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# Great Falls Regional Transportation Task #7

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Prepared for  
Cascade County  
Commission

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**N.C. Doty & Associates, LLC**  
Fargo, ND

**Wilbur Smith Associates**  
Cincinnati, OH

## Contents

|  |    |
|--|----|
| Executive Summary .....  | 4  |
| Task #7A - Air Cargo Transportation .....  | 7  |
| Introduction .....   | 7  |
| Air Cargo Competitive Market Analysis .....  | 7  |
| Air Cargo Facility Analysis .....  | 8  |
| Runway Length Considerations .....   | 10 |
| Pilot Factoring .....  | 13 |
| Navigation Equipment and Landing Approach Minimums .....   | 14 |
| Runway and Taxiway Systems .....   | 15 |
| Air Cargo Tonnage Trends .....   | 16 |
| Competing Airports Summary .....   | 17 |
| Air Cargo Carrier Networks & Airport Utilization .....   | 18 |
| Market Segment Analysis .....  | 25 |
| Air Cargo Providers .....  | 25 |
| All Cargo Carriers .....   | 25 |
| Passenger Airlines .....   | 25 |
| Road Feeder Service/Freight Forwarders .....   | 26 |
| Integrated Express Operators .....   | 26 |
| Air Cargo Commodities .....  | 26 |
| Industry Clustering .....  | 28 |
| Aerospace Manufacturing .....  | 29 |
| Taxidermy & Meat Processing .....  | 29 |
| Other Montana Industry Clusters Utilizing Air Cargo .....  | 30 |
| Potential Montana Produced Air Cargo Commodities .....   | 30 |
| International Cattle Shipments .....   | 31 |
| Flathead Lake Cherries .....   | 32 |
| Market Strengths, Weaknesses, Opportunities, & Threats (SWOT) Analysis and Recommendations ..... | 32 |
| Strengths .....  | 33 |
| Weaknesses .....   | 35 |
| Opportunities .....  | 36 |
| Threats .....  | 37 |
| Recommendations .....  | 39 |
| Conclusion .....   | 42 |
| Task #7B – Intermodal Transportation .....   | 43 |
| Intermodal Transportation Defined .....  | 43 |
| Rail and Ocean Carrier Requirements .....  | 44 |
| North Dakota Port Services, Inc. ....  | 45 |
| Williston Basin Oil Drives Intermodal Service .....  | 47 |
| Alberta Basin Bakken Fairway in Montana .....  | 48 |
| Agricultural Production for Outbound Intermodal Traffic .....                                    | 52 |
| Montana Alberta Basin Bakken Fairway Oil .....   | 53 |
| Key to Intermodal Services .....   | 53 |
| Strengths .....  | 53 |
| Weaknesses .....   | 54 |

## Great Falls Regional Transportation Task #7

---

|   |    |
|---|----|
| Recommendations.....  | 54 |
| Conclusion .....  | 56 |
| Task #7B - Backhaul Opportunities.....                              | 57 |
| Introduction.....   | 57 |
| Over The Road Truck & Intermodal Transportation Traffic .....       | 59 |
| Review of the Port of Shelby Logistics .....                        | 61 |
| Review of the Port of Montana (Butte) Logistics.....                | 63 |
| Overview of Cargo Types and Inbound and Outbound Statistics.....    | 63 |
| Freight Rate Analysis.....  | 75 |
| Strengths .....   | 76 |
| Weaknesses .....  | 76 |
| Recommendations.....  | 77 |
| Conclusion .....  | 77 |
| Task #7B - Transportation to Alberta Oil Sands .....                | 79 |
| Introduction.....   | 79 |
| Development & Production Overview.....                              | 79 |
| Short-Term & Forecasted Production Volumes .....                    | 81 |
| Transport of Oil Exploration & Extraction Equipment to Canada ..... | 82 |
| Recommendations.....  | 84 |
| (Select) Companies Involved in Alberta Oil Sands Energy Play .....  | 85 |
| Conclusion .....  | 90 |
| Conclusion Summary.....   | 90 |

# Great Falls Region Defense Diversification Project

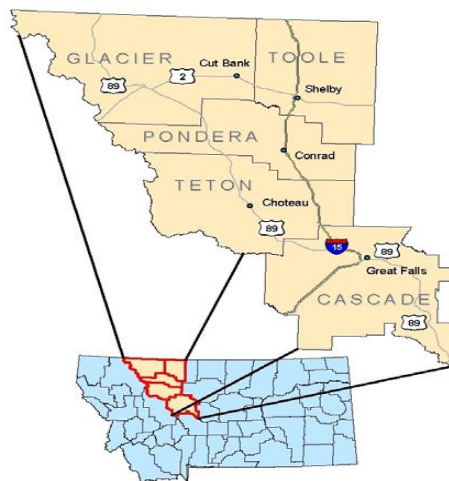
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## Executive Summary

In January 2007, the U.S. Air Force announced plans to deactivate the 564<sup>th</sup> Missile Squadron from the mission on Malmstrom Air Force Base. Acknowledging the need to mitigate the economic impact of such a move, the Great Falls Development Authority (GFDA) and Cascade County solicited funding assistance from the Department of Defense's Office of Economic Adjustment (OEA), which they received in January 2008.

The Sweetgrass Region (Exhibit 1) admittedly relies too heavily on government/military spending and tourism to carry its economy and sees the value in diversifying not only because of the opportune moment, but because of the time-tested truth that through diversification and the sound adherence to change, a community can strengthen its asset base to protect those things it deems most valuable.

The Sweetgrass Comprehensive Economic Development Strategy (CEDS) incorporates a philosophy of economic development that supports the notion that prosperity depends upon creating environments in which entrepreneurship flourishes and succeeds. In such an environment, assets are exploited, weaknesses are mitigated, and cultivation of innovative ideas is encouraged, all while supporting regional partnerships. The Defense Diversification Project will draw upon these concepts as it seeks to revitalize the regional economy and create further opportunities in Glacier, Toole, Pondera, Cascade and Teton counties.



Source: Kadrmas Lee & Jackson  
Exhibit 1 - Map illustration of the Sweetgrass Region study area

## Great Falls Regional Transportation Task #7

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This study, Great Falls Regional Transportation Task #7, is the final task of the U.S. Department of Defense, Office of Economic Adjustment Defense Diversification Project for the Sweetgrass Region of North Central Montana. The seventh task is an analysis of the Sweetgrass Region's transportation system and its role to successfully implement the strategies identified in the original six tasks of the Defense Diversification Project. Specifically, the seventh task identifies areas of competitive strengths and weaknesses with regard to air cargo, air logistics truck backhaul, intermodal rail, and potential assembly opportunities for energy-related, large scale equipment destined for Canada.

Transportation is critical to the Sweetgrass Region, which is heavily dependent upon transportation dependent industries, which are agriculture, energy production, tourism, and manufacturing. The Sweetgrass Region is a part of the North American transportation system, which moves goods and people efficiently into and out of the Sweetgrass Region to provide economic gain for the Region. Agriculture is the largest user by tonnage of transportation services within the Sweetgrass Region.

Task #7A of this study was a comprehensive competitive analysis of the air cargo/air logistics opportunities in the Sweetgrass Region. The task details the characteristics and capabilities of air cargo services in the Region and competitive air cargo services outside of the Region. Air cargo tonnage has been dropping more precipitously (7.1% annually) over the last five years at the Great Falls International airport compared to other airports in the Region. The reduction in tonnage at the airport is connected to the 2008-09 recession and as a result of the reduction in FedEx Express' weekend network operations at the airport.

Industry cluster analysis pointed to opportunities to expand air cargo services to include food and live animal shipments. A strengths, weaknesses, opportunities, and threats analysis pointed to recommendations for the Region's air cargo industry. They included strategies to retain current air cargo carriers, especially FedEx; expand air cargo activity; foster air cargo ventures such as air freighting livestock and high value fruits, such as cherries; and continuously market the Region's air cargo capabilities. This study recommends the Airport staff and local economic development agencies continue to collaborate in marketing the Region to four industry clusters reliant on air cargo services: aerospace/aviation, healthcare, energy, and perishables.

Task #7B of this study has three basic parts: Intermodal Transportation Evaluation, Backhaul Opportunities, and Wide Load Equipment Fabrication and Transportation. The Sweetgrass Region is an inbound destination for manufactured goods and consumables that arrive in the state primarily by truck. As shown in Task #4 Competitive Analysis Agri-Processing/Alternative Agriculture, the four primary agricultural commodities transported out of the Sweetgrass Region are wheat, barley, cattle, and forage crops. The Region utilizes rail as its primary mode of transportation to move its grain commodities out of state. The Region has an imbalance of inbound versus outbound freight where for every five fully loaded trucks coming into the state, only one leaves fully loaded. Therefore, inbound freight is considerably more expensive than outbound freight, which provides an opportunity for Ag producers, agri-processors, and manufacturers in the Sweetgrass Region to obtain competitive freight rates for transportation for out of state markets to offset the Region's distance to markets.

## Great Falls Regional Transportation Task #7

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Shelby, MT had an operational intermodal transportation service that was discontinued in 2004. Over ninety percent of that service's business was truck trailers on rail flatcars. The sole rail operator in the Sweetgrass Region, Burlington Northern Sante Fe (BNSF), and its affiliated ocean freight companies have stringent requirements for the establishment of intermodal transportation sites anywhere in the nation. A study of the Minot Port of North Dakota intermodal facility, operated by North Dakota Port Services, Inc., illustrates the process and requirements involved in developing and maintaining an intermodal facility. Requirements for reliable inbound and outbound intermodal freight volumes have not been met in the Sweetgrass Region at this time, however, agricultural and energy production trends in the Region indicate that freight volumes could be reached in the foreseeable future.

There is currently not enough identifiable potential inbound or outbound container traffic to justify the development and operation of an intermodal container freight facility in the Sweetgrass Region. Particular trends occurring in the Sweetgrass Region include the impending energy play in the Alberta Basin Bakken Fairway oil and gas field that is centered in the Sweetgrass Region and the intense interest by agribusiness enterprises in fostering rapid growth in the production of pulse crops, peas and lentils, in the Sweetgrass Region.

When the increase in petroleum energy exploration and extraction begins in earnest in the Region, the potential for a large quantity of full inbound containers on rail coming into the Region will increase dramatically. When enough increased acreage of pulse crops occurs in the Region, the potential of achieving sufficient demand for full outbound containers on rail will also increase. Recommendations center on the Shelby area Northern Express Transportation Authority's accelerating their formal organizational efforts to ensure that the monitoring of potential container volumes, seasonality, and balance trigger the development and operation of an intermodal container facility in Shelby.

The Sweetgrass Region has significant opportunities for its manufacturers, agri-processors, and wholesalers in that Regional outbound truck freight rates are significantly lower than Regional inbound truck freight rates. Outbound truck freight rates in the Region are more than one dollar per mile lower than inbound truck freight rates. Recommendations to the Great Falls Development Authority include the routine tracking of Regional inbound and outbound freight rates, disseminating the advantages of attractive outbound freight rates to economic developers and Regional businesses, and utilizing the strategic advantage of attractive outbound freight rates to prospective new businesses and businesses contemplating moving into the Region.

Wide and heavy loads of oil exploration and extraction equipment are being shipped into the Columbia River transit system, through Idaho, through Western Montana, and are due to transit through the Sweetgrass Region on state highways into Canada for delivery to the Alberta oil sands. Issues with moving incredibly large loads may provide an opportunity to do fabrication and sub-assembly work on the oil equipment in the Sweetgrass Region just prior to shipping into Alberta. Recommendations are to connect the Region's fabrication and sub-assembly business resources with petroleum producers who are currently transporting wide and heavy loads of equipment into the Alberta oil sands. A list of petroleum producer candidates is included.

## Task #7A - Air Cargo Transportation

### *Introduction*

This section addresses the role air cargo transportation plays in the Great Falls market area and the Sweetgrass Region. Great Falls International Airport (GTF) offers substantial infrastructure supporting not only the passenger airline industry, but the air cargo industry. To ascertain potential air cargo growth and future opportunities, Wilbur Smith Associates analyzed current air cargo activity within a 400-mile radius of the airport, examined current air cargo networks at 15 airports, and conducted a Strength Weaknesses Opportunities and Threats Analysis (SWOT) analysis.

This section concludes with recommendations on best practices to increase air cargo activity at GTF and to identify specific market segments showing potential for air cargo reliance.

This section follows the following outline:

- Air Cargo Competitive Market Analysis
- Air Cargo Networks & Airport Utilization
- Market Segment Analysis
- Strength Weaknesses Opportunities and Threats Analysis
- Recommendations

### *Air Cargo Competitive Market Analysis*

Airports, like other facilities such as retail shopping malls, compete with other airports for aviation business. Airport tenants, like mall retail tenants, have the option to relocate their operations to a competing facility. With this in mind, it is important for airport management to provide adequate facilities to retain and attract air cargo providers. Successful airports attract passengers and cargo from their own market area, as well as neighboring market areas. This section identifies airports in the Northwest and Intermountain Region competing with Great Falls International Airport for air cargo market share. By the very nature of the industry's ability to utilize a host of modal combinations and routes structures, competition amongst airports must be at a Regional level.

Some airports are more successful than others in the realm of air cargo development. This is a result of a host of factors which impact demand for aviation services. These factors include:

- airport location in proximity to demand,
- proximity to other nearby airports offering cargo services and facilities,
- airport facilities and their ability to meet current and future aviation demand,
- truck access to the airport,
- environmental issues, and
- community support of the airport and its cargo-related activity.

## Great Falls Regional Transportation Task #7

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This section of the report focuses on infrastructure necessary to attract and retain air cargo carrier operations. It also provides trends in air cargo activity in the study area.

- Air Cargo Facility Analysis
- Runway and Taxiway Systems
- Air Cargo Tonnage Trends
- Competing Airports Summary

### *Air Cargo Facility Analysis*

Great Falls International Airport serves a significant portion of Montana's air cargo market and extends into southern Alberta, Canada. While the facility serves the entire Sweetgrass Region, it is surrounded by airports serving other markets within a 400-mile radius. Exhibit 2 represents the study area and the 400-mile radius it encompasses. These airports serve much of the Northwest and Intermountain regions of the US and Canada. While these airports are very distant from Great Falls from a surface transport perspective, it is important to consider they are all less than an hour travel time in a cargo jet from Great Falls.

Seven airports in Montana support both commercial passenger jet traffic as well as scheduled air cargo service. They include:

- Bert Mooney – (Butte)
- Billings-Logan International
- Gallatin Field (Bozeman)
- Great Falls International
- Helena Regional
- Glacier Park International (Kalispell)
- Missoula International

Five airports outside of Montana, but within the 400-mile radius study area are:

- Casper-Natrona International
- Jackson Hole Airport
- Boise Air Terminal
- Idaho Falls Regional
- Spokane International

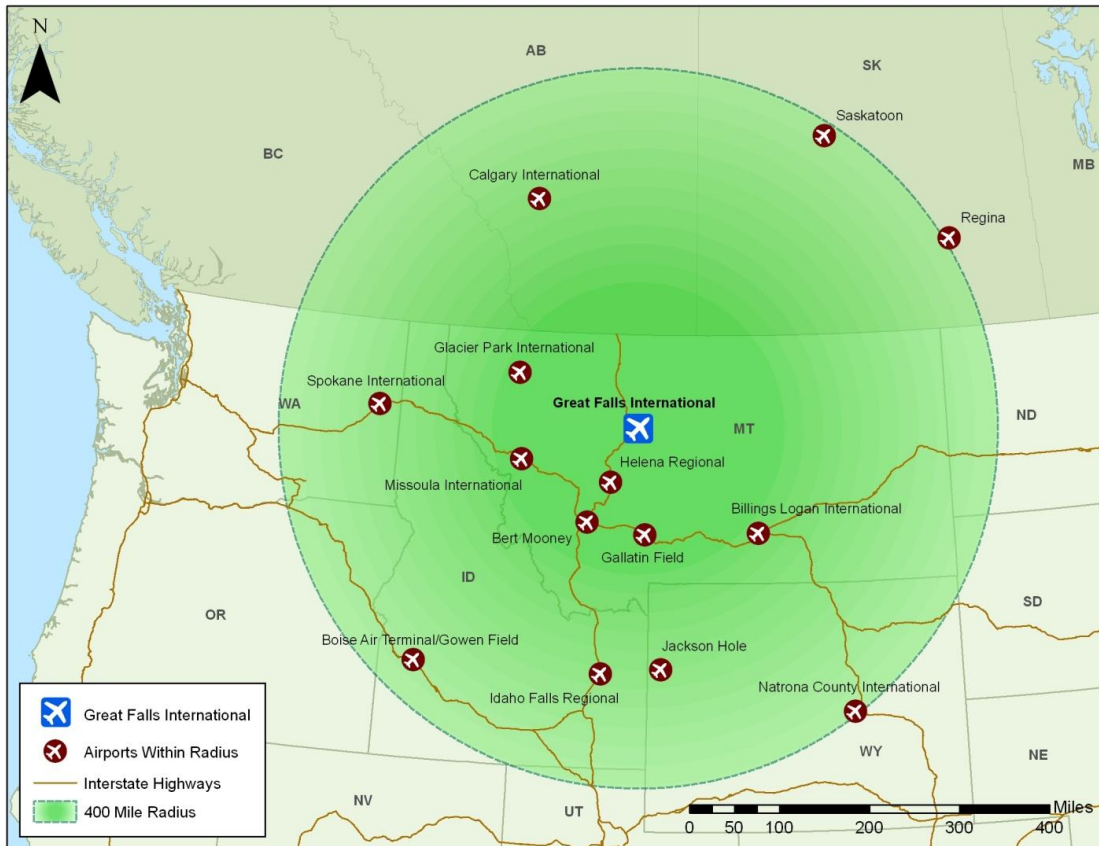
Additionally, three Canadian airports with commercial jet service and scheduled air cargo activity within the study area are:

- Calgary International
- Saskatoon International
- Regina International



## EXHIBIT 2

### Airports with Scheduled Air Cargo Service Commercial Service Passenger Jets within 400 Miles of Great Falls



Source: Wilbur Smith Associates

The 15 commercial service airports provide business and leisure travelers with quick means of transportation. They also serve the cargo needs of their respective regions, with most having a wide range of cargo facilities utilized by multiple carriers and all having at least some degree of cargo feeder activity. The large distances and mountainous terrain between populated areas make air travel the most efficient mode of transportation in a region where trucking is less effective.

For this reason, many of the feeder cargo aircraft in and around Montana operate what is known as “long-thin” routes. These routes cover long distances with a consistently low volume of cargo and are usually operated using aircraft with lower operating costs. Many of the intrastate cargo routes to and from Great Falls International, for example, are operated using single engine aircraft such as the Cessna 208 (Cessna Caravan). These aircraft offer fairly quick transport and have adequate cargo capacity for the markets they serve.

Airports require adequate runway length and width to meet the critical or design aircraft which will use the airport on a regular basis. Runway length requirements are dictated by the types of aircraft expected to use the airport, as well as other operational factors such as engine type, distance to destination, take-off weight, and temperature factors. Taxiways and their separation distances from the runway are also key facilities impacting the size and type of aircraft operating at an airport.

Aircraft apron must be able to accommodate aircraft requiring service and storage as well as be able to withstand the weight of the heaviest aircraft anticipated to operate at the airport. Terminal space and warehouses for cargo operations are also factors considered by airlines and aircraft owners. Automobile parking for passengers and airport employees must also meet demand. The roadways to the airport must be able to accommodate automobiles and cargo trucks. For large commercial service airports, immediate access to interstate-type highways is nearly always mandatory.

For an airport to provide access to air cargo carriers, it must have facilities which will meet the requirements, or needs, of the airport's users. The most critical facilities analyzed in this section represent infrastructure most often considered by an air cargo carrier prior to entering a market include:

- Runway length considerations
- Navigation equipment and landing approach minimums
- Runway and taxiway design

### **Runway Length Considerations**

Analysis of U.S. airports where FedEx, UPS, and DHL have scheduled cargo jet flights indicates the average length of the primary runway averages over 10,000 feet in length. The average for FedEx is 10,230 feet, UPS is 10,410 feet, and DHL is 11,460 feet. However, these runway lengths include airports with some of the longest runways in the world such as Denver International at 16,000 feet and New York's JFK International at over 14,000 feet in length.

These runway lengths skew the data to a degree. The analysis, however, also indicates that FedEx and UPS operate at airports with less than 7,000 feet in runway length. FedEx has scheduled Boeing 727 service into Huntington, WV and Roanoke, VA which have primary runway lengths of 6,517 and 6,800 feet respectively. UPS operates an Airbus 306 into Albany, GA which has a runway length of 6,601 feet. GTF's primary runway length is adequate to accommodate mid-size cargo jets such as the B757 on a typical day.

## Great Falls Regional Transportation Task #7

**TABLE 1**  
**Competing Airport Infrastructure (1 of 2)**

| Location<br><br>Airports within 400 mile radius | Montana                   |                     |                 |                        |                          |                              |
|---|---------------------------|---------------------|-----------------|------------------------|--------------------------|------------------------------|
|   | Great Falls International | Bert Mooney (Butte) | Helena Regional | Missoula International | Gallatin Field (Bozeman) | Billings Logan International |
| Scheduled Jet Service                           | Yes                       | Yes                 | Yes             | Yes                    | Yes                      | Yes                          |
| Scheduled Air Cargo Jet Service                 | Yes                       | No jet              | No jet          | No jet                 | No jet                   | Yes                          |
| Elevation                                       | 3,680                     |                     |                 |                        |                          |                              |
| Average Number of Days >90F                     | 18                        |                     | 17              | 21                     |                          | 29                           |
| Number of Runways                               | 3                         | 2                   | 3               | 2                      | 3                        | 3                            |
| Primary Runway                                  | 3/21                      | 15/33               | 9/27            | 11/29                  | 12/30                    | 10L/28R                      |
| Primary Runway Length (feet)                    | 10,502                    | 9001                | 9,000           | 9,501                  | 8,994                    | 10,518                       |
| Primary Runway Width (feet)                     | 150                       | 150                 | 150             | 150                    | 150                      | 150                          |
| Secondary Runway                                | 16/34                     | 11/29               | 05/23           | 07/25                  | 03/21                    | 07/25                        |
| Secondary Runway Length (feet)                  | 5,722                     | 5,100               | 4,644           | 4,612                  | 2,650                    | 5,501                        |
| Secondary Runway Width (feet)                   | 150                       | 75                  | 75              | 75                     | 75                       | 75                           |
| Parallel Taxiway all Runways                    | No                        | Yes                 | No              | No                     | No                       | No                           |
| Airport Reference Code                          | D-IV                      | C-III               | C-III           | C-IV                   | C-III                    | D-IV                         |
| Instrument Approach Minimums                    | Cat. IIIc 0 - 0           | 1500 – 1¼           | 200 – ½         | 400 - 1                | 200 – ½                  | 200 – ½                      |
| Control Tower                                   | Yes                       | No                  | Yes             | Yes                    | Yes                      | Yes                          |
| ARFF  | Index C                   | Index A             | Index B         | Index B                | Index B                  | Index C                      |
| # of Terminal Gates                             | 4                         | 2                   | 2               | 4                      | 4                        | 7                            |
| Cargo Apron Area (Sq. ft.)                      | 531,000                   | Undesignated        | FBO ramp        | 40,000                 | 42,000                   | 296,500                      |
| Cargo Warehouse (Sq. ft.)                       | 72,000                    | None                | None            | none                   | 50,000                   | 27,000                       |
| Acres   | 2,113                     | 890                 | 1,224           | 2,700                  | 2,481                    | 2,300                        |
| Annual Operations                               | 41,704                    | 35,378              | 49,509          | 39,217                 | 68,913                   | 83,500                       |
| % Commercial                                    | 15%                       | 9%                  | 5%              | 12%                    | 11%                      | 14%                          |
| % Air Taxi                                      | 22%                       | 16%                 | 12%             | 23%                    | 13%                      | 31%                          |
| % GA Local                                      | 21%                       | 48%                 | 34%             | 36%                    | 38%                      | 34%                          |
| % GA Itinerant                                  | 29%                       | 26%                 | 35%             | 27%                    | 38%                      | 20%                          |
| % Military                                      | 13%                       | 1%                  | 14%             | 1%                     | 1%                       | 1%                           |

Source: FAA 5010 Form, Airport Records

## Great Falls Regional Transportation Task #7

**TABLE 2**  
**Competing Airport Infrastructure (2 of 2)**

| Location<br><br>Airports within 400 mile radius | Wyoming                      |              | Idaho              |                      | Washington            | Saskatchewan            |                      | Alberta               |
|---|------------------------------|--------------|--------------------|----------------------|-----------------------|-------------------------|----------------------|-----------------------|
|   | Casper-Natrona International | Jackson Hole | Boise Air Terminal | Idaho Falls Regional | Spokane International | Saskatoon International | Regina International | Calgary International |
| Scheduled Jet Service                           | Yes                          | Yes          | Yes                | Yes                  | Yes                   | Yes                     | Yes                  | Yes                   |
| Scheduled Cargo Jet Service                     | Yes                          | No jet       | Yes                | No jet               | Yes                   | Yes                     | Yes                  | Yes                   |
| Elevation                                       |                              |              |                    |                      |                       |                         |                      |                       |
| Average Number of Days >90F                     | 28                           |              |                    |                      |                       |                         |                      |                       |
| Number of Runways                               | 4                            | 1            | 2                  | 2                    | 2                     | 2                       | 2                    | 3                     |
| Primary Runway                                  | 03/21                        | 01/19        | 10L/28R            | 02/20                | 03/21                 | 09/27                   | 13/31                | 16/34                 |
| Primary Runway Length (ft)                      | 10,165                       | 6,300        | 10,000             | 9,002                | 11,002                | 8,300                   | 7,900                | 12,675                |
| Primary Runway Width (ft)                       | 150                          | 150          | 150                | 150                  | 150                   | 150                     | 150                  | 200                   |
| Secondary Runway                                | 08/26                        | NA           | 10R/28L            | 17/35                | 07/25                 | 15/33                   | 08/26                | 10/28                 |
| Secondary Runway Length (ft)                    | 8,679                        | NA           | 9,763              | 4,051                | 8,199                 | 6,200                   | 6,200                | 8,000                 |
| Secondary Runway Width (ft)                     | 150                          | NA           | 150                | 75                   | 150                   | 150                     | 150                  | 200                   |
| Parallel Taxiway all Runways                    | No                           | Yes          | Yes                | Yes                  | Yes                   | Yes                     | No                   | No                    |
| Airport Reference Code                          | D-III                        | C-IV         | D-IV               | C-III                | C-III                 | C-III*                  | C-III*               | D-V*                  |
| Instrument Approach Min.                        | 200 – ½                      | 1200–1¼      | Cat IIIc 0-0       | 200 – ½              | Cat IIIc 0-0          | Cat. II                 | Cat. II              | Cat. II               |
| Control Tower                                   | Yes                          | Yes          | Yes                | Yes                  | Yes                   | Yes                     | Yes                  | Yes                   |
| ARFF  | Index B                      | Index B      | Index B            | Index B              | Index B               | Yes                     | Yes                  | Yes                   |
| # of Terminal Gates                             | 2                            | 6            | 22                 | 2                    | 24                    | 11                      | 5                    | 50                    |
| Cargo Apron Area (Sq. ft.)                      | 167,700                      | FBO ramp     | 225,000            | 30,000               | 415,000               | NA                      | NA                   | 1,000,000             |
| Cargo Warehouse (Sq. ft.)                       | 10,000                       | None         | 31,000             | 14,600               | 62,500                | NA                      | NA                   | 675,500               |
| Acres   | 5,131                        | 533          | 5,000              | 866                  | 4,753                 | NA                      | NA                   | NA                    |
| Annual Operations                               | 43,088                       | 30,865       | 129,004            | 40,747               | 81,397                | 93,083                  | 64,111               | 233,145               |
| % Commercial                                    | 3%                           | 22%          | 31%                | 7%                   | 46%                   | NA                      | NA                   | NA                    |
| % Air Taxi                                      | 30%                          | 25%          | 12%                | 19%                  | 17%                   | NA                      | NA                   | NA                    |
| % GA Local                                      | 65%                          | 8%           | 15%                | 38%                  | 17%                   | NA                      | NA                   | NA                    |
| % GA Itinerant                                  | 0%                           | 44%          | 31%                | 35%                  | 17%                   | NA                      | NA                   | NA                    |
| % Military                                      | 2%                           | 1%           | 11%                | 1%                   | 3%                    | NA                      | NA                   | NA                    |

Source: FAA 5010 Form, Airport Records, Canada Aviation Administration \*US Equivalent

Commercial airliners offer versatility in their ability to operate at a wide assortment of airports throughout the world. Their aircraft are designed to operate at airports with runway lengths that fit the airport's market demand. Large wide-body aircraft such as the Boeing 747 are designed to seat over 300 passengers and operate at international gateway airports such as Tokyo's Narita and JFK in New York; whereas narrow body aircraft designed for medium size markets and seat 100 to 200 passengers and serve markets such as Boise, ID and Great Falls, MT. Regional jets seat 34 to 70 passengers and serve markets such as Butte, MT.

