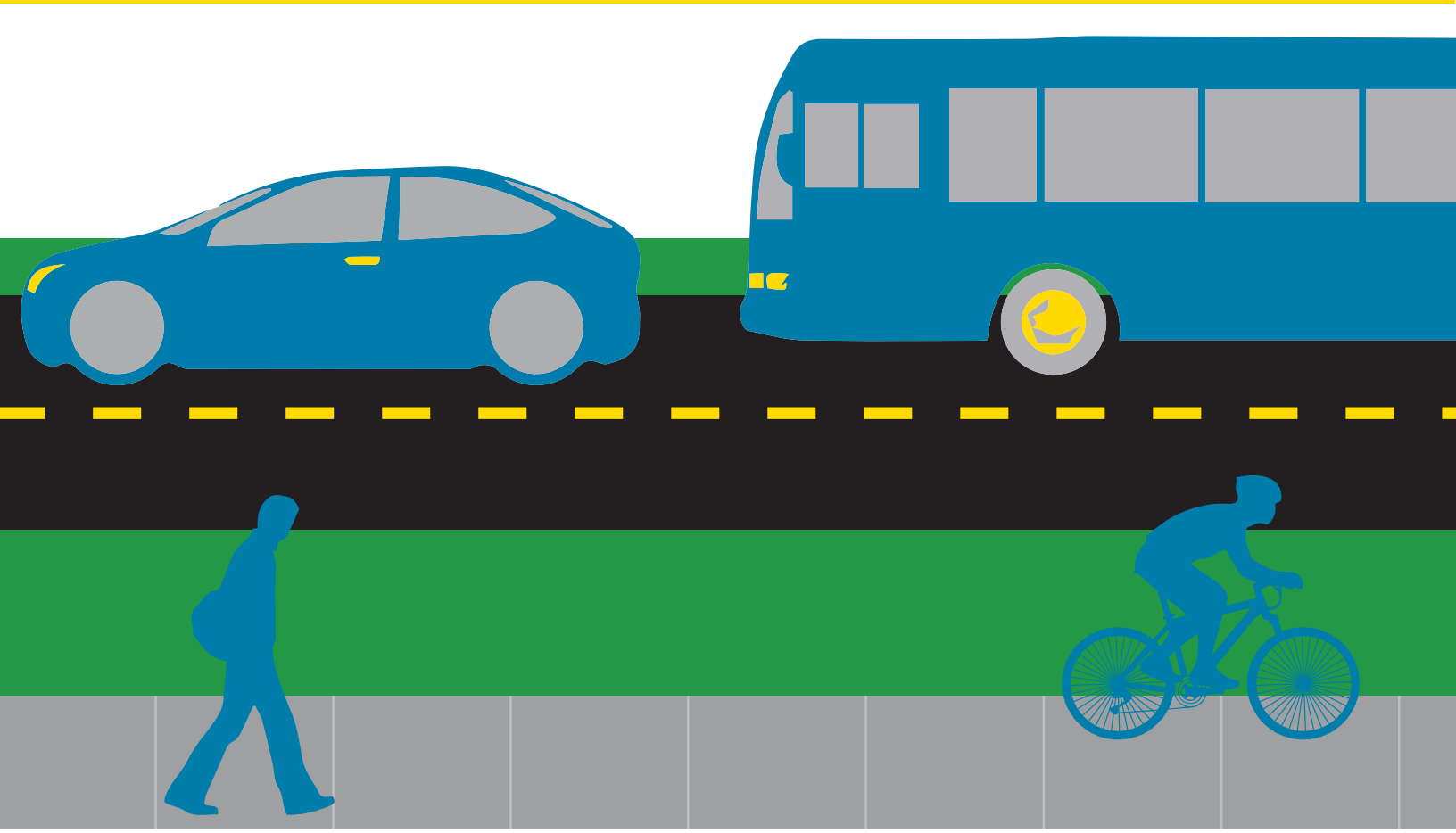
2040 Long Range Transportation Plan



MAPA Omaha - Council Bluffs Metropolitan Area Planning Agency

Connect. Plan. Thrive.

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Introduction

1.1 Overview of the 2040 Long Range Transportation Plan (LRTP)

The MAPA region, which covers the greater Omaha-Council Bluffs area, consistently scores among the strongest, most vigorous, and healthy metropolitan areas in the nation. During the recent recession, for example, the Brookings Institution ranked Omaha among the top ten "recession-resistant cities," [1] In addition to economic measures, the region gets high scores based on health, safety, relocating families, and attracting "next gen workers."[2] All of these factors contribute to the MAPA regions continued ability to retain businesses and draw in new opportunities and residents.

The transportation system plays an essential role in the continued growth and vitality of a community. As in any metropolitan area, transportation provides mobility and helps to shape the urban form. The convenience and relatively high level of mobility enjoyed in the area are a direct result of improvements made to the freeway and arterial street system over recent decades.

Over the coming 25 years, the region's population is expected to approach one million, while employment is predicted to grow from over 440,000 workers in 2013 to over 560,000 workers in 2040. This rate of growth will place increased demands on the metro area's transportation system. At the same time, we are facing serious challenges concerning how transportation projects will be funded in the future. Fuel taxes, which have traditionally been the primary source of transportation funding, have seen a decrease in revenues due to more fuel efficient vehicles decreasing the amount of demand for gasoline. The increase in demand on existing roadways is a considerable burden on existing systems and creates new demands for projects on limited financial resources.

There is a renewed emphasis on developing alternative, non-vehicular modes of transportation. The widespread interest in going "green" and finding more environmentally-conscious ways of living and working are causing people to reassess how they travel. Recently communities have been giving greater scrutiny to the relationship between transportation and land use. There is increased recognition of the often externalized costs of low-density, auto-oriented development prevalent in American cities since the post-World War II period, including the high costs of providing infrastructure for municipalities and the inability of systems to adapt to pedestrian and bike usage

[1] Brookings Institution, June 2009.
[2] Next Generation Consulting, "Next Cities – The 60 U.S. Hotspots for Young, Talented Workers," 2009-2010 (nextgenerationconsulting.com/assets/documents/NextCities_2009-2010_US.pdf next gen workers)

The Metropolitan Area Planning Agency's (MAPA) Long Range Transportation Plan (LRTP) looks out to the year 2040, a period of 25 years. While such a period extends beyond what can be accurately predicted, a long-range plan's value lies in comprehensively assessing the region's current transportation system, and charting a course of action for coming years. It presents an opportunity to step back and take a big picture look at where we stand, the challenges we face, and how to best address those problems. The MAPA LRTP creates a vision that assists in guiding future decisions toward the goal of a safe, efficient transportation system to meet the region's current and future needs.

Of course, the process of planning is dynamic, and will be adapted as changes occur and new challenges arise. Planning is a continuous process, and the LRTP is updated at least every five years to consider recent developments and remain a relevant plan for the region.

1.2 WHAT IS THE MAPA REGION?

The Omaha-Council Bluffs Metropolitan Area Planning Agency (MAPA) is a voluntary association of local governments in the greater Omaha region chartered in 1967. MAPA performs planning and development work, especially to address problems that are regional in scope and cross jurisdictional boundaries. MAPA's areas of work include community and economic development, environmental programs, transportation planning, mobility management for paratransit, among others.

The MAPA region covers five counties in Nebraska and Iowa. These counties include Douglas, Sarpy, and Washington Counties in Nebraska and Pottawattamie and Mills counties in Iowa. However, MAPA serves as the federally-required "Metropolitan Planning Organization" (MPO) for a smaller region that encompasses only Douglas and Sarpy Counties in Nebraska and the western-most portion of Pottawattamie County; that is, the area generally south of Crescent and Underwood and west of L-52. As the MAPA 2040 LRTP pertains only to this smaller region, the term "MAPA region" is used to refer to the MAPA MPO throughout the remainder of this Plan. As the MPO for this area, MAPA is charged with creating and maintaining a regional long-range transportation plan among other planning requirements identified in federal law in cooperation with state and local governments.[3]

MPOs with a population over 200,000, like the MAPA region, are deemed Transportation Management Areas (TMA) in federal law. In this Plan, the metropolitan planning area is frequently referred to simply as the MAPA TMA. Figure 1.1 identifies the MAPA TMA.

[3] *cf.* CFR Title 23 and 49

The governing body for MAPA is a 63 member Council of Officials, representing cities, counties, school districts, resource agencies, and numerous other governmental bodies. The MAPA Board of Directors is a nine-member board that serves as the Council of Officials' executive committee. It is made up of elected officials representing cities and counties from the larger five-county MAPA region. A Transportation Technical Advisory Committee (TTAC) reviews and makes recommendations related to transportation to the MAPA Board. Various other committees, such as the Coordinated Public Transit and Human Services Transportation Stakeholders committee, Citizen's Advisory Committee, and the MAPA Development forum for planning practitioners, are involved in MAPA's planning process and help provide input and recommendations to the Board. A visual of MAPA's structure is shown below in Figure 1.1.

FIGURE 1.1
MAPA STRUCTURE

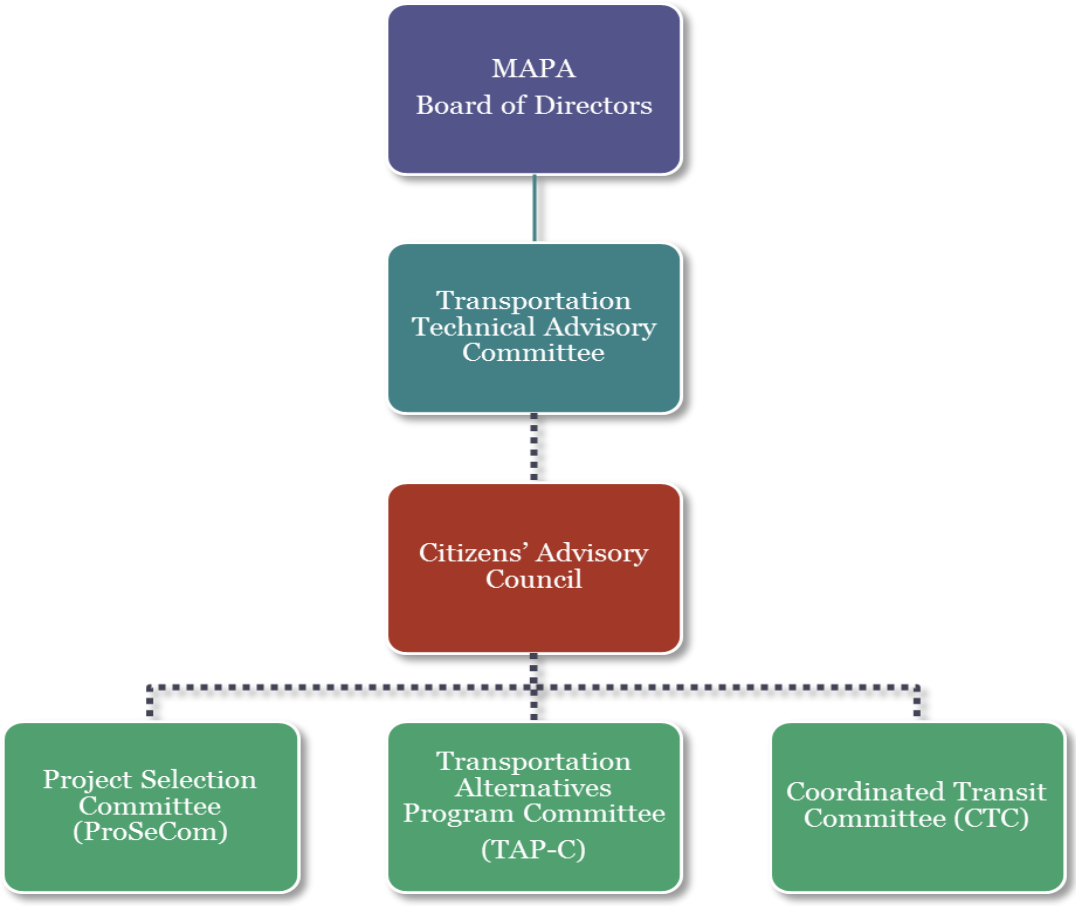
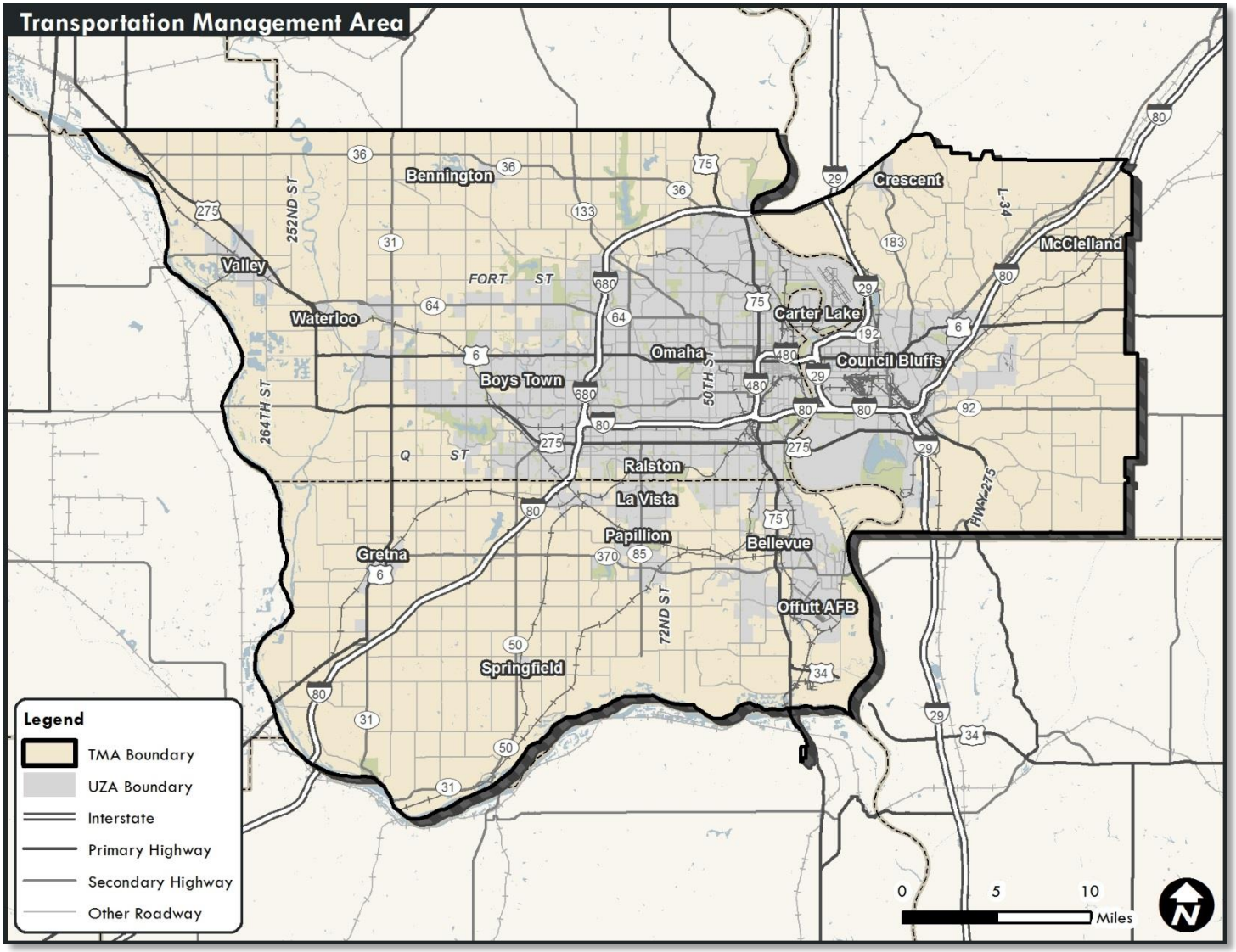


FIGURE 1.2
MAPA TRANSPORTATION MANAGEMENT AREA (TMA)



1.3 FEDERAL TRANSPORTATION LEGISLATION

This Long Range Transportation Plan is an integral part of the Omaha Metro Area's "continuing, cooperative, and comprehensive" planning process as stipulated by federal law. This process was established by the federal government with the intent of fostering better management, operation and development of the surface transportation system. Specifically, federal law identifies the following needs as pertaining to the national interest:

- mobility of people and freight
- economic growth and development
- minimizing fuel consumption and air pollution

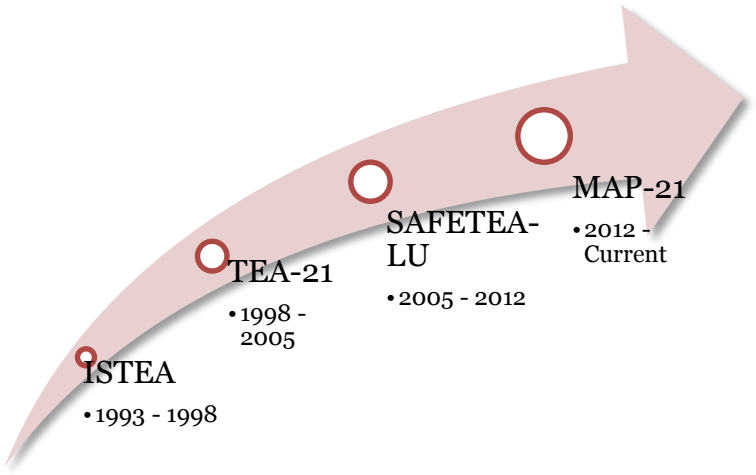
These three concerns reflect the inter-related nature of transportation, economic development, and environmental goals. Since transportation has a broad impact on society, long range transportation planning must take into account concerns such as impact upon the environment, land use and economic development, in addition to traditional transportation-related issues such as mobility and safety.

The current guiding transportation legislation is the **M**oving **A**head for **P**rogress in the **21st C**entury (MAP-21) which was signed into law on July 6th, 2012. MAP-21 authorizes the federal surface transportation programs for highways, highway safety, and transit. It provides the rules, regulations and planning practices and guidance for metropolitan transportation planning.

MAP-21's original authorization was extended and is currently in law under continuing resolutions passed by Congress.

Much of the current transportation planning framework in MAP-21 was established by the landmark Intermodal Surface Transportation Equity Act (ISTEA), which was passed in 1993. ISTEA was succeeded by the Transportation Equity Act for the 21st Century (TEA-21) in 1998, followed by the Safe, Accountable, Flexible, Efficient, Transportation Equity Act (SAFETEA-LU) in 2005 and now MAP – 21 in 2012. Figure 1.3 displays the past and current transportation legislation. The federal transportation legislation identifies several planning factors to guide states and MPOs in their long-range transportation planning efforts that will be further discussed in Section 3, which identifies Regional Goals.

FIGURE 1.3
TRANSPORTATION LEGISLATION



In the past few years, with the passage of MAP-21, there has been an increases in emphasis on public participation in the planning process. As part of the development of this LRTP, MAPA sought participation from stakeholders; local jurisdictions, and the general public. The input gathered from the public is helpful to the transportation professionals and decision makers responsible for planning the region's future transportation system.

This Plan also conforms to MAP-21's requirements to plan for fiscal, social and environmental concerns as part of the transportation process, as well as the increased emphasis on alternative modes of transportation.

OVERVIEW OF PLAN

MAPA's Long Range transportation covers many aspects of transportation planning, the issues covered are sorted by category below:

Chapters 1-4 detail the existing and future conditions of the MAPA region.

1. Explains the role of MPOs, what MAPA does and the area that MAPA covers.
2. Covers historic, current, and future population and employment trends.
3. Has the goals that the region identified through public meetings and surveys and the potential action steps for the community.
4. Defines livability, complete streets, and future growth scenarios for Omaha and the surrounding areas.

Chapters 5-13 detail the different modes of transportation used in the Omaha-Council Bluffs TMA

5. Overviews the current road and bridge systems in the area along with data on their conditions.
6. Looks at traffic and congestion in the Omaha area as well as the congestion mitigation plan for the region.
7. Lays out the plans for future system improvements and additions for the local transportation network, and the fiscal constraint for future projects.
8. Details the transit network and services in Omaha and the surrounding counties, as well as future improvements and changes forecasted.
9. Covers MAPA's role in paratransit services and mobility management, as well as a summary of the services provided for the region.
10. Looks at the bike and pedestrian facilities in the area and the potential projects.
11. Reviews the aviation facilities in the Omaha region.
12. Discusses the current rail network in the Midwest and the future improvements and changes along with the new legislative initiatives.
13. Looks at the current freight networks surrounding the MAPA TMA.

Chapters 14-17 discuss the different factors that impact planning and transportation decisions.

14. Covers environmental concerns in the area as well as the relevant legislation and policies concerning the impacts of transportation networks on the region's environment.
15. Details environmental justice policies and practices and the potential impacts that new transportation projects will have on historically disadvantaged populations.
16. Outlines the safety requirements and MAPA's action plans.
17. Deals with security issues faced by the region's transportation networks and the steps taken by MAPA and other government agencies to plan for potential disasters

Demographics and Forecasts

2.1 Historic MAPA Population

Population and employment in the MAPA region have grown steadily for decades. Although the economic recession that began in 2008 has slowed the region's development recently, continued growth is expected to occur for the coming 25 years. Significant changes to the make-up of the region's population will take place that will play an important role in the transportation system and its ability to meet future demands.

The 3-county MAPA TMA[1] is home to approximately 770,000 people (see Table 2.1). It is the largest metropolitan area in Nebraska and Iowa, and an important economic center in the Midwestern U.S. The total population has increased over 42% from 1970, when the population was nearly 550,000.

Table 2.1
Historical Population Trends

County	1970	1980	1990	2000	2010
Douglas	389,455	397,038	416,444	463,585	517,110
Sarpy	66,200	86,015	102,583	122,595	158,840
Pottawattamie	86,991	86,561	82,628	87,804	93,158
MAPA Total	**542,646**	**569,614**	**601,655**	**673,984**	**769,108**

Source: U.S. Census Bureau

Population growth has not been consistent in all three MAPA counties. Sarpy County's population has soared in recent years, averaging over 20% growth each decade. Douglas County's population has tracked closely with the MAPA total, typically ranging between 5 and 12 percent growth per decade. Pottawattamie County's population declined during the 1970s and 1980s, but rebounded for modest, but consistent growth from the 1990s onward. Figures 2.1 and 2.2 demonstrate these changes by county.

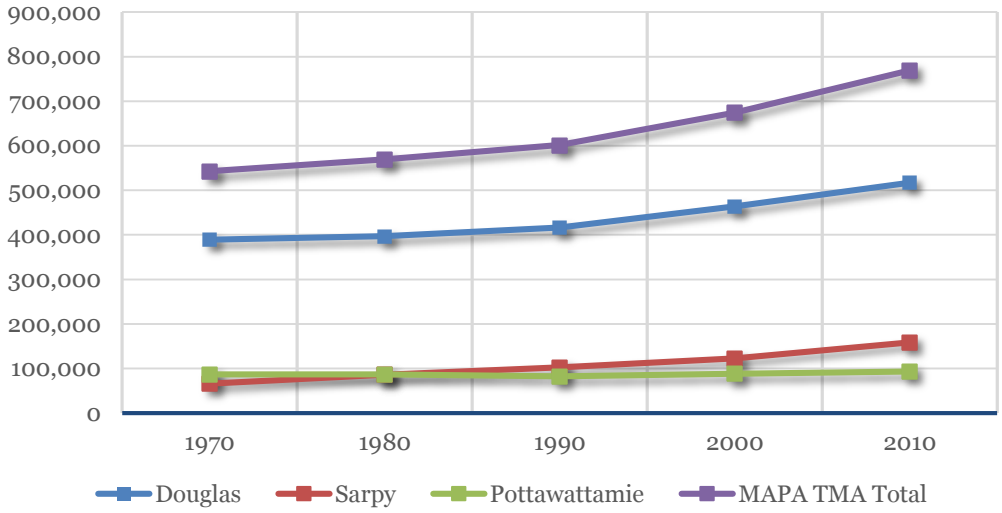
These county growth patterns reflect the overall pattern of population growth along the outer suburban areas and population decline or stability in the older, urban portions of metro area, though there has been interest in new redevelopment communities in downtown Omaha and downtown Council Bluffs. Figure 2.3 illustrates this pattern average growth rate by Census Tract between 1970 and 2010. Note the red-colored

[1]This section uses the entirety of Pottawattamie County in all population statistics and projections. The MAPA TMA only includes the western-most portion of Pottawattamie County (see Section One), but over 80% of the county's population lives within the MAPA TMA.

tracts in the suburban portion of the Metro Area showing increased population, whereas the light yellow and blue tracts show no growth or population decrease. Overall, the population increases greatly outweigh the decreases. Note that the while the blue-colored tracts indicate declines of 1,500 or more persons, the dark red tracts indicate increases of greater than 2,000 persons.

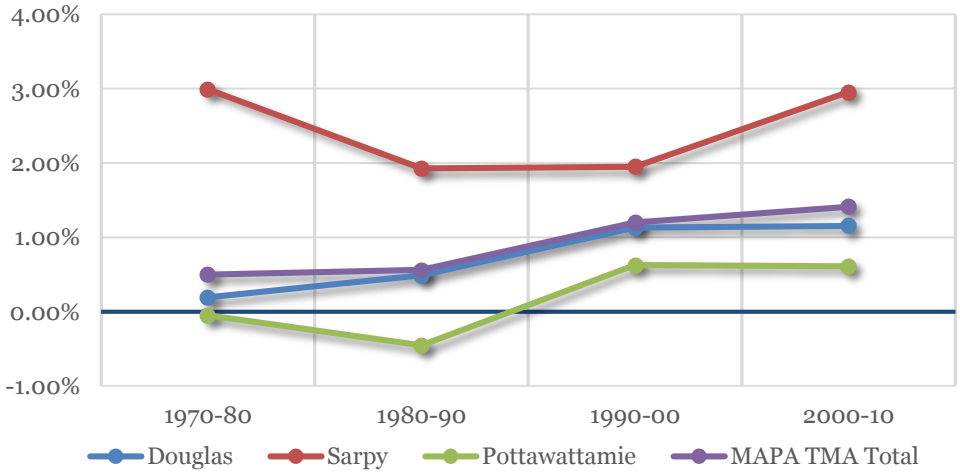
While all three MAPA counties have seen significant new suburban construction in the past decade, the highest concentration of new subdivisions is located along the western edges of the metro area. In 2005, the City of Omaha annexed the former City of Elkhorn. Corridors of continuous development now exist between what were formerly two distinct communities. There is also notable development in the unincorporated area of northwest Sarpy County between Gretna and La Vista.

FIGURE 2.1
TOTAL HISTORICAL POPULATION TRENDS BY COUNTY, 1970 – 2010



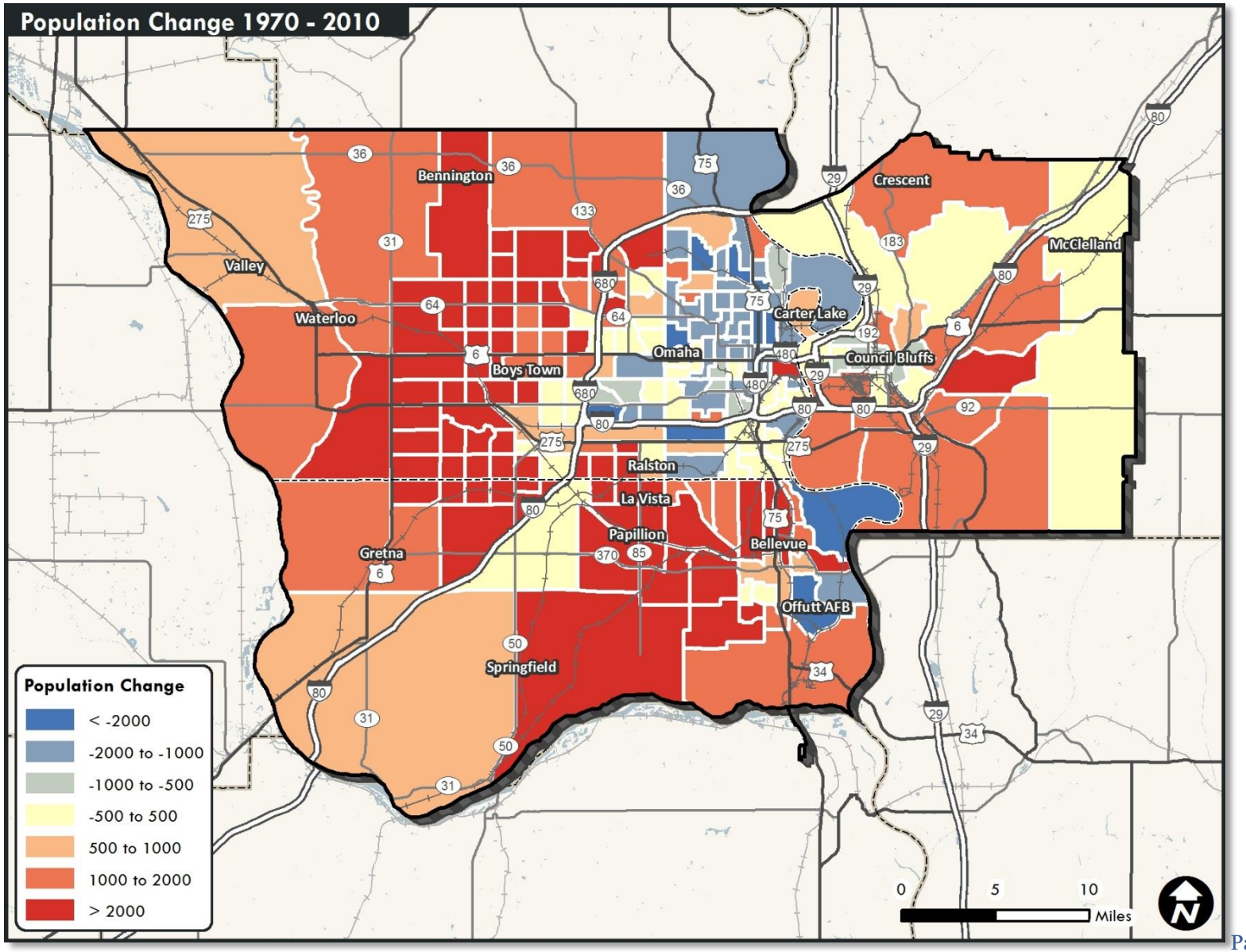
Source: U.S. Census Bureau

FIGURE 2.2
POPULATION GROWTH RATE BY COUNTY, 1970 – 2010



Source: U.S. Census Bureau

FIGURE 2.3
POPULATION CHANGE 1970 – 2010



New development is not confined to the suburbs. Recently, there have been redevelopment efforts in the urban core, including the Midtown Crossing, Aksarben Village, and extensive loft and condominium projects downtown and along the Riverfront near the CenturyLink Center. The City of Omaha is planning additional similar projects in future years. Urban neighborhoods such as Dundee and Aksarben in Omaha and downtown Council Bluffs remain very popular for the charm of unique houses, tree-lined streets, and proximity to urban amenities. The City of La Vista undertook a corridor plan for 84th Street that proposed medium and high-density housing along European-style streets.

City leaders are trying to bring a revival of new business opportunities to North Omaha through efforts such as the North Omaha Development Project. South Omaha neighborhoods have been growing in the past 20 years thanks to a large influx of immigrants. This wave of immigrants primarily hails from Latin America, but the Omaha region also has a significant Sudanese population.

Much of the anticipated growth in this higher density residential market is due to two factors:

1. Young professionals, many of whom are choosing to live in urban settings where they can be close to work and social activities.
2. Retiring baby boomers who wish to live in a more urban setting, closer to work and social activities and who do not want the continued maintenance required of a single family home. This is proven by the growth of the Downtown, Old Market, and the creation of Midtown Crossing and the Aksarben Village.

2.2 Future Population Growth in the MAPA Region

In order to properly plan for the region's future transportation system, it is important to understand the characteristics of the region's population and how it is likely to change in the next 25 years. In order to estimate the future population, MAPA utilizes a well-known methodology of population forecasting called a "cohort-survival projection method." This process takes into account the number of births and the "survival" rates as well as migration rates for the region's population. Historical and current data trends are used to make reasonable projections into the future (refer to Table 2.2).

The number of births has always outpaced the number of deaths in the MAPA TMA. Table 2.2 shows that between 2000 and 2010, total births more than doubled total deaths. The addition of these new babies contributed to nearly 74,000 in additional population to the MAPA region during these years.

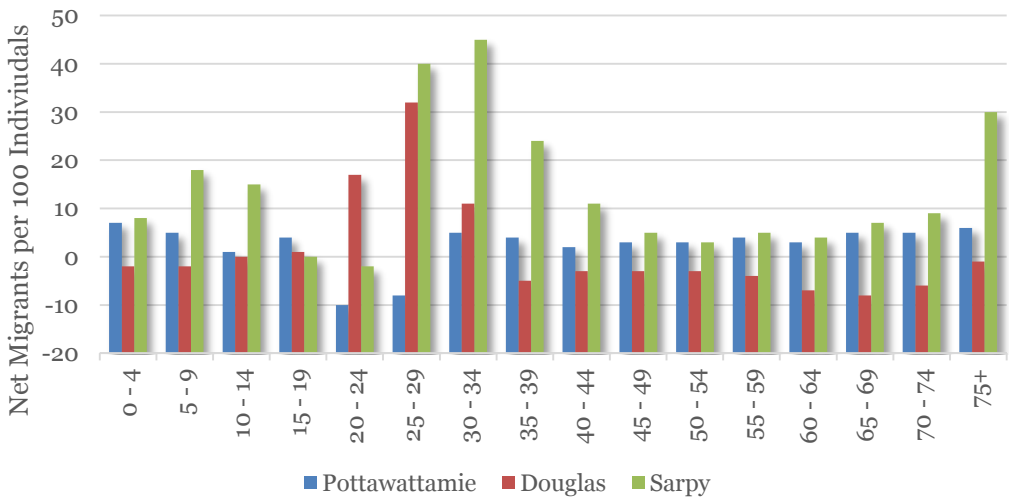
TABLE 2.2
TOTAL BIRTHS AND DEATHS IN THE MAPA REGION FROM 2000 - 2010

County	Births	Deaths	Total Natural Increase
Douglas	90,213	39,438	50,775
Sarpy	25,590	6,663	18,927
Pottawattamie	13,168	9,068	4,100
MAPA Total	**128,971**	**55,169**	**73,802**

Source: U.S. Census Bureau

Net migration from outside the MAPA area added over 28,000 new residents between 2000 and 2010. Figure 2.4, below, details regional migration trends. The largest intensity of added population was between the ages of 20 – 40. Sarpy and Douglas County saw the largest gains in this age group while Pottawattamie County showed a decline.

FIGURE 2.4
NET MIGRATION IN THE MAPA REGION FROM 2000 – 2010



Source: U.S. Census Bureau

The population in the MAPA counties should continue to increase during the next 25 years. Table 2.3 and Figure 2.5 displays the population projections. By 2040, the population is expected to increase by over 240,000, for a total of 1,009,600 in 2040. This is an increase of 31%, which is just slightly more than the 30% increase the region has seen over the past 25 years. This expected future growth would result from both domestic and international in-migration from outside the region as well as natural increase (more births than deaths).

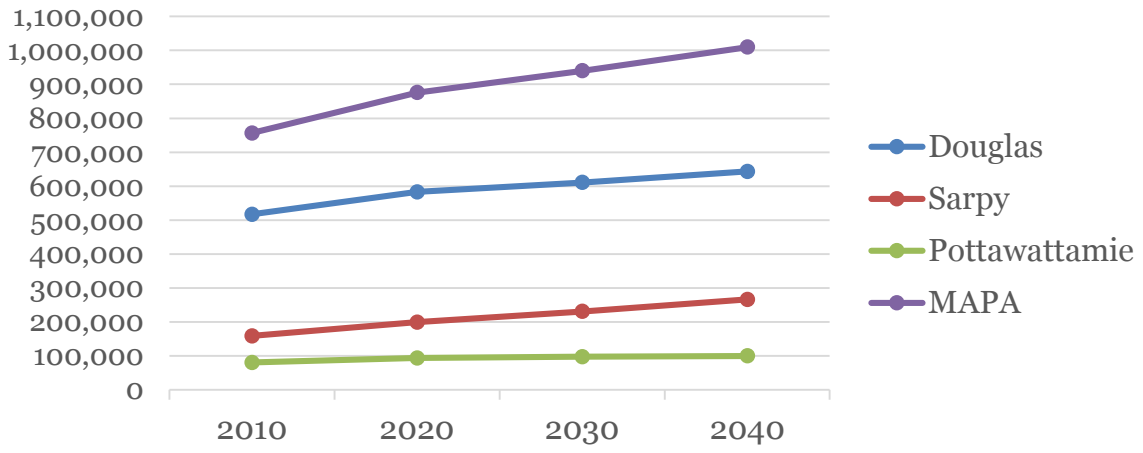
The majority of the expected growth is likely to occur in Douglas and Sarpy Counties. MAPA forecasts that Sarpy County's recent explosive growth will continue in the coming 25 years, adding more than half of its current population by 2040. Douglas County should also continue to grow at a steady clip, with an additional 126,267 residents forecasted. Pottawattamie County is forecasted to continue modest growth with 6,823 more residents by 2040. Figure 2.5 illustrates the anticipated growth by county in a graphical format. As shown, based on demographic projections done through a cohort analysis to project growth over a number of years, more rapid growth is expected between 2010 – 2020, compared to the other decades. The cohort analysis used data from land use projections, local comprehensive plans, and coordination with localities.

TABLE 2.3
MAPA TMA POPULATION PROJECTIONS BY COUNTY

County	2010	2020	2030	2040
Douglas	517,110	582,769	610,968	643,377
Sarpy	158,840	199,312	231,055	266,242
Pottawattamie	93,158	93,678	97,705	99,981
MAPA Total	**769,108**	**875,759**	**939,728**	**1,009,600**

Source: U.S. Census Bureau

FIGURE 2.5
TOTAL PROJECTED FUTURE POPULATION BY COUNTY, 2010 – 2040



Source: U.S. Census Bureau

In recent years, the national fertility rate has been rising slightly after decades of decline. In 2006, the U.S. fertility rate reached the replacement rate for the first time since 1971,[2] giving the United States the highest fertility rate among the world's developed countries. Birth rates in Nebraska and Iowa are routinely higher than the

[2]Haya El Nasser & Paul Overberg, "Fertility rate in USA on upswing" *USA Today*, Dec. 20, 2007 (http://www.usatoday.com/news/nation/2007-12-19-fertility_N.htm?loc=interstitialskip)

national average. Nebraska, in particular, ranked as the third highest birth rate in the nation according to one recent study released by the Census Bureau.[3] Given this strong local trend, it is reasonable to assume that natural population growth will continue well into the future.

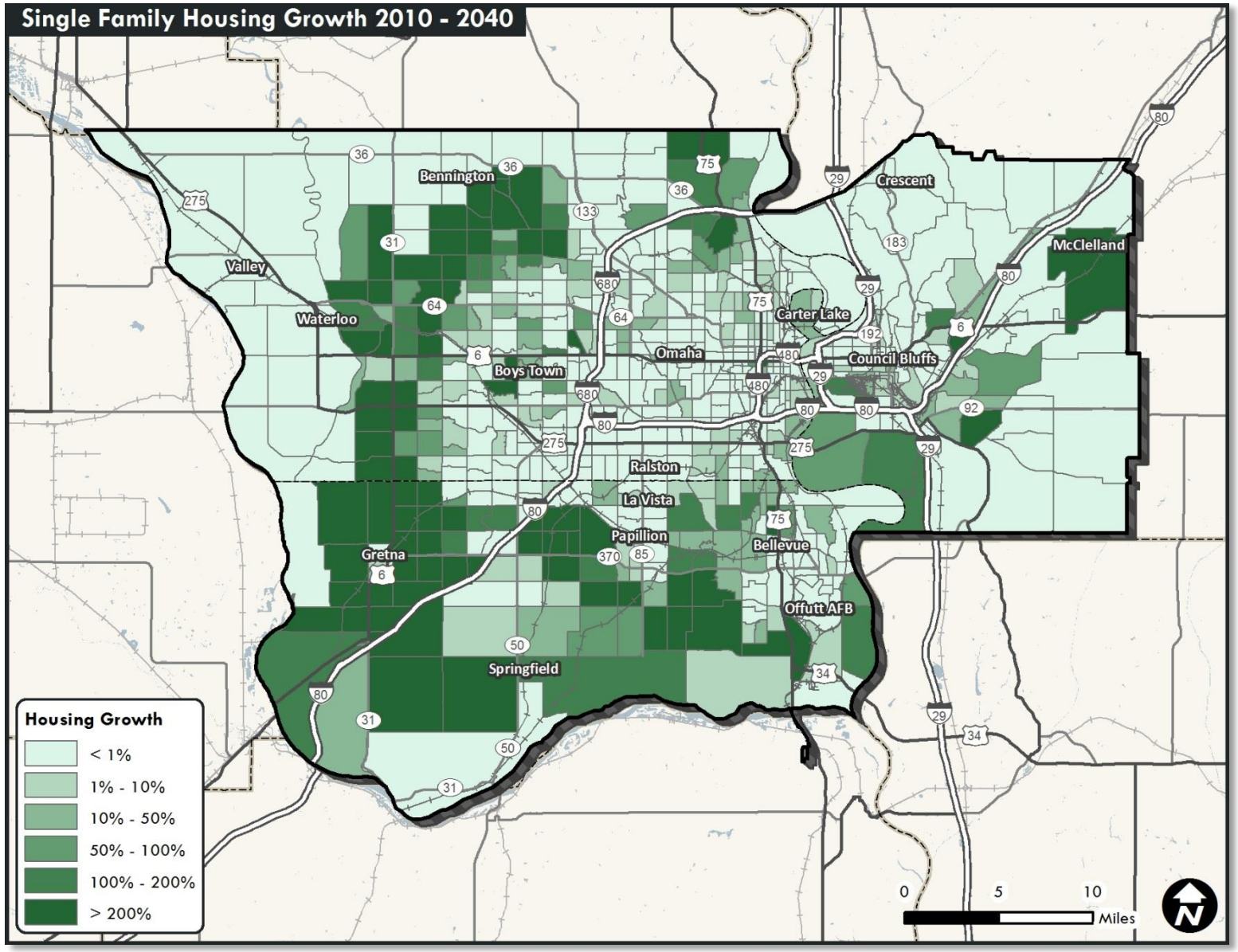
Another contributing factor to the area's population growth is the relatively stable economy. The greater Omaha Metro Area often scores as one of the most recession-resistant areas in the nation. Several factors account for this. There is significant diversity among local businesses, as well as a strong foundation of businesses related to agriculture, which is a sector that is somewhat insulated from economic downturns. The cost of living is relatively cheap and the workforce boasts a high level of productivity. Recent decisions by employers such as Google, Yahoo, and Ebay to locate in the MAPA region attest to these strengths, which should help propel the area's economic engine.

The majority of future population growth is anticipated to follow recent trends of continued new growth along the suburban fringe. As demonstrated by Figure 2.6, the perceived benefits of suburban life—namely, good schools, affordable land and housing, and convenient shopping—continue to attract residents. While the downturn in the housing market that began in 2008 has significantly slowed new construction of suburban subdivisions, a substantial market for new greenfield development remains into the foreseeable future, which is reflected in MAPA's 2040 population forecast.

MAPA staff developed land use forecasts as part of the Heartland 2050 Vision. Control totals were set based upon a cohort analysis by age and sex. These base projections were then brought to the community who selected a preferred growth scenario that promoted economic well-being, education, healthy living, diverse housing and transportation choices, and the preservation of natural features. Housing and employment was then allocated regionally based upon these preferences.

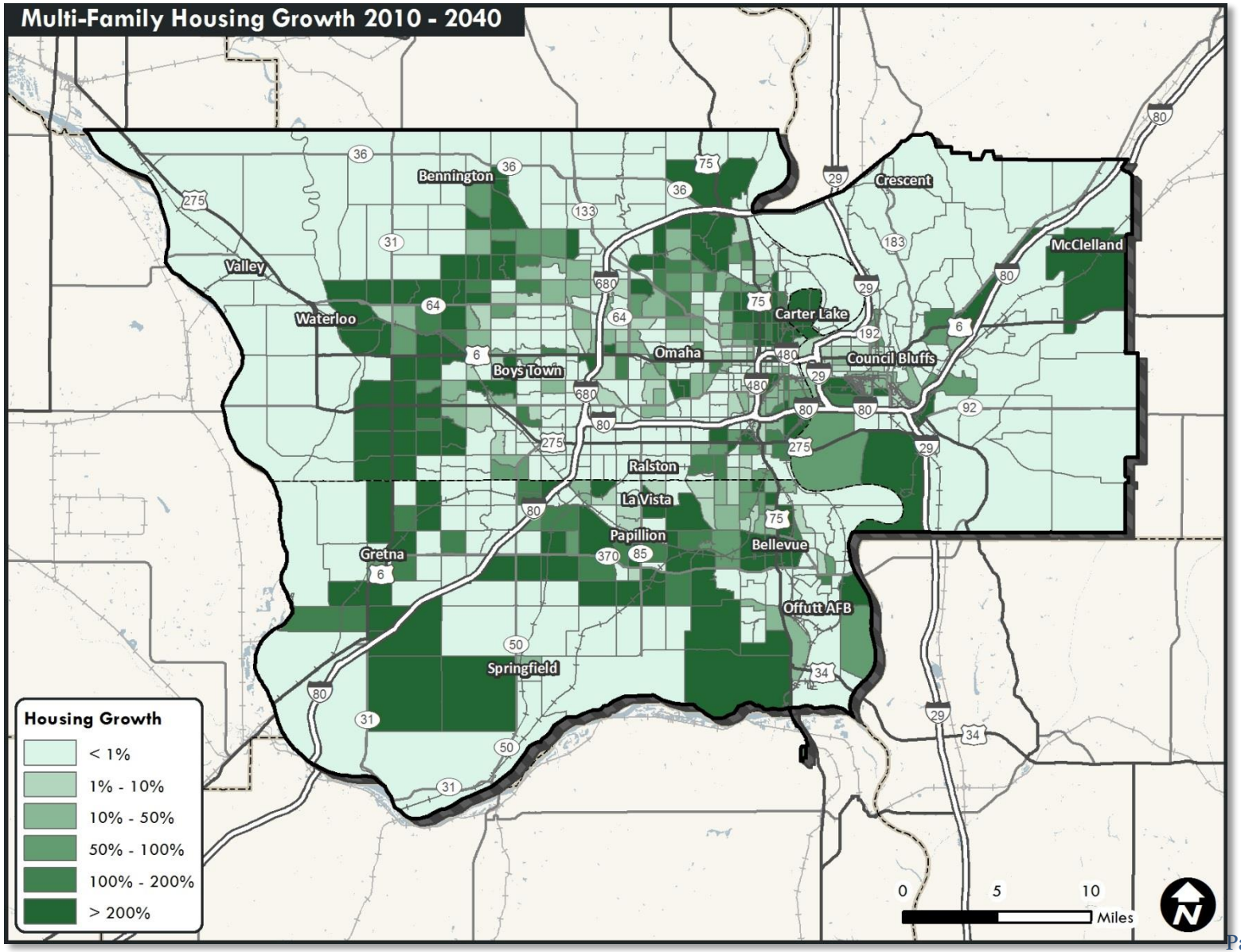
,Joyce A. Martin EtAl, National Vital Statistics Report; Births, Final Data for 2012 " *U.S. Census Bureau,* December 30th 2013.; http://www.cdc.gov/nchs/data/nvsr/nvsr62/nvsr62_09.pdf

FIGURE 2.6
FORECASTED SINGLE-FAMILY HOUSING GROWTH: 2010 - 2040



New residential development in the region's urban core, such as Downtown and Midtown Omaha, are also expected to continue to grow. Many of the metro area's elected officials and other leaders view improving the developed areas as a key goal for the region. In a response to these trends, MAPA's population forecast shows multi-family housing increases in these developed areas in Figure 2.7.

FIGURE 2.7
FORECASTED MULTI-FAMILY HOUSING GROWTH: 2010 – 2040



2.3 Changing Population Characteristics

Diversity

The growing population of the MAPA TMA is changing in more ways than sheer numbers. One notable shift can be seen in the increasing racial and ethnical diversity in the area. Table 2.4 illustrates this ongoing trend through population changes between 2000 and 2010. In each of the three MAPA counties, the minority, or non-white non-Hispanic, population grew at a significantly faster rate than the majority, or white non-Hispanic, population. As for the total region, the majority population grew by just over 12%, while the minority population grew at the rapid clip of 22% during this ten-year period.

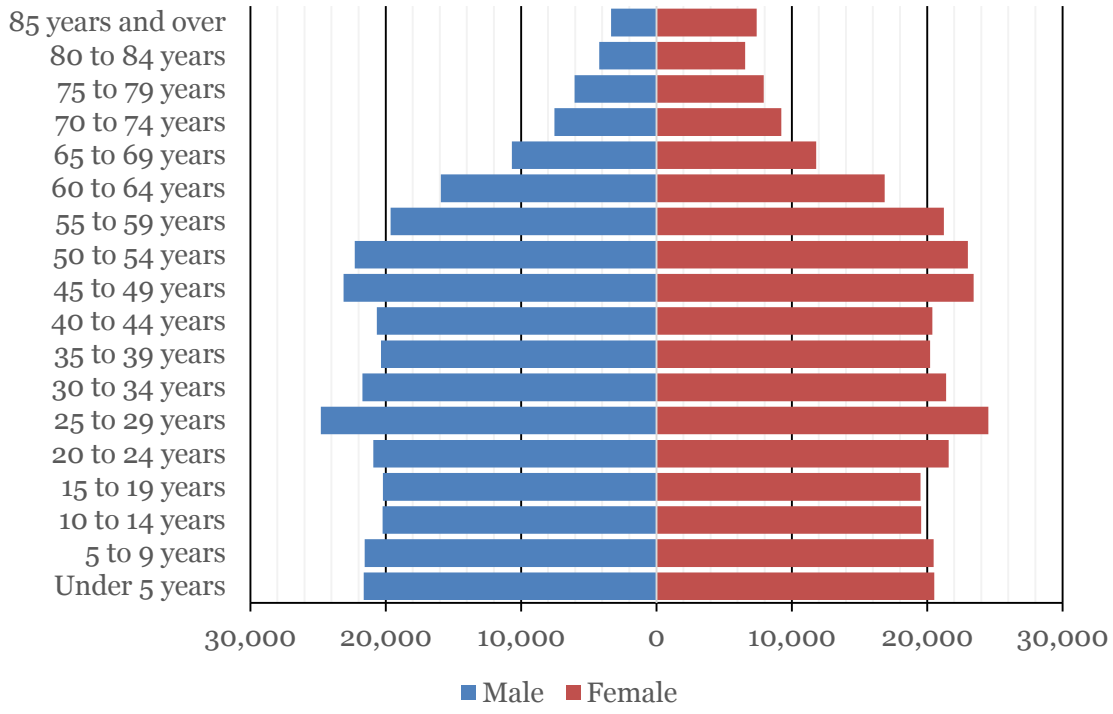
Table 2.4
Comparative Population Growth 2000 - 2012

	Majority (White Non-Hispanic) Population			Minority Hispanic Population			Minority (Non-White, Non-Hispanic) Population		
County	**2000**	**2012**	**Percent Change**	**2000**	**2012**	**Percent Change**	**2000**	**2012**	**Percent Change**
Douglas	375,317	395,025	8.6%	30,928	57,804	46.5%	57,340	122,085	20.8%
Sarpy	109,335	138,879	29.2%	5,358	11,569	53.7%	7,902	19,961	27.4%
Pottawattamie	84,181	86,558	4.3%	2,892	5,713	49.4%	731	6,600	31.8%
MAPA Total	**568,833**	**620,462**	**12.0%**	**39,178**	**75,086**	**47.8%**	**65,973**	**148,646**	**22.1%**

Source: U.S. Census Bureau (ACS)

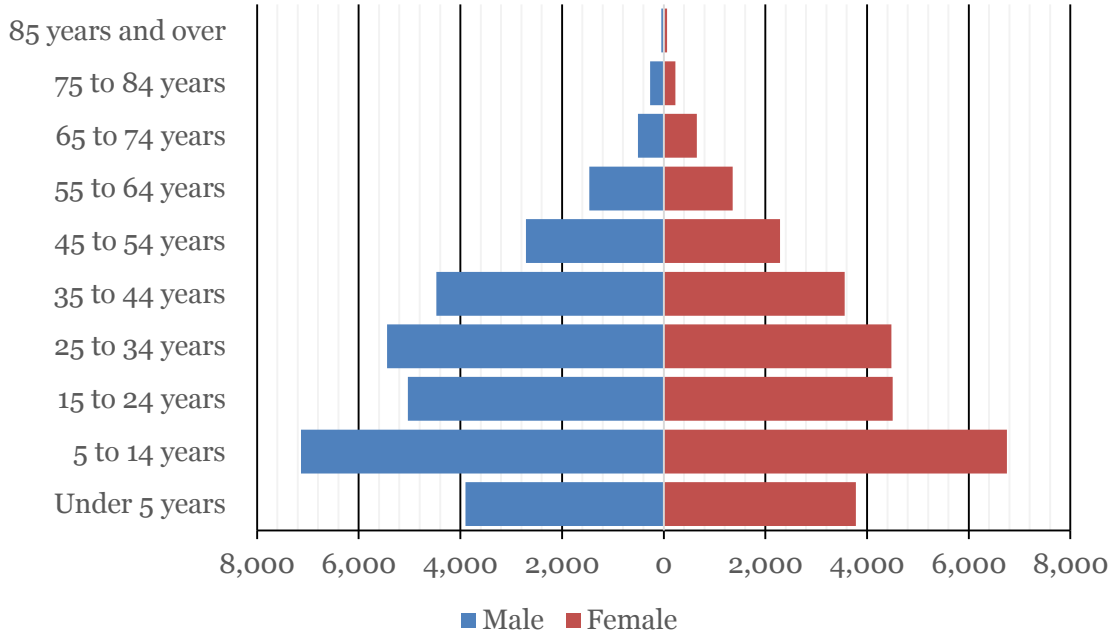
This marked trend is even more pronounced among the youngest population of the MAPA region (see Figures 2.8, 2.9 and 2.10). If the population is examined by age group distribution, the minority population is weighted much more heavily in the younger age groups, whereas the majority white population is distributed relatively evenly among all age groups, as demonstrated by the charts below. Thus, the population of the future Omaha Metro Area, not unlike the future United States as a whole, will have more racial and ethnic diversity than in previous years.

FIGURE 2.8
2010 NEBRASKA POPULATION BY SEX AND FIVE-YEAR AGE GROUP: WHITE ALONE, NOT HISPANIC/LATINO (MAJORITY POPULATION)



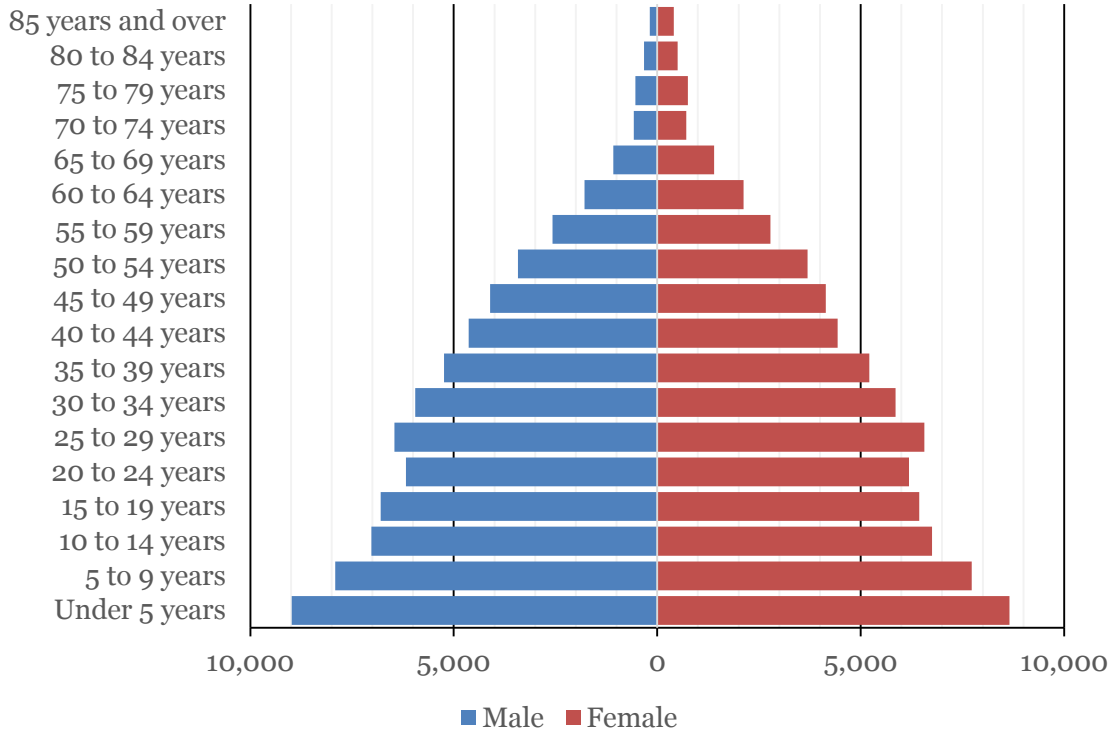
Source: U.S. Census Bureau

FIGURE 2.9
2013 NEBRASKA POPULATION BY SEX AND TEN-YEAR AGE GROUP: HISPANIC/LATINO (MINORITY POPULATION)



Source: U.S. Census Bureau

FIGURE 2.10
2010NEBRASKA POPULATION BY SEX AND FIVE-YEAR AGE GROUP: NON-WHITE OR HISPANIC/LATINO (MINORITY POPULATION)



Source: U.S. Census Bureau

Household Size

The nearly 750,000 residents of the MAPA region constitute almost 300,000 total households (see Table 2.5). This number is expected to increase to over 400,000 households by 2040. The average household size has been decreasing for decades due to smaller family sizes, an increased number of divorces, and people choosing to wait longer to marry than in previous years.

Nationwide, fewer households have children and there is an increase in single person households. While 44% of all households in the U.S. had children in 1970, that figure was down to 20% in 2010. In contrast, only 17% of households were single person in 1970, but they comprised 27% of all households in2010. In Omaha area, 28% of households included a married couple and children and 25% were single-person households in 1970. By 2010, those numbers had essentially flipped, with 17% made up of married couple and children, and 32% single-person.

The extent to which these societal trends continue into the future is a matter of debate. The high local birth rates suggest that decreases in the average number of children from past decades will not continue indefinitely. However, given demographics and societal trends, it is reasonable to expect that a fewer percentage of overall households will

include married couple and children, which will contribute to a reduction in average household size.

In forecasting household size, MAPA uses historical trends while taking the above conditions into account. MAPA conservatively estimates that the average household size for the region will slightly decline from 2.55 persons per household in to 2.53 persons per household in 2040.

TABLE 2.5
TOTAL HOUSEHOLDS AND AVERAGE HOUSEHOLD SIZE BY COUNTY

County	2010		2040	
Douglas	198,377	2.50	262,379	2.48
Sarpy	56,529	2.70	113,736	2.65
Pottawattamie	44,311	2.52	60,857	2.52
MAPA Total	**299,217**	**2.55**	**436,972**	**2.53**

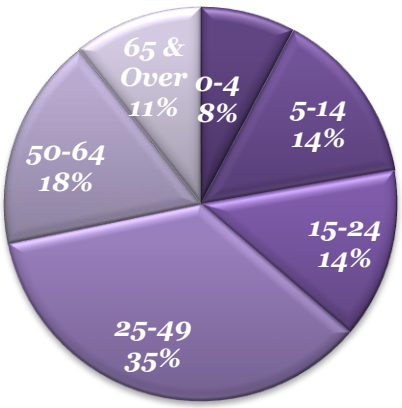
Source: U.S. Census Bureau

Aging

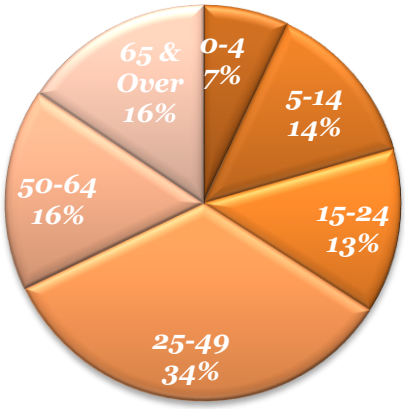
Another notable trend in the future is the growing average age of the population. Due to the large baby-boom generation, which is beginning to enter into retirement years, older persons will constitute a greater share of the total population. For instance, persons aged 65 and up constitute about 10% of the metro area's population today. However, in 2040 they will comprise at least 16%. Therefore, a smaller percentage of the total future population will be in the workforce. At the same time, it should be born in mind that population is expected to increase for all age groups. Figures 2.11 and 2.12 illustrate this future trend:

FIGURE 2.11
2010 – 2040 TREND AGE DISTRIBUTIONS

2010 Age Distribution

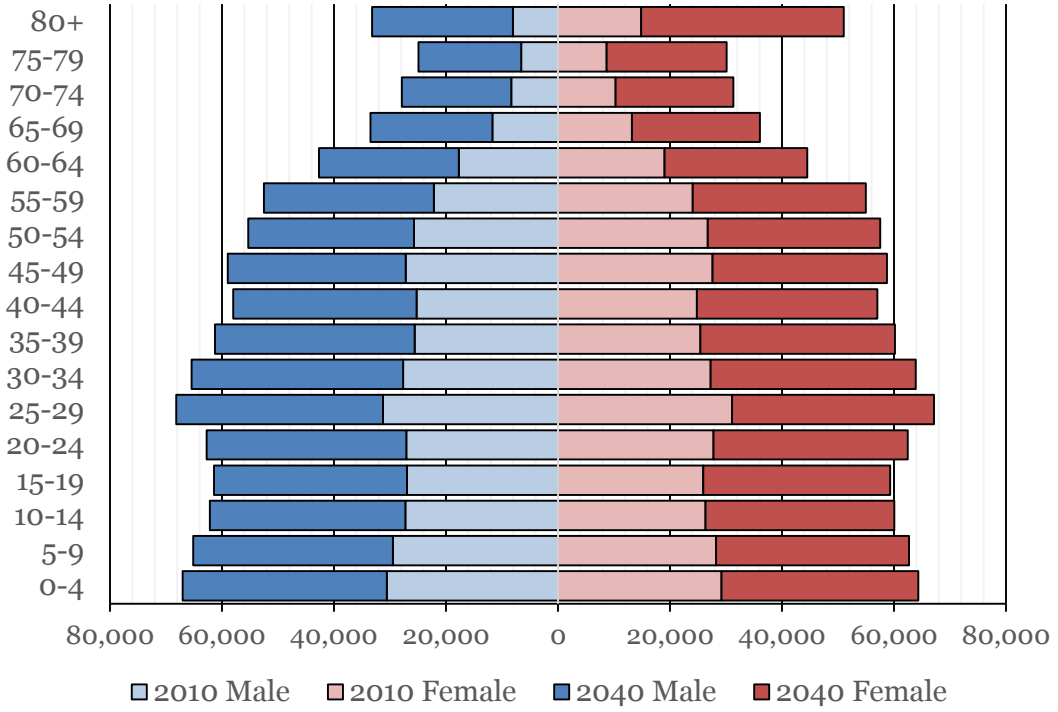


2040 Age Distribution



Source: U.S. Census Bureau and Heartland 2050 Vision

FIGURE 2.12
POPULATION AGE GROUP PROJECTION
COMPARISON OF 2010 TO 2040



Source: U.S. Census Bureau and Heartland 2050 Vision

What ramifications do these population shifts mean for transportation in the MAPA region? Retirees, low income, and minority populations traditionally have driven less and done more of their driving during the off-peak hours. This would indicate that the increase in traffic accompanying future population growth might not grow at a corresponding rate to the overall population. In other words, while the region's population is expected to grow 30% by 2040, it would be reasonable to argue that traffic will not increase by the same amount since less of the population will be in the workforce due to longer life expectancies as well the aging baby boomer generation meaning a higher percentage of retirees, which generates a greater share of the overall trips.

On the other hand, there is a trend among many baby-boomers to not retire completely, but work part-time or work from home. Some have suggested that since baby-boomers' social and economic behaviors have often departed from previous generations, they will also differ by maintaining a greater level of activity into their later years, which could lead to higher traffic levels than those traditionally seen among older age groups.

The aging of the boomers and the low income and minority population will also require more robust transportation options. There is likely to be an increased demand for transit and coordinated mobility services. The American Association of Retired Persons (AARP) has been advocating for policies that are more friendly to non-vehicular modes of travel such as Complete Streets, which is discussed in Section 4. MAPA and area

jurisdictions are working on solutions to meet these challenges, which will only grow in the future.

2.4 Employment in the MAPA Region

The MAPA region is home to a broad array of businesses and industries. Key sectors of the economy include communications, technology, defense, insurance, finance, health care, gaming, professional trades and services, and agriculture among others. The following is a list Table 2.6 of the largest employers in the MAPA area:

Table 2.6
Top Employers in the Greater Omaha Region, 2014

2014 Largest Employers*	Number of Employees
1. Offutt Air Force Base	7,500+
2. Alegent Health	7,500+
3. Omaha Public Schools	5,000-7,499
4. Methodist Health System	5,000-7,499
5. The Nebraska Medical Center	5,000-7,499
6. University of Nebraska Medical Center	2,500-4,999
7. First Data Corp.	2,500-4,999
8. Union Pacific	2,500-4,999
9. HyVee Inc.	2,500-4,999
10. First National Bank of Nebraska	2,500-4,999
11. West Corp.	2,500-4,999
12. Walmart Stores	2,500-4,999
13. ConAgra Foods	2,500-4,999
14. Mutual of Omaha	2,500-4,999
15. Creighton University	2,500-4,999
16. University of Nebraska at Omaha	2,500-4,999
17. Millard Public Schools	2,500-4,999
18. City of Omaha	2,500-4,999
19. PayPal	2,500-4,999
20. Omaha Public Power District	1,000-2,499
21. Baker's Supermarkets	1,000-2,499
22. Omaha Steaks	1,000-2,499
23. Omaha World-Herald	1,000-2,499
24. Target Stores	1,000-2,499
25. Douglas County	1,000-2,499

Source: Greater Omaha Chamber of Commerce

Some jobs have been shed during the recent recession, but new jobs have also been created. Overall, the region's strong economic position has allowed it to weather economic turmoil relatively well and offers many signs that the Omaha-Council Bluffs Metro Area will continue to grow in the next 25 years.

In 2013, there were 457,580 jobs in the Omaha – Council Bluffs MSA. Over 75% of these jobs are located in Douglas County. Downtown Omaha remains the highest concentration of employment in the region. In recent years, the construction of new headquarters for First National Bank and Union Pacific Railroad has helped to solidify the importance of the Omaha central business district (CBD). The addition of residential development, amenities such as Qwest Center Omaha, the new TD Ameritrade ballpark, Holland Performing Arts Center, and Pedestrian Bridge indicate that downtown Omaha is healthy and growing. The City of Omaha completed a Downtown Master Plan that anticipates aggressive growth in the coming decades.

Nevertheless, jobs in the Omaha-Council Bluffs region have followed the decentralization pattern seen in other metro areas throughout the country. This pattern is one in which jobs and employment options are moving from an urban core to decentralized suburban locations. Significant employment centers include the Old Mill and Miracle Hills Business Parks, which are located to the north and south of West Dodge Road between 120th Street and I-680 in Omaha. Many new industries and businesses have located in La Vista near I-80 and West Giles Road.

New hospitals that have been completed or are under construction include Lakeside at 168th and West Center Road, the new Methodist Women's Hospital at 192nd and West Dodge Road, as well as the Bellevue Medical Center at 25th Street and Highway 370. Some new major shopping areas are the Shadow Lake Shopping Center off Highway 370 and 72nd Street in Papillion, Village Pointe at 168th south of West Dodge Road, and the Power Center along the South Expressway south of I-29/80 in Council Bluffs.

2.5 Future Employment in the MAPA Region

By 2040, the MAPA region is expected to have over 562,000 total jobs (see Table 2.7). This represents an increase of over 28%, which is slightly lower than the total anticipated population growth. The majority of these jobs will likely be in Douglas County, although Sarpy County will likely gain an increasing share as it continues to grow over the next 25 years. The total employment in Sarpy County is forecasted to grow by over 99%, from over 60,000 jobs in 2010 to close to 121,464 in 2040.

These forecasts are derived from a methodology that begins with total future population by age cohort. Historical trends and anticipated factors are then applied to forecast future labor participation rates for each employment type by age cohort, which results in the employment forecasts. Furthermore, the local counties and municipalities participated in community mapping meetings to determine the predicted land use and economic growth. In summary, local comprehensive plans, community expertise, data from the US Census were incorporated into Envision Tomorrow software to help determine the future land use and employment growth projections used in this plan.

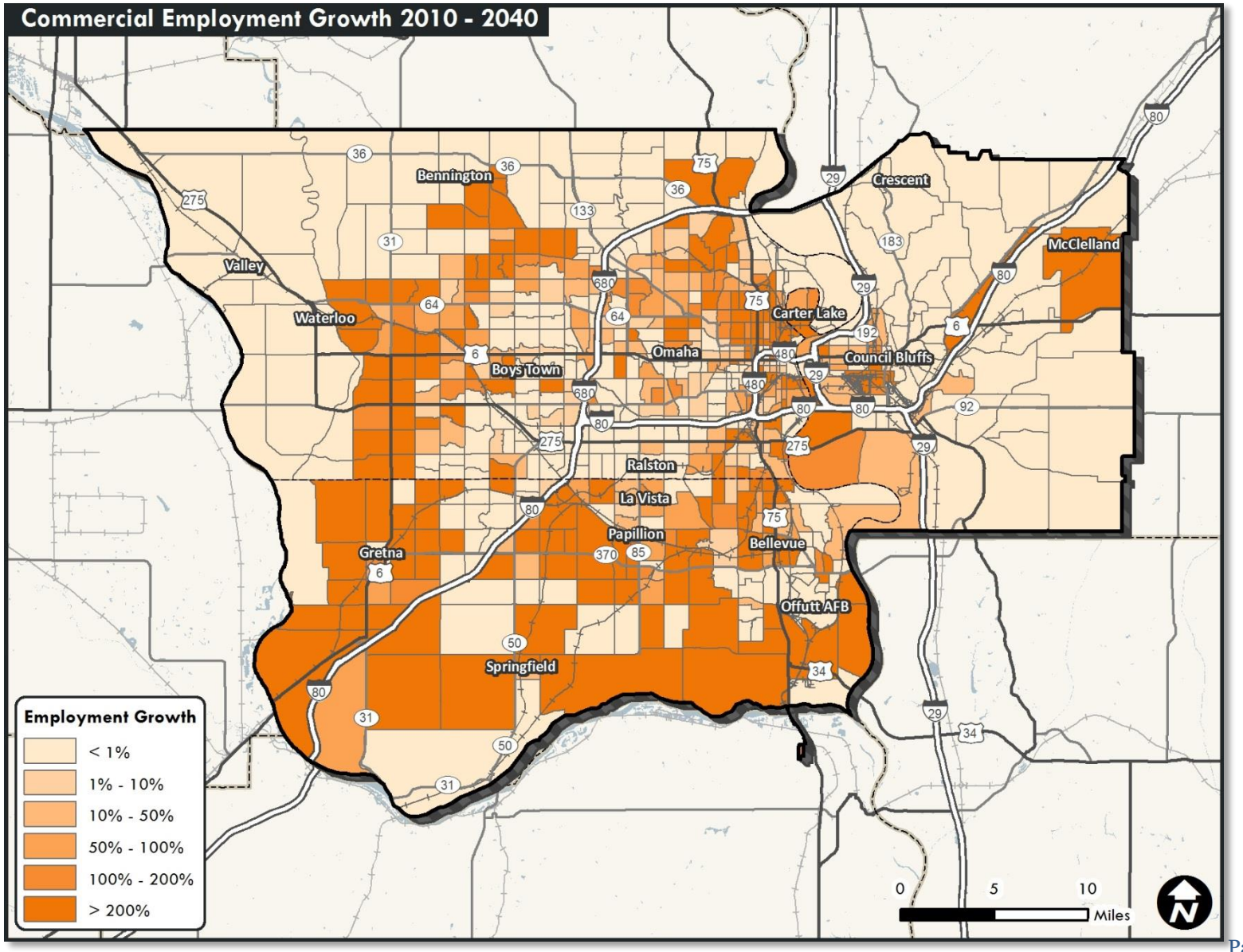
TABLE 2.7
FUTURE JOBS PROJECTION FOR YEAR 2040

County	2010	2020	2030	2040	Percent Growth
Douglas	321,003	346,153	359,610	372,246	15.96%
Sarpy	65,859	89,686	107,464	126,249	91.70%
Pottawattamie	33,939	40,300	42,465	44,359	30.70%
MAPA Total	420,801	476,139	509,539	542,854	29.00%

Source: U.S. Census Bureau and Heartland 2050 Vision

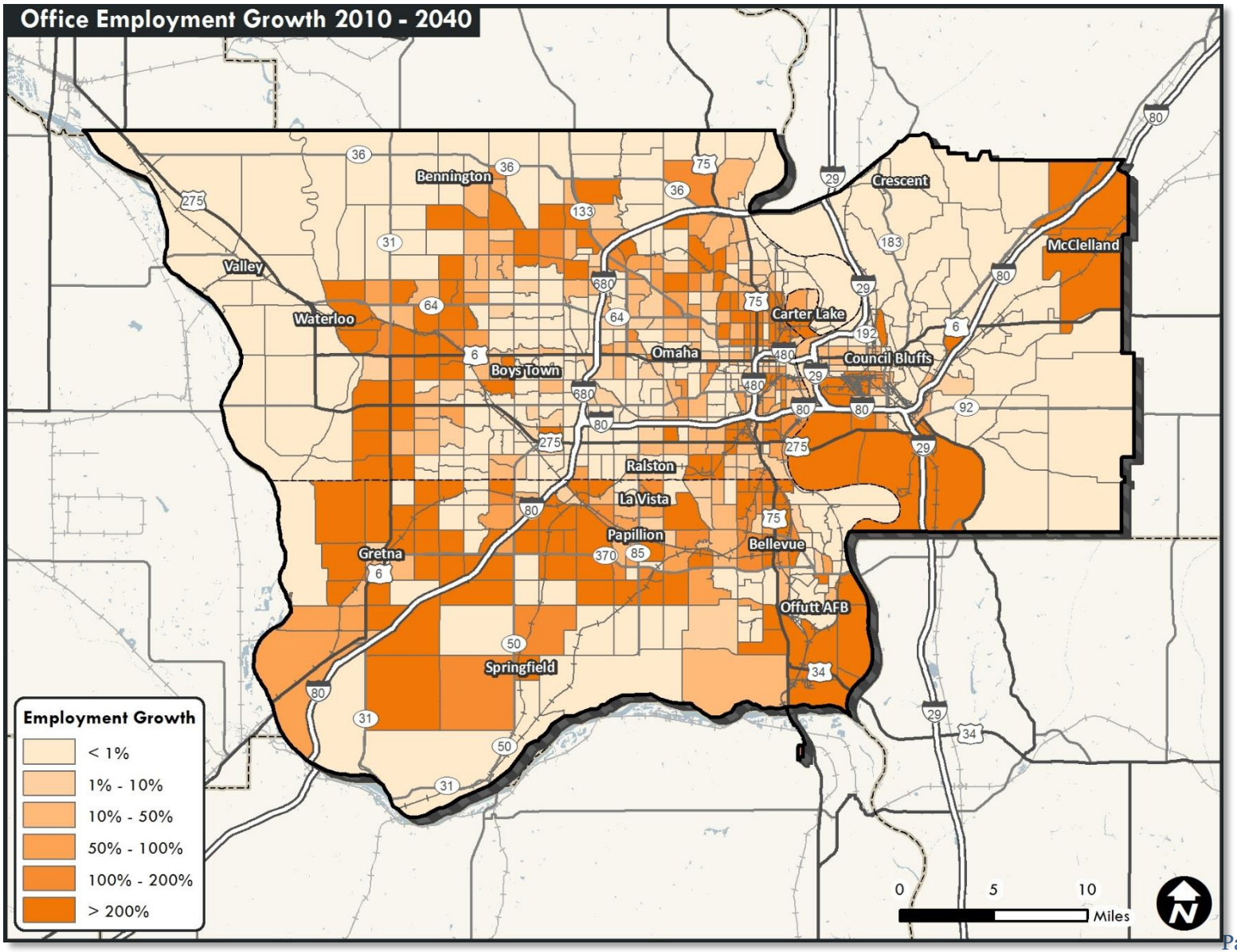
Anticipated future commercial employment growth is identified in Figure 2.13, this anticipated growth is derived from local input and coordination with communities on future growth patterns and where they anticipate this growth to happen. Growth is likely to be well distributed, with clusters of future development along Blair High Road /Highway 133, West Maple Road, West Dodge Road, and West Center Road corridors in Douglas County. Heavy growth in Sarpy County is anticipated near the current and new I-80 interchanges, Highway 370, 144th Street (N-50), as well as significant new development in the Cities of Bellevue, La Vista, and Papillion.

FIGURE 2.13
FORECASTED COMMERCIAL EMPLOYMENT GROWTH 2010 - 2040



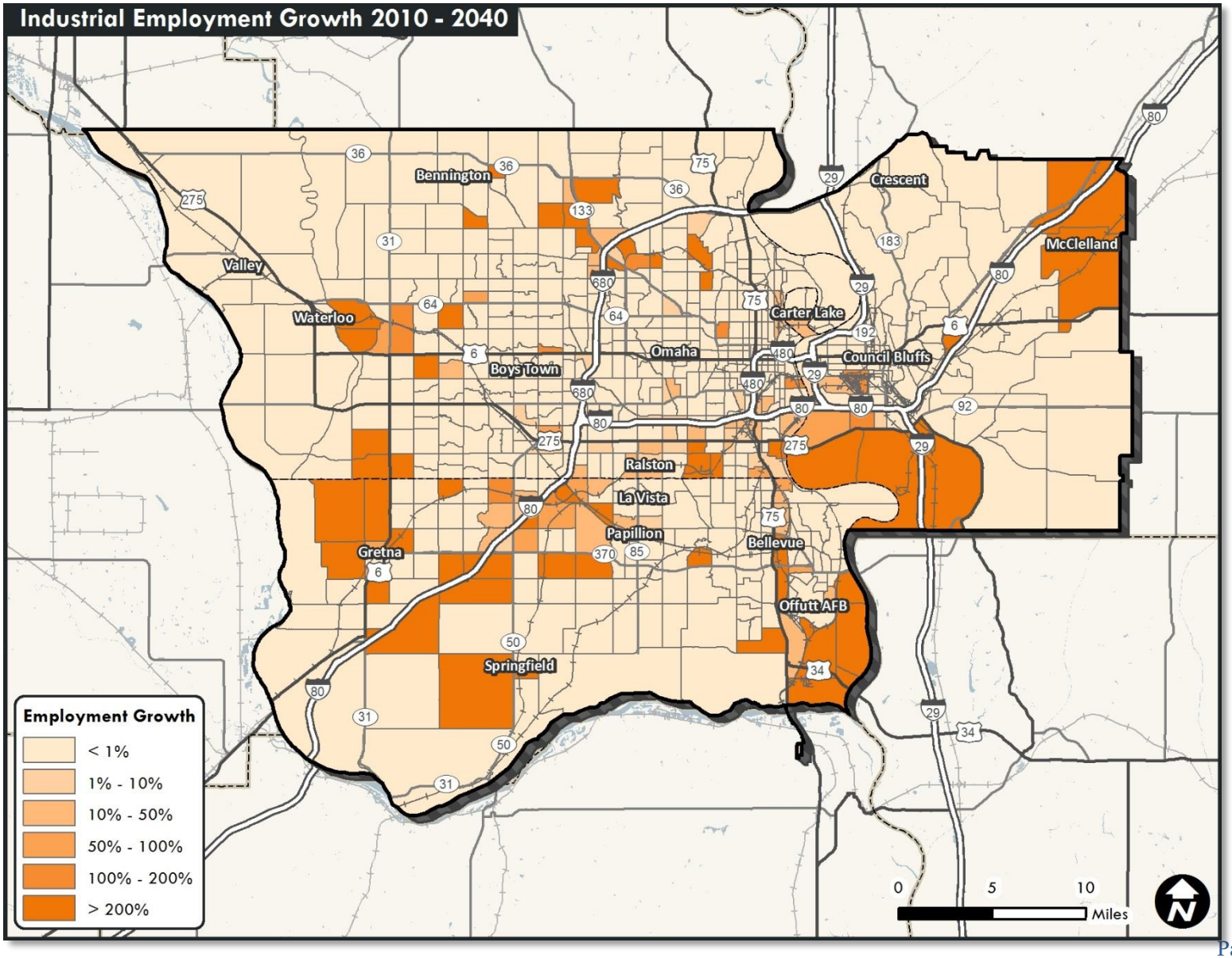
Growth in office employment is limited to a smaller number of locations adjacent to primary transportation arterials (see Figure 2.14). These include the West Dodge Road and West Maple Road corridors, Highway 6/31 in Douglas County, along 72nd Street in far north Omaha, and near the I-80 interchanges in Sarpy County. Smaller areas of office development are also expected in Bellevue, Papillion, Council Bluffs, and developed portions of Omaha.

FIGURE 2.14
FORECASTED OFFICE EMPLOYMENT GROWTH 2010 – 2040



Future industrial employment is slated to occur along a few large industrial corridors throughout the metro area as indicated in Figure 2.15. The largest industrial growth is likely to be located along Blair High Road / Highway 133, along I-80 in Sarpy County, near I-29 in southern Council Bluffs, and along the Kennedy Freeway and Platteview Road near the new US-34 bridge in southeastern Sarpy County. Other industrial growth areas include the Storz Expressway area in the vicinity of Eppley Airfield and various other location sprinkled throughout Omaha and Council Bluffs.

FIGURE 2.15
FORECASTED INDUSTRIAL EMPLOYMENT GROWTH 2010– 2040



The ability to attract workers to fill these future jobs is a concern for area leaders, especially given the gradual retirement of the baby boomer generation in the coming years. Recall the description above on the increase of the average age in the metro area, which points to the assumption that more people will be working in their later years. While the MAPA region was not affected by the 2009 recession as severely as many other areas of the country growth in the Omaha metro region is not as strong as it once was and is not keeping pace with the rates of recovery seen in many other places, posing issues for continued growth for the area.

Regional Goals

3.1 Goals

As the MAPA region plans for the coming 25 years, what principles will guide the development of the region's transportation system? The federal transportation legislation identifies eight planning factors to guide the transportation planning process. The federal planning factors provide a helpful framework for identifying goals and strategies for a region's transportation system. The eight planning factors are listed below:

- "Support the **Economic Vitality** of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency."
- "Increase the **Safety** of the transportation system for motorized and non-motorized users."
- "Increase the **Security** of the transportation system for motorized and non-motorized users."
- "Increase the **Accessibility and Mobility** of people and for freight."
- "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."
- "Enhance the **Integration and Connectivity** of the transportation system, across and between modes, for people and freight."
- "Promote efficient system **Management and Operation**."
- "Emphasize the **Preservation** of the existing transportation system."
- "Improve the resiliency and reliability of the transportation system and reduce **or mitigate stormwater** impacts of surface transportation"
- "Enhance travel and tourism"

Many of these goals are interrelated. For example, accessibility and mobility have a direct bearing on a metropolitan area's economic vitality. If it is convenient to travel and distribute a company's products, then they will be more likely to locate in that region. Similarly, efficient management and operation of the system affect its level of accessibility and mobility. The concerns identified by the eight planning factors can be condensed into four overarching categories related to a region's economic vitality and quality of life. Therefore, this LRTP identifies four general goals for the MAPA region's transportation system:

Transportation System Goals

1. **Maximize accessibility and mobility.**
2. **Increase safety and security.**
3. **Consider the environment and urban form.**
4. **Keep costs reasonable and sustainable.**

3.2 Regional Objectives, Action Steps, and Measures of Success

Objectives have been identified to move toward achieving the regional goals. These are followed by example action steps associated with the objectives for each category. Also listed are example measures of success that can be used to measure the region's progress toward achieving the regional goals.

3.2.1 – Goal #1: Maximize accessibility and mobility.

- Minimize delay and congestion so that the MAPA region's low travel times and convenient travel continue to be an asset in attracting new business and industry
- Build on the metro area's importance as a trucking and rail freight center
- Create viable transportation alternatives (transit, bicycle, pedestrian) that will attract people from communities with strong alternative forms of transportation
- Increase use of ridesharing, carpooling and other programs to improve vehicle occupancy rates
- Promote inter-modalism and connections between different modes of transportation
- Provide transportation opportunities for elderly, disabled, and low-income individuals
- Educate the public on alternate transportation options

  Example Action Steps:

  - Identify needed upgrades in traffic signal technology and communications.
  - Continue to support initiatives like The Omaha Signal Project to improve traffic flow and adaptability.
  - Build cooperative relationships with freight companies to pro-actively collaborate, address their needs, and communicate on a continual basis with municipalities.
  - Develop a major east-west bicycle-only trail and assist in implementing the trail improvements and connections identified in the Bike-Pedestrian Master Plan.
  - Aid in the implementation of Complete Streets on selected corridors as is being done in the City of Bellevue, and suggested in other areas in the Bike –Pedestrian Master Plan.
  - Identify new opportunities for transit service and funding options, as suggested in the Regional Transit Vision Plan and implemented in upcoming projects like the Omaha Bus Rapid Transit Line.
  - Provide capacity improvements to streets and highways where warranted.

- Grow MAPA's on-line Metro! Rideshare carpool and van pool program.
- Study potential new passenger rail options, and develop ways to implement the suggested routes and changes in the Iowa DOT Passenger Rail Study, completed in 2014.
- Develop a regional mobility coordination center to provide more transportation options for the elderly, disabled and low income individuals using grants that MAPA has received to develop a one call center.
- Educate the public about the EPA's ozone standard and the need to lower ozone emissions in the metro area through continuing projects like MAPA's Little Steps Big Impact ozone awareness campaign.

Example Measures of Success:

- Maintain Level of Service (LOS) "D" or better on region's roadways
  See Section Six, Figure 6.9 for today's LOS.
- Maintain average commute time to below 20 minutes
  Commute times in the MAPA region average near 20 minutes.
- Create on-road bicycle facilities and increase the miles of off-road bicycle facilities by at least 25%. For current bicycle facilities, see Section Ten.

3.2.2 – GOAL #2: INCREASE SAFETY AND SECURITY.

- Develop a transportation system that provides a safe environment for all citizens and travelers
- Properly maintain transportation infrastructure
- Minimize exposure to collisions through growing alternative modes of transportation (transit, bicycle, pedestrian)
- Minimize the consequences for collisions that do occur
- Develop and track safety-related performance measures
- Maintain a secure environment to protect transportation assets in the MAPA TMA
- Coordinate with state and federal agencies to use local transportation assets during times of natural disasters, extreme accidents, or terrorist attacks

Example Action Steps:

- Utilize NDOR's District Operations Center (DOC) and other traffic operations centers in the metro area to assist with incident management

- Preserve and improve aging infrastructure
- Continue and grow the Metro Area Motorist Assist (MAMA) program
- Enforce existing laws concerning travel and travel safety
- Respond to weather incidents in a timely and effective manner through cooperation with state and local agencies, specifically NDOR and Iowa DOT Transportation Incident Management (TIM) committees
- Continue committees such as the Southwest Iowa Freeway Team (SWIFT) for more efficient use of freeways through incident management, technology, etc.
- Use Metropolitan Travel Improvement Study (MTIS) and local data to evaluate and suggest corrections for common causes of crashes.
- Use MTIS data to evaluate locations with safety issues and suggest improvements.
- Develop implementation strategies for MTIS recommendations to improved safety measures as they are received.
- Secure support from the public and its elected representatives through education and advocacy for safer transportation facilities.
- Help to implement the Omaha area Local Emergency Operations Plan that was adopted in December of 2014 by the City of Omaha.

Example Measures of Success:

- Decrease the annual number of crashes, especially fatalities.
- Continue and grow working groups that coordinate incident management and emergency response efforts between agencies in the MAPA region.

3.2.3 – GOAL #3: CONSIDER THE ENVIRONMENT AND URBAN FORM.

- Avoid, minimize, and mitigate the negative environmental impacts of the transportation system (*e.g.,* air pollution, noise pollution, water run-off, habitat destruction)
- Retain attainment air quality status as designated by the Environmental Protection Agency (EPA)
- Foster energy conservation through the transportation system
- Increase the mode share of alternative modes of transportation (transit, bicycle, pedestrian) to ten percent of all trips by 2040
- Consider aesthetics and urban form in the design process
- Coordinate transportation investments with land use policies to minimize environmental costs
- Achieve the national designation as a “Bicycle Friendly Community” as conferred by the League of American Bicyclists

- Preserve cultural, scenic, and historic resources

  Example Action Steps:

  - Continue the work that is being done with the Heartland 2050 study and adapt and develop strategies for the region to support many of the findings and suggestions of this study in relation to transportation.
    - Education methods on land use
    - Accessible neighborhoods
    - Alternate Transportation methods and routes
  - Coordinate with public and private groups to prevent violations of air quality standards through the Little Steps Big Impact, work to expand the community connections of this program.
  - Facilitate local and national efforts to create a more balanced, aesthetically-pleasing, and environmentally-friendly transportation system such as 'Green Streets for Omaha', 'Omaha by Design' and 'Live Well Omaha', as outlined in the Bike – Pedestrian Study, Regional Transit Vision, and Heartland 2050.
  - Analyze connectivity of sidewalks in the MAPA region to improve accessibility for pedestrian traffic as stated in the Bike – Pedestrian Plan and outlined in the Bike – Pedestrian Master Plan and later in this document.
  - Promote alternative-fueled vehicles that reduce emissions.
  - Implement funding mechanisms for alternative modes of transportation (transit, bicycle, pedestrian) that have become available through MAP-21 initiatives: increases in STP funding that can now be allocated to the development of alternative modes of transportation and other funding programs which go towards funding new and alternate modes of transportation.
  - Continue efforts for 'Bicycle Friendly' community standards. Work to help bring the Omaha region up from Bronze to Silver and eventually Gold level 'Bike Friendly Community'.
  - Follow, or exceed, federal regulations on projects through Environmental Assessment meetings and input.
  - Refine criteria for the TIP based on the goals for the LRTP.

