

Montgomery County Thoroughfare Plan

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Acknowledgments

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Key Terms

There are several technical terms used throughout this plan that are specific to transportation planning. Some of these key terms are listed below. A complete listing is in the appendix.

Annual Average Daily Traffic (AADT): The total traffic volume passing a point or segment of a highway facility in both directions for one year divided by the number of days in a year.

Capacity: The maximum rate of flow at which persons or vehicles can be reasonably expected to traverse a point or uniform segment of a lane or roadway during a specified time under the prevailing roadway, traffic and control conditions and usually expressed as vehicles per hour or persons per hour.

Functional Classification is the classification of roadways based on two key characteristics: roadway mobility (traffic volume) and roadway accessibility (entry and exit onto the roadway). Functional classifications are defined by the Federal Highway Administration (FHWA).

Land Use is the classification of geographic areas of land according to their primary use. Examples can include agricultural, residential, commercial, industrial, open space, and recreation. Land use classifications are defined in the Comprehensive Plan.

Level of Service is a qualitative measure describing operational conditions within a traffic stream, generally expressed in terms of such factors like speed and travel time, freedom to maneuver, traffic interruptions, safety, comfort, and convenience.
Multi-Modal: Utilizing multiple forms of transportation, including transit, vehicular, cycling, and pedestrian.

Right of Way is Publicly owned land reserved for public infrastructure purposes such as roadways, railroads, utilities, greenways, etc.

FHWA is the acronym for the Federal Highway Administration, which is an agency within the U.S. Department of Transportation. This agency supports state and local governments in the design, construction, and maintenance of the nation's highway system (Federal-Aid Highway Program) and various federally and tribally owned lands.

INDOT: The acronym for the Indiana Department of Transportation.

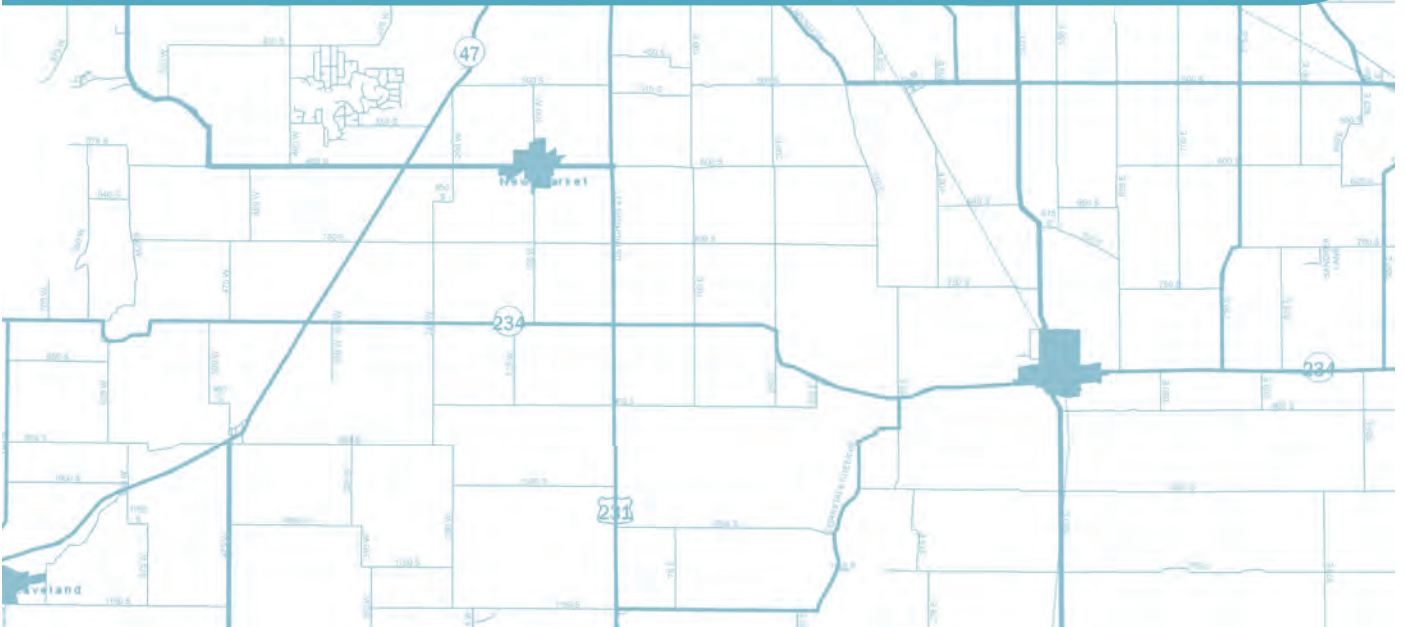
Shared-Use Trail: Infrastructure that supports multiple modes of transportation and recreation. This infrastructure may include walking, biking, running, skating, or people in wheelchairs. Shared-use trails may be located in public right-of-way along roadways connecting critical destinations throughout the municipality.

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Executive Summary



Plan Purpose

Why Now?

Montgomery County does not currently have a thoroughfare plan. However, the county has recognized the need to look forward and identify ways in which the county can respond to future challenges and opportunities.

Previous planning efforts such as the 2017 Economic Development Vision Plan and the 2019 Comprehensive Plan identified priorities, areas of focus, and completed a preliminary analysis on the county's transportation network.

The thoroughfare plan is a continuation and further analysis of the ideas presented in these plans, specifically, how the transportation network can support the stated goals of the county.

The county is fortunate to have access to three major regional corridors:

- **Interstate 74 to Indianapolis**
- **U.S. 231 north to Lafayette and south to Interstate 70**
- **S.R. 32 east to Lebanon and Interstate 65**

As the county seeks to improve quality of life, ensuring the county transportation network integrates well with these regional corridors, as well as ensuring county-wide connectivity will be crucial. Maximizing connectivity to S.R. 32 is especially important.

Additional principles which helped guide the development of this plan are found to the right.

Guiding Principles

- ***Establish transportation network hierarchies and priorities which recognize fiscal realities***
- ***Create a safe and improved transportation network***
- ***Enhance mobility and accessibility throughout the county***
- ***Integrate thoroughfare plan to support desired future land uses based on the Montgomery County Comprehensive plan***
- ***Increase economic vitality and quality of life efforts throughout the county***

Key Plan Elements

Key Road Network

A unique component of the Montgomery County Thoroughfare Plan is a Key Road Network Map. The Key Road Network Map is the blueprint to enhance connectivity between all communities in the county. The primary and secondary roadway network, as identified in this map served as the starting point for developing the key plan elements listed below.

Functional Classification Changes

There are road segments identified as part of the primary or secondary road network which are not currently functionally classified roadways by INDOT. As functionally classified roadways are eligible for funding opportunities, the county should bring these road segments to INDOT for consideration of changing the classification.

Thoroughfare Plan Map

The Future Thoroughfare Plan Map serves as the county's envisioned future roadway network. While this map utilizes some the same terms as the Existing Functional Classification Map (arterials and collectors), the Future Thoroughfare Plan Map is specifically for the county to plan for changes to its transportation network over the next 10 to 15 years. The Existing Functional Classification Map represents current conditions.

Right-of-Way Standards

The right-of-way standards contained in this plan represent minimum standards which should be used to guide roadway improvement projects or in right-of-way dedication as part of development adjacent to county thoroughfares. The right-of-way correlates to the roadway classification on the thoroughfare plan map and helps ensure that county thoroughfares will have enough right-of-way to accommodate future capacity improvements as well as potential multi-modal and drainage infrastructure.

Priority Improvements and Action Steps

The last element of this plan was the development of priority improvements and top action steps the county can take over the next several years to enhance the transportation network. To develop these recommendations, the Key Road Network Map was analyzed against several data inputs, including:

- **Existing and Projected Traffic Volumes**
- **Current Roadway Ratings (PASER)**
- **Roadway Surface Type (Gravel, Paved, or Chip and Seal)**
- **Future Land Use Map**
- **Stakeholder Input**

The outcome is a prioritized list of improvements and action steps which can have the greatest immediate impact on the county's transportation network.

Figure 1.1 | Key Road Network

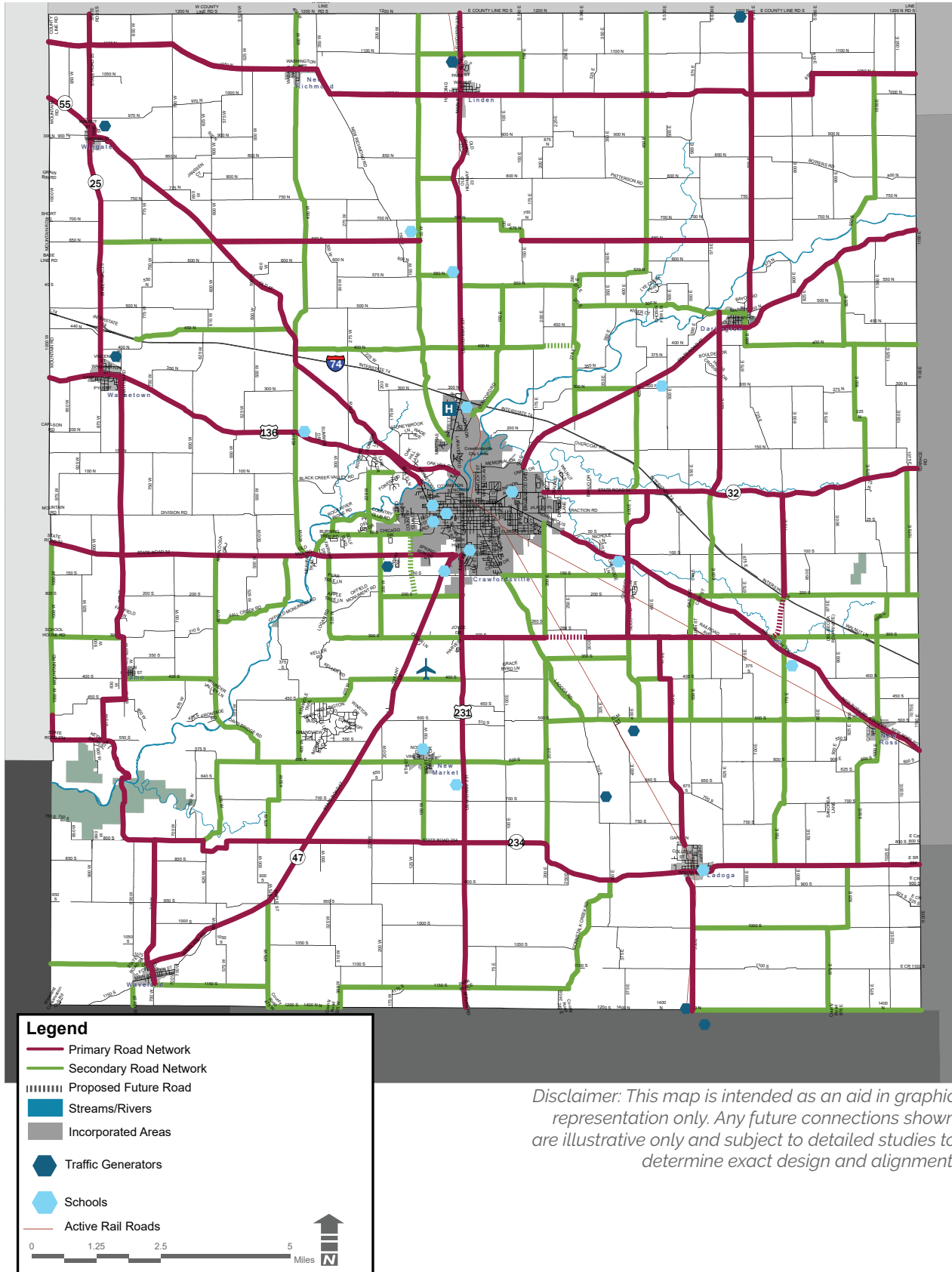


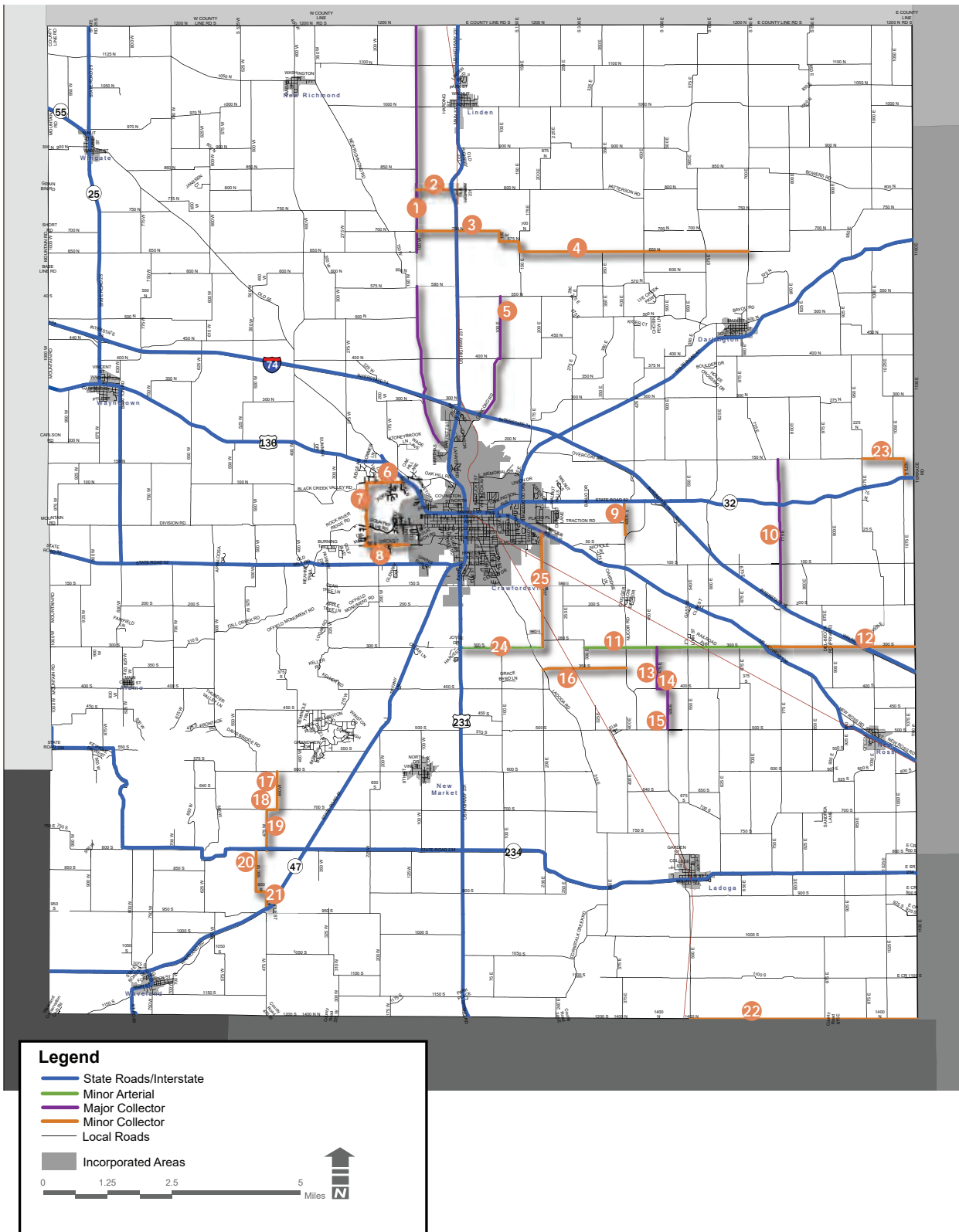
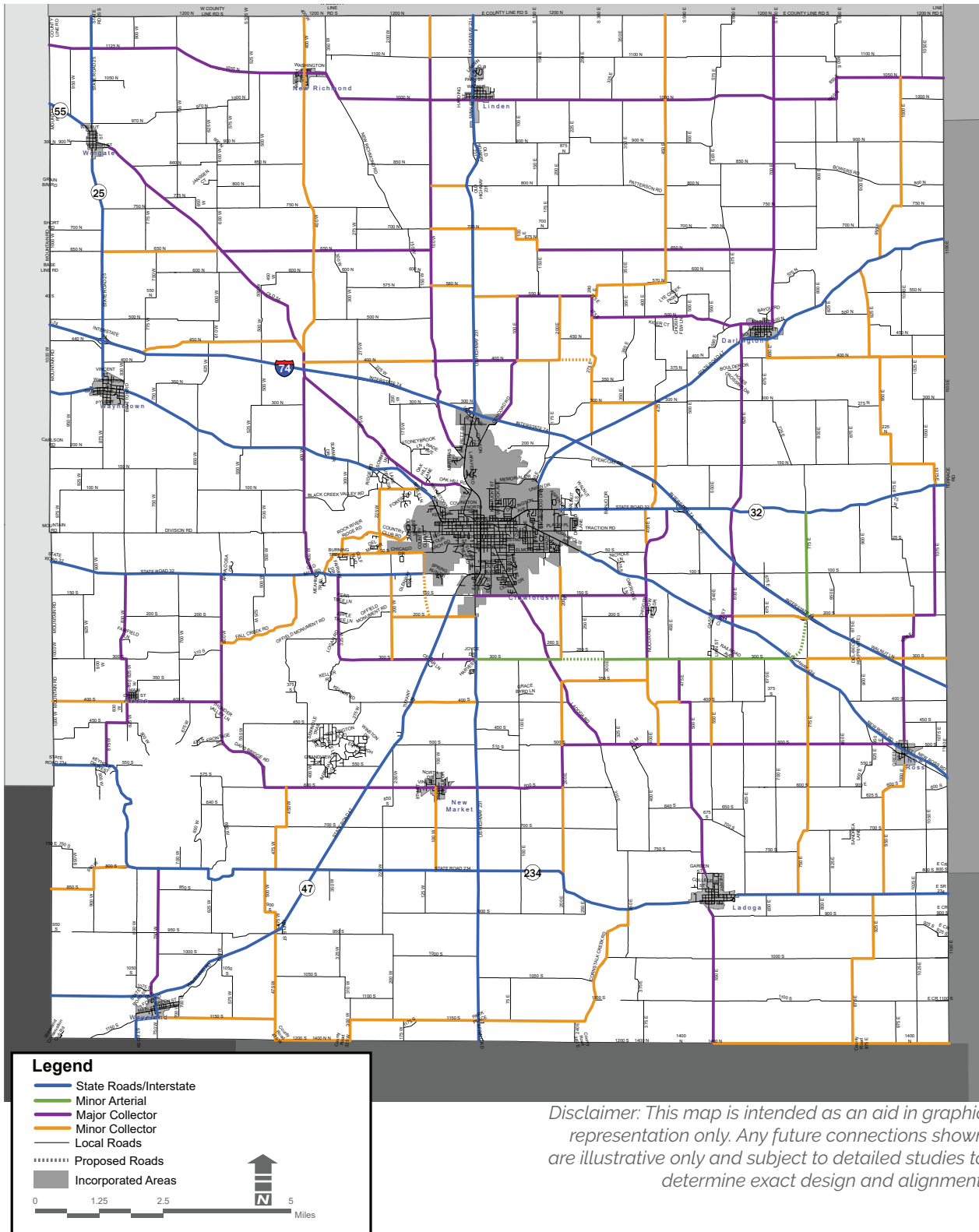
Figure 1.2 | Functional Classification Changes

Figure 1.3 | Future Thoroughfare Plan

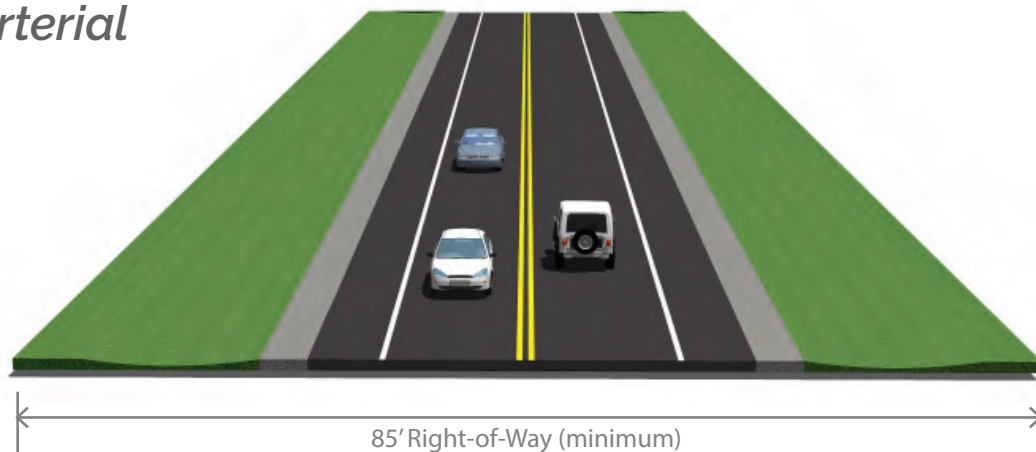


Right-of-Way Standards

Table 1.1 | Typical Roadway Standards

	Min. R.O.W.	No. of Travel Lanes	Travel Lane Width	Aux. Lane Width	Min. Shoulder Width	Rural Drainage Strip
Major Arterial	<i>Not currently applicable</i>					
Minor Arterial	85'	2-4	12'	12'	6' (4' paved)	16'
Major Collector	70'	2	12'	12'	6' (2' paved)	16'
Minor Collector	60'	2	11'	none	4' (2' paved)	16'
Local	50'	2	11'	none	4'	

