



Good Morning Chairman Delzer and Honorable Members of the House Appropriations Committee, my name is Josh Teigen and I serve as the Director of Economic Development and Finance for the ND Department of Commerce. I am humbled to be here today to discuss a truly magical story from our neighbors in Minot.

For 20 years, the State of ND worked extremely hard to introduce an intermodal facility as we are dependent on oil and soil to drive the economy. In addition, as global trading patterns shifted as well as appetites, wealth and purchasing agreements, North Dakotan producers and processors found themselves at a competitive disadvantage. As such, a multifaceted team consisting of the private sector partners spanning the Pacific Northwest to ND, a progressively minded local economic development team and state agencies decided that we were going bold.

We were no longer going to accept the wait and see approach nor were going to allow the transportation industry to dictate the future of the state's second largest sector, agriculture. We took the bull by the horns and untangled every loose string, sourced solutions, partners and helped build a book of business that would make this project a go. And we did it with absolutely no state money! Most of the infrastructure existed and just required a systems level approach to drive the project.

Think about that for a second, people like John MacMartin, Ryan Ackerman, Brekka Kramer, Representative Jay Fischer, Eric Bartsch, Bob Sinner, Gene Griffin, Scott Zainhofsky, the Bank of North Dakota and local financial institutions as well as others said no more, we are going to do this!

Pause for one more second as this is the essence of an agile and effective ND approach to economic development, think of that all-star team, financial institutions and private sector entities being supported by government to change support farmers and processors across the state!

We went to BNSF headquarters and met with the senior leadership team in multimodal operations, shared new data, discussed evolving global trade movements, and put everything on the line. We walked away with new requirements as the goal post was moved about a dozen times but we were not deterred and were not going to take no for an answer. The meeting was tense but we got down to brass tacks, shook hands and departed that 98 degree day with new requirements but most importantly, we had a commitment if we could meet those requirements: find a book of business, meaning enough product to ship a unit train a week, and a third-party logistics provider. We built the book of business together, interviewed third party logistics partners and found a partner.

In the aggregate, farmers and producers in states like Ohio, Wisconsin, Minnesota etc. have been enjoying a competitive advantage over our producers for years. Below are a few statistics I would like to share to give you perspective. Talk to any food grade soy producer in the state and they will double or triple their food grade production if logistics costs were on par with other states.

That brings us to here in North Dakota. We are shipping a unit train a week saving producers at a minimum \$137,500 per week. This isn't money that goes to the 3PL, this is money that farmers save in the very base case scenario. Methodology: Average transport savings equates to \$500 per container and a rough average of 275 (some unit trains are 220, some are 330) ship per week saving ND producers \$137,500 per week. One of the largest shippers saves 34% on drayage as a result of the facility; another saves almost 30%. Could you imagine saving a third on your transport and logistics costs? It would be a game changer and your competition wouldn't know what to do.

This is on one train a week, the demand exists to easily triple this amount and, in some estimates, quadruple volume. We are talking real money: \$2.5-\$3MM per month and this does not include additional economic growth at the Minot facility which is rapidly growing given the opportunity or additional industries which may leverage the infrastructure such as the energy sector. There is a major demand for ND energy products, e.g. ethanol and LNG and new intermodal conversion opportunities to accommodate this for growing markets in Asia. We haven't even broken the surface.

I will also leave you with a high side potential report. **The report included includes the top end of the potential spectrum but is being shared so that you understand that we are only shipping a unit train at this point.**

Thank you for your time today and I stand for any questions.

# North Dakota Intermodal Twenty-Foot Equivalent Unit (TEU) Demand Potential



## Outbound and Inbound Shipping Forecast 2021

## Intermodal TEU Demand Model and Estimate

### Executive Summary

North Dakota requires intermodal transportation for its producers to be globally competitive. Currently, there are several options under consideration to provide shippers with intermodal exporting capability. This document outlines the estimated outbound potential associated with major agricultural products both in the western and eastern regions of the state. In addition, it estimates inbound requirements; it is important to note that there are many assumptions given the lack of granular data. The total estimate for outbound shipments in Western ND is 92,000 Twenty-Foot Equivalent Units (TEUs); with an assumed inbound potential of approximately 19,000 containers. For Eastern ND, the outbound potential is 48,000 TEUs and with inbound at 9,352 containers. This document outlines how these estimates were ascertained. This document also provides a business case for further intermodal investment by Class I rail companies that operate in the State of North Dakota.