Example Measures of Success:

- Promote increased population density for the MAPA region.
  Currently, the Census-defined Omaha urbanized area averages approximately 2,400 persons per square mile (see Section Four).
- Remain in "attainment" air-quality status (*i.e.,* not exceed national ambient air quality standards set by the EPA).

- Maintain or reduce *per capita* vehicle miles traveled (VMT).
  Today, average *per capita* VMT for the Omaha-Council Bluffs metro area is 22. (See Section Six, Figure 6.6)
- Increase the percentage of trips taken by non-vehicular mode of transportation.
  Single-occupancy vehicles and carpools comprise approximately 94% of work trips in the MAPA region. (See Section Six, Figure 6.2)

3.2.4 – GOAL #4: KEEP COSTS REASONABLE AND SUSTAINABLE.

- Maximize the useful life of the streets, highways, bridges, and related transportation devices of the transportation system
- Utilize management strategies and technologies to maximize street and highway efficiency
- Incorporate and coordinate transportation improvements with existing and planned future land use to minimize infrastructure costs
- Efficiently utilize financial resources and investigate new potential revenue sources.
- Coordinate transportation activities across jurisdictional boundaries where appropriate

Example Action Steps:

- Utilize Transportation Asset Management (TAM) strategies to maximize system performance and minimize life-cycle costs.
- Continue programs like the Omaha Signal Project and Intelligent Transportation Systems (ITS) architecture updates to improve traffic flow and decrease congestion.
- Continue Transportation Systems Management (TSM) committee to coordinate infrastructure construction and planning in the MAPA TMA.
- Explore alternate financing options for transportation funding (vehicle mileage road user fees, toll roads, private financing, user fees, fuel taxes, etc.) in the metro area
- Continue transportation-related studies and projects such as traffic signal coordination or safety studies on a multi-jurisdictional or regional basis to more efficiently use resources.
- Continue to improve project development process between local, regional, state and federal agencies to reduce costs and increase the speed of project delivery.

Example Measures of Success:

- Using asset management principles to reduce long-term roadway maintenance costs, increase the percentage of mileage with “good” or better pavement condition.

Currently, 84% of the rated roadways in the MAPA region are rated “good” or “very good”. (See Section Five, Figure 5.6)

- Using asset management principles to reduce long-term infrastructure costs, reduce the percentage of bridges rated “poor” or “fair”.
  20% of bridges in the MAPA region are rated as such today. (See Section Five, Figure 5.10)
- Utilize and evaluate benefit-cost analysis in major projects.

3.3 SYSTEM PERFORMANCE REPORT

Effective May 20, 2017, a series of related Transportation Performance Management (TPM) rules established a set of performance measures for State Departments of Transportation (State DOT) and Metropolitan Planning Organizations (MPOs) to use as required by MAP-21 and the FAST Act. These safety performance measures carry out the HSIP and assess fatalities and serious injuries on all public roads.

The Safety PM Final Rule establishes five performance measures as the five-year rolling averages to include:

1. Number of Fatalities
2. Rate of Fatalities per 100 Million Vehicle Miles Traveled (VMT)
3. Number of Serious Injuries
4. Rate of Serious Injuries per 100 Million VMT
5. Number of Non-motorized Fatalities and Non-motorized Serious Injuries

3.3.1 – SAFETY PERFORMANCE MEASURE TARGETS

The Safety Performance Management Measures regulation supports the Highway Safety Improvement Program (HSIP) and requires State Departments of Transportation (DOTs) and Metropolitan Planning Organizations (MPOs) to set HSIP targets for these five safety performance measures. MPOs must establish their HSIP targets by February 27 of the calendar year in which they apply.

MPOs establish HSIP targets by either:

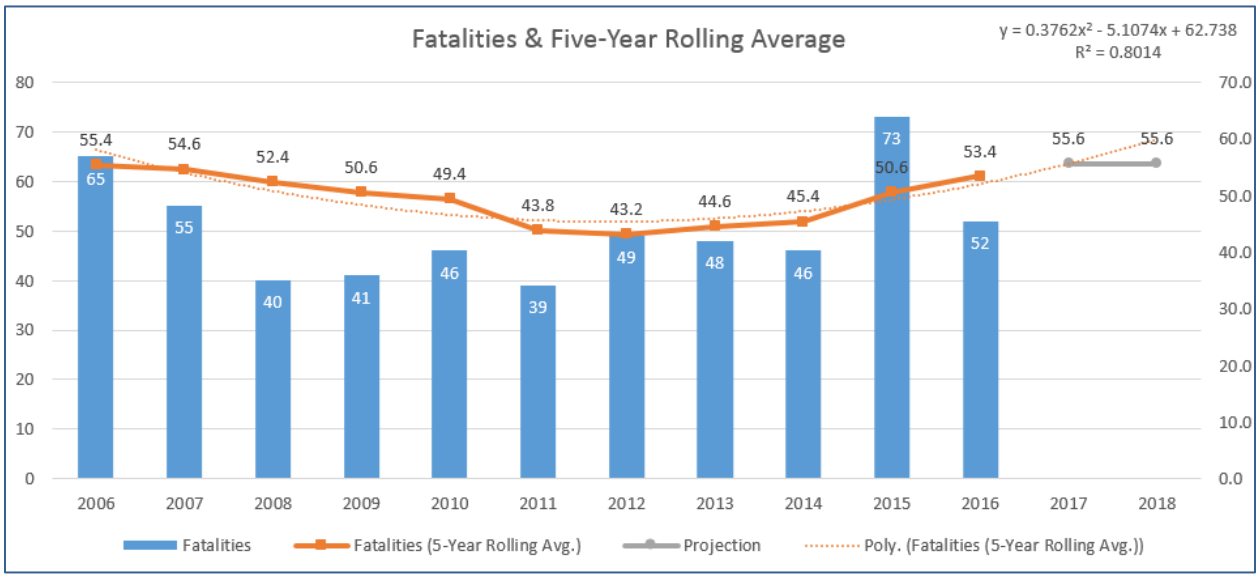
1. Support the State HSIP Target; or
2. Establish its own HSIP Target.

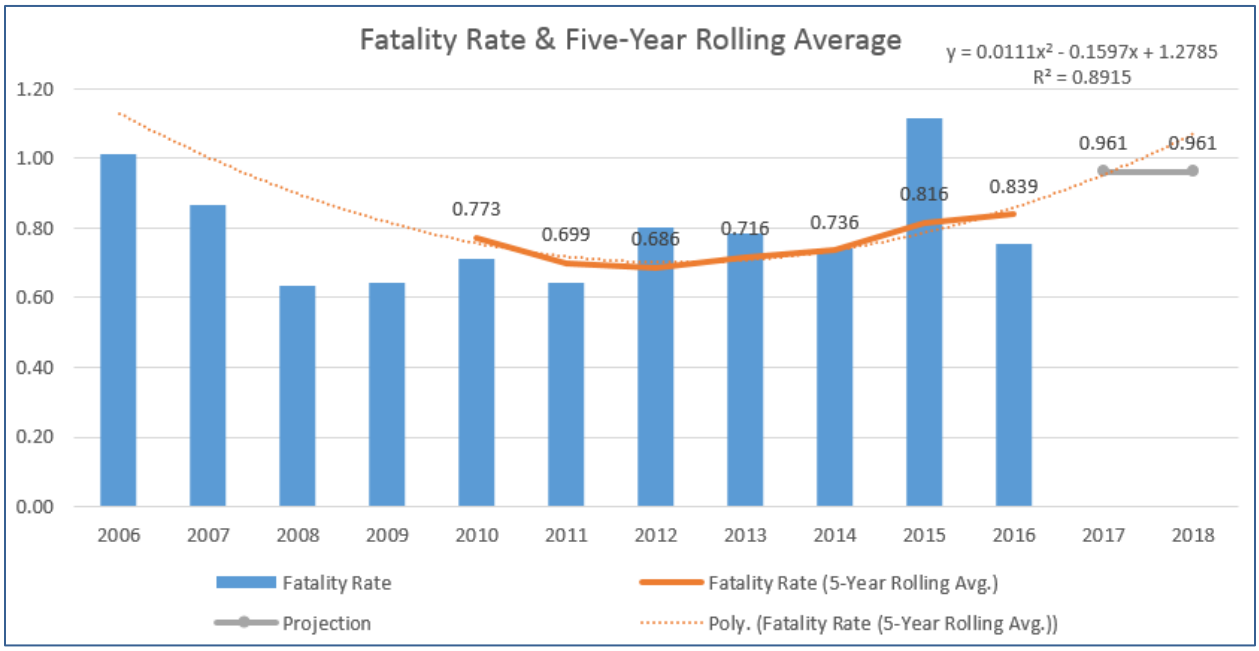
As a result of the stakeholder process, MAPA elected to establish its own HSIP targets for safety performance measures, and as a bi-state MPO, MAPA coordinated with both the Nebraska Department of Transportation (NDOT) and the Iowa Department of Transportation (Iowa DOT) in the process of adopting its own region-wide targets. Targets for the MAPA region were identified using VMT estimates for all public roads within the planning area to establish rate targets. These targets have since been integrated into the metropolitan transportation planning process and include a description of the anticipated effect of the TIP toward achieving HSIP targets in the MTP, linking investment priorities in the TIP to these safety targets.

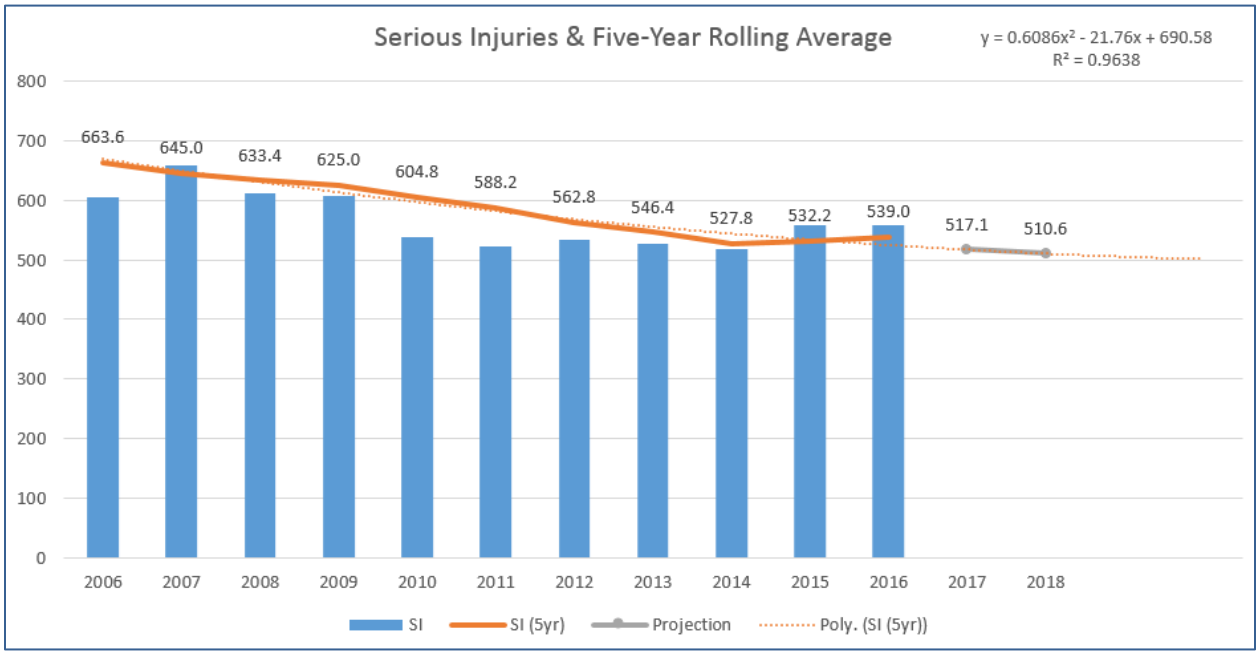
MAPA will coordinate with both NDOT and the Iowa DOT on the manner in which they will report targets to the respective state agencies. A systems performance report evaluating the condition and performance of the transportation system with respect to the safety performance targets described in the MTP including progress achieved by MAPA in achieving safety performance targets will be produced annually by MAPA to NDOT and Iowa DOT.

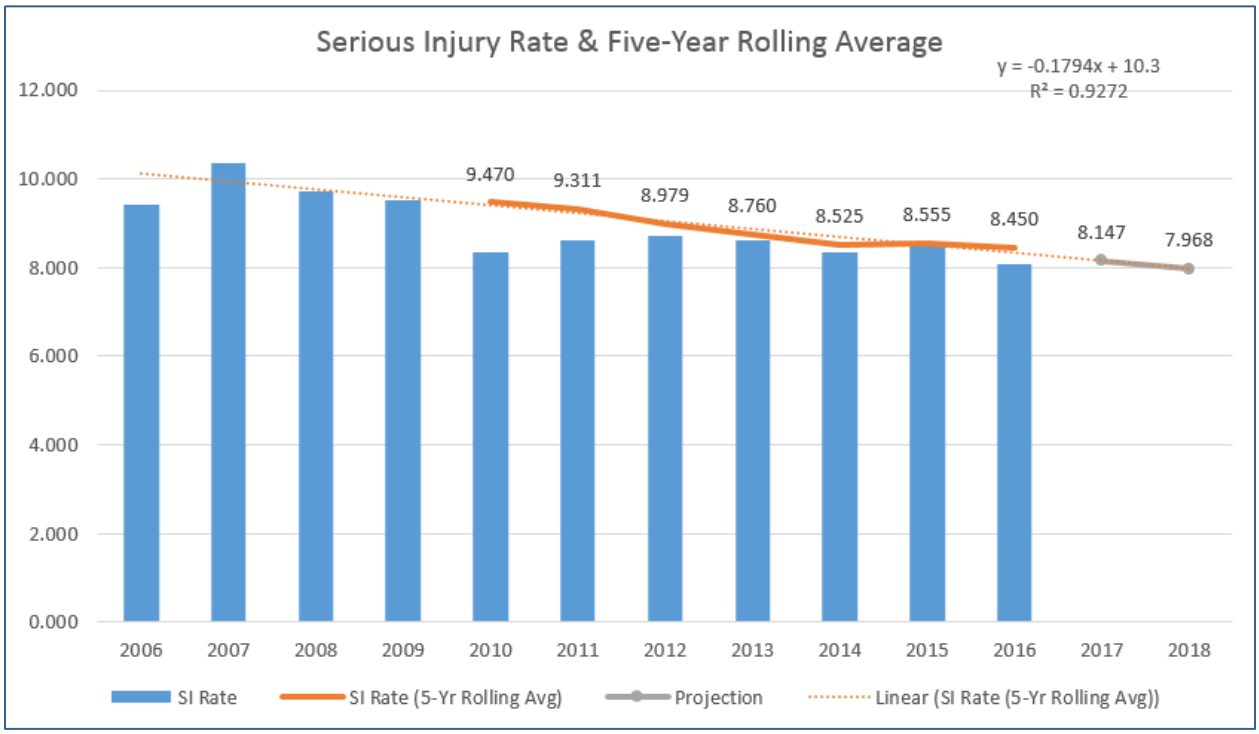
The following safety performance measures have been adopted by the MAPA Executive Board:

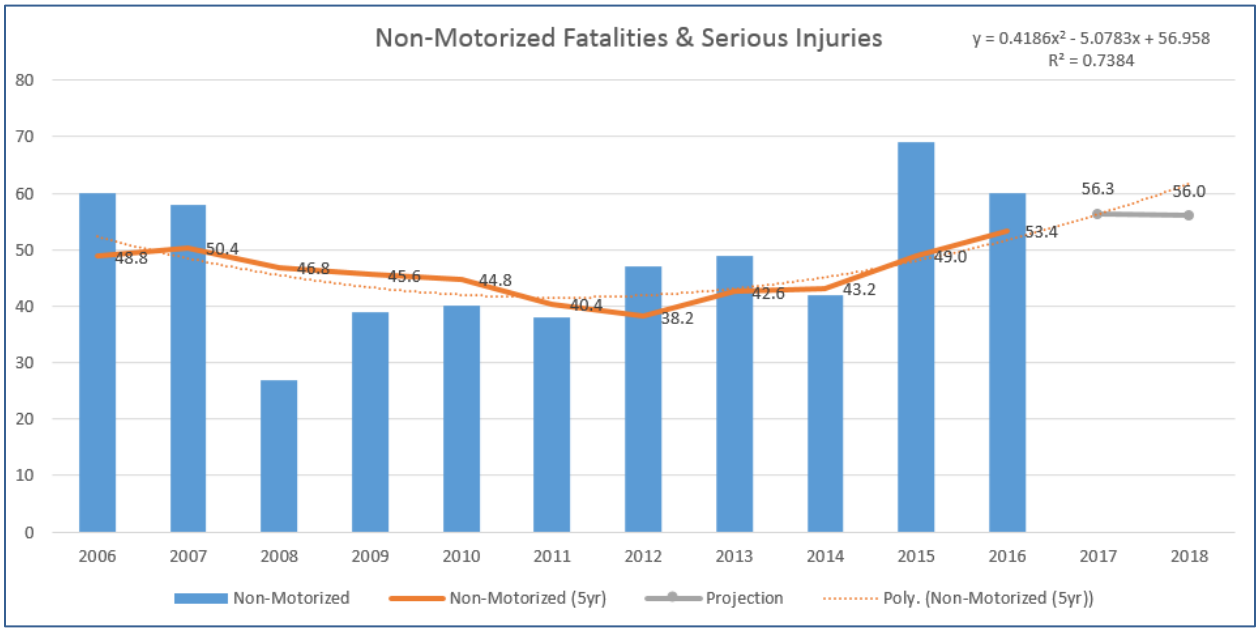
Safety Performance Measure Summary		
	5-Year Rolling Average	
Category	**2012-2016**	**2014-2018**
	Baseline	Anticipated Target
Fatalities (#)	53.4	55.6
Fatality Rate	0.839	0.961
Serious Injuries (#)	539.0	510.6
Serious Injury Rate	8.450	7.968
Non-Motorized (# Fatal & Serious)	53.4	56.0


Fatalities & Five-Year Rolling Average
y = 0.3762x² - 5.1074x + 62.738
R² = 0.8014
80
70
60
50
40
30
20
10
0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
55.4
54.6
52.4
50.6
49.4
43.8
43.2
44.6
45.4
50.6
53.4
55.6
55.6
65
55
40
41
46
39
49
48
46
73
52
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
Fatalities
Fatalities (5-Year Rolling Avg.)
Projection
Poly. (Fatalities (5-Year Rolling Avg.))


Fatality Rate & Five-Year Rolling Average
y = 0.0111x² - 0.1597x + 1.2785
R² = 0.8915
1.20
1.00
0.80
0.60
0.40
0.20
0.00
0.773
0.699
0.686
0.716
0.736
0.816
0.839
0.961
0.961
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
Fatality Rate
Fatality Rate (5-Year Rolling Avg.)
Projection
Poly. (Fatality Rate (5-Year Rolling Avg.))


Serious Injuries & Five-Year Rolling Average
y = 0.6086x² - 21.76x + 690.58
R² = 0.9638
800
700
600
500
400
300
200
100
0
663.6
645.0
633.4
625.0
604.8
588.2
562.8
546.4
527.8
532.2
539.0
517.1
510.6
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
SI
SI (5yr)
Projection
Poly. (SI (5yr))


Serious Injury Rate & Five-Year Rolling Average
y = -0.1794x + 10.3
R² = 0.9272
12.000
10.000
8.000
6.000
4.000
2.000
0.000
9.470
9.311
8.979
8.760
8.525
8.555
8.450
8.147
7.968
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
SI Rate
SI Rate (5-Yr Rolling Avg)
Projection
Linear (SI Rate (5-Yr Rolling Avg))


Non-Motorized Fatalities & Serious Injuries
y = 0.4186x² - 5.0783x + 56.958
R² = 0.7384
80
70
60
50
40
30
20
10
0
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
48.8
50.4
46.8
45.6
44.8
40.4
38.2
42.6
43.2
49.0
53.4
56.3
56.0
Non-Motorized
Non-Motorized (5yr)
Projection
Poly. (Non-Motorized (5yr))

Future Growth and Livability

4.1 Introduction

With population in the three-county MAPA TMA expected to exceed one million residents by 2040, the region will continue to be dramatically shaped by new growth and development. Mounting concerns surrounding the costs of infrastructure, protecting the environment, and providing a quality urban form are leading to new emphasis placed on "livability" and "sustainability."

Livability and sustainability are directly affected by transportation and land use elements. Transportation and land use are also interrelated. Since travelers use the transportation system in order to arrive at a specific destination, it can be said that land use affects transportation. However, the transportation system also has an influence on development, since a location's accessibility affects its market value and appropriate land use. In spite of these connections, transportation and land use planning processes occur independently, and may not be fully coordinated. If transportation and development projects are undertaken without consideration of one another it can produce unforeseen consequences that cause more congestion and higher costs.

Creating a sustainable transportation system means designing future projects in more environmentally-friendly, multi-modal ways. Sustainable roadways incorporate amenities such as green spaces and planters. Trails and sidewalks provide important connections for non-vehicular transportation and should be a key part of the transportation system.

Efforts to create more livable and sustainable communities are at the forefront of national and local planning discussions. In the MAPA region, this is visible in recent local comprehensive plans, most notably the Heartland 2050 Plan, the Omaha by Design study, the Green Streets for Omaha plan, and the MAPA Beltway Feasibility Study, to name a few. Area leaders and citizens are discussing and implementing ways to make the metro area sustainability and livability.

4.2 Livability Defined

Livability is most commonly understood as the quality of life experienced by residents within an area. The quality of life can be measured by things such as accessibility, equity, and participation. The quality of life of residents in a city or region can be affected by the city infrastructure, availability and affordability of necessities (such as food and housing), the availability of meaningful employment, and the ability to feel as if input in major decisions is possible for their area. These factors work together to create a livable city with economic, social, cultural, and environmental surroundings that helps to enhance the lives and livelihood of residents.

The federal government also speaks of livability in terms of providing alternatives to the automobile for transportation. Secretary of Transportation, Anthony Foxx has called for an emphasis on bike and pedestrian measures in connection with creating more livable sustainable communities with the DOT's Safer People, Safer Streets action plan, "This initiative is aimed at reversing the recent rise in deaths and injuries among the growing number of Americans who bicycle or walk to work, to reach public transportation, and to other important destinations, definable places for folks to travel however they're traveling…Everyone is a pedestrian"

In the MAPA region, the automobile is anticipated to remain the primary mode of transportation. Some critics have expressed concerns that this emphasis on multi-modalism and land use will detract transportation agencies from their primary responsibility to provide for the efficient movement of people and goods.[1] Nevertheless, the federal government and others' concerns regarding the dominance of the automobile in American transportation merit specific attention.

4.3 CURRENT CONCERNS

It is said that Americans love their cars and the MAPA region is no different. The automobile allows a high degree of mobility and convenience that drivers enjoy. Since automobiles became the dominant mode of travel, our growth patterns have largely developed around the car. For the foreseeable future, this is likely to continue.

However, the auto-oriented development that has ruled since the post-World War II era is not without problems. The following summarize some of the primary concerns with the prevailing form of development.

Dependence on Gasoline

In the past decade the price of gasoline has fluctuated wildly, occasionally topping $4 a gallon. Faced with this severe shock, many travelers began looking for alternatives in numbers not seen since the energy crises of the 1970s. Commuters took transit, carpooled, and reduced the number of vehicle trips in significant amounts. Traffic counts showed decreases in many locations and gas tax revenues fell. School districts were forced to quickly supplement their budgets to provide for busing, while many farmers, truckers, some of whom were able to change over to Compressed Natural Gas or liquefied natural gas, others took losses or passed on costs to consumers. While much of this behavior has leveled out there is still concern over the instability of oil prices and the continuing dependence on foreign oil.

This experience brought increasing attention to the nation's dependence on fossil fuels, over the past few years oil process have fluctuated wildly, any future rises in gas prices

[1] *cf.* O'Toole, Randal, "Roadmap to Gridlock: The Failure of Long-Range Metropolitan Transportation Planning." Cato Institute Policy Analysis No. 617. May 27, 2008.; Barnes, Fred. "Coercing People Out of their Cars" *The Weekly Standard* Vol. 16 No. 8 November 8, 2010; Will, George "Why Ray LaHood is Wrong", *Newsweek* May 16, 2009.

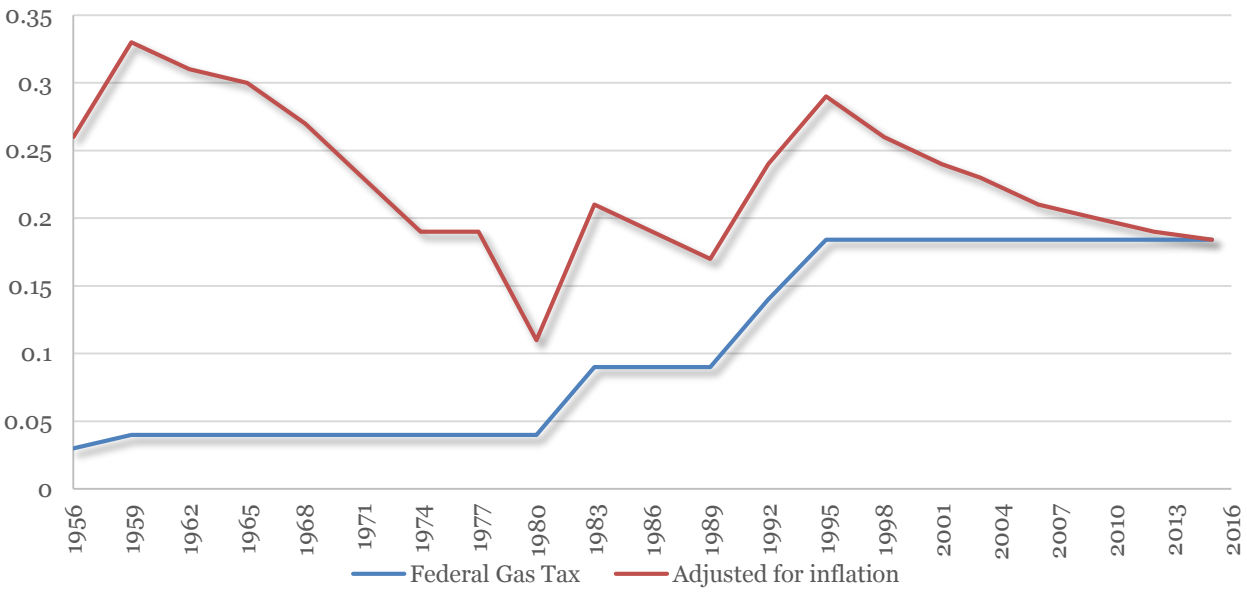
can quickly create financial hardship for many lower and middle-income people, who often have few feasible transportation options beyond the motor vehicle. In spite of many efforts to improve alternative fuels and alternative modes of transportation, our economy and society remain highly dependent on readily available and affordable petroleum-based fuels. Given the United States' tenuous political relationship with many other leading oil-producing nations, the dependence on oil created by an auto-dependent transportation system can leave the U.S. vulnerable from an economic and national security perspective. Identifying alternative energy sources and developing a more robust multi-modal transportation system have taken on increased importance as the Omaha region confronts changing air quality standards which may force substantial changes in gas composition and pricing; as well as changes to car emission standards.

Infrastructure Costs

The rising costs of infrastructure are an increasing concern for governments facing increasing budget constraints. Inflation in the construction sector has outpaced that of other portions of the economy, creating barriers to continued economic recovery.

At the same time, there is little to no political support for raising the federal fuel tax, which has remained at 18.4 cents/gallon since 1993. States have modestly increased fuel taxes, but overall revenues have not kept pace with inflation or construction costs.

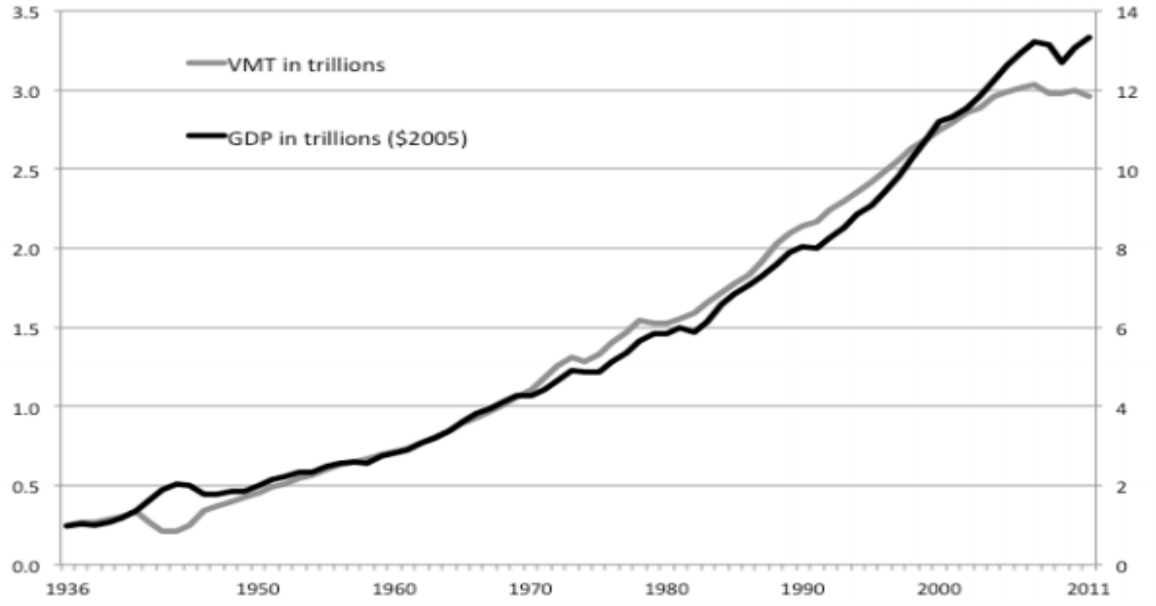
FIGURE 4.1
HISTORIC FEDERAL GAS TAX, 1946 – 2015



Source: AASHTO Transportation Finance Clearinghouse
http://www.transportation-finance.org/funding_financing/funding/federal_funding/motor_fuel_taxes.aspx

In addition, the nationwide supply of roadway capacity has not kept pace with demand. Setting aside the environmental and societal concerns listed here, it is questionable whether jurisdictions have the ability to provide the necessary capacity that a near exclusively auto-centric transportation system requires. Since new lane miles constructed do not match the population growth, let alone growth in VMT. Due to persistent revenue shortfalls, a multi-modal, multi-faceted approach should provide a more effective and balanced transportation system.

FIGURE 4.2
TOTAL AUTO AND TRUCK VMT (TRILLIONS) AND GDP ($ TRILLIONS) SINCE 1936



Source: FHWA Exploring the Relationship between Travel Demand and Economic Growth Report, http://www.fhwa.dot.gov/policy/otps/pubs/vmt_gdp/vmt_gdp.pdf

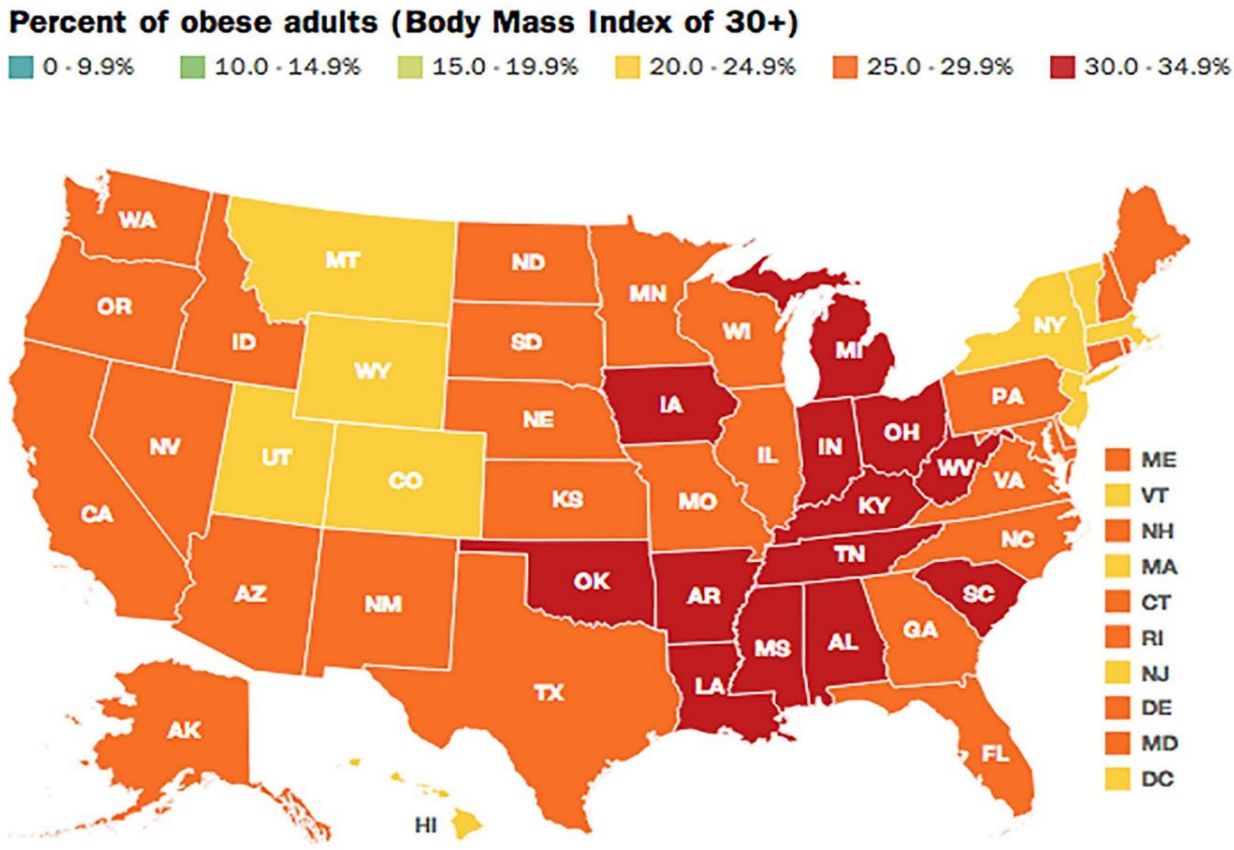
Health and Wellness

The United States is facing a myriad of health concerns. The U.S. ranks among the highest in obesity rates worldwide, as illustrated by Figure 4.3. Many have pointed to the sedentary lifestyle associated with auto-oriented development as a primary factor in this epidemic. Bicycle and pedestrian-friendly communities such as Minneapolis-St. Paul and New York City tend to score higher on health statistics due to higher levels of physical activity. In locations where non-auto travel is difficult or infeasible, health problems are aggravated because physical exercise is not as easily incorporated into daily activities.

Obesity rates are particularly troubling among younger Americans. Many indicators suggest that the current youngest generation will have shorter life spans than their parents on average. The Centers for Disease Control and Prevention (CDC) now recommends healthy community design, active transportation and public

transportation, and good air quality in order to promote public health. These troubling signs will be a factor in the development of the future transportation system.

FIGURE 4.3
NATIONWIDE OBESITY RATES



Source: Trust for America's Health

Organizations and communities in the MAPA region such as Live Well Omaha and county health departments are working to improve health in the metro area. In the spring of 2010, Douglas County was awarded a 5.7 million dollar grant to fight childhood obesity. Some of the money will be used for transportation related projects such as community trails, more parks and green spaces, as well as an update to the Transportation Element of the City of Omaha Master Plan with special emphasis on active transportation.

Increasing Retirees

The growing number of senior Americans will dramatically rise in the coming years as the members of the baby-boomer generation enter retirement. Many elderly people are

unable to drive or do not own a motor vehicle. Therefore, increasing transportation options is of particular importance to this segment of the population.

In recognition of this, seniors' organizations have taken an interest in transportation and community design. For example, AARP is strongly promoting the Complete Streets approach to road design. Given the high growth of this population segment in the coming decades, the accessibility of the transportation system will continue to be a major issue of concern.

Environment

Motor vehicle transportation results in emissions that decrease air quality. Pollutants caused by vehicles include carbon monoxide (CO), nitrous oxides (NO_x), sulfur oxides (SO_x), hydrocarbons, volatile organic compounds (VOC), and particulate matter (PM).

Ground level ozone (O_3) is currently of particular concern to the MAPA region. Ozone is the result of the combination of NO_x and VOCs. Recent studies show that humans are more negatively impacted by ground-level ozone pollution than previously understood, which has led the EPA to reduce the ozone standard. Given this reduction, the MAPA region is in danger of falling into non-attainment air quality status if ozone levels reached at some points in the past decade are reached again. MAPA is coordinating with the Nebraska Department of Environmental Quality (NDEQ), Iowa Department of Natural Resources (IDNR), and local jurisdictions in a public education and outreach effort, like our Little Steps Big Impact Campaign, to reduce ozone and mitigate going into non-attainment. The standards were announced to be updated in the fall of 2015.

If the metro area receives a non-attainment designation, this can have major implications on economic development. Additionally, offsetting technology and measures will need to be put into place to reduce the level of O_3 in the air. Go to www.LittleStepsBigImpact.com for more information on this important issue for the area.

There is also concern about the impact of greenhouse gases (GHGs) in affecting climate change. Motor vehicles produce carbon dioxide, which are presumably partly responsible for increases in carbon dioxide levels in the atmosphere.

As will be discussed in the following segment, decentralized, auto-oriented development also consumes a large amount of valuable farm land that is needed to grow crops and resources. Transportation and land use should be coordinated to minimize development on "greenfields," which is previously undeveloped land.

Auto makers are starting to introduce new alternative-fueled cars into the market. Currently there are some commercially available options already in existence such as ethanol / E-85, compressed natural gas (CNG), and hybrid electric vehicles such as the Toyota Prius and Honda Insight, and the Nissan Leaf among many other models. The introduction of cleaner, 'greener' vehicles will help to mitigate some of aforementioned environmental concerns associated with auto-oriented development.

4.4 URBAN FORM & TRANSPORTATION

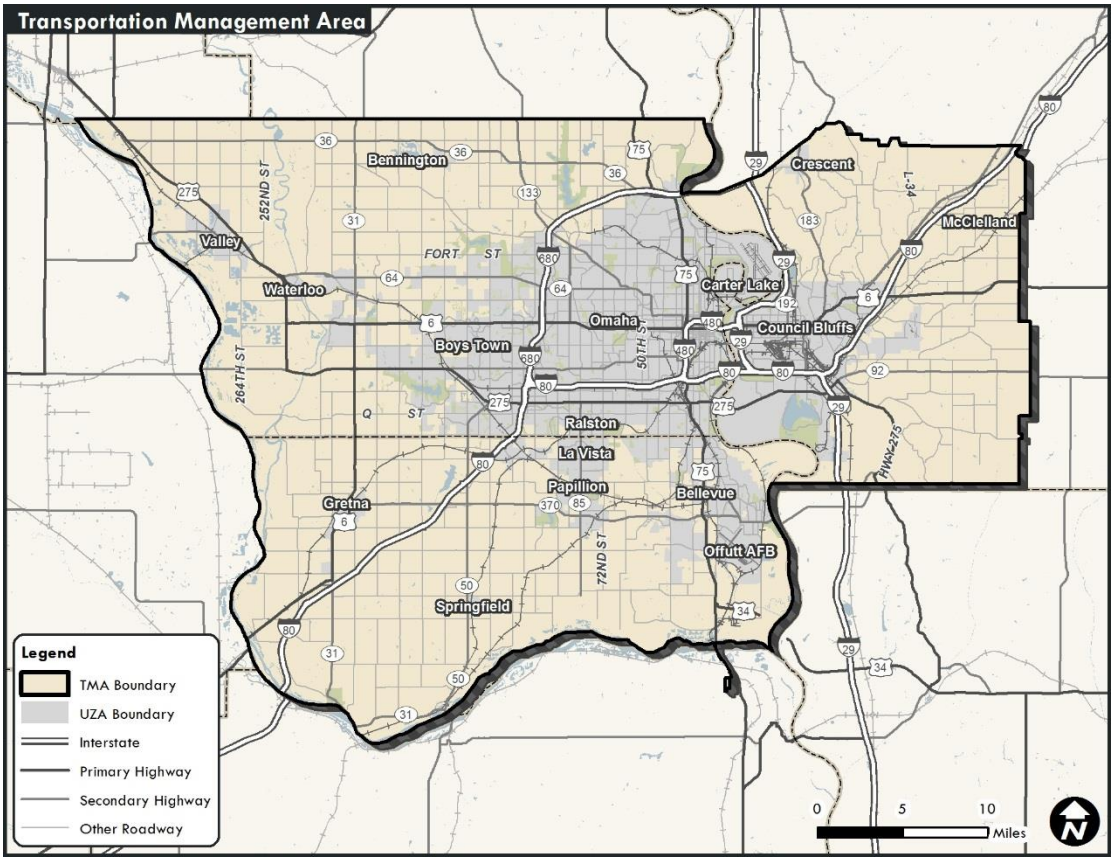
The transportation system influences the character and shape of the region's urban form. For instance, the role of transportation in decentralization is often cited. In this scenario a new high speed facility such as a freeway or commuter rail line is constructed that decreases travel times between a distant suburb and an urban employment center. This causes the suburban area to become a more viable option for commuters. Developers and elected officials respond to the new market demand and create new residential areas, which is followed by retail and commercial services to support the residents. In this example, the new transportation facility became the catalyst to the land use development.

However, the opposite can also occur. A new suburban area might be highly desirable for any number of reasons (*e.g.,* good school district, political boundary, attractive development, etc.), but not have the transportation infrastructure necessary to support the development. Congestion occurs as the population grows, and transportation improvements become necessary to provide for the residents' needs. In this case, the development occurred independent of transportation and the infrastructure must be incorporated later.

Due to the concerns cited above surrounding low-density, auto-oriented development, there are many efforts to increase population densities. This would reduce land consumption and make alternative transportation modes more viable. The City of Omaha and the Omaha by Design organization undertook a policy initiative called "Environment Omaha," which included an Urban Form and Transportation portion. This plan called for Omaha to increase population density from the current 3,218 people per square mile to 4,500 people per square mile within 20 years. This would be a reversal of recent trends which have led to a sharp decline in density; in 1950, the City of Omaha had a population density of approximately 6,000 people per square mile.

Urbanized areas are regions defined by the Census Bureau with concentrated development. Specifically, the Census Bureau used the threshold of core Census blocks with a population density of at least 1,000 people per square mile and surrounding census blocks that have an overall density of at least 500 people per square mile. The green lines on Figure 4.4 shows the urbanized area in the greater Omaha-Council Bluffs area.

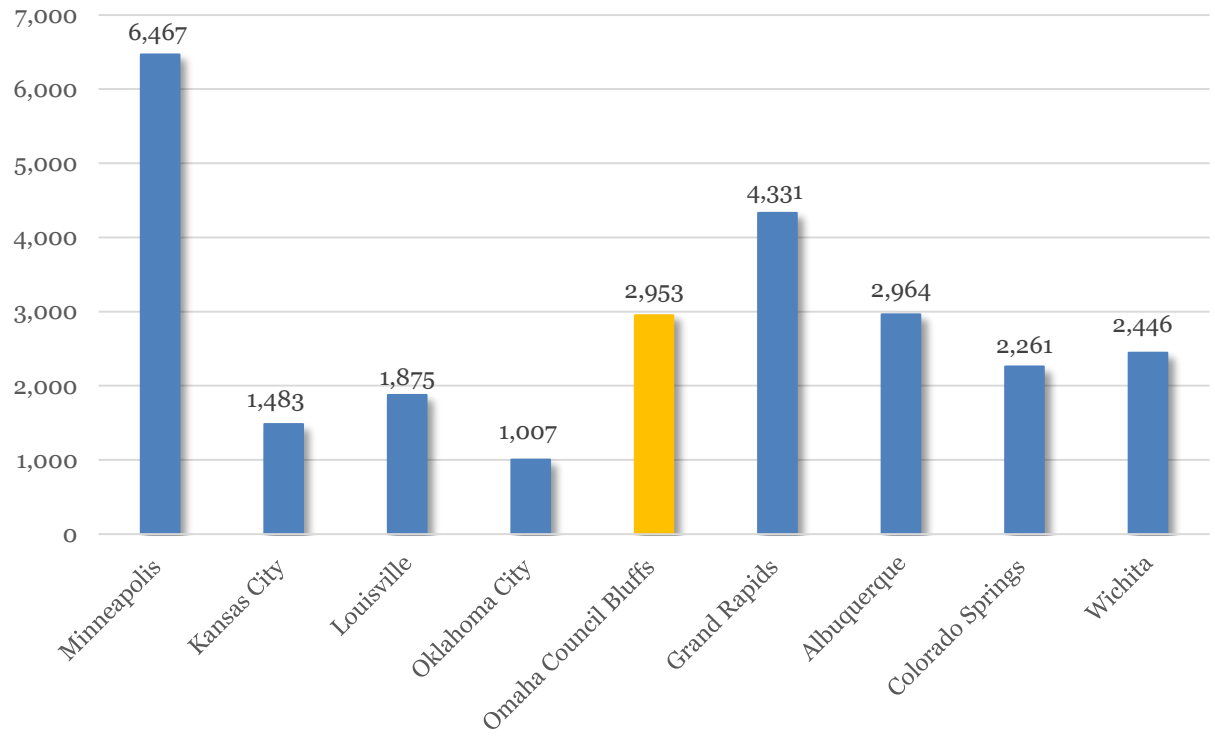
FIGURE 4.4
OMAHA-COUNCIL BLUFFS URBANIZED AREA BOUNDARY



Urbanized area boundaries are often used to measure population densities, because larger definitions of metropolitan areas often include large amounts of rural land. Urbanized areas give a more accurate picture of population density within the developed portion of a region.

The population density in 2010 for the Omaha-Council Bluffs urbanized area was 2,368 people per square mile. This is nearly 900 people per square mile less than the density for the City of Omaha alone cited above. When compared to some peer regions, the Omaha-Council Bluffs urbanized area has a higher population density than our peer urbanized areas, as illustrated in Figure 4.5:

FIGURE 4.5
POPULATION DENSITY (PER SQUARE MILE) VS. PEER REGIONS[2]



Source: US Census Bureau

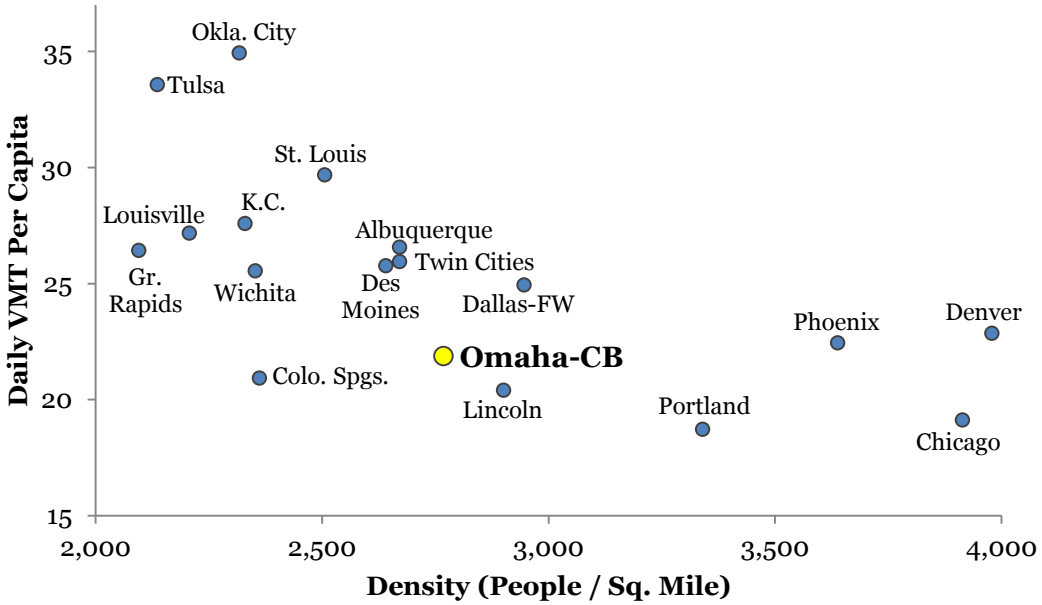
Population densities tend to be higher in the MAPA region than many peer regions due to a multitude of factors. Nebraska State law grants metropolitan class cities (*i.e.*, the City of Omaha) broad annexation powers relative to many other states. The City of Omaha has used this authority to annex formerly autonomous cities such as Benson, Millard, and, most recently in 2007, the former City of Elkhorn. This annexation policy has provided the City with the tools necessary to maintain a contiguous development pattern, and avoided "leapfrog" style development (far-flung islands of development that are not adjacent to existing development) frequently seen in other metro areas. The City of Omaha uses the provision of infrastructure in addition to zoning regulations to control development in this manner. Also, lot sizes in most subdivisions in the MAPA region are relatively modest and large lot (acreage) development is somewhat limited.

Population densities typically affect the amount of vehicle miles traveled (VMT) in a region. Where densities are higher, trip origins are closer together, which results in shorter car trips and makes alternative modes of transportation such as mass transit more effective. Consequently, VMT tends to be lower than in areas with lower population densities.

[2] 2013 American Communities Survey, U.S. Census Bureau, 2014

This relationship is confirmed statistically when population densities are compared with *per capita* VMT for various metro areas. In Figure 4.6 these numbers are shown for the Omaha-Council Bluffs urbanized area and the peer regions that have been used in other figures, as well as other metro areas that are included for the sake of comparison. Note the overall trend downward and to the right, indicating that as population density increases*, per capita* VMT tends to decrease:

FIGURE 4.6
VMT PER CAPITA VS. DENSITY - PEER REGION COMPARISON



Source: Regional Transit Vision

While the urbanized portion of the MAPA TMA is already more densely populated than many similarly-sized regions, increasing population densities will help the metro area achieve its goal of creating a more balanced, multi-modal transportation system. This will create benefits for the environment, improving public health, and reducing many costs of infrastructure that accompany auto-dependent development.

On the other hand, while drivers tend to drive less as densities increase, this reduction can be offset by more drivers competing for the same road space. Therefore, in the absence of robust transportation alternatives, higher population densities can exacerbate congestion.[3] The majority of travel in the MAPA TMA for the foreseeable future will continue to be done by motor vehicle, since this occurs even in metro areas with robust alternative transportation options. Consequently, attempts to create a more balanced transportation system should not impede the regional goal of maximizing accessibility and mobility.

[3]Paul Sorensen, "Moving Los Angeles," *Access* 35 (Fall 2009): 16-24.

4.5 Multi-Modal Developments

There are many actions that communities can take to create developments that are more amenable to alternative modes of transportation. 50% of all trips are three miles or less and over 25% of trips are one mile or less. However of these trips under one mile, 65% are taken by motor vehicle. It is also worth noting that a full one-third of Americans cannot drive. This includes about 20% of Americans over 65, all children under 16, and many disabled and low income Americans who cannot afford automobiles. In order to create a transportation system that serves the needs of all residents, communities in the MAPA region should be truly multi-modal.

By following the following action steps, cities and counties can design developments to accommodate all modes of transportation:

Connectivity

- Sidewalks and trails should connect to nearby developments, shopping areas, and access to mass transit.
- Incorporate context sensitive or Smart Growth principles in the street circulation network and functional classification as proposed by CNU-ITE.[4]
- Shorten block lengths and limit cul-de-sacs as long, isolated streets discourage walking.
- On longer blocks, dedicate right-of-way for pedestrian connections between lots.
- Connect any parks, commons, or green spaces with sidewalks and trails.

Walkability

- Make streets safer for pedestrians by lowering speeds through narrowing streets, reducing speed limits, and using other traffic calming techniques.
- Provide separation between streets and sidewalks, especially on streets with higher speeds (greater than 25 mph).
- Plant trees between sidewalk and street to provide shade and buffer pedestrians from traffic.
- Provide good disability access to streets in all directions.

[4] Brian Bochner & Fred Dock, "Street Systems and Classifications to Support Smart Growth," 2nd Urban Street Symposium (Anaheim, CA), July 28-30, 2003.

Bicycle-Friendly

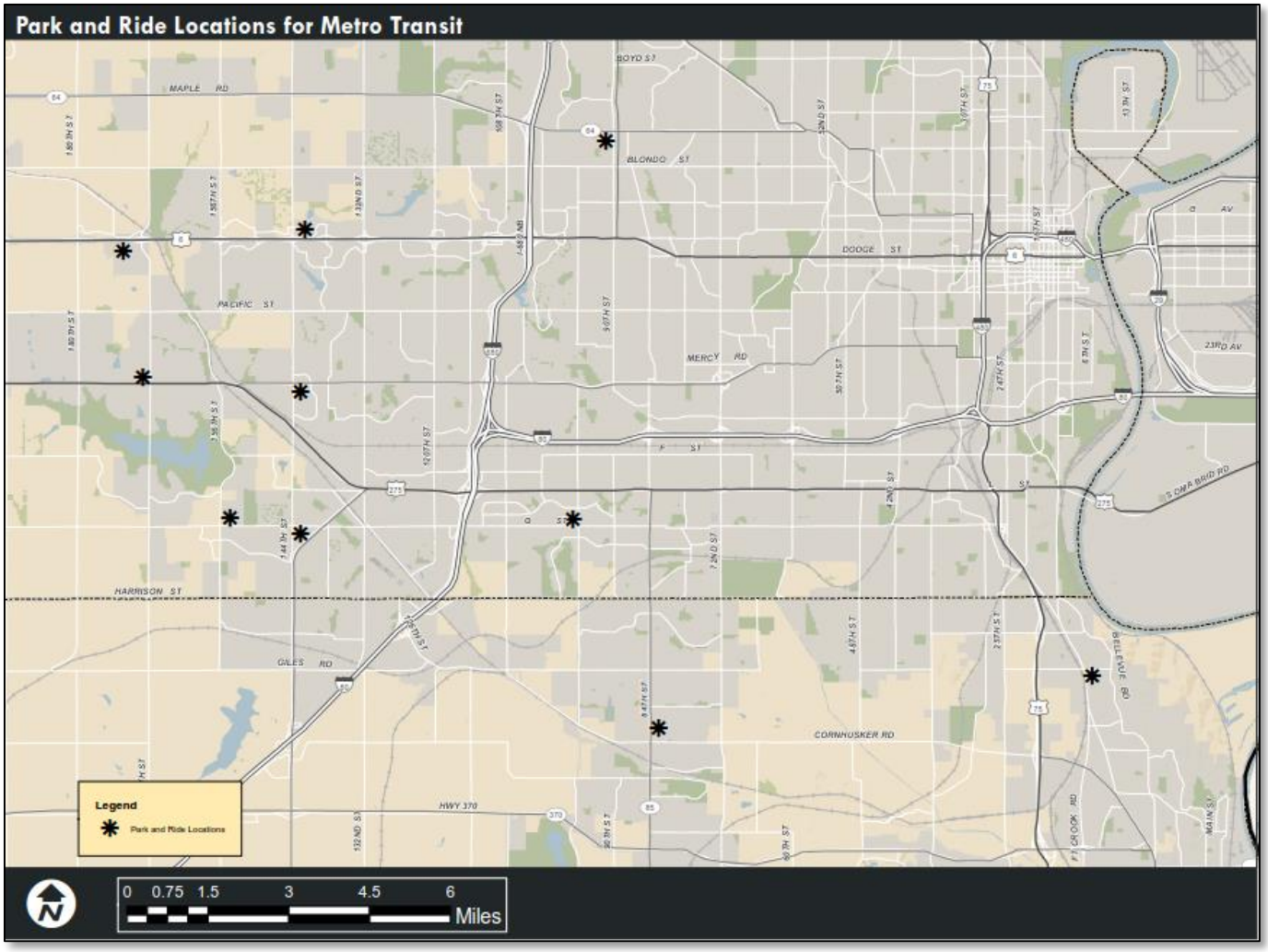
- Construct wide sidewalks (5' or wider) where possible, especially on "collector" streets that connect to external arterial streets or parks and schools within the development.
- Identify bicycle routes with signs and striping on the road such as "sharrows."
- On higher traffic facilities, give consideration to creating segregated bike lanes.

Transit-Friendly

- Incorporate transit-oriented development (T.O.D.) principles, such as integrating transit stops into new mixed-use centers.
- Create "transit-proximate development" by clustering higher density development within reach of mass transit.
- In suburban areas with lower densities, work with local transit agencies to provide innovative transit uses such as circulators,, and bus rapid transit (BRT) lines that are more appropriate to suburban or exurban contexts.

- Currently there are several Park and Ride Lots in the Omaha Area that serve many of the denser suburban areas a map of which is included in Figure 4.7.
- Iowa DOT identified two candidate park and ride locations within the MAPA TMA in their 2014 Park and Ride System Plan (accessed at http://www.iowadot.gov/iowainmotion/park_ride.html). The two candidate locations are listed below
    - I-29/U.S. 275/Iowa 92 (Council Bluffs)
    - I-29/I-680 (Crescent)

FIGURE 4.7
METRO TRANSIT PARK AND RIDE LOCATIONS



4.6 COMPLETE STREETS

"Complete Streets" is a term used nationally to describe the transformation of vehicle dominated thoroughfares in urban and suburban areas into community oriented streets that safely and conveniently accommodate all modes of travel, not just motorists. Complete street concepts include considerations for better accommodation of all roadway users using the following elements:

- Roadways are designed to relate to their context and land use objectives
- Safer and more convenient walkways, sidewalks, and crosswalks
- Safer and more convenient bikeways
- Access management to improve public safety and reduce congestion (see more in Section 5.5)

- Mixed land uses that have direct frontage to the street and provide easier access for non-motorized modes of travel (especially in urban areas)

Transforming major urban thoroughfares into complete streets is complicated, requiring a diverse range of skill sets and broad support from the community. Fortunately, other metropolitan areas have demonstrated success stories that have been translated into guiding documents.[5] Successful complete street transformations require community support and leadership, as well as coordination between various disciplines. It is also important to have an interconnected network of major and minor streets with some redundancy in traffic capacity on parallel major streets.

Complete Streets principles Complete Street and New Urbanism inspired developments including pedestrian and bike friendly streets, continuous sidewalks, and mixed use zoning, have been done in several areas in Omaha including:

- Village Pointe
- Midtown Crossing
- Akasrben Village
- The Shops of Legacy

4.6.1 STREET REALMS

Complete streets can be viewed in terms of three basic zones or realms.

Context Realm

[5] Detailed guidance comes from a joint effort of the Institute of Transportation Engineers and Congress for the New Urbanism. Best practices have been published as "Context-Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities."

The context realm of a complete street is defined by the elements that frame the major roadway. Identifying distinct qualities of the context realm requires focusing on several key areas. Consideration should be given to all of the following with modifications as appropriate to fit the specific context of the area.

- *Building Form and Massing:* To enhance an already high quality street design and new buildings should be placed close to the street in order to frame the public space.
- *Architectural Elements:* Consider building placement adjacent to the major roadway.
- *Transit Integration:* Land use and zoning policies should foster transit-oriented development (TOD) and increase access to alternative modes of travel.
- *Site Design:* The complete street truly is integrated into the surrounding environment when the interface between the site and the street is complementary to the pedestrian environment created along the entire corridor.

Pedestrian Realm

The pedestrian realm of a complete street extends between the outside edge of sidewalk and the face-of-curb located along the street. Safety and mobility for pedestrians within this realm is predicated upon the presence of continuous sidewalks along both sides of the street built to a sufficient width for accommodating the street's needs as defined by the environment.

Recommended design elements for promoting a healthy pedestrian realm generally focus on one of four areas of concentration: pedestrian mobility, quality buffers, vertical elements, and public open space. Together, these best practices can be implemented in both urban and suburban environments, to varying degrees, for promoting healthy pedestrian environments.[6]

- *Pedestrian Mobility:* The presence of a comprehensive, continuous pedestrian network serves as the foundation for fostering a walkable community that supports active transportation and mode choice. Sidewalks provide clear zones to accommodate pedestrian travel.
- *Quality Buffers:* Providing separation between pedestrians and moving traffic greatly enhances the character of the pedestrian realm.
- *Vertical Elements:* Vertical elements traditionally incorporated into the pedestrian realm include street trees, pedestrian-scale street lighting, and utilities.
- *Public Open Space:* Specific design elements incorporated into the pedestrian environment should reinforce the area as a public space and provide opportunities for visitors to enjoy the character of the corridor.

[6]Institute of Transportation Engineers, "Recommended Practice: Context-Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities," 2006.

Travelway Realm

The travelway realm of a street is defined by the pavement area that traditionally accommodates the travel or parking lanes needed to provide mobility for bicycles, transit, and automobiles sharing the transportation corridor. Recommended design elements incorporated into the travelway realm serve to achieve greater balance between travel modes sharing the corridor and favor design solutions that promote human scale for the street and minimize pedestrian crossing distance.

- *Multimodal Corridors:* Balance between travel modes within the same transportation corridor fosters an environment of choice for mobility that could lead to reduced congestion on major roadways and a healthier citizenry.
- *On-Street Bicycle Lanes:* Bicycle lanes (typically 5 to 6 feet wide) should be considered for designated bike routes when vehicle speeds range from 35 to 45 miles per hour.
- *Median Treatments:* Medians are often incorporated into the travelway realm to provide dedicated left turn lanes, opportunities for landscaping, and pedestrian refuge at crossings.

Geometric Design in Walkable Urban Areas

An important goal of the Complete Streets approach is creating "walkable" or "livable" communities. While some traffic facilities such as freeways and principle arterials are designed for the primary purpose of moving large amounts of vehicle traffic quickly, Complete Streets recommends features that often reduce travel speeds along corridors that have been identified for bicycle and pedestrian travel.

In 1996, the Federal Highway Administration (FHWA) published Flexibility in Highway Design, a guide that provides methods and examples of ways to balance safety and mobility with environmental, cultural, and historical concerns. Furthermore, in 2006 the Institute of Traffic Engineers in cooperation with the FHWA, the U.S. Environmental Protection Agency and the Congress for New Urbanism developed a proposed recommended practice for designing major urban thoroughfares for walkable communities. Geometric design in urban areas should utilize the inherent flexibility contained within existing design guidelines to achieve greater compatibility between transportation and land use.

The following proposed geometric design variables can be incorporated to calm traffic in multi-modal corridors and create walkable urban areas.

- "Design Speed" can be more closely related to the "Actual Speed" reducing the need for overcompensation for errant driving typical for highways.
- Consider design for slower vehicular traffic which would provide smoother flow of vehicles for a safer and more effective traffic flow.
- Consider Road Diets on thoroughfares with available vehicle capacity or too little pedestrian or bicycle capacity. Road diets should be used to balance the needs for multiple modes when necessary.
- Sometimes a slight reduction in level of service may be necessary to accommodate efficiencies in other modes.
- Consider design for a "dense grid network" with suitable block length for pedestrian activity. Traffic modeling should include analysis for the dense grid infrastructure.
- Eliminating free flow right turn lanes should be a consideration.
- Curb extensions can be provided at intersection to shorten pedestrian crossing distance.
- Consider maintaining and/or providing on-street parking to calm traffic and buffer the sidewalk areas.
- Consider utilizing street trees and or a continuous row of pedestrian scaled lighting to narrow the perceived width of the roadway section in order to calm traffic.
- When bike lanes are provided it may be beneficial to use wider outer lanes to accommodate a striped bicycle lane while providing a narrower vehicle lane. The effective lane width serves a dual function of calming vehicle traffic and improving vehicle facilities**.** Bicycle lanes also provide for emergency snow storage during the seasonal extremes.

4.6.2 GREEN STREETS

The MAPA TMA is very street heavy. Omaha alone has over 2,000 miles of streets. Because streets are such a large portion of total public space in the MAPA area, many are finding it vital to make sure streets and corridors are attractive, functional, and efficient.

To help address this need, the Green Streets approach has been adopted. The Green Streets approach for the MAPA TMA includes:

- Improved traffic safety
- Increasing property values
- Increased pedestrian and bicycle access
- Better storm water management
- Upgraded development
- Better image and community marketing

A main view in the Green Streets approach is to consider the function of streets (to move traffic and people) in combination with creating a designed environment that is a positive public space. This can be done in several ways: adding foliage and other green elements to the space, road dieting, etc.

To help address the need for Green Streets in the area a task force has been formed. This group will aid in the process of establishing a Green Streets plan, present standards, and establish a process to help key decision makers implement Green Streets in the area.

There are already some Green Streets in the MAPA TMA. One example is Farnam Street from 10th to 13th Streets. However, many streets can be improved. When contrasting Farnam to Cuming Street from 30th Street to Saddle Creek Road, the differences in environment and look are noticeable.[7]

For more information on Green Streets for Omaha, go to www.OmahaByDesign.Org.

4.6.3 COMPLETE STREETS POLICY FOR THE MAPA REGION

With the adoption of last LRTP, the Regional Transit Vision and the Bike – Pedestrian Plan there have been a number of priority corridors identified. Future project based on these plans can implement the use of complete street principals and promote alternative

[7] RDG Planning and Design, "Green Streets for Omaha," 2008.

modes of transit including pedestrian and bike usage. With the continued development of the Heartland 2050 Plan and growing interest in areas like Midtown, Dundee, OldMarket, Aksarben Village and other mixed use developments the MAPA region will likely see an increase in the construction and renovation of walkable and bike able areas. After selection of these corridors, any projects in these corridors could be designed in accordance with Complete Streets principles and considerations. This includes establishing bicycle and pedestrian ways in new construction and reconstruction projects, unless the cost would be excessively disproportionate to the need or probable use or if additional right-of-way creates an unreasonable impact upon adjacent land use.

MAPA will strive to provide opportunities for local engineers and planners to participate in training in Complete Streets and Context Sensitive Solutions approaches. Future planning efforts should identify desirable areas to "retrofit" with a Complete Streets approach, which limits costs compared to user benefits. This policy leaves open the possibility to implementing Complete Streets on a region-wide basis at a later date, should it be required by federal law or desired by the MAPA region.

Beyond the policy set forth in this update of the Long Range Transportation Plan, other important policy documents that should reflect complete street policies or enabling language include:

- Local Comprehensive Plans
- Local Transportation and "Green Streets" Plans
- Area Plans (for the applicable area served by the complete street)
- Park Master Plans (if adjacent to the corridor)
- Economic Revitalization/ Development Strategies
- Urban Design Standards
- Internal Departmental Policies and Procedures

4.7 Future Growth Scenarios

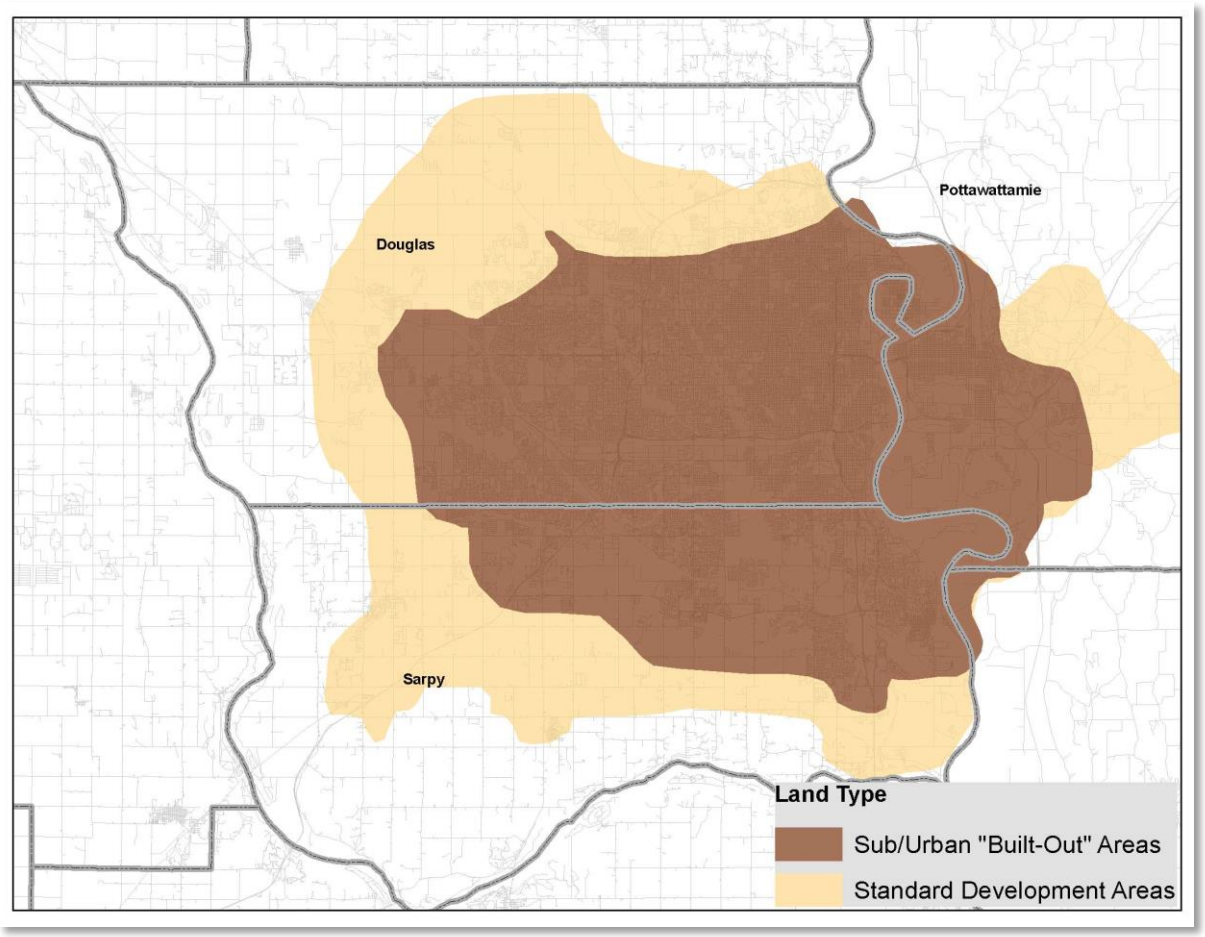
In MAPA's Metro Beltway Feasibility Study, completed in March 2010, several future growth scenarios were developed and analyzed. The assumptions for each scenario are explained below:

Status Quo

Future development and densities follow the local comprehensive plans in the region. These plans show some increases in densities and mixed use developments, but do not differ dramatically from development that has been constructed in recent decades. The

assumed densities in this scenario are approximately 3 units per acre. This scenario is the basis of the socio-economic projections utilized in MAPA's travel demand model discussed in Section 7. Figure 4.8 shows a map of Future Land Uses gathered from local comprehensive plans in the MAPA TMA:

FIGURE 4.8
STATUS QUO LAND USE SCENARIO

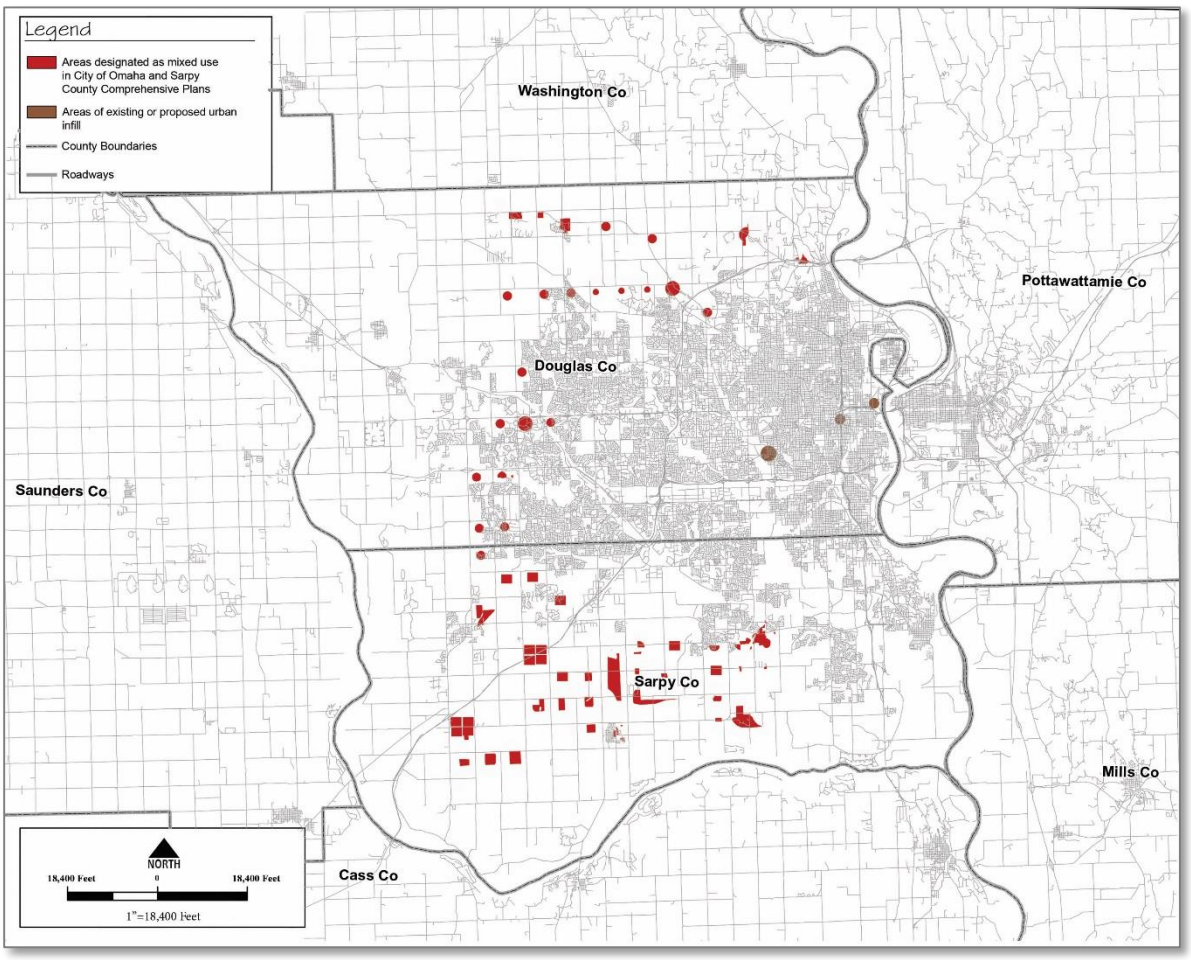


Targeted Density

This scenario includes clustering higher density development around mixed-use nodes. The overall densities for this scenario are about 5 units per acre. Nationwide trends have seen an increase in popularity in these developments that include office, retail, and residential uses within walking distance. Market demand for these is expected to continue to grow due to demographics. Many baby boomers that are entering retirement age that like to forego the maintenance associated with a single-family home and enjoy the activities in a mixed-use center.

Both nationally and locally, the percentage of total households with children has been falling, while the percentage of single person households has been increasing (see discussion of household size in Section 2). This would also indicate a larger demand for this type of development. Recent successful examples of these mixed-used developments in the MAPA region include Aksarben Village, Midtown Crossing, and Riverfront Place. Figure 4.9 identifies the areas designated as mixed-use centers in the City of Omaha and Sarpy County Comprehensive Plans:

FIGURE 4.9
TARGETED DENSITY LAND USE MAP



Transit Oriented

The Transit Oriented scenario looked at what could be expected should the MAPA region undertake a major investment in a 50-mile light rail transit system. Such a project would dramatically alter transportation and land use in the metro area as it is known today. High density development along light rail lines would likely occur, with large mixed use nodes including residential, retail and office uses of at least 12-units per acre surrounding transit stops (this estimate is conservative, as densities around transit stops in Chicago range from 15 to 30 units per acre). Growth in the urbanized areas

would presumably be less decentralized in this scenario, although projections outside the urbanized areas were not changed since people choosing to live in a semi-rural/exurban environment would presumably not desire to live in a high-density area along a transit line

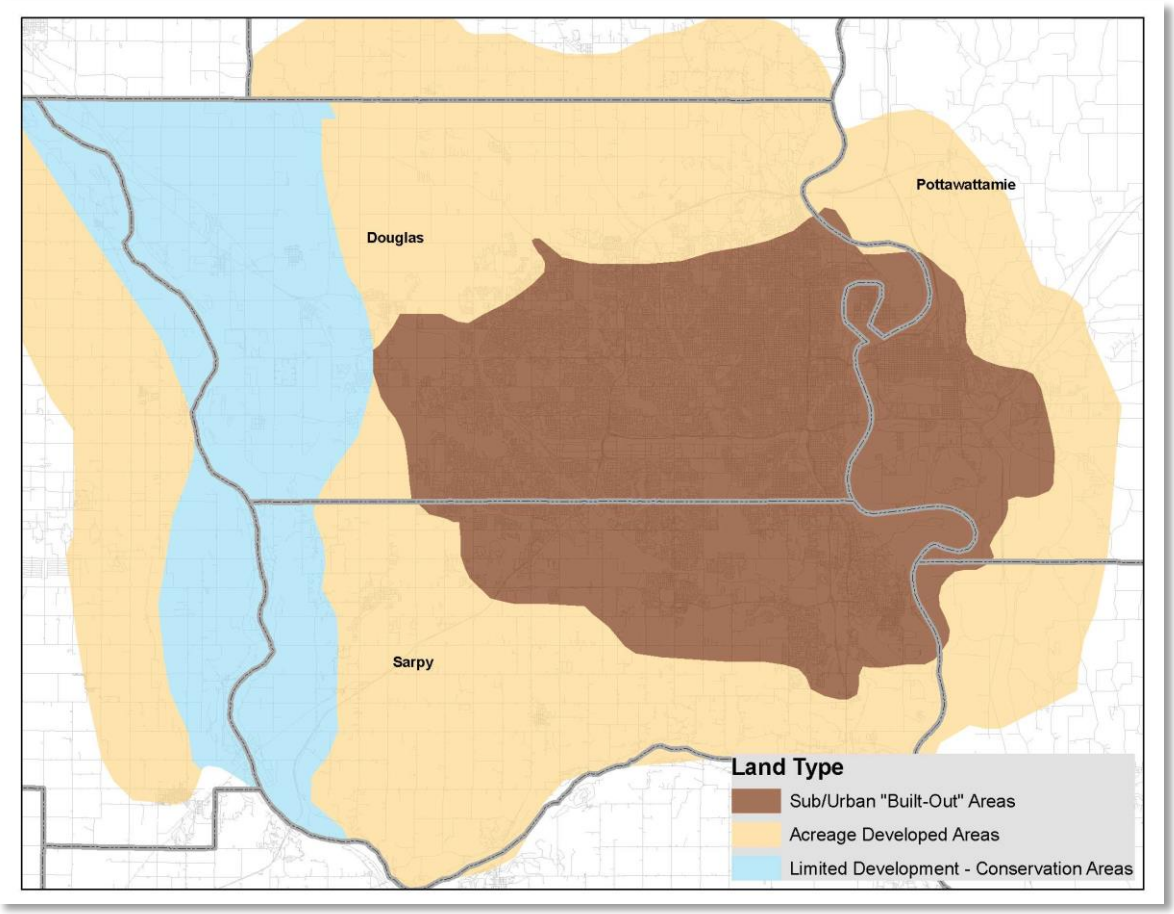
Note that there are no current plans for such a transit project, and that this scenario would require significant political changes and extensive redevelopment costs, which were not included in the analysis performed for the Beltway Study, making the scenario highly unlikely to occur in today's environment.

Sprawl

This scenario examined what would occur if the region developed in a less dense, more suburban or exurban pattern, which is commonly referred to as "sprawl." This scenario would result in a worsening effect on regional goals such as reducing infrastructure costs, creating a more balanced multi-modal transportation system, and decreasing emissions and land consumption. On the other hand, there is still a large market for low-density development, such as acreages. The survey at the completion of the Beltway study indicated that 57% of respondents in the MAPA region would choose a less dense area if they were to change residences. As consumer preferences can sometimes conflict with public policy goals, it is important to analyze the impacts of this scenario even if no governments in the MAPA TMA currently plan to increase low-density development or "sprawl."

Figure 4.10 shows the areas that would be fully built out by 2035 in this scenario versus what would be built out by 2035 in the *Status Quo* scenario. Clearly, the 2035 sprawl scenario in Figure 4.10 compared to the status quo in Figure 4.8 is dramatically different as sprawl is projected to be greatly increased.

FIGURE 4.10
LAND USE AND METRO AREA SPRAWL SCENARIO
YEAR 2035 OUTCOME



Conclusions

Following MAPA's Metro Beltway Feasibility Study, this Long Range Transportation Plan proposes a three-pronged policy approach to meet the future transportation needs:

- Regional **LAND USE POLICIES** affect transportation, and should be coordinated with transportation investments. Targeted density residential and commercial mixed-use developments and promoting infill will result in a more efficient use of land and make alternative modes of transportation more feasible.

- Enhancing **TRANSIT** ridership in the region would also help to alleviate future congestion and create a more balanced, multi-modal system. A comprehensive transit study should be conducted to test transit opportunities in greater detail and establish reasonable goals and objectives for more robust transit service in the region.

- Without major investments, the transportation system's performance is likely to degrade in the coming decades, resulting in millions of dollars in added costs due to increased travel times and congestion. Maximizing mobility and accessibility has been identified as a regional goal, and land use policies and transit investment will not remove the need for additional investment in the roadway system. Even in cities that emphasize transit and have comparably high transit ridership, the vast majority of travel still takes place using personal vehicles. Therefore, in addition to strategies to create a more robust multi-modal transportation system, investment in additional **ROADWAY CAPACITY** will remain necessary in the future.

Street, Highway, and Bridge

5.1 Introduction

The network of streets, highways, and bridges represents the primary form of transportation in the MAPA TMA. From residential streets to interstate freeways, it is utilized daily by the vast majority of residents in the metro area to get from point A to point B. In recent decades, hundreds of millions of dollars have been spent to construct and maintain the system that exists today. Ensuring that the roadway system continues to be safe and provides a high degree mobility for residents and businesses is critical to the region's future.

The MAPA LRTP provides the metro area with a roadmap for anticipated transportation improvements. While the 25-year planning timeframe inherently carries with it a high level of uncertainty, it is nonetheless important to periodically assess the region's transportation system and evaluate long range plans and goals. Furthermore, projects must be listed in the MAPA LRTP in order to be eligible for federal transportation funds.

As noted in Section 4's discussion of traffic trends, traffic levels have grown rapidly in recent decades in the MAPA region. Traffic growth has slowed of late, and since 2008 has remained essentially stable in most portions of the metro area. Nevertheless, it is anticipated that traffic growth will resume in future years as the region's population and employment continue to expand. Traffic increases will probably never reach the growth seen from the 1970s to the 1990s, having leveled off and made only slight increases over the past several decades.

Even with the recent stabilization in traffic volumes, the metro area has failed to keep pace with new suburban growth. Needed improvements to the roadway system still lag behind residential, commercial and retail development. This section will list these current needs, as well as likely future needs to provide an effective transportation system.

5.2 Roadway System in the MAPA Region

As of early to mid-2010, Douglas, Sarpy, and Pottawattamie Counties have approximately 560,000 licensed drivers, (including permits). These three counties cover an area slightly larger than the MAPA TMA, as only the western, more populous portion of Pottawattamie County is contained in the TMA. Of the metro area's drivers, approximately 67% (376,000) are in Douglas County. 21% (118,000) are in Sarpy County, and 12%, or just over 65,000, are in all of Pottawattamie County.

To accommodate these drivers, state and local governments operate and maintain approximately 5,500 centerline miles and 11,347 lane miles of streets, highways, and bridges in the MAPA region. These facilities also serve as the primary thoroughfares for freight and goods movement that the supply the regional and national economies.

5.2.1 FREEWAY SYSTEM

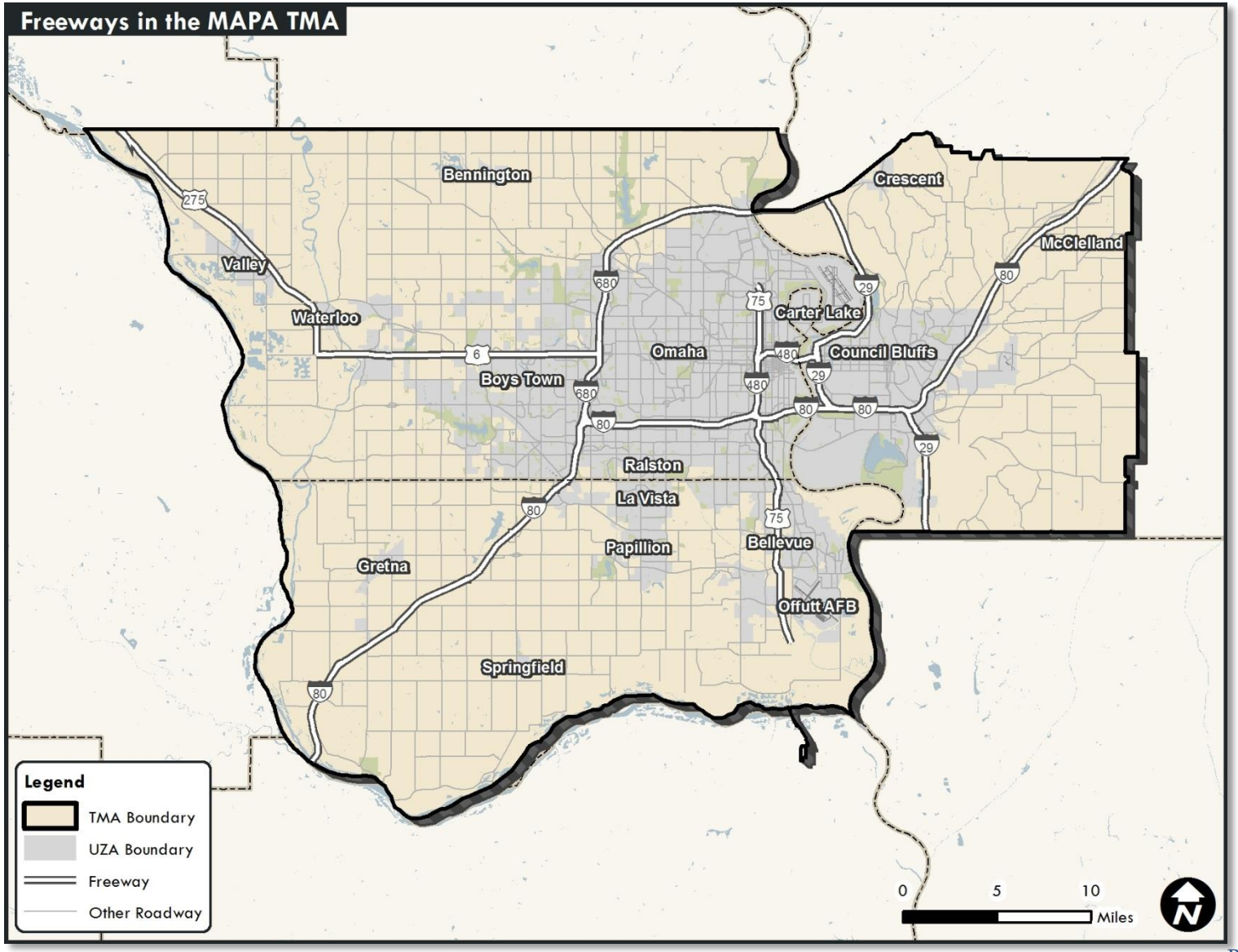
Freeways are roadways characterized by high travel speeds, divided medians and limited access (no at-grade intersections). Most but not all freeways in the metro area part of the national interstate system. Two major interstates bisect the metro area. Interstate 80 is one of the primary east-west corridors in the nation, connecting the San Francisco Bay area on the west coast with the New York City region on the east coast. In the MAPA TMA, I-80 travels from at the Platte River on the southwest to the Underwood Interchange (G-30/Magnolia Road) on the northeast. It carries the highest traffic volumes in the MAPA region, and has averaged as high as 188,000 vehicles per day in some recent years between 72nd Street and the I-480/Kennedy Freeway system interchange. Interstate 29 travels from Kansas City on the south through the Council Bluffs area. Further north it traverses the eastern Dakotas to the Canada border, where a Canadian highway ultimately leads to Winnipeg, Manitoba.

Omaha is also served by I-480, which operates as an interior loop through the downtown area of Omaha across the Missouri River to Council Bluffs. I-680 travels from its junction with I-80 in southwest Omaha and loops to the north side of the metro area before crossing the Missouri River and connecting with I-29. It continuous further to the north along I-29, until just south of the Pottawattamie-Harrison County line, where it becomes an east-west facility that connects I-29 and I-80.

The MAPA region has several other freeways that are not designated as interstates. The Kennedy Freeway runs along US-75 from Fairview Road to the I-80/I-480 junction. The North Freeway is US-75 from the I-480 junction to the interchange with Sorensen Parkway and Storz Expressway.

The West Dodge Expressway was completed in 2006. This major project created an above-ground freeway to travel from 120th Street to the West Dodge Road/I-680 Interchange. With the extension of improvements along US-6/West Dodge Road in west Omaha and former Elkhorn, this freeway now creates a continuous freeway between Omaha and Fremont along US-6, L-28B (West Dodge Road between US-275 and US-6), and US-275. Figure 5.1 illustrates the freeway system in the MAPA region:

FIGURE 5.1
FREEWAYS IN THE MAPA TMA



5.2.2 U.S. & State Highways

The MAPA TMA is served by numerous U.S. and State highways. With the exception of where a U.S. or state highway runs along a freeway, these facilities are divided or undivided highways that have at-grade crossings and frequently operate at higher speeds than other arterial roadways (45 mph and higher). These highways supplement the freeway system and provide access to many of the region's large employment and commercial centers.

