

An aerial photograph of a river and surrounding landscape, rendered in a monochromatic orange-brown color. The river flows from the top right towards the bottom right. A dark grey horizontal band is overlaid across the middle of the image, containing the chapter title in white text. Below the band, the landscape shows a mix of trees, buildings, and roads.

## **Chapter 6: Future Regional Transportation Threats, Solutions, and Alternatives**

**A Long Range Transportation Plan for  
Siouxland Regional Transportation Planning Association**  
Completed by the Siouxland Interstate Metropolitan Planning Council (SIMPCO)

## **I. Overview**

This chapter examines the transportation threats, solutions, and alternatives Region IV will confront in the next 25 years. Each transportation threat, solution, and alternative will be examined using key trends regarding the population, economy, traffic, and condition of the system. The transportation threats are identified as the negative possibilities and conditions that have a significant chance of occurrence in the area. The transportation solutions represent the positive possibilities and opportunities for the future of the region. The transportation alternatives are the possibilities and opportunities whose potential would be realized through adequate resources. The transportation threats, solutions, and alternatives are not an all-inclusive list and are recorded in Table VI.1 (page V-2). These lists include the most agreed upon transportation threats, solutions, and alternatives most likely to occur in the next 25 years. This list was first compiled during the development of the 2035 Long Range Transportation Plan and has been reworked as fits the region five years later. Ethanol plants were a significant issue during the development of the last plan and while they are still significant, the increase in facilities was lower than anticipated. During the development of the last plan, automated vehicles was included as an alternative; however, as technology has rapidly developed in the past five years, the idea of a fully automated vehicle is more probable in transportation than it was during the last update. In addition, a more detailed review of each transportation threat, solution, and alternative is included in this section.

**Table VI.1: Transportation Threats, Solutions, and Alternatives**

<b>Transportation Threats</b>
Age of infrastructure
Aging population
Decrease in population
Decrease in funding and buying power
Pavement and bridges were not designed to carry weight loads that they do
Increased rail traffic
Weather
<b>Transportation Solutions (Opportunities)</b>
Expanding Highway 20
Regional Airports
Development of Trails
Railroads
Tourism opportunities
Improvements on infrastructure and surrounding infrastructure will bring development
Carpooling
The expansion of expressway bypass outside of Le Mars
State Funding Legislation
<b>Transportation Alternatives</b>
Bridge replacement alternatives
Automated Vehicles
Rumble strips
Better effort to improve locations of utility line
Bill miles to drivers for wear and tear on the roads

## **A. Transportation Threats**

The following transportation threats are issues both the public and stakeholders have listed as negative possibilities and conditions that have a significant chance of occurrence in the area. The following threats are a hindrance on the efficiency and the safety of the transportation network. The list is not all-inclusive of every transportation threat the region may encounter, but is a general consensus of the issues at hand.

### **1. Age of infrastructure**

The aging infrastructure has become an area of great concern not only throughout Region IV but the state of Iowa as well. The need to maintain and improve aging infrastructure keeps increasing while the funds used to maintain the roads remains flat and in some cases is declining. Currently, the price of materials has been inconsistent with sharp increases and slight declines per year and with the rise of the inflation rate slightly increasing since January 2000, this is a significant issue. Because many of the roads were built at approximately the same time, renovation and repair will be required simultaneously. This is especially difficult since an increase in the price of materials and a decrease in funding is currently the norm. The price

increase of materials and decrease in funding sources is the reason this transportation threat should be a source of concern.

## **2. Aging population**

With an aging population, transportation safety measures are becoming a basis of concern. As referenced in Chapter Three: Regional Background and Trends, a sub-trend in the region is the gradual aging of the population. The median age will continue to increase rapidly owing to the sheer size and dominating influence of the “baby boom” cohort in the population. Steps will need to be taken to guarantee the aging population is safe while traveling. Larger signage and sign placement for optimal viewing are possible safety alternatives for aging drivers. Mobility decreases as a population ages, making the safety issue especially acute in rural areas where transport is principally provided by personal automobiles. Isolation of persons who are no longer able to drive will become more common and a theme for mobility issues. Opportunities to improve upon the existing services in place in the region and to provide alternative transportation modes to the older population include carpooling, simple neighborliness, Siouxland Regional Transit System (SRTS), churches, assisted living facilities, non-profit agencies, and human service agencies are alternative modes of mobility for these populations.

