IMPACT OF CANADIAN ECONOMIC DEVELOPMENT ON NORTHERN MONTANA HIGHWAYS

FHWA/MT-10-001/8197

Final Report

prepared for
THE STATE OF MONTANA
DEPARTMENT OF TRANSPORTATION

in cooperation with
THE U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

April 2010

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RESEARCH PROGRAMS

MDT

Impact of Canadian Economic Development on Northern Montana Highways

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The State of Montana
Department of Transportation

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April 2010

TECHNICAL REPORT DOCUMENTATION PAGE

1. Report No. FHWA/MT-10-001/8197	**2. Government Accession No.**	**3. Recipient's Catalog No.**
4. Title and Subtitle **Impact of Canadian Economic Development on Northern Montana Highways**	**5. Report Date April, 2010** **6. Performing Organization Code** **HDR | Decision Economics**	
7. Author(s) **Daniel Hodge, Khalid Bekka, Jon Lee, Johnny Abedrabbo, Geoff Parkins, Fred Kramer**	**8. Performing Organization Report No.**	
9. Performing Organization Name and Address **HDR | Decision Economics** **8403 Colesville Road, Suite 910** **Silver Spring, MD 20910**	**10. Work Unit No.** **11. Contract or Grant No.** **8197**	
12. Sponsoring Agency Name and Address **Research Programs** **Montana Department of Transportation** **2701 Prospect Avenue** **PO Box 201001** **Helena MT 59620-1001**	**13. Type of Report and Period Covered** **Final Report** **November 2008 to February 2010** **14. Sponsoring Agency Code 5401**	

15. Supplementary Notes **Research performed in cooperation with the Montana Department of Transportation and the US Department of Transportation, Federal Highway Administration.**
This report can be found at http://www.mdt.mt.gov/research/docs/research_proj/canada_impact_nhwy/final_report.pdf

16. Abstract

Recent economic development in the Canadian provinces of Alberta and Saskatchewan is generating changes in commercial traffic across border crossings into Montana and along associated north-south highway corridors. Most notably, oil and gas exploration, generation and refinement in Canada tend to lead to a wide mix of auto, truck, and pipeline activity across the Montana-Canada border. This report covers Phase I of a potential two-phase study where Phase I is an assessment of current and future economic conditions and an estimate of related commercial vehicle traffic growth with and without expanded port operations. Phase II, if warranted, would identify highway impacts of the future traffic and necessary improvements along the highway corridors leading to the ports.

This research study focused on examining current and future economic conditions to estimate future commercial traffic growth at the border crossings and connecting north-south highways in Montana. In addition, the research assessed the impacts of expanding port of entry operating hours and estimates induced and re-distributed traffic volumes. Key elements of the study included: 1) literature review of regional economic and transportation studies, and similar border crossing analyses; 2) assessment of current traffic and infrastructure conditions, and border crossing policies and security; 3) evaluation of existing economic conditions and projections of future industry growth; and 4) forecasts of future traffic volumes at Montana border crossings and connecting highways. The research employed a risk analysis to account for future uncertainties in key driving factors and industry growth trends, thus producing a range of likely future traffic volumes by facility. The study findings indicate that historical border crossing traffic volumes vary significantly depending on factors such as oil prices, and the value of the Canadian dollar. Further, traffic volumes, other than at Sweet Grass, are relatively low and well-below capacity. The current economic recession and expected gradual recovery means flat to modest growth in the near-term. There is some potential for stronger long-term traffic growth due to anticipated expansion in the energy industries and the potential for expanded port operations.

17. Key Words **Economic Development, Border Crossing, Forecasting, Trade Flows, Traffic Volumes**		**18. Distribution Statement** **Unrestricted. This document is available through the National Technical Information Service, Springfield, VA 21161.**	
19. Security Classif. (of this report) **Unclassified**	**20. Security Classif. (of this page)** **Unclassified**	**21. No. of Pages 270**	**22. Price**

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Acknowledgements

The consultant team wishes to acknowledge the contributions and guidance of many individuals and their organizations for the development and completion of this research project. The research was directed by a technical panel composed of public and private sector stakeholders:

1. Craig Abernathy, Montana Department of Transportation (Research Project Manager)
2. Hal Fossum, Montana Department of Transportation (Chair of Technical Panel)
3. Jerry Stephens, Research Director, Western Transportation Institute
4. Craig Erickson, Director of Infrastructure Services, Bear Paw Development Corporation
5. Duane Kurokawa, Great Northern Development Corporation
6. Mark Cole, Dick Irvin, Inc., and Montana Motor Carriers Association
7. Tod Kasten, Regional Development Officer, Montana Department of Commerce
8. Randy Hanson, Regional Development Officer, Montana Department of Commerce
9. Anne Booth, formerly Executive Director, PhillCo Economic Growth Council, Inc.

10. Eileen Pankratz, Montana Department of Transportation, Motor Carrier Services Division

11. Bob Burkhardt, Federal Highway Administration

12. Zia Kazimi, Montana Department of Transportation

The study was managed by Craig Abernathy, Research Programs Manager, and Hal Fossum, Chair of the Technical Panel.

The consultant team conducted dozens of interviews with economic development officials, business owners, local and state elected officials, and other stakeholders. Due to the informal nature of some of these communications (e.g., telephone conversations, e-mail exchanges, chance encounters at presentations, etc.), it is not possible to acknowledge all those who gave their insights and offered assistance over the course of the past year.

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EXECUTIVE SUMMARY

Western Canada has been experiencing significant economic growth in the past decade, especially within the energy-related sectors. This growth, however, has decelerated in the past two years amid the economic recession and the drop in oil prices. The value of U.S.-Canada trade, one of the primary indicators of economic growth in Canada, has decreased significantly over the past year. Based on the latest data from U.S. Bureau of Transportation Statistics (BTS), the value of imports transported by truck from Canada to the U.S. fell by 24.5% from September 2008 to 2009, with exports decreasing by 15.1%.

With turmoil in the credit markets, chaotic movements in commodity prices, and the prospect of shifts in the structure of NAFTA, one might wonder whether planning for future growth is a worthwhile undertaking. Freight pathways, volumes, and values hinge critically on several factors which are less than clear and well defined.