Minor Arterial



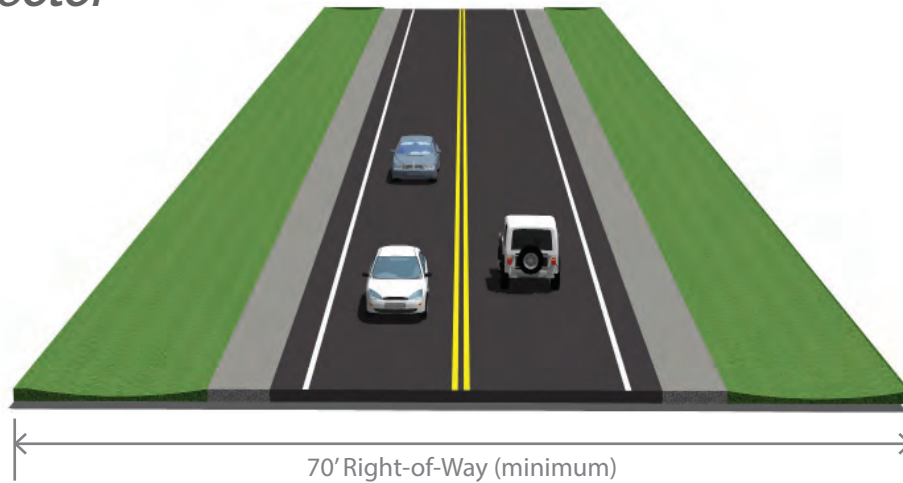
Minimum Standards

12' travel lanes
2-4 lanes
6' shoulder (4' paved)
16' drainage section
No parking

Optional Standards (Context Relevant)

5' bike lane(s)
5' sidewalk(s)
8-12' multi-use path

Major Collector



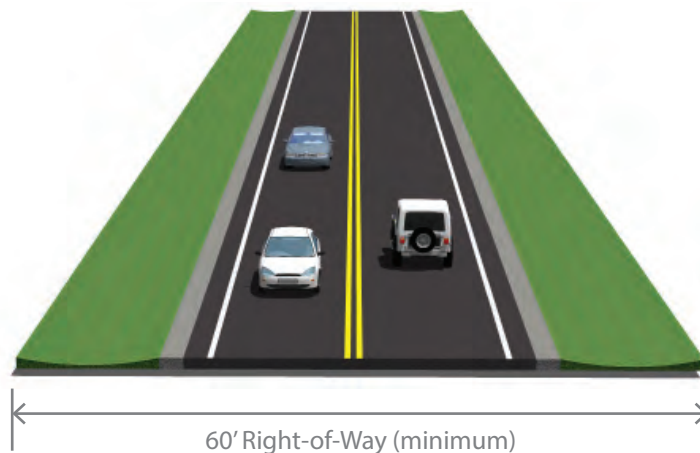
Minimum Standards

12' travel lanes
2 lanes
6' shoulder (2' paved)
16' drainage section
No parking

Optional Standards (Context Relevant)

5' bike lane(s)
5' sidewalk(s)
8-12' multi-use path

Minor Collector



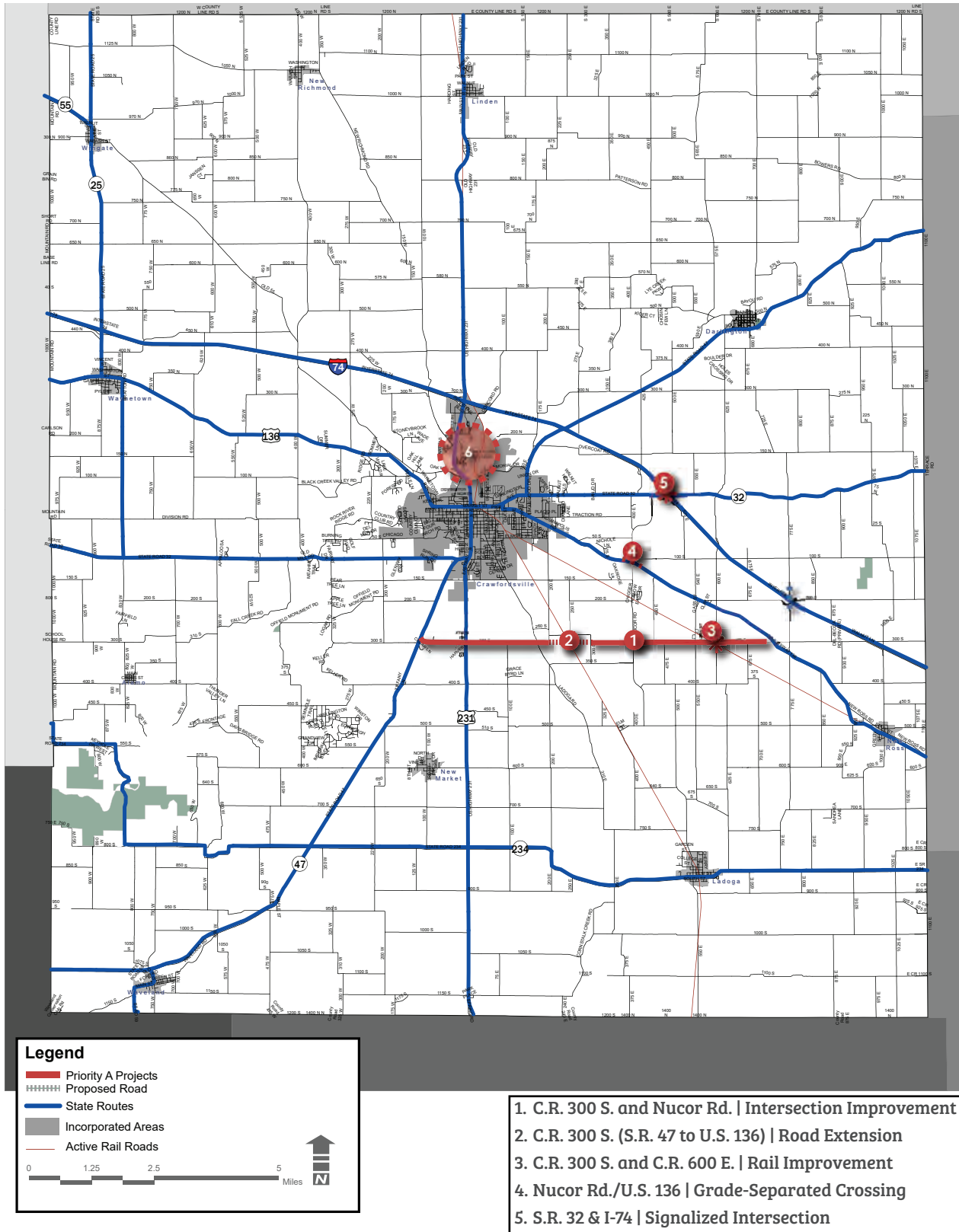
Minimum Standards

11' travel lanes
2 lanes
4' shoulder (2' paved)
16' drainage section
No parking

Optional Standards (Context Relevant)

8-12' multi-use path

Figure 1.4 | Priority A Improvement Considerations



Top 6 Improvement Considerations

- 1. Improve intersection at C.R. 300 S. and Nucor Road***
- 2. Improve C.R. 300 S. between S.R. 47 and U.S. 136. Extend the road between C.R. 200 E. and 300 E.***
- 3. Improve rail crossing near C.R. 300 S and C.R. 600 E.***
- 4. Construct a grade-separated crossing at the intersection of Nucor Road and U.S. 136***
- 5. Improve intersection and signalization on either side of Interstate 74 along S.R. 32***
- 6. Extend Memorial Drive/Concord Drive in northern portion of Crawfordsville.***



Action Steps

- ❑ *Pursue completion of a Local Road Safety Plan (LRSP)*
- ❑ *Adopt right of way standards into a future zoning ordinance*
- ❑ *Create a Capital Improvements Plan (CIP) to identify annual improvements*
- ❑ *Adopt the Thoroughfare Plan into the County Comprehensive Plan*
- ❑ *Require all new developments to dedicate and/or improve right of way for existing or future streets*
- ❑ *Incorporate regional initiatives that support coordination and safe transportation*
- ❑ *Partner with local jurisdictions to ensure transportation and land use support one another*
- ❑ *Encourage continued dialogue with private sector entities to coordinate improvements to the transportation network*
- ❑ *Work with INDOT to update roadway classifications*
- ❑ *Establish a policy that new and rehabilitated bridges on classified roads should accommodate pedestrians and cyclists.*

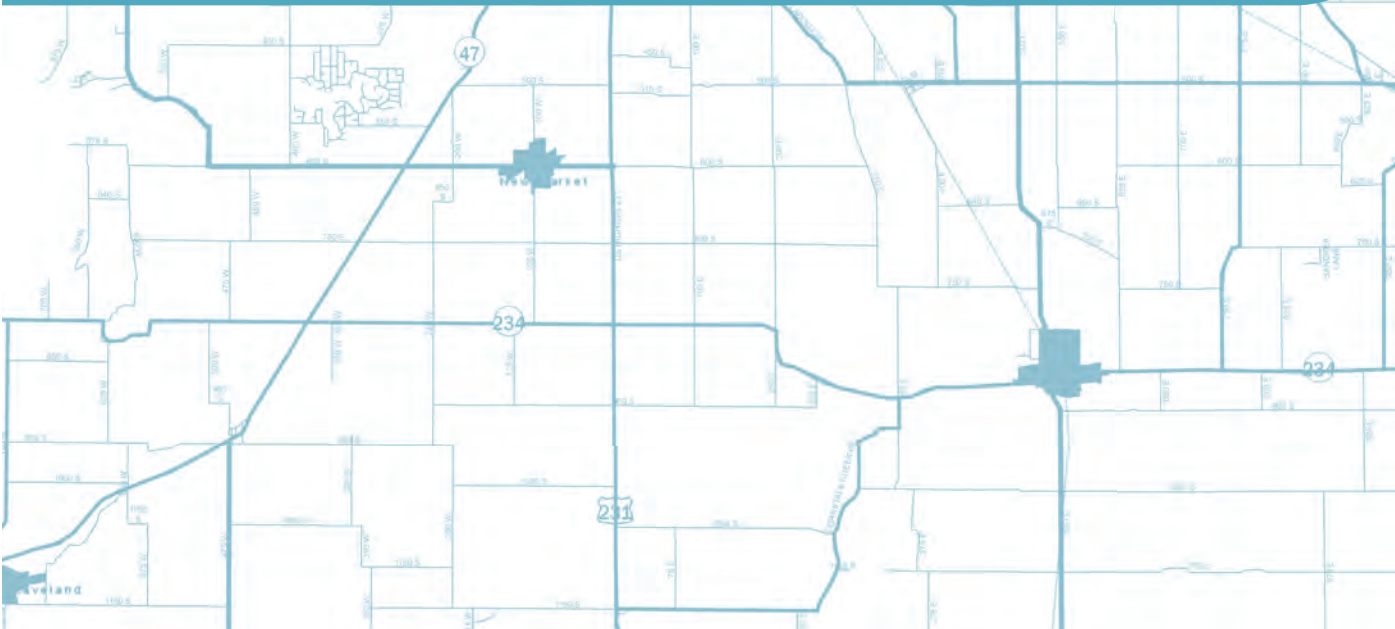


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Introduction

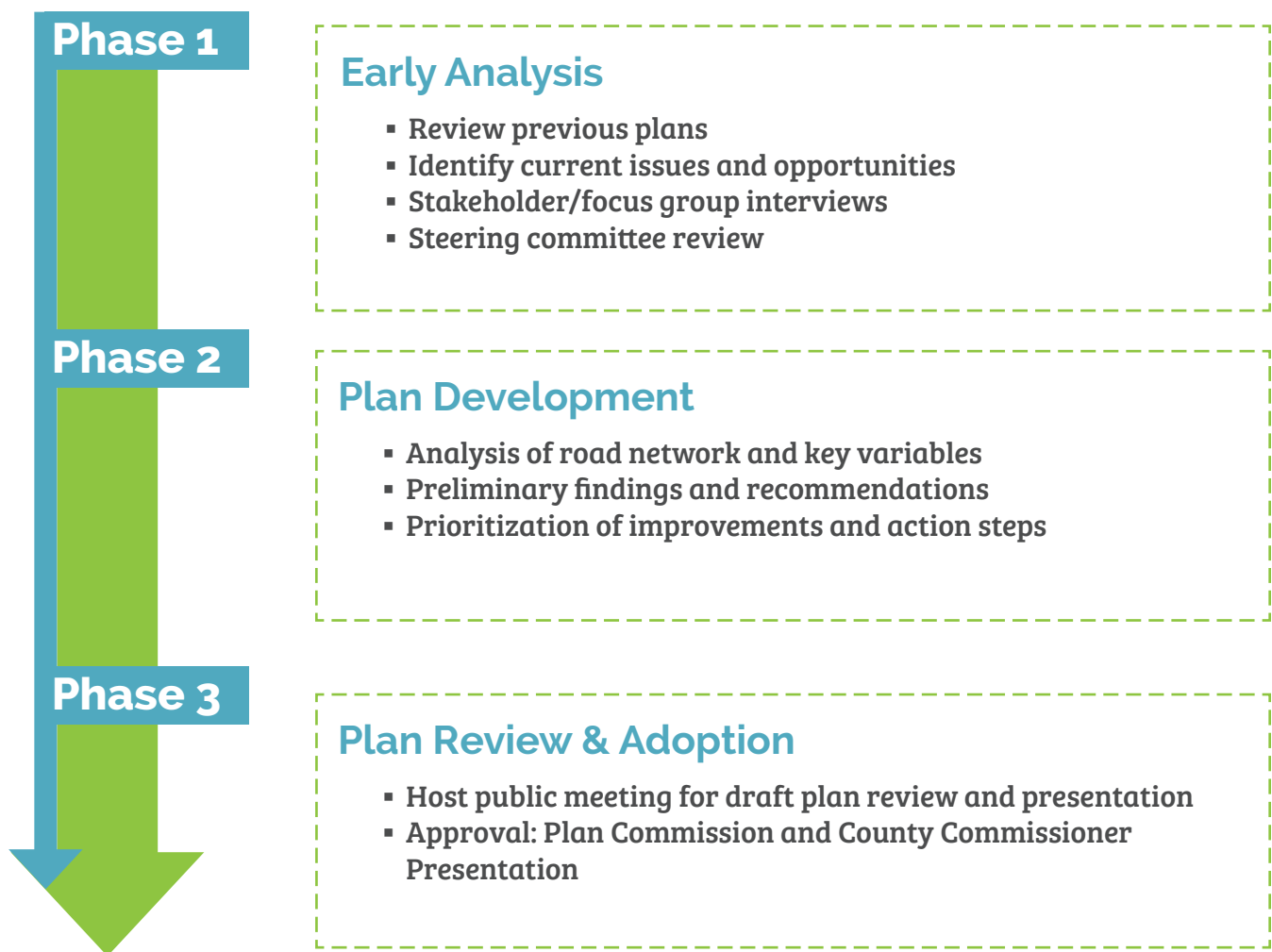


Plan Overview

This Thoroughfare Plan has five chapters that illustrate the recommendations for Montgomery County's transportation network. Roadway infrastructure is a critical component of the county's economic success and long-term sustainability. This plan will research current conditions, analyze future goals, provide guidance to right-of-way standards, roadway classifications, and future planning projects. This plan focuses on the unincorporated areas of Montgomery County.

Planning Process

The thoroughfare plan was developed following the Montgomery County Comprehensive Plan. Although there has been overlap in findings between the two plans, separate engagement has been done for both plans. This plan has largely been informed from public feedback garnered during the comprehensive planning process and steering committee and stakeholder conversations held during this plan development.



Public Participation

Key focus topics and background information are mainly based on the public engagement efforts of the Montgomery County Comprehensive Plan. As part of the 2017 Montgomery County Economic Development Plan as well as the 2019 Montgomery County Comprehensive Plan, project websites and public surveys were created for public engagement. A series of six public workshops were held as part of the comprehensive plan process to achieve a full understanding of the county's needs, concerns, and desires for the future.

Public workshops were held at each of the high schools within the county including North Montgomery High School, Crawfordsville High School, and South Montgomery High School. Over 200 people participated in public workshops. A full summary of public comment can be found in the appendix. Additionally, public presentations of both the Comprehensive Plan and Economic Development Vision Plan were held to gather additional feedback from the public.

Stakeholder input meetings were also held for this plan. These meetings allowed for detailed conversations regarding the road network in Montgomery County. Stakeholder discussions brought forward issues and concerns as well as future plans that might impact the transportation network.

Transportation plays a significant role in determining where development happens and can sometimes influence what kind of development occurs. Based on the desired development, it is crucial to provide transportation improvements to ensure this type of development will be successful in the county.

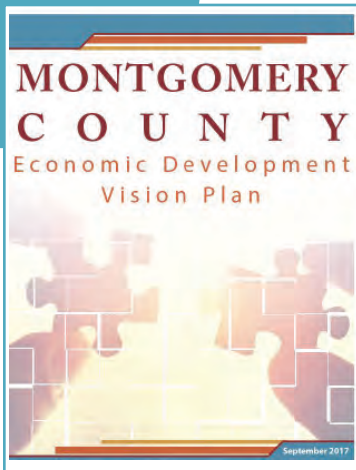
Desired Types of Development:

- Manufacturing with good wages
- Local and national retail stores
- Places to eat
- Entertainment/outdoor recreation
- Single-family residential
- Small businesses
- Professional businesses/white collar jobs
- Agribusiness
- Agri-tourism
- Mixed-use development
- "Clean Energy" that is not windmills

As industry continues to grow and thrive in Montgomery County, pursuing road improvements that allow for improved connections for industries will benefit the county as a whole. Improved infrastructure can incentivize new businesses and increase economic development opportunities.

Montgomery County is a well known agricultural hub and continues to out produce many other counties in the state. Creating better connections to critical agricultural destinations will help keep the county at the forefront of this industry.

Reference Documents



2017 Montgomery County Economic Development Vision Plan

This plan highlights the economic advantages and opportunities of Montgomery County in a local and regional perspective. Three strategic focus areas were identified in this planning process. Key priorities from this plan:

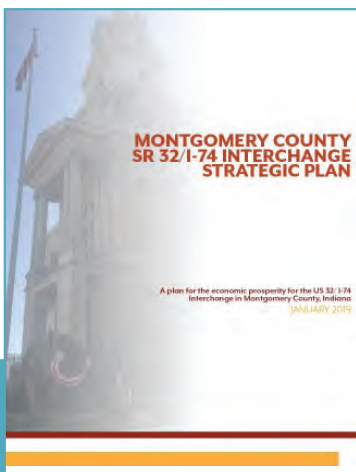
- **Need for Thoroughfare Plan**
- **Development Focus Areas**
- **Improving access to I-74**
- **Access to rail**



2019 Montgomery County Comprehensive Plan

Recently adopted, this planning effort is the first comprehensive plan for the county's history. This document is a critical component of what Montgomery County is working to improve. It relates to quality of life, natural resource, parks and recreation facilities, economic development, and future land use. Key priorities from this plan:

- **Need for thoroughfare planning**
- **Coordinate with others to plan transportation network**
- **Attract new businesses**



2019 Montgomery County S.R. 32/I-74 Interchange Strategic Plan

Currently underway, this strategic plan is a supplemental document developed from the 2017 Montgomery County Economic Development Vision Plan. The S.R. 32/I-74 interchange area has the greatest economic impact area due to its location and ongoing development efforts at NuCor Road. Key priorities for this plan:

- **Building infrastructure for industry**
- **Mitigating truck traffic**
- **Regional impacts of S.R. 32**

Key Stakeholder Takeaways

Stakeholder discussions for this plan revealed a lot about critical corridors in Montgomery County and things that can be improved in the Montgomery County transportation network. Key discussion topics include:

- **Movement of agriculture equipment**
- **Connections to critical farming locations**
- **Key employment locations**
- **Traffic generators**
- **Truck traffic**
- **Buses and school pick up and drop off traffic**

Discussions with the town representatives were critical in understanding how transportation networks in different parts of the county could be improved. Representatives from Alamo, Crawfordsville, Darlington, Ladoga, Linden, New Richmond, and Waynetown met to discuss county transportation issues related to their communities. These discussions revolved around connectivity between the municipalities.

With industry growing in the county, truck traffic becomes a concern and identifying the routes that are used for a lot of that traffic is increasingly important to many stakeholders. These discussions helped identify specific areas of improvement like C.R. 300 S. as well as alternative routes to S.R. 32 and S.R. 231. Transition zones in and out of towns and the city of Crawfordsville were also identified.