## **3. Decrease in population**

The population of the region has been gradually declining over the years with the regression being particularly steep in the predominately rural counties of Ida, Monona, and Cherokee. If past trends hold true, the population is not anticipated to grow over the duration of this plan keeping (reference Chapter Three: Regional Background and Trends). With an accelerated demand on the roads there are increased requirements for new infrastructure and maintenance; decrease in population has a vast impact on the transportation network. The declining populations in the counties fail to generate the revenue required to maintain the demanding infrastructure commitments and the raising costs of materials. Although the region as a whole is seeing a decrease in the population, the demand for new infrastructure and maintenance has not and will not change.

## **4. Decrease in funding and buying power**

The core issue Region IV, the state of Iowa, and even the United States will face is the decrease in funding received for infrastructure. An increase in funding is required to keep up with

inflation. However, inflation is not the only problem; a decline in the buying power of materials for roads is a major concern. With the price of materials rising due to high fuel costs, the probability of funding decrease is certain. If funding does not increase on level with all the obstacles, support for new projects is precarious. If funding remains flat, only preservation for the existing system can remain in place.

The state of Iowa currently ranks 14<sup>th</sup> in the nation in the miles of roadways making up its network and fifth in the number of bridges. As of the 2010 U.S. Census, Iowa ranks 30 out of 51 (with the inclusion of the District of Columbia) in terms of population and ranks 24<sup>th</sup> in land mass. Iowa has an extraordinary road network given its population size and the landmass. Iowa faces in the approaching 20 years, a shortfall of in system maintenance funding.

During the development of the 2035 Long Range Transportation Plan, the Iowa DOT was preparing a report (TIME-21) that outlined the shortfall the state could anticipate over the next 20 years and how roads would be affected. The need to maintain and improve aging infrastructure was discussed as the costs were increasing and the funds used to care for roads remained flat and in some cases declining. In 2008, TIME-21 was established through legislation. This revenue was enacted to help prevent a steep shortfall of funding and included new revenues by changing certain vehicle registration fees and schedules and by increasing trailer and title fees. While TIME-21 helped bridge some of the shortfall, the region and state are still in need of additional revenue to maintain the transportation network.

Below, Table VI.2 (page V-5) shows six different types of materials used in construction and how their buying power has declined from 1989 to 2013. This trend is expected to continue.

**Table VI.2: Buying Power Decline from 1989 to 2013**

	<b>Roadway Excavation</b>	<b>Hot-Mix Asphalt Surfacing</b>	<b>Portland Cement Concrete Surfacing</b>	<b>Reinforcing Steel</b>	<b>Structural Steel</b>	<b>Structural Concrete</b>
--	-------------------------------	--	---	------------------------------	-----------------------------	--------------------------------

<b>1989</b>	10 cubic yards/\$9.90	10 tons/ \$209.50	100 sq. yards/\$1,401	1000 pounds/\$380	1000 pounds/\$1,000	100 cubic yards/\$16,931
<b>2006</b>	4 cubic yards/\$9.90	5 tons/ \$209.50	53 sq. yards/\$1,401	528 pounds/ \$380	661 pounds/ \$1,000	52 cubic yards/\$16,931
<b>2013</b>	2.5 cubic yards/\$9.90	3.3 tons /\$209.50	45.4 sq. yards/\$1,401	442 pounds /\$380	507.6 pounds /\$1,000	40.6 cubic yards/\$16,931
<b>Percent decline in buying power</b>	75 percent	66 percent	55 percent	56 percent	49 percent	59 percent

