REPORT
APRIL 2024

Grundy Moves Multimodal Transportation Master Plan

Prepared for:

Grundy County Highway Department and
Grundy Economic Development Council

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1.0 Introduction

The Grundy County Multimodal Transportation Master Plan, also referred to as *Grundy Moves*, comes at a key moment for communities across the county. Grundy County has long been at the crossroads of transportation infrastructure – served by two key Interstates, Class I railroads, and the Illinois River – which in turn has supported a diverse economic base in manufacturing, agriculture, energy, and other sectors. The county's population grew 7.6 percent between 2010 and 2022, which was the third highest out of 102 counties in Illinois. In recent years, industrial development has also grown rapidly, driven by the strength of distribution and logistics sectors across the nation and the access provided by local multimodal transportation system. Between 2017 and 2021, the transportation and warehousing industry in the county grew in value by 73% and increased employment by 27%. Other industries such as professional and scientific services, construction, and manufacturing have seen significant increases as well. While this growth has provided new economic opportunities for the county, it has placed new demands on the transportation network.

The intent of the *Grundy Moves* plan is to reach consensus among local stakeholders on a set of improvements that will meet both existing and anticipated future investment needs for the transportation system. **The cornerstone deliverable of this planning effort is a Transportation Improvement Program (TIP), which lists 49 priority projects.** This TIP considers the transportation network in the county as a whole, and as result makes recommendations for improvement to state, county, municipal, and township facilities alike. It includes both near- and long-term priorities for improvement and is not fiscally constrained to one agency's budget.

Projects in the TIP reflect consensus among diverse stakeholders across the county, including representatives from public sector agencies and private sector interests. The TIP includes projects identified from prior planning efforts and existing investment programs, a robust stakeholder engagement effort, and original technical analyses conducted as part of the *Grundy Moves* study. The latter include regional travel demand modeling and intersection analyses of key nodes in the county's transportation network. After project concepts were assembled, the draft TIP was evaluated using performance measures that span the key goals of asset condition, mobility, safety, economic development, environment, and equity. Projects were then ranked into tiers, with the results further refined by the study's Advisory Committee.

This technical report describes the methodology and findings from the *Grundy Moves* study in detail. **Section 2** describes the stakeholder engagement process, which relied on a combination of engagement activities, including the Advisory Committee, public survey, stakeholder interviews, and virtual public open house. **Section 3** reviews existing conditions of the transportation system in Grundy County, identifying current hot spots for safety and congestion. **Section 4** describes the travel demand modeling process and results, which identify anticipated locations of future congestion on the transportation system. **Section 5** describes the TIP development process, final set of priority projects, and funding opportunities to support those projects. **Section 6** briefly reviews operational and management strategies to further improve performance on the transportation system without major capital investment. The report closes in **Section 7** with considerations for next steps.

2.0 Stakeholder Engagement

Stakeholder engagement was a key component in the development of *Grundy Moves* and was embedded throughout the planning process. The project team developed a Stakeholder Engagement Plan at the beginning of the planning process which outlined the key stakeholder and community outreach activities, including an Advisory Committee, key stakeholder interviews, a public survey, a virtual public open house, and a project website. **Figure 2-1** includes stakeholder engagement participation results. These engagement activities yielded crucial input during the planning process and informed the final *Grundy Moves* Plan, particularly the Transportation Improvement Program project list.

Figure 2-1. Stakeholder Engagement Participation

2.1 Advisory Committee

An Advisory Committee was established at the beginning of the planning process to help guide and provide input on major aspects of the plan. The committee included representatives from both the public and private sectors based on recommendations provided by Grundy County and the Grundy County Economic Development Council.

Advisory Committee members were drawn from the following organizations:

- Ann L. Schneider & Associates
- City of Morris
- Grundy County
- CR Transport and Logistics
- Grundy County Economic Development Council
- Illinois Department of Transportation District 3
- Kendall-Grundy Farm Bureau
- Mid-West Truckers Association
- Narvick Brothers Construction
- Village of Channahon
- Village of Coal City
- Village of Diamond
- Village of Dwight
- Village of Mazon

- Village of Minooka
- Will County Governmental League

Three in-person Advisory Committee meetings occurred at key points in the planning process. Meeting topics and input opportunities are described in **Table 2-1**. **Figure 2-2** Advisory Committee Meeting on June 26, 2023includes a photograph of committee members engaging in discussion at the second Advisory Committee meeting at Morris City Hall. The committee was significantly engaged on the development of the transportation improvement project list. Members provided input on potential projects to include in the list, refinement of project concepts, as well as the development of evaluation criteria for the prioritization process.

Table 2-1. Advisory Committee Meetings

Date	Presentation Topics and Input
June 26, 2023	Plan overview; scope and key tasks review; existing conditions analysis; model development overview; outreach overview; input on potential projects.
October 3, 2023	Study updates regarding outreach, intersection analysis and travel demand model; input on initial TIP project list; and next steps.
January 30, 2024	Study updates; intelligent transportation systems and innovative solutions overview; virtual open house results; final input on prioritization of TIP project list; next steps and implementation.

Figure 2-2 Advisory Committee Meeting on June 26, 2023

2.2 Stakeholder Interviews

Interviews with key stakeholders were conducted to solicit feedback and input on transportation concerns, issues, and opportunities to inform the plan. These stakeholders were selected in coordination with Grundy County and the Grundy Economic Development Council to represent the diverse needs and interests in the county's transportation network.

A total of 16 stakeholder organizations, listed in **Table 2-2**, were interviewed in July and August 2023. Topics covered included areas of congestion, safety concerns, and general ideas to improve travel in the county. Additionally, industry-specific questions were used to help identify unique travel needs of the various industries in the county. Interviews included organizations representing industrial and commercial, real estate, logistics, freight railroads and ports, agriculture, environmental, and transit and active transportation perspectives.

Table 2-2. Interviewee List

Organization	Representative
Aux Sable Liquid Products	Andy Schwerha, General Manager Operations
Clarius Partners	Taivo Tammaru, Executive VP
Constellation, Dresden Station	Carolyne Joseph, Dresden Plant Manager
CN Railroad	Scott Anderson, State & Local Affairs Manager
CSX Railroad	Adam Hess, Industrial Development Manager
D Construction, Inc.	Ken Sandeno, President
Grundy County Transit System	Amanda Olvera, Director
Illinois Department of Natural Resources	Dan Bell, Site Superintendent
LyondellBasell	Randy Tatum, Site Manager
Morris Hospital	Tom Dohm, President of Morris Hospital
Openlands	Gerald Adelmann, President & CEO
Prologis / Avison Young	Chris Lydon, Principal
Ridgeline Property Group	Ben Harris, VP of Development
Seneca Regional Port District	Joe Green, Chair - Board of Directors
Walmart, Minooka Supply Chain	James White, General Manager
Will & Grundy Counties Building Trades Council	Doc Gregory, President

Nearly all interview participants acknowledged transportation challenges as Grundy County continues to grow. Stakeholders noted the county is rapidly transforming from an economy largely based on agriculture to one based on industry, warehousing, and logistics. There was general consensus that development moving south and west from neighboring Will County would persist. While this transformation and growth is welcomed by most stakeholders, it raises concerns regarding congestion, the environment, and the quality of life of residents. Interviewees noted that proactive planning for transportation improvements to manage development and the associated traffic impacts is crucial.

Other key themes included areas of congestion, the lack of system redundancy and opportunities to expand existing transit and trail opportunities throughout the county. Some stakeholders also provided

suggestions for potential improvement projects which were taken under consideration and reflected in the Transportation Improvement Program project list.

2.3 Public Survey

As part of the *Grundy Moves* public outreach process, the project team developed and implemented a brief public survey to collect input from residents, visitors, and workers in Grundy County on key transportation challenges. The results assisted the project team in tailoring project messaging and as well as inform recommendations for the transportation improvement program project list. The survey was also one of the first outreach activities and helped introduce the planning process to the public.

The survey was developed using Alchemer, a digital survey platform, and included nine questions. The survey was accessible online through the GrundyMoves.com project website and was available from August 24 to September 25, 2023.

A survey partner kit was developed to help municipalities and organizations encourage survey participation. **Figure 2-3** shows a social media flyer that was included in the kit. The partner kit was distributed by members of the Advisory Committee and other stakeholders including Grundy County Chamber of Commerce, Grundy Economic Development Council, Grundy Transit System, Grundy County Veterans Assistance Commission, multiple departments in the County, local media, and several municipalities.

A total of 427 survey responses were collected, including 309 fully completed surveys and 118 partially completed surveys. Over 83 percent of survey respondents were residents of Grundy County living in ZIP codes 60447, 60450, 60410, 60416, and 60444. A total of 89 participant addresses were provided to receive future project information (e.g., Virtual Public Open House notification).

Figure 2-3. Public Survey Social Media Flyer

Survey respondents identified minimizing the negative effects of truck traffic as the biggest transportation need in Grundy County. This was followed by relieving congestion, providing more transit and bike and/or pedestrian options, and improving safety.

Respondents also noted specific areas for improvement on local roads including Ashley Road, Gore Road, Lisbon Road, McEvilly Road, McLindon Road, and Ridge Road, as well as major roadways including I-80, US 6, IL 47, and IL 113.

2.4 Virtual Open House

As part of the *Grundy Moves* public outreach process, the project team designed and hosted a virtual public open house. The intent of the open house was to present the plan and its purpose, provide overview and highlight tasks completed to date, and present the draft projects list for feedback. The virtual public open house was the final major outreach activity completed for *Grundy Moves* and provided an opportunity for public comment on plan recommendations.

Similar to the public survey, a partner kit was developed to help municipalities and organizations promote the virtual public open house. The partner kit was distributed by members of the Advisory Committee such as Grundy County, Grundy County Economic Development Council, and several municipalities. Other outlets/stakeholders included Grundy County Chamber of Commerce, Grundy Transit System, Grundy County Veterans Assistance Commission, multiple departments in the County, and local media such as Morris Herald-News and WCSJ News.

The virtual public open house was developed and hosted using Gather, CDM Smith's virtual open house tool. Gather is an interactive, web-based tool, where the public can view plan information and provide direct input and feedback. **Figure 2-4** depicts the virtual open house room. Participants could provide input using comment forms embedded throughout various presentation boards in the virtual public open house.

Figure 2-4. Virtual Open House Welcome Room

The virtual public open house was available from December 4, 2023, to January 9, 2024. While the comment period for the virtual public open house concluded on January 9, 2024, the public can still access the virtual public open house on the project website to view project information.

A total of 249 participants attended the virtual public open house. Eighty-nine participants completed the sign-in form, and 34 responses were collected from two comment forms which were optional. The feedback received informed recommendations for the final plan and the TIP. Key feedback themes included:

- Improving intersections
- Relieving traffic
- Balance environmental equity and preservation with economic development
- Improve pedestrian and bike infrastructure
- Suggestions regarding projects listed on the draft transportation improvement program list

Participants also provided comments regarding specific locations and general considerations for future planning efforts.

2.5 Project Website

GrundyMoves.com was created to assist with public communications and dissemination of project-related materials for the duration of the project. The website, launched in May 2023, contains general plan information, study area map, outreach activities and materials, project timeline and project contact information. **Figure 2-5** displays the project website homepage. The website was used to disseminate

the public survey and the virtual public open house tool. Over 1,500 visitors have accessed the website for project information as of April 2024.

Figure 2-5. Project Website Homepage

3.0 Existing Conditions

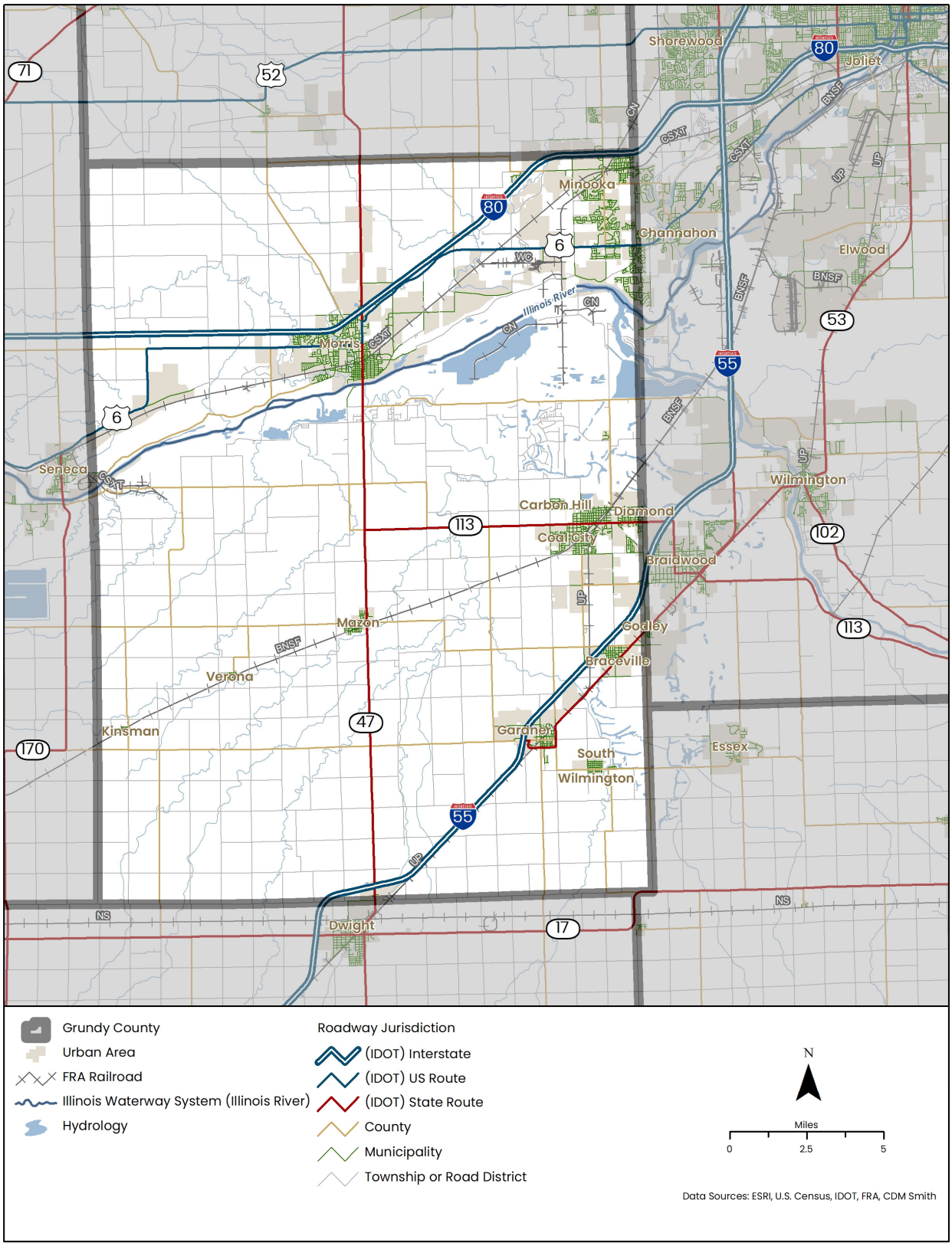
This section summarizes the existing conditions of the multimodal transportation system in Grundy County, providing an understanding of current system performance. This analysis supported the identification of potential future capital projects for the *Grundy Moves* plan, which will result in a consensus-based, multijurisdictional Transportation Improvement Program.

As described in the sections below, key topics include traffic volumes, congestion, safety, asset condition, at-grade railroad crossings, and non-motorized modes. The section also includes a review of planning documents and current transportation investment programs to understand ongoing efforts to improve the regional transportation system.

3.1 System Performance

Grundy County has a robust multimodal transportation system, including key highway assets such as Interstate 80 (I-80) and Interstate 55 (I-55), four Class I freight rail lines, and the Illinois River, which connects to the Great Lakes system upstream and the Mississippi River downstream. As shown in **Figure 3-1**, Grundy County's roadway network includes the two Interstates (I-80 and I-55), one US Route (Route 6), and three state routes (IL 47, IL 53, and IL 113) —all of which are managed and maintained by the Illinois Department of Transportation (IDOT). The Grundy County Highway Department manages and maintains several arterials and collectors (including Gardner Road, Pine Bluff Road, and Ridge Road) that provide key connections to these IDOT routes. The four Class I rail lines provide freight connections to Chicago, which is the primary interchange in North America between the eastern and western railroads. In addition. The Class I rail lines provide connections to states to the south and west of Illinois. With respect to navigable waterways, the Illinois River is part of the 336-mile Illinois Waterway system, which provides a key connection between the Great Lakes and the Mississippi River systems.

Figure 3-1. Road Network and Jurisdictions in Grundy County



Source: https://idot.illinois.gov/transportation-system/Network-Overview/highway-system/maps

3.1.1 Traffic Volumes and Congestion

The project team analyzed traffic volumes and congestion to understand typical system performance throughout the county, as well as identify locations that may require future improvement. CDM Smith collected publicly available IDOT Annual Average Daily Traffic (AADT) data for 2021[12]. These counts were supplemented by counts performed by the project team in spring 2023.

Interstate 80, which runs across northern Illinois from Iowa to Indiana, carries approximately 50,000 vehicles per day in the northeast corner of Grundy County and approximately 31,000 vehicles in the northwest corner. Interstate 55 runs southwest from Chicago to St. Louis and carries about 29,000 vehicles per day through the southeast corner of the county. **Figure 3-2** shows that traffic volumes increase markedly just northeast of Grundy County, particularly along I-80 and I-55. These increased volumes represent a transition from a mostly rural Grundy County to a more suburban Will County, which is also home to major freight and logistics facilities.

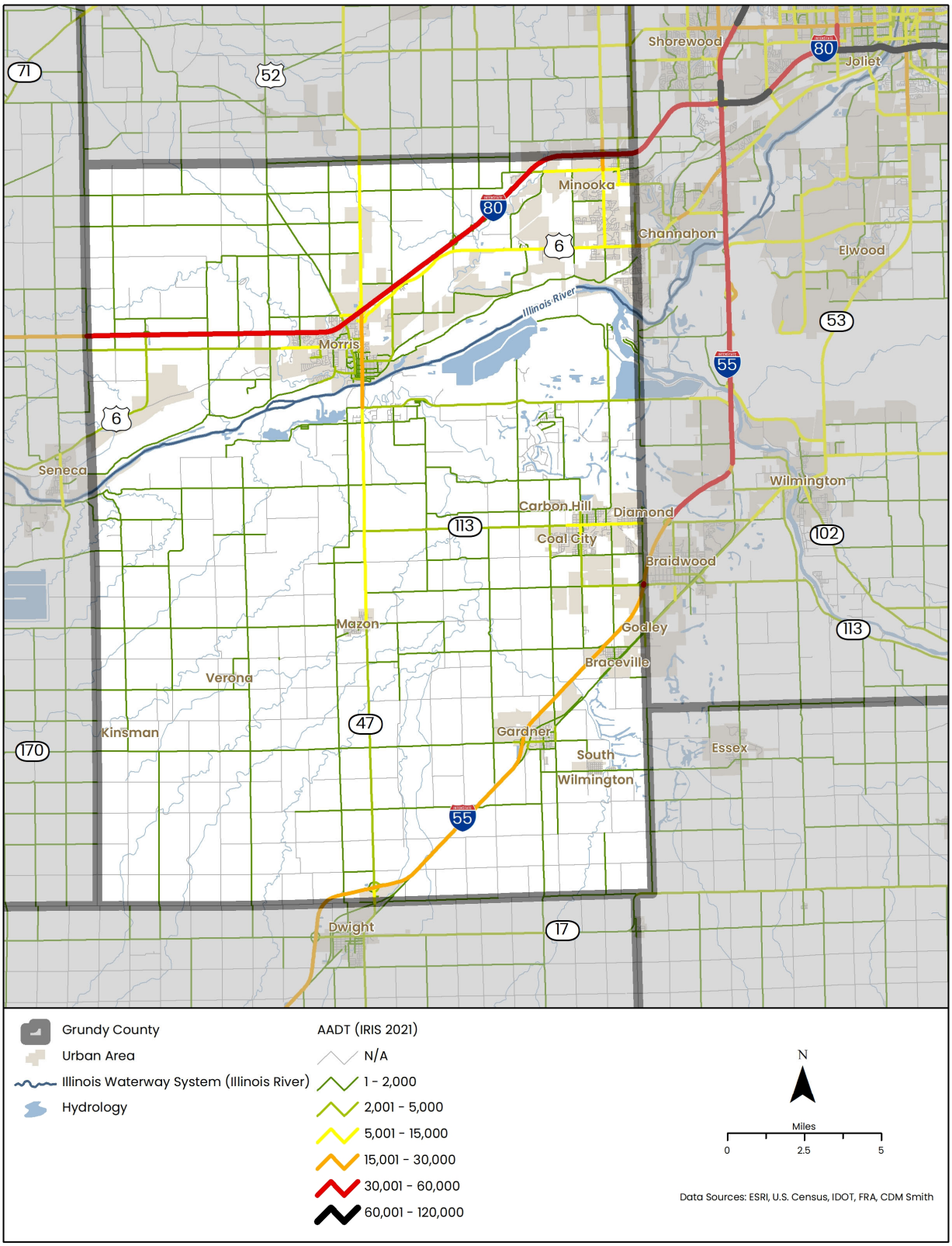
US Route 6, which runs just south of I-80, carries the largest volume of east-west traffic through Grundy County, with AADTs ranging from 3,000 vehicles in the western portion of the county to 13,000 vehicles in Morris. Pine Bluff Road and IL 113 also provide east-west connections throughout Grundy County, with each carrying an AADT of approximately 4,500 vehicles between IL 47 and I-55. Traffic on IL 113 increases to 10,000 vehicles in Coal City, located just east of I-55. **Figure 3-2** also shows that higher AADTs take place on local roads in more urban settings such as Morris, Minooka, Channahon, and Coal City.

IL 47 is a four-lane principal arterial that runs north-south through the center of Grundy County. Certain segments of IL 47, such as between Morris and I-80, have an AADT of up to 19,000 vehicles. IL 47 is the only facility in Grundy County that crosses the Illinois River, with the next closest river crossings located approximately 10 miles west at IL 170 and approximately 12 miles east at I-55. The IL 47 corridor also serves as a detour route to I-55, for the purpose of maintenance of traffic during construction and for temporary incident management of the Interstate. A detour of this nature puts significant strain on IL 47, both due to higher traffic volumes and a greater concentration of trucks.

Pine Bluff Road and IL 113 are important east-west corridors in the central portion of the county. IL 113 connects Coal City and Diamond to IL 47 and has an AADT of up to 10,100 vehicles. Pine Bluff Road, located approximately four miles to the north, connects IL 47 and I-55 and sees between 3,000 and 4,600 AADT within the county. It has seen a recent increase in heavy vehicle traffic due to substantial industrial growth to the east in Will County, where the Elion Logistics Park 55 development is located near the interchange with I-55. A proposed grade separation at the BNSF railroad immediately west of the development may help address truck-related congestion on the corridor. Pine Bluff Road also serves as the evacuation route for the Dresden Nuclear Station.

[1] https://www.gettingaroundillinois.com/
[2] https://idot.public.ms2soft.com/

Figure 3-2. AADT throughout Grundy County



Source: https://idot.illinois.gov/transportation-system/Network-Overview/highway-system/maps

Heavy Vehicle Travel Conditions

Grundy County serves as a strategic location for the movement of goods. The recent growth in industry, particularly logistics uses, has resulted in the significant presence of heavy vehicles on area roadways. I-80 and I-55 carry the greatest numbers of heavy vehicles throughout Grundy County (see **Figure 3-3**). I-80 is an important east-west Interstate in the United States and the second-longest Interstate in the country. Within Grundy County, I-80 carries a high number of heavy vehicles, with 13,100 AADT east of Ridge Road in Minooka and 11,200 east of Division Street in Morris. Heavy vehicles represent between approximately 26.2 and 36.1 percent of total traffic along I-80, depending on the location within the county. While I-55 carries fewer heavy vehicles than I-80, it serves as a vital north-south connection, with a range of 4,400 to 7,800 heavy vehicles per day. These heavy vehicles represent between approximately 15.2 percent and 26.9 percent of total traffic along this segment of I-55.

In addition to the Interstate, US Route 6 serves as an important east-west corridor that parallels I-80 and carries up to 700 heavy vehicles per day. Similarly, IL 53 parallels I-55 and carries up to 800 heavy vehicles per day. IL 47 carries about 2,000 heavy vehicles per day near the I-80 interchange. Lastly, IL 113 serves as another important east-west corridor that travels through Coal City. IL 113 experiences about 240 heavy vehicles per day.

Illinois has two classifications of designated truck routes that define lawful access for Class I and Class II trucks (those exceeding 65 feet). Class I routes tend to be Interstates, while Class II routes tend to be US and state highways. Vehicles may travel off designated routes for five highway miles only for the purpose of loading, unloading, food, fuel, repairs, and rest if they travel on roads with no signage prohibiting trucks. The classification for particular roads is determined by local highway jurisdictions. In Grundy County, I-80 and I-55 are Class I designated truck routes, and US Route 6, IL 47, and IL 113 are Class II designated truck routes (**Figure 3-4**). In addition, a small segment of Seneca Road connecting US 6 to I-80 is a Class II designated truck route.

Grundy County experiences the highest congestion levels during the midday period, according to 2022 speed reduction data. As shown in **Figure 3-5,** congestion is concentrated in the main urbanized areas in the north-central and northeast portions of the county. IL 47 and US Route 6 both experience between a 20 and 30 percent speed reduction compared to free-flow speeds in Morris, and US Route 6 experiences a 20 to 30 percent speed reduction just west of IL 47 and further east as it approaches Minooka and Channahon. Several local roadways in the Minooka/Channahon area also experience speed reductions of up to 30 percent, including Minooka Road, Ridge Road, and roadways that serve as frontage roads for I-80. There are also road segments over 20 and 30 percent in the eastern portion of the county, south of Heidecke Lake and near Coal City and Gardner.

Figure 3-3. Heavy Vehicle ADTs

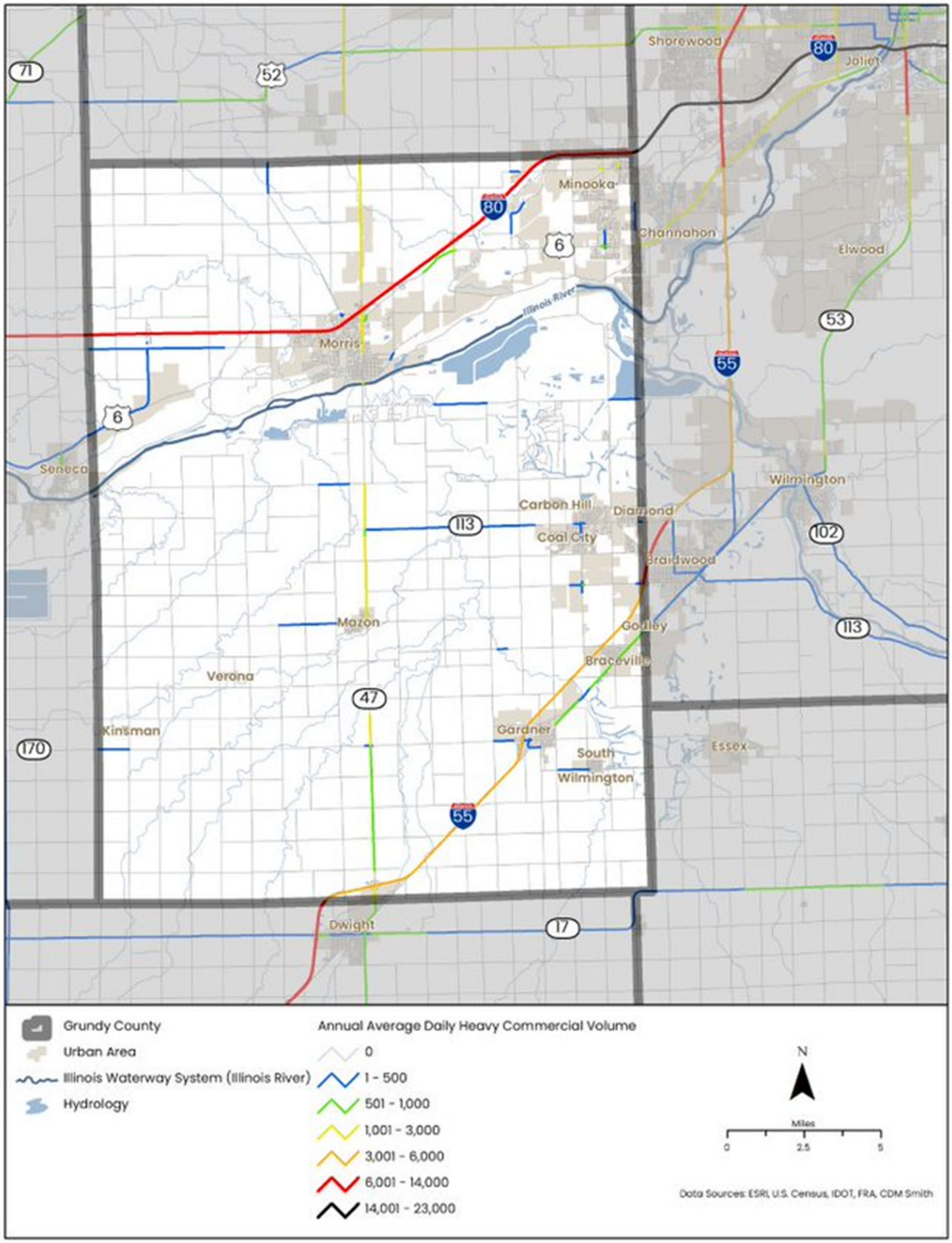


Figure 3-4. Truck Route by Class

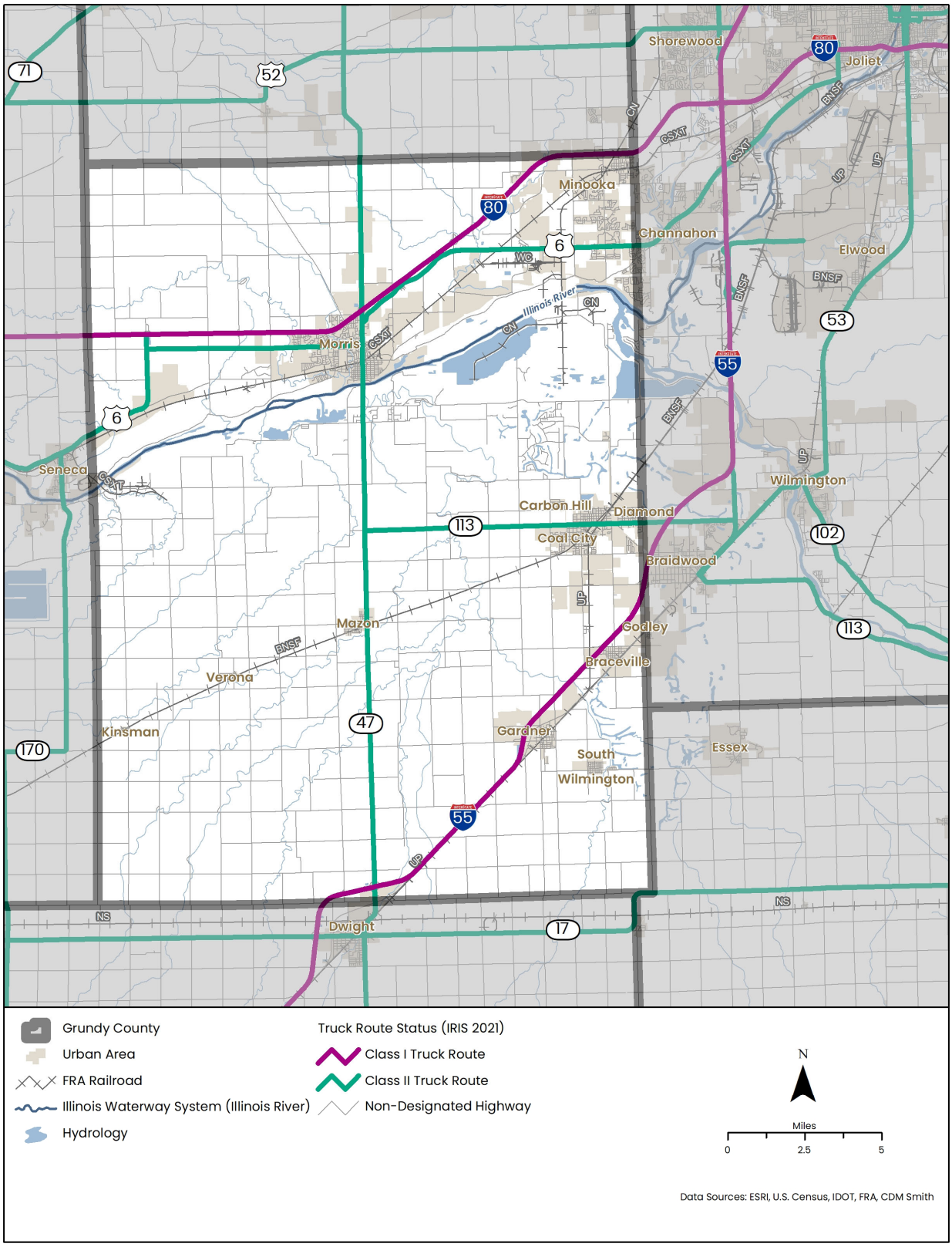
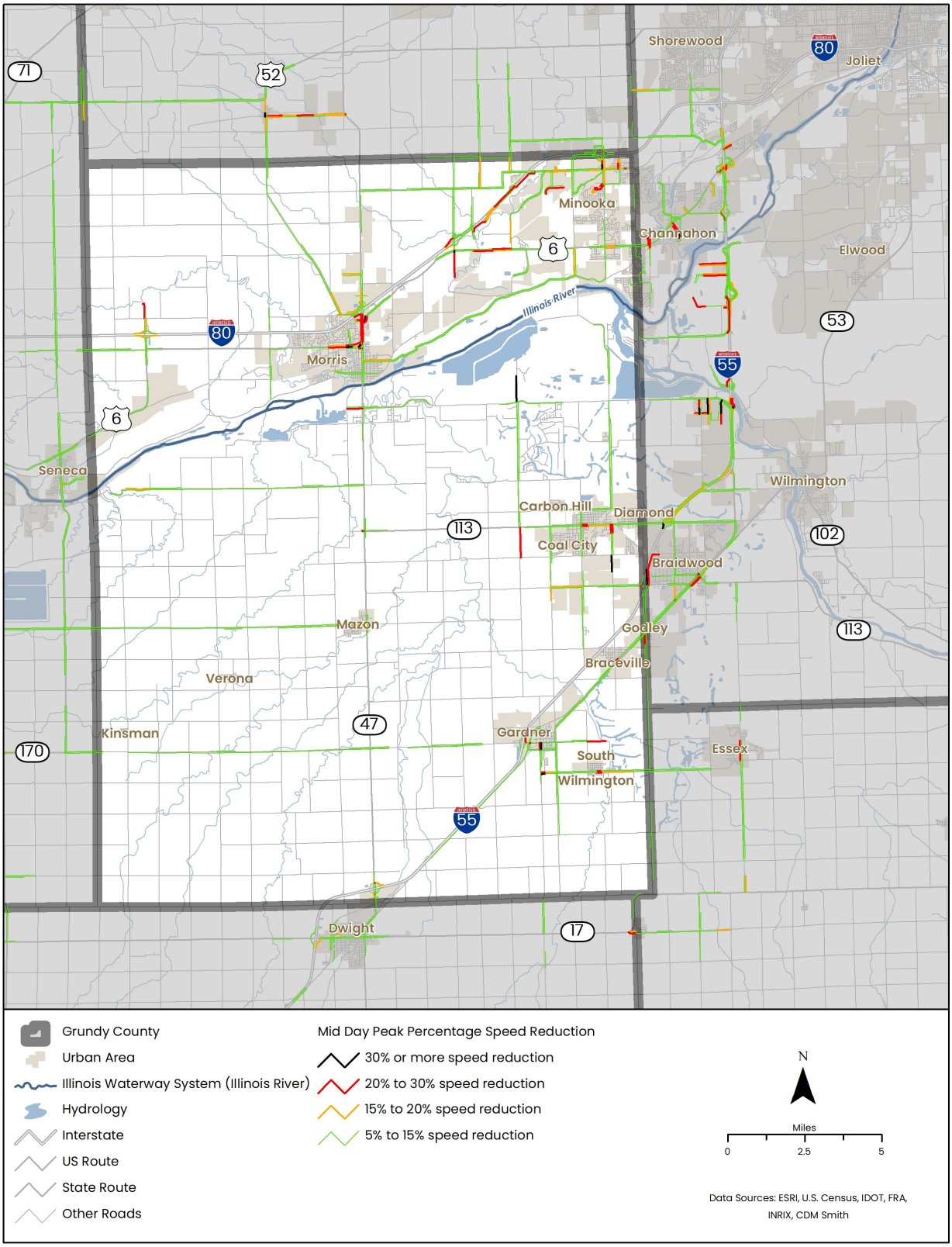


Figure 3-5. Mid-Day Peak Percentage Speed Reduction Compared to Free-Flow Speeds (2022)



Source: INRIX speed data (2022)

3.1.2 Pedestrian, Bicycle, and Transit Networks

The CDM Smith team also reviewed the current state of the non-motorized and public transportation networks in Grundy County. This effort provides an understanding of potential travel needs for those without personal vehicles.