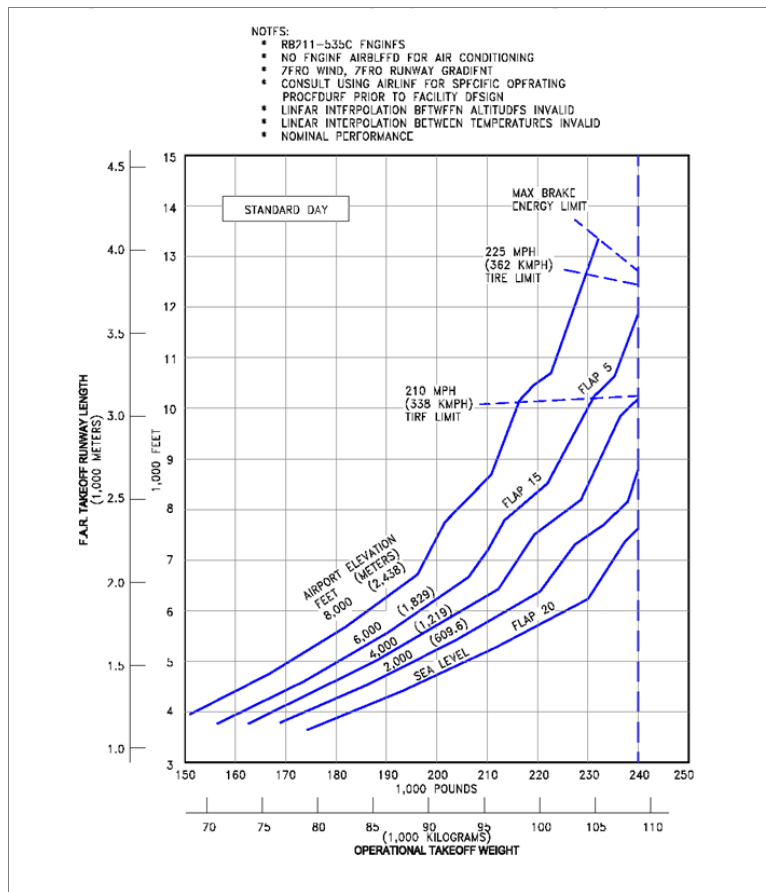
Airport master plans determine the size of critical aircraft anticipated to operate at an airport in the future, then design the runway system to accommodate that aircraft. Unlike general aviation airports which rely on FAA design software, runways at commercial airports are designed using aircraft manufacturer's specifications. These specifications provide length of runway required for aircraft based on payload, temperature, and elevation. In general, the higher the temperature, elevation, and payload weight, the longer the runway needs to be. This is not to say the aircraft at

## Great Falls Regional Transportation Task #7

high altitude airports on hot days cannot take off on a runway with less than ideal length. It does indicate that a commercial airliner may be unable to use its entire capacity for cargo, baggage and passengers in these conditions.

Exhibit 3 is a runway length table for airport design issued by Boeing for the 757-200 aircraft. This type of table is used by airport planners to design runways at Commercial Service airports. For example, this table indicates that a B757-200 would need 8,000 feet of runway if an aircraft weighing 225,000 pounds were to take off at an airport at an elevation of 4,000 feet MSL if temperatures are below 60 degrees Fahrenheit<sup>1</sup>.

**Exhibit 3**  
**B757-200 Takeoff Runway Requirements for Design Purposes**



## Pilot Factoring

It is the pilot's responsibility to calculate aircraft performance on a given day prior to takeoff. Takeoff runway length requirements for any airplane differ over a wide-range as a function of several variables. It is not possible for a pilot to arbitrarily specify a minimum or maximum runway length that applies to all conditions. The variables, which influence runway length requirements for actual takeoff as opposed to runway design, are:

<sup>1</sup> Standard Day temperature is 59 degrees F.

## Great Falls Regional Transportation Task #7

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- Aircraft gross takeoff weight (GTW);
- Airfield elevation;
- Wind velocity and direction;
- Ambient temperature and barometric pressure; and
- Runway surface slope and drag.

Prior to takeoff a pilot will consider all these factors. If, for example, the ambient temperature is greater than the mean maximum temperature the runway is designed for (thereby reducing aircraft takeoff performance), the pilot may need to, during preflight, reduce the aircraft's GTW by limiting the number of passengers or freight or not fueling the aircraft to capacity so as to reduce the takeoff distance length.

### Navigation Equipment and Landing Approach Minimums

Navigational aids are a critical component in airport infrastructure and highly used by air cargo carriers. Without adequate navigational aids, many air cargo carriers would experience less dependable operations at airports during periods of inclement weather, and as a result, customers would experience delays in critical shipments. For this discussion, navigational aids are divided into two categories:

- **Visual aids** - These include runway lighting, airport beacons, obstruction lighting, and Precision Approach Path Indicator (PAPIs).
- **Instrument navigational aids** - These include Non-Directional Beacons, Very High Frequency Omnidirectional Range (VOR), or Instrument Landing System (ILS) and Global Positioning Systems (GPS) instrument approaches.

There are three classes of instrument navigation procedures. They are:

- **Precision Approaches (PA)** – An instrument approach based on a navigation system that provides course and glide path deviation information meeting the precision standards of ICAO Annex 10. The most common example is the instrument landing system (ILS). The FAA breaks these approaches in three Categories with Category III being the most stringent.
- **Approaches with Vertical Guidance (APV)** – An instrument approach based on a navigation system that is not required to meet the precision approach standards of ICAO Annex 10 but provides course and glide path deviation information. The most common are LNAV/VNAV, and LPV approaches, all of which are GPS-based approaches.
- **Nonprecision Approaches (NPA)** – An instrument approach based on a navigation system which provides course deviation information only (no glide path deviation information). Typical examples include VOR, NDB, LOC, as well as LNAV approaches.

All of Montana's commercial service airports have Navigational Aids (NAVAIDS) in the above categories for at least one of the main runways for the commercial and cargo aircraft to operate on. Exhibit 3 presents the approach minimum ceiling height and approach minimum visibility distance for the runway with the most stringent instrument approach procedure. For example, the

approach minimums at Billings Logan International are 200 feet minimum ceiling height and one half mile visibility. The Category III approach at Great Falls International has no ceiling limit and no visual distance. It should be noted that most regional air cargo carriers, often contracted to UPS and FedEx in small markets, will not operate on a scheduled basis at airports lacking an instrument navigational aid.

### *Runway and Taxiway Systems*

The FAA has developed a system which categorizes aircraft type and designs runways and taxiways at airports to meet their design criteria. These design standards prevent aircraft of the same category from clipping wings if one is on the taxiway and the other is on the runway. In this system, the FAA classifies aircraft by an Airport Reference Code (ARC) determined by approach speed (letters A-E) and wingspan (roman numerals I-VI).

The airport's master plan identifies the design or critical aircraft at GTF as D-IV. Under this designation, GTF is designed to serve airplanes in aircraft approach speed categories A, B, C, and D. GTF also meets the FAA wingspan design requirements for aircraft in Airplane Design Groups I, II, III, and IV based upon runway to taxiway separation standards. This ARC of D-IV allows aircraft with a landing speed up to but not including 167 knots, and a wingspan up to but not including 171 feet. This is sufficient for turbo-props, regional jets, mid-size jets, and large wide body jets such as the B747.

The Boeing 757-200 aircraft is a common cargo aircraft utilized by FedEx at GTF and is identified as a C-IV design aircraft category. Other common cargo aircraft suitable for small to medium size markets include a wide range of turboprop aircraft such as the ATR-43, B1900, Embraer 120, Fairchild Metro III, and Cessna 208 Caravan. These aircraft are well suited to operate at an airport with a D-IV ARC since they fall into the A, B and I and II ARC categories.

An airport's master plan determines the ARC or design standard and is based on the largest aircraft anticipated to operate at the airport over 500 times in a year. As shown in Tables 1 and 2, airports in the study area have an ARC of either D-III, C-IV, or C-III while Great Falls International and Billings Logan International both have an ARC of D-IV. Most aircraft traffic at the airports in the study area are narrow-body passenger aircraft and small regional jets (i.e. B757, B737, A320, CRJ and ERJ). Interestingly, at many of these airports, aircraft that require the most stringent airport design standards are FedEx and UPS air cargo aircraft.

In fact, many of the airports in the study area were designed during an era when airlines operated larger passenger aircraft and today are under-utilized in terms of runway capabilities. With the exception of Calgary International, which sees many wide-body passenger jets, the only wide-body jet traffic experienced by airports in the study area are operated by air cargo carriers. Integrated express carriers such as FedEx and UPS both have an extensive wide-body fleet including A300 and B767 aircraft and all cargo carriers such as CargoLux operate B747 aircraft exclusively.

## Air Cargo Tonnage Trends

Air cargo tonnage trends at commercial service airports with scheduled air cargo jet service and within a 400-mile radius of Great Falls International indicate air cargo volumes have declined approximately -1.8 percent<sup>2</sup> between 2005 and 2010. Table 3 identifies air cargo tonnage at these six commercial service airports as well as the aggregate tonnage and includes all cargo carried by both passenger airlines and air cargo carriers. Air Cargo tonnage is the combination of air freight and mail tonnage and activity peaked in 2007. Calgary International Airport is the predominate airport for air cargo tonnage with over 155,000 annual tons in 2008. This is due to the airport's international passenger service in wide-body aircraft as well as regularly schedule freighters to Europe and a significant UPS hub on the airport.

**Table 3**  
Total Air Cargo Tonnage 2005-2010 and Growth/Decline Rates

| Airport                      | Code       | 2005           | 2006           | 2007           | 2008           | 2009           | 2010           | CAGR         |
|------------------------------|------------|----------------|----------------|----------------|----------------|----------------|----------------|--------------|
| Billings Logan Int'l         | BIL        | 39,071         | 40,153         | 38,625         | 33,499         | 33,327         | 33,675         | -2.9%        |
| Great Falls Int'l            | GTF        | 22,257         | 20,187         | 18,192         | 17,525         | 16,624         | 15,391         | -7.1%        |
| Spokane Regional             | GEG        | 85,400         | 81,767         | 80,734         | 79,166         | 73,319         | 77,932         | -1.8%        |
| Boise Gowen Field            | BOI        | 40,258         | 43,948         | 41,160         | 39,114         | 38,672         | 42,729         | 1.2%         |
| Casper Natrona County        | CPR        | 11,328         | 12,474         | 13,442         | 11,244         | 12,549         | 14,440         | 5.0%         |
| <u>Calgary International</u> | <u>YYC</u> | <u>137,750</u> | <u>139,557</u> | <u>147,944</u> | <u>151,130</u> | <u>122,847</u> | <u>122,847</u> | <u>-2.3%</u> |
| Total                        |            | 336,063        | 338,086        | 340,095        | 331,679        | 297,338        | 307,014        | -1.8%        |

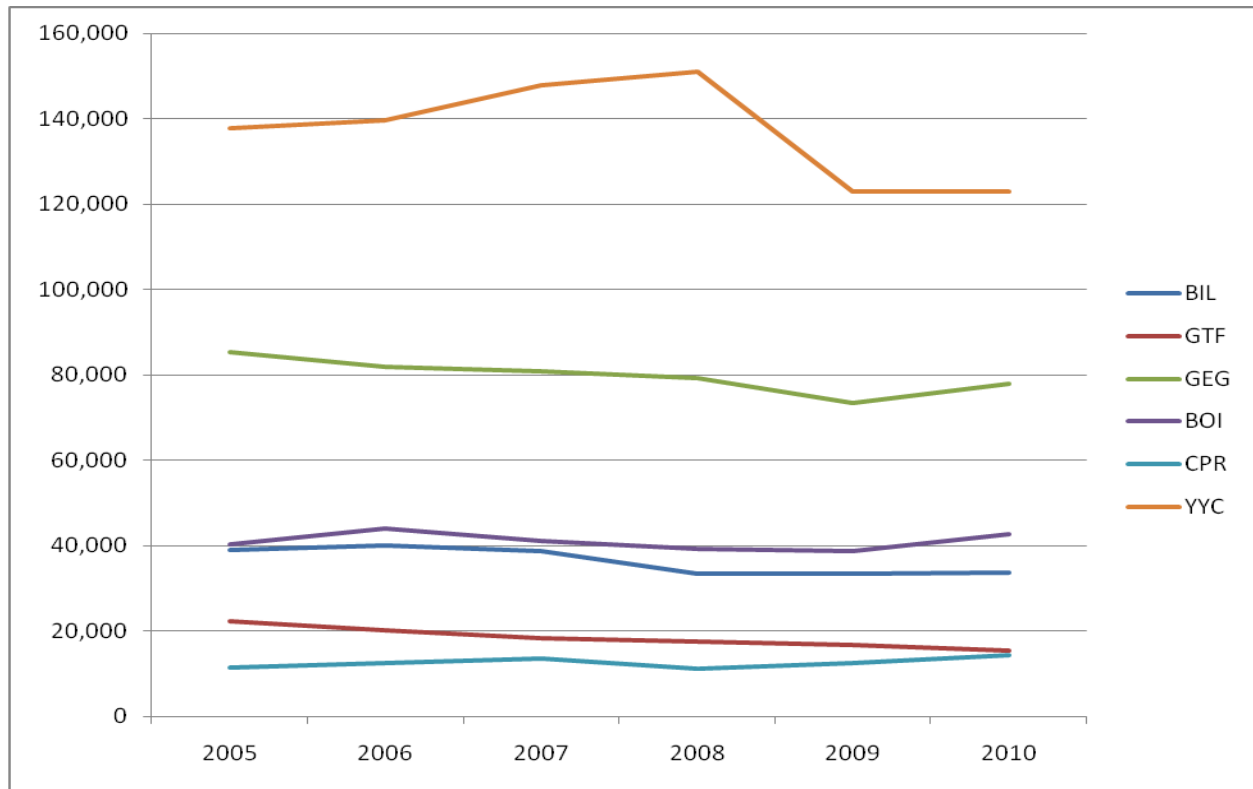
Source: US DOT T-100 Domestic Cargo Data, (T100 data includes air cargo carried on aircraft weighing more than 60,000 pounds) YYC data is based on Airports Council International, YYC 2010 is unavailable and is held constant

Exhibit 4 graphically depicts the air cargo tonnages for each airport and the Region. The decline in air cargo tonnages is indicative of the subprime mortgage recession beginning in September 2008. Air cargo trends for Great Falls International have declined, not only as a response to the recession, but also as a result of the reduction in FedEx Express' weekend network operations at the airport. This network consisted of a MEM-GTF-Calgary (YYC) route using a wide-body A310 aircraft. In addition, a wide-body DC10 operated MEM-Sacramento (SMF) with a stop in Great Falls, while a B727 flew the MEM-GTF-Salt Lake City (SLC) route. Since 2006, the weekend network has been reduced to a single flight on Sundays from Calgary to Memphis with a stop in Great Falls.

<sup>2</sup> Compounded annual growth rate



Exhibit 4  
Total Air Cargo Tonnage 2005-2010



Source: US DOT T-100 Domestic Cargo Data, YYC data is based on Airports Council International

### *Competing Airports Summary*

Great Falls International Airport has many attributes that set it apart from other airports within the 400-mile radius. The airport's Category III ILS landing system allows cargo jets to operate at the airport during periods of inclement weather such as rain, fog, and snow. FedEx Express operations at the airport would be hampered without this navigational aid. FedEx' 72,000 square foot sorting facility at GTF acts as a package distribution hub for all of Montana and is the largest on-airport cargo warehouse in the state.

The carrier operates an extensive network in the state via a fleet of contracted regional feeder air cargo aircraft. The airport's primary runway is 10,500 feet in length and is the fourth longest runway in the 400-mile study area. It can accommodate large wide-body air cargo aircraft such as the MD-11 as well as Boeing 747. The airport is used for testing the new Boeing 747 Dash 8 aircraft as well as the new Boeing 757 Dreamliner. US Customs Border Patrol has an office on the airport which is conducive to inbound international flights. The airport is over 2,100 acres in size and has a foreign trade zone. Finally, airport staff have extensive experience in air cargo operations and support its continued development.

## Air Cargo Carrier Networks & Airport Utilization

Integrated express operators are the predominant air cargo carriers in the state. Integrated express operators provide their customers with door-to-door service and have national and, in most cases, worldwide networks. The integrated express operators in Montana with scheduled air cargo aircraft include FedEx Express and UPS. UPS uses Billings Logan International as their Montana center of aircraft operations, while FedEx uses GTF as their statewide hub. UPS operates a Beech 1900 and B99 at GTF which feeds into its jet operations in Billings. Feeder contracted turboprop cargo aircraft operate in and out of Great Falls and Billings for FedEx and UPS, respectively, typically on long-thin routes.

To serve the air cargo demand in the Great Falls area, FedEx Express operates at GTF as a feeder hub to collect and distribute cargo via air to four communities in Montana using three contract air cargo carriers. Empire Airways departs GTF for Missoula International weekday mornings using an ATR-42 twin-engine turbo-prop aircraft and returns to GTF in the evening. Corporate Air operates Cessna 208 Caravan (C208) single-engine turbo-prop aircraft from GTF to Bozeman (twice daily) and Wolf Point. Both flights have a morning departure and an evening return to GTF. Ameriflight operates a route between GTF and Glacier Park International Airport for FedEx Express utilizing Beechcraft 1900 twin-engine turbo-prop aircraft.

FedEx Express operates a pair of Boeing 757 narrow-body jet aircraft on round-trip routes that include GTF. One aircraft begins its morning route departing FedEx's main hub in Memphis for GTF, while the other departs GTF for Memphis. Conversely, there is one evening route from GTF to Memphis and one from Memphis to GTF with a stop in Wichita. The daytime operations typically carry United States Postal Service mail while the overnight flights typically carry freight and packages. FedEx has been contracted through the USPS to carry first class mail since 2001.

Outside of Great Falls, Montana's other major air cargo airport is Billings-Logan International, from which both UPS and FedEx have two daily departures using mainline jet aircraft. FedEx operates one morning departure from BIL to Memphis using a Boeing 757 aircraft, which returns in the evening, and one evening departure from BIL to Denver using a Boeing 727 narrow-body jet aircraft, which returns the following morning. Acting as a consolidation point for cargo from over 10 Montana cities, UPS maintains a significant feeder hub in Billings. Alpine Air is the sole contract cargo carrier for UPS in Billings, operating routes to cities such as Butte, Helena, Great Falls, Cut Bank, Bozeman, Kalispell, Missoula, Wolf Point, and Havre on Beechcraft 1900 and Beechcraft 99 (Baron) aircraft. These aircraft then feed into UPS's two Airbus A300 wide-body aircraft, which subsequently feed into larger UPS hubs.

One A300 departs Billings for Denver in the evening and continues to Ontario, California. An A300 then returns to Billings the following morning from Rockford, IL, by way of Denver. A second A300 operates a more circular route that departs Billings each morning for Omaha, NE, and ultimately arrives at UPS's main hub in Louisville, KY. The aircraft then returns to Billings direct from Louisville, KY the same evening. Table 4 identifies all cargo aircraft operations in Montana while FedEx and UPS specific route structures are illustrated in Exhibits 5 and 6.

**Table 4**  
**Scheduled Air Cargo Routes in Montana**

| Cargo Carrier            | Aircraft Type | Morning Route |          |          | Evening Route |          |          |
|--------------------------|---------------|---------------|----------|----------|---------------|----------|----------|
|                          |               | Origin        | 1st Stop | 2nd Stop | Origin        | 1st Stop | 2nd Stop |
| FedEx Express            | B752          | MEM           | GTF      |          | GTF           | MEM      |          |
| FedEx Express            | B752          | GTF           | MEM      |          | MEM           | ICT      | GTF      |
| FedEx Express            | B752          | BIL           | MEM      |          | MEM           | BIL      |          |
| FedEx Express            | B722          | DEN           | BIL      |          | BIL           | DEN      |          |
| UPS                      | A306          | RFD           | DEN      | BIL      | BIL           | DEN      | ONT      |
| UPS                      | A306          | BIL           | OMA      | SDF      | SDF           | BIL      |          |
| <b>Contract Carriers</b> |               |               |          |          |               |          |          |
| Alpine Air               | B190/BE99     | BIL           | BTM      |          | BTM           | BIL      |          |
| Alpine Air               | BE99          | BIL           | BTM      |          | BTM           | BIL      |          |
| Alpine Air               | BE99/B190     | BIL           | GTF      | CTB      | CTB           | GTF      | BIL      |
| Alpine Air               | B190          | BIL           | BZN      |          | BZN           | BIL      |          |
| Alpine Air               | B190/BE99     | BIL           | GPI      |          | GPI           | BIL      |          |
| Alpine Air               | B190          | MSO           | BIL      |          | BIL           | GPI      | MSO      |
| Alpine Air               | BE99          | BIL           | OLF      |          | OLF           | BIL      |          |
| Alpine Air               | B190          | GTF           | HVR      |          | HVR           | GTF      |          |
| Alpine Air               | B190          | BIL           | MSO      | GPI      | GPI           | MSO      | BIL      |
| Corporate Air            | C208          | GTF           | BZN      |          | BZN           | GTF      |          |
| Corporate Air            | C208          | GTF           | OLF      |          | OLF           | GTF      |          |
| Ameriflight              | B190          | GTF           | GPI      |          | GPI           | GTF      |          |
| Empire Airways           | AT43          | GTF           | MSO      |          | MSO           | GTF      |          |

Source: FAA, [www.flightware.com](http://www.flightware.com) data

The jet aircraft for all cargo carriers transport cargo in roll-on containers for expedited handling, while smaller aircraft such as the ATR-42 and C208 aircraft are bulk-loaded. Depending on the size of jet aircraft, and the amount of cargo space required for other airports on the round-robin route, BIL’s enplaned and deplaned volumes vary. What does not travel by aircraft goes by truck, depending on the route. FedEx Express supplements air cargo lift requirements in the market with trucks. A truck carries a 53-foot long trailer loaded with five containers of deferred (2<sup>nd</sup> and 3<sup>rd</sup> day) packages between BIL and Denver. Exhibit 5 illustrates the route structure of all FedEx and FedEx feeder aircraft operating within the 400-mile radius of Great Falls. FedEx Express typically does not transport overnight packages via truck outside of the state.

Outside of Montana there are significant air cargo operations at Boise Air Terminal and Spokane International. Both FedEx and UPS operate multiple wide-body aircraft on routes to their respective hubs, while a variety of contract cargo carriers feed into these networks at Boise and Spokane.

FedEx Express operates one Boeing 757 and two Airbus A300 aircraft on routes in and out of Boise, ID. The B-757 is operated on a daily round-trip route from Boise to Memphis, making a stop in Casper, WY each way. Both of the A300s arrive to Boise, ID in the morning from Salt Lake City, UT; however, one A300 departs for the FedEx hub in Memphis, TN shortly after arriving while the other remains in Boise for the day then returns to Salt Lake City in the

## Great Falls Regional Transportation Task #7

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evening, eventually continuing to a FedEx Regional hub in Oakland, CA. UPS operates one A300 on a daily roundtrip flight from Salt Lake City to Boise in the morning, and returns in evening.

In Spokane, FedEx operates a pair of A300 aircraft on routes to and from Memphis. These aircraft carry parcels originating locally in Spokane as well as all over the region due to feeder aircraft service. Empire Airways operates as a contracted feeder carrier for FedEx in Spokane, serving the smaller regional cities where logistics deems trucking inefficient. The airports served by Empire include Yakima, Lewiston, Eastern Oregon, Tri-Cities, and Pangborn Memorial. Cessna Caravans (C208) is the primary aircraft used by Empire for these routes.

UPS has developed second-day air hubs in its network, which provide airlift for UPS packages not requiring overnight delivery but the distances require shipping on both trucks and aircraft. As shippers have become more cost conscious integrated express carriers have developed products to meet their logistical needs. This trend in the air cargo industry is the result of shippers cutting costs from time overnight service to time definite services. Spokane International is one such second-day hub for UPS, serving a vital role for the carrier. UPS operates inbound and outbound flights into Spokane from Portland and Seattle's Boeing Field as well as their Regional Hub in Dallas (DFW) and their Midwest second-day hub in Des Moines. The primary aircraft used by UPS on these routes to and from Spokane are Boeing 767 wide-bodies.

In addition, Spokane and Boise also experience various cargo operations outside of FedEx and UPS. AmeriFlight operates a route between Salt Lake City and Boise utilizing a small twin-engine piston Beechcraft Baron (BE99) aircraft to feed DHL's larger jet aircraft in Salt Lake City. Airpac is a small contract cargo carrier based out of Seattle that operates a twice daily roundtrip flight between Boise and Boeing Field utilizing single-engine turboprop Pilatus PC-12 aircraft. Airpac may be carrying bank/Federal Reserve checks or mail between the two cities. Western Air Express operates to both Boise and Spokane utilizing a Swearingen Metroliner (SW4) and a Cessna 402 (C402). The SW4 is routed on one daily roundtrip flight between Salt Lake City and Boise, while the C402 is routed once daily between Spokane and Boise. Table 5 identifies all U.S. cargo operations outside of Montana within the 400-mile radius while FedEx and UPS specific route structures are illustrated in Exhibits 5 and 6.

**Table 5**  
**U.S. Cargo Operations Outside Montana**

| Cargo Carrier            | Aircraft Type | Morning Route |          |          | Evening Route |          |          |
|--------------------------|---------------|---------------|----------|----------|---------------|----------|----------|
|                          |               | Origin        | 1st Stop | 2nd Stop | Origin        | 1st Stop | 2nd Stop |
| FedEx Express            | B752          | MEM           | CPR      | BOI      | BOI           | CPR      | MEM      |
| FedEx Express            | A306          | OAK           | SLC      | BOI      | BOI           | SLC      | OAK      |
| FedEx Express            | A306          | OAK->SLC      | BOI      | MEM      | MEM           | BOI      | SLC->OAK |
| FedEx Express            | A306          | GEG           | MEM      |          | MEM           | GEG      |          |
| FedEx Express            | A306          | MEM           | GEG      |          | GEG           | MEM      |          |
| UPS                      | A306          | SLC           | BOI      |          | BOI           | SLC      |          |
| UPS                      | B763          | ONT->BFI      | GEG      | SDF      | SDF           | GEG      | BFI->ONT |
| UPS                      | B763          | PDX           | GEG      | DFW      | DFW           | GEG      | PDX      |
| UPS                      | B763          | GEG           | DSM      |          | DSM           | GEG      |          |
| <b>Contract Carriers</b> |               |               |          |          |               |          |          |
| Key Lime Air             | SW4           | DEN           | CPR      |          | CPR           | LAR      | DEN      |
| Ameriflight              | B190/BE99     | SLC           | JAC      |          | JAC           | SLC      |          |
| Ameriflight              | BE99          | SLC           | BOI      |          | BOI           | SLC      |          |
| Ameriflight              | BE99          | BFI           | GEG      |          | GEG           | BFI      |          |
| Airpac                   | PA31          | BFI           | GEG      | BFI      | BFI           | GEG      | BFI      |
| Empire Airways           | C208          | GEG           | PDT      | LGD      | LGD           | PDT      | GEG      |
| Empire Airways           | C208          | GEG           | YKM      | MWH      | MWH           | GEG      |          |
| Empire Airways           | C208          | GEG           | YKM      |          | YKM           | GEG      |          |
| Empire Airways           | C208          | GEG           | LWS      |          | LWS           | GEG      |          |
| Empire Airways           | C208          | GEG           | EAT      |          | EAT           | GEG      |          |
| Empire Airways           | AT72/C208     | GEG           | PSC      |          | PSC           | GEG      |          |
| Western Air Express      | SW4           | SLC           | BOI      |          | BOI           | SLC      |          |
| Western Air Express      | C402          | GEG           | BOI      |          | BOI           | GEG      |          |

Source: FAA, [www.flightware.com](http://www.flightware.com) data

North of the border, Canadian airports that fall within the 400-mile radius of Great Falls International Airport include Calgary International, Regina International, and Saskatoon John G. Diefenbaker International. Of the three, Calgary is by far the most active cargo airport and is one of their fastest growing cargo markets due to location, intermodal accessibility, natural resources, and economic growth. Regina and Saskatoon both experience moderate to low levels of feeder service, with most being routed through Calgary.

FedEx and UPS both operate Airbus A300 wide-body aircraft on daily routes between Calgary and their hubs in Memphis and Louisville (via Sioux Falls), respectively. For high density intra-Canadian cargo routes between larger cities, FedEx Express Canada contracts with Morningstar Air Express, an all-cargo carrier based in Edmonton, Alberta. Morningstar operates inbound and outbound flights into Calgary from Toronto, Winnipeg, and Vancouver utilizing Boeing 757 (B757) aircraft.