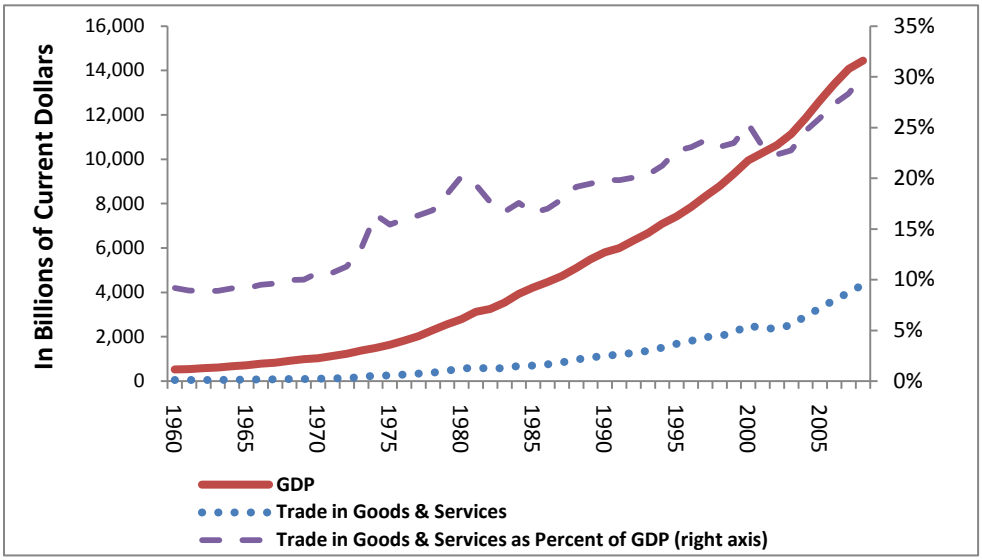
It is important to recognize, however, that steering the course of a regional economy is a continuous process. Halting planning processes until the fog clears would lead to the economy drifting in a way that threatens the stability and competitiveness of its industrial base, and adversely affecting the living standards of its residents.

Growth and the Role of Trade

The last few decades have shown us that trade is an important driver of economic growth. Countries that effectively participate in international trade tend to attract foreign investments and experience higher economic growth than countries that fail to integrate well into the global economy.[1]

In fact, trade in goods and services in the U.S. as a percentage of Gross Domestic Product (GDP) increased from 10% to 30% during the last 40 years as seen in Figure ES 1 (Bureau of Economic Analysis [BEA] 2009a, National Economic Accounts). Growth in the past 30 years was fueled by cost reductions and efficiencies in technology, transportation, and communications. As the global economies become increasingly inter-dependent, this trend is expected to continue.

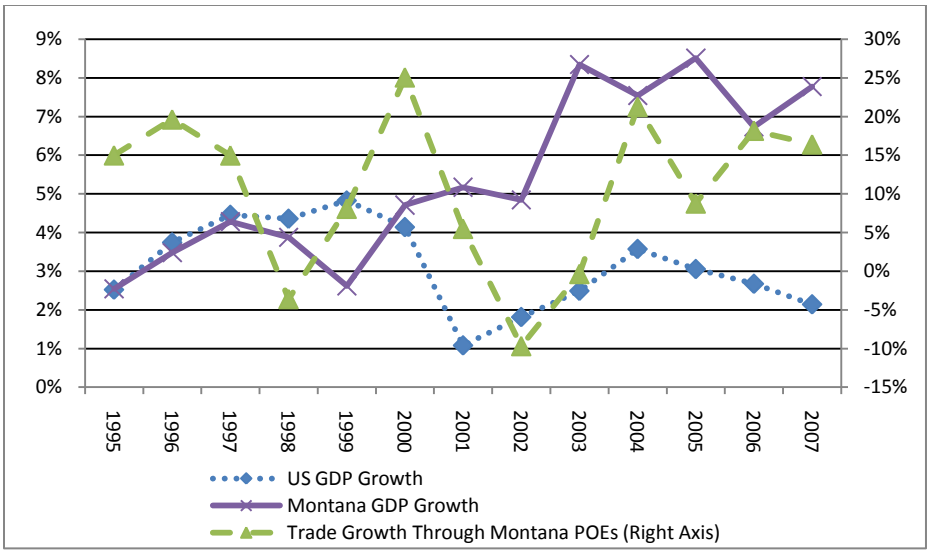
[1] The economic literature provides ample evidence on the relationship between trade and economic growth; see for example "*Trade Liberalization and Growth: New Evidence*", Romain Wacziarg and Karen Horn Welch, NBER Working Paper No. 10152.



Source: BEA 2009a, National Economic Accounts

Figure ES 1: US GDP and Trade (1960 – 2008)

Canada is the number one trading partner for the U.S., and trade has been and is expected to continue to be a growing part of the economy. While the economic recession of 2008-2009 is expected to continue well into 2010, this research study provides an opportunity to examine longer-term trade and traffic volume trends and forecasts. As the economic recovery is sustained and trade volumes return to an overall pattern of growth, state planning agencies should be prepared to seize the opportunities and consider the infrastructure and operational enhancements that will serve longer-term needs. The Point of Entries (POEs) and their connections to corridors within the state provide vital linkage between the provinces of Alberta and Saskatchewan and the United States. This relationship between infrastructure and growth is demonstrated by the high correlation between economic growth and increased trade through Montana's borders. Figure ES 2 (BEA 2009a, National Economic Accounts) shows the growth rate of Montana's GDP, which has outpaced national GDP, and its relationship to the trade flow through the Points of Entry (POE).