*Source: Iowa Department of Transportation Price Trend Index for Iowa Highway Construction (4<sup>th</sup> Quarter 2013 Report)*

### **5. Pavement and bridges were not designed to bear current weight loads**

The pavement on the region's county and local roadways was not designed to suffer the abuse they are currently undergoing. The roads are required to bear weight loads far beyond the extents expected of them when constructed. The size and amount of today's vehicles and equipment on the roads can cause safety and structural problems. The volume of products transported on thoroughfares in the region is more than the system was designed to accommodate; meaning, the more output of product, the more deterioration of the pavement. Although good for the economy, industries like factory farms, wind energy components, and ethanol plants create extra traffic and weight burdens on the roads.

### **6. Increased rail traffic**

An increase in rail traffic means higher safety measures are required. The region is benefiting from the increase of products being shipped in and out of the area; however, with an increase in train traffic, an increase in safety precautions for the driver is crucial. Extra funding should be required for motorists safety items like cross bars, gates, and lights to create awareness of the immediate train dangers.

### **7. Weather**

Weather is unpredictable, which makes estimating the cost of maintenance and repair difficult. Winter weather is extremely grueling on Iowa's roadways. The freeze and thaw cycles experienced in Iowa create potholes and cracks on the surface of the roads and it is exceptionally difficult to plan the amount of funding to allocate for plowing and salting the roads. Weather can

also cause severe rain storms in the spring and early summer take their toll as well. These storms can produce flooding, flash flooding, and even tornados. There has been varying amounts of flooding in recent years along the Missouri River, Big Sioux River, and Little Sioux River. Flooding can damage roads and trails, while also causing closing of roads within the rivers watershed; these closures have even included areas of I-29. Heavy rainfalls have also caused bridges to washout in the many of Region IV's counties. With these severe storms the potential for tornados is always present. While they may not cause damage to roadway infrastructure, the recovery efforts afterward can cause substantial damage to roadway infrastructure that is not suited for this heavy traffic. While these weather events are again unpredictable, it is important to note and be wary of in the future.

## **B. Transportation Solutions**

The transportation solutions represent the positive possibilities and opportunities for the future of the region. Although there was a significant amount of perceived transportation threats in the region, there was a positive outlook as to the transportation solutions and/or opportunities within Region IV. The following transportation solutions are issues both the public and stakeholders have listed as positive possibilities and conditions in the region.

### **1. Expanding Highway 20**

The expansion of Highway 20 from a two-lane to a four-lane highway would enhance the mobility of the entire region. Since Interstate 80 is the only continuous four-lane major arterial road running east - west across the state of Iowa it will be necessary to have an alternate route. The entire state of Iowa could benefit from another major arterial road running east-west and servicing the northern half of Iowa. With the increasing freight traffic traveling the nation's highways and interstates, a need to keep non-freight traffic safe on the roads is essential. Easing elevated freight traffic on Interstate 80 by expanding Highway 20 to a four-lane road would help with the busy and sometimes unsafe roads. By allowing another major east - west arterial to traverse the state of Iowa, traffic can be dispersed which can alleviate deterioration on one route. Not only would it benefit Iowa's overcrowding and safety concerns, expanding Highway 20 would increase travel on the thoroughfare, which would provide a higher demand for necessities such as food and rest areas, thus helping to improve the local economy. The portions of

Highway 20 that have been completed to a four-lane have seen increases of traffic along the route.

## **2. Regional Airport**

The development of additional regional airports would be advantageous for Region IV. As stated in Chapter Four: Existing Regional Transportation System, there are five airports in the region. Currently the only regional airport is the Sioux Gateway Airport – Colonel Bud-Day Field which is located in the Sioux City Metropolitan area. An additional regional airport would not be solely for human transit but could be used to transfer cargo. By using airplanes to transport additional cargo, there is an opportunity to move goods over long distances through the air rather than on the roads. There are economic benefits of a regional airport such as creating new jobs in the area. Having centrally located airports in the region would assist in the distribution of cargo and/or passengers to the surrounding counties.

