Dubuque Metropolitan Area Transportation Study (DMATS) Long Range Transportation Plan 2050

Adopted October 14, 2021

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DUBUQUE METROPOLITAN AREA TRANSPORTATION STUDY (DMATS)
POLICY COMMITTEE

DMATS RESOLUTION 2021-10

RE: APPROVAL OF YEAR 2050 LONG-RANGE TRANSPORTATION PLAN

WHEREAS the Federal Highway Act of 1962, as amended, and the Urban Mass Transportation Act of 1964, as amended, provides for an urban transportation planning process; and

WHEREAS Fixing America's Surface Transportation (FAST) Act authorizes funding to improve our nation's transportation system for the 5-year period of 2016-2020; and

WHEREAS the Dubuque Metropolitan Area Transportation Study (DMATS) is the Metropolitan Planning Organization (MPO) for the Dubuque Urban and Metropolitan Areas, and the Policy Committee has the specific responsibility to direct and administer the continuing urban transportation planning process; and

WHEREAS sections included in FAST Act require MPO's in conducting a continuing, comprehensive, and coordinated transportation planning process in Metropolitan Planning Areas (MPA), which include the development of a Long-Range Transportation Plan for the DMATS MPA; and

WHEREAS the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) provide regulations and guidance initiating from FAST Act for MPO's to follow and implement a transportation planning process that leads to the development of strategies/actions that will lead to the development of an integrated multimodal transportation system to facilitate the safe and efficient movement of people and goods in addressing current and future transportation demand; and

WHEREAS the DMATS Policy Committee adopted a Year 2050 Long-Range Transportation Plan (LRTP) on October 14, 2021, which discusses the issues and strategies for DMATS to follow a planning process for the coordination and implementation of transportation improvements in the DMATS;

NOW, THEREFORE, BE IT RESOLVED
that the Policy Committee adopts DMATS Year 2050 LRTP to comply with FHWA / FTA FAST Act guidance and regulations.

Approved this 14th day of October 2021.

Attest:

Roy D. Buol, DMATS
Chairperson

Kelley Deutmeyer, ECIA
Executive Director

Chapters

Chapter 1
Introduction

Introduction

The long-range transportation plan is a statement of how the Dubuque Metropolitan Area Transportation Study (DMATS) intends to manage its transportation system for the next 30 years. Federal law requires the creation of a plan that provides an assessment of current transportation trends in the area as well as to aid in forecasting potential changes for the future.

The DMATS 2050 Long Range Transportation Plan (LRTP) plan is an update of the 2045 LRTP that was adopted in 2016. The 2050 LRTP is guided by an updated vision and set of principles, goals, and objectives. A major focus of the 2050 update is to ensure that the plan meets Federal requirements and reflects current transportation issues and concerns of the DMATS area.

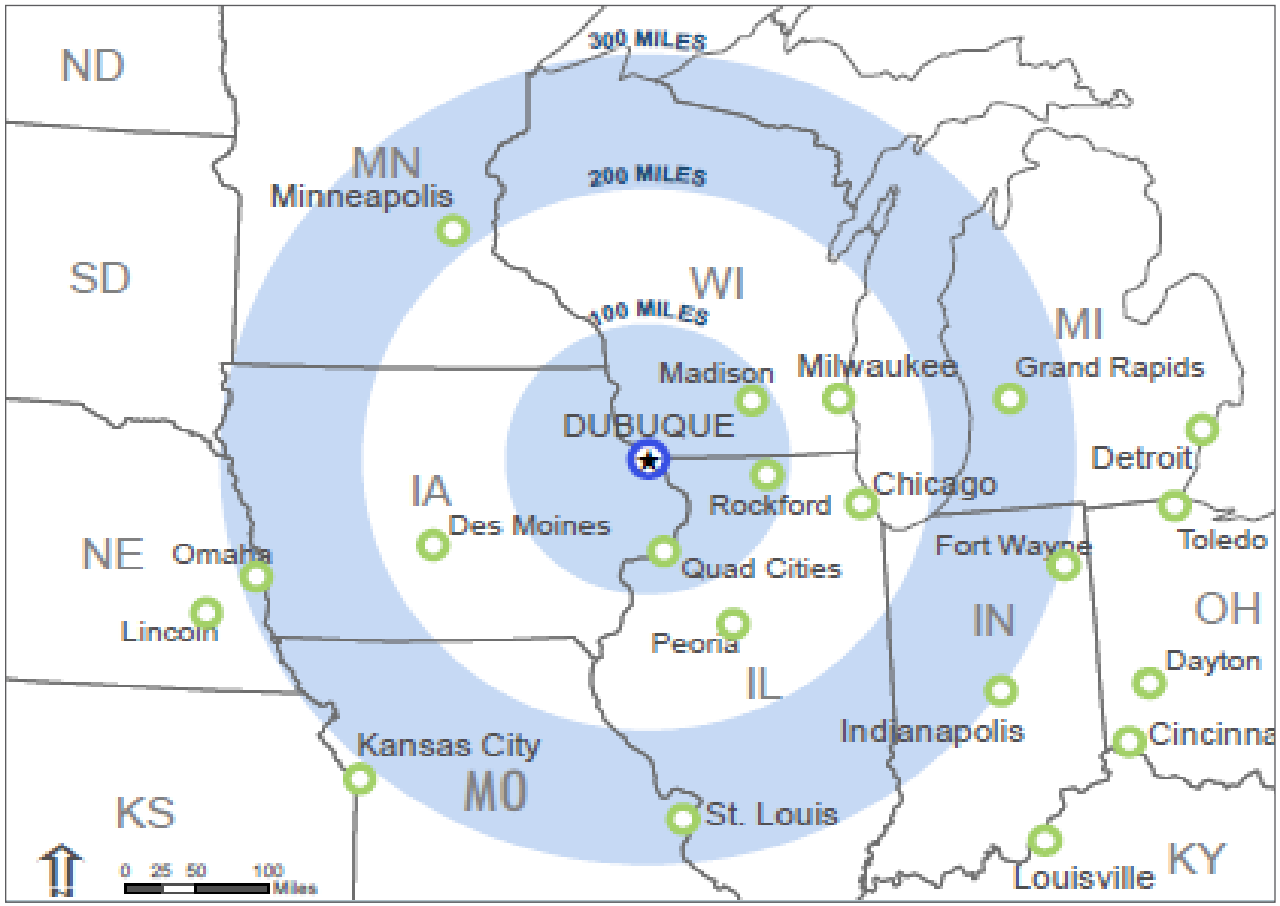
Dubuque Metro Area

The Dubuque Metropolitan Area is located on the Mississippi River at the convergence of the state boundaries of Iowa, Illinois and Wisconsin. The 2010 Census population for the metro area was 81,073.

The City of Dubuque, Iowa, the largest city represented in DMATS, had a 2010 Census population of 57,573. Approximately 92% of the DMATS population lives in the Iowa portion of the area. Around 5 percent of the area's residents live in Illinois and 3 percent in Wisconsin. Dubuque was the first area in what is now Iowa to be settled by Europeans.

Early settlers were drawn to the area by lead mining, trading, and river transportation. Today' economy is driven by a diverse collection of industries including manufacturing and tourism. Figure I.I shows Dubuque's location in relation to surrounding metropolitan areas.

Figure 1.1 Dubuque and Surrounding Metro Areas



Dubuque Metropolitan Area Transportation Study

The Dubuque Metropolitan Area Transportation Study (DMATS) is the metropolitan planning organization (MPO) for the Dubuque Metropolitan Area. As the MPO, DMATS is responsible for maintaining a continuous, comprehensive, and coordinated (3-C) transportation planning process. DMATS is also responsible for carrying out the metropolitan planning requirements of the current federal surface transportation legislation, the Fixing America Surface Transportation Act (FAST Act).

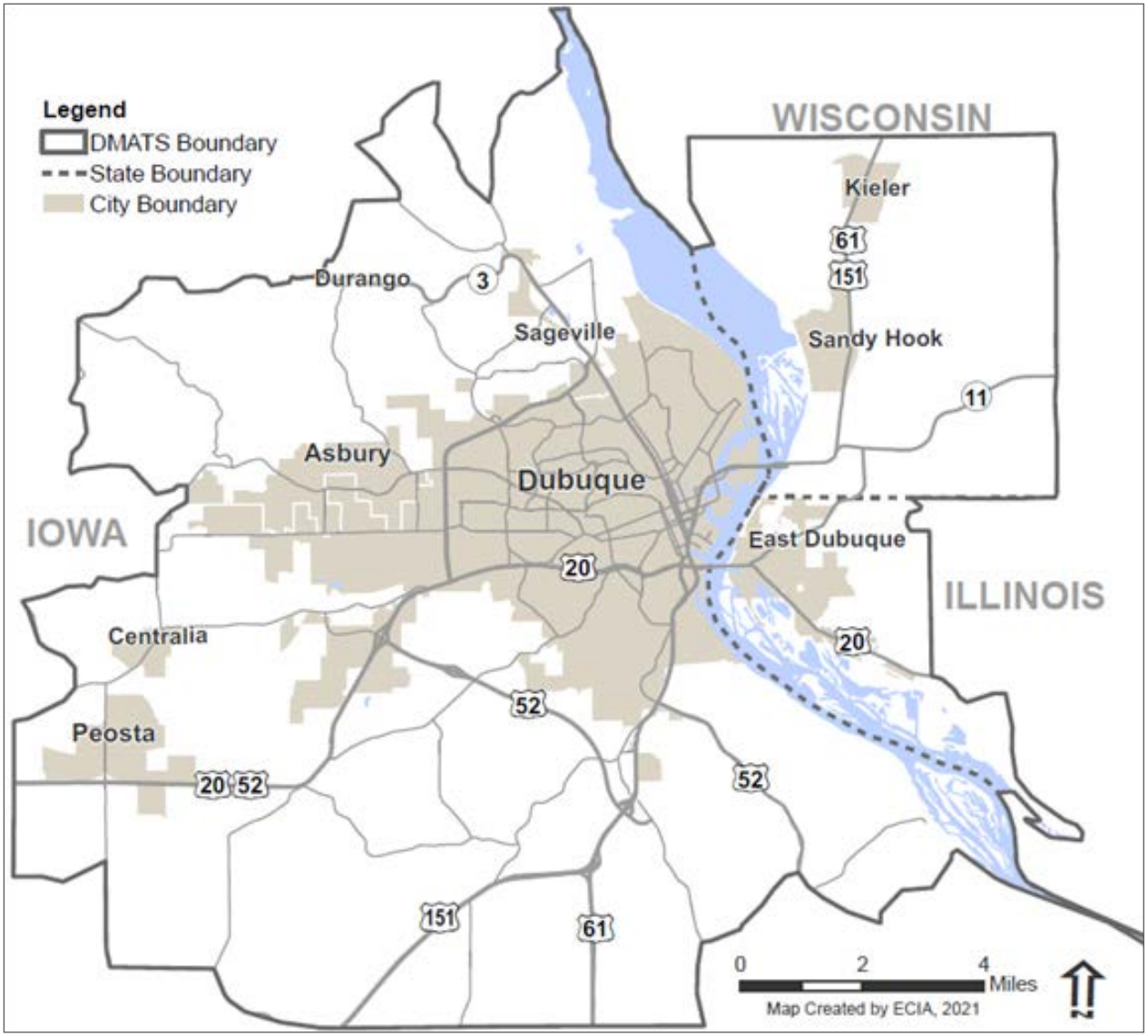
DMATS is governed by a Policy Board which is comprised of representatives from a mixture of local, regional, and state organizations.

The local governments represented on the DMATS Policy Board include: the cities of Dubuque and Asbury in Iowa; the City of East Dubuque, Illinois; Dubuque County, Iowa; Jo Daviess County, Illinois; and Grant County, Wisconsin. The board also includes one small city representative for the cities of Centralia, Durango, Peosta, and Sageville.

In addition, DMATS has representation from the Iowa, Illinois, and Wisconsin Departments of Transportation; the East Central Intergovernmental Association (ECIA); Southwest Wisconsin Regional Planning Commission (SWWRPC); Jule Transit; and Regional Transit Authority 8.

The DMATS Policy Board is advised by a Technical Advisory Committee that includes professional staff from DMATS member organizations. Figure 1.2 maps the areas included in DMATS.

Figure 1.2 DMATS Area



Long Range Planning Process

The following section describes the process used by DMATS to complete the 2050 LRTP.

FAST ACT Planning Factors

The FAST Act identifies ten planning factors to be used by metropolitan planning organizations like the DMATS to structure their policies and programs. The ten planning factors require MPOs to provide projects and strategies that will:

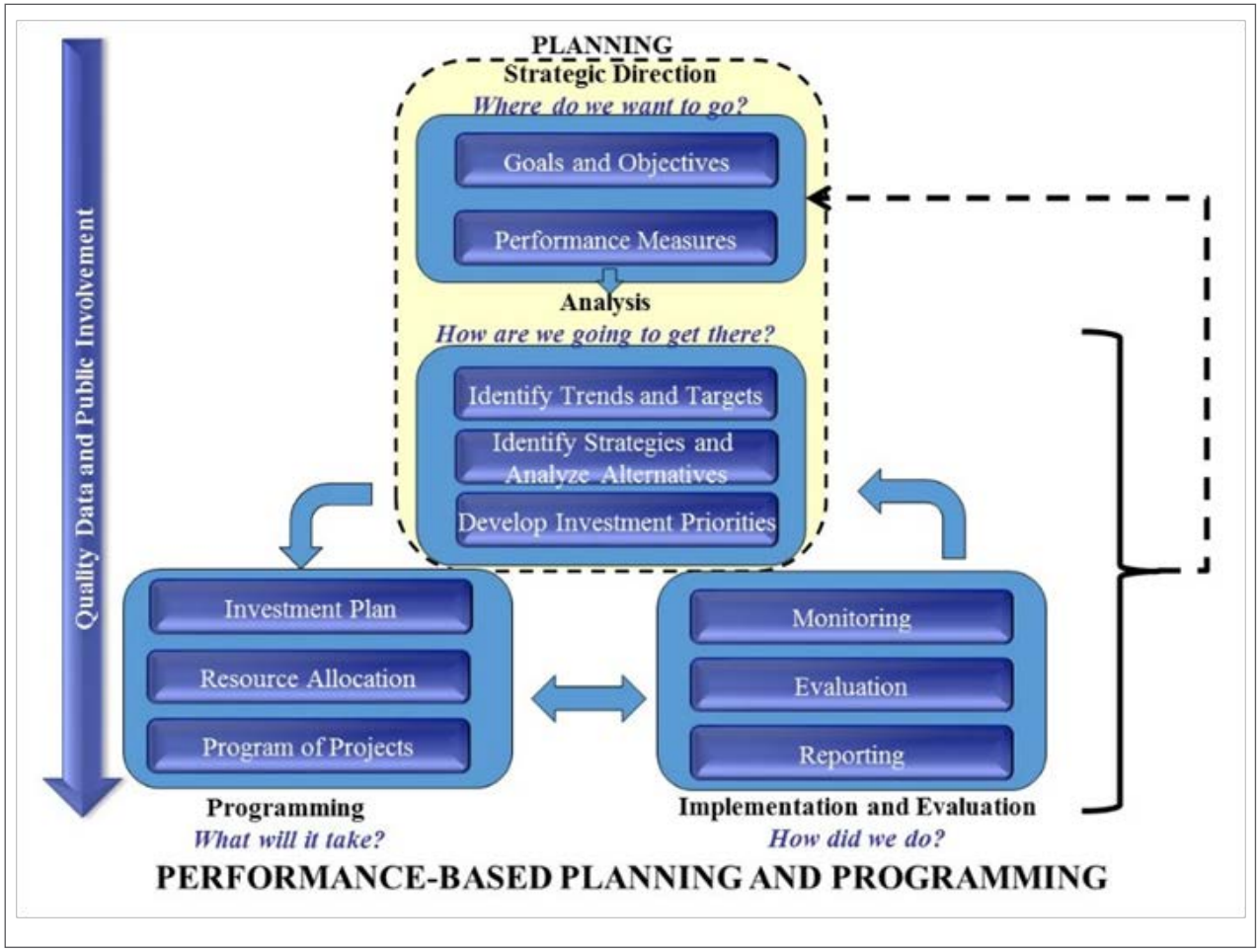
1. Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency;
2. Increase the safety of the transportation system for motorized and non-motorized users;
3. Increase the security of the transportation system for motorized and non-motorized users;
4. Increase the accessibility and mobility of people and for freight;
5. Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and state and local planned growth and economic development patterns;
6. Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight;
7. Promote efficient system management and operation; and
8. Emphasize the preservation of the existing transportation system.
9. Improve the resiliency and reliability of the transportation system and reduce or mitigate stormwater impacts of surface transportation
10. Enhance travel and tourism

Performance Based Planning and Programing

The FAST Act places emphasis on measuring and managing the surface transportation system's performance. The FAST Act describes performance management as a way to achieve "the most efficient investment of Federal transportation funds by refocusing on national transportation goals." Figure 1.3 shows how PBPP stages fit within a traditional planning and programming process.

The PBPP approach incudes four key elements: Strategic Direction, Planning Analysis, Programming, and Implementation and Evaluation. The following section details each of the elements.

Figure 1.3 Performance Based Planning and Programing Framework



Strategic Direction

Where do we want to go? – In the transportation planning process, strategic direction is based upon a vision for the future, as articulated by the public and stakeholders. PBPP includes:

• Goals and Objectives – Stemming from a state or region's vision, goals address key desired outcomes, and supporting objectives (specific, measurable statements that support achievement of goals) play a key role in shaping planning priorities.

• Performance Measures – Performance measures support objectives and serve as a basis for comparing alternative improvement strategies (investment and policy approaches) and for tracking results over time.

Planning Analysis

• Identify Trends and Targets – Preferred trends (direction of results) or targets (specific levels of performance desired to be achieved within a certain timeframe) are established for each measure to provide a basis for comparing alternative packages of strategies. This step relies upon baseline data on past trends, tools to forecast future performance, and information on possible strategies, available funding, and other constraints.

• Identify Strategies and Analyze Alternatives – Performance measures are used to assess strategies and to prioritize options. Scenario analysis may be used to compare alternative packages of strategies, to consider alternative funding levels, or to explore what level of funding would be required to achieve a certain level of performance.

• Develop Investment Priorities – Packages of strategies for the LRTP are selected that support attainment of targets, considering tradeoffs between different goal areas, as well as policy priorities.

Programming

What will it take? Programming involves selecting specific investments to include in an agency capital plan and/or in a Transportation Improvement Program (TIP) or State Transportation Improvement Program (STIP) . In a PBPP approach, programming decisions are made based on their ability to support attainment of performance targets or contribute to desired trends, and account for a range of factors.

• Investment Plan – In order to connect the LRTP, which has an outlook of at least 20 years, to selection of projects in a TIP/STIP, some areas develop a mid-range (e.g., 10 year) investment plan or investment program.

• Resource Allocation / Program of Projects – Project prioritization or selection criteria are used to identify specific investments or strategies for a capital plan or TIP/STIP. Projects included in the TIP/STIP are selected on the basis of performance, and show a clear link to meeting performance objectives.

Implementation and Evaluation

How did we do? – These activities occur throughout implementation on an on-going basis, and include:

• Monitoring – Gathering information on actual conditions.

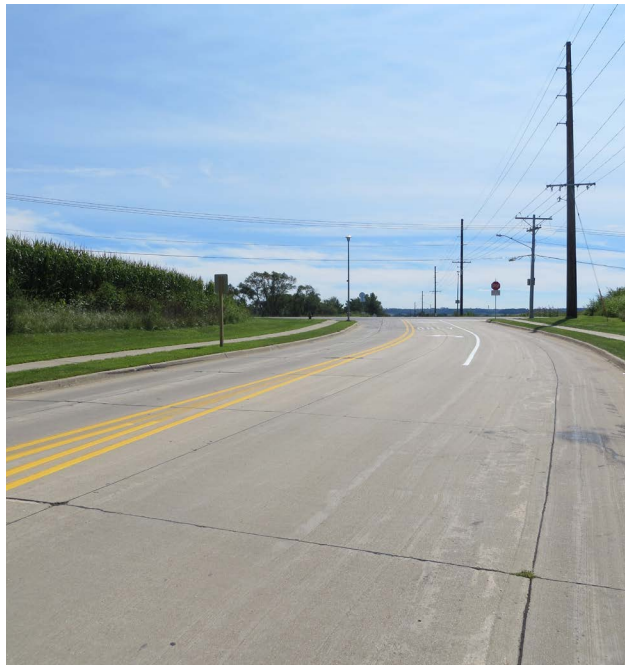
• Evaluation – Conducting analysis to understand to what extent implemented strategies have been effective.

• Reporting – Communicating information about system performance and the effectiveness of plans and programs to policymakers, stakeholders, and the public.

In a PBPP approach, each step in the process is clearly connected to the next in order to ensure that goals translate into specific measures, which then form the basis for selecting and analyzing strategies for the long range plan. Ultimately, project selection decisions are influenced by expected performance returns. Keeping the next step in the process in mind is critical to each step along the way.

Public involvement and data are critical throughout the process. The public's vision for the transportation system and their community plays a key role in determining goals, performance measures, and investment priorities.

Data on past, existing, and expected future performance, and information on the effectiveness of possible strategies, helps to inform selection of priorities. Like all planning, the process is cyclical. Over time, and as planning cycles advance, the goals and objectives may be adjusted, and performance measures and targets may be refined to ensure they focus on the most important priorities and are achievable.



GOALS AND PERFORMANCE MEASURES

The FAST ACT adopted a set of national transportation planning goals. The goals include:

1. SAFETY—To achieve a significant reduction in traffic fatalities and serious injuries on all public roads.

2. INFRASTRUCTURE CONDITION—To maintain the highway infrastructure asset system in a state of good repair.

3. CONGESTION REDUCTION—To achieve a significant reduction in congestion on the National Highway System.

4. SYSTEM RELIABILITY—To improve the efficiency of the surface transportation system.

5. FREIGHT MOVEMENT AND ECONOMIC VITALITY—To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.

6. ENVIRONMENTAL SUSTAINABILITY—To enhance the performance of the transportation system while protecting and enhancing the natural environment.

7. REDUCED PROJECT DELIVERY DELAYS—To reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practices.

The FAST Act requires that states and MPOs demonstrate that they are making progress toward achieving these goals. Progress is to be tracked by using a set of performance measures. The FAST Act defines several performance measures but it does not specify what a state or MPO's targets should be; states and MPOs are to identify their own targets. For example, pavement condition on the Interstate System is a performance measure included in the legislation, but FwAST Act does not tell states or MPOs what the condition of their pavement should be. The performance measures mandated by federal legislation are:

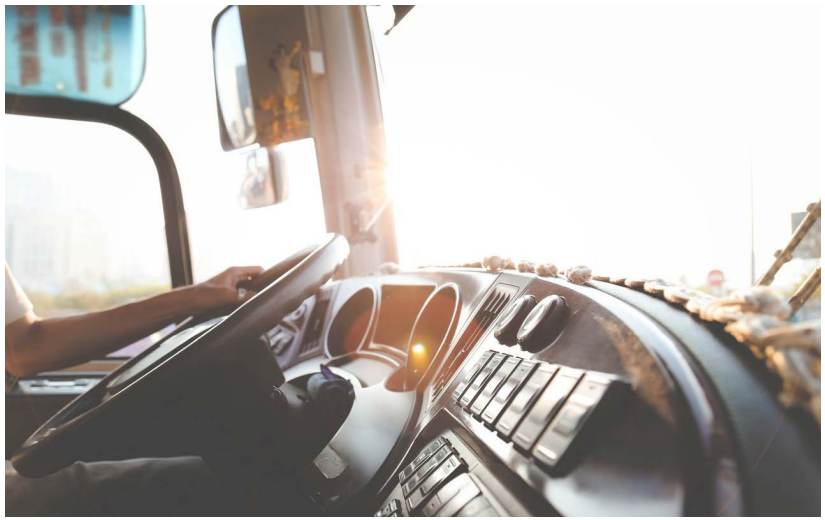
- Fatalities and serious injuries – both number and rate – on all public roads
- Pavement condition on the Interstate System and on the remainder of the National Highway System (NHS)
- Performance of the Interstate System and the remainder of the NHS
- Bridge condition on the NHS
- Traffic congestion
- On-road mobile source emissions
- Freight movement on the Interstate System

Vision

To help guide the development of the LRTP, DMATS created the following vision for the future based on the information and public input collected through the planning process. The vision represents what we hope community members will see when they look at the DMATS area in the year 2050.

In 2050 the Dubuque Metropolitan Area remains a vibrant Upper Midwest Mississippi River region, with a transportation system that provides efficient movement of people and goods. This system promotes the area's economy and environmental quality, and operates in an attractive and safe setting that serves everyone.

The system is fiscally sustainable, driven by a collaboration of involvement by citizens and key stakeholders, promotes areas of concentrated growth, manages both demand and capacity, employs the best technology, and unites air, bicycle, pedestrian, rail, roadway, public transportation, and waterway facilities into one fully interconnected network.



Guiding Principles

To bring its 2050 vision into focus, DMATS created a list of eight guiding principles that represent the broad ideas that the organization values most. DMATS will use its guiding principles to shape the LRTP's goals and objectives and as the road map for future transportation policy decisions. The guiding principles will help DMATS remain focused on its vision as we move forward to 2050.

Equity - Ensure that all members of the community have access to reliable and affordable transportation and use transportation investments to create opportunities in underserved communities.

Economic Development – Leverage transportation investments to create opportunities for economic growth and support local industries.

Public Health - Improve public health by providing more active transportation opportunities like walking and biking.

Mode Choice – Build a multi-modal system that is affordable and accessible and allows people to choose the mode that best fits their transportation needs.

System Maintenance - Maintain and improve existing transportation infrastructure to ensure system reliability for years to come.

Environment – Safeguard the natural environment and ensure that environmental costs and benefits are distributed equitably throughout the region.

Safety – Reduce the number of transportation related injuries and deaths.

Efficiency – Make strategic investments in the transportation system that reduce delay, fuel consumption, and vehicle emissions.

Technology – Closely monitor and evaluate advancements in transportation technology and deploy these innovative technologies to improve the system.

Goals, Objectives, and Performance Measures

To maintain focus on its vision for the future, DMATS has adopted a strategy called performance-based planning. Performance-based planning attempts to ensure that transportation investment decisions are made based on their ability to meet established goals for improving the overall transportation system. Performance-based planning also involves measuring progress toward meeting goals, and using information on past and anticipated future trends to inform investment decisions.

Moving Ahead for Progress in the 21st Century (MAP-21), signed into law in 2012, and the Fixing America's Surface Transportation (FAST) Act, signed into law in 2015, placed increased emphasis on performance management within the Federal-aid highway program and transit programs. The FAST Act requires use of performance-based approaches in statewide, metropolitan, and non-metropolitan transportation planning.[1]

To comply with the federal requirements, DMATS must incorporate performance-based planning principles into is Long Range Transportation Plan and other planning documents. The FAST Act states that, "MPOs in cooperation with the State and public transportation operators, shall develop long-range transportation plans and transportation improvement programs through a performance-driven, outcome-based approach to planning."

Following the adoption of MAP-21 and the FAST Act the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) began the process of establishing performance measures for state DOTs and MPOs. Both agencies issued final performance measure rules in 2018 and 2019. Any MPO LRTP adopted after the effective date of the final rule must include the associated performance measures and targets. To comply with the federal performance-based planning requirements, the 2050 DMATS LRTP must include the 18 FTA and FHWA required performance measures.

Table 1.1 FTA and FHWA Required Performance Measures

Safety
Number of fatalities
Rate of fatalities
Number of serious injuries
Rate of serious injuries
Number of non-motorized fatalities and non-motorized serious injuries
Transit Asset Management
Percentage of non-revenue vehicles met or exceeded Useful Life
Percentage of revenue vehicles met or exceeded Useful Life
Percentage of track segments with performance restrictions
Percentage of assets with condition rating below 3.0 on FTA TERM Scale

Pavement
Percentage of pavements of the Interstate System in Good condition
Percentage of pavements of the Interstate System in in Poor condition
Percentage of pavements of the non-Interstate NHS in Good condition
Percentage of pavements of the non-Interstate NHS in Poor condition
Bridge
Percentage of NHS bridges classified as in Good condition
Percentage of NHS bridges classified as in Poor condition
System Performance
Percent of person-miles traveled on the Interstate that are reliable
Percent of person-miles traveled on the non-Interstate NHS that are reliable
Freight
Truck Travel Time Reliability Index

[1] *23 USC Section 134(h)(2); 49 USC Section 5303(h)(2).*

DMATS Goals and Objectives and Performance Measures

To satisfy the required FTA and FHWA performance measures, MPOs can choose to support state DOT performance targets, or they can set their own unique targets. DMATS has elected to support measures established by Iowa DOT, Illinois DOT, and Wisconsin DOT. The state DOTs provide DMATS with updated performance targets annually and DMATS adopts the targets through the Transportation Improvement Program (TIP) process.

For DMATS the required federal performance measures represent a starting point for the LRTP. The DMATS LRTP expands on the idea of performance-based planning by creating additional goals and objectives that support its 2050 vision and guiding principles. DMATS has also established performance measures and targets that will allow it to track its progress toward achieving its vision. For each measure, the table includes a baseline measurement and a future target or desired direction that the that DMATS hopes to achieve.

DMATS Goals, Objectives, and Performance Measures				
Equity				
Goal	Objective	Performance Measures	Baseline	Target or Desired Direction
Ensure that all have access to reliable and affordable transportation	Improve transportation affordability	Reduce the transportation and housing cost burden on area low and moderate income households as measured by H+T Affordability Index	56% (2015)	≤ 45%
Economic Development				
Goal	Objective	Performance Measures	Baseline	Target or Desired Direction
Encourage regional economic development	Improve Freight Reliability	Truck Travel Time Reliability Index [1]	1.12 (2017)	1.21
	Connect people to jobs with transit	Percentage of area jobs within ¼ mile of a transit stop	58.1% (2018)	Increase
Public Health				
Goal	Objective	Performance Measures	Baseline	Target or Desired Direction
Improve public health	Increase trail accessibility	Percentage of area population that lives within ¼ mile of a trail	18.12% (2019)	Increase
	Provide more on-road bicycle facilities	Centerline miles of roads with on-road bicycle facilities in the area	51.94 mi (2019)	Increase
	Provide more multi-use trails in the area.	Miles of multi-use trails in the area	35.22 mi (2020)	Increase

[1]Federal Performance Measure

DMATS Goals, Objectives, and Performance Measures				
Mode Choice				
Goal	Objective	Performance Measures	Baseline	Target or Desired Direction
Build a multi-modal transportation system	Reduce the share of commute trips made by personal vehicle	Percentage of workers commuting via transit	1.40% (2019)	Increase
		Percentage of workers commuting via walking and biking	4.32% (2019)	Increase
		Percentage of workers commuting via carpool	8.91% (2019)	Increase
System Maintenance				
Goal	Objective	Performance Measures	Baseline	Target or Desired Direction
Maintain transportation infrastructure	Maintain interstate pavement	Percentage of pavements of the Interstate System in Good condition[1]	NA	NA
		Percentage of pavements of the Interstate System in in Poor condition[1]	NA	NA
	Maintain non-interstate pavement	Percentage of pavements of the non-Interstate NHS in Good condition[1]	49.06% (2017)	46.9% (2022)
		Percentage of pavements of the non-Interstate NHS in Poor condition[1]	14.22% (2017)	14.5% (2022)
	Maintain bridges	Percentage of NHS bridges classified as in Good condition[1]	46.8% (2017)	44.6% (2022)
		Percentage of NHS bridges classified as in Poor condition[1]	2.6% (2017)	3.2 % (2022)
	Transit asset management	Percentage of non-revenue vehicles met or exceeded Useful Life[1]	0%	35%
		Percentage of revenue vehicles met or exceeded Useful Life[1]	88.24% (2018)	35%
		Percentage of track segments with performance restrictions[1]	NA	NA
		Percentage of assets with condition rating below 3.0 on FTA TERM Scale[1]	0% (2018)	-

[1] Federal Performance Measure

DMATS Goals, Objectives, and Performance Measures				
Environment				
Goal	Objective	Performance Measures	Baseline	Target or Desired Direction
Protect and Enhance the natural environment	Reduce vehicle emissions	Tons of vechicle emissions	(Will Add)	Decrease
	Increase usage of alternative fuels	Number of alternative fuel and electric charging stations in the area.	Stations: CNG - 1 EV Charging - 6 E85 - 4 (2020)	Increase
Safety				
Goal	Objective	Performance Measures	Baseline	Target or Desired Direction
Improve Transportation Safety	Reduce transportation related injuries and deaths	Number of fatalities[1]	342.0	336.8
		Rate of fatalities	1.019	0.983
		Number of serious injuries[1]	1,420.0	1,370.8
		Rate of serious injuries[1]	4.230	4.002
		Number of non-motorized fatalities and non-motorized serious injuries[1]	132.6	131.0
Efficiency				
Goal	Objective	Performance Measures	Baseline	Target or Desired Direction
Improve System Efficiency	Improve system realiability	Percent of person-miles traveled on the Interstate that are reliable[1]	NA	NA
		Percent of person-miles traveled on the non-Interstate NHS that are reliable[1]	95.6% (2017)	95.0% (2022)
Technology				
Goal	Objective	Performance Measures	Baseline	Target or Desired Direction
Deploy technology to improve the system	Intelligent transportation Systems (ITS) to maximize efficiency.	Percent of signalized intersections connected to adaptive control systems	0%	Increase

[1] *Federal Performance Measure*

Plan Content

The 2050 DMATS Long Range Transportation Plan provides data analysis and recommendations that will guide the future transportation decisions made by the DMATS Policy Board. The following is a brief overview of the contents of the 2050 LRTP.

Chapter 2 – Community Profile

Chapter 2 provides a broad overview of the people and communities in the DMATS area. The chapter will present current demographic and socioeconomic data including total population, age, race, and income. The chapter will also present forecasts of future population and employment for the next 30 years.

Chapter 3 - Transportation Network Overview

Chapter 3 describes the existing transportation system in the DMATS area. Current travel demand, safety, and security data will be examined in this section. The chapter will explore all modes including: road and bridges, transit, bike and pedestrian, freight, and air transportation. The final section of the chapter will highlight several initiatives currently being undertaken within the area.

Chapter 4 - Transportation Network Forecast

Chapter 4 provides a forecast of the transportation network to help evaluate future infrastructure investments. The chapter includes an overview of the data and methods used to develop the DMATS Travel Demand Forecast Model, and summary of the data and analysis uses for transit, bike and pedestrian, freight, and air transportation.

Chapter 5 – Public Input

Chapter 5 outlines the methods used to engage the public in the transportation planning process. Collecting input from the public is a crucial step in the long-range planning process, as well as all other planning activities conducted by DMATS.

Chapter 6 - Safety

Chapter 6 assess safety at a regional level. The chapter conducts a region-wide analysis of crashes that compares the DMATS area to state and national averages and studies the underlying causes of crashes. The chapter concludes with a collection of regional strategies that can be implemented to address the safety issues identified by the analysis.

Chapter 7 - Freight

The efficient movement of goods is one of the keys to effective competition in the global economy. Chapter 7 describes the DMATS region's freight systems and summarizes the regional fright goals and objectives that the region has developed through freight plans and studies

Chapter 8 - Finance

Federal law requires that all plans prepared by metropolitan areas be fiscally constrained. The Finance chapter contains a 30-year budget for the projects presented in the 2050 LRTP. The budget includes two parts. The first section is a forecast of the federal and local funds that will be available to DMATS and its members over the next 30 years. The second section includes the priorities for expenditure of federal funds as determined by the DMATS policy board.

Chapter 9 - Projects and Project Prioritization

Through the LRTP planning process, DMATS and its members have developed a list of projects designed to help the region achieve its vision for the future and address the 2050 LRTP goals and objectives. Chapter 9 first presents the full list of 2050 LRTP projects. Second, it describes the process used to prioritize the projects and allocate limited funding to the highest priority projects. Finally, the chapter concludes with the final LRTP project funding schedule that will guide the MPO's transportation investments over the next thirty years.

Chapter 10 - Environmental

Chapter 10 includes a preliminary environmental screening of all projects listed in the 2050 LRTP. A preliminary environmental impact screening can identify potentially serious impacts that could delay or completely shut down a project. Identifying such issues in the early planning stages provides local governments with the opportunity to avoid or mitigate undesirable environmental impacts

Chapter 2
Community Profile

Introduction

Understanding the transportation needs of a region requires an understanding of how community residents make travel decisions. Travel behavior is made up of thousands of decisions made by individuals on how, when, and where to travel. Individuals make these decisions based on many factors such as family size, work location, travel time, and available modes.

Chapter 2 of the DMATS LRTP will focus on building a community profile based on demographic and socioeconomic data. The community profile will provide a general understanding of travel behavior in the DMATS area, and will provide input data for the DMATS travel demand model, a mathematical representation of travel behavior within the Dubuque metropolitan area. The model uses these representations to estimate collective travel behavior and to forecast future travel demand within the region.

Population

As the Dubuque metropolitan area has grown and changed over the years, DMATS has needed to adjust its planning area boundary from time to time. These boundary adjustments make historical analysis of population and demographic data of the DMATS area difficult. Therefore, DMATS uses Dubuque County, a more consistent geographic area, when studying historical population data trends. Figure 2.1 shows historical population for Dubuque County from 1970 to 2018. For most of its history, the population of Dubuque County grew steadily, but beginning in the mid 1970s, economic challenges caused Dubuque, and many other counties in Iowa, to lose population. The County's population decreased throughout the 1980s reaching a low point of around 86,000 in 1990. Since its low point, the County's population has rebounded and experienced sustained growth. In 2013, Dubuque County reached an estimated population 95,697, nearly matching its previous historical peak from of 95,700 1977. The county's estimated population has since grown further peaking at 97,125 in 2017.

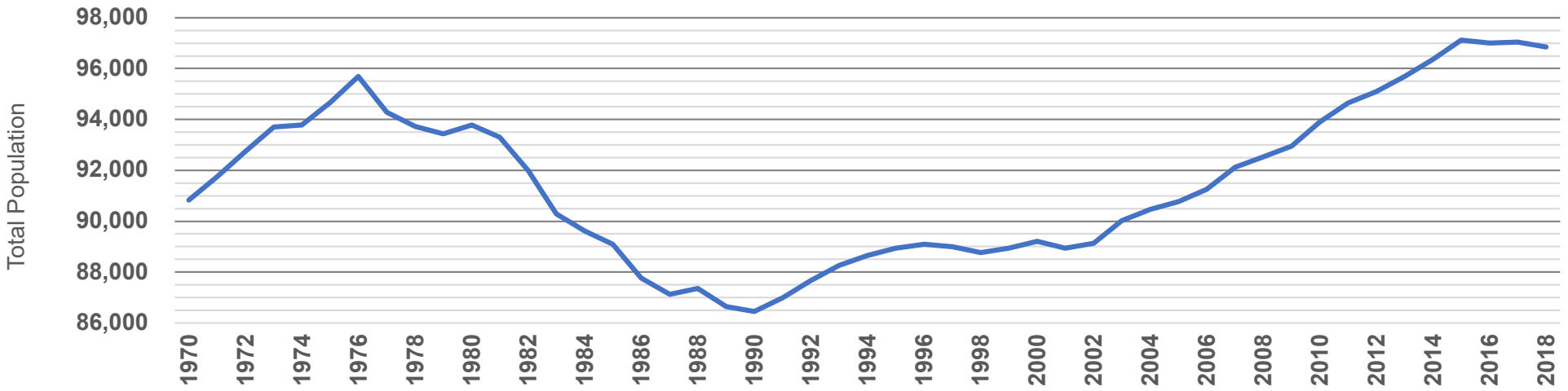


Figure 2.1 Dubuque County Historical Population
Source: Woods and Poole Economics, Inc; US Census Bureau, American Community Survey (ACS); State Data Center of Iowa

DMATS Population Projection

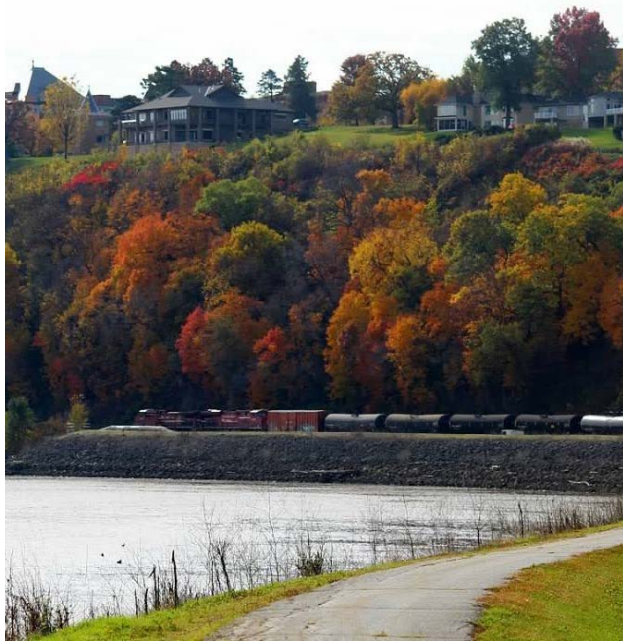
Accurate forecasts of future demographic conditions are necessary for efficient distribution of transportation resources. DMATS relies on population forecast models to provide a picture of what future transportation demand might look like within the region.

DMATS staff produced a population forecast for the DMATS planning area for the year 2050 using the Age Cohorts Method. The Cohorts Method was chosen because, in addition to total population, the model produces forecasts for five-year age groups. Age group, also known as cohort, forecasts are useful for the planning process because as people age, their transportation needs change.

The most recent decennial census, 2010, serves as the base year for the projection. The model then estimates future population using three primary components of population change: births, deaths, and migration. First, the model applies current birth and death rates to the base year population data in five-year increments.

Second, the model estimates migration by forecasting population change from births and deaths for an already measured year, and comparing observed and projected values. Staff created a projection for 2010 based on the 2000 census and compared the 2010 forecast to observed 2010 Census data. The difference between the model forecast and the Census data is assumed to be the result of migration. Staff used the difference to create age-specific migration factors that were applied to all projected years.

Figure 2.2 contains the results of the DMATS area population forecast.



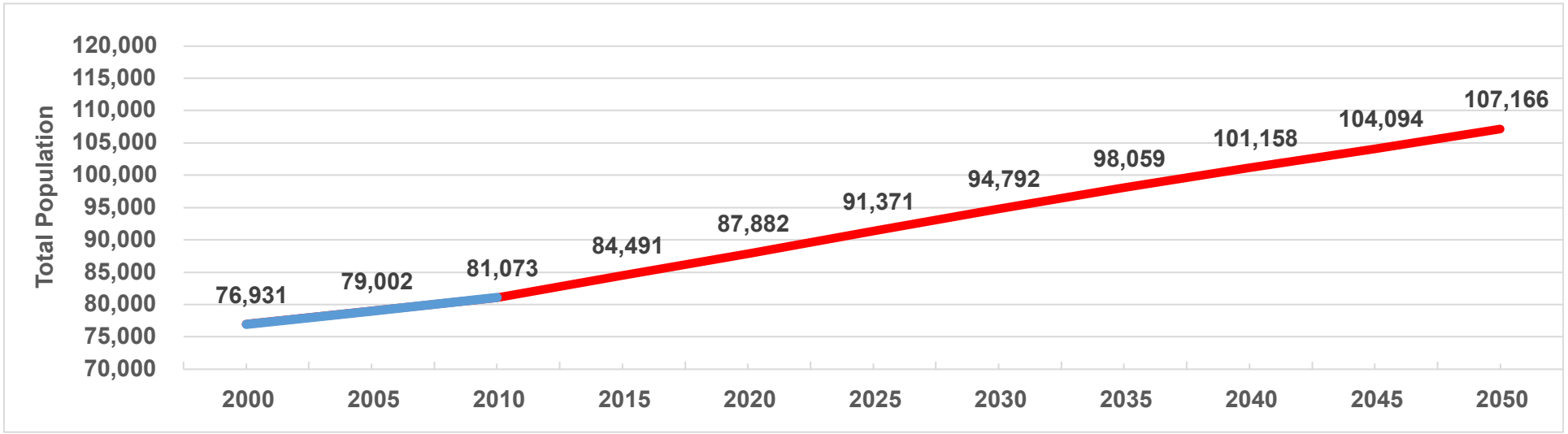


Figure 2.2 Age Cohorts Population Projection Results

Age Cohort Projection by Age

The Age Cohorts model forecasts that population of the DMATS planning will grow to 107,166 by 2050. The projected population growth of 26,093 between 2010 and 2050 equals a 32 percent increase in population or a 0.8 percent average annual increase over 40 years. Growth is expected to occur in all age cohorts, but ages 65 and older, 25-45, and 0-14 are expected to have the most growth.

Age cohorts 65 years and older are expected to grow as a result of the aging baby boomers cohort. Baby boomers aging and retiring from the workforce is also expected to result in increased growth in in the 25 to 45 age group as more workers are attracted to the area to fill jobs vacated by retiring employees. Growth in the 25 to 45 group is likely to result in more children in the region as this age group is most likely to have children. Figure 2.3 shows the projected growth in five-year age cohorts.

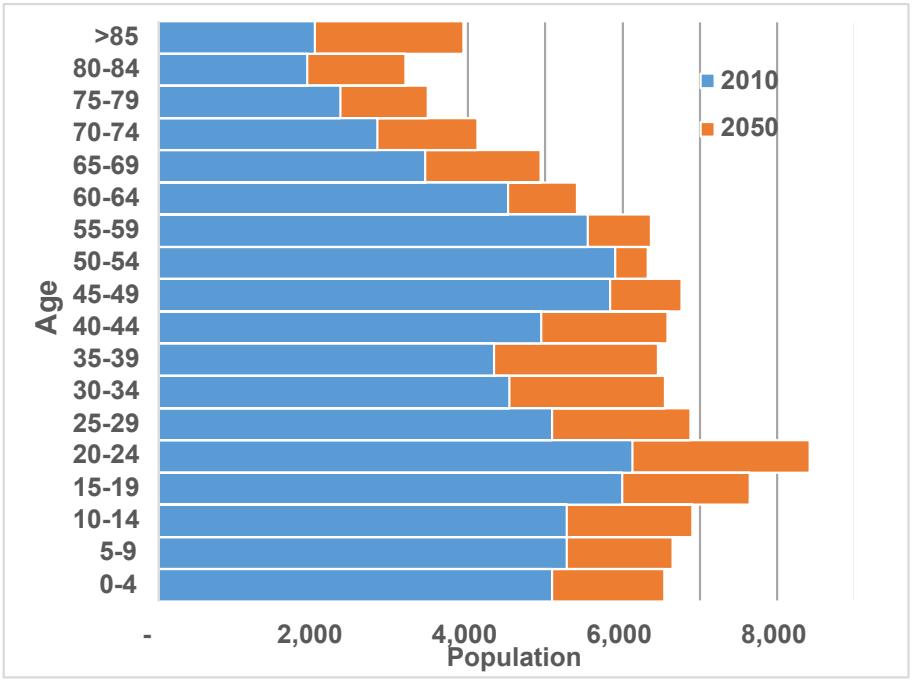


Figure 2.3 Projected Population Change by Age

Population Projection Reasonableness Check

DMATS staff created additional population scenarios to check the reasonableness of the age cohorts population projection. Scenarios were based on historical population data from 1970 to 2014, and are intended to represent plausible future population growth outcomes for the DMATS area. The four growth scenarios are listed below.

- 2011-2014 Average Growth - 0.65% Annual Growth
- 2000-2010 Average Growth – 0.51% Annual Growth
- 1970 – 2010 Average Growth – 0.01% Annual Growth
- Best Year– 1% Annual Growth[1]

[1] From 1970 to 2014, Dubuque County had several years of 1% annual population growth. The County sustained a 1% annual growth rate in the early 1970s and had several years of 1% annual growth in the mid to late 2000s. The "Best Year" growth scenario represents a best-case scenario where Dubuque County sustains a 1% annual growth rate over the entire forecast period.

DMATS staff plotted the four growth scenarios and the age cohorts projections on a graph and compared the results. The age cohorts projection fell within the four growth scenarios. This result indicates that the age cohorts projection is reasonable. See Figure 2.4 for a comparison of the population scenarios.

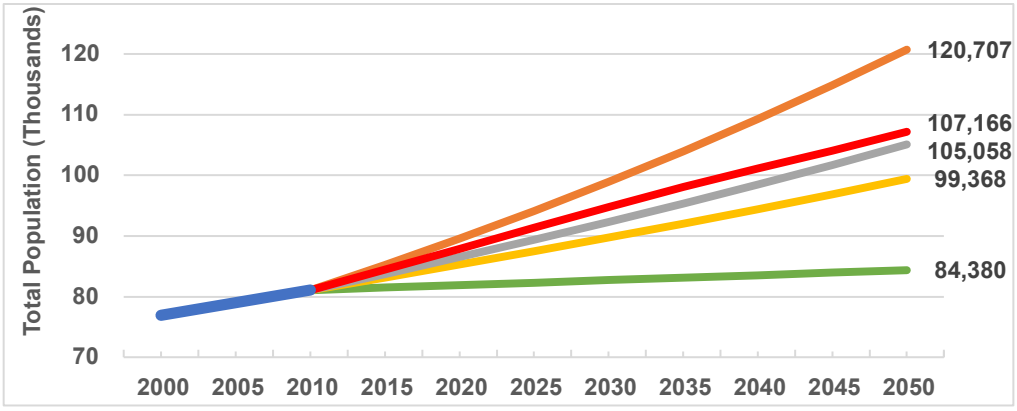


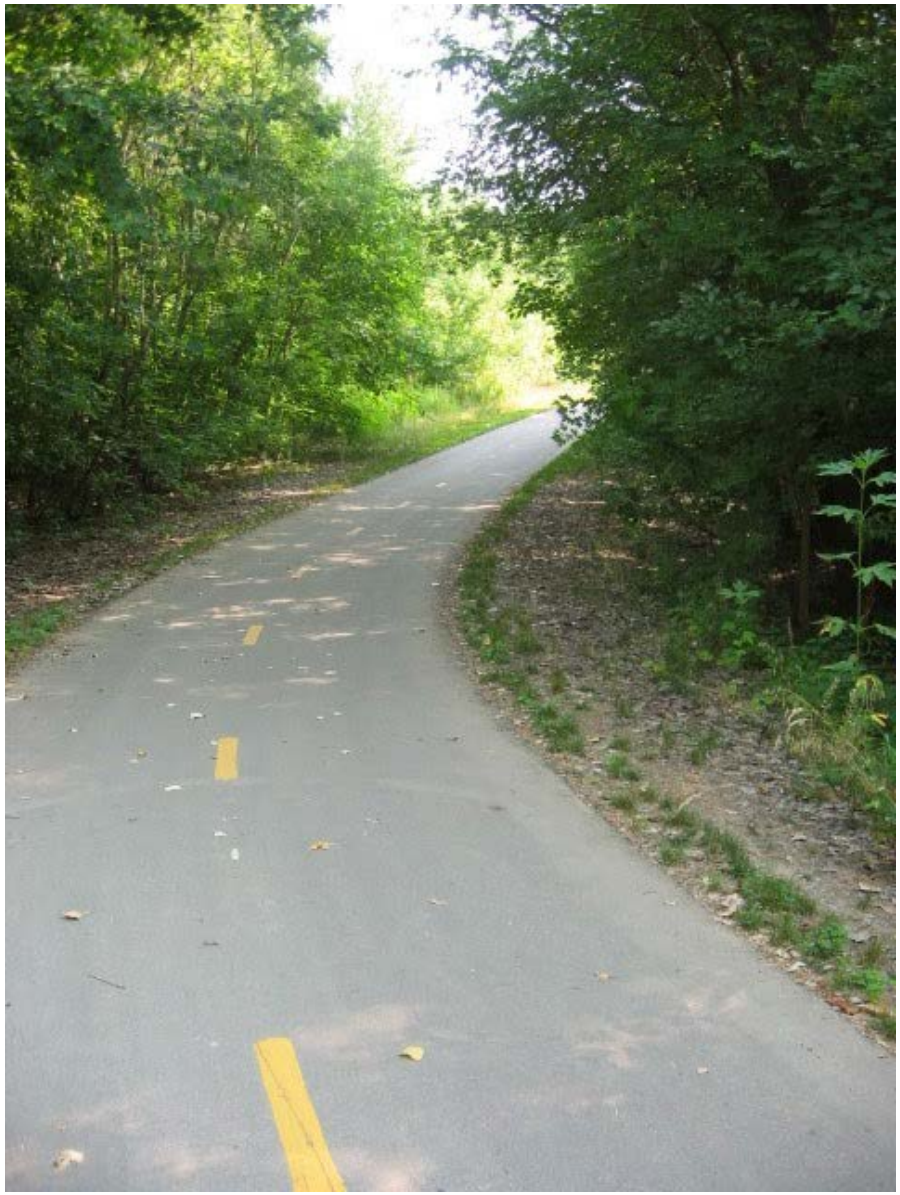
Figure 2.4 Population Projection Reasonableness Check

Approved Population Projection

The DMATS Policy Board reviewed the population projection and the historical growth scenarios. The Policy Board determined that the age cohorts method provided a reasonable population forecast for the planning area and approved it as the official population projection to be used in the DMATS LRTP. Table 2.1 summarizes the population projection approved by the DMATS Policy Board.

Table 2.1 DMATS Approved Population Projection Summary

2010 Base Year Population	81,073
2050 Population Projection	107,166
Total Percent Increase	32%
Annual Average Percent Increase	0.8%



Employment

Monitoring the number and location of jobs in the DMATS area is critical to the long range planning process. Jobs attract people from all over the region, so knowing where jobs are located can help DMATS model travel patterns in the area. As with population, changes to the DMATS boundary make historical analysis of employment difficult, so DMATS will use Dubuque County as a proxy when reviewing past employment data. Figure 2.5 tracks Dubuque County historical employment from 1970 to 2020. Employment in Dubuque County declined sharply during the late 1970's and early 1980s, but has grown steadily ever since, peaking at 60,900 in September 2019.

The COVID-19 pandemic had a severe impact on Dubuque County employment in 2020. Total employment fell to 50,700 in April 2020. Overall, the county was able to regain most of its lost jobs, reaching a total employment of 58,000 by December. Total employment grew steadily between May and September before leveling off in the last quarter of the year. Figure 2.6 charts monthly Dubuque County employment in 2020. Figure 2.5 tracks Dubuque County historical employment from 1970 to 2020. Employment in Dubuque County declined sharply during the late 1970's and early 1980s, but has grown steadily ever since, peaking at 60,900 in September 2019.

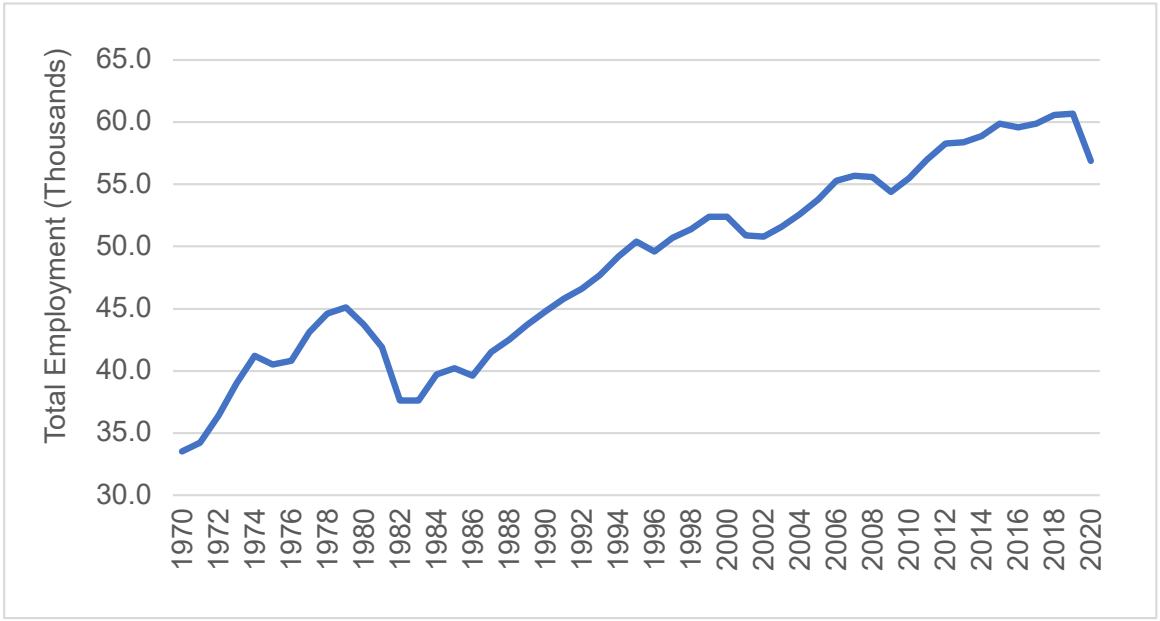


Figure 2.5 Dubuque County Annual Average Employment 1970-2020
Total Nonfarm Employment
Source: US Bureau of Labor Statistics, February 2021.

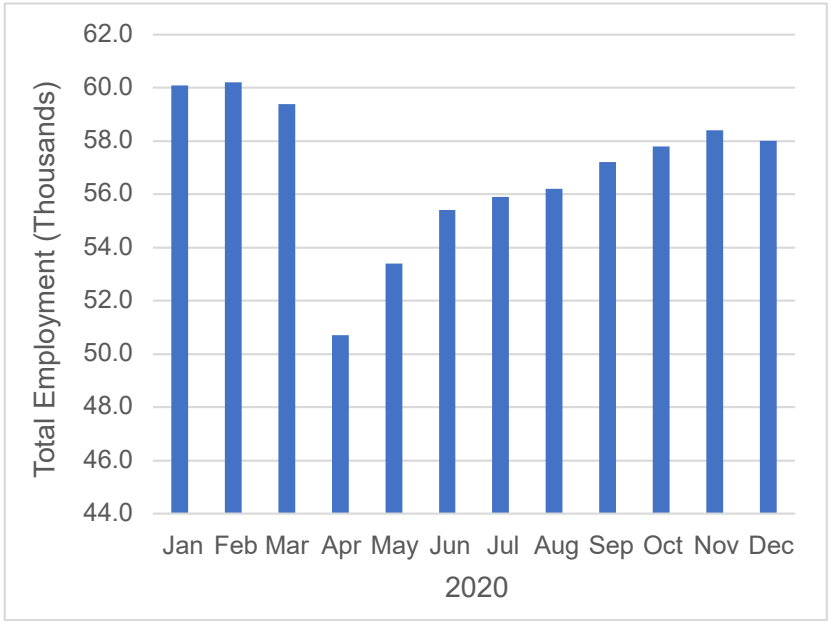


Figure 2.6 Dubuque County Total Employment
Total Nonfarm employment. Not Seasonally Adjusted. December number is preliminary.
Source: US Bureau of Labor Statistics, February 2021.

Employment Distribution

Understanding the distribution of jobs across the region is key for understanding the transportation dynamics of the region. Locations with more jobs are likely to attract more trips. Figure 2.7 maps the distribution of employment across the DMATS planning area. Points in the map represent the center of a census block. The size of the point represents the estimated number of jobs within the block. Locations with the most employment in the area include: Downtown Dubuque John Deere north of Dubuque, commercial areas along John F. Kennedy Road and NW Arterial, and industrial parks in Peosta and Dubuque

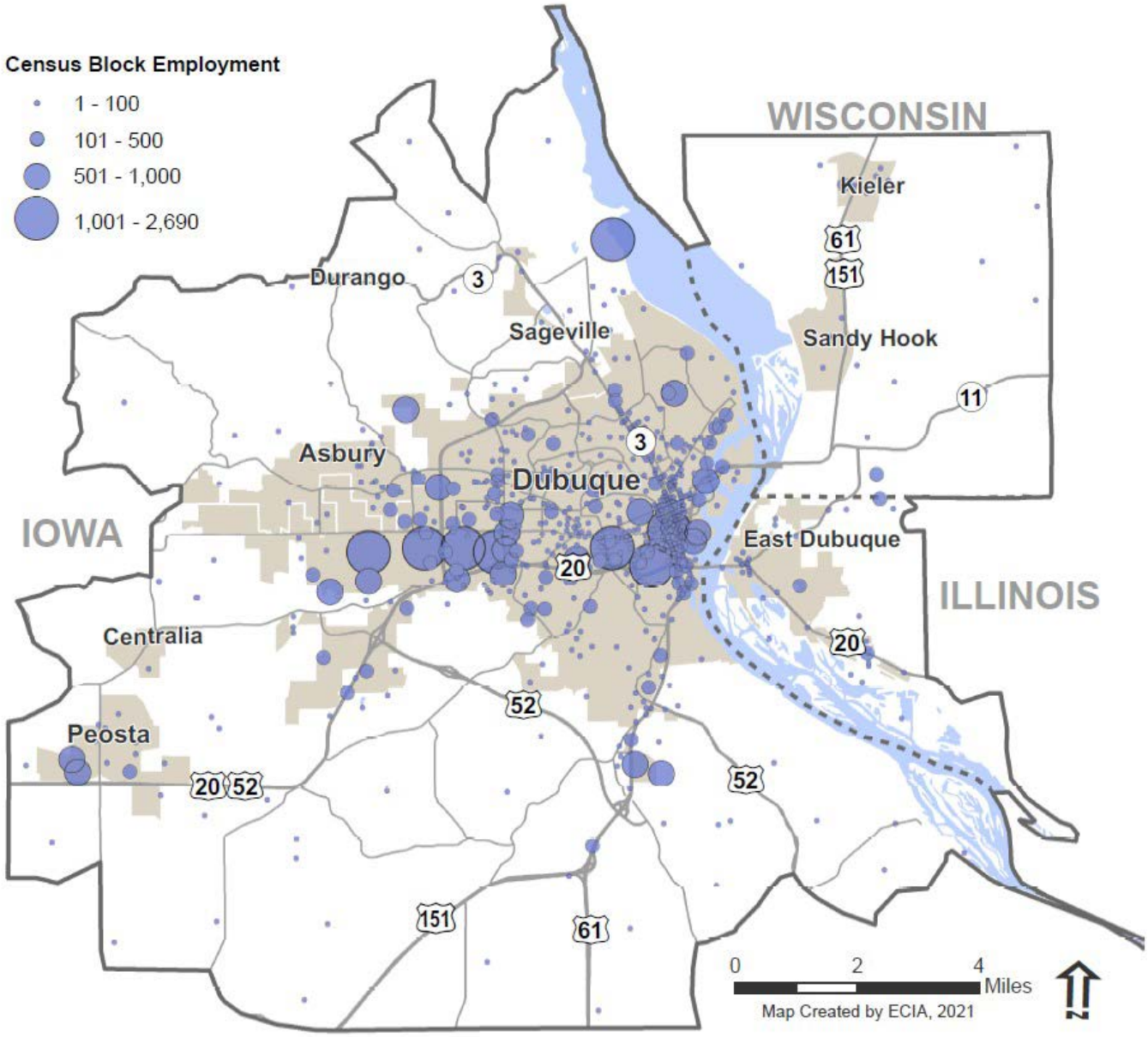


Figure 2.7 Employment Distribution -2018

Source: U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics. Accessed Feb 2021.

