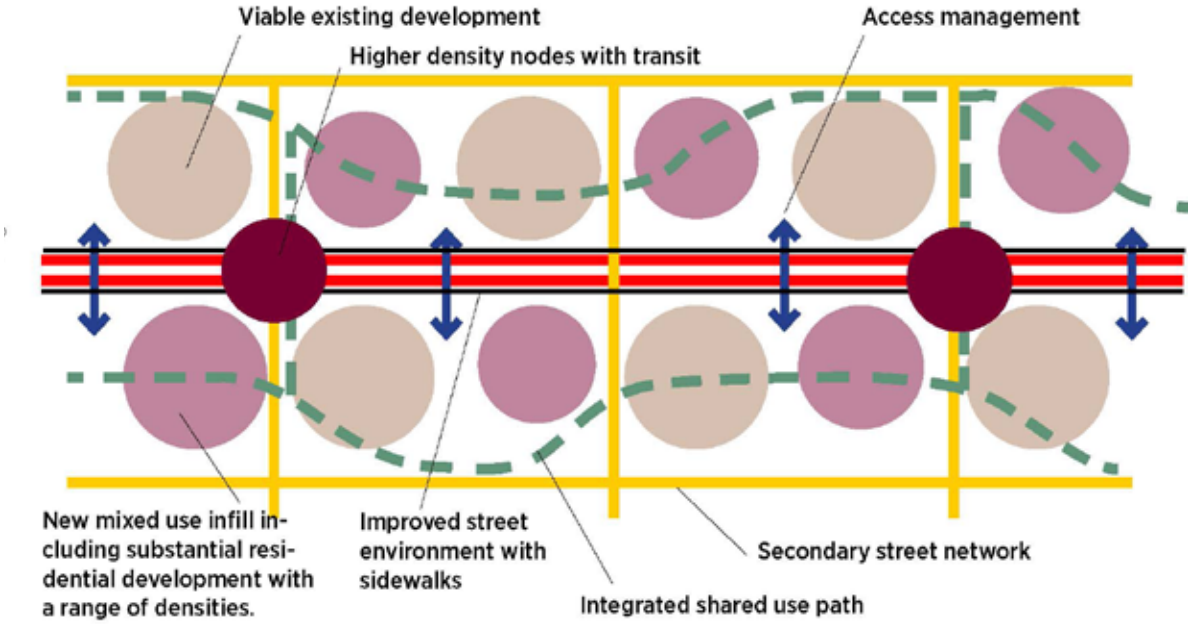


Figure 5-48: Components of Corridor Urbanism

To that end, MPOs in the Saint Louis and Kansas City areas have developed these kinds of efforts through their Great Streets and Planning Sustainable Places programs. These substantial efforts are awarded to cities in their regions through a competitive application process for specific study areas. They are often backed up with implementation funding through transportation and redevelopment programs. Many of the corridors in Northwest Indiana would be excellent candidates for specific plans.

TODs, TrODs, and TOCs

Maximize transit resources to create major mixed use focuses.

Expand the concept of transit oriented developments to developable land along trails. Transit oriented development in NWI has been a major focus of community and MPO attention with transformational improvement projects on the South Shore Line. This resulted in the publication of the TOD report and the creation of seven Transit Development Districts (TDD) in 2022. Trails can have much of the same beneficial impact on development as major transit lines and arguably have a broader range of users. We recommend extending the TDD concept and incentives to trail corridors to take advantage of opportunities along existing and new trails.

Transit oriented corridors in Northwest Indiana represent another unusual aspect and opportunity for regional land use planning and development. South Shore stations at Ogden Dunes, Dune Park, and Beverly Shores are in the National or State Park property and constrained by whatever development preceded the current public control of this unique area. Conventional TODs – high density development surrounding a major transit station – are impossible in these locations. But corridors leading to these stations, such as Willowcreek/Crisman, SR 49. or parallel to the railroad (like US 20) can support some of the development that might normally grow around stations. TDD benefits and land use entitlements may be reasonably extended to these transit associated corridors.

Commercial Retrofits

Retrofit obsolete and/or overly land intensive commercial development.

In common with most metropolitan areas, Northwest Indiana has a number of obsolete shopping centers, which once were centers of activity but have fallen victim to more attractive competitors (both brick and mortar and on-line), changing customer preferences, and different traffic patterns. These factors have affected even staples of the retail environment like Southlake Mall. Components of retrofit programs may include:

- Right-sizing parking and redevelopment of surplus paved areas.
- Demolishing chronically vacant buildings, pruning the size of a shopping center to concentrate businesses and activity.
- Introducing new uses to the site, including residential components.
- Breaking large parking lots into smaller units with internal streets.
- Creating better pedestrian and bicycle access and increasing internal connectivity and green space.
- Providing resources for planning and retrofits.

New Centers

Incorporate new "town center" type opportunities into major road development projects.

The major corridors plan discussed earlier proposes a number of new corridors necessary to provide better access, with a major emphasis on north-south transportation. The Willowcreek extension, currently proposed in Union Township between US 6 and US 30 is one example of these initiatives. The planning of these projects should include a land use element and can provide opportunities to avoid conventional strip development by identifying opportunities for new centers. An example of such an opportunity is the intersection of the Willowcreek extension and a future Wheeler Trail between Hobart and Valparaiso. Portage's Founders Square project developing north of Central Avenue between Willowcreek and Hamstrom is an example of the emergence of a new center.



Built-Up Areas: Redevelopment and Infill

Priority Infill Areas

Identify priority infill development strategies and sites with infrastructure in place. Establish projected densities and residential diversity.

Infill development is an appropriate community development strategy throughout the region's communities, but especially in the older industrial cities. Individual cities should inventory candidate infill sites and consider potential land use mixes and intensities. Some of these larger sites, especially near I-65 and others somewhat isolated from residential uses, will be adaptable to industrial development, and a study of e-commerce locations was completed for Gary in 2022. For larger scale projects, transportation and infrastructure funding should be available for streets both on and off the federal aid system.

Gary

Plan and execute a special development program for Gary.

Gary should be seen as both an important opportunity area and a regional enterprise. While this program must be locally generated and executed, we believe there are several important possibilities for short-term focus:

- *Downtown, the Marquette Greenway, and the Gary Elevated*. The value of elevated parks on abandoned railroads has been demonstrated by the popularity of the 606 Trail in Chicago and in other innovative projects around the country. The Greenway and Gary Elevated, combined with upgraded and faster South Shore service, creates a real possibility for new development. In addition, the Gary Elevated creates a well-defined area that also includes and benefits adjacent neighborhoods to the east and west.

- *25th Avenue.* This corridor, roughly paralleling the Borman Expressway, provides a direct route between Hammond and Gary, a status that makes it appealing as a complete street. Extensive land along the way provides possibilities for both residential and employment-based development.

- *IU-Gary area.* The coincidence of the IU campus, the Little Calumet Trail, upgraded service on the Broadway BMX bus line, and surrounding vacant land creates a major TOD opportunity and the emergence of a neighborhood nucleus.

Concept Diagram

Figure 5-49 is a conceptual diagram that illustrates many of the concepts and recommendations of this report. It should not be viewed as a finished plan, but rather as an illustration of ideas on a specific geography. The subjects illustrated in this diagram can be divided into three general categories:

- ***Overall Development,*** illustrating the geographic areas covered by the preferred development scenario – the relative extent and governing policy concept of urban and exurban development.
- ***Corridors and Centers****,* considering important future planning and investment focuses to provide structure for the Northwest Indiana environment and identify high-density focuses to help achieve the preferred scenario.
- ***Environmental Corridors,*** linking managed lands into green networks, taking the concept that has driven the Indiana Dunes National and State Parks inland to other valuable environmental assets.

Figures 5.50 through 5.52 break the overall diagram of Figure 5.49 into these three constituent parts.



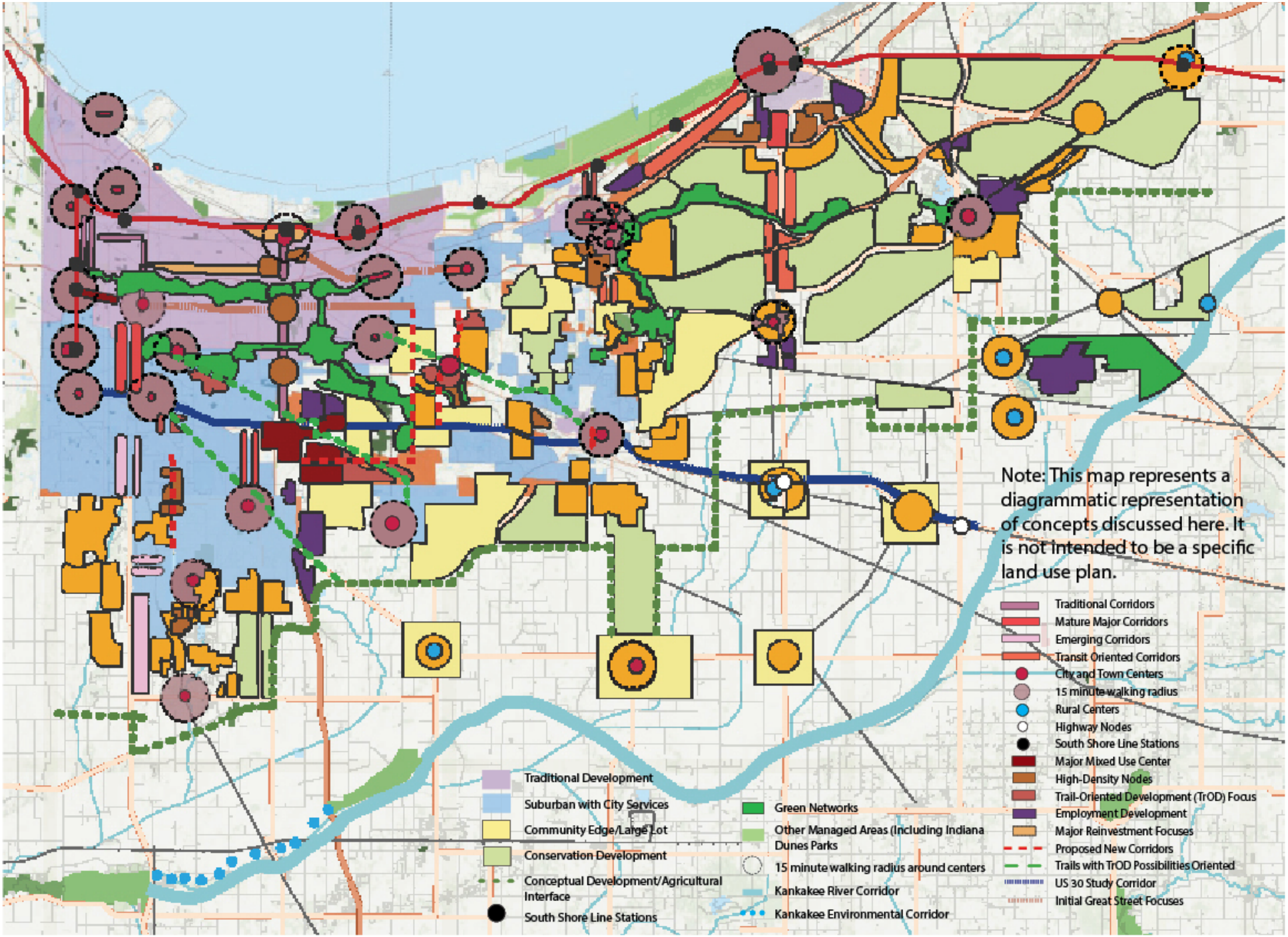


Figure 5-49: Regional Development Concept Diagram

Overall Development

Figure 5-50 diagrams a framework for managing urban and exurban growth, a major issue for Northwest Indiana's land use future. The layers of development illustrated here include:

Traditional development, older development established around urban grids. Appropriate policy focuses in these areas are infill development and reinvestment, including neighborhood revitalization and supporting public improvements. These areas also include city centers and areas within a 15-minute walking and bicycling radius of those centers.

Suburban development with city services. These areas generally grew from 1960 to the present and typically include subdivisions within curvilinear street patterns and usually single-family residential. These areas utilize city infrastructure services. Older subdivisions sometimes require conservation strategies. Infill subdivisions and higher density development in centers and along corridors are also appropriate strategies here.

Future urban development, areas around existing development that permit incremental extensions of urban services. The actual extent of these urban service areas should be established by each community. These are the key areas for residential density mixes identified in the preferred scenario. Large lot or rural development on individual wastewater systems should be discouraged in these areas.

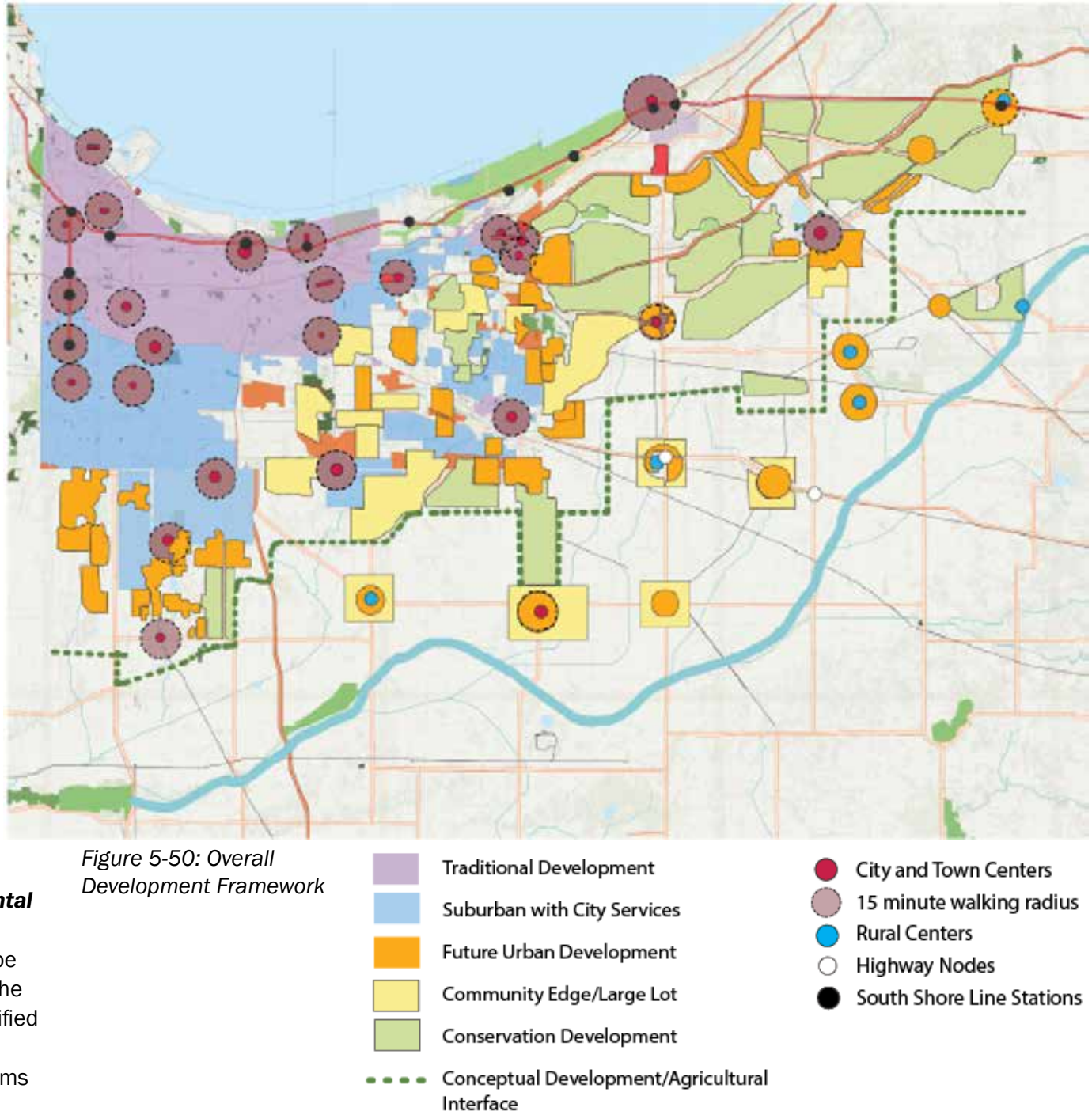


Figure 5-50: Overall Development Framework

Community edge/large lot development. In these areas, a large lot or rural residential pattern is strongly established. New very low-density developments should focus on available infill sites, rather than extending into predominantly rural country.

Conservation development. In these areas, more rural and with some topographic constraints, rural development should use conservation techniques, clustering large lots in a way that preserves environmentally sensitive areas as open space.

Development/Agriculture Interface. Areas south of a line should be maintained in primary agricultural use, except where they are contiguous to rural towns and centers.

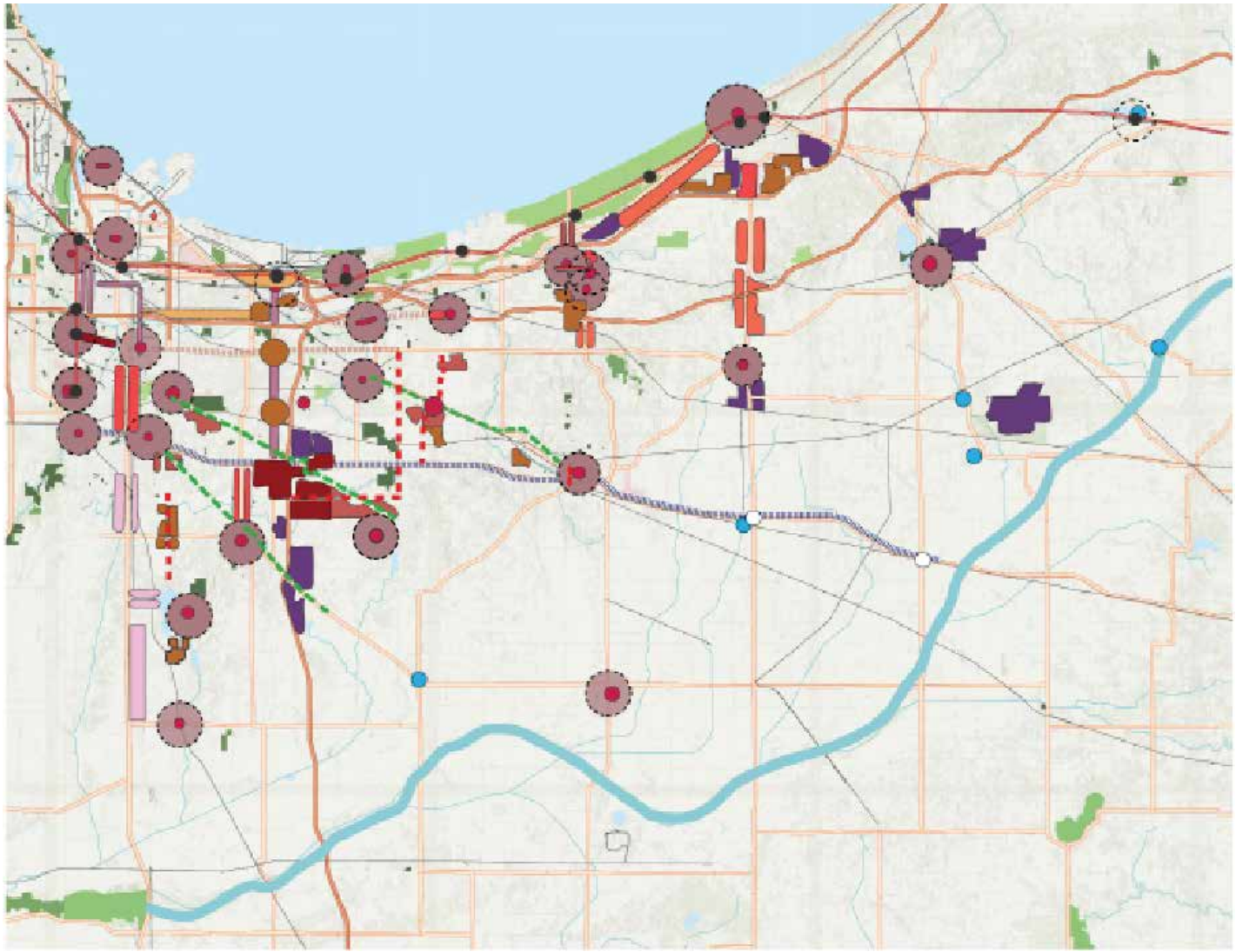


Figure 5-51: Centers and Corridors Framework

Centers and Corridors

Figure 5-51 illustrates the concept of a regional framework of centers and corridors that complements the overall growth areas presented in Figure 5-50. This framework includes four categories of components:

Traditional Centers. In most cases, these are the central commercial and civic districts of Northwest Indiana's communities, as well as their image centers. Regional policy should reinforce the character of and investment in these centers. Central city areas within a 15-minute walking or biking distance both contribute to and benefit from small town and city centers. Policies that improve active transportation access and take advantage of opportunities to increase population advance goals of the preferred development scenario.

Community corridors. These linear districts are major focuses of commerce and transportation and fall within a gradient from older urban corridors to mature and emerging districts. Previous sections of this document have discussed specific policies for each of these corridor types, moving toward an urbanism that satisfies both transportation and development goals.

Development nodes. These include major mixed use nodes like the US 30/I-65 district that require a new development vision, employment centers, potential areas for trail related development, and centers and corridors that provide catalysts for transformational development. Smaller nodes include 109th and Randolph in Winfield.

Catalysts. These facilities provide opportunities where advance planning and execution can provide significant opportunities for medium density development. They include planned new roadways; trails that when built can create beneficial investment; and strategic study corridors with unusual characteristics.

Environmental Corridors

Figure 5-52 illustrates a framework of environmental corridors. This concept is based on the Indiana Dunes National and State Parks, which are an archipelago of protected environmental resources rather than the more customary large contiguous park. In Northwest Indiana, the concept connects the large managed areas identified in the Conservation Action Plan (CAP). These connections are made by possible acquisition of adjacent priority areas, following watercourses, or connecting through other open lands. The northern archipelagos include:

- The West Branch of the Little Calumet River.
- Hoosier Prairie, Hobart Branch, and Deep River.
- Moraine and the East Branch of the Little Calumet River.

A fourth proposed corridor connects the La Salle State Fish and Wildlife Area, Badal Wildlife Habitat Trust Area, and Grand Kankakee Marsh County Park along the Kankakee River along the south boundary of the region.





Figure 5-52: Environmental Corridors Framework

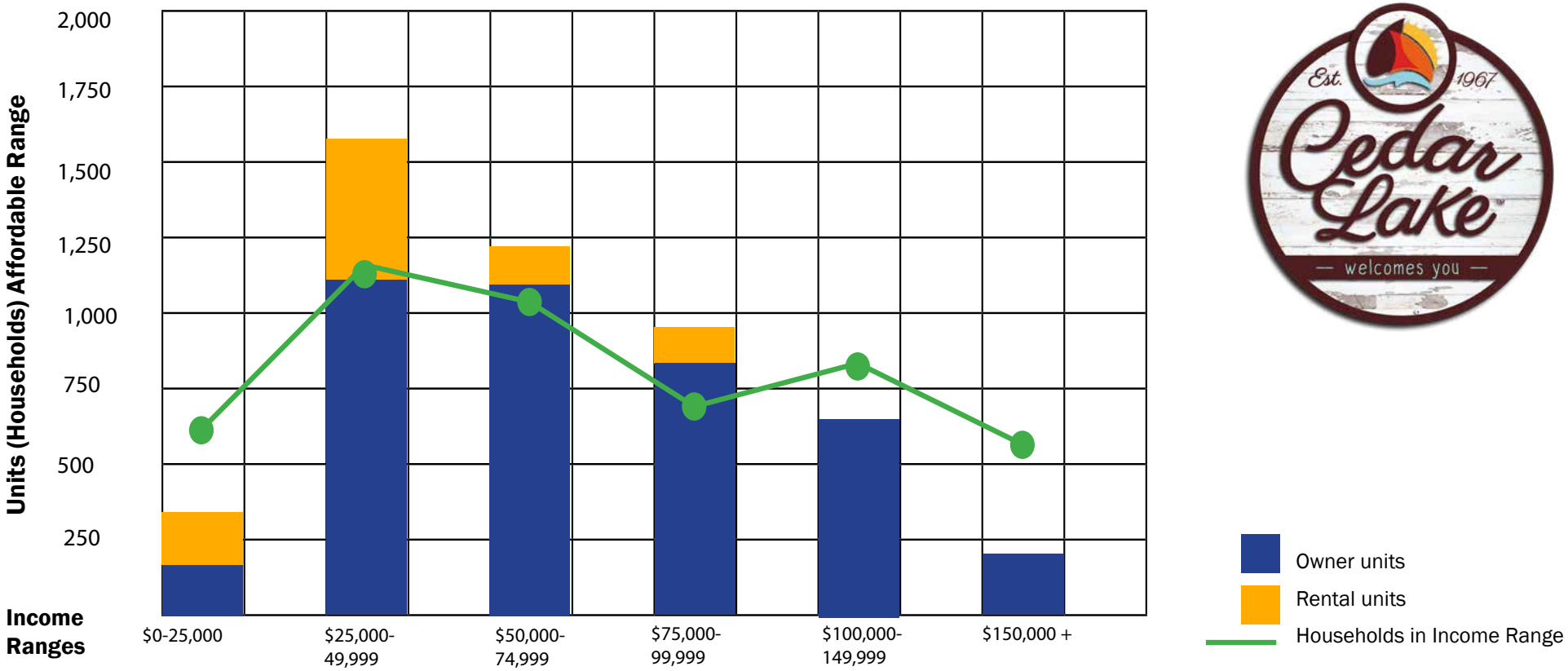
Appendix 5A

Housing Affordability Analysis for Cities Over 10,000



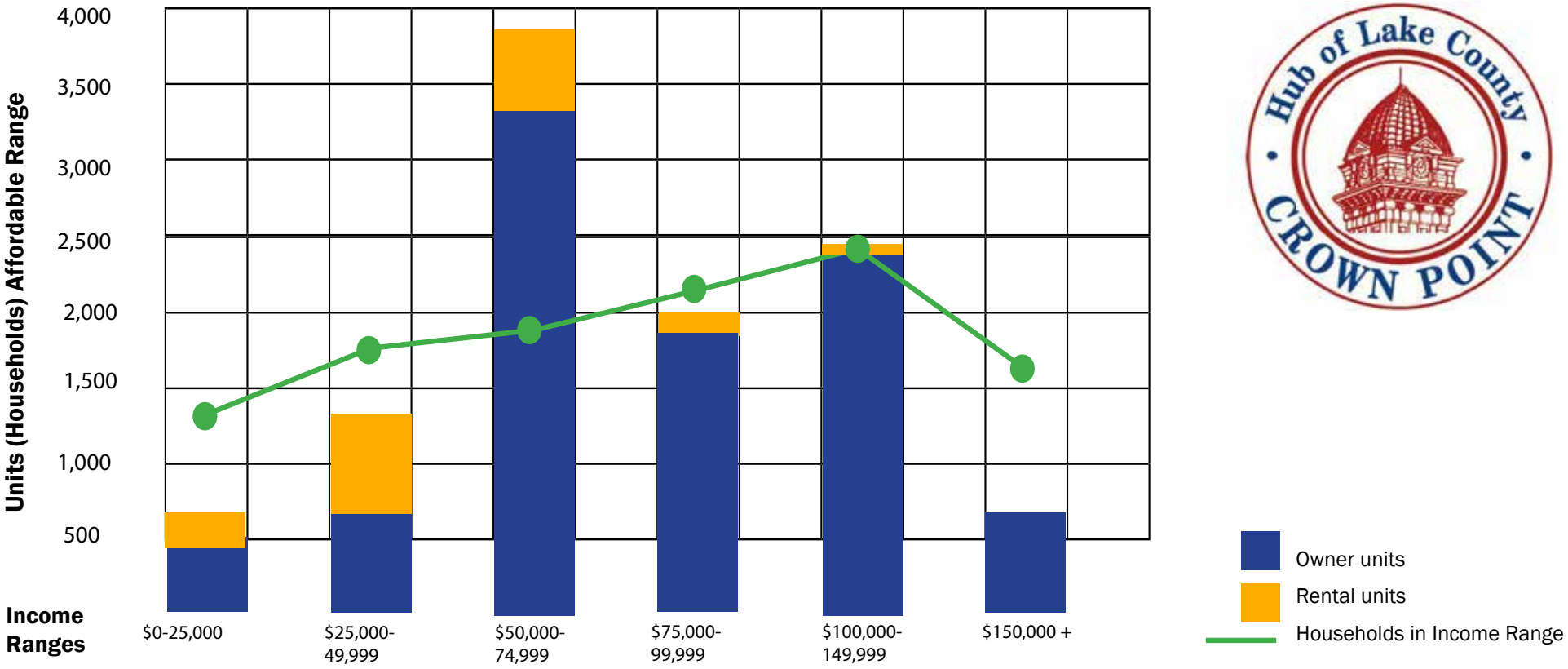
Income Range	% of City Median	% of Households	Number of Households in Group	Affordable Range for Owners	Number of Owner Units	Affordable Range for Renters	Number of Rental Units	Total Affordable Units for Income Group	Balance
$0-25,000	Under 39%	12.48%	603	>$60,000	134	$0-499	148	282	-321
$25,000-49,999	39-77%	23.53%	1,137	$60,000-124,999	837	$500-999	738	1,575	438
$50,000-74,999	78-115%	21.08%	1,019	$125,000-199,999	1,061	$1,000-1,499	153	1,214	195
$75-99,999	116-154%	14.55%	703	$200,000-249,999	842	$1,500-1,999	101	943	240
$100-150,000	155-231%	17.07%	825	$250,000-399,999	648	$2,000-2,999	-	648	-177
$150,000+	Over 231%	11.30%	546	$400,000+	171	$3000+	-	171	-375
Total			**4,833**		**3,693**		**1,140**	**4,833**	**0**

Figure 5A-1: Housing Affordability Analysis for Cedar Lake



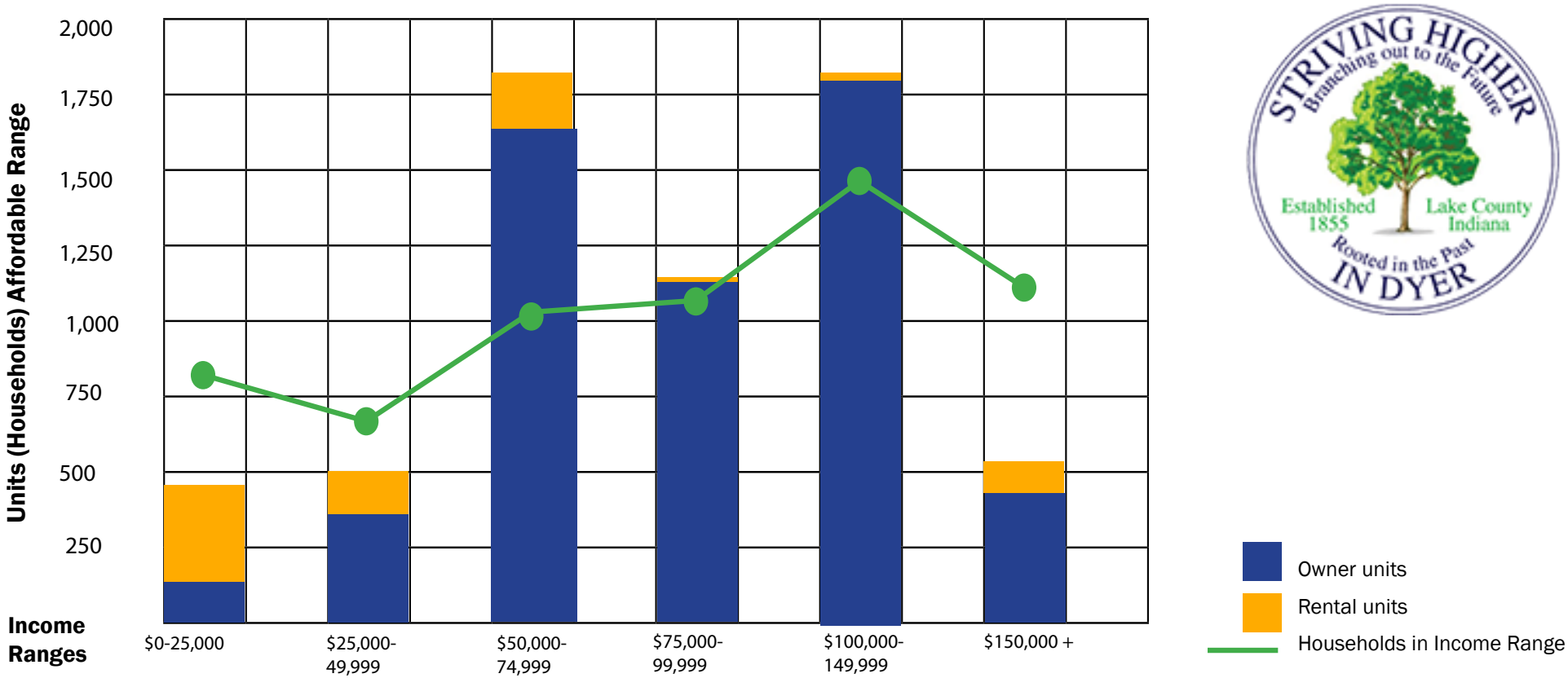
Income Range	% of City Median	% of Households	Number of Households in Group	Affordable Range for Owners	Number of Owner Units	Affordable Range for Renters	Number of Rental Units	Total Affordable Units for Income Group	Balance
$0-25,000	Under 31%	12.16%	1,330	>$60,000	446	$0-499	144	590	-740
$25,000-49,999	31-61%	15.81%	1,729	$60,000-124,999	678	$500-999	712	1,390	-339
$50,000-74,999	62-91%	16.79%	1,836	$125,000-199,999	3,332	$1,000-1,499	542	3,874	2038
$75-99,999	92-122%	19.30%	2,111	$200,000-249,999	1,884	$1,500-1,999	98	1,982	-129
$100-150,000	123-182%	22.06%	2,413	$250,000-399,999	2,387	$2,000-2,999	46	2,433	20
$150,000+	Over 182%	13.89%	1,519	$400,000+	668	$3000+	-	668	-851
Total			**10,938**		**9,395**	**1,543**		**10,938**	**0**

Figure 5A-2: Housing Affordability Analysis for Crown Point



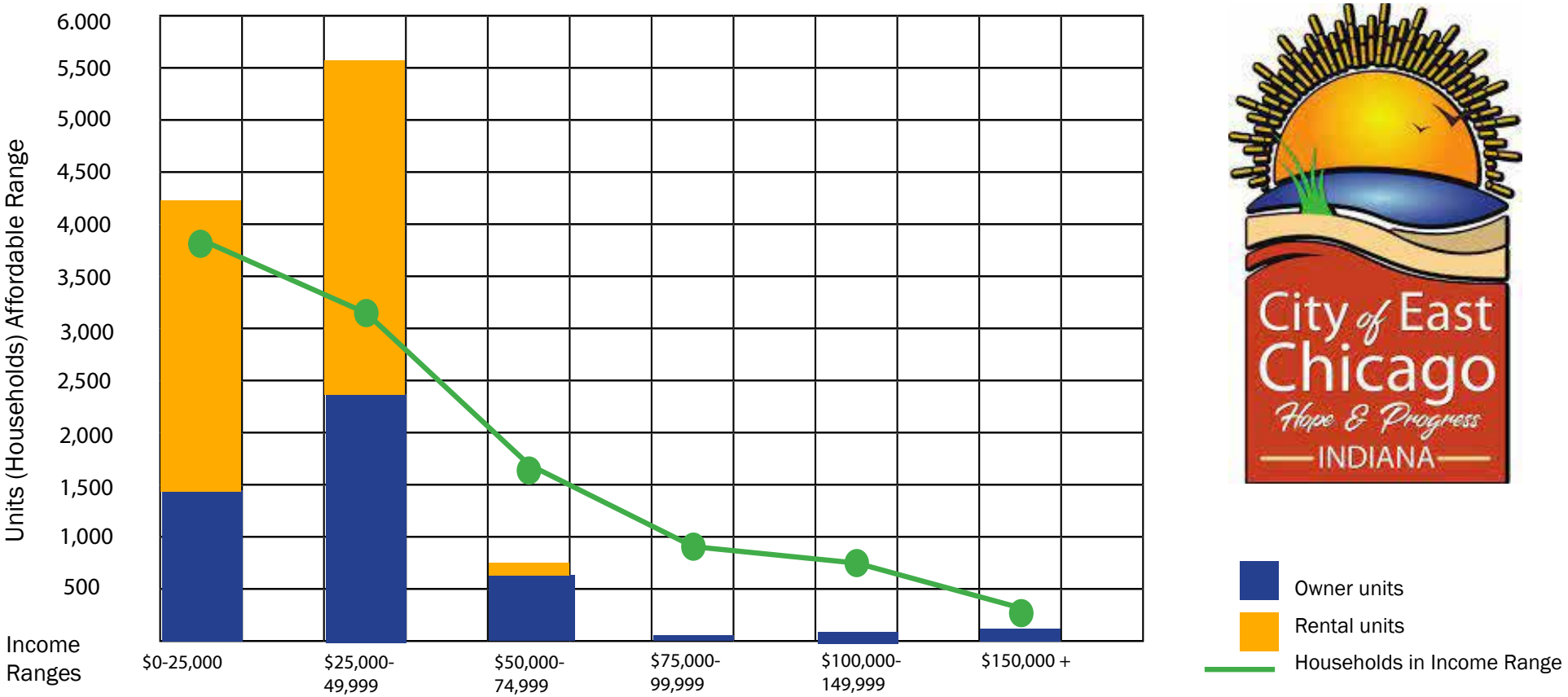
Income Range	% of City Median	% of Households	Number of Households in Group	Affordable Range for Owners	Number of Owner Units	Affordable Range for Renters	Number of Rental Units	Total Affordable Units for Income Group	Balance
$0-25,000	Under 30%	12.72%	791	>$60,000	138	$0-499	335	473	-318
$25,000-49,999	30-58%	11.11%	691	$60,000-124,999	340	$500-999	156	496	-195
$50,000-74,999	59-87%	16.41%	1,020	$125,000-199,999	1,622	$1,000-1,499	168	1,790	770
$75-99,999	88-116%	17.82%	1,108	$200,000-249,999	1,136	$1,500-1,999	14	1,150	42
$100-150,000	117-174%	23.52%	1,462	$250,000-399,999	1,766	$2,000-2,999	32	1,798	336
$150,000+	Over 174%	18.42%	1,145	$400,000+	443	$3000+	67	510	-635
Total			**6,217**		**5,445**		**772**	**6,217**	**0**

Figure 5A-3: Housing Affordability Analysis for Dyer



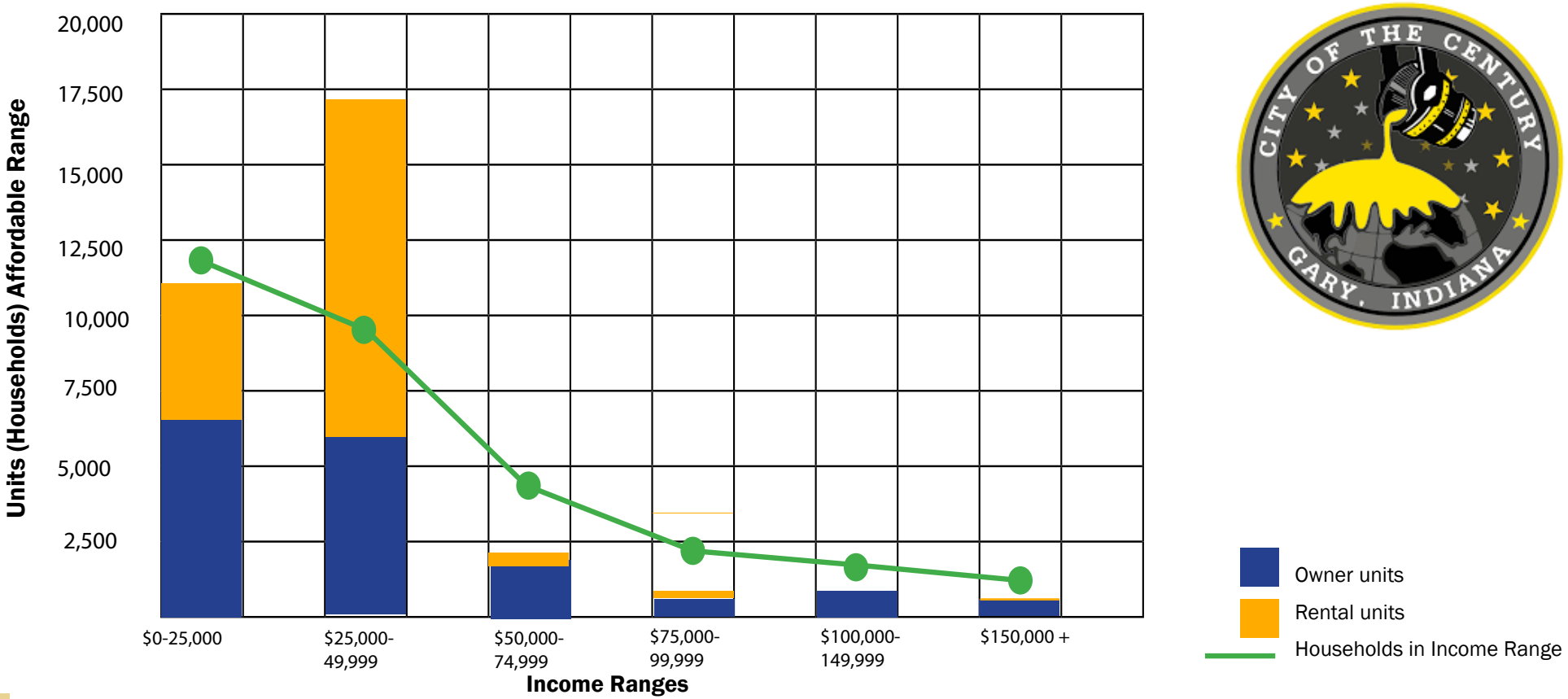
Income Range	% of City Median	% of Households	Number of Households in Group	Affordable Range for Owners	Number of Owner Units	Affordable Range for Renters	Number of Rental Units	Total Affordable Units for Income Group	Balance
$0-25,000	Under 72%	35.75%	3,806	>$60,000	1,467	$0-499	2,840	4,307	501
$25,000-49,999	72-141%	29.85%	3,178	$60,000-124,999	2,440	$500-999	3,090	5,530	2352
$50,000-74,999	142-212%	15.49%	1,649	$125,000-199,999	565	$1,000-1,499	50	615	-1034
$75-99,999	213-283%	8.85%	942	$200,000-249,999	7	$1,500-1,999	-	7	-935
$100-150,000	284-424%	7.05%	751	$250,000-399,999	76	$2,000-2,999	-	76	-675
$150,000+	Over 424%	3.00%	319	$400,000+	110	$3000+	-	110	-209
Total			**10,645**		**4,665**		**5,980**	**10,645**	**0**

Figure 5A-4: Housing Affordability Analysis for East Chicago



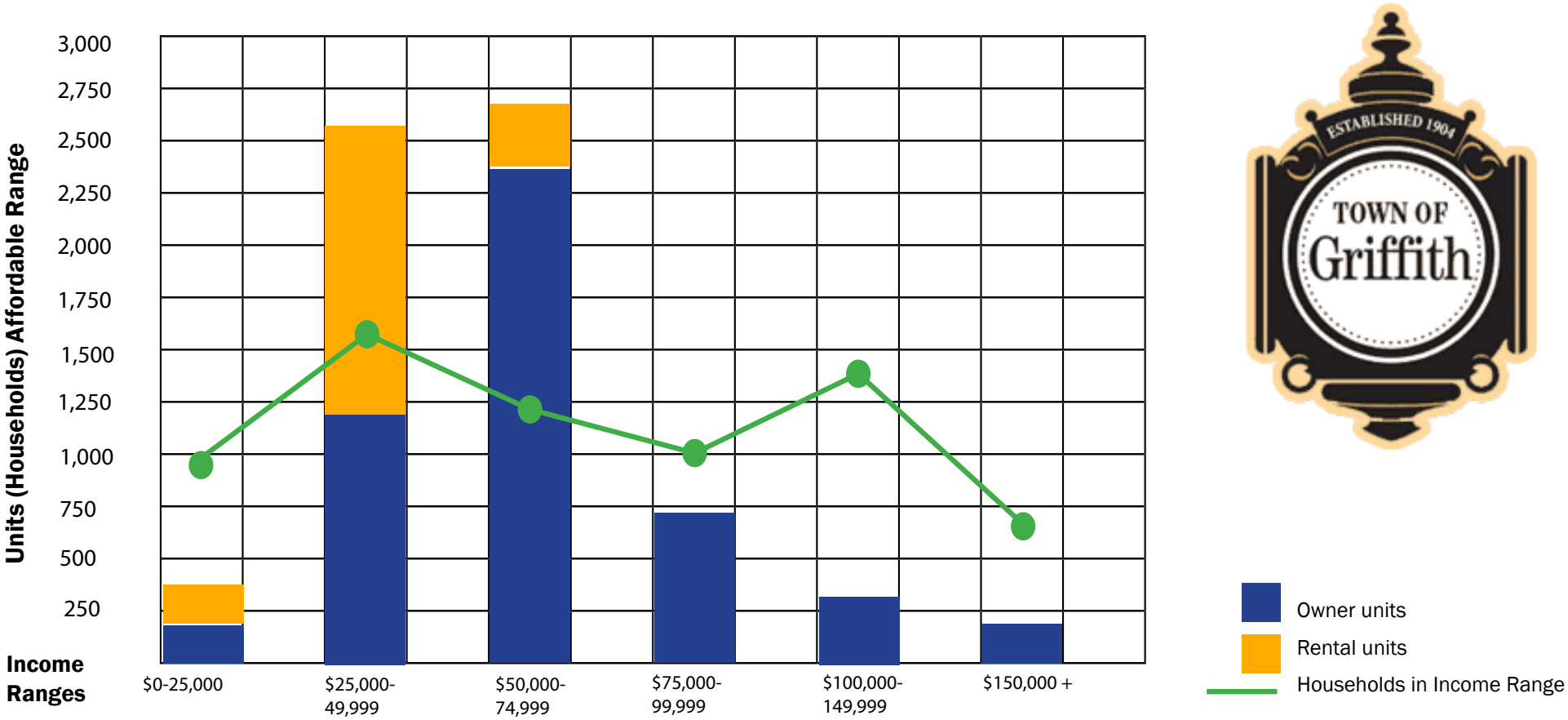
Income Range	% of City Median	% of Households	Number of Households in Group	Affordable Range for Owners	Number of Owner Units	Affordable Range for Renters	Number of Rental Units	Total Affordable Units for Income Group	Balance
$0-25,000	Under 81%	39.60%	12,358	>$60,000	6,541	$0-499	4,130	10,671	-1687
$25,000-49,999	81-160%	29.92%	9,337	$60,000-124,999	6,225	$500-999	11,045	17,270	7933
$50,000-74,999	161-239%	14.99%	4,678	$125,000-199,999	1,875	$1,000-1,499	304	2,179	-2499
$75-99,999	240-319%	6.93%	2,162	$200,000-249,999	219	$1,500-1,999	28	247	-1915
$100-150,000	320-479%	5.97%	1,862	$250,000-399,999	514	$2,000-2,999	-	514	-1348
$150,000+	Over 479%	2.60%	810	$400,000+	319	$3000+	8	327	-483
Total			**31,207**		**15,693**		**15,514**	**31,207**	**0**

Figure 5A-5: Housing Affordability Analysis for Gary



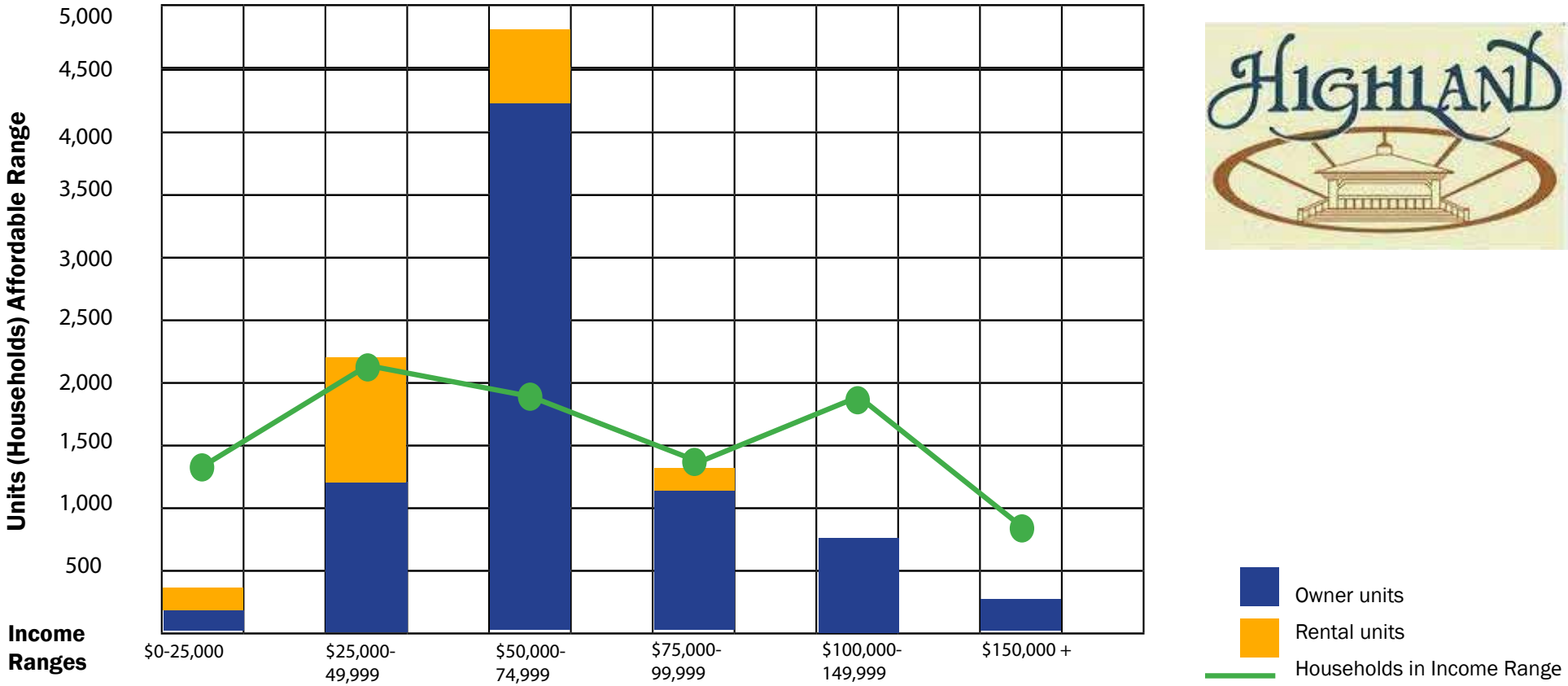
Income Range	% of City Median	% of Households	Number of Households in Group	Affordable Range for Owners	Number of Owner Units	Affordable Range for Renters	Number of Rental Units	Total Affordable Units for Income Group	Balance
$0-25,000	Under 38%	14.20%	964	>$60,000	179	$0-499	173	352	-612
$25,000-49,999	38-74%	22.94%	1,558	$60,000-124,999	1,205	$500-999	1,338	2,543	985
$50,000-74,999	75-111%	18.02%	1,224	$125,000-199,999	2,362	$1,000-1,499	326	2,688	1464
$75-99,999	112-148%	14.84%	1,008	$200,000-249,999	739	$1,500-1,999	-	739	-269
$100-150,000	149-222%	20.35%	1,382	$250,000-399,999	286	$2,000-2,999	-	286	-1096
$150,000+	Over 222%	9.65%	655	$400,000+	182	$3000+	-	182	-473
Total			**10,645**		**4,665**		**5,980**	**10,645**	**0**

