



NORTH
Dakota | Transportation
Be Legendary.





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Dakota | Transportation
Be Legendary.

December 19, 2022

Fellow North Dakotans:

The movement of goods and commodities is central to North Dakota's economy. **Transportation Connection**, the Statewide Long-Range Transportation Plan, was developed in 2021 by the North Dakota Department of Transportation (NDDOT). **Transportation Connection** serves as the umbrella plan for the NDDOT's family of plans and provides the strategic direction for decision-making and developing transportation policies, programs, and projects for the next 25 years.

The **North Dakota State Freight and Rail Plan**, which supports **Transportation Connection**, is the state's first combined freight and rail plan and supports the Department's Mission of Safely Moving People and Goods. Input was received from all freight modes (trucking, rail, air, and pipeline), logistics providers, key industries, businesses (agriculture, mining, manufacturing, energy extraction, and others), Metropolitan Planning Organizations, local governments, communities, Tribal nations, associations, academia, the public, numerous state agencies, surrounding states and provinces. The plan provides an in-depth look at the importance of freight movement to the state and the role North Dakota has in both feeding and fueling the nation, but also supporting pass-through traffic bound to other states and countries. The **State Freight and Rail Plan** provides the "way forward" for freight-related needs of mobility, safety, and economic development. Passenger rail is also incorporated into the plan due to its key interface with freight rail and the additional transportation opportunity it provides North Dakotans. The plan includes an analysis of the needs and issues that our industries experience, the trends and forecasts we face, and the recommendations and potential solutions to solve freight mobility concerns.

North Dakota's future is strongly dependent on the movement of goods and commodities to regional, national, and global markets to support jobs and our quality of life. New challenges such as labor shortages, technology development and adaption, environmental impacts, funding, and others make the "road ahead" daunting but also an opportunity. This plan provides the foundation to guide us in making informed decisions to improve freight movement today and for tomorrow. Continued communications and collaboration with stakeholders will allow us to continuously plan and shape the multimodal freight transportation system to support the needs of all freight users.

Sincerely,



Ronald J. Henke, PE
Director

17/smm/sbs

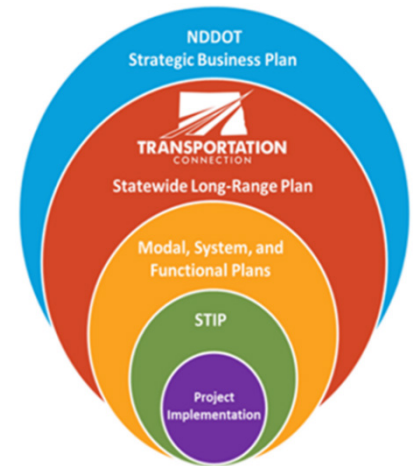
NDDOT
North Dakota
Department of Transportation

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**VISION
ZERO**
Zero fatalities. Zero injuries.

North Dakota State Freight and Rail Plan (SFRP)

The North Dakota State Freight and Rail Plan (SFRP) provides a foundation for understanding freight and rail issues impacting the state and proposing solutions to improving freight efficiency, reliability, and safety. The SFRP is multimodal and includes highway, rail, pipeline, air cargo, and intermodal connectivity. The SFRP supports Transportation Connection, North Dakota's Long Range Transportation Plan (LRTP), supports North Dakota's transportation strategy, and is consistent with NDDOT's emphasis on Transportation Asset Management.



KEY PLAN COMPONENTS:

- Includes a comprehensive, practical, and implementable plan that supports NDDOT's freight transportation goals
- Identifies freight goals, objectives, and performance measures to guide NDDOT in measuring and monitoring the state's multimodal freight system
- Analyzes the state's multimodal freight system and identification of the system's condition and performance
- Includes comprehensive commodity flow analysis and information on North Dakota's key supply chains
- Identifies a robust stakeholder engagement process which includes freight modal carriers, key industries, planning partners, logistics professionals, public officials, the general public, NDDOT staff, and other state agency staff
- Identifies trends, forecasts, and future demands of the multimodal freight system
- Identifies freight mobility needs and issues and recommends solutions and an implementation plan to solve problems

The SFRP was developed to comply with the Infrastructure Investment and Jobs Act (IIJA), the Passenger Rail Investment and Improvement Act of 2002 (PRIIA) and guidance from the Federal Highway Administration (FHWA), and the Federal Railroad Administration (FRA).

Building a Vision

This North Dakota Freight and Rail Plan serves as an important modal plan designed to support Transportation Connection, the state's Long Range Transportation Plan (LRTP). Transportation Connection defines a vision for North Dakota's transportation future, focusing NDDOT's efforts on "DELIVERING A SAFE, INNOVATIVE, AND CONNECTED FUTURE."

TRANSPORTATION CONNECTION GOALS - FREIGHT AND RAIL SUB-GOALS



KEEPING YOU SAFE

- Partner with railroads and aligned agencies and initiatives to improve hazmat safety
- Implement data-driven safety improvements on major freight corridors
- Continue to partner with Operation Lifesaver and other entities to promote safety educational programs
- Encourage adopting and implementing safety technologies by NDDOT and private industry
- Support long-term efforts to improve the availability of truck parking
- Continue to support programs such as the Wildlife Carcass Collection Program, to monitor and inform mitigation solutions to reduce the number of collisions involving wildlife and freight vehicles



CARING FOR WHAT WE HAVE

- Preserve short line rail corridors
- Partner with aligned agencies to create a resilient multimodal freight system and decrease the severity of impacts of extreme weather and natural disasters on freight mobility
- Preserve major freight corridors and rural last-mile connections
- Enhance construction and maintenance activities, such as connected and automated trucking, that support future technology deployment
- Partner with public sector agencies and the freight industry to scope projects and seek funding to decrease the impacts of freight movement on local air pollution



CONNECTING NORTH DAKOTA

- Upgrade short line facilities to support economic opportunities
- Work with U.S. Customs and Border Protection (CBP), the Canada Border Services Agency (CBSA), Manitoba, and Saskatchewan to enhance border crossing opportunities
- Expand opportunities for international air cargo
- Partner with bi-state and bi-national organizations to coordinate investment and freight-related growth in key economic centers



HELPING YOU GET THERE

- Provide consistent travel reliability on the freight network
- Improve seasonal maintenance and response times
- Expand multimodal freight opportunities
- Improve the availability of freight-related traveler information
- Collaborate with transportation planning partners at the binational, tribal, federal, state, regional, and local levels
- Improve workforce mobility for the state's freight businesses (transit access)
- Promote access to the state's passenger rail facilities
- Work with partners to assess the severity of impacts and develop strategies to reduce the impacts of extreme weather and natural disasters on freight mobility



INVESTING FOR THE FUTURE

- Focus on freight and passenger rail customers by modernizing services and data
- Evaluate collaborative grant and partnership opportunities to advance freight and rail mobility
- Communicate investment success stories with freight and passenger rail customers
- Ensure that construction and maintenance-of-traffic plans consider freight mobility
- Make strategic highway and rail investments to increase efficiency, capacity, and performance
- Ensure freight-related infrastructure projects evaluate measures to reduce flooding and stormwater runoff and reduce the impact on wildlife habitats

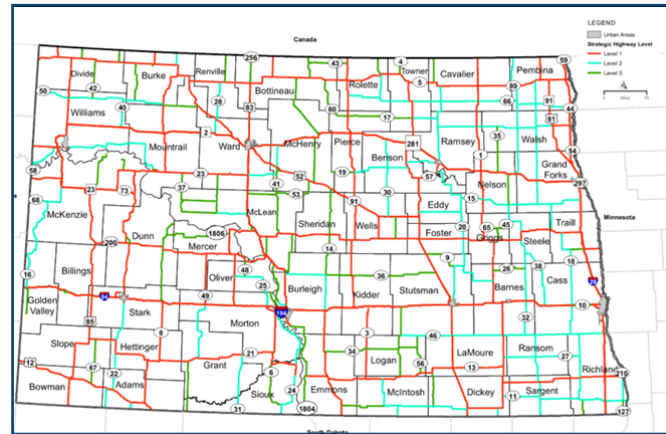
State Freight System: Highway

North Dakota's Strategic Freight System was developed to support the state's economic growth and competitiveness relative to international/interstate, regional/intrastate, and local movements of freight.