DMATS Employment Projection

In addition to population projections, good long range transpiration planning also requires reliable forecasts of future employment. To develop its employment forecast, DMATS started with data from the Census Bureau's Longitudinal-Employer Household Dynamics (LEHD) program to estimate the base year employment for the DMATS area. Based on this data, DMATS estimated total employment within the planning area at 49,192 for the base year of 2015.

From the base year, staff created employment forecast scenarios based on historical employment data for Dubuque County. Six scenarios were created based on the annual average employment growth rate observed during six different periods in Dubuque County's history. The scenario growth rates are listed in Table 2.2. Figure 2.8 charts the results of each forecast scenario.

Table 2.2 Employment Forecast Growth Rates

Period	Annual Average Employment Growth
2014-2019	0.61%
2010-2019	1.04%
2000-2019	0.83%
1990-2019	1.22%
1980-2019	0.998%
1970-2019	1.67%

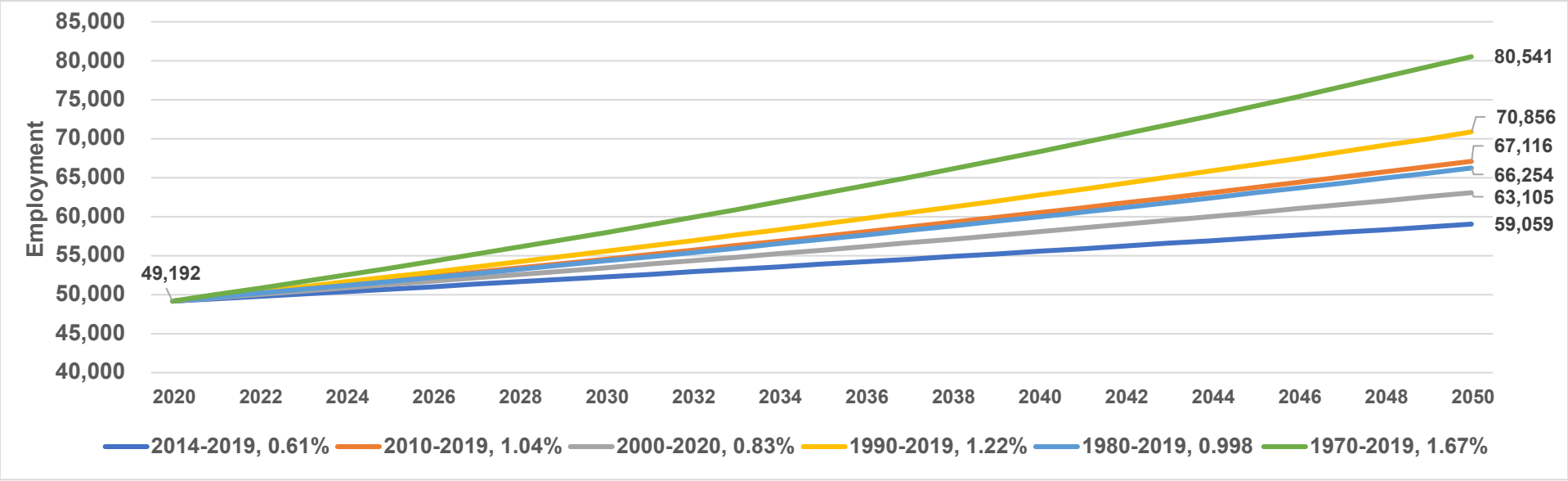


Figure 2.8 Employment Projection Scenarios

Approved Employment Projection

The DMATS Policy Board reviewed the employment projection scenarios. Taking the historical scenario forecasts into account, DMATS selected the 2010-2019 scenario with its 1.04% employment growth rate for its employment projection. Using this rate, total employment is projected to increase from 49,192 in 2015 to 67,116 in 2050, a total increase of 17,924.

The Policy Board determined that the 2010-2019 scenario provided a reasonable employment forecast for the planning area and approved it as the official employment projection to be used in the DMATS LRTP. Table 2.3 summarizes the population projection approved by the DMATS Policy Board.

Table 2.3 DMATS Approved Employment Projection Summary

DMATS 2015 Base Year Employment	49,192
Forecast Average Annual Growth Rate	1.04%
DMATS 2050 Forecast Employment	67,116
Forecast Employment Growth 2015-2050	17,924

Employment Projection Reasonableness Check

DMATS used its population projection to help judge the reasonableness of its employment projection. Staff calculated the ratio of population to employment for Dubuque County for the years 1990 to 2014. In 1990 there were 0.5 jobs per person living in Dubuque County. Over time the ratio steadily increased and by 2014 there were approximately 0.59 jobs per person in the County.

Figure 2.9 charts the ratio of jobs to population from 1990 to 2014. The increase is likely due to increased concentration of jobs in Iowa's urban areas. Urban counties like Dubuque are now drawing in more workers from outside counties than in previous years. DMATS expects that this trend will continue into the future, which means that the ratio of jobs to people will likely climb to over 0.60 : 1 by 2050.

Dividing the DMATS 2050 employment projection by the 2050 population project yields a ratio of 0.63 : 1. This ratio seems to be a reasonable continuation of recent trends, and indicates that that DMATS employment forecast is also reasonable.

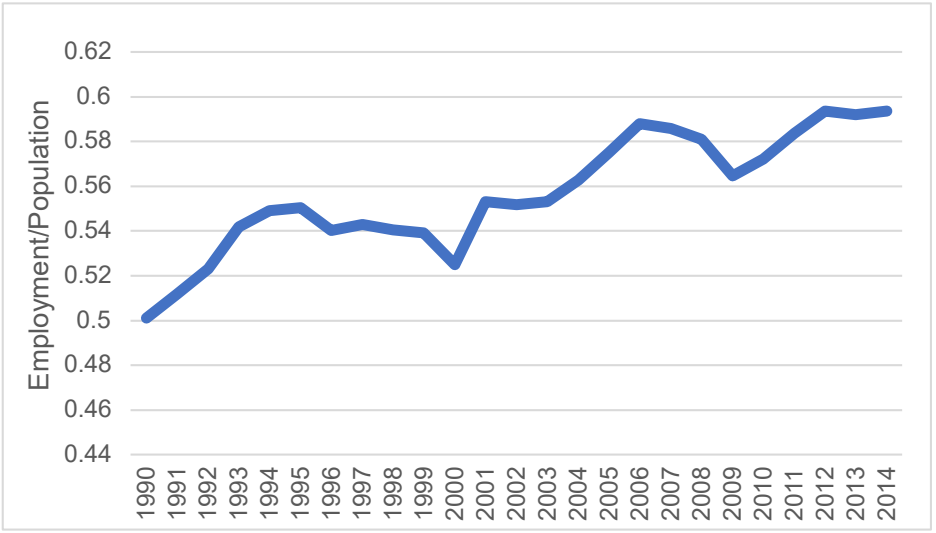


Figure 2.9 Jobs Per Person in Dubuque County

Income

Income is one of the most important components to individual mobility. The automobile is the most popular mode of transportation in the DMATS area, but for some, owning and operating a vehicle is too expensive. Low-income families are often dependent on public transportation, walking, and bicycling, so knowledge of size and location of the low-income population is vital to the long range planning process. Table 2.4 lists median household income for Dubuque County and the State of Iowa in 2018 inflation-adjusted dollars for 1989, 1999, 2010, and 2018. The data shows a small increase in median household income at the county level and little change statewide in median household income since 1989.

*Table 2.4 Median Household Income 2018 Dollars**

Year	Dubuque County	State of Iowa
2018	$60,225	$59,955
2010	$55,935	$56,280
1999	$59,660	$59,489
1989	$57,260	$59,190

**Values adjusted for inflation using the Consumer Price Index*
Source: US Census Bureau, American Community Survey (ACS) & Decennial Census

Figure 2.10 shows the percentage of all households in each income range for Dubuque County and the State of Iowa. The data shows a similar income distribution for both Dubuque County and the state of Iowa.

Income can greatly affect a household's ability to move around their community. Lower income households may not be able to afford a car and be more dependent on public transit to get to work or school. Figure 2.11 maps the distribution of household income across the DMATS area. Lower household incomes are more concentrated in the city of Dubuque area while higher income areas are located outside the City of Dubuque in the western part of the region.

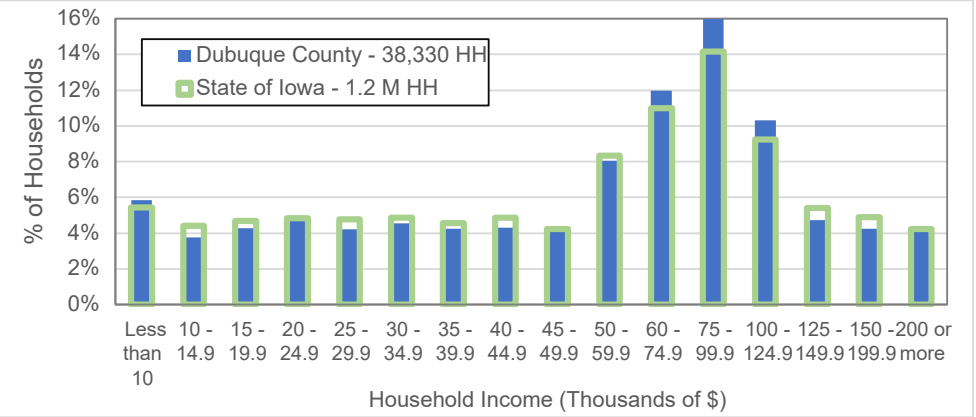


Figure 2.10 Household Income in the Past 12 Months – 2018 Inflation Adjusted Dollars
Source: 2014-2018 American Community Survey 5-Year Estimates

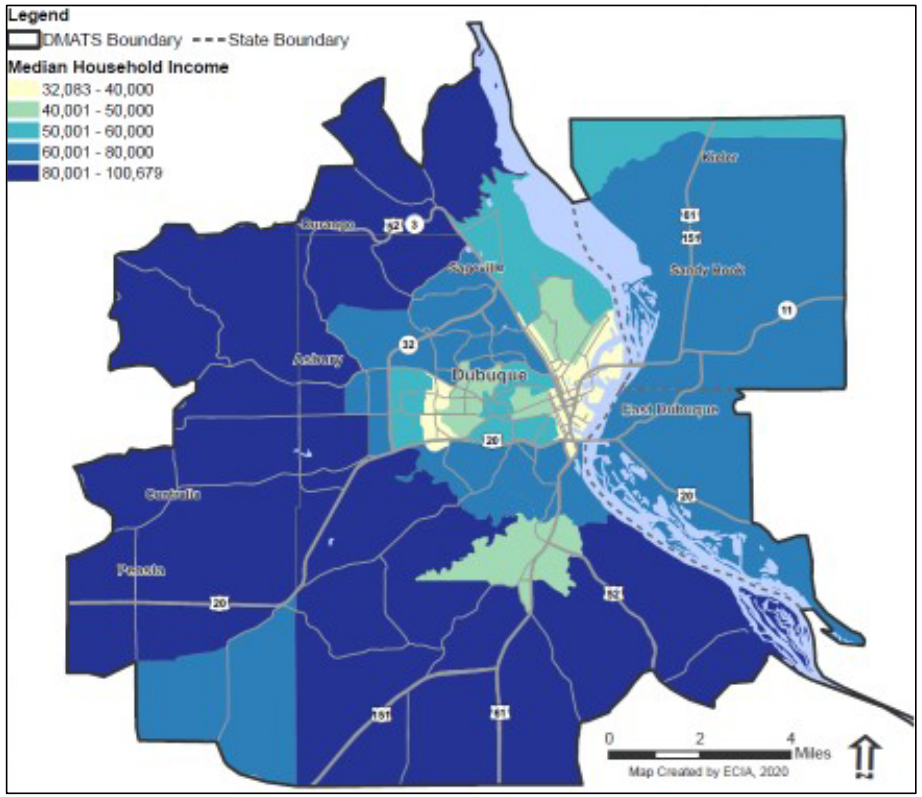


Figure 2.11 Median Household Income Map - 2018
Source: 2014-2018 American Community Survey 5-Year Estimates

Race and Ethnicity

Including minority populations in the long-range planning process is important because minority populations often have disproportionately lower household incomes and limited mobility. Historically, minority populations have made up a very small segment of Dubuque County population, but recent census data shows an increasingly diverse population. In 1990, minority racial groups made up 1.2% of the county population; by the 2000 census, the proportion had grown to 2.9%, and in 2018 all minority groups combined to make up 7.1% of the population. Dubuque County also has a growing Hispanic and Latino population. In 1990, less than 1% of the County's population identified as Hispanic or Latino; in 2018 the percentage had increased to just over 2%. Figure 2.12 shows the population of Dubuque County by race.

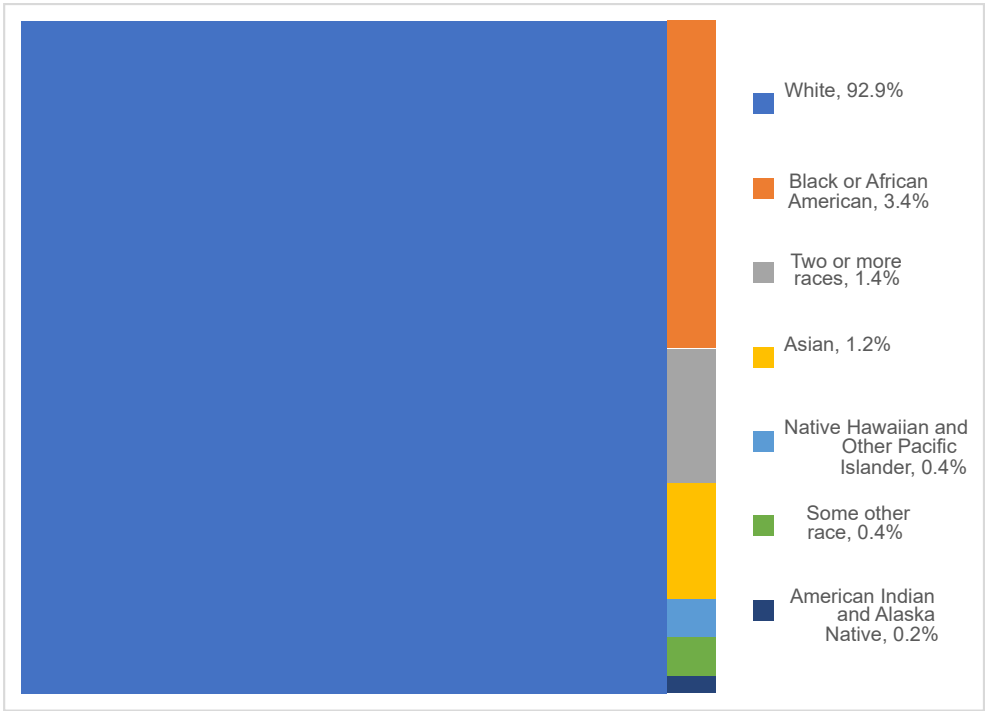


Figure 2.12 Race, Dubuque County 2018
Source: U.S. Census Bureau, American Community Survey 5-Year Estimates 2014-2018.

Vehicles Available to Households

Knowledge of the number of vehicles available to households can help forecast future travel demand. Household travel surveys indicate that households with more vehicle tend to make more vehicle trips. Households with one or zero vehicle swill likely create more demand for bicycle, pedestrian, or transit services. Figure 2.13 shows the number of vehicles available to households in the DMATS area for 2000, 2010, and 2018. The chart shows little change over the three years measured.

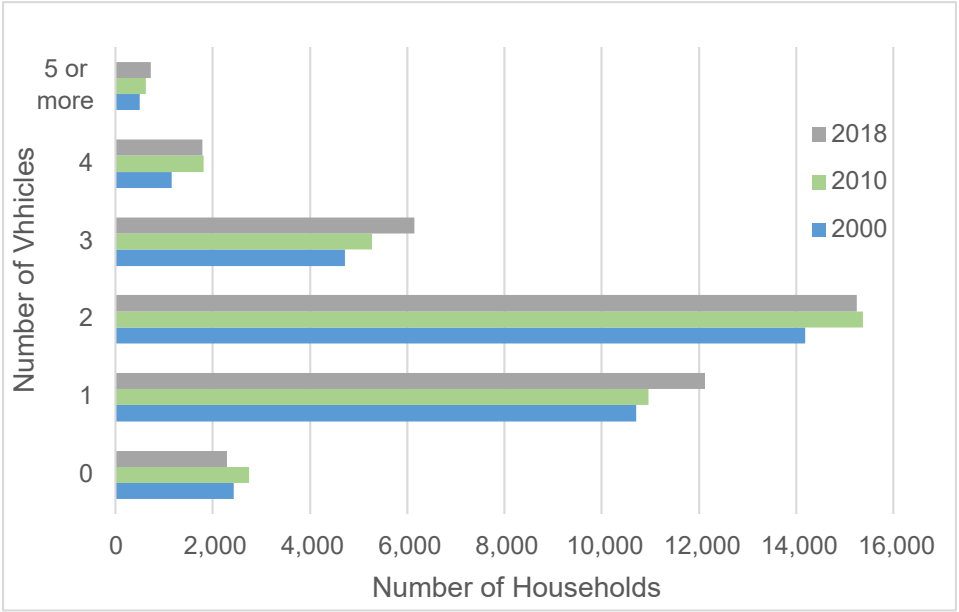


Figure 2.13 Number of Vehicles Available to Dubuque County Households
Source: U.S. Census Bureau, American Community Survey 5-Year Estimates 2014-2018.

Limited English Proficient Populations

People with limited English proficiency (LEP) often work in lower-wage jobs that require few communication skills, and rely on public transportation because they can not afford a car. These populations may have difficultly learning about public transit options in their community if information is primarily communicated in English.

Mapping the location of LEP populations can help transportation officials target language services to the areas where they are most needed. According to FTA Circular C 4702.1B, "Limited English Proficient (LEP) persons refers to persons for whom English is not their primary language and who have a limited ability to read, write, speak, or understand English.

Figure 2.14 shows the distribution of the LEP population in the DMATS area. According to the 2018 ACS, 0.53% of people in the DMATS area meet the LEP definition. DMATS does not have a defined LEP population above the Department of Justice's Safe Harbor threshold. The Department of Justice defines the Safe Harbor threshold as 1,000 persons OR 5% of the total population for a particular language, whichever is less, requiring vital document translation. The highest concentration of LEP people in the DMATS area is located Dubuque County Census Tract 1, which includes Downtown Dubuque. Tract 1 contains 150 LEP people, or 4.47 percent of the tract's total population.

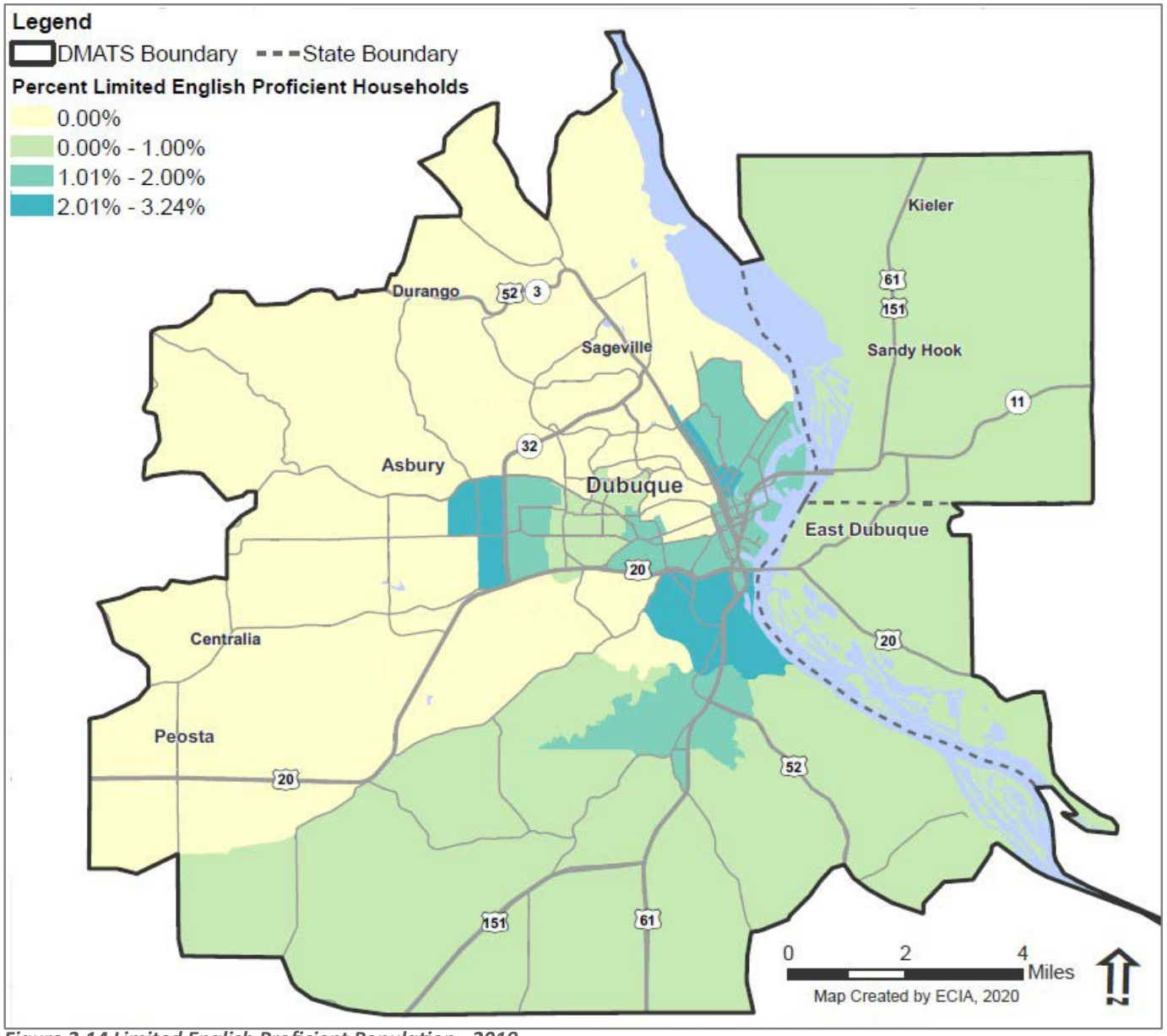


Figure 2.14 Limited English Proficient Population - 2018

Source: U.S. Census Bureau, American Community Survey 5-Year Estimates 2014-2018.

Commuting Patterns

The Dubuque Metropolitan area serves as a regional employment center that draws workers from surrounding communities. Table 2.5 shows commuting pattern data for Dubuque County. The data shows that workers travel into and out of Dubuque County for work, but more workers commute in than out. This gives the county a net job inflow of 6,601. Commuting data illustrates the importance of regional transportation planning. The region's economy relies on the transportation network to move workers safely and efficiently.

Table 2.5 Dubuque County Commuting Patterns 2017

Workers Living in Dubuque County	Count	Share
Total Number of Workers Living in Dubuque County	53,282	100.0%
Workers Living and Employed in Dubuque	37,911	71.2%
Workers Living in Dubuque County but Employed Outside	15,371	28.8%
Workers Employed in Dubuque County	**Count**	**Share**
Employed in the Selection Area	59,883	100.0%
Employed and Living in the Selection Area	37,911	63.3%
Employed in the Selection Area but Living Outside	21,972	36.7%
Net Job Inflow	**6,601**	

Source: U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics, 2017

Mode to Work

Most workers in the Dubuque Metropolitan area drive themselves to work. The Census estimates that 82% of workers that live in the Dubuque Metro area drive alone to get to work. Dubuque's mode to work breakdown is very similar to other metro areas in Iowa. Figure 2.15 charts the means of transportation to work for workers in Dubuque, and all other metro areas in Iowa. Mode share is an important factor in future transpiration planning. While driving accounts for most of the area's trips, DMATS is committed to accommodating all modes of transportation in its planning process.

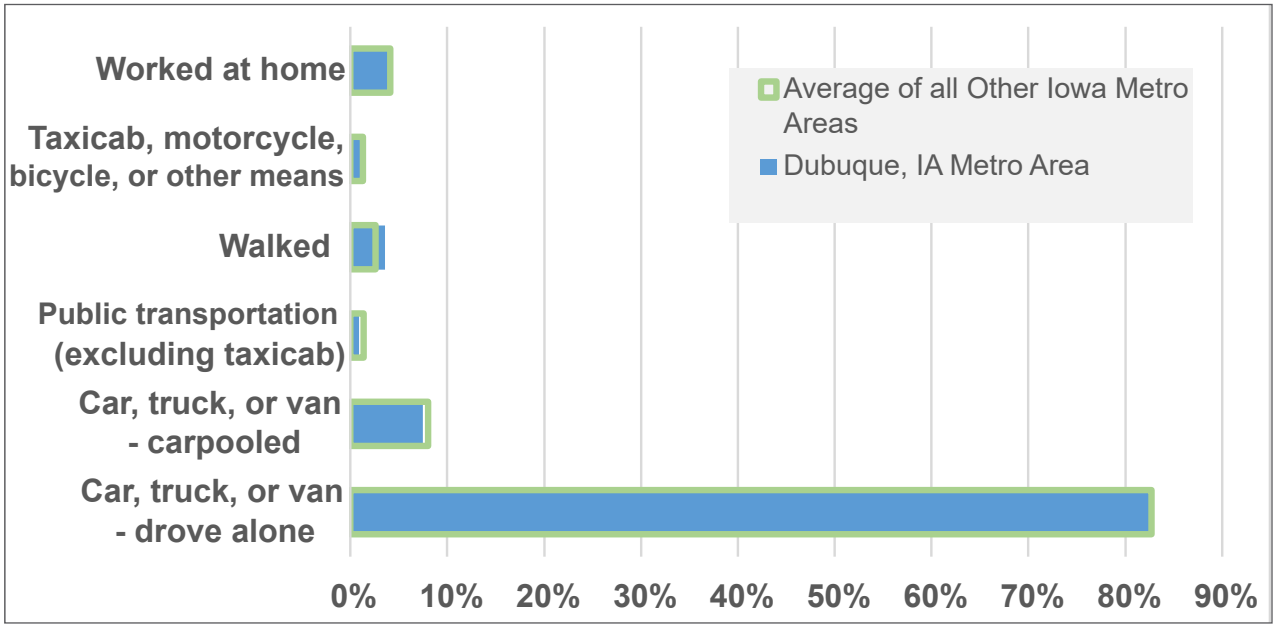


Figure 2.15 Means of Transportation to Work for Workers 16 Years and Older
Source: U.S. Census Bureau, American Community Survey 5-Year Estimates 2014-2018

Travel Time to Work

Residents in the Dubuque Metropolitan Area have shorter commutes when compared to other Iowa metros. Workers living in the Dubuque Metro Area have the shortest average travel time to work of all metro areas in Iowa, 16.22 minutes. Waterloo-Cedar Falls metro residents have the next shortest commute with an average travel time to work of 17.05 minutes. The average travel time to work for all Iowa metro areas not including Dubuque in 19.05 minutes. Table 2.6 shows average travel times for all Iowa metro areas.

Travel times in the Dubuque County are most likely the result of several factors. First, when compared to other metro areas in Iowa, Dubuque is an older, more compact city. The smaller area to cover could result in less drive time. Second, in other metro areas transit trips may make up a higher proportion of all trips. Transit trips tend to be longer than driving trips which could increase the average travel time. Figure 2.16 charts average travel times in the Dubuque Metro Area with all Iowa Metro Areas. The chart shows that Dubuque has a larger percentage of commutes of less than ten minutes, and a smaller percentage of commutes of 15 to 34 minutes.

Table 2.6 Average Travel Time to Work

Metro Area	Average Travel Time to Work (minutes)
Des Moines-West Des Moines, IA Metro Area	20.40
Omaha-Council Bluffs, NE-IA Metro Area	20.31
Davenport-Moline-Rock Island, IA-IL Metro Area	19.85
Cedar Rapids, IA Metro Area	19.54
Iowa City, IA Metro Area	19.31
Sioux City, IA-NE-SD Metro Area	17.98
Ames, IA Metro Area	17.93
Waterloo-Cedar Falls, IA Metro Area	17.05
Dubuque, IA Metro Area	16.22

Source: U.S. Census Bureau, American Community Survey 5-Year Estimates 2014-2018

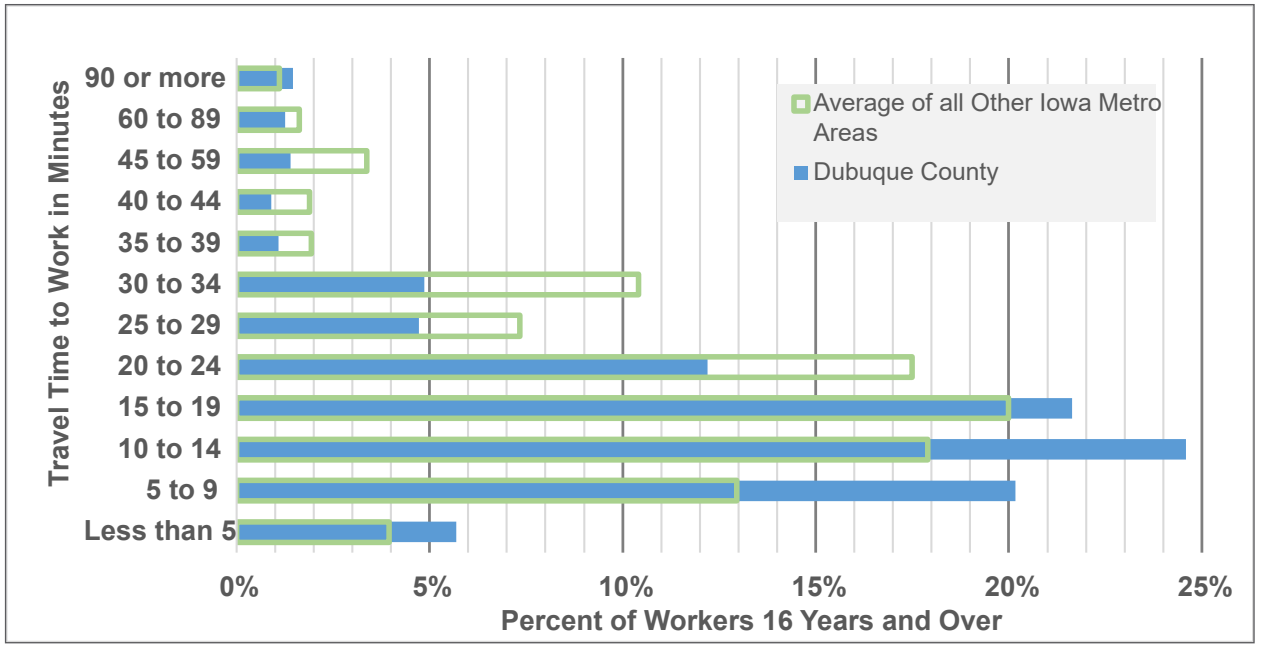
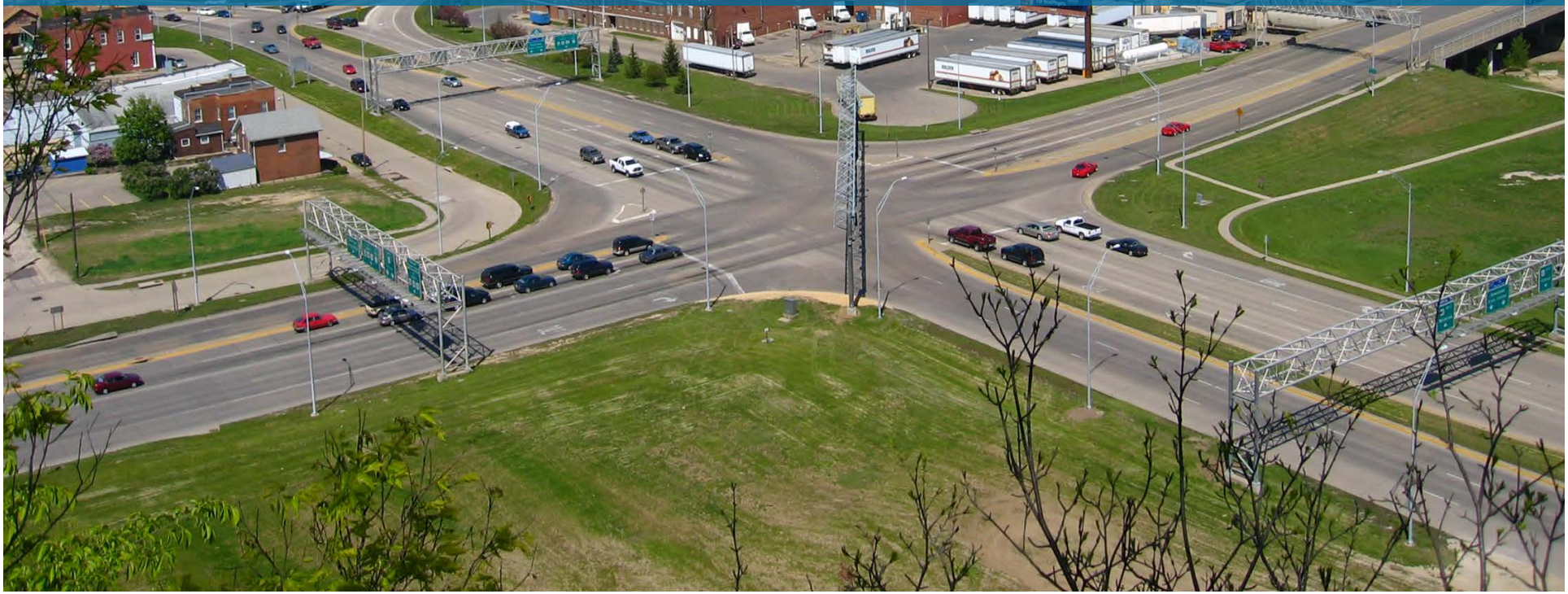


Figure 2.16 Travel Time to work for Workers 16 Years and Older

Source: U.S. Census Bureau, American Community Survey 5-Year Estimates 2014-2018

Chapter 3
Transportation Network Profile



Introduction

After identifying current socioeconomic and demographic trends in Chapter 2, the next step in the LRTP development process is to study the area's transportation network. The primary goal of Chapter 3 is to describe the facilities and services that make up DMATS area's transportation network. The chapter includes data on the area's roadways including traffic volumes, levels congestion, and vehicle crashes. The chapter also focuses on other modes of transportation including public transit, bicycle and pedestrian, freight, and air travel. The final section of the chapter includes information on some special transportation initiatives currently being undertaken within the area.

Highways and Roads

The predominant transportation system in the DMATS area, as in the rest of the United States, is a network of highways and roads that carry automobiles and trucks. These roadways accommodate the travel needs of local residents and businesses, and travelers from outside the area. The following section describes the roadway system in the DMATS area in terms of its functional classification, existing capacity, congestion, and safety.

Functional Classification

Roadways are assigned a functional classification category based on the type of service they provide. Roadways provide two basic types of service: land access and mobility. The degree to which a roadway provides access and/or mobility determines its functional classification. The key to planning an efficient roadway system is finding the appropriate balance between mobility and accessibility. A roadway's assigned functional classification is referred to as its Federal Functional Classification or FFC.

The following section provides a brief description of each functional classification type. Table 3.1 provides the total lane-miles of each functional classification category DMATS area, and Figure 3.1 maps the location of FFC routes in the area.

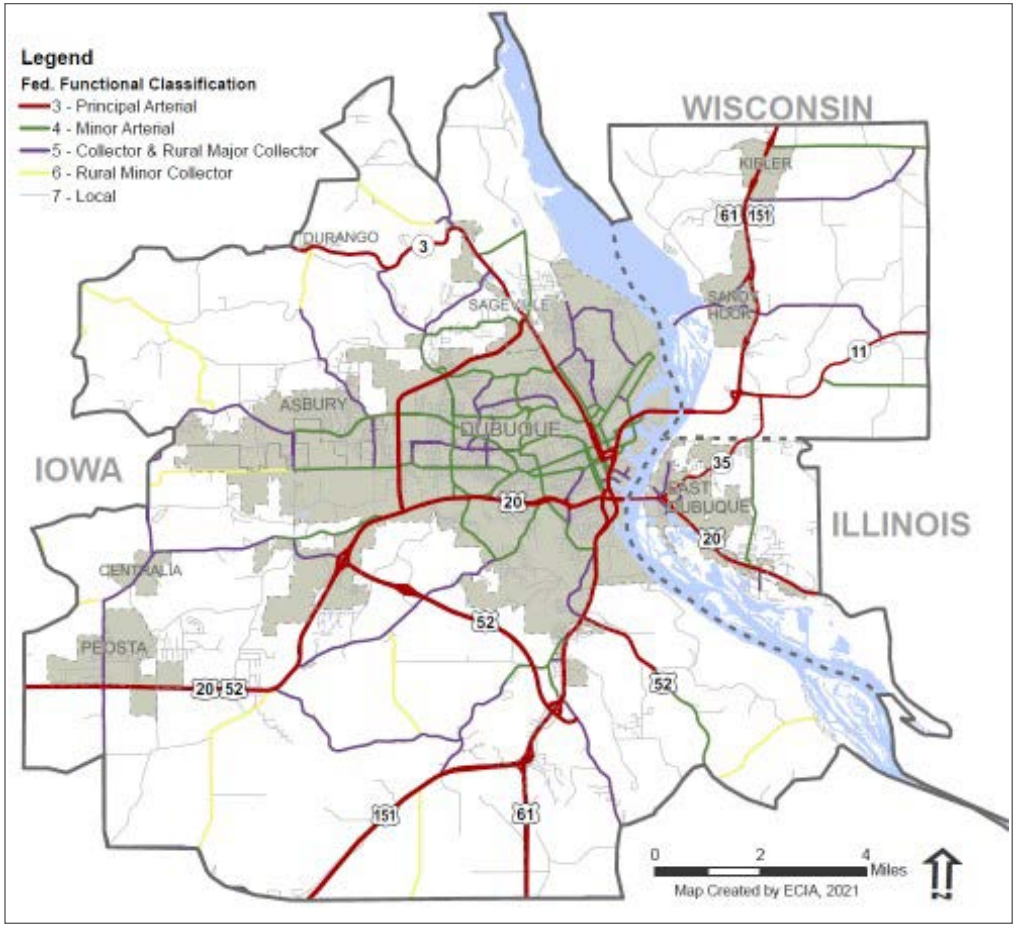


Figure 3.1 DMATS Roadway Functional Classification
Source: Iowa DOT, Illinois DOT, and Wisconsin DOT

Table 3.1 Roadway Functional Classification

Functional Classification	Lane Miles
Principal Arterial	272
Minor Arterial	137
Collector and Rural Major Collector	169
Rural Minor Collector	72
Local	746

Source: Iowa DOT, Illinois DOT, and Wisconsin DOT

PRINCIPAL ARTERIAL roadways primarily serve a mobility function with minimal land access. The primary purpose of principal arterials is the rapid movement of people and goods for extended distances. Principal arterials are high capacity, high speed roadways with restricted access. US Highway 20 is an example of a principal arterial in the DMATS area.

MINOR ARTERIALS interconnect with and augment principal arterials. Minor arterials within urban areas serve intercommunity trips of moderate length. Although the primary use of the minor arterial is mobility, this functional class provides more land access than a principal arterial. John F. Kennedy Road in the City of Dubuque is a local example of a minor arterial.

COLLECTOR streets channel trips between the local street system and the arterials. Collectors serve a balance between mobility and land access. Parking and direct driveway access to the street are typically allowed on collectors. Collectors are usually wider, have higher capacity, and permit somewhat higher speeds than the local street network. In rural areas, collectors are broken down into two categories: Major Collectors and Minor Collectors. Chaney Road in the City of Dubuque is a local example of a collector street.

LOCAL STREETS primarily provide local land access and offer the lowest level of mobility. Characteristics of local streets include uncontrolled intersections, posted speed limits of 25 miles per hour or less, and few restrictions on parking. Local streets are not a significant consideration in metropolitan planning and this plan does not address them in any systematic fashion.

The Federal Highway Administration uses functional classification to determine if a roadway is eligible for federal funds. Federal-aid eligible routes include: Principal Arterials, Minor Arterials, Major Collectors, and Urban Minor Collectors. Rural Minor Collectors and Local Streets are not Federal-aid eligible.

Traffic Volume

Transportation planners use average annual daily traffic (AADT) to measure the use of the roadway system. AADT is an annualized measure of traffic volume on a road segment. AADT numbers are based on traffic counts that local and Iowa DOT engineers periodically collect on area roads. Traffic counts provide onetime "snapshot" views of traffic on area roads that traffic engineers then extrapolate into an annualized daily average using a mathematical process. This plan reports 2017 traffic data as 2017 is the base year for the DMATS Travel Demand Forecast Model. Figure 3.2 displays the 2017 traffic volumes from the DMATS travel demand forecast model network.

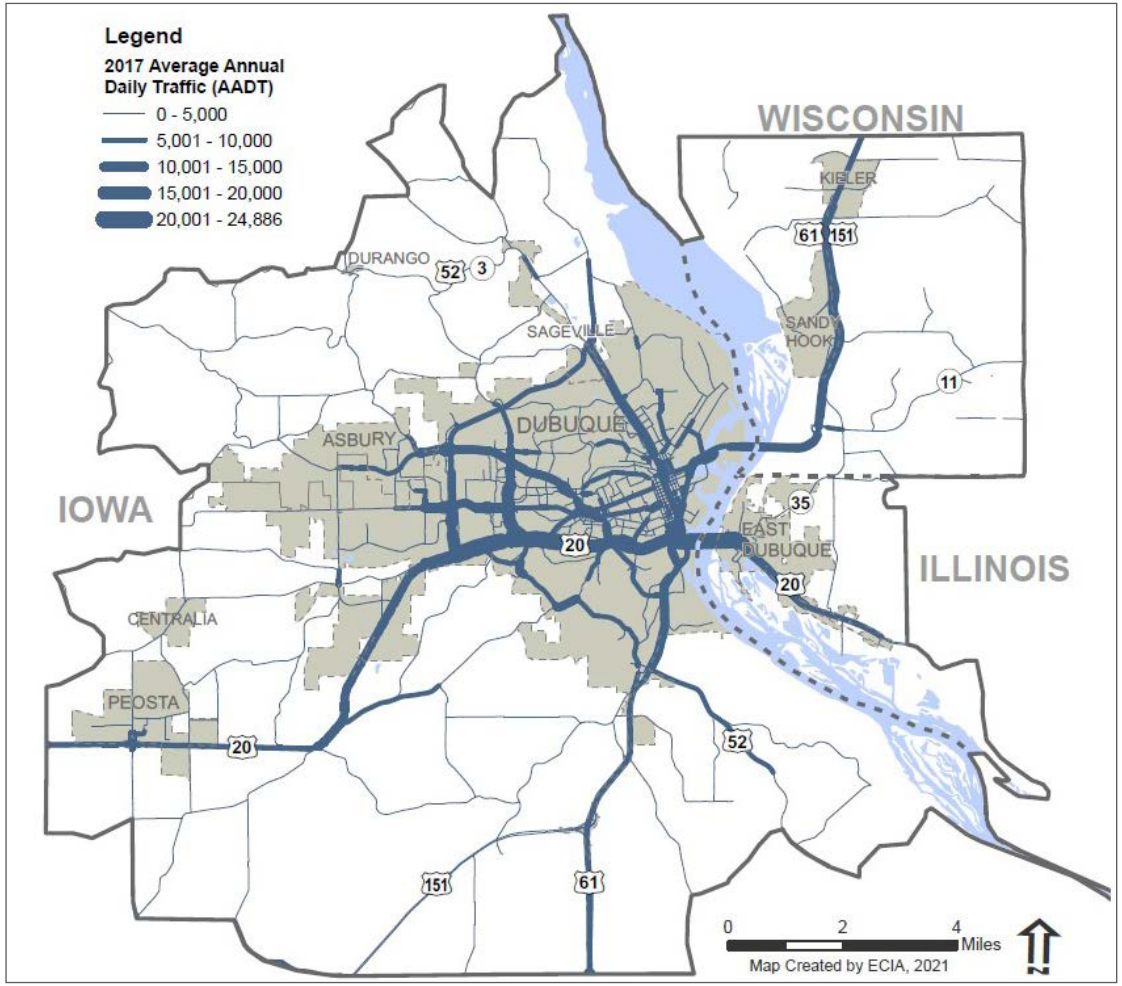


Figure 3.2 2017 Traffic Volume
Source: State DOT Traffic Counts, DMATS Travel Demand Forecast Model

Level of Service

Level of service (LOS) is a qualitative measure describing conditions within a traffic stream, based on speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience. LOS is estimated by dividing roadway speed by the posted speed limit. LOS "A" represents complete free flow of traffic, allowing traffic to maneuver unimpeded. LOS "F" represents a complete breakdown in traffic flow, resulting in stop and go travel. Roadways with LOS values below C present opportunities for improvement. Figure 3.3 maps of level of service and traffic volume for the DMATS area and Table 3.2 lists the roadways that have segments where the traffic volume is 5,000 AADT or greater and a LOS value of D, E, or F. Roadway segments with an LOS rating of D, E, or F.

Table 3.2. Level of Service

LOS D	LOS E	LOS F
Asbury Rd	Central Ave	Asbury Rd
Cedar Cross Rd	NW Arterial	NW Arterial
Central Ave	US Hwy 20/Dodge St	US Hwy 20/Dodge St
Iowa Hwy 965		
Kerrigan Rd		
NW Arterial		
Pennsylvania Ave		
US Hwy 20/Dodge St		

Vehicle Crashes

In addition to traffic and congestion, DMATS monitors safety on area roadways using data on the number and severity of vehicle crashes. Reducing vehicle crashes, and the injuries and fatalities that result from crashes, is a top priority for DMATS. Vehicle crash data was acquired from the Iowa Department of Transportation for the Iowa portion the DMATS region. DMATS was unable to acquire similar data for the Illinois and Wisconsin portions of the region. The data includes vehicle crashes with other vehicles, pedestrians, bicycles, and fixed objects. DMATS has mapped the crashes to illustrate the distribution of fatal and serious injury crashes and locations experiencing the most crashes. DMATS uses these maps along with input from

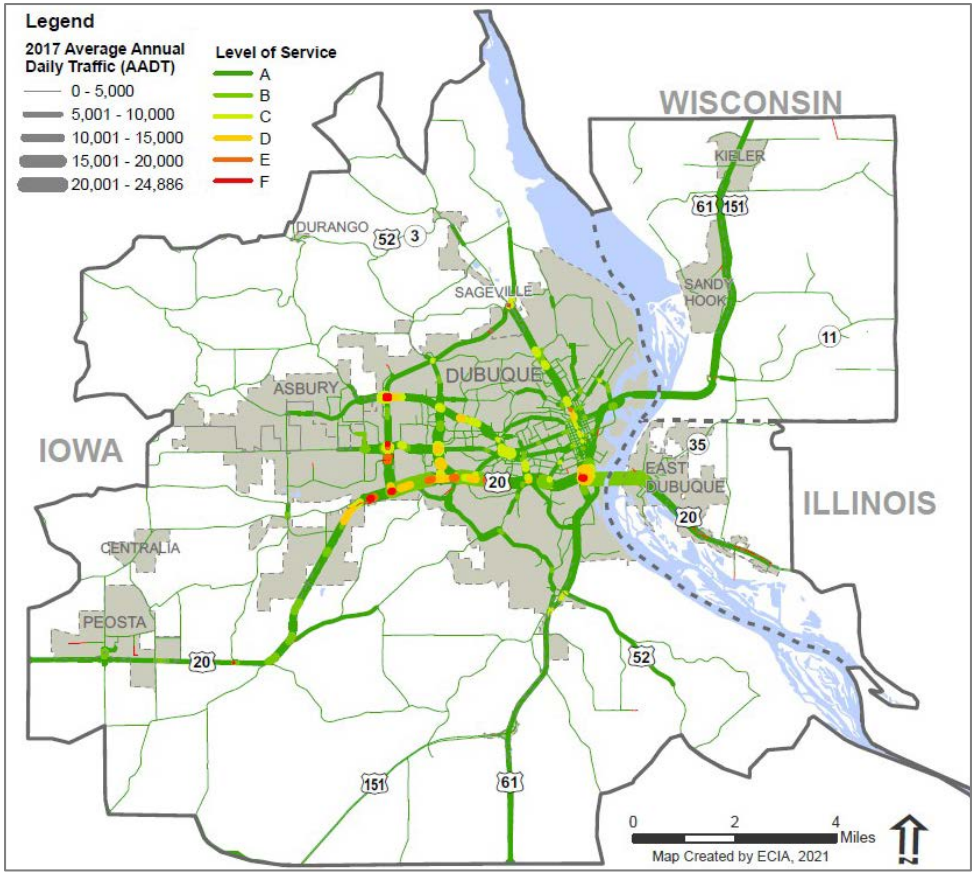


Figure 3.3 2017 Level of Service
Source: State DOT Traffic Counts, and DMATS Travel Demand Forecast Model
LOS A – 0.91 – 1.00; LOS B – 0.81 – 0.90; LOS C – 0.61 – 0.80; LOS D – 0.41 – 0.60; LOS E – 0.21-0.40; LOS F – 0.00 -0.20

local engineers and law enforcement agencies to help identify locations that may need safety improvements. DMATS conducts additional safety analysis in *Chapter 6: Safety*. Safety is also a component of the DMATS project ranking process that is detailed in *Chapter 9: Projects and Project Prioritization.*

FATAL AND SERIOUS INJURY CRASHES

Figure 3.4 maps the location of all fatal and serious injury crashes that occurred from 2016 – July 2020. The 18 fatal crashes that occurred during this time period seem to be spread across the region with the majority occurring on the region's primary arterials. The 74 serious injury crashes from this time are also spread across the region but seem to be more frequent on the region's arterials and major collectors. Higher traffic volumes and higher speeds on arterials and collectors likely play a role in the higher occurrence of fatal serious injury crashes.

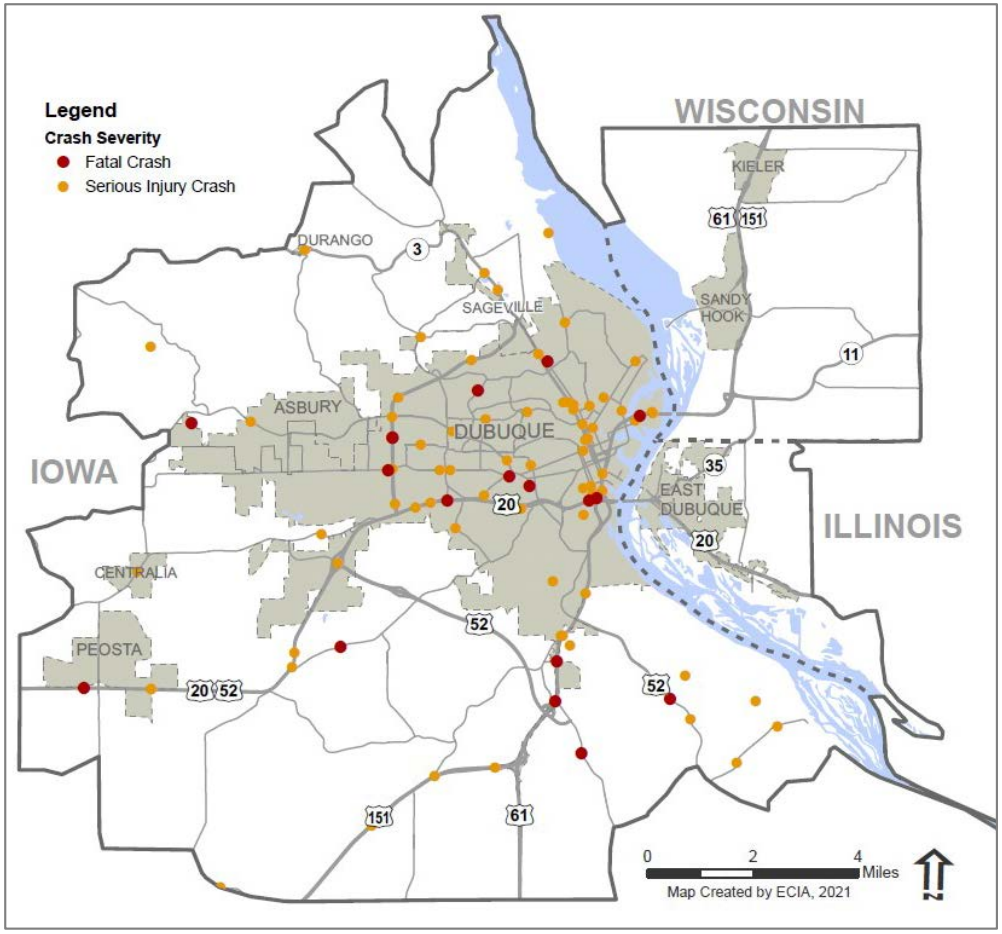


Figure 3.4 DMATS Fatal and Serious Injury Crashes 2016-2020 (Iowa Only)
Source: Iowa DOT Crash Data 2016-2020

CRASH CLUSTERS

To illustrate where clusters of crashes have occurred, 30 foot buffers were created around all crash locations in Iowa. Any overlapping buffers were then merged together to create a cluster region, and the number of crashes occurring in each cluster region was calculated. Figure 3.5 maps locations that had more than twenty crashes between 2016 and 2020. Table 3.3 lists the ten locations with the most during the same time period.

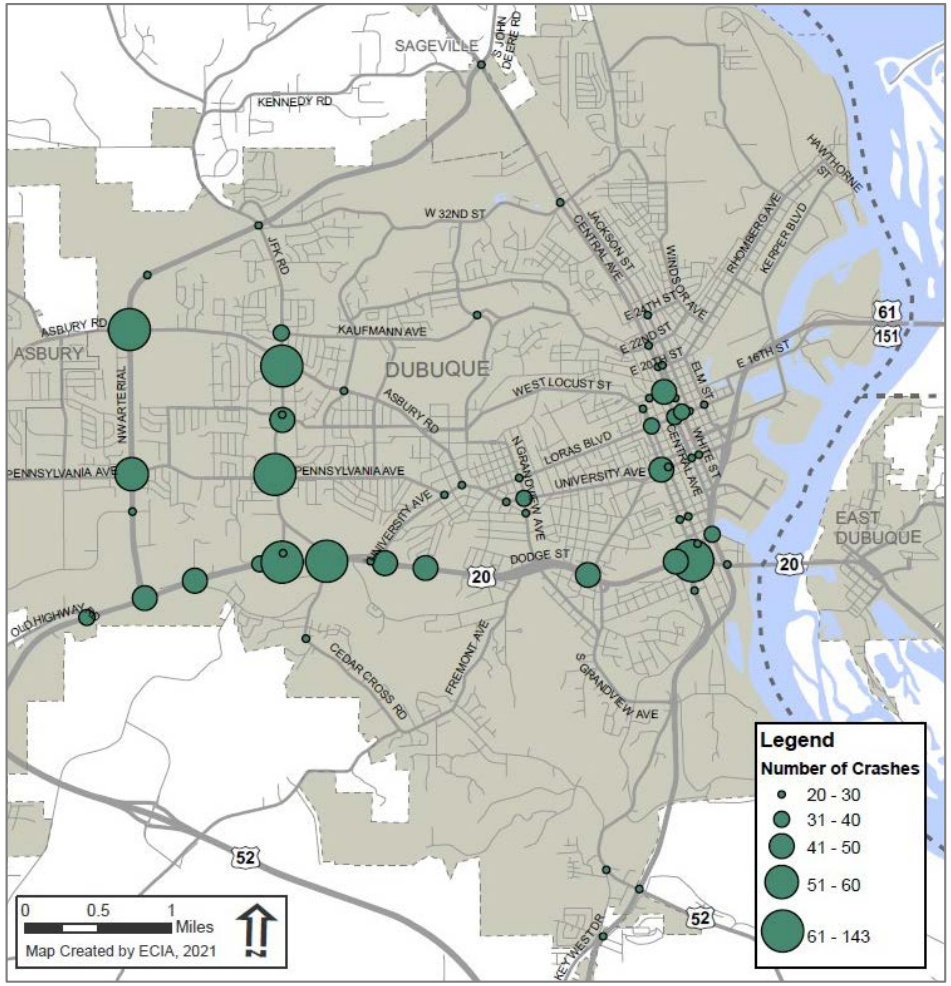


Figure 3.5 Crash Clusters by Number of Crashes
Source: Iowa DOT Crash Data 2016-2020.

Table 3.3 Top Ten Crash Locations by Number of Crashes

Rank	Crashes	Location
1	143	John F Kennedy Rd & Pennsylvania Ave
2	82	John F Kennedy Rd & Dodge St
3	79	Locust St & Dodge St
4	75	Wacker Dr & Dodge St
5	70	John F Kennedy Rd & Asbury Rd
6	62	NW Arterial & Asbury Rd
7	59	NW Arterial & Pennsylvania Ave
8	48	Devon Dr & Dodge Street
9	48	University Ave & Dodge St
10	48	Bluff St & Dodge St

CRASH SEVERITY

Using the same locations with 20 or more crashes, the areas with the most severe crashes were examined. DMATS used the 1 through 5 severity values recorded in the crash database (1 = fatality, 2 = major injury, 3 = minor injury, 4 = unknown injury, 5 = property damage only), to produce an average severity score. Lower severity scores indicate more severe crashes. Figure 3.6 maps locations with twenty or more crashes by average severity score, and Table 3.4. Top Ten Crash Locations by Severity Score lists the top ten crash clusters by severity score.

Table 3.4 Top Ten Crash Locations by Severity Score

Rank	Severity Score	Location
1	4.25	NW Arterial & Plaza Dr
2	4.36	Century Dr & Dodge St
3	4.39	17th St & Central Ave
4	4.40	Rockdale Rd & Twin Valley Dr
5	4.41	John F Kennedy Rd & NW Arterial
6	4.41	Jackson St & 24th St
7	4.44	John F Kennedy Rd & Kaufmann Ave
8	4.48	Locust St & 9th St
9	4.51	Bluff St & 9th St
10	4.52	Central Ave & 20th St

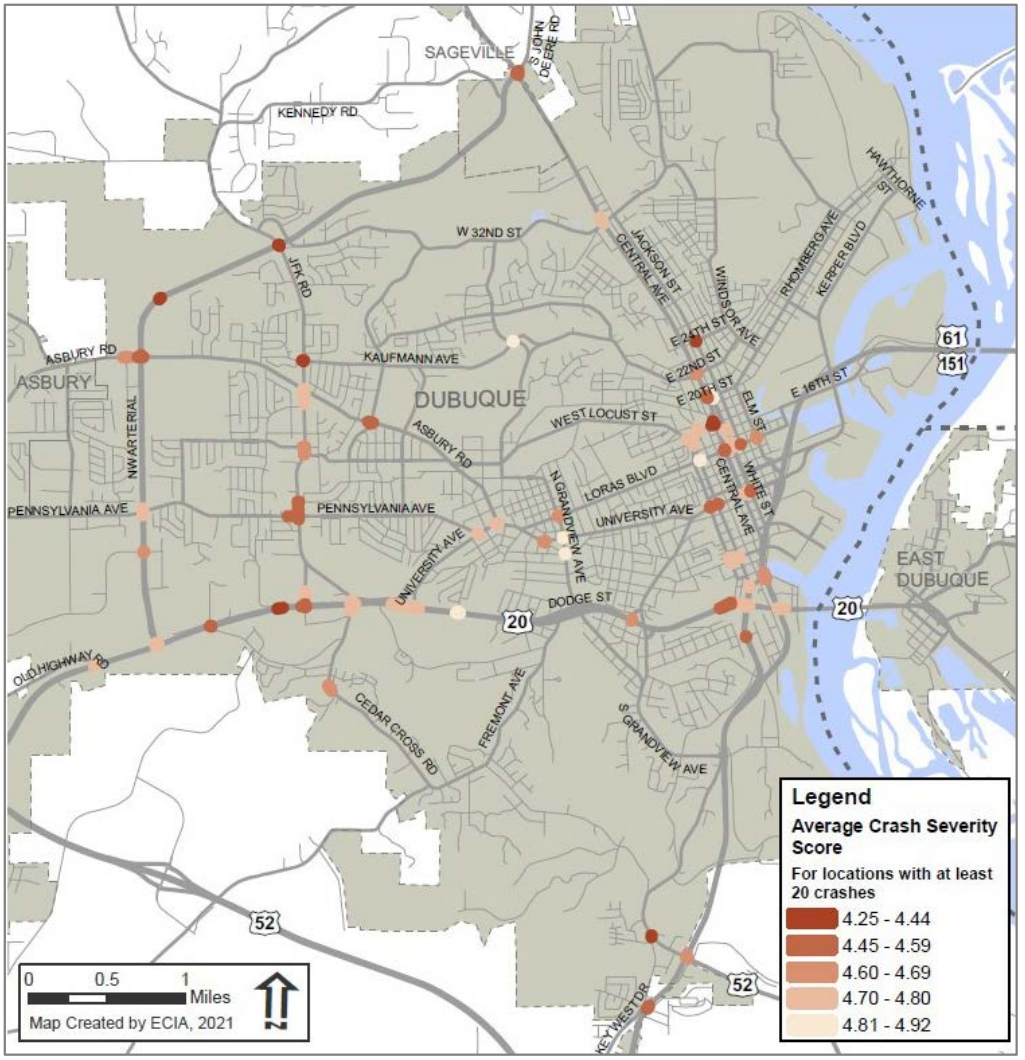


Figure 3.6 Crash Clusters by Severity Score
Source: Iowa DOT Crash Data 2016-2020

Transit

Transit service connects many DMATS area residents to work, school, and other important activities. The Jule and Regional Transit Authority 8 (RTA 8) are the two primary transit agencies in the DMATS area. Both agencies provide rides to the general population. The region also has several smaller agencies that provide rides to specific groups such as the elderly or disabled. The following section provides an overview of each agency and the services they provide.