Figure 5A-6: Housing Affordability Analysis for Griffith



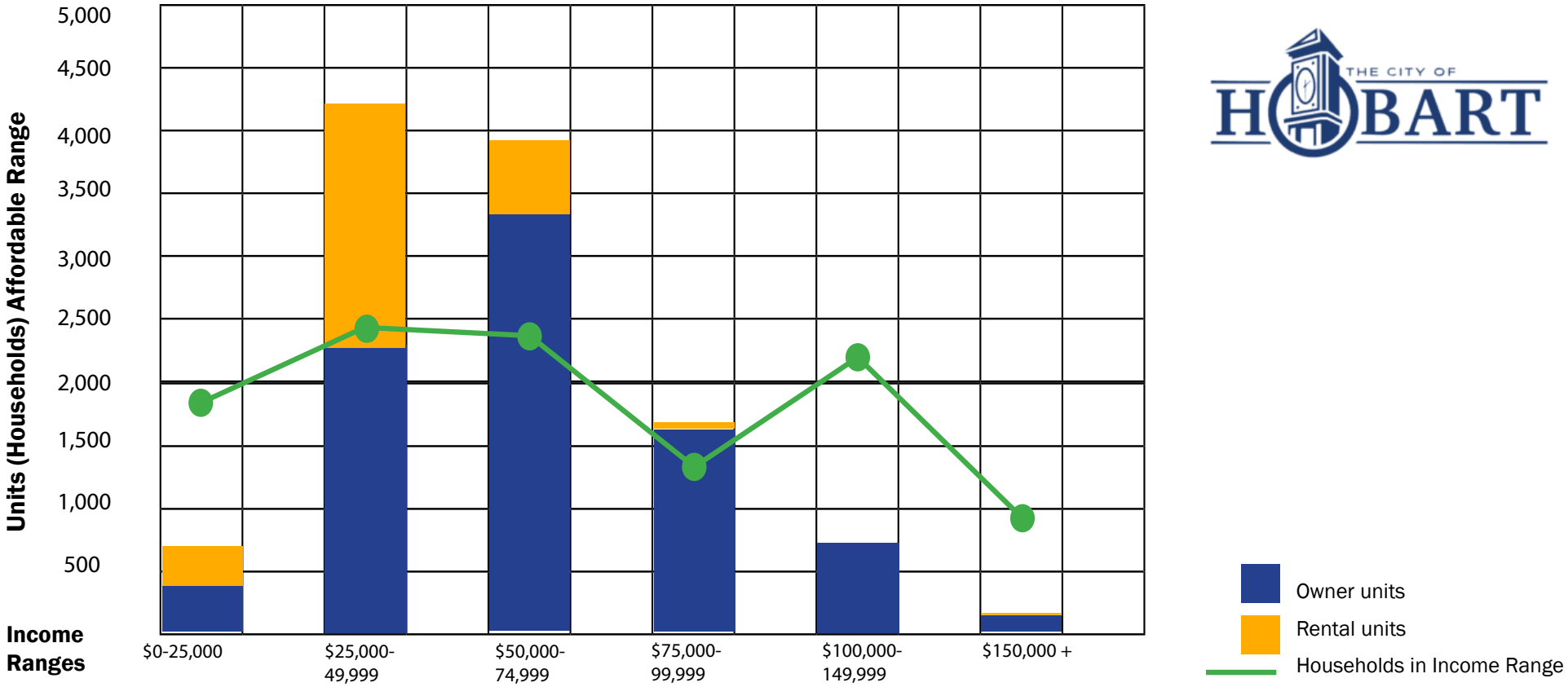
Income Range	% of City Median	% of Households	Number of Households in Group	Affordable Range for Owners	Number of Owner Units	Affordable Range for Renters	Number of Rental Units	Total Affordable Units for Income Group	Balance
$0-25,000	Under 39%	14.20%	1,352	>$60,000	164	$0-499	203	367	-985
$25,000-49,999	39-76%	22.19%	2,113	$60,000-124,999	1,199	$500-999	949	2,148	35
$50,000-74,999	77-113%	19.83%	1,889	$125,000-199,999	4,209	$1,000-1,499	582	4,791	2,902
$75-99,999	114-151%	14.38%	1,370	$200,000-249,999	1,224	$1,500-1,999	126	1,350	-20
$100-150,000	152-227%	20.04%	1,909	$250,000-399,999	628	$2,000-2,999	-	628	-1,281
$150,000+	Over 227%	9.36%	891	$400,000+	240	$3000+	-	240	-651
Total			**9,524**		**7,664**		**1,860**	**9,524**	**0**

Figure 5A-7: Housing Affordability Analysis for Highland



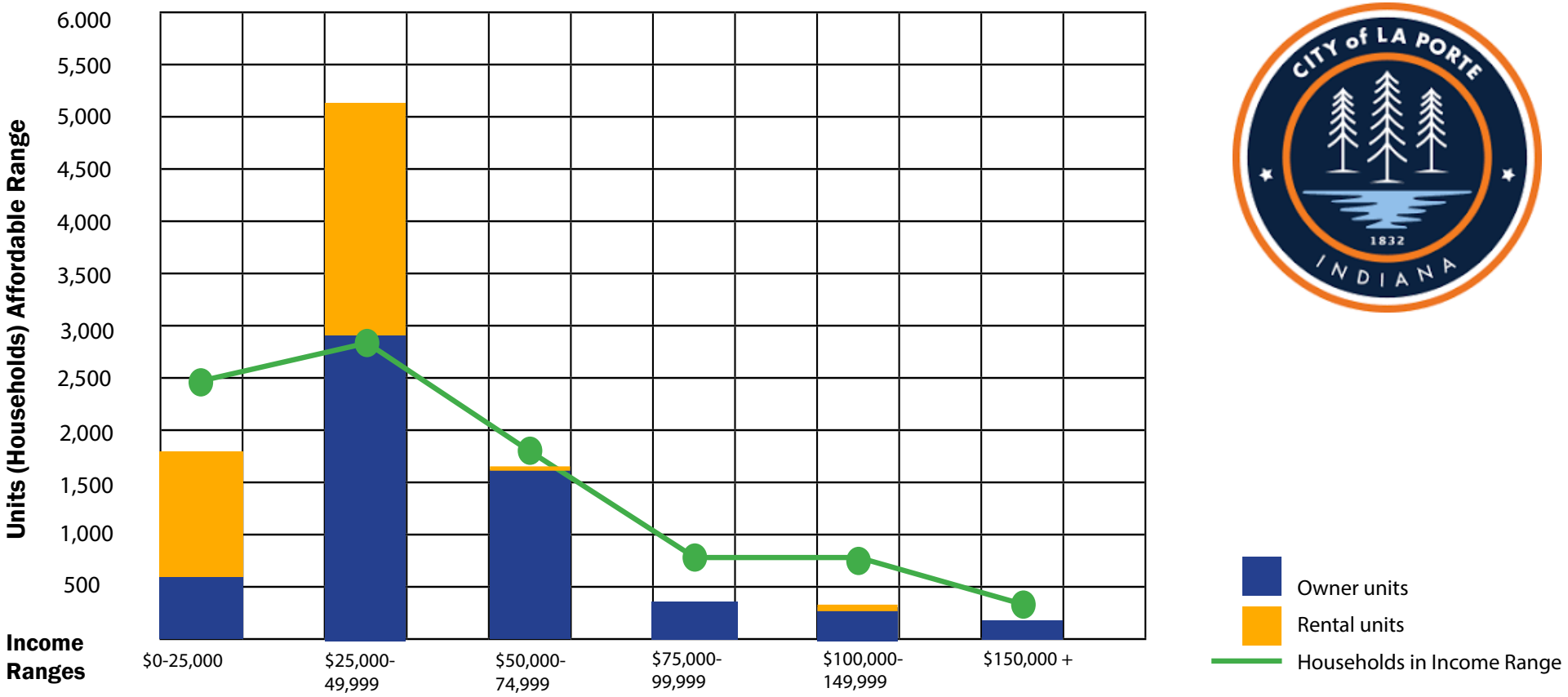
Income Range	% of City Median	% of Households	Number of Households in Group	Affordable Range for Owners	Number of Owner Units	Affordable Range for Renters	Number of Rental Units	Total Affordable Units for Income Group	Balance
$0-25,000	Under 40%	16.54%	1,849	>$60,000	359	$0-499	297	656	-1193
$25,000-49,999	40-79%	21.84%	2,442	$60,000-124,999	2,272	$500-999	1,974	4,246	1804
$50,000-74,999	80-118%	21.39%	2,392	$125,000-199,999	3,305	$1,000-1,499	605	3,910	1518
$75-99,999	119-158%	12.08%	1,351	$200,000-249,999	1,545	$1,500-1,999	70	1,615	264
$100-150,000	159-237%	19.61%	2,193	$250,000-399,999	664	$2,000-2,999	-	664	-1529
$150,000+	Over 237%	8.54%	955	$400,000+	74	$3000+	16	90	-865
Total			**11,182**		**7,664**		**2,963**	**11,182**	**0**

Figure 5A-8: Housing Affordability Analysis for Hobart



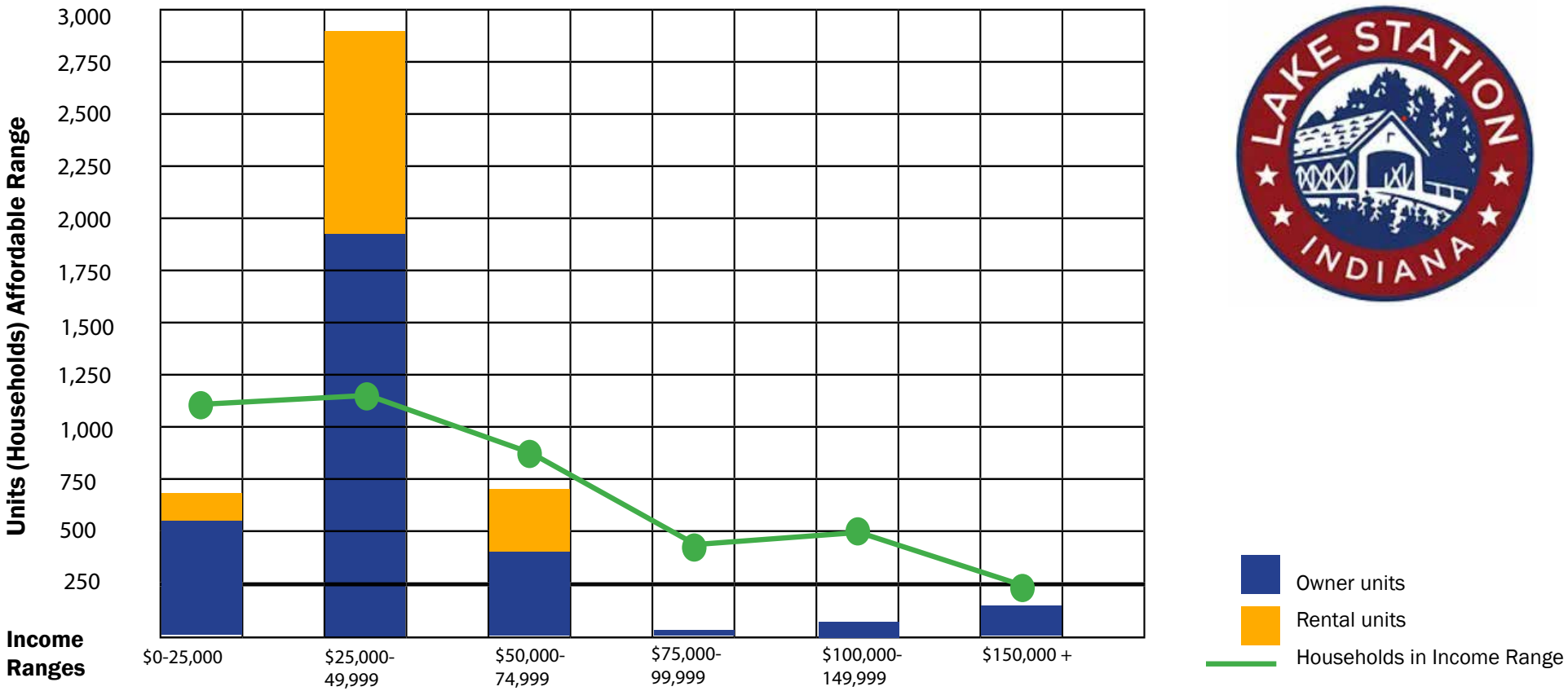
Income Range	% of City Median	% of Households	Number of Households in Group	Affordable Range for Owners	Number of Owner Units	Affordable Range for Renters	Number of Rental Units	Total Affordable Units for Income Group	Balance
$0-25,000	Under 60%	27.07%	2,486	>$60,000	519	$0-499	1,175	1,694	-792
$25,000-49,999	60-119%	30.81%	2,829	$60,000-124,999	2,886	$500-999	2,226	5,112	2283
$50,000-74,999	120-178%	20.46%	1,879	$125,000-199,999	1,572	$1,000-1,499	38	1,610	-269
$75-99,999	179-238%	9.42%	865	$200,000-249,999	374	$1,500-1,999	-	374	-491
$100-150,000	239-357%	8.98%	825	$250,000-399,999	253	$2,000-2,999	57	310	-515
$150,000+	Over 357%	3.26%	299	$400,000+	83	$3000+	-	83	-216
Total			**9,183**		**5,687**		**3,496**	**9,183**	**0**

Figure 5A-9: Housing Affordability Analysis for La Porte



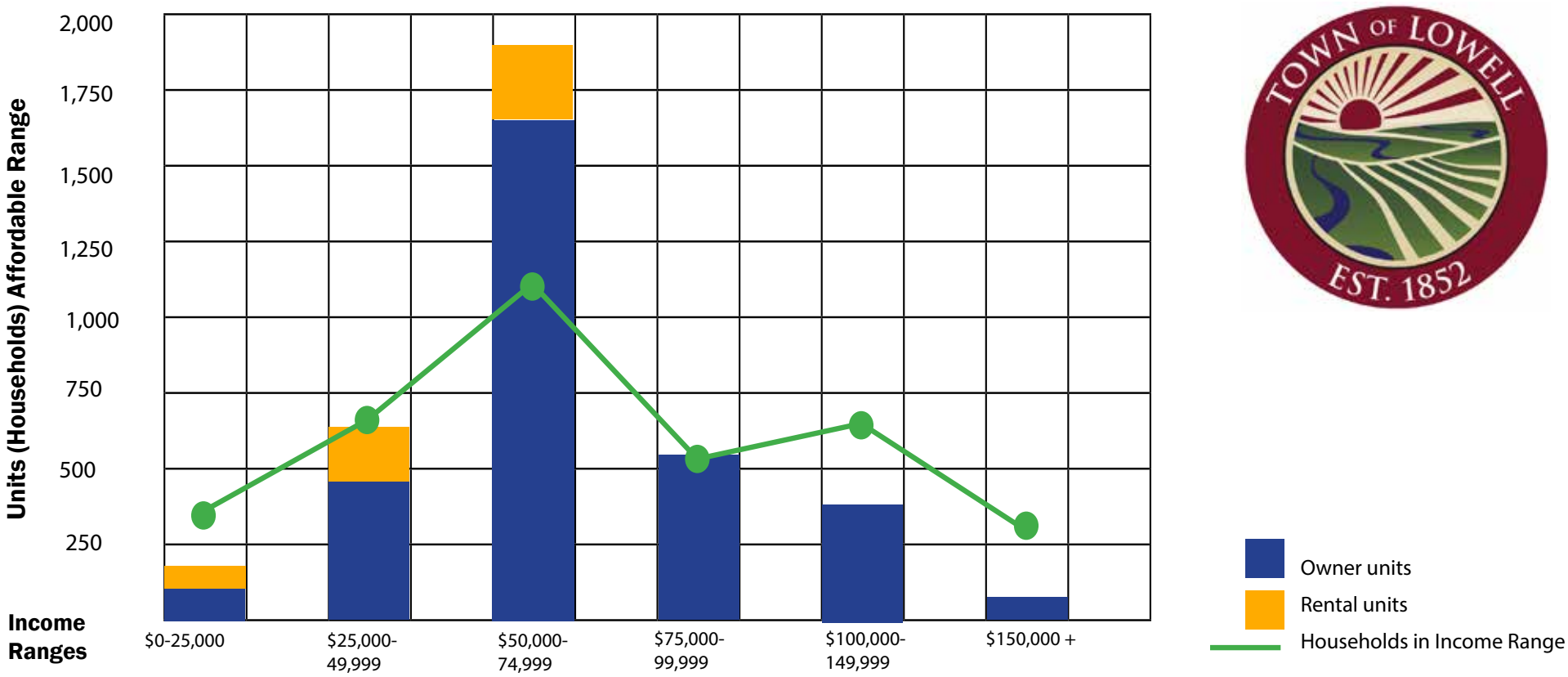
Income Range	% of City Median	% of Households	Number of Households in Group	Affordable Range for Owners	Number of Owner Units	Affordable Range for Renters	Number of Rental Units	Total Affordable Units for Income Group	Balance
$0-25,000	Under 52%	24.97%	1,071	>$60,000	535	$0-499	134	669	-402
$25,000-49,999	52-103%	26.83%	1,151	$60,000-124,999	1,934	$500-999	916	2,850	1699
$50,000-74,999	104-154%	20.12%	863	$125,000-199,999	386	$1,000-1,499	268	654	-209
$75-99,999	155-206%	10.89%	467	$200,000-249,999	8	$1,500-1,999	-	8	-459
$100-150,000	207-309%	11.47%	492	$250,000-399,999	19	$2,000-2,999	-	19	-473
$150,000+	Over 309%	5.73%	246	$400,000+	90	$3000+	-	90	-156
Total			**4,290**		**2,972**		**1,318**	**10,645**	**0**

Figure 5A-10: Housing Affordability Analysis for Lake Station



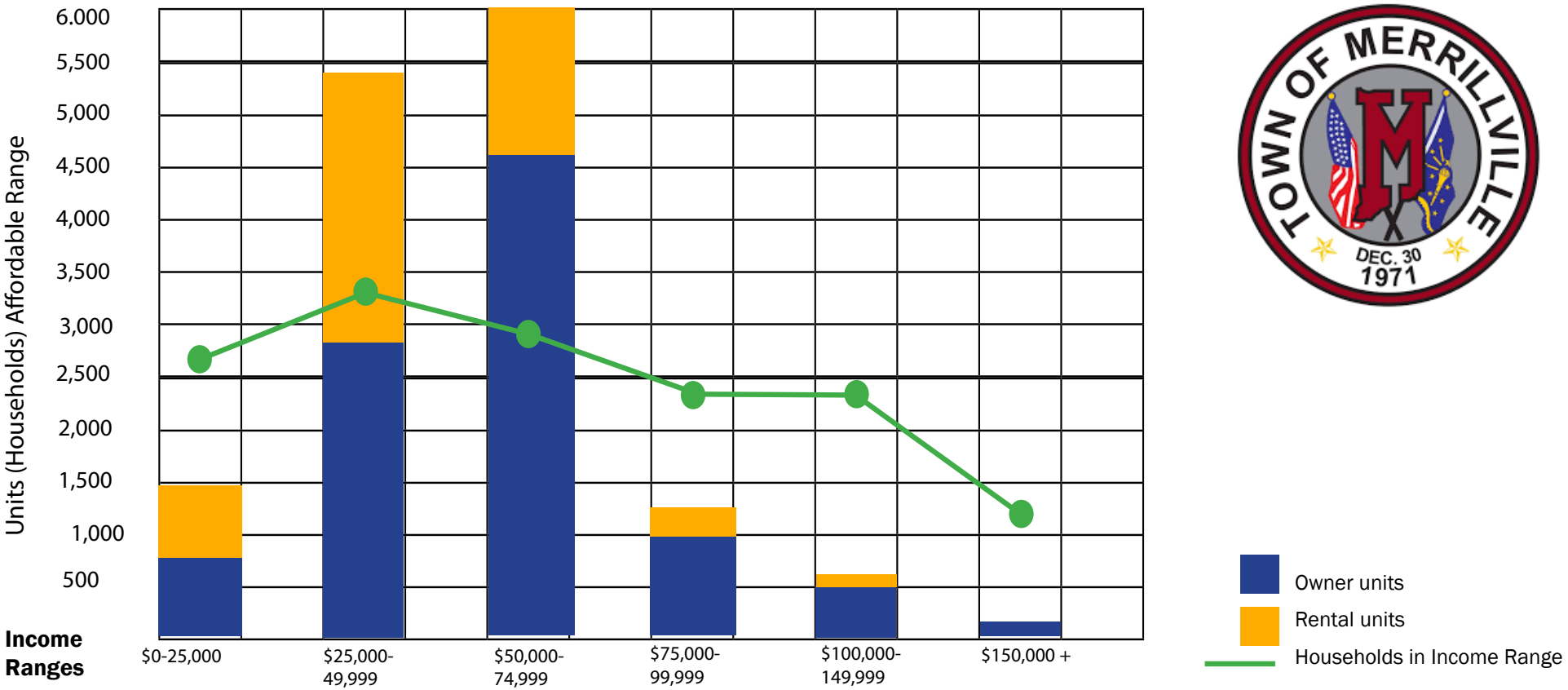
Income Range	% of City Median	% of Households	Number of Households in Group	Affordable Range for Owners	Number of Owner Units	Affordable Range for Renters	Number of Rental Units	Total Affordable Units for Income Group	Balance
$0-25,000	Under 37%	9.43%	341	>$60,000	92	$0-499	83	175	-167
$25,000-49,999	37-73%	19.80%	716	$60,000-124,999	471	$500-999	186	657	-59
$50,000-74,999	74-109%	30.56%	1,105	$125,000-199,999	1,629	$1,000-1,499	226	1,855	750
$75-99,999	110-146%	14.35%	519	$200,000-249,999	520	$1,500-1,999	-	520	1
$100-150,000	147-219%	18.09%	654	$250,000-399,999	369	$2,000-2,999	-	369	-285
$150,000+	Over 219%	7.77%	281	$400,000+	40	$3000+	-	40	-241
Total			**3,616**		**3,121**		**495**	**3,616**	**0**

Figure 5A-11: Housing Affordability Analysis for Lowell



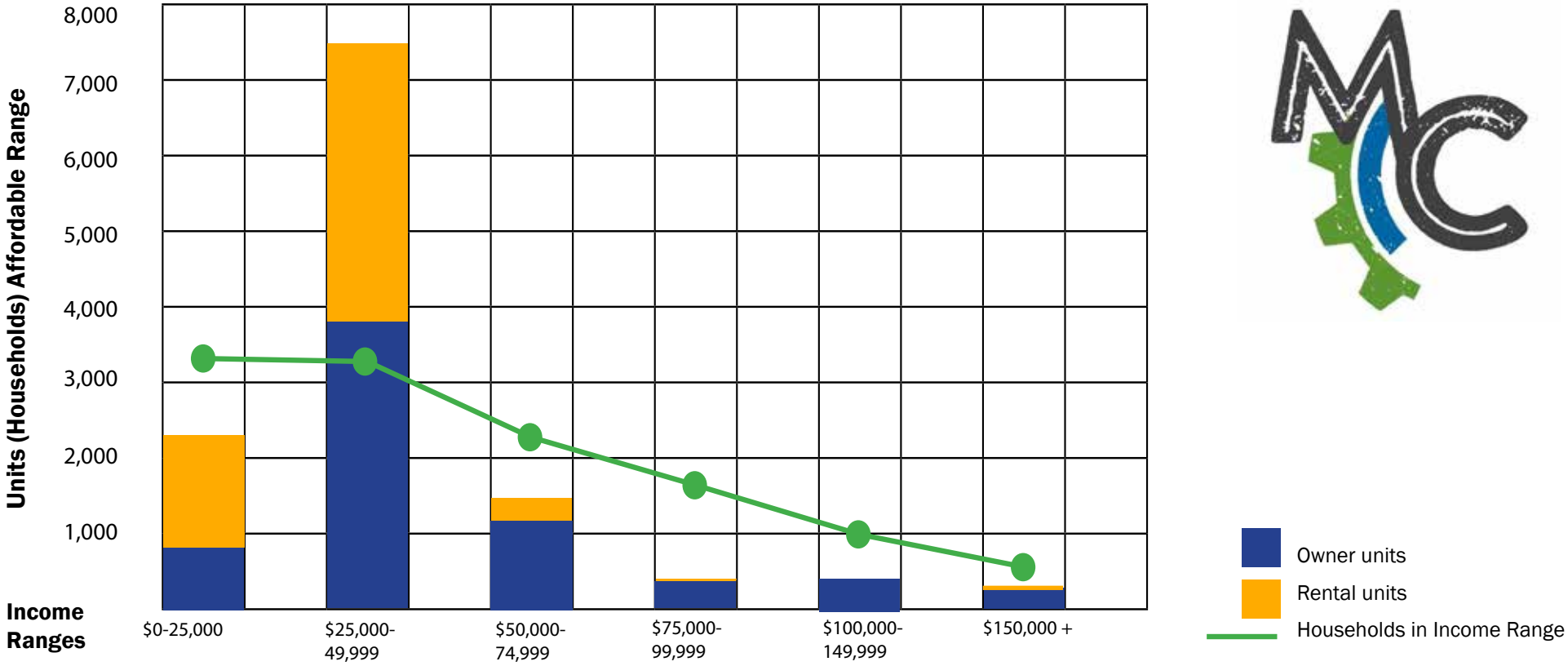
Income Range	% of City Median	% of Households	Number of Households in Group	Affordable Range for Owners	Number of Owner Units	Affordable Range for Renters	Number of Rental Units	Total Affordable Units for Income Group	Balance
$0-25,000	Under 40%	17.92%	2,604	>$60,000	646	$0-499	624	1,270	-1334
$25,000-49,999	40-79%	22.73%	3,304	$60,000-124,999	2,823	$500-999	2,509	5,332	2028
$50,000-74,999	80-118%	19.76%	2,871	$125,000-199,999	4,565	$1,000-1,499	1,570	6,135	3264
$75-99,999	119-158%	15.92%	2,314	$200,000-249,999	960	$1,500-1,999	222	1,182	-1132
$100-150,000	159-237%	15.87%	2,307	$250,000-399,999	478	$2,000-2,999	40	518	-1789
$150,000+	Over 237%	7.80%	1,133	$400,000+	96	$3000+	-	96	-1037
Total			**14,533**		**9,568**		**4,965**	**14,533**	**0**

Figure 5A-12: Housing Affordability Analysis for Merrillville



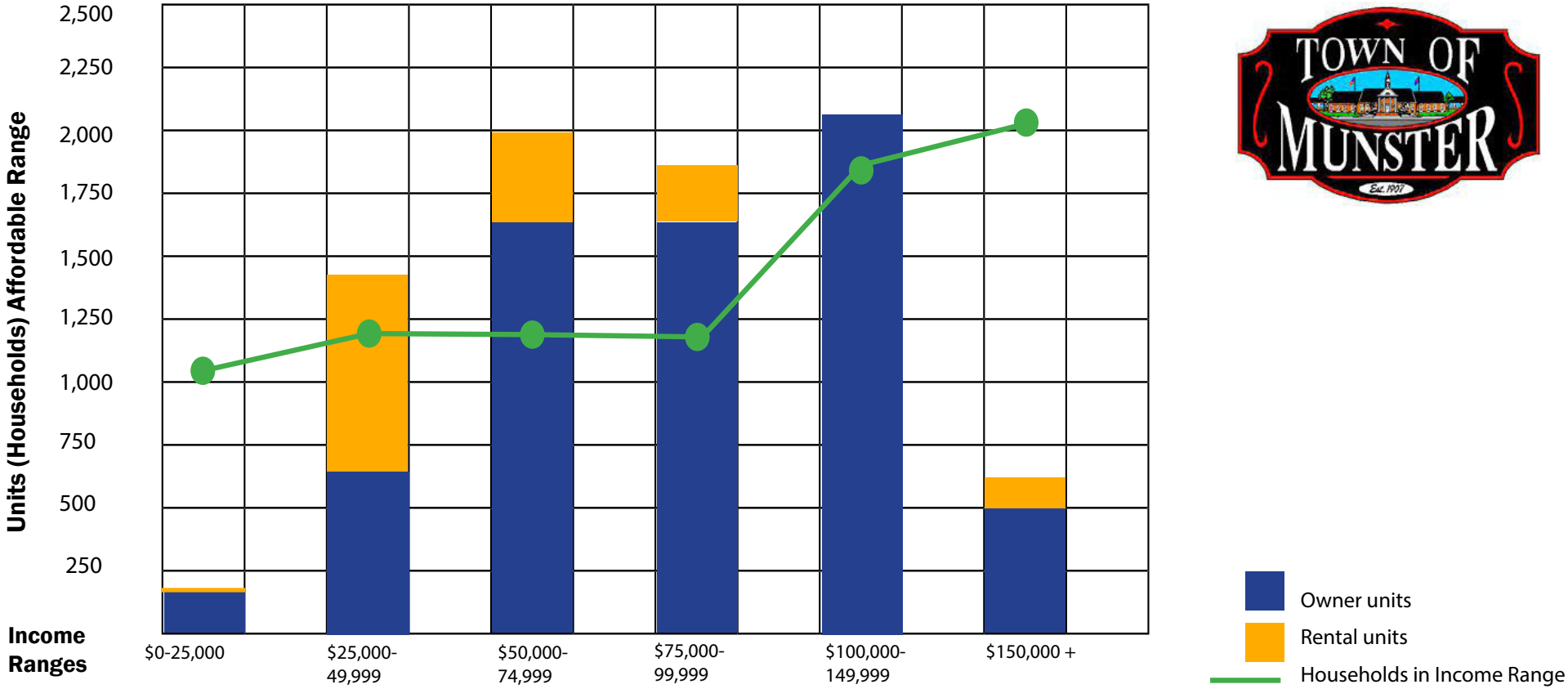
Income Range	% of City Median	% of Households	Number of Households in Group	Affordable Range for Owners	Number of Owner Units	Affordable Range for Renters	Number of Rental Units	Total Affordable Units for Income Group	Balance
$0-25,000	Under 57%	27.35%	3,297	>$60,000	835	$0-499	1,421	2,256	-1041
$25,000-49,999	57-111%	26.96%	3,250	$60,000-124,999	3,813	$500-999	3,754	7,567	4317
$50,000-74,999	112-167%	18.90%	2,279	$125,000-199,999	1,115	$1,000-1,499	314	1,429	-850
$75-99,999	168-223%	14.46%	1,744	$200,000-249,999	247	$1,500-1,999	29	276	-1468
$100-150,000	224-334%	8.29%	999	$250,000-399,999	290	$2,000-2,999	-	290	-709
$150,000+	Over 334%	4.05%	488	$400,000+	176	$3000+	64	240	-248
Total			**12,057**		**6,476**		**5,581**	**12,057**	**0**

Figure 5A-13: Housing Affordability Analysis for Michigan City



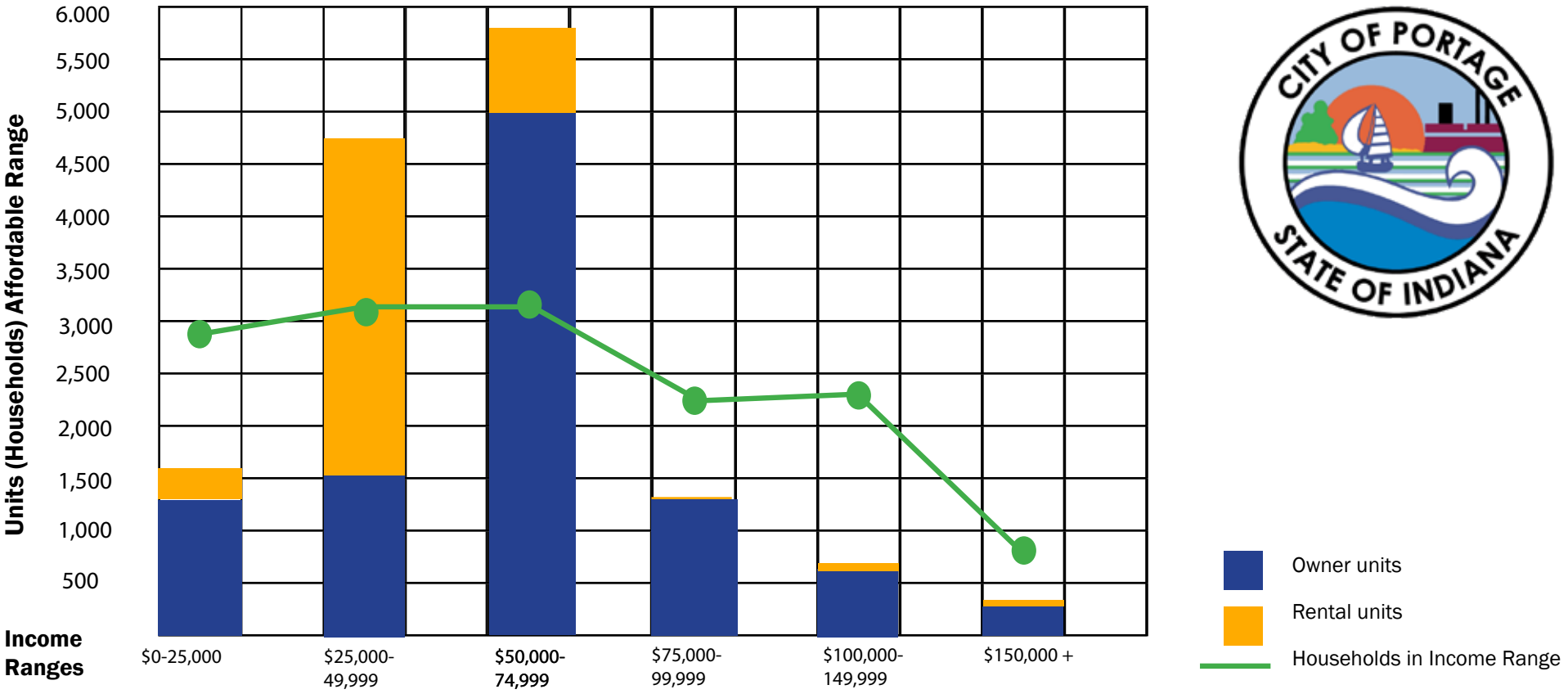
Income Range	% of City Median	% of Households	Number of Households in Group	Affordable Range for Owners	Number of Owner Units	Affordable Range for Renters	Number of Rental Units	Total Affordable Units for Income Group	Balance
$0-25,000	Under 29%	11.90%	1,016	>$60,000	186	$0-499	9	195	-821
$25,000-49,999	29-57%	14.43%	1,232	$60,000-124,999	643	$500-999	771	1,414	182
$50,000-74,999	58-85%	14.26%	1,217	$125,000-199,999	1,688	$1,000-1,499	305	1,993	776
$75-99,999	86-114%	14.13%	1,206	$200,000-249,999	1,666	$1,500-1,999	155	1,821	615
$100-150,000	115-170%	21.14%	1,804	$250,000-399,999	2,045	$2,000-2,999	-	2,045	241
$150,000+	Over 170%	24.14%	2,060	$400,000+	993	$3000+	73	1,066	-994
Total			**8,535**		**7,221**		**1,314**	**8,535**	**0**

Figure 5A-14: Housing Affordability Analysis for Munster



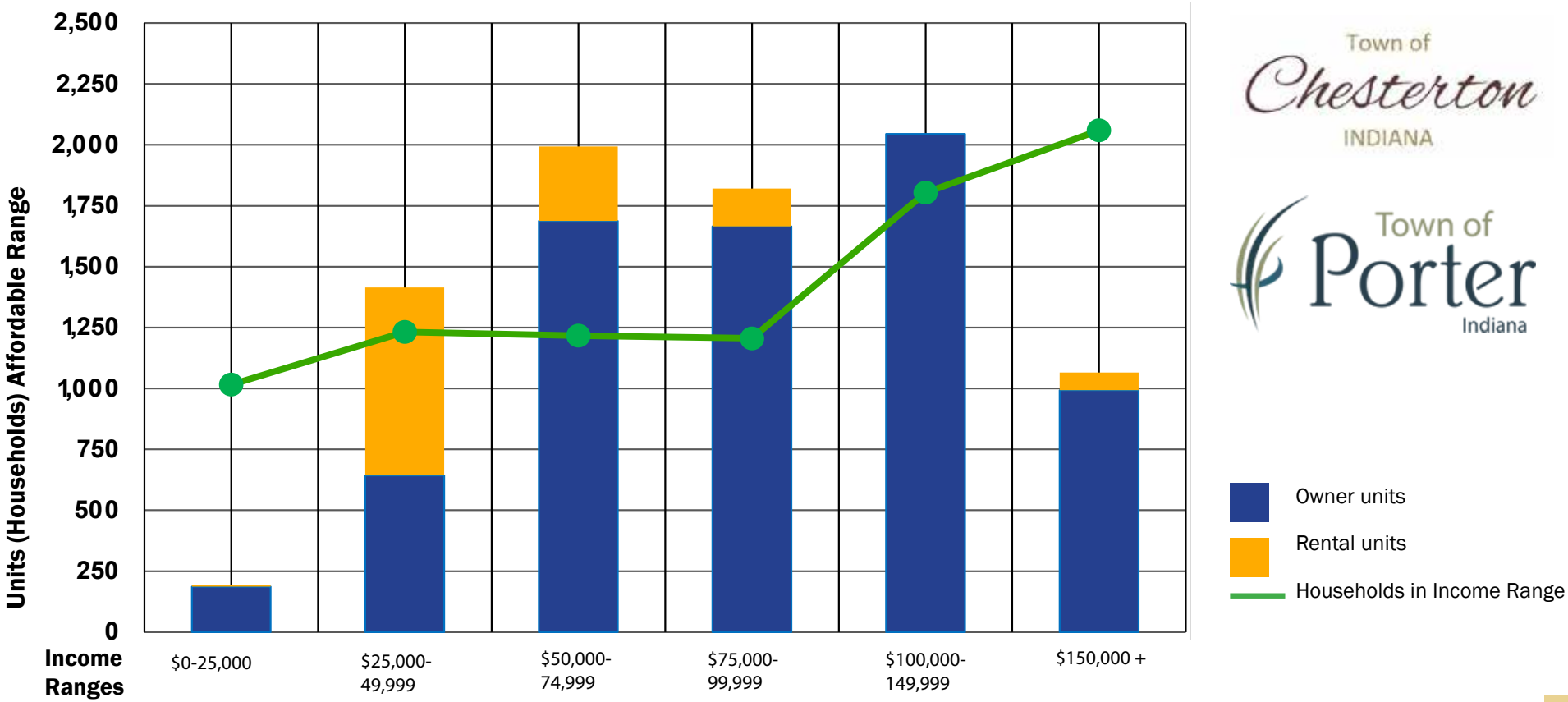
Income Range	% of City Median	% of Households	Number of Households in Group	Affordable Range for Owners	Number of Owner Units	Affordable Range for Renters	Number of Rental Units	Total Affordable Units for Income Group	Balance
$0-25,000	Under 43%	20.23%	2,911	>$60,000	1,211	$0-499	365	1,576	-1335
$25,000-49,999	43-84%	21.11%	3,037	$60,000-124,999	1,532	$500-999	3,211	4,743	1706
$50,000-74,999	85-126%	21.28%	3,062	$125,000-199,999	5,006	$1,000-1,499	815	5,821	2759
$75-99,999	127-167%	15.56%	2,238	$200,000-249,999	1,312	$1,500-1,999	31	1,343	-895
$100-150,000	168-251%	15.82%	2,276	$250,000-399,999	567	$2,000-2,999	52	619	-1657
$150,000+	Over 251%	5.99%	862	$400,000+	236	$3000+	48	284	-578
Total			**14,386**		**9,864**		**4,522**	**14,386**	**0**

Figure 5A-15: Housing Affordability Analysis for Portage



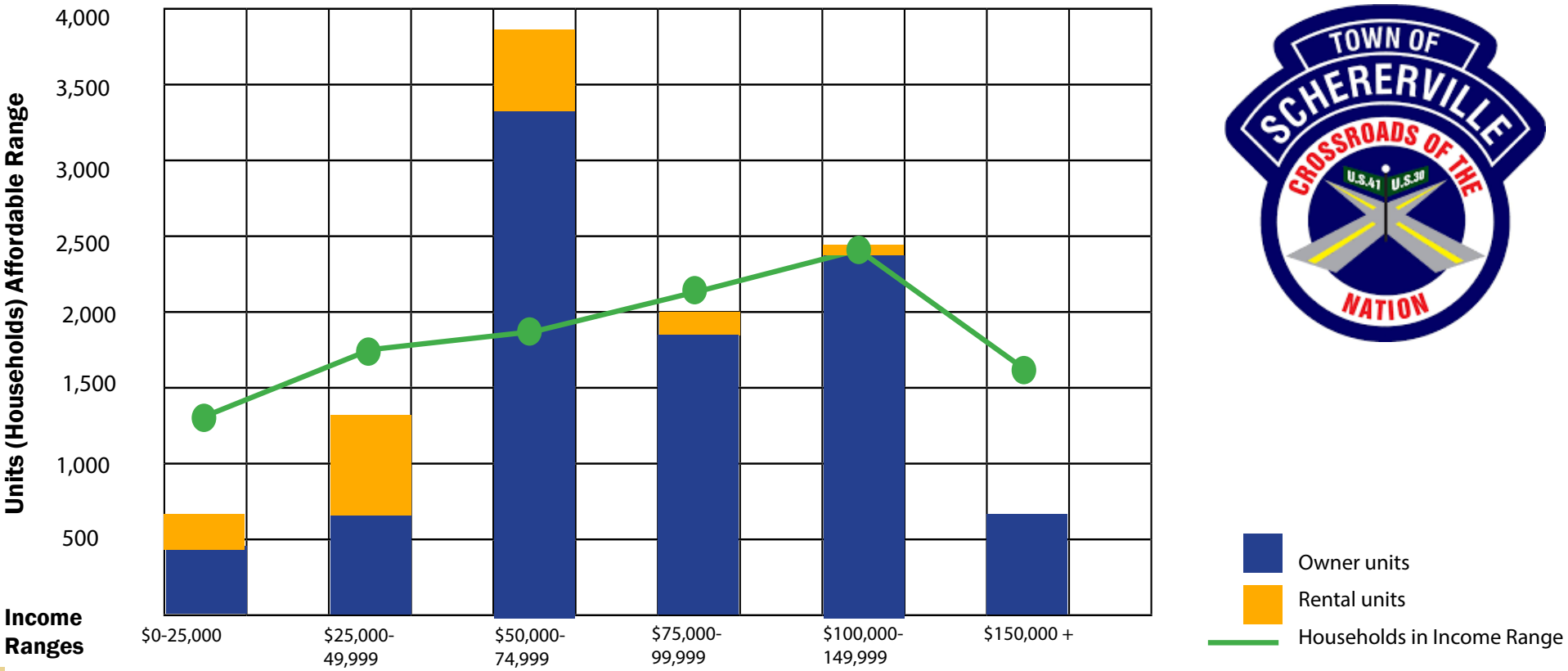
Income Range	% of City Median	% of Households	Number of Households in Group	Affordable Range for Owners	Number of Owner Units	Affordable Range for Renters	Number of Rental Units	Total Affordable Units for Income Group	Balance
$0-25,000	Under 29%	11.90%	1,016	>$60,000	186	$0-499	9	195	-821
$25,000-49,999	29-57%	14.43%	1,232	$60,000-124,999	643	$500-999	771	1,414	182
$50,000-74,999	58-85%	14.26%	1,217	$125,000-199,999	1,688	$1,000-1,499	305	1,993	776
$75-99,999	86-114%	14.13%	1,206	$200,000-249,999	1,666	$1,500-1,999	155	1,821	615
$100-150,000	115-170%	21.14%	1,804	$250,000-399,999	2,045	$2,000-2,999	-	2,045	241
$150,000+	Over 170%	24.14%	2,060	$400,000+	993	$3000+	73	1,066	-994
Total			**8,535**		**7,221**		**1,314**	**8,535**	**0**

Figure 5A-16: Housing Affordability Analysis for Porter/Chesterton



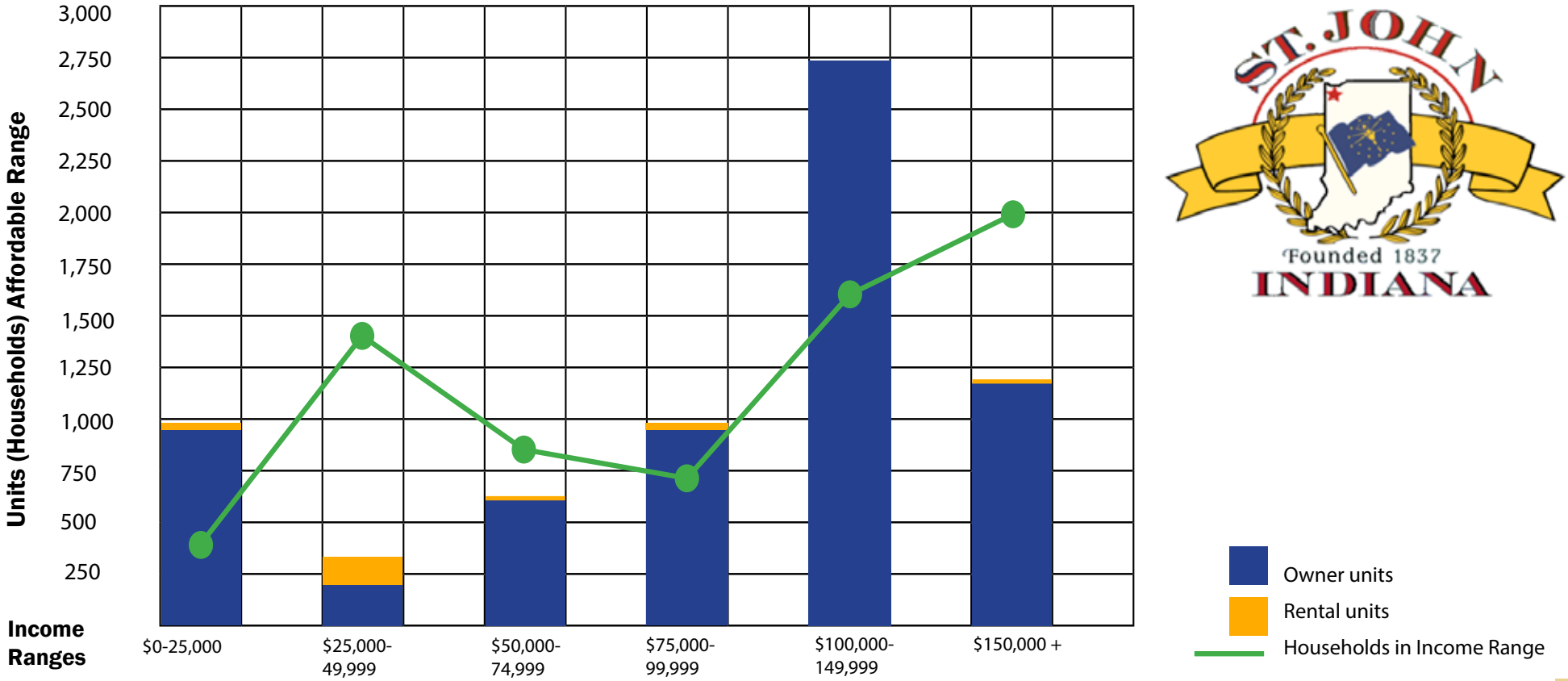
Income Range	% of City Median	% of Households	Number of Households in Group	Affordable Range for Owners	Number of Owner Units	Affordable Range for Renters	Number of Rental Units	Total Affordable Units for Income Group	Balance
$0-25,000	Under 34%	10.02%	1,154	>$60,000	220	$0-499	162	382	-772
$25,000-49,999	34-66%	17.41%	2,006	$60,000-124,999	699	$500-999	1,336	2,035	29
$50,000-74,999	67-100%	22.30%	2,569	$125,000-199,999	2,361	$1,000-1,499	662	3,023	454
$75-99,999	101-133%	12.93%	1,489	$200,000-249,999	1,799	$1,500-1,999	81	1,880	391
$100-150,000	134-199%	21.27%	2,450	$250,000-399,999	3,382	$2,000-2,999	12	3,394	944
$150,000+	Over 199%	16.07%	1,851	$400,000+	797	$3000+	7	804	-1047
Total			**11,519**		**9,258**	**2,261**		**11,519**	**0**

Figure 5A-17: Housing Affordability Analysis for Schererville



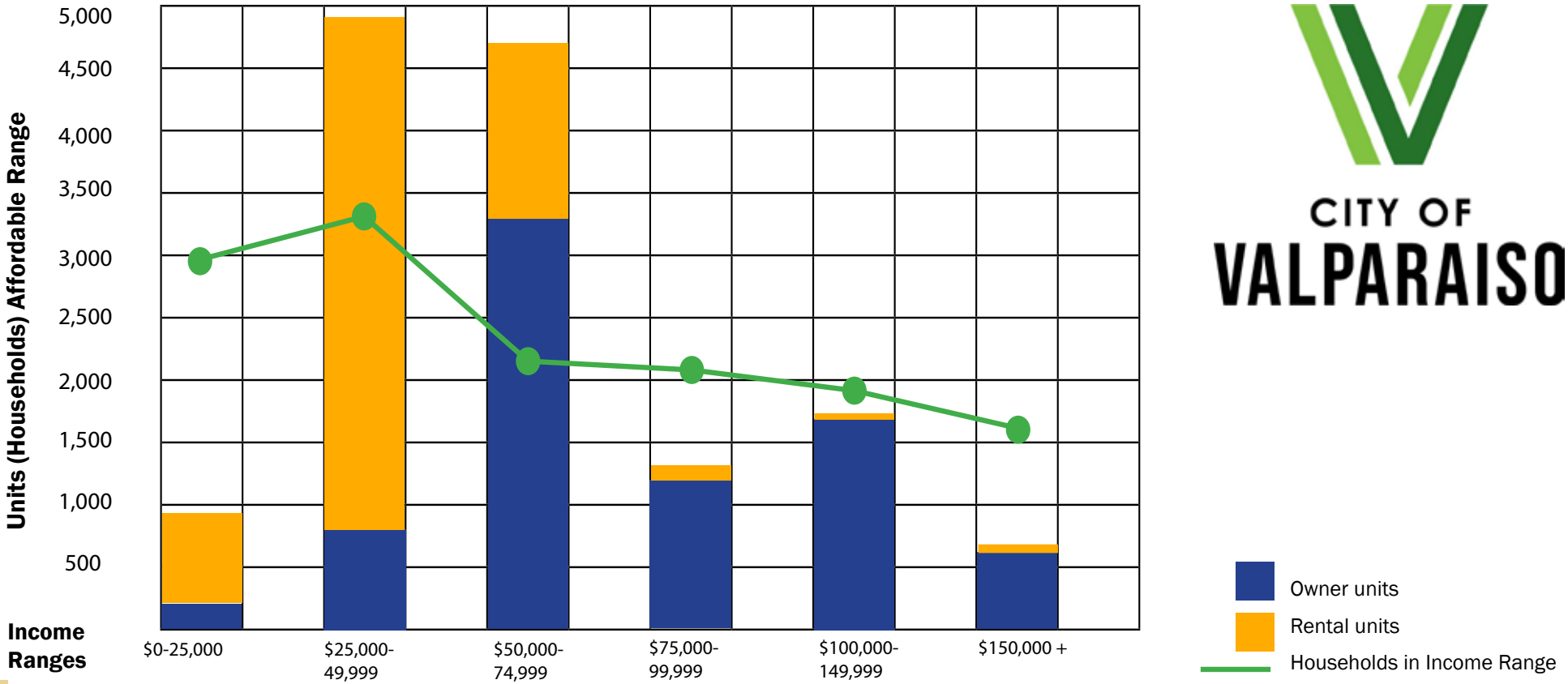
Income Range	% of City Median	% of Households	Number of Households in Group	Affordable Range for Owners	Number of Owner Units	Affordable Range for Renters	Number of Rental Units	Total Affordable Units for Income Group	Balance
$0-25,000	Under 25%	5.33%	362	>$60,000	932	$0-499	11	943	581
$25,000-49,999	25-48%	20.70%	1,405	$60,000-124,999	196	$500-999	91	287	-1118
$50,000-74,999	49-72%	11.26%	764	$125,000-199,999	631	$1,000-1,499	13	644	-120
$75-99,999	73-96%	10.99%	746	$200,000-249,999	940	$1,500-1,999	37	977	231
$100-150,000	97-144%	22.88%	1,553	$250,000-399,999	2,743	$2,000-2,999	-	2,743	1190
$150,000+	Over 144%	28.83%	1,957	$400,000+	1,179	$3000+	14	1,193	-764
Total			**6,787**		**6,621**		**166**	**6,787**	**0**

Figure 5A-18: Housing Affordability Analysis for St. John



Income Range	% of City Median	% of Households	Number of Households in Group	Affordable Range for Owners	Number of Owner Units	Affordable Range for Renters	Number of Rental Units	Total Affordable Units for Income Group	Balance
$0-25,000	Under 46%	21.35%	2,981	>$60,000	177	$0-499	746	923	-2058
$25,000-49,999	46-89%	23.65%	3,303	$60,000-124,999	755	$500-999	4,146	4,901	1598
$50,000-74,999	90-134%	15.09%	2,107	$125,000-199,999	3,277	$1,000-1,499	1,418	4,695	2588
$75-99,999	135-178%	14.87%	2,077	$200,000-249,999	1,076	$1,500-1,999	117	1,193	-884
$100-150,000	179-268%	13.95%	1,948	$250,000-399,999	1,623	$2,000-2,999	47	1,670	-278
$150,000+	Over 268%	11.09%	1,549	$400,000+	529	$3000+	52	581	-968
Total	**56027**	**100.00%**	**13,965.00**		**7,437**		**6,528**	**13,965**	**0**

Figure 5A-19: Housing Affordability Analysis for Valparaiso



CITY OF VALPARAISO


Merrillville PLAZA
J·maxx
OfficeMax
FASHION SUPERSTORE
Penney Home Store
VE BELOW
AVID'S BRIDAL
JIMMY JOHN'S
Bedroom
NAILS SPA
NAVY
CASUAL
H40 2844



6 ROADS

Connected

The vision of a Connected region in 2019's *NWI 2050* states, *NWI's people have accessible, safe, and equal opportunities for working, playing, living and learning*. The *NWI 2050* Mobility focus area formulated a goal to address this vision as "complete roadway, bicycle, sidewalk, and transit networks across municipal and county lines to enhance safe and efficient access to opportunities for all." In the context of roadways, *NWI 2050+* distills this goal into four objectives:

1. The roadway network in Northwest Indiana adequately covers the region and affords roadway users sufficient mobility and accessibility.