Source: BEA 2009a, National Economic Accounts

Figure ES 2: Trade Growth and GDP Growth by Metropolitan Area

Trade and Freight Movement

In recent years, trade has seen tremendous advancement in logistics planning. Manufacturers and shippers adopted technologies and business processes that permit firms to reduce costs by substituting large inventories, warehouse networks and customer service outlets with efficient transportation, e-commerce and just-in-time deliveries. Firms have been restructuring their supply chains in response to transportation infrastructure improvements so as to reap the rewards of advanced logistics[2]. A reliable transportation network for goods movement is, therefore, critical to promote trade and growth. Planning agencies nationwide are recognizing the importance of freight movement to facilitate trade and economic growth at both regional and national levels. Today, as Montana continues to reshape its growth strategy, transportation planners are faced with an opportunity to facilitate freight movement within the region, and to capture its related economic development within the state. Planning for adequate freight movement, which is increasingly challenging in today's dynamic environment, primarily involves planning for efficient gateways coupled with a reliable network infrastructure.

Study Goals and Characteristics

The primary purpose of this research project was to evaluate current and projected Canadian economic activity, and the impacts of associated commercial traffic on Montana highways and US-Canada border crossings (ports). The ports and highways under consideration stretch from the Port of Coutts-Sweet Grass to the Port of Regway-Raymond, and the study assessed the impact on all north-south connecting highway corridors, which includes Secondary Highways

[2] Carrier effects include reduced vehicle operating times and reduced costs through optimal routing and fleet configuration. Transit times may affect shipper in-transit costs such as for spoilage, and scheduling costs such as for inter-modal transfer delays and port clearance. These effects are non-linear and may vary by commodity and mode of transport.

232, 233, 241, and 511; Montana Highways 24, 13, and 16; US Highways 191 and 2; and Interstate 15 (See Figure ES 3 for the study area).

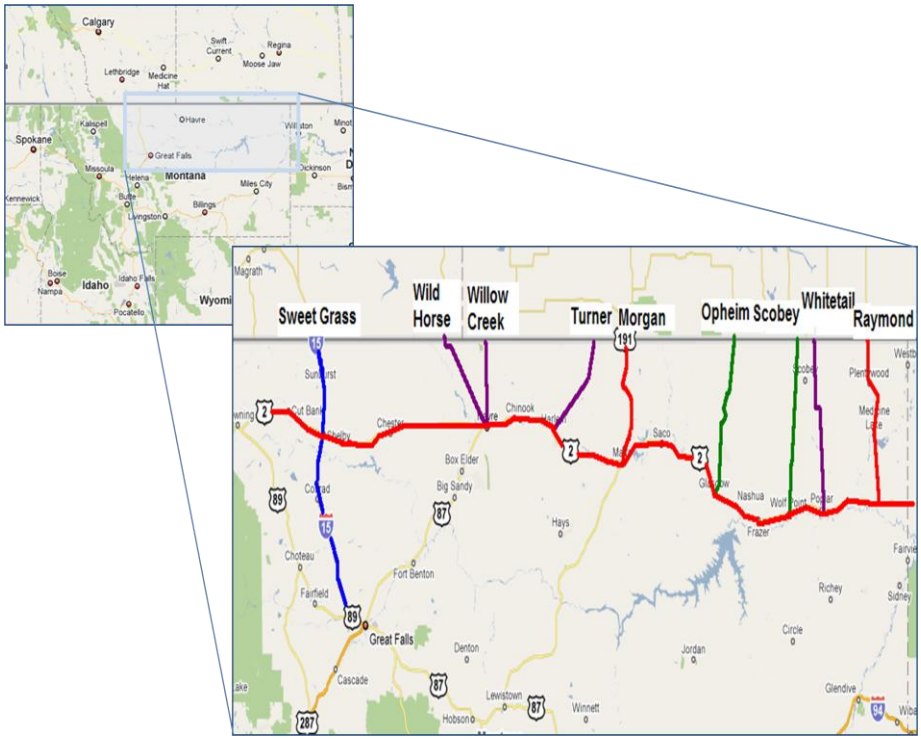


Figure ES 3: Overview of Research Study Area
Source: MDT 2008b

The study estimated the commercial traffic demand and its impact on existing POEs, and assessed whether the growth in demand is sustainable. Commercial traffic includes goods movement and trade as well as commercial auto trips such as tourism and other types of business and retail trade activity. It also focused on analyzing whether improvements to existing infrastructure capacity are needed, especially the north-south highway corridors.

Addressing the scope and the objectives of this study required overcoming some key challenges, including, but not limited to:

- Lack of historical traffic data availability;
- Significant fluctuations in oil prices and demand;
- Impact of POE hours of operations on traffic demand;
- Lack of direct north-south interstate highway connectivity from the POE (except for Sweet Grass/ and the I-15 Corridor) and the impact on shippers and carriers decision making;
- Complexity of route choices by shippers and carriers following a POE and/or highway; and

- Projecting economic development and induced demand in the long run.

To address these challenges, the research team relied on the following:

- A comprehensive review of existing studies in the region;
- An assessment of existing infrastructure (roadways and port of entries) and traffic conditions;
- Economic outlook for Canada and trade activities concentrated on Alberta and Saskatchewan industry trends;
- An analytical framework to forecast freight movement and traffic in the identified corridors; and
- Input and review from various stakeholders and regional experts.