The Jule

The Jule strives to provide citizens with a safe, timely, and comfortable mode of public transportation to and from their destinations on fixed routes and door to door services. Fixed route service provides transportation to Dubuque citizens so that they may access various services, shopping, entertainment, community functions, and employment opportunities within the City.

Trolley routes operate seasonally on a 1-hour schedule between the Port of Dubuque, key downtown locations, and many city parks and river viewing areas. Mini-bus promotes independence for seniors and persons with disabilities by providing origin to destination transportation and passenger assistance when accessing the demand response service.

Table 3.5 lists the Jule's service hours for fixed route and mini bus. Table 3.6 and Table 3.7 show service fares and bus pass costs for both fixed route and paratransit services. Table 3.8 provides information on the Jule's vehicle fleet and staff and Table 3.7 includes a map of fixed route service.

Table 3.5 Jule Service Hours – Fixed Route and Mini Bus

Monday-Thursday	6:00 am - 9:00 pm
Friday	6:00 am - 9:15 pm During the Summer 6:00 am - 2:40 am During the College School Year
Saturday	8:00 am - 9:15 pm During the Summer 8:00 am - 2:40 am During the College School Year
Sunday	No Service

Table 3.6 Jule Fixed Route Bus Fares

Full Fare	$1.50
Half Fare*	$0.75
Youth (6-18 years)	$0.75
Youth (5 years and under)	FREE but must be accompanied by an adult
College Students (Clarke, Loras, UD)	FREE with current semester ID

Table 3.7 Fixed Route Bus Passes

11 Ride Punch Card	Full Fare $15.00 Half Fare* $7.50
Monthly Unlimited Ride Pass (pro-rated and effective for calendar month)	Full Fare $45.00 Half Fare* $22.50
Youth Annual Pass (11-18 years) Valid August 1-July 31 each year	$15.00 Annual Youth Pass Application Proof of age is required
Youth (6-10 years) Valid August 1-July 31 each year	FREE with Annual Youth Pass Application Proof of age is required

** Half-Fare eligibility is defined for the following individuals:*
Aged 65 or older with photo ID
Disabled residents showing a Medicare card

Table 3.8 Jule Vehicle Fleet and Staff

Number of Vehicles	36
Number of Vehicles with Lifts or Ramps	36
Number of Vehicles to ADA Standards	36
Full-Time Employees	12
Part-Time Employees	60
Volunteers	0

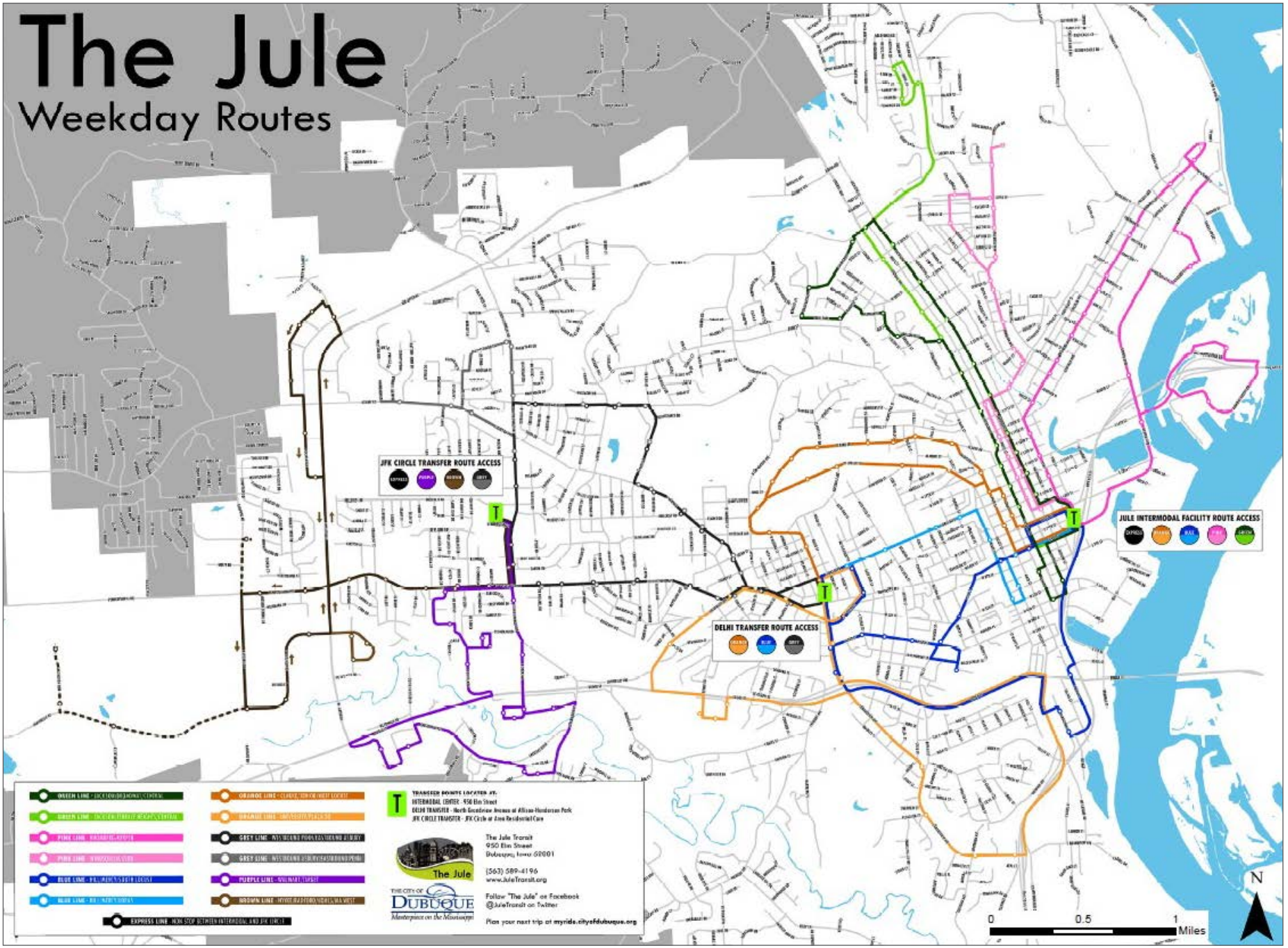


Figure 3.7 Jule Transit Full System Map
Source: Jule Transit, 2020

Regional Transit Authority 8

Regional Transit Authority 8 (RTA 8) provides accessible, safe, convenient, and efficient transportation for all citizens in the cities, communities and rural areas of Delaware, Dubuque, and Jackson Counties to enhance their quality of life. RTA 8 vehicles are equipped to accommodate the general public, including children, the elderly, and people with disabilities.

All RTA services are based on the demand of our clients and are open to the general public, including people with disabilities.

The RTA was formed in 1982 as a 501(c)(3) non-profit organization for the purpose of connecting the elderly, disabled, youth and low income citizens in Delaware, Dubuque and Jackson counties to critical services like healthcare, counseling, nutrition, childcare, education, employment, and social venues.

The RTA 8 Corporate Board is comprised of all of the County Supervisors from Dubuque, Delaware, and Jackson Counties. The Board meets every month to review the RTA's budget and general operating policies.

RTA 8 manages a fleet of 30 light duty buses, accessible minivans and standard vans. RTA provides 180,000 annual passenger trips serving over 2,500 individuals in the three-county region. To expedite customer service, the RTA maintains offices in Dubuque, Earlville, and Maquoketa. Table 3.9 summarizes RTA 8's vehicle fleet and staff.

Table 3.9 RTA 8 Vehicle Fleet and Staff

Number of Vehicles	30
Number of Vehicles with Lifts or Ramps	30
Number of Vehicles to ADA Standards	30
Number of Full-Time Employees	7
Number of Part-Time Employees	27
Number of Volunteers	16

The RTA provides transportation to a variety of destinations in Delaware, Dubuque and Jackson counties. All services are open to the general public, and all RTA vehicles are equipped with a lift and are wheelchair accessible. Most RTA services are door to door unless specified. All fares are contingent upon fitting into a current service.

Reservations for service are requested 24 hours in advance. Same day service is subject to availability. Dispatch hours are 5:00 a.m. to 5:00 p.m. RTA is a contracted provider for the State of Iowa's Medicare Managed Care Organizations (MCOs) and in partnership with NEIAAA (Scenic Valley). RTA services are available to persons of all income levels.

In addition to regularly scheduled services, the RTA provides round trip transportation on a reservation basis to other cities such as Cedar Rapids, Davenport, and even interstate travel to Madison, WI and other locations. Table 10 lists RTA's services and Figure 3.8 maps RTA's service area.

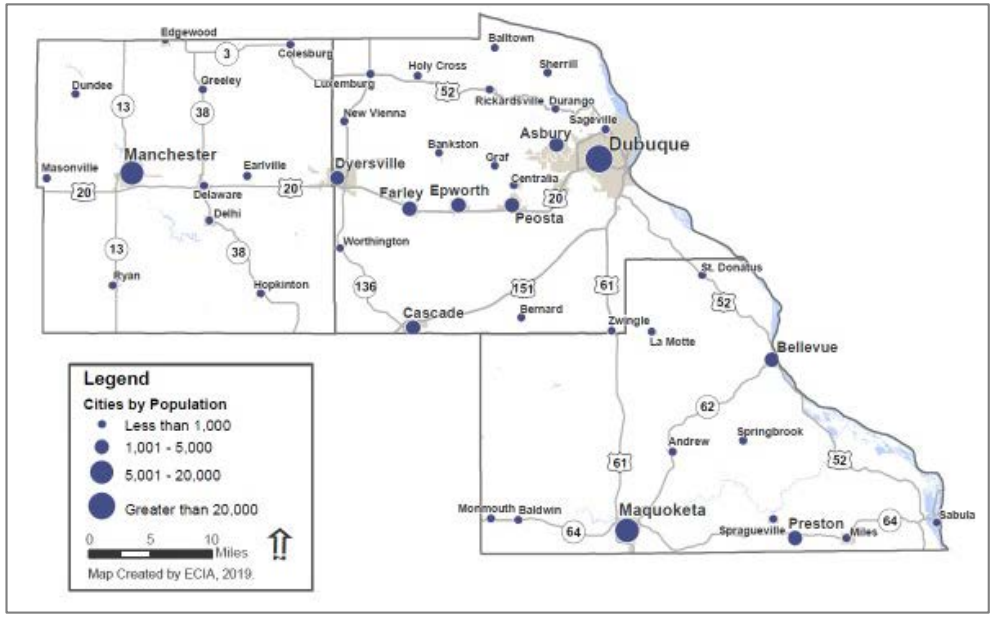


Figure 3.8 RTA 8 Service Area

Table 3.10 RTA 8 Services

Service	Hours	Cost
Delaware County Connections - volunteer driver service	7:00am-7:00pm M-F and weekends, pending driver availability.	$3.00 One way in-town Manchester. $6.75 One way out-of-town anywhere in Delaware County.
Iowa City – Service from Dubuque, Delaware, and Jackson Counties to Iowa City	Varying, depending upon passenger appointment times.	Contact dispatch for availability and cost (minimum ridership required).
In-Town Dubuque	7:00am-9:00am and 10:00am-5:30pm M-F. locations and times vary throughout the Dubuque County area, contact dispatch for more detailed information and availability.	$6.75 One way. Children 14 and under $3.25 one way.
Headstart Dubuque – Service in the City of Dubuque, Dubuque County, Epworth, and Dyersville for Head Start students.	Contact Operation New View/Headstart for further details and for availability	Contact dispatch for times and rates
NICC and Peosta – Service from the JFK Transfer Station in Dubuque to NICC and the City of Peosta	Departs at JFK Transfer Station at 8:30am and returns to JFK Transfer Station at 2:30pm	$6.75 One way
Epworth/Farley to Dubuque	M-F on a limited basis. Contact dispatch for availability. Departs Epworth around 8:15am arrives at the JFK Transfer Station around 9:00am. Return transportation is provided at 2:30pm at the JFK Transfer Station.	$6.75 One way
Dyersville to Dubuque	M-F. Departs at 7:40am and returns at 2:30pm from the JFK Transfer Station	$6.75 One way
Dyersville to Manchester	M-Th Departs at 7:50am and returns at 3:00pm from Manchester	$6.75 One way
Maquoketa in Town	8:00am-3:30pm M, W, & F. 9:00am-3:30pm T & Th	$3.00 One way
Miles and Preston to Maquoketa	M-F. Departs at 6:30am and returns at 2:00pm	$6.75 One way
Bellevue to Maquoketa	M, W, & F. Departs at 6:30am and returns at 2:00pm	$6.75 One way
Baldwin to Maquoketa	M-Th. Departs at 6:30am and returns at 2pm	$6.75 One way
Delhi to Manchester[1]	M-F. Departs at 7:45am and returns at 3:00pm.	$6.75 One way
Ryan to Manchester[1]	Available on a limited basis. Departs at 7:45am and returns at 3:00pm.	$6.75 One way
Earlville to Manchester[1]	Available on a limited basis various times throughout the week.	$6.75 One way
Manchester in-town[1]	M-F. 7:00am-5:00pm.	$3.00 One way

DuRide

DuRide is a nonprofit transportation program that is operated by volunteers who use their own vehicles to provide at-cost rides to Dubuque, Asbury, and East Dubuque residents age 65 and older. DuRide charges an annual fee and a small pickup fee for each trip. DuRide uses an account system so riders do not have to pay during their ride. Consumers are encouraged to donate their vehicles they no longer use, in exchange for credit towards their ride account.

Grant County Aging and Disability Resource Center

The Grant County Aging and Disability Resource Center (ADRC) provides transit service to the residents of Grant County, Wisconsin. The ADRC operates two wheelchair accessible bus routes. The service is open to persons 60 and older, persons with disabilities of any age, and persons under 60 if there is room available. The bus leaves Lancaster at 8:30 a.m. and will leave the destination city between 1:00 p.m. and 1:30 p.m. to return. The cost is $3.00 round trip per person. Passengers will be able to stop at up to three places in the destination city at no additional cost.

ADRC also operates the TRIPS program which provides rides to medical and some business appointments for individuals who are not on Medical Assistance. TRIPS drivers are volunteers who drive their own vehicles. TRIPS charges a mileage-based fee.

Jo Daviess County Transit

Jo Daviess County Transit is a county-wide public transportation system operated by The Workshop, an organization that assists people with disabilities in the county. The Jo Daviess County Board, Townships, and the Illinois Department of Transportation provide financial support for the service. Regularly scheduled routes to-and-from Galena run weekday mornings and afternoons from all communities in the county. General public transportation is available within the City of Galena on weekdays from 9:00 a.m. to 1:00 p.m. and Saturdays from 9:30 a.m. to 12:30 p.m. Jo Davies County Transit also provides transportation for medical appointments within the county and to some adjoining counties.

Bicycle and Pedestrian

Walking and biking are important modes of transportation for the DMATS area. Walking or biking instead of driving can reduce traffic congestion, improve air quality, and improve physical health. Through its goals and objectives, the DMATS LRTP supports programs that increase the number of people walking and biking in the area by creating interconnected bicycle and pedestrian networks and making walking and biking safer and more convenient

Walking and biking currently accounts for a small share of all trips in the DMATS area. 2014-2018 American Community Survey data shows that 3.55% of Dubuque County residents walked to work and 0.35% bicycle to work. Driving alone is the most popular mode to get to work with almost 82.91% of residents choosing this mode. The number of residents walking and biking to work has increased slightly from the 2000 census where 4.02% walked and 0.11% biked.

Bicycle and Pedestrian Facilities

Existing bicycle and pedestrian facilities in the DMATS area fall into three main categories: off-street trails, on-street routes, and sidewalks. The following section provides a description of each category and Figure 3.9 maps the location of these facilities across the region.

OFF-STREET TRAILS

The DMATS region has several off-street trails. Most trails in the area are classified as multi-use trails. These trails typically are concrete, asphalt, or packed crushed rock and are usually between 8 feet and 10 feet wide. Multi-use trails are physically separated from motorized traffic by open space or barrier and can in an independent right of way or within a highway right-of-way. Multi-use trails usually accommodate both bicyclists and pedestrians and are suitable for most age groups and abilities.

In addition to multi-use trails, the DMATS region also has several trails that are geared to more specific types of uses including: hiking and mountain biking. These trails are usually unpaved, steeper, and narrower than a multiuse trail, and as a result may require a relatively higher level of physical ability.

ON-STREET BICYCLE ROUTES

In addition to trails, the DMATS area has on-street bicycle routes. With an on-street route, bicyclists share the roadway with vehicle traffic. Street design can include specific design elements to direct bicycles and vehicles and improve safety for all users. Collectively these design elements are often referred to as complete streets. Design elements include signage, sharrows, bicycle lanes, buffered bicycle lanes, and protected bikeways. The design element used depends on vehicle speed, vehicle traffic volume, and space available in the right-of-way.

Streets with higher vehicle speeds and volumes will usually call for elements like buffered bicycle lanes or separated bikeways that offer more protection to bicyclists. Streets with slower speeds and lower traffic volumes are generally safer for bicyclists and are good candidates for less protective elements such as bicycle signage or sharrows. In many cases local streets are suitable for biking without any additional design elements. Local streets located in primarily residential neighborhoods with low traffic volume and low speeds could be good candidates for bicycle routes.

SIDEWALKS

Sidewalks are an important part of the pedestrian network. Sidewalks provide necessary walking connections to homes, businesses, transit services, and other activities. The DMATS region has a complex network of sidewalks already in place. Most streets in the region have sidewalks, but there are gaps in the sidewalk network. Unlike trails or on-street bicycle routes, private property owners usually maintain sidewalks. This can create challenges, as property owners can vary greatly in their ability or desire to maintain sidewalks. Street designers can also use complete streets design elements to improve pedestrian safety. Design elements include curb extensions, enhanced street crossings, and reduced vehicle lane width.

Together all three facility types make up the DMATS bicycle and pedestrian network. While trails may by the most desirable option for walkers and bikers, cost and available land will not allow a community to build a comprehensive network out of trails alone. Sidewalks and on-street bicycle routes are important facilities that can help fill in the gaps in the trail network and make sure that the entire region is connected to the bicycle and pedestrian network.

Race and Ethnicity

Including minority populations in the long-range planning process is important because minority populations often have disproportionately lower household incomes and limited mobility. Historically, minority populations have made up a very small segment of Dubuque County population, but recent census data shows an increasingly diverse population. In 1990, minority racial groups made up 1.2% of the county population; by the 2000 census, the proportion had grown to 2.9%, and in 2018 all minority groups combined to make up 7.1% of the population. Dubuque County also has a growing Hispanic and Latino population. In 1990, less than 1% of the County's population identified as Hispanic or Latino; in 2018 the percentage had increased to just over 2%.

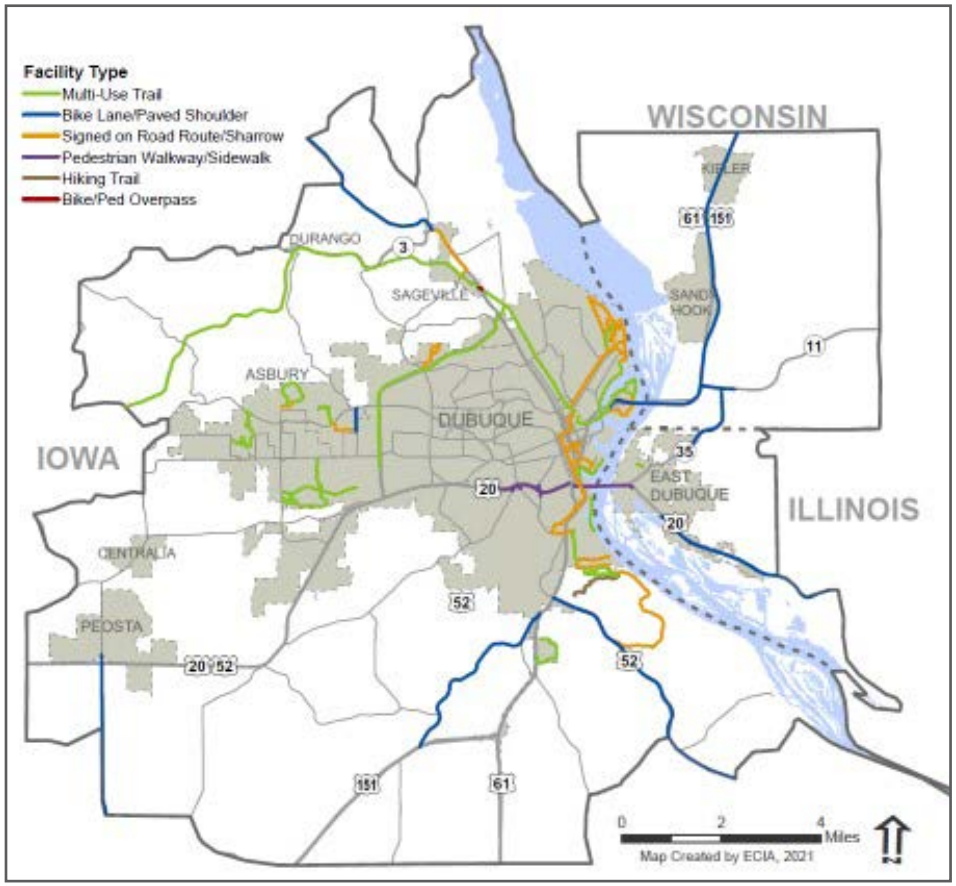


Figure 3.9 Existing Bicycle and Pedestrian Facilities

Freight

The efficient movement of goods is one of the keys to effective competition in the global economy. As a result, policy makers, industry specialists, and transportation planners have recognized that providing efficient systems for moving goods will help create a competitive advantage in the global market. This section provides an overview of the DMATS area's existing freight facilities for truck, rail, barge and air cargo. See Chapter 7: Freight for additional freight information including commodity movement data, infrastructure assessments, and freight system vision and goals.

Highway System

The DMATS Area's highway system is made up of different sub-networks including United States highways, state highways, and local city and county roads. Truck transport serves a range of industries and commodities, but is generally preferred for moderate to high value items that are low to moderate weight. The DMATS area has no direct connection to the Interstate Highway System. Therefore, US Highways such as US Highway 20, US Highway 52, US Highway 61, and US Highway 151 serve as the primary corridors for freight movement in the region.

US HIGHWAY 20

US Highway 20 (US 20) runs east and west through the DMATS area. It connects the area to interstates 39 and 90 in Rockford, Illinois and to Interstate 380 at Waterloo, Iowa. Truck traffic is heaviest in and around Dubuque, but is high throughout the corridor. Bottlenecks on US 20 include the 47-mile, two-lane section between Galena and Freeport, and the two-lane Julien Dubuque Bridge.

US HIGHWAY 52 / SOUTHWEST ARTERIAL

The US Highway 52 (US 52) corridor received a major upgrade with the opening of the Southwest Arterial (SW Arterial) in 2020. Prior to the SW Arterial's opening, US 52 cut directly through downtown Dubuque. With the new alignment, US 52 enters the northwest corner of Dubuque County and travels south and merges with US 20 at Dyersville. US 20/52 then heads east across the middle of Dubuque County. The highways split west of Dubuque with US 20 traveling through the city and us 52 bypassing Dubuque on the SW Arterial. US 52 then exits the DMATS area heading southeast along the Mississippi River toward Bellevue. The SW Arterial has drastically improved transportation in the region by providing a reliable four-lane truck route that bypasses the traffic, delay, and unreliability experienced on the US 20 in Dubuque.

US HIGHWAY 61

US Highway 61 (US 61) provides a four-lane north south corridor south of the DMATS Area. US 61 runs south from Dubuque to Maquoketa and DeWitt before connecting with Interstate 80 in the Quad Cities. North of Dubuque, US 61 crosses into Wisconsin and becomes a two-lane route and does not connect to any major freight transportation facilities. Truck traffic on US 61 is moderately high between Dubuque and the Quad Cities, making it an important north-south route.

US HIGHWAY 151

US Highway 151 (US 151) crosses the region diagonally from southwest to northeast. US 151 provides four-lane highway connections to Interstate 380 in Cedar Rapids, Iowa and to Interstates 90 and 94 in Madison, Wisconsin. US 151 is an important freight route with high truck volumes through out the corridor. US 61/151 bridge provides a key Mississippi River crossing between Iowa and Wisconsin.

Rail Facilities

The DMATS Area's rail system is a valuable resource as many the region's industries depend on materials that are transported primarily by rail. The area is served by 3 rail carriers: The Burlington Northern and Santa Fe Railway, Canadian National, and Canadian Pacific. The following describes the carriers in general terms. Figure 3.10 maps the location of railroad facilities in the DMATS area.

THE BURLINGTON NORTHERN AND SANTA FE RAILWAY (BNSF)

BNSF is among the largest railroads in the United States today with track mileage totaling 33,353 miles covering 28 states and two Canadian provinces. In the DMATS area, the BNSF's track is located exclusively on the east side of the Mississippi in the governmental jurisdictions of Grant County, Wisconsin, and Jo Daviess County and the City of East Dubuque in Illinois.

CANADIAN NATIONAL (CN)

CN has owned the main east-west rail line in the DMATS area since its acquisition of Illinois Central in 1999. CN is the only railroad which crosses North America east-west and north-south, serving ports on the Atlantic, Pacific, and Gulf coasts while linking customers to all three NAFTA nations.

CANADIAN PACIFIC (CP)

CP officially acquired Iowa, Chicago, and Eastern Railroad and the Dakota, Minnesota and Eastern Railroad in 2008. Between the two branches (DM&E and IC&E) the railroad operates in Iowa, Illinois, Minnesota, Missouri, Nebraska, Wyoming, Wisconsin and South Dakota. CP provides service between Minneapolis, Chicago and Kansas City. The main route in Iowa parallels the Mississippi River on the west side from the Minnesota state line, south through the Dubuque area as far as Muscatine.

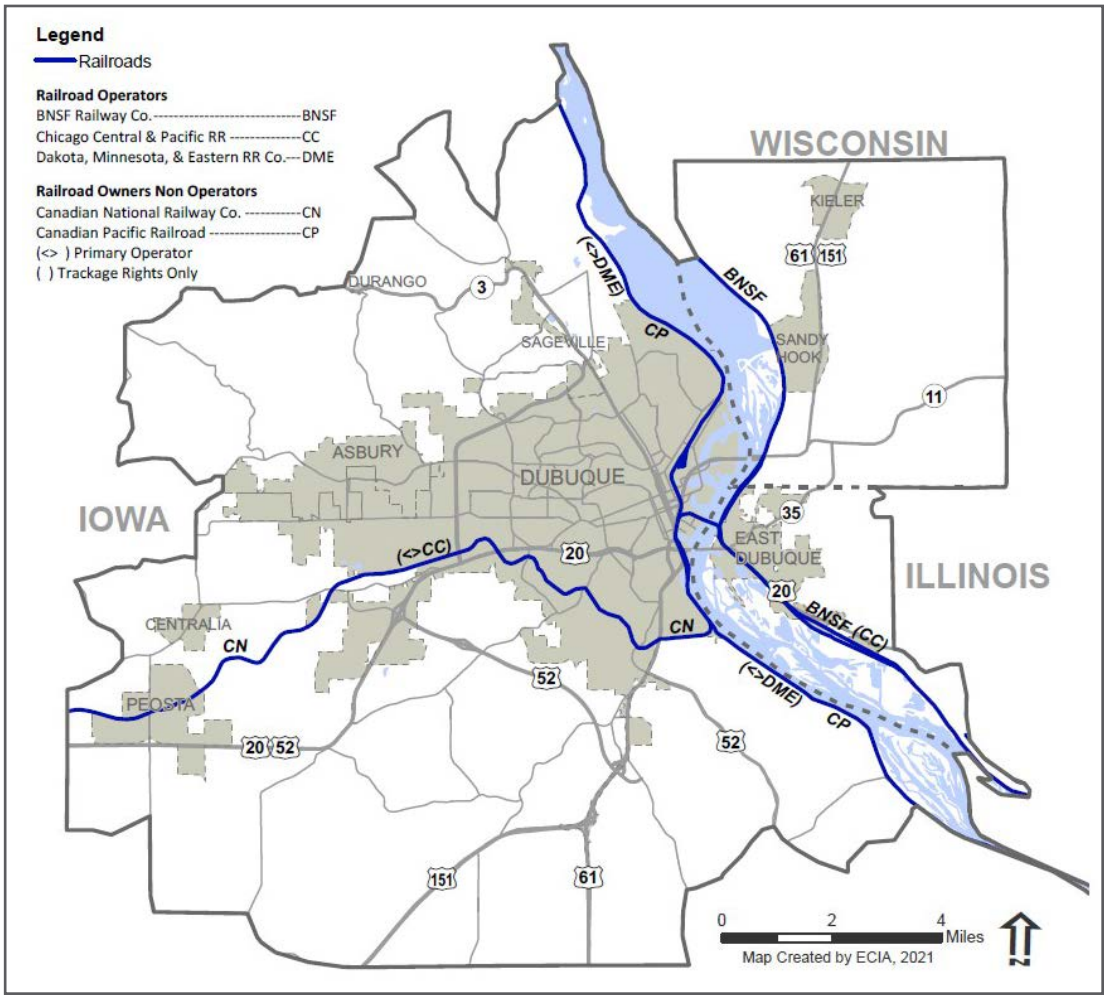


Figure 3.10 Railroads
Source: Iowa DOT

Barge Facilities

The Mississippi River is a valuable freight transportation asset for the DMATS area. The river carries one percent of the region's freight volume and value, and its slow-moving, but fuel-efficient barges are well-suited for extremely bulky lower-value commodities like grain, oil, fertilizer, and minerals. In fact, one barge can carry the equivalent dry cargo tonnage of 16 railcars, or 70 semi-trucks.

LOCKS AND DAMS

The Upper Mississippi River's flow is controlled by a system of locks and dams, which maintain a nine-foot river channel depth needed to support barge traffic. Each lock has a chamber in which the water level is raised or lowered to move boats between the different water levels on either side of the dam. On the Upper Mississippi, the standard lock chamber size is 110 by 600, but a standard 15-barge tow with boat is can stretch to over 1,300 feet. This means that barge tows often must be divided up into smaller groups to pass through the lock, which slows the process of getting barge tows through the locks. There are 29 lock and dam structures built along the river between Minneapolis, Minnesota and St. Louis, Missouri. The DMATS area is home to Lock and Dam 11, which is located on the north side of Dubuque near Eagle Point Park. See location in Figure 3.11.

The Region's barge system is affected by the seasons: for about three months during the winter, the river freezes and barges cannot operate. The system's operation is also affected by the state of repair of lock facilities, which are over 75 years old.

These facilities may experience shutdowns when lock equipment fails, and these shutdowns can halt river traffic for days or weeks. As the locks and dams continue to age, breakdowns, and disruptions to barge traffic may become more common. The potential for delays or shutdowns is a threat to the economic competitiveness of regional firms that rely on the waterway for shipping.

BARGE TERMINALS

The DMATS area is home to nine groups of barge terminals in the Dubuque and East Dubuque areas. The terminals facilitate the movement of goods between barges and other modes transportation modes such as rail or truck. All nine terminals have truck connections, and four have rail connections. DMATS area firms have access to the river through the barge terminals listed in Table 3.11 and mapped in Figure 3.11. The Mississippi River and the inland waterway network provides connections to a range of cities including St. Paul, St. Louis, Memphis, New Orleans, Chicago, Louisville, Cincinnati, and Pittsburgh. Additionally, New Orleans and the Gulf of Mexico provide access to ocean shipping and international markets for the region's agricultural products.

The region's position along the Mississippi River, and ample barge terminals is an advantage for firms looking to move large volumes of goods at a low cost. However, the lock and dam infrastructure that supports commercial navigation is outdated, and potential failure of this infrastructure is a threat to the Region's economy.

Table 3.11 Barge Terminals (Listed North to South)

Name	City	Commodity Handled	Modes Connected
Cargill AgHorizons	Dubuque	Grain	Truck
Flint Hills Resources (Koch)	Dubuque	Liquid Petroleum	Truck
Peavey Co	Dubuque	Mixed	Truck, Rail
Dubuque River Terminal	Dubuque	Mixed	Truck
Newt Marine Service Dock	Dubuque	Mixed	Truck
IEI Barge Services	East Dubuque	Mixed	Truck, Rail
Aggregate Materials Co	East Dubuque	Mixed	Truck, Rail
Consolidated Grain and Barge	East Dubuque	Grain	Truck
East Dubuque Nitrogen Fertilizers	East Dubuque	Chemicals	Truck, Rail

Air Cargo

Air cargo shipments are expensive, and thus are used for high-value, low weight, or highly time-sensitive goods. Dubuque Regional Airport does not provide cargo service, so firms looking to move goods by air must use other airports. Three nearby options are The Eastern Iowa Airport in Cedar Rapids, Iowa the Quad City International Airport in Moline, Illinois and Chicago-Rockford International Airport. Firms seeking further choice in air cargo shippers and connectivity may choose to send their goods to Chicago O'Hare International Airport.

Air Transportation

Dubuque Regional Airport is located about seven miles south of downtown Dubuque on US Highway 61. The airport occupies 1,057 acres and has a field elevation of 1,076 feet. The airport opened at the present location in 1948. Figure 3.13 maps the location of the Dubuque Regional Airport.

American Airlines offers daily departures from the Dubuque Regional Airport to Chicago O'Hare International Airport. The airline temporarily suspended fights to and from the Dubuque Regional airport in October 2020 as a response to the COVID-19 pandemic. The airline resumed flights in early January 2021, offering one flight per day. Sun Country Airlines offers direct charter departures from Dubuque to Laughlin, NV and Gulfport/Biloxi, MS.

Airside Facilities

The airport has two runways, 18-36 and 13-31 and six taxiways to support air traffic. Runway 18-36 runway is the primary runway. Runway 18-36 is 6,327 ft. long and 150 ft. wide. Its pavement is rated for 75,000 pounds for single wheel aircraft and 173,000 pounds for dual wheel aircraft. Runway 13-31 is 6,502 ft. long x 100 ft. wide. Its pavement is rated for 75,000 pounds for single wheel aircraft and 125,000 pounds for dual wheel aircraft. Taxiway A runs parallel to Runway 13-31. Taxiways B , C, D, E, and F provide aircraft access to runways and terminal.

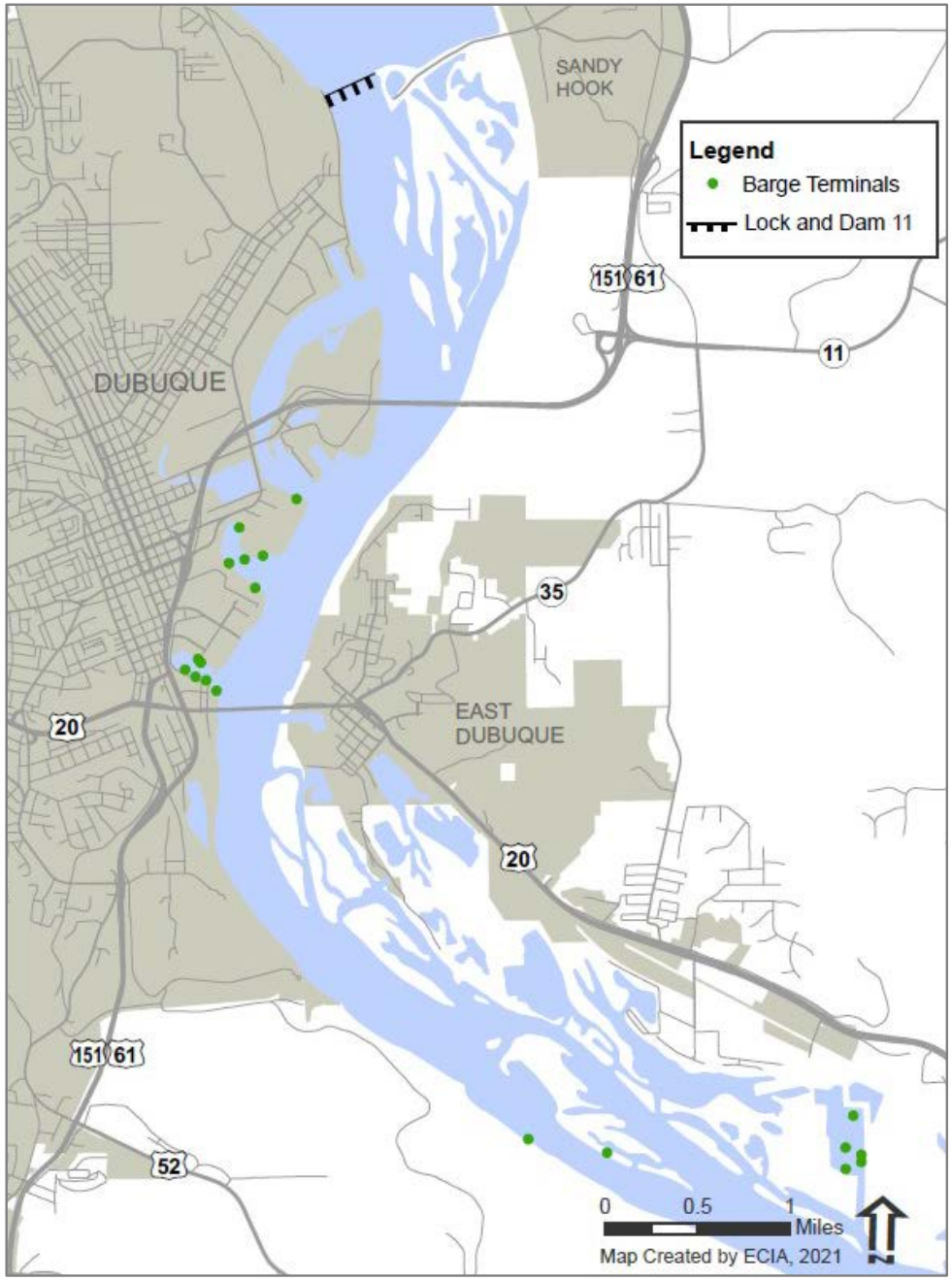


Figure 3.11 Barge Facilities

Groundside Facilities

The Dubuque Regional Airport's groundside facilities serve passengers, freight, airport administration, and general aviation needs. The airport's passenger terminal, opened in 2016, features architectural design elements that are visually striking and environmentally sustainable. The limestone façade, atrium windows, and Mississippi River inlay flooring, give visitors there first and last impressions of the community. The US Green Building Council awarded its (Leadership in Energy and Environmental Design) LEED Silver Certification to the terminal in 2017. The FAA's Airport Improvement Program funded the majority of the $40 million project.

The 33,000 square foot passenger terminal building houses the airport's primary passenger arrival and departure functions. Departure functions include: ticket counters and kiosks, TSA security checkpoint, and a secure holding room with three gates, restrooms, and a snack bar. The terminal's arrival facilities include: two jet bridges, baggage claim carousel, and rental car counters. The terminal also offers a number of passenger conveniences such as a full-service restaurant, Wi-Fi, USB charging, and concessions.

Airport Operations

The FAA measures air traffic activity at an airport in operations, or the number of takeoffs and landings. Operations at the Dubuque Regional Airport have increased over the last several years. Total operations increased to 64,257 in 2019. Dubuque's 2019 operations total ranked second in the state of Iowa behind only Des Moines. Figure 3.12 charts the number of total operations at the Dubuque Regional Airport from 2010 to 2020.

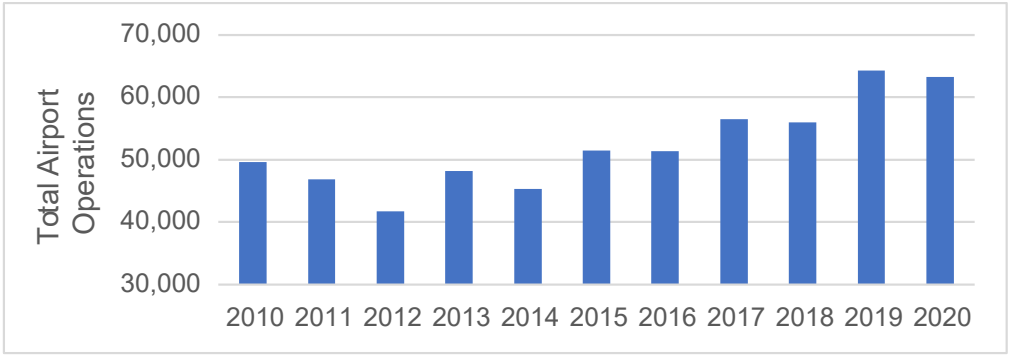


Figure 3.12 Dubuque Regional Airport Total Operations
Source: Federal Aviation Administration

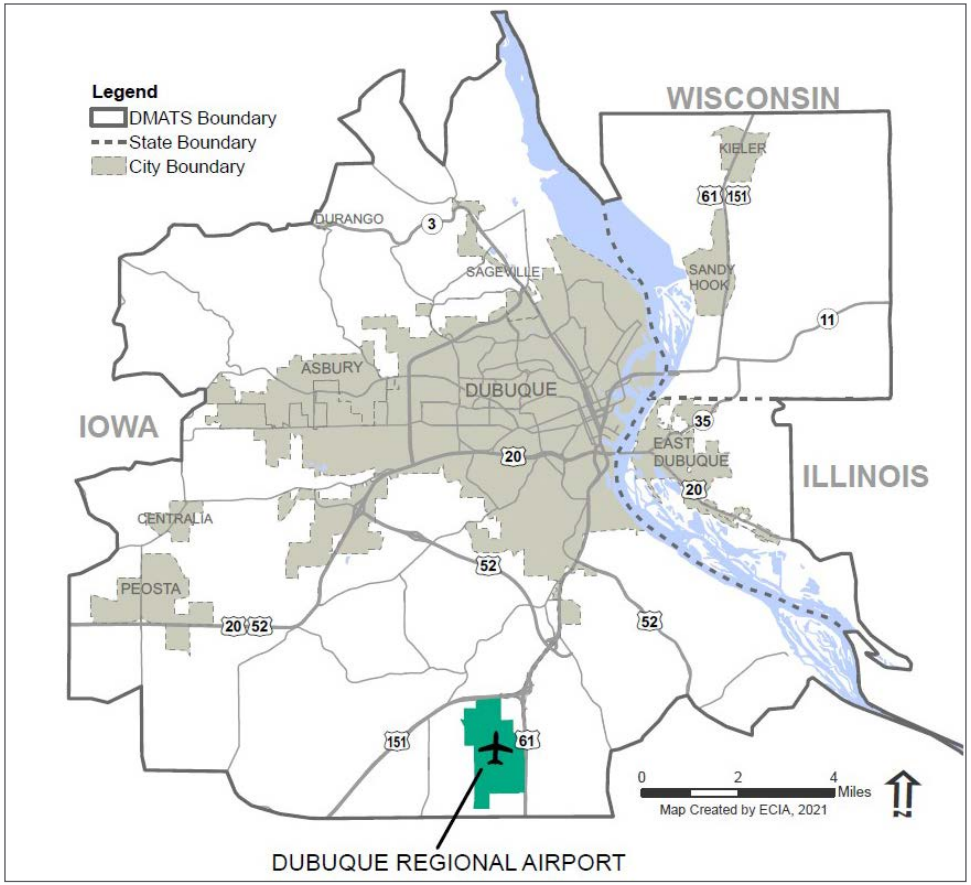


Figure 3.13 Dubuque Regional Airport Location

Passenger Rail

No passenger trains currently serve the DMATS area, but from the time railroads first arrived in Dubuque in the 1850s until 1981 when the Dubuque to Chicago AMTRAK service was discontinued, passenger rail provided important connections to surrounding communities.

DMATS is currently working with the Illinois DOT on a passenger rail feasibility study. The purpose of the Rockford – Dubuque High Speed Intercity Passenger Rail Program is to reestablish passenger rail services from Chicago to Dubuque. The proposed Rockford to Dubuque service would be a component of the Chicago–Dubuque corridor, which is part of a broader vision to expand regional passenger rail service to meet existing and future travel demands in the Midwest.

The program will establish a rail transportation alternative to supplement private automobile, bus, and air travel between Chicago and Dubuque, and intermediate points. Goals of the program include: improved reliability and continence for rail passengers, reduced travel times, and increased safety through improved signal infrastructure.

The feasibility study will provide a comprehensive assessment of the project including: analysis of alternative routes, rail ridership projections, and cost estimates for improvements necessary to accommodate passenger rail service such as track upgrades and crossing improvements.

Chapter 4

Transportation Network Forecast

Introduction

The objective of Chapter 4 is to provide a forecast of the transportation network to help evaluate future infrastructure investments. DMATS uses several methods for forecasting future transportation demand including the DMATS travel demand forecast model, public input, and secondary data analysis. This chapter will provide a summary of the analysis methods and the results from the analysis.

The DMATS Travel Demand Model

A travel demand model (TDM) is a series of mathematical equations that represent how people make travel decisions. Thousands of travel decisions made by individuals add up to create regional travel demand. Many factors including auto ownership rate, income, household size, density, type of development, availability of public transportation, and the quality of the transportation system affect individual travel decisions. The model is based on several assumptions and its accuracy is limited by the data available.

The level of analysis for the model is the transportation analysis zone (TAZ). TAZs are a series of small areas delineated for the purpose of traffic analysis. For the 2050 model update, DMATS increased the number of TAZs from 741 to 1,147. The smaller TAZs allow DMATS to conduct more detailed analysis of transportation activities in the area. Figure 4.1 maps the DMATS TAZs.

Travel Demand Modeling Process

Travel demand forecasting involves four steps: trip generation, trip distribution, mode choice, and trip assignment.

Trip Generation estimates the number of trip productions (starting points) and trip attractions (ending points) for each traffic analysis zone. The result is the total number of vehicle trips to and from activities in the study area. Information from land use, population, and economic forecasts is used to estimate how many trips will be made to and from the 1,147 TAZs. Methods for producing these forecasts are documented in Chapter 2.

Trip Distribution links trip productions to trip attractions for each pair of TAZs. The most commonly used method for trip distribution is the gravity model. Gravity model distributes trips produced by one zone to other zones based on trip attractions and the size of the zone.

In Mode Choice, the model splits the number of trips among all TAZ pairs between all possible modes of transportation. The DMATS model omits this step because personal vehicle trips make up more than 95% of trips in the area.

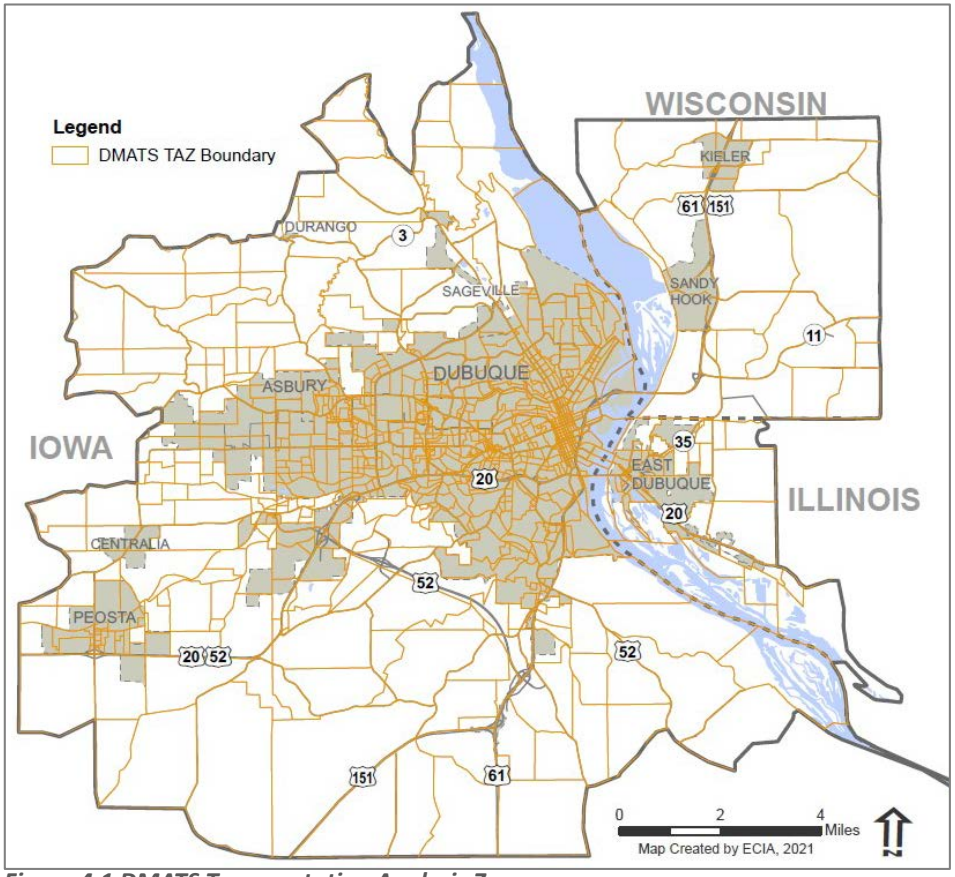


Figure 4.1 DMATS Transportation Analysis Zones

In Trip Assignment, the model assigns trips to specific travel paths on a digital model of the area's roadway network. The network model categorizes all primary roads in the region based on capacity, speed of travel, number of lanes, presence of turn lanes, and surrounding land uses. The model then uses the road network to simulate trips between the production and attraction pairs of traffic analysis zones. The model chooses routes based on the shortest total travel time.

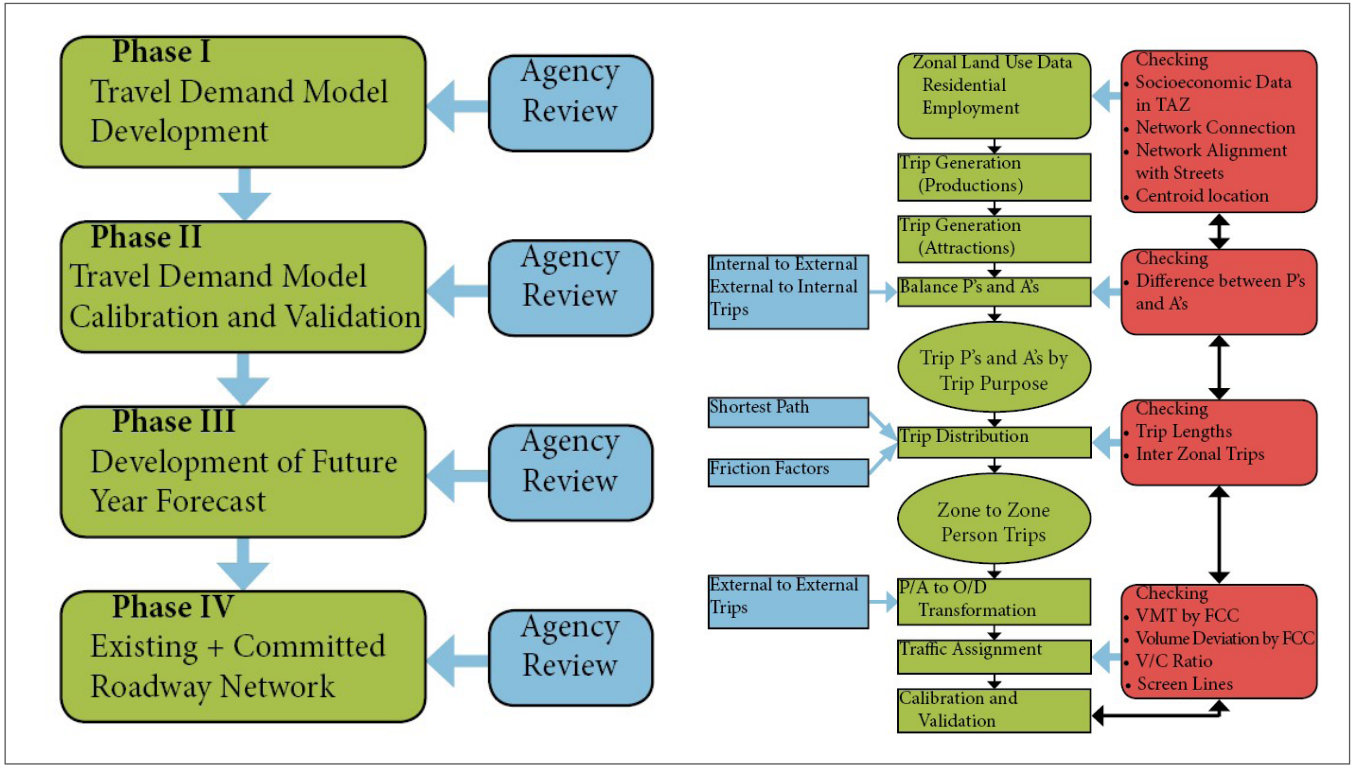


Figure 4.2. DMATS Modeling Process

ISMS

For the 2050 model update, DMATS developed its travel demand model to meet the standards of the Iowa Standardized Model Structure (ISMS). ISMS provides a standardized travel demand modeling architecture for all MPOs across Iowa. ISMS was the result of a multi-year effort led by the Iowa DOT in coordination with the Midwest Travel Model Users Group (MTMUG), a group that provides a forum where transportation professionals meet to discuss travel demand modeling forecasting issues.

While the overall four-step modeling process remined the same, implementation of the ISMS architecture required DMATS to implement a number of changes within the basic model development structure depicted in Figure 4.2.

The most significant ISMS-related change was the shift away from traditional sources of input data to a parcel-based concept. Travel demand models rely on data about economic activity and housing units to predict transportation decisions and trip generations. Prior to the adoption of ISMS, most travel demand models, including the DMATS model, relied on a variety of data sources including the U.S. Census Bureau and the Bureau of Labor Statistics for input data. ISMS introduced a new parcel-based approach to modeling that relies on the parcel data that is produced and maintained by local tax agencies. After evaluating the options for input data, the ISMS model development team chose to recommend parcel data because of its accuracy and availability.

For the 2050 model, DMATS developed an area-wide parcel file based on GIS parcel data provide by the Dubuque City Assessor, the Dubuque County Assessor, the Grant County Assessor, and the Jo Daviess County Assessor. The parcel file serves as the source of basic input data like land use, number of housing units, acres of agricultural and park space, and square feet of commercial and industrial buildings for the model's base year and future forecast years.

Land Use Maps

Land use is a critical component of the DMATS travel demand model. Over time, new development and changes in land use will result in changes in travel patterns. The model uses land use data to determine where people will live, work, shop, and go to school in the future. Figure 4.2. DMATS Modeling Process4.3 displays the DMATS existing land use map. DMATS created a standardized land use map for the region by combining tax assessor's land use classifications into the DMATS parcel file.

DMATS FUTURE LAND USE FORECASTS

After mapping the region's existing land use, the next step in the modeling process is creating a forecast of the area's future land use. DMATS created its future land use forecasts based on (1) the future population and employment projections described in Chapter 2 and (2) on input from local officials and local planning documents including city and county comprehensive plants. The population and employment forecasts provide an estimate of region-wide growth, while the input from local officials and plans provides an estimate of the locations within the area where growth is expected to occur.

Previous versions of the DMATS model estimated future changes in travel demand based forecasted changes in households and employment, but the 2050 model's parcel-based modeling concept uses a different set of inputs. The 2050 model forecasts change in travel demand based on changes in the number of housing units and the amount of commercial and industrial development within a TAZ.

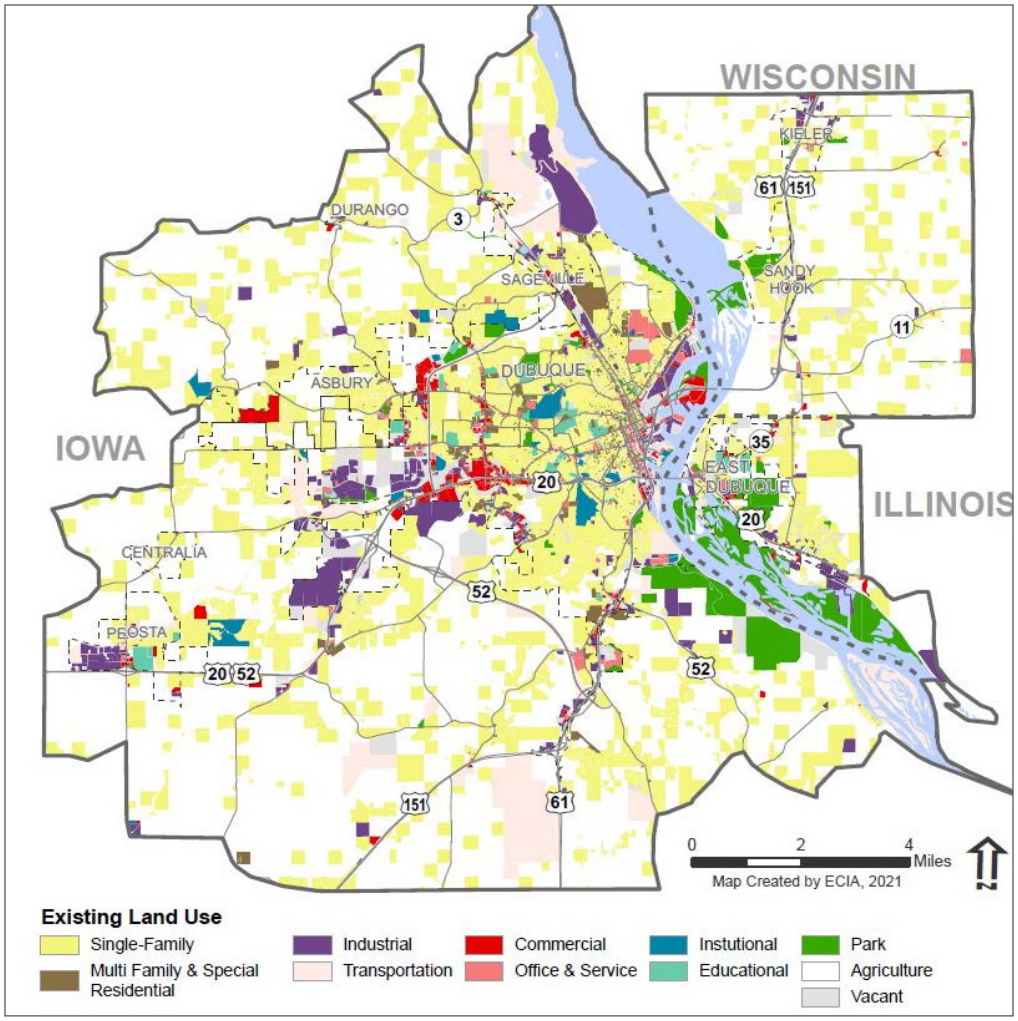


Figure 4.3. DMATS Existing Land Use

To account for the changes to the model, DMATS converted its population and employment forecasts to forecasts of housing units and commercial and industrial square feet. The forecast population growth of approximately 26,000 equates to about 9,000 additional housing units and the estimated 18,000 additional employees will require an additional 17 million square feet of commercial and industrial space.

Figure 4.4 maps the forecasted increase in housing units between 2017 and 2050. The size of the circle represents the number new of housing units. The size of the circle represents the number new of housing units. Figure 4.5 maps the forecasted increase in commercial and industrial development between 2017 and 2050. The size of the circles represents thousands of square feet of commercial and industrial buildings

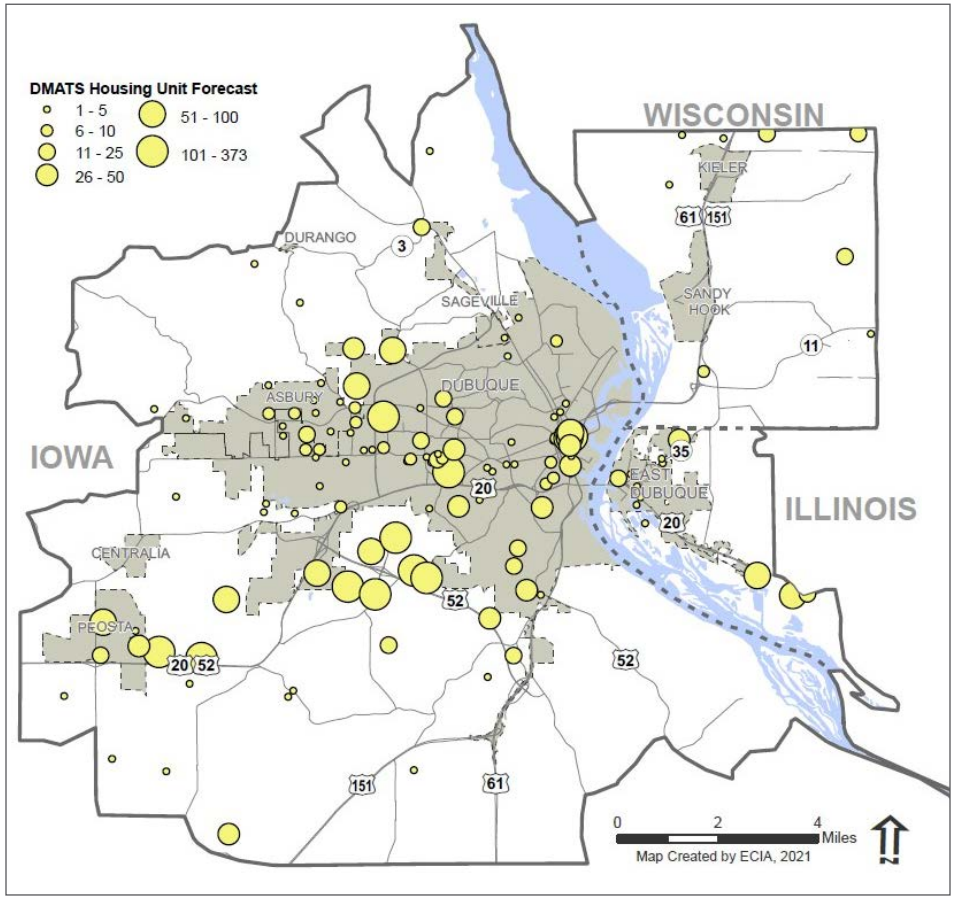


Figure 4.4 DMATS Housing Unit Forecast

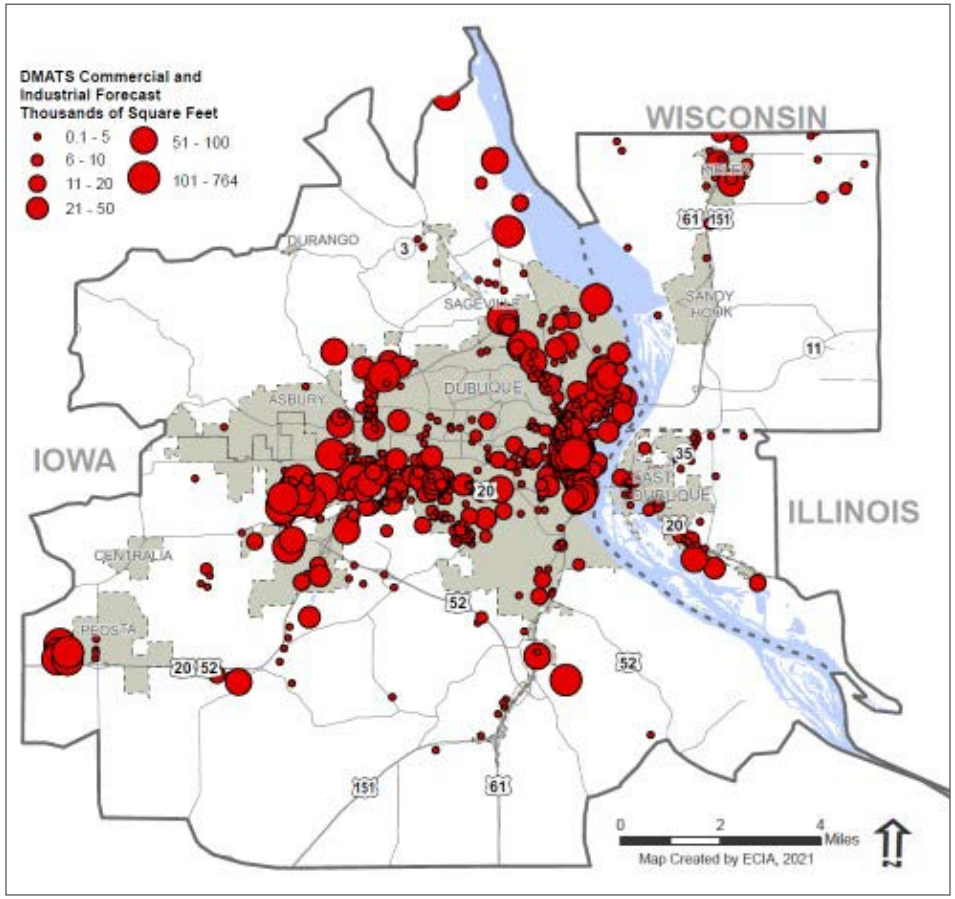


Figure 4.5 DMATS Commercial and Industrial Forecast

Travel Demand Model Applications

After DMATS staff complete the TDM development process, including validation and calibration procedures that verify its accuracy, the model is reviewed and adopted by the DMATS Policy Board. Once adopted, DMATS can then use the TDM to develop the LRTP and for other planning applications.