Sunwest Home Aviation is the sole contracted feeder operating in and out of Calgary. They operate a variety of piston and turbo-prop aircraft including Beechcraft 1900 (B190), Pilatus

## Great Falls Regional Transportation Task #7

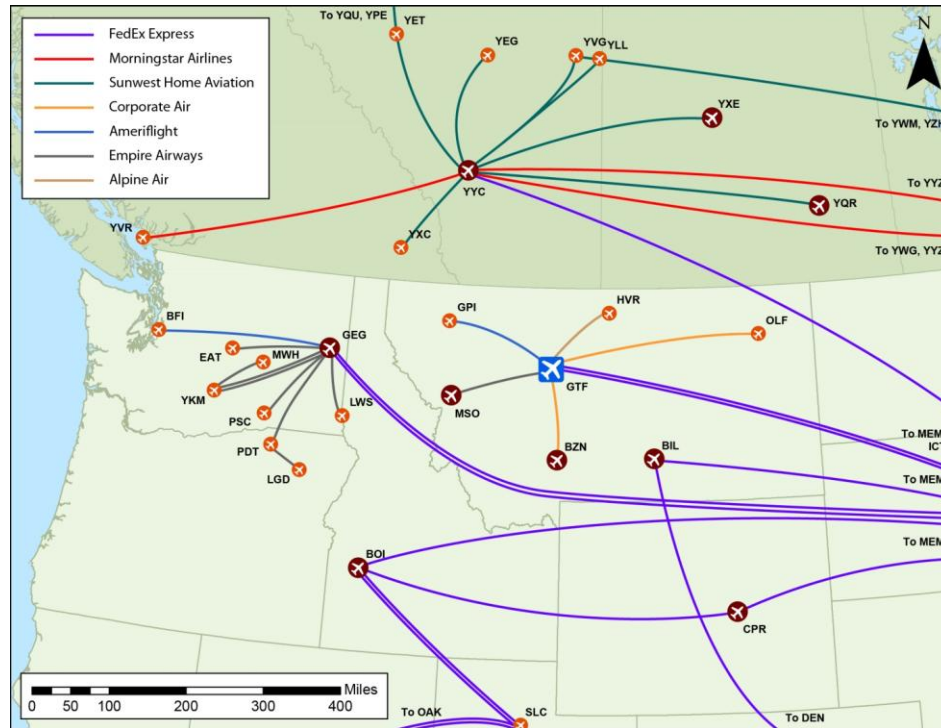
PC12 (PA31), Cessna Caravan (208), Swearingen Metroliner (SW4). Sunwest Home contracts for both FedEx and UPS out of Calgary, serving western Canadian cities such as Edmonton, Bonnyville, Cranbrook, Edson, Vermillion, Lloydminster, and Red Deer. Regina and Saskatoon are both served by Sunwest Home contracting through FedEx at Calgary. Table 6 identifies all cargo operations in Canada within the 400-miles radius while FedEx and UPS specific route structures are illustrated in Exhibits 5 and 6.

**Table 6**  
**Cargo Operations in Canada**

| <b>Cargo</b>             | <b>Aircraft</b> | <b>Morning Route</b> |                            |                            | <b>Evening Route</b> |                            |                            |
|--------------------------|-----------------|----------------------|----------------------------|----------------------------|----------------------|----------------------------|----------------------------|
| <b>Carrier</b>           | <b>Type</b>     | <b>Origin</b>        | <b>1<sup>st</sup> Stop</b> | <b>2<sup>nd</sup> Stop</b> | <b>Origin</b>        | <b>1<sup>st</sup> Stop</b> | <b>2<sup>nd</sup> Stop</b> |
| UPS                      | A306            | FSD                  | YYC                        |                            | YYC                  | FSD                        |                            |
| FedEx Express            | A306            | MEM                  | YYC                        |                            | YYC                  | MEM                        |                            |
| Morningstar Air Express  | B752            | YYZ                  | YYC                        | YVR                        | YVR                  | YYC                        | YYZ                        |
| Morningstar Air Express  | B752            | YYZ                  | YWG                        | YYC                        | YYC                  | YWG                        | YYZ                        |
| Cargolux Airlines        | B744            | LAX                  | YYC                        | LUX                        |                      |                            |                            |
| Cargolux Airlines        | B744            | SEA                  | YYC                        | LUX                        |                      |                            |                            |
| Southern Air             | B742            | ORD                  | YYC                        | ANC                        |                      |                            |                            |
| <b>Contract Carriers</b> |                 |                      |                            |                            |                      |                            |                            |
| Sunwest Home Aviation    | B190            | YYC                  | YBF                        |                            | YBF                  | YYC                        |                            |
| Sunwest Home Aviation    | B190/PA31       | YYC                  | YXC                        |                            | YXC                  | YYC                        |                            |
| Sunwest Home Aviation    | B190/C208       | YYC                  | YEG                        |                            | YEG                  | YYC                        |                            |
| Sunwest Home Aviation    | SW3/4           | YYC                  | YEG                        |                            | YEG                  | YYC                        |                            |
| Sunwest Home Aviation    | PA31            | YYC                  | YET                        | YQU->YPE                   | YPE->YQU             | YET                        | YYC                        |
| Sunwest Home Aviation    | PA31            | YYC                  | YVG/YLL                    | YWM->YZH                   | YZH->YWM             | YVG/YLL                    | YYC                        |
| Sunwest Home Aviation    | SW4             | YYC                  | YQR                        |                            | YQR                  | YYC                        |                            |
| Sunwest Home Aviation    | SW4/C208        | YYC                  | YXE                        |                            | YXE                  | YYC                        |                            |
| Sunwest Home Aviation    | B190            | YYC                  | YQF                        |                            | YQF                  | YYC                        |                            |

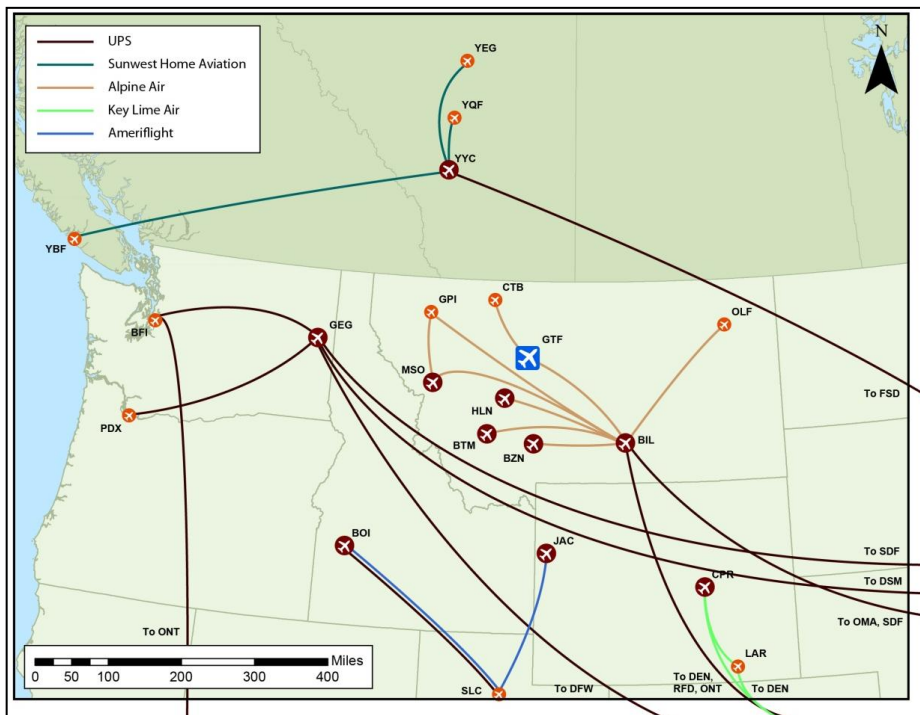
Source: FAA, [www.flightware.com](http://www.flightware.com) data

**Exhibit 5**  
**Route Structure of Cargo Operations Inside 400-Mile Radius of Great Falls - FedEx Express & FedEx Feeders/Contractors**  
**Weekday Network**



Source: FAA, [www.flightware.com](http://www.flightware.com) data

**Exhibit 6**  
**Route Structure of Cargo Operations Inside 400-Mile Radius of Great Falls - UPS and UPS Feeders/Contractors**



Source: FAA, [www.flightware.com](http://www.flightware.com) data

## Great Falls Regional Transportation Task #7

Significant industry growth in oil and gas as well as the high tech industry in the Calgary region spurred the development of stopover along the routes of two major international cargo carriers. Cargolux Airlines (one of the largest European scheduled all cargo airlines) and Southern Air (a long-haul all cargo carrier) operate once-weekly routes through Calgary using Boeing 747 (B747) wide-body aircraft. Cargolux operates its route from either Los Angeles (LAX) or Seattle (SEA) to its hub in Luxembourg after stopping in Calgary. At one point prior to the 2008 recession, Cargolux operated at the airport three times a week. Southern Air operates its route from Chicago (ORD) to Anchorage after stopping in Calgary. These routes, along with all other non-FedEx/UPS routes, are illustrated in Exhibit 7.

**Exhibit 7**  
**Route Structure of Other Cargo Carriers**  
**Unaffiliated With FedEx/UPS**



Source: FAA, [www.flightware.com](http://www.flightware.com) data



## Market Segment Analysis

As part of the marketing segment analysis, WSA completed in depth interviews of air cargo businesses, businesses in aviation, aerospace, agriculture, and healthcare and defined the current market segments based on interviews and online research. Data collection determined how cargo is shipped, the types of cargo shipped, and what the primary industries in the Great Falls area are that ship via air cargo on a regular basis.

This section of the report focuses on the air cargo providers, commodities commonly transported by air, and industry clusters in the Great Falls market area that rely on air cargo transport.

### *Air Cargo Providers*

There are four primary distribution channels for air freight: all cargo carriers, integrated express operators, commercial airlines, and freight forwarders. A brief description of each follows.

#### **All Cargo Carriers**

All cargo carriers operate airport-to-airport air cargo and freight services for their customers but do not offer passenger service. All cargo carriers include Polar Air Cargo, Atlas Air, and Kalitta Air Cargo, to name a few. Japan Airlines and Korean Air, however, are passenger airlines with their own fleet of passenger aircraft and a separate fleet of Boeing 747 freighter aircraft. All cargo carriers offer scheduled service to major markets throughout the world using wide body and/or containerized cargo aircraft. A few all cargo carriers operate extremely large aircraft such as the Antonov 124 which boasts a capacity of 220,000 pounds and a low main deck with ramps for ease of loading. These aircraft were developed in Russia for military transport and now are used in civil aviation for movement of large project cargo items such as equipment, large aerospace components, and vehicles.

#### **Passenger Airlines**

Air cargo services provided by passenger airlines vary in scope and size from airline to airline, based on differences in aircraft operating fleets. A regional airline, with a fleet of turboprop and regional jets, cannot accommodate bulky cargo. Airlines operating wide-body aircraft have containerized lower decks, and are capable of handling large shipments. Passenger airlines generally provide airport-to-airport service, carried as belly cargo. Freight is dropped off at the origination airport by the shipper (or freight forwarder), and the freight is picked up at the destination airport by the customer (or freight forwarder).

### **Road Feeder Service/Freight Forwarders**

Road feeder service (RFS) is a service offered by a scheduled cargo operator to move its carried goods to and from the aircraft and/or terminal by truck road service. This allows a carrier to offer services to a city to which it does not fly aircraft. These services are typically allocated an airline flight number although no aircraft may be involved in the transport.

A freight forwarder accepts small packages from shippers and consolidates them into container loads. These loads are then transferred to the non-integrated carrier or passenger airline to deliver to an agent or subsidiary at another airport. Freight forwarders rely heavily on lift provided by commercial passenger carriers, road feeder service providers, as well as all cargo carriers. Freight forwarders have their leading gateways near major hub airports such as Chicago O'Hare International and Seattle Tacoma International. BAX Global operates as a multi-modal forwarder, but utilizes its own aircraft fleet and a hub and spoke system to support its air freight operations.

### **Integrated Express Operators**

Integrated express operators move the customer's goods from the shipper's door to the consignee (receiver's) door, providing shipment collection, transport via air/truck, and delivery. Integrated express operators include FedEx Express<sup>3</sup>, UPS, and DHL. Express companies provide next day and deferred, time-definite delivery of documents and small packages (two to 70 pounds). Integrated express operators are increasingly transporting heavy freight, (over 70 pounds). Integrated express operators use hub-and-spoke systems similar to passenger airlines. The hub is the backbone of integrated express operators, providing connection to each market in the operator's system. Each day of operation, flights from around the U.S. arrive at the hub, where packages are unloaded, sorted by destination market, and then loaded onto outbound aircraft.

### ***Air Cargo Commodities***

Air cargo demand is generated when there is a need for expeditious transportation of material and goods between two points. In the business world, logistics managers must justify the use of air cargo as their preferred mode of transport, as shipping by air is a greater cost than shipping via truck, rail, and water. Factors involved in deciding to transport via air include:

- Cost of transporting the material
- Level of service commitment to the customer or end user
- Value of the material
- Time-sensitivity of the material

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<sup>3</sup> FedEx has several product types that utilize the FedEx brand name in some form. FedEx Express is the integrated express arm of the company, providing the "overnight service" synonymous with the brand. FedEx Freight is a trucking division which specializes in freight weighing over 150 pounds and offers fast-cycle logistics with regional next- and second-day service, including accelerated service in 3 days or more.

## Great Falls Regional Transportation Task #7

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Products benefiting from increased speed of distribution or better stock availability provided by air cargo shipping include those that are high value, relatively light weight, and time critical, including:

- **Aerospace - Equipment & Parts**
- Automotive - Equipment & Parts
- **Energy Development**
- **Pharmaceuticals**
- Computers & Computer Components
- **Medical Diagnostic Equipment and Specimens**
- **Medical/Surgical Devices and Equipment**
- Textiles - Garments
- Consumer Electronics
- **Perishables - Flowers, Fruit, Vegetables, Meats & Seafood**
- Economically Perishable Materials - Printed Material
- Telecommunications Equipment - Cell Phones, etc.

All of the commodities identified above are high in value, relatively light weight, and are time critical. Commodities commonly destined for or originating in the Great Falls Region and shipped via air are identified with bold font. Commodities that regularly originate in or are destined for the Great Falls market area are linked to industry clusters in the Region. Industry clusters may be linked to similar clusters in other parts of the country, or world; and as a result of distant markets or supply sources, are reliant on air cargo transport for the movement of products and parts.

Interviews with air cargo business staff in the Great Falls market indicate commodities commonly transported inbound to the Region by integrated express carriers include: aerospace parts and equipment, legal and financial documents, new cell phones, wind energy parts and equipment for maintenance and repair of local wind turbines, mining parts and equipment, and oil and gas extraction parts and equipment. There is a firm in Lincoln, MT that develops and ships wind turbine repair kits that include all the parts, tools and accessories to repair wind turbines. Mining and oil and gas commodities may reach weights up to 150 lbs.

Medical diagnostic equipment, pharmaceuticals and medical devices are common inbound commodities to local hospitals. An aircraft charter operator supports Benefis Health with every-other-day medical supplies flights from Spokane and Seattle to Great Falls. Flowers are commonly shipped to retailers in the Region. Transport of tractor and heavy equipment parts is becoming more common as many local tractor and ranch suppliers in the Region carry smaller inventories and rely more often on overnight express shipments.

Outbound commodities generated in the Great Falls market include meat products with much of it related to the hunting and fishing industry, taxidermies, music concert equipment, documents and forms. Aerospace related shipments are increasing with the growth in AvMax' and Cable Technologies' aircraft equipment manufacturing and repair/overhaul business.

### *Industry Clustering*

A cluster, in basic terms, is defined as a geographic region with a concentration of companies, universities and institutions that have similar or related products, needs and interests to generate external economies of scale. Resultantly, these entities produce innovation and build upon each other's knowledge base. These innovative businesses will ultimately export goods and services outside of a region, creating jobs and importing wealth. These clusters also have an economic multiplier effect as businesses and individuals in the service sector support businesses within these clusters on a daily basis. Industry clusters developing or developed in the Great Falls Region as identified by the GFDA include:

- **Energy Cluster** – These include opportunities in oil and gas development, electric generation and transmission, and alternative and renewable energy. Examples of existing energy businesses and projects include Naturener Wind Farms, Montana Refining, the Montana Alberta Transmission line, Gibson Dam, Rainbow Dam upgrade and the USAF Coal to Liquid proposal.
- **Agriprocessing Cluster** - These includes grain and oil seed processing, food processing and biofuels. Examples of existing companies include General Mills, Archer Daniels Midland, Pasta Montana, Montana Milling, Timeless Seeds, Cenex Harvest States and Montana Specialty Mills.
- **Business Services** - This include finance, insurance, customer service, data centers and professional services. Existing companies include DA Davidson, NEW, and Centene, as well as entrepreneurial companies such as Wendt, North Country Media Group, Winston Publishing and many others.
- **Design & Construction** - This includes architectural, engineering, construction management, construction supply companies and construction firms that do business, or would like to do business, outside the Great Falls trade area. Existing companies include Sletten Construction, LâHeurreux Page Werner, CTA, NCI, United Materials, Lumber Yard Supply, Stelling Engineers, Pacific Steel & Recycling and Anderson Steel, just to name a few.
- **Medical** - This includes Benefis, Great Falls Clinic, Bio Life Plasma, and the McLaughlin Research Institute. To a certain extent this cluster includes large and small animal veterinary providers and suppliers in the market area.

Interviews of air cargo suppliers indicate all clusters in the Region listed above are reliant on air cargo to some degree in their day-to-day business activities. Additionally, interviews of businesses and cargo carriers for this study other emerging industry clusters in the market area are very reliant on regular utilization of air cargo transport. These emerging clusters include aerospace manufacturing and maintenance, and taxidermy and meat processing.

### Aerospace Manufacturing

Avmax Group Inc. is a Canadian owned company that was founded by a group of aviation and aircraft professionals with extensive experience in corporate and commercial airline operations. Avmax located in Great Falls in 2006 and focuses on aviation support, training and management services with six profit centers. These include:

- **Avmax Heavy Maintenance Centre** – These facilities provide aircraft maintenance and refurbishment capabilities in Calgary Alberta, Great Falls, MT and Jacksonville, FL.
- **Western Avionics** - Is the largest dedicated avionics<sup>4</sup> shop in Canada, with locations in Calgary (CYYC) and Vancouver (CYVR).
- **Aircraft Leasing and Sales** - AvMax provides aircraft for sale or lease to customers
- **Aircraft Spares** - Provides the civilian aircraft industry with supply and management of operator's spare aircraft inventories.
- **Airline** - Regional 1 is the newest division aimed at providing domestic and international charter services.
- **Real Estate/Development Projects** - Airdrie AirPark is a 602-acre development is specifically designed towards commercial aviation and related businesses and is the only development of its kind in Canada.

AvMax operations at GTF entail providing heavy maintenance checks for airline owned aircraft. These aircraft are owned by domestic airlines in the US as well as foreign owned aircraft from carriers in Russia, China and the Netherlands making the operation a truly global one.

Cable Technology Inc. was established in 1997 in Great Falls and provides design, assembly solutions, and expertise for the aviation and military industries. Their headquarters is a 37,000 square foot facility in Great Falls. Cable Technology's commercial aerospace product base includes customers in air transport, helicopter operators, and OEM airframe manufacturers for in-flight entertainment system harnessing, engine controls, antennas, and instrumentation.

The Aviation Maintenance Technology program at the University of Montana-Helena, College of Technology is considering offering course work in Great Falls to expand the aerospace workforce in the Great Falls market area. Students would be able to earn an Associate of Applied Science within four semesters.

### Taxidermy & Meat Processing

There are approximately 12 taxidermy establishments and seven game meat processing businesses listed in the National Rifle Association databases. These facilities regularly process

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<sup>4</sup> The avionics sector comprises electronic systems for use on aircraft, artificial satellites and spacecraft, comprising communications, navigation and the display and management of multiple systems. It also includes the hundreds of systems that are fitted to aircraft to meet individual roles, these can be as simple as a search light for a police helicopter or as complicated as the tactical system for an Airborne Early Warning platform for military aircraft.

fish and game meat for out of state fisherman and hunters and then ship the product via air cargo to their customers after they have returned home. Prepared fish and game trophies are also commonly transported by air cargo to out of state hunters. Approximately 10 percent of all meat processors and taxidermists in Montana are based in the Great Falls market area. This concentration of fish and game service providers in Great Falls is based on the close proximity to some of the largest hunting and fishing lands in Montana.

### ***Other Montana Industry Clusters Utilizing Air Cargo***

Montana clusters feeding air cargo into the FedEx statewide hub at GTF include the high tech optics companies in and around Bozeman, Missoula, and Kalispell. Gallatin Development Corporation identify approximately 50 software, laser optic, and other high-tech companies in Bozeman, which foster collaboration with researchers at Montana State University. SemiTool Inc. in Kalispell specializes in equipment manufacturing for the semiconductor industry. Demand for air cargo in Bozeman warrants two FedEx Cessna Caravans and one Cessna Caravan in Kalispell. These aircraft operate every week day into GTF.

### ***Potential Montana Produced Air Cargo Commodities***

In recent years there have been significant shifts in many of the world's developed nations in consumer preference for more highly differentiated foods. These highly differentiated products, often referred to as niche market or place-based products, consist of foods marketed by farmers or groups of farmers within a specific region, directly to consumers. Examples of place-based agricultural products include Vidalia onions, Florida orange juice, Indiana melons, wild Alaska salmon, Vermont maple syrup, and Texas ruby red grapefruit. Many place-based agricultural products are only produced in specific regions due to soil type, micro climate, genetic strain, and institutional knowledge of growers and producers. Many businesses providing consumers with place-based products rely on quick and efficient transportation, particularly during holidays, to get their product to market. These businesses range in size from food based cottage industries, to large companies, such as Omaha Steaks.

Montana has a wide variety of place-based food producers that provide niche products to restaurants, stores and consumers both in and outside Montana. Many of these producers started as mail order enterprises and eventually made their products available through online ordering via the internet. Perhaps the most common Montana based-product available to the consumer online are Montana meat products with a number of premium meat producers specializing in angus beef, grass feed beef and hormone-free beef. Many of these producers also offer pork and game meats such as fish and bison. Examples of established Montana businesses in this category include Montana Valley Ham in Helena (which has been served at the White House), La Cense Beef in Dillon, Montana Kobe Beef in Belgrade, Big Sky Beef from the Malek Ranch in Highwood and Montana Grass Fed Beef in Twin Bridges. La Cense Beef in Dillon utilizes FedEx for overnight shipments. Interestingly, Hutterite colonies in the Region have ranches that are experimenting with inland salmon fish farms which may be marketed to ecologically conscious consumers in the Seattle market. These fish are neither wild nor ocean farmed and may be considered to have a much less negative impact on the environment. These same ranchers also have significant egg and swine production in the Region.

### International Cattle Shipments

Montana ranchers not only ship beef products via air cargo but they have a history of shipping entire herds via air cargo aircraft. In the 1970s and early 1980s Great Falls International Airport was utilized several times for the transport of livestock to Asia via Flying Tigers B747 aircraft. Similar operations also occurred at Helena Regional Airport where dairy cattle were transported. While Montana cattle have been transported by air in the past, a 2010 shipment of Montana cattle has renewed interest in the transport mode. Montana beef cattle producers involved in this shipment to Russia were comprised of a partnership between Montana rancher, Darrell Stevenson, and a group of Russian investors.

Work on the export deal began in 2008, during a trade mission to Russia that included Montana Agriculture Director, Ron de Yong, Mr. Stevenson and Jack Holden, of Holden Herefords. A rotation of Montana ranchers, working cowboys, and veterinarians traveled with the herd and taught the Russian herdsman how to care for the livestock over a several month period while in country. The shipment earned the moniker of “instant ranch”. The program is part of a Russian subsidized deal to quickly make that country's cattle industry more self-sufficient and improve the genetic stock of cattle in Russia.

Montana agriculture officials indicate the shipment represents the state's largest overseas export of live cattle to date. Russia has only about a half-million beef cattle compared to the United State's 90 plus million. Russia wants to sharply increase that figure in the next decade. Officials at the Montana Department of Agriculture believe there is a five-year window of opportunity for Montana cattle to be shipped via air to Russia. While the Russian government has also made cattle import deals with European countries, Canada and Australia, the “how-to-ranch services” provided by Montana ranchers and veterinarians could give Montana producers a future advantage.

The shipment included 1,434 purebred beef cattle and five quarter-horses. The air shipment included 900 with the remaining 545 cattle and five quarter-horses sent across the ocean with a veterinarian from Choteau, MT.

**Maritime Shipment** - The cattle and horses were shipped to the Port of Wilmington in Delaware where they boarded a boat for a 24-day journey to Russia where they arrived at a port on the Baltic Sea then traveled by truck to Stevenson Sputnik Ranch.

**Air Cargo Shipment** - For the 18-hour air cargo shipment, most of the cattle departed by aircraft out of Chicago O'Hare on AirBridge B747 aircraft in the fall of 2010, with the last shipment in late December to Sheremetyevo International Airport (SVO). SVO airport is located 18 miles north-west of central Moscow, Russia. The cattle were transported to O'Hare via truck. Chicago was chosen because it is well set up for loading and crating cattle and is close to the approved quarantine facility, Lathrop Livestock of Dundee, IL. Cattle were then trucked from SVO to Russia's Voronezh region where the landscape and climate is similar to the grassy high plains of eastern Montana.

The preparation time for each mode of transport was about the same and there were considerable issues loading the cattle onto the ship.

### ***Flathead Lake Cherries***

Cherry production at the southern end of Flathead Lake near Kalispell has occurred for decades and contributes to the total cherry output in the Northwest region. The Flathead area (south of Kalispell) has about 700 acres in cherry orchards producing approximately 1200 – 2500 tons of fruit (cherry yields swing widely).

Cherries in the Northwest are commonly transported by air cargo to markets in Japan where the Japanese consumer will spend up to \$80 per quart for Bing cherries from Washington State. Transporting cherries to Asia is typically a good revenue stream for passenger airlines and all cargo carriers. Cherries are a dense commodity and up to 12,000 pounds can be accommodated on a single pallet. Roughly one-third of the cherries grown in Washington State are exported, nearly half on passenger planes and total about 1.3 million 20-pound boxes. Freighter aircraft carry the majority of cherries to markets in Hong Kong and Tokyo.

The ripening season in the Northwest lasts about eight weeks in June, July and August depending on the yield. Officials at Montana Department of Agriculture and at the Flathead Lake Growers Association indicate that cherry producers in the Flathead Lake area have had spoilage issues since packaging plants do not have capacity to process the entirety the ripened cherries in Montana and Eastern Washington. Since Montana's Flathead cherries are a lower priority in the packaging processing facilities (based on type of cherry) some of the product is not processed in time and ends up spoiling. Montana cherry growers primary concern it to get the crop processed and to the market and buyers. The Flathead Lake Growers Association does not know if their product is exported to Asia.

### ***Market Strengths, Weaknesses, Opportunities, & Threats (SWOT) Analysis and Recommendations***

Previous chapters and tasks presented in the Great Falls Regional Air Cargo Transportation Study have reviewed current trends in the air cargo industry, identified facilities a Great Falls International Airport (GTF) that support air cargo activity, presented analysis of competing airports in the region and identified industry clusters in the market area reliant on air cargo transport.

This chapter focuses on Great Falls' market dynamics and provides an analysis of air cargo market opportunities within the Airport's market area. This is presented using a SWOT analysis which identifies the Strengths, Weaknesses, Opportunities, and Threats (SWOT) as they pertain to the market. This evaluation addresses Great Falls' air cargo market internal strengths and weaknesses as well as the external opportunities and threats. The objective is to retain and attract air cargo carrier activity at GTF. Recommendations to achieve this objective are provided at the end of this chapter.



### Strengths

Strengths are attributes of the Great Falls International Airport facilities and market area that are helpful to the achievement of the objective.

*Navigational Aids to Runways* – GTF’s instrument approach system is considered one of the most stringent and allows for pilots to land aircraft when weather conditions limit visibility. As indicated in the previous section the required minimums for Runway 3 are zero – zero meaning aircraft with the proper navigational equipped and properly trained pilots may land in extremely poor visibility conditions. The advantage of this approach from an air cargo operations perspective is that an all cargo carrier can operate into the airport unimpeded by visibility conditions. As a result, air cargo customer service levels to the market area are far greater than airports without such instrument approaches and equipment.

*Adequate Runway Length* – GTF runway length is considered adequate for the types of air cargo operations anticipated to occur at the airport. While an additional 1,000 to 2,000 feet would provide even greater performance the current length of 10,502 feet does not limit the capability of the runway to accommodate intercontinental cargo flights. These flights may require a “tech stop” which is common for many intercontinental air cargo routes. During a tech stop the aircraft is refueled and crews are switched. One of the benefits of operating a tech stop by freighter aircraft is that it increases payloads since extra fuel is not required and thus allows more capacity for payload weight. The downside is that it increases transport time to final destination.

