2018

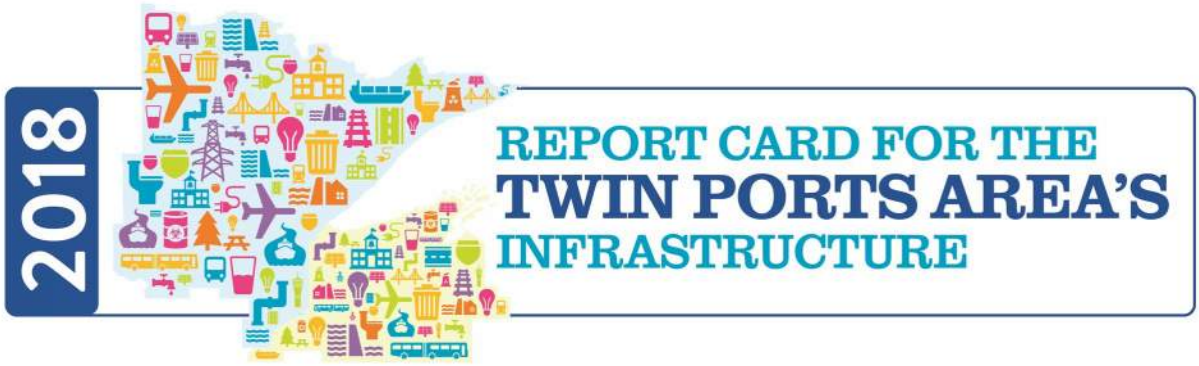
REPORT CARD FOR THE TWIN PORTS AREA'S INFRASTRUCTURE

Duluth Section of the American Society of Civil Engineers

INFRASTRUCTUREREPORTCARD.ORG/TWINPORTSAREA

ASCE

AMERICAN SOCIETY OF CIVIL ENGINEERS



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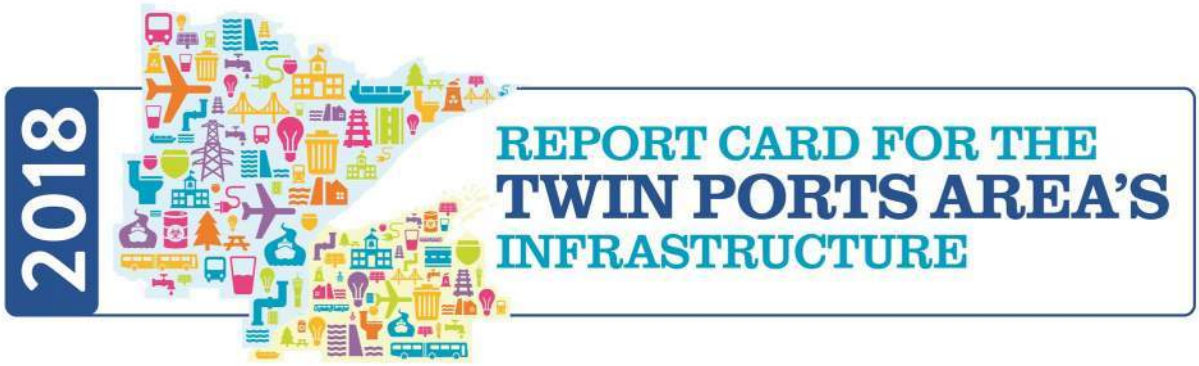


EXECUTIVE SUMMARY

The infrastructure in the Twin Ports region merits an overall "C" grade. Our infrastructure is mediocre and requires increased attention.

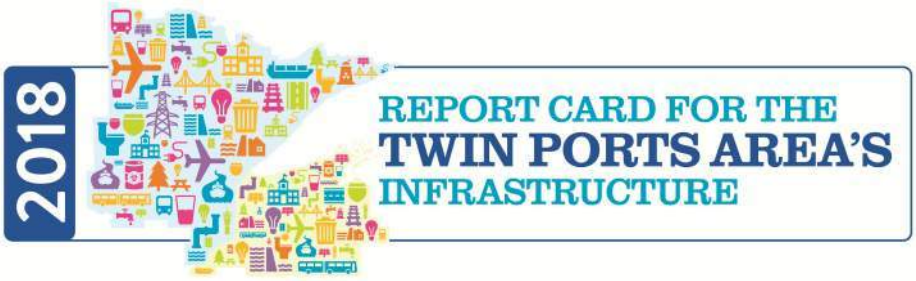
An expert team of over 20 civil engineers and industry professionals from 16 organizations was assembled to evaluate seven infrastructure categories of the Twin Ports area. The results have been reviewed and scrutinized by ASCE's team of national experts, the Committee on America's Infrastructure.

As civil engineers, our job is to plan, design, build and maintain our infrastructure networks. We provide for safe modes of transportation at airports, bridges, ports and roads. We provide the public with safe drinking water and protect the public health by disposing of waste in a responsible manner. Without reliable infrastructure, forward looking maintenance programs and adequate funding sources from all levels of government, the Twin Ports region will lose its economic competitiveness.

We have recent success stories in the region: new airport terminals and runways, the Highway 53 relocation project in Virginia, the Port of Duluth Intermodal Project, the Greater Minnesota Transportation Sales Tax, and many others. However, if we assume that the job is complete based on these success stories, we will not be in position to meet the many infrastructure challenges that we still face as a region.

ASCE's Code of Ethics states that "Engineers shall issue public statements only in an objective and truthful manner" and that "Engineers shall hold paramount the safety, health and welfare of the public." As such, we take the responsibility of our message in this inaugural Twin Ports Infrastructure Report Card seriously. We present this report card as a fulfillment of our public duty and to inform the public and our elected officials on the state of our region's infrastructure.

The overarching conclusion is that our region's infrastructure is currently slightly better than the national average, but backsliding will occur in the next 5-10 years if infrastructure funding issues do not continue to be pushed to the forefront.



GRADING SCALE

A — EXCEPTIONAL, FIT FOR THE FUTURE

The infrastructure in the system or network is generally in excellent condition, typically new or recently rehabilitated, and meets capacity needs for the future. A few elements show signs of general deterioration that require attention. Facilities meet modern standards for functionality and are resilient to withstand most disasters and severe weather events.

B — GOOD, ADEQUATE FOR NOW

The infrastructure in the system or network is in good to excellent condition; some elements show signs of general deterioration that require attention. A few elements exhibit significant deficiencies. Safe and reliable, with minimal capacity issues and minimal risk.

C — MEDIOCRE, REQUIRES ATTENTION

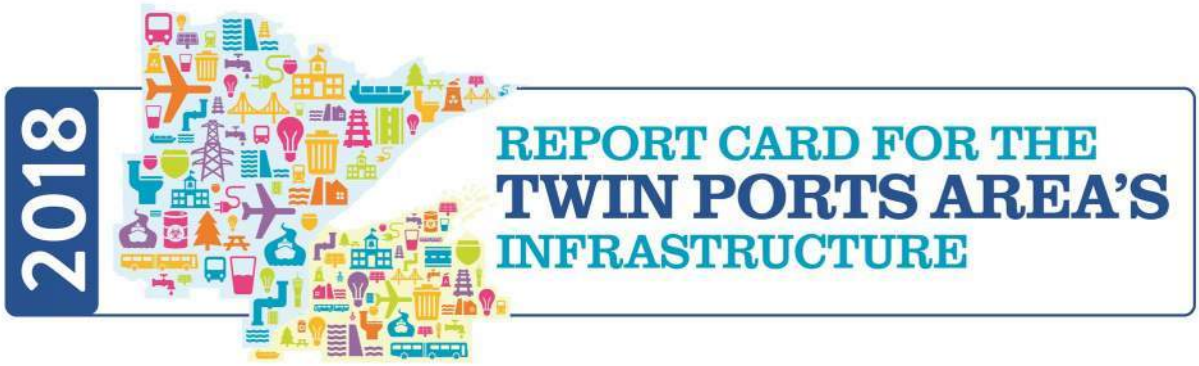
The infrastructure in the system or network is in fair to good condition; it shows general signs of deterioration and requires attention. Some elements exhibit significant deficiencies in conditions and functionality, with increasing vulnerability to risk.

D — POOR, AT RISK

The infrastructure is in poor to fair condition and mostly below standard, with many elements approaching the end of their service life. A large portion of the system exhibits significant deterioration. Condition and capacity are of serious concern with strong risk of failure.

F — FAILING/CRITICAL, UNFIT FOR PURPOSE

The infrastructure in the system is in unacceptable condition with widespread advanced signs of deterioration. Many of the components of the system exhibit signs of imminent failure.



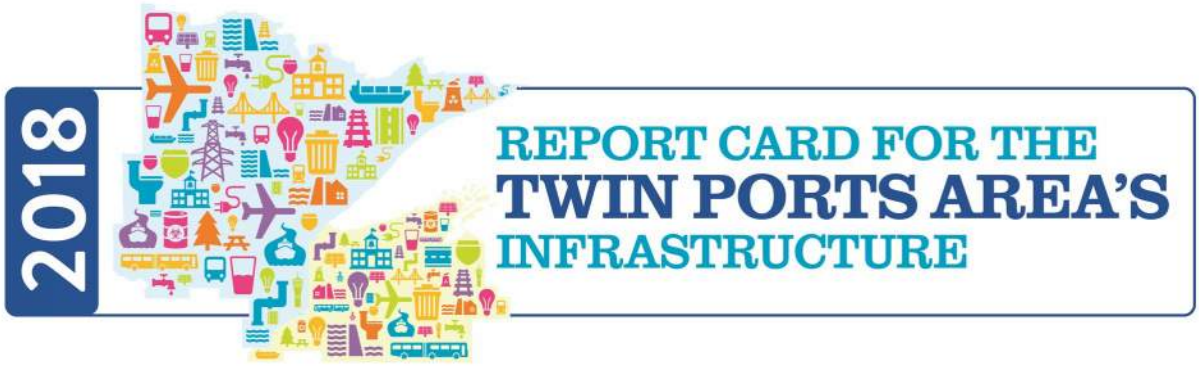
GRADING METHODOLOGY

Using a simple A to F school report card format, the Report Card examines current infrastructure conditions and needs, assigning grades and making recommendations to raise them.

ASCE Duluth Section compiled a team of regional infrastructure experts to gather data and prepare detailed summaries for each infrastructure category. Summaries provided for each infrastructure category were peer reviewed by subject matter experts.

The Infrastructure Report Card Committee assessed all relevant data and references, consulted with other technical and industry experts, and assigned grades for each infrastructure category using the following criteria:

- CAPACITY: Does the infrastructure's capacity meet current and future demands?
- CONDITION: What is the infrastructure's existing and near-future physical condition?
- FUNDING: What is the current level of funding from all levels of government for the infrastructure category as compared to the estimated funding need?
- FUTURE NEED: What is the cost to improve the infrastructure? Will future funding prospects address the need?
- OPERATION AND MAINTENANCE: What is the owners' ability to operate and maintain the infrastructure properly? Is the infrastructure in compliance with government regulations?
- PUBLIC SAFETY: To what extent is the public's safety jeopardized by the condition of the infrastructure and what could be the consequences of failure?
- RESILIENCE: What is the infrastructure system's capability to prevent or protect against signifcant multi-hazard threats and incidents? How able is it to quickly recover and reconstitute critical services with minimum consequences for public safety and health, the economy, and national security?
- INNOVATION: How does future technology integrate with today's infrastructure?



STEPS WE CAN TAKE TO "RAISE THE GRADES"

1. **RE-INVEST IN INFRASTRUCTURE**

   For decades, as a region and a nation we have been living off the depreciation of infrastructure investments made by our parents and grandparents. It is time for us to accept the reality that we need to re-invest now to provide the same infrastructure stability to our own children and grandchildren. If we do not, our region will suffer economically, and our quality of life will diminish.

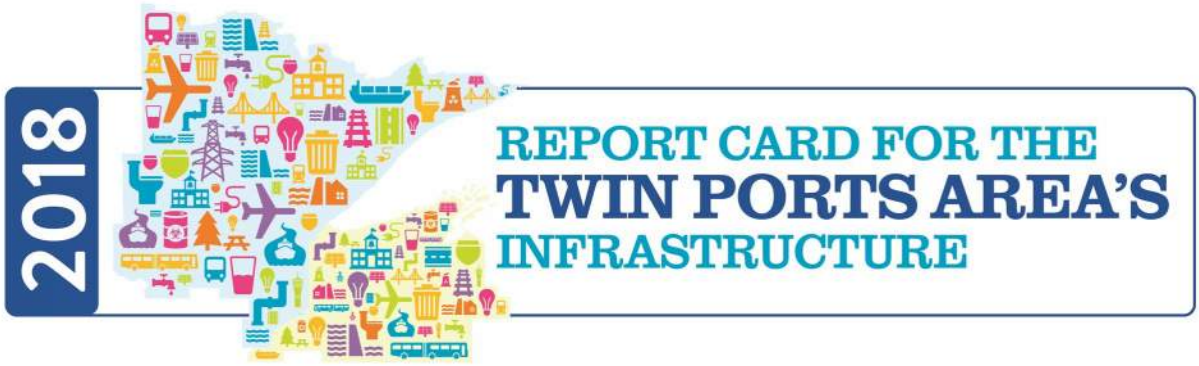
   As a starting point, we encourage the Minnesota legislature to support the City of Duluth's infrastructure sales tax initiative. We also recommend the State of Minnesota expand the Port Development Assistance Program to include grant access to private dock owners. Additionally, we urge decision-makers to identify funding sources for the Twin Ports Interchange and the replacement of the Blatnik Bridge.

2. **SHOW UP AND ADVOCATE**

   Everyone agrees our infrastructure is key to current economic stability and future prosperity. Talk to your city councilors and mayors about infrastructure. Write your legislators. E-mail your governor. Show up to town halls with your Senators and Congresswomen/Congressman. Talk about infrastructure and its impact on your business and community. At public town halls and public meetings relating to infrastructure, civil engineers and elected officials often show up to near-empty rooms. Public agencies, such as MNDOT and WDOT, hold public meetings to solicit input about what is important to the general public. Show up and be engaged! The political process belongs to those who choose to participate.

3. **SAY THANK YOU!**

   We have been blessed with several infrastructure success stories in our region in the last 10 years. Take a moment to thank your elected officials. Let them know that infrastructure matters to you. Relate a story about how improved infrastructure has had an impact on your family, your business and your community.



ASCE REPORT CARD FOR DULUTH SECTION 2018

AVIATION CHAPTER

GRADE: B-

EXECUTIVE SUMMARY

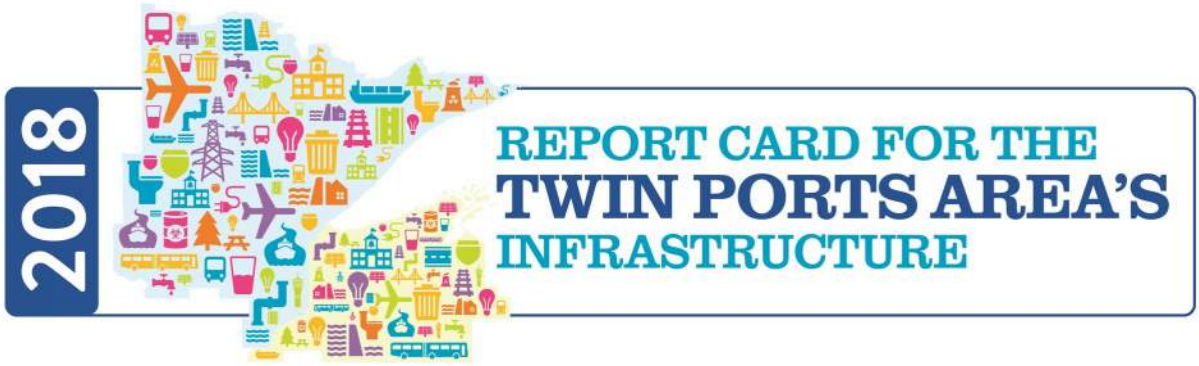
Recent upgrades to pavement and commercial airport terminal buildings in Brainerd, Duluth International, Falls Regional and Range Regional Airports have resulted in infrastructure that is in new condition with increased capacity. The condition will continue to improve in the next four years as some of the most poorly rated pavements in the region undergo scheduled upgrades. However, while sufficient funding has been identified to move forward with needed capital improvements at Duluth International Airport, many other airports in the region have needs that outpace available funding. Looking ahead, the uncertainly of the current local, state and federal funding programs is the greatest cause for future concern. Without continued advocacy for increased and dedicated aviation funding, recent gains in infrastructure condition in our region will be overtaken by ongoing infrastructure deterioration.

ANALYSIS

The ASCE Duluth Section comprises 10 counties in northeast Minnesota (Koochiching, Saint Louis, Lake, Cook, Itasca, Cass, Crow Wing, Aitkin, Carlton and Pine) and six counties in northwest Wisconsin (Douglas, Bayfield, Ashland, Sawyer, Washburn and Burnett).

The Aviation grade is based on analysis of the four commercial airports in the region, their respective general aviation (GA) components, and approximately 25 other general aviation airports in both the Minnesota and Wisconsin portions of Duluth Section. All airports which are a part of the National Plan of Integrated Airport Systems (NPIAS) and eligible to receive Federal grants through the Airport Improvement Program (AIP) were included. The commercial aviation airports analyzed include:

- Duluth International Airport (DLH)
- Range Regional Airport (HIB)
- Brainerd Lakes Regional Airport (BRD)



- Falls International Airport (INL)

Passenger (enplanement) and cargo data for each airport are compiled into an FAA database. The database supports the FAA's Airport Improvement Program (AIP) apportionment formula calculations, which determines entitlements for the next full fiscal year (i.e., calendar year 2016 data determines Fiscal Year 2018 entitlement funds).