Stakeholder Groups

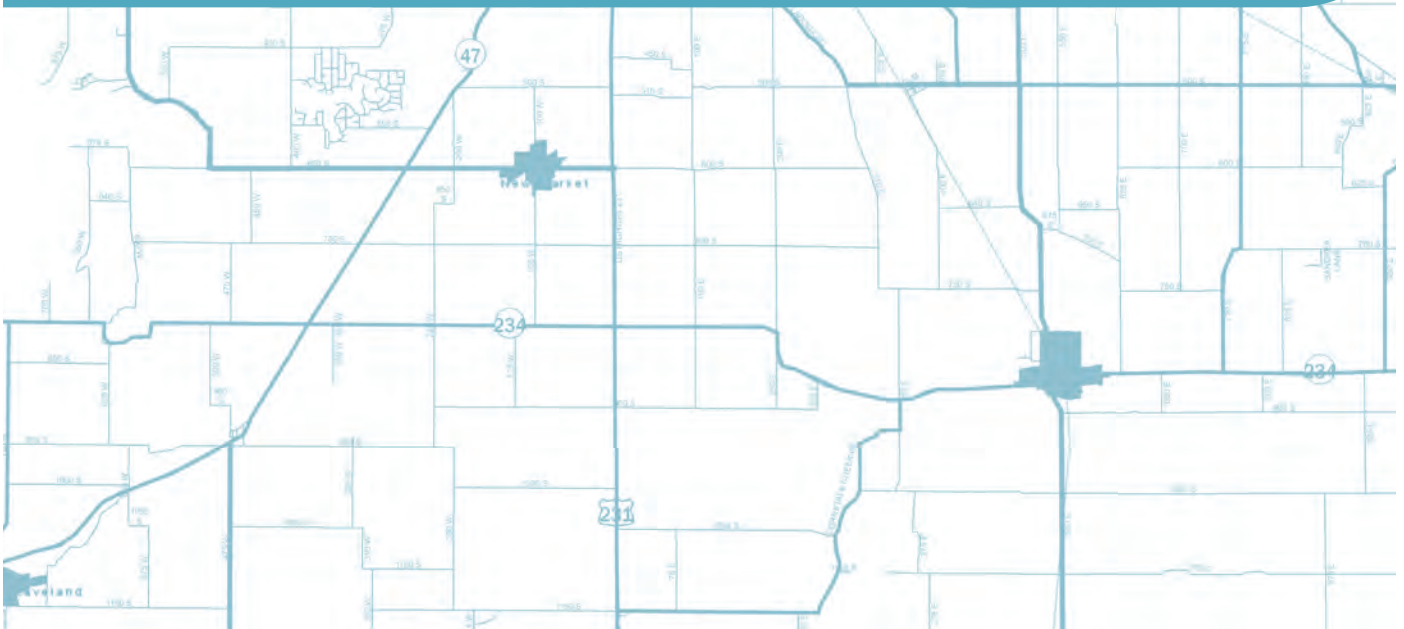
- **Highway Department**
- **Agriculture & Farming**
- **Town Representatives**
- **Schools and Education**
- **Industry and Local Businesses**
- **Public Safety Officials**

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A photograph of a residential street with trees and houses. The street is paved and has a concrete curb on the right side. There are several trees lining the street, some with green leaves and some without. Houses are visible on both sides of the street. A green square with the number 3 is overlaid on the left side of the image.

3

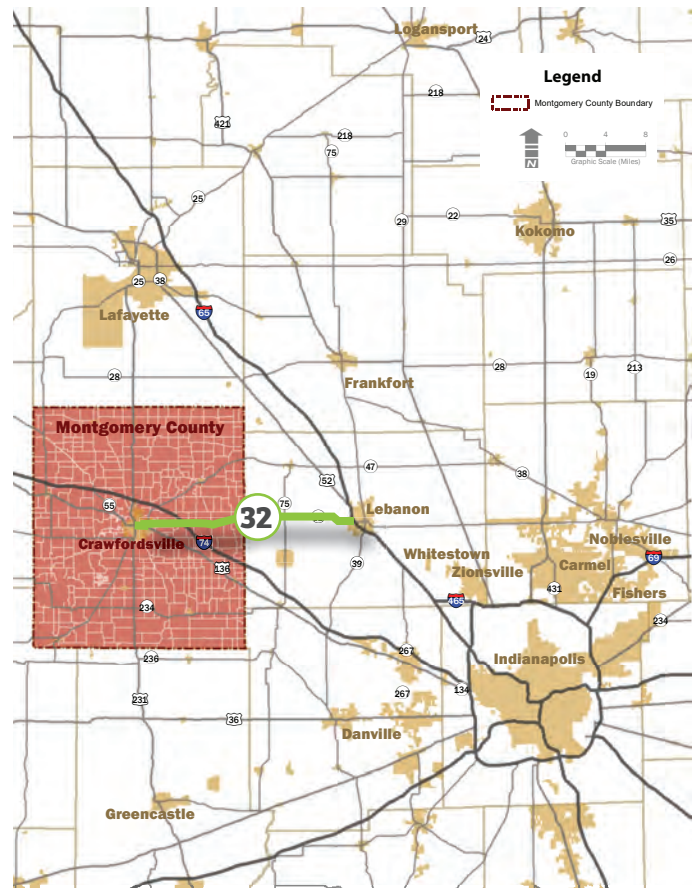
Context & Background



Location is Key

Montgomery County sits in a unique regional geographic area. Located between Lafayette and Indianapolis, the county has access to these urban centers and adjacent counties through the extensive state roads and U.S. highways. Major corridors include S.R. 47, U.S. Highway 231, I-74 and S.R. 32. Montgomery County connects to some of the fastest-growing areas in the state including Lebanon, Whitestown, and Zionsville via S.R. 32. The proximity between these areas allows for access to jobs, entertainment, and recreational opportunities.

S.R. 32 serves as an essential connector for Montgomery County as a lot of industry and business use S.R. 32 to get to I-65. I-65 opens the doors to significant opportunities for businesses and the connection from S.R 32 to should be capitalized. I-65 provides a straight shot to Chicago as well as Indianapolis and Southern Indiana.



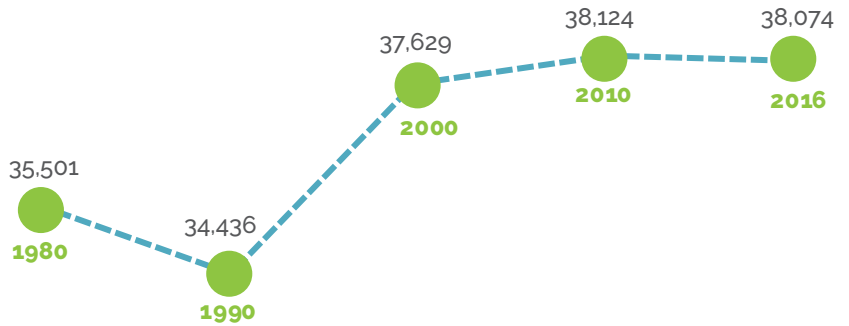
Montgomery County Context Map

Population & Growth

The following demographic data were gathered for the 2019 Montgomery County Comprehensive Plan. Transportation networks are often related to the population of an area, and the land uses. As a community grows, understanding the anticipated changes can help build a better transportation network.

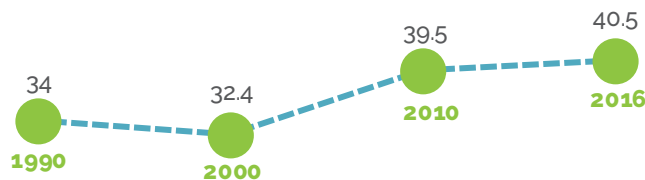
Population Change

Montgomery County experienced a population increase from 1990 to 2010, but the population has essentially remained the same from 2010 to 2016.



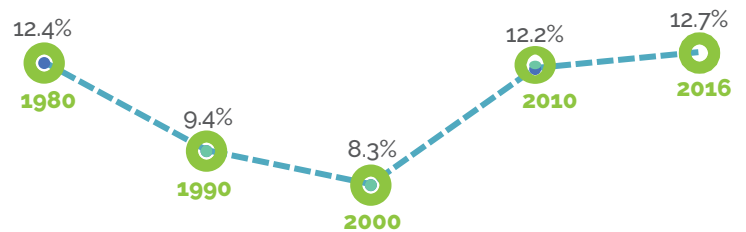
Median Age

Montgomery County has seen a significant increase in the median age since 2000 with a 1 year age increase between 2010 and 2016.



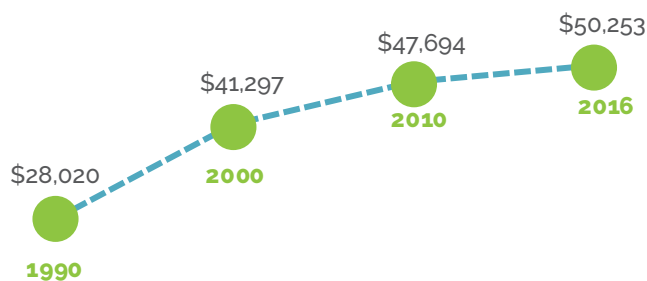
Poverty

Montgomery County experienced a sharp jump in the overall poverty level between 2000 and 2010. This was in concert with the population increases for the county.



Median Household Income

Montgomery County has experienced a consistent increase in median household income since 1990. Increases have flattened somewhat from 2010 to 2016.



Source: US Census Bureau ACS 5-Year Estimates

Land Use and Growth Areas

Figure 3.1, Future Land Use Map was recently created in the 2019 Montgomery County Comprehensive Plan. The focus on creating a long-range future land use map resulted in extensive conversations on what Montgomery County wants to be in the future. In determining where the desired types of development are located and where undesirable development types are within the County was critical in the creation of this map. As illustrated, the majority of the County is and will remain rural for the foreseeable future. Land Uses for the County are relatively general and reflect conversations from the county comprehensive plan.

Industrial areas are shown on the map in purple and are primarily found in the eastern areas around the city of Crawfordsville. These areas are also noted as focus areas in Figure 3.2, which drives the discussion for network improvements in these areas. The area southeast of Crawfordsville already has some industrial uses and is anticipated to grow in the future. By providing better connections to the interstate and building improving road conditions will allow for continued industrial success in that area.

Based on the feedback gathered during the comprehensive planning process, more residential opportunities are also desired by residents. Based on Figure 3.1, this will most likely take place in the areas immediately surrounding the city of Crawfordsville. With a higher concentrated amount of people, it is vital to provide a transportation network that supports this growth in housing.

The S.R. 32 and I-74 interchange is one area where a majority of Montgomery County jobs are located, outside of Crawfordsville's city boundaries. The Nucor Road corridor is expected to continue to expand its industrial development, creating jobs and additional traffic. Highway 231 is one of many main arteries that run into Crawfordsville and connects Montgomery County into Tippecanoe County and Putnam County. Highway 231 is uniquely located along with a live railroad system that may create crossing issues as the industry continues to expand north of Crawfordsville.

Land use has a very close relationship with transportation and should always be considered when trying to understand connectivity in an area better. Figure 3.1 helps highlight areas that will see growth and changes in the future and how the current transportation system might need to be upgraded to meet those needs.

Figure 3.2 displays priority growth areas that should be considered when determining where transportation connections are most critical. These areas tend to follow significant corridors and are more centrally located in areas in the County that are expected to experience growth. Increasing connectivity between these areas is crucial in supporting future growth and development.

Figure 3.1 | Future Land Use Map

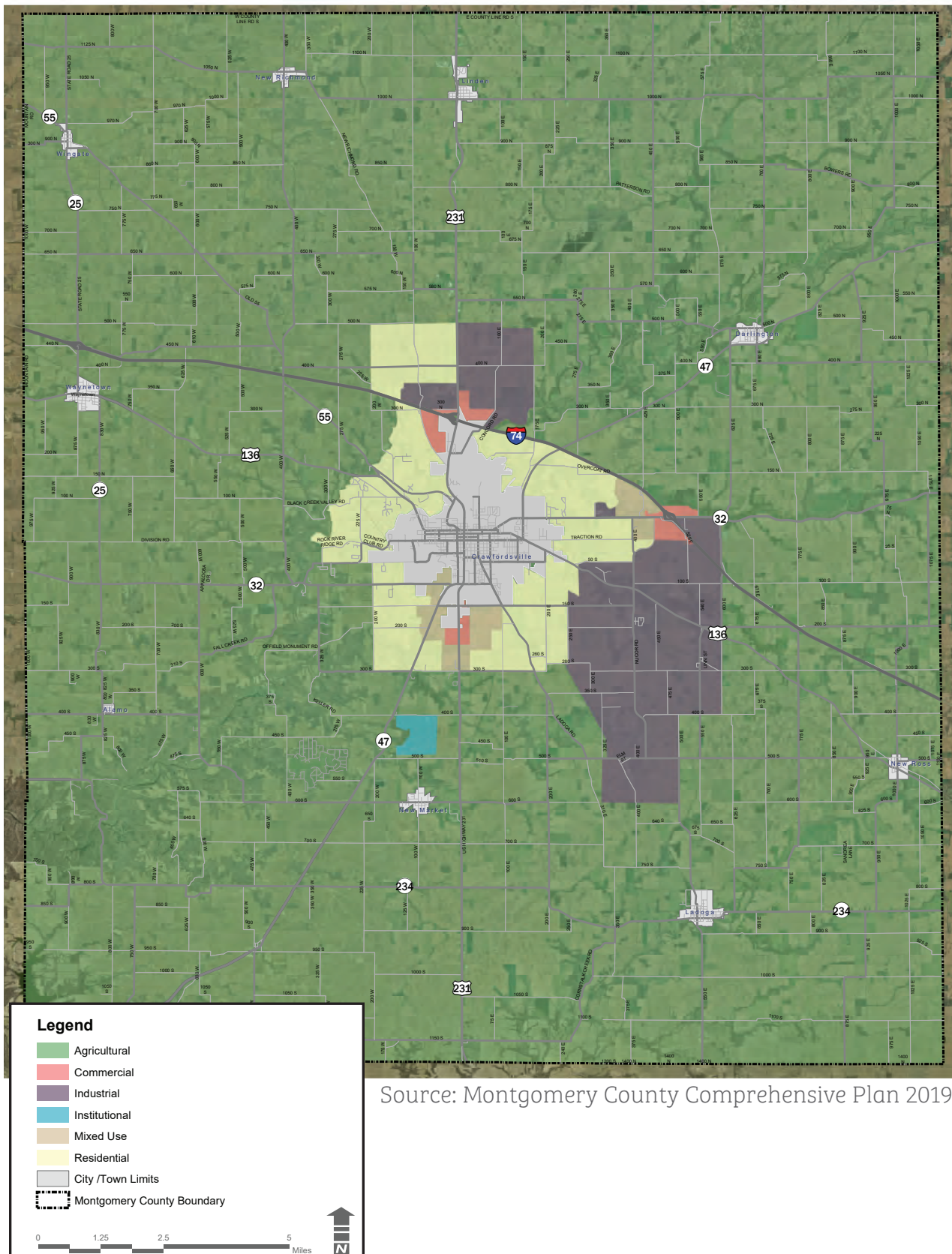
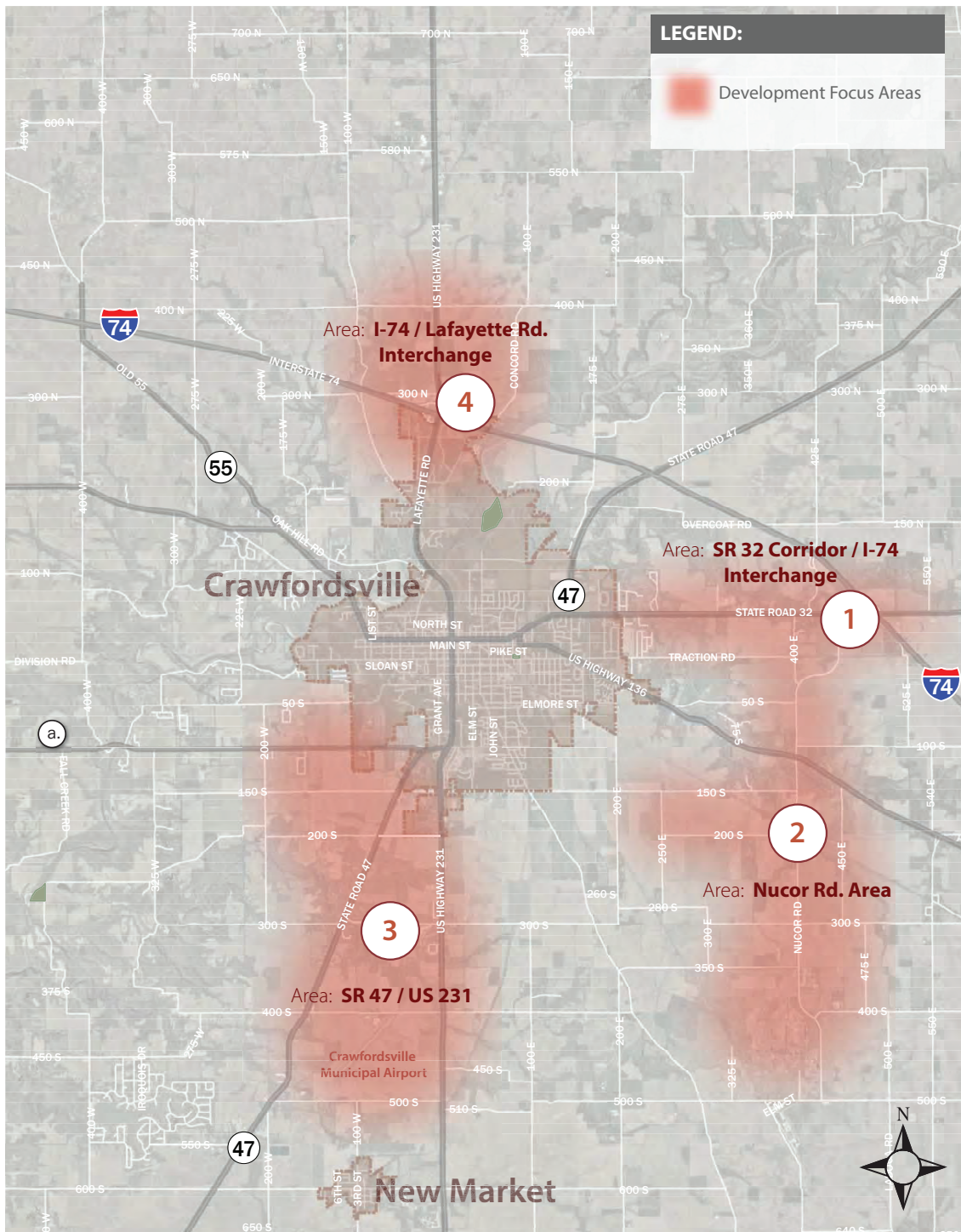


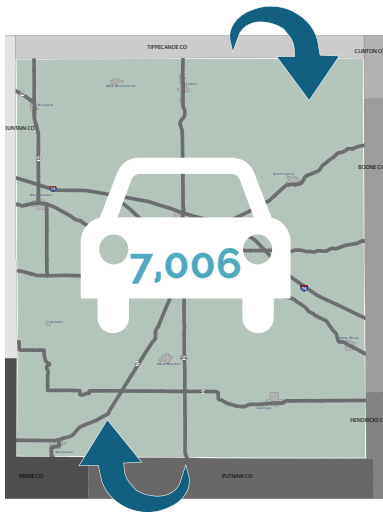
Figure 3.2 | Priority Growth Areas



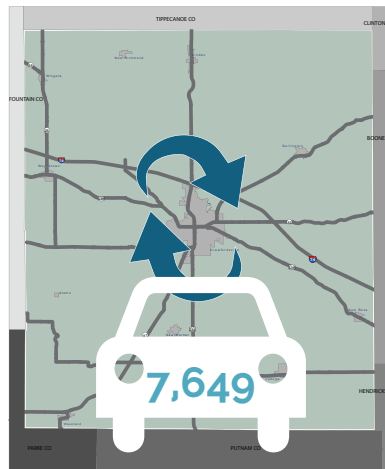
Commuting

Understanding the commuting patterns of those who live and work in Montgomery County helps give a basis on how the transportation networks within the county are used on a daily basis. According to On The Map Census data, a slight majority of individuals commute out of the county for their primary job. While that number is closely followed by the number of commuters who both live and work within the county, the jobs that Montgomery County residents are seeking tend to be outside of the county.

