The term “Infrastructure” is relatively recent in public policy parlance, and over the last 40 years has become more commonly used than its predecessor “public works.” Both terms refer to the physical structures and systems, which are often publicly financed (through utilities, taxes or user fees), usually regulated by our governments, and that are required for an economy and a society to function and thrive. For this chapter, the word “Infrastructure” is used to refer to the systems that support, or provide, transportation, clean drinking water and sewage management, safe and affordable housing, and Internet-based communications grids. Energy is discussed separately in the next Minnesota Equity Blueprint chapter, “Natural Resources and Climate Resilience.”

Infrastructure quality and sufficiency improve quality of life, provide basic standards of universal access, and stimulate economic growth. Infrastructure allows everyone to gather in public space, go to work, get products to market, attend religious services, go to political gatherings or just stay home and happily flush the toilet. Public-sector infrastructure enables Minnesota’s private-sector businesses, and especially smaller businesses and entrepreneurs, to be productive, competitive and profitable.

Thriving by Design Network’s Problem Statement: Minnesota’s physical infrastructure systems are deteriorating or lacking across the state, posing threats to vulnerable populations and to long-term business growth. Estimates of needs for waste and drinking water management, broadband, housing, and transportation and transit amount to billions of dollars over the next decade.

We’re worried about the impact of neglected, aging and (probably eventually) failing basic infrastructure— including roads, bridges, sewers, utilities, streets, and sidewalks— on individual families and entire communities.

— Participant at Thriving by Design Statewide Convening in Granite Falls
Some thought leaders emphasize the economic aspects of infrastructure investments, aside from human comfort and safety. For instance, Chuck Marohn (founder of Strong Towns) has said that “…infrastructure is a platform for expanding wealth. The reason to build infrastructure is that it builds wealth in a place beyond what would happen without infrastructure.”

Marohn and similar development professionals stress that infrastructure projects must be financially sustainable for a community; that it is unwise to seek funding for a project which the community cannot afford to maintain. These considerations are a significant constraint for regions with low population density and a small tax base.

Much of Minnesota’s public infrastructure (especially road pavements, utility pipes and bridges) have reached their service age, the time when replacement or improvements are required. Decades of disinvestment and slow adoption of climate resilient systems are likely to create infrastructure emergencies in the future. Minnesota’s rural and urban public works structures are crumbling, posing an urgent threat to vulnerable populations as well as threatening long-term business growth.

The reason Minnesota thrives today is we’re living off the fat of yesterday, and [that’s] a very dangerous place to be.

— Former Governor Arne Carlson

The Minnesota chapter of the American Society of Civil Engineers’ (ASCE) 2018 Report Card on Minnesota Infrastructure graded nine categories of facilities and systems (ranging from Aviation to Wastewater) needed for the health and prosperity of Minnesota’s people and economy. The categories were graded “… on the basis of capacity, condition, funding, future need, operation and maintenance, public safety, resilience, and innovation.”

Minnesota’s overall average was a “C” (“Mediocre: Requires Attention”). Of particular concern were the state’s network of systems for water management (drinking water was a “C−” and wastewater was a “C”) and transportation (Roads were a “D+”, Transit was a “C−”, and Bridges were a “C”).
Many organizations focus on the important specific pieces of Minnesota’s massive infrastructure challenge, but few are as devoted to long-term vision and comprehensive investment as MN2050.

This coalition of 18 professional organizations includes many civil engineers who are committed to community service. The central message on the MN2050 website meshes with the values of the Minnesota Equity Blueprint: “Lack of timely attention to reasonable public infrastructure investment hinders economic development, safety, and quality of life in Minnesota.”

Launched a decade ago, MN2050 traces its origins to a seminal 2006 national study by the American Public Works Association, entitled “America 2050: A Prospectus.” This sweeping and prophetic framework called for extensive and “integrated investments in mobility, environment, and economic development that are needed to guide the nation’s growth in the 21st century.”

Attention to racial equity and concentrated poverty, to climate change and “green infrastructure,” and to regional disparities and bypassed areas was spelled out in that 2006 document. And those themes permeate MN2050’s considerable portfolio.

Among recent initiatives and accomplishments, MN2050:

• Developed and promoted a new comprehensive statewide “Asset Management” survey. The formal tool showed for the first time the extent that cities, counties, Met Council and MnDOT are adopting asset management to map and inventory their numerous infrastructure assets, and better plan for maintenance and assessment.

• Coordinated with former State Auditor Rebecca Otto and the U of M to create a comprehensive statewide “infrastructure stress” tool, showing among other things, the relatively old age of sewer and water systems in both inner-ring Twin Cities suburbs and in Greater Minnesota. MN2050 is currently working with State Auditor Julie Blaha to expand the tool.

• Collaborated with the Minnesota Rural Water Association, to help smaller communities in Greater Minnesota locate and document their sewer and water assets and needs, and identify replacement costs.

• Helped another partner, the Minnesota Chapter of American Society of Civil Engineers (ASCE), build public awareness of the 2018 Report Card for Minnesota’s Infrastructure. The Minnesota Report Card is an important resource and covers not only transit, transportation, drinking water, and waste water, but dams, ports, bridges, aviation, and energy systems.

Brad Henry, a MN2050 Steering Committee Member, says one important revelation in the group’s research has been the scale and total value of public infrastructure, along with the discovery that most of it actually belongs to local city and county governments.

“The combined value of city and county infrastructure is greater than the combined value of Met Council’s and MnDOT’s infrastructure,” Henry says. “And there is an annual infrastructure funding gap for all levels of government of $2 billion.”
In this report, the analysts observed that most of the public infrastructure in use today was built before smartphones, electronic sensors and fuel-efficient cars were common.

New materials and expanded awareness of pollutants in waste streams and drinking water constantly require upgraded approaches and equipment. The energy grid, roads, sewers, and drinking water systems of decades ago need upgrading to better prepare for larger storm events, increased use of renewable fuels, and a changing population.

— Report Card for Minnesota’s Infrastructure 2018

In addition, Minnesota’s population has grown by about 2 million people over the last half-century, when much of the state’s current infrastructure was built. Estimates of needs for waste and drinking water management, broadband, housing, transportation, transit, and other crucial infrastructure updates amount to billions of dollars of new investment required over the next decade.

All Minnesotans will be impacted by the state’s aging and failing infrastructure. Infrastructure affects our state’s economy, our vaunted quality of life (good for many of us, although racial, regional and other disparities remain) and basic public safety. Economic growth requires dependable lifeline services to attract employers, employees and customers. Businesses of all kinds are hindered by gaps in safe drinking water and wastewater systems, inability to access high-speed Internet, lack of access to affordable workforce housing, and traffic congestion and bad roads. The opposite scenarios — reliable water management, accessible safe housing, good roads, and convenient transit — combine to lower overhead for business, reduce employee turnover, and boost productivity.

Infrastructure improvements must be climate resilient.

— Participant at TBDN Granite Falls Statewide Convening

INFRASTRUCTURE GRANTS BOOST RURAL JOB GROWTH

Like many small-to-medium manufacturing enterprises in Greater Minnesota, Kappers Fabricating Inc. in Spring Valley (pop. 2,518) has been thriving, bursting at the seams in fact. The company recently sought to expand its warehouse for storing the parts it manufactures for all-terrain and utility vehicles, but that required the city to improve water, sewer and transportation systems that serve the site, an expensive proposition for local taxpayers.