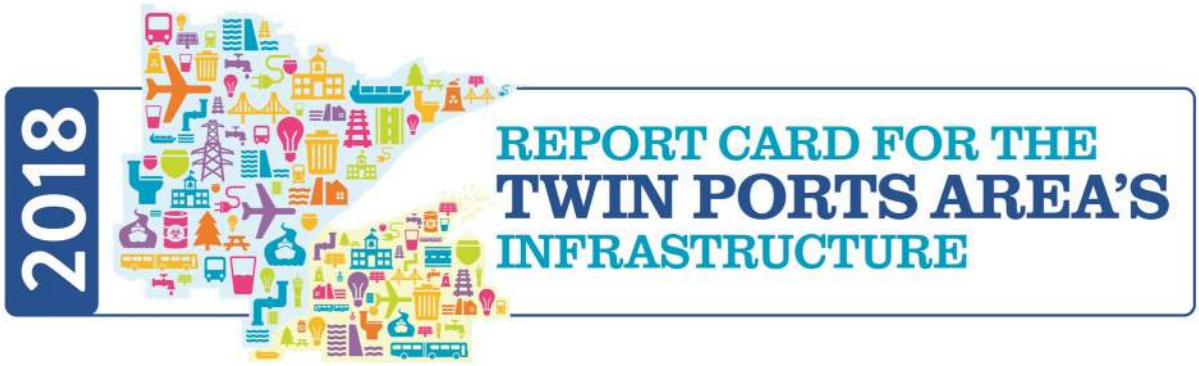
The relative percentages of commercial enplanements at our region's airports are shown in the following table:

Airport Name	Approximate published enplanements	Percentage of Total Enplanements
Duluth International Airport	131,000	76%
International Falls Airport	15,000	8.5%
Brainerd Lakes Regional Airport	15,000	8.5%
Range Regional Airport	12,000	7%
Total	173,000	

CAPACITY

To determine whether airport infrastructure has sufficient capacity to meet current and future demands, we evaluated runways and terminals for congestion and their ability to handle average daily plane takeoffs/landings without unreasonable delays. Area commercial airports do not report capacity as an issue. Published enplanement projections at the commercial airports are generally stable through 2045, with slight increases noted (generally less than 10%). Due to recent investments into new terminal buildings and runways, capacity is sufficient to meet current and projected future capacity needs.

For example, the Duluth International Airport projects that enplanements between 2017 and 2045 will run between 118,000 and 147,000 annually. The new Duluth Airport terminal, which opened in 2013, was designed for a maximum throughput of 200,000 enplanements (400,000 passengers). Similarly, Range Regional Airport projects enplanements to remain steady between 13,000 and 14,000 annually between 2017 and 2045. The new RRA terminal, which opened in 2015, could handle 100,000 enplanements annually.



Published forecasts for general aviation airports in both Minnesota and Wisconsin also indicated steady or small increases in operations projections over the next 10 year period.

CONDITION

The condition of the region's airport infrastructure was assessed by considering terminal buildings at the commercial airports and composite pavement condition at the commercial and general aviation airports.

Terminal scoring was qualitatively based on the number of terminals that are newly constructed or renovated at the commercial airports in our region, including a renovation in Brainerd (2012), and completion of new replacement terminal buildings in DIA (2013), RRA (2015) and International Falls (2017). Due to these recent success stories, these airports should be considered "fit for the future" in terms of ADA compliance, security and amenities.

Runway scoring was quantitatively based on Pavement Condition Index (PCI) scores for all pavement (runways, taxiways, aprons, etc.) at the four commercial airports plus over 20 general aviation airports. For reference, a PCI score of 100 is pavement in new or near perfect condition. For the Minnesota airports, PCI was gleaned from the Minnesota Department of Transportation (MnDOT) "Airview" website, which complies the most recent public condition assessment reports for pavements. For the GA airports in Wisconsin, information was gleaned from public Wisconsin 2016 IDEA website. A summary table is shown below:

Name	Sq Feet	PCI Score
Brainerd Lakes	4,333,688	89.3
Duluth International	6,727,415	65.2
Falls Regional	2,423,480	75.0
Range Regional	2,845,420	73.7
GA Airports (25 total)	14,741,804	73.0
Total	31,071,807	
Weighted Average		73.8

Only three GA airports in Duluth Section (Duluth Sky Harbor, Cloquet/Carlton and Grantsburg) reported lowest PCI scores the "poor" range (below 55), but the remaining airports in the

region rank from fair to excellent. Additionally, pavement replacement projects are scheduled (and funded!) at DIA, RRA and Duluth Sky Harbor within the next four years. These pavement replacement projects will significantly increase the condition scores for the lowest scoring pavements at these airports.

FUNDING & FUTURE NEED

Projects at airports are funded through a variety of funding sources. Federally, the largest program is the Airport Improvement Program (AIP). The AIP provides grants for the planning and development of public-use airports that are included in the National Plan of Integrated Airport Systems (NPIAS). This funding comes in the form of "entitlement" funding, dispersed to each NPAIS airport based on enplanements totals, and "discretionary" funding, which is disbursed according to a national prioritization formula. The federal grants require a "local match," usually 10% per project.

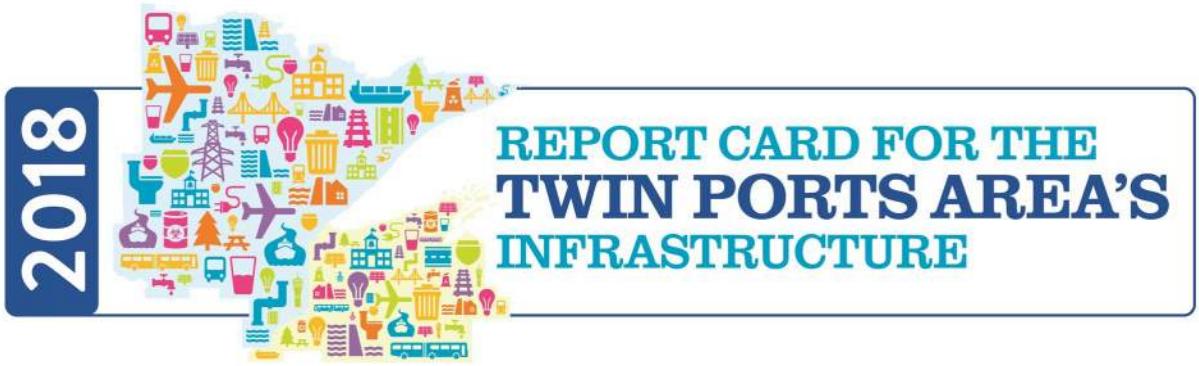
State level sources of revenue in Minnesota include the State Airports Fund, which is the operating fund for the MnDOT Office of Aeronautics. In Wisconsin, the state provides 5% funding for airport projects which are federally funded, leaving the airport sponsor responsible for only 5% of the total cost, which is half of the required local match. State aid in Wisconsin is

also available for some projects that are not eligible for AIP funding. The state aid program funds projects up to 80% with the remainder being a local match.

Local sources of revenue include Passenger Facilities Charges (PFCs), revenue from parking and on-site concessions, fuel sales, hangar rentals and land leases. PFCs are currently capped at $4.50 for every enplaned passenger at commercial airports, per flight segment, with a maximum of four segments ($18) charged total per passenger. Airports often use these fees as the local share to leverage state and federal (AIP) funded grants for projects and to purchase equipment that improves condition, capacity, security and public safety. The PFC fee has been capped at $4.50 since 2000 and is not indexed to inflation. Hence, the purchasing power of this funding source continues to erode with each passing year.

The Essential Air Service (EAS) program was put into place to guarantee that small communities served by certificated air carriers before airline deregulation continue to maintain a minimal level of scheduled air service. The United States Department of Transportation (USDOT) is mandated to provide eligible EAS communities with access to the National Air Transportation System. This is generally accomplished by subsidizing two round trips a day with 30- to 50-seat aircraft, or additional frequencies with aircraft with 9-seat or fewer, usually to a large- or medium-hub airport. USDOT currently subsidizes commuter and certificated air carriers to serve Brainerd Lakes, Range Regional and Falls Regional Airports. Without this program, these airports would lose significant portions of the air service and the associated local revenue streams from PFCs. The ability of these airports to leverage AIP dollars would be lessened and local and regional business and private citizens would suffer due a lack of accessible air service. Unfortunately, the EAS is frequently a political target for cost cutting.

Funding has been secured at our region's airports successfully in the last 10 years to upgrade and maintain infrastructure. For example, $70 million has been invested into Duluth International and Duluth Sky Harbor airports since 2007 and over $44 million has been invested at Range Regional Airport since 2008. Recent fully funded upgrades to runway pavements and terminals at Duluth International, Range Regional Airport, Falls Regional, Brainerd Lakes and GA airports have addressed a significant portion of funding need in our region.

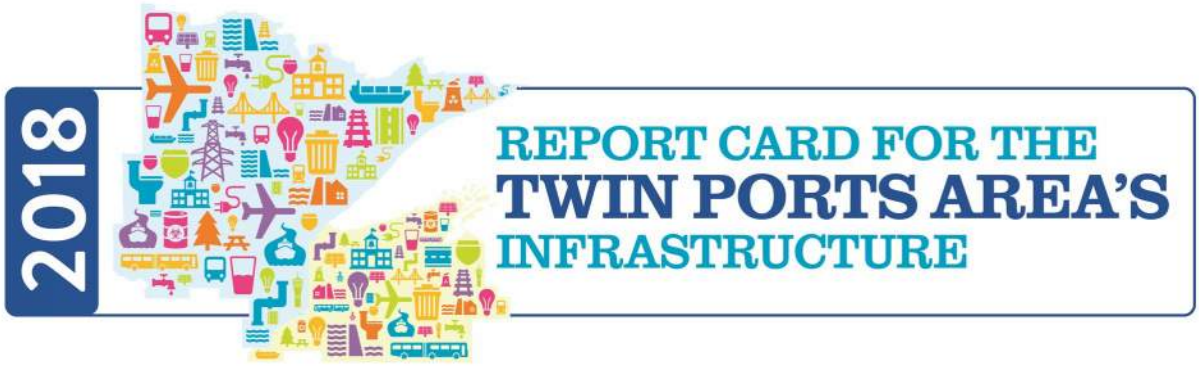


Looking forward, the most recent master plan at Duluth International Airport in 2015 stated that sufficient funds/funding sources are projected to be available over the 2015-2021 time period to fund $32 million in proposed capital improvement projects. Projects beyond 2021 have yet to be sequenced, but aggressive pursuit of FAA discretionary funding and state grants/bonding money will be required to fully fund projects beyond 2021.

However, the amount of monies available from existing funding sources is generally below the need at many of the region's other airports. For example, the 2018 CIP for Range Regional Airport identifies $38 million in funding needs for the 2018-2028 timeframe. Approximately $13 million will be available from FAA entitlement funds and local sources over this timeframe, leaving the remainder to be pursued through competition from other sources, such as FAA discretionary dollars, state grants/bonding money, local sources, etc. Similarly, Brainerd Lakes ($20 million) and Falls Regional ($30 million) identify similar amounts of need over the next 10 years with similar outlook on funding.

The Minnesota Council of Airports (MCOA) is aggressively advocating for increased funding for the MnDOT Aeronautics State Airports Fund to help fill in the funding shortfalls. The Minnesota State Airports Fund budget is $27 million annually and is funded by 4 key sources: aviation fuel tax, aircraft registration tax, airline flight property tax and sales taxes. Of this funding source, approximately $11 million goes towards the airport construction grant program, $5 million for the airports maintenance and operation grant program and $4 million for maintaining navigation systems.

In general, the future of funding is always tenuous because of the uncertainty of long-term Federal Aviation Authority (FAA) reauthorization, the cap on Passenger Facility Charges (PFCs) state funding limitations, and the continued threat of elimination of the Essential Air Service (EAS) program. Due to these factors, we believe that funding and funding sources require attention at all levels of government. Without continued advocacy for increased aviation funding, recent gains in infrastructure condition in our region will be overtaken by ongoing infrastructure deterioration.



OPERATION AND MAINTENANCE & PUBLIC SAFETY

Operation and Maintenance (O&M) includes consideration of condition and quantity of snow removal equipment, de-icing capabilities, condition of access ramps, mowing, maintenance of street and apron lighting, signals, fencing, striping, etc. Public Safety includes the extent the public's safety is jeopardized by the condition of the infrastructure.

Facilities generally reported having adequate snow removal equipment to consistently remove snow from runways and parking within reasonable timeframes. Snow removal equipment purchases are funded either wholly by PFC fees or by using PFC fees as the local share to leverage state or federal grants to complete the purchase.

Striping, apron lighting, signals, and other safety related items are all compliant with state and federal regulations. Law enforcement and fire-fighting response teams have adequate modes of access.

RESILIENCE AND INNOVATION

The level of security at the perimeter DIA is high due to the nearby presence of the 148th Air National Guard Fighter Wing. The region's other airports have the capability to recover from incidents with minimal impact on critical services.

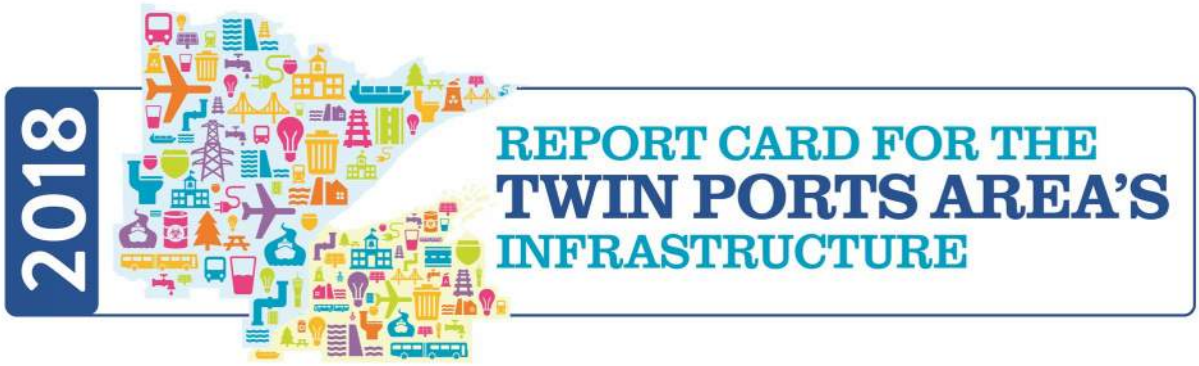
Positive innovation at DIA included the use of geothermal heating and cooling systems pumps in its recent new terminal construction project. The geothermal system required the drilling of approximately 80 wells to a depth of 500 feet near the terminal and uses the latent temperature of the earth to heat the terminal in the winter and cool it in the summer.

Due to a lack of funding, no facility within the Duluth Section footprint uses solar panels for electrical power generation as of yet. These technologies, if installed and utilized, stand to improve the overall strength of the aviation industry in our region.

HOW CAN WE RAISE THE GRADE?

- At the local level, airports can continue to research innovative energy sources such as solar and wind to help lower operation costs.
- At the State level, our legislators should continue to assist airports with bonding money for infrastructure improvements as well as increase funding for the State Airports Fund in Minnesota and Wisconsin

- At the Federal Level, Congress should allow local airports the option to increase local PFCs. Raising the cap would allow airports the option to generate more local revenue with which to leverage state and federal grants.
- Congress should also continue to protect the EAS program in Congress for the benefit of Brainerd, RRA and Falls Regional Airport.