### Western North Dakota Potential

#### **Peas and Lentils**

Most lentils grown in the U.S. are exported. Montana and North Dakota combined account for approximated 67% of the U.S. production of lentils in 2014. Similarly, more than 70 percent of the total U.S. dry pea production is exported to India, China, and Spain for food and feed processing. Dry Peas are also a major crop in NE Montana and Western North Dakota accounting for 57% of the U.S. production.

The amount of available commodity for export is limited by the annual production. As a check on the estimates of potential for export a brief analysis of the production for the past twelve years was conducted. North Dakota production of lentils from 2005 through 2016 amounted to an average 1,933,833 cwt or 87,717 MT per year (Table 1). Dry pea production for the same time-period amounted to 7,886,667 cwt or 357,734 MT. The combined production of lentils and dry peas is equivalent to 22,273 containers loaded to 20 MT. This is strictly North Dakota production and does not consider the potential movement of commodities from Eastern Montana and Saskatchewan, Canada which would add to the export demand at Minot.

Year	Acres Planted			Production, CWT.		
	Lentils	Dry Peas	Total	Lentils	Dry Peas	Total
2005	150,000	540,000	690,000	1,971,000	9,785,000	11,756,000
2006	160,000	610,000	770,000	1,214,000	9,322,000	10,536,000
2007	110,000	515,000	625,000	1,442,000	10,850,000	22,292,000
2008	95,000	520,000	615,000	828,000	7,900,000	8,728,000
2009	165,000	490,000	655,000	2,543,000	11,520,000	14,063,000
2010	265,000	430,000	695,000	3,927,000	8,120,000	22,791,000
2011	80,000	85,000	165,000	824,000	1,160,000	1,984,000
2012	160,000	235,000	395,000	1,928,000	4,485,000	6,413,000
2013	129,000	295,000	424,000	1,764,000	5,740,000	8,397,000
2014	75,000	265,000	340,000	871,000	5,432,000	6,303,000
2015	165,000	385,000	550,000	2,122,000	8,063,000	10,185,000
2016	305,000	560,000	865,000	3,772,000	12,263,000	16,488,000
Total	1,859,000	4,930,000	6,789,000	23,206,000	94,640,000	117,846,000
12 Yr. Avr.	154,917	410,833	565,750	1,933,833	7,886,667	9,820,500
Avr. In MT				87,717	357,734	445,451
<b>Potential Annual Containers; 12 yr Average @ 20MT/Container</b>						<b>22,273</b>

Table 1. North Dakota Lentil and Pea Production, 2005-2016; Source: NASS, USDA.

Northeastern Montana is also a major producer of dry peas, as well as lentils. The two Eastern agricultural districts in Montana produced 13,165,000 cwt. of dry peas and lentils in 2016 (NASS, USDA). That is equivalent to 29,857 containers at 20 MT/container in addition to the North Dakota production.

**Total potential based on current production in Western ND and Eastern MT is 52,130 containers**

### Additional DDGS Requirements using Minot

North Dakota is a major producer of several types of commodity grain and oilseeds including a major producer of spring wheat, durum, barley, corn, soybeans, and sunflowers. Most commodity grain and soybeans are shipped in bulk however using shuttle trains and bulk ships, some is marketed via containers. Wheat, soybeans and distillers dried grains with solubles (DDGS) are considered the best candidates to be marketed in containers from North Dakota. The production of these commodities is large and there is no need to compare estimated potential demand for containers with production for wheat and soybeans.

There are five ethanol plants in North Dakota that produce DDGS, Tharaldson, Red Trail Energy, Hankinson Renewable Energy, Blue Flint, and Dakota Spirit AgEnergy. According to the North Dakota Ethanol Council, they produce a combined total of 1,202,000 MT of DDGS annually.