Despite concerns about expense, the city moved forward with the expansion, adding 20 jobs to the southeastern corner of the state, thanks in large part to a $609,000 grant from DEED’s Greater Minnesota Business Development Public Infrastructure Grant Program (BDPI). The improved infrastructure added capacity for as many as five new businesses nearby and gives the city a tool to attract new commerce.

Laser cutting process at Kappers Fabricating Inc.
Among grants in the same round that helped Spring Valley was a $689,000 award to Wadena in central Minnesota, to improve streets and water and sewer systems for a new business park. The park will provide 15 new industrial lots and an estimated 30 new jobs. Meanwhile, in east central Minnesota, a $401,000 grant for North Branch assists the extension of a large trunk water main that will provide service for a 252-acre industrial park. The park has been mostly vacant due to inadequate water service. And the city estimates over time the park could generate up to 2,800 jobs.

The BDPI grant program was designed to exclusively serve areas outside the seven-county Twin Cities metropolitan area. Under the program, DEED awards 50 percent of eligible capital costs for the qualifying public infrastructure projects, including wastewater collection and treatment, drinking water systems, storm sewers, and more.

“By utilizing these BDPI grants, cities around the state are improving their local economies,” says DEED Commissioner Steve Grove. “These infrastructure projects signal that Greater Minnesota is open for business, and these communities are eager to welcome new opportunities.”

Both the Coalition of Greater Minnesota Cities and the Greater Minnesota Partnership have been staunch supporters of expanding the BDPI program and ensuring that it is reserved for rural regions.

“As a direct result of the BDPI program, more than 2,000 jobs have been created in Greater Minnesota and the state’s tax base has increased by millions of dollars,” said Coalition member and Le Sueur Mayor Robert Broede in a recent Coalition statement. “As the House and Senate prepare their bonding bills, we hope they will also show a commitment to helping more cities take advantage of the opportunities a BDPI grant provides.”

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Infrastructure is not of much interest to most of us; we take it for granted, as long as it works. Life will get more interesting and exciting as infrastructure ages and fails to perform more frequently across the state.

— Participant at Thriving by Design Statewide Convening in Granite Falls

Throughout TBDN’s listening sessions, participants called out uneven access to adequate and safe infrastructure based on race, region (rural vs. urban), income group, age and other key characteristics. Participants emphasized that all of Minnesota’s diverse and numerous communities must benefit from infrastructure investments, in updated water management, expanding affordable housing choices, and providing better access to transportation and Internet connectivity. TBDN stakeholders also emphasized the importance of avoiding one-size-fits-all solutions, since problem specifics vary with population density, culturally specific needs, and major differences in the state’s biomes.
DRINKING WATER AND WASTEWATER MANAGEMENT

Bacteria in Minnesota lakes and streams mainly come from sources such as failing septic systems, wastewater treatment plant releases, livestock, and urban stormwater. Waste from pets and wildlife is another, lesser source of bacteria.

— Minnesota Pollution Control Agency

Challenges

Minnesota’s serious and pressing water management deficits disproportionately impact people based on their race, income and location. Failing, aging and insufficient systems for handling drinking and waste water are typically most burdensome in older neighborhoods, on rural and lower-income households and particularly in communities of color. Businesses in these vulnerable communities suffer similarly. Recent disasters in Flint, Michigan and Newark, New Jersey, underscore the racially disparate impact of water infrastructure neglect.

The general rule is, “The older your neighborhood, the closer you are to an infrastructure crisis.” For the most affluent older suburban areas, where property wealth and the tax base have funded infrastructure maintenance, this rule will likely not apply. Newer developments, in suburban and exurban neighborhoods across Minnesota may not be impacted for many years. However, it’s the people who live in lower-income neighborhoods in older Minnesota cities, suburbs, towns and rural areas who depend on aged infrastructure. With time and neglect, older neighborhoods are at heightened risk of becoming unlivable when the water mains break or the wastewater management system ceases to work.

Using age of housing units as a proxy for age of neighborhoods, Exhibit 1 shows the median age of housing units in each of Minnesota’s 87 counties. The “median” age of housing refers to the age at which 50 percent of the housing units in the county are that age or older and 50 percent of the housing units are that age or newer. The map clearly shows how rural and inner-city counties contrast with the exurban counties surrounding the Twin Cities.
Exhibit 1 shows that median age of residential units varies widely across the state. There is an arc of newer housing units in the counties immediately surrounding Hennepin county. The oldest housing is in the south and southwestern parts of the state. Given the similarities in median age of Ramsey and Renville counties, clearly some of the same infrastructure challenges experienced in the Capitol City are shared by cities and towns in many rural sections of the state.
Solutions

1. **Increase funding for the Minnesota Public Facilities Authority (MPFA).** The state should approve the MPFA’s 2020 capital budget increased request of $200 million which will serve communities across the state as they work to improve their water infrastructure. The MPFA provides low interest loans and grants to help communities finance improvements to wastewater and drinking water infrastructure. Grants are based on affordability (targeting funds primarily to small rural communities) and provided to upgrade treatment facilities to meet water quality goals.

2. **Increase funding for Local Government Aid (LGA) and maximize annual legislative bonding bill effort.** LGA and state bonding bills (which extend borrowing authority for public works projects) provide lifeblood for local governments seeking to maintain their infrastructure quality and address new demands imposed by climate change. LGA formulas are especially beneficial for both rural and urban communities with relatively higher needs, lower incomes and lower property tax wealth. LGA should be restored at least to its 2002 levels, when large cuts were imposed during a state budget crisis. Local projects also are often tucked into state bonding bills and maximizing the total bonding bill in each legislative session will enable more investment in transportation, housing, water quality, and infrastructure that improves environmental quality. A broad consensus exists that bonding was woefully inadequate in 2019.

3. **Create a blue-ribbon cross-sector infrastructure initiative.** In the early 1980s, St. Paul, Minneapolis and South St. Paul, as the oldest metro cities, put together a model partnership with state and federal governments that dramatically improved water quality by separating sanitary sewer systems from stormwater drains. It’s now time for another successful federal, state, and local partnership to meet an even larger and more complex and comprehensive statewide challenge: simultaneous repair and improvement of streets, bridges, transit, drinking water, access to high speed broadband and affordable housing in Minnesota’s older rural and metro cities of all sizes. A new blue-ribbon cross-sector infrastructure initiative — led by state government and supported by cities, counties, professional organizations, and existing coalitions — would comprehensively inventory assets and needs, estimate the cost to meet those needs, prepare an action plan and schedule to allocate costs and perform the work, and then supervise the work’s completion.

4. **Prioritize sewer and water improvements using cost-efficient and innovative technologies.** Minneapolis, St. Paul and other larger utility operations in the state are using innovative pipe-lining technology, in which a flexible fiber sleeve is inserted into cracked pipes, then inflated and chemically hardened. Access causes minimal street disruption and damage since it can be done without digging up entire blocks; existing access structures are often insufficient. Pipelining works best on gravity lines. Pressure pipes (used mainly for drinking water) are more challenging. Lining is most cost-effective when the street above the pipe is very good and only the pipe itself is in structurally bad condition. According to Bruce Elder, St. Paul Public Works Sewer Utility Division manager, this city has lined over 250 miles of sanitary and storm sewers using pipelining technology. Funding this type of pipelining is an investment in sustainable, non-disruptive infrastructure for the future.
5. **Promote Asset Management.** Minnesota state government should create a program dedicated to providing Asset Management technology and training assistance to local governments. Asset Management training is one of the recommendations identified as a critical step in increasing the ASCE Report Card grades for categories such as drinking water, waste water, roads and transit. Asset Management technology encompasses techniques, tools, systems and procedures to gather data on location, condition, repair records, cost and expected service life for physical facilities. Larger public infrastructure agencies presently utilize various versions, but smaller rural cities and some counties often do not have the budget nor staff to acquire and use these techniques.\(^{11}\)

While a statewide campaign is critical, this initiative must avoid one-size-fits-all assumptions. Regulations built to solve problems in very densely populated regions can needlessly result in unaffordable mandates for local governments, particularly small rural cities with more sparse populations.