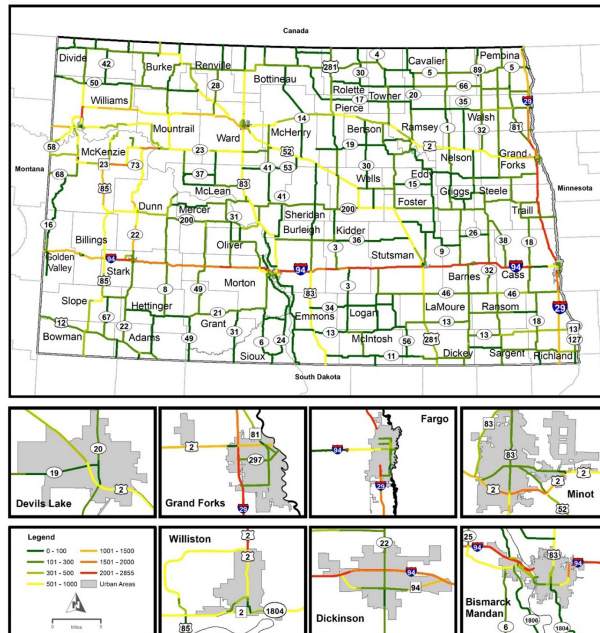
There are **18** highway border crossings on the **310-mile** North Dakota-Canada border. Three crossings (Portal, Dunseith, and Pembina) account for **88%** of the total truck crossing activity.

Truck traffic in North Dakota is high compared to total traffic, particularly on I-29 & I-94, which are major truck routes connecting Canada and local commodity generators with the U.S. central region. Emphasizing locations with high truck volumes is imperative from a maintenance and investment perspective because high truck volume corridors receive more wear and tear on pavements and structures.

Strategic Freight System Highway Classification

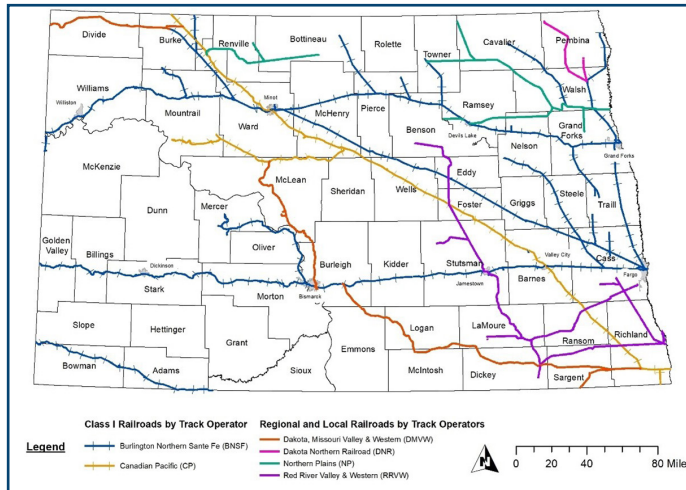


Truck Average Annual Daily Traffic (2020)



State Freight System: Rail

North Dakota Rail System



North Dakota is served by two Class I freight railroads:

- Burlington Northern Santa Fe Railway (BNSF)
- Canadian Pacific Railway (CP Rail)

And four regional and short line railroads:

- Dakota, Missouri Valley & Western (DMVW)
- Red River Valley & Western Railroad (RRVW)
- Dakota Northern Railroad (DNR)
- Northern Plains Railroad (NPR)

Key Rail Facts

BNSF has **5** rail yards and CP has **3**.

There are **11** Transload facilities and **1** intermodal facility served by BNSF and CP Rail.

There are **299** rail-served grain elevators. These are critical for transporting North Dakota's agricultural grain.

4 short line railroads account for **36%** of the rail miles in North Dakota.

BNSF and CP Rail account for **60%** of the rail track miles in North Dakota and **65%** of the public at-grade crossings.

North Dakota has two rail border crossings: **Portal** and **Northgate**. Together, they support over **1,800 trains annually**.

State Freight System: Pipeline

Pipelines are a critical component of North Dakota’s multimodal freight transportation system for the movement of energy-related products. They account for 53% of all tons moved to, from, and within North Dakota.

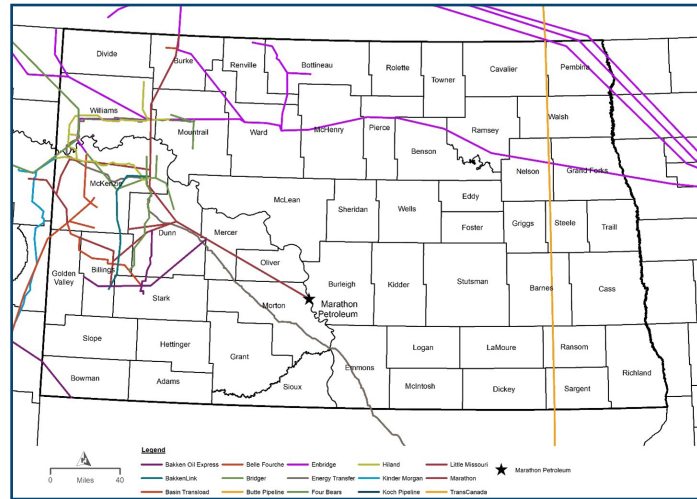
The North Dakota Pipeline Authority estimates that 75% of the crude oil produced in the Williston Basin is exported by pipeline.

In the early 2000s, North Dakota was typically producing 80,000 to 90,000 barrels per day (bpd) of crude oil. Driven largely by new oil extraction techniques, by 2019, that number peaked at 1.5 million bpd.

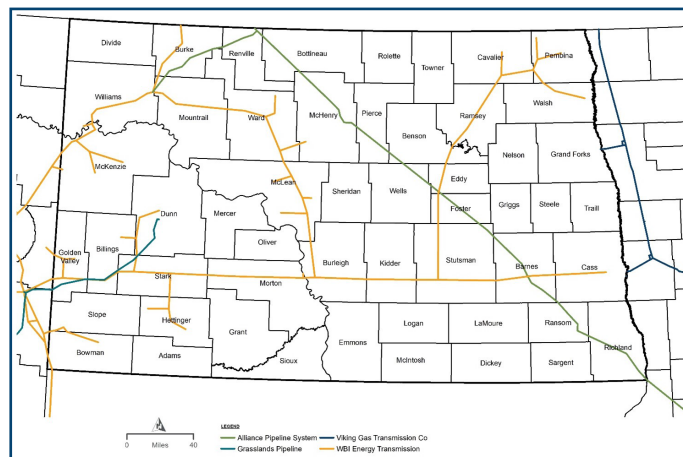
In 2008, there were 12 plants with a capacity to process 355 million cubic feet (mcf) of natural gas per day. By 2021, this had increased to 33 plants with the ability to process a total of 4 billion mcf per day.

North Dakota has approximately **30,000 miles** of gathering and transmission pipelines.

Crude Oil Pipelines

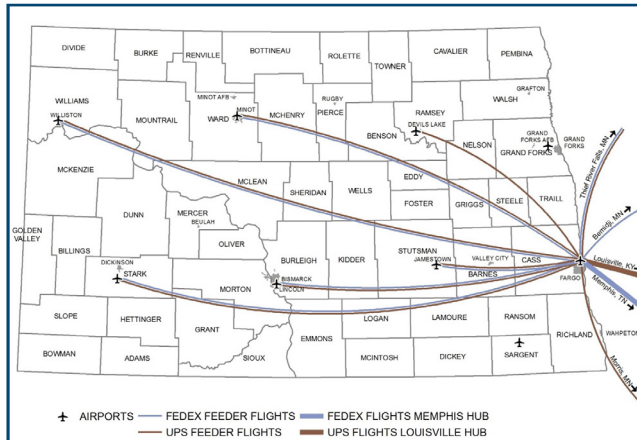


Natural Gas Pipelines



State Freight System: Air & Maritime

FedEx and UPS Air Cargo Network



In North Dakota, there are a total of 281 airports, 89 of which are for public use and 54 of which are included in the Federal Aviation Administration’s National Plan of Integrated Airport Systems (NPIAS). Several of these airports support air cargo services and ensure that shippers and goods receivers across the state can access express and expedited domestic and global products and services.