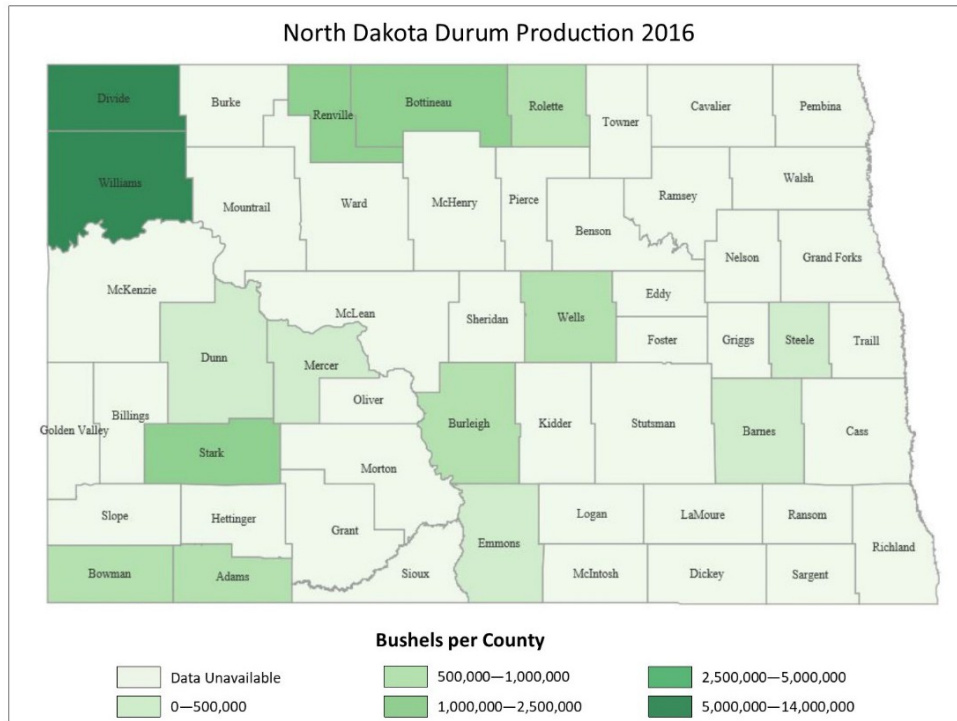
Based on a survey administered by the North Dakota Trade Office in 2016, it is estimated that there is potential for 51,120 containers of commodity grain, commodity soybeans, and DDGS

annually with about half coming from facilities located in the West. The total potential was halved due to location of ethanol plants and geographical location of specialty crops. This is assuming that the respondents had a collective market share of 30% of the total market for commodity grain container shipments. The extent which firms shipping commodity grain would utilize containers to market would depend on several factors including rates, service, drayage costs, ownership of local handling facilities, and of course, profitability. As such, the total potential for DDGS is **25,560 containers**.

### **Beyond DDGS Estimate for Durum**

According to the North Dakota Wheat Commission, exports in 2016 were approximately 25 million bushels or 1,500,000,000 pounds. A majority of the state's durum production is concentrated west; as such, it is assumed that approximately 90% of the durum exported will use Minot as a shipping facility, this is an estimated 1,350,000,000 pounds. This equates to 612,350 metric tons or 30,618 containers.