6. **Restore the State Planning Office.** The new water and sewer system interactive maps developed by the University of Minnesota and the State Auditor’s Office provide detailed public utility data on a city-by-city basis. The data for these maps comes from the annual surveys of water and sanitary sewer needs published by the state Public Health Department and Pollution Control Agency respectively. Although the data exist in a variety of locations and formats, there is no one state source of data, expertise or planning on the complete array of public infrastructure. Placing this data in a restored Minnesota Planning Agency, which was abolished in 2003, is an optimal solution.\(^{12}\)
BROADBAND AND DIGITAL INCLUSION

Challenges

Among all the infrastructure components discussed in this Blueprint, broadband is the youngest sector and still has not reached all Minnesotans; not everyone has the ability to connect to this type of high-speed Internet at work or at home. This is important because broadband is a critical ingredient for today’s successful businesses, educational institutions, systems of delivering health care, and governments.

Broadband is an economic development and a wealth issue, whether it’s from the employer or the consumer perspective. The Blandin Foundation estimates that broadband access drives an additional $1,850 in household economic benefits annually, including a 3 percent increase in home values.

However, too many of Minnesota’s people and businesses do not yet have access to high speed, affordable broadband. Many do not have access to computers and other Internet-enabled devices, nor the basic and advanced skills training, to make use of the Internet access for home, school, and business improvement. As the array of valuable home and business web-based tools increases, the demand for greater broadband equity and more inclusive broadband digital literacy will continue to grow. Minnesota will continue to need to invest in both the physical infrastructure and the human capacity to make good use of it for the foreseeable future.

BROADBAND DEFINITIONS

• “Broadband” refers to high capacity, high-speed Internet access which is always available. Wired broadband relies on a physical connection to a concrete location (such as a home, school, clinic or business) most typically conducted through a cable of some kind, usually a traditional copper telephone line (DSL), coaxial cable, or fiber. Wireless broadband is transmitted through fixed wireless, satellite, and mobile technology connections. With wireless Internet access, connection speed, capacity, and lag time may be affected by distance, objects in the way, and other factors.

• “Digital Inclusion” refers to the actions and investments needed to ensure that all individuals and communities, regardless of location, race, income or other trait, have access to and the skills required to use information and communication technologies.

• “Mbps,” short for “megabits per second,” is the standard measure of Internet speed, according to the Federal Communications Commission. It refers to the speed with which information is downloaded from or uploaded to the Internet. One megabit is equal to one million bits or 1,000 kilobits. The higher the number of Mbps, the speedier the connection. With higher bandwidth upload speeds, around 25 Mbps, uploading and downloading high-resolution images and HD-quality video takes seconds or minutes, instead of hours. However, speed is also impacted by capacity needs up and downstream. If a household, for example, has more than one Internet-dependent device in use at the same time, it will need to increase Mbps capacity accordingly. For rural Minnesotans with lower upload speeds, a single telephone call using the Internet (known as “voice over IP”) can cause all other Internet-based applications to lag, challenging both productivity and stable business operations.

• “Latency” is the amount of delay of signal, measured in milliseconds, that occurs in a round-trip transmission. Latency is the stutter you see on your Netflix movie, for example, when multiple devices in your household are using the same Internet connection simultaneously. Latency is an especially critical problem for certain applications using Internet — telemedicine, for example.
“Digital inclusion” is a social state where every person, regardless of location, race or income, has access to broadband, and the training, tools and skills necessary to fully leverage this access. As of today, access to high-speed Internet and the devices and skills needed to leverage Internet access to improve one’s quality of life is least likely to be available Minnesotans who are:

- Living in low-income areas in rural Minnesota.
- Children and youth (people under 25 years old).
- Members of African American, Hispanic and Native American communities.
- People who are not currently participating in the labor force (either unemployed or not looking for work).
- People who never graduated from high school.\(^\text{15}\)

For over thirty years, government, private and non-profit organizations have collaborated across Minnesota to reach access and inclusion goals. In 2013, then-Governor Mark Dayton established the Governor’s Task Force on Broadband, and the state legislature created the Minnesota Office of Broadband Development (OBD), which is located within the MN Department of Employment & Economic Development (DEED), signaling the state’s appreciation of the link between inclusive infrastructure investment and equitable wealth building.

The Legislature also established the Border-to-Border Broadband Infrastructure grant program which works to ensure that all Minnesota homes and businesses have access to broadband service of at least 25 Mbps download and 3 Mbps upload (referred to as “25/3”) by 2022 and, that all homes and businesses have access to at least one provider offering significantly faster service of at least 100 Mbps download/20 Mbps upload (“100/20”) by 2026. The share of Minnesota households with access to wireline broadband at the 25/3 state speed goal has increased from 69.64 percent in 2011 to 92.70 percent in April 2019. However, rural households still lag by almost ten percentage points, meaning that almost a fifth lack this basic economic necessity.

While better than the dial-up service prevalent at the end of the 20\(^{\text{th}}\) century, the 25/3 state speed goal is nowhere near the download and upload speeds needed going forward for business, health care, government, and schools. Institutional users and home users require more bandwidth — higher speeds, higher capacity, and no latency — especially when multiple users (at work or at home) are on the Internet simultaneously and are uploading large files such as images or video conferencing. In addition to consuming data, individuals and employers (including hospitals, universities, and police departments) produce and upload data in significant amounts. All communities must have the infrastructure that enables higher upload speeds. As Exhibit 2 illustrates, more than half of the households in many rural Minnesota cities, townships, and school districts still do not have access to broadband that meets the state’s standard.

"Dig Once" Installing high-speed fiber-optic infrastructure is incredibly expensive, costing up to $8,000 per home to put the cabling in place. Yet a Federal Highway Administration report detailed that up to 90 percent of this cost was tied up in the process of actually digging up the roadways to install the fiber lines. As a result, some cities and states champion the idea of future-proofing PROW’s (public rights-of-ways) during road construction projects. This common-sense concept is frequently referred to as ‘Dig Once’ and it mandates the inclusion of broadband conduit during the construction of any road receiving federal funding. The conduit, the flexible plastic pipes, provides access to more easily install fiber-optic communications cable during construction or later, without tearing up the road again.
Exhibit 2. Many rural homes and businesses lack high speed Internet.
As Dick Sjoberg’s family-owned business continues its efforts to connect rural northwestern Minnesotans to high-speed Internet service, he gets downright passionate about all the ways life improves when rural folks finally get fully up to speed with the world economy.

Sjoberg loves to reel off anecdotes: the lady who breeds springer spaniels and has seen her business improve because customers can now see the puppies online; kids who can now do more homework at home instead of trekking into town to work at the local library; life-saving improvements in response time for stroke victims because of high-speed telemedicine; farmers feeling more secure because broadband technology helps them track moisture content in their bins; small micro-enterprises flourishing because owners can reach more customers and more easily comply with licensing and regulations; and providing back-up service to even large high-tech employers (notably DigiKey), which already had its own Internet service but needed redundancy in case of system failure. “A lot of things are changing in the ecosystem out here,” Sjoberg says. “It’s always good when we can provide a service that’s useful and uplifting to people, and make a little money doing it.”