Prominent examples of these roadways in Nebraska include Nebraska State Highway 370 in Sarpy County and Highway 31, which travels from southern Sarpy County through Gretna, the former City of Elkhorn, and north to Washington County. State Highway 92 travels across the entire breadth of the MAPA TMA, from the Platte River to the junction with US-275, along West Center Road to L Street in Omaha, across the Veteran's Memorial Bridge into Council Bluffs, where it becomes Veteran's Memorial Road and travels east to the edge of the MAPA area just west of Treynor.

In the urbanized area, these highways are sometimes virtually indistinguishable from arterial roadways operated by municipalities. In recent years, jurisdiction along several state highways has been transferred to local governments. Examples include former Iowa Highway 183 (Old Lincoln Highway) between Council Bluffs and Crescent, former Iowa Highway 191 (Railroad Highway) that travels from Council Bluffs through Underwood and Neola to I-680, as well as former Nebraska Highway 38 (West Center Road) in Omaha. Currently, Nebraska Department of Roads (NDOR) is negotiating with local jurisdictions along Highway 85 (84th Street) to potentially remove it from the state system.

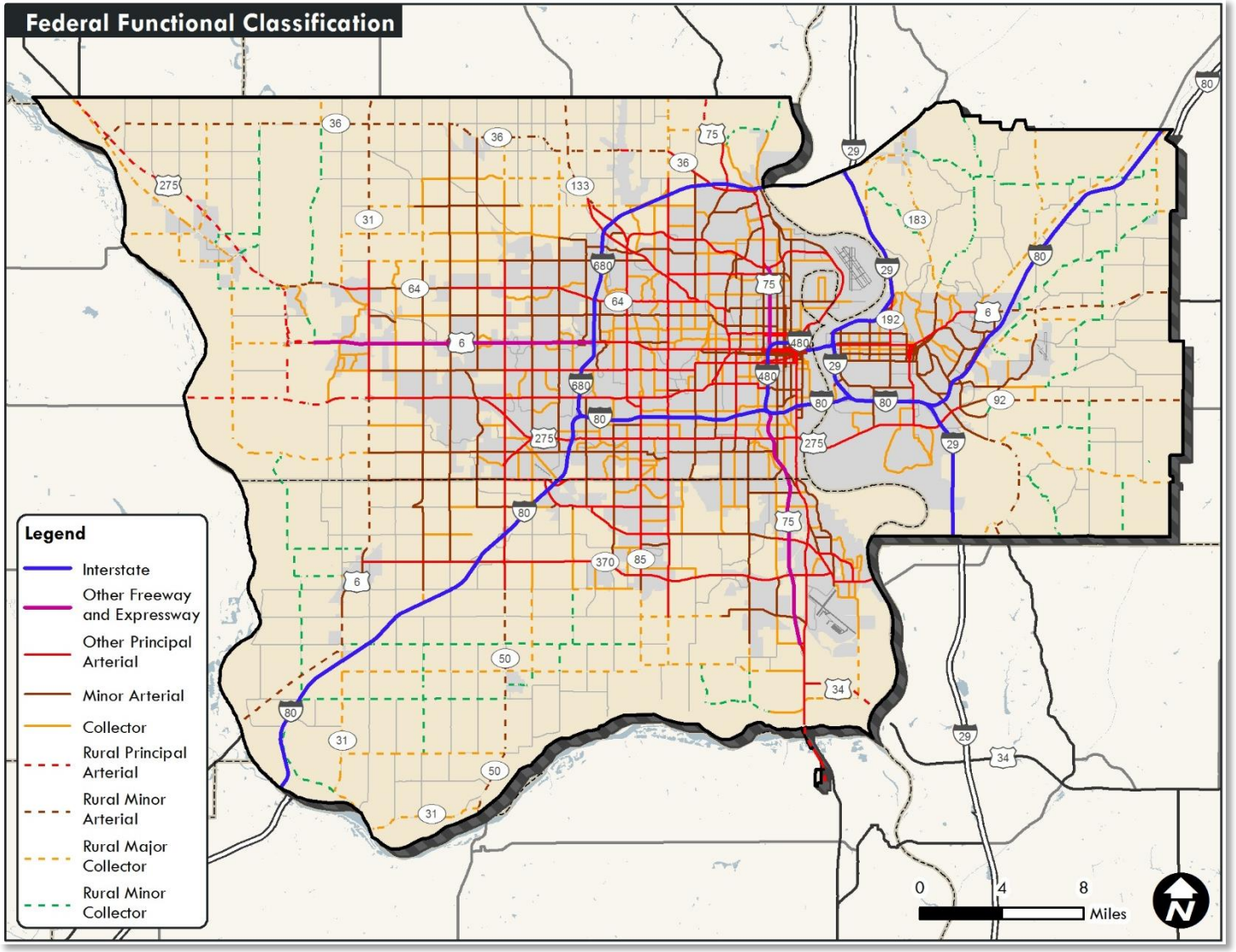
5.2.3 Other Major and Local Streets

The local jurisdictions in the MAPA TMA operate and maintain several thousand miles of streets and roads. These roadways vary in character from rural gravel roads in unincorporated areas to six-lane divided urban arterials that carry more than 50,000 vehicles per day. Included in these streets are also thousands of miles of residential streets. Although they carry light to medium traffic, they serve as the last link connecting households to the surface street and highway network in the MAPA region.

5.2.4 Functional Classification and National Highway System (NHS)

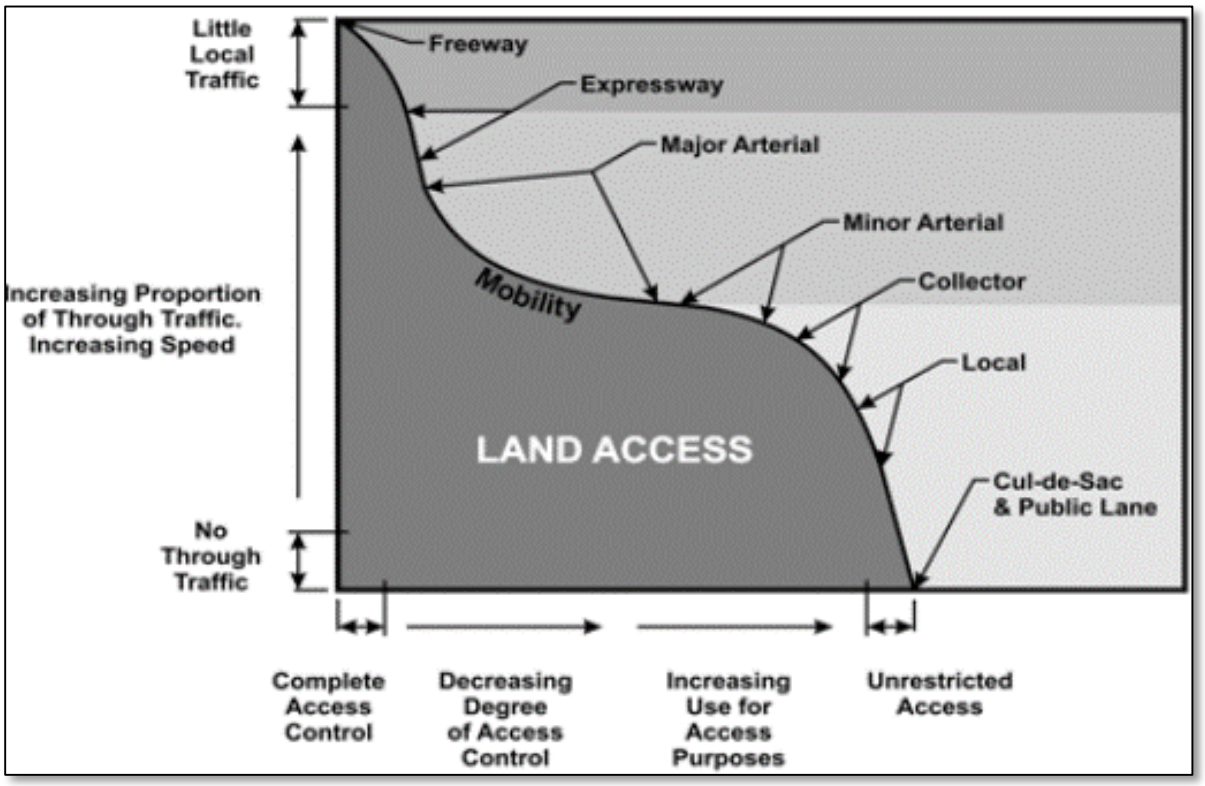
The Federal Highway Administration (FHWA) groups roadways into classes according to the character of service they are intended to provide. In order to be eligible for federal-aid funding, a roadway must be identified as part of the functionally classified road network (Figure 5.2).

FIGURE 5.2
FUNCTIONAL CLASSIFICATION MAP



The functionality of a street is related to traffic mobility and land access. Higher level facilities such as freeways and expressways have lower access which allow for higher speeds and capacities. Conversely, lower level facilities such as local streets and minor collectors allow for greater access, but have reduced mobility due to lower speeds and capacities. This relationship can be seen in Figure 5.3:

FIGURE 5.3
MOBILITY AND THE RELATIONSHIP BETWEEN TRAFFIC TYPES AND ACCESS CONTROL BY ROADWAY TYPE



Source: FHWA Functional Classification Guidance Update

Tables 5.1, 5.2, and 5.3 list the number of center-line, lane miles, and miles by each federal functional classification in the MAPA TMA:

TABLE 5.1
CENTER-LINE MILES BY FEDERAL FUNCTIONAL CLASSIFICATION

County	Interstate (PAI)	Other Principal Arterial (OPA)	Minor Arterial (MA)	Collector	Local (LOC)	Total
Douglas	35	204	222	279	2,442	3,182
Sarpy	17	63	62	158	1,020	1,320
Pottawattamie (MPO)	38	18	72	146	605	879
MAPA	**90**	**286**	**356**	**583**	**4,067**	**5,381**

Source: Metro Area Travel Improvement Study, Physical Conditions Assessment October 6, 2014

TABLE 5.2
LANE MILES BY FEDERAL FUNCTIONAL CLASSIFICATION

County	Interstate (PAI)	Other Principal Arterial (OPA)	Minor Arterial (MA)	Collector	Local (LOC)	Total
Douglas	182	795	624	587	4,882	7,070
Sarpy	81	246	162	325	2,040	2,855
Pottawattamie (MPO)	154	67	162	292	1,198	1,872
MAPA	**418**	**1,108**	**949**	**1,203**	**8,120**	**11,798**

Source: Metro Area Travel Improvement Study, Physical Conditions Assessment October 6, 2014

TABLE 5.3
MILES BY FEDERAL FUNCTIONAL CLASSIFICATION

Functional Class	Nebraska Part		Iowa Part		Total	
	Segment Miles	Lane Miles	Segment Miles	Lane Miles	Segment Miles	Lane Miles
Interstate	91	276	80	167	171	443
U.S. Roads	169	377	22	52	190	429
State Roads	166	321	8	17	174	338
Local Roads	337	770	2	4	339	774
Total	**763**	**1,744**	**111**	**240**	**874**	**1,984**

Source: Metro Area Travel Improvement Study, Physical Conditions Assessment October 6, 2014

5.3 Pavement Conditions

Both Iowa DOT and NDOR have extensive asset management programs that monitor pavement conditions. The states measure road surface quality annually, and use the data to determine needs on the system. Tables 5.4 shows the pavement status in the metro area according to the Nebraska Serviceability Index (NSI) and the Pavement Condition Index (PCI) used in Iowa. These are two separate rating systems, which cannot be directly compared.

Table 5.4
Road Surface Quality by State (in miles)

NSI (Serviceability)	Nebraska Portion					
	90-100	70-89	50-69	30-49	0-29	
Functional Class	Very Good	Good	Fair	Poor	Very Poor	Total
Interstate	158	99	19	0	0	276
U.S. Roads	198	76	42	56	5	377
State Roads	29	173	89	31	0	321
Local Roads	124	474	109	63	0	770

PCI (Condition)	Iowa Portion					
	85-100	70-84	50-69	30-49	0-29	
Functional Class	Very Good	Good	Fair	Poor	Very Poor	Total
Interstate	44	94	24	5	2	167
U.S. Roads	3	0	31	9	9	52
State Roads	0	0	4	2	11	17
Local Roads	0	4	0	0	0	4

Source: Metro Area Travel Improvement Study, Physical Conditions Assessment October 6, 2014

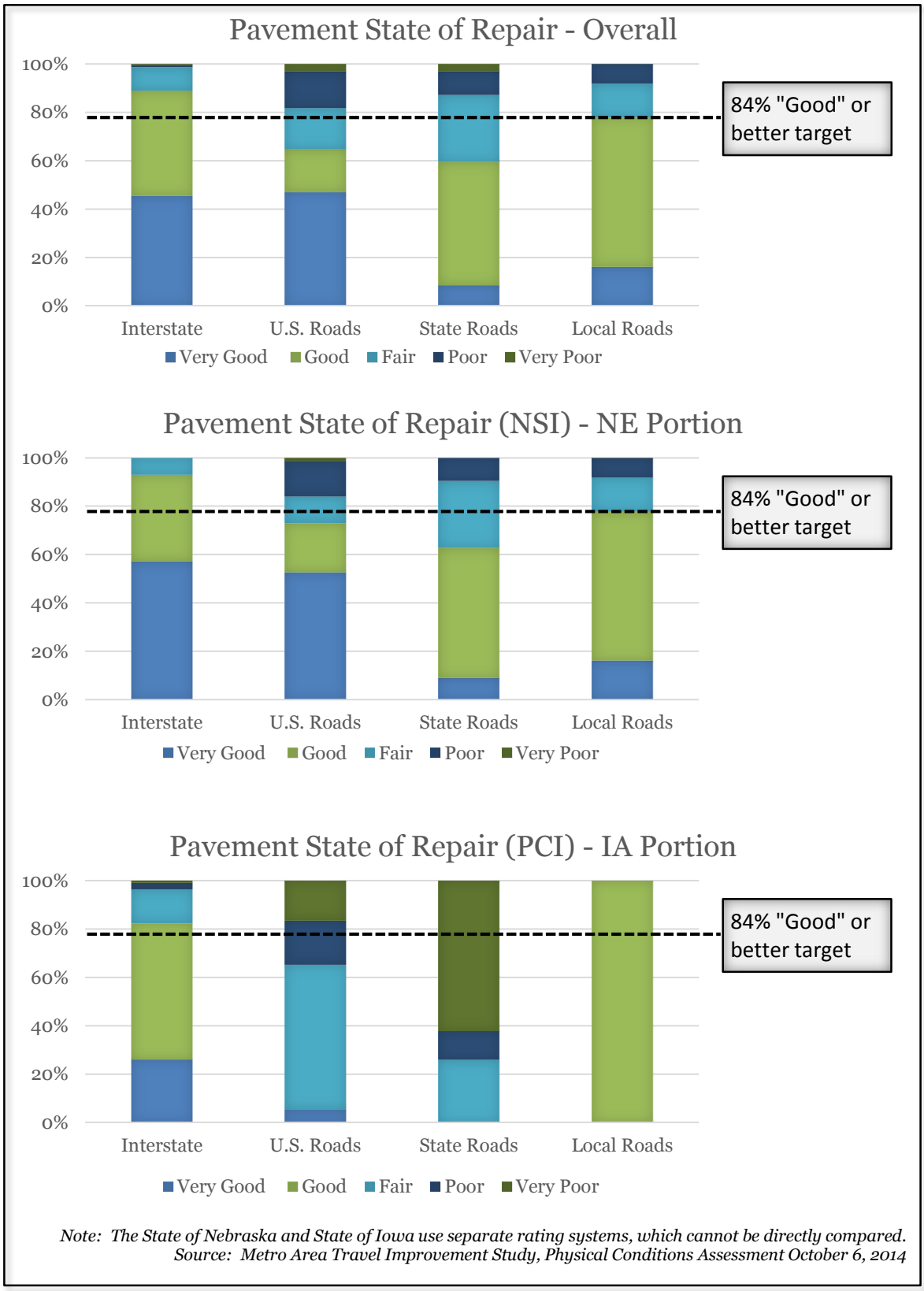
Note that the numbers above represent data collected solely by the state and do not cover the roadway system in its entirety. This also accounts for the discrepancy between the road conditions on the Iowa and Nebraska sides of the region. Therefore, while these numbers are helpful at providing a general idea of pavement conditions, it should be understood that they are incomplete and not precise.

Based on the above pavement conditions, about three-quarters of the roadway system in the MAPA region is rated "good" or "excellent." About 10% is rated "poor" or "very poor." These numbers paint a picture of generally good pavement conditions with a smaller portion of trouble-spots. Figure 5.4 displays this information in graphical format. As discussed earlier, this data is based on the

existing information, but shows overall, Nebraska has a greater level of pavement conditions compared to the conditions in Iowa.

The 84% target highlighted on Figure 5.4 is because the State of Nebraska's performance measure of pavement condition of Nebraska highways is, "84% of the highway system miles shall be rated at least good or very good (NSI ratings >= 70)" (accessed at http://www.transportation.nebraska.gov/docs/annual-report.pdf). Thus the figure illustrates the amount of pavement conditions meeting the NDOR performance measure.

FIGURE 5.4
MTIS STUDY AREA PAVEMENT EXISTING STATE OF REPAIR



Note: The State of Nebraska and State of Iowa use separate rating systems, which cannot be directly compared.
Source: Metro Area Travel Improvement Study, Physical Conditions Assessment October 6, 2014

5.4 BRIDGES IN THE MAPA REGION

The two major rivers in the MAPA region are the Missouri and Platte Rivers. Twelve bridges cross these two rivers in the MAPA region. These are shown in Figure 5.5.

The Missouri River is the dominant geographical and political boundary in the MAPA region. It is one of the nation's major waterways and is the state line dividing Iowa and Nebraska (with the exception of Carter Lake, Iowa). There are currently five roadway crossings of the Missouri River, which are listed in Table 5.5:

FIGURE 5.5
MAJOR RIVER CROSSINGS IN THE MAPA REGION

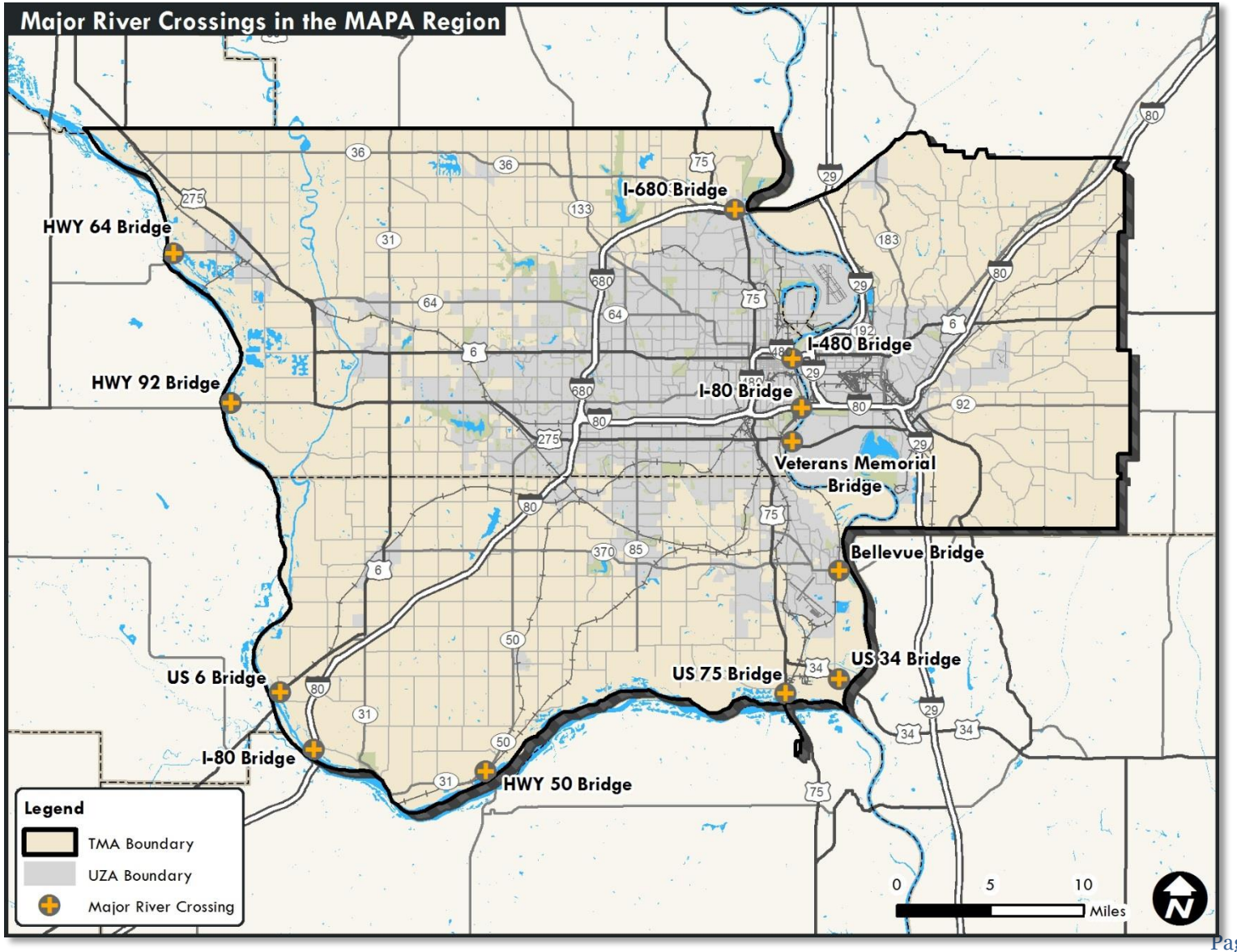


TABLE 5.5
BRIDGE CROSSINGS BETWEEN NEBRASKA AND IOWA

Bridge	Roadway	Lanes	Vehicles/Day (2014)
Bellevue Bridge (toll)	Hwy. 370	2-Lanes	2,900
Veteran's Memorial Bridge	US-275/Hwy. 92	4-Lanes	9,300
I-80 Bridge	I-80	6-Lanes*	80,300
I-480 Bridge	I-480/US-6	8-Lanes	53,700
I-680 Bridge	I-680	4-Lanes	15,400
US 34 Bridge	US Highway 34	4-Lanes	3,800

Source: 2014 MAPA Traffic Report

The Interstate 80 crossing of the Missouri River has been completed, it was a joint project of Iowa DOT and NDOR. The bridge has two structures of five lanes each for a total of ten lanes. The large capacity on the bridge was chosen to meet anticipated future demand as well as to allow three lanes of traffic in each direction during closure of one of the bridges.

The new US 34 Bridge, previously the Plattsmouth Bridge, was a joint project between Iowa DOT and Nebraska DOR between 2011 and October 2014. The bridge now connects US 75 in Sarpy County and I-29 in Mills County.
In addition to the roadway crossings, there is a rail crossing and a pedestrian bridge over the Missouri River. The Union-Pacific Missouri River Bridge is located east of downtown Omaha (south of Leavenworth Street) and south of Harrah's casino in Council Bluffs. The bridge is utilized by a very high volume of rail traffic as it is one of the primary connections in the UP rail network.

Fireworks for the unveiling of the Pedestrian Bridge lights on September 13, 2008

The Bob Kerrey Pedestrian Bridge was opened in September 2008. It is open to pedestrian and bicycle traffic. Prior to its construction, there was not a legal or safe bridge over the Missouri River to cross in the MAPA TMA for bicycle and pedestrian traffic. Pedestrians frequently used I-480 even though it is not permitted on an interstate facility in Nebraska or Iowa. The bike/pedestrian

bridge is located to the north of the I-480 bridge and features two 200-foot towers. It cost $22 million to construct and was designed to be an iconic structure for the greater Omaha-Council Bluffs metro area. Gallup donated the lights on the bridge. Gallup's corporate headquarters are located adjacent to the Omaha landing of the bridge. Although not without controversy, the bridge has seen high levels of bicycle and foot traffic, particularly on evenings and weekends during warm weather months.

Nebraska Department of Roads and Iowa DOT opened the new Veteran's Memorial Bridge to traffic in May 2010. The bridge is a continuous 625-foot long steel truss structure, which is among the largest in the nation. It provides a ten-foot wide bicycle and pedestrian facility, making it the second such crossing in the MAPA region.

Construction of the new Veteran's Memorial Bridge alongside the old bridge.

The MAPA TMA is bounded on the south and west in Nebraska by the Platte River. There is no barge traffic on the placid Platte, and it is used for recreational purposes as well as commercial and industrial uses, such as the Louisville Ready Mix concrete plant. Table 5.6 illustrates the crossings over the Platte.

TABLE 5.6
BRIDGE CROSSINGS OVER THE PLATTE RIVER

Bridge	Lanes	Vehicles/Day (2012)	TTI External
US-75 Bridge	4-Lanes	20,800	21,905
Highway 50 Bridge	2-Lanes	8,500	8,098
I-80 Bridge	6-Lanes	45,400	46,784
US-6 Bridge	2-Lanes	6,900	7,355
Highway 92 Bridge	2-Lanes	8,700	7,457
Highway 64 Bridge	2-Lanes	3,900	1,916

Source: 2014 MAPA Traffic Report
*TTI External = Texas A&M Transportation Institute External Travel Study

5.4.1 BRIDGE DEFICIENCIES

There are nearly 1,000 bridges in the MAPA TMA. Of these, 325, or one-quarter, are currently classified as structurally deficient or functionally obsolete. A report

by the U.S. DOT to Congress describes these terms as follows: "Structural deficiencies are characterized by deteriorated conditions of significant bridge elements and reduced load carrying capacity. Functional obsolescence is a function of the geometrics of the bridge not meeting current design standards. Neither type of deficiency indicates that the bridge is unsafe." In other words, these are bridges in need of improvement and can result in congestion or pose inconveniences to large vehicles such as trucks, school buses or emergency vehicles that are forced to take lengthy detours. However, the terms do not necessarily imply that a bridge is unsafe or on the verge of collapse.

The majority—three quarters—of structurally deficient or functionally obsolete bridges are located off the state highway system on municipal and county roads, which typically carry lower traffic volumes. 19 percent of bridges in Douglas County fall into this category as do 27 percent of bridges in the MAPA TMA portion of Pottawattamie County. The Sarpy County portion of the MAPA TMA has the highest rate of obsolete or deficient bridges at 28 percent. Pottawattamie County also has the highest number of bridges *per capita* within the metro area. Table 5.7 provides the bridge conditions by county:

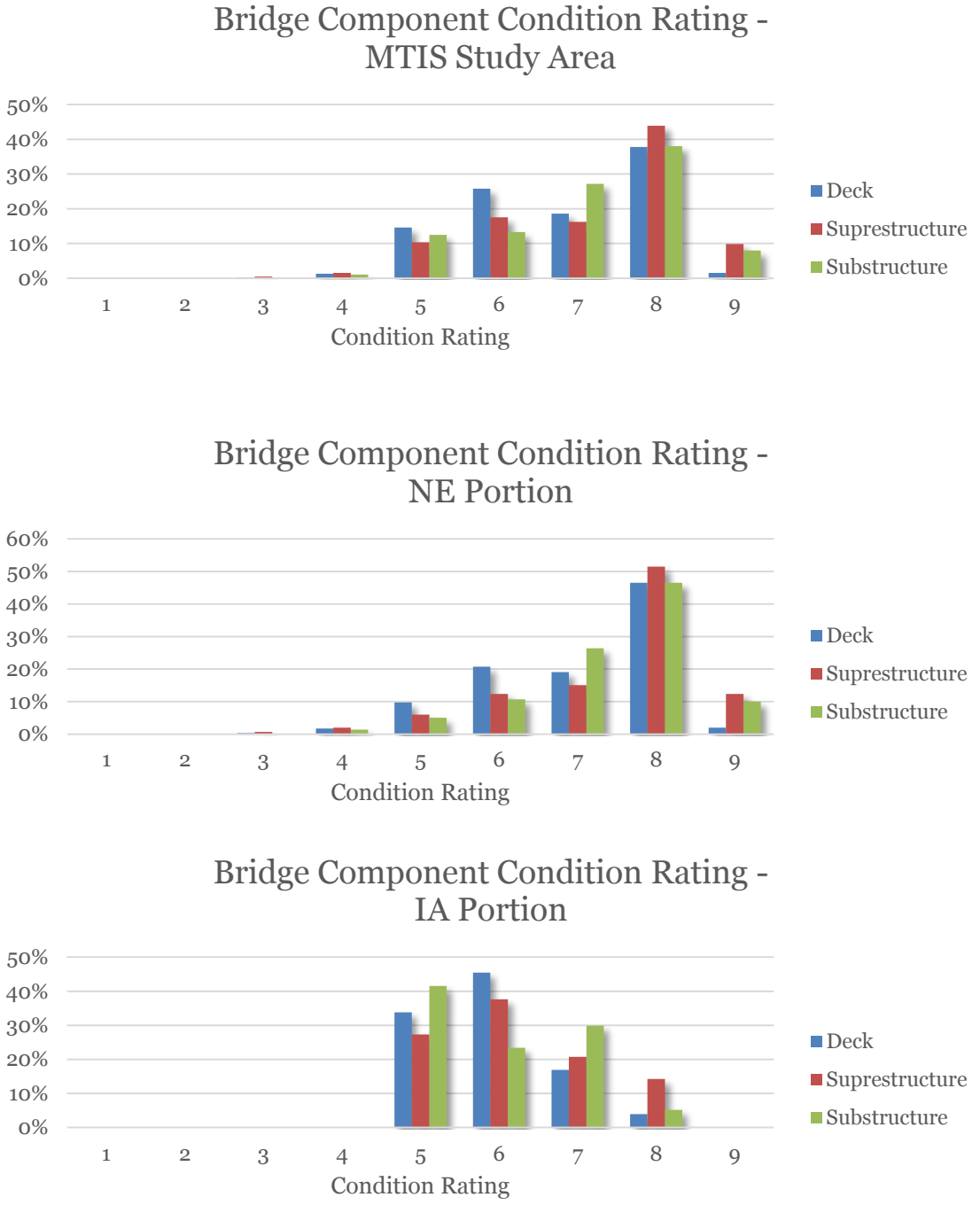
TABLE 5.7
DISTRIBUTION OF BRIDGE COMPONENT CONDITION RATINGS

County	Count	# of Structurally Deficient	# of Functionally Obsolete	Percent Deficient or Functionally Obsolete
Douglas	502	22	75	19%
Sarpy	185	25	27	28%
Pottawattamie	566	99	54	27%
MAPA Total	1,253	146	156	24%

Source: FHWA, NBI 2013 Data, http://www.fhwa.dot.gov/bridge/nbi/no10/county13a.cfm#ia
**Pottawattamie County bridges represent the entire county, not only the MPO portion of the county.*

The Metropolitan Travel Improvement Study (MTIS) evaluated the overall condition of each bridge, the condition ratings of their main components (deck, superstructure, and substructure) were analyzed. In Iowa, part of the bridge component ratings mostly lie in the range of 5-7, while in Nebraska, the components are in better condition, with ratings between 6 and 8 (Figure 5.6).

FIGURE 5.6
DISTRIBUTION OF BRIDGE COMPONENT CONDITION RATINGS



Source: Metro Area Travel Improvement Study, Physical Conditions Assessment October 6, 2014

5.5 Access Management

Access management aims to preserve traffic flow while providing adequate access to development. It has benefits for the transportation system in terms of safety, capacity, and speed. Access management balances the needs of motorists, pedestrians, and bicyclists using a roadway with the needs of adjacent property owners dependent upon access to the roadway. In an environment with limited funds for transportation projects and competing agendas, good access management significantly improves the health of the entire transportation network.

Poor access management directly affects the livability and economic vitality of commercial corridors, ultimately discouraging potential customers from entering the area. A corridor with poor access management lengthens commute times, lowers fuel efficiency, and increases vehicle emissions. Corridor with poor access management will see increased crashes between motorists, pedestrians, and cyclists, congestion growth that outpaces traffic growth, spillover cut-through traffic on adjacent residential streets, and reduced property values on adjacent commercial development.

Access management has wide ranging benefits to a variety of users. Improvements through reduced travel time and delays and greater safety help motorists, bicyclists and pedestrians, as well as those delivering goods and services. Business owners see stabilization in property values and additional customer traffic, and improved corridor aesthetics. Government agencies enjoy a lower cost method to achieve transportation goals, while protecting the jurisdiction's investment in infrastructure that reduces the need for constant construction projects such as road widening's.

Although a goal of access management is to reduce delay and increase travel speeds, this should be employed in areas identified for the purpose of moving high volumes of vehicle traffic smoothly and safely. As discussed in Section 4.5 on Complete Streets, in order to create an environment that is more amenable to non-vehicle modes of travel, it will sometimes be necessary to employ traffic calming strategies. In such contexts, some of the tools listed below may not be appropriate.

5.6 Access Management Toolbox

Access management includes a variety of tools to improve corridor operation and should never be considered a one-size fits all solution. Strategies must be selected that are appropriate to the specific context. The toolbox that follows provides a general overview of various strategies available to alleviate congestion.

5.6.1 ON-SITE TRAFFIC CIRCULATION

Vehicle conflicts can be reduced by on-site traffic circulation and shared-use driveways. The following improvements should be included during development application review for sites along corridors identified for access management programs.

Improved On-Site

Manage driveway throat length, the distance from the edge of the public street to the first internal site intersection. A minimum separation of 100 feet, or more if required by the local agency, should be provided to prevent internal site operations from affecting an adjacent public street, ultimately causing spillback problems.

Number of Driveways

Where new development occurs adjacent to an existing site or to another new development, driveway permit applicants should been encouraged to seek cross access easements/agreements from an existing adjacent property ownership to create interconnected internal circulation systems and shared-use external driveways.

Driveway Placement/Relocation

Relocate or close driveways close to intersections as appropriate to reduce operational and safety issues such as intersection and driveway blockages, increased points of conflict, frequent/unexpected stops in the through travel lanes, and driver confusion as to where vehicles are turning.

As a best planning practice, no driveway should be allowed within 100 feet of the nearest intersection and full movement driveways should be no closer than 300 feet to an intersection in urban areas or 600 feet to an intersection in suburban areas on arterial roadways. Driveways closer than these distances to an intersection on arterial roadways should be restricted to right-in/right-out access only. In all cases, the location of driveways should be in accordance with the standards of the local jurisdiction.

Cross Access

Cross access is a service drive or secondary roadway that provides vehicular access between two or more continuous properties, which prevents the driver from having to enter the public street system to travel between adjacent uses. Cross access can be a function of good internal traffic circulation at large developments with substantial frontage along a major roadway. Similarly, backdoor access occurs when a parcel has access to a parallel street behind

buildings and away from the main road. When combined with a median treatment, cross access, and backdoor access ensure that all parcels have access to a median opening or traffic signal for left turn movements.

5.6.2 MEDIAN TREATMENTS

Segments of a corridor with sufficient cross access, backdoor access, and on-site circulation may be candidates for median treatments. Median treatments can improve traffic flow, reduce congestion, increase traffic safety, and provide opportunities for pedestrian buffers. While medians restrict some left-turn movements, access to businesses is enhanced and traffic delays are reduced. Landscaping and gateway features incorporated into median treatments improve the aesthetics of the corridor, in turn encouraging investment in the area.

Non-Traversable Median

These features are raised or depressed cross-section elements that physically separate opposing traffic flows. They should be considered for a new cross-section or retrofit of an existing cross-section along multi-lane roadways with high pedestrian volumes or collision rates as well as in locations where aesthetics are a priority. A non-traversable median requires sufficient cross and backdoor access. As these treatments are considered, sufficient spacing and locations for left-turn bays must be identified.

Advantages of non-traversable medians can include increased safety and capacity by separating opposing vehicle flows, space for pedestrian refuge, and restricting turning movements to locations with appropriate turn lanes. Disadvantages may include increased emergency vehicle response time due at some destinations, inconvenience, increased travel distance for some movements, and potential opposition from the general public and affected property owners.

Left-Turn Lanes/Storage Bays

Where necessary, exclusive left-turn lanes/bays should be constructed to provide adequate storage space exclusive of through traffic for turning vehicles. These bays reduce vehicle delay related to waiting for vehicles to turn and also may decrease the frequency of collisions attributable to lane blockages. In some cases, turn lanes/bays can be constructed within an existing median. If additional right-of-way is required, these can add costs.

Offset Left-Turn Treatment

Exclusive left-turn lanes at intersections of streets with medians many times are configured to the right of one another, which causes opposing left-turning vehicles to block one another's forward visibility. An offset left-turn treatment shifts the left-turn lanes to the left, adjacent to the innermost lane of oncoming

through traffic. If permissive left-turn phasing is used, this treatment can improve efficiency and safety by reducing crossing and exposure time and distance for left-turning vehicles. In addition, the positive offset improves sight distance and may improve gap recognition.

5.6.3 Intersection and Minor Street Treatments

The operation of intersections can be improved by reducing driver confusion, establishing proper curb radii, and ensuring adequate laneage of minor street approaches.

Skip Marks (Dotted Line Markings)

These pavement markings can reduce driver confusion and increase safety by guiding drivers through complex intersections. Intersections that benefit from these lane markings include offset, skewed or multi-legged intersections. Skip marks are also useful at intersections with multiple turn lanes. The dotted line markings extend the line markings of approaching roadways through the intersection. The markings should be designed to avoid confusing drivers in adjacent or opposing lanes.

Intersection and Driveway Curb Radii

Locations with inadequate curb radii may cause turning vehicles to use opposing travel lanes to complete their turning movement. Inadequate curb radii may cause vehicles to "mount the curb" as they turn a corner and cause damage to the curb and gutter, sidewalk, and any fixed objects located on the corner. This maneuver also can endanger pedestrians standing on the corner. Curb radii should be adequately sized for area context and likely vehicular usage.

Traffic and Congestion Trends

6.1 Introduction

A look at current traffic trends help to gauge where the MAPA region is heading and how the transportation system is likely to perform over the coming 25 years. It also offers an opportunity to the region to step back and consider what steps will be necessary to meet future transportation needs. Travel data and trends are vital to setting goals, choosing appropriate action steps, and tracking the region's progress toward attaining those goals.

Data and statistics play an important role in this analysis. For instance, travel time studies confirm that nearly all of the metro area is within a half hour's drive, and most of the area can be reached within twenty minutes during nonpeak hours.

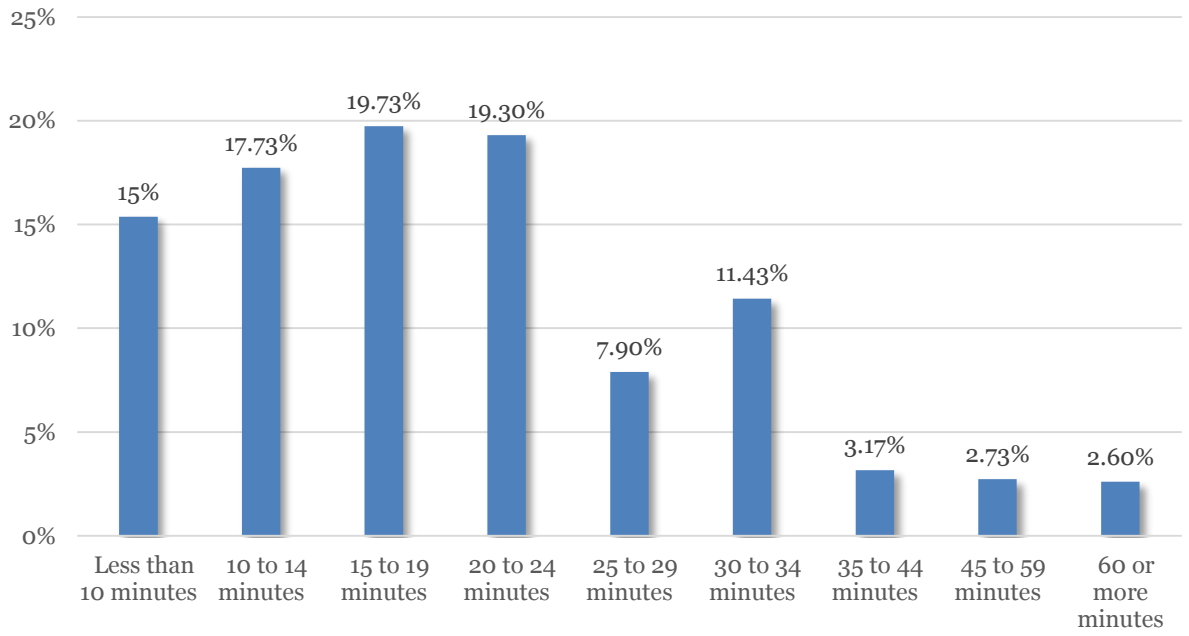
Traffic congestion has grown over recent decades in the MAPA TMA resulting in added delays and costs to area residents and businesses. Traffic Growth (6.3) and Congestion in the MAPA Region (6.4) of this section specifically discuss recent trends and statistics related to congestion. These sections also serve as MAPA's Congestion Management Process (CMP), which MAP-21 requires TMAs to maintain and use in transportation planning efforts. The primary causes of congestion and strategies to alleviate and mitigate them are identified in this part of the Chapter.

6.2 Commuting to Work

Commuting to and from work is one of the most essential functions of the transportation system. The morning and late afternoon peak travel periods generally represent the highest periods of congestion. Much of the transportation planning work is performed with an eye toward improving work trips.

Travel times to work reported by the Census Bureau attest to the Omaha-Council Bluffs region's reputation as being generally convenient for travel. More than half of all commutes to work in the MAPA TMA are less than 20 minutes and three quarters of commutes take less than 25 minutes. Figure 6.1 shows the average travel times for work commutes:

FIGURE 6.1
PERCENTAGE OF DRIVERS PER COMMUTE TRAVEL TIME FOR MAPA TMA, 2012



Source: U.S. Census Bureau

The automobile is the predominant mode by which people get to work in the MAPA region. Over 90-percent of all work trips are made by a car, truck, or van. Of these, about 84-percent are made by people driving alone. Table 6.1 shows the most recent Census data indicating the means of transportation to work in the MAPA TMA:

TABLE 6.1
MEANS OF TRANSPORTATION FOR WORK COMMUTES

Transportation Type	Percent
Car, truck or van - drove alone:	82.9%
Car, truck or van - carpooled:	9.9%
Public transportation:	1.0%
Walked:	1.9%
Taxi, motorcycle, bicycle, or other means:	1.0%
Worked at home:	3.3%

Source: 2012 ACS 5-year Estimate

These percentages are not uncommon for medium-sized metro areas in the Midwest. The personal vehicle offers a high level of convenience and mobility. Hence, the often-repeated phrase that Americans have a love affair with their cars, trucks, and SUVs.

While the automobile has advantages to users, a transportation system designed almost exclusively for motor vehicles carries costs, as discussed extensively in Section 4. This is particularly true when auto trips are made by single-occupancy vehicles (SOV). Table 6.2 provides the percentages of vehicle occupancies for work trips in the MAPA TMA:

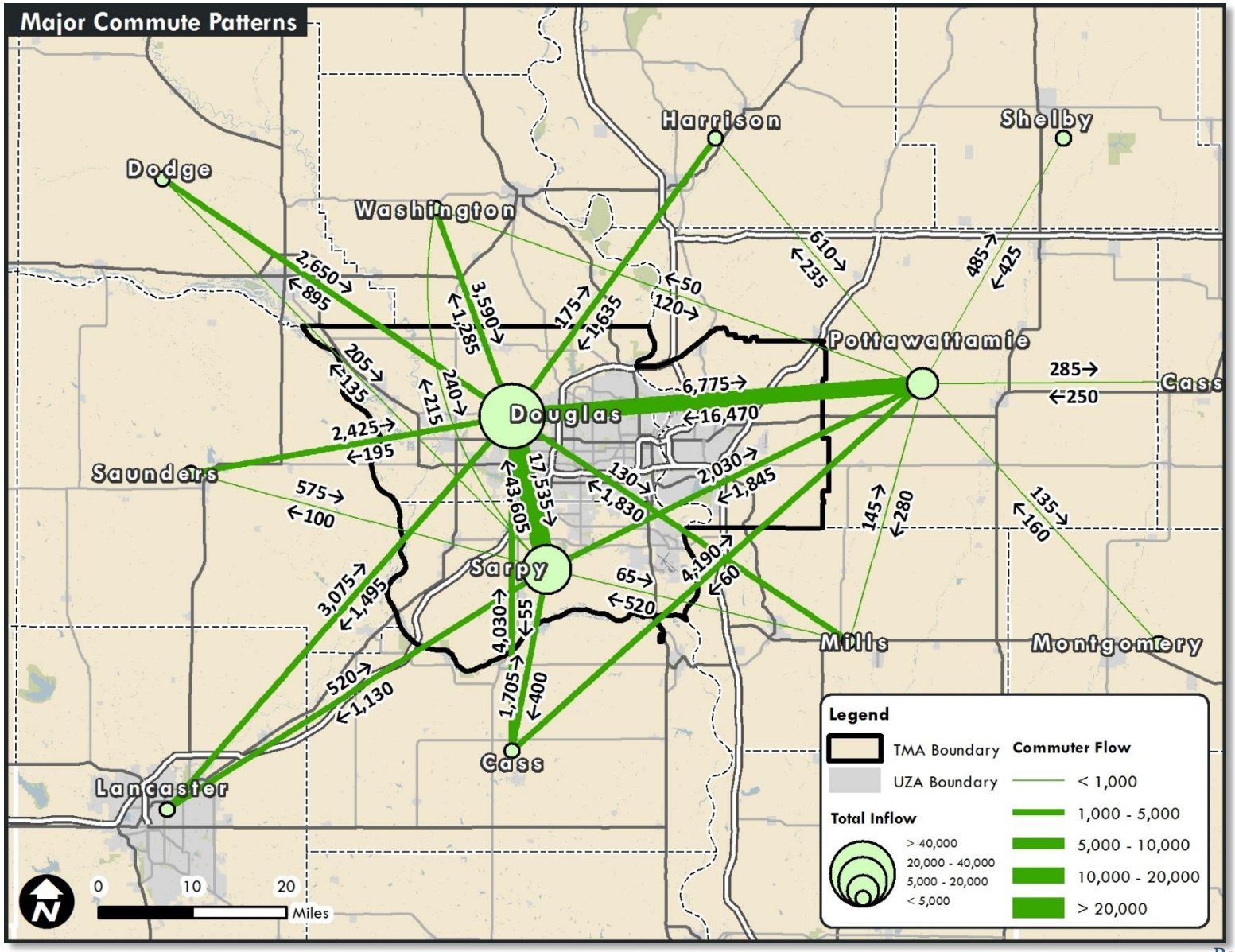
TABLE 6.2
VEHICLE OCCUPANCY FOR WORK TRIPS

Vehicle Occupancy	Total Travelers	Percent of Drivers
Drove alone	331,171	83.8%
2-person carpool	31,602	7.7%
3-person carpool	4,610	1.0%
4 + person carpool	2,959	0.7%

Source: 2012 ACS 5-year Estimate

Figure 6.2 shows the commute patterns of workers between counties in the greater Omaha metro area based on the 2010 American Community Survey. Not surprisingly, the largest movements are into Douglas County from Sarpy and Pottawattamie Counties since many residents of these two counties work in Douglas County, which has the region's highest concentration of employment. However, there is also extensive movement between the surrounding counties. The 2010 data shows worker flows of over 6,000 between Lancaster County (Lincoln, NE) and the MAPA region.

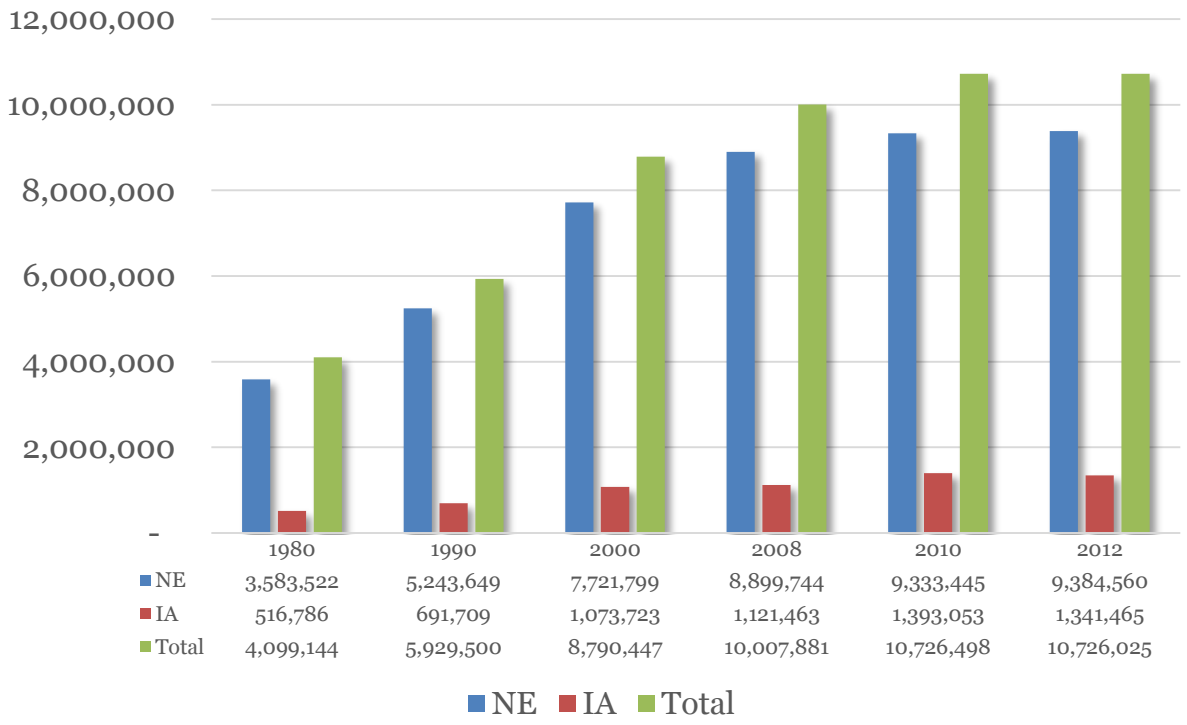
FIGURE 6.2
MAJOR COMMUTE PATTERNS – 2010



6.3 Traffic Growth

Traffic levels have grown rapidly over recent decades in the MAPA region. Vehicle Miles Traveled (VMT) is a common statistic used to measure traffic levels, which is calculated by multiplying the length of a road segment by the Average Daily Traffic (ADT) collected through traffic counts. According to MAPA Traffic Growth studies, VMT in the MAPA TMA has experienced an increase of more than two and one-half times in the past 30 years. In 1980, the daily VMT was approximately 6.6 million VMT per day, but in 2012 this amount had grown to over 10.7 million VMT. Figure 6.3 illustrates this growth for both the Nebraska and Iowa portions of the TMA, as well as the regional total:

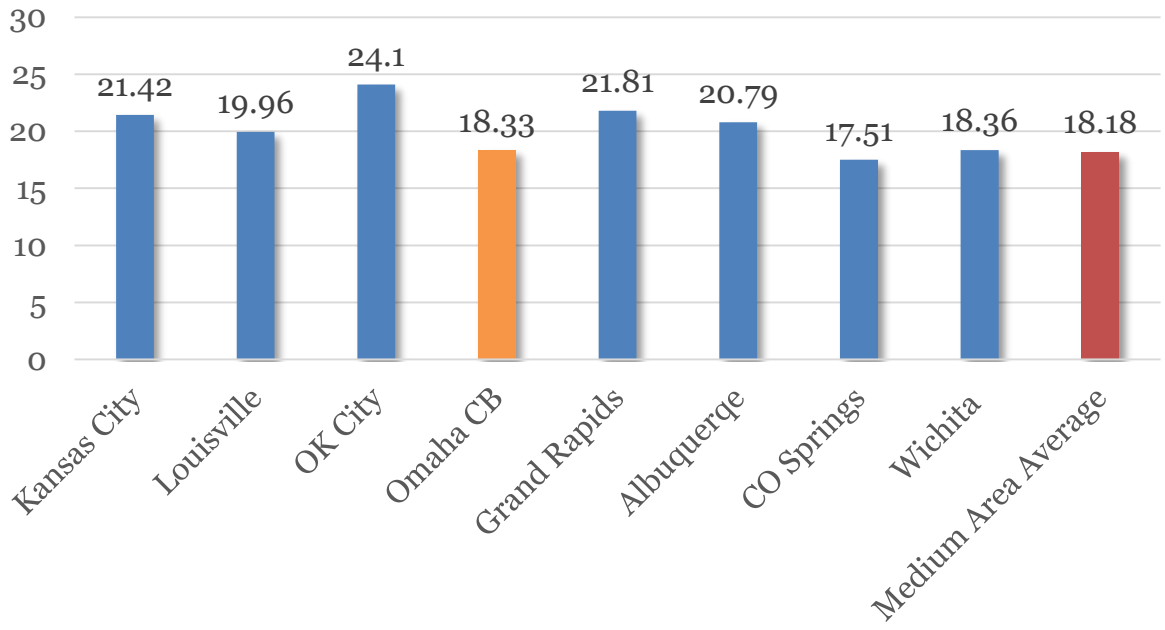
Figure 6.3
Total Vehicle Miles Traveled (VMT) in the MAPA Region



Source: U.S. Census Bureau

Historically residents in the MAPA TMA drive less than residents of most other medium-sized areas (Figure 6.4) The Texas Transportation Institute's *Urban Mobility Study* also lists Omaha as having among the lowest *per capita* VMTs in the nation for mid-sized metro areas. This is largely the result of a contiguous and relatively dense urban form and a smaller freeway system than most of MAPA's peer regions. Keeping the *per capita* VMT low, and further reducing it has been identified as a regional goal by groups such as Omaha by Design, which aim to promote active modes of transportation and coordination of transportation with land use. The relationship between population density, land use policies, and transportation is further discussed in Section 4.

FIGURE 6.4
DAILY VEHICLE MILES TRAVELED (VMT) PER CAPITA (IN 1,000S)



Source: 2012 Urban Mobility Report, Texas Transportation Institute

6.4 CONGESTION IN THE MAPA REGION

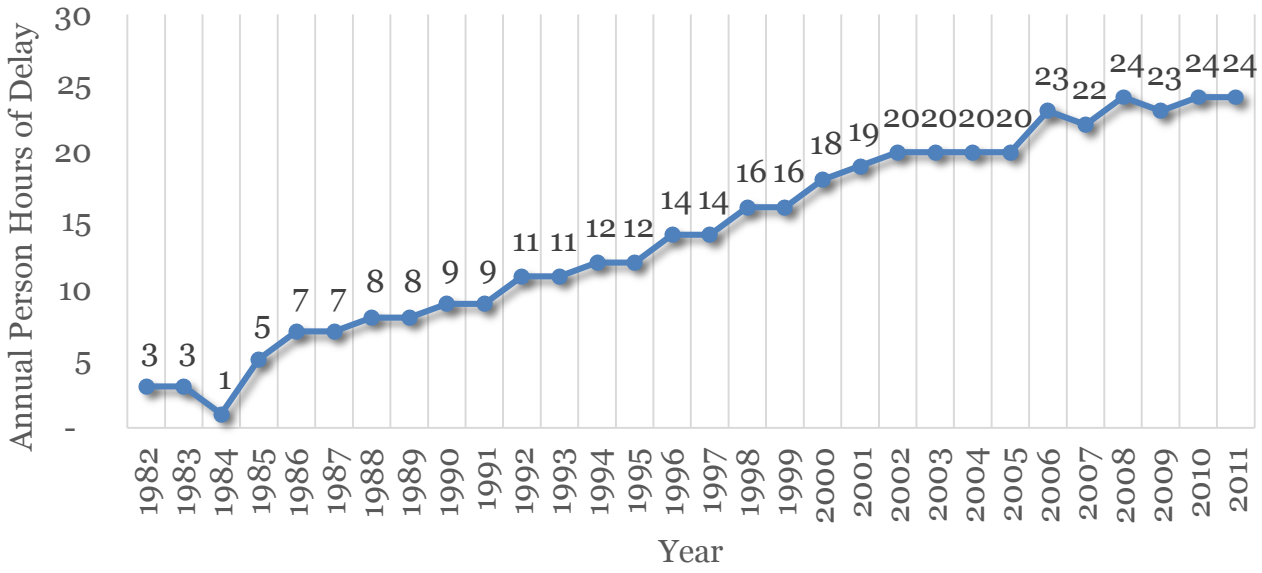
In order to address traffic congestion, MAP 21 legislation requires TMAs to create and implement a Congestion Management Process (CMP). See Section 6.5 for MAPA's Congestion Management Process. The CMP aims at providing effective management and operations of the transportation system in order to increase mobility and efficiency and more effectively utilize the region's resources. The following sub-sections explain MAPA's Congestion Management Process.

Congestion has grown significantly in the MAPA region over the past 25 years. The Texas Transportation Institute's annual *Urban Mobility Study* (which was last completed in 2012) provides a comprehensive look at traffic and congestion across the nation's metro areas. While it is a macroscopic congestion measure that does not necessarily take into account all local factors affecting congestion, it nevertheless provides a reasonable and consistent source of data that that can be tracked and compared over time.

Figure 6.5 shows the TTI study's estimated hours of delay per traveler in the greater Omaha-Council Bluffs metro area between 1982 and 2011. This study's figures show a seven-fold increase in delay associated with congestion, growing from three annual hours per person in 1982 to 24 hours in 2011. Figure 6.6 compares the MAPA region's delay to other similar metro areas. Note that the peer regions have a broad range of

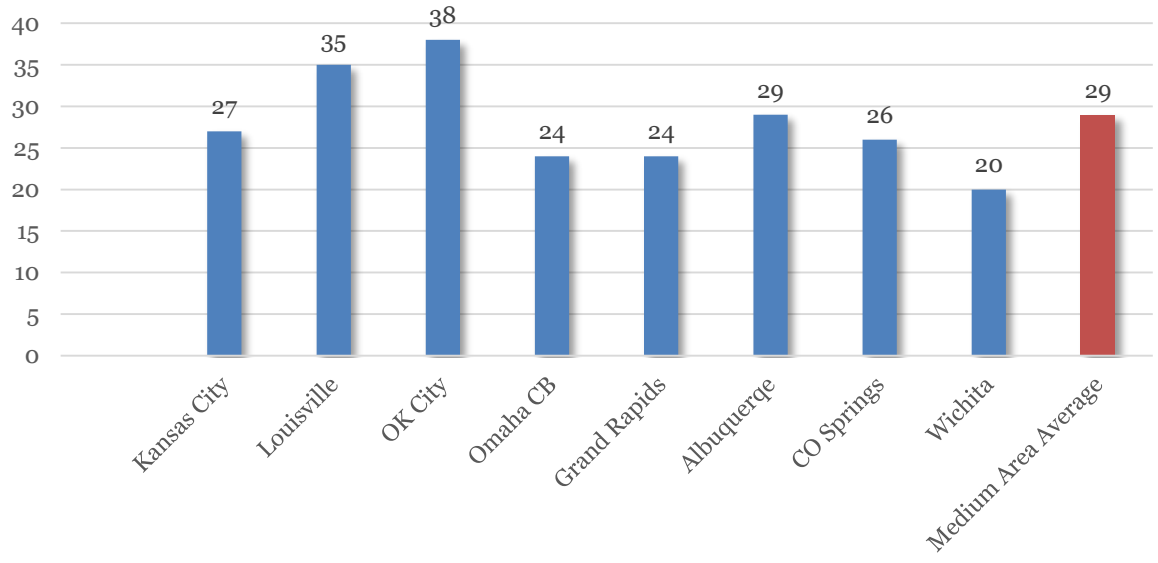
average delay. The 24 annual person hours estimated for the Omaha-Council Bluffs metro area is near the average for MAPA's peer regions.

FIGURE 6.5
MAPA REGION ANNUAL DELAY PER AUTO COMMUTER, 1982-2011



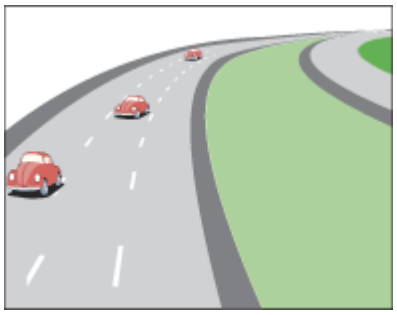
Source: 2012 Urban Mobility Report Data, Texas Transportation Institute

FIGURE 6.6
ESTIMATED ANNUAL DELAY PER AUTO COMMUTER, 2011

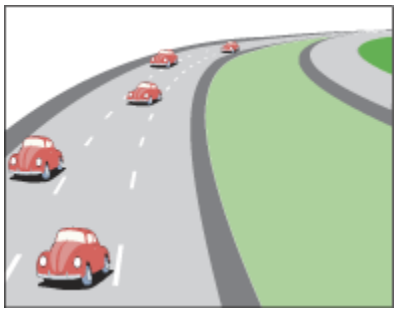


Source: 2012 Urban Mobility Report, Texas Transportation Institute

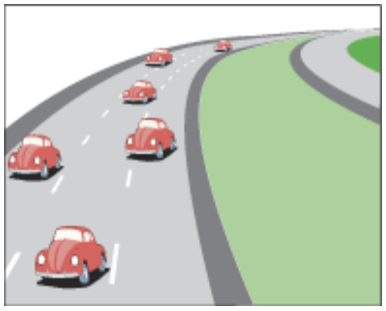
Another way to gauge congestion levels is Level of Service (LOS). This measure was used in the 2007-2009 MAPA Travel Time Study. The *Highway Capacity Manual* recommends a method of determining LOS based on average vehicle travel speed for each road segment. The LOS for a road ranges from LOS "A", meaning no congestion and very light volumes, to LOS "F", indicating a complete breakdown in a facility's performance due to very heavy congestion. The pictures below provide visual approximations of the traffic levels experienced in each LOS.



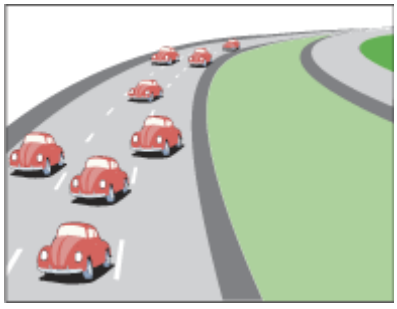
LOS "A"



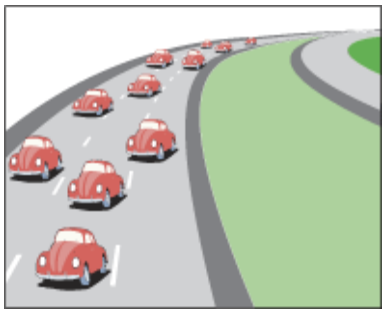
LOS "B"



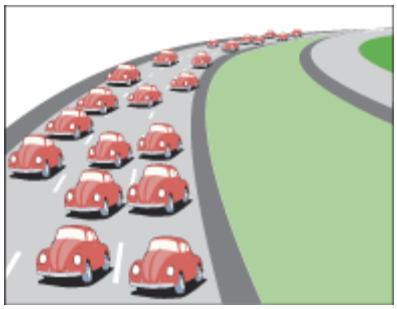
LOS "C"



LOS "D"



LOS "E"

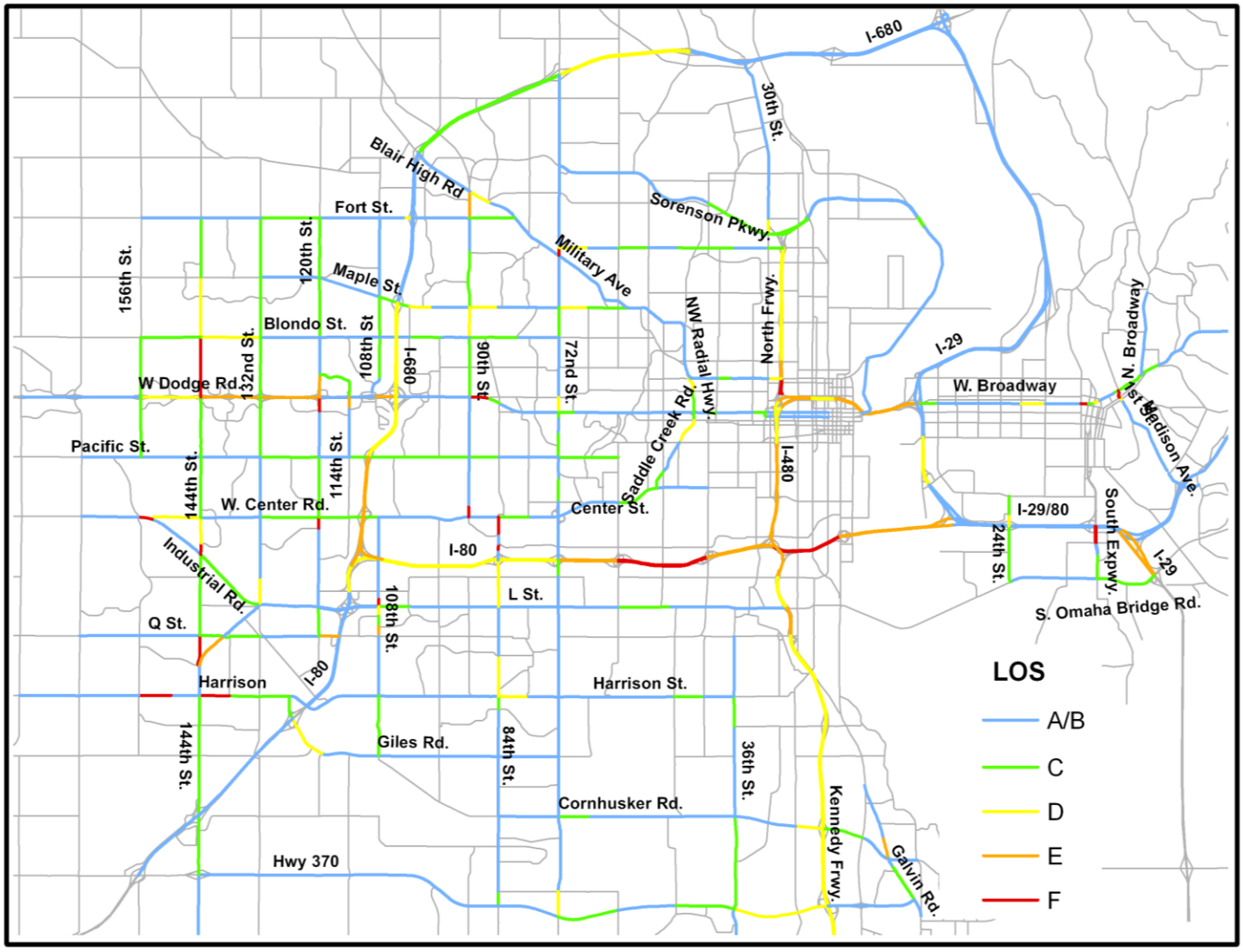


LOS "F"

MAPA's current data for Level of Service (LOS) was collected between 2007 and 2009 in the MAPA Travel time Study. However, the Metropolitan Travel Improvement Study (MTIS) is currently collecting LOS information and will be used in future studies. Figure 6.7 shows the average Level of Service (LOS) for the PM peak hour in the outbound direction (that is, the direction generally radiating away from downtown Omaha) along

segments monitored in the study. The study data confirms that congestion levels throughout most of the region are relatively low. Nevertheless, some congestion "hot spots" merit specific attention.

FIGURE 6.7
PM RUSH HOUR LEVEL OF SERVICE, 2007 – 2009



The local street system appears to have a generally high LOS rating. It is worth bearing in mind that the LOS ratings in the map above represent an average of several travel time runs recorded between four and six o'clock. Since the peak travel period in Omaha is limited, the worst traffic conditions are not represented here.

Sections with the most congestion include some locations near freeways and several in west Omaha. For instance, 84th Street between Harrison Street and West Center Road has several sections that are between LOS "D" and "F." Areas of high delay in west Omaha include Harrison Street, West Dodge Road, and 144th Street north of West

Dodge Road. In general, the east-west streets appear to perform better than north-south streets. This makes sense since the majority of travel is in an east-west direction, and traffic signals are timed accordingly to maintain traffic flow during the high traffic periods.

Along the freeways, the highest trouble spot occurs along I-80 between 72nd Street and the I-29 west junction in Council Bluffs. Several sections rate an LOS "D", including I-680 between the I-80 junction and Pacific Street and most of I-480.

In general, the segments identified as having an LOS worse than "D" (*i.e.,* sections with orange or red on the map) are fairly limited to particular locations and do not indicate a severe level of congestion on a widespread basis in the MAPA TMA. It should be further noted that projects are either under construction or planned along most of the locations with higher congestion levels that should improve the Level of Service. For instance, the large Council Bluffs Interstate Reconstruction project will improve the Missouri River crossing on I-80. The Nebraska Department of Roads is also constructing or planning improvements along the most severely congested sections of I-80 and I-680. The City of Omaha is also planning projects along 144th and Blondo Streets, while Harrison Street has been widened to a four-lane urban section east of 144th Street.

The Travel Time Study also illustrates the results of recent projects in the MAPA region. Several congestion hot spots from previous years have recently been improved. Prior to 2007, L Street / Industrial Road west of 120th Street was a four-lane facility. The LOS for L Street varied between "C" and "F." During the past few years, it was improved to a 6-lane facility with several intersection modifications. These changes were evident in the most recent round of data collection as the LOS now ranged between LOS "A" and LOS "C." Similar improvements could be seen along Q Street in southwest Omaha. Recent capacity improvements to four-lane arterials directly corresponded to LOS improvements in the Travel Time Study.

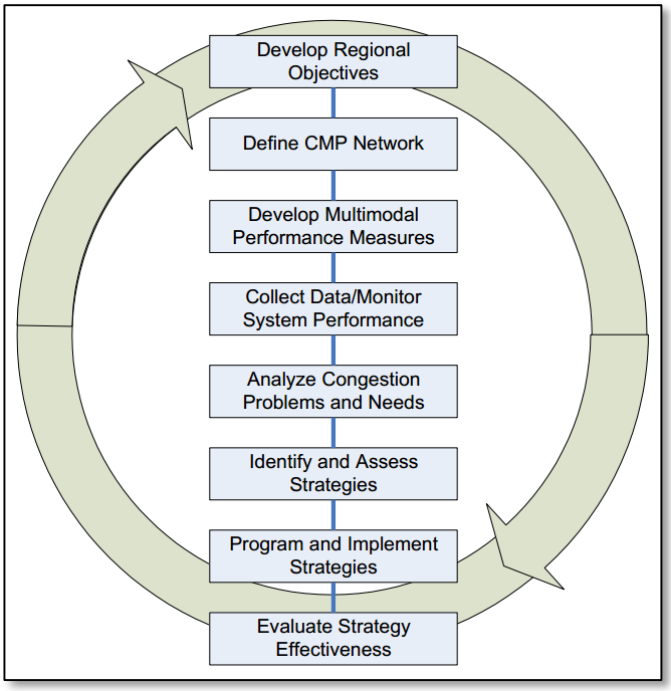
It should also be noted that there are a number of segments identified as LOS "C" or "D". While this is to be expected in any major metropolitan area, future growth will likely increase traffic on facilities past their current design capacities. The strategies listed below to reduce and mitigate congestion levels should be utilized in order to avoid a significant decrease in mobility.

6.5 Congestion Management Process (CMP)

MAPA's Congestion Management Process (CMP) is designed to establish a systematic process through which all modes of transportation are considered and utilized to ensure efficient and safe operations of the region's multimodal transportation system. The CMP provides local and regional stakeholders with the data and tools to make decisions about investments affecting congestion on the region's roadways.

The sections in this chapter mirror the eight steps in the Congestion Management Process that have been identified by FHWA. These steps are illustrated in Figure 6.8 (right). In general, MAPA has identified the current state of its CMP and the steps presently being undertaken to improve the quality of the data used in CMP analyses and the stakeholders involved in implementing strategies identified within this chapter.

Figure 6.8
Elements of the Congestion Management Process



Source: FHWA Congestion Management Process Guidebook

6.5.1 – Regional Congestion Management Principles

The goals of MAPA's Congestion Management Process mirror the four overall goals of the Long Range Transportation Plan. Each of the four goals applies, in part, to the management of congestion in the MAPA region:

1. **Maximize accessibility and mobility –** Reducing congestion helps decrease travel time and delay and improve mobility in the metro area.

2. **Increase safety and security –**Effective management and operation of the system results in a safer, more secure transportation network.

3. **Consider the environment and urban form** – Congestion management strategies aim at reducing single occupancy vehicle (SOV) travel in addition to traditional capital improvement projects to create a more livable, healthy community and reduce air pollution.

4. **Keep costs reasonable and sustainable –** The CMP includes many strategies that are very cost-effective ways of improving efficiencies such as signal improvements, ITS equipment, and incident management programs.

In order to mitigate the negative effects of congestion, MAPA has identified specific Congestion Management Principles that will assist in identifying congestion issues and prioritizing projects. These principles shape MAPA's approach to congestion management and ensure that progress towards all regional goals is maintained. A summary of these Congestion Management Principles is included below:

Maintain LOS "D" or Better on the Region's Roadways – Based on the population growth projections identified for the MAPA region, it is not conceivable that congestion will be fully eliminated by 2040. As such, MAPA has established that Level of Service "D" represents an acceptable level of congestion for the region's busiest roadways, and that this level of congestion provides adequate mobility for the travelling public– particularly on the region's most important roadways.

Maintain Travel Times Below 20 Minutes – Residents in the Omaha region have, for many years, enjoyed average commute times at or below 20 minutes. Continued growth and increased traffic on the region's major roadways have reduced the segment of the population that still enjoy short commutes. This principle will help ensure a high quality of life for residents of the MAPA region.

Strategically Invest in New Technologies – Many regions have had difficulty "building their way out" of congestion. MAPA recognizes the importance of investing in technology solutions (such as Adaptive Traffic Signal Control) in order to maximize the existing roadway infrastructure within the region.

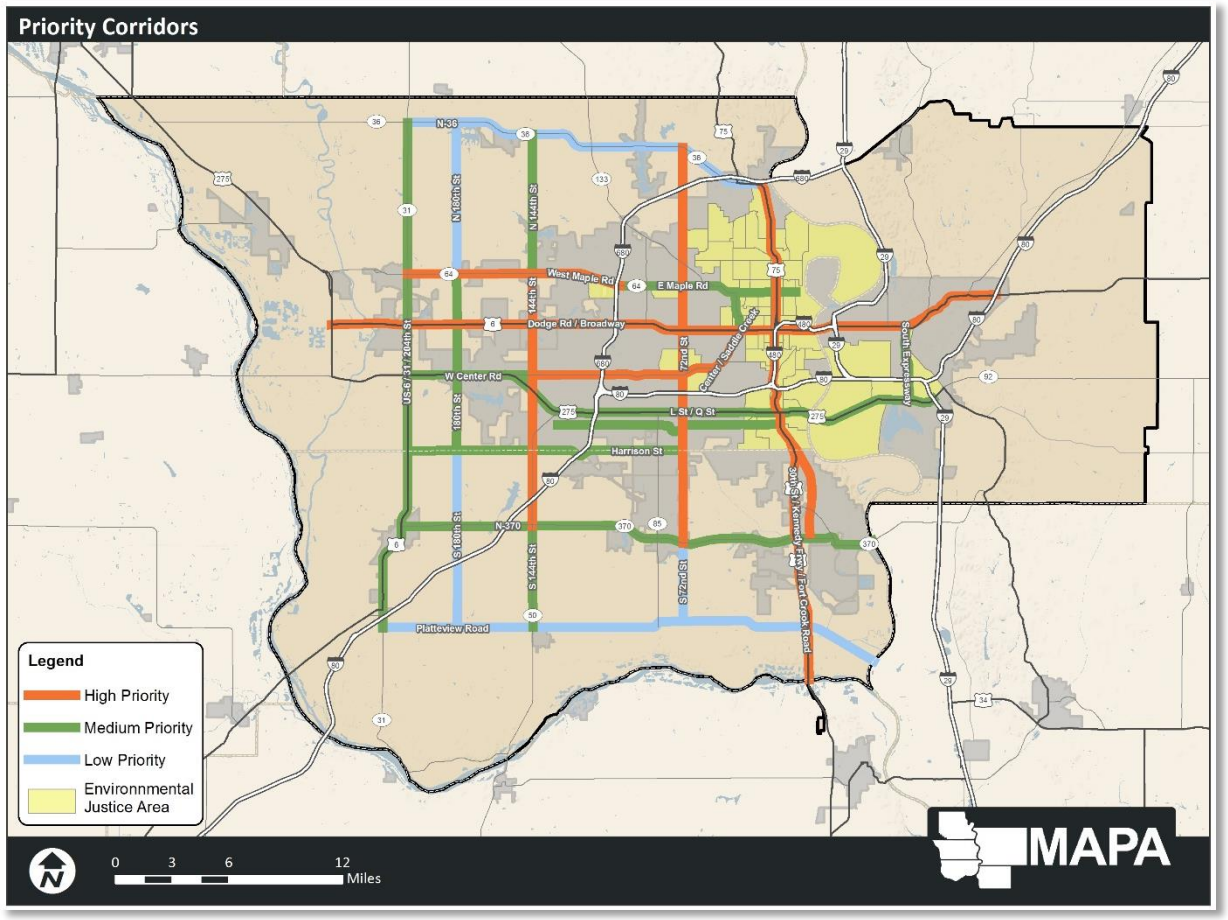
Reduce Single-Occupancy Vehicle Rates – Travel Demand Management (TDM) strategies such as rideshare/vanpool programs, park & ride lots, and other investments in public transit can directly impact congestion by reducing the number of vehicles on the road or by increasing the number of people in each vehicle.

6.5.2– Congestion Management Process (CMP) Network

The National Highway System (NHS) network within the MAPA TMA comprises many of the regions most important roadways– including the interstate. As such MAPA utilized the National Highway System as the basis for its CMP network.

In 2013, MAPA's Project Selection Committee (ProSeCom) undertook a process to identify Priority Corridors in which Regional-STP funding would be prioritized (high, medium, and low priority). These roadways were selected based on their importance to regional mobility at present and expected development over the next couple decades. These priority corridors include the entire non-interstate NHS in addition to a few other corridors of local significance. A map of MAPA's Surface Transportation Program Priority Corridors is included in Figure 6.9 (next page).

FIGURE 6.9
MAPA CONGESTION MANAGEMENT PROCESS NETWORK



6.5.3– MAPA'S MULTI-MODAL PERFORMANCE MEASURES

The performance measures described below were derived in part from the scenario planning conducted as a part of the development of this plan. These measures (and others) were utilized to vet scenarios and to identify strategies and projects which made the greatest impact in reducing future congestion issues.

A summary of the performance measures outlined as a part of this Congestion Management Process are included below:

> **Priority Corridor Volume-to-Capacity (V/C) Ratio** – The volume to capacity ratio of corridor segments is an effective way of estimating future needs within the transportation network. Additionally, the V/C ratio provides a measure of the intensity of congestion along a particular segment. The V/C ratio is derived from the model.
>
> *Performance Measure: Total mileage of Priority Corridors with V/C > 1.0*

Average Regional Travel Time – More than half of all commutes in the MAPA region are less than 20 minutes based on 2012 American Community Survey (ACS) data. While the population within the MAPA region continues to grow, the 20 minute commute threshold represents an important measure of the progress being made towards reducing congestion. This data is provided from the ACS.

Performance Measure: Average commute time from American Community Survey

Cost Effectiveness– In order to "Keep Costs Reasonable and Sustainable" (a goal of this LRTP), MAPA included a performance measure related to the cost effectiveness. In addition to calculating the total cost of the LRTP program of projects, MAPA estimated the total Vehicle Hours Travelled (VHT) reduction that would occur based on the output of the Travel Demand Model. This measure provides a useful way of comparing the costs of the LRTP program to the benefits realized by the travelling public (i.e. less time spent in their vehicles).

Performance Measure: Ratio of LRTP program cost to VHT reduction over 2040 no-build scenario in Travel Demand Model

6.5.4– Collect Data & Monitor System Performance

MAPA currently undertakes many data collection activities related to traffic patterns and travel demand. Notably, MAPA maintains a database of regional traffic count data and publishes traffic reports every two years. This data collection serves as the basis for the HPMS data submitted to NDOR on behalf of the MAPA region. Additionally, this data serves as the basis for the validation of MAPA's regional Travel Demand Model– a critical tool for testing the effectiveness of various strategies and determining regional V/C and VHT improvements. MAPA uses US Census data as the socio-economic input when developing the model.

Additionally, MAPA maintains American Community Survey (ACS) data as it is released by the United States Census bureau. This data provides important characterizations of current commute times for residents of the MAPA region, and will be an important measure of the MAPA region's progress towards mitigating current congestion issues through the implementation of the Transportation Improvement Program (TIP). Furthermore, the US Census data provides key population and employment data. This demographic data is used to calibrate and validate the model.

MAPA is also in the process of negotiating agreements with NDOR and IDOT to gain travel time data from a national vendor. In the future, this dataset will provide MAPA with a high resolution of bottlenecks within the CMP Network and serve as an effective tool for evaluating future strategies as a part of MAPA's CMP.

6.5.6– Analysis of Congestion Problems & Needs

Sections 6.2 through 6.4 of this chapter provide a high-level overview of congestion and mobility issues within the MAPA region. This analysis was conducted based on existing sources of data available from state and local sources at the time this plan was developed.

In the future, partnerships with State Transportation Agencies and local jurisdictions may provide additional data from which these characterizations of congestion may be improved over time.

In general, the majority of the Metro's residents achieve a commute of less than 20 minutes in single occupancy vehicles. However, continued development in the rural parts of Douglas and Sarpy Counties is lengthening commutes for downtown employees. Most congestion occurs during the AM and PM peak periods, but capacity is sufficient throughout the rest of the day.

6.5.7– Regional Congestion Management Strategies

Numerous strategies have been identified as potential means by which congestion in the Omaha Metro can be reduced. These strategies have been identified through other local and regional planning efforts through stakeholder and public involvement. The Multi-Modal Planning Group (MPG) is a collection of transportation planners, engineers, advocates, and air quality professionals who will meet regularly to discuss potential approaches to managing the region's congestion. Many strategies identified by this group were incorporated into the discussion below.

Table 6.3 (next page) provides an overview of the identified causes and contributors to congestion in the MAPA region and potential strategies for addressing or mitigating these issues. A detailed discussion of each management strategy is included within the sections that follow this table.

TABLE 6.3 – CONGESTION CAUSES AND MANAGEMENT STRATEGIES

Congestion Causes		Congestion Management Strategies
A) Geometric - Capacity Improvements	Inadequate access management	Use access management principles in street and highway design.
	Inadequate capacity	Increase road capacity when necessary.
	Transit Service	Incorporate bus-friendly design features (*e.g.* dedicated lanes, queue jumper).
	Truck traffic	Design for smooth truck traffic; encourage trucks to use right lanes on freeways.
B) Technology - Operations	Traffic signal synchronization	Improve traffic signal technology and coordination.
	Traffic incidents	Improve incident management strategies.
C) Demand - Alternative Transportation	High SOV (single-occupancy vehicle) travel	Enhance strategies to reduce SOV travel-park and ride lots, vanpools, rideshare, supportive land use.
	Insufficient road capacity	Widen and channelize roads.
	Insufficient bicycle-pedestrian facilities	Improve bikeways and walkways, expand system, and increase connectivity.

A) GEOMETRIC IMPROVEMENTS

Use access management principles in street and highway design.

Street and highway design plays an important part in reducing traffic congestion. As discussed in Section 5, access management principles allow for safe and smooth traffic flow. Access management includes the proper spacing of driveways, on-site traffic circulation, median treatments, left and right turn channelization, pavement markings, proper signage, among other actions that improve traffic flow and safety. Incorporating access management into the design for intersections, street sections, and parking management is also critical to diminishing traffic congestion.

Increase road capacity when necessary.

Capacity improvements are necessary to reduce traffic congestion and allow for smooth traffic flow. While the MAPA Long Range Transportation Plan supports the reduction in single occupancy vehicle travel, high traffic congestion results in increased costs and delays to users and higher emissions that worsen air quality. Therefore, the planned street and highway capacity improvements listed in the Street and Highway section are intended to prevent high levels of congestion and maintain mobility in the MAPA TMA.

Incorporate transit-friendly design features.

Streets should be designed in a manner that is conducive to transit and also reduces conflicts with traffic flow. Transit-friendly design should include convenient, accessible transit stops to provide clear priority for a transit vehicle in addition to improvements to sidewalks and pedestrian crossings. Additionally, dedicated transit lanes and queue jumpers can make transit service more rapid. These design features improve the quality of transit service and make it a more desirable option for shifting SOV trips to transit. Local jurisdictions are encouraged to cooperate with Metro Transit in their planning process to ensure that transit is considered as roadway projects are developed. Ongoing coordination regarding the development of a Complete Streets policy for the City of Omaha and the Central Omaha Bus Rapid Transit (BRT) project have continued these efforts.

Design for smooth truck traffic; encourage trucks to use right lanes on freeways.

Roads and intersections along designated freight corridors should also be designed with the goal of enhancing the flow of freight movement in mind. For example, right-hand turns on truck routes can be designed with proper turning radii, and acceleration lanes can be longer to accommodate truck traffic. These goals reduce conflicts with non-freight traffic, while also assisting the freight and goods movement industries. See Section 13 for additional information on Freight and Goods Movement.

B) TECHNOLOGY – OPERATIONS

Improve traffic signal technology and coordination.

Drivers experience stops, delays, and longer travel time due to insufficiently synchronized traffic signals. Traffic signal coordination is dependent upon multiple elements. Traffic engineers use signal timing plans to program how the signals operate. However, the sophistication of the coordination between signals depends on the available software, hardware (conduit, controllers, etc.), as well as the communications between signals. Signal coordination is limited by the staff and funding available to analyze and coordinate the systems and whether the infrastructure and technology that is necessary to coordinate the signals are in place.

Communities in MAPA region continue to upgrade their signal technology. The City of Omaha recently adopted its Signal System Master Plan and MAPA coordinated the development of systems engineering documentation for Regional Adaptive Signal Control Technology (ASCT) in 2013. This report developed requirements and verifications for ASCT along three major corridors in the MAPA region:

- Dodge Street (69th to 93rd Street) - Omaha
- 84th Street (Center Road to Lincoln Road) - Omaha, Ralston, La Vista, & Papillion
- Highway 192South Expressway (19th Avenue to 35th Avenue) – Council Bluffs

ASCT technology was implemented along the Dodge corridor in 2014 using HSIP funding. Other projects and improvements identified in these will be implemented as funding becomes available.

Expand fiber-optic and other communications infrastructure

Agencies in the metro area are examining ways to expand the communications infrastructure to allow for improved technological solutions that include signal coordination, incident management, and emergency response. The Nebraska Department of Roads (NDOR) is currently prohibited by State law from owning fiber-optic infrastructure cables, which has limited the region's communications resources. However, agencies have various strategies, including working with private providers on public right-of-way to create the necessary infrastructure. These resources should ultimately tie in to the NDOR's District Operations Center (D.O.C.) to coordinate incident management efforts between jurisdictions. The City of Omaha is leading region efforts to expand local fiber-optic networks and to make signal operations interoperable between jurisdictions on important corridors.

Improve incident management strategies.

Crashes and other incidents can result in significant traffic delays, particularly on freeways where lane closures have the ability to create bottlenecks and congestion on a massive scale during peak hour traffic. MAPA commissioned an *Omaha – Council Bluffs Traffic Incident Management Operations Manual*, which was published in 2005. The Manual identified strategies and opportunities for improvement to incident response in the MAPA region.

Recently, significant additions in Intelligent Transportation Systems (ITS) technology have been made in the MAPA region on both sides of the state line. In Nebraska, the District Operations Center located at Nebraska Department of Roads' District 2 headquarters is open and fully functioning. NDOR and the Nebraska State Highway Patrol are co-located in the facility to foster better communication and coordination. NDOR has also added numerous cameras along the state highway system in the metro area.

The Iowa Department of Transportation is currently undertaking a large ITS project in the Council Bluffs area. This includes the installation of cameras along Council Bluffs streets and at interchanges with I-29/80 to assist in incident management. In order to ensure that this investment is used effectively, Iowa DOT is leading the Western Iowa ITS Traffic Incident Management ("TIM") effort. This involves stakeholders from across the greater Omaha-Council Bluffs metro area involved with incident management to update the Traffic Incident Management Operations Manual from 2005 and integrate the new ITS technology into the procedures and protocols utilized by incident management personnel. The effort should result in expanding the use and effectiveness of ITS technologies in incident management in the metro area.

C) DEMAND – ALTERNATIVE TRANSPORTATION

Enhance strategies to reduce single occupancy vehicle (SOV) travel.

SOV travel is the predominant mode of transportation in the MAPA region. As noted in Table 6.1, nearly 83 percent of all work trips are SOV trips. While the ability to transport oneself autonomously provides benefits to travelers in terms of convenience and time, it results in traffic congestion and deteriorating air quality for the metro area, among other problems (see Section 5 for more discussion on this).

Efforts to reduce traffic congestion in the MAPA region must include increasing non-SOV travel, whether it is by alternative transportation such as bicycle, pedestrian, and transit usage or by increasing auto occupancies. Fewer SOVs on the road will lessen congestion, as well as mitigate other transportation related issues such as infrastructure costs, fuel consumption, vehicle emissions, etc. The following is an overview of current strategies as well as potential future tools aimed at reducing SOV travel in the MAPA region:

Travel Demand Management

Transportation Demand Management is a general term for various strategies that increase transportation efficiency. MAPA currently operates two TDM strategies: a carpool system and a Commuter Challenge. MAPA is also working on developing a vanpool system and other TDM strategies.

MAPA currently operates MetrO! Rideshare, which is a free web-based carpool matching system available for those who live or work within the MAPA Region. Metro Rideshare has been available since October 2007. Since that time, the number of registered users has been as high as 2,500. Currently, the number of registered users is near 1,100. MAPA has also been forming partnerships with area companies, businesses, organizations, schools, and cities to help in the marketing for the services. These relationships also help encourage the use of alternative forms of transportation in the area.

MAPA has led or coordinated an annual Commuter Challenge every summer since 2009. These challenges are to promote carpooling, transit, and bike riding while reducing single occupancy vehicle commutes to work. The 2014 Commuter Challenge was coordinated with Live Well Omaha's annual bike challenge. The challenge coordination boosted participation and saved 32.120 tons of CO2. (For more information please see, http://www.omahacommuterchallenge.org.)