The TDM is a critical part of the LRTP development process. DMATS uses the TDM to help understand the impact of future development on transportation, and to gauge the system-wide impact of a proposed project. Overall, the TDM allows DMATS to make informed decisions by providing the best possible information about the region's future transportation needs.

The following sections provide examples of outputs form the 2050 DMATS travel demand model. Figure 6 and Figure 4.7 map 2050 traffic volume and level of service produced by the DMATS TDM. DMATS uses these forecasts to as a key part of its process to select and prioritize the projects listed in the LRTP.

2050 TRAFFIC VOLUME

The final output of the travel demand model is the traffic volume for each road segment. Annual Average Daily Traffic (AADT) is the unit of measurement for traffic volume. Following the initial model run, the model is calibrated. The model's travel forecast in the base year is checked against actual traffic counts. Calibration allows the model developer to test the accuracy of the model's forecasts. The National Cooperative Highway Research Program and the Transportation Research Board set standards for calibration. If the predicted traffic volume differs greatly from the observed counts, the assumptions in the model will need to be adjusted. Figure 6 displays 2050 traffic volume forecast for the DMATS area. Note the increases in traffic volume from the 2017 map in Chapter 3.

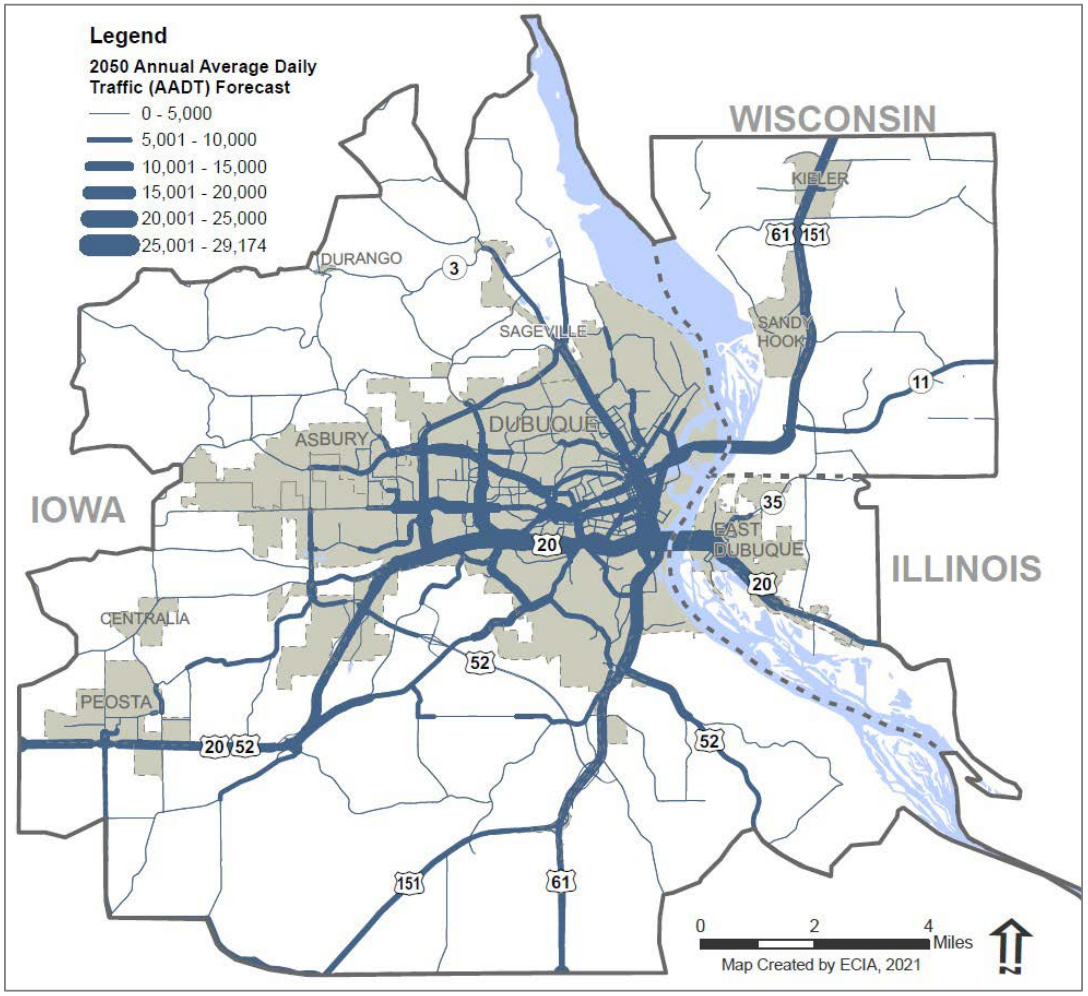


Figure 4.6 2050 AADT Forecast

2050 LEVEL OF SERVICE

In addition to traffic volumes estimates, DMATS uses the TDM to forecast future traffic conditions and congestion. Level of Service (LOS) is a qualitative measure describing conditions within a traffic stream, based on speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience. LOS is estimated by dividing road-way speed by the posted speed limit. LOS "A" represents complete free flow of traffic, allowing traffic to maneuver unimpeded. LOS "F" represents a complete breakdown in traffic flow, resulting in stop and go travel Figure 4.7 maps 2050 level of service based on the DMATS Travel Demand Forecast Model. The figure maps the forecast level of service on the future network including committed projects and projects included in the 2050 LRTP fiscally constrained plan.

The TDM forecasts that future development is expected to result in an overall increase in traffic volume across the DMATS area and an increase in the number of in the number roadway segments with a LOS value below C. US Highway 20 and the NW Arterial are expected to be especially congested as new residential and commercial development occurs in the west and southwest portions of the region. DMATS will address these future congestion areas though its recommended LRTP projects

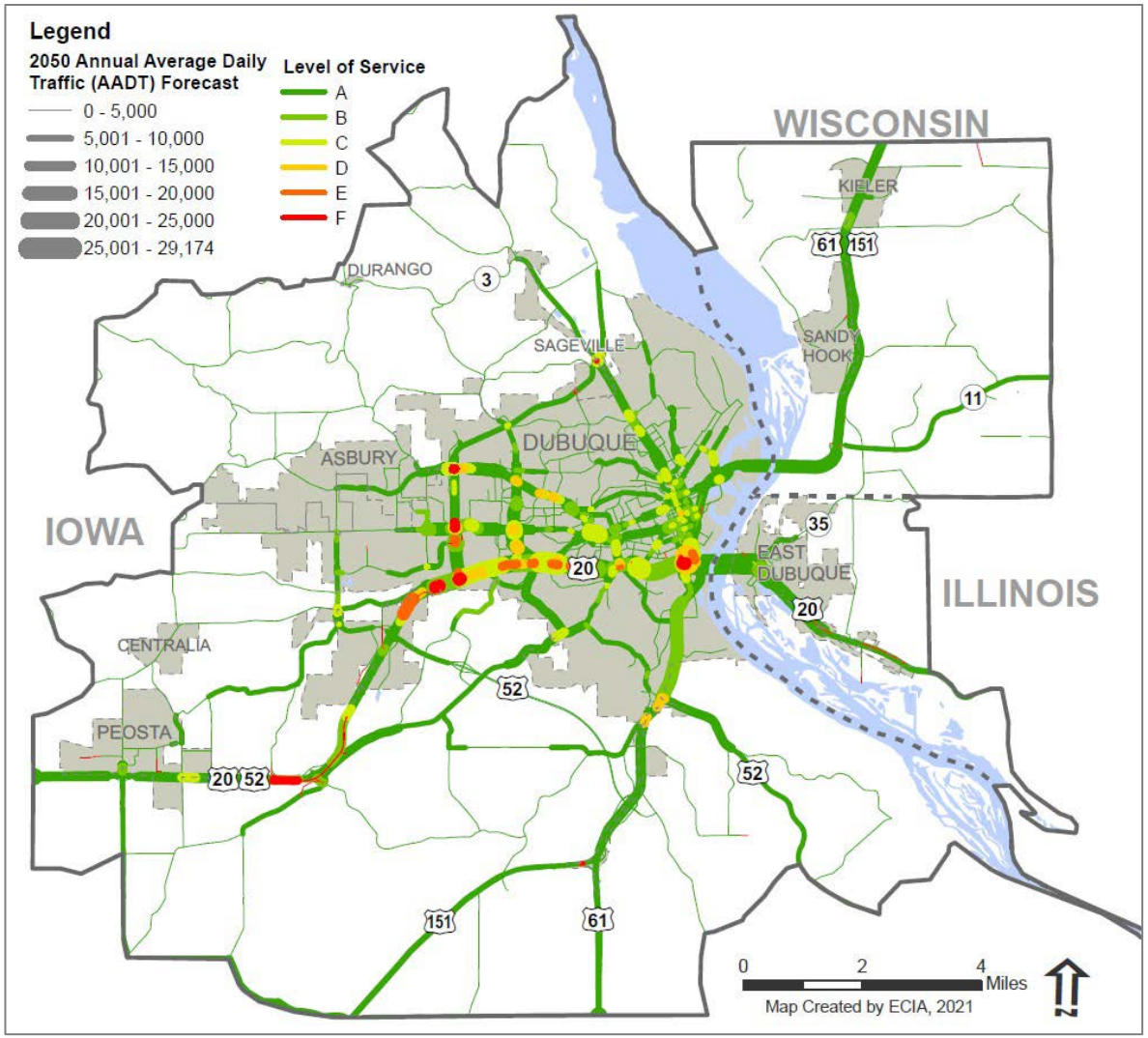


Figure 4.7 2050 Level of Service Forecast
Source: DMATS Travel Demand Forecast Model
LOS A – 0.91 – 1.00; LOS B – 0.81 – 0.90; LOS C – 0.61 – 0.80; LOS D – 0.41 – 0.60; LOS E – 0.21- 0.40; LOS F – 0.00 -0.20

Future Transit Systems

DMATS staff worked with the Jule and Regional Transit Authority 8 (RTA 8) to develop a list of future projects and priorities. DMATS consulted both transit agency staff and transit advisory groups including the Jule Transit Advisory Board (TAB) and the Regional Transit Action Group (TAG). The TAB advises the Dubuque City Council on transit related issues including: system operation, equipment purchases rates, and fares. The TAG is a community group, coordinated by RTA 8, that meets bi-monthly to address regional transportation issues. TAG membership is comprised of human service providers, transit providers, and transportation professionals. TAG members represent originations located in communities served by RTA 8 in Delaware, Dubuque, and Jackson Counties.

To develop future priorities for the LRTP, DMATS staff started with the information contained in the *FY 2021-2025 DMATS and RPA 8 Passenger Transportation Plan* (PTP). The DMATS board adopted the PTP in May 2020. The PTP provides needs-based project justification for all transit programs within DMATS and RPA 8. As part of the PTP development process, the regions transit agencies developed a prioritized list of future projects. Table 4.1 lists the Jule's PTP priority projects. Table 4.2 lists the RTA 8 PTP priority projects that involve communities in the DMATS area.

Table 4.1 Jule Transit PTP Priority Projects

No.	Service Need	Project
1	Replace Jule Buses	The Jule will replace buses that are at the end of their useful life.
2	Update equipment on Jule Buses	The Jule will purchase new onboard computers, swipe card readers, electronic fareboxes, and a farebox collection vault.
3	Greater Accessibility to Service	Shorten wait times, adjust route pickup times
4	Knowledge of routes, schedules, and service options for consumers	Increase knowledge of and market routes and fares
5	Passenger Rail Service Between Chicago and Dubuque	Passenger Rail Service Between Dubuque and Chicago
6	Review and develop standard design guidelines and amenities for bus stops	Review and develop standard design guidelines and amenities for bus stops
7	Public Transit Infrastructure Grant: ARC Transfer Center Phase II	Improvements to west-end transfer center including indoor waiting area and public restrooms
8	Promotion of Intercity Bus Station and Connections to Jule Services	Intercity Bus (5311) Promotion of intercity connections at Intermodal Center
9	Iowa Clean Air Attainment Program: Expanded Weekday Evening Hours; minimum Nightrider service routes, all routes preferred	a. extend weeknight service hours to 7:30pm b. extend weeknight service hours to 8:30pm c. extend weeknight service hours to 9:00pm
10	Partnership service between RTA and The Jule for service to Peosta	Partnership service between RTA and The Jule for service to Peosta
11	Sunday and Holiday Service	Add service on: New Year's Day; Memorial Day; Independence Day; Labor Day; Thanksgiving Day; Christmas Eve, Christmas Day; New Year's Eve
12	Greater geographic coverage of routes	Key West, West End Expansion, Asbury, Illinois, Wisconsin, John Deere
13	Increase the number of bus stop amenities including targeting partner and high ridership locations for bus shelters	Increase the number of bus stop amenities (benches, shelters, lighting) including targeting partner and high ridership locations for bus shelters
14	Review East Dubuque Service Needs	Evaluate needs in East Dubuque
15	State Transit Assistance	Operating Assistance for Day-To-Day Operation
16	Iowa Clean Air Attainment Program: Service to Dubuque Industrial Center South (Seippel Rd & Highway 20)	Operating assistance for service to new industrial park jobs
17	Iowa Clean Air Attainment Program: Service to Kerper Blvd Industrial Area (including Veterans Freedom Center)	Operating assistance for service to new industrial park jobs
18	Maintenance and repair of ADA features on all transit vehicles	(5310) Capital Assistance
19	STA Special Projects	Service Expansions Identified in PTP
20	ICAAP Funding	Service Expansions Identified in PTP
21	Bus Replacements	Replace 35' HD buses
22	Bus Replacements	Replace 22' MD buses

Table 4.2 Jule Transit PTP Priority Projects

No.	Service Need	Project
1	Improve attendance and action from the TAG. More accountability and influence as a group	Form a TAG Technical Group to identify gaps in transportation within each County, devising strategies to address the gaps, and obtaining funds to support creative transportation solutions.
2	Advancement and improved structure for RTA with set goals	Develop a five year Strategic Plan
3	Identify every potential community in the region that may need transportation, but is not utilizing RTA (growth potential) e.g. Amish	Conduct a Transit Self-Assessment; data collection for a demographic analysis and transit demand estimation

No.	Service Need	Project
4	Seniors needing rides with little or no money and not a member with NEIAAA	NEIAAA partnering with RTA to complete NAPIS intake form to allow for immediate ride accommodations. Bill NEIAAA for the rides within 30 days.
5	RTA general public rates too expensive, particularly for working parents needing help with transportation for children, and for senior citizens. Delaware County volunteer drivers also having concerns about the cost to their passengers.	Service Improvement Plan: all three counties agreed to subsidize the cost of rides, reducing the cost to the individual riders. All agreed to fund full cost for children age 15 and under, making those free, for as long as designated funding lasts.
6	Consumers can be anxious on the bus and sometimes act out. Provide activities to keep them occupied and entertained.	Bus Buddies. Either hire high-functioning consumers to conduct activities on the bus, or find volunteers; retired teachers (who can also develop a program/ activities for consumers to follow)
7	Possible need to get low-income Dubuque County residents to Dubuque Farmers Market	Work with Dubuque Main Street to determine the need for transportation for residents in the rural Dubuque areas and Asbury/West End to the downtown Dubuque Farmers Market on Saturday mornings. Also for Dubuque Winter Farmers' Market.
8	Strategy for spending advertising dollars and promoting RTA services	Marketing Plan
9	Increase RTA's operational revenue stream	Bus Wraps
10	Improve RTA's reliability of service and wait times	Develop an app, a portal and re-designed website to improve coordination and reduce wait time, show (potentially improve) availability, and provide better communication
11	Free rides for low-income individuals with no other funding	Rides for Wellness Ride Vouchers - grant from United Way under Health Pillar
12	Goodwill gesture by RTA to community partners	RTA Christmas Bus Decorating. Consumers and staff come to RTA garage at noon to decorate their bus with home-made or purchased decorations. In the evening gather again to ride the bus to dinner, then to Reflections in the Park, with a "winner" announced at dinner
13	Pacific Islander (Marshallese) community in Maquoketa needs transportation to medical appointments in Dubuque & Iowa City, ICE in Cedar Rapids, Immigration Court in Omaha, NE.	Partner with Community Foundation of Greater Dubuque, Crescent CHC and Pastor Wihden in Maquoketa, for funding and trip coordination to Dubuque, CR and Omaha, NE.
14	Transportation between Dubuque and Manchester	Add service between Dubuque and Peosta with possible future extension to Manchester with stops at the Dyersville Park & Ride, Farley and Peosta. Possible options include a route, carpool or vanpool.
15	Expand mid-day service	Explore coordination opportunities between The Jule and RTA
16	Offer same day service, or demand response	Provide services on an on call basis
17	Work with MCOs and transportation brokers to fill gaps in non-emergency medical service	Continue and grow collaboration with human service agencies, dialysis, medical centers, and MCOs
18	Partner with IowaWORKS to identify and address employment transportation needs	Continue discussions with PROMISE JOBS
19	Expand Hours	Expand hours to include late afternoons, evenings, weekends and holidays for all three counties
20	Provide Inter-county transportation	Transportation in Dubuque, Delaware, Jackson, Clinton and Clayton Counties
21	Recruitment and retention of paid and volunteer drivers	Continue to recruit paid and volunteer drivers and retain current part time drivers and subs
22	Provide rider education and increase knowledge of services available	Continue Travel Training Program
23	Easily, accessible transportation information available on the internet for potential customers	Develop a "one stop" website for transportation options in our area
24	Update Transportation Resource Guide	Update Transportation Resource Guide

Future Bicycle and Pedestrian Facilities

DMATS is committed to creating more opportunities for walking and biking by improving its bicycle and pedestrian network. Over the past several years, communities in the DMATS area have continued to add to the regional network of on and off-street walking, hiking, and biking routes.

While the area has made progress, DMATS still has work to do to reach its goal of developing an integrated bicycle and pedestrian network. Through the LRTP and the Tri-State Area Integrated, Walking Bicycling, and Hiking Network Plan, DMATS has developed plans for future bicycle and pedestrian improvements. Future bicycle and pedestrian improvements fit into the following three priority areas:

- Improve pedestrian safety
- Continue to expand the regional trails network
- Improve On-Street Bicycle Safety

Improve On-Street Bicycle Safety

Improving safety for all users of the transportation system is one of the most important priorities established of the DMATS LRTP. On-street biking allows bicyclists to access destinations that they would not be able get to using the off-street trail system alone. However, safety is an important consideration with on-street bicycling. Bicyclists are more exposed and vulnerable to injury than people in cars, and are bicyclists are more likely to interact with cars when riding on streets. To improve bicycle safety, communities need to consider the needs of bicyclists in the transportation planning process and integrate design improvements into existing streets.

Continue to Expand the Regional Trails Network

Off-street trails provide walking and biking based mobility and recreation. Off-street trails are also a good option when traffic volume and vehicle speed make on-street facilities too dangerous. Off-Street trails are a DMATS communities have worked to expand the regional trail network over the past several years. The NW Arterial Trail and Bee Branch Trail are examples of trail improvement projects. DMATS communities have made plans to expand the network and to improve existing trails by implementing projects such as adding additional amenities and improving wayfinding signage.

Improve Pedestrian Safety

Like biking, walking is a transportation mode that combines mobility and physical activity. Walking is also the only means of transportation for many people who are unable to drive. But, pedestrians, like bicyclists, are also exposed and more vulnerable to injury if they are involved in a vehicle crash. To improve safety for pedestrians communities can plan and design streets in ways that will improve safety for pedestrians.

Communities have many design options at their disposal for improving pedestrian and on-street bicycle safety. The design elements chosen for implementation will be unique to each street. Streets with more vehicle traffic and higher vehicle speed will require more protection to the bicyclist, while low speed low volume streets may require no additional intervention. For pedestrians, sidewalks and crossings are important design elements. The Federal Highway Administration has produced or recommended several design guidance document that can help communities select the appropriate bicycle design elements. Guidance documents include the AASHTO Guide to Bikeway Facilities, the Manual on Uniform Traffic Devices (MUTCD), and the National Association of Transportation Officials (NACTO) Urban Bikeway Design Guide and Urban Street Design Guide.

DMATS and the City of Dubuque have adopted complete streets policies. These polices state that the respective agencies will consider bicycle and pedestrian improvements when planning and designing streets projects. DMATS is working to implement bicycle and pedestrian improvements through the Complete Streets Policy.

BICYCLE AND PEDESTRIAN CRASHES

To illustrate the need for bicycle and pedestrian safety improvements DMATS mapped the locations of bicyclist and pedestrian injuries that resulted from a vehicle crash. From 2016 to 2020 there were 136 bicyclists and pedestrians injured in vehicle crashes. The total injuries included 3 fatalities and 17 serious injuries. Figure 4.8 maps the location and severity of the injuries. The location of pedestrian and bicycle crash injuries can provide information on where safety improvements are needed.

PLANNED AND PROPOSED BICYCLE AND PEDESTRIAN FACILITIES

Unlike road network planning, there is no modeling process for forecasting future demand for trails. However, DMATS has used several criteria to locate areas of high demand for bike and pedestrian facilities, and to identify barriers to walking and biking. DMATS uses land use maps, commuter patterns, bicycle and pedestrian counts, and crash data to develop its list of future projects.

Figure 4.9 maps the planned bike and pedestrian facilities in the DMATS area. See Chapter 7: Projects for details on bicycle and pedestrian projects included in the DMATS fiscally constrained plan. The remaining projects in the map are regarded as illustrative, as none have a dedicated source of funding. For a detailed description of planned bicycle and pedestrian facilities, please see the Tri-State Area Integrated Walking, Bicycling and Hiking Network Plan.

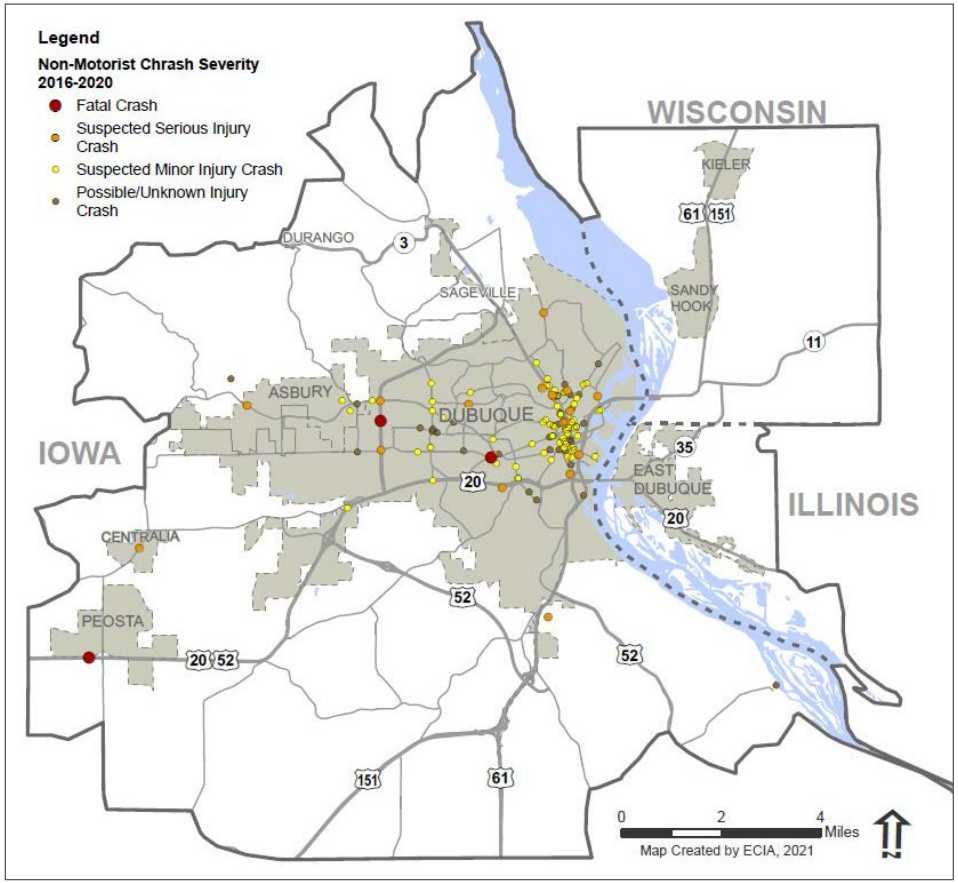


Figure 4.8 Bicycle and Pedestrian Crash Injuries

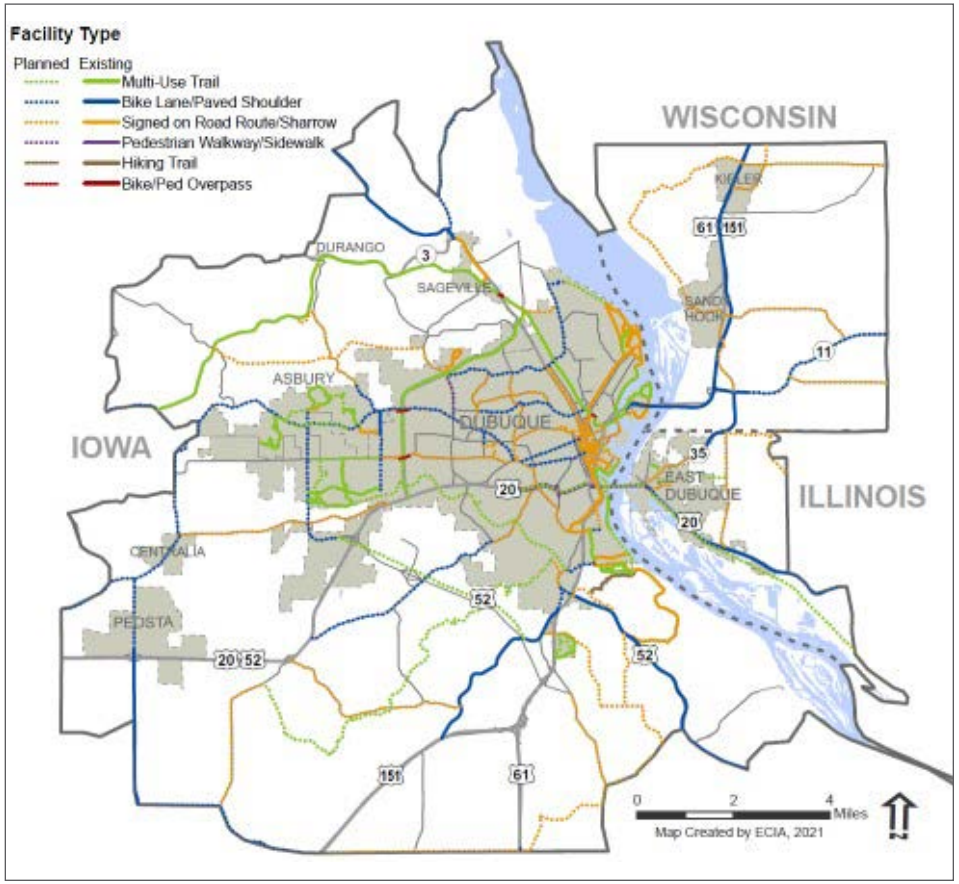


Figure 4.9 Future Bicycle and Pedestrian Facilities

Future Airport Plans

The Dubuque Regional Airport Master Plan guides future projects at the Dubuque Regional Airport. The current Master Plan was adopted in 2021. The Master Plan's recommended development concept presents a recommended configuration for the Dubuque Regional Airport that preserves its role while meeting FAA design and safety standards to the extent practicable. The concept establishes a vision and direction for facility needs for the next 20 years and beyond.

The Master Plan Concept includes development recommendations for both airside facilities and groundside facilities. The airside plan generally considers improvements related to the airport's runway and taxiway system and navigational aids. Airside projects include upgrades to existing runways and taxiways including extensions at the north and south ends of Primary Runway 18-36 to increase the total length to 7,500 feet from its current length of 6,327 feet. The runway extension project will require property acquisition and relocating some of the existing instrument systems. The runway extension will allow it to accommodate the types of aircraft that are currently, or are projected to, conduct 500 or more operations per year at the airport.

The Master Plan Concept also identifies upgrades to the airport's groundside facilities needed to accommodate future demand for terminal space, hanger space, parking areas, and taxiways due to anticipate increases in airport use. The Master Plan forecasts steady growth enplanements, aircraft operations, and number of based aircraft for over the next twenty years. Total annual operations are forecast to increase from 59,797 in 2019 to 81,622 in 2039. Scheduled passenger enplanements are forecast to grow from 38,397 in 2019 to 52,600 by 2039. Based aircraft are forecast to increase from 78 in 2019 to 122 in 2039.

Future Passenger Rail

DMATS has worked for the past several years to establish an Amtrak passenger rail route between Dubuque and Chicago. Amtrak published a report in 2007 that identified one feasible route between Dubuque and Rockford, and four feasible routes between Rockford and Chicago. In 2010 the Illinois DOT released an updated report that reduced the routes up for consideration to two, and analyzed the routes based on performance, ridership, and cost. The report estimated a capital cost of $60 million to get the Dubuque to Chicago service up and running.

In the spring of 2014, following unsuccessful negotiations with CN, the State of Illinois announced a $233 million plan to extend Amtrak service to Rockford along lines owned by Metra and the Union Pacific Railroad. Planned improvements included upgrading tracks, capacity improvements, bridge improvements, and new stations. The plan included a future service extension to Dubuque with stops in Freeport and Galena.

As of summer 2021, both the Chicago to Rockford and Rockford to Dubuque projects continue to move forward. In September of 2020, the Illinois DOT announced that it had hired a consultant to manage the Chicago to Rockford portion of the project. The segment was also included in Amtrak's 2035 rail plan. In 2020 the Illinois DOT awarded a Statewide Planning and Research grant to DMATS and its regional partners to complete a feasibility study for the Rockford to Dubuque route. The project team has selected a consultant that expects to complete the final report by spring 2022.

Future Traffic Management

For communities in the DMATS area, limiting traffic congestion is critical for the region's overall economic competitiveness. Poor traffic conditions can affect the quality of life of the area's residents and limit area business's ability to move goods from place to place.

DMATS is committed to continuing to improve traffic flow and relieve congestion within its planning area. Expanding roadway capacity, i.e., building new roadways and adding additional lanes to existing roadways is an important part of the organization's future traffic management stagey. But, DMATS also understands that over the long term it cannot address traffic congestion with infrastructure construction projects alone.

DMATS and its members have identified a number of non-capacity related strategies that are aimed at improving the performance of the area's existing and planned transportation facilities. Theses efforts include expanding the area's implementation of transportation technologies and harnessing the power of those technologies through the STREETS project.

ITS Infrastructure

Over the years, DMATS has worked with its partners to invest in the region's Intelligent Transportation Systems (ITS) infrastructure. ITS integrates advanced technologies into transportation infrastructure including: cameras and other sensors that monitor traffic conditions, and a network of fiber optic cables and wireless communications devices that connect individual sensors to the regional network and deliver data to a central operations center where data is processed and put to use.

Within in the DMATS area, the City of Dubuque has constructed a fiber optic backbone along the region's major corridors and through parts of the downtown area. The City has also undertaken a program to install fiber optic conduit and advanced ITS components into all new or reconstructed traffic signal controllers throughout the city. The need for monitoring traffic and adapting signal plans to changing conditions has led the City to install four-inch multi-ducted conduit under all new roadways to accommodate future fiber optic communications cable.

The City of Dubuque has invested in a robust Traffic Operations System that uses advanced communication technologies along with state of the art traffic control equipment that allows management of the operations via a Traffic Operations Center (TOC) located at City Hall.

Within the DMATS area, communities have applied ITS technologies in a variety of ways including: traffic counts for project planning, traffic signal timing and coordination, and motorist notifications through dynamic message sign (DMS) boards.

DMATS has identified a number of future ITS improvements in the LRTP fiscally constrained plan. See Chapter 7: Projects for location and cost information on these projects.

STREETS Project

The Smart Traffic Routing with Efficient and Effective Traffic Systems or STREETS project represents the future of the DMATS area's traffic management efforts. Dubuque has been a leader in the use of ITS technology to manage and operate its traffic signal network. The implementation of these technologies has resulted in reduced delay on some of the area's most heavily traveled corridors.

The STREETS project is based on the vision of "doing more with our technology" by creating the next generation of integrated traffic signal systems that includes rapid simulation of future traffic conditions based on real-time data collection. It also includes communicating the modeled changes to road-users before they leave and in route to balance delay and reduce congestion.

When implemented, the STREETS system will greatly improve the regions traffic management capabilities by creating a platform for dynamic rerouting of traffic to balance road user delay. STREETS also improve traffic incident management, by rerouting traffic around roadway incidents, and provide real-time traveler information through existing and planned DMS boards. The system is also expected to have safety benefits with a reduction congestion, crashes, and vehicle emissions. Over the long term the streets system will provide a robust dataset that will be used to develop recommendations for future projects.

STREETS PROJECT GOALS

Phase 1 of the STREETS project, Systems Engineering, was completed in 2018. The Systems Engineering Final Report created a guide for future phases of the project by defining the roles and responsibilities of the stakeholders involved and the basic technical requirements of the system. The report also established the following goals and objectives for the project:

Improve Mobility

- Reduce travel time for commuters within the corridor
- Increase person and vehicle throughput on the corridor
- Reduce delay time for corridor travel on the corridor's networks
- Detour/reroute traffic among corridors to balance the capacity usage

Reduce Congestion

- Improve intersection operation
- Reduce delay at intersections
- Reduce incident detection time

Improve Safety

- Reduce incident rate
- Reduce injury rate
- Reduce fatality rate
- Reduce roadway hazards

Provide Information for Travelers

- Improve collection and dissemination of road network information
- Collect and process data on the operational condition/status of all corridor networks, including:
    - Comparative travel times between major origins and destinations
    - Construction, detours, and other planned road work
    - Occurrence and location of incidents
    - Expected delays

Disseminate comprehensive, real-time, and accurate information to travelers within the corridor by means of multiple media (e.g., phone, computer, CMSs, 511 App)

Make available archived historical data to travelers

PROJECT TIMELINE

As of summer 2021, the STREETS project is currently at the beginning of multi-year implementation phase. Final plans are currently being developed and full construction and implementation of the system is expected to be complete by early 2024.

Electric Vehicle Readiness

Electric vehicle (EV) technology and deployment have advanced dramatically in recent years, creating opportunities to directly reduce emissions from the transportation sector while providing additional economic and energy security benefits. Recognizing the role that the role that local and regional governments can take in establishing an electrified transportation future, DMATS worked with several communities in eastern Iowa define strategies to achieve a greater level of readiness for EVs. w *Eastern Iowa Vehicle Readiness Plan* (EVRP) is a collective effort that cities, counties, and MPOs of Eastern Iowa are taking towards the goal of increasing zero-emission vehicles as one of the available solutions leading to lower transportation emissions, while ensuring that the mobility needs of the region and target carbon reductions are met equitably. The the Eastern Iowa EVRP's recommended readiness strategies and priority actions are summarized in table 4.3.

Table 4.3 EV Key Readiness Strategies and Actions

Key Readiness Strategy	Priority Action
Invest in EV Charging Infrastructure	Quantify the need for new publicly available charging equipment to fill gaps at both local and regional level, including direct current (DC) fast chargers to enable long-distance travel along corridors.
Expand Access to EV Charging Infrastructure	Amend local zoning/land use codes to allow EV charging as a permitted accessory use, and to include incentives (e.g., density bonuses) for the installation of charging infrastructure in new construction and major renovations.
Adoption of and Access to EVs	Coordinate with dealers to facilitate point-of-sale rebates for EVs.
Increase Education and Awareness of EVs and EV Charging	Develop and maintain a comprehensive EV resources website to educate all Eastern Iowa consumers on the environmental, financial, and other benefits of EVs. The website should include information on logistics of buying EVs (including available incentives), installing charging (including the local permitting process), finding charging, etc. Link to other reputable and well-maintained resources as appropriate.
Coordinate Regionally to Implement Actions and Strategies	Integrate EV readiness into regional planning efforts, including regional transportation plans and sustainable communities' strategies.
Lead by Example	Educate municipal/county employees about EVs and EV charging and encourage EV adoption through the development of workplace charging programs.

Chapter 5
Public Input

Introduction

Collecting public input is a crucial step in all DMATS planning activities including the LRTP. The information and perspectives provided through public participation assist decision-makers and lead to a more meaningful and comprehensive planning process. Good public participation techniques allow planners to identify issues and understand aspects of the transportation system that may be missed when considering a project from a purely technical or political point of view. Effective transportation planning must include the participation of those whose everyday lives are affected by how they are able to get to work, home, school, stores, and services.

DMATS Public Involvement Plan

The FAST Act requires MPOs to collect and consider public input as part of the long range transportation plan development process. The DMATS Public Involvement Plan (PIP) guides the public participation in the regional transportation planning process. The plan, updated in 2021, outlines recommended methods to engage the public during the transportation planning & decision-making process and informs members of the public how they can be involved.

In keeping with the spirit of public involvement and participation, DMATS follows a systematic approach that allows the public to become involved in the transportation planning process. DMATS consistently adheres to established guidelines as a means of heightening public involvement. This includes the Title VI population, persons with a disability, the Limited English Proficiency (LEP) population, the Environmental Justice (EJ – low income and high minority) zone populations, and other traditionally underserved groups.

Utilizing various techniques to solicit public involvement has proven to be the most effective means by which to attract citizen involvement. DMATS remains committed to using a variety of resources to reach out to the public and attempt to engender public participation. Figure 5.1 lists available participation methods.

DMATS is committed to the concept of public participation and will work to ensure that the public plays an active role in transportation planning. The hope is that public participation will reduce unfavorable public opinions of transportation projects by incorporating public sentiment into the planning process.

Figure 5.1 Ways to Participate

DMATS LRTP Input

COVID-19 Pandemic

The typical DMATS LRTP development process calls for a series of in-person meetings. From meetings with individuals or small groups up to large community workshops, meetings are an important tool for listening to the community and developing plans for the future. The COVID-19 pandemic required everyone to make changes to typical routines, and the LRTP planning process was no different. DMATS altered its typical process to keep the community healthy and limit the spread of the virus while continuing to provide everyone with the opportunity to participate in the development of the LRTP. During the LRTP development process, DMATS staff took the following pandemic mitigation steps:

- Held meetings virtually though Zoom when practical.
- Collected public input through surveys and other methods that do not require personal contact.
- Distributed project information through the DMATS website.

DMATS monitored the COVID-19 situation throughout the LRTP development process and updated is mitigation strategies as needed. By summer 2021 DMATS was able to ease some restrictions and begin holding meetings in-person.

Community Survey

A key component of the LRTP public input strategy was a community survey that was conducted by of DMATS staff in February and March of 2020. The twelve-question online survey form was created using Survey Monkey and published on the DMATS website. The results of the survey are based on a total of 126 responses. Figure 5.2 shows the results of survey Question 3 that asked respondents to rank a set of 17 transportation considerations. The three highest ranking times on average were 1) Transportation costs for individuals and families 2) Transportation safety and 3) Rising cost of maintaining aging roads and bridges. Full results of the survey are available in Appendix B.

Public Meetings

The DMATS area is made up of several distinct communities containing diverse populations that require different public services. To adequately serve the needs of these unique communities, and to ensure that all communities are represented in the LRTP, DMATS created a public input strategy where DMATS staff attended meetings of a variety of community groups across the MPO planning area. Staff gave a short presentation on the LRTP and engaged in discussions with members of the group. City and County staff and elected officials attended several of the meetings and contributed to the discussion.

At the meetings DMATS staff provided a presentation that included basic information about DMATS and the LRTP and directed people to additional sources of information including: staff email addresses, the DMATS website, and DMATS social media accounts. Table 5.1 includes a list of the meetings attended.

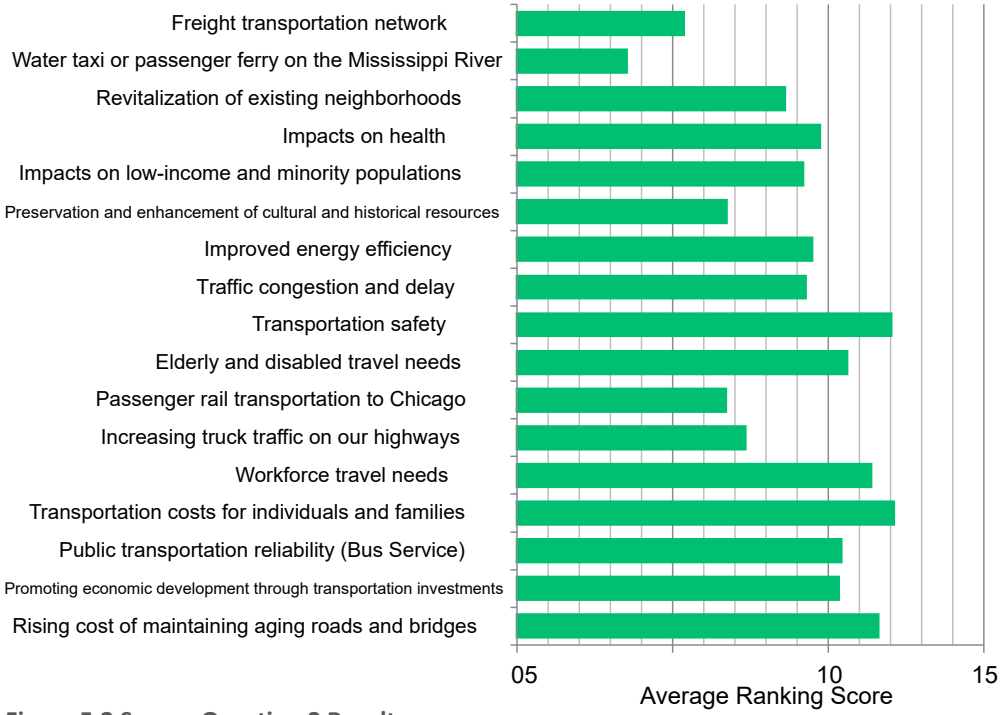


Figure 5.2 Survey Question 3 Results

Question - Which of the following considerations would you want your elected representatives to give most weight to when choosing transportation projects to fund? Rank each issue by its importance. 1=Most important to consider, 17 = Least important to consider.

Following the community group meetings, DMATS hosted two general public input meetings via Zoom on August 26, 2021.

Table 5.1 LRTP Community Meetings

Meeting	Date
Dubuque City Council Meeting	6/7/2021
East Dubuque City Council Meeting	6/22/2021
Peosta City Council Meeting	8/22/2021
Asbury City Council Meeting	6/22/2021
Dubuque County Board of Supervisors	7/6/2021

Draft Chapter Review and Comment

During the LRTP development process DMATS provides opportunities for public review and comment on draft plan chapters. As draft chapters are developed, DMATS staff present the drafts at the DMATS Policy Board and Technical Advisory Committee meetings. All MPO Policy Board and advisory committee meetings are open to the public, agendas are posted online prior to the meeting, and public comment opportunities are provided at those meetings. DMATS staff also published draft LRTP chapters on the DMATS website. The public may also request printed copies of draft chapters for their review. The public can submit comments on draft LRTP chapters by email, phone, fax, in writing, or in person at the ECIA office.

Public Hearings and Final Adoption

The DMATS PIP requires the organization to hold at least one public hearing prior to the adoption of the LRTP. Notice of the meeting is published 4-20 days prior to the scheduled meeting and the hearing is typically held as part of a regularly scheduled DMATS meeting.

Input Summary

This section includes a summary of the input collected during the public input process. Appendix B includes a full listing of public input collected. DMATS Table 5.2 includes summarization of suggested polices and projects. Items in the table are listed in no particular order.

Table 5.2 LRTP Public Input Summary

Highways and Roads
Arterials need frontage roads with limited access-not all the traffic lights.
Quit putting stop lights up all the time. Northwest Arterial was the prefect set up for overpasses, but instead they stuck stop lights all over the place.
Road marking should be improved - very poor during darkness and/or precipitation.
Dodge Street from Devon to Old Highway is a mess - huge bottleneck. Improvements are long overdue (additional lanes, overpasses, etc).
Sundown Road capacity improvements.
Truck route improvements on Old Davenport Road and Schueller Heights Road.
Resurface Old Highway Road
Highway 20 and Cox Springs Road frontage road
Transit
Regular reliable bus service between Asbury and Dubuque.
We need bus system to be available to all employees and to have more bus stops.
I think we need to find more transportation in an uber-like way for individuals that are willing to work but lack the transportation to get them to e.g. Peosta. In many cases employees need a ride to work the first few weeks, but after that they figure out rides. Can we offer a low-cost service that helps get rides until workers are able to get rides or find other alternatives? We also need to keep in mind 2nd and 3rd shift options for people
Public transit and electric vehicle infrastructure need to be heavily considered.
Public transportation needs to be affordable but practicable regarding to economically sustainability.
Public transportation needs to be affordable but practicable regarding to economically sustainability.
Bike and Pedestrian
Improve pedestrian and bicycle routes.
The region is significantly behind the times for investments in bicycle trails, on street routes and infrastructure are necessary for workforce recruitment, retention and overall single vehicle use reduction.
Pedestrian crossing at Iowa Highway 3 and John Deere Road
Airport
Lower price of flying from Dubuque.
More flight options, or at least more options in the summer to frequent traveled areas.
Lowering the cost to Chicago to eliminate people traveling further for flights

Table 5.2 LRTP Public Input Summary (Continued)

Rail
Walking from the Port of Dubuque to Downtown is difficult because of trains parked on the tracks at 5th Street
I feel we have a serious need for rail travel in our area.
railway to Chicago would be beneficial.
Miscellaneous
Improve the efficiency of traffic traveling through Dubuque. Coordinate traffic lights for smooth travel.
More public input.
I transport kids to daycare and work very early in the morning. Need my own car.
Current infrastructure should be improved/maintained before alternative options are funded (rail, water taxi).
Travel time drastically varies based on time of day.
Traffic signal coordination/timing is drastically needed.
We need State tax credit for electric vehicles.
Climate change impacts need to be a key component in this planning process.

Chapter 6
Safety

Introduction

DMATS has identified improving safety by reducing transportation-related injuries and deaths as a key goal the Long Range Transportation Plan. Chapter 4 of this plan uses crash data to help identify locations with safety issues where transportation officials can implement specific countermeasures to reduce the number of crashes, injures, and deaths. Chapter 6, the safety chapter, expands focus beyond specific locations to assess safety at a regional level. The chapter conducts a region-wide analysis of crashes that compares the DMATS area to state and national averages and studies the underlying causes of crashes. The chapter concludes with a collection of regional strategies that can be implemented to address the safety issues identified by the analysis.

Data and Assumptions

The DMATS area covers portions of three counties in three states: Dubuque County, Iowa, Grant County, Wisconsin, and Jo Daviess County, Wisconsin. Each of these jurisdictions has its own methods for collecting and analyzing safety data. Because of these differences, DMATS does not typically have one standardized dataset to use for a region-wide analysis. In many cases this means that data available in one state is not necessarily available in another state. In addition, some data is only available at the county level. The DMATS area includes portions of counties, so with county level data it is not possible to get a dataset that fits the DMATS area exactly.

To account for these data related issues, DMATS has made the flowing assumptions:

•In instances where data only available at the county level, DMATS will use Dubuque County data DMATS determined that of the three area counties, Dubuque County would be most representative of the DMATS are because it contains the largest portion of the DMATS area's land area and population, and the DMATS area contains 75% of Dubuque County's population. The analysis did not use Jo Daviess County, Illinois and Grant County, Wisconsin data as the portions of these counties within the DMATS boundary contain less than 5% of either county's population.

• In instances where point location crash data is available, DMATS will provide separate charts for each portion of the area. This allows DMATS to avoid trying to combine data from different state databases

• DMATS has labeled all charts with their data source and the geographic area covered by the dataset.

Fatalities and Serious Injuries Trends

For the first level of safety analysis, DMATS compares Dubuque County's fatality and serious injury rates with state and national averages. DMATS looks at two rates: fatalities and severe injuries per 100 million vehicle miles traveled and fatalities per 100,000 population. The rates allow DMATS to compare safety data from different geographic levels and across time while accounting for differences in population and miles driven. Tracking these rates over time allows DMATS to see if numbers trending in any particular direction. The result of the analysis shown in figures 6.1-6.3. Figure 6.1 charts fatalities per 100 million vehicle miles traveled. Figure 6.2 charts serious injuries per 100 million vehicle miles traveled and Figure 6.3 charts fatalities per 100,000 population.

According to Figure 6.1, between 2010 and 2018 state and national fatality rates held steady at around 1.0 and 1.2 fatalities per 100 million vehicle miles traveled (HMVMT). Over the same time period, Dubuque County maintained a fatality rate below the state of Iowa and national rate, with the exception of 2014 and 2017 where the fatality rate went to 1.2 and 1.3 fatalities per HMVMT respectively.

In general, serious injury rates, shown in Figure 6.2 in Iowa have been trending downward over the previous decade, falling from 6.2 to 4.0 in 2018. As with the fatality rate, Dubuque County's serious injury rate has been below the state rates with the exception of a couple of years. In this case the exceedances occurred in 2012 and 2016. The Safety analysts attribute this success to a number of factors, including increased seatbelt use and fewer alcohol-related crashes. High fuel prices and poor economic conditions have also led to a downturn in the number of vehicle miles traveled. According to early projections, the fatality rate, which takes into account the number of miles traveled, reached the lowest level ever recorded.

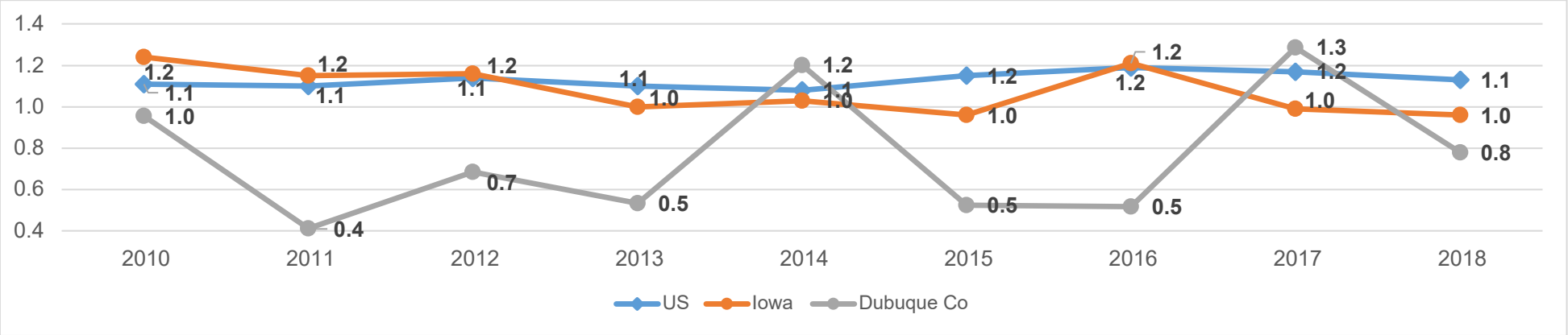


Figure 6.1 Fatalities per 100 million vehicle miles traveled
Source: National Highway Traffic Safety Administration. Dataset geography: Dubuque County

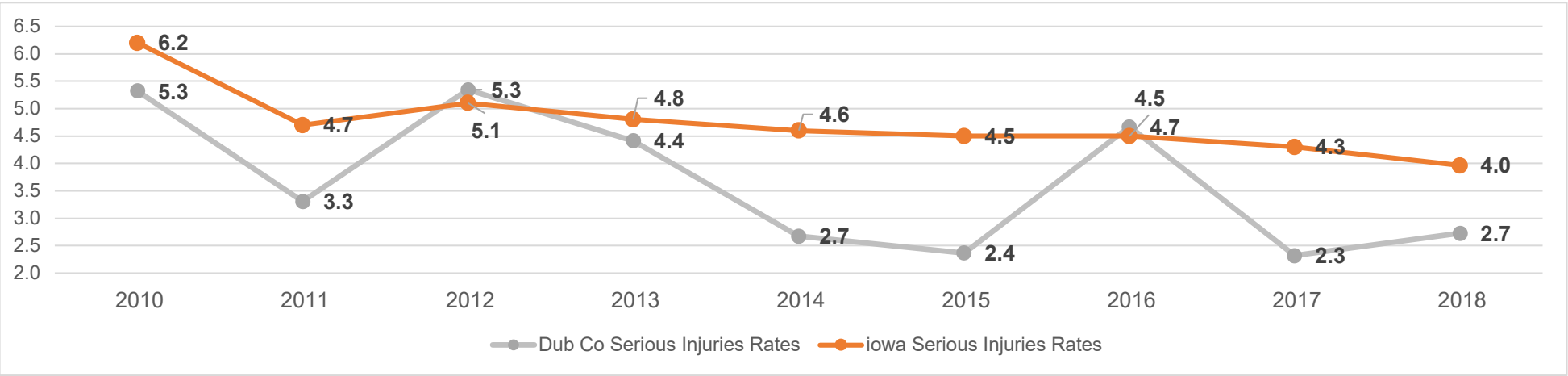


Figure 6.2 Serious injuries per 100 million vehicle miles traveled
Source: Iowa DOT. Dataset geography: Dubuque County

Looking at fatalities per 100,000 population in Figure 6.3, from 2010 to 2018 Dubuque County maintained a rate below the state and national averages. As with fatalities per HMVMT, Dubuque County recorded its highest fatalities per 100,000 population in the years 2014 and 2017. While these two years were still below the state and national rates, they were still much higher than the values typically seen in Dubuque County which tend to be between 4 and 5 per 100,0000. In 2018, the most recent year where data was available, the Dubuque County dropped back to of 6.2 fatalities per 100,000 population. To address the elevated fatality rates the DMATS policy board has elevated the importance of transportation safety within the regional transportation policy.

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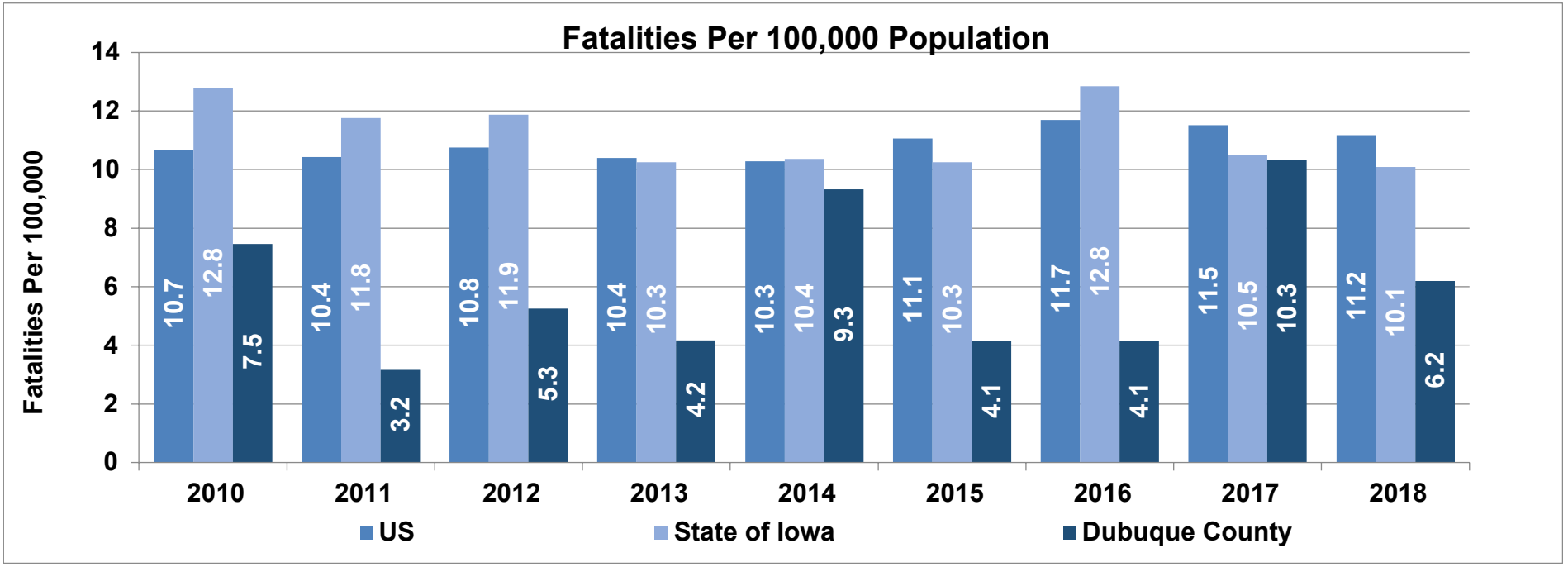


Figure 6.3 Fatalities per 100,000 population
Source: National Highway Traffic Safety Administration. Dataset geography: Dubuque County

Crash Data Evacuation

For the next phase of the safety analysis, DMATS used crash report data to track the total number of crashes in the Iowa and Illinois portions of the DMATS area. Similar data for the Wisconsin portion of the area was not available. The crash report filled out by a law enforcement officer at the scene of a crash is the primary source for transportation safety data. The crash report summarizes the details of a crash including contributing factors or driver behaviors that caused the crash, location of the incident, driver characteristics, vehicle characteristics, and other relevant information. DMATS uses this data to identify issues that may require public education and specific demographics prone to collisions.

The Iowa Traffic Safety Department and Illinois Department of Transportation collects and distributes crash data for use by local public safety agencies. Figure 6.4 provides the total crashes between 2010 and 2019 in the Iowa portion of the DMATS Area and Figure 6.5 charts 2010 and 2018 crashes for the Illinois portion of the DMATS area.

The State of Iowa data includes three crash types: injury crashes, unknown injuries, and property damage only. State of Illinois data includes two types: injury crashes and property damage crashes.

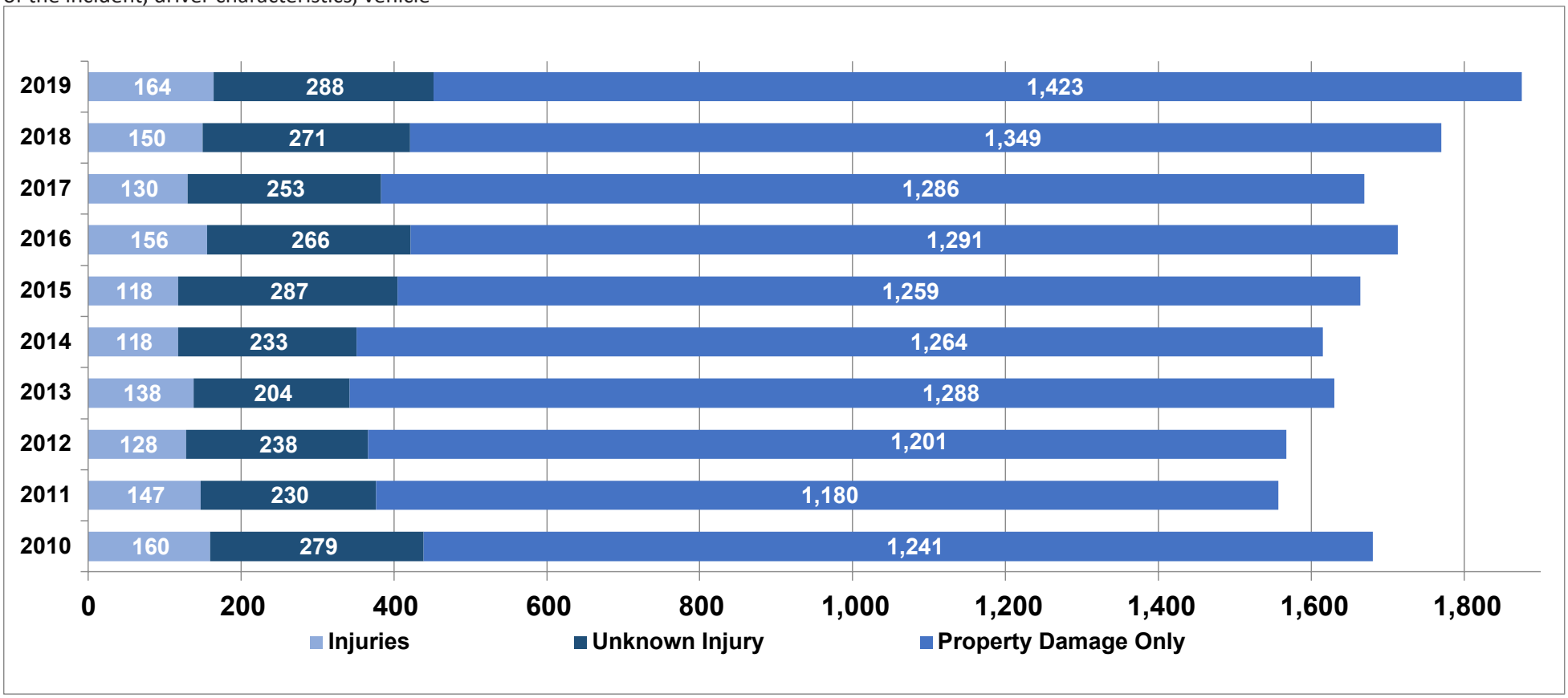


Figure 6.4: Total Crashes 2010 -2019 in the Iowa portion of the DMATS area
Source: Iowa DOT. Dataset geography: Iowa portion of the DMATS Area.