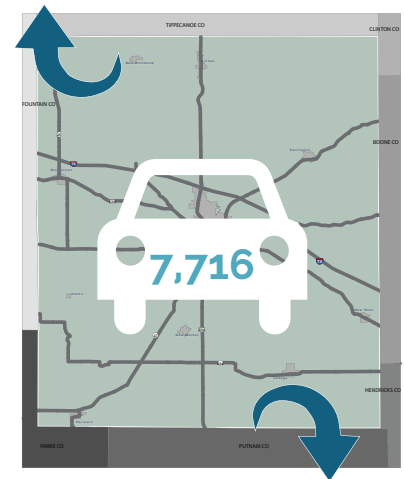
In-Commuters



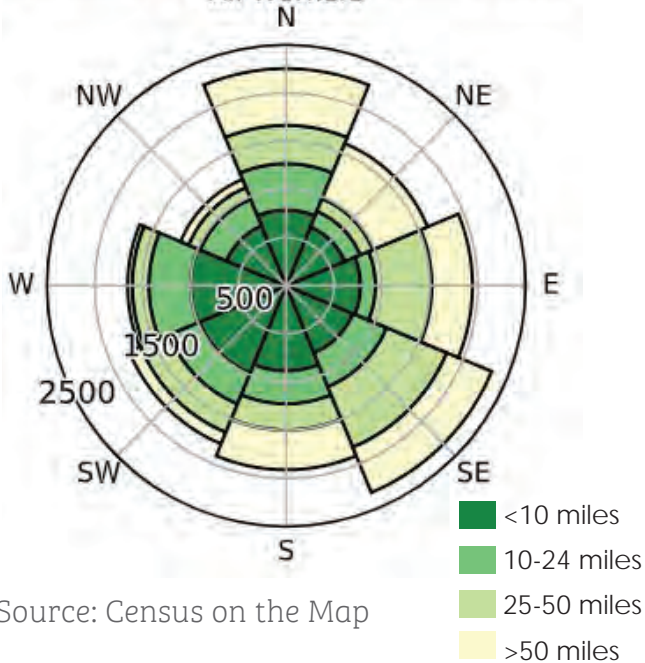
Same Home / Work



Out-Commuters



Job Counts by Distance/Direction in 2015
All Workers



Source: Census on the Map

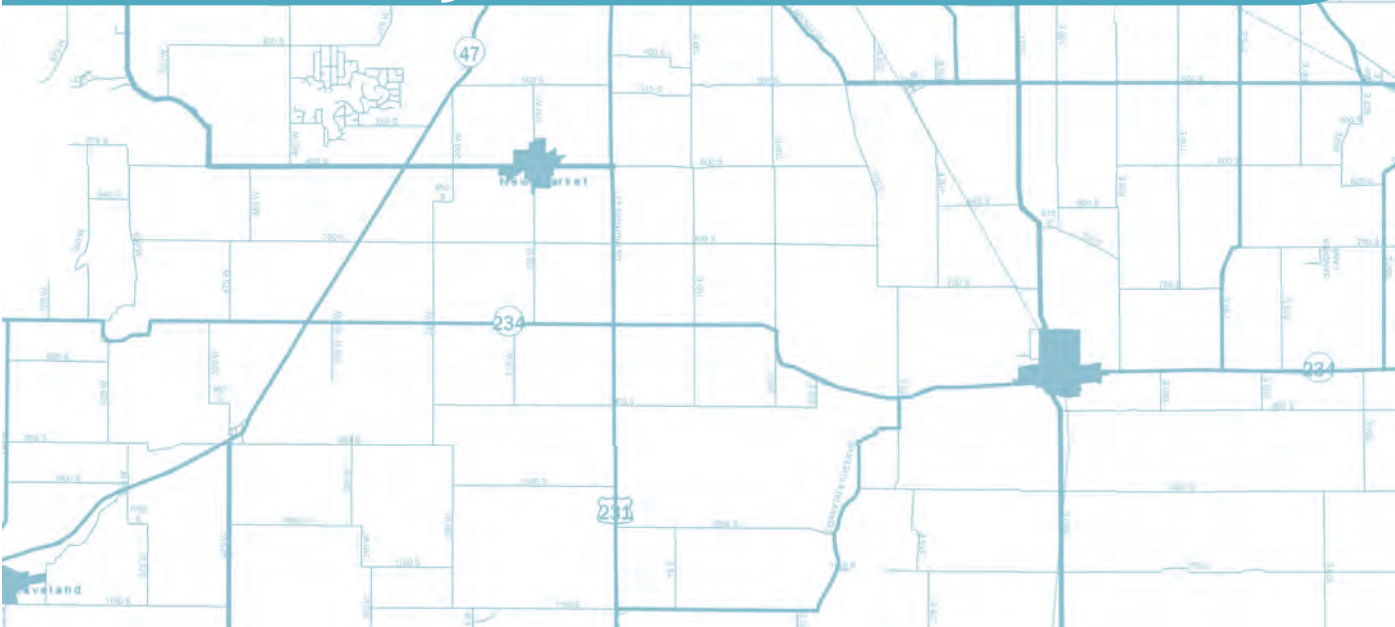
45% of commuters are traveling less than 10 miles to their jobs. A little more than 100 people travel more than 50 miles north towards Lafayette and southeast towards Indianapolis than those who travel between 10-24 miles and 24-50 miles. This indicates that the major metropolitan areas may have a more attractive job base than Montgomery County currently offers. The Montgomery County Comprehensive Plan and Economic Development Plan illustrates the economic benefits of job creation and attraction for Montgomery County.

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Transportation Needs & Analysis

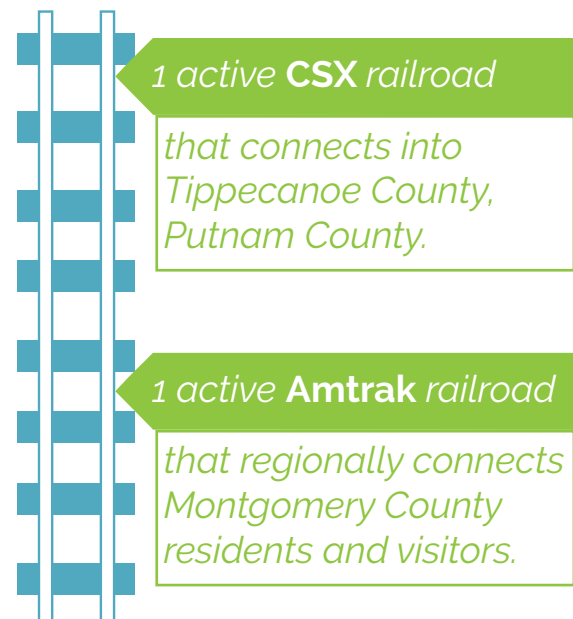
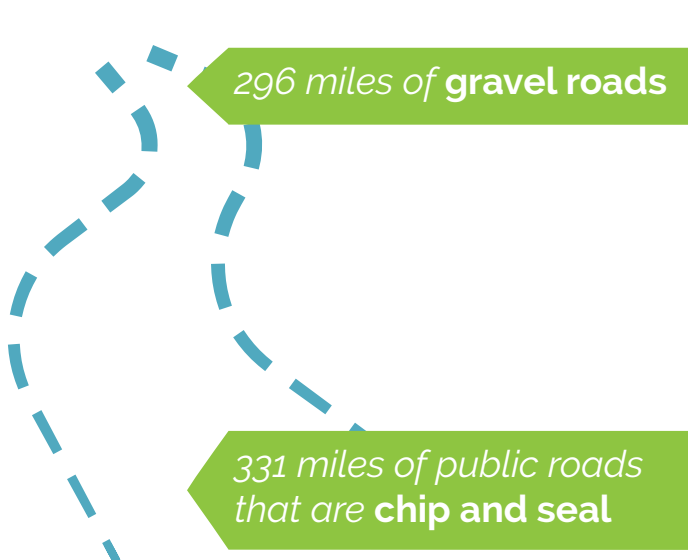


Current Infrastructure Assets

Montgomery County is responsible for significant amounts of critical infrastructure throughout the county, including roads and bridges. Maintaining this existing system in a state of good repair takes considerable effort, planning, and prioritization. A key outcome of this thoroughfare plan is identifying potential priorities for improving this network. Establishing a hierarchy of improvements allows the county to better apply for funding opportunities, such as the INDOT Community Crossings Grant.



Current conditions on S.R. 32



181 Bridges
managed by the county.



Over **17 Miles** of trails
and bikeways

Source: Arc GIS Online

Existing Road Networks

It is important to understand the current conditions within Montgomery County before establishing any recommendations for future network improvements.

The existing transportation network is illustrated in Figure 4.3, with roadways classified according to the Federal Highway Administration (FHWA). The FHWA designates functional classifications of streets and roadways based along opposing continuums to either connect to destinations or to carry through-traffic. See the definitions table on the following page for a description of the functional classifications.

Other important factors related to functional classification include access control, speed limit, traffic volume, the spacing of routes, number of travel lanes, and regional significance. Many of these classified roads are the responsibility of INDOT but intersect with county roads and function as part of the county roadway network.

Figure 4.1

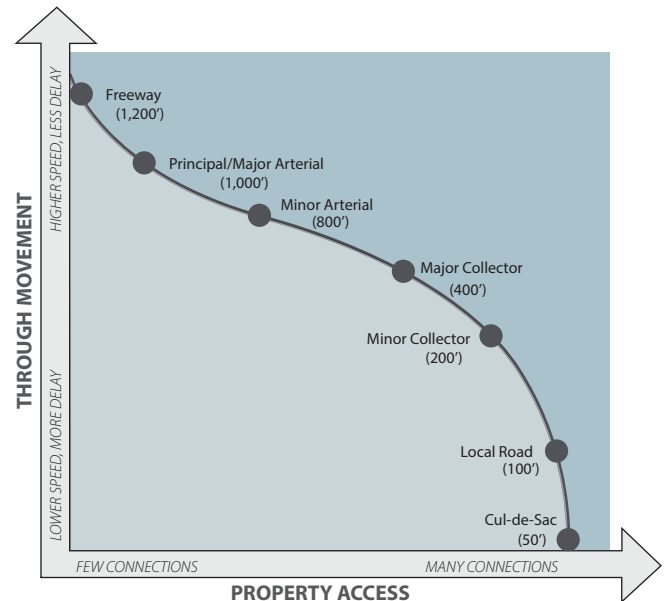
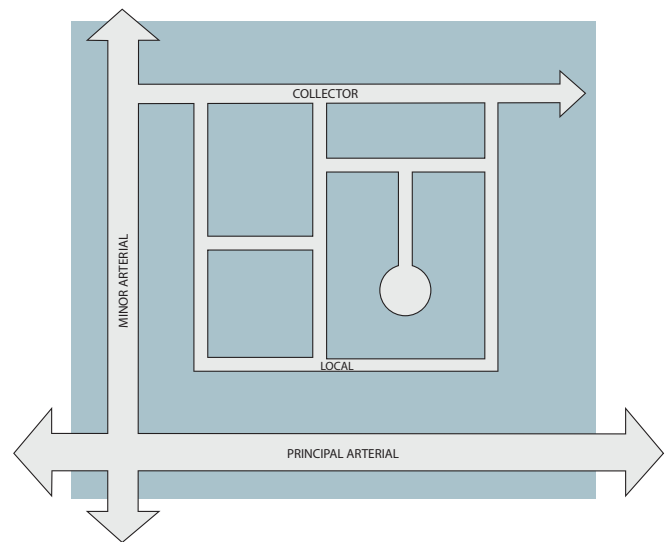


Figure 4.2



Roadway classifications establish a hierarchy, as illustrated in Figures 4.1 and 4.2 above, which serve to create a functioning and efficient roadway network.

Existing Functional Classification Definitions

Interstates such as Interstate 74, are the highest classification of roadway. They prioritize mobility and have minimal access. Interstates are high speed, high volume, and have statewide or national significance. Interstates are planned and maintained by state authorities with federal oversight.

Principal Arterial - Other Freeways or Expressways look very similar to interstates, but without the interstate designation. These have regional or statewide significance. There are currently no roadways in Montgomery County with this classification.

Principal Arterials - Other carry high volumes of regional traffic. They serve major cities from multiple directions, while in rural areas, they provide connectivity to towns. Arterials provide direct access to adjacent land but may limit the number of intersections and driveways to give higher priority to through-traffic. Principal arterials are spaced at three to five miles in suburban areas, and farther apart in rural areas. U.S. 231 is an example of a principal arterial in Montgomery County.

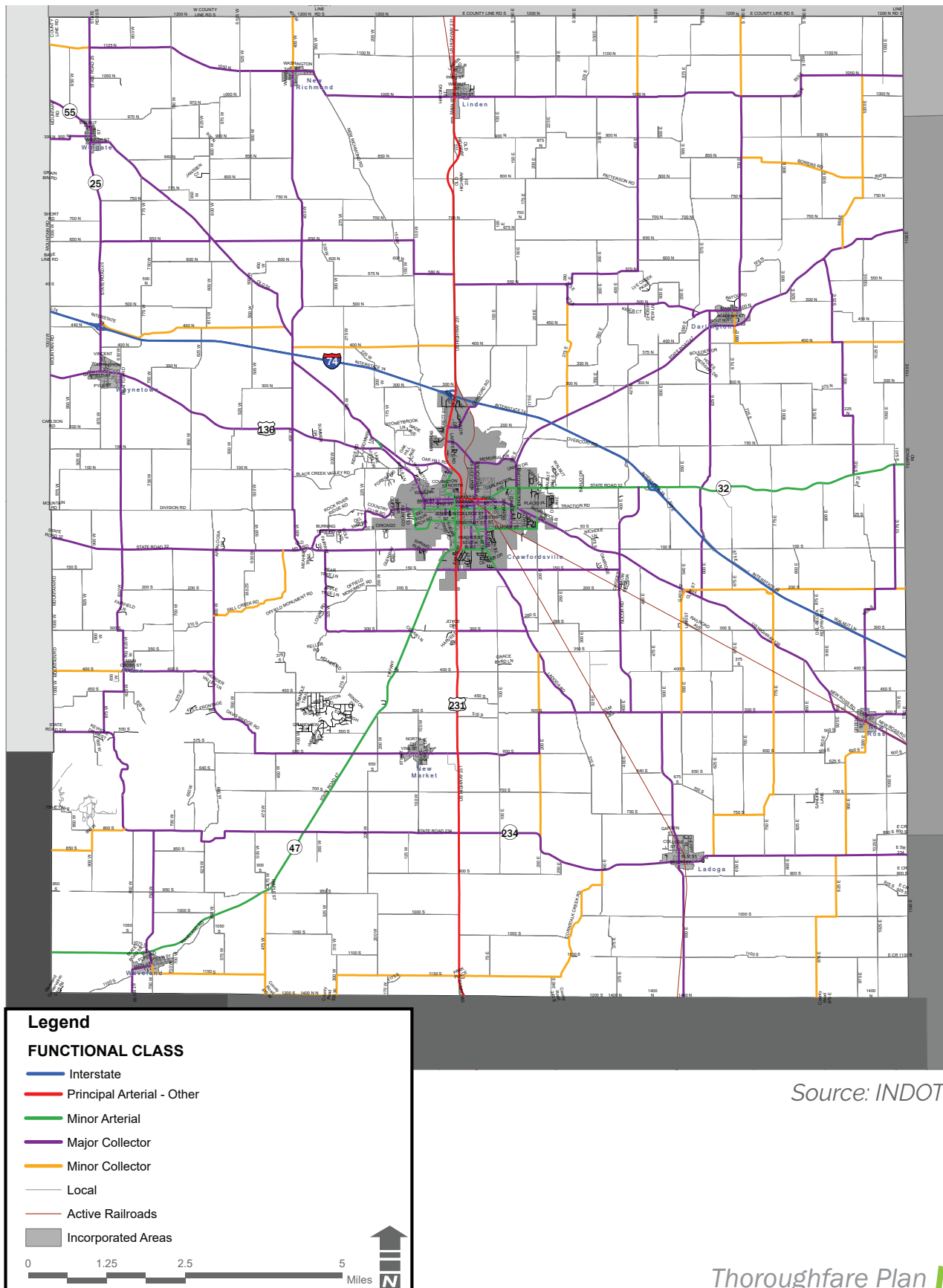
Minor Arterials are similar to principal arterials but are spaced more frequently and serve trips of moderate length. The spacing of minor arterials is two to three miles in suburban areas and less in rural areas. Minor arterials connect most cities and larger towns and provide connectivity between principal arterials. S.R. 32 east of Crawfordsville is classified as a minor arterial.

Major Collectors gather traffic from the local road network and connect them to the arterial network. They provide a balance between access to land and corridor mobility. These roads often provide connectivity to traffic generators not already on the arterial system, such as schools, parks, and major employers. Nucor Road and C.R. 1000 N are examples of major collectors in Montgomery County.

Minor Collectors are similar to major collectors but are used for shorter trips. They provide traffic circulation in lower-density developed areas and connect rural areas to higher-class roadways. Fall Creek Road and C.R. 775 E are examples of minor collectors.

Local Roads make up the largest percentage of roadways in most networks. Their primary function is to provide access to land. Trips are short, lower speeds prevail, and cut-through traffic may be discouraged. All remaining roads that are not arterials or collectors are considered local roads. In most cases, local roads are not part of the system of roads that is eligible for federal funding.

Figure 4.3 | Existing Functional Classification



Key Road Networks

State Routes

Further review of the existing functional classification and road network reveals that Montgomery County has a large number of state routes that criss-cross the county. These state routes run north/south, east/west and diagonally across the county, with nearly all of them intersecting in some way in Crawfordsville. State routes are illustrated in Figure 4.4.

The amount and coverage of these state routes are unique compared to most Indiana counties. This requires that the county closely coordinates with INDOT on improvements to not only county-managed roads but also these state routes, which are critical to connectivity throughout the county.

Primary and Secondary Road Network

Recognizing the critical role that state routes play in the county, a key road network map was created to illustrate the primary and secondary roadways in the county.

The primary road network, as illustrated in red in Figure 4.5, is comprised of all the state routes and other roadways which serve to create direct connections between communities and destinations within the county.

The secondary road network, as illustrated in green in Figure 4.5, is comprised of roadways which facilitate additional connections between the primary road network and lesser-traveled destinations in the county.

The local road network, as illustrated in black, is primarily local county roads.

This hierarchy of key road networks has been used as the starting point to analyze the county road network against several inputs, including:

- Accident data
- Existing and projected traffic volumes
- Pavement Surface Evaluation and Rating (PASER) data
- Road surface type

The key road network map also forms the backbone of the Future Thoroughfare Map discussed later in this plan. The primary road network translates into minor arterials and some major collector roads on the Future Thoroughfare Plan Map. The secondary road network translates into major and minor collector roads on the Thoroughfare Plan Map.

Figure 4.4 | State Routes

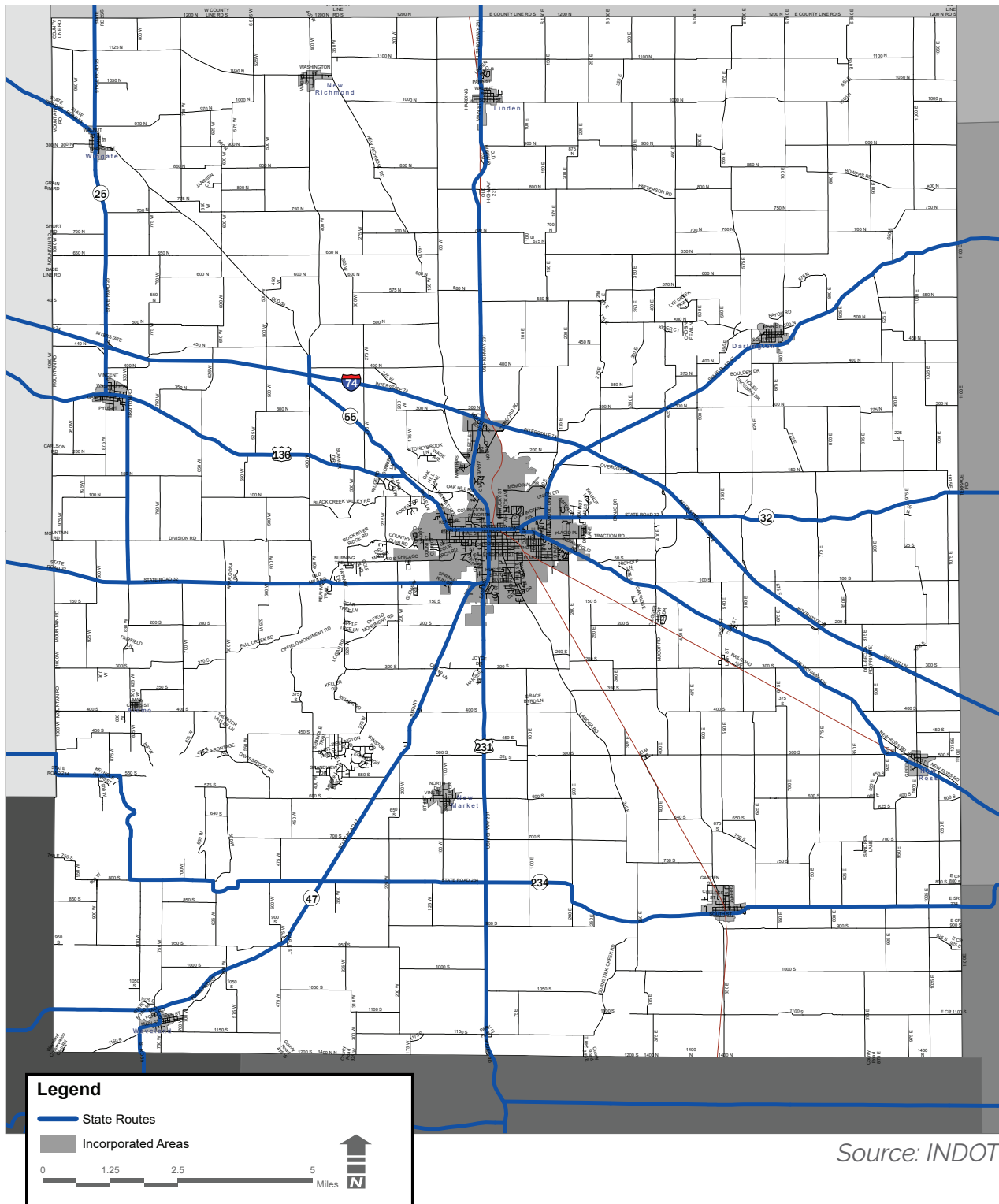
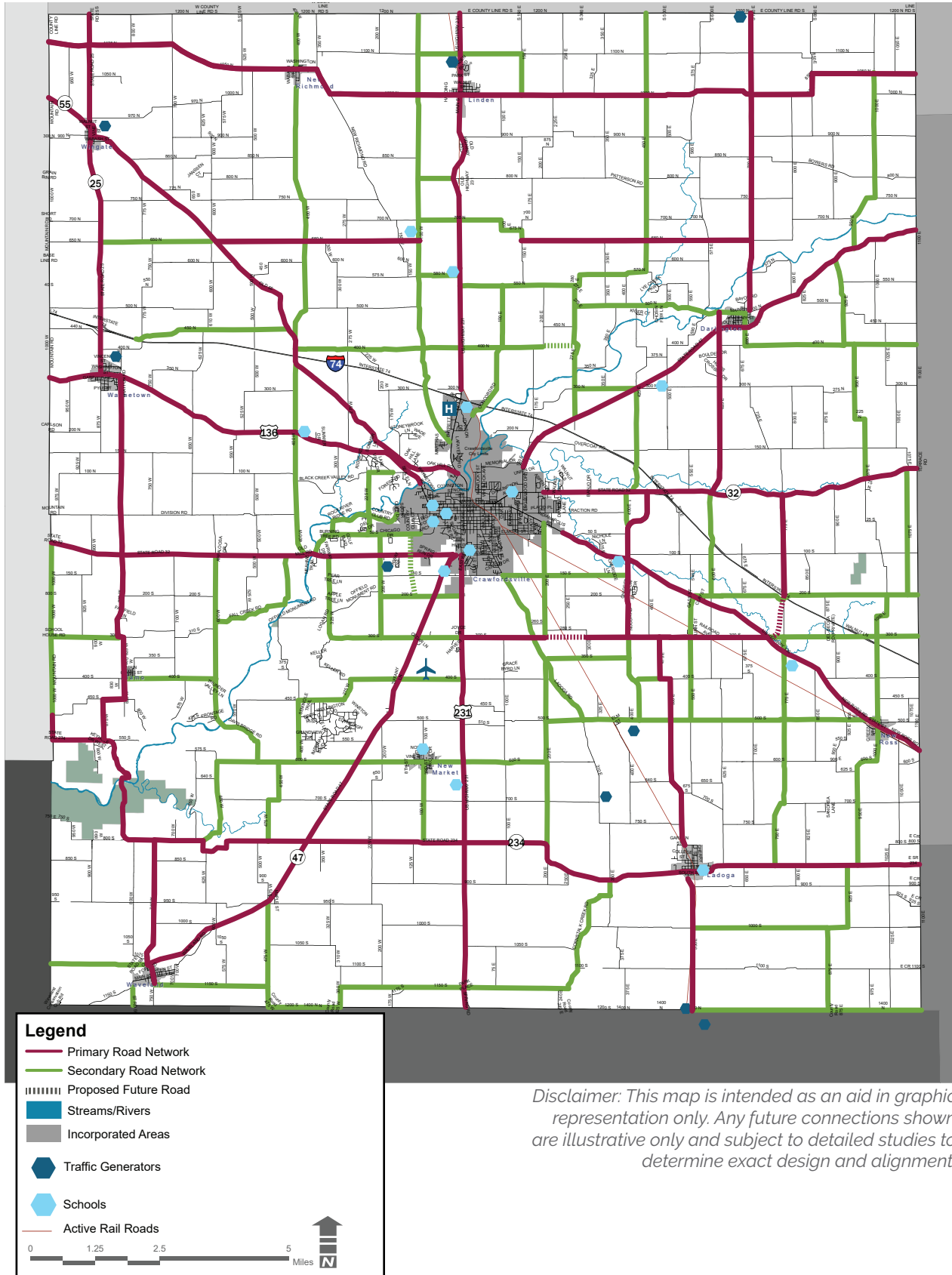