Absolutely crucial to providing this modern necessity, Sjoberg adds, is Minnesota’s Border-to-Border Broadband Grant program, from DEED’s Office of Broadband Development. Since 2014, the Border-to-Border Broadband Grant program has awarded $85.2 million for both wireline and wireless infrastructure solutions, in turn leveraging $110.6 million in matching local and private investments from communities, private businesses, and cooperatives. As a result, service has been extended in mostly remote and rural areas to an additional 34,000 households, 5,200 businesses and 300 community institutions.

Many Minnesotans may be unaware of the extent to which broadband grants really nurture local private businesses and co-ops, representing authentic public-private partnerships. They are not your classic government programs or projects.

As noted in NCTA, the trade journal of Internet cable providers, the Sjoberg family business started in the 1940s (selling appliances and TVs), and remains relatively small, with 22 employees serving 37 towns and townships. “We’ve got a business that’s doing a lot of good for a lot of people,” Sjoberg told the NCTA. “It’s a nice business to be in.”
Solutions

Everyone in Minnesota will be able to use convenient, affordable world-class broadband networks that enable us to survive and thrive in our communities and across the globe.

— Minnesota Rural Broadband Coalition’s vision for Minnesota

7. **Prioritize digital inclusion.** Digital inclusion and equity efforts must continue focusing on Minnesota’s rural and tribal areas and on areas in the cities where there has been a history of neglect in delivering advanced residential technologies to lower-income communities. State and federal subsidies are needed to help bridge the gap between what it costs to deploy broadband in rural, low-density population areas versus high-density urban areas. Federal assistance is available from agencies such as USDA Rural Development and the U.S. Department of Commerce. State level strategies for improving equity and inclusion\(^{16}\) include:

   • Develop a widely accessible best practices inventory for deployment and management of broadband service in rural, sparsely populated and high-cost regions.

   • Identify measures of, and continuously track, broadband adoption and affordability, especially for low income and rural consumers, as important aspects of evaluating deployment success.

   • Uplift the digital neglect issue and report on lasting damage due to historic policies followed by certain providers in withholding the last generation of advanced residential technologies from lower-income urban communities and rural areas.

   • Enforce the non-discrimination provisions of the federal Telecommunications Act regarding full and fair deployment of high-speed broadband networks. This would include creating and enforcing fines for those providers not bringing necessary speeds to all households.

   • Fully fund the Telecommunications Equity Aid and Regional Library Telecommunications Aid to facilitate broadband in K-12 education and libraries.

8. **Invest in digital literacy.** Improving the digital skills of residents, workers and organizations is critical. Libraries, K-12 schools, higher educational institutions, workforce development programs and non-profits should offer free digital literacy workshops for people of all ages. “Hackathons” can be used to encourage community members to develop digital solutions to local challenges.

9. **Broaden access to reliable computing devices.** Even when broadband is available and affordable, people are unlikely to invest time on Internet-based activities if their devices are inadequate or unreliable. Community leaders can reach out to local businesses and support programs to recycle computing devices and sell or loan them to community residents. PCs for People, founded in Minnesota in 1998, is a nationally recognized model for this. The non-profit acquires computers in partnership with local businesses that typically retire computers before their useable life is over. Together they keep the computers out of landfills and once refurbished, provide them to people and organizations with limited income in order to help them benefit from the “life changing impact” of computer fluency and mobile Internet.
To further digital inclusion we need to continue to support libraries as digital device and training resources and as community-based destinations for people without devices. Internet researcher Roberto Gallardo also recommends that communities “…establish technology hubs with free access to computers and makerspaces at strategic points in the community where all residents are within 10-15 minutes walking distance from these technology hubs.” And some libraries in Minnesota are doing just that, in partnership with the Libraries Without Borders project which brings literacy, digital literacy, and library services to people outside of a traditional library — for example in pop-up libraries in laundromats and manufactured housing parks.

10. Prepare for future technologies. As technology and applications continue to advance, consumer and business demand for ever faster broadband will also continue. Minnesota must stay committed to both the investments required for broadband maintenance and the investments required to maintain capacity and productivity. The following two recommendations are abridged from the 2018 Governor’s Task Force on Broadband Report, as well as recommendations made to the Task Force by the Minnesota Rural Broadband Coalition, which represents a broad range of statewide community voices.

• Agencies with construction oversight and funding, and agency partners with land stewardship responsibilities must insist on “Dig Once” practices to promote broadband competition and increased deployment.

• Establish a legislative cybersecurity commission to enable information-sharing between policymakers, state agencies, and private industry and to develop legislation to support and strengthen Minnesota’s cybersecurity infrastructure.

11. Expand and increase funding for broadband partnerships and the Border-to-Border Broadband Development program. TBDN stakeholders want state legislators to advocate for, create, and leverage public and private partnerships (at local, state, federal, and tribal levels) to fund and sustain improved broadband access and functionality. Specific policy directions include:

• Increase funding to $70 million for the Border-to-Border Broadband Development Grant Program, which has been instrumental in advancing the state’s broadband goals and allowing qualified providers and community applicants to extend and improve networks in the hardest to reach places in Minnesota. While the Legislature appropriated $40 million for the 2020-2021 biennium, the total amount requested by qualified applicants will continue to exceed the money available in the fund.

• Continue the Minnesota Broadband Task Force as a resource to the Governor and the Legislature on broadband policy, with a broad representation of perspectives and experiences, including provider, community, business and labor interests. Membership on the Task Force must be reviewed in light of equity and inclusion goals.
In its current form, broadband service providers have outsized representation [on the Minnesota Broadband Task Force] compared to consumers, business owners, agriculture, and other important groups that are dedicated supporters and beneficiaries of broadband funding.

— Minnesota Rural Broadband Coalition

12. Sustain and expand Office of Broadband Development (OBD). The OBD is more than a symbolic entity; it links communities, businesses, and providers, and it promotes successful infrastructure project design, execution and management. After a year hiatus, the 2019 Minnesota Legislature approved $40 million in additional state broadband grant funding. The OBD reported receiving 78 applications at the close of the application period in September 2019, for the first $20 million allocation of the grant funds. For the first time, the Legislature also approved multi-year funding from the grants, which is essential to achieving more effective and efficient construction planning and local match leveraging.

Stable, biennial funding should be incorporated into DEED’s base budget. Funding must be sufficient for OBD to meet its statutory mandates and create an OBD operating fund to advance and promote programs and projects to improve broadband adoption and use. OBD’s mapping program continues to be particularly useful as both planning and communications tools. This would give confidence to providers and communities alike to continue to plan and build partnerships and prepare effective project proposals. The Legislature must also remove, or raise, the $5 million cap per project, which can limit applications for projects covering larger areas, such as an entire county. In some cases, larger projects allow for more cost-efficient network planning and construction.

13. Reform the Broadband Grant Challenge Procedure to encourage competition. According to community leaders who have experienced working on state broadband grant applications, the Broadband Challenge process: “…remains an obstacle to delivering the best network possible to communities, by being overprotective of incumbent providers and discourages non-incumbent providers from participating in the program over concerns their efforts will be undermined. The process does not require the incumbent to install the same or better service as proposed by the applicant, rather it allows a challenger to improve service — not to 2026 speed goals – but just enough to prevent a grant, to the detriment of the community. If a provider is not meeting a community’s needs, they should not be allowed to place undue burdens on access to state grants.”

— Participant at Thriving by Design Legislative Agenda Convening in Hinckley

Broadband should be seen as a public utility!