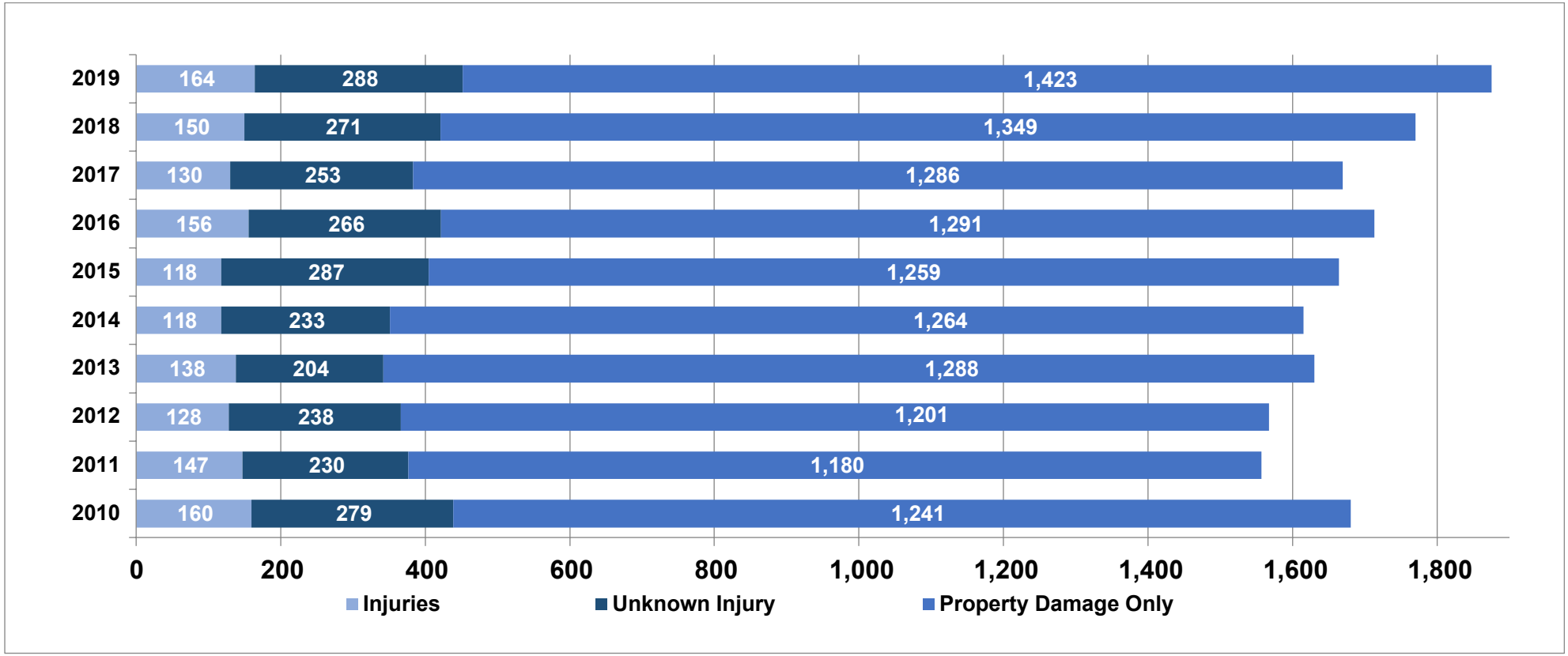


Figure 6.5: Total Crashes 2010 -2018 in the Illinois portion of the DMATS area
Source: Illinois DOT. Dataset geography: Illinois portion of the DMATS Area.

Over the last ten years, the Iowa portion of the DMATS region on has averaged approximately 1,674 crashes per year and Illinois side averaged 55 crashes per year. In the DMATS region on Iowa side between 2010 and 2019, motor vehicle crashes resulted in 31 fatalities, 150 major injuries, and 1,228 minor injuries. Over the decade, the region averaged approximately 3 deaths, 15 major injuries, and 123 minor injuries per year. In the Illinois side between 2010 and 2018, motor vehicle crashes resulted in 3 fatalities, and 133 injuries. Over 9 years, the region averaged approximately 0 deaths, and 15 injuries per year.

Crashes by System

DMATS uses crash data to evaluate vehicle crashes by roadway system. This analysis helps DMATS identify needs and allocate safety improvement resources at based on where crashes are occurring. The DMATS roadway network includes 1,592 miles of roadway and 346 bridges. This network is composed of a broad range of facility types, from multi-lane divided highways to gravel roads. Table 1.1 summarizes DMATS public roadway system by milage, bridges and vehicle miles traveled (VMT).

As can be seen in Table 1.1, most of the of the area's roadway mileage is classified as secondary or municipal. These roadways belong to the county and city governments throughout DMATS region. These local governments bear the responsibility for over 79% of the county's public road miles, but these roadways only carry 46% of the area's VMT. The majority of the area's traffic, over 56% of its VMT, occurs on its US and State Highways, also known as its primary system.

Figure 6.6 charts the percentrage of crashes by system and Figure 6.7 provides percentage of crashes by urban and rural areas . In the DMATS 86% of all crashes occurred in urban areas (Cities), whereas 14% have occurred in rural areas. Similarly, 61% of all crashes occurred on either the county system or municipal system, while the remaining 39% occurred on the primary highway system.

This data demonstrates that even though county secondary roads account for over a quarter of the area's roadway milage and over 30% of its VMT, these roadways only account for 7.6% of the area's crashes. Far more crashes occur on ion the areas primary and municipal networks. DMATS has set a goal to improve safety across the region and on all systems. However, based on this information, DMATS should continue to place special emphasis on reducing crashes on the area's primary and municipal systems.

Table 1.1 DMATS Roadway Systems

System	Mileage	Percent of total mileage	Number of bridges	Total VMT (millions)	Percent of total VMT
Primary	328	21%	96	1,128,298	56%
Secondary	413	26%	217	618,154	31%
Municipal	851	53%	33	269076	13%
Total	1,592	100%	346	2,015,528	100%

Source: Iowa DOT. Dataset geography: Full DMATS area.

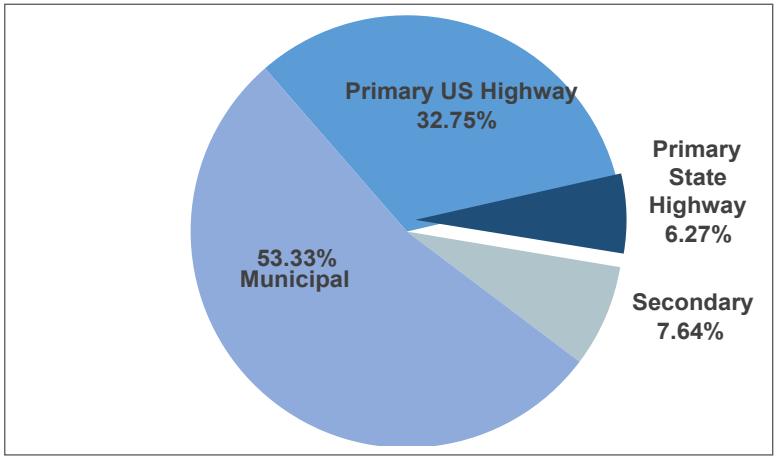


Figure 6.6 2011-2020 Crashes by System
Source: Illinois DOT and Iowa DOT. Dataset geography: Iowa and Illinois portions of the DMATS area.

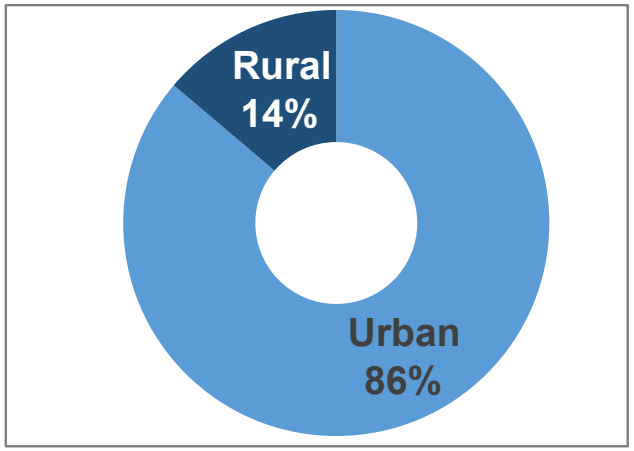


Figure 6.7 2011-2020 Urban/Rural Crashes
Source: Iowa DOT and Illinois DOT. Dataset geography: Iowa and Illinois portions of the DMATS area.

Crashes by Age and Gender

DMATS uses demographic data gleaned from crash reports to help its members effectively allocate their traffic safety education resources. Nation-wide crash statistics show that older and younger drivers tend to responsible for a higher proportion of crashes than other age groups. For younger drivers lack of driving experience likely leads to higher crash numbers. For older drivers, higher crash prevalence has been linked to the physical and mental changes associated with aging. Figures 6.8 and 6.9 chart crash data from the Iowa and Illinois portions of the DMATS area by age and gender. The figures show higher proportions of crashes in the under 25 and over 65 age groups. The data also indicates that male drivers in every age group represent a disproportionately large percentage of crashes. The data in both figures indicates that educational resources are needed for all age groups, but they are especially important for drivers under 25 years old and drivers over 65 years old.

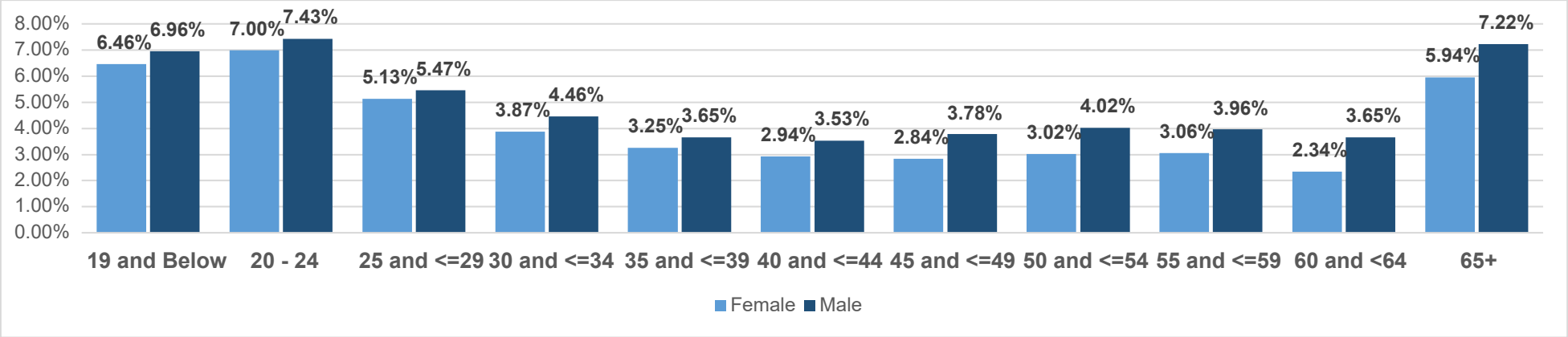


Figure 6.8 Percentage of crashes by driver age and gender 2010-2019
Source: Iowa DOT. Dataset geography: Iowa Portion of the DMATS area.

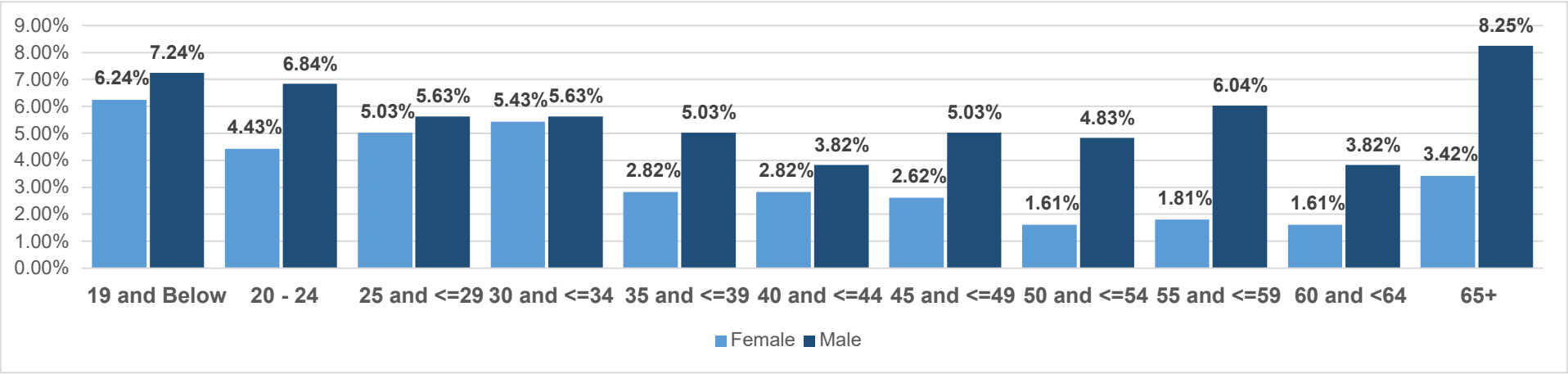


Figure 6.9 Percentage of crashes by driver age and gender 2010-2019
Source: Illinois DOT. Dataset geography: Illinois portion of the DMATS area.

Major Cause of Crash

Crash reports identify a major cause of a collision, and DMATS uses the major cause data to identify areas of emphasis in its traffic safety efforts. Figure 6.10 illustrates major crash causes for the Iowa portion of the DMATS from 2010 to 2019. The figure shows that lane departures, losing control, following too closely, running traffic signals, and speed-related were the most frequent causes of crashes. These causes represented in over 50% of crashes in the Iowa portion of the DMATS area. The ranking of the crash causes has remained relatively consistent since the previous plan period. The safety emphasis areas of roadside collisions and young drivers have risen two four and five rankings, respectively.

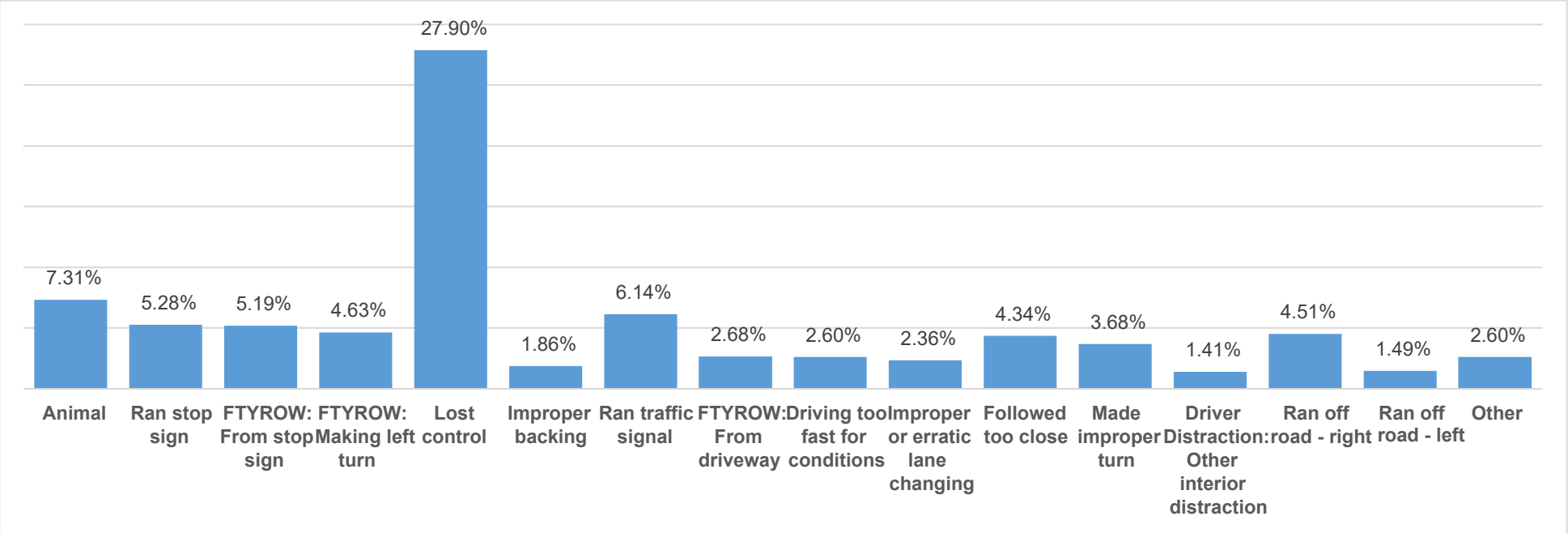


Figure 6.10 Major Cause of Crash
Source: Iowa DOT. Dataset geography: Iowa portion of the DMATS Area.

Safety Analysis - Key Findings

The DMATS safety analysis yielded a several findings related to transportation safety in the DMATS area. Key findings of the analysis are summarized in the list below. DMATS has used these findings to target its future safety efforts.

- People under the age of 25 and over the age of 65 represented over 35% of the drivers involved in crashes. However, these two demographics have drastically different driving behaviors and transportation safety needs.
- Even though more travel occurs on the primary system, more fatalities and serious injuries occur on county and municipal systems.
- Even though the rural has more road miles, it has less vehicles miles traveled and fewer crashes when compared to urban system.
- The male drivers are over-represented in crashes when compared to their female counterparts in MPO area.
- Most of the accidents happened due to loss of control, animal, ran traffic signals, ran stop signs, FTYROW: from stop sign, making left turn, ran off road – right, made improper turns etc.

DMATS Transportation Safety Efforts

DMATS implemented a number of safety efforts intended to address the key findings listed above. These efforts include establishing a Multi-Disciplinary Safety Team (MDST) to take the lead on the area's safety efforts, adopting safety goals and supporting strategies to guide regional safety efforts, improving safety at signalized intersections with the STREETS project, and installing roundabouts to reduce crashes at unsignalized intersections. The following section describes these safety efforts.

Dubuque Multi-Disciplinary Safety Team

Collaboration is critical to the implementation of a safe and efficient transportation system. Time, money and personnel are limited, and public safety agencies need to work together to eliminate duplication of services, and ensure that response efforts have the greatest impact on the region's transportation safety problems. In 2002, the Dubuque County public safety agencies came together to form a Multi –Disciplinary Safety Team (MDST). The MDST has undertaken a variety of strategies to improve DMATS transportation safety.

It is the goal of the Dubuque County MDST to collaborate and cooperate with other agencies to improve safety in the region. The five areas the group focus on to improve safety are Education, Engineering, Enforcement, and Emergency Services.

Education

Education involves informing users about unsafe behaviors and suggesting ways to improve safety when they use the transportation system. Police, fire, and engineering departments across the region use education as a transportation safety tool.

Engineering

Local public works departments or state departments of transportation often implement engineering strategies to improve roadway safety. In most cases, infrastructure solutions are low-cost, reactionary improvements that focus on crash hot spots or corridors. However, engineers and planners are beginning to use a proactive approach to improve transportation safety. Under this approach, small safety improvements are implemented in the planning stages of a project. This proactive method takes a system wide approach to addressing transportation safety issues that will prevent accidents through incremental changes on a corridor level. A good safety plan will include a balance of reactionary and proactive improvements.

Enforcement

Law enforcement officers play a valuable role in maintaining the region's transportation safety and security. Their presence can encourage appropriate driving behaviors, prevent motor vehicle collisions, and deter criminal acts. Enforcement officers also are the source of most transportation safety data — typically crash data. In addition, these individuals must coordinate traffic flow around incidents that may create congestion and motorist delays along the region's roadways.

Emergency Services

Emergency services personnel help prevent additional deaths and injuries from occurring after an initial incident. This professional sector includes emergency medical services paramedics, first responders, trauma room nurses, and doctors. Other services such as motorist assist, which helps drivers with vehicle problems contribute to transportation safety by limiting the length of time vehicles are stopped on the highway. Their efforts, in coordination with regional transportation management systems, help prevent traffic delays and secondary crashes.

Everyone

The significant challenge of reaching Zero Fatalities requires not only the dedication of committed professionals who represent the four E's of roadway safety, but also those who use Iowa's roadways. The National Highway Traffic Safety Administration (NHTSA) reports that for 94% of crashes nationwide the critical reason for the vehicle crash can be attributed to driver error. This finding suggests the important role that everyone plays in ensuring not only their safety but the safety of others traveling on the roadway. Further, this statistic also points to a broader need for Iowa to develop a culture of traffic safety.

Policy Framework Goals and Supporting Strategies

DMATS will examine, evaluate, and implement the regional strategies contained in the Iowa Strategic Highway Safety Plan (SHSP). The SHSP addresses highway-safety priorities and issues monitored by the State Safety Committee. In addition, appropriate actions will be taken to support the transportation system goals identified in SHSP. The Iowa, Illinois, and Wisconsin DOTs' instructed DMATS staff to use the Iowa SHSP for the LRTP, because the majority of the area's population lives in Iowa. DMATS staff used SHSP to address key findings within the region.

The Safety Strategies focuses on strategies that have the greatest potential to reduce fatalities, major injuries, minor injuries and unknown injuries on Dubuque's public roadways. These strategies will be implemented in locations chosen using criteria such as crash history, system characteristics, and population demographics.

1. People under the age of 25 and over the age of 65 represented over 35% of the drivers involved in crashes

PEOPLE UNDER AGE OF 25

- Improve content and delivery of driver education curriculum
- Continue educating young drivers in school-based settings using various training techniques, including those that simulate impairment.
- Support a broad-based coalition to plan for addressing age- based transportation needs.
- Support young drivers to avoid distractions and impairment

PEOPLE UNDER AGE OF 65

- Support a broad-based coalition to plan for addressing age- based transportation needs.
- Provide educational and training opportunities for mature drivers that address driver safety, road engineering and signage, vehicle technology, driver licensing, health and vision concerns, and alternative transportation options.
- Update publications and web resources for older drivers and their families to include safety strategies, warning signs, and planning for driving retirement.
- Update procedures for assessing medical fitness to drive.
- Know when to put the keys down, or when to have a conversation with family members who may pose a hazard to others on the road.

2. Reducing fatalities and serious injuries on county and municipal systems

- Increase safety at intersection by implementing roundabouts (see roundabouts section of this chapter more details) at heavily traveled intersection on municipal and county system.
- Provide education on using roundabouts.
- Improve traffic flow and reduce congestion by improving signal coordination using STREETS project (see STREETS section of this chapter for more details).
- Develop educational resources informing the public of alternative intersection types, traffic signals, and laws.
- Conduct enforcement campaigns related to bicycle and pedestrian awareness at targeted intersections.
- Use systemic approaches to improve visibility and awareness of intersections.
- Implement alternative intersection designs that reduce conflict points and enhance safety and mobility.
- Approach intersections with caution and get familiar with new designs in your community

3. Reduce accidents due to loss of control, ran traffic signals and ran stop signs.

- Educate drivers on the importance of controlling and managing vehicle speed.
- Identify corridors with a high frequency of speed related crashes and implement high-visibility enforcement campaigns.
- Evaluate and implement signing and geometric design strategies to moderate speeds and enhance safety
- Implement speed feedback signs at targeted locations.
- Give yourself enough time to reach your destination. Be patient, slow down, and do not engage with aggressive drivers

3. Reduce accidents due to loss of control, ran traffic signals and ran stop signs.

- Evaluate high-friction surface treatments (HFST) at targeted locations on local systems.
- Place centerline and/or shoulder rumble strips on and local systems. Where necessary, install or widen paved shoulders.

STREETS Project

The Smart Traffic Routing with Efficient & Effective Traffic System (STREETS) project will use advanced traffic control strategies to enable dynamic traffic routing to maximize the use of existing roadway capacities in the Dubuque metropolitan area. The ultimate deployment of STREETS will be completed in two phases and cover nine (9) corridors with 65 signalized intersections within the City of Dubuque. Figure 6.11 maps the STREETS project corridor and intersection locations.

Benefits from implementation of the STREETS include:

- Improved Safety
- Reduced wear and tear on major corridors
- Reduced congestion
- Improved travel times
- Reduced emissions
- Enhanced system monitoring capabilities

The proposed STREETS project is expected to dynamically react to congestion detected/ predicted by a micro-simulation model, and proactively change signal timing based on predicted traffic flow data while disseminating congestion and alternate route information for motorists. Figure 6.12 includes a flow char of the STREETS system process.

Reduced congestion will improve safety by reducing the number of stops drivers have to make while traveling along a corridor. Fewer stops will reduce opportunities for crashes and improve safety across the Dubuque metro area. Implementation of STREETS will require improvements to existing signal systems and ITS infrastructure to meet the operational requirements of the system. Signal improvements will be conducted in two phases.

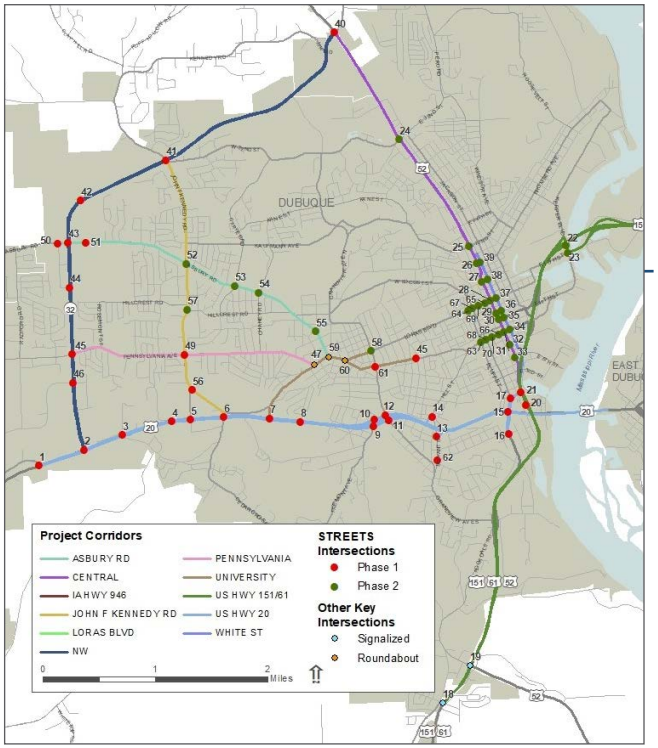


Figure 6.11 STREETS Project Intersection

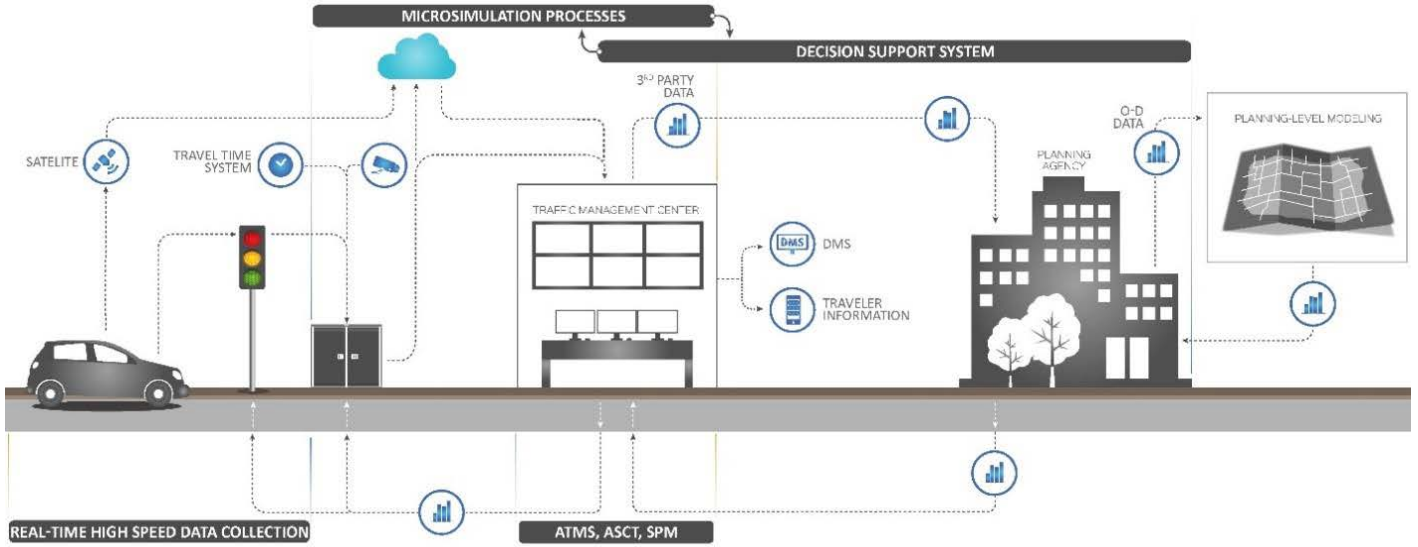


Figure 6.12. STREETS Project Flow Chart

Roundabouts

DMATS and its member in cities and counties are installing roundabouts on the municipal system to improve safety within the region. Roundabouts are a proven safety countermeasure because they can substantially reduce crashes that result in serious injury or death. Traffic safety studies have shown that roundabouts can: improve safety, promote lower speeds and traffic calming, reduce conflict points, lead to improved operational performance, and meet a wide range of traffic conditions because they are versatile in size, shape, and design.

Within the DMATS area roundabouts have been installed at the intersection of Grandview Ave. and University Ave., the intersection of Grandview Ave. and Delhi St., and on the Southwest Arterial and US Highway 20 interchange. DMATS members have plans to expand the number of roundabouts in the area. The DMATS is working with its members to install roundabouts at the locations mapped in Figure 6.13.

1. 16th St. / Admiral Sheehy Dr.
2. 16th St. / Elm St.
3. 16th St. / Kerper Blvd.
4. 16th St./ Sycamore St.
5. Asbury Rd. / Radford Rd.
6. Elm St / E 20th St.
7. Pennsylvania Ave. / Radford Rd.
8. S John Deere Rd. / W John Deere Rd.
9. S John Deere Rd. / Peru Rd.
10. University Ave. / Asbury Rd.
11. University Ave. / Loras Blvd.
12. University Ave. / Pennsylvania Ave.

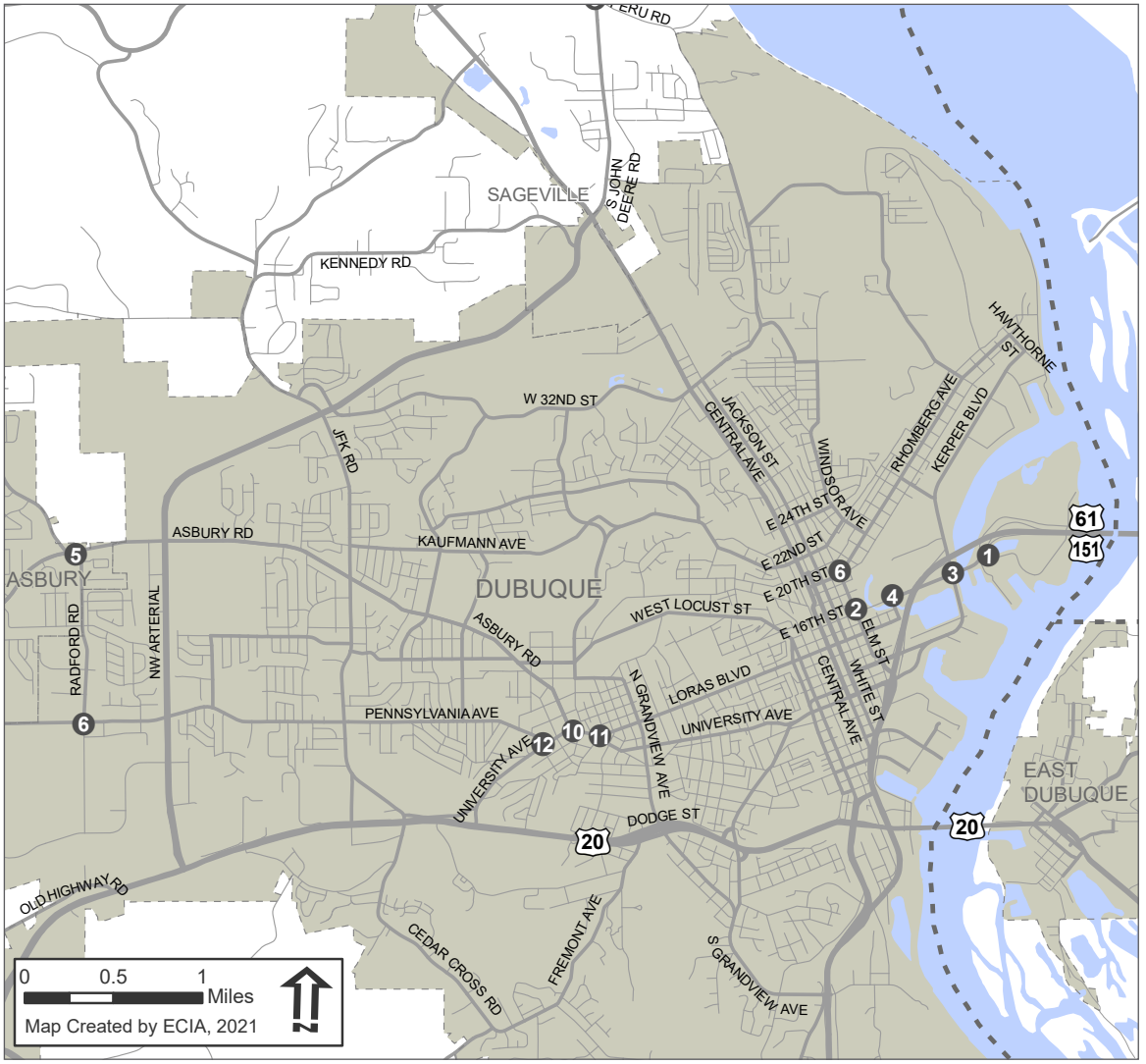


Figure 6.13. Future Roundabout Locations

DMATS Safety Projects

The following section lists key safety projects that areas that DMATS staff are working from the previous LRTP:

Roads and Bridges

- Install traffic cameras at major intersections to help with law enforcement and criminal investigations. (Ongoing)
- Implement ITS that can aid in incident management, e.g., display boards that warn drivers of an incident, and can help route traffic away from the area.
- Ensure that roads and bridges remain passable during an emergency. (Ongoing)
- Reduce the number of fatalities and decrease the economic impact from highway-related accidents (Ongoing)

Bicycle and Pedestrian

- Encourage cities and counties to implement bicycle and pedestrian improvements, services, and programs. (Ongoing)
- Encourage local government participation in safety outreach activities, and continue bicycle and pedestrian safety education.
- Encourage cities and counties to continue to implement bicycle parking and encourage its installation by developers, business owners, schools, and other institutions.
- Improve safety for children who walk and bike to school. (Ongoing)

Transit

- Review security measures against checklists developed by FTA and IPTA.
- Create an action plan with County Sheriff and City Police Department to request random patrols of transit systems headquarters, the bus depot, and "hot spots" on Friday and Saturday evenings.
- Work with MDST and County EMS regarding security and emergency preparedness plans, and ensure that all are familiar with the basic operation of a bus, and are aware of the bus depot's layout.
- Define transit systems role in non-transit emergencies.
- Conduct at least one emergency exercise annually.
- Install cameras on buses that are equipped with a "panic button" that will capture a higher quality of video footage. (Done)
- Purchase newer buses to be equipped with full time cameras (Done)
- Equip buses with mobile data terminals and GPS systems. (Done)
- Install security cameras at transit offices and bus depots. (Done)
- Transit offices secured with passcard swipe locks. (Done)
- Encourage transit systems to secure funding for full-time cameras on all buses. (Done)
- Encourage transit systems to secure funding for automated vehicle locator system. (Done)
- Encourage transit systems to contact the fire department and county emergency management regarding security and emergency preparedness plans, and ensure that all are familiar with the basic operations of a bus and are aware of the bus depot's layout.
- Encourage transit systems to develop and execute at least one emergency exercise annually.

Rail

- Work closely with the IADOT Rail Division on planning studies and project development activities for rail safety projects, including rail grade separations at targeted locations. (Ongoing)

Region-Wide Safety Projects

- Coordinate transportation and operational agencies with the county emergency and hazard mitigation plans.
- Ensure continued cooperation between transportation agencies and transit systems. (Ongoing)
- Train all personnel in emergency response procedures and protocols, and conduct annual refresher training. (Ongoing)
- Establish an ongoing means of communication with fire, sheriff, and police departments and the County EMS to ensure sharing of crime and security information among all concerned. (Ongoing)
- Work with safety teams and County EMS regarding security and emergency preparedness plans. (Ongoing)
- Continue use of incident management patrols, coordination with law enforcement agencies, and implementation of safety and mobility projects by the members to respond to safety and security trends and issues.
- Review evacuation plans in the region, focusing on transit security plans. Plan review will ensure compatibility and clarification regarding responsibility and procedures in the event of an incident. (Ongoing)

Chapter 7
Freight

Introduction

The efficient movement of goods is one of the keys to effective competition in the global economy. As a result, policy makers, industry specialists, and transportation planners have recognized that providing efficient systems for moving goods will help create a competitive advantage in the global market. In 2018, DMATS worked with surrounding counties in Iowa and Illinois to prepare a multimodal, intermodal freight plan for the eight county Blackhawk Hills & East Central Intergovernmental Association (ECIA) region. The Eight County Freight Plan will be referenced in this plan. The full Eight County Freight Plan is available at www.eciatrans.org.

The Eight County Region is at the heart of major US manufacturing and agricultural activity, and is made up of the counties of Carroll, Jo Daviess, Stephenson, and Whiteside counties in Illinois, as well as Clinton, Delaware, Dubuque, and Jackson counties in Iowa. This region, shown in Figure 7.1, relies on the multimodal transportation system of roads, rails, air and water ports to both supply the inputs needed for production and to transport goods to consumers inside and outside of the Region – driving their local economies.

The efficiency of the transportation system affects the competitiveness and growth potential of the Region. In order to enable the competitiveness of existing, as well as attract new business, the Region must understand how the freight transportation system is linked to the local economy, identify needs on the transportation system and define opportunities to improve freight transportation in local planning and policy decisions.

Key Industries and Output

This Region has a diverse population and economy in whizch freight transportation is extremely important. As shown in Figure 7.2, almost 50 percent of the Region's workers are employed by firms that rely on the movement of freight to support their operations. Key freight-related industries for the region are agriculture, which generates large tonnages of freight (over 31.8 million tons in 2014), and manufacturing, which employs 18 percent of the Region's workforce.

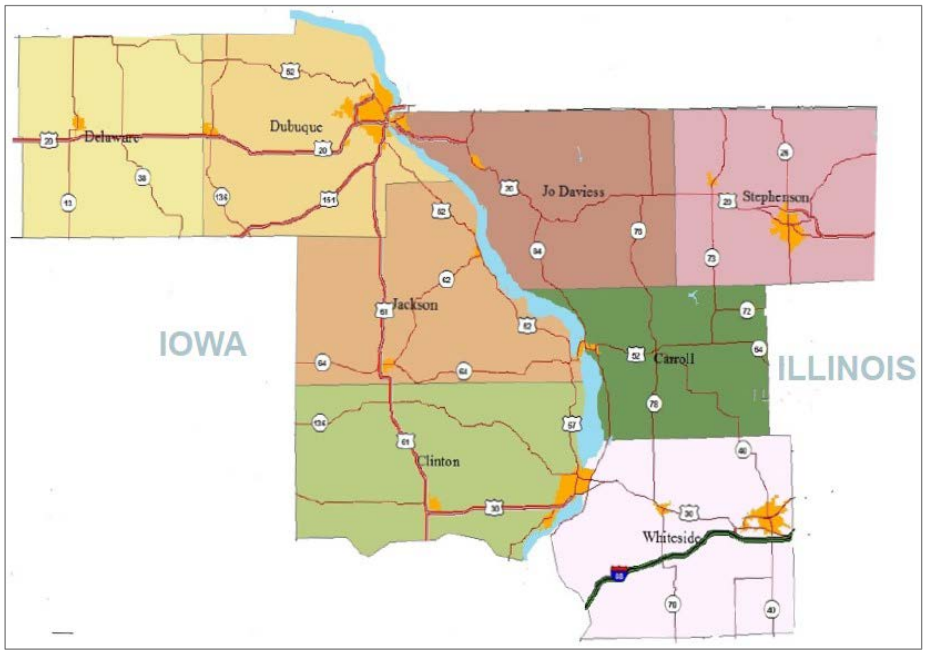


Figure 7.1 The Eight County Region

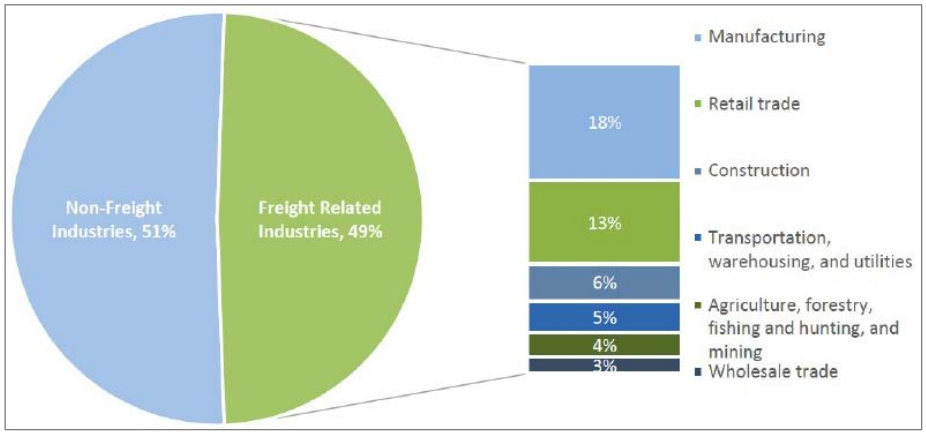


Figure 7.2 Relative Employment by Industry

As a result of these local industries, in 2014, the Region's freight system carried 67.3 million tons of freight worth $50.4 billion. As shown in Figure 7.3, trucking was the most commonly-used mode, carrying 73 percent of the region's freight by tonnage, and 82 percent of its freight by value. While trucks carry the majority of the freight in the Eight County Region in terms of both value and tonnage, the Region also has extensive rail lines and major barge facilities. Rail carried the second largest tonnage (23 percent), and multiple-mode shipments (such as truck to barge or truck to rail, or containerized shipments), carried the second largest share of value (10 percent).

In terms of specific commodities, bulk cereal grains (such as corn) are the number one commodity by tonnage (18 percent), and machinery is the number one commodity by value (eight percent). Figure 7.4 provides a visual of the top ten commodities by tonnage and value.

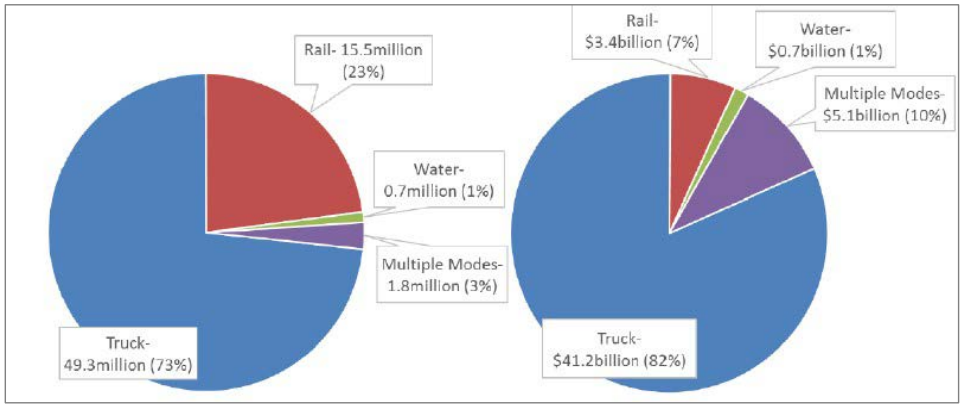


Figure 7.3 Freight System Tonnage (left) and Value (right) by Mode (2014)
Source: WSP | PB Analysis of FHWA Freight Analysis Framework version 4 (FAF4) data. Preliminary.

Infrastructure

In terms of freight system infrastructure, the Region's road network is made up of different sub-networks including Interstate highways, national highways, state highways, and county roads. However, of note is the small number of Interstate miles in the Region (~46 miles), as compared to national highway system miles (~640 miles). This means trucks must rely on US and State Routes for connections to the broader national freight system.

A similar picture is true for rail infrastructure. The Region is served by five railroads and nine railyards, yet local firms have relatively limited rail access, as rail sidings are required for direct access, and most of the Region's rail terminals are built for the transfer of bulk materials, such as grain or fertilizer. Because of this orientation towards bulk shipments, few rail connections are available for producers of non-bulk commodities such as manufactured goods. Firms looking to move their goods by rail may have to ship their products by truck to rail intermodal facilities.

The Mississippi River flows for 93 miles through the center of the Region, making it an ideal transportation corridor to the Gulf of Mexico and international markets. The Region is home to 21 groups of barge terminals in seven cities, with the majority clustered around Dubuque, IA and Clinton, IA. All terminals have a truck connection, and ten have rail connections.

The Region may lack its own access points for many mode/commodity combinations, but it benefits from the Midwest's wealth of transportation assets, in particular the Mississippi River, and the intermodal yards and airports nearby in Rockford, Rochelle and greater Chicago.

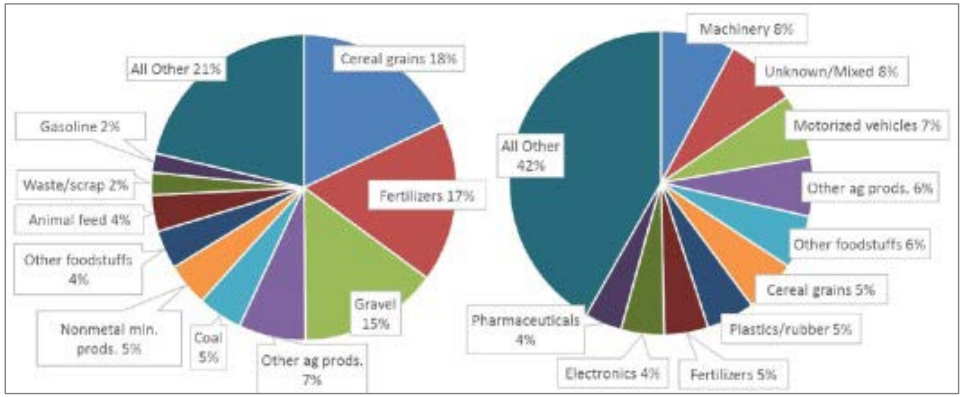


Figure 7.4 Freight System Tonnage (left) and Value (right) by Commodity (2014)
Source: WSP | PB Analysis of FHWA Freight Analysis Framework version 4 (FAF4) data. Preliminary.

Future Outlook

The freight system (including the transportation network, shippers, carriers, etc.) operates within a dynamic environment that is continually changing and adapting to best meet current market demands. While it is difficult to pinpoint how this environment will change in the future, we do know that there are a number of external factors that will influence it and, in turn, how goods are moved in the Region.

This study does not focus on predicting how the system will change, as much as it considers how to make the Region's freight transportation system resilient and adaptable to an unknown future.

Initial observations were made related to the Region's strengths weaknesses, threats, and opportunities (SWOT). Figure 7.5 presents a summary of the SWOT as conducted related to the Region's population, key industries, and transportation infrastructure. This preliminary assessment was built upon during the development of the Eight County Freight Plan.

Strengths	Weaknesses
• Relatively stable population • Steady increases in income • Diverse industrial base, including manufacturing and agriculture • Diverse manufacturing sector • Multimodal freight assets • Freight system designed to transport bulk goods	• Lack of skilled and semi-skilled employees • Bridges, river crossings • Distance to major intermodal and transfer facilities
Threats	**Opportunities**
• Lower population growth compared to peer regions • Shrinking workforce • The importance of manufacturing for the Region appears to be decreasing • Automation (manufacturing-related) • Competitive global market for crops • Infrastructure failure – locks and dams • Unknown social, economic, and policy changes from the adoption of connected and autonomous vehicles • Sea level rise	• Postsecondary workforce programs • On- and Near-shoring • Value-added agriculture • Embrace technology

Figure 7.5 Eight County Region Strengths, Weaknesses, Threats and Opportunities

Eight County Region Commodity Flows

By Tonnage and Value

For the year 2014, the Eight County Region handled approximately 67.3 million tons of freight, worth approximately $50.4 billion dollars, as inbound-outbound-internal movements, including both domestic and international freight. Figure 7.6 shows that both tonnage and value flows are extremely balanced between inbound and outbound directions. The tonnage and value moving within the Eight County Region is a very small share of total movement, indicating the Eight County Region economy is largely "outward facing."

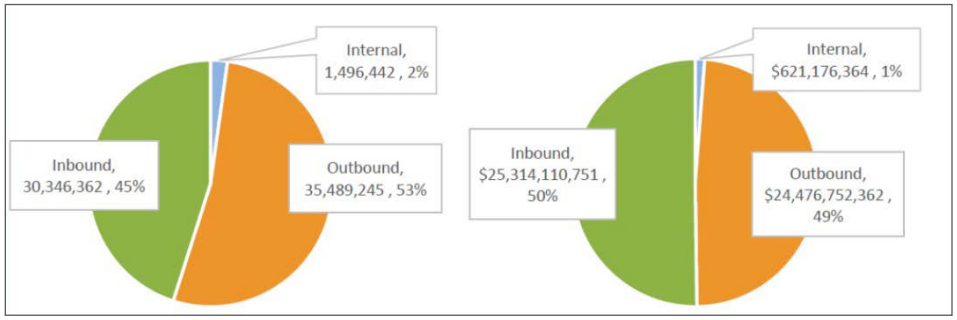


Figure 7.6 Total Eight County Region Tonnage (left) and Value (right) by Direction, 2014

Source: WSP Analysis of FHWA Freight Analysis Framework version 4 (FAF4) data.

By Commodity Tonnage And Value

In 2014, the leading tonnage commodities for the Eight County Region included cereal grains, fertilizers, and gravel; these three commodities represented 50 percent of the region's tonnage. Other important tonnage commodities included: other agricultural products; coal; nonmetallic mineral products; other foodstuffs; animal feed, commodity waste/scrap; and gasoline.

The leading value commodities for the Eight County region in 2014 included: machinery; unknown/mixed (primarily containerized goods and mixed shipments of retail goods); motorized vehicles; other agricultural products; other foodstuffs; cereal grains; plastics/rubber; fertilizers; electronics; and pharmaceuticals. Value is broadly dispersed across a wide range of commodities, with none being dominant. Figures 7.7 and 7.8 summarize the region's commodity types by tonnage and value.

By Modal Tonnage and Value

Looking at state-to-state freight transportation modes in Figure 7.9, trucking represents 73 percent of Eight County Region tonnage and 82 percent of value; rail represents 23 percent of tonnage and 7 percent of value; multiple modes represents 3 percent of tonnage and 10 percent of value; and water represents 1 percent of tonnage and 1 percent of value. Each mode serves a distinct set of commodities and trading partners; the greatest tonnage and value is from trucking between the Eight County Region and the rest of Iowa and Illinois.

The share of freight value carried by truck (82 percent) is greater than the share of freight tonnage (73 percent), suggesting that trucks are being used to carry the Region's higher-value, lower weight manufactured goods. Rail serves a different purpose, carrying 23 percent of the Region's tonnage, but only seven percent of its value, which suggests rail shipments are being used for relatively high-weight, low-value commodities like agricultural products. An interesting category is multiple-mode shipments, which carried only three percent of tonnage, but accounted for 10 percent of value. This category includes intermodal container shipments, which are often used to carry higher-value goods with low to medium weights.

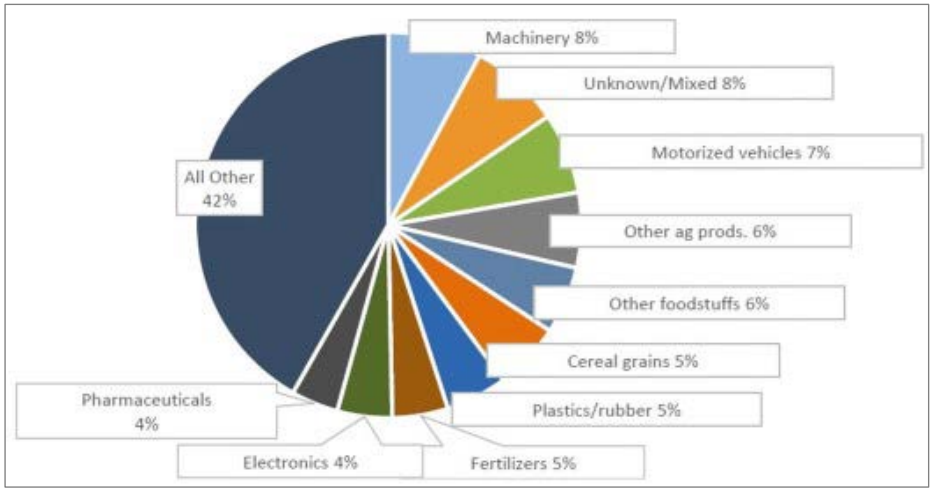


Figure 7.8 Total Eight County Region Value by Commodity Type, 2014
Source: WSP Analysis of FHWA Freight Analysis Framework version 4 (FAF4) data.

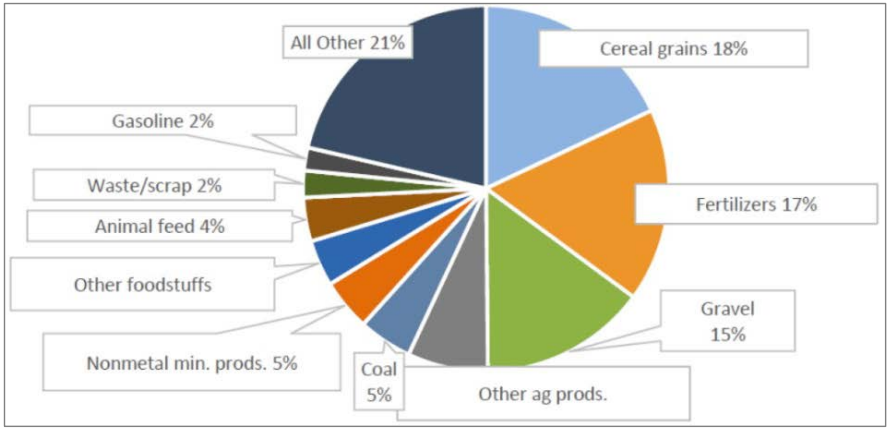


Figure 7.7 Total Eight County Region Tonnage by Commodity Type, 2014
Source: WSP Analysis of FHWA Freight Analysis Framework version 4 (FAF4) data

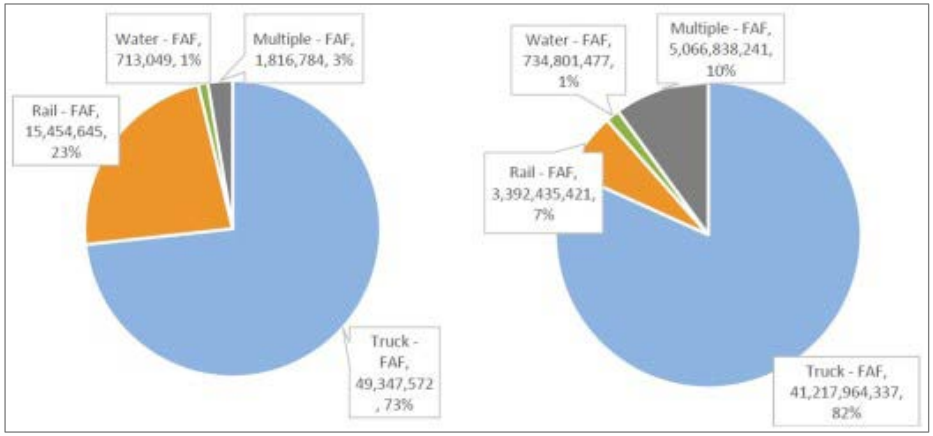


Figure 7.9 Eight County Region Tonnage (left) and Value ($) (right) by State-to-State Mode, 2014
Source: WSP Analysis of FHWA Freight Analysis Framework version 4 (FAF4) data.

Eight County Region Future Commodity Flows

Tonnage and Value Growth

FAF data includes growth forecasts though the year 2045. The FAF forecast provides a useful picture of one possible "baseline scenario" future for the Eight County Region, where the Region and the rest of the country continue to follow historical trends. Between 2014 and 2045, the Eight County Region is projected to add 28.5 million tons of freight (a 42 percent total increase based on an average growth rate of 1.1 percent per year) worth almost $30.8 billion dollars (a 61 percent total increase based on an average growth rate of 1.5 percent per year). In 2045, the region will handle nearly 96 million tons of freight worth over $81 billion dollars. Figure 7.10 illustrates the projected change.

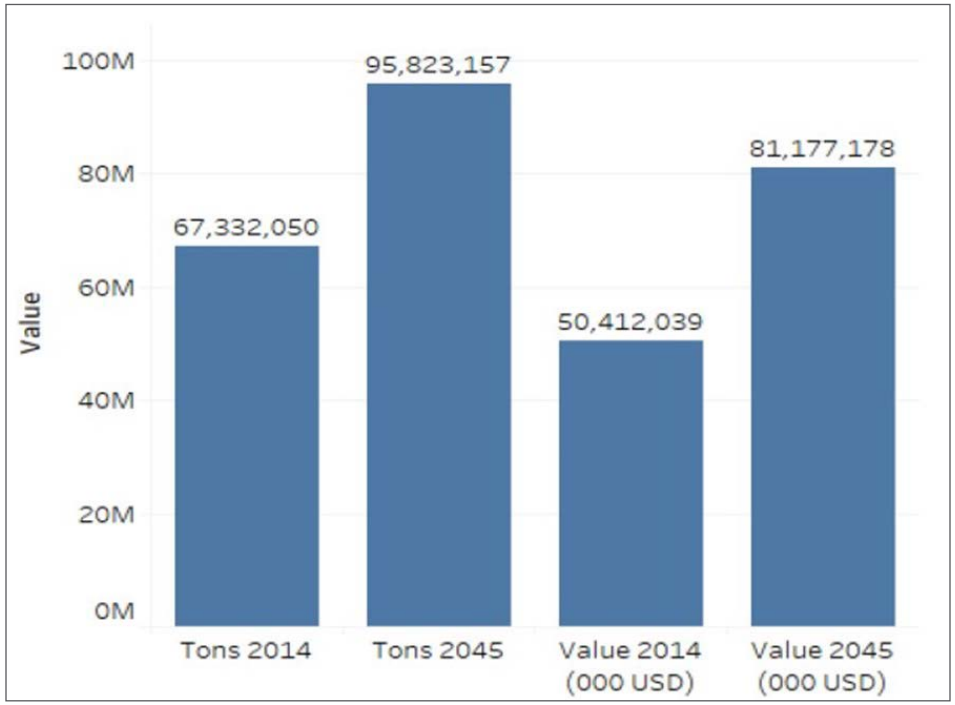


Figure 7.10 Eight County Tonnage and Value (000 USD) Comparisons, 2014-2045
Source: WSP Analysis of FHWA Freight Analysis Framework version 4 (FAF4) data.

Tonnage and Value Growth by Commodity

In 2014, the top five Eight County Region tonnage commodities were cereal grains, fertilizers, gravel, other agricultural products, and coal. In 2045, the leading tonnage commodities are forecast to be cereal grains, fertilizers, gravel, other agricultural products, and non-metallic mineral products. See Table 7.1

Table 7.1 Eight County Commodities Ranked by 2045 Forecast Tonnage

	Tons 2014	Tons 2045	Tons Added	Percent Growth	Tons CAGR
Cereal grains	12,114,601	17,464,810	5,350,209	44.2%	1.2%
Fertilizers	11,517,022	16,333,601	4,816,579	41.8%	1.1%
Gravel	9,926,427	14,412,942	4,486,515	45.2%	1.2%
Other ag prods.	4,792,338	6,833,904	2,041,566	42.6%	1.2%
Nonmetal min. prods.	3,064,298	5,837,700	2,773,402	90.5%	2.1%

Source: WSP Analysis of FHWA Freight Analysis Framework version 4 (FAF4) data.

In 2014, the top five Eight County Region value commodities were machinery, unknown/mixed commodities, motorized vehicles, other agricultural products, and other foodstuffs. In 2045, the leading tonnage commodities are forecast to be machinery, unknown/mixed (generally consisting of higher-value goods shipped in intermodal containers or truck vans), pharmaceuticals, motorized vehicles, and electronics. See Table 7.2.

Table 7.2 Eight County Commodities Ranked by 2045 Forecast Value

	Value 2014 (USD)	Value 2045 (USD)	Value Added	% Growth	Value CAGR
Machinery	3,958,031,328	8,197,190,967	4,239,159,639	107.1%	2.4%
Unknown/Mixed	3,844,393,817	5,445,134,789	1,600,740,972	41.6%	1.1%
Pharmaceuticals	1,993,475,649	4,969,508,368	2,976,032,719	149.3%	3.0%
Motorized vehicles	3,429,676,018	4,802,950,395	1,373,274,377	40.0%	1.1%
Electronics	2,317,293,231	4,751,774,275	2,434,481,044	105.1%	2.3%

Source: WSP Analysis of FHWA Freight Analysis Framework version 4 (FAF4) data.

Tonnage and Value Growth by Mode

Between 2014 and 2045, all Eight County region freight modes are forecast to experience growth. State-to-state truck tonnage is projected to increase by 44.1 percent; rail tonnage is projected to increase by 32.0 percent; water tonnage is projected to increase by 42.2 percent; and multiple modes tonnage is projected to increase by 82.4 percent. The Eight County Region's transportation system will need to accommodate and absorb these increases in freight tonnage while maintaining levels of performance that are acceptable to its freight shippers and receivers. See Table 7.3.