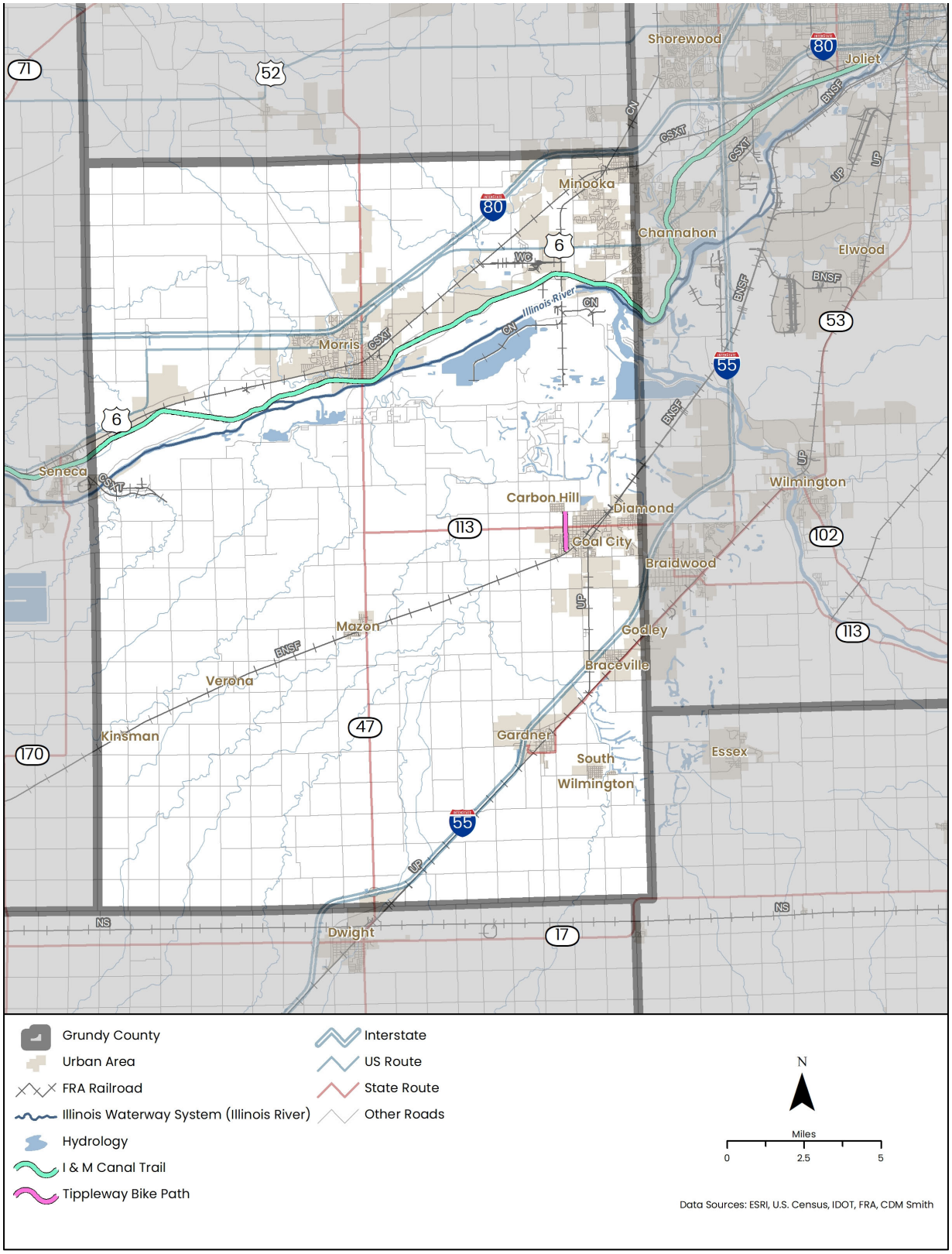
Walkability varies widely between locations, and there is little dedicated bike infrastructure within Grundy County outside the regional Illinois and Michigan (I&M) Canal State Trail. About 10 percent of trips that originate in Grundy County are primarily walking, and about 0.5 percent of trips were biking in fall 2022, according to Replica, a third-party provider of location-based mobility data. Some residential areas have built-out sidewalk networks, while others have limited or no sidewalks. State routes and arterial roads typically have sidewalks within municipalities, and some have sidepaths, especially in Minooka. No on-street bicycle facilities in the county were identified.

Downtown Morris has a robust, walkable commercial district that centers around Liberty Street. This area has wide sidewalks and pedestrian-oriented streetscaping that encourages 'park once' behavior for visitors with multiple destinations. Downtown Morris is also accessible by walking or biking from residential neighborhoods to its east and west. It has a Walk Score of 87, which is defined as "very walkable—most errands can be accomplished on foot," and a bike score of 57, which is defined as "some bike infrastructure." Grundy County has few walkable commercial districts outside of Morris. The city centers of Coal City and Minooka each have Walk Scores of 66,[3] which is defined as "somewhat walkable—some errands can be accomplished on foot." Walk Score is a third-party rating methodology that measures pedestrian friendliness through a variety of variables, such as facility attributes and trip generators.

The I&M Canal State Trail is a historic regional recreational trail that parallels the Illinois River to the north and traverses the entire county. The trail connects to Joliet and other southwest suburbs of Chicago to the east and to towns such as Seneca, Ottawa, and LaSalle to the west. Its primary connection point to the transportation network in Grundy County is adjacent to downtown Morris, where it traverses William G. Stratton State Park. There is also access to the trail at Aux Sable. In addition to the I&M Canal State Trail, there is a multiuse path, called the Tippleway Bike Path, in Coal City that follows a utility right of way for approximately 1.25 miles. See **Figure 3-6** for a map of these trails.

[3] https://www.walkscore.com/

Figure 3-6. Trail Map



Grundy Transit System (GTS), the county's on-call transit agency, operates similar to paratransit services. It allows passengers to schedule a ride ahead of time, usually at least a couple of days in advance. A photo of a GTS vehicle is shown in **Figure 3-7**. The service area of GTS includes the entire county and includes select destinations in Joliet, including Joliet Union Station, Ascension Saint Joseph Hospital, and the University of St. Francis[4]. The hours of operation are Monday through Friday, 6:00 am to 6:00 pm. Grundy County does not have any scheduled fixed bus routes or passenger rail service.

According to GTS data, the service provided 16,030 on-demand rides in Fiscal Year (FY) 2023, with 53 percent of rides provided for senior or disabled residents. The two municipalities that produced the most ridership were Morris (63 percent) and Minooka (13 percent). Common destinations include the Walmart and Jewel in Morris, other large retail locations, and distribution centers in Minooka.

Figure 3-7. GTS Vehicle

Source: https://www.grundycountyil.gov/transit/

Though Amtrak traverses the southeast corner of Grundy County, there are no passenger rail stops in the county. The closest passenger rail stations are in Joliet, which is home to an Amtrak station and is the terminus of two Metra lines (Rock Island District and Heritage Corridor). There is an additional Amtrak station located to the south in Dwight in Livingston County, which is part of the Chicago to St. Louis high-speed intercity passenger rail corridor. There is a historic passenger rail station in Morris along the CSX tracks that currently serves as the Grundy County Chamber of Commerce.

3.1.3 Asset Condition

The project team also analyzed transportation asset condition data, which helps provide context for identifying potential future capital improvements. Data from IDOT (2022) provides roadway pavement condition for facilities under the department's jurisdiction as well as some local agency facilities (**Figure 3-8**). There are poor roadway conditions on US Route 6 between Minooka and Morris, for a small segment of I-55, and on IL 53 in Braceville and Gardner. Fair pavement conditions are found on segments of both Interstates and along key local routes, such as portions of Minooka Road and Ridge Road.

Figure 3-9 presents bridge conditions throughout Grundy County as per the latest IDOT condition ratings data (2021). Conditions are determined through surveys of individual bridge components, such as support structures and decks. Out of 305 total bridge structures in Grundy County, 55 bridges (approximately 18 percent) are listed as being in poor condition. Most of the bridges in poor condition are in low-volume locations, but there were three poor-condition bridges found on roads in central Morris, including the high-volume IL 47 bridge over the CSX tracks and Buchanan Street. An additional poor-condition bridge is located on US Route 6 over Aux Sable Creek.

[4] https://www.grundycountyil.gov/wp-content/uploads/2023/07/5.24.23-Rider-Handbook-English-1.pdf

Figure 3-8. Pavement Conditions

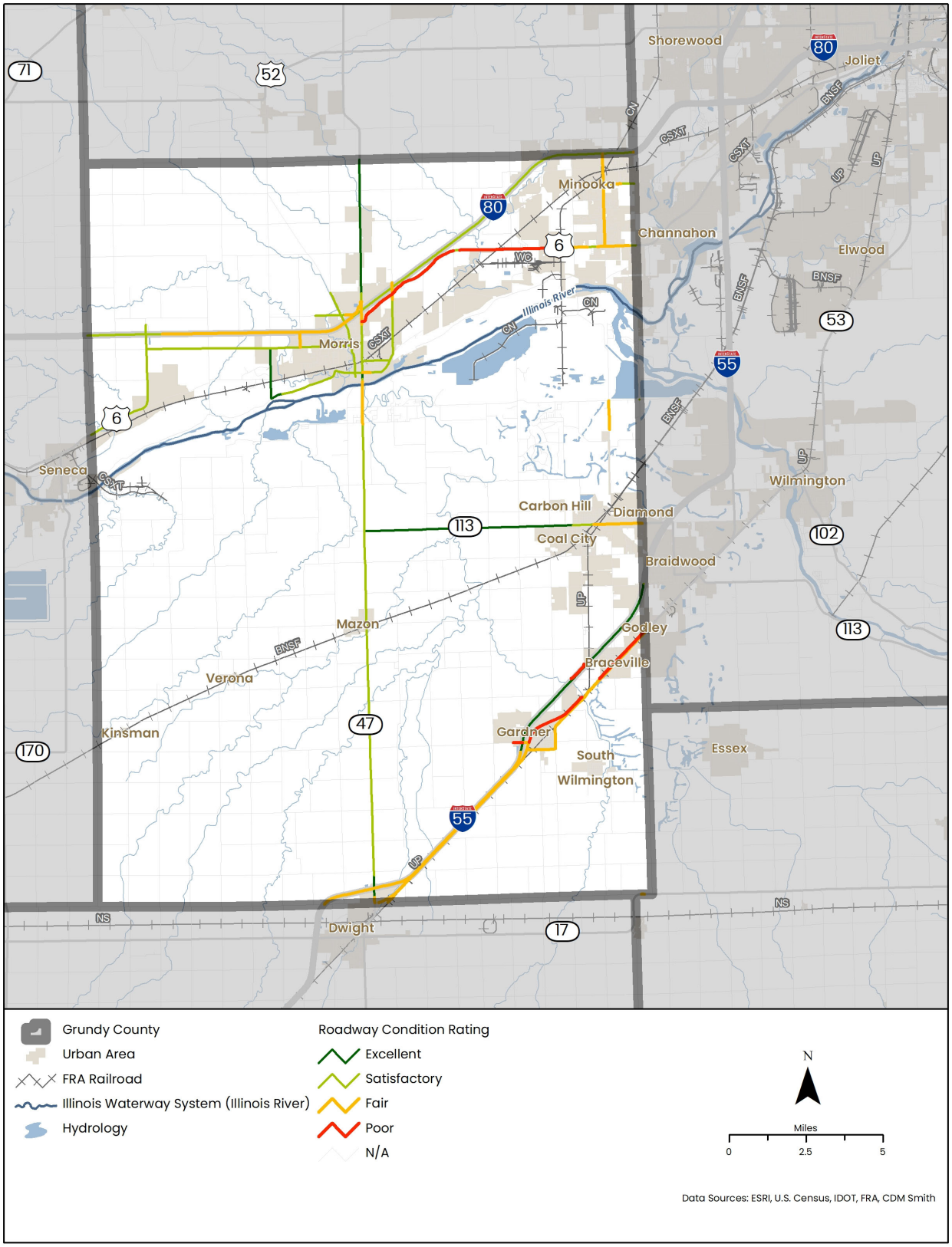
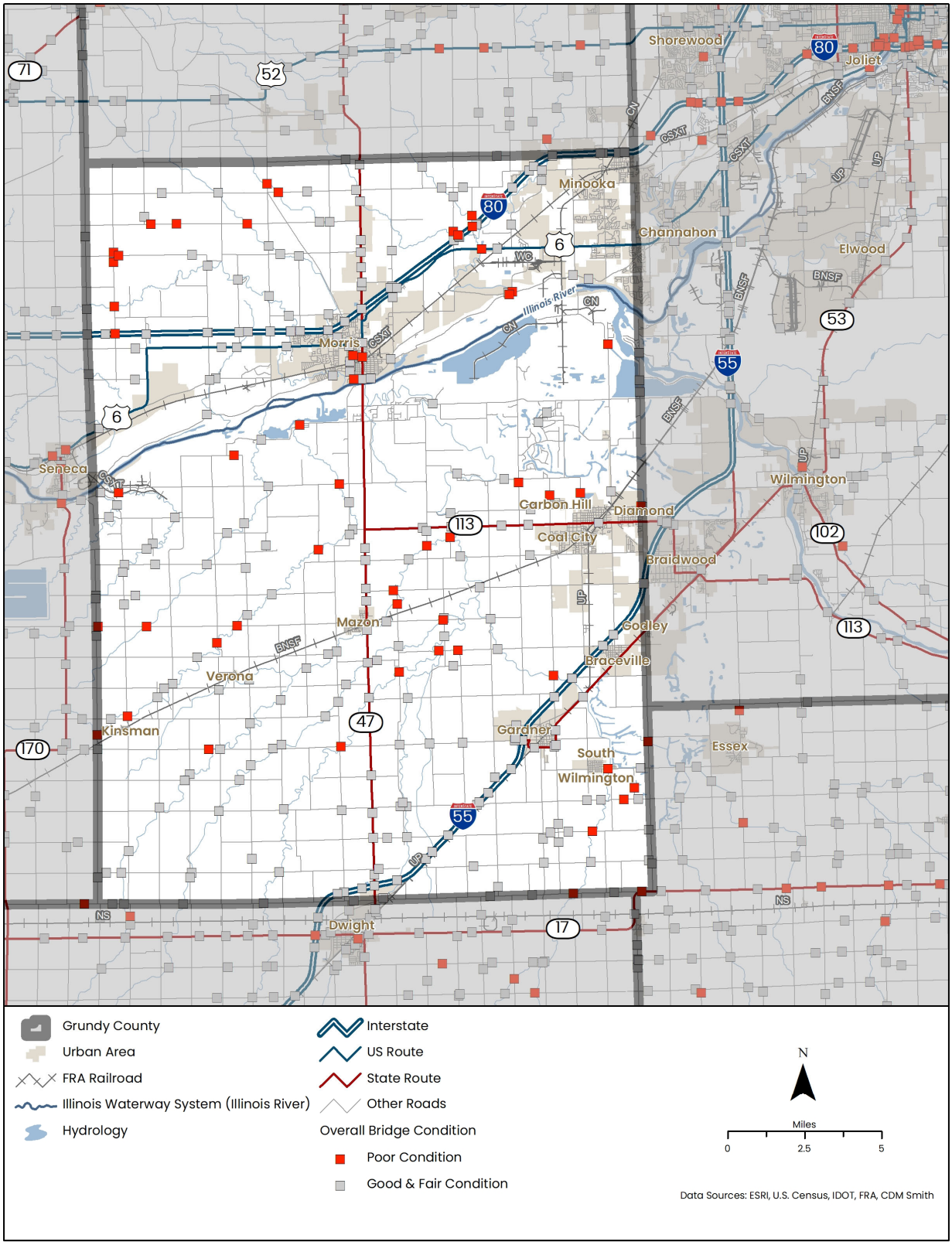


Figure 3-9. Bridge Conditions



3.1.4 Safety

The project team analyzed crash data from IDOT to inform potential future capital projects. **Figure 3-10** presents a hot spot analysis of all crashes that occurred in Grundy County between 2017 and 2021. Crashes are centered in populated areas, including Morris, Minooka, and Coal City, as well as along major arterial corridors. Within these clusters, there are relatively large numbers of crashes at the intersections of IL 47 and Pine Bluff Road, Washington Street and Liberty Street, and Ridge Road and McEvilly Road.

Figure 3-11 shows crashes that only resulted in major injuries or fatalities from 2017 to 2021. Similar to total crashes, major injuries and fatalities also occurred in urban areas or along higher-volume roadway segments. There are several major injury or fatal crashes on US Route 6 between Morris and Minooka and on IL 47 for most of its extent in Grundy County.

Approximately eight percent of crashes between 2017 and 2021 involved at least one heavy vehicle. Hot spot analysis for truck-involved crashes occurs along corridors with high volumes of heavy vehicle traffic (**Figure 3-12**). I-80 shows the highest levels of heavy-vehicle crashes, with the highest density at the IL 47 interchange. High numbers of crashes also occur on IL 47 through Morris and south of the Illinois River. Ridge Road, south of the I-80 interchange, also has a higher density. Heavy-vehicle crashes along I-55 are spread evenly throughout the portion where it crosses the county, with a slight increase in density around the IL 47 interchange.

Figure 3-10. Crash Hot Spot Analysis, 2017-2021

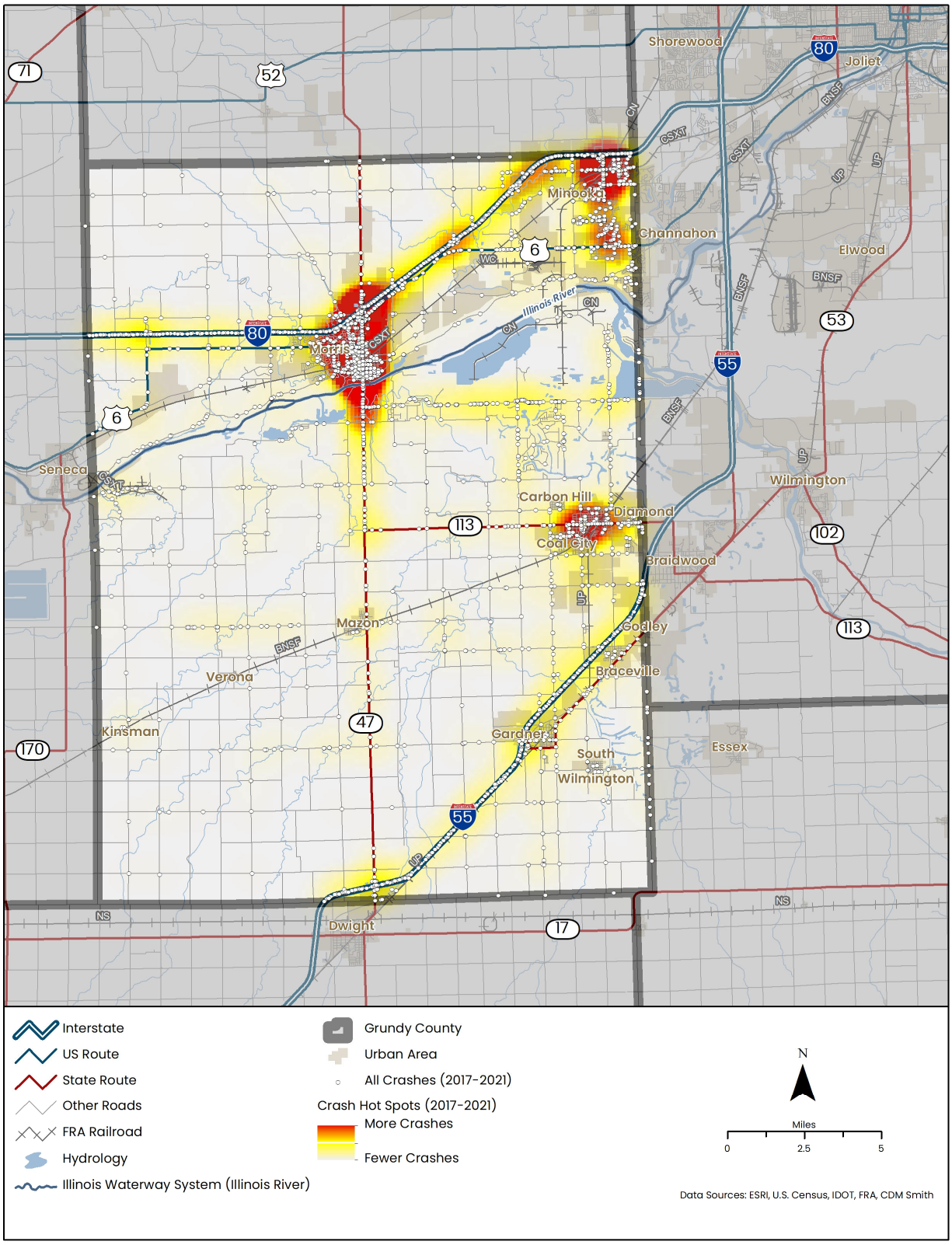


Figure 3-11. Crashes Resulting in Major Injuries or Fatalities, 2017-2021

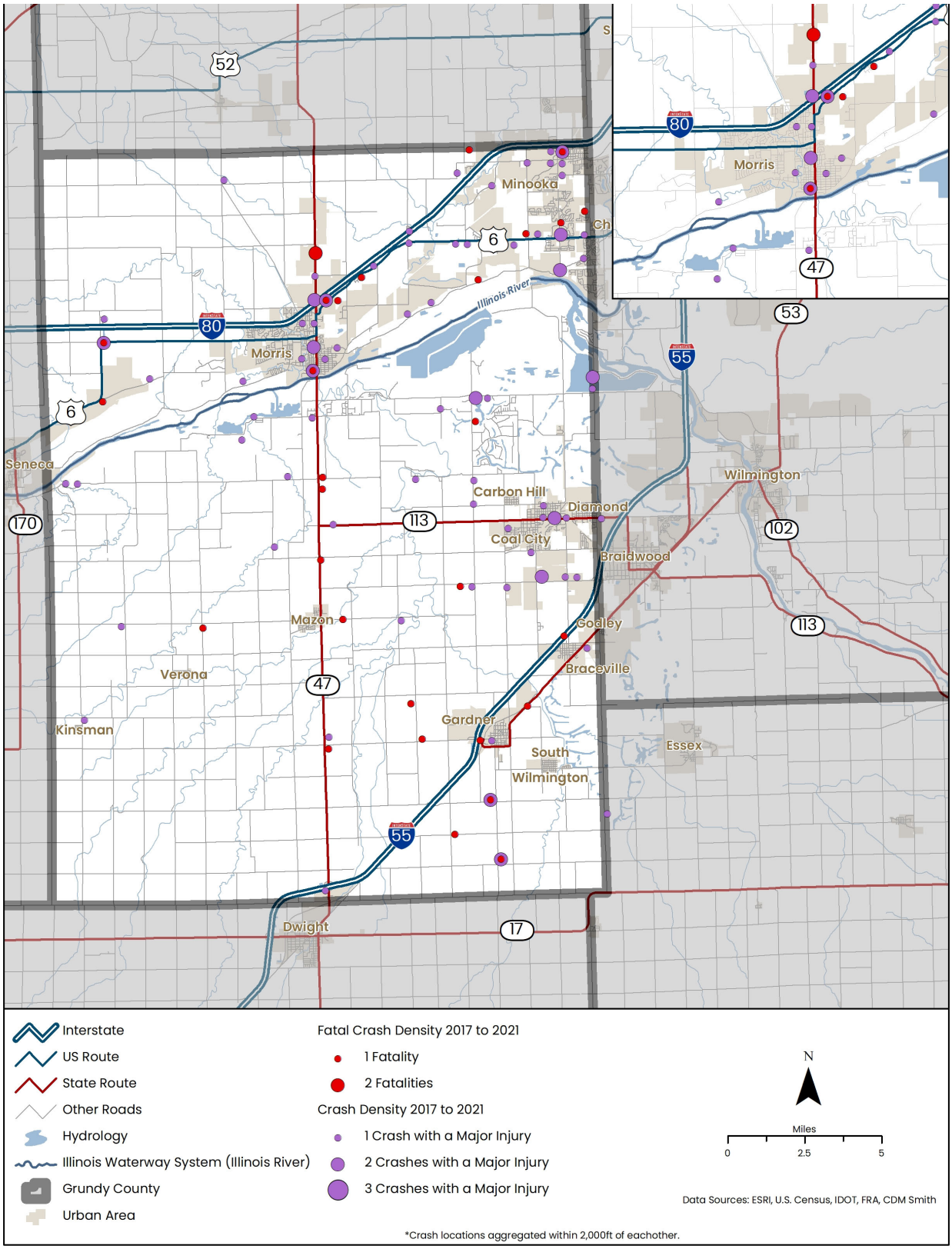
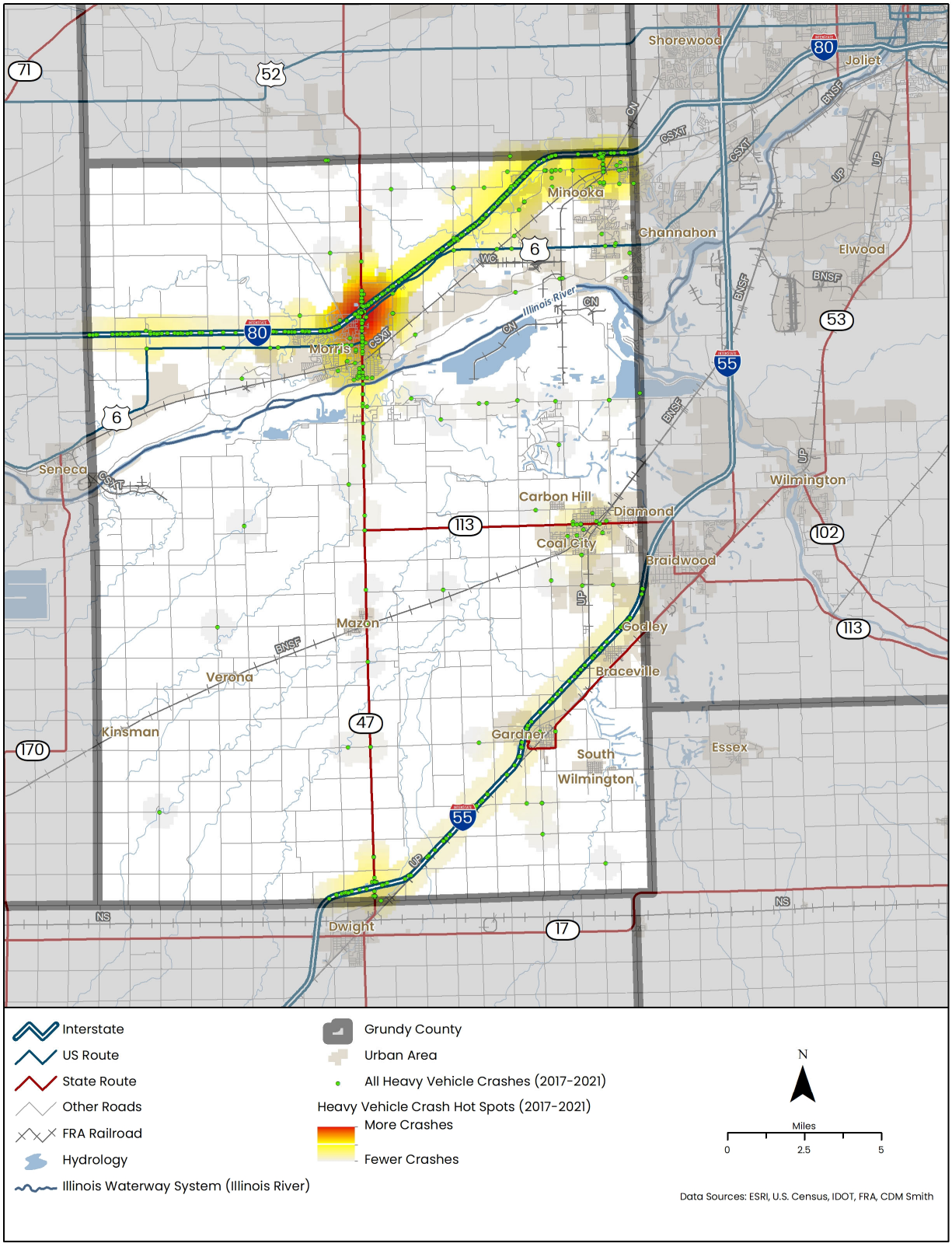


Figure 3-12. Crash Hot Spot Analysis – Heavy Vehicles, 2017-2021



3.1.5 At-Grade Railroad Crossings

Four Class I railroads operate in Grundy County: CSX Transportation (CSX), Burlington Northern Sante Fe (BNSF) Railway, Union Pacific Railroad (UP), and Canadian National Railway (CN). CSX runs east-west, paralleling I-80, US Route 6, and the Illinois River. CSX has 16 grade crossings throughout Grundy County, including in Morris and Minooka. BNSF Railway bisects Grundy County and has 28 grade crossings throughout Grundy County, including in Coal City and Mazon. UP closely parallels I-55 and has 17 grade crossings throughout Grundy County in Gardner, Coal City, Braceville, and Dwight. Out of the 17 UP grade crossings located in Grundy County, 11 of them also serve the Lincoln Service and Texas Eagle Amtrak routes. Lastly, CN runs through the northeast portion of Grundy County, with six grade crossings in Morris and Minooka.