*FedEx Statewide Distribution Center* – GTF has the benefit of being a statewide cargo center for FedEx Express. FedEx Express is in its tenth year of a 20-year lease with the airport. FedEx’ reliance on the airport has benefited not only the airport’s revenue stream but has garnered the support of the local business community throughout the state. Additionally, FedEx’ presence at the airport has contributed to a trained workforce skilled in the logistics sector. By the very nature of cargo feeder hub operation at GTF, other airports and markets in Montana rely on GTF for their FedEx logistics needs. Additionally, FedEx is contracted with the US Postal Service and transports through Great Falls International Airport a significant portion of Montana’s inbound and outbound first class mail.

FedEx’ recent aircraft gauge change to the Boeing 757 at GTF enables the cargo carrier to save \$6,000 per operation and thereby improve the performance of the GTF FedEx Station.

*Unique assets* – GTF has other unique assets that contribute to airport’s strengths. The airport has two FBOs with one, Holman Aviation, experienced in providing ground support to airlines and freighter aircraft. Should the airport become engaged in livestock air cargo projects the airport has a corral located on airport property as well as pasture land which is currently leased to local ranchers. These facilities could prove beneficial in developing a livestock quarantine or inspection facility.

*Foreign Trade Zone* - The airport’s foreign trade zone offers unique advantages to manufacturer's allowing duty free import of raw material, storage of inventory and export of

## Great Falls Regional Transportation Task #7

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finished products for manufacturers operating in the zone. Aircraft bound for international destinations and purchasing fuel within GTF's FTZ are exempt from federal fuel excise taxes.

*Location* – The airport's location on the North American continent places it in an advantageous position with other major global gateway airports. Direct routings via the great circle routings include a Spokane to Louisville Kentucky which UPS flies on a scheduled basis. UPS could provide a stop in Great Falls with little to no diversion from the route. The airport is also located on Los Angeles to Europe intercontinental routes and a Memphis to Anchorage transcontinental route<sup>5</sup>. Lastly, the airport's location in the Mountain Time Zone could provide advantage for product fulfillment businesses relying overnight package shipping. If a distribution center were located on the airport orders from eastern time zone locations can take place up to 9 p.m. Eastern (7 p.m. Mountain) and be loaded on to the FedEx jet for an 8 p.m. departure.

*Market* – The Great Falls market continues to utilize air cargo. Discussions with FedEx indicate the market is diverse and a number of commodity types arrive and depart via air cargo aircraft. In the late 1990s FedEx committed to serving all of Montana through the airport and is at the ten year mark of a 20-year cargo building lease. Specific market segments that use integrated express cargo on a regular basis include:

Aerospace/aviation

Healthcare

Energy

Perishables

The airport also has a historic utilization of cargo. In the late 1970s and early 80s the airport was utilized occasionally for livestock transport for shipments to S. Korea and Japan.

Another advantage of the Great Falls market area is the benefit of having a skilled workforce in the aerospace industry and supply chain management. The presence of the US Air Force and Air National Guard in the market provides skilled aviation and supply chain workers comprised of retired or former military personnel.

The airport's location on the I-15 corridor provides easy access to points north in Alberta, Canada as well as major markets to the south such as Salt Lake City, UT and Los Angeles, CA. The declining US dollar positions GTF to receive additional passenger and cargo traffic from Canada.

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<sup>5</sup> Great Falls International Airport, AIR CARGO DEVELOPMENT: PHASE I, Page 58, Wilbur Smith Associates

### Weaknesses

Weaknesses are attributes of the GTF facilities and market area that are harmful to the achievement of the objective.

*Navigational aids to runways* – The Category III approach system only applies to properly equipped jet transport and military aircraft. Regional cargo feeder aircraft typically are not equipped with Category III instruments nor are regional air cargo pilots trained to land at Category III airports. As a result, while the FedEx jet can arrive at Great Falls during periods of reduced visibility cargo feeder aircraft into the airport cannot.

*Location* – There are several disadvantages to Great Falls location from an air cargo development perspective. The primary disadvantage is the market area's distance to major markets in North America. The nearest market with over a million residents is Calgary which is a five hour drive to the north. While this distance may promote the use of air cargo to and from Great Falls businesses it may impede on the ability of the Great Falls market area in attracting new businesses. A secondary disadvantage is the market area's lack of a large concentration of industries, or industry cluster, which relies on air cargo. It is noteworthy to point out that several industries in the Great Falls market area that do rely on air cargo include the aerospace, healthcare and perishables; but these industries clusters are still developing.

*Livestock quarantine and inspections facility* – In order for livestock to be air transported from GTF there are two related facility and processing issues that must be addressed. These are listed as weaknesses but can be overcome through several straight forward strategies. First, a USDA approved quarantine facility is required, and secondly, an export inspection facility is required. A USDA approved quarantine facility could be located on airport, near the airport (at the county fairgrounds for example) or on a local ranch; providing there is adequate separation distance between the livestock to be transported and the remaining herd. The time period for quarantining livestock is based on the recipient country's requirements but in the case of exports to Russia for example it is a 30-day period. During this period animals are tested by veterinarians and handlers at the beginning and end of the time period for various livestock related diseases and conditions. An inspection facility must also be USDA approved and include electricity, telephone service, cement floors, covered roof, animal loading chutes and pens, and an adequate distance from other livestock not being shipped. The facility must also be within 25 miles of the departure airport.

*USPS Mail routings* – As indicated in the Strengths section, FedEx Express provides air mail lift for the USPS on a daily basis. Mail arriving on the FedEx Express aircraft into Great Falls is then trucked (four hours) directly to Billings where it is sorted and processed. All mail arriving in GTF and destined for nearly all of western Montana is distributed via the Billings USPS mail facility; creating circuitous mail routings to western portions of the state. If the mail for western Montana were sorted and processed via the USPS facility in Great Falls the savings to the USPS could be significant since it is more centrally located to the western and southwestern parts of the state.

## Great Falls Regional Transportation Task #7

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*Limited Carrier Selection* – There are two integrated express carriers operating in the Great Falls market area: UPS and FedEx Express. UPS operates a Beech 1900 and Beech 99 aircraft into the market area and, when compared to FedEx Express operations at the airport, has limited cargo capacity due to the size of the aircraft and due to the fact that the aircraft's capacity is shared with Cut Bank. Both of these UPS aircraft are bulk loaded and do not have ULD containers capabilities. The UPS aircraft capacity issue has on occasion impacted shippers in the market area desiring to ship on UPS large pieces of freight.

Global integrated express carrier DHL does not operate in Montana. DHL recently transitioned from a domestic and international integrator to a specialized international cargo-only integrator. The transition began in December 2008 and more-or-less returns the carrier to the business model it adhered to in the mid 1990s when the carrier focused primarily on international cargo. During this recent transition, DHL liquidated its Airborne Express assets it acquired when DHL and Airborne Express merged in 2004. The nearest market where DHL does operate is Calgary, Alberta.

### Opportunities

Opportunities are external conditions that are helpful to the achievement of the objective.

*Expanding global air cargo market* - According to the Boeing World Air Cargo Forecast 2010/2011, world air cargo traffic will expand at a 5.9 percent annual rate over the next two decades, with worldwide air freight traffic expected to triple through 2029. According to the International Air Transport Association, 2010 statistics for international air cargo traffic indicate a strong bounce back from 2009's sharp global decline where air cargo grew 20.6 percent as companies around the world re-stocked their inventories. As a result, world air cargo traffic nearly regained its 2007 peak by the end of 2010.

*Declining U.S. dollar* – The value of the US dollar has been in the news of late and does impact the cost of doing business in Montana as well as the rest of the U.S. While there are a number of factors involved, the dollar's value can be measured by: exchange rates, US Treasury notes and the amount of dollars held by foreign countries. These three measurements are intrinsically tied to each other, and trends indicate; the US dollar will continue losing value over the long-term. Long term implications for a declining dollar are inflation concerns, increases in the cost of fuel and increases in the costs of imports. Short term implications are considered positive in that it makes U.S. produced goods cheaper and more competitive when compared to foreign produced goods. This increases U.S. exports, boosting economic growth. However, it also leads to higher fuel prices since oil is priced in U.S. dollars. Whenever the U.S. dollar declines, oil producing countries raise the price of oil to maintain profit margins in their local currency.

*Global market for beef and other protein products* – One target industry for air cargo growth at GTF includes beef and other meat products as well as livestock transport. U.S. beef exports grew significantly in 2010 and were the best year on record for U.S. beef exports. According to the U.S Meat Export Federation (USMEF) more than \$4 billion worth of beef was exported in 2010, a 19% increase in volume and a 32% rise in value over 2009. Data indicates the largest

## Great Falls Regional Transportation Task #7

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growth has been to S. Korea (up 100 percent), Russia, and Japan (up 36 percent). Interestingly these three markets have had recent or historic Montana livestock air transport activity. The Middle East was also up very strongly.

One out of every five pigs raised in the United States is exported, according to the Pork Checkoff Trade Committee, and in 2010 these exports reached 4.28 billion pounds and were valued at \$4.78 billion. Japan was the largest consumer of U.S. pork exports, setting a new value record of \$1.65 billion. Mexico also set a new record of \$986 million. Other noteworthy U.S. Pork export markets in 2010 include Central/South America (up 32 percent on a volume basis), Australia/New Zealand (up nearly 10 percent), and the Caribbean (up nearly 10 percent). Canada, which is the fourth-largest export market for U.S. Pork, also showed an increase of nearly 10 percent.

### Threats

Threats are external conditions that are harmful to the achievement of the objective.

*Declining US domestic air cargo market* - The US domestic market decline totaled more than 20 percent during 2008 and 2009. According to Boeing, the US domestic market is mature and, in recent years, has experienced flat or slightly declining rates. This trend not only reflects the impacts of the economic recession but also the modal transition from air to surface transportation. The global economic downturn became evident in 2008 when the domestic air cargo market decreased 9.7 percent. In 2009, it declined an additional 12.4 percent.

*Oil and Jet A costs* - Fuel costs are one of the biggest expenses airlines face, averaging approximately 30 percent of annual operating costs. Average fuel costs impacting the airline industry in the U.S. are presented in Table 7. Factors contributing to the price of jet fuel include: difficulties in refinery operations; declining value of the US dollar, environmental regulations; surges in regional demand; seasonal surges in demand; supply disruptions caused by natural disasters, military conflicts or geopolitical events; and market speculators. Since 2004, average Jet A cost rose from \$1.16 per gallon to \$3.07 per gallon by 2008 and settling down to \$2.15 in 2010.

Rising oil prices have spurred air cargo companies to develop new solutions in order to survive and profit. There are three common solutions within the industry to address high fuel costs:

- Pass higher fuel costs on to the customer – During peak fuel prices air cargo airlines often attach a fuel surcharge to shipping costs. When fuel prices drop the surcharge is usually discontinued. Nearly all cargo airlines had a fuel surcharge at some point in 2008 as a result of the enormous spike in fuel costs. The result of fuel surcharges ultimately contributes to higher consumer prices for goods shipped via air cargo services, making global trade more difficult.
- Improve aircraft fleet efficiency – Many cargo airlines are replacing old, less fuel efficient aircraft with newer aircraft with increased performance and fuel efficiency. For

example, air cargo carrier FedEx Express announced in April 2009 plans to reduce its fleet by 14 aircraft from its 670 aircraft fleet. According to the freight carrier, 10 A310-200s and four MD10-10s would be permanently removed from service by the end of May 2009. Recently FedEx Express introduced the Boeing 757 model into the company's fleet which provides measurable cost benefits. The aircraft has significantly improved fuel-burn efficiencies, cutting greenhouse gas emissions and reducing fuel consumption up to 36 percent while providing 20 percent more capacity per flight, when compared to the Boeing 727 it replaces. FedEx Express plans to introduce an additional 11 Boeing 757s into service over the next year and operates a B757 at GTF.

- In addition to replacing planes with more fuel-efficient aircraft, the airlines have begun taking measures on a smaller scale, all contributing to the much larger picture: such as using less fuel-burning holding patterns, using one engine to taxi the aircraft, towing from the gate and less idling, among a variety of other fuel-savings tactics.

**Table 7  
Crude Oil and  
Average Airline  
Jet A Prices 1991-2010**

| YEAR | Avg. Paid Price<br>(U.S. DOT) |          |
|------|-------------------------------|----------|
|      | Jet A<br>\$/gal               | \$/bbl   |
| 1991 | \$0.69                        | \$29.01  |
| 1992 | \$0.64                        | \$26.74  |
| 1993 | \$0.61                        | \$25.44  |
| 1994 | \$0.56                        | \$23.44  |
| 1995 | \$0.56                        | \$23.45  |
| 1996 | \$0.67                        | \$27.91  |
| 1997 | \$0.65                        | \$27.08  |
| 1998 | \$0.51                        | \$21.55  |
| 1999 | \$0.53                        | \$22.31  |
| 2000 | \$0.81                        | \$33.87  |
| 2001 | \$0.78                        | \$32.64  |
| 2002 | \$0.71                        | \$30.01  |
| 2003 | \$0.85                        | \$35.67  |
| 2004 | \$1.16                        | \$48.53  |
| 2005 | \$1.66                        | \$69.84  |
| 2006 | \$1.97                        | \$82.60  |
| 2007 | \$2.10                        | \$88.28  |
| 2008 | \$3.07                        | \$128.94 |
| 2009 | \$1.66                        | \$79.67  |
| 2010 | \$2.15                        | \$94.25  |

Source: Air Transport Association

- Improve vehicle fleet efficiency – UPS announced 2008 that it ordered 200 hybrid electric vehicles. This is the largest commercial order of such trucks by any company. In addition, the company ordered another 300 Compressed Natural Gas (CNG) vehicles for its U.S. delivery fleet. The purchase of the 500 additional vehicles means the UPS

## Great Falls Regional Transportation Task #7

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alternative fuel fleet, already the largest such private fleet in the United States, will grow 30 percent from 1,718 to 2,218 low-carbon vehicles. These new vehicles will provide increased fuel savings as well as reducing UPS' carbon footprint.

- Integrated express carriers also utilize other measures to reduce fuel consumption such as favoring right turns over left turns on delivery routes and reducing engine idle time.

### Recommendations

This section of the report reflects our collective views on some of the strategic initiatives required to more fully exploit the opportunities that GTF air cargo facilities and operations present to Great Falls Region, as well as to leverage geographic, economic and market assets in pursuit of expanding air cargo activity at GTF.

The recommendations provided coincide with commonly pursued economic development strategies. These strategies are analogous to a three legged stool which rely on all three legs to successfully support a platform for development. These legs are comprised of: business retention, business attraction/expansion, and providing an environment which fosters entrepreneurship and business ventures.

*Retain air cargo carriers* – In the late 1990s FedEx committed to serving all of Montana through GTF and today are at the midpoint of a 20-year lease of a 70,000 square foot cargo building. This building was built specifically for FedEx and is owned by the airport. FedEx operates a B757 aircraft at the airport on weekdays and on weekends FedEx operates an Airbus A300F4-600 aircraft on a Calgary – Great Falls – Memphis route. While FedEx' commitment to the Great Falls market has been significant their operations should not be taken for granted since air cargo carrier operations and assets are extremely flexible. Cargo carriers may, for economic and financial reasons, elect to change aircraft gauge, operation frequency, and air routes as well as location of consolidation stations.

Strategies to retain FedEx and UPS air cargo operations at GTF should include the airport and GFDA working as a team to create a safe, secure, efficient and customer-friendly air cargo transportation facility that enables cargo businesses as well as local shippers in the market area to get to packages and parcels to where they need to go; when they need to get there; at a price they can afford. One of the greatest inconveniences suffered by air cargo customers worldwide is inclement weather and air traffic system impacts (delays and cancellations) which interfere with their ability to successfully ship goods on time. The more apparent strategies for retention include effective snow removal operations, ample fuel supplies at competitive prices, facilities maintenance, long-term facility planning, and competitive rent costs and landing fees.

Another strategy the airport and GFDA can pursue to retain air cargo carrier activity at GTF is to continue efforts to attract business and industry which utilize air cargo on a regular basis to increase local air cargo demand in the Great Falls market area. Specific market segments that use integrated express cargo on a regular basis and which are emerging in the Great Falls Region include:

## Great Falls Regional Transportation Task #7

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Aerospace/aviation – avionics equipment, aircraft repair

Healthcare – medical devices and pharmaceuticals

Energy – oil and gas and renewable energy

Perishables – agricultural meat/fish and game meat products

*Expand air cargo activity* – UPS operates Beech 1900 and Beech 99 aircraft at GTF which feed to UPS cargo jet in Billings. Further study may be warranted to determine whether UPS may gain efficiencies if the Spokane to Louisville Hub cargo jet flight would include a stop at GTF to pick up and drop off cargo. Efficiencies gained may include parcels and packages bound for the West Coast hub in Ontario California would pass through Spokane from Great Falls thereby bypassing the Louisville hub. Additionally, the inclusion of GTF on the route would eliminate the need for contracted BIL-GTF B1900 and Beech 99 service as well as contracted HLN-BIL contracted Beech 99 service since it could be replaced by at HLN-GTF UPS truck. This would eliminate the cost of three contracted aircraft.

One expansion strategy is to attract a business distribution or product fulfillment center adjacent to or on the airport. One prospect may be to attract a FedEx SmartPost station which operates an independent distribution network specifically designed to tender their customer's low-weight, non-urgent packages into the U.S. Postal system for final delivery to the recipient. There are 25 SmartPost hubs in the US and, interestingly, there are no FedEx SmartPost hubs in Idaho, Montana, Wyoming, North Dakota, or South Dakota. The nearest SmartPost hub to GTF is located in Salt Lake City.

Both the airport and GFDA need to continue promotion of Foreign Trade Zone 88 on the Airport. FTZs are ideal for international distribution centers as the FTZ designation provides an advantage for businesses seeking to store or stage cargo, repackage or re-label merchandise, repair merchandise, and assemble or test products.

Another issue that may warrant additional study is the USPS mail routing and distribution centers for Montana. As stated previously much of the mail transported by FedEx through GTF is processed in Billings. Efficiencies will likely be gained for western and central Montana postal customers, and the USPS, if this postal traffic were processed in Great Falls.

Its noteworthy to point out that nearly all economic development in Montana benefits FedEx' GTF operations. Continued development of Montana industry clusters such as the high tech optics companies in and around Bozeman, Missoula, and Kalispell provide demand for air cargo in the state. Increases in cargo demand may someday replace the two FedEx Cessna Caravans providing lift for the Bozeman – Great Falls route with a larger ATR 43 FedEx aircraft.

*Foster air cargo ventures* – Data collected during the course of this study indicates the most prominent air cargo activity potential is utilizing GTF to transport livestock to international destinations. A recent shipment of Montana cattle out of Chicago O'Hare International Airport to Russia provides impetus to pursue this as a development strategy. In order for livestock transport to take place at the airport USDA approved livestock quarantine and inspection facilities will need to be developed. These facilities could be located on airport, near the airport (at the county fairgrounds) or on a local ranch.



During interviews for this study FedEx and another carrier indicated they have the capability to transport livestock at the airport with wide-body freighter aircraft and are interested in providing the lift. Both carriers indicated a tech stop would be required to refuel and swap crews. Additionally, Holman Aviation (an FBO on the airport) indicated they would be interested in providing support of the livestock transport if there would be a return on the investment made for equipment acquisition. It is important to point out, however, that fuel prices will play a big role in the feasibility of this venture and continued increases in fuel costs may prohibit the project from going forward.

Other cargo commodities which could increase air cargo demand in the Region include Montana based meat products. Montana has a number of premium meat producers specializing in Angus beef, grass feed beef and hormone-free beef. Many of these producers also offer pork and game meats such as fish and bison. There is also an aquaculture experiment with inland salmon fish farms in the Great Falls Region.

Cherries in the Northwest are commonly transported by air cargo to markets in Japan where the Japanese consumer will spend up to \$80 per quart for Bing cherries from Washington State. Cherry production at the southern end of Flathead Lake near Kalispell has occurred for decades and contributes to the total cherry output in the Northwest region. The Flathead area has about 700 acres in cherry orchards producing approximately 1,200 – 2,500 tons of fruit. Test marketing of Flathead Lake Cherries to the Japan market may provide insight into the feasibility of transporting cherry shipments out of GTF on a regular basis. FedEx Express has experience in shipping cherries and initial shipments could take place within their network (Great Falls – Memphis - Tokyo). Cool storage equipment would be required on the airport but could easily be accommodated by rented refrigerated trailers during the short cherry season.

*Market GTF's air cargo capabilities* - The airport requires continuous marketing for not only passenger service but as an air cargo center for the Region. The following steps should be taken to market GTF with the goal of expanding air cargo activity:

- The GFDA and airport web site should contain prominent photos of FedEx jets and tout the carrier's network. Provide information on all carrier's schedules, cut-off times, aircraft capabilities and carrier performance at the airport.
- GFDA and airport staff and commissioners should meet with air cargo industry leaders both locally and nationally. When meeting with local leaders staff should come away with a better understanding of market trends, their facility needs and their goals to expand air cargo traffic. When marketing to any logistics company at the national level, present them with the big geographic picture. Tell them how GTF fits into the Regional and global economy. Explain why your facility and location is best and stress Interstate highway access, the airport's FTZ, proximity to other metropolitan areas, lack of congestion, time zone advantage, easy access, prevailing labor costs, and workforce qualities. Then present finer details such as landing fees, lease rates, and tax incentives.
- Attend airport and air cargo industry events and trade shows. It is important for airport staff and economic development officials to meet other airport and EDA officials and logistics suppliers to gain knowledge from their experience and perspectives.

- Continue to study the Regional market and develop an *Airport Business Plan*. An *Airport Business Plan* would provide strategies to develop all aspects of the airport including passenger service, air cargo, general aviation, military activity and real estate development.

### Conclusion

Air cargo is an important and integral part of the Great Falls Region and its success. The Airport has excellent facilities that are able accommodate cargo jet operations such as the Boeing 757, MD-11 and the Boeing 747. There are businesses and organizations in the Great Falls Region which use air cargo in the form of express shipping on integrated express carriers such as FedEx Express and UPS. GTF garners excellent community support from GFDA, the Region's economic development agency (EDA) as well as other agencies. The analysis presented in this report indicates GTF competes well with other airports in a 400-mile radius that have scheduled air cargo jet service. Of the 14 airports analyzed in the study area only Calgary and Spokane offer better facilities and lift capacity.

The most significant strength or attributes of GTF is its state-of-the-art aviation facilities and navigational aids. The airport's 10,502 foot runway can support wide-body freighter aircraft flights to overseas destinations. The airport's instrument approach landing system permits properly equipped and trained pilots to land aircraft during periods of extremely poor visibility. The airports taxiways and aircraft parking aprons are ample and can support wide-body freighters while Holman Aviation, one of the airport's FBO, can accommodate ground handling of nearly every aircraft type.

GTF is strategically located in Montana and is well positioned to accommodate air cargo demand in Great Falls. Two integrated express carriers operate at the airport with one, FedEx Express, operating a non-stop flight to their hub in Memphis five days a week. UPS supports the Great Falls market with cargo feeder aircraft to and from Billings Logan international Airport. The Airport's strategic location serves not only business and industry in Great Falls, but communities within a 90- to 120-minute drive time as well as nearly every Montana community by supporting cargo feeder aircraft.

In order to build on the Airport's successful air cargo track record, this study recommends the Airport staff and local economic development agencies continue to collaborate in marketing the Region to four industry clusters reliant on air cargo services.

- Aerospace/aviation – avionics equipment, aircraft repair
- Healthcare – medical devices and pharmaceuticals
- Energy – oil and gas and renewable energy
- Perishables – agricultural meat/fish and game meat products

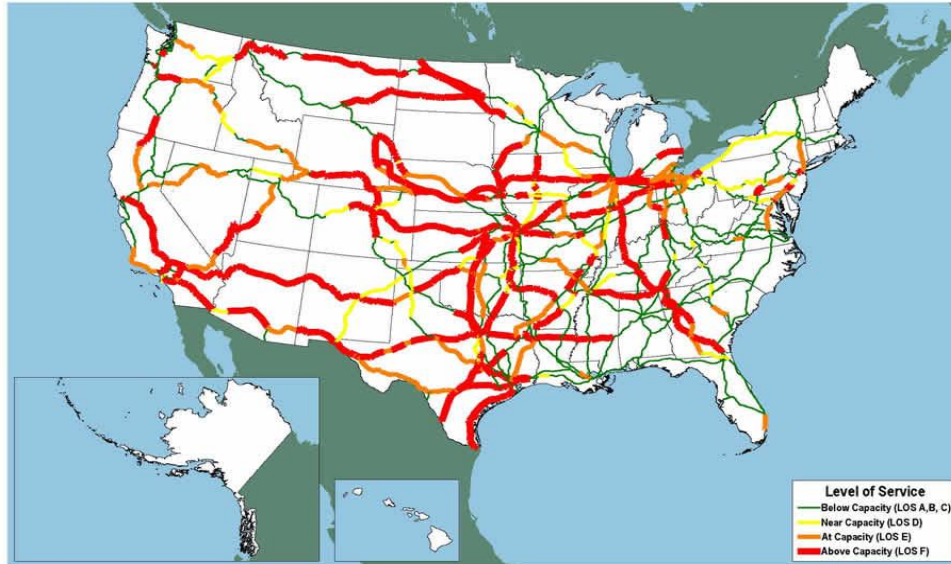
It is also important to monitor the Region's business and industry logistics pulse. Airport marketing must be a continuous process and relationships at the local level with all logistics firms must be maintained.

## Task #7B – Intermodal Transportation

### *Intermodal Transportation Defined*

Intermodal freight transport consists of the transportation of freight in an intermodal container or truck, while using multiple modes of shipping such as trucks, rail, and ships, without loading and unloading the freight from the intermodal container or truck. Intermodal transportation reduces the amount of freight handling; improves freight security; retains quality by reducing damage, loss, or contamination; and reduces transit times. Intermodal transportation is particularly useful for shipping identity preserved agricultural commodities or manufactured goods to overseas customers.

In order to attract an intermodal transportation site, there must be a specific minimum volume of both inbound intermodal freight and outbound intermodal freight; frequent inbound and outbound shipments of freight; a balance of full inbound containers and outbound containers to and from the intermodal transportation site; and, most importantly, an enterprise that will effectively finance, develop, and operate the intermodal transportation site. The key terminology to keep in mind in evaluating the potential of a region for an intermodal transportation site is volume, frequency, balance, and ownership/management. On the bright side, the BNSF mainline east-west rail is projected to operate above capacity in the Sweetgrass Region. (Exhibit 8)



Note: Level of Service (LOS) A through F approximates the conditions described in Transportation Research Board, *Highway Capacity Manual 2000*.  
Source: Association of American Railroads, *National Rail Infrastructure Capacity and Investment Study*, prepared by Cambridge Systematics, Inc. (Washington, DC: September 2007), figure 5.4, page 5-5.

Source: U.S. DOT, National Highway Administration, Freight Management and Operations Exhibit 8: Train Volumes Projected for 2035 Compared to Current Capacity

## ***Rail and Ocean Carrier Requirements***

Prime Focus, LLC, DePere, WI and the Western Transportation Institute, Bozeman, MT reported on their intermodal transportation study in November 2008.<sup>6</sup> The study found that inbound rail freight into Montana was one fourth that of outbound rail freight. Extrapolating total rail freight to potential containers on rail freight, the number of inbound containers into Montana was estimated to reach only 1,700 containers per year. Estimated outbound containers potentially available in the State of Montana was 16,781 containers per year.

The intermodal terminal in Calgary, AB receives 6,000 to 7,000 containers a year from Lethbridge, AB. If freight rates were competitive, some containers could be shipped through a potential facility in Shelby.<sup>7</sup> The imbalance of full inbound to full outbound container was considered to be a limiting factor in justifying the establishment of a intermodal container facility. The study did identify Shelby as clearly the most favorable site for an intermodal container facility in Montana.

In late 2010, Mayor Larry Bonderud identified four potential shippers that could utilize container shipments out of Shelby. They were:

- GreenPrairie Intl. Inc. Lethbridge, AB: Compressed Hay 25 – 40 ft. Containers/Week
- American Pulse, Ltd., Hingham, MT: Peas and Lentils 50 – 20 ft. Containers/Week
- Pasta Montana, Great Falls, MT: Pasta 15 – 40 ft. Containers/Week
- Ingnimbrite Inc., Whitefish, MT: Bagged Potassium 200 – 20 ft. Containers/Week

The estimated potential outbound shipping volume described by Mayor Bonderud would be adequate to meet BNSF and Ocean Carrier outbound requirements. The identification of potential loaded outbound container traffic does not necessarily facilitate obtaining freight rates from BNSF due to a lack of loaded inbound container traffic to generate competitive freight rates. Without loaded inbound traffic to make containerized cargo out of Shelby competitive, companies interested in shipping containers overseas can obtain better freight rates by trucking products to the Pacific Northwest ports and transloading their cargo onto containers at the ports. The transport and spotting of empty containers from other BNSF intermodal container facilities to Shelby would result in excessively high shipping rates.

Information was obtained from BNSF and BNSF Logistics officials on the status of intermodal transportation in Montana and North Dakota. On February 2, 2011, the Montana World Trade Center held a Montana Intermodal Information Meeting in Helena. Mr. John H. Miller, Assistant Vice President Agricultural Products for BNSF led a delegation of BNSF personnel. Representation from Great Falls, Shelby, Sweetgrass Regional Development Corporation, and the State of Montana provided dialogue during the meeting.