Table 7.3 Eight County Tonnage and Value Growth by Mode, 2014- 2045

	Mode			
	Truck - FAF	Rail - FAF	Water - FAF	Multiple - FAF
Tons 2014	49,347,572	15,454,645	713,049	1,816,784
Tons 2045	71,095,638	20,400,234	1,014,143	3,313,142
Tons Added	21,748,066	4,945,589	301,094	1,496,358
Percent Growth Tons	44.1%	32.0%	42.2%	82.4%
Tons CAGR	1.2%	0.9%	1.1%	2.0%
Value 2014 (USD)	41,217,964,337	3,392,435,421	734,801,477	5,066,838,241
Value 2045 (USD)	63,794,940,850	5,657,484,319	914,339,365	10,810,413,400
Value Added	22,576,976,513	2,265,048,898	179,537,887	5,743,575,158
Percent Growth Value	54.8%	66.8%	24.4%	113.4%
Value CAGR	1.4%	1.7%	0.7%	2.5%

Source: WSP Analysis of FHWA Freight Analysis Framework version 4 (FAF4) data.

Leading opportunities are:

- Build on core strengths in established commodity groups (cereal grains, fertilizers, gravel, other agricultural products, machinery, mixed goods, motorized vehicles, and other foodstuffs) and prepare to accommodate growing transportation needs associated with these commodities.
- Look to capture emerging fast-growing commodity groups (pharmaceuticals, precision instruments, plastics/rubber, and other known economic development targets) by providing sufficient and attractive (safe, reliable, cost-effective) freight transportation options and services.
- Focus – first and foremost – on truck corridors and connections linking the Eight County Region to the remainder of Iowa and Illinois. These are critical for today's most important commodities, and for the commodities that are expected to see the most growth in the future.
- Maintain and enhance other modal options – including rail, water, and airport connections – and evaluate the potential for intermodal service improvements to best serve the region.

Potential risks include:

- The FAF forecast is a model. Like all models, it is likely wrong in some respects. We believe it has a sound basis, but its findings and implications should be confirmed where possible with local economic development knowledge and industry input.
- There are larger uncertainties that are not reflected in the forecast. Compared to parts of the country that are heavily dependent on energy products (which are highly cyclic), or lack diversity in their economic and freight transportation profile, the Eight County Region is relatively fortunate – it is not exposed to energy uncertainty, and it has diversity in its economic base. However, changes in the production of grain, for example, could significantly affect both grain and fertilizer movements; if those movements decline, construction and industrial activity could decline, suppressing the need for gravel and machinery; and so on.
- From a transportation perspective, the biggest risk is associated with the potential inability or failure to provide competitive transportation services to freight shippers and receivers. Freight system users demand reliability, cost-effectiveness, speed, safety, and (increasingly) resiliency. Different users weigh these factors differently – for example, coal places a premium on low per-unit costs, while container shippers place the highest value on reliability and speed – but they matter to all stakeholders in the freight ecosystem. If the Eight County Region can identify and address existing freight transportation deficiencies, and build new advantages for freight shippers, it should be increasingly competitive for the retention, growth, and attraction of freight-dependent industries. If it does not do so, it risks limited growth and loses opportunities.

Eight County Region Benchmarking: Commodities, Modes, Distances, and Costs

In addressing the competitiveness of the Eight County Region in providing freight transportation services, it is useful to compare its performance to national-average benchmarks for truck, rail, water, and multiple modes tonnage in four areas: commodity shares; mode shares; trip distances; and freight transportation costs.

To examine commodities, FAF data was used to generate two sets of metrics:

- "Commodity Quotients" (CQ) calculated as the ratio of Eight County Region commodity tonnage shares to US commodity tonnage shares. Commodity Quotients greater than 1.0 reflect a strong concentration Eight County Region tonnage in a given commodity, compared to the national average.
- "Commodity Growth Quotients" (CGQ) calculated as the ratio of Eight County Region and US commodity tonnage growth percentages. Commodity Growth Quotients greater than 1.0 mean a commodity is faster growing in the Eight County Region than in the US as a whole, on a percentage basis.

Table 7.4 lists the Region's CQ and CGQ values for the ten leading tonnage groups. Table 7.5 lists the Region's CQ and CGQ values for the ten leading value groups.

Regarding commodities, the region is more heavily concentrated in fertilizers, cereal grains, and other agricultural products than the nation as a whole; these groups are projected to grow at rates near or exceeding national averages. The region is less heavily concentrated in high-value goods (machinery, electronics, pharmaceuticals, etc.) but growth rates for these commodities are generally near national averages, suggesting the possibility of stronger roles in the regional economy. Overall, the region is expected to grow at the same rate as the nation as a whole.

Table 7.4 Eight County Region CQ and CGQ for Ten Leading Tonnage Groups, 2014

	Eight County Region 2014 Tonnage Share	US Total Tonnage Share	Eight County "Commodity Quotient"	Eight County "Commodity Growth Quotient"
Cereal grains	18.0%	7.7%	2.34	1.12
Fertilizers	17.1%	1.6%	10.70	0.95
Gravel	14.7%	12.7%	1.16	1.07
Other ag prods.	7.1%	3.9%	1.84	0.90
Coal	4.8%	6.8%	0.70	0.56
Nonmetal min. prods.	4.6%	7.5%	0.61	1.17
Other foodstuffs	4.1%	4.9%	0.83	0.96
Animal feed	3.9%	2.3%	1.65	0.84
Waste/scrap	2.4%	4.6%	0.52	1.07
Gasoline	2.0%	5.4%	0.37	1.30

Table 7.5 Eight County Region CQ and CGQ for Ten Leading Value Groups, 2014

	Eight County Region 2014 Tonnage Share	US Total Tonnage Share	Eight County "Commodity Quotient"	Eight County "Commodity Growth Quotient"
Machinery	0.6%	0.9%	0.69	0.84
Unknown/Mixed	1.4%	2.7%	0.53	0.90
Motorized vehicles	0.6%	1.3%	0.45	0.97
Other ag prods.	7.1%	3.9%	1.84	0.90
Other foodstuffs	4.1%	4.9%	0.83	0.96
Cereal grains	18.0%	7.7%	2.34	1.12
Plastics/rubber	1.2%	1.7%	0.70	0.80
Fertilizers	17.1%	1.6%	10.70	0.95
Electronics	0.2%	0.5%	0.34	0.77
Pharmaceuticals	0.0%	0.1%	0.30	0.84

Similar Modal Quotients (MQ) and Modal Growth Quotients (MGQ) were calculated to examine modes. Table 7.6. summarize the calculations. The region is substantially more dependent on rail than the nation as a whole, and substantially less dependent on water. The region's use of trucking and multiple modes are slightly below national averages. All modes are expected to grow at roughly the national average rates.

Table 7.6 Eight County Region MQ and MGQ, 2014

	Rate per Ton-Mile	Ton-Miles, 2014	Estimated Transportation Cost
Truck	$ 0.108	13,056,538,943	$ 1,410,106,206
Rail	$ 0.083	6,159,485,019	$ 511,237,257
Multiple	$ 0.097	1,012,159,822	$ 98,179,503
Water	$ 0.050	385,064,490	$ 19,253,224
Total			$ 2,038,776,190

Source: WSP Analysis of FHWA Freight Analysis Framework version 4 (FAF4) data.

Compared to national averages, the region's average length of haul is longer for truck (even though the most significant truck trade is with Illinois and Iowa) and for water, and shorter for rail (much of the market is in the Midwestern states) and multiple modes. See Table 7.7 and 7.8.

Table 7.7 Eight County Region and US Average Trip Lengths by Mode (Provisional), 2014

	Eight County Region Average Miles per Trip	US Total Average Miles per Trip
Truck - FAF	265	177
Rail - FAF	399	802
Multiple - FAF	557	811
Water - FAF	540	453

Source: WSP Analysis of FHWA Freight Analysis Framework version 4 (FAF4) data.

Table 7.8 Order-of- Magnitude Freight Transportation Costs for the Eight County Region, 2014

	Rate per Ton-Mile	Ton-Miles, 2014	Estimated Transportation Cost
Truck	$ 0.108	13,056,538,943	$ 1,410,106,206
Rail	$ 0.083	6,159,485,019	$ 511,237,257
Multiple	$ 0.097	1,012,159,822	$ 98,179,503
Water	$ 0.050	385,064,490	$ 19,253,224
Total			$ 2,038,776,190

Source: WSP. Eight County Freight System Vision and Goals

Freight System Vision

In order to appropriately assess the needs of the Eight County Region, the freight plan must first define the overall vision for the transportation system. The vision is an aspirational future point for the transportation system, and guides the development of goals, performance measures and the assessment of transportation needs.

The goals are assigned performance measures that are used to assess the performance of the current freight transportation system and identify needs. Performance measures focus on variables that the freight plan can affect, therefore making the information derived from the performance assessment actionable.

Developing The Freight System Vision

An iterative process was used, informed by the Project Steering Committee, to develop the vision for the Eight County Region's freight transportation system. First, existing visions and goals in established Regional and national plans were examined, including those from BHRC and ECIA, Dubuque Metropolitan Area Transportation Study, ILDOT, IADOT, and Federal Legislation.

After identifying reoccurring themes in existing vision documents, an initial vision was developed to guide a discussion with the Project Steering Committee. The vision for the Region was developed using an iterative process of receiving Project Steering Committee comments, revising the vision and presenting the updated vision to the Project Steering Committee for further comment.

The output of the iterative development process is the vision statement shown below. The vision outlines both the desired outcomes used to define the goals (quality of life, growth, business retention, and business attraction) and categories for performance measures (safe, efficient, reliable and connected).

Eight County Freight System Vision: The Eight County Multimodal Freight System supports quality of life, growth and enables business retention and attraction, by providing safe, efficient, and reliable connections to regional, national, and global markets today and in the future.

Freight System Goals

The vision provides the ultimate point that the Region seeks to attain through the implementation of the freight plan recommendations. The vision identifies quality of life, growth, business retention, and business attraction as the goals for the freight plan. These goals provide intermediate targets to focus projects and policies that will advance the overall vision.

Figure 7.11 displays the goals of the Eight County Freight Plan. The goals identify that the freight transportation system should support economic activity and meet community needs in the Region.

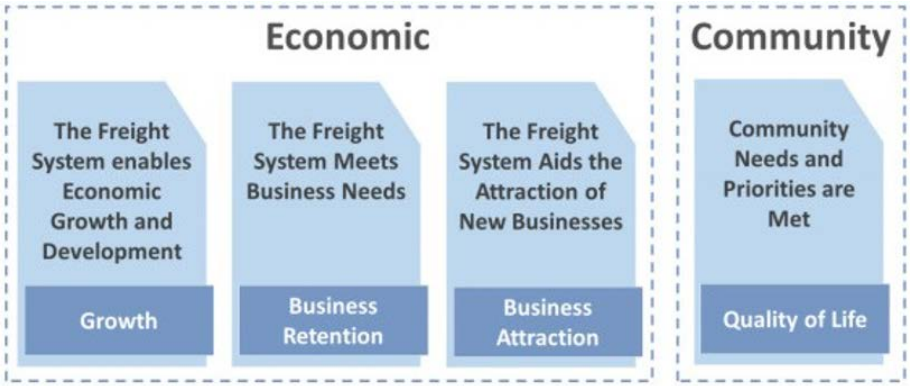


Figure 7.11 Eight County Freight Plan Goals

The goals for the Region are focused on outcomes or outputs. For example, providing freight investment and implementing policies that meet the needs of the community results in higher quality of life. Similarly, enabling a freight transportation system that provides competitive transportation options will aid current businesses and advance the Region's economy. The goals of the Region are clearly enabled by good transportation investment and policy, but since transportation demand is affected by other non-transportation variables, the investments and policies must fit the needs of system users to be effective.

Freight System Performance Measures and Indicators

The approach to performance measures in the Eight County Freight Plan focuses on measuring transportation performance in line with attributes that matter to the Region by linking measures to the plan's goals. Additionally, the measures serve as a benchmark using available data, to the extent possible, allowing measures to be calculated on an ongoing basis. Benchmarking will allow the Region to identify changes in transportation system performance in the future, as well as assess the impact of emerging trends. The plan positions the Region for future collaboration with Illinois and Iowa DOTs on target setting and freight corridor identification. Additionally, the Region can use performance measures required by MAP-21 as a resource to monitor the performance of the transportation system in the future.

The performance measures used in this plan focus on fewer measures that provide the region with insights into key issues rather than focusing on many measures, some of which would not provide actionable information for decision making.

The vision of the Eight County Region Freight Plan sets the stage for identifying performance measures, by naming safety, efficiency, reliability and connectivity as key components of the future Eight County Transportation System. Safety, efficiency, reliability and connectivity were used as categories to define performance measures. Figure 7.12 displays the performance categories and the measures that will be calculated to assess the performance of the transportation system. Other key indicators have also been included to provide context to the performance measures and to be used to describe and promote the freight system in the Region.

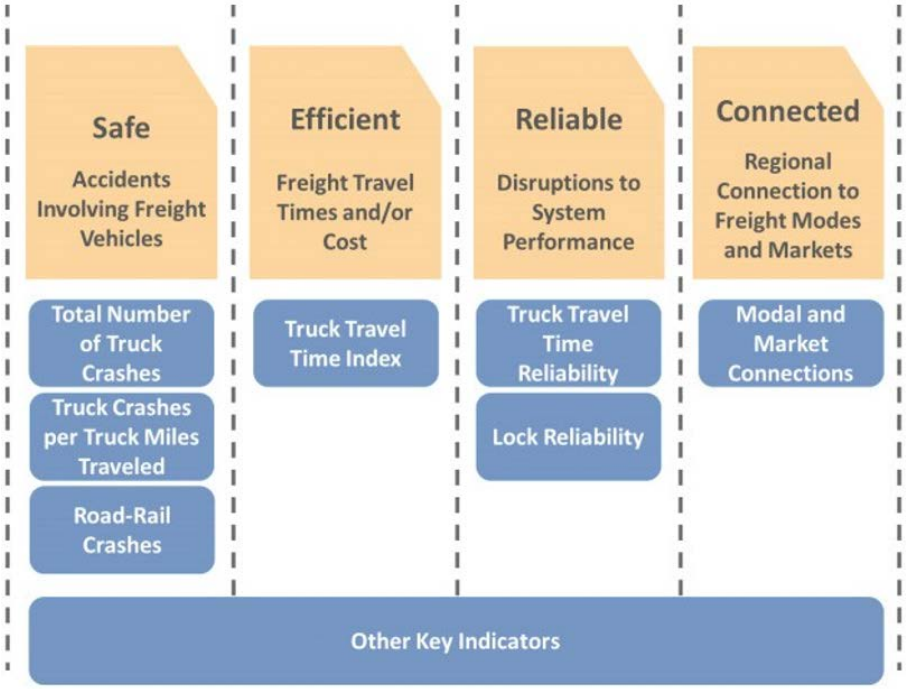


Figure 7.12 Freight Performance Measures

Freight Study Recommendations

The Eight County Freight Plan developed a slate of strategic recommendations for the freight system. These strategies will be generally grouped within the "4 P" categories of 1) projects, 2) programs, 3) policies, and 4) partnerships. As shown the top two most frequently cited improvements are project related – new/ expanded roadways and pavement improvements.

As shown in Figure 7.13, a slate of strategic opportunities have been identified for the Eight County Region. While stakeholders often find project recommendations to be the most tangible, likely the most critically important category of opportunities is "partnerships." So much of the multimodal freight transportation system is outside of the public domain, and partnerships and collaboration will be critical to advancing any efforts off the highways system, and in most cases also those on the highway system due to the myriad jurisdictions that have ownership and operations roles in the Eight County Region.

Projects	Programs
• Spot highway improvements to address congestion and safety (next slide) • Pavement improvements • Bridge improvements • New/improved intermodal and/or port facilities • Transload/consolidation facilities • Lock and dam improvements	• Programs focused on highway and railway safety (including grade separations) • Programs focused on enhancing skills of local workforce • Programs focused on technology applications to the (freight) transportation system • Freight planning program to monitor needs, issues and progress
Policies	**Partnerships**
• Truck regulation harmonization between Iowa and Illinois • Illinois seasonal exemption for agricultural loads (up to 90,000 lbs.) • Truck route guidance • Freight-appropriate design standards	• State, county and local public agency partnerships • Federal transportation agencies, including USDOT and the USACE • Regional and local economic development agencies • Class I and short line railroads • Airports • Water ports • Other local private industry/businesses

Figure 7.13 Freight Study Recommendations

The Eight County Freight Plan identified locations needing improvements by mapping gaps in planned freight projects. Figure 7.14 maps the project gaps and Table 7.9 provides a list of project gaps.

Figure 7.14 Project Gaps Shown with Safety and Congestion Data

Route	Location	"Gaps"
US-20	Old Castle Road to Old Hawkeye Road (Between Farley and Dyersville)	Safety
US-20	North Cascade (west end of Dubuque) to US-20 Frontage Road (East Dubuque)	Safety
US-20	N. Main Street to Franklin Street (North of Galena)	Safety, Congestion
US-20	Tapley Woods to IL-84 junction	Safety
US-20	Woodbine to S. Logemann Road	Safety
US-20	W. Salem Road to N. Bolton Road (Eleroy area)	Safety
US-20	Freeport Area (Includes IL-75)	Congestion
US-20	Farwell Bridge Road to Stephenson County Line	Safety
US-30	Grand Mound to DeWitt	Safety
US-30	Downtown Clinton	Safety, Congestion
US-30	IL-136 junction to IL-78 junction	Safety
US-30	Sterling Area (includes IL-2 and IL-40)	Congestion
US-151	Dubuque Area	Safety, Congestion
IA-136	Delmar to Charlotte	Congestion
IL-78	Lowden Road to IL-40 (Mount Carroll area)	Congestion
US-52	Mount Carroll to Lanark	Safety
IL-84	Savanna to Jo Daviess County Line	Safety
I-88	IL-78 to Lincoln Road	Safety

Table 7.9 Project Gaps Listing

ECIA Port Expansion Study

The Eight County Freight Study highlighted the importance of public – private partnerships in freight transportation where key facilities are often managed by private entities. Following completion of the Plan, discussions between local governments and freight operators identified the need to study opportunities at two of the DMATS area's key marine terminals. Ultimately these discussions resulted in the ECIA Port Expansion Study.

The Eight County Freight Study determined that the Region depends on distant freight facilities and over the road truck for its supply of shipping containers, consumer products and other freight. These facilitates are located in cities such as Minneapolis, Memphis, New Orleans, Rockford, Rochelle, and Greater Chicago. As a result, the Region has longer truck hauls when compared to the US average which drive up freight costs for area industry.

The Eight County Freight Plan aims to lower overall transportation system costs by providing improved modal connectivity points between road, rail and river for local businesses. Specifically, the Eight County Freight Plan found that the waterway system is an undersized resource for our Region. While the Region is bisected by the Mississippi River, the Eight County Freight Study found that local businesses use the waterway for shipping less than peer regions across this US. This could be due to historic river use dominated by coal and other bulk commodities shipping that have waned in recent years, or a lack of handling capacities (equipment and services) at local port facilities that do not align with local production and shipping needs.

Regional stakeholders deemed enhancement to existing barge facilities – most of which also have access to rail - to diversify their cargo handling capabilities as a need for the Region in the Eight County Freight Plan. That plan included a benefit-cost analysis for the port expansions to determine the costs that could be invested to provide improved connectivity for local commodities that could more cost effectively be transported via the inland waterway system or, as a default, rail which exists at most facilities.

In the ECIA Port Expansion Study, the East Central Intergovernmental Association (ECIA), in partnership with the states of Illinois and Iowa, local and regional governments, and local marine terminal operators, conducted a study of the potential to expand and enhance the physical and operational capabilities of key marine freight terminals in Dubuque, IA and East Dubuque, IL.

The study addressed the Gavilon Terminal located in Dubuque IA, the Logistics Park Dubuque terminal located in East Dubuque IL, highway and rail access systems serving these facilities, customer markets currently or potentially attracted to these facilities, inland rail hubs in Iowa and Illinois, and competing marine terminals on the Mississippi and Illinois River systems.

The ECIA region's ports are critical transportation and economic assets. The ECIA Port Expansion Study highlights their value to the bi-state region and the role they play. The Study provides a market-feasible foundation for their future growth and continued success through the year 2045. The following section highlights some of the key recommendations from the Study. A full version of the study is available at www.eciatrans.org.

Recommendations

The study team reviewed the strengths and weaknesses of each port location (including marine infrastructure, water depth and navigability, highway and rail access and other relevant factors) in combination with the market forecasts and development program to develop two lists of needs and project recommendations. Near-term needs and project recommendations could be implemented between 2020 and 2025. Long term needs and project recommendations could be implemented between 2025 and 2045.

NEAR-TERM RECOMMENDATIONS

The study team worked directly with Gavilon and Logistics Park Dubuque to develop an area-wide improvement program and corresponding projects at each port facility, and created plans and layout diagrams for improvements to marine terminals (addressing salt, fertilizer, and agricultural by-products handling) along with rail access improvements.

Gavilon Near-Term Recommendations

- Replace an older fertilizer storage building with a 20,000-ton capacity shed.
- Renovate an existing fertilizer storage shed to increase its capacity by 12,000 tons.
- Replace/upgrade inoperable rail track.
- Relocate rail track to support direct transfer/transloading of fertilizer and other bulk products from river barge to rail.
- Install new rail equipment, including main line switch, loadout system, and shed.

In 2021 the U.S. Department of Transportation awarded $5 million in Infrastructure for Rebuilding America (INFRA) funding to the City of Dubuque to complete the near-term recommendations at the Gavilon facility. Construction is expected to commence in 2023.

Logistics Park Dubuque Near-Term Recommendations

- Repurpose the coal handling system to transfer "hard to handle" processed grain by-products from rail (and truck) to barge.
- Replace 15,100 tons of fertilizer storage buildings that are at the end of their usable life and were built with inefficient handling systems.
- Install a new, fixed 250' x 260' fabric-covered structure for the facility's 70,000-ton salt pile.

As of 2021 Logistics Park Dubuque is in the process of implementing the near-term recommendations listed above. All improvements are funded by the facility operator.

LONG-TERM RECOMMENDATIONS

The long-term opportunities for Gavilon and Logistics Park Dubuque focus on capturing proven market demand and positioning for new business opportunities beyond the five-year timeframe projects. Conceptual development plans were prepared for each site through the year 2045, in collaboration with the terminal operators and in consultation with other study partners.

Gavilon Long-Term Recommendations

- Expansion of fertilizer storage capacity on the current leasehold.
- Expansion of salt storage capacity on the current leasehold.
- Expansion of grain storage capacity on the current leasehold.
- Utilization of the new Seventh Street Connector (planned by the City of Dubuque) for access.
- Expansion of the current Gavilon leasehold into a portion of the former Alliant Energy Plant, with the development of open storage for steel rebar and the potential for additional open/covered storage for other future commodities, along with reactivation of the existing coal dock for barge transfer; note this is a newly-proposed concept and will require further discussion between the responsible parties, and there are no commitments in place.

The proposed Long-Term Development Plan for the Gavilon terminal includes the following projects in addition to the BUILD/PIDP projects, and is shown on Figure 7.15 and Figure 7.16 following.

- Fertilizer Expansion at Dove Harbor:
    - Purpose: Fertilizer storage expansion in Dove Harbor to provide additional capacity.
    - Area/Volume: Volume = 206,000 cu. ft. additional
    - Capacity: ~43,000 tons/year
- Salt at Salt Harbor:
    - Purpose: New open storage and expansion of existing open storage in Salt Harbor to capture identified demand.

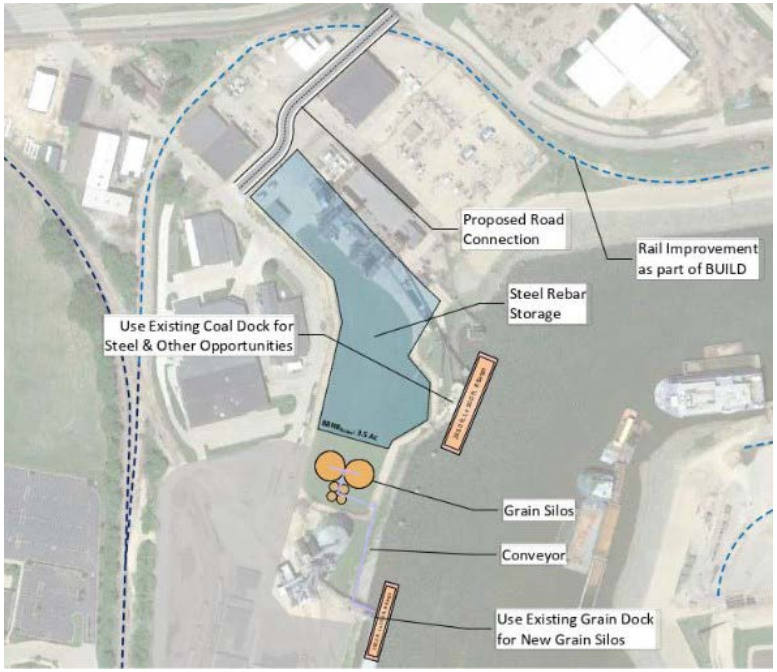


Figure 7.15 Proposed Long-Term Development Plan, Gavilon (Seventh Street)

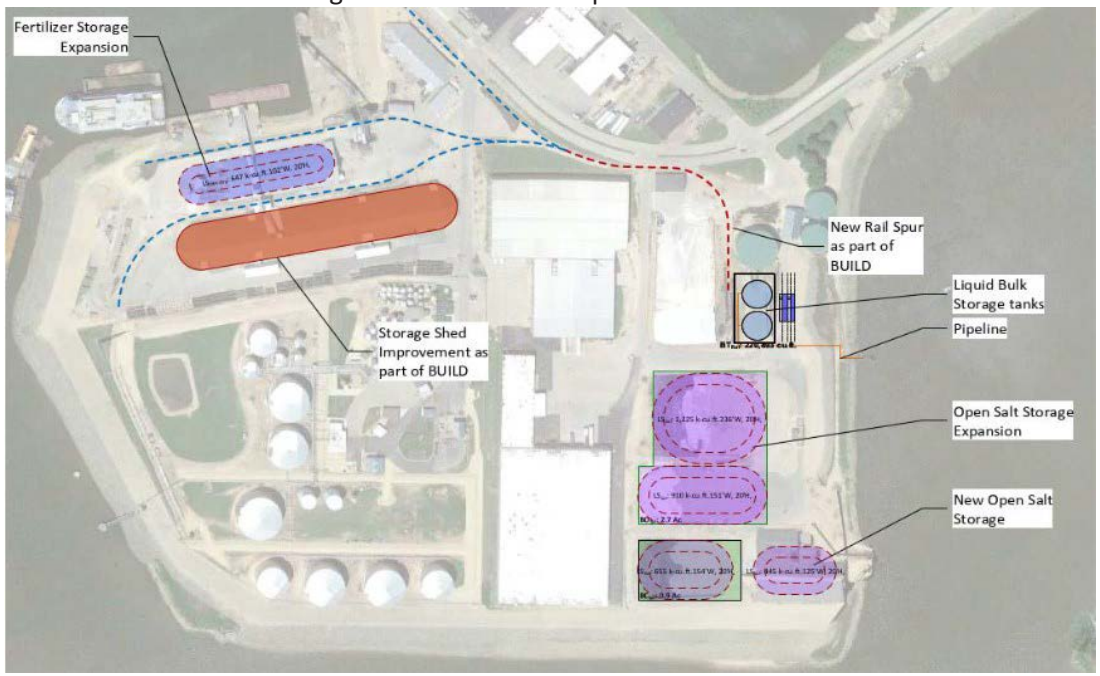


Figure 7.16 Proposed Long-Term Development Plan, Gavilon (Dove Harbor and Salt Harbor)

  - Area/Volume: Area = ~40,000 sq. ft.
  - Capacity: ~139,000 tons/year
- Liquid Bulk at Salt Harbor:
  - Purpose: To capture liquid bulk commodity as such as Ethanol.
  - Area/Volume: Volume = 396,000 cu. ft.
  - Capacity: ~80,000 tons/year
- Grain Silos at 7th Street
  - Purpose: Provide additional grain storage to supplement existing capacity to meet future grain demand.
  - Area/Volume: Volume = 377,000 cu. ft.
  - Capacity: ~1M tons/year
- Breakbulk (Rebars) at 7th Street:
  - Purpose: Account for loss of steel storage in other areas and provide capacity for flexible future open/covered storage to meet new commodity opportunities, by utilizing a portion of the former Alliant Energy plant.
  - Area/Volume: Area = 3.5 acres
  - Capacity: ~73,000 tons/year

Logistics Park Dubuque Recommendations

- Substantial improvement of the US 20 / Barge Terminal Road intersection, which is being designed and implemented by the Illinois Department of Transportation as part of a larger program of safety improvements for the US 20 corridor between East Dubuque and Freeport.
- Expansion of fertilizer storage capacity; expansion of salt storage capacity; and provision of new capacity for opportunity commodities including wood pulp and ethanol, along with a new dock.

The proposed Long-Term Development Plan for Logistics Park Dubuque includes the following projects in addition to the BUILD/PIDP projects, and is shown on Figure 7.16 following.

- US 20 / Barge Terminal Road Improvements:
  - Longer truck access / egress / merging lanes and better grades
- Fertilizer:
  - Purpose: To capture the market for additional demand for fertilizer
  - Area/Volume: Area = 1,611,000 cu. ft. in two warehouses; note that the long-term plan would slightly modify the location and alignment of the Agricultural By-Products storage building proposed as a BUILD/PIDP project
  - Capacity: ~294,000 tons/year
- Salt:
  - Purpose: Expansion of existing salt storage at Dock 4 to address the demand.
  - Area/Volume: Volume = 1,640,000 cu. ft. (total salt storage)
  - Capacity: ~270,00 tons/year
- Liquid Bulk (longer-term opportunity):
  - Purpose: To capture liquid bulk commodity as such as Ethanol.
  - Area/Volume: Volume = 324,000 cu. ft.
  - Capacity: ~65,600 tons/year
- Wood Pulp (longer-term opportunity):
  - Purpose: To capture the market for wood pulp and address the possible demand.
  - Area/Volume: Area = 39,000 sq. ft. warehouse
  - Capacity: ~65,600 tons/year
- New Dock #5 to serve Salt, Liquid Bulk, Wood Pulp commodity transfer.

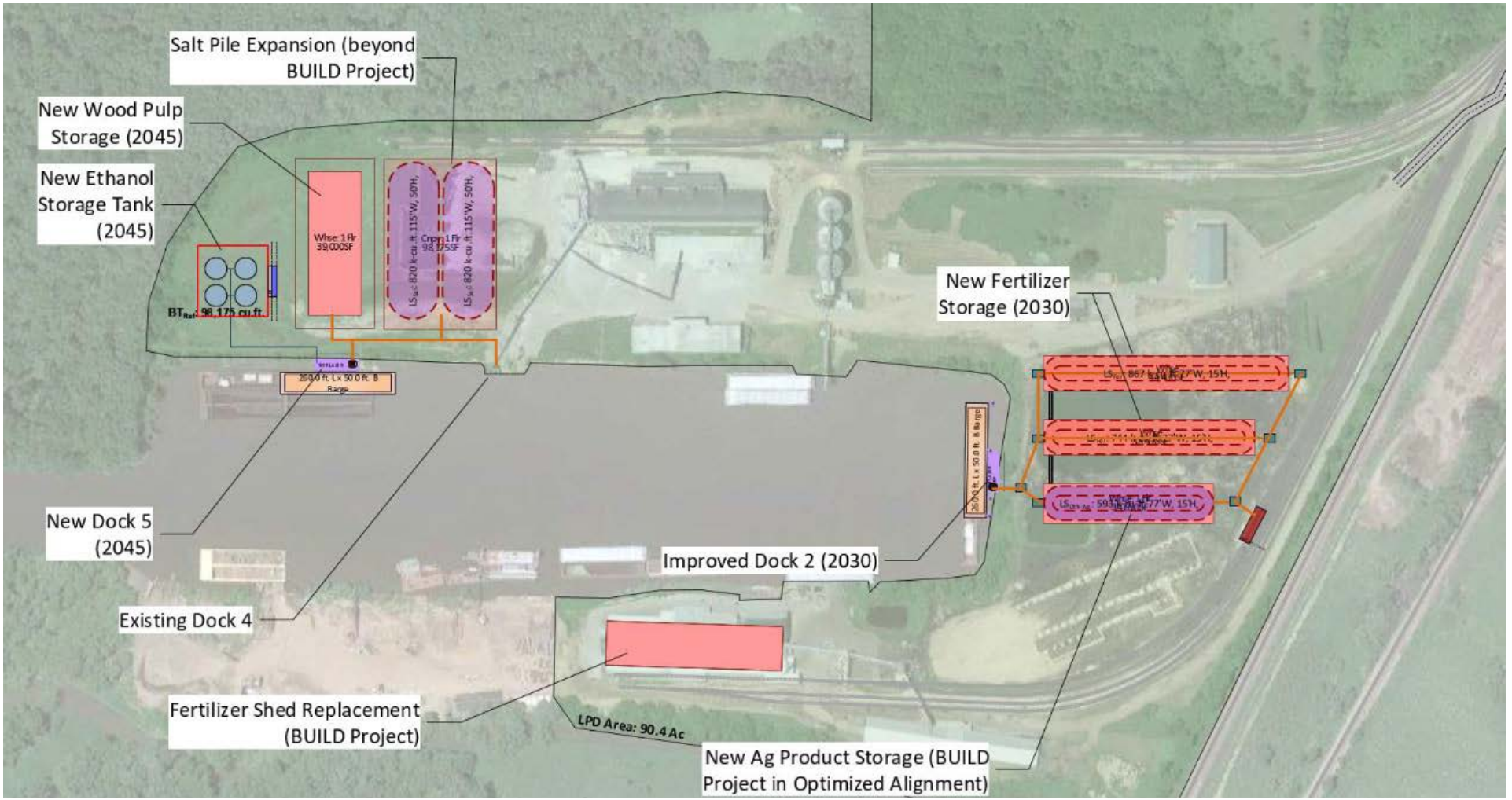


Figure 7.16 Proposed Long-Term Development Plan, Logistics Park Dubuque Terminal Facility

Chapter 8
Financial Analysis

Introduction

A major component of insuring that the recommendations of the 2050 LRTP are advanced, is the development of a finance plan to project expected revenues. Title 23 of the U.S. Code of Federal Regulations governing MPOs requires the LRTP to include "a financial plan that demonstrates how the adopted transportation plan can be implemented." The requirement further states that "the MPO, public transportation operator(s), and State shall cooperatively develop estimates of funds that will be available to support metropolitan transportation plan implementation…" and "All necessary financial resources from public and private sources that are reasonably expected to be made available to carry out the transportation plan, shall be identified."

This chapter includes a historical analysis and future funding projections for road, bridge, and trail projects and a historical analysis and future funding projections for transit projects. DMATS developed projections of future anticipated federal formula funds based on funding amounts authorized in the FAST Act, and on past funding levels. These projections represent a conservative estimate of federal formula funding that the region can reasonably expect over the next 30 years. In addition, DMATS projected future state and local funds based on historical trends. Combined federal, state and local funds comprise the vast majority of revenues available to maintain and operate the federal-aid transportation system in the region.

Funding Overview for roads, Bridges, and Trails

The DMATS MPO's transportation system improvements are funded through a combination of federal, state, and local funds. DMATS member governments and participating agencies utilize this combination of funds for demand management, operational management, and capital-intensive strategies. Federal funding for streets and highways, bicycle, and pedestrian facilities flow through DMATS.

Revenue Sources for Roads, Bridges & Trails

Several federal, state, and local funding sources provide revenues to fund the transportation system in the DMATS region. The funding sources that can be used for the projects within the region are addressed. The funding sources available for the projects within the region can be categorized by Federal, State and local sources received annually, and funding sources that are based on an application process.

Surface Transportation Block Grant Program (STBG)

STBG (formerly Surface Transportation Program STP) funds represent the federal funding main resource that can be committed by DMATS to transportation improvements. The funding can be used for:

- Aid public road jurisdictions with funding for road or bridge projects;
- Provide funding for transit capital improvements;
- Provide funding for bicycle and pedestrian facilities; and
- Provide funding for transportation planning activities.

A minimum of 20 percent non-federal match is required (80 percent federal funding). Road projects must be on federal-aid roads, which includes all federal functional class routes except local and rural minor collectors (see exception under "qualifications for funding"). Bridge projects may be on any public road.

Transit capital improvement projects require adherence to approved transit procurement procedures and equipment specifications. Project candidates must be part of an approved five-year capital improvement program. Federally funded projects must comply with civil rights protection requirements.

Funding Estimate: DMATS has STBG funding history from 2001 to 2020. Future year of expenditure funding was based on linear regression between 2021 and 2050. ($76.7 Million – Year of Expenditure Dollars) with an annual average of $1,581,322 and growth rate of 3.93%.

National Highway Performance Program (NHPP)

The NHPP 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.

NHPP projects must be on an eligible facility and support progress toward achievement of national performance goals for improving infrastructure condition, safety, mobility, or freight movement on the NHS, and be consistent with Metropolitan and Statewide planning requirements. Eligible activities include: Construction, reconstruction, resurfacing rehabilitation of NHS segments, NHS bridges and tunnels, bicycle transportation and pedestrian walkways, highway safety improvements

on the NHS, and infrastructure-based ITS capital improvements, among others.

Funding Estimate: DMATS area received NHS funds from 2001 to 2020. The area received an annual average of $8,973,972. These funds are not taken into consideration for future funding analyses as these funds are programmed and spent on DOT projects.

Primary Road Funds (PRF)

Primary Road Fund (PRF) are used by the Iowa DOT to fund statewide improvements on the Primary Road System both outside of and within cities. The funding sources for PRF are for state RUTF plus federal and miscellaneous funds.

Funding Estimate: DMATS area received PRF funds from 2008 to 2018. The area received an annual average of $1.06 million. These funds are not taken into consideration for future funding analyses as these funds are programmed and spent on DOT projects.

STPG Highway Bridge Program (STPG-HBP)

While the Highway Bridge Program was eliminated in MAP-21, a portion of Iowa's STP will continue to be targeted directly to counties and dedicated specifically to county bridge projects. The STPG-HBP provides for the replacement or rehabilitation of structurally deficient or functionally obsolete public roadway bridges. A portion of these funds are required to be obligated for off-system bridges. The remaining funds can be used on either on system or off-system bridges.

The funding requires a local match of 20 percent (80 percent federal funding). The bridge candidate must be classified as structurally deficient or functionally obsolete according to federal guidelines. Bridge replacement candidates must have a structure inventory and appraisal (SI&A) sufficiency rating of less than 50 and average daily traffic of at least 25 vehicles. Bridge rehabilitation candidates must have an SI&A sufficiency rating of 80 or less and average daily traffic of at least 25 vehicles. Cities are limited to $1 million per bridge candidate (only one bridge per city per year).

The DMATS has BR funding history from 2001 to 2020. Future year of expenditure funding was based on linear regression between 2021 and 2050. ($24.8 Million – Year of Expenditure Dollars) with an annual average of $579,900 and growth rate of 2.63%.

Iowa's Transportation Alternatives Program (Iowa's TAP)

The FAST Act eliminates the MAP-21 Transportation Alternatives Program (TAP) and replaces it with a set-aside of Surface Transportation Block Grant (STBG) program funding for Transportation Alternatives (TA). These set-aside funds include all projects and activities that were previously eligible under TAP, encompassing a variety of smaller-scale transportation projects such as pedestrian and bicycle facilities, recreational trails, safe routes to school projects, community improvements such as historic preservation and vegetation management, and environmental mitigation related to storm water and habitat connectivity. It is important to note that some types of projects eligible under the SAFETEA-LU program Transportation Enhancements are no longer eligible, or have modified eligibility, under the TAP/TA. All projects completed using TAP/TA funds should be verified to ensure compatibility with TAP/TA eligibility.

Funding Estimate: The DMATS has TAP/TA funding history from 2001 to 2020. Future year of expenditure funding is based on linear regression between 2021 and 2050. ($6.9 Million – Year of Expenditure Dollars) with an annual average of $138,000 and growth rate of 4.17%.

Iowa Clean Air Attainment Program (ICAAP)

The ICAAP program was created using Congestion Mitigation and Air Quality Improvement Program (CMAQ) funds. This program funds highway/street, transit, bicycle/pedestrian, or freight projects or programs which help maintain Iowa's clean air quality by reducing transportation-related emissions. Eligible highway/street projects must be on the federal-aid system, which includes all federal functional class routes except local and rural minor collectors. A local match of at least 20 percent is required. Eligible projects will fall into four categories:

- those which reduce emissions via traffic flow improvements and provide a direct benefit to air quality by addressing ozone, carbon monoxide, or particulate matter PM-2.5 or PM-10 (all of these pollutant emissions must be addressed, and a reduction calculation must be provided by the applicant for all types of projects listed);
- those which reduce vehicle miles of travel;
- those which reduce single-occupant vehicle trips; or
- other transportation improvement projects to improve air quality or reduce congestion.

Net operating costs of new transit services are eligible for up to three years (at 80 percent federal/20 percent local participation); however, an application must be submitted for each year funding is requested.

Funding Estimate: The DMATS has ICAAP funding history from 2001 to 2020. The area received an annual average of $298,000. These funds are not taken into consideration for future funding analyses as these funds are grant based.

State Recreational Trail Program

The State Recreational Trail Program provides funding for public recreational trails. A minimum of 25% match is required for this funding. Volunteer services and other state grants are not eligible as matching funds. Proposed projects must be part of a local, area-wide, regional, or statewide trail plan. Successful applications must be maintained as a public facility for a minimum of 20 years.

Funding Estimate: The DMATS area received State Recreational Trail funding in 2002 and Scenic Byway funding in 2013. Future year of expenditure funding was based on linear regression between 2015 and 2045. ($5.5 Million – Year of Expenditure Dollars) with an annual average of $212,000 and growth rate of 0%.

TIGER Grants

The Transportation Investment Generating Economic Recovery, or TIGER Discretionary Grant program, provides a unique opportunity for the DOT to invest in road, rail, transit, and port projects that promise to achieve national objectives. Since 2009, Congress has dedicated nearly $4.6 billion for seven rounds of TIGER Discretionary Grants to fund projects that have a significant impact on the Nation, a region or a metropolitan area. The City of Dubuque received $5.6 million in TIGER Discretionary Grants 2009 for Complete Streets project to help create a vibrant environment for the people that live and work in the Historic Millwork District in downtown Dubuque.

BUILD Grants

The Better Utilizing Investments to Leverage Development, or BUILD Transportation Discretionary Grant program, provides a unique opportunity for the DOT to invest in road, rail, transit and port projects that promise to achieve national objectives. Previously known as Transportation Investment Generating Economic Recovery, or TIGER Discretionary Grants, Congress has dedicated nearly $7.9 billion for eleven rounds of National Infrastructure Investments to fund projects that have a significant local or regional impact. Dubuque County received $5.45 million in BUILD Transportation Discretionary Grants 2019 for NW Arterial / John Deere Improvements.

Historical Revenue Analysis for Roads Bridges, and Trails

Table 8.1 provides the historical funds received by the Iowa portion of DMATS for street, highways & bridges from FY 2001 to FY 2020. The table does not include funding that DMATS is eligible for but did not receive. The analysis also provides information on federal and state grant funds; however, these funding sources will not be used to do future analysis. Growth rate has been assigned to each funding source using the linear regression method, and used to project future funding for the area.

Table 8.1 Future Local Funds for DMATS Region

Funding Source	Street, Highway & Bridge Funds							
	STBG	NHPP	BR	ICAAP	Earmarks	Primary Road funds	TIGER Grant	BUILD Grant
FY 2001	$1,153,000	$0	$0	$0	$0	$0		
FY 2002	$1,171,000	$905,600	$686,240	$0	$0	$0		
FY 2003	$1,128,078	$8,982,636	$1,105,000	$320,000	$10,657,364	$0		
FY 2004	$1,128,078	$6,740,000	$380,000	$0	$0	$0		
FY 2005	$1,429,620	$1,573,200	$740,000	$0	$39,696,635	$0		
FY 2006	$1,052,473	$70,000	$360,000	$260,370	$0	$0		
FY 2007	$1,043,815	$822,000	$0	$0	$0	$0		
FY 2008	$1,268,630	$50,000	$500,000	$779,000	$4,848,500	$300,000		
FY 2009	$1,440,667	$400,000	$500,000	$400,000	$950,000	$223,000	$5,600,000	
FY 2010	$1,606,313	$3,382,000	$945,000	$0	$2,909,534	$5,600,000		
FY 2011	$1,831,241	$30,000	$742,000	$400,000	$0	$0		
FY 2012	$1,885,749	$20,100,000	$1,123,000	$1,833,000	$0	$0		
FY 2013	$1,800,400	$3,840,000	$1,223,000	$0	$0	$0		
FY 2014	$1,856,695	$0	$2,573,000	$0	$0	$1,445,000		
FY 2015	$1,879,560	$9,280,000	$0	$167,966	$0	$7,692,000		
FY 2016	$1,869,867	$24,800,000	$0	$442,735	$0	$45,000		
FY 2017	$1,924,679	$41,079,000	$0	$530,000	$0	$2,889,000		
FY 2018	$1,925,138	$57,425,000	$320,000	$0	$0	$3,005,000		
FY 2019	$2,081,870		$400,000	$0	$0			$5,450,000
FY 2020	$2,149,571		$0	$818,250	$0			
Average Annual	$1,581,322	$8,973,972	$579,862	$297,566	$2,953,102	$1,059,950	$280,000	$272,500
% growth	3.93%							

Source: IADOT

Table 8.2 provides the historical funds received by DMATS for Bike & Pedestrian from FY 2001 to FY 2020. The table does not provide funding that DMATS is eligible but did not receive. The analysis also provides information on federal and state grant funds and earmarks. These funding sources will not be used to do future analysis. Growth rate has been assigned to each funding using the linear regression method, and is used to project future funding for the area.

Table 8.2 Historic Revenue Analysis for Streets, Highways, & Bridges on Iowa Side.

Funding Source	Bike and Pedestrian Funds		
	MPO-TE	Federal-TE	Recreational Trails & Scenic Byways
FY 2001	$102,000	$0	$0
FY 2002	$102,000	$0	$0
FY 2003	$98,000	$737,376	$2,174,711
FY 2004	$92,000	$0	$0
FY 2005	$105,000	$0	$0
FY 2006	$120,565	$0	$0
FY 2007	$98,595	$0	$0
FY 2008	$98,637	$0	$0
FY 2009	$145,803	$0	$0
FY 2010	$119,177	$0	$0
FY 2011	$126,180	$0	$0
FY 2012	$126,180	$0	$0
FY 2013	$136,781	$0	$1,000,000
FY 2014	$182,131	$0	$0
FY 2015	$181,989	$0	$0
FY 2016	$184,437		
FY 2017	$190,178		
FY 2018	$185,287		
FY 2019	$187,953		
FY 2020	$184,525		
Average Annual	$138,371	$49,158	$211,647
% growth	4.17%		

Source: IADOT

DMATS Non-Federal Funds

In addition to federal funds, there are a number of local and regional funding sources that are used for operating and maintaining the region's transportation system. These include:

Cities: Road Use Tax Funds (RUTF), Other Road Monies Receipts, and Receipts, Debt Service

Dubuque County: Property Tax, RUTF, TJ Revenue, FM Extension, Time -21, Misc. Receipts, Farm to Market, Local Option Sales Tax, and RISE

Non-federal funds can be used both on federal and non-federal aid route construction, as well as system maintenance and preservation. The funds can also be used for other local projects. However, it is difficult to determine how much a community spent on federal and nonfederal aid routes in a specific year. Staff analyzed each member's financial profile and calculated the average amount of non-federal funding that each spends annually on a federal aid system. Staff then used these calculations as part of the DMATS future funding projection. The following sections present an overview of each member's revenues and expenditures. Appendix B includes detailed information on each member's past revenues and expenditures.

City of Dubuque

Revenues

With an average annual budget of $18 million, the City of Dubuque derives its revenues from several sources. Annual Road Use Tax Funds (RUTF) revenues averaged $6.7 million. Other road monies (local property tax support, grants, and other sources) averaged $11.4 million. Receipts, debt service averaged of $77,800 annually. On average, about 62.62 % of the City's funding comes from local property tax support, grants, and other sources; 36.95 % comes from State road use tax funds; and the rest from receipts, debt service. Figure 10.1 provides the funding breakdown.

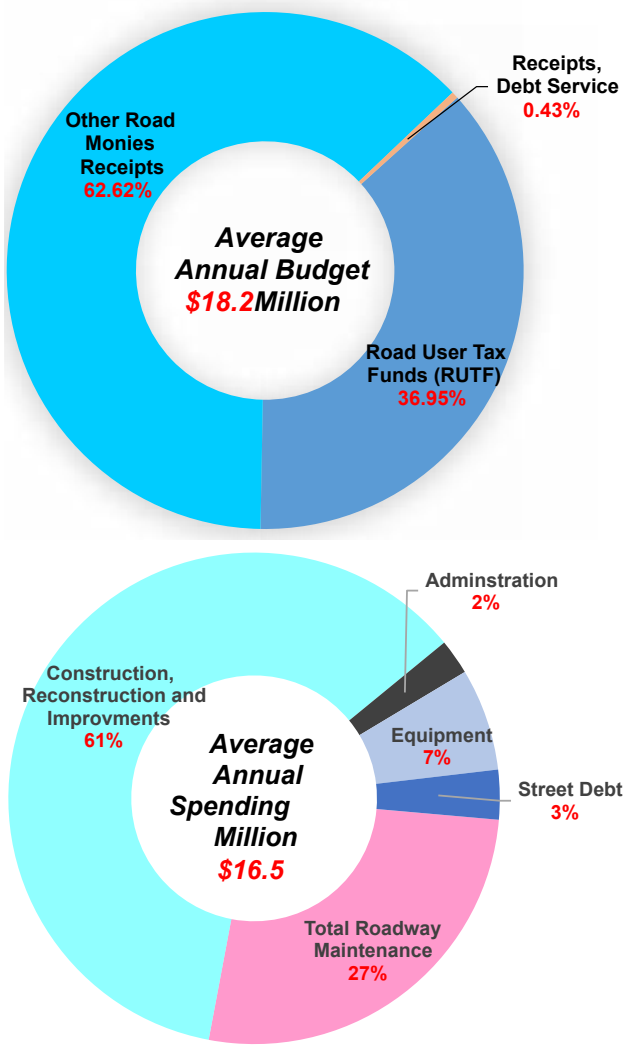
Expenditures

Annual City of Dubuque expenditures averaged $16.5 million between fiscal year 2010 to 2019. The City uses these funds to support activities: road maintenance, construction and reconstruction, administration, equipment, and to pay debt. The City's annual roadway maintenance expenditures averaged $4.4 million; construction, reconstruction and improvements averaged $10 million; administration costs averaged $383,400; equipment costs averaged $1.1 million; and debt service averaged $538,000. Figure 8.1 provides the breakdown of City's expenditures.

Spending on Federal Aid System

The City of Dubuque has over all 655.75 lane miles of road systems of which 247.31 miles (37.71%) is federal aid eligible routes and 408.43 miles (62.29%) are nonfederal aid eligible routes. It is assumed that the City will spend 37.71% of $14.29 million on federal aid system. Table 8.3 provides the City's spending on federal aid system.

Figure 8.1: City of Dubuque Percentage Breakdown of Average Annual Budget and spending.



Source: DMATS

Table 8.3 City of Dubuque Expenditure on Federal Aid System

Total Roadway Maintenance	Construction, Reconstruction and Improvements	Administration	Equipment	Street Debt	Total
$1,651,748	$3,798,817	$144,592	$417,959	$202,803	6,215,919

Source: DMATS

City of Asbury

Revenue

With an average annual budget of $5.4 million, the City of Asbury derives its revenues from several sources. The City's Road Use Tax Funds (RUTF) revenues had an annual average of $1.15 million. Other road monies (local property tax support, grants, and other sources) had an annual average of $3.4 million, and the Debt Services had an annual average revenue of $825,100. On average, 63.29 % of the City's funding comes from local property tax support, grants and other sources. 21.34% comes from Road Use Tax funds from the State of Iowa, and the rest from Receipts, and Debt Services. Figure 10.2 provides the funding breakdown.

Expenditures

Annual City of Asbury expenditures averaged $2.7 million from 2010 to 2019. The City uses these funds to support five activities: road maintenance, construction & reconstruction, administration, equipment and debt service. Between 2010 and 2019, the City's annual roadway maintenance expenditures averaged $402,000; construction, reconstruction and improvement costs averaged $1.4 million; administration costs averaged $17,000; equipment costs averaged $65,000 and street debt service averaged $824,000. Figure 8.2 provides the breakdown of City's expenditures.

Spending on Federal Aid Systems

The City of Asbury has over all 202.83 lane miles of road systems, of which 28.24 miles (13.92%) are federal aid eligible routes and 174.59 miles (86.08%) are nonfederal aid eligible routes. It is assumed that the City will spend 13.92% of $2.7 million on federal aid systems. Table 8.4 provides the City's spending on federal aid systems.

Figure 8.2 City of Asbury Percentage Breakdown of Average Annual Budget and Spending.

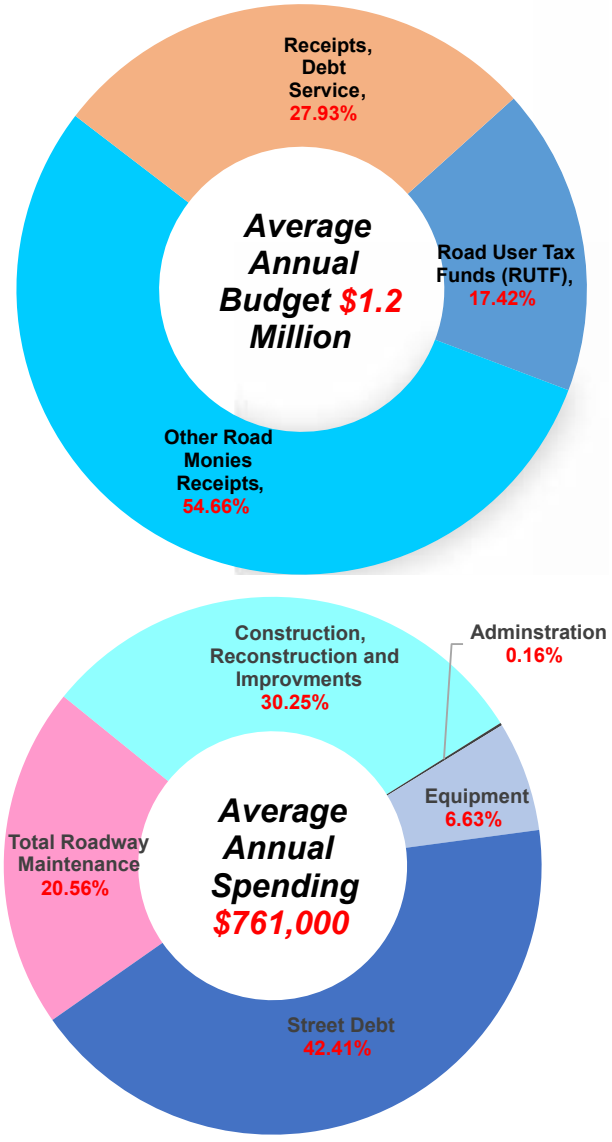


Table 8.4 City of Asbury Average Annual Expenditure on Federal Aid System

Total Roadway Maintenance	Construction, Reconstruction and Improvements	Administration	Equipment	Street Debt	Total
$55,987	$196,140	$2,335	$9,033	$114,678	$378,172

Source: DMATS

City of Peosta

Revenue

With an average annual budget of $1.2 million, the City of Peosta derives its revenues from several sources. Figure 10.7 provides funding sources and breakdown from 2010 to 2019. Road use tax funds (RUTF) revenues averaged $209,000 annually. Other road monies (local property tax support, grants, and other sources) had an annual average of $657,000. Receipts, debt service had an annual average of $336,000. Figure 10.3 provides the funding breakdown.

Expenditures

Peosta's expenditures averaged $761,000 annually between 2010 to 2019. The City uses these funds to support the work for five activities: road maintenance, construction and reconstruction, administration, equipment, and to pay debt. Annually, roadway maintenance expenditures averaged $156,000; construction, reconstruction, and improvements averaged $230,000; administration costs averaged $1,200; equipment costs averaged $50,000; and the street debt service averaged $323,000. Figure 8.3 provides the breakdown of the City's expenditures.

Spending on Federal Aid System

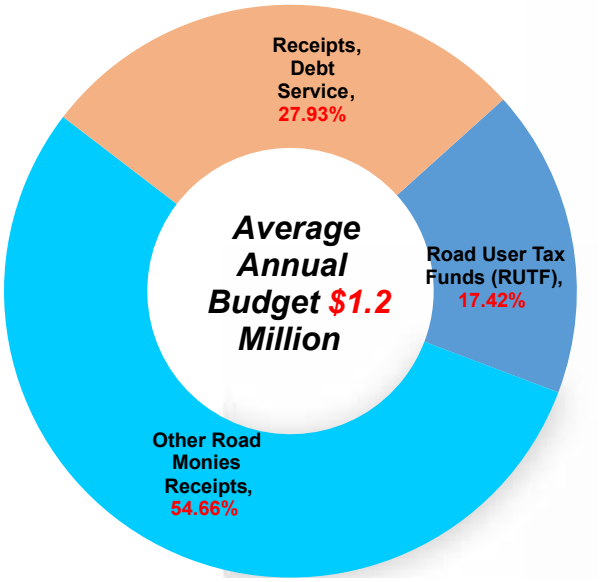
The City of Peosta has over all 29.96 lane miles of road systems of which 5.05 miles (16.87%) are federal aid eligible routes and 24.91 miles (83.13%) are nonfederal aid eligible routes. This analysis assumes that the City will spend 16.87% of $761,000 on the federal aid system. Table 8.5 provides the City's spending on federal aid system.

Figure 8.5 City of Peosta Annual Average Expenditure on Federal Aid System

Total Roadway Maintenance	Construction, Reconstruction and Improvements	Administration	Equipment	Street Debt	Total
$26,378	$38,818	$200	$8,505	$54,411	$128,311

Source: DMATS

Figure 8.3 City of Peosta Percentage Breakdown of Average Annual Budget and Spending.



Source: DMATS

Dubuque County

Revenues

With an average annual budget of $12.2 million, Dubuque County derives its revenues from several sources. Between 2010 and 2019 the County's property tax revenues averaged $1.7 million annually. Transfer of Jurisdiction (TJ) revenues had an annual average of $16,000. Local Option Sales Tax (LOST) revenues had an annual average of $1.8 million. Farm to Market (FM) revenues had an annual average of $44,000. The Road Use Tax Fund (RUTF) revenue had an annual average of $ 2.0 million. Transportation Investment Moves the Economy in the 21st Century (TIMES-21) revenues had an annual average of $200,000 and Other miscellaneous funds had an annual average of $373,000. Figure 10.4 provides the funding breakdown.

Expenditures

Annual Dubuque County expenditures averaged $12.0 million between 2010 to 2019. The County uses these funds to support the work for four activities: road maintenance, local construction, administration and engineering, and general roadway. Annual county roadway maintenance expenditures averaged $1.0 million; local construction averaged $4.7 million; administration and engineering costs averaged $4.14 million; and the County's General Roadway averaged $2.2 million. Figure 8.4 provides the breakdown of County's expenditures.

Spending on Federal Aid System

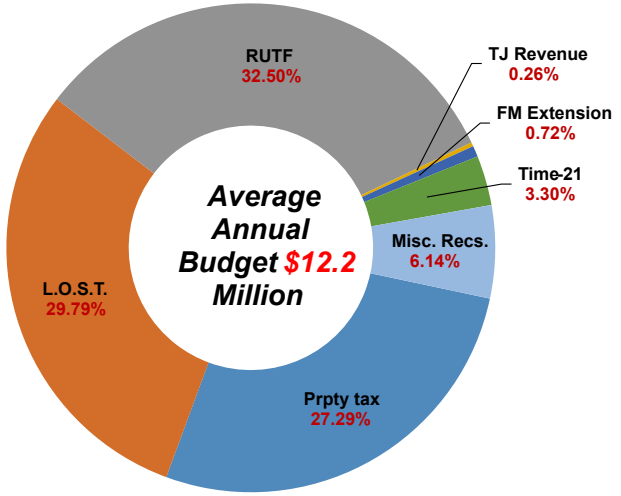
Dubuque County has over all 441.38 lane miles of road systems in the DMATS area, of which 176.85 miles (40.07%) are federal aid eligible routes and 264.54 miles (59.93%) are nonfederal aid eligible routes. It is assumed that the County will spend 40.07% of $9.6 million on federal aid systems. Table 8.6 provides the County's spending on federal aid systems.

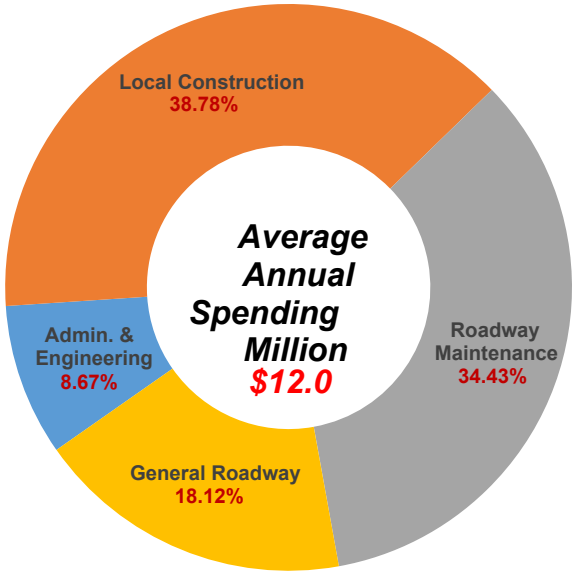
Table 8.6 County of Dubuque Expenditure on Federal Aid System

Admin. & Engineering	Local Construction	Roadway Maintenance	General Roadway	Total
$417,867	$1,867,923	$1,658,468	$872,791	$4,817,049

Source: DMATS

Figure 8.4 Dubuque County Percentage Breakdown of Average Annual Budget and Spending.





Source: DMATS

Overall Historical Funds Spent on Federal Aid System Within DMATS

Table 8.7 provides the amount spent for construction, reconstruction, and engineering by members in the DMATS. The growth rate for each member is determined using revenue growth from 2010-2019. The members within DMATS spent $6.4 million on an average, annually. The revenue growth for the City of Dubuque and Dubuque County are taken into consideration to establish an average growth rate for future projects as they have the majority of federal aid systems. DMATS prefers to be conservative in projecting future revenues and recommends to use an annual growth of 3% for future years.

