Draft

South Dakota Department of Transportation

Freight Plan

2022

Prepared by:

South Dakota Department of Transportation
Project Development Office

In corporation with
United States Department of Transportation

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The preparation of this report has been financed in part through a grant from the Federal Highway Administration and Federal Transit Administration, U.S. Department of Transportation, under the State Planning and Research Program, Section 505 of Title 23, U.S. Code. The contents of this report do not necessarily reflect the official views or policy of the U.S. Department of Transportation.

Table of Contents

List of Figures, Maps, and Tables

Abbreviations and Acronyms

AADT	Average Annual Daily Traffic
ABR	Aberdeen Regional Airport
BIL	Bipartisan Infrastructure Law
CATT	Center for Advanced Transportation Technology
CMV	Commercial Motor Vehicle
CRFC	Critical Rural Freight Corridor
CUFC	Critical Urban Freight Corridor
DoD	Department of Defense
FAST	Fixing America's Surface Transportation
FHWA	Federal Highway Administration
FSD	Joe Foss Field Airport in Sioux Falls
GDP	Gross Domestic Product
IIJA	Infrastructure Investment and Jobs Act
ICS	Interstate Corridor Study
ITS	Intelligent Transportation System
LCV	Long Combination Vehicle
LRTP	Long Range Transportation Plan
MPO	Metropolitan Planning Organization
MTP	Metropolitan Transportation Plan
NASS	National Agricultural Statistics Service
n.e.c.	Not Elsewhere Classified
NHPF	National Highway Freight Program
NHPP	National Highway Performance Program
NHS	National Highway System
NPMRDS	National Performance Management Research Data Set
PCPI	Per Capita Personal Income
PHFN	Primary Highway Freight Network
PHFS	Primary Highway Freight System
SAT	Study Advisory Team
SCI	Surface Condition Index
SDDOT	South Dakota Department of Transportation
SHSP	Strategic Highway Safety Plan
STIP	Statewide Transportation Improvement Program
STRAHNET	Strategic Highway Network
TAMP	Transportation Asset Management Plan
TTR	Time Travel Reliability
U.S.C.	United States Code

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CHAPTER 1: MISSION, VISION, AND GOALS

Department Mission

To efficiently provide a safe and effective public transportation system.

Department Vision

Better lives through better transportation, by being the best.

Purpose of the South Dakota Department of Transportation (SDDOT) Freight Plan

The purpose of the SDDOT Freight Plan is to guide improvement of the state's overall freight system in alignment with national freight goals and the department's core value of all employees contribute to providing a high-quality transportation system by continuously striving to innovate and improve the quality of services.

Federal legislation, beginning with the Fixing America's Surface Transportation (FAST) Act and continued by the passing of the Infrastructure Investment and Jobs Act (IIJA), requires states to develop a freight plan to be eligible for federal funds provided through the National Freight Policy (23 USC § 167).

Goals

The SDDOT Freight Plan is created to develop goals and strategies that support the national multimodal freight policy goals and the national highway freight program goals. Table 1-1 correlates the state's Long Range Transportation Plan's (LRTP) goals with these national freight goals.

Table 1-1 Transportation Planning Factors and Plan Integration

	SDDOT Long Range Plan Goals						
National Freight Goals	Improve transportation safety and security for all modes	Preserve and maintain the transportation system	Improve mobility, reliability, and accessibility	Preserve SD's quality of life	Support economic growth and development	Promote environmental stewardship	Promote innovative transportation technologies
Improve economic efficiency, productivity, and competitiveness			✓	✓	✓		✓
Reduce congestion, bottlenecks, and cost of freight transportation	✓	✓	✓	✓	✓	✓	✓
Improve safety, security, and resiliency	✓	✓	✓	✓		✓	
Improve state of good repair	✓	✓		✓	✓	✓	
Use advanced technology, innovation, and competition	✓		✓	✓	✓	✓	✓
Performance management and accountability	✓	✓		✓	✓	✓	
Reduce adverse environmental and community impacts	✓	✓	✓	✓	✓	✓	✓

The national multimodal freight policy goals are to:

- Identify infrastructure improvements, policies, and operational innovations that:
    - Strengthen the contribution of the National Multimodal Freight Network to the economic competitiveness of the United States;
    - Reduce congestion and eliminate bottlenecks on the National Multimodal Freight Network; and
    - Increase productivity, particularly for domestic industries and businesses that create high-value jobs.
- Improve the safety, security, efficiency, and resiliency of multimodal freight transportation;
- Achieve and maintain a state of good repair on the National Multimodal Freight Network;
- Use innovation and advanced technology to improve the safety, efficiency, and reliability of the National Multimodal Freight Network;
- Improve the economic efficiency and productivity of the National Multimodal Freight Network;
- Improve the reliability of freight transportation;
- Improve the short and long-distance movement of goods that:
    - Travel across rural areas between population centers;
    - Travel between rural areas and population centers; and
    - Travel from the nation's ports, airports, and gateways to the national multimodal freight network.
- Improve the flexibility of States to support multi-State corridor planning and the creation of multi-State organizations to increase the ability of States to address multimodal freight connectivity; and
- Reduce the adverse environmental impacts of freight movement on the National Multimodal Freight Network.

The national highway freight program goals are to:

- Invest in infrastructure improvements and implement operational improvements on the highways of the United States that:
    - Strengthen the contribution of the National Highway Freight Network to the economic competitiveness of the United States;
- Reduce congestion and bottlenecks on the National Highway Freight Network;
- Reduce the cost of freight transportation;
- Improve the year-round reliability of freight transportation; and
- Increase productivity, particularly for domestic industries and businesses that create high value jobs;
- Improve the safety, security, efficiency, and resiliency of freight transportation in rural and urban areas;
- Improve the state of good repair of the National Highway Freight Network;
- Use innovation and advanced technology to improve the safety, efficiency, and reliability of the National Highway Freight Network;
- Improve the efficiency and productivity of the National Highway Freight Network;
- Improve the flexibility of States to support multi-State corridor planning and the creation of multi-State organizations to increase the ability of States to address highway freight connectivity; and
- Reduce the environmental impacts of freight movement on the National Highway Freight Network.

In 2021, the IIJA added the following seven (7) improvements to state freight plans:

- The most recent supply chain cargo flows in the State, expressed by mode of transportation;
- An inventory of commercial ports in the State;
- If applicable, consideration of the findings or recommendations made by any multi-State freight compact to which the State is a party under section 70204;
- The impacts of e-commerce on freight infrastructure in the State;
- Considerations of military freight;
- Strategies and goals to decrease:
    - The severity of impacts of extreme weather and natural disasters on freight mobility;
    - The impacts of freight movement on local air pollution;
    - The impacts of freight movement on flooding and stormwater runoff; and
    - The impacts of freight movement on wildlife habitat loss;
- A commercial motor vehicle (CMV) parking facilities assessment.

Plan Integration

The Freight Plan focuses on freight movement primarily occurring on the National Highway System, connectivity between modes, key goals, objectives, and strategies developed through this plan, the LRTP and other plan components, as follows:

- Statewide Transportation Improvement Program (STIP)
- Strategic Highway Safety Plan (SHSP)
- South Dakota Aviation System Plan
- State Rail Plan
- Transportation Asset Management Plan (TAMP)
- Metropolitan Planning Organization's (MPO) Long Range Plans
- Statewide Intelligent Transportation Systems Architecture Plan
- Interstate Decennial Corridor Study
- Various Corridor Studies

The Freight Plan includes goals to maintain and improve South Dakota's freight transportation system and identifies challenges and opportunities regarding the safety, preservation, mobility, economic vitality, and environmental aspects of the freight system. The plan proposes strategies to achieve state and national freight goals and objectives identified in the plan. It also provides a framework, through performance measures, to implement the plan.

Outreach

Preparation of this plan conformed to the SDDOT's Public Involvement Plan and customized virtual methods for conducting events to increase public engagement as detailed in Appendix A.

A Study Advisory Team (SAT) was assembled from various offices within the South Dakota Department of Transportation, complimented by external partners from the state's trucking and agriculture industries to collaborate the development of this plan and consider key stakeholders. The SAT members are listed below:

Myron Rau	SD Trucking Association (Retired)
Brenda Forman	SD Association of Cooperatives
Jerry Ortbahn	SDDOT, Project Development
Julie Stevenson	SDDOT, Communications
Jack Dokken	SDDOT, Air, Rail, and Transit
Josh Bench-Bresher	SDDOT, Asset Management
Dave Huft	SDDOT, Intelligent Transportation Systems
Steve Gramm	SDDOT, Project Development
Dani Doorn	SDDOT, Project Development
Christina Bennett	SDDOT, Operations
Scott Rabern	SDDOT, Road Design
Mark Hoines	FHWA, South Dakota Division

Stakeholder meetings were conducted during plan development to gain insights from the commercial motor vehicle permit regulators, the Metropolitan Planning Organizations within South Dakota, and other high-interest groups as recommended by the SAT utilizing a survey questionnaire. A public comment period was held in which the public and targeted stakeholders were encouraged to provide additional input; these collective efforts are summarized in Appendix B. Comment responses and actions taken to incorporate this input may be found in Appendix C.

Periodic Leadership Coordination was also conducted throughout the plan's development at project milestones.


CHAPTER 2: Freight Characteristics

Introduction to Freight

A safe, efficient, and reliable freight transportation network is essential to the state's economy. Highways, railroads, pipelines, and airports allow South Dakota businesses and consumers to export and receive goods to and from local, regional, and global markets and producers. Improvements to our freight system will move services and goods to all producers and consumers, lower costs for producers and consumers, and make South Dakota products more attractive in global markets. Failure to continue to make improvements or weaknesses in the supply chain result in decreased productivity and limited economic development.

The recent global pandemic brought to light vulnerabilities in the world's established supply chain methodology and attention to the various modes that make up a vast freight network that under normal conditions functioned adequately for just-in-time inventories and last-mile deliveries. The supply chain failures and delays have motivated states to bolster existing freight systems to improve the overall resilience of air, rail, and trucking modes of freight transportation.

This chapter will evaluate trends, identify common vulnerabilities, and show links between transportation and the economy.

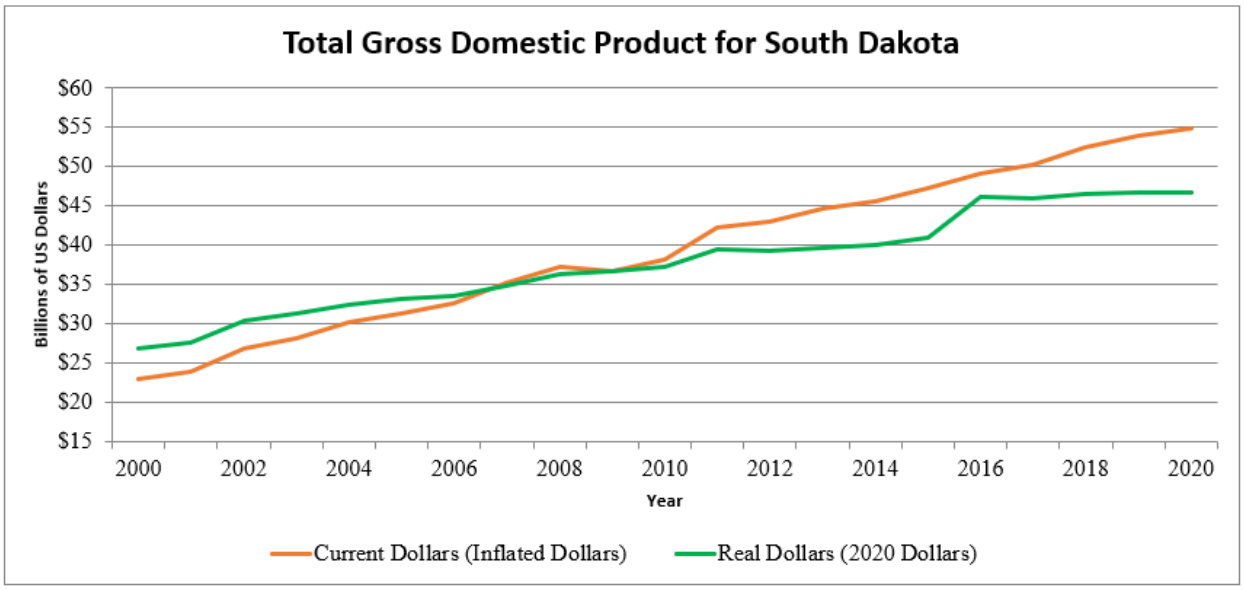
Freight and the Economy

Agriculture is very important to South Dakota's economy. Moving farm commodities to market is vital. Although retail trade, finance and insurance, educational services, health care, and government have a greater impact to the Gross Domestic Product (GDP), nothing relies more on the transportation system than agriculture. Failure to maintain agriculture's freight mobility will result in loss of jobs, economic development, and income for South Dakotans.

Gross Domestic Product (GDP)

The GDP is the total market value of everything produced in the economy. It is calculated in current and real dollars. Real dollars is the adjusted value removing the effects of inflation. South Dakota's GDP continues to grow as shown in Figure 2-1.

Figure 2-1: Total Gross Domestic Product for South Dakota



Source: U.S. Bureau of Economic Analysis;
https://apps.bea.gov/itable/iTable.cfm?ReqID=70&step=1&acrdn=1

In 2015, South Dakota's current-dollar GDP $47.2 billion, ranked 47th in the United States. In 2020, South Dakota's real GDP was $54.7 billion, indicating a 15.9% increase from 2015 to 2020. South Dakota's GDP is growing faster than the national average and is expected to continue that trend.

Population

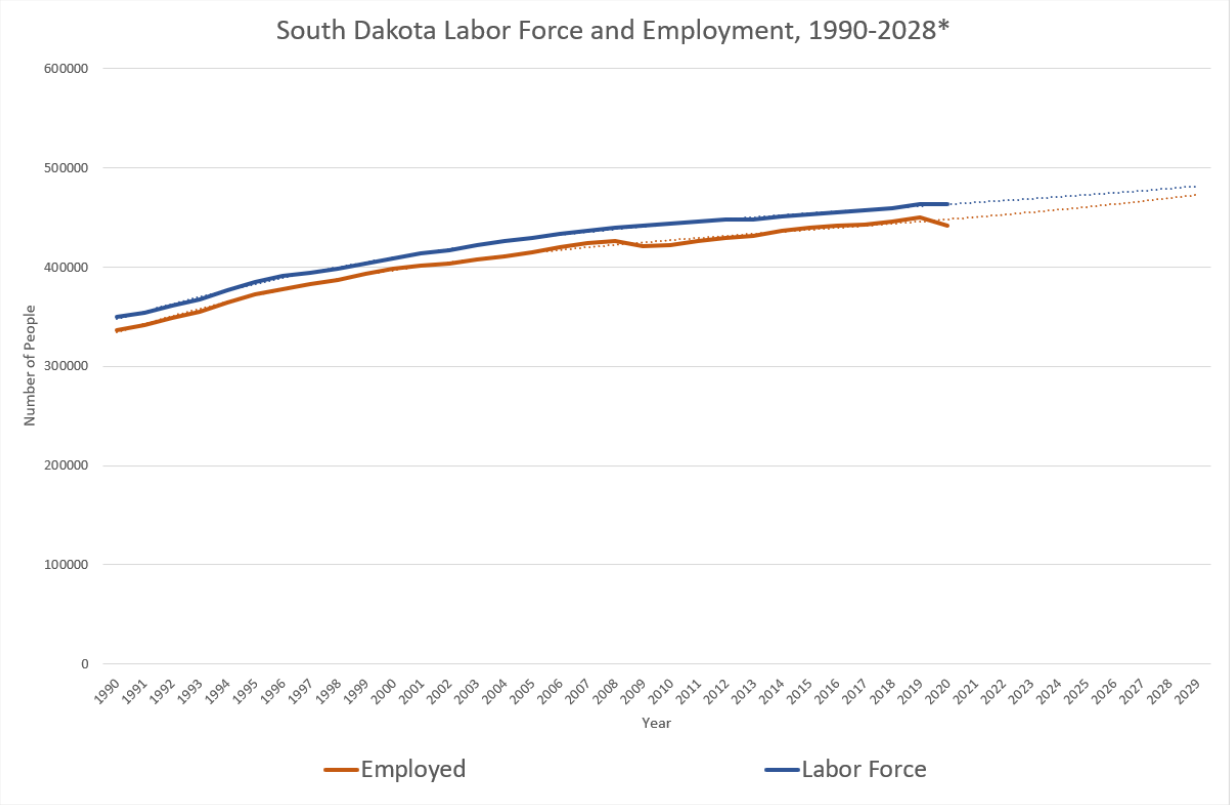
Freight demand is driven by multiple factors. Population growth has a direct impact. Population growth and density can also affect freight distribution patterns. Since 1990, population has increased steadily. The most recent population estimates of 884,659 from the U.S. Census Bureau, reflected an approximate 8.7% increase since the census of 2010. The state's two urban areas are Sioux Falls and Rapid City, situated east and west of the Missouri River, respectively. Both areas continue to grow at rates higher than the rural populations of the state.