Despite North Dakota’s landlocked location in the Upper Great Plains, maritime transportation of goods and commodities are important for trade:

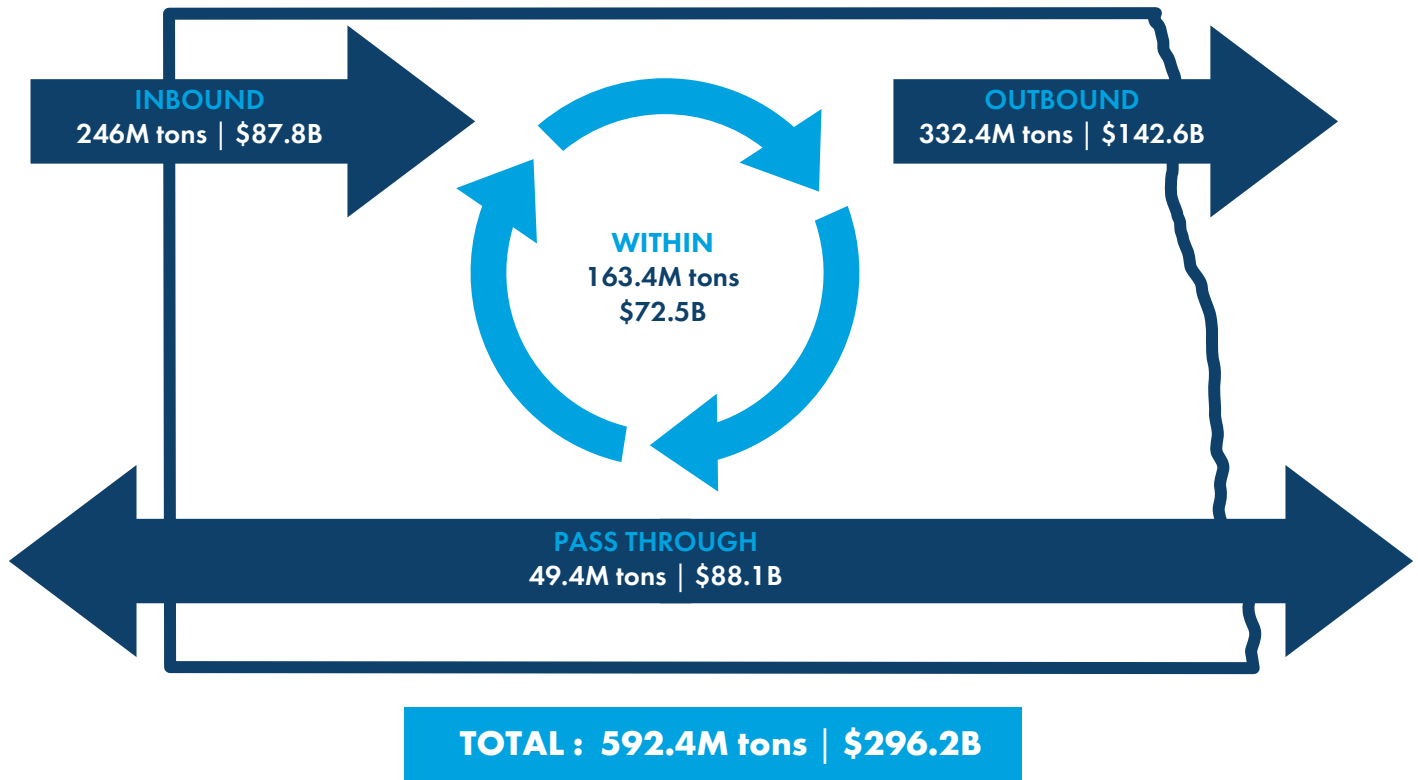
- The Minot intermodal facility regularly ships and receives containerized freight to and from West Coast ports (Canada and the Northwest US)
- Agriculture products, primarily grain, travels via rail and barge to New Orleans for export
- North Dakota imports fertilizers that travel from Gulf Coast ports via rail and barge to North Dakota
- North Dakota ships minerals to the Port of Duluth-Superior, which travels via the Great Lakes to other US and Canadian locations and to Europe

Connecting North Dakota to International Markets via Maritime



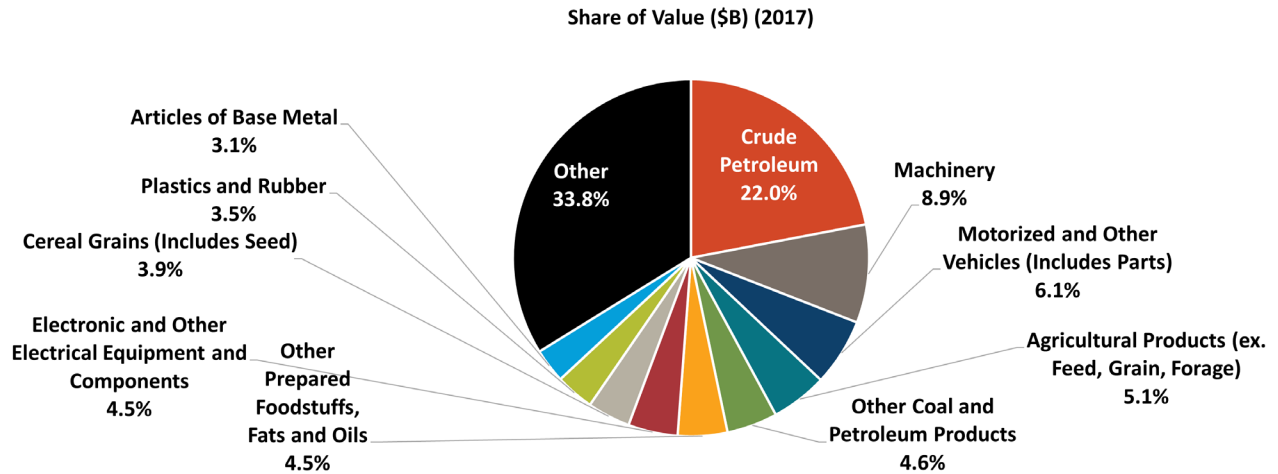
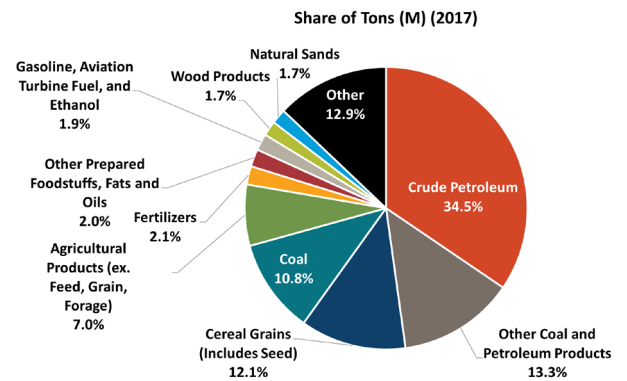
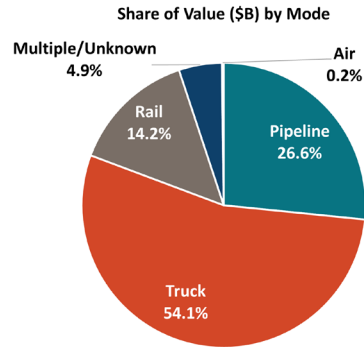
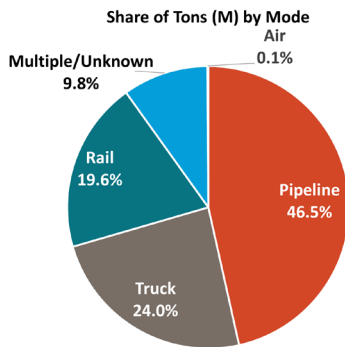
Goods Movement Data and Current/Forecast Demand

North Dakota is a gateway state for international goods and commodities and a connector state for interstate commerce. Goods and commodity movement reflects the economy in motion and supports North Dakota's economic growth, communities, and quality of life for North Dakota citizens.