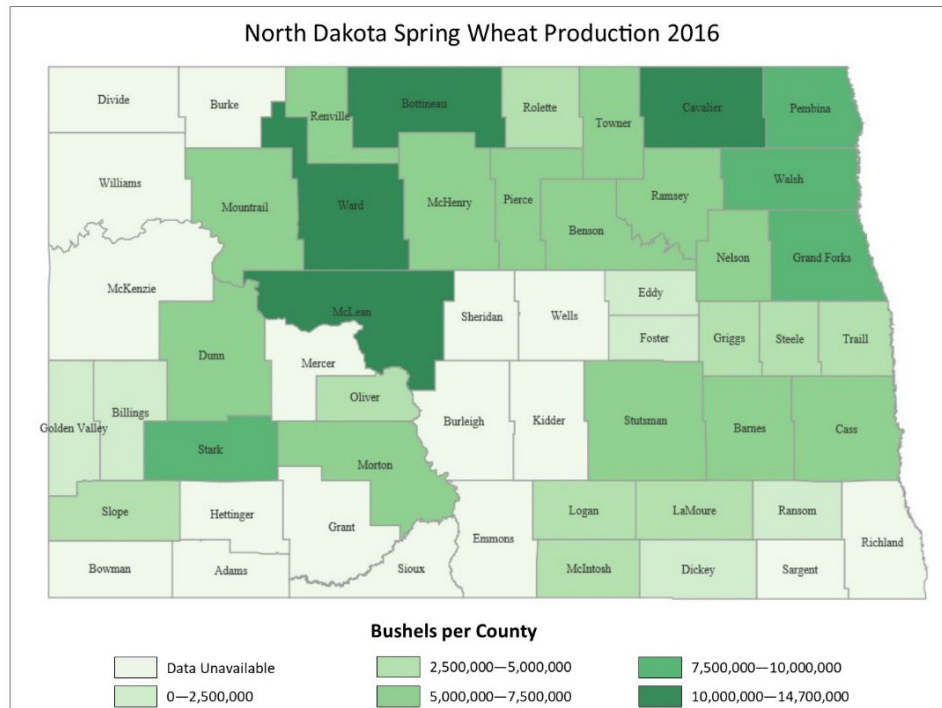
One could surmise that containerized freight could catch on for durum; this is due to the back-haul direction (East to West with empties) corresponding to head-haul direction for export grain moving in hoppers to ports in the west. Rail companies may have supply shortages elsewhere for hopper cars and leverage new infrastructure to reposition them while using empty TEUs moving through North Dakota. Beyond the western DDGS estimate, grain could be loaded using empty containers instead of traditional hoppers providing shipping at near back-haul rates (speculation). The conversion of grain from bulk to container would balance the movement of containers and mitigate the need for hoppers, and the empty return movement they incur. At 5% intermodal shipping, this would create the potential for **1,531 containers**.



### Beyond DDGS for Spring Wheat

According to the North Dakota Wheat Commission, exports in 2016 were approximately 315 million bushels or 18,900,000,000 pounds. Approximately 60% of production occurs in the area that would likely be serviced by a Minot facility (see graphic below derived from NASS/ USDA data query). This equates to 11,340,000,000 pounds or 5,145,191 metric tons or 257,259 containers.

Based on the surmised use of TEUs vice hopper cars, grain could be loaded using empty containers instead of traditional hoppers providing shipping at near back-haul rates (speculation). The conversion of grain from bulk to container would balance the movement of containers and mitigate the need for hoppers, and the empty return movement they incur. At 5% shipping, this would create the potential for **12,863 containers**.



### Total Outbound Potential using Commodities

Given the estimated traffic and assumptions, it is estimated that **approximately 92,000** containers, or almost 1,800 per week, could leave the Minot facility using an intermodal facility.



## Eastern North Dakota Demand Potential

### Food Grain Soybean

Food Grade Soybean represents a potential significant source of demand for export containers. It has been estimated that Food Grade Non-GMO soybeans account for approximately 6.5% of the total soybean production in the U.S in 2014 (US Soybean Export Council). This figure has been steadily increasing for the past four years from 5.05% to 6.46% (USDA).

As with any commodity, the amount available for export is limited by the annual production. As a check on the estimates of potential for export a brief analysis of the production for the past twelve years was conducted as was for pulses. North Dakota production of soybeans from 2005 through 2016 amounted to an average 146,066,667 bushels (Table 2). It should be noted that production for four out of the last five years exceeded the 12-year average.