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Renalls, C. (2011, September 23). Duluth airport gets grant for green heating system. *Duluth News-Tribune* Retrieved http://www.duluthnewstribune.com

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www.faa.gov/airports/pfc

www.transportation.gov/policy/aviation-policy

https://www.appliedpavement.com/hosting/wisconsin/statewide-summary/condition-summary/pci-by-airport-table.html

APO TAF Quick Data Summary Report – Duluth International Airport (2016)

https://taf.faa.gov/Home/RunReport

Duluth Airport Authority Airport Master Plan Update (January 2015)

http://www.dot.state.mn.us/aero/airportdevelopment/fundingandgrants.html#state

Memo: AAAE, ACI-NA, U.S. Travel Response to Misleading A4A Claims, November 2017

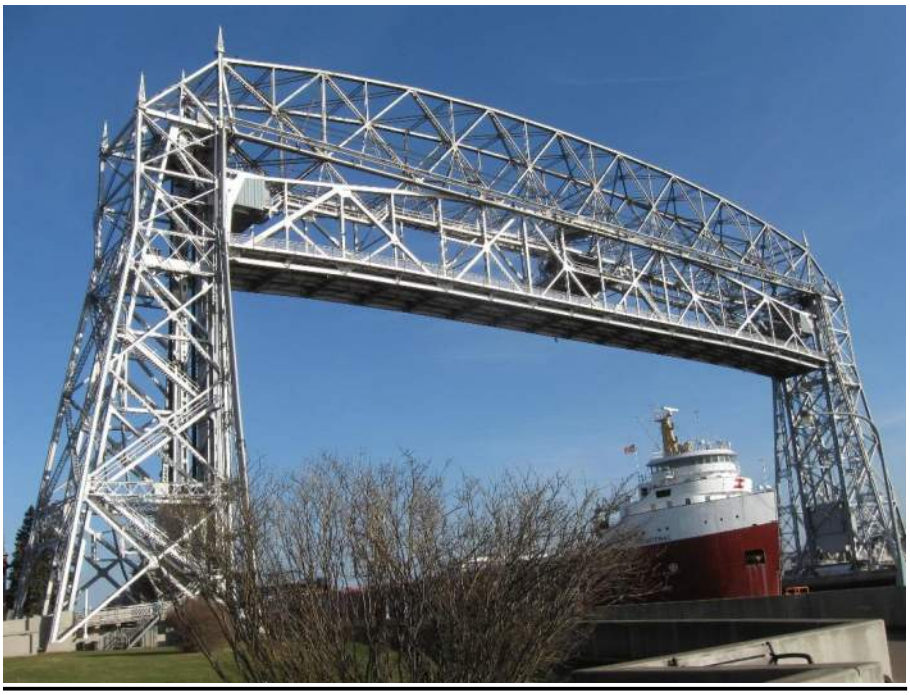
Wisconsin State Airport System Plan 2030
http://wisconsindot.gov/Pages/projects/multimodal/sasp/air2030-chap.aspx

2018 REPORT CARD FOR THE TWIN PORTS AREA'S INFRASTRUCTURE

ASCE REPORT CARD FOR DULUTH SECTION 2018

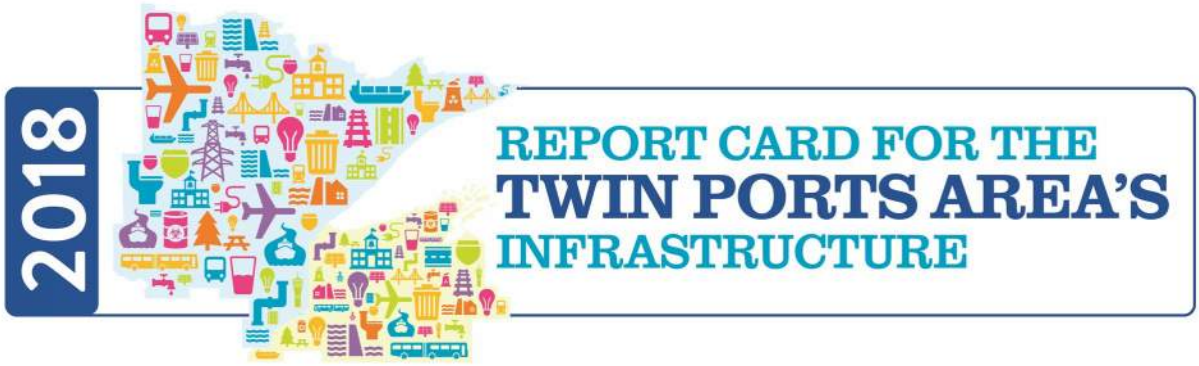
BRIDGE CHAPTER

GRADE: B-



EXECUTIVE SUMMARY

Capacity on our area's bridges is sufficient and bridge condition is relatively uniform and high across all the city, county and state bridges. Approximately 7% of all bridges in the Duluth Section were rated as "structurally deficient," compared to a national average of 9.1%. Recent local funding initiatives authorized through the Greater Minnesota Transportation Sales Tax program, which have been enacted recently by several counties in Minnesota, are a new funding mechanism to address infrastructure needs in the region. Public confidence in our region's bridges is high mainly due to recent highly-publicized infrastructure repairs to the Blatnik and Bong interstate bridges which connect Duluth, Minnesota to Superior, Wisconsin.



ANALYSIS

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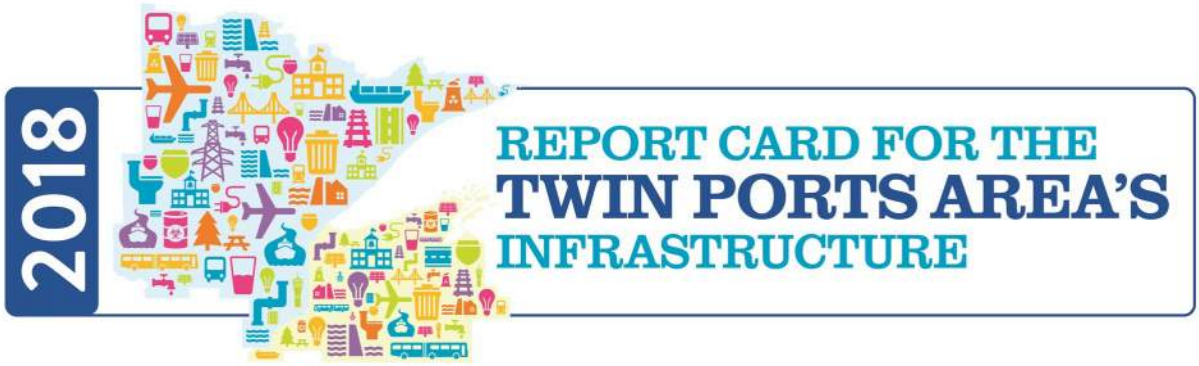
The Bridges grade in the Duluth Section is based on analysis of over six million square feet of bridge data submitted by state and local jurisdictions within the Section footprint. For comparison, relative quantity and square feet of bridge of each participating jurisdiction are shown in the following table:

JURISDICTION	SQ FEET	QUANTITY OF BRIDGES
BURNETT COUNTY (WI)	49,500	66
CARLTON COUNTY	97,412	115
CITY OF DULUTH	69,800	88
COOK COUNTY	38,859	56
DISTRICT 1 (MnDOT)	5,196,282	542
LAKE COUNTY	59,999	78
ST LOUIS COUNTY	509,313	584
TOTAL	6,021,165	1,529

There have been efforts to improve the overall condition of bridges in the state of Minnesota with the Trunk Highway Bridge Improvement Program (Chapter 152), which was enacted in 2008 to fund repairs to structurally deficient and fracture critical state bridges. In September 2017, the Highway 53 realignment project and bridge was completed. At a cost of $156 million, the new bridge maintains a major transportation corridor in the region.

CAPACITY

Bridges in the area generally have capacity for our current and expected future population base. Generally speaking, traffic flows at or above the posted speed limit and motorists have a high level of physical and psychological comfort. MnDOT utilizes traffic cameras in combination with dynamic message signs and other ITS related equipment to direct traffic flow in key locations in the region.



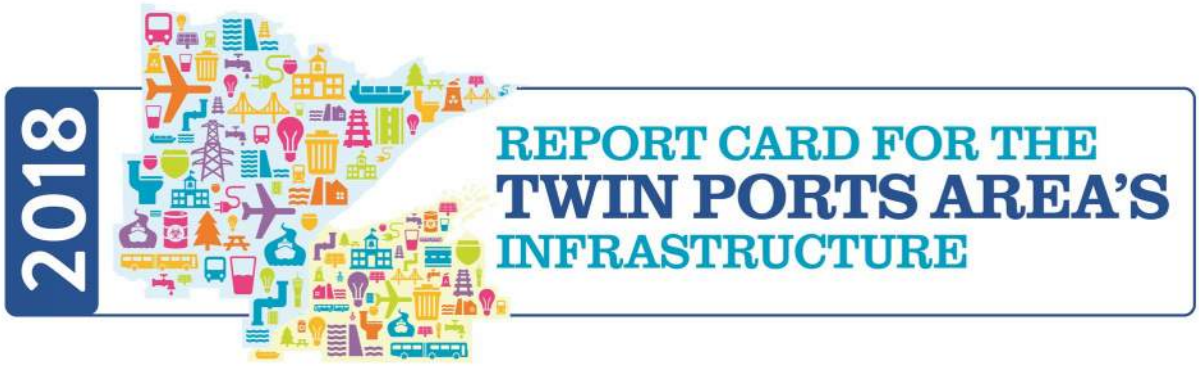
CONDITION

Condition score was based on the sufficiency rating scores reported from all of the bridges in the participating state, county and city agencies.

JURISDICTION	AVG SUFFICIENCY	SQ FEET	QTY OF BRIDGES	S.D. BRIDGES
BURNETT	89.3	49500	66	0
CARLTON	91.6	97412	115	9
CITY OF DULUTH	91.5	69800	88	2
COOK	81.0	38859	56	15
DISTRICT 1	89.9	5196282	542	17
LAKE	90.2	59999	78	3
ST LOUIS	88.8	509313	584	63
TOTALS		6,021,165	1,529	109
WEIGHTED AVG	89.8			

Bridge condition scores are relatively uniform and high across all the city, county and state bridges. Approximately 7% of all bridges were rated as "structurally deficient," which is lower than the national average of 9.1% reported in the National 2017 ASCE Infrastructure Report Card. Due to the funding mechanisms such as the Chapter 152 program in Minnesota, the number of structurally deficient bridges has generally trended downward in the last 5 years. Specific data can be skewed by the size of the Blatnik Bridge, which has teetered back and forth from being rated "structurally deficient" to "fair" as repair projects have been executed. Currently, the Blatnik Bridge is not rated as structurally deficient.

General information gathered from the Wisconsin Department of Transportation (WDOT) website indicates that in 2015, the State of Wisconsin (as a whole) rated 96.8% of their bridges at or above the "fair" rating, which equates to a score of 5 or higher on a scale of 0 to 9. The 96.8% score is above Wisconsin DOT's internal target of 95% scoring "fair" or higher. Similarly, in 2016 Minnesota DOT District 1 reported 88% of bridges at or above the "fair" rating on the same scale.



The largest bridges in Duluth Section are the Blatnik and Bong Bridges. The Blatnik Bridge was built approximately 60 years ago and has been in service beyond its original design service life of 50 years. A long-term management report was compiled in May 2017 and options for repair, replacement and funding are under consideration currently. MnDOT is assessing these future repair or replacement options for a 15-40 year time horizon. Preliminary research suggests that a main span replacement combined with partial replacement of the approach spans in the 10-15 time horizon is recommended. Other options are still being investigated to determine viability.

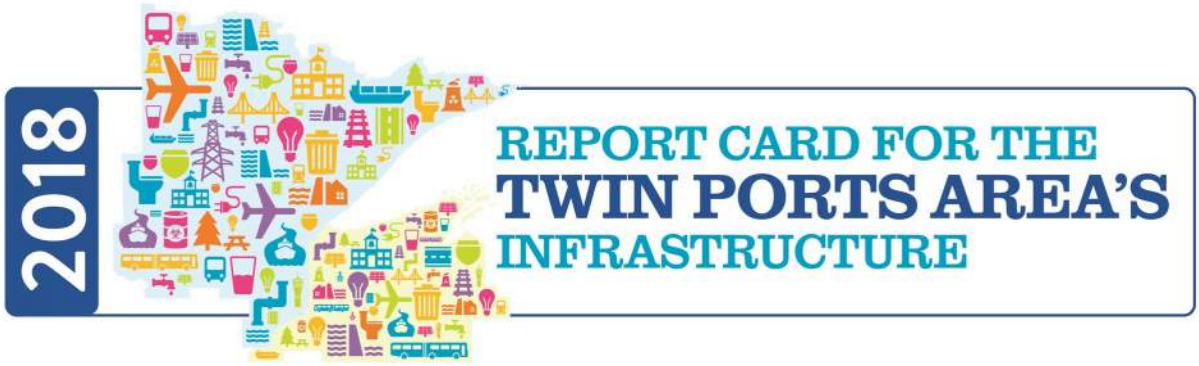
The Blatnik Bridge, under the jurisdiction of the MnDOT, has an average annual daily traffic count of 28,500 and accounts for 2% of the state trunk highway bridge deck area for the State of Minnesota. The Bong Bridge, under the jurisdiction of the WDOT, with an average annual daily traffic count of 16,300, was constructed in the 1980s and still has decades of service life remaining.

FUNDING & FUTURE NEED

At the State level, bridge improvements and operational costs are funded primarily by state and federal gasoline taxes. Funds are supplemented by any special one-time state bonding and any supplemental funding from the federal government.

In Minnesota, the Trunk Highway Bridge Improvement Program (Chapter 152) was enacted in 2008 to fund repairs to structurally deficient and fracture critical state bridges. This program has funded repair or replacement of 120 bridges, but the program is set to expire in 2018. A new and more broadly encompassing funding mechanism should be considered by the Minnesota legislature to replace this the Trunk Highway Bridge Improvement Program. Currently, funds will be available through the Corridors of Commerce and Trunk Highway bonds, as well as new funding authorized in the 2017 Legislative Session under the title of 17NEW.

At the county level in Minnesota, transportation funding can be enhanced by the Greater Minnesota Transportation Sales Tax. This tax allows political subdivisions to impose a local sales tax up to 0.5% and a $20 excise tax on commercial sales of motor vehicles to fund transportation projects.



A recent success story was the implementation of such a 0.5% sales tax in Saint Louis County which will raise an estimated $10.5 million (USD) annually to be invested exclusively in transportation-related projects, including a portion which goes towards improving bridges. A similar 0.5% sales tax was implemented in Cass, Carlton, Cook, Crow Wing, Lake and Pine Counties in Minnesota recently.

The major interstate bridge in the Duluth Section is the Blatnik Bridge. Funding for replacement of this bridge, estimated at $350 million, is not currently in place and a funding source will need to be developed in the next 5 to 15 years. Another large-scale project, the Twin Ports Interchange, could be up to a $200 million-dollar replacement program and is also not currently funded. The uncertainty of funding for these projects is a cause for concern.

OPERATION AND MAINTENANCE & PUBLIC SAFETY

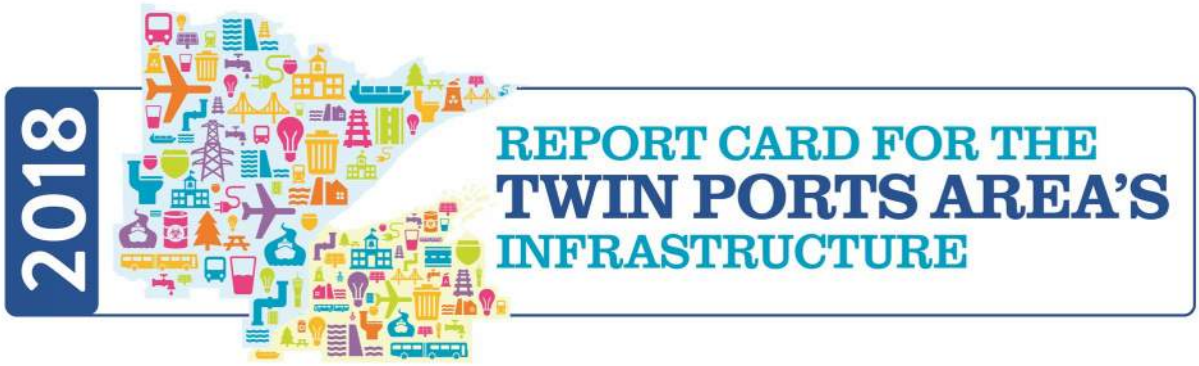
Highway departments have proactive and robust inspection programs which help prioritize needed repairs. Funding for O&M is considered stable and repair/replacement programs are prioritized every four years in Minnesota by the MnDOT State Transportation Improvement Program (STIP).

Public safety is not considered to be an issue with our regions bridges. Relatively few bridges have posted load limits or other limitations.

RESILIENCE AND INNOVATION

The bridge system in our area has a high capability to recover from incidents, with minimal impact on critical services. For example, even during the 2012 floods in Duluth, there was enough redundancy in the bridge systems that critical services were maintained. Even when traffic on our major interstate bridges is closed or reduced to a single lane, motorists can proceed to another nearby bridge with minimal disruption.

Innovation at the state level by MnDOT includes proactive research. Research programs underway include use of sonar and drones for inspection, GFRP materials for retrofitting applications, and use of micro/macro fibers in concrete. MnDOT in particular is ambitiously looking for ways to improve their program with materials, details, design and inspection technology.



HOW CAN WE RAISE THE GRADE?

- At the local level, there are counties in Minnesota (Aitkin, Itasca, and Koochiching) who should consider adoption of the 0.5% Greater Minnesota Transportation Sales Tax to increase funding for their bridge programs.
- At the State level, indexing the motor fuels tax to inflation would help stabilize this funding source. The Greater Minnesota Transportation Sales Tax has been a successful initiative to help increase roadway funding and should be kept in place in state law.
- Identify a funding source(s) for potential replacement of the Blatnik Bridge and the Twin Ports Interchange projects in 5 to 15 years.
- At the Federal Level, the motor fuels tax has not been raised since 1993. We are currently trying to build 2017 infrastructure with 1993 dollars even though total inflation in that time period has exceeded 65%! Generating more federal revenue to support bridge construction is imperative.
- Investigation of the greater use of public-private partnerships to help fund public works.

SOURCES:

Minnesota Department of Revenue website
http://www.revenue.state.mn.us/Pages/default.aspx

http://www.dot.state.mn.us

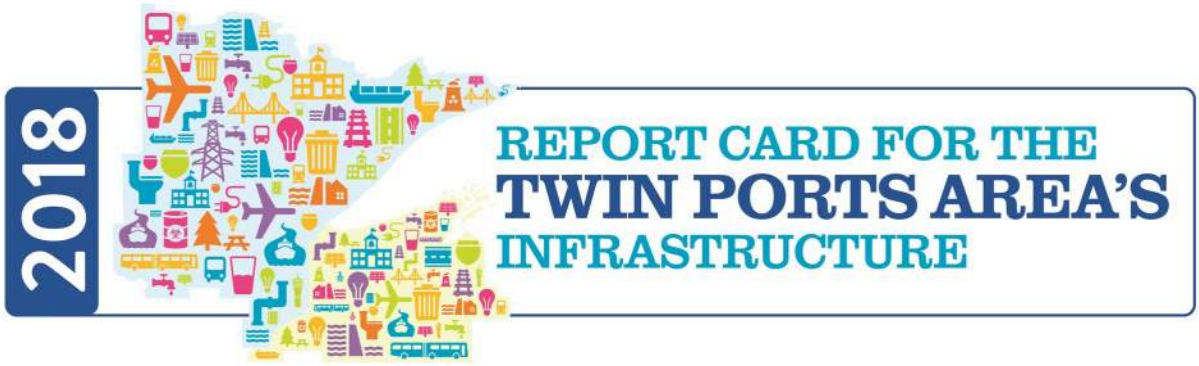
Minnesota House of Representatives, Information Brief, "Local Sales Taxes in Minnesota" November 2016

Saint Louis County Transportation Sales Tax information found on the Saint Louis County website: http://www.stlouiscountymn.gov/GOVERNMENT/Departments-Agencies/Public-Works/Transportation-Sales-Tax

Personal communication with multiple state and county highway engineers on multiple dates

Minnesota Bridges October 2016, published by the Minnesota Department of Transportation Bridge office

Trunk Highway Bridge Improvement Program Chapter 152 (January 2016), published by the Minnesota Department of Transportation



ASCE REPORT CARD FOR DULUTH SECTION 2018

DRINKING WATER CHAPTER

GRADE: D

EXECUTIVE SUMMARY

While underground pipe capacity in the City of Duluth is more than adequate for demand, the infrastructure in many cases is beyond its useful service life and available funding does not keep up with repair and replacements costs. For the City of Duluth to keep up with pipe replacement, 1% of the pipe system, or 4.33 miles of pipe per year, will need to be replaced annually, at a total cost of $4.33 million. The current budget for pipe replacement is $2.5 million per year, which is well short of the annual need. Some funding relief is on the way in the future as the City of Duluth will be enacting water rate increases of 4.7% per year for the next 6 years.