Increased consumption of goods and services because of population growth increases the need for freight transportation as demand grows.

Employment

Population growth will also increase workforce availability. In 2020, South Dakota's unemployment rate reached 4.6%, however, the rate has stabilized down to 2.6% in 2021. The workforce available is projected to increase as the population increases. Figure 2-2 shows South Dakota's actual and projected labor force and employment from 1990-2028.

Figure 2-2: South Dakota Labor Force and Employment, 1990-2028

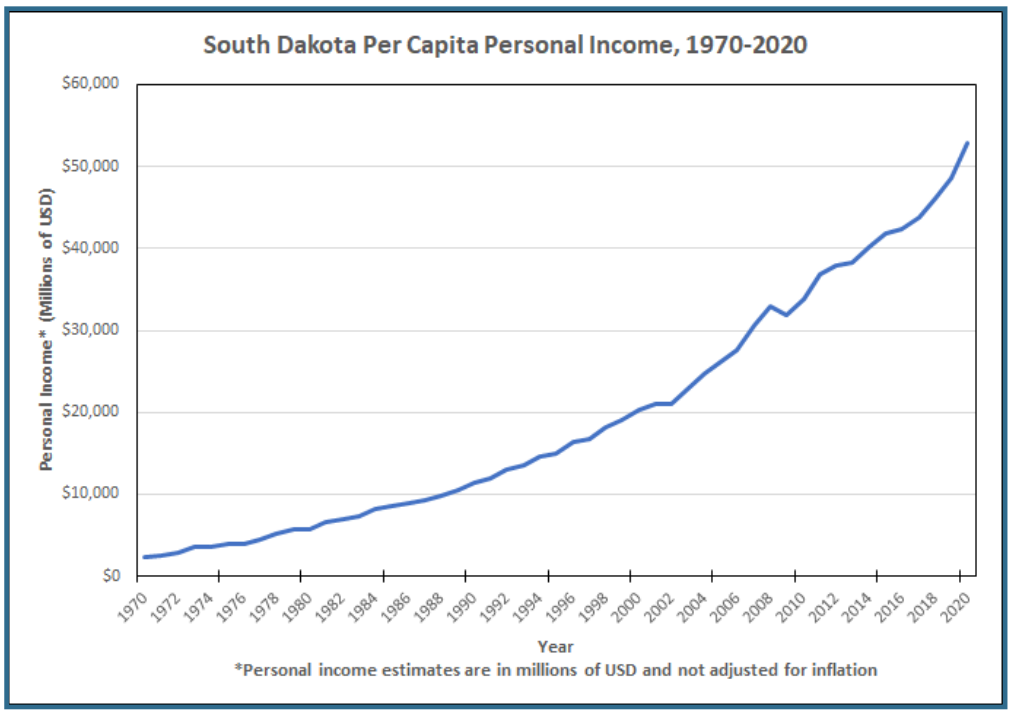


Source: South Dakota Department of Labor and Regulation (Actual); *SDDOT Project Development (Projections)

Per Capita Income

According to the Bureau of Economic Analysis, in 2020, South Dakota had a per capita personal income (PCPI) of $52,281 which ranked 18th in the United States and reflected a 9.0 percent increase from 2019. In 2010, the South Dakota PCPI was $41,417 which ranked 19th in the United States. The 2010-2020 South Dakota compound annual growth rate of PCPI was 3.7 drifting slightly below the national average of 3.9 percent. Figure 2-3 shows the overall trend of PCPI in the state since 1970.

Figure 2-3: South Dakota Per Capita Personal Income, 1970-2020



Source: U.S. Bureau of Economic Analysis

Commonly, increases in personal income will increase the amount of capital going into the economy. This will have a direct impact on the freight system as demand for goods and services are closely dependent on PCPI.

Freight Movement

South Dakota supplies the world with agricultural commodities. Farm to market freight movement is vital to the state's economy for both production and export purposes. Most of the top commodities moving to and from South Dakota are related to the agriculture industry. It is projected South Dakota will continue this trend into the future.

Freight movement is typically measured by weight and dollar value. Table 2-1 shows the top twelve commodities by weight moving to and from the state in 2020 and the projection for 2050. These commodities are typically high weight bulk shipments with a lower value. Of these, the top five commodities account for 85% of the total commodities shipped by weight in 2020 and are projected to continue at 82% of commodity weight in 2050. Cereal grains and Coal Not Elsewhere Classified (n.e.c.), which includes liquefied natural gas and propane, are projected at the top into 2050. Table 2-1 illustrates the top twelve percentages of the total weight in 2020.

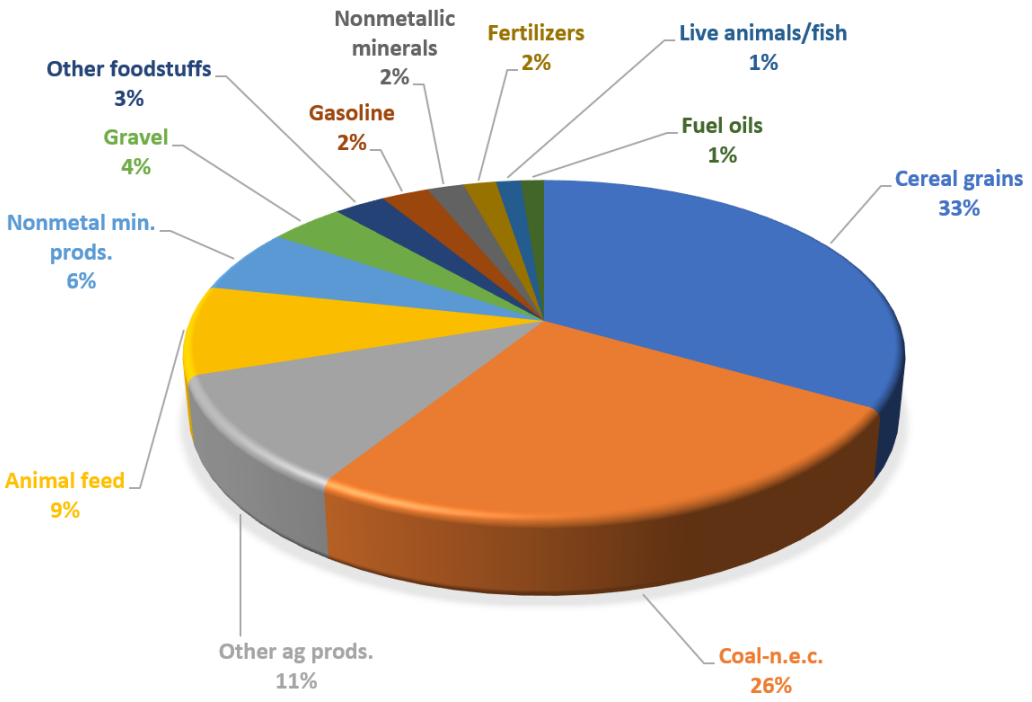
Source data for the following pages was extracted from the Freight Analysis Framework v5. The raw data can be retrieved at: https://faf.ornl.gov/faf5/

Table 2-1: South Dakota Commodity Shipments Ranked by **Weight**

Commodity - 2020	2020 Thousand Tons	Commodity - 2050	2050 Thousand Tons
Total	193,330.11	Total	272,300.85
Cereal grains	58,783.65	Cereal grains	65,577.67
Coal-n.e.c.	45,430.73	Coal-n.e.c.	63,733.90
Other ag prods.	19,207.77	Animal feed	30,420.43
Animal feed	15,099.85	Other ag prods.	24,209.90
Nonmetal min. prods.	10,797.81	Nonmetal min. prods.	16,418.67
Gravel	7,080.63	Gravel	10,632.09
Other foodstuffs	4,856.22	Fertilizers	8,165.70
Gasoline	4,451.65	Other foodstuffs	7,270.20
Nonmetallic minerals	3,442.06	Live animals/fish	7,168.74
Fertilizers	3,068.29	Gasoline	5,528.16
Live animals/fish	2,304.87	Mixed freight	3,653.43
Fuel oils	2,189.64	Wood prods.	3,192.99

The same weight information from above is shown in the pie chart as percentages of total freight shipments in Figure 2-4.

Figure 2-4: Top Commodities Percentage of Total **Weight** – 2020



Turning from weight to value, agricultural and mining commodities also make up the majority of the top twelve commodities ranked by value. Table 2-2 shows the top twelve commodities ranked by value for 2020 and projections for 2050. These top twelve commodities account for 85% of the total commodities shipped by value in 2020 and are projected to comprise 67% of total shipment value in 2050.

Table 2-2: South Dakota Commodity Shipments Ranked by **Value**

2020	Value Millions of US Dollars	2050	Value Millions of US Dollars
Totals	86,529.4	Totals	159,686.7
Coal-n.e.c.	8,646.8	Live animals/fish	19,040.6
Cereal grains	6,937.2	Mixed freight	13,096.5
Mixed freight	6,555.7	Coal-n.e.c.	12,244.5
Other ag prods.	6,428.2	Machinery	9,106.4
Live animals/fish	6,035.6	Chemical prods.	8,938.4
Machinery	5,029.9	Plastics/rubber	8,783.8
Electronics	4,149.9	Electronics	8,216.8
Motorized vehicles	3,982.4	Other ag prods.	8,033.6
Other foodstuffs	3,866.8	Cereal grains	7,800.6
Plastics/rubber	3,748.3	Motorized vehicles	7,775.9
Chemical prods.	3,539.6	Pharmaceuticals	6,609.0
Gasoline	2,383.5	Misc. mfg. prods.	5,842.1

Freight movement can be split into multiple categories: freight moving **within** South Dakota, freight moving from outside South Dakota to South Dakota (**Inbound**) and freight moving from South Dakota to a location outside South Dakota (**Outbound**). The following tables break down freight weights and values into these categories.

The top commodities by **weight** for freight shipments **within** the state are agricultural related goods. Table 2-3 on the following page lists the top six commodities shipped within the state in 2020 and what is projected for 2050. In 2020, cereal grains, other agricultural products, and animal feed accounted for 65% of the freight by weight transported within the state. Like 2017, cereal grains continued to lead the way by comprising 41% of the total commodities moving within the state.

Projected in 2050, agricultural commodities will continue to lead South Dakota's freight movement within by weight, but at 32% of the freight shipments within the state. The top six commodities will account for 81% of the freight movement within the state. Table 2-3 shows the 2020 volumes and 2050 projections for shipments of the top commodities within South Dakota by weight. Note that other foodstuffs commodity category is predicted to be replaced by live animals/fish in the 2050 projection.

Table 2-3: Top Commodities Moving **Within** South Dakota by **Weight**, 2020 and 2050

Commodity	2020 Thousand Tons	Commodity	2050 Thousand Tons
Total	87,150.81	Total	119,119.67
Cereal grains	35,979.13	Cereal grains	38,303.61
Other ag prods.	10,690.63	Animal feed	20,055.07
Animal feed	10,071.48	Other ag prods.	13,047.66
Nonmetal min. prods.	8,071.29	Nonmetal min. prods.	12,258.79
Gravel	5,475.43	Gravel	8,424.17
Other foodstuffs	2,153.92	Live animals/fish	4,438.91
All Other	7,240.46	All Other	10,912.84

The **value** of commodities transported **within** South Dakota in 2020 is shown in Table 2-4. The top six commodities transported by value are also related to agriculture. Live animals/fish are the top commodity shipped by value at $3.9 billion, while cereal grains come in as second at $3.7 billion. The top six commodities in 2020 accounted for 58% of the value of commodity shipments within the state and are projected to account for 61% in 2050.

The value of the commodities projected to be shipped within the state in 2050 differs in some ways to the top commodities moved in 2020. The top six commodities shipped by value will continue to be related to agriculture, but not necessarily in the same order. Chemicals are expected to move up to the second top commodity at $13.1 billion, while cereal grains are projected to drop to third at $4.0 billion. Live animals are expected to take the lead at $13.1 billion in 2050.

Table 2-4: Top Commodities Moving **Within** South Dakota by **Value**, 2020 and 2050

Commodity	2020 Value in Millions of US Dollars	Commodity	2050 Value in Millions of US Dollars
Total	$25,375.17	Total	$47,522.35
Live animals/fish	$3,946.21	Live animals/fish	$13,139.76
Cereal grains	$3,759.77	Chemical prods.	$4,278.46
Other ag prods.	$3,264.39	Cereal grains	$4,002.68
Chemical prods.	$1,713.41	Other ag prods.	$3,984.11
Other foodstuffs	$1,113.16	Mixed freight	$2,213.04
Fuel oils	$1,077.79	Other foodstuffs	$1,685.92
All Other	$3,388.82	All Other	$5,901.03

In 2020, the top commodities moving **inbound** by **weight** into South Dakota were coal n.e.c. (including natural gas and propane) followed by fertilizers and cereal grains. Most of the coal n.e.c. travels through pipelines to terminals where distribution begins. Propane is used to dry grains at elevators and is a vital resource for the agricultural industry. Cereal grains and fertilizers ranked second and third respectively. The top six commodities coming into South Dakota by weight comprised 76% of the total weight in 2020.

The top six commodities projected to move inbound in 2050 are not much different from what is seen today, except for mixed freight climbing in and other foodstuffs exiting the top six. The top six commodities are expected to account for 73% of the total inbound freight by weight, as shown in Table 2-5.

Table 2-5: Top Commodities Moving **Inbound** to South Dakota by **Weight**, 2020 and 2050

Commodity	2020 Thousand Tons	Commodity	2050 Thousand Tons
Total	43,008.37	Total	61,491.73
Coal-n.e.c.	23,468.07	Coal-n.e.c.	30,576.40
Cereal grains	3,175.72	Fertilizers	5,277.84
Fertilizers	1,886.89	Cereal grains	2,544.35
Nonmetal min. prods.	1,562.92	Nonmetal min. proc	2,486.98
Gravel	1,523.12	Mixed freight	2,133.98
Other foodstuffs	1,257.91	Gravel	2,015.26
All Other	4,190.03	All Other	6,638.29

The 2020 top commodities moving **outbound** by **weight** remained coal n.e.c., followed by cereal grains and fertilizers, as shown in Table 2-6. The top six commodities were agriculture related and accounted for 76% of the total weight of freight moving out of South Dakota. The 2050 projected commodities moving outbound are similar to what was moving outbound in 2020 from what was reported from 2015, with the exception of mixed freight replacing gasoline. The top six commodities are expected to account for 73% of the total outbound freight movement in 2050.

Table 2-6: Top Commodities Moving **Outbound** from South Dakota by **Weight**, 2020 and 2050

Commodity	2020 Thousand Tons	Commodity	2050 Thousand Tons
Total	63,170.93	Total	91,689.46
Coal-n.e.c.	19,879.30	Coal-n.e.c.	30,244.57
Cereal grains	19,628.80	Cereal grains	24,729.72
Other ag prods.	7,370.77	Other ag prods.	10,026.94
Animal feed	4,047.42	Animal feed	8,489.32
Gasoline	3,812.49	Gasoline	4,962.31
All Other	5,175.29	All Other	6,719.05

As shown in Table 2-7 below, the top six commodities by **value** moving **inbound** were coal n.e.c., mixed freight, machinery, pharmaceuticals, motorized vehicles, and electronics. The value of these top commodities made up approximately 51% of the total inbound value coming into South Dakota in 2020. Live animals/fish no longer appear in the top list of commodities by value, as it had in the previous freight plan. The projections for 2050 include mixed freight and pharmaceuticals at the top of the commodities moving into South Dakota, ahead of coal, n.e.c. in a close third. These three top commodities are predicted to comprise 31% of the total value of freight moving inbound in 2050. The 2050 projection also differs from the 2017 freight plan that predicted electronics instead of pharmaceuticals among the top three in the 2045 forecast horizon.

Table 2-7: Top Commodities Moving **Inbound** to South Dakota by **Value**, 2020 and 2050

Commodity	2020 Value in Millions of US Dollars	Commodity	2050 Value in Millions of US Dollars
Total	$31,941.44	Total	$61,533.14
Coal-n.e.c.	$4,256.51	Mixed freight	$7,633.22
Mixed freight	$3,931.21	Pharmaceuticals	$5,856.23
Machinery	$2,305.54	Coal-n.e.c.	$5,627.75
Pharmaceuticals	$2,111.91	Machinery	$4,394.75
Motorized vehicles	$2,048.76	Electronics	$4,219.85
Electronics	$1,694.87	Motorized vehicles	$3,599.30
All Other	$5,060.82	All Other	$12,828.57

Table 2-8 shows the 2020 commodities moving **outbound** by **value**; it lists coal n.e.c., cereal grains, other agricultural products, machinery, plastics/rubber as among the top five commodities. These top commodities accounted for 51% of the total commodity value moved

out of the state. The 2050 projection indicates plastics/rubber to replace cereal grains as the second of the top two commodities moving out of South Dakota. Coal n.e.c. and plastics/rubber are predicted to be 22% of the freight moving outbound value. The 2050 projection differs from the previous freight plan that reported coal, n.e.c. and electronics as the top two in 2045. The 2050 prediction indicates that other agricultural products will be replaced in the top five by mixed freight. The top five commodities accounted for approximately 43% of the commodities shipped out of the state, which is predicted to be 39% in 2050.