YEAR	ACRES HARVESTED	ACRES PLANTED	YIELD (BU/ACRE)	PRODUCTION (BUSHELS)
2005	2,900,000	2,950,000	37	105,850,000
2006	3,870,000	3,900,000	32	121,905,000
2007	3,060,000	3,100,000	36	108,630,000
2008	3,760,000	3,800,000	28	105,280,000
2009	3,870,000	3,900,000	30	116,100,000
2010	4,070,000	4,100,000	34	138,380,000
2011	3,960,000	4,000,000	29	114,840,000
2012	4,730,000	4,750,000	35	163,185,000
2013	4,630,000	4,650,000	31	141,215,000
2014	5,870,000	5,900,000	35	202,515,000
2015	5,720,000	5,750,000	33	185,900,000
2016	6,000,000	6,050,000	42	249,000,000
Total	52,440,000	52,850,000	398	1,752,800,000
10 Yr. Avr.	4,370,000	4,404,167	33	146,066,667
10 Yr. Average in Lbs.				8,764,000,000
10 Yr. Average in MT				3,975,288
GMO Production in MT@6%				238,517
Potential Annual Containers; 12 yr. Average @ 20MT/Container				11,926

Table 2. North Dakota Soybean Production, 2005-2014; Source: NASS, USDA

According to NASS, USDA, in West Central as well as Northwestern Minnesota, a total of 133,777,000 bushels of soybeans were produced in 2017; this equates to 8,026,620,000 pounds. When converted to metric tons, approximately 3,640,851 were produced; at 6% production, this equates to 10,922 containers. Given the high concentration in Kittson, Roseau,

Marshal, Pennington, Red Lake and Polk Counties, a large portion will likely continue to be transported to Winnipeg; as such, at 50% production using a ramp in Eastern ND, one could anticipate another 5,000 or so containers for export.

**Total estimate for ND and Eastern MN 16,926**

### **Additional DDGS Requirements**

As mentioned in the Minot section of the demand estimate, North Dakota is a major producer of several types of commodity grain and oilseeds including a major producer of spring wheat, durum, barley, corn, soybeans, and sunflowers. Most commodity grain and soybeans are shipped in bulk however using shuttle trains and bulk ships, some is marketed via containers. Wheat, soybeans and distillers dried grains with solubles (DDGS) are considered the best candidates to be marketed in containers from North Dakota. The production of these commodities is large and there is no need to compare estimated potential demand for containers with production for wheat and soybeans.

There are five ethanol plants in North Dakota that produce DDGS, Tharaldson, Red Trail Energy, Hankinson Renewable Energy, Blue Flint, and Dakota Spirit AgEnergy. According to the North Dakota Ethanol Council, they produce a combined total of 1,202,000 MT of DDGS annually.

Based on a survey administered by the North Dakota Trade Office in 2016, it is estimated that there is potential for 51,120 containers of commodity grain, commodity soybeans, and DDGS annually with about half coming from facilities located in the West. This is assuming that the respondents had a collective market share of 30% of the total market for commodity grain container shipments. The extent which firms shipping commodity grain would utilize containers to market would depend on several factors including rates, service, drayage costs, ownership of local handling facilities, and of course, profitability. As such, the total potential for DDGS is **25,560 containers**.

### **Beyond DDGS Estimate for Spring Wheat**

According to the North Dakota Wheat Commission, exports in 2016 were approximately 315 million bushels or 18,900,000,000 pounds. Approximately 40% of production occurs in the eastern half of the state; it is assumed that wheat grown in Cavalier, Pembina and Walsh Counties would be serviced by Winnipeg. As such, it is assumed that 25% of state wheat production would use the Minot ramp if more competitive shipping rates were available. This equates to 4,725,000,000 pounds or 2,143,829 metric tons or 107,191 containers. This data does not capture additional potential from Western MN production given double haul potential in ND.

Based on the surmised use of TEUs vice hopper cars, grain could be loaded using empty containers instead of traditional hoppers providing shipping at near back-haul rates (speculation). Rail companies may have supply shortages elsewhere for hopper cars and leverage new infrastructure to reposition them while using empty TEUs moving through North Dakota. The conversion of grain from bulk to container would balance the movement of containers and mitigate the need for hoppers, and the empty return movement they incur. This also includes IP as well as specialty protein demand. At 5% shipping, this would create the potential for **5,360 containers**.