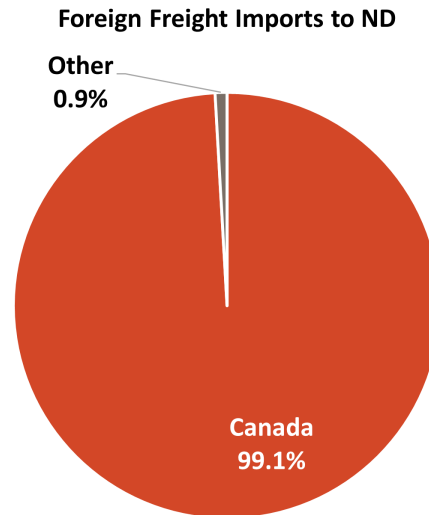
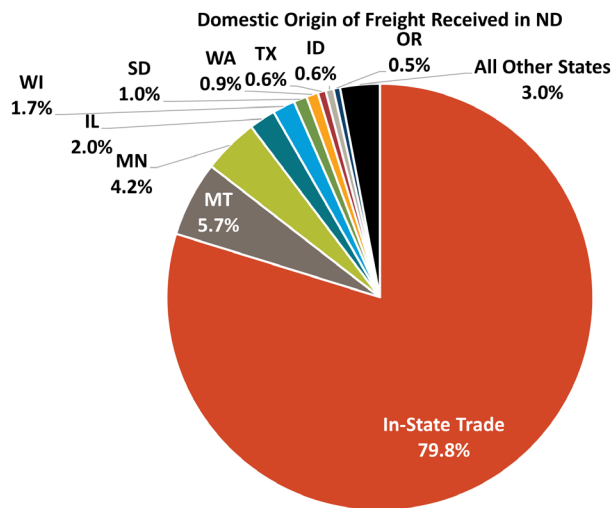
COMMODITY DATA

Crude oil and natural gas moving via pipelines account for North Dakota's largest modal share. North Dakota produces more products and commodities than it consumes.



Goods Movement Data and Current Forecast Demand

Domestically, North Dakota primarily ships to itself, but Canadian trade, primarily crude oil, is almost exclusively North Dakota's top import business.



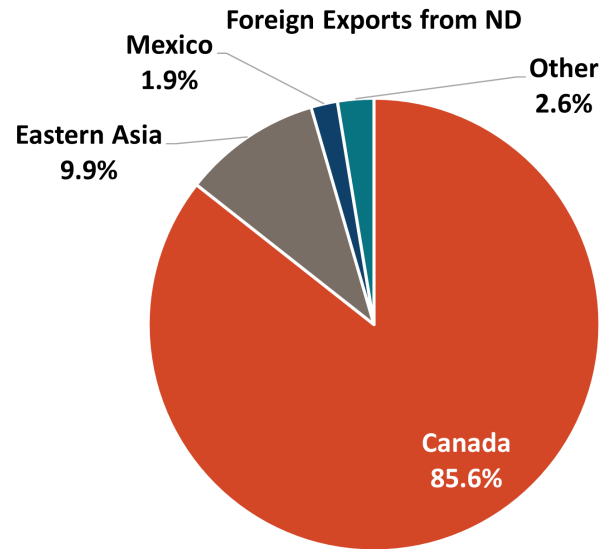
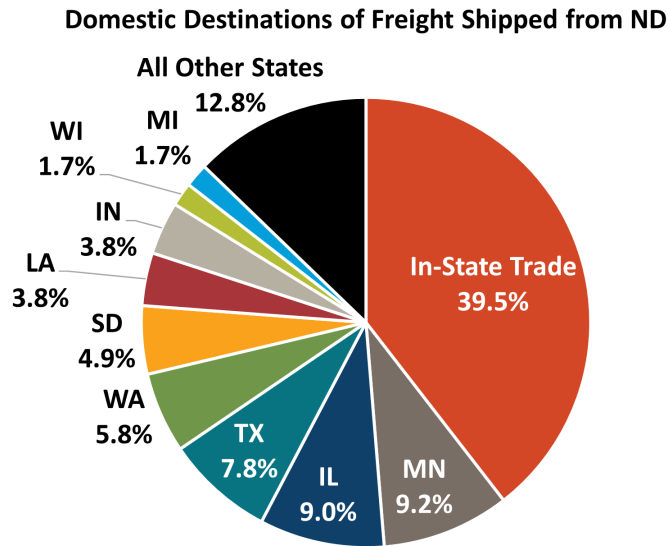
FREIGHT FAST FACTS:

79.8% of domestic freight to ND originates in ND; **5.7%** from MT and **4.2%** from MN.

99.1% of foreign freight imports to ND originate in Canada.

ND Industries that Rely on Freight Transportation:

- Agriculture: grains, livestock, crops, fertilizers, chemicals
- Energy:
 - Fossil: petroleum/oil, natural gas, coal
 - Renewable: wind and solar
- Mining: metallic minerals (Uranium, Iron)
- Mining: non-metallic minerals (clay, sand, gravel)
- Manufacturing
- Construction



Key Commodity Information:

- ND is a production/manufacturing state
- ND exports more than it imports
- Energy-related commodities account for about 50% of total tonnage
- Pipeline accounts for 47% of total freight tonnage
- Agriculture related industry is about 23% of total tonnage
- Of all the freight in the US, 64% of it is domestic and 36% is foreign
- ND is its own #1 trading partner, with surrounding states making up the remaining ranks
- Canada is ND's primary foreign trading partner

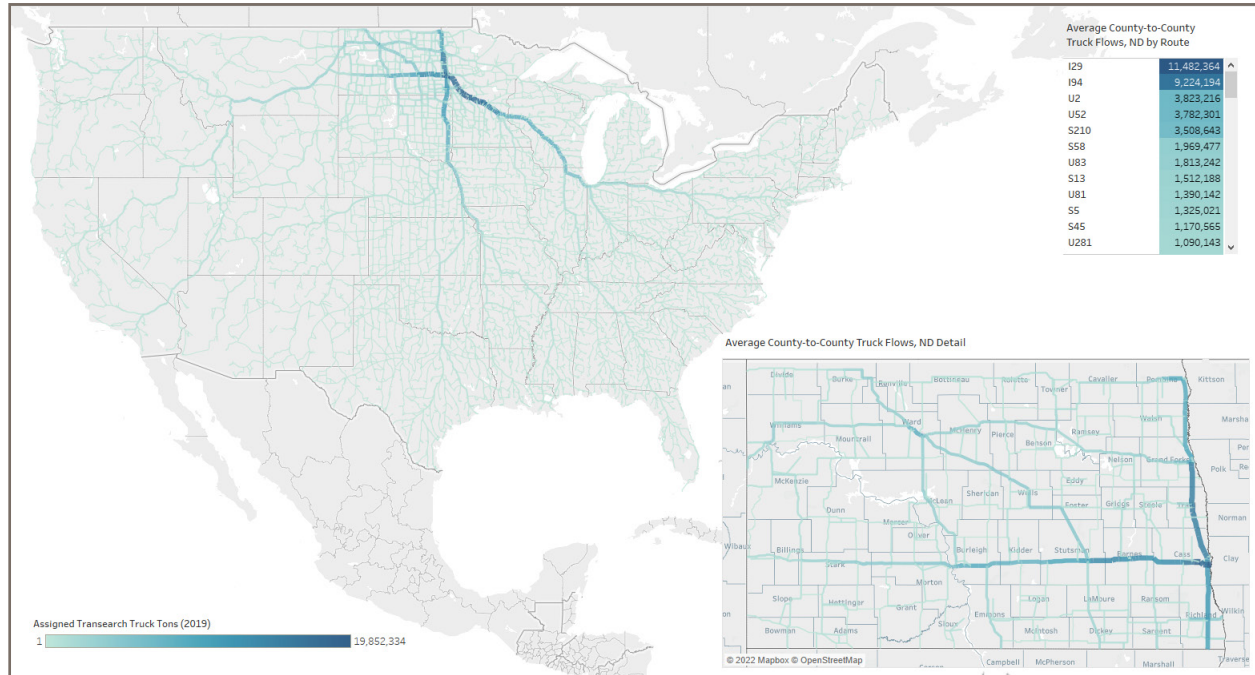
TELLING NORTH DAKOTA'S FREIGHT STORY

ND is a production state. Domestically, ND exports over 3 times the volume than it receives via domestic imports.