Future Funding Analysis for Roads, Bridges, and Trails

The DMATS LRTP financial estimates are derived from an economic climate that is neither stable nor predictable. Revenues for the long-range plan are estimated at a planning level, not the programmatic level, as with the Transportation Improvement Program (TIP). DMATS financial projections are reviewed and adjusted regularly to reflect future economic trends. Once there is clarity around the new federal transportation bill and/or state revenues, staff will make adjustments to the plan's revenues.

Table 8.7 Average Construction, Reconstruction and Engineering with Growth Rate

Average Spending on Construction, Reconstruction and Engineering (2010-2019)		
Name	**Average Amount Spent**	**Average Revenue Growth**
City of Dubuque	$3,943,409	42.28%
City of Asbury	$198,475	356.30%
City of Peosta	$39,018	39.94%
Dubuque County	$2,285,790	3.65%
TOTAL	$6,466,691	

This analysis is subject to a number of inherent limitations:

- The projections are for a period of 30 years, during which time significant changes are possible in travel behavior and transportation finance.
- Financial estimates are based on future funding estimates, not project-specific estimates, as with the TIP's programmatic approach.
- The analysis lumps federal, state and local funding together and compares the total against the aggregate expenditures identified in the plan.
- Revenues from local sources are projected based on historical trends and percentage of growth. However, this may not account accurately for private-sector funding that could support transportation improvements.
- Projections of federal funding involve a great deal of uncertainty due to shifts in federal transportation budget and deficit-reduction policies, and because these funds are largely administered on a statewide basis.
- Ongoing maintenance costs were estimated by surveying state and local governments about current expenditures. Maintenance needs may be more accurately determined when region-wide pavement and bridge management/condition rating systems are in place.
- Cost estimates for many of the highway capacity projects may involve significant errors due to the long-range nature of the plan, the absence of detailed cost estimates based on actual design of the improvements, and the simplified methodology used to develop many of the estimates.

Procedure for Future Projections

Transportation revenues rely on taxes and generally reflect the circumstances of the regional economy, and therefore fluctuate from year to year. Currently the DMATS 2050 LRTP's financial estimates are derived from information that is existing as of today. Over the 30-year time horizon for DMATS 2050 LRTP, there will likely be variation in the annual transportation revenues available to the region. However, for the purposes of the long-range plan, this variation is impossible to accurately predict, and requires a conservative approach in anticipating gross-level forecasts needed to demonstrate fiscal constraint.

These forecasts assume constant growth in potential revenues for all sources of funds. Future growth rates are estimated based on historical analysis of past years funding. They also assume a constant rate of inflation calculated by using historical data obtained from cities, counties, IADOT, WIDOT, ILDOT and other sources. The future projections are calculated using the linear regression method, with annual growth rate and average annual funding as inputs. The projections are done for 30 years — between 2020 and 2050.

Overall DMATS will have $108,525,000 in federal and $1.086 billion in local funds.

Future Federal Funds

Table 8.8 provides future federal funds for DMATS region using information from historical trends.

Table 8.8 Future Federal Funds for DMATS Region

Years	DMATS Funds			Total Revenue
	STBG	MPO-TA	BR	
Annual Growth Rates	**3.93%**	**4.17%**	**2.63%**	
2021	$1,644,000	$145,000	$596,000	$2,385,000
2022	$1,707,000	$151,000	$612,000	$2,470,000
2023	$1,770,000	$157,000	$628,000	$2,555,000
2024	$1,833,000	$163,000	$644,000	$2,640,000
2025	$1,896,000	$169,000	$660,000	$2,725,000
2026	$1,959,000	$175,000	$676,000	$2,810,000
2027	$2,022,000	$181,000	$692,000	$2,895,000
2028	$2,085,000	$187,000	$708,000	$2,980,000
2029	$2,148,000	$193,000	$724,000	$3,065,000
2030	$2,211,000	$199,000	$740,000	$3,150,000
2031	$2,274,000	$205,000	$756,000	$3,235,000
2032	$2,337,000	$211,000	$772,000	$3,320,000
2033	$2,400,000	$217,000	$788,000	$3,405,000
2034	$2,463,000	$223,000	$804,000	$3,490,000
2035	$2,526,000	$229,000	$820,000	$3,575,000
2036	$2,589,000	$235,000	$836,000	$3,660,000
2037	$2,652,000	$241,000	$852,000	$3,745,000
2038	$2,715,000	$247,000	$868,000	$3,830,000
2039	$2,778,000	$253,000	$884,000	$3,915,000
2040	$2,841,000	$259,000	$900,000	$4,000,000
2041	$2,904,000	$265,000	$916,000	$4,085,000
2042	$2,967,000	$271,000	$932,000	$4,170,000
2043	$3,030,000	$277,000	$948,000	$4,255,000
2044	$3,093,000	$283,000	$964,000	$4,340,000
2045	$3,156,000	$289,000	$980,000	$4,425,000
2046	$3,219,000	$295,000	$996,000	$4,510,000
2047	$3,282,000	$301,000	$1,012,000	$4,595,000
2048	$3,345,000	$307,000	$1,028,000	$4,680,000
2049	$3,408,000	$313,000	$1,044,000	$4,765,000
2050	$3,471,000	$319,000	$1,060,000	$4,850,000
Total	**$76,725,000**	**$6,960,000**	**$24,840,000**	**$108,525,000**

Source: DMATS

Future Local Revenues

Table 8.9 provides future local funds for DMATS region using information from historical trends..

Table 8.9 Future Local funds for DMATS region

Year	Cities				County							Total Revenue
	RUTF	Other Road Monies Receipts	Receipts, Debt Service	City Revenues	Property tax	L.O.S.T.	RUTF	FM Extension	Time-21	Misc. Recs.	County Revenue	
% Adjusted Growth Rate	1.50%	1.50%	1.50%	TOTAL	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%	TOTAL	
2020	$8,445,000	$11,763,000	$835,000	$21,043,000	$2,137,000	$1,941,000	$2,446,000	$56,000	$356,000	$172,000	$7,108,000	$28,151,000
2021	$8,562,000	$11,989,000	$854,000	$21,405,000	$2,163,000	$1,969,000	$2,477,000	$57,000	$360,000	$178,000	$7,204,000	$28,609,000
2022	$8,679,000	$12,215,000	$873,000	$21,767,000	$2,189,000	$1,997,000	$2,508,000	$58,000	$364,000	$184,000	$7,300,000	$29,067,000
2023	$8,796,000	$12,441,000	$892,000	$22,129,000	$2,215,000	$2,025,000	$2,539,000	$59,000	$368,000	$190,000	$7,396,000	$29,525,000
2024	$8,913,000	$12,667,000	$911,000	$22,491,000	$2,241,000	$2,053,000	$2,570,000	$60,000	$372,000	$196,000	$7,492,000	$29,983,000
2025	$9,030,000	$12,893,000	$930,000	$22,853,000	$2,267,000	$2,081,000	$2,601,000	$61,000	$376,000	$202,000	$7,588,000	$30,441,000
2026	$9,147,000	$13,119,000	$949,000	$23,215,000	$2,293,000	$2,109,000	$2,632,000	$62,000	$380,000	$208,000	$7,684,000	$30,899,000
2027	$9,264,000	$13,345,000	$968,000	$23,577,000	$2,319,000	$2,137,000	$2,663,000	$63,000	$384,000	$214,000	$7,780,000	$31,357,000
2028	$9,381,000	$13,571,000	$987,000	$23,939,000	$2,345,000	$2,165,000	$2,694,000	$64,000	$388,000	$220,000	$7,876,000	$31,815,000
2029	$9,498,000	$13,797,000	$1,006,000	$24,301,000	$2,371,000	$2,193,000	$2,725,000	$65,000	$392,000	$226,000	$7,972,000	$32,273,000
2030	$9,615,000	$14,023,000	$1,025,000	$24,663,000	$2,397,000	$2,221,000	$2,756,000	$66,000	$396,000	$232,000	$8,068,000	$32,731,000
2031	$9,732,000	$14,249,000	$1,044,000	$25,025,000	$2,423,000	$2,249,000	$2,787,000	$67,000	$400,000	$238,000	$8,164,000	$33,189,000
2032	$9,849,000	$14,475,000	$1,063,000	$25,387,000	$2,449,000	$2,277,000	$2,818,000	$68,000	$404,000	$244,000	$8,260,000	$33,647,000
2033	$9,966,000	$14,701,000	$1,082,000	$25,749,000	$2,475,000	$2,305,000	$2,849,000	$69,000	$408,000	$250,000	$8,356,000	$34,105,000
2034	$10,083,000	$14,927,000	$1,101,000	$26,111,000	$2,501,000	$2,333,000	$2,880,000	$70,000	$412,000	$256,000	$8,452,000	$34,563,000
2035	$10,200,000	$15,153,000	$1,120,000	$26,473,000	$2,527,000	$2,361,000	$2,911,000	$71,000	$416,000	$262,000	$8,548,000	$35,021,000
2036	$10,317,000	$15,379,000	$1,139,000	$26,835,000	$2,553,000	$2,389,000	$2,942,000	$72,000	$420,000	$268,000	$8,644,000	$35,479,000
2037	$10,434,000	$15,605,000	$1,158,000	$27,197,000	$2,579,000	$2,417,000	$2,973,000	$73,000	$424,000	$274,000	$8,740,000	$35,937,000
2038	$10,551,000	$15,831,000	$1,177,000	$27,559,000	$2,605,000	$2,445,000	$3,004,000	$74,000	$428,000	$280,000	$8,836,000	$36,395,000
2039	$10,668,000	$16,057,000	$1,196,000	$27,921,000	$2,631,000	$2,473,000	$3,035,000	$75,000	$432,000	$286,000	$8,932,000	$36,853,000
2040	$10,785,000	$16,283,000	$1,215,000	$28,283,000	$2,657,000	$2,501,000	$3,066,000	$76,000	$436,000	$292,000	$9,028,000	$37,311,000
2041	$10,902,000	$16,509,000	$1,234,000	$28,645,000	$2,683,000	$2,529,000	$3,097,000	$77,000	$440,000	$298,000	$9,124,000	$37,769,000
2042	$11,019,000	$16,735,000	$1,253,000	$29,007,000	$2,709,000	$2,557,000	$3,128,000	$78,000	$444,000	$304,000	$9,220,000	$38,227,000
2043	$11,136,000	$16,961,000	$1,272,000	$29,369,000	$2,735,000	$2,585,000	$3,159,000	$79,000	$448,000	$310,000	$9,316,000	$38,685,000
2044	$11,253,000	$17,187,000	$1,291,000	$29,731,000	$2,761,000	$2,613,000	$3,190,000	$80,000	$452,000	$316,000	$9,412,000	$39,143,000
2045	$11,370,000	$17,413,000	$1,310,000	$30,093,000	$2,787,000	$2,641,000	$3,221,000	$81,000	$456,000	$322,000	$9,508,000	$39,601,000
2046	$11,487,000	$17,639,000	$1,329,000	$30,455,000	$2,813,000	$2,669,000	$3,252,000	$82,000	$460,000	$328,000	$9,604,000	$40,059,000
2047	$11,604,000	$17,865,000	$1,348,000	$30,817,000	$2,839,000	$2,697,000	$3,283,000	$83,000	$464,000	$334,000	$9,700,000	$40,517,000
2048	$11,721,000	$18,091,000	$1,367,000	$31,179,000	$2,865,000	$2,725,000	$3,314,000	$84,000	$468,000	$340,000	$9,796,000	$40,975,000
2049	$11,838,000	$18,317,000	$1,386,000	$31,541,000	$2,891,000	$2,753,000	$3,345,000	$85,000	$472,000	$346,000	$9,892,000	$41,433,000
2050	$11,955,000	$18,543,000	$1,405,000	$31,903,000	$2,917,000	$2,781,000	$3,376,000	$86,000	$476,000	$352,000	$9,988,000	$41,891,000
Total	$316,200,000	$469,743,000	$34,720,000	$820,663,000	$78,337,000	$73,191,000	$90,241,000	$2,201,000	$12,896,000	$8,122,000	$264,988,000	$1,085,651,000

Source: DMATS

Expenditures

The total expenditures for DMATS region are expected to be $782 million. The expenditures included regular maintenance & operations of the system with administrative costs. Table 8.10 provides future local funds for DMATS region using information from historical trends.

Table 8.10 Future Expenditures for DMATS Region

Year	Cities			County			Total		Total Expenditure
	Total Roadway Maintenance	Total Operations	Total Cost	Total Roadway Maintenance	Total Operations	Total Cost	Total Roadway Maintenance	Total Operations	
% Growth Rate	5.25%	12.69%		4.91%	2.45%				
2021	$4,404,000	$2,738,000	$7,142,000	$3,340,000	$4,187,000	$7,527,000	$7,744,000	$6,925,000	$14,669,000
2022	$4,624,000	$3,047,000	$7,671,000	$3,497,000	$4,287,000	$7,784,000	$8,121,000	$7,334,000	$15,455,000
2023	$4,844,000	$3,356,000	$8,200,000	$3,654,000	$4,387,000	$8,041,000	$8,498,000	$7,743,000	$16,241,000
2024	$5,064,000	$3,665,000	$8,729,000	$3,811,000	$4,487,000	$8,298,000	$8,875,000	$8,152,000	$17,027,000
2025	$5,284,000	$3,974,000	$9,258,000	$3,968,000	$4,587,000	$8,555,000	$9,252,000	$8,561,000	$17,813,000
2026	$5,504,000	$4,283,000	$9,787,000	$4,125,000	$4,687,000	$8,812,000	$9,629,000	$8,970,000	$18,599,000
2027	$5,724,000	$4,592,000	$10,316,000	$4,282,000	$4,787,000	$9,069,000	$10,006,000	$9,379,000	$19,385,000
2028	$5,944,000	$4,901,000	$10,845,000	$4,439,000	$4,887,000	$9,326,000	$10,383,000	$9,788,000	$20,171,000
2029	$6,164,000	$5,210,000	$11,374,000	$4,596,000	$4,987,000	$9,583,000	$10,760,000	$10,197,000	$20,957,000
2030	$6,384,000	$5,519,000	$11,903,000	$4,753,000	$5,087,000	$9,840,000	$11,137,000	$10,606,000	$21,743,000
2031	$6,604,000	$5,828,000	$12,432,000	$4,910,000	$5,187,000	$10,097,000	$11,514,000	$11,015,000	$22,529,000
2032	$6,824,000	$6,137,000	$12,961,000	$5,067,000	$5,287,000	$10,354,000	$11,891,000	$11,424,000	$23,315,000
2033	$7,044,000	$6,446,000	$13,490,000	$5,224,000	$5,387,000	$10,611,000	$12,268,000	$11,833,000	$24,101,000
2034	$7,264,000	$6,755,000	$14,019,000	$5,381,000	$5,487,000	$10,868,000	$12,645,000	$12,242,000	$24,887,000
2035	$7,484,000	$7,064,000	$14,548,000	$5,538,000	$5,587,000	$11,125,000	$13,022,000	$12,651,000	$25,673,000
2036	$7,704,000	$7,373,000	$15,077,000	$5,695,000	$5,687,000	$11,382,000	$13,399,000	$13,060,000	$26,459,000
2037	$7,924,000	$7,682,000	$15,606,000	$5,852,000	$5,787,000	$11,639,000	$13,776,000	$13,469,000	$27,245,000
2038	$8,144,000	$7,991,000	$16,135,000	$6,009,000	$5,887,000	$11,896,000	$14,153,000	$13,878,000	$28,031,000
2039	$8,364,000	$8,300,000	$16,664,000	$6,166,000	$5,987,000	$12,153,000	$14,530,000	$14,287,000	$28,817,000
2040	$8,584,000	$8,609,000	$17,193,000	$6,323,000	$6,087,000	$12,410,000	$14,907,000	$14,696,000	$29,603,000
2041	$8,804,000	$8,918,000	$17,722,000	$6,480,000	$6,187,000	$12,667,000	$15,284,000	$15,105,000	$30,389,000
2042	$9,024,000	$9,227,000	$18,251,000	$6,637,000	$6,287,000	$12,924,000	$15,661,000	$15,514,000	$31,175,000
2043	$9,244,000	$9,536,000	$18,780,000	$6,794,000	$6,387,000	$13,181,000	$16,038,000	$15,923,000	$31,961,000
2044	$9,464,000	$9,845,000	$19,309,000	$6,951,000	$6,487,000	$13,438,000	$16,415,000	$16,332,000	$32,747,000
2045	$9,684,000	$10,154,000	$19,838,000	$7,108,000	$6,587,000	$13,695,000	$16,792,000	$16,741,000	$33,533,000
2046	$9,904,000	$10,463,000	$20,367,000	$7,265,000	$6,687,000	$13,952,000	$17,169,000	$17,150,000	$34,319,000
2047	$10,124,000	$10,772,000	$20,896,000	$7,422,000	$6,787,000	$14,209,000	$17,546,000	$17,559,000	$35,105,000
2048	$10,344,000	$11,081,000	$21,425,000	$7,579,000	$6,887,000	$14,466,000	$17,923,000	$17,968,000	$35,891,000
2049	$10,564,000	$11,390,000	$21,954,000	$7,736,000	$6,987,000	$14,723,000	$18,300,000	$18,377,000	$36,677,000
2050	$10,784,000	$11,699,000	$22,483,000	$7,893,000	$7,087,000	$14,980,000	$18,677,000	$18,786,000	$37,463,000
Total	$227,820,000	$216,555,000	$444,375,000	$168,495,000	$169,110,000	$337,605,000	$396,315,000	$385,665,000	$781,980,000

Source: DMATS

Revenues Available to Implement LRTP projects

DMATS region will have $376 million to implement DMATS projects which were prioritized with in the region for the next 30 years. Table 8.11 provides revenues and expenditure for DMATS region and the funds available to implement Long Rage Plan Projects.

Table 8.11 Revenues Available to implements LRTP projects

Years	Total			Total
	Federal Revenue	Non-Federal Revenue	Operation & Maintenance cost	
2021	$1,947,000	$28,151,000	$14,669,000	$15,429,000
2022	$2,605,000	$28,609,000	$15,455,000	$15,759,000
2023	$2,103,000	$29,067,000	$16,241,000	$14,929,000
2024	$2,181,000	$29,525,000	$17,027,000	$14,679,000
2025	$2,259,000	$29,983,000	$17,813,000	$14,429,000
2026	$3,204,000	$30,441,000	$18,599,000	$15,046,000
2027	$3,282,000	$30,899,000	$19,385,000	$14,796,000
2028	$3,360,000	$31,357,000	$20,171,000	$14,546,000
2029	$3,438,000	$31,815,000	$20,957,000	$14,296,000
2030	$3,516,000	$32,273,000	$21,743,000	$14,046,000
2031	$3,594,000	$32,731,000	$22,529,000	$13,796,000
2032	$3,672,000	$33,189,000	$23,315,000	$13,546,000
2033	$3,750,000	$33,647,000	$24,101,000	$13,296,000
2034	$3,828,000	$34,105,000	$24,887,000	$13,046,000
2035	$3,906,000	$34,563,000	$25,673,000	$12,796,000
2036	$3,984,000	$35,021,000	$26,459,000	$12,546,000
2037	$4,062,000	$35,479,000	$27,245,000	$12,296,000
2038	$4,140,000	$35,937,000	$28,031,000	$12,046,000
2039	$4,218,000	$36,395,000	$28,817,000	$11,796,000
2040	$4,296,000	$36,853,000	$29,603,000	$11,546,000
2041	$4,374,000	$37,311,000	$30,389,000	$11,296,000
2042	$4,452,000	$37,769,000	$31,175,000	$11,046,000
2043	$4,530,000	$38,227,000	$31,961,000	$10,796,000
2044	$4,608,000	$38,685,000	$32,747,000	$10,546,000
2045	$4,686,000	$39,143,000	$33,533,000	$10,296,000
2046	$4,764,000	$39,601,000	$34,319,000	$10,046,000
2047	$4,842,000	$40,059,000	$35,105,000	$9,796,000
2048	$4,920,000	$40,517,000	$35,891,000	$9,546,000
2049	$4,998,000	$40,975,000	$36,677,000	$9,296,000
2050	$4,998,000	$41,433,000	$37,463,000	$8,968,000
Total	**$114,517,000**	**$1,043,760,000**	**$781,980,000**	**$376,297,000**

Funding Overview for Transit

Transit systems in the DMATS area are funded through a combination of federal, state, and local funds. The Jule and RTA utilize this combination of funds for operational and capital strategies. Federal funding for transit programs and capital projects flow through DMATS.

Revenue Sources for Transit

The FTA and Iowa DOT provide funding to Iowa's MPOs, RPAs and public transit providers to support public transit operations.

METROPOLITAN PLANNING PROGRAM (SECTION 5305D)

The FTA provides this funding to support planning activities in metropolitan areas. Iowa DOT is the direct recipient of 5303 funds. The Iowa DOT allocates 5303 funds to MPOs based on a formula that distributes one-third of the funds based on the 1990 urban area population; one-third of the funds based on the 2010 urban area population; and one-third equally distributed. Iowa DOT administers 5303 funds jointly with Metropolitan Planning "PL" funds, available through FHWA, as part of a Consolidated Planning Grant. The 5303 and PL funds can support any MPO costs related to intermodal transportation planning activities for the urbanized area.

Funding Estimate: The DMATS area received $34,000 in section 5303 funding each year from 2010 to 2020. The funding has 3% growth rate.

URBANIZED AREA FORMULA PROGRAM (SECTION 5307)

This program supports urban transit systems serving communities over 50,000 in population. The FTA allocates funding partially on population and population density, and partially on performance factors, including passenger miles of service provided.

Funding Estimate: The Jule Transit received $10.8 million in section 5307 funding from 2010 to 2019. The system received an annual average of $1.1 million. Staff used 3% as annual growth rate for future projections.

CAPITAL INVESTMENT PROGRAM (SECTION 5309/5339)

Section 5309 is a discretionary funding source which supports transit capital needs that exceed what federal formula programs can support. This program was replaced with 5339. The 5339 program is designed to replace, rehabilitate and purchase buses and related equipment, and to construct bus-related facilities.

Funding Estimate: The local transit systems received $7.1 million in section 5309/5339 funding for years 2010 to 2019. The system received an annual average of $1.0 million. Staff used 3% as annual growth rate for future projections.

SPECIAL NEEDS PROGRAM (SECTION 5310)

Section 5310 supports transit services serving persons who are elderly or persons with disabilities. FTA allocates these funds to Iowa based on the number of persons who are elderly or have disabilities within the state compared to other states.

Funding Estimate: The local transit systems received $1.46 million in section 5310 funding from 2010 to 2019. The system received an annual average of $133,000. Staff used 3% as annual growth rate for future projections.

SURFACE TRANSPORTATION BLOCK GRANT PROGRAM (STBG)

As noted previously under highway funding programs, STBG funds may be used for transit capital projects.

Funding Estimate: The local transit systems received $3.1 million in STBG funding from 2010 and 2020. Future estimates are not done for these funds as they are application based.

CONGESTION MITIGATION/AIR QUALITY (CMAQ)

As noted previously under highway funding programs, CMAQ/ICAAP funds may be used for anything that the STBG may fund, including transit capital projects.

Funding Estimate: Jule transit received ICAAP funding of $2.3 million from 2011 and 2017. Future estimates are not done for these funds as they are grant based.

PUBLIC TRANSIT INFRASTRUCTURE GRANT (PTI)

Iowa DOT provides this program to fund vertical infrastructure needs of public transit agencies. Iowa DOT defines vertical infrastructure as buildings and facilities, but not vehicles. Projects can include new construction, reconstruction, or remodeling.

Funding Estimate: The RTA and Jule system received PTI funding totaling $767,500 from 2011 and 2019. Future estimate is not done for these funds as they are grant based.

STATE TRANSIT ASSISTANCE (STA)

All public transit systems in Iowa are eligible for funding under the STA program. STA funding is derived from four percent of the fees for new registration collected on sales of motor vehicles and accessory equipment.

Funding Estimate: The local transit systems have STA funding history from 2010 to 2019. Future year of expenditure funding was based on linear regression between 2010 and 2045. ($11.68 Million – year of expenditure dollars) with an annual average of $327,000. Staff used 1% as annual growth rate for future projections.

STA SPECIAL PROJECTS

Each year up to $300,000 of the total STA funds are set aside to fund "special projects." These can include grants to individual systems to support transit services which are developed in conjunction with human service agencies, or statewide projects to improve public transit in Iowa through such means as technical training for transit system or planning agency personnel, statewide marketing campaigns, etc.

Funding Estimate: The local transit systems did not receive STA Special Project funding in 2010 and 2019. Future estimates are not done for these funds as they are grant based.

TRANSIT LEVY

Iowa law authorizes municipalities to levy up to 95 cents per $1,000 of assessed taxable property in order to support the cost of a public transit system. Most of Iowa's larger communities levy for support of their urban transit systems. A number of smaller communities use this authority to generate funding used to support services contracted from their designated regional transit system.

Funding Estimate: RTA does not receive transit levy. Jule transit does receive transit levy from the City of Dubuque annually. Jule received $12.84 million from 2010 to 2019. The system receives an average annual funding of $1.28 million. Staff used 3% as annual growth rate for future projections.

FARES

Fees paid by the passengers are one of the most common sources of local support. This can include monies collected on-board the transit vehicle (usually labeled as "farebox receipts"), as well as prepaid fares from sale of passes or tickets, or fares billed to the passenger after the fact.

Funding Estimate: The local transit systems on an average received $308,000 in fares annually. The systems had a negative annual growth in fares. Staff used 0% as annual growth rate for future projections.

ADVERTISING & MISCELLANEOUS

These are the funds that are locally generated. Miscellaneous funds have a bigger balance than fares and advertising as they are based on local grant funds and other revenues.

Funding Estimate: The local transit systems on an average received $7,475 in advertising and $484,000 in miscellaneous funds. The systems had a positive annual growth in advertising and miscellaneous funds. Staff used 4% as annual growth rate for future projections.

State of Good Repair Grants (SGR)

The State of Good Repair Grants Program (49 U.S.C. 5337) provides capital assistance for maintenance, replacement, and rehabilitation projects of high-intensity fixed guideway and bus systems to help transit agencies maintain assets in a state of good repair. Additionally, SGR grants are eligible for developing and implementing Transit Asset Management plans. The City of Dubuque received $8.0 million for construction of the new Intermodal Facility in 2010.

Historical Analysis of Transit Revenue, Operations & Maintenance Cost

Tabel 8.12 provides the historical funds received by the Jule and RTA 8 from 2010 to 2019 and Table 8.12 also provides historic operation and maintenance costs for the transit systems. The analysis also provides information on federal and state grant funds. These funding sources will not be used to do future analysis. Growth rate has been assigned to each funding source using the linear regression method. The growth rate is used to project future funding for the area.

Table 8.12 Historic funds received by the Jule and RTA

Funding Source Jule & RTA	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	Average Annual
Capital											
Section 5309/5339	$290,146	$1,560,485	$2,319,305	$12,003	$9,036	$23,752	$0	$0	$80,325	$3,263,667	$755,872
Infrastructure Grant	$0	$300,000	$0	$278,214	$189,278	$0	$600,000	$569,823	$454,489	$0	$239,180
Federal & State Grants	$752,435	$0	$0	$10,000,000	$19,957	$0	$0	$0	$0	$0	$1,077,239
Surface Transportation Program	$0	$0	$0	$0	$1,200,000	$1,386,000	$0	$220,000	$83,333	$0	$288,933
Operations											
Section 5307	$978,632	$834,272	$803,368	$1,052,336	$960,604	$1,045,320	$1,163,667	$1,181,050	$1,346,261	$1,436,622	$1,080,213
Section 5310	$123,297	$111,087	$135,399	$159,440	$129,195	$146,497	$134,369	$138,684	$144,733	$145,489	$136,819
CMAQ /ICAAP	$0	$93,250	$244,486	$152,080	$452,954	$555,388	$529,022	$290,419	$0	$0	$231,760
STA	$225,279	$245,917	$286,952	$304,897	$322,403	$334,552	$380,707	$381,262	$387,430	$399,925	$326,932
Transit Levy	$1,345,044	$1,230,292	$717,611	$1,278,866	$1,315,883	$1,132,748	$1,112,131	$1,294,450	$1,709,399	$1,706,011	$1,284,244
Fares	$196,600	$247,048	$224,320	$190,407	$213,292	$331,535	$401,707	$412,862	$427,259	$439,186	$308,422
Contracts	$210,879	$242,175	$317,766	$292,824	$304,155	$314,670	$378,916	$501,665	$404,383	$362,143	$332,958
Other	$20,133	$13,911	$501,972	$97,285	$103,934	$177,979	$105,074	$170,725	$116,521	$206,442	$151,398
Miscellaneous	$231,012	$256,086	$819,738	$390,109	$408,089	$492,649	$483,990	$672,390	$520,904	$568,585	$484,355
Total	**$4,373,457**	**$5,134,523**	**$6,370,916**	**$14,208,460**	**$5,628,781**	**$5,941,092**	**$5,289,584**	**$5,833,331**	**$5,675,039**	**$8,528,070**	**$6,213,970**

Source: Jule & RTA

Future Funding Analysis for Transit

Table 8.13 provides future projections of transit system funding. The Table 8.14 displays future operations and maintenance costs for local transit systems. Growth rate has been assigned to each funding source using the linear regression method. The growth rate is used to project future funding for the area. Transit system staff decided to use 3% annual growth rate for O&MGrowth rate has been assigned to each funding source using the linear regression method. The growth rate is used to project future funding for the area.

In order to find out the amount of funding available to implement the projects the future O&M costs are subtracted from future federal and local funding. Table 8.15 compares future operations and maintenance costs and revenues for local transit systems. Overall, the local transit systems need $192 million in O& M cost and will have $173 million in revenues between 2021 and 2050. The systems will have 20 million deficits in 30 years.

Conclusion

The DMATS region will have $376 million that can be spent on roads, bridges and trails over 30 years. The local transit systems will not have any additional funds for transit improvements. Transit systems should secure funding through grant programs for capital improvement projects. The financial analysis does not explicitly address other transportation modes such as bicycle, pedestrian and goods movement in the financial analysis. Although LRTP 2050 currently identifies specific projects in these categories, there are no dedicated funding sources for project development other than Transportation Alternative dollars for trails which will not be sufficient. Projects compete for the same funding sources identified in this analysis, particularly federal highway funds. Bikeway and pedestrian improvements may also be incorporated in other highway or transit projects.

Figure 8.13 Future projections of funds received by the Jule and RTA

Years								Total Revenue
	Section 5309/5339	Section 5307/5310	STA	Transit Levy	Fares	Contract	Others	
Growth Rates	2.00%	2.00%	1.00%	1.00%	1.00%	2.00%	2.00%	
2021	$779,000	$1,102,000	$331,000	$1,298,000	$312,000	$343,000	$499,000	$4,664,000
2022	$795,000	$1,124,000	$335,000	$1,311,000	$316,000	$350,000	$509,000	$4,740,000
2023	$811,000	$1,146,000	$339,000	$1,324,000	$320,000	$357,000	$519,000	$4,816,000
2024	$827,000	$1,168,000	$343,000	$1,337,000	$324,000	$364,000	$529,000	$4,892,000
2025	$843,000	$1,190,000	$347,000	$1,350,000	$328,000	$371,000	$539,000	$4,968,000
2026	$859,000	$1,212,000	$351,000	$1,363,000	$332,000	$378,000	$549,000	$5,044,000
2027	$875,000	$1,234,000	$355,000	$1,376,000	$336,000	$385,000	$559,000	$5,120,000
2028	$891,000	$1,256,000	$359,000	$1,389,000	$340,000	$392,000	$569,000	$5,196,000
2029	$907,000	$1,278,000	$363,000	$1,402,000	$344,000	$399,000	$579,000	$5,272,000
2030	$923,000	$1,300,000	$367,000	$1,415,000	$348,000	$406,000	$589,000	$5,348,000
2031	$939,000	$1,322,000	$371,000	$1,428,000	$352,000	$413,000	$599,000	$5,424,000
2032	$955,000	$1,344,000	$375,000	$1,441,000	$356,000	$420,000	$609,000	$5,500,000
2033	$971,000	$1,366,000	$379,000	$1,454,000	$360,000	$427,000	$619,000	$5,576,000
2034	$987,000	$1,388,000	$383,000	$1,467,000	$364,000	$434,000	$629,000	$5,652,000
2035	$1,003,000	$1,410,000	$387,000	$1,480,000	$368,000	$441,000	$639,000	$5,728,000
2036	$1,019,000	$1,432,000	$391,000	$1,493,000	$372,000	$448,000	$649,000	$5,804,000
2037	$1,035,000	$1,454,000	$395,000	$1,506,000	$376,000	$455,000	$659,000	$5,880,000
2038	$1,051,000	$1,476,000	$399,000	$1,519,000	$380,000	$462,000	$669,000	$5,956,000
2039	$1,067,000	$1,498,000	$403,000	$1,532,000	$384,000	$469,000	$679,000	$6,032,000
2040	$1,083,000	$1,520,000	$407,000	$1,545,000	$388,000	$476,000	$689,000	$6,108,000
2041	$1,099,000	$1,542,000	$411,000	$1,558,000	$392,000	$483,000	$699,000	$6,184,000
2042	$1,115,000	$1,564,000	$415,000	$1,571,000	$396,000	$490,000	$709,000	$6,260,000
2043	$1,131,000	$1,586,000	$419,000	$1,584,000	$400,000	$497,000	$719,000	$6,336,000
2044	$1,147,000	$1,608,000	$423,000	$1,597,000	$404,000	$504,000	$729,000	$6,412,000
2045	$1,163,000	$1,630,000	$427,000	$1,610,000	$408,000	$511,000	$739,000	$6,488,000
2046	$1,179,000	$1,652,000	$431,000	$1,623,000	$412,000	$518,000	$749,000	$6,564,000
2047	$1,195,000	$1,674,000	$435,000	$1,636,000	$416,000	$525,000	$759,000	$6,640,000
2048	$1,211,000	$1,696,000	$439,000	$1,649,000	$420,000	$532,000	$769,000	$6,716,000
2049	$1,227,000	$1,718,000	$443,000	$1,662,000	$424,000	$539,000	$779,000	$6,792,000
2050	$1,243,000	$1,740,000	$447,000	$1,675,000	$428,000	$546,000	$789,000	$6,868,000
Total	$30,330,000	$42,630,000	$11,670,000	$44,595,000	$11,100,000	$13,335,000	$19,320,000	$172,980,000

Source: DMATS

Table: 8.14 Future Operations and Maintenance costs for transit systems

Years	Operations		Vehicle Replacement		Total Cost
	Jule	RTA	Jule	RTA	
Growth Rates	**3.00%**	**3.00%**	**3.00%**	**3.00%**	
2021	$3,313,000	$519,000	$567,000	$93,000	$4,492,000
2022	$3,410,000	$535,000	$584,000	$96,000	$4,625,000
2023	$3,507,000	$551,000	$601,000	$99,000	$4,758,000
2024	$3,604,000	$567,000	$618,000	$102,000	$4,891,000
2025	$3,701,000	$583,000	$635,000	$105,000	$5,024,000
2026	$3,798,000	$599,000	$652,000	$108,000	$5,157,000
2027	$3,895,000	$615,000	$669,000	$111,000	$5,290,000
2028	$3,992,000	$631,000	$686,000	$114,000	$5,423,000
2029	$4,089,000	$647,000	$703,000	$117,000	$5,556,000
2030	$4,186,000	$663,000	$720,000	$120,000	$5,689,000
2031	$4,283,000	$679,000	$737,000	$123,000	$5,822,000
2032	$4,380,000	$695,000	$754,000	$126,000	$5,955,000
2033	$4,477,000	$711,000	$771,000	$129,000	$6,088,000
2034	$4,574,000	$727,000	$788,000	$132,000	$6,221,000
2035	$4,671,000	$743,000	$805,000	$135,000	$6,354,000
2036	$4,768,000	$759,000	$822,000	$138,000	$6,487,000
2037	$4,865,000	$775,000	$839,000	$141,000	$6,620,000
2038	$4,962,000	$791,000	$856,000	$144,000	$6,753,000
2039	$5,059,000	$807,000	$873,000	$147,000	$6,886,000
2040	$5,156,000	$823,000	$890,000	$150,000	$7,019,000
2041	$5,253,000	$839,000	$907,000	$153,000	$7,152,000
2042	$5,350,000	$855,000	$924,000	$156,000	$7,285,000
2043	$5,447,000	$871,000	$941,000	$159,000	$7,418,000
2044	$5,544,000	$887,000	$958,000	$162,000	$7,551,000
2045	$5,641,000	$903,000	$975,000	$165,000	$7,684,000
2046	$5,738,000	$919,000	$992,000	$168,000	$7,817,000
2047	$5,835,000	$935,000	$1,009,000	$171,000	$7,950,000
2048	$5,932,000	$951,000	$1,026,000	$174,000	$8,083,000
2049	$6,029,000	$967,000	$1,043,000	$177,000	$8,216,000
2050	$6,126,000	$983,000	$1,060,000	$180,000	$8,349,000
Total	**$141,585,000**	**$22,530,000**	**$24,405,000**	**$4,095,000**	**$192,615,000**

Source: DMATS

Table 8.15 Comparisons between revenue and cost for transit systems

Years	Transit systems		
	Revenue	Cost (O&M)	Revenue - Cost
2021	$4,664,000	$4,492,000	$172,000
2022	$4,740,000	$4,625,000	$115,000
2023	$4,816,000	$4,758,000	$58,000
2024	$4,892,000	$4,891,000	$1,000
2025	$4,968,000	$5,024,000	$56,000
2026	$5,044,000	$5,157,000	$113,000
2027	$5,120,000	$5,290,000	$170,000
2028	$5,196,000	$5,423,000	$227,000
2029	$5,272,000	$5,556,000	$284,000
2030	$5,348,000	$5,689,000	$341,000
2031	$5,424,000	$5,822,000	$398,000
2032	$5,500,000	$5,955,000	$455,000
2033	$5,576,000	$6,088,000	$512,000
2034	$5,652,000	$6,221,000	$569,000
2035	$5,728,000	$6,354,000	$626,000
2036	$5,804,000	$6,487,000	$683,000
2037	$5,880,000	$6,620,000	$740,000
2038	$5,956,000	$6,753,000	$797,000
2039	$6,032,000	$6,886,000	$854,000
2040	$6,108,000	$7,019,000	$911,000
2041	$6,184,000	$7,152,000	$968,000
2042	$6,260,000	$7,285,000	$1,025,000
2043	$6,336,000	$7,418,000	$1,082,000
2044	$6,412,000	$7,551,000	$1,139,000
2045	$6,488,000	$7,684,000	$1,196,000
2046	$6,564,000	$7,817,000	$1,253,000
2047	$6,640,000	$7,950,000	$1,310,000
2048	$6,716,000	$8,083,000	$1,367,000
2049	$6,792,000	$8,216,000	$1,424,000
2050	$6,868,000	$8,349,000	$1,481,000
Total	$172,980,000	$192,615,000	$19,635,000

Source: DMATS

Chapter 9
Projects and Project Prioritization

Introduction

Through the LRTP planning process, DMATS and its members have developed a list of projects designed to help the region achieve its vision for the future and address the 2050 LRTP goals and objectives. This chapter first presents the full list of 2050 LRTP projects. Second, it describes the process used to prioritize the projects and allocate limited funding to the highest priority projects. Finally, the chapter concludes with the final LRTP project funding schedule that will guide the MPO's transportation investments over the next thirty years.

DMATS LRTP Projects

Early in the planning process DMATS staff worked with the Technical Advisory Committee to create an initial list of projects, map their location, and develop cost estimates. Project cost estimates are based on planning level construction and right of way cost estimates provided by city and county engineers and the state departments of transpiration. As the process moved forward, the projects were evaluated using the DMATS travel demand model and the LRTP project ranking process. The project list was revised based on this analysis, input form DMATS members, and public comments. After several rounds of revisions, the final project list was presented to the DMATS Policy Board for approval. The final list of 42 projects is provided in Table 9.1. Project locations are mapped in Figure 9.1

The projects in Table 9.1 are organized on a corridor level. Corridor level analysis allows DMATS to examine the collective impact of all projects on the transportation network while still providing a good understanding of the all components that make up the larger projects. The total corridor-level cost of each project is broken out into seven classifications: Resurfacing, Reconstruction, Capacity Improvements, Bike and Pedestrian, ITS Improvements, and Right of Way.

Projects are also organized by the jurisdiction responsible for the project (city or county) or are listed as region-wide projects. This classification is for information purposes only. The DMATS project prioritization process ranks projects based on their individual merits and does not consider the project's sponsor as part of the ranking process.

Southwest Arterial Groundbreaking

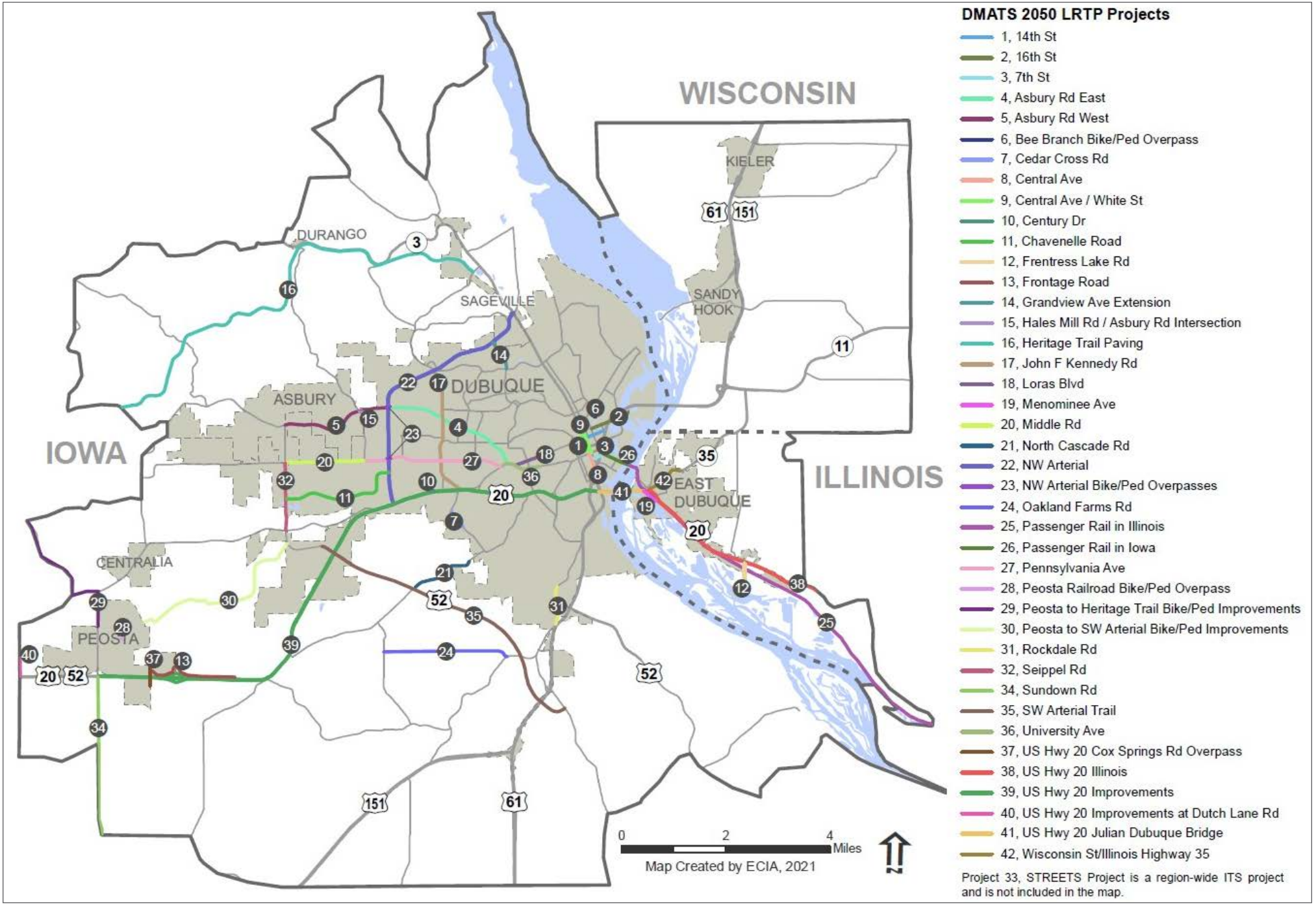
Table 9.1 LRTP Projects

Project Number	Name	From	To	Resurfacing	Reconstruction	Capacity Improvements	Bike & Pedestrian	Safety & Security	ITS improvements	Right of Way	TOTAL
CITY OF DUBUQUE											
1	14th St	Central Ave	Sycamore St	$0	$0	$10,780,000	$0	$0	$0	$1,800,000	$12,580,000
2	16th St	Admiral Dr	Elm St	$0	$9,420,000	$8,000,000	$0	$0	$0	$0	$17,420,000
3	7th St	Central Ave	Star Brewery Dr	$0	$2,760,000	$0	$120,000	$0	$0	$0	$2,880,000
4	Asbury Rd East	University Ave	John F Kennedy Rd	$2,427,195	$10,587,600	$3,108,000	$4,896,000	$110,400	$1,782,600	$1,262,178	$24,173,972
5	Asbury Rd West	John F Kennedy Rd	Seippel Rd	$1,856,864	$0	$593,691	$115,020	$0	$270,000	$123,472	$2,959,047
6	Bee Branch Bike/Ped Overpass	Bee Branch Creek over CP rail tracks		$0	$0	$0	$4,230,000	$0	$0	$0	$4,230,000
7	Cedar Cross Rd	725' E of Starlight Dr	Lake Ridge Dr	$0	$2,700,000	$0	$0	$120,000	$72,000	$400,000	$3,292,000
8	Central Ave	4th St	9th St	$1,072,500	$0	$0	$100,000	$0	$0	$0	$1,172,500
9	Central Ave / White St	9th St	21st St	$2,574,000	$0	$0	$6,000	$12,000	$186,000	$0	$2,778,000
10	Century Drive	Sylvan Dr	US Hwy 20	$0	$2,200,000	$0	$0	$0	$72,000	$25,600	$2,297,600
11	Chavenelle Rd	Seippel Rd	NW Arterial	$0	$1,436,252	$0	$0	$0	$0	$0	$1,436,252
14	Grandview Ave Extension	32nd St	NW Arterial	$0	$0	$3,120,000	$0	$0	$0	$1,200,000	$4,320,000
17	John F Kennedy Rd	US Hwy 20	NW Arterial	$0	$0	$0	$77,760	$210,000	$325,880	$0	$613,640
18	Loras Blvd	University Ave	Alta Vista St	$0	$0	$0	$88,800	$0	$0	$0	$88,800
20	Middle Rd	Seippel Rd	Radford Rd	$0	$6,500,000	$6,500,000	$1,000,000	$0	$0	$1,000,000	$15,000,000
21	North Cascade Rd	SW Arterial	Catfish Creek Bridge	$0	$4,974,008	$0	$0	$0	$0	$0	$4,974,008
22	NW Arterial	US Hwy 20	Iowa Hwy 3	$0	$36,174,912	$30,000,000	$779,960	$0	$2,179,920	$0	$69,134,792
23	NW Arterial Bike/Ped Overpasses	At Pennsylvania Ave and Asbury Rd		$0	$0	$0	$2,400,000	$0	$0	$0	$2,400,000
27	Pennsylvania Ave	University Ave	Seippel Rd	$6,531,782	$25,566,400	$2,448,000	$4,587,600	$36,000	$1,078,800	$725,692	$40,974,274
31	Rockdale Rd	Key West Dr	Old Mill Rd	$0	$0	$6,228,834	$468,000	$0	$0	$2,516,090	$9,212,924
32	Seippel Rd	Middle Rd	Old Highway Rd	$0	$0	$5,772,200	$0	$0	$0	$0	$5,772,200
33	STREETS Project	DMATS area		$0	$0	$0	$0	$0	$2,000,000	$0	$2,000,000
36	University Ave	Asbury Rd	Delhi St	$0	$3,204,000	$7,320,000	$38,400	$12,000	$230,400	$3,227,194	$14,031,994
CITY OF ASBURY											
15	Hales Mill Rd / Asbury Rd Intersection				$3,000,000						
DUBUQUE COUNTY											
13	Frontage Rd	Thunder Hills Rd	Cottingham Rd	$0		$5,000,000	$0	$0	$0	$0	$5,000,000
16	Heritage Trail Paving	IA Highway 3	Dyersville	$8,000,000		$0	$0	$0	$0	$0	$8,000,000
24	Oakland Farm Rd	Military Rd	Whitetop Rd	$0	$3,500,000	$0	$0	$0	$0	$0	$3,500,000
34	Sundown Rd	US Hwy 20	DMATS boundary	$0				$3,000,000			$3,000,000

Table continues on the next page

Table 9.1 LRTP Projects (Continued)

Project Number	Name	From	To	Resurfacing	Reconstruction	Capacity Improvements	Bike & Pedestrian	Safety & Security	ITS improvements	Right of Way	TOTAL
REGION WIDE PROJECTS											
25	Passenger Rail in Illinois	Rail from East Dubuque to Rockford		$0	$139,000,000	$0	$0	$0	$0	$0	$139,000,000
26	Passenger Rail in Iowa	Mississippi River Museum and CN track improvements		$0	$3,800,000	$0	$0	$0	$0	$0	$3,800,000
35	SW Arterial Trail	US Hwy 20/Seippel Rd	US Hwy 61/151 Old Davenport Rd.	$0	$0	$0	$3,000,000	$0	$0	$0	$3,000,000
38	US Hwy 20 Illinois	US Hwy 20 and Barge Terminal Rd		$0	$620,000	$0	$0	$0	$0	$0	$620,000
39	US Hwy 20 Improvements	Peosta Interchange	Julien Dubuque Bridge	$0	$0	$590,800,000	$0	$0	$0	$0	$590,800,000
41	US Hwy 20 Julien Dubuque Bridge	US 20 Julian Dubuque Bridge Replacement in IL		$0	$0	$241,056,000	$0	$0	$0	$0	$241,056,000
EAST DUBUQUE PROJECTS											
12	Frentress Lake Rd	Rail Overpass		$0	$1,984,000	$0	$0	$0	$0	$0	$1,984,000
19	Menominee Ave	2nd St	6th St	$576,600	$0	$0	$0	$0	$0	$0	$576,600
42	Wisconsin St/Illinois Hwy 35	Sinsinawa Ave	Cherry Ln	$43,400	$0	$0	$0	$217,000	$0	$0	$260,400
PEOSTA PROJECTS											
13	Frontage Rd	Enterprise Dr	Cox Springs Rd	$0	$0	$1,100,000	$0	$0	$0	$0	$1,100,000
28	Peosta Railroad Bike/Ped Overpass	at Maple Ridge Court		$0	$0	$0	$1,500,000	$0	$0	$0	$1,500,000
29	Peosta to Heritage Trail Bike/Ped Improvements	City of Peosta	Heritage Trail	$0	$0	$0	$3,840,000	$0	$0	$0	$3,840,000
30	Peosta to SW Arterial Bike/Ped Improvements	City of Peosta	Southwest Arterial	$0	$0	$0	$4,500,000	$0	$0	$0	$4,500,000
37	US Hwy 20 Cox Springs Rd Overpass	at Cox Springs		$0	$0	$4,000,000	$0	$0	$0	$0	$4,000,000
40	US Hwy 20 Improvements at Dutch Lane Rd	at Dutch Lane Rd		$0	$0	$10,000,000	$0	$0	$0	$0	$10,000,000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SANDY HOOK
ASBURY
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Map Created by ECIA, 2021
DMATS 2050 LRTP Projects
1, 14th St
2, 16th St
3, 7th St
4, Asbury Rd East
5, Asbury Rd West
6, Bee Branch Bike/Ped Overpass
7, Cedar Cross Rd
8, Central Ave
9, Central Ave / White St
10, Century Dr
11, Chavenelle Road
12, Frentress Lake Rd
13, Frontage Road
14, Grandview Ave Extension
15, Hales Mill Rd / Asbury Rd Intersection
16, Heritage Trail Paving
17, John F Kennedy Rd
18, Loras Blvd
19, Menominee Ave
20, Middle Rd
21, North Cascade Rd
22, NW Arterial
23, NW Arterial Bike/Ped Overpasses
24, Oakland Farms Rd
25, Passenger Rail in Illinois
26, Passenger Rail in Iowa
27, Pennsylvania Ave
28, Peosta Railroad Bike/Ped Overpass
29, Peosta to Heritage Trail Bike/Ped Improvements
30, Peosta to SW Arterial Bike/Ped Improvements
31, Rockdale Rd
32, Seippel Rd
34, Sundown Rd
35, SW Arterial Trail
36, University Ave
37, US Hwy 20 Cox Springs Rd Overpass
38, US Hwy 20 Illinois
39, US Hwy 20 Improvements
40, US Hwy 20 Improvements at Dutch Lane Rd
41, US Hwy 20 Julian Dubuque Bridge
42, Wisconsin St/Illinois Highway 35
Project 33, STREETS Project is a region-wide ITS project and is not included in the map.

Project Prioritization

Under the FAST Act the DMATS is required to produce financially constrained transportation plans. This means that the DMATS must identify its priorities for the expenditure of federal funds that it can reasonably be expected to have access to in the 30-year plan time frame. The prioritization process divides the projects into real projects and illustrative projects. The DMATS Policy Board views real projects as its highest priority and has made a commitment of federal funds. Illustrative projects are those that are necessary to meet the transportation needs of the area in the future, but no funding sources have been identified.

DMATS staff have created a project ranking process that includes eight categories. Each category has a possible point total. The total number of points a project can be awarded is 1,000. Points are awarded in the Safety, Air Quality, Economic Impact II, Freight, and System Preservation categories are based on numeric values obtained from data analysis. Economic Impact I, Accessibility and Mobility, Local and Regional Impact, and Complete Streets categories are subjective.

To rank the projects, the DMATS Technical Advisory Committee (TAC) and DMATS Policy Board form a ranking subcommittee. The subcommittee members recommend rankings in the subjective categories based on the project's merits. DMATS staff provide subcommittee members with project information and data analysis to determine the merit of the projects. Staff will then provide the recommendations from subcommittee to TAC. The TAC member's recommendations are then provided to Policy Board for final approval.

Safety (125)

The safety analysis is a benefit cost ratio that compares the total cost of the project to the safety benefits created by the project. Points for safety are awarded based on a numerical formula that monetizes the benefits that result from the implementation of the project and divides the benefits by the total project cost.

Data sets required to run the analysis include total lifetime project cost, crash reduction factor, traffic volume, fatalities, major injuries, minor injuries, and property damage. Points are awarded based on the safety scoring criteria.

Safety Scoring Criteria	
Benefit - Cost Ratio	Points
<1.00	0
1.00-1.10	15
1.10-1.20	30
1.20-1.30	45
1.30-1.60	60
1.60-2.00	75
2.00-2.20	90
2.20-2.40	105
2.40+	125

Economic Impact (125)

The economic analysis is designed to measure the local and regional economic impact of the proposed project. The economic impact component of the ranking process comes in two parts, each worth 62.5 points. The first component is intended to measure the long-term impacts of the project. The second component measures the economic impact of jobs generated by the project.

ECONOMIC IMPACT I (62.5)

Ranking committee members will award points based on the project's long-term impacts on the regional economy and tourism. Staff will provide project data for reference during the scoring process. Points are awarded based on the Economic Impact I Scoring Criteria.

Economic Impact I Scoring Criteria
12 Points - Project promotes general economic development.
24 Points - Project specifically enhances or improves tourism.
36 Points - Project specifically improves or enhances movement of freight and services.
48 Points - Project improves or enhances movement of workers.
62.5 Points - Project improves access to jobs and business opportunities.

ECONOMIC IMPACT II (62.5)

The Economic Impact II analysis will be performed using an input output (I\O) model. The I\O model is an accounting of transactions among industries, governments, households, imports, and exports in the DMATS area. The I\O model helps study the linkages between industries and in- situations in the area. Knowledge of these linkages allows the modeler to calculate the direct, indirect, and induced economic impact of a project on the region. For this ranking process, the I/O analysis will provide information on the long-term economic impact on the net change in jobs between 2020 and 2050. Points will be awarded based on the total number of jobs the project will serve between base year (2020) and future year (2050). The chart illustrates how the 62.5 points are awarded to each project. Points are awarded based on the Economic Impact II Scoring Criteria.

Economic Impact II Scoring Criteria	
Number of Jobs served	Points
> 300	60
201 to 300	45
101 to 200	30
< 100	15

System Preservation (125)

The system preservation component is based on impact of pavement roughness on vehicle speed (source: *Highway Development and Management Model, Version 4 (HDM-4)* report). Points for system preservation are awarded based on current pavement condition, and current average annual daily traffic (AADT), current volume to capacity ratio and posted speeds. The information for each of the previously mentioned categories is plugged into a formula and the point value is determined by where the formula solution fits into the points range. Below is an example of how the system preservation formula may be applied to a proposed project:

$y = 30.7368 + 1.0375x_1 - 11.2421x_2 + 0.0062x_3^2$

$RCI = 7.254 - 9.984 \times \log_{10} IRI$

Y is the average highway speed (miles/h)
x1 is RCI
x2 is the ratio of traffic volume to the total capacity of roadway
x3 is the speed limit, in miles
IRI is the International Roughness Index, in in/miles.

% difference = ((*x3-Y)/ x3)*100*

System Preservation Scoring Criteria	
% difference	Points
0-15%	30
15%-30%	60
30%-60%	90
60% -100%	120

Local and Regional Impact (125)

The local and regional impact component will evaluate consistency with local planning documents, impacts on the local and regional transportation system, and the number of project sponsors (local governments) involved. Adopted planning document include a long-range transportation plan, comprehensive plan, capital improvements plan, or any other local, regional, or state planning document. Points are awarded based on the Local and Regional Scoring Criteria.

Local and Regional Scoring Criteria	
Q1	40 Points - Project will contribute to the local and regional transportation system.
Q2	40 Points - Proposed project involves more than one jurisdiction.
Q3	45 Points - Project improves access to other transportation facilities such as air, water, rail, multimodal, etc.

Accessibility and Mobility (125)

The Accessibility and Mobility component is designed to measure improvements in land use accessibility and mobility for users of the transportation system resulting from the project. Accessibility and mobility points are awarded based on estimated reductions in congestion resulting from the project.

Data required for the analysis: existing AADT, existing capacity, future AADT, and future capacity. The model calculates existing and future Volume/Capacity (V/C) ratios using the AADT and capacity data. The model then calculates the percent change in V/C ratio. Points are awarded based on the Accessibility and Mobility Scoring Criteria.

Accessibility and Mobility Scoring Criteria	
Percent	Points
<-10%	0
-10 to -20%	25
-20 to -30%	50
-30 to -40%	75
-40 to -50%	100
>-50+	125

Complete Streets (125)

This component is designed to measure how the project addresses the concept of complete streets. The complete streets concept stresses the provision of safe access for motorists, pedestrians, bicyclists, and transit users. Points are awarded based on the Complete Streets Scoring Criteria.

Complete Streets Scoring Criteria		
Q1	40 Points	Project improves connectivity to bicyclists
Q2	40 Points	Project improves connectivity to pedestrians
Q3	45 Points	Project improves connectivity to transit users

Air Quality (125)

Points for air quality are awarded based on results of an air quality analysis conducted for the Iowa Clean Air Attainment Program. The analysis provides a methodology for analyzing the environmental impact of a transportation project. Data on corridor Vehicles Miles Traveled and Vehicles Hours Traveled are used to calculate emissions. The amount of greenhouse gas (GHG) produced are calculated using this information. Current corridor GHG emissions are compared with estimated GHG emissions after the improvements are made. The model estimates the percent change in GHG emissions resulting from the project. Points are awarded based on the Air Quality Scoring Criteria.

Air Quality Scoring Criteria	
Range	Points
< -5%	0
-5 to -10 %	25
-10 to -12 %	50
-12 to -13 %	75
-13 to -15 %	100
> - 15%	125

Freight (125)

Travel Time Costs Savings is the monetized benefit of less time spent traveling on the roads. The calculation of travel time savings is based on estimating the opportunity cost to the road-user of an alternative use of time. Reduction in daily freight transportation cost is valued as the product of freight transportation cost per hour and the daily change in travel time or delay. Transportation cost per hour of $30 is utilized for truck travel. Travel time savings is valued as the product of hourly wages and changes in VHT. For business related travel savings, daily travel time saving is annualized over 260 working days. Daily value of travel time savings is estimated as the product of traveler's hourly wage and daily travel time savings.

Savings in value of Transportation = Hourly cost to utilize truck X Change in VHT X 260 days

Project Prioritization Results

Table 9.2 lists the results of the project prioritization analysis. The DMATS LRTP is a fiscally constrained plan. The project prioritization and the following future funding schedule are used to determine which projects are included in the fiscally constrained plan. DMATS uses the project prioritization and project funding schedule specifically for the DMATS LRTP. A project's ranking does not carry over to project programming in the DMATS Transportation Improvement Program (TIP). Projects included in the 2021-2025 TIP were not included in the ranking process, as funding has already been allocated to these projects. State DOT projects were not ranked, as DMATS does not provide funding for these projects.