Table 2-8: Top Commodities Moving **Outbound** from South Dakota by **Value**, 2020 and 2050

Commodity	2020 Value in Millions of US Dollars	Commodity	2050 Value in Millions of US Dollars
Total	$29,212.77		$50,631.19
Coal-n.e.c.	$3,879.61	Coal-n.e.c.	$5,902.66
Cereal grains	$2,811.84	Plastics/rubber	$4,133.22
Other ag prods.	$2,373.25	Cereal grains	$3,507.09
Machinery	$1,932.64	Machinery	$3,345.17
Plastics/rubber	$1,762.39	Mixed freight	$3,250.22
All Other	$7,852.13	All Other	$13,771.85

Freight Movement by Mode

The majority of freight movement in South Dakota is by truck, pipeline and rail accounting for 95% of the shipments in 2020 and 2050 by **weight**. Table 2-9 shows the tonnage projections from 2020 to 2050. Trucks dominate 2020 and 2050 in moving freight. In 2020, trucks account for 63% of the freight movement by weight and are projected to account for 64% of the freight movement by weight in 2050.

Table 2-9: Mode of Freight Movement by **Weight** (Millions of Tons)

Mode of Freight Movement by Weight (Millions of Tons)	2020	2050	Percent Change
Total	187.906	264.169	41%
Truck	118.453	169.991	44%
Pipeline	41.668	59.858	44%
Rail	19.148	22.618	18%
Multiple modes & mail	8.636	11.701	35%
Air (include truck-air)	0.001	0.002	85%

By **value**, the majority of freight movement in South Dakota is by truck, multiple modes and mail, pipeline and rail account for the shipments in 2020 and 2050. Table 2-10 shows the value of freight by mode. Trucks continue to dominate from 2020 and 2050 as the top mode. In 2020 trucks accounted for 71% of the freight movement, by value, and are expected to account for nearly 73% of the freight movement, by value, in 2050. Air and multiple modes & mail will have the largest growth from 2020 to 2050.

Table 2-10: Mode of Freight Movement by **Value** (Millions)

Mode of Freight	2020	2050	Percent Change
Total	$83,630.73	$153,790.36	84%
Air (include truck-air)	$163.98	$353.89	116%
Multiple modes & mail	$10,658.00	$22,116.51	108%
Pipeline	$7,983.48	$11,476.12	44%
Rail	$3,803.57	$4,935.23	30%
Truck	$61,021.70	$114,908.63	88%

Trading Partners

South Dakota's top domestic trading partners in 2020 are bordering states and the state of Washington, as shown in Table 2-11. In 2020, Minnesota remained the top partner with the most tonnage and value and is projected to continue at the top through 2050 in weight. The other top major domestic trading partners in 2020 included Nebraska, Washington, North Dakota, and Iowa. The 2050 projections indicate that Iowa is second to Minnesota in freight value as it is today. Table 2-12 estimates the projected top trading partners in 2050 by weight and value.

Table 2-11: Top Trading Partners in **2020** by Weight and Value

Weight (Thousands Tons)			Value (Millions of USD)		
State	Tons	Percent	State	Dollars	Percent
2020 Total	**150,321.7**	**100.0%**	**Total**	**$54,587.9**	**100.0%**
South Dakota	87,150.8	58.0%	South Dakota	$25,375.2	46.5%
Minnesota	25,164.5	16.7%	Minnesota	$7,034.1	12.9%
Nebraska	6,095.5	4.1%	Iowa	$3,121.5	5.7%
Washington	5,951.5	4.0%	North Dakota	$2,187.6	4.0%
North Dakota	5,860.7	3.9%	Washington	$1,942.9	3.6%

Table 2-12: Top Trading Partners in **2050** by Weight and Value

Weight (Thousands Tons)			Value (Millions of USD)		
State	Number	Percent	State	Number	Percent
2050 Total Projected	**210,809.1**	**100.0%**	**Total**	**$98,153.5**	**100.0%**
South Dakota	119,119.7	56.5%	South Dakota	$47,522.4	48.4%
Minnesota	37,749.3	17.9%	Minnesota	$11,213.4	11.4%
North Dakota	9,480.3	4.5%	Iowa	$4,952.8	5.0%
Nebraska	8,212.9	3.9%	North Dakota	$4,539.3	4.6%
Washington	7,518.8	3.6%	Nebraska	$3,339.8	3.4%

In 2020, South Dakota internationally exported goods valued $1.389 billion, which increased to $1.858 billion in 2021. The top international trading partner was Canada with exports valued at $525 million, Mexico was second with exports valued at $314 million. Table 2-13 shows South Dakota's breakdown of export value to foreign countries, according to the U.S. Department of Commerce.

Table 2-13: Top International Trading Partners by Value **Exported**, 2020

Country	Trade Value (Millions of USD)	Percent
World	$1,379	100.0%
Canada	$525	38.1%
Mexico	$314	22.8%
China	$98	7.1%
Japan	$93	6.8%
Germany	$39	2.8%
All Other Countries	$310	22.5%

Source: U.S. Department of Commerce, International Trade Administration
Retrieved 2/8/2022 from: https://www.trade.gov/tradestats-express-national-and-state-trade-data

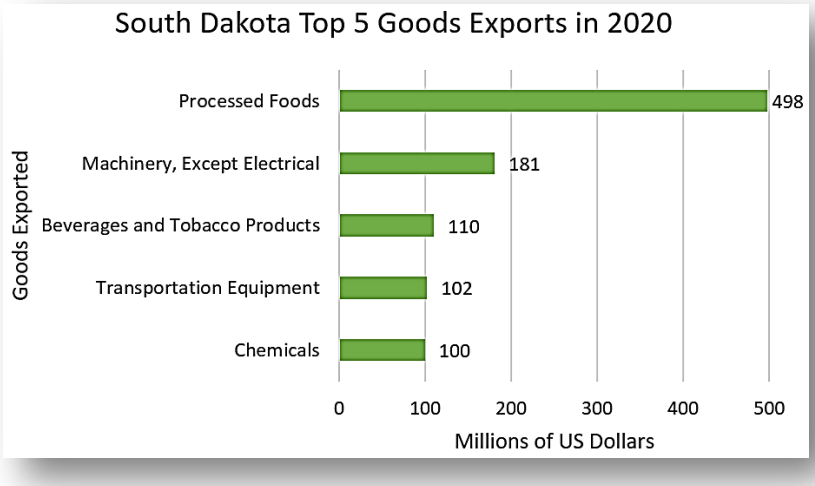
In 2020, Canada was also the leader in South Dakota's foreign import trade market with imports valued at $543 million, which is 47.6% of the market share. The rest of the top five included Brazil, China, Mexico, and Japan. The top five made up approximately 84% of the total imports to South Dakota. Table 2-14 shows the breakdown of South Dakota's imports from foreign countries.

Table 2-14: Top International Trading Partners by Value **Imported**, 2020

Partner	Trade Value (Millions of USD)	Percent
World	$1,261	100.0%
Canada	$428	33.9%
China	$230	18.2%
Brazil	$184	14.6%
Mexico	$77	6.1%
Germany	$58	4.6%
All Other Countries	$285	22.6%

The top valued South Dakota goods exported in 2020 are in shown in Figure 2-5. Processed foods remained as the top export up from $414 million in 2015 to $498 million in 2020; an increase of 20%. Beverages and tobacco products jumped from fifth to third of the top exports with a 14% increase. Chemicals appeared among the top five in 2020, replacing computer and electronic products previously reported in South Dakota's 2017 Freight Plan.

Figure 2-5: South Dakota Goods Exports in 2020 (Millions $)



Source: U.S. Department of Commerce; International Trade Administration

CHAPTER 3: Transportation System

Interconnectivity and Resilience

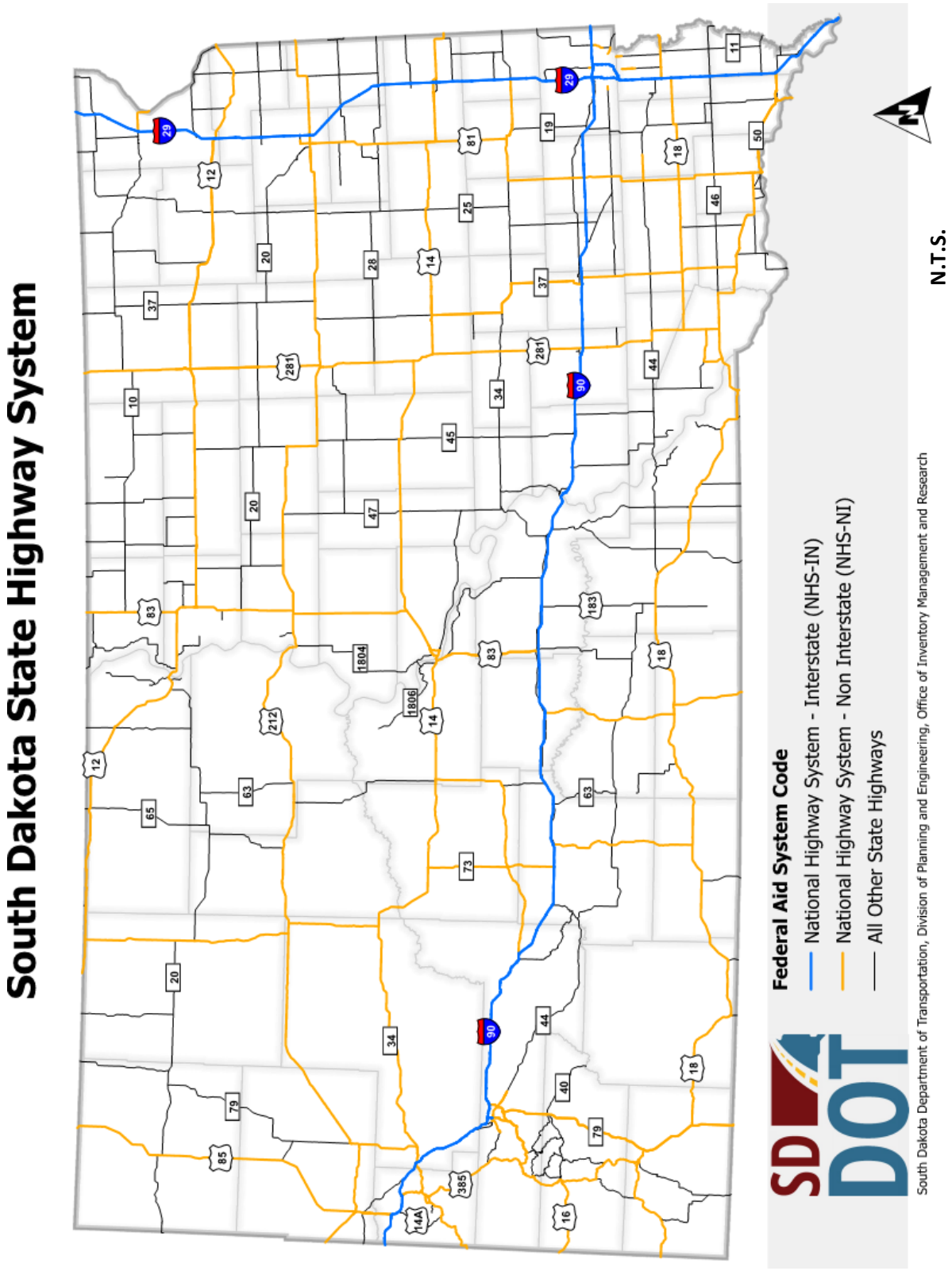
There is an interrelationship and intermodal nature of freight that includes port, air, rail, pipeline, and truck. Together, these modes of freight support production, consumption, and all economic activity as an interconnected and interdependent system. Through proper stewardship and allocation of resources, the SDDOT maintains a portion of these modes to provide a resilient component for the transportation of goods and services throughout the state.

South Dakota's Highway System

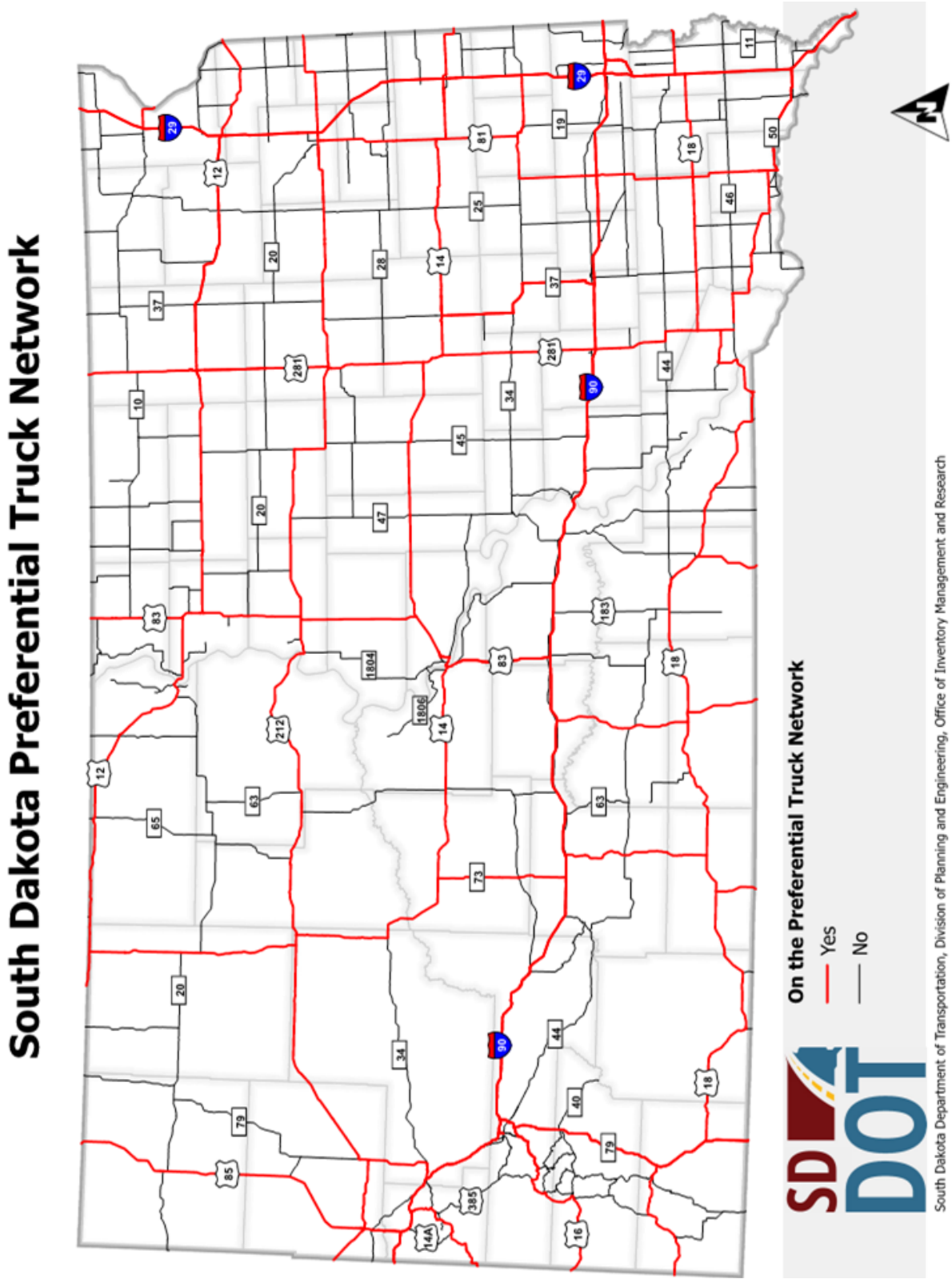
South Dakota's highway system is the lifeline of the transportation system that provides access to all areas of the state. South Dakota's roads range from Interstate, rural four-lane divided highways, multilane urban streets, paved secondary roads, and gravel roads. Bridges provide crossings at rivers, creeks, railroads, and other roadways. The combination of roadways, rails, and bridges provides a high level of access and mobility for freight movement.

The state's highway system comprises more than 7,794 centerline miles and approximately 1,807 structures. The state's preferential truck network comprises more than 4,700 miles with 969 structures. The state highway system is shown on Map 3-1 and the state's preferential truck network on Map 3-2. Most of the preferential truck network is included in the National Highway System (NHS). The NHS includes the Interstate highway system as well as other roads important to the nation's economy, defense, and mobility. The NHS provides connectivity to move freight to key intermodal freight facilities in South Dakota, the United States, Canada, and Mexico.