2. The roadway network in Northwest Indiana balances opportunities for working, playing, living, and learning in the region.

3. The roadway network extent in Northwest Indiana is not itself a major contributor to congestion.

4. The roadway network in Northwest Indiana fosters connections between communities without imposing barriers.

Objective #1: *The roadway network in Northwest Indiana adequately covers the region and affords roadway users sufficient mobility and accessibility.*

Northwest Indiana offers residents, workers, and visitors an extensive roadway network. Indiana is known as "the Crossroads of America," and Northwest Indiana is the second most populated region in the state after the Indianapolis region. On a national scale, Northwest Indiana region benefits from an even more connected roadway network by virtue of the fact that it lies at the southern tip of the Great Lakes that geographically block the path between the population centers of the Chicago Metropolitan Area and the East Coast. Figure 6-1 shows the Functional Classification map of the Northwest Indiana.



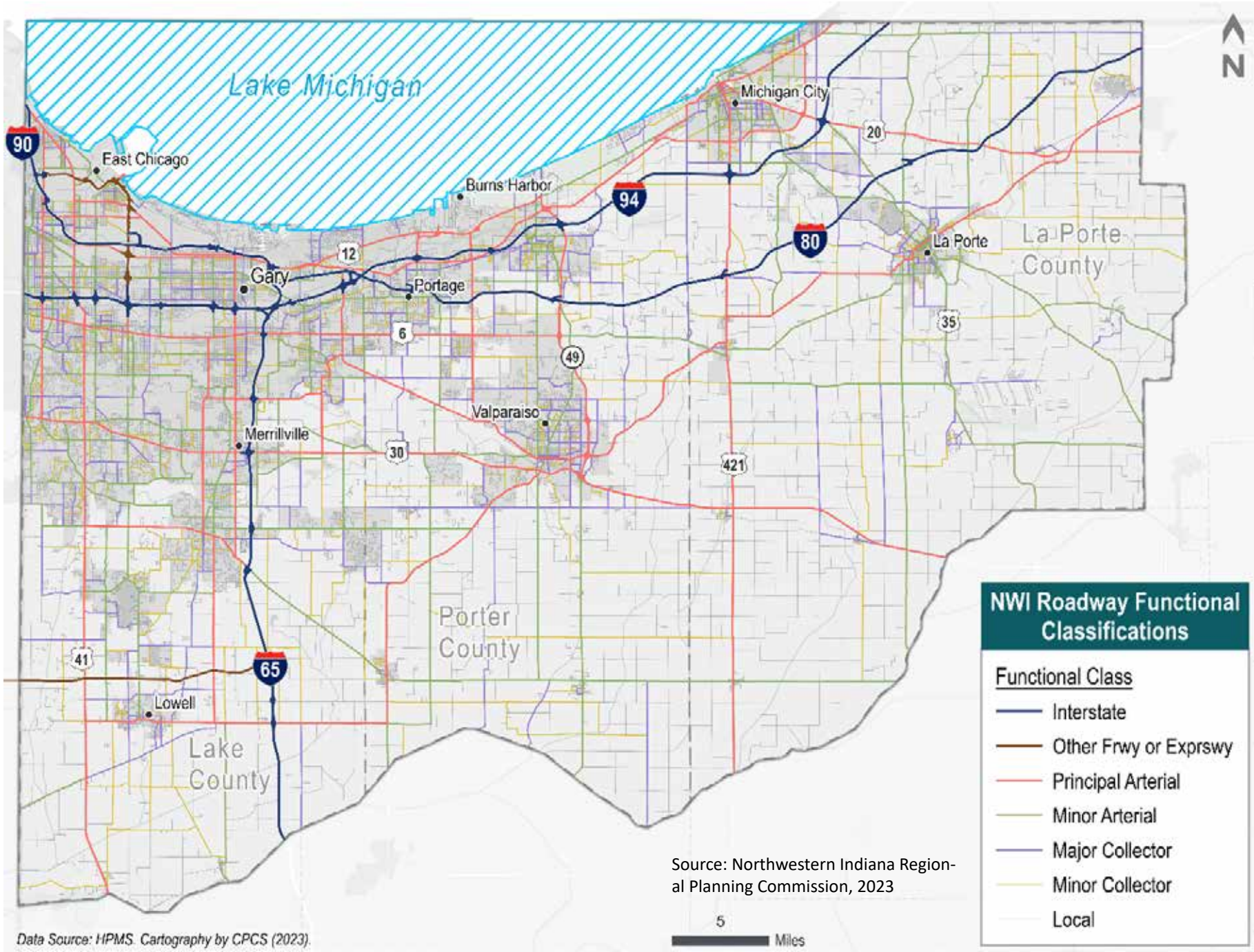


Figure 6-1: Roadway Functional Classification in Northwest Indiana

Functional Classification is a classification of roadways by the functions they are designed to serve. Freeways, Expressways, and Arterials are primarily designed to provide mobility, whereas Collectors and Local Roads are primarily designed to provide accessibility at the beginning and end of roadway trips. Mobility is defined as "how far you can go in a given amount of time," whereas accessibility is defined as "how much you can get to in that time." Northwest Indiana is clearly well-covered by Freeways, Expressways, and Arterials, so region roadway users experience good mobility. It is a bit harder to assess exactly how well covered Northwest Indiana is from an accessibility perspective by just looking at Figure 6-1 at first glance. In general, it does appear there are plenty of Collectors and Local Roads to serve region road users' accessibility needs. In order to more fully assess how well Northwest Indiana's roadways provide for accessibility, it is necessary to examine some metrics about how efficiently region residents, workers, and visitors are reaching opportunities as discussed in Objective #2.



Purpose	2007-2008 Household Travel Survey	2018 Household Travel Survey
Home-based Work	25.6	28.0
Home-based Shopping	15.3	14.7
Home-based Other	19.5	17.4
All Home-based	18.9	19.8

Source: Northwestern Indiana Regional Planning Commission, 2007-2008 and 2018.

Table 6-1: 2007-2008 and 2018 Household Travel Survey Average Trip Duration by Purpose for Road-based Trips (minutes)

Objective #2: *The roadway network in Northwest Indiana balances opportunities for working, playing, living, and learning in the region.*

Whether it be accessing jobs, enjoying beautiful beaches and parks, getting to a family member or friend's house, or commuting to a world class college or university, road users in Northwest Indiana depend on the roadway network. One purpose of using the roadway network should not outweigh another. NIRPC surveyed region households in 2007-2008 and then again in 2018 about their daily experiences traveling, predominately on the region's roadways. These household travel surveys collect vital information about how long it takes residents to complete trips of various purposes: work, shopping, and other. Table 6-1 shows the differences between the 2007-2008 and 2018 household travel surveys in terms of how long on average trips by a road-based mode take for each of these three different purposes.

Table 6-1 shows that Northwest Indiana road users experienced slightly longer trip times for all home-based trips in 2018 than a decade earlier, but the difference was particularly pronounced for home-based work trips, with Northwest Indiana road users taking on average about two and a half minutes longer on each leg of their commute in 2018 than in 2008. It should be noted, however, that road users experienced slightly shorter travel times for shopping trips and other purposes in 2018 than in 2008. Overall, the degree of change in road users' experience between 2008 and 2018 was relatively minor, but planners should ensure that Northwest Indiana work commuters do not have to continue driving for ever increasing lengths of time to reach jobs.

Objective #3: *The roadway network extent in Northwest Indiana is not itself a major contributor to congestion.*

Road users in Northwest Indiana may experience congestion on the region's roadway network due to traveling at high-demand periods of the day, but congestion is of special concern to planners when it is caused by physical features in the roadway network itself. In 2016, NIRPC conducted the *Regional Corridors Study* to assess the degree to which gaps in certain major roadway corridors contribute to congestion and to prioritize which corridor gaps planners should pursue with projects to fill in these gaps. Figure 6-2 shows a map of the Regional Corridors as part of the *Regional Corridors Study*, and Table 6-2 shows the ordered ranking and status of each of the 22 corridor gaps evaluated in the *Regional Corridors Study.*

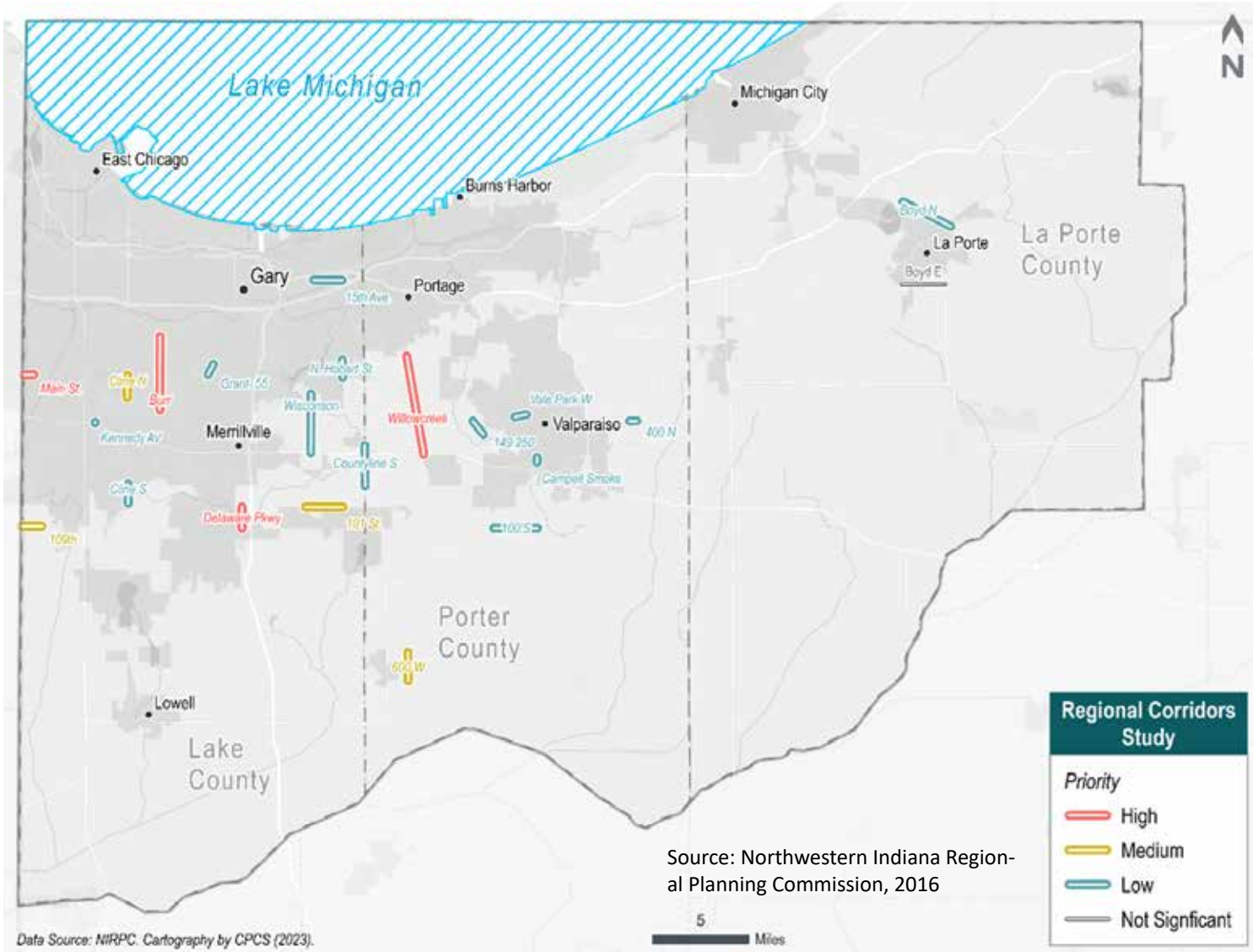


Figure 6-2: Regional Corridors Study Map

Rank	Roadway Segment	Total Score	Status (if in NIRPC's Core Planning and Programming Documents)
1	**Main St**	89	In *NWI 2050*
2	**Cline Ave N**	85	
3	**Willowcreek Rd**	83	In *NWI 2050* and FY 2022-2026 TIP
4	**Burr St**	82	
5	**Kennedy Ave**	81	In *NWI 2050* and FY 2022-2026 TIP
6	**Grant St**	81	
7	**15th Ave**	80	
8	**Campbell St**	71	In FY 2024-2028 TIP
9	**Cline Ave S**	70	In *NWI 2050* and FY 2022-2026 TIP
10	**N Hobart Rd**	70	
11	**Wisconsin St**	67	
12	**County Line Rd**	64	
13	**Boyd Blvd N**	64	In *NWI 2050*
14	**101st Ave E**	63	
15	**600 W**	62	
16	**Vale Park Rd W**	61	In *NWI 2050*
17	**109th Ave**	57	
18	**Boyd Blvd E**	57	
19	**Delaware Pkwy**	53	
20	**Vale Park Rd E**	47	
21	**SR-149**	44	
22	**100 S**	34	

Source: Northwestern Indiana Regional Planning Commission, 2023

Table 6-2: Rank and Status of Regional Corridors Study Corridor Gaps

Figure 6-2 shows that while there are corridors with gaps that contribute to congestion in all three counties in Northwest Indiana, the majority are in Lake and Porter Counties, which have a higher concentration of roads than La Porte County. Also, Figure 6-2 shows that the highest priority corridor gaps are in Lake and western Porter Counties. Table 6-2 shows that seven out of 22 of the *Regional Corridors Study* gaps have already progressed to the point of being included in NIRPC's planning and programming documents. As these corridor gaps continue to progress, Northwest Indiana road users should continue to expect improvements in congestion.

***Objective #4**: The roadway network in Northwest Indiana fosters connections between communities without imposing barriers.*

While the Northwest Indiana roadway network is extensive and provides a reasonably well-balanced experience in meeting motorists' demands, it does impose some barriers that impede connections between communities. Limited access highways in particular, along with their interchanges and ramps, block non-roadway users from being able to conveniently travel between different communities. Figure 6-3 shows the sheer extent of limited-access highways in Northwest Indiana.

These limited-access highways effectively improve mobility, but they also do not permit non-roadway users and only allow non-roadway users to cross them at certain grade separated bridges or tunnels. In addition to imposing barriers by themselves, they also require supporting interchange and ramp infrastructure to allow motorists to access them. Figure 6-4 displays the extent of these interchanges and ramps.

The interchanges and ramps shown in Figure 6-4 further compound the barriers that limited-access facilities impose on non-roadway users. This is done by bringing the high-speed merging and exiting for limited access motorized traffic down to grade level with surface roads, requiring extensive physical space to achieve this. Figure 6-4 also shows that the largest and most concentrated interchange and ramp facilities are mainly located in northern Lake County, an area with greater Environmental Justice populations. Planners should seek to work with traffic engineers to design interchanges and ramps in ways that balance motorists' mobility needs with non-motorized users' and local motorists' needs of connecting within communities.



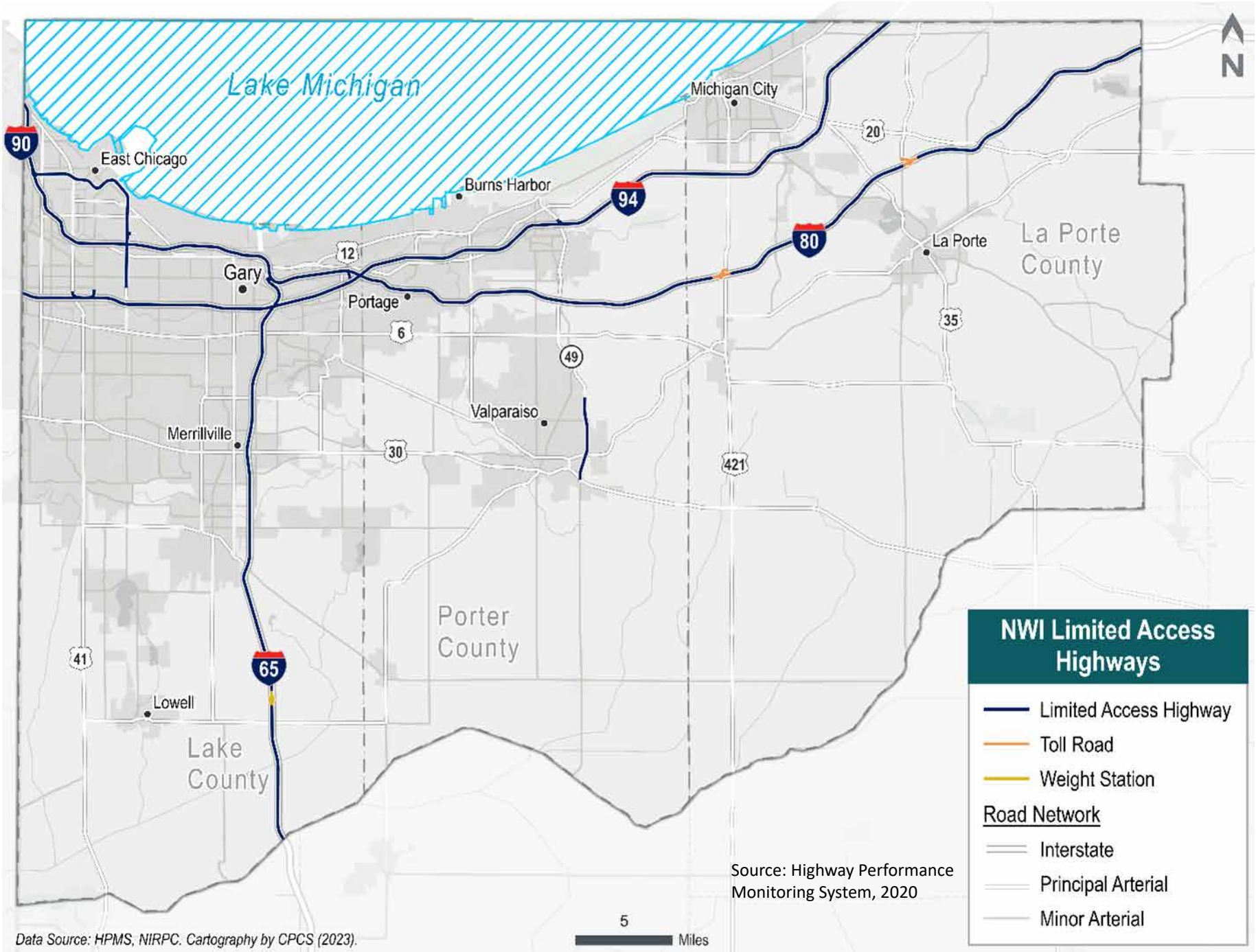


Figure 6-3: Limited Access Highways in Northwest Indiana

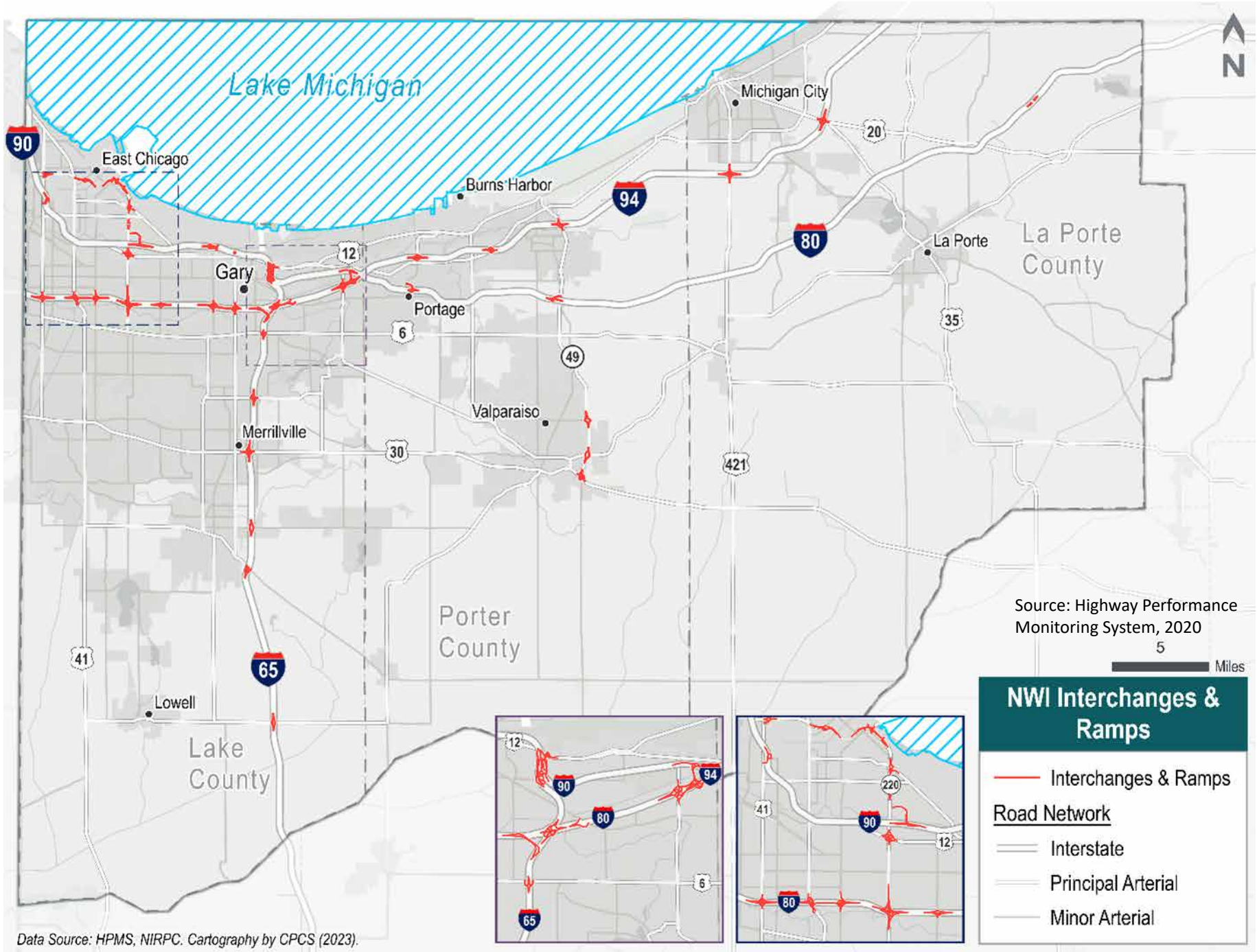


Figure 6-4: Interchanges and Ramps in Northwest Indiana

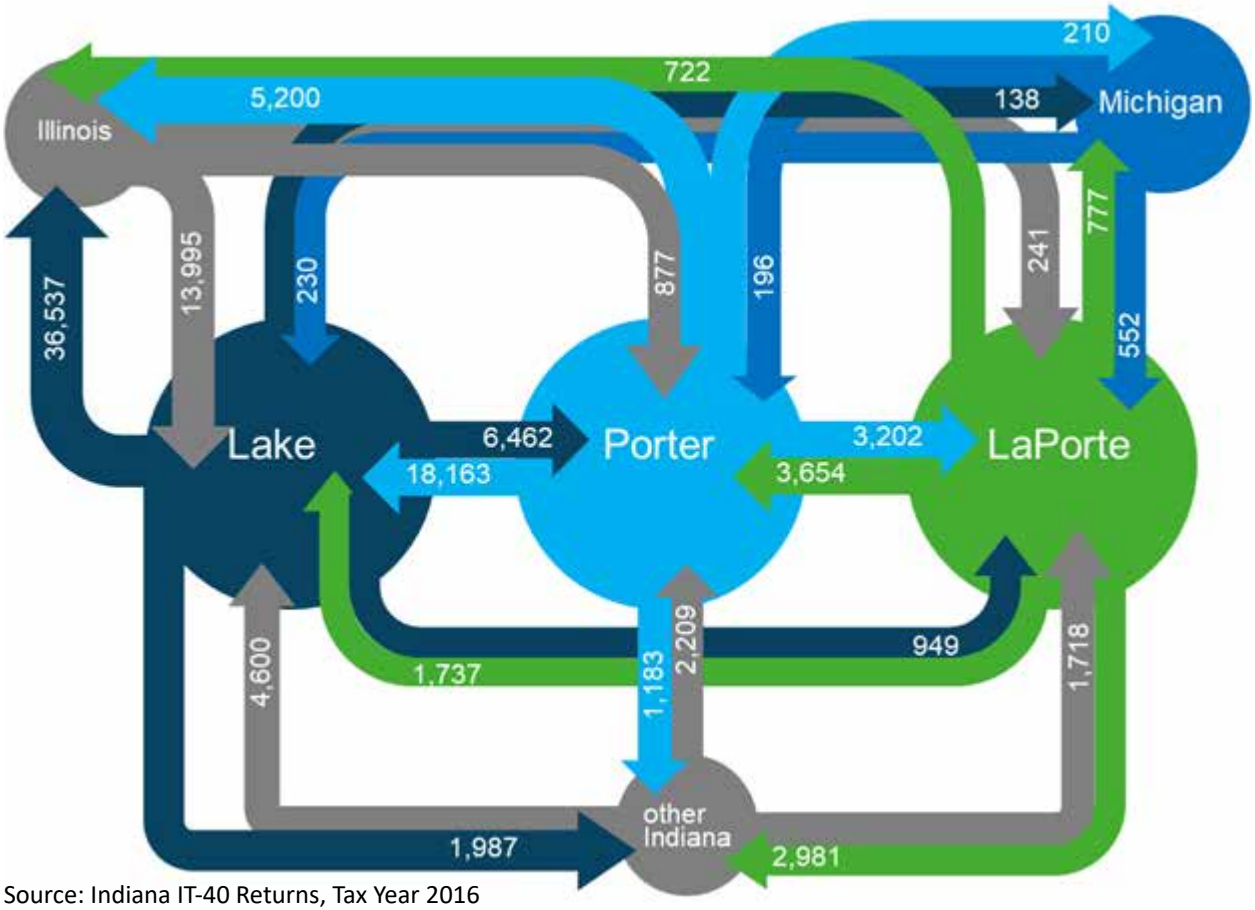
United

The vision of a United region in 2019's *NWI 2050* states as a goal, *NWI's diversity is celebrated, and we work together as a community across racial, ethnic, political and cultural lines for the mutual benefit of the region*. The *NWI 2050* Mobility focus area formulated a goal to address this vision as, "prioritize transformative investments to elevate the position of the region and to attract a diversity of residents and high-quality economic opportunities." In the context of roadways, *NWI 2050+* distills this goal into two objectives:

1. Northwest Indiana's residents are able to access jobs both within and outside the region, and Northwest Indiana's jobs attract talent from both within and outside the region.
2. Leaders deploy Travel Demand Management (TDM) strategies and transformative Transportation Systems Management and Operations (TSMO) investments in the region.

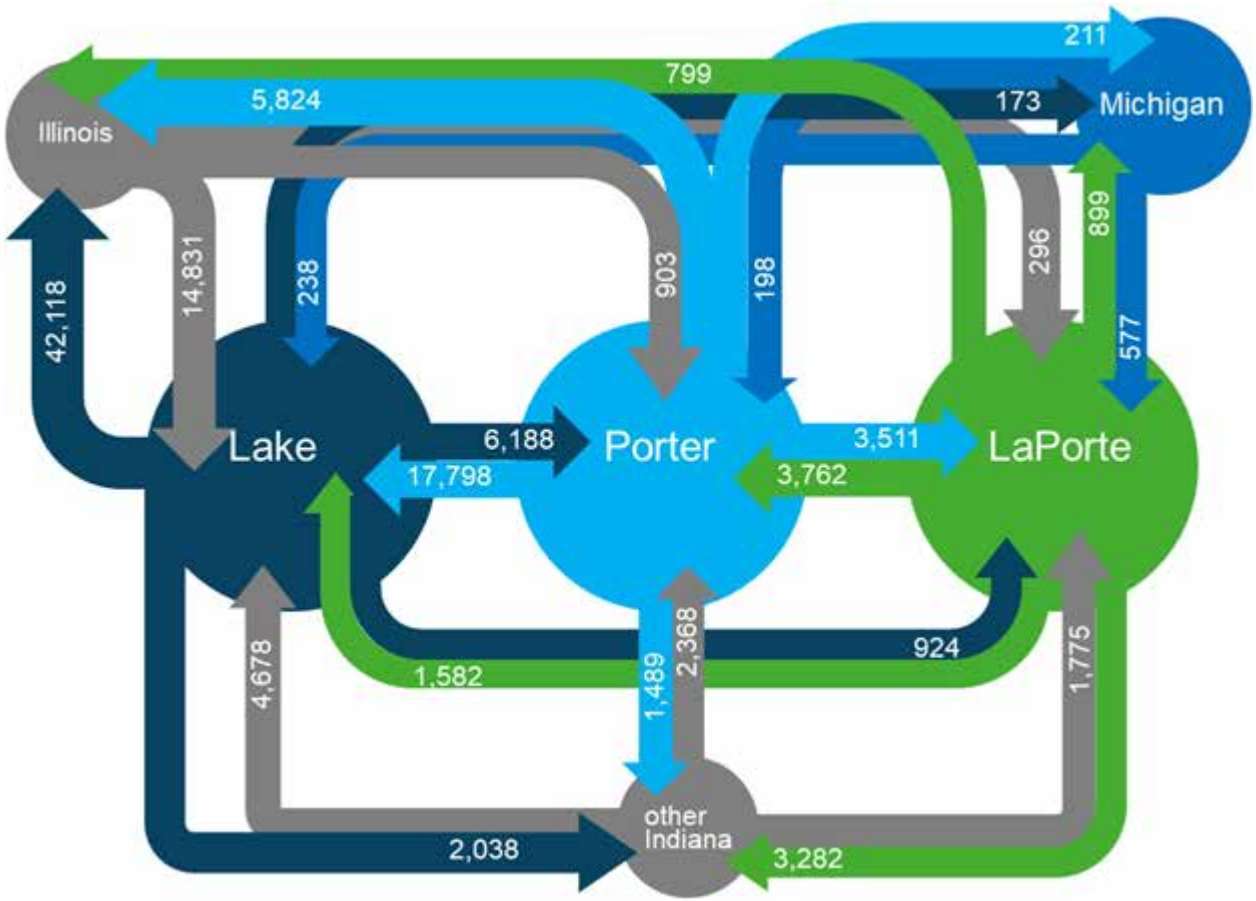
Objective #1: *Northwest Indiana's residents are able to access jobs both within and outside the region, and Northwest Indiana's jobs attract talent from both within and outside the region.*

Northwest Indiana workers are able to access good quality jobs both within the region and in neighboring areas. Likewise, the jobs in Northwest Indiana attract talent from region residents as well as residents from other areas. *NWI 2050* examined commute patterns between Lake, Porter, and La Porte Counties as well as between each of the three counties and adjacent areas. *NWI 2050+* reexamines these same commute patterns, and the results are shown in Figures 6-5 and 6-6.



Source: Indiana IT-40 Returns, Tax Year 2016

Figure 6-5: Average Daily Commute Patterns Into and Out Of Northwest Indiana from NWI 2050



Source: Indiana IT-40 Returns, Tax Year 2020 (Adjusted from 2019, so no COVID-19 impact)

Figure 6-6: Average Daily Commute Patterns Into and Out Of Northwest Indiana in NWI 2050+

Figures 6-5 and 6-6 show that while most region workers find jobs in Northwest Indiana, Illinois attracts a significant number of commuters. At least immediately before the COVID-19 Pandemic, the number of workers commuting between Northwest Indiana and Illinois continued to grow. As Table 6-3 shows, most Northwest Indiana commuters commute by driving alone.

Table 6-3 shows that the vast majority of Northwest Indiana workers commute by motorized vehicle, with well over 90 percent of commuters choosing to either drive alone or carpool. Therefore, it is critical that planners maintain the region's roadway network in order to continue to keep the economy thriving. It is also notable that the percentage of commuters working from home increased between 2017 and 2021, though the 2020 and 2021 percentages were based on the preceding five-year averages, meaning they are almost certainly lower than the actual one-year estimates in 2020 and 2021 would show due to the COVID-19 Pandemic.

Year	% Drive Alone	% Carpool	% Transit	% Walk	% Work from Home	% Other Mode
2017	84.2%	7.4%	2.2%	1.5%	3.2%	1.5%
2018	84.0%	7.5%	2.2%	1.5%	3.3%	1.4%
2019	84.0%	7.5%	2.3%	1.4%	3.4%	1.5%
2020	83.2%	7.8%	1.9%	1.3%	4.4%	1.3%
2021	82.8%	7.5%	1.6%	1.2%	5.5%	1.3%

Source: American Community Survey, 2017-2021 5-Year Estimates

Table 6-3: Commute Mode Share of Northwest Indiana Workers, 2017-2021

Objective #2: *Leaders deploy Travel Demand Management (TDM) strategies and transformative Transportation Systems Management and Operations (TSMO) investments in the region.*

Reducing congestion is not usually as straightforward as building more capacity into the roadway network. Transportation planners often examine two types of strategies to reduce congestion: Travel Demand Management (TDM) strategies and Transportation Systems Management and Operations (TSMO) strategies. *MOVE NWI,* NIRPC's Congestion Management Process (CMP) for the Northwest Indiana region, prescribes both strategies. TDM strategies are strategies to reduce the demand for travel during peak times. Table 6-4 shows TDM strategies in *MOVE NWI.*



Strategy	Description
Increased transit	Strategically expand transit or make transit more accessible and attractive to existing or would-be riders
Increased non-motorized use	Make non-motorized, active transportation such as bicycling, walking, or e-scooter use safer and more accessible and attractive to existing or would-be users
Alternative/flexible work hours	Work with employers to encourage and incentivize having employees work in staggered shifts and/or have the option of working at more non-traditional, off-peak times
Telecommuting	Work with employers to allow employees to work from an alternative location, including at home, at least on certain days
Ridesharing	Encourage and remove barriers for ridesharing companies/programs to operate
Carpooling/School-pooling	Work with employers to incentivize carpooling or with school districts to incentivize school-pooling
Vanpooling	Promote Pace vanpool program and other possible upstart vanpool programs that allow employees working at close-by work locations to arrange shared van rides to and from work
High-Occupancy Vehicle (HOV) lanes	Implement lanes on major road corridors that are restricted to vehicles with more than one occupant
Congestion pricing	Levy a fee on certain congested roadway segments or dense geographical areas that may vary by congestion condition or time-of-day

Source: Northwestern Indiana Regional Planning Commission, MOVE NWI, 2020

Table 6-4: Travel Demand Management (TDM) Strategies in MOVE NWI

The TDM strategies explained in Table 6-4 all require multiple stakeholders in Northwest Indiana to coalesce around the shared mission of reducing the demand for single occupancy vehicle travel. For example, effective transit requires sufficiently funded operators working strategically with transportation planners as well as a willing traveling public to use the system. Flexible hours and telecommuting require employers to be willing to grant their employees these benefits. Carpooling and vanpooling often greatly benefit from the private sector marketing these programs and developing mobile apps. HOV lanes and congestion pricing programs, while not currently planned in Northwest Indiana, would require transportation planners and policymakers to work with project engineers to design these concepts. In short, TDM strategies propagate the spirit of a United Northwest Indiana.

In addition to TDM, Transportation Systems Management and Operations (TSMO) strategies can help transportation planners reduce congestion without adding capacity to the roadway network. Unlike TDM strategies, which seek to reduce the demand for single occupancy vehicle travel before it even uses the roadway network, TSMO strategies are aimed at optimally using existing capacity. Table 6-5 shows the TSMO strategies in *MOVE NWI*.

Strategy	Description
Signal preemption/priority	Allow certain classes of vehicles (such as emergency vehicles, transit vehicles, etc.) to receive priority when they arrive at or are approaching traffic signals
Signal coordination	Better coordinate a series of adjacent traffic signals along a corridor(s) so as to optimize traffic flow
Reduced or variable speed limits	Reduce speed limits in areas with high non-motorized activity or allow variable speed limits in order to optimize traffic flow
Crash reduction focus at specific sites	Employ a crash-reduction focus on the project(s) by incorporating specific, non-capacity adding targeted interventions based on crash data and in a way that effectiveness can be measured over time after implementation

Table 6-5: Transportation Systems Management and Operations (TSMO) Strategies in MOVE NWI

The ongoing I-80/94 FlexRoad project, led by the Indiana Department of Transportation (INDOT) partnering with the Illinois Department of Transportation (IDOT) and the Illinois Tollway, is an example of a TSMO project in the Northwest Indiana region that has involved the States of Indiana and Illinois working together along with stakeholders and members of the public. The project explores a menu of possible TSMO strategies on the heavily traveled I-80/94 corridor between IL-394 and I-65, a roughly 15-mile stretch.

Since the Planning and Environmental Linkages (PEL) Study process is moving into the National Environmental Policy Act (NEPA) process without having identified a preferred alternative at the time of *NWI 2050+*, still the I-80/94 FlexRoad project will deploy a variety of TSMO strategies. These may include dynamic shoulder lanes (DSL), queue warning, variable speed limits, and ramp metering. NIRPC staff has participated during the Planning and Environmental Linkages (PEL) Study phase of the I-80/94 FlexRoad project on both the Resource Agency Committee and Community Advisory Committee.



Strategy	Description
Increased operational data sharing	Commit to increasing the amount of operational data (i.e. crash locations, traffic volumes, travel times, etc.) shared with NIRPC, first responders, university partners, and/or other external entities
Intelligent Transportation Systems (ITS)	Incorporate ITS elements into the project(s) not already mentioned in other OM strategies such as dynamic messaging signs, travel time signs/notifications, etc.
Freight/intermodal coordination	Coordinate with freight-specific stakeholders to incorporate non-capacity adding freight congestion reduction elements into the project(s)
Tolling	Levy a toll on a corridor in order to more efficiently transfer the costs of its operation and maintenance to the users and shift some traffic to other nearby corridors
HOV/managed lanes	Implement lanes on major road corridors that are restricted to vehicles with more than one occupant or are willing to pay a posted price that can vary, or lanes that are restricted in some way so as to optimally manage traffic flow
Reversible lanes	Implement lanes on major road corridors that can be directionally reversed at certain times of day on a fixed schedule or variable schedule when conditions warrant
Part-time shoulder use	Allow through-motor vehicle traffic on shoulders of major road corridors during certain times of day or during certain conditions of congestion
Ramp metering	Implement signals or other traffic control devices at merging interchanges to optimize the times/intervals of allowing merging traffic to proceed

Source: Northwestern Indiana Regional Planning Commission, MOVE NWI, 2020

Table 6-5 cont.: Transportation Systems Management and Operations (TSMO) Strategies in MOVE NWI

Renewed

The vision of a Renewed region in 2019's *NWI 2050* states as a goal, NWI's urban and rural centers are places people want to come to and live in, and our environment is safe and healthy. The *NWI 2050* Mobility focus area formulated a goal to address this vision as, "improve roadway, bicycle, sidewalk, and transit networks to revitalize existing urban and rural centers and enhance equity." In the context of roadways, *NWI 2050+* distills this goal into two objectives:

1. Leaders prioritize maintaining roadway and highway pavements in satisfactory condition in the Northwest Indiana region.
2. Leaders prioritize maintaining bridges in a state of good repair in the Northwest Indiana region.

Objective #1: *Leaders prioritize maintaining roadway and highway pavements in satisfactory condition in the Northwest Indiana region.*

Maintaining the existing roadway network in a state of good repair is the second most important investment leaders can make in roads and highways after safety improvements. Pavements are expensive investments, so to protect the investment in the asset, it is incumbent upon planners at the local level to rely on good data and pavement management systems to target investments in maintaining pavements in satisfactory condition.

Figure 6-7 maps the pavement condition on major roadways and highways in Northwest Indiana.

Figure 6-7 clearly demonstrates that Northwest Indiana planners and leaders have a lot of room for improvement in maintaining pavements in good or fair condition. Rural areas in general have a much higher percentage of pavements in good condition than in the more urban areas of the region. This could be partially due to higher traffic volumes in urban areas than in rural areas, but the clear pattern suggests that there could be other contributing factors. Northwest Indiana lacks a distinct, central hub city with a much larger population than surrounding communities, so it is possible that the more fractured nature of municipal governance in the region than in many regions of similar population leads to higher hurdles to overcome in coordinating planning, data collection, and prioritization of road maintenance projects. However, there have been many success stories of Northwest Indiana communities receiving Community Crossings Matching Grant Program funding awards from the State of Indiana since the program launched in 2016. Table 6-6 shows the Community Crossings Matching Grant Program funds awarded to communities in Northwest Indiana between 2016 and 2022.



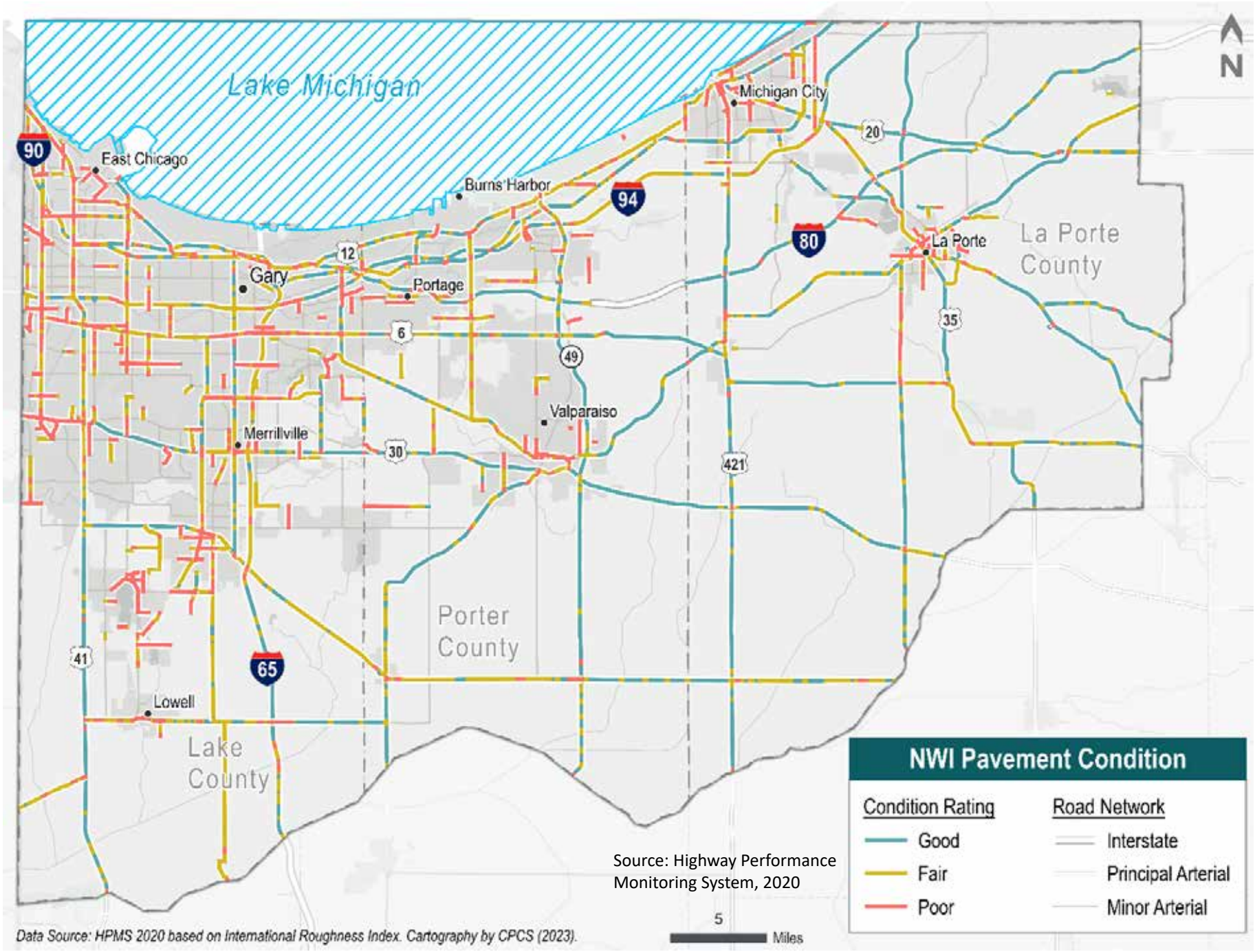


Figure 6-7: Pavement Condition on Major Roadways and Highways in Northwest Indiana

Community	2016	2017	2018	2019	2020	2021	2022	2016-2022 Total
Beverly Shores	$35,141		$297,225	$182,216	$31,260		$65,314	$611,156
Burns Harbor	$96,856		$1,000,000	$1,000,000		$705,000	$1,000,000	$3,801,856
Cedar Lake		$690,000			$1,064,516	$999,814	$202,850	$2,957,179
Chesterton	$156,563		$444,618	$167,889	$352,020	$265,726	$383,773	$1,770,587
Crown Point	$1,000,000			$999,718	$1,055,984	$1,017,513	$994,791	$5,068,006
Dune Acres	$50,014		$325,543	$149,631	$105,079	$143,841		$774,107
Dyer	$325,000		$695,000	$946,000	$1,071,588	$1,000,000	$1,000,000	$5,037,588
East Chicago	$935,764				$1,000,000	$568,964	$1,000,000	$3,504,728
Gary	$1,000,000			$1,000,000	$1,000,000		$767,599	$3,767,599
Griffith	$800,000			$950,292	$761,883	$1,000,000		$3,512,175
Hammond	$1,000,000				$956,323	$1,000,000	$1,000,000	$3,956,323
Hebron	$150,600			$329,076	$758,197		$443,454	$1,681,327
Highland	$472,671			$899,478	$1,000,000	$500,000	$705,950	$3,578,099
Hobart	$1,000,000			$1,000,000	$997,321	$999,990	$999,998	$4,997,309
Kingsford Heights			$6,843	$545,550	$381,150		$391,072	$1,324,615
Kouts		$216,160	$185,755		$483,390			$885,305
La Porte (city)	$1,000,000		$460,037	$710,110	$994,813	$946,912	$1,000,000	$5,111,872
LaCrosse	$93,868							$93,868
Lake County	$1,000,000		$1,000,000	$1,000,000	$975,073	$1,000,000	$1,000,000	$5,975,073
Lake Station		$232,803		$999,942	$896,250	$348,636		$2,477,631
La Porte County		$568,500	$636,591	$1,000,000	$996,975	$1,000,000	$1,000,000	$5,202,066
Long Beach			$719,483		$990,159	$326,766	$256,110	$2,292,518
Lowell	$1,000,000		$1,000,000	$999,976	$1,000,000	$1,000,000	$489,493	$5,489,469
Merrillville		$425,800		$888,332	$751,574	$1,000,000	$738,254	$3,803,959
Michiana Shores			$84,034					$84,034
Michigan City	$977,533			$1,000,000	$983,192	$999,404	$697,573	$4,657,702
Munster	$481,075			$1,016,960	$1,027,792	$428,460	$1,000,000	$3,954,286
New Chicago		$89,151	$65,228	$150,104	$530,978	$137,842	$93,098	$1,066,400
Ogden Dunes		$234,000		$316,815	$127,875			$678,690
Pines		$67,177	$63,000		$78,942	$41,280	$225,457	$475,856

Table 6-6: Community Crossings Matching Grant Program Funding Awards to Northwest Indiana Communities, 2016-2022

Community	2016	2017	2018	2019	2020	2021	2022	2016-2022 Total
Portage	$900,954			$1,000,000	$1,327,883	$1,000,000	$1,000,000	$5,228,837
Porter (town)				$623,697	$602,948	$593,301		$1,819,946
Porter County	$1,000,000		$817,545	$838,996	$1,125,263	$1,000,000	$1,000,000	$5,781,803
Pottawatamie Park				$98,644				$98,644
St. John		$670,000		$1,000,000	$1,000,000		$1,000,000	$3,670,000
Schererville	$426,500		$1,000,000	$738,767	$1,125,382	$1,021,024	$1,000,000	$5,311,673
Schneider	$59,915		$74,670					$134,585
Trail Creek		$333,665		$291,413	$332,561			$957,638
Valparaiso	$849,200		$1,000,000	$114,398	$1,422,822	$1,000,000	$1,000,000	$5,386,420
Wanatah		$105,909		$317,402	$153,033		$240,993	$817,337
Westville		$404,998	$300,000		$120,000	$89,999	$299,991	$1,214,988
Whiting	$333,850		$374,591	$1,000,000		$532,433	$427,500	$2,668,373
Winfield	$50,300		$981,930	$541,498	$1,000,000	$535,283	$944,423	$4,053,434
NWI Total	**$15,195,803**	**$4,038,163**	**$11,532,093**	**$22,816,902**	**$28,582,224**	**$21,202,188**	**$22,367,692**	**$125,735,065**

Source: Indiana Department of Transportation, 2023

Table 6-6: Community Crossings Matching Grant Program Funding Awards to Northwest Indiana Communities, 2016-2022 (continued)

It is a remarkable success story that 43 local units of government in Northwest Indiana have received Community Crossings Matching Grant Program funding awards since the program was authorized by the Indiana General Assembly in 2016. These funds are only awarded to communities that have asset management plans, meaning that they take a data-driven approach to assessing their transportation assets, primarily pavements. The challenge will be for Northwest Indiana communities to continue to prioritize maintaining pavements in good or fair condition on roads and highways that connect across and between communities, not just within them.