Study Findings

Existing Conditions

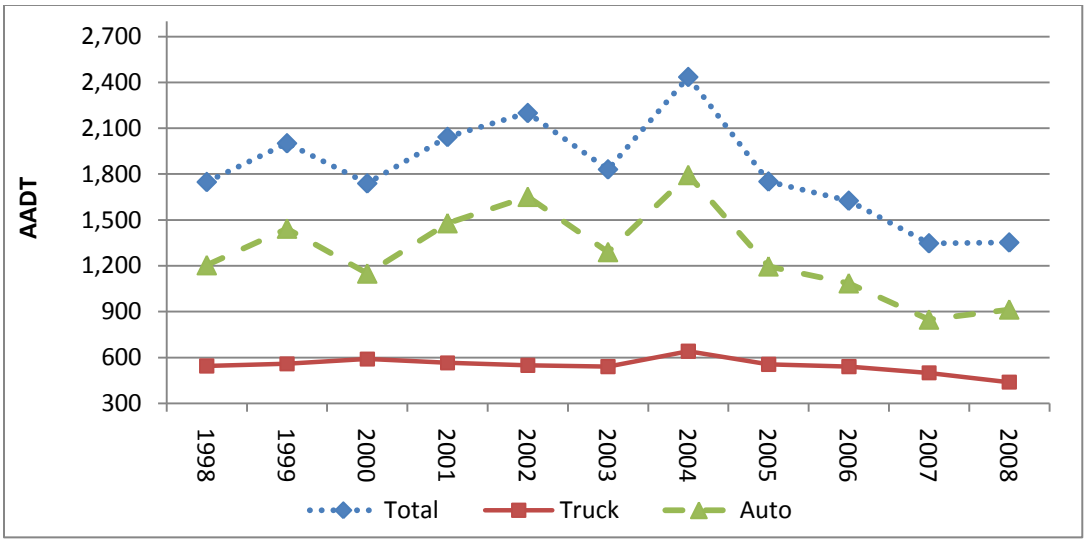
- **Economic Growth.** Montana's GDP has been growing at an average annual rate of 3.0 percent over the last decade, with growth exceeding the U.S. average since 2001 (BEA 2009b, Regional Economic Accounts). Meanwhile, Alberta and Saskatchewan have been growing at 3.5 percent and at 2.3 percent respectively over the last decade. Especially since 2002 and consistent with rising energy prices and regional oil production, Alberta's GDP has been growing at a much higher rate than the rest of Canada, exemplified in 2006 when Alberta's GDP grew 5 percentage-points more than the rest of Canada (Statistics Canada 2008d, National Economic Accounts).

- **Trade Flows.** The value of U.S. imports from Canada across the Montana border in 2008 for all modes was $16.6 billion, and has been growing at an average annual rate of 13.9 percent since 1995 (Bureau of Transportation Statistics [BTS] 2008). Growth rates of value reflect inflation, including the relatively high increases in oil prices. Of the total trade value, 33% of trade was carried via truck through Montana POEs, while 62 percent was carried via pipeline. Truck imports have increased from $1.7 billion in 1995 to $5.4 billion in 2008.

- **Trade Flows by Province.** Trade imports from Canada using Montana ports (by value) largely originated in Alberta (91 percent) and to a lesser degree Saskatchewan (2.4 percent) in 2008. Meanwhile, 77 percent of truck freight imports using Montana ports originate in Alberta with 14 percent of originating in Saskatchewan (BTS 2008).

- **Traffic Conditions.** The total traffic crossing at the Montana POEs has been growing at an average annual rate of 5 percent over the period 1997 through 2004 (Montana Department of Transportation [MDT] 2009a). Since 2004, the level of traffic has been falling at an annual rate of 4 percent. The average annual rates of change can be

misleading as it tends to "wash out" the year-to-year variations in traffic volumes at the POEs, which have fluctuated as much as 28 percent from year-to-year. Figure ES 4 shows average annual daily traffic (AADT) for autos, truck, and total traffic. It is worth noting that the scale of the graphic downplays the variation in truck volumes over this period which has ranged from a peak of about 650 per day in 2004 to about 450 per day in 2008. Border crossing traffic is dominated by the two 24 hour POEs: Sweet Grass and Raymond. Sweet Grass has the largest traffic volumes with 1,890 daily trips and 720 trucks, followed by Raymond with 250 daily trips and 88 trucks. The remaining seven study area POE's account for 17%, or 430 daily trips, according to the latest MDT traffic counts.



Source: MDT 2009a

Figure ES 4: Southbound Traffic Volumes at Montana POEs 1997-2008

Economic, Trade and Commercial Traffic Forecasts

Research for the study generated estimates of economic growth, trade flows, and traffic volume projections, which are summarized in this section.

- **Economic Growth.** Montana's major Canadian trading partners are expected to experience positive economic growth over the next 20 years. Alberta's median GDP forecast is to increase from $228 billion in 2008 to $285 billion by 2020 (in real 2009 dollars), an average annual growth rate of 2 percent. Similarly, Saskatchewan's median GDP forecast is to grow from $48 billion in 2008 to $60 billion in 2020, an average annual growth rate of 1.9 percent.

- **Trade Flows**. The estimated combined imports carried by truck through Montana's POEs from Saskatchewan and Alberta are projected to be $5.8 billion in 2020, an increase of 1.4 percent annually compared to 2008 volumes. This is expected to translate into an increase of 565,300 tons of freight shipped across Montana POEs over the next 20 years.

- **Traffic Volume Projections.** The total traffic crossing at Montana POEs is anticipated to grow at an average annual rate of 2.0 percent. Table ES 1 shows the projected average

annual growth rates for each POE for all traffic as well as commercial traffic volumes (truck and auto). Figure ES 5 demonstrates the forecast range of total daily traffic volumes at Montana POEs based on the risk analysis forecast where the 50% trend line represents the "most likely" forecast with 10% as the low and 90% as the high end of the probable range. Table ES 2 shows the forecast growth rate ranges for total traffic at Montana's connecting highways.

Table ES 1: Projected Average Annual Traffic Growth Rates (2010 through 2029) at POEs

POEs	Total Traffic	Commercial Auto	Truck
Sweet Grass	2.1%	2.2%	1.7%
Wild Horse	2.2%	2.5%	0.7%
Willow Creek	2.4%	2.3%	3.1%
Turner	0.7%	-0.8%	8.9%
Morgan	2.2%	2.0%	2.8%
Opheim	2.1%	1.1%	13.5%
Scobey	2.5%	0.8%	10.6%
Whitetail	1.3%	1.0%	2.2%
Raymond	4.6%	6.4%	0.9%