Map 3-1: South Dakota's Highway System



Map 3-2: South Dakota Preferential Truck Network



Pipelines

There are approximately 8,601 miles of natural gas and hazardous liquid pipelines in South Dakota, excluding service lines to end customers. While most natural gas is delivered to consumers through a network of distribution mains, petroleum and gas products are often delivered by truck from an above-ground terminal on the pipeline to their final point of consumption. Propane is essential for heating rural South Dakota homes and drying crops after harvest in areas that are not served by natural gas distribution pipelines.

The Dakota Access pipeline transports crude oil from the Bakken Formation in North Dakota to Illinois through 275 miles of pipeline in South Dakota. Pipeline miles by commodity are shown in Table 3-1 and pipeline operators in Table 3-2.

Table 3-1: Pipeline in South Dakota

Type of Pipeline	Miles
Distribution Mains	5049
Service Lines	3787
Intrastate Gas Transmission	288
Interstate Gas Transmission	1282
Interstate Hazardous Liquid	991
Crude	495
Refined Petroleum Products	494
HVL Flammable or Toxic	2

Source: South Dakota Public Utilities Commission

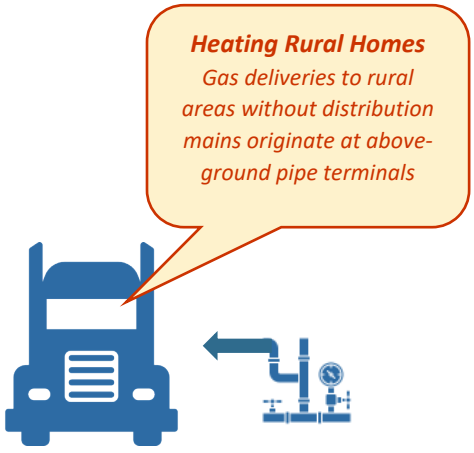


Table 3-2: Pipeline Operators in South Dakota

Pipeline	Owner/Operator
Private Gas Distribution	MEC, MDU, NW
Public Gas Distribution	Crooks, Garretson, Humboldt, Watertown
Intrastate Gas Transmission	Basin, Black Hills Power, Montana-Dakota Utilities, NorthWest Energy, SDIP, Sioux Falls Landfill, Xcel, Eastern Dakota Renewable Energy
Interstate Gas Transmission	Northern Natural Gas, Northern Border Pipeline, WBI, Great Plains Natural Gas
Interstate Hazardous Liquid	Dakota Access, Nustar, Magellan, TC Oil Pipeline Operations, Inc.

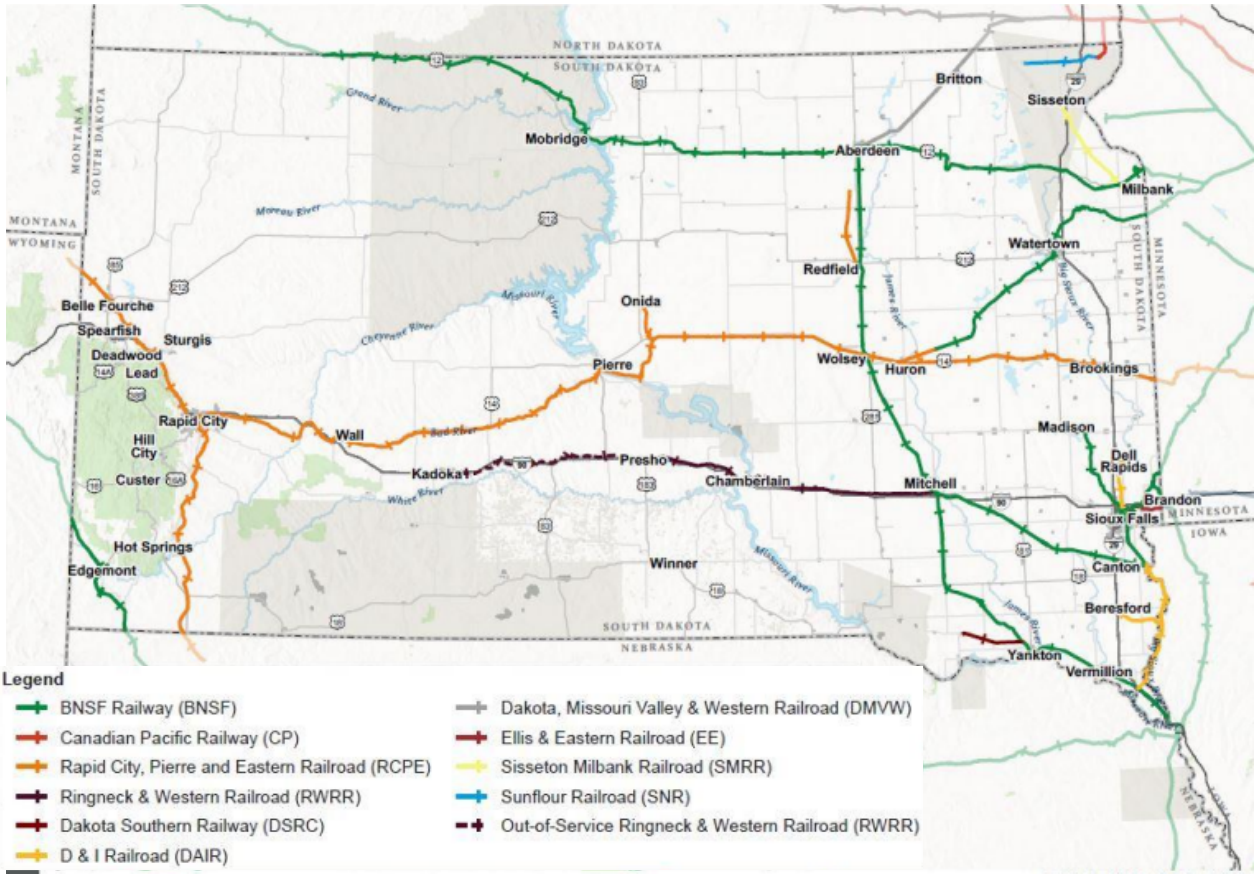
Source: South Dakota Public Utilities Commission (Data from Dec 2020)

Rail

Railroads are vital to the state's agricultural industry, which, in turn, is critical to the overall economy. Railroads are the primary means of moving South Dakota agricultural exports,

including ethanol, to U.S. and global markets. Trucks are generally not cost-effective for the long-haul transport of heavy and bulky commodities.

Figure 3-3: South Dakota State Rail Network, By Owner (2022)



Source: South Dakota Rail Plan, Chapter 2

The state's rail network, as depicted in Figure 3-3, totals 2,038 miles of active rail. In recent years there have been changes in ownership of the railways within the state, in an attempt to reduce state-owned rail miles that were purchased in the 1970s to keep the system viable as a vital component of agriculture freight movements. State-owned rail comprised 15% of the system in 2017, which has been reduced to 7.4% today. The current ownership composition of the rail system within the state is as follows:

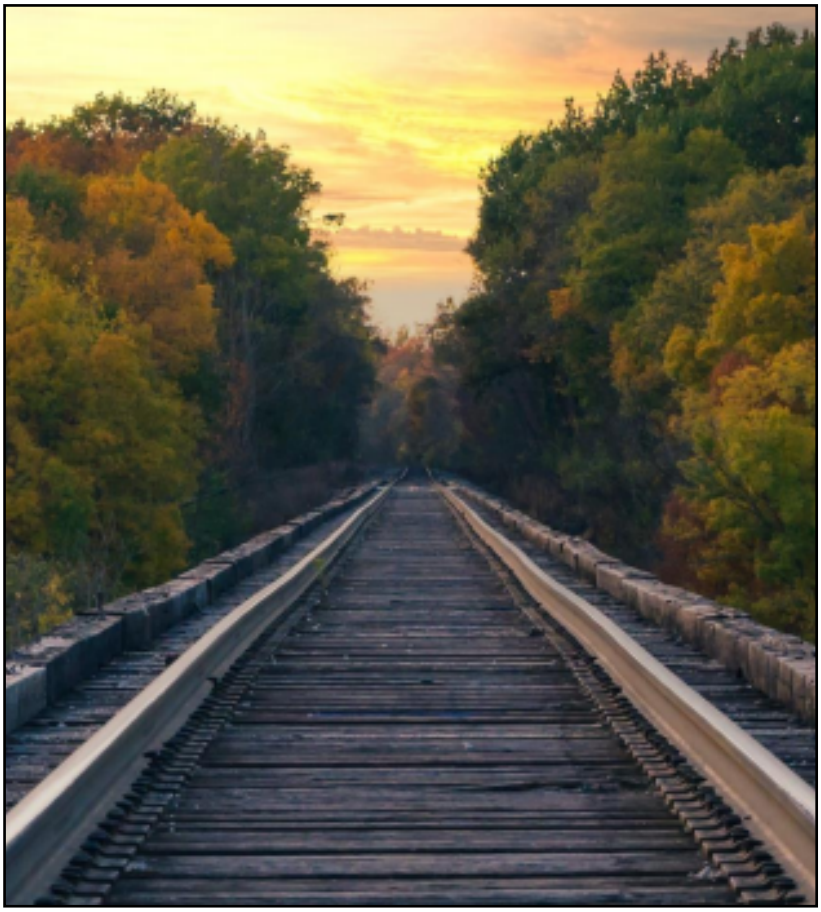
- Ringneck & Western owns 187.8 miles – 9.5%
- Rapid City, Pierre & Eastern (RCP&E) owns 577.5 miles – 29.4%
- Burlington Northern/Santa Fe (BNSF) owns 900.4 miles – 45.8%
- CP/SOO Line owns 6 miles – 0.3%
- D&I Railroad owns 84.8 miles – 4.3%
- Twin City Railroad owns 37.1 miles – 1.8%

- Ellis & Eastern (EE) owns 14.5 miles – 0.7%
- Sunflour Railroad owns 19 miles in-service and 9 miles inactive – 0.9%
- South Dakota owns 146.51 active rail miles with the following railway companies operating on the state-owned rail lines:
    - Dakota Missouri Valley & Western operates 76.71 miles – 3.9%
    - Dakota Southern operates 54.5 miles – 2.7%
    - Rapid City, Pierre & Eastern operates 15.3 miles – 0.8%

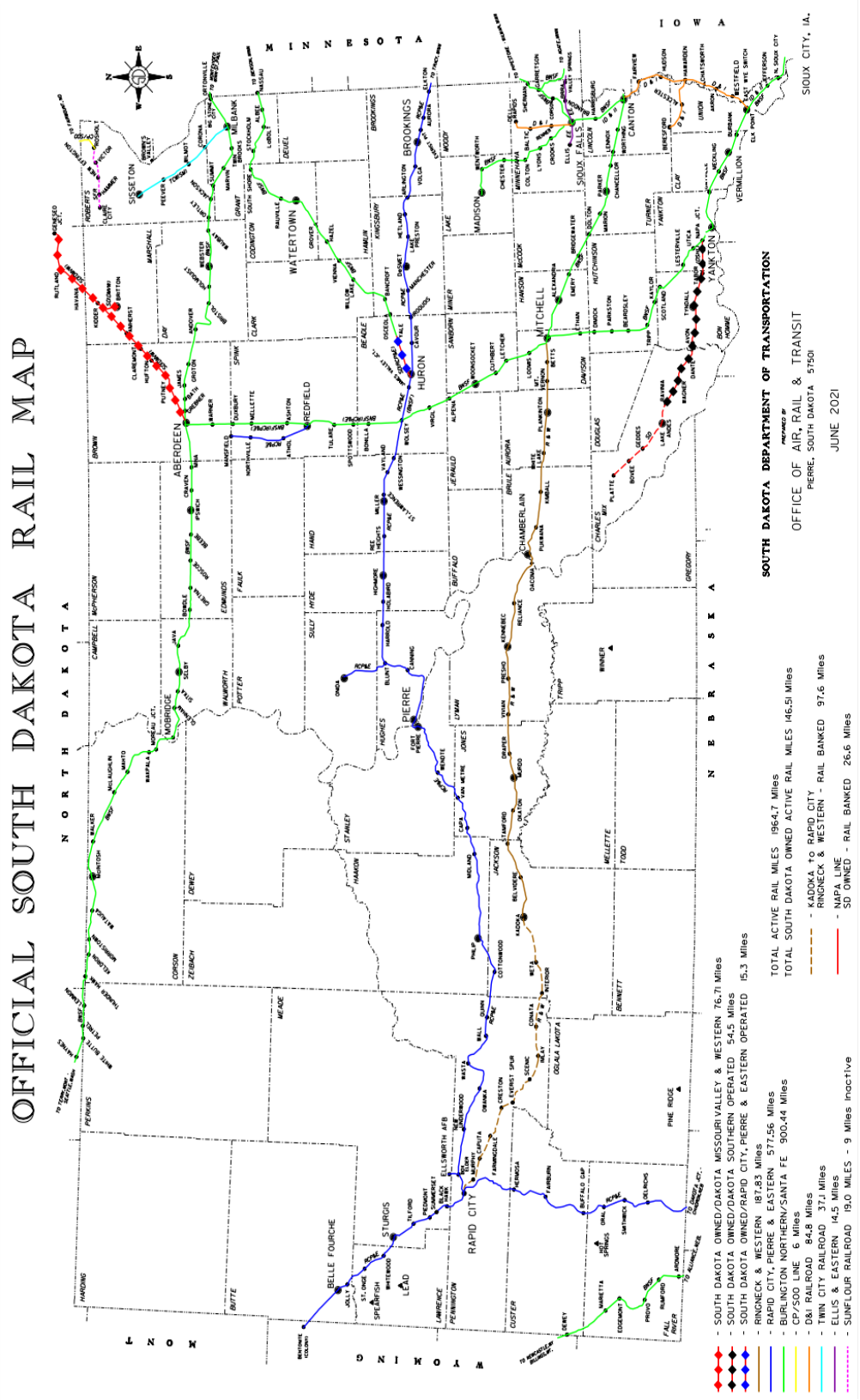
Note: Percentages are approximate, Source: State Rail Plan 2022, Table 1, Chapter 2

For more in-depth information regarding rail, check out South Dakota's past and current State Rail Plans at: https://dot.sd.gov/transportation/railroads/state-rail-plan#listItemLink_1738

Chapter 4 of the 2022 Rail Plan is devoted to proposed Freight Rail improvements and investments. The official State Rail Map is shown in Figure 3-4.



Map 3-3: Official South Dakota Rail Map



CHAPTER 4: Condition and Performance

Introduction

South Dakota's economy depends on an efficient and reliable transportation system. Agriculture producers and shippers rely on the transportation system to move their products to U.S. and global markets. South Dakota's transportation infrastructure has provided agriculture producers and shippers the network needed to serve their markets and to maintain a strong economy.

Condition of the Highway System

Efficiently moving freight across the highway system is vital to the economy of South Dakota. Sixty-seven percent of the freight moved in South Dakota is moved by truck. Agriculture commodities are a major contributor, so it is vital for the highway system to be in adequate condition to move these products from farm to market. The majority of the first and last miles in the commodity chain are moved by truck.

South Dakota uses a pavement management system to create a Surface Condition Index (SCI) for pavement condition. Data used to compute SCI is gathered on a yearly basis. SCI takes into account different types of pavement cracking, roughness, rutting, punchouts, faulting, joint condition, and patching depending on the surface type for asphalt and Portland cement concrete. It uses a scale from 0 to 5 with four rating categories, excellent, good, fair, and poor shown below.

South Dakota's National Highway System is in very good condition with 94% of the roadways in excellent or good, 5% in fair, and 1% in poor condition. Table 4-1 shows the percent of pavement in excellent, good, fair, and poor condition on the National Highway System and the range for each category. South Dakota developed performance targets for pavements that are published in the Transportation Asset Management Plan (TAMP). The performance measures and targets developed in the Transportation Asset Management Plan support the freight plan's goals and strategies.