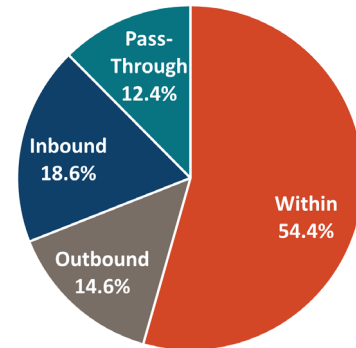


Truck Activity

Transearch Truck Tonnage Network Assignments, All Commodities (2019)



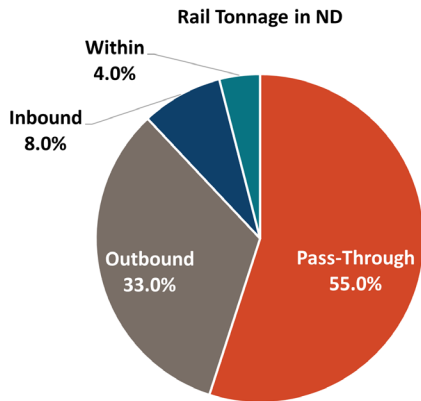
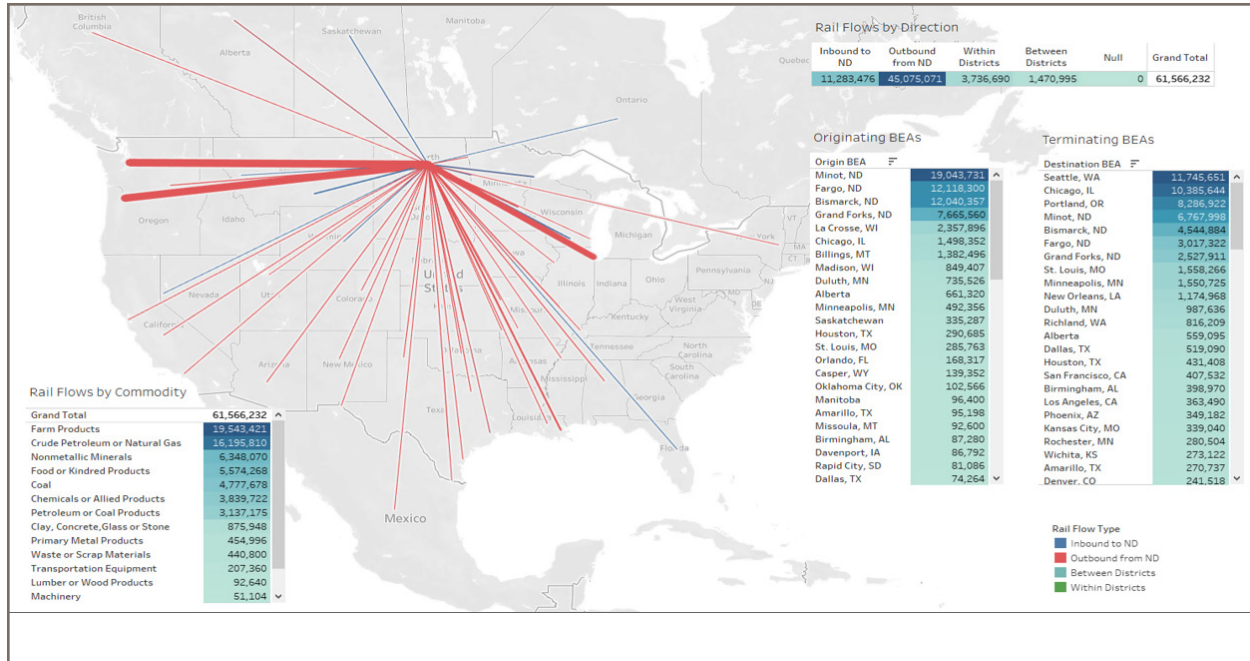
Truck Tonnage in ND





Rail Activity

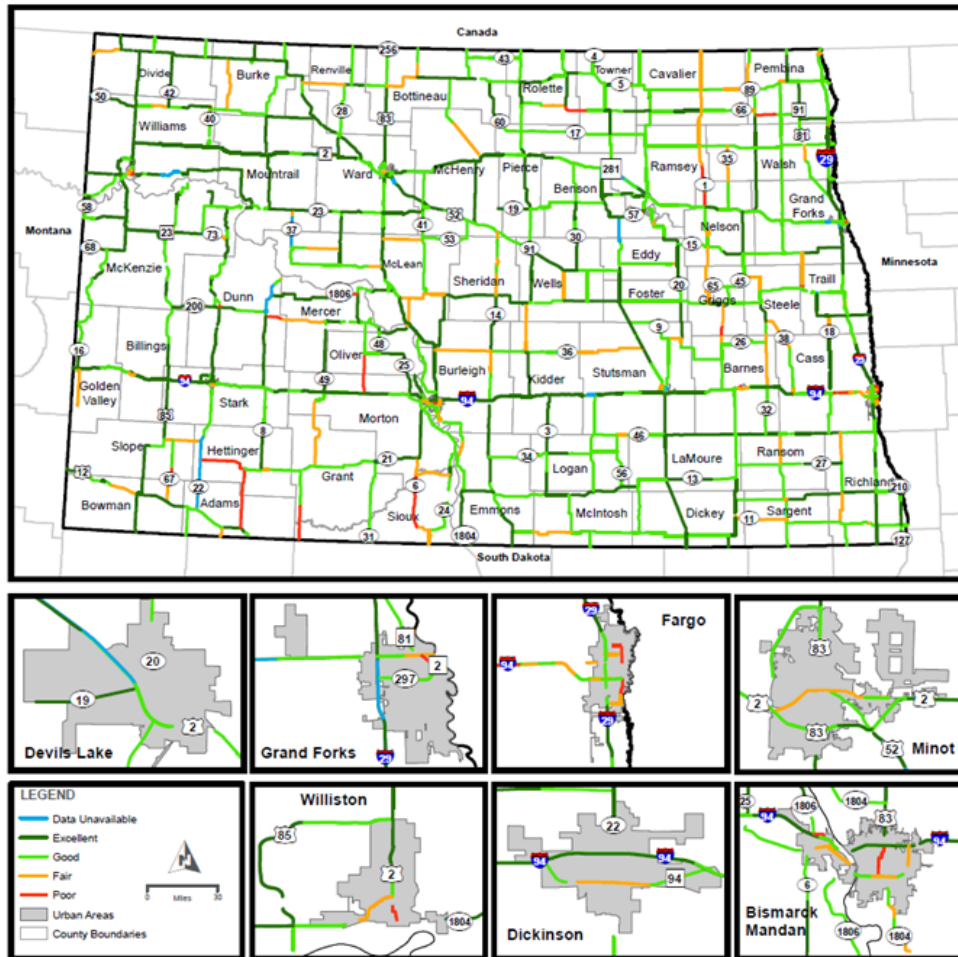
Transearch Rail Activity, All Commodities (2019)