Statewide funding programs in Minnesota and Wisconsin are providing some relief to other municipalities for drinking water improvement programs, but funding falls short of projected need by a wide margin.

ANALYSIS

The ASCE Duluth Section comprises 10 counties in northeast Minnesota (Koochiching, Saint Louis, Lake, Cook, Itasca, Cass, Crow Wing, Aitkin, Carlton and Pine) and six counties in northwest Wisconsin (Douglas, Bayfield, Ashland, Sawyer, Washburn and Burnett).

The Drinking Water grade in the Duluth Section is mainly based on our analysis of the infrastructure in the City of Duluth in addition to review of annual drinking water report information published by the states of Minnesota and Wisconsin. For reference, the City of Duluth has approximately 433 miles of underground piping.

While complete numbers on the infrastructure within the Duluth section boundaries (Wisconsin and Minnesota) are not available, we can make some assumptions based on statewide data. Based on a 2011 assessment by the EPA, statewide, Wisconsin will have $7.1 billion of drinking

water infrastructure needs from 2011 – 2031 while similarly, Minnesota has a statewide need of $7.4 billion for drinking water infrastructure over the same time period.

CAPACITY

The City of Duluth reported capacity is approximately 32 million gallons, with a demand of only 20 million gallons as the City's drinking water infrastructure was built anticipating a much larger population than currently lives in the City. Population decline throughout the 1970's and 80's has reduced water demand as well as monetary income from the system.

Generally speaking, for the rural municipalities within Duluth Section, capacity is generally not an issue due to similar population declines brought about by economic forces in the 1970s and 1980s.

CONDITION

The condition of the drinking water infrastructure in the City of Duluth is poor. The City has 433 miles of piping. Durable cast-iron pipe, as shown in the above photo, was installed in the 1880s and 1890s and can last for 120 to 130 years, meaning it is now coming to the end of its design service life. The piping installed from 1910 to 1920, projected to last about 100 years, is also due to be replaced. Pipe installed in the 1960s and 1970s, which has had a life span of 50 to 60

years, is also coming due for replacement. Unfortunately, compounding the issue is that many of the ductile iron pipes installed in the 1990s were incompatible with the chemistry of Duluth's clay soils, causing them to corrode and fail prematurely. This convergence of aging pipes all coming due for replacement in the same era is cause for concern.

The City estimates that the current piping system has a 15% water leakage rate and that repair events occur at a rate of 280 repairs annually. New pipe installation targeted in the most critical areas has gradually reduced the amount of annual repairs required from previous years.

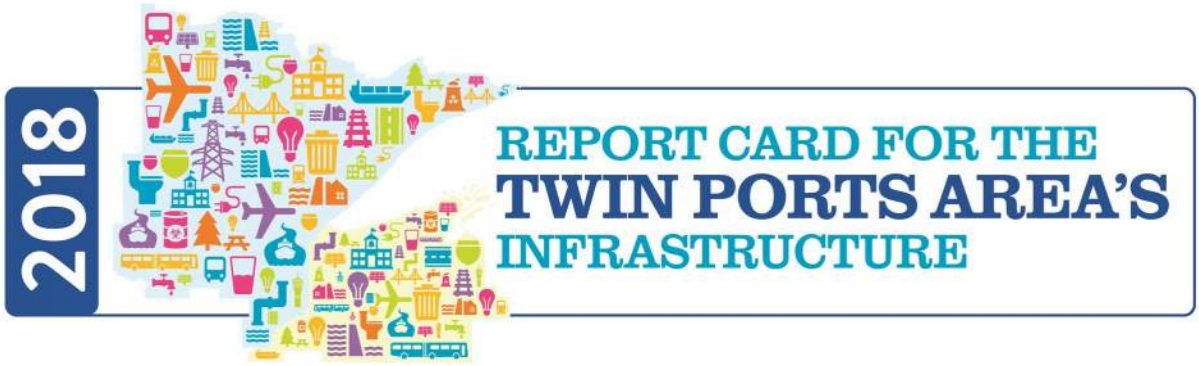
FUNDING & FUTURE NEED

Newly installed piping is designed for a 100-year service life. For the City of Duluth to keep up with pipe replacement, 1% of the pipe system, or 4.33 miles of pipe per year, will need to be replaced annually. Pipe replacement is estimated to cost $1 million for every one mile of pipe replacement, meaning approximately $4.33 million would be required annually. The current budget for pipe replacement is $2.5 million per year, which is well short of the annual need. However, a recent water rate increase of 4.7% annually for the next 6 years was passed by the City Council. The rate increase will double funding for capital projects to $5 million per year by the year 2023.

Wisconsin's Safe Drinking Water Loan Program awarded nearly $24 million to municipal water systems statewide in 2016 for projects that will help to provide safe water for consumers at affordable prices. However, none of these awards went to communities within the 6 Wisconsin counties that are within the Duluth Section.

In 2016 the Wisconsin Department of Natural Resources (DNR) created a program to fund replacement of lead service lines. The Private Lead Service Line Replacement Funding Program has awarded $14.5 million for lead service line replacement projects statewide since its inception, with $330,000 going to the communities of Ashland and Bayfield within the Duluth Section.

These Wisconsin statewide funding sources fall well short of the $7.1 billion of drinking water infrastructure needs in Wisconsin, as reported by the 2011 EPA Drinking Water Infrastructure Needs Survey and Assessment, the years of 2011-2031.



Similarly, according to the 2011 EPA assessment, Minnesota has a statewide need of $7.4 billion for drinking water infrastructure over the years of 2011-2031. Minnesota's Drinking Water Revolving Fund awarded nearly $43 million in loans and grants to municipalities in fiscal year 2017, which falls well short of the projected need. Only $2.2 million was awarded to municipalities within Duluth Section.

Both statewide programs report more applicants and project need than current funding levels can support. The funding shortfalls from the State level will trickle down into municipalities. In the future, we believe that more and more municipalities will need to raise water rates similar to the recent initiative in the City of Duluth to keep up with repairs due to again infrastructure.

OPERATION AND MAINTENANCE & PUBLIC SAFETY

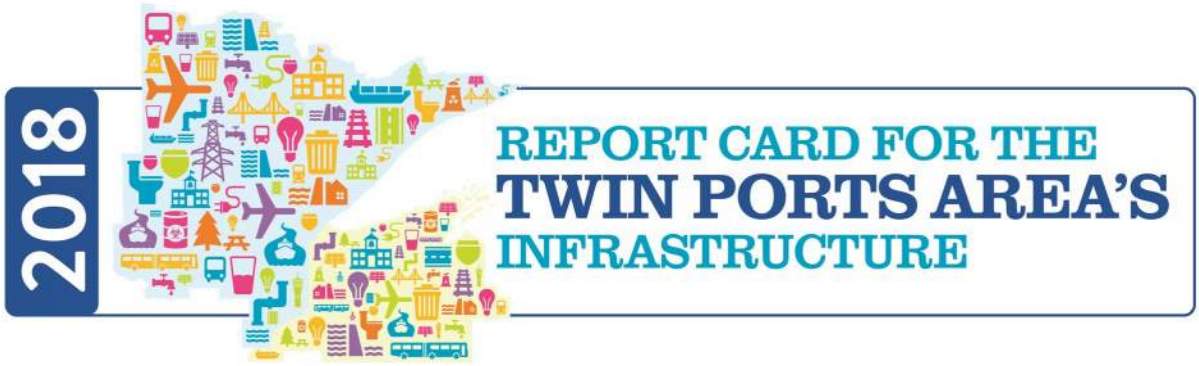
Operations &Maintenance includes consideration of the ability to conduct routine maintenance within current budgets. Public Safety includes the extent the public's safety is jeopardized by the condition of the infrastructure.

The City of Duluth can "keep up" with the 280 repairs needed annually with minimal disruption to water distribution, but O&M could be greatly improved in the future as an increase in new pipe installation will presumably lead to a drop in annual repairs. With an average cost of $7,000 per repair, fewer repair costs incurred would also mean more money available for new pipe installation.

Despite the challenges of pipe condition, the drinking water in the City of Duluth meets regulatory and public safety metrics applied by the Minnesota Department of Health. Statewide, the Minnesota Department of Health reports that in 2016, 99.4% of the state's population received drinking water that meets federal drinking water standards. This percentage exceeds the State's regulatory goal of 97% of the population.

Other cities in the Duluth Section, such as Ashland and Superior in Wisconsin, publish water quality reports indicating contaminant levels below allowable levels.

In the wake of the events in Flint, Michigan, in recent years, the City of Duluth made an effort to educate residents on their potential lead exposure. The City stopped installing lead service lines in 1929, but there still exist an estimated 2,000 lead water service lines owned by the City within the system that run from water mains to the property lines. The number of lead water services on private property is assumed to be even higher. To help prevent residents' exposure



to lead, drinking water is pH-adjusted to reduce its corrosiveness as it travels through distribution and private plumbing systems. In addition to corrosion control, the City of Duluth conducts scheduled monitoring of lead in water samples collected from homes with lead plumbing or service lines.

Similarly, Wisconsin has a total of 170,000 lead service lines statewide. These pipes connect water mains to individual homes and usually have a public portion (owned by a municipality) and a private portion (owned by the homeowner). In 2016, the communities of Ashland and Bayfield received a combined $330,000 of funding for full lead service line replacement projects through the Wisconsin DNR's Private Lead Service Line Replacement Funding Program.

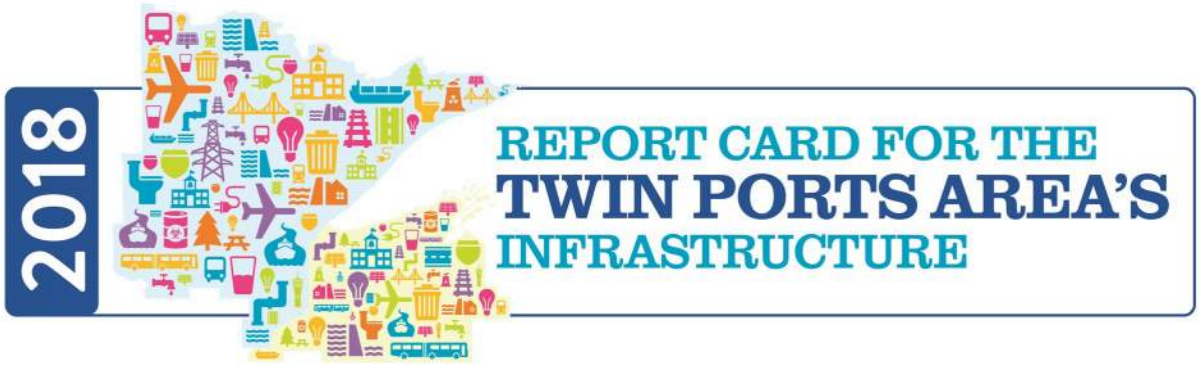
RESILIENCE AND INNOVATION

The City of Duluth reports handling the 2012 flood event (a 500 year flood event) with minimal downtime and as a result feel quite confident in their ability to function during a hazard event with minimal disruption to the public.

The City of Duluth is current with innovation in pipe installation methodology. The City of Duluth now primarily uses only High Density Polyethylene (HDPE) pipe for water main installations to combat corrosive soils and obtain a 100 year life span for the water mains.

HOW CAN WE RAISE THE GRADE?

- At the local level, the City of Duluth needs to continue funding improvements on a sustainable (cash) basis as currently planned.
- At the state level in Minnesota, continue funding the Drinking Water Revolving Fund (DWRF), which provides below market rate loans for public water system improvements. Similarly, in Wisconsin, continue to fund the Safe Drinking Water Loan Program (SDWLP) and increase funding for the Private Lead Service Line Replacement Funding Program.
- At the federal level, Congress should continue to appropriate and increase funding for the Drinking Water State Revolving Fund (DWSRF), where the EPA awards capitalization grants to each state for their DWSRF based upon the results of the most recent Drinking Water Infrastructure Needs Survey and Assessment. The state provides a 20 percent match.



SOURCES:

City of Duluth 2016 Public Works Report

City of Duluth 5-year Capital Improvement Plan 2017-2021

Personal communication with Eric Shaffer of the City of Duluth

Wisconsin Public Water Systems 2016 Annual Drinking Water Report

Minnesota Drinking Water 2017 Annual Report for 2016

EPA Drinking Water Infrastructure Needs Survey and Assessment, Fifth Report to Congress

Minnesota Public Facilities Authority 2017 Annual Report

http://www.duluthnewstribune.com/news/4272028-duluth-weighs-need-water-rate-increases

http://www.comfortsystemsduluth.com/media/504346/Lead-education_edited.pdf

http://dnr.wi.gov/aid/eif

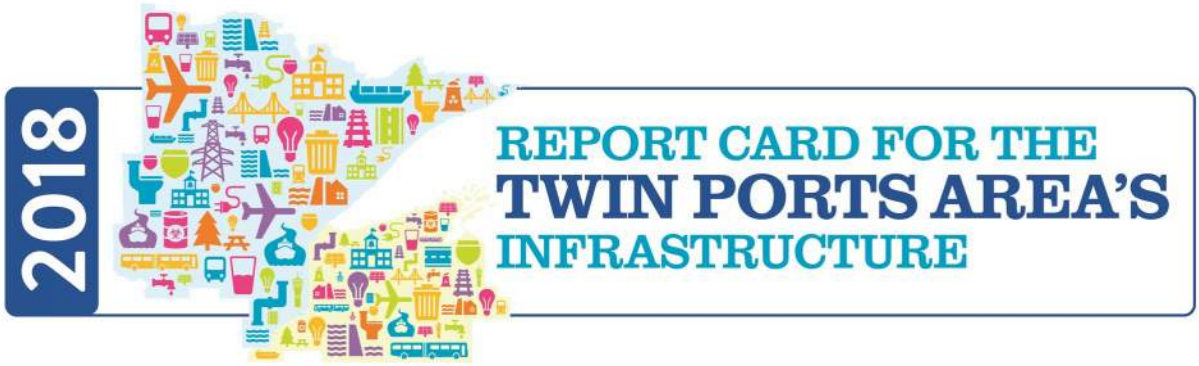
https://www.epa.gov/drinkingwatersrf/how-drinking-water-state-revolving-fund-works

https://www.infrastructurereportcard.org/state-item/wisconsin/)

https://www.infrastructurereportcard.org/state-item/minnesota/

2016 City of Ashland Drinking Water Quality Report

City of Superior 2016 Water Quality Report



ASCE REPORT CARD FOR DULUTH SECTION 2018

PORTS CHAPTER

GRADE: C+

EXECUTIVE SUMMARY

Port infrastructure in the Twin Ports region includes commercial, private, and municipal/federal dock structures, facilities, shipping channels and slips in the Duluth-Superior Harbor.
The port is a major economic driver for the cities of Duluth and Superior, representing 11,500 jobs, $1.5 billion annual business revenue and over $500 million annual wages. Approximately 35 million tons of cargo move through the port annually—more than 20% of all tons moved by ship on the Great Lakes and St. Lawrence Seaway combined. While capacity in the region is sufficient, the ability of each facility to secure funding to improve the condition of its infrastructure is highly dependent on which state the dock is located. Other factors that influence the current and future condition of the port's infrastructure include public funding, corrosion of steel structures, dredging backlog and gentrification.

ANALYSIS

The ASCE Duluth Section comprises 10 counties in northeast Minnesota (Koochiching, Saint Louis, Lake, Cook, Itasca, Cass, Crow Wing, Aitkin, Carlton and Pine) and six counties in northwest Wisconsin (Douglas, Bayfield, Ashland, Sawyer, Washburn and Burnett).

The Port of Duluth-Superior is a bi-state international port at the far Western end of the Great Lakes/ St. Lawrence Seaway. Located within the natural estuary of the St. Louis River, the port has 19 miles of federally-dredged navigation channels. The shipping season is seasonal, with an approximately two-month closure for domestic shipments and three-month closure for overseas shipments.

The Ports grade is based on analysis of the commercial, private, and municipal/federal dock structures, facilities, shipping channels and slips in the Duluth-Superior Harbor. Invested and active members of the Port were brought together to review and accurately grade each of the

active and non-active docks. This panel contributed knowledge of the harbor, harbor activities, and dock owners.