Table 9.2 Project Prioritization Results

	PROJECT INFO				DMATS LRTP RANKING									
Rank	Project Name	From	To	Estimated Cost	SAFETY (125 points)	ECONOMIC IMPACT I (62.5 points)	ECONOMIC IMPACT II (62.5 points)	SYSTEM PRESERVATION (125 points)	AIR QUALITY (125 points)	ACCESSIBILITY & MOBILITY (125 points)	LOCAL & REGIONAL IMPACT (125 points)	COMPLETE STREETS (125 points)	FREIGHT (125 points)	TOTAL (1000 POINTS)
IOWA PROJECTS														
1	Pennsylvania Ave	University Ave	Seippel Rd	$40,974,274	13	39	63	125	0	60	40	80	125	544
2	John F Kennedy Rd	US Hwy 20	NW Arterial	$613,640	52	51	63	125	0	60	40	125	21	536
3	NW Arterial	US Hwy 20	Iowa Hwy 3	$69,134,792	13	63	63	125	0	60	40	125	0	488
4	Seippel Rd	Middle Rd	Old Highway Rd	$5,772,200	13	51	30	125	0	30	80	125	12	466
5	7th St	Central Ave	Star Brewery Dr	$2,880,000	13	63	63	125	0	30	40	80	0	413
6	Century Dr	Sylvan Dr	US Hwy 20	$2,297,600	13	39	63	125	0	0	40	125	1	405
7	STREETS Project	DMATS area		$2,000,000	13	63	15	125	125	20	40	0	0	401
8	North Cascade Rd	SW Arterial	Catfish Creek Bridge	$4,974,008	13	51	30	125	0	60	40	80	0	399
9	Asbury Rd West	John F Kennedy Rd	Seippel Rd	$2,959,047	13	39	63	125	0	30	40	80	0	389
10	Loras Blvd	University Ave	Alta Vista St	$88,800	13	39	63	125	0	30	40	80	0	389
11	Hales Mill Rd/ Asbury Rd Intersection	Asbury Rd	Radford Rd	$3,000,000	13	39	15	125	0	0	125	0	70	387
12	Rockdale Rd	Key West Dr	Old Mill Rd	$9,212,924	13	51	15	125	0	60	40	80	0	384
13	Middle Road	Seippel Rd	Radford Rd	$15,000,000	13	39	45	125	0	30	40	80	0	372
14	Central Ave	4th St	9th St	$1,172,500	13	51	63	125	0	0	40	80	0	371
15	Central Ave	9th St	21st St	$2,778,000	13	51	30	125	0	30	40	80	2	370
16	Sundown Rd	US Hwy 20	DMATS Boundary	$3,000,000	13	51	15	125	0	30	0	0	125	359
17	Asbury Rd East	University Ave	John F Kennedy Rd	$24,173,972	13	39	30	125	0	30	40	80	0	357
18	Grandview Ave Extension	32nd St	NW Arterial	$4,320,000	13	51	15	125	0	60	40	45	0	349
19	Bee Branch Bike/Ped Overpass	Bee Branch Creek over CP rail tracks		$4,230,000	13	39	15	125	0	30	40	80	0	342
20	14th St	Central Ave	Sycamore St	$12,580,000	13	27	15	125	0	30	40	80	0	330
21	Cedar Cross Rd	725' E of Starlight Dr	Lake Ridge Dr	$3,292,000	13	51	15	125	0	0	40	80	0	324
22	16th St	Admiral Dr	Elm St	$17,420,000	13	15	63	125	0	30	0	45	0	290
23	NW Arterial Bike/Ped Overpasses	At Pennsylvania Ave and Asbury Rd		$2,400,000	13	27	15	125	0	30	0	80	0	290
24	Frontage Rd	Thunder Hills Rd	Cottingham Rd	$5,000,000	13	51	15	125	0	0	40	45	0	289
25	SW Arterial Trail	US Hwy 20/Seippel Rd	US Hwy 61/151 Old Davenport Rd	$3,000,000	13	51	15	125	0	0	40	45	0	289
26	Paving Heritage Trail	IA Hwy 3	Dyersville	$8,000,000	13	24	15	125	0	30	40	0	0	247
27	Peosta to Heritage Trail Bike/Ped Improvements	Peosta	Heritage Trail	$3,840,000	13	24	15	125	0	30	0	0	0	207
28	Peosta to SW Arterial Bike/Ped Improvements	Peosta	SW Arterial	$4,500,000	13	24	15	125	0	30	0	0	0	207
29	Frontage Rd	Enterprise Dr	Cox Springs Rd	$1,100,000	13	51	15	125	0	0	40	45	0	289
30	US Hwy 20 Cox Springs Rd Overpass	at Cox Springs Rd		$4,000,000	13	39	15	125	0	0	0	0	0	192
31	Peosta Railroad Bike/Ped Overpass	at Maple Ridge Ct		$1,500,000	13	0	15	125	0	30	0	0	0	183
32	Us Hwy 20 Improvements	at Dutch Lane Rd		$10,000,000	13	27	15	125	0	0	0	0	0	180
City of East Dubuque														
1	Frentress Lake Rd Rail Overpass	Rail Overpass		$3,000,000	0	51	30	60	0	0	85	0	0	226
2	Menominee Ave	2nd St	6th St	$576,600	0	14.5	15	30	0	0	0	45	0	105

DMATS Project Funding Schedule

Based on the financial analysis presented in Chapter 8, the DMATS region will have and estimated $376 million to spend on roads, bridges and trails over 30 years. The local transit systems will not have any additional funds for transit improvements. Transit systems should secure funding through grant programs for capital improvement projects. The financial analysis does not explicitly address other transportation modes such as bicycle, pedestrian and goods movement. Although LRTP 2050 currently identifies specific projects in these categories, there are no dedicated funding sources for project development other than Transportation Alternative Program dollars for trails which will not be sufficient. Projects compete for the same funding sources identified in this analysis, particularly federal highway funds. Bikeway and pedestrian improvements may also be incorporated in other highway or transit projects.

Staff used the project prioritization results in Table 9.2 and future funding projections detailed in Chapter 8 and to create a future funding schedule. The schedule allocates funding to projects based on priority ranking. Priority number one will receive funding, then priority two and so on down the list until all funds are allocated. The schedule assumes a constant 4% annual project cost increase. Future project cost calculations assume that the project will be constructed midway through the five-year period. The final project funding schedule is displayed in Table 9.4. Based on these projections, by 2050 DMATS will be able to fund projects ranked 1-22. DMATS includes these projects in is fiscally constrained plan and considers them to be the highest priority projects that have funds committed. DMATS considers any remaining projects to be illustrative. Illustrative projects will meet the needs of the region in the future but have no funding source committed.

Bike And Pedestrian and Bridge Projects

The projects listed in the fiscally constrained plan include Transportation Alternative Program (TAP) and Bridge Replacement Program (BR) projects. DMATS is estimating $13.6 million in costs (today's dollars) for bike and pedestrian improvements and projecting $6.9 million in TAP funding. DMATS is projecting $23.38 million in BR funds. The DMATS project corridors include one new bridge and 12 existing bridges that are on federal aid eligible routes and maintained by local jurisdictions. Figure 9.2 lists the number of bridges on LRTP project corridors. The list includes several sizable bridge projects, including one on Rockdale Rd and two on NW Arterial that are over existing railroads, and the City of Dubuque's proposed new bridge on 14th Street which is estimated at $12.5 million in today's dollars. While bridge costs are combined with overall corridor reconstruction costs, there are enough sizable bridge projects included in the project list to justify the inclusion of BR funding in the financial projections.

Table 9.3 Bridges Included in the Fiscally Constrained Plan

Project Name	Location (From To)	No of Bridge Structures
Existing bridges on projects listed as real		
Chavenelle Road	Seippel Rd to NW Arterial (IA 32)	1
NW Arterial	US Hwy 20 to Iowa Hwy 3	4
Rockdale Rd	Key West Dr to Old Mill Rd	1
Hales Mill Rd	Asbury Rd to Derby Grange Rd	2
Cedar Cross Rd	725' E of Starlight Dr to Lake Ridge Dr	1
Seippel Rd	Middle Rd to Old Highway Rd	1
14th St	Central Ave to Sycamore St	2
TOTAL		12
New bridges on projects listed as real		
14th St	Central Ave to Sycamore St	1

Table 9.4 DMATS Project Funding Schedule

Rank	Project Name		To & From	Estimated Cost	2021-2025	2026-2030	2031-2035	2036-2040	2040-2045	2045-2050
FY 2021-2025 TIP Projects										
	SW Arterial	US HWY 20	US Hwy 151/61	$2,600,000	$2,600,000					
	STREETS Project Admin	Dubuque Metro Region		$66,000	$66,000					
	NW Arterial	US 20	UA 20 to IA 3	$4,431,420	$4,431,420					
	Oakland Farm Rd		North Cascade to Military Rd	$3,000,000	$3,000,000					
	Swiss Valley Rd Bridge		Military Rd West 1.5 mi	$320,000	$320,000					
	University Ave	Asbury Rd	Delhi	$14,031,994	$14,031,994					
	Chavenelle Road	Seippel Road	NW Arterial (IA 32)	$1,436,252	$1,436,252					
	Old Hales Mill Rd		Asbury rd to City limits	$1,000,000	$1,000,000					
Iowa Projects										
1	Pennsylvania Ave	University Ave	Seippel Rd	$40,974,274	$40,974,274					
2	John F Kennedy Rd	US Hwy 20	NW Arterial	$613,640	$613,640					
3	NW Arterial	US Hwy 20	Iowa Hwy 3	$69,134,792	$6,751,420	$72,730,000				
4	Seippel Rd	Middle Rd	Old Highway Rd	$5,772,200			$8,544,266			
5	7th St	Central Ave	Star Brewery Dr	$2,880,000			$4,263,104			
6	Century Dr	Sylvan Dr	US Hwy 20	$2,297,600			$3,401,009			
7	Phase II Smarter Travel	DMATS area		$2,000,000			$2,960,489			
8	North Cascade Rd	SW Arterial	Catfish Creek Bridge	$4,974,008			$7,362,747			
9	Asbury Rd West	John F Kennedy Rd	Seippel Rd	$2,959,047			$4,380,113			
10	Loras Blvd	University Ave	Alta Vista St	$88,800			$131,446			
11	Hales Mill / Asbury Rd Int.	Asbury Rd	Radford Rd	$3,000,000			$4,440,733			
12	Rockdale Rd	Key West Dr	Old Mill Rd	$9,212,924			$13,637,377			
13	Middle Rd	Seippel Road	Radford Rd	$15,000,000			$17,358,717	$5,894,619		
14	Central Ave	4th St	9th St	$1,172,500				$2,111,606		
15	Central Ave / White St	9th St	21st St	$2,778,000				$5,003,021		
16	Sunndown Rd	US Hwy 20	DMATS Boundary	$3,000,000				$5,402,831		
17	Asbury Rd East	University Ave	JFK	$24,173,972				$41,817,924	$2,090,252	
18	Grandview Avenue Extension	32nd St	NW Arterial	$4,320,000					$9,465,652	
19	Bee Branch Bike Overpass	Bee Branch Creek over CP Rail tracks		$4,230,000					$9,268,451	
20	14th St	Central Av	Sycamore St	$12,580,000					$27,564,329	
21	Cedar Cross Rd	725' E of Starlight Dr	Lake Ridge Dr	$3,292,000					$5,591,315	$1,973,243
22	16th St	Admiral Dr	Elm St	$17,420,000						$45,678,757
23	NW Arterial Bike/Ped Overpass	At Penn. Ave & Asbury Rd		$2,400,000						
24	Frontage Rd	Thunder Hills Rd	Cottingham Rd	$5,000,000						
25	SW Arterial Trail	US Hwy 20 / Seippel Rd	US 61/151 / Old Davenport Rd	$3,000,000						
26	Heritage Trail Paving	Iowa Hwy 3	Dyersville	$8,000,000						
27	Peosta to Heritage Trail Bike/Ped	Peosta	Heritage Trail	$3,840,000						
28	Peosta to SW Arterial Bike/Ped	Peosta	SW Arterial	$4,500,000						
29	Frontage Rd	Enterprise Dr	Cox Springs Rd	$1,100,000						
30	US Hwy 20 Overpass	at Cox Springs		$4,000,000						
31	Peosta Bike/Ped Overpass	at Maple Ridge Ct		$1,500,000						
32	US Hwy 20 Improvements	at Dutch Lane Rd		$10,000,000						
	TOTAL				**$75,225,000**	**$72,730,000**	**$66,480,000**	**$60,230,000**	**$53,980,000**	**$47,652,000**
	Funding Available (Federal + Local)				**$75,225,000**	**$72,730,000**	**$66,480,000**	**$60,230,000**	**$53,980,000**	**$47,652,000**

Rank	Project Name	To & From		Estimated Cost
Illinois Projects				
1	Frentress Lake Rd Rail Overpass	Frentress Lake Dr	Rail Crossing	$3,000,000
2	Menominee Ave	2nd St	6th St	$576,600
Iowa DOT Projects				
	US 20 Improvements	NW Arterial Intersection		$5,000,000
	Passenger Rail in Iowa	Mississippi River Museum and CN track improvements		$3,800,000
	US Hwy 20 Julien Dubuque Bridge	US 20 Julian Dubuque Bridge Replacement in IL		$241,056,000
	US Hwy 20 Improvements	Peosta Interchange	Julien Dubuque Bridge	$590,800,000
Illinois DOT Projects				
	Passenger Rail in Illinois	Rockford	East Dubuque	$139,000,000
	Wisconsin St/ Illinois Hwy 35	Sinsinawa Ave	Cherry Ln	$260,400
	US Highway 20	Julien Dubuque Bridge	DMATS Boundary	$243,771,000

Chapter 10
Environmental

Introduction

Development of the LRTP gives DMATS the opportunity to consult with environmental agencies and analyze environmental impacts resulting from project recommendations. The LRTP is an initial step in identifying impacted areas and adjusting project alignments to minimize impacts on natural resources. The LRTP also allows DMATS, as the project sponsor, to make informed decisions when setting project priorities for the area. The result is a transportation plan that not only minimizes negative impacts on the natural environment, but that is ultimately more efficient, timely, and cost-effective.

Environmental Justice

Federal Executive Order 12898 sets out requirements for transportation and Environmental Justice. The intent is to demonstrate that minority and low-income communities will not be disproportionately affected in an adverse manner under the transportation plan. Environmental justice requirements also address public involvement, and these requirements are satisfied under DMATS's Public Participation Plan, and the steps taken for the LRTP public involvement effort.

Environmental Justice is a concept intended to avoid the use of federal funds for projects, programs, or other activities that generate disproportionate or discriminatory adverse impacts on minority or low-income populations. This effort is consistent with Title VI of the 1964 Civil Rights Act and is promoted by the U.S. Department of Transportation (USDOT) as an integral part of the long-range transportation planning process. The environmental justice assessment incorporated in the LRTP update is based on three basic principles, derived from guidance issued by the USDOT:

- The planning process should minimize, mitigate, or avoid environmental impacts (including economic, social, and human health impacts) that affect minority and low-income populations with disproportionate severity.
- The benefits intended to result from the transportation planning process should not be delayed, reduced, or denied to minority and low-income populations.
- Any community potentially affected by outcomes of the transportation planning process should be provided with the opportunity for complete and equitable participation in decision-making.

Environmental Justice principles apply to all programs, policies, and activities, including:

- Transportation planning decisions, including policy decisions and funding decisions.
- Environmental review associated with project development and the National Environmental Policy Act, or NEPA.
- Preliminary design and final design engineering of projects.
- Right-of-way, construction; and Maintenance and operations.

Environmental Justice applies not only to Federal agencies, but to all agencies and sub-recipients that receive Federal funds, or have actions approved by the FHWA or FTA. As part of this LRTP update, DMATS staff identified the geographic distribution of low-income and minority populations in order to assess the effects of various transportation investments in the plan. This update to the LRTP also includes analysis of the elderly population.

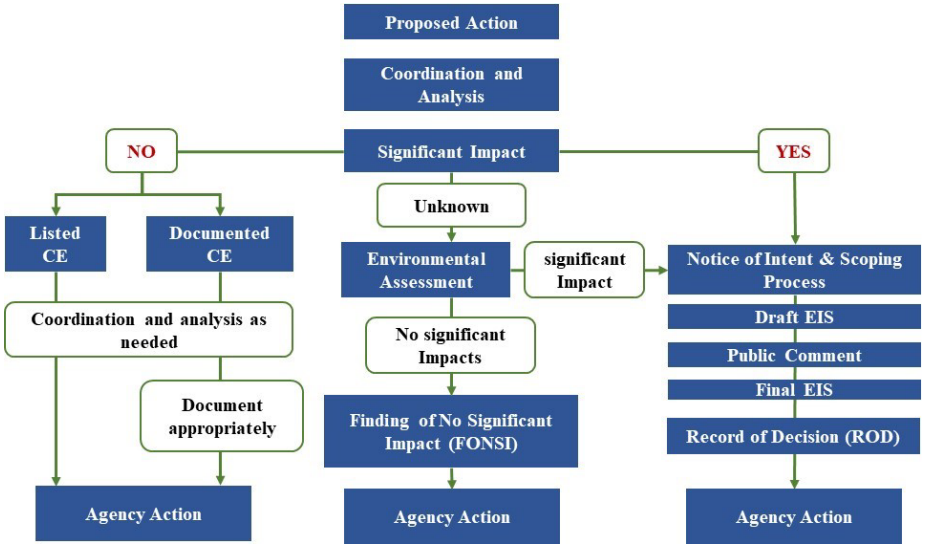


Figure 10.1 NEPA Document Decision Process
Source: U.S. Environmental Protection Agency

National Environmental Policy Act (NEPA)

The National Environmental Policy Act (NEPA) is the project development process for federally funded projects that balance transportation decision making with the potential impacts on the human and natural environment and the public's need for safe transportation. Transportation projects go through several steps from conception to implementation.

The considerations and recommendations made during the planning process are preliminary in nature. Detailed environmental analysis conducted through the National Environmental Policy Act (NEPA). NEPA requires the examination and avoidance of potential impacts to the social and natural environment when considering approval of proposed transportation projects.

All federal aid projects need to go through go through NEPA process and disclose any environmental consequences and evaluate alternatives that would avoid or lessen the project's impacts. More details on NEPA can be found at https://www.epa.gov/laws-regulations/summary-national-environmental-policy-act.

Levels of Environmental Analysis

Transportation projects vary in type, size, complexity, and potential to affect the environment. Transportation project effects can range from minor to significant impacts on the natural and human environment. To account for the variability of project impacts, three basic "classes of action" are allowed, which determine how compliance with NEPA is carried out and documented. This decision-making process is shown in Figure 10.1.

- An environmental impact statement (EIS) is prepared for projects where it is known the action will have a significant effect on the environment. An environmental assessment (EA) is prepared for actions for which the significance of the environmental impact is not clearly established. Should environmental analysis and interagency review during the EA process find a project to have no significant impacts on the quality of the environment, a finding of no significant impact (FONSI) is issued. If significant issues are found, an EIS is prepared.

- Categorical exclusions are issued for actions that are not individually or cumulatively significantly affecting the environment.

Linking Planning and NEPA

Transportation projects go through several steps from conception to implementation. The considerations and recommendations made during the planning process are preliminary in nature. Detailed environmental analysis conducted through the NEPA does not apply to long range transportation plans. With exceptions for regional ambient air quality, offsetting environmental impacts during the long-range planning process is not required.

While detailed environmental analysis is not required, it is important to consult with environmental resource agencies during the development of an LRTP. This interagency consultation provides an opportunity to compare transportation plans with environmental resource plans and develop a discussion on potential environmental mitigation activities, areas to provide the mitigation and activities that may have the greatest potential to restore and maintain the environment.

Detailed environmental analysis of individual transportation projects occurs later in the project development process as the improvement approaches the preliminary engineering stage. At this stage, project features may be narrowed and refined, and the environmental impacts and environmental mitigation strategies can be appropriately ascertained. Typically, a variety of environmental documentation, permit and mitigation needs are identified, and environmental findings are closely considered and evaluated. However, special environmental concerns may differ widely by project and location.

As environmental studies are conducted and undergo public and interagency review, needed mitigation plans are specified and committed to within the environmental documents on a particular transportation project or activity. Environmental management systems are then used to monitor and ensure compliance with the environmental mitigation commitments.

Environmental Impact Screening

A preliminary environmental impact screening can identify potentially serious impacts that could delay or completely shut down a project. Identifying such issues in the early planning stages provides local governments with the opportunity to avoid or mitigate undesirable environmental impacts through modification or elimination of the project. Early "fatal flaw" analysis of this type helps reduce the possibility that subsequent, more detailed analyses will uncover unexpectedly serious environmental impacts. This approach helps reduce the risks that are inherent in transportation planning process and helps ensure that local governments do not waste time and resources unnecessarily.

Since the transportation planning activities of DMATS are regional in scope, this environmental mitigation discussion does not provide a detailed analysis of individual projects within the LRTP, but rather offers a summary of the

potential impacts on environmentally sensitive areas. DMATS conducts this analysis to identify conflicts between planned projects and environmentally sensitive areas. The analysis process is an effort to minimize negative effects that a project can have on environmentally sensitive areas.

Once a few critical decisions are made, constraints on roadway cross-sections and alignments (due to safety factors and design criteria) limit opportunities to avoid or reduce these negative impacts.

Sidewalks and bicycle facilities are much more limited in the magnitude of their environmental and community impacts, due to smaller cross-sections and greater flexibility in design. Furthermore, pedestrian and bicycle facilities are most often built-in conjunction with roadway facilities and have only marginal environmental impacts beyond those of the roadway itself. Bicycle and pedestrian travel are inherently less disruptive to the environment than travel by automobile, especially with respect to air pollution, noise, and energy consumption.

Most of the transit elements in the DMATS are associated with bus route and service expansions, which typically involve no new construction and have minimal negative impacts on either natural or man-made environments. In general, transit impacts tend to be positive, in that increased service tends to reduce vehicle miles traveled (VMT) and typically improves accessibility in disadvantaged neighborhoods. It is difficult to identify environmental impacts for these facilities in the context of this DMATS update. Specific studies are needed to assess the impacts of these transit systems.

The following discussion is divided into two parts. The first focuses on overall impacts to the natural and social environments. The second section addresses specific issues related to environmental justice.

Environmental Consultation & Mitigation

DMATS is committed to minimizing and mitigating the negative effects of transportation projects on the natural and built environments in order to preserve our quality of life. In doing so, DMATS recognizes that every project will not require the same type or level of mitigation. Some projects, such as new roadways and roadway widening, involve major construction with considerable earth disturbance. Others, like intersection improvements, street lighting, and resurfacing projects, involve minor construction and minimal, if any, earth disturbance. The mitigation efforts used for a project should depend on the severity of the expected impact on an environmentally sensitive area. DMATS uses the following three-step process to determine the type of mitigation strategy to apply for any given project:

- Identify and confirm environmentally sensitive areas throughout the project study area.
- Determine how and to what extent transportation projects will affect these environmentally sensitive areas.
- Develop and review appropriate mitigation strategies to lessen the impact of these projects on the environmentally sensitive areas.

To effectively mitigate environmental impacts, it is essential to know how federal regulations define mitigation:

- Avoiding the impact altogether by not taking a certain action or parts of an action.
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
- Compensating for the impact by replacing or providing substitute resources or environments. (Source: 40 CFR 1508.20)

An ordered approach to mitigation, known as “sequencing,” involves understanding the affected environment and assessing transportation effects throughout project development. Effective mitigation starts at the beginning of the environmental process, not at the end. Mitigation must be included as an integral part of the alternative’s development and analysis process.

SEQUENCING:

- AVOID
- MINIMIZE
- REPAIR/RESTORE
- REDUCE OVER TIME
- COMPENSATE

FHWA's mitigation policy states: "Measures necessary to mitigate adverse impacts will be incorporated into the action and are eligible for Federal funding when the Administration determines that:

- The impacts for which mitigation is proposed actually result from the Administration action; and
- "The proposed mitigation represents a reasonable public expenditure after considering the impacts of the action and the benefits of the proposed mitigation measures. In making this determination, the Administration will consider, among other factors, the extent to which the proposed measures will assist in the compliance with a Federal statute, Executive Order, or Administration regulation or policy." (Source: 23 CFR 771.105(d))

The table 10.1 below details mitigation activities and measures that should be considered when dealing with environmental impacts. Many of the measures are considered by the MPO during the project development phase. Measures considered include construction of sidewalks and bicycle lanes, design modifications to reduce community impacts, and request noise barriers and landscaping to reduce audio and visual impacts.

Table 10.1 Mitigation Activities and Measures

Impacts	Mitigation Measures
Air Quality	• Designate pedestrian/transit-oriented development areas • Develop project that will reduce delay and over all Vehicles hours Traveled (VHT) in the metro area
Cultural Resources	• Design modifications to avoid area • Relocation of historical propertyDesign modification • Landscaping to reduce visual impactsPhoto documentation • Historic archival recording to present historic information to thepublic
Neighborhoods and communities, cultural resources, homes, and businesses	• Minimize noise impact with sound barriers • Prevent the spread of hazardous materials with soil testing, well water tests and treatment • Avoid or minimize impact altogether
Environmental JusticeCommunities	• Property Owners paid fair market value for property acquiredResidential and commercial Relocation
Farmland	• Protect one to one farmland acre for every acre converted • Agricultural conservation easement on farmland Compensation
Wetlands and water resources including streams, lakes, and watersheds	• Realign roadway corridors to avoid aquatic resources. Replace or restore wetlands. • Bridge sensitive areas instead of laying pavement directly onto the ground. Improve storm water management for construction and operation of facilities and development associated with projects. • Make perpendicular crossings of streams and riparian buffers rather than lateral encroachments. • Restore streams and/or stream buffers. Protect, improve, and repair resources through Preservation, Enhancement and Restoration programs and projects

Table 10.1 Mitigation Activities and Measures (Continued)

Endangered and Threatened Species	• Time of year restrictions • Construction sequencing • Species research and/or fact sheets • Memorandum of Agreement for species management • Bridge sensitive areas instead of laying pavement directly onto the ground • Design measures to minimize potential fragmenting of animal habitats • Enhancement or restoration of degraded habitat • Creation of new habitat • Establish buffer areas around exist inhabitants • Modifications of land use • Restrictions on land use
Noise	• Depressed roads • Noise barriers • Planting trees
Park Impacts	• Construct bike/pedestrian pathways • Replace impaired functions

Definition of Minority: A minority person is defined as a person who identifies with the following ethnic groups:

- Black (having origins in any of the black racial groups of Africa)
- Hispanic (of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race)
- Asian American (having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands)
- American Indian and Alaskan Native (having origins in any of the original people of North America and who maintains cultural identification through tribal affiliation or community recognition).

Definition of Low Income: Title VI defines low-income as a person whose household income (or in the case of a community or group, whose median household income) is at or below the U.S. Department of Health and Human Services poverty guidelines. The guidelines are defined by household size.

Definition of Limited English Proficiency: Under Title VI of the Civil Rights Act of 1964, individuals who do not speak English as their primary language and have a limited ability to read, write, or speak English are entitled to langue assistance where language barriers may otherwise prohibit people who are Limited English Proficient (LEP) from obtaining service or information relating to service and programs, and may limit participation in the transportation planning process.

Typical measures to assist those needing language assistance include but are not limited to providing translated documents, opportunities to have interpreters present at meetings and public hearings. DMATS projects should take into projects the impact of improvements on LEP population and make necessary agreements to update them and seek their input.

Analysis

DMATS staff performed a qualitative screening of assess the potential environmental impacts of the roadway projects recommended for inclusion in the DMATS 2050 LRTP. This analysis consisted of overlaying project locations and sensitive natural and social resource locations. Any proposed project determined to encroach on a sensitive area is identified. The nature and degree of conflict determines the level of impact assessed. For example, a road widening is typically assumed to be less disruptive to the natural environment than a comparable project on new alignment. On the other hand, widening may be more disruptive than a new facility in terms of community impacts, which depend on available right-of-way, alignment, type of development, and other factors. DMATS staff assigned buffer distances to corridors based on the table 10.2 below.

Table 10.2 Corridor Types and Buffer Distance

Corridor Type	Buffer Distance
Southwest Arterial	800 ft
Principal Arterials with posted speeds 40 mph or greater	600 ft
Principal Arterials with posted speeds less than 40 mph	400 ft
All other Corridors	200 ft

Right of Way

- The amount of existing footprint used for the project. The Impact of the project will be minimal when the right of way requirements are minimal.

Environmental

- 500 – Year – Flood Plain
- 100 – Year - Flood Plain
- Underground Storage Tanks
- Conservation Rec Lands / Parks

Maps 8.4 – 8.10 show the environmental analysis for transportation projects included in the fiscally constrained LRTP. This analysis is meant to provide an idea on environmental impacts in planning process. The NEPA process must be completed, and other applicable federal and state regulations must be met for each project before any federal funds for transportation improvements are expended for construction. Table below provides a planning level environmental analysis of LRTP projects.

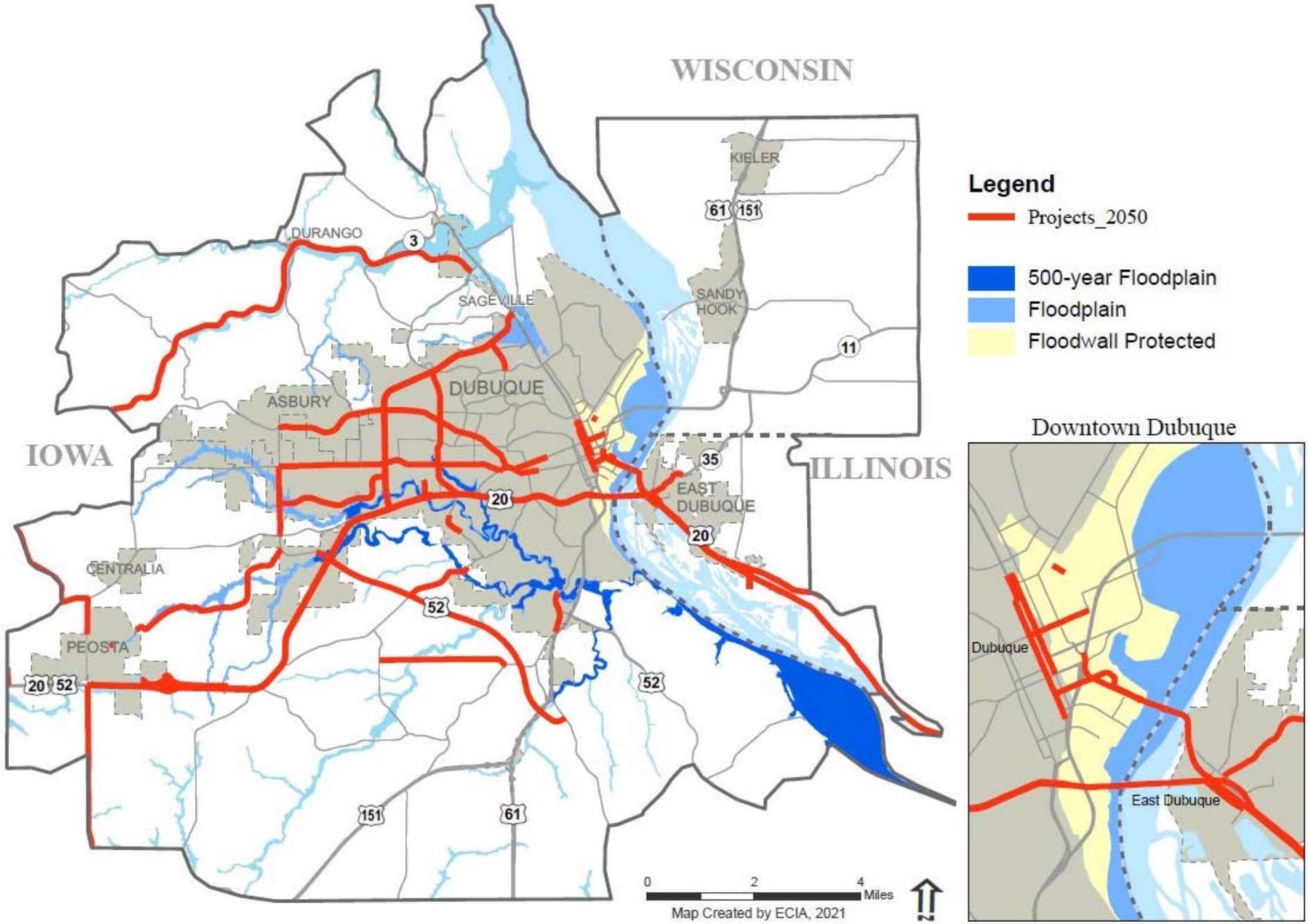
Since this is a system-wide, planning-level screening, no formal field investigation was conducted, and screening was performed on those features for which GIS coverage was available. The assessments also took into account any recent studies that had been done for individual projects. As project specific plans are further refined, more precise environmental assessments may be necessary. For some of the projects in the LRTP, environmental studies based on federal guidelines are already underway or completed.

Each matrix rates the impacts of every project completed in that time period. Impacts in the following categories are assessed, based on project and environmental features mapping:

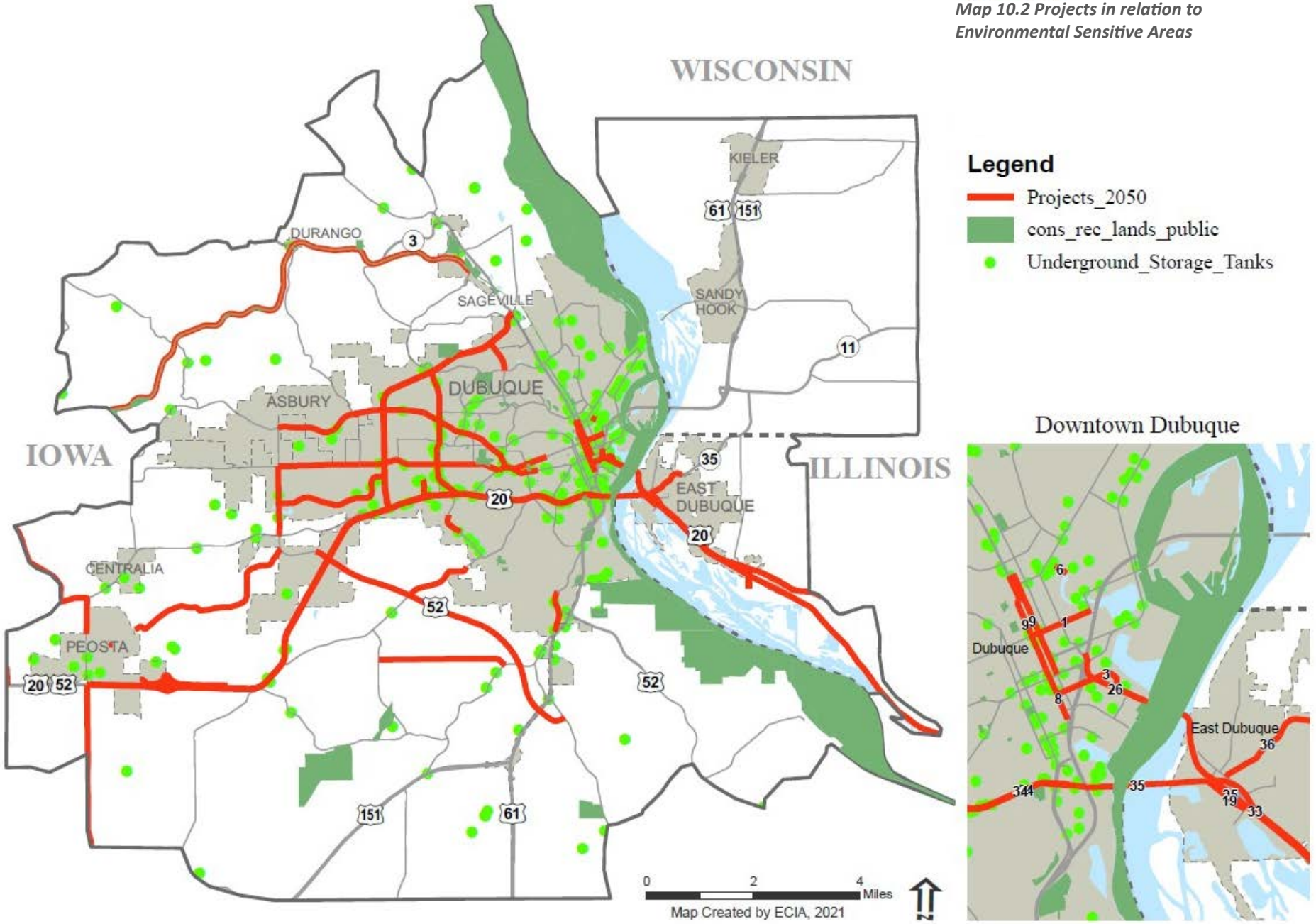
Table 10.3 Planning Level Environmental Analysis of LRTP Projects

MAP NO	Analysis	Elements	Impact
10.1	Floodplain	500-year Flood Plain	Resurfacing, Restoration, or Rehabilitation projects have a high chance of getting Categorical Exclusion (CE). Capacity Improvements need to go through NEPA process.
		100- year Flood Plain	
		Floodwall Protected	
10.2	Environmental Sensitive Areas	Conservation Recreation lands & Public lands	Resurfacing, Restoration, or Rehabilitation projects have a high chance of getting Categorical Exclusion (CE). Capacity Improvements need to go through NEPA process.
		Underground Storage Tanks	
10.3	Social Facilities	School	Resurfacing, Restoration, or Rehabilitation projects have a high chance of getting Categorical Exclusion (CE). Capacity Improvements need to go through NEPA process.
		Cemetery	
		Hospital	
		Religious Facilities	
10.4	Poverty	Household Income by block groups	The average Household size in the Dubuque metro area is 2.51 person per household. The Very Low Income (VLI) for household size of 2.5 people to be eligible for vouchers from Housing authority is $35,500 in Dubuque region. The analysis took into consideration households with income level less than $40,000 as low income and poverty.
			Most of the Households in poverty are located within downtown Dubuque, John F Kennedy Road and in Key west. Projects in these areas need to take this into consideration while going through NEPA process.
10.5	Minority Population	Percentage of Minority population within a block group.	The percentage of Minority population is calculated by block group. Projects in areas that has more than 10% minorities need to be given more attention and provide provision for seeking their input.
			Block groups with 10% or more minorities are located within downtown Dubuque, University Ave and on Pennsylvania Ave. Projects in these areas need to take this into consideration while going through NEPA process.
10.6	Limited English Proficiency	Percentage of Minority population within a block group.	The percentage of Limited English Proficiency (LEP) population is calculated by block group. Projects in areas that has more than 5% LEP population need to do special accommodations to seeking their input.
			There are no block groups with 5% or more LEPs in the metro area. The most predominant LEPs are located within downtown Dubuque area.

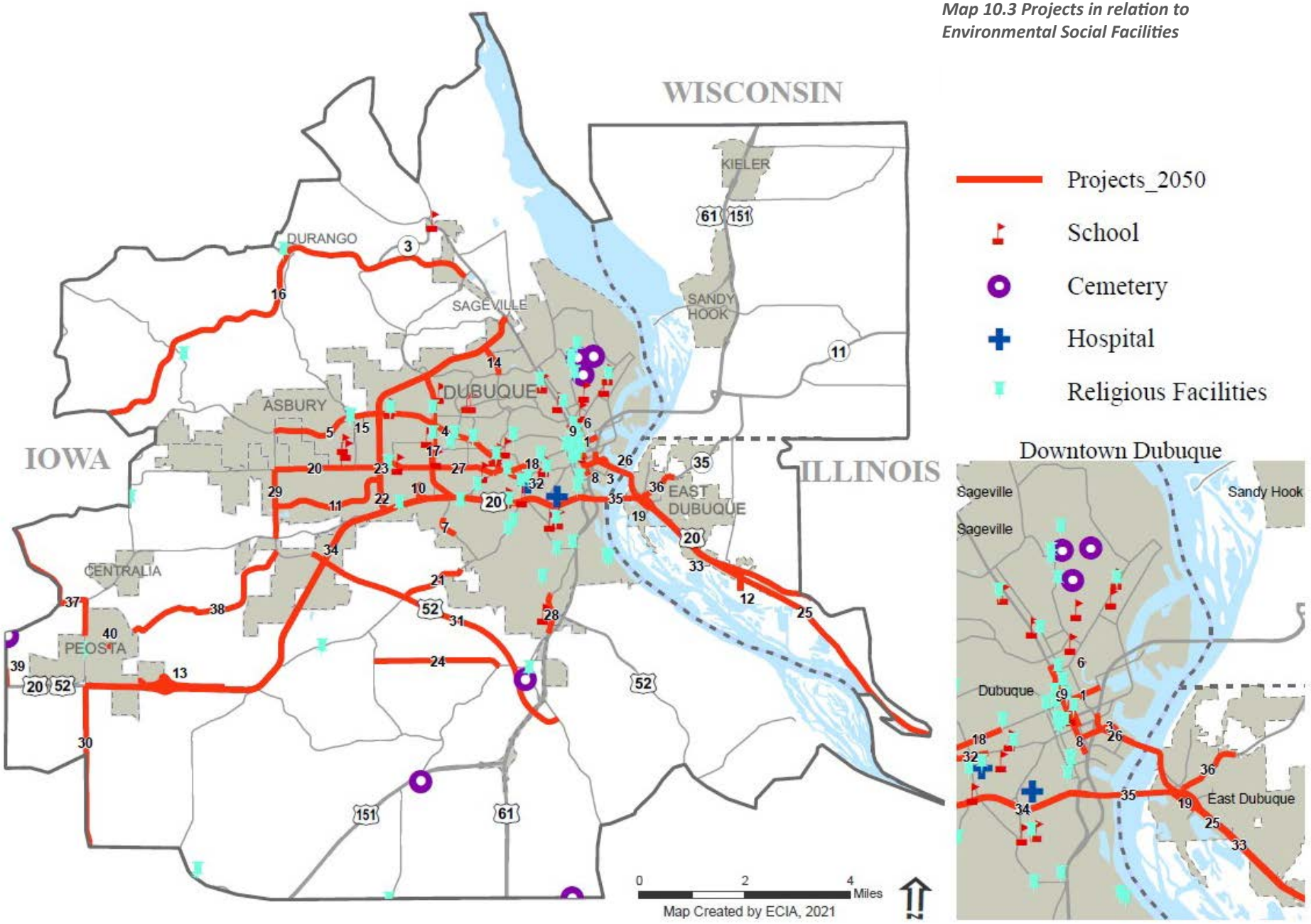
Map 10.1 Projects in Relation to Floodplain



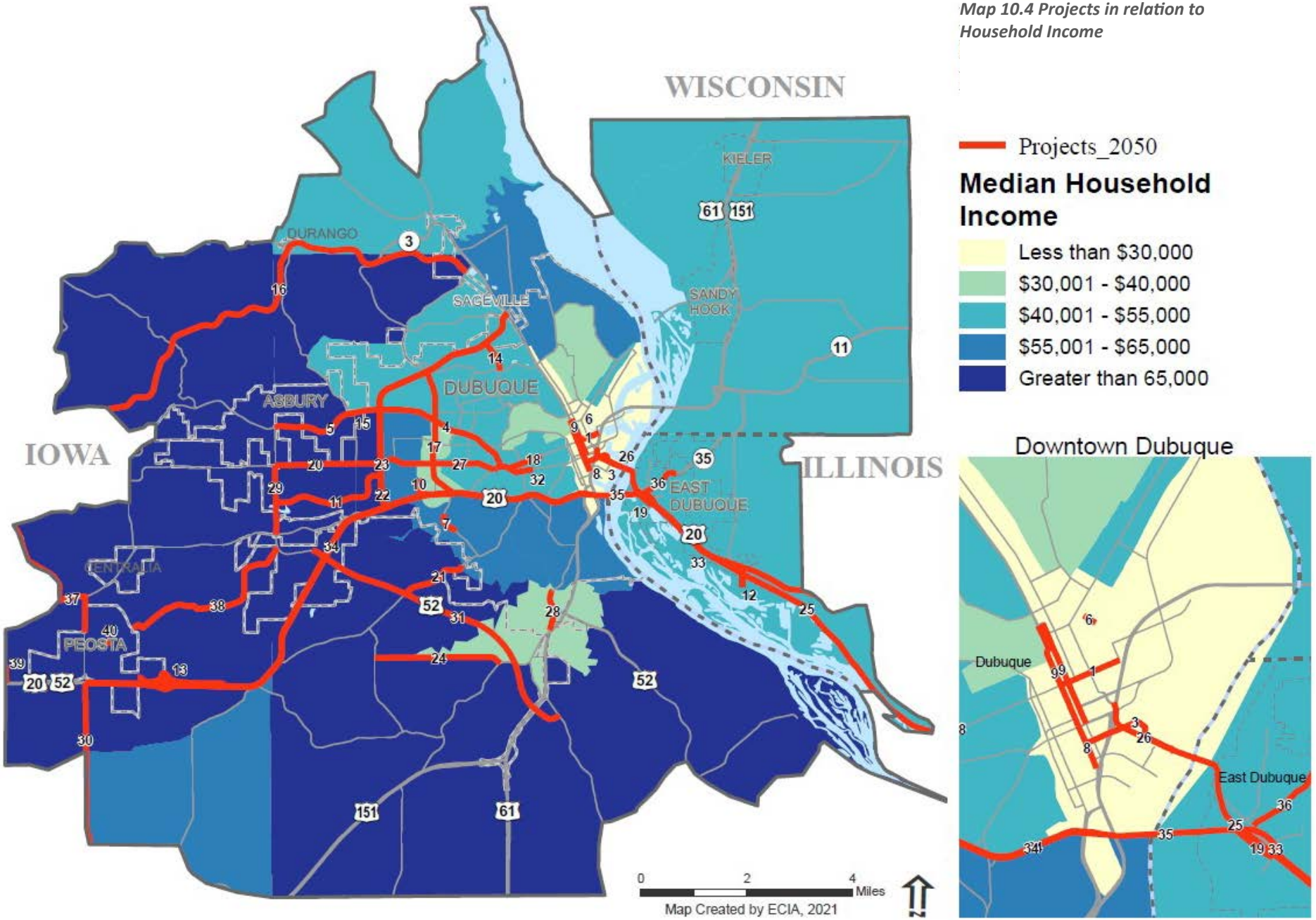
Map 10.2 Projects in relation to Environmental Sensitive Areas



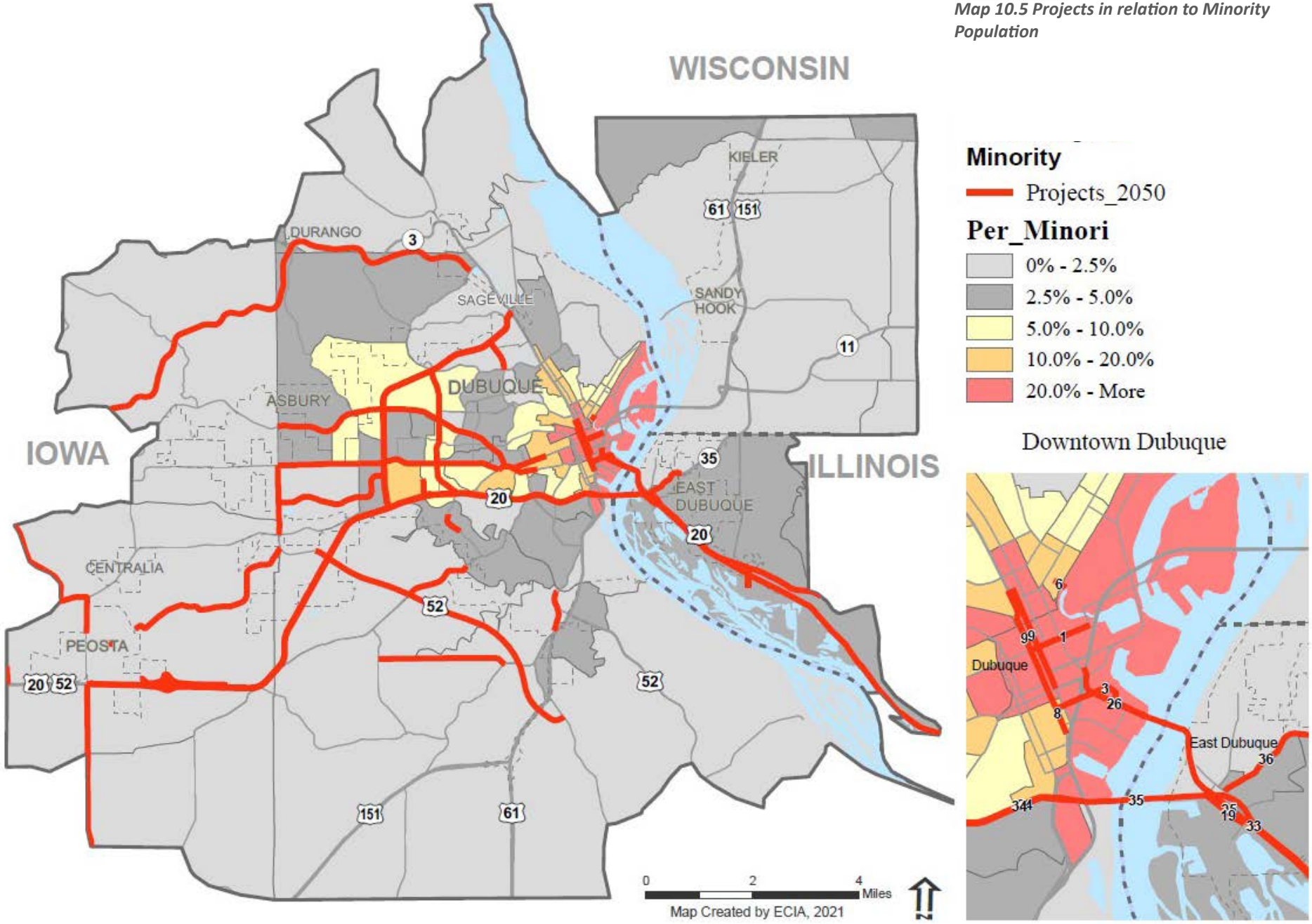
Map 10.3 Projects in relation to Environmental Social Facilities



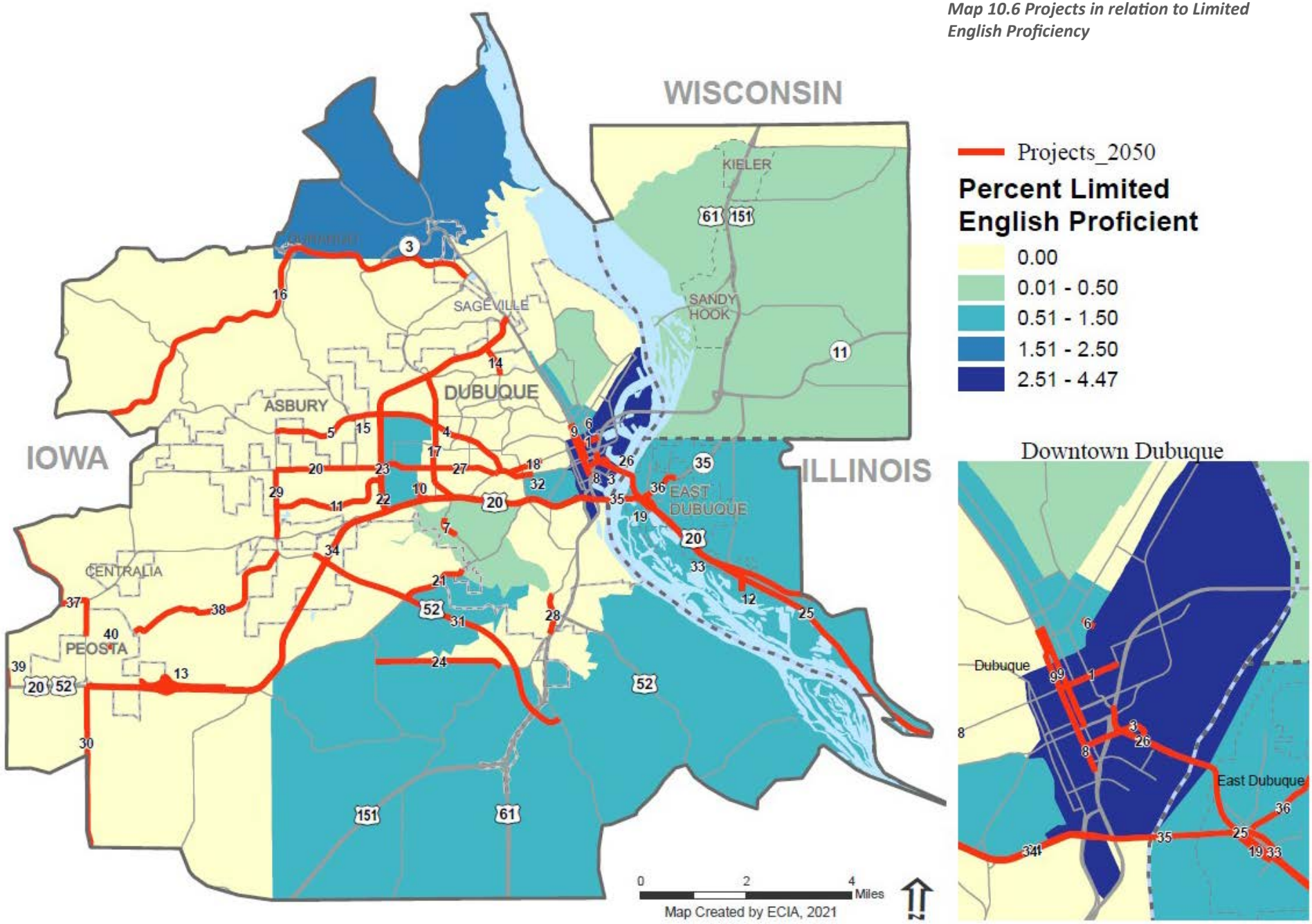
Map 10.4 Projects in relation to Household Income



Map 10.5 Projects in relation to Minority Population



Map 10.6 Projects in relation to Limited English Proficiency



Potential project impacts (if any) are classified as “Minor,” “Moderate,” or “Major” for each of the above categories. This determination is based on a combination of objective and subjective criteria. For example, impacts are generally considered less severe if the project involves widening or other improvements along an existing roadway, as opposed to construction on new alignment. The following guidelines were used to rate project impacts in this screening process:

Minor Impacts

- Road widening with single small creek crossing
- Road widening near sensitive area

Moderate Impacts

- Road widening with multiple creek crossings
- Road widening through sensitive area
- New alignment with single small creek crossing
- New alignment near sensitive area

Major Impacts

- New alignment along stream
- New alignment with multiple stream crossings
- New alignment through sensitive area
- Road widening or new alignment with numerous impacts

Project Information											ROW	Natural Environment				Social				Environmental Justice			Overall Impact
				Description / Extents																			
Project Number	Project Name	From	To	Resurfacing	Reconstruction	Capacity Improvements	Bike & Pedestrian	Safety & Security	ITS improvements	Right of Way	Percentage on Existing Foot print	500-Year-Floodplain	100-Year-Floodplain	Underground Storage Tanks	Conservation Rec Lands / Parks	Cemetery	Hospital	Religious Facilities	Schools	Minority-Population > 20%	Low-Income < $30,000	Low English Proficiency > 2.5%	
IOWA PROJECTS																							
1	Pennsylvania Ave	University Ave	Seipple Rd	x	x	x	x	x	x	x	75% - 100%	Y	N	N	N	N	N	N	N	N	N	N	Minor
2	JFK Rd	US 20	NW Arterial				x	x	x		75% - 100%	Y	N	N	N	N	N	N	N	N	N	N	Minor
3	NW Arterial	US 20	US 52			x	x		x		75% - 100%	Y	Y	N	N	N	N	N	N	N	N	N	Moderate
4	Seipple rd.	Middle Rd	Old highway rd.		x						75% - 100%	N	Y	N	N	N	N	N	N	N	N	N	Minor
5	Seventh St	Central Ave	Star Brewery Dr		x		x				75% - 100%	N	N	Y	N	N	N	N	N	Y	Y	Y	Major
6	Century Drive	Sylvan Dr	US Hwy 20		x				x	x	75% - 100%	N	N	N	N	N	N	N	N	N	N	N	Minor
7	Phase II Smarter Travel	DMATS area							x		75% - 100%	N	N	N	N	N	N	N	N	Y	Y	Y	Minor
8	North Cascade Road	SW Arterial	Catfish Creek Bridge		x						75% - 100%	Y	N	N	N	N	N	N	N	N	N	N	Minor
9	Asbury Rd West	JFK	Seipple Rd	x		x	x		x	x	75% - 100%	N	N	N	N	N	N	N	N	N	N	N	Minor
10	Loras Boulevard	University Ave	Alta Vista St				x				75% - 100%	N	N	N	N	N	N	N	N	N	N	N	Minor
11	Improvements to Hales Mill/ Asbury and Radford intersection	Asbury Rd	Radford Rd		x					x	25% - 50%	N	N	N	N	N	N	N	N	N	N	N	Moderate
12	Rockdale Rd	Key West Dr	Old Mill Road		x		x			x	75% - 100%	N	N	N	N	N	N	N	N	N	N	N	Minor
13	Middle Road	Seippel Road	Radford Road		x		x			x	75% - 100%	N	N	N	N	N	N	N	N	N	N	N	Minor
14	Central Avenue	4th	9th	x			x				75% - 100%	N	N	N	N	N	N	N	N	Y	Y	Y	Minor
15	Central Ave	9th	21st	x			x	x	x		75% - 100%	N	N	N	N	N	N	N	N	Y	Y	Y	Minor
16	Sunndown Rd	US 20	DMATS Boundary					x			75% - 100%	N	N	N	N	N	N	N	N	N	N	N	Minor
17	Asbury Rd East	University Ave	JFK	x	x	x	x	x	x	x	75% - 100%	N	N	N	N	N	N	N	N	N	N	N	Minor
18	Grandview Avenue Extension	32nd Street	N.W. Arterial		x					x	0% - 25%	N	N	N	N	N	N	N	N	N	N	N	Minor
19	Bee Branch Bike Overpass	BEE Branch Creek over CP Rail tracks					x				0% - 25%	N	N	N	N	N	N	N	N	Y	Y	Y	Minor
20	14th Street	Central Avenue	Sycamore Street		x					x	50% - 75%	N	N	Y	N	N	N	N	N	Y	Y	Y	Minor
21	Cedar Cross Rd	725' E of Starlight Dr	Lake Ridge Dr		x			x	x	x	75% - 100%	N	N	N	N	N	N	N	N	N	N	N	Minor
22	16th Street Project	Admiral Dr	Elm St		x						75% - 100%	N	N	N	N	N	N	N	N	Y	Y	Y	Minor
23	Pedestrian Overpass	At Pennsylvania Ave and Asbury rd.					x			x	0% - 25%	N	N	N	N	N	N	N	N	N	N	N	Minor
24	Frontage Rd	Cox Springs Rd	Swiss Valley Rd			x				x	0% - 25%	Y	N	N	N	N	N	N	N	N	N	N	Moderate
25	SW Arterial Trail	US20/Seipple Rd	US 151/61/Old Davenport rd.				x				75% - 100%	N	Y	N	N	N	N	N	N	N	N	N	Minor
26	Paving Heritage Trail	IA 3	Dyersville	x							75% - 100%	N	Y	N	N	N	N	N	N	N	N	N	Minor
27	Bike & Pedestrian Trail	Peosta	Heritage Trail				x				0% - 25%	N	N	N	N	N	N	N	N	N	N	N	Minor
28	Bike & Pedestrian Trail	Peosta	Southwest Arterial				x				0% - 25%	N	Y	N	N	N	N	N	N	N	N	N	Minor
29	Frontage Rd	Adrina	Enterprise			x				x	0% - 25%	N	Y	N	N	N	N	N	N	N	N	N	Minor
30	HWY 20 Overpass	at Cox Springs				x				x	25% - 50%	N	Y	N	N	N	N	N	N	N	N	N	Minor
31	Pedestrian Overpass over CN Railroad	at Maple Ridge Court					x			x	25% - 50%	N	N	N	N	N	N	N	N	N	N	N	Minor
32	HWY 20 Improvements	at Dutch Lane				x				x	25% - 50%	N	N	N	N	N	N	N	N	N	N	N	Minor
City of East Dubuque																							
1	Frentress Lake Rd Rail Overpass	Frentress Lake Dr	Rail Crossing		x					x	50% - 75%					N	N	N	N	N	N	N	Minor
2	Menominee Ave	2nd St	6th St	x							75% - 100%					N	N	N	N	N	N	N	Minor
Iowa DOT Projects																							
	US 20 Improvements	NW Arterial Intersection			x	x		x	x	x	60% - 70%	N	N	N	N	N	N	N	N	N	N	N	Minor
	Passenger Rail in Iowa	Mississippi River Museum and CN track improvements			x	x		x	x	x	50% - 75%	N	N	N	N	N	N	N	N	Y	Y	Y	Minor
	US Hwy 20 Julien Dubuque Bridge	US 20 Julian Dubuque Bridge Replacement in IL		x	x	x	x	x	x	x	75% - 100%	N	N	N	Y	N	N	N	N	Y	Y	Y	Major
	US Hwy 20 Improvements	Peosta Interchange	Julien Dubuque Bridge	x	x	x	x	x	x	x	0% - 25%	Y	Y	N	N	N	N	N	N	N	N	N	Moderate
Illinois DOT Projects																							
	Passenger Rail in Illinois	Rockford	East Dubuque		x	x		x	x	x	75% - 100%	N	N	N	N	N	N	N	N	N	N	N	Minor
	US Highway 20	Julien Dubuque Bridge	DMATS Boundary	x	x	x	x	x	x	x	75% - 100%	N	N	N	Y	N	N	N	N	N	N	N	Major
	Wisconsin St/Illinois Hwy 35	Sinsinawa Ave	Cherry Ln		x						75% - 100%					N	N	N	N	N	N	N	Minor

This analysis is used to adjust or refine proposed roadway alignments to minimize possible environmental impacts. The screening process allows early identification of impacts and areas of uncertainty that will need to be investigated more as a particular project moves forward through detailed planning and design.

The data used for the screening analysis is obtained through IADOT and local government databases (City of Asbury, City of Dubuque, City of Peosta, and Dubuque County), and agency resource consultation.

Consultation

Several Federal, State, Tribal, and local government agencies were notified when the draft LRTP document was available for review and comment. Feedback on topics relevant to their field of expertise was requested. Agencies notified include the following:

City of Dubuque Historic Preservation Commission	Iowa Department of Veterans' Affairs
City of Dubuque Leisure Services	Iowa Department on Aging
City of Dubuque Planning & Zoning	Iowa Economic Development Authority
Clark University	Iowa Homeland Security and Emergency Management
Dubuque County Zoning	Iowa Northland Regional Transit Commission
Dubuque County Conservation	Iowa Tourism Board
Dubuque County Emergency Management	Iowa Utilities Board
Dubuque County REAP Committee	Iowa Workforce Development
Friends of Dubuque County Conservation Board	Jo Daviess County Conservation
Grant County Conservation	Loras Collage
Iowa Department for the Blind	Northern Iowa Community College
Iowa Department of Agriculture and Land Stewardship	Office of the State Archaeologist
Iowa Department of Cultural Affairs	Sac & Fox Tribe of the Mississippi
Iowa Department of Education	State Historical Society of Iowa
Iowa Department of Human Rights	Transit Advisory Committee
Iowa Department of Human Services	Travel Dubuque
Iowa Department of Natural Resources	U.S. Army Corps of Engineers, Rock Island District
Iowa Department of Public Health	U.S. Department of Agriculture – Natural Resources Conservation Service
Iowa Department of Public Safety	U.S. Department of the Interior Bureau of Indian Affairs, Midwest Regional Office
Iowa Department of Transportation, District 2	U.S. Environmental Protection Agency, Region 7
Iowa Department of Transportation, Systems Planning Bureau	U.S. Fish and Wildlife Service, Illinois-Iowa Field Office
	University of Dubuque