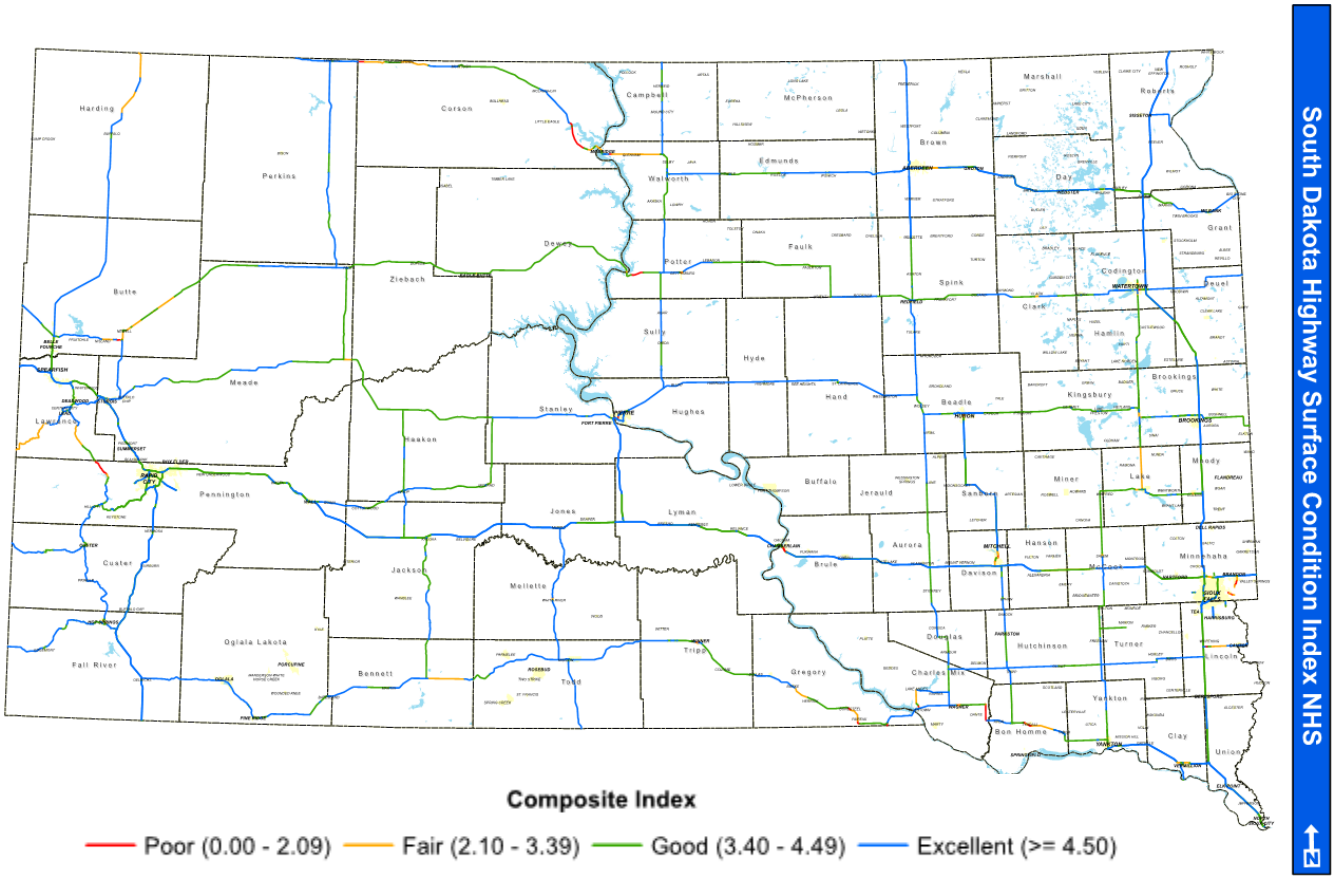
Table 4-1: Surface Condition Index Values and 2021 Pavement Condition on the NHS

Composite Index Value	Rating	SD NHS Pavement Condition
5.00 to 4.50	Excellent	54%
4.49 to 3.40	Good	40%
3.39 to 2.10	Fair	5%
2.09 to 0.00	Poor	1%

Source: South Dakota Department of Transportation

Figure 4-1 shows the locations of the pavement condition on the NHS. Projects are programmed in the 2022-2025 Statewide Transportation Improvement Program (STIP) according to pavement management priorities.

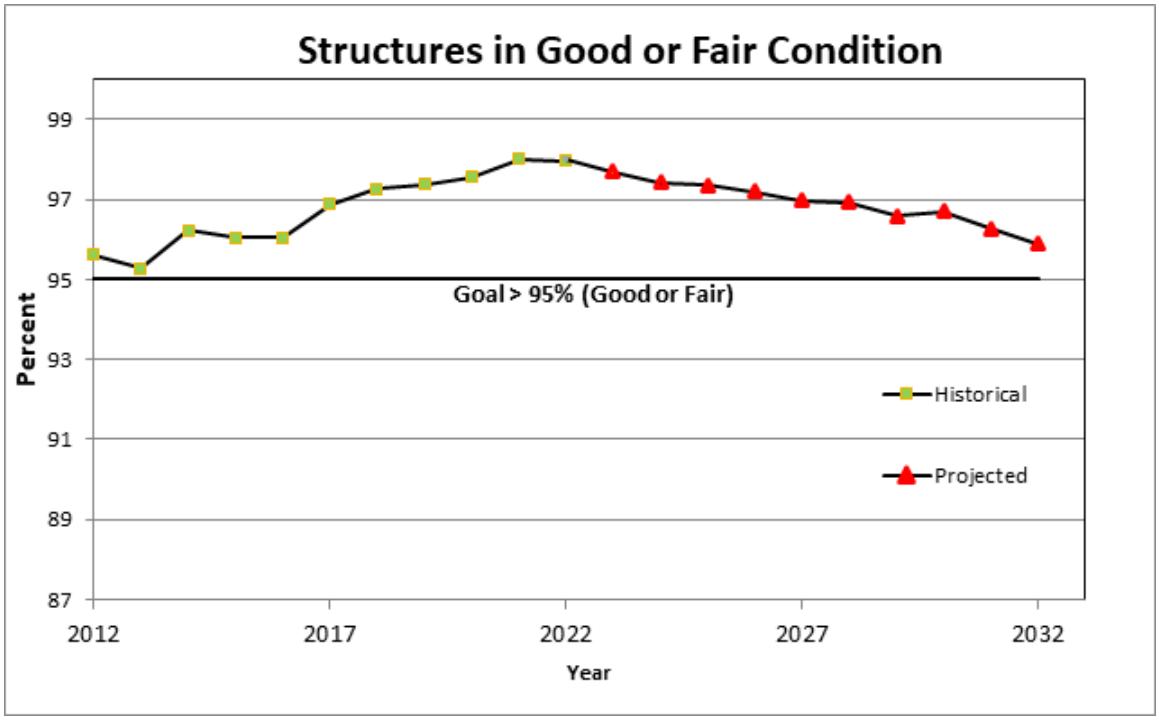
Figure 4-1: South Dakota Highway Surface Condition Index NHS



Bridge condition is determined from the condition rating of the bridge deck, substructure and superstructure. The condition of a bridge, commonly referred to as structure, is measured by good, fair and poor. South Dakota owns 1807 structures on the State Highway System. South Dakota's performance target is to have less than 5% rated in the poor category and has consistently achieved this mark since 2011. In 2021, the South Dakota Department of Transportation reported 2.4% in poor condition as it continues to preserve and maintain bridges and culverts efficiently. South Dakota developed performance targets for structures that are defined in the Transportation Asset Management Plan, which can be found at https://dot.sd.gov/media/documents/SDDOT2019TAMPFHWASubmittalrevised8-28-2019.pdf

The structure performance measures and targets support South Dakota's Freight Plan strategies by providing a safe and efficient transportation system. Figure 4-2 shows historical and projected condition of the state-owned structures.

Figure 4-2: Condition of State-Owned Structures

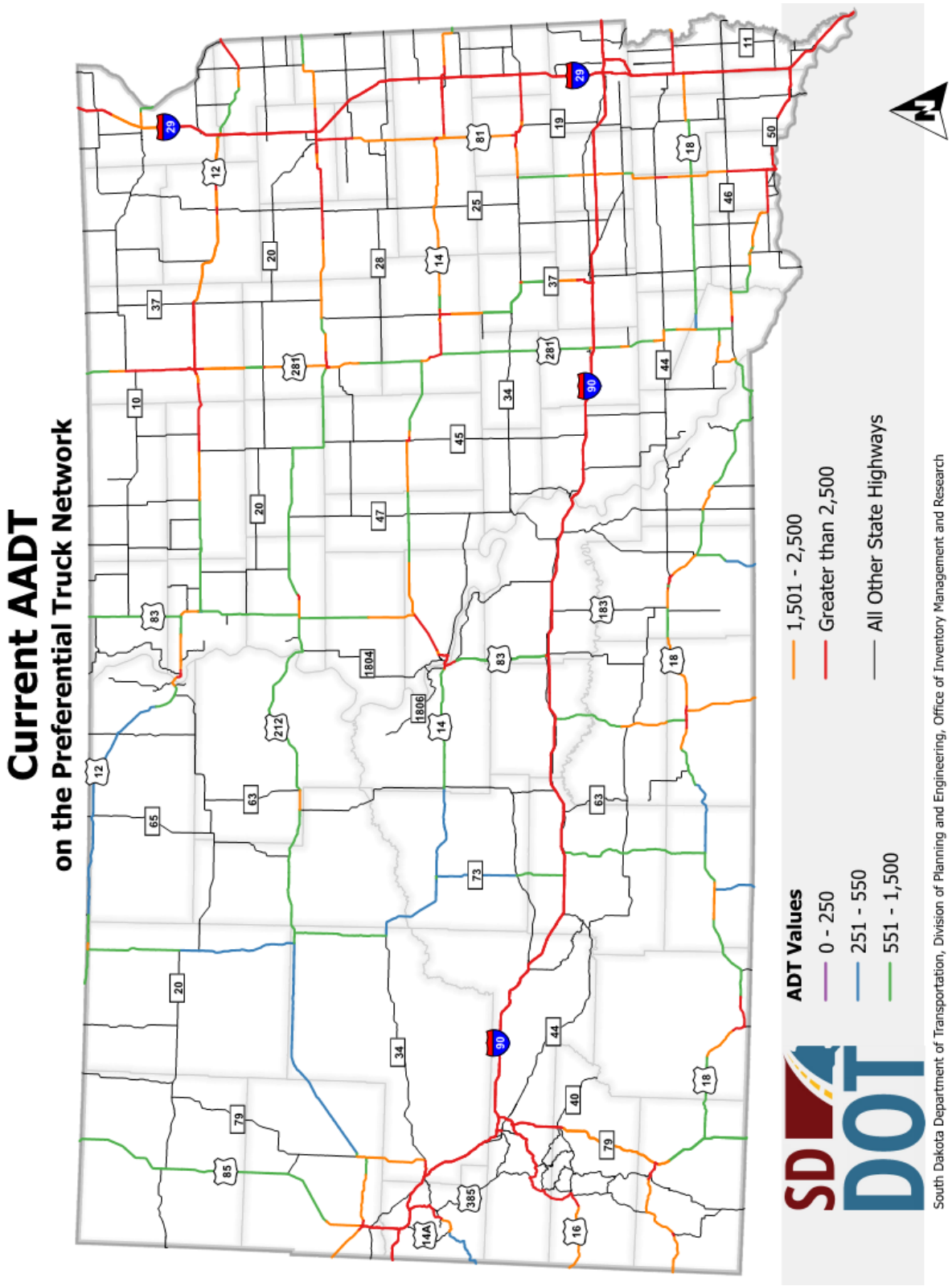


Traffic

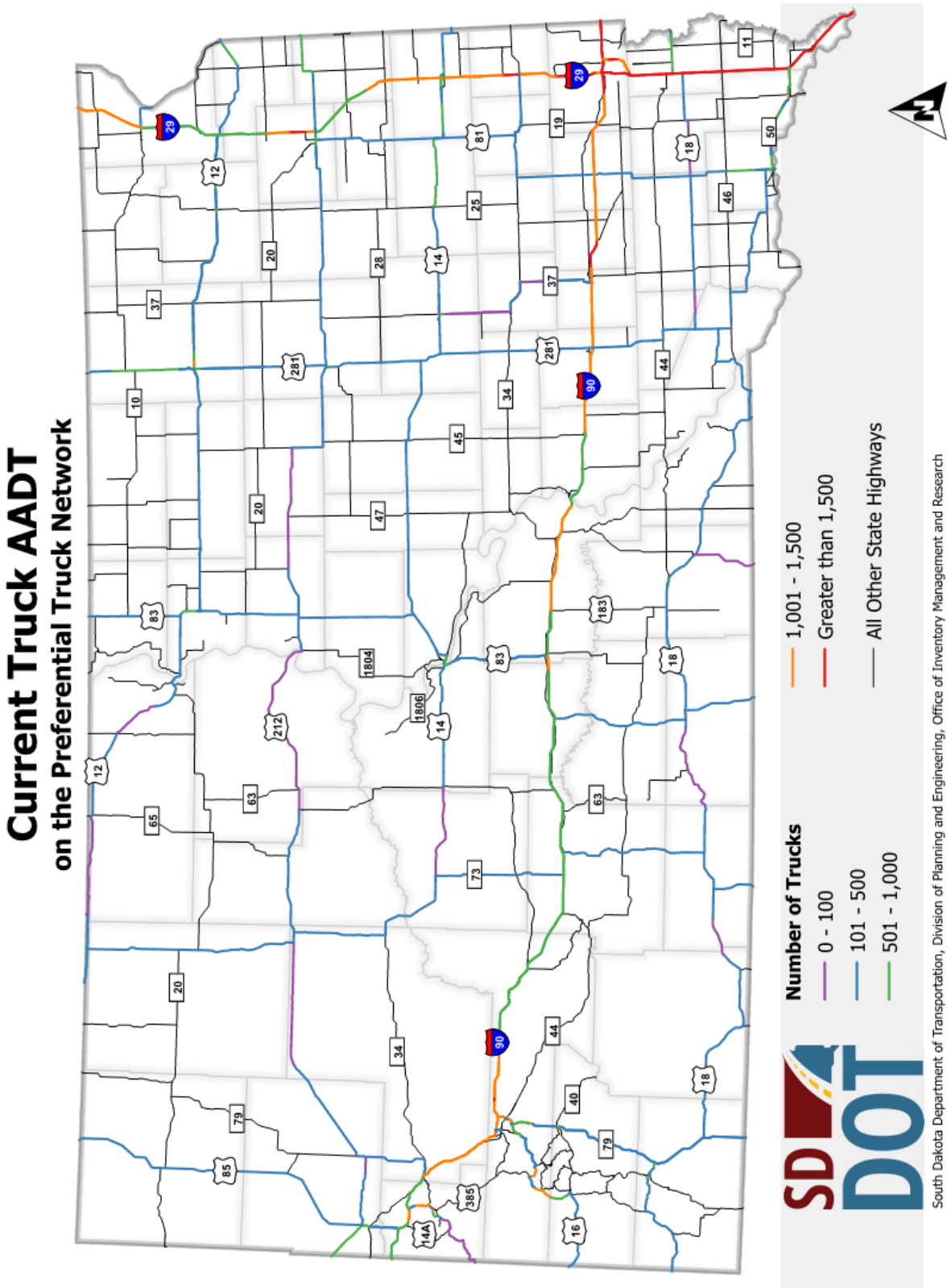
Efficiently moving freight across the highway system is vital to the economy of South Dakota. Truck traffic in the state is concentrated on the Interstate system, where truck traffic ranges from 1000 to greater than 5000 trucks per day depending on the highway segment. The higher truck traffic is located around the Sioux Falls area where segments show greater than 5000 trucks per day. Overall, the truck traffic on the Interstate is approximately 20 to 25 percent of the total traffic.

The majority of the non- Interstate preferential truck network consists of two-lane rural highways which have an average annual daily traffic (AADT) of 2500 or fewer vehicles per day and truck traffic of less than 200 per day. The average truck traffic on the non-Interstate preferential truck network ranges from 10 to 20 percent of the total traffic. Map 4-1 shows the 2021 AADT and Map 4-2 shows the 2021 AADT truck traffic on the preferential truck network.

Map 4-1: Current Average Annual Daily Traffic on the Preferential Truck Network



Map 4-2: 2021 Average Annual Daily **Truck** Traffic on the Preferential Truck Network



One performance measure to indicate system performance is travel time reliability. The Federal Highway Administration is contracting the collection of travel time data throughout the nation on the National Highway System using the Regional Integrated Transportation Information System (RITIS). It is a tool developed by the Center for Advanced Transportation Technology (CATT) Laboratory that uses this data to show how the National Highway System is moving traffic in relation to the speed limit. In 2021, South Dakota's Interstate system had a 99.9 percent travel time reliability rating. The Interstate was flowing at acceptable speeds 99.9 percent of the time. South Dakota's non-Interstate National Highway System had a 95.2 percent rating in 2021. These ratings show South Dakota has minimal congestion on the state's highways. Table 4-2 shows the travel time reliability for the Interstate and the non-Interstate NHS for all vehicles and the truck travel time reliability index for the Interstate.

A formal definition for travel time reliability is the consistency or predictability to travel a certain distance, as measured from day to day, and /or across different times of the day. Personal and business travelers value reliability because it allows them to accurately plan departures and arrivals with minimal unproductive time. Shippers and freight carriers especially rely on predictable travel times because manufacturers often use "just-in-time" and "lean manufacturing" practices to maximize economic efficiency.