Figure 4.5 | Key Road Networks



Comparative Analysis

Crash Data

Automated Reporting Information Exchange System (ARIES) is the data collected by law enforcement agencies. These data are used to understand locations of key intersections or roadway segments that appear to have a higher frequency or more severe accidents within the county's road network.

Figure 4.6: Crash Heat Map illustrates the intensity of all accidents throughout Montgomery County between 2012 and 2017. As can be seen on the map, the highest concentration of crashes within the county occur along state routes, such as Interstate 74, S.R. 32, US 231, and S.R. 47. While these are out of the county's direct control, it is useful to understand which routes or segments are problematic to be able to communicate concerns with INDOT.

Figure 4.7: Crashes with Injury or Fatality, helps to identify further which segments or intersections should be further evaluated due to crashes which result in injury or fatality. The data is for the years 2012 through 2017, as in Figure 4.6. The majority of crash locations occur along state routes. There are a few county road segments which may warrant further study. The county is also embarking on a pilot Local Road Safety Plan in coordination with Indiana Local Technical Assistance Program through Purdue University. This study should further help sift through crash data and determine priorities for the county.

Figure 4.6 | Crash Heat Map (2012-2017)

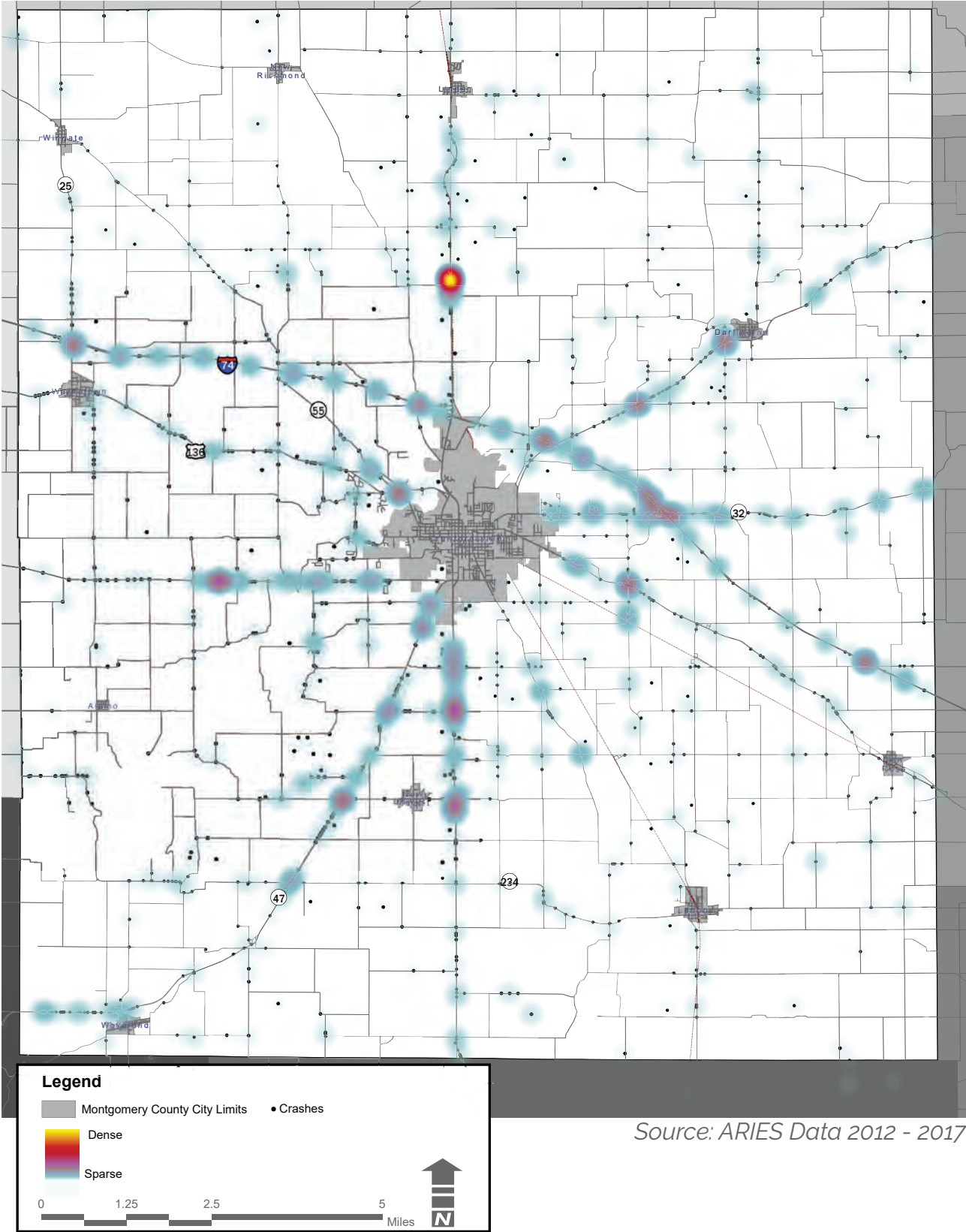
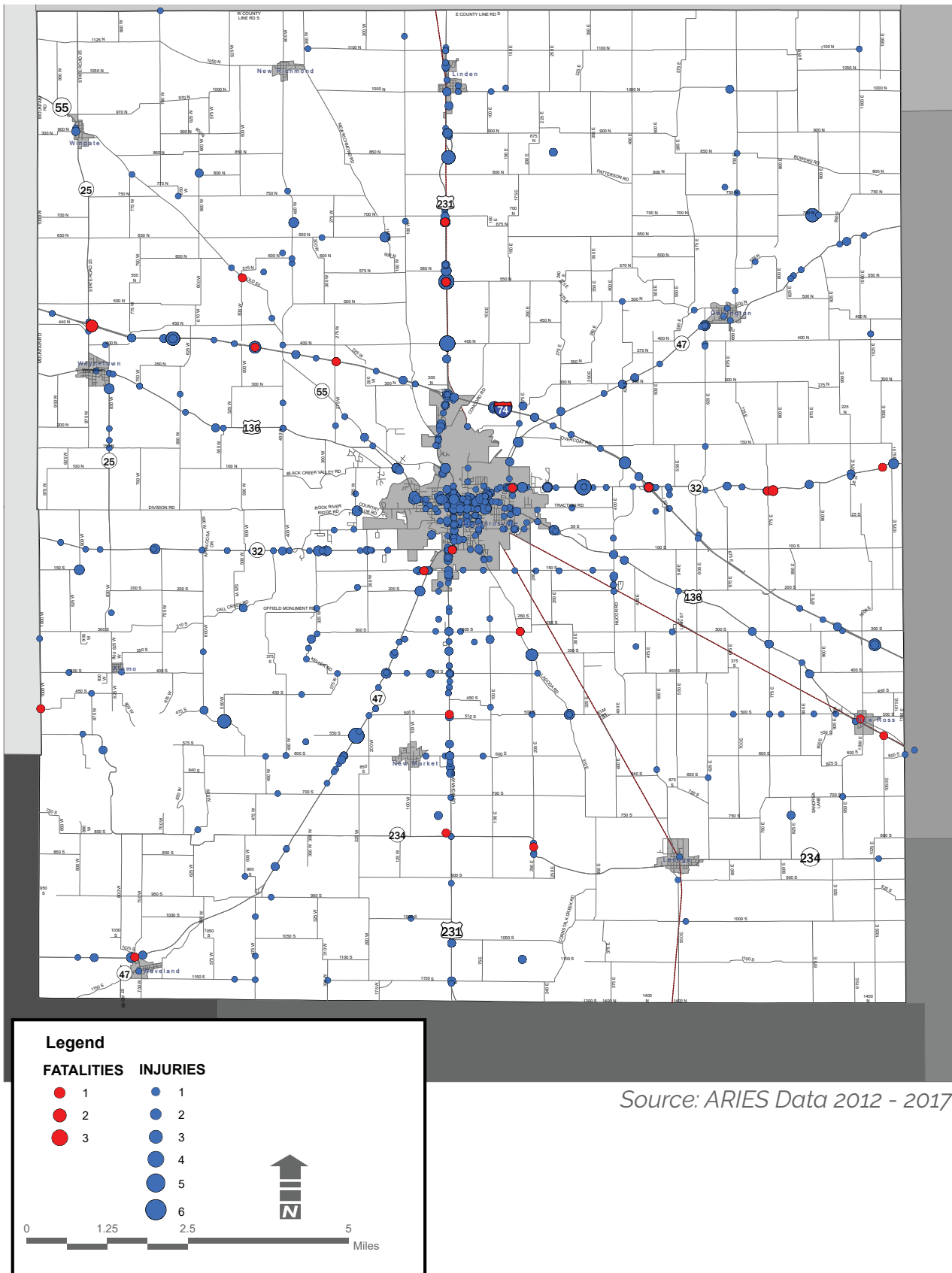


Figure 4.7 | Crashes with Injury or Fatality (2012-2017)



Traffic Volumes

Average annual daily traffic (AADT) is a measure of the total volume of vehicular traffic on a roadway for a year divided by 365. This value is useful in understanding how much use roadways receive compared to other roads.

Annual average daily traffic volumes (AADT) for 2017 are illustrated in Figure 4.8. While 2017 data may be slightly dated, it is still an accurate picture of traffic volume on Montgomery County's roadways as no significant traffic generating development has occurred since 2017. As expected, the roads with the highest volumes include state roads, interstates and U.S. highways, with U.S. 231, S.R. 47, U.S. 136 and S.R. 32 being a few of them. Traffic throughout Montgomery County on local roads typically ranges between 2,000 and 5,000 vehicles.

Figure 4.9 Projected Future AADT (2037) illustrates the estimated AADT for year 2037 by INDOT. The same proportions of traffic volumes between roadways are mostly the same with a few minor differences.

Figure 4.10 AADT Increase/Decrease highlights the differences between the two maps. There were several roads added to the 2037 forecast map which did not have count data on the 2017 map. These roads are shown in blue.

Of greater interest are the roads that have projected increases, of which there are several. Generally, these increases are clustered around municipalities and along state routes. Roads likely to see an increase are illustrated in green on figure 4.10 and include segments of S.R. 47, US 231, and S.R. 25. The road segment with the largest projected increase in volume is S.R. 32 east of Crawfordsville. This connection between Montgomery County and Lebanon/Interstate 65 is vital to continue economic development.

It should be noted that the projections INDOT prepares are wide network based projections. As Montgomery County considers improvements, detailed traffic count data should be gathered for those locations and compared against historical count data. Depending on the complexity and scale of proposed improvements, the county may also want to consider detailed traffic modeling for future volumes. This will take into consideration future development capacities, local road conditions, and traffic control devices which may direct traffic to specific routes over others. The projected volumes provided by INDOT do not go into this detail.

Figure 4.8 | Existing AADT (2017)

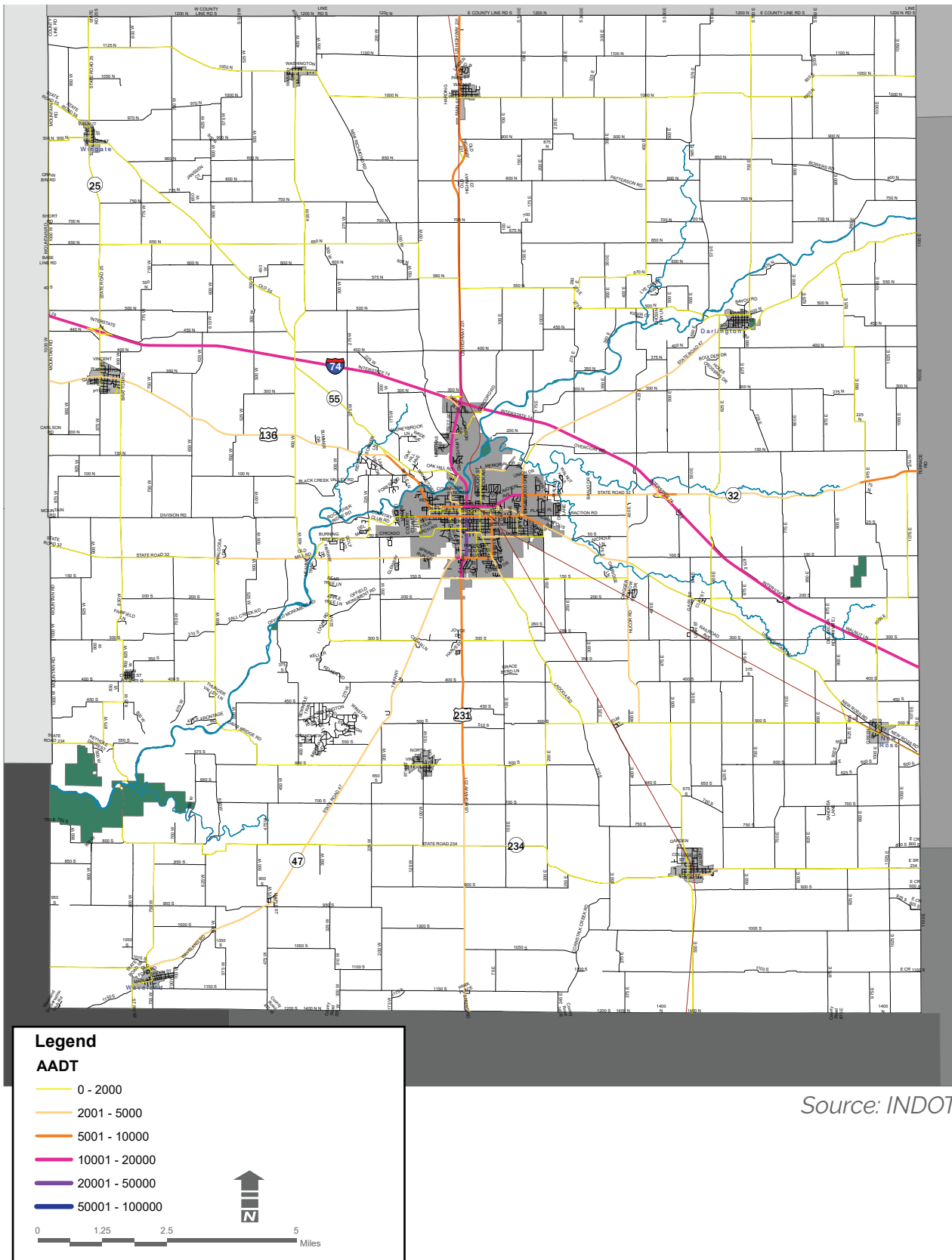


Figure 4.9 | Projected Future AADT (2037)