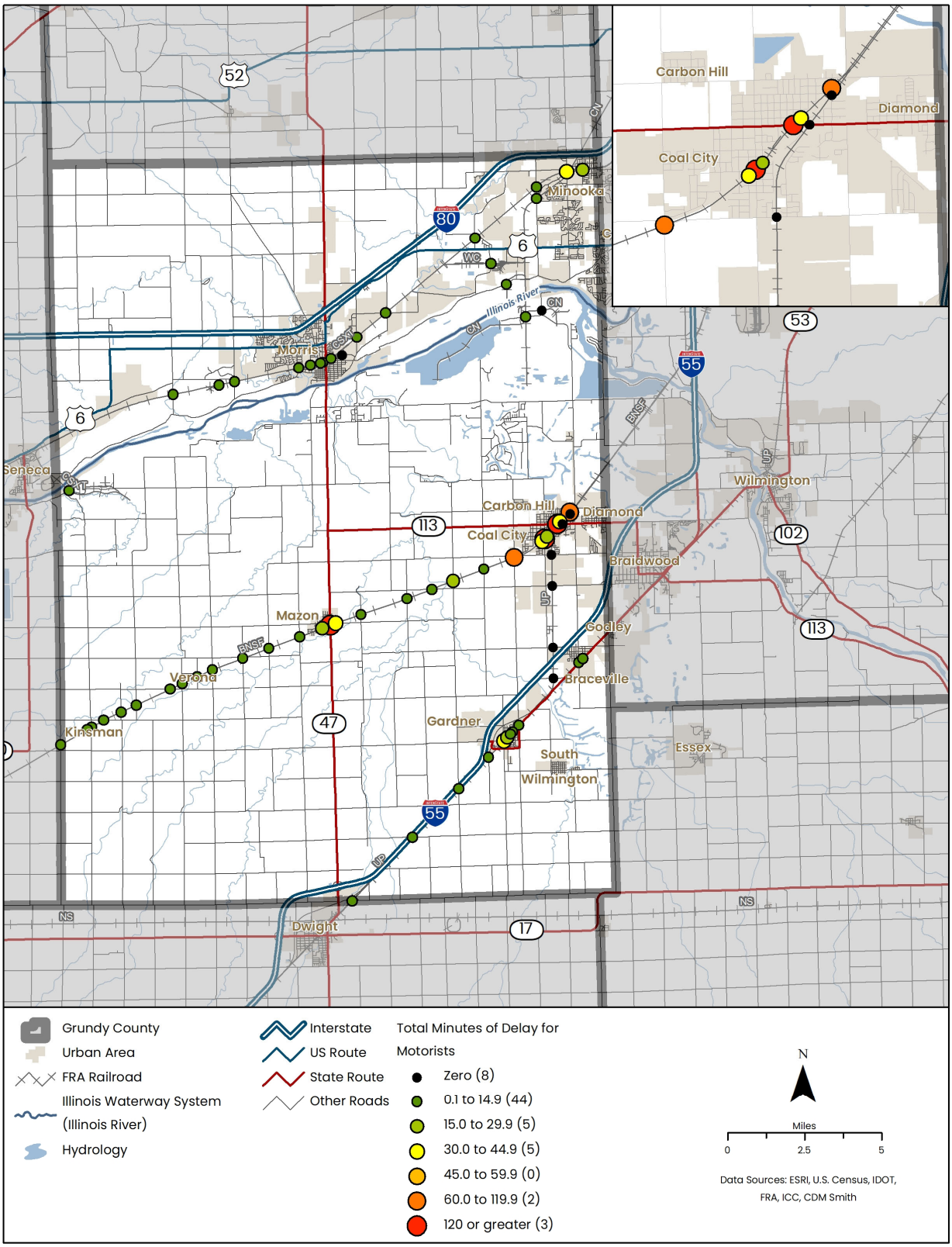
Grade crossings throughout Grundy County are shown with their total aggregate daily delay (min) in **Figure 3-13,** according to 2017 Illinois Commerce Commission (ICC) data. The BNSF crossings have the longest aggregate total delay due to having the most train traffic. The BNSF tracks through Grundy County see approximately 64 trains pass each day, compared to 22 daily trains for the UP corridor and low single-digit numbers of trains each day for the other railroads. Due to the frequency with which trains use the BNSF tracks, a closely spaced series of at-grade crossings, and local traffic volumes, most at-grade crossing delays in Grundy County occur in Coal City. Outside the Coal City area, the IL 47 grade crossing at the BNSF tracks in Mazon also experiences large delays, with nearly 200 minutes of daily delay. The total aggregate delay is determined by the number of vehicles delayed and the average gate down time per train. As the railroads run longer freight trains, local delay increases.[5] In the ICC's methodology to estimate delay, all the freight trains that pass through the crossings in **Table 3-1** are approximately 7,000 feet long.

Table 3-1. Grade Crossings the Largest Aggregate Daily Delay

Road Name	Railroad	AADT	% Trucks	Municipality	Total Agg. Daily Delay (min)
IL 113 (Division St.)	BNSF	9,750	9	Coal City	502.7
Broadway Rd.	BNSF	5,800	9	Coal City	300.8
IL 47 (East St).	BNSF	4,950	22	Mazon	199.8
Carbon Hill Rd.	BNSF	2,300	11	Coal City	77.3
5th Ave.	BNSF	1,650	9	Coal City	68.7
Main St.	UP & Amtrak	2,400	4	Gardner	44.8
1st Ave.	BNSF	825	7	Coal City	43.0
Ridge Rd.	CSXT	14,100	10	Minooka	42.9
County Route 9 (Grand Ridge Rd.)	BNSF	950	15	Mazon	40.8
Mazon St.	BNSF	NA	8	Coal City	36.5

[5] https://www.gao.gov/products/gao-19-443

Figure 3-13. Grade Crossings



3.2 Review of Past Plans and Programs

The following plans, programs, and reports from the past were sourced from IDOT, Grundy County, local jurisdictions, and specific corridor studies. For the purposes of this study, "programmed projects" are defined as those with funding committed, while "planned projects" are project proposals without funding committed. CDM Smith focused on capacity expansion and major modernization projects in this review.

3.2.1 IDOT Documents

IDOT Long-Range Transportation Plan (2019)

The IDOT Long-Range Transportation Plan (LRTP) is a comprehensive roadmap for the state's multimodal transportation system. The plan identifies key priorities and strategies to create a safe, efficient, and sustainable transportation network that supports economic growth and development.

The IDOT LRTP focuses on several critical areas, such as reducing traffic congestion, improving safety, promoting alternative transportation options, and enhancing the freight transportation network. To achieve these objectives, the plan outlines a range of strategies, including investing in public transit, promoting active transportation, supporting intelligent transportation systems, and improving infrastructure to meet the needs of the growing freight industry. The latter is especially relevant to Grundy County, which is experiencing significant growth in industrial land uses. The IDOT LRTP is updated every five years, per federal and state requirements.

IDOT Multi-Year Programs (2022)

IDOT has proposed a six-year Highway Improvement Plan for FY 2023-2028, which focuses on investing in the maintenance and preservation of existing infrastructure. The program also covers the expansion and modernization of the transportation network. The program includes one project relevant to Grundy County: the reconstruction and widening of a little over 1 mile of US Route 6, from Lakewood Drive to IL 47. It is an approximately $20 million project. The multi-year program is revised annually to reflect the availability of resources, project readiness, and updated project priorities.

Illinois Bike Transportation Plan (2014)

The Illinois Bike Transportation Plan is a state-level strategy aimed at improving bicycle transportation and infrastructure throughout the state of Illinois. The plan includes goals such as increasing the number of bike trips, improving safety for cyclists, and expanding bike-related economic benefits. Its relevance to Grundy County lies in creating safe and accessible bike routes for residents and visitors. This could help encourage more people to use bicycles as a means of transportation, potentially reducing traffic congestion and improving public health outcomes.

3.2.2 Grundy County and Local Plans

Grundy County Comprehensive Plan (2014)

The Grundy County Comprehensive Plan is a document that serves as an official policy, land use, and development guide for the Grundy County government. The plan considers various aspects of community life, including land use, demographics, and transportation, among others. The plan also

presented a future land use and development framework. Transportation and mobility are critical elements of the plan; they affect Grundy County's mobility, accessibility, and connectivity.

The plan recognizes the importance of maintaining and improving the existing transportation network in Grundy County. It emphasizes the need for efficient, safe, and accessible transportation infrastructure, including roads, bridges, transit systems, and pedestrian and bicycle facilities. The plan also calls for addressing traffic congestion and safety issues and promoting sustainable transportation solutions. Overall, the transportation goals and strategies outlined aim to ensure that the transportation network can support Grundy County's growth and development while improving the quality of life for its residents.

GEDC Grundy County Transportation Priorities (2013)

The Grundy County Transportation Priorities Plan outlines the transportation needs and priorities of Grundy County for the next several years. The plan is based on extensive research and community input and aims to ensure a high quality of life for residents and those who work and travel in Grundy County.

The plan identifies several key priorities and projects relating to state roads, local roads, aviation, rail, and waterways. The selected projects in the report focus on maintaining and expanding the existing transportation network as the county experiences growth in population, travel, and industry. To achieve these goals, the plan recommends a variety of strategies, such as expanding roadway capacity, implementing passenger rail, and modernizing the Illinois River Waterway network.

Will County Freight Plan (2017)

The Will County Community-Friendly Freight Mobility Plan is a comprehensive transportation plan that focuses on improving the efficiency and safety of freight transportation, while also addressing the needs of local communities in Will County, Illinois. The plan aims to develop a multimodal transportation network that includes road, rail, and waterway systems to facilitate the movement of goods and reduce congestion on local roads. It also emphasizes the importance of community engagement and collaboration between public and private stakeholders to address the impact of freight transportation on local communities.

The relevance of this plan to Grundy County, which is adjacent to Will County, is in its potential to improve the flow of freight traffic and reduce congestion on the local road network. By promoting the use of alternative transportation modes such as rail and waterway systems, the plan may also help to alleviate some of the pressure on the road network in Grundy County. Additionally, the focus on community engagement and collaboration could provide a framework for addressing the impact of freight transportation on local communities in Grundy County.

Local Plans (Various Years)

In addition to all the plans from IDOT and Grundy County, municipalities across Grundy County have published their own comprehensive plans and investment programs. The following list of plans is a mix of documents that include bike and pedestrian improvements, grade crossing safety improvements, intersection improvements, new interchanges, new roads, and road relocations:

- Channahon Comprehensive Plan, 2019
- Channahon—Ridge Road and Hansel Road Plans, 2023
- Channahon Proposed 5 Year Plan, 2023
- Coal City 2035 Comprehensive Plan, 2014
- Coal City 2018 Strategic Planning and Goal Development, 2018
- Coal City Strategic Plan Progress Report, 2020
- Coal City Capital Improvement Plan for FY 2023, 2023
- Coal City Development Assets Map, Date Unknown
- Diamond Comprehensive Plan, 2015
- Diamond Resolution for ADA Transition Plan, 2022
- Diamond Grant Application for Will Road Reconstruction, 2023
- Dwight—Livingston Road Realignment, 2022
- Minooka Comprehensive Plan, 2021
- Minooka Pavement Data Collection and Pavement Management System Implementation, 2023
- Minooka Major Maintenance & Repair Plan 2023-2032 Based on eliminate Backlog Funding, 2023
- Minooka Capital Improvement Plan for Roads and Path, Date Unknown
- Downtown Morris Master Plan, 2020
- Morris Comprehensive Plan, 2022
- Morris 2022 Parks Master Plan, 2022
- Peoria Passenger Rail, 2021
- Various Corridor Access Studies from the Grundy County Highway Department:
  - Broadway Road and Reed Road Corridor Access Study, 2011
  - Brisbin Road Corridor Access Study, 2012
  - Saratoga Road Corridor Access Study, 2013
  - Lisbon Road Corridor Access Study, 2016

3.2.3 Planned and Programmed Projects

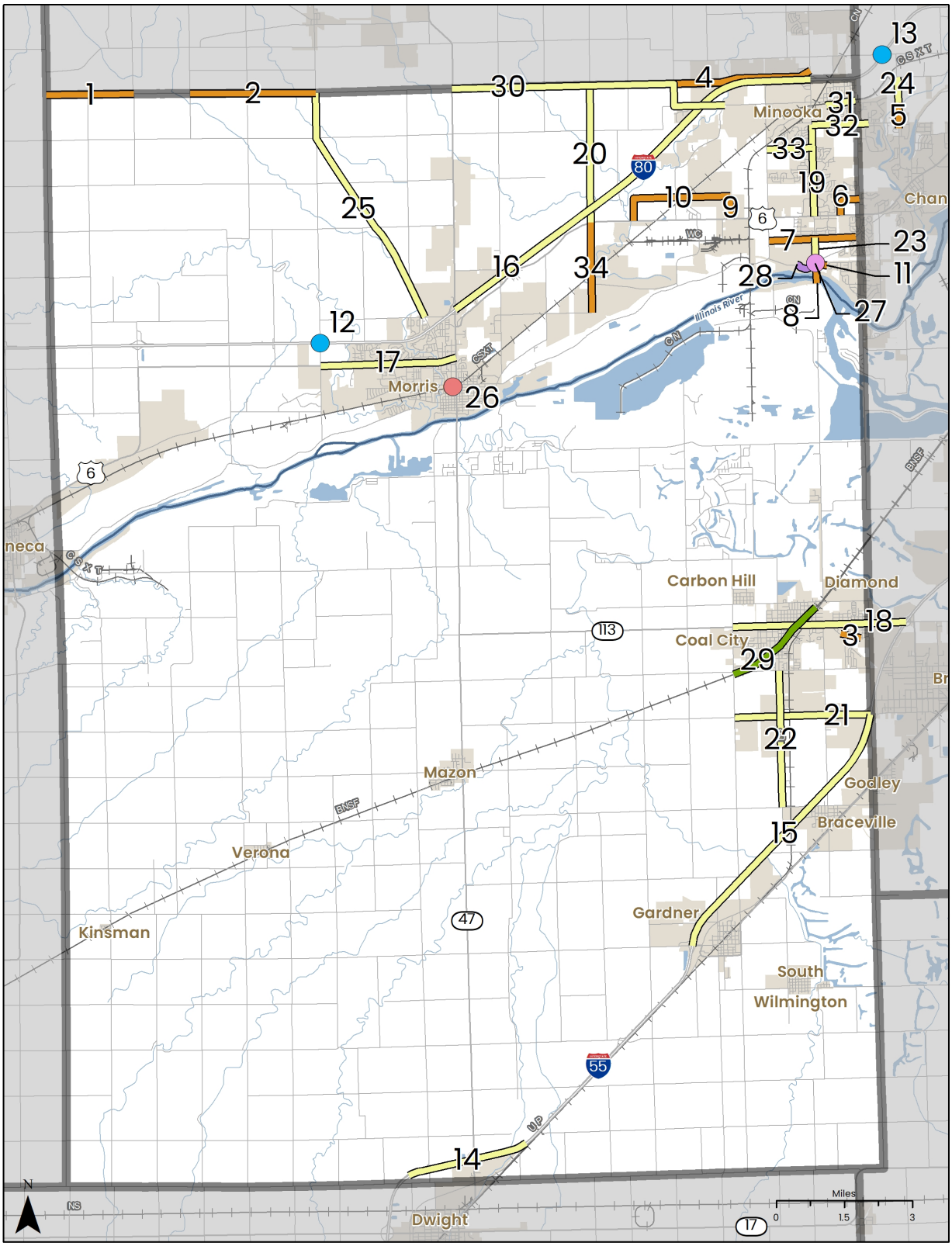
The list of planned and programmed projects is displayed below in **Table 3-2** and mapped in **Figure 3-14**. These projects were identified from the plans and programs described in **Section 2.2** and refined based on feedback from the study's Advisory Committee. These projects include only regionally significant improvements that improve capacity, safety, or another aspect of mobility. They do not include routine maintenance projects, such as resurfacing roadways, or projects with primarily local impacts, such as residential street improvements.

This project list informs the next steps in the *Grundy Moves* plan. For example, relevant programmed projects will be included in the travel demand model's highway network. In addition, the projects in **Table 3-2** represent initial project concepts to be evaluated in the TIP development process.

Table 3-2. Planned and Programmed Project List

#	Road/Intersection	Extent	Category	Source
1	Sherrill Rd Extension	Roods Rd to LaSalle Rd	New Road	GC Comprehensive Plan
2	Sherrill Rd Extension	Townhouse Rd to Lisbon Rd	New Road	GC Comprehensive Plan
3	McGinty St Extension	at Girot Ln	New Road	Diamond Comprehensive Plan
4	Sherrill Rd Extension	O'Brien Rd to Ridge Rd	New Road	Minooka Comprehensive Plan
5	Ford Rd Extension	Crossing DuPage River	New Road	Re-Imagine Channahon
6	New Collector	US 6 to Bell Rd	New Road	Re-Imagine Channahon
7	New Collector	Hansel Rd to McLindon Rd	New Road	Re-Imagine Channahon
8	Ridge Rd Extension	Hansel Rd to I&M Canal	New Road	Re-Imagine Channahon
9	New Road	US 6 to Sand Ridge Rd Extension	New Road	Re-Imagine Channahon, AC Feedback
10	Sand Ridge Rd Extension	Sand Ridge Rd to Project #9	New Road	Re-Imagine Channahon, AC Feedback
11	Old Kerry Grove Rd Extension	Old Kerry Rd to Ridge Rd	New Road	Ridge/Hansel Corridor Plans
12	I-80	at Saratoga Rd	New Interchange	GC Comprehensive Plan
13	I-80	at Shepley Rd	New Interchange	Minooka Comprehensive Plan
14	I-55	North and south of IL 47	Road Widening	GC Comprehensive Plan
15	I-55	Village of Gardner to Will County	Road Widening	EDC Transportation Priorities
16	I-80	IL 47 to Ridge Rd	Road Widening	EDC Transportation Priorities
17	US 6	IL 47 to Saratoga Rd	Road Widening	IDOT MYP, GC Comprehensive Plan
18	IL 113	I-55 to Carbon Hill Rd	Road Widening	Coal City CIP, GC Comprehensive Plan
19	Ridge Rd	McEvilly Rd to US 6	Road Widening	GC Comprehensive Plan
20	Brisbin Rd	US 6 to Sherrill Rd	Road Widening	Brisbin Corridor Study
21	Reed Rd	I-55 to Gorman Rd	Road Widening	Broadway Reed Study, AC Feedback
22	Broadway Rd	Spring Rd to Braceville Rd	Road Widening	Broadway Reed Study
23	Ridge Rd	Yellow Pine Rd to Hansel Rd	Road Widening	Re-Imagine Channahon
24	Ford Rd	DuPage River to Canal Rd	Road Widening	Re-Imagine Channahon
25	Lisbon Rd	Sherrill Rd to Gore Rd	Road Widening	Lisbon Corridor Study
26	New Amtrak/Metra Station	City of Morris	Rail	Morris Comprehensive Plan, Peoria Passenger Rail Study
27	Ridge Rd/Hansel Rd		Intersection Improvement	Ridge/Hansel Corridor Plans
28	Hansel Rd	West of Ridge Rd	Road Relocation	Ridge/Hansel Corridor Plans
29	Coal City BNSF Rail Corridor	Carbon Hill Rd to 5th Ave	Grade Crossing	Coal City 2035, AC feedback
30	Minooka Rd, O'Brien Rd, Sherill Rd	Tabler Rd to IL 47	Road Widening	AC Feedback
31	Wapella St	Rivers Edge Dr to Western terminus	Road Widening	AC Feedback
32	McEvilly Rd	Ridge Rd to Vista Ct	Road Widening	AC Feedback
33	Brannick Rd	Ridge Rd to McLindon Rd	Road Widening	CMAP TIP, AC Feedback
34	Brisbin Rd Extension	US 6 to Bungalow Rd	New Road	AC Feedback

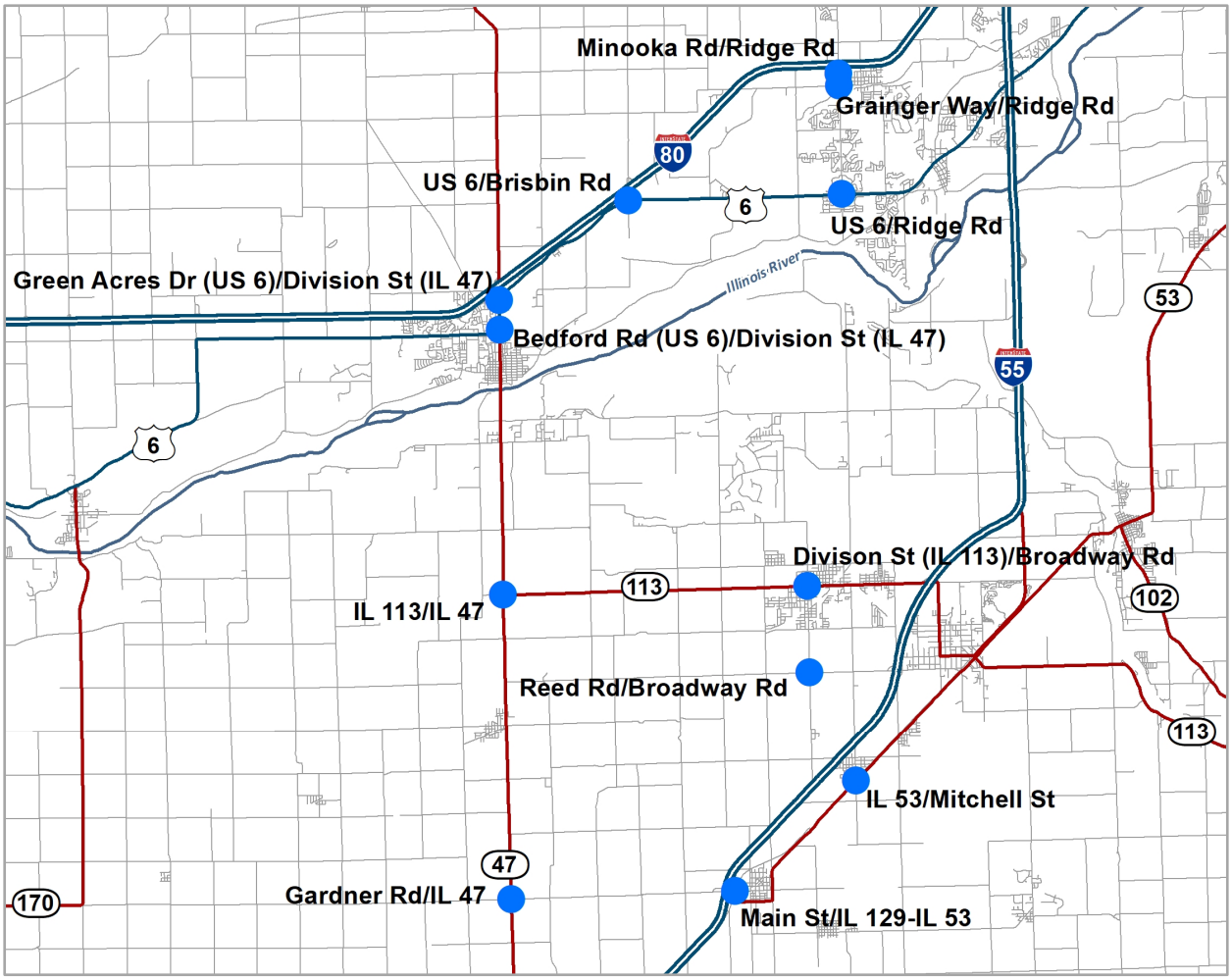
Figure 3-14. Planned and Programmed Project List Map



3.3 Intersection Analysis

CDM Smith completed a planning-level assessment of safety and geometrics at 12 key intersections within the study area (**Figure 3-15**). These locations were identified based on CDM Smith's review of congestion and safety data and in consultation with Grundy County and project staff. Key intersections were reviewed for safety conditions, existing geometry, and traffic operations in support of the development of the study's Transportation Improvement Plan. Note that this analysis addresses existing conditions only. Horizon year (2050) conditions will be assessed at a later stage in this study. Operational modeling may be conducted where closely spaced intersections are reaching capacity due to projected traffic growth. Based on existing conditions, it is likely that operational analysis will be conducted in portions of the Ridge Road corridor. Additional locations may be identified after the future year traffic forecasts are completed.

Figure 3-15. Intersection Analysis Locations



3.3.1 Methodology

This analysis relies on publicly available data sets and supplemental information gathered by the CDM Smith project team. Public data sets include AADT, truck volumes, and five-year crash data from IDOT. This traffic data was supplemented by data collected by the project team, including 30 72-hour volume/classification counts and 10 72-hour turning movement counts (TMC). Speed and congestion data was obtained through INRIX, a third-party provider of traffic data and analytics. Intersection geometric information was obtained using aerial imagery from Google Earth and Google Streetview. Based on the content, quality, and up-to-date nature of the imagery available, no field visits were necessary.

Geometric and operational characteristics were inventoried and compared against industry standards and recommendations. The following were referenced in support of this planning-level analysis: the IDOT Bureau of Design and Environment (BDE) Manual, FHWA Intersection Safety: Manual for Local Rural Road Owners, Illinois Traffic Crash Report SR1050: 2019 Instruction Manual for Law Enforcement Agencies, and FHWA Manual on Uniform Traffic Control Devices (MUTCD).

While CDM Smith referenced these manuals, please note that this intersection analysis is not a comprehensive engineering review. Unless specified otherwise, CDM Smith's review focuses only on the assessment criteria mentioned in this document. Where present, deficiencies or issues were noted based on specific characteristics for each intersection:

- Crashes were aggregated at the intersection level within a 250-foot radius from the center of the intersection Detailed analysis of individual approaches was not performed.
- Intersection angle
- Number of intersection lanes and lane types
- Lane capacity minimum requirements
- Pavement conditions
- Pavement marking conditions
- Pedestrian and bicycle facilities
- Right-turn and left-turn lane conditions
- Signage
- Signal type
- Traffic control device

3.3.2 Results

The comprehensive set of findings are presented in the **Appendix A**. Key observations are summarized below.

- No pedestrian-related crashes occurred in the five-year dataset, although some intersections had faded pedestrian markings or unclear pedestrian signals.
- Three intersections – Minooka Road and Ridge Road; US 6/Green Acres Drive and IL 47/Division Street; and IL 113/Division Street and Broadway Road had elevated shares of turning-related crashes.
- Approximately 45 percent of all crashes at the intersection of Reed Road and Broadway Road are angle crashes.

- The intersection of US 6/Bedford Road and IL 47/Division Street recorded the highest number of crashes (75 crashes), with front-to-rear crashes being the most common type.
- Seven of the 12 intersections are signalized, with six having emergency vehicle preemption (EVP) to improve emergency response. However, the seventh signalized intersection at US 6/Bedford Road and IL 47/Division Street currently lacks EVP.
- Out of the seven signalized intersections, two have pedestrian signals on all legs of the intersection, and three have ped signals on only some legs of the intersection.
- Five intersections are stop-controlled; three are two-way stop controlled; one is three-way stop controlled; and one is four-way stop controlled. Further details are noted in the discussion on each intersection.
- Many intersections in the study area are observed to have faded pavement markings. These faded elements include turn lane arrows, stop bars, pedestrian crosswalks, gores, and channelization.
- The T intersection of US 6/Bedford Road and IL 47/Division Street presents a unique operational challenge due to an east-bound lane that serves through-traffic but also facilitates left turns into the adjacent Circle K gas station. The signal currently only allows permissive left turns in the northbound direction, leading towards the gas station driveway. There is no signage stating, “No Left Turn” or “Do Not Enter”, which allows drivers to make the left turn into the Circle K driveway entrance. Furthermore, the absence of clear signage may confuse drivers, potentially leading to queuing, conflicts, or other traffic operational issues.
- US 6/Bedford Road and IL 47/Division Street, as well as IL 53 and Mitchell Road are skewed-angle intersections, not aligning with FHWA and IDOT recommendations for 90-degree crossings. These skewed angles can present design challenges when there are large volumes of heavy trucks. The T intersection at US 6/Bedford Road and IL 47/Division Street presents a particularly complex geometry due to the three gas station entrances located along the top of the T. Its north leg also has a two-way left turn lane.
- Grainger Way and Ridge Road features a service road connecting to Simotes Motor Sales & Service. However, its utility is unclear given the establishment's direct driveway to Ridge Road. Lack of wayfinding signage at this intersection could lead to confusion.
- All intersections currently meet the FHWA capacity guidelines: no more than 400 vehicles per lane per hour and dedicated turn lanes for turn movements exceeding 100 vehicles per hour.

4.0 Travel Demand Modeling

This section outlines the results of travel demand modeling conducted as part of the *Grundy Moves* plan. The primary objective of the analysis is to assess the transportation network's future state under baseline and alternative future land use scenarios. These scenarios consist of variations on projected growth in warehousing and other industrial facilities. Note that these are not land use forecasts, but rather assume a certain percentage of land identified for industrial development is built out. This exercise is intended to stress test the transportation network and identify low-performing facilities that could represent potential future bottlenecks. These findings may result in the addition of project concepts into the Transportation Improvement Program.

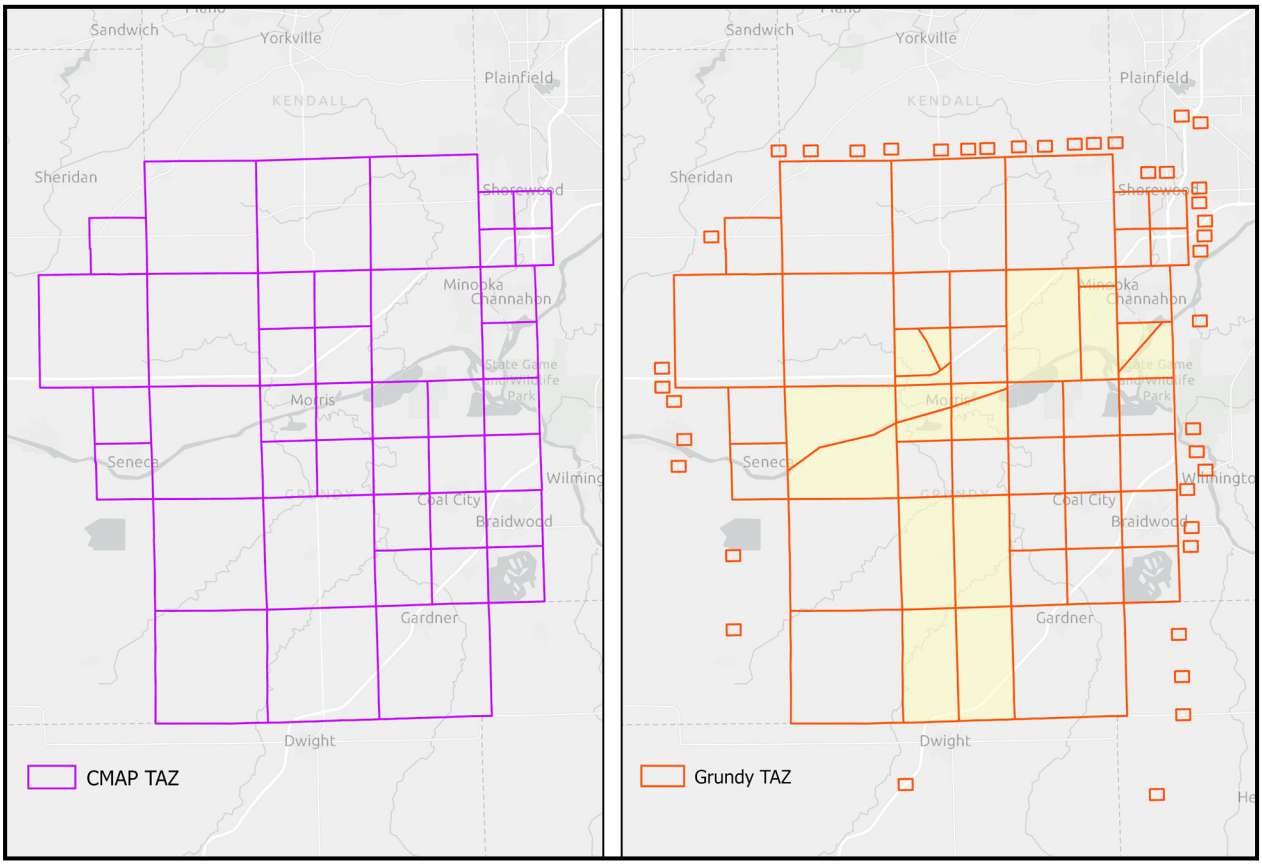
The following sections provide details on the methodology in developing the travel demand model, modeling results, and recommendations for new project concepts to be included in the *Grundy Moves* TIP.