Table 4-2: Travel Time Reliability on the Interstate and NHS

Year	Interstate Reliability	NHS-Non Interstate Reliability	Truck Travel Time Reliability Index*
2017	99.8	94.0	1.15
2018	100.0	93.6	1.16
2019	99.9	92.8	1.19
2020	99.9	95.0	1.15
2021	99.9	95.2	1.19

*NOTE: This is the PM3 Index, which is a different measure than the Interstate Trucks Reliability shown in the previous plan.

Winter weather, however, does have an impact on travel time and freight movement in South Dakota. During an extreme winter weather event, traffic slows resulting in a dramatic decrease in travel time reliability. To help travelers plan for winter storm delays, SDDOT provides travel advisory and condition information predominantly through its 511 system, complemented with timely media feeds. Schools, governments, and local businesses close or have limited staffing during winter storm events to reduce the number of drivers on the road in the interest of public safety. South Dakota actively participates in multi-agency and multi-state planning efforts to better prepare for weather-related emergency events. The SDDOT's plowing efforts are regionally recognized for clearing roads efficiently and safely.

During interstate closures in South Dakota, there is a multi-agency coordination effort to get the interstate open as quickly and safely as possible. While interstates are closed, truck parking can

become problematic, yet South Dakota is committed to making advances in improving of truck parking during these events. The state recently completed its 2020 Decennial Interstate Corridor Study (ICS) that incorporated truck freight movements and accommodations into the study as part of SDDOT's preparations to improve.

From the 2020 ICS, four broad types of parking facilities within ½ mile of the Interstate corridor were evaluated:

- **Shipper/Receiver**; warehouses, manufacturing facilities, retail outlets
- **Public Facilities**; rest areas, scenic overlooks, weigh stations, ports of entry
- **Private Facilities**; gas/convenience stores, hotels, motels
- **Unauthorized Parking**; shoulders of Interstate on-off ramps, vacant lots, on-street parking in commercial or residential areas

The inventory based on these categories is shown in Table 4-3 and Figure 4-3. It is important to note that only 6% of the available parking facilities are publicly owned, while 34% of the sites where truck parking was recorded were at sites considered unauthorized.

Table 4-3: Total Number of Identified Truck Parking Sites Within ½ Mile of Interstate System

Route	Number of Sites				
	Private	Public	Shipper	Unauthorized	Total
I-29	52	12	97	79	**240**
I-90	96	31	117	139	**383**
I-190	1	0	1	1	**3**
I-229	4	0	26	7	**37**
Total	**153**	**43**	**241**	**226**	**663**

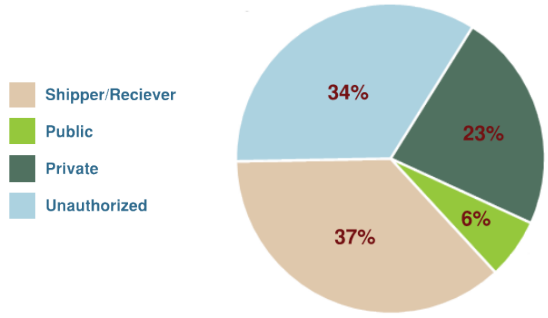


Figure 4-3: Truck Parking Sites by Type

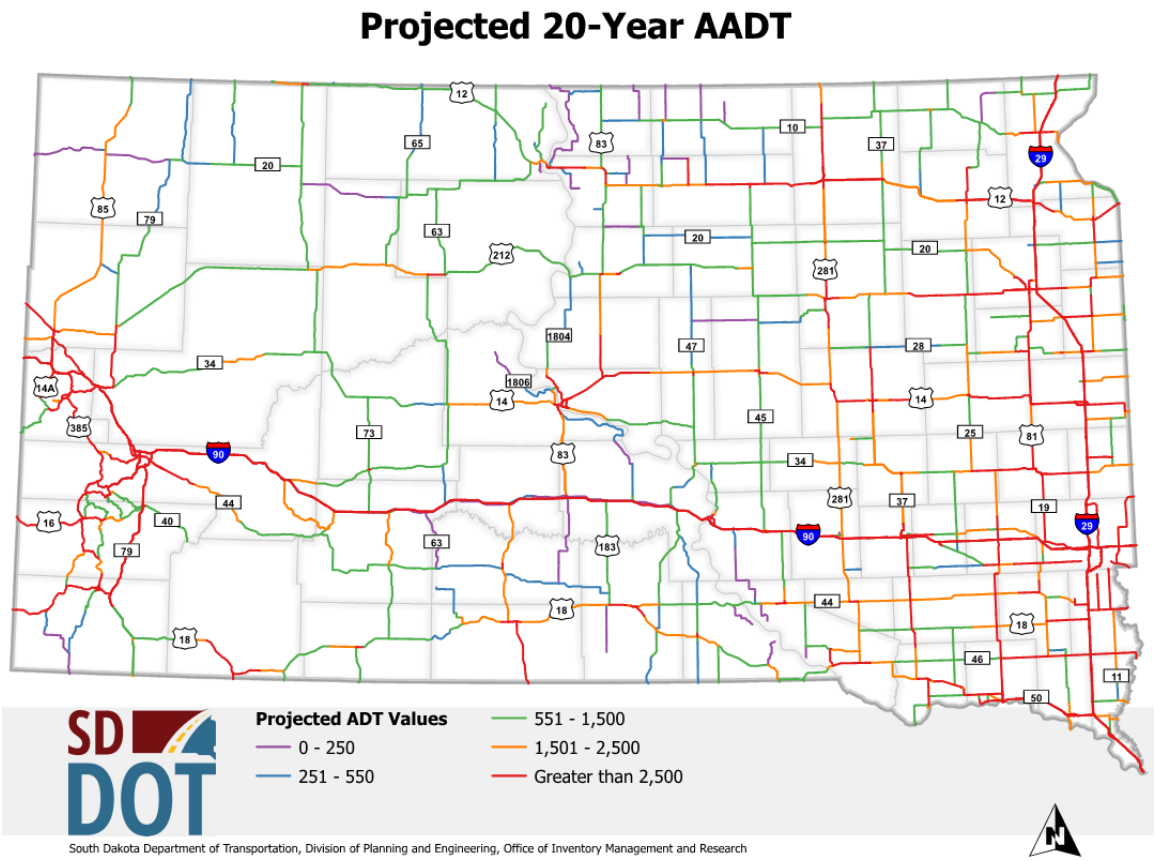
South Dakota participates in a multi-state planning effort to accommodate truck parking through the Northwest Passage Freight Task Force that facilitates and coordinates topics of mutual benefit to improve freight movement along the I-90 corridor to the pacific coast.

On most of the highway system in South Dakota, normal traffic flow depends on the posted speed the driver prefers to drive and it is not restricted by congestion. There are no bottlenecks in South Dakota.

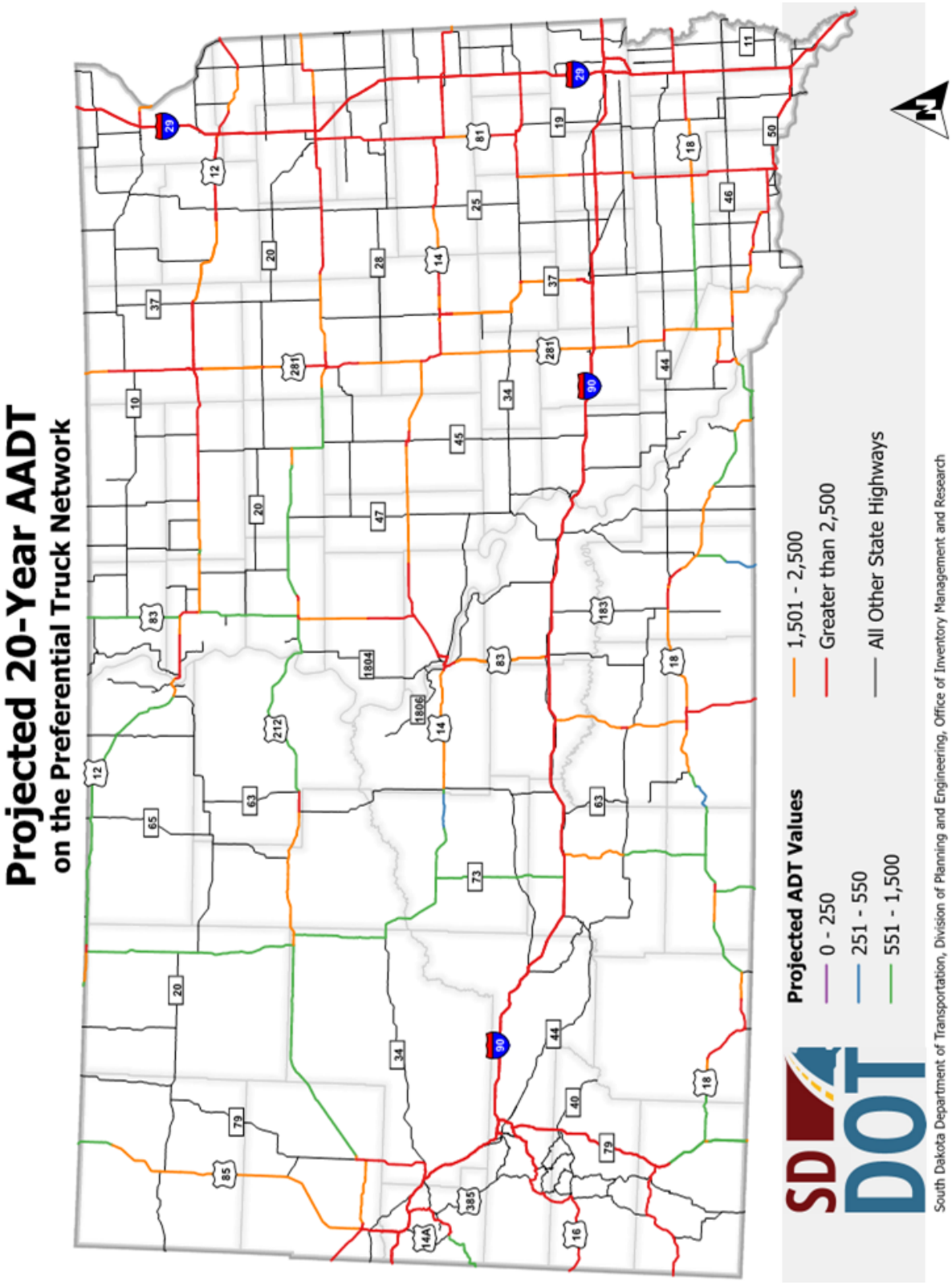
South Dakota monitors traffic on the highway system using automatic traffic recorders and annually conducts traffic counts at specified locations. South Dakota also conducts a decennial Interstate corridor study to look at the operation of the Interstate System to ensure that mainline and interchanges operate at an acceptable level of service and to verify compliance with current Interstate design standards. South Dakota analyzes current and 20-year traffic projections to prioritize improvements that mitigate any issues or deficiencies. Figure 4-4 shows the projected AADT.

Traffic is also expected to increase on the preferential truck network along with truck traffic. Map 4-3 shows the 20-year projected traffic on the preferential truck network and Map 4-4 shows the 20-year projected truck traffic.