Objective #2: *Leaders prioritize maintaining bridges in a state of good repair in the Northwest Indiana region.*

Bridges are perhaps the single most critical element of the roadway network, since if they fail or collapse completely, communities can be completely cut off from one another. However, lining up funding for maintaining bridges in a state of good repair is often more overlooked, at least at the local level, than maintaining pavements. Counties are responsible for maintaining bridges in Indiana, except for INDOT roads, which are maintained by INDOT. Figure 6-8 shows a map of the condition of bridges in Northwest Indiana.

Figure 6-8 shows that while overall, most bridges in the region are in good or fair condition, there are several bridges in poor condition, particularly on non-INDOT roads. This suggests that it will continue to be critical for local and county officials to work together and with NIRPC on prioritizing bridge rehabilitation and replacement work using an asset management approach.



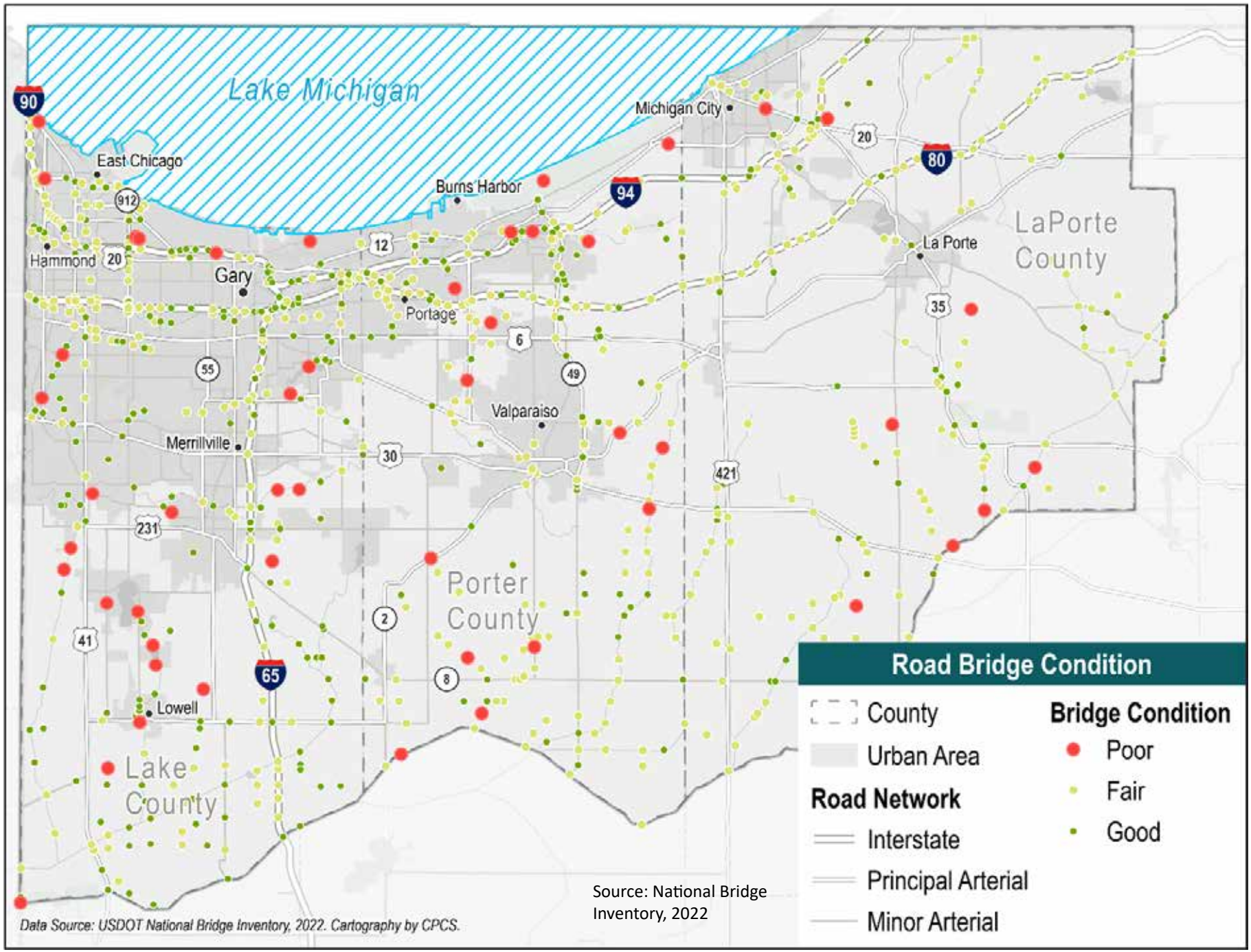


Figure 6-8: Bridge Condition in Northwest Indiana

Vibrant

The vision of a Vibrant region in 2019's *NWI 2050* states as a goal, *NWI's economy is thriving, our people are well educated, growth is planned, and natural and agricultural areas are valued and protected*. The *NWI 2050* Mobility focus area formulated a goal to address this vision as "adopt technological innovation that enhances the safe and fluid movement of people and goods to enable a flourishing economy." In the context of roadways, *NWI 2050+* distills this goal into three objectives:

1. The Northwest Indiana region is prepared to transition to Electric Vehicles (EVs) by ensuring that residents have the means to access EVs and that EV charging infrastructure is adequately and equitably distributed across the region.
2. Northwest Indiana residents and freight carriers can expect to travel at reliable and safe speeds on the region's roadway network.
3. Leaders effectively manage congestion on the region's roadway network to ensure that people and goods move fluidly in order to sustain a flourishing economy.

Objective #1: *The Northwest Indiana region is prepared to transition to Electric Vehicles (EVs) by ensuring that residents have the means to access EVs and that EV charging infrastructure is adequately and equitably distributed across the region.*

By 2023 at the time *NWI 2050+* launches, it is clear that the automobile market is moving toward Electric Vehicles (EVs). There are a host of reasons for this trend, many having to do with market forces and policies outside of the Northwest Indiana region. From a roadways perspective, it is critical that the Northwest Indiana region is prepared for an increasing amount of EVs. Regional EV preparation means that regional planners and leaders proactively make it more convenient for drivers to choose EVs by making them more affordable and accessible where possible, but more under regional control, ensuring that charging infrastructure is adequately and equitably distributed. In recent years, it is evident that while EVs still only represent a small fraction of statewide vehicle registrations, their rate of registration is beginning to rapidly increase as shown in Table 6-7.

Year	Electric (EV)
2016	0.023%
2017	0.033%
2018	0.058%
2019	0.086%
2020	0.117%
2021	0.172%

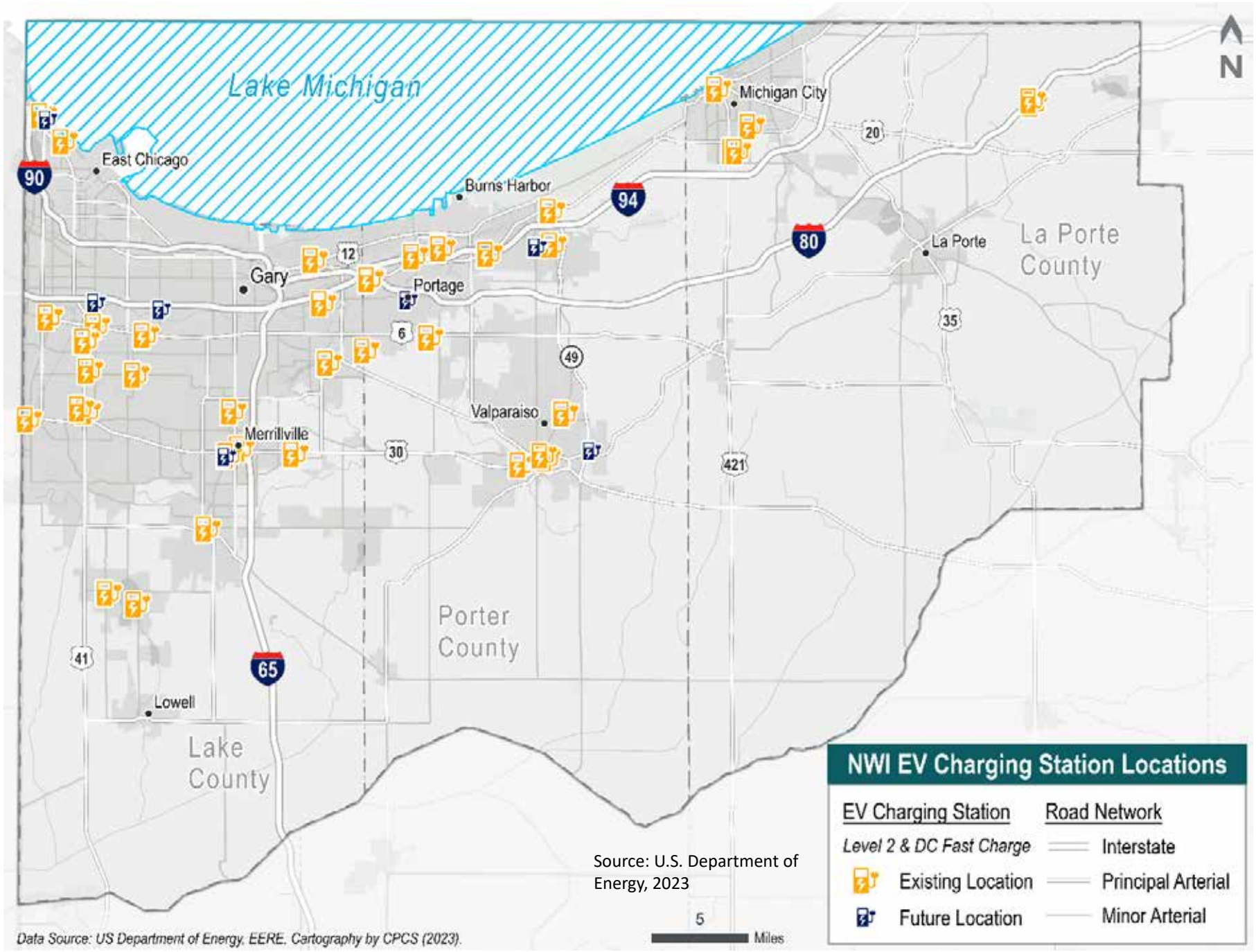
Source: U.S. Department of Energy, 2023

Table 6-7: Electric Vehicle (EV) Registrations in Indiana as a Percentage of Total Registrations, 2016-2021

In order to accommodate the growing number of EV registrations shown in Table 6-7, Northwest Indiana regional leaders are planning for and implementing more charging infrastructure as shown in Figure 6-9.

Figure 6-9 shows that while there are a significant number of EV charging stations in the region with even more already planned, the coverage could be improved. Central Lake and northern Porter counties, and the Michigan City area clearly have more EV charging stations than other portions of the region. The relative sparseness of EV charging stations in northern Lake County should raise the attention of region leaders and planners, as this area has a high residential and road network density, but that has not translated into as much momentum in siting EV charging stations.





Source: U.S. Department of Energy, 2023

Figure 6-9: Location of Present and Future Planned Level 2 and DC Fast Chargers for EVs in Northwest Indiana

Objective #2: *Northwest Indiana residents and freight carriers can expect to travel at reliable and safe speeds on the region's roadway network.*

Achieving a balance between operating at speeds both reliable and safe will help the roadway network in Northwest Indiana contribute to a vibrant region. Achieving reliable speeds on the roadway network ensures that Northwest Indiana residents and truck drivers can predictably reach their destinations on time. Achieving safe speeds ensures that roadway users can reach their destinations safely without encountering other roadway users traveling at unsafe speeds. Roadway design, rather than posted speed limit, is the key determinant of how fast roadway users are likely to travel. Posted speed limits are traditionally determined based on the 85th percentile of observed speed. Figure 6-10 shows the observed 85th percentile speeds on major roads and highways in Northwest Indiana, while Figure 6-11 shows the median speeds on major roads and highways in Northwest Indiana.

Since the overall color schemes representing 85th percentile and median speeds in Figures 6-10 and 6-11 respectively are very similar, roadway users in Northwest Indiana experience remarkably reliable speeds. The corridors with the largest apparent fluctuations between low and high speeds are US 30, particularly west of SR 49, US 41 in the northern half of Lake County, and US 6 in northern Porter County and near the boundary between Lake and Porter Counties.



these figures if they experience safe speeds. According to Figure 6-11, every stretch of Interstate except for the far western portion of I-80/94 near the Illinois State Line and Indiana Toll Road (I-90 and I-80/90) near the toll plazas experienced median speeds of 70 miles per hour or greater in 2019. Figure 6-10 also shows that many stretches of Interstate Highway in the region saw 85th percentile speeds of nearly 80 miles per hour. The posted speed limit on the Interstate Highways in Northwest Indiana is 70 miles per hour except for I-80/94 in Lake County and I-65 north of US 30, where it is 55 miles per hour, and immediately around the toll plazas on the Indiana Toll Road where it is reduced. Even median speeds on the rural stretches of US 41 south of the Town of Lowell and US 30 east of US 421 approach or exceed 70 miles per hour when their speed limit is only 60 miles per hour. Region leaders should consider either changing the design of these stretches of roadway to encourage slightly slower speeds or increasing law enforcement activity to discourage speeding.

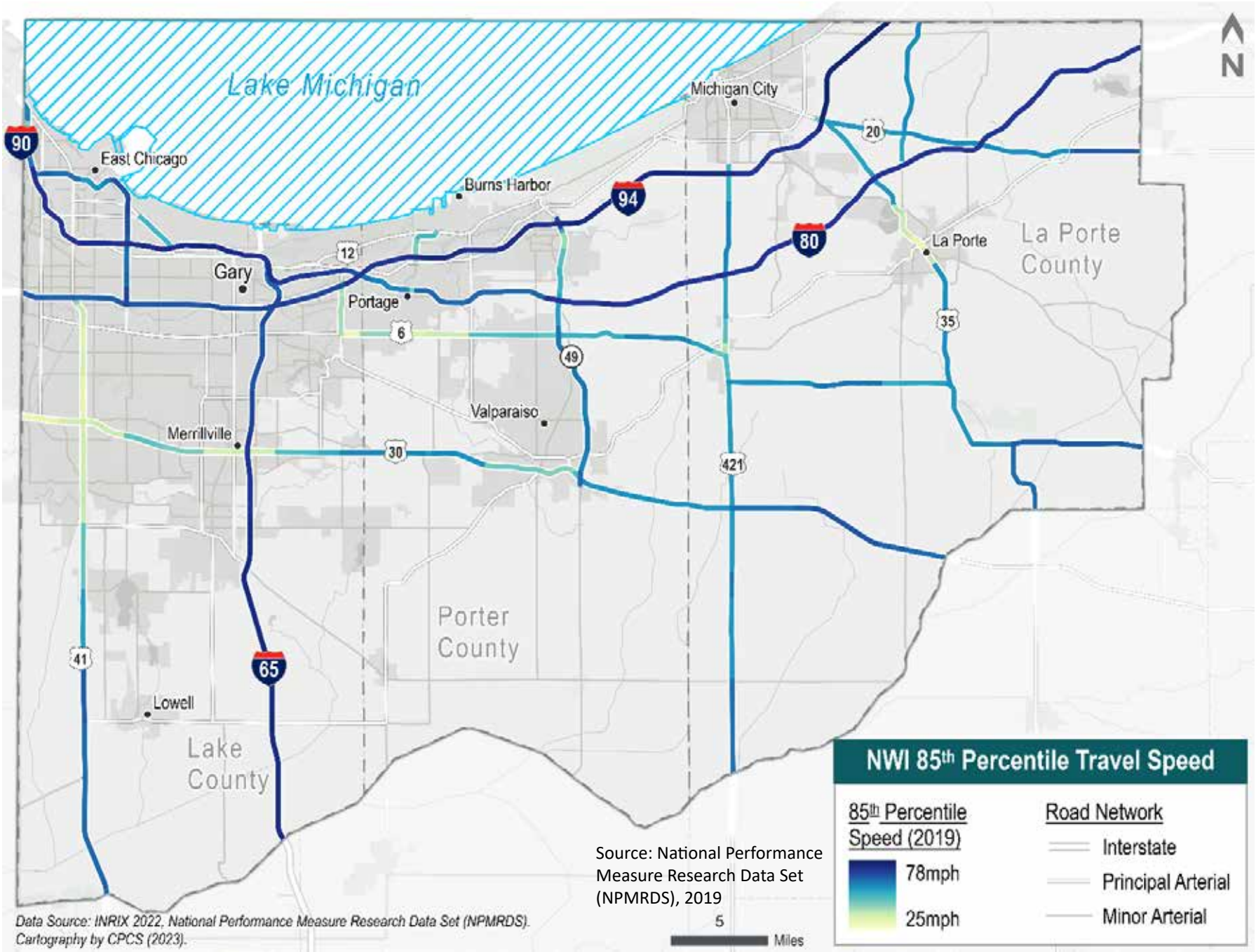


Figure 6-10: 85th Percentile Speeds on Major Roads and Highways in Northwest Indiana

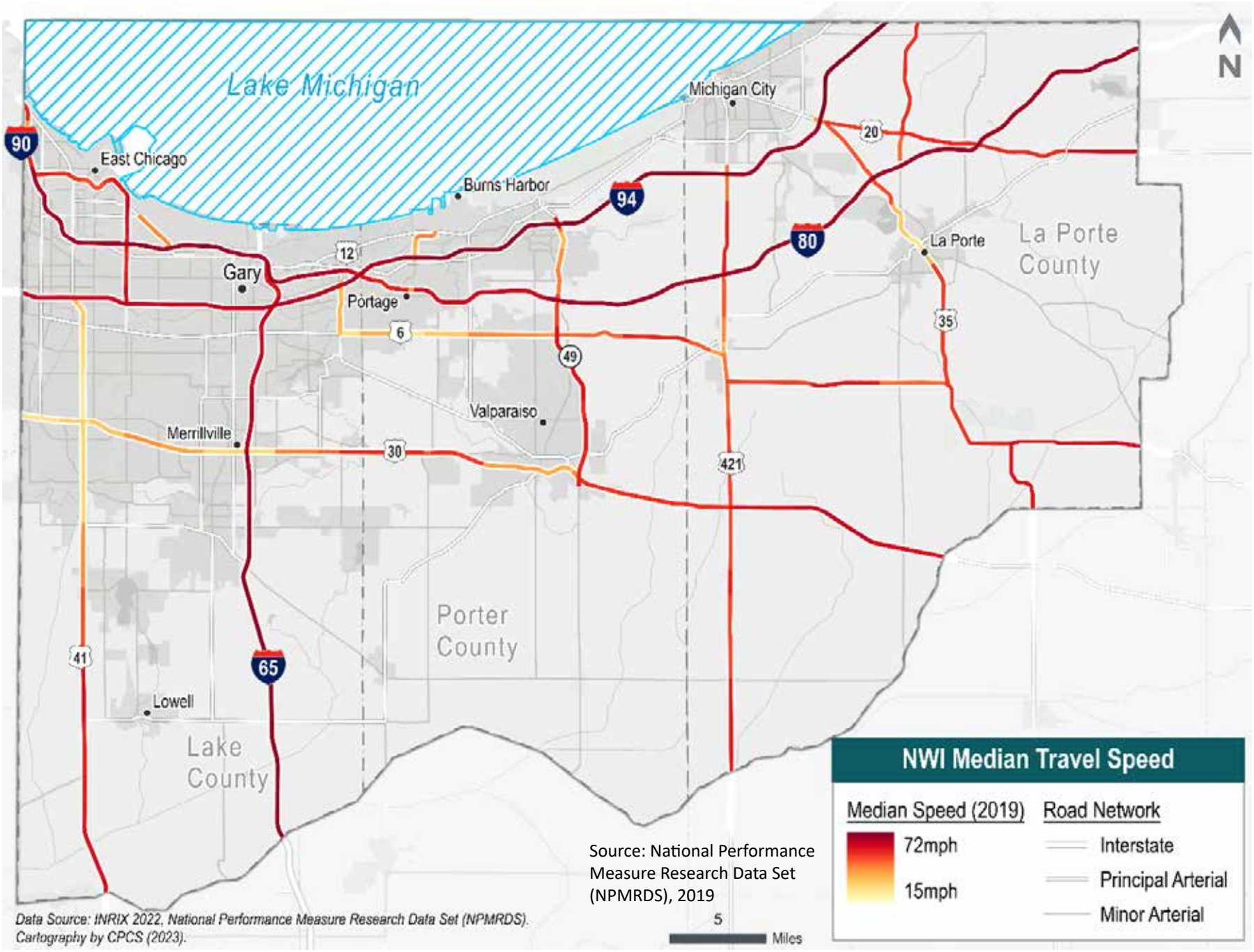


Figure 6-11: Median Speeds on Major Roads and Highways in Northwest Indiana

Objective #3: *Leaders effectively manage congestion on the region's roadway network to ensure that people and goods move fluidly in order to sustain a flourishing economy.*

Roadway congestion erodes at the regional productivity of the economy and leaves roadway users with a lower quality of life than with less congestion. *MOVE NWI* is NIRPC's Congestion Management Process, which prescribes a variety of strategies to attempt to reduce congestion and to vet new planned projects to minimize their impacts on congestion. Travel Demand Management (TDM) and Transportation Systems Management and Operation (TSMO) strategies as previously mentioned are two types of strategies to reduce congestion that unite multiple regional stakeholders around the common mission of reducing congestion, but there are others such as land use strategies and capacity adding strategies. Regardless of which strategies end up best fitting a particular project or situation, it is important for planners to be able to understand and forecast congestion as accurately as possible. One of the most important concepts of diagnosing congestion is Level of Service (LOS). The Highway Capacity Manual defines LOS as "a quality measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience" (Highway Capacity Manual 2000). LOS is graded on a letter scale from A (Free Flow) to F (Gridlock). Figure 6-12 shows LOS on Northwest Indiana roadways in 2019 (the base year of *NWI 2050+*).

Roadways with LOS E and F are generally considered congested during peak periods, and even in 2019, there were several stretches of roadways that met these criteria. I-94 generally from Portage west to the Illinois State Line as well as US 30 from the Illinois State Line east to about the Lake-Porter County Line were already particularly long stretches of roadways with LOS E or F. US 41 in the vicinity of US 30 was also performing at a poor LOS in 2019. Figure 6-13 shows the forecasted LOS on Northwest Indiana roadways in 2050 (the horizon year of *NWI 2050+*).

Figure 6-13 shows that generally across all modeled roadways, LOS is forecasted to either stay the same or get slightly more congested. It is notable that the stretch of I-94 between Lake Station and Burns Harbor through the Portage corridor is projected to get significantly more congested by the year 2050. Some corridors are forecasted to slightly improve in LOS between 2019 and 2050. For example, US 41 in the vicinity of US 30 is forecasted to improve slightly by 2050, probably due in part to the Town of Schererville's Kennedy Avenue Extension projected to be open to traffic by 2030. Main Street along the border between the Towns of Munster and Dyer near the Illinois State Line is also forecasted to improve in congestion due to the Main Street Extension between Burnham Avenue in the Village of Lansing, Illinois and the Munster/Dyer Station of the future Northern Indiana Commuter Transportation District West Lake Corridor project being open to traffic by 2040.

These projects are both part of the Regional Corridors Study as previously mentioned and look to have an impact on reducing congestion. It is important that planners continue to use tools like Travel Demand Models to monitor and forecast congestion in order to best insure that people and goods move as freely as possible.



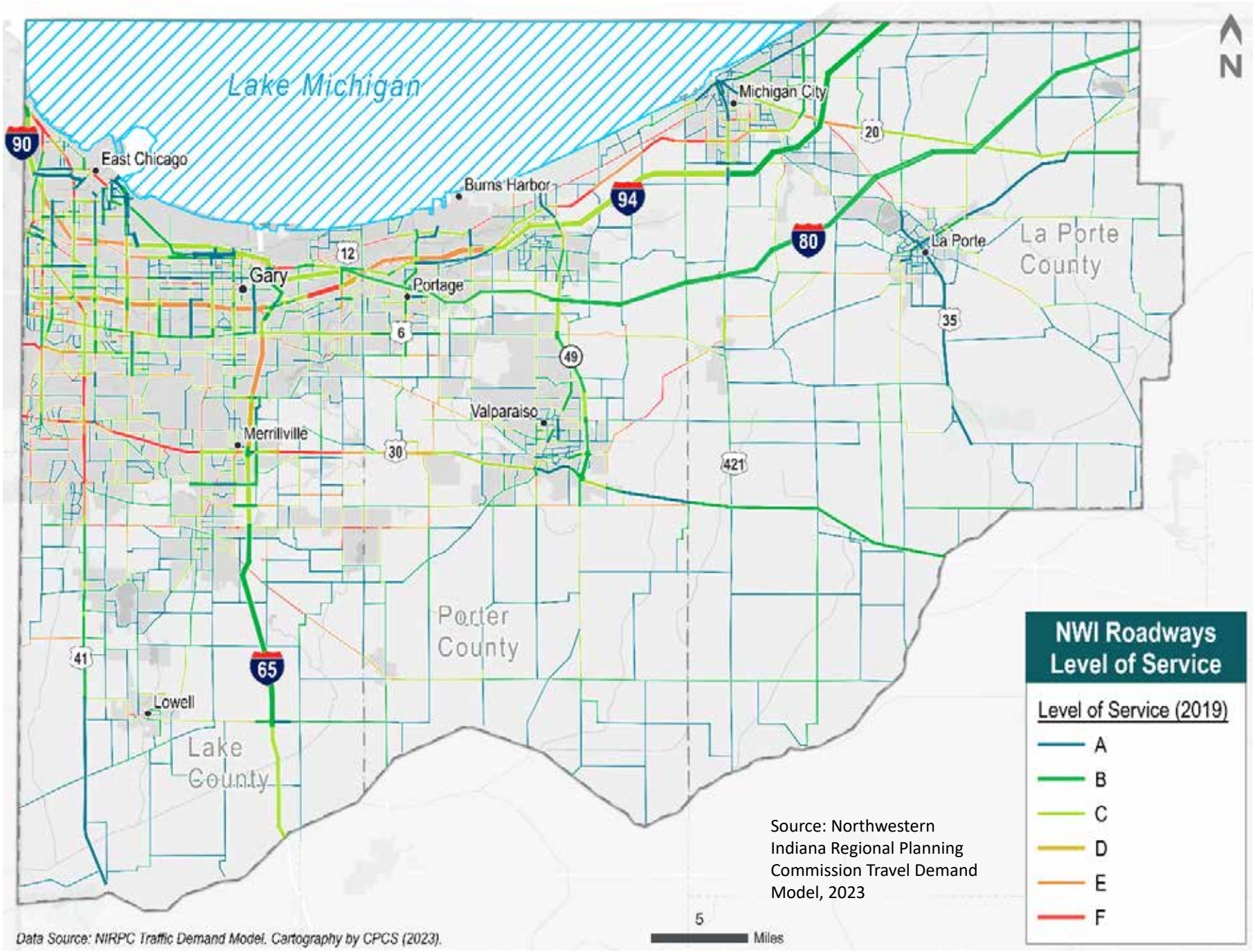


Figure 6-12: Level of Service (LOS) on Northwest Indiana Roadways in 2019

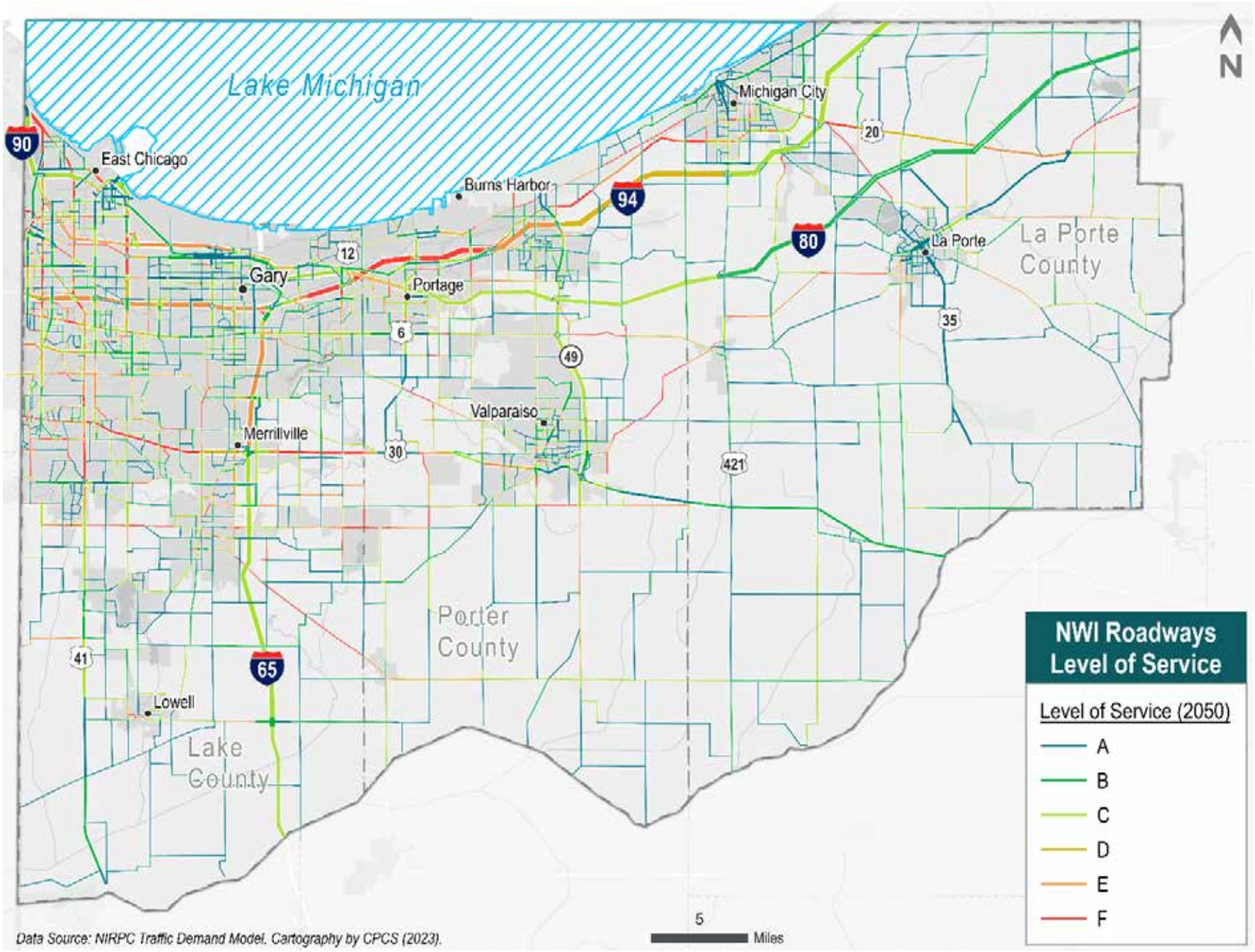


Figure 6-13: Forecasted Level of Service (LOS) on Northwest Indiana Roadways in 2050

Equitable

Feedback from the planning and public involvement processes in the *NWI 2050+* development effort led to a vision for an Equitable Northwest Indiana region as *seek fairness in access to resources and opportunities to meet the needs of all community members*. In the context of roadways, *NWI 2050+* formulates a goal to address this vision as "seek to distribute access to the region's roadway network equitably and justly as well as ensure that leaders invest in improvements to roadways equitably and justly." *NWI 2050+* distills this goal into two objectives:

1. Leaders seek to ensure that Northwest Indiana region households have more equal access to vehicles.
2. Leaders invest in projects and other improvements to the roadway network equitably and justly, not unduly benefiting or burdening certain communities at the expense of others.

Objective #1: *Leaders seek to ensure that Northwest Indiana region households have more equal access to vehicles.*

There are significant cost burdens associated with being able to access the roads and highways in Northwest Indiana. First and foremost, a motorized user needs to be able to access a vehicle. Access to a vehicle does not necessarily mean owning or even leasing a vehicle. The U.S. Census Bureau asks about household access to a vehicle, and even having one shared vehicle among many licensed members of the household or subscribing to a shared vehicle service would qualify as "access." However, it remains an unfortunate fact that household vehicle access is not evenly or equitably distributed when for much of the region lack of access to a vehicle significantly limits being able to have access to jobs or otherwise attend to the needs of daily living. Figure 6-14 shows Census Block Groups in Northwest Indiana with high concentrations of households that do not have access to a vehicle.

Figure 6-14 shows that almost all of the Census Block Groups with higher than regional average households reporting no vehicle access are in the northern half of the region. Gary, and to a lesser extent, Hammond and Merrillville, are communities with a particularly high concentration of households unable to access a vehicle. East Chicago, Michigan City, and La Porte also have significant areas where households report no access to a vehicle compared to the Northwest Indiana regional average. While a more extensive transit system and denser development can help to ensure that these households are able to access the same quality of opportunities as households with access to a vehicle, it is incumbent upon regional leaders and planners to strive to lower the barriers to vehicle access when so much of the region is inaccessible otherwise.



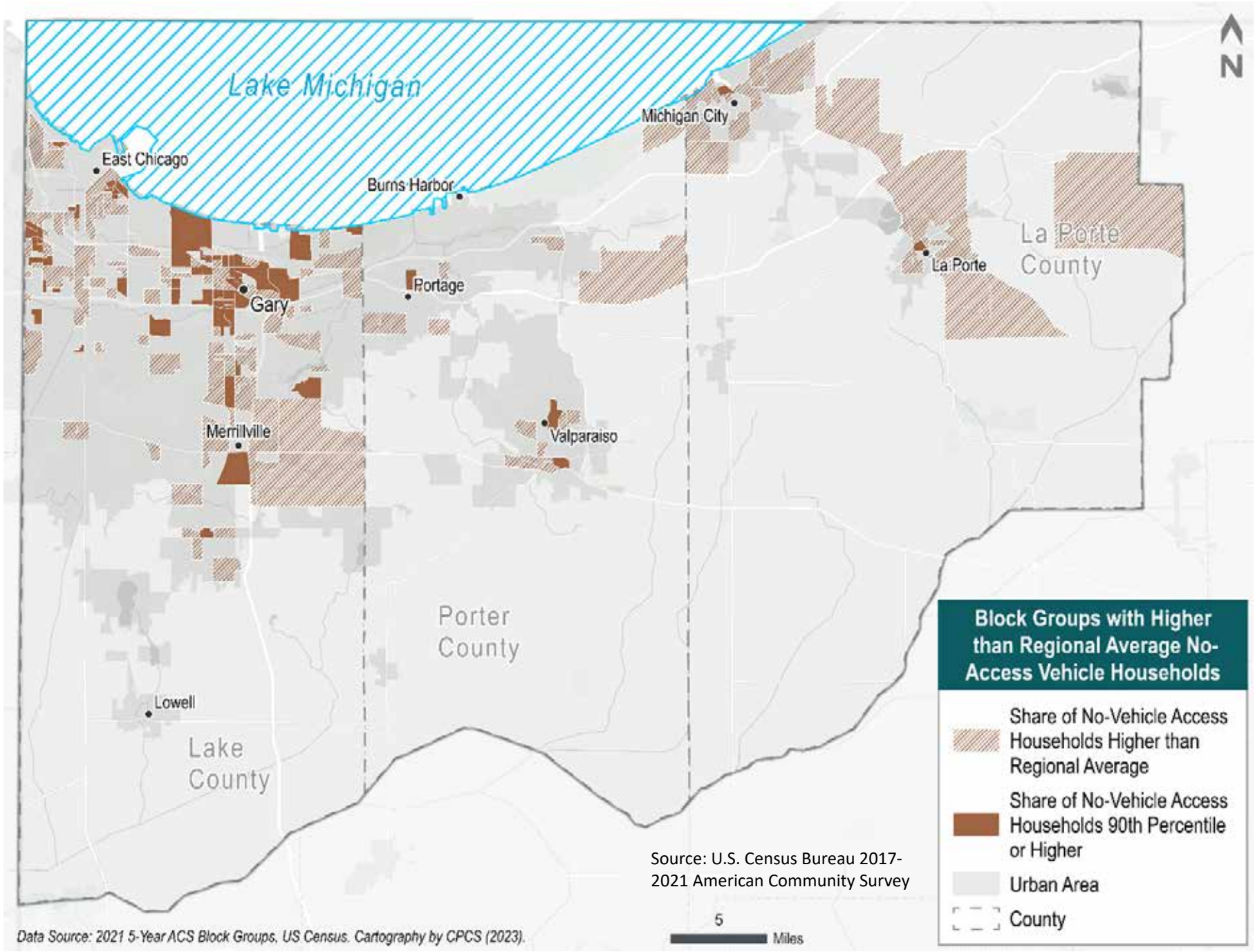


Figure 6-14: Census Block Groups with Higher than Regional Average and 90th Percentile Concentrations of Households with No Vehicle Access

Objective #2: *Leaders invest in projects and other improvements to the roadway network equitably and justly, not unduly benefiting or burdening certain communities at the expense of others.*

Investing in improvements to roadways equitably and justly is an enormous responsibility for transportation planners and leaders to take seriously. *NWI 2050+* thoroughly examines the issue of Environmental Justice through the lens of seven socioeconomic and demographic criteria of stress: racial or ethnic minority status, low-income, limited English speaking proficiency, disability status, veteran status, senior status (aged 65 and older), and no vehicle access (as previously explained). These are the same seven criteria used to assess the Environmental Justice status of Census Block Groups as in *NWI 2050,* but *NWI 2050+* expands upon this methodology by examining Block Groups not only by higher than regional average status for each of these stressors but also by 90th percentile status for each stressor. Figures 6-15 through 6-20 show Block Groups with higher concentrations of each of these other six stressors than no vehicle access (Figure 6-14), and Figure 6-21 shows the composite Environmental Justice status for each Block Group.

While 1994's Executive Order 12898 only defines Environmental Justice communities as those experiencing burdens of low-income and minority status, *NWI 2050+* includes not only these two criteria, but also five others to arrive at the composite Environmental Justice designation of Census Block Groups shown in Figure 6-21. Census Block Groups were chosen as the geographical unit of analysis because these were the most granular level of detail for which data were available. Every Census Block Group designated as having a significant risk level of Environmental Justice populations except one is located in Lake County, and almost all are located in the communities of Hammond, East Chicago, Gary, and Merrillville.

NWI 2050+ assesses the benefits and burdens of transportation investments on these Environmental Justice populations by examining the location of projects funded in NIRPC's State Fiscal Years (FY) 2024-2028 Transportation Improvement Program (TIP). Figure 6-22 shows a map of projects funded in the FY 2022-2024 TIP overlaid on the Environmental Justice map.

In general, Figure 6-22 shows that the fiscally constrained projects NIRPC has awarded in its FYs 2024-2028 TIP align with Environmental Justice areas. Certainly not every project NIRPC awards is located in an Environmental Justice area, but the greatest density of fiscally constrained projects is concentrated in northern Lake County in and immediately adjacent to Environmental Justice areas.



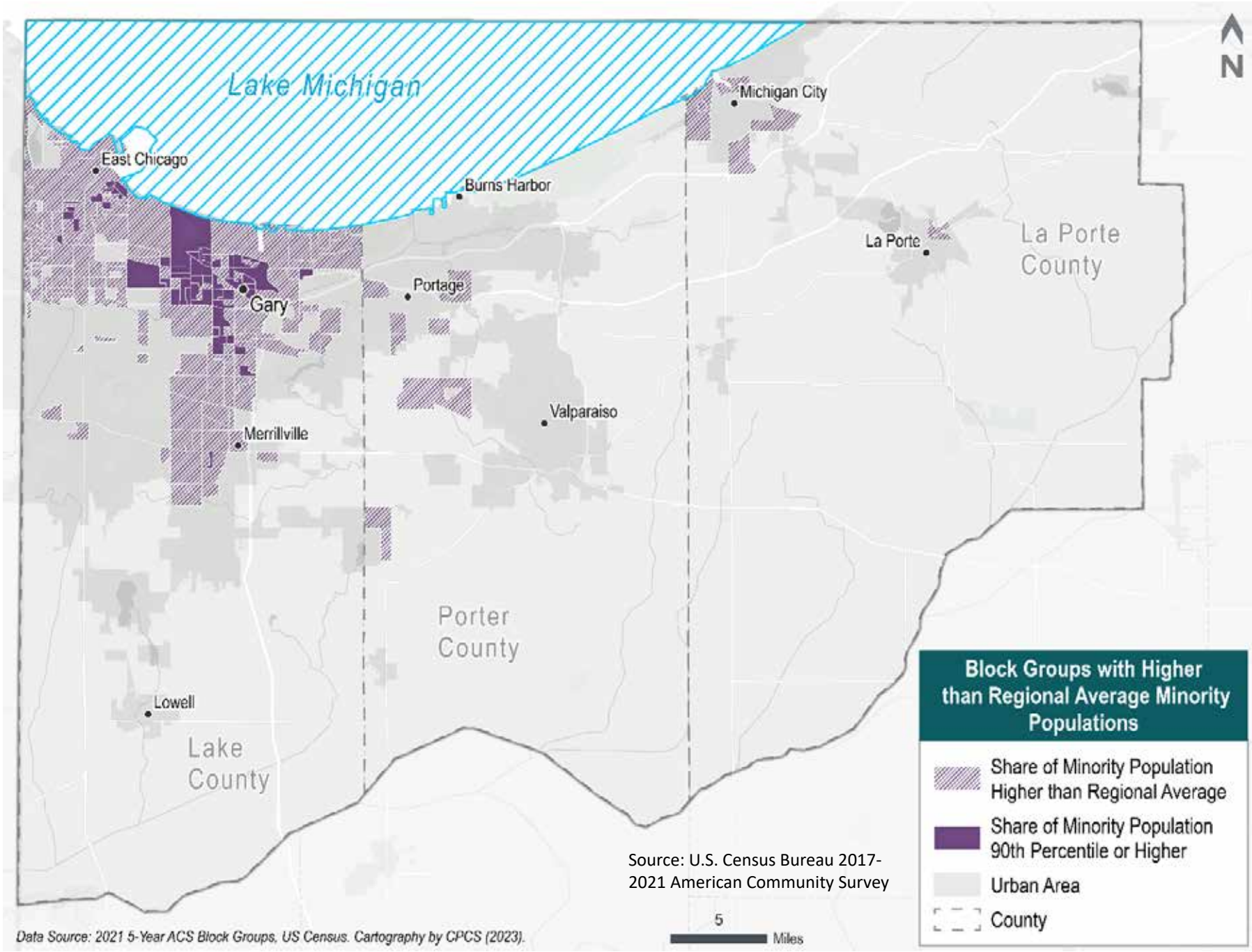


Figure 6-15: Census Block Groups with Higher than Regional Average and 90th Percentile Concentrations of Racial or Ethnic Minorities

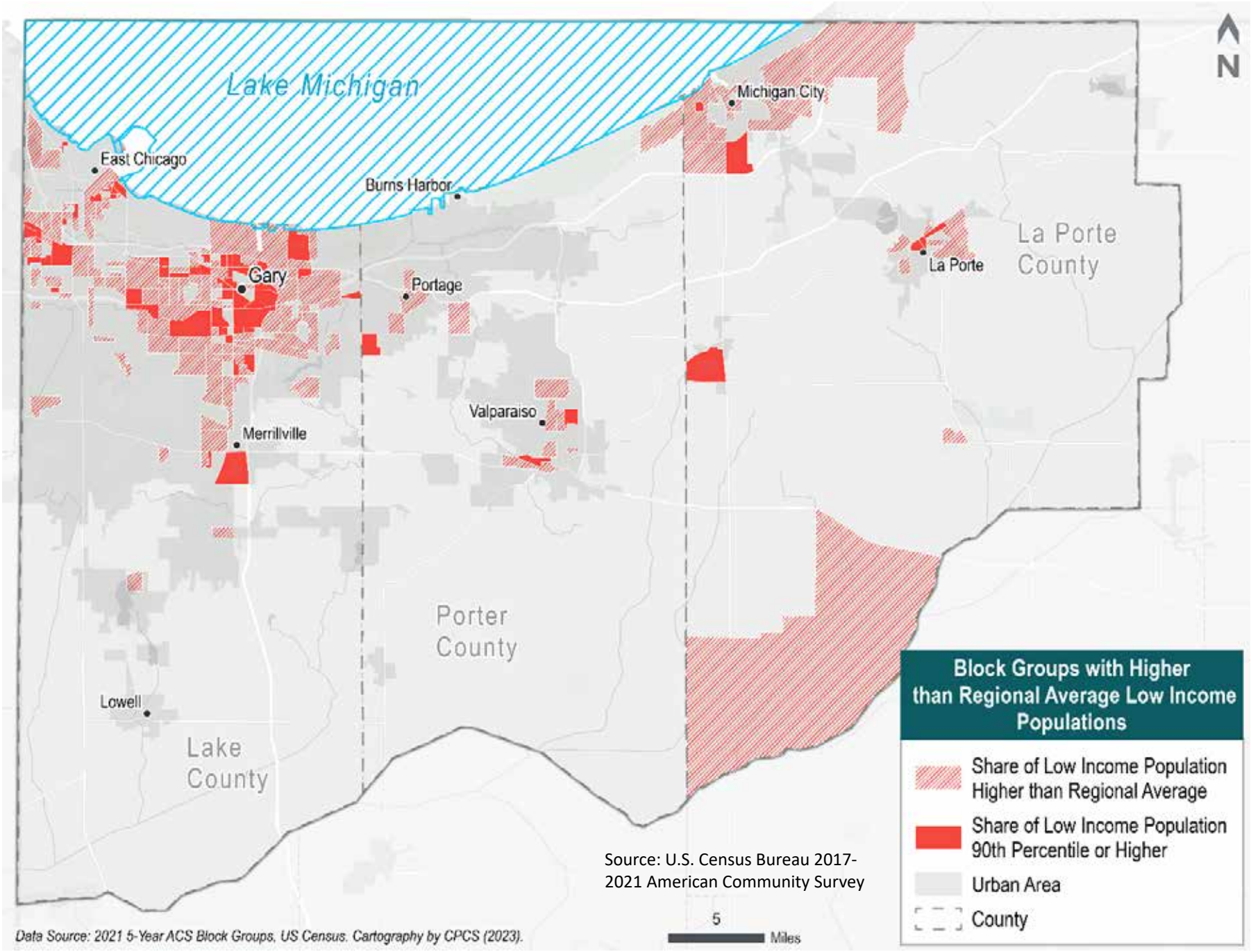


Figure 6-16: Census Block Groups with Higher than Regional Average and 90th Percentile Concentrations of Low Income Households

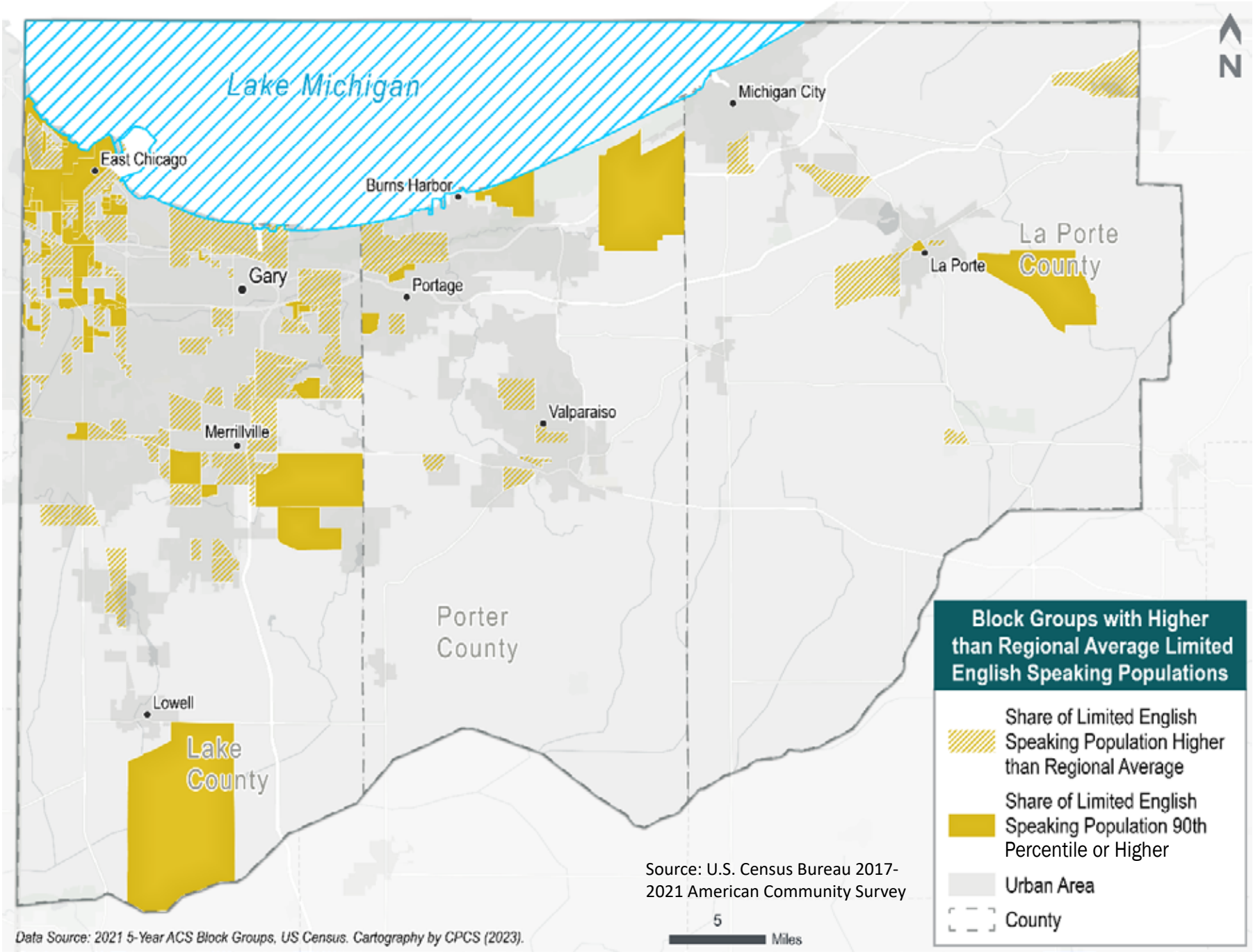


Figure 6-17: Census Block Groups with Higher than Regional Average and 90th Percentile Concentrations of Limited English Speaking Households