Coordination is continuing between MAPA, NDOR, the Lincoln Metropolitan Planning Organization, the University of Nebraska system, and various other partners to develop a vanpool system. The project team is investigating the possibility of creating a vanpool network between Lincoln and Omaha based upon the 2013 External Travel Survey, which showed over 4,000 vehicles are commuting between the two metropolitan areas.

Fixed Route Transit Service

Metro Transit is the primary public transit provider in the metro area. As discussed further in Section 8, they operate over 40 routes covering thousands of miles each day. A regional, more comprehensive transit system would increase transit ridership and decrease SOV travel. Metro Transit and the City of Omaha completed an Alternatives Analysis of rapid transit corridors in Central Omaha and expect to construct the initial corridor on Dodge between Westroads Mall and Downtown Omaha by 2018.

Coordination between Land Use and Transportation Planning

The dominant development trend in recent decades within the MAPA region has been suburbanization built around the automobile. This has made alternative transportation difficult, if not impossible, in some parts of the metro area. Strategies to better coordinate land use with transportation to more easily accommodate non-SOV travel such as transit-oriented development (T.O.D.) or the Complete Streets approach are encouraged. See Section Four for more discussion on the connection between land use and transportation.

Sidewalks and Walkways

Sidewalks in residential areas should have connectivity to provide a continuous link to schools, businesses, and other destinations. Retrofitting to add sidewalks where there is no connectivity in developed areas is encouraged, although it can sometimes be challenging in developed areas. Walkways should provide Americans with Disabilities Act (ADA) accessibility ramps where called for, and should be sufficiently wide to comfortably accommodate multiple pedestrians. See Sections 6 and 11 for more details on sidewalks and walkways.

Trails and Bikeways

Trails and bikeways, such as side paths or shared use paths, provide necessary facilities for alternative modes of transportation. The MAPA region already has an extensive trail network that will form the backbone of future extensions. Trails within the metro area should be sufficiently wide to comfortably accommodate multiple bicyclists and pedestrians. See Sections 6 and 11 for more details on trails and bikeways.

Parking Management

Parking policies have a large influence on travel behavior. In regions such as the greater Omaha-Council Bluffs area where free parking has become the norm, it can be politically difficult and counter-productive to charge parking fees in urban areas. Still parking policies might need to be reassessed to maximize the effectiveness of available parking in harmony with local land use goals and alleviate parking supply-and-demand mismatches. For example, MAPA and the City of Omaha are currently collaborating on a

downtown parking study that will analyze parking in the Downtown Omaha / Qwest Center area and identify alternatives for the area.

Tolls and Congestion Pricing

The States of Iowa and Nebraska do not currently allow toll roads on the state highway system. However, many jurisdictions throughout the country facing congestion issues have found these to be among the most effective strategies at reducing congestion and providing sorely needed funding for transportation facilities. In addition to standard toll roads, some locales are implementing congestion pricing that varies the toll rate based on demand. Other toll roads include "HOT" lanes (high occupancy / toll). In contrast with standard "HOV" lanes which require vehicles to have at least more than a single passenger, "HOT" lanes allow SOV travel with a toll. These have proven to be feasible in places where HOV lanes were ineffective.

Social equity concerns are sometimes raised about toll roads and congestion pricing. Low-income populations are perceived to receive a disproportionate share of negative impacts since they presumably have less ability to pay the tolls on a higher speed facility. However, research has suggested that low-income populations have the highest cost-benefit ratio of any income group on facilities with tolling or congestion pricing.[1] While MAPA jurisdictions are not planning on adding tolls and congestion pricing in the near future, they should continue to be studied and considered as potential future funding sources for the MAPA region.

6.5.8– Assessment of Congestion Management Strategies

MAPA conducted extensive Travel Demand Modeling as a part of the development of this LRTP in order to assess the model's sensitivity to various congestion strategies. This modeling included various multi-modal strategies including increased roadway capacity, technological innovations (such as adaptive signal control), and improved transit service. These strategies were first evaluated individually and then were bundled into scenario packages that provided information about comprehensive approaches to managing congestion issues in the Omaha Metro. A summary of these scenarios is included in Table 6.4 (next page).

[1] Lisa Schweitzer, Brian D. Taylor. "Just pricing: the distributional effects of congestion pricing and sales taxes" *Transportation*; November 2008. Springer Science and Business Media.

TABLE 6.4 – TRAVEL DEMAND MODELING SCENARIOS

Scenario	Description
A - ProSeCom & 2035 LRTP Projects	Projects identified by ProSeCom and existing 2035 LRTP projects
B - Core Density & 2035 LRTP Projects	Shift 10% of growth from outside Interstate loop to within and 2035 LRTP projects
C - Core Density, Transit, and 2035 LRTP Projects	Shift 10% of growth from outside Interstate loop to within, Phase III Transit projects, and 2035 LRTP projects
D - ITS & 2035 LRTP Projects	Assumption that all priority corridors would have capacity improved by 13% and 2035 LRTP projects
E - Priority Corridors (6-lanes) & LRTP 2035 Projects	Increases all Priority Corridors in the no-build network to 6 lanes

While many of these scenarios included elements that may not be entirely feasible by the year 2040, the process of evaluating potential strategies was important to understand and inform future transportation policy decision for the region.

These scenarios were evaluated based on several indicators including: Total Flow, Priority V/C, Total VMT, Total VHT, Flow/VHT Ratio, Lane Mile Increase, Capacity Increase, Cost, Cost Effectiveness, and existing LRTP goals. In general, the most cost effective scenarios provided the lowest increase in lane miles and capacity. However, the scenarios that provided the highest Priority V/C were the least cost effective.

A detailed discussion of these scenarios and their incorporation into the program of projects for this LRTP is included in Chapter 7– including the key outputs of the model used to evaluate the scenarios based on this CMP.

6.5.9– PROGRAMMING AND IMPLEMENTATION OF CMP STRATEGIES

The implementation of this CMP and its strategies is achieved in two primary ways. First, as discussed above, the outputs of MAPA's Regional Travel Demand Model were utilized to prioritize investments along priority corridors within the planning horizon for this plan. Many existing projects where expanded to incorporate elements identified through MAPA's CMP including the incorporation of ITS elements and additional capacity improvements.

Secondarily, MAPA incorporates many of these same measures into its annual project selection cycles. The Project Selection Committee (ProSeCom) developed competitive criteria for MAPA's regional Surface Transportation Program (STP) funding in 2013, and has made several key revisions since that time. At present, projects are evaluated based on a variety of factors, summarized in Table 6.5 (next page).

TABLE 6.5 – MAPA REGIONAL-STP PROJECT SELECTION CRITERIA

	General Roadway Projects (Urban or Rural)	Alternative Transportation Projects	Transportation System Management Projects
% of Annual Funding	75 - 90%	10-25%	
Project Type	General roadway projects and other transportation improvements	Alternative transportation projects are defined as projects that focus on modes of travel other than private single-occupancy vehicles such as walking, bicycling, carpooling, or transit.	Systems management is a broad term that encompasses planning studies, Intelligent Transportation System activities, signal coordination projects, or any other transportation project that enhances the operation of the transportation system.
Criteria	• Percentage of Local Match • Priority Corridors • Future Level of Service • Redevelopment and EJ • Pavement Condition • Ability to AC work • Safety • Bridge Sufficiency • Bridge Statues • Bridge Detour Length • Transportation Emphasis Areas	• Percentage of Local Match • Public Health Benefits • Air Quality Benefits • Walkability, Access, and Equity • Community Neighborhood Facilities and Land Use Connectivity • Link-Node Ratio • Bicycle and Pedestrian Safety	• Percentage of Local Match • Intelligent Transportation System- Delay Reduction (LOS) • Benefits of the Proposed Study • Description of Multi-Jurisdictional Impacts

Many of these strategies are consistent with and derived from the approach detailed in this CMP including the measurement of LOS improvements and delay reduction achieved through ITS improvements. MAPA and ProSeCom will continue to evaluate these project selection criteria to ensure they are reflective of the principles detailed in this CMP and are making progress towards implementing regional mobility goals.

6.5.10– Evaluation of Congestion Management Strategies

MAPA will continue to improve its approach through future Long-Range Transportation Planning efforts and through its continued refinement of regional project selection criteria. By tracking progress during the five (5) intervening years between LRTPs, MAPA believes progress towards the goals of this CMP will be able to be measured and fed back into decision-making and prioritization of projects. Future LRTPs will continue to refine the specific objectives and performance measures used to measure congestions based on cooperation and coordination with state and federal agencies.

Additionally, each year MAPA's ProSeCom evaluates the criteria used to make project selection decisions about the Omaha-Council Bluffs apportionment of Surface Transportation Program funding. As the largest source of federal funding received by the region, this program will likely have the greatest impact and comprise the greatest progress towards the goals of this LRTP and CMP.

Future Multi-Modal Transportation Investments

7.1 Introduction

The MAPA TMA is required to identify future transportation projects as part of its Long-Range Transportation Plan. This section discusses funding for transportation investments and includes the list of anticipated street, highway, and transit projects for the MAPA region. These projects are required to be "fiscally-constrained," meaning that the total project costs may not exceed reasonably anticipated revenues. A detailed discussion of this analysis is included later in this chapter. Additionally, MAPA's Travel Demand Model was utilized heavily to test various projects and strategies to understand different investment strategies. This analysis is described in detail in Section 7.5.

7.2 State of Transportation Funding

Transportation officials have described the lack of funding for transportation projects in the country as nothing less than a "perfect storm," in which costs have skyrocketed while revenues have stagnated, if not declined. The sources of the current funding issues are several. First, inflation in the construction industry has outpaced general inflation, due in large part to increased global competition for construction materials such as steel. Until stabilizing in the recent past, traffic growth has far surpassed population growth, which means that congestion and need for roadway projects has continued to grow at an exponential rate.

On the other hand, revenues have not kept pace with transportation needs. The federal gas tax is a static user fee at 18.4 cents per gallon and not indexed to inflation. It was last increased in 1993, and there appears to be little political will to raise it. In addition, vehicles are becoming more fuel efficient so the amount of money per mile driven has decreased.

As such, the federal Highway Trust Fund has not been sufficient to fund the transportation programs authorized in MAP-21, the last transportation bill. Transfers of money from the general fund have been required to finance these programs. As of Spring 2015, the federal transportation programs are operating under a continuing resolution of MAP-21- originally authorized as a two-year funding bill. Whether Congress decides to take up reauthorization of federal transportation legislation or decides to pass additional continuing resolutions, additional Congressional action will be required to fund the federal transportation programs.

The transportation funding crisis has been felt in the MAPA region, albeit not as severely as some other regions of the country. Several projects that have been scheduled or planned for years have been pushed back, if not cancelled altogether. This 2040 Long Range Transportation Plan (LRTP) attempts to reflect realistic expectations of future funding based on historic trends. If additional revenues become available, then the future funding projects will be reassessed and potentially increased. As of now, MAPA

forecasts approximately $3.5 billion in funds will be available to the region for transportation projects over the next 25 years.

7.3 Regional Travel Demand Model

MAPA utilizes a computer model, known as a "travel demand model," to forecast future traffic in the region. Models can be helpful tools to transportation planners and engineers in analyzing future traffic demand, and MAPA's forecasts are utilized in the project development process.

Travel demand models divide the region into 770 traffic analysis zones, or "TAZs." Socio-economic data is used to estimate the number of vehicles traveling to and from each of the TAZs along a model network that represents the street system. Local streets are not included in the model, but are represented by centroid connectors, which connect the TAZ to the arterial streets. Figure 7.1 (next page) shows the current MAPA model network.

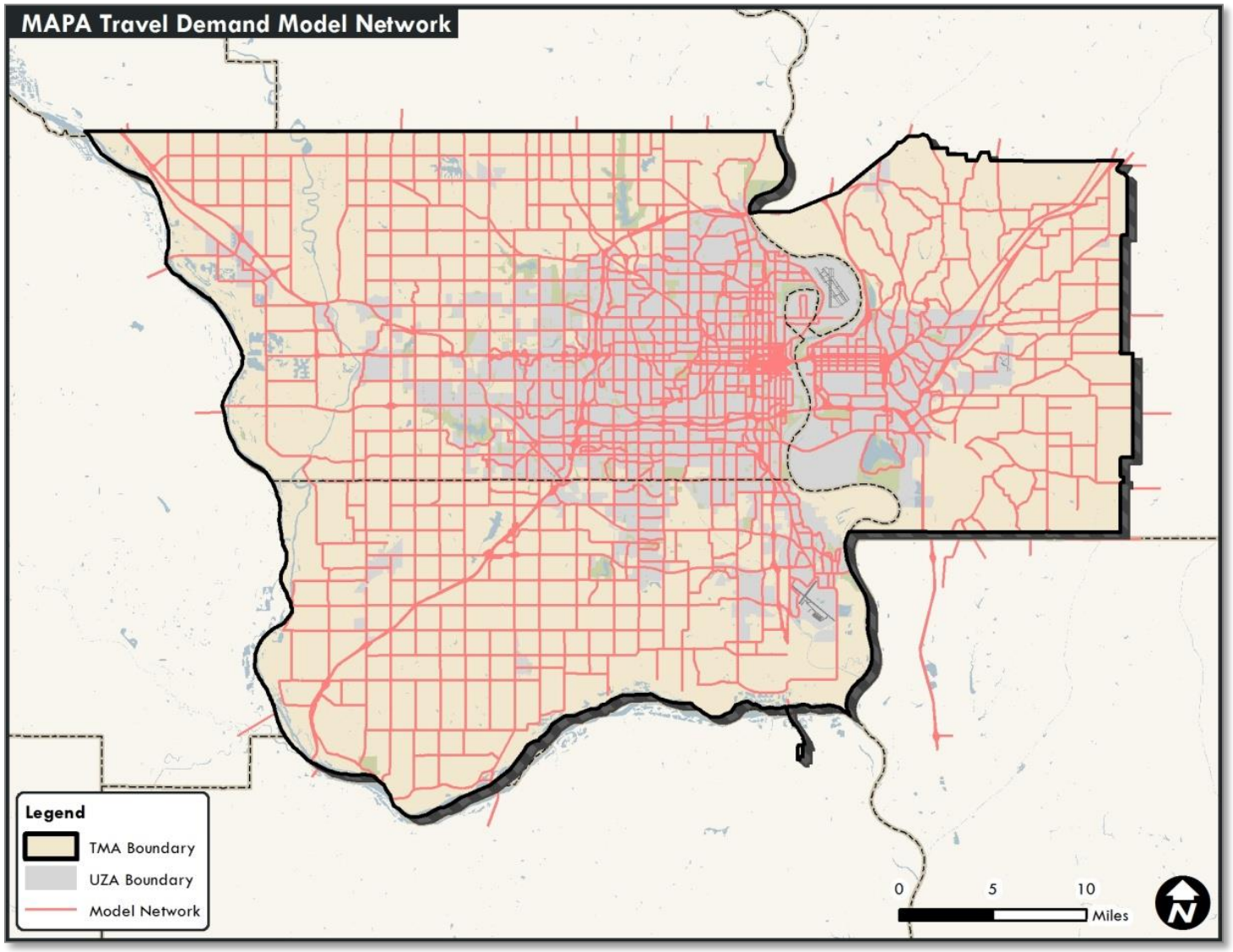
Travel demand modeling traditionally follows a four-step process: trip generation, trip distribution, mode split, and traffic assignment. Congested travel times are fed back to the trip distribution and mode split steps to assure consistency of travel times and travel choices. The mode split component of this model estimates transit and non-motorized trips.

Trip Generation: The process of determining the number of trips produced by and attracted to each TAZ. Data such as the number of households, employment, or average income are used to determine trips. The MAPA model calculates the number of person trips and later converts these trips to vehicle trips using average vehicle occupancy rates for each trip purpose.

Trip Distribution: The process of linking, of forming complete trips between TAZs. This process is based on the "gravity model," which links trip ends based on their relative attractiveness, which is related to average travel times between the production and attraction TAZs.

Trip Assignment: The process of "loading" trips onto the roadway network to determine which path is most likely to be taken to complete a trip. Routing is based on determining the minimum time paths available for making a trip. The MAPA model includes a feature that considers the added travel time as a roadway reaches capacity in order to adjust for the effects of congestion.

FIGURE 7.1
MAPA TRAVEL DEMAND MODEL NETWORK



A base year is used to calibrate and validate the travel demand model. MAPA is currently using a base year of 2010. The model heavily depends on socio-economic data, which is most accurately captured in the decennial Census. Socio-economic becomes less reliable as one gets further removed from the decennial Census.

The model is primarily calibrated by comparing link assignments to actual traffic counts. This is done by a number of means:

- Cordon and screen line tests to analyze on a corridor-level or sub-regional level;
- Comparing vehicle miles traveled (VMT) in the model to VMT based on count data;
- Statistical analysis such as root-mean squared error (RMSE) and "R-squared" regression analysis;
- Comparing the above by each federal functional classification as well as overall

The MAPA region participated in an add-on to the 2009 National Household Travel Survey (NHTS) that provides valid, regionally specific, trip information. The last known regional study of this nature was conducted in the 1960s. Trip generation rates were estimated from this data including local add-on samples.

MAPA's model reached or exceeded standard acceptable calibration values for nearly all functional classifications. For example, Iowa DOT recommends that travel demand models have an RMSE of less than 30. The RMSE for freeways is 16, urban arterials have an RMSE of 20, and for rural arterials the RMSE is near 23.

Other measures utilized in calibration include average trip lengths, percentage of total trips by trip purpose, and travel times. When the model is able to replicate these tests within a reasonable degree of accuracy, the model is considered to be calibrated. Model results are shared with partner State and Federal agencies, which also provide feedback in the calibration process.

After the model has been sufficiently calibrated, the future socio-economic forecasts and transportation projects are entered and run as a separate network. These results provide an estimate of future travel for the region. In November 2010, MAPA participated in the Federal Highway Administration's TMIP Peer Review Program in order to assess and improve its travel demand model. Recommendations from this Peer Review will be implemented on continuous basis.

7.4 Revenue Estimation

In order to have a "fiscally-constrained" Long Range Transportation Plan, anticipated revenues and costs over the life of the Plan must be forecasted. As such MAPA conducted an analysis of past federal funding within the Omaha-Council Bluffs region. Additionally, MAPA collected information from local jurisdictions about existing local revenues and Operations & Maintenance costs to ensure sufficient matching funds were likely to be available. A detailed discussion of these analyses is included in the sections

that follow. For all funding categories, MAPA estimates an annual 3% inflation in costs, as recommended by the Federal Highway Administration (FHWA).

7.3.1 – Revenue Projections for Federal Highway Funding

MAPA analyzed past Transportation Improvement Programs (TIPs) and obligation summaries provided by NDOR and Iowa DOT to identify and estimate the level of funding available from Federal Highway Administration (FHWA) programs on an annual basis. From this annual average, MAPA estimate a 3% rise per year in federal revenues for Nebraska and a 2% rise per year for federal revenues for Iowa projects. These increases reflect the overall trend in funding growth for MAPA's regional STP funding in both states over the past five years, and are reasonable estimates of future growth in revenue.

Funding estimates for Fiscal Years 2016-2019 were taken from revenue and programming estimates from MAPA's Final FY2016 Transportation Improvement Program. The funding during each of the other five-year band of funding was derived by summing the total anticipated funding in each year. Inflation was added to each of these bands to capture the anticipated growth in federal revenues. A summary of this process is included in Table 7.1 (next page).

Some funding categories (e.g. CMAQ and Highway Bridge Program (STP-HBP) funding) were derived based on historic funding levels for each program. While decision-making for these programs generally lies with NDOR and IDOT, our analysis of past funding indicated that these revenues can reasonably be anticipated in the future for local jurisdictions to utilize for projects.

State-directed revenues such as NHPP and STP-State funding were not estimated based on historic levels of investment in the MAPA region. Funding for these programs was only identified when NDOR or Iowa DOT had directed to specific projects within the program.

Additionally, MAPA anticipates a significant decrease in the amount of National Highway Performance Program (NHPP) funding spent in the Iowa portion of the TMA once the Council Bluffs Interstate System (CBIS) project is complete. Presently, Iowa DOT anticipates that construction of the final phases of this $2 billion project will be completed in 2023. As such, NHPP revenues and expenditures in Iowa are likely to decrease sharply as that major project is completed within the planning period.

TABLE 7.1
ANTICIPATED FEDERAL REVENUES

Nebraska Federal Highway Administration (FHWA) Revenues (in $1,000s)

Funding Category	Annual Average	2016-2019 (TIP)	2020-2025	2026-2030	2031-2035	2036-2040	Total
CMAQ	$750	$1,930	$4,997	$4,897	$5,044	$5,195	**$22,063**
DPU	$1,000	$4,360	$0	$0	$0	$0	**$4,360**
HSIP	$1,600	$6,248	$10,660	$10,447	$10,761	$11,084	**$49,200**
NHPP	$18,500	$79,189	$3,065	$0	$0	$0	**$82,254**
STP-MAPA	$15,071	$93,737	$110,175	$98,407	$101,359	$104,400	**$508,087**
STP-HBP	$1,000	$5,000	$6,662	$6,530	$6,725	$6,927	**$31,844**
STP-State	$2,500	$13,183	$0	$0	$0	$0	**$13,183**
TAP-MAPA	$1,000	$4,730	$6,662	$6,530	$6,725	$6,927	**$31,574**
Total	**$41,421**	**$208,386**	**$142,221**	**$126,811**	**$130,614**	**$134,533**	**$742,565**

Iowa Federal Highway Administration (FHWA) Revenues (in $1,000s)

Funding Category	Annual Average	2016-2019 (TIP)	2020-2025	2026-2030	2031-2035	2036-2040	Total
CMAQ	$150	$864	$946	$879	$897	$915	**$4,501**
DPS	$1,150	$4,662	$0	$0	$0	$0	**$4,662**
NHPP	$98,000	$388,309	$84,681	$0	$0	$0	**$472,990**
STP-MAPA	$1,700	$15,600	$10,724	$9,963	$10,162	$10,366	**$56,815**
STP-HBP	$2,700	$0	$6,308	$5,861	$5,978	$6,097	**$24,244**
STP-State	$5,000	$0	$6,557	$18,400	$0	$0	**$24,957**
TAP-MAPA	$300	$700	$1,892	$1,758	$1,793	$1,829	**$7,972**
Total	**$109,000**	**$410,135**	**$111,108**	**$36,861**	**$18,830**	**$19,207**	**$596,141**

Total Regional Federal Highway Administration (FHWA) Revenues (in $1,000s)

Funding Category	Annual Average	2016-2019 (TIP)	2020-2025	2026-2030	2031-2035	2036-2040	Total
CMAQ	$900	$2,794	$5,943	$5,776	$5,941	$6,110	**$26,564**
DPS & DPU	$2,150	$9,022	$0	$0	$0	$0	**$9,022**
HSIP	$1,600	$6,248	$10,660	$10,447	$10,761	$11,084	**$49,200**
NHPP	$116,500	$467,498	$87,746	$0	$0	$0	**$555,244**
STP-MAPA	$16,771	$109,337	$120,899	$108,370	$111,521	$114,766	**$564,893**
STP-HBP	$3,700	$5,000	$12,970	$12,391	$12,703	$13,024	**$56,088**
STP-State	$7,500	$13,183	$6,557	$18,400	$0	$0	**$38,140**
TAP-MAPA	$1,300	$5,430	$8,554	$8,288	$8,518	$8,756	**$39,546**
Total	**$150,421**	**$618,512**	**$253,329**	**$163,672**	**$149,444**	**$153,740**	**$1,338,697**

7.3.2 –Revenue Projections for Federal Transit Funding

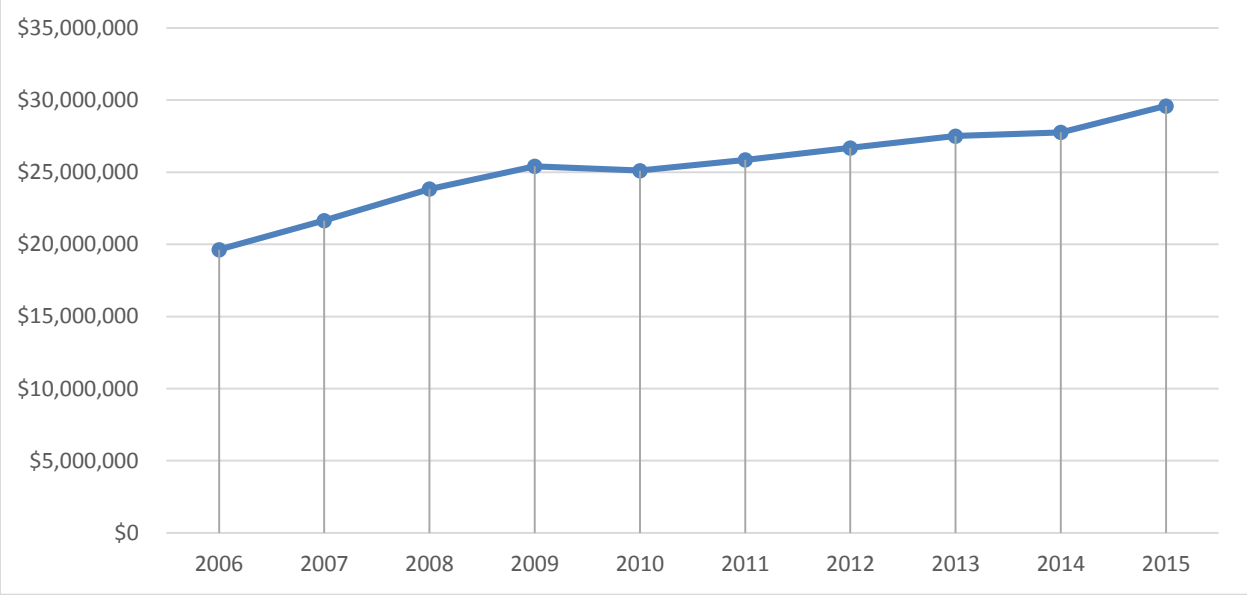
Federal-aid transit projects in the MAPA region are funded through the Federal Transit Administration (FTA) of the USDOT. Similar to estimates of Federal Highway Administration funding, MAPA utilized historical trends about Metro Transit's FTA funding to estimate future, anticipated revenues. The primary Federal portion of the Metro Transit Authority's dedicated financing stems from FTA Section 5307 funding. This program is formally known as the "Urbanized Area Formula Program." In urbanized areas with populations greater than 200,000, including the MAPA region, the Transit Authority is the direct recipient of 5307 funding. These funds can be used to finance capital improvements (new facilities, equipment, etc.), preventive maintenance activities as well as to offset operating expenses (up to 50 percent of the total FTA apportionment). Additionally, Section 5339 – Bus and Bus Facilities funding are utilized for capital expenditures related to transit vehicles and facilities. Projections for both these funding categories are shown in Table 7.2 below.

Table 7.2
Anticipated Federal Revenues, Section 5307 & 5539

	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	Total
Sec. 5307	$33,776,284	$55,955,902	$51,986,139	$57,396,898	$63,370,813	**$262,486,035**
Sec. 5339	$3,725,397	$6,171,724	$5,733,873	$6,330,660	$6,989,560	**$28,951,214**
Total	**$37,501,681**	**$62,127,625**	**$57,720,012**	**$63,727,558**	**$70,360,373**	**$291,437,249**

Since 2006, Metro Transit's total budget has grown by over 50%. A significant portion of this annual budget is comprised of the federal funding described above. Figure 7.2 below shows the annual trends in Metro Transit's total budget over the last 10 years.

Figure 7.2 - Metro Transit Budget Trend, 2006 - 2015



Source: Metro Transit

Based on this trend, MAPA has conservatively estimated that federal funding for the 5307 program will continue to grow by 2% each year similar to recent years. MAPA utilized the revenue estimates in the FY2016-2019 Transportation Improvement Program (TIP) as the basis for projecting the federal, local, and state revenues anticipated for Metro Transit's programs.

Additionally, the Central Omaha Bus Rapid Transit project received a $14.9 million TIGER 6 grant to construct bus-rapid transit (BRT) infrastructure and purchase rapid transit vehicles for service along the Dodge Street corridor. A detailed discussion of the Central Omaha Bus Rapid Transit project is provided in Section 8.3 of this plan. A summary of the anticipated revenues for Metro Transit during the planning period are included in the Table 7.3 below.

TABLE 7.3
ANTICIPATED REVENUES FOR METRO TRANSIT, 2016-2040

	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	Total
Farebox	$21,821,050	$24,700,311	$27,271,139	$30,109,541	$33,243,366	**$137,145,406**
State	$8,655,690	$6,749,281	$7,451,752	$8,227,336	$9,083,644	**$40,167,702**
Federal	$41,103,572	$45,392,938	$50,117,471	$55,333,738	$61,092,918	**$253,040,636**
Local	$86,652,716	$98,129,510	$108,342,908	$119,619,325	$132,069,400	**$544,813,859**
Total	**$158,233,028**	**$174,972,039**	**$193,183,269**	**$213,289,939**	**$235,489,327**	**$975,167,602**

Central Omaha BRT	
TIGER 6	$14,960,000
Total Cost	$32,960,000

Total Revenue	**$191,193,028**

In addition to Metro, three other Federal programs provided funding to public transportation providers in the MAPA region. Section 5310 funds provide funding for vehicle purchases for the needs of the elderly and individuals with disabilities. Non-profit and public agencies are eligible recipients and must provide 20% of the total grant. As the designated recipient for Section 5310 funding in the Omaha-Council Bluffs region, MAPA's members and committees are responsible for making project selection decisions about this funding. The Coordinated Transit Committee is responsible for identifying goals, objectives, and project selection criteria to prioritize this regional funding. A detailed discussion of MAPA's coordinated transit planning activities is included in Chapter 9 of this plan.

Based on MAPA's 2014 Coordinated Transit Plan, MAPA anticipates that Section 5310 funding will remain flat over the course of the planning period. As such, MAPA's FY2016 funding level was utilized to demonstrate the availability of federal funding during each of the funding bands. This funding is summarized in Table 7.4 (next page).

TABLE 7.4
ANTICIPATED SECTION 5310 REVENUES, 2016-2040 (IN $1,000S)

	Annual Average	2016-2020 (TIP)	2021-2025	2026-2030	2031-2035	2036-2040	Total
Section 5310	$550	$2,750	$2,750	$2,750	$2,750	$2,750	$13,750

7.3.3– LOCAL JURISDICTION REVENUE PROJECTIONS

MAP-21 directs MPOs to consider operation and maintenance (O & M) of the system as part of fiscal constraint, in addition to capital projects. O & M costs represent what is required to operate and maintain existing transportation facilities within the transportation network. In this way, O&M costs serve as an additional constraint on the locally available revenues that can be used to fund capital projects or match federal funding.

The basis of these numbers comes from varying sources. The Nebraska Department of Roads (NDOR) does not maintain a clearinghouse of system level operations and maintenance expenditures for jurisdictions under their purview. As such, O&M expenditures for Nebraska municipalities and jurisdictions in the MAPA Region have been determined from the figures annually provided on Nebraska Board of Public Roads Classifications and Standards (NBCS) Forms 1 and 2. These forms are annually submitted to NDOR and contain budgetary operations and maintenance (as well as capital improvement) expenditures for each jurisdiction in the Nebraska portion of the MAPA Region.

The Iowa Department of Transportation (IDOT) maintains a clearinghouse of system level operations and maintenance expenditures for Iowa jurisdictions. MAPA utilized this data set to establish the base year estimates of local revenues & O&M costs.

Table 7.5 (next page) shows the total local revenues available to jurisdictions within the MAPA region, estimates of O&M costs, and the balance of funding available for capital improvements. For the purposes of this analysis, it was assumed that local revenues would increase 2% every five years, while O&M costs would increase by 3% over the same period. This convergence provides an additional constraint to the analysis and assumes that costs will outpace future revenues within the planning period.

TABLE 7.5
LOCAL REVENUES AND OPERATIONS & MAINTENANCE EXPENDITURES

Total Operations & Maintenance Expenditures - MAPA TMA (in $1,000s)

	TIP	Short Term	Medium Term	Long Term		Total
	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	
Nebraska Total	$520,161	$535,766	$551,839	$568,394	$585,446	**$2,761,606**
Iowa Total	$32,956	$33,945	$34,963	$36,012	$37,092	**$174,967**
Total	**$553,117**	**$569,710**	**$586,802**	**$604,406**	**$622,538**	**$2,936,573**

Local Capital Expenditures - MAPA TMA (in $1,000s)

	TIP	Short Term	Medium Term	Long Term		Total
	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	
Nebraska Total	$278,821	$279,196	$279,422	$279,492	$279,398	**$1,396,328**
Iowa Total	$124,232	$126,387	$128,575	$130,797	$133,053	**$643,044**
Total	**$403,053**	**$405,583**	**$407,997**	**$410,289**	**$412,451**	**$2,039,372**

	TIP	Short Term	Medium Term	Long Term		Total
	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	
Total Expenditures	**$956,170**	**$975,293**	**$994,799**	**$1,014,695**	**$1,034,989**	**$4,975,945**

Total Local Revenues - MAPA TMA (in $1,000s)

	TIP	Short Term	Medium Term	Long Term		Total
	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	
Nebraska Total	$798,982	$814,962	$831,261	$847,886	$864,844	**$4,157,934**
Iowa Total	$157,188	$160,331	$163,538	$166,809	$170,145	**$818,011**
Total	**$956,170**	**$975,293**	**$994,799**	**$1,014,695**	**$1,034,989**	**$4,975,945**

7.5 PROJECT IDENTIFICATION & SCENARIO PLANNING

The project selection process for the 2040 Long Range Transportation Plan began with the list of projects from MAPA's previous LRTP. MAPA staff combed over these projects to review whether they have been completed, are in progress, remain planned for the future, or have been cancelled.

Projects identified in local or regional studies were also evaluated for possible inclusion in the LRTP. Staff compiled a draft initial list of projects that is not fiscally constrained and presents the list to MAPA's Project Selection Committee (ProSeCom). During this initial vetting, members of the Project Selection Committee identified additional transportation improvements they believed may be necessary.

The MAPA travel demand model was also utilized extensively to conduct scenario planning based on LRTP goals and elements of MAPA's CMP. The additional projects identified by ProSeCom were modeled alongside existing 2035 LRTP projects to identify

impacts on regional Vehicle Miles Travelled (VMT), Vehicle Hours Travelled (VHT), and the overall efficiency of the modeled scenario (as measured by the total model flow divided by Total VHT). This analysis provided detailed information about the benefits of the LRTP & ProSeCom project scenario over a no-build scenario in which no transportation improvements were made beyond "existing and committed" projects identified in MAPA's Transportation Improvement Program (TIP).

Once this initial scenario had been identified and evaluated, MAPA staff developed four other scenarios based on strategies identified in its Congestion Management Process (CMP). A summary of each of these multi-modal scenarios is provided below:

Core Density & 2035 LRTP Projects: Shift 10% of growth from outside the interstate loop to within and construct LRTP projects

Core Density, Transit, & 2035 LRTP Projects: Shift 10% of growth from outside the interstate loop to within, construct LRTP projects, and implement Phase III transit service improvements identified in the Comprehensive Operational Analysis (COA) of MAPA's Regional Transit Vision

Intelligent Transportation Systems (ITS) & 2035 LRTP Projects: Assume 13% capacity improvement along MAPA Priority Corridors based on Adaptive Traffic Signal Control (ATSC) improvements and construct 2035 LRTP projects

Priority Corridors (6-Lanes): Increase all priority corridors in the no-build network to 6-Lanes. These corridors are identified in the Congestion Management Program in Chapter 6

A summary of the key indicators for each of these preliminary scenarios is included in Table 7.6 on the next page.

TABLE 7.6
KEY LRTP MODELING SCENARIO METRICS

Scenario	Description	Total Flow	Priority V/C	Total VMT	Total VHT	Flow/VHT Ratio	Average Rank	Lane Mile Increase*	Capacity Increase*	Cost	Cost Effectivness
A - ProSeCom & 2035 LRTP Projects	Projects identified by ProSeCom and existing 2035 LRTP projects	79,775,836	0.633	24,726,863	639,287	124.8	4.0	23.5%	17.0%	$4,292,319	$1.09
B - Core Density & 2035 LRTP Projects	Shift 10% of growth from outside Interstate loop to within and 2035 LRTP projects	79,869,167	0.733	24,334,256	626,106	127.6	2.8	18.0%	12.5%	$4,191,534	$0.80
C - Core Density, Transit, and 2035 LRTP Projects	Shift 10% of growth from outside Interstate loop to within, Phase III Transit projects, and 2035 LRTP projects	79,452,910	0.730	24,225,206	623,147	127.5	2.3	18.0%	12.5%	$5,205,304	$0.94
D - ITS & 2035 LRTP Projects	Assumption that all priority corridors would have capacity improved by 13% and 2035 LRTP projects	79,817,561	0.683	24,690,799	638,475	125.0	3.5	18.0%	22.1%	$4,212,170	$1.05
E - Priority Corridors (6-lanes) & LRTP 2035 Projects	Increases all Priority Corridors in the no-build network to 6 lanes	80,943,854	0.565	24,996,257	634,170	127.6	2.5	63.6%	48.0%	$5,017,484	$1.13

					Existing 2035 LRTP Goals				
Scenario	V/C Rank	VMT Rank	VHT Rank	Flow/VHT Rank	Accessibility & Mobility	Safety & Security	Urban Form & Environment	Keep Costs Reasonable	Total
A - ProSeCom & 2035 LRTP Projects	2	4	5	5	O	O	O	O	O
B - Core Density & 2035 LRTP Projects	5	2	2	2	O	O	+	O	+
C - Core Density, Transit, and 2035 LRTP Projects	4	1	1	3	O	O	+	–	O
D - ITS & 2035 LRTP Projects	3	3	4	4	+	O	O	+	++
E - Priority Corridors (6-lanes) & LRTP 2035 Projects	1	5	3	1	+	O	–	O	O

The tables on the previous page show the various indicators of each scenario, in addition to a general measure of cost effectiveness. As identified in MAPA's Congestion Management Process, cost effectiveness is determined by dividing the reduction in Vehicle Hours Travelled over the no-build scenario divided by the cost of that scenario. Scenario costs were based on the total investment necessary to implement each strategy along MAPA's Priority Corridor network.

Additionally, MAPA staff analyzed the consistency of each scenario with the four Long-Range Transportation Plan goals, as shown in Table 7.4. This analysis provided ProSeCom with both quantitative and qualitative information from which to prioritize multi-modal strategies. After discussing the benefits and costs associated with each strategy, ProSeCom selected a preferred, Final Scenario Package. This final package included the following elements:

Core Density: Promote land use policies and development that increase the overall density within the urban core. While MAPA doesn't control land use decision-making directly, encouraging communities to increase the density of existing communities improves the potential for transit service and reduces the demand for new facilities

6-Lane Priority Corridors: Increase Priority Corridors to 6-lanes to increase capacity and improve traffic flow, where applicable

Transit Improvements: Implement Phase II and Phase III service improvements identified in the Regional Transit Vision to increase the frequency of transit service along Priority Corridors

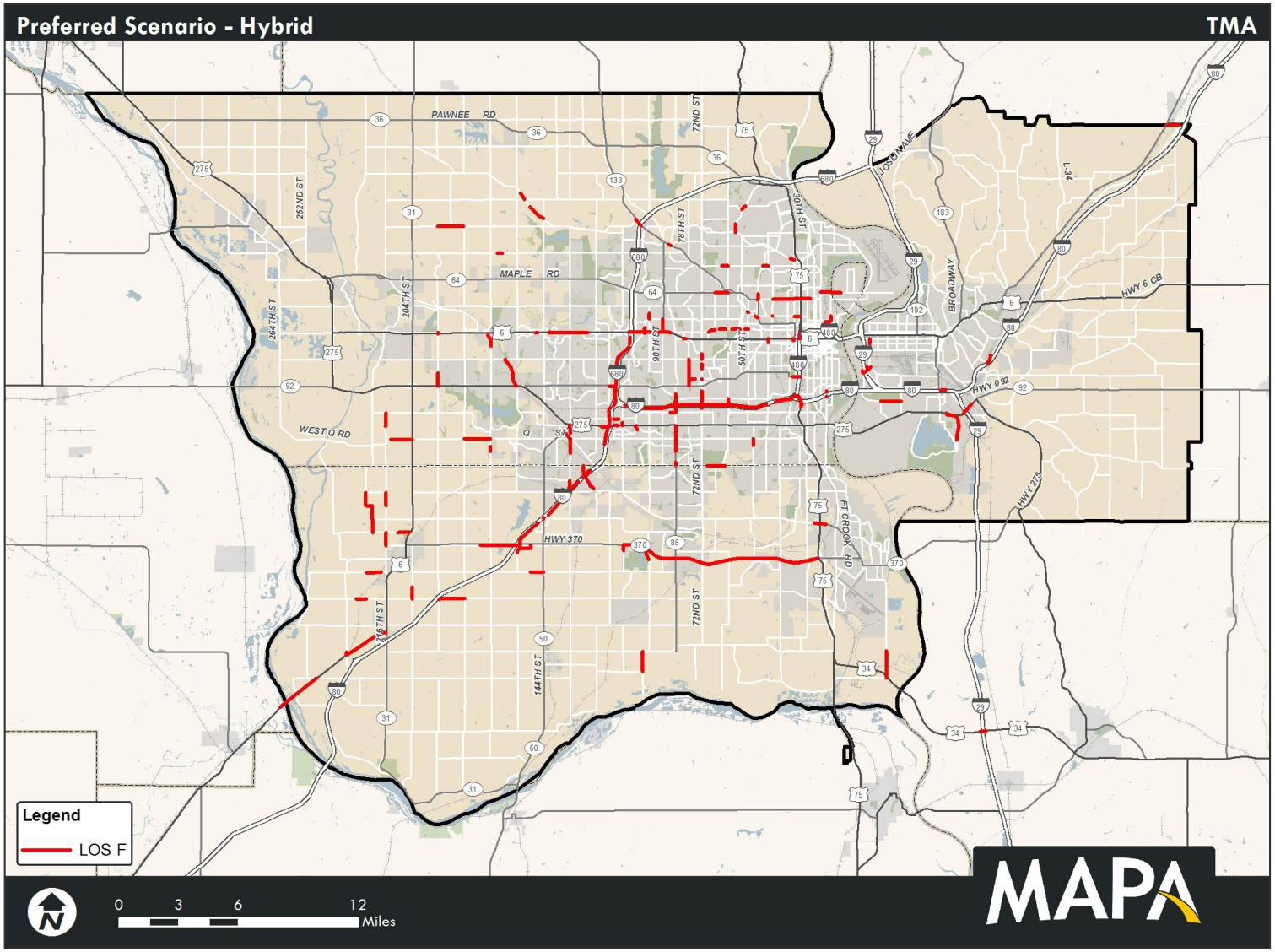
Intelligent Transportation Systems: Invest strategically in technologies such as Adaptive Traffic Signal Control (ATSC) to improve traffic flow on Priority Corridors

These factors provided MAPA with a clear set of strategies from which to prioritize investments within this LRTP. A summary of the Final Scenario outputs is included in Table 7.7 below. Additionally, a map of the future year (2040) Level of Service of the preferred scenario is included in Figure 7.3 (next page).

TABLE 7.7
FINAL LRTP SCENARIO PACKAGE

Scenario	Total Flow	Priority V/C	Total VMT	Total VHT	Flow/VHT Ratio	Scenario Cost (in $1,000s)	Cost Effectiveness
Final Scenario Package	80,602,937	0.530	24,454,430	605,191	133.2	$4,750,000	$0.65

FIGURE 7.3
Locally Preferred Modeling Scenario



7.6 Regionally Significant Transportation Investments

The list of street and highway projects eligible for Federal aid funding following in this section is fiscally-constrained to reasonably available local, state, and federal revenues. Project costs take inflation into account and appear in year-of-expenditure dollars. Therefore, project costs for future years appear higher than what they would cost if constructed today. As is described in Section 7.3, federal funding levels were identified based on past trends within the Omaha-Council Bluffs region. Local revenues were identified based on local financial reports and identified operations & maintenance costs.

These projects listed in this LRTP are considered eligible for Federal-Aid funding by the MPO. Projects will be selected for Federal aid funding as they go through the MPO's project selection and prioritization process for the TIP, while some projects may be advanced using solely local funding sources. The following sections divide the projects between Regionally Significant Roadway & Trail Projects, Regionally Significant Transit Investments, and Illustrative Projects.

7.5.1– Regionally Significant Roadway & Trail Investments

The tables that follow this section include regionally significant roadway and trail projects identified from the 2035 Long Range Transportation Plan and the scenario planning process described earlier in this chapter. These investments represent the federal-aid eligible portion of this LRTP as the total funding for both local and state projects has been

The FY2016-2019 Transportation Improvement Program serves as the four-year implementation program of this plan. Projects identified in this TIP are included in the first band of projects within this project list.

A summary of the fiscally constrained Roadway & Trail program is included in Table 7.8 below.

Table 7.8
Summary of Regionally Significant Roadway & Trail Projects

	2016-2019 (TIP)	2020-2025	2026-2030	2031-2035	2036-2040	Total
Iowa	$467,444	$120,273	$37,320	$59,884	$35,153	$720,074
Nebraska	$345,575	$158,236	$151,710	$147,222	$148,488	$951,231
Total	**$813,019**	**$278,509**	**$189,030**	**$207,106**	**$183,641**	**$1,671,305**

(Figures in $1,000s)

Nebraska TIP Projects | FY 2016-2019

TIP ID	Lead Agency	Project Name	Improvement Location	Project Cost (FY2016-2019)	Total Project Cost
2015-048	Bellevue	36th Street Phase N-370 - Sheridan	36th St - N-370 to Sheridan	$9,618,500	$10,871,620
2015-050	Bellevue	36th Street Phase II	Sheridan to Platteview Rd	$956,130	$9,911,130
2015-046	Bennington	156th Street	Bennington	$2,208,750	$2,929,446
2015-039	Douglas	180th Street (Phase 1)	HWS Cleveland Blvd to Blondo St and Blondo St .25 mile East and West to 180th St	$28,520,000	$31,185,000
2016-037	La Vista	Applewood Creek Trail	From Giles Road north along Applewood Creek between Giles and Harrison	$163,000	$1,830,500
2016-038	MAPA	Heartland B-Cycle Expansion	Various locations throughout the City of Omaha	$1,162,909	$1,162,909
2015-021	Metro	Metro Rolling Stock	Metro Transit service area	$3,052,500	$4,466,250
2015-139	Metro	Bus Rapid Transit	Along Dodge/Farnham corridor, from Westroads Mall	$2,232,500	$36,012,500
2015-005	NDOR	I-680/US-6 Interchange DMS	Along I-680/US-6 in Omaha. Begin R.P. – 2.29	$712,000	$760,000
2015-006	NDOR	N-370: US-75 West, Bellevue	N-370 sections from 1.6 mi east of 72nd Street east 3.15 mi	$5,474,000	$5,670,000
2015-008	NDOR	I-80/680 'Q'-'L' CD Rds, Omaha (WB)	WB I-80 CD roads and ramps in the I-80/I-680 interchange area in Omaha. Begin R.P. – 444.23	$4,197,000	$4,237,000
2015-015	NDOR	US-75: Plattsmouth - Bellevue, North of Platte River	US-75 from Platte River bridge, north 3.1 miles. Begin R.P. – 76.30	$32,016,000	$32,016,000
2015-023	NDOR	I-80: 24th Street - 13th Street	I-80 from 24th Street to 10th Street. Begin R.P. – 453.37	$13,446,000	$13,446,000
2015-024	NDOR	Platte River Bridges East of Yutan	On Highway N-92, two bridges over the Platte River 1.5 and 1.8 miles east of Yutan. Begin R.P. – 462.56	$947,000	$962,000
2015-025	NDOR	Schramm Park South	N-31, 4.2 miles south of Schramm Park Recreational Area. Begin R.P. – 4.18	$1,870,000	$1,925,000
2015-026	NDOR	Giles Road Interchange Ramps	I-80 ramps at Giles Road interchange. Begin R.P – 442.0	$2,483,000	$2,541,000
2015-027	NDOR	Jct N-31/N-36 Intersection Improvements	Junction of Highways N-31 and N-36. Begin R.P. – 30.93	$2,092,000	$2,092,000
2015-028	NDOR	Elkhorn River West	On N-36 from Old Highway 275/Reicmuth Road, east to just west of the Elkhorn River	$5,234,000	$5,234,000
2015-029	NDOR	N-64 at SE Jct US-275 - Omaha	N-64 (W Maple Road) at junction of US-275 east to Ramblewood Drive/Elkhorn Drive. Begin R.P. – 59.21	$3,250,000	$3,360,000
2015-034	NDOR	N-92: Platte River East Structures	Nebraska Highway 92 (W Center Road) at the Platte River. Begin R.P. – 463.30	$715,000	$740,000
2015-036	NDOR	EB I-80 at I-680	EB I-80 at interchange with I-680. Begin R.P. – 445.74	$1,342,000	$1,342,000
2015-037	NDOR	Ralston Viaduct	N-85/BNSF viaduct in Ralston. Begin R.P. – 4.02	$10,125,000	$10,505,000
2015-068	NDOR	N-133: Thomas Creek Bridge North (SB)	On southbound lanes of N-133 from just north of Thomas Creek crossing, north 0.12 miles. Begin R.P. – 5.94	$532,000	$534,000
2016-001	NDOR	I-480: Bancroft - Dewey	On I-480, from 0.1 miles north of 1-80/US-75, north to miles south of Harney Street. Begin R.P. – 0.50	$6,692,000	$6,700,000
2016-002	NDOR	N-31: Schramm Park - US-6	On N-31 from near Schramm Park entrance to south junction with US-6	$5,088,000	$5,088,000
2016-003	NDOR	US-275: Waterloo Viaduct	On US-275 from Valley to viaduct at Waterloo. Begin R.P. – 165.74	$7,570,000	$7,570,000
2016-004	NDOR	US-275: West Papillion Creek Bridge West	On US-275 from 1.6 mile east of the west limits of Omaha to east of West Papillion Creek bridge. Begin R.P. – 176.33	$1,556,000	$1,556,000
2016-005	NDOR	I-680: Fort Street to Missouri River	On I-680 from near Fort Street northeast to Missouri River Bridge. Begin R.P. – 6.04	$155,000	$155,000
2016-006	NDOR	I-80/I-480 Bridges	I-80 bridges at I-480 Interchange. Begin R.P. – 451.00	$4,800,000	$4,800,000
2016-007	NDOR	I-80/I-480/US-75 Interchange	I-80 and I-480 bridges at I-80/I-480/US-75 Interchange. Begin R.P. – 452.98	$12,970,000	$12,970,000
2016-008	NDOR	I-480: 20th Street - Missouri River Bridges (EB)	On eastbound I-480 (including ramps) from 20th Street to the Missouri River. Begin R.P. – 2.95	$8,600,000	$8,600,000
2016-009	NDOR	I-480: 20th Street - Missouri River Bridges (WB)	On westbound I-480 (including ramps) from 20th Street to the Missouri River. Begin R.P. – 2.95	$9,350,000	$9,350,000
2016-010	NDOR	N-31 Bridges North of N-36	On N-31, approximately 0.7 miles and 5.2 miles north of N-36. Begin R.P. – 31.75	$2,271,000	$2,271,000
2016-011	NDOR	US-75: J Street & Gilmore Ave Bridge (SB)	Viaduct on US-75 at Gilmore/Union Pacific Rail Road and bridge at J Street. Begin R.P. – 85.80	$2,619,000	$2,619,000
2016-012	NDOR	US-75: Off Ramp to N-64 (NB)	On northbound US-75 off-ramp to N-64 (Cuming Street). Begin R.P. – 91.09	$258,000	$258,000
2016-013	NDOR	US-75: Big Papillion Creek, Bellevue	On US-75 over Big Papillion Creek, approximately 0.3 miles south of Bellevue. Being R.P. – 80.03	$250,000	$250,000
2016-014	NDOR	District 2 CCTV Cameras	On I-680, at three (3) locations in the Omaha area. Begin R.P. – 9.94	$131,000	$136,000
2016-015	NDOR	US-75 Fiber-Optic	Along US-75 from Fort Crook Road to south Junction with I-480	$755,000	$759,000
2016-016	NDOR	US-6 Fiber-Optic	Along US-6 from N-31 to Westroads Mall Road in Omah	$922,000	$922,000
2016-017	NDOR	I-80/I-480/I-680 Barriers, Omaha	Along I-80, I-480, and I-680 bridge locations in Omaha	$864,000	$864,000
2016-018	NDOR	I-80, N-31, N-370, & N-50 Ramps	I-80 interchange ramps at N-31, N-370, and N-50	$710,000	$710,000
2016-019	NDOR	US-275: 25th Street - 23rd Street	On US-275 from 1/2 block west of 25th Street to 1/2 block east of 23rd Street. Begin R.P. – 189.14	$1,668,000	$1,668,000
2016-020	NDOR	I-680: Mormon Bridge Painting	On I-680 at Mormon Bridge over Missouri River. Begin R.P. – 13.43	$12,412,000	$12,412,000
2016-021	NDOR	I-680: Mormon Bridge Deck Overlay	On I-680 at Mormon Bridge over Missouri River. Begin R.P. – 13.43	$1,610,000	$1,610,000
2016-022	NDOR	US-75 Bridge Approaches, Bellevue	US-75 bridges approaches from approximately 0.3 miles south Bellevue, north to Chandler Road. Begin R.P. – 80.03	$1,643,000	$1,643,000
2016-023	NDOR	24th Street Interstate Bridge	On 24th Street over I-80. Begin R.P. – 453.37	$460,000	$460,000
2016-024	NDOR	N-31: Elkhorn Viaduct	On N-31, viaduct over Park/Papio/Union Pacific Railroad approximately 0.7 miles south of N-64. Begin R.P. – 24.40	$4,500,000	$4,500,000
2016-025	NDOR	I-680: West Center Road Bridge	On I-680 at West Center Road. Begin R.P. – 0.83	$1,520,000	$1,520,000
2016-026	NDOR	I-80: I-480 to 24th Street	On I-80 from I-480 to 24th Street. Begin R.P. – 453.01	$6,762,000	$6,762,000
2016-027	NDOR	N-370: I-80 to Bellevue	On N-370 from I-80 to NB US-75 ramp terminal in Bellevue. Begin R.P. – 4.19	$500,000	$500,000
2016-028	NDOR	District 2 I-80 Fiber-Optic	Along I-80 from near Mahoney interchange east to the Iowa State line. Begin R.P. – 426.90	$2,426,000	$2,426,000
2016-029	NDOR	District 2 I-680 Fiber-Optic	Along I-680 in Omaha	$1,300,000	$1,300,000
2016-030	NDOR	District 2 I-480 Fiber-Optic	Along I-480 in Omaha	$467,000	$467,000
2016-031	NDOR	US-75: Dynamic Message Signs, Omaha	Along northbound and southbound US-75 from approximately J Street to west of F Street in Omaha. Begin R.P. – 87.33	$688,000	$688,000
2016-032	NDOR	District 2 DMS	Along I-80, US-75, and US-34 in District 2. Begin R.P. – 428.92	$2,065,000	$2,065,000
2016-033	NDOR	District 2 CCTV Camera Towers	At eleven locations along I-80, I-680, US-75, US-34, and N-370 in District 2	$485,000	$485,000
2017-030	NDOR	US-6 Bridges at I-680	Bridge repair and overlay	$4,500,000	$4,500,000
2015-001	Omaha	North Downtown Riverfront Pedestrian Bridge	10th and Fahey Drive	$5,848,500	$6,558,500

Nebraska TIP Projects | FY 2016-2019

TIP ID	Lead Agency	Project Name	Improvement Location	Project Cost (FY2016-2019)	Total Project Cost
2015-013	Omaha	Omaha Signal Infrastructure - Phase A	Various Locations Throughout City	$8,562,970	$8,562,970
2015-016	Omaha	Omaha ATMS Central System Software	Citywide	$655,000	$1,573,750
2015-017	Omaha	Omaha Signal Network - System Management	Various locations throughout the City of Omaha	$500,000	$500,000
2015-040	Omaha	156th Street Phase Two	Pepperwood Dr. to Corby St.	$27,391,990	$28,634,550
2015-044	Omaha	Q Street Bridge	Q St. between 26th St. and 27th St.	$15,408,750	$16,870,750
2015-051	Omaha	108th Street	Madison St to Q Street	$9,240,940	$9,655,940
2015-052	Omaha	168th Street	West Center Rd to Poppleton	$272,950	$8,970,200
2015-053	Omaha	114th Street	Burke to Pacific St	$4,583,750	$5,556,250
2015-054	Omaha	168th Street	West Center Rd to Q Street	$3,418,360	$15,764,050
2015-065	Omaha	24th Street Road Diet	From L Street to Leavenworth Street.	$3,395,000	$3,395,000
2015-132	Omaha	132nd at West Center Road Safety Project	132nd Street from Kingswood to Arbor Plaza and West Center Road from 133rd Plaza to 130th Ave	$2,001,000	$2,313,500
2015-157	Omaha	Omaha Signal Infrastructure - Phase B	Various Locations Throughout City	$0	$0
2015-158	Omaha	Omaha Signal Infrastructure - Phase C	Various Locations Throughout City	$0	$0
2015-159	Omaha	Omaha Signal Infrastructure - Phase D	Various Locations Throughout City	$1,448,750	$1,448,750
2016-045	Omaha	Omaha Resurfacing Program	Various locations throughout the City of Omaha	$12,000,000	$12,000,000
2015-010	Papillion	Schram Road 84th Street to 90th Street	Schram Road 84th Street to 90th Street	$437,500	$5,522,500
2015-041	PMRNRD	Western Douglas County Trail Phase 2	City of Valley to Village of Waterloo	$2,224,910	$2,543,228
2015-042	PMRNRD	Western Douglas County Trail Phase 1	City of Valley to Twin Rivers YMCA	$3,224,655	$3,586,055
2015-058	Sarpy	132nd and Giles	132nd and Giles Road	$2,585,000	$3,057,713
2015-062	Sarpy	66th and Giles	Harrison St. to 400ft. South of Giles Road and Giles Road from 69th St. to 66th St.	$1,233,750	$11,761,250
2015-138	Valley	Valley D.C. Safe Routes to School	Portion of Meigs Street in Valley, NE	$225,000	$270,000
Total				**$345,575,064**	**$440,862,311**

Nebraska Short-Term Projects | FY 2020-2025

Lead Agency	Roadway	Location	Improvement Description	Program	Year	Total Cost (2020-2025)	Total Project Cost
Bellevue	36th St Phase II	Sheridan Rd to Platteview Rd	Widen 2 Lane Rural to 4 Lane Urban	STP-MAPA	2020	$8,955,000	$9,911,130
Douglas County	180th St	Blondo St to Maple St	4 Lane Urban	STP-MAPA	2020	$9,852,000	$11,331,250
Douglas County	Q St	192nd St to N-31	4-Lane Divided with LTLs and RTLs	STP-MAPA	2025	$7,251,234	$7,251,234
NDOR	I-680	I-680 / US-6 Bridges	On I-680 at US-6. Begin R.P. – 2.89	NHPP	2021	$3,700,000	$3,700,000
Omaha	Citywide Resurfacing	Various Locations throughout City of Omaha	Advance Construction (AC) repayment of Omaha resurfacing projects	STP-MAPA	2021	$6,227,000	$6,227,000
Omaha	Citywide Resurfacing	Various Locations throughout City of Omaha	Advance Construction (AC) repayment of 2014 Resurfacing Package	STP-MAPA	2021	$3,313,000	$3,313,000
Omaha	120th Street	Stonegate Dr to Fort St	Widen 2 Lane to 4 Lane Urban	STP-MAPA	2021	$10,732,500	$12,510,720
Omaha	168th Street	West Center Rd to Poppleton	Widen 2 Lane to 4 Lane Urban Divided with Turn Lanes	STP-MAPA	2022	$8,697,250	$8,970,200
Omaha	168th Street	West Center Road to Q St.	Widen 2 Lane to 4 Lane Urban Divided with Turn Lanes	STP-MAPA	2021	$12,345,690	$15,764,050
Omaha	180th St	West Dodge Road to HWS Cleveland Blvd	6-Lane Urban Divided	STP-MAPA	2021	$3,641,400	$3,641,400
Omaha	Industrial Road	132nd St to 144th St	Widen 4 Lane Divided Rural to 6 Lane Urban Divided with Turn Lanes	STP-MAPA	2025	$11,803,338	$11,803,338
Papillion	Schram Rd	84th St to 90th St	3 Lane with TWLTL	STP-MAPA	2023	$5,556,517	$5,556,517
Sarpy County	66th Street	66th & Giles Intersection	Widening and reconstruction of roadway	STP-MAPA	2022	$8,422,000	$12,076,250
Sarpy County	New I-80 Interchange	At 180th Street	I-80 and 180th Street	STP-MAPA	2024	$36,414,000	$36,414,000
Sarpy County	Harrison St	168th - 156th St	4-Lane Divided with LTL	STP-MAPA	2025	$13,684,381	$13,684,381
Sarpy County	Platteview Rd	36th - 27th St	4-Lane Divided with LTLs	STP-MAPA	2025	$7,640,429	$7,640,429
Total						**$158,235,739**	**$169,794,899**

Iowa Short-Term Projects | FY 2020-2025

Lead Agency	Roadway	Location	Improvement Description	Program	Year	Total Cost
Council Bluffs	East Beltway	Greenview Road - West Segment	Construct/Widen to a 4 Lane Urban Divided	STP-MAPA	2022	$3,654,688
Council Bluffs	East Beltway	Stevens Road - West Segment	Construct/Widen to a 4 Lane Urban Divided	STP-MAPA	2023	$2,420,313
Council Bluffs	23rd Ave Trail	From Mid America Drive to South Expressway	Ped/Bike Grade and Pave	TAP-MAPA	2025	$884,340
Council Bluffs	West Broadway Reconstruction Phase I	On West Broadway (US 6) from I-29 to 30th Street	Reconstruction of extsting roadway	STP-MAPA	2025	$7,462,500
IDOT	I-80	Along Interstate network in Council Bluffs	Council Bluffs Interstate Stystem Improvements: Madison Avenue Interchange, ITS improvements, and ROW Management	NHPP	2021	$105,850,696
Total						**$120,272,536**

Nebraska Medium-Term Projects | FY 2026-2030

Lead Agency	Roadway	Location	Improvement Description	Total Cost
Douglas County	144th St	W Maple Rd to State St	4 Lane Divided	$35,385,981
Omaha	West Maple Road	I-680 to 204th Street	6-Lane Urban Divided	$51,565,158
Omaha	Q St	48th St to 60th St	3-Lane with TWLTL	$8,049,575
Omaha	Riverfront 4 Trail	Not stated in 2035 LRTP	New, 10' Wide Concrete Pedestrain/Bike Trail	$478,584
Ralston	Q St	Country Club Rd to 72nd St	3-Lane with TWLTL	$1,655,518
Sarpy County	72nd Street	Schram Rd to Platteview Rd	4 Lane Urban	$31,454,205
Sarpy County/Bellevue	Platteview Road	84th St to 36th St	4 Lane Urban	$23,121,012
Total				**$151,710,033**

Iowa Medium-Term Projects | FY 2026-2030

Lead Agency	Roadway	Location	Improvement Description	Total Cost
Council Bluffs	7th St	Kanesville - Ave G.	3-Lane with TWLTL	$3,504,000
Council Bluffs	West Broadway Reconstruction, F	32nd St to 28th St	Reconstruct 5 Lane Roadway	$4,731,739
Council Bluffs	West Graham Avenue Reconstruc	High Street to Fairmont Avenue	Reconstruction of existing roadway	$4,347,500
Council Bluffs	South Expressway - Phase 2	On Highway 192 from 21st Street north to 16th Street	Reconstruction of existing roadway	$5,119,000
Council Bluffs	Harrison Street Reconstruction	Kanesville Boulevard to Morgan Street	Reconstruction of extsting roadway	$5,433,750
Council Bluffs	N Broadway	Elliot to Kanesville Blvd	5-Lanes	$5,987,000
IDOT	Iowa 92	I-29 to 0.3 Miles East of Concord Loop	Resurfacing	$1,559,976
IDOT	US-6	Indian Hills Drive to Hunt Avenue	Reconstruction of existing roadway	$6,000,000
IDOT	Iowa 165	In Carter Lake, from Nebraska State Line to Nebraska State Line	Resurfacing	$636,725
Total				**$37,319,690**

Nebraska Long-Term Projects | FY 2031-2035

Lead Agency	Roadway	Location	Improvement Description	Total Cost
Douglas County	144th St	State St to N-36	3 Lane Urban	$17,014,784
Douglas County	180th St	Ida to Washington County Line	3 Lane Urban	$37,050,000
Omaha	180th St	Maple to Ida	4 Lane Divided	$22,230,000
Sarpy County/Gretna	180th St	Platteview to Harrison	6-Lane Divided	$70,926,898
Total				**$147,221,682**

Iowa Long-Term Projects | FY 2031-2035

Lead Agency	Roadway	Location	Improvement Description	Total Cost
Council Bluffs	North Broadway	Elliot - Mud Hollow Rd	3-Lane with TWLTL	$6,920,137
Council Bluffs	8th St	Kanesville - Ave G.	4-Lane Divided with LTLs	$2,733,000
Council Bluffs	23rd Ave	24th St - South Expwy	4-Lane Divided with LTLs	$13,694,000
Council Bluffs	West Broadway Reconstruction Phase V	21st to 16th	Reconstruct 5 Lane Roadway	$4,196,016
Council Bluffs	West Broadway Reconstruction, Phase III	28th St to 25th St	Reconstruct 5 Lane Roadway	$4,860,749
Council Bluffs	West Broadway Reconstruction, Phase IV	25th to 21st St	Reconstruct 5 Lane Roadway	$4,480,420
IDOT	US-6	I-480 to 15th Street	Reconstruction of existing roadway	$20,000,000
IDOT	Iowa 192	I-80 North to I-29	ACC Resurfacing	$3,000,000
Total				**$59,884,323**

Nebraska Long-Term Projects | FY 2036-2040

Lead Agency	Roadway	Location	Improvement Description	Total Cost
Omaha	180th St	Harrison St to West Dodge Rd	6-Lane Urban Divided	$90,812,875
Omaha	144th Street	Harrison to Maple	6-Lane Urban Divided	$57,675,000
Total				**$148,487,875**

Iowa Long-Term Projects | FY 2036-2040

Lead Agency	Roadway	Location	Improvement Description	Total Cost
Council Bluffs	9th Avenue Viaduct and Approach	19th to 8th Street	4 Lane Viaduct and approach	$35,152,900
Total				**$35,152,900**

7.5.1– Regionally Significant Transit Investments & Fiscal Constraint

MAPA's Long-Range Transportation Plan also includes regionally significant transit investments. As a part of the Scenario Planning process, increased transit investment was evaluated utilizing MAPA's travel demand model. Phase I service improvements have been implemented by Metro Transit and future service improvements will require additional financial resources to implement. Phase I improvements increased the frequency of productive routes and realigned routes to provide more efficient service.

This analysis modeled the increased frequency and route coverage provided by the Phase II and Phase III service improvements that were identified within MAPA's Regional Transit Vision. Over $754 million of additional capital expenditures (e.g. purchasing of new buses) were identified as a part of these service improvements, in addition to the additional operations costs. However, based on the modest estimates of revenue increases over the planning period, MAPA does not anticipate Phase II or Phase III service improvements being implemented without significant changes to local and/or federal revenue streams.

Fiscal constraint of the regionally significant transit investments identified in this plan is demonstrated in Table 7.9 below.

Table 7.9
Regionally Significant Transit Investments (Phase I Improvements Only)

	Rolling Stock		Capital/Maintain/Planning		Projected Apportionment	Total Costs
	Federal	Total	Federal	Total		
2016-2019 (TIP)	$5,197,749	$6,114,999	$32,303,933	$40,379,916	$37,501,682	**$46,494,915**
2020-2025	$8,111,760	$9,543,247	$54,015,864	$67,519,831	$62,127,624	**$77,063,078**
2026-2030	$7,503,602	$8,827,767	$50,216,411	$62,770,513	$57,720,013	**$71,598,280**
2031-2035	$8,284,582	$9,746,568	$55,442,975	$69,303,719	$63,727,557	**$79,050,287**
2036-2040	$9,146,848	$10,760,998	$61,213,524	$76,516,906	$70,360,372	**$87,277,904**
Total	**$38,244,541**	**$44,993,579**	**$253,192,707**	**$316,490,885**	**$291,437,248**	**$361,484,464**

	2016-2019	2020-2025	2026-2030	2031-2035	2036-2040	Total
Operations Costs	**$111,738,113**	**$97,908,961**	**$121,584,989**	**$134,239,652**	**$148,211,423**	**$613,683,138**
Project Costs	**$46,494,915**	**$77,063,078**	**$71,598,280**	**$79,050,287**	**$87,277,904**	**$361,484,464**
Total Revenues	**$158,233,028**	**$174,972,039**	**$193,183,269**	**$213,289,939**	**$235,489,327**	**$975,167,602**
Balance	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

In addition to Metro's fixed route transit service, the Coordinated Transit Committee analyzed the Federal funding which is anticipated during the planning horizon of the Coordinated Transportation Plan (CTP). This analysis included funding from MAPA's 5310 apportionment and an award of competitive Veterans Transportation and Community Living Initiative (VTCLI, 5309) funding secured by MAPA. Cost estimates for equipment and services were developed and programmed in accordance with the implementation goals discussed earlier in this chapter and were inflated by 3% to account for rising costs throughout the planning period. The results of this analysis are shown in the fiscal constraint table in Table 7.10 (next page)

TABLE 7.10
FISCAL CONSTRAINT OF COORDINATED TRANSIT PROJECTS

	Projected CTC Budget										
	Fiscally Constrained Years						Illustrative Years				
Projects	2015	2016	2017	2018	2019	2020	2021-2025	2026-2030	2031-2035	2036-2040	Total Project Cost
Vehicles (5310 Capital)	$ 416,000	$ 428,480	$ 441,334	$ 397,753	$ 351,159	$ 301,411	$ 1,586,150	$ 1,751,093	$ 1,329,058	$ 1,326,161	$ 8,328,599
Dispatching Software (5310 Capital)	$ 20,000	$ 20,600	$ 21,218	$ 17,484	$ 18,008	$ 18,548	$ 60,268	$ 58,793	$ 68,157	$ 79,012	$ 382,088
AVL (5310 Capital)	$ 16,000	$ 16,480	$ 16,974	$ 17,484	$ 18,008	$ 18,548	$ 80,849	$ 58,793	$ 68,157	$ 79,012	$ 390,305
Alternative Fuel Projects (5310 Capital)	$ 12,800	$ 13,184	$ 13,580	$ 13,987	$ 14,407	$ 14,839	$ 64,679	$ 47,034	$ 54,525	$ 63,210	$ 312,244
Operations Local Services (5310 Operations)	$ 56,000	$ 57,680	$ 59,410	$ 61,193	$ 63,028	$ 64,919	$ 177,503	$ 205,774	$ 238,549	$ 276,544	$ 1,260,601
Coordination Planning (5310 Operations)	$ 50,000	$ 51,500	$ 53,045	$ 54,636	$ 56,275	$ 57,964	$ 158,485	$ 183,727	$ 212,990	$ 246,914	$ 1,125,536
Operations Call Center (5310 Operations)	$ 100,000	$ 103,000	$ 106,090	$ 109,273	$ 112,551	$ 115,927	$ 475,454	$ 551,181	$ 638,970	$ 740,742	$ 3,053,188
AVL/ Veteran's Grant (5309 Capital)	$ 260,000	$ 263,680	$ 212,180	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 735,860
Design/ Engineering Veteran's Grant (5309 Capital)	$ 32,000	$ 32,960	$ 33,949	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 98,909
Technology/ Software Veteran's Grant (5309 Capital)	$ 32,000	$ 32,960	$ 33,949	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 98,909
Total Project Cost	$ 994,800	$ 1,020,524	$ 991,729	$ 671,809	$ 633,436	$ 592,157	$ 2,603,386	$ 2,856,396	$ 2,610,407	$ 2,811,595	**$ 15,786,240**
Revenue											
5310 Beginning Balance (Carryover)	$ 731,633	$ 610,833	$ 469,909	$ 308,257	$ 186,449	$ 103,012	$ 60,855	$ 207,469	$ 101,073	$ 240,666	
5310 Spending Authority	$ 550,000	$ 550,000	$ 550,000	$ 550,000	$ 550,000	$ 550,000	$ 2,750,000	$ 2,750,000	$ 2,750,000	$ 2,750,000	$ 15,031,633
5310 Total Funding (Carryover + Spending Authority)	$ 1,281,633	$ 1,160,833	$ 1,019,909	$ 858,257	$ 736,449	$ 653,012	$ 2,810,855	$ 2,957,469	$ 2,851,073	$ 2,990,666	
5310 Project Costs	$ 670,800	$ 690,924	$ 711,652	$ 671,809	$ 633,436	$ 592,157	$ 2,603,386	$ 2,856,396	$ 2,610,407	$ 2,811,595	
5310 Ending Balance	$ 610,833	$ 469,909	$ 308,257	$ 186,449	$ 103,012	$ 60,855	$ 207,469	$ 101,073	$ 240,666	$ 179,071	
5309 Beginning Balance (Carryover)	$ 933,750	$ 609,750	$ 280,150								
5309 Spending Authority											$ 933,750
5309 Total Funding (Carryover + Spending Authority)	$ 933,750	$ 609,750	$ 280,150								
5309 Project Costs	$ 324,000	$ 329,600	$ 280,078								
5309 Ending Balance	$ 609,750	$ 280,150	$ 72								
Total Funding	**$ 2,215,383**	**$ 1,770,583**	**$ 1,300,059**	**$ 858,257**	**$ 736,449**	**$ 653,012**	**$ 2,810,855**	**$ 2,957,469**	**$ 2,851,073**	**$ 2,990,666**	**$ 15,965,383**
									Total Project Cost		**$ 15,786,240**
									Total Funding		**$ 15,965,383**
									Deficit/Surplus		**$ 179,143**

Cost is based on 3% inflation. This is based on the federal portion of funding. Federal Fiscal Years are October 1 to September 30.

At least 55% of expenses must be spent on eligible capital expenses. 55% is a floor, not a ceiling.

7.5.3– Non-Federal-Aid Projects

Many projects identified for the MAPA region are regionally significant but are not prioritized for federal funding for a variety of reasons. Notably, MAPA has prioritized investments along the Priority Corridors identified by the Project Selection Committee.

As a part of this change, MAPA has removed a significant portion of two-lane to three-lane roadway conversions from the fiscally constrained portion of its LRTP. In general these projects have a more limited impact on the capacity of a roadway facility and, as such, do not demonstrate significant benefits within the Travel Demand Model. However, these projects were included as a part of the Preferred Scenario detailed earlier in this chapter as there are anticipated transportation investments. Additionally, local jurisdictions have worked closely with private developers to construct these types of projects at the time development occurs. Members of MAPA's ProSeCom noted that many of these projects were likely to be constructed by 2040, but with local funding outside of the federal-aid system.

A full listing of all non-federal-aid projects included in this LRTP is included in Tables 7.12a & 7.12b on the page 7-26.

7.5.3– Illustrative Projects

Other projects may be regionally significant but may not have an identified funding source available for them. These projects may remain in the LRTP as illustrative investments until such time that a source of funding is identified to construct them. Many of these projects have been identified by NDOR as necessary transportation investments that do not have reasonably anticipated revenues to fund them at this time.

Notable among these illustrative projects is the Beltway project. The MAPA Beltway Feasibility study concluded that a Beltway along the edges of the metro area was part of the solution to meet future transportation needs in the MAPA region and that future study for the project should continue. Current anticipated revenues are not sufficient to construct the Beltway, and MAPA does not anticipate that the Beltway will be possible to construct without a major change to transportation funding. Illustrative Projects are included in Table 7.11 (next page).

TABLE 7.11
ILLUSTRATIVE HIGHWAY TRANSPORTATION PROJECTS

Lead Agency	Roadway	Location	Project Description	Project Cost
NDOR	I-80	126th - N-50	Add'l WB lane	$2,631,000
NDOR	I-80	Q St - 126th St WB	Add'l WB lane	$2,893,000
NDOR	I-680	Fort St - Irvington	6-lane	$25,481,000
NDOR	I-680	Fort St Bridge	Bridge	$4,109,000
NDOR	I-80	Ramp Bridge I-80 EB to US-75 SB	Widen ramp bridge	$2,260,000
NDOR	N-50	N-50 Interchange	Interchange modifications	$11,480,000
NDOR	N-36	Jct N-31 to I-680	4-lane	$98,425,000
NDOR	N-370	Gretna East: Gretna to I-80	Add'l lanes EB and WB	$8,000,000
NDOR	N-370	On N-370 from I-80 to US75	Add'l lanes EB and WB	$17,000,000
NDOR	N-50	On N-50 from 0.2 mi S Cass/Sarpy C/L, North 6.0 mi. to 0.6 mi South of N Limits of Springfield	4-lane from Louisville to N-31 Jct	$34,936,000
NDOR	N-50 (Springfield South)	N-50 from N-31 North to 0.3 mi North of Springfield	4-lane from N-31 Jct to Springfield	$12,991,000
NDOR	N-92	On N-92 from the Platte River East 3.4 Miless	4-lane, Platte River to US-275	$19,949,000
NDOR	US-275	L-28B to US-6/N-31	4-lane, W Dodge to N-92 Jct to US-6/N-31	$29,981,000
NDOR	US-75	N-370 - "W" St	Add'l lanes NB and SB	$80,000,000
NDOR	US-75	"W" St - I-80	Add'l lanes NB and SB	$35,000,000
NDOR	US-75	Chandler Road North Northbound, Omaha	Reconstruction, Additional Lane GR, Surface/Bridge Rehab	$8,946,000
NDOR	Beltway	Douglas & Sarpy Counties	Identified Inner Loop Beltway Corridor	$1,300,000,000
Omaha	"Gateway Bridge" Connector Frwy	Storz Expwy - Mo River	4-Lane Freeway	$5,280,000
Omaha	"Gateway Bridge" Frwy New Interchange	New Frwy & Pershing Dr Intchg.	New Interchange Under Study	$5,280,000
Omaha	"Gateway Bridge"	New Mo River Bridge	New Bridge	$50,000,000

Table 7.12a: Regionally Significant Non-Federal-Aid Projects (Nebraska)

Lead Agency	Roadway	Location	Improvement Description	Cost Estimate
Bellevue	25th Street	Schneekloth Rd to South of Capehart Road	3-Lane with TWLTL	$17,512,000
Bellevue	25th Street	North of Childs	3-lane with TWLTL	$1,601,000
Bellevue	Capehart Road	27th Street to 35th Street	4 Lane Urban	$9,771,000
Douglas County	156th St	Ida Street to State Street	4 Lane Divided	$9,880,000
Douglas County	156th St	Fort St to Ida St	4-Lane Divided with LTLs	$9,237,841
Douglas County	156th St	W Maple Rd to Fort St	4-Lane Divided with LTLs	$8,541,000
Douglas County	168th St	Maple to State	4 Lane Urban	$29,640,000
Douglas County	168th St	State to Washington County Line	3 Lane Urban	$29,640,000
Douglas County	192nd St	W Dodge Rd to W Maple Rd	4 Lane Urban	$16,012,000
Douglas County	Blondo	156th St to 168th St	4-Lane Urban	$6,842,845
Douglas County	Blondo Street	192nd to 168th Street	4 Lane Urban	$19,760,000
Douglas County	Fort St	156th St to 168th St	4-Lane Divided with LTLs	$9,791,716
Douglas County	Fort St	144th St to 156th St	4-Lane Divided with LTLs	$8,512,000
Douglas County	Ida St	120th St to 132nd St	4 Lane Urban	$7,117,000
Douglas County	Irvington Rd	Ida to State Street	Widen Existing 2 Lane to 3 Lane	$1,947,000
Douglas County	Irvington Rd	State St to McKinley St	Widen Existing 2 Lane to 3 Lane	$846,000
Douglas County	132nd St	W Maple Rd to State St	4 Lane Urban	$29,640,000
Douglas County	132nd St	State St to N-36	3 Lane Urban	$22,230,000
Douglas/Sarpy	Harrison St	216th St to 168th St	4 Lane Divided	$44,460,000
LaVista/Sarpy	W Giles Road	132nd St to West Giles Road Long-Term Improvements	4 Lane Urban	$30,000,000
LaVista/Sarpy	66th Street	Giles Road to Hamilton Street	3 Lane with TWLTL	$6,415,000
Omaha	156th St	Pacific St to South of Dodge St	3-Lane 1 NB, 2 SB	$5,223,000
Omaha	Cunningham Lake Trail Project	Around Lake Cunningham	New, Aggregate Muti-Use Trail	$161,201
Omaha	F Street	144th to 156th	2 Lane with TWLTL	$5,132,134
Omaha	Fort St	132nd to 144th St	4-Lane Divided with LTL	$7,402,000
Omaha	Fort Street	168th St to 204th St	4 Lane Divided	$33,345,000
Omaha	Fort Street	123rd St to 132nd St	Widen 2 Lane to 4 Lane Urban Divided with Turn Lanes	$11,137,000
Omaha	Harrison St	156th St to 144th St	4-Lane Divided with LTLs	$11,480,000
Omaha	Ida Rd	N-133 to 120th St	4 Lane Urban with LTLs	$15,396,402
Omaha	Ida St	180th St to 132nd St	4 Lane Divided	$44,460,000
Omaha	Ida St	204th St to 180th St	3 Lane Urban	$14,820,000
Omaha	Pacific	180th St to 192nd St	4-Lane Urban	$6,842,845
Omaha	Pacific St	180th St to 168th St	4-Lane Divided with LTLs	$7,679,000
Omaha	State Street	144th St to N-133	4 Lane Divided	$44,460,000
Omaha	State Street	204th St to 144th St	3 Lane Urban	$37,050,000
Omaha	West Center Road	At West Center Road and 156th Street	Widen 4 Lane Urban Divided with Dual Left Turn Lanes	$3,617,200
Omaha	192nd Street	Maple to N-36	3 Lane Urban	$44,460,000
Papillion	6th Street	84th St to 96th Street	3 Lane with TWLTL	$6,415,000
Papillion	90th St	Gruenther - Hwy 370	2-Lane Undivided with LTL (add turn lane)	$2,737,000
PMRNRD	Western Douglas County Trail Phase 3		Install new 10' wide bicycle/pedestrain trail	$1,391,232
PMRNRD	Western Douglas County Trail Phase 4		Install new 10' wide pedestrain bridge across the Elkhorn River	$1,233,020
Sarpy County	168th St	Hwy 370 to Schram Rd	3 Lane Urban	$5,337,000
Sarpy County	48th Street	Cornhusker Rd - Bellevue City Limits	3-Lane with TWLTL	$9,162,570
Sarpy County	W Giles Road	N-50 to 156th St	4 Lane Urban	$6,842,845
Sarpy/NDOR	144th Street	I-80 to Harrison	6-Lane Urban Divided	$57,675,000
UNMC	Saddle Creek Road	Leavenworth St to Dodge St	New alignment of roadway	$43,033,000
Total				**$745,888,851**

Table 7.12b: Regionally Significant Non-Federal-Aid Projects (Iowa)

Lead Agency	Roadway	Location	Improvement Description	Cost Estimate
Council Bluffs	Kanesville Boulevard	8th Street to Railroad Avenue	Reconstruction of existing roadway	$43,297,286
Council Bluffs	South Expressway	16th Avenue to 6th Avenue	Reconstruction of existing viaduct	$40,000,000
Council Bluffs	Wabash Ave	Overland Trail South to Bellevue Exit	2 Lane with LTLs	$34,234,000
Pottawattamie County	Lincoln Highway (Hwy 183)	Mud Hollow Road to Crescent	2 Lane Urban	$14,000,000
Pottawattamie County	192nd Street	Mills County Line to South Omaha Bridge Road	Gravel to 2-Lane Rural	$8,000,000
Total				**$139,531,286**

7.7 Fiscal Constraint Overview for Roadway & Trail Projects

In order to demonstrate fiscal constraint of the projects and revenues identified in this chapter, MAPA has included Tables 7.13 (below) and & 7.14 (next page). These tables correlates the anticipated federal-aid highway revenues, local revenues, and estimated project costs to summarize the analysis conducted within this chapter. The positive balances shown in Table 7.13 below demonstrates that the identified Federal-Aid program of projects is fiscally constrained. Balances in the short-term bucket reflects the inability to program funding by year for non-regional sources of federal funding.

Table 7.14 (next page) summarizes non-federal-aid revenue and expenditures identified within this plan. The maps that follow this section show identified Federal-Aid investments, non-federal-aid projects, and all projects together.