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<sup>6</sup> Container/Trailer on Flatcar in Intermodal Service on Montana's Railway Mainlines, Prime Focus, LLC, Western Transportation Institute, November 2008.

<sup>7</sup> Container/Trailer on Flatcar in Intermodal Service on Montana's Railway Mainlines, Prime Focus, LLC, Western Transportation Institute, November 2008, page 105.

Mr. Miller summed up BNSF's position regarding intermodal transportation in Montana in that the primary impediment was the imbalance between loaded inbound and loaded outbound containers. A secondary impediment was the lack of adequate volume identified as potential volume for a Montana-based intermodal facility. BNSF's measurement device for the establishment of intermodal rail services is regular weekly availability of at least 200-20 foot containers. The Port of Montana Butte-Silver Bow and the Port of Northern Montana Shelby both offer rail-truck transload service, but have discontinued intermodal services.

Mr. Miller stated that prior to the 2008-09 recession, empty containers were plentiful in the U.S. and repositioning of empty containers back to Asian ports for reloading was commonplace. The shortage of containers in Asia prior to the recession made for very attractive container rates from the U.S. to Asian ports. In 2005, BNSF shipped 120 million metric tons of grain. In that same year, 8 million metric tons of grain in containers was shipped to small and intermediate sized Asian users of grain. After the recession hit, only 3 million metric tons of containerized grain was shipped in 2009. After the recession, volume of full containers from Asia to the U.S. dropped dramatically and the surplus of empty containers in the U.S. became a deficit.

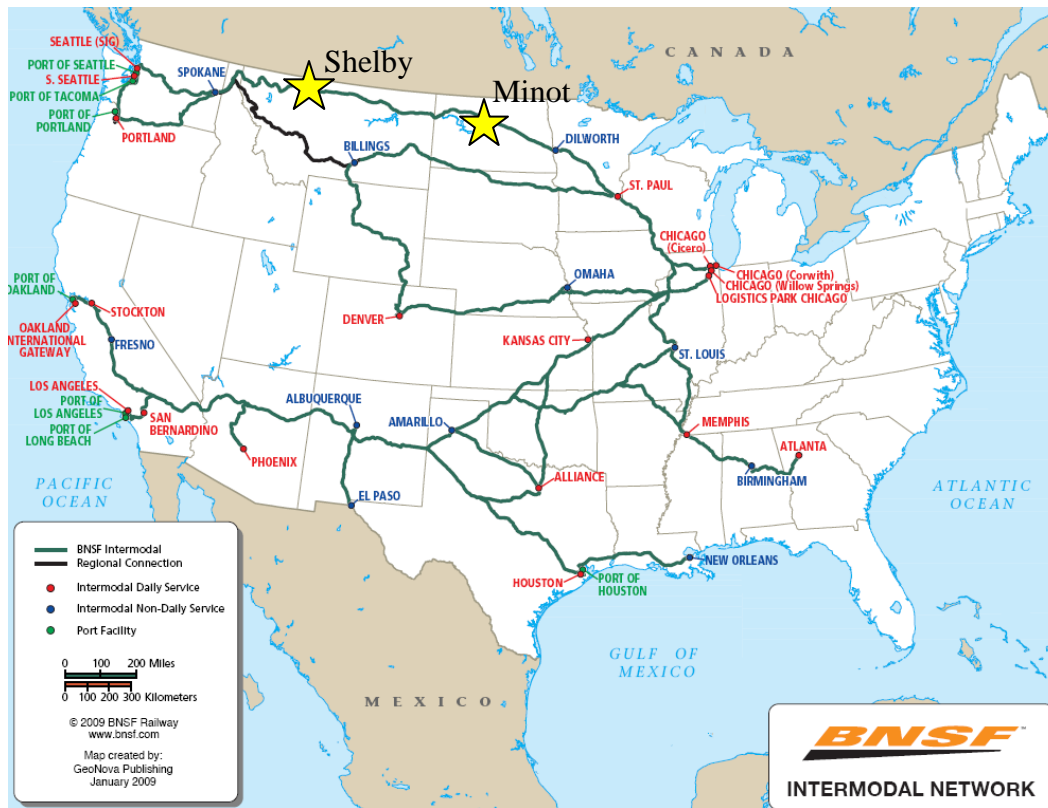
Mr. Miller stated that steamship lines (ocean carriers) are owners of containers and control their transit on the water. Outbound containers of agricultural commodities in 2010 has changed, so that 70% of containers of ag products exiting the U.S. consist of Dried Distiller Grains (from ethanol production) destined for livestock feeding in China. The key to a successful intermodal container facility is consistency, defined as balance between inbound and outbound freight volume and sufficient quantity throughout the year. Mr. Miller stated that the Minot-based North Dakota Port Services, Inc. should succeed. Important requirements for the development of an intermodal container facility whose freight rates are cost competitive are:

- 200 Containers (unit train) consistently outbound per week
- Balanced traffic consisting of full inbound and full outbound containers
- No facility infrastructure cost to BNSF or to Ocean Carriers
- No facility operating cost to BNSF or to Ocean Carriers

### ***North Dakota Port Services, Inc.***

It is instrumental to study the history and methodology of the development of the Minot, ND, Intermodal Terminal, which began in 2000. The Minot region and the Sweetgrass Region have many common characteristics. (Exhibit 9) Both regions have similar climates; adjacency to the Canadian border; have mainline Burlington Northern Santa Fe (BNSF), east-west, rail access; are in prime agricultural production areas; and are in growing energy production areas. Differences between the regions include dual mainline rail for Minot (BNSF and Canadian Pacific Rail); broader crop diversification for Minot; and nearby, robust oil exploration and extraction near Minot.

## Great Falls Regional Transportation Task #7



Source: BNSF Railway

Exhibit 9: BNSF Intermodal Network Map 2009

During this study, conversations were conducted with the Minot Area Development Corporation, the Port of North Dakota and BNSF Logistics personnel on the lengthy development of the Minot-based North Dakota Port Services, Inc. intermodal facility. Development efforts for the facility took place over a decade and involved the Minot Area Development Corporation, the State of North Dakota, regional agricultural interests, and a wide range of other interested stakeholders. Individuals instrumentally involved in developing the Port and the intermodal facility were Roger Ward, a forward thinking Minot businessman; Jay Fisher, North Dakota State University Ward County Extension Agent; Jerry Chavez, Executive Director for the Minot Area Development Corporation; and Greg Johnson, Owner of Premier Pulses in Minot.

For their initial eight years of work, the Minot intermodal group heard the same refrain from BNSF and ocean carriers who controlled access to shipping containers. The reply was that potential fully loaded inbound containers into Minot were scarce while potential fully loaded outbound containers appeared to have adequate volume and could be identified. The unbalanced ratio of loaded inbound to loaded outbound containers made a Minot intermodal terminal untenable. Hopes were high that energy development in the Williston Basin could turn the project around.

Even though BNSF and ocean carriers were repeatedly giving the Minot intermodal group the thumbs down, the group believed in the project and the State of North Dakota took a calculated

risk in 2007 by granting \$1.5 million of public funds for leverage to secure private funds for a total of \$4.7 million for an intermodal site and a facility. Three years later in August 2010, the first intermodal train left westbound for Asian customers. The key to launching intermodal service from the North Dakota Port Services, Inc. facility was the oil industry's use of new oil drilling technology in the Bakken Formation in the Williston Basin west of Minot. The new oil drilling technology utilized hydraulic fracturing of oil reservoir rock formations.

### ***Williston Basin Oil Drives Intermodal Service***

An active market exists for enhanced oil recovery technologies and the materials required to utilize the technology. Many current oil fields long thought depleted are now utilizing these methods. Oil production in the U.S. since the new millennium has trended upwards. Most of this increase in production is due to the introduction of new drilling and well completion techniques (Exhibit 10) that are being employed in the Bakken Formation in eastern Montana, Western North Dakota, and Saskatchewan. Similar advanced techniques may be employed in the future to extract currently unrecoverable oil (and/or gas) from depleted or non-producing formations in the Sweetgrass Region.<sup>8</sup>

Leigh Price, a geochemist at the U.S. Geological Survey field office in Denver, authored an estimate of oil potential in the Williston Basin in 1999. Price's estimated mean oil quantity was 413 billion barrels of oil. The problem was that the shale layers held the oil like a hard sponge. Price estimated that half of the oil could be extracted. Not until 2005 did oil exploration companies get serious in trying the new techniques of horizontal drilling miles deep in the earth and hydraulic fracturing of the ten to fifty feet thick oil rock layers in bore holes nearly four miles long. Oil production in North Dakota has exponentially increased to where 113 million barrels of crude oil was produced in 2010, which is more than 5% of U.S. domestic oil use.<sup>9</sup>

With the boom in hydraulic fracturing (frac'ing) utilization in the Williston Basin, oil drilling companies needed to bring frac sand and other supplies from China in containerized cargo to the Basin. Minot was the obvious destination for containerized frac sand from Asia to service the Williston Basin. The Minot intermodal facility was presented with the reverse imbalance of too many fully loaded inbound containers compared to potential outbound agricultural container shipments.

In 2009, it became apparent to BNSF, OOCL (the ninth largest ocean carrier), and the North Dakota Port Services, Inc. that a critical mass of fully loaded inbound containers and fully loaded outbound containers was imminent. With BNSF noting that the U.S. Department of Transportation has stated that freight rail demand will rise 88% by 2035 compared to 2005 levels,<sup>10</sup> the Minot-based North Dakota Port Services, Inc. was fully funded for operation with a balance in loaded containers.

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<sup>8</sup> Great Falls Defense Diversification Project, Energy, pp 37, <http://www.gfdevelopment.org/userfiles/Task%203%20-%20Energy%20Strategy.pdf>

<sup>9</sup> Kuwait on the Prairie, Eric Konigsberg, The New Yorker, April 25, 2011, pp. 43-53.

<sup>10</sup> North America's Corridor Coalition, Inc., The NASCO Report, Volume III, Issue 2, February 1, 2011.

## Great Falls Regional Transportation Task #7

North Dakota Port Services, Inc. now handles up to 400 loaded inbound containers per week containing frac sand, drilling mud, pipe, ceramics, and aggregates. The facility ships a train a week of primarily peas and lentils westbound to Asian ports. Plans are to add an eastbound train a week to accommodate European, Middle East, and African customers.<sup>11</sup> Discussions are being held with soybean exporters in Eastern North Dakota and Western Minnesota to obtain competitive freight rates to Asia through the Minot facility rather than incur expensive empty container dray services from Minneapolis and Chicago.<sup>8</sup> North Dakota Port Services, Inc. now has the availability of three ocean carriers: OOCL, Maerskline, and CMA-CGM. North Dakota Port Services, Inc. will be extending its available track by 3,000 feet to a full 8,000 foot siding in 2011.

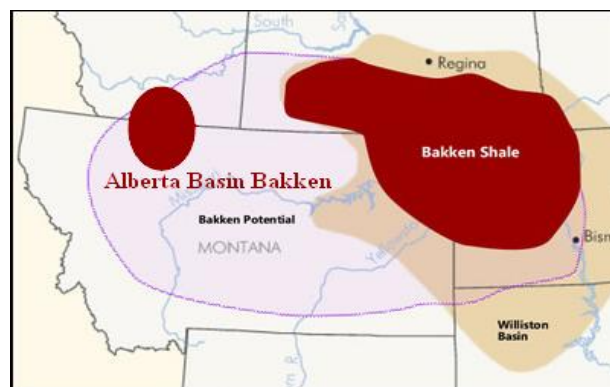


Source: Oilfield Review

Exhibit 10: Pictorial of Fractional Design for Oil Recovery

### ***Alberta Basin Bakken Fairway in Montana***

The Alberta Basin Bakken Fairway oil field is a large area of potential oil production that encompasses much of the Sweetgrass Region. (Exhibit 11) Oil production in the Sweetgrass Region was thought to be depleted due to the use of shallow oil wells pumping in the region since 1925. It is now thought that the Sweetgrass Region may contain millions of barrels of recoverable oil, which is now available using new technology. This discovery is timely considering the increasing demand for petroleum. (Exhibit 12)

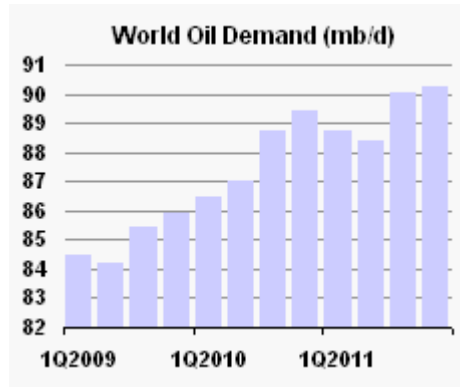


Source: BeatingtheIndex.com, Feb. 7, 2011

Exhibit 11: Alberta Basin Bakken Fairway Map

<sup>11</sup> Communication with BNSF Logistics.





Source: International Energy Agency  
Exhibit 12: Increase in World Oil Demand, 2009 to 2011, May 8, 2011

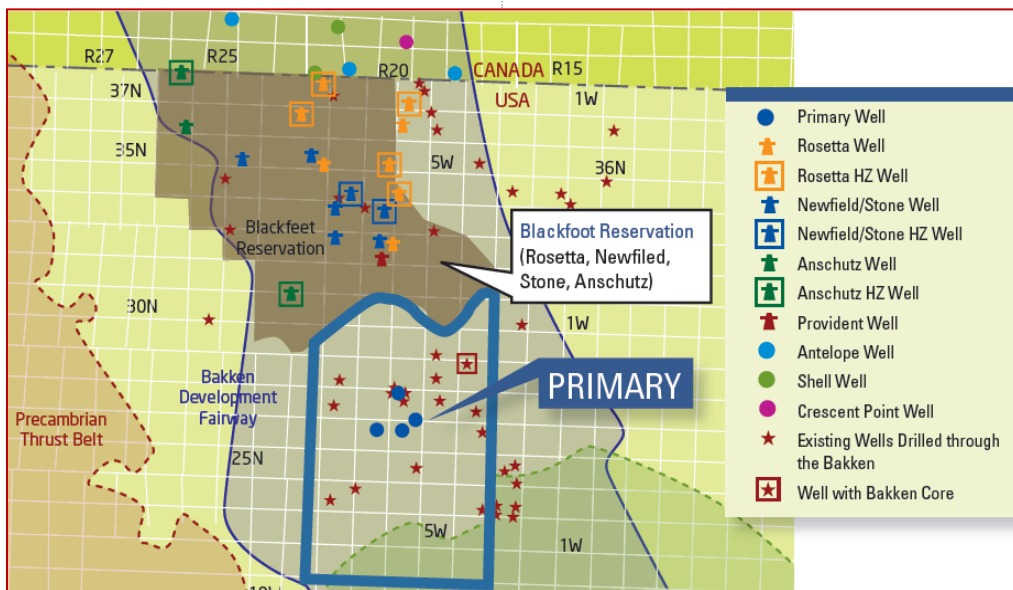
Petroleum companies have taken an intense interest in the Alberta Basin Bakken Fairway oil field. One of many, Primary Petroleum, Calgary, AB, currently holds over 242,000 net acres (380 Sections) in the Pondera-Teton region that is located in the Alberta Basin Bakken Fairway in Western Montana in Pondera and Teton Counties. (Exhibits 13, 14, and 15) These leased lands adjoin the Blackfeet Indian reservation to the south and east and will be investigated for oil in the Sunburst; Madison; Lodgepole (Banff); Bakken; Three Forks and Nisku Formations.

Recent drilling (15 vertical and horizontal wells) by multiple major U.S. petroleum companies, which combined have acquired over 580,000 acres on the adjoining Blackfeet Indian reservation, has resulted in the discovery of oil saturation and over pressurization in the Lodgepole [Banff], Bakken, and Three Forks Formations plus oil and normal pressurization in the Nisku Formation. Primary Petroleum has stated that estimated published OOIP (Original Oil in Place) on a section of land ranges from 13 million to 15 million barrels. Current drilling operations in the Alberta Basin Bakken Fairway on both sides of the border have resulted in over 40 vertical and horizontal wells that have been permitted, spud (very start of drilling) and/or drilled as reported by the Montana State board of Oil and Gas and the DOB in Alberta.<sup>12</sup>

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<sup>12</sup> Primary Petroleum, USA, Western Montana Alberta Basin Prospect, <http://www.primarypetroleum.com>





Source: Primary Petroleum, Calgary, AB

Exhibit 15: Oil Drilling Sites in the Sweetgrass Region, January 2011

Information supplied by the global securities and investment company, Jeffries & Co., New York, NY in July 2010 on major petroleum leaseholders in the Sweetgrass Region is summarized below:<sup>13</sup>

- Rosetta Resources, Houston, TX and Newfield Exploration Operations, Houston, TX have acquired acreage on the Blackfoot Indian Reservation.
  - Acreage within the reservation has higher operational costs because the reservation has required environmental studies and additional permitting requirements.
  - There are drilling requirement to hold acreage on the reservation.
  - NFX and ROSE have leased on the reservation because they could accumulate larger contiguous acreage positions.
- Rosetta Resources Operations
  - Approx. 280,000 net acres (on the Blackfoot Indian Reservation)
  - Drilled three wells in 2009 (one horizontal); announced discovery of oil saturation and over pressurization in the Lodgepole (Banff), Bakken, and Three Forks formations, plus oil in the Nisku formation.
  - Rosetta released OOIP estimates of 12.5 to 15.3 million barrels per section.
  - Currently completing two horizontal legs on wells drilled in 2009.
- Newfield Exploration Operations
  - Approximately 220,000 net acres (on the Blackfoot Indian Reservation)
  - Purchased 156,000 acres for \$12 million CAD in Q4 2009 (\$78 CAD per acre)
  - The company spud the first of eight wells in late April 2010.

<sup>13</sup> Oil and Gas 360°, The Alberta Basin Bakken Montana, July 19, 2010, by EnerCom, <http://www.b2i.us/profiles/investor/ResLibraryView.asp?BzID=1977&ResLibraryID=39391&Category=1758>

- Primary Petroleum has leased acreage adjoining the Blackfeet Indian Reservation. There leases are a mix of Montana state leases (10-year terms with 16.67% royalties) and freehold leases (five-year term with a five-year option to renew and royalties ranging from 12.5% to 15%).
- Estimated horizontal well costs are \$3 to \$4 million CAD per well.
- Target zones include: Sunburst, Madison, Lodgepole (Banff), Bakken, Three Forks and Nisku.
- Comparison to the Williston Basin (Bakken):
  - Primary Petroleum believes that the structure on the Montana side of the Alberta basin is similar to the Williston but the middle Bakken is approximately 20% thinner.
  - As you go further west of the Williston in Montana, there is more depositional diversity. As a result, well control will be an issue, which increases the importance of 2D and 3D seismic.
  - More faults are apparent in the Alberta Basin than in the Williston.

### ***Agricultural Production for Outbound Intermodal Traffic***

Agricultural production in the Sweetgrass Region is concentrated in four areas: wheat, barley, forage crops, and livestock. The vast majority of wheat, barley, and forage crops are transported by trucks and bulk rail. Pulse crops, peas and lentils, have been proven to be viable candidates for increased production in the Sweetgrass Region. Pulse crops are currently grown primarily in Eastern Montana, North Dakota, and Saskatchewan. The Northern Pulse Growers organization held organizational meetings with Sweetgrass Farmers in early 2011. Over 250 interested farmers attended a Great Falls meeting and over 150 attended a Shelby meeting.

A number of pulse crop agri-businesses have established offices or increased their presence in the Sweetgrass Region in anticipation of increased pulse crop production. Columbia Grain, Portland, OR, JM Grain, Garrison, ND, and American Pulse, Ltd., Hingham, MT are interested in pulse crop procurement in the Sweetgrass Region. Columbia Grain's Great Falls-based Vice President, Jeff Van Pevenge stated that Northeast Montana produces about 200 containers of pulse crops per week, but the output in the Sweetgrass region of pulse crops is only 10 containers per week at this time.

Mr. Van Pevenge stated that trucking rates outbound from Montana are very attractive due to Montana being primarily an inbound freight state. Therefore, it is cost effective to transload pulse crops on the Pacific Northwest ports at this time. A 20 foot container can be transloaded for only \$320 in Seattle versus a transload fee of \$900 per 20 foot container in Vancouver, BC or Montreal, QC. Bunge's new Pacific Northwest grain terminal will have capability to bulk load pulse crops onto ships, which could impact container traffic, however, many smaller pulse crop suppliers rely on direct 20 foot container shipments.

Green Prairie International, Inc., Lethbridge, AB has demonstrated that it can ship forage crops, such as alfalfa and hay, in a compressed state to Japanese markets by using 20 foot containers put on rail in Calgary, AB. The Sweetgrass Region is a renown supplier of high quality, high altitude alfalfa and hay suitable for dairy cattle feeding. Green Prairie International, Inc. has

considered expanding into the Sweetgrass Region to access high quality forage crops for export customers. With an intermodal container facility in the Sweetgrass Region, Green Prairie International, Inc. may be able to operate more cost effectively in the Sweetgrass Region compared to the Lethbridge, AB region.

As pulse crops, identity preserved small grains, and forage crops export development increases, the Sweetgrass Region will increase the possibility of obtaining a volume of 200 containers per week or more. The Prime Focus, LLC Intermodal Study completed in 2008 identified only 300 containers per week potential in all of Montana. Since 2008, an increased interest in pulse crop development along with compressed forage crop development could significantly increase potential intermodal container use to a critical mass for outbound shipments.

### ***Montana Alberta Basin Bakken Fairway Oil Key to Intermodal Services***

It is evident from the interest and activity by petroleum-based companies that exploration for and extraction of petroleum in the Sweetgrass Region is highly probable. Drilling methodology for the Alberta Basin Bakken Fairway in Montana appears to be similar to the technology currently utilized in the Williston Basin of the Bakken Formation. The petroleum companies listed in Exhibit 15 have invested millions of dollars and are committed to investing substantially more to validate the projected oil reserves in the Sweetgrass Region.

It appears that aggressive oil exploration and extraction using fracturing technologies will commence in the Sweetgrass Region in the near future. When this activity begins in earnest, there will be a increasing demand for frac sand, clay, ceramics, aggregate, and piping. The petroleum companies engaged in exploration and extraction will need to bring those frac commodities into the region with the use of 20 and 40 foot containers from Asia. As was the case in Minot, a surplus of full inbound containers may very well take place upon the commencement of oil exploration and extraction activities.

### ***Strengths***

The following is a list of strengths within the Sweetgrass Region that favor the development and operation of an intermodal container facility.

- Rail infrastructure and property available in Shelby, MT for intermodal development.
- Mainline, east-west route BNSF railway through Shelby, MT.
- Port of Northern Montana organization in Shelby, MT
- Trucking firms headquartered in Shelby, MT available for dray services.
- Alberta Rocky Mountain Double trucks (137,500 lbs) are approved for travel from Alberta on I-15 to Shelby for heavy load access to and from Canada.
- Port of Entry at Sweetgrass, MT as a major freight conduit to and from Canada.
- I-15 Corridor as a major freight conduit to Canada and the U.S. major markets southbound.

## Great Falls Regional Transportation Task #7

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- Understanding and expertise at oil exploration and extraction in the Region.
- Oil exploration and extraction potential in the Alberta Basin Bakken Fairway for inbound container traffic
- Efforts taking place to increase in pulse crop production in the Region for outbound container traffic.
- Efforts taking place to increase forage crop exports in the Region for outbound container traffic.
- High inbound truck freight rates in the Region make future inbound container traffic with competitive rates potentially attractive to shippers.

### ***Weaknesses***

The following is a list of weaknesses within the Sweetgrass Region that hinder the development and operation of an intermodal container facility.

- Insufficient inbound container traffic into the Region to interest BNSF and ocean carriers.
- Insufficient outbound container traffic out of the Region to interest BNSF and ocean carriers.
- Current imbalance of potential outbound container freight versus potential inbound container freight.
- Low outbound truck freight rates in the Region make future outbound container traffic with uncompetitive rates potentially unattractive to shippers.
- BNSF officials attitude is to consider a Shelby, MT intermodal container site not feasible at this time.
- Montana anti-energy exploration special interest groups could delay or stall development of the Alberta Basin Bakken Fairway oilfield.
- Distances to obtain outbound intermodal freight may be cost prohibitive.

### ***Recommendations***

The following are recommendations for the Sweetgrass Region economic development entities to take advantage of the Sweetgrass Region's strengths and to mitigate the Sweetgrass Region's weaknesses.

- Select board members from the Northern Express Transportation Authority, Shelby, MT and other interested individuals as the Working Group to develop the Port of Northern Montana Intermodal Container Facility. Valuable potential members of the Working Group would be representatives from the Montana Refining Company, Great Falls.
- Establish regular communication with petroleum exploration and extraction companies operating in the Sweetgrass Region to monitor potential fully loaded inbound oil industry-based container traffic.

## Great Falls Regional Transportation Task #7

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- Establish regular communication with agri-processing and mineral-based companies operating in the Sweetgrass Region to monitor potential fully loaded outbound container traffic.
- Establish regular communication with BNSF Logistics, Springdale, AR, and BNSF Intermodal Services, Fort Worth, TX.
- Begin a dialog with steamship lines familiar with container traffic to and from Minot to track steamship line interest in inbound and outbound container supply.
- Engage Montana's Federal congressional delegation to

OOCL (USA) Inc.  
2400 11<sup>th</sup> Ave. E.  
Seattle, WA 98102  
(206) 332-1910  
[www.oocl.com](http://www.oocl.com)  
Head Office: Hong Kong, Republic of China

Maersk Line  
1001 4<sup>th</sup> Ave.  
Floor 9  
Seattle, WA 98154-1119  
(206) 461-1200  
[www.maerskline.com](http://www.maerskline.com)  
Head Office: Copenhagen, Denmark

CMA CGM  
2400 11<sup>th</sup> Avenue SW  
Seattle, WA 98154  
(206) 623-0314  
[www.cma-cgm.com](http://www.cma-cgm.com)  
Head Office: Marseille, France

- Issue a request for proposals to qualified candidates for an Intermodal Container Facility Feasibility Study when potential loaded inbound and loaded outbound container traffic is sufficiently balanced and of a volume to warrant a competent study.
- If a Feasibility Study is positive, interested private investor(s) identified by the Working Group will develop a comprehensive business plan that fully describes the planned development and operation of a proposed Shelby-based Intermodal Container Facility.
- Interested private investor(s) will use the business plan to secure equity and debt funding for the construction and operation of a proposed Shelby-based Intermodal Container Facility. Offering documents may be necessary to obtain funding.

- Upon securing funding, private investor(s) will launch the Shelby-based Intermodal Container Facility company with a functional board of directors and competent, experienced management.

### **Conclusion**

The development and operation of an Intermodal Container Facility in the Sweetgrass Region has a high probability of occurring when considering the increasing development of oil and gas exploration and extraction in the Alberta Basin Bakken Fairway. The increased development of producing specialty agricultural crops that are best suited to containerized shipping will greatly aid in building potential outbound intermodal traffic in the Region. The difficulty, at this time, is predicting when a critical mass and balance of potential full inbound containers and potential full outbound containers can be identified. It is therefore imperative that an Intermodal Container Facility Working Group routinely estimate with precision potential inbound and outbound container activity to be ready to engage in facility development at the appropriate time in the future.

The Sweetgrass, MT Port of Entry is by far the busiest port of entry in Montana with significant truck traffic into and out of Canada. The U.S. Bureau of Transportation Statistics for 2010 showed the Sweetgrass Port had 124,214 trucks enter the U.S. where 90,867 were listed as loaded and 21,392 were listed as unloaded. The Sweetgrass Port has 373 railroad trains enter the U.S. with 16,985 loaded rail containers and 10,201 unloaded rail containers. The Port had 298,441 personal vehicles pass through in 2010 along with 2,816 pedestrians. The Sweetgrass Port was the ninth largest Port of Entry into the U.S. from Canada in 2010.<sup>14</sup> With the large amount of traffic moving through the Sweetgrass, MT Port of Entry, the City of Shelby is the most logical location in all of Montana to take advantage of and develop a potential container clientele who utilize the I-15 Industrial Corridor.

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<sup>14</sup> Research and Innovative Technology Administration, Bureau of Transportation Statistics., [www.bts.gov](http://www.bts.gov)



## Task #7B - Backhaul Opportunities

### *Introduction*

This section reviews and assesses some of the different elements of inbound and outbound logistics and commodity flow that are impacting the Great Falls and the Sweetgrass Region's trucking capacity and infrastructure. This section also identifies truck backhaul opportunities for businesses in the Sweetgrass Region to enhance their economic position with favorable outbound freight rates. These components, including over-the-road traffic, unique inbound and outbound (flow) statistics for the various ports and types of commodities, should be reviewed in the context of the larger intermodal transportation mix, including rail, air and different types of other intermodal traffic that is used to move large quantities of commodities and manufactured and/or fabricated materials. This section addresses primarily over the road/truck transport components of the following outline:

- Over-the- road truck & Intermodal transportation traffic
- Review of the Port of Shelby logistics
- Review of the Port of Montana (Butte) logistics
- Overview of Cargo Types
- Rate and Volume Differential between Inbound and Outbound Truck Freight

This data represents both challenges and opportunities to capitalize on the significant amount of traffic - and the related products this traffic represents – to grow the required capacity and networks to support the industries involved. Challenges would include a continued focus and investment in the development of key infrastructure including roads, intermodal services, port facilities and skilled workers. Opportunities would include the growth and continued development of economic development opportunities related to the industries that are served by this important component of trade and commerce.