4.1 Model Development

The travel demand model developed for Grundy County was extracted from the larger Chicago Metropolitan Agency for Planning (CMAP) model. The Grundy County subarea was refined to better represent local traffic conditions, including calibration to observed base-year 2023 average weekday traffic volumes. The Grundy County model assumes no additional infrastructure changes for the future year of 2050, aside from the larger planned capital projects already included in the CMAP model. In addition to the baseline future growth assumptions, CDM Smith developed two alternate future year scenarios based on varying intensity of industrial development.

The model also incorporates additional refinements. Enhancements to the local highway network provide additional details such as missing road links and link attributes, such as speed and capacity, which were not previously accounted for in the original CMAP model network. In addition, the traffic analysis zones were reviewed using GIS and aerial imagery, resulting in the disaggregation of the original CMAP zones for improved granularity (**Figure 4-1**). These adjustments were generally made to zones south of I-80, better aligning the zone structure in the model with both existing land use patterns and the alternate future land use scenarios.

Figure 4-1. Original CMAP Traffic Analysis Zones (left), Enhanced Traffic Analysis Zones (right)

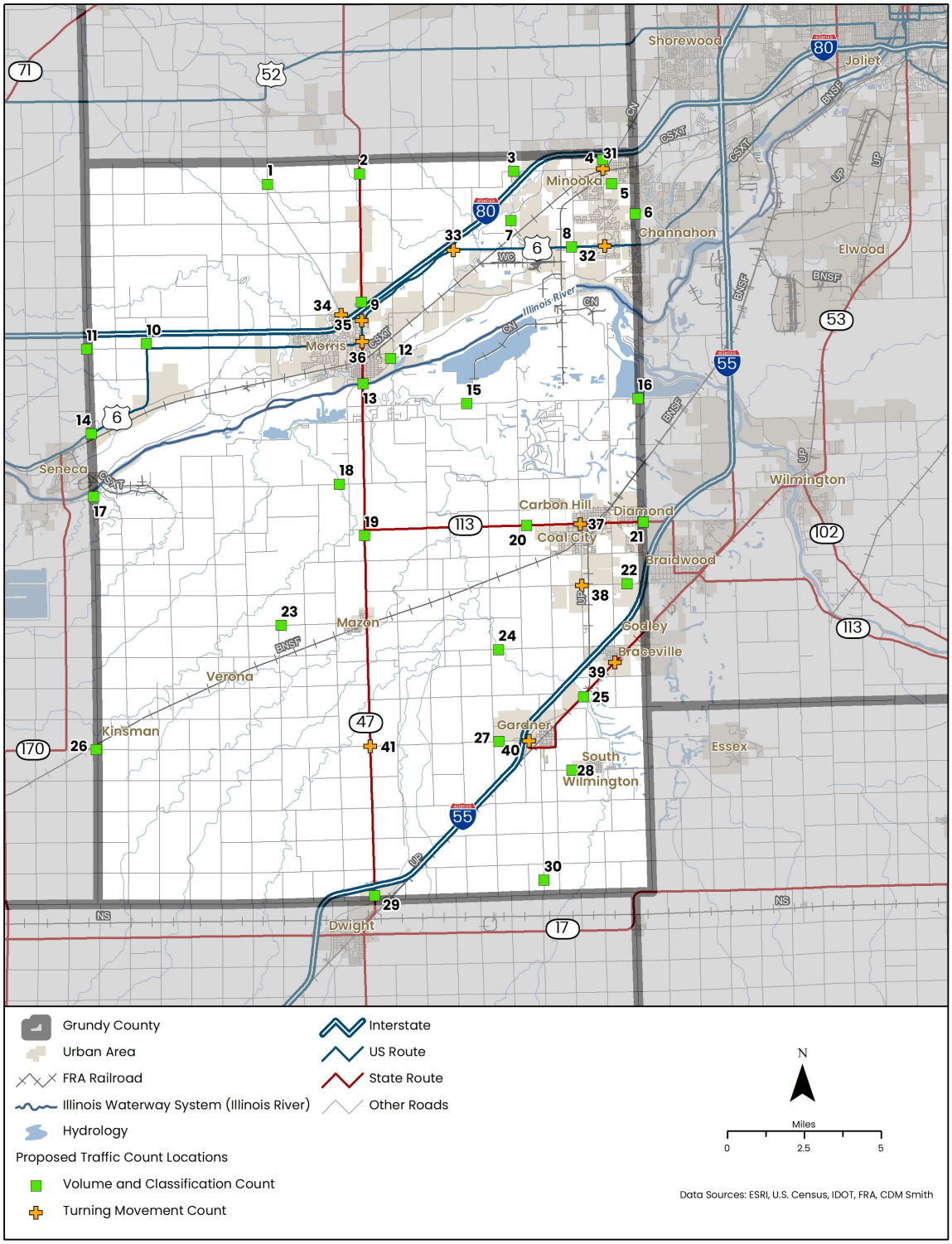


4.1.1 Traffic Volumes

Traffic counts were conducted to ensure a comprehensive understanding of local traffic conditions to calibrate the base model. These traffic counts supplement publicly available count data from IDOT for 2019 and 2021. Comparison to historical data helps identify areas where significant traffic growth has been observed in recent years. Unlike IDOT's vehicle count classifications, which are limited in detail, CDM Smith conducted counts for passenger car, single-unit trucks, and multiple-unit trucks and, for select locations, included turning movements.

Figure 4-2 shows the 30 traffic count locations, and also the 12 locations where turning movements were recorded. Count data was collected over three consecutive days, Tuesday through Thursday, in May 2023. Turning movement counts were conducted over a single 24-hour period, also during a Tuesday through Thursday period, between May 2-16, 2023.

Figure 4-2. Traffic Count Locations



When identifying traffic count locations, the CDM Smith team prioritized the following factors:

- High traffic volume areas with average daily traffic of 1,500 or more
- Major access routes leading to and from the county
- Facilities likely to serve significant truck traffic, such as those providing access to industrial land uses
- Facilities approaching areas of new development, as identified via aerial imagery.

These counts played a vital role in calibrating the model, which improves its accuracy in representing traffic conditions. As shown in **Table 4-1**, the model's error rate, which measures the difference between the modeled traffic volumes and actual counts, improved substantially after the calibration process. Prior to calibration, the error rate between modeled traffic volumes and observed traffic counts in the base year exceeded the acceptable maximum error rate for roadway facility groups. After calibration to observed traffic counts, the model's rate of error was significantly reduced, achieving error rates well within the acceptable range for all facilities.

Table 4-1. Calibrated and Uncalibrated Model Error Rates

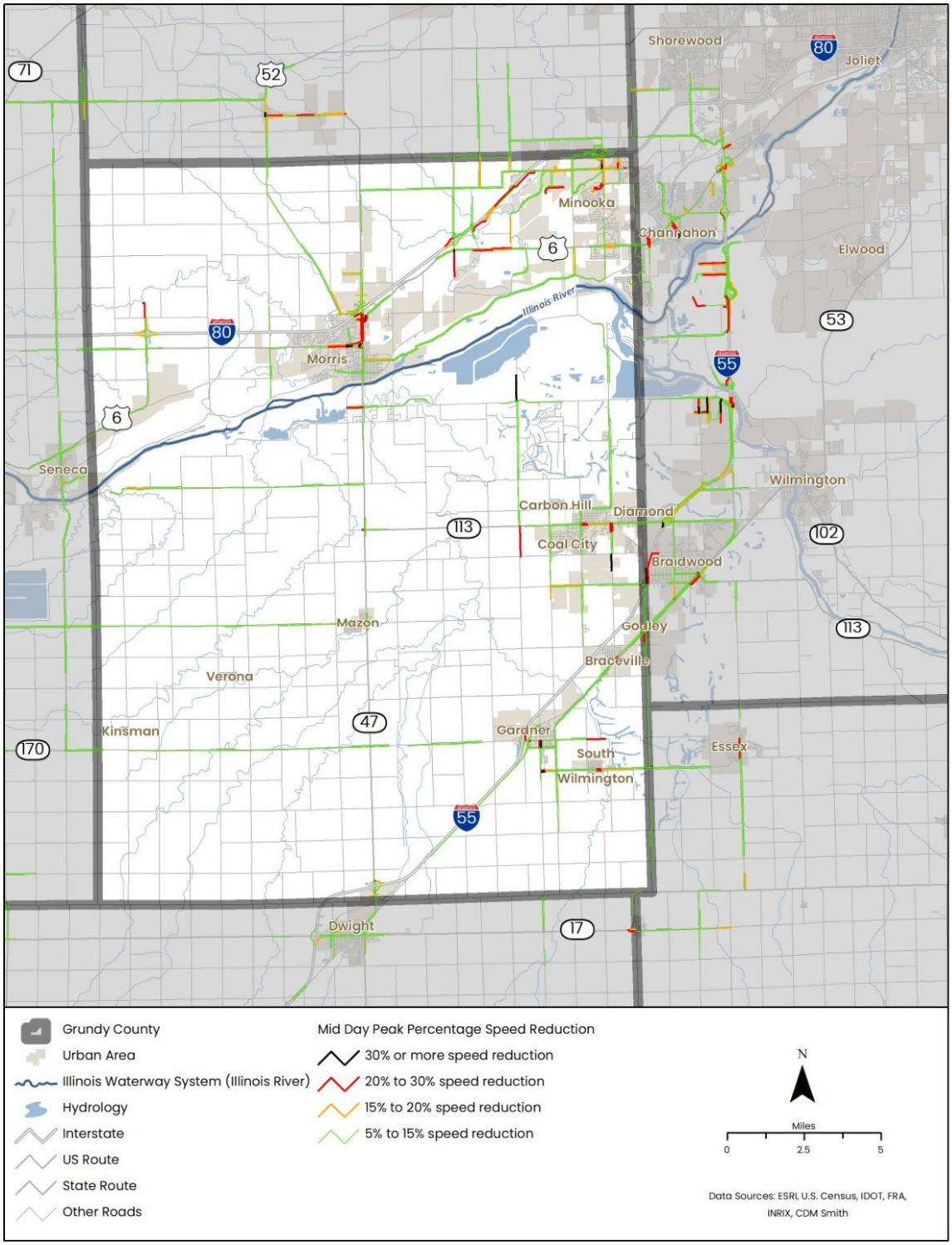
Volume (Vehicles Per Day)	Uncalibrated error rate (%)	Calibrated error rate (%)	Maximum acceptable error range[6]
<=4,999	114%	31%	45% - 100%
5,000-9,999	61%	23%	35% - 45%
10,000-14,999	50%	8%	27% - 35%
15,000-19,999	30%	6%	25% - 30%
20,000-29,999	38%	6%	15% - 27%
30,000-49,999	74%	12%	15% - 25%
>50,000	33%	2%	10% - 20%

4.1.2 Traffic Speeds

As described in **Section 3.1.1**, observed speed data for 2022 were purchased from INRIX, a global vendor of transportation data and analytics. The INRIX data were used to identify congested roadway segments, which was a factor considered in identifying traffic count locations. INRIX data were not used during the model's calibration, as the free-flow speeds coded into the network are derived from the CMAP model. Figure **4-3** presents the existing conditions analysis findings, and serves as a point of reference to compare existing congestion against anticipated future congestion estimated by the travel demand model.

[6] FSUTMS-Cube Framework Phase II, Model Calibration and Validation Standards. Florida Department of Transportation Systems Planning Office

Figure 4-3. Existing Peak-Period Congestion



Grundy County experiences the highest congestion levels during the midday period, according to 2022 data. Congestion is concentrated in the main urbanized areas in the north-central and northeast portions of the county. Segments of IL 47 and US Route 6 in Morris, along with additional segments of US Route 6 in Minooka, experience between a 20 and 30 percent speed reduction compared to free-flow speeds. Several local roadways in the Minooka/Channahon area also experience speed reductions of up to 30 percent, including Minooka Road, Ridge Road, and roadways that serve as frontage roads for I-80. There are also road segments with speed reductions of over 20 and 30 percent in the eastern portion of the county, south of Heidecke Lake and near Coal City and Gardner.

4.1.3 Future Year Scenarios

The baseline 2050 scenario assumes only the modest growth present in the CMAP model. CDM Smith developed two alternative land use scenarios based on 50 percent and 100 percent buildout of areas identified for future industrial development. These additional scenarios were developed for the purpose of stress-testing the transportation network under high-growth scenarios. It is important to note that these scenarios are not intended as land use forecasts and may exceed development the county is likely to see by 2050.

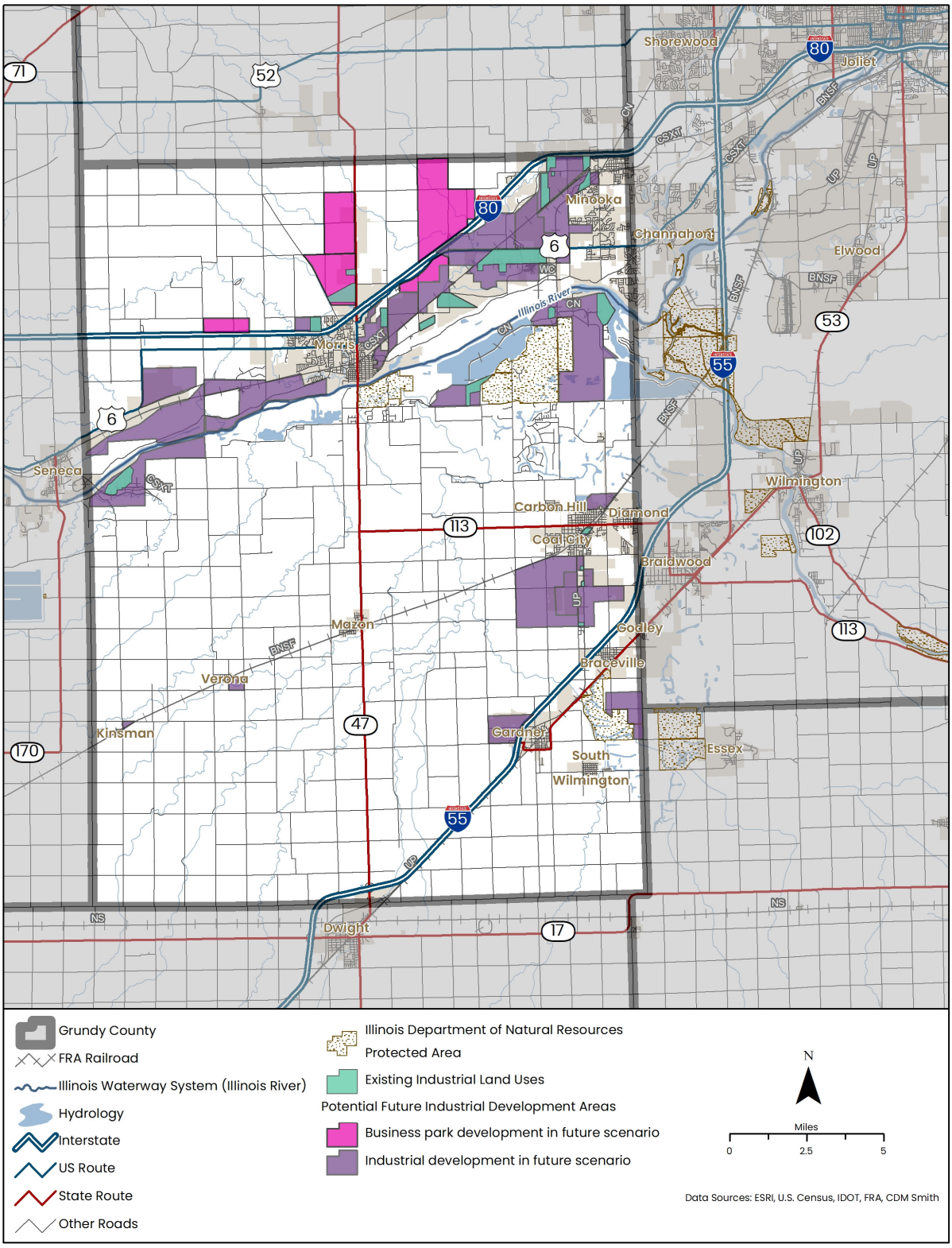
To develop these scenarios, CDM Smith reviewed local zoning documents and land use plans from Grundy County and municipalities to identify locations identified for future business parks and general industrial development. CDM Smith then made adjustments to these locations based on feedback from local stakeholders. Specifically, some acreage near the Illinois River east of Morris was removed, either because it was protected open space or fell within a flood-prone area and was determined to be unlikely for future development. As shown in **Figure 4-4**, the resulting areas identified for future development are primarily located across northern Grundy County along major transportation corridors, such as I-80, US Route 6, and the Illinois River. Additional sites are located along the Union Pacific Railroad south of Coal City and near Braceville, in the east-central portion of the county.

Traffic generation on these sites was estimated based on the traffic generation rates provided in the Institute of Transportation Engineers (ITE) Trip Generation Manual, presented in **Table 4-2**. For the business park areas, the industrial park trip generation rate was applied. For the industrial development areas, an average of the trip generation rates for manufacturing and warehousing was applied.

Table 4-2. Weekday Trip Generation Rate (ITE Manual)

Land Use Number	Land Use	Weekday Trips per 1,000 sq. ft.	Truck Trips
110	General Light Industrial	4.87	0.25
130	Industrial park	3.37	0.57
140	Manufacturing	4.75	0.45
150	Warehousing	1.71	0.60
155	High-cube Fulfillment Center Warehouse	1.81	0.23

Figure 4-4. Existing and Assumed Future Locations of Industrial Land Uses



In total, these areas account for 6,000 acres of business park development and 24,000 acres of industrial land use. For both development types, an assumption of 21 percent was used to estimate the square footage of a parcel that would be occupied by an industrial building, resulting in over 1.4 million square feet of total development (Table 4-3). This percentage is based on an assessment conducted for the Joliet Intermodal Transportation Master Plan (2022), which included interviews and observations of existing development in neighboring Will County. For the 100 percent buildout scenario, the proposed developments are anticipated to generate 910,000 new vehicle trips to the County each weekday. Trucks are expected to account for 16.4 percent of this total, or 150,000 weekday trips.

Table 4-3. Total Area of Proposed Development and Associated Trip Generation (100 percent buildout scenario)

Land Use	Land Area (1,000 sq ft)	GFA (1,000 sq ft)	Weekday Trips	Weekday Truck Trips
Business/Industrial park	257,500	54,100	180,000	30,000
Manufacturing or Warehousing	1,174,500	225,600	730,000	120,000
Total	**1,432,000**	**279,700**	**910,000**	**150,000**

4.2 Model Results

The following section presents the key outputs from the travel demand model, emphasizing the performance of the roadway network under various future year scenarios. Volume-to-capacity (V/C) ratios are utilized as the principal metric to evaluate and quantify the network's ability to accommodate future travel demand under each scenario. A ratio less than one indicates that a facility is operating within its capacity, while a ratio greater than one indicates the facility is over capacity, leading to congestion and delays.

In the base future year scenario, which relies on underlying growth assumptions in the CMAP model and does not account for the additional industrial land use described above, the model mostly shows V/C ratios under 0.5 across the county, indicating that most road segments are forecast to remain well under capacity and expected to operate under free-flow conditions (Figure **4-5**). The few exceptions to this observation can be found within the developed core of Morris and Minooka, where some facilities have V/C ratios between 1.0 and 1.5 indicating varying degrees of congestion.

In the 50 percent build-out scenario (**Figure 4-6**), multiple facilities in Minooka and Channahon worsen compared to the base case, particularly along US Route 6 and Tabler Road, where V/C ratios exceed 1.5. Significant congestion also occurs on IL 47, especially over the Illinois River between Benton Street and Pine Bluff Road, where the V/C ratio reaches 2.3. I-80 in Minooka experiences V/C ratios ranging from 1.0 to 1.5. Some facilities near Morris experience a slight increase in congestion, especially along US Route 6, Nettle School Road, and Old Stage Road, although congestion on these facilities remains relatively low. Local stakeholders have indicated that industrial development is unlikely in the area near the Illinois River west of Morris, due to potential flooding concerns. As a result, congestion along facilities including Nettle School Road and Old Stage Road is unlikely to occur in 2050.

Figure 4-5. Future Year Congestion, Base Scenario

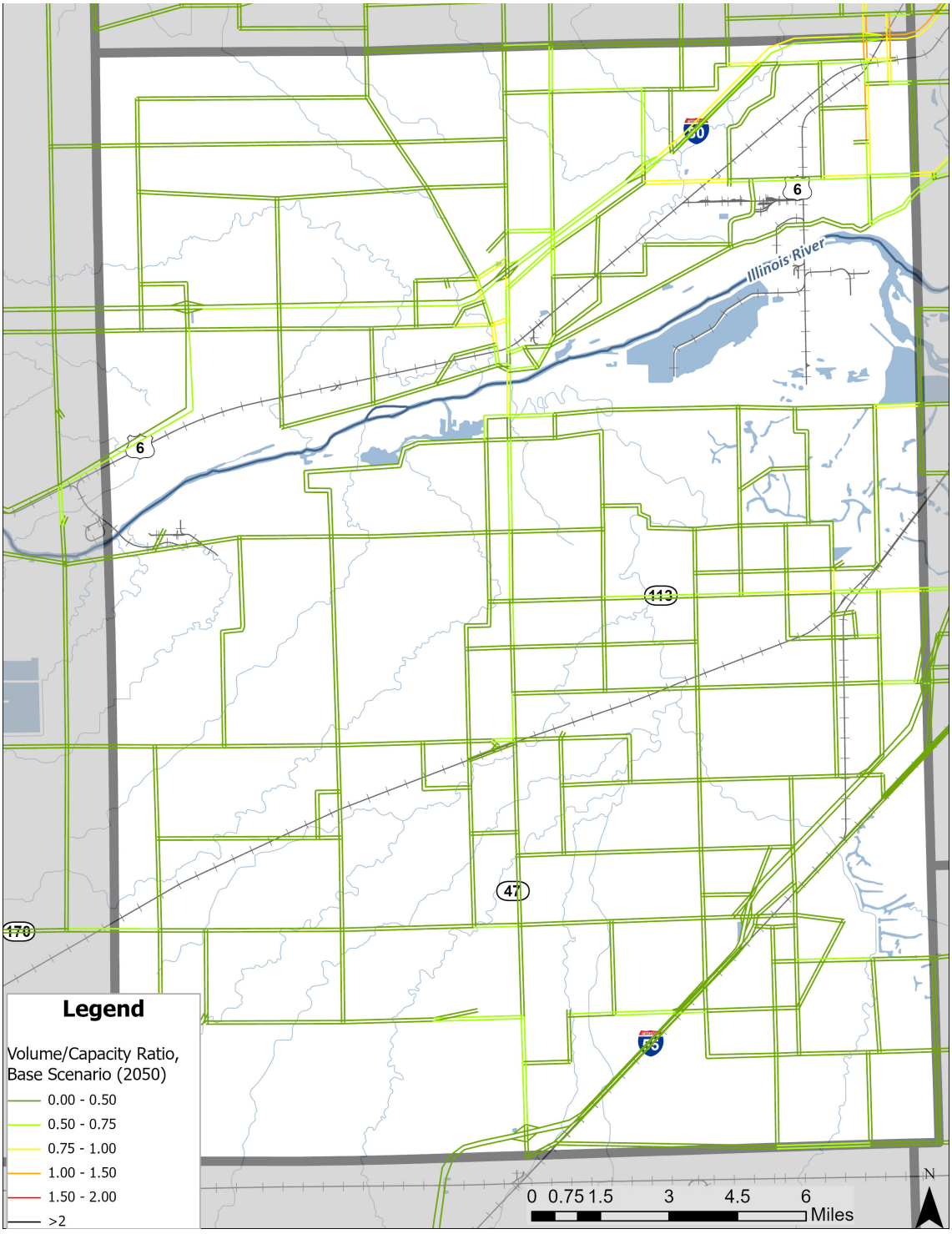
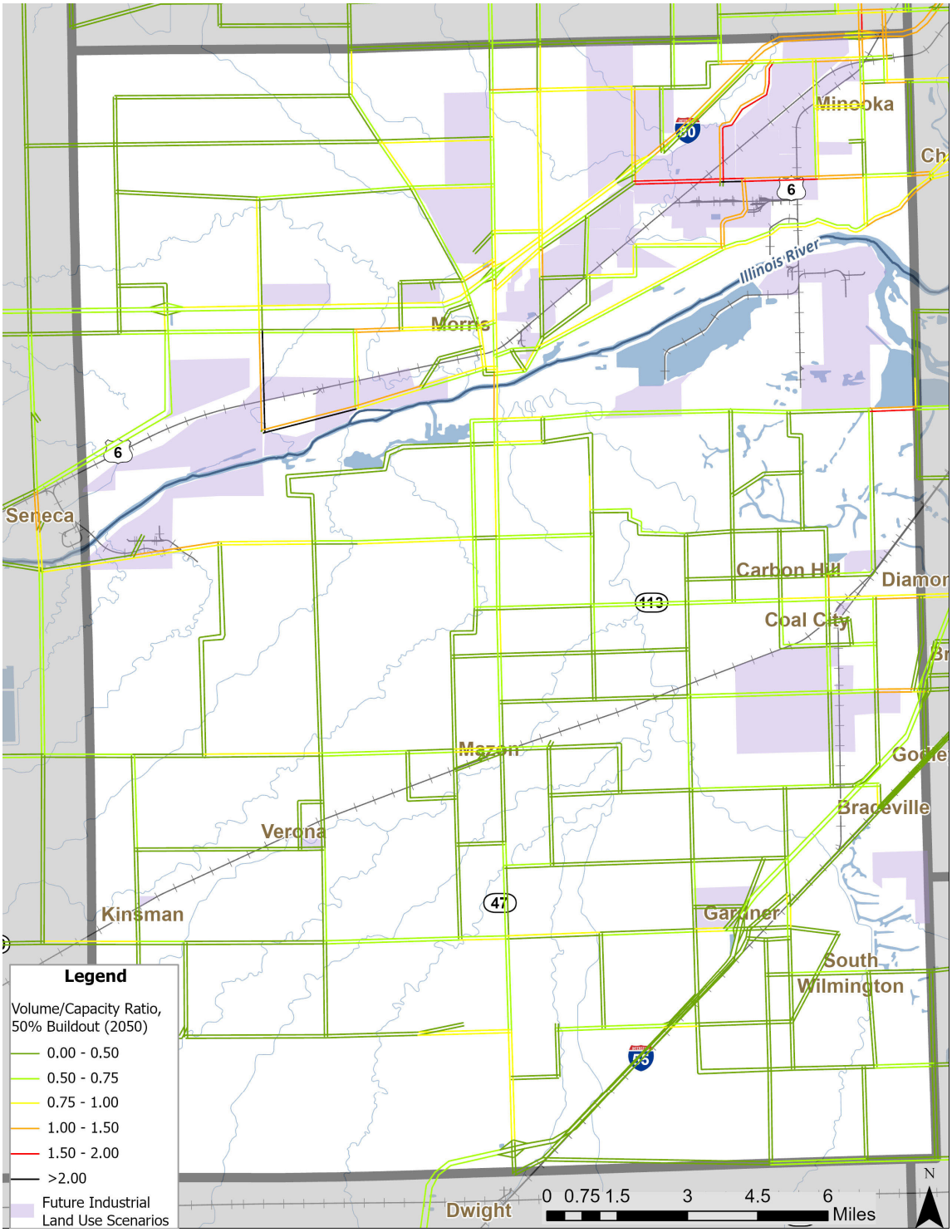


Figure 4-6. Future Year Congestion, Alternate 1 Scenario (50 percent buildout)



Locations with existing congestion either persist or intensify in the 100 percent build-out scenario (**Figure 4-7**). Interstate facilities are less severely impacted in this scenario, while arterial, collector, and local road facilities are more impacted. Numerous facilities throughout Minooka, Morris, and Seneca exhibit V/C ratios over 1.5. Some locations have V/C ratios above 4.0, indicating severe congestion. For example, the segment of US Route 6 near Tabler Road has a V/C ratio of 5.4. Although showing high ratios as well, areas near Nettle School Road and Old Stage Road are unlikely to experience congestion in 2050, as properties there are not likely candidates for industrial development due to the potential for flooding.

Compared to observed congestion in 2023, which used percent below free-flow speed rather than V/C ratios as its metric, similar spatial patterns of congestion are observed in the modeling results. Although the metrics are different, both sets of data identify similar areas in the county's main urban centers, such as Morris and Minooka, as congestion hotspots.

For a more detailed understanding of low-performing road segments, **Table 4-4** and **Table 4-5** list all segments with V/C ratios greater than 1.5 in the two future land use scenarios. The travel direction with the higher V/C ratio was selected for inclusion in each table.