Table 7.13
MAPA Federal-Aid Fiscal Constraint Overview (in $1,000s)

Anticipated Federal-Aid Revenues (in $1,000s)

	TIP	Short Term	Medium Term	Long Term		
	2016-2019	2020-2025	2026-2030	2031-2035	2036-2040	Total
Iowa Federal-Aid	$410,135	$111,108	$36,861	$18,830	$19,207	$596,141
Nebraska Federal-Aid	$208,377	$142,221	$126,811	$130,614	$134,533	$742,556
Sub-Total	**$618,512**	**$253,329**	**$163,672**	**$149,444**	**$153,740**	**$1,338,697**
Iowa Match	$57,309	$24,055	$7,464	$23,423	$15,946	$128,197
Nebraska Match	$137,198	$29,178	$28,759	$16,608	$13,955	$225,698
Sub-Total	**$194,507**	**$53,233**	**$36,223**	**$40,031**	**$29,901**	**$353,895**
Iowa Total	$467,444	$135,163	$44,325	$59,884	$35,153	$741,969
Nebraska Total	$345,575	$171,399	$157,153	$147,222	$148,488	$969,837
Total Revenues	$813,019	**$306,562**	**$201,478**	**$207,106**	**$183,641**	**$1,711,806**

Total Federal-Aid Project Costs (in $1,000s)

	TIP	Short Term	Medium Term	Long Term		
	2016-2019	2020-2025	2026-2030	2031-2035	2036-2040	Total
Federal-Aid - IA	$467,444	$120,273	$37,320	$59,884	$35,153	$720,074
Federal-Aid - NE	$345,575	$158,236	$151,710	$147,222	$148,488	$951,231
Sub Total	**$813,019**	**$278,509**	**$189,030**	**$207,106**	**$183,641**	**$1,671,305**

Balance of Federal-Aid Revenues & Expenditures (in $1,000s)

	TIP	Short Term	Medium Term	Long Term		
	2016-2019	2020-2025	2026-2030	2031-2035	2036-2040	Total
Iowa Balance	$0	$14,890	$7,005	$0	$0	$21,895
Nebraska Balance	$0	$13,163	$5,443	$0	$0	$18,606
Regional Balance	**$0**	**$28,053**	**$12,448**	**$0**	**$0**	**$40,501**

TABLE 7.14
MAPA NON-FEDERAL-AID FISCAL CONSTRAINT OVERVIEW (IN $1,000S)

Anticipated Non-Federal-Aid Revenues (in $1,000s)

	TIP	Short Term	Medium Term	Long Term		
	2016-2019	2020-2025	2026-2030	2031-2035	2036-2040	Total
IA Non-Federal-Aid	$57,309	$126,387	$128,575	$130,797	$133,053	**$576,121**
NE Federal-Aid	$120,417	$279,196	$279,422	$279,492	$279,398	**$1,237,925**
Sub-Total	**$177,726**	**$405,583**	**$407,997**	**$410,289**	**$412,451**	**$1,814,046**
Iowa Match	-$57,309	-$24,055	-$7,464	-$23,423	-$15,946	**-$128,197**
Nebraska Match	-$120,417	-$24,552	-$28,759	-$16,608	-$13,955	**-$204,291**
Sub-Total	**-$177,726**	**-$48,607**	**-$36,223**	**-$40,031**	**-$29,901**	**-$332,488**
Available Revenue IA	**$0**	**$102,332**	**$121,111**	**$107,374**	**$117,107**	**$447,924**
Available Revenue - NE	**$0**	**$254,644**	**$250,663**	**$262,884**	**$265,443**	**$1,033,634**
Total Available Revenue	**$0**	**$356,976**	**$371,774**	**$370,258**	**$382,550**	**$1,481,558**

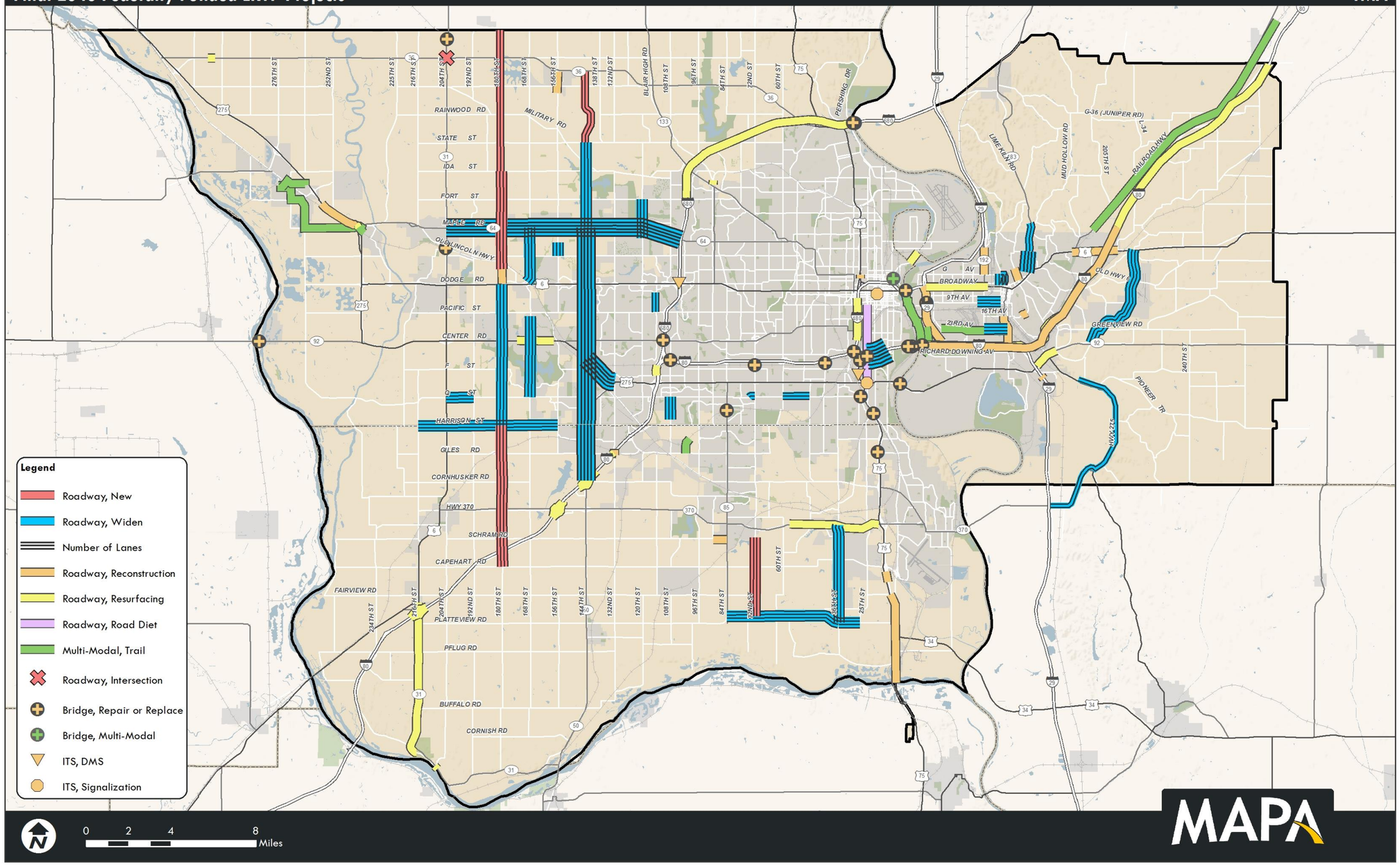
Total Non-Federal-Aid Project Costs (in $1,000s)

	TIP	Short Term	Medium Term	Long Term		
	2016-2019	2020-2025	2026-2030	2031-2035	2036-2040	Total
Non-Federal-Aid - IA	$0	$43,297	$40,000	$34,234	$22,000	$139,531
Non-Federal-Aid - NE	$0	$185,805	$222,868	$203,389	$133,827	$745,889
Sub Total	**$0**	**$229,102**	**$262,868**	**$237,623**	**$155,827**	**$885,420**

Balance of Non-Federal-Aid Revenues & Expenditures (in $1,000s)

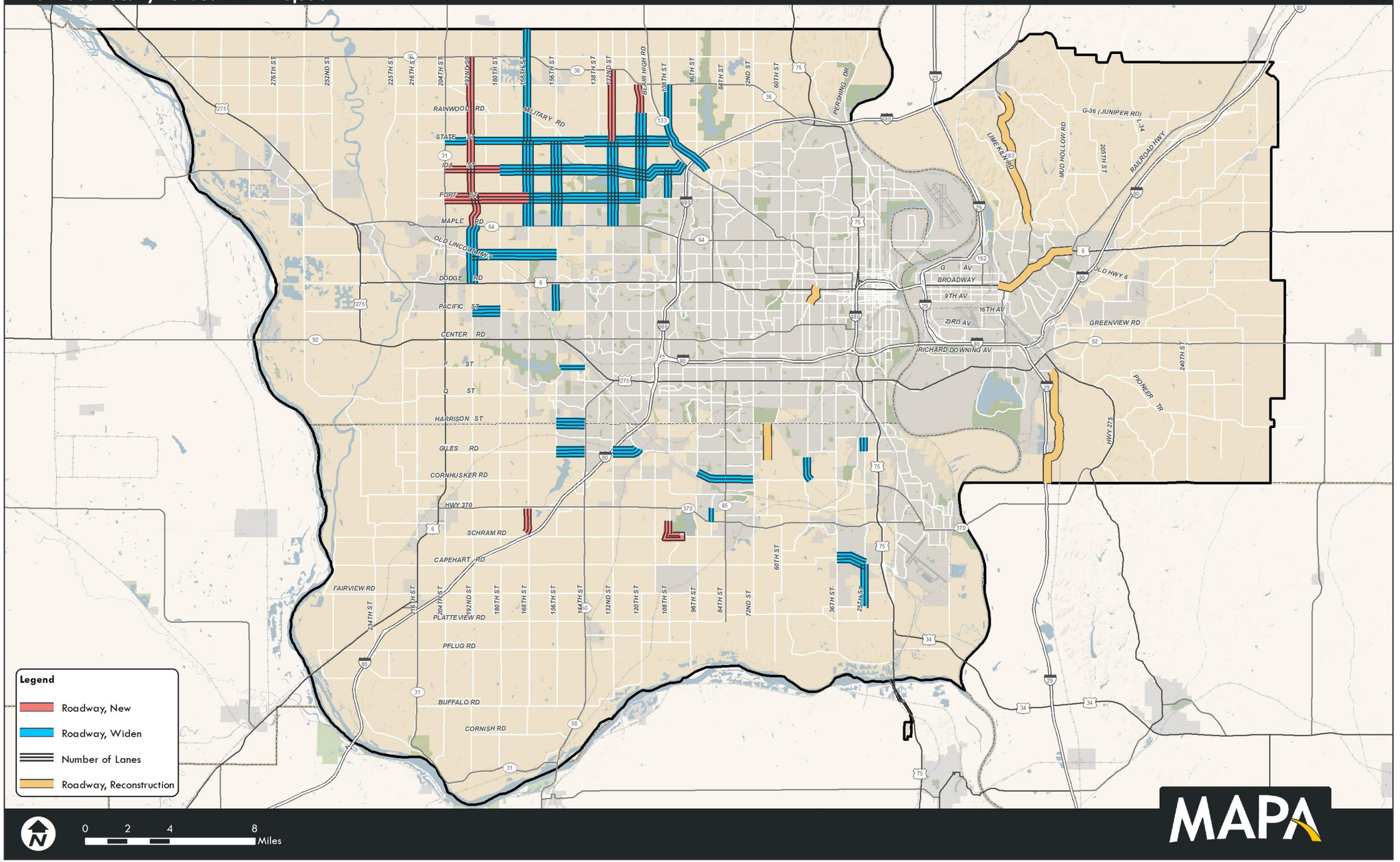
	TIP	Short Term	Medium Term	Long Term		
	2016-2019	2020-2025	2026-2030	2031-2035	2036-2040	Total
Iowa Balance	$0	$59,035	$81,111	$73,140	$95,107	$308,393
Nebraska Balance	$0	$68,839	$27,795	$59,495	$131,616	$287,745
Regional Balance	$0	$127,874	$108,906	$132,635	$226,723	$596,138

Final 2040 Federally Funded LRTP Projects — TMA

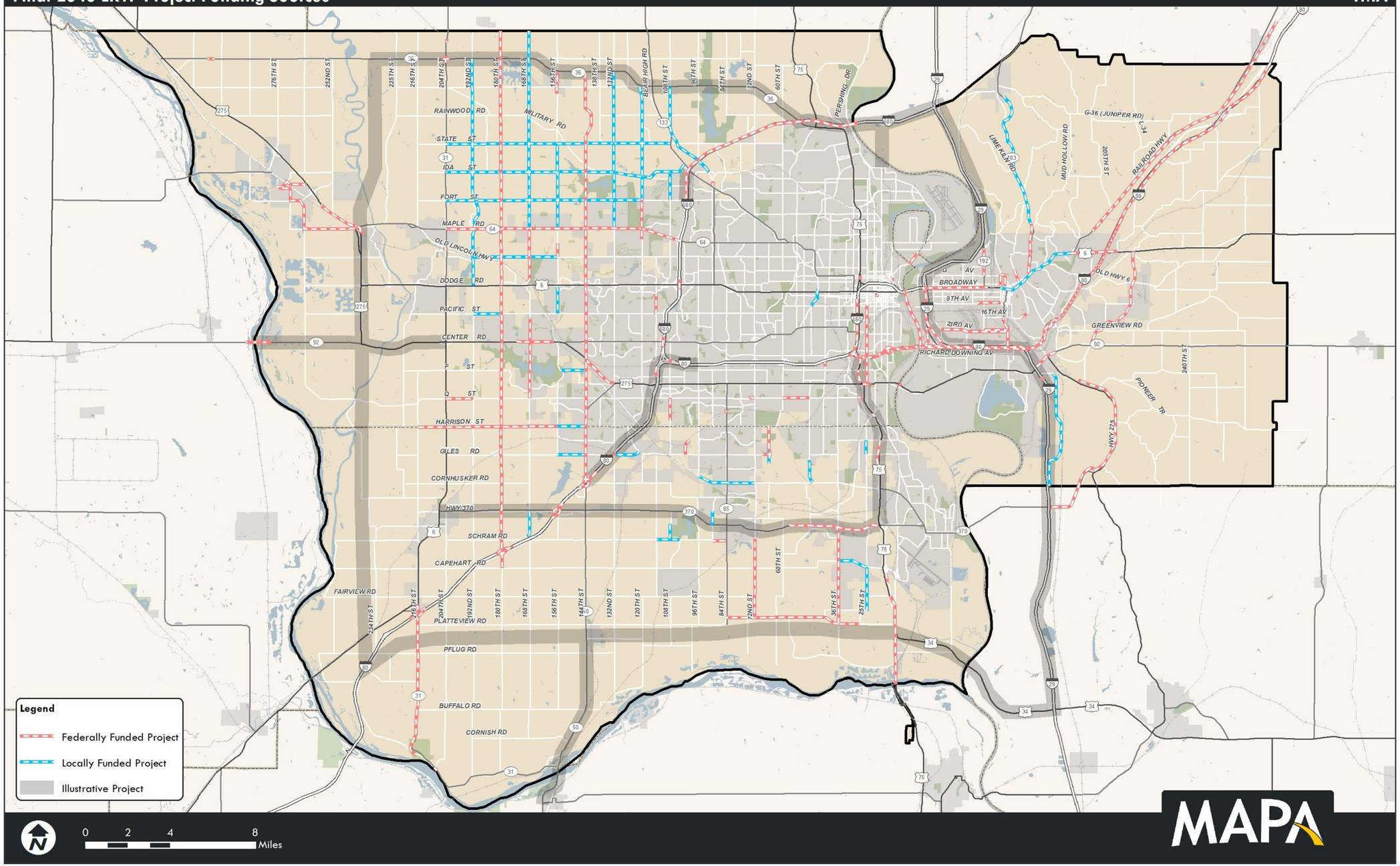


Final 2040 Locally Funded LRTP Projects

TMA



Final 2040 LRTP Project Funding Sources — TMA



Transit

8.1 Introduction

Public transportation is a vital element of the MAPA region's transportation system. Public transit services represent an affordable and environmentally-friendly transportation alternative for many commuters. For others, including many seniors, students, individuals with disabilities and the economically disadvantaged person, transit can be the only viable means of transportation. Mass transit services are best suited to those making traditional suburban-to-urban commutes and for those who live and work in high density corridors. Like most metro areas in the central and western United States, the majority of the development in the MAPA TMA has been constructed since World War II, and caters to the automobile, which can leave transit services at a disadvantage. Nevertheless, public transit still plays an important role in the region's transportation system. Transit officials and planners in the MAPA region are evaluating transit options to create a more robust transit system, including some services that have proven successful in other communities with similar dynamics.

8.2 METRO TRANSIT

The Transit Authority of the City of Omaha, Metro is a political subdivision of the State of Nebraska. Metro's authority and dedicated taxing boundaries are coincident with those of the City of Omaha which is approximately 120 square miles. Transit services operated outside the Omaha city limits and with private entities are "turnkey" contracts. All transit services operated by Metro are open to the general public with published schedules and fares charged. Current contracting cities are: Council Bluffs, Iowa and Bellevue, La Vista, Papillion and Ralston, Nebraska.

8.2.1 Current Services and Inventories

Currently Metro exclusively operates a surface bus and van fleet. The fleet size inventories include 134 full size heavy-duty transit buses and 26 stretch-roofed body on chassis cut-a-ways ("VANS"). The vans are used in the operation of Metro's MOBY , complementary paratransit service for Americans with Disability Act ("ADA") certified persons who cannot independently use fixed route service because of a disability—see Section 9 for more on Metro's MOBY service.

Currently, Metro operates a timed-transfer bus system for multi-directional travel transferring at five Transit Centers. Figure 8.1 shows a map of Metro's current route system. Metro's Transit Centers include:

North Omaha
North Omaha Transit Center
4308 North 30th Street
Omaha, Nebraska 68111

South Omaha
Metropolitan Community College – South Campus
2801 Babe Gomez Avenue
Omaha, Nebraska 68103

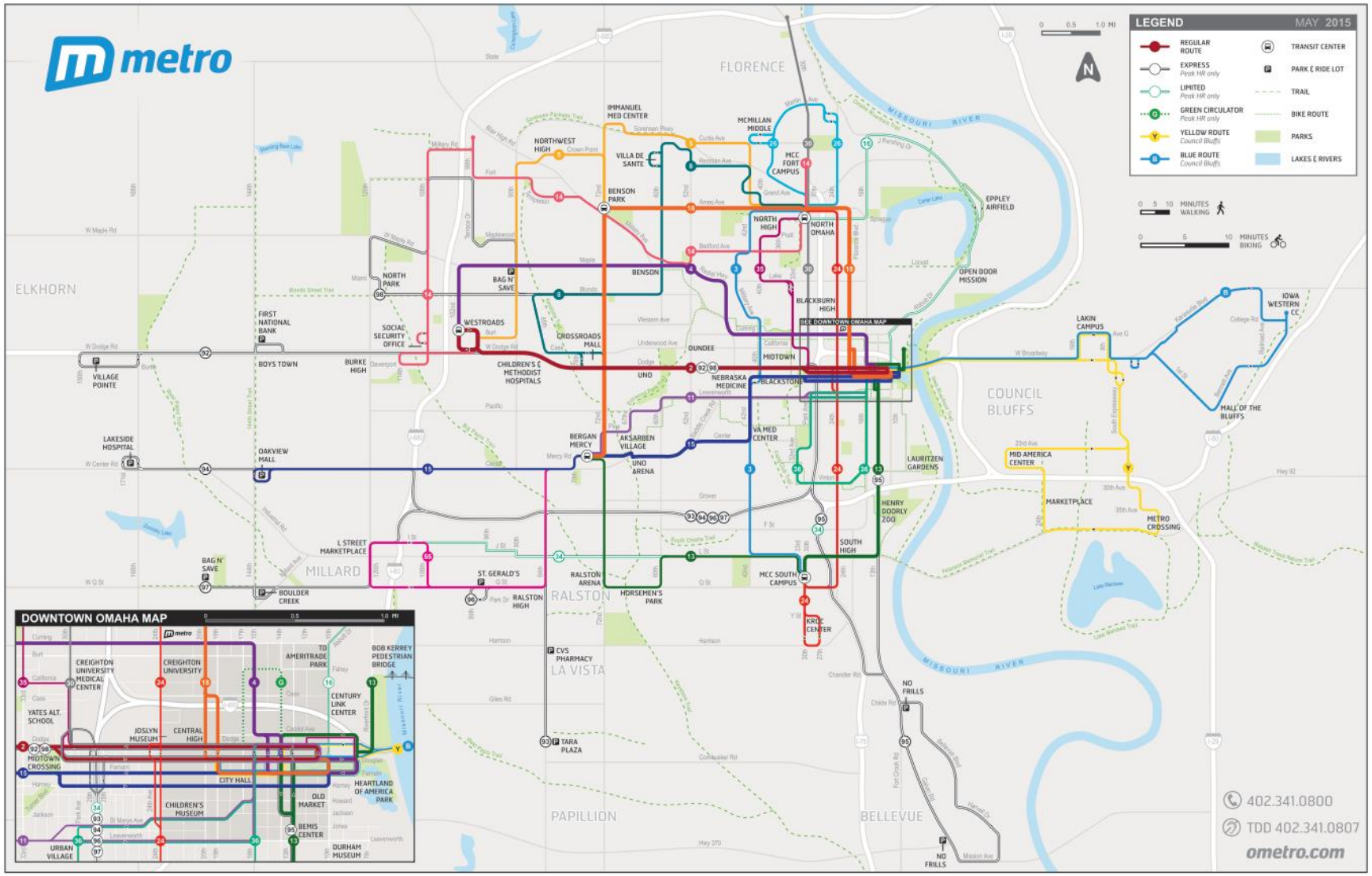
West Omaha
Westroads Transit Center
1099 North 102nd Street
Omaha, Nebraska 68114

Northwest Omaha
Benson Park Transit Center
7098 Military Avenue
Omaha, Nebraska 68104

Bergan Mercy Transit Center
75th and Dorcas Streets
Omaha, Nebraska68124

All five Transit Centers adhere to ADA regulations and have similar amenities, e.g., enclosed and wall-less covered shelters, seating, posted schedule information, signage indicating individual bus stops, lighting, concrete passenger platforms, trash containers, etc.

FIGURE 8.1
METRO TRANSIT NETWORK



Collectively Metro is responsible for the operations of 29 routes – 20 fixed, 7 express and 2 downtown circulators. Service is operated seven days a week with service hours generally: Monday – Friday from 4:00 a.m. to 12:30 a.m., on Saturday from 5:00 a.m. to 11:30 p.m., and Sunday from 6:00 a.m. to 9:30 p.m. Fixed routes maximize access by providing more frequent stops while commuter/express routes increase speed by including non-stop segments. Commuter/express routes operate on arterials and freeways and provide primarily suburban to Central Business District (CBD) service.

In May of 2015, Metro extended a number of its routes to operate past midnight on weeknights and many of these same routes to operate until after 11pm on Saturdays. There were also several fixed routes discontinued or combined to allow for more direct routing between major destinations and greater service frequency on the most heavily utilized routes.

Metro's current routes with the highest ridership are:

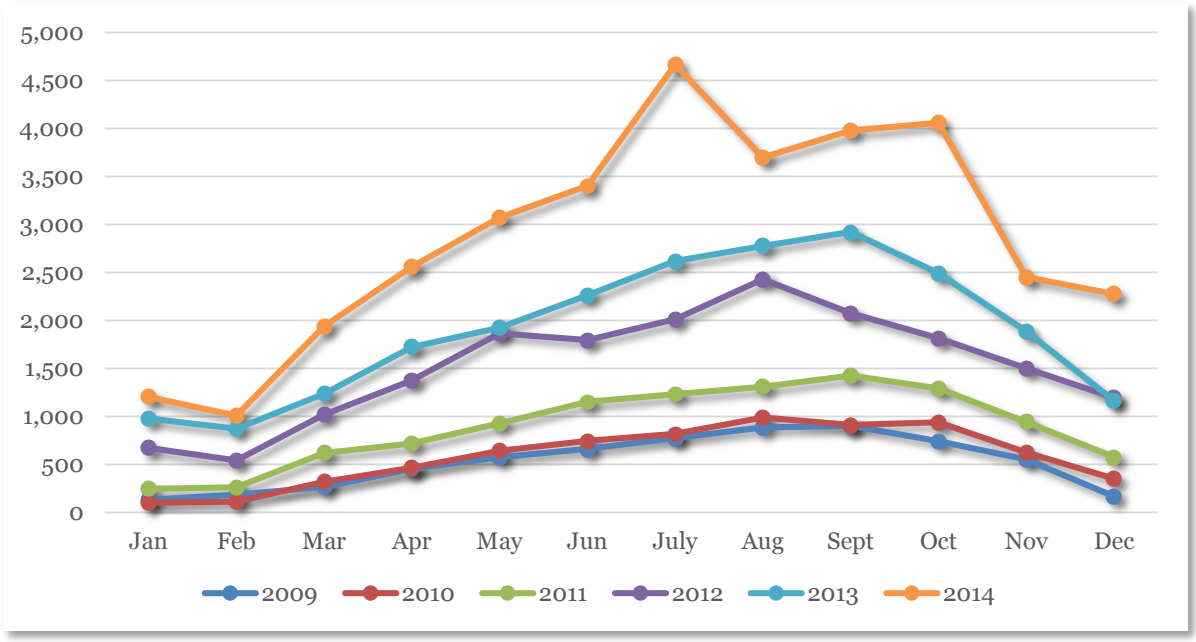
- **Route 2** (Dodge Street Corridor, from Westroads Mall to Omaha CBD)
    - Service to: Downtown Omaha, Medical Center, UNO, Crossroads, Methodist & Children's Hospital and Westroads Transit Center
- **Route 18** (72nd Street, Ames Avenue, Florence Boulevard)
    - Service to: Downtown Omaha, Crossroads, North Omaha Transit Center, North High School, Central High School, Benson Park Shopping Center, Creighton Prep, Lewis and Clark Middle School Benson Park Transit Center, and Bergan Mercy Transit Center.
- **Route 30** (Omaha CBD to Florence along 30th Street)
    - Service to: Downtown Omaha, Creighton University and Medical Center, , North Omaha Transit Center, Metro Community College - Fort Omaha, , Florence Business District and Central High School

Park and ride lots are another option for Metro commuters. Metro shares lot space with public entities to provide this passenger service. Park and ride lot locations are shown on the Metro routes system map (Figure 8.1) and include:

- Village Pointe Shopping Centre – 17404 Burke Street, Omaha;
- First National Bank – Surface Lot, 14010 FNB Parkway;
- Tara Plaza – Hogan Drive & Tara Road, Papillion;
- CVS Pharmacy – 6901 South 84th Street;
- Oak View Mall – 3030 Oak View Drive, Omaha;
- Lakeside Hospital - 16901 Lakeside Hills Court, Omaha;
- Bag N' Save – 2650 N 90th Street, Omaha;
- Bag N' Save - 15370 Weir St, Omaha;
- No Frills – Childs Road and Hwy 75, Bellevue;
- Boulder Creek – 14132 "S" Street;
- St Gerald's – 9602 "Q" Street.

All Metro buses are equipped with bike racks. Each bus accommodates two bikes on a first come, first serve basis. In 2014, bike rack usage increased drastically from 2013, going from 17,317 loadings to 25,532, a 32% increase in one year. Metro works very closely with the metropolitan area cycling community to both enhance and increase multi-modal travel. In addition, MAPA and Metro, along with other area partners, have conducted an annual Commuter Challenge, which promotes active and alternative modes of transportation. It is likely that the Commuter Challenge can be directly linked with the increase in bike rack usage.

FIGURE 8.2
METRO TRANSIT BIKE RACK USAGE BY MONTH, 2009-2014



Source: Metro Transit, 2015

8.2.2 STUDENT PROGRAMS

In 2009, Metro partnered with Metropolitan Community College (MCC) to introduce the student Pass to Class Program. This program provides unlimited ride cards to MCC students during each quarter. The program has been wildly popular, surpassing 1 million total student rides as of February 2014.

In February 2011, University of Nebraska at Omaha's Student Government teamed with Metro to launch the MavRide program, providing 400 students with bus passes for the semester, distributed at no cost to the student on a first come, first serve basis. The program was continued and has recently been expanded to 1,000 passes per semester. As of December 2014, over 200,000 rides have been recorded by UNO students.

Additionally, a new UNO pass program launched in January 2015, making unlimited bus rides available to faculty and staff as well.

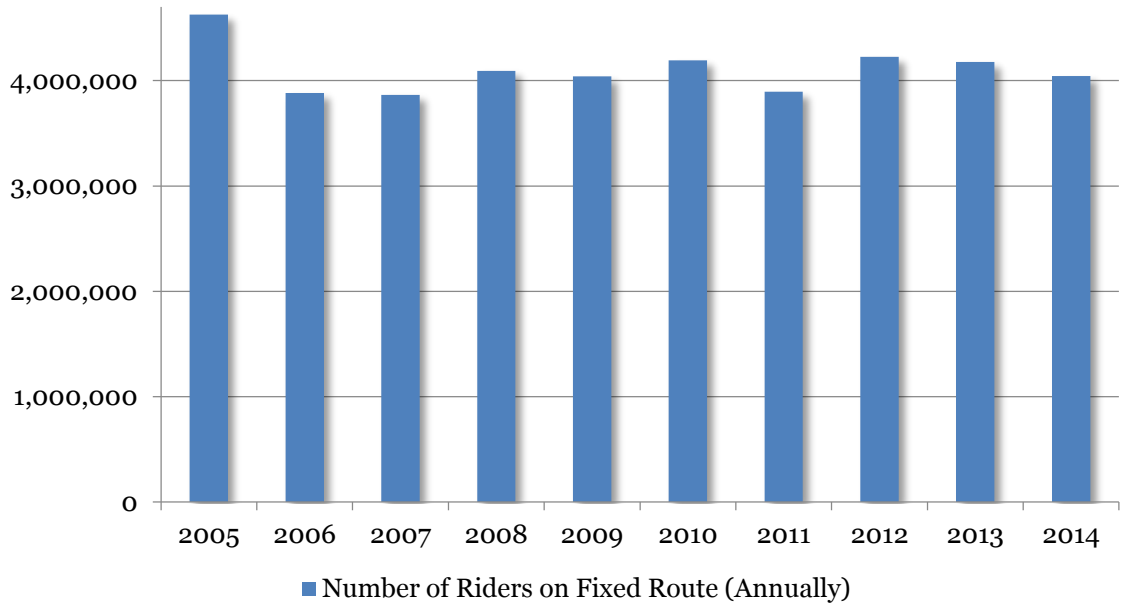
In June 2011, Metro partnered with Clarkson College to introduce a student pass program. Passes are provided to any interested student. This small program has also experienced growth and expanded participation. As of December 2014, over 3,000 rides have been recorded by Clarkson College students. The program design is such that it can be easily adapted to any educational institution, or employer situation. Metro has started to expand the program to other educational institutions.

8.2.3 Historical Ridership

As the metro area has decentralized and vehicle ownership has increased, demand has been reduced for public transit. Recently, due to economic conditions and greater concerns about the environment and sustainability, there has been an increased interest in improving transit service. Efforts such as the Environment Omaha Plan, MAPA's Beltway study, among others have recommended studying the possibilities for more robust transit service. Thus, a notable local interest in continuing to grow recent ridership numbers exists in the MAPA region.

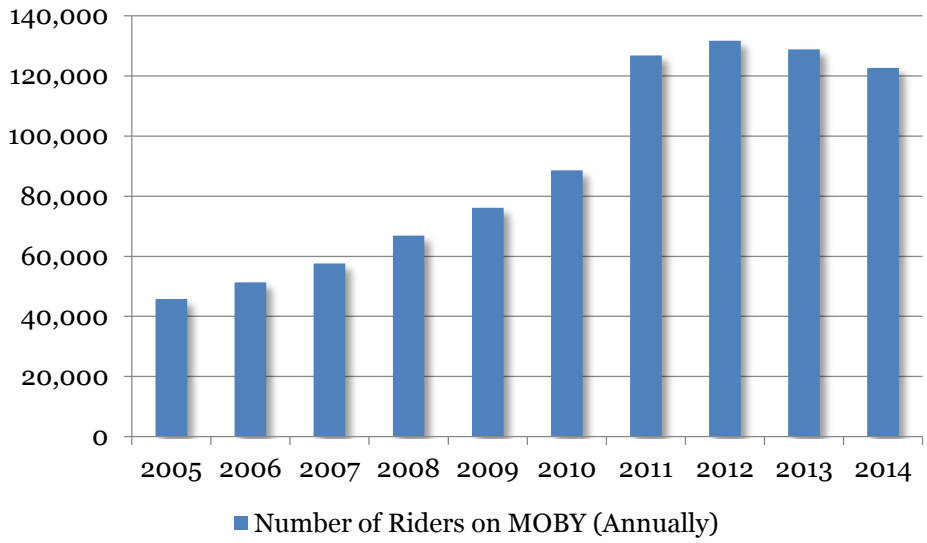
Figures 8.3 and 8.4 show historical ridership numbers for both standard Metro services and MOBY services. While MOBY services have seen an overall yearly increase from 2003 to 2012, standard Metro ridership has remained mostly level with an average of about 4 million riders annually.

Figure 8.3
Historical Ridership – Standard Metro Services



Source: Metro Transit, 2015

FIGURE 8.4
HISTORICAL RIDERSHIP – MOBY SERVICES FROM 2005 TO 2014



Source: Metro Transit, 2015

8.2.4 IDENTIFIED DEFICIENCIES AND OPPORTUNITIES

In 2012, Metro conducted an onboard passenger survey.

- 74% of respondents indicated that they agreed or strongly agreed that Metro takes them "where they need to go";
- 63% indicated that "schedule information is easy to use"; and
- 67.7% or respondents indicated that they "felt safe riding the bus".

Respondents were also asked their opinion on what was most important to improve Metro's service. The three most commonly requested improvements were:

- More service on weekends,
- Later night service on weekdays, and
  More frequent weekday service.

The service changes in May 2015 were primarily aimed to improve service in these three key areas.

<u>Elderly and Disabled Residents</u>

The elderly and disabled residents face many problems when trying to navigate the Metro. These include, but are not limited to, the list below. The needs of these residents are described more in Section 9 as well as MAPA's Coordinated Transit Plan.

- Physical limitations hindering access to the bus stop (difficulty walking, cracked sidewalks, etc)
- Financial burden associated with car ownership and taxi rides
- Lack of point-to-point transportation

Current service includes MOBY, Metro's complementary paratransit curb-to-curb demand response service for passengers who cannot use the fixed route service due to disability. There are no trip purpose restrictions for MOBY trips. MOBY adheres to ADA policy and procedures including, but not limited to, the ¾ mile corridor and ¾ mile terminus of individual routes and days and in-service hours of its fixed route system. MOBY clients complete the ADA eligibility certification process.

Obstacles to Low Income and Transit-Dependent Residents

Residents from lower economic levels and with less education generally use public transit at greater rates than the general population. However, many of these residents in the MAPA region do not utilize transit due to several factors. These include:

- Insufficient service and frequencies,
- Long travel times,
- Routes that require transfers,
- Difficult to read/navigate schedules, or
- Undependable service.

Attracting New "Choice" Riders

Choice riders are those who can afford to use a personal vehicle or other means of transportation, but choose to use public transit for a multitude of reasons. Transit ridership comprises a relatively low percentage of all trips in the metro area. If public transit is to grow, it must attract these riders in addition to those who utilize transit primarily for economic reasons. Metro's 2012 onboard survey identified that 19% of current transit riders, had a vehicle available for their trip.

As described below in Section 8.4, Looking Forward, a number of organizations have expressed interest in improving transit in the greater Omaha metro area. Multiple incentives can be cited for marketing and attracting new ridership. Certainly, the ability to relax, work, or potentially get online during one's commute is a strong marketing incentive to help attract new riders. Many businesses in the Omaha CBD have parking fees that can be avoided by taking the bus. Others prefer the savings in gas and other auto expenditures that come with using public transit. Environmental concerns such as reducing greenhouse gas (GHG) emissions are another incentive for some riders.

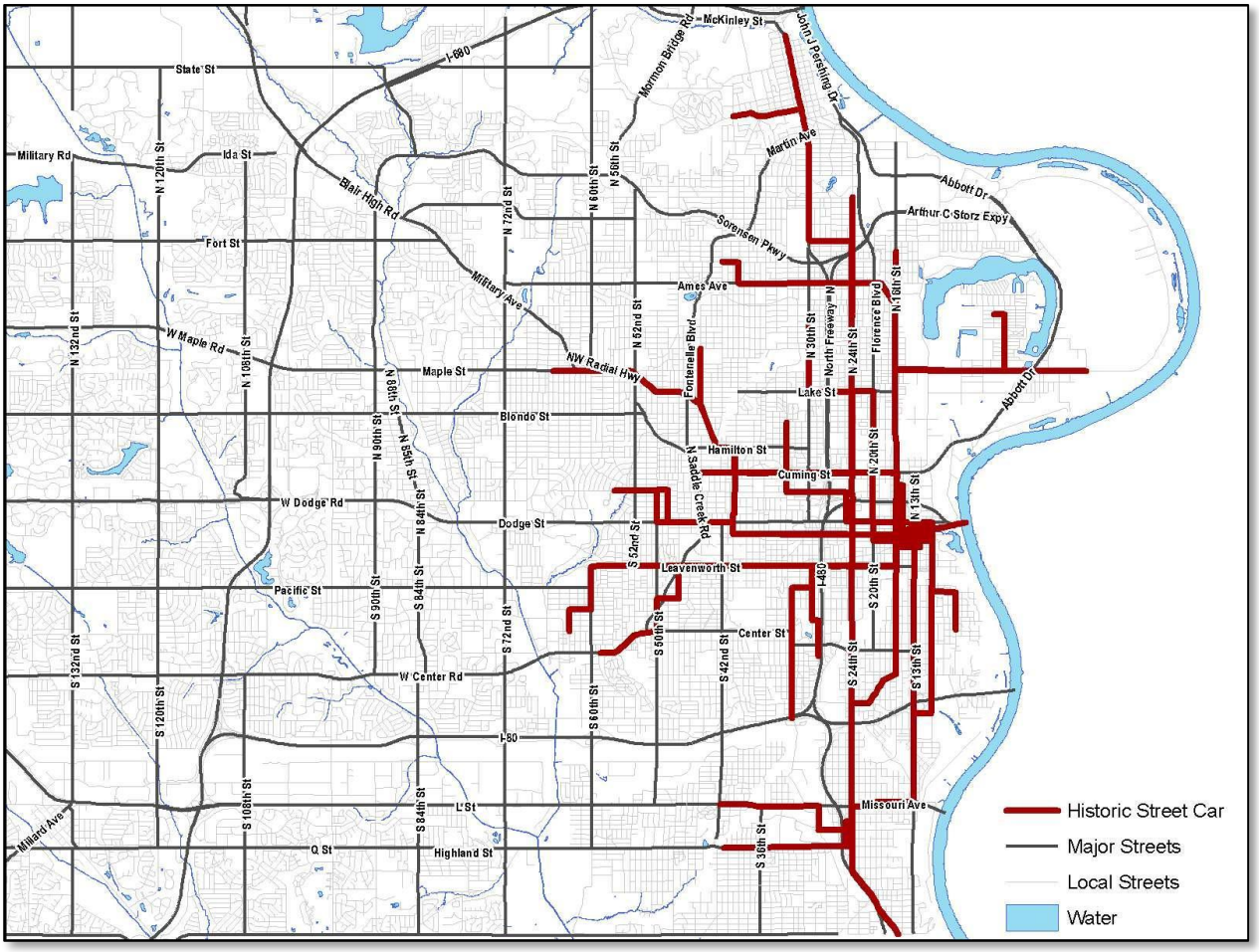
The Greater Omaha Chamber of Commerce's Young Professionals Bus Challenge Final Report presented several recommendations to improve transit service. These included seeking out new partnerships with area employers as well as colleges and universities; aggressively seeking new funding opportunities to provide increased service; rebranding to update transit's image; utilizing technology such as providing wireless internet, real-time trip information through social media, as well as listing route times and information on Google transit, among others.

8.3 Streetcar and Bus Rapid Transit (BRT)

8.3.1 Omaha Streetcar

Streetcar services in the MAPA region began in the late 1860s. In 1955, they were discontinued due to increased access and use of the personal car. They have since been out of service. View the map of the old streetcar lines in Figure 8.5.

Figure 8.5
Historical Streetcar Map



Beginning in the 1990s, interest in reinstating streetcar service in the area has grown. Former Omaha Mayors P.J. Morgan, Hal Daub and Mike Fahey, and Jim Suttle have all supported a streetcar program in one form or another. Advocate groups such as Omaha Streetcar have also pushed for the implementation of streetcar services. Proponents of a streetcar view it as a means to improve economic development in the urban core, increase densities, and also provide a new means of transportation.

8.3.2 Bus Rapid Transit (BRT)

Bus Rapid Transit (BRT) is bus service that operates at a higher speed with greater frequencies than standard bus service. In other metro areas, BRT often operates in exclusive lanes or receives signal priority that preempts traffic signals. It represents an effort to provide many of the benefits often associated with higher speed light-rail or heavy-rail transit using rubber-tired vehicles at a lower cost than rail or streetcars systems.

In 2005, Kansas City Area Transit Authority (KCATA) launched a new BRT service to operate between downtown and the Country Club Plaza known as The Max. This service featured unique station identifiers with real-time information on bus status, frequent headways, and exclusive lanes during the peak hours. Overall, this service has been well-received and met with acclaim. KCATA is currently constructing or planning multiple other BRT routes in the Kansas City metro area.

The success of these and other BRT projects has led some in the MAPA region to discuss the potential for future BRT service locally. While not as expensive or glamorous as a streetcar or light rail system, BRT represents a significant improvement in transit service that would catch the attention of citizens. Critics of BRT note that while it has been successful in many locations in providing transit service, it does not typically create the impacts to development akin to what is seen along successful streetcar and light rail corridors.

Dodge Street would appear to be a natural first choice for a BRT corridor. It could possibly connect to Council Bluffs along the Broadway corridor. Other east-west options for consideration would include Center Street or Saddle Creek / Northwest Radial Highway / Maple Street. Possible north-south corridors include 24th and 30th Streets in South Omaha and North Omaha as well as 72nd Street.

8.3.3 Central Omaha Transit Alternatives Analysis (AA)

In early winter 2011, the City of Omaha and Metro undertook the Central Omaha Transit Alternative Needs Analysis ("AA"). The specific purpose of the grant was to study the Downtown Omaha, Midtown Omaha, UNMC and the University of Nebraska at Omaha (UNO) corridor (shown in Figure 8.6.) and make recommendations as to the preferred transit alternative. Additionally, a potential extension west to 72nd to serve the Crossroads and Aksarben Village areas was included in the study. The project was funded by an FTA discretionary grant with local matching funds provided by a coalition of local contributors.

FIGURE 8.6
AA STUDY AREA

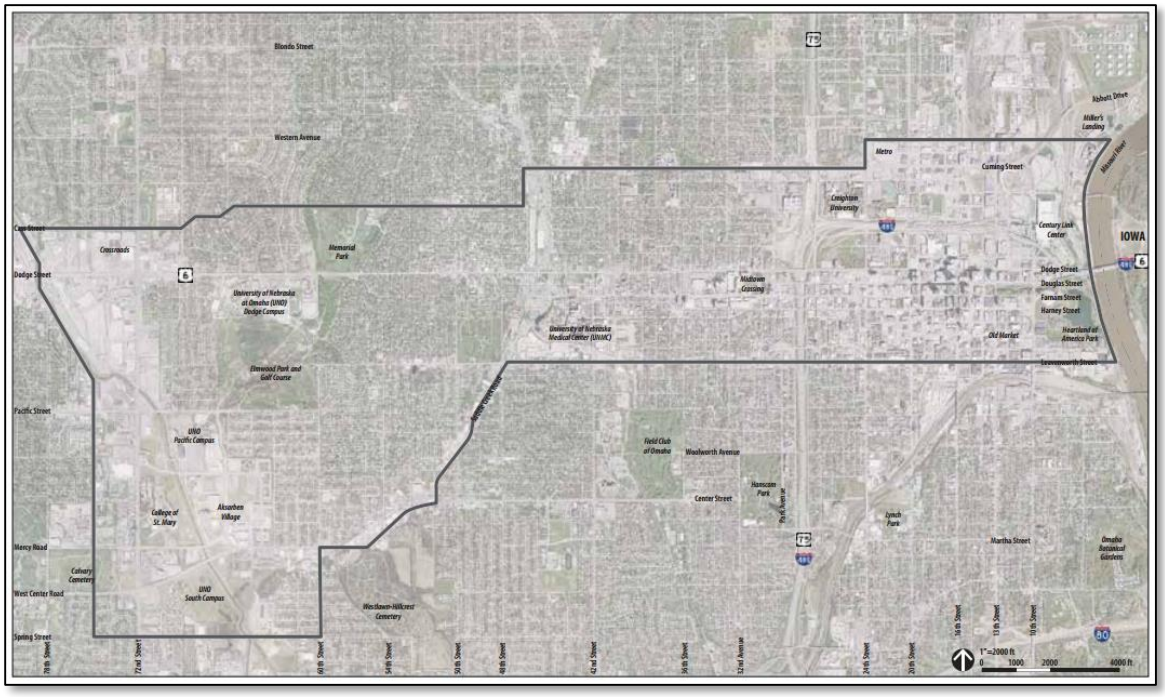
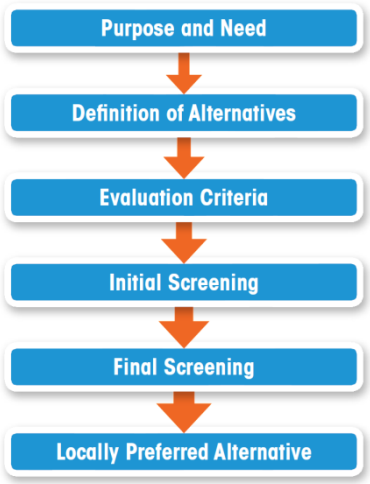


FIGURE 8.7
AA STUDY PROCESS



Over the course of the two-and-one-half year planning process, twenty-two stakeholder meetings, four public meetings, and three mobile workshops were held. A multitude of online methods were utilized including an online idea forum to gather public input regarding possible alternatives and service improvements. This process is shown in Figure 8.7.

The multiple levels of screening took into account many criteria important in determining the success of a rapid transit system. Each iteration of screening expanded the criteria considered to evaluate and prioritize project corridors and transit technologies. A summary of the criteria utilized for screening is listed below:

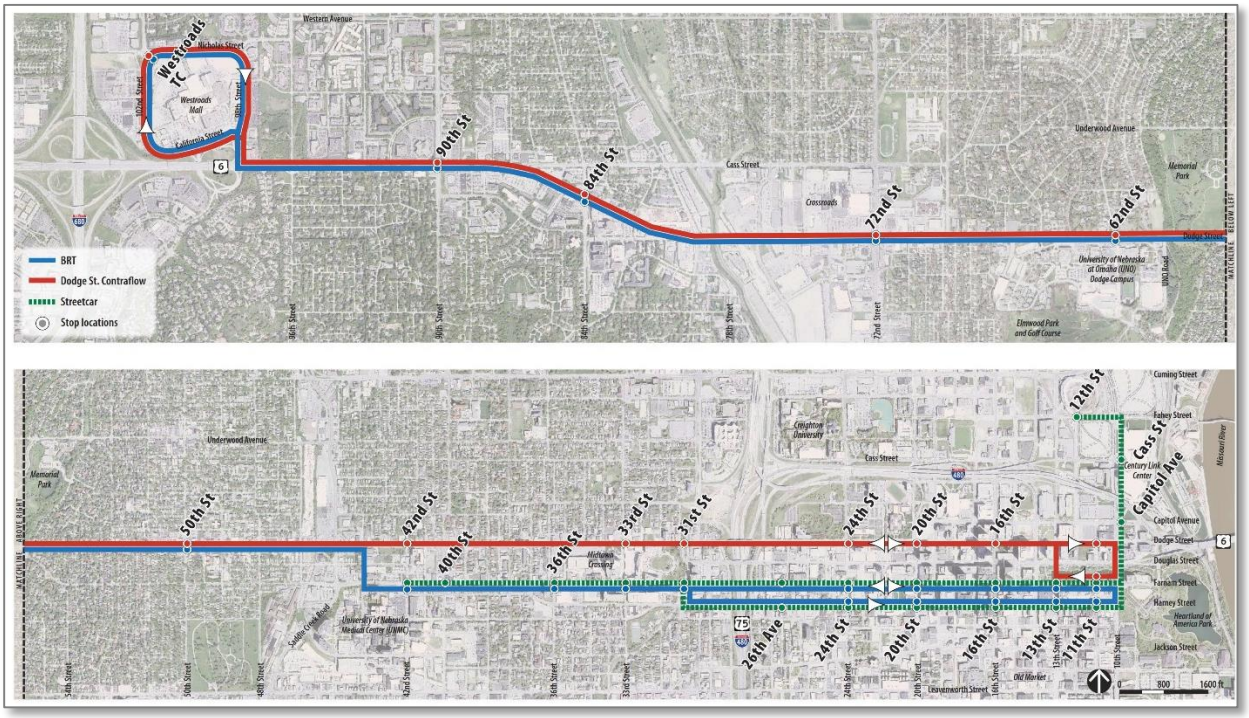
- Ridership
- Operation & Maintenance Costs
- Cost-Benefit Analysis
- Mobility
- Origin & Destination Analysis
- Service Characteristics
- Physical Constraints
- Environmental Issues

Through the planning process a Locally Preferred Alternative (LPA) was identified that included the potential for BRT and Streetcar technologies along the Dodge/Farnam corridor. Table 8.1 summarizes the characteristics of each transit technology within the combined alternative, and Figure 8.8 shows the project corridor(s). Phase 2 of the Alternatives Analysis will further evaluate the potential environmental impacts and develop conceptual and preliminary engineering documentation for these projects.

TABLE 8.1
CHARACTERISTICS OF THE LOCALLY PREFERRED ALTERNATIVE (LPA)

Feature	Locally Preferred Alternative (Combined LPA)	
	Alternative 2 (Modified) Bus Rapid Transit (BRT)	Alternative 3 (Modified) Modern Streetcar
Termini	Downtown to Westroads Transit Center	North Downtown to UNMC
Frequency (peak/off-peak/evening)	10/15/20	10/15/20
Distance	7.98	3.22
Vehicle Travel Time	26:59	15:24
Capital Cost	$33,093,000	$134,457,000
Capital Cost per Mile	$6,048,000	$41,757,000
Annual O&M cost ($2013)	$3,008,844	$6,347,246
Job Projection	2,100	8,500
Population Increase Projection	1,350	3,150
Economic Development Projection	$262,000,000	$1,000,000,000

FIGURE 8.8
PROPOSED TRANSIT PROJECT CORRIDORS



8.4 Looking Forward

In the last several years Metro has replaced 18 buses fueled by clean diesel technology; upgraded fareboxes; launched Google Transit; upgraded the administrative/maintenance facility; and completed a variety of smaller projects. Additionally, a complete renovation of the North Omaha Transit Center was completed in 2013. These updates are part of an effort to expand and appeal to a broader audience, such as young professionals, than has traditionally ridden transit service. New technology possibilities combined with redevelopment in the urban core and increased environmental consciousness represent a fertile ground for additional transit ridership.

Various recent planning studies including the Regional Transit Vision Study through a partnership between Metro and MAPA and the Alternatives Analysis through a partnership between Metro and the City of Omaha identified opportunities for improvement and led to service changes and future transit infrastructure.

Near-Term Future Transit Routes

Metro completed a Comprehensive Operations Analysis (COA) in 2013. The COA evaluated the fixed-route operations and completed a market assessment and needs analysis. The COA included several phases of implementation.

- Phase I, implemented over the five years starting in 2015, will enhance Metro's productivity, restricting routes to more closely follow priority corridors.
- Phase II, projected to take between 5-10 years, will increase the frequencies over the Phase I service improvements to achieve spontaneous-use frequencies.
- Phase III, which is expected to take between 10-20 years, will focus on expanding the availability of rapid and frequent service to promote spontaneous use of the system.

Bus Rapid Transit (BRT)

In 2014 Metro received a $14.9 million TIGER grant from the federal government to build a Bus Rapid Transit (BRT) line in Omaha as described in Section 8.3. This federal grant made the creation of an Omaha BRT possible years earlier than originally planned. Through this grant Metro is updating its fleet to be able to handle a BRT line, improving passenger boarding facilities at select stops, installing signaling technology along the approved BRT route.

Automatic Vehicle Location (AVL)

Metro is pursuing technology and infrastructure in order to provide enhanced tracking and dispatching capabilities as well as real time information for passengers through the installation of AVL systems on its buses.

Alternative Fuels

Transit systems in many regions utilize alternative fuel vehicles to reduce emissions and fuel costs. Metro is starting to implement compressed natural gas (CNG) buses with plans to purchase 5 CNG MOBY vans and 6 CNG medium duty buses. Expansion of CNG utilization along with needed infrastructure to fuel such vehicles is being evaluated.

Creighton Intermodal Transit Center

In the near-future, Metro will work with Creighton University to develop intermodal transit facilities and improved pedestrian and bicycle access to Metro buses and Creighton shuttles on Creighton's campus. Enhanced facilities are planned for 24th Street, 20th Street, and pedestrian mall (vacated California Street).

Downtown and Crossroads Transit Centers

In the near-future, Metro will develop transit centers in Downtown Omaha and at 72nd and Dodge (Crossroads area) in conjunction with the planned BRT. The planned facilities will have the capacity to accommodate buses, BRT vehicles, and bicycles and will provide improved passenger amenities.

Community Planning Needs

Planning of new development and redevelopment could be better coordinated to ensure that transit, pedestrian and multi-modal needs are considered in the development process. With the development of the 2050 Heartland Study there has been a considerable increase in regional cooperation and cohesive planning in the MAPA area. Recently there has also been the development of a comprehensive Bicycle – Pedestrian Master Plan to better facilitate the needs of the growing bike community and increased interest in walkable communities in the Omaha metropolitan area.

Coordinated Transit and Paratransit

9.1 Introduction & Overview

The Metropolitan Area Planning Agency completed an update to the MAPA Coordinated Transit Plan in May of 2014. This plan outlines the demographics and funding sources to assist in the transportation needs of the socially and economically disadvantaged.

Coordinated Transit and Paratransit is covered by three of the four general regional goals for the MAPA 2040 LRTP. Through enhanced Coordinated Transit/Paratransit, MAPA seeks to:

1. Maximize accessibility and mobility
2. Increase Safety and Security
3. Keep costs reasonable and sustainable

MAPA acts as the administrator in charge of Section 5310 Elderly and Disabled Program and any remaining New Freedom and Job Access/Reverse Commute funding, as well as the Veterans Transportation Community Living Initiative (VTCLI; Section 5309) through the Federal Transit Administration (FTA). These grants are specially targeted to assist the elderly, persons with disabilities, and economically disadvantaged with their transportation needs. The grant award process is carried out through a competitive selection procedure. Applicants are scored and ranked based on a demonstration of need, cost effectiveness, project oversight, project coordination, and project equity. The scoring for these applications is carried out by the Coordinated Transit Committee (CTC).

CTC Membership

AARP
Black Hills Workshop
Catholic Charities
City of Bellevue
City of Council Bluffs
City of LaVista/Ralston
City of Omaha
City of Papillion
Eastern Nebraska Community Action Partnership
Eastern Nebraska Human Service Agency
Empowerment Network
Florence Home for the Aged
Friendship Program
Goodwill Industries
Heartland Family Service
Heartland Workforce Solutions
Lutheran Family Services
Mayor's Commission for Citizen's with Disabilities
Metro Transit
Nebraska Veterans of Foreign Wars
Omaha Association of the Blind
Papio-Missouri River Natural Resources District (PMRNRD)
Paralyzed Veterans of America
Pottawattamie County Veteran Affairs
Sherwood Foundation
Southern Sudan Community Association
Southwest Iowa Planning Council (SWIPCO)/ Southwest Iowa Transit Agency (SWITA)
United Way of the Midlands

9.2 Affected Population Groups

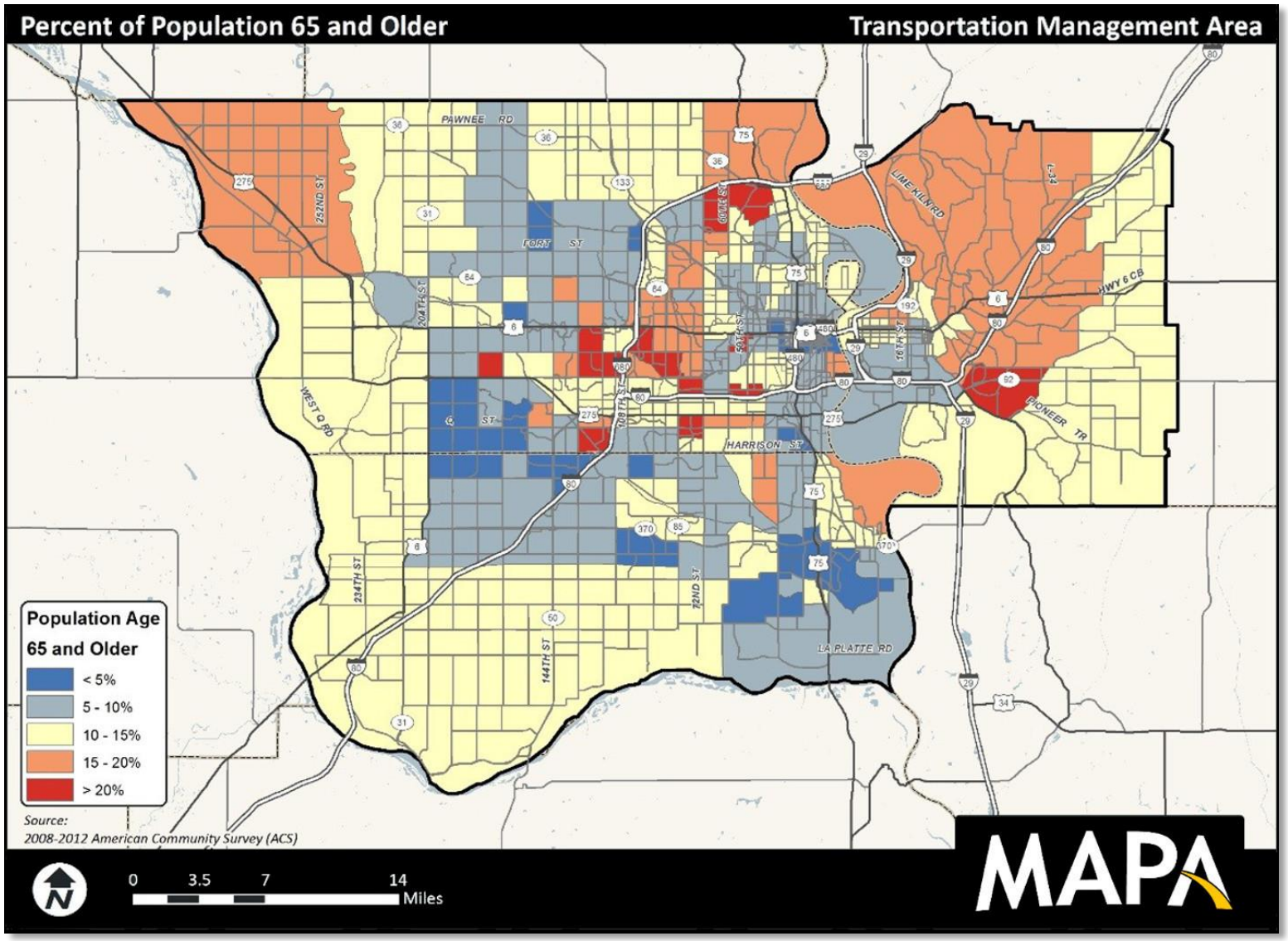
The elderly, persons with disabilities, and persons of low income require specialized services. The members of the CTC provide transportation and other social services to these groups and are shown in maps below (Figures 9.1 – 9.3).

9.2.1 ELDERLY

In keeping with general national trends the population of the Omaha metro area is quickly aging as the baby boomer generation reaches their 60's and life expectancies increase for boomers and older generations. With the increase in the percentage of people over 65 in the area there have also come changes in the locations of where those over 65 live. Problems of providing transportation and other services to quickly aging populations creates demands on localities especially since people retain their independence and desire for mobility later into life in communities that have previously not had to deal with these issues.

Previously the area had small dense pockets of those over 65 concentrated in the downtown core, easily served by existing transit services, but now there are growing sections of those over 65 in outlying suburbs and counties. This creates new problems for the city and counties as they struggle to increase transit and social services to these areas to provide for a rapid increase in elderly populations.

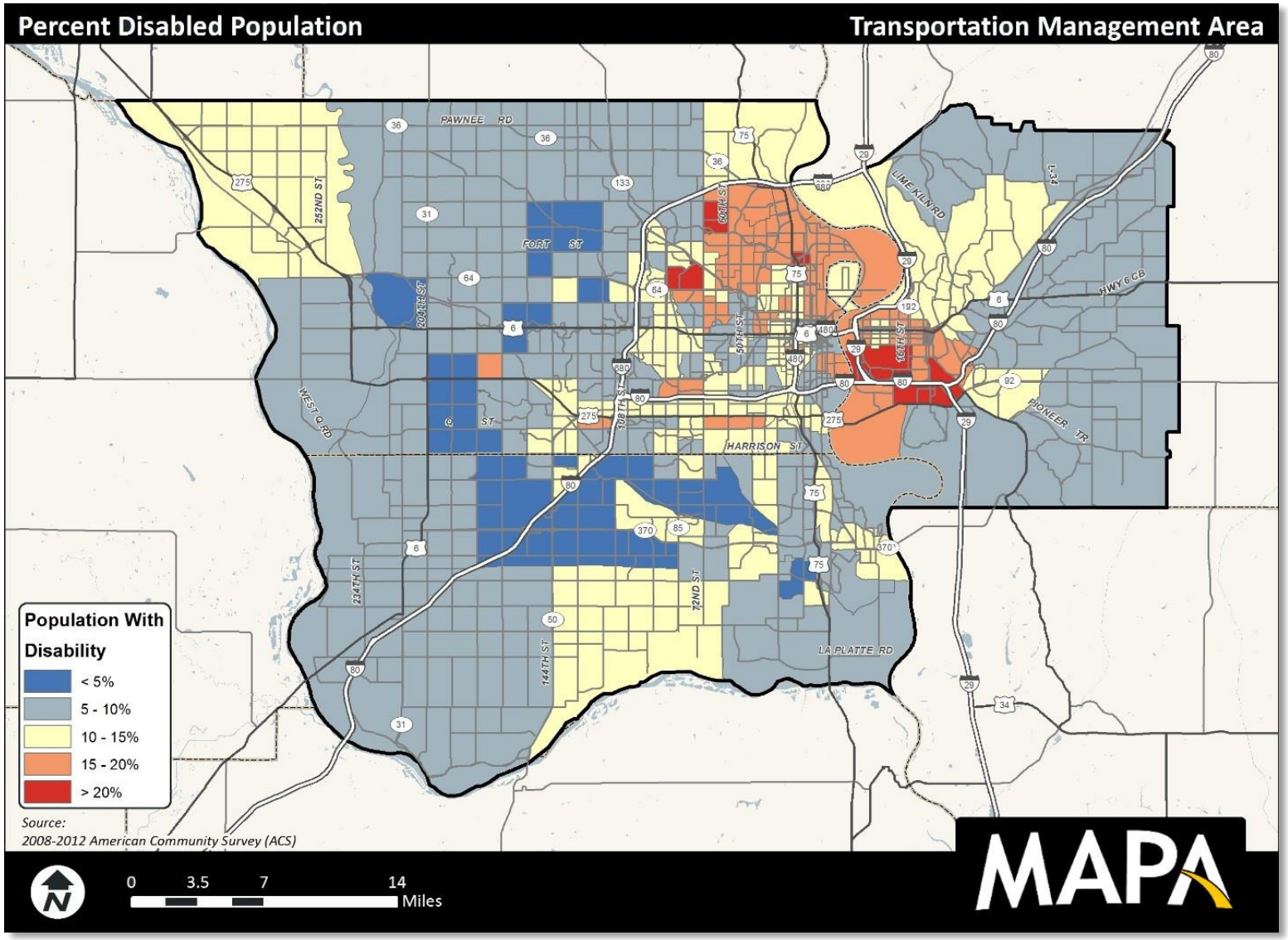
FIGURE 9.1
ELDERLY POPULATION DISTRIBUTION IN MAPA TMA



9.2.2 DISABLED

Figure 9.2 indicates that the highest density of disabled persons in the Omaha-Council Bluffs Metropolitan area is located in the northeast part of Omaha. This section of the city already has some of the highest rates of transit service and large portions of North-East and Downtown Omaha are walkable, increasing those with disabilities potential mobility. Some of the sections of the TMA with the highest rates of disability also correspond with concentrations of elderly and low-income populations, for example in Northeast Omaha.

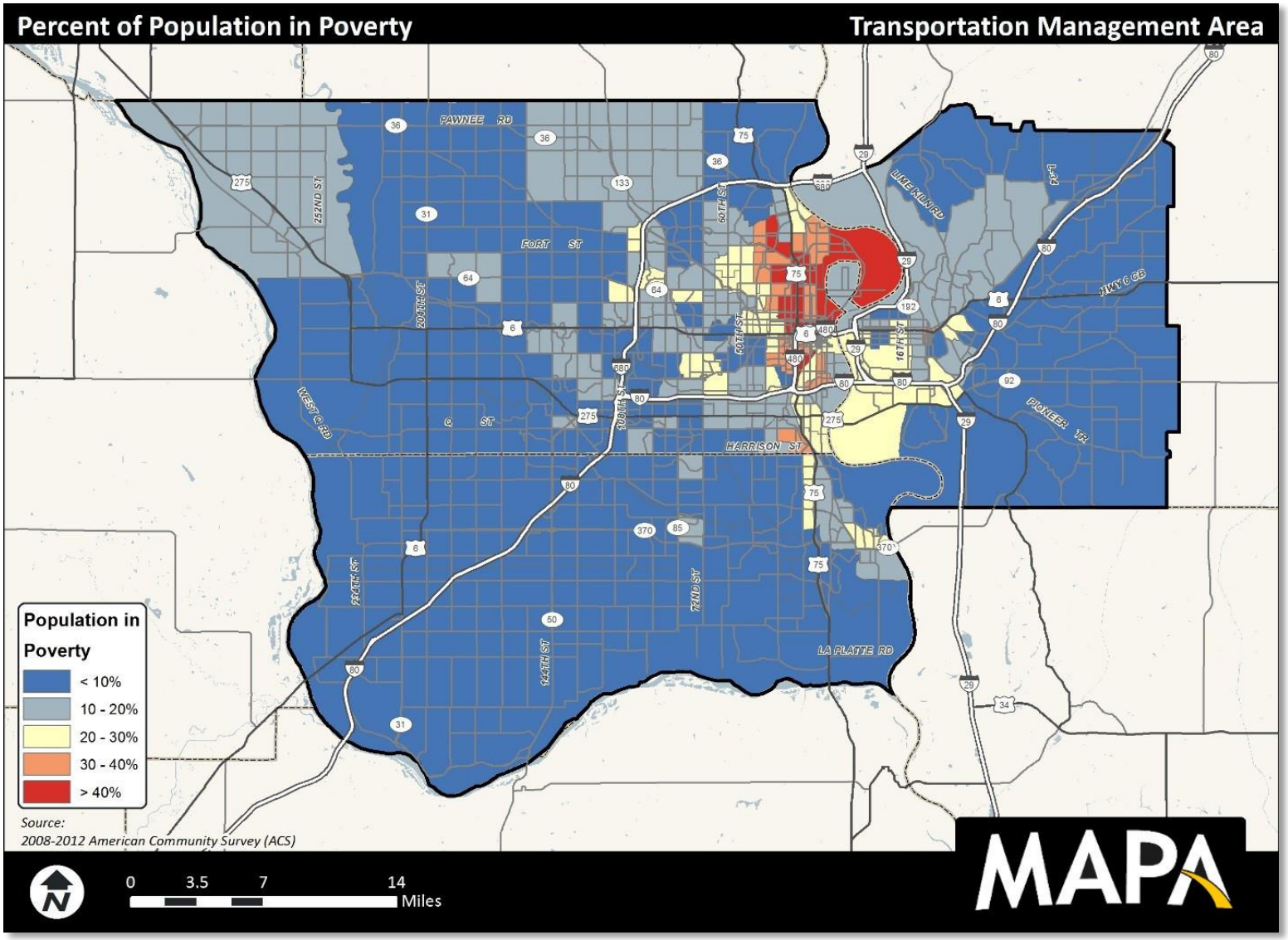
FIGURE 9.2
DISABLED POPULATION DISTRIBUTION IN MAPA TMA



9.2.3 LOW INCOME

The low income population in the Omaha-Council Bluffs metropolitan area is predominantly located in Northeast Omaha (see Figure 9.3). While much of the low income population is located in northeast Omaha, there are some areas of high density low income in South Omaha and Council Bluffs, in the same areas with high concentrations of elderly and disabled.

FIGURE 9.3
LOW INCOME POPULATION DISTRIBUTION IN MAPA TMA



9.3 Mobility Management

According to United We Ride, "Mobility Management can be described as a strategic approach to service coordination and customer service which enhances the ease of use and accessibility of transportation networks." (http://www.unitedweride.gov/1_8_ENG_HTML.htm).

One of MAPA's Transportation Planners acts as the Region's Mobility Manager. The Mobility Manager serves as a policy coordinator working with local human service providers through the Coordinated Transit Committee (CTC) to increase coordination and create systems to facilitate region wide mobility management among transit service providers in the MAPA TMA.

Currently MAPA is working on a One-Call/One-Click program for local transit providers to link constituents with rides across agencies and increase cooperation and efficiently in the area. This program will be user friendly, communicating when and how public rides can be obtained and to offer each resident his or her best options. Eventually, the One-Call Transportation Management Coordination Center will work toward new services for any un-met rides, especially in populations of the disabled, the elderly, and the under-employed.

9.3.1 Coordinated Transit Committee (CTC)

The Coordinated Transit- Committee (CTC) is composed of transportation providers, social workers, various nonprofits, and concerned citizens that works to address transportation issues for the elderly, low-income, and disabled populations in the Metro region. MAPA staff coordinates and facilitates the regularly scheduled CTC to address concerns, upcoming issues, and assist in the administration and delivery of 5310 grants. CTC meetings are open to the public and are held on the 3rd Wednesday of every month. Meeting agendas are posted at: http://mapacog.org/component/content/article/58-agendas.

9.4 Existing Transportation Services

Existing service within the MAPA TMA include two public transportation services operated by the City of Omaha, Metro Transit and Metro Transit's on-demand paratransit service (MOBY), the City of Council Bluffs services, the Southwest Iowa Transit Agency (SWITA) services, and other human service transportation providers.

A transportation inventory survey was conducted to gather information on existing services and the potential agencies which would want to participate in a coordinated transit network, as a part of the Coordinated Transit Plan development. A summary is displayed below (Table 9.1), but more information is available in the Coordinated Transit Plan.

9.4.1 METRO MOBY SERVICE

Metro Transit offers on-demand paratransit service to persons who cannot independently use fixed transit due to a disability within the city of Omaha through their MOBY service. This service is mandated of public transit providers by the Americans with Disabilities Act (ADA). MOBY service is limited to areas within .75 miles of an existing bus route within the Omaha city limits.

MOBY vehicles are operated and maintained by Metro and dispatched into service from the central dispatch center at Metro. Clients wishing to use the MOBY service contact Metro in order to schedule trips. Currently MOBY has a fleet of 27 vehicles and provided 122,640 rides in 2014.

9.4.2 CITY OF COUNCIL BLUFFS, IOWA

The City of Council Bluffs contracts with Metro Transit to provide fixed-route service for the City. The City also contracts with Midwest Medical Transport Service to provide paratransit services in Council Bluffs. The vehicles used by Midwest Medical Transport Service for service in Council Bluffs were previously purchased with Section 5307 funds and the services provided by Midwest Medical Transport Service are supported in part with Section 5310 funding. Section 5310 funding will be used to purchase vehicles in the future.

9.4.3 SOUTHWEST IOWA TRANSIT AGENCY (SWITA)

Although the SWITA service area is outside the established study area, rural transit and human service agencies operate transportation services to Council Bluffs and Omaha.

9.4.4 OTHER HUMAN SERVICE TRANSPORTATION PROVIDERS

A variety of programs offer transportation services in the Omaha/Council Bluffs metro area. They consist of non-profit and other transportation providers but mostly consist of social service or volunteer programs that offer transportation as a part of their agency mission.

9.4.5 TRANSPORTATION INVENTORY SURVEY

MAPA conducted an inventory of existing services and potential agencies that would be willing to participate in a coordinated transit network in the Omaha/Council Bluffs metropolitan area in late 2012. The following sections detail the information gathered. Table 9.1 displays the survey responses from major agencies in a matrix summary format; while the subsequent section provides a more detailed description of survey responses including the number of vehicles each organization operates and difficulties they face as an organization. According to the survey, at least 167 vehicles are utilized to provide transportation services in the Metro region.

TABLE 9.1 TRANSPORTATION INVENTORY SURVEY

	Metro MOBY	Bellevue	Papillion	Disabled Am Vets	ENCAP	ENOA	Goodwill	Heartland Family Service-A
Hours each day	4 am – 12 am	7 am – 3:30 pm	7:30am – 4 pm	6 am – 3:30 pm	6 am – 6 pm	7 am – 5 pm	n/a	7 am – 7 pm
Days of Week	7	5	5	5	5	5	7	7
Rides per day	500	40	40	60	30	20	10	80
Geography/Area	City Omaha	City Bellevue	City Papillion	Statewide	Douglas	Rural metro	Metro	NE & IA
Vehicles for D/R	27	6	2	15	10	5	4	18
Annual $/Budget	$ 2,100,000	$ 277,000	$ 76,000	N/A	$ 250,000	$ 196,686	$ 7,500	$ 2,504,338
Fares (y/n)	2.50	yes	yes	no	yes	yes	no	yes
Dispatch (y/n)	yes	yes	no	yes	yes	yes	no	yes
Medical Trips (y/n)	yes	yes	yes	yes	yes	yes	no	yes
Work Trips (y/n)	yes	yes	yes	no	yes	yes	yes	yes
Social Trips (y/n)	yes	yes	yes	no	yes	yes	no	yes
Curb to Curb	yes	yes	yes	yes	yes	yes	yes	yes
Door to Door	no	yes	no	yes	yes	yes	yes	yes
Thru Door	no	no	no	no	no	no	no	no
Non-Profit entity	no	no	no	yes	yes	no	yes	yes
Governmental entity	yes	yes	yes	no	no	yes	no	no
Coordination Interest?	possibly	possibly	possibly	yes	yes	no	possibly	yes
Funding Types F=federal; S=state; L=local; D=foundation	F,S,L	S, L	S, L	F, D	F, L, D	F, S, L	F, S, L, D	S, L, D

	City Council Bluffs	Salvation Army	Community Alliance	Girls Inc.	Trailblazers	Florence Home	Lutheran Family Service	Catholic Charities
Hours each day	6:30 am – 11:30 pm	varies	6 am – 12 am	2 pm – 5 pm	7 am – 7 pm	n/a	8 am – 5 pm	8 am – 10 pm
Days of Week	6	5	7	5	6	7	5	7 & 5
Rides per day	50	60	60	60	60	4	1-4	100
Geography/Area	City CB	Douglas	Douglas & Sarpy	Metro	Metro	Omaha	Omaha	Omaha
Vehicles for D/R	20	9	12	7	7	2	2	21
Annual $/Budget	$ 288,000	$ 250,000	N/A	$ 115,000	$ 19,000	$ 79,500	$ 18,500	$ 152.350
Fares (y/n)	2.50	yes	no	no	yes	yes	no	no
Dispatch (y/n)	yes	no	no	no	no	no	no	no
Medical Trips (y/n)	yes	yes	yes	no	no	yes	no	yes
Work Trips (y/n)	yes	yes	yes	no	no	no	yes	yes
Social Trips (y/n)	yes	yes	yes	yes	yes	yes	yes	yes
Curb to Curb	yes	yes	yes	yes	yes	yes	yes	yes
Door to Door	no	yes	yes	no	yes	yes	yes	yes
Thru Door	no	yes	yes	no	yes	yes	yes	yes
Non-Profit entity	no	yes	no	yes	yes	yes	yes	yes
Governmental entity	yes	no	yes	no	no	no	no	no
Coordination Interest?	possibly	possibly	yes	yes	yes	yes	no	yes *restricted due to insurance
Funding Types F=federal; S=state; L=local; D=foundation	F, S, L	L, D	S	L, D	D	L, D	S, L, D	S, L, D

Source: MAPA Transportation Survey December 2012

Table 9.2 displays a summary of the total rides per day, vehicles available and annual budget for the 16 agencies displayed in Table 9.1.

TABLE 9.2
2012 TRANSPORTATION SURVEY SUMMARY

Rides per day	1,175
Vehicles for D/R	167
Annual $/Budget	$6,333,874

9.4.3 Nebraska & Iowa Medicaid Non-Emergency Medical Transportation

The largest purchaser of public transportation in each state of Nebraska and Iowa are the Departments of Health and Human Services. Each state changed how their Non-Emergency Medical Transportation (NEMT) are handled. Previously, trips were arranged by the state's human services caseworkers. Now trips are arranged by a statewide brokerage office.

The State of Nebraska contracted their NEMT service with IntelliRide in 2014. The State of Iowa is currently contracted with the, TMS Management Group, Inc. However, Iowa is in the process of changing their brokerage service.

The challenge for Mobility Management in the metro area will be to have electronic coordination between the states' NEMT brokerages and the Metro's One-Call Transportation Management Coordination Center so that maximum efficiencies can be found by coordinating most all the public rides in the metro area each day.

Bicycles and Pedestrians

10.1 Overview

Bicycles are becoming an increasingly popular mode of transportation in the MAPA TMA. There has been a notable increase in walking and biking among citizens nationwide. According to the U.S. Department of Transportation, between 1995 and 2009 there has been an increase of over 20% in cycling trips from 3.3 billion to 4 billion. Additionally, walking trips have increased to a total of 45.5 billion in 2009. This has also lead to an increase in budget allocations devoted to the improvement of pedestrian and bicycle programs. In 2014, $2.2 billion dollars were budgeted for such programs from the Department of Transportation. This figure had increased from $1.2 billion in 2009.

While recreational use of bicycles has been popular in the region for many years, some residents are employing bicycles as their primary mode of transportation for the commute to work. Several improvements to the commute system available for bicyclists have been made. However, expansions to bike facilities in the MAPA TMA can be made to increase and enhance bike ridership. Many roads in the region do not have adequate space or signage to provide for safe and accessible travel.

Jurisdictions in the MAPA TMA generally have provisions that require sidewalks in all new developments. However, some major streets do not have sidewalks. An overview of Complete Streets in Section 4 discusses characteristics of Complete Streets and the future need for bicycle and pedestrian facilities in the MAPA TMA. Sidewalks and the trail system in this area act as the primary facilities for pedestrians. In limited situations, bicyclists can utilize sidewalks. However, the strong preference is for cyclists to travel on the road (as a vehicle) or on designated lanes, paths, side paths, and trails.

This LRTP will encourage the incorporation of measures in current and future transportation improvements that will provide for safer pedestrian and bicycle travel for the region.

10.2 The "Four Types of Cyclists"

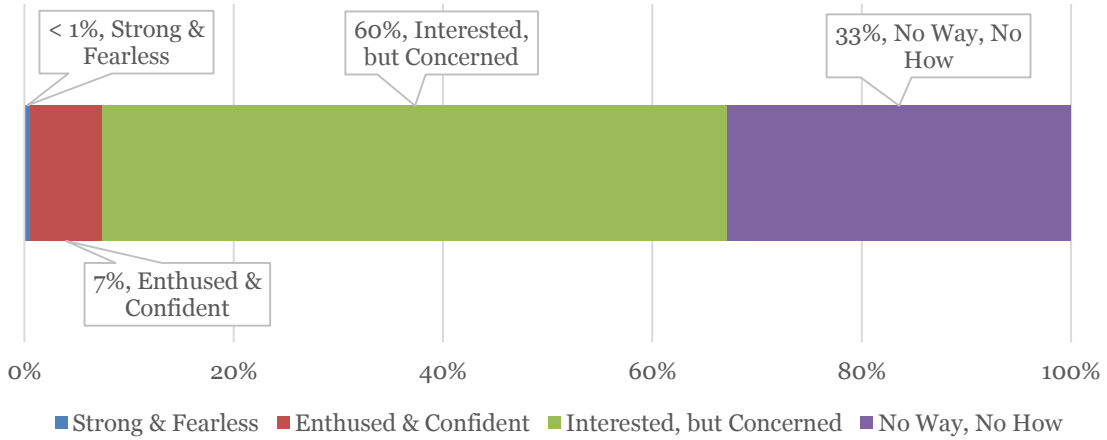
In his seminal 2006 paper1, Roger Geller of the Portland Department of Transportation defined the "Four Types of Cyclists" that should be considered when planning bike infrastructure and programs. Since the article was published, it has been a useful tool for transportation planners and engineers to consider the factors that motivate or deter people from choosing an active mode of transportation. The author noted that the

[1] Full report available at: http://www.portlandoregon.gov/transportation/article/264746

driving factor deterring people from choosing cycling as a mode of transportation is a fear of their own safety on the roadway– particularly conflicts with automobiles.

The report included a diagram which showed the proportion of each "type" of cyclist within Portland. Subsequent surveys and academic research have established that these proportions are reasonable estimates of general perceptions within the population at large. This diagram from Geller's report is included below in Figure 10.1 below.

FIGURE 10.1
THE FOUR TYPES OF TRANSPORTATION CYCLISTS



Source: Roger Geller, "Four Types of Cyclists", http://www.portlandoregon.gov/transportation/article/264746

A brief description of each type of transportation cyclist is included below:

- **Strong & Fearless** – These cyclists will ride in their communities regardless of weather conditions or the availability of cycling infrastructure
- **Enthused & Confident** – Enthused & Confident riders are comfortable sharing the road with automobiles, but prefer riding in designated bikeway facilities
- **Interested, but Concerned** – These residents enjoy riding a bike, and are curious about using a bike for transportation. However, concerns about their own personal safety due (in large part) to conflicts with motorists. These riders are encouraged to ride if protected or separated facilities exist in their communities
- **No Way, No How** – Not interested in cycling as a transportation modes because of factors such as topography, inability, or lack of personal interest

This typology is useful for considering the types of bikeway facilities that are necessary to mode-shift goals such as the one included in this LRTP. The "Interested, but Concerned" segment of the population is the critical group that should be considered in order to truly make cycling a transportation option for all interested residents. As such, protected facilities or separated facilities should be considered wherever possible.

10.3 Types of Bicycle Facilities

This section provides brief descriptions of different types of bicycle facilities that currently exist within the MAPA region or are being considered locally for implementation. "Bikeways" are generally defined as any facility that is open for the use of bicyclists. Bikeways include on-street facilities such as bike lanes and shared lane markings, as well as off-street facilities such as shared use paths.

10.3.1 - On-Street Bikeways and Bicycle Treatments

Bike Lane	
A bike lane is a pavement marking that designates a portion of a street for the preferential or exclusive use of bicycles. Bike lane markings are typically dashed where vehicles are allowed to cross the bike lane, such as for right turns or at bus stops. Bike lanes are best suited for two-way arterial and collector streets where there is enough width to accommodate a bike lane in both directions, and on one-way streets where there is enough width for a single bike lane. **Examples**: *16th Street, Omaha; Fort Crook Road, Bellevue; Harry Langdon Boulevard, Council Bluffs; Lincoln Road near Werner Park*	

Buffered Bike Lane	
Buffered bike lanes are created by striping a buffer zone between a bike lane and the adjacent travel lane. Some buffered bike lanes also offer a painted buffer between the bike lane and an adjacent parking lane. Buffered bike lanes should be considered at locations where there is excess pavement width or where adjacent traffic speeds are at or above 35 mph. **Examples**: *Leavenworth Street, Omaha*	

Separated Bike Lane (Cycletrack)

A separated bike lane, sometimes called a cycletrack, is a bicycle facility that is physically separated from both the street and the sidewalk. A separated bike lane may be constructed at street level using street space, or at the sidewalk level using space adjacent to the street. Separated bike lanes isolate bicyclists from motor vehicle traffic using a variety of methods, including curbs, raised concrete medians, bollards, on-street parking, large planting pots/boxes, landscaped buffers (trees and lawn), or other methods. Separated bike lanes designed to be level with the sidewalk should provide a vertical separation between bicyclists and pedestrians, as well as a different surface treatment to delineate the bicycle from the pedestrian space (such as asphalt vs. concrete). Separated bike lanes can be one way for bicycles on each side of a two-way road, or two-way and installed on one or both sides of the road. Separated bike lanes provide cyclists with a higher level of comfort compared to bike lanes, and are typically used on large multi-lane arterials where higher vehicle speeds exist. They may also be appropriate on high-volume but lower-speed streets.

Examples: *Harney Street Cycletrack, Omaha; portions of 1st Avenue Corridor, Council Bluffs*

Shared Lane Marking – Neighborhood Street

Shared lane markings (sharrows) may also be used on residential streets to designate bicycle facilities where there is not sufficient width for bike lanes. Studies have shown that sharrows direct bicyclists away from the "door zone" of parked cars, alert motorists of appropriate bicyclist positioning and encourage safe passing of bicyclists by motorists. The "Bicycles May Use Full Lane" sign (R4-11 in the MUTCD) is commonly used in conjunction with shared lane markings

Examples: *Bike Omaha Network, Omaha;*

Bike Box (Advanced Stop Line)

Bike boxes are street markings at signalized intersections that allow bicyclists to move to the front of a traffic queue during the red signal phase. Allowing bicyclists to move to the front of the queue can increase their visibility to motorists and can reduce "right-hook" crashes with motorists at the beginning of the green signal phase. Bike boxes can also aid cyclists in position for left turns. This Plan does not recommend any specific locations for bike boxes, but they should be considered on streets with bike lanes as the proposed bicycle network is more fully implemented.
Example*: 13th & Jackson Intersection, Omaha*

10.3.2 - Off-Street Bikeways and Bicycle Treatments

Shared-Use Path

A shared use path is an off -street bicycle and pedestrian facility that is physically separated from motor vehicle traffic. Typically, shared use paths are located in an independent right-of-way such as in a park, stream valley greenway, along a utility corridor, or an abandoned railroad corridor. Shared-use paths are utilized by other non-motorized users including pedestrians, skaters, wheelchair users, joggers, and sometimes equestrians.
Examples: *Local & Regional Trail Networks; Papio-Missouri River NRD "Paths to Discovery"*

Sidepath

A sidepath is a shared use path located adjacent to a roadway. It is designed for two-way use by bicyclists and pedestrians. Sidepaths are sometimes created by designating a wide sidewalk for shared use, or they may be a segment of a longer trail. Sidepaths sometimes facilitate connections to on- and off-street bicycle facilities. A sidepath is not generally a substitute for on-street bicycle facilities, but may be considered in constrained conditions, or as a supplement to on-street facilities. Sidepaths may not be appropriate in areas of high pedestrian activity unless there is space to successfully manage conflicts. The use of sidepaths should be limited to roadways with limited points of conflict at intersections and driveways. Examples: West Broadway, Council Bluffs; 144th Street, Omaha

10.3.3 - Bikeway Facility Design Guidance

There are many State and Federal resources available to guide the design and development of bikeway facilities. Below is a summary of the primary design guidance available to communities in the MAPA region:

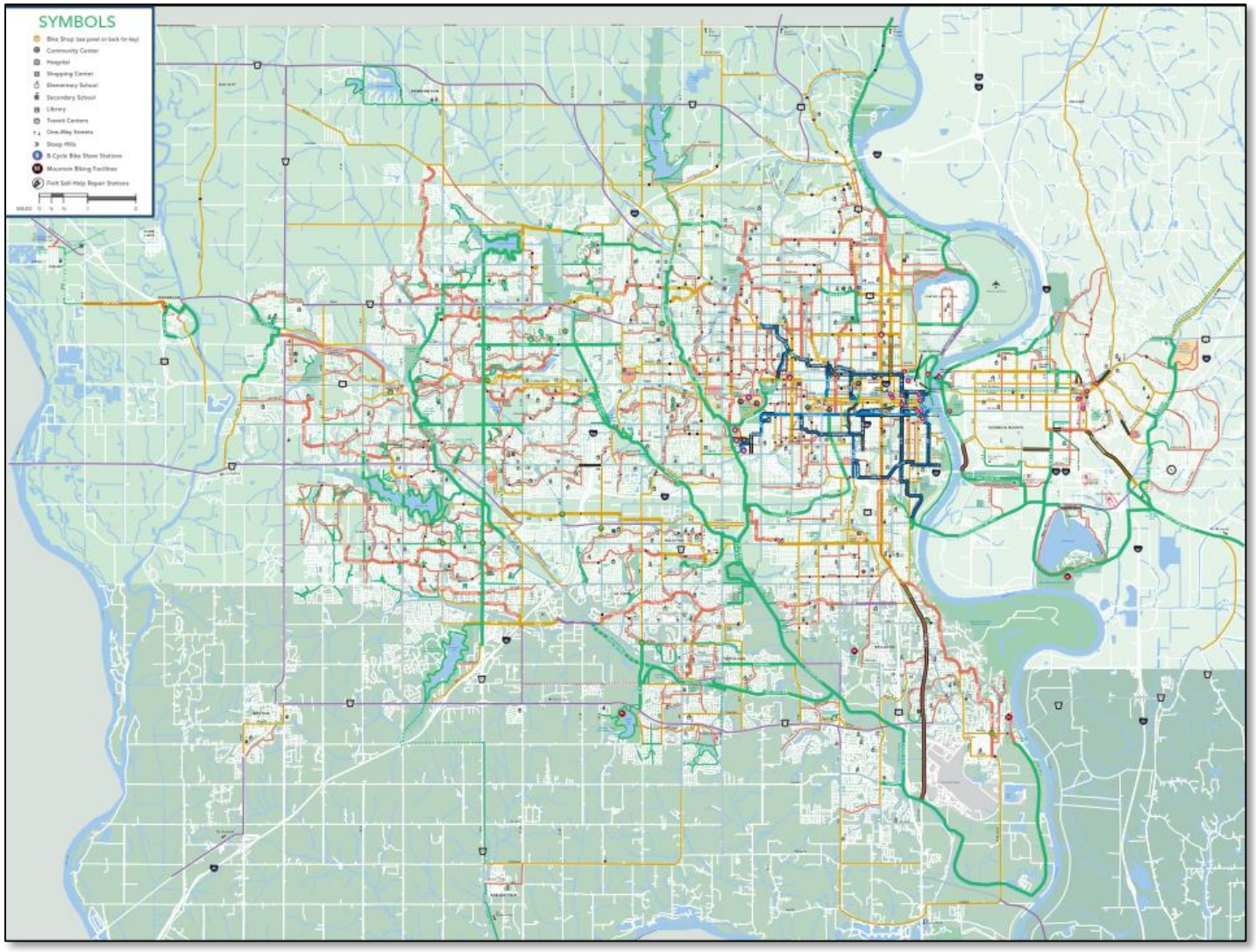
- The American Association of State Highway and Transportation Officials (AASHTO) *Guide for the Development of Bicycle Facilities, 4th Edition* (2012) https://bookstore.transportation.org/item_details.aspx?id=1943
- The Federal Highway Administration's (FHWA) *Manual on Uniform Traffic Control Devices* (2009) http://mutcd.fhwa.dot.gov/
- The National Association of City Transportation Officials (NACTO) *Urban Bikeway Design Guide* (2012) http://nacto.org/cities-for-cycling/design-guide/
- Iowa Statewide Urban Design and Specifications (SUDAS) http://www.iowasudas.org/

10.4 Current Inventory

Bicycle and pedestrian facilities throughout the MAPA TMA consist of various systems of sidewalks and trail facilities in the urban portions, supplemented by various sections of paved shoulders in rural sections. Metro Area Transit has also taken a proactive role in promoting bicycle traffic by adding bike racks to all of their buses. The bike racks were used over 25,000 times in 2014 with a steady increase in usage each year since they were installed.

The Omaha Metropolitan Area Bicycle Map is currently under development through a partnership of MAPA, Live Well Omaha, and RDG. This map displays current bicycle facilities, some planned facilities, as well as bike friendly connector routes that may or may not be signed. The map takes factors such as traffic volume and grade into consideration and makes recommendations based on the skill level of riders interested in cycling. This map will serve as an update to the 2010 Bicycle Map developed by Activate Omaha (now Live Well Omaha). A draft of the revised Bicycle Map is included on the next page in Figure 10.2.

FIGURE 10.2
CURRENT INVENTORY OF BICYCLE FACILITIES



Source: MAPA, Live Well Omaha , and RDG

10.4.1 Multi-purpose Trails

The MAPA TMA contains over 150 miles of multi-purpose trails. These trails are maintained by both public and private entities. On the Nebraska side of the river the majority of recreational trails were developed and are maintained by local jurisdictions and resource agencies. These trails are open to the public and are free to use. Trails on the Iowa side of the river are also maintained by both public and private entities. A map of the existing trails within the MAPA TMA are included in Figure 10.2 (previous page).

The trails follow the local waterways in the MAPA TMA and are also located around the area's flood control reservoirs. The Papio-Missouri River Natural Resources District (PMRNRD) has also refurbished an abandoned rail crossing of the Platte River in order to provide pedestrian and bicycle access across the Platte River and to provide connectivity between the Omaha trails and the Mo-Pac trail system in eastern Nebraska. This will ultimately connect the Omaha metro area to Lincoln, NE. The trail system is currently expanding to improve connectivity between all routes. Some planned expansions include the West Papio Trail near La Vista on the Nebraska side and the Lewis and Clark Trail from Sioux City to Hamburg, Iowa. In general, the metro area trails flow from the northwest corner of the MAPA TMA to the southeast corner of the region.

The City of Council Bluffs has continue to develop the trail network within its community. These trails are free to use and are open to the public. The Wabash Trace recreational trail has a trail head in Council Bluffs and is open to the public for us. The trail is owned and maintained by Southwest Iowa Nature Trails Inc. through a group of volunteers and the Iowa Natural Heritage Foundation. The Wabash Trace contains over 63 miles of crushed limestone and the fee for use is $ 1.00 per day per rider. Additionally, the Pottawattamie County Trails committee has proposed over 50 miles of new trails that extend from Council Bluffs to the smaller communities within Pottawattamie County. To date, over $3 million in private, state and federal funding has been secured for these trail projects and preliminary design is underway on the initial phases of the project.