## **3. Development of Trails**

Region IV has a great opportunity to continue development of trails within the counties. There are approximately 39 miles of trails running through the region. The Milwaukee Trail is a proposed project running from the SIMPCO MPO boundary to Woodbury County line. This planned trail would run along the C M ST&P right of way. Ida County has identified and started planning a bike trail to connect Galva and Holstein via D15 and into Buena Vista County. The Iowa DOT commissioned a study to identify routes for the Lewis and Clark Multi-Use Trail that would extend from the existing trail network in the south portion of the SIMPCO MPO and follow the Missouri River through Woodbury, Monona, Harrison, Pottawattamie, Mills and Fremont counties similar to the trail along the Mississippi River in eastern Iowa. The Iowa DOT with RDG Planning & Design developed a plan for the trail with the help from a Lewis and Clark Trail Steering Committee and Project Committee which were comprised of stakeholders and those with an interest in the development of the trail. The implementation of the Lewis and Clark Multi-Use Trail would have the potential to entice tourists from outside the state and even outside the country, bringing in opportunities and enhancing the economy. More information on the plan can be found at: <http://www.iowadot.gov/lewisClarkTrail/index.html>. SIMPCO staff developed a Floyd River Valley Trail Study that proposed options for a multi-purpose trail that connected the cities of Sioux City, Hinton, Merrill and Le Mars. The purpose of the study was to

identify a safe and secure transportation link for bicycle and pedestrian travel as a desire for a regional connection was discussed. A copy of the documents can be found on the SIMPCO website at: <http://www.simpco.org/simpco/documents/FloydRiverValleyTrailStudyFinal.pdf>. The Iowa DOT created an Iowa Bicycle and Pedestrian Long-Range Plan called the Iowa in Motion – Planning ahead 2040. This purpose of this plan was to build upon the Iowa DOT’s long-range strategy for multimodal transportation over the next three decades. The plan will serve as the primary guide for statewide decision-making regarding bicycle and pedestrian programs and facilities, including sidewalks, trails, bike lanes, paved shoulders, and other trail elements. It will also help achieve a better level of statewide coordination and continuity for all levels of bicycle and pedestrian mobility through regional, county, and city plans and programs. More information about this plan can be found at: <http://www.iowadot.gov/iowainmotion/index.html>.

#### **4. Railroads**

Railroads have established their importance for the economy in Region IV, which was previously stated in Chapter 4 section H. Railroads have increased the size they carry during one trip, the Iowa DOT’s Office of Rail Transportation says that trains carry 100 plus cars, with each car being 100 – 110 ton cars. Each car has the capacity of hauling 3,500 to 3,900 bushels of grain which is equivalent to 4 semi-tractor trailers. The opportunity to increase the capacity of what a Railroad can haul, allows for more alternative means of transporting goods throughout the nation and Region IV, in a more timely and cost effective manner. This increase also could be an opportunity to improve the rail system in the region and to update safety features to the rail line.

#### **5. Tourism Opportunities**

Tourism could be profitable to the region if it is made a priority since there are already marketable opportunities in the area. Monona and Woodbury Counties align with the Missouri River and Region IV is located in the Loess Hills which is a unique landscape and can be found only in Iowa and a region of China. The Lewis and Clark Multi-Use Trail that was listed above in the development of trails section could be a significant tourism opportunity. The Iowa Department of Natural Resources (Iowa DNR) along with SIMPCO’s assistance is working on a study that would possibly identify the Little Sioux and Big Sioux Rivers as Statewide Designated Water Trails. This may provide another outlet for prospective tourism opportunities. Other

prospects may include regional events and locations that can be found on each counties and cities website. By providing activities, tourism makes life richer for the families in all of the surrounding communities and could potentially help attract young people and families to the area as a place to settle. By creating a tourism outlet, infrastructure must be continually updated to serve not only the community but those visiting as well. TAP funds could be invested in the roads, streetscapes, trails, and cultural or historical facilities to leave a favorable impression upon the tourists journeying to the region, examples of these facilities include the Loess Hills and the Scenic Byway.