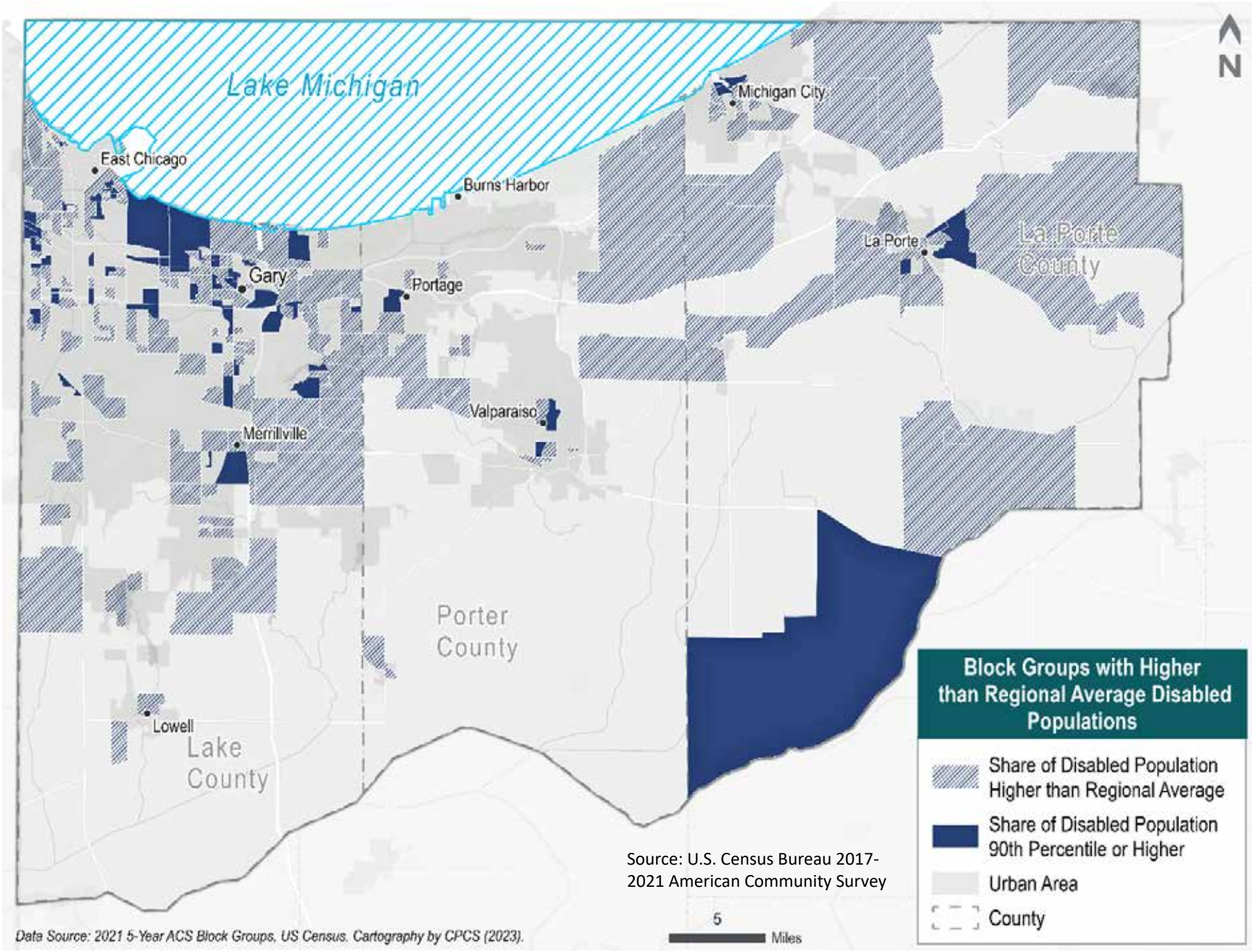


Figure 6-18: Census Block Groups with Higher than Regional Average and 90th Percentile Concentrations of People with Disabilities

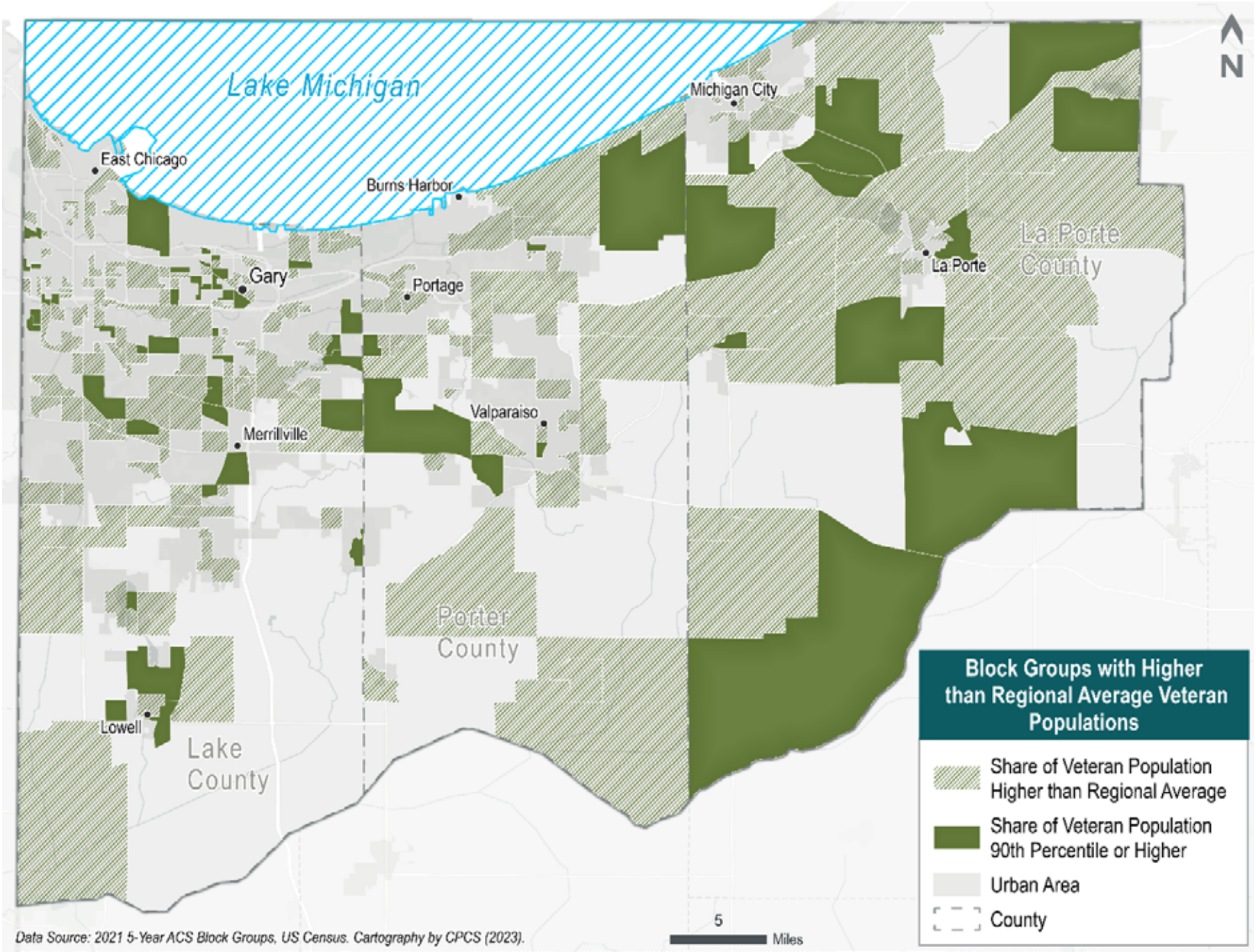


Figure 6-19: Census Block Groups with Higher than Regional Average and 90th Percentile Concentrations of Veteran Populations

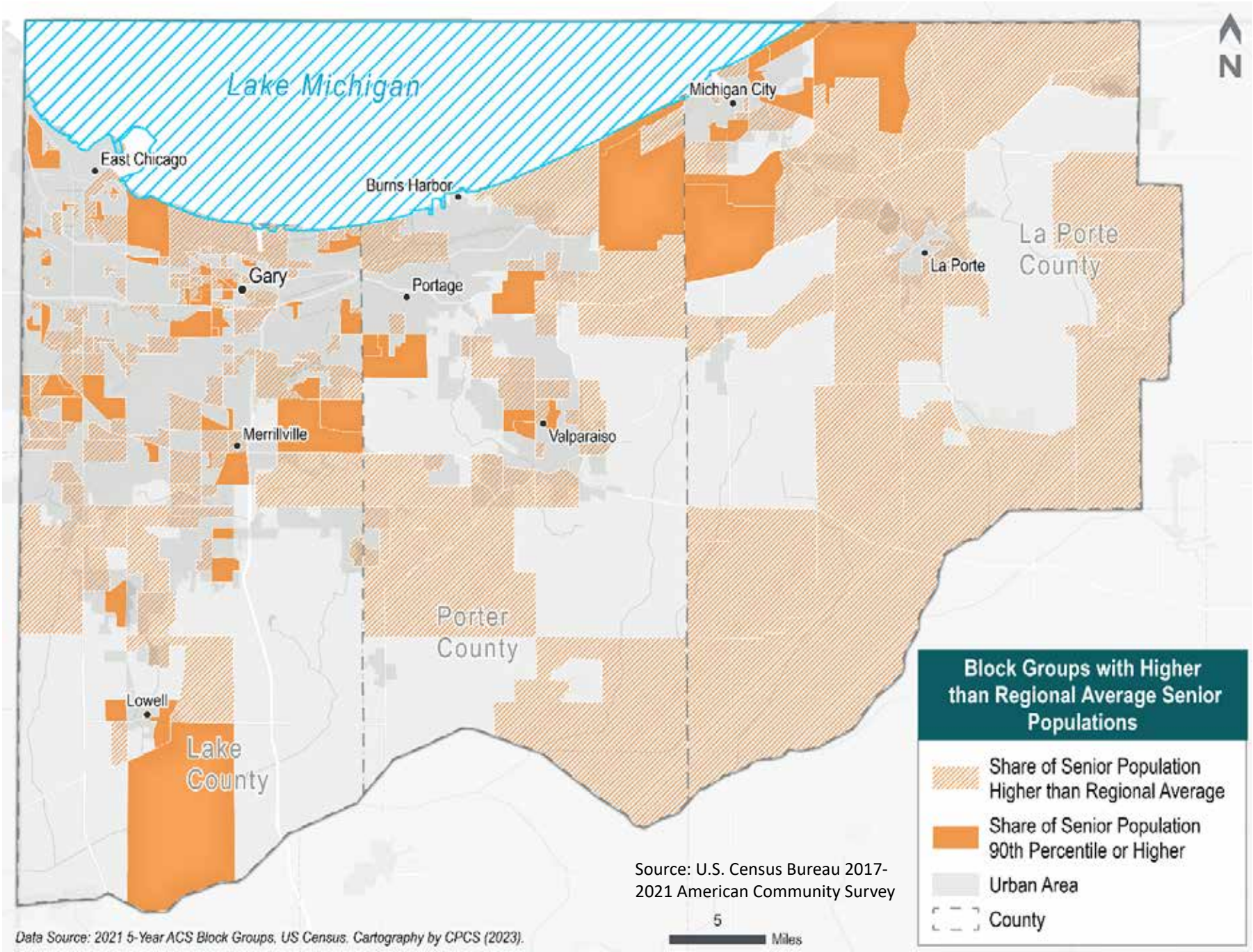


Figure 6-20: Census Block Groups with Higher than Regional Average and 90th Percentile Concentrations of Senior Populations

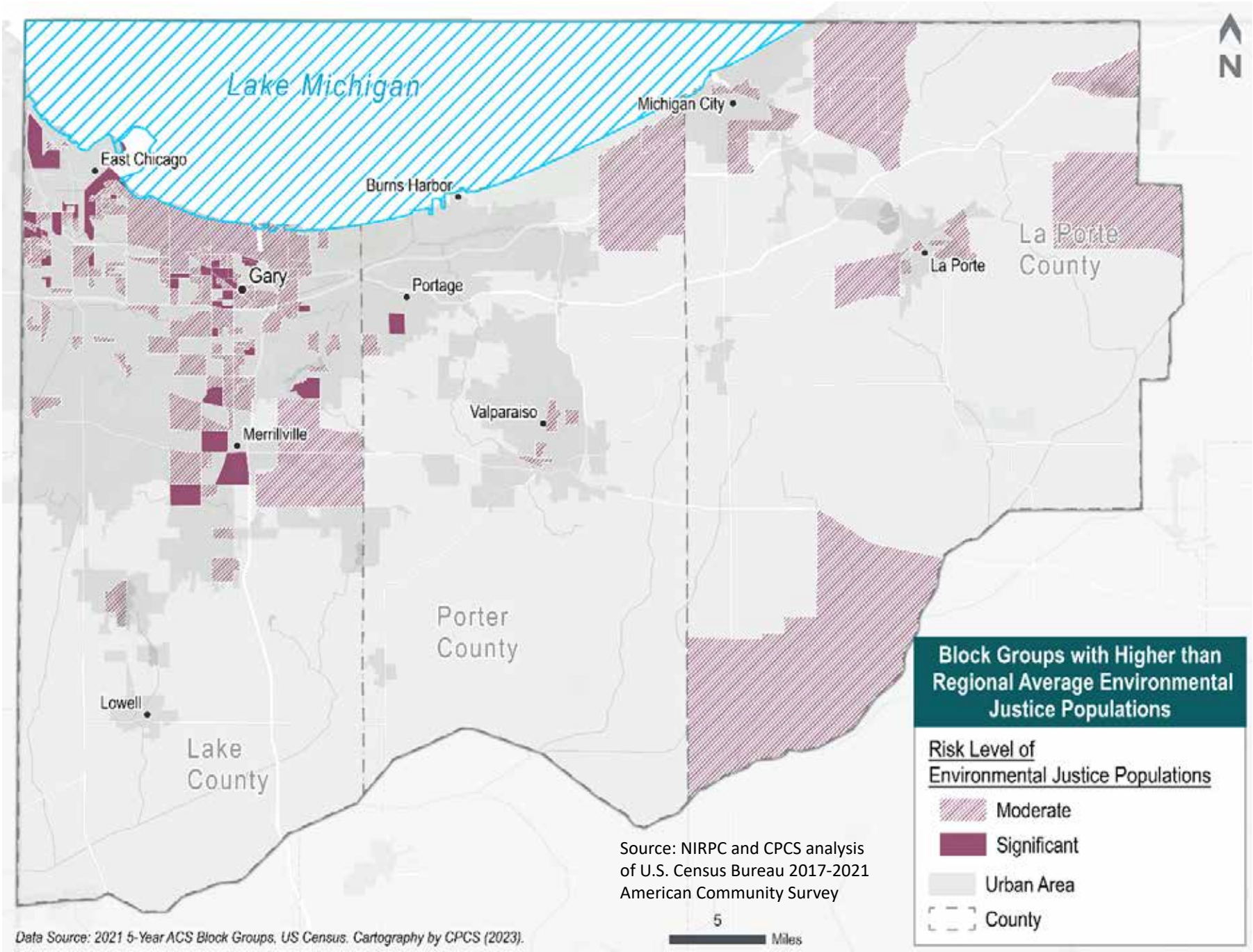


Figure 6-21: Environmental Justice Status of Census Block Groups in Northwest Indiana

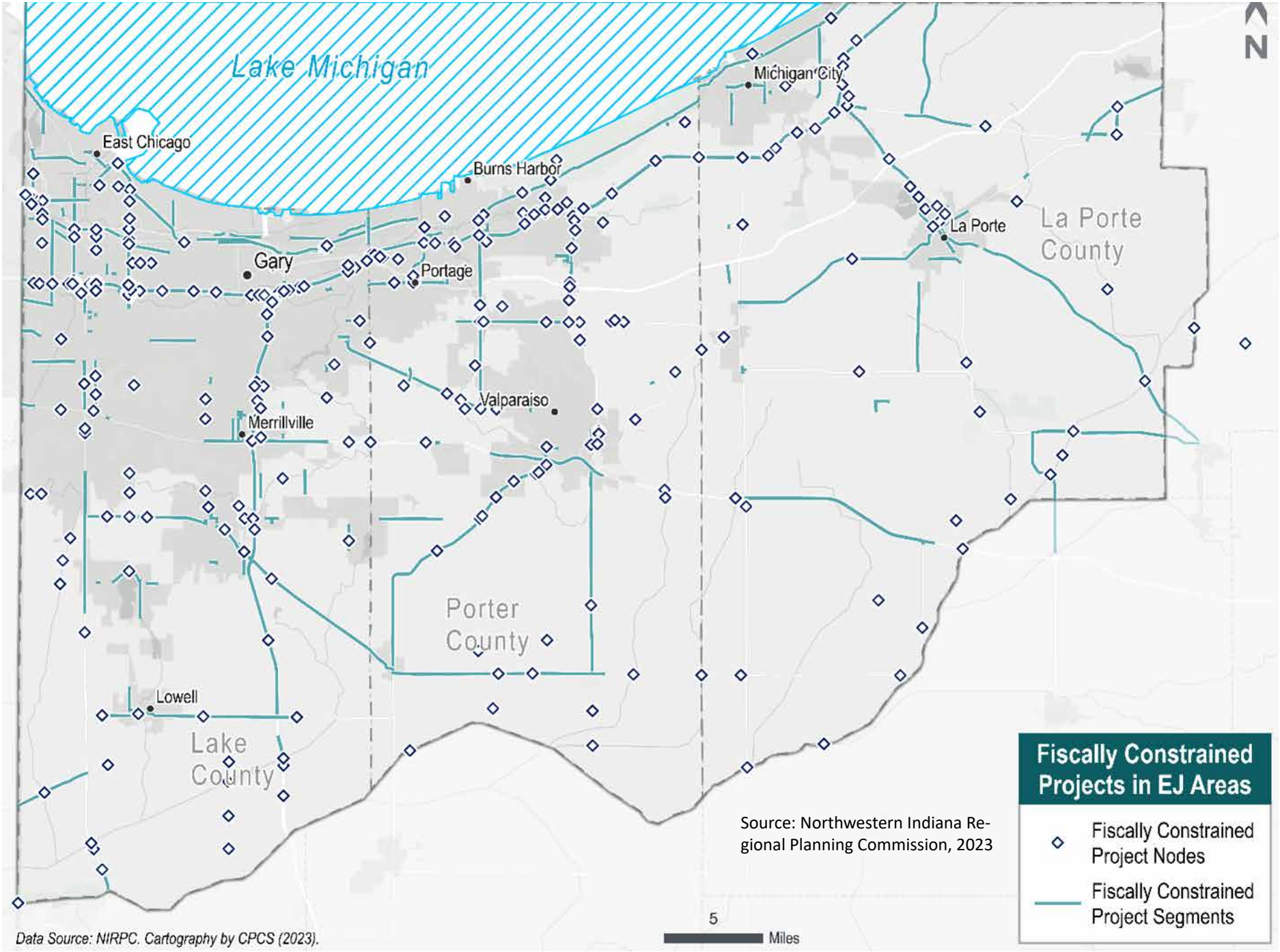


Figure 6-22: FY 2024-2028 TIP Projects Overlaid on Environmental Justice Map in Northwest Indiana

Safe

NWI 2050 does not explicitly feature a vision for a Safe Northwest Indiana region. Feedback from the planning and public involvement processes in the *NWI 2050+* development effort led to a vision for a Safe Northwest Indiana region as "reduce and mitigate roadway safety and security risks". In the context of roadways, *NWI 2050+* formulates a goal to address this vision as "ensure that the region's roadways operate as safely as possible, with the guiding principle that any fatality on the roads or highways is one too many." *NWI 2050+* distills this goal into three objectives:

1. Leaders seek to reduce crashes on the region's roadways.
2. Leaders seek to reduce injuries on the region's roadways.
3. Leaders seek to eliminate fatalities on the region's roadways.

***Objective #1**: Leaders seek to reduce crashes on the region's roadways.*

Safety is the single most important priority in planning for and investing in the region's roadways. Crashes occur too often on roadways in Northwest Indiana, and planners and leaders owe it to the public to better understand the contributing factors to crashes in order to prioritize which contributing factors they should address to reduce the number of crashes. Figure 6-23 shows a heat map of where crashes most often occurred between 2015 and 2019 on Northwest Indiana roadways.

The overall pattern shows that crashes more often occurred in areas with more roads and more traffic, and also near major intersections and interchanges. Not surprisingly, the western portion of the region, especially northwestern Lake County, saw the highest concentration of crashes. Rural areas, by contrast, saw much fewer crashes than urban areas.

While it is important to understand where crashes tend to occur, it is also critical for region leaders to plan to reduce crashes. In February 2023, the Cities of Hammond, East Chicago, and Gary were awarded Safe Streets and Roads for All (SS4A) grant program funds from the U.S. Department of Transportation collectively totaling $468,480. Planners in these cities will use the SS4A funds to develop Safety Action Plans to equip them with the understanding, strategy, and leadership capacity to make their roadways safer for all users. While NIRPC sets performance measure targets annually for a variety of safety measures, it is critical that more communities and regional planners follow the lead of these three cities in northern Lake County to commit more strongly to reducing crashes.



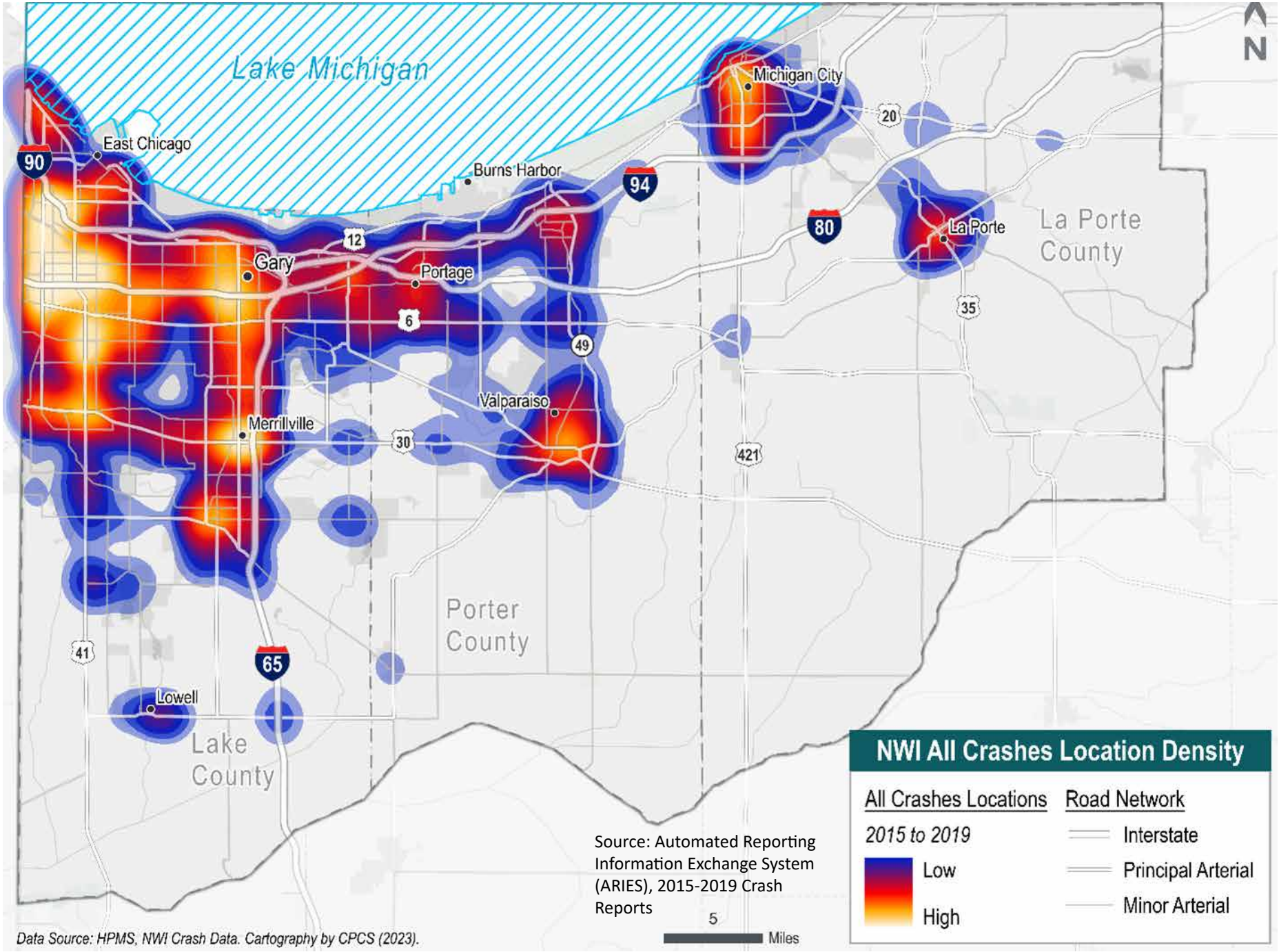


Figure 6-23: Heat Map of Crashes on Northwest Indiana Roadways

Objective #2: *Leaders seek to reduce injuries on the region's roadways.*

Any crash on one region roadways is bad, no matter how minor. Roadway crashes that result in injuries, whether to occupants of a single vehicle, occupants in other vehicles on the road, or to non-motorized users, are much worse. Transporting the injured person(s) to the appropriate hospitals or trauma centers becomes a critically time-sensitive decision that first responders face. The injured and their loved ones are saddled with potentially financially ruinous medical bills and the uncertainty of the course of recovery. Planners should make every effort to understand how the roadway network may contribute to injury crashes. Figure 6-24 shows a heat map of injury crashes that occurred on Northwest Indiana roadways between 2015 and 2019.

The pattern where injury crashes tend to occur most often, shown in Figure 6-24, is very similar to the overall pattern of crashes in Figure 6-23. It does appear that injury crashes are slightly more pronounced near intersections and on higher speed roads and highways. The area of Hammond around and just north of I-80/94 near the Illinois State Line was the area that experienced the highest concentration of injury crashes between 2015 and 2019. This area represents not only the most heavily traveled stretch of I-80/94 in the region, but it also involves a high density of intersections near the merging and exiting traffic as well as along major arterials such as Calumet Ave (US 41), Indianapolis Blvd (SR 152), and Kennedy Ave. The Broadway Ave (SR 53) corridor in Gary and in Merrillville also stands out as having experienced a high concentration of injury crashes, and the areas of US 30 near its intersections with I-65 in Merrillville and US 41 in Schererville also stand out. The Lincolnway corridor in Valparaiso also experienced a higher concentration of injury crashes than anywhere else in Porter or La Porte Counties.

Reducing injury crashes is a major focus of NIRPC staff in its State Fiscal Years 2023-2024 Unified Planning Work Program, as there is a task to conduct Road Safety Audits, which will help communities be better equipped to understand where injury crashes occur and to proactively plan for roadway improvement fixes.



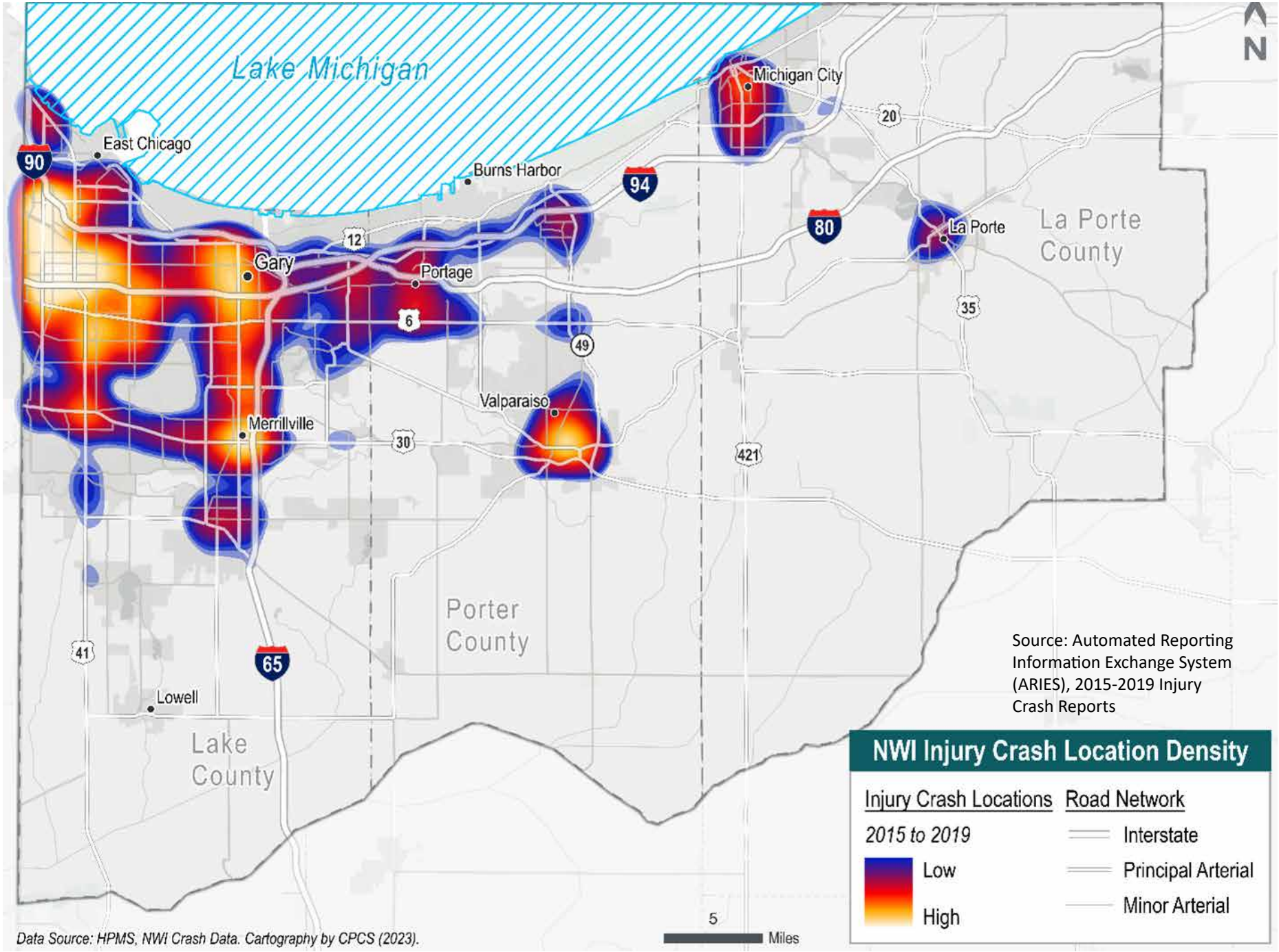


Figure 6-24: Heat Map of Injury Crashes on Northwest Indiana Roadways

Objective #3: *Leaders seek to eliminate fatalities on the region's roadways.*

No one should be killed as a result of traveling on a road. The Federal Highway Administration boldly adopted the "Vision Zero" principle first introduced in Sweden in 1997 by setting a goal that there should be zero fatalities on the nation's highway system (https://highways.dot.gov/safety/zero-deaths). As administrators of sub-allocated Federal Highway Administration funding, NIRPC should build consensus with region leaders that Vision Zero should become the abiding principle. However, Vision Zero has no hope of becoming reality in Northwest Indiana unless planners of the roadway network better understand how the roadway network may be contributing to the likelihood of fatal crashes. Figure 6-25 shows a heat map of fatal crashes that tragically occurred on Northwest Indiana roadways between 2015 and 2019.

The pattern in Figure 6-25 could not be clearer that fatal crashes are more likely to occur near busy interchanges and intersections as well as near roadway curves and oblique intersection angles. It is imperative that planners and engineers seek to design interchanges that discourage high speeds and minimize difficult merging and exiting maneuvers. Also, oblique intersections should be either converted to roundabouts or right angles with appropriate traffic control devices whenever possible. Ultimately, the Road Safety Audit task will help NIRPC staff begin to make more of an effort to equip communities with the tools they need to eliminate fatal crashes, but it will take an undivided commitment from all involved, including planners, engineers, community leaders, advocacy groups, civic institutions, and families and households, to make Vision Zero possible.



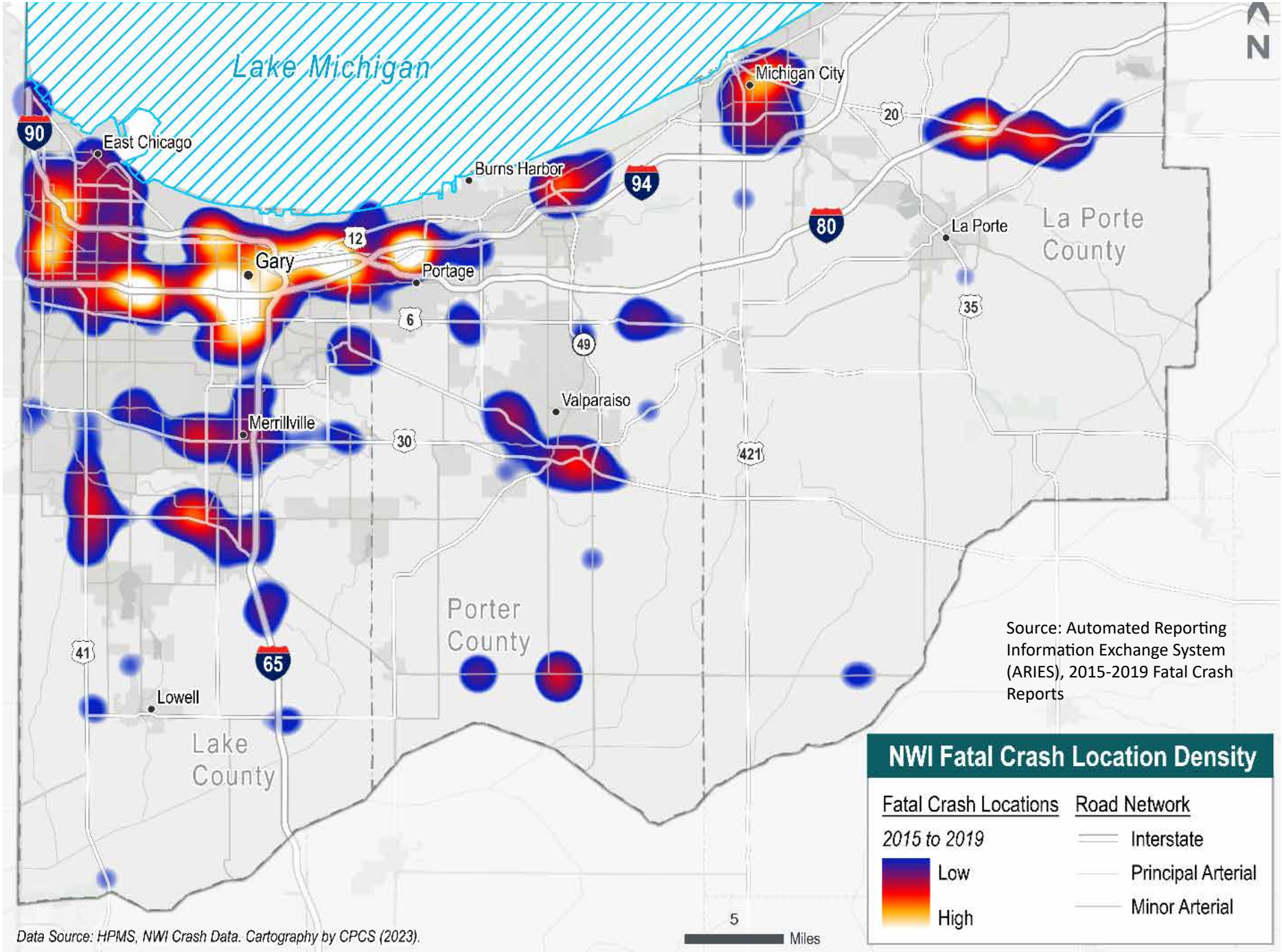


Figure 6-25: Heat Map of Fatal Crashes on Northwest Indiana Roadways


39th Ave
HARVEY


1008
SAFE PLACE



7 TRANSIT

Finding Meaning

Introduction

The Transit Chapter of *NWI 2050+* will develop a road map for implementing an achievable plan for a transit network that is attractive to riders and sustainable within available resources. It is important that the plan, developed with consensus by stakeholders, identifies a recommended network that serves local and regional goals.

This Finding Meaning report is the first phase of the Transit Plan. The report provides the background necessary to understand strengths and weaknesses of current transit services and identifies gaps and needs to define a path for the Creating Purpose and Purpose Driving Planning phases of *NWI 2050+.*

Existing Public Transportation Services

Commuter rail, fixed route bus, and demand response services are provided in Northwest Indiana.

Commuter Rail

The South Shore Line regional rail service is Northwest Indiana's predominant transit operator, accounting for 3.2 million unlinked trips in 2019. It is owned by the Northern Indiana Commuter Transportation District (NICTD). While the South Shore Line was originally a short name for the railroad's official name (Chicago South Shore & South Bend Railroad), it is now, essentially, a brand name. Freight service is also operated on the same tracks by South Shore Freight, NICTD's tenant.

The South Shore operates passenger service from early morning until late in the evening, 7-days/week, between the South Bend Station (located just east of La Porte County, the easternmost NIRPC county) and Millennium Station in Downtown Chicago. Most trains operate between Michigan City and Downtown Chicago, with some trains operating through to the east terminal, located at the South Bend Airport, and some operating only west of Gary. Certain stops are not served by all trains. See Figure 7-1.

The South Shore Line has a zonal based fare system with eleven zones. With one minor exception (within Michigan City), the minimum full fare between stations within the same zone (i.e., between Hammond and East Chicago-about four miles or between the three stations within Gary-about 6.5 miles) is $4.00 ($2.00 for reduced fare riders). This fare is higher than local bus fares for similar trips. The South Shore Line has a traditional commuter rail fare structure with a nominal reduction for 10-ride tickets, about a 10% reduction for 25-ride tickets, and more on unlimited ride monthly tickets. There is no transfer interchange program between South Shore Line and local buses, or the Chicago Transit Authority (CTA).

The South Shore uses electrically powered trains. Between South Bend and the Illinois state line, South Shore Line service operates on tracks owned by NICTD, from the state line to 115th Street, the tracks are owned by South Shore Freight, and between Kensington/115th Street Station and Downtown Chicago, the South Shore Line is operated on tracks owned by Metra (the commuter rail division of the Northeast Illinois Regional Transportation Authority-RTA).

NICTD is currently implementing two major infrastructure projects on the South Shore Line:



Figure 7-1: South Shore Line Stations

- *Double Tracking Project:* East of Gary, the railroad has previously operated on a single main track with passing sidings. This greatly complicates operations and limits capacity. NICTD is currently installing a second main track as far east as Michigan City, in conjunction with several other upgrades. When the double-track project is completed (anticipated in 2024) a significant increase in ridership and a reduction in scheduled running time is anticipated. Seventy-nine (79) mile per hour operation is already permitted on major portions of the railroad, and more is anticipated as part of this project.

- *West Lake Corridor Project:* NICTD is constructing a new branch of South Shore Line service, approximately eight miles long and connecting a relocated Hammond Station (Hammond Gateway) to the Main Street Station on the Munster/Dyer border, with intermediate stations located in South Hammond and at Ridge Road in Munster. Twelve weekday peak period trips are planned to operate through downtown Chicago and 12 weekday off-peak period trips are planned to operate as shuttles connecting to mainline trains at the new Hammond Gateway station (Figure 7-2).

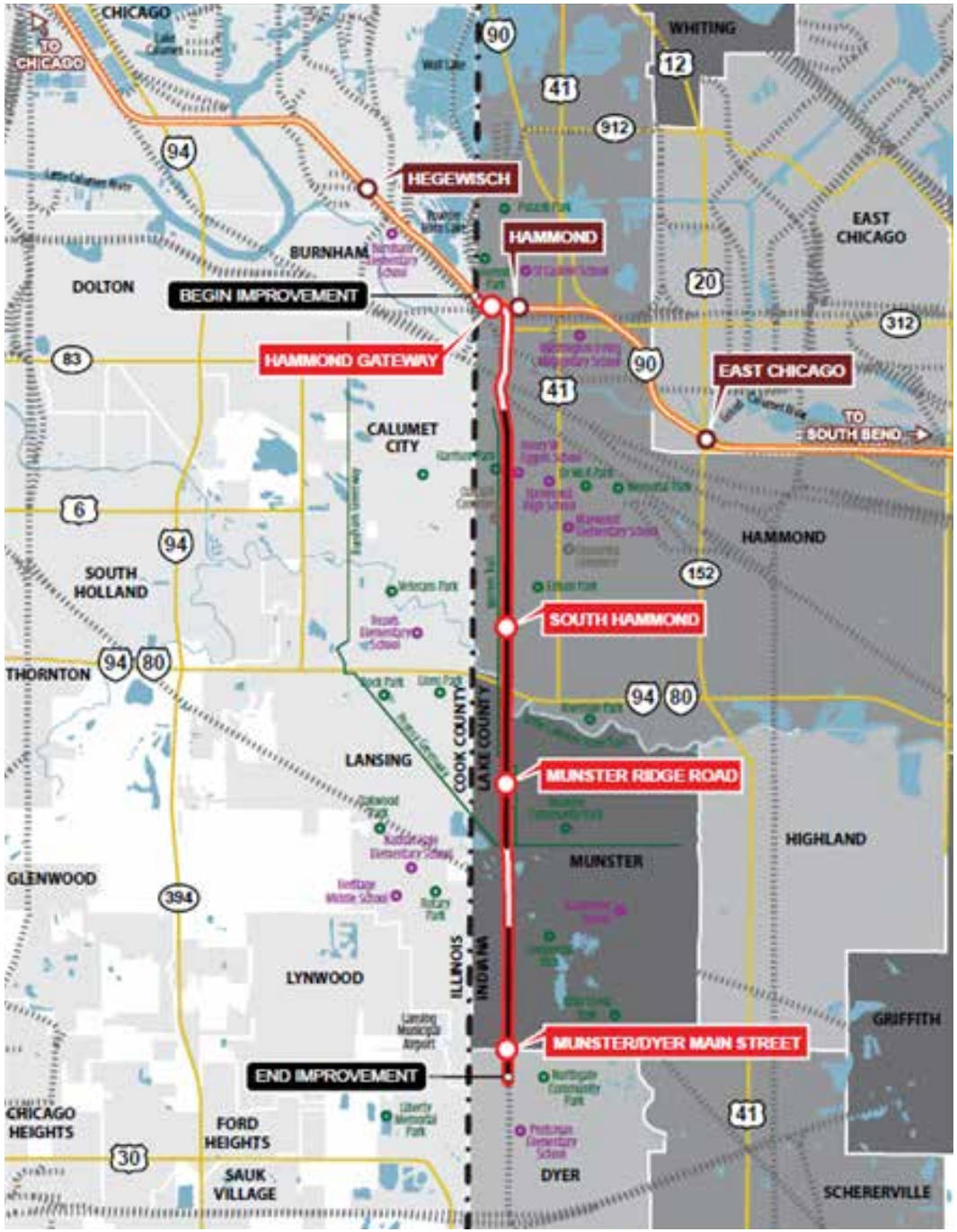


Figure 7-2: NICTD West Lake Corridor Project

Fixed Route Bus Services
There are four bus service operators in the region that operate fixed route bus service.

Gary Public Transportation Corporation (GPTC)
GPTC is the largest bus operator in the region; it operates a fixed route bus service, using full-size buses, as well as the federally required complementary paratransit service for passengers with disabilities associated with these routes. All services are operated in-house. While it is based in Gary, a substantial portion of its operations are in the neighboring municipalities of Hammond, East Chicago, Merrillville, Munster, and Highland. This "regional service" is supported by funding through Gary, Lake County, Hammond, and Merrillville. Higher fares are charged on routes outside the Gary city limits. Service on all routes is operated for approximately 16 hours/day on weekdays and 8 hours on Saturdays. GPTC service information is shown in Table 7-1.

GPTC fares are $1.60 for full fares for riders within Gary (80¢ for reduced fares) and $2.25 on regional routes ($1.00 for reduced fares) regardless of the length of the rider's trip.

It should be noted that two Pace bus routes (Routes 350 Sibley and 364 159th) come one block across the state line from Illinois into Hammond via Sibley Boulevard to meet GPTC Routes R1 and R4. Pace is the suburban bus operating agency of the Regional Transit Authority (RTA). A substantial number of passengers transfer here. There are no fare provisions for interagency transfers; a new fare is required.

Valpo Transit
Valpo Transit operates a few different types of fixed route services in the City of Valparaiso:

V-Line: Local service, coined as the V-Line, is provided on three routes, Brown, Green, and Yellow within Valparaiso and some adjacent areas. This service is operated with small "cutaway" buses. The Green Line serves the east side of the city, the Yellow Line serves the west side of the city, and the Brown Line serves the south side of the city and Valparaiso University. All three routes have fixed stops but can deviate up to ¾ mile from any posted stop provided the rider calls 24 hours in advance to request this; only one deviation per trip is allowed. Because it offers this route deviation option, complementary paratransit service is not provided.

All local services are operated hourly. Fourteen (14) trips are operated on the Green and Yellow routes from 6:15 a.m. to 7:15 p.m. Monday-Saturday, with eight trips and reduced hours on Sundays. The Brown Line operates from noon to 9:00 p.m. Monday-Saturday with eight trips. No service is operated on major holidays. Fares are $1.00 or 50¢ for reduced fare riders.

South Shore Connect: The South Shore Connect is an express bus service from Downtown Valparaiso to the Dune Park South Shore Line Station just outside of Chesterton, Indiana. Service operates on a schedule built around meeting South Shore Line trains with six round trips operated every day (with a different schedule for weekdays and weekends, coordinated with train schedules). Fares are the same as on the Valparaiso local service.

	Number	Name	Scheduled Frequency (minutes)	Note in GPTC Facebook post
Gary local routes	L1	E. 35th/Marshalltown	60	
	L2	Oak & County Line Rd.	60	
	L3	6th Ave. Tolleston	60	
	L4	University Park	60	Route not in operation
	L5	Horace Mann/Village via Taft	60 *	Route not in operation
Regional routes	R-BMX	Broadway Metro Express	60	Operating every 120 minutes
	R1	Lakeshore Connection	120	
	R2	US 30 Shuttle	60	
	R3	Burr Lake Ridge		Operating every 120 minutes
	R4	Lakeshore South	60 (no Sat. service)	Route not in operation
	R5	Merrillville Shuttle	40	Route not in operation

**30 minute service frequency expected in mid-2023 with electric buses*
Table 7-1: Gary Public Transit Corporation (GPTC) Service Information



11th Street (currently closed due to construction as part of the double-track project). MCT also provides complementary paratransit services in their service area.

East Chicago Transit (ECT)
ECT operates two routes within the city. On Route 3: West Calumet, ten trips operate on weekdays between approximately 6 a.m. and 7 p.m. There are six trips on Saturdays, between approximately 9 a.m. and 4 p.m. On Route 2: Crosstown, nine trips are operated on weekdays between approximately 6 a.m. and 8 p.m. and five trips are operated on Saturdays between approximately 9 a.m. and 4:40 p.m. There is no Sunday/holiday service. Headways are irregular and buses operate more than an hour apart. ECT has always been operated as a service that is free to riders. Medium-sized conventional transit buses are used. The city operates complementary paratransit service for the disabled. All trips originate at the East Chicago South Shore Line station. It is worth noting that GPTC Route R1 Lakeshore Connection operates on the same streets (notably, Indianapolis Boulevard and Columbus Drive) as ECT does for approximately four miles; however, the R1 only operates every two hours.

Chicago Dash: The Chicago Dash is a weekday express commuter bus service from Downtown Valparaiso to Downtown Chicago. Using intercity coach-type buses, three morning trips leave Valparaiso picking up from a commuter parking lot at 270 Brown Street at 6:00 a.m., 6:30 a.m., and 7:00 a.m. with three return trips originating at Randolph and Michigan at 4:00 p.m., 4:30 p.m., and 5:00 p.m., there are stops at two other downtown locations. The cash fare is $8.00, similar to the South Shore Line fare, with reductions for 10-ride and monthly tickets purchased through the Token Transit app. The website shows that an intermediate stop at Hobart has been proposed.

Michigan City Transit (MCT)
MCT operates four local routes, with each leaving from the library in Downtown Michigan City, hourly from 6:30 a.m. (8:30 am on Saturdays) to 5:30 p.m.; there is no Sunday/holiday service. Small buses are used. Fares are $1.00 or 50¢ for reduced fare riders. Three of the routes directly serve the South Shore Line's station at



Demand Response Services
There are three demand response services that are operated by government agencies that are open to the general public. Demand response services are services that pick people up at their homes and drop them at their destinations, either "door to door" or "curb to curb".

TransPorte
The City of La Porte operates a demand-response service within its city limits. Service is provided between 6 a.m. and 7 p.m. on weekdays and 9 a.m. and 2 p.m. on Saturdays. There is no service on Sundays/holidays. The full fare is $3.50, fare for seniors (over 60) and disabled passengers are $2.50, and child fare is $1.25 (when accompanying an adult). Service requests are all handled by phone calls to the TransPorte dispatcher. The agency does not use an app. The agency offers three types of trips: subscription (i.e., recurring), scheduled (requested more than 24 hours in advance), and demand-response (same day, even right away; these are the lowest priority and may not be able to be accommodated).

North Township Dial-A-Ride
North Township Dial-A-Ride includes the communities of East Chicago, Hammond, Highland, Munster, and Whiting. This service is operated Monday-Friday between 7 a.m. and 5 p.m. Service must be requested at least 24 hours in advance. Riders need to reside in North Township and be going somewhere in North Township. No fares are charged. Much of the area served is also served by GPTC and ECT fixed route buses.

Lake County Community Services (LCCS)
Lake County Community Services operates a demand response service that is provided to eleven municipalities and two townships in Lake County. Service hours are 8 a.m. to 4:30 p.m. Monday to Friday; no weekend service is provided. To schedule services, the rider needs to call 48 hours in advance. There is no app to use to schedule service. Fares are $7.00/general public and $5.00/seniors and disabled but can be reduced based on where the rider lives as different funding sources allows for different fares.

Other Demand Response Services
There are other demand response services in the region that transport specific populations.

Opportunity Enterprises (OE)
Opportunity Enterprises is a non-profit organization that serves individuals with developmental disabilities. In addition to their other services, OE provides transportation services to residents of Porter County including transportation to doctor's appointments, therapy sessions, or other community locations. Their curb-to-curb service includes a wheelchair accessible fleet of vehicles available 7 a.m. to 5 p.m. on weekdays. The rate is $7.50 per one-way trip. Those who need assistance can have an attendant ride free of charge. OE Transportation is limited to Porter County and certain bordering county medical facilities.