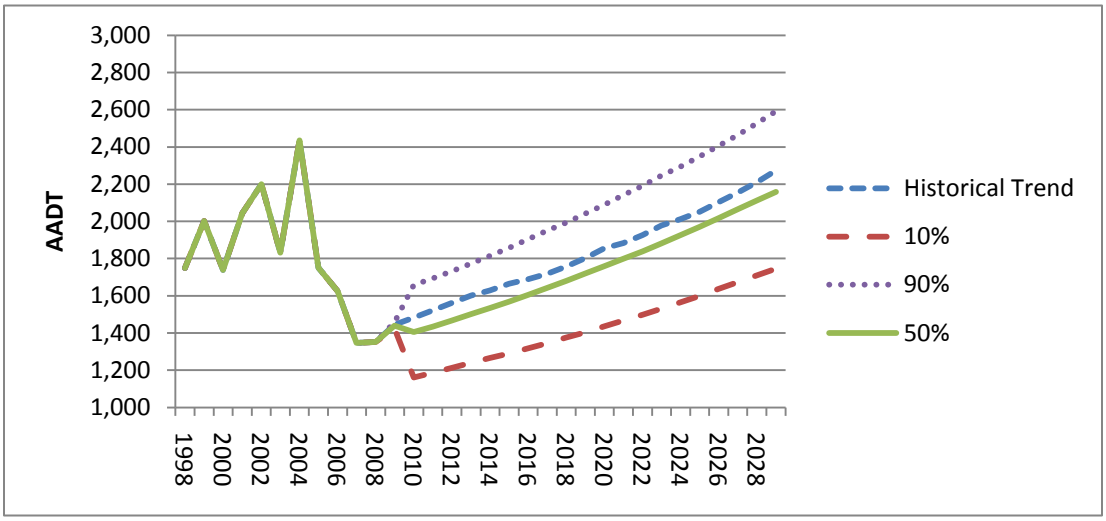


Figure ES 5: Southbound Traffic at POEs

The POE traffic volumes are most directly impacted by trade and economic growth in Canada, and thus the continuation of a slow economic recovery in 2010 keeps the "most likely" 50% growth forecast at a modest level in the near-term with more steady growth in the future. The most likely (50%) forecast indicates that commercial traffic volumes are likely to equal the peak volumes experienced between 2003 and 2005 but even with fairly consistent growth, it may take 15 to 20 years to reach that level. Truck volume growth at Montana POEs is projected to have greater growth and variation based on more direct influence from Canadian trade.

For the connecting highways, which are impacted by trade but also local economic and traffic activity, the estimated commercial traffic volumes in the study area are expected to have flat

growth in 2010, consistent with the current economic recession, and then recover gradually over the next twenty years. The most likely (50%) forecast for connecting highways closely follows the historical trend line, as seen in Table ES 2.

Since 2004, traffic volumes across all POEs and connecting highways have either dropped dramatically or demonstrated low to zero growth. The historical trend analysis therefore shows the declining traffic volumes through 2009, by taking into account the downward economic industry growth trend the traffic volumes continue to decline through 2010. After 2010, economic growth is anticipated to be positive, albeit low, resulting in positive traffic growth.

Table ES 2: Average Annual Growth Rates for All Traffic at Connecting Highways: 2010 to 2029

	Low	Most Likely	High	Historical Trend
Sweet Grass (I-15)	-1.1%	0.9%	1.4%	1.1%
Wild Horse (S-231) S-232	-0.4%	1.2%	2.6%	1.2%
Willow Creek (S-233)	-0.7%	0.7%	2.0%	0.6%
Turner (S-241)	-3.8%	-1.7%	0.6%	-1.9%
Morgan (N-99) US 191	0.3%	1.7%	2.9%	1.7%
Opheim (P-31) MT-24	0.0%	1.2%	2.3%	1.8%
Scobey (P-32) MT-13	-1.4%	0.6%	2.4%	0.5%
Whitetail (S-511)	-5.9%	-2.1%	1.2%	-2.5%
Whitetail (S-251)	-1.1%	0.6%	2.1%	-2.5%
Raymond (N-34) MT-16	-1.0%	1.1%	3.0%	-0.8%
Raymond (N-22) MT-16	-1.5%	0.0%	1.6%	0.0%

Key Challenges to Growth in Traffic Volumes

- Infrastructure capacity and expanded port operating hours at the POEs between Sweet Grass and Raymond addresses one potential constraint for commercial traffic in the region, but it is also critical to examine the connecting highways on either side of the border. In most cases, the connecting highways are two-lane roads with relatively long-distance connections to major highway corridors typically preferred by freight trucks.

- The level of service (LOS) on the connecting highways, however, are virtually all at a LOS A, meaning that there are no major traffic or congestion issues on those roadways requiring new investment. Typical for more rural roads, this presents a "chicken or the egg" challenge as current traffic volumes do not justify highway expansion but local proponents argue that improved roadways are needed to boost demand and attract more economic and trade activity.

- Trade corridors between Canada, the U.S., and Mexico typically include a range of freight and trade-related services such as warehouses, distribution centers, intermodal facilities, free-trade zones and other supporting activities. These types of facilities, which contribute to the network connectivity and flexibility of modern trade, are generally lacking on most Montana-Canada border connections. This type of private and public/private investment in supporting facilities and services is critical to the viability of any new or emerging trade corridor.

- While there are a number of specific economic development opportunities in Western Canada and Northern Montana (oil and gas production, renewable energy, supporting manufacturing, etc.), the overall freight truck shipment trend has been relatively flat. The wide fluctuations of traffic at POEs in recent years can largely be explained by variations in oil prices and the exchange rate between Canada and the U.S. Broader industry trade in agriculture and consumer goods/distribution has not led to any sustained growth trend.

- Changes to future border security policies are a potential risk to the ease of commercial traffic flows. Although border security policies between the U.S. and Canada have generally become more restrictive in recent years, such as the mandated possession of a passport, current policies do reflect the need to keep efficient movement between the borders, especially for frequent truck and auto travelers.

Research Conclusions and Next Steps

Traffic at Montana borders and the connecting corridors have been very sensitive to Western Canada's economic conditions and the fluctuations in energy prices. While traffic has increased significantly from 2002 to 2004, it has slowed down notably in the past few years due to the economic recession. The current economic conditions have placed a significant dampening effect on border crossing volumes as truck traffic volumes have decreased significantly.

While the forecasts did not identify significant capacity constraint at any of the POEs or connecting corridors over the next twenty years, the results are not, conclusive. This study recognizes the fact that truck traffic is and will remain very sensitive to various trade drivers. Stakeholder interviews confirmed the constraints and limitations of not having any 24-hour operating POEs between Sweet Grass and Raymond. Fluctuations in commodity prices, debate over environmental policies, and the prospect of changes in trade agreements, add a high level of uncertainty to the freight traffic forecast.