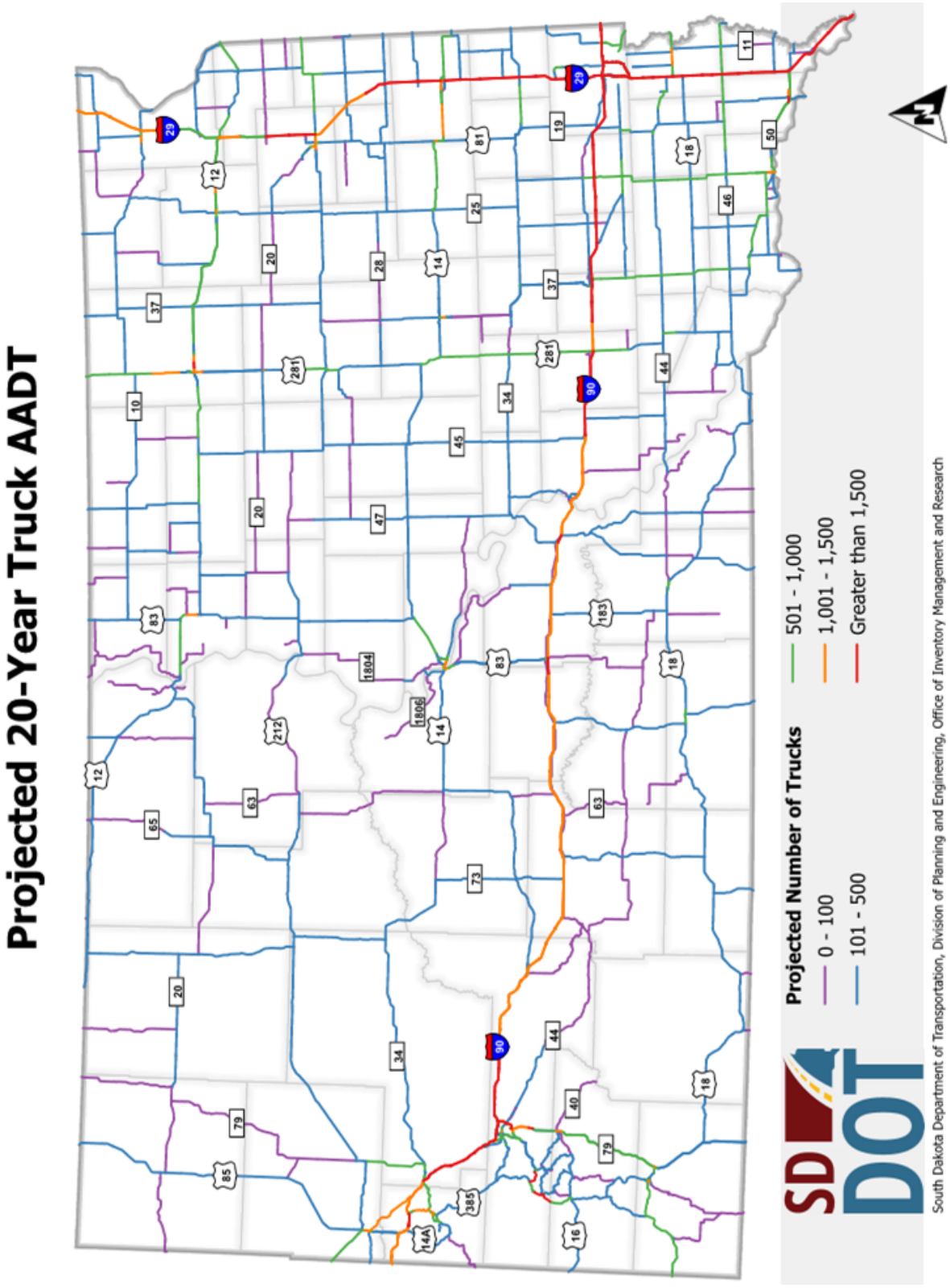
Figure 4-4: Projected 20-year AADT



Map 4-3: 2040 Projected 20-year AADT on the Preferential Truck Network



Map 4-4: Projected 20-year Truck AADT



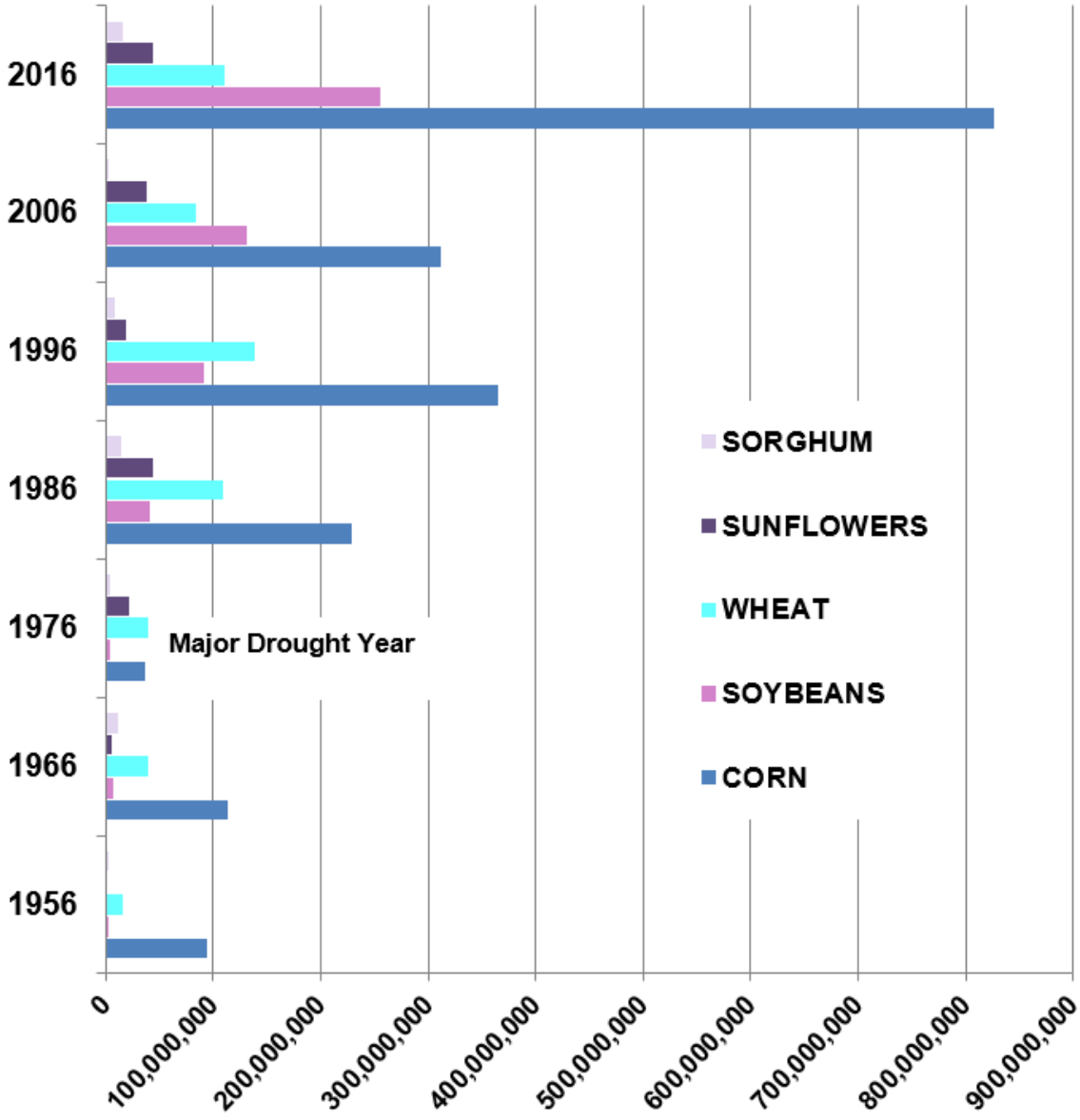
Agricultural land use and commodity movements may determine locations where transportation improvements and asset modifications are needed. Although the highway network has available capacity, grain elevators and agricultural processing facilities like ethanol plants may concentrate truck traffic. During harvest, or when a 110-car shuttle train is being loaded for rail transport, some corridors may be busy. Loading one shuttle train can require more than 400, 18-wheel truck loads. Also, large dairy operations generate traffic as feed, forage, and milk are transported on rural roads in a fashion that resembles moving grain to cattle feedlots. From an asset management standpoint, these facilities may increase stress on transportation pavements and bridges which may increase the rate of deterioration. Though rural congestion and capacity are of concern, the size and weight of modern agricultural machinery can become a burden on highways that do not have a stabilized subbase in place.

Average South Dakota corn crop yields have increased by about 2 percent per year for the past two decades, plus the acreages planted to corn production continue to increase. Recent growth in corn production has been remarkable, growing by over 780 percent since 1956 and more than doubling since 1996. Production of other crops like wheat, soybeans, and sunflowers has also increased.

Agricultural freight movements have kept pace with these increased yields. The importance of good highways to move crops to rail terminals, processing facilities, and points of animal feeding or conversion cannot be overstated. Quick access from truck to rail reduces producer's costs and it also reduces the generation of greenhouse gases and carbon because of the energy efficiency of rail. Farmers have built large privately-owned grain storage bins on their property to store commodities. This allows the movement of commodities from the farm to the terminal according to market demand or when convenient for the farmer. Field grain tubes are also used to store commodities in the fields and then move crops to grain terminals intermittently. These practices have helped decrease harvest peak travel demand on the highway network and reduced short-term congestion between passenger vehicles and farm machinery movements.

There has been an increase in agricultural commodity prices, acres under cultivation, improvements in crop genetics, and management practices which created agricultural freight growth which was addressed by additional intermodal facility capacity. Figure 4-5 shows the crop production from 1956 to 2016 for sorghum, sunflowers, wheat, soybeans, and corn in 10-year increments to show long-term trends and control for short-term fluctuations due to farmers' responses to short-term markets, droughts, and other factors.

Figure 4-5: South Dakota Crop Production in Bushels

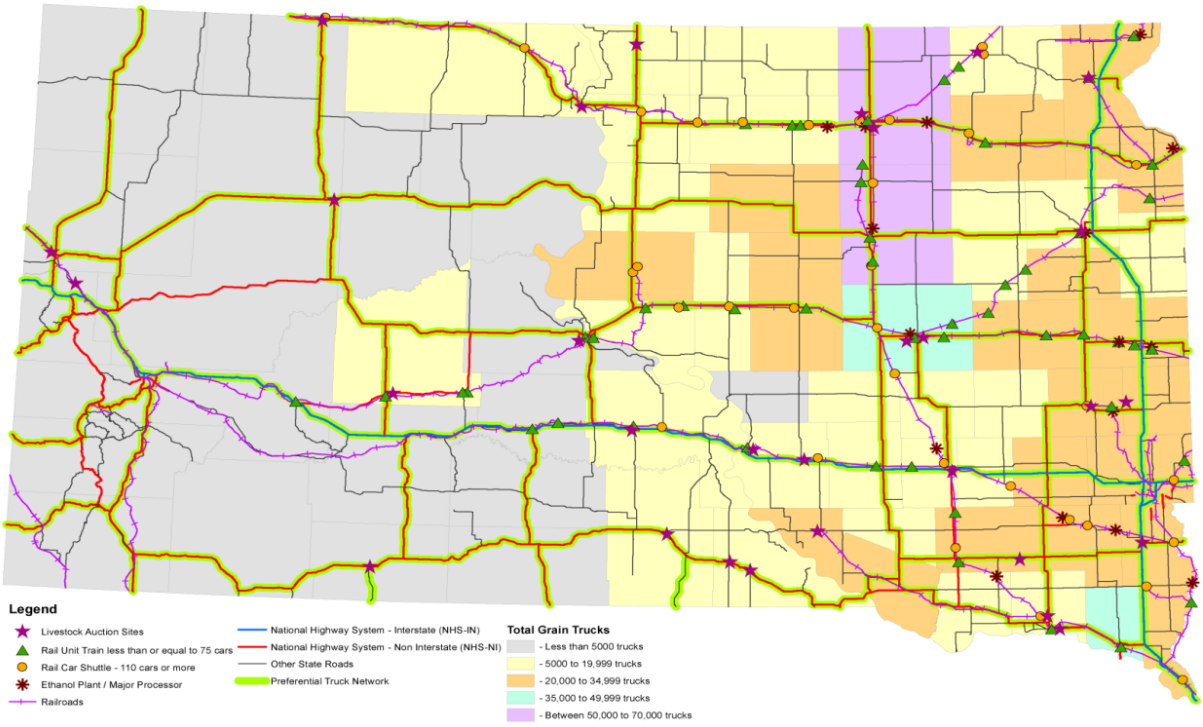


Source: NASS

Commodity movements for corn, wheat, soybeans, sunflowers and sorghum generate the equivalent of over 1 million 18-wheel truck trips per year on average. Some data is not disclosed because of confidentiality or the limited number of farmers growing a particular crop. Such a data gap would result in an underestimation of production. Figure 4-6 shows the estimated county commodity movements by trucks based on average annual production levels relative to the locations of processing and shuttle train facilities. The truck movements are

estimated based on an 18-wheel configuration at 80,000 pounds using average annual crop production over multiple years. The numbers estimate the movement occurring only one time, but it may occur several times from field to storage bin, and finally to market. Consequently, it is probably an underestimation of the total truck movements. Most of the data is at the county level. Using the Federal Highway Administration's Freight Analysis Framework, there could be about 1.5 million agricultural trucks if all the internal shipments used fully loaded 18-wheel trucks. This is fifty percent over the rough estimate using only agricultural production tonnage to estimate commodity truck volumes.

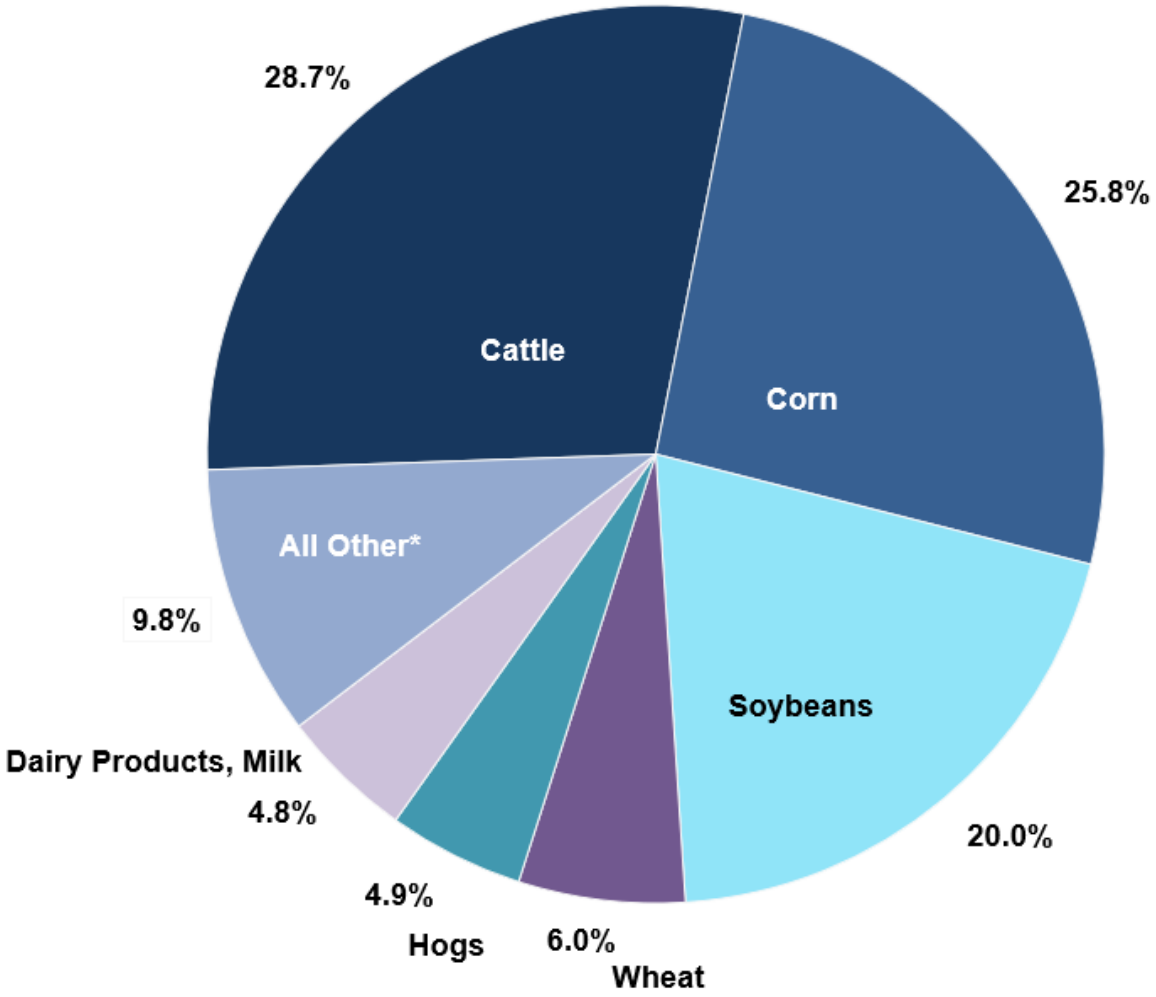
Figure 4-6: Estimate of Annual Commodity Movement by Trucks



In the previous Freight Plan, cattle outnumbered people in South Dakota by about 5:1 at 3.95 million. In 2021, approximately 6.02 million cattle were inventoried, increasing this ratio to nearly 7:1. There were approximately 1.2 million hogs and 255,000 sheep reported in 2017. Currently, hogs have increased to 2.01 million while sheep decreased to 235,000. In 2021, total farm cash receipts were about $9.16 billion. Over 90 percent of farm cash receipts came from cattle and calves, corn, soybeans, wheat, hogs, and dairy and milk as shown in Figure 4-7. Cattle movements do not generate as many trucks as crop commodities, but cattle values exceed

most crop values. Transportation asset management will need to focus on serving these important freight traffic generators.

Figure 4-7: Percent of Farm Cash Receipts by Commodity



Source: Economic Research Service, USDA. ***All Other*** consists of sunflowers, hay, turkeys, chicken eggs, sorghum, honey, oats, millet, dry beans, rye, barley, wool, flaxseed, mink pelts, mohair, farm chickens, and other products.

Cattle and calf movements may generate over 30,000 truck equivalent trips per year in single movements from points of production. This is a minimum estimate based on typical load capacity of an 18-wheel configuration. Livestock move using other configurations, for example, it is common to move livestock by pick-up trailer. Livestock movements are probably much higher because there are often multiple movements per year using various vehicle types that

are not tracked by regulatory means. Movements for hogs and sheep are less common than cattle.

South Dakota's Rail and Freight Plans identify intermodal freight loading locations adjacent to the highway system affecting asset decisions. In the future, the SDDOT may have to respond to new facility siting should agricultural production and commodity shipments grow with additional land cultivation and increases in crop production per acre.

SDDOT will continue to monitor truck traffic to aid decision-making to improve assets as needs grow and funding allows.

CHAPTER 5: Strategies

South Dakota's Freight Improvement Strategies

South Dakota developed strategies to address the national freight goals, South Dakota Long Range Plan goals, and the State Freight Plan objectives identified in Chapter 1. The following strategies represent the primary elements that aid South Dakota in planning and selecting freight projects.

1. Identify deficiencies that limit connectivity to freight destinations and develop proposed solutions.

South Dakota will monitor growth and locations of freight destinations and their relationship to the transportation system. Examples are new industrial parks and grain elevators. South Dakota will continue to identify deficiencies and mitigate solutions.

2. Monitor freight trends to better support freight decision-making.

South Dakota will continue to monitor freight trends to aid in the decision-making process. Agriculture production continues to increase in South Dakota. The increases of commodity unloading and loading facilities will need to be monitored for transportation issues. The majority of these facilities are being built along the state highway system and rail network.

South Dakota will continue to monitor freight travel through South Dakota to the Bakken oil fields in North Dakota. The amount of freight traffic fluctuates based on market forces. South Dakota will monitor the freight movement to aid in the decision-making process.

3. Use Intelligent Transportation System (ITS) technology to decrease delay and idle time for freight movers.

ITS technology can be a way to keep freight moving more efficiently. South Dakota will continue to use ITS technology to keep freight moving efficiently and have less idle time. South Dakota will include ITS technology when conducting studies on the Interstate highway system or on the freight network where ITS technology could be used to improve freight movement. South Dakota will explore potential ITS enhancements that could improve freight movement.

Examples of technologies South Dakota has implemented to decrease delay and idle time are:

- Electronic screening
- Automated commercial vehicle permitting
- Travel information for commercial vehicle operators

Autonomous freight movement is being tested in the United States. South Dakota continues to monitor the progress to identify measures that may assist in autonomous freight movement through and within the state as advances in its use are made.

4. Use FHWA travel time data to monitor freight movements for bottlenecks and develop proposed solutions.

South Dakota's data shows no identified bottlenecks on the National Highway System and none are predicted in the 20-year planning horizon. South Dakota will continue to use travel time on the National Highway System to compare expected travel times to observed travel times. South Dakota will monitor mainline, intersection, and interchange capacity and geometrics where bottlenecks could occur. Winter weather events have the greatest impact on travel time and South Dakota will monitor ways to improve travel time during and after events. Snow fencing has been installed in areas of known drift impacts to travel and results will be closely observed for implementation at additional sites.

5. Conduct necessary freight corridor studies to improve freight movements.

South Dakota will continue to monitor freight corridors and initiate studies where deficiencies are identified. Every 10 years, South Dakota conducts a Decennial Interstate Corridor Study to look at the entire Interstate system including interchanges. South Dakota uses this tool to program projects and identify corridors or interchanges for detailed study. SDDOT's last study was completed in 2020.

6. Use the Strategic Highway Safety Plan strategies to reduce fatalities and serious injury crashes.

South Dakota has identified performance targets, goals and strategies in the Strategic Highway Safety Plan (SHSP) to decrease serious injury and fatality crashes. The freight plan supports the goals and strategies identified in the SHSP to reduce fatalities and serious injury crashes to help achieve the performance targets.

7. Identify truck parking deficiencies and improve access to truck parking facilities to reduce fatigue on freight drivers.

South Dakota completed a study that identified current and future truck parking needs at the Interstate rest areas. Changes in national logbook monitoring requirements could create truck parking issues. South Dakota incorporated a truck parking element into the 2020 Decennial Interstate Corridor Study (ICS), which helped to identify locations of unauthorized truck parking within a mile of the interstate corridors in the state, which could help identify areas for the expansion of truck parking facilities.