### **Total Outbound Potential using Commodities**

Given the estimated traffic and assumptions, it is estimated that **approximately 48,000** containers, or almost 925 per week, could use the intermodal facility if the shipping rates are competitive.

### **Ratio of Outbound to Inbound**

According to the U.S. Department of Transportation, Bureau of Transportation Statistics and Federal Highway Administration, Freight Analysis Framework, Version 4.3.1, 2016, there is an outbound to inbound ratio of 3.06 containers to 1. The rail carriers however offer different statistics in their reports, when BNSF data is combined with Canadian Pacific, we find that in 2015, 599,158 containers left North Dakota (non-TEU but we are assuming a similar ratio for shipping) and 137,964 terminated in the state providing a ratio of 4.34 to 1. See data below for context.

One can deduce from the types cargo being transported into North Dakota that about two-thirds would likely come through Minot given the inbound potential for energy products and new distribution center plans in the region. In addition, a 20% reduction in volume will occur because of coal movements (which shouldn't be included as potential). As such, the estimate for each ramp is as follows:

150,000 total outbound containers (120,000 with the reduction) divided by 4.234; these equals 28,342 inbound containers. Given the 2/3 to 1/3 ratio, one could estimate the following number of inbound TEUs based on the assumptions:

**Minot: 18,990 inbound**

**For the East: 9,352 inbound**

## BNSF Data to Support Inbound Estimate

### BNSF Commodities Originating and Terminating in North Dakota (2015)

	BNSF			BNSF	
	Number of Cars	Number of Tons		Number of Cars	Number of Tons
Crude, Petroleum, Natural Gas &	268,077	26,581,776	Nonmetallic Minerals Except Fuels	37,724	4,005,456
Grain	119,693	12,803,345	Coal	26,449	3,010,136
Coal	34,537	3,367,455	Chemicals and Allied Products	13,788	1,332,332
Food and Kindred Products	30,917	2,887,520	Stone, Clay, Glass & Concrete Products	8,875	938,215
Petroleum and Coal Products	22,416	1,674,046	Farm Products	6,727	664,976
All Other	13,768	1,141,680	All Other	23,415	1,210,388
<b>Total</b>	<b>489,408</b>	<b>48,455,822</b>	<b>Total</b>	<b>116,978</b>	<b>11,161,503</b>