#### **6. Improvements on infrastructure and surrounding infrastructure brings development**

By paving the roads and creating a trail and sidewalk system, people begin to feel more comfortable in their surroundings and with the transportation network. Both pedestrian and vehicular traffic is good for the development of a community or neighborhood. The more opportunities created to get from Point A to Point B gives the traveler more options and conveniences. Creating additional roads, trails, and sidewalks; residential or commercial development could begin to see further growth.

#### **7. Carpooling**

In January of 2008, the Sioux City Journal listed Woodbury County as the 2007 Carpool County of Iowa based on U.S. Census Bureau estimates. Below, in Table VI.3, is a list of the percentage of carpoolers in each county, the state of Iowa, and the United States according to the U.S. Census data for the year 2000 and compares it to the 2012 ACS 5-year estimate:

**Table VI.3: Percentages of Carpoolers per County**

	<b>Cherokee County</b>	<b>Ida County</b>	<b>Monona County</b>	<b>Plymouth County</b>	<b>Woodbury County</b>	<b>State of Iowa</b>	<b>United States</b>
<b>Percentage of those who carpooled in the year 2000</b>	9.7%	9.4 %	12.9%	8.9%	13.6%	10.8%	12.2%
<b>Percentage of those who carpooled in the year 2012</b>	11%	6.1%	10.4%	11.3%	9.7%	9.8%	10%

*Source: US 2000 Census and 2012 ACS 5-year estimate*

While carpooling in Woodbury decreased over the timeframe, Cherokee, Monona, and Plymouth Counties had higher percentages of people carpooling to work than the state and national average. This shows a potential opportunity for the region to put together a ride-sharing program much like what has been started in different cities and communities in the Midwest. The Iowa DOT is currently drafting a Park and Ride System Plan for the entire state of Iowa. Three potential Park and Ride Locations are being identified within the region/metropolitan planning areas.

#### **8. The expansion of the expressway bypass outside of Le Mars**

In 2007, the Highway 75 bypass outside the city of Le Mars was opened. With the new bypass, the community has an opportunity to benefit economically by adding commercial industries and expanding the existing local transportation network. The bypass was built to redirect the highway traffic outside of the city creating a safer route for both residents and travelers. With commuters on the bypass, the city of Le Mars, may find it attractive to develop businesses around the Highway 75 area. Zoning regulations and strategic planning should be instituted to assist preparing the development but also, the city of Le Mars has an opportunity to improve the infrastructure of the local road network connecting to the bypass. Updating the infrastructure could help draw commuters in from the highway.

#### **9. State Funding Legislation**

There is an ongoing discussion taking place in the Iowa House of Representatives and the Senate in Des Moines about how and where to obtain additional funding for future infrastructure and maintenance of the existing transportation within the state. It is paramount to pass further

legislation to fund the roads. In May of 2008, the TIME-21 (Transportation Investment Moves the Economy in the Twenty-First Century) Fund was created to distribute new funds generated by increasing vehicle fees. Considerations are still in place to scrutinize raising gas taxes to help fund roads, maintain the state's system and accomplish important future projects. TIME-21 and other legislation have given the region an opportunity to apply for funding to complete essential projects having an impact on local communities. One such project benefiting from the new legislation is the expansion of Highway 20 to a four-lane road.

The Iowa DOT has recently put out a funding concepts list in an effort to broaden transportation funding discussion. The concepts laid out are not a final recommendation and not a part of their legislative proposals but are an effort to receive public feedback on ideas for future funding. These proposals include: dedicate aircraft use tax revenue to the State Aviation Fund; allocate General Fund annual appropriations to the Statutory Allocations Fund for the following new programs; increase oversize/overweight vehicle permit fees; increase the Fee for New Registration from 5 percent to 6 percent; eliminate the state per gallon fuel tax and replace with a state excise sales tax on fuel; apply Local Option Sales Tax (LOST) to fuel sales with move to six percent excise sales tax on fuel sales; apply state excise tax on dyed fuel sales; focus Federal Funding on the Primary Road System; and streamline County Treasurer funding for driver's license and vehicle registration services. The full two page funding concepts can be found in the Appendix.