8. Use asset management to maintain rest area security cameras and lighting.

South Dakota uses a building management system to manage rest area assets. The state will use this tool to maintain the rest area security cameras and lighting to enhance safety and security at the rest areas.

9. Explore ITS technology to enhance safety and security.

South Dakota will explore ways to use ITS technology to improve safety and security. Some of the ways South Dakota currently use ITS technology to improve safety and security are:

- 511 and Safe Travel USA for road and traffic conditions
- Cameras and weather stations at various locations throughout the state
- Cameras at rest areas

- Dynamic message signs
- Tire anomaly sensors

South Dakota will continue to explore options to enhance safety and security using ITS technology.

10. Use pavement and bridge management systems and Transportation Asset Management Plan to prioritize improvements on the freight network.

South Dakota will continue to use its pavement management system and bridge management system to program projects. The pavement management system determines the best treatment for pavements to maximize the efficient use of highway funds. The bridge management system manages bridge improvements to maximize the efficient use of highway funds. South Dakota developed performance measures and targets for pavements and bridges published in the Transportation Asset Management Plan and reported to FHWA. The performance measures identified in TAMP will support the freight plan and continue to use the pavement and bridge management systems to prioritize infrastructure improvements in the Statewide Transportation Improvement Program. The TAMP can be found at: https://dot.sd.gov/media/documents/SDDOT2019TAMPFHWASubmittalrevised8-28-2019.pdf

11. Support the Aviation and Rail Plans.

The South Dakota Freight plan supports the aviation systems plan and rail plan goals and strategies. The National Highway System provides access to intermodal connections to air and rail facilities which provides freight access to the world. South Dakota manage the transportation system using freight strategies and asset management tools to ensure the connections to the intermodal facilities are maintained. The state Rail Plan can be found here: https://dot.sd.gov/transportation/railroads/state-rail-plan and the Aviation Plan can be found here: https://dot.sd.gov/transportation/aviation/aviation-systems-plan

12. Improve data at critical freight links.

With the implementation of performance-based planning, South Dakota reviews data needs and continues to improve collection, analysis, and dissemination of data that aids in the decision-making process. The use of automated traffic recorders, National Performance Management Research Data Set (NPMRDS), and crash data analysis are subject to continuous improvement. ITS infrastructure improvements further aid in improving data collection.

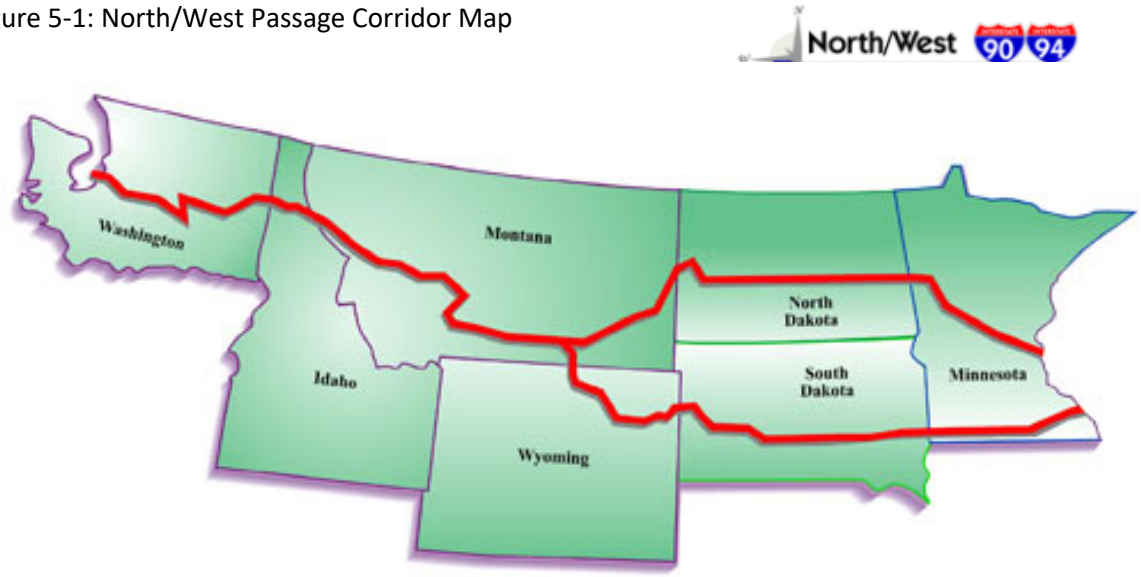
13. Participate in multistate freight planning.

The surrounding states generate freight affecting South Dakota. North Dakota has the Bakken oil fields and Minnesota has ports and rail terminals. South Dakota will continue to monitor freight movement through the state. Freight planning that includes freight which passes through to destinations outside of South Dakota will require coordination with other states. South Dakota participates in multistate freight planning that aids short- and long-range freight planning through the North/West Passage Freight Task Force and as a stakeholder during neighboring states' plan updates.

14. Improve understanding of international and Interstate corridor movements.

South Dakota's economy relies heavily on interstate and international freight movement. South Dakota will continue to monitor this movement and could study interstate and international freight movements and how they affect South Dakota's freight transportation system. The North/West Passage Freight Task Force consists of representatives from Minnesota, North Dakota, South Dakota, Montana, Wyoming, Idaho, and Washington; focusing on mutual interests along the I90 and I94 interstate corridors, shown in Figure 5-1. This also support the improvement of flexibility of States to support multi-State corridor planning. Commercial motor vehicle parking facilities assessment is just one example of the projects the task force discussed.

Figure 5-1: North/West Passage Corridor Map



The state freight plan is required to support the national freight goals. Table 5-1 illustrates the correlation between the South Dakota freight plan strategies to the national freight goals.

Table 5-1: Correlation between State Freight Plan Strategies and **National Freight Goals**

Strategies	National Freight Goals						
	Improve economic efficiency, productivity, and competitiveness	**Reduce Congestion, Bottlenecks, and cost of Freight Transportation**	**Improve Safety, Security, and Resiliency**	**Improve State of Good Repair**	**Use Advanced Technology, Innovation, and Competition**	**Performance Management and Accountability**	**Reduce Environmental and Community Impacts**
Identify deficiencies which limit connectivity to freight destinations and develop proposed solutions	X						
Monitor freight trends to better support freight decision-making	X	X	X			X	
Use Intelligent Transportation Systems technology to decrease delay and idle time for freight movers		X			X	X	
Use FHWA travel time data to monitor freight movements for bottlenecks and develop proposed solutions		X				X	
Conduct necessary freight corridor studies to improve freight movements	X	X	X	X	X	X	X
Use the Strategic Highway Safety Plan strategies to reduce fatalities and serious injury crashes			X		X	X	

Strategies	National Freight Goals						
	Improve economic efficiency, productivity, and competitiveness	Reduce Congestion, Bottlenecks, and cost of Freight Transportation	Improve Safety, Security, and Resiliency	Improve State of Good Repair	Use Advanced Technology, Innovation, and Competition	Performance Management and Accountability	Reduce Environmental and Community Impacts
Identify truck parking deficiencies and improve access to truck parking facilities to reduce fatigue on freight drivers	X		X				
Use asset management to maintain rest area security cameras and lighting			X	X			
Explore ITS technology to enhance safety and security			X		X		
Use pavement and bridge management systems and transportation asset management plan to prioritize infrastructure improvements on the freight network	X	X	X	X		X	X
Support the Airport and Rail Plans	X					X	X
Use ITS technology to reduce delay and idle time, and idle time emissions	X	X	X		X	X	X
Monitor future freight truck parking needs at rest areas		X	X			X	
Improve data at critical freight links	X	X	X	X	X	X	X
Participate in multistate freight planning	X	X	X		X	X	
Improve understanding of international and interstate corridor movements	X	X	X		X	X	

CHAPTER 6: Projects and Funding

Freight Projects

Freight projects are identified in this chapter in accordance with the Fast Act and as continued in under the IIJA/BIL. This chapter also presents a financial plan showing how National Highway Freight Program (NHFP) funds will be allocated.

NHFP funds can only be used on the following network:

- Primary Highway Freight System (PHFS) Map 6-1
- Critical Rural Freight Corridors (Maximum of 600 miles)
- Critical Urban Freight Corridors (Maximum of 75 miles)
- Portions of the Interstate not designated as part of the PHFS

Projects utilizing NHFP funds must be programmed in the State Transportation Improvement Program and are shown in Figure 6-1.

South Dakota is allowed to identify 600 miles of critical rural freight corridors (CRFC) and 75 miles of critical urban freight corridors (CUFC) outside the urbanized areas of Sioux Falls, Rapid City and North Sioux City (Within Sioux City, IA MPO). Designating these additional corridors enhances the reliability of freight movement as well as provides redundancy.

South Dakota is in the process of identifying these corridors and will include them for funding opportunities when identified. The CRFCs will be finalized upon CUFC determination. The proposed CUFCs were distributed to the MPOs within the state for their consideration. Formal designation is expected after SDDOT and its partner agencies agree on routes. Military freight routes within the Rapid City MPO boundary were identified as part of the CUFC designation to address additional freight plan provisions under IIJA.

Long Combination Vehicle (LCV) routes have gained increased industry interest and the SDDOT developed effective design guidance to ensure interstate interchange geometry can be brought up to a standard to accommodate LCV movements. These heightened standards are implemented during interchange reconstruction design.

The National Highway Freight Program (NHFP) funding is one source of federal funding South Dakota receives for highway use. The freight plan requires South Dakota to identify and fiscally constrain projects using NHFP funding. There are multiple steps South Dakota takes for a project to move to its construction program. Some of the steps, which can delay project delivery, are Right of Way acquisition, environmental, design, wetland mitigation and utilities. South Dakota works very hard to ensure the project is let in the year it is programmed, but sometimes unforeseen delays can occur. Because of possible project delays, South Dakota is taking the approach of showing two scenarios to fiscally constrain projects. National Highway Performance Program (NHPP) funding is the other federal source we will use to make up the shortfall for projects identified in the freight plan. State funding will be used for the match. The NHFP projects are listed in Table 6-1.

Map 6-1: The National Highway Freight Network

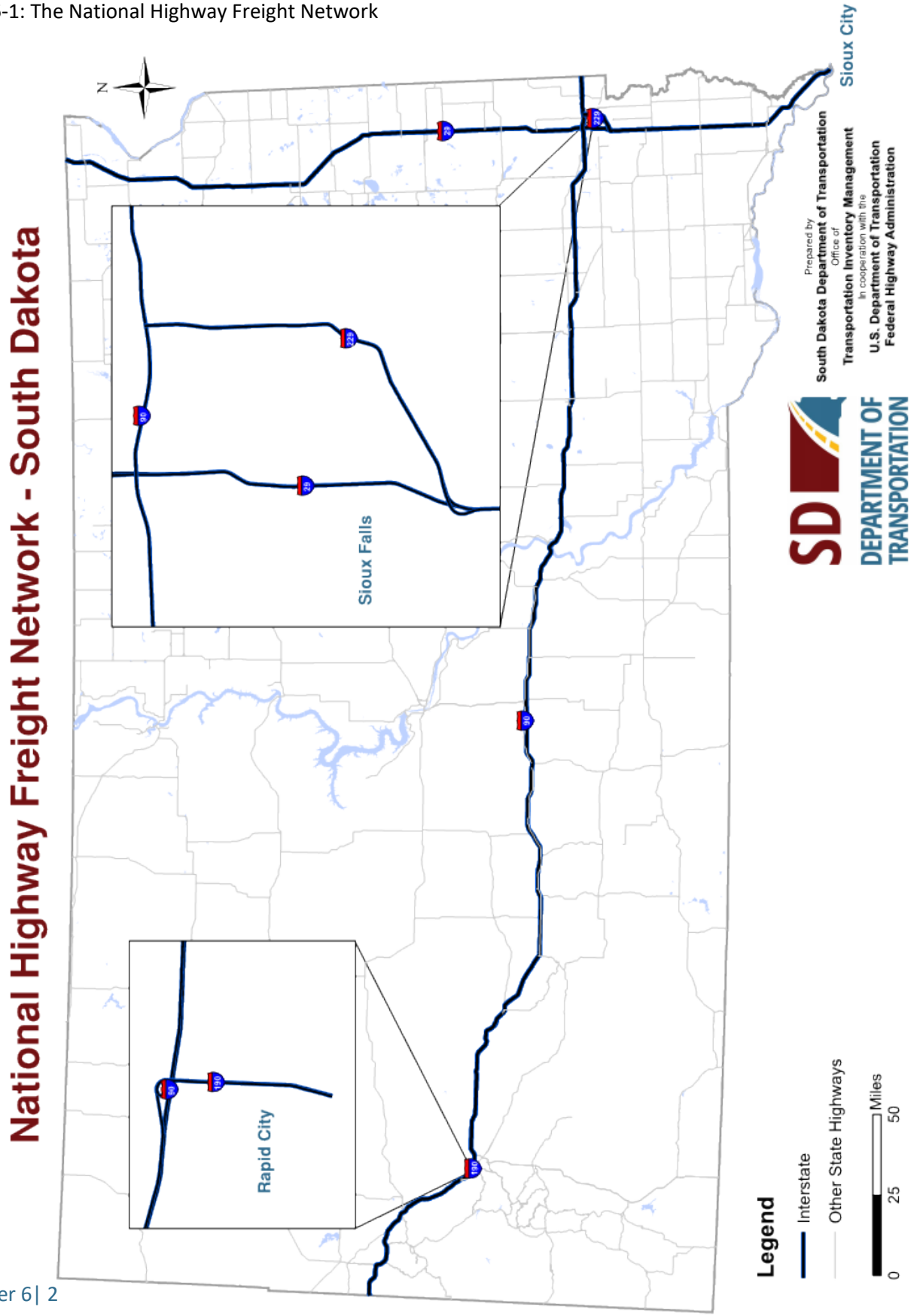


Table 6-1: NHFP Projects and Funding Sources

Project Number	PCN	Location of Project	Type of Improvement	Fed Funds	FY	Total Cost	Scenario 1			Scenario 2		
							NHFP funds	NHPP Funds	State Funds	NHFP funds	NHPP Funds	State Funds
IM-NH 0909(46)406	4433	I90 - Exit 406 (Corson/Brandon)	Interchange Reconstruction Replace Str Bridge	29.155	2023	33.738	9.773	19.382	4.583	0	29.155	4.583
IM 2292(98)9	04XK	I229 Exit 9 (Benson Rd) in Sioux Falls	Interchange Reconstruction, Structure Repair	20.077	2023	27.133	0	20.077	7.056	9.773	10.304	7.056
IM 0901(187)44	034J	I90 E & W - Fm E of Exit 44 to W of Exit 48; Exit 46 (Elk Creek Rd)	Grading, PCC Surfacing, Interchange Reconstruction	52.988	2024	63.391	9.968	43.02	10.403	0	52.988	10.403
IM 0902(18)101	035F	I90 E & W - Strs 33 E of the Wasta Interchange Over Bull Ck	Structure	11.033	2024	12.715	0	11.033	1.682	9.968	1.065	1.682
IM-B 2292(101)4	05HN	I229 - Exit 4 (Cliff Ave) in Sioux Falls	Interchange Reconstruction	41.587	2025	50.978	10.171	31.416	9.391	0	41.587	9.391
IM 0909(92)387	06G8	I90 - Exit 387 (Hartford)	Interchange Reconstruction Replace Str Bridge Approach Grading Surfacing Sidewalk	13.324	2025	16.235	0	13.324	2.911	10.171	3.153	2.911
IM 0901(198)32	060N	I90 E - Fm Exit 32 (Sturgis) to W of Exit 37 (Pleasant Valley)	Grading PCC Surfacing Replace Str Bridge Reconstruct Interchange (Exit 34)	29.223	2026	36.644	10.373	18.85	7.421	0	29.223	7.421
IM-B 0905(108)212	04W6	I90 - Exit 212 (US83N) Interchange	Replace Str Bridge Approach Grading Modify Vertical Clearance	9.29	2026	10.845	0	9.29	1.555	3.811	5.479	1.555
IM 0908(101)336	07NX	I90 E - Weigh Station 4 E of Mitchell	Grading PCC Surfacing Lighting Building	5.479	2026	6.525	0	5.479	1.046	5.479	0	1.046
IM 0902(177)78	05TC	I90 E & W - Fm 2 E of New Underwood to W of Exit 88 (171st Ave)	Grading Replace Strs Bridge PCC Surfacing	53.941	2027	62.451	10.373	43.568	8.51	0	53.941	8.51
IM 0902(111)62	3022	I90 E & W - Fm W of Exit 63 (Dusters Corner) E of West Gate Rd	Grading PCC Surfacing Interchange Replacement (Exit 63) Replace Str Bridge & RCBC	50.051	2027	61.546	0	50.051	11.495	10.373	39.678	11.495