Table 4-4. Low Performing Segments in Alternative 1 Scenario (50 percent buildout)

Road Name	From	To	V/C Ratio
US Route 6	N Tabler Rd	S Tabler Rd	2.7
Old Stage Rd*	Nettle School Rd	Saratoga Rd	2.5
Nettle School Rd*	US Route 6	Old Stage Rd	2.4
US Route 6	Brisbin Rd	Tabler Rd	2.0
Tabler Rd	US Route 6	Minooka Rd	1.7
US Route 6	Tabler Rd	McLindon Rd	1.6
Pine Bluff Rd	Dresden Rd	Will Rd	1.5

** While the modeling outputs indicate severe congestion on these facilities in the alternate future year land use scenarios, local stakeholders indicated that industrial development is unlikely to occur in these areas, due to potential for flooding and lack of municipal services. As a result, CDM Smith did not include project concepts for these roadway segments.*

Figure 4-7. Future Year Congestion, Alternate 2 Scenario (100 percent buildout)

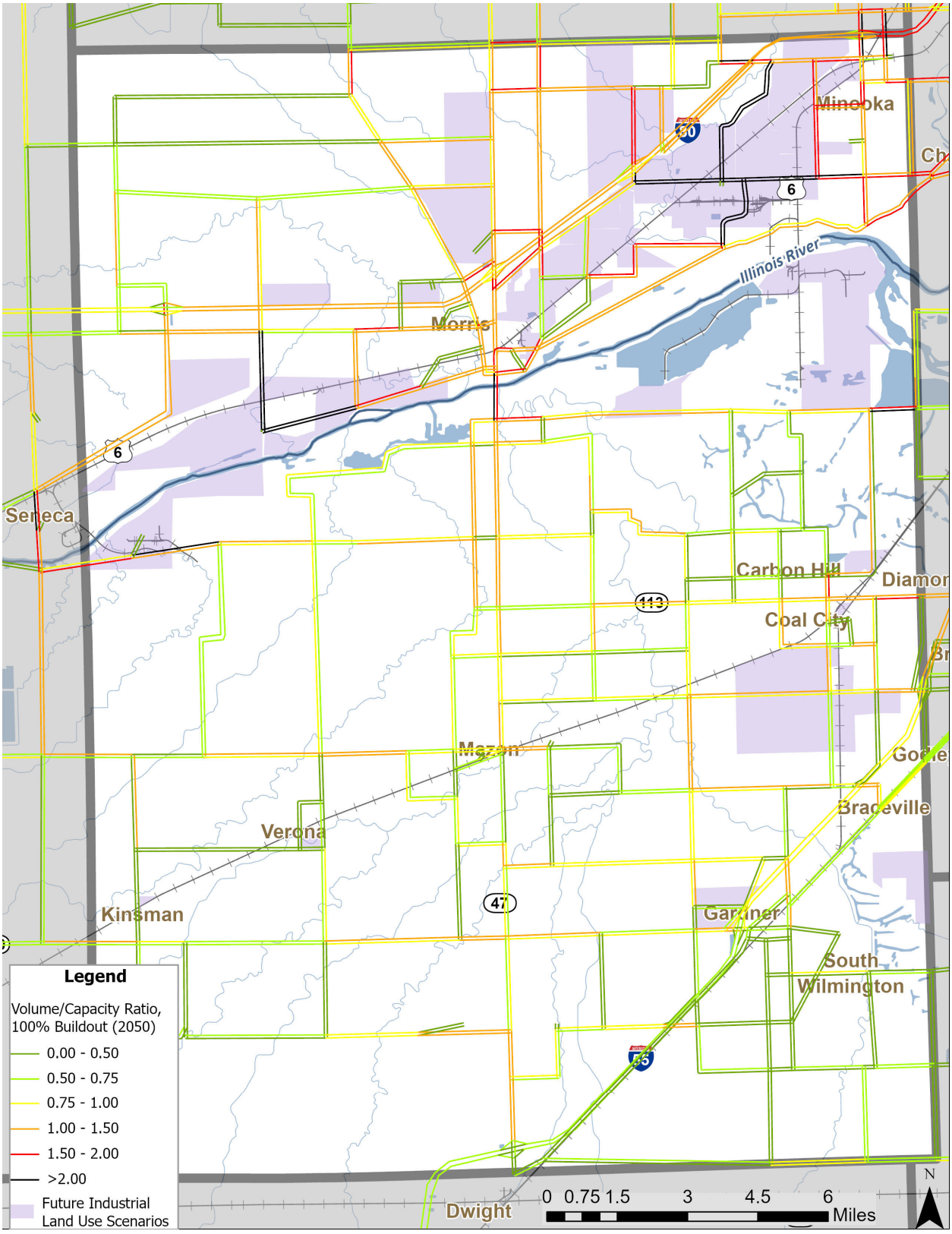


Table 4-5. Low Performing Segments in Alternative 2 Scenario (100 percent buildout)

Road Name	From	To	V/C Ratio
US Route 6	N Tabler Rd	S Tabler Rd	5.4
Old Stage Rd*	Nettle School Rd	Saratoga Rd	4.5
Nettle School Rd*	US Route 6	Old Stage Rd	4.4
US Route 6	Brisbin Rd	Tabler Rd	3.8
Tabler Rd	Minooka Rd	US Route 6	3.4
US Route 6	Tabler Rd	McLindon Rd	3.1
Tabler Rd	US Route 6	Cemetery Rd	3.0
Ridge Rd	Minooka Rd	Holt Rd	2.3
IL 47	Benton St	Pine Bluff Rd	2.3
N Wabena Ave	Mondamin St	Holt Rd	2.2
US Route 6	McLindon Rd	Ridge Rd	2.2
Main St	Jackson St	Dupont Rd	2.1
Minooka Rd	Obrien Rd	Tabler Rd	2.1
Brisbin Rd	I-80	US Route 6	2.1
Pine Bluff Rd	Dresden Rd	Will Rd	2.1
Dupont Rd	IL-170	Gonnam Rd	2.0
US Route 6	Saratoga Rd	Ashton Rd	2.0
US Route 6	Ridge Rd	Tryon St	1.9
Ashley Rd	Granville Rd	Bungalow Rd	1.9
McEvilly Rd	S Wabena Ave	Bell Rd	1.9
Ridge Rd	McEvilly Rd	Brannick Rd	1.9
Minooka Rd	IL 47	Ashley Rd	1.8
I-80	I-55	Ridge Rd	1.8
Lisbon Rd	Minooka Rd	Sherill Rd	1.8
Brannick Rd	McLindon Rd	Ridge Rd	1.8
McLindon Rd	Minooka Rd	US Route 6	1.7
IL 47	I-80	US Route 6	1.7
Granville Rd	IL 47	Ashley Rd	1.7
Hansel Rd	Ridge Rd	Fryer St	1.7
Minooka Rd	McLindon Rd	Ridge Rd	1.7
Gore Rd	Lisbon Rd	IL 47	1.7
Washington St	IL 47	Ashley Rd	1.7
Broadway St	North St	IL 47	1.6
Brisbin Rd	Minooka Rd	I-80	1.6
Old Stage Rd	Saratoga Rd	Crabapple Ln	1.6
US Route 6	IL 47	Ashley Rd	1.6
Dellos Rd	Bungalow Rd	Tabler Rd	1.6
Bungalow Rd	Dellos Rd	Gun Club Rd	1.6
Ridge Rd	US Route 6	Hansel Rd	1.6
Sherill Rd	IL 47	Ashley Rd	1.6
Pine Bluff Rd	IL 47	School Dr	1.6
Ashley Rd	Sherill Rd	Minooka Rd	1.5
IL 113	Berta Rd	Will Rd	1.5
Armstrong St	IL 47	Spruce St	1.5

** While the modeling outputs indicate severe congestion on these facilities in the alternate future year land use scenarios, local stakeholders indicated that industrial development is unlikely to occur in these areas, due to potential for flooding and lack of municipal services. As a result, CDM Smith did not include project concepts for these roadway segments.*

4.3 Project Identification

To assist in the identification of new project concepts for the TIP, outputs from the modeling exercise were cross-referenced against programmed or planned improvements collected during the existing conditions analysis. For example, the segment of I-80 from IL 47 to I-55, although congested in model's future-year scenarios, has existing plans for improvement. Locations without any scheduled improvements were noted. In these cases, a capacity enhancement project was added to the TIP (Table 4-6**).**

Table 4-6. Low-Performing Segments Not Programmed/Planned for Improvement

Road/Intersection	Extent	Jurisdiction	Category
I-80/Minooka Rd Interchange	N/A	Minooka	New Interchange
I-80/Ridge Rd Interchange	N/A	Minooka	Interchange/Intersection Improvement
US 6	IL 47 to Ridge Rd	Grundy County	Road Widening
US 6/Seneca Rd	Main St (Seneca) to I-80	Grundy County	Road Widening
IL 47 at US 6-Green Acres Dr	N/A	Morris	Interchange/Intersection Improvement
IL 47 at US 6-Bedford Rd	N/A	Morris	Interchange/Intersection Improvement
Minooka Rd, O'Brien Rd, Sherill Rd	Tabler Rd to IL 47	Grundy County	Road Widening
Dupont Rd	Gonnam Rd to Kinsman Rd	Grundy County	Road Widening
Gore Rd	Lisbon Rd to IL 47	Morris	Road Widening
Granville Rd	IL 47 to Ashley Rd	Grundy County	Road Widening
Tabler Rd	Minooka Rd to US 6	Grundy County	Road Widening
Pine Bluff Rd/Lorenzo Rd	IL 47 to I-55	Grundy County	Road Widening
Brannick Rd	Ridge Rd to McLindon Rd	Minooka	Road Widening
McEvilly Rd	Vista Ct to Ridge Rd	Minooka	Road Widening
Ashley Rd	Granville Rd to Bungalow Rd	Morris	Road Widening
McLindon Rd	Minooka Rd to US 6	Minooka	Road Widening

5.0 Transportation Improvement Program Development

This section reviews the development process for the Transportation Improvement Program. It first reviews the various sources for the full set of project concepts, then describes the ranking and prioritization process. That process included both quantitative evaluation and review by stakeholder groups and the public. Finally, this section describes the development of the updatable TIP database, which will allow project sponsors and stakeholders to track project development over time.

Additionally, brief project descriptions for each of the project on the TIP are include in the **Appendix B**.

5.1 Sources and Methodology

The TIP methodology was designed to produce a list that addresses current or future needs for the transportation network in Grundy County. Projects were considered based on an unconstrained timeframe and budget. Any jurisdiction of roadway was considered.

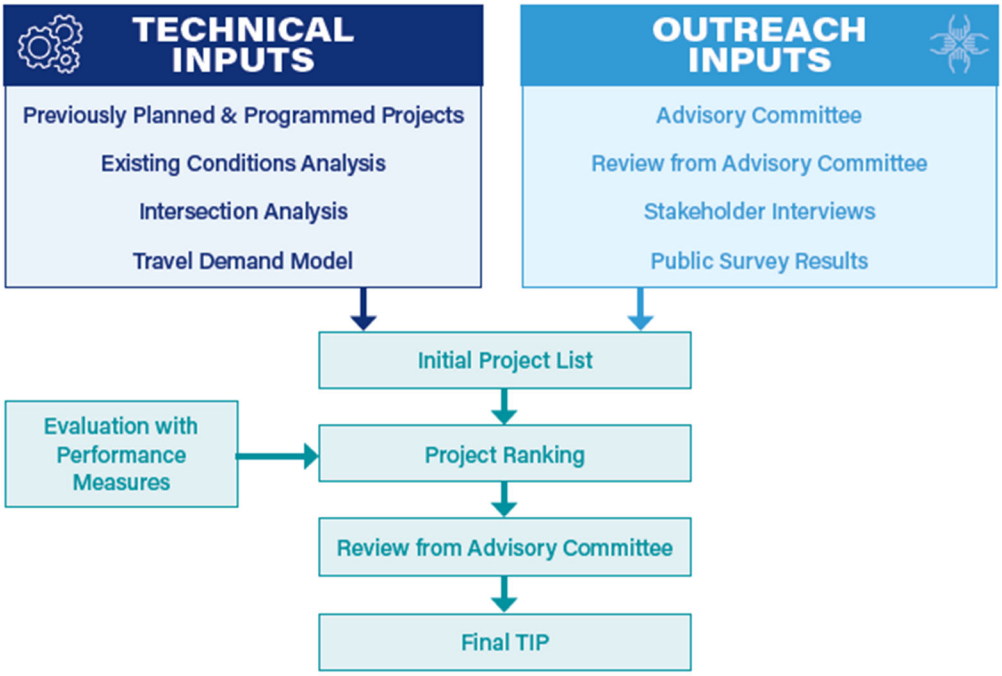
Projects were identified through several sources and then prioritized based on evaluation criteria agreed upon and weighted by the Advisory Committee. The project team considered projects that were impactful at a regional scale, meaning projects affected mobility and development for wider area than just the adjacent land. Though state-of-good-repair factors could be considered in projects included, they need to focus on improving safety, mitigating congestion, adding capacity, or improving mobility.

Selecting the initial list of projects included pulling from several sources including state, regional, and local plans and programs. Detail on all the documents reviewed is found in **Section 3.2**. From this initial list several technical and outreach-related inputs added to and refined the projects being considered. See for a **Figure 5-1** graphic depiction of the process to develop the TIP.

The examining the transportation network through mode share, traffic volumes, asset conditions, safety, and thorough intersection analyses (detailed in **Section 3.0**), areas of the network that needed improvement emerged. The modeling portion of this study, presenting in **Section 4.0**, served as a source for the TIP by identifying roadways likely to be experiencing congestion in the future as development in the County grows.

Outreach inputs also were considered in addition to the technical inputs. The Advisory Committee was presented with the initial list of planned and programmed projects and then informed as sources brought in new projects. Iterations with the committee led to some projects being dropped and others being added. Additionally, the stakeholder interviews (detailed in **Section 2.2**) allowed the project team to hear directly from important users of the network on concerns which brought about other potential projects. And most broadly, this study engaged the public in the TIP development through a survey and virtual open house which solicited responses about specific areas of concern to generate more potential projects. The results are documented in **Sections 2.3** and **2.4.**

Figure 5-1 TIP Development Process



After the full TIP list was established and confirmed by the county and Advisory Committee, a prioritization process was used to rank projects. Projects were scored using a multi-criteria analysis rubric and followed these steps:

- Identified six key goals and performance metrics within those goals
- Weighted the goals to reflect local priorities
- Developed a project evaluation tool to evaluate project concepts
- Ranked projects into three high-level tiers

The six goals were presented to the Advisory Committee and members were able to propose weighting the goals through a brief survey. The project team averaged the proposed weightings to find a final weighting scheme that is shown in **Figure 5-2** .

The project team identified data sources that reflected the goals through performance metrics. The was followed by developing a scoring system for each of the data results and applying the weights provided by the Advisory Committee to produce the scores. The data sources and their owners are provided below in **Table 5-1**.

With the appropriate scores and weights applied, the project team found natural breaking points in the stratified project list and grouped them into three tiers. The tier allocations were discussed with the county and the Advisory Committee, and it was agreed to make minor adjustments for a small number of projects because of unavailable data or reasonable future development timelines.

Figure 5-2 TIP Project Prioritization Goals and Weights

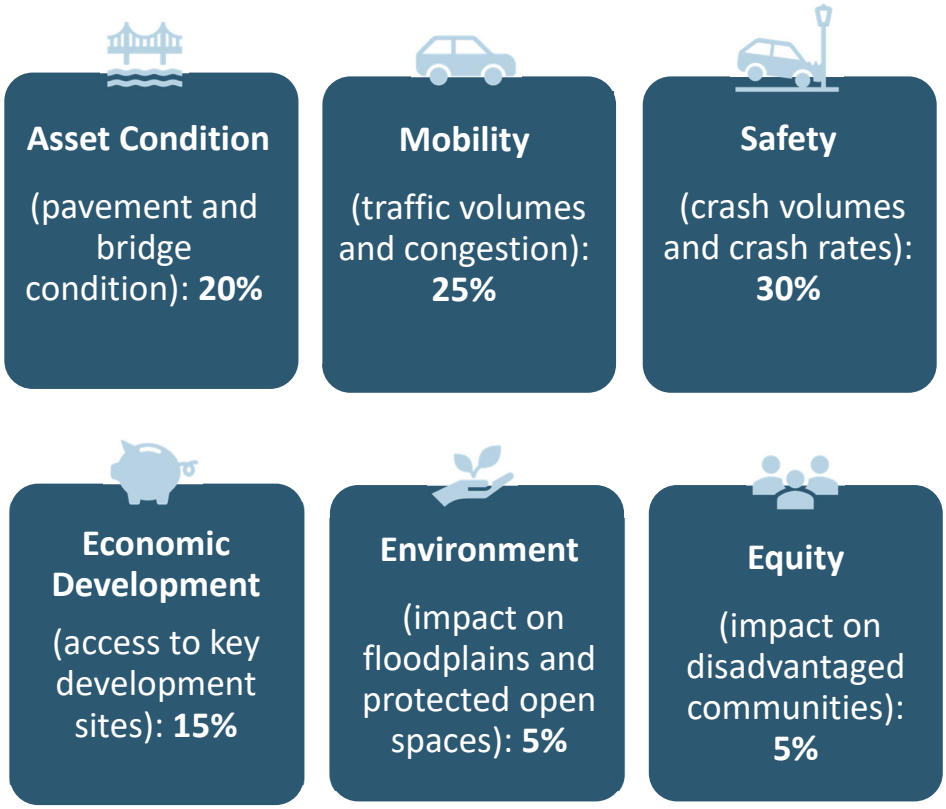


Table 5-1. TIP Performance Metrics and Sources

Project	Data
Asset Condition	Bridge Condition Rating (IDOT)
	Pavement Condition Rating (IDOT)
Mobility	AADT (IDOT)
	Percent of traffic below free-flow speeds (INRIX)
	Motorist delay at railroad crossings (ICC)
Safety	Crashes, 2017-2021 (IDOT)
	Crash rate, crashes per VMT (IDOT)
Economic Development	Proximity of existing development (Grundy MTMP)
	Proximity to future industrial and commercial development areas (Grundy MTMP)
Environment	Proximity to protected open spaced (USGS)
	Proximity to floodplains (FEMA)
Equity	Proximity to disadvantaged populations (USEPA)

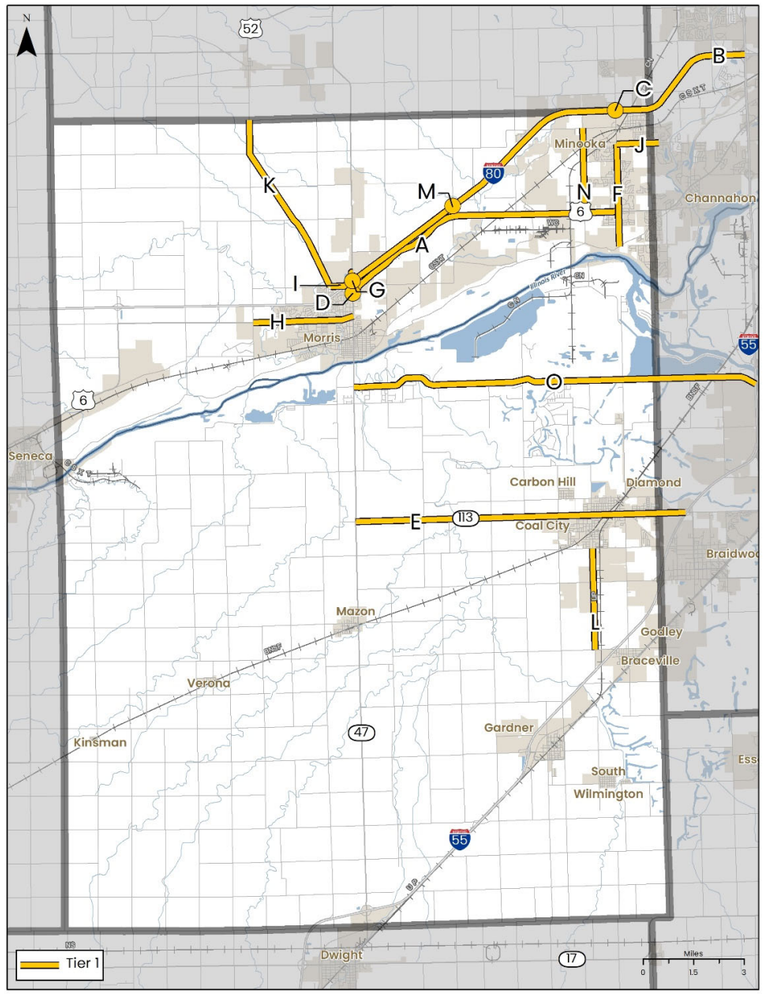
5.2 Final Project List

There are a total of 49 projects identified through the TIP project section process that have been broken into three tiers based on the prioritization goals and weights described previously in **Section 5.1**. Tier 1 projects scored the highest and contain 15 proposed projects. Tier 2 is next with 16 proposed projects and is then followed by Tier 3 containing 20 projects.

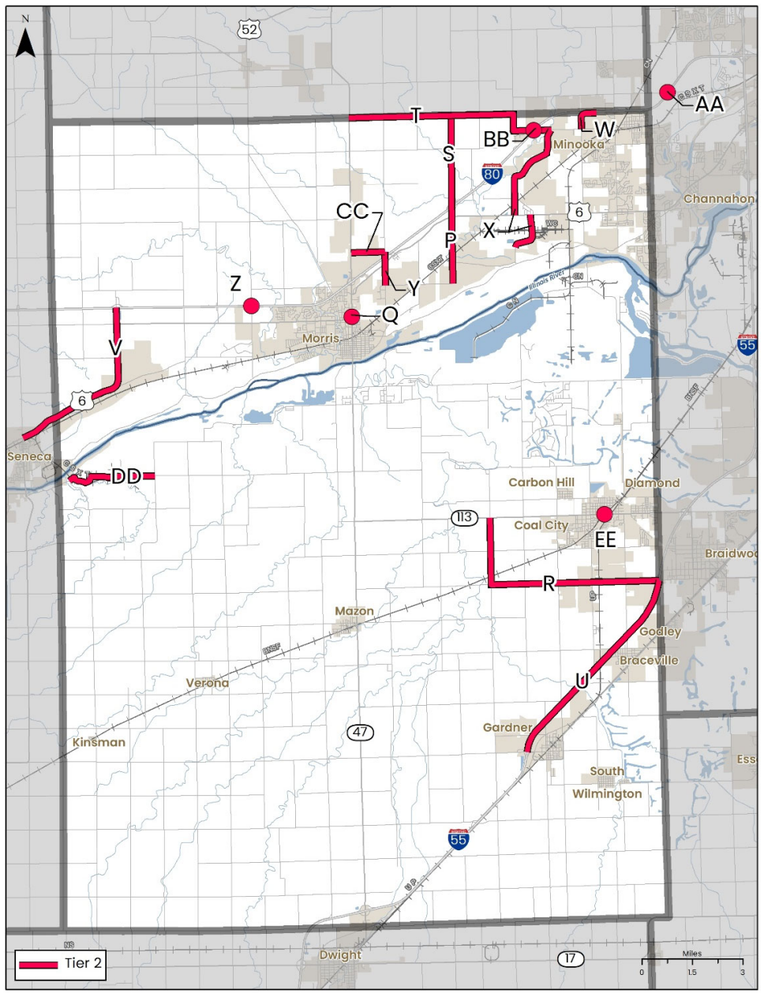
	Ranking	Road/Intersection	Extent	Jurisdiction	Category	Source	Map ID
Tier 1	1	US 6	IL 47 to Ridge Rd	IDOT	Road Widening	Stakeholders, TDM, survey	A
	2	I-80	IL 47 to I-55	IDOT	Road Widening	Previous plan, ECA, TDM, stakeholders, survey	B
	3	Ridge Rd/I-80 Interchange		IDOT	Interchange/Intersection Improvement	ECA, stakeholders, IA	C
	4	IL 47/US 6-Green Acres Dr (north)		IDOT	Interchange/Intersection Improvement	ECA, TDM, IA, stakeholders, survey	D
	5	IL 113	IL 47 to I-55	IDOT	Road Widening	Previous plan, TDM, IA, AC feedback	E
	6	Ridge Rd	McEvilly Rd to Hansel Rd	County/Municipal	Road Widening	Previous plan, survey, TDM	F
	7	IL 47/I-80 Interchange		IDOT	Interchange/Intersection Improvement	ECA, stakeholders	G
	8	US 6	IL 47 to Saratoga Rd	IDOT	Road Widening	Previous plan, partially programmed, ECA, stakeholder	H
	9	Gore Rd	Lisbon Rd to IL 47	Municipal	Road Widening	TDM	I
	10	McEvilly Rd	Vista Ct to Ridge Rd	County	Road Widening	TDM, AC Feedback, survey	J
	11	Lisbon Rd	Sherrill Rd to Gore Rd	County	Road Widening	Previous plan	K
	12	Broadway Rd	Spring Rd to Braceville Rd	County/Municipal	Road Widening	Previous plan	L
	13	Brisbin Rd/I-80 Interchange		IDOT	Interchange/Intersection Improvement	Stakeholders	M
	14	McLindon Rd	Minooka Rd to US 6	Township/Municipal	Road Widening	TDM	N
	15	Pine Bluff Rd/Lorenzo Rd	IL 47 to I-55	County	Road Widening	Stakeholders, TDM	O
Tier 2	16	Brisbin Rd	US 6 to Bungalow Rd	Township	New Road	AC feedback	P
	17	IL 47/US 6- Bedford Rd (south)		IDOT	Interchange/Intersection Improvement	IDOT study for US 6, ECA, TDM, IA, stakeholders, survey	Q
	18	Reed Rd/Jugtown Rd	IL 113 to Broadway St	County/Municipal	Road Widening	ECA, stakeholders, previous plan, TDM, IA	R
	19	Brisbin Rd	US 6 to Sherrill Rd	County	Road Widening	Previous plan, TDM	S
	20	Minooka Rd, O'Brien Rd, Sherill Rd	Tabler Rd to IL 47	County	Road Widening	AC feedback, TDM	T
	21	I-55	Gardner to Will Co Line	IDOT	Road Widening	Previous plan, stakeholders	U
	22	US 6/Seneca Rd	Main St (Seneca) to I-80	IDOT	Road Widening	TDM	V
	23	Grainger Way	Minooka Rd to entrance to Grainger facilities	Municipal	Road Widening	Stakeholders	W
	24	Tabler Rd	Minooka Rd to Nouryon	Township	Road Widening	TDM	X
	25	Ashley Rd	Granville Rd to Bungalow Rd	Municipal	Road Widening	TDM, survey	Y
	26	Saratoga Rd/I-80 Interchange		IDOT	New Interchange	Previous plan	Z
	27	Shepley Rd/I-80 Interchange		IDOT	New Interchange	Previous plan	AA
	28	Minnoka Rd/I-80 Interchange		IDOT	New Interchange	ECA, TDM	BB
	29	Granville Rd	IL 47 to Ashley Rd	Municipal	Road Widening	TDM	CC
	30	Dupont Rd	Gonnam Rd to Kinsman Rd	County	Road Widening	TDM	DD
	31	IL 113	BNSF and UP Railroads	IDOT	Grade Crossing	ECA, stakeholders, previous plan	EE
Tier 3	32	I-55	1.5 miles south and north of IL 47	IDOT	Road Widening	Previous plan, stakeholders	FF
	33	Brannick Rd	Ridge Rd to McLindon Rd	Municipal	Road Widening	AC feedback, TDM	GG
	34	Hansel Rd	Ridge Rd to Cemetery Rd	Municipal	Road Relocation	Previous plan	HH
	35	Sand Ridge Rd Extension	US 6 to Tabler Rd	County/Municipal	New Road	Previous plan	II
	36	Sherrill Rd	O'Brien Rd to Ridge Rd at I-80	County/Municipal	New Road	Previous plan	JJ
	37	Grand Ridge Road	IL 47 to School District Facility	County	Road Widening	AC feedback	KK
	38	Illinois River Bridge	New crossing between IL 47 and I-55	TBD	New Road	ECA, stakeholders, survey	LL
	39	IL 47	Southmor Rd to IL 113	IDOT	Road Widening	AC feedback, survey	MM
	40	New Road	Aux Sable Liquid Products/US 6 to Sand Ridge Rd Extension	TBD	New Road	Previous plan	NN
	41	Ridge Rd Extension	Hansel Rd to Old Kerry Grove	TBD	New Road	Previous plan	OO
	42	Livingston Rd Extension	Dwight Rd to Old Rte 66	TBD	New Road	AC feedback	PP
	43	New Collector	Hansel Rd to McLindon Rd	County/Municipal	New Road	Previous plan, stakeholders	QQ
	44	Metra Extension		Regional Transit Authority	Transit	Previous plans, survey	RR
	45	Wapella St	Western terminus to Rivers Edge Dr	Municipal	Road Widening	AC feedback	SS
	46	McGinty St Extension	McGinty St to Girot Lin	County/Municipal	New Road	Previous plan	TT
	47	New Collector	US 6 to Bell Rd	County/Municipal	New Road	Previous plan, stakeholders	UU
	48	Sherrill Rd	Roods Rd to LaSalle Rd	County	New Road	Previous plan	VV
	49	Sherrill Rd	Townhouse Rd to Lisbon Rd	County	New Road	Previous plan	WW

ECA = Existing Conditions Analysis, IA = Intersections Analysis, TDM = Travel Demand Model

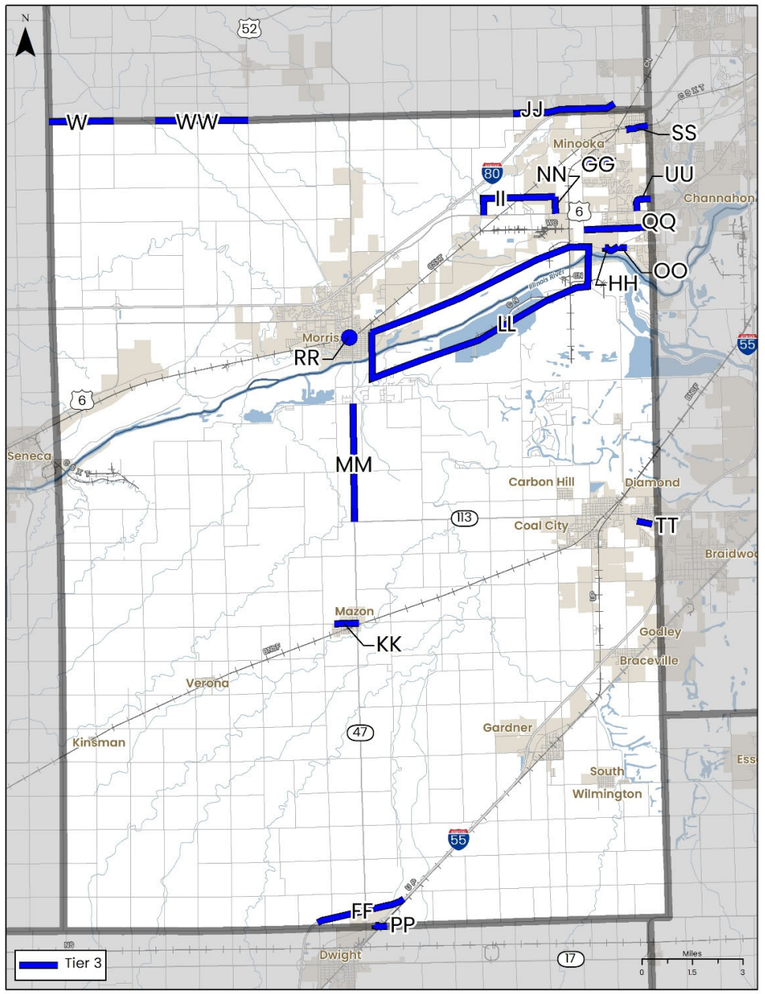
Tier 1 Project



Tier 2 Projects



Tier 3 Projects



5.3 Planning-Level Cost Estimates

This plan includes additional context into potential costs for the projects on the tip. This is done through research into publicly available sources and applied to the types of projects included. As specific projects are approached, further estimates at the concept and engineering levels will be needed to consider site-specific conditions and needs. For this exercise, the public CMAP e-TIP tool was used to source existing transportation projects throughout the Chicago region to better understand costs associated with project types from the TIP[7]. This tool lists all federally funded or otherwise regionally significant projects programmed for the next five years and is updated regularly. Queries were made based on project types and filtering to include projects with locations that have a comparable context as Grundy, including locations in Cook, Kane, Kendall, and Will counties. The e-TIP database provides details including cost, funding timeline, and specific locations about recent on ongoing projectsInformation collected from the e-TIP is helpful because project attributes can be compared to projects within this plan's TIP and total and per-mile costs are easily accessible.

The following examples of existing projects are broken into four categories: Roadway Expansion (**Table 5-2**), Roadway Extension (**Table 5-3**), Intersection Improvements (**Table 5-4**), and New Interchanges (**Table 5-5**). Roadway Expansion project found generally include widening and reconstruction along with other associated improvement and had an average total cost of $25.6M or $10.9M per mile. The average length of the project was 2.4 miles. Road extensions were found to be more costly per mile at $36M due to bridges or other scoped items. The average extension length was 1.3 miles.

Intersections improvement projects often include widening and new signals while averaging $4.3M. In recent years, new interchanges are rarer in the region, so all examples found were included. They averaged under $40M excluding a complex interchange and bridge replacement that cost $185M.