To summarize, commercial traffic flows at Montana POEs peaked in 2004, driven by higher oil and gas prices, favorable exchange rates, and growing regional economies in Alberta and Saskatchewan. Traffic flows have steadily declined since with a return to more moderate volumes, exacerbated by the continuing global economic recession. Still, longer term growth trends in trade and anticipated expansion of key commodity markets in the region (namely energy) are projected to result in long-term positive growth in commercial traffic volumes at Montana POEs and the connecting highways. The forecasts reflect a range of uncertainties with trade agreements, Federal funding, and environmental and energy policies. Another area of uncertainty is the private sector market for developing significant alternative trade corridors and the necessary trade-supporting services. Based on this research and the forecasts, two specific improvements to consider for more detailed planning are:

- Expanded port operations between Sweet Grass and Raymond – this would include 1-2 POEs with 18 to 24 hour operations to facilitate regional connectivity and economic opportunities. As specified by many stakeholders, this should be coordinated with improved connecting highway corridors.

- Tracking potential highway corridor capacity needs – the current economic recession has slowed the need for general capacity enhancements at connecting highways but the speed of the economic recovery, especially related to the energy industry, should be tracked as the upper (90%) forecasts indicate the potential for significant growth at Montana POEs.

1 INTRODUCTION AND BACKGROUND

1.1 Goals and Objectives

The western Canadian provinces have been experiencing significant growth over the past decade, partly due to high commodity prices for oil and gas and related production activities. Montana, which borders three Canadian provinces (British Columbia, Alberta and Saskatchewan), represents a vital surface link between the United States and a number of these growing markets, especially the provinces of Alberta and Saskatchewan. Growth in Canada's western province economies directly impacts commercial traffic volumes at northern Montana ports (border crossings) and connecting roadways.

In general, economic growth results in increased demand for goods movement, transportation services, and tourist travel. This study assesses the impact of Canadian economic development on transportation demand across the study area, with the objective of forecasting future truck and commercial auto traffic volumes at Montana ports and connecting highways.

The study area includes highways and border crossing facilities in northern Montana that stretch from Interstate 15 (Sweet Grass) on the east to the Montana-North Dakota border on the west, and from US Highway 2 to the Canadian border. The analysis includes nine north/south corridors and points of entry (POEs) between US 2 and the Canadian border. The corridors are I-15, S-232, S-233, S-241, US 191, MT-24, MT-13, S-251/S-511, and MT-16. The POEs analyzed are Sweet Grass, Wild Horse, Willow Creek, Turner, Morgan, Opheim, Scobey, Whitetail, and Raymond.

This report covers Phase I of a potential two-phase study, which represents an assessment of current and future economic conditions, and an estimate of related commercial vehicle traffic growth with and without expanded port operations. Phase II, if warranted, would identify highway impacts of future traffic and necessary improvements along the highway corridors leading to the ports.

The objectives of Phase I of the study are to:

- Assess current and future conditions of the Canadian economy, with particular focus on Alberta and Saskatchewan;
- Assess current traffic, infrastructure, and border crossing conditions in the study area;
- Identify the major freight and passenger routes, origins, destinations, commodities, and trends across northern Montana;
- Estimate the relationships between economic growth and commercial traffic volumes; and

- Forecast future commercial traffic volumes on northern Montana highways and through POEs within a risk analysis framework that accounts for uncertainty and includes input from industry and development experts.

1.2 Overview of Approach

This study forecasts commercial traffic through the ports and the relevant connecting highway corridors. The assessment is based on economic conditions that consider multi-state and multi-provincial areas that capture the relevant freight flows onto the Montana highway system. This study is a detailed analysis of: a) existing and future regional economic conditions; and b) traffic and infrastructure conditions, to estimate future commercial traffic volumes through the ports and the corridors listed above.

The approach comprises of five major steps:

1. Researching and analyzing regional economic trends and projections to determine the economic conditions impacting traffic volumes;

2. Reviewing data and reports from various sources, including MDT traffic data and official Canadian industry data to develop an assessment of existing infrastructure and traffic conditions;

3. Developing a commercial traffic forecasting model largely based on trade growth between the U.S. and Canada (via Montana), with risk analysis capabilities;

4. Conducting a Risk Analysis Process (RAP) stakeholder workshop session; and

5. Updating risk analysis assumptions to estimate future traffic flows across Montana's POEs and northern highways identified above.

The approach employs Risk Analysis, which measures the probability or "odds" that an outcome will actually materialize. This is accomplished by attaching ranges (probability distributions) to the estimates of each input variable. The analysis process allows all inputs to be varied simultaneously within their distributions and evaluates the impact on the output. This approach handles uncertainties much more effectively than conventional sensitivity analysis does. Figure 1 presents an overview of the study approach. Key inputs into the analysis include traffic conditions, infrastructure conditions, and border security and policy. The output is an assessment of traffic and infrastructure at Montana POEs and connecting highways. Economic, industry, and trade data are combined with findings from interviews with stakeholders and industry experts (Appendix A) to develop an assessment of regional economic conditions. This information is used, in combination with a stakeholder workshop, to develop forecasting models within a risk analysis framework to develop commercial traffic volume forecasts. The potential Phase II study would focus on highway and POE-specific infrastructure and policy alternatives.