The current activity and potential growth in extraction and refining of energy related products, particularly to and from the Alberta Oil sands region points to a significant growth opportunity in both transportation related activity and for trade capture as it relates to machinery fabrication that may be developed within the Sweetgrass region. The development of this type of capacity would also have potential opportunities related to the significant oil play happening in western North Dakota associated with the Bakken oil fields. The Alberta Basin Bakken Fairway oil field that is centered in the Sweetgrass Region has the potential of generating substantial amounts of inbound truck, rail, and intermodal container rail traffic in the Region.

The Sweetgrass Region is an inbound freight State, with respect to inbound and outbound trucking. Interviews with Sweetgrass Region trucking companies and freight brokers revealed a large imbalance of inbound truck freight compared to outbound truck freight. Regional trucking companies have stated that for every five fully loaded trucks destined for Montana from its trading partner States, only one truck gets fully loaded on the trip out of Montana. The other four trucks have partial or no loads outbound from Montana.

## Great Falls Regional Transportation Task #7

Freight rates are highly reflective of the inbound versus outbound freight differential in the Sweetgrass Region. Rates for dry vans and flatbeds coming into Montana from the east, west, and south average \$2.60 per mile (includes fuel surcharges). Rates for refrigerated loads are a bit higher averaging \$3.00 per mile. Rates for dry vans, flatbeds, and refrigerated vans outbound to the east, west, and south average \$0.90 to \$1.50 per mile. Interviewed Regional freight companies said they would prefer to obtain an overall \$1.50 to \$2.00 per mile flat rate inbound and outbound, rather than run the risk of deadheading (no load on board) out of Montana.

The province of Alberta is also primarily an inbound destination for freight. Sweetgrass Region truckers hauling a variety of freight to Calgary, Edmonton, and Fort McMurray obtain \$2.50 to \$3.00 per mile hauling freight from Florida, California, Arizona, and Oklahoma, but can obtain only \$0.60 per mile on the return trip from Alberta. Refrigerated vans deadhead from Alberta back to pick more refrigerated goods in the U.S. Canadian firms pay a \$1,500 to \$1,700 deadhead fee to trucking firms for refrigerated pick ups in California. Exhibit 16 is illustrative of the heavy inbound freight volume and value (green arrows) into Montana and Alberta via the I-15 corridor and the relatively light freight volume and value (red arrows) for conventional trucking firms.

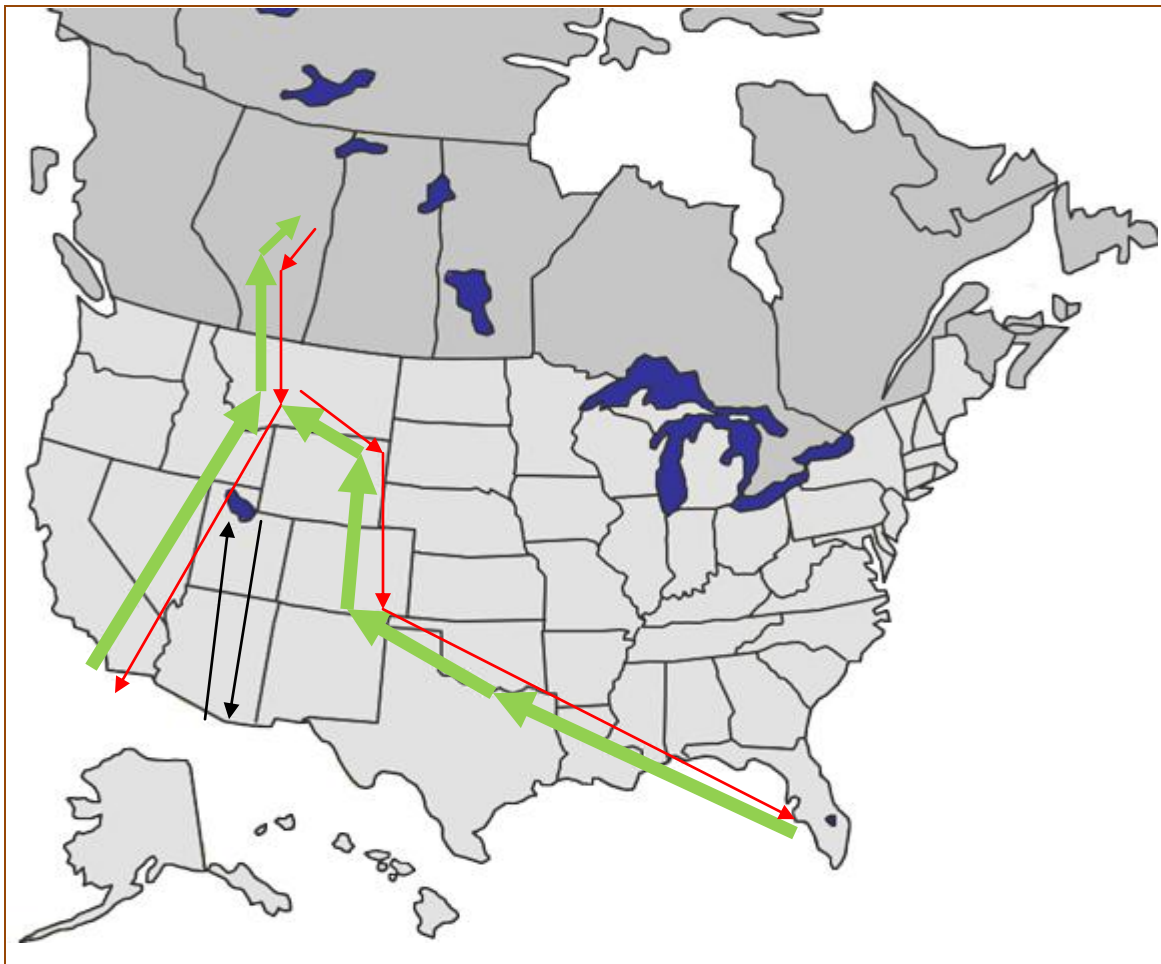


Exhibit 16: Inbound (Green) and Outbound (Red) Truck Routes to Montana and Alberta

## ***Over The Road Truck & Intermodal Transportation Traffic***

Assessing the volume and value of inbound and outbound cargo through the Sweetgrass region (including Toole, Teton, Pondera, Glacier and Cascade counties) provides a clear picture of the impact that truck and intermodal transportation has on the region. The amount of goods being moved through the region has both a direct and indirect effect on commerce within the region and state and points to the value of

The Commodity Flow Survey (CFS), which is maintained by the Bureau of Transportation Statistics (U.S. Census) is the primary source of national and state-level data on domestic freight shipments by American establishments including mining, manufacturing, wholesale, auxiliaries, and selected retail industries. Data is provided on the types, origins and destinations, values, weights, modes of transport, distance shipped, and ton-miles of commodities shipped. The CFS conducted every five years as part of the Economic Census. It provides a modal picture of national freight flows, and represents only publicly available source of commodity flow data for the highway mode. The CFS was conducted most recently in 2007 and as such data provided here represents the most current data available from the BTS.

A review of current commodity shipments for the state of Montana (Table 8) shows 9 separate commodities representing roughly two-thirds of all commodities shipped through the state. The data shows a significant amount of shipments directly related to energy related goods, mining, wood products and the robust nature of the agricultural activity within the region. A rank order (by volume) of these commodities would include:

1. Gasoline and aviation turbine fuel
2. Fuel oils
3. Wood products
4. Coal and petroleum products
5. Mixed freight
6. Cereal grains
7. Metallic ores and concentrates
8. Miscellaneous manufactured products
9. Machinery

An overview of these commodities is outlined below show the total volume (tons) and value of products shipped within the state. A significant amount of the energy related traffic can be attributed to energy plays and related processing and refining that is evident within the region on both sides of the border. Continued growth and production in the Alberta oil sands can and ultimately will result in a higher level of trade in both fuels and related energy by products and the movement of energy-related machinery within the region.

It is important to note that many of the commodity categories utilize specialized truck trailers that are not conducive toward easily obtaining backhauls. A good example is the transport of flour or semolina by truck from the General Mills milling operation in Great Falls, MT. Flour transport by truck is accomplished by using specialized pneumatic tank trailers. Those trailers are reserved for transport of food grade flour products and not used for other powder or granulated products. Other commodities that require specialized trailers are grain, coal, livestock, fuels, and automobiles. Therefore, analysis of the freight data in this study is primarily relevant for those goods that can be transported by multi-cargo dry vans, refrigerated vans, and flatbeds.

**Table 8**  
**Shipment Characteristics by Two-Digit Commodity for Montana: 2007**

| <b>Commodity (2 digit SCTB)</b>       | <b>2007 Tons<br/>(million)</b> | <b>%<br/>of<br/>total</b> | <b>2007 Value<br/>(millions)</b> | <b>Value CV</b> |
|---------------------------------------|--------------------------------|---------------------------|----------------------------------|-----------------|
| 02 Cereal grains                      | 988                            | 4.6                       | 4,789                            | 49.9            |
| 14 Metallic ores and concentrates     | 959                            | 4.4                       | 394                              | 31              |
| 17 Gasoline and aviation turbine fuel | 3,171                          | 14.7                      | 4,189                            | 24.7            |
| 18 Fuel oils                          | 2,723                          | 12.6                      | 4,422                            | 26.3            |
| 19 Coal and petroleum products, nec   | 1,349                          | 6.2                       | 5,901                            | 24.8            |
| 26 Wood products                      | 1,576                          | 7.3                       | 3,863                            | 14.1            |
| 34 Machinery                          | 863                            | 4                         | 86                               | 29.8            |
| 40 Miscellaneous mfg products         | 911                            | 4.2                       | S                                | 32.8            |
| 43 Mixed freight                      | 1,107                          | 5.1                       | 389                              | 10.5            |

Source: Bureau of Transportation Statistics (U.S. Census)

An assessment of the value of products shipped points to the strength of coal and related petroleum products and cereal grains within the state and region. These commodities are products with high strategic advantages for the state and region, and suggest continued active participation within the region to promote, market and advance these industries moving forward.

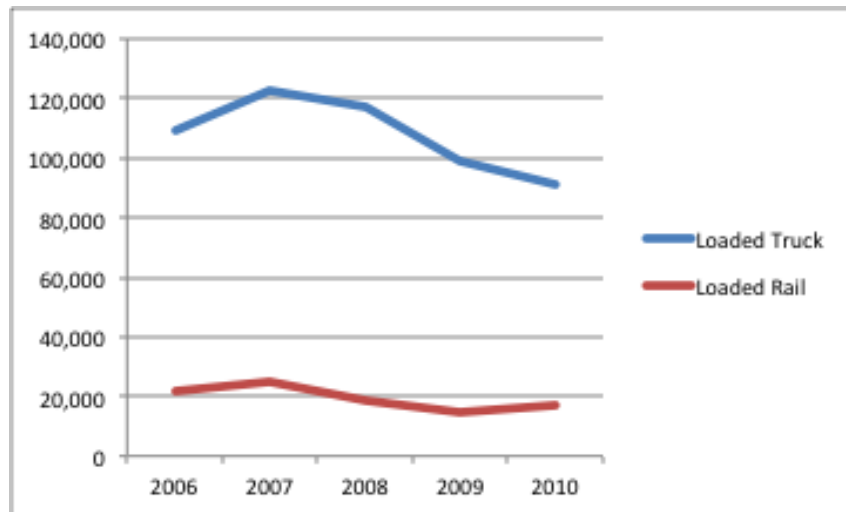
A review of trans border traffic through the Port of Montana-Sweetgrass (Tables 9, Exhibit 17) points to a robust flow of goods and products across the border with Canada utilizing both truck and rail. An area of interest and opportunity is reflected in both truck and rail loaded and unloaded capacity and would suggest a back-haul opportunity utilizing either modality. As noted in Table 9, there has been a decrease in the number of loaded trucks crossing the border since 2006. Loaded rail container data have been mixed with peak utilization happening in 2007.

The Port of Northern Montana has been successful in trucking in lumber from Canada to be transloaded onto rail cars transported by BNSF. The same trucks that delivered lumber often are reloaded with oil extraction-related minerals offloaded from rail cars in Shelby, MT. The reloaded trucks then deliver minerals to oil extraction sites in Alberta. In addition to featuring inbound and outbound freight balance, in 1991, the City of Shelby became the terminus on I-15 for Alberta Rocky Mountain Double trucks (137,500 lbs versus 129,000 lbs in other Montana roads) to and from Alberta, which gave heavy load access to Canadian lumber, fertilizer, and petrochemicals. Goods from Shelby, such as oil extraction minerals, can be delivered more cost effectively.

**Table 9  
Montana/Canada Trans-border Freight Data, 2006-2010 (Port of Montana/Sweetgrass)**

| Year | Loaded  | Empty  | Loaded Rail | Empty Rail |
|------|---------|--------|-------------|------------|
|      | Truck   | Truck  | Container   | Container  |
| 2006 | 109,652 | 14,615 | 21,979      | 10,165     |
| 2007 | 123,029 | 13,979 | 24,874      | 12,648     |
| 2008 | 116,828 | 18,690 | 18,528      | 13,446     |
| 2009 | 98,628  | 18,842 | 14,405      | 19,712     |
| 2010 | 90,867  | 21,392 | 16,985      | 10,201     |

Source: Bureau of Transportation Statistics, Research and Innovative Technology Administration



Source: U.S. DOT, Federal Highway Department, Freight Mgmt. & Ops.  
Exhibit 17: Trans Border Traffic through the Port of Montana-Sweetgrass

### ***Review of the Port of Shelby Logistics***

Located in Shelby, Montana the Port of Northern Montana is the northernmost inland port authority serving the U.S. and is located within close proximity to the Sweetgrass Montana Port of Entry. The facility provides access to custom brokerages and offers storage/warehousing facilities and lumber, palletized product, rail car and bulk rail car transloading. The intermodal terminal at the Port of Northern Montana was closed by BNSF in 2004, but it still exists as a railroad trainload facility. The Port has highway access to I-15 and U.S. Highway 2 and is located just off BNSF’s primary intermodal corridor

## Great Falls Regional Transportation Task #7

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connecting the Pacific Northwest to key Midwest gateways. BNSF previously maintained a small intermodal operation at Shelby (adjacent to the northernmost of the several sidings in the yard), where the over ninety percent of the intermodal business was trailer on flatcar (TOFC)<sup>15</sup>.

Currently, the Port's main outbound freight is wheat (estimated at 5,000–6,000 carloads/year to Seattle) and lumber (1,500 carloads/year to the southeast United States). The Port's main inbound freight is liquefied petroleum gas (250 cars/year). The Port also handles fertilizer, resin, drilling fluids, and recycled materials. Previous studies suggest a potential of 17,000 intermodal loads could be handled if a facility were available at the Port of Montana. BNSF estimates that each existing intermodal terminal on their system has a catchments area (or multi-modal customer reach) of up to 200 miles from an intermodal/transload center. Portions of 35 of Montana's 56 counties would benefit within this roughly 400 square mile impact area.

This allows trucks to efficiently gather and distribute freight, in short haul relays, connecting customers to a central freight facility. This gathering practice helps create a dense load center that generates full trainloads and contributes to rail freight train efficiency. Previous intermodal freight experience the Port of Montana also has business relationships with customers as far North as Edmonton, AB<sup>16</sup>. Demand for intermodal service in Montana has traditionally focused on export agricultural crops but new and emerging opportunities to handle manufactured goods and supplies for the growing energy industry in Calgary and Edmonton suggest growth opportunities for the port and the region alike.

Three factors have significant impact on intermodal volumes:

Volume—Railroads wholesale their services to intermediaries such as intermodal marketing companies and truckload and ocean carriers, and do not sell to shippers directly (with few minor exceptions). These intermediaries are required to meet minimum revenue thresholds with each rail carrier. Intermediaries seldom have minimum volume commitments for their customers, but pricing is often more attractive if users make commitments. A balance of inbound and outbound container freight is key to obtaining attractive container freight rates along with volume.

Seasonality—Agricultural shipments are impacted by seasonality and global environmental factors such as drought and crop disease. Agricultural products often are used as the backhaul for inbound retail imports. Typically this inbound market flow peaks between August and October. First-quarter volumes are lowest, followed by increasing demand from April to August.

Origin—Intermodal economics tend to favor shipments that move over 1,000 miles and originate within 200 miles of the intermodal terminal. BNSF estimates a 200-mile “catchment area” as a reasonable market reach for any intermodal terminal operation.

The area and region have extensive truck traffic with national carriers utilizing the facility throughout the year. Carriers within the local area include:

Dick Irvin, Inc.  
Hurley Trucking Inc.  
Ed Ahenakew Trucking Inc.  
Gary Whittaker Trucking  
Irvin Inc. and Mico Inc.

RCM Trucking  
R and N Trucking LLC  
Rowley Trucking  
F & S Transport

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<sup>15</sup> Container/Trailer on Flatcars in Intermodal Service on Montana's Railway Mainlines; Prime Focus LLC; 2008

<sup>16</sup> <http://pnmselby.com>

## ***Review of the Port of Montana (Butte) Logistics***

The Port of Montana, located Silver Bow, offers a wide variety of services at its 55-acre facility including warehouse and storage services, certified scales, distribution services, technical support, customized billing, railcar and truck transload services, inventory management and control, packaging and shipping, consulting, pricing and logistics. The client base for the Port includes a number of industries such as; railroad, agriculture, automobile, trucking, forest products, silicon, ore concentrates, fertilizer, road treatment, and fuels.

The Port acts as a distribution center for the following industries:

- Agriculture
- Fuel
- Metal and steel
- Petroleum
- Ore
- Auto
- Clays & Sands
- Building Materials
- Fertilizer

The Port of Montana offers direct transfer from rail to truck, scheduling and shipment coordination, as well as storage and timely inventory control and complete bonded warehousing. Warehouse services allow customers the flexibility to consolidate or separate shipments for further distribution. Ancillary warehouse services include; customized inventory information, sorting, labeling, picking, packing, crating and repackaging. Additionally, the Port of Montana offers enclosed and outside storage for unitized, dry bulk or liquid products.

Carriers serving the Port include Western Transport Line, Yellow Freight, Molerway Freight Lines, Consolidated Freightways, Transystems, Roadway Express, ANA Transport, Biggers Transport, Irving Trucking, Americana Expressways, Highland, S&J Trucking, Prince, Kenyon-Noble, Rob Clark, RB&C Trucking, Solberg, and Ward Trucking. There are well over 1,000 motor freight carriers that serve Montana and have access to Butte-Silver Bow.

## ***Overview of Cargo Types and Inbound and Outbound Statistics.***

An overview of cargo types (commodities – both inbound and outbound and industry type) is outlined below. This data suggests potential targets for expanding transportation and logistics opportunities within the region that would include both state specific (major import states) and industries. As outlined previously, many or much of the commodity flows and shipments are based on existing and emerging energy plays both in the state and outside (to include Canada and North Dakota). As outlined below, gasoline, related fuel oils and coal and petroleum products are leading shipments originating in Montana in both value & weight. (Table 10) These products are high value and are either extracted and or refined within the state and region.

## Great Falls Regional Transportation Task #7

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The highest ranking commodities by value, coal and fuels, are transported by pipeline, rail, and specialty truck trailer. Cereal grains are shipped by rail and hopper bottom truck trailers. Wood products, mixed freight, and other commodities may be shipped using multi-cargo dry vans, refrigerated vans, and flatbeds.

**Table 10**  
**Commodity Shipments Originating in Montana by Value**

| <u>2 Digits SCTG - Commodity Desc.</u> | <u>Percent of value</u> |
|--|-------------------------|
| 17 Gasoline and aviation turbine fuel  | 14.7                    |
| 18 Fuel oils                           | 12.6                    |
| 26 Wood products                       | 7.3                     |
| 19 Coal and petroleum products, nec    | 6.2                     |
| 43 Mixed freight                       | 5.1                     |
| Other commodities                      | <u>54.1</u>             |
| Total                                  | 100                     |

**Commodity Shipments Originating in Montana by Weight**

| <u>2 Digits SCTG - Commodity Desc.</u> | <u>Percent of weight</u> |
|--|--------------------------|
| 15 Nonagglomerated bituminous coal     | 56.6                     |
| 19 Coal and petroleum products, nec    | 6.9                      |
| 2 Cereal grains                        | 5.6                      |
| 18 Fuel oils                           | 5.2                      |
| 17 Gasoline and aviation turbine fuel  | 4.9                      |
| Other commodities                      | <u>20.8</u>              |
| Total                                  | 100                      |

Source: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics and U.S. Department of Commerce.

Table 11 reviews outbound, or export, shipments for the state by value and weight. Washington and Wyoming lead all states as a percentage of value - suggesting higher value shipments of petroleum and energy related by products and/or machinery or fabricated metals. Wisconsin and Minnesota lead by weight relying mainly on the markets for cereal grains and wood by products to make the bulk of trade to these two states.



**Table 11**  
**Outbound Shipments for State of Montana by Value and Weight**

| <u>State of Destination</u> | <u>Percent of value</u>  |
|-----------------------------|--------------------------|
| Montana                     | 51                       |
| Washington                  | 11.4                     |
| Wyoming                     | 7.8                      |
| California                  | 4.3                      |
| Texas                       | 2.7                      |
| Idaho                       | 2.5                      |
| Other states                | <u>20.3</u>              |
| Total                       | 100                      |
| <br>                        |                          |
| <u>State of Destination</u> | <u>Percent of weight</u> |
| Montana                     | 41.6                     |
| Wisconsin                   | 13.1                     |
| Minnesota                   | 12.8                     |
| Washington                  | 12.2                     |
| North Dakota                | 3.9                      |
| Indiana                     | 3                        |
| Other states                | <u>13.3</u>              |
| Total                       | 100                      |

Source: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics and U.S. Department of Commerce.

Table 12 outlines inbound, or import, shipments by value and weight. While California leads in imports to the state, it is followed closely by Texas, Utah, Washington and Illinois. California may provide higher end, and value, perishables and electronic equipment, while Texas maybe capitalizing on energy related products that are focused on opportunities within the state and in Canada. The weight shipped within the state far outweighs any of the other states, suggesting the high cost of shipping durable goods long distances. Utah, Washington, and Illinois are states that have extensive warehousing and distribution centers that focus on a wide range of durable and consumable goods.

**Table 12**  
**Inbound Shipments for State of Montana by Value and Weight**

| <u>State of Origin</u> | <u>Percent of value</u> |
|------------------------|-------------------------|
| Montana                | 29                      |
| California             | 7.6                     |
| Texas                  | 6.5                     |
| Utah                   | 5.8                     |
| Washington             | 5.3                     |
| Illinois               | 5.2                     |
| Other states           | <u>40.6</u>             |
| Total                  | 100                     |

| <u>State of Origin</u> | <u>Percent of weight</u> |
|------------------------|--------------------------|
| Montana                | 73.8                     |
| Utah                   | 2.1                      |
| Washington             | 1.7                      |
| California             | 1.6                      |
| Idaho                  | 1.5                      |
| Texas                  | 1.3                      |
| Other states           | <u>18</u>                |
| Total                  | 100                      |

Source: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics and U.S. Department of Commerce.

Table 13 shows that trucking represents almost two-thirds of all value shipped from Montana, followed by rail and pipeline. These products would include manufactured goods, fuels and related energy products. Rail predominates by weight, suggesting the value in shipping commodity-related, heavier goods by rail, and the sheer volume of products shipped includes coal and wood by products. Pipelines too, transport a significant amount by value, again playing into the energy production and refining that occurs within the state.

**Table 13**  
**Modes of Transportation for Shipments Originating in Montana**

| <b>Mode of Transportation</b> | <u>Percent of value</u>  |
|-------------------------------|--------------------------|
| Truck                         | 58.8                     |
| Air (incl truck and air)      | 0.5                      |
| Rail                          | 15.1                     |
| Water                         | -                        |
| Pipeline                      | 14.9                     |
| Multiple modes                | 9.2                      |
| Parcel, U.S.P.S. or courier   | 6.5                      |
| Other and unknown modes       | <u>1.5</u>               |
| Total                         | 100                      |
| <br>                          |                          |
| <u>Mode of Transportation</u> | <u>Percent of weight</u> |
| Truck                         | 25.5                     |
| Air (incl truck and air)      | S                        |
| Rail                          | 48                       |
| Water                         | -                        |
| Pipeline                      | 6.1                      |
| Multiple modes                | 5.9                      |
| Parcel, U.S.P.S. or courier   | Z                        |
| Other and unknown modes       | <u>S</u>                 |
| Total                         | 100                      |

Source: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics and U.S. Department of Commerce.

Table 14 showing industry data for the state points out the real impact of both manufacturing and wholesale trade, representing over 88 percent of all value shipped from the state. The manufacturing capacity within the state provides the state and region a significant competitive advantage in meeting and addressing the ongoing downturn in the national economy. Montana has over 650 manufacturers who contribute to the large percentage of value in shipments originating in Montana.<sup>17</sup>

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<sup>17</sup> Montana Manufacturers Information System, Billings, MT, <http://www.mmis.umt.edu/>

**Table 14**  
**Shipment by Industry Originating in Montana**

| <u>NAICS - Industry</u>                                     | <u>Percent of value</u> |
|---|-------------------------|
| 212 Mining (except oil and gas)                             | 8.2                     |
| 31-33 Manufacturing   | 46.8                    |
| 42 Wholesale trade  | 41.4                    |
| 4541 Electronic shopping and mail-order houses              | 0.4                     |
| 45431 Fuel dealers  | 0.6                     |
| 4931 Warehousing and storage                                | 0.4                     |
| 5111 Newspaper, periodical, book, and directory publishers  | 0.3                     |
| 551114 Corporate, subsidiary, and regional managing offices | <u>S</u>                |
| Total   | 100                     |
| <br>  |                         |
| <u>NAICS - Industry</u>                                     | <u>% of weight</u>      |
| 212 Mining (except oil and gas)                             | 60.8                    |
| 31-33 Manufacturing   | 24                      |
| 42 Wholesale trade  | 12.7                    |
| 4541 Electronic shopping and mail-order houses              | Z                       |
| 45431 Fuel dealers  | 0.2                     |
| 4931 Warehousing and storage                                | 0.1                     |
| 5111 Newspaper, periodical, book, and directory publishers  | Z                       |
| 551114 Corporate, subsidiary, and regional managing offices | <u>S</u>                |
| Total   | 100                     |

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics and U.S. Department of Commerce.

Table 15 shows that 44% of total shipments by weight into Montana are accomplished by truck traffic. The table also shows that 9% of total shipments by weight leaving Montana are accomplished by truck traffic. This disparity in percentages of shipments is indicative of the imbalance in outbound versus inbound truck traffic and clearly indicates the overwhelming amount of inbound truck freight compared to outbound freight.