Interstate bicycle and pedestrian connectivity between Nebraska and Iowa is provided by the Bob Kerrey Pedestrian Bridge and the South Omaha Veterans Memorial Bridge. The Bob Kerry pedestrian bridge opened in 2008, and cost $22 million to build. The bridge connects the Omaha Central Business District with Playland Park in Council Bluffs and allows pedestrian and bicycle access to both states and provides bicycle and pedestrian connections to many of the areas large entertainment centers. Plans are currently being developed to construct an additional bike and pedestrian bridge over railroad tracks and connect to Mike Fahey Street near TD Ameritrade Stadium as well The new South Omaha Veterans' Memorial Bridge opened in May of 2010, replacing a bridge from the 1930's. The bike trail connects the Southern portions of Omaha and Council Bluffs and connects trails on both sides of the Missouri River.

Lewis & Clark Multi-Use Trail
The Lewis and Clark Multi-Use Trail study concluded in 2010 and offered various proposed trail networks connecting Hamburg, IA to Sioux City, IA. The most comprehensive trail design would be over 300 miles at an estimated cost of $66 million in 2010 non-inflated dollars. This particular proposed network would offer trail users a full range of experiences by taking them through various landscapes offered by the area. This "touring" route would be accompanied by express paths to give trail users a more direct route between points along the way to aid in commuting trail users.

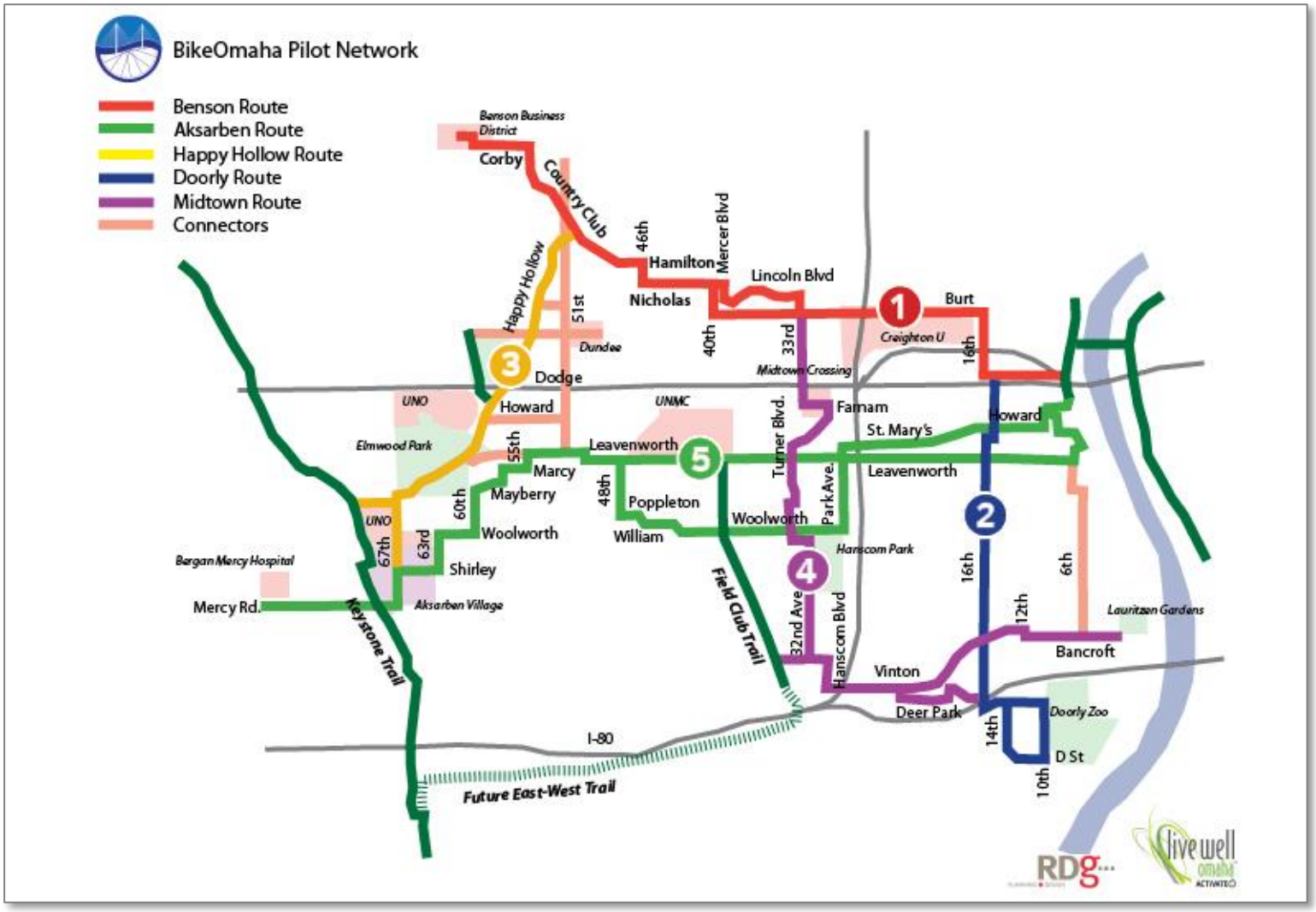
Currently, implementation plans call for the Lewis and Clark "Today" trail outlined in the Lewis and Clark Multi-Use Trail Study. This route uses facilities already in place such as roads and side paths that typically have low motor vehicle volumes. Implementation steps for this project include evaluating the priority criteria and working to develop the trail to meet these criteria, estimating costs, and reviewing potential funding sources.

*Source: Lewis and Clark Multi-Use Trail Study

10.4.2 Bike Omaha Network

The final segments of the Bike Omaha Pilot Network are in Final Design. Initially proposed in 2009, the Bike Omaha Pilot Network represents the first portion of a signed bicycle route system that could be expanded to the entire city and elsewhere in the metro area. Bike lanes, shared roadway markings, and wayfinding signage have already been implemented, and the remaining work will address major barriers along the Leavenworth corridor– including the potential for identifying a parallel route. The Heartland Connections Bicycle-Pedestrian Plan that is currently under development has identified the expansion of this signed network as a major priority for expanding transportation options for residents in the MAPA region. A map of the proposed Bike Omaha Pilot Network is included in Figure 10.3 (next page).

FIGURE 10.3 -BIKE OMAHA PILOT NETWORK



Source: Live Well Omaha and RDG

10.5 Bicycle Friendly Community

The City of Omaha received the designation of Bicycle Friendly Community in 2011 from the League of American Bicyclists. The Bronze level of designation recognizes that every part of the community may not feel bike friendly. These communities may only have a couple bike lanes in place and motorists may not yet be aware that they need to share the road with bicyclists. However, communities that have received this designation have begun the work of implementing programs supportive of the Five E's that make up the "DNA of Bike-Friendly Community". For example, an on-going bicycle safety education program is a critical component of Education. A list of the League's Five E's is included below:

- **Enforcement** – Enforcement of bicycle-related traffic laws
- **Education** – Safety education programs for adults and children, including Safe Routes to Schools
- **Engineering** – Design and implementation of bikeways that make roadways safer for cyclists
- **Evaluation** – Designated staffing resources within local government to monitor and evaluate progress towards bike-related goals
- **Encouragement** – Programming encouraging people to choose cycling as a mode of transport, including bike-to-school days and commuter challenges

Other resources have recognized Omaha's steady progress towards becoming more bike-friendly. Omaha was listed as #47 on *Bicycling Magazine's* "America's Top 50 Bike Friendly Cities" list in 2014. MAPA is committed to assisting Omaha with achieving a higher designation from the League and also will be encouraging other communities to begin the work to achieve designation– an identified objective of this plan.

10.6 Funding Resources

Several funding resources are available for Bicycle and Pedestrian enhancements and improvements to the current system. Some potential funding sources include:

- Federal and State Recreational Trails Program
- Transportation Alternatives Program (Regional & Statewide)
- Federal Supply Service (General Services Administration's Federal Supply Service)
- Economic Development Administration (U.S. Department of Commerce)
- Wildlife Conservation and Appreciation (U.S. Fish and Wildlife Service)
- The National Trails Endowment (American Hiking Society)
- Nebraska Department of Roads
- Iowa Department of Transportation
- Surface Transportation Program
- Congestion Mitigation and Air Quality Funding
- Sanitary Improvement Districts (SIDs)
- Local philanthropic community
- Local contributions and donations

It is estimated that the improvements to the trail system will cost approximately $500,000/mile based on local engineering estimates. Funding future facilities will largely come from the Transportation Alternatives Program (TAP) dollars outlined in MAP-21 and future transportation legislation as well as other grant programs. Federal financial aid can also be used for trail development when applicable. Sidewalk construction will continue to be financed through local funding mechanisms and private contributions and as a part of accessibility improvements in other Federal-Aid projects.

For purposes of this fiscal constraint, bicycle and pedestrian projects are grouped and not included in the list of individual regionally-significant projects in this LRTP (see Section 7.5.1 in Chapter 7). However, it is anticipated that future revenues would go toward many of the project concepts described in this section.

10.7 Future Actions

10.7.1 Regional Bicycle-Pedestrian Plan

The Heartland Connections Regional Bicycle-Pedestrian Plan will identify regional priority corridors for bikeway infrastructure. The purpose of this plan is identify the potential for connections between communities that can improve the connectivity of cycling infrastructure in the MAPA region by coordinating local investments along priority routes. This strategy will allow for a cost-effective approach to implementing enhanced bikeway facilities as a part of the capital improvement planning processes of local communities and regional partners such as the Papio-Missouri River Natural Resources District (NRD).

The final Regional Bicycle-Pedestrian Plan will identify short-, medium- and long-term priority projects that are not currently fiscally constrained. Elements of this effort were incorporated into the multi-modal goals and objectives within this plan. A fiscally constrained program of projects based on recommendations from the plan will be incorporated into the next LRTP update.

10.7.2 Future Improvements

The following are improvements that should be considered in the long range planning for pedestrian and cycling facilities in the MAPA TMA. These improvements were identified by local citizens and cycling/pedestrian advocates from the MAPA TMA.

These projects are not fiscally constrained and are not necessarily scheduled in the future, but represent opportunities to implement the goals and action steps discussed in this Long Range Transportation Plan.

<u>General improvements:</u>

- End facility improvements and additions (such as lockers, bike racks, etc.)
- Complete Streets Policies
    - Support local communities in the process of developing Complete Streets ordinances and/or Administrative policies

- Traffic shaping
    - Work to provide viable alternative options to area residents to reduce single occupancy vehicle trips
- Bike Education and Ordinances
    - It is important to educate both cyclists and motorists on the proper laws and rules regarding bicycling
    - Expand urban bicycling educational and training programs
    - Review and modify current bicycling legislation on a state and local level
- Identify and fill small gaps in current system that improve the continuity and usefulness of the trail system. Examples include:
    - Completion of the West Papio Creek Trail between F Street and L Street
    - Connection between 132nd and Q Street (Millard) to 108th and Giles
    - Northwest corridor connection between Highway 36, Cunningham Lake, and the current Fort Street terminus of the Keystone Trail
    - Northeast Connection between Happy Hollow Boulevard at 50th and the Missouri Riverfront
        - Via Fontanelle Boulevard/Martin Avenue corridor

<u>Trails:</u>

- Complete West Papio Trail west of Papillion
- Complete Riverfront Trail system, including:
    - Connection south from the Veterans Memorial Bridge to Olde Towne Bellevue
    - Connection north from the terminus of the levee trail at Hickory Street to the Downtown Omaha riverfront
- Link the West Papio Trail to the Elkhorn/Ta-Ha-Zouka Park Trail to Maple
- Link West Maple Corridor to Western Douglas County Trail
- Complete the Western DC Trail to Valley
- Keystone East Trail linking the Field Club and Keystone Trails
- Complete elements of the Lewis & Clark Multi-Use Trail, including:
    - Keg Creek Trail between Glenwood and Mineola
    - Shouldering of L20 (Old Lincoln Highway) between Council Bluffs and Missouri Valley
    - Paving Monument Road and L19 between Lewis and Clark Monument and Crescent
    - Paving L31 from Highway 370 to the Iowa West Trailhead of the Wabash Trace Nature Trail
    - Connections using paths and levees between the trail corridor and the Plattsmouth and new Highway 34 Bridges
    - Complete the Omaha/Lincoln Trail using the Mopac East, Lied Platte River Crossing, Highway 31, and 144th Street Trails
        - Integrate this with the Omaha trail system to connect to the Bob Kerrey Pedestrian Bridge

Douglas County:

- A major continuous east/west corridor through the city, this may be achieved by (but not limited to):
    - Leavenworth corridor to Complete Street standards between Downtown and Elmwood Park and a bikeway route between UNO and the Big Papio Trail between Dodge and Pacific Streets
    - West Dodge Road frontage roads west to 132nd Street, and on-street routes beyond that
- Complete and extend the on-street BikeOmaha system from its five route pilot to other parts of the city
    - Identify a network of Bicycle Boulevards or Neighborhood Greenways
- Dodge Street bikeway between 69th Street and 90th Street
- Improve pedestrian and bicycle access to University of Nebraska–Omaha and between UNO campuses and Aksarben Village
- Adapt frontage roads throughout area to include bike lanes

Sarpy County:

- Completion of the Sarpy County Trail Master Plan to guide trail connections to existing and proposed neighborhoods
- Bellevue Loop Trail at Haworth Park, using the Mandan Park/Mount Vernon Gardens alignment along 13th Street to Bellevue Boulevard
- Developing Bellevue Boulevard as a "bicycle boulevard" for shared local traffic/bicycle use
- Ft. Crook Road as a complete street south to Offutt and the Bellevue Loop

Pottawattamie County:

- Continue implementation of the Pottawattamie County Trail Plan
- Enhance local connections to the Wabash Trace to promote recreational cycling

Aviation

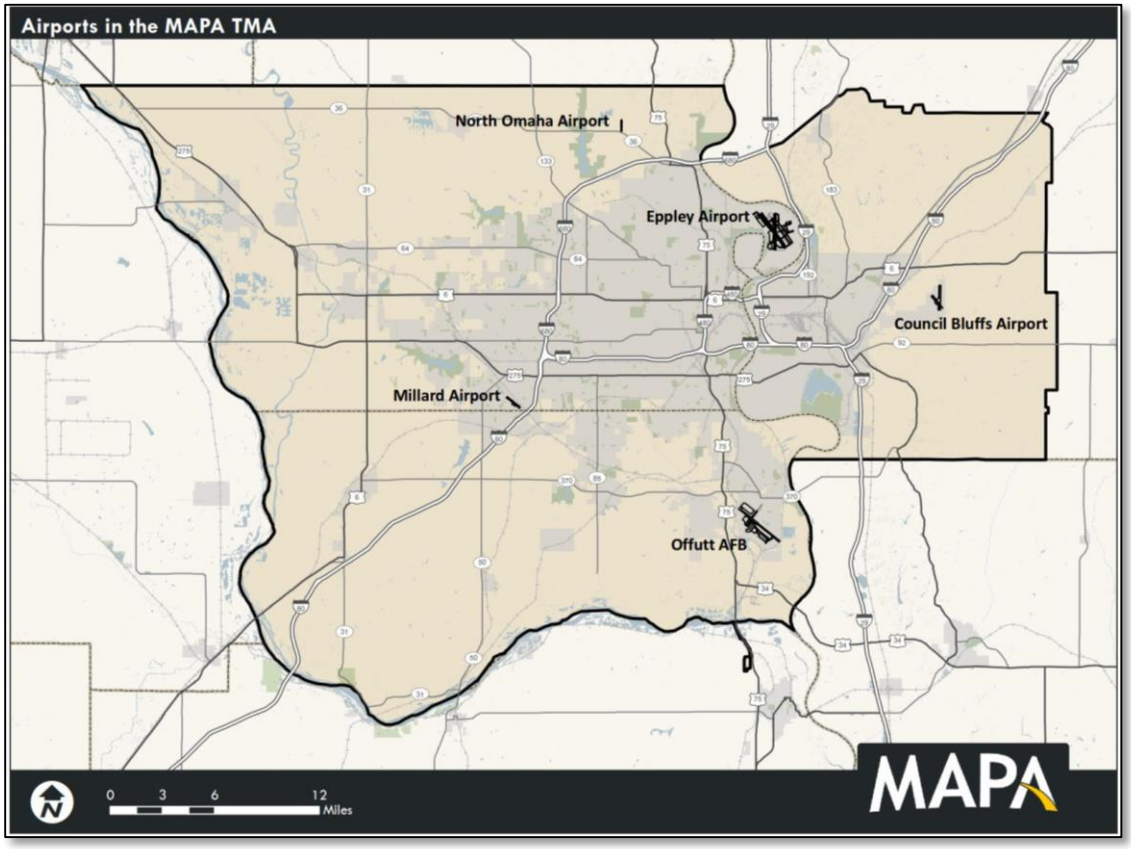
11.1 Overview

There are five airport facilities located inside the limits of the MAPA TMA (see Figure 11.1). Three of these facilities are public airports, one is a private facility and the fifth is operated by the United States Air Force.

The vast majority of civilian traffic in the MAPA TMA flows through Omaha's Eppley Airfield. Eppley is the sole commercial airport with regular commercial service in the region. Eppley Airfield is operated by the Omaha Airport Authority (OAA). Eppley Airfield offers domestic service to the Nation's major hubs where passengers can connect to destinations across the globe. The City of Omaha's other public airport is the Millard Airport. This single-strip, general aviation facility is also under the control of the OAA.

The region's third public airport is located east of Council Bluffs, IA. The Council Bluffs Municipal Airport is a dual-strip general aviation facility and is operated by the Council Bluffs Airport Authority.

Figure 11.1
Airport Facility Locations within MAPA TMA



The North Omaha Airport is a privately owned, public use airport located north of Interstate 680 on 72nd Street. Users pay a fee for operation of the airport. The North Omaha Airport is also the home base for the Omaha Police Department's helicopter fleet.

The United States Air Force operates Offutt Air Force Base in Bellevue, Nebraska. In the past, Offutt was the home of Strategic Air Command or SAC. Currently, Offutt Air Force Base is the home of United States Strategic Command or USSTRATCOM and the 55th Wing of the United States Air Force. There are currently around 10,000 military and federal employees stationed at Offutt in various capacities.

Further connectivity to international destinations is maintained through connecting flights from Eppley Airfield. Residents in the MAPA TMA are also within reasonable driving distance of Kansas City International Airport, Des Moines International Airport, and to a lesser extent Denver International Airport.

11.2 Eppley Airfield (OMA)

Eppley Airfield is located north of downtown Omaha. This 2,650 acre facility is classified as a Medium Hub Commercial Service Airport by the Federal Aviation Administration and currently serves nine commercial carriers:

- American Airlines
- Alaska Airlines
- Allegiant Air
- Delta Air Lines
- Frontier Airlines
- Southwest Airlines
- United Airlines

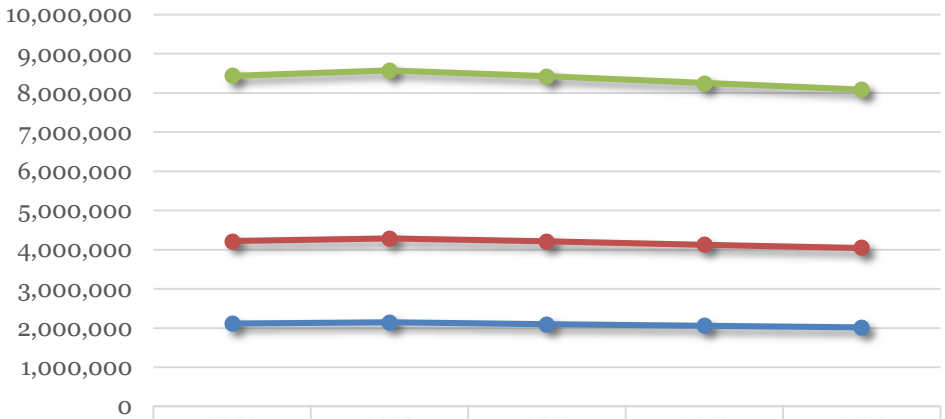
Eppley Airfield operates two concourses with 20 available gates for commercial traffic. Although the number of flights has been on the decline in recent years, the overall number of enplanements and deplanements has risen during recent years.

Eppley Airfield also serves various corporate, charter, and general aviation operations. Eppley Airfield's flight statistics are shown in Figures 11.2 and 11.3

11.2.1 PASSENGERS

As shown in Figure 11.2, the general trend for passenger traffic was flat/down over the past five years with an increase in 2014. This is an encouraging sign for the airport and the MAPA TMA and reflects an improvement of the local economy in 2014. Aviation forecasts indicate passenger traffic will continue to rise as the economy stabilizes.

FIGURE 11.2
EPPLEY AIRFIELD PASSENGER ENPLANEMENTS AND DEPLANEMENTS
2009 – 2013



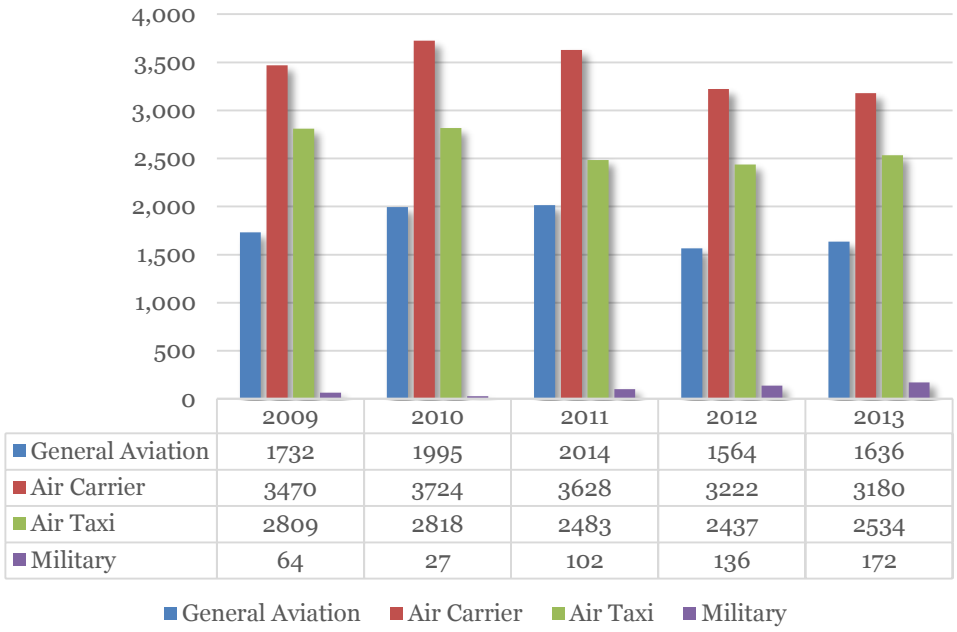
	2009	2010	2011	2012	2013
Total	4,217,718	4,287,428	4,212,399	4,127,344	4,042,333
Deplanements	2,105,539	2,139,522	2,111,004	2,066,312	2,023,085
Enplanements	2,112,179	2,147,906	2,101,395	2,061,032	2,019,248

Source: Eppley Airfield, 2015

11.2.2 TOTAL AIRCRAFT OPERATIONS

Based on the data shown for passengers, it would seem that Eppley Airfield users have become more efficient over the past five years. The number of flights into and out of Eppley during this time period has continued to fall while the total passenger enplanements/deplanements have remained flat (see Figure 11.3). This shows that the aircraft that do enter and depart Eppley Airfield are generally larger and are operating with higher passenger volumes than they had in the past. It can be assumed that Air Taxi and Cargo operations are operating at similar levels in terms of capacity due to the correlated decline in both categories over the past five years.

FIGURE 11.3
EPPLEY AIRFIELD TOTAL AIRCRAFT OPERATIONS
2009 – 2013



	2009	2010	2011	2012	2013
General Aviation	1732	1995	2014	1564	1636
Air Carrier	3470	3724	3628	3222	3180
Air Taxi	2809	2818	2483	2437	2534
Military	64	27	102	136	172

Source: Eppley Airfield, 2015

11.3 MILLARD AIRPORT (MLE)

The Millard Airport is a general aviation facility located northwest of the intersection of Interstate 80 and Harrison Street. Millard Airport does not have a control tower and traffic relies on control service from Eppley Airfield. The Millard Airport is operated by the Omaha Airport Authority. Millard has one lighted runway that is 3,801 feet long by 75 feet wide.

The runway was resurfaced in 2014 and the operations spaces will be renovated in 2015. OAA will continue to maintain the facility as per federal regulations. The latest data available for traffic at Millard was complied in 2012, which showed 14,900 annual operations.

11.4 COUNCIL BLUFFS AIRPORT (CBF)

The Council Bluffs Airport is a general aviation facility located 4 miles east of Council Bluffs, Iowa. This facility is owned and operated by the Council Bluffs Airport Authority. Council Bluffs Airport has two runways in operation. Renovations and expansions are as follows:

- 18/36 is a 5,500 feet by 100 feet concrete facility
- Expanded in 200514/32 3,650 feet by 60 feet concrete runway
    - Completely reconstructed in 2008
- 4 corporate hangers
    - Completed in 2012
- Instrument Landing System (ILS)
    - Completed in 2012
- New itinerant apron
    - Completed in 2010
- Road Access to the airport

The Council Bluffs Airport is designated in the National Plan of Integrated Airport Systems (NPIAS) as the reliever airport for Eppley Airfield. The emergency rescue organization *LifeNet* operates a rescue helicopter out of Council Bluffs Airport. Traffic statistics for the Council Bluffs Airport compiled in 2008 show average of 106 departures and arrivals take place per day.

Council Bluffs Airport is also home to a full service fixed base operator with a certified flight school. The Council Bluffs Airport Authority has an active public / private development growth plan to facilitate investment in additional aircraft storage hangars and business location to the airport area.

11.5 NORTH OMAHA AIRPORT (3NO)

The North Omaha Airport is a privately owned facility located on the northeast corner of the junction of 72nd Street and Bennington Road. There is one runway located at this facility. Runway 17/35 is a 2,480 feet by 40 feet concrete facility in good condition. The North Omaha Airport also has tie down space and hangar space for rent. There is an overnight parking fee at this airport and the facility is closed to aircraft 8,000 lbs or larger.

North Omaha is also the base of operations for the Omaha Police Department's helicopter operations.

Traffic statistics for the North Omaha Airport show that on average 39 departures and arrivals take place per day; statistics were updated in 2008.

TABLE 11.1
MAPA TMA AIRPORT MATRIX

Airport Name (LID), Elevation /*Runway*	Control Tower	Dimensions (Feet)		Runway Weight Capacity (x 1,000 lbs)				Lighting Configuration					
		Runway Length	Runway Width	Single Wheel	Double Wheel	Double Tandem Wheel	Runway Surface Type	Approach Lights	REIL	Edge Lights	Visual Guide Slope	Centerline Lights	Touchdown Lights
Eppley Airfield (OMA), 983 feet													
14L/32R	Yes	8,500	150	100	209	345	Concrete	MALSR/ALSF2	No/No	HIRL	P4L/P4R	Yes/Yes	No/Yes
14R/32L	Yes	9,502	150	100	184	346	Concrete	ALSF2/MALSR	No/No	HIRL	P4L/P4R	Yes/Yes	Yes/No
18/36	Yes	8,153	150	150	175	260	Concrete	MALSR/MALSR	No/No	HIRL	P4L/P4R	Yes/Yes	No/No
***Millard Airport* (MLE), 1,051 feet**													
12/30	No	3,801	75	13	13	n/a	Asp/Con	None/None	Yes/No	MIRL	P2L/P2L	No/No	No/No
Council Bluffs Airport (CBF), 1,253 feet													
14/32	No	3,650	60	28	48	n/a	Concrete	None/None	Yes/Yes	MIRL	P2L/P2L	No/No	No/No
18/36	No	5,500	100	30	60	n/a	Concrete	None/None	Yes/No	MIRL	P2L/P2L	No/No	No/No
North Omaha Airport (3NO), 1,322 feet													
17/35	No	2,480	40	28	n/a	n/a	Concrete	None/None	No/No	NSLS	None	No/No	No/No

MALSR: Medium Intensity Approach Lighting system with Runway Alignment Indicator Lights
ALSF2: High Intensity Approach Lighting System with Sequenced Flashing Lights, Category II Configuration
REIL: Runway End Identifier Lights
NSLS: Non-Standard Lighting System
HIRL: High Intensity Runway Lights
MIRL: Medium Intensity Runway Lights
Visual Guide Slope: P(x)(y): P= Precision Approach Path Indicator, X= # of Lights, Y= Right or Left Side of Runway

Source: Eppley Airfield, Millard Airport, Council Bluffs Airport, North Omaha Airport, 2015

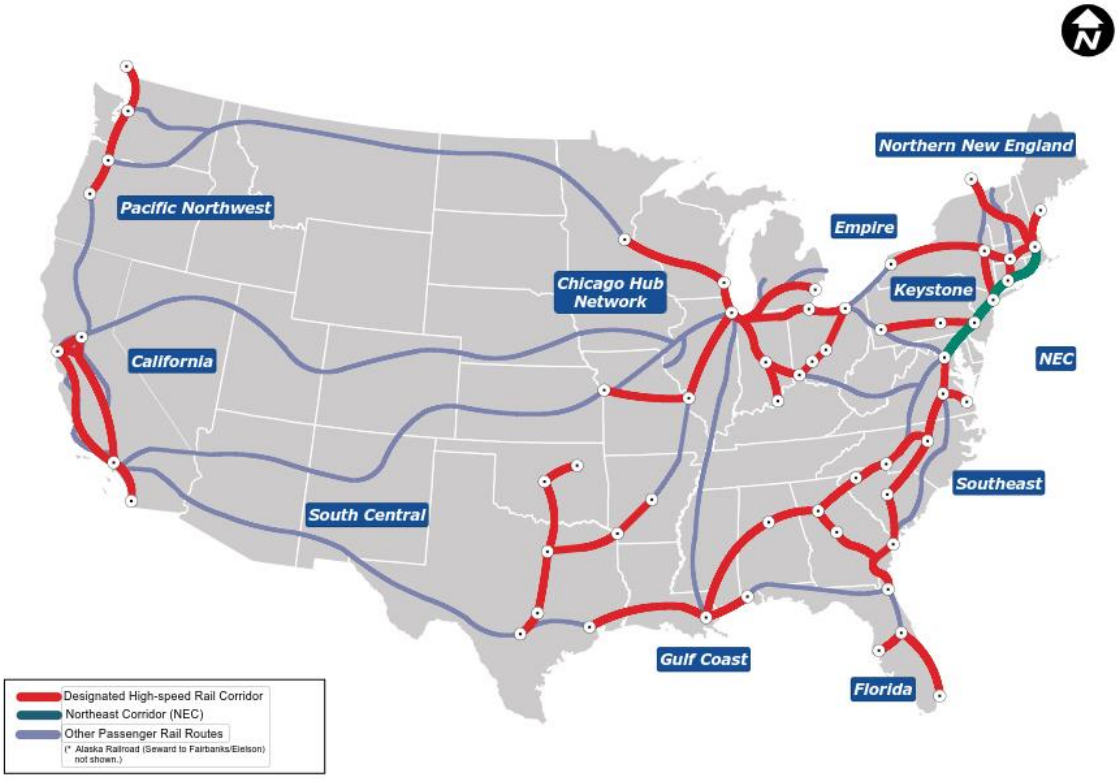
Passenger Rail

12.1 Introduction

Passenger rail provides an alternate mode of inter-city travel to vehicles and airplanes. Passenger rail usage in the MAPA region has been limited, but the MAP-21 legislation signed into law in 2012, dedicates significant money and federal resources to the development and expansion of passenger rail systems in the United States.

Recently, the federal government has been actively pursuing the development of passenger rail. A nation-wide High Speed Rail Plan (Figure 12.1) was created that includes long-range plans for multiple regional systems of "high speed" and "higher speed" rail lines.

Figure 12.1
High Speed Rail Corridor Designations Throughout the United States



Source: FRA High-Speed Rail Strategic Plan, 2009 (http://Www.Fra.Dot.Gov/Elib/Details/L02833)

In the past decade, passenger rail has gained political support demonstrated by increases in funding in SAFETEA-LU and MAP-21 bills. In 2009, President Obama unveiled his plan to develop passenger rail throughout America and over three years allocated over $10 billion to infrastructure improvements through the Americans for Recovery and Reinvestment Act and the Passenger Rail Investment and Improvement

Acts. In MAP-21, $1 billon was devoted to passenger and freight rail projects in 2014 alone, with this rate expected to hold steady or increase in coming years.

In order to be eligible for federal dollars for passenger rail, States must create a statewide passenger rail plan. While Iowa has aggressively pursued passenger rail planning, the State of Nebraska has yet to draft a passenger rail plan and, consequently, remains ineligible for federal passenger rail funding.

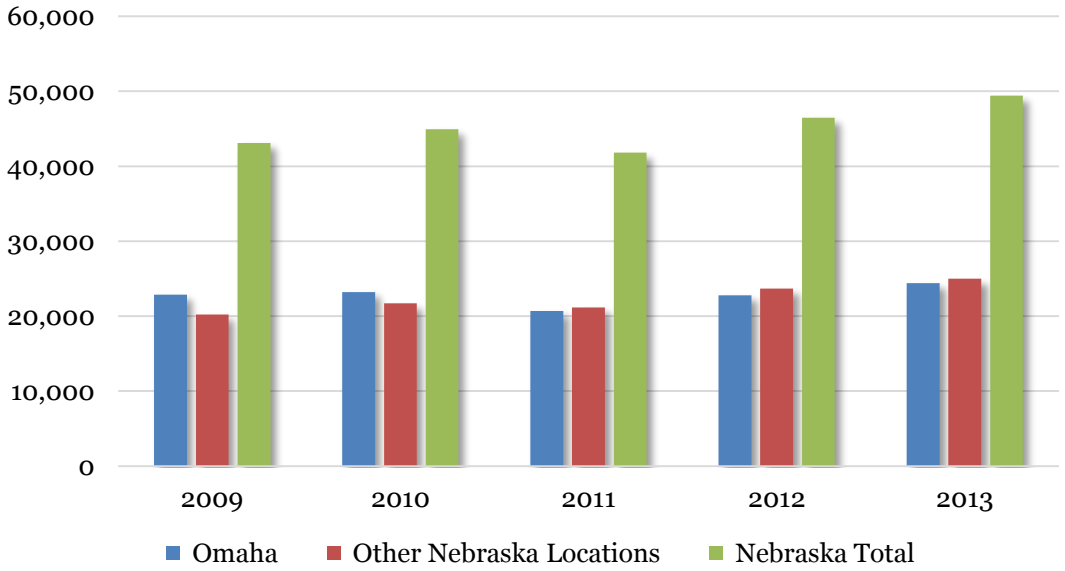
12.2 Current Passenger Rail Services

Passenger transportation via rail in the MAPA TMA is provided by AMTRAK. The California Zephyr Line operates a route from Chicago, IL to San Francisco, CA and all points in between. The California Zephyr utilizes the AMTRAK depot located at 1003 South 9th Street in Downtown Omaha.

The California Zephyr route is comprised of two AMTRAK trains (numbers 5 & 6) providing daily eastbound and westbound service. The eastbound train arrives in Omaha at approximately 5:39 a.m. daily and departs at 5:54 a.m. The westbound train arrives in Omaha at approximately 10:55 p.m. and departs at 11:05 p.m. From Omaha it takes approximately 10 hours to reach Chicago, 31 hours to reach DC and 43 hours to reach San Francisco by train.

In the past 5 years, Nebraska rail ridership has gradually increased though 2011 and 2012 saw dips while 2013 maintained the previous trend seen in 2009 and 2010. Overall Nebraska ridership has increased a fairly steady rate, with the exception of 2011, as shown in Figure 12.2.

Figure 12.2
Nebraska & Omaha Historical AMTRAK Boardings and Alightings

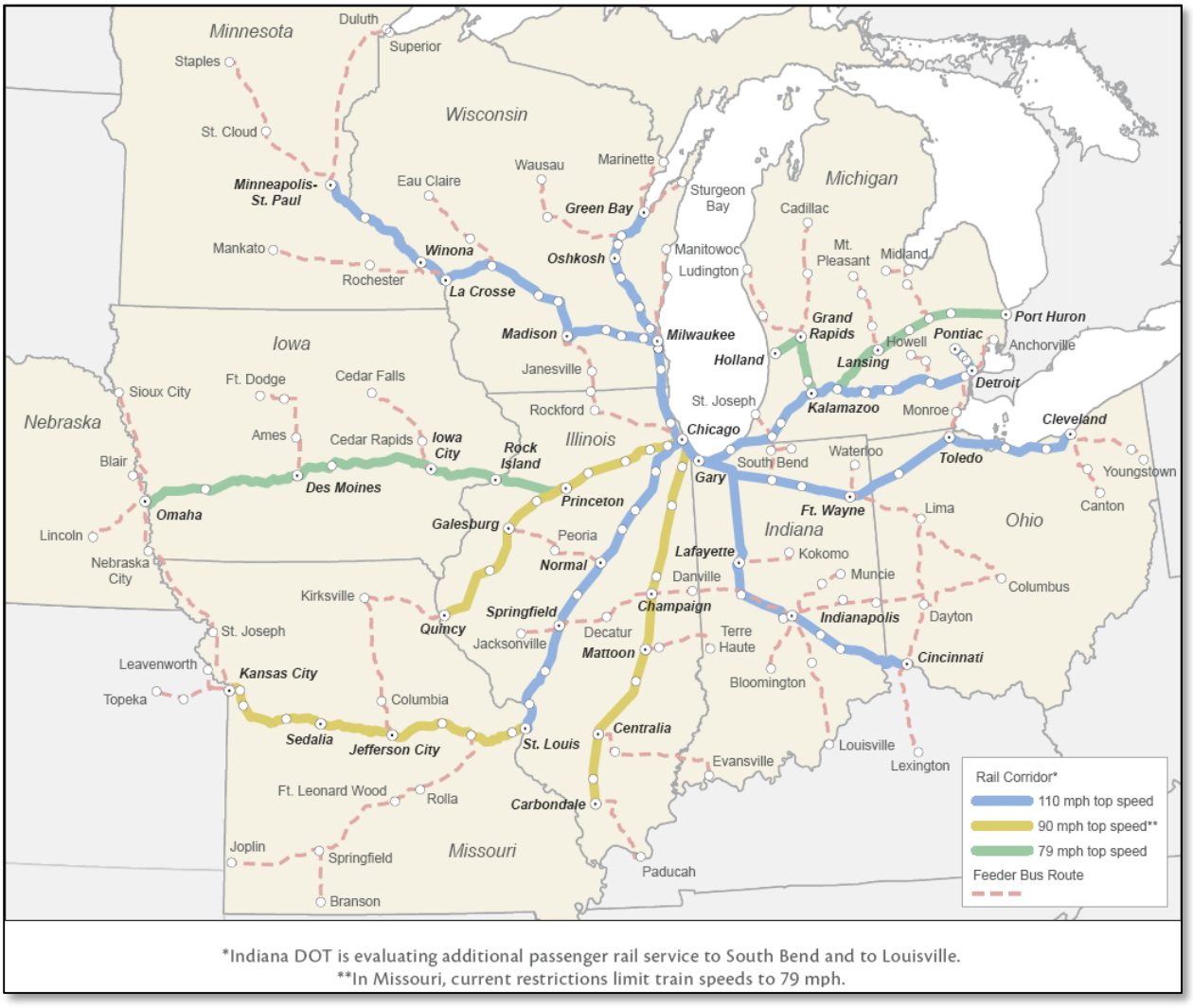


Source: Amtrak, 2014

12.3 Midwest Passenger Rail Plans

Several organizations support plans to increase passenger rail in the Midwest. Representatives from Iowa participate in the Midwest Interstate Passenger Rail Commission (MIPRC), a group from eleven Midwestern states. The MIPRC supports a proposed Midwest Regional Rail System (Figure 12.3), which would use Chicago as a hub and include a new connection between Chicago and the MAPA region via Des Moines and the Quad Cities. There is also the Midwest High Speed Rail Association (MHSRA), which acts as a lobbying group for high speed rail interests. The MHSRA is based out of Chicago and works to advocate for rail through research, awareness building, and political outreach.

Figure 12.3
Map of Midwest Regional Rail Plan



Source: Minnesota Department of Transportation, Midwest Regional Rail Initiative (http://www.dot.state.mn.us/passengerrail/mwrri)

The proposed Midwest Regional Rail Initiative shown in Figure 12.3 was released in 2004 and includes three levels of rail corridors: The highest- speed group could reach top speeds of up to 110 mph; the middle group could reach up to 90 mph; and the third group could reach up to 79 mph. Additional routes with feeder bus service were also identified.

This Plan identified a passenger rail connection from the MAPA TMA to Chicago via Des Moines and the Quad Cities with a top speed of up to 79 mph. Speeds were selected based on limitations of current rail infrastructure, and feasible improvements with speeds increasing to 110mph over several decades to spread out costs.

The Midwest Coalition's Plan is being implemented in piecemeal fashion as funding becomes available. Significant projects, especially along the important Chicago to St. Louis route, have been completed or are underway. Other projects, such as the proposed rail connections between Cincinnati, Columbus, and Cleveland in Ohio, are still in development.

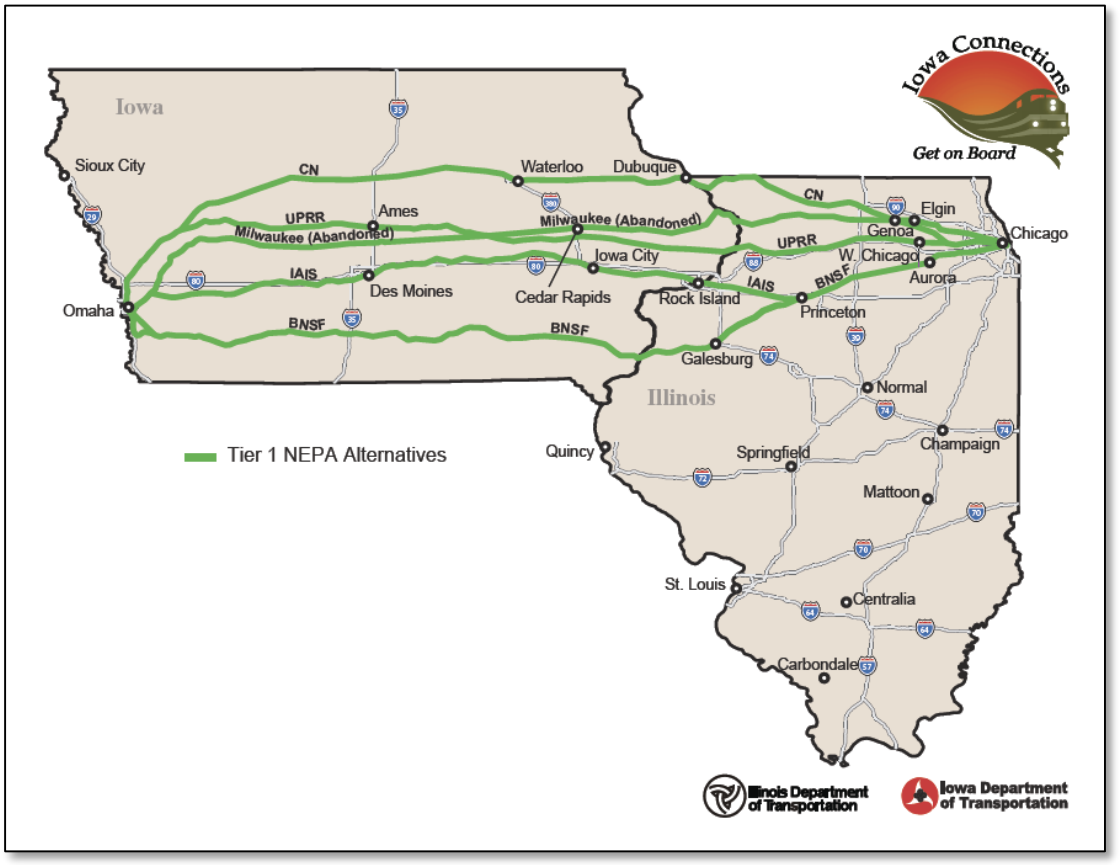
In 2009, the MHSRA and other organizations conducted new studies of rail routes in the Midwest, including a Chicago – St. Louis report. The finding supported a goal of top speeds eventually reaching 220 miles per hour for this corridor. In 2011, MHSRA released another study supporting high speed rail, this one on a regional level for the whole of the Midwest with recommendations to expand service to include 150 and 220 mph corridors between major regional hubs and these hubs and Chicago. A 2013 study done by the MHSRA details a Chicago to Champaign high speed (220mph) corridor to further expand regional service. Like the Federal government and the Midwest Coalition MHSRA also supports a piecemeal strategy for implementing high-speed rail, with connections to be unified at a later date.

12.4 Chicago to Council Bluffs/Omaha Study

Iowa DOT, the Illinois DOT and the Federal Railway Administration (FRA) studied the creation and extension of a dedicated passenger rail route running from Omaha to Chicago (HDR served as the project consultant). The Iowa Passenger Rail Advisory Group (of which MAPA is a member) supports this initiative and the expansion of the route to the Council Bluffs/Omaha metro area.

Funding has been secured to construct the route from Chicago to Iowa City, but the Omaha extension is still seeking financial support. The Federal Railroad Administration completed an alternative route analysis and selected a preferred route. In 2013, a fiscal feasibility study was completed as well the first parts of the environmental study for a portion of the proposed route. Figure 12.4 displays the Tier 1 NEPA alternatives completed.

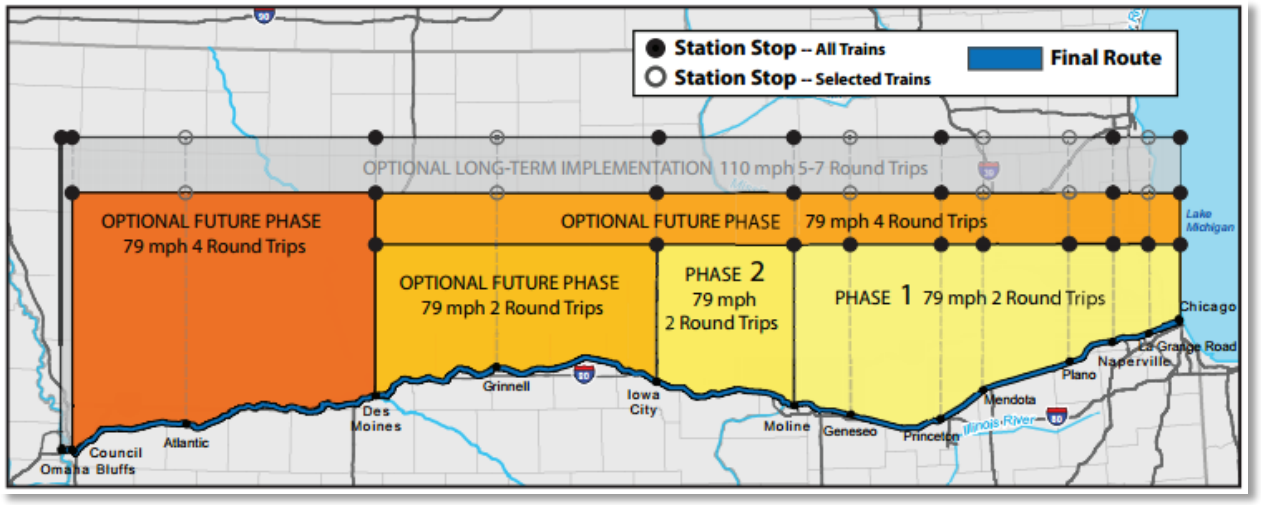
FIGURE 12.4
TIER 1 NEPA ALTERNATIVES FOR RAIL LINES ACROSS IOWA



Source: Iowa Department of Transportation, Iowa Connections, (http://www.iowadot.gov/iowarail/index.htm)

Construction for improvements and additions to the route chosen between Chicago and Moline, Illinois were to begin in 2014. But as of 2015 there has yet to be any construction. Completion for all parts of the project is projected to be in 2030. The final project would have five trips a day between Chicago and Omaha with speeds up to 110mph with phased implementation over the next 15 years.

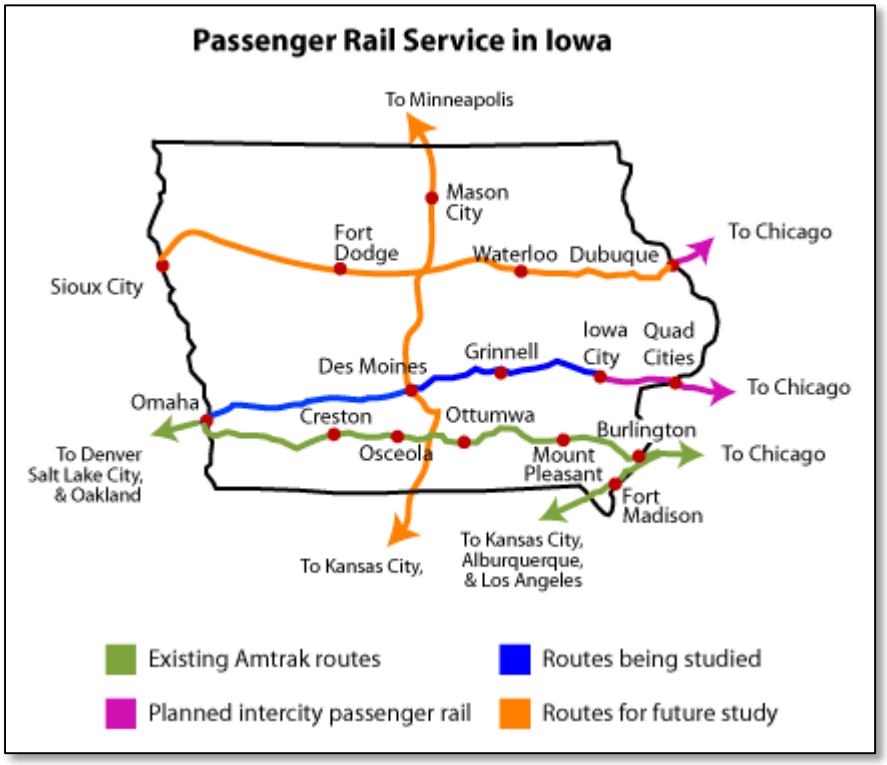
FIGURE 12.5
POTENTIAL LONG-TERM PHASED IMPLEMENTATION
CHICAGO TO COUNCIL BLUFFS/OMAHA



Source: Iowa Department of Transportation (http://www.iowadot.gov/iowarail/pdfs/chicago%20to%20omaha%20planning%20study.pdf)

The desire to connect Council Bluffs/Omaha to Chicago is not a new one. Many studies have been completed including the 2009 Iowa Railroad System Plan, which connects passenger rail service across the State (Figure 12.6).

FIGURE 12.6
2009 IOWA RAIL CORRIDOR VISION



Source: Iowa Department of Transportation (http://www.iowadot.gov/iowarail/passenger/visionplan.htm)

12.5 Other Future Expansion Possibilities

The California Zephyr currently passes through the MAPA region at nighttime hours, which is not conducive to attracting new ridership. In order for AMTRAK to attract and retain new customers in the region it will have to offer more convenient and appealing travel times and increase frequency of service.

The current schedule is largely due to the desire to have arrival and departure times during the daytime hours in the larger metro areas of Chicago and Denver. Given this predicament, there is a proposed first step of adding a second train between Chicago and Omaha along the current route that would operate during the daytime hours. This is viewed as a short-term solution and not as an alternative in lieu of the new Chicago to Omaha service through Des Moines that is being studied by Iowa DOT.

Better connections between Omaha and Chicago raises the possibility for other regional expansions of rail including connections between Omaha and Kanas City, which has long been a goal of rail advocates. One way of doing this would be to build other regional connections like the Heartland Flyer between Ft. Worth Texas and Oklahoma City then on to Kansas City to create a comprehensive network of rail lines that would have sufficient demand to justify further, and potentially more costly, expansion.

If the above plans were realized, it would create rail connections along both a north-south and east-west axis in the Midwest that would provide connections with major population centers throughout the country. Of course, these developments depend on substantial additional funding and political will to invest in passenger rail service. Another essential consideration is the availability of the railroads, which are largely privately owned by freight companies and may not available for passenger rail usage.

12.6 Omaha to Lincoln Commuter Rail

12.6.1 2003 N-TRAC Nebraska Transit Corridors Study

In 2003 the Nebraska Transit and Rail Advisory Council (N-TRAC) commissioned a study to examine feasible transit corridors in Nebraska. This study examined the possibility of intercity bus and rail routes throughout the state. Included in this document is a Commuter Rail Operating Plan for an Omaha to Lincoln commuter rail route.

The study examined the potential for a commuter rail route utilizing existing Burlington Northern Santa Fe (BNSF) track between Lincoln and Omaha, Nebraska. This track is currently utilized by AMTRAK's California Zephyr. The study assumed that the commuter train would operate a minimum of three locomotives offering a dual mirrored scheduled trip per rush hour per day (Table 12.1).

TABLE 12.1
MINIMUM SERVICE OPTION, 3 TRAIN SETS

Eastbound (Read Down)				Location	Westbound (Read Up)			
#1	#3	#5	#7	Train #	#2	#4	#6	#8
6:00a	6:45a	5:00p	5:45p	Lincoln	7:35a	8:20a	6:35p	7:20p
7:05a	7:50a	6:05p	6:50p	Omaha	6:30a	7:15a	5:30p	6:15p

Note: Train #1 turns to #4; Train #5 turns to #8

This route schedule assumes that the total operating time for each train would be 55 minutes. En route stops located in southwest Omaha, Gretna, and east Lincoln each would add about 3 minutes to the trip time bringing the final trip time to 1 hour 5 minutes. Additional options that allow mid-day trips were also examined.

Based upon the minimum service option with three train sets, annual operating expenses were forecast to be just under $5 million (2003 dollars). Total capital costs for a complete implementation of a three train system (including track work, stations, sidings, design and contingencies) was estimated to be just over $79 million (2003 dollars).

At the time of the study, total annual revenue was also estimated based upon the minimum service option with three train sets. These estimates focused on a fare of $5.50 per rider per trip. Total revenues based upon estimated trip levels and a $5.50 fare totaled between $1,107,000.00 (high side) and $786,000.00 (low side). This would create between a 22% and 16% fare box recovery for the system; requiring a subsidy of 78% to 84% to operate the system. The study estimated that the total subsidy required for daily operation in 2010 would have been between $3.9 million and $4.2 million. The study also expected that the annual subsidy would decrease over time as ridership increased.

12.6.2 2010 FEASIBILITY STUDY OF A CORNHUSKER GAME DAY COMMUTER RAIL SERVICE

In 2010, University of Nebraska at Lincoln Graduate Student Matthew D. Roque conducted a feasibility study to determine the possibility of reinstating the Game Day Special train that operated from the mid 1960s to the mid 1970s. The study was sponsored by Pro-Rail Nebraska, a rail advocacy group.

This independent study assumed that the game day train would operate along the same BNSF track identified in the N-TRAC study above. The game day train would utilize existing AMTRAK stations in both Lincoln and Omaha and would only operate on days when the University of Nebraska Cornhusker football team had a home game.

Operations for the game day train would utilize 15 passenger cars totaling 2,385 passengers in transit via the train. The train would be assumed to leave Omaha prior to the game, stay for the game's duration and return to Omaha sometime after the game's conclusion. Financial data for the operation of the game day train showed that the operation could succeed with a small profit margin. Partnerships would need to be established with the BNSF and a company would need to be contracted with to operate the system, but in the end the game day train is feasible according to the study.

Freight and Goods Movement

13.1 Overview

The movement of freight throughout the United States is a major driving force of the national economy. The crossroads of Interstate 29 and Interstate 80 creates an ideal situation for the movement of freight into and out of the MAPA TMA via truck. Omaha's Eppley Airfield also serves as a major hub for airborne freight. Union Pacific Railroad and the Burlington Northern Santa Fe Railroad both have Class I lines that cross the MAPA region. The navigable portions of the Missouri River can also serve as a major highway for barge traffic to carry freight north and south. Freight traffic should not be considered in terms of a single mode of transportation. Currently, the MAPA TMA has two intermodal facilities for transferring train freight into truck freight. Two recent studies have also explored the potential for additional intermodal sites within the MAPA region.

Of the four goals outlined for this LRTP, freight transportation relates to two:

1. **Maximize accessibility and mobility.**
   Increasing the accessibility and mobility of freight inside the region will help to spur future economic growth in the region.

2. **Increase safety and security.**
   Creating a centralized network for freight to enter and exit the region in a more controlled environment will help to enhance the security and integrity of the freight cargo.

13.2 Background

The commercial freight community played an essential role in the development of the Omaha-Council Bluffs metropolitan area. During the late 1860s, Council Bluffs, and later Omaha, served as the railhead for the Transcontinental Railroad. Naturally an effort this large created an unprecedented boost in the number of people, goods, and services offered in the communities. In the decade surrounding the authorization and beginning of the Transcontinental Railroad, Omaha's population grew from 1,883 (in 1860) to 16,083 (in 1870) an increase of 754.1%. The Union Pacific Railroad continues to call Omaha home.

13.3 Total Freight Breakdown 2007 – 2040

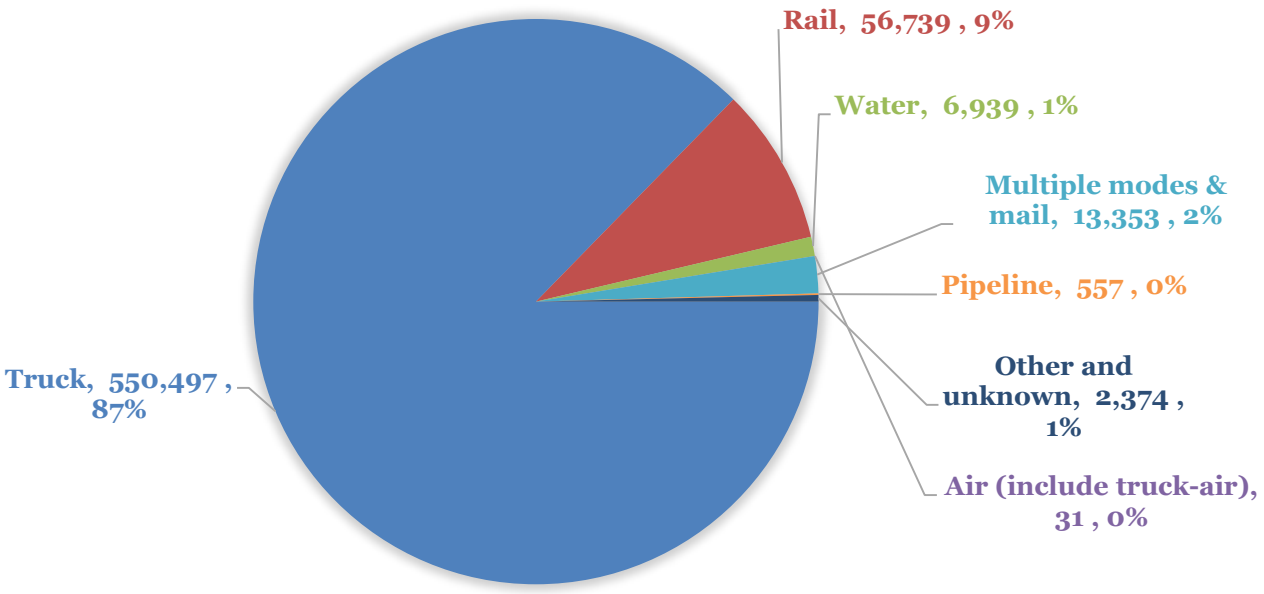
The FHWA last updated its Freight Analysis Framework (FAF) in 2007 and is working on a 2012 update but does not yet have the state and local data released. This product projects freight growth by mode for the entire US as well as for individual states. Additionally, the analysis shows the origin and final destination for freight traffic by

state. This serves as the basis for freight data and projections in the MAPA TMA as there is currently no local or regional data source from which to extrapolate trends. It is therefore assumed that the freight characteristics of the MAPA TMA will mirror the characteristics of the states of Iowa and Nebraska.

The following charts will show a breakdown of freight movement by mode in 2007 and 2040. The vast majority of freight transported in Nebraska and Iowa is via highway truck traffic. The MAPA TMA is thought to reflect this same trend of transport. Pipelines and unknown means make up less than .5% of the total transported materials. Goods transported by rail make up almost 9% of the total tonnage transferred. All other modes constitute the total tonnage transported by the USPS or other currier service, water transport, and unidentifiable intermodal transport.

Figure 13.1 illustrates the above breakdown of freight tonnage in 2007. Total modal tonnage in 1,000s of tons and is also represented percentage of total freight movement.

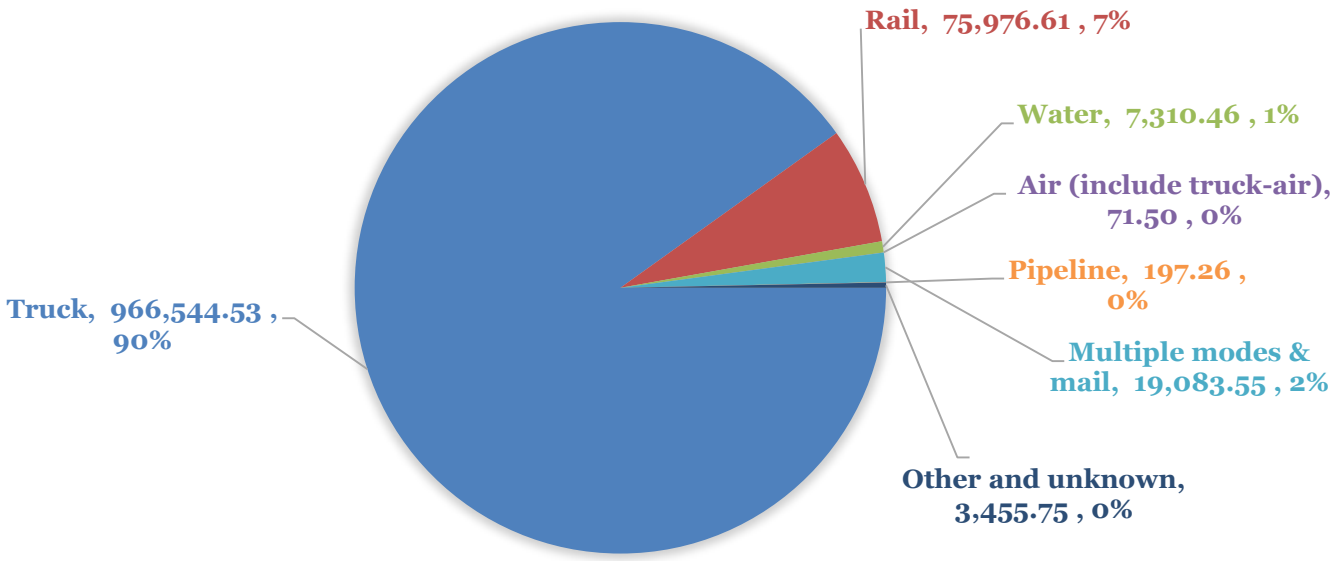
FIGURE 13.1
FREIGHT MOVEMENT BY MODE – 2007



Source: FHWA Freight Analysis Framework3 Data

The projected 2040 values for all modes of freight transport in Iowa and Nebraska are shown in Figure 13.2. The overall growth in tonnage from 2007 to 2040 is projected to be 70%For the most part, the breakdown by mode is expected to similar to the current breakdown with slight growth in the share of truck freight tonnage by 2040.

FIGURE 13.2
FREIGHT MOVEMENT BY MODE – 2040



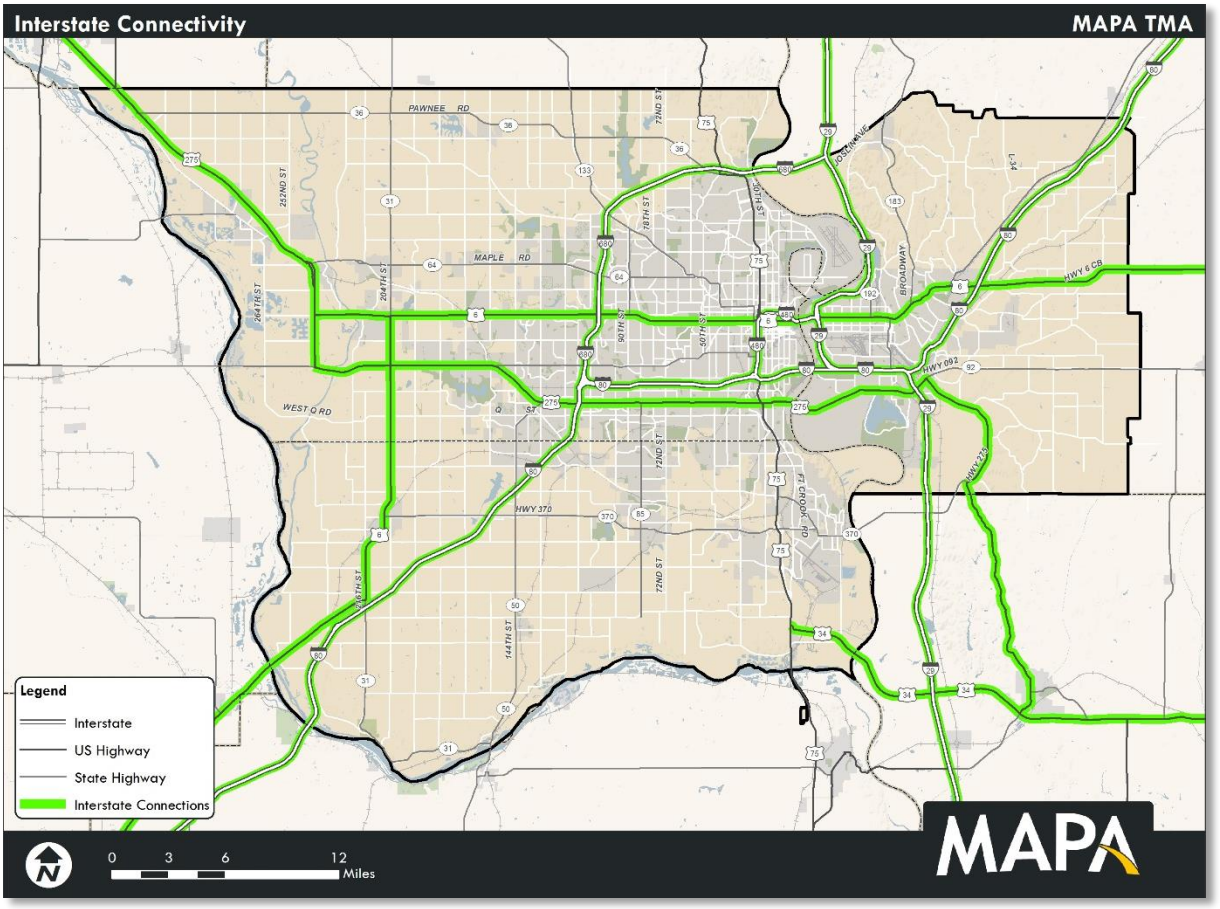
Source: FHWA Freight Analysis Framework3 Data

13.4 HIGHWAY

In addition to Interstates 29 and 80, there are three US Highways in the region that provide additional connectivity for interstate traffic. US-6 (concurrent crossing with I-480) and US-75 provide connectivity across the Missouri River for the MAPA TMA and US-75 allows for north/south traffic on the Nebraska side of the river. The new US 34 bridge that connects Mills and Sarpy Counties is expected to serve as an important freight connection between Iowa and Nebraska. This connection provides additional connectivity between US 75, Interstate 29, and may provide an alternative East-West route through the Omaha-Metro if improvements along the Platteview corridor are made.

Further intrastate connectivity in the region is provided by the Iowa and Nebraska state highway systems. Iowa 92 and 192 along with Nebraska 36, 50, 64, and 370 provide major secondary facilities for freight traffic in the region.

FIGURE 13.3
INTERSTATE HIGHWAY INTERCONNECTIVITY



The data collected via the 2007 FHWA Freight Analysis projects that freight traffic via highway will grow by 75.6% in Nebraska and Iowa by 2040. According to this analysis, in 2007, 64% of all freight tonnage was transported via the highway system. 2040 projections show that 90.1% of freight tonnage will be transported via trucks.

While the percentage increase compared to other modes of transport is only 2%, the 98% increasing in freight traffic will cause a great deal of strain on local infrastructure. The total freight movement via truck is projected to increase by 98%. The total value for this movement is expected to increase by 114% from 2002 to 2035.

13.4.1 FREIGHT SURVEY

A brief survey of 8 local freight trucking companies of various sizes was conducted by MAPA in 2011. In terms of good transported the following were indicated: agricultural products, processed foods, mixed freight, parcel/mail products, construction materials, paper and allied products, chemical products, steel, durable consumer products, movie projection equipment, heavy machinery, and manufactured goods and machinery.

Additionally, a majority of respondents transported goods throughout the Omaha-Council Bluffs metro area and throughout Nebraska. Some also transported goods nationwide and one respondent operates in Canada as well. Several respondents said that they had encountered roadway or bridge deficiencies in the area that made traveling difficult.

In terms of congestion at freight terminals or loading docks, all respondents said they do not experience congestion and few indicated the need for additional intermodal facilities in the area. One indicated the want for port accessibility. Last, respondents named several areas of improvement to make truck travel easier in the area:

- Increase trucking speed limit to match car speed limit on L Street
- Complete construction in the area
- Add another north/south major arterial west of I-680 and east of Highway 31
- Pave Fairview Road west of Highway 31
- Improve signage along truck routes
- Widen intersections

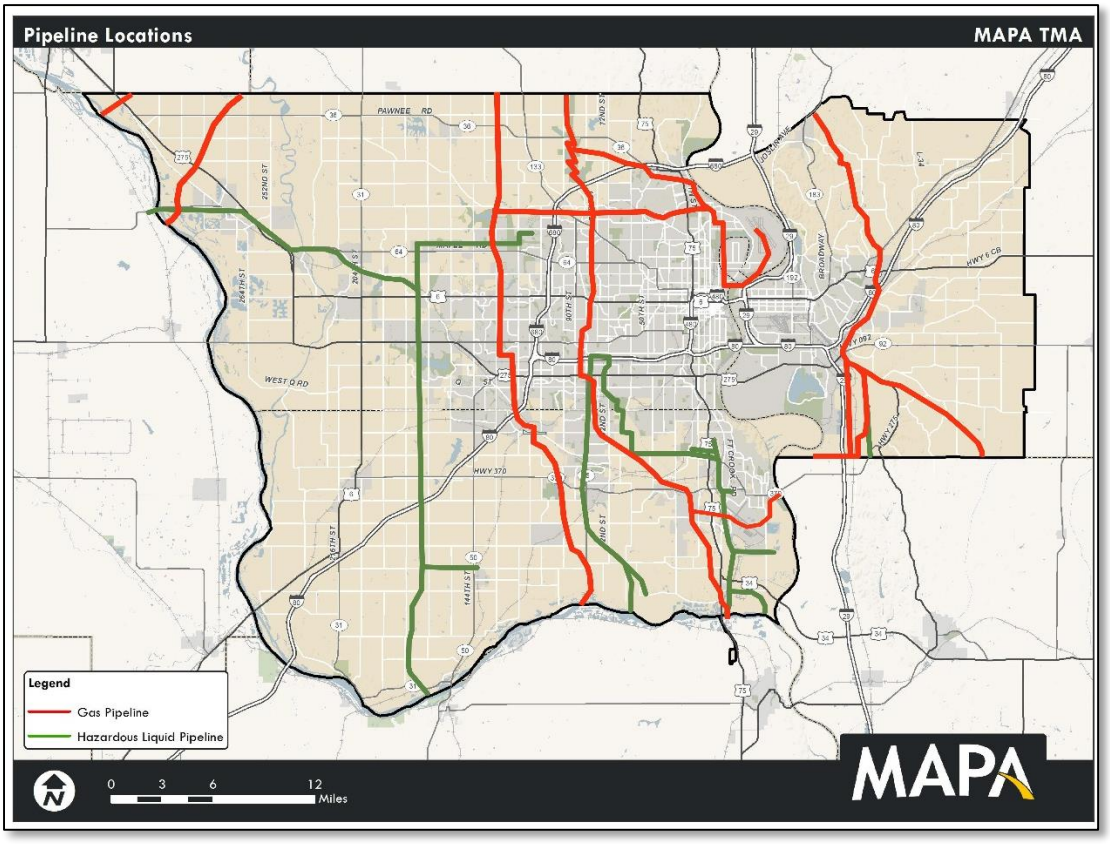
13.5 PIPELINES

Pipelines are the second largest mover of freight materials in Iowa and Nebraska. Pipelines in the MAPA TMA generally transport crude petroleum, products (gasoline and ethylene), natural gas, or a slurry mix such as pulverized coal. Omaha is a secondary junction center for pipelines throughout the United States. Regionally, there are three products pipelines that transport gasoline and ethylene, two natural gas pipelines, and one crude oil pipeline. These pipelines are listed below with a general description of the goods they are used to transport:

- C30- Minneapolis/St. Paul to Midland Basin Pipeline (products)
- C31- Minneapolis/St. Paul to Tulsa Pipeline (products)
- C33- Omaha to Chicago Pipeline (products)
- C18- Winnipeg to Omaha Pipeline (natural gas)
- C43- Hugoton (KS) to Detroit Pipeline (natural gas)
- C18- Guernsey (WY) to Chicago (crude oil)

A detailed map of the alignments of pipelines inside the TMA is shown in Figure 13.4. Locations are approximated in order to ensure their security.

FIGURE 13.4
MAPA TMA PIPELINE MAP



Pipelines require a great deal of initial investment capital in order to facilitate construction. Over time, maintenance costs are generally lower than other large scale freight modes such as trucking or rail.

However, despite some of these advantages, the overall tonnage of goods transported by pipeline is actually expected to decrease by 2040 with the current rate at 557 tons going to 197.26 tons in 2040 based on data from the Freight Analysis Framework (FAF). Within the FAF according to the FHWA Freight Analysis Framework Data3 pipeline freight is the only mode which sees an overall decrease in tonnage over the planning horizon, while truck and rail-related freight show major increases (as shown in Figures 13.1 and 13.2).

13.6 RAIL

In 2002, rail accounted for 15% of the total tonnage shipped during the year. FHWA projections for 2040 show that rail will only account for 7% of tonnage shipped. While rail is projected to comprise a smaller share of total freight traffic, the overall tonnage is projected to increase 33% from 2007 to 2040.

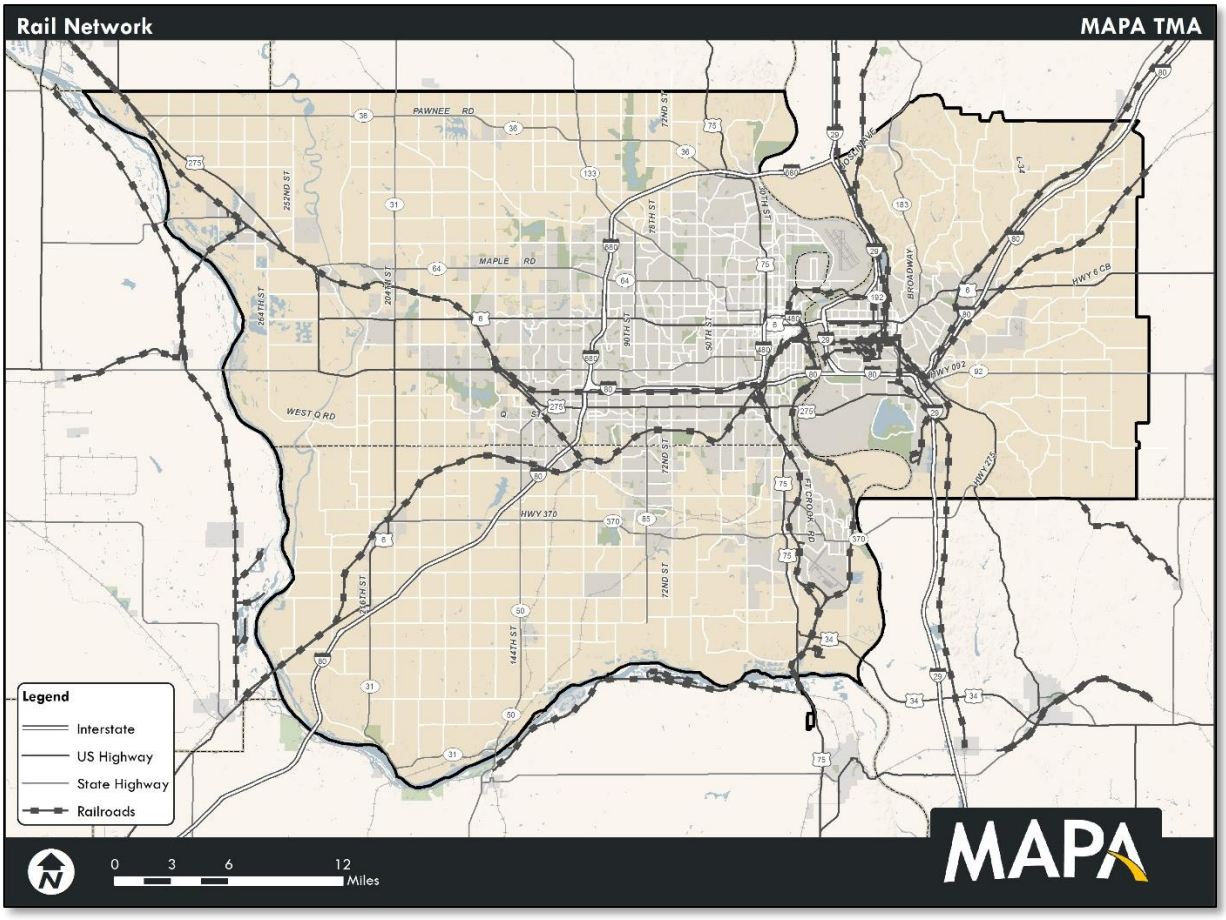
There are two Class I railroads in the MAPA TMA. Union Pacific Railroad and Burlington Northern Santa Fe Railroad both have lines that cross the MAPA TMA. Union Pacific is also headquartered in Omaha. Intermodal rail facilities are located on both sides of the Missouri River. A detailed look at rail freight statistics by carload for Nebraska and Iowa are located in Figure 13.5. (One carload is assumed to be 18 tons per carload.) Additionally, a view of the MAPA TMA rail network can be seen in Figure 13.6 (next page).

FIGURE 13.5
TOTAL RAIL FREIGHT STATISTICS BY CARLOAD FOR NE AND IA – 2014

Product	Carloads Terminated 2014		Carloads Originated 2014	
	Nebraska	Iowa	Nebraska	Iowa
Coal and Cement	15,417,000	20,017,000	n/a	5,731,000
Chemicals	2,311,000	4,520,000	5,447,000	397,000
Primary Metal Products	802,000	n/a	n/a	934,000
Food Products	814,000	3,144,000	7,060,000	19,192,000
Scrap Paper or Metal	n/a	979,000	166,000	n/a
Farm Products	1,654,000	3,193,000	712,489,000	7,945,000
All Other	2,325,000	3,536,000	603,000	3,071,000
Gravel, Crushed Stone, Sand	n/a	n/a	1,262,000	n/a

Source: American Association of Railroads, 2014

FIGURE 13.6
MAPA TMA RAIL NETWORK MAP

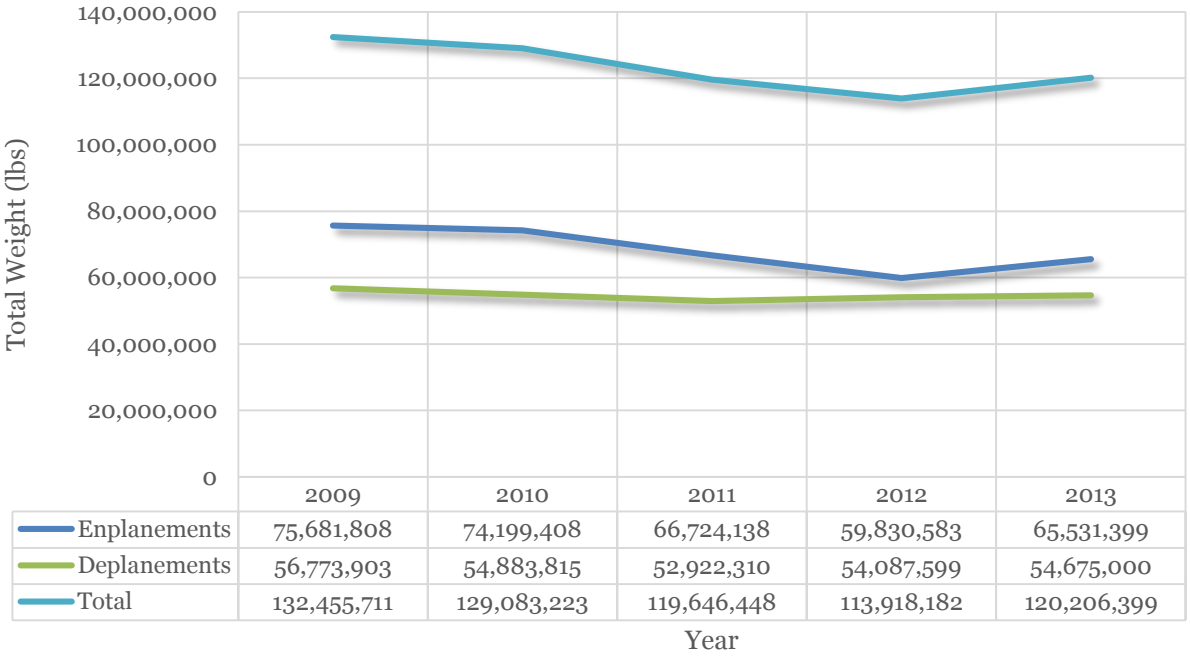


13.7 AIR CARGO

Air cargo in the MAPA TMA flows out of Omaha's Eppley Airfield. Eppley services seven freight and postal carriers that moved over 113 million pounds of freight and mail in 2014.

Total air cargo and mail numbers decline from 2009 to 2012, and increased slightly in 2013 and then decreased again in 2014. These trends are illustrated in Figure 13.7 (next page).

FIGURE 13.7
EPPLEY AIRFIELD ENPLANED AND DEPLANED CARGO AND MAIL (LBS)



	2009	2010	2011	2012	2013
Enplanements	75,681,808	74,199,408	66,724,138	59,830,583	65,531,399
Deplanements	56,773,903	54,883,815	52,922,310	54,087,599	54,675,000
Total	132,455,711	129,083,223	119,646,448	113,918,182	120,206,399

Source: Eppley Airfield, 2015

13.8 WATER FREIGHT

Water freight transportation in the MAPA TMA takes place on the Missouri River. Recently, low water levels have caused barge traffic on the Missouri River to decline. Several factors have led to the decline of barge traffic on the Missouri River. While the Mississippi River has a system of locks in order to support barge traffic, the Missouri River does not. The Missouri River also has a narrower channel than the Mississippi, resulting in higher flow speeds. These higher speeds cause greater resistance and greater fuel consumption on upstream traffic making it less efficient to operate on this waterway.

In order to deal with the low water levels and fast currents of the Missouri, shallow draft Missouri River tugs were designed and built. These tugs can navigate the channel much more efficiently and effectively than their Mississippi River counterparts. However, due to the decrease in overall traffic on the Missouri River, the vast majority of the Missouri River specific tugs were shipped to South America. There is currently one Missouri River specific tug that operates in the United States.

The agricultural profile of the region has also changed. Farmers in Nebraska and Iowa are producing more corn and soybeans than wheat in past years. This change in production further damaged the water freight in the region due to the availability of

local corn and soybean processing facilities. It is not cost effective to ship corn or soybeans downriver to processing facilities when they are available locally.
The availability of rail transport is also a contributing factor to the decline of water freight in the region. There are two intermodal facilities that can facilitate land transport of freight at lower prices and faster speeds than water travel can provide.

13.9 FACILITIES INVENTORY

13.9.1 INTERMODAL FREIGHT FACILITIES

There are two Intermodal Freight Facilities in the MAPA TMA which are shown in Figure 13.8:

- Iowa Interstate Railroad Intermodal Freight Facility (2722 South Avenue P.O. Box 1737 Council Bluffs, IA 51501)*
    - **Operator/Owner:** Iowa Interstate Railroad
    - **Operation start date:** 1984
    - **Square feet:** Did not disclose
    - **Major materials handled:** Freight of all kinds: frozen meat, canned goods, animal feed, etc.
    - **Traffic numbers:** 115,000 lifts/year
    - **Capacity:** 500 units
    - **Area to expand:** Did not disclose

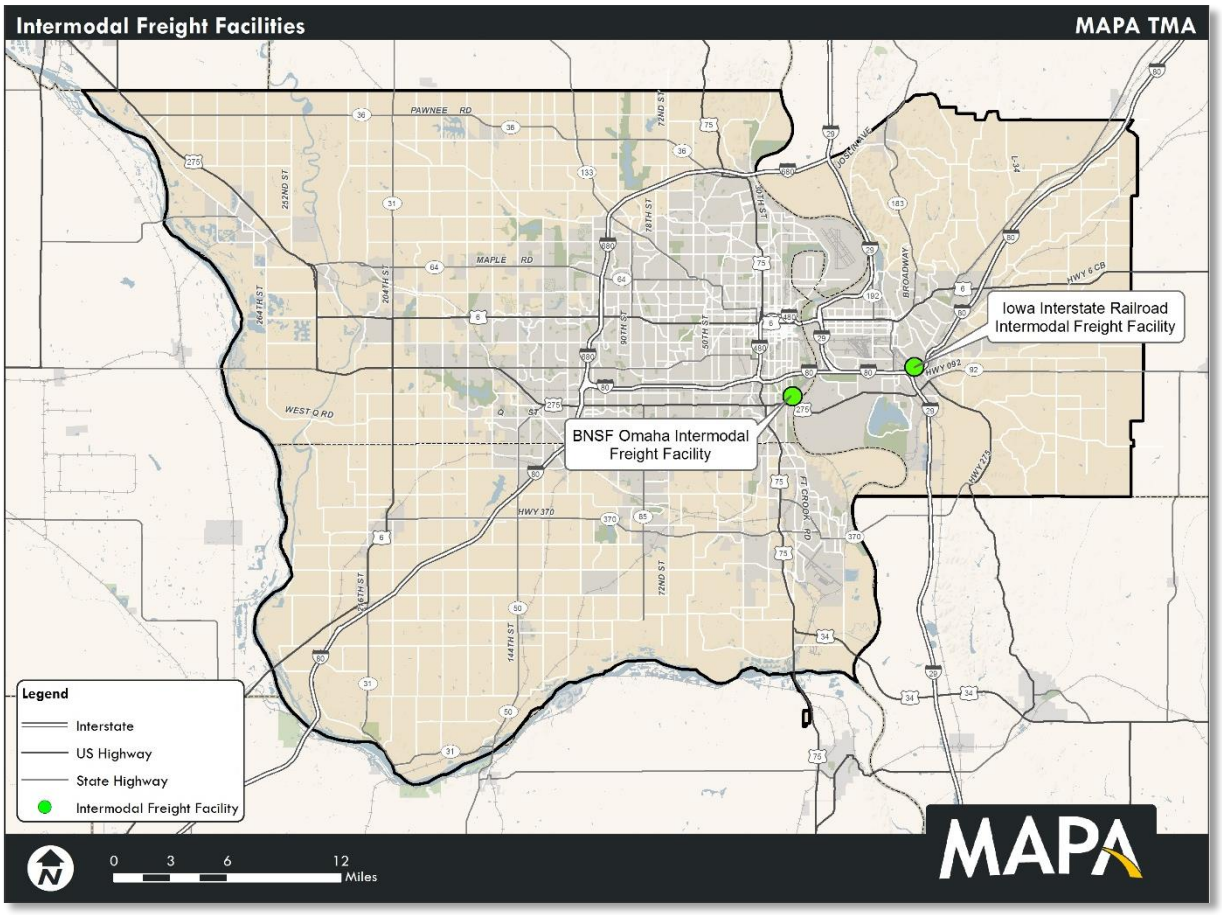
**Source: Iowa Interstate RR*

BNSF Omaha Intermodal Freight Facility (4370 Gibson Road, Omaha, NE 68107)*

- **Operator/Owner:** Burlington Northern Santa Fe
- **Operation start date:** September 1987
- **Facility Land Occupancy:** 30 acres
- **Major materials handled:** Major intermodal carriers
- **Traffic numbers:** 10,500 lifts/year
- **Capacity:** The facility can accommodate volumes significantly higher than current levels
- **Area to expand facility:** The facility can handle additional volume on its current footprint

**Source: BNSF RR*

FIGURE 13.8
INTERMODAL FREIGHT FACILITIES



13.9.2 AIR FACILITIES

Eppley Airport (OMA) is the only air cargo facility in the MAPA TMA. According to the official airport website, the Eppley facilities cover 2,650 acres of land and there are 368,000 sq. ft. in the building. Additionally, there are six runways at Eppley Airfield. OMA currently has eight freight carriers and accommodated over 113 million pounds of cargo and mail in 2014.

13.9.3 PORTS

The U.S. Army Corp of Engineers designates two ports located on the Omaha side of the Missouri River. These facilities include:

- Lafarge Corp. (located at 1106 Ida, Omaha, NE 68112)
    - Port has not been recently utilized
- Kinder Morgan Inc. (located at 6801 No. 9th St., Omaha, NE 68112)
    - Square Feet: 35 acres
    - Barge Volume: Average about 2 barges per year
    - Historically it handled 25-30 barges per year, however since water levels on the Missouri have dramatically decreased due to drought, little barge traffic is handled
    - The facility also uses rail and truck to move product
        - Product mainly arrives by rail (90-95%)
        - 100% of outgoing product is by truck
    - While this facility handles various freight transport options, it is not considered an Intermodal Freight Facility
    - Major products handled: steel, fertilizer, salt

After discussions with managers of these ports, it is clear that barge traffic is very limited to nonexistent. The main methods of transporting freight in the MAPA TMA is via truck, pipe, air, and rail facilities.