— Participant at Thriving by Design Legislative Agenda Convening in Hinckley

Image: Jane Leonard, Kenyon MN
SAFE AND AFFORDABLE HOUSING

We need programs that address housing needs for everyone (workers, new homeowners, renters, refugees and immigrants, families, disabled people and seniors).

— Participant at Thriving by Design Statewide Convening in Granite Falls

Challenges

Housing is “affordable” when it requires less than 30 percent of a household’s income, according to the US Department of Housing and Urban Development (HUD). Households paying 30 percent or more of their monthly income are identified as “cost-burdened.” Those paying 50 percent or more are identified as “extremely cost-burdened.” These definitions apply to both renting and home-owning households.

Access to safe, stable and affordable housing is a critical ingredient for creating thriving families and communities. “Affordable” is the keyword here. There may be safe and available housing, but if it is not affordable, then it’s not a stable housing solution. The benefits to taxpayers of ensuring that all households have safe and stable housing are typically measured in terms of lower public costs (for emergency room visits, jail, court, detox, public benefits uptake) and higher tax revenues through better health and educational outcomes and higher employment and job retention. For these reasons, policy experts and housing advocates increasingly categorize affordable housing as public infrastructure.

Consequences of widespread housing instability include more school students who are identified as “high mobility” (being admitted to more than one school during an academic year) and the persistent increases in newly homeless elders and chronically homeless (homeless for two years or more) households. In addition, and harder to quantify, there are the invisible homeless, the households that move between their own housing and doubling-up with kin and strangers.

Housing instability functions as a major barrier to individuals and families being able to access opportunity and it constrains our state’s potential prosperity. Lack of affordable housing burdens some communities more than...
others, some age groups more than others, and some regions more than others. Across Minnesota, there are significant racial disparities in housing stability, as evidenced in the following:

- According to the Minnesota Housing Finance Agency, Minnesota’s homeownership disparity is the fifth largest in the country. Three fourths (76 percent) of white non-Hispanic households in Minnesota own their own home, while fewer than half (41 percent) of Minnesota’s households of color own their own homes.\(^{21}\)

- Regardless of rental vs ownership status, Minnesota’s households of color are disproportionately likely to live in housing they cannot afford. In 2017, about one in five (23 percent) of Minnesota’s white non-Hispanic households devoted 30 percent or more of their income to their monthly housing costs. Minnesotans of color are almost twice as likely (40 percent) to be housing cost burdened.\(^{22}\)

- People of color are also disproportionately reflected among Minnesota households experiencing homelessness. Among all Minnesotans experiencing homelessness in January 2018, 43 percent were African Americans\(^{23}\), which is over five times the presence of African Americans in the general population of Minnesota (8 percent as of 2017).\(^{24}\)

Children experiencing homelessness are the most vulnerable, paying the highest personal lifetime price. The younger the children, and the longer their homelessness, the more pronounced the negative future impacts will be.\(^{25}\) Childhood homelessness is linked to developmental delays, failure to thrive in school,\(^{26}\) and poor health outcomes.

Individuals living with mental illness are another group facing major housing stability challenges. Wilder Research indicates that of the persons in Minnesota experiencing long-term homelessness, nearly 59 percent have a mental illness.\(^{27}\) Severe persistent mental illness (SMPI) can impede daily functioning in areas of self-care, social functioning, employment and education. Although having a SPMI is not, in many cases, the cause of homelessness, it does put people at a higher risk for this occurrence. Adults living with SPMI may experience difficulty maintaining housing as a result of mental health-related symptoms, a lack of or loss of income, or overall difficulty in managing daily living activities.\(^{28}\)

In addition, there are disparities in housing stability based on age cohort. In 2017, almost one in five (19 percent) of Minnesota’s rental households was headed by a person who is 65 years old or older. Among these elderly renters, 60 percent are cost burdened, paying 30 percent or more of their monthly income on their housing. This is the second highest rate of elderly renter cost burden in the United States.\(^{29}\)

Elders are a particularly vulnerable group among the population of people experiencing homelessness. They have three to four times the mortality rate compared with the general population due to unmet health needs (physical, mental, and chemical).\(^{30}\) Combining the negative physical and mental health impacts associated with homelessness with the expected consequences of aging (such as greater challenges to physical mobility, higher likelihood of chronic health conditions, etc.) results in a unique set of needs that emergency shelters are not usually equipped to meet.

Finally, there are disparities based on region, with rural areas being the most likely to be under resourced. Federal housing policy has historically been focused on urban areas, both the suburbs and urban core, overlooking concerns about rural equity and disparities. As Exhibit 3 shows, the median home value in rural
Norman County is one-ninth the median home value in suburban Carver County. Home ownership is known to be America’s primary means for intergenerational wealth transfer, and the disparities in home value across the state represent a significant rural disadvantage.

**Exhibit 3. Rural homes offer less asset value than urban homes**

![Map of Minnesota showing 2017 Median Home Value by County](image)

Source: Minnesota Realtor’s 2017 Annual Report on the Minnesota Housing Market

Created February, 2019
Renters are significantly more likely to spend more than thirty percent of their household income on housing, than those living in owner-occupied homes. The graphic in Exhibit 4 shows that in 2017, 18 percent of all households living in owner-occupied housing spent 30 percent or more of their monthly income on housing. During the same year, Exhibit 4 demonstrates that renters were over twice as likely (44 percent) to spend more than thirty percent of their household income on housing. Exhibit 4 also shows that half of all cost-burdened renters were extremely cost-burdened, meaning that they were paying 50 percent or more of their income on their housing. Only one in three cost-burdened homeowners were extremely cost-burdened.

Lastly, Exhibit 4 indicates that homeowners were less likely to be cost burdened in 2017 (17 percent), than they were in 2012 (23 percent). Renters on the other hand have made very little progress in terms of housing affordability during that time frame. Renters paying over half their monthly income on housing continue to represent 22 percent of all rental households.

The most affordable rental housing (often referred to as “naturally occurring affordable housing,” or NOAH) is generally found in the existing housing stock. These are usually older units which have been maintained well, but do not attract upmarket renters. When these buildings are sold to new ownership, the tenants are often evicted as updates are made so higher rent can be charged.

In terms of subsidized housing, existing project-based Section 8 rental units are too frequently leaving the affordable housing market through contract expirations, sales to upmarket developers, and demolitions.
Solutions

14. Maintain and preserve existing rental housing. The state of Minnesota can assist communities by providing funds to rapidly increase the number of rental units rehabilitated across the state. This could include either low cost debt or equity sources for loans and grants for rehab.  

Financial and contractual incentives may also be good tools for stopping conversions of existing project-based Section 8 rental units into market-rate rental units due to contract expiration sales to upmarket developers and demolitions. Finally, the state could fund NOAH acquisitions through dedicated housing partners such as the Greater MN Housing Fund — NOAH Impact Fund.

15. Build 10,000 more homes per year for the next five years to meet the demand. Increasing the overall supply of housing affordable and accessible to lower- and middle-income households is a critical need across the state. Increasing the supply should be accompanied by increased diversity in housing solutions, based on density and affordability including cooperative and multi-generational housing, and tiny house communities.

Building many more homes in a limited period requires more skilled workers, a need which dovetails with the building trades training needs of young persons, especially people of color and rural people.