Porter County Demand Response Services (PCACS)
PCACS provides demand response services to seniors (60 years+) and those with disabilities. Service is only available in Porter County. Riders must be registered to use PCACS transit services. Rides need to be arranged in advance by calling in or using an app. Rides are prioritized by type with medical trips and grocery store trips handled first; subscription type trips (e.g., to dialysis) are allowed. Service hours are Monday and Wednesday, 6 a.m. to 5 p.m. and Tuesday and Thursday, 9 a.m. to 4 p.m. Currently, there is no Friday or weekend service.

Fare Collection
Fare collection has evolved over the years for transit agencies. To reduce the potential for theft incidents for bus drivers, most bus transit agencies began requiring riders to pay with exact fares in the early 1970s, removing drivers from involvement with cash. However, having to carry exact fare is a major inconvenience for riders, which depresses ridership. To mitigate these conditions some small agencies, such as ECT and North Township Dial-A-Ride, have simply gone to fare-free operation.

In recent years most agencies have adopted smartphone-based apps. Typically, riders can download these at no charge. Larger agencies, such as the Chicago Transit Authority (CTA), have typically purchased custom apps, which may involve riders setting up an account, e.g. Ventra, which CTA shares with Pace and Metra. Because of the cost of custom-developed apps, smaller agencies typically use one of the publicly available apps that are available. Systems with simple fare structures, which require little/no customization may choose to use apps that

require little/no up-front payment but keep a commission on each sale. These apps generally do not require accounts to be established.

GPTC and Valpo have adopted the Token Transit app and have paid for a certain amount of customization. NICTD/South Shore Line has adopted the Bytemark app. This has required customization to accommodate its zone fares and multiple-ride tickets.

All of these agencies indicated in interviews that it would be difficult and unaffordable to transition to another app that could be used by multiple agencies in the region. However, it is recommended that a universal fare app be studied in the future to understand the feasibility and costs in implementing the same system for all. This would reduce confusion in understanding each system's payment structure and allow riders to more easily transfer between systems.

Socioeconomic Analysis

In addition to density thresholds, it also is important to look at populations that are more transit dependent. An analysis of each of these populations living in the region was conducted and is described below. The geography analyzed were Census Bureau block groups. Both percentages and concentrations (i.e. density) of these groups were analyzed.



Population and Job Density

The population density levels in the region were mapped and are shown in Figure 7-3. The highest population density in the study area can be found in the south side neighborhood of East Chicago. This neighborhood features two-flat housing that promotes greater population density than standalone, single-family, homes. While this type of housing is also present in other parts of the study area, this area has fewer vacant lots and buildings than comparative neighborhoods. East Chicago also has the other five densest neighborhoods in the study area. Other pockets of high density areas in the region are in Hammond, Gary, Michigan City, Whiting, and Griffith.

Job density is highest near Franciscan Hospital and along Hohman Avenue south of the hospital in Downtown Hammond. Two other areas near hospitals are among the top five densest areas: Gary (Methodist Hospital) and Munster (Community Hospital). The downtown areas of La Porte, Valparaiso, and Michigan City also have relatively high job density. The highest number of jobs regardless of density is in the retail corridor near the Southlake Mall in Merrillville. See Figure 7-4.

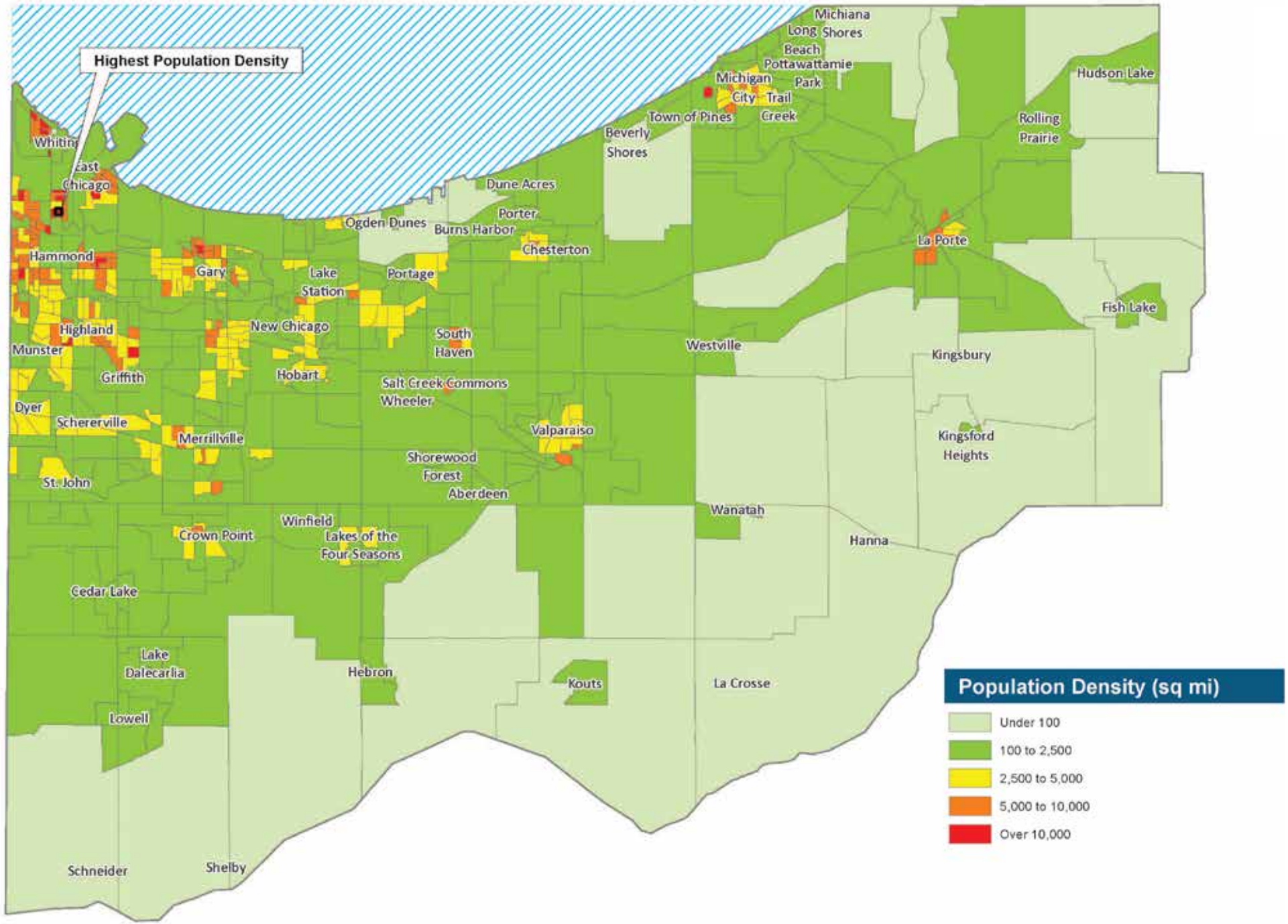


Figure 7-3: Population Density

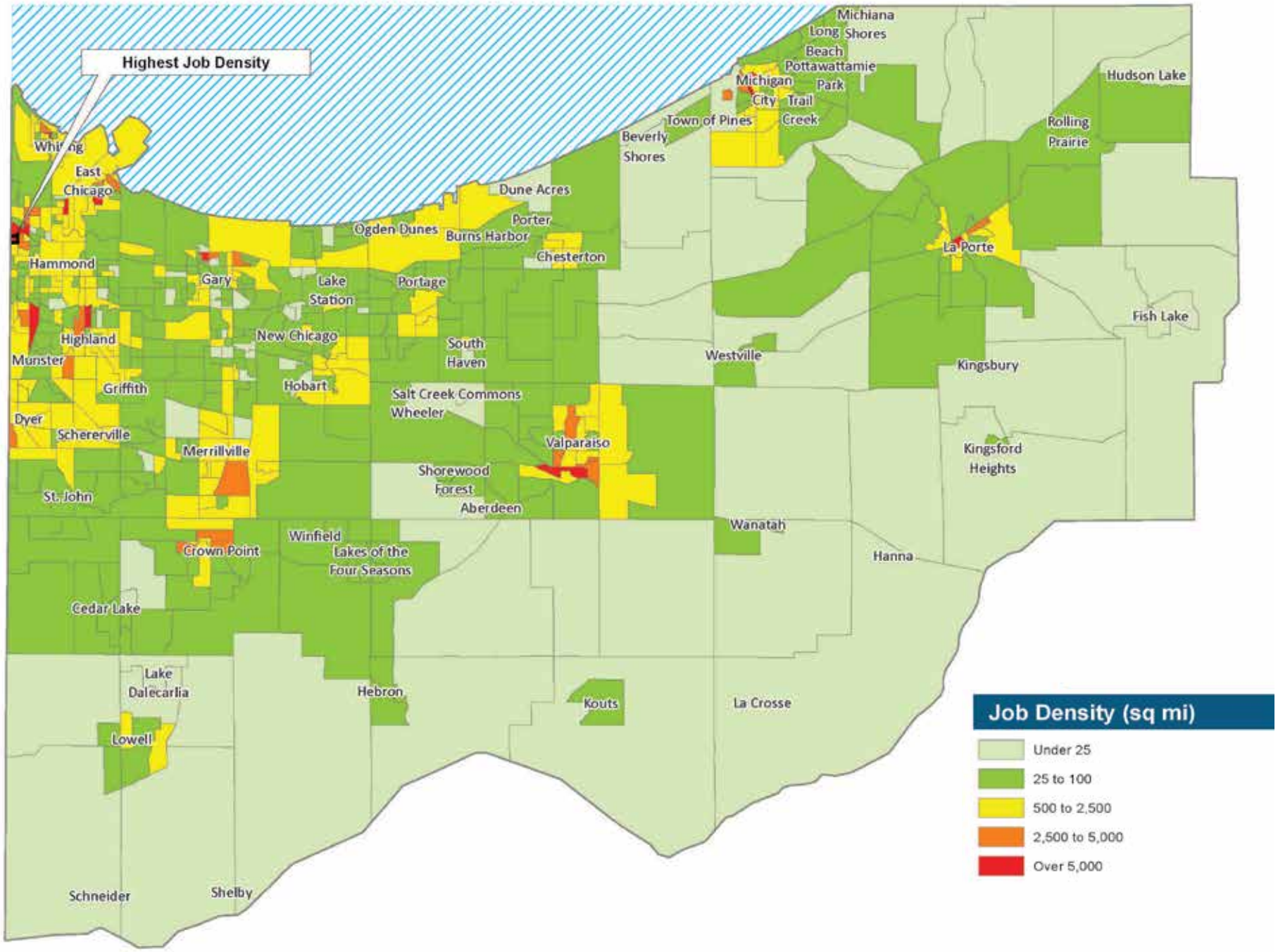


Figure 7-4: Job Density

Transit Dependent Populations

Certain populations tend to be more transit dependent[1]; these populations are typically:

- Low Income (below $15,000 annual income) - Low- income residents are about 1.5 times more likely to use transit
- Minority Population - Minority populations are more than twice as likely to use transit
- Persons Over 65 - People over 65 years old are 1.5 times more likely to use transit.
- Persons without a car - Those without access to a car are almost eight times more likely to use transit
- Individuals with a Disability (18-64) - Persons with disabilities are over 5 times more likely to use transit

Low-Income

The west side of Hammond and east-central Gary have the highest concentration of low-income households in the study area. There are also high concentrations of low-income populations in areas of East Chicago, in and around the Lakeside Gardens low-income apartment complex. Of the areas with the greater density of low-income populations, three are in East Chicago (Southside and just north of the Sunnyside neighborhoods) and two are in Gary. See Figure 7-5.

Minority Population

The highest concentrations of minority residents are in East Chicago, Hammond, Gary, and Michigan City. While minority populations are located throughout the region, rural areas in Northwest Indiana have significantly fewer minority residents than urban areas, and some block groups registered no minority residents. See Figure 7-6.

People with Disabilities

Unlike the previous demographic groups, there are relatively high percentages of people with disabilities in rural parts of the study area. High concentrations of people with disabilities are present in both urban and rural areas in the region. Areas with greater numbers of people with disabilities include the municipalities of Hammond, East Chicago, New Chicago, Lake Station, La Porte, and in rural La Porte County. There also is a large percentage of persons with disabilities living just south of the Hammond South Shore Line station. See Figure 7-7.

Senior Population

Concentrations of seniors (65 and over) are present throughout Northwest Indiana. The highest percentage of those 65 and over live in Merrillville, in the neighborhood where the Golden Living Center, Belvedere Senior Center, and the Spring Mill Health Campus are located. See Figure 7-8.

No Vehicle Access

People with no access to a vehicle are concentrated in Gary and East Chicago. The highest percentage of people without access to a vehicle corresponds to the block group with the highest percentage living in poverty (Lakeside Gardens in East Chicago). See Figure 7-9.

1 TCRP Report 28: Transit Markets of the Future: The Challenge of Change" Table 4 (Work trip data).

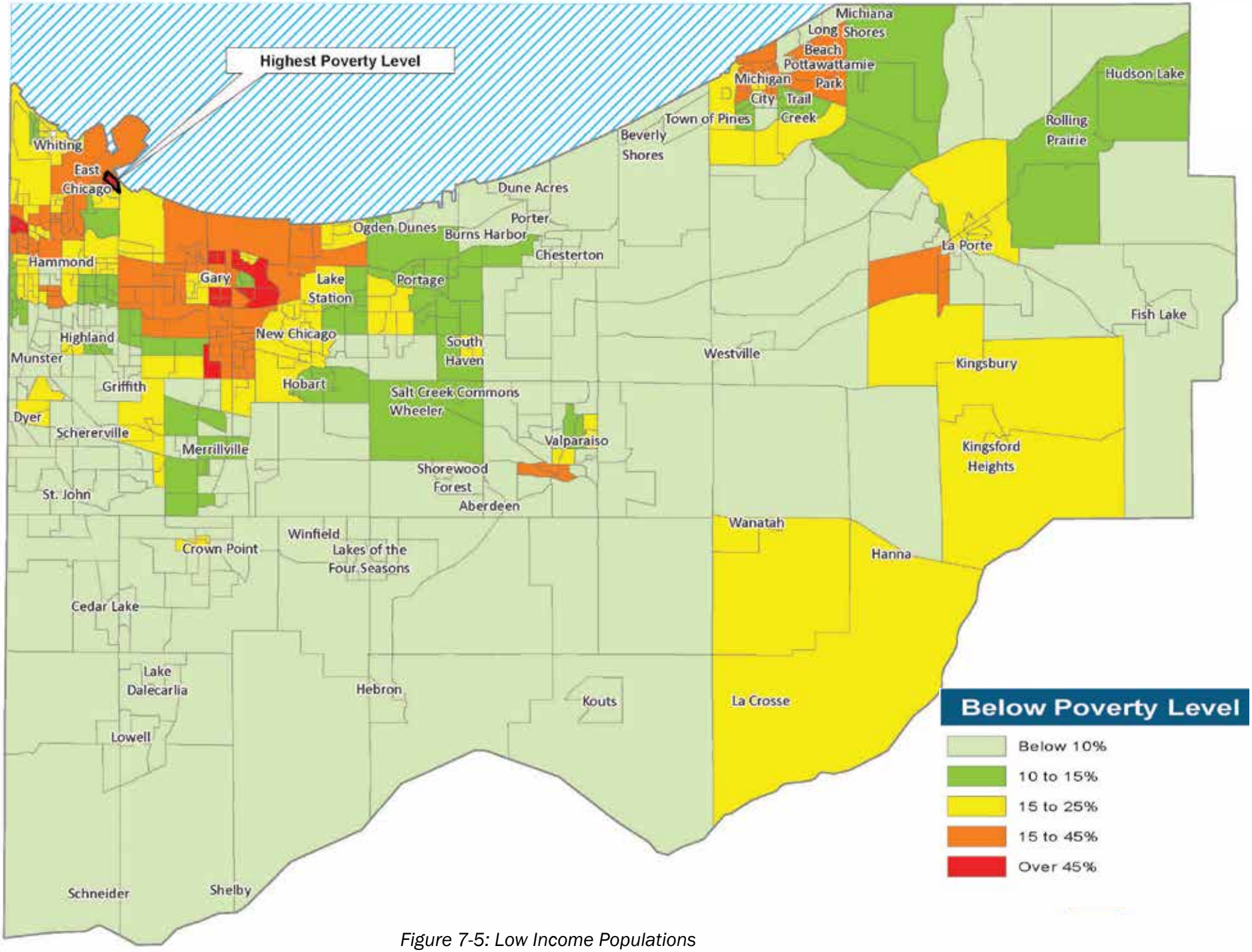


Figure 7-5: Low Income Populations

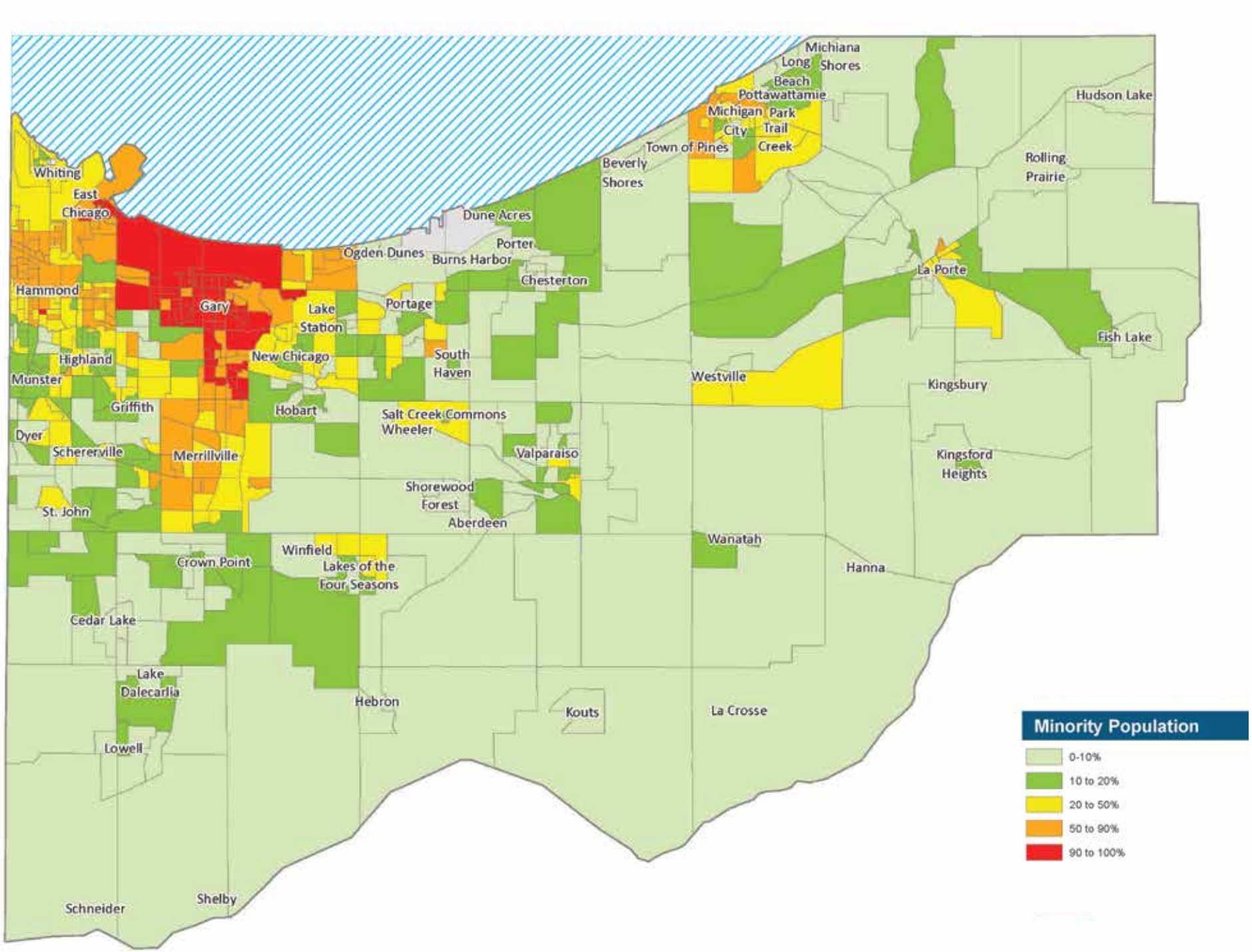


Figure 7-6: Minority Populations

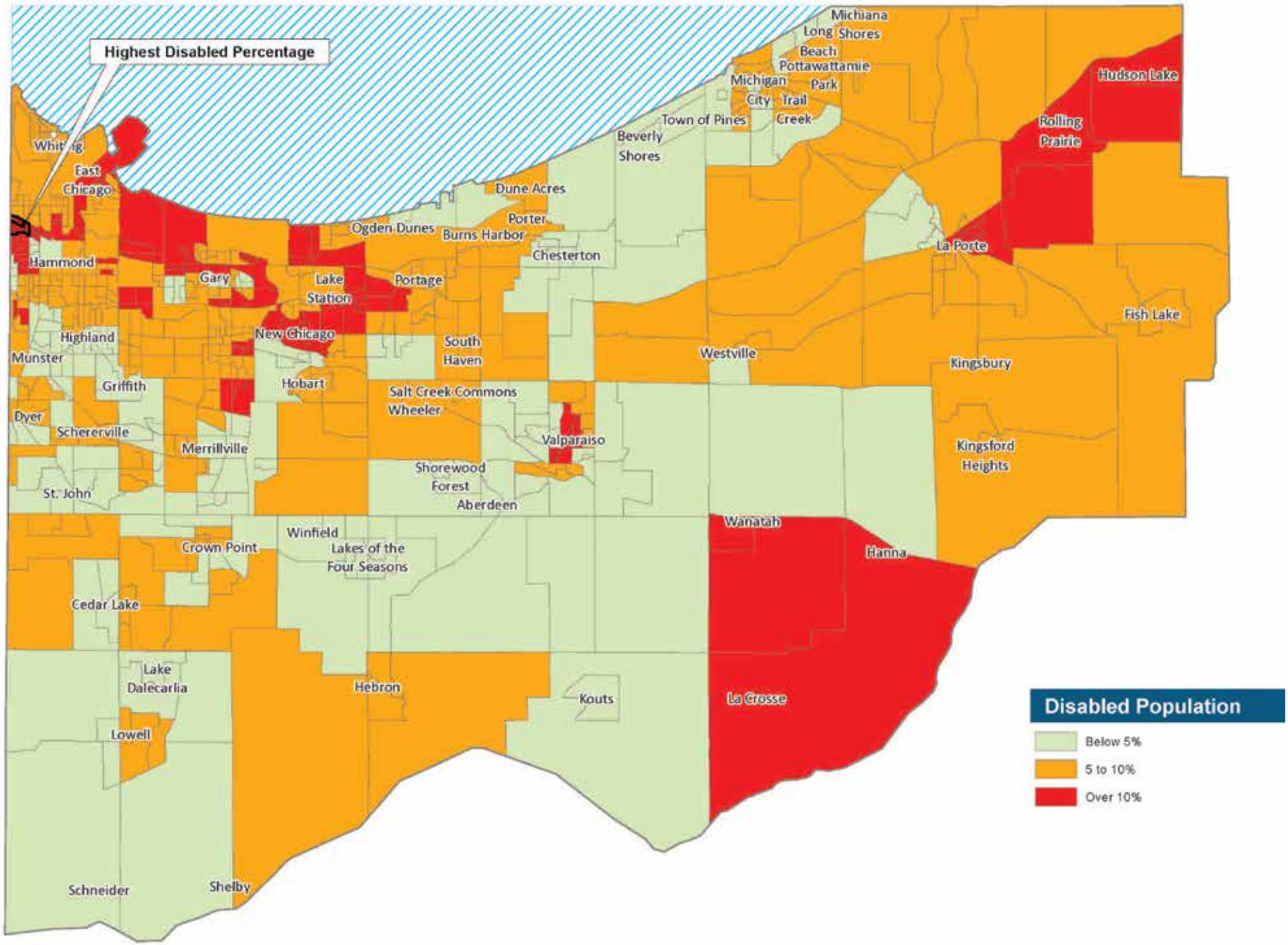


Figure 7-7: People with Disabilities

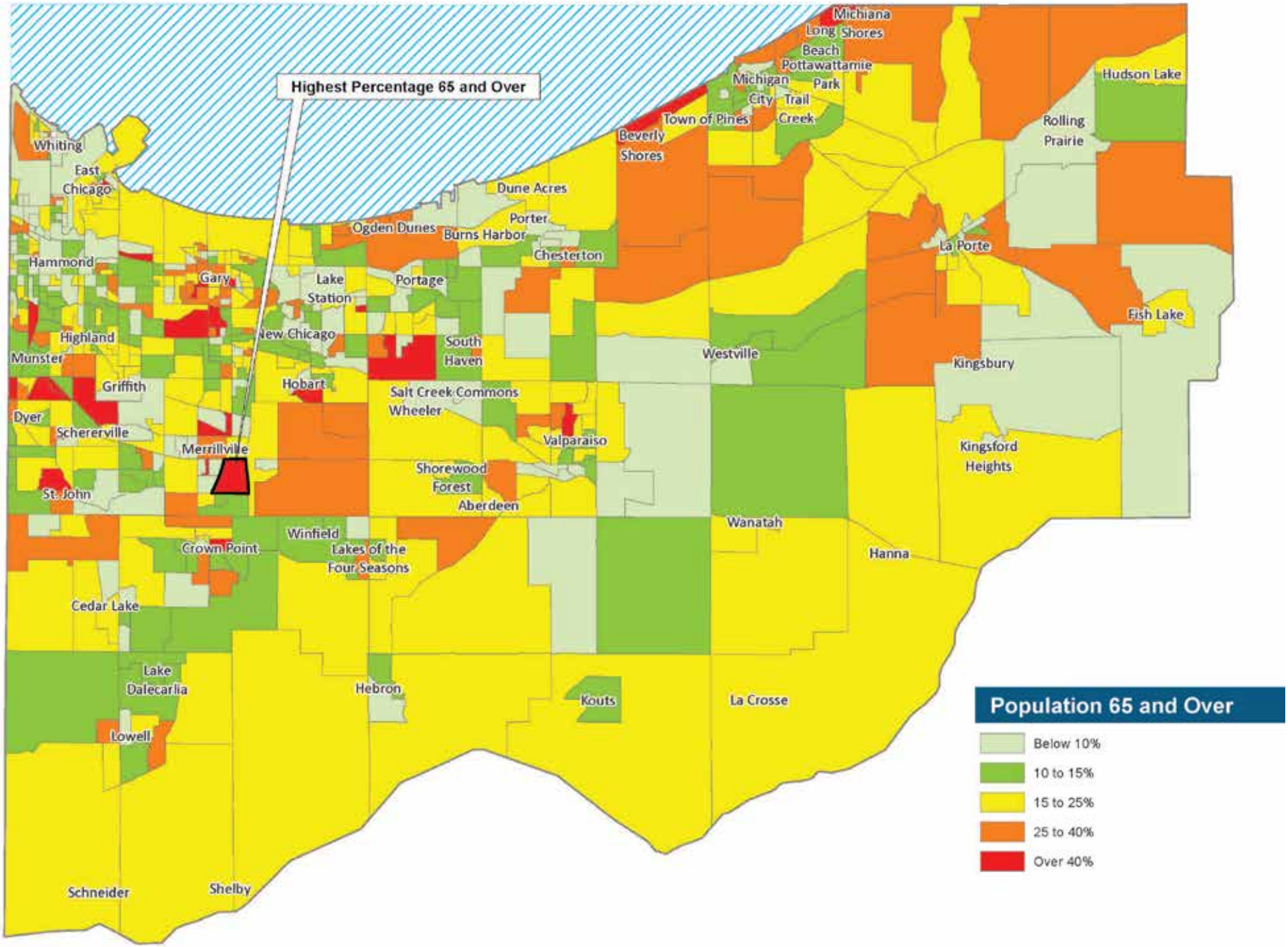


Figure 7-8: Senior Population

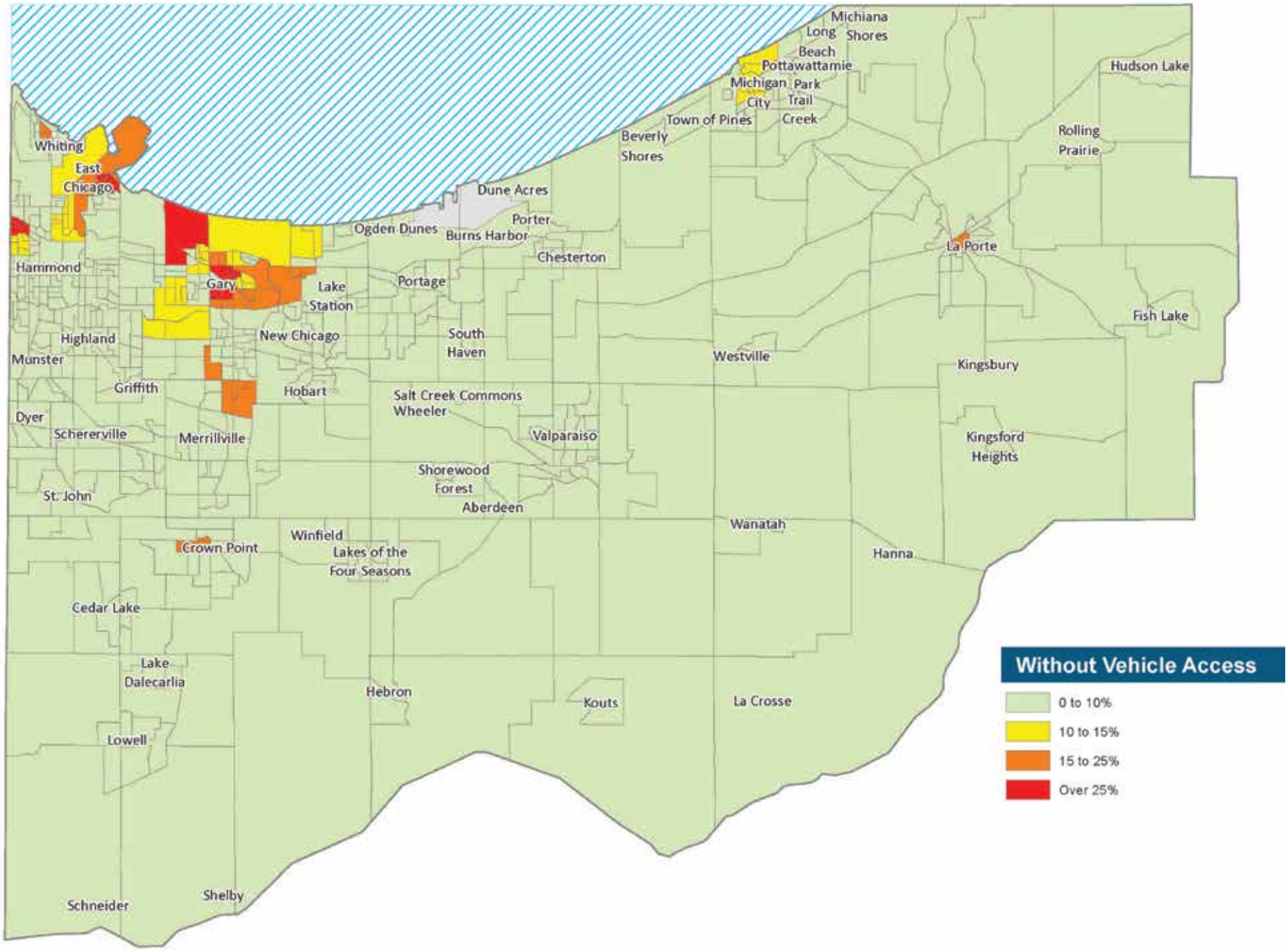


Figure 7-9: Vehicle Availability

Transit Dependency Index Data

By combining the individual factors above, a transit dependency index is created that includes a formula-based equation to measure overall transit dependency.

The equation takes into consideration the fact that these subgroups have different propensities to use transit. Multiplying the population of the groups by the factors shown below provides a more accurate picture of transit demand rather than just using total population. The methodology was based on data from block groups. The equation also considers the density of the block group surveyed.

Population+(Minority×2.3)+(With Disability×5.5)+(Over 65×1.6)+(Below Poverty Level×1.4) +(Carless×8)+(Jobs×0.50)+(Service Jobs×0.75) / (Block Group Acres)

Transit demand index maps were created for the study area and are shown in Figures 7-10 and 7-11. As indicated, northern Lake County and La Porte County have areas of high to very high transit demand. These areas are focused on the cities of Hammond, Gary, East Chicago, Michigan City, and La Porte.

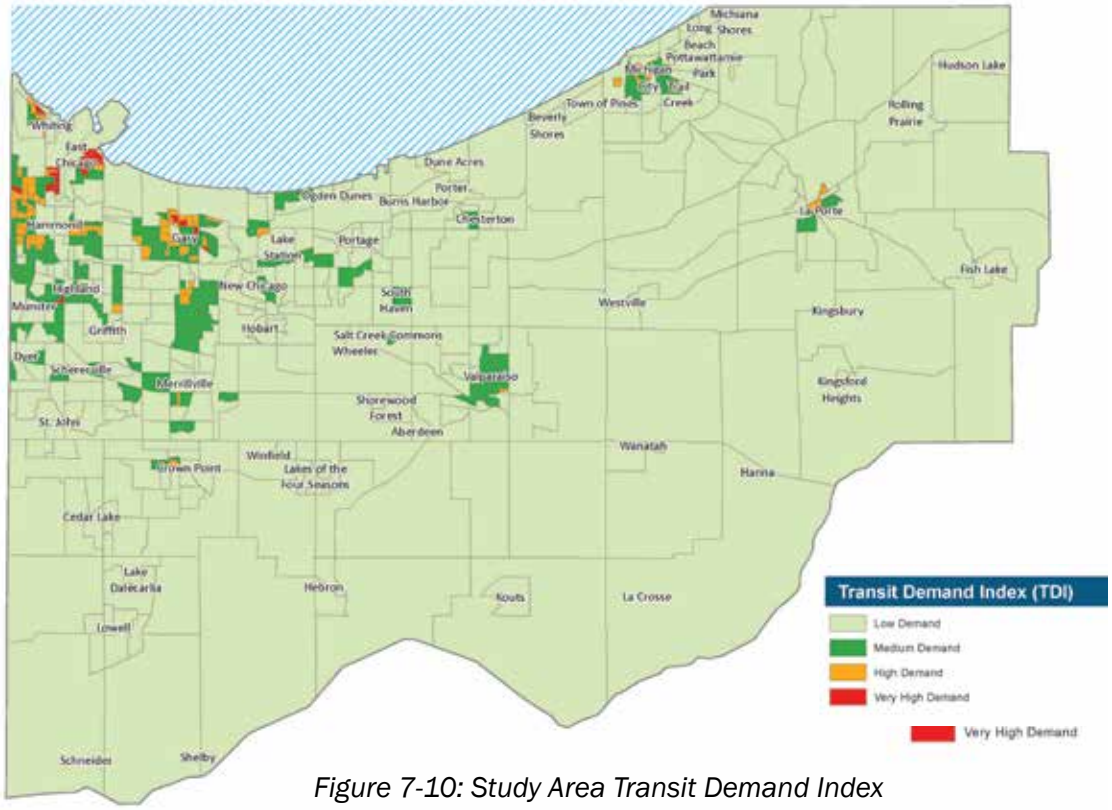


Figure 7-10: Study Area Transit Demand Index

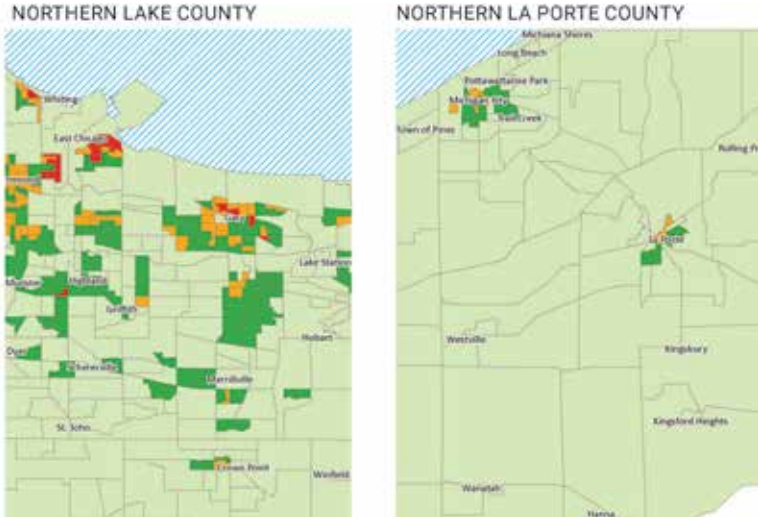


Figure 7-11: High Transit Demand Areas

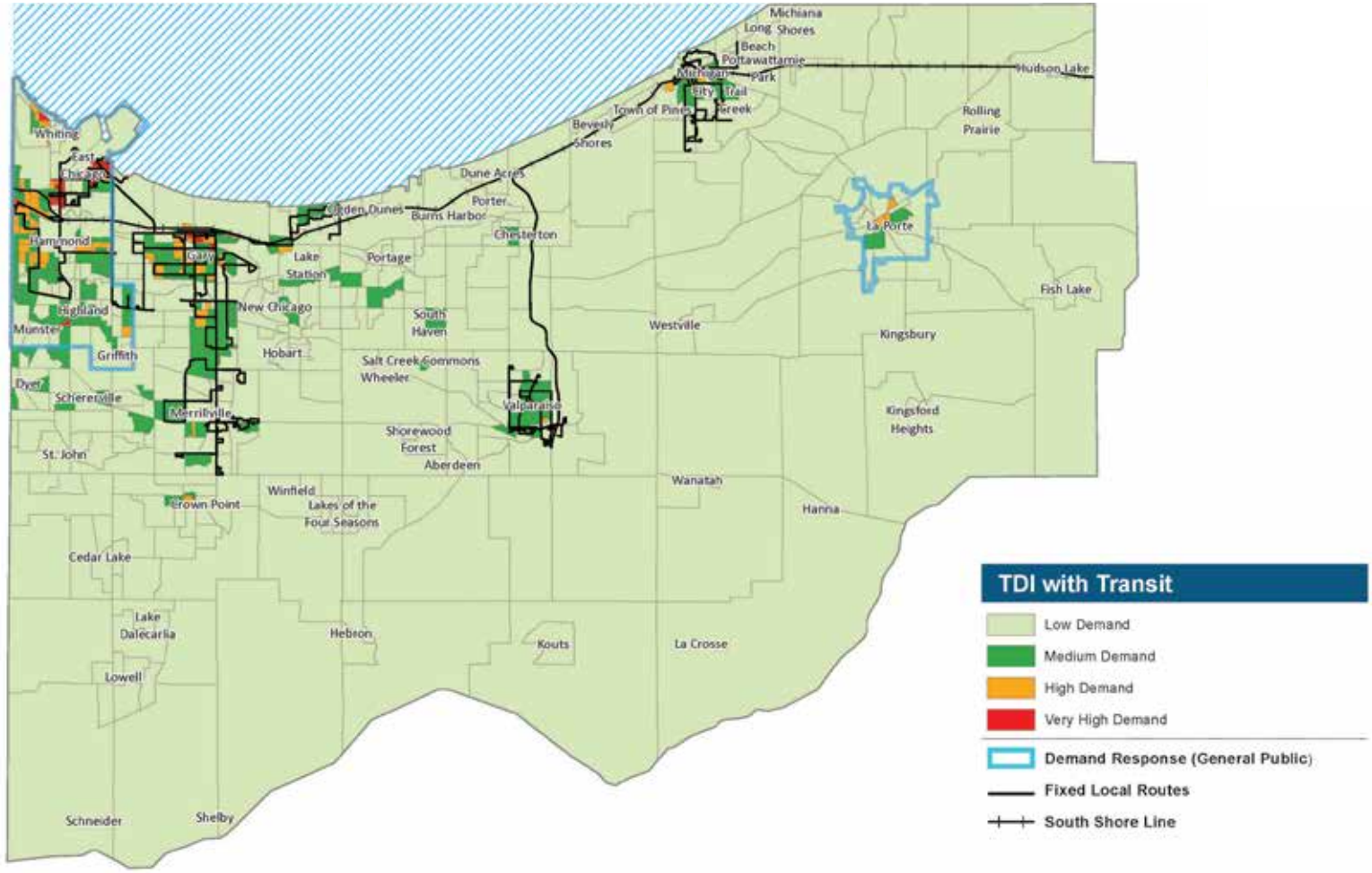


Figure 7-12: Transit Demand Index with Transit Service Overlaid

Figure 7-12 shows the existing transit services in the region overlaid on the transit demand index map. Eighty-three (83) percent of high transit demand areas are accessible by public transportation services. The high transit demand areas not served by public transportation services are the neighborhoods surrounding Whiting High School (in Whiting), the Porte De L'eau Apartments (in Highland), and the Hampton (in Highland) apartment complex. More detailed transit demand index maps of each community served by fixed route services are shown in Appendix 3A.

Assessing Gaps and Needs

The following methods were used to identify transit gaps and needs in the region:

- Assessment of existing transit services to determine service efficiency, effectiveness, service overlaps and attractiveness
- Demographic analysis of transit routes using concentrations of overall population, jobs and transit dependent populations
- Stakeholder interviews with transit agencies and municipalities
- Input from the Transit Steering Committee
- Input from the public during the June 21-23rd public meetings
- Input from the online public survey hosted by NIRPC during the months of July through October.



Service Efficiency/Effectiveness Analysis

A simple analysis of the efficiency and effectiveness of the existing fixed route transit services was performed using statistics collected annually by the Federal Transit Administration (FTA) and published in agency profiles in the National Transit Database (NTD). Data for 2019, the last pre-pandemic year was used. Table 7-2 indicates the efficiency and effectiveness measures selected for analysis from the NTD for each of the transit operators in the region. Service efficiency is measured by examining a transit provider's operating expenses divided by vehicle revenue miles and vehicle revenue hours; a lower number indicates a service that is more efficient. Service effectiveness is measured by calculating annual rides per capita, dividing unlinked passenger trips by operating expenses, and dividing unlinked trips by vehicle revenue miles and vehicle revenue hours. Higher numbers for annual rides per capita and unlinked trips divided by vehicle revenue miles and vehicle revenue hours indicate a service that is more effective. A lower dollar amount for operating hours divided by unlinked passenger trips makes a service more effective.

An analysis of the transit agencies that provide fixed route bus service in the study area shows that the transit agencies in Gary and East Chicago have greater operating expenses than those in Valparaiso and Michigan City because their services cover a larger area and serve a larger population. The service effectiveness of both fixed route and demand response services vary when looking at results.

A common way of analyzing the relative effectiveness of transit systems is to compare to peer agencies, using NTD data. Peers were selected based on similar sized municipality and socioeconomic conditions. Maps showing where the peers are located are in Appendix 3B.

Results are indicated in Tables 7-3 and 7-4. To interpret how the region transit agencies compare to their peers, refer to the "above/below median" column. Where there is a cost associated with a measurement it is better to be below the median value of all peer agencies, which is indicated by the down arrow (most of these are in the service efficiency category). For all other measurements, it is better to be above the median peer value, indicated by the up arrow (all of these are in the service effectiveness category).

	NICTD	GPTC	MCT	Valpo	ECT	North Twp	TransPorte	LCCS
Veh. Op.in Max Svc. (Rail)	70							
Veh. Op.in Max Svc. (Fixed Route)		17	4	6	3			
Veh. Op.in Max Svc. (Demand Response)		4	2		1	30	5	16
Veh. Op.in Max Svc. (Commuter Bus)			2	8				
Unlinked trips	3,283,603	793,716	182,049	176,849	117,785	41,002	42,352	43,445
Service area pop.	958,644	102,746	31,479	31,730	27,697	162,855	21,692	216,180
Service Efficiency								
- Op Exp/Rev. Veh. Mile	$11.82	$6.33	$4.05	$5.71	$8.06	$3.22	$5.11	$3.22
- Op Exp/Rev. Veh. Hr.	$405.51	$87.63	$68.32	$98.42	$94.58	$38.01	$53.94	$30.30
Service Effectiveness								
- Annual rides per capita	3.43	7.7	5.8	5.6	4.3	0.3	1.3	0.20
- Op Exp/unlinked Psgr trip	$15.82	$7.94	$8.23	$11.07	$9.99	$18.04	$15.41	$20.49
- Unlinked trips/Rev. Veh. Mi.	0.7	0.8	0.5	0.5	0.8	0.2	0.3	0.2
- Unlinked trips/Rev. Veh. Hr.	25.6	11	8.3	8.9	9.5	2.1	3.5	1.5

NICTD = South Shore Line
GPTC = Gary
MCT = Michigan City
Valpo = Valparaiso
ECT = East Chicago
TransPorte = La Porte
LCCS = Lake County Community Services

2019 Data not Available; 2018 data used

Table 7-2: Efficiency and Effectiveness Factors for Transit Providers (2019 data)



Gary (Fixed Route)

MODE: Fixed Route	GPTC	Above/ Below Median	PEERS					MEDIAN
			HART	CUE	Commerce	Norwalk	Cecil	
Veh. Op.in Max Svc.	20		8	8	10	24	8	9
Unlinked trips, FR (ann.)	493,179		55,829	488,078	314,383	1,187,289	59,931	401,231
Service area pop.	102,746		200,495	22,565	12,997	637,365	102,383	102,565
Service Efficiency								
- Op Exp/Rev. Veh. Mile	$7.77	↓	$8.69	$9.00	$12.71	$13.05	$4.31	$8.85
- Op Exp/Rev. Veh. Hr.	$102.76	↓	$141.92	$115.21	$136.03	$143.56	$87.36	$125.62
Service Effectiveness								
- Annual rides per capita	4.80	↑	0.28	21.63	24.19	1.86	0.59	3.33
- Op Exp/unlinked Psgr trip	$13.08	↑	$58.86	$8.20	$12.88	$11.72	$23.86	$12.98
- Unlinked trips/Rev. Veh. Mi.	0.9	↔	0.1	1.1	1	1.1	0.2	1.0
- Unlinked trips/Rev. Veh. Hr.	11.9	↑	2.4	14.1	10.6	12.2	3.7	11.25

Valparaiso (Fixed Route)

MODE: Fixed Route	Valpo	Above/ Below Median	PEERS					MEDIAN
			Burlink	Laudergo	PART	CATA	Arcadia	
Veh. Op.in Max Svc.	13		6	10	7	11	6	9
Unlinked trips, FR (ann.)	96,050		47,327	182,437	51,984	60,184	56,364	58,274
Service area pop.	31,730		449,772	129,495	61,963	155,236	41,709	95,729
Service Efficiency								
- Op Exp/Rev. Veh. Mile	$3.56	↓	$4.63	$10.08	$4.49	$8.37	$6.65	$5.64
- Op Exp/Rev. Veh. Hr.	$59.33	↓	$85.59	$95.47	$92.67	$111.65	$75.21	$89.13
Service Effectiveness								
- Annual rides per capita	3.03	↑	0.11	1.41	0.84	0.39	1.35	1.10
- Op Exp/unlinked Psgr trip	$10.78	↓	$26.92	$12.10	$27.33	$12.04	$26.91	$19.51
- Unlinked trips/Rev. Veh. Mi.	0.3	↔	0.2	0.8	0.2	0.7	0.2	0.3
- Unlinked trips/Rev. Veh. Hr.	5.5	↑	3.2	7.9	3.4	9.3	2.8	4.5

Michigan City (Fixed Route)

MODE: Fixed Route	MCT	Above/ Below Median	PEERS					MEDIAN
			MTS	Steel Valley	Owensboro	Electric City	City Line	
Veh. Op.in Max Svc.	4		4	7	9	6	7	7
Unlinked trips, FR (ann.)	120,446		120,388	131,745	274,442	295,336	196,576	164,161
Service area pop.	31,479		49,490	22,113	57,276	27,293	57,836	40,485
Service Efficiency								
- Op Exp/Rev. Veh. Mile	$6.06	↑	$4.88	$7.02	$4.34	$3.19	$4.92	$4.90
- Op Exp/Rev. Veh. Hr.	$82.71	↑	$72.67	$101.20	$63.08	$58.31	$66.84	$69.76
Service Effectiveness								
- Annual rides per capita	3.83	↓	2.43	5.96	4.79	10.82	3.40	4.31
- Op Exp/unlinked Psgr trip	$9.44	↑	$8.66	$12.26	$6.30	$3.33	$4.19	$7.48
- Unlinked trips/Rev. Veh. Mi.	0.6	↔	0.6	0.6	0.7	1	1.2	0.65
- Unlinked trips/Rev. Veh. Hr.	8.8	↓	8.4	8.3	10	17.5	15.9	9.4

East Chicago (Fixed Route)

MODE: Fixed Route	ECT	Above/ Below Median	PEERS					MEDIAN
			Clarkstown	Cecil	Long beach	Medina County	HART	
Veh. Op.in Max Svc.	3		8	8	5	7	8	8
Unlinked trips, FR (ann.)	72,076		50,238	59,931	156,690	35,148	55,829	57,880
Service area pop.	27,697		300,173	102,383	33,275	174,091	200,495	138,237
Service Efficiency								
- Op Exp/Rev. Veh. Mile	$8.00	↑	$6.15	$4.31	$11.30	$6.05	$8.69	$7.08
- Op Exp/Rev. Veh. Hr.	$108.21	↑	$105.17	$87.36	$101.46	$77.58	$141.92	$103.32
Service Effectiveness								
- Annual rides per capita	2.60	↑	0.17	0.59	4.71	0.20	0.28	0.43
- Op Exp/unlinked Psgr trip	$13.04	↓	$23.15	$23.86	$15.05	$24.03	$58.86	$23.51
- Unlinked trips/Rev. Veh. Mi.	0.6	↑	0.3	0.2	0.8	0.3	0.1	0.3
- Unlinked trips/Rev. Veh. Hr.	8.3	↑	4.5	3.7	6.7	3.2	2.4	4.1

Table 7-3: Peer Comparisons—Fixed Route Systems
(for peer comparisons, only statistics from the dominant mode are shown)

South Shore Line (Commuter Rail)

	NICTD	Above/ Below Median	PEERS					MEDIAN
			Sound Transit	VRE	CalTrain (West Bay)	MARC	Tri Rail	
Veh. Op.in Max Svc.	70		70	99	134	149	43	85
Unlinked trips, (ann.)	995,049		1,265,882	3,222,428	13,692,716	6,680,248	742,714	2,244,155
Service area pop.	958,644		3,205,700	2,238,365	3,614,716	7,811,145	133,588	2,722,033
Service Efficiency								
- Op Exp/Rev. Veh. Mile	$13.44	↓	$35.60	$36.33	$20.19	$28.81	$29.29	$29.05
- Op Exp/Rev. Veh. Hr.	$467.28	↓	$1,072.04	$1,119.81	$653.01	$1,104.25	$818.89	$945.47
Service Effectiveness								
- Annual rides per capita	1.04	↓	0.39	1.44	3.79	0.86	5.56	1.24
- Op Exp/unlinked Psgr trip	$52.99	↑	$42.93	$24.19	$9.57	$24.14	$26.27	$25.23
- Unlinked trips/Rev. Veh. Mi.	0.3	↓	0.8	1.5	2.1	1.2	1.1	1.15
- Unlinked trips/Rev. Veh. Hr.	8.8	↓	25	46.3	68.3	45.7	31.2	38.45

La Porte (Demand Response)

	TransPorte	Above/ Below Median	PEERS					MEDIAN
			Go Transit	Allen Co RTA	JATA	Battle Creek	Shoreline Metro	
Veh. Op.in Max Svc.	5		30	8	7	7	6	7
Unlinked trips, (ann.)	28,291		42,469	26,751	22,159	23,431	18,564	25,091
Service area pop.	21,692		66,083	106,331	158,510	87,735	59,490	76,909
Service Efficiency								
- Op Exp/Rev. Veh. Mile	$7.18	↓	$3.08	$8.17	$9.18	$12.53	$8.04	$8.11
- Op Exp/Rev. Veh. Hr.	$65.86	↓	$62.86	$117.06	$117.73	$125.88	$95.24	$106.15
Service Effectiveness								
- Annual rides per capita	1.30	↑	0.64	0.25	0.14	0.27	0.31	0.29
- Op Exp/unlinked Psgr trip	$25.10	↓	$14.44	$33.97	$60.69	$63.71	$42.44	$38.21
- Unlinked trips/Rev. Veh. Mi.	0.3	↓	0.2	0.2	0.2	0.2	0.2	0.2
- Unlinked trips/Rev. Veh. Hr.	2.6	↑	4.4	3.4	1.9	2	2.2	2.4

North Township (Demand Response)

	North Twp	Above/ Below Median	PEERS					MEDIAN
			LCCS	Cecil	HART	Commerce	GCPT	
Veh. Op.in Max Svc.	6		18	7	12	4	4	7
Unlinked trips, (ann.)	18,961		22,348	19,839	20,576	9,032	12,554	19,400
Service area pop.	170,200		216,180	102,383	200,495	12,997	102,746	136,473
Service Efficiency								
- Op Exp/Rev. Veh. Mile	$6.91	↓	$4.51	$3.60	$15.44	$12.70	$10.68	$8.80
- Op Exp/Rev. Veh. Hr.	$85.06	↓	$50.47	$77.27	$191.16	$131.74	$140.75	$108.40
Service Effectiveness								
- Annual rides per capita	0.11	↓	0.10	0.19	0.10	0.69	0.12	0.12
- Op Exp/unlinked Psgr trip	$37.45	↓	$37.38	$21.43	$95.66	$86.76	$54.59	$46.02
- Unlinked trips/Rev. Veh. Mi.	0.2	↔	0.1	0.2	0.2	0.1	0.2	0.2
- Unlinked trips/Rev. Veh. Hr.	2.3	↑	1.4	3.6	2	1.5	2.6	2.2

Lake County Community Services (Demand Response)

	LCCS	Above/ Below Median	PEERS					MEDIAN
			North Twp	GCT	Cecil	HART	Medina County	
Veh. Op.in Max Svc.	18		6	4	7	12	14	10
Unlinked trips, (ann.)	22,348		18,961	12,554	19,839	20,576	25,438	20,208
Service area pop.	216,180		170,200	102,746	102,383	200,495	174,091	172,146
Service Efficiency								
- Op Exp/Rev. Veh. Mile	$4.51	↓	$6.91	$10.68	$3.60	$15.44	$4.44	$5.71
- Op Exp/Rev. Veh. Hr.	$50.47	↓	$85.06	$140.75	$77.27	$191.16	$57.56	$81.17
Service Effectiveness								
- Annual rides per capita	0.10	↓	0.11	0.12	0.19	0.10	0.15	0.12
- Op Exp/unlinked Psgr trip	$37.38	↓	$37.45	$54.59	$21.43	$95.66	$44.46	$40.96
- Unlinked trips/Rev. Veh. Mi.	0.1	↓	0.2	0.2	0.2	0.2	0.1	0.2
- Unlinked trips/Rev. Veh. Hr.	1.4	↓	2.3	2.6	3.6	2	1.3	2.2

Table 7-4: Peer Comparisons—Commuter Rail and Demand Response Systems

Service Overlaps

An analysis was performed to identify areas where overlapping service is operated in an area by two or more transit agencies. The only portion of the study area where there is overlap is in the northwest corner of the region. Both GPTC (Routes R1 and R4) and North Township Dial-A-Ride provide service to the general public in this area. However, Route R1 is only scheduled to operate every 120 minutes (2 hours). In East Chicago there is also overlap between GPTC R1 and GPTC R4 with and ECT service, but the service patterns are different. It is important to note that the basic fare on GPTC R1 is $2.25 ($1 for reduced fare riders) while both the North Township Dial-a-Ride and East Chicago Transit charge no fares.