Cargoes generally are dry bulk and not containerized, with the largest tonnages comprising iron ore, coal, limestone, grain and salt. Break bulk cargoes of mining and energy industry equipment, steel, lumber, paper products, etc. are handled at the Duluth Seaway Port Authority owned docks. The port is a major economic driver for the cities of Duluth and Superior, representing 11,500 jobs, $1.5 billion annual business revenue and over $500 million annual wages. Approximately 35 million tons of cargo move through the port annually- more than 20% of all tons moved by ship on the Great Lakes and St. Lawrence Seaway combined. As an example of the importance of these cargoes to the North American economy, the iron ore in a single 70,000 ton cargo on a 1,000 foot Laker will be utilized in the manufacture of over $2 billion in finished products within the North American economy. With total iron ore tonnage through the port projected to be in excess of 18 million tons in 2017, this translates more than $500 billion of finished goods.

This report is centralized to the Duluth/Superior Harbor and excluded additional Minnesota and Wisconsin ports in the section's area to focus on the region with majority of tonnage import/exports.

CAPACITY

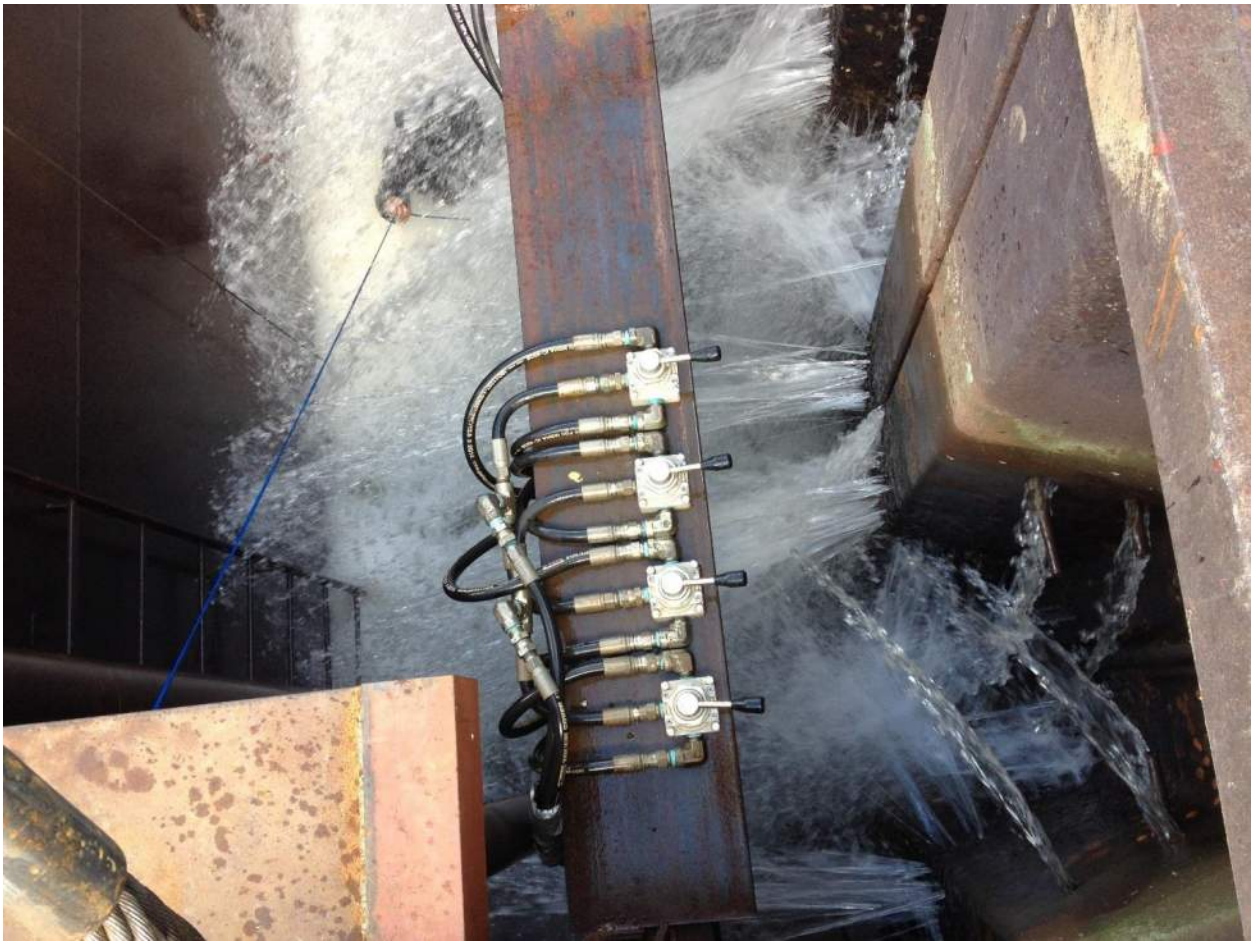
To determine capacity, the ability for each property to handle both current and future tonnage requirements for the facility were assessed. The Port of Duluth-Superior does not report capacity as a critical issue as it was determined that capacity was sufficient to meet current needs.

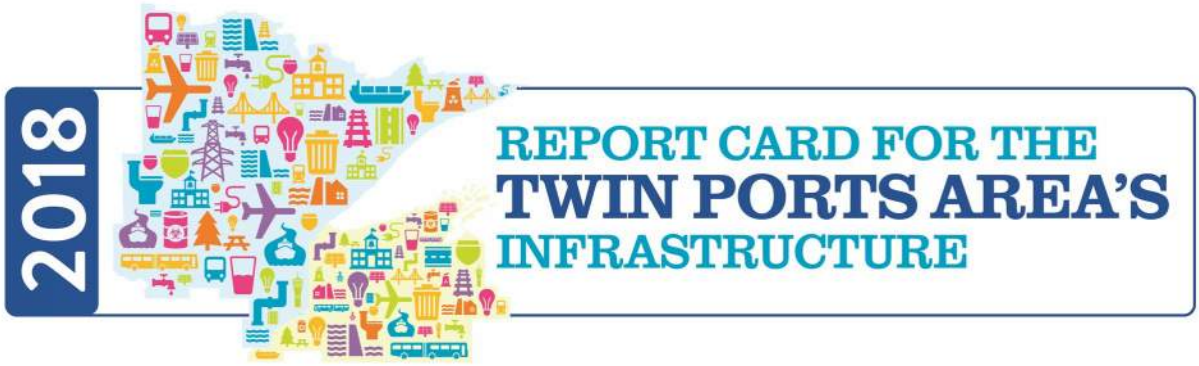
CONDITION

The physical condition of docks, both above water and below, condition of adjacent slip (or vessel access to the dock) and condition of the facility on land were taken into consideration.

Steel structures in the upper six feet of the water column in the Duluth-Superior harbor are exposed to a high rate of corrosion that must be mitigated with painting or other means. One specific item for condition of docks recognition of the accelerated corrosion rate of steel in the Duluth-Superior Harbor and if the dock has addressed the problem.

There was a wide range of conditions noted in the docks assessed. Overall, the condition of the Port requires attention in the future. Dock structures are typically a 50-year design and a fair portion have exceeded (or near exceeding) their working life. Property owners need to locate and/or allocate proper resources to maintain good condition of their facilities and keep up with the ongoing battle with corrosion before they are deemed unsafe and failing.





FUNDING & FUTURE NEED

The ability of each facility to secure funding is highly dependent on which state the dock was located. Wisconsin has access to more readily available grants where Minnesota does not. The Wisconsin Harbor Assistance Program (HAP) supports dock repair and construction projects, both for municipal and private docks. Minnesota, by comparison, limits eligibility for its respective repair and construction program Port Development Assistance Program (PDAP) to publicly owned properties.

Federal grant programs such as TIGER, ARRA and Port Security Grants have been utilized recently to support:

1. A major corrosion protection project at the Duluth Seaway Port Authority
2. The recent redevelopment of the Duluth Seaway Port Authority's Garfield C&D dock- now called Berths 8, 9, 10 and 11
3. Security upgrades at private docks.

If the Minnesota PDAP grant program is ever modified to include privately owned facilities, the physical condition and future competitiveness of the facilities on the Minnesota side of the harbor could benefit.

The Army Corps of Engineers also increased funding in the last few years (and into the foreseeable future) with additional Great Lakes Restoration Initiative dredging dollars and a larger allocation of the Harbor Maintenance Trust Fund dollars. Current work to delist the harbor as an Area of Concern (AOC) brought federal dollars through the Great Lakes Restoration Initiative (GLRI) to relieve the multi-year dredging backlog and restore 1700 acres of near shore shallow water habitat.

Finally, numerous docks have had significant upgrades to their facilities or dock wall in the last 10+ years, largely due to the corrosion issues, and that was a significant grading factor in terms of long-term investment of the property.

OPERATION & MAINTENANCE

A consideration when assessing O&M was the maintenance/inspection schedules and the reaction to each inspection report. Port owners/operators react differently to issues, some repairing immediately upon initial notice, with others waiting for issues to go beyond critical. Also, certain facilities do annual inspections where others do not.

Current and long-term condition is also an O&M consideration, with previously mentioned properties undergoing significant upgrades recently. As a result, their maintenance and inspection schedule needs are significantly lower than others.

Finally, operation facility on the dock and how productive that operation was compared to the activity it was performing (i.e. ship loading/unloading, rail car or truck loading/unloading compared to industry averages) was considered. The majority of the facilities have adapted to a productive and intermodal operation, with a minimal amount being accessible by only one form of transportation.

PUBLIC SAFETY

Public safety is always important. There are several facilities with high exposure and general public foot traffic, but majority of properties have little to no public exposure. In general, the criteria considered for each was: exposure, access and risk to public (and how this is managed). There are facilities with security gates, signage, fencing and/or safety railing. The vast majority of the properties are located within an industrial area and away from high traffic or even visible areas allowing all operations to be conducted without any potential harm to general public.

However, not one property is completely access free, as there is always water access, and some have nothing but signage up to keep away any trespassers.

RESILIANCE

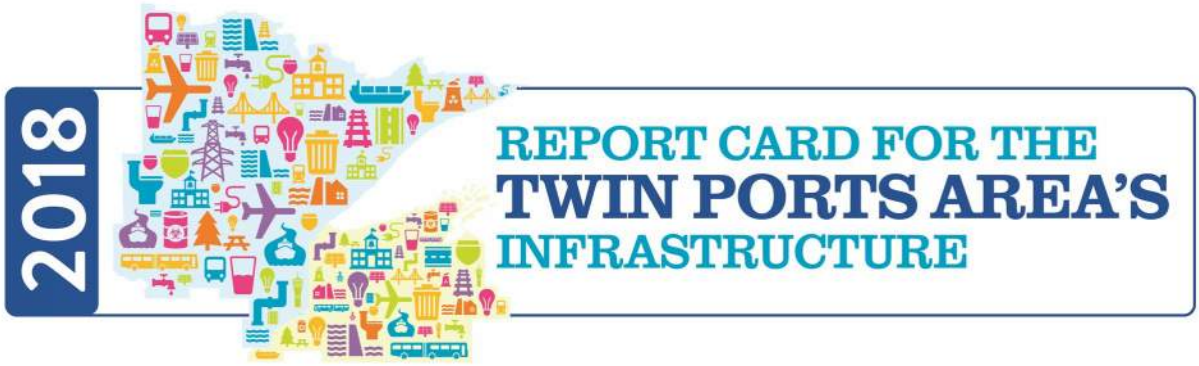
Port facilities in the Duluth/Superior region must withstand ongoing corrosion issues and extreme weather conditions, including flash floods, high/low water elevation fluctuation, ice, and heavy winds.

Other items considered included the facilities ability to effectively respond to short term economic changes and product flexibility for each facility. Several of the docks have the capability to import/export multiple types of products (i.e. grain industry facilities, Port Authority facilities, general bulk material storage docks), while others are currently dedicated to a single product and tonnage on/off that dock is strictly tied to a single demand (i.e. iron ore docks, coal dock, fuel dock).

INNOVATION

With such a wide range of docks and facilities in the harbor, there is an extremely large gap in innovations. Each was graded separately in terms of their operation. Primary questions and considerations: How each facility has, or has not, addressed condition of dock and highly corrosive environment and how land facility is able to manage/import/export products and doing so efficiently.

The topic creating the most innovation in the past 15 years has been steel corrosion protection, with many steel dock structures incorporating an epoxy coating protection. Some significantly older docks have upgraded their wood structures to new forms of steel sheet pile in the past 20 years. Several docks have lacked capacity, need or funding to modernize or innovate their facilities. Regarding dredging operations, federal and local agencies and become very innovative with their funding to reuse dredge material in capping/remediating historically contaminated areas of the harbor.



HOW CAN WE RAISE THE GRADE?

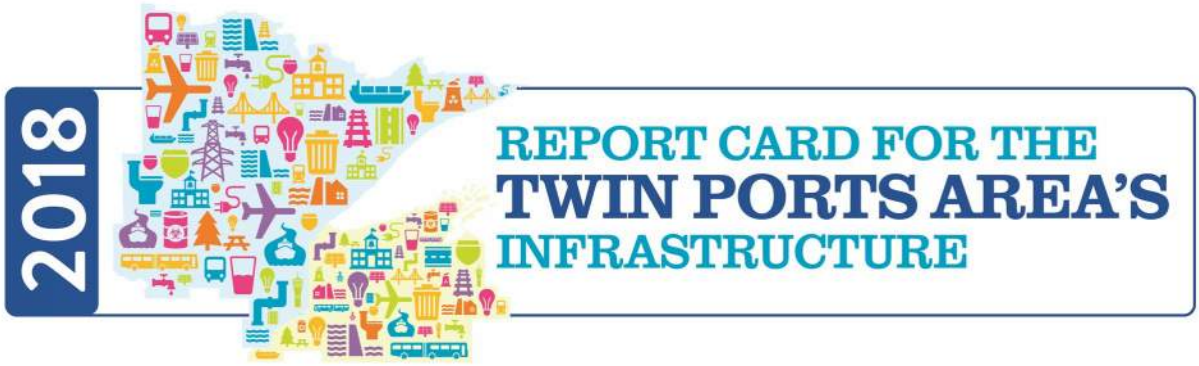
- At the local level, the Port Authority will continue to preserve land uses and maximize efficiency of rail/truck/ship connection (intermodal).
- The Port Authority will continue to seek new cargo potentials.
- The State of Minnesota can expand the Port Development Assistance Program (PDAP) to include grant access to private dock owners.
- At the federal level, continuing to protect the Harbor Maintenance Trust Fund will help prevent and address dredging backlogs in the system, as well as USACE structural repairs.
- Also at the federal level, maintaining Great Lakes Restoration Initiative (GRLI) funding and incorporating into dredging projects.

SOURCES:

Panel of professionals grading the properties included: Jim Sharrow P.E. (Director of Planning and Resiliency, Duluth Seaway Port Authority), Nick Patterson P.E. (Project Manager, Marine Tech), Chad Scott P.E. (Principal, AMI Consulting Engineers), Mike Wenholz (Senior Planner, Duluth-Superior Metropolitan Interstate Council), Gene Clark P.E. (Coastal Engineering Specialist, University of Wisconsin Sea Grant Institute – Lake Superior Field Office).

Other documents referenced:

- Port of Duluth-Superior, PORT FACILITIES/PRINCIPAL DOCKS (by Duluth Seaway Port Authority, 2017)
- The ECONOMIC IMPACTS of the PORT OF DULUTH-SUPERIOR (by Martin Associates, Lancaster, PA, 2011)



ASCE REPORT CARD FOR DULUTH SECTION 2018

ROADS CHAPTER

GRADE: D+

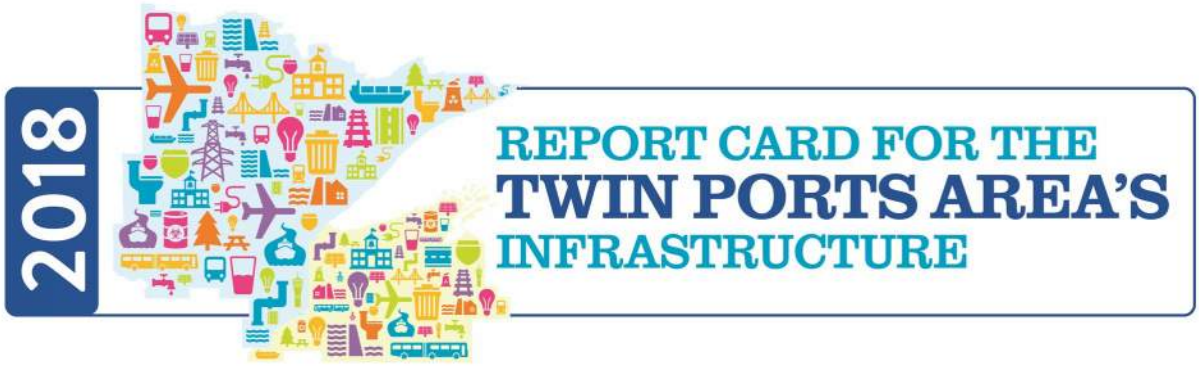
EXECUTIVE SUMMARY

The roads of the Twin Ports region have sufficient capacity and public safety is a high priority. However, condition of roadway pavement, particularly in the City of Duluth, are cause for concern. Recent local funding initiatives authorized through the Greater Minnesota Transportation Sales Tax program, such as the recent Saint Louis County Transportation 0.5% sales tax, are an attempt to close the funding gap and are reasons for optimism. A similar initiative by the City of Duluth would help improve roadway conditions in the largest city in the Twin Ports area. However, available funding continues to be insufficient to comprehensively address the region's road needs.

ANALYSIS

The ASCE Duluth Section comprises 10 counties in northeast Minnesota (Koochiching, Saint Louis, Lake, Cook, Itasca, Cass, Crow Wing, Aitkin, Carlton and Pine) and six counties in northwest Wisconsin (Douglas, Bayfield, Ashland, Sawyer, Washburn and Burnett).