Source: North Dakota Public Service Commission Annual Reports

## CP Estimate to Support Inbound Estimate

### Canadian Pacific Commodities Originating and Terminating in North Dakota (2015)

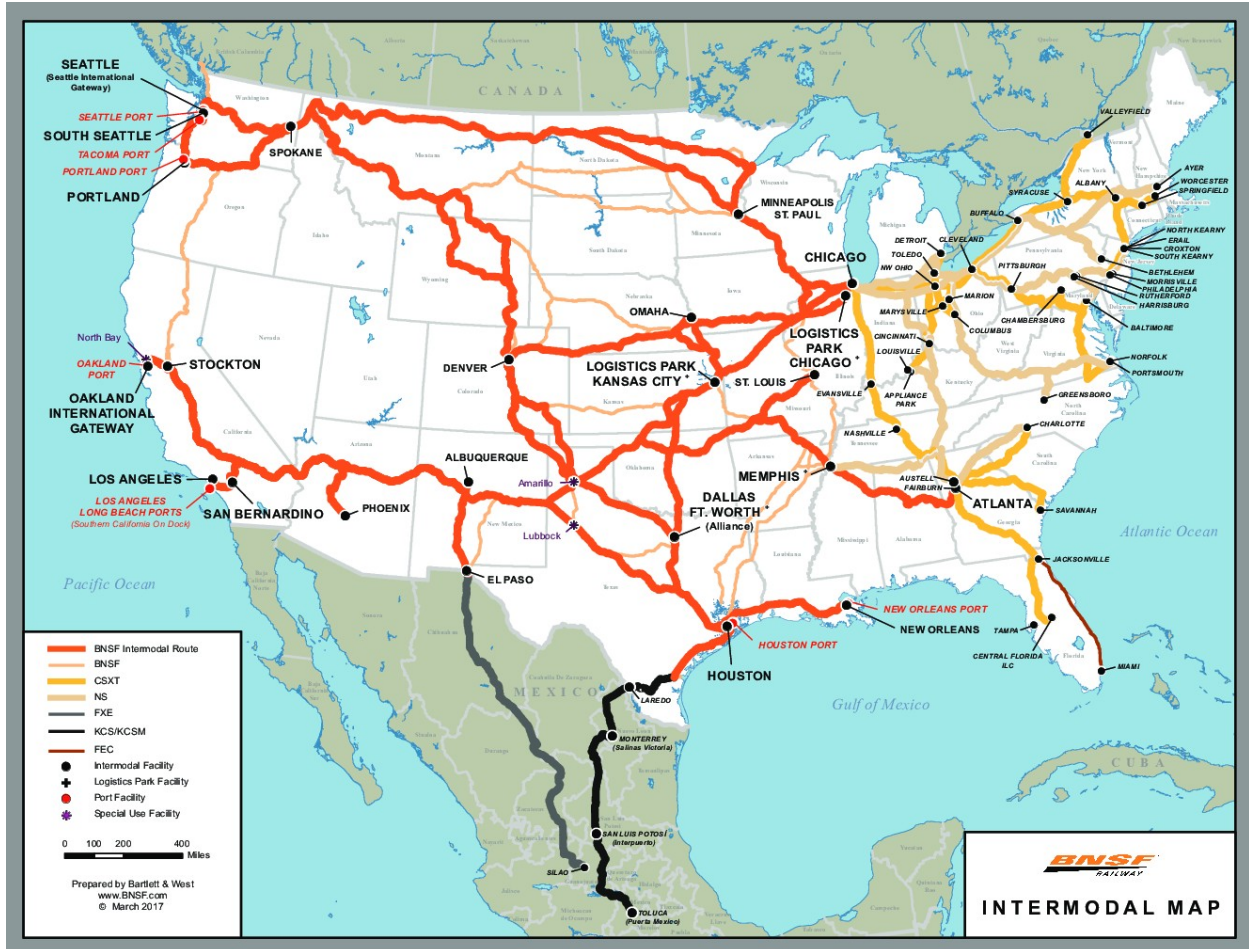
Commodity	CP		Commodity	CP	
	Number of Cars	Number of Tons		Number of Cars	Number of Tons
Grain	52,378	5,285,330	Nonmetallic Minerals	7,682	842,899
Crude, Petroleum, Natural Gas & Natural Gasoline	35,811	3,643,116	Stone, Clay, Glass & Concrete Products	3,909	427,713
Food and Kindred Products	8,179	817,299	Chemicals and Allied Products	4,655	407,825
Chemicals and Allied Products	5,017	474,288	Farm Products	2,207	216,022
Coal	2,898	289,899	Primary Metal Products	981	85,514
All Other	5,467	499,759	All Other	1,552	110,668
<b>Total</b>	<b>109,750</b>	<b>11,009,691</b>	<b>Total</b>	<b>20,986</b>	<b>2,090,641</b>

Source: North Dakota Public Service Commission Annual Reports

## Location of Rail Lines

To provide perspective of where both BNSF and CP have infrastructure, the maps below are offered to highlight existing infrastructure within the intermodal space.

### BNSF Intermodal Map



## Canadian Pacific's Intermodal Infrastructure



**Disclaimer/ Methodology:** The data used in this estimate is derived from several sources; one, previous work conducted by the North Dakota Trade Office, two, the United States Department of Agriculture and three, an aggregated formula as well as assumptions developed by the ND Department of Commerce. In addition, several assumptions (included in the document) are conveyed to indicate realistic transportation, logistics and supply chain conditions. The information contained in this document is best guess given a lack of granular data, assumptions are up to the reader to adopt.