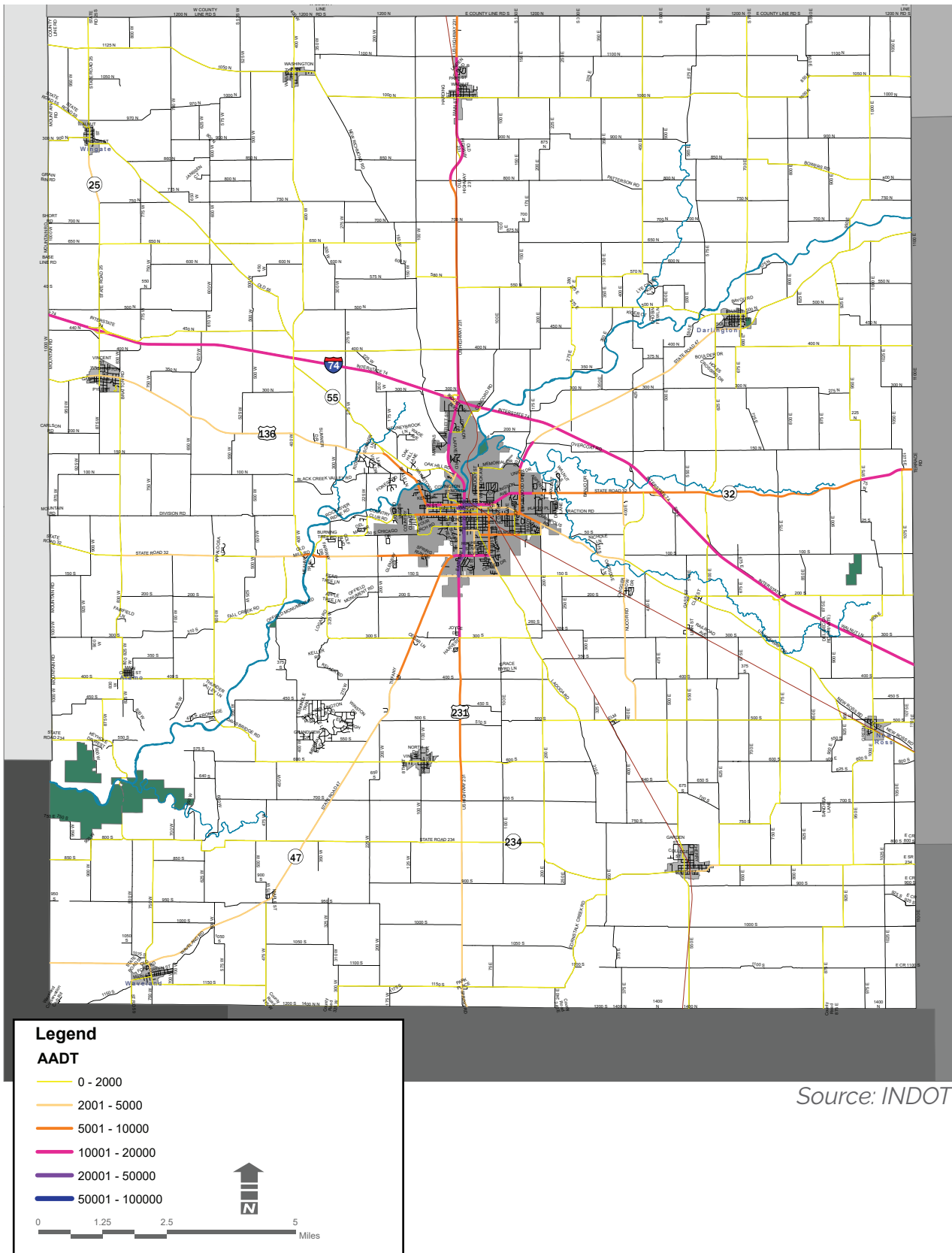
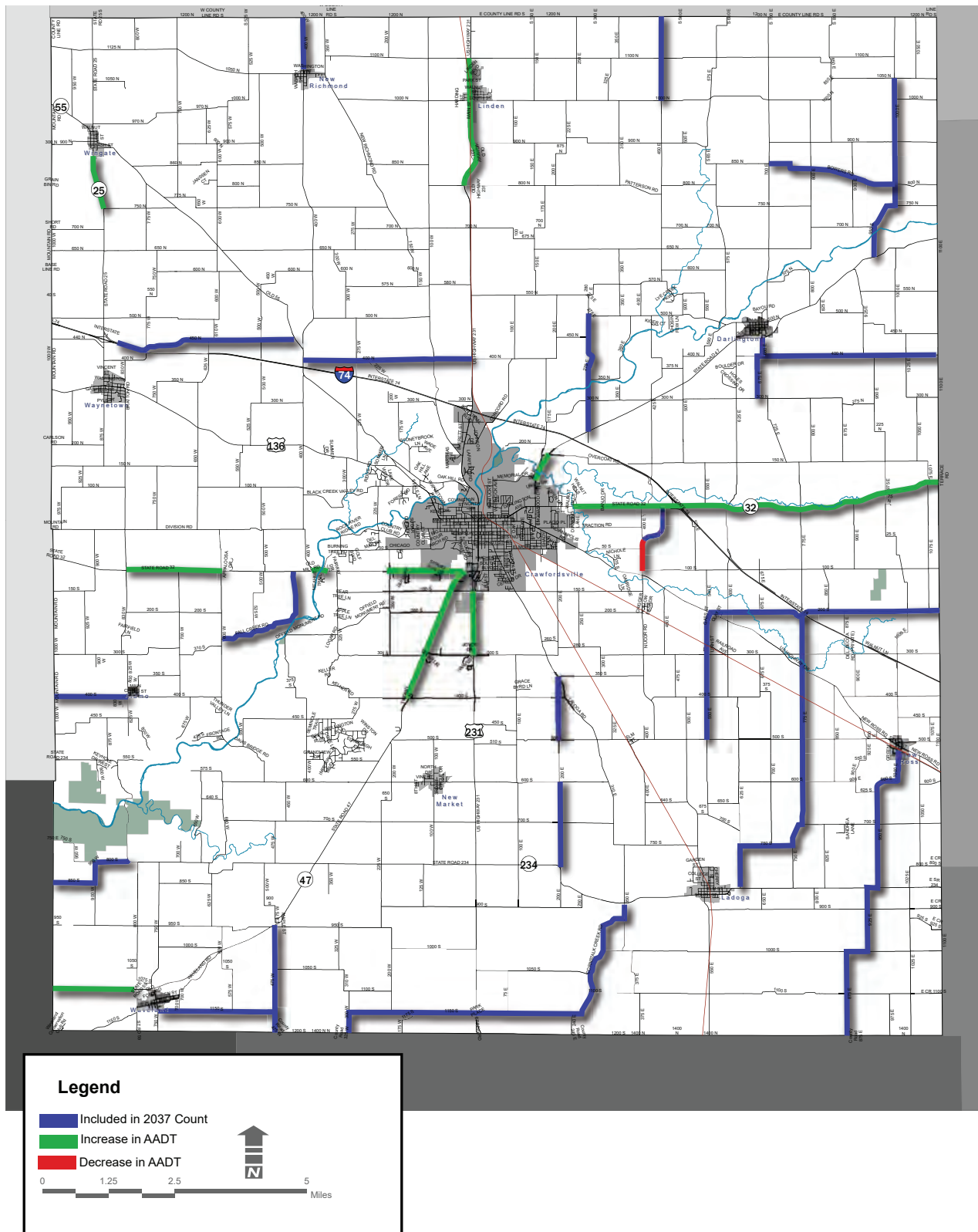


Figure 4.10 | AADT Increase/Decrease Included in 2037 Projections



Existing Pavement Surface Evaluation and Rating (PASER)

A Pavement Surface Evaluation and Rating (PASER) system is used for determining road condition and for helping create and facilitate capital improvements or maintenance plans. PASER studies are also often used to determine roadway funding for future projects. The higher the number associated with a road, the better the quality.

To illustrate roads of concern in the county, Figure 4.11 highlights poor (values 1-3) and fair (values 4-7) roads from the 2018 PASER for Montgomery County. A large majority of county roads are included in the poor and fair category.

In order to help bring some additional focus to potential priorities for the road network, the Key Road Network map was overlaid with the PASER ratings of poor or fair. The roads which both occurred on the Key Road Network Map and which were rated poor or fair are illustrated in Figure 4.12. The road segments on the primary road network rated as poor or fair are listed in the table to the right.

Table 4.1 | Primary Road Segments and PASER

Road	Segment	Rating
C.R. 750 W	Between S.R. 234 and S.R. 47	Poor
C.R. 875 W, 450 S, 825 W, 300 S, 830 W	Between S.R. 234 and S.R. 32	Poor
Old State Road 55	Between Wingate and Crawfordsville	Fair
C.R. 1125 N, 1050 N, 1000 N	Between the county line and C.R. 100 W.	Poor
C.R. 625 E	Between Darlington and S.R. 32	Poor
Nucor Road	Between S.R. 32 and C.R. 300 S	Fair
C.R. 550 E	Between Ladoga and C.R. 1000 S	Fair

Figure 4.11 | 2018 Poor and Fair PASER Values

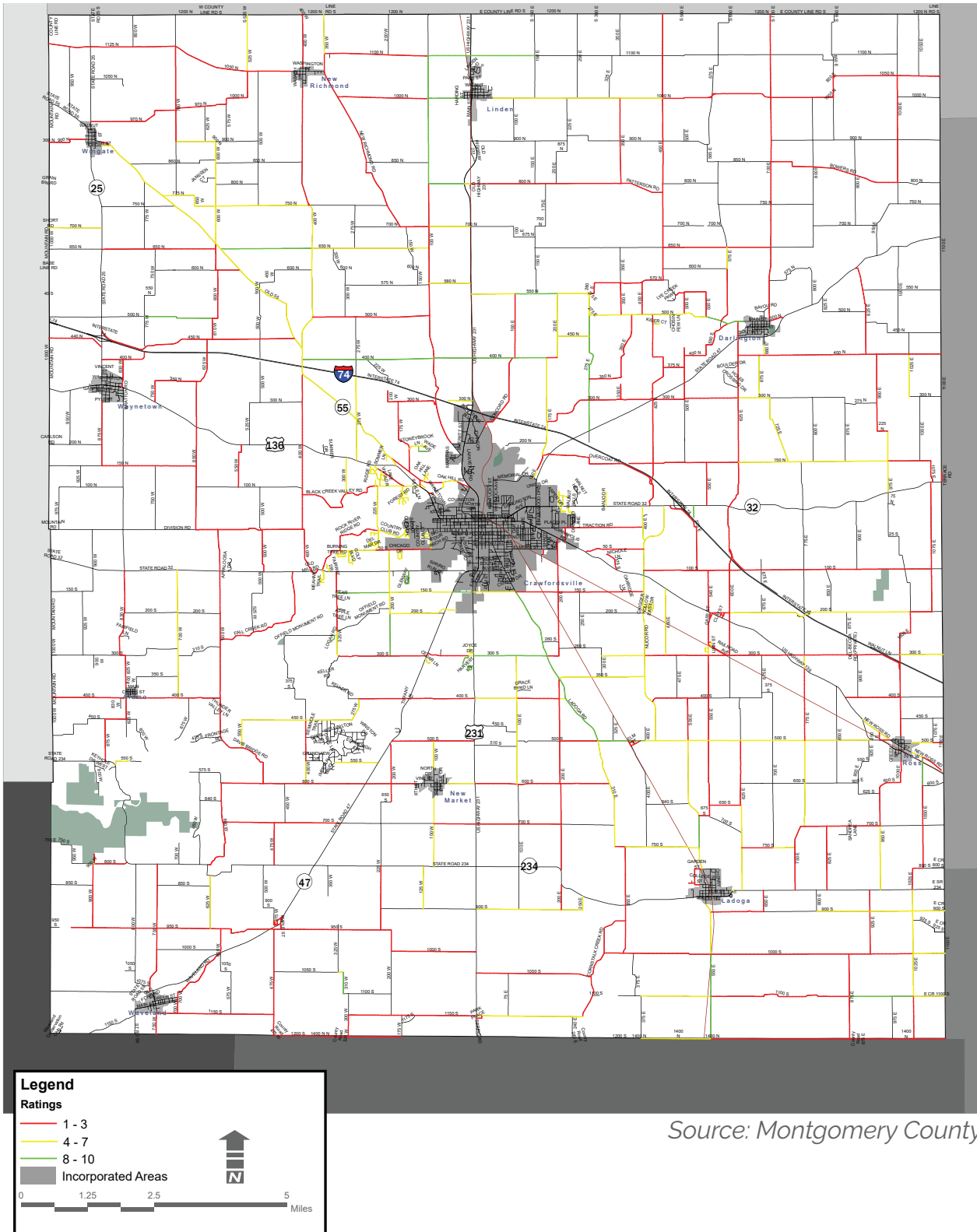
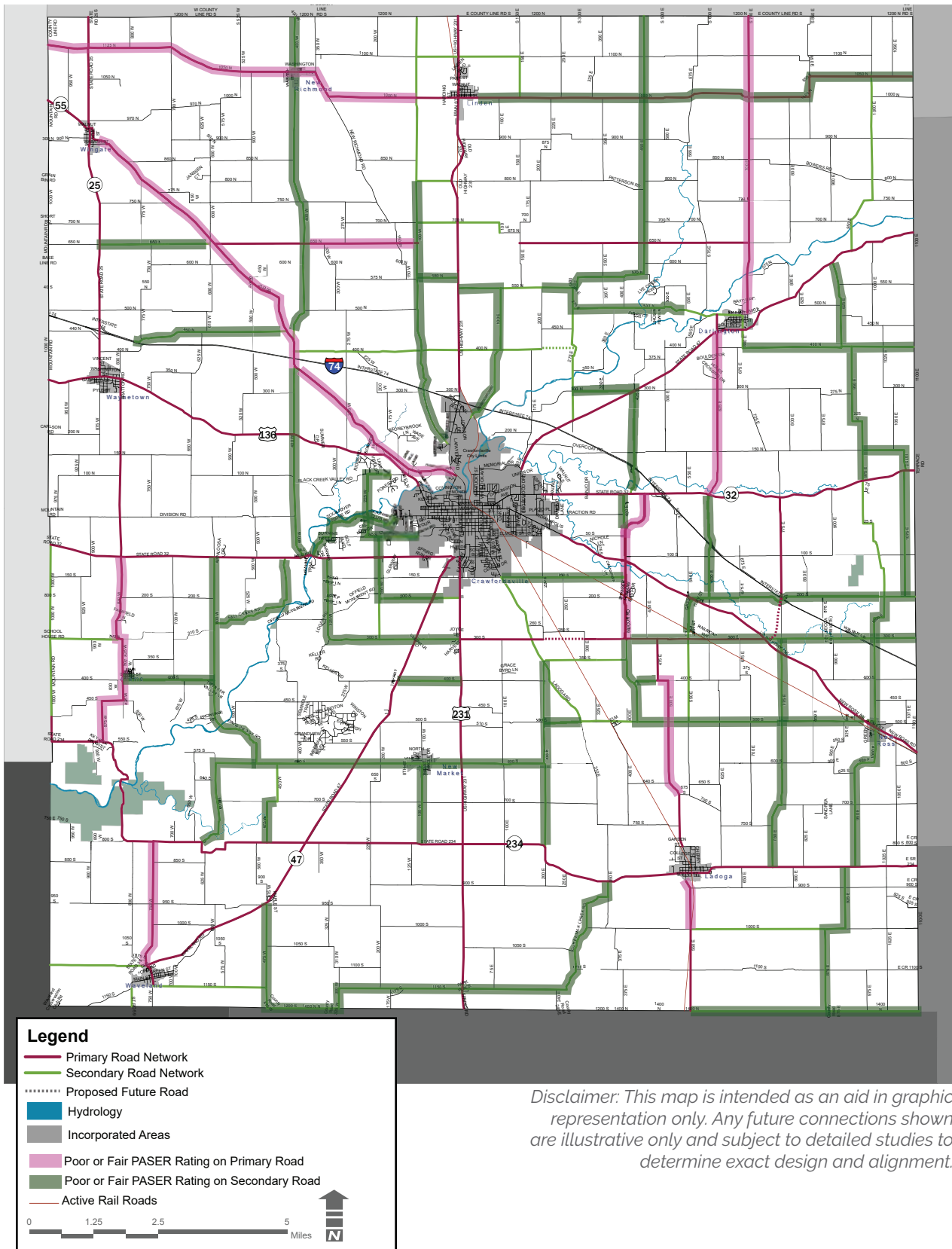


Figure 4.12 | PASER and Key Road Network



Road Surface Type

While PASER is a useful metric, it only provides ratings on roadways that have hard surface paving. This means gravel roads are not considered on the rating system. Montgomery County has a significant amount of gravel roads, as well as many chip and seal roads. “Chip Sealing” is a common pavement maintenance practice used on low volume roads that extends pavement life and provides a good driving surface. These roads contain a layer of gravel chips embedded in a layer of liquid asphalt. In time, the asphalt can break down, and the gravel chips can become loose on the surface. Figure 4.13 illustrates all gravel and chip sealed roads within the county. Table 4.2 below also provides a breakdown of the total mileage of these roads in the county.

Similar to the analysis method described for the PASER values, the Key Road Network was overlaid with identified gravel and chip and seal roadways. Figure 4.14 illustrates the portions of the primary and secondary road network, which are on gravel or chip sealed roads. Table 4.2 below lists how many miles of primary and secondary roads are on gravel or chip sealed roads. As can be seen in both examples, there are just a few road segments on the Key Road Network map which are currently comprised of gravel roads.

Only about 45 miles of primary roadways are chip sealed. This is promising as this means the majority of the primary road network is already paved or that preventative maintenance such as chip and seal have been done which could allow for asphalt overlays in the future if needed.

Gravel roads have their place within a rural county such as Montgomery County. They are low cost and a fiscally responsible paving alternative for low volume roads. However, gravel roads can be damaging for certain vehicles to drive on and can be prone to erosion and drainage issues. As the county works to enhance the primary and secondary road network, a priority should be made to convert gravel roads identified as part of that network. Other gravel roads should be considered on a case by case basis, but only after drainage and other improvements have occurred. The next chapter will discuss policy recommendations as well as recommended roadway sections in more detail.

Table 4.2 | Gravel and Chip and Seal Roads

	Primary	Secondary	Key Roads Total	County Total
Gravel	7.34 miles	6.21 miles	13.55 miles	296 miles
Chip and Seal	45.23 miles	109.96 miles	155.19 miles	331 miles

Source: Montgomery County GIS

Figure 4.13 | Existing Gravel and Chip and Seal Roads

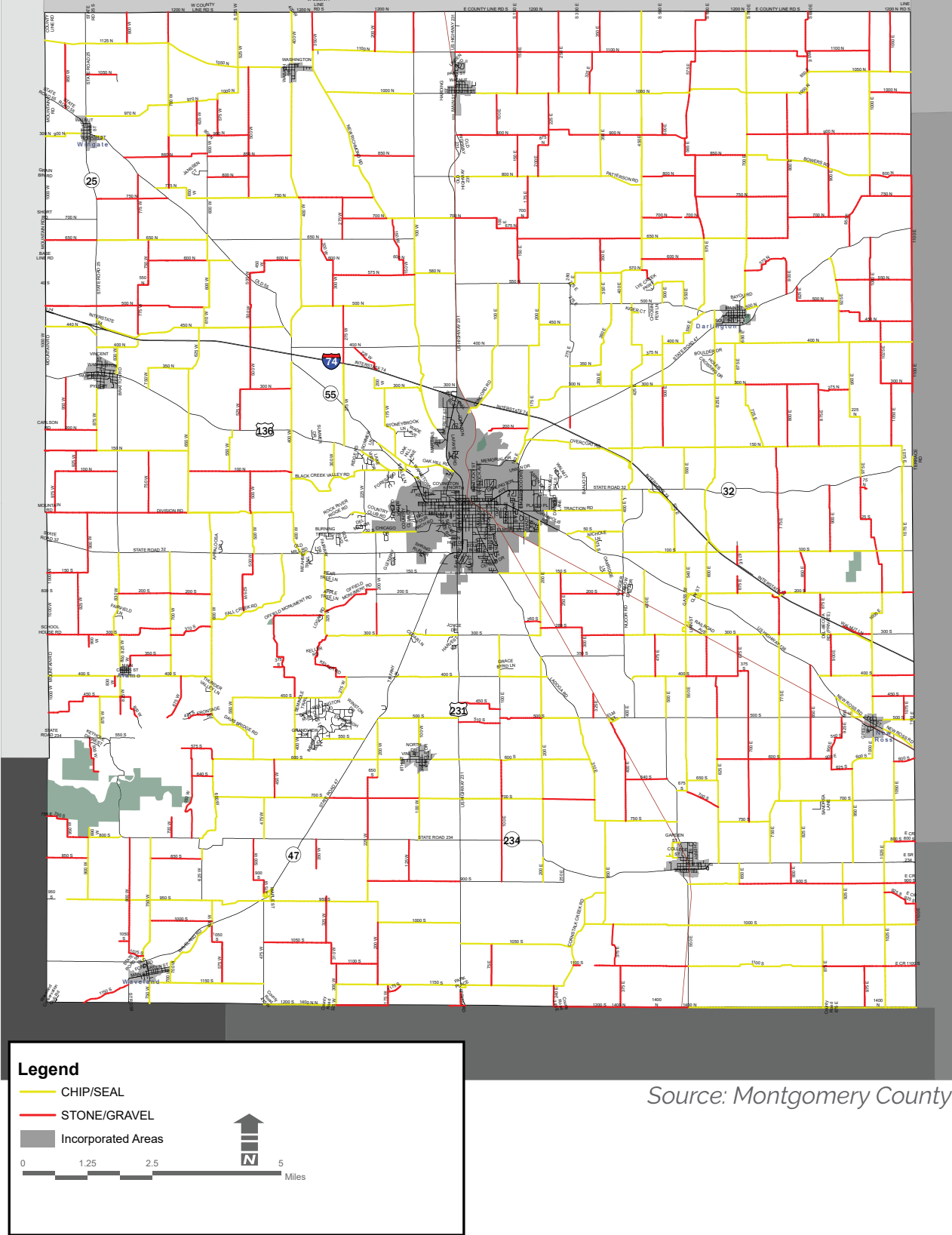
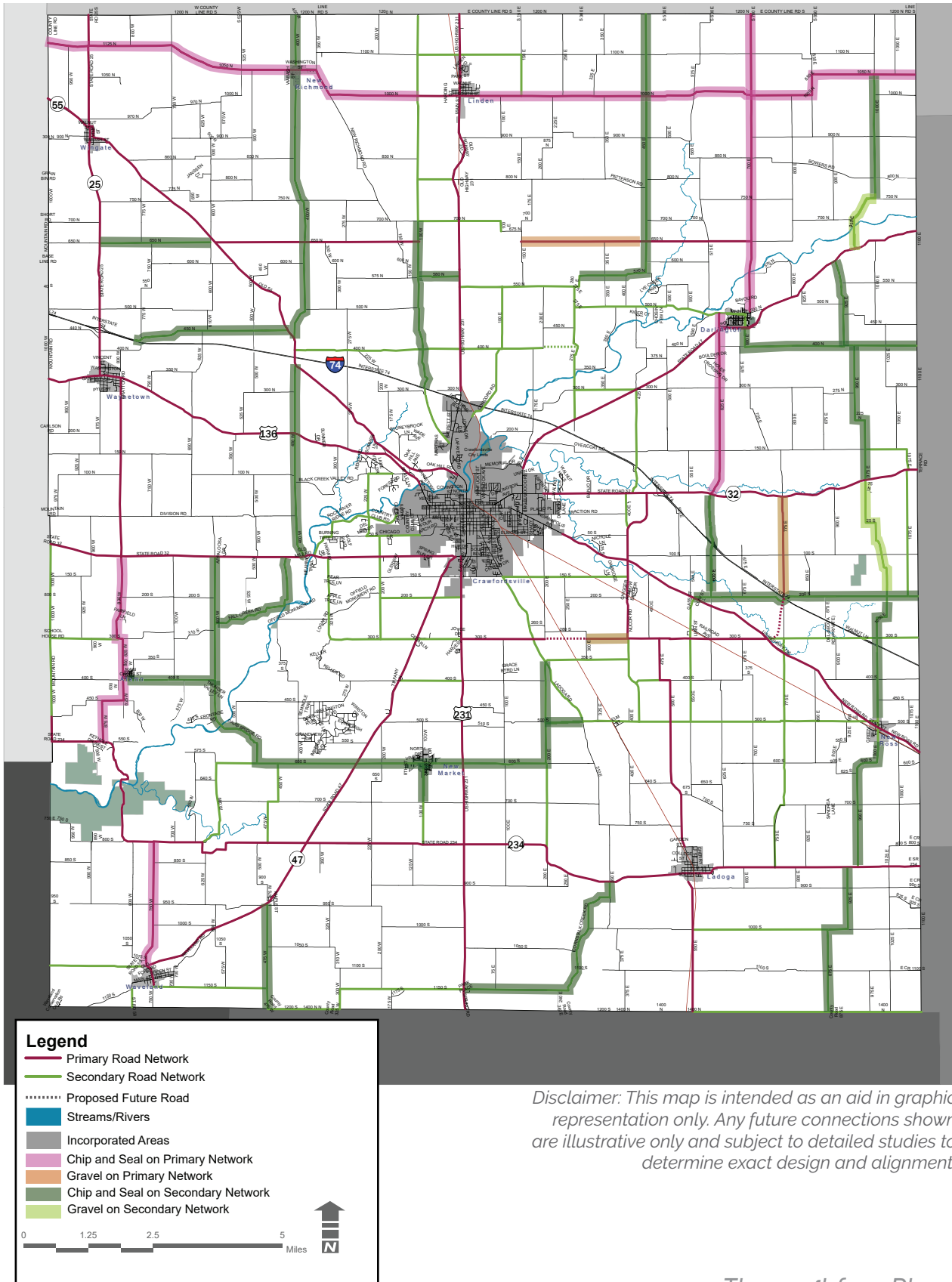


Figure 4.14 | Road Surface and Key Road Network



Disclaimer: This map is intended as an aid in graphic representation only. Any future connections shown are illustrative only and subject to detailed studies to determine exact design and alignment.