Service Gaps

Figure 7-13 indicates high and very high transit demand areas that are not served by fixed route service. Whiting, despite being close to the Gary and East Chicago transit systems, is isolated from a fixed route service. GPTC conducted a survey in October 2022 regarding future North Hammond/Whiting service. The results were very favorable for providing service. Whiting is served by North Township Dial-a-Ride, which covers a much greater area and has the potential to connect residents to regional transit services like the South Shore Line which has a station in nearby East Chicago. La Porte also has very high transit demand near downtown but is only served by demand response service (TransPorte) and not fixed route. Since TransPorte only serves the City of La Porte, these residents are unable to use transit to travel across the region. Riding a demand response service, rather than a fixed route service, is often times more daunting for a rider and takes additional effort, causing it to only be used by the most transit dependent populations. The need to schedule the service 24 to 48 hours ahead of time, and the fact that, often, only certain types of trips can be honored, proves to be less attractive for non-transit dependent riders.

Two high transit demand areas are unserved by any form of public transportation: one on the east side of Downtown Crown Point and the block group that includes The Lakes at 8201 Apartment Homes in Merrillville.

There are other transit dependent areas without fixed route service as indicated on Figure 7-13.



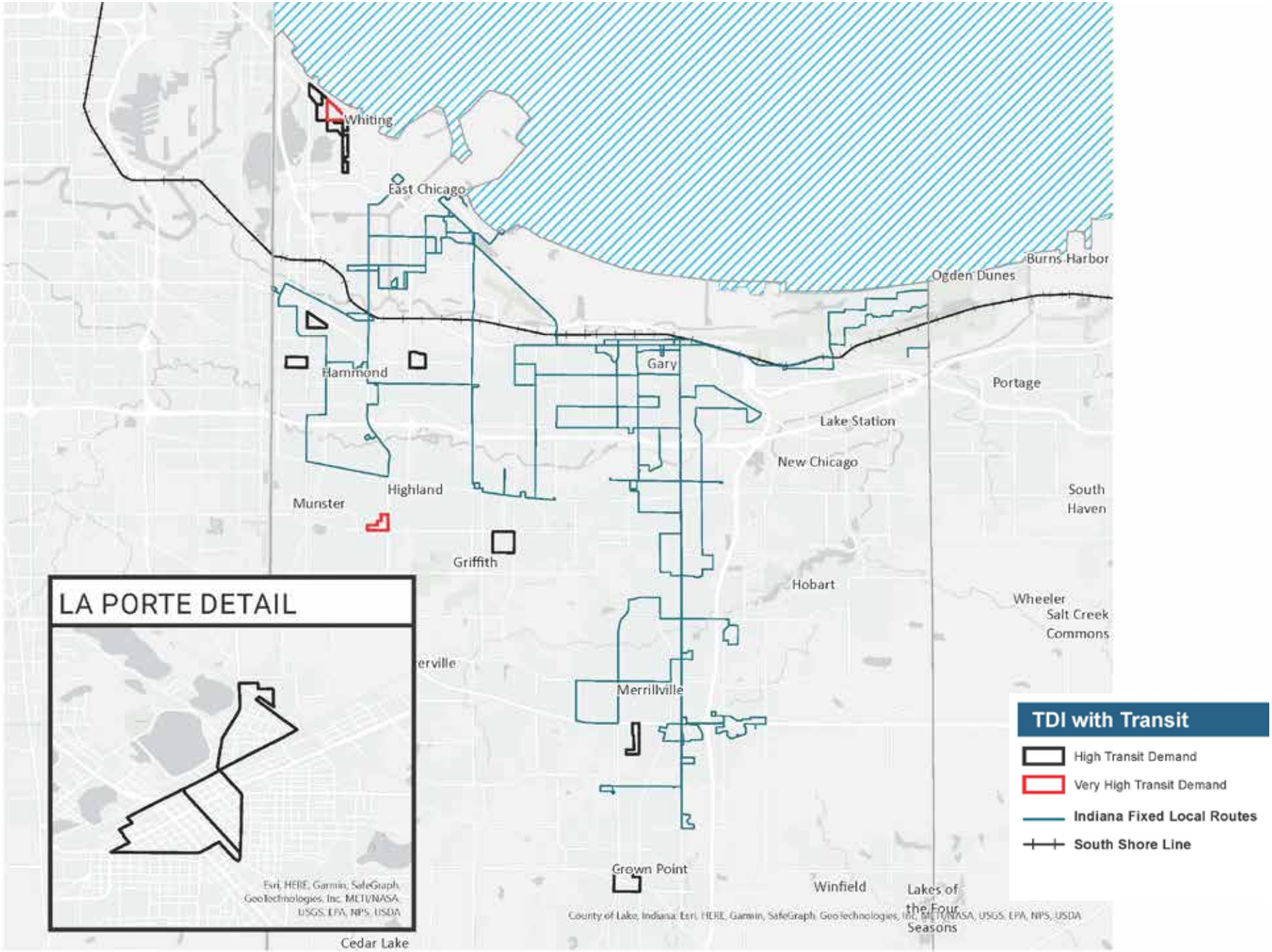


Figure 7-13: Unserved High Transit Demand Areas (Fixed Route Only)

Service Coverage

Approximately 15 percent of the land area of the region is covered by public transportation as shown in Figure 7-14, either fixed route or demand response service open to the general public. About three quarters of region residents live in this area and about the same percentage of all jobs in the region are located there[2]. Connections can be made via fixed route service in Hammond to Pace service. Express routes (ChicagoDash) connect residents to Downtown Chicago and to the CTA bus and rail routes. The South Shore Line shares six stations in Chicago with Metra, allowing cross platform transfers as necessary.

Most of the cities[3] in Northwest Indiana are served by fixed route transit, the exceptions being Portage and La Porte (see Table 7-5). However, only a minority of towns (all other incorporated communities) are served.

	Number	Served	% Served
Cities	11	9	82%
Towns	30	6	20%

Table 7-5: Service Coverage of Municipalities

As Table 7-6 indicates very few hospitals are served due to the relocation of urban hospitals to more suburban and rural areas. Other destinations not served on this list include the Horseshoe Casino in Hammond and the Westville campus of Purdue University.

	Number	Served	% Served
Universities and Colleges	10	8	80%
Hospitals	18	6	33%
Casinos	4	3	75%

Table 7-6: Major Destinations Served

Service coverage was also examined by the percentage of arterial/major roads that have fixed route bus routes. There is an estimated 1,041 miles of arterial roadways in Northwest Indiana; 63 miles or 6% have fixed route bus service operating on them. Since most arterial road [4] miles are in rural parts of the study area, few of these road miles are served by fixed route transit.



2 Exact numbers: 71 percent of the population and 72 percent of the jobs

3 Communities over 30,000 residents

4 Arterial roads in this context are non-limited access highways with a state or united states route designation

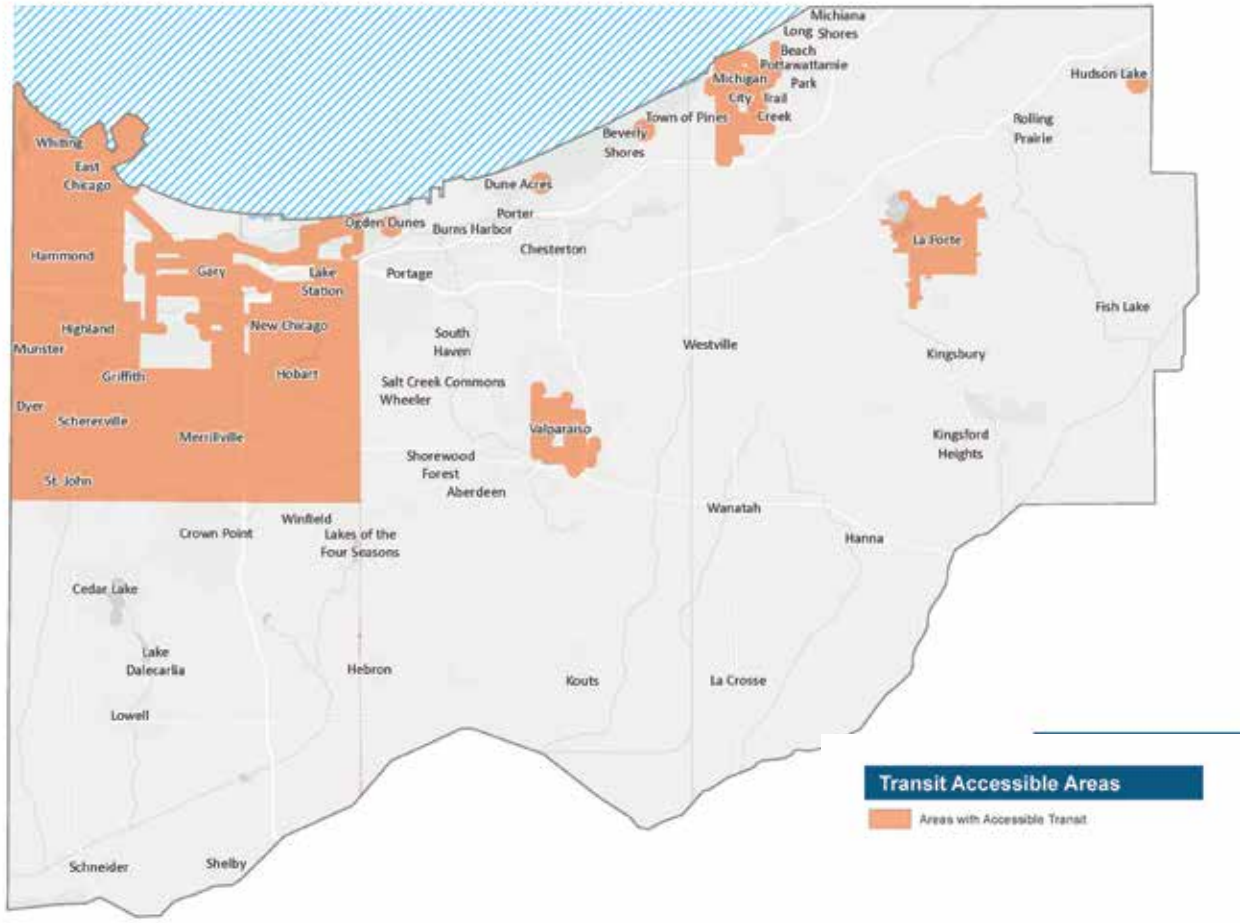


Figure 7-14: Access to Transit in the Study Area

Attractiveness of Service to Non-Transit Dependent Riders

Public transportation competes with the automobile, usually owned by individuals or families, but also taking the form of taxis or ride-hailing services (i.e., Uber or Lyft). In Northwest Indiana, the public transportation service that is most competitive with the automobile is the South Shore Line (SSL/NICTD) which operates fast, frequent service and allows passengers to avoid the high cost of parking in Downtown Chicago. While it only operates during weekday peak periods, Valparaiso's ChicagoDash express bus service to Downtown Chicago has similar attributes.

Most public transportation in the region is local bus service, with buses stopping at corners along the route. Some bus stops in Northwest Indiana are not marked with signs. The primary source of information regarding bus routes, stops, schedules, and fares are the websites of the operating agencies. There is no comprehensive website, there are few instances of links to the websites of other agencies, and they are inconsistent as to how comprehensive, or current, the posted information is. The lack of coordination regarding information and transfer opportunities between systems can be a detriment to attracting riders who want to ride regionally.

In addition, some routes are not as attractive if they cause the rider to travel for a long period of time to get to a destination. Several local bus routes in the region include long, broad loops operated in a single direction which means that riders traveling to/from stops near the start or end of the loop will need to ride a long amount of time and distance to or from their stop in one direction.

Fares on most systems have been held at low levels ($1.00 adult full fares, with 50¢ reduced fares are common). GPTC fares are $1.60 for full fares for riders within Gary (80¢ for reduced fares) and $2.25 on regional routes ($1.00 for reduced fares), regardless of the length the rider's trip. However, even with low fares, local bus service, particularly on routes with broad loops or service that comes every hour or less frequently is not competitive for riders with the means to own an automobile, borrow one, use Uber or Lyft, or are able to get a ride from a friend or family member.

Stakeholder Meetings

A series of stakeholder meetings with transit operating agencies and other stakeholders were held in May and June 2022. The transit operating agencies were asked to identify the gaps that they perceived based on input from riders or their knowledge of destinations in or near their operating areas. The potential destinations that they identified as gaps in current service or areas for enhanced service are detailed below.

East Chicago Transit (ECT)

- Whiting
- Proposed senior center at Main Street/Martin Luther King Drive/Guthrie Street

Gary Public Transit Corporation (GPTC)

- New/enhanced connections to new West Lake Corridor/Hammond Station
- Proposed Lakeshore North Route (planned but not funded)
- Better service to Schererville/Ridgeville
- Better service to Merrillville
- Hobart (planned)
- Calumet College of St. Joseph
- Better service in the Hammond area and the northwest corner of the region, i.e., Whiting
- Porter County (outside their operating boundaries)
- Better service to Pace connections in Hammond

City of Hammond

- New/enhanced connections to new West Lake Corridor/Hammond Station
- Enhanced connections to Purdue University NW
- New service between Robertsdale and Whiting neighborhoods
- New/enhanced service in Hessville neighborhood

Lake County Community Services (LCCS)

- Requests to serve doctors/hospitals in Illinois, municipality of Lafayette, and North Township

TransPorte

- New service between La Porte and Michigan City
- Expansion of service boundaries to serve unincorporated La Porte – schools and businesses

Michigan City Transit (MCT)

- New service between Michigan City and La Porte
- New service between Michigan City and Westville
- New service along US-421
- New service along IN-212
- New service to municipalities outside of Michigan City limits
- New service to Weatherstone Village (mobile home park)

NICTD/South Shore Line

- Better coordination with transit providers serving station areas
- Long term goal by NICTD/South Shore Line is to extend the West Lake Corridor line further south, and also eventually create a diagonal branch off the mainline to the southeast to serve Valparaiso

Union Township

- Although there is no transit service operating within Union Township, there are plans to expand Highway 249 to meeting US 30 so expect future population/employment growth
- Future connections to Valparaiso and Hobart

Valpo Transit

- Northwest Health (Porter Regional) in Chesterton
- Porter County Expo Center/Fairgrounds
- New service to Gary and La Porte
- Chicago Dash stop in Hobart



Transit Steering Committee Meeting

A Transit Steering Committee Meeting was held on Tuesday, June 28, 2022. Members of the Transit Steering Committee are listed in Appendix C. A presentation showing existing transit and transit demand was presented and Steering Committee members were asked to identify gaps and needs. Input received from the various operating agencies has been included under the respective transit agencies.

In addition to input received by the transit agencies, NIRPC indicated that there are four themes as part of NIRPC's focus for improved transit in the region. This includes:

- A need for rail service to Valparaiso
- Better bus/rail connections
- Better connections across the Illinois State line
- Better connections between the 41 cities and towns in the region

Steering Committee members shared concerns about barriers to implementing improvements. These barriers include funding, staff shortages (notably bus drivers), bus rolling stock shortages, maintenance or age issues, and operating boundary restrictions. Regarding the bus rolling stock, buses are back ordered and more expensive due to the impact of inflation and supply chain difficulties. There also is concern about the transition to electric vehicles, with the lack of electric charging stations and the potential impact on operations.



Public Meetings

Three public meetings were held during the week of June 20, 2022 to solicit feedback and encourage public engagement in *NWI 2050+*. All three meetings were held in an open house format, where attendees could arrive at any time between 4:00 p.m. and 7:00 p.m. While information disseminated at the public meetings included several different elements of the update (public transit, bike/pedestrian, freight), the following focuses on feedback from members of the public on the public transit element. Attendees at all three meetings were asked to participate in an interactive exercise to help identify gaps in existing transit service in Northwest Indiana and areas that they were interested in accessing with a future expansion of transit service.

Meeting #1 – Michigan City 6/21/22

The first public meeting for *NWI 2050+* was held at the Michigan City Public Library on Tuesday, June 21st. Approximately 20 members of the public attended the meeting. An existing transit service map was provided and attendees were instructed to mark the city they live in and where they would like to go using public transit. As the first meeting was held in Michigan City, all but one participant in the exercise reported living in Michigan City. The greatest area of desired transit was connection with Valparaiso. Several attendees also provided comments verbally that they had previously used Michigan City's "Transit Triangle" service, which provided connections between Michigan City, the Purdue NW Campus in Westville, and La Porte, enjoyed the service, and were disappointed that the service was recently suspended during the pandemic. Several attendees also provided positive feedback on the ongoing South Shore Line Double Tracking project and the construction of a new South Shore Line 11th Street Station in Michigan City.

Meeting #2 – Chesterton 6/22/22

The second public meeting was held at the Chesterton Town Hall on Wednesday, June 22nd. One attendee stated he lived in a rural area north of Valparaiso and he wanted to go to the Indiana Dunes using transit.

Meeting #3 – Merrillville 6/23/22

The final public meeting was held at the Dean and Barbara White Community Center in Merrillville on Thursday, June 23rd. An estimated fifteen members of the public attended the meeting and five participated in the interactive exercise. Attendees reported living in East Chicago, Highland, Gary, Merrillville, and Crown Point. Desired transit connections expressed during the interactive exercise included the beach at the Indiana Dunes, Michigan City, Downtown Crown Point, and locations in the Hammond and Munster area. Several attendees at the meeting also provided comments verbally indicating a desire for greater economic development/transit-oriented development at South Shore Line train stations in the area, especially the Downtown Gary and East Chicago stations.

Summary

While feedback from the attendees at each of the meetings was primarily focused on improving transit connections near to where they live, several themes that can be applied to the entire region emerged from comments received at the public meetings:

- A desire for enhanced regional transit connectivity – having the ability to use transit to conveniently access destinations throughout Northwest Indiana, not just within their municipality
- Greater economic development around existing transit hubs, especially existing South Shore Line stations
- Better integration and coordination, including schedules and fares, between different transit providers to make transfers more efficient
- Better amenities at transit stops such as bus shelters

Public Survey

A public survey was available on the NIRPC website during the months of July and August 2022 to allow for feedback to formulate the vision for *NWI 2050+*. The following input specific to transit has been received as of this report:

- A bus line to connect with the V-Line from Crown Point, Winfield, and Valparaiso
- MCT schedules don't match the South Shore Line schedules; bus service does not start early enough or late enough to connect with the South Shore Line. There needs to be more integration with transit operators
- It is not easy to get to the South Shore Line from Porter or Chesterton; a shuttle service or bus line would help
- A bus route from Porter/Chesterton to Michigan City and/or Valparaiso could alleviate some congestion on Routes 49 and 20 and provide connections to entertainment options
- Willow Creek Boulevard is a good candidate for Bus Rapid Transit with limited stops connecting the Ogden Dunes Station with Portage and Downtown Hobart
- Central Avenue is a good candidate for Bus Rapid Transit with limited stops linking Gary, New Chicago, Lake Station, and Portage
- Consider potential for light rail transit along Broadway linking Downtown Gary with the Indiana University NW campus, a distance of about 3 miles; could help revitalize the corridor
- US 30 should have bus rapid transit with limited stops linking Joliet, IL with Valparaiso, IN with stops in Dyer, Merrillville, and Hobart
- Ridge Road is a great candidate for Bus Rapid Transit with limited stops linking Lansing, IL with Munster, Highland, Griffith, Gary, Hobart, and Portage (and the West Lake Corridor)
- Indianapolis Boulevard is a great candidate for Bus Rapid Transit with limited stops linking Whiting/East Chicago, Hammond, Munster, and Dyer
- There is a need for high-speed rail linking Chicago to Detroit with stops in Gary and Michigan City
- There is need for high-speed rail linking Chicago to Indianapolis with a stop in Gary or Hammond
- Light rail connecting Whiting, Hammond, Highland, and Merrillville is desired



Creating Purpose

The Creating Purpose Report is the second phase of the Transit Plan Chapter. The report takes into consideration the analysis in the Finding Meaning Report in order to develop potential future service ideas that are regionally based.

Need for Regional Connections

Public transportation services in Northwest Indiana include commuter rail services provided by the Northwest Indiana Commuter Transportation District (NICTD)-South Shore Line; fixed route bus services operated by four operators Gary Public Transportation Corporation (GPTC), Valpo Transit, Michigan City Transit (MCT), and East Chicago Transit (ECT); and various demand response services.

The objective of the Transit Plan Element is to focus on a regional public transportation system which would allow better connections to major employers, the South Shore commuter rail system (including the planned West Lake corridor), regional shopping centers, and other key destinations, meeting the goals of *NWI 2050*. One of the goals of the *NWI 2050+* Transit Chapter is to have a robust transit network which remains essential to region residents and businesses. This initiative should be designed toward increasing the quality of Northwest Indiana's transit network and, in turn, improve travel choices and access to jobs, medical services, and educational and recreational opportunities."

There is a need to improve regional connections throughout the region. While there are several routes that connect communities and could be considered "regional" only the following two bus routes were considered to be regional routes for the purposes of this study:

- The Broadway Metro Express (BMX), operated by GPTC between the cities of Gary and Crown Point
- The South Shore Connect, operated by Valpo Transit between downtown Valparaiso and the Dune Park South Shore Train Station

The NICTD-South Shore Line also provides regional transportation, operating between South Bend, IN and downtown Chicago. NICTD continues to enhance their regional system with the double track of the current South Shore Line between the cities of Gary and Michigan City, and the West Lake Corridor, an eight mile north-south branch between the cities of Dyer and Hammond. Both projects are expected to dramatically improve intra-region access and links to Chicago.

A true regional public transportation system is needed to address the disparities in certain parts of the region that lack adequate public transportation as well as allow riders to travel across county or municipal boundaries. This is difficult to do with the current public transportation network. These problems are increasingly felt when new land development continues to take place outside of the urban core and into unincorporated areas or on the fringes of main centers (e.g., only 6 out of 18 hospitals in the region are served by public transportation due to their locations outside urban areas). Such development patterns increase the cost of running and managing transit to new housing, hospitals, retail destinations, and amenities due to low density of development and routing inefficiencies.



The Finding Meaning Report identified major gaps and needs in the region based on areas that currently lack public transportation as well as areas where there are higher numbers of transit dependent populations. Based on these gaps and needs, a regional system of connected bus routes has been created and presented in this report. Gaps and needs identified include a lack of public transportation in higher transit dependent areas in the cities of Whiting, Highland, the east side of Crown Point, and in a certain area of Merrillville. In addition, although the cities of Portage and La Porte are served by demand response services, often those services are not as easy to use as fixed route bus services due to the advanced reservations and sometimes restrictive trip purposes allowed. Finally, out of 41 incorporated municipalities, only 15 are served by transit. Most of that transit service is in the larger urbanized areas.

Figure 7-15 indicates high and very high transit demand areas that are and are not served by fixed route bus service.

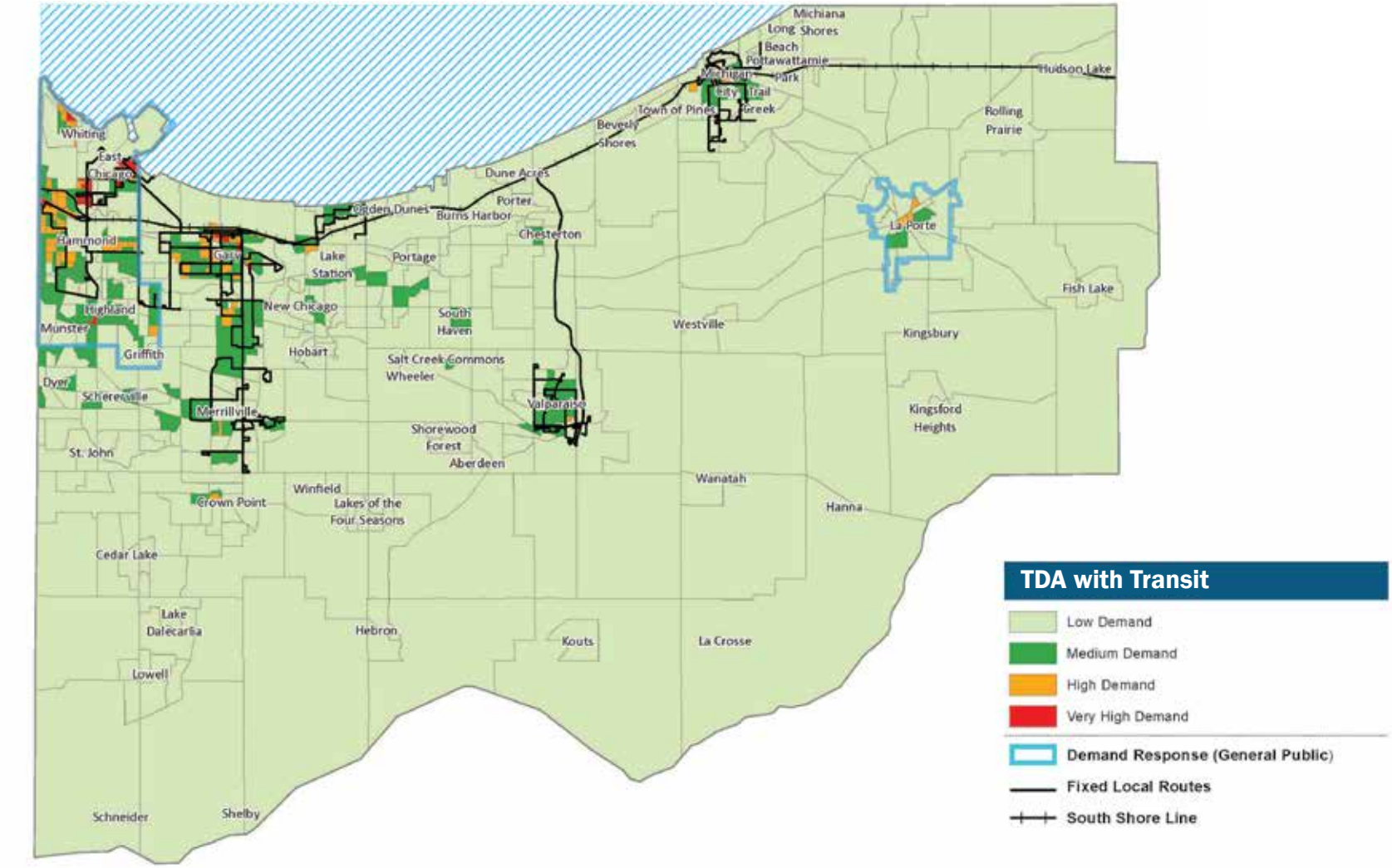


Figure 7-15: Transit Demand Areas with Transit Services Overlaid

Vision and Guiding Principles

The recommendations of the Transit Plan Element were developed to meet the Vision and Guiding Principles in *NWI 2050.* These focus on the themes of building communities through transportation that is connected, renewed, united, and vibrant. The Transit Element has created the following Vision and Guiding Principles based off these four themes.

Vision

Linking rural and urban residents in Northwestern Indiana with a more efficient and connected public transportation system will move the region into a more sustainable, economically stable, environmentally friendly, and equitable future.

Guiding Principles

Connected: Reduce jurisdictional barriers to connect residents through improved regional public transportation

Renewed: Encourage better land use planning and implementation that supports higher quality transit

United: Seek to provide equitable access to public transportation options to meet the needs of all community members

Vibrant: Enhance public transportation to support economic development opportunities in Northwest Indiana

Regional Fixed Route Bus System Alternatives

With the goal of identifying regional transit connections, two transit system design alternatives were envisioned for the proposed regional fixed route bus network in Northwest Indiana. Both were developed in detail to be compared to each other. Only one system can be selected to move forward.

The proposed regional route alternatives are intended to be express routes and to support local bus services. The regional routes will only stop at selected stops in urbanized areas, at stops approximately ½ mile apart. In rural areas, the buses will stop only at likely ridership generators. A sample list of places the buses may stop includes industries employing greater than 500 people at the location, big box retail, grocery stores, hospitals, places of higher education, high schools, and other possible transfer locations.

The transit system design alternatives each have spans of service generally 6:00 AM to 9:00 PM on weekdays, and 8:00 AM to 8:00 PM on Saturdays (roughly matching the current BMX service span) and 8:00 AM to 5:00 PM on Sundays. Each system includes the two existing regional routes (the BMX route operated by GPTC and South Shore Connect operated by Valpo Transit) in a slightly revised form: BMX is extended to Crown Point and South Shore Connect adds additional stops in Chesterton and extends to the Indiana Dunes National Park.

The two systems designed are described as “hub” and “grid”. The differences between the two systems are explained.

Hub System

The Hub System is designed to have riders transfer for longer trips at several hubs or mobility transfer centers in the region.

Of the original list of routes considered, nine initial routes are included in the overall Hub System. Additional routes were considered but due to their location in rural areas or because they partially parallel other proposed routes or commuter rail lines, the routes did not move forward. These routes warrant further study or await greater urbanization in the east edge of the study area.

The nine new regional hub routes are shown in Figure 7-16. On this map are also the existing South Shore commuter rail service, and the recommended rerouting of the BMX and South Shore Connect services previously described.

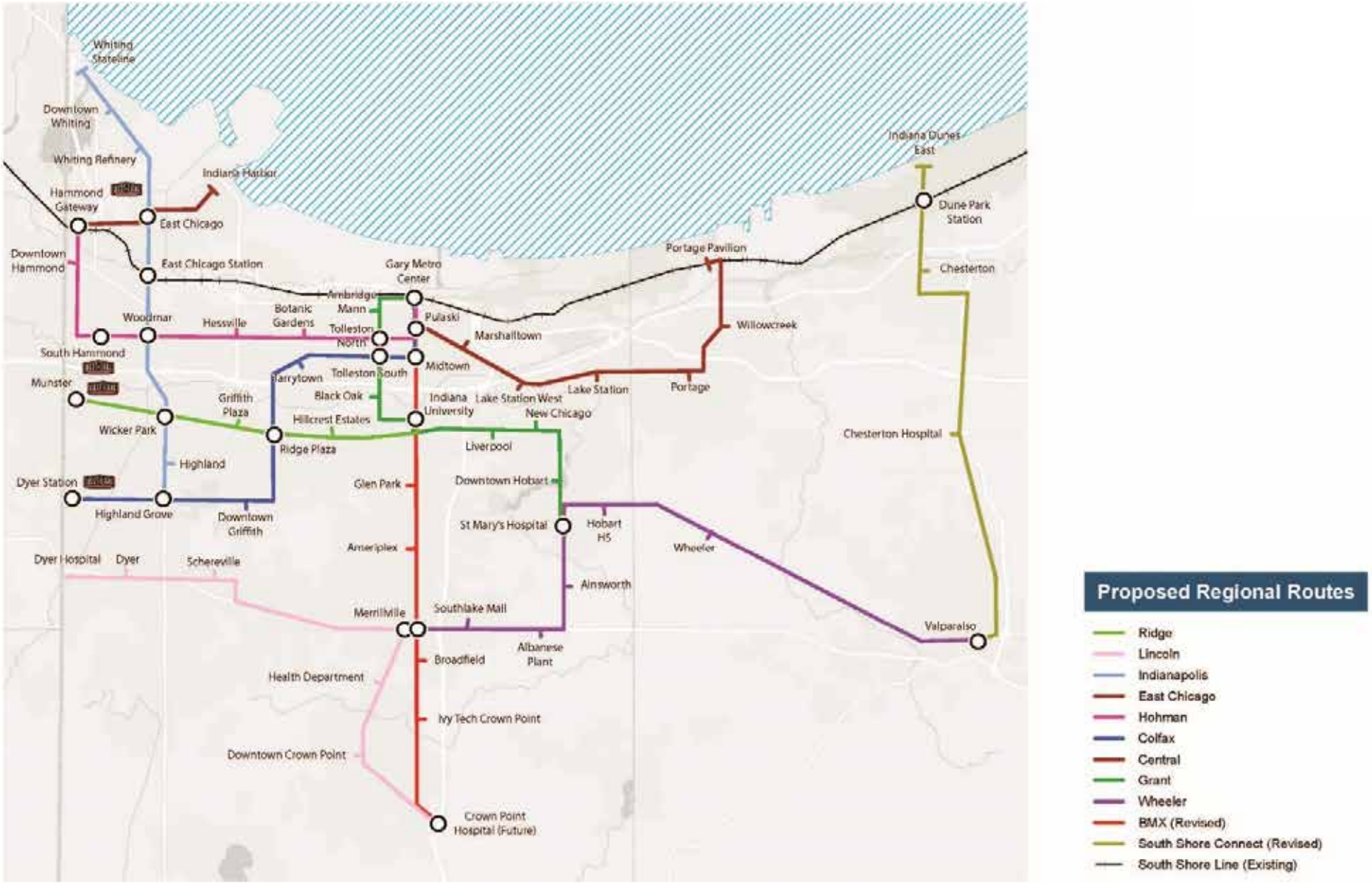


Figure 7-16: Proposed Hub System Routes

Transfers at these hubs would be timed, meaning the schedules of the connecting existing local and regional routes would be adjusted to ensure short wait times to transfer. Three transit centers, as well as on street and off-street transfer locations are part of the hub system. The proposed regional routes would meet local routes at these locations at specific times, allowing for "timed" transfers with little or no waiting. The transit centers would all have passenger amenities and allow a passenger to wait for the bus in a comfortable environment.

Transit Centers

- Gary Metro Center
- Hammond Gateway (once built, part of NICTD West Lake Corridor plan)
- Indiana Harbor (East Chicago—proposed)

On Street Transfer Locations

- Valparaiso University

Off-Street Transfer Locations (location to be determined but most likely in the parking lot of each facility listed)

- Indiana University (Gary)
- Meijer (Merrillville)
- Highland Grove Shopping Center
- St Mary's Hospital (Hobart)

Additional service characteristics of the hub system routes are shown in Table 7-7.

Route	Weekday Peak Frequency	Weekday Off-Peak Frequency	Saturday Frequency	Sunday Frequency
Wheeler	60	60	*Does not operate*	
Colfax	30	45	60	*Does not operate*
Hohman	30	45	60	60
East Chicago	30	45	60	60
Grant	30	45	45	45
Indianapolis	60	60	*Does not operate*	
Lincoln	30	45	45	*Does not operate*
Central	45	45	*Does not operate*	
Ridge	30	45	45	*Does not operate*
SS Connect	60	60	60	60
BMX	30	45	45	45

Table 7-7: Proposed Hub System Service Characteristics



Grid System

The grid system is designed to have riders transfer for longer trips at street intersections. Transfers at these places would not be timed, meaning the schedules of the connecting existing local and regional routes would need to run frequently to allow connections. Headways on the routes would need to be no longer than 30 minutes. Fourteen (14) new routes were initially proposed; these were reduced to 10 new routes including the revised BMX and South Shore Connect routes. The four other routes either warrant further study or await greater urbanization in the east edge of the study area.

Figure 7-17 shows the routes proposed for the grid system.

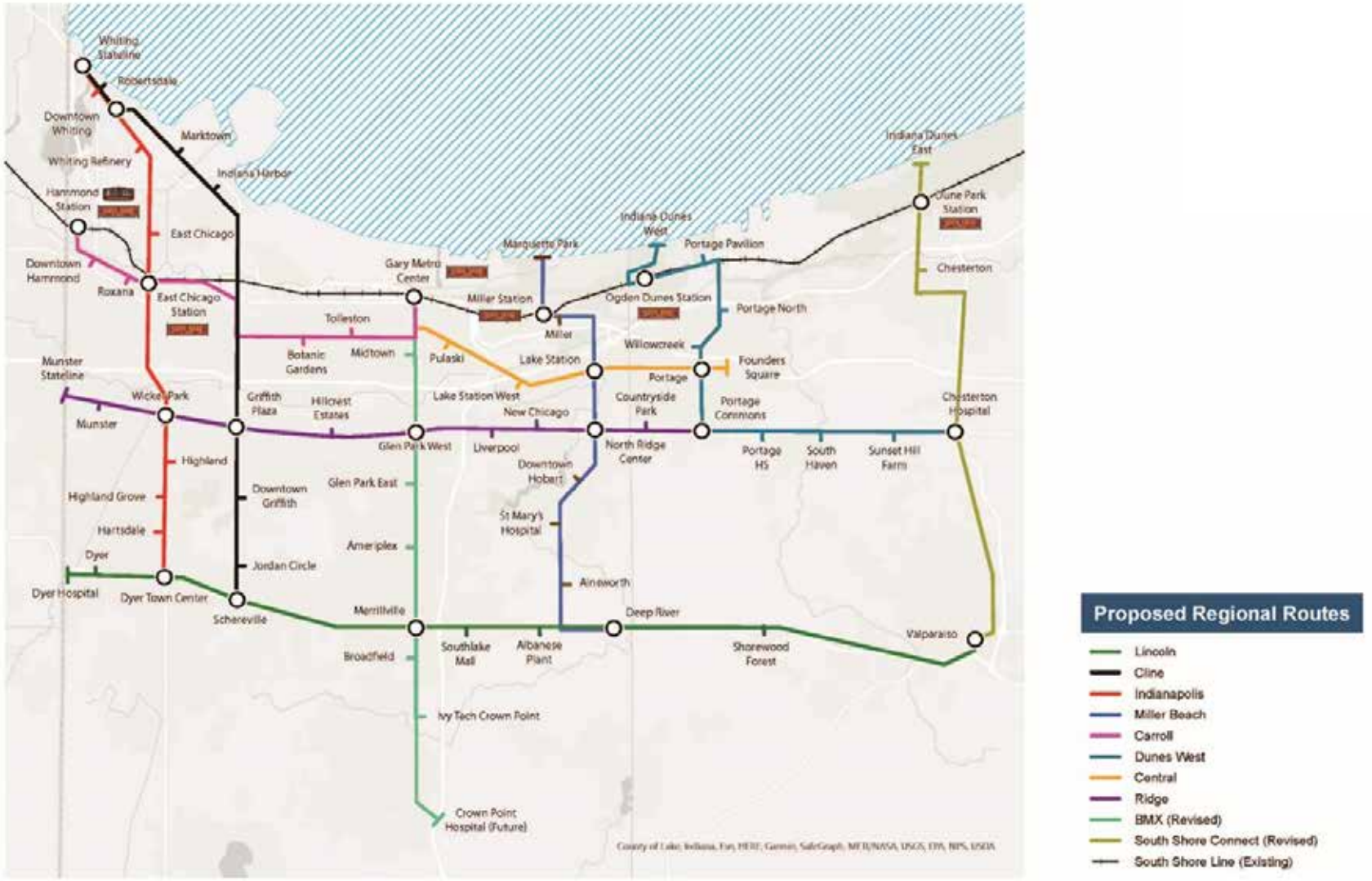
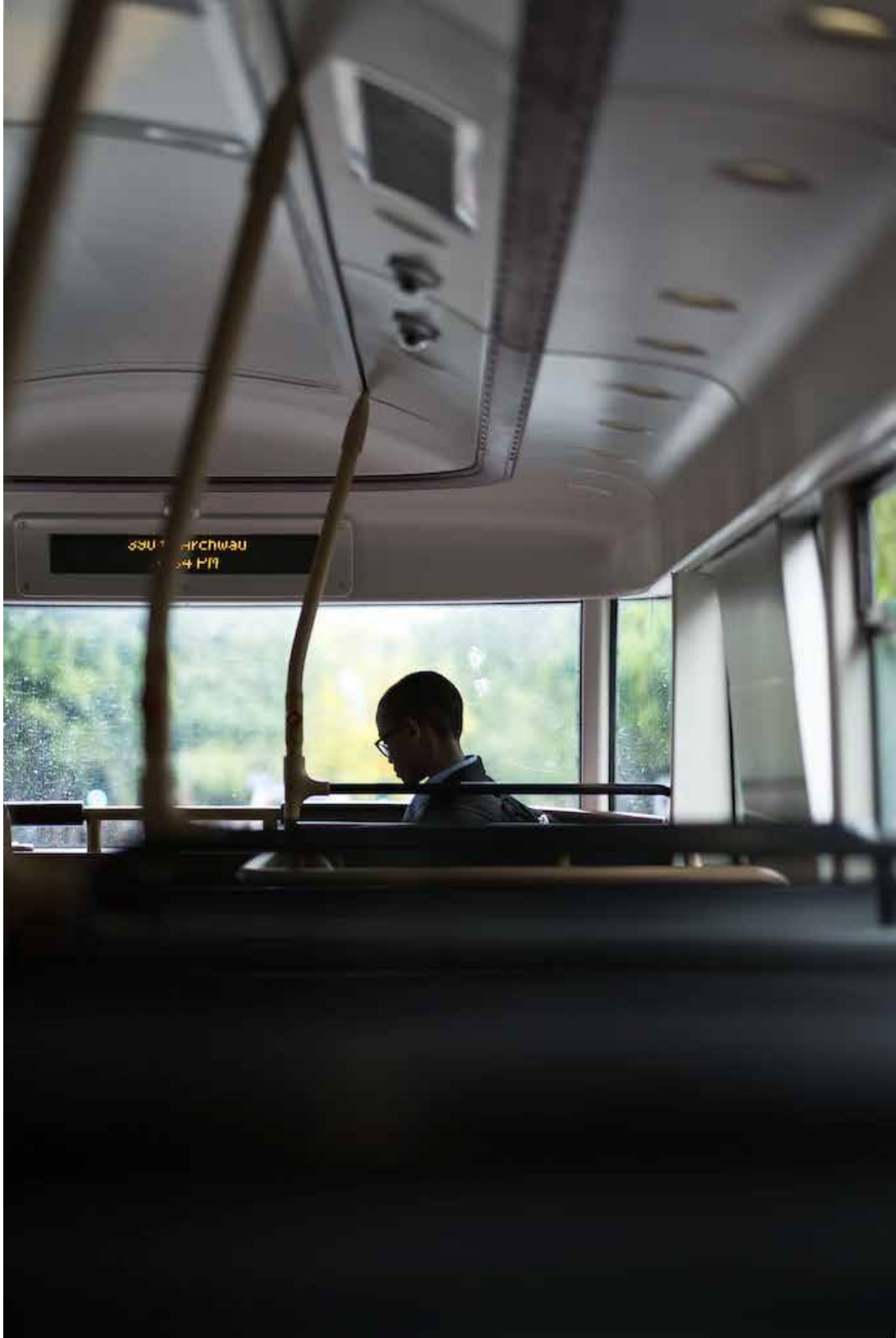


Figure 7-17: Proposed Grid System Routes

Additional service characteristics of the grid system routes are shown in Table 7-8.

Route	Weekday Peak Frequency	Weekday Off-Peak Frequency	Saturday Frequency	Sunday Frequency
West Dunes	20	30	30	*Does not operate*
Carroll	30	30	*Does not operate*	
Miller Beach	30	30	30	30
Cline	20	30	*Does not operate*	
Indianapolis	20	20	30	30
Lincoln	20	20	30	30
Central	20	20	30	*Does not operate*
Ridge	20	20	30	*Does not operate*
SS Connect	60	60	60	60
BMX	30	30	30	30

Table 7-8: Proposed Grid System Service Characteristics



Coordinated Demand Response System

There are three demand response services in the region that are open to the general public: TransPorte (La Porte), North Township Dial-a Ride, and Lake County Community Services (LCCS). There are others including Porter County Aging and Community Services (PCACS) and Opportunity Enterprises that serve specific populations (e.g., seniors and those with disabilities) and provide only certain types of trips (e.g., medical trips, grocery shopping, etc.). These demand response services are limited by geographic boundaries and will only serve origins and destinations within those geographic boundaries. Hours of service are typically limited to weekdays, with no evening or weekend services. In addition, a reservation is required to ride the service, sometimes as long as 72 hours in advance. This limitation in services, including boundary restrictions, restricts access to transit in the region.

A coordinated demand response system could help provide a more regionally based demand response system. NIRPC could embark on a study to identify which demand response systems could be coordinated to reduce the barriers being faced. An example of a coordinated demand response service is in McHenry County, IL. All demand response services now fall under the jursidiction of the county to coordinate and provide all services. Another "model" of a coordinated system would be if certain municipalities, townships, or non-profit organizations pooled their resources (funding and vehicles) to provide a higher level of service to a larger service area.

Rail System

In the initial Finding Meaning phase of the Transit Element of *NWI 2050+*, the desirability of new rail service connecting the southeast corner of the three county NIRPC region to the northwest corner via a new somewhat diagonal routing of a rail system was raised. This additional rail service would be a supplement to the well-established South Shore Line service along the northern tier of communities and the West Lake Corridor.

This idea is centered on restoring service on the historic Pennsylvania Railroad mainline. This route crossed the Illinois State Line just east of the drawbridge over the Calumet River and exited the region just southeast of Valparaiso. Historically, this line carried multiple passenger trains operating through to Philadelphia, New York City, and Washington DC with most of them stopping at a station at Fifth and Chase in Gary and some of them also stopping in Valparaiso. There were also two commuter trains which operated on weekdays between Chicago and Valparaiso which made several additional stops including Whiting, Indiana Harbor, Broadway in Gary, and Hobart. When Amtrak took over operation of most intercity passenger rail service in this country in 1971 one train via the Pennsylvania to the East Coast and one commuter train to Valparaiso were retained. The commuter train was discontinued in 1991 and the train to the East Coast on this routing was discontinued in 2005.

Ownership of the tracks themselves transitioned in:

- 1968 – From the Pennsylvania Railroad to the Penn Central with the merger with New York Central
- 1976 – To Conrail (owned by the Federal Government) in 1976 after the Penn Central bankruptcy
- 1998 – To Norfolk Southern as part of the breakup of Conrail, returning the line to private ownership
- 2004 – To Chicago, Fort Wayne, and Eastern Railroad (CFE), a regional railroad, which acquired the portion of the route between Tolleston(on the west side of Gary, just north of a bridge under the South Shore Line) and Ohio
- 2012 – To Genesee & Wyoming, a company which owns numerous short line and regional railroad across North America, and the world, which acquired control of the CFE (it continues to operate it as the CFE).

There have been a couple of studies of the concept of restoring passenger service on the portion of the line through Valparaiso and on to Ft. Wayne, with possible extensions to Lima, OH (with service continuing to Columbus via other existing tracks) or to Toledo (with service continuing to Detroit or Cleveland via other tracks). The most comprehensive, and most recent, was a feasibility study of service with several daily trains on a Chicago-Valparaiso-Ft. Wayne-Lima-Columbus routing. The Federal Railroad Administration's (FRA) Midwest Regional Rail Plan identified the Chicago-Ft. Wayne-Columbus route as having the potential for supporting operation of frequent, high-speed trains at a profit. Considerable interest has developed for implementation of such service through the FRA Corridor Identification Program. A key portion of the routing that the Pennsylvania Railroad used to connect from its mainline through Valparaiso and Gary has been abandoned. However, a connecting track between the CFE and the South Shore could be fairly-readily constructed at Tolleston.

The former Pennsylvania Railroad mainline across Northern Indiana is virtually straight, making it particularly suitable for upgrading to high-speed rail standards, minimizing travel times and, thus, increasing ridership while reducing operating cost. No railroads can operate through at-grade crossings over 110 mph. The practical limit to operation of diesel-powered trains is about 125 mph. Electrically powered trains, with grade-separations and high-quality track are operated in a number of countries around the world at 220 mph. INDOT has recently initiated a study of potentially upgrading U.S. 30 to eliminate its at-grade intersections. Since the railroad and U.S. 30 are side-by-side for a significant distance the potential for grade-separating the adjacent highway-rail crossings at the same time should be considered in that study.