**Table 15**  
**Freight Shipments To, From, and Within Montana**  
**2002 and 2035 (projected)**

**Shipments by Weight: 2002 (Millions of Tons).**

|                               | Within State |         | From State |         | To State |         |
|-------------------------------|--------------|---------|------------|---------|----------|---------|
|                               | Number       | Percent | Number     | Percent | Number   | Percent |
| Total                         | 59.5         | 100     | 76.2       | 100     | 19.7     | 100     |
| Truck                         | 36.6         | 62      | 7.2        | 9       | 8.6      | 44      |
| Rail                          | 4.4          | 7       | 48.1       | 63      | 1.6      | 8       |
| Water                         | <0.1         | <1      | <0.1       | <1      | <0.1     | <1      |
| Air, air and truck            | <0.1         | <1      | 0.1        | <1      | <0.1     | <1      |
| Truck and rail                | <0.1         | <1      | <0.1       | <1      | <0.1     | <1      |
| Other intermodal <sup>1</sup> | <0.1         | <1      | 0.5        | <1      | <0.1     | <1      |
| Pipeline 2                    | 18.4         | 31      | 20.3       | 27      | 9.3      | 47      |

**Shipments by Weight: 2035 (Millions of Tons) (projected).**

|                               | Within State |         | From State |         | To State |         |
|-------------------------------|--------------|---------|------------|---------|----------|---------|
|                               | Number       | Percent | Number     | Percent | Number   | Percent |
| Total                         | 191.4        | 100     | 138.8      | 100     | 58.9     | 100     |
| Truck                         | 92.7         | 48      | 15.6       | 11      | 26       | 44      |
| Rail                          | <1           | <1      | 71.8       | 52      | 6.5      | 11      |
| Water                         | 19.1         | 10      | <0.1       | <1      | <0.1     | <1      |
| Air, air and truck            | <0.1         | <1      | 0.2        | <1      | <0.1     | <1      |
| Truck and rail                | <0.1         | <1      | 0.1        | <1      | <0.1     | <1      |
| Other intermodal <sup>1</sup> | <1           | <1      | 0.8        | <1      | 0.4      | <1      |
| Pipeline 2                    | 79.5         | 42      | 50.4       | 36      | 25.9     | 44      |

Source: U.S. DOT, Federal Highway Administration, Freight Management and Operations  
 Table 15: Projected Montana Shipments Increases 2002 vs. 2035

Table 16 shows that in 2002 approximately \$1 billion of truck-related freight (machinery and miscellaneous manufactured products) was shipped out of Montana. Also, in 2002, an estimated \$6 billion of truck-related freight (machinery, mixed freight, miscellaneous manufactured products, chemical products) was shipped into the state. 44% of total shipments by weight into Montana are accomplished by truck traffic. The table also shows that 9% of total shipments by weight leaving Montana are accomplished by truck traffic. This disparity in percentages of shipments is indicative of the imbalance in outbound versus inbound truck traffic and clearly indicates the overwhelming amount of inbound truck freight compared to outbound freight.

| <b>Table 16</b>   |           |
|---|-----------|
| <b>Top Commodities Shipped by Weight, Within the State - 2002</b> |           |
| Tons (millions) Within State                                      |           |
| Total   | 59.5      |
| Coal  | 19.2      |
| Cereal grains   | 8.4       |
| Gasoline  | 5.8       |
| Logs  | 3.6       |
| Fuel oils   | 2.7       |
| <b>Top Commodities Shipped by Value, Within the State - 2002</b>  |           |
| Value (\$ millions) Within State                                  |           |
| Total   | 15,663.90 |
| Machinery   | 2,682.30  |
| Gasoline  | 1,642.30  |
| Unknown   | 1,213.80  |
| Mixed freight   | 1,129.20  |
| Live animals/fish   | 1,010.40  |
| <b>Top Commodities Shipped by Weight, From the State - 2002</b>   |           |
| Tons (millions) From State  |           |
| Total   | 76.2      |
| Coal  | 39.3      |
| Coal, n.e.c.1   | 19.1      |
| Nonmetallic minerals  | 3.7       |
| Cereal grains   | 3.3       |
| Wood prods.   | 2.9       |
| 1 Coal and petroleum products, not elsewhere classified           |           |
| <b>Top Commodities Shipped by Value, From the State - 2002</b>    |           |
| Value (\$ millions) From State                                    |           |
| Total   | 12,122.90 |
| Coal, n.e.c.1   | 5,576.80  |
| Wood prods.   | 1,027.60  |
| Misc. mfg. prods.   | 510.2     |
| Machinery   | 494       |
| Coal  | 458.4     |
| 1 Coal and petroleum products, not elsewhere classified           |           |
| <b>Top Commodities Shipped by Weight To the State - 2002</b>      |           |
| Tons (millions) To State  |           |
| Total   | 19.7      |
| Coal, n.e.c.1   | 9.7       |
| Wood prods.   | 1.4       |
| Mixed freight   | 1         |
| Cereal grains   | 0.9       |
| Chemical prods.   | 0.6       |
| 1 Coal and petroleum products, not elsewhere classified           |           |
| <b>Top Commodities Shipped by Value To the State - 2002</b>       |           |
| Value (\$ millions) To State                                      |           |
| Total   | 16,077.20 |
| Mixed freight   | 2,345.40  |
| Machinery   | 1,871.00  |
| Coal, n.e.c.1   | 1,694.00  |
| Misc. mfg. prods.   | 1,638.50  |
| Chemical prods.   | 1,223.20  |
| 1 Coal and petroleum products, not elsewhere classified           |           |

Source: U.S. DOT, Federal Highway Administration, Freight Management and Operations  
 Table 16: Top Commodities Shipped Within, From, and To Montana 2002 vs. 2035

Table 17 shows the projection by the U.S. Department of Transportation where volume of freight traded by Montana will double from 2002 to 2035 and that the value of freight will nearly triple in over that same time period.

| <b>Table 17</b>  |           |         |
|--|-----------|---------|
| <b>Top Trading Partners, by Weight - 2002</b>          |           |         |
| Tons (millions)  |           |         |
|  | Number    | Percent |
| Total  | 95.9      | 100     |
| Foreign  | 14.7      | 15      |
| ND   | 18.2      | 19      |
| MN   | 15.3      | 16      |
| WI   | 12.6      | 13      |
| IL   | 6.5       | 7       |
| Note: Numbers may not add to total due to rounding.    |           |         |
| <b>Top Trading Partners, by Value - 2002</b>           |           |         |
| Value (\$ millions)                                    |           |         |
|  | Number    | Percent |
| Total  | 28,200.10 | 100     |
| Foreign  | 3,294.00  | 12      |
| ND   | 5,848.90  | 21      |
| WA   | 2,016.90  | 7       |
| NJ   | 1,545.60  | 5       |
| WY   | 1,513.60  | 5       |
| Note: Numbers may not add to total due to rounding.    |           |         |
| <b>Top Trading Partners, Weight - 2035 (projected)</b> |           |         |
| Tons (millions)  |           |         |
|  | Number    | Percent |
| Total  | 197.7     | 100     |
| Foreign  | 32.8      | 17      |
| ND   | 42.7      | 22      |
| MN   | 30        | 15      |
| WI   | 17.4      | 9       |
| ID   | 11.3      | 6       |
| Note: Numbers may not add to total due to rounding.    |           |         |
| <b>Top Trading Partners, Value- 2035 (projected)</b>   |           |         |
| Value (\$ millions)                                    |           |         |
|  | Number    | Percent |
| Total  | 84,396.00 | 100     |
| Foreign  | 14,116.00 | 17      |
| ND   | 13,824.80 | 16      |
| ID   | 6,725.40  | 8       |
| CA   | 4,716.50  | 6       |
| WA   | 4,176.10  | 5       |
| Note: Numbers may not add to total due to rounding.    |           |         |

Source: U.S. DOT, Federal Highway Administration, Freight Management and Operations  
 Table 17: Top Trading Partners with Montana 2002 vs. 2035

Table 18 shows that Montana ships primarily agricultural commodities and processed goods to the state’s primary state trading partners of North Dakota, Idaho, California and Washington. Most of the ag products, coal, fuels, milled grain, and fertilizers utilize specialized single use truck trailers. Limited value of outbound commodities used multi-cargo truck trailers except chemicals from Washington. Table 19 show a higher value of inbound commodities used multi-cargo truck trailers.

**Table 18**  
**Top 10 Commodities Shipped by Truck from Montana to Identified Domestic Trading Partners**

**Top 10 Commodities (by weight) Shipped To North Dakota From Montana, Via Truck (2007).**

| <b>Commodity</b>     | <b>K Tons (weight)</b> | <b>Value (M\$)</b> |
|----------------------|------------------------|--------------------|
| Other ag prods.*     | 13.85                  | 5.4                |
| Animal feed          | 60.06                  | 1.85               |
| Nonmetallic minerals | 18.32                  | 1.89               |
| Coal 16.14           | 0.02                   |                    |
| Fuel oils            | 21.1                   | 15.04              |
| Coal-n.e.c.          | 114.45                 | 33.65              |
| Fertilizers          | 50.94                  | 13.85              |
| Wood prods.          | 111.37                 | 57.78              |
| Newsprint/paper      | 38.07                  | 27.55              |
| Nonmetal min. prods. | 32.42                  | 6.13               |

\*not including cereal grains

**Top 10 Commodities (by weight) Shipped To Idaho From Montana, Via Truck (2007).**

| <b>Commodity</b>     | <b>K Tons (weight)</b> | <b>Value (M\$)</b> |
|----------------------|------------------------|--------------------|
| Cereal grains        | 9,171.33               | 946.67             |
| Other ag prods.      | 162.51                 | 63.64              |
| Milled grain prods.  | 16.05                  | 29.28              |
| Other foodstuffs     | 20.97                  | 9.45               |
| Nonmetallic minerals | 13.88                  | 2.97               |
| Coal-n.e.c.          | 370.12                 | 50.03              |
| Fertilizers          | 60.22                  | 13.6               |
| Wood prods.          | 206.46                 | 97.99              |
| Nonmetal min. prods. | 45.56                  | 7.83               |
| Waste/scrap          | 61.35                  | 9.9                |
| Mixed freight        | 10.63                  | 28.67              |

**Top 10 Commodities (by weight) Shipped To California From Montana, Via Truck (2007).**

| <b>Commodity</b>     | <b>K Tons (weight)</b> | <b>Value (M\$)</b> |
|----------------------|------------------------|--------------------|
| Live animals/fish    | 129.41                 | 121.39             |
| Other ag prods.      | 70.78                  | 44.26              |
| Meat/seafood         | 76.45                  | 215.26             |
| Milled grain prods.  | 160.5                  | 73.78              |
| Other foodstuffs     | 64.08                  | 52.05              |
| Building stone       | 45.19                  | 14.96              |
| Nonmetallic minerals | 28.3                   | 6.08               |
| Fertilizers          | 12.52                  | 5.91               |
| Wood prods.          | 78.28                  | 32.53              |
| Newsprint/paper      | 111.96                 | 66.01              |
| Waste/scrap          | 26.79                  | 71.03              |

**Top 10 Commodities (by weight) Shipped To Washington From Montana, Via Truck (2007).**

| <b>Commodity (weight)</b> | <b>K Tons</b> | <b>Value (M\$)</b> |
|---------------------------|---------------|--------------------|
| Milled grain prods.       | 15.23         | 15.46              |
| Other foodstuffs          | 17.87         | 9.11               |
| Nonmetallic minerals      | 26.02         | 6.32               |
| Coal-n.e.c.               | 309.12        | 11.61              |
| Basic chemicals           | 30.96         | 386.62             |
| Wood prods.               | 63.35         | 27.38              |
| Newsprint/paper           | 37.1          | 15.1               |
| Printed prods.            | 15.99         | 89.35              |
| Nonmetal min. prods.      | 71.57         | 1.54               |
| Waste/scrap               | 85.86         | 35.98              |

Source: FHWA Freight Management and Operations  
 Table 18: Top 10 Commodities Shipped From Montana, Via Truck (2007)



**Table 19**  
**Top 10 Commodities Shipped by Truck to MT From Identified Domestic Trading Partners**

**Top 10 Commodities (by weight) Shipped From California To Montana, Via Truck (2007).**

| <b>Commodity</b>    | <b>K Tons (weight)</b> |        | <b>Value (M\$)</b> |
|---------------------|------------------------|--------|--------------------|
| Animal feed         | 7.99                   | 9.99   |                    |
| Other foodstuffs    | 45.72                  | 77.02  |                    |
| Coal-n.e.c.         | 8.53                   | 3.95   |                    |
| Plastics/rubber     | 11.57                  | 42.23  |                    |
| Nonmetal min.       | 30.63                  | 33.29  |                    |
| Base metals         | 10.81                  | 11.85  |                    |
| Articles-base metal | 13.58                  | 31.83  |                    |
| Electronics         | 13.43                  | 307.7  |                    |
| Furniture           | 8.89                   | 34.97  |                    |
| Mixed freight       | 23.4                   | 164.31 |                    |

**Top 10 Commodities (by weight) Shipped From Idaho To Montana, Via Truck (2007).**

| <b>Commodity</b>    | <b>K Tons (weight)</b> |        | <b>Value (M\$)</b> |
|---------------------|------------------------|--------|--------------------|
| Live animals/fish   | 19.97                  | 33.15  |                    |
| Cereal grains       | 3,020.71               | 256.3  |                    |
| Other ag prods.     | 660.57                 | 184.25 |                    |
| Gasoline            | 9                      | 7      |                    |
| Fertilizers         | 238.64                 | 75.09  |                    |
| Wood prods.         | 263.8                  | 118.68 |                    |
| Nonmetal min.       | 23.16                  | 4.91   |                    |
| Articles-base metal | 7.05                   | 12.38  |                    |
| Waste/scrap         | 32.49                  | 0.28   |                    |
| Mixed freight       | 8.76                   | 41.02  |                    |

**Top 10 Commodities (by weight) Shipped From North Dakota To Montana, Via Truck (2007).**

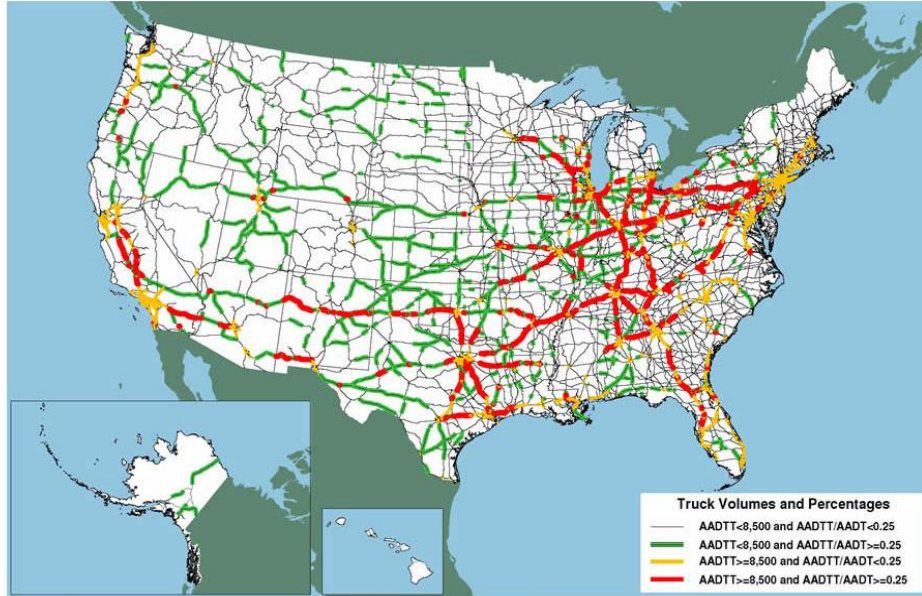
| <b>Commodity</b>    | <b>K Tons (weight)</b> |       | <b>Value (M\$)</b> |
|---------------------|------------------------|-------|--------------------|
| Animal feed         | 15.01                  | 1.2   |                    |
| Other foodstuffs    | 11.21                  | 4.22  |                    |
| Crude petroleum     | 50.49                  | 22.82 |                    |
| Gasoline            | 21.99                  | 16.98 |                    |
| Fuel oils           | 48.03                  | 37.97 |                    |
| Basic chemicals     | 26.06                  | 12.93 |                    |
| Pharmaceuticals     | 7.54                   | 7.69  |                    |
| Articles-base metal | 25.98                  | 38.09 |                    |
| Machinery           | 38.82                  | 102.4 |                    |
| Mixed freight       | 7.38                   | 19.32 |                    |

**Top 10 Commodities (by weight) Shipped From Washington To Montana, Via Truck (2007).**

| <b>Commodity</b>    | <b>K Tons (weight)</b> |        | <b>Value (M\$)</b> |
|---------------------|------------------------|--------|--------------------|
| Other ag prods.     | 36.02                  | 60.97  |                    |
| Other foodstuffs    | 24.44                  | 56.53  |                    |
| Wood prods.         | 130.33                 | 81.55  |                    |
| Newsprint/paper     | 22.98                  | 25.96  |                    |
| Nonmetal min.       | 175.67                 | 54.98  |                    |
| Base metals         | 24.74                  | 36.6   |                    |
| Articles-base metal | 18.95                  | 64.37  |                    |
| Machinery           | 13.87                  | 76.81  |                    |
| Motorized vehicles  | 25.56                  | 171.51 |                    |
| Mixed freight       | 187.96                 | 615.51 |                    |

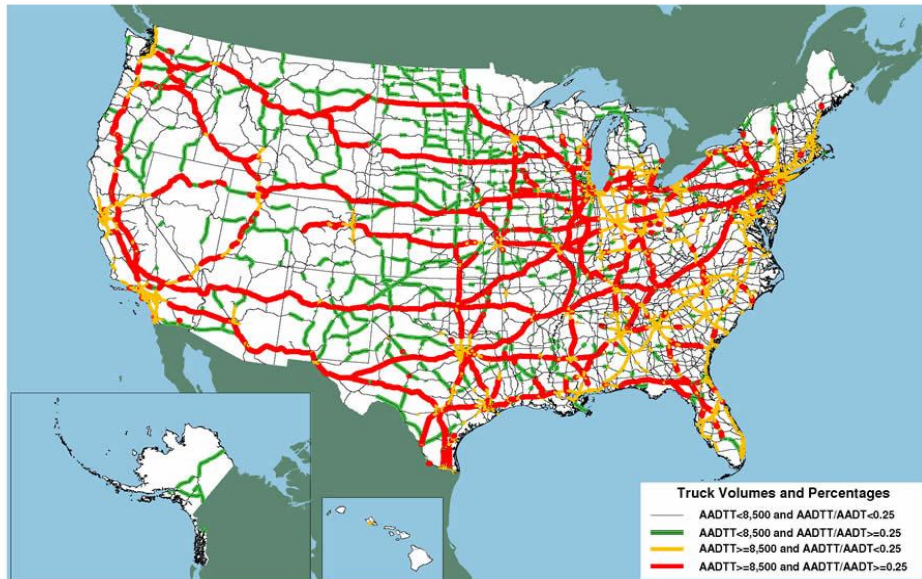
Source: FHWA Freight Management and Operations  
 Table 19: Top 10 Commodities Shipped To Montana, Via Truck (2007)

Exhibit 18 shows the I-15 corridor within the Sweetgrass Region was considered in 2007 to be a significant truck route in terms of volume and percentages. Exhibit 19 shows the U.S. Department of Transportation projection for 2040 where I-94 in Montana will become one of the major truck volume routes in the U.S., which will enhance truck volume on I-15.



Note: AADTT is average annual daily truck traffic and includes all freight-hauling and other trucks with six or more tires. AADT is average annual daily traffic and includes all motor vehicles.  
Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, version 3.1, 2010.

Source: U.S. DOT, National Highway Administration, Freight Management and Operations  
Exhibit 18: Major Truck Routes on the National Highway System, 2007

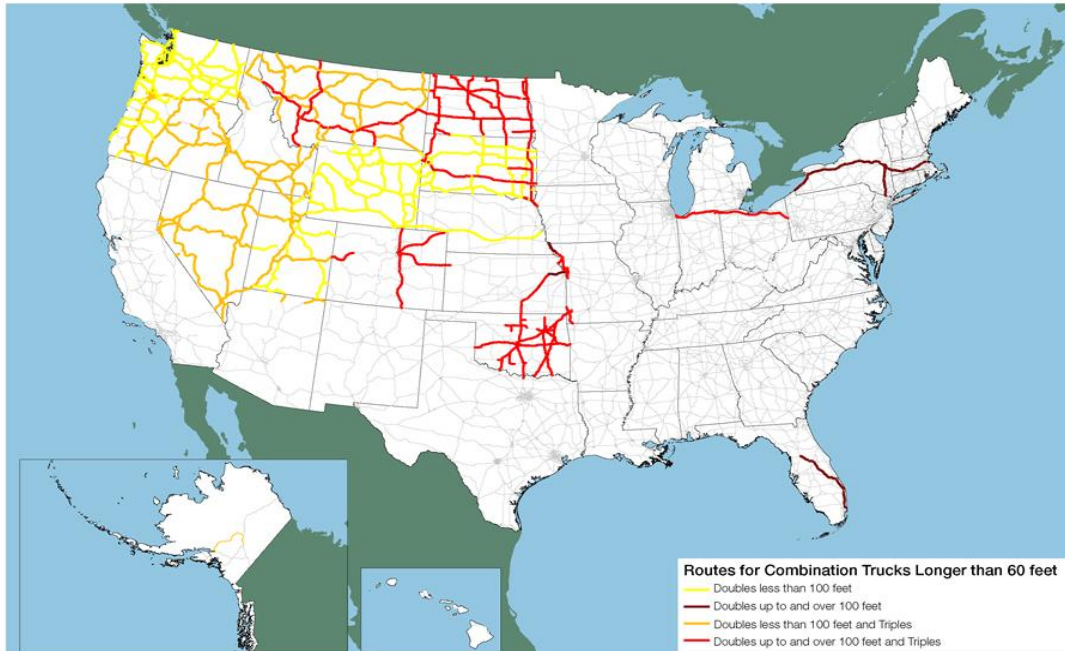


Note: AADTT is average annual daily truck traffic and includes all freight-hauling and other trucks with six or more tires. AADT is average annual daily traffic and includes all motor vehicles.  
Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, version 3.1, 2010.

Source: U.S. DOT, National Highway Administration, Freight Management and Operations  
Exhibit 19: Major Truck Routes on the National Highway System, 2040

## Great Falls Regional Transportation Task #7

Montana and its major trading states of North Dakota, Idaho, and Washington have routes that allow combination trucks that include double trailers and in some cases triple trailers. (Exhibit 20) The CANAMEX Trade Corridor organization, Edmonton, AB, is actively advocating the adoption of uniform load restrictions of 129,000 lbs per truck/trailer combination from points in Alberta, down the I-15 corridor to California and Arizona.<sup>18</sup>



Note: Empty triples are allowed on I-80 in Nebraska.

Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, special compilation by the Freight Operations and Technology Team, 2009.

Source: U.S. DOT, National Highway Administration, Freight Management and Operations  
Exhibit 20: Permitted Longer Combination Vehicles on the National Highway System, 2009

### **Freight Rate Analysis**

Interviews with trucking companies and truck brokers in the Sweetgrass Region verified the data shown above from the U.S. Department of Transportation concerning the freight imbalance where much more inbound truck freight arrives into Montana compared to outbound truck freight to other states using multi-cargo dry van, refrigerated van, and flatbed trailers. The Region's trucking companies travel across the 48 lower states and into the Canadian provinces east of the Rocky Mountains.

Trucking companies in the Sweetgrass Region stated that rates for dry vans and flatbeds coming into Montana from the east, west, and south average \$2.60 per mile (includes fuel surcharges). Rates for refrigerated loads are a bit higher averaging \$3.00 per mile. Rates for dry vans, flatbeds, and refrigerated vans outbound to the east, west, and south average \$0.90 to \$1.50 per

<sup>18</sup> CANAMEX Corridor Project, A building Block to Western Prosperity, Phoenix, AZ, Edmonton, AB, <http://www.transportation.alberta.ca/Content/doctype59/production/Canamex-Trade-Brochure.pdf>

## Great Falls Regional Transportation Task #7

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mile. The minimum differential reported by the Region's trucking companies was outbound rates were at least \$1.00 per mile less than inbound rates. Interviewed Regional freight companies said they would prefer to obtain an overall \$1.50 to \$2.00 per mile flat rate inbound and outbound, rather than run the risk of deadheading (no load on board) out of Montana.

The province of Alberta is also primarily an inbound destination for freight from the U.S. Sweetgrass Region truckers hauling a variety of freight to Calgary, Edmonton, and Fort McMurray charge \$2.50 to \$3.00 per mile hauling freight from Florida, California, Arizona, and Oklahoma, but can obtain only \$0.60 per mile on the return trip from Alberta. Regional trucking firms reported that they generally return from Alberta empty to rapidly pick up more loads in the U.S. Refrigerated vans deadhead from Alberta back to pick more refrigerated goods in the U.S. Canadian firms pay a \$1,500 to \$1,700 deadhead fee to trucking firms for refrigerated pick ups in California.

### *Strengths*

- Sweetgrass Region has a number of competent, experienced trucking companies and truck brokers who can supply current outbound rate information for shippers.
- Sweetgrass Region has several manufacturers using favorable outbound truck rates who can act as reference shippers.
- Discounted outbound truck freight rates reduce the impact of being further from markets for Sweetgrass Region businesses compared to competitors closer to markets.
- When the Alberta Basin Bakken Fairway oil field becomes actively explored and extracted, dramatically increased inbound oil-industry supplies will increase the supply of outbound trucking looking for loads.
- Projections from the U.S. Department of Transportation indicated Montana's inbound and outbound shipping volume will double and the value of shipped goods in and out of Montana will triple resulting in increased opportunity to obtain favorable outbound freight services.
- The I-15 north-south corridor is projected to handle significantly more truck volume in the next 25 years.
- Expansion of activity in the Alberta oil sand region pulls increasing amounts of goods from the U.S., which generates more empty trailers heading back to a variety of locations across the U.S.

### *Weaknesses*

- Advantageous outbound freight rates from the Sweetgrass Region are not utilized frequently enough as a tool by Regional economic development and public service professionals in expanding Regional businesses and recruiting new businesses to the Region.

## Great Falls Regional Transportation Task #7

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- The Sweetgrass Region does not have enough value added agri-processing and manufacturing activity to take advantage of the abundance of available outbound transport.
- The Sweetgrass Region does not have as wide a variety of industries that use outbound freight services compared to more populous regions.
- The Sweetgrass Region has a full complement of pipeline, rail, and air alternatives to truck transport.

### ***Recommendations***

The Sweetgrass Region has a major freight-related benefit for its manufacturing, agri-processing, identity preserved agricultural commodity processing, and wholesaling industries. Those industries can benefit from very advantageous outbound freight rates. Those industries that are not hampered by having to bring in high freight cost materials, but draw their materials from Montana, benefit the most from favorable outbound truck rates. Also, those industries that add a significant amount of value to their goods through the application of intellectual property and/or technology benefit from the same favorable outbound truck rates.

- The Great Falls Development Authority is recommended to regularly obtain and maintain on record current inbound and outbound truck freight rates from the Region's trucking companies and truck brokers.
- The Great Falls Development Authority is recommended to include the economic development advantages of the latest information on favorable outbound freight rates in correspondence and meetings with Regional city, county, and Regional economic development professionals.
- Sweetgrass Region economic development city, county, and Regional entities are recommended to share information on outbound truck freight rate advantages and current rates with manufacturing, agri-processing, identity preserved agricultural commodity processing, and wholesaling industries in their jurisdictions and to potential business candidates for relocation to the Sweetgrass Region.
- Sweetgrass Region economic development city, county, and Regional entities are recommended to share information on outbound truck freight rate advantages and current rates with potential business candidates for relocation to the Sweetgrass Region.

### ***Conclusion***

The Sweetgrass Region's economic development professionals have a valuable tool in favorable outbound truck freight rates for their business community and for prospective new businesses to the Region. By regularly disseminating the strategic advantage of favorable outbound truck freight rates to current and potential businesses, the Sweetgrass Region has a significant means

## Great Falls Regional Transportation Task #7

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of mitigating the adverse effect of long distances to markets. In addition, the education of economic development professionals, the business community, and the general public that the Sweetgrass Region's business community is much more cost competitive than conventional wisdom implies regarding distance to markets.

## Task #7B - Transportation to Alberta Oil Sands

### *Introduction*

This section addresses the impact of the extensive energy play being developed as part of the Alberta Oil Sands (commonly referred to as the Alberta Tar Sands) north of the Great Falls market area and the Sweetgrass Region. Canada has the third largest oil reserves in the world and 97% of those reserves are located in its oil sands. The potential to capitalize on these efforts will rely on developing strong relationships with current and future participants in this development and providing the necessary logistical and manufacturing support and transportation infrastructure to meet the growing needs of this resource.

This section follows the following outline:

- Development/Production Overview
- Short-Term Volume and Forecasted Production Volumes
- Transport of Oil Exploration and Extraction Equipment to Canada
- (Select) Companies Involved

### *Development & Production Overview*

Alberta's oil sands deposits are divided into three major regions in northern Alberta (Exhibit 21) referred to as the Athabasca, Cold Lake and Peace River deposits (Exhibit 22). Oil sands production currently makes up 55 per cent of western Canada's total crude oil production. The costs associated with oil sands production exploration are (relatively) insignificant because the location of the resource has been well documented and is well known. However, the development costs associated with this resource are high.

Costs associated with either open-pit mining techniques or steam injection to recover bitumen located further below the surface are higher than for conventional production. Of the remaining established reserves in Alberta, 135 billion barrels, or 80 per cent, is considered recoverable by in situ methods and 35 billion barrels from surface mining. In situ recovery includes both primary methods, which are similar to conventional production, and methods whereby steam, water, or other solvents are injected into the reservoir to reduce the viscosity of the bitumen, allowing it to flow to a vertical or horizontal wellbore.

Historically, oil sand was incorrectly referred to as tar sand due to the largely ineffective practice of using it for paving and roofing tar (oil sand will not harden suitably for these purposes). While they appear to be similar, tar and oil sands are different; while oil sand is a naturally occurring petrochemical, tar is a synthetically produced substance that is largely the last waste product of the destructive degradation of hydrocarbons. Furthermore, their uses are completely different; oil sand can be refined to make oil and ultimately fuel, while tar cannot and has historically been used to seal wood and rope against moisture.