The Roads grade is based on analysis of nearly 5,000 miles of pavement from the participating jurisdictions (listed below) from the Duluth Section as well as our analysis of public statewide data from Minnesota and Wisconsin and the other counties. Relative percentages of roadway miles of each participating jurisdiction are shown in the following table:



Jurisdiction Name	Approximate Number of Miles of paved Roadway Analyzed	Percentage of Total Miles Analyzed
Burnett County (WI)	221	5%
Carlton County	315	7%
City of Duluth	450	9%
Cook County	114	2%
Lake County	215	4%
Minnesota DOT (District 1)	2194	44%
Saint Louis County	1450	29%
Total	4959	100%

While complete numbers on the infrastructure within the Duluth section boundaries (Wisconsin and Minnesota) are not available, we can make some assumptions based on statewide data.

CAPACITY

Roadways in the Duluth Section have more capacity than needed for our current and expected future population base. Generally speaking, traffic flows at or above the posted speed limit and motorists have minimal delays, most of which are during the morning and afternoon peaks. Motorists have a high level of physical and psychological comfort. The effects of incidents or point breakdowns are easily absorbed. Average vehicle spacing is well in excess of 16 car lengths, except on rare occasions where special events occur.

CONDITION

Roadway condition was evaluated based on the equivalent Pavement Condition Index (PCI) scores reported from all of the roadways in the participating state, county and city agencies. We also made representative judgements on the condition of the other jurisdictions based on statewide data from Minnesota and Wisconsin.

PCI road condition scores correspond qualitatively as follows:

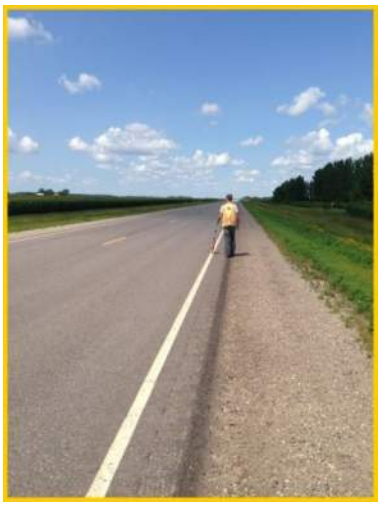
81-100 Very Good
72-80 Good

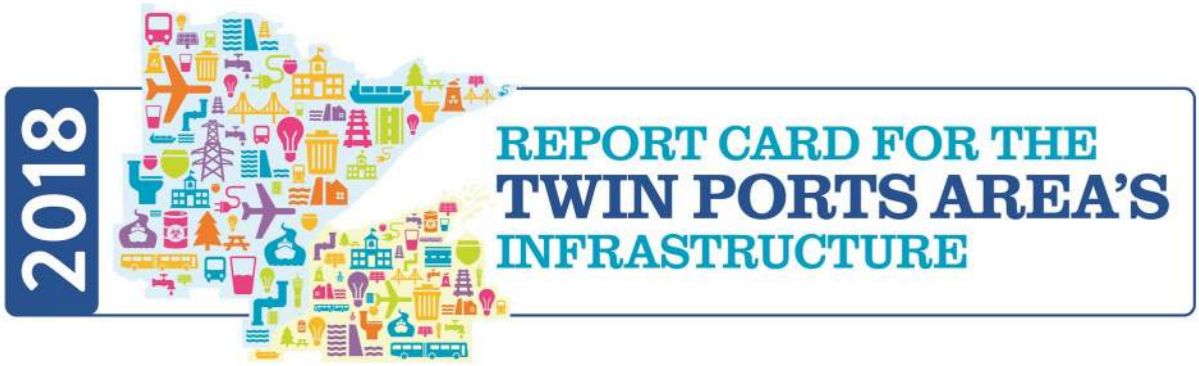
63-71	Fair
54-62	Poor
0 to 53	Very Poor

The pavement condition on the MnDOT roads was the best (PCI of 71) and generally meet or exceed MnDOT internal targets for roadway condition. Road condition in the participating counties was reported at an average PCI score of 62, at the top of the "poor" range. The City of Duluth reported the lowest average PCI scores of 36 (very poor) for their 450 miles of roadway.

The Wisconsin DOT (WDOT) reports that in 2015, on a state level, 97.6% of their multi-line "backbone" highways and 78.8% of their "non-backbone" highways had a PCI of 55 or above. The vast majority of state roadway miles in the six Wisconsin counties are classified as "non-backbone."

The information trends indicate that repairs and replacements are not happening at a sufficient rate to keep up with road deterioration. Once a road falls into the "Poor" or "Very Poor" category, it will require major rehabilitation or reconstruction to restore any meaningful amount of service life. These types of repairs are expensive, thus making it harder with a limited budget to improve roadway condition significantly.





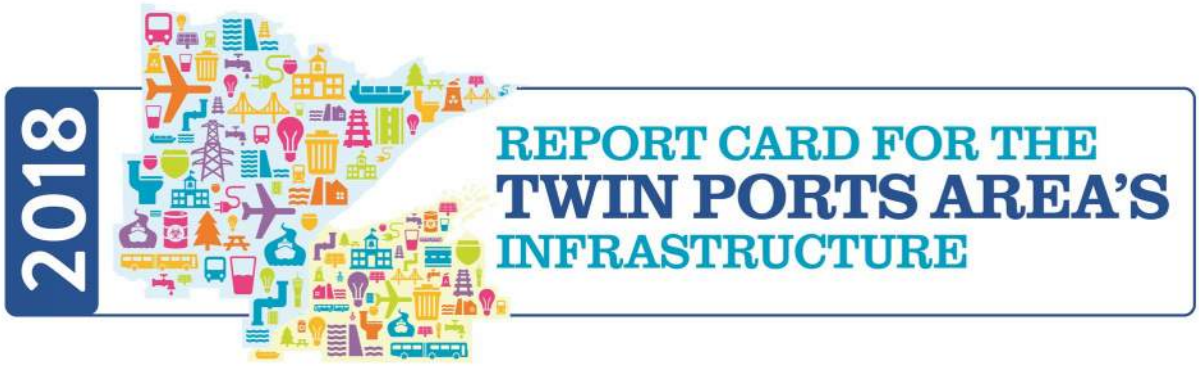
FUNDING & FUTURE NEED

State road improvements are funded primarily by the motor fuels tax in both Minnesota and Wisconsin. Funds are supplemented by license plate fees (tabs), state highway bonding, and any special one-time funding from the federal or state governments. The Minnesota state motor fuels tax has not been raised since 2012 and is not indexed to inflation. The Wisconsin state motor fuels tax has not been raised since 2006 and is also not indexed to inflation. The Federal motor fuels tax, which has not been increased since 1993, is also not indexed to inflation. Since these taxes have not been increased and are not indexed to inflation, their purchasing power has diminished significantly over time.

At the county level in Minnesota, transportation funding has benefited from the Greater Minnesota Transportation Sales Tax. This tax allows counties to impose a local sales tax up to 0.5% and a $20 excise tax on commercial sales of motor vehicles to fund transportation projects. A recent success story was the implementation of such a 0.5% sales tax in Saint Louis County. The sales tax will raise an estimated $10.5 million (USD) annually to be invested exclusively in transportation-related projects, 70% of which goes toward improving pavements in the poorest condition. A similar 0.5% sales tax has been implemented in Cass, Carlton, Cook, Crow Wing, Lake and Pine Counties in Minnesota.

The City of Duluth is attempting to follow suit with a similar proposal for a 0.5% sales tax which would generate an estimated $7 million (USD) annually and would be earmarked exclusively for roads and sidewalks. When compared to the approximately $1.5 million per year being currently spent on non-state aid (local) streets, this would substantially increase the amount of pavement improvements on local streets in the City of Duluth, which has the worst PCI ratings in Duluth area. The City of Duluth has shown support in the last election by passing a (non-binding) resolution of support for the 0.5% sales tax with a 77% yes vote.

However, even with these sales taxes in place to bolster funding, the revenues generated are still not sufficient to keep up with O&M of all paved roads in the Duluth Section region.



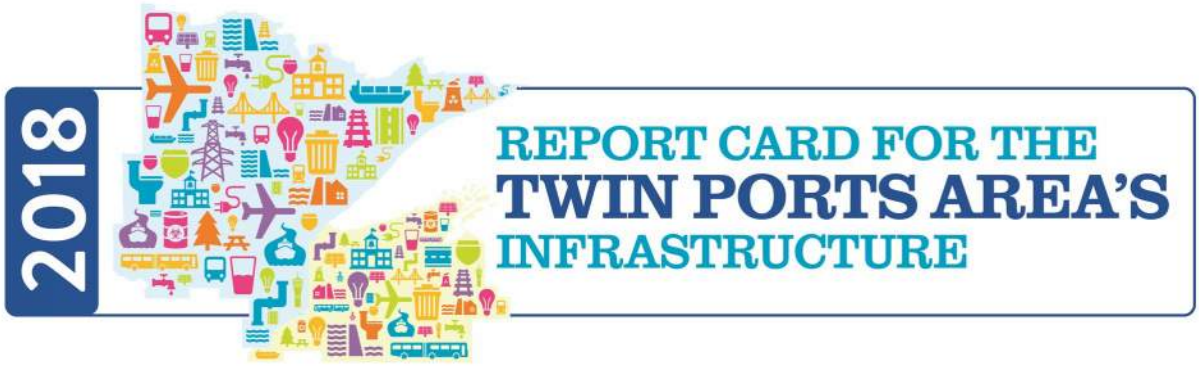
OPERATION AND MAINTENANCE & PUBLIC SAFETY

WDOT publishes crash statistics for each county. In 2016, the total number of crashes in the six counties in Duluth Section remained steady when compared with the average total crashes from 2011-2015. Wildlife strikes are significant factor in these counties. In Bayfield County, more than 50% of crashes were wildlife related in 2015. Attempts to reduce crashes due to wildlife strikes include educating the public about deer movements and precautions to take once deer are spotted near the roadway.

Fatalities in the six Wisconsin counties (total population of ~120,000) have also remained steady. There were 16 total fatalities reported in 2017 compared with an average of 18 per year in the years 2013-2016. This number is higher than the national average for fatalities per 100,000 population (21.26 vs. 10.92 reported by the National Highway Transportation Safety Administration for 2015). This information is consistent with other published data indicating that fatality rates on non-interstate rural roads in Wisconsin is generally more than double than on all other roads in the state. Statewide, Wisconsin's fatality rate per 100,000 miles traveled in 2013 was 0.89, which is lower than the national average of 1.1 fatalities per 100,000 miles traveled.

MnDOT's "Towards Zero Deaths" program utilizes education, enforcement, engineering and emergency medical services to move towards zero deaths on the roads. Average fatalities for the Minnesota counties of Duluth Section (raw population of ~450,000) have remained steady for the period from 2010-2016. The fatality rate per 100,000 population is slightly higher than the national average (11.3 vs. 10.92). Minnesota's statewide fatality rate per 100,000 miles traveled in 2013 was 0.68, which compared favorably with the national average of 1.1 per 100,000 miles traveled.

Most jurisdictions report that it is difficult to keep up with O&M items such as striping, pothole patching, tree removal, culvert repairs, etc. due to a lack of funding. Costs to maintain continue to go up as pavements age.



RESILIENCE AND INNOVATION

The roadway system in our area has a high capability to recover from incidents, with minimal impact on critical services. For example, even during the 2012 flood (a 500 year flood event) in the Duluth region, there was enough redundancy in the road systems that critical services were maintained.

At the county level, multiple counties report using chip-seal programs as a cost-effective way to improve rural roadways to extend the pavement life.

At the state level, MnDOT has conducted research at their "MnROAD" facility since 1993. MnROAD is a pavement test track made up of various research materials and pavements owned and operated by MnDOT. MnROAD, in conjuction with MnDOT's Material Lab, finds ways to make roads last longer, perform better, cost less to build and maintain and be built faster. WDOT's Division of Transportation System Development (DTSD) Innovation Initiative focuses on identifying opportunities to identify, evaluate and adopt promising materials, technologies, policies and procedures throughout the DTSD.

HOW CAN WE RAISE THE GRADE?

- At the local level, the residents of the City of Duluth approved a proposed 0.5% sales tax increase which would provide a much needed and stable funding source for roadway condition improvements for some of the worst roads in the Duluth region. Residents needs to advocate for this tax at the State level.
- At the local level, there are counties in Minnesota (Aitkin, Itasca, and Koochiching) who should consider adoption of the 0.5% Greater Minnesota Transportation Sales Tax to increase funding for their road programs.
- At the State level, raising the motor fuels tax and indexing it to inflation would help stabilize this funding source in both Minnesota and Wisconsin. The Greater Minnesota Transportation Sales Tax has been a successful initiative to help increase roadway funding and should be kept in place in state law.
- The Minnesota Legislature should allow the City of Duluth to implement the 0.5% sales tax for street funding.
- At the Federal Level, the gas tax has not been raised since 1993. We are currently trying to build 2017 infrastructure with 1993 dollars even though total inflation in that time

period has exceeded 65%! Generating more federal revenue to support road construction is imperative.

SOURCES:

American Association of State Highway and Transportation Officials (AASHTO), 4th Edition, 2001, "A Policy on Geometric Design of Highways and Streets"

Minnesota Department of Revenue website http://www.revenue.state.mn.us/Pages/default.aspx

Minnesota House of Representatives, Information Brief, "Local Sales Taxes in Minnesota" November 2016

Passi, Peter "Duluth Mayor proposes new sales tax to fix streets", Duluth News-Tribune, August 8, 2017

Saint Louis County Transportation Sales Tax information found on the Saint Louis County website: http://www.stlouiscountymn.gov/GOVERNMENT/Departments-Agencies/Public-Works/Transportation-Sales-Tax

Personal communication with multiple county highway engineers on multiple dates

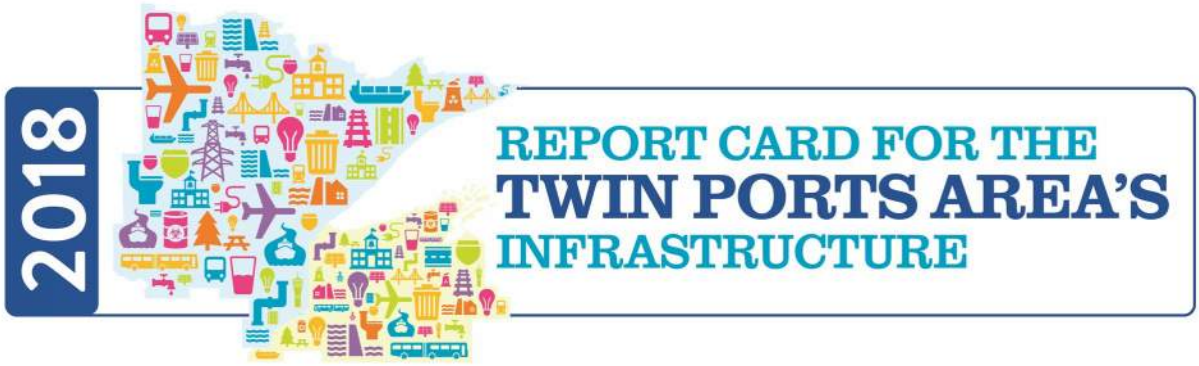
http://wisconsindot.gov/Pages/about-wisdot/newsroom/statistics/final-county.aspx

http://wisconsindot.gov/Pages/about-wisdot/newsroom/statistics/countyfatality.aspx

National Highway Transportation Safety Administration (NHTSA) Fatality Analysis Reporting System (FARS) website https://www-fars.nhtsa.dot.gov/Main/index.aspx

Wisconsin Transportation by the Numbers May 2016

MnDOT 2017 Pavement Condition Annual Report



ASCE REPORT CARD FOR DULUTH SECTION 2018

SOLID WASTE CHAPTER

GRADE: C+

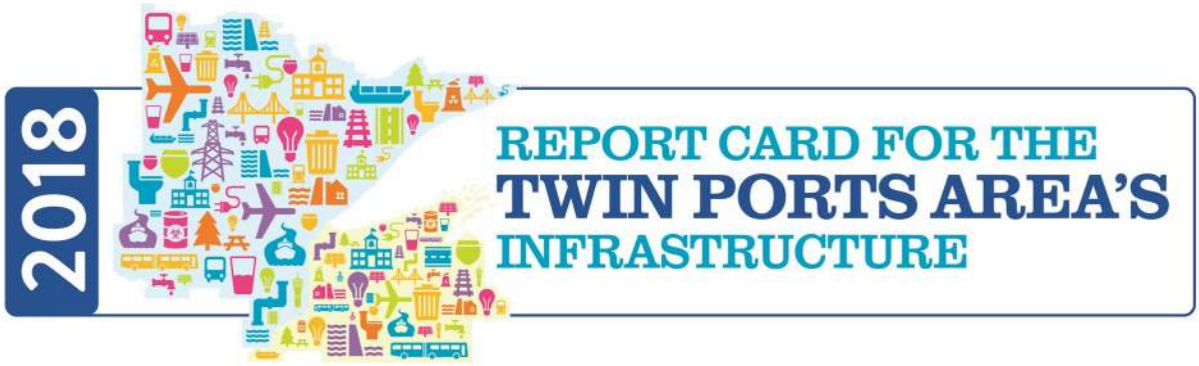
EXECUTIVE SUMMARY

The primary solid waste management authorities within the Twin Ports region support an integrated solid waste management strategy. Solid waste abatement programs and solid waste management facilities that support that strategy are adequately funded, in good condition and have capacity for current and projected demand. Even with continued growth of solid waste abatement through education, source reduction, recycling and reuse, landfill capacity will remain a necessary component of solid waste management in the region. Availability of that capacity is a concern beyond 2022.