Existing Assets, Conditions, and Performance

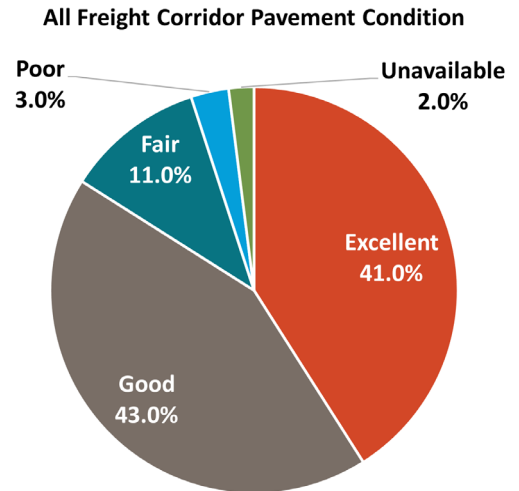
Maintaining infrastructure and preserving assets is critical to the efficient movement of freight and the safety of truck drivers, train engineers, and aircraft pilots as well as the traveling public. Keeping freight moving 24/7 and 365 days of the year is a key requirement to support today's low-inventory, just-in-time supply chains.

Freight Highway Network Conditions (2020)



BRIDGE AND CULVERT CONDITIONS (2019)

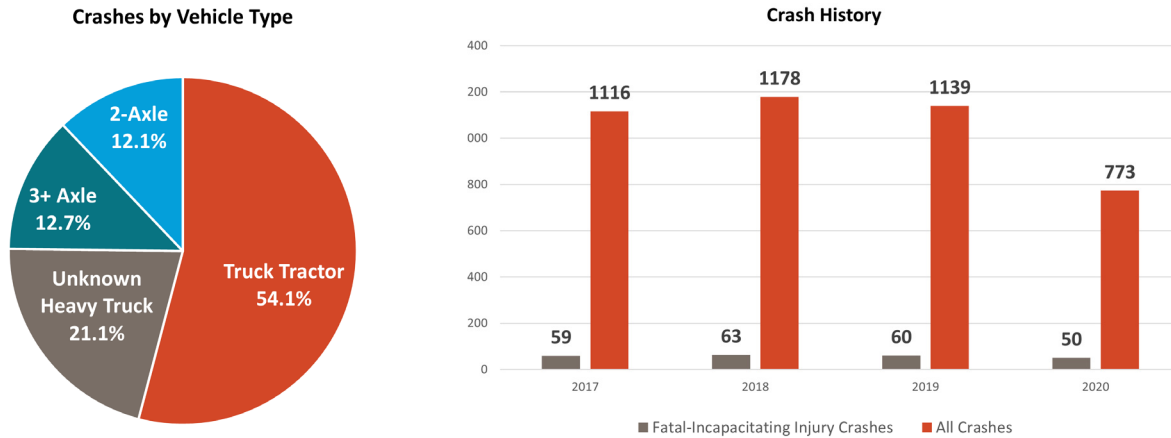
North Dakota’s highway bridges are a critical component of the state’s highway infrastructure. The NDDOT state bridge system is comprised of 1,147 structures, of which 714 are bridges more than 20’ long and 433 are culverts more than 20’ long as defined in the National Bridge Inventory (NBI).



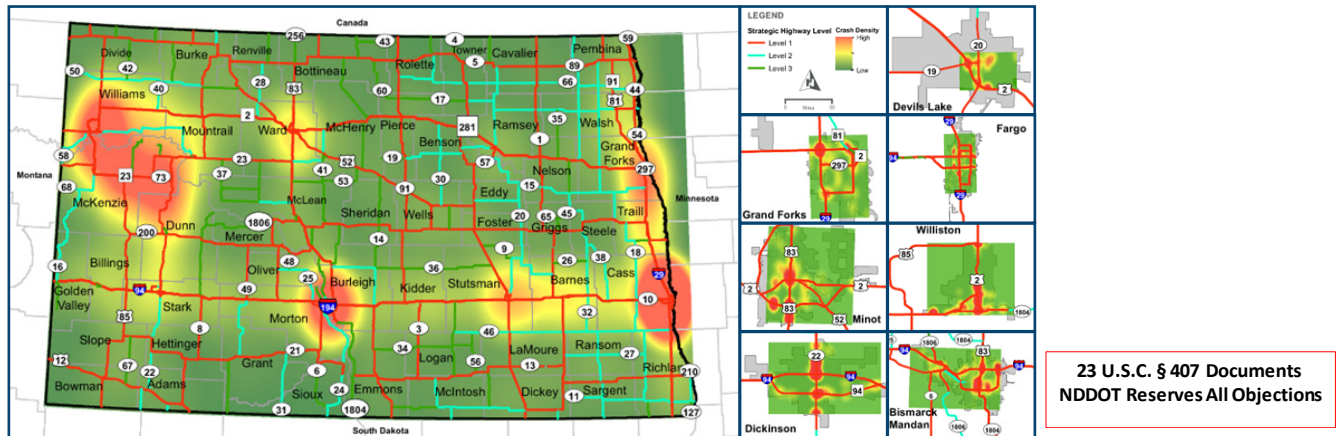
Freight Corridor	Good		Fair		Poor	
	Quantity	Percentage	Quantity	Percentage	Quantity	Percentage
Level One	240	51%	218	47%	10	2%
Level Two	148	55%	114	42%	8	3%
Level Three	63	51%	54	44%	6	5%

TRUCK CRASH TRENDS (2017-2020)

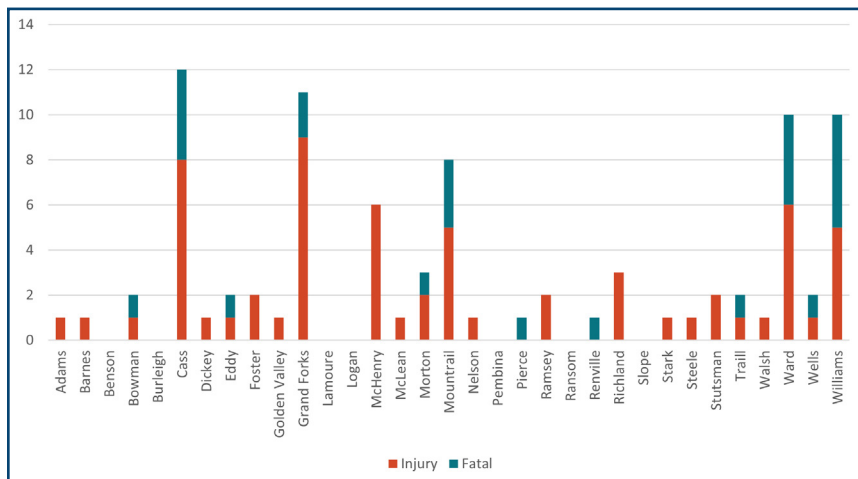
From 2017 to 2020, the total crash rate of trucks observed on North Dakota corridors was approximately 11 crashes per 100 MVMT (million vehicle-miles traveled). This is lower than the national average of crash rates per 100 MVMT of 17.8 crashes. Most truck crashes in North Dakota (up to 76.2%) resulted in property damage. Only 6.5% of truck crashes during the 4 year period resulted in a fatality or an incapacitating injury. A truck crash does not indicate that a truck is at fault in a crash, only that it was involved.



Heat Map of Freight Vehicle Crashes (2017-2020)



Injury and Fatal Crashes at At-Grade Rail Crossings by County (2011-2020)



The counties with the highest incidents of injury are Cass (8), Grand Forks (9), McHenry (6), Mountrail (5), Ward (6), and Williams (5). Similarly, the counties with the highest reported fatal crashes are in Cass (4), Grand Forks (2), Mountrail (3), Ward (4), and Williams (5). These counties generally correspond with higher populations and population density.