Additionally, Amtrak has proposed shifting the routing of its five daily trains between Michigan and Chicago to avoid serious delays that its trains routinely encounter on the existing routing via Norfolk Southern by operating to Union Station via the South Shore (from a new connection from the point where the lines now cross at-grade in Michigan City) and Canadian National tracks via the lakefront line through Chicago's south side. This would establish a new, direct, connection to Union Station (eliminating the backup movement that trains from Downstate Illinois now need to use). Commuter trains, originating/terminating in Valparaiso, could be added to the proposed routing of the intercity passenger trains. There are many cases of commuter and intercity trains sharing track around the country. The commuter trains could make additional stops, such as in Hobart and at Broadway in Gary.

Other Ideas

Local Service Recommendations

In addition to the new regional service ideas identified above, other ways to improve transit services in Northwest Indiana have been discussed while working on the Transit Element of *NWI 2050+*. These improvements acknowledge issues that local transit agencies face including funding, staff shortages, bus and equipment shortages, and operating and capital cost increases. Recommendations for improvements to local services include:

- Better service information including up to date websites and bus stop signs
- Better coordinated schedules for interagency transfers
- More frequent service
- More direct routing rather than circular routes
- Integrated fares



Partnership with TNCs
Another idea to provide better access to transit is for local agencies to team with Transportation Network Companies (TNCs) to provide the first mile-last mile connection. Stakeholder interviews have suggested that the existing transit services do not always get the rider close enough to the destination; this is particularly true when the rider has a form of disability and demand-response service is not an option, forcing the rider to use the fixed route system. Often, walking to the transit stop is too difficult for a variety of reasons including a lack of sidewalk infrastructure, rider disability, inclement weather, etc. Teaming with a TNC (e.g., Uber, Lyft) with a type of fare integration is something to consider.

This first mile-last mile connection could also be made through a scooter or bike share program for those riders able to utilize them. GPTC has implemented a scooter and bike share program at the Gary Metro Center.

Bus-on-Shoulder
Buses operating on highway shoulders is also a relatively new practice. Bus-on-shoulder programs have been implemented in 13 metropolitan areas in the United States including Chicago. This practice allows buses to move through congestion, promoting fast and efficient transportation. This is a relatively low cost strategy to allow buses to travel at or near free-flow speeds through congested arterial and freeway routes. Although this Plan does not recommend any specific corridors for bus-on-shoulder, further study of bus-on-shoulder routes should be examined.

Electronic Fare Payment Systems
A common concern heard about public transit in Northwest Indiana is the lack of coordination in fare payment systems and the ability to easily transfer between systems due to the need to pay an additional fare. Each agency has indicated that moving away from cash payments to an electronic fare payment system or switching the electronic fare payment system to one that is more "universal" would be difficult and cost prohibitive.

However, it is recommended that a universal fare payment app, that could be used across all systems, (i.e., similar to the Ventra app used for the Chicago Transit Authority (CTA)/Metra/Pace in the Chicago region) be studied. Introducing an electronic fare payment system that has more functionality and can be used on both bus and rail systems should be studied to understand the feasibility and costs in implementing the same system for all transit providers. This would reduce confusion in understanding each system's payment structure and allow riders to easily transfer between systems with little or no transfer charge. Since a fare app requires smart phone technology, the study would also need to address how to provide some type of transit farecard for people who do not have a bank account, a credit card, or a smart phone.

Safety and Security
The Federal Transit Administration (FTA) requires that each transit agency develop Agency Safety Plans (ASP) that meet Public Transportation Agency Plan regulation requirements (49 CFR Part 673) in order to protect the safety and security of employees, contractors, passengers, and the public. Although NIRPC does not officially oversee the safety and security of each transit agency, staff can be a resource for agencies when it comes to safety and security by providing assistance in terms of funds or resources.

As NIRPC conducts the long and short-range programming for the federal programs that support the region's local public transit, they can confirm that each agency is committed to safety and security throughout all phases of project development and operations. NIRPC staff can also assist by providing research in terms of best practices and help identify grants and other funding resources that can be used to enhance the safety and security of all public transit agencies in the region.

Purpose Driven Planning

Introduction

The Purpose Driven Planning Report is the third and final phase of the Transit Chapter. The report takes into consideration the information presented in the Finding Meaning Report and the Creating Purpose Report in order to develop potential future service ideas that are regionally based.

Regional Fixed Route Bus System Alternatives Comparisons

System Alternatives

As described in the Creating Purpose section, two system alternatives were developed and labeled as the "Hub System" and the "Grid System". An explanation of each system is described in the Creating Purpose Report. Figures 7-18 and 7-20 provide maps of each system alternative.

Evaluation Criteria

In order to evaluate the two systems, the following evaluation criteria was used. The information identified in each metric assessed the potential performance of each system, allowing a comparison to each other. See Table 7-9. Operating and capital costs were also developed to evaluate each system

Evaluation Criteria	Measurement
Medium/High Transit Demand Areas	Miles that bus route is adjacent to medium/high transit demand area
Environmental Justice (EJ) Area	Miles which bus route is adjacent to an EJ area
Municipalities	Number of municipalities the bus route serves
Local Bus Routes	Number of existing bus routes the new route connects to
Route Length	Length of the bus route (one way)
Hospitals/Medical Centers	Number of hospitals/medical centers served
Higher Education Facilities	Number of higher education facilities served
Rail Stations	Number of South Shore/Amtrak stations served
Jobs	Total jobs within ½ mile of route
Population	Total population within ½ mile of route

Table 7-9: Evaluation Criteria and Measurement



Operating costs use the following assumptions:

- All dollar amounts are in 2023 dollars
- Cost per hour is derived from the cost per hour of the Gary Public Transportation Corporation (GPTC) ($113.71) as a sample cost/hour

The operating costs shown are the annual costs to operate the new services.

Capital costs use the range of costs for the following vehicles, since it is unknown which type of vehicle will be used[5]

- 30-foot hybrid or diesel vehicles (i.e., $400,000/bus)
- 40-foot hybrid or diesel vehicles (i.e., $725,000/bus)

Note that capital costs are estimated for the initial capital investment in new vehicles needed for the new services recommended. Eventually, these vehicles will need to be replaced and additional capital costs will be required. The cost for any other associated transit infrastructure (shelters, new transit centers, new signals, park and rides) is not included.

Phasing of Regional Routes

The new regional routes for both the Hub and the Grid Systems were divided into three groups based on their total rankings for prioritization of implementation. Implementation of the new and revised routes is recommended to be conducted in phases due to cost factors and due to implementing new routes first which would have the greatest potential for riders.

5 https://wisconsindot.gov/Documents/doing-bus/local-gov/astnce-pgms/transit/procurement/hdb-price.xlsx

Hub System Phasing

For Phase I of the Hub System, three new regional routes will be implemented and two existing routes will be adjusted. These are recommended to operate weekdays and weekends. The three new routes are Hohman, East Chicago, and Indianapolis (refer to Figure 7-18). The two existing routes where the routing, service frequency, and span are recommended for adjustment are the South Shore Connect and the BMX. The initial capital cost for implementing these new services is estimated between $3.6 to $6.5 million, with the amount varying due to the unknown type of vehicle that will be used. The annual operating cost is estimated at $4.2 million per year. It is assumed that Phase 1 will be initiated within the next five to seven years.

Phase 2 of the Hub System adds in three more new regional routes but due to the assumptions made in terms of demand, would operate weekdays and Saturdays but not on Sundays. These three new routes are Grant, Colfax, and Ridge (refer to Figure 7-18). The initial capital cost shown for these new routes is between $3.6 and $6.5 million, with the amount varying due to the unknown type of vehicle that will be used. The additional operating cost per year is estimated at $3.2 million per year. Phase 2 would be expected to be implemented after Phase I, mainly due to funding constraints and also to gauge the success of the previous phase.

Phase 3 of the Hub System adds in three more routes: Lincoln, Wheeler, and Central (refer to Figure 7-18) but due to the more limited assumed demand for these routes, services would be weekday-only. The initial capital costs vary between $2.4 million and $4 million with the amount varying due to the unknown type of vehicle that will be used. The additional operating cost per year would be $2.0 million per year. Phase 3 would be expected to be implemented after Phase 2, mainly due to funding constraints and also to gauge the success of the previous phases.

Note that as the regional routes gained in ridership, service characteristics could be adjusted.

Table 7-10 shows each of the routes recommended by phase and provides the data results for each of the evaluation criteria. Explanation of the evaluation criteria was provided earlier in the report.

Route	Route Miles Traversing High Transit Demand Areas	Route Miles Traversing Medium Transit Demand Areas	Route Miles Traversing Both Types of Transit Demand Areas	Route Miles Traversing High EJ Areas	Job Density	Pop Density	Towns Served	Local Route Connec-tions	Route Length	Percent of Route Traversing High and Medium Transit Areas	Percent of Route Traversing High EJ Areas	Hospitals/ Health Clinics Served	Higher Edu-cation Served	Commuter Rail Connections (Future/ Current)
Phase I														
Hohman	1.01	7.94	8.94	5.62	1109.0	2328.5	2	9	15.65	25.4%	35.9%	1	1	3
East Chicago	3.46	2.53	5.99	2.35	1263.9	1378.7	2	4	6.22	20.4%	37.8%	0	1	1
Indianapolis	1.27	4.00	5.27	4.17	1180.6	1739.1	4	5	15.35	13.0%	27.2%	0	0	1
SS Connect (Rev)	0.13	3.62	3.75	0	586.0	715.6	3	3	18.27	9.9%	0%	1	1	1
BMX (Rev)	2.69	8.12	10.81	7.69	696.6	930.3	3	9	14.86	27.3%	51.7%	3	3	1
Phase 2														
Grant	2.77	3.05	5.82	0.99	810.5	1518.5	4	8	14.45	10.6%	6.8%	2	2	1
Colfax	0.49	3.92	4.42	4.20	819.7	1599.0	6	7	15.53	12.6%	27.0%	0	0	2
Ridge	0	0.89	0.89	0.53	1376.4	1894.5	4	7	11.14	4.0%	4.8%	0	2	1
Phase 3														
Lincoln	0	1.49	1.49	0	728.6	1265.1	4	2	19.06	3.9%	0%	1	0	0
Wheeler	0	0	0	0	591.6	451.7	3	5	25.55	0%	0%	1	1	0
Central	0.62	0.24	0.87	2.23	680.5	1015.5	3	7	9.52	1.3%	23.4%	0	0	1
Totals	**12.44**	**35.80**	**48.25**	**27.77**	**9843.3**	**14836.4**	**38**	**66**	**165.6**	**29.1%**	**16.8%**	**9**	**11**	**12**

Table 7-10: Hub System Evaluation Statistics

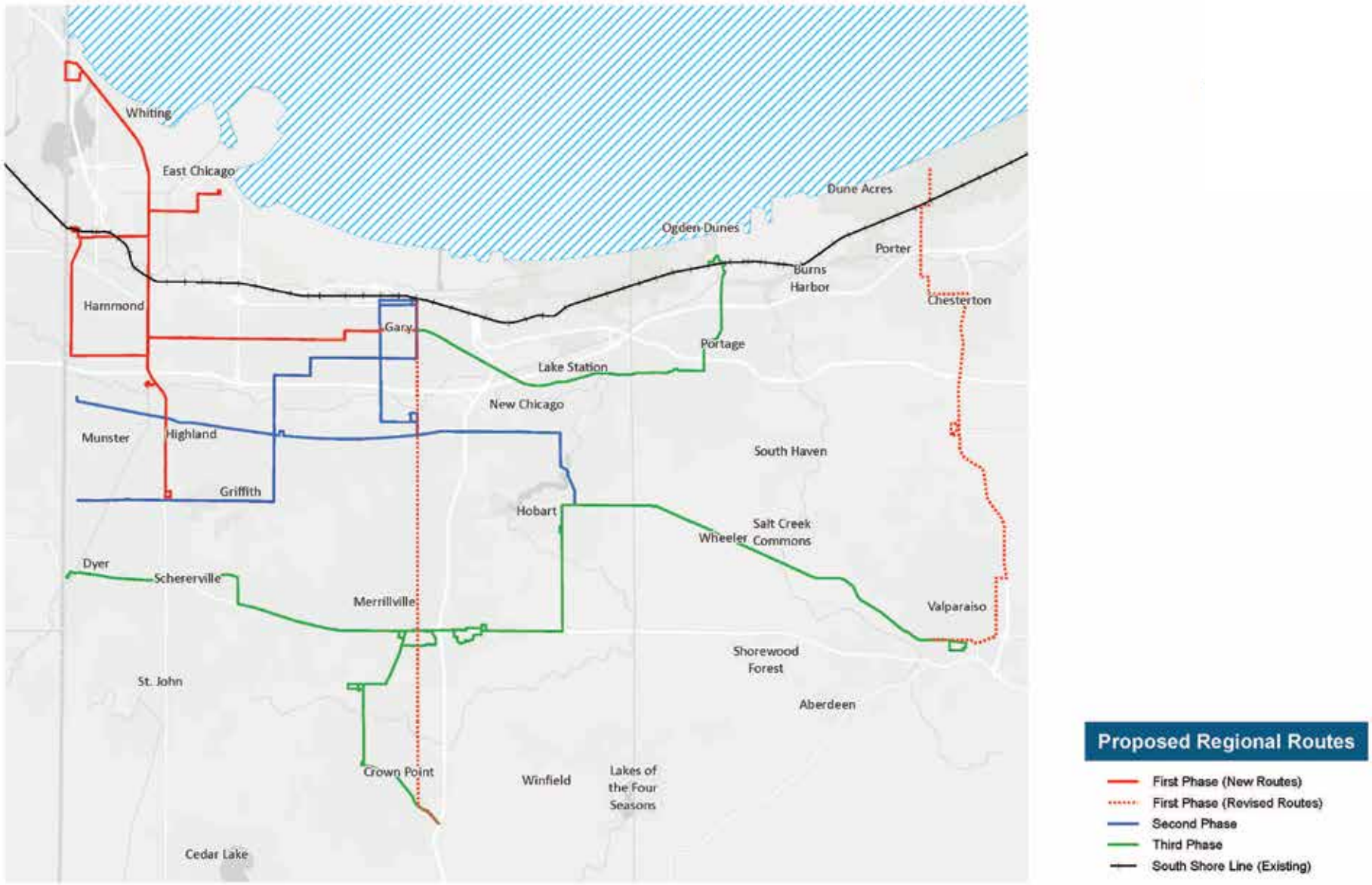


Figure 7-18: Hub System - Phased Implementation

Figure 7-19 shows the range of initial capital cost for each of the three phases. Table 7-11 shows the estimated annual operating cost.

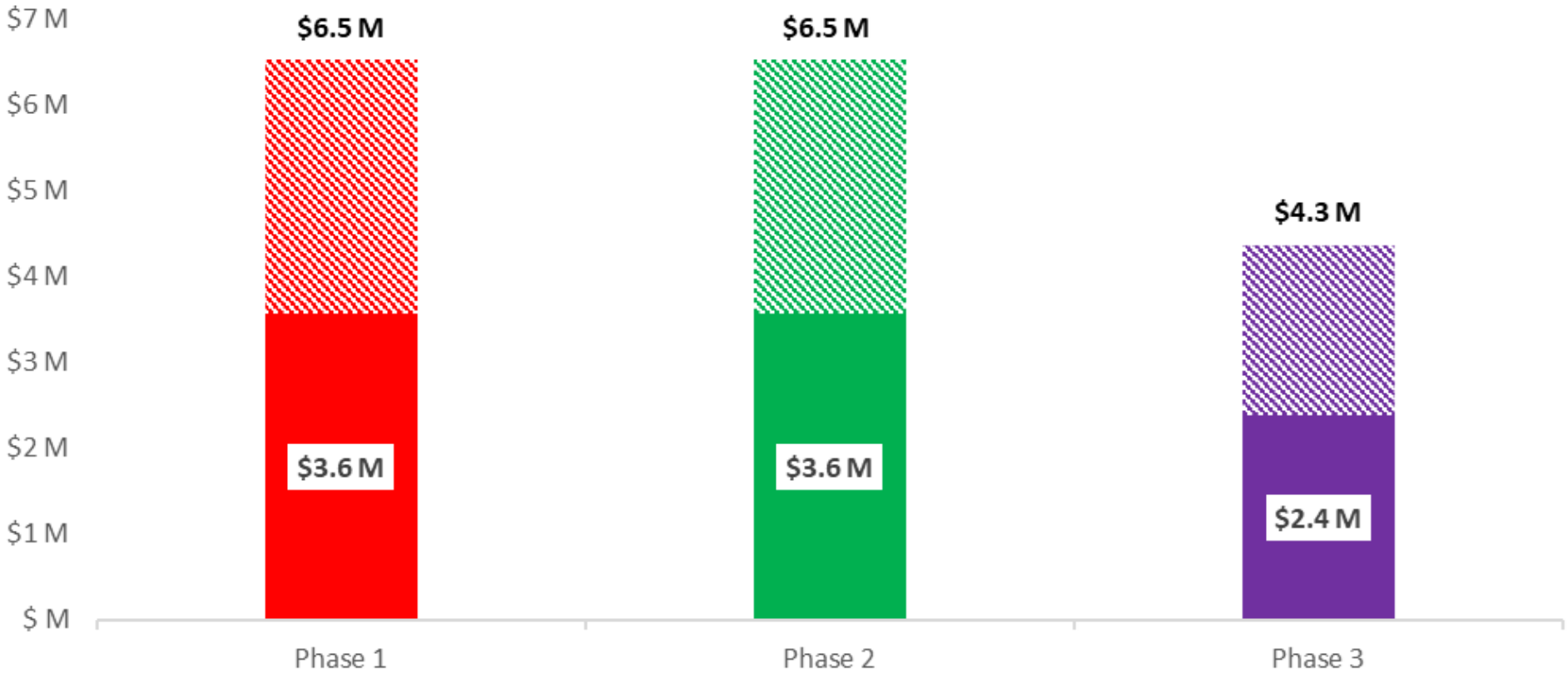


*Figure 7-19: Initial Capital Cost Range for Hub System for Each Phase**

**The cost varies as it is dependent on vehicle type, length, and fuel type of the vehicles ultimately chosen to operate this service.*

Phase	Estimated Annual Operating Cost
1	$4.2 million
2	$3.2 million
3	$2.0 million
TOTAL	$9.4 million

Table 7-11: Estimated Hub Annual Operating Costs Range

Grid System Phasing Results

For Phase I of the Grid System, three new regional routes and two existing routes that will be adjusted are recommended for weekday and weekend services. The three new routes are Carroll, Cline, and Indianapolis (refer to Figure 7-20). The two existing routes where the routing is recommended for adjustment are the South Shore Connect and the BMX. The initial capital cost for implementing these new services is estimated between $6.0 to $10.9 million, with the amount varying due to the unknown cost and type of vehicles. The annual operating cost is estimated at $10.1 million per year. It is assumed that Phase 1 will be initiated within the next five to seven years.

Phase 2 of the Grid System adds in three more new regional routes but due to the assumptions made in terms of demand, would operate weekdays and Saturdays but not on Sundays. These three new routes are: Central, Ridge, and Lincoln (refer to Figure 7-20). The initial capital cost show for these new routes is between $6.0 to $10.9 million, with the amount varying due to the unknown cost and type of vehicles. The additional operating cost per year is estimated at $7.5 million per year. Phase 2 would be expected to be implemented after Phase I, mainly due to funding constraints.

Phase 3 of the Grid System adds in two more routes West Dunes and Miller Beach (refer to Figure 7-20), but due to assumed demand for these routes, services would be weekday-only service. The initial capital costs vary between $3.6 million to $6.5 million with the amount varying due to the unknown cost and type of vehicles. The additional operating cost per year would be $3.4 million per year. Phase 3 would be implemented after Phase 2 mainly due to funding resources constraints.

Note that as the regional routes gained in ridership, service characteristics could be adjusted.



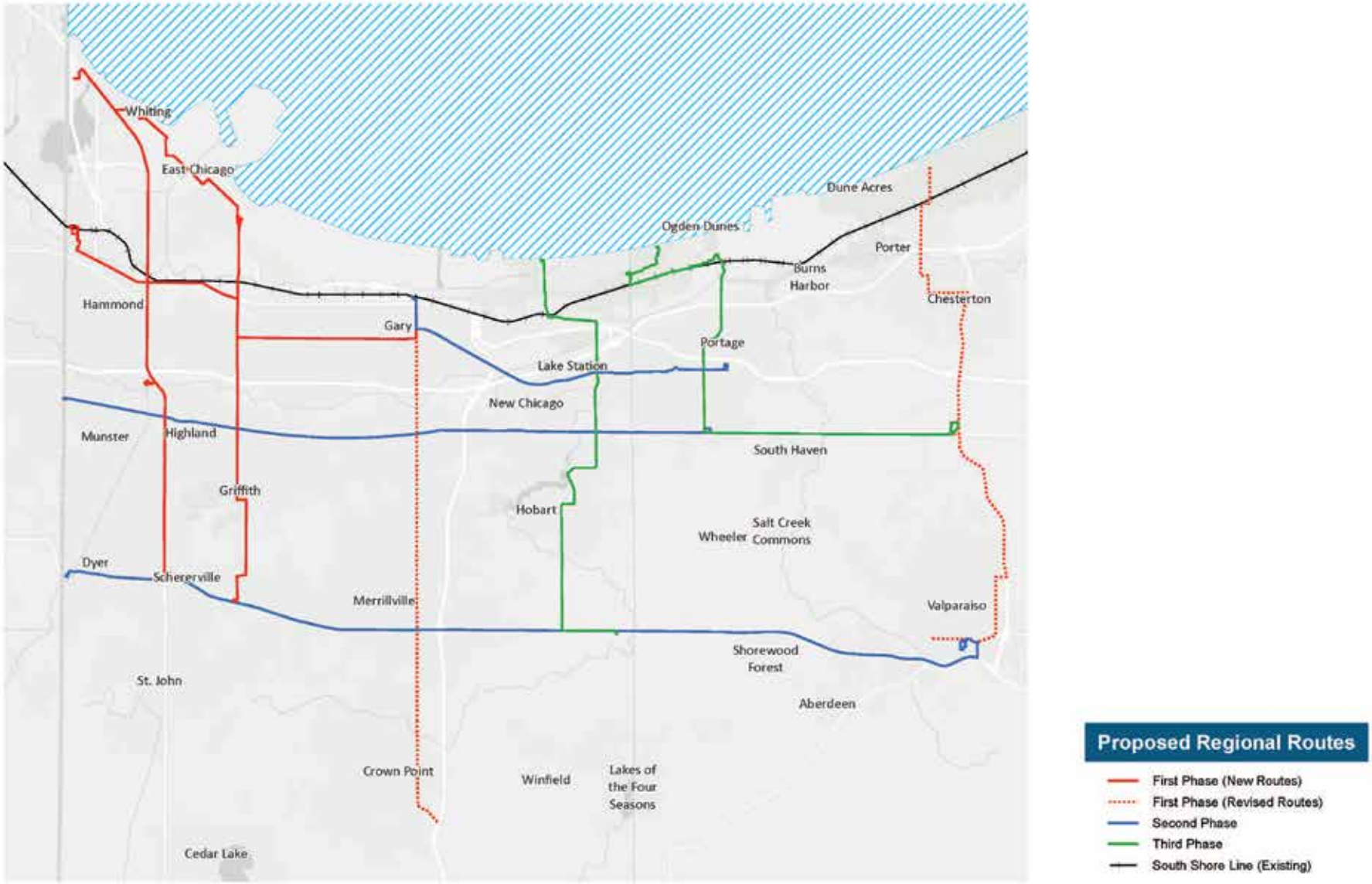


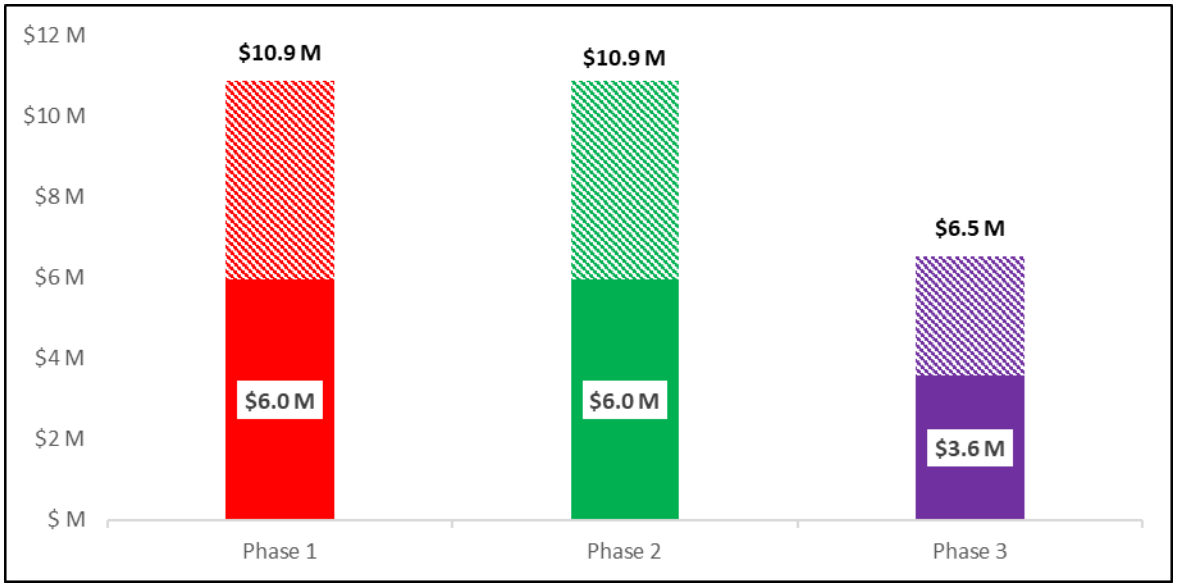
Figure 7-20: Grid System - Proposed Route Implementation

Table 7-12 shows each of the routes recommended by Phase and provides the data results for each of the evaluation criteria. The evaluation criteria were provided at the beginning of the report.

Figure 7-21 shows the range of initial capital cost for each of the three phases. Table 7-13 shows the estimated annual operating cost.

Route	Route Miles Traversing High Transit Demand Areas	Route Miles Traversing Medium Transit Demand Areas	Route Miles Traversing Both Types of Transit Demand Areas	Route Miles Traversing High EJ Areas	Job Density	Pop Density	Towns Served	Local Route Connec-tions	Route Length	Percent of Route Traversing High and Medium Transit Areas	Percent of Route Traversing High EJ Areas	Hospitals/ Health Clinics Served	Higher Edu-cation Served	Commuter Rail Connections (Future/ Current)
Phase I														
Carroll	1.36	6.35	7.708319	3.83278	1.014.8	1,636.40	3	8	13.71	23.2%	28.0%	0	0	2
Cline	3.33	2.90	6.236453	8.201	738.3	1,177.7	6	4	19.08	7.6%	43.0%	0	0	0
Indianapolis	2.66	2.53	5.189454	3.888232	1,206.3	1,806.0	5	5	16.21	7.8%	24.0%	0	0	1
SSC Connect (Rev)	0.13	3.62	3.747575	0	586.0	715.6	3	3	18.27	9.9%	0.0%	1	1	1
BMX (Rev)	2.69	8.12	10.806914	7.686041	696.6	930.3	3	9	14.86	27.3%	51.7%	3	3	1
Phase 2														
Central	0.26	0.67	0.932679	2.231511	656.8	1,156.7	3	7	10.54	3.2%	21.2%	0	0	1
Ridge	0	0.89	0.885242	0.522911	822.1	1,887.4	8	4	18.6	2.4%	2.8%	1	0	1
Lincoln	0	0.16	0.160411	0	584.4	834.6	5	4	27.97	0.3%	0.0%	1	1	0
Phase 3														
West Dunes	0	0	0	0	327.6	745.3	3	0	18.1	0.0%	0.0%	1	0	1
Miller Beach	0	0	0	0	291.4	658.2	4	1	14.48	0.0%	0.0%	1	0	1
Totals	**10.43**	**25.24**	**35.67**	**26.36**	**6,924.22**	**11,548.35**	**43.00**	**45.00**	**171.82**	**0.82%**	**1.71%**	**8**	**5**	**9**

Table 7-12: Grid System Evaluation Statistics



Phase	Est. Annual Operating Cost
1	$10.1 million
2	$7.5 million
3	$3.4 million
Total	$21.0 million

Table 7-13: Estimated Grid Annual Costs

*Figure 7-21: Capital Cost Range for Grid System for Each Phase**

**The cost varies as it is dependent on vehicle type, length, and fuel type of the vehicles ultimately chosen to operate this service*

Comparison Between the Hub and Grid Systems
Tables 7-14 and 7-15 evaluate each system using the criteria and cost information.

	Route Miles						
System	**Total**	**Traversing High Transit Demand Areas**	**Traversing Medium Transit Demand Areas**	**Traversing Both Types of Transit Demand Areas**	**% Traversing Both Types of Transit Demand Areas**	**Traversing High EJ Areas**	**% Traversing High EJ Areas**
GRID	171.82	7.61	13.50	21.11	3.9%	18.68	10.9%
HUB	132.47	12.44	35.80	48.25	29.1%	27.77	16.8%
	Destination/Connections Served						
System			**Cities, Towns & Villages**	**Local Routes**	**Hospitals/ Health Clinics**	**Higher Education**	**Future/Current Commuter Rail**
GRID			43	45	8	5	9
HUB			38	54	9	11	12

Table 7-14: System Comparison Measurements

	Operating Costs			
System	**Weekday Operating Cost**	**Saturday Operating Cost**	**Sunday Operating Cost**	**Total Operating**
GRID	$18,382,813	$1,803,441	$857,373	$21,043,627
HUB	$8,034,294	$946,067	$417,748	$9,398,109
	Capital Costs (Vehicles)				
System	**Vehicles Needed**	**Diesel Cost (30ft)**	**Hybrid Cost (30ft)**	**Diesel Cost (40ft)**	**Hybrid Cost (40ft)**
GRID	39	$15,470,091	$26,750,451	$17,690,205	$28,283,502
HUB	24	$9,520,056	$16,461,816	$10,886,280	$17,405,232

Table 7-15: System Comparison Cost Estimates



Conclusion

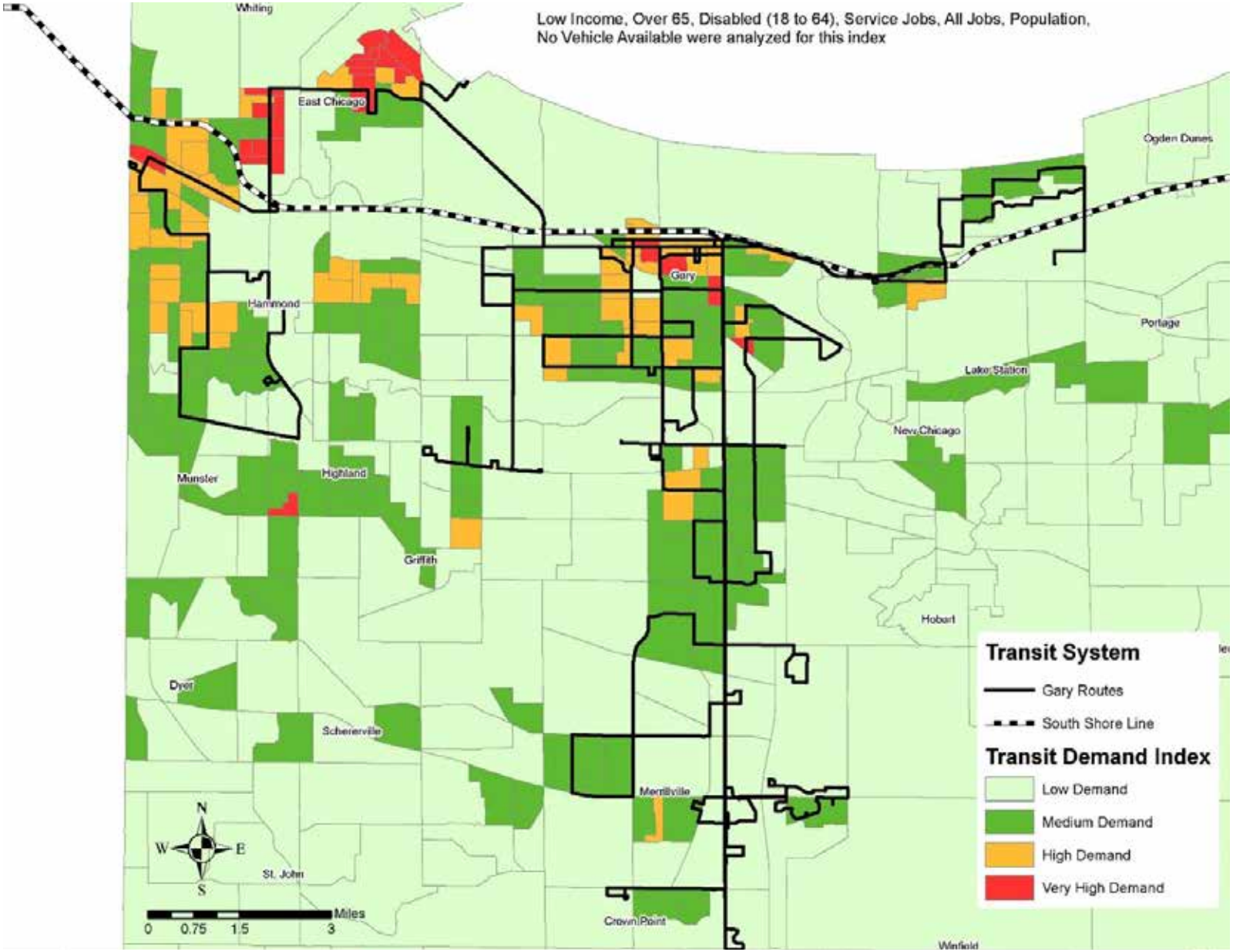
The analysis indicates the Hub System performs better on all measures except the number of municipalities served and total route miles. It also has lower operating and capital costs. However, the Hub System would possibly require more off-street transit infrastructure (a new transit center in East Chicago, for example) since transfers are designed to be off street rather than on-street. Transfer possibilities are also more limited, as riders would need to travel to a hub to make a transfer which could cause them to backtrack in their travel direction in some cases.

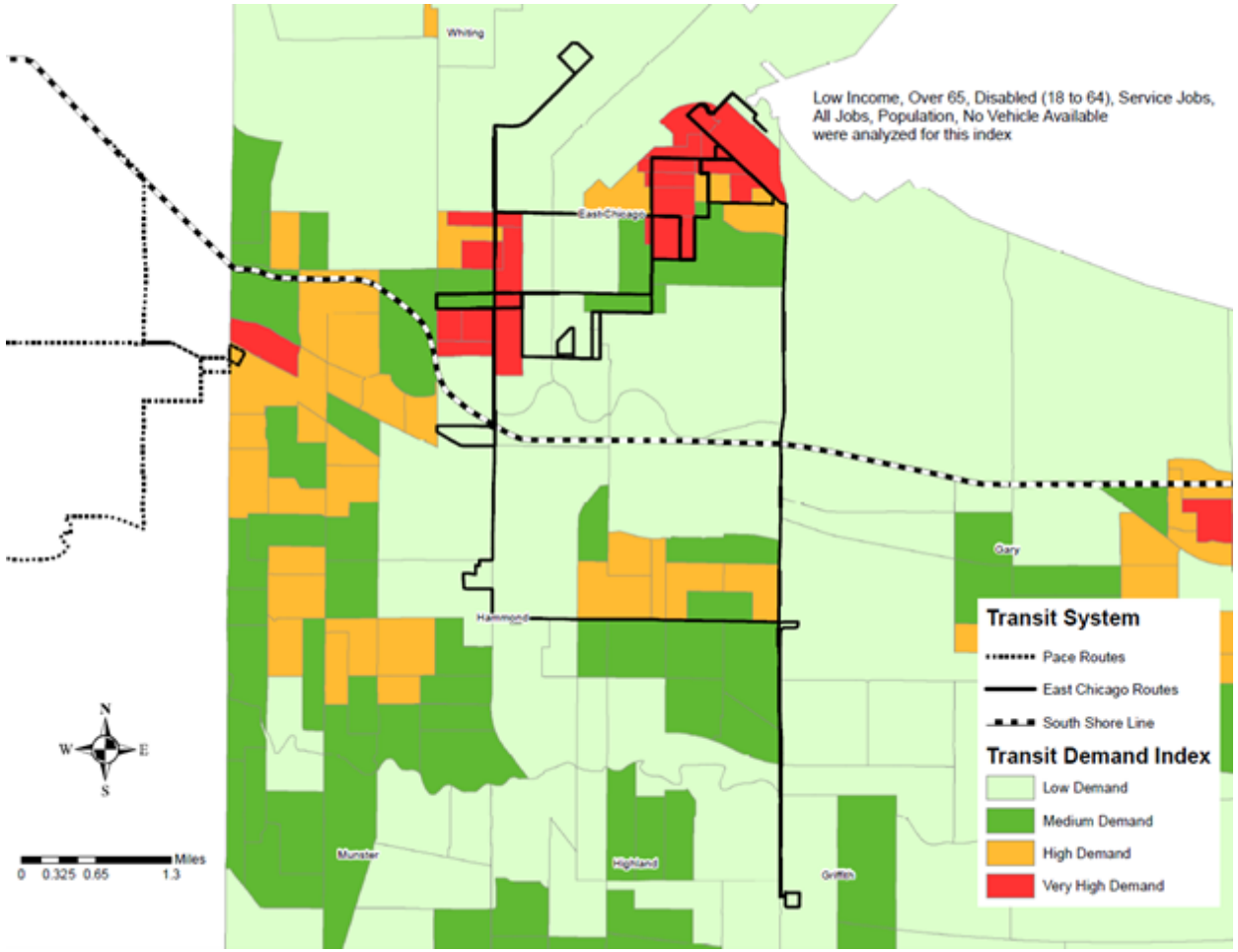
The Grid System would operate more frequently and cover a greater part of the study area, so therefore transfers would be easier to make since transfers could occur at regular intervals along the route rather than at just one location. The Grid routes also travel longer distances in general than the Hub routes, so a rider would not need to transfer as often to travel regionally within the study area. The Grid System, however, has higher operating and capital costs as compared to the Hub System and is not as targeted to those with the greatest need for transit.

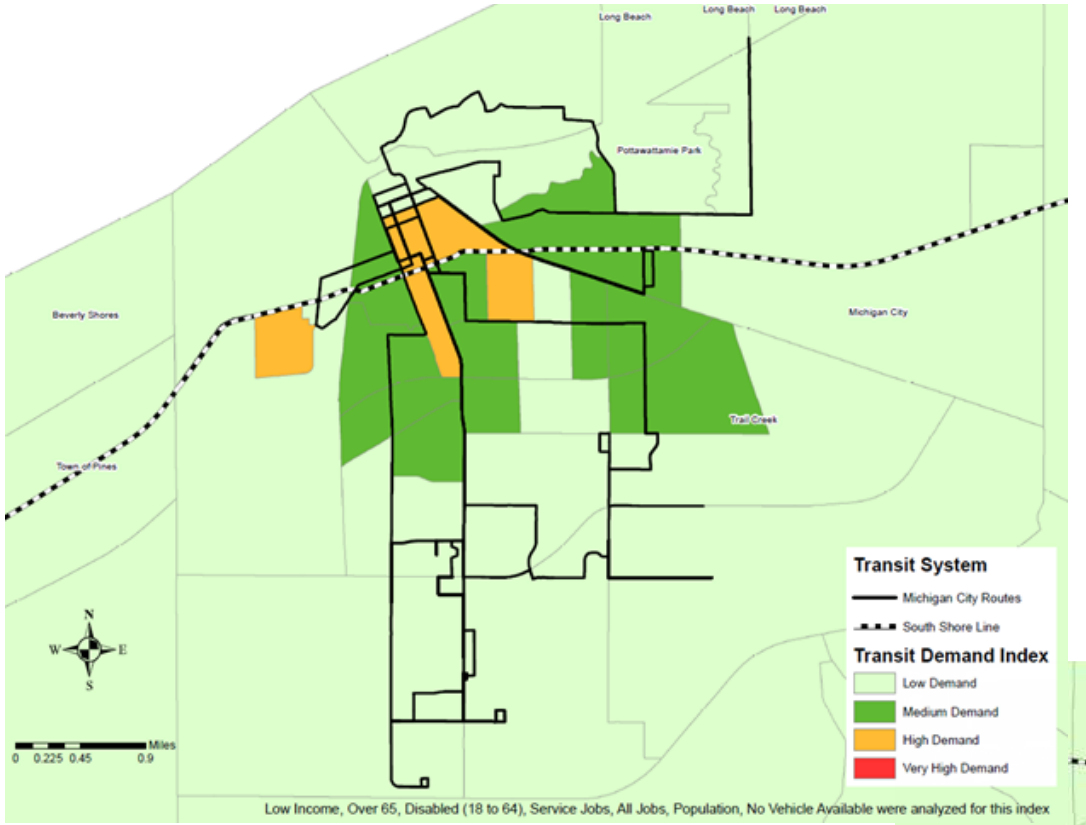
Both systems have positive and negative attributes. ***The Hub System, however, is recommended to be implemented for the following reasons:***

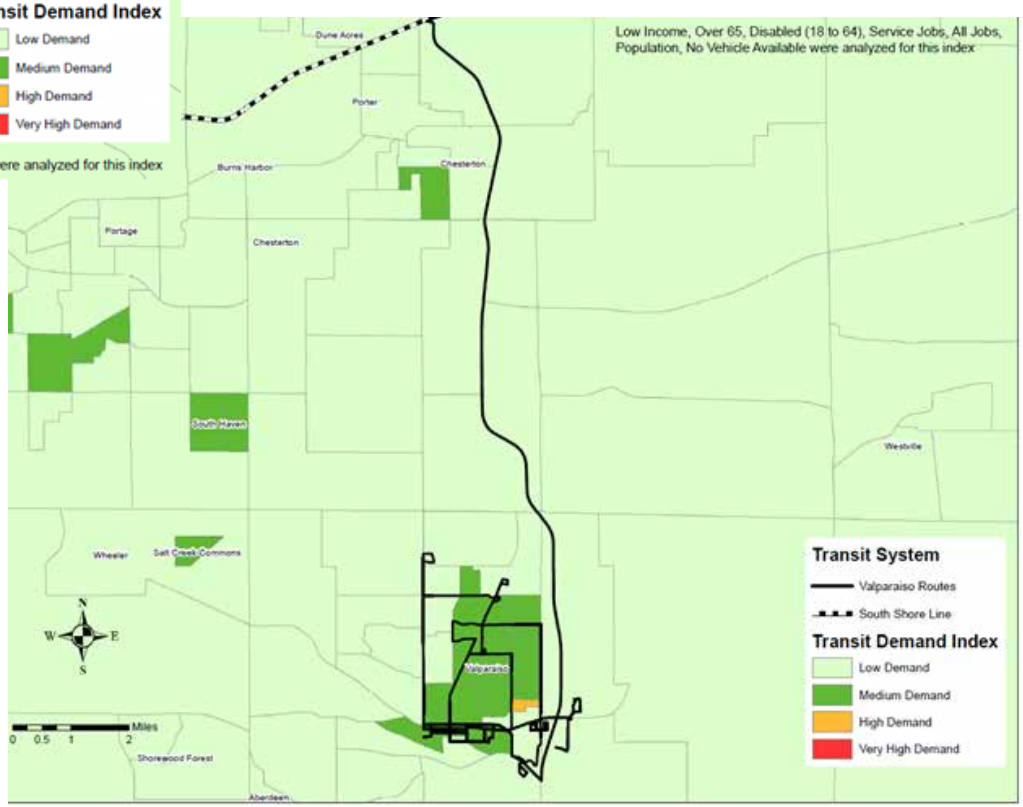
1. Because the Hub System is designed to reach the most likely riders in the study area, ridership would be higher than the Grid System
2. The Hub System can start out at lower service frequency thus saving initial start up costs; the Grid System would need to start out at a higher frequency, regardless whether demand warrants that level of service. This is because Hub transfers can be timed to any service frequency at a hub whereas Grid routes would need to operate at least every 20 minutes to reduce transfer wait times on street (since buses cannot sit on the street waiting for the connecting bus to appear).
3. Because of the operating characteristics described above, the Hub System is more flexible in adjusting service frequency as demand increases or decreases.
4. Because transit centers would be the most common locations for transfers, better amenities for passengers transferring would be available; conversely, the lack of pedestrian infrastructure in the study area could make on-street transfers uncomfortable for Grid System passengers.
5. The evaluation criteria for both systems are aligned with the visions and goals NIRPC has for this plan; since the Hub System does much better on these criteria than the Grid System, it aligns better with the goals and visions of this plan.
6. The Hub System better serves the densest, most urbanized areas of the study areas which are better suited for fixed route transit whereas the Grid routes are more likely to run in rural areas.
7. The Hub System will be more cost effective to operate than the Grid System, and the costs of initiating the first phase will be lower, making it more likely a regional transit system will gain political support to get off the ground.
8. The Hub Systems reaches significantly more locations identified by NIRPC and the public as needing service— especially hospitals moving to the periphery of the study area— and institutions of higher learning.

APPENDIX 7A: Closeup Transit Demand Index Maps

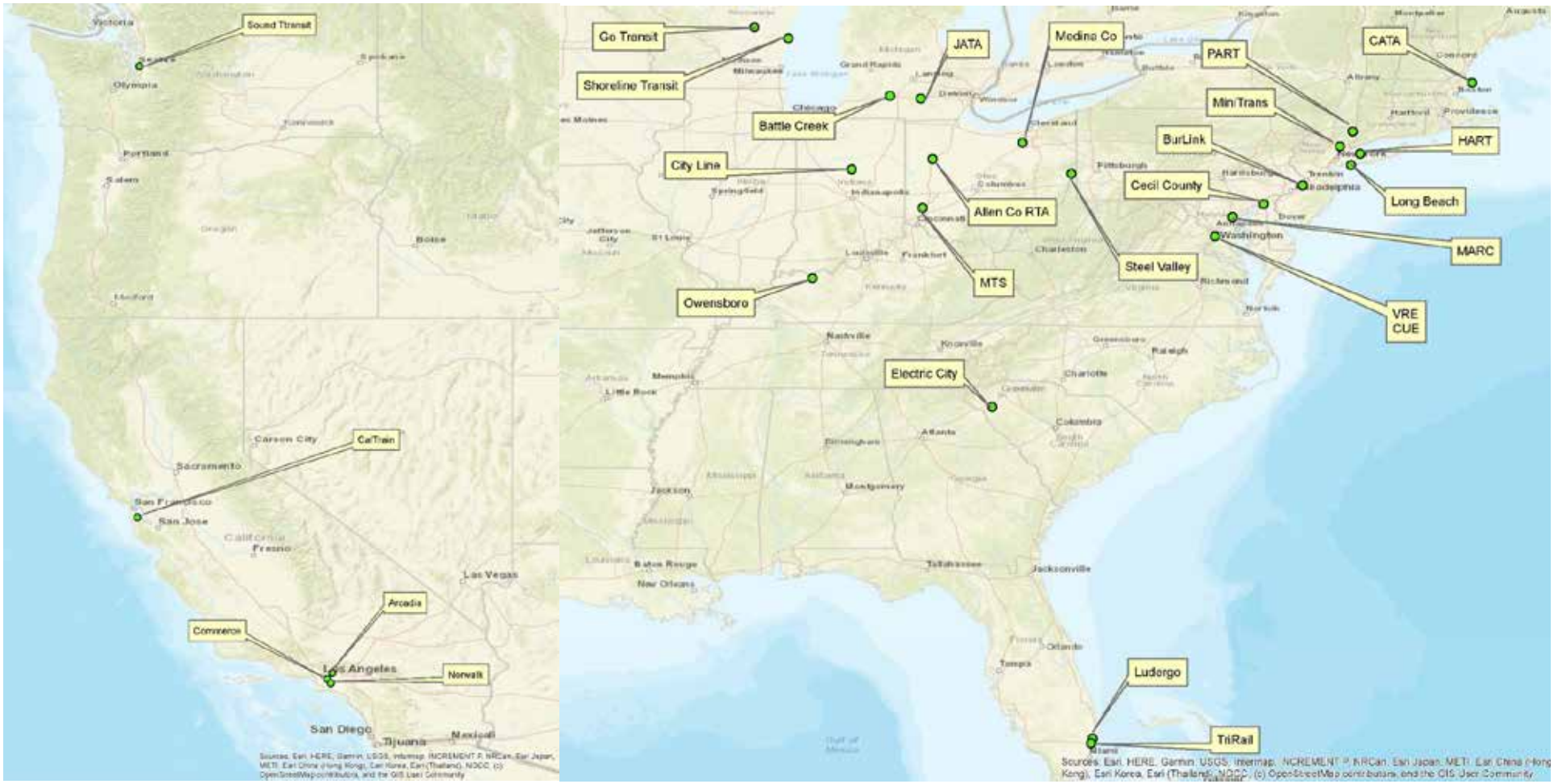



Low Income, Over 65, Disabled (18 to 64), Service Jobs, All Jobs, Population, No Vehicle Available were analyzed for this index
Whiting
East Chicago
Gary
Hammond
Munster
Highland
Griffith
Transit System
Pace Routes
East Chicago Routes
South Shore Line
Transit Demand Index
Low Demand
Medium Demand
High Demand
Very High Demand
N
W
E
S
Miles
0 0.325 0.65 1.3


Long Beach
Long Beach
Long Beach
Pottawattamie Park
Beverly Shores
Michigan City
Trail Creek
Town of Pines
N
W
E
S
Miles
0 0.225 0.45 0.9
Transit System
Michigan City Routes
South Shore Line
Transit Demand Index
Low Demand
Medium Demand
High Demand
Very High Demand
Low Income, Over 65, Disabled (18 to 64), Service Jobs, All Jobs, Population, No Vehicle Available were analyzed for this index


Low Income, Over 65, Disabled (18 to 64), Service Jobs, All Jobs, Population, No Vehicle Available were analyzed for this index
Dune Acres
Porter
Burns Harbor
Chesterton
Portage
Chesterton
South Haven
Westville
Wheeler
Salt Creek Commons
Valparaiso
Shorewood Forest
Aberdeen
N
W
E
S
Miles
0 0.5 1 2
Transit System
Valparaiso Routes
South Shore Line
Transit Demand Index
Low Demand
Medium Demand
High Demand
Very High Demand

APPENDIX 7B: Peer Transit Agencies



APPENDIX 7C: Transit Steering Committee Members

East Chicago Transit	Frank Rosado
Gary Public Transportation Corporation	David Wright
City of Hammond	Tom Novak
City of Hobart	Ross Pietrzak
Lake County Community Services	Blossom Mabon
City of Merrillville	Steve King
Michigan City Transit	Robin Tillman
Northern Indiana Commuter Transit District	Kelly Wenger
North Township Dial-A-Ride	Dianna DeLeon
City of Portage	AJ Monroe
Porter County Aging and Community Services	Bruce Linder
Regional Transportion Authority	Peter Kersten
TransPorte	Beth West
Union Township	George Topoll
Valpo Transit	Donald Lorentzen





NWI 2050

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