ANALYSIS

The ASCE Duluth Section comprises 10 counties in northeast Minnesota (Koochiching, Saint Louis, Lake, Cook, Itasca, Cass, Crow Wing, Aitkin, Carlton and Pine) and six counties in northwest Wisconsin (Douglas, Bayfield, Ashland, Sawyer, Washburn and Burnett). Solid Waste in the Duluth region was assessed based on analysis of the Solid Waste Management Plan developed by the Western Lake Superior Sanitary District (WLSSD), as well as Plans from neighboring counties.

Within the counties of Northeast Minnesota, over 320,000 tons of solid waste is produced annually. In 2013, approximately 150,000 tons or 47%, was recycled, and the remaining 170,000 tons or 53% was landfilled. The percentage of recycled waste has increased from approximately 30% in 1991 to its current level, primarily due to education and increased availability of recycling opportunities. Recycling rates are anticipated to stabilize at 50% plus, which is above the national average. Local markets are well-established for #1 and #2 plastics, which are the core of the market. Available markets for others continues to evolve. The emphasis moving forward will be on waste reduction, diversion and identification of new opportunities for recycling. The recycling rate in the region exceeds the state of Minnesota's mandated minimum of 35%.



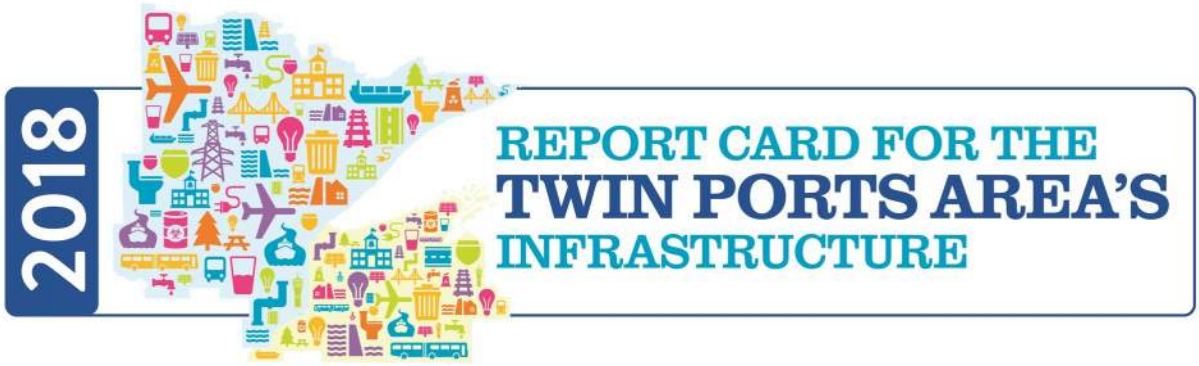
While information specific to the Wisconsin counties in the scope of this Report Card is not available, statewide information is. Residents of Wisconsin generate 4.6 million tons of trash and recyclables every year. Wisconsin imports a large amount of trash from other states, including Minnesota. Within Wisconsin, many recyclable and compostable items are banned from the trash, including aluminum containers, glass containers, office and newspaper. These bans are designed to reduce the amount of solid waste generate and reuse materials recovered from solid waste, to name a few. In 2004, the last year numbers were available, recycling rates in Wisconsin hovered around 32%, and today, recycling markets are continuing to expand.

CAPACITY

Solid waste programs and facilities accommodate and focus on recycling, source reduction, and beneficial reuse.

Solid waste management transfer facilities have capacity for current demand. For example, the WLSSD Transfer Station is where garbage comes in from independent haulers from Grand Marias, Minnesota to Ashland, Wisconsin. The material is inspected and loaded for transport to the Moccasin Mike Landfill, which is owned and operated by the City of Superior, Wisconsin. This transfer station has capacity for 156,000 tons of material a year but only sees between 80,000 and 120,000 tons annually. Similarly, the WLSSD Material Recovery Center, where residents and businesses dispose of "items that don't fit in the trash can" (appliances, tires and electronics) has a demand of 15,000 tons per year with a capacity of 150,000 tons per year.

The lack of available municipal solid waste landfill capacity in the region raises concern beyond 2022, when a current disposal contract with the City of Superior is scheduled to expire. This will mean that waste will likely need be transported in excess of 100 miles for disposal in permitted facilities either in Elk River, Minnesota; Sorona, WI; or Ladysmith, WI. While capacity exists at these facilities and hauling longer distances is possible, it will mean increased cost burden on the local economy as well as negative impact on the environment due to emissions from haul trucks.



CONDITION AND OPERATION AND MAINTENANCE

In the Twin Ports region, solid waste facilities are designed and maintained to provide current and evolving functionality. Facilities are continuously modified and expanded to accommodate additional reuse opportunities and storage of new types of recyclable materials.

Permitted capacity and the condition of existing facilities, quality, availability and adaptability of existing reuse programs and facilities is an important metric when considering the condition of solid waste facilities. In the region, there are 10 public and private reuse/transfer facilities. Each facility has individual requirements out lined in their operating permit which is overseen by the state, county or regional solid waste authority.

FUNDING & FUTURE NEED

Local funding is adequate to support current solid waste programs and facilities while maintaining stable rates. However, solid waste management systems throughout this region may struggle in the future to meet changing community needs, regulatory requirements, and state mandates. Additionally, as capacity in nearby landfills is filled, transportation to far-away landfills will be a huge problem and expense for the region. From collection through disposal, all elements of solid waste management including problem materials, recyclables, electronics, appliances and municipal solid waste are affected by funding needs.

In the future, solid waste infrastructure would benefit from the development of improved markets for recyclable materials, permitting of a municipal solid waste (MSW) landfill in northeast Minnesota, evaluation of and financial support for a waste processing or waste to energy facility in northeast Minnesota, and an increase in state-wide funding to support mandated solid waste programs.

PUBLIC SAFETY

Solid waste programs and facilities are in place to proactively protect public safety and the environment. The WLSSD Household Hazardous Waste Facility provides a location for free disposal of household hazardous waste items such as paint and paint products, automotive fluids, weed killers, degreasers, etc. as well as pharmaceutical collections. This location also collects various seasonal organics, such as leaves and brush, to produce compost that is sold back to the public.

Debris management plans, included in region-wide emergency response action plans are in place and are adaptable to handle public safety emergencies.

Following best practices, solid waste landfills in Wisconsin are also regulated to protect the environment and people. The collection and treatment of liquids and gases are required and facilities are monitored regularly to detect contamination. Over the last 40 years, to mitigate the impacts of solid waste landfills on the population and the environment, the state has reduced active landfills to 80 active landfills, down from thousands.

RESILIENCE AND INNOVATION

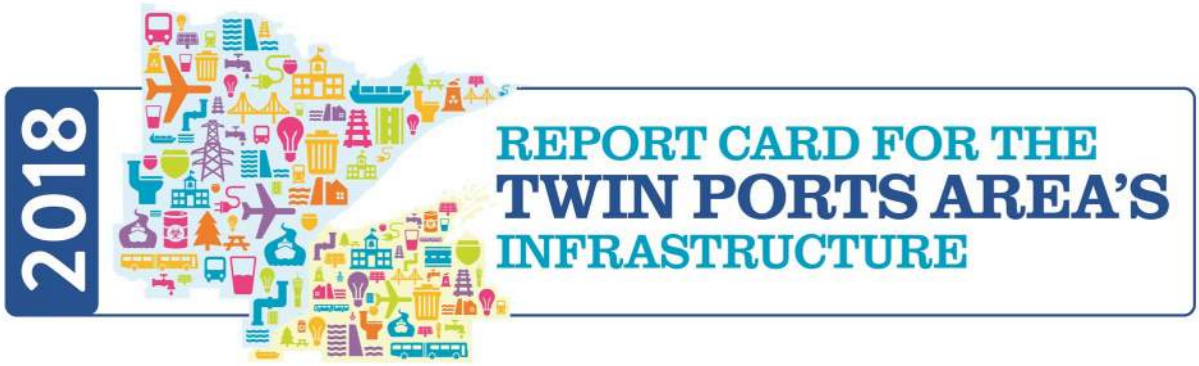
Solid waste programs in this region have proven to be well-managed, resilient and forward-looking. Surrounding counties continue to operate solid waste programs in a manner which meets and often exceeds expectations of the Minnesota Pollution Control Agency. Resistance from the general public toward unreasonable increases in costs will continue to challenge local officials from moving forward with innovative and costly solid waste management systems.

Bottle Bill Legislation (Beverage Container Deposit Language) is supported by the Association of MN Counties, has been written up but has not passed the Minnesota Legislature. Such legislation could potentially boost Minnesota's recycling volume by nearly 2 billion containers statewide.

WLSSD's solid waste and biosolids master planning efforts resulted in improved reuse and recovery of solid and wastewater solids disposal through recycling, reuse, organics composting, anaerobic digestion and land application of biosolids. The WLSSD's energy master plan integrates co-digestion of food waste with production of biogas from anaerobic digestion for use in combined heat and power generation facilities.

WLSSD operated a Refuse Derived Fuel/Incineration Waste to Energy Facility from 1978 – 1999. Multiple waste to energy studies have been conducted regionally since then. Unfortunately, the studies have determined that without public funding, implementation does not make economic sense in this region due to lack of population density.

WLSSD proactively works with up to ten local area schools annually, along with area businesses, to establish waste reduction priorities. The WLSSD staff assists schools in establishing Green Teams, conducting a waste audit and coming up with strategies to reduce solid and food waste.



HOW CAN WE RAISE THE GRADE?

- Progress toward permitting of regional MSW Landfill, which would reduce dependence on excessive transportation (100 miles or more) to landfill capacity.
- Evaluation and funding for a Waste to Energy facility in the region.
- Progress in recycling legislation in such areas as beverage container deposit.
- An increase in SCORE Grant funding to all Counties to support mandated programs (Governor's Select Committee on Recycling and the Environment, a state program that defines recycling goals and provides funding for recycling programs to Counties in Minnesota).

SOURCES:

2013 Solid Waste Management Plan – Western Lake Superior Sanitary District

WLSSD Staff - Jack Ezell and Heidi Ringhofer

Minnesota PCA website https://www.pca.state.mn.us/waste/recycling-minnesota-score-report

http://wlssd.com/education/reducing-waste/schools/

http://wlssd.com/hours-facilities/

http://www.startribune.com/jan-9-minn-considers-dime-fee-on-some-recyclables/239476461/

http://dnr.wi.gov/topic/recycling/facts.html

http://dnr.wi.gov/topic/landfills/

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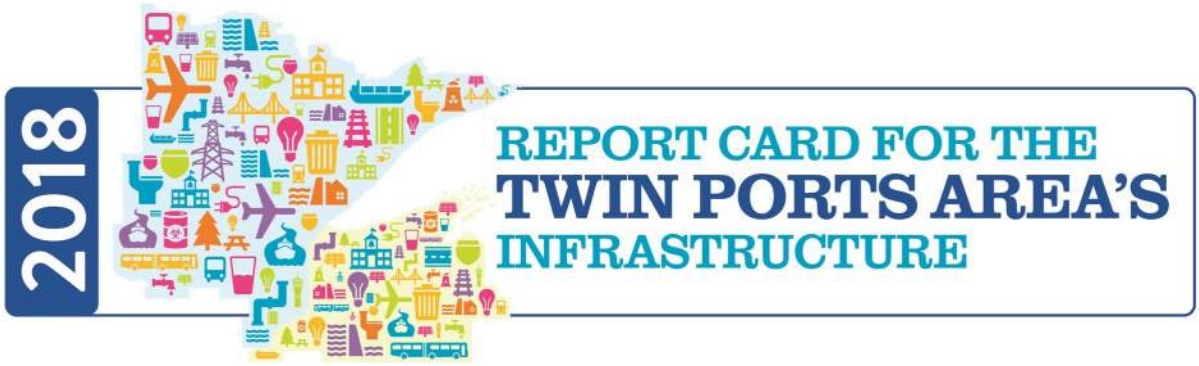


ASCE REPORT CARD FOR DULUTH SECTION 2018

WASTEWATER CHAPTER

GRADE: C+

EXECUTIVE SUMMARY

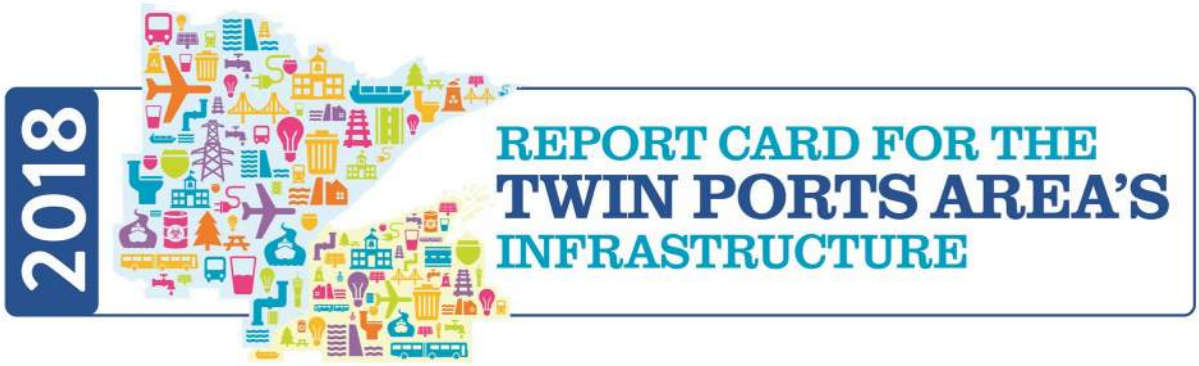
Wastewater infrastructure analyzed in the Duluth region includes nearly 500 miles of underground piping and the largest wastewater treatment plant. While existing capacity is sufficient, the condition of wastewater infrastructure needs improvement, but is not at risk at this time. In the City of Duluth, between 30% and 40% of the 400 miles wastewater piping needs to be replaced as much of the piping is between 60 and 100 years old and has outlived its original design service life. The City of Duluth Public Works & Utilities department reports that nearly $100 million has been invested in wastewater infrastructure in the City of Duluth in the last 10 years and the City is in sound financial shape currently. Western Lake Superior Sanitary District (WLSSD) has invested over $100 million over the last 10 years and also reports good condition and stable funding.

Statewide funding programs in Minnesota and Wisconsin are providing some relief to other municipalities for wastewater improvement programs, but funding falls short of projected need.

ANALYSIS

The ASCE Duluth Section comprises 10 counties in northeast Minnesota (Koochiching, Saint Louis, Lake, Cook, Itasca, Cass, Crow Wing, Aitkin, Carlton and Pine) and six counties in northwest Wisconsin (Douglas, Bayfield, Ashland, Sawyer, Washburn and Burnett).

The Wastewater grade in the Duluth Section is mainly based on our analysis of the infrastructure in the City of Duluth and Western Lake Superior Sanitary District (WLSSD), which is a regional special unit of government that provides wastewater and solid waste services and oversight for a 530-square mile region around Duluth, Minnesota, that includes the cities of Duluth, Cloquet, Hermantown, Proctor, Carlton, Scanlon, Thompson, Wrenshall and nine surrounding townships. We also reviewed public information from the websites of the City of Superior and City of Ashland in Wisconsin.



In addition, we reviewed annual wastewater report information published by the states of Minnesota and Wisconsin. While complete numbers on the infrastructure within the Duluth section boundaries (Wisconsin and Minnesota) are not available, we can make some assumptions based on statewide data.

For comparison, the City of Duluth has approximately 400 miles of underground piping and over 40 pump stations. WLSSD has 76 miles of underground piping (sewer interceptors), 17 pump stations and operates a 48 million gallon per day wastewater treatment plant.

CAPACITY

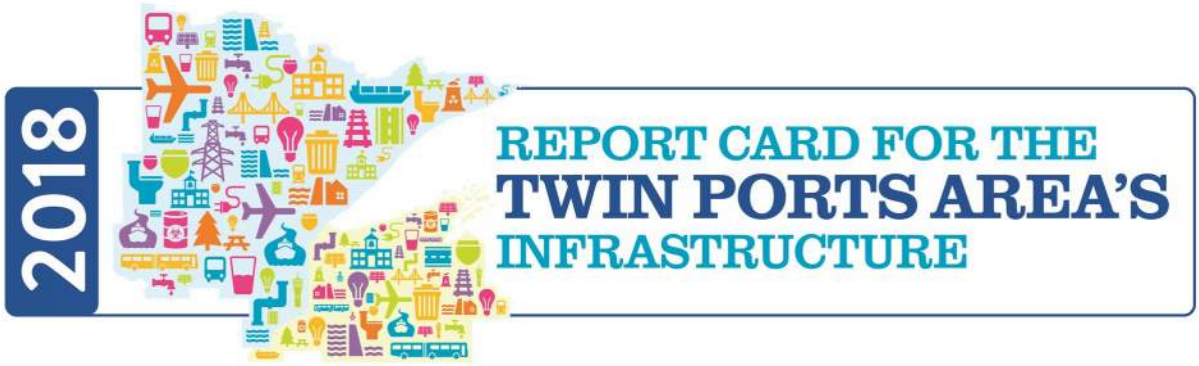
The City of Duluth reported capacity is nearly twice that of demand. The City's wastewater infrastructure was built anticipating a much larger population than currently lives in the City. Generally speaking, for the rural municipalities within Duluth Section, capacity is generally not an issue due to similar population declines brought about by economic forces in the 1970s and 1980s. WLSSD's capacity at the wastewater treatment plant, collection systems and pipes, with planned improvements, are safe and reliable with minimal risk at the current and projected loads.

CONDITION

The condition score was determined based on the percentage of pipes needed to be replaced as well as the wastewater conveyance and treatment infrastructure condition.

In the City of Duluth, between 30% and 40% of the 400 miles wastewater piping needs to be replaced as much of the piping is between 60 and 100 years old and has outlived its original design service life. In the last 10 years, over $100 million has been invested in the City's wastewater infrastructure to contain sanitary sewer overflows before they enter Lake Superior. While the condition of the infrastructure needs improvement, the City has come a long way in the last decade and are in position to better its wastewater infrastructure condition score in the future.