Principal Warning Device	Number of Crossings
Crossbucks Only	2,554
Gates	635
Stop Signs	55
None	17
Flashing Lights (Excluding Gates)	12
Four Quad Gates	5
Special Warning	1
Total	3,279

Less than **20%** of North Dakota's public at-grade rail crossings have active warning devices.

ND TRUCK PARKING FACILITIES (2020)

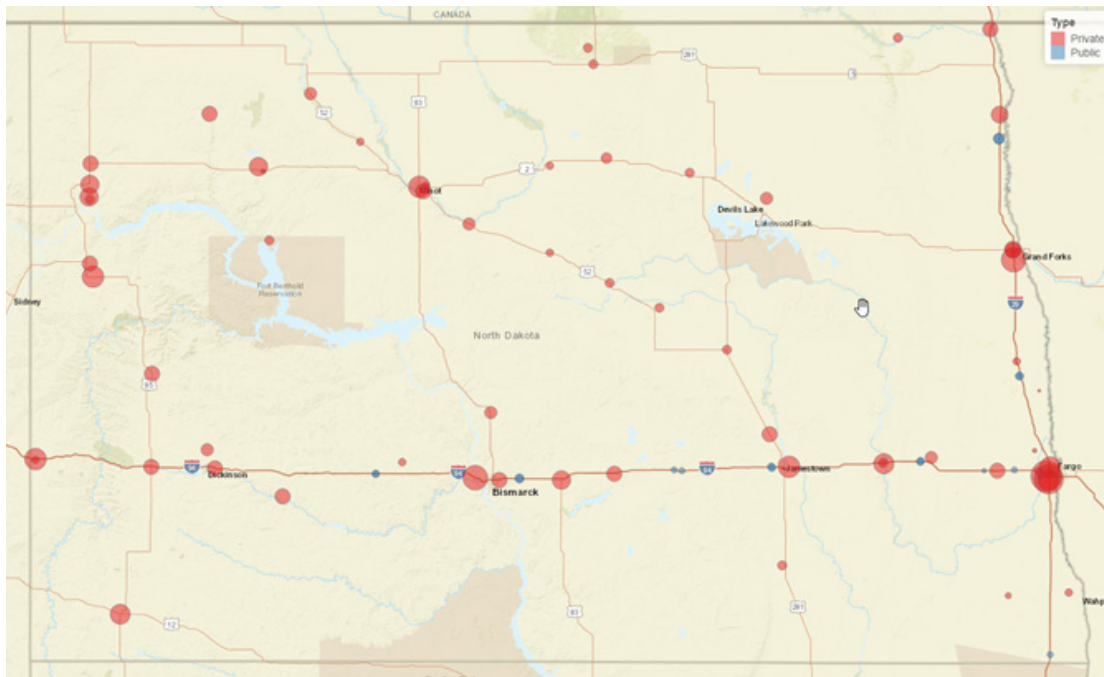
17 Public Rest Areas	71 Private Truck Stops
189 spaces	3,746 spaces
5.2%	94.8%

Truck parking facilities are primarily concentrated along I-94, I-29, and US-2. The largest concentration of truck parking capacity is in the Fargo-Moorhead region.

ACCORDING TO THE FHWA, NORTH DAKOTA HAS MORE SPACES:

- per 100 miles of the National Highway System than its three surrounding states
- per 100k daily truck vehicle miles traveled than its three surrounding states

North Dakota Public and Private Truck Parking Facilities



KEY STRENGTHS, WEAKNESSES, OPPORTUNITIES, AND THREATS

STRENGTHS

- Uncongested highways
- Highway infrastructure is in a good state of repair
- Extensive air express/integrator operations
- Growing urban population attracting e-commerce
- North Dakota's position leading the development of beyond visual line of site drone operations
- Use of longer combination vehicles supporting energy and agricultural sectors

WEAKNESSES

- Sections of the freight network are susceptible to flooding
- Conflicts with train operations in urban areas
- Short line railroads have infrastructure constraints restricting use of industry standard 286,000-pound rail cars
- Geometry of some highway intersections impacts freight activity

OPPORTUNITIES

- Improve processing capacities at border crossings
- Improve resiliency of the freight network
- Consolidation of grain elevators and potentially removing some rail-served elevators and mills from urban areas
- Improve safety and reduce incidents associated with freight transportation such as bridge strikes and truck crashes including rollovers
- Reduce rail and traffic conflicts in urban areas through a targeted program of addressing at-grade crossings

THREATS

- A global energy market in transition
- Shortage of labor to drive trucks and trains
- Potential removal of select grain elevators due to low volume
- Civil unrest and terrorism to include disruption or blockage of freight movement

Freight and Rail Mobility Issues and Needs



NDDOT identified freight and rail issues and needs and potential strategies to consider in relation to the goals of Transportation Connection. The final plan also addresses friction points and livability impacts associated with freight activity. An important goal for this plan is to maximize prosperity, livability, and quality of life for North Dakota residents while addressing the needs of North Dakota businesses and freight and rail operators for an efficient, responsive, and innovative transportation system that allows continued success for all.



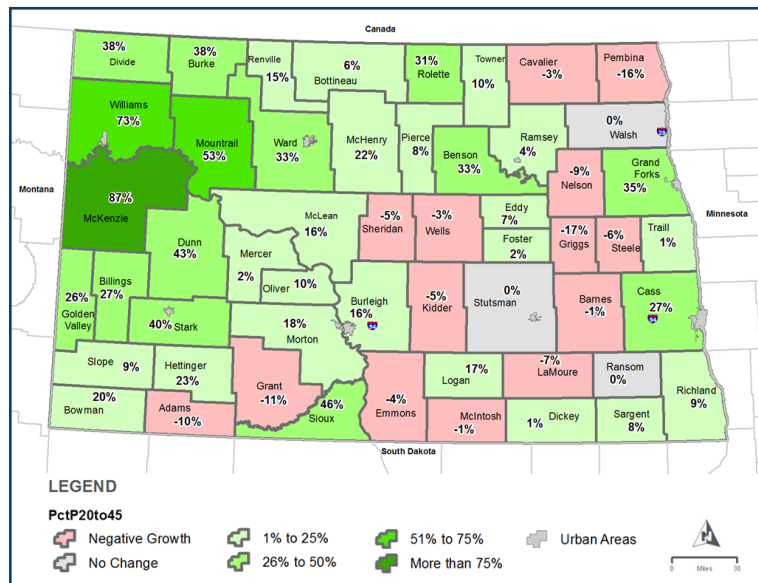
Friction Points Between Livability/Community and Freight:

- Mobility & congestion with trucks and rail in urban areas
- Curb management
- Safe routes to school
- Truck routes & rail lines crossing adjacent to hospitals, schools, residential, and civic event areas
- Bike-pedestrian movements

Demographic and Economic Growth Factors

The population of North Dakota is projected to increase by 199,900 by 2040. Ten counties account for over 182,200 of the expected growth, which is over 91% of the expected population growth for the entire state. The next five counties are expected to increase population by 7,900. The remaining 38 counties are expected to grow collectively by 9,800.