[7] CMAP e-TIP, https://etip.cmap.illinois.gov/, Accessed December 19, 2023

Table 5-2. Programmed Costs of Recent Road Expansion Projects

TIP ID	YEAR	LEAD AGENCY	PROJECT	TOTAL COST ($)	DISTANCE (MI)	COST/ MILE	SCOPE ITEMS
08-00-0057	2026	DuPage Council	248th Ave from 95th S. to 103rd St	15.7M	1.0	15.7M	Roadway widening, new median, upgrade existing sidewalks for ADA, construction of new sidewalks
09-09-0039	2028	IDOT	IL 47 from IL 71 to CH 23 (Caton Farm Rd)	46.9M	4.2	11.1M	Roadway widening, paved shoulders, drainage improvements
09-09-0071	2025	IDOT	IL 71 from 0.5 Mi E of IL 126 to W of Orchard Rd W of Oswego	49.6M	3.7	13.3M	Roadway widening, reconstruction, new median
09-22-0008	2026	Kane/ Kendall Council	Ridge Rd From Black To Holt Rds	27.0M	4.5	6.0M	Roadway widening, reconstruction, new median, intersection redesign
12-20-0067	2027	Will Co Council	N Broadway From 120' north of State Route 113 To North St & North St From Broadway St To Dresden Rd	7.1M	1.5	4.7M	Roadway reconstruction, multimodal path implementation
12-21-0026	2026	Will Co Council	Theodore St From Drauden Rd To IL Rt 59	23.6M	1.8	13.5M	Roadway widening, resurfacing, construction of new path, utility adjustments, traffic signal installation
09-23-0024	2026	Kane Co DOT	Galligan Road from Freeman Rd to Binnie Rd	9.0M	0.9	9.9M	Roadway widening, construction of new path
07-19-0023	2026	South Council	Burville Rd From IL Route 1 To State St	5.7M	1.2	4.9M	Roadway reconstruction
07-21-0008	2030	South Council	Dixie Highway Corridor Improvement Project: 138th St to 159th St	37.8M	2.8	13.4M	Pavement reconstruction, truck access improvements new signal installation, water and sewer replacement; lighting, construction of new multi-use sidepath and pedestrian improvements
12-12-0033	2027	Will Co DOT	Weber Rd (CH 88) from 135th St (Romeo Rd) to Airport Rd (Lockport Rd)	33.6M	2.0	16.8M	Road reconstruction
			AVERAGE	**25.6M**	**2.4**	**10.9M**	

Table 5-3. Programmed Costs of Recent Road Extension Projects

TIP ID	YEAR	LEAD AGENCY	PROJECT	TOTAL COST ($)	DISTANCE (MI)	COST/ MILE ($)	SCOPE ITEMS
09-00-0033	2023	Kane Co DOT	Bliss Rd From Fabyan Pkwy CH 8 To Main Street CH 10	20.2M	1.1	18.4M	Roadway relocation, expansion, intersection improvement, new lanes
12-06-0013	2023	Will Co Council	143rd St from IL 59 to IL 126	67.6M	1.3	52.0M	Roadway extension, new roadway
12-21-0028	2025	Will Co Council	Olympic Blvd From Houbolt To Crossroads Dr & Olympic Blvd Extension From Crossroads Dr To I-55 East Frontage Rd	43.6M	2.1	20.8M	Roadway extension, new roadway, new traffic signals, ped & bike trail
09-16-0016	2020	Kane/ Kendall Council	Anderson Road From CH 41 Keslinger Rd To Freedom Rd	1.5M	0.1	13.6M	Roadway extension
09-96-0017	2024	Kane Co DOT	Longmeadow Pkwy Bridge Corridor from Huntley Rd to IL 62	157.9M	3.8	42.1M	New bridge, roadway extension, ped & bike trail
06-20-0028	2028	Southwest Council	Walker Rd (CH W13) Extension Project - South of Main St to North of Illinois Central Railroad	11.0M	0.2	64.7M	Roadway extension, new grade crossing
09-99-0101	2024	Kane/ Kendall Council	Dauberman Rd Extension from US 30 to Granart Rd (Granart/Dauberman/BNSF Railroad)	27.5M	0.6	44.3M	New bridge, roadway extension, new interchange
			AVERAGE	**47.0M**	**1.3**	**36.0M**	

Table 5-4. Programmed Costs of Recent Intersection Improvement Projects

TIP ID	YEAR	LEAD AGENCY	PROJECT	TOTAL COST ($)	SCOPE ITEMS
09-14-0018	2019	Kane Co DOT	CH 10 Main St at Deerpath Rd	2.3M	Intersection widening, signalization
12-11-0050	2022	Will Co Council	US 52 at Gougar Rd and Smith Rd	2.2M	New intersection, intersection realignment
12-10-0007	2022	IDOT D1 Hwys	IL 129 Washington St at Coal City Rd	3.3M	Intersection widening, signalization
12-21-0004	2026	Will Co DOT	Exchange St at Burville Rd	3.0M	Future signalization or roundabout

TIP ID	YEAR	LEAD AGENCY	PROJECT	TOTAL COST ($)	SCOPE ITEMS
12-16-0022	2023	IDOT D1 Hwys	IL 394 (Calumet Expy) At Burville Rd	2.8M	Intersection redesign to RCUT
09-10-0015	TBD	IDOT D1 Hwys	IL 47 at Main St (S of Elburn)	13.7M	Intersection widening, signalization, new bridge
12-16-0001	2026	Will Co Council	Monee-Manhattan Rd at Hamilton Ave/Cleveland Ave	3.6M	Intersection realignment, widening, and signalization
09-19-0020	2023	Kane Co DOT	Orchard Rd at U.S. Route 30	4.3M	Intersection widening, additional lanes, signal modernization
12-18-0030	2024	Will Co Council	Emerald Dr at IL 53	2.7M	Signalization, bike & ped improvements
12-18-0004	2023	IDOT D1 Hwys	Jefferson St (US 52) at 55 southbound ramp	4.9M	Intersection widening
09-22-0057	2028	Kane/Kendall Council	IL Route 38 & Anderson Rd	4.1M	Intersection widening, signalization, drainage improvements
09-22-0025	2027	Kane/Kendall Council	Reinking Rd and Damisch Rd Intersection Improvements	3.8M	Improvement and reconstruction of an existing roundabout
07-21-0029	2025	Cook County DOTH	Vollmer Rd at Ridgeland Ave (HSIP)	1.0M	Traffic Signal Modernization
07-10-0033	2025	South Council	Pulaski Rd at 183rd St	7.3M	Intersection widening, signal modernization
07-09-0086	2024	IDOT D1 Hwys	183rd St at Central Ave	3.5M	Add permanent signal, channelization
09-09-0084	TBD	IDOT D1 Hwys	IL 72 Oak Knoll Dr at State St/Getzelman Rd	6.1M	Signal modernization, drainage & lighting improvements, ADA improvements
			AVERAGE	**4.3M**	

Table 5-5. Programmed Costs of Recent New Interchange Projects

TIP ID	YEAR	LEAD AGENCY	PROJECT	TOTAL COST ($)	SCOPE ITEMS
12-06-0041	TBD	IDOT D1 Hwys	I-55 from Weber Rd to US 30; I-55 At Airport/Lockport Rd & At Ill 126 - RSP A3	185.8M	Interchange Reconstruction, Bridge Replacement, Widening & Resurfacing, Shoulder Repair, Signing (New), RR Flagger, Interchange Construction
N/A	2018	Illinois Tollway	IL 23 Interchange Project on the Jane Addams Tollway (I-90)	33.4M	New Interchange
N/A	2025	Illinois Tollway	88th/Cork Ave/88th Ave Interchange on the Central Tri-State Tollway (I-294)	39.0M	New Interchange
N/A	2011	Illinois Tollway	Balmoral Ave Ramp on the Central Tri-State Tollway (I-294)	16.0M	New exit ramp
N/A	2009	Illinois Tollway	Eola Rd interchange on the Ronald Reagan Tollway (I-88)	36.0M	New Interchange
			AVERAGE	**62.0M**	

5.4 Funding Strategy

This plan provides support for implementing agencies as they pursue funding opportunities to advance TIP projects. Ultimately the advancement of any individual projects are the responsibility of the respective project sponsors which may be IDOT, the county, municipalities, or other implementing organization. For the benefit of these sponsors, this section briefly outlines a funding strategy, described below, and also provides a roster of competitive funding programs available at the federal, state, and regional levels. That inventory is provided in **Appendix C**.

The project team recommends several ways to position projects for competitive funding opportunities:

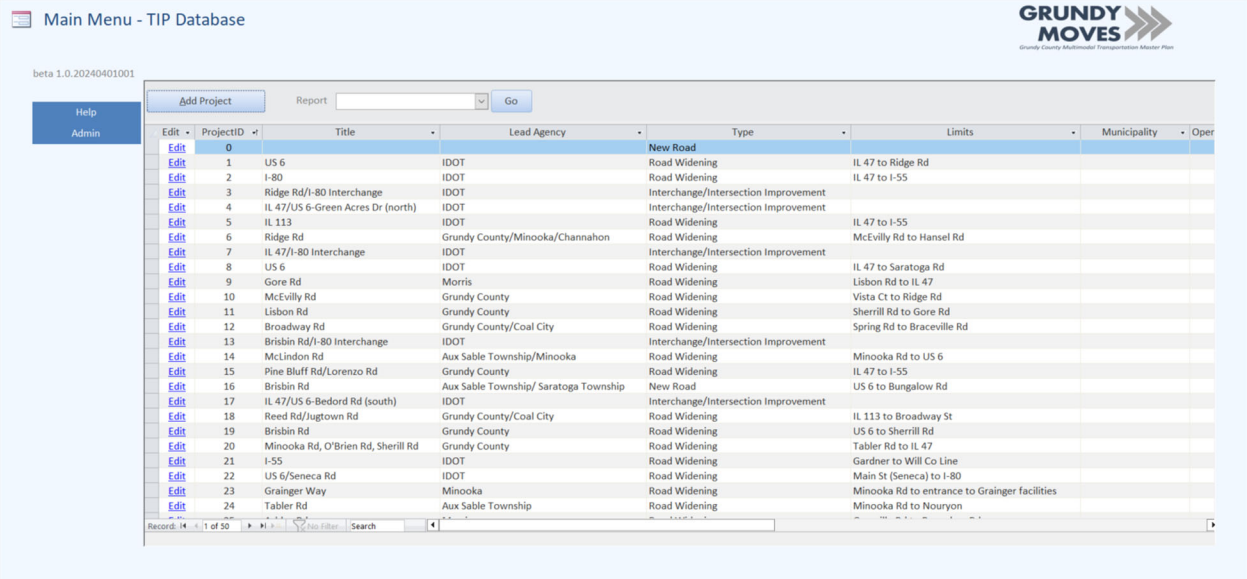
- **IDOT coordination** – Hold semi-annual meetings to coordinate prioritizing projects for the IDOT multi-year plan.
- **Local agency coordination and project tracking** – The county should lead efforts to track progress on projects and plan implementation, including recommendation for future studies.
- **Regional grants strategy** – The county should prioritize and support regional projects for grant opportunities and align projects with grant programs available.
- **Pursue appropriate grant programs** – Work with local agencies and stakeholder to identify projects that are likely to be competitive from the funding programs list in the **Appendix C**.
  - For example, federal funding sources programmed through the IDOT or Chicago Metropolitan Agency for Planning (CMAP), such as the Congestion Mitigation and Air Quality Improvement (CMAQ) program and the Surface Transportation Program (STP) prioritize projects that results from a prior planning process such as *Grundy Moves*.
- **Update the county-level plan regularly** – Depending on the rate of development, this study should be updated every 5 to 7 years to capture changes. If growth is rapid, consider shorter time frames to mitigate negative outcomes of rapid growth.

5.5 TIP Database Tool

The project team built a Microsoft Access database to house the project information for the TIP and allow for future updates. The database system is designed to input, store, and print project information. It is likely that the Grundy County Highway Department will maintain and update the TIP Database after the completion of this study. It is assumed that members of this study's Advisory Committee and other stakeholders will coordinate with the county to track the implementation of the recommendations of the study over time.

From a technical perspective, the database consists of four major parts: input form, input table, query, and reports. The input form is used to type in new project information such project location, phase, year, cost, etc. When the user finishes the project input, the user submits the information in the form and the data is automatically saved into input table. The data in the input table can be searched, analyzed, and exported into different report formats. **Figure 5-3** shows the TIP data input system.

Figure 5-3: Grundy County Multimodal Transportation Master Plan TIP Database



Edit	ProjectID	Title	Lead Agency	Type	Limits	Municipality	Oper
Edit	0			New Road			
Edit	1	US 6	IDOT	Road Widening	IL 47 to Ridge Rd		
Edit	2	I-80	IDOT	Road Widening	IL 47 to I-55		
Edit	3	Ridge Rd/I-80 Interchange	IDOT	Interchange/Intersection Improvement			
Edit	4	IL 47/US 6-Green Acres Dr (north)	IDOT	Interchange/Intersection Improvement			
Edit	5	IL 113	IDOT	Road Widening	IL 47 to I-55		
Edit	6	Ridge Rd	Grundy County/Minooka/Channahon	Road Widening	McEvilly Rd to Hansel Rd		
Edit	7	IL 47/I-80 Interchange	IDOT	Interchange/Intersection Improvement			
Edit	8	US 6	IDOT	Road Widening	IL 47 to Saratoga Rd		
Edit	9	Gore Rd	Morris	Road Widening	Lisbon Rd to IL 47		
Edit	10	McEvilly Rd	Grundy County	Road Widening	Vista Ct to Ridge Rd		
Edit	11	Lisbon Rd	Grundy County	Road Widening	Sherrill Rd to Gore Rd		
Edit	12	Broadway Rd	Grundy County/Coal City	Road Widening	Spring Rd to Braceville Rd		
Edit	13	Brisbin Rd/I-80 Interchange	IDOT	Interchange/Intersection Improvement			
Edit	14	McLindon Rd	Aux Sable Township/Minooka	Road Widening	Minooka Rd to US 6		
Edit	15	Pine Bluff Rd/Lorenzo Rd	Grundy County	Road Widening	IL 47 to I-55		
Edit	16	Brisbin Rd	Aux Sable Township/ Saratoga Township	New Road	US 6 to Bungalow Rd		
Edit	17	IL 47/US 6-Bedord Rd (south)	IDOT	Interchange/Intersection Improvement			
Edit	18	Reed Rd/Jugtown Rd	Grundy County/Coal City	Road Widening	IL 113 to Broadway St		
Edit	19	Brisbin Rd	Grundy County	Road Widening	US 6 to Sherrill Rd		
Edit	20	Minooka Rd, O'Brien Rd, Sherill Rd	Grundy County	Road Widening	Tabler Rd to IL 47		
Edit	21	I-55	IDOT	Road Widening	Gardner to Will Co Line		
Edit	22	US 6/Seneca Rd	IDOT	Road Widening	Main St (Seneca) to I-80		
Edit	23	Grainger Way	Minooka	Road Widening	Minooka Rd to entrance to Grainger facilities		
Edit	24	Tabler Rd	Aux Sable Township	Road Widening	Minooka Rd to Nouryon		

6.0 Intelligent Transportation Systems and Emerging Technologies

This section summarizes the current state of the practice for several intelligent transportation solutions as part of the *Grundy Moves* plan. CDM Smith selected the strategies and design considerations included in this section based on having potential relevance for Grundy County. The following sections review emerging technology strategies most relevant to this study for improving traffic operations, safety, and infrastructure design. The section closes with concluding thoughts on how to best integrate emerging transportation technologies into Grundy County.

6.1 Strategies to Improve Traffic Operations

This section describes three areas that form the backbone of traffic operations strategies: Smart Traffic Signal Systems, Connected and Autonomous Vehicles Solutions, and Traffic Management Center and Communication. Each component plays an important role in creating a more efficient, safe, and responsive transportation network.

6.1.1 Smart Traffic Signal Systems

Traffic signal control systems consist of approaches to managing traffic signal timing and coordination. It includes managing signal cycle length and intersection clearance times, coordination between multiple signals on a corridor, and adaptive signal control to deal with real-time changing traffic conditions. This subsection describes general corridor signal timing strategies, freight signal priority strategies, and vehicle detection strategies.

Corridor Signal Timing

Corridor Signal Timing involves synchronizing traffic signals across multiple intersections to create a seamless flow of traffic along major roadways. This system ensures that green lights are timed to allow continuous traffic movement at a defined speed, reducing the frequency of stopping at multiple red lights. Unique traffic characteristics can impact the timing and programming of signalized intersections in other ways, such as clearance interval requirements and corridor progression.

By reducing stop-and-go conditions, Corridor Signal Timing enhances the efficiency of traffic movement, which is particularly important for freight vehicles operating in the county. Smoother traffic flow also leads to less congestion, and minimizing the frequency of stopping at intersections reduces the risk of accidents, particularly rear-end collisions. Overall, improved traffic flow means faster and more predictable travel times, benefiting local businesses, especially those reliant on freight services.

Commercial freight vehicles operate with different characteristics than passenger vehicles. Limited braking capacity can require extended yellow clearance intervals to reduce potential conflicts at intersections. Yellow signal intervals should be extended at high-crash intersections and may also be extended in response to inclement weather.[11]

Slower start-up times for large vehicles, including heavy trucks, alter the assumptions necessary to time corridors with an appropriate progression speed. In addition, peak freight demand may occur in

different directions or time periods than other traffic. Signal control strategies can be designed to better accommodate trucks at certain times (e.g., early morning pickups or afternoon departures) while reverting to passenger-focused timing during peak commuting hours. A thorough analysis of the network demand for all vehicle classifications could provide the context necessary to design a comprehensive timing plan for the entire signal system.

Applicability to Grundy County

Congested routes, especially those with substantial heavy vehicle volumes, are candidates for signal timing studies and design. High volume roadways such as IL 47/Division Street may benefit from extended clearance intervals at intersections where a history of angle crashes or near-misses occur. Tightly spaced signals may see improved operations from a redesigned corridor progression. These could include four signalized intersections within one half-mile on US 6/Bedford Road, between IL 47/Division Street and Union Street, and the five signalized intersections within one half-mile on Ridge Road, between the I-80 interchange and Minooka Road.

Freight Signal Priority

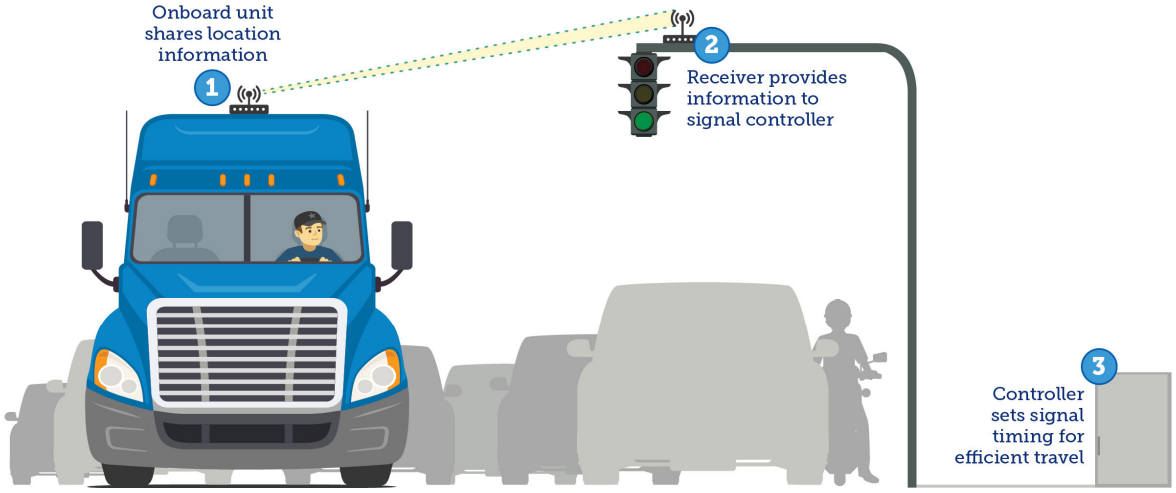
One freight-specific application is freight signal priority (FSP), which reduces truck delays at intersections by enabling dynamically adjustable traffic signal phasing and timing that assigns priority to trucks when conditions allow. Freight signal priority makes the traffic signal system aware of trucks approaching properly equipped intersections. The system can then adjust signal phase timing as needed to assign priority to freight trucks, smoothing traffic flows for freight and reducing stop/start cycles, reducing emissions and pavement deterioration. The traffic control system can detect trucks in the traffic mix via vehicle-to-infrastructure (V2I) communications, toll transponders, or infrastructure designed to monitor such traffic. Signal systems can also be configured to provide speed advisories to properly equipped trucks so drivers will arrive when the light is green.

Traffic signal control methods work best on urban freight arterials. Last-mile connections between freight generators, like intermodal yards and the Interstate highway network, are natural candidates for freight signal priority. Intersections with steep grades that reduce braking capability or increase start-up delay experienced by large commercial vehicles receive additional benefits from FSP implementation.

Some form of vehicle detection that is capable of distinguishing large vehicles is necessary. Several possible alternatives exist, ranging from advance inductive loops to camera-based technologies like radar or video.[8]

[8] https://tsmowa.org/category/intelligent-transportation-systems/freight-or-truck-signal-priority

Figure 6-1. Communication Between Roadside Units and On-Board Units for FSP



Another possibility is direct communication with commercial vehicles via short-range radios, which requires additional coordination with private companies in the area. For example, the San Diego Port Tenants Association implemented an FSP project that utilizes radio communication to indicate traffic signals when a freight vehicle is approaching. This strategy was very effective at reducing freight vehicle stops and idle emissions. It did, however, introduce several challenges:[9]

- Management of the corridor was shared between three separate agencies, requiring coordination between them and adherence to multiple sets of policies and standards.
- The system is only effective for vehicles regularly in the area that were willing to install the on-board communication devices. To address this, incentive programs were established.
- Networking challenges stressed the program's ability to transfer data, requiring the development of a new data collection strategy.

A comprehensive study should be performed on any corridor where freight-specific signal systems are planned to determine necessary improvements that must be incorporated prior to any changes. In addition to advanced vehicle detection capabilities, signal controllers and other hardware may need to be upgraded before some parameters can be implemented.

Applicability to Grundy County

Roadways that serve a relatively high volume of trucks would be potential locations for Freight Signal Priority applications. Examples include portions of Minooka Road, Grainger Way, Ridge Road, portions of McLindon Road, or IL 113, which was identified in the Grundy County Comprehensive Plan as having a relatively high share (i.e., 10 percent) of truck traffic.[10]

[9] San Diego Port Tenants Association – Freight Signal Priority Project
https://www.ite.org/ITEORG/assets/File/Awards/2022/TSMO_MORE_STC%20Traffic_stripped.pdf
[10] https://www.grundycountyil.gov/wp-content/uploads/2019/01/Grundy-County-Comprehensive-Plan-ADOPTED-2014-2030.pdf

Vehicle Detection Systems

Inductive loop detection, the current standard in traffic signal systems, relies on electromagnetic fields from wires in the roadway to detect vehicles, triggering traffic signals as vehicles pass or stop over these loops. While effective, it faces limitations in adaptability, maintenance, and detection of diverse transportation modes. Emerging technologies like radar and video detection offer significant advancements. Radar detection uses radio waves to determine vehicle presence and speed, boasting weather resistance and effectiveness in multi-lane scenarios. In contrast, video detection utilizes cameras to analyze real-time footage, providing visual confirmation and the ability to adapt to varying traffic conditions, including detecting pedestrians and cyclists. These new technologies mark a substantial leap in traffic signal detection, addressing the limitations of the inductive loop system and enhancing overall traffic management efficiency.

Transitioning to radar and video detection systems significantly enhances vehicle detection accuracy, a vital improvement over traditional inductive loops, especially under adverse weather conditions. Unlike loops that necessitate road surface cuts and are prone to wear, these advanced systems are less invasive and boast longer lifespans with minimal maintenance. This reduction in maintenance needs not only eases the workload for traffic management staff but also minimizes disruptions to traffic during repairs, a crucial factor in maintaining steady traffic flow.

Traffic signal response to local, real-world conditions depends on the availability of good data. This includes both real-time and historical data. Many roadway agencies are incorporating permanent data collection methods in their intelligent transportation systems. For example, the Texas Department of Transportation (TxDOT) suggests that high-resolution traffic data services be prioritized along “last mile” freight corridors.[11] This aids in the design and programming of signal timing that provides green progression that is responsive to changing conditions and is targeted to truck progression based on time-of-day and direction.

Furthermore, the adaptability of radar and video detection is a key benefit. These systems can be easily adjusted to adapt to changing traffic patterns without physical road modifications, making them ideal for dynamic traffic environments. The safety of all road users, particularly non-motorized ones, is greatly enhanced by video detection systems, which can accurately identify pedestrians and cyclists. In addition to safety improvements, these technologies provide comprehensive data for traffic analysis, aiding in informed decision-making for traffic management. Over the long term, the operational and maintenance cost savings, coupled with the efficiency gains in traffic management, position radar and video detection systems as a cost-effective solution for modernizing our traffic signal infrastructure.

Applicability to Grundy County

Many intelligent traffic management strategies will require more detailed vehicle detection capabilities beyond the basic stop-line presence detection. For example, truck warning sign applications and freight signal priority necessitate detection capable of distinguishing vehicles by classification. Smarter detection technologies can detect vehicles in advance of intersections, distinguish large commercial vehicles, determine vehicle speed, and make other observations that can provide the data necessary for

[11] Texas Department of Transportation. *Texas Freight Network Technology and Operations Plan.* 2020. https://ftp.txdot.gov/pub/txdot/tpp/freight-planning/fntop/strategies-and-conceptual-framework.pdf

more sophisticated traffic operations. In the short term, advanced detection technologies can be integrated into individual traffic signals or warning devices, with the potential for this data to be transmitted back to a central server in the future.

Improved detection would provide the immediate benefit of allowing traffic signals to be more responsive to demand and gives designers flexibility to implement data collection locally, while also positioning Grundy County to be more adaptable to future technologies.

6.1.2 Connected and Autonomous Vehicles (CAV) Solutions

Connected and Autonomous Vehicle (CAV) technologies represent a significant advancement in ITS, offering transformative benefits for traffic management, safety, and overall transportation efficiency. The following list provides an overview of CAV solutions and their potential benefits:

- **Autonomous Vehicles**: Self-driving vehicles are already on the roadway in large numbers. *Many different levels of autonomy exist*, but they all rely on some combination of video, radar, lidar, and similar systems for lane-keeping. Self-driving capabilities, including technologies like lane-keep assist, have the potential to dramatically improve safety. The visual pattern recognition performed by autonomous vehicles requires well-maintained and standardized pavement markings and traffic sign installations.
- **Vehicle-to-Everything (V2X) Communications**: This includes Vehicle-to-Vehicle, Vehicle-to-Infrastructure, and Vehicle-to-Pedestrian communications. Connected vehicle technologies enable vehicles to communicate with each other, with road infrastructure, and with pedestrians. This interconnectedness allows for the exchange of real-time data about road conditions, traffic flow, accidents, and other hazards, significantly enhancing situational awareness and safety.
- **Dedicated Short-Range Communications (DSRC)**: Installing DSRC units at intersections allows direct communication between traffic signals and CAVs. This technology can transmit information about signal timing, traffic conditions, and incidents directly to vehicles, aiding in safer and more efficient navigation.
- **Variable Message Signs (VMS)**: Utilizing VMS, the county can provide real-time information about traffic conditions, lane closures, or road work directly to CAVs. This information assists in route optimization and congestion management.
- **Pre-emptive Signal Control for Emergency Vehicles**: This system allows emergency vehicles to communicate with traffic signals to preemptively control signal phases, ensuring they receive green lights as they approach intersections. Traditional systems employ short range detection of emergency sirens, whereas with the integration of connected vehicle technologies, systems can cycle traffic signals far enough in advance of emergency responders so that vehicle queues have time to disperse prior to their arrival.

Applicability to Grundy County

Connected vehicle technologies may not present enough benefit to justify significant investment by Grundy County currently. A roadway signs and markings maintenance strategy that ensures high-

contrast and reflectivity exceeding Federal Highway Administration standards[12] would provide immediate benefit to existing road users as well as preparing roadways for autonomous vehicle use.

6.1.3 Traffic Management Center and Communication

A traffic management center (TMC) is a hub for regional traffic control, bringing together both human and technological inputs to manage the transportation network.[13] TMCs incorporate data from a variety of sensors and systems that could include vehicle sensors, cameras, flooding detection systems, weather stations, and data from first responders. All this information is assembled in a central location, allowing staff to manage devices and the network in real time. TMCs may focus on freeway operations, surface street management, transit, or some combination of the three. TMCs can be multijurisdictional with several counties or agencies combining into a larger regional TMC. TMCs are often linked to state or regional 511 traveler information systems to disseminate traveler information to the public via web sites, apps, highway advisory radio, and other means. In Grundy County, a TMC could link to dynamic message signs (DMS) to push information to the traveling public. Any TMC plan should investigate opportunities for operational sharing among agencies and should be fully integrated with existing and planned TMCs within the region. Finally, TMCs can provide system usage and congestion data for planning needs.

Effective communication between deployed field equipment and a traffic management center is vital for efficient and responsive traffic management. Various communication technologies are employed to establish this connectivity, each with its unique advantages.

- **Fiber Optic Cables** are widely used for their high bandwidth and reliability, ideal for transmitting large volumes of data like video feeds from traffic cameras.
- **Wireless Radio Frequencies (RF)**, including DSRC, offer flexibility and ease of installation, particularly useful in areas where laying fiber is impractical.
- **Cellular Networks (4G/LTE, 5G)** provide another wireless option, leveraging existing telecommunications infrastructure for data transmission, which is beneficial for cost-effective and rapid deployment.

Each of these communication methods can be used independently or in a complementary manner, depending on the specific requirements of the traffic management system. The choice of communication technology is crucial and is typically influenced by factors such as the location of equipment, the type and volume of data to be transmitted, and the existing infrastructure in Grundy County.

Applicability to Grundy County

TMCs work best wherever there are multiple systems that need to work together. They can be used in urban or rural areas. The greatest benefit is often achieved when multiple systems and agencies (e.g., city traffic managers, state DOTs, first responders, transit agencies) coordinate such that data from

[12] https://safety.fhwa.dot.gov/roadway_dept/night_visib/general-information.cfm
[13] FHWA Office of Operations, Traffic Control Systems Handbook, retrieved from https://ops.fhwa.dot.gov/publications/fhwahop06006/chapter_8.htm#:~:text=One%20of%20the%20primary%20purposes,signal%20programs%20in%20real%20time.

several systems can be collected, processed, fused with other data, and synthesized into actionable intelligence. From a freight standpoint, cameras, sensors, and DMS should be installed at critical locations chosen to benefit freight users. For example, freight-specific traveler information should be provided before major routing decision points to advise truck drivers on congestion ahead, travel times, safety messages, or the need to detour.

As more ITS systems get deployed, the need for a TMC may grow substantially. This could include systems as simple as a few detectors and Variable Message Signs (VMS). These systems would be integrated into a potential new TMC in Grundy County. This TMC could then share the information with existing regional TMCs, such as IDOT's Transportation Systems Center, the Illinois Tollway's Traffic and Incident Management System, and other county TMCs, to reach the most significant number of users.

The cost to deploy a TMC will vary depending on many factors, including whether it is virtual or occupies a physical space, sensors and infrastructure that need to be installed, staffing requirements, and data sharing with other jurisdictions. Agencies can pool resources to minimize upfront costs associated with creating a new TMC and grow the coverage of their TMC gradually over time. For a smaller county with limited ITS infrastructure like Grundy County, significant investment in a new facility may not be cost effective. An alternative to a dedicated TMC would be to deploy central traffic management software on existing computers. The ITS and data management features can be leveraged as needed by existing staff. As the ITS network is built out in the future, this could be gradually expanded to a dedicated workstation and eventually a full-time TMC if it becomes feasible.

6.2 Strategies to Improve Safety

Adopting targeted strategies that utilize advanced technologies is vital in the continuous effort to enhance road safety. This section explores two critical components in this endeavor: Intelligent Warning Signs and Road Weather Information Systems (RWIS).

6.2.1 Intelligent Warning Signs

Intelligent warning signs, equipped with cutting-edge technology, play a vital role in alerting drivers to potential hazards and changing road conditions and providing real-time traffic information, significantly reducing the likelihood of accidents. They are particularly effective in addressing dynamic scenarios such as changes in traffic flow, road work, and school zones.

Typical warning signs and other traffic control devices warn of specific roadway conditions, but many conditions do not apply at all times or to every driver. Active warning signs provide warning only when conditions apply by adding visual emphasis via changeable messages or illuminating flashing beacons. This method can elevate high priority or unique hazards only when they are applicable, to more effectively communicate to drivers.

Truck Route Warning Signs

Inappropriate Truck Route Warning signs are intelligent systems designed to prevent large commercial vehicles from using routes unsuitable for their size or weight. These signs use sensors and GPS data to identify trucks about to enter restricted routes and provide real-time warnings to re-route them. Several technologies exist suited for different roadway constraints, such as laser detection systems to detect

vehicle height, weigh-in-motion sensors for weight restricted roadways and bridges, and video detection for large vehicles in advance of narrow or winding roads. This prevents potential road damage and safety hazards caused by large trucks on inadequate roads, helps reduce traffic congestion, and improves overall route efficiency for freight transport.

The primary benefit of Inappropriate Truck Route Warning signs is the prevention of large vehicles from entering unsuitable routes, thereby averting potential road damage and safety hazards. These signs effectively manage freight traffic by guiding trucks to more appropriate routes, enhancing overall traffic flow and reducing congestion. Locations for signs would likely be most useful in areas where major freight generators are located in close proximity to residential areas, which occurs in several locations in the northeast portion of the county.

This targeted guidance also helps minimize the wear and tear on infrastructure not designed for heavy vehicles. It reduces the likelihood of accidents caused by large trucks navigating tight or congested roads. Additionally, by redirecting trucks to optimal routes, these signs contribute to more efficient fuel use and reduced emissions.

Applicability to Grundy County

Commercial vehicle travel in Grundy County follows a limited number of designated Class II truck routes along portions of US 6, IL 47, and IL 113. An increasing number of truck drivers use GPS route guidance and ignore traditional route guidance signs. Congestion often causes these apps to re-route drivers around major chokepoints, and the most common routing apps do not include routing data for geometric obstacles and other route features that restrict the movement of large vehicles, nor do they distinguish what type of vehicle the user is driving. By providing warning systems activated by and targeted towards large vehicles, high visibility devices can alert commercial drivers of inappropriate truck routes before they are stuck or cause damage to infrastructure.