WLSSD has 76 miles of interceptor sewer and 17 pump stations. The wastewater treatment plant processes approximately 48 million gallons of wastewater per day. Assessment and improvement programs for pump station and plant processes and facilities are ongoing and an asset management program is used to plan interceptor sewer replacement needs. In the past 10 years the WLSSD has spent over $100 million on the wastewater treatment plant, pump



stations and interceptors. The current capital plan includes estimated spending of an additional $160 million over the next 10 years. The condition of the infrastructure needs improvement but is not at-risk at this time.

FUNDING & FUTURE NEED

In the City of Duluth, pipe improvements have been funded on a cash basis generated from utility rates for the past 40 years. Debt from past projects totals approximately $1.5 million and the City anticipates being debt-free on this front in 2026. Rates are stable and adequate for anticipated future projects and any savings that come from paying off debt will be put back into the pipe replacement program.

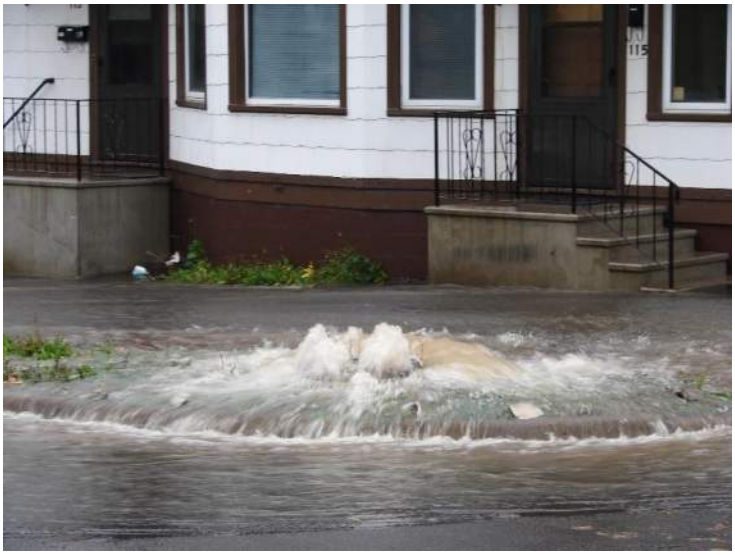
WLSSD annual Capital budgets are anticipated to average $16 million/year over the next 10 years. Current budgets looking forward over the next 10 years can be obtained with current rates along with small and sustainable rate increases. Anticipated continued additional support from low interest loans and grants are needed to supplement funding.

Approximately $25 million in funding is needed for WLSSD's proposed Combined Heat and Power energy project, which would allow WLSSD to use the biogas currently produced at its regional wastewater plant to generate more than a third of the electricity needed to power the treatment plant. WLSSD plans to provide nearly half of the investment but will need state bonding investment to fully fund the project.

Minnesota's statewide funding need for wastewater infrastructure is approximately $2.4 billion over the next 20 years. The Minnesota Clean Water Revolving Fund awarded nearly $85 million in loans and grants to municipalities in fiscal year 2017, of which approximately $7.2 million was awarded to communities within the Duluth Section (approximately $5 million to WLSSD alone). While these funds are needed, they do fall short of the projected statewide need.

Wisconsin's statewide funding need for wastewater infrastructure is approximately $6.3 billion over the next 20 years. The Wisconsin Clean Water Fund Program (CWFP) provides financial assistance (loans and grants) to municipalities for wastewater treatment facilities and urban storm water runoff projects. Funding for the program however appears to be much lower than demand and only a fraction of the available funding makes its way to municipalities in the Duluth Section.

2018 REPORT CARD FOR THE TWIN PORTS AREA'S INFRASTRUCTURE



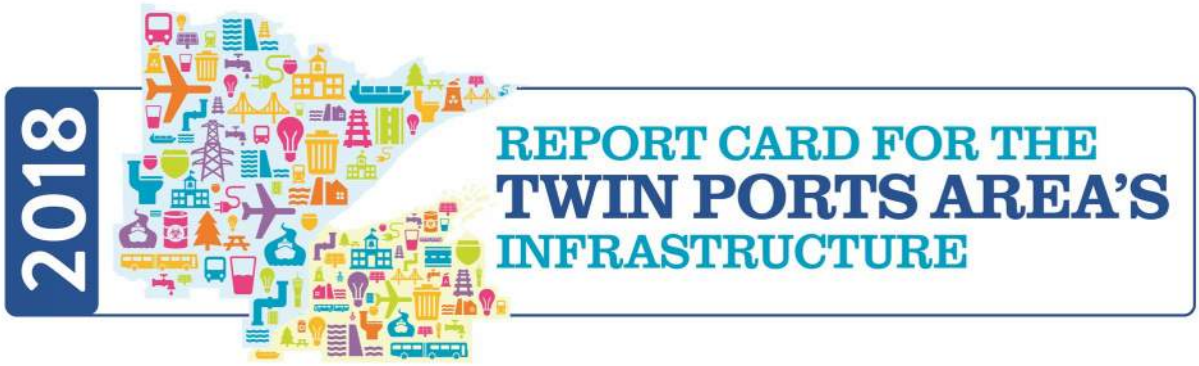
OPERATION AND MAINTENANCE & PUBLIC SAFETY

O&M includes consideration of the ability to conduct routine maintenance within current budgets. Public safety includes the extent the public's safety is jeopardized by the condition of the infrastructure.

Organizations in the Duluth Section (WLSSD, City of Duluth, City of Superior, etc.) collect wastewater in a manner that protects the health, safety and welfare of the general public.

WLSSD has established a computerized maintenance management system and continues to develop an asset management program for all assets. An asset management program is beneficial to O&M and public safety because it provides a framework for establishing priorities and making decisions that is consistent with providing the necessary level of service (safe, effective and efficient operation) at the overall lowest life cycle cost.

Plant operations are maintained at a high level through the use of established practices, adequate staffing and training programs. In the public safety category, WLSSD has continually met and exceeded effluent permit requirements. Pre-treatment and water quality programs are well developed.



The City of Superior's Capacity Management Operations and Maintenance (CMOM) Program establishes protocols for routine maintenance activities within the system. One example is a goal of performing routine cleaning of City owned sanitary and combined sewers once every five years. This equates to approximately 30 miles of sewers annually. Since the inception of the program, over 40 miles has been cleaned annually, exceeding the stated goal.

RESILIENCE AND INNOVATION

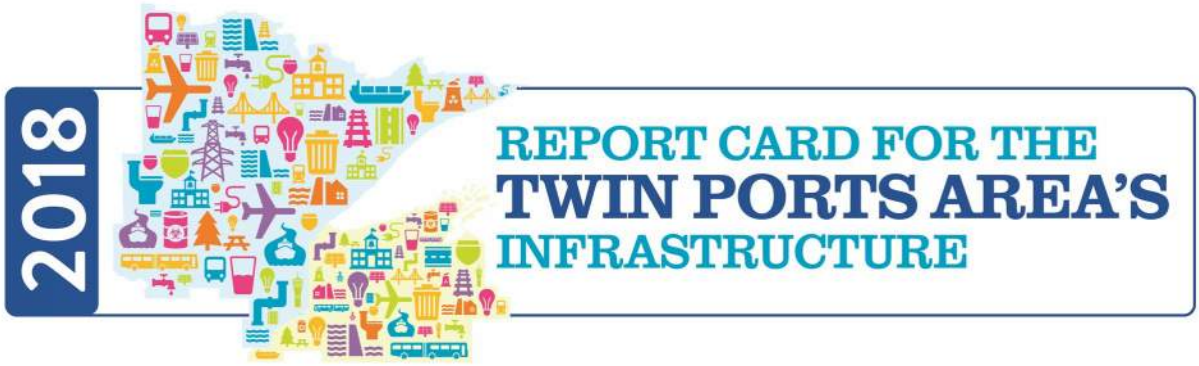
Both the City of Duluth and WLSSD report handling the 2012 flood, a 500 year flood event, with minimal downtime. During the event, Duluth sanitary sewers were inundated causing numerous sanitary sewer overflows throughout the City. Due to the steep topography of Duluth, flood waters substantially receded within hours of the storm ending. Overflows from the sanitary system also ended within a few hours. As a result, confidence is high in the system's ability to function during a hazard event with minimal disruption to the public.

The City of Superior reports using a GIS Sewer Basemap for location of all existing sewer lines. As new lines are added, the information is updated and stored within the GIS for easy access.

If WLSSD can implement their Energy Management Master Plan and Combined Heat and Power energy project, they will become a utility of the future. Along with clean water, WLSSD's wastewater treatment facility can produce clean, renewable energy. Biogas, a methane-rich byproduct of the treatment process can be used to create electricity and heat. The proposed Combined Heat and Power energy project will use biogas currently produced, along with reclaimed additional wastes to increase biogas production, to generate more than one-third of the electricity needed to power the treatment plant. This project would significantly bring WLSSD closer towards their goal of energy neutrality.

HOW CAN WE RAISE THE GRADE?

- At the local level, the City of Duluth needs to continue their prudent fiscal course, funding improvements on a sustainable (cash) basis as currently planned with a goal of being debt-free in 2026.
- At the state level, the Minnesota Legislature should provide funding for the WLSSD Combined Heat and Power energy project.
- At the federal level, increase funding for clean water revolving loan funding and wastewater infrastructure grant programs.



SOURCES:

City of Duluth 2016 Public Works Report

City of Duluth 5-year Capital Improvement Plan 2017-2021

U.S. Environmental Protection Agency. Clean Watershed Needs Survey 2012: Report to Congress. 2016

Minnesota Public Facilities Authority 2017 Annual Report

Personal communication with Eric Shafer of the City of Duluth

Personal communication with Caroline Clement and Jack Ezell of WLSSD

WLSSD Comprehensive Wastewater Services Master Plan 2016

http://wlssd.com/about-us/investing-in-our-infrastructure/biogas-harnessing-energy-from-wastewater/

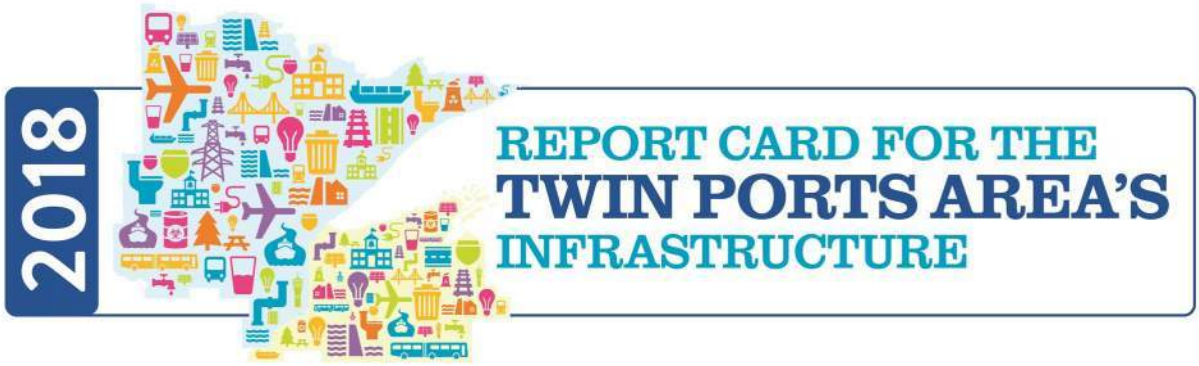
Harnessing Energy from Wastewater Project Profile (November 2017)

City of Ashland Wastewater Facility Flyer

City of Superior Capacity Management Operations and Management (CMOM) Program (June 2014)

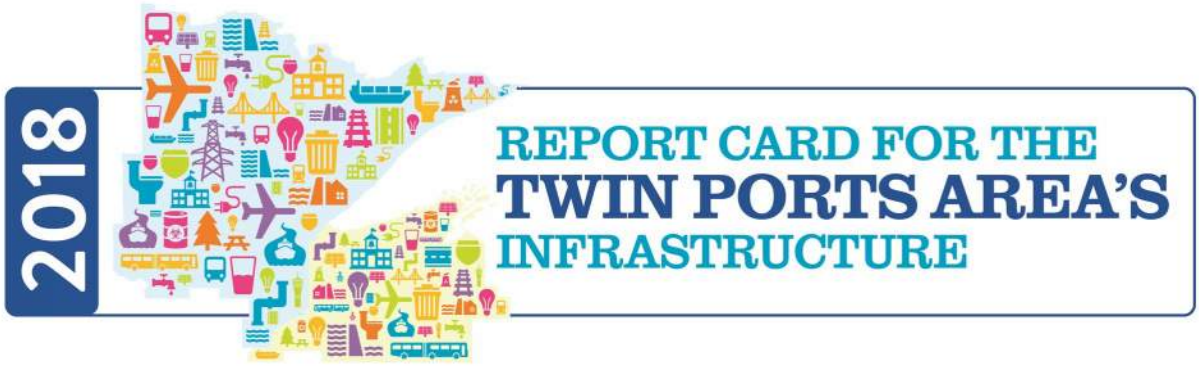
https://www.infrastructurereportcard.org/state-item/wisconsin/

https://dnr.wi.gov/Aid/EIF.html



ABOUT THE DULUTH SECTION

Established in 1917, the ASCE Duluth Section comprises 10 counties in northeast Minnesota (Koochiching, Saint Louis, Lake, Cook, Itasca, Cass, Crow Wing, Aitkin, Carlton and Pine) and six counties in northwest Wisconsin (Douglas, Bayfield, Ashland, Sawyer, Washburn and Burnett) surrounding the Twin Ports of Duluth and Superior. With over 300 members, the Duluth Section integrates engineering knowledge with public awareness. We share our expertise and excitement for the engineering profession by educating youth, engaging elected officials and informing the general public. We are leaders who build a better quality of life in the Twin Ports region. Our goal is to create a safe and healthy infrastructure in our communities both now and for another 100 years.



ACKNOWLEDGEMENTS

MAIN COMMITTEE

Chair:	Craig W. Bursch, PE (MBJ)
Main Committee Members:	Caroline Clement, PE (WLSSD) Ben Helmer, EIT (MBJ) Nick Patterson, PE, (Marine Tech) Cindy Voigt, PE (City of Duluth) Tom DesMarais, PE (NCE), ASCE Duluth Section President

AVIATION

Duluth Airport Authority (Blaine Peterson, Operations Director)
Range Regional Airport (Shaun Germolous, C.M., Executive Director)
Craig W. Bursch, PE (MBJ)

BRIDGES

Burnett County Highway Department (Michael Hoefs, PE)
Carlton County Highway Department (JinYeene Neumann, PE)
City of Duluth (Cindy Voigt, PE)
Cook County Highway Department (Jeff Cadwell, Administrator)
Lake County Highway Department (Krysten Foster, PE)
Minnesota Department of Transportation, District 1 (David Janish, PE; Ed Lutgen, PE; Lisa Hartfiel)
Saint Louis County Highway Department (Matt Hemmila, PE)

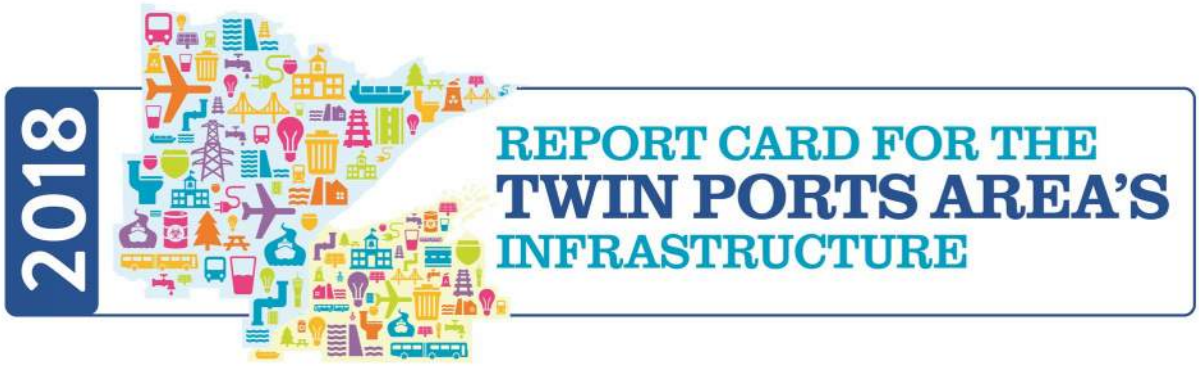
DRINKING WATER

City of Duluth (Eric Shaffer, PE; Cindy Voigt, PE)

PORTS

Jim Sharrow, PE, Ports Sub-Committee Chair (Duluth Seaway Port Authority)

Nick Patterson, PE (Marine Tech)



Chad Scott, PE (AMI Consulting Engineers)
Mike Wenholz, (Duluth-Superior Metropolitan Interstate Council)
Gene Clark, PE (University of Wisconsin Sea Grant Institute – Lake Superior Field Office)

ROADS

Burnett County Highway Department (Michael Hoefs, PE)
Carlton County Highway Department (JinYeene Neumann, PE)
City of Duluth (Cindy Voigt, PE)
Cook County Highway Department (Jeff Cadwell, Administrator)
Lake County Highway Department (Krysten Foster, PE)
Minnesota Department of Transportation, District 1 (David Janish, PE: Ed Lutgen, PE; Lisa Hartfiel)
Saint Louis County Highway Department (Matt Hemmila, PE)

SOLID WASTE

Western Lake Superior Sanitary District (WLSSD) (Caroline Clement, PE; Jack Ezell)

WASTEWATER

City of Duluth (Eric Shaffer, PE)
Western Lake Superior Sanitary District (WLSSD) (Caroline Clement, PE; Jack Ezell)