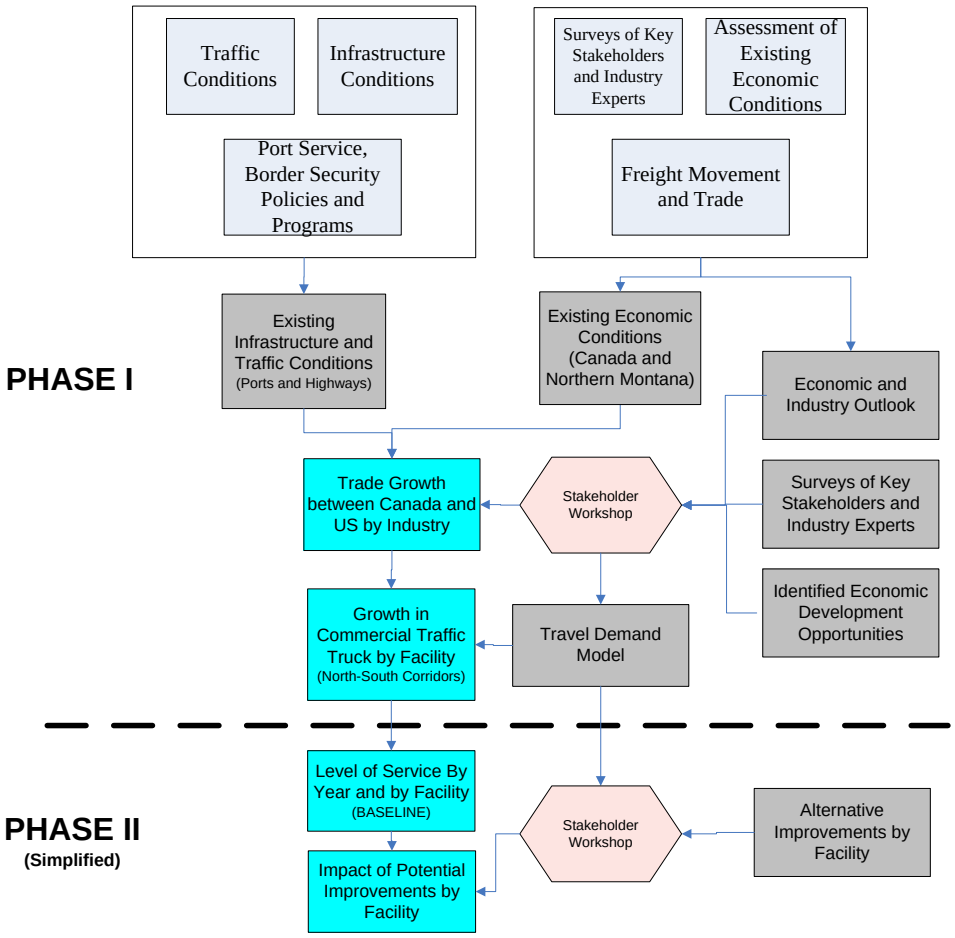


Figure 1: Overview of Research Study Approach

1.2.1 Study Challenges

As demonstrated by the diagram above, forecasting future commercial traffic volumes requires a significant amount of information and data trends, and is subject to some uncertainty. Even though the risk analysis process is designed to handle a variety of uncertainty factors associated with the forecast variables, there are further challenges related to data that are worth noting. These are discussed below.

Traffic Data Availability. A key input to forecasting future traffic volumes at POEs and connecting highways is historical traffic count data for trucks and autos. This analysis considers both historical trends over the past 10-15 years and includes the latest data available from MDT. At the time of the analysis, available data included 2008 data for most POEs and connecting highways, and preliminary counts at some POEs (but not all). Further, traffic count data was often volatile with significant dips and jumps not tied to economic cycles, and in other cases POEs reported the exact same traffic counts for multiple years in succession. This was especially true for smaller POEs (in terms of traffic).

Fluctuations in Oil Prices and the Energy Industry. A key driver of traffic counts in northern Montana is the price of energy, in particular oil prices. Oil prices impact energy production in both Canada (Alberta and Saskatchewan) and Montana and the related truck and auto traffic that is generated by energy activity. Severe energy price swings in the mid-to-late 2000s corresponded with significant variation in traffic counts and while energy prices are generally expected to rise again over time, the current economic downturn has created significant uncertainty in terms of the pace of recovery, future capital investment in the Alberta oil sands, as well as initiatives in Montana to foster natural gas and renewable energy production.

Highway Connectivity and 24-Hour Operations. The study area for this project includes POEs from Sweet Grass to Raymond with seven other POEs in between. Sweet Grass and Raymond are the only two 24-hour POEs in the region and Sweet Grass is the only POE with a major highway connection in the U.S. (I-15). Not surprisingly, this results in Sweet Grass handling the majority of traffic, with Raymond the only other significant POE in terms of daily traffic volumes. With a combination of 2-lane connecting highways, 2-lane east-west highway connections (U.S. 2), and a lack of 24-hour operations, it is fairly difficult to predict which POEs may grow more in the future than others. For example, a couple of well-placed large shipping companies could easily double or triple traffic volumes at some of the smaller POEs but that type of industry forecasting precision is beyond the scope of this study.

Forecasting Traffic Volumes at POEs and Connecting Highways. This research study estimates future commercial traffic volumes for both POEs and the connector highways in northern Montana. The relationship between traffic volumes at the POE and most relevant highway connector(s) is very close at Sweet Grass as the POE traffic volume is 84% of the volume on the I-15 connecting highway. For all other POEs, the share of border crossing traffic volume is less than 40% (and in most cases less than 20%) of the connecting highway. This reflects the length of the connecting highway segment and the volume of local Montana traffic (not using the border). Consequently, it is not uncommon to have differing overall growth trends for POEs and the connecting highways. If there is a substantial increase in border crossing trade, the issue might be more of a POE-specific operations/infrastructure issue as a potential constraint with a lesser impact on the connecting highway. Further complicating this relationship is the finding from stakeholder interviews of the importance of corresponding highway infrastructure improvements when considering an upgrade to POE operations.

To address these challenges, the research team: 1) used as many relevant data sources as possible; 2) conducted interviews with regional experts and stakeholders in trucking, manufacturing and economic development; and 3) conducted a RAP session to test all key model assumptions and risk factors.

1.3 Report Structure

The structure of this report mirrors that of the project tasks, which were:

Task 1 – Literature Review;

Task 2 – Existing Conditions of Highways and Ports;

Task 3 – Existing and Future Economic Conditions and Trends; and

Task 4 – Future Commercial Traffic Volumes.

The report includes six chapters (including this one) and seven appendices (providing supporting data and technical details).