Information from the U.S. Army Corp of Engineers indicates two barge/port facilities are located on the Council Bluffs side of the Missouri River. These facilities are commercial property:

- Cargill (located at 2401 So. 37th St, Council Bluffs, IA 51501)
- Warren Distribution (located 2850 River Road, Council Bluffs, IA 51501)

Contact with these facilities indicates that they are not currently in operation for any commercial barge/port purposes.

While port and barge facilities in the area presently have limited use, water levels on the Missouri River are rising after drought conditions for nearly the past ten years. With this increase in water levels there is a possibility that barge traffic could increase as the Missouri River will be more accessible.

Environmental

14.1 Introduction

This environmental element of the Plan evaluates the connection between the MAPA LRTP goals and environmental stewardship, the inventory of environmental resources, the applicable legislation, and the currently employed mitigation process. This evaluation is completed due to a desire to take environmental factors into consideration when developing projects and due to federal requirements (shown in the textbox to the right).

> *"A discussion of types of potential environmental mitigation activities and potential areas to carry out these activities, including activities that may have the greatest potential to restore and maintain the environmental functions affected by the metropolitan transportation plan. The discussion may focus on policies, programs, or strategies, rather than at the project level. The discussion shall be developed in consultation with Federal, State, and Tribal land management, wildlife, and regulatory agencies. The MPO may establish reasonable timeframes for performing this consultation"* (23 CFR 450.322(f)(7))

14.2 Connection to MAPA LRTP Goals

Environmental Stewardship falls under the third goal of this Long Range Transportation Plan:

Goal #3: Consider the environment and urban form.

Possible strategies for implementation of this goal are listed below.

- Avoid, minimize, and mitigate the negative environmental impacts of the transportation system.
- Retain attainment air-quality status, as designated by the EPA.
- Foster energy conservation through the transportation system.
- Increase the mode share of alternative modes of transportation (transit, bicycle, pedestrian) to ten percent of all trips by 2040.
- Consider aesthetics and urban form in the design process.
- Coordinate transportation investments with land use policies to minimize environmental costs.
- Improve national designation from the League of American Bicyclist from Bronze to Silver
- Preserve cultural, scenic and historic resources.

Section 14.3 provides an inventory of environmental resources, information on air quality and climate change.

14.3 Environmental Resources

This section provides an inventory of water resources, section 4(f) resources, and threatened and endangered species.

14.3.1 WATER RESOURCES

The MAPA TMA is abounding in environmental resources. The western edge of the MAPA region is defined by the Platte River. Iowa's Loess hills flank the region on the eastern end. In the middle of the region the Missouri River defines the scenery. The MAPA Region is also home to a multitude of lakes, ponds, creeks and streams.

Included in this watershed are wetlands. Wetlands are defined by the EPA as areas in which water covers the soil, or is present at or near the surface of the soil during varying times of the year (including the growing season). Wetlands are further separated into two categories based upon their location.

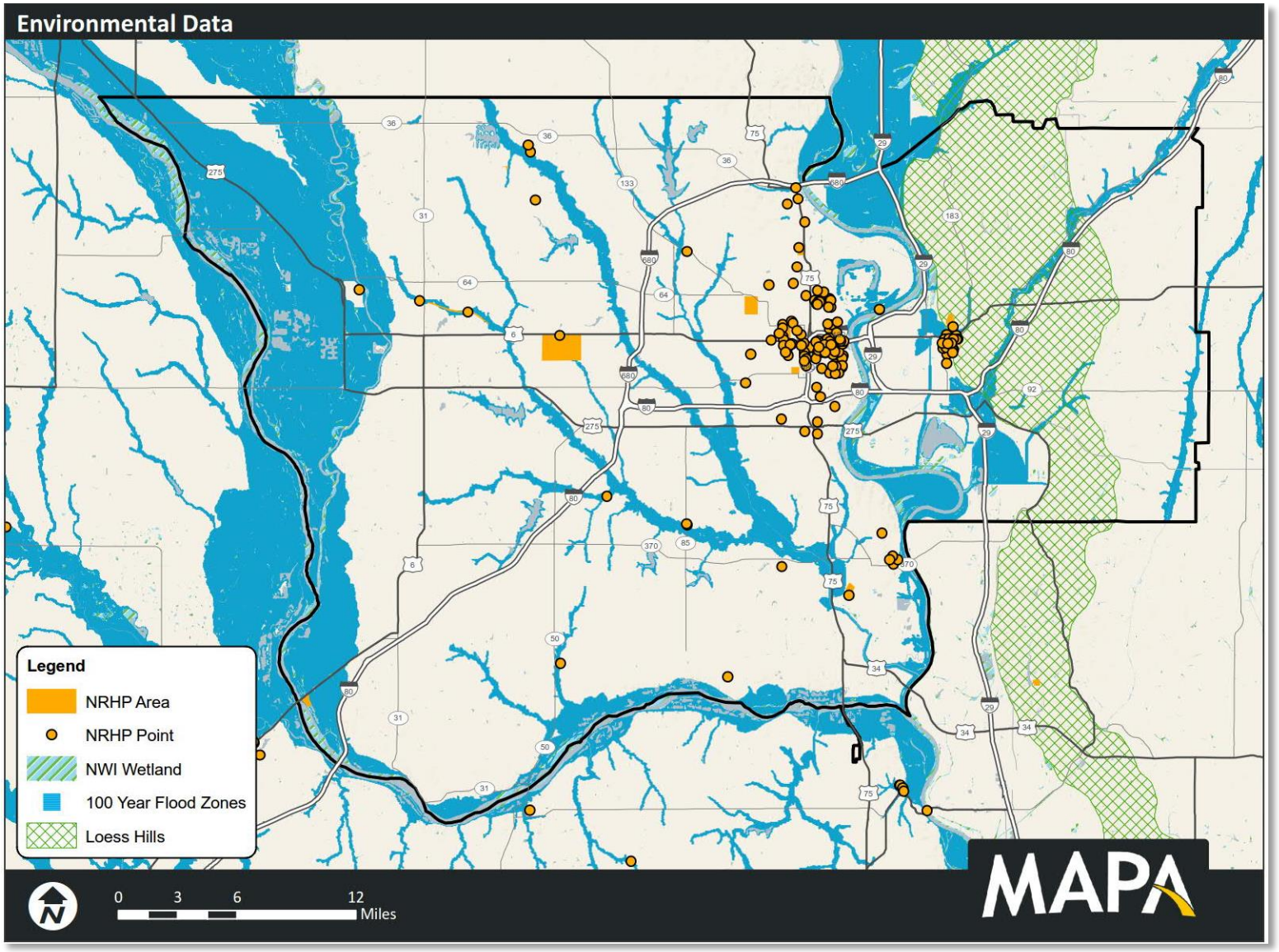
- Coastal Wetlands
    - These wetlands occur along the nation's oceanic coasts. Coastal wetlands are closely linked with estuaries where freshwater rivers mix with oceanic saltwater.
- Inland Wetlands
    - More pertinent for the MAPA LRTP are Inland wetlands. These areas of hydrologic soil are found most commonly around lakes, rivers, and streams (riparian wetlands); isolated wetlands can also be evident in depressions surrounded by dry land. In many cases, wetlands can be dry for much of the year. These vernal wetlands are important because they offer specialized breeding habitat for many plants and animals.

Inside of the above classifications, the US Army Corps of Engineers (USACE) identifies jurisdictional and non-jurisdictional wetlands. The determination of a jurisdictional wetland or waterway is conducted by the Corps of Engineers. Generally, jurisdictional wetlands are under the protection and control of the EPA and USACE.

Where applicable, projects in the MAPA region will comply with all necessary FHWA, USACE, and EPA regulations in dealing with the region's water resources.

Water resources in the MAPA TMA are shown in Figure 14.1. (It should be noted that all wetlands are not delineated in the Figure. Wetlands delineation shall take place as part of the NEPA process for individual applicable projects.

FIGURE 14.1
TMA HYDROLOGY AND SECTION 4(F) MAP



14.3.2 Section 4(f) Resources

49 U.S. Code 303 Section 4(f) states that a special effort should be made to preserve the beauty of the nation's public historic sites. A map showing the location of Section 4(f) resources inside the MAPA TMA is shown above (Figure 14.1). This map is not the definitive source for 4(f) resources inside the TMA and individual surveys should be carried out during the planning stages of future projects to ensure the project does not adversely affect the region's 4(f) resources. Furthermore, the map includes other culturally important resources including the examples below:

- 100 Block of West Broadway Historic District (Council Bluffs)
- Boys Town (Douglas County)
- Old Market Historic District (Omaha)

Also shown on the map are the limits of Iowa's Loess Hills inside the MAPA TMA. As part of the environmental consultation for this plan, the Iowa Department of Natural Resources (IDNR) identified the Loess Hills as a culturally significant resource. The US National Park Service identifies Iowa's Loess Hills as "the best example of loess topography not only in the Central Lowlands, but in the United States." Due to the uniqueness of this area and in deference to the efforts of a large number of people and organizations to protect this resource it is the policy of this LRTP to avoid utilization of the Loess Hill's material as borrow for construction projects in the MAPA TMA.

For a complete listing of the region's historical sites please see the National Park Service's database (available here: http://nrhp.focus.nps.gov/natreghome.do?searchtype=natreghome). The National Register of Historic Places is constantly being updated with new sites. In addition, the National Park Service is in the process of digitizing their records to make the Register easier to use.

14.3.3 Threatened and Endangered Species

Consultations were performed with Natural Resource Agencies of both Iowa and Nebraska to identify threatened and endangered species throughout the MAPA TMA. A complete listing of threatened, endangered, and rare species in the MAPA region is shown in Table 14.1.

TABLE 14.1
THREATENED, ENDANGERED, AND RARE SPECIES IN THE MAPA REGION

Common Name	Scientific Name	Federal Status	IA Status	NE Status
American Ginseng	*Panax quinquefolium*			Threatened
Bald Eagle	*Haliaeetus leucocephalus*		Rare species	
Biscuit Root	*Lomatium foeniculaceum*		Endangered	
Cobaea Penstemon	*Penstemon cobaea*		Rare species	
Dusted Skipper	*Atrytonopsis hianna*		Rare species	
Eared Milkweed	*Asclepias engelmanniana*		Endangered	
Great Plains Ladies'-tresses	*Spiranthes magnicamporum*		Rare species	
Great Plains Skink	*Eumeces obsoletus*		Endangered	
Interior Least Tern	*Sternula antillarum athalassos*	Endangered	Endangered	Endangered
Lake Sturgeon	*Acipenser fulvescens*			Threatened
Lance-leaf Scurf-pea	*Psoralidium lanceolatum*		Rare species	
Leonard's Skipper	*Hesperia leonardus*		Rare species	
Narrow-leaved Milkweed	*Asclepias stenophylla*		Endangered	
Ornate Box Turtle	*Terrapene ornata*		Endangered	
Ottoe Skipper	*Hesperia ottoe*		Rare species	
Pallid Sturgeon	*Scaphirhyncus albus*	Endangered	Endangered	Endangered
Piping Plover	*Charadrius melodus*	Threatened	Endangered	Threatened
Plains Pocket Mouse	*Perognathus flavescens*		Endangered	
Pretty Dodder	*Cuscuta indecora*		Rare species	
River Otter	*Lutra canadensis*			Threatened

TABLE 14.1 (CONTINUED)

Common Name	Scientific Name	Federal Status	IA Status	NE Status
Scarlet Globe-mallow	*Sphaeralcea coccinea*		Threatened	
Slender Ladies'-tresses	*Spiranthes lacera*		Threatened	
Spreading Yellow Cress	*Rorippa sinuata*		Rare species	
Sturgeon Chub	*Macrhybopsis gelida*			Endangered
Sumpweed	*Iva annua*		Rare species	
Western Prarie Fringed Orchid	*Platanthera praeclara*	Threatened	Threatened	Threatened

Source: Outdoor Nebraska and Iowa DNR

These species are associated with several habitats, including wooded river and stream corridors, prairie remnants, and wetlands. To best avoid adversely affecting these species it is recommended that whenever possible these habitats be avoided. The above is a general listing of species that may or may not be found on the location of a particular project inside the TMA. Field surveys should be undertaken to assess the possible impacts to threatened and endangered species as part of project development as additional planning, phased construction, impact studies, or mitigation activities may need to be undertaken.

14.4 AIR QUALITY

The Clean Air Act, as amended in 1990, requires the EPA to set National Ambient Air Quality Standards (NAAQS) for pollutants deemed harmful to humans and the environment. The EPA lists the following 7 pollutants as harmful. Table 14.2 identifies the maximum allowable value of these pollutants and also the time frame in which the pollutants are measured.

- **PM_{10}:** Fine Particulates less than 10 microns in diameter.
- **$PM_{2.5}$:** Fine Particulates less than 2.5 microns in diameter.
- **O_3:** Ground level Ozone gas.
- **CO:** Carbon Monoxide gas.
- **SO_2:** Sulfur Dioxide gas.
- **TRS:** Total Reduced Sulfur.
- **NO_2:** Nitrogen Dioxide gas.

TABLE 14.2
NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS)

Pollutant [final rule cite]		Primary/ Secondary	Averaging Time	Level	Form
Carbon Monoxide [76 FR 54294, Aug 31, 2011]		Primary	8-hour	9 ppm	Not to be exceeded more than once per year
			1-hour	35 ppm	
Lead [73 FR 66964, Nov 12, 2008]		Primary and Secondary	Rolling 3 month average	0.15 µg/m3 (1)	Not to be exceeded
Nitrogen Dioxide [75 FR 6474, Feb 9, 2010] [61 FR 52852, Oct 8, 1996]		Primary	1-hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		Primary and Secondary	Annual	53 ppb (2)	Annual Mean
Ozone [73 FR 16436, Mar 27, 2008]		Primary and Secondary	8-hour	0.075 ppm (3)	Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years
Particle Pollution 14-Dec-12	$PM_{2.5}$	Primary	Annual	12 µg/m³	annual mean, averaged over 3 years
		Secondary	Annual	15 µg/m³	annual mean, averaged over 3 years
		Primary and Secondary	24-hour	35 µg/m³	98th percentile, averaged over 3 years
	PM_{10}	Primary and Secondary	24-hour	150 µg/m³	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide [75 FR 35520, Jun 22, 2010] [38 FR 25678, Sept 14, 1973]		Primary	1-hour	75 ppb (4)	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		Secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year

Source: http://www.epa.gov/air/criteria.html, as of October 2011. Accessed 2/25/15.

Per federal regulations, states are required to monitor the ambient air quality inside their borders. Air quality sensors in both Nebraska and Iowa continuously monitor the levels of harmful gasses, particulates, and elements contained in the ambient air of the MAPA TMA.

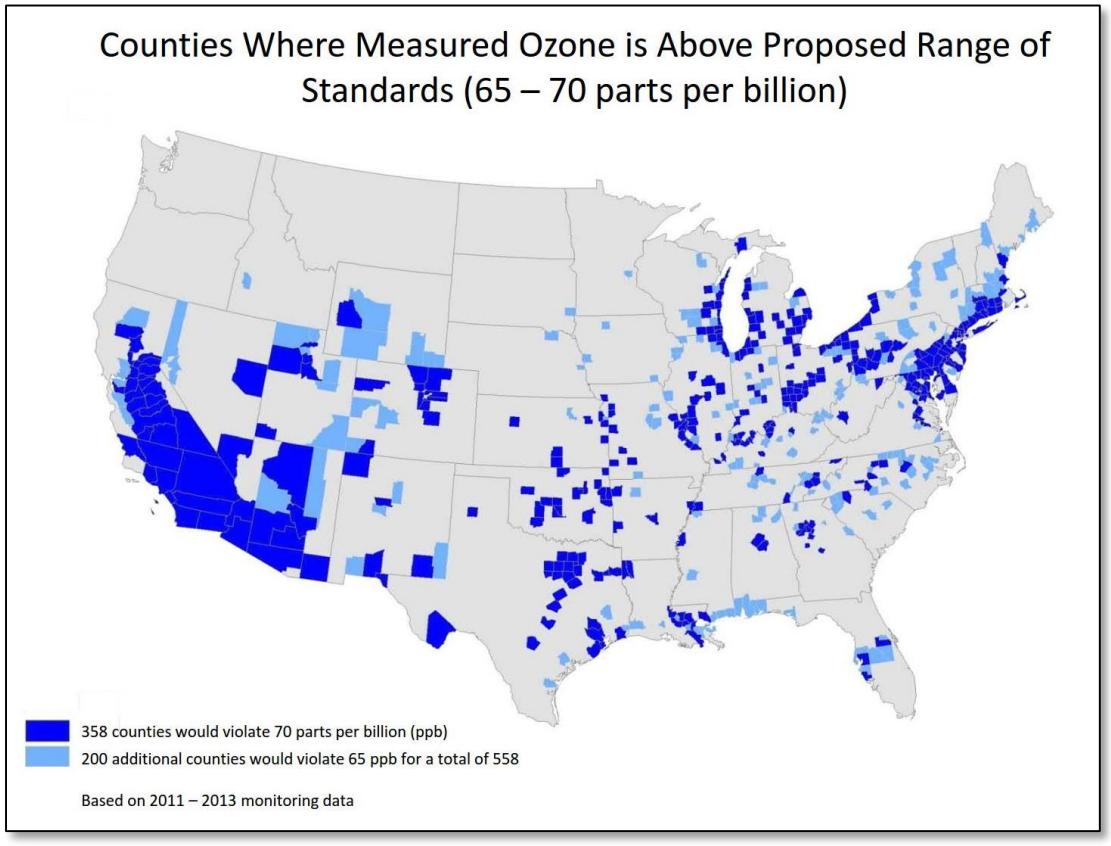
As of January 1, 2015, the entire MAPA TMA is in attainment for the above air quality standards. Though these are likely to change in the coming years.

14.4.1 NEW LEGISLATION IN AIR QUALITY

Currently the MAPA TMA is in attainment for greenhouse gasses, ozone, and other emissions. However, the Center for Environmental Quality (CEQ) and EPA are currently seeking to change the acceptable standards for ozone and other emissions to a lower level.

The current standard for Ozone emissions is .075 parts per million (PPM). The CEQ is seeking to lower the primary standard somewhere between 0.065 to 0.070 (https://federalregister.gov/a/2014-28674) parts per million. Should the standard be lowered to 0.065 ppm the MAPA TMA would be at a higher risk to enter non-attainment for ozone. Figure 14.2 illustrates areas that would be in non attainment depending on the new standard in 2015.

FIGURE 14.2
PROJECTED GROUND LEVEL OZONE VIOLATIONS



Source: Environmental Protection Agency (http://www.epa.gov/groundlevelozone/pdfs/20141126-ozonemaps.pdf)

The CEQ and EPA are currently studying the proper level at which to set the Ozone standards. A determination of the national standards for Ground-Level Ozone has been delayed until September 2015.

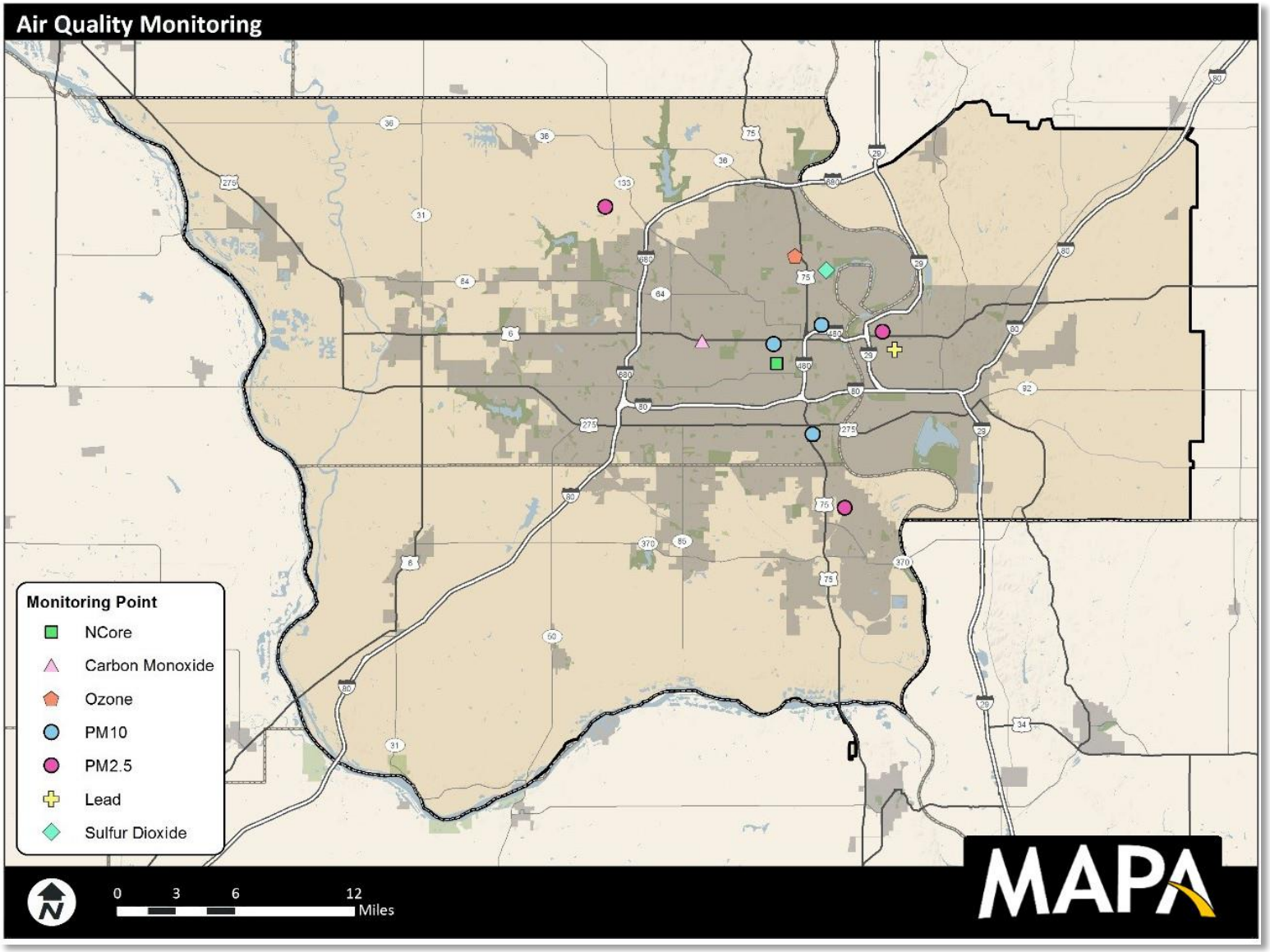
The MAPA region contains air quality monitors that are shown in Figure 14.3. These monitors currently show the region in attainment for air quality standards. Figure 14.3 shows that there is a monitor to the north of the MAPA TMA that would be projected to violate Ozone standards if they were to be set at 0.065 ppm, see Table 14.3. This monitor is located in Harrison County, Iowa near the town of Pisgah. The location of this monitor is shown in the lower right-hand corner of Figure 14.3. Due to the direction of prevailing winds, it is thought that the Pisgah monitor reflects the air quality of the MAPA region and the pollutants the region creates through emissions.

TABLE 14.3
NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS) PROPOSED CHANGES

Year	Carbon Monoxide Allowable Levels	NOX Allowable Levels	Ozone Allowable Levels
Current	9ppb	53ppb	75ppb
Proposed	No change	No change	No change

Source: EPA

FIGURE 14.3
AIR QUALITY MONITORING LOCATION MAP



Since July 2010, MAPA has been working with Nebraska Department of Environmental Quality (NDEQ), Iowa Department of Natural Resources (IDNR), the City of Omaha, Douglas County, and various other organizations and jurisdictions to address the potential Ground Level Ozone issue in the Omaha-Council Bluffs metropolitan area. As discussed earlier, the Environmental Protection Agency is expected to lower the ground level ozone standard to between 65 – 70 ppb. The lowering of this limit would push the Omaha-Council Bluffs metro area into non-attainment. Therefore, MAPA has been working with the various agencies and jurisdictions mentioned above to organize a proactive response to the possible lowering of the ozone standard. These efforts are two-fold.

First, a Community Based Planning Process to identify voluntary reductions is currently being used to bring together community stakeholders and major emitters. This group of stakeholders is actively working together to identify activities and actions that can be taken to reduce ozone emissions.

Second, a public education campaign increasing public awareness of the health issues involved with ground level ozone (with ozone action days) and reduction actions that households and individuals can take was implemented in August 2011. The program is called Little Steps, Big Impact (Figure 14.4). It is an annual campaign that MAPA undertakes with partnerships with the Douglas County Health Department, the City of Omaha Public Works Department, and Metro Transit. For more information on the ground level ozone reduction efforts in the Omaha-Council Bluffs metro area, please go to www.littlestepsbigimpact.com.

FIGURE 14.4
OZONE PROJECT

14.5 CLIMATE CHANGE

In 2008, the American Association of State Highway and Transportation Officials (AASHTO) released a report concerning global climate change. AASHTO's *Primer on Transportation and Climate Change* (available here: http://climatechange.transportation.org/pdf/primer_on_transportation_climate_change_2008.pdf) maintains the validity of climate change, outlines some root causes of climate change (as they pertain to transportation), and offers several strategies for climate change mitigation.

The U.S. DOT and FHWA support and reference the *Primer on Transportation and Climate Change* as a key document that offers climate change guidance for

transportation agencies. Additional FHWA guidance on climate change and transportation is available online at FHWA's Climate Change and Transportation webpage (available here: ftp://www.mdt.mt.gov/research/LIBRARY/PCRT-1-OL-PRIMER-TRANSPORTATION-CLIMATE_CHANGE-AASHTO.PDF).

14.5.1 EVIDENCE OF CLIMATE CHANGE AND ROOT CAUSES

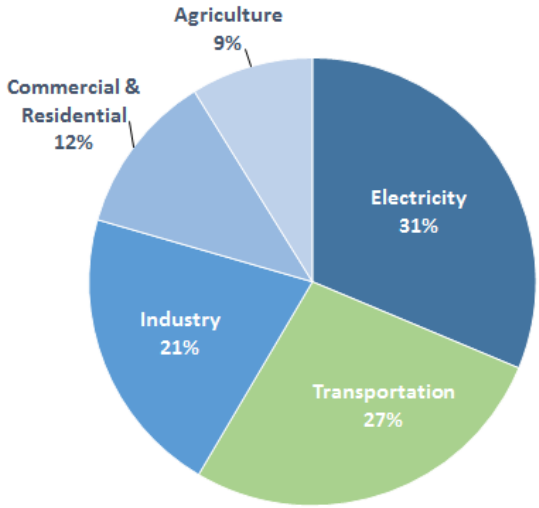
AASHTO offers the following points as evidence that global climate change is occurring:

- The global climate is becoming warmer. Average global temperatures have risen markedly in the last century.
- Global warming, if allowed to continue unchecked will cause severe and lasting impacts. Impacts such as rising sea levels, shrinking polar ice, warmer winters, and receding glaciers have been evident for some time and will become more severe if global warming continues.
- Global warming is caused in large part by human activities. Human activities and industries release greenhouse gas. These gasses accumulate in the atmosphere and prohibit heat from dissipating. Human activities also hamper the earth's ability to absorb greenhouse gas through actions such as deforestation.

The AASHTO report examines the root causes in great detail and the report asserts that hundreds of scientific studies that all point to the same outcome. AASHTO asserts that climate change is real and human factors are contributing to the problem (Figure 14.5).

Greenhouse gasses are determined to be the primary cause of climate change. In 2012, greenhouse gas emissions from transportation activities comprised 28 percent of total US greenhouse gas emissions, almost all of these emissions is the result of fossil fuel combustion.

FIGURE 14.5
TOTAL US GREENHOUSE GAS EMISSIONS BY ECONOMIC SECTOR IN 2013



Source: EPA

14.5.2 Climate change Mitigation Strategies

To assist in reducing global greenhouse emissions AASHTO offers the following strategies as templates for implementation:

- **Reduce total vehicle miles traveled (VMT)**
  - Expand transit services or other alternatives to single-occupant vehicles
  - Encourage land use that minimizes the number and length of auto trips
- **Congestion relief**
  - Recent research has demonstrated that the optimal speed for internal combustion engine emission reduction is 45 mph. Reducing congestion and allowing traffic to flow at 45 mph may have a positive impact on greenhouse gas emissions
- **Alter driver behavior**
  - The manner in which many people operate their vehicles is inefficient and can lead to an increase in greenhouse gas emissions. AASHTO recommends education campaigns that would help to promote more efficient vehicle operation.

AASHTO has also examined larger policy strategies to assist in lowering greenhouse gas emissions on a national stage. These strategies center around the increased research and development of alternative fuel sources, higher efficiency engines, and punitive tax policies to encourage motorists to reduce their VMT. These strategies are broken down in a greater amount of detail in the full AASHTO's *Primer on Transportation and Climate Change*, page 19 and 39.

14.5.3 Local Implementation of Climate Change Mitigation Strategies

The above recommended strategies and positions of AASHTO, FHWA, and the U.S. DOT complement other MAPA initiatives to promote environmental stewardship and create a more balanced multi-modal transportation policy, including:

- Local efforts to increase the efficiency of the transportation system are being implemented through signal coordination and other intelligent transportation system (ITS) projects.
- Congestion relief through intersection and corridor improvements are also taking place through construction efforts.
- MAPA is also supporting changes in existing land use policies to encourage more dense development.
  - Recently, large mixed use developments such as Midtown Crossing and Aksarben Village have opened to the public with positive reviews.
- MAPA is currently examining transit trips not taken in North Omaha in order to gain knowledge of how to better serve constituents in that area.
- The Metro Transit and the City of Omaha was awarded a grant to perform an alternatives analysis. This study resulted in the Central Omaha Alternatives Analysis, which analyzed potential transit options, including a the possibility of a

streetcar circulator system running from midtown to downtown Omaha and Bus Rapid Transit (BRT) from downtown Omaha to the Westroads Transit Center.
- MAPA offers carpool matching services through the *MetrO! Rideshare* program (available here: http://www.mapacog.greenride.com/). This service allows carpoolers to match up based upon common starting and ending points.
- MAPA coordinates with Live Well Omaha, Metro Transit, and the Douglas County Health department on the Little Steps Big Impact campaign to raise awareness about air pollution and improve air quality in the Omaha region. (discussed under section 14.6.1).

14.6 Environmental Streamlining & Mitigation

The protection and enhancement of the environment is a concern shared by most of the transportation community. Planning factors contained in MAP-21 provide the guidance that affords for the protection of the environment. MAP-21 identifies the need for integrating the planning and environmental processes and promotes a streamlined process for reviews and permitting.

The early integration of the planning and the environmental review and approval improves the likelihood that transportation projects and services can be implemented in a timely and environmentally sensitive manner.

The MAPA LRTP offers a coordinated effort to support the protection and enhancement of the environment and a streamlined process to achieve the environmental review set forth by the National Environmental Policy Act (NEPA). Although the integration of the planning and development process will vary for projects included in the LRTP, all efforts should be made to initiate the environmental assessment and to avoid, minimize, and mitigate possible environmental impacts as early in the project developmental phase as possible.

Furthermore, MAPA encourages the avoidance, minimization, and mitigation of environmental impacts. These are discussed below, as are the currently used mitigation practices.

14.6.1 Avoidance, Minimization, and Mitigation

During the planning process, environmental impacts (and therefore potential mitigation costs) can be reduced by avoiding or minimizing areas of potential environmental impacts.

Avoidance Practices

Where possible, this Long Range Transportation Plan will seek to avoid potential environmental impacts when planning, designing, and constructing federal infrastructure projects. Examples of possible avoidance activities include but are not limited to the following:

- Alignment Shifts- where possible the alignment of a proposed improvement can be shifted to eliminate possible impacts on protected areas.
    - Example: In the planning stages, wetlands are located adjacent to a proposed alignment. The design team is informed and the wetlands are found to be in a cut area. The alignment can be shifted slightly to avoid impacting this protected area.

- Grade Shifts- where possible the grade of a proposed improvement can be raised or lowered in order to eliminate possible impacts on protected areas.
    - Example: A significant archeological site is identified that warrants preservation in place. During project design it is determined that the entire area can be bridged; impacts are avoided by building the new roadway above the site, preserving it in place.

Minimization Practices

Minimization practices involve the creation or implementation of measures to reduce potential impacts to a protected area or resource. Examples of potential minimization practices could include but are not limited to the following:

- Alignment shifts
- Commitment to off-season construction to avoid habitat used by threatened and endangered species during breeding season
- Incorporation of drainage structures to prevent or control the release of excess runoff into protected water resources
- Construction of sound walls or depressing a section of roadway to minimize noise impacts where justified
- Create landscaping option that serve as a visual screen
- Limiting access to an expressway or interstate facility in order to minimize incompatible development

Mitigation Practices

Mitigation practices include compensation and enhancement measures. Compensation measures make an effort to replace land or facilities to offset damages or displacements due to construction. Examples of compensation activities include but are not limited to the following:

- Adding area to a public park or recreation area to replace lost facilities
- Providing off-site compensation (replacement) for lost wetlands

Enhancement measures add attractive, desirable features to allow a project to blend into the surrounding environment. Enhancements can occur when a project's impact cannot be avoided or minimized. Examples of enhancement measures include but are not limited to the following:

- Developing bicycle and pedestrian trails or paths adjacent to roadways
- Creation of a landscaped gateway boulevard into a community

- Including artistic works (i.e. sculpture, painting, etc.) on an overpass or adjacent to a roadway that requires widening
- Providing signage to recognize specific cultural, scenic, or historical resources
- Naturalizing the look of retaining walls to mimic stone outcroppings
- Creating wildlife overpasses or underpasses

14.6.2 Currently Utilized Mitigation Practices

In addition to the above strategies, when transportation improvement projects cannot avoid environmental consequences the project sponsor is required to mitigate the effect of the project on the environmental resource. In the MAPA region, the most common type of environmental mitigation revolves around wetlands mitigation.

Wetlands Mitigation Banks

The MAPA TMA is divided and bordered by rivers. The Missouri, Platte, and Elkhorn Rivers are all located in the MAPA TMA (Figure 14.1). In addition to these major waterways, the MAPA Region has an abundance of creeks, streams, lakes and ponds. These water resources are sometimes unavoidably impacted by transportation activities. In these cases, the impacted area must be mitigated for. The Nebraska Natural Resources District and the Iowa Department of Natural Resources both maintain wetlands mitigation banks that offer areas for mitigation activities to occur.

General wetlands mitigation banking practices allow for the constructing jurisdiction to add to an existing mitigation bank, restore a previously-existing wetland, or create a new wetland. Wetlands are often mitigated for in excess of the impacted on-project wetland. This means that if one acre of existing wetland is destroyed through construction, wetlands mitigation would result in the creation, enhancement or restoration of a total more than one acre.

Generally, when projects impact wetlands the constructing jurisdiction approaches willing landowners in order to purchase land to construct isolated wetland mitigation banks. Wetlands banks are located in both Iowa and Nebraska but are usually near to a past or current roadway construction project.

Context Sensitive Solutions

As defined by FHWA in 2007, Context Sensitive Solutions (CSS) is a collaborative, interdisciplinary approach that involves all stakeholders in providing a transportation facility that fits its setting. It is an approach that leads to preserving and enhancing scenic, aesthetic, historic, community, and environmental resources, while improving or maintaining safety, mobility, and infrastructure conditions.

CSS is based upon four key principles, which shape the way that projects should be developed with respect to their surrounding environment. The key principles factor in during the planning process, determine outcomes and are key factors in decision-making.

1. Strive towards a shared stakeholder vision to provide a basis for decisions;
2. Demonstrate a comprehensive understanding of contexts;
3. Foster continuing communication and collaboration to achieve consensus;
4. Exercise flexibility and creativity to shape effective transportation solutions, while preserving and enhancing community and natural environments.

The use of CSS results in a windfall of benefits in overall project performance. Some of these potential benefits include: improved predictability in project delivery, the ability to scope and budget the project, environmental stewardship, improved public/stakeholder feedback, increased partnering opportunities, improved opportunities for economic development, and many others.
For a complete breakdown of Context Sensitive Solutions including *NCHRP Report 642-Quantifying the Benefits of Context Sensitive Solutions*, please visit:

http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_642.pdf

This LRTP will seek to promote the use of CSS throughout the planning and design process for infrastructure projects inside the region.

Social and Environmental Justice

15. 1 Introduction

This chapter reviews the social and environmental justice aspects found within the MAPA TMA. Background is provided about pertinent federal legislation and applicable terminology. Furthermore, the methodology for performing environmental justice analysis is detailed, as is the results of the analysis.

15. 2 Social & EJ Background

In 1994, federal Executive Order 12898 directed every federal agency to make environmental justice part of its mission by identifying and addressing the effects of all programs, policies and activities on "minority populations and low-income populations." The order reinforces Title VI of the Civil Rights Act of 1964. The executive order requires all government agencies receiving federal funds to address discrimination as well as the consequences of all their decisions or actions that might result in disproportionately high and adverse environmental and health impacts on minority and low-income communities.

In 1997, the United States Department of Transportation (DOT) issued its Order to Address Environmental Justice in Minority Populations and Low-Income Populations (DOT Order). The DOT Order addresses the requirements of Executive Order 12898 and sets forth DOT's policy to promote the principles of environmental justice in all programs, policies and activities under its jurisdiction.

Executive Order 12898

"Each federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority populations and low-income populations."

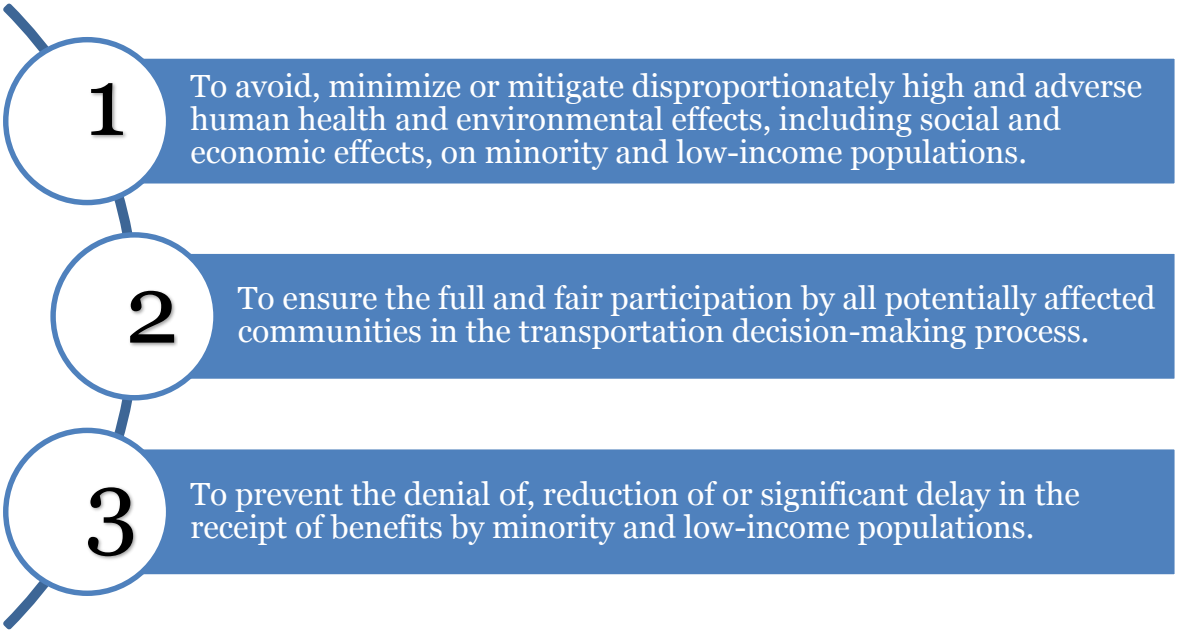
Title VI of the 1964 Civil Rights Act

"No person in the United States shall, on the ground of race, color or national origin be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any programs or activity receiving federal financial assistance."

Since the DOT Order was issued, the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) have been working with their state and local transportation partners to make sure that the principles of environmental justice are integrated into every aspect of their mission.

Figure 15.1 displays the three fundamental environmental justice principles.

FIGURE 15.1
FUNDAMENTAL EJ PRINCIPLES



15.3 TERMS

Low-Income

Means a person whose median household income is at or below the U.S Department of Health and Human Services poverty guidelines. For the purposes of this analysis 2010 US Census and 2012-2013 American Community Survey five year aggregate data on poverty level within the MPO area was used.

Minority

Means a person, as defined by the U.S. Bureau of Census, who is a: (1) Black American (a person having origins in any of the black racial groups of Africa); (2) Hispanic person (a person of Mexican, Puerto Rican, Cuban, Central or South American, or Spanish culture or origin, regardless of race); (3) Asian American or Pacific Islander (a person having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands); or (4) American Indian or Alaskan Native (a person having origins in any of the original people of North America and maintaining cultural identification through tribal affiliation or community recognition).

Environmental Sensitive Areas

Means areas where any readily identifiable groups of minority or low-income persons reside at a higher percentage than the TMA average.

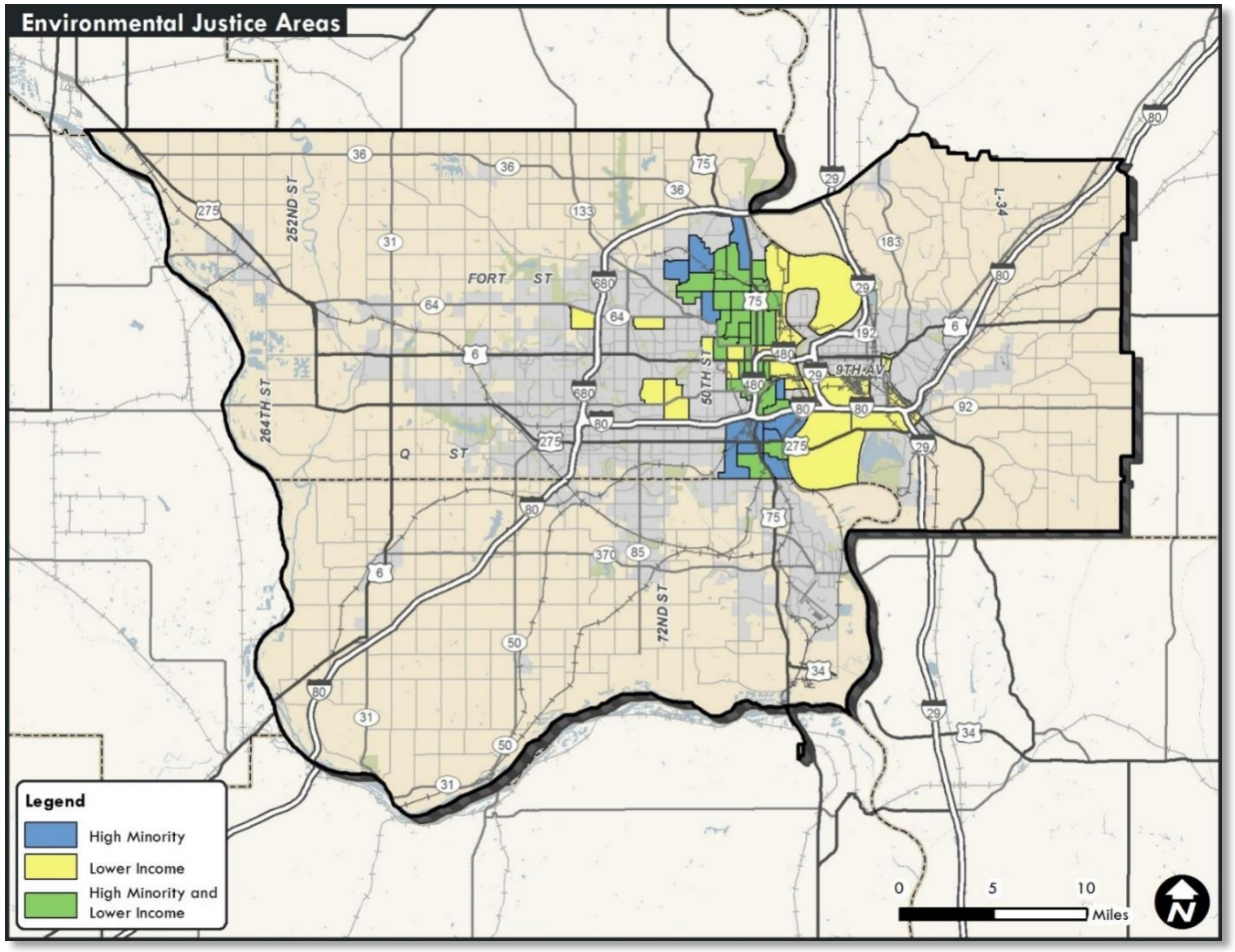
15.4 METHODOLOGY

15.4.1 IDENTIFYING ENVIRONMENTAL JUSTICE POPULATIONS

All analysis was done at the census tract level, using data from the 2010 US Census and 2012-2013 American Community Survey. The first step in the analysis looked at the MAPA Transportation Management Area (TMA) to evaluate whether there are areas with disproportionate minority and low-income populations. The percentage of the population within each census tracts identified as low-income or minority was compared to the TMA average, using a normal range of one-standard deviation above and below the average; 68 percent of all measurements fall within one standard deviation of the average. Those census tracts with a score greater than one standard deviation above the average have a concentrated minority or low income population.

Figure 15.2 below illustrates the locations of the aforementioned areas within the TMA. The map indicates census tracts with minority populations and low-income populations higher than the TMA average. The Figure highlights areas with high concentrations of minority or low-income populations as defined by percentages higher than one (1) standard deviation above the average. These census tracts were determined to be environmental justice areas of concern for evaluation purposes. It should also be noted that the analysis of future projects was done using current environmentally sensitive areas and does not include forecasts of changes in low-income and minority populations.

FIGURE 15.2
ENVIRONMENTALLY SENSITIVE AREAS DISTRIBUTED BY CENSUS TRACT



15.4.2 ANALYZING EXTERNALITIES, EQUITY, AND ACCESS

Methodology

The methodology utilized in this LRTP analysis is further discussed below. The Transportation Improvement Program (TIP) environmental justice analysis is more rigorous and summarized briefly in Figure 15.4.

Future projects were examined in relationship to their proximity to EJ areas and the transit shed (a ¼ mile buffer on each side for all bus routes). Metro projects and route changes were also considered and the funding for these taken into account in the final analysis. These analyses calculate the amount of funding that is spent on projects likely to benefit those living and working in environmentally sensitive areas. The focus on the bus system reflects the concentrations of those living in EJ areas who do not have cars, or do not have reliable vehicles to consistently access work and other services.

Proximity to EJ Areas Analysis

The environmentally sensitive areas were examined in relationship to the recommended future roadway projects for potential externalities that may affect these areas adversely. Projects were analyzed based on their proximity to the identified EJ areas. Figure 15.4 displays the map overlay of 2040 LRTP projects and EJ. Section 15.5 delineates the findings of this analysis.

Access to Public Transportation

Public transit service in the MAPA region provides much of its service in environmentally-sensitive areas. Almost all the residential land area in these areas is covered by the ADA required ¾ mile proximity buffer to transit lines. Figure 15.5 illustrates the transit shed.

FIGURE 15.3
TIP EJ ANALYSIS

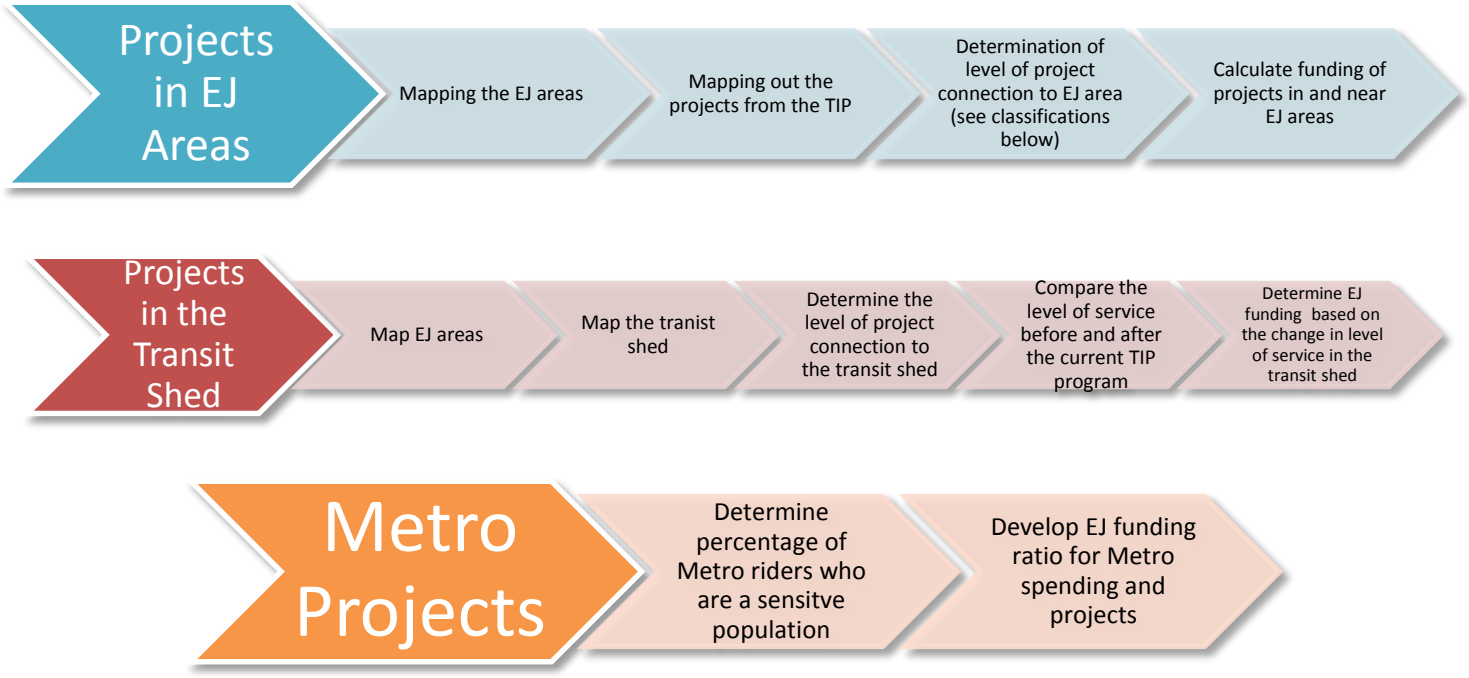


FIGURE 15.4
TRANSPORTATION PROJECT OVERLAY – ENVIRONMENTALLY SENSITIVE AREAS

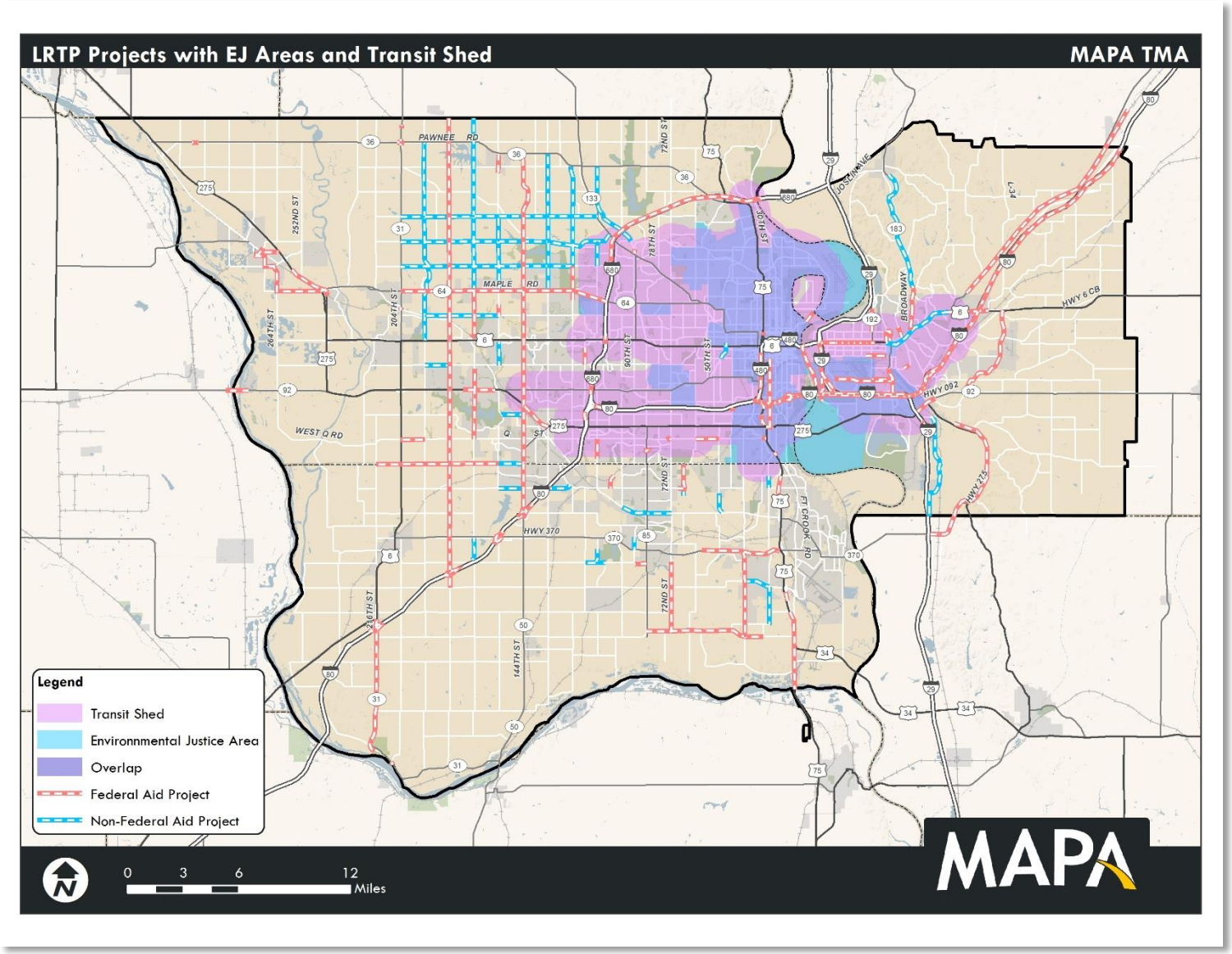
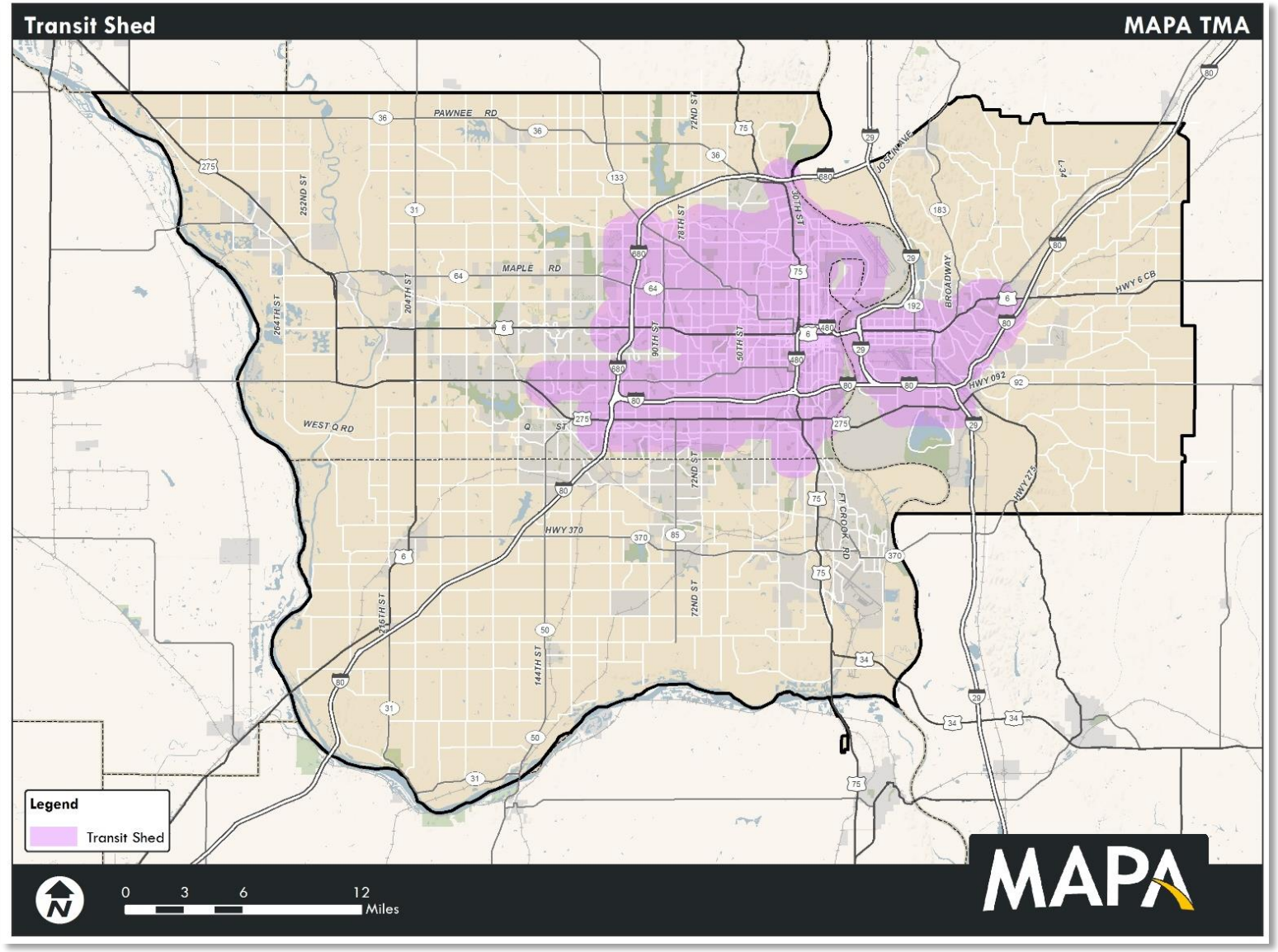


FIGURE 15.5
TRANSIT SHED



15.5 ANALYSIS & FINDINGS

15.5.1 DISTRIBUTION OF EQUITY

Proximity to EJ Areas Analysis Findings

MAPA staff completed the analysis described in the methodology section earlier (15.4.2). Many of the region's largest and most expensive capital projects fall partially in or near EJ areas, totaling over $ 228,973,133 in investment over the next 25 years near EJ communities.

Access to Public Transportation Findings

As shown in Figure 15.5, the 3/4 mile transit shed surrounding the transit lines at a 3/4 mile buffer provides service to a majority of the EJ areas, as well as connections to a large portion of the region. This is important as, transit services offer mobility to some of the most sensitive populations to access essential support services and potential employment.

The change in levels of service to the transit shed with the 2040 program of projects was not found to be significant.

The list of projects that are in or touch the transit shed are shown below in Table 15.2. Table 15.3 displays a summary of the EJ and non-EJ projects.

TABLE 15.1
MAPA LRTP PROJECTS IN ENVIRONMENTAL JUSTICE AREAS

Project Name	Lead Agency	Description	Total Cost	% EJ Funding	EJ Funding
23rd Avenue	Council Bluffs	4-Lane Divided with LTLs	$13,694,000	10%	$1,369,400
South Expressway Reconstruction - Phase 1	Council Bluffs	Reconstruction of Existing Roadway	$5,781,500	50%	$2,890,750
South Expressway Reconstruction - Phase 2	Council Bluffs	Reconstruction of Existing Roadway	$5,119,000	50%	$2,559,500
River Rd. Trail	Council Bluffs	Construction of multi-use recreational trail	$307,500	100%	$307,500
Iowa Riverfront Trail III	Council Bluffs	Construction of multi-use recreational trail	$286,250	81%	$143,125
Iowa 92 Resurfacing	Iowa DOT	Resurfacing	$1,559,976	78%	$1,216,781
Iowa 192 ACC Resurfacing	Iowa DOT	ACC Resurfacing	$3,000,000	50%	$1,500,000
I-80 Council Bluffs	Iowa DOT	Madison Avenue Interchange, ITS improvements, and ROW Management	$105,850,696	40%	$42,340,278
Iowa 165	Iowa DOT	Resurfacing of existing roadway	$636,725	10%	$63,673
I-80 Interstate Improvements	Iowa DOT	I-80/I-29/I-480 Interstate Reconstruction	$431,454,000	60%	$258,872,400
I-80 Bridge over Missouri River - Eastbound	Iowa DOT	Bridge	$68,000	100%	$68,000
I-80 Missouri River Bridge - Westbound	Iowa DOT	Bridge	$68,000	100%	$68,000
I-80 Missouri River to Cass County	Iowa DOT	Roadway	$1,400,000	20%	$280,000
US 275 Bridge Over Missouri River	Iowa DOT	Bridge	$760,000	100%	$760,000
Metro Rolling Stock	Metro	Transit Capital	$2,332,500	100%	$2,332,500
I-80: 24th Street - 13th Street	NDOR	Road Widening	$1,870,000	100%	$1,870,000
I-480: Bancroft - Dewey	NDOR	Resurfacing	$9,575,000	90%	$8,617,500
I-80/I-480 Bridges	NDOR	Bridge	$5,908,750	50%	$2,954,375
I-80/I-480/US-75 Interchange	NDOR	Bridge	$4,583,750	100%	$4,583,750

TABLE 15.1 (CONTINUED)
MAPA LRTP PROJECTS IN ENVIRONMENTAL JUSTICE AREAS

Project Name	Lead Agency	Description	Total Cost	% EJ Funding	EJ Funding
I-480: 20th Street - Missouri River Bridges (EB)	NDOR	Bridge	$4,583,750	100%	$4,583,750
I-480: 20th Street - Missouri River Bridges (WB)	NDOR	Bridge	$8,600,000	100%	$8,600,000
US-75: J Street & Gilmore Ave Bridge (SB)	NDOR	Bridge	$1,233,750	100%	$1,233,750
US-75: Off Ramp to N-64 (NB)	NDOR	Road Improvement	$3,395,000	100%	$3,395,000
US-275: 25th Street - 23rd Street	NDOR	ITS/Signalization	$1,970,000	100%	$1,970,000
24th Street Interstate Bridge	NDOR	Bridge	$7,570,000	100%	$7,570,000
I-80: I-480 to 24th Street	NDOR	Resurfacing	$4,800,000	100%	$4,800,000
US-75: Dynamic Message Signs, Omaha	NDOR	ITS/Signalization	$2,619,000	100%	$2,619,000
Q Street Bridge	Omaha	Bridge	$7,434,750	100%	$7,434,750
Omaha Signal Network - Infrastructure	Omaha	ITS	$12,076,800	100%	$12,076,800
24th Street Road Diet	Omaha	Roadway	$1,520,000	100%	$1,520,000
North Downtown Riverfront Pedestrian Bridge	Omaha	Bridge	$3,809,000	100%	$3,809,000
Total			**$658,633,947**		**$395,305,832**

TABLE 15.2
ENVIRONMENTAL JUSTICE TRANSIT PROJECTS

Project Name	Lead Agency	Description	Total Funding	% in Transit Shed	EJ Funding
West Broadway Reconstruction Phase V	Council Bluffs	Reconstruct 5 Lane Roadway	$4,196,017	100%	$4,196,017
South Expressway Reconstruction - Phase 1	Council Bluffs	4-Lane Viaduct and Roadway	$5,781,500	50%	$2,890,750
South Expressway Improvements - Phase 2	Council Bluffs	Reconstruct Shoulders, Pavement Repair, Drainage Improvements	$5,119,000	50%	$2,559,500
West Broadway Reconstruction, Phase II	Council Bluffs	Reconstruct 5 Lane Roadway	$4,731,739	100%	$4,731,739
West Broadway Reconstruction, Phase III	Council Bluffs	Reconstruct 5 Lane Roadway	$4,860,749	100%	$4,860,749
West Broadway Reconstruction, Phase IV	Council Bluffs	Reconstruct 5 Lane Roadway	$4,480,420	100%	$4,480,420
North Broadway:	Council Bluffs	3-Lane with TWLTL	$6,920,138	10%	$692,014
Harrison Street Reconstruction	Council Bluffs	Roadway	$5,433,750	100%	$5,433,750
W Graham Ave Reconstruction	Council Bluffs	Roadway	$4,347,500	100%	$4,347,500
Iowa Riverfront Trail III	Council Bluffs	Trail	$286,000	13%	$37,180
West Broadway Reconstruction - Phase 1	Council Bluffs	Roadway	$6,180,000	100%	$6,180,000
Interstate Utility Relocation	Council Bluffs	Roadway	$2,675,500	100%	$2,675,500
North 16th Street Reconstruction	Council Bluffs	Reconstruction of existing roadway	$5,625,000	81%	$4,556,250
23rd Avenue	Council Bluffs	4-Lane Divided with LTLs	$13,694,000	90%	$12,324,600
23rd Avenue Trail	Council Bluffs	Trail	$884,340	100%	$884,340
7th Street	Council Bluffs	3-Lane with TWLTL	$3,504,000	100%	$3,504,000
8th Street	Council Bluffs	4-Lane Divided with LTLs	$2,733,000	100%	$2,733,000
9th Avenue Viaduct and Approach	Council Bluffs	Reconstruction of viaduct	$39,906,000	100%	$39,906,000
I-80 Council Bluffs	Iowa DOT	Madison Avenue Interchange, ITS improvements, and ROW Management	$105,850,696	41%	$43,398,785

TABLE 15.2 (CONTINUED)
ENVIRONMENTAL JUSTICE TRANSIT PROJECTS

Project Name	Lead Agency	Description	Total Funding	% in Transit Shed	EJ Funding
I-29 Bridge at 9th Avenue - Northbound	Iowa DOT	Bridge	$250,000	100%	$250,000
I-29 Bridge at 9th Avenue - Southbound	Iowa DOT	Bridge	$250,000	100%	$250,000
I-480 Bridge over Missouri River	Iowa DOT	Bridge	$761,000	100%	$761,000
I-680 Bridge Over Missouri River - Eastbound	Iowa DOT	Bridge	$1,558,000	100%	$1,558,000
I-680 Bridge Over Missouri River - Westbound	Iowa DOT	Bridge	$1,558,000	100%	$1,558,000
I-80 Missouri River to Cass County	Iowa DOT	Roadway	$1,400,000	20%	$280,000
US 275 Bridge Over Missouri River	Iowa DOT	Bridge	$760,000	100%	$760,000
US 6 Reconstruction	Iowa DOT	Reconstruction of existing roadway	$6,000,000	56%	$3,360,000
Iowa 92 Resurfacing	Iowa DOT	Resurfacing	$1,559,976	58%	$904,786
US 6 Reconstruction	Iowa DOT	I-480 to 15th Street	$20,000,000	100%	$20,000,000
Iowa 165	Iowa DOT	Resurfacing of existing roadway	$636,725	90%	$573,052
Metro Rolling Stock	Metro	Transit Capital	$2,332,500	100%	$2,332,500
Ralston Viaduct	NDOR	Bridge	$10,355,000	100%	$10,355,000
I-80/680 'Q'-'L' CD Rds, Omaha (WB)	NDOR	Roadway	$13,446,000	100%	$13,446,000
I-80: 24th Street - 13th Street	NDOR	Road Widening	$1,870,000	100%	$1,870,000
I-680/US-6 Interchange DMS	NDOR	ITS/Signalization	$760,000	100%	$760,000
EB I-80 at I-680	NDOR	Bridge	$741,000	100%	$741,000
N-133: Thomas Creek Bridge North (SB)	NDOR	Roadway	$509,000	100%	$509,000
I-480: Bancroft - Dewey	NDOR	Roadway	$1,673,000	10%	$167,300
I-680: Fort Street to Missouri River	NDOR	Roadway	$155,000	13%	$20,150
I-80/I-480 Bridges	NDOR	Bridge	$4,800,000	50%	$2,400,000
I-480: 20th Street - Missouri River Bridges (WB)	NDOR	Bridge	$9,350,000	18%	$1,683,000

TABLE 15.2 (CONTINUED)
ENVIRONMENTAL JUSTICE TRANSIT PROJECTS

Project Name	Lead Agency	Description	Total Funding	% in Transit Shed	EJ Funding
120th Street	Omaha	Widen 2 Lane to 4 Lane Urban Divided with Turn Lanes	$12,959,190	45%	$5,831,635
24th Street Road Diet	Omaha	Reduce excess capacity with 4-lane to 3-lane road diet and facilitate multi-modal options.	$1,440,750	100 %	$1,440,750
Industrial Road	Omaha	Widen 4 Lane Divided Rural to 6 Lane Urban Divided with Turn Lanes	$11,803,340	22%	$2,596,735
Q St	Omaha	3-Lane with TWLTL	$8,049,575	100%	$8,049,575
W Maple Reconstruction	Omaha	Expand to 6 lane	$51,565,000	12%	$6,187,800
			$393,752,405		**$239,037,378**

TABLE 15.3
ENVIRONMENTAL JUSTICE SUMMARY TABLE

Project Type	Total Projects	Percent of Fed Funding	Percent of Population	Funding (1,000s)		
				EJ Funding	Non-EJ Funding	Total Project Cost
Non-Environmental Justice Projects	$719,742,615	45%	76%	$0	$719,742,615	$719,742,615
Environmental Justice Projects	$892,051,385	55%	24%	$634,343,211	$257,708,174	$892,051,385
Total	**$1,611,794,000**	**100%**	**100%**	**$634,343,211**	**$977,450,789**	**$1,611,794,000**

Although Table 15.1 has the full listing of EJ projects, the following major projects are highli420ghted as significant investments into environmentally sensitive areas:

I-80 Expansion Projects, Missouri River – 60th Streets

NDOR, in coordination with Iowa DOT, is in the process of widening the I-80 crossing of the Missouri River and plans to do a series of projects to improve traffic flow west to 60th Street. This has been a bottleneck that has been identified in the MAPA Congestion Management Process for years as a severe issue in the MAPA TMA, and is highly utilized by commuters crossing the state line to go to and from work. These projects represent a total cost of over $250 million. In addition to relieving congestion for local traffic, this will also assist with reducing pollution for the environmentally sensitive areas.

Council Bluffs Interstate Reconstruction

The Iowa DOT has begun a massive reconstruction of the Interstate System in the Council Bluffs area. The majority of these projects occur in environmentally sensitive areas. The total project costs in these areas approach $ 649.3 million, and represent the largest investments in the MAPA 2040 LRTP. The improvement in traffic flow and access to adjacent employers will provide substantial economic benefits to this area.

9th Avenue Viaduct

The City of Council Bluffs has long-range plans to construct a new viaduct across the railroad lines on 9th Avenue between 8th and 19th Streets, which is along the edge of an environmental justice area. This will remove traffic impediments on 9th Avenue and provide immediate safety benefits. By benefiting the railroad, it also strengthens Council Bluffs as a rail hub, which provides many good jobs for the metro area.

Kennedy Freeway (US-75) Widening

NDOR plans to rebuild and widen the Kennedy Freeway to four lanes in each direction between Highway 370 in Sarpy County and the I-80/US-75/I-480 junction in Douglas County. These projects would be built in existing right-of-way and not negatively impact the surrounding area, but will provide improved traffic flow and attractiveness

for nearby businesses and residents. These projects entail an investment of approximately $115 million.

In addition to the capital projects (see Table 15.2), there are many projects that are not location-specific that provide enhancements to the environmentally sensitive portions of the TMAMAPA. Due to the fact that these areas are located within fully developed portions of the region, most local projects in these areas tend to be of this nature. These projects do not appear in Figure 15.2 and are usually not included individually in the project listing (unless they are currently part of the MAPA TIP), although the metro area will spend hundreds of millions of dollars on these types of projects in the coming 25 years. Here are the categories of these projects, many of which occur in environmentally-sensitive areas:

- Operations and Maintenance
- Intersection and Interchange Improvements
- Safety-Related Projects
- Resurfacing, Restoration, and Rehabilitation
- Technology and signal coordination
- Bicycle-Pedestrian and Complete Streets improvements

15.5.2 Negative Externalities

MAPA did not find any reasonable negative impacts that would result from the proposed roadway projects listed in the plan. Furthermore, the NEPA process provides significant protections to these populations. For instance, analysis of cultural and historical resources in addition to the soci-economic standing of the area, is required to identify impacts that are adverse and disproportionate to environmental justice populations. In addition, noise studies are required to determine whether additional noise created from the project will necessitate noise reduction measures. Impacts to the transit shed and the mobility of those who depend on public transit are also considered when analyzing the program of projects to determine any potential decrease in the level of service within the transit shed and EJ areas.

15.5 Conclusion

Based on the analysis presented above, environmentally sensitive populations are not being adversely affected by the MAPA 2040 Long Range Transportation Plan program of projects. No projects are anticipated to have significantly negative impacts on the EJ populations. Furthermore, the MAPA region plans to invest over $892 million over the coming 25 year in EJ areas. This includes some of the region's most significant projects in the LRTP, including the Council Bluffs Interstate Reconstruction and the reconstruction and widening along I-80 and Kennedy Freeway. Projects benefiting EJ populations represent nearly 40% of the total investment in capital projects in the Region. The total population in environmentally sensitive areas is approximately 180,000, which constitutes 24% of the total population in the MAPA TMA (769,108).

The two to one ratio of spending to population for EJ areas shows a clear investment in the improvement of mobility for those living in EJ areas.

This becomes even more evident when it is taken into account that projects that are not specifically identified in the LRTP by location, such as intersection and safety improvements, signal coordination projects, and operations and maintenance projects, which benefit the overall transportation network, including EJ areas. In addition, the public transit system provides its highest levels of service to riders in the EJ areas, and through travel time analysis it has been determined that the current level of projects does not change the level of service for those who are transit dependent. Therefore, this LRTP's negative impacts are not adversely skewed toward non-minority and non-low income populations, and the LRTP can be said to be in compliance with federal regulations concerning environmental justice.

Safety

16.1 Overview

Safety is an important consideration as a part of MAPA's transportation planning process. To "Increase Safety & Security"

16.2 AASHTO Strategic Highway Safety Plan

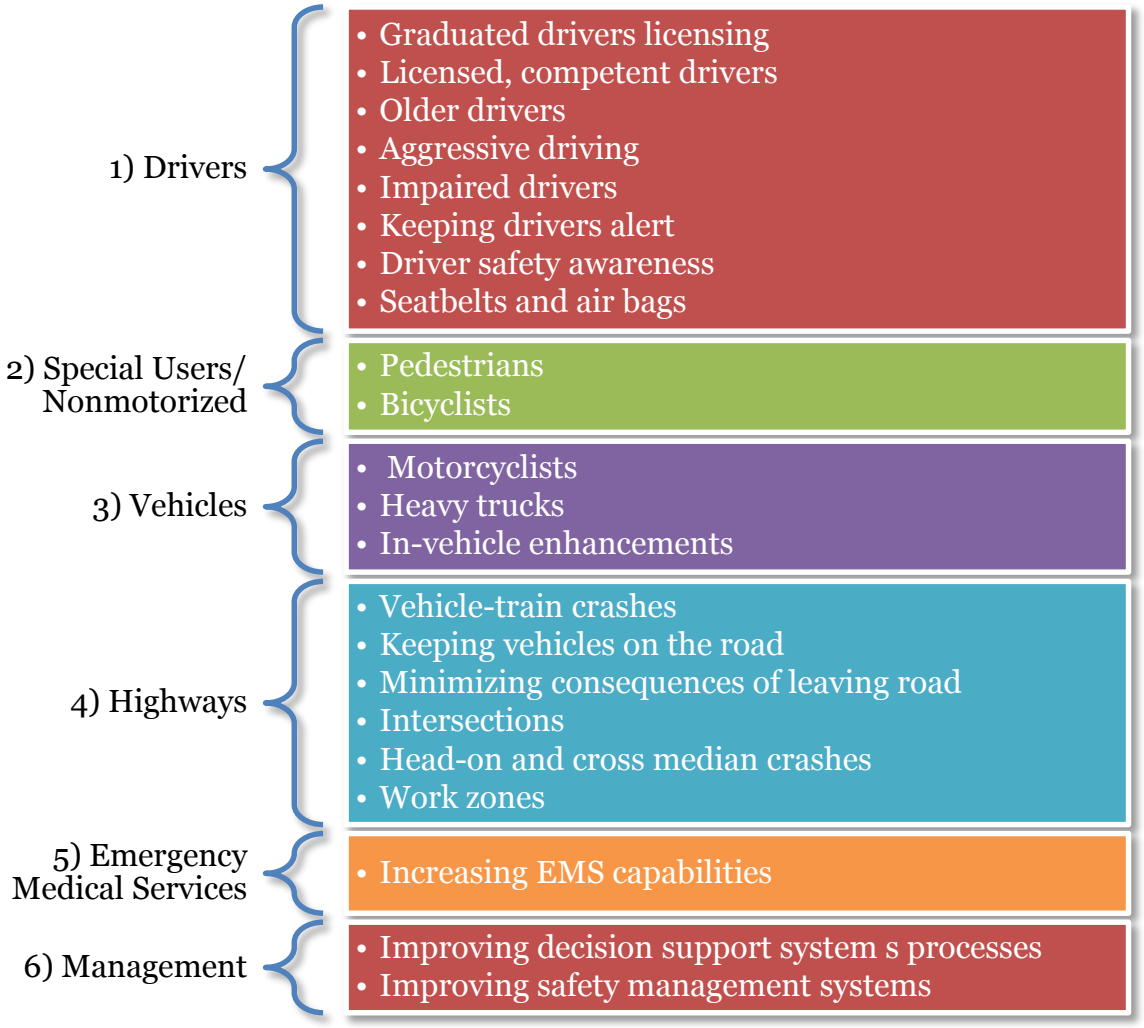
First prepared in 1997 and revised in 2005 and 2010, the American Association of State Highway Transportation Officials (AASHTO) Strategic Highway Safety Plan (SHSP) presents a comprehensive approach to reduce vehicle-related fatalities and injuries on the nation's highways. Created with the cooperation of all levels of government (federal, state, and local), coupled with public and private input the SHSP focuses on 22 specific safety challenges or "emphasis areas" (EA's). Strategies addressed in these EA's seek to improve safety in all areas of transportation. Detailed guidance for the implementation of these strategies is contained in the NCHRP Report 500 series of Guidance for Implementation of the AASHTO SHSP (located here: divided into the six categories http://safety.transportation.org/guides.aspx).

The 6 categories and 22 emphasis areas as outlined in the AASHTO SHSP are displayed in Figure 16.1.

Federal Planning Regulations

23 CFR 450.322 (h) requires: "The metropolitan transportation plan should include a safety element that incorporates or summarizes the priorities, goals, countermeasures, or projects for the MPA contained in the Strategic Highway Safety Plan required under 23 U.S.C. 148, as well as (as appropriate) emergency relief and disaster preparedness plans and strategies and policies that support homeland security (as appropriate) and safeguard the personal security of all motorized and non-motorized users."

FIGURE 16.1
AASHTO SPECIFIC SAFETY EMPHASIS AREAS



Source: AASHTO Strategic Highway Safety Plan, 2005

The full plan (located here: http://safety.transportation.org/doc/Safety-StrategicHighwaySafetyPlan.pdf) includes general strategies and development plans for each of the above emphasis areas.

This plan serves as the basic template and guidance document for State Strategic Highway Safety Plans.

16.3 NEBRASKA STRATEGIC HIGHWAY SAFETY PLAN: GUIDANCE FOR 2012 – 2016

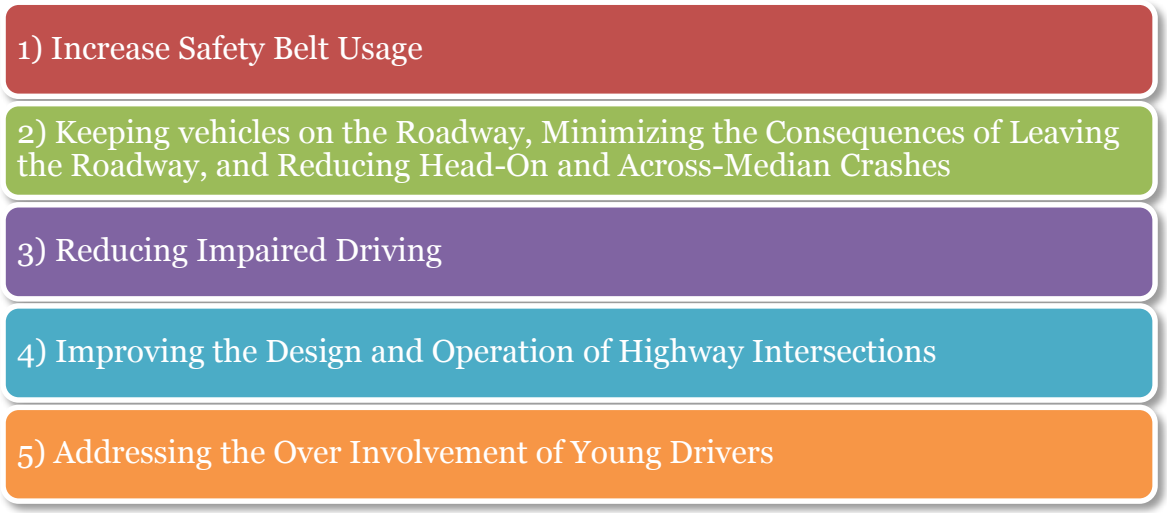
The Nebraska Department of Roads in cooperation with their partners in the Nebraska Interagency Safety Committee created the Nebraska Strategic Highway Safety Plan in order to address the frequency, rate, and factors contributing to fatal and serious injury crashes in Nebraska. The plan was developed through the coordinated effort of the

public and 180 safety professionals representing education, enforcement, engineering and EMS services.

The Federal Highway Administration mandated that states address three key objectives in their SHSP. First, States must set a safety goal; states must then identify a short list of the highest priority safety strategies as listed in the AASHTO SHSP; finally, states must analyze their safety investment practices and determine the best way to achieve their safety goal.

Based upon the above requirements the Nebraska Interagency Safety Committee and NDOR selected the 5 focus areas listed in Figure 16.2:

FIGURE 16.2
NEBRASKA FOCUS AREAS



Source: Nebraska Strategic Highway Safety Plan Guidance for 2012-2016 (http://www.transportation.nebraska.gov/traffeng/shsp/shsp-current.pdf)

By focusing the NSHSP on these five factors NDOR was able to reduce the strategy set from over 500 to around 160 directly related safety strategies. From these 160 strategies the Nebraska Interagency Safety Committee further focused the list to include 20 Critical Strategies in five areas (Figure 16.3).

FIGURE 16.3
20 CRITICAL SAFETY STRATEGIES (NEBRASKA)

Education

- Encourage parental involvement and remove diversion programs to discourage underage drinking and driving
- Consider required server training and perform general public education campaigns
- Enhance public education to groups with lower than average restraint use rates and host community inspections for child safety seat installations
- Conduct public information campaigns focused on young drivers
- Expand driver training and improved training materials
- Develop community coalitions programs focused on young drivers

Data Systems

- Identify intersections with a high number of fatal and disabling injury crashes

EMS

- Expand involvement of EMS personnel in child safety seat installation inspections

Engineering

- Keep vehicles in their lane
- Eliminate shoulder drop offs
- Install median barriers on roads with narrow medians
- Install, update and improve attenuation systems and guardrail
- Provide access management
- Increase intersection sight distance
- Increase driver awareness when approaching an intersection
- Utilize non-conventional intersection designs

Enforcement

- Employ coordinated and publicized DUI checkpoints and patrols
- Enforce Zero Tolerance laws for underage drivers
- Perform compliance checks of alcohol retailers to reduce sales to underage persons
- Perform publicized seatbelt enforcement campaigns
- Adopt a primary safety belt law and stronger penalties
- Use targeted speed enforcement on intersection approaches, including automated enforcement
- Enhance existing GDL system
- Conduct enforcement campaigns focused on young drivers

Source: Nebraska Strategic Highway Safety Plan Guidance for 2012-2016 (http://www.transportation.nebraska.gov/traffeng/shsp/shsp-current.pdf)

State of Nebraska seeks to utilize the above strategies in order to achieve the following goal:

Reduce the statewide fatality rate by 45%, from a rate of 0.95 fatalities per 100 million vehicle miles of travel (VMT) in 2011 to a rate of 0.5 in 2016 and move "Toward Zero Deaths"

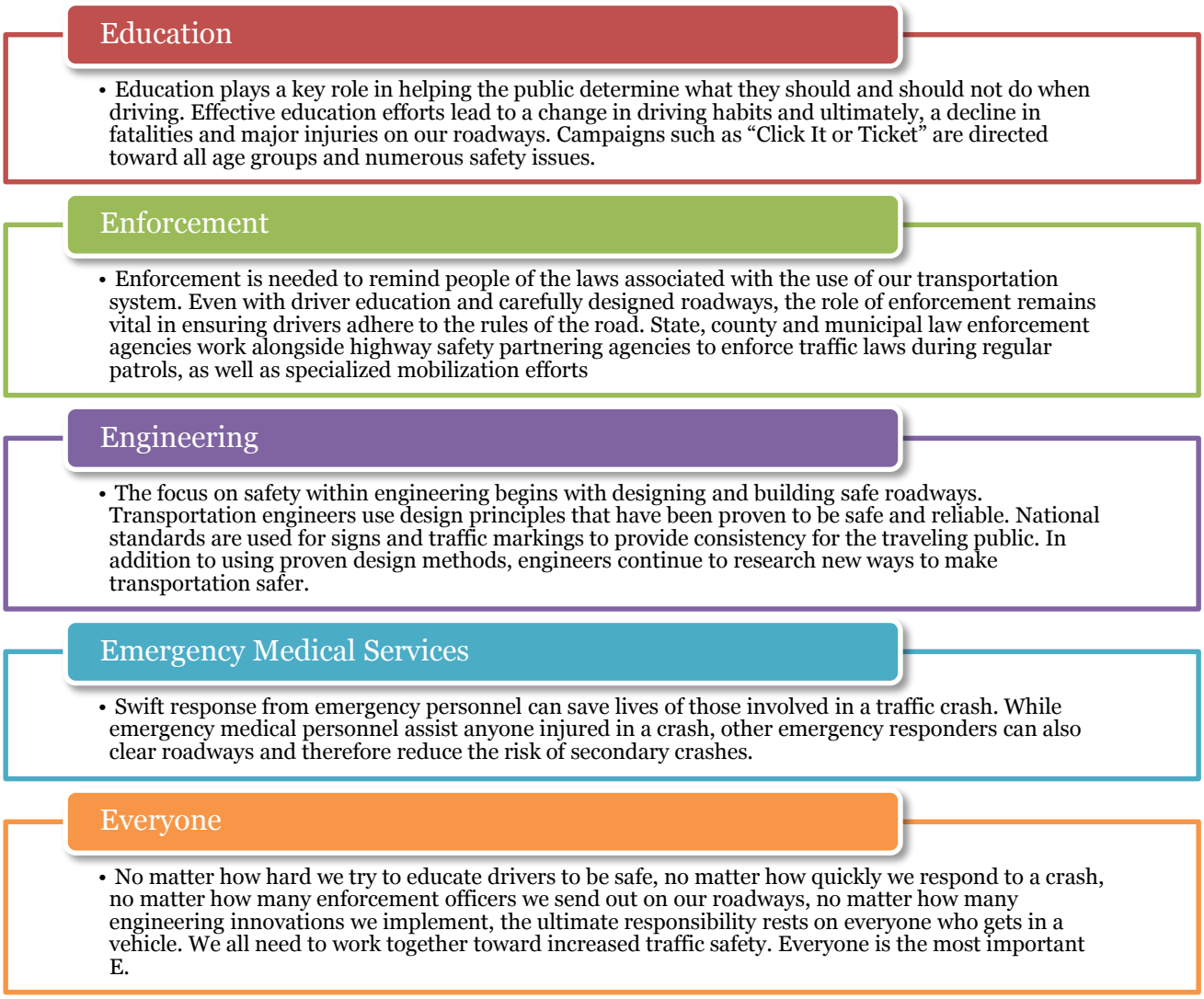
Achieving this reduction would result in 80 lives saved per year. The full Nebraska Strategic Highway Safety Plan: Guidance for 2012-2016 is available here:
http://www.transportation.nebraska.gov/traffeng/shsp/shsp-current.pdf

16.4 IOWA STRATEGIC HIGHWAY SAFETY PLAN: SEPTEMBER 2013-2016

The Iowa Department of Transportation in coordination with their safety stakeholders created a Strategic Highway Safety Plan in 2013. This plan is mandated by MAP-21. Iowa's stated goal in this plan is to reduce the death toll on the state's highways by 15% by the year 2020.

The Iowa DOT has organized its strategies under a framework called "The Five E's", corresponding to different categories of safety professionals involved in traffic safety initiatives. A summary of each of the five E's is included in Figure 16.4

FIGURE 16.4
SUMMARY OF IOWA'S FIVE E'S



Source: Iowa Strategic Highway Safety Plan July 1, 2013 – December 31, 2016

The Iowa Strategic Highway Safety Plan is available here:
http://www.iowadot.gov/traffic/shsp/pdf/SHSP.pdf

16.5 SYNTHESIZED SAFETY GOALS AND STRATEGIES FOR THE MAPA TMA

As a bi-state jurisdiction, the MAPA TMA seeks to employ all of the above strategies from each of the respective Strategic Highway Safety Plans. MAPA has combined the two plans to establish the following TMA Safety Goals for this Long Range Plan (Figure 16.5).

FIGURE 16.5
SUMMARY OF MAPA SAFETY GOALS

Increase Safety Belt Usage	Enhance public education to groups with lower than average restraint usage rates.
	Support and publicize seatbelt enforcement campaigns (e.g., click-it or ticket campaigns).
	Advocate primary safety belt laws and stronger penalties.
	Support the expanded involvement of EMS personnel in child safety seat installation inspections.
Keeping Vehicles on the Roadway, Minimizing Consequences of Leaving the Roadway, Reducing Head-On and Across Median Crashes	Support engineering based solutions (e.g., pave shoulders, eliminate shoulder drop offs, install median barriers on roads with narrow medians, improve attenuation systems and guardrails, etc.)
Reduce Impaired Driving	Support the employment of publicized DUI checkpoints and patrols.
	Support compliance checks of alcohol retailers to reduce sales to underage persons.
	Encourage the removal of diversion programs to discourage drinking and driving
Improve the Design and Operation of Intersections	Provide access management to freeway, highway and interstate highways.
	Increase sight distance at intersections.
	Increase driver awareness when approaching an intersection.
	Utilize nonconventional intersection designs (e.g., roundabouts).
Address the Over Involvement of Young Drivers in Fatal Crashes	Encourage parental involvement and the removal of diversion programs to discourage underage drinking & driving.
	Support public information campaigns focused on young drivers.
	Expand driver training and improved training materials.
	Support the development of community coalitions focused on young drivers
	Support the enforcement of zero tolerance laws for underage drivers.
	Support the enhancement of existing Graduated Drivers License programs in both states.
	Support and publicize enforcement campaigns focused on young drivers.
Improve Data Resources	Support enhanced data availability and use by all stakeholders.
	Assist in identification of intersections with a high number of fatal and disabling crashes.