Because the need for additional affordable housing will be a long-term need, TBDN stakeholders and partners recommend creating a new, permanent state funding source for affordable housing.
16. **Invest in income mobility.** Housing investments should expand residency options for lower-income families to live in neighborhoods linked to higher income mobility, as well as investing housing and other infrastructure resources in neighborhoods with higher concentrations of poverty. Public and private housing advocates must emphasize the building and maintenance of scattered site affordable housing programs in neighborhoods with lower concentrated poverty. Households that do not need permanent supportive housing are more likely to prosper when living outside the concentrated poverty characteristic of the larger developments managed by the community’s Public Housing Authority. This means reducing Minnesota’s reliance on site-based housing projects, including public housing. At least half of the state’s rental housing investment should be invested in scattered site housing and the remainder in site-based (public projects).

In the interest of improving the value of existing neighborhoods, policy makers should fund programs for demolition of vacant, unsafe and dilapidated housing units, and authorize expedited tax foreclosure procedures for vacant properties.

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**…affordable housing needs to be in mixed income neighborhoods and not exacerbate income and race segregation in housing development.**

— Participant at Thriving by Design Legislative Agenda Convening in Hinckley

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Because local needs and visions vary, the state’s funding must empower local leaders to create solutions that meet the housing affordability and access issues in their communities, including options to attend to “problem properties,” where neighbors repeatedly ask for outside assistance with a property because crime is occurring and the community feels unsafe.

In addition, municipal infrastructure investments must support both business development and affordable housing, particularly larger investments in workforce housing across the state. Minnesota’s employers themselves must be involved in the development and funding of workforce housing.

17. **Realign government regulations and taxation.** The state of Minnesota should develop and lead a statewide review panel to identify state and other regulations regarding occupancy requirements, building standards, land use and environmental protections that suppress access to stable housing by barring occupancy and constraining the creation of new affordable housing units. Examples of regulatory changes that would expand occupancy include:

- Altering voucher restrictions so that seniors can care for their grandchildren and grandchildren can provide care for their elders. Create programs similar to the Grandfamily housing model recently developed in Washington D.C. ³⁴

- Review state and local housing regulations and policies that exclude applicants with criminal records and that preclude formerly incarcerated individuals from rejoining their families. Given the unfair disproportionate burden that criminal justice policies have imposed on communities of color, these policies reinforce disparities in housing stability.
Identify and re-examine the intent behind state and local building codes and affordable housing regulations which often drive up the cost of building new housing. According to HUD’s Office of Policy Development and Research, state and local regulations regarding land use and construction standards often make the production of even middle-income housing unprofitable.\textsuperscript{35}

Split-rate property tax systems, also known as “value-capture” taxes, have been proven to expand affordable housing and incentivize its location in the most infrastructure rich locations. Under this approach, there is a differential tax on structures and the underlying value of the land it sits on. Usually these systems result in reduced taxes for all but speculators and slumlords.\textsuperscript{36}

18. Enable local and community housing solutions. Minnesota’s state policy makers should fully empower local leaders and regional economic development organizations to create solutions that meet the housing affordability and access issues in their communities. In addition, the state should issue additional permits for rural congregate housing for older adults and create more options for workforce housing expansion in rural smaller towns that bring in workers (including immigrants) to sustain and revitalize businesses.

Foundations and state and local governments must invest in the capacity of hometown non-profits and community development financial institutions. Local champions for rural and other underrepresented communities need a leg up in the complex and competitive world of housing finance.\textsuperscript{37} One example of an underrepresented community are Muslims, whose faith practice prohibits interest-bearing mortgages. The Minnesota Housing Finance Agency (MHFA) was the first state agency to offer a type of financing known as “Murabaha” or “cost plus sale” loans. In this type of loan, the state purchases the home and then sells it to the buyer at a higher price, in which the agreed upon down payment and subsequent monthly payments reflect the current mortgage rate.

19. Expand protections for renters. Additional protections are needed for renters who are often one crisis or one landlord decision away from eviction and homelessness. There should be local funds that give one-time subsidies to households facing sudden job loss or a catastrophic health event.

State and local authorities should implement contracts with housing developers that prohibit drastic rent increases, as well as city rental ordinances that strengthen tenant rights. These contracts could also require new developer/owners who want to take over a building, increase rent, and change rental requirements, to provide notice to tenants, the city, and the state Minnesota Housing Finance Agency (MHFA) one year in advance.

Policy makers should ensure that affordable legal services are available to lower-income households who are facing eviction or who need assistance in pursuing their rights.
criminal records expungement (including unlawful detainers). The Legislature should also pilot and then expand the use of pre-court landlord mediation programs.

State and local policies should reduce expensive fees for rental housing application and background checks. It’s also imperative to end discrimination by landlords against households who have Section 8 vouchers.

20. **Prioritize the homeless.** The very most vulnerable are the Minnesotans experiencing homelessness. Minnesota must create and expand housing solutions that are sustainable for formerly homeless households. For those individuals experiencing homelessness who require additional supportive services, the state must increase funding to encourage development of service-enriched transitional and permanent supportive housing, especially investing in wrap-around services related to child care, jobs, mental health, and transportation.

Elders are the fastest growing age group among Minnesota’s newly homeless and unstably housed. Housing programs must create more safe, thriving, creative, and intentional living communities for older Minnesotans to “age in place” while they continue their vital involvement in the communities they’ve invested in over their lifetimes. Key components to Minnesota’s elder housing portfolio are cooperative housing and other pilots providing alternatives such as intergenerational housing, shared housing, and senior communities connected to developments housing families with young children. These programs contrast with the potential cultural isolation in traditional senior high-rises. The Legislature must also re-assess housing choice voucher programs based on current senior housing needs and affordability. Creating more affordable and desirable spaces for elders will also open housing stock for young families.

21. **Support homeownership.** Becoming a home owner can be a step toward wealth accumulation and intergenerational income mobility. Policy-makers should increase funding for lower- and middle-income households seeking home ownership. Find ways to increase home ownership among people of color and Indigenous people.

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*You can solve a lot of these [other social] problems if people have a place to live.*

— Participant at Thriving by Design Community Conversation at Norway House in Minneapolis
TRANSPORTATION

…for many working-class and rural households, transportation costs actually exceed housing costs.

— U.S. Housing and Urban Development Report

Challenges

From a public sector perspective, transportation is the largest and most complex public infrastructure category, as it combines multiple modes (each having many components), involves controversial and conflicting policies and constituencies, intricate private-sector connectivity, as well as seemingly intractable politics.

TRANSPORTATION HAS MANY COMPONENTS

- road pavements
- bridges
- bus shelters
- sidewalks
- traffic control devices
- rail
- buses
- lighting
- trains
- locks
- airports
- planes
- ports
- buildings
- train stations
- dams
- channels
- bike trails

For business owners and employers, Minnesota’s location as an economic hub near the center of North America provides access to global markets via roads, water, rail and air. Delayed investments, budget shortfalls, and increasing transportation demands threaten to slow the growing economy and restrict access to a qualified workforce.

Transportation is typically the second largest household budgeting category and it poses an increasing burden on families of color, and low-income households in metro and Greater Minnesota.

The most substantial, ongoing cost for transportation infrastructure is upkeep of roads and bridges. Minnesota’s weather is especially taxing on transportation infrastructure, as frigid temperatures, frequent freeze-thaw cycles, and heavy snowfalls and flooding crack and wear pavement. Every summer, potholes must be filled, and roads must be repaved to maintain traveler and environmental safety and ease of use, especially for those with mobility limitations due to disability or age.