## Great Falls Regional Transportation Task #7

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The Alberta Energy Resources and Conservation Board (ERCB) estimated at year-end 2008, that these areas contain remaining established reserves of 174 billion barrels – these numbers are prone to change as new resources and techniques are developed. There are 315 billion barrels of potentially recoverable oil in the oil sands. Some of this oil would require more favorable economic conditions (continued higher prices of oil) or new technology to extract and process this resource. Approximately 80% of Alberta oil sands are recoverable through in-situ production, with only 20% recoverable by mining.<sup>19</sup>

According to the Alberta Government – Division of Energy, recovery rate percentages vary depending on the method of extraction:

- 5-10% for primary recovery of conventional oil.
- Up to 20% using conventional enhanced oil recovery methods such as water flood or polymer flood.
- Up to 35-40% bitumen using cyclic steam stimulation.
- Up to 50-60% of bitumen using steam assisted gravity drainage.
- Up to 90% of bitumen from mining.

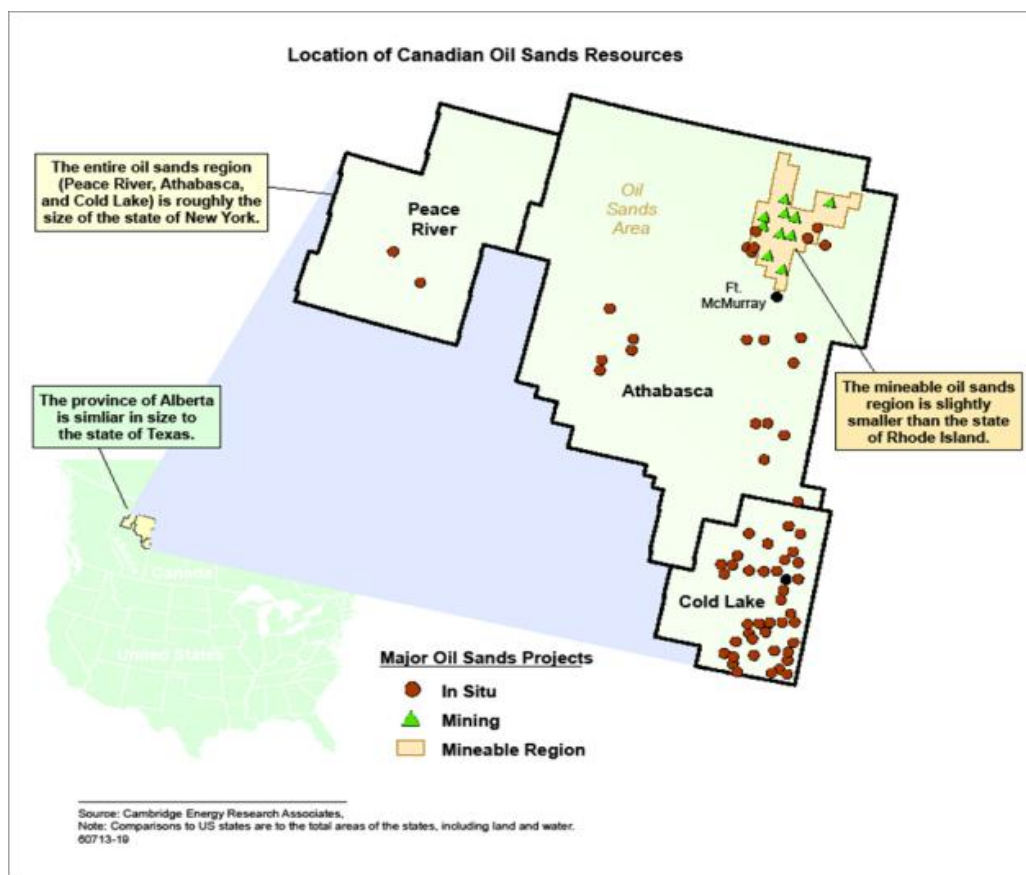


Source: Canadian Association of Petroleum Producers  
Exhibit 21: Oil Sands Deposits in Western Canada

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<sup>19</sup> Canadian Association of Petroleum Producers, The Facts on Oil Sands, Upstream Dialogue, March 2011, <http://www.capp.ca/getdoc.aspx?DocId=178979&DT=NTV>





Source: Cambridge Energy Research Associates  
Exhibit 22: Detail of Major Oil Sands Projects in Alberta

### ***Short-Term & Forecasted Production Volumes***

In 2009, 2.4 million barrels/day of crude oil were produced from Western Canada, with the majority of this production coming from the sands that make up the Alberta Oil Sands and the remaining portion taken from conventional oil wells/fields.<sup>20</sup> In 2009/2010, Alberta's production of crude bitumen (oil sand) was 1.5 million barrels per day with surface mining accounting for 55% and in situ for 45%. About 60% of crude bitumen production was sent for upgrading in the province. Oil sands within 245 feet (75 meters) of the surface can be mined; whereas, oil sands below this threshold must be extracted using in situ methods.<sup>21</sup>

As of August 2010, there were 91 active oil sands projects in Alberta. Of these, six mining projects have been approved; four of these projects are currently producing bitumen; and two are still under construction. The remaining projects use various in situ recovery methods. Oil sand

<sup>20</sup> Canadian Association of Petroleum Producers, The Facts on Oil Sands, Upstream Dialogue, March 2011, <http://www.capp.ca/getdoc.aspx?DocId=178979&DT=NTV>

<sup>21</sup> Province of Alberta Division of Energy, Oil Sands, <http://www.energy.alberta.ca/OurBusiness/oilsands.asp>

production is expected to grow from over 1.3 million barrels per day in 2010 to approximately 2.2 million barrels in 2015 and to about 3.5 million barrels per day in 2025.<sup>22</sup>

### ***Transport of Oil Exploration & Extraction Equipment to Canada***

Wide and heavy loads of refinery equipment are currently being shipped, primarily from Oklahoma, to points in Montana and north into Canada. One of the shippers is Oregon-based Emmert International, who reports loads of up to 600,000 pounds and 215 feet long – 24 feet tall and 25 feet wide and moving at speeds at/or around 20 mph.

Exxon Mobil and ConocoPhillips are seeking permits to move similar-sized loads from the Port of Lewiston in Idaho through northwestern Montana – potentially impacting the Sweetgrass region and associated ports. (Exhibit 23) ConocoPhillips is seeking permits to haul four large loads of refinery equipment from Lewiston, Idaho to Billings, while Exxon Mobil is seeking permits to haul more than 200 loads of equipment from Lewiston, Idaho through northwestern Montana to an oil-sands project in Alberta, Canada.<sup>23</sup>

The Montana Department of Transportation signed its final environmental assessment, which included a finding of no significant impact. Under the newly approved plan, 207 loads of Imperial Oil equipment will pass through Idaho and Montana, from Lolo Pass to the Port of Sweet Grass, to reach the Kearl Oil Sands in Alberta, Canada. Once there, the equipment will be assembled and used to convert the oil sands into oil. The first load of modules has been shipped from South Korea, up the Columbia and Snake rivers, and arrived at the Port of Lewiston in Idaho. The modules, nearly 200 feet long and 30 feet tall, are so huge they must be loaded onto trailers that take up both lanes of U.S. 12, resulting in a rolling roadblock as they move.

Imperial Oil will spend \$21.6 million in Montana for permits and hundreds of highway modifications to accommodate the oversized loads on a route from Lolo Pass to the Port of Sweetgrass, via Missoula, the Blackfoot River Valley and the foothills of the Rocky Mountain Front. Environmental groups in Montana have filed a lawsuit to stop large and wide load oil industry equipment from passing through the wild and scenic river territories in the Rocky Mountains. Imperial Oil has already spent considerable sums of money in the Sweetgrass Region on its route through Teton, Pondera, Glacier, and Toole counties according to conversations with county commissioners and city staff in those counties.

As of May 4, 2011, the Imperial Oil test load had made it to Montana through the Lolo pass.<sup>24</sup> District Judge Ray Dayton of Deer Lodge County is scheduled to conduct hearing arguments in Missoula on May 16, 2011 on a preliminary injunction request against the Montana Department of Transportation and Imperial/Exxon. Missoula County joined with three environmental groups

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<sup>22</sup> Canadian Association of Petroleum Producers, The Facts on Oil Sands, Upstream Dialogue, March 2011, <http://www.capp.ca/getdoc.aspx?DocId=178979&DT=NTV>

<sup>23</sup> Refinery Equipment from Oklahoma Reaches Billings, Ravalli Republic News, Hamilton, MT, December 9, 2010, [http://ravallirepublic.com/news/state-and-regional/article\\_90c32f3a-040c-11e0-9c35-001cc4c002e0.html](http://ravallirepublic.com/news/state-and-regional/article_90c32f3a-040c-11e0-9c35-001cc4c002e0.html)

<sup>24</sup> Megaload Test Module Reaches Lolo Hotsprings, Missoulian, Missoula, MT, May 4, 2011.

## Great Falls Regional Transportation Task #7

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in the lawsuit to halt the Kearl Module Transportation Project to ensure that a more extensive environmental review would be completed prior to equipment transit.

The 200 plus wide and heavy loads that would be traversing through the Sweetgrass Region will have a significant effect on the Region's economy. The loads travel at night to avoid most traffic issues. During the day, the six person plus crews would stay and eat in Sweetgrass Region communities improving restaurant and lodging incomes. When traveling only 20 miles per hour, each load could conceivably spend two to three nights in the Sweetgrass Region.

Conoco Phillips has successfully moved wide large loads consisting of coke ovens to its Billings-area refinery using two routes from Oklahoma to Billings and across Idaho and Western Montana to Billings. The primary difference is that Conoco Phillips had requested just a few loads to take place through Montana versus over 200 wide loads sought by Imperial Oil.<sup>25</sup>



Source: Billings Gazette, March 27, 2011

Exhibit 23: Conoco Phillips coke drums roll through Missoula

Mr. Jim Lynch, Director, and Ms. Lynn Zanto, Planning Director, for the Montana Department of Transportation were interviewed to determine the State of Montana's stance on wide and heavy loads. Mr. Lynch stated that wide and heavy equipment fabrication in the Sweetgrass region is definitely a possibility because there are minimal restrictions to moving wide and heavy loads on non-Interstate Montana highways. Mr. Lynch stated that there was very little impediment to wide and heavy loads from Valier, MT to the Canadian border.

Senator Frank Lautenberg (D-NJ), May 4, 2011, introduced legislation to continue to limit the size of trucks traveling on the nation's Interstate highways to 80,000 pounds in weight and 53 feet in length. This railroad industry supported bill counters several other bills in the Senate and House of Representatives that are attempting to increase truck weights to 97,000 pounds.<sup>26</sup> Mr. Lynch stated that Interstate highways have too many constriction issues with underpasses and

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<sup>25</sup> 2 Megaloads Move Through Missoula, Protestor Arrested, Billings Gazette, Billings, MT, March 10, 2011, [http://billingsgazette.com/news/state-and-regional/montana/article\\_b92f5451-3e08-5b7c-ac15-9e25acf83151.html](http://billingsgazette.com/news/state-and-regional/montana/article_b92f5451-3e08-5b7c-ac15-9e25acf83151.html)

<sup>26</sup> Senate Bill Would Freeze Federal Truck Size, Weight Limits, Progressive Railroading Daily News, May 4, 2011, <http://www.progressiverailroading.com/prdailynews/news.asp?id=26520>

limited offramp and onramp radii to warrant wide and heavy oil equipment loads. Also, according to Michael Johnson, Great Falls District Administration, Montana Department of Transportation, Interstate maximum vehicle size is 14 feet high, 18 to 20 feet wide, and 160 feet long. Mr. Johnson stated that Interstate access for approved wide and heavy loads are at the east side of Gore Hill at Gordon, at Collins, and loads can exit at Vaughn and travel to Fairview, MT.

### ***Recommendations***

To enable wide and heavy load fabrication for Alberta-based companies to take place in the Sweetgrass Region, it is recommended that Sweetgrass Regional economic development professionals engage fabrication companies in the Region in the search for wide and heavy load fabrications work. The intermittent nature of oil equipment shipments to Alberta would most probably not provide consistent work for a standalone fabrication business solely engaged in that type of work. Oil equipment destined for Alberta Oil Sands, such as large and wide South Korean-made mining equipment, (Exhibits 24 and 25) are made in locations that ship those types of equipment to companies worldwide, which make their fabrication efforts more cost effective than a Sweetgrass Regional company dedicated to only the Alberta oil sands region. It is recommended that the Great Falls Development Authority, or a designee by the Authority engage in the following:

- Obtain company contact information for petroleum-related companies who purchase oil exploration and extraction equipment. (See Select List Below)
- Develop a list of Sweetgrass Region companies who have fabrication and sub-assembly skill sets, who would be willing candidates for providing fabrication and sub-assembly services for petroleum-related companies. These fabrication and sub-assembly services would be valuable for not only Alberta-bound oil industry equipment, but also would be valuable for oil exploration and extraction companies projected to ramp up activities in the Sweetgrass Region's Alberta Basin Bakken Fairway.
- Regularly engage with petroleum-related companies and inform them, through correspondence, emails, personal visits, and trade shows, of the Sweetgrass Region's interest, resources, and capabilities in engaging in fabrication and sub-assembly services for wide and heavy loads of oil industry related equipment destined for the Alberta Oil Sands.
- Additionally, interview truck repair and service companies along the Sweetgrass Region's I-15 corridor about their interest in planning for business expansion to coincide with increased cross border truck traffic and increased truck traffic that would be caused by increased oil exploration and extraction activity in the Sweetgrass Region's Alberta Basin Bakken Fairway.



Source: Earth Island Journal Dispatches  
Exhibit 24: Exxon Mobile Mining Equipment Traveling Through Idaho



Source: Oregon Sierra Club Blog  
Exhibit 25: Exxon Mobile Mining Equipment Traveling Through Idaho

### ***(Select) Companies Involved in Alberta Oil Sands Energy Play***

Companies that are involved in the Alberta Oils sand energy play including field service reps, technical and labor providers, engineers and energy companies that are predominant in the Province. Outlined below is a select listing of companies (with contact information where available) that have a presence within the oil sands geography.

**TABLE 20**  
**Alberta Oil Sand Companies (select). Source Global Infomine.**

Habanero Resources Inc. is engaged in the identification, acquisition, exploration and development of oil and natural gas properties. During the year ended December 31, 2008, the Company had interests in 10 oil sand lease parcels in Alberta, in addition to long-term investments in Andora Energy Corporation and Patch Oilsands Limited Partnership. HABANERO RESOURCES INC. (“Habanero”) 1470-701 West Georgia Street Vancouver, BC Canada V7Y 1C6

Firesteel Resources Inc. is currently concentrating its research, acquisition and exploration efforts on the Stikine Arch of Northern British Columbia. This area hosts many large porphyry copper-gold and vein-hosted gold deposits. FIRESTEEL RESOURCES INC. Suite 503 - 675 West Hastings St. Vancouver B.C. V6B 1N2 Ph: (604) 669-5768 Fax: (604) 669-5728

BlackPearl Resources Inc. together with its subsidiaries, engages in the exploration, development, and production of oil and natural gas in Canada and the United States. 700, 444 – 7th Avenue SW, Calgary, AB T2P 0X8

Titanium Corporation - The company is developing technology to recover heavy minerals, primarily zircon, and bitumen contained in the waste tailings streams from oil sands mining operations near Fort McMurray, Alberta. Suite 1400, 10025 – 106th Street, Edmonton, Alberta, T5J 1G4

Southern Pacific Resource Corp. is a junior oil and gas exploration company with an average 84% working interest in 269 sections of Athabasca oil sands leases in five core areas. The productive zone is the McMurray Formation, consisting primarily of fluvial and estuarine channel sandstones which form the main bitumen deposits. 1700, 205 - 5 Avenue SW Calgary, AB T2P 2V7 Phone: 403-269-524300, 205 - 5 Avenue SW Calgary, AB T2P 2V7  
Phone: 403-269-5243

Teck Resources Ltd. is a diversified resource company with major business units focused on copper, metallurgical coal, zinc, gold and energy. Unit 6, 1 Clive St West Perth WA 6005.

ExxonMobil is a worldwide leader in the petroleum and petrochemicals business. The company holds interests in a wide range of chemicals and minerals companies, including ExxonMobil Coal and Minerals. ExxonMobil Coal and Minerals mines coal and copper on three continents.

Deloro Resources Ltd. is engaged in the acquisition, exploration and development of oil and gas properties in Canada, primarily in the Province of Saskatchewan. Deloro Resources Ltd. has acquired a 75% interest in the Wilkie Heavy Oil Project. The Deloro leases cover part of a McLaren Channel Zone 1/2 to 3/4 of a mile wide and approximately 5 miles long. Suite 900-925 West Georgia Street, Vancouver, British Columbia, Canada, V6C 3L2 Telephone 604-484-5761

## Great Falls Regional Transportation Task #7

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Syncrude Canada Ltd. is the world's largest producer of crude oil from oil sands.

Canadian Oil Sands Trust is an open-ended investment trust that generates income from its 35.49% working interest in the Syncrude Project. The Trust is managed by its wholly owned subsidiary Canadian Oil Sands Limited.

AEC Oil Sands Limited Partnership owns a 6% interest in Syncrude Limited, an oil sands producer

ConocoPhillips is a major international integrated energy company headquartered out of Houston, Texas, with operations in some 49 countries.

Imperial Oil is one of Canada's largest corporations. The company produces crude oil and natural gas and is also a refiner and marketer of petroleum products.

Mocal (a subsidiary of Mitsubishi Corp of Japan) holds an interest in Syncrude Limited, operation of the Syncrude oil sands project in Alberta.

Murphy Oil Corporation is a worldwide oil and gas exploration and production company with refining and marketing operations in the United States and the United Kingdom and crude oil transportation and trading operations in Canada. The company also holds a interest in Syncrude, an oil sands development joint venture.

Nexen Inc. is an energy and chemicals company. It has oil and gas operations in North America, South America, the North Sea, Yemen, Nigeria, Australia and South East Asia, and oil sands interests in Alberta.

Suncor Energy Inc. is a Canadian integrated energy company comprised of four operating segments: Oil Sands, Natural Gas, Energy Marketing and Refining – Canada, and Refining and Marketing – U.S.A. Suncor Energy Inc. P.O. Box 2844, 150 - 6 Avenue S.W., Calgary, Alberta, Canada T2P 3E3 T: 403-296-8000.

Albian Sands Energy Inc. is the operator of the Muskeg River Mine oil sands mine. The Muskeg River Mine and the Scotford Upgrader together comprise the Athabasca Oil Sands Project - a joint venture of Shell Canada Limited, Chevron Canada Limited (a wholly owned subsidiary of ChevronTexaco Corp.) and Marathon Oil Canada.

Marathon Oil Corp is an integrated energy company whose activities include: Exploration and production of liquid hydrocarbons and natural gas; Integrated gas business; Refining, marketing and transportation; and Oil Sands mining through the company's 20 percent interest in the Athabasca Oil Sands Project which the company acquired through their acquisition of Western Oil Sands in 2007.

Chevron Canada Limited is a wholly owned subsidiary of Chevron Corp. (formerly ChevronTexaco Corp) a global integrated oil company. Chevron Canada Limited is a 20% partner in the Athabasca Oil Sands Project which is comprised of the Muskeg River Mine and the Scotford Upgrader.

## Great Falls Regional Transportation Task #7

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Canadian Natural Resources Limited is a senior independent oil and natural gas exploration, development and production company based in Calgary, Alberta. The company has operations in Western Canada, the North Sea and offshore West Africa. The company is also involved in oil sands through its Horizon project in Alberta. 2500, 855 – 2nd Street S.W. Calgary, Alberta T2P 4J8

Japan Canada Oil Sands Limited (JACOS) has been conducting pilot tests since 1978 with oil sands experimental projects in the Athabasca area through its membership in the PCEJ consortium. The company is majority owned (84%) by Japan Petroleum Exploration Company Limited (JAPEX).

Devon Energy Corporation is engaged in oil and gas exploration, production and property acquisitions. Devon ranks among the top-five U.S.-based independent oil and gas producers and is one of the largest independent processors of natural gas and natural gas liquids in North America. The company also has operations in Canada and through Deveon Canada Corporation is evaluating the development of oil sands in Alberta. Devon Energy Corporation 20 North Broadway Oklahoma City, OK 73102-8260

OPTI Canada Inc. (OPTI) was established in 1999 to commercialize the OrCrude™ upgrading process and to develop integrated bitumen and heavy oil projects in Alberta. OPTI Canada Inc. Suite 1600, 555 – 4th Avenue SW Calgary, Alberta, Canada T2P 3E7 (403) 249-9425

Husky Energy is a Canadian integrated energy and energy-related company. The company also has interests the Alberta oil sands in the Cold Lake and Athabasca regions. 707 8th Ave. SW, Calgary, Alberta T2P 3G7 Telephone (403) 298-6111.

MEG Energy Corp. is a private Canadian oil and gas corporation engaged in oil sands development at its 100% owned Christina Lake Regional Project located in north east Alberta, Canada. 11th Floor, 520 – 3rd Avenue S.W., Calgary, AB T2P 0R3 Phone 403.770.0446

Petrobank Energy and Resources Ltd. is a Calgary-based oil and natural gas exploration and production company with operations in western Canada and Colombia. The Heavy Oil Business Unit commenced the development of the WHITESANDS pilot project to field-demonstrate Petrobank's patented THAI™ heavy oil recovery process. Suite 1900, 111 – 5th Avenue S.W., Calgary, Alberta, T2P 3Y6 Phone: 403.750.4400

Enerplus Resources Fund was established in 1986. The company is an oil and gas producer with properties across Western Canada and the United States. In addition to conventional oil and gas production the company is also involved in Canada's oil sands. The Dome Tower 3000, 333-7th Avenue SW Calgary, Alberta T2P 2Z1 Tel 403.298.2200

Connacher Oil and Gas Limited (TSX - CLL) is a Calgary-based crude oil and natural gas exploration, development, production and refining company. Our principal asset is a 100 percent interest in approximately 98,000 acres of oil sands leases at the Great Divide project near Fort McMurray, Alberta. P (403) 538- 6201 F (403) 538- 6225 inquiries@connacheroil.com



## Great Falls Regional Transportation Task #7

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Pan Orient is a Canadian publicly listed (TSX-V: POE) junior oil and natural gas company based in Calgary, Alberta, Canada. The Company's principal properties are divided into three distinct groups: 1) partially developed concessions located on-shore Thailand; 2) interests in production sharing contracts on-shore Indonesia; and 3) Canadian oil sand properties; Pan Orient Energy Corp. Jeff Chisholm President and CEO (403) 294-1770

Penn West Energy Trust is the largest conventional oil and natural gas producing income trust in North America. Based in Calgary, Alberta, Penn West operates throughout the Western Canadian Sedimentary Basin. Penn West's first half 2009 projected production approximately 180 mboe per day, of which just under half is natural gas.

Oilsands Quest Inc. is a public company (Amex: BQI) engaged in a variety of projects in the oil and gas industry in Western Canada with an emphasis on the oil sands. The company is aggressively exploring Canada's largest contiguous oil sands land holding, which is located in northeast Alberta and northwest Saskatchewan. Oilsands Quest is leading the development of an oil sands industry in the province of Saskatchewan.

Bronco Energy Ltd. (Bronco) is engaged in the development, exploration and production of oil sands in Western Canada. Bronco also owns and operates drilling rigs and related services and equipment through its wholly owned subsidiary, Bronco Drilling Services Ltd. (Bronco Drilling). Bronco is primarily focused on heavy oil development of approximately 55,000 acres in the Athabasca Oil Sands region through its joint venture agreement with the Bigstone Cree Nation.

Alberta Oilsands Inc. (TSX-V:AOS) is an early stage oil sands exploration and development company focused in the Athabasca oil sands region of northeast Alberta. AOS has 140.5 sections of oil sands leases with a resource base of more than five billion barrels of bitumen in place. Shabir Premji, Executive Chairman, T: (403) 232-3341, Email: spremji@aboilsands.ca; or Andrew Constantinidis, Vice President Finance and Business Development, T: (403) 538-3191.

Athabasca Oil Sands Corp is a publicly held oil company focused on the sustainable development of oilsands resources in the Athabasca region of northern Alberta, Canada. Heather Douglas Vice President, Communications & External Affairs (403) 532-7408 hdouglas@aosc.com.

Sunshine Oilsands Ltd. is a Calgary based company focused on the development of its significant holdings of oil sands leases in the Athabasca oil sands region.

SilverBirch is a pre-production oil sands company. SilverBirch Energy Corporation 1000, 350 – 7th Avenue SW, Calgary, Alberta T2P 3N9 T 403 538 7030.

### **Conclusion**

The Sweetgrass Region could serve as a fabrication and sub-assembly location for oil equipment shippers. The shippers are generally petroleum producers who are well acquainted with the trials and tribulations of moving wide and heavy equipment across oceans and across thousands of miles of roads. Engaging petroleum producers with fabrication and sub-assembly service solutions could provide transit solutions for the petroleum producers and significant business opportunities for fabrication and sub-assembly providers in the Sweetgrass Region.

### **Conclusion Summary**

Air cargo is an important and integral part of the Great Falls region and contributes to the Region's economic well being. The Airport has excellent facilities that are able accommodate cargo jet operations such as the Boeing 757, MD-11 and the Boeing 747. There are a wide range of businesses and organizations in the Great Falls region which use air cargo in the form of express shipping on integrated express carriers such as FedEx Express and UPS. GTF garners excellent community support from GFDA , the region's economic development agency (EDA) as well as other agencies. The analysis presented in this report indicates GTF competes well with other airports in a 400-mile radius that have scheduled air cargo jet service. Of the 14 airports analyzed in the study area only Calgary and Spokane offer better facilities and lift capacity.

The most significant strength or attributes of GTF is its state-of-the-art aviation facilities and navigational aids. The airport's 10,502 foot runway can support wide-body freighter aircraft flights to overseas destinations. The airport's instrument approach landing system permits properly equipped and trained pilots to land aircraft during periods of extremely poor visibility. The airports taxiways and aircraft parking aprons are ample and can support wide-body freighters while Holman Aviation, one of the airport's FBO, can accommodate ground handling of nearly every aircraft type.

GTF is strategically located in Montana and is well positioned to accommodate air cargo demand in Great Falls. Two integrated express carriers operate at the airport with one, FedEx Express, operating a non-stop flight to their hub in Memphis five days a week. UPS supports the Great Falls market with cargo feeder aircraft to and from Billings Logan international Airport. The Airport's strategic location serves not only business and industry in Great Falls, but communities within a 90- to 120-minute drive time as well as nearly every Montana community by supporting cargo feeder aircraft.

In order to build on the Airport's successful air cargo track record, this study recommends the Airport staff and local economic development agencies continue to collaborate in marketing the region to four industry clusters reliant on air cargo services: aerospace/aviation, healthcare, energy, and perishables. It is recommended that airport marketing must be a continuous process and relationships at the local level with all logistics firms must be maintained.

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An Intermodal Container Facility in Shelby has a high probability of development considering the increasing development of oil and gas exploration and extraction in the Alberta Basin Bakken Fairway. Increased petroleum development would increase the potential for a significant critical mass of full inbound containers into Shelby. Also, the accelerating development of growing specialty agricultural crops that are best suited to containerized shipping will greatly hasten the building potential outbound intermodal traffic in the Region. Predicting when the critical mass and balance of potential full inbound containers and potential full outbound containers are available for an intermodal container site requires regular monitoring. It is recommended that a Working Group derived from the Shelby-centered Northern Express Transportation Authority routinely estimate with precision potential inbound and outbound container activity to be ready to engage in facility development at the appropriate time in the future.

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Favorable outbound truck freight rates are definitely a strategic advantage for manufacturers, agri-processors, and wholesalers in the Region's business community and is a significant economic development tool to attract prospective new businesses to the Region. By regularly disseminating the strategic advantage of favorable outbound truck freight rates to existing Regional businesses and potential Regional businesses, the Sweetgrass Regional economic developers have a significant tool to counter long distances to markets. The education of economic development professionals, the business community, and the general public that the Sweetgrass Region's business community is economically cost competitive to competition that is closer to markets.

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The Sweetgrass Region could serve as a fabrication and sub-assembly location for Alberta-based oil equipment buyers. Oil equipment buyers are generally petroleum producers who are afflicted with the costs and time delays of moving wide and heavy equipment across oceans and across thousands of miles of roads. It is recommended that the Great Falls Development Authority engage petroleum producers with fabrication and sub-assembly service solutions that could solve a large portion of transit issues for petroleum producers and also provide significant business opportunities for fabrication and sub-assembly providers in the Sweetgrass Region.

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The Sweetgrass Region will continue to gain an increased reputation as a resource for oil and gas production and for specialty agricultural crops. Accelerated development of petroleum and agricultural production in the Sweetgrass Region will increase overall economic activity, which will in turn generate higher demand for air cargo services; set the stage for the development of a Shelby-based intermodal container facility; increase utilization of favorable backhaul truck freight rates; and build fabrication and sub-assembly services that could attract manufacturing of oil exploration and extraction equipment. The Great Falls Development Authority and the Sweetgrass Development Corporation along with colleagues in county and city economic development will be instrumental in ensuring that the Region is prepared for optimizing economic development activities and economic results as increased demand for the Region's resources, products, and services occurs in the near future.