16.6 Existing Regional Programs

16.6.1 - 2011 Traffic Incident Management Plan

The Iowa Department of Transportation, the Nebraska Department of Roads, MAPA, local jurisdictions, law enforcement, EMS, and other interested parties have created a (TIM) Plan for the MAPA region. This new TIM Plan contains matrices and routing maps that identify the acceptable (preferred) reaction to a variety of incidents on the region's interstate highway system.

Incidents are categorized by their severity in terms of the duration of the closure and the number of lanes affected. Based upon these conditions, a responder will implement the preferred response that is listed in the TIM Plan. Typically, there are primary and at least two secondary detour routes for a given lane closure.

The TIM Plan also lists contact information for various responders, NDOR, IDOT, and Public Works personnel who may be required to assist in the implementation of the detour routes. The structure of the TIM Manual allows for a responder to navigate from the main screen to a specific detour plan quickly from a laptop or mobile device on the scene of an incident.

In addition to providing assistance for implementing detours the TIM Plan also helps to coordinate training and response protocol across agencies and states. This coordinated and informed response allows for faster more effective and safer incident management. Continued coordination between the project partners continues on a monthly basis to monitor the effectiveness of policies and procedures identified within the TIM Plan.

16.6.2 Metro Area Motorist Assist Program (MAMAP)

Metro Area Motorist Assist is a program that provides responsive assistance to motorists on the freeway and principal arterial system in the Omaha/Council Bluffs Metropolitan Area. MAMAP volunteers operate three well equipped emergency response vans during the morning and evening rush hours on the freeway system in the metro area. The program operates during rush hours on the freeway system to minimize the impact of incidents during peak traffic periods.

Trained MAMAP volunteers provide a variety of services including:

- Servicing disabled vehicles with fuel, oil and other fluids
- Helping with flat tires
- Clearing debris from driving lanes
- Arranging to have vehicles towed
- Providing jump starts
- Giving advice and directions

MAPA administers this program with the assistance of AAA Nebraska, the Nebraska Department of Roads, the Iowa Department of Transportation, and the Nebraska Office of Highway Safety.

Further information of MAMAP can be found here: http://mapacog.org/metro-area-motorists-assist-mama. Assistance regarding the MAMAP is available at the following number 1-800-525-555 or *55 on your mobile phone.

16.6.3 Prioritization of Regional Funding

Safety-related measures have been incorporated into MAPA's project selection criteria for both Surface Transportation Program (STP) funding and Transportation Alternatives Program (TAP) funding. For STP funding the Crash Severity Index (CSI) and Crashes per Million vehicles as measures of existing safety issues at proposed project locations. These factors help MAPA's Project Selection Committee (ProSeCom) prioritize projects in areas that to have identified safety issues.

Additionally, many safety factors are incorporated into MAPA's Transportation Alternatives Program (TAP) funding. Principally, proposed bikeway and pedestrian facilities that enhance the physical separation of cyclists and pedestrians from motor vehicles are awarded more points. Additionally, the posted speed limit and future traffic volumes of project corridors are considered within the prioritization model as well. Finally, the density of pedestrian-involved crashes within in a project corridor serves as a measure of safety for non-motorist users of the transportation network as well. These factors combine to provide a detailed picture of how a project may reduce or mitigate conflicts between modes and enhance the safety of project corridors.

16.7 MAPA TMA Traffic Collision Statistics 2011 – 2013

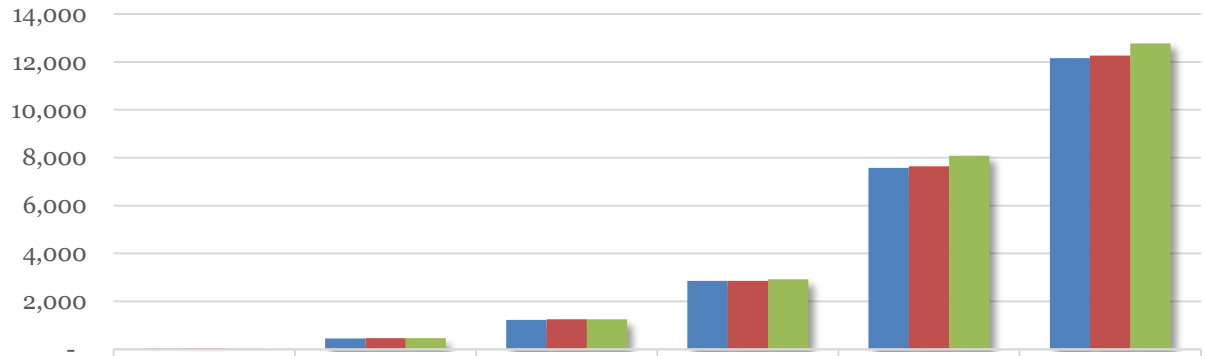
The States of Nebraska and Iowa do not categorize collisions in the same manner. This causes difficulty in comparing statistics across state lines. Therefore, traffic collision statistics have been summarized to the KABCO standard within this plan. The KABCO scale is a measure of the functional injury level of the victim at the crash scene. The codes are selected based on the on-site judgment of the investigating police officer completing the crash report. Each state utilizes this scale to describe the crash data it collects and draft Performance Measurement guidance developed under MAP-21 has proposed reporting requirements consistent with the KABCO scale.

Levels within the KABCO scale are based on the following characteristics of a crash:

- K – Fatal Crash
- A – Incapacitating Injury (serious)
- B – Non-Incapacitating Injury (moderate)
- C – Possible Injury (minor or undetermined injury)
- O – Property Damage Only (no injuries)

Accident rates in the MAPA TMA have been somewhat unstable recently. Fatal accidents have been increased slightly in recent years while the total number of accidents has fluctuated. During this same period, injury crashes have increased from 4,540 to 4,651. Figure 16.6 below the total number of traffic collisions inside the TMA from 2011 through 2013 (the most recent year for which full annual data is available).

FIGURE 16.6
TOTAL TRAFFIC COLLISIONS IN MAPA TMA (2011-2013)

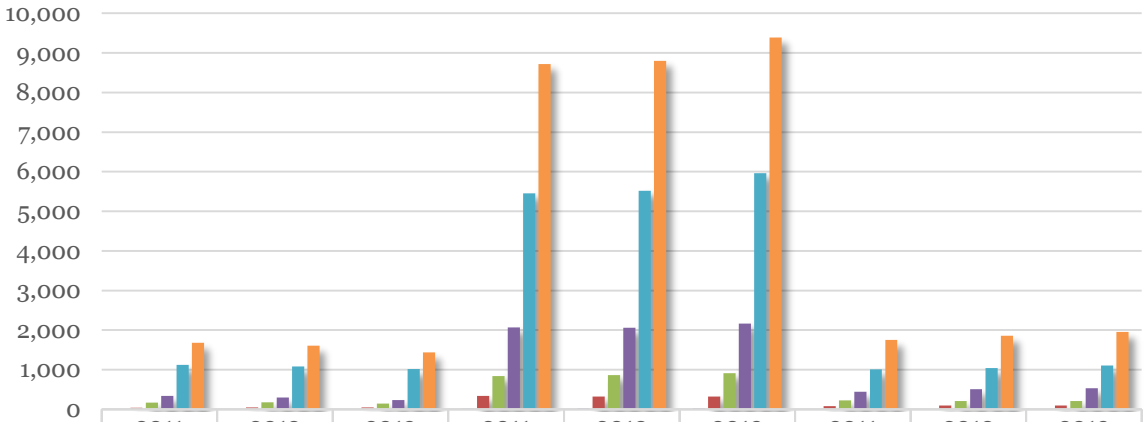


	K: Fatal Accident	A: Incapacitating Injury	B: Non-Incapacitating Injury	C: Possible Injury	O: Property Damage Only	Total
2011	38	456	1,233	2,851	7,580	12,158
2012	47	460	1,253	2,863	7,641	12,264
2013	41	462	1,260	2,929	8,085	12,777

Source: MAPA Traffic Count 2014

Figure 16.7 (next page) shows a breakdown of these same crash statistics by county. Fatal crashes have trended downward in the Iowa portion of the MAPA TMA while fatal crashes in Douglas and Sarpy County have increased or remained level (respectively). Similarly, total injury crashes have declined in Pottawattamie County (percentage change from 2011 to 2013 of a 14% decrease) while increasing in both Douglas (a 7.6% increase between 2011 – 2013) and Sarpy County (11.2% increase between 2011 – 2013).

FIGURE 16.7
TOTAL TRAFFIC COLLISIONS IN MAPA TMA BY COUNTY (2011-2013)



	Pottawattamie			Douglas			Sarpy		
	2011	2012	2013	2011	2012	2013	2011	2012	2013
K: Fatal Accident	9	6	5	21	33	28	8	8	8
A: Incapacitating Injury	40	44	44	340	322	321	76	94	97
B: Non-Incapacitating Injury	172	179	142	840	867	911	221	207	207
C: Possible Injury	340	298	230	2,071	2,056	2,168	440	509	531
O: Property Damage Only	1,122	1,083	1,019	5,449	5,517	5,959	1,009	1,041	1,107
Total	1,683	1,610	1,440	8,721	8,795	9,387	1,754	1,859	1,950

Source: MAPA Traffic Count 2014

16.8 RECENT LEGISLATION

16.8.1 TEXTING WHILE DRIVING

During 2010 both the Iowa and Nebraska State Legislatures passed bills banning texting while driving. Iowa House File 2456 (available here: http://www.votesmart.org/billtext/29106.pdf) specifies that texting while driving in Iowa is a secondary offense. A graduated enforcement system in this law will not allow teens from 14-18 years of age to use their mobile devices in any capacity (including to place and receive calls); fines for using a mobile device while driving in this age bracket include a $50.00 ticket plus court costs. Those over 18 years of age are prohibited from texting while driving; fines include a $30.00 ticket plus court costs.

Nebraska LB 945 (http://uniweb.legislature.ne.gov/FloorDocs/Current/PDF/Intro/LB945.pdf) also specifies that texting while driving in Nebraska is a secondary offense. This law bans all drivers from texting while driving. Violations of this law are punishable by a $200.00 fine and the loss of three points on the offender's driver's license; second offense results in a $300.00 fine, third or greater offense $500.00. Nebraska also has a previous law (effective July 1, 2008) prohibiting those under 18 from placing and receiving calls while driving.

Security

17.1 Introduction

Threats to the transportation infrastructure system have become more apparent in recent decades. An attack on major transportation facilities could have adverse effects on the national economy even after the initial shock of the attack has passed. The transportation sector has multiple segments that may be targeted by terrorist activity. Airports, harbors and transit facilities, as well as major bridges and roadways are susceptible to terrorist activities. The best way to combat the effectiveness of an attack is to prepare for the possibility of attack by coordinating a response effort.

This plan will seek to continue and enhance local preparedness in planning efforts by:

- Providing resources for transportation-related homeland security projects that would be identified through the regular transportation planning process, including those aimed at prevention, mitigation, response and recovery
- Providing resources to improve security at Intermodal facilities, airports and ports, and military facilities
- Providing resources to expedite urgent highway and public transportation security projects to address an imminent threat or to repair damage caused by a terrorist attack, including structural hardening, relocation of roads form sensitive areas, property acquisition to create secure zones or replace or repair damages or destroyed structures as a result of a terrorist attack
- Increased coordination between transportation and national security officials to identify potential security issues and needed infrastructure investments

MPO Planning Regulations

23 CFR 450.322 (h) requires: "The metropolitan transportation plan should include a safety element that incorporates or summarizes the priorities, goals, countermeasures, or projects for the MPA contained in the Strategic Highway Safety Plan required under 23 U.S.C. 148, as well as (as appropriate) emergency relief and disaster preparedness plans and strategies and policies that support homeland security (as appropriate) and safeguard the personal security of all motorized and non-motorized users."

Documents Referenced Within This Chapter

Local Emergency Operations Plans

Regional Transportation Incident Management (TIM) Plan

National Infrastructure Protection Program (NIPP)

National Incident Management System (NIMS)

National Response Framework (NRF)

- Encouraging the use of monitoring systems (Intelligent Transportation Systems-ITS) to check the status or condition of key surface transportation facilities

17.2 Local Coordination for Disaster Preparedness

17.2.1 Nebraska

Douglas County Emergency Management Agency

The Douglas County Emergency Management Agency (DCEMA) was established to help coordinate local response to disasters. The Douglas County Emergency Management Agency is the primary response agency for Douglas, Sarpy, and Washington Counties in Nebraska.

Emergency Operations Center

The DCEMA maintains a dedicated emergency operations facility in the bottom two floors of the Omaha Civic Center. The EOC is a 25,000 square foot facility containing a main communications room, briefing and planning room, a radio room as well as a kitchen facility. Immediately adjacent to the EOC is a back-up 911 call center. The EOC is manned daily by three full time employees but has the capacity to support up to 120 people during times of crisis. There are over 50 dedicated phone lines and two message systems linked to this facility.

The facility has the capacity to be self-sufficient for an unknown period of time. The EOC is linked to a back-up power source and has kitchen facilities to support those working in the EOC during an emergency.

Local Emergency Operations Plan

The Douglas County Local Emergency Operations Plan (LEOP) was written in 2010 to outline the procedures to be followed when the region is confronted with an emergency incident. The LEOP outlines the local government's response based on the various sectors of governmental control (i.e. police, fire, health, public works, etc.). The Douglas County Local Emergency Operations Plan is available here:
http://www.nema.ne.gov/content/e_plan_pdf/Douglas_eLEOP.pdf

Nebraska Emergency Management Agency

The State of Nebraska also operates the Nebraska Emergency Management Agency (NEMA) which will help to coordinate disaster prevention and recovery on intrastate and interstate levels. NEMA maintains a website with all applicable information, located here:
http://www.nema.ne.gov/

17.2.2 IOWA

Pottawattamie County Multi-Hazard Emergency Operations Plan

The Pottawattamie County Multi-Hazard Emergency Operations Plan (EOP) was revised in October 2004. The EOP focuses on prevention of disasters along with minimizing the vulnerability of Pottawattamie County to disasters. Enhancing Homeland Security is also a key feature of the EOP. The EOP outlines key facilities and responses to all manner of emergency situations including Highway-related Transportation incidents

Iowa Homeland Security and Emergency Management Division

Statewide preparedness and prevention for emergency incidents in Iowa are covered by the Iowa Homeland Security and Emergency Management Division (IHSEMA). IHSEMA works to coordinate with local jurisdictions, other states, and the federal government. IHSEMA maintains a website located here:
http://www.iowahomelandsecurity.org/

17.2.3 REGIONAL EVACUATION PLANS

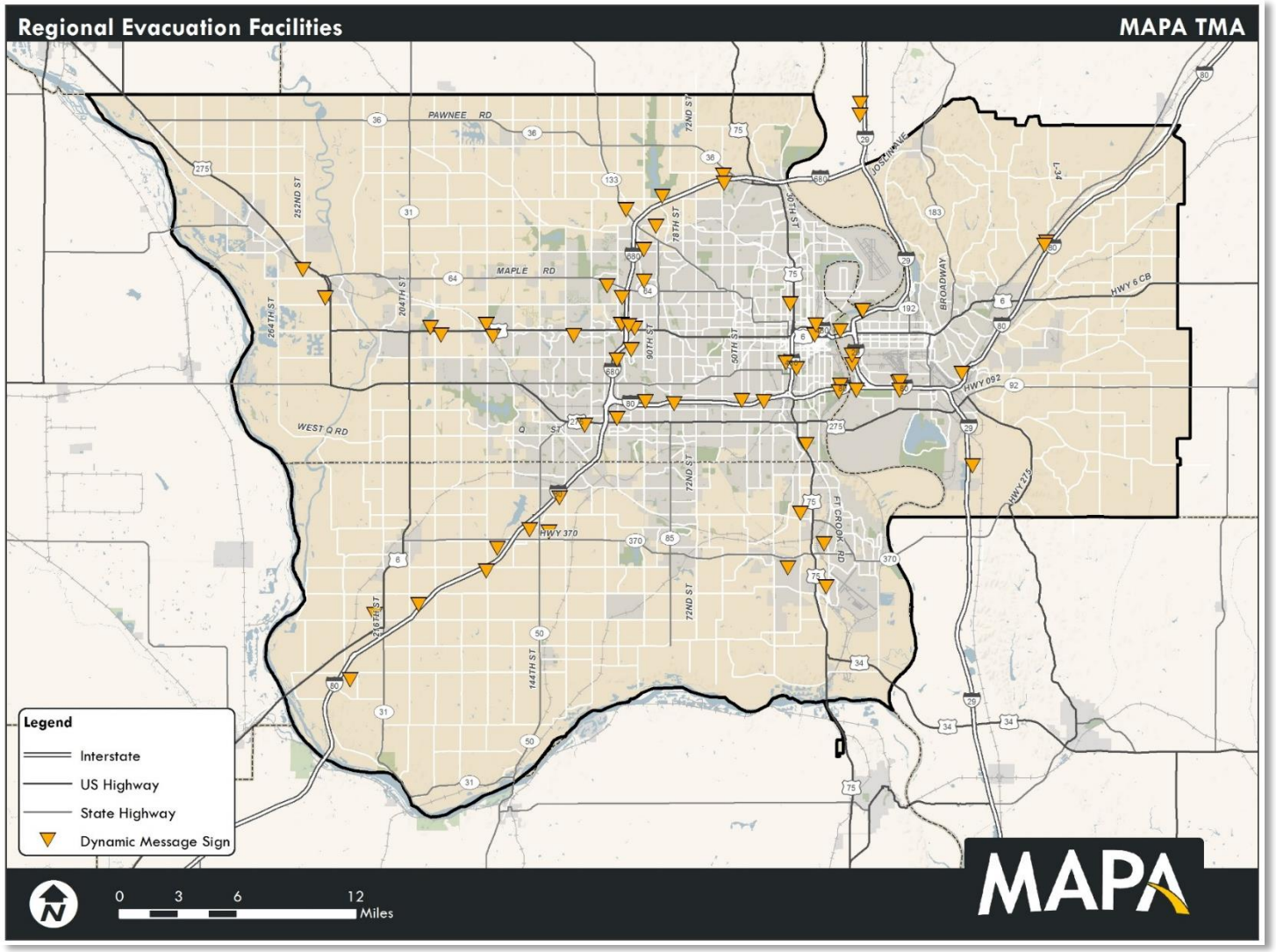
Emergency management agencies on both sides of the river have developed operational frameworks to facilitate large scale evacuations of the urban population of the MAPA region. These frameworks do not contain a specific routing plan for the evacuation of the urban population. It is understood that the evacuation would be a coordinated effort of law enforcement, Iowa DOT, Nebraska DOR, and the regional emergency operations centers. Control of the operation would be delegated to local law enforcement agencies via command from regional emergency operations centers with assistance from local public works and state department of transportation personnel.

These frameworks delegate roles and responsibilities for evacuation based upon Department of Homeland Security best practices and national frameworks. In 2011, Iowa DOT developed a Traffic Incident Management Manual (TIM Manual) as a part of its Western Iowa ITS Deployment project. This plan includes the identification of potential routes that could be utilized to create detours and routing for traffic in the event of a large scale evacuation. While this document (referenced in Chapter 16 of this plan) is not expressly designed for large scale evacuations, the basic framework allows for detour routes to be established in short order to deal with traffic incidents on major regional transportation facilities. These detour routes could feasibly be utilized in order to facilitate a large scale evacuation.

The vast majority of urbanized evacuation traffic is expected to be channeled to the region's interstate highway facilities (I-80 and I-29). Exits would be closed and monitored in order to further channelize traffic flow out of the metro region. In the event that a major river crossing (such as the Interstate 80 bridge between Council Bluffs and Omaha) is not operational, detours utilizing the region's other crossings (I-680, I-480, US-275, US-34) would be established.

Dynamic message signs (DMS) located away from the MAPA region and operated by the Nebraska DOR and Iowa DOT would reroute traffic around the area in order to better facilitate the flow of evacuation traffic. Major transportation facilities that would be utilized in the event of a large scale regional evacuation are shown in Figure 17.1 on the following page. Regional DMS signs are also illustrated in this figure.

FIGURE 17.1
MAPA TMA DYNAMIC MESSAGING SIGNS MAP



17.3 NATIONAL SCOPE

In order to prepare the nation to combat the threat of attack, the federal government has set the National Preparedness Goal to "engage Federal, State, Territorial, tribal and local entities, their private and nongovernmental partners and the public to achieve and sustain risk-based target levels of capability to prevent, protect against, respond to and recover from major events…"

Preparedness goals for the transportation sector include plans to implement three specific programs:

- The National Infrastructure Protection Program (NIPP)
- The National Incident Management System (NIMS)
- The National Response Framework (NRF)

National Infrastructure Protection Program (NIPP)

The NIPP establishes the nation's ready-state level of protection by focusing resources where investment yields the largest reduction in national risk relative to cost. The NRP addresses prevention, preparedness, response, and recovery in the context of domestic threat and incident management of Incidents of National Significance. The goal of the National Infrastructure Protection Program (NIPP) is to:

Build a safer, more secure, and more resilient America by preventing, deterring, neutralizing, or mitigating the effects of deliberate efforts by terrorists to destroy, incapacitate, or exploit elements of our Nation's Critical Infrastructure and Key Resources (CIKR) and to strengthen national preparedness, timely response, and rapid recovery of CIKR in the event of an attack, natural disaster, or other emergency.

The NIPP defines an infrastructure asset as something of importance or value belonging to one of 17 sectors that if targeted, exploited, destroyed, or incapacitated could result in large-scale injury, death, economic damage, destruction of property and could profoundly affect the nation's prestige or confidence. Elements of the transportation system fall into this category.

The NIPP defines a program management approach that provides for collecting and validating sector requirements; prioritizing the allocation of federal resources through the annual budget process, measuring national results and performance, and continuously improving critical infrastructure/key resource protection based on results and performance.
Resource allocation consists of four phases:

- Establish sector requirements
- Prioritize requirements according to criticality to the nation
- Protective programs are the recommended that have the greatest potential to reduce risk as per the NIPP risk management framework
- HSC reviews proposed funding, resolves issues, finalizes recommendations to be passed to OMB for President's budget recommendation

The NIPP is available here:
http://www.dhs.gov/sites/default/files/publications/National-Infrastructure-Protection-Plan-2013-508.pdf

In 2010 the Department of Homelands Security released Sector Specific Plans (SSP) for the 17 different sectors of the National Infrastructure. Each of these plans outlines the specific goals and objectives of the DHS in protecting the CIKR for each sector.

The SSP for Transportation Systems lists four sector security goals:

1. **Prevent and deter acts of terrorism using or against the transportation system.**
   Under this goal the DHS along with transportation partners will seek to develop a flexible, layered and effective security program based on risk management principles. It is important to increase the vigilance of travelers and transportation workers in order to enhance their role in reporting suspicious activity. The traveling public along with public employees will serve as force multipliers to law enforcement in combating terrorist attacks. Finally, this goal seeks to enhance the communication between the various transportation partners in order to share best practices as well as intelligence information and threats.

2. **Enhance resilience of the U.S. transportation system.**
   Currently there are many points in the transportation system that if damaged could cripple the U.S. transportation system. This goal seeks to improve the U.S. transportation system's ability to accommodate and absorb damage from any source, natural or otherwise. This goal also seeks to manage and reduce the risk associated with key points in the transportation network. Finally this goal seeks to improve the capacity for rapid and flexible response and recovery to all-hazards events.

3. **Improve the cost-effective use of resources for transportation security.**
   Transportation resources should be allocated to deal with the highest priority transportation security risks; economic analyses should also be considered when making these decisions. Enhanced participation from all levels in the transportation sector should also take place. Efforts need to be coordinated in order to ensure the best outcome.

4. **Improve sector situational awareness, understanding, and collaboration**
   The US Government should strengthen partnerships to further national interests to enhance security awareness and coordination. Additionally, agencies should continuously assess threats and enhance timely information-sharing among sector partners. Additionally, it is critical that sector partners understand intermodal and cross-sector intra-dependencies, and collaborate with partners to enhance knowledge.

Resources of potential risk in the MAPA TMA include portions of the National Defense Highway (interstates I-80 and I-29), major bridges across the Missouri River, active rail, pipeline and telecommunication corridors and facilities.

The Sector Specific Plan for Transportation Systems is available here:
http://www.dhs.gov/xlibrary/assets/nipp-ssp-transportation-systems-2010.pdf

National Incident Management System (NIMS)

The National Incident Management System (NIMS) was last updated in December 2008. NIMS is not an operational manual. However, NIMS does provide a basic framework and guidelines for the collaboration of agencies in effective incident management. The NIMS document contains a set of acceptable practices as used by various jurisdictions for incident management. NIMS integrates these best practices into a comprehensive framework that is flexible enough to be applicable across a broad array of incidents.

The NIMS consists of a five-component, systems approach aimed at integrating existing best practices into a multi-jurisdictional incident management plan. The components of the NIMS plan are listed on the following bullets:.

NIMS Components

- Component I- Preparedness
- Component II- Communications and Information Management
- Component III- Resource Management
- Component IV- Command and Management
- Component V- Ongoing Management and Maintenance

The NIMS full Document is available here:
http://www.fema.gov/pdf/emergency/nims/NIMS_core.pdf

National Response Framework

The National Response Framework (NRF) was most recently updated in 2013. The NRF establishes a set of guidelines comprehensive all-hazards approach to enhance the ability of the United States to manage domestic incidents. The NRF outlines general roles for the different levels of government: local, state and federal.

Local Government:

- Individual Awareness- prepared communities start with prepared individuals. It is important that individuals prepare emergency kits and plans.
- Coordination of Responders- Local police, fire, emergency and medical services are often the first to arrive and the last to leave an incident scene. Senior local officials should create local emergency frameworks in order to effectively respond to incidents.

- Coordination with Business Partners- Business partners in the community are a key resource for threat awareness and response. Local government officials should consult with these organizations in order to help them understand their community better.
- Coordination with NGO and NP- Nongovernmental and Nonprofit organizations are also a key resource to help identify threats and hard to reach populations when supplying emergency services. Local officials need input from NGO and NP actors in order to address the needs of the entire community in case of a hazardous incident.

State, Territorial, and Tribal Government:

- Local-State Coordination- States are the first in line to offer support to local communities dealing with incidents.
- State Agencies- State police, emergency management, health, and homeland security agencies are a great resource. These agencies can provide additional resources, coordination and expertise to assist a local government with managing an incident.
- National Guard- The governor has the authority to call out a State's National Guard troops in order to assist with disaster relief. These troops can help to provide security and assistance after an incident occurs.
- Federal-State Assistance- If a State anticipates that its resources will be exceeded the Governor of that State can request assistance from the federal government as well as other States.

The Federal Government

- Larger Scope- When an incident's scope is larger than a local or state government's ability to respond the federal government can offer assistance at the request of the governor of the effected state.
- Lands Under Federal Jurisdiction- In the case of federally owned lands or military bases, federal government representatives will most likely be the first to respond. These first responders will coordinate with local and state actors.
- Oversight- Pursuant to the Homeland Security Act of 2002 and Homeland Security Presidential Directive (HSPD) 5, the Secretary of Homeland Security is the principal Federal official for domestic incident management. Incident management refers to how incidents are managed across all homeland security activities, including prevention, protection, and response and recovery.

The National Response Framework is available here:
http://www.fema.gov/media-library-data/20130726-1914-25045-1246/final_national_response_framework_20130501.pdf

The NRF incorporates best practices and procedures from incident management disciplines—homeland security, emergency management, law enforcement, firefighting, public works, public health, responder and recovery worker health and safety, emergency medical services, and the private sector—and integrates them into a unified

structure. It forms the basis of how the federal government coordinates with state, local, and tribal governments and the private sector during incidents.

Incorporation of new priorities into the transportation planning stage should include input from:

- Police and sheriff departments
- Fire departments, rescue squads
- Federal and State response agencies
- Elements of the Department of Homeland Security (TSA, FEMA, US Coastguard, etc)

17.4 CONCLUSION

In order to "Increase Safety and Security", MAPA will continue to coordinate with local stakeholders to increase their consideration of National Security measures in the planning, engineering and implementation of transportation projects in the MAPA TMA. Transportation is only one of many issues that national security officials must consider in developing their own plans and policies. However, impacts to the transportation network could have devastating economic and environmental impacts, if risks are not properly considered or prepared for. The collaborative approach detailed in this chapter makes progress towards those goals and ensures that security considerations are made within the transportation planning process.

Appendix A: Public Involvement/Comments

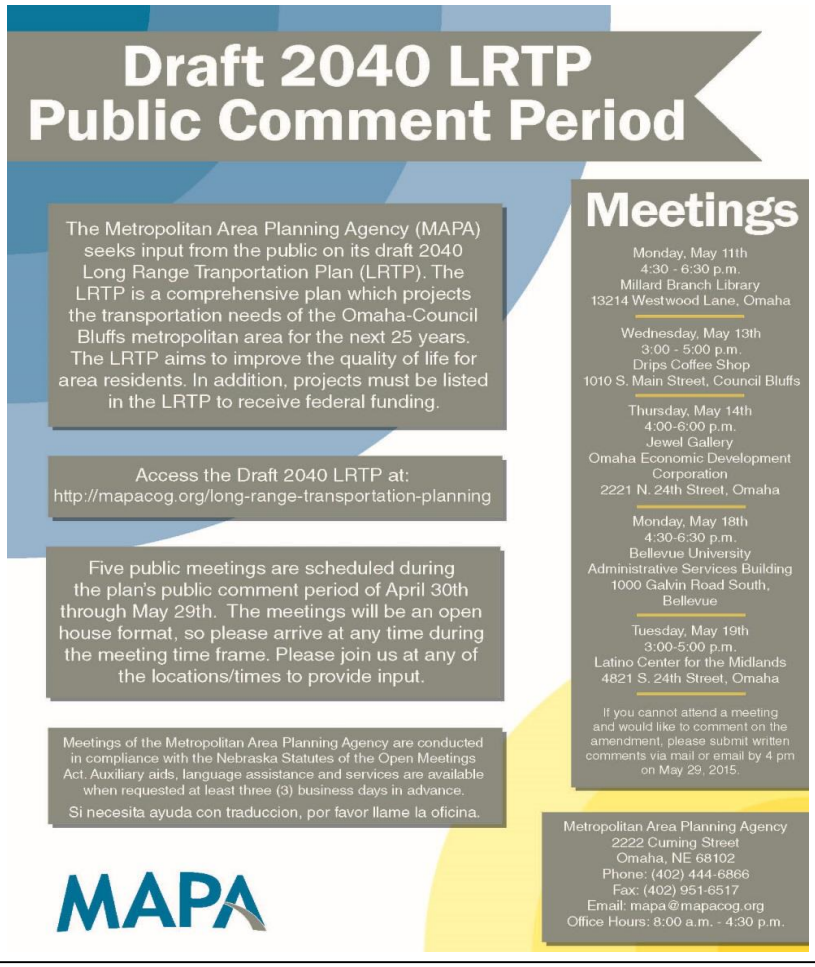
A.1 Public Involvement Process

The 2040 Draft plan was available for public comment from April 30th – May 29th. MAPA posted the draft plan online to its agency website as well as facebook and twitter. Over the course of two weeks there were 5 public meetings held around the Omaha-Council Bluffs region which were also advertised online and in print media.

A.1.1 Notification of Draft Plan

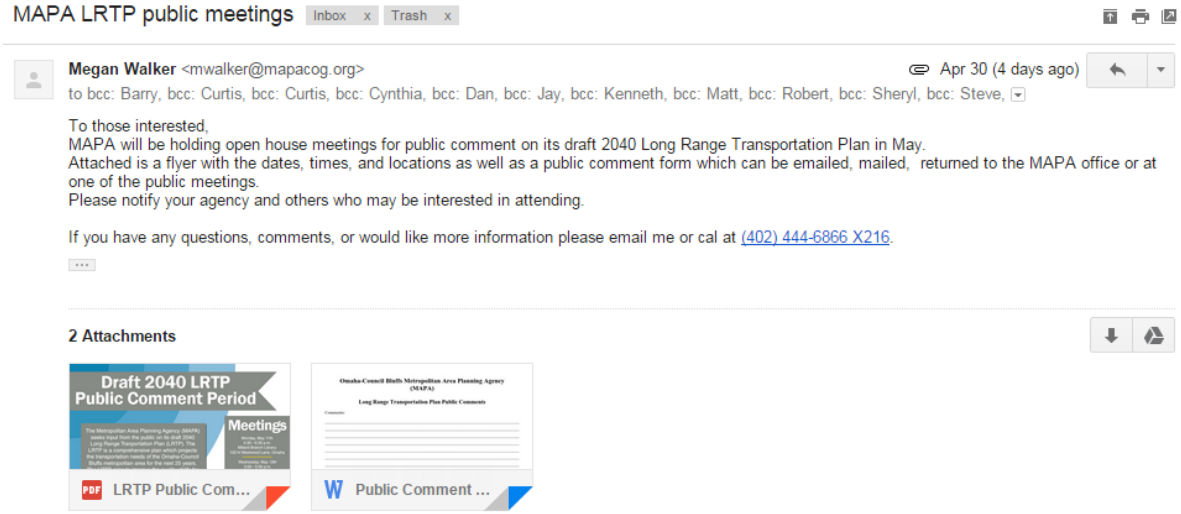
MAPA staff used a variety of methods, detailed in the Public Participation Plan (PPP), to solicit public input and notify communities of the draft plan. These methods include emailing self-identified interested parties, resource agencies who work with sensitive populations, public libraries, as well as local, state, and federal agencies to comment and share with their constituents. MAPA also advertised the public meeting and draft plan in public newspapers, and posting the meetings and draft plan to facebook and twitter as well as the MAPA website. Examples of these notifications are shown below.

Flyer



Emails/Memo

Email to resource agencies, interested parties, local, state, and federal partners



MAPA LRTP public meetings Inbox x Trash x

Megan Walker <mwalker@mapacog.org> Apr 30 (4 days ago)

to bcc: Barry, bcc: Curtis, bcc: Curtis, bcc: Cynthia, bcc: Dan, bcc: Jay, bcc: Kenneth, bcc: Matt, bcc: Robert, bcc: Sheryl, bcc: Steve,

To those interested,
MAPA will be holding open house meetings for public comment on its draft 2040 Long Range Transportation Plan in May.
Attached is a flyer with the dates, times, and locations as well as a public comment form which can be emailed, mailed, returned to the MAPA office or at one of the public meetings.
Please notify your agency and others who may be interested in attending.

If you have any questions, comments, or would like more information please email me or cal at (402) 444-6866 X216.

2 Attachments

Memo to Libraries

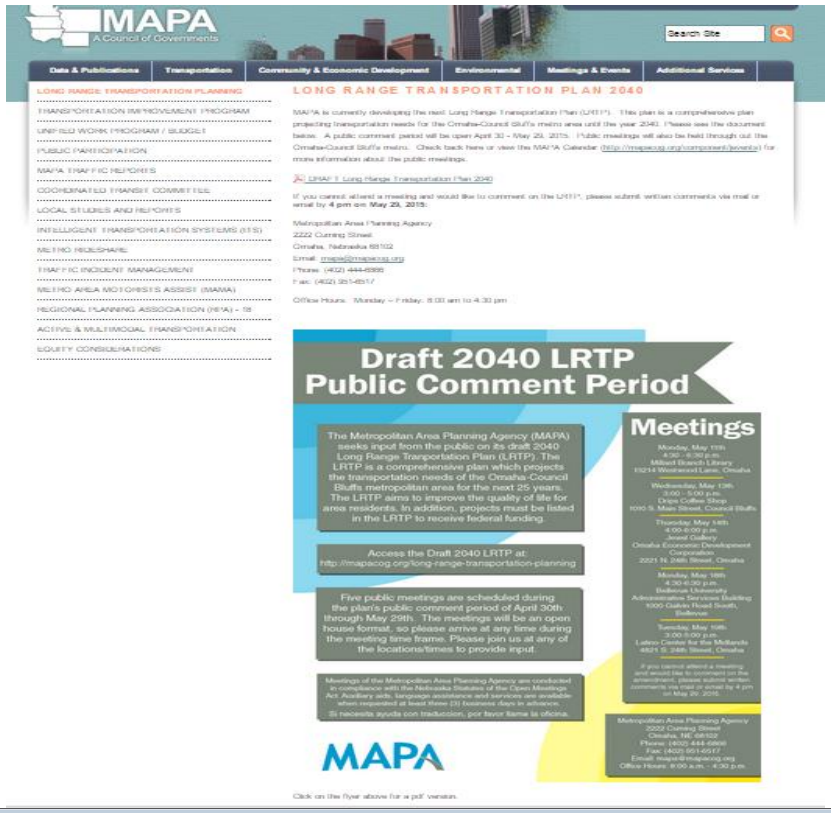
MAPA Omaha - Council Bluffs Metropolitan Area Planning Agency

To: All Library Managers and Directors
From: Sue Cutsforth, Communications Coordinator
Date: 6/12/2015
Re: **Draft Long Range Transportation Plan (LRTP) Flyer**

Please consider posting the enclosed flyer on a bulletin board in your library. It is a notice that MAPA is seeking public comment on its Draft Long Range Transportation Plan (LRTP).

MAPA uses various methods to inform the public regarding documents which it may want to review and provide feedback. Having this notice posted in your library would be a helpful tool for informing the public.

Website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Meetings & Events
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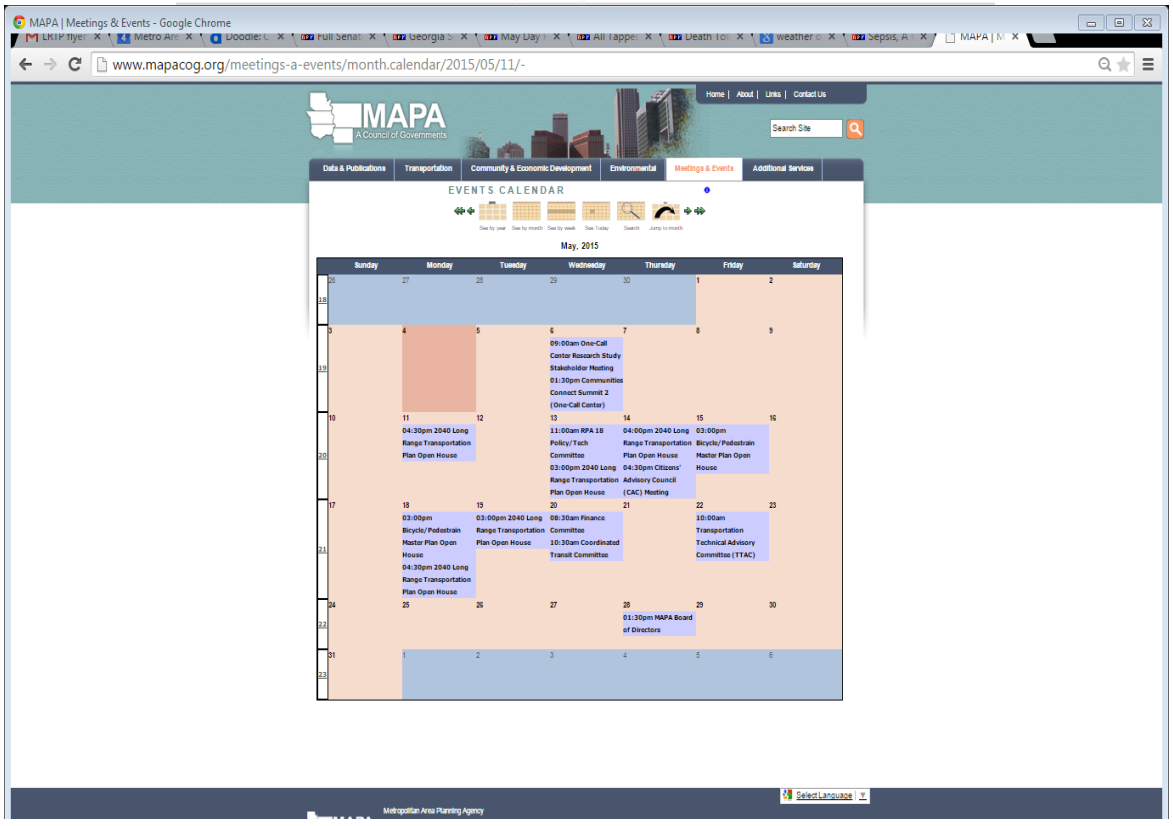
LONG RANGE TRANSPORTATION PLAN 2040
Draft 2040 LRTP
Public Comment Period
The Metropolitan Area Planning Agency (MAPA) seeks input from the public on its draft 2040 Long Range Transportation Plan (LRTP). The LRTP is a comprehensive plan which projects the transportation needs of the Omaha-Council Bluffs metropolitan area for the next 25 years. The LRTP aims to improve the quality of life for area residents. In addition, projects must be listed in the LRTP to receive federal funding.
Access the Draft 2040 LRTP at:
http://mapacog.org/long-range-transportation-planning
Five public meetings are scheduled during the plan's public comment period of April 30th through May 29th. The meetings will be an open house format, so please arrive at any time during the meeting time frame. Please join us at any of the locations/times to provide input.
Meetings
MAPA


MAPA | Meetings & Events - Google Chrome
www.mapacog.org/meetings-a-events/month.calendar/2015/05/11/-
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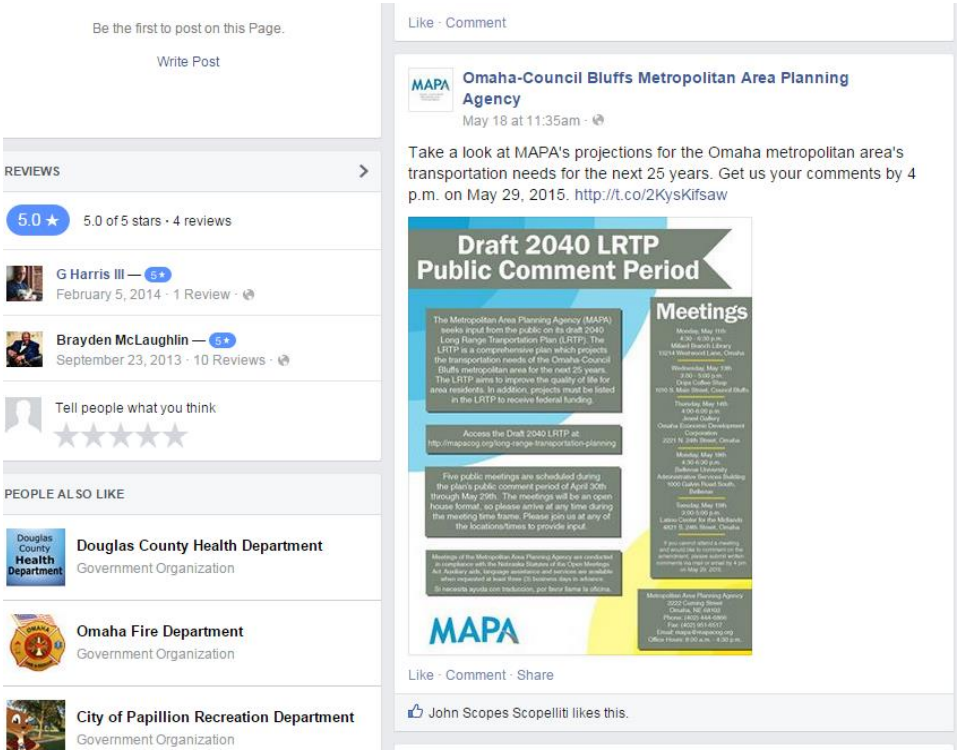
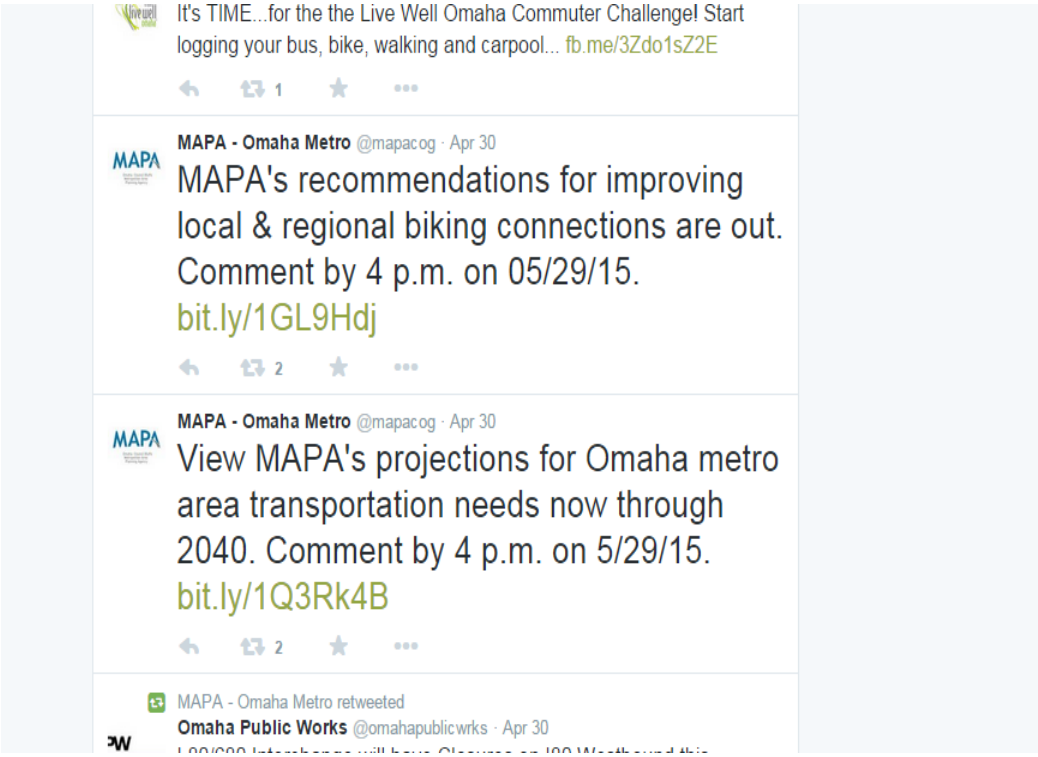
Community & Economic Development
Environmental
Meetings & Events
Additional Services
EVENTS CALENDAR
May, 2015
Sunday
Monday
Tuesday
Wednesday
Thursday
Friday
Saturday
09:00am One-Call Center Research Study Stakeholder Meeting
01:30pm Communities Connect Summit 2 (One-Call Center)
04:30pm 2040 Long Range Transportation Plan Open House
11:00am RPA 18 Policy/Tech Committee
03:00pm 2040 Long Range Transportation Plan Open House
04:00pm 2040 Long Range Transportation Plan Open House
04:30pm Citizens' Advisory Council (CAC) Meeting
03:00pm Bicycle/Pedestrain Master Plan Open House
03:00pm Bicycle/Pedestrain Master Plan Open House
03:00pm 2040 Long Range Transportation Plan Open House
08:30am Finance Committee
10:30am Coordinated Transit Committee
10:00am Transportation Technical Advisory Committee (TTAC)
01:30pm MAPA Board of Directors
Select Language
Metropolitan Area Planning Agency

Social Media





Proof of Publication

AFFIDAVIT OF PUBLICATION

STATE OF NEBRASKA }
} SS.
County of Sarpy }

Being duly sworn, upon oath, Shon Barenklau deposes and says that he is the Publisher or Ron Petak deposes and says that he is the Executive Editor of the **Bellevue Leader, Papillion Times, Gretna Breeze and Springfield Monitor,** legal newspapers of general circulation in Sarpy County, Nebraska, and published therein; that said newspaper has been established for more than one year last past; that it has a bona-fide paid subscription list of more than three hundred; that to this personal knowledge, the advertisement, a copy of which is hereto attached, was printed in the said newspaper once each week, the first insertion having been on:

Wednesday, May 6, 2015 Bellevue Leader

And that said newspaper is a legal newspaper under the statutes of the State of Nebraska. The above facts are within my personal knowledge.

Shon Barenklau OR Ron Petak
Publisher Executive Editor

Today's Date 5-6-2015
Signed in my presence and sworn to before me:

Notary Public

GENERAL NOTARY - State of Nebraska
ELIZABETH M WHITE
My Comm. Exp. December 22, 2018

Printer's Fee $ 33.62
Customer Number: 11521
Order Number: 0001856691

PUBLIC NOTICE

The Metropolitan Area Planning Agency (MAPA) seeks input from the public on its draft 2040 Long Range Transportation Plan (LRTP). The LRTP is a comprehensive plan which projects the transportation needs of the Omaha-Council Bluffs metropolitan area for the next 25 years. The LRTP aims to improve the quality of life for area residents. In addition, projects must be listed in the LRTP to receive federal funding.
Five public meetings are scheduled during the plan's public comment period of April 30th through May 29th. The meetings will be an open house format, so please arrive at any time during the meeting time frame. Please join us at any of the locations/times to provide input.

Monday, May 11th, 4:30-6:30 p.m.
Millard Branch Library
13214 Westwood Lane, Omaha

Wednesday, May 13th, 3:00–5:00 p.m.
Drips Coffee Shop
1010 S. Main Street, Council Bluffs

Thursday, May 14th, 4:00-6:00 p.m.
Jewel Gallery
Omaha Economic Development Corporation
2221 N. 24th Street, Omaha

Monday, May 18th, 4:30-6:30 p.m.
Bellevue University
Administrative Services Building
1000 Galvin Road South, Bellevue

Tuesday, May 19th, 3:00-5:00 p.m.
Latino Center for the Midlands
4821 S. 24th Street, Omaha

If you cannot attend a meeting and would like to comment on the amendment, please submit written comments via mail or email by 4 pm on May 29, 2015:

Metropolitan Area Planning Agency
2222 Cuming Street
Omaha, Nebraska 68102
Email: mapa@mapacog.org
Phone: (402) 444-6866
Fax: (402) 951-6517

Office Hours: Monday – Friday: 8:00 am to 4:30 pm
Access the Draft 2040 LRTP at http://mapacog.org/long-range-transportation-planning
Meetings of the Metropolitan Area Planning Agency are conducted in compliance with the Nebraska Statutes of the Open Meetings Act. Auxiliary aids, language assistance and services are available when requested in advance.

Si necesita ayuda con traduccion, por favor llame la oficina.
1856691; 5/6

A.1.2 Public Meetings

MAPA held public meetings in each of the five counties of the Transportation Management Area. These meetings were held between the hours of 4-6pm with an open house format to allow people to come in at any time. A variety of location types were chosen including; a library, a school, and a coffee shop as well as community centers to provide outreach to a wide cross section of people.

Location	Millard Library	Drips Coffee	Omaha Economic Development Cooperation	Bellevue University	Latino Center for the Midlands
Date	5/11/2015	5/13/2015	5/14/2015	5/18/2015	5/19/2015
Number of Attendees	2	4	0	0	5
Comments	0	0	0	0	0
Requests for Further Information	1	3	0	0	3

Meeting Materials

At the public meetings boards were setup around the room in a narrative fashion. There were five boards showing what a long range plan is, the demographics of the area, the goals for the transportation system, a map of the area showing where roadways will be over capacity by 2040 if nothing is built, and a final map showing the projects in the 2040 LRTP.

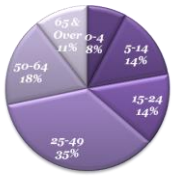
Boards on Display

What is a Long Range Transportation Plan

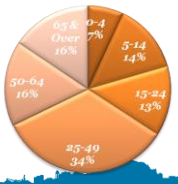
- A long range transportation Plan (LRTP) provides a comprehensive look at transportation in the metro area and proposes a vision (list of goals and projects future projects) to guide the region over the next 25 years.
- Metro areas are required to have a plan and all projects must be in the plan to receive federal funding.
- The MAPA plan covers the City of Omaha, Douglas County, City of Council Bluffs, Pottawattamie County, and Sarpy County.

Demographics of the MAPA Region

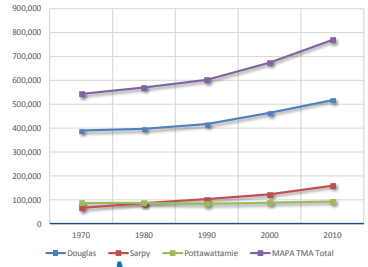
2010 Age Distribution



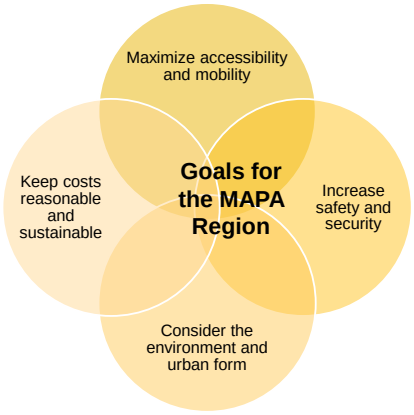
2040 Age Distribution



Total Historical Population Trends by County 1970-2010

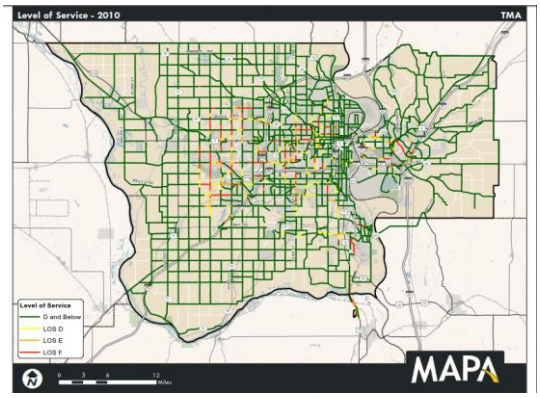


Connect. Plan. Thrive.



Current Level of Service

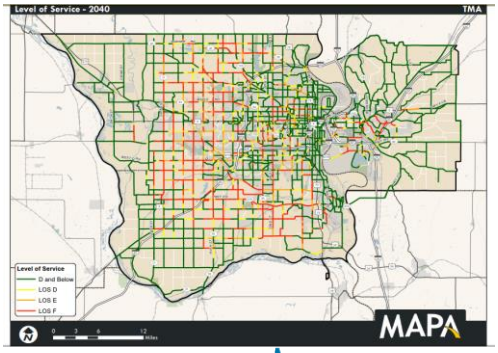
The map to the right shows the current traffic and congestion issues in the MAPA region



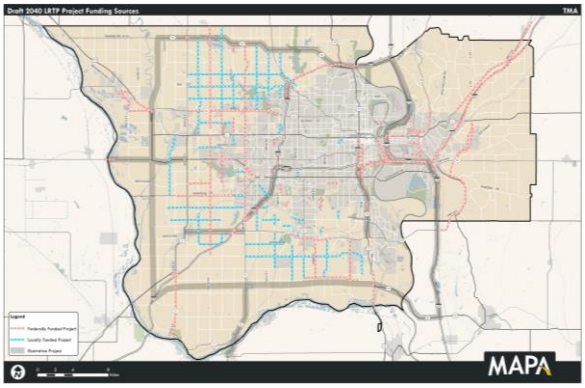
Connect. Plan. Thrive.

Projected Level of Service

If there are no new road project in the MAPA region the map to the right shows what traffic and congestion will most likely look like in the year 2040



2040 Projects



Connect. Plan. Thrive.

A.2 PUBLIC AND AGENCY COMMENTS

A.2.1 PUBLIC COMMENTS:

There were two write public comments received via email, the text of the comment is included below:

Hello,
I just finished reading the plan and I appreciate your hard work. I support your emphasis on alternative transportation options, especially the rapid transit bus route down Dodge, the streetcar, and safer bicycle lanes.

I would like to note that the bike symbols painted in the middle of the lanes are not safe and should not be considered an option. My experience shows me that cars just honk for bikes to move over, where we could be hit by a door. For that reason, I will not commute to work by bike, but I am in the "interested" category in your chart if safer bike lanes become an option.

I have a quick question about the plans on when the projects will happen. From 2021-2025, it lists 180th from Harrison-Dodge as becoming a six lane road. From 2031-2035, it lists 180th from Harrison-Platteview as becoming a six lane road. From 2036-2040, it lists 144th from I-80-Maple becoming a six lane road. Won't we actually see 144th become six lanes before 180th? The reason I ask that is because 144th is busier than 180th.

Also I don't think I saw this on the plans but is HWY-370 supposed to one day become a six lane HWY? The reason I ask that is because some intersections of HWY-370 there is a closed lane in between the right turn lane and the right driving lane. That closed lane looks like it will become a third driving lane.

Also will Platteview ever become a six lane road? The reason I ask that is because I heard that Platteview will become the main driving road in Southern Sarpy County.

A.2.2 PARTNER AGENCY COMMENTS

Federal and state comments were adopted to the plan accordingly.

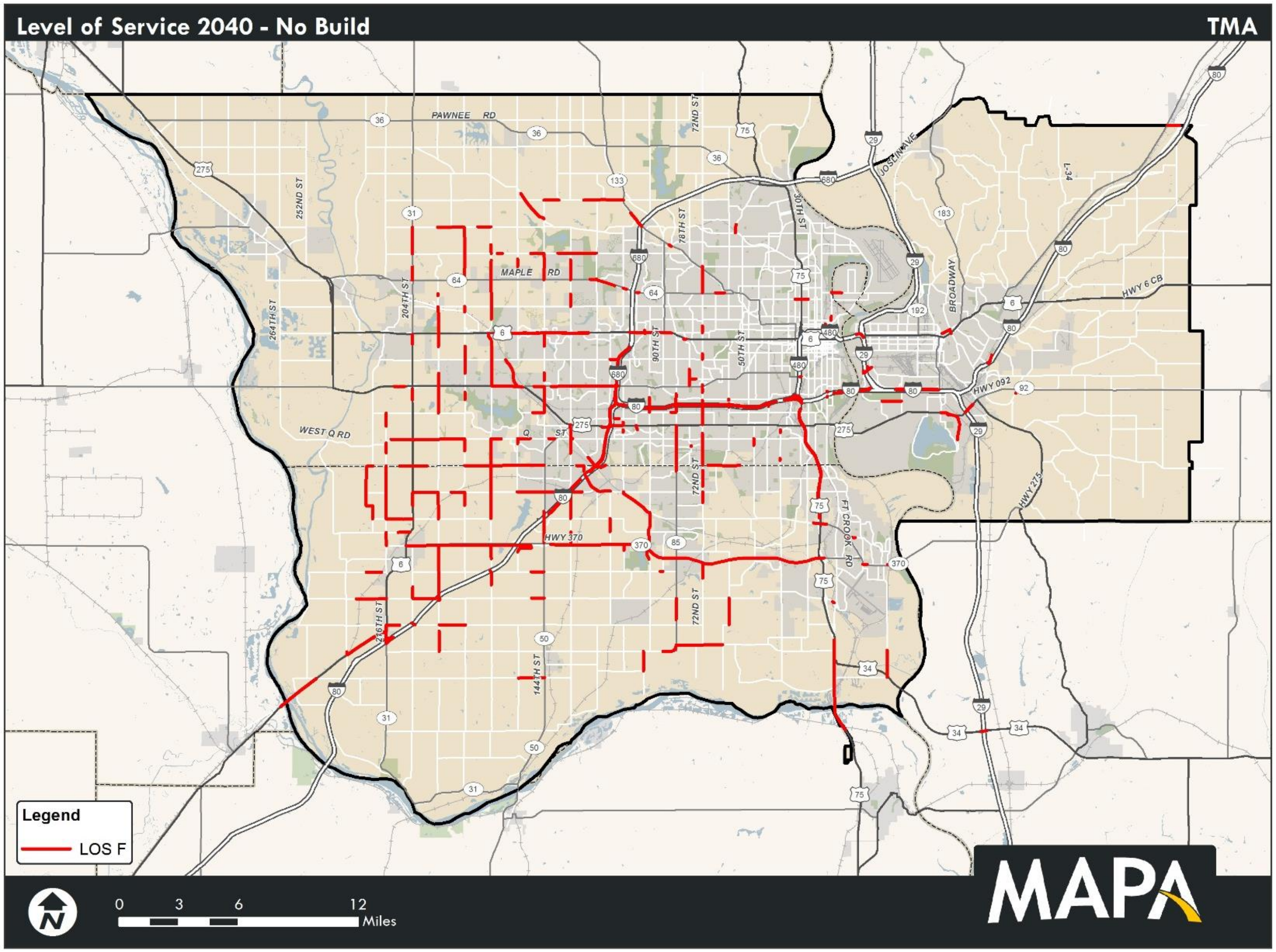
Appendix B: Maps

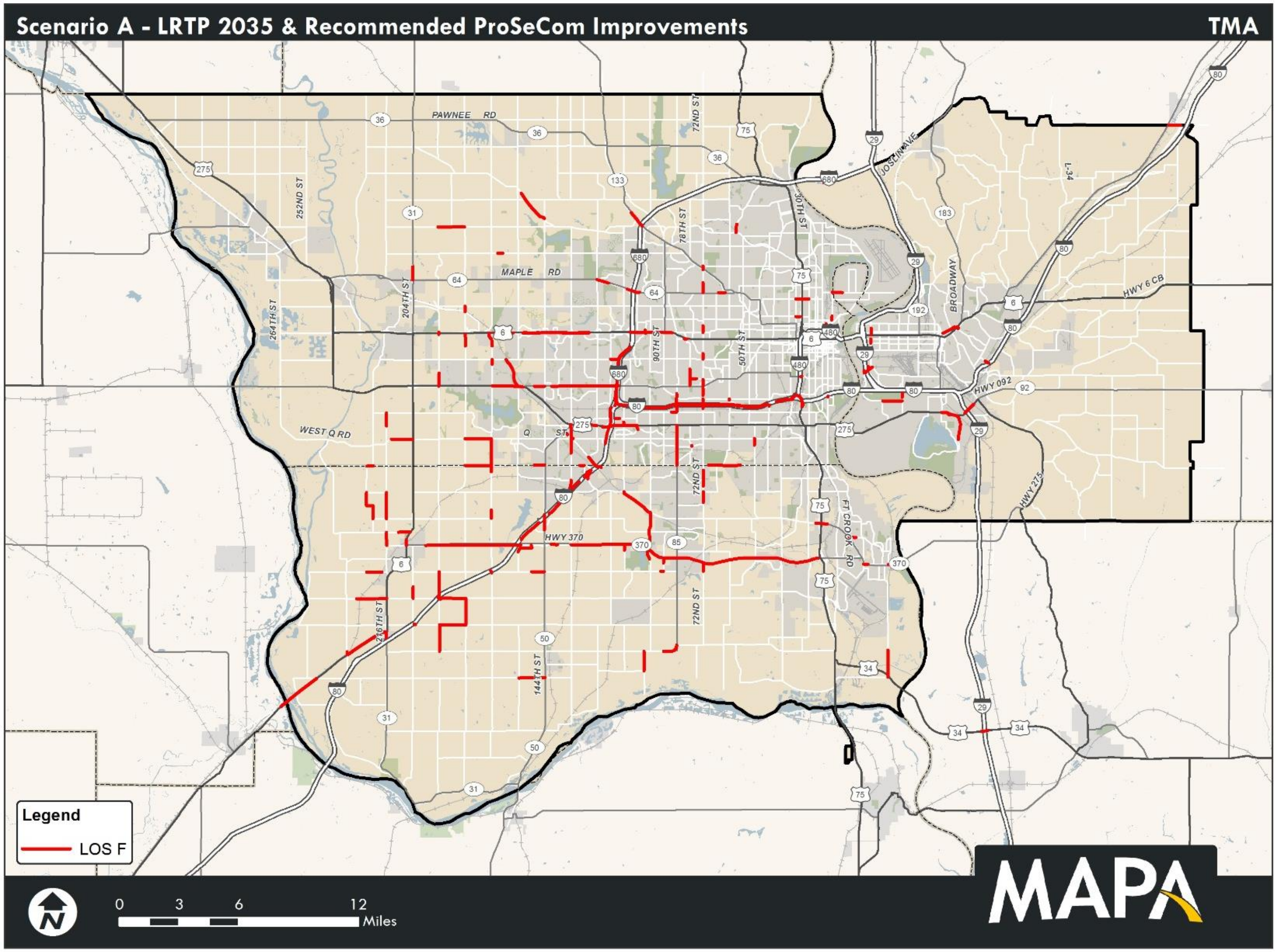
B.1 MAPS

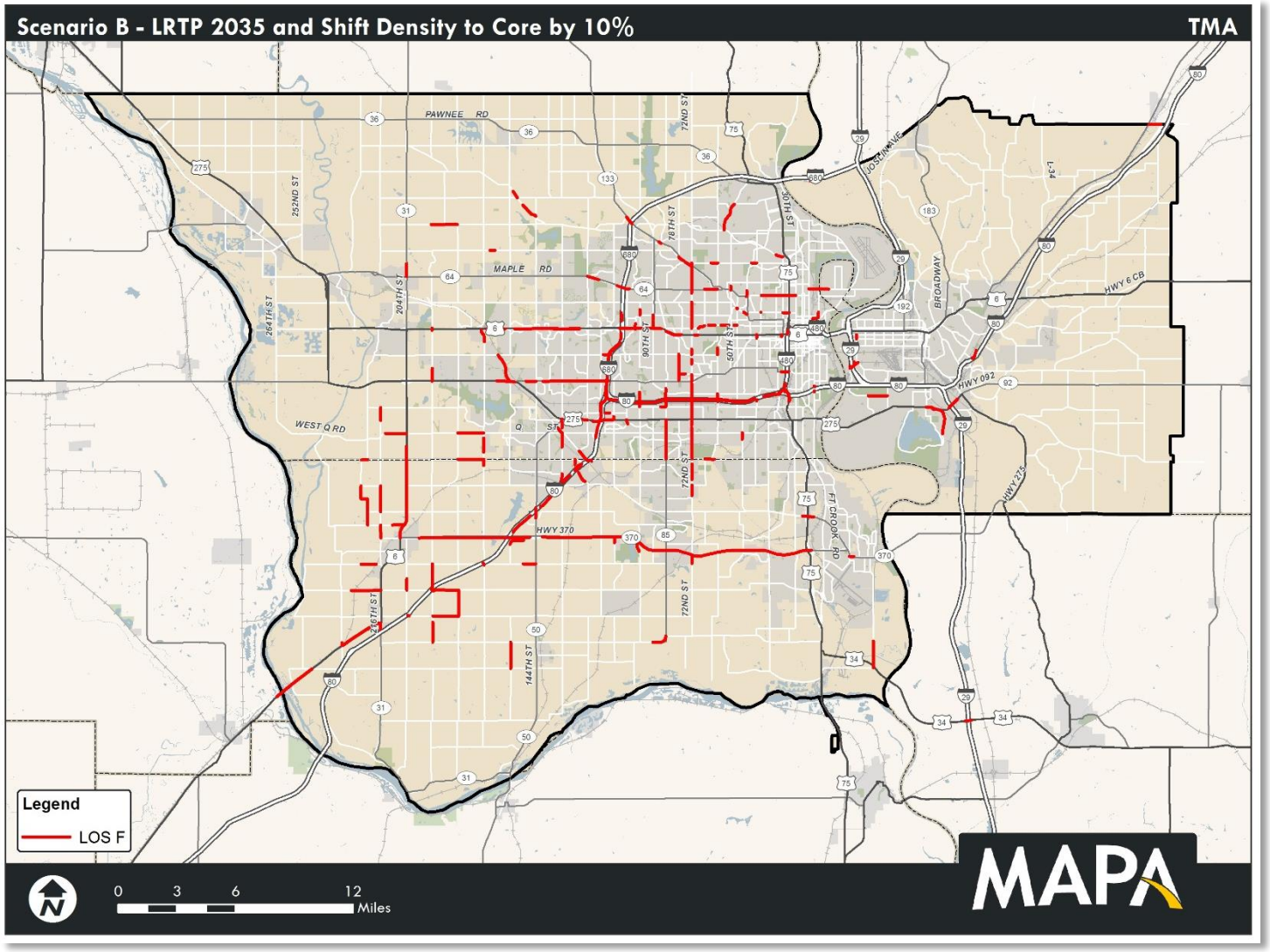
The map on page B-2 displays the "no build" situation, which would occur if no projects were built by 2040.

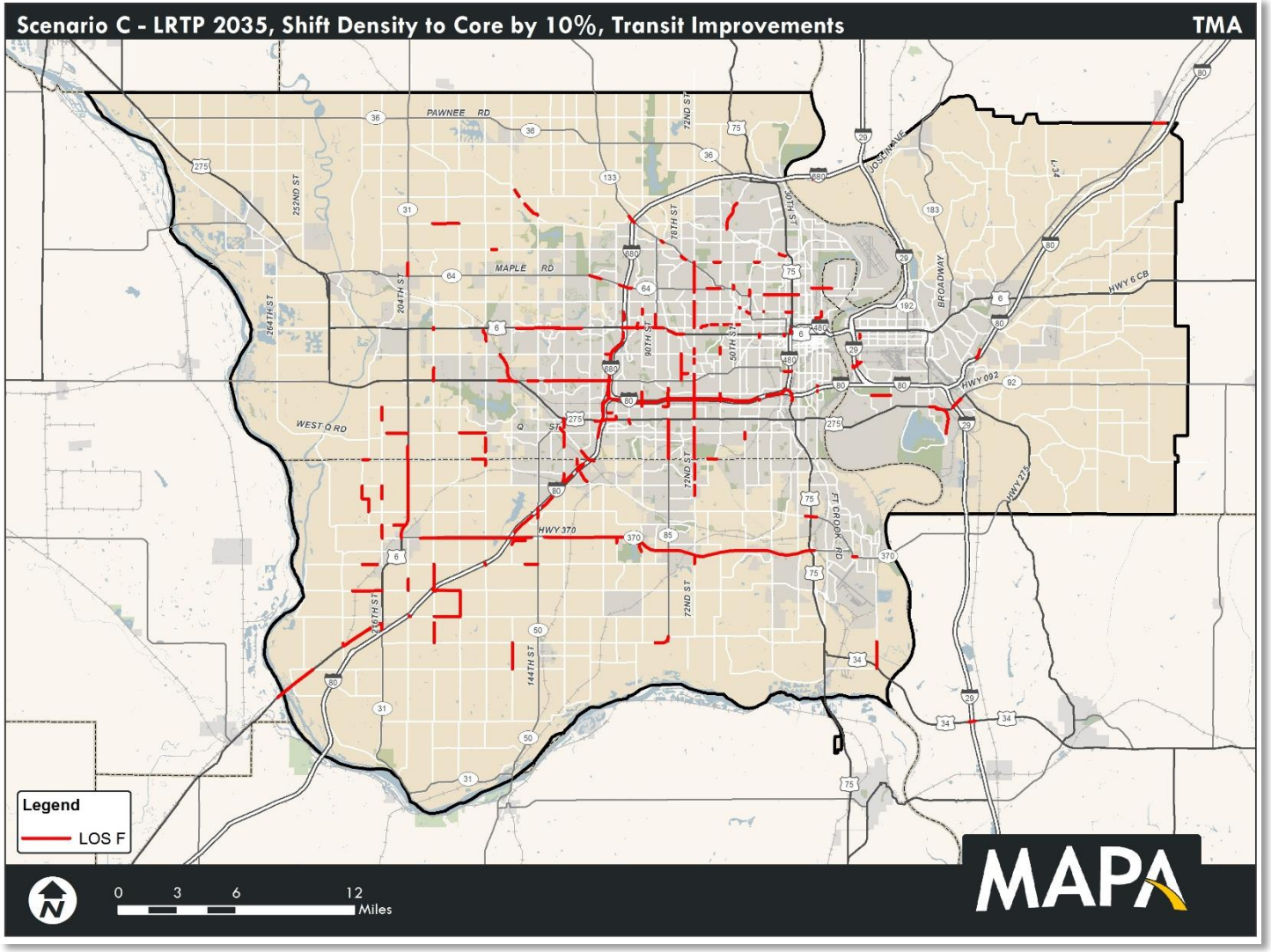
The maps beginning on page B-3 were the outputs of the scenarios displayed in Table 7.4.

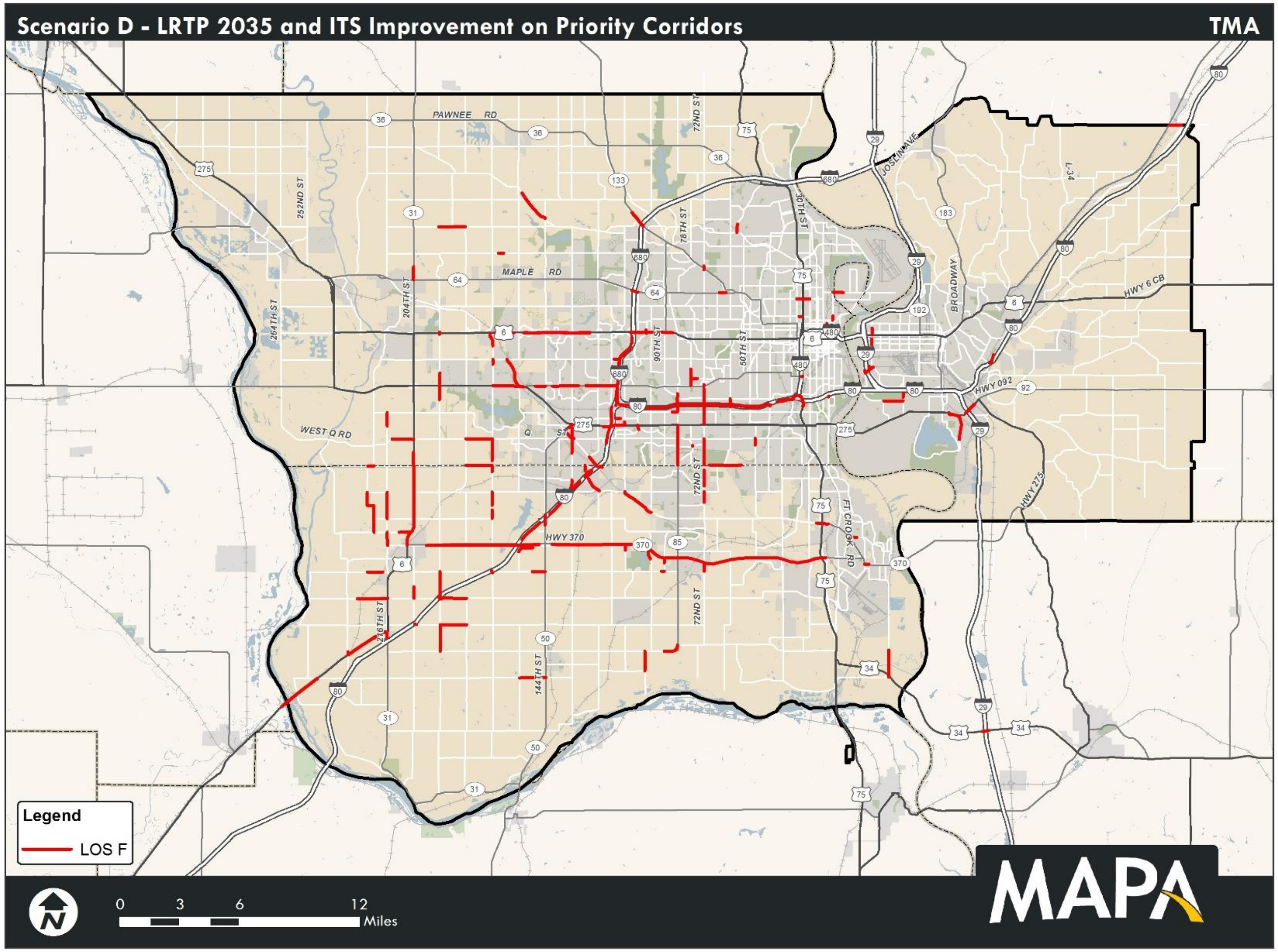
The final approved scenario is shown on page B-8.

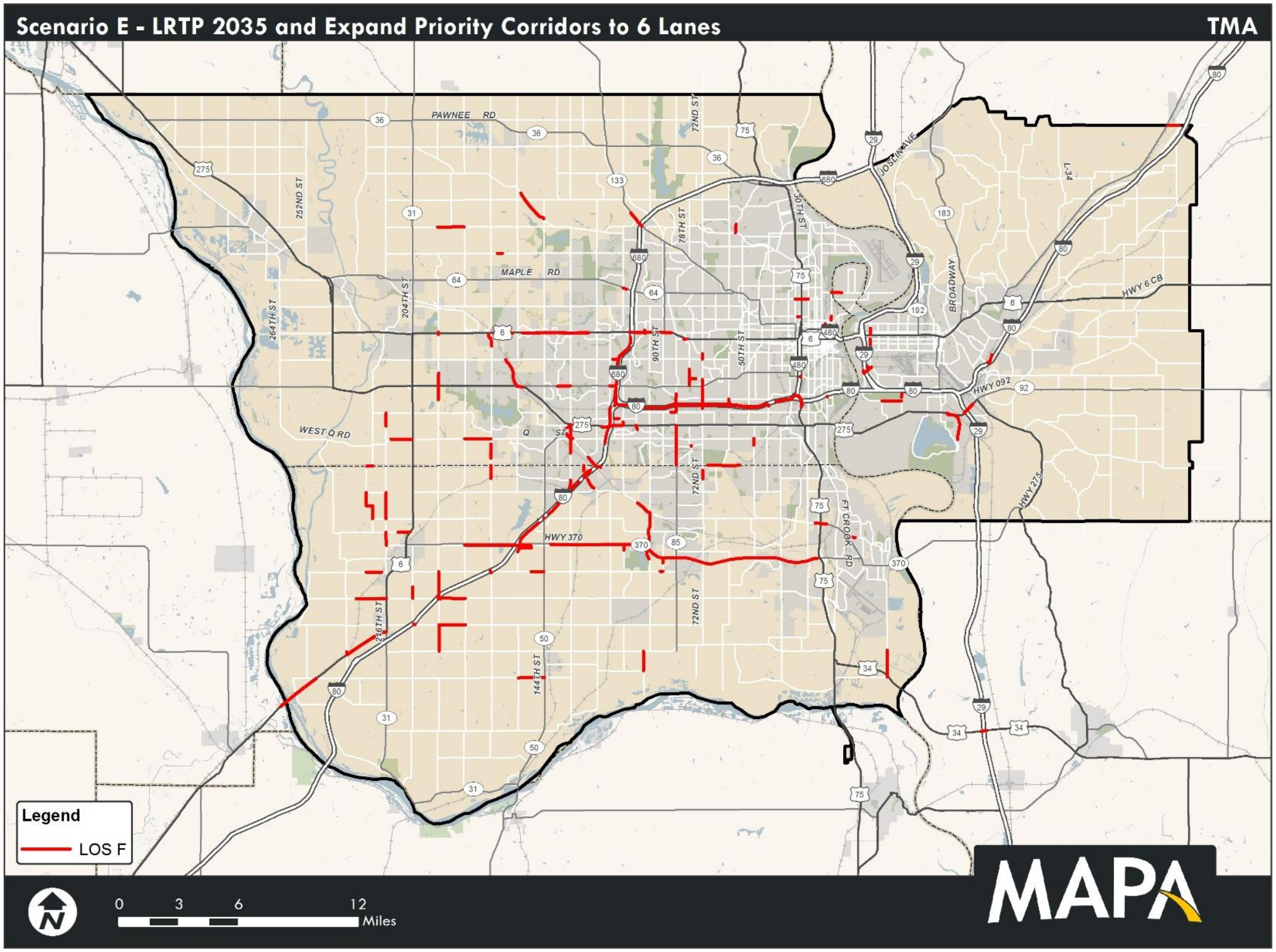

Level of Service 2040 - No Build
TMA
Legend
LOS F
0 3 6 12
Miles
MAPA
PAWNEE RD
MAPLE RD
WEST Q RD
Q ST
HWY 370
HWY 6 CB
HWY 092
HWY 275
BROADWAY
FT CROOK RD
264TH ST
252ND ST
204TH ST
144TH ST
90TH ST
78TH ST
72ND ST
50TH ST
30TH ST

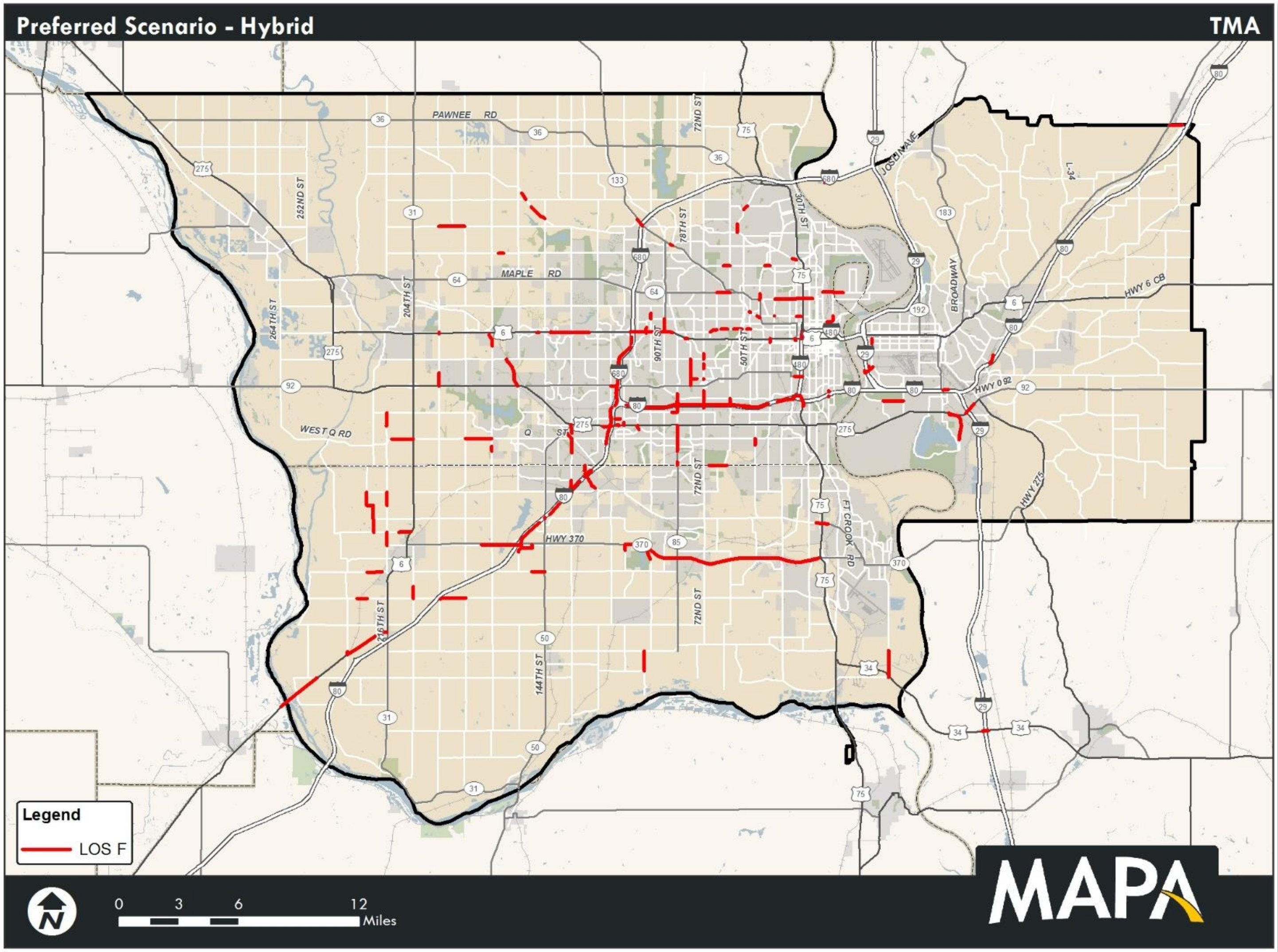

Scenario A - LRTP 2035 & Recommended ProSeCom Improvements
TMA
PAWNEE RD
MAPLE RD
WEST Q RD
Q ST
HWY 370
72ND ST
78TH ST
90TH ST
50TH ST
30TH ST
FT CROOK RD
144TH ST
204TH ST
216TH ST
252ND ST
264TH ST
JOSLIN AVE
BROADWAY
HWY 6 CB
HWY 092
HWY 275
L-34
Legend
LOS F
0
3
6
12
Miles
MAPA


Scenario B - LRTP 2035 and Shift Density to Core by 10%
TMA
PAWNEE RD
MAPLE RD
WEST Q RD
HWY 370
HWY 092
HWY 6 CB
BROADWAY
FT CROOK RD
72ND ST
90TH ST
84TH ST
78TH ST
252ND ST
264TH ST
204TH ST
144TH ST
Legend
LOS F
0 3 6 12
Miles
MAPA


Scenario C - LRTP 2035, Shift Density to Core by 10%, Transit Improvements
TMA
PAWNEE RD
MAPLE RD
WEST Q RD
HWY 370
HWY 092
HWY 6 CB
BROADWAY
FT CROOK RD
72ND ST
78TH ST
90TH ST
204TH ST
252ND ST
264TH ST
144TH ST
Legend
LOS F
0 3 6 12
Miles
MAPA


Scenario D - LRTP 2035 and ITS Improvement on Priority Corridors
TMA
Legend
LOS F
0 3 6 12
Miles
MAPA
PAWNEE RD
MAPLE RD
WEST Q RD
HWY 370
HWY 6 CB
HWY 092
BROADWAY
FT CROOK RD
JOSLIN AVE
264TH ST
252ND ST
204TH ST
90TH ST
78TH ST
72ND ST
50TH ST
30TH ST
144TH ST


Scenario E - LRTP 2035 and Expand Priority Corridors to 6 Lanes
TMA
Legend
LOS F
0 3 6 12
Miles
MAPA


Preferred Scenario - Hybrid
TMA
PAWNEE RD
MAPLE RD
WEST Q RD
HWY 370
HWY 6 CB
HWY 092
HWY 275
FT CROOK RD
BROADWAY
252ND ST
264TH ST
204TH ST
144TH ST
90TH ST
78TH ST
72ND ST
50TH ST
30TH ST
L-34
Legend
LOS F
0
3
6
12
Miles
MAPA

Appendix C: Resolutions and Approvals

The MAPA Board of Directors approved the LRTP document in full on August 27, 2015; the affirming resolution is on the following page. The MAPA Council of Officials adopted the 2040 Long Range Transportation Plan on October 7, 2015; its resolution is also included in this section.

OMAHA-COUNCIL BLUFFS METROPOLITAN AREA PLANNING AGENCY

RESOLUTION NUMBER 2016 – 02

WHEREAS, the members of the Omaha-Council Bluffs Metropolitan Area Planning Agency (MAPA) have been formally designated by their respective legislative bodies to act as the official representative in planning matters of mutual concern; and

WHEREAS, MAPA is the designated Metropolitan Planning Organization (MPO) for the Omaha-Council Bluffs Transportation Management Area (TMA); and

WHEREAS, it is the responsibility of the MPO, in conjunction with the States, to certify that the transportation planning process complies with all applicable federal laws and regulations; and

WHEREAS, a Long Range Transportation Plan is required by the U.S. Department of Transportation (DOT) and was developed by the MP0 for the Omaha-Council Bluffs metropolitan area; and,

WHEREAS, the MAPA 2040 Long Range Transportation Plan (LRTP), dated August 2015, which provides a comprehensive plan to guide multi-modal transportation improvements in the Omaha-Council Bluffs metropolitan area over a 25-year planning horizon, has been reviewed by the Transportation Technical Advisory Committee; and

WHEREAS, the MAPA 2040 Long Range Transportation Plan (LRTP) has been available for review and comment by the public; and

WHEREAS, the MAPA 2040 Long Range Transportation Plan (LRTP) has been given due consideration by the MAPA Board of Directors; therefore be it

RESOLVED, that MAPA approves said MAPA 2040 Long Range Transportation Plan and recommends said plan be forwarded to the MAPA Council of Officials.

PASSED this 27 day of August 2015

Ron Kohn

Chairman, MAPA Board of Directors

OMAHA-COUNCIL BLUFFS METROPOLITAN AREA PLANNING AGENCY

RESOLUTION NUMBER 2016-03

WHEREAS, the members of the Omaha-Council Bluffs Metropolitan Area Planning Agency (MAPA) have been formally designated by their respective legislative bodies to act as the official representative in planning matters of mutual concern; and

WHEREAS, MAPA is the designated Metropolitan Planning Organization (MPO) for the Omaha-Council Bluffs Transportation Management Area (TMA); and

WHEREAS, it is the responsibility of the MPO, in conjunction with the States, to certify that the transportation planning process complies with all applicable federal laws and regulations; and

WHEREAS, a Long Range Transportation Plan is required by the U.S. Department of Transportation (DOT) and was developed by the MPO for the Omaha-Council Bluffs metropolitan area; and,

WHEREAS, the MAPA 2040 Long Range Transportation Plan (LRTP), dated August 2015, which provides a comprehensive plan to guide multi-modal transportation improvements in the Omaha-Council Bluffs metropolitan area over a 25-year planning horizon, has been reviewed by the Transportation Technical Advisory Committee; and

WHEREAS, the MAPA 2040 Long Range Transportation Plan (LRTP) has been available for review and comment by the public; and

WHEREAS, the MAPA 2040 Long Range Transportation Plan (LRTP) has been given due consideration by the MAPA Board of Directors; therefore be it

RESOLVED, that MAPA Council of Officials adopts said MAPA 2040 Long Range Transportation Plan as the region's transportation plan to guide transportation decision processes for up to the next five years.

PASSED this 7th day of October, 2015

Doug Kindig

Chairman, MAPA Council of Officials