Although Minnesota is the 12th largest state by area, it has the nation’s fifth-largest state highway system, with over 143,000 miles of public roads. These roads connect people across the state, but their condition has been
steadily worsening. Further deterioration is a given considering the significant transportation budget shortfalls forecasted for the near future. Almost $40 billion is needed to maintain roads over the next 20 years, but only $21 billion can be anticipated from existing revenue sources. This funding shortfall will particularly affect rural Minnesotans, as the vast majority of highways and roads are in Greater Minnesota. An additional $3 billion gap is expected in terms of bridge maintenance over the same time period.

Both Minnesota businesses and consumers depend on the shipment of goods from producers to customers, including farm commodities from one of the largest agricultural regions in the country. In 2017, sales of Minnesota’s agricultural products totaled over $18 billion, and the state ranked first in sales of all grains. In addition, manufacturers, the state’s largest industry, and other businesspeople must move their products. A well-functioning freight system is important for Minnesota’s companies and economy to continue to prosper and grow.

Trucking has dominated, and will likely continue to dominate, freight transportation modes. Transport via truck provides flexibility, especially in terms of the first mile (freight pickup) and last mile (delivery) stretches. The Minnesota Department of Transportation (MnDOT) estimates that trucking will continue to account for more than 60 percent of freight mode share for the next twenty years.

However, larger vehicles, greater freight quantities (with associated additional release of greenhouse gases) and aging transportation infrastructure (with associated weight limitations) are making trucking less cost-effective than in the past. Trucks cause the heaviest wear and tear on roads and bridges, and they tend to not cover the costs of repairing this damage. Thus, Minnesota must maintain its appeal to shippers while addressing transportation budget shortfalls and environmental impacts of trucking.

Public transit helps local economies by attracting new residents and increasing the local consumer base. By focusing on improving and expanding public transit in Greater Minnesota, smaller urban and rural areas can better compete. In Rochester, for instance, the Mayo Clinic’s Destination Medical Center and Rochester Public Transit are working together to construct a “circulator” bus rapid transit line to improve transportation throughout the city. In addition to fostering new economic activity along those transit corridors, public transit encourages existing companies to invest in the city where they are located.

Due to demographic shifts, the need for transit options in Greater Minnesota is expected to grow substantially over the next few decades. Like many places in the United States, Minnesota is facing an aging white population and an expanding and younger population of people of color. As the former retires from the workforce, the latter group becomes the most readily available source for Minnesota’s future workforce. At the same time, growing income inequality and stagnant wages are increasing financial stress on low- and middle-income workers. The transportation needs of these three sub-populations intersect.

- To age in place, elders who are unable to drive or unable to afford to drive, require transportation to meet their physical, medical, social and spiritual needs. In Greater Minnesota, seniors make up 32 percent of transit riders. That percentage is expected to increase as the population ages.

- Over the last fifty years, Minnesota’s communities of color have been under-served and over-stressed. Lack of convenient transportation to and from work, school, child care, grocery stores and medical services have
formed barriers to achievement among low-income communities of color. To meet the needs of the state’s future workforce, these barriers must be removed.

- Public transit provides needed solutions for low income households. Over half (58 to 69 percent) of transit riders in Greater Minnesota and 30 percent in the seven-county Twin Cities metro have annual incomes below $15,000.\(^2\) As of 2017, 6.1 percent of households in Greater Minnesota did not own a vehicle.\(^3\) Minnesota’s rural and urban low- and middle-income workers are financially challenged to find a residence where the combined costs of housing and transportation are affordable. Transportation reliability is causally related to job tenure. Many rural and urban households are living one car breakdown away from losing a job.

Although transit users, in general, appear to be most likely to rely on public transportation to commute to and from work, households in smaller communities are most likely to also use public transit to get to school and to do other household errands.\(^4\)

The climate impacts of transit use are strongly positive. An average passenger vehicle typically emits 4.6 tons of carbon dioxide annually.\(^5\) In 2016, the total carbon emissions of passenger cars in Minnesota was over 8 million tons, while buses emitted about 272 thousand tons.\(^6\)

Transit ridership throughout the state is growing as the state’s population increases. Despite assumptions that public transit benefits only urban areas, Greater Minnesota’s ridership has increased at twice the rate as the Twin Cities over the last decade.\(^7\) Greater Minnesota’s population also trends older than the Twin Cities metro. With time, more services and additional hours will be needed to transport seniors to medical appointments, especially in less-dense areas where the span of service is solely during business hours. However, it’s clear that the state’s public transit resources have been concentrated in the Twin Cities.

Minnesota is making progress on improving the reach of public transit options throughout the state. In its 2018 transit report, MnDOT highlighted the launch of the Greater Minnesota Public Transit Service Expansion Program, which aims to “encourage public transit service growth, system efficiency, and service effectiveness throughout Greater Minnesota” and established a target of meeting 90 percent of Greater Minnesota transit need by 2025.\(^8\)

Increasing numbers of Minnesota’s rural counties are developing strong demand response transit solutions (such as “dial-a-ride”). Growing numbers of mid-sized areas have both fixed-route bus systems and complementary paratransit demand response systems (dedicated resources for serving people with disabilities) within their regions.\(^9\)

Exhibit 5 presents a map of the Greater Minnesota public transit systems administered by MnDOT, which are primarily demand response programs, although some are deviated routes supported by demand response.\(^10\) Two examples are: Friendly Rider which provides demand response buses in Wadena and Staples,\(^11\) and Hibbing Area Transit which provides regular services between major stores,
but riders can call to be picked up from a different location. Moorhead, East Grand Forks, La Crescent, Rochester, Duluth, St. Cloud, and Mankato, are all midsized urban areas, with fixed-route systems that provide transportation at set times throughout the day.

Exhibit 5. Greater Minnesota has developed a variety of MnDOT-administered transit solutions.

While Greater Minnesota has made strides toward developing transit systems, rural community leaders and policy analysts say the supply does not meet demands, that greater coordination and improved service is needed, especially for the disabled and elderly, and that affordable transportation options between communities and regions is lacking.
Minnesota has over 4,000 miles of paved bike trails that traverse the state. Although the Twin Cities metro is the dominant hub for bike riders and commuters, 26 percent of people in Greater Minnesota bike at least once a week.

Walking or biking is an easy, healthy, and environmentally friendly option to get from one place to another. While transit riders still contribute to greenhouse gas emissions, people who bike or walk to work do not. Although bike safety has been steadily improving over the last decade, there has also been a recent spike in pedestrian crashes and fatalities.

Walk Friendly Communities declared Fergus Falls as a bronze-level walk friendly community for its Safe Routes to School program and walkability initiatives, including the pedestrian lane near Lake Alice. Plentiful bike lanes and wide, walkable sidewalks, in addition to the availability of public transit, make Minnesota’s neighborhoods, towns and parks accessible to all.

**“COMPLETE STREETS” AND “ROAD DIETS” ARE THE NEW NORMS, RURAL AND METRO**

The town of Glenwood (pop. 2,527) on scenic Lake Minnewaska in western Minnesota recently completed a downtown makeover that includes: new pedestrian and bicycling options, a smoother road surface, upgraded curb ramps and sidewalks, flood mitigation, and improvements to water, sewer, storm sewer and lighting.

These holistic infrastructure makeovers go by the name “Complete Streets” and dozens of rural, suburban and urban communities now belong to the Minnesota Complete Streets Coalition.

Wikipedia defines this national Complete Streets movement as policy “that requires streets to be planned, designed, operated, and maintained to enable safe, convenient and comfortable travel and access for users of all ages and abilities, regardless of their mode of transportation... Complete Streets emphasize the importance of safe access for all users, not just automobiles.”