After this introductory chapter, Chapter 2 reviews and summarizes relevant literature and studies on the various aspects of the impacts of economic growth and development on traffic volumes, infrastructure needs and transportation policy, with particular emphasis on border crossing regions. While the focus of this study is on the needs of the northern Montana transportation network as it relates to economic development in the neighboring provinces of Alberta and Saskatchewan, this chapter examines literature on economic development as it relates to commercial traffic growth in addition to studies on border crossings and the need for transportation improvements.

Chapter 3 assesses the existing conditions of Northern Montana highways and the nine border crossings within the study area. Particular emphasis is paid to traffic conditions along Northern Montana's roadways, utilizing metrics such as average annual daily traffic (AADT), level of service (LOS), as well as commercial truck traffic volumes. Additionally, infrastructure conditions are examined, with respect to land and shoulder widths, pavement quality in addition to hours of operations at each border crossing. Finally, border crossing policies and programs related to security, efficiency and use are investigated, including those for both truck and passenger travel.

Chapter 4 assesses the sources of economic growth across Canada's Western provinces, with particular emphasis on Alberta. The chapter investigates demographic and economic trends across the region, followed by a detailed analysis of regional economic activity by sector. This analysis includes major demand drivers for goods movement and transportation services, including mining, agriculture, construction, manufacturing, tourism and trade. The chapter also examines freight movements and trade between the United States and Canada across Montana's Ports of Entry, with a detailed analysis of commodities, modes and origins, and destinations.

Chapter 5 presents the commercial traffic modeling framework and results, including a detailed description of the model's inputs and assumptions. The Canadian industry growth forecasts reflect both Alberta and Saskatchewan economic development opportunities. The modeling approach utilizes input reviewed by a panel of experts and results are presented by POE and connecting highway with "most likely" and risk ranges of future commercial traffic volumes.

Finally, Chapter 6 provides conclusions based on the study's research and forecasting results. Additional information and results can be found in a series of appendices, at the end of the report.

2 LITERATURE REVIEW

2.1 Introduction

This chapter reviews available literature on the various aspects of the impacts of economic growth and development on traffic volumes, infrastructure needs and transportation policy, with particular emphasis on border crossing regions. While the focus of this study is on the needs of the northern Montana transportation network as it relates to economic development in the neighboring provinces of Alberta and Saskatchewan, this review examines literature on economic development as it relates to commercial traffic growth in addition to studies on border crossings and the need for transportation improvements. Thus, the remaining sections of this chapter are:

- Section 2.2 – Economic Growth and Transportation;
- Section 2.3 – Transportation and Economic Studies of Border Crossings;
- Section 2.4 – Recent Montana Transportation and Economic Development Studies.

International trade has grown significantly over the past few decades exerting added pressure on the nation's transportation infrastructure. In addition, the enactment of the North American Free Trade Agreement (NAFTA) has resulted in dramatic increases in trade among the three-member nations. This growth has resulted in record freight transportation moving across the nation's northern and southern border crossings, straining the capacity of both ports and the whole transportation network.

As a direct result of the NAFTA agreement, north-south trade corridors were identified and established linking Canada, the United States and Mexico. Three federally designated trade corridors intersect Montana: CANAMEX, Camino Real, and the most recently designated Theodore Roosevelt Expressway. CANAMEX is an example of such a trade corridor, stretching 3,800 miles from Anchorage, Alaska to Mexico City, Mexico, running along Interstate 15 through Sweet Grass crossing into Montana and serving as the major link between Montana and Alberta. The corridor was initiated by Alberta in the early 1990s and is considered one of the first north-south corridors designated as a High Priority Corridor under the National Highway System Designation Act (Alberta Ministry of Transportation 2001).

Meanwhile, Canada represents Montana's largest foreign export market with the bilateral trade balance more than doubling between 2003 and 2007 to over $5 billion (Industry Canada, 2008b). Energy-related products represent around 75% of total trade, while the remainder is largely composed of forest products, metals and chemicals. At the same time, the United States represents Alberta's largest trading partner, accounting for 87% of Alberta's exports, valued at $63.7 billion in 2007. Of that total, $50.1 billion were energy exports, while the remaining $13.6 billion non-energy exports included chemicals, plastics, machinery, agricultural and forestry products. Non-energy exports, most of which are transported by trucks across the Montana-Alberta border have increased from $4.7 billion in 1995 to $13.6 billion in 2007 (Alberta International Intergovernmental Relations 2008).

2.2 Economic Growth and Transportation

It is generally recognized that transportation can play a crucial role in economic development, through lowering the costs of production, improving productivity and increasing opportunities for business expansion (Eberts 2000). It is also true that economic development and growth can directly lead to increased transportation demand and the need for enhanced infrastructure. So, while a good transportation system can stimulate economic growth, there is no guarantee that increased economic growth will occur. At the same time, economic growth can create the necessary conditions for increased transportation services. Thus, policy makers are not only faced with the question of the effects of transportation on additional economic development, but are also interested in knowing the transportation needs of future growth.

2.2.1 Economic Growth & Transportation Infrastructure Planning

A recent study in Southwest Saskatchewan examined the transportation network in the southwestern part of Saskatchewan to identify long-term needs (UMA Engineering Ltd 2008). With the economy of southwestern Saskatchewan well positioned to benefit from the emerging and growing energy and alternative energy industries, in addition to a host of other sectors in neighboring Alberta, the road network needs to be aligned with future economic opportunities in the region. In recent years, the region has shifted from a primary agricultural focus to more value-added agriculture, and has also seen growth in manufacturing, tourism and energy-related industries. This combination of economic growth and structural industry change has directly impacted the demands on the transportation system. For example, the increased reliance on transporting more industrial inputs and value-added goods, has led to a new need for additional "primary weight" highway corridors that are capable of handling larger loads.

The study followed a three-phase approach, whereby it initially performed an economic overview of southwestern Saskatchewan in order to determine demand drivers for transportation in the region. In order to accomplish that, the study reviewed key sectors such as manufacturing, agriculture, energy as well as tourism to determine industry growth opportunities and the resulting transportation demand. In the second phase, the study performed