Analysis Summary

Montgomery County relies heavily on state routes and interstate connections for county-wide travel. These networks are an advantage in terms of connecting the county regionally to assets such as Interstate 65 in Boone County and the Indianapolis metropolitan area. However, they also pose a challenge with the number of county-owned roadways which intersect with these routes. The county will need to continue to coordinate closely with the state on needed transportation improvements on both state routes and on county-owned roads which interface with the state network.

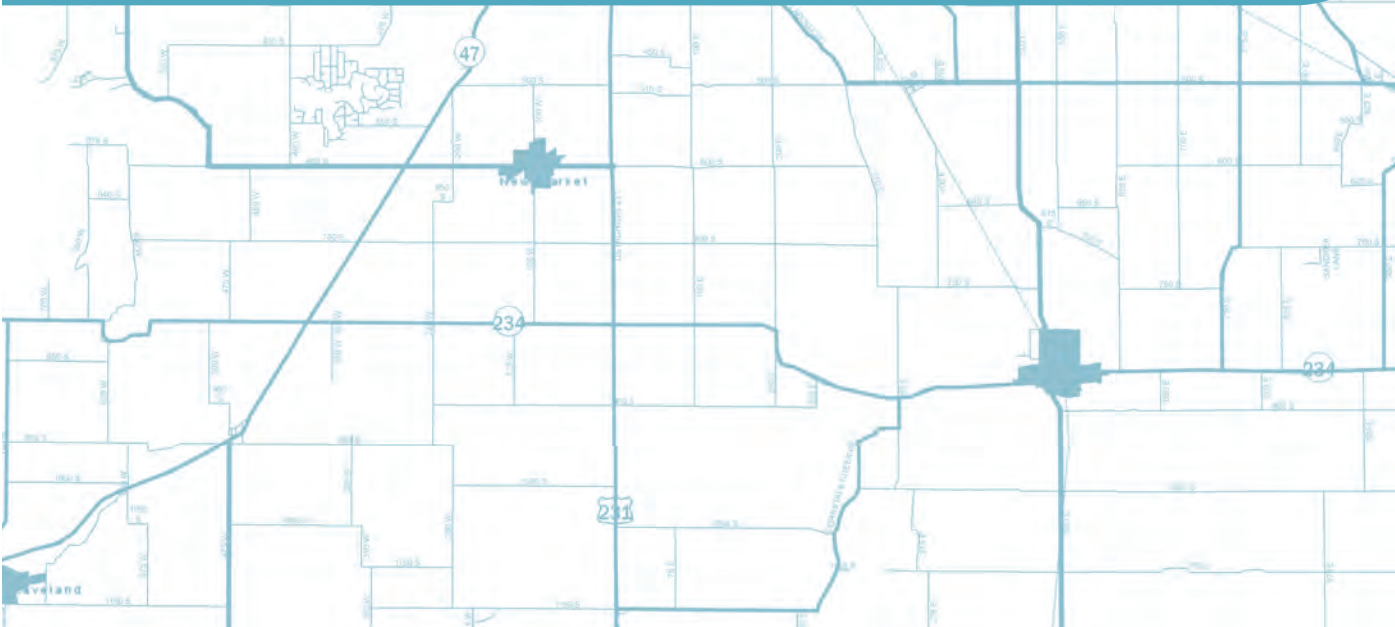
The recommendations presented in the next chapter were created based on the analysis presented in this section as well as from stakeholder feedback and previous input from the comprehensive plan. Key analysis takeaways are listed below.

- *State routes currently carry most of the traffic throughout the county and thus are most prone to accidents. However, the county must pay special attention to the interface of county-managed roadways and state routes. Safety or capacity concerns along the state routes can carry over into county managed roadways.*
- *As most state routes currently lead into or through Crawfordsville, the county can play a role in creating secondary and alternative routes to ease congestion on these roads while at the same time opening up previously identified areas for economic development.*
- *S.R. 32 is anticipated to increase in traffic volume. As this is a main freight corridor between Interstate 65 and Interstate 74, local connections and improved access to this corridor will be critical in ensuring efficient access for employment centers in the county.*
- *The PASER evaluation is useful in helping determine priority roadways. Roadways which are rated poor or fair condition and are also on the primary or secondary roadway network should be prioritized for improvements.*
- *Gravel roads are an integral part of Montgomery County. However, gravel roads which are part of the primary or secondary road network should be prioritized for improvement.*



5

Transportation Plan Recommendations



Key Road Network

Primary and Secondary Road Network

As in the analysis chapter, the key road network map illustrated in Figure 5.1 to the right serves as the starting point for identifying recommendations. The key road network map helped to identify missing functional classifications, form the thoroughfare map, and help form project priority locations.

Primary Roadway Section

The roadway section illustrated below should be used by the county as the ideal roadway section to be used to enhance county roadways identified as part of the primary roadway network. This section focuses strictly on the ideal pavement section, exclusive of right-of-way. Right-of-way standards and the thoroughfare plan presented later in this chapter should be used to guide roadway development as part of new development projects. The section below should be strictly be used as a guide for the county on their own improvement projects.

Primary Roadway Section

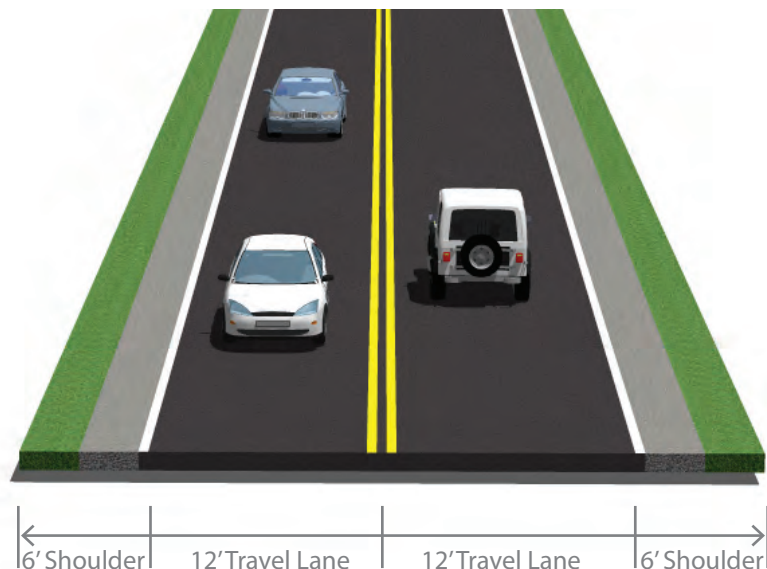
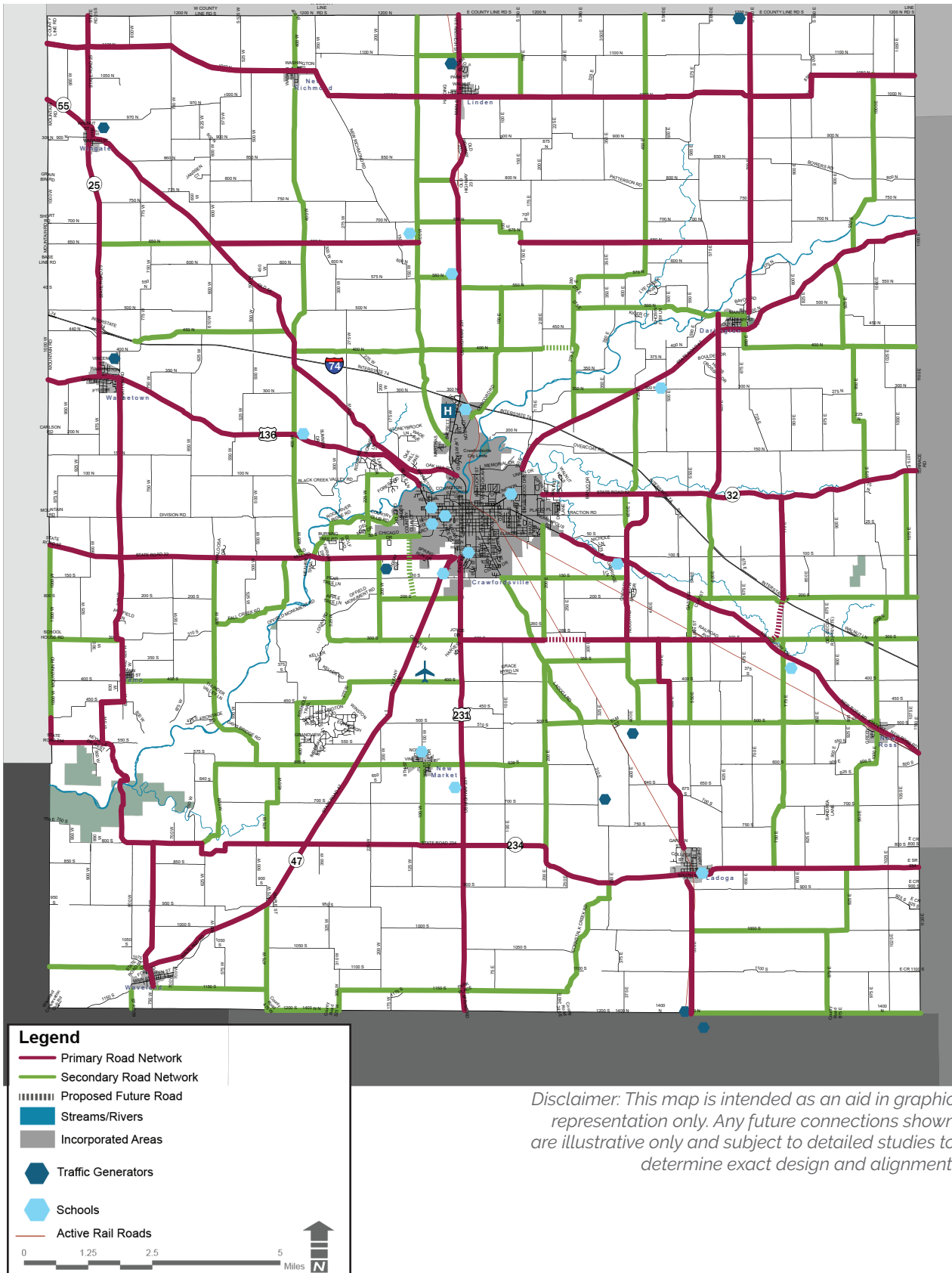


Figure 5.1 | Key Road Networks



Functional Classifications

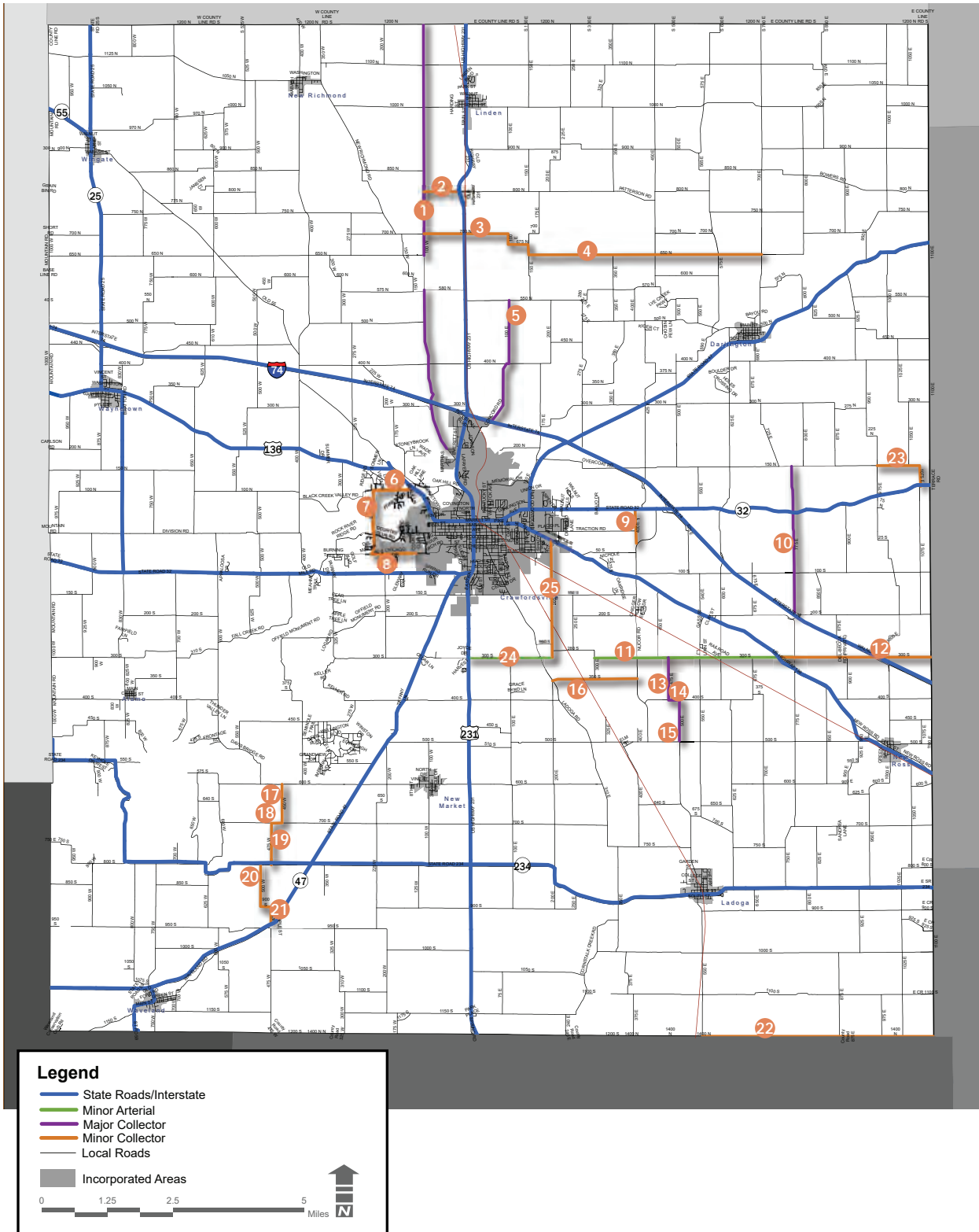
Figure 5.2 Functional Classification Changes Map shows how what updates to the functional class should be discussed with INDOT in the future. The roadways identified as changing from one functional class to another were determined by analysis as seen in Chapter 4.

As Montgomery County prepares for the future, it is important to consider changes in Functional class especially for priority areas where projects might happen more quickly. Functional classification allows for better opportunities for roadway funding.

Table 5.1 | Functional Classification Map Changes

#	Segment	Current Fun. Class	Proposed Fun. Class
1	100 W from 200 N to 1200 N	Local	Major Collector
2	800 N from U.S. 231 to 100 W	Local	Minor Collector
3	700 N from 100 W to 100 E.	Local	Minor Collector
4	650 N from 700 E to 100 W	Local	Major Collector
5	100 E from Concord Rd. to 675 N	Local	Major Collector
6	100 N from U.S. 136 to 225 W.	Local	Minor Collector
7	225 W from 100 N to 50 S.	Local	Minor Collector
8	50 S from 225 W to City Limits	Local	Minor Collector
9	400 E from S.R. 32 to Nucor Rd.	Local	Minor Collector
10	775 E. from 150 N. to 300 S.	Local	Minor Arterial
11	300 S. from U.S. 231 to 775 E.	Local	Minor Arterial
12	300 S. from 775 E. to 1100 E.	Local	Minor Collector
13	475 E. from 300 S. to 400 S.	Local	Major Collector
14	400 S. from 475 E. to 500 E.	Local	Major Collector
15	500 E. from 500 S. to 400 S.	Local	Major Collector
16	350 S. from Ladoga Rd. to Nucor Rd.	Local	Minor Collector
17	450 W. from 600 S. to 700 S.	Local	Minor Collector
18	700 S. from 475 W. to 450 W.	Local	Minor Collector
19	475 W. from S.R. 234 to 700 S.	Local	Minor Collector
20	500 W. from S.R. 234 to 900 S.	Local	Minor Collector
21	475 W. from S.R. 47 to 900	Local	Minor Collector
22	1200 S. from 500 E. to 1100 E.	Local	Minor Collector
23	150 N. from 975 E. to 1075 E.	Local	Minor Collector
24	C.R. 300 S. from S.R. 231 to C.R. 200 E.	Local	Minor Arterial
25	C.R. 200 E. from C.R. 300 S. to U.S. 136	Local	Minor Collector

Figure 5.2 | Functional Classification Map Changes



Future Thoroughfare Plan

Based on input given for the Montgomery County Comprehensive Plan, it has been concluded that most people want the county to stay the same for the most part. This can be seen in Figure 3.1: Future Land Use Map. With the majority of the county staying the same, there are some key focus areas that might necessitate some adjustments in the thoroughfare plan.

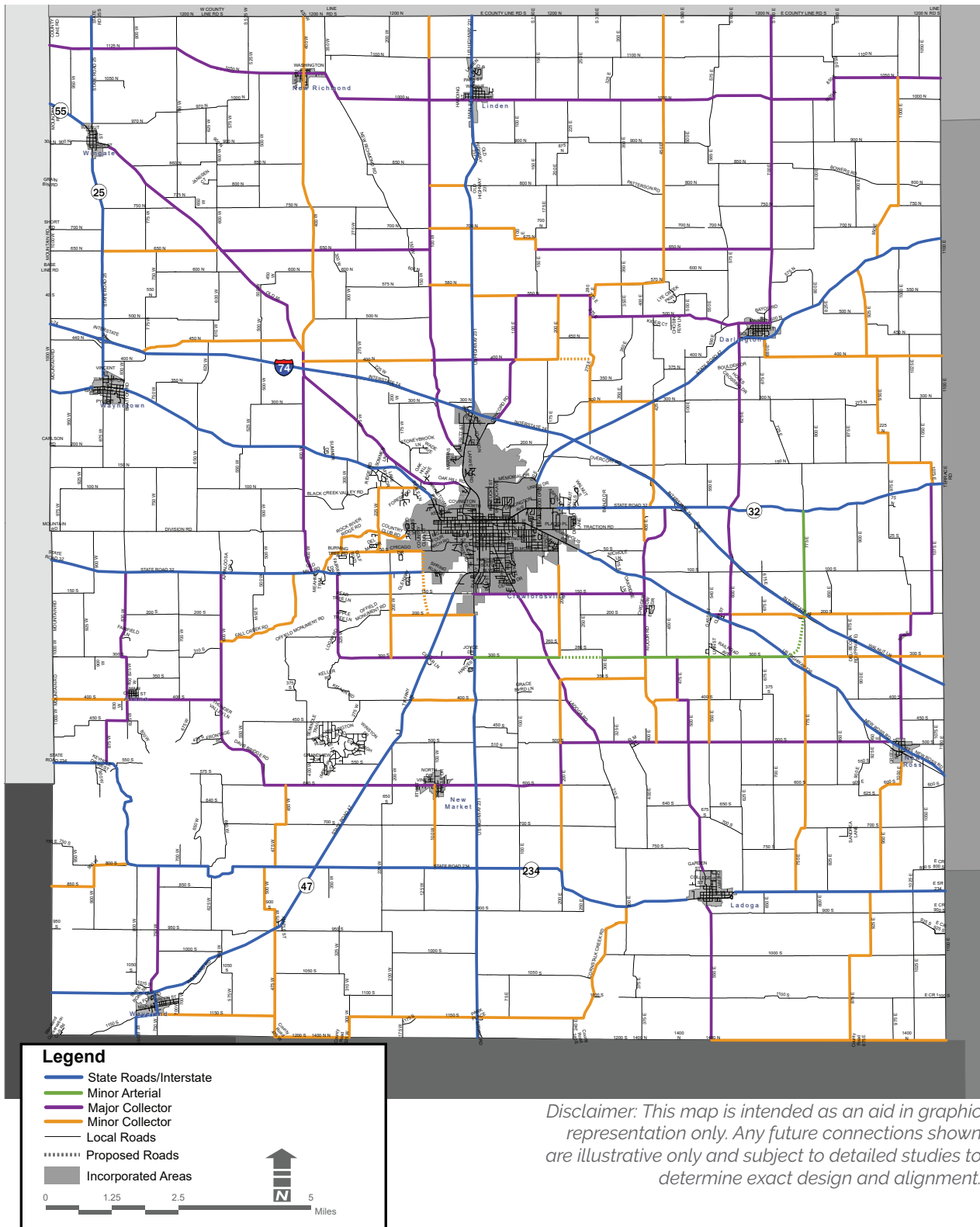
Figure 5.3: Future Thoroughfare Plan displays an envisioned transportation network for Montgomery County. This map provides expectations for roadway standards for main thoroughfares throughout the county. Terms for these corridors are similar to the terms used by INDOT which will help secure future funding. This map is designed to be a long term plan for the next 15-20 years into the future.