Rail Crossings Blocked Warning Signs

Rail Crossing Blocked Warning signs are crucial for enhancing safety at railroad crossings. These intelligent signs are activated when a train is occupying a crossing or when there is a significant delay, alerting approaching drivers to the blockage ahead. This real-time information helps prevent accidents and allows drivers to seek alternative routes, reducing congestion and frustration caused by unexpected railway crossing delays.

Rail Crossing Blocked Warning signs significantly enhance safety and efficiency at railroad crossings. These signs help reduce the risk of collisions between vehicles and trains by providing real-time alerts about train crossings. They also assist in alleviating traffic congestion caused by blocked crossings, allowing drivers to re-route in advance and avoid long wait times. This proactive approach to managing rail crossings not only improves the overall flow of traffic but also enhances the predictability and reliability of travel times, contributing to a smoother and safer driving experience for all road users.

Applicability to Grundy County

Nearly every population center in Grundy County is intersected by at least one rail line. Many do not have any grade-separated crossing opportunities. Often, these crossings are blocked for extended periods of time because of heavy train traffic, especially on the BNSF line through Coal City and Mazon.

Frustrated drivers could benefit from a system capable of informing them about nearby unblocked crossing alternatives. Future intermodal development on other rail lines may create levels of demand where this delay reduction strategy could be considered.

Speed Radar Signs

Speed Radar Signs are interactive signs equipped with radar technology to detect and display the speed of approaching vehicles. These signs effectively encourage safer driving behavior by providing immediate feedback to drivers about their driving speed relative to the posted speed limit. They are beneficial in areas where speeding is a concern, such as school zones, construction areas, or accident-prone stretches, contributing to enhanced road safety and awareness.

Speed Radar Signs play an important role in promoting road safety by actively influencing driver behavior. By displaying the speed of oncoming vehicles, these signs provide immediate feedback to drivers, encouraging them to slow down and adhere to speed limits. They effectively reduce speeding in high-risk areas such as school zones, residential neighborhoods, and accident-prone roads. The presence of these signs has been shown to lower the incidence of speeding-related accidents, enhance pedestrian safety, and create a more vigilant driving environment. Additionally, the data collected by these signs can be used for traffic studies and to inform further road safety measures.

Applicability to Grundy County

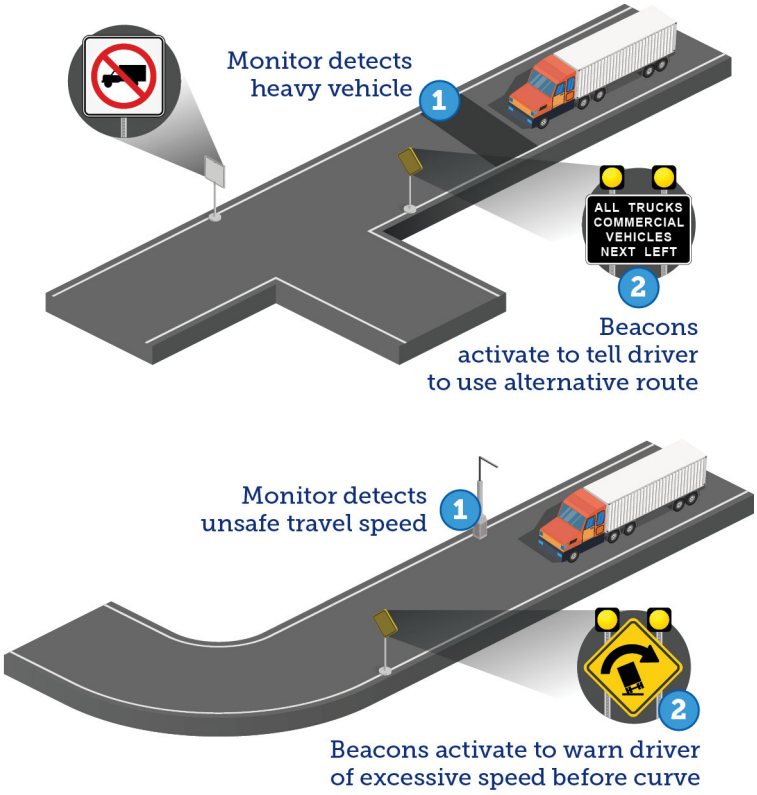
High vehicle speeds have a significant impact on both real and perceived safety. The straight roadways in Grundy County and the surrounding region, in many cases compounded by low traffic volumes and rural land uses, create plenty of opportunity for excessive speeding. Vehicle speeds are especially critical in the downtown area of Morris, where on-street angled parking, alleys, driveways, and pedestrian infrastructure introduce the potential for added conflict.

Advance Warning Signs

Advance Warning Signs that operate at specific times of the day are tailored to address peak traffic hours, high-incident locations, or changing weather conditions. These signs can be programmed to display messages about congestion, upcoming hazards, or recommended speeds based on real-time traffic and road conditions. By providing timely and relevant information, they are more likely to be observed and help reduce the likelihood of rear-end crashes and other accidents, especially in high-risk situations like sudden traffic slowdowns or in areas with frequent environmental changes.

Commercial freight vehicles operate with additional constraints due to their size, weight, and turning radius. When warnings of geometric or weight restrictions are ignored, the consequences can be costly to both operators and infrastructure. There are several ITS warning devices designed to assist freight traffic: overweight detection, overspeed detection, intersection conflict warning, and overheight detection. **Figure 6-2** illustrates examples of implementation strategies for intelligent warnings for freight traffic.

Figure 6-2. Intelligent Warning Sign Illustrations



Benefits achieved from a warning system for at-grade rail crossing blockages are dependent on multiple site-specific characteristics. At a crossing location that is currently blocked, one proposed system in Indiana will install signs to direct drivers to a website with information on the status of nearby crossings.[14] A system like this depends on nearby crossings that are close enough to be valid alternatives but far enough away not to be blocked.

Other systems intend to provide advance notice or predict blocked crossing events based on historical data. This data can then be disseminated at upstream decision points or provided via remote broadcast. A comprehensive warning system would be one that incorporates train presence detection at and in advance of multiple crossings along a route, provides the ability to collect and analyze train volumes and gate downtimes, and makes this information available to drivers via multiple sources.

Advance Warning Signs that are operational during specific times offer dynamic traffic management capabilities. By providing real-time information on traffic conditions, hazards, or recommended speeds, these signs help preemptively reduce traffic congestion and minimize the risk of accidents, especially rear-end collisions. Their ability to adapt to varying traffic patterns and environmental conditions makes them particularly useful for managing rush hour traffic, weather-related road conditions, and unexpected road incidents. The signs' timely warnings enable drivers to make safer and more informed decisions, leading to a smoother flow of traffic and a reduction in travel-related stress and accidents.

[14] Website to Soon Help Elkhart County Drivers Avoid Blocked Railroad Crossings https://www.abc57.com/news/website-to-soon-help-elkhart-county-drivers-avoid-blocked-railroad-crossings

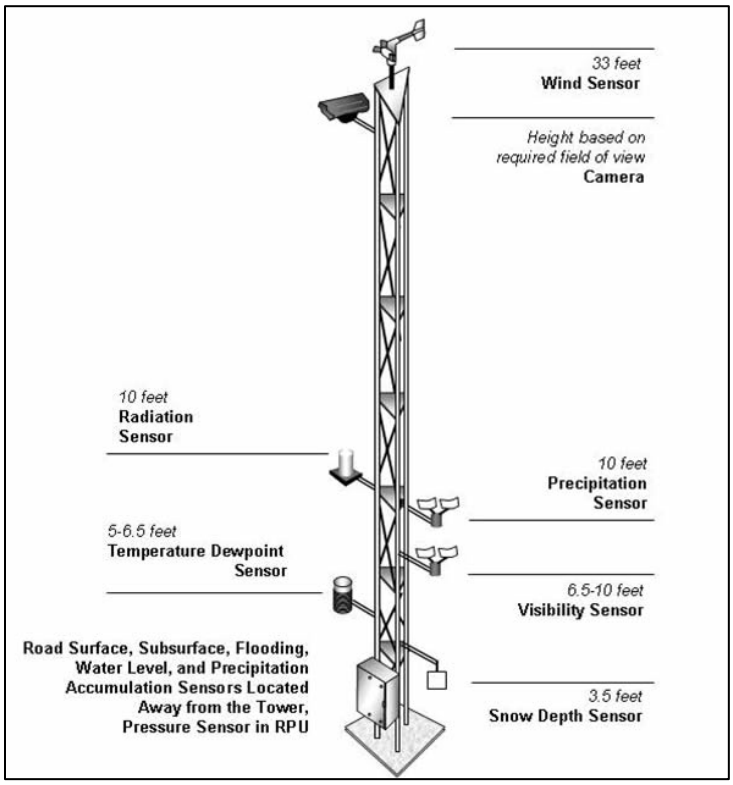
Applicability to Grundy County

Changing traffic patterns in the study region create the opportunity for unexpected congestion and other conditions. Such conditions are common at US 6/Bedford Road and IL 47/Division Street, and seasonal impacts occur near the Dresden nuclear power plant during refueling operations. In these cases, an elevated crash risk, particularly with rear-end crashes, could be mitigated by an intermittent warning system for congestion ahead that is activated by traffic backups or only during peak periods.

6.2.2 Road Weather Information Systems (RWIS)

Road Weather Information Systems (RWIS) are advanced technological solutions designed to gather and disseminate real-time information about road and weather conditions. These systems play a pivotal role in modern transportation management, especially in areas with variable and challenging weather conditions. An RWIS typically comprises a network of sensors at the roadside and embedded in the pavement, along with weather stations (see **Figure 6-3**). These sensors collect data on atmospheric conditions, pavement temperature, humidity, wind speed, and other relevant weather parameters.

Figure 6-3. Typical RWIS Tower-Based Sensors



Source: FHWA

Information dissemination can be provided remotely via a website or direct to motorists on dynamic message signs (DMS). For example, the Kansas Department of Transportation (KDOT) provides real-time weather updates through an online platform and a 511 system.[15] While KDOT's data is collected manually, Utah Department of Transportation (UDOT) has a similar system that relies on a variety of field-located sensors, which can be overridden by field observations from plow drivers. UDOT has discovered that manual field observations are often more cost-effective than relying on field sensors or advanced modeling techniques.[16]

[15] https://ops.fhwa.dot.gov/weather/best_practices/casestudies/013.pdf
[16] https://ops.fhwa.dot.gov/weather/best_practices/casestudies/026.pdf

Applicability to Grundy County

The primary benefit of RWIS lies in its capacity to enhance road safety. By providing real-time data on road conditions, RWIS enables proactive responses to adverse weather, significantly reducing the risk of weather-related accidents. This system informs timely deployment of maintenance activities like salting or plowing, ensuring roads remain safe for travel. Additionally, RWIS plays a critical role in traffic management, especially during weather emergencies. Traffic management centers leverage this data to make informed decisions, effectively re-routing traffic and preventing congestion. This improves overall traffic flow and reduces travel delays, even in challenging weather conditions.

Freight vehicles are more susceptible to certain weather-related safety concerns. For example, reduced maneuverability and increased stopping distance exacerbate the effects of poor visibility. Additionally, when large vehicles encounter a flooded roadway, they cannot turn around as easily or may be forced into an inappropriate route for truck traffic. With the growing amount of freight traffic in Grundy County, industrial areas may benefit from systems to communicate inclement weather conditions to drivers from out of the area, especially if there are roads prone to flooding or other location-specific conditions.

Another significant advantage of RWIS is the efficient allocation of resources. With accurate and timely weather and road condition data, the system ensures that maintenance resources are deployed where they are most needed, optimizing public funds and equipment use. This efficiency also extends to environmental benefits, as optimized road maintenance and smoother traffic flow lead to reduced vehicle emissions. Moreover, RWIS enables transportation agencies to disseminate precise road condition information to the public, aiding drivers in making safer travel choices. In the long term, the data collected by RWIS serves as a valuable asset for transportation planning and policymaking, allowing for a deeper understanding of weather impacts on road infrastructure and traffic, thereby supporting the development of more effective transportation strategies and policies.

6.2.3 Truck Parking Availability

Knowledge of available parking along freight routes is vital to safe and efficient operation of commercial vehicles. Surveys performed by the US DOT indicate that drivers prioritize maximizing driving time and distance within the mandated maximum hours of service. If adequate parking is not available or easily located when they have reached the hours-of-service limit, drivers are increasingly likely to park in an unsafe manner. This is especially pertinent for trucks with electronic logging devices that automatically disable the vehicle if the allowable hours of service are exceeded. Illinois ranks in the top quartile of states in total truck parking spaces, but ranks in the lowest quartile in spaces per truck vehicle mile traveled (VMT).[17] In surveys from the Owner-Operator Independent Drivers Association (OOIDA), Illinois ranked third in states identified with parking shortages.[17]

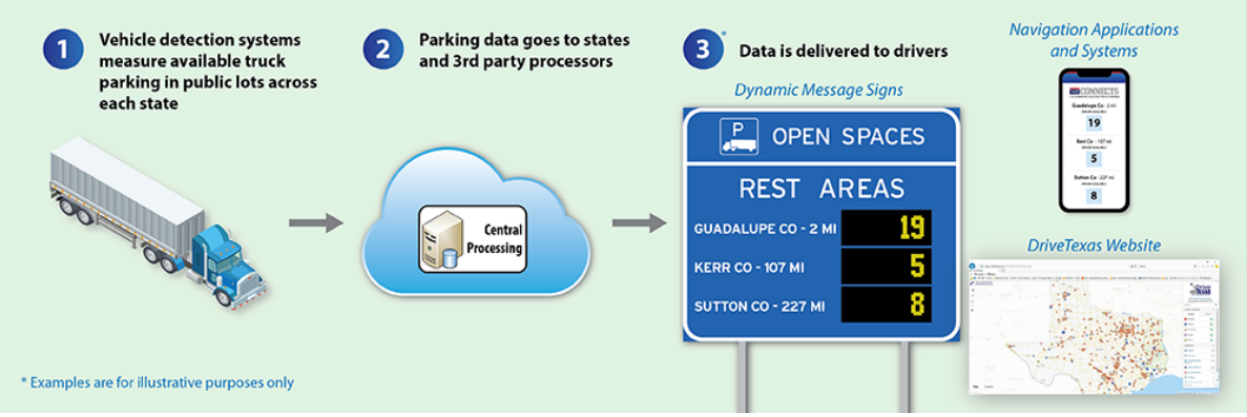
The National Transportation Safety Board has previously issued recommendations to states, including Illinois, that adequate truck parking availability and timely information about parking opportunities for truck drivers are critical safety considerations for the transportation network.[18] In this report, the NTSB

[17] https://ops.fhwa.dot.gov/freight/infrastructure/truck_parking/jasons_law/truckparkingsurvey/index.htm
[18] National Transportation Safety Board. *Highway Special Investigation Report: Truck Parking Areas.* 2000. https://www.ntsb.gov/news/events/Documents/truck_bus-SIR0001.pdf

emphasizes the importance of making information available in advance, both prior to and during the trip. Feedback from US DOT surveys of states nationwide listed communication as one of several key issues.[17] States indicated that "driver perception of parking issues becomes the reality that influences their parking decisions." Apps and other notification methods were a common suggestion.[17]

Several regional efforts exist to improve the public availability of truck parking information. For example, a pilot implementation is currently underway on Interstate 10, providing real-time parking availability communicated via multiple methods for 37 public rest areas. The project corridor spans California, Arizona, New Mexico, and Texas.[19] See a **Figure 6-4** for an illustration of this technology. Also, the Mid-American Association of State Transportation Officials (MAASTO) used a variety of funding sources in an effort to install a regional system at truck stops on multiple Interstate routes in Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Ohio, and Wisconsin.[20]

Figure 6-4. I-10 Truck Parking Availability System Technology



The typical approach for data collection involves a variety of camera and in-ground detection methods, with vehicle counts obtained at the entrance and exit ramps, although for smaller lots with fewer than 20 spaces it may make sense to implement space-by-space counting methods.[11] Multiple options exist to broadcast this information. Michigan conducted surveys that indicated driver preference for the data to be displayed on changeable message signs.[20] These signs are typically updated frequently to display information in real-time about parking availability at up to three locations. Many projects communicate data to a national truck parking database to be displayed on a public map service.[21]

In addition to public rest areas, data from private facilities can be incorporated into the system. This requires data-sharing agreements with private partners and an effective strategy for processing and integrating data from multiple sources. In planning for backups onto public streets due to private facility inefficiencies, TxDOT has proposed a solution of providing real-time parking availability data for staging areas along last-mile freight connectors.[11]

[19] I-10 Corridor Coalition Truck Parking Availability System (TPAS) https://i10connects.com/overview-tpas
[20] https://ops.fhwa.dot.gov/freight/infrastructure/truck_parking/workinggroups/technology_data/product/best_practices.htm
[21] https://www.americantruckparking.com/

Applicability to Grundy County

Interstates 80 and 55 cross Grundy County, with major freight destinations along each, including several large private travel centers. Rest areas also exist on Interstate 80, east of Morris. Dynamic message signs in advance of the rest area and exits could prove beneficial to the area, but fall within the jurisdiction of IDOT. If truck parking availability is a priority, Grundy County should focus its efforts on last-mile strategies for information dissemination. This could alleviate demand placed on the infrastructure from commercial vehicles circulating to find parking.

6.3 Design Considerations for New Facilities

In parallel with deploying ITS solutions, it is important to consider design modifications in new infrastructure projects to enhance operational efficiency and safety further. Grundy County is developing rapidly, and with that growth comes the need to invest in new infrastructure. As the roadway network is expanded, there will be opportunity to implement new systems and design standards. Integrating these structural design elements with advanced ITS solutions creates a more comprehensive approach to transportation planning, ensuring that the technological and physical aspects of Grundy County's roadways are optimized for safety, efficiency, and future readiness.

6.3.1 Communications and Utilities

New construction provides an opportunity to plan for communications and utility infrastructure needs. Utility installations are most easily done during initial road construction. Even if fiber optic communications are not justified initially, the addition of conduits and pull boxes to an existing project is far less costly than the potential of retrofitting with a future standalone project. Empty or overbuilt conduits and unused “dark” fiber are still assets that can be leased to other agencies or private partners.

The development of a communications master plan would aid in prioritizing installation of fiber optic cables or placeholder conduit systems. Such a plan should provide a tiered priority list of corridors that would ultimately connect existing traffic signals to corridors with the need for ITS elements or that will likely soon warrant signals. Ideally this system would eventually connect to a public works facility and provide multiple connection paths for redundancy.

6.3.2 Roundabouts

As existing facilities are widened or new facilities built in Grundy County, agencies can consider alternative roadway design options. One opportunity is the incorporation of roundabouts in strategic locations. Roundabouts facilitate smoother traffic flow, reducing the likelihood of congestion and significantly lowering the risk of high-speed collisions compared to traditional intersections. This makes them particularly effective in managing traffic in both urban and rural settings.

When designing roundabouts in areas frequented by large trucks and freight vehicles, specific considerations must be made to accommodate these vehicles' unique dimensions and maneuvering capabilities. First, the roundabout's geometry should include wider entry and exit lanes, as well as a larger central island to ensure that trucks can navigate the roundabout without encroaching on adjacent lanes or the central island. Additionally, it is critical to incorporate truck aprons – a slightly elevated section around the central island – which provides extra space for the rear wheels of long vehicles to track while the front wheels navigate the roundabout. This design feature allows for smoother

movement of large trucks and reduces the risk of accidents. The approach and exit lanes should also be designed with gentle curves and adequate lengths, enabling trucks to decelerate and accelerate smoothly. Such specialized design considerations ensure that roundabouts can effectively handle mixed traffic flows, including heavy freight movement.

Figure 6-5. Roundabout in Kane County, IL

6.3.3 Truck Pullouts on Rural Roads

With the growing freight and truck traffic in Grundy County, implementing truck pullouts along key rural and arterial routes could significantly enhance road safety and operational efficiency. Truck pullouts are designated areas, typically on the shoulder of the road, where heavy vehicles and trucks can safely pull over. This feature is particularly beneficial in areas where slower-moving trucks can impede traffic flow or in zones where drivers require rest to comply with hours-of-service regulations. By providing these designated spaces, Grundy County can reduce the incidence of rear-end collisions and other traffic accidents caused by sudden stops or slow-moving heavy vehicles on the main roadway.

Additionally, truck pullouts contribute to smoother traffic flow, as faster-moving vehicles can pass without the need to dangerously overtake, particularly around grain elevators or processing facilities during the harvest season. They also offer a safe space for truck inspections and emergency stops, further enhancing road safety. Strategically placed truck pullouts can also mitigate the impact of heavy vehicles on local roads, preserving road quality and reducing maintenance costs. For rural areas within Grundy County, where agricultural and industrial activities may lead to increased truck traffic, these pullouts are a critical component in maintaining an efficient and safe transportation network.

Figure 6-6. Truck Pullouts in Kane County, IL

6.4 Conclusion

When planning to deploy ITS solutions, it is imperative to acknowledge the rapidly evolving landscape of transportation technology. This continuous evolution of technology not only presents new opportunities for enhancing traffic management and road safety, but also necessitates a dynamic approach to understanding and selecting the most suitable ITS solutions. Recognizing that today's 'best practice' may not hold the same status tomorrow, Grundy County could adopt a flexible and informed strategy for ITS implementation.

This approach ensures that the county's transportation infrastructure is not only aligned with current national standards but is also adaptable to future innovations and changing transportation needs. In analyzing successful plans and programs elsewhere in the United States, several criteria stand out as common themes:

- **Regional Context:** Existing geographic features, demographic patterns, traffic characteristics, inter-agency relationships, and other factors differ across regions. An ITS implementation plan should be developed focusing on the conditions and constraints unique to each agency.
- **Agency Collaboration:** Data collected and utilized by ITS systems often benefit multiple stakeholders and are best implemented within a regional plan or strategy. Before any new technologies are integrated, their design should be carefully reviewed with respect to the potential impact or opportunity to benefit other agencies and systems.

- **Comprehensive Public and Stakeholder Engagement:** Effective, two-way communication is vital for any infrastructure program. Prior to implementation, stakeholder interviews and public meetings can inform project development on the existing systems in place and the needs of various users. Once a new system is installed, a good public communication plan ensures that users are aware of how their travel may be impacted.

- **Robust Data Governance Standards:** ITS systems rely on the collection and processing of data. Agencies have a legal and ethical responsibility to ensure that the data management practices in place protect their users' privacy and comply with all applicable standards.

- **Ongoing Performance Evaluation:** A detailed project evaluation strategy should be in place before implementing new features or systems. Performance measures should be identified in advance to allow for the benefit of projects to be quantified. Transportation systems come with an ongoing commitment of funding and oversight that must be weighed against the realized benefits.

Given the degree of uncertainty surrounding many new transportation technologies, the below conclusions are provided as Grundy County plans for emerging technologies. Further development of strategies and improvements could be identified in a future ITS plan for Grundy County.

- Grundy County has the opportunity to standardize implementation practices as minimal ITS infrastructure exists currently. This will ensure system compatibility in the future and that data needs are met system-wide, as much as possible. Implementation goals and standards should be established for new technologies as the ITS network is expanded, such as vehicle detection type, signal communication standards, and signal timing practices.

- Good maintenance practices for traffic signs and pavement markings should be prioritized. High-visibility, reflectivity, and contrast are crucial for the safety of all road users, but especially critical for autonomous vehicles.

- Since there is no mandate for CAV equipment in production vehicles, planning for county-wide V2X deployment is likely premature for local agencies. Further, autonomous vehicles are being developed to operate within existing infrastructure constraints and without the need for communication with roadside equipment, offering limited scope for local government involvement. Nonetheless, routine maintenance of signs and pavement markings to consistent standards, along with installing ITS devices at spot locations or along individual corridors, may encourage the adoption of emerging technology while benefiting all road users. Co-locating future CAV equipment with existing ITS infrastructure can also generate cost savings since the equipment can share the same power, cabinet, and communications infrastructure.

- Grundy County could explore technology demonstrations and pilot deployment projects to deploy signal system upgrades. Given the recent Federal Communications Commission rule change, there may be opportunities to sponsor pilot deployments to test cellular V2X applications. Grundy County could also coordinate with Midwest Gateway to identify additional truck traveler information, which could be published on Midwest Gateway's existing trucker

page. In addition, competitive Congestion Mitigation and Air Quality (CMAQ)[22] or other federal grant opportunities that encourage innovation[23] can be used to fund freight projects that reduce diesel emissions. These programs may present opportunities to fund intermodal terminal and/or fleet electrification projects in partnership with the private sector.

- It will be important to cultivate partnerships with technology providers, other agencies, and private firms as new transportation technologies continue to evolve. This can help Grundy County identify promising technologies, secure funds for technology planning and pilot tests, evaluate results, and generate lessons learned. For local or regional projects, such as setting up a TMC or testing freight CAV technology in the study area, coordination with regional agencies like the Chicago Metropolitan Agency for Planning and fleet partners will be necessary. For multi-state corridor deployments like truck platooning, IDOT support will likely be required to leverage federal grant participation and technical expertise.

[22] Aux Sable and Goose Lake townships in northeast Grundy County are both included in the Chicago metropolitan area's non-attainment classification for the 8-hour ozone standard (https://www3.epa.gov/airquality/greenbook/jbca.html#Ozone_8-hr.2015.Chicago), which would make those areas eligible for CMAQ funding. Aux Sable Township is also included in the planning area for the Chicago Metropolitan Agency for Planning (https://www.cmap.illinois.gov/documents/10180/282605/MPAMap.pdf/41873ffe-fb8e-4875-a2c1-13750a31f7a8).

[23] Innovation-oriented grants include the Accelerated Innovation Deployment Demonstration Program (AID), Advanced Transportation Technologies and Innovative Mobility Deployment (ATTAIN), Strengthening Mobility and Revolutionizing Transportation (SMART), and Advanced Digital Construction Management Systems (ADCMS) programs. A full listing of federal grant opportunities for rural areas is available from the U.S. Department of Transportation: https://www.transportation.gov/rural/funding-opportunities.

7.0 Next Steps

The Grundy County Multimodal Transportation Master Plan, or *Grundy Moves*, provides a data-driven, consensus based list of 49 capital projects. These projects are expected to address existing performance on the transportation system, as well as position the county to accommodate future growth in industrial development and its associated heavy commercial vehicle traffic. The study also provides an overview of opportunities to implement operational and design improvements to ensure the best possible performance of the transportation network.

Each implementing agency is responsible to manage project development for the improvements listed in the transportation improvement program, including the required planning and engineering studies, potential right-of-way acquisition, construction activities, and future operations and maintenance. The plan supports these implementing agencies by providing key data items, completing initial public engagement, and identifying appropriate funding opportunities.

Moreover, the core stakeholder group convened as part of the *Grundy Moves* initiative can continue to play an active role in advancing the priority projects in the TIP. In addition, the regional consensus provided by *Grundy Moves* is an asset when competing for federal and state funding opportunities. Close working relationships among stakeholders facilitates coordination with the Illinois Department of Transportation and among local agencies as project development gets underway.

Future study can provide greater insight into the topics introduced in this plan. Over the course of the study, the Advisory Committee identified the need for a separate countywide bicycle and pedestrian plan. Further, a standalone intelligent transportation systems study could develop tailored recommendations for communities by developing a common data architecture and deployment plan. The development of a regional grant strategy could provide guidance and support for implementing agencies.

Given the rapid pace of change in Grundy County, the recommendations in this plan could be revisited and updated on a regular basis. Future updates would ensure that the plan evolves with the changing development patterns, emerging technologies, and new travel patterns. The *Grundy Moves* initiative, including its analytical approach, stakeholder relationships, and implementation tools, provides a strong foundation for the region to proactively shape its future.

Appendix A

Intersection Analysis Results

Below are tables from the project's intersection analysis that consist of traffic counts, safety metrics, traffic operations, and geometric reviews.

Table A.1. Intersection Traffic Counts (2023)

E/W Road	N/S Road	Municipality	AWDT (E/W)	% Truck (E/W)	AWDT (N/S)	% Truck (N/S)	Total Veh.	% Truck (Total)
Minooka Road	Ridge Road	Minooka	8,550	24.0%	21,700	6.2%	30,250	11.3%
US 6	Ridge Road	Minooka	13,000	7.0%	9,800	4.0%	22,800	5.7%
US 6	Brisbin Road	Morris	8,650	7.2%	6,300	27.2%	14,950	15.6%
US 6 / Green Acres Drive	IL 47 / Division Street	Morris	15,600	15.2%	29,050	2.3%	44,650	6.8%
US 6 / Bedford Road	Division Street / IL 47	Morris	14,400	15.1%	32,300	1.4%	46,700	5.6%
IL 113 / Division Street	Broadway Road	Coal City	10,850	3.0%	7,250	4.0%	18,100	3.4%
Reed Road	Broadway Road	Coal City	3,800	7.1%	2,950	21.5%	6,750	13.4%
IL 53	Mitchell Road (CR 8000)	Braceville	1,600	4.1%	800	8.4%	2,400	5.5%
Main Street	IL 129 / IL 53	Gardner	4,250	2.3%	2,300	2.7%	6,550	2.4%
Gardner Road	IL 47	Goodfarm Township	1,750	75.5%	5,600	4.2%	7,350	21.2%
IL 113	IL 47	Morris	4,550 (IDOT)	-	11,100 (IDOT)	-	15,650	-
Grainger Way	Ridge Road	Minooka	-	-	20,300 (IDOT)	-	-	-

Table A.2. Intersection Safety Metrics

E/W Road	N/S Road	Municipality	K&A Crashes (Qty. and Type)	All Crashes within 250 ft	Crash Trend Notes
Minooka Road	Ridge Road	Minooka	1 A-Injury	56	31 crashes were turning crashes
US 6	Ridge Road	Minooka	1 A-Injury	16	12 crashes were rear-ends
US 6	Brisbin Road	Morris	1 A-Injury	8	Low no. of crashes
US 6 / Green Acres Drive	IL 47 / Division Street	Morris	0	58	24 turning crashes
US 6 / Bedford Road	Division Street / IL 47	Morris	1 A-Injury	75	Intersection with highest no. of crashes 34 rear-end crashes 23 turning crashes

CDM Smith

E/W Road	N/S Road	Municipality	K&A Crashes (Qty. and Type)	All Crashes within 250 ft	Crash Trend Notes
IL 113 / Division Street	Broadway Road	Coal City	0	32	16 turning crashes
Reed Road	Broadway Road	Coal City	1 A-Injury	22	10 angle crashes
IL 53	Mitchell Road (CR 8000)	Braceville	0	0	No crashes within 250ft
Main Street	IL 129 / IL 53	Gardner	0	3	Low no. of crashes
Gardner Road	IL 47	Goodfarm Township	1 Fatal	6	Low no. of crashes
IL 113	IL 47	Morris	0	22	10 rear end crashes
Grainger Way	Ridge Road	Minooka	0	10	Low no. of crashes

Table A.3. Intersection Traffic Operations

E/W Road	N/S Road	Municipality	Traffic Control Device*	Emergency Veh. Preemption (EVP)	Posted Speed Limit (MPH)	Pavement Marking Conditions
Minooka Road	Ridge Road	Minooka	Signalized: Protected/Permissive	Yes	N/S: Not Posted /W: 30	Clear pavement markings, and left turn dotted line extension markings.
US 6	Ridge Road	Minooka	Signalized: Protected/Permissive	Yes	N/S: 40 E/W: 45	Clear pavement markings.
US 6	Brisbin Road	Morris	Signalized: Protected/Permissive	Yes	N/S: 45 E/W: 50	Turn lane arrows and gore markings are faded.
US 6 / Green Acres Drive	IL 47 / Division Street	Morris	Signalized: Protected/Permissive	Yes	N/S: 35 E/W: 35	Pavement markings are very faded.
US 6 / Bedford Road	Division Street / IL 47	Morris	Signalized: Protected (from W) Protected/Permissive (from S) Protected (from N)	No	N/S: 35 E/W: 30	Dual Left turn lanes from the W are faded.
IL 113 / Division Street	Broadway Road	Coal City	Signalized: Protected/Permissive	No	N/S: 25 E/W 35	Turn lanes, stop bars, and crosswalk markings are faded.

E/W Road	N/S Road	Municipality	Traffic Control Device*	Emergency Veh. Preemption (EVP)	Posted Speed Limit (MPH)	Pavement Marking Conditions
Reed Road	Broadway Road	Coal City	Two-Way Stop	-	N/S: 55 E/W: 45	Pavement markings are faded.
IL 53	Mitchell Road (CR 8000)	Braceville	Three-Way Stop	-	N/S: 25 E/W: 40	Stop bar markings are faded.
Main Street	IL 129 / IL 53	Gardner	Four-Way Stop	-	N/S: 40 before intersection, 55 after intersection E: 30 W: 40	Pavement markings are faded.
Gardner Road	IL 47	Goodfarm Township	Two-Way Stop	-	N/S: 55 E/W: Not posted	Pavement markings are fading.
IL 113	IL 47	Morris	Two-Way Stop Stop sign has flashing beacon and additional signage	-	N/S: 55 E/W: 55	Pavement markings are in good condition.
Grainger Way	Ridge Road	Minooka	Signalized: Protected/Permissive	Yes	N/S: Not Posted E/W: 45	Left turn lane markings are faded (from WB side).