Much of the progress toward Complete Streets goals has occurred in dense urban areas, as public health and safety and climate action rise as priorities in transportation planning. The Glenwood story shows how the principles are catching on in rural areas as well.
Another iteration of the Complete Streets concept is the “Road Diet,” or basically reducing lanes from four to two or three, adding bike lanes, medians and pedestrian-friendly amenities. This encourages transit usage and healthier alternatives to total reliance on automobiles for transportation, especially in highly congested, high-growth urban areas. Both St. Paul and Minneapolis, which have added some 75,000 residents between them over the last decade, have been aggressively pursuing these kinds of streetscapes, with suburban areas joining in.

A Star Tribune article on the “Road Diet” trend focused on a Larpenteur Avenue project as a classic example of how some urban counties are aggressively putting many or most of their four-lane roads on diets. From the article: “Ramsey County, with the blessing of St. Paul on one side of Larpenteur and (suburban) Roseville on the other, is converting a bustling stretch of the road from four driving lanes to two, along with a dedicated left-turn lane. Crews also will add new bike lanes and medians at different intersections to aid safe crossing. According to Hennepin County, such a conversion typically reduces crashes by 33 percent to 50 percent and leaves room for a buffer between sidewalks and moving vehicles.”

Solutions

22. Develop and fund a major, long-range transportation investment plan. The Minnesota Legislature must develop a strategic and long-range transportation plan and allocate at least 7 billion new dollars to support substantial new investment over the next decade. Minnesotans across the state need a pragmatic and equitable transportation portfolio with a consistent source of increased funding. More than a decade has elapsed since the Legislature passed its last significant transportation funding bill. The updated package must include maintenance and improvement of roads, bridges, transit, and bike and pedestrian paths in both metro and Greater Minnesota.

Historically, Minnesota taxpayers have paid for road maintenance and construction through the state gas tax, a debt-service surcharge, vehicle registration fees, and motor vehicle sales taxes. Increases in either or both the gas tax and the debt service surcharge are clearly warranted. In addition, Minnesota must adopt various forms of use-based funding streams such as a mileage-based user fee and congestion pricing. Other innovative funding structures may also be developed. Political intransigence against increasing the gas tax may necessitate emphasizing other options. A debt-service surcharge, for instance, would act to pay off bonds and increase the budget for transportation costs such as bridge repair and restoration. A mileage-based user fee becomes more important as Minnesotans acquire electric and hybrid vehicles.

Congestion pricing also is a proven approach to both reducing traffic flow and increasing funding for state transportation systems. Two of the most common forms of congestion pricing are: tolling programs that incentivize high-occupancy vehicle travel and cordon pricing. In the former, drivers traveling through and around an urban core are charged a fee to enter “fast lanes.” That fee increases or decreases depending on the current volume of cars on the road (congestion), peaking during morning and afternoon rush hours. Vehicles carrying more than one or two passengers are given access to the fast lane for free. Three of Minnesota’s highways use a kind of congestion pricing in the form of high occupancy toll (HOT) lanes. Under cordon pricing, drivers pay a fee to enter a restricted area, (usually a city center). The results of this policy have been so positive that New York City is slated to implement cordon pricing for vehicles entering the central business district below 60th street in 2021. Additionally, cities sometimes offer discounted access to low-income people and people with disabilities.

23. Fund new transit initiatives to improve mobility services across Minnesota. Substantial new investments by state and local governments, in partnership with private carriers where possible, are needed
throughout Minnesota, but especially in small towns, rural and suburban areas where the population is increasingly elderly, disabled or otherwise underserved. Although Minnesota’s intercity bus network is improving, few consider it a viable long-distance transit option. As of 2015, only two-thirds of Minnesotans were aware of inter-city bus options and only 19 percent had used one in the past two years. In 2015, MnDOT set out to develop a “robust intrastate and interstate intercity passenger rail system that results in improved travel options, lower costs and higher speeds for Minnesotans and interstate travelers.” The trains proposed would include a supplement to the Empire Builder and new services between the Twin Cities and Duluth and the Twin Cities and Rochester.

24. **Transportation investments must be inclusive and focus on both regional and racial equity.** Regional equity must be advanced by increasing the percentage of Greater Minnesota’s roadways quality rated as “Fair” over the next 20 years, including arterials and collectors under both state and local jurisdictions. In rural Minnesota, state and federal funding distributions are so sparse that road maintenance is usually paid for out of personal property tax levies, which are insufficient to cover the real costs. As a result, some counties have resorted to “unpaving” roads, where the county decides, usually due to budget constraints, to convert asphalt roads back to gravel.

Racial equity must be advanced by intentionally including communities of color in transit planning to ensure that residents and businesses also benefit from investments that are proposed near or in their community. In the Twin Cities’ urban area, where the Metropolitan Council and other local planners expand the region’s transit systems, there must be substantially improved investments in transit equity in currently lower-income and under-served neighborhoods.

25. **Invest in electric trucks and other forms of electrification for moving freight, to reduce negative environmental impact.** Globally, trucks account for 57 percent of emissions incurred while moving freight. Adding electric trucks to fleets decreases their negative environmental impact while maintaining their economic viability.

26. **Enhance freight rail use through improved intermodal terminals.** Transport via rail is cleaner environmentally but does not have the same flexibility as trucks. Improving the efficiency of rail terminals and transferring between rail and concurrent modes of transportation could make them a more attractive option.

27. **Explore innovative transit equity options for Greater Minnesota.** Although all counties are minimally served by at least one public transit service, these generally are insufficient to meet the growing demands of an increasingly elderly and low-to-middle-income population. Minnesota should follow the example of North Central Montana Transit (NCMT), a fixed-route bus service that allows reliable transit every day of the week and has been in operation for a decade.

28. **Intensify renewable and high-tech strategies in public transit.** Promote electronic vehicle (EV) and autonomous vehicle (AV) innovations, as well as smart (electronic) management of highways and transit to reduce greenhouse gas production. Many midsized urban areas such as Duluth, La Crescent,
and Rochester are already on their way to incorporating electric buses into their transit fleets and should continue these developments.\(^{80}\) Minnesota should follow the lead of other states by investing in smart highway management to improve driver safety and decrease crash response time,\(^{81}\) and provide automatic/driverless buses to complement current bus systems and cover the first/last mile.\(^{82}\) Micro-mobility options, such as dockless electric bikes and scooters, complement buses and light rail while decreasing car use in moderate and higher density areas.\(^{83}\) Combining these forms of transportation into one Mobility-as-a-Service (MaaS) application can improve the ease and efficiency of commutes. WHIM is one example of this type of app. It combines every mode of transit into one app that finds, books, and pays for people’s trips.\(^{84}\)

29. **Accelerate the current trends that encourage pedestrian and bicycling alternatives.** In 2010, Minnesota joined about 20 other states in adopting a statewide Complete Streets Law which stipulates a planning and design process that emphasizes safety and access for all users of roadways (regardless of whether they are walking, biking, riding transit or in their own vehicles). Since Complete Streets applies only to roads owned and funded by MnDOT, there are still communities throughout the state that need to improve their walking and biking accessibility and safety. Other options include: creating more Safe Routes to School to make it easier for students to walk or bike to school and reduce the risk of pedestrian injury by 44 percent;\(^{85}\) reevaluating underutilized four-lane roads and standard lane widths to provide space for bike paths or sidewalks; supporting legislation that modifies bike traffic regulations to make roads safer for bicyclists; install pedestrian-activated flashing beacons to increase driver’s awareness of pedestrian priority and safety.
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