Proposed roads are shown on this map for future county connections and are illustrative only. These connections are conceptually illustrated and have not been studied to determine feasibility. In most cases, the proposed roads are extensions of existing roads that are suggested to help increase mobility in the county. Detailed studies and surveys are necessary to determine exact alignment, design, and any new right-of-way dedications and new road construction.

Figure 5.3 was created by referencing the existing functional class and the analysis of the Montgomery County road network. Regional coordination is encouraged in this process as well as coordination between towns within Montgomery County.

State routes are maintained by INDOT and are shown in blue on Figure 5.3. Should the county gain control of these roads it is important that they be added to the Future Thoroughfare Plan. Redevelopment along these routes must be reviewed and approved by INDOT to ensure proper right-of-way dedication.

Figure 5.3 | Future Thoroughfare Plan



Right-of-Way Standards

These suggested right-of-way standards come from discussions with the steering committee and stakeholders in the community. Recommendations are made on the basis of keeping the rural character of Montgomery County while increasing opportunity and safety. These standards should be adopted throughout the county and shall be required for new development.

Design standards allow for the roadway to include design elements primarily for vehicular traffic; however bicycle and pedestrian facilities have also been considered for this process. Drainage is an important consideration given soil types found in the county. Keeping water off

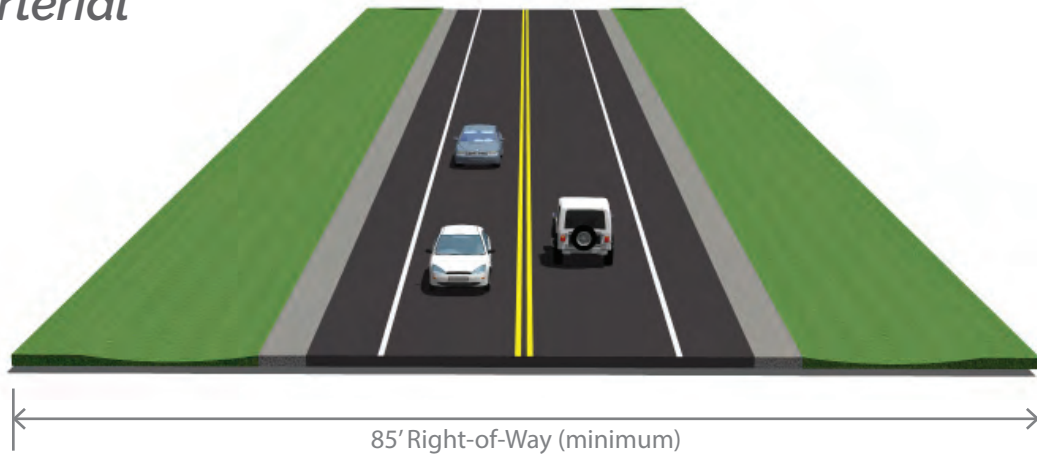
The standards in this plan are minimum design standards. The county may increase standards where appropriate.

Based on analysis of the current road network in Montgomery County, for county roads, the largest classification for roads should be a Minor Arterial. Figure 5.1 shows C.R. 300 S. as a Minor Arterial which comes from discussions of future industrial development in that area. The majority of classified roads in the county will be either a major or minor collector.

Table 5.2 | Typical Roadway Standards

	Min. R.O.W.	No. of Travel Lanes	Travel Lane Width	Aux. Lane Width	Min. Shoulder Width	Rural Drainage Strip
Major Arterial	<i>Not currently applicable</i>					
Minor Arterial	85'	2-4	12'	12'	6' (4' paved)	16'
Major Collector	70'	2	12'	12'	6' (2' paved)	16'
Minor Collector	60'	2	11'	none	4' (2' paved)	16'
Local	50'	2	11'	none	4'	

Minor Arterial



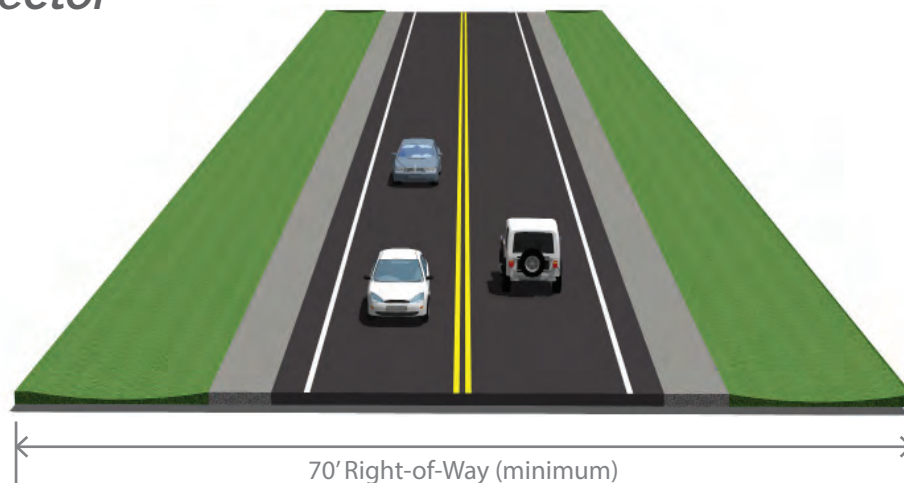
Minimum Standards

12' travel lanes
2-4 lanes
6' shoulder (4' paved)
16' drainage section
No parking

Optional Standards (Context Relevant)

5' bike lane(s)
5' sidewalk(s)
8-12' multi-use path

Major Collector



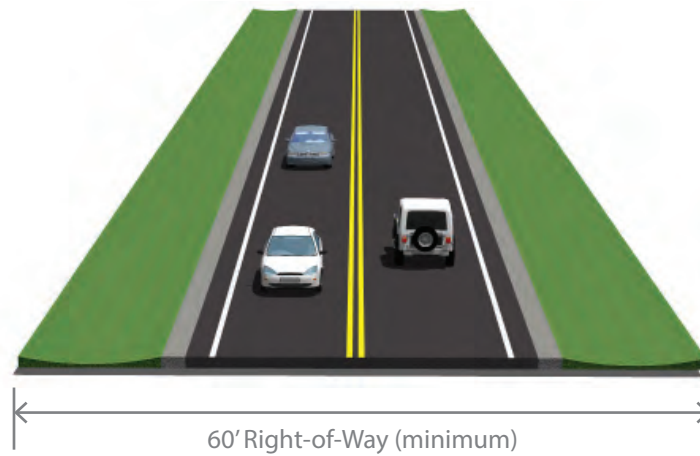
Minimum Standards

12' travel lanes
2 lanes
6' shoulder (2' paved)
16' drainage section
No parking

Optional Standards (Context Relevant)

5' bike lane(s)
5' sidewalk(s)
8-12' multi-use path

Minor Collector



60' Right-of-Way (minimum)

Minimum Standards

11' travel lanes
2 lanes
4' shoulder (2' paved)
16' drainage section
No parking

Optional Standards (Context Relevant)

8-12' multi-use path

Local Road



50-60' Right-of-Way (minimum)

Minimum Standards

11' travel lanes
2 lanes
4' shoulder
No parking

Improvement Considerations

The map and table on the followings pages present all potential roadway improvement considerations identified during the development of this plan. These improvements have been identified through the analysis presented in Chapter 4, through stakeholder input, and through previous studies or funding applications that studied specific roadway improvements.

The improvement considerations map shown in Figure 5.4 illustrates all the locations of these potential improvements. The improvements have been divided into three categories:

- **Priority A**
- **Priority B**
- **Priority C**

These categories are intended to provide a level of priority for the identified improvements and are not meant to inform a specific time-frame. Within the three categories, some identified improvements may have had previous studies associated with them. These improvements are closer to reality than other improvements which may still need more analysis and detailed studies.

The categories are also not meant to imply that only priority A improvements should be pursued. All identified improvements have been included as they increase the efficiency and effectiveness of the county transportation network. If an opportunity presents itself to pursue priority B or C improvements, the county should strongly consider pursuing such opportunity, even with other priority A improvements have not yet been completed.

Figure 5.4 | Improvement Considerations

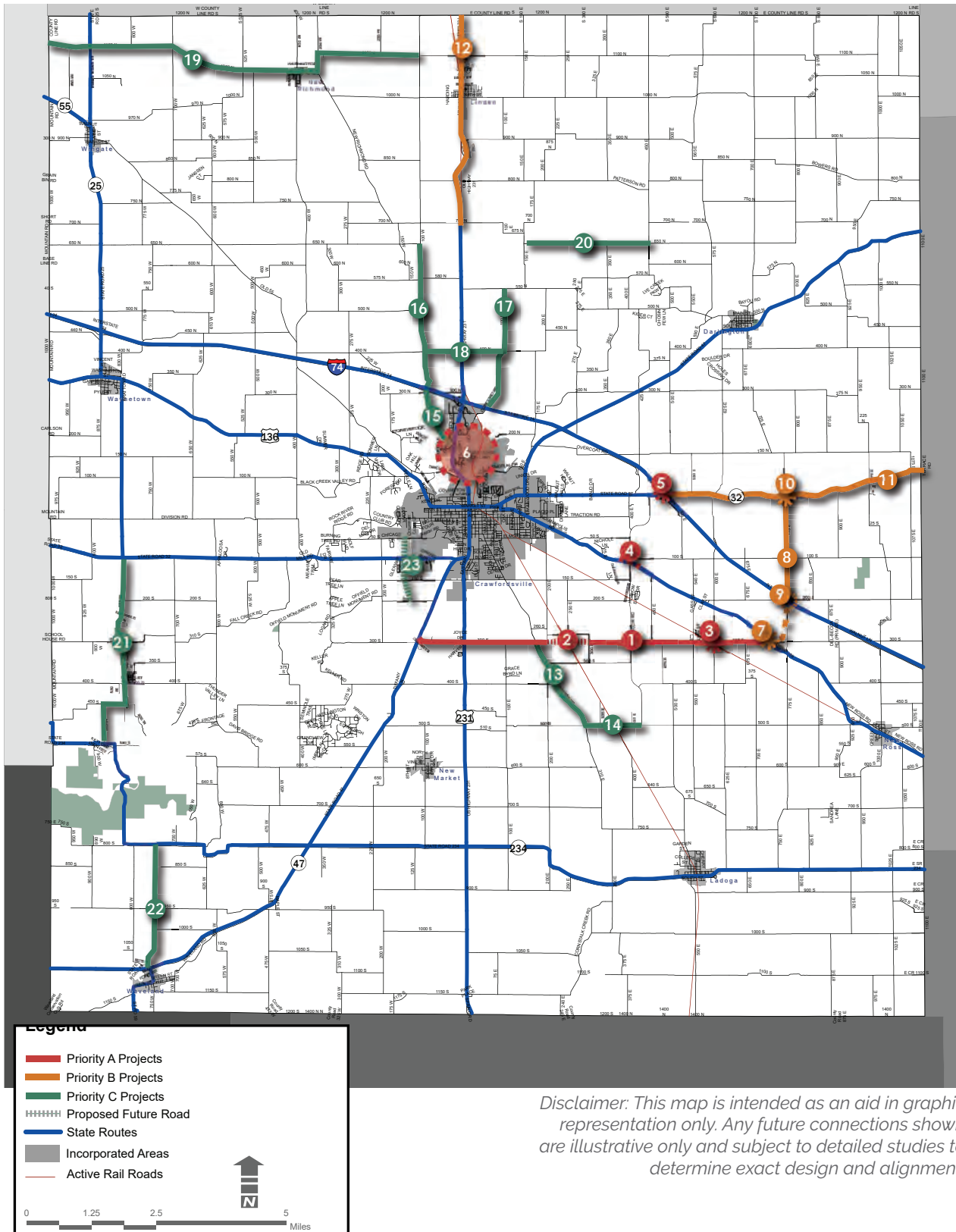


Table 5.3 | Improvement Considerations

#	Segment	Improvement	Responsible Party
1	C.R. 300 S. and Nucor Rd	Intersection	County
2	C.R. 300 S. (S.R. 47 to U.S. 136)	Extension/ Improvements	County
3	C.R. 300 S. and C.R. 600 E.	Rail Improvements	County
4	Nucor Rd./U.S. 136	Grade-Separated Crossing	County/INDOT
5	S.R. 32 & I-74	Signalized Intersection	INDOT
6	Concord Rd./Memorial Drive	Extension	County/ Crawfordsville
7	C.R. 300 S. and U.S. 136	Intersection	County/INDOT
8	C.R. 775 E. (U.S. 136 to S.R. 32)	Extension/ Improvements	County
9	C.R. 775 E. /I-74	Overpass Re- alignment/Interchange	County/INDOT
10	C.R. 775 E. and S.R. 32	Intersection	County/INDOT
11	S.R. 32 (I-74 to I-65)	Improvements	INDOT
12	S.R. 231 (700 N. to County Line)	Auxiliary/Passing Lanes	INDOT
13	Ladoga Rd (C.R. 300 S. to C.R. 500 S.)		County
14	C.R. 500 S. (Ladoga Rd. to Nucor Rd.)		County
15	C.R. 100 W. (S.R. 231 to I-74)		County
16	C.R. 100 W (I-74 to C.R. 650 N.)		County
17	C.R. 100 E (I-74 to C.R. 550 N)		County
18	C.R. 400 N. (C.R. 100 W to C.R. 100 E.)		County
19	C.R. 1125 N. (C.R. 1000 W to C.R. 100 W)	Road Improvements	County
20	C.R. 650 N. (C.R. 150 E to C.R. 450 E)	Road Improvements	County
21	C.R. 875 W. (S.R. 32 to S.R. 234)	Road Improvements	County
22	C.R. 750 W. (S.R. 234 to S.R. 47)	Road Improvements	County
23	Schenck Rd. (Country Club Rd. to C.R. 200 S.)	Extension	County/ Crawfordsville

Potential Improvements

Priority A

The Priority A improvement considerations, shown in red in Figure 5.4, are primarily concentrated east and south of Crawfordsville around an area identified as an economic development priority. These improvements seek to increase connectivity to both U.S. 231 and S.R. 32, which serves both industrial and economic growth in this region. They also provide alternative routes for freight traffic that does not require travel through downtown Crawfordsville.

C.R. 300 S.

C.R. 300 S is the largest focus of the Priority A improvements. C.R. 300 S is projected to become an important industrial corridor for the county. Given this, improvements must be made to keep up with the amount of usage the road will receive. In order to make a continuous corridor from S.R. 47 to U.S. 136, new roads are needed between C.R. 200 E. and C.R. 300 E. Intersection improvements should occur at Nucor Road and C.R. 300 S, as well as improving rail crossings near C.R. 300 S. and C.R. 600 E.

U.S. 136 and Nucor Road

An overpass at U.S. 136 and Nucor Road will improve traffic movement on both of those roads.

Figure 5.5 | Memorial Drive Extension



Source: United Consulting

S.R. 32 and Interstate 74

Intersection improvements near U.S. 32 and Interstate 74, including new signals, can help facilitate vehicle movement on and off the interstate.

Memorial Drive/Concord Drive

Memorial Drive in the city of Crawfordsville is also shown as an area of interest for Priority A improvements. The north side of Crawfordsville currently lacks adequate east/west connections. An extension of Memorial Drive and Concord Drive could improve access within Crawfordsville and improve connectivity and access to the area north of Crawfordsville. This is identified as another economic development priority area. Figure 5.5 illustrates what this alignment may look like.

This improvement would require extensive coordination and collaboration with the City of Crawfordsville. With the aim of these improvements being the ability to increase connectivity and access, the county may also want to consider working with the city to create a better crossing for Market Street across the existing railroad tracks.

Priority B

Priority B improvements are still considered important for the county but may be a little further out on the horizon. These improvements are shown in orange in Figure 5.4. and mainly support the connectivity started by implementing the short-term improvements.

Priority B improvements would include a re-aligned overpass or new interchange at C.R. 775 E and Interstate 74. C.R. 774 would then be re-aligned south to connect to the intersection

of C.R. 300 S and U.S. 136, creating a more direct connection for C.R. 300 S to both S.R. 32 and Interstate 74. Intersection improvements would be needed at both S.R. 32 and C.R. 775 E and at C.R. 300 S and U.S. 136.

Planned future capacity improvements to S.R. 32 will also benefit from and contribute to increased connectivity along the corridor.

Priority C

Projects shown in green on the map reference Priority C improvements. While these projects are a lower priority and have a longer time-frame for completion, they have still been identified as important to the community. These projects take place in a broader range of areas throughout the county.

One of the most significant focus areas for these improvements would be the area north of Crawfordsville. These projects would build off of the Memorial Drive/Concord Drive improvements. Improving both C.R. 100 W. and C.R. 100 E. also provide alternative routes to U.S. 231, lessening congestion and dependence on that roadway.

Action Plan

As presented in the executive summary, this plan has been developed and formed around several guiding principles.

- **Establish transportation network hierarchies and priorities which recognize fiscal realities**
- **Create a safe and improved transportation network**
- **Enhance mobility and accessibility throughout the county**
- **Integrate thoroughfare plan to support desired future land uses based on the Montgomery County Comprehensive plan**
- **Increase economic vitality and quality of life efforts throughout the county**

However, principles on their own are not enough to ensure progress and action. In addition to the improvements considerations previously presented, there are also several tangible steps the county can take to continue to improve the county transportation network around the principles above.

Action Items

Pursue completion of a Local Road Safety Plan (LRSP)

The LSRP is a new Federal Highway Association program to help map safer roadways. The completion of LRSP in Montgomery County is essential to guide data-driven solutions to safer roads. These plans help communities see the ways they can increase safety and lower risks in their communities. The LRSP will identify what can be done at the local level, which is especially crucial in counties like Montgomery County.

Adopt right-of-way standards into a future zoning ordinance

Right-of-way standards ensure that new roadways are constructed with county-wide standards that will ensure quality roads. Improvements to existing roads as well as new road construction should also include updating right-of-way standards.

Create a Capital Improvements Plan (CIP) to identify annual improvements

A CIP will help identify cost and timeline for infrastructure projects in the county. Understanding costs will assist in determining which grants to apply for and where alternative funding can come from

Adopt the Thoroughfare Plan into the County Comprehensive Plan

The Montgomery County Comprehensive Plan was approved in the spring of 2019. This plan outlines how the county can improve and prepare for the future. Based on public feedback from this plan, the majority of the county will stay the same. Even though no large-scale expansion projects are planned, maintaining and improving existing road networks is very important.

Comprehensive plans are not the law in Indiana; however, adopting the thoroughfare plan into the comprehensive plan will allow developers and the public to recognize the plan as the desire for the community. Doing so will ultimately help guide any future development projects.

Require all new developments to dedicate and/or improve right of way for existing or future streets

Right-of-way standards will help create consistent roadways throughout the county. New developments should be required to dedicate and improve right-of-way to keep roads consistent within the county's jurisdiction.

Incorporate regional initiatives that support coordination and safe transportation

It is crucial to coordinate regionally to work out better connections in and out of Montgomery County. This is especially important with Boone County as a lot of residents commute to Boone County or go through it to get to I-65. Having right-of-way standards that are required throughout the county will help increase road quality in all areas.

Partner with local jurisdictions to ensure transportation and land use support one another

Partnering with local jurisdictions will allow for more open discussion in ensuring how land uses might change in the coming years. Reviewing both the Comprehensive Plan as well as this Thoroughfare Plan annually to ensure that they still align with community values is also an important part of making certain the plan is relevant.

Encourage continued dialogue with private sector entities to coordinate improvements to the transportation network

As improvements in the plan start to come to fruition, working with private sector entities becomes an important part of fulfilling the vision of the plan.

Work with INDOT to update roadway classifications

Updating roadway classifications is a key part of securing funding for roads. This process is done through the state and must be completed to update classifications.

Establish a policy that new and rehabilitated bridges on classified roads should accommodate pedestrians and cyclists.

Retrofitting county bridges to meet the needs of all modes of transportation is important in keeping users of the road network safe. As the county continues to expand trails and recreational opportunities, safety becomes very important.

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