## **C. Transportation Alternatives**

The transportation alternatives are the possibilities and opportunities whose potential would be realized through adequate resources. Some of these ideas have been implemented within the region but are included in the list as alternatives to highlight the options that county engineers are exercising in Region IV. The following is not an all-inclusive list of alternatives considered by stakeholders to address the key needs and issues of the region but a sampling of choices available for future consideration.

### **1. Bridge replacement alternatives**

Since Iowa ranks fifth in the nation in the number of bridges, it can be expensive and time-consuming when the need to replace them arises. One alternative to bridge replacement is using

box culverts. These culverts are safe and easy to install, small pre-fabricated bridges. Using box culverts over the cast-in-place systems lowers the overall cost and saves time. Another alternative is to construct bridges to the side of the site and move them into the place of the previous bridge. This can be an effective tool when appropriate and saves time which in turn minimizes the impact for the users.

## **2. Automated Vehicles**

Innovative ideas to protect all drivers are vital when taking into consideration: weather problems; aging populations; vehicle operator concerns; and others. The automated vehicle is something the region might encounter in the future. The automated vehicle would be able to judge what is transpiring in the environment and take the necessary precautions.

## **3. Rumble strips**

With the aging population in Region IV, new and creative alternatives are necessary to keep drivers safe and alert on the roads. In 2004 the Iowa Department of Transportation designated shoulder rumble strips as a design standard for all new paved shoulder construction in rural areas. Another innovative idea is to put rumble strips on the center line of a two-lane highway for the stretch of roadway that is a No Passing Zone, thus drawing the attention of the driver to potentially unsafe conditions and help prevent cross-lane crashes. This form of rumble strip is used to address head-on, sideswipe, and crossing-the-centerline crashes on two-lane and rural highways. In 2003 a study by the Insurance Institute for Highway Safety conducted a survey on centerline rumble strips. The study found that head-on and opposing-direction sideswipe crashes were reduced an estimated 21 percent. While rumble strips are a safe and effective tool for motor vehicle awareness, they can be a hazard to bicyclist. The Iowa DOT has provided alternatives that allow gaps in coverage for bicyclists to cross over, which would still provide 80 percent coverage on the road, and larger shoulders.

## **4. Enhanced efforts to improve locations of utility lines**

New transportation construction or expansion projects may now need land where utility lines are presently located. These utility lines will have to be moved in order to complete the project. Since utility lines are expensive to relocate, a long range plan to create a development system is crucial to negate future displacement. The proposed long range plan would estimate where new projects may occur in the future and where lines could be relocated so not to disturb the utility

lines during construction. Once the system is developed, access to documentation and maps should be made widely and readily available.

#### **5. Invoice miles to drivers for wear and tear on the roads**

With the increasing urgency to make cars fuel efficient and environmentally friendly, the gas tax is losing revenue. Proceeds of the gas tax facilitate improvements to the roads, but with cars attaining as much as 50 miles per gallon, it is hard to determine with the gas tax which vehicles are putting more wear and tear on the roadways. The idea of frequently assessing vehicles using Iowa's roads is currently being tested in eastern Iowa as well as other parts of the country. Simply put the state could "bill miles" to drivers based how much and where individuals are driving by tracking miles with some form of a GPS device. In order to succeed, the concept must be simple. People do not need the extra complication of tracking their miles while driving their vehicles and many may balk at the notion of "being tracked".

## **II. Summary**

The purpose of this chapter is to provide a listing of transportation threats, solutions and alternatives within Region IV. The transportation threats, solutions, and alternatives outlined in this chapter support coordination among governments and the public, promote improvements to current and new infrastructure, and encourage the legislation to create new funding sources to make these improvements.