**Protected signal phasing allows drivers the right-of-way to turn left only with a green arrow, while permissive signals permit left turns during the through phase*

Table A.4. Intersection Geometric Reviews

E/W Road	N/S Road	Municipality	Intersection Lanes	Lane Capacity meets peak hourly volume*	Intersection Geometry Angle	Pedestrian Infrastructure	Pedestrian Signal
Minooka Road	Ridge Road	Minooka	NB: 1LT, 1Thru, 1Thru+RT SB: 1LT, 1Thru, 1Thru+RT EB: 1LT, 1Thru+RT WB: 1LT, 1Thru, 1RT	Yes	Right-angle	Crosswalks clearly striped. Pedestrian push button and signal.	Only N/S crosswalks

E/W Road	N/S Road	Municipality	Intersection Lanes	Lane Capacity meets peak hourly volume*	Intersection Geometry Angle	Pedestrian Infrastructure	Pedestrian Signal
US 6	Ridge Road	Minooka	NB: 1LT, 1Thru, 1RT SB: 1LT, 1Thru, 1RT EB: 1LT, 1Thru+RT WB: 1LT, 1Thru, 1RT	Yes	Right-angle	Crosswalks clearly striped. Pedestrian push button and signal present.	Yes, on all legs.
US 6	Brisbin Road	Morris	NB: 1LT, 1Thru, 1RT SB: 1LT, 1Thru, 1RT EB: 1LT, 1Thru, 1RT WB: 1LT, 1Thru, 1RT	Yes	Right-angle	No pedestrian infrastructure present.	No
US 6 / Green Acres Drive	IL 47 / Division Street	Morris	NB: 1LT, 2Thru, 1RT SB: 1LT, 1Thru, 1Thru+RT EB: 1LT, 1Thru, 1RT WB: 1LT, 1Thru+RT	Yes	Right-angle	Only one crosswalk and pedestrian signal on Division Street (W side). Needs restriping and a curb ramp.	No
US 6 / Bedford Road	Division Street / IL 47	Morris	NB: 1LT, 2Thru SB: 2Thru, 1 RT EB: 2LT, 1RT	Yes	Acute	Only 2 crosswalks and pedestrian signal and push button on Division St (N/S side and SW corner). Crosswalks need restriping.	Only on N/S Crosswalk. East side of intersection (E/W) has crosswalk, but no ped head.
IL 113 / Division Street	Broadway Road	Coal City	NB: 1LT, 1Thru, 1RT SB: 1LT, 1Thru+RT EB: 1LT, 1Thru+RT WB: 1LT, 1Thru+RT	Yes	Right-angle	Crosswalks need restriping. Pedestrian signal and push buttons present on all sides of intersection.	Yes, on all legs.
Reed Road	Broadway Road	Coal City	NB: 1Thru+RT+LT SB: 1Thru+RT+LT EB: 1Thru+RT+LT WB: 1Thru+RT+LT	Yes	Right-angle	No pedestrian infrastructure present.	-

E/W Road	N/S Road	Municipality	Intersection Lanes	Lane Capacity meets peak hourly volume*	Intersection Geometry Angle	Pedestrian Infrastructure	Pedestrian Signal
IL 53	Mitchell Road (CR 8000)	Braceville	NB: 1Thru+RT+LT SB: 1Thru+RT+LT EB: 1LT, 1Thru+RT WB: 1LT, 1Thru+RT	Yes	Skewed	Only one crosswalk present on CR 8000 (W side). Crosswalk needs restriping.	-
Main Street	IL 129 / IL 53	Gardner	NB: 1Thru+RT+LT SB: 1Thru+RT+LT EB: 1Thru+RT+LT WB: 1Thru+RT+LT	Yes	Skewed	No pedestrian infrastructure present.	-
Gardner Road	IL 47	Goodfarm Township	NB: 1LT, 1Thru+RT SB: 1LT, 1Thru+RT EB: 1Thru+LT, 1RT WB: 1Thru+RT+LT	Yes	Right-angle	No pedestrian infrastructure present.	-
IL 113	IL 47	Morris	NB: 1LT, 1Thru, 1RT SB: 1 LT, 1Thru+RT EB: 1Thru+LT, 1RT WB: 1Thru+LT+RT	Yes	Right-angle	No pedestrian infrastructure present.	-
Grainger Way	Ridge Road	Minooka	NB: 1LT, 2Thru, 1RT SB: 1LT, 2Thru, 1RT EB: 2LT, 1Thru+RT WB: 1LT, 1Thru+RT	Yes	Right-angle	Only one crosswalk present (Ridge Rd, W side). Crosswalk clearly striped. Pedestrian signal and push button present.	Only West side crosswalk on the N/S Leg.

**FHWA rules of thumb for sizing an intersection with appropriate number of lanes (without using a formal modeling exercise) determines the following: [1] lanes should not exceed 450 vehicles per hour and [2] exclusive left-turn lanes should be investigated when left-turn volume exceeds 100 vehicles per hour, and 300 vehicles per hour for dual left-turn lanes.*

Appendix B

Project Concept Descriptions

The following are brief project descriptions for the project concepts in the final TIP list. They are intended to convey key aspects of the planning context, such as the nature of the existing or anticipated future performance issue at that location, as well as the general scope of work that is expected to address that performance issue.

Tier 1 Project Descriptions

US 6 from IL 47 to Ridge Road

While this segment of US 6 currently experiences little congestion or safety concerns, traffic volumes are expected to grow significantly with the additional industrial development anticipated in both the near- and long-term. To accommodate this growth, near-term improvements to the corridor could include **modernization** (e.g., addition of full-width shoulders and turning lanes at key intersections), along with bridge improvements over a small creek. Potential capacity improvements of one new lane in each direction could be required in the long term, as development matures throughout the corridor. Consider **right-of-way acquisitions or preservation** in the near term to allow for future expansion needs.

I-80 from IL 47 to I-55

This segment of I-80 was highlighted by both technical and outreach inputs more than any other location in the county, which reflects its importance to regional travel. To expand upon the ongoing improvements east of Ridge Road, a future phase of improvements could include **widening the segment** from Ridge Road to IL 47 from four lanes to six (about 9.5 miles). This would include four bridge replacements over small creeks and the relocation of four access ramps to the Three Rivers safety rest area, including two ramps each in the eastbound and westbound directions.

I-80/Ridge Road Interchange

Future industrial and residential development is expected to increase traffic at this interchange, so **an interchange capacity study** is recommended. Potential improvements on Ridge Road could include lengthening of the existing right turn lane to the I-80 eastbound entrance ramp and the southbound lane to the nearby Grainger Way intersection. A potential study of the interchange could consider the segment of Ridge Road from I-80 to Minooka Road as a system since it has several signalized intersections within approximately 0.5 miles.

IL 47/US 6-Green Acres Drive Intersection

This intersection was frequently identified in both technical and outreach sources because of current congestion concerns. An **intersection study** could examine geometric improvements (especially in the northbound-to-eastbound movement), property access, and signal timing as potential improvements. Adding sidewalks, hardened pedestrian islands, and other safe pedestrian facilities could be included in a potential project, given the high traffic volumes.

IL 113 from IL 47 to I-55

This corridor could be **modernized** to meet future increased demand. Between Coal City and Diamond (about 3 miles), the corridor could be **reconstructed as a complete street** by adding separated bike facilities, hardened pedestrian islands, and other safe pedestrian facilities where appropriate. For the remaining 6 miles from Coal City to IL 47, the corridor could be improved to include full-width shoulders, turn lanes where appropriate, medians where effective, and a sidepath.

Ridge Road from McEvilly Road to Hansel Road

Future commercial and residential development is expected to increase demand along this portion of Ridge Road. To accommodate this growth, near-term improvements to the corridor could include **modernization** (e.g., addition of full-width shoulders and medians where effective) similar to the work that was completed to the north between Minooka Road and McEvilly Road in 2021. Potential capacity improvements of one new lane in each direction could be required in the long term, as development matures throughout the corridor. Consider **right-of-way acquisitions or preservation** in the near term to allow for future expansion needs.

I-80/IL 47 Interchange

This interchange already has auxiliary lanes for entrance and exit movements on both I-80 and IL 47 and associated ramps to accommodate its high volumes. Future growth may put more demand on the interchange, so a **capacity study** that considers an alternate interchange design, geometric improvements to turning lanes, or signal timing is recommended.

US 6 from IL 47 to Saratoga Road

There is already an IDOT project underway for most of this segment, which may address concerns identified by the technical and public outreach inputs of this study. In Phase One, the project currently plans to **add lanes**, increasing from two to four for approximately two miles of roadway, make intersection improvements for five intersections, add pedestrian facilities, and make drainage improvements.

Gore Road from Lisbon Road to IL 47

Because of the proximity to I-80 and possible increased demand in the future, this segment could be **modernized** to include full-width shoulders, turn lanes where appropriate, medians where effective, and a sidepath. Such a project could also include **right-of-way preservation** for the 1-mile segment, to allow for potential expansion of the facility if warranted in the future.

McEvilly Road from Vista Court to Ridge Road

Due to the proximity of existing trip generators (e.g., multiple schools, parks, Minooka Village Hall) and possible increased demand in the future, this corridor could be **reconstructed or reconfigured as a complete street** by adding bicycle signage on the existing sidepath, hardened pedestrian islands, and other safe pedestrian facilities given the sensitive land uses along the 1.3-mile segment.

Lisbon Road from Sherrill Road to Gore Road

This segment is in a rural part of the county but connects Morris and parts of the county north of I-80. Increased demand from potential industrial development in this area could require **modernization** to

include full-width shoulders, turn lanes where appropriate, and medians where effective. Such a project could also include **right-of-way preservation** for the 5.6-mile segment.

Broadway Road from Spring Road to Braceville Road

Future industrial development is expected to increase demand along this portion of Broadway Road, which closely parallels the UP railroad. To accommodate this growth, near-term improvements to the corridor could include **modernization** items such as full-width shoulders, turn lanes where appropriate, and medians where effective. Such a project could also include **right-of-way preservation** for the 3-mile segment to allow for additional capacity in the future if warranted.

I-80/Brisbin Road Interchange

This relatively new interchange was built in part to support local economic development plans. While overall capacity is anticipated to be adequate in the long term, signalization of the ramp intersections could be needed as traffic demand increases over time. Further, potential future signals at the interchange could be coordinated with signals at the nearby intersection of US 6 and Brisbin Road. Future industrial growth could increase demand further, so a larger interchange **capacity study** could explore potential alternate interchange designs and capacity or geometric improvements.

McLindon Road from Minooka Road to US 6

Future industrial development is expected to increase demand along this portion of McLindon Road, which crosses both the CSX and CN railroads and closely parallels the latter. To accommodate this growth, near-term improvements to the corridor could include **modernization** to include full-width shoulders, turn lanes where appropriate, and medians where effective. Such a project could also include **right-of-way preservation** for the 2.5-mile segment. Maintaining heavy vehicle restrictions south of Twin Rail Drive because of the residential land use in that segment should be a priority. A study could determine whether there is an opportunity for intelligent warning signage to discourage truck use in this segment.

Pine Bluff Road/Lorenzo Road from IL 47 to I-55

This segment is in a rural part of the county but provides a crucial east-west connection to locations south of the Illinois River. There will may be increased demand from industrial development in the future, especially for the eastern side of the corridor. This could require **modernization** to include full-width shoulders, turn lanes where appropriate, and medians where effective. Such a project could also include **right-of-way preservation** for the 12.2-mile segment to support future capacity expansion if warranted.

Tier 2 Project Descriptions

Brisbin Road from US 6 to Bungalow Road

Existing industrial land-uses and future industrial development is expected to increase demand in this area of the county. There is currently a 0.5-mile gap in Brisbin Road between US 6 and Bunaglow Road. To accommodate this growth, the gap should be closed by constructing a **new roadway** to facilitate north-south redundancy in the roadway network, reducing congestion along other corridors. A new

roadway that stays on the current alignment would cross Aux Sable Creek twice and the CSX railroad to fill the existing gap.

IL 47/US 6-Bedford Road Intersection

This intersection is part of the ongoing IDOT project along US 6 to the west and has had design proposals. Study inputs from this project suggest that improvements could consider **correcting the skew, provide more signage** to direct driver behavior, **closing problematic property access**, and **add safer pedestrian crossings**.

Reed Road/Gorman Road from IL 113 to Broadway Road

To link IL 113 to the I-55 interchange at Reed Road without travel though the center of Coal City, Reed Road and Gorman Road could be **modernized** to include full-width shoulders, turn lanes where appropriate, and medians where effective. Such a project could also include **right-of-way preservation** for the 5-mile segment, to allow for potential expansion of the facility if warranted in the future. Directional signage for heavy vehicles could be added to encourage use of this route.

Brisbin Road from US 6 to Sherrill Road

Future commercial and industrial is expected to increase demand along this 3.0-mile portion of Brisbin Road. To accommodate this growth, near-term improvements to the corridor could include **modernization** (e.g., addition of full-width shoulders, left turn lanes where appropriate, and medians where effective). Potential capacity improvements of one new lane in each direction could be required in the long term, as development matures throughout the corridor. Consider **right-of-way acquisitions** or preservation in the near term to allow for future expansion needs.

Minooka Road, O'Brien Road, and Sherill Road from Tabler Road to IL 47

Future commercial and industrial is expected to increase demand along this corridor, which could also have access to I-80 (see the *I-80/Minooka Road New Interchange* project concept). To accommodate this growth, near-term improvements to the corridor could include **modernization** (e.g., addition of full-width shoulders, left turn lanes where appropriate, and medians where effective). Potential capacity improvements of one new lane in each direction could be required in the long term, as development matures throughout the corridor. Consider **right-of-way acquisitions** or preservation in the near term to allow for future expansion needs.

I-55 from Gardner to Will County Line

There is currently no recurring congestion or major truck volumes at this location. If industrial development along I-55 continues, there could be a need for increasing capacity on I-55 from approximately the Village of Gardner to the county line to the north. This could include **expanding from four lanes to six lanes** for a distance of about 7 miles, potentially necessitating four bridge replacements over a small creek and a railroad.

US 6/Seneca Road from Main St (Seneca) to I-80

Because of possible increased demand in the future, this segment could be **modernized** to include full-width shoulders, turn lanes where appropriate, and medians where effective. Such a project could also

include **right-of-way preservation** for the 5.5-mile segment, to allow for potential expansion of the facility if warranted in the future.

Grainger Way from Minooka Road to Grainger Entrance

Future industrial development is expected to increase demand along this portion that already sees regular use from heavy vehicles. To accommodate this growth, near-term improvements to the corridor could include **modernization** (e.g., addition of full-width shoulders and medians where effective) to be like the existing cross section of Grainger Way to the east, between the Grainger facility entrance and Ridge Road. Potential capacity improvements of one new lane in each direction could be required in the long term, as development matures throughout the corridor. Consider **right-of-way acquisitions or preservation** as needed in the near term to allow for future expansion needs.

Tabler Road from Minooka Road to Nouryon Entrance

Existing industrial land-uses and future industrial development is expected to increase demand along this corridor. This segment could be **modernized** to include full-width shoulders, turn lanes where appropriate, and medians where effective. Such a project could also include **right-of-way preservation** for the 4.3-mile segment, to allow for potential expansion of the facility if warranted in the future.

Ashley Road from Granville Road to Bungalow Road

Future industrial development is expected to increase demand along this portion. Due to this expected growth, the segment could be **modernized** to include full-width shoulders and medians where effective. Signage could also direct heavy vehicles to use Ashley Road and Granville Road to access IL 47 instead of the IL 47/US 6-Green Acres Drive intersection, potentially relieving congestion at the latter. Such a project could also include **right-of-way preservation** for the 1-mile segment, to allow for potential expansion of the facility if warranted in the future.

I-80/Saratoga Road New Interchange

A **new interchange** at Saratoga Road could help alleviate congestion at the IL 47 interchange, which currently experiences high levels of demand. It would provide additional access to I-80 for existing and potential future residents and businesses on the west side of Morris. The interchange could provide access to and from the east only since there is likely significantly more demand in that direction. This would require **some property acquisition** and relocation of an existing frontage road for a small segment.

I-80/Shepley Road New Interchange

A **new interchange** at Shepley Road could help alleviate potential future congestion at the Ridge Road interchange, which will likely see increased demand in the near term. While not in Grundy County, it would provide additional access to I-80 for existing and potential future residents and businesses in the northeast corner of the county. The interchange could provide full access and may **require some property acquisition** and relocation of frontage road for a small segment. The existing bridge would likely need to be reconstructed as part of this project.

I-80/Minooka Road New Interchange

A **new interchange** at Minooka Road could help alleviate future congestion at the Ridge Road interchange, which will likely see increased demand in coming years. This interchange would improve access to the neighboring industrial district, which has seen several recent growth in freight-generating businesses and potential for substantial additional growth in the near term. The interchange could provide access to and from the east only since there is likely significantly more demand in that direction and would require **some property acquisition**. A new interchange at this location would likely be paired with **modernization** of Minooka Road to the east of I-80, which is also a Tier 2 project.

Granville Road from IL 47 to Ashley Road

Because of possible increased demand in the future due to industrial development, this segment could be **modernized** to include full-width shoulders, turn lanes where appropriate, and medians where effective. Signage could also direct heavy vehicles to use Granville Road and Ashley Road to access IL 47 instead of the IL 47/US 6-Green Acres Drive intersection, potentially relieving congestion at that location. Such a project could also include **right-of-way preservation** for the 1-mile segment, to allow for potential expansion of the facility if warranted in the future.

Dupont Road from Gonnam Road to Kinsman Road.

Due to potential industrial development and poor sightlines on this segment, it could be **modernized** to include full-width shoulders and medians where effective. Environmental considerations are important for this project because of the forested areas it traverses.

IL 113/BNSF and UP Railroads Grade Separation

The two railroad crossings at IL 113 in Coal City result in the largest delay for vehicle trips in the county by far and present concerns over emergency response delays. The need for improvement at this location is expected to grow, as traffic demand in this part of the county increases over time. **Grade separation** of these at-grade crossings would likely include a single two-lane bridge over both railroads, given that they are closely spaced (approximately 900’ apart). There would be significant community impacts with this project, including roadway reconfiguration and new access for properties between the railroads and on either side of them.

A potential interim improvement before grade separation could be the establishment of a **Quiet Zone** for the two crossings. A Quiet Zone will require safety enhancements at and near the crossings. Approved safety improvements to achieve Quiet Zones status can include (but are not limited to) four-quadrant gates, vehicle channelization, and closure of intersecting roadways close to the selected crossing.

Tier 3 Project Descriptions

I-55 near IL 47

Although there is not recurring congestion at this location, future development may create additional demand on I-55 near IL 47. A future project could **widen the roadway** from four lanes to six for about 1.25 miles in either direction from the interchange, which would likely require two bridge replacements over a small creek.

Brannick Road from Ridge Road to McLindon Road

Future commercial and residential development is expected to increase demand along this portion of Brannick Road. To accommodate this growth, near-term improvements to the corridor could include **modernization** (e.g., addition of full-width shoulders, left-turn lanes, and medians where effective). Potential capacity improvements of one new lane in each direction could be required in the long term, as development matures throughout the corridor. Consider **right-of-way acquisitions** or preservation in the near term to allow for future expansion needs.

Hansel Road from Ridge Road to Cemetery Road

Hansel Road is prone to flooding due to the roadway being adjacent to the Aux Sable Creek and Illinois River. **Relocation** of this 1.1-mile stretch could be considered if major environmental issues persist in the future.

Sand Ridge Road Extension from US 6 to McLindon Road

Due to future industrial development expected to increase demand, a **feasibility study** could consider a **new roadway**, which extends Sand Ridge Road south to US 6 and east to Tabler Road. This will add to the east-west redundancy in the roadway network and reduce congestion along other corridors. Consider **right-of-way preservation** in the near term to allow for future expansion needs.

Sherill Road from O'Brien Road to Ridge Road at I-80

Due to future industrial and business park development expected to increase demand along this corridor, a **feasibility study** could consider a new roadway to add to the east-west redundancy in the roadway network, reducing congestion along other corridors. Consider **right-of-way preservation** in the near term to allow for future expansion needs.

Grand Ridge Road from IL 47 to School District Facility

A **feasibility study** was already conducted for roadway reconstruction which includes recommendations for wider shoulders, bi-directional two way turn lanes, and rehabilitation. Considering the sensitive land use the segment traverses, further recommendations could include **reconstructing it as a complete street** by adding separated bike facilities, hardened pedestrian islands, and other safe pedestrian facilities where appropriate for the 0.7-mile segment.

New Illinois River Crossing

Grundy County currently has only one Illinois River crossing, at IL 47 in Morris, and has a much longer gap in river crossings than neighboring counties. A **new bridge over the Illinois River** in the area between Morris and Minooka would create north-south redundancy in the roadway network, reducing congestion on IL 47, provide a reliable alternative for emergency services, and also reduce trip distance and travel times for the growing industrial areas in the northeast of the county. A new river crossing would be a complex, long-term project that would first require a rigorous feasibility study. A future **feasibility study** could focus on various alignments, considering significant land use challenges (e.g., protected open space, Dresden Lake, and the nuclear power plant) and costs. A new bridge would likely span between 1,000 feet and 2,000 feet and require new roadways of unknown length on either side to connect to the existing roadway network.

IL 47 from Southmor Road to IL 113

This segment of IL 47 is located in a rural part of the county but provides a key connection between Morris and parts of the county south of the Illinois River. Increased demand in the future could require **modernization** of this 3.3-mile segment, potentially including full-width shoulders, turn lanes where appropriate, medians where effective, and a sidepath.

New Road from Aux Sable Liquid Products/US 6 to Sand Ridge Road Extension

Due to possible increased demand in the future, a **feasibility study** could consider a new roadway to add to the north-south redundancy in the roadway network, reducing congestion along other corridors. Consider **right-of-way preservation** in the near term to allow for future expansion needs.

Ridge Road Extension from Hansel Road to Old Kerry Grove

Due to possible increased residential demand in the future, a **feasibility study** could consider an extension of Ridge Road to Old Kerry Grove, which will expand the roadway network and reduce congestion along other corridors. Consider **right-of-way preservation** in the near term to allow for future expansion needs.

Livingston Road Extension from Dwight Road to Old Route 66

Currently, Livingston Road ends approximately 500 feet from Old Route 66, leaving a missing connection between the two corridors. To accommodate future industrial growth and strengthen the roadway network, a **feasibility study** was already conducted to close the gap by constructing a new roadway. The preliminary cost estimate drafted in Spring of 2022 estimates that an extension would cost approximately $1.8 million. Consider **right-of-way preservation** in the near term to allow for future expansion needs.

New Collector from Hansel Road to McLindon Road

Due to possible increased demand in the future, a **feasibility study** could consider a new roadway to add to the east-west redundancy in the roadway network, reducing congestion along other corridors. Consider **right-of-way preservation** in the near term to allow for future expansion needs.

Metra Extension

There is no existing commuter rail or passenger rail in Grundy County. A **feasibility study** could consider **passenger rail** serving the county via an extension of the Metra Rock Island District along existing track alignment to the largest population centers in the county, Morris and Minooka.

Wapella Street from Western Terminus to Rivers Edge Drive

Because of possible increased demand in the future, this segment could be **modernized** to include full-width shoulders, a sidepath, turn lanes where appropriate, and medians where effective. Such a project could also include **right-of-way preservation** for the 0.7-mile segment to allow for potential expansion of the facility if warranted in the future.

McGinty Street Extension from McGinty St to Girot Lane

Due to possible increased residential demand in the future, a **feasibility study** could consider and extension of McGinty St to Girot Lane, which will expand the roadway network and reduce congestion

along other corridors. Consider **right-of-way preservation** in the near term to allow for future expansion needs.

New Collector from US 6 to Bell Road

Due to possible increased demand in the future, a **feasibility study** could consider a new roadway to add to the redundancy in the roadway network, reducing congestion along other corridors. Consider **right-of-way preservation** in the near term to allow for future expansion needs.

Sherrill Road from Roods Road to LaSalle Road

Due to possible increased demand in the future, a **feasibility study** could consider a new roadway to fill in the approximately 1.9-mile gap in between Roods Road and LaSalle Road. Filling in this gap will add to the east-west redundancy in the roadway network, reducing congestion along other corridors. Consider **right-of-way preservation** in the near term to allow for future expansion needs.

Sherrill Road from Townhouse Road to Lisbon Road

Due to possible increased demand in the future, a **feasibility study** could consider a new roadway to fill in the approximately 2.8-mile gap in between Townhouse Road and Lisbon Road. Filling in this gap will add to the east-west redundancy in the roadway network, reducing congestion along other corridors. Consider **right-of-way preservation** in the near term to allow for future expansion needs.

Appendix C

Funding Opportunities

Below is a table with a thorough list of federal, state, and local funding opportunities that could apply to future transportation studies or projects in Grundy County. These range from competitive grant programs administered by the USDOT or IDOT to local direct funding sources. The USDOT and IDOT programs include several that focus on a roadway type or particular challenges such as electric vehicle charging or rail crossings. In general, federal funding programs require at least a 20 percent local match. Competitive programs that rely on state funding may have larger match requirements. Local funding sources included in the table include motor fuel task, vehicle registration, and special tax or financing districts that can be established.

Table C.1. Funding Opportunities

Program	Description	Eligibility	Programming Agency	Programming Process
RAISE - Rebuilding American Infrastructure with Sustainability and Equity	Helps municipalities, Tribal governments, counties, and others complete critical freight and passenger transportation infrastructure projects. The eligibility requirements of RAISE allow project sponsors to obtain funding for projects that may be harder to support through other U.S. DOT grant programs.	State Highway agency, Metropolitan Planning Organization, Local Government or agency	USDOT	Competitive
SS4A - Safe Streets and Roads for All	Funds regional, local, and Tribal initiatives through grants to prevent roadway deaths and serious injuries.	Metropolitan Planning Organization, Local Government or agency	USDOT	Competitive
AID - Accelerated Innovation Deployment Demonstration Program	Provides funding as an incentive for eligible entities to accelerate the implementation and adoption of innovation in highway transportation.	State Highway agency, Local Government or agency (must apply through the State DOT as a subrecipient)	USDOT	Competitive
Bridge Investment Program	Competitive and discretionary program that focuses on existing bridges to reduce the overall number of bridges in poor condition, or in fair condition at risk of falling into poor condition.	State Highway agency, Local Government or agency	USDOT	Competitive
Charging and Fueling Infrastructure Grants Program (Corridor Charging)	Strategically deploys publicly accessible electric vehicle charging and alternative fueling infrastructure in the places people live and work – urban and rural areas alike – in addition to along designated Alternative Fuel Corridors (AFCs).	State Highway agency, Metropolitan Planning Organization, Local Government or agency	USDOT	Competitive

Program	Description	Eligibility	Programming Agency	Programming Process
INFRA - Nationally Significant Multimodal Freight and Highway Projects	Awards competitive grants for multimodal freight and highway projects of national or regional significance to improve the safety, efficiency, and reliability of the movement of freight and people in and across rural and urban areas.	State Highway agency, Local Government or agency	USDOT	Competitive
MEGA - National Infrastructure Project Assistance Program	Supports large, complex projects that are difficult to fund by other means and likely to generate national or regional economic, mobility, or safety benefit	State Highway agency, Metropolitan Planning Organization, Local Government or agency	USDOT	Competitive
National Culvert Removal, Replacement, and Restoration Grants	Awards grants to eligible entities for projects for the replacement, removal, and repair of culverts or weirs that meaningfully improve or restore fish passage for anadromous fish.	State Highway agency, Local Government or agency	USDOT	Competitive
PROTECT Discretionary Grant Program	Funds projects that address the climate crisis by improving the resilience of the surface transportation system, including highways, public transportation, ports, and intercity passenger rail	State Highway agency, Metropolitan Planning Organization, Local Government or agency	USDOT	Competitive
Rural Surface Transportation Grant Program	Supports projects that improve and expand the surface transportation infrastructure in rural areas to increase connectivity, improve the safety and reliability of the movement of people and freight, and generate regional economic growth and improve quality of life	State Highway agency, Local Government or agency	USDOT	Competitive
NHPP - National Highway Performance Program	Provides support for the condition and performance of the National Highway System (NHS), for the construction of new facilities on the NHS, and to ensure that investments of Federal-aid funds in highway construction are directed to support progress toward the achievement of performance targets established in a State's asset management plan for the NHS.	National Highway System (NHS) facilities.	USDOT	Competitive
The Railway-Highway Crossings (Section 130)	Provides funds for the elimination of hazards at railway-highway crossings	State Government	USDOT	Competitive
HSIP - Highway Safety Improvement Program	Program intended to produce a measurable and significant reduction in fatalities and serious injuries resulting from traffic related crashes on all public roads	Local-jurisdiction facilities.	IDOT	Competitive

Program	Description	Eligibility	Programming Agency	Programming Process
Illinois Competitive Freight Program	Aims to improve the mobility of freight throughout the State of Illinois	National Highway Freight Network (NHFN) which includes Primary Highway Freight System, Interstates, and Critical Urban/Rural Freight Connectors	IDOT	Competitive
SRTS - Safe Routes to School	Uses a multidisciplinary approach to improve conditions for students who walk or bike to school (can include funding for infrastructure improvements to the physical environment)	Political subdivisions (municipalities, counties, townships) or other roadway jurisdiction	IDOT	Competitive
EDP - Economic Development Program	Provides state assistance for roadway improvements or new construction that are necessary for access to new or expanding industrial, manufacturing or distribution type companies.	Local-jurisdiction roadways. Requires private-firm sponsor to make a job retention/expansion commitment.	IDOT	Competitive
TARP - Truck Access Route Program	Helps local governments upgrade roads to accommodate 80,000-pound truck loads.	Local-jurisdiction roadways.	IDOT	Competitive
Carbon Reduction Program	Projects that reduce transportation-related emissions. Potential freight applications include truck stop electrification, diesel engine retrofits, and traffic flow improvements.	State Highway agency, Metropolitan Planning Organization, Local Government or agency	IDOT/CMAP	Competitive
CMAQ - Congestion Mitigation and Air Quality Improvement Program	Federally funded program that is part of the surface transportation improvements designed to improve air quality and to mitigate congestion	Projects that reduce emissions or traffic congestion	IDOT/CMAP	Competitive
STP - Surface Transportation Program	A joint fund established by the Council of Mayors and the City of Chicago to facilitate major regional projects prioritizing Performance-Based Programming decisions and the achievement of the goals outline in ON TO 2050.	Local or state jurisdiction roadway with functional classification above local roadway.	IDOT/CMAP	Competitive
Carbon Reduction Program	Projects that reduce transportation-related emissions. Potential freight applications include truck stop electrification, diesel engine retrofits, and traffic flow improvements.	State Highway agency, Metropolitan Planning Organization, Local Government or agency	IDOT/CMAP	Competitive
Grade Crossing Protection Fund	Assists local jurisdictions in paying for safety improvements at highway-railroad crossings on local roads and streets.	Local-jurisdiction (counties, townships, and municipalities) highways crossing railroads	Illinois Commerce Commission (ICC)	Competitive

Program	Description	Eligibility	Programming Agency	Programming Process
Recreational Trails Program	Provides up to 80% funding assistance for acquisition, development, rehabilitation and maintenance of motorized and non-motorized recreation trails	Recreational trails	Illinois Department of Natural Resources (IDNR)	Competitive
Motor Fuel Tax	Taxes operating motor vehicles on public highways and recreational watercraft on waterways in Illinois	All public roadways	Local	Programmed Directly
Motor Vehicle Registration	Taxes motor vehicles purchased (or acquired by gift or transfer) from another individual or private party	All public roadways	Local	Programmed Directly
Tax Increment Financing	Supports infrastructure improvements within TIF district	All public roadways	Local	Programmed Directly
Special Service Areas	Typically includes but is not limited to: public way maintenance and beautification; district marketing and advertising; business retention/attraction, special events and promotional activities; auto and bike transit; security; façade improvements; and other commercial and economic development initiatives.	Local tax districts that fund expanded services and programs through a localized property tax levy within contiguous areas	Local	Programmed Directly
Business Improvement Districts	Tax is designed to fund the development or redevelopment of designated areas within a municipality	Proposed business district must be contiguous and blighted, as defined in the Illinois Municipal Code, 65 ILCS 5/11-74.3-5	Local	Programmed Directly