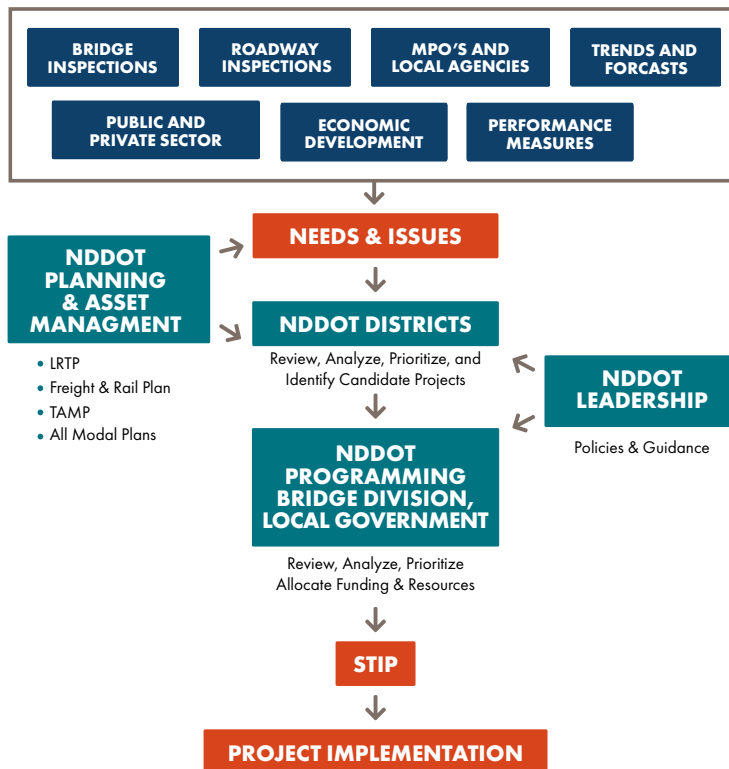
North Dakota Population Growth (2020-2045)



Projects: Identification, Selection, and Prioritization

NDDOT has developed a process for identifying, selecting, and prioritizing freight projects. This process employs a step-based method that builds on the needs and issues identified through quantitative and qualitative data analysis, and state freight and rail plan goals. Projects are reviewed, analyzed, and supported by ensuring they are consistent with NDDOT statewide and regional planning goals, NDDOT district needs, NDDOT leadership policy responsibilities, and anticipated funding/resource streams.

PROJECT PRIORITIZATION



ACRONYMS

MPO:
Metropolitan
Planning Organization

L RTP:
Long Range
Transportation Plan

TAMP:
Transportation Asset
Management Plan

STIP:
State Transportation
Improvement Program

Policies, Programs, and Institutions

Funding opportunities are available for freight and rail projects in North Dakota. It is recognized that successfully competing for competitive grants and fully utilizing formula funding will be vital to investing in North Dakota's freight system. Furthermore, since the passage of the Infrastructure Investment and Jobs Act (IIJA), the reliance on competitive discretionary funding programs has become of greater importance due to the increased funding within these programs.

SOURCES OF FUNDING



FEDERAL:

USDOT agencies (FHWA, FRA)

Types of Funding:

- Formulaic (from federal fuel taxes - Highway Trust Fund)
- Discretionary (from IIJA programs)

Program types:

- | | | |
|----------------------|----------------------|-------------------------|
| • Bridge | • Infrastructure | • Economic Development |
| • Tribal | • Sustainability | • Metropolitan Planning |
| • CMAQ | • Equity | • Motor Carrier Safety |
| • Rail | • Rural | • Rail Rehab |
| • Federal | • Surface | • TIFIA |
| • Lands | • Rail | • Surface Alternatives |
| • Safety | • Crossing | |
| • Performance | • Airport | |
| • Multimodal Freight | • Diesel Elimination | |

STATE:

- State fuel taxes
- State loan programs (Bank of North Dakota and NDDOT)
- Freight Rail Improvement Program (NDDOT)

The state pursues a variety of discretionary funding such as federal grants. Projects are considered for grant applications based on a number of criteria which can include:

- Safety
- Environmental Sustainability
- Quality of Life
- Mobility and Community Connectivity
- Economic Competitiveness
- State of Good Repair
- Partnership and Collaboration
- Innovation

Recommendations and Implementation

There are policies, plans, and other initiatives that support the state in achieving the goals of the plan. The potential recommendations are also aligned with the goals of Transportation Connection.

HIGHWAY INVESTMENTS (2023-2026)

Freight Level Highway	Mileage	Freight Level Mileage %	Truck Tonnage %	Total Projects Value (\$)	% of Projects Value
Level One	4,218.3	49.1%	94.9%	1,017,200,458	64.3%
Level Two	2,860.1	33.3%	4.2%	352,062,585	22.3%
Level Three	1,518.6	17.7%	0.1%	212,239,590	13.4%



POTENTIAL TRANSPORTATION STRATEGIES



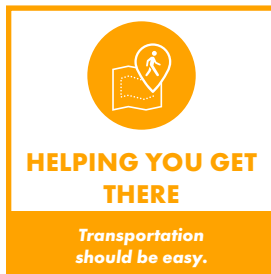
- Create a task force to address truck-related crashes in the oil producing region and in particular the counties of Williams, Mountrail, McKenzie and Dunn (to be forwarded to the NDDOT Safety Division for consideration in the State Highway Safety Plan (SHSP))
- Uphold expectation that the private sector will continue to lead development of truck parking spaces
- Continue to support programs such as the Wildlife Carcass Collection Program to monitor and inform mitigation solutions aiming to reduce the number of collisions involving wildlife and freight vehicles



- Ensure a safe and secure freight and rail passenger system
- Explore adopting a vertical clearance policy for heavily traveled oversize/overweight (OSOW) routes with an 18' 6" clearance
- Continue the research and work with partners to expand the Wise Roads (Weather Information System to Effectively Reduce Oilfield Delays and Disruption) to improve frost law policy
- Participate in strategic planning with other agencies including NDDES, USACE, FEMA and FHWA to receive assistance in identifying priorities and focus resources to address freight resiliency issues within the state, including those associated with extreme weather and natural disasters
- Partner where possible with public sector agencies and the freight industry to scope projects and seek funding to decrease the impacts of freight movement on local air pollution



- Keep the rail system in good repair
- Work with other agencies and entities to support the introduction of technology, modernization, and enhancements to highway and freight rail connections to expedite the movement of freight across the nation's borders
- Rehabilitate and expand infrastructure at North Dakota's cargo airports



- Maintain a rail system that serves all economic sectors and geographies
- Improve the communication of information associated with road and travel conditions to help the freight industry to plan and prepare for unexpected events
- Identify opportunities to streamline and enhance the OSOW permit processes
- Work with partners to assess the severity of impacts and develop strategies to reduce the impacts of extreme weather and natural disasters on freight mobility



- Maintain a rail system to reliably move people and goods
- Explore the designation of corridors as Critical Rural Freight Corridors (CRFC) and if applicable, apply for designation according to the prescribed process
- Cooperate with partners to maximize opportunities associated with competitive grant funding programs and the increase in funding available through the IIJA
- Maintain a watching brief on the evolution of technologies such as autonomous vehicles, drones, etc.
- Adopt technologies to advance rail transportation with consideration of environmental, cultural, and social issues
- Ensure freight-related infrastructure projects evaluate measures to reduce flooding and stormwater runoff and reduce the impact upon wildlife habitats

Inter-City Passenger Rail

Amtrak's Empire Builder route is a once-daily round trip from Chicago to Seattle and Portland. This route serves seven stations in North Dakota including:

Williston **Stanley** **Minot** **Rugby** **Devils Lake** **Grand Forks** **Fargo**



This route had one of the highest ridership of any Amtrak long-distance train in 2019-2021. Major destinations for North Dakota passengers include:

- St. Paul, MN
- Chicago, IL
- Whitefish, MT

Please see Appendix B of the final plan for more information on Inter-City Passenger Rail in ND.

AMTRAK 5-YEAR WORK PLAN

- Restore daily two-way service on Empire Builder route
- Improve web/app-based travel information and planning
- Address reliability and on-time performance
- Focus on fleet investments such as locomotives and baggage cars
- Improvements to North Dakota stations
- Study the Hiawatha Route

Stakeholder and Public Engagement

Throughout the development of the plan, NDDOT was committed to involving the public and stakeholders. Industry leaders, organizations, government agencies, and the general public provided valuable input that was incorporated into the final plan.

221 Stakeholders **2 Live Virtual Public**
3 Newsletters **Input Meetings**

1 Online, Self-Guided Public Meeting

18 Stakeholder Small **4 Stakeholder**
Group Meetings **Listening Sessions**

57 Comment Map Submissions

9 General Comments Received

Please see Appendix A of the final plan for more information on stakeholder and public engagement efforts.

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