



Central Minnesota Resilient Region Plan

MAP NARRATIVES

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**Regional Sustainable
Development Partnerships**

UNIVERSITY OF MINNESOTA
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Introduction

Communities looking to achieve sustainable growth can utilize maps, data, and analysis as tools to help guide and support decisions on economic development and natural resource preservation. As the Central Minnesota communities of Cass, Crow Wing, Morrison, Todd, and Wadena Counties strive to preserve and enhance quality of life within the region, it is important to consider past and present housing, transportation, natural environment, and economic development conditions.

The goal of map narratives is to provide additional information and insight into the five-county Central Minnesota region’s current and past conditions to aid in the development of the Central Minnesota Sustainable Development Plan. The narratives provide information that compliments and expands upon map information, and includes references to the “Recommendations” established in the Resilient Region Plan’s *Themes, Issues, Goals, Recommendations, and Action Steps* document.

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Central Minnesota

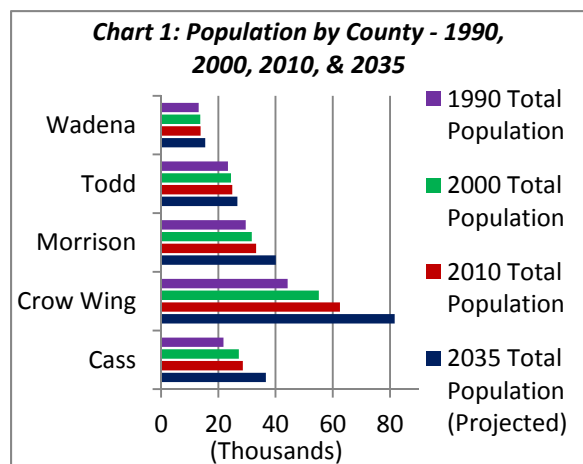
The *Central Minnesota* map illustrates the five-county Central Minnesota Resilient Region. Minnesota Department of Natural Resources (MN DNR) and Minnesota Department of Transportation (MN DoT) data is used to create map information.

Located in north central Minnesota, the counties of Cass, Crow Wing, Morrison, Todd, and Wadena comprise the five-county Central Minnesota region. The region is a rural and small town area with a population of 162,000 in 69,194 households spread over an area of 3,996,051 acres.¹ The area includes over 200 small towns of varying sizes, of which 65 are incorporated. Cities with population greater than 5,000 include Baxter (Crow Wing) and the region's county seats in Brainerd (Crow Wing), Little Falls (Morrison), Long Prairie (Todd), Wadena (Wadena), and Walker (Cass). The five-county region's population is concentrated the greatest in and around the Brainerd Lakes Area. Brainerd and Baxter cities serve as the region's hub for many recreational, governmental, health care, and retail services.² Northern Cass County, along with bordering Beltrami, Hubbard, and Itasca Counties, are home to the Leech Lake Band of Ojibwe and Leech Lake Reservation, one

of Minnesota's seven Anishinaabe (Chippewa, Ojibwe) reservations. Established in 1855, the reservation is considered a separate and distinct nation by the United States government.³

Geographically the region is unique in that three distinct environments or biomes meet. The western plains and prairies, the northern coniferous forest, and eastern hardwood forest all intersect in central Minnesota. To the north, there are deep pine forests, the majority of which are state and federal land. Lakes, large and small as well as the Mississippi River, run through the surrounding terrain. The south and west boundaries of the region possess rich farmland and rolling hills that define the pastoral landscape. Still an agricultural hub, the area has expanded. Developments in biomass technology raise future expectations for becoming a producer of renewable energy and increased economic development.⁴

The five-county area offers an abundance of business, industry, cultural, and natural resources. Referred to as the Central Lakes Region, tourism is one of the major economic engines of the region.⁵ Area water bodies, including Alexander, Gull, Leech, Osakis, Pelican, Ten Mile, Whitefish, and Winnibigoshish Lakes, along with Crow Wing, Gull, Long Prairie, Sauk, and Mississippi Rivers offer visitors a variety of recreation opportunities. Extensive trails systems, including the Paul Bunyan, Soo Line, and Heartland trail systems provide mountain bike, ATV and snowmobile riders a unique experience.⁶



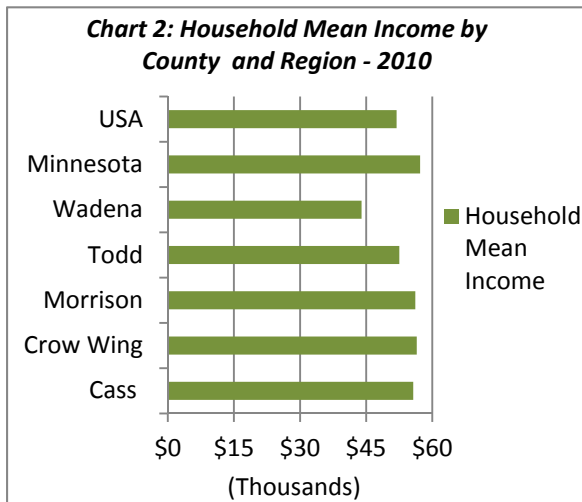
^{1, 2, 4, 5, 6} Region Five Development Commission website accessed September 2012. <http://www.regionfive.org>

³ Indian Affairs Council website accessed September 2012. <http://www.indianaffairs.state.mn.us>

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The region is also well served by state, regional, and local roadways. Area roadways provide convenient access to locations throughout the five-county region, along with access to economic centers outside the region's borders. Roadways such as Highways 10, 94, 169, and 371 provide access to the cities of Bemidji, Grand Rapids, and St. Cloud.



What does the five-county Central Minnesota data suggest in regards to choices the region has to make or solutions they should consider for the future? Creating and sustaining healthy ecosystems, diverse economies, and vibrant communities within the region may mean a need for:

1. Encouraging local units of government to voluntarily coordinate, develop, and implement conforming technical guidelines, planning and zoning standards and ordinances. (HI1)
2. Extending high-speed internet access to the entire region to increase telecommuting opportunities, provide greater access to customers and markets for businesses, and allow all residents access to civic resources and commerce. (CI)

3. Developing breakthrough technology in energy production critical for advancing the industry cluster and the region. (EI)
4. Improving environmental and economic outlook by promoting land use plans addressing and balancing long-term economic and environmental needs. (NR1)
5. Understanding the demographic and skill make-up of the people in the region's major employment sectors in order to educate and retain workforce. (EW1)
6. Improving public transit in the region to get products to markets, respect tighter public budgets, and improve transit options to affordably transport people. (TI)
7. Financing that provides capital to new and expanding businesses, especially entrepreneurs and companies in research and development stages. (EC1)
8. Providing health care services that are accessible and sustainable for all residents. (HCI)
9. Providing an aging and shrinking workforce the skills necessary to be productive, valued, and self-reliant, rather than dependent on society. (CPI)
10. Tightening resources, promoting efficiency and effectiveness, and fostering innovation in public and private institutions to minimize dependence on spending from traditional sources. (EEI)
11. Affordable housing that includes development of rental and single-family housing, affordable pricing and/or financing, innovative building design and technology, and addressing the need for senior housing and shelter for the homeless. (AHI)

Central Minnesota Resilient Region Plan

Central Minnesota

Central Minnesota Counties, Cities, and Townships

(Info taken from Minnesota State Demographic Center - 2011)

Cass County

Ansel township
Backus city
Barclay township
Becker township
Bena city
Beulah township
Birch Lake township
Blind Lake township
Boy Lake township
Boy River city
Boy River township
Bull Moose township
Bungo township
Byron township
Cass Lake city
Chickamaw Beach city
Crooked Lake township
Deerfield township
East Gull Lake city
Fairview township
Federal Dam city
Gould township

Hackensack city
Hiram township
Home Brook township
Inguadona township
Kego township
Lake Shore city
Leech Lake township
Lima township
Longville city
Loon Lake township
McKinley township
Maple township
May township
Meadow Brook township
Moose Lake township
Motley city (part)
Otter Tail Peninsula township
Pike Bay township
Pillager city
Pine Lake township
Pine River city
Pine River township

Ponto Lake township
Poplar township
Powers township
Remer city
Remer township
Rogers township
Salem township
Shingobee township
Slater township
Smoky Hollow township
Sylvan township
Thunder Lake township
Torrey township
Trelipe township
Turtle Lake township
Wabedo township
Walden township
Walker city
Wilkinson township
Wilson township
Woodrow township

Crow Wing County

Baxter city
Bay Lake township
Brainerd city
Breezy Point city
Center township
Crosby city
Crosslake city
Crow Wing township
Cuyuna city
Daggett Brook township
Deerwood city
Deerwood township
Emily city
Fairfield township
Fifty Lakes city
Fort Ripley city

Fort Ripley township
Gail Lake township
Garrison city
Garrison township
Ideal township
Irondale township
Ironton city
Jenkins city
Jenkins township
Lake Edward township
Little Pine township
Long Lake township
Manhattan Beach city
Maple Grove township
Mission township
Nisswa city

Nokay Lake township
Oak Lawn township
Pelican township
Pequot Lakes city
Perry Lake township
Platte Lake township
Rabbit Lake township
Riverton city
Roosevelt township
Ross Lake township
St. Mathias township
Timothy township
Trommald city
Wolford township

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Central Minnesota Counties, Cities, and Townships (cont.)

Morrison County

Agram township
Belle Prairie township
Bellevue township
Bowlus city
Buckman city
Buckman township
Buh township
Culdrum township
Cushing township
Darling township
Elmdale city
Elmdale township
Flensburg city
Genola city
Granite township
Green Prairie township

Harding city
Hillman city
Hillman township
Lakin township
Lastrup city
Leigh township
Little Falls city
Little Falls township
Morrill township
Motley city (part)
Motley township
Mount Morris township
Parker township
Pierz city
Pierz township
Pike Creek township

Platte township
Pulaski township
Randall city
Richardson township
Ripley township
Rosing township
Royalton city (part)
Scandia Valley township
Sobieski city
Swan River township
Swanville city (part)
Swanville township
Two Rivers township
Upsala city

Todd County

Bartlett township
Bertha city
Bertha township
Birchdale township
Browerville city
Bruce township
Burleene township
Burnhamville township
Burtrum city
Clarissa city
Eagle Bend city
Eagle Valley township
Fawn Lake township
Germania township

Gordon township
Grey Eagle city
Grey Eagle township
Hartford township
Hewitt city
Iona township
Kandota township
Leslie township
Little Elk township
Little Sauk township
Long Prairie city
Long Prairie township
Moran township
Osakis city (part)

Reynolds township
Round Prairie township
Staples city (part)
Staples township
Stowe Prairie township
Swanville city (part)
Turtle Creek township
Villard township
Ward township
West Union city
West Union township
Wykeham township

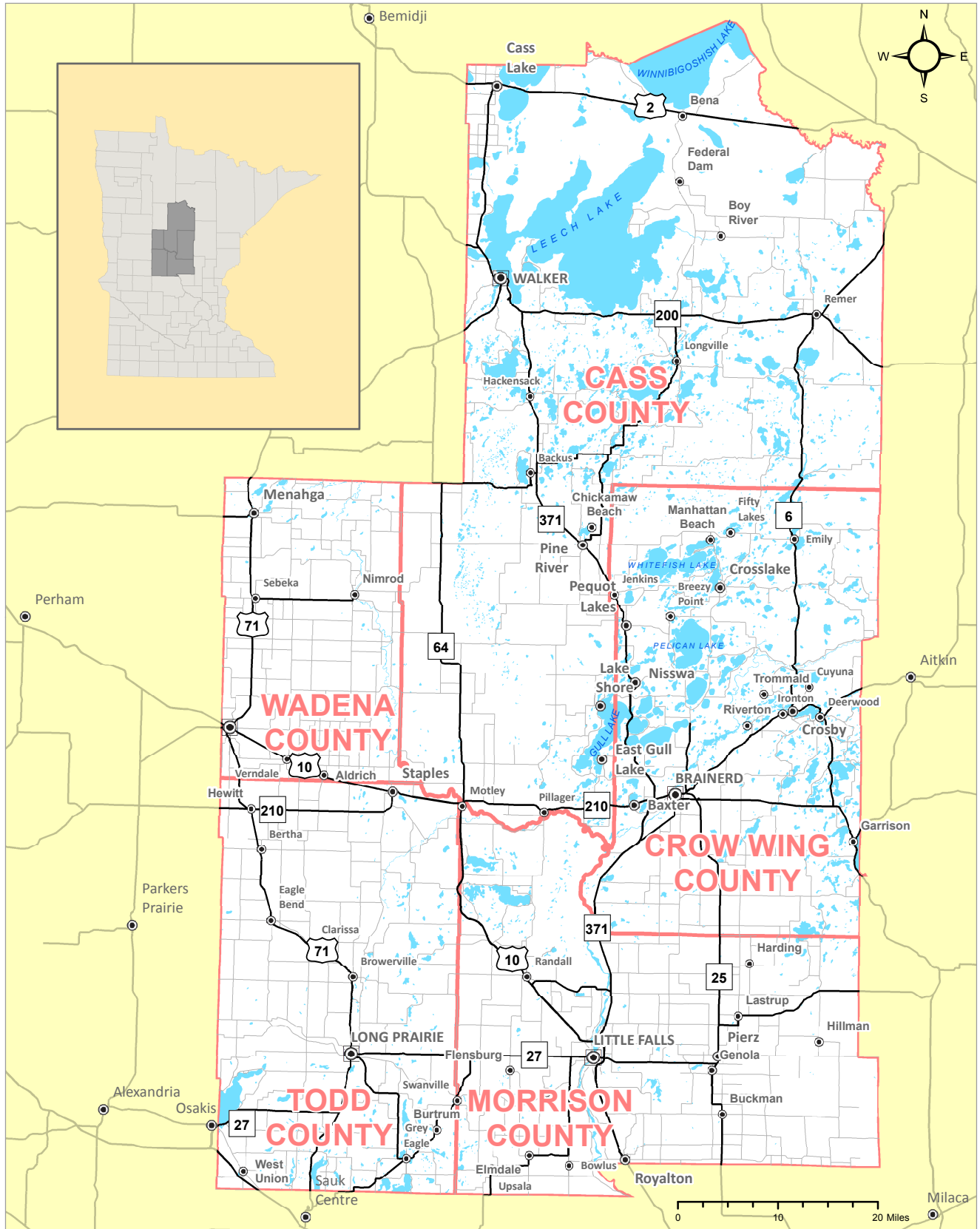
Wadena County

Aldrich city
Aldrich township
Blueberry township
Bullard township
Huntersville township
Leaf River township
Lyons township
Meadow township
Menahga city
Nimrod city

North Germany township
Orton township
Red Eye township
Rockwood township
Sebeka city
Shell River township
Staples city (part)
Thomastown township
Verndale city
Wadena city (part)

Wadena township
Wing River township

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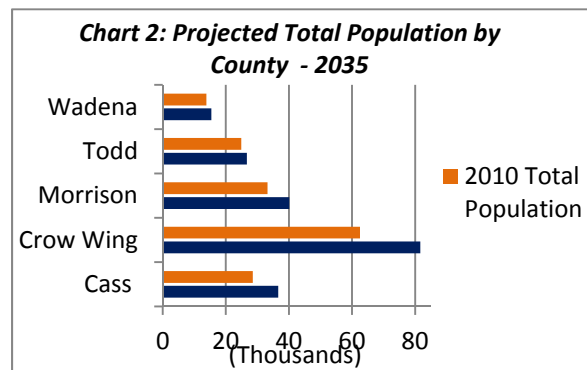
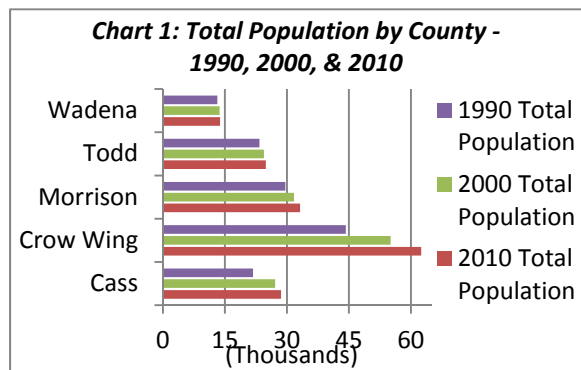
2010 Population Density

The 2010 Population Density map illustrates the distribution of population within the five-county Central Minnesota region. 2010 Census Bureau Redistricting Data is used to support map information. Population density illustrated on the map is accurate to the five-county region's census blocks. Census blocks are statistical areas bounded by visible features, such as streets, roads, streams, and railroad tracks, and by nonvisible boundaries, such as selected property lines and city, township, school district, and county limits and short line-of-sight extensions of streets and roads. Generally, census blocks are small in area. In suburban and rural areas, census blocks may be large, irregular, and bounded by a variety of features, such as roads, streams, and transmission lines. In remote areas, census blocks may encompass hundreds of square miles.¹

The five-county Central Minnesota region includes 65 incorporated cities, three of which have a population over 5,000.² Population centers within each county are found in Walker (Cass), Brainerd and Baxter (Crow Wing), Little Falls (Morrison), Long Prairie (Todd), and Wadena (Wadena). Smaller cities with significant population densities are found along Highways 10, 27, 210, and 371 corridors. The highest population density in the region is in and around the Brainerd Lakes Area. Brainerd and Baxter cities serve as the region's hub for many recreational, governmental, health care, and retail services.

What does the five-county population density data suggest in regards to choices the region has to make or solutions they should consider for the future? Changes in population density may mean different choices for housing, infrastructure, and transportation. An increase in population density within the region may mean a need for:

1. Creating neighborhood and communitywide plans that account for the location of infrastructure and encourage efficient and functional development. (HIII Recommendation H4)
2. Ensuring households in the region have high-speed internet access which meets common state standards. (CI Recommendation C1)
3. Increasing collaboration between public and private sectors to implement new energy technologies. (EI Recommendation E1)
4. Balancing development and natural resources by implementing rigorous standards for natural resource protection. (NRI Recommendation NR1)
5. Shifting development patterns away from sprawl and automobile-centric designs through fiscally, socially, and environmentally sound land-use decisions. (NRI Recommendation NR2)
6. Focusing on low-cost, reasonable access to transit service for communities. (CPI Recommendation CP1)



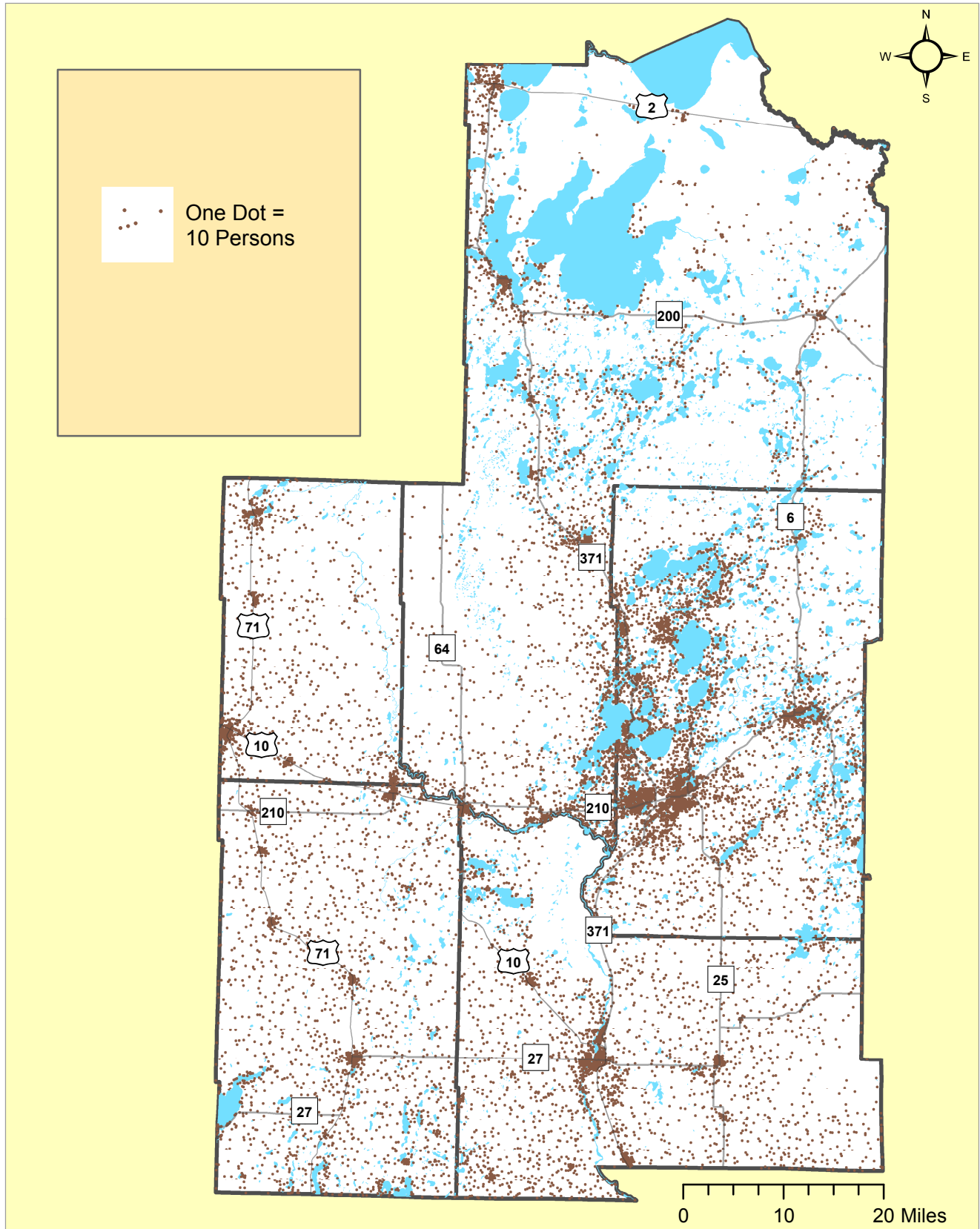
¹ US Census Bureau website accessed August 2012.

<http://www.census.gov>

² Region Five Development Commission website accessed September 2012. <http://www.regionfive.org>

2010 Population Density

Distribution of Population, Accurate to Census Block



Central Minnesota Resilient Region Plan

2010 Minority Population

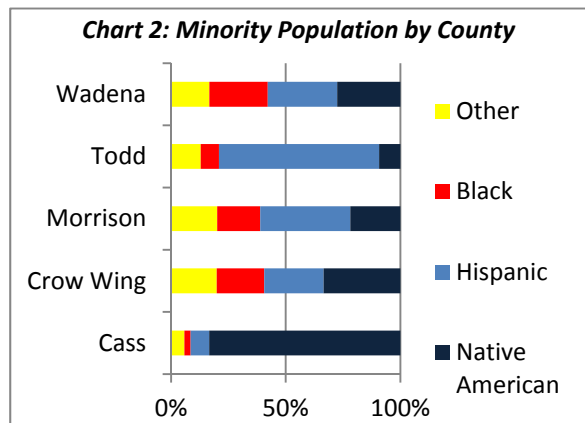
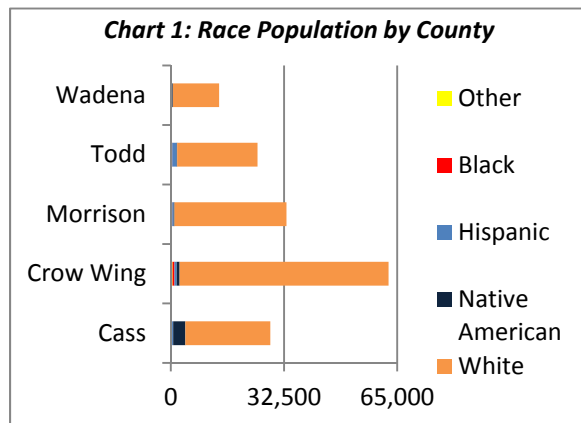
The *2010 Minority Population* map illustrates the percentage of minority population of total population in each minor civil division within the five-county Central Minnesota region. 2010 US Census Bureau race and ethnicity data is used to determine minority categories and population percentages. Minority population groups include individuals categorized as:

- "Black" (Non Hispanic Black or African American plus Non Hispanic Black or African American and White)
- "Asian" (Non Hispanic Asian plus Non Hispanic Asian and White)
- "Hispanic" (Hispanic of Any Race)
- "Indian" (Non Hispanic American Indian and Alaska Native plus Non Hispanic American Indian and Alaska Native and White)
- "Other" (Non Hispanic Some Other Race)
- "Other Multi Race" (Where more than one minority race is listed).¹

Minority populations within the five-county region's total population is relatively low and dispersed uniformly, with most

minor civil division's minority populations at 10% or less. In comparison, Minnesota's state-wide minority population is 16.9%, while the US minority population is 36.3%.² A sizeable portion of Leech Lake Reservation is located in Cass County, where Native Americans make up 83% of the minority population. Overall, the percentage of minority population of total population by minor civil division in Cass County is the region's highest at 61%-90%. At 70%, Todd County has the region's highest percentage of Hispanic population of total minority population.

The five-county region minority population is growing. Comparing 2000 and 2010 US Census Bureau race and ethnicity census data shows an increase from 4.7% to 6.0%.³ To forecast future population numbers for the region, analyzing Minnesota's minority population projections may provide some insight. State-wide population projections indicate an increase in minority population to 25% of the total population by the year 2035.⁴



¹ Minority categories are taken from 2010 Redistricting Data as released by the US Census Bureau for the 2010 census.

² 2010 US Census data. A minority is an individual categorized in a race group other than "Not Hispanic, White alone."

³ 2000 and 2010 US Census data. A minority is an individual categorized in a race group other than "Not Hispanic, White alone."

⁴ 2009 Minnesota State Demographic Center.

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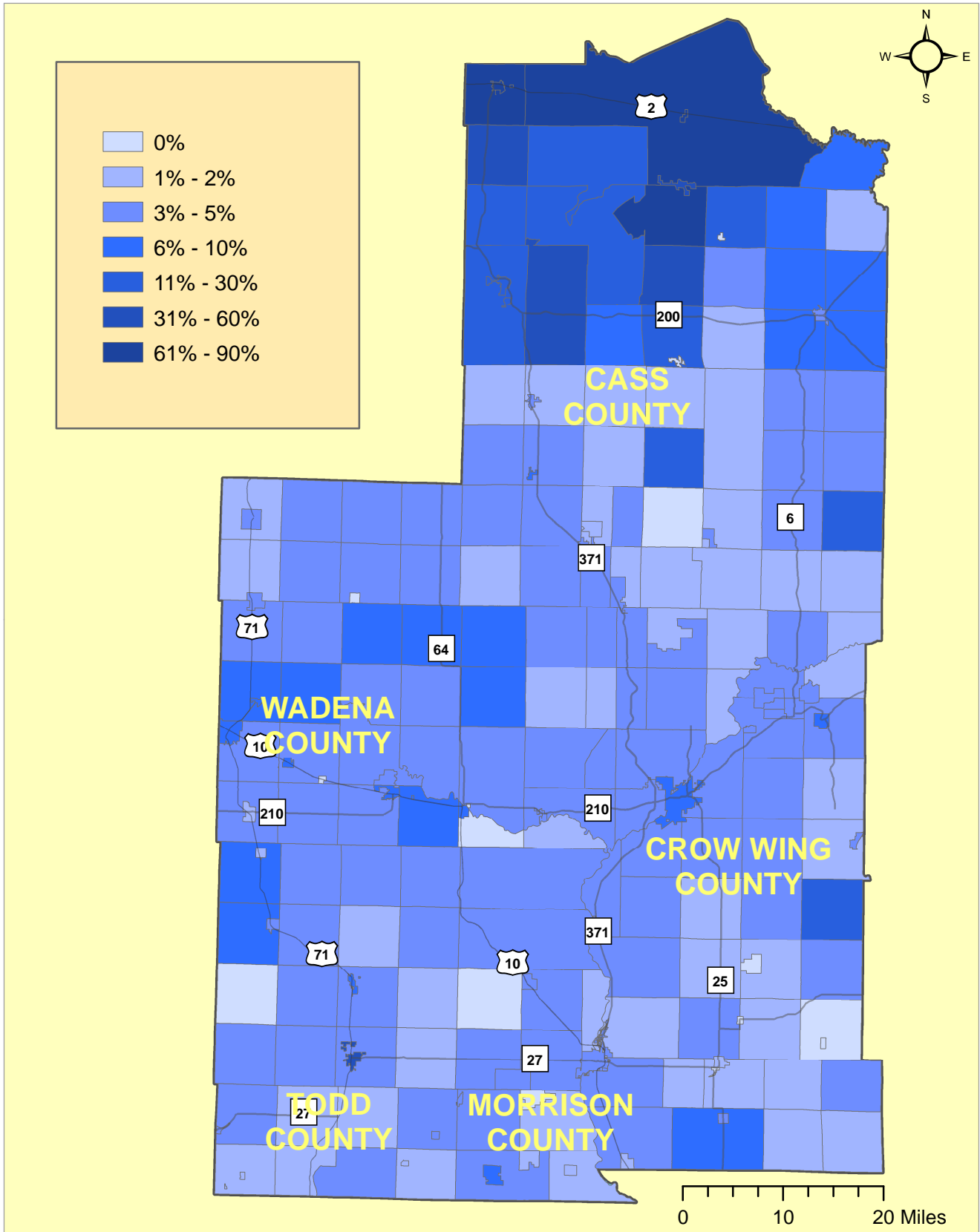
2010 Minority Population

What does the five-county minority population data suggest in regards to choices the region has to make or solutions they should consider for the future? Changes in minority population numbers may mean different choices for housing, jobs, education, and transportation. An increase in the minority population within the region may mean a need for:

1. Promoting options in addition to college for pursuing education, job advancement, and higher pay. This may include additional workplace training, achieving advanced certification and licenses, or seeking other non-traditional pathways to climbing the ladder of success. (EWI Recommendation EW3)
2. Reforming the education and workforce development system by making education affordable for all learners. (EWI Recommendation EW5)
3. Addressing and embracing the various geographic and cultural differences of people in the five-county area. Fund and value art and cultural preservation efforts for all arts, including culinary, visual, and others. (ECIII Recommendation EC3)
4. Improving availability and access to affordable health care services throughout the region. (HCI Recommendations HC2)
5. Focusing on developing low-cost, reasonable access to transit service for communities. (CPI Recommendations CP1)
6. Offering services and opportunities to welcome newcomers into communities and workforce. (CPI Recommendation CP3)
7. Recognizing and addressing the extent of poverty in the region and the need for a comprehensive affordable housing plan. (AHI Recommendation AH3)

2010 Minority Population

Percentage Minority Population of Total Population by Minor Civil Division



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1990-2010 Aging Population

The *1990-2010 Aging Population* map illustrates increase in percentage of population 65 years of age and older in the five-county Central Minnesota region. 1990 and 2010 Census Bureau age and gender data is used to determine percentages.

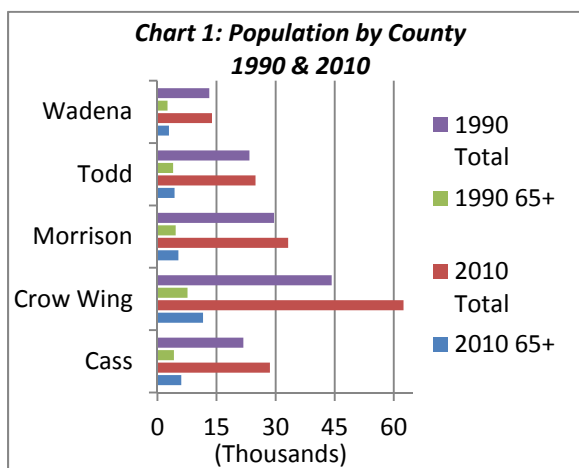
From 1990 to 2010, all five counties within the region experience an increase in percentage of population 65 years of age and older. Cass County and Wadena County achieve the region's highest increase of 1.9%, with aging population percentages increasing from 19.2% to 21.1%. During the same 20 year time period, both Minnesota's (12.5% to 12.9%) and the United States' (12.6% to 13.0%) percentage of population ages 65 and older increase by 0.4%. Cass County and Wadena County share the highest percentage of total population age 65 and older at 21.1%. In comparison, Minnesota's 2010 state-wide percentage of population ages 65 and older is 12.9%, while the US percentage is 13.0%.¹

Minnesota State Demographic Center 2035 projections indicate potential for a dramatic increase in percent of population 65 years of age and older within the five-county region. As of 2010, Morrison County and Todd County populations ages 65 and older, at 16.0% and 17.4% respectively, are projected to increase to 20%-27% of total population. Crow Wing County's population ages 65 and older, at 18.5%

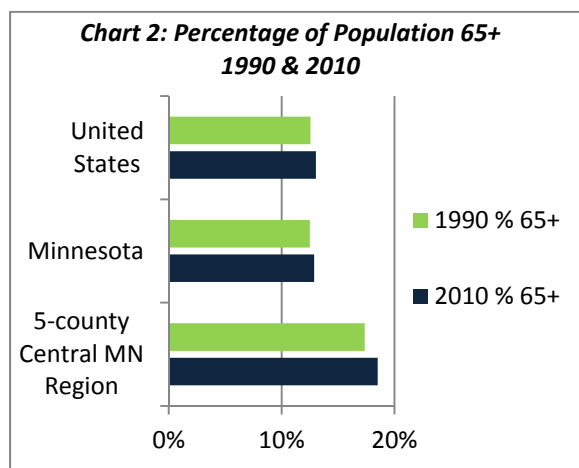
in 2010, is projected to increase to 27%-30%. Cass County and Wadena County, both at 21.1% as of 2010, are projected to see the region's greatest increase in population ages 65 and older at 30%-39% of the total population.²

What does the five-county aging population data suggest in regards to choices the region has to make or solutions they should consider for the future? Changes in percentage of population 65 years of age and older may mean different choices for health care, housing, jobs, education, and transportation. An increase in population of individuals 65 years of age and older within the region may mean a need for:

1. Providing links to social services for residents receiving housing assistance. (HIII Recommendation H5)
2. Prioritizing and promoting lifelong learning for all residents of the region. (EWI Recommendation EW1)
3. Improving availability and access to affordable health care services throughout the region. (HCI Recommendation HC2)
4. Focusing on low-cost, reasonable access to transit service for communities, specifically to serve the aging population. (CPI Recommendation CP1)
5. Providing opportunities and services to update the skills of older workers. (CPI Recommendation CP4)



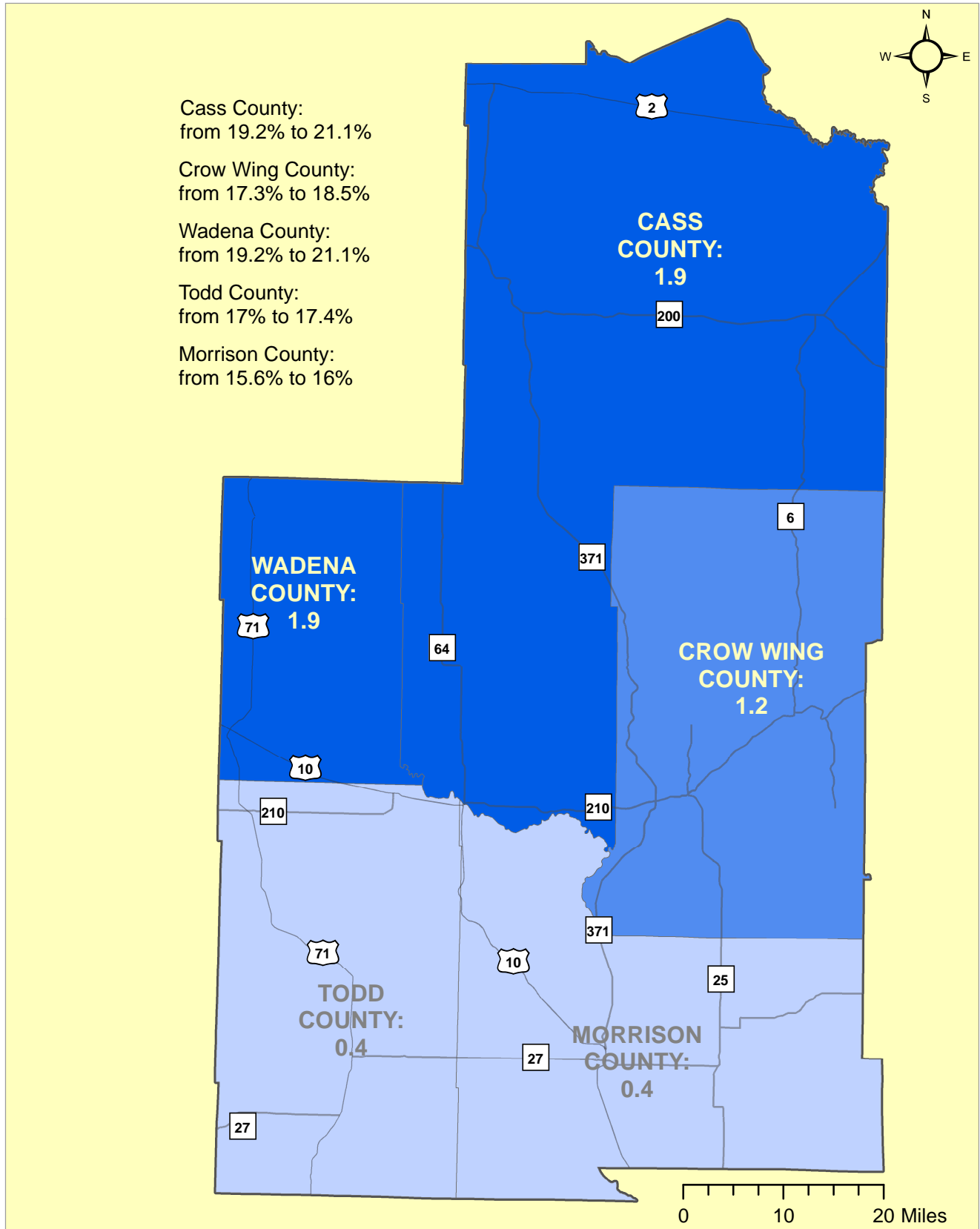
¹ 2010 US Census data.



² Minnesota State Demographic Center Minnesota Population Projections 2005-2035.

1990-2010 Aging Population

Increase in Percentage of Population over 65



Central Minnesota Resilient Region Plan

Lakes and Streams

The *2011 Impaired Lakes and Streams* map illustrates lakes and streams designated as impaired within the five-county Central Minnesota region. United States Environmental Protection Agency (EPA) data and Minnesota Pollution Control Agency (MPCA) data is used to support map information.

The federal Clean Water Act requires states to adopt water quality standards to protect lakes, streams, and wetlands from pollution.¹ The standards define how much of a pollutant can be in the water and still meet designated uses, such as drinking water, fishing, and swimming. The Minnesota Pollution Control Agency (MPCA) monitors and assesses water bodies throughout the state to make sure water quality standards are met. MPCA guidelines determine the extent of violations of standards and whether or not surface waters are considered to be “impaired.” A water body is impaired if it fails to meet one or more water quality standards.² Water quality standards include the following components:

- Beneficial uses - designation of the public uses and benefits our water resources provide to people.
- Numeric standards - allowable concentrations of specific pollutants in water, established to protect the beneficial uses.
- Narrative standards - descriptions or statements of unacceptable conditions in and on the water.
- Nondegradation - extra protection for high-quality or unique waters to keep them from being degraded.³

Numerous pollutants and stressors from a range of sources can affect the quality of Minnesota’s surface waters. The four most common found throughout the five-county Central Minnesota region and Minnesota is mercury, excessive nutrients, *E. coli*, and water turbidity.⁴ Left unmonitored, pollutants and stressors can lead to increased water treatment

costs, reduced fish populations, and unhealthy waters that affect the five-county region’s tourism, eco-tourism, and cultural characteristics.

Mercury can be deposited into lakes and streams through activities such as burning coal, processing taconite, and improper disposal of items such as wiring devices and switches, thermometers, and fluorescent lights. Mercury never degrades and can bioaccumulate through the food chain to toxic levels that can cause serious health effects. One way people are exposed to mercury is through consumption of fish contaminated with mercury deposited in lakes and streams.⁵

Fertilizers containing nutrients such as phosphorous and nitrogen can enter lakes and streams through water runoff from agricultural fields and maintained landscapes. Phosphorus and nitrogen use up oxygen in water bodies, making it unavailable for fish, and fuel algal blooms, making the water unsightly and even unhealthy for swimming.⁶

Escherichia coli (*E. coli*) are the major species of the fecal coliform group of bacteria. They can enter lakes and streams with sewage, wastes, or runoff. The presence of *E. coli* bacteria indicates water bodies may be contaminated with human or animal wastes. Illnesses associated with *E. coli* are typically acquired by eating contaminated food, contact with contaminated drinking water, or swallowing contaminated water while swimming.⁷

Turbidity in water is a measurement of how cloudy or murky it is. Although sediment from erosion or agricultural and urban stormwater runoff is often the cause, increased algae growth from excessive nutrients and breakdown of organic matter can contribute to turbidity. Too much algae or sediment in lakes

¹ For access to the Clean Water Act, visit the U.S. Government Printing Office website. <http://www.gpo.gov/fdsys/pkg/USCODE-2011-title33/pdf/USCODE-2011-title33-chap26.pdf>

^{2, 3, 5, 6} MPCA website accessed July 2012.

<http://www.pca.state.mn.us>

⁴ MPCA TMDL 2010 Impaired Waters List.

⁷ Minnesota Department of Health website accessed July 2012. <http://www.health.state.mn.us>

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Lakes and Streams

and streams can make them unsuitable for recreation and aquatic life.

To identify and restore impaired waters, Section 303(d) of the Clean Water Act requires states to:

1. Assess all waters of the state to determine if they meet water quality standards.
2. List waters that do not meet standards (also known as the 303d list) and update every even-numbered year.
3. Conduct TMDL (total maximum daily load) studies in order to set pollutant reduction goals needed to restore waters.⁸

Federal and state regulations and programs also require implementation of restoration measures to meet TMDLs. According to the Minnesota Final 2010 303(d) List, five-county Central Minnesota water bodies on the approved list of impaired waters needing TMDLs include:

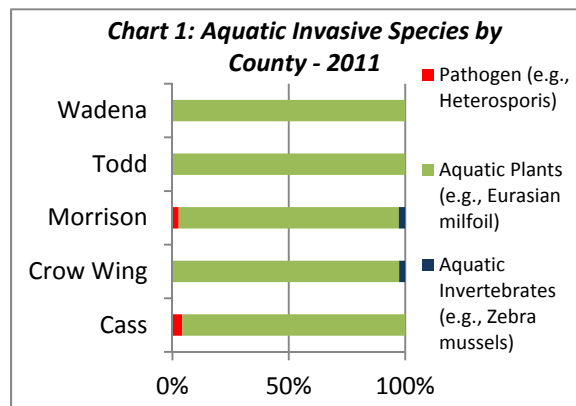
- Ashley, Buffalo, Diamond, Farnahm, Little Rock, Painter, Sand, and Spunk creeks.
- Crooked Lake Ditch
- Long Prairie, Mississippi, Skunk, Straight, and Swan rivers.
- Big Swan, Blueberry, Boy, Crow Wing, Faille, Kego, Maple, Osakis, Ossawinnamakee, Platte, Saulk, Steamboat, Stevens, Ten Mile, and Trace lakes.⁹

The *2011 Aquatic Invasive Species* map illustrates locations of aquatic invasive species throughout the five-county Central Minnesota region. Minnesota Department of Natural Resources (DNR) data is used to support map information. Invasive species are species that are not native to Minnesota. Aquatic invasive species can harm surface waters, affecting economic and environmental health and human health. The five-county region's aquatic invasive species include aquatic plants, aquatic invertebrates, and pathogens.

The two most common invasive aquatic plants identified within the Central Minnesota region are curly-leaf pondweed and purple loosestrife. Although some invasive aquatic

plants, such as curly-leaf pondweed, can provide protective cover for fish or seeds for waterfowl, most are detrimental to lake, stream, and wetland ecosystems. Invasive aquatic plants typically have several methods of reproduction and can grow excessively to compete with and crowd out native plant species. Plants, such as Eurasian watermilfoil, can spread from infected waters to uninfected waters via attachment to boats and other water recreation equipment. They often form dense, impenetrable stands which can be unsuitable for native animals and can interfere with water recreation activities. Water bodies in the region identified as infected include Gull and Leech lakes in Cass County, Pelican and Whitefish lakes in Crow Wing County, Morrison County's Lake Alexander, Osakis Lake in Todd County, and Blueberry Lake in Wadena County.¹⁰

Invasive aquatic invertebrates, such as zebra mussels, can attach to water recreation vehicles and equipment and be transported from infected waters to uninfected waters. Zebra mussels can cause problems for lakeshore residents and recreationists by attaching to equipment motors, rocks, docks, and swimming equipment. Mussels can harm water ecosystems by attaching to and killing native mussels or reducing food availability through excessive plankton filtration. Zebra mussels have been identified in Ossawinnamakee Lake, Rice Lake, Pelican Brook, and Pine River in Crow Wing County, and in the Mississippi River in Crow Wing and Morrison counties.¹¹



^{8,9} MPCA website accessed July 2012. <http://www.pca.state.mn.us>

^{10,11} Minnesota DNR website accessed August 2012. <http://www.dnr.state.mn.us>

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Lakes and Streams

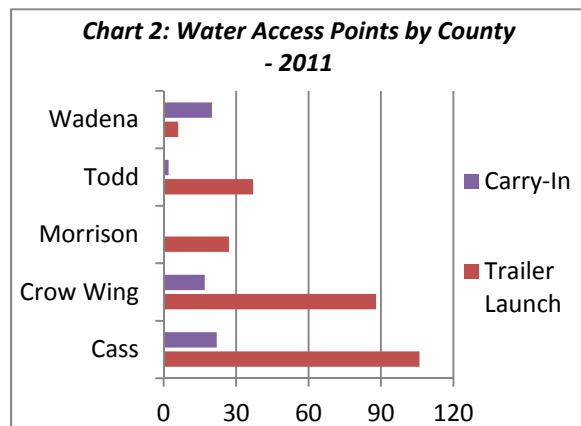
The heterosporis parasite produces millions of spores which infects and gradually destroys muscle tissue of fish. Heterosporis spreads when fish pick up spores from the water or eat infected fish or carcasses, or through infected fathead minnows sold as bait. Fish infected with heterosporis have been discovered in Cass County's Gull, Leech, Vermillion, and Winnibigoshish lakes, and Lake Alexander in Morrison County.¹²

The *2011 Lakes, Streams, and Water Access* map illustrates locations of public water access points within the five-county Central Minnesota region. Minnesota Department of Natural Resources (DNR) Shoreland Management Lake Classifications data is used to support map information. Public waters are lakes, wetlands, and watercourses in which the DNR has regulatory jurisdiction. Public water access points are usually open 24 hours and provide launch ramp or carry-in access to water bodies.¹³ The map illustrates two of DNR's three lake development classifications. Recreational Development Lakes and General Development Lakes are described as follows:

- Recreational Development Lakes usually have between 60 and 225 acres of water per mile of shoreline, between 3 and 25 dwellings per mile of shoreline, and are more than 15 feet deep.
- General Development Lakes usually have more than 225 acres of water per mile of shoreline and 25 dwellings per mile of shoreline, and are more than 15 feet deep.¹⁴

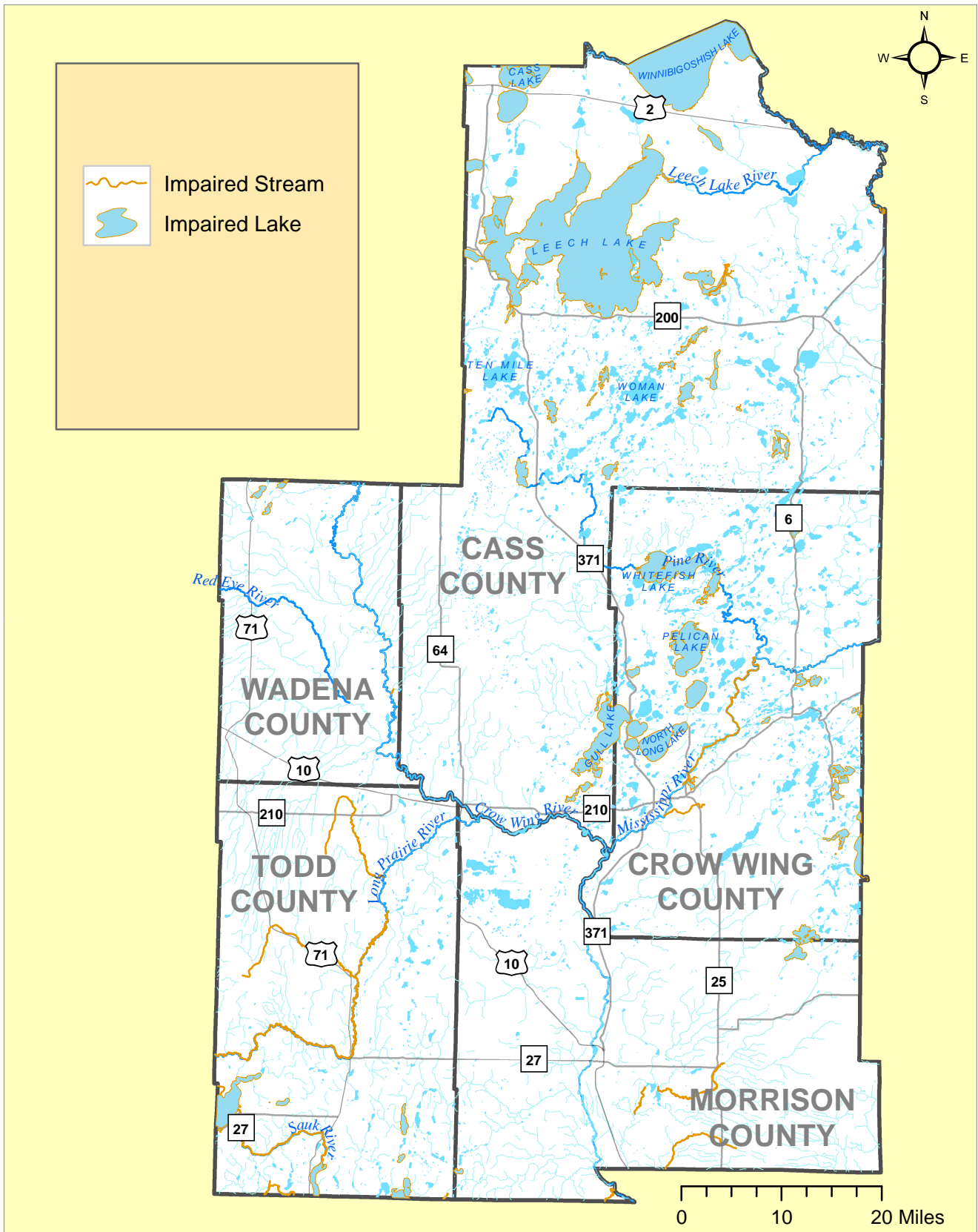
What do the five-county lakes and streams data suggest in regards to choices the region has to make to protect a valuable natural resource? Changes in lake and stream health and water access may mean a need for:

1. Balancing development and natural resources by implementing rigorous standards for natural resource protection. (NRI Recommendation NR1)
2. Shifting development patterns away from sprawl and automobile-centric designs through fiscally, socially, and environmentally sound land-use decisions. (NRI Recommendation NR2)
3. Developing and implementing management plans that protect the region's surface and subsurface water quality for future viability. (NRI Recommendation NR3)

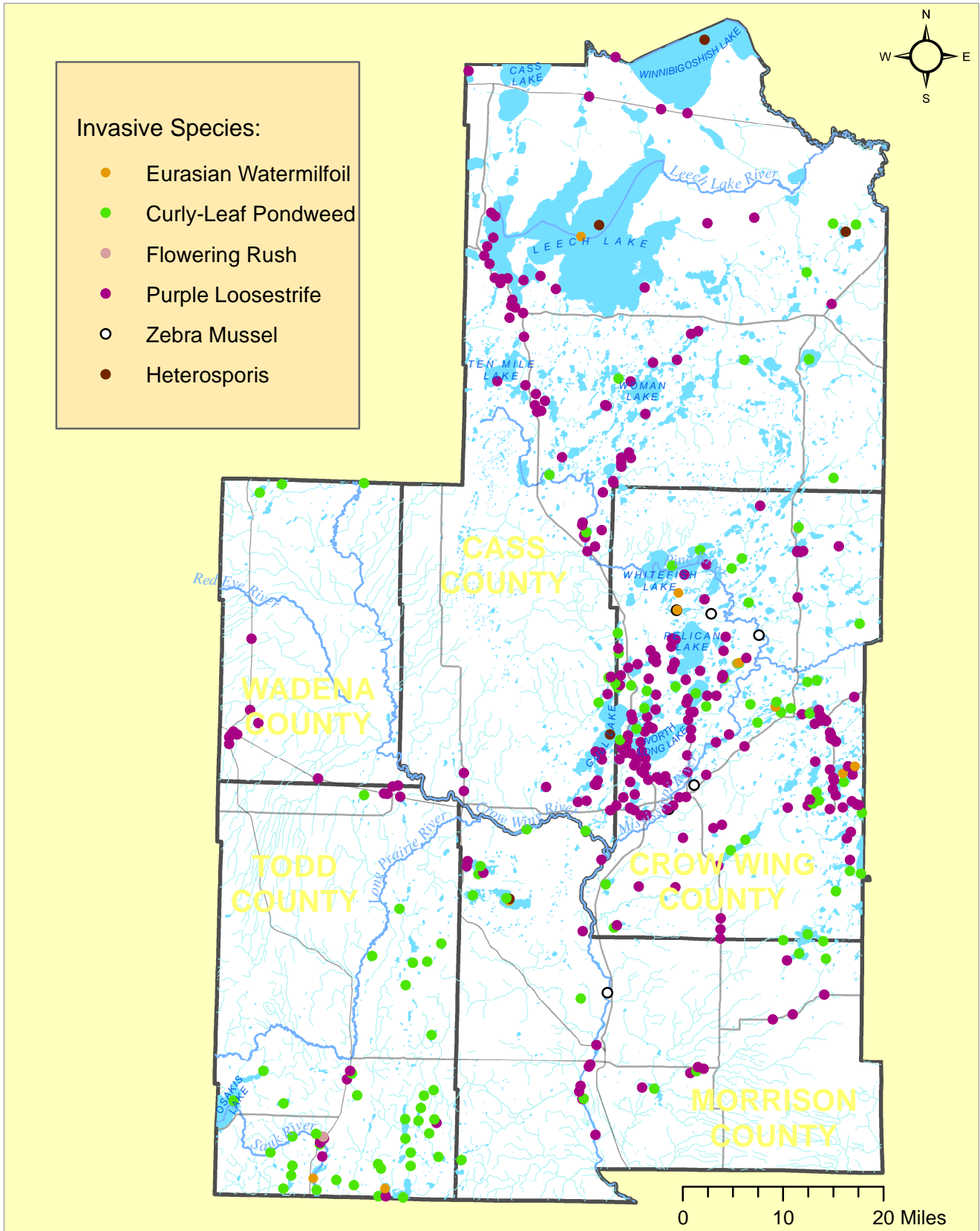


^{12, 13, 14} Minnesota DNR website accessed August 2012.
<http://www.dnr.state.mn.us>

2011 Impaired Lakes and Streams

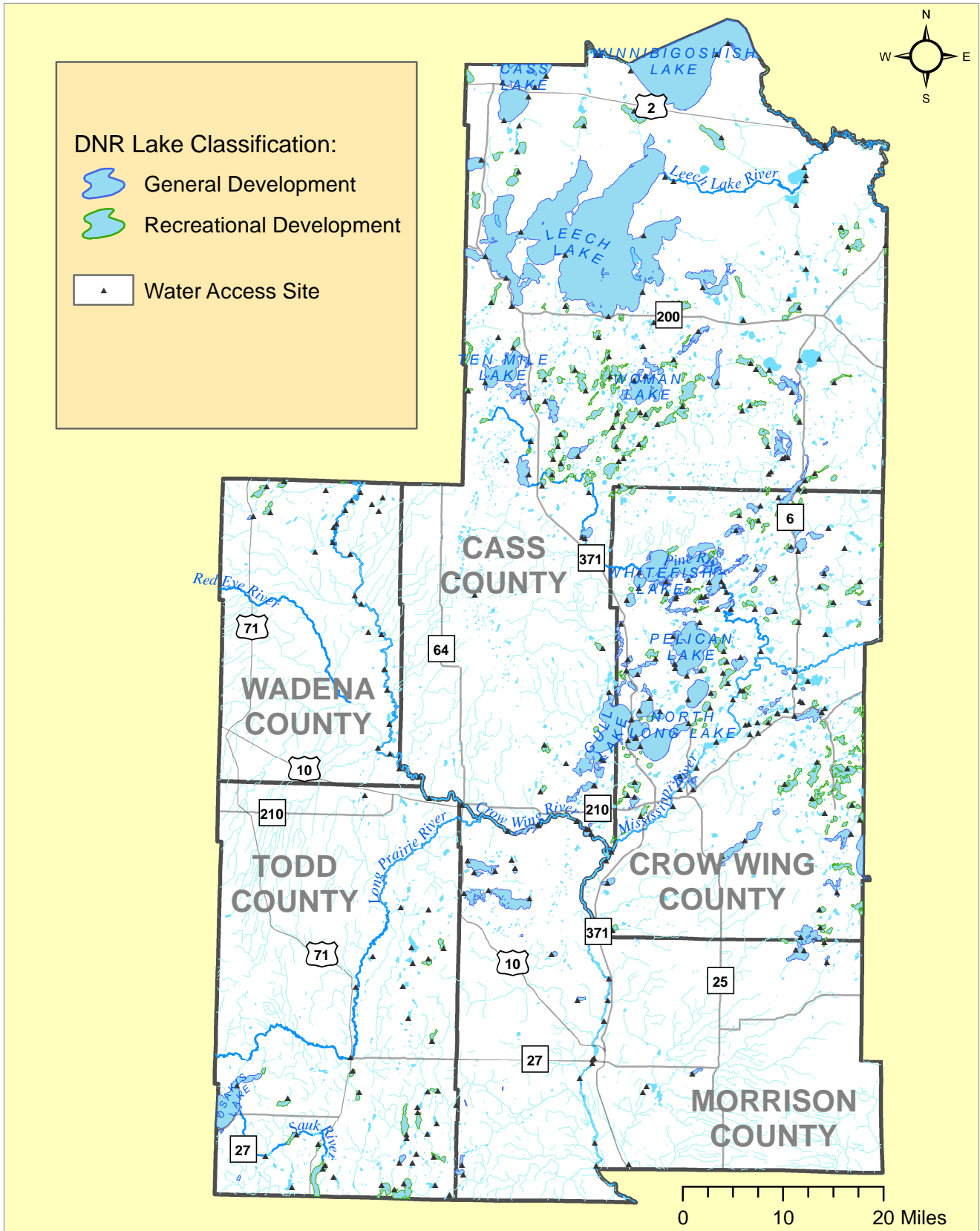


2011 Aquatic Invasive Species



2011 Lakes, Streams and Water Access

By DNR Development Classification



Central Minnesota Resilient Region Plan

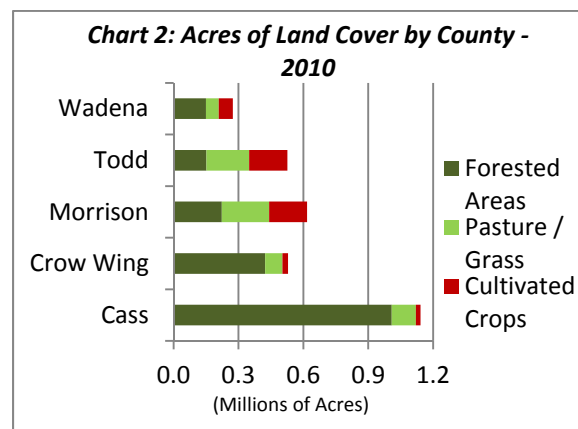
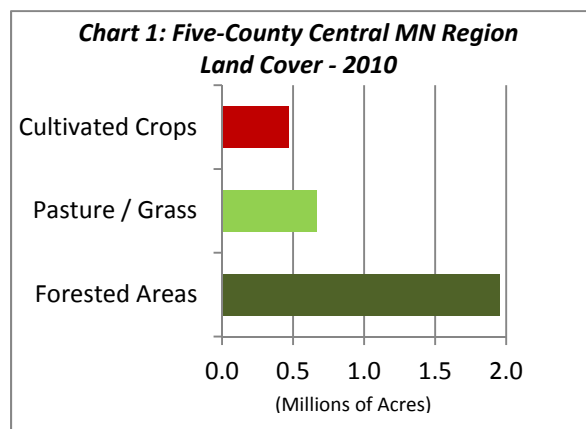
2010 Agriculture and Forestry

The *2010 Agriculture and Forestry* map illustrates land cover classifications within the five-county Central Minnesota region. United States Geological Service (USGS) 2006 National Land Cover Database (NLCD) data and 2010 National Agricultural Statistics Service data is used to determine land cover and agricultural use. Land cover is broadly defined as the biophysical pattern of natural vegetation, agriculture, and human influences.¹ The 2006 NLCD describes land surface conditions in 30-meter cells and are obtained using remote sensing via aircraft and satellite. Because a 30-meter cell size is used to describe land surface conditions, land cover data obtained is not as precise as actual site level land surface conditions. General land cover types within the five-county region are classified as²:

- Cultivated Crops – areas used for the production of annual crops, such as corn, soybeans, and vegetables, and also perennial woody crops such as orchards and vineyards. This also includes all land being actively tilled.
- Pasture / Grass – areas dominated by graminoid or herbaceous vegetation, generally greater than 80% of total vegetation. These areas are not subject to intensive management such as tilling, but can be utilized for grazing.

- Forested Areas – areas characterized by tree cover (natural or semi-natural woody vegetation, generally greater than 20 feet tall); tree canopy accounts for 25% to 100% of the cover.

Existing land cover within the region is associated with the area’s geological history. A unique geographic land cover pattern is evident within the region. The northern portion of the region is home to the majority of the region’s coniferous forests. Hardwood forest are largely found in the eastern portion of the region, and rolling hills, plains, and prairies make up the south and west portions of the region. Land areas with predominant forest cover are found in Cass, Crow Wing, northern Wadena, and northwest Morrison counties. The majority of cultivated crop areas are located in southern Morrison County, Todd County, and a majority of Wadena County. Pasture/grass land cover is dispersed uniformly throughout Morrison, Todd, and Wadena counties, southwest Cass County, and southern Crow Wing County. Within the five-county region, cultivated crops cover approximately 466,100 acres, pasture/grass approximately 666,400 acres, and forested areas approximately 1,956,000 acres.³ (Cont.)



¹ US Geological Survey website accessed June 2012, <http://www.usgs.gov/newsroom/article.asp?ID=2704>
² US Geological Survey Multi-Resolution Land Characteristics Consortium (MRLC) website accessed July 2012, http://www.mrlc.gov/nlcd06_leg.php

³ US Geological Survey website accessed July 2012, <http://www.usgs.gov/newsroom/article.asp?ID=2704>

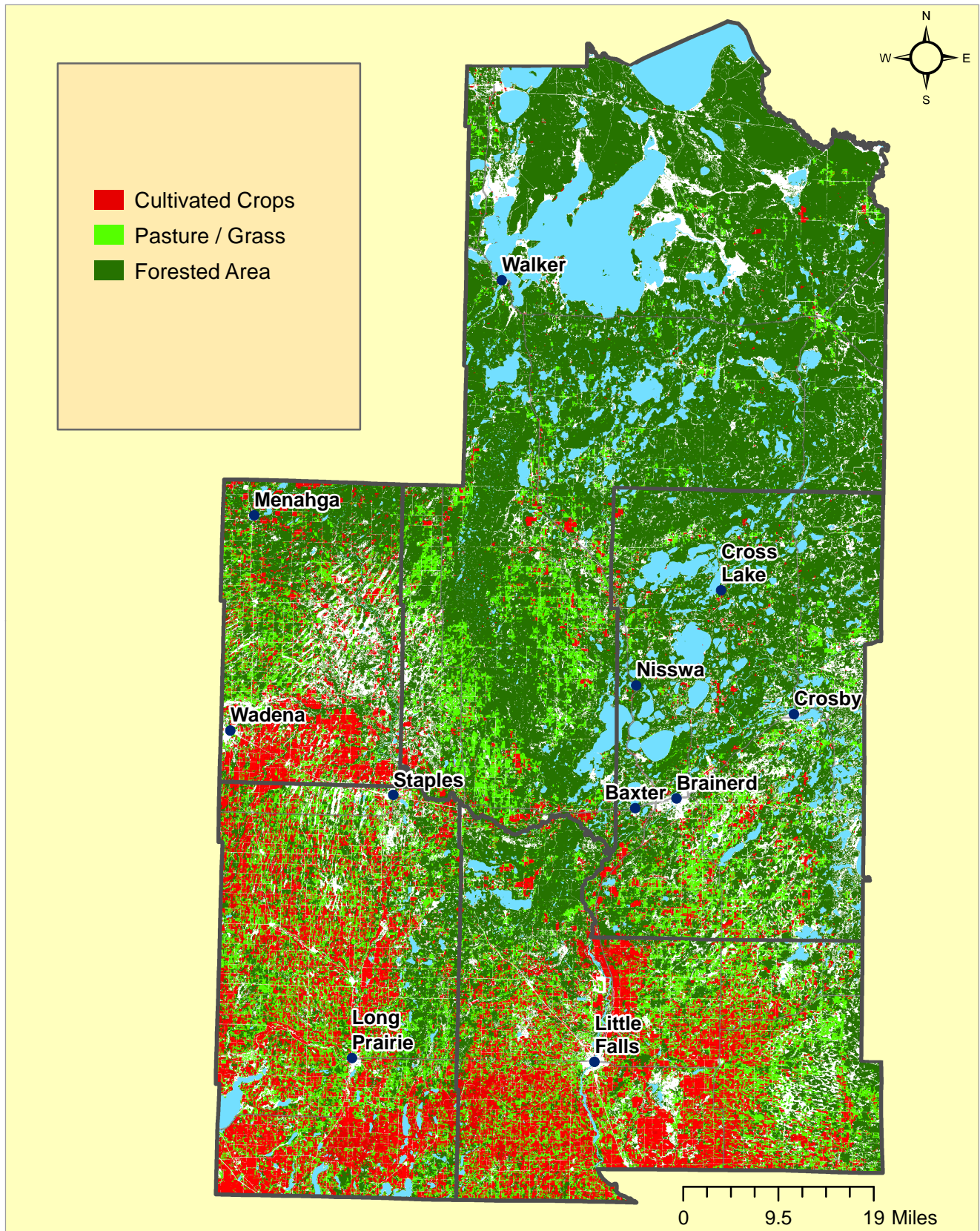
Central Minnesota Resilient Region Plan

2010 Agriculture and Forestry

What does the five-county agriculture and forestry data suggest in regards to choices the region has to make or solutions they should consider for the future? Changes in land use may mean different choices for housing, transportation, and economic development. An emphasis on natural resource preservation and resourceful development patterns within the region may mean a need for:

1. Balancing development and natural resources through rigorous standards for natural resource protection to help recognize the economic and aesthetic value of healthy environments. (NRI Recommendation NR1)
2. Shifting of current development patterns away from sprawl and automobile-centric designs by embracing and implementing sound land-use decisions. (NRI Recommendation NR2)
3. Promoting and supporting the expansion of the local food economic sector. (ECII Recommendation EC2A)

2010 Agriculture and Forestry



Central Minnesota Resilient Region Plan

Affordable Housing

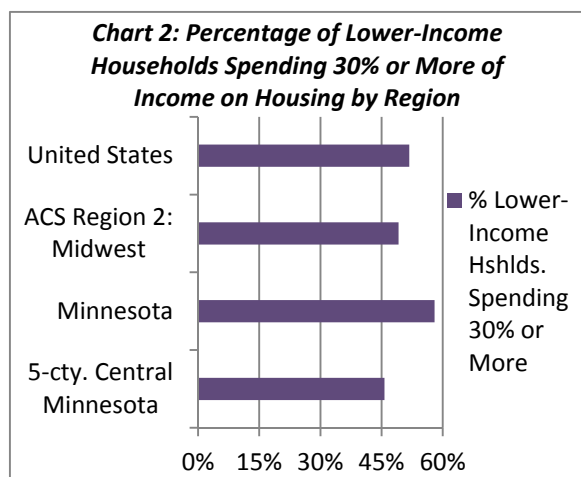
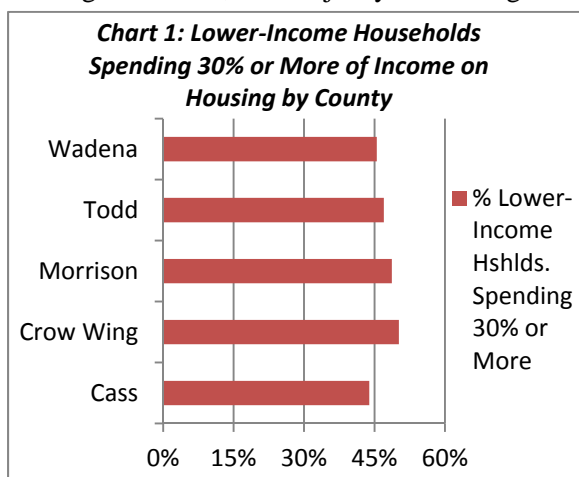
The 2011 *Affordable Housing Need* map illustrates percentage of lower-income households spending 30% or more of their income on housing in the five-county Central Minnesota region. 2011 Minnesota Housing Finance Agency affordable housing and household income data and information are used to determine percentages. Lower-income households are defined as owner-occupied households with annual incomes less than or equal to \$50,000.¹ Geographic areas shown within each county are 2010 US Census Bureau Census Tract areas. Census tracts are statistical subdivisions that generally have a population size between 1,200 and 8,000 people, with an optimum size of 4,000 people. The primary purpose of census tracts is to provide a stable set of geographic units for the presentation of statistical data.²

The five-county region is divided into 40 census tracts varying in size and number within each county. Cass County's northernmost census tract has a region-low 26% of low-income households spending 30% or more of their income on housing. At 63%, the census tract located in west-central Crow Wing County has the region's highest percentage.³ The region's data indicates a wide range for percentage of lower-income households spending 30% or more of their income on housing. However, the majority of the region's

census tracts (36 of 40) fall within the percentage range where lower-income households spend 41%-60% of their income on housing. In comparison, Minnesota's state-wide percentage of lower-income households spending 30% or more their income on housing is 58.0%. The American Community Survey (ACS) Region 2: Midwest is 49.1% and the US percentage of lower-income households spending 30% or more of their income on housing is 51.8%.⁴

The 2012 *Affordable Apartment Units* map illustrates the number of public rental housing units within the five-county Central Minnesota region. Total units in each municipality indicated on the map are obtained from 2012 Central Minnesota Housing Partnership data and information.

Except for Cass County, all other counties in the five-county region have at least one municipality with 100 or more total apartment units. Brainerd, the region's most populous city, has the greatest number of units at 451. Little Falls is second with 390 units, followed by Wadena with 131 units and Long Prairie with 124 units.⁵ Common to all four cities with 100 or more affordable apartment units is their location to adjacent transportation corridors that provides access to affordable apartment units. (Cont.)



^{1,3} 2011 Minnesota Housing Finance Agency.

² 2010 US Census Bureau Geographic Terms and Concepts.

⁴ US Census Bureau American Community Survey 2006-2010 5-Year Estimates. ACS Region 2: Midwest includes IA, IL, IN, KS, MI, MN, MO, ND, OH, SD, and WI.

⁵ 2012 Central Minnesota Housing Partnership.

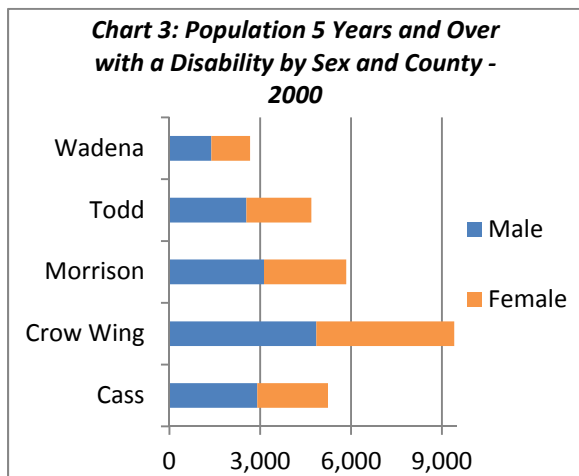
Central Minnesota Resilient Region Plan

Affordable Housing

The 2000 *Persons with Disabilities* map illustrates percentage of the population five years old and over with a disability within the five-county Central Minnesota region. Data from the 2000 US Census Bureau survey is used to establish percentages. For Census 2000, disability is defined as the existence of long-lasting conditions such as blindness, deafness, or a severe vision or hearing impairment, (sensory disability), a condition that substantially limits one or more basic physical activities such as walking, climbing stairs, reaching, lifting, or carrying (physical disability), or a physical, mental or emotional condition lasting six months or more that make it difficult to perform certain activities.⁶

The percentage of population age five years and older with a disability is relatively similar when comparing the region’s five counties. Percentages range from approximately 18% to 21%, with Wadena County achieving the region’s highest percentage at 21.4% and Crow Wing the lowest at 18.4%. Minnesota’s percentage of population age five years and over with a disability is 15.0%. The US percentage is 19.3%.⁷

What does the five-county affordable housing data and persons with disabilities data suggest in regards to choices the region has to make or solutions they should consider for the



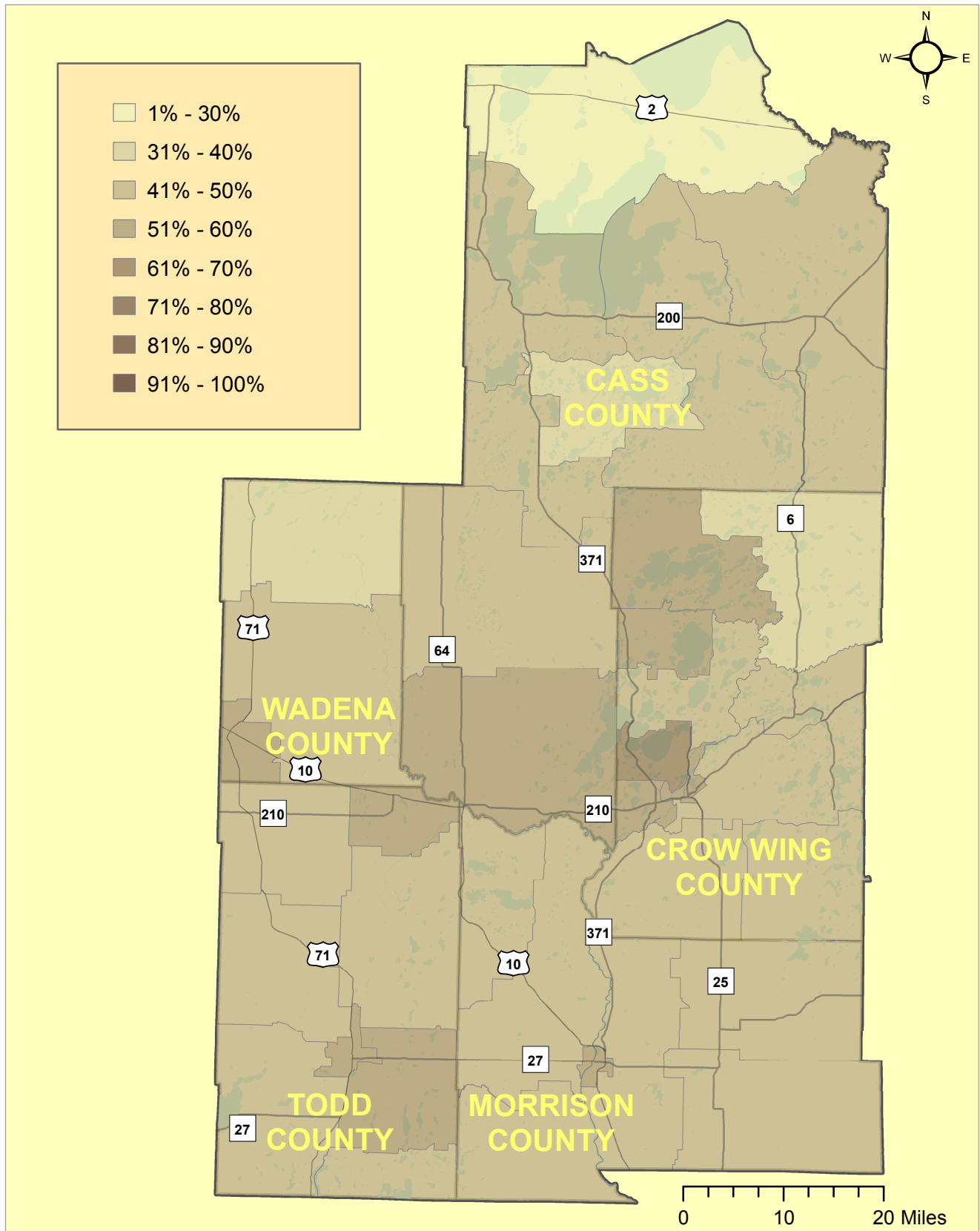
^{6,7} 2000 US Census Bureau data.

future? Changes in affordable housing demand and persons with disability population may mean a need for:

1. Providing links to social services for residents receiving housing assistance. (HIII Recommendation H5)
2. Supporting efforts to rehabilitate housing in the region, particularly for vacant homes, foreclosures, and low-income homes, through establishing standards, providing incentives and resources, and education. (HIV Recommendation H6)
3. Simplifying rules regarding rehabilitation. Return more power to the local government to oversee and set standards for their area. (HIV Recommendation H8)
4. Strongly prioritizing small towns and rural areas in the effort to continue preserving affordable housing in Greater Minnesota. (HIV Recommendation H9)
5. Providing housing support services to the elderly and mentally ill that would allow them the option of remaining as independent as possible under their circumstances. (CPI Recommendation CPI)
6. Recognizing the value of programs that have been very effective in providing affordable housing, such as rural rental housing and senior and disable persons housing. (AHI Recommendation AH1)
7. Encouraging life-cycle, multi-generational neighborhoods with affordable housing integrated into all neighborhoods. (AHI Recommendation AH2)
8. Recognizing and addressing the extent of poverty in the region and the need for a comprehensive affordable housing plan. (AHI recommendation AH3)
9. Addressing the temporary and permanent housing needs of the homeless in the region. (AHI Recommendation AH4)
10. Making policy recommendations that will address fair housing issues for protected classes in the region. (AHI Recommendation AH5)

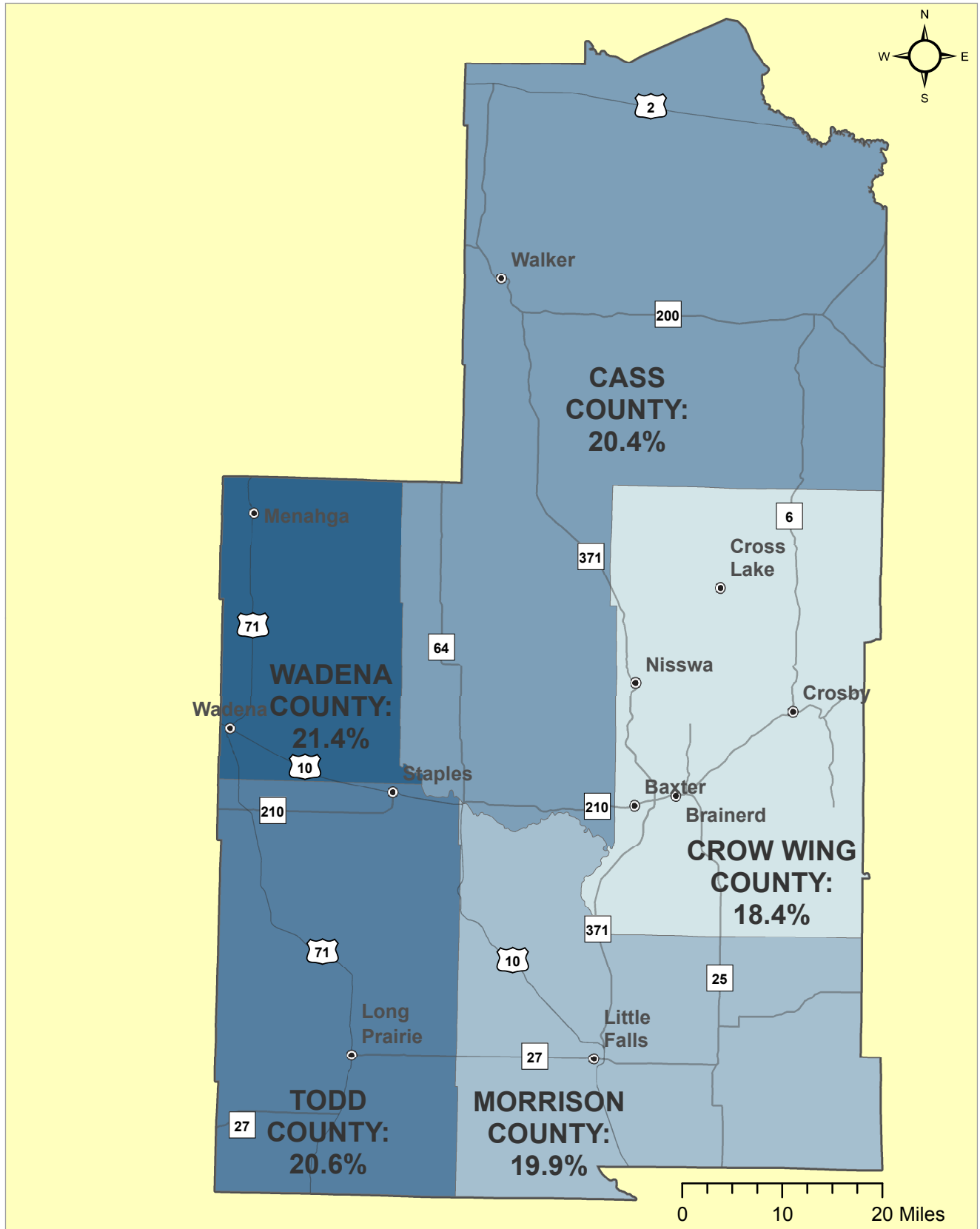
2011 Affordable Housing Need

Percentage of Lower-Income Households Spending 30% or More of Income on Housing



2000 Persons with Disabilities

Percent of Population 5 Years and Over with a Disability, by County



Central Minnesota Resilient Region Plan

Education

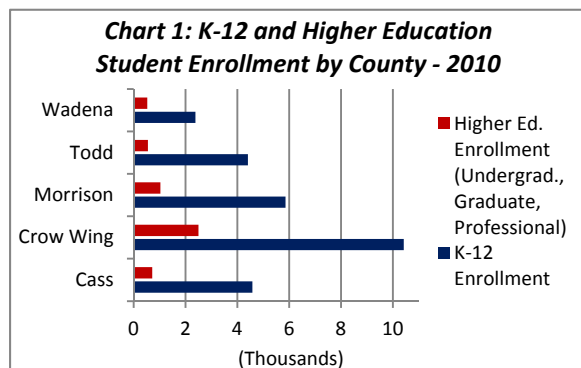
The *K-12 Schools and School Districts* map illustrates school district boundaries and locations of public and nonpublic schools within the five-county Central Minnesota region. 2012 Minnesota Department of Education data is used to support map information. Public schools represented on the map include:

- Elementary, middle, and secondary schools
- Area Learning Centers (ALCs)
- Alternative Learning Programs (ALPs)
- Charter schools
- Colleges (community, tribal)
- Cooperatives (Co-op)

Nonpublic schools represented on the map include:

- Faith-based schools
- Tribal-based schools

The five-county Central Minnesota region includes 31 Minnesota Public School districts whose boundaries are completely or partially within the region. A variety of education options, including primary and secondary schools, Area Learning Centers, Alternative Learning Programs, Charter schools, faith-based schools, and tribal-based schools, are available to parents and their children as they move through the K-12 system. Crow Wing County has the region's largest K-12 enrollment at 10,419 students. Wadena County has the region's lowest K-12 enrollment at 2,381 students.¹ The region's only tribal-affiliated K-12 school, Bug-O-Nay-Ge-Shig, is located on Leech Lake Reservation in northern Cass County.²



¹ 2006-2010 American Community Survey data.

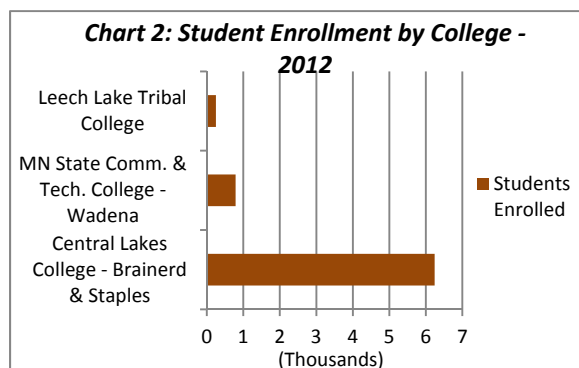
² Bug-O-Nay-Ge-Shig website accessed August 2012. <http://bugonaygeshig.wordpress.com>

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Four counties within the region are home to higher education institutions. Central Lakes College campuses are located in the cities of Brainerd (Crow Wing) and Staples (Todd) with an enrollment of 6,200 students combined.³ Minnesota State Community and Technical College is located in the City of Wadena in Wadena County and has an enrollment of 800 students.⁴ Leech Lake Tribal College, located on Leech Lake Reservation, has an enrollment of 250 students.⁵

What does the five-county education data suggest in regards to choices the region has to make or solutions they should consider for the future? Changes in the demographic and skill make-up of people in the region may mean diverse education opportunities. An effort to retain the current and future workforce within the region may mean a need for:

1. Prioritizing and promoting lifelong learning for all residents of the region. (EWI Recommendation EW1)
2. Improving the educational system to provide a well-qualified future workforce. (EWI Recommendation EW2)
3. Promoting options in addition to college for pursuing education, job advancement, and higher pay. (EWI Recommendation EW3)
4. Reforming the education and workforce development system by making education affordable for all learners. (EWI Recommendation EW5)

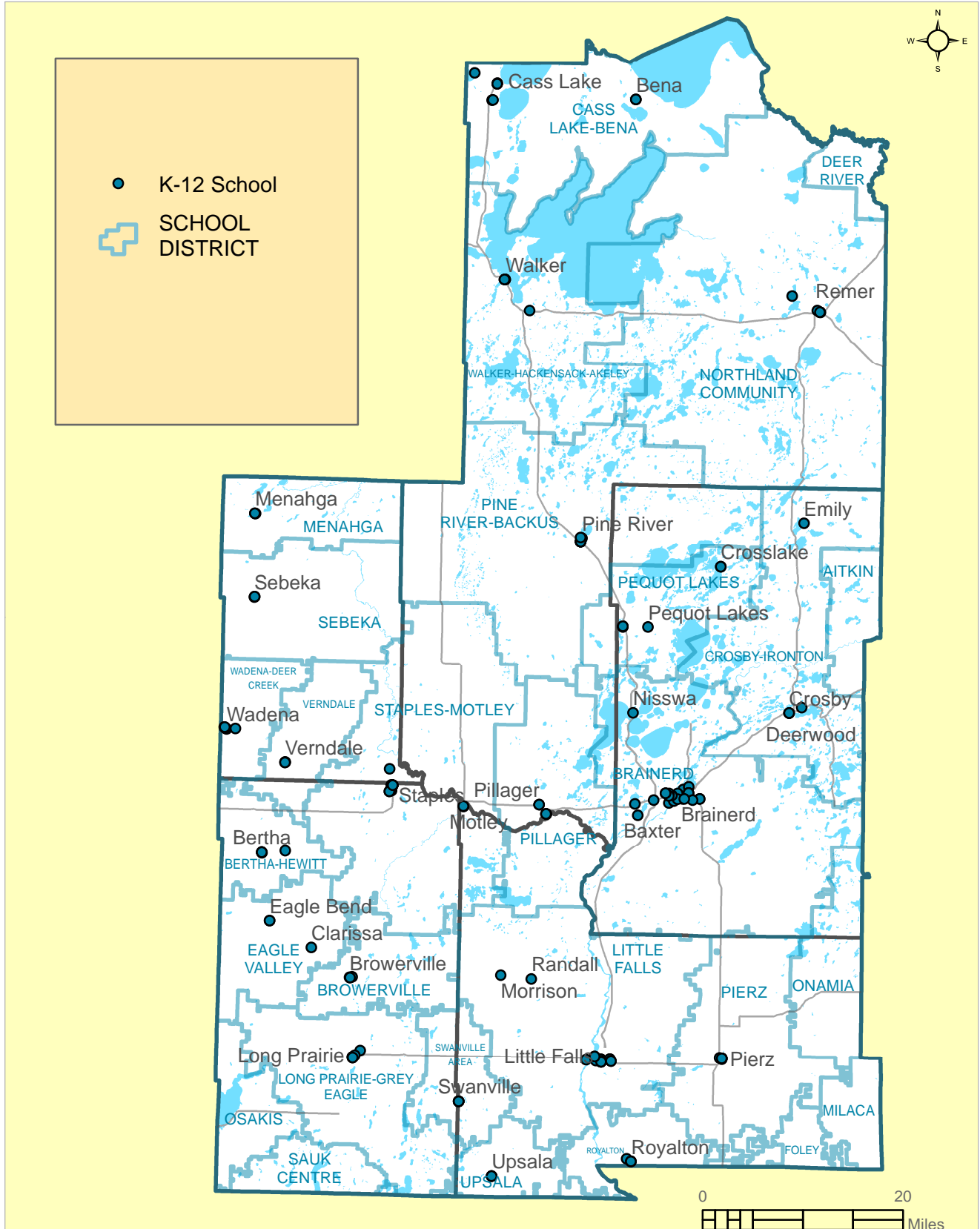


³ Minnesota State Colleges and Universities (MNSCU) website accessed August 2012. <http://www.mnscu.edu/collegesearch>

⁴ Minnesota State website accessed August 2012. <http://www.minnesota.edu/wadena/>

⁵ Leech Lake Tribal College website accessed August 2012. <http://www.lltc.edu>

K-12 Schools and School Districts



Central Minnesota Resilient Region Plan

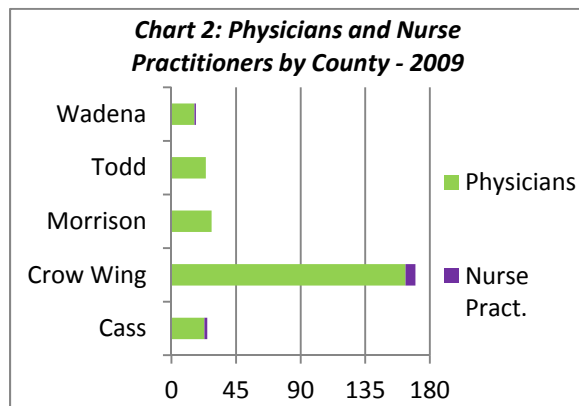
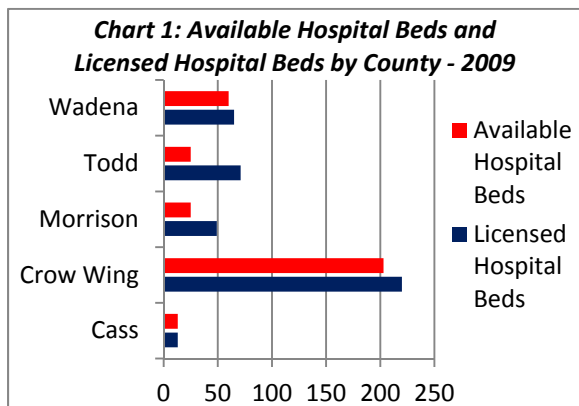
2009 Locations of Hospitals and Clinics

The *2009 Locations of Hospitals and Clinics* map illustrates locations of hospitals and clinics within the five-county Central Minnesota region. Minnesota Department of Health data and 2009 Minnesota Office of Rural Health and Primary Care data is used to support map information.

The region is home to nine of Minnesota's 148 acute care hospitals. Eight of the region's nine hospitals are members of the Minnesota Hospital Association. The ninth hospital, located in the City of Cass Lake on Leech Lake Reservation, is a member of the federal government's Indian Health Services Hospital system.¹ Six of the region's nine hospitals are part of Minnesota's 79 rural hospitals identified as Critical Access Hospitals.^{2,3} Hospitals with federal Critical Access Hospital designation receive cost-based federal payments to preserve access to care in rural areas.⁴ Collectively, Crow Wing County's three hospitals are licensed for a combined 220 beds, highest in the region. Cass County, with one hospital, has the region's lowest total at 13 beds. Together, the five-county region's nine hospitals are licensed for a total of 418 beds.⁵

There are thirteen Rural Health Clinics (RHCs) located within the five-county region. Guided by the Rural Health Clinic Service Act of 1977, the purpose of RHCs is to increase primary care services for Medicaid and Medicare patients in rural communities. Attaining RHC status allows clinics the opportunity to receive enhanced reimbursement rates for providing Medicaid and Medicare services in rural areas. Todd County has the five-county region's highest number of RHCs with six. Crow Wing County and Wadena County have a region-low of one RHC in each county.⁷

Crow Wing County's average of 2.7 physicians and nurse practitioners per 1,000 residents is the region's highest. Morrison County's 0.8 per 1,000 residents is the region's lowest. Combining all five counties, the region's average of 1.6 primary care physicians and nurse practitioners per 1,000 residents is comparable to the Twin Cities Metro Area average of 1.6 per 1,000 residents and Minnesota's average of 1.4 physicians and nurse practitioners per 1,000 residents.⁸



¹ Minnesota Hospital Association website accessed July 2012. <http://www.mnhospitals.org>

² *Tiny town fights for hospital*. Larry Oakes. StarTribune. April 3, 2012.

^{3,4,6} Minnesota Department of Health website accessed July 2012. <http://www.health.state.mn.us>

⁵ Minnesota Office of Rural Health and Primary Care.

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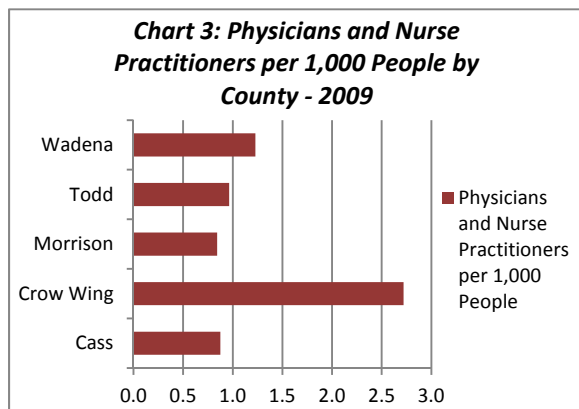
^{7,8} Minnesota Department of Health.

Central Minnesota Resilient Region Plan

2009 Locations of Hospitals and Clinics

What do the five-county hospitals and clinics data suggest in regards to choices the region has to make or solutions they should consider for the future? Changes in population size and demographics may mean different choices for health care and healthy living. The goal of addressing health care issues within the region may mean a need for:

1. Encouraging more active lifestyles by developing and promoting safe walking and biking options in the region. (HCI Recommendation HC1)
2. Improving availability and access to affordable health care throughout the region. (HCI Recommendation HC2)
3. Responding to public health issues specific to the region, including smoking, farm safety, hazardous materials, and environmental health concerns. (HCI Recommendation HC3)



2009 Locations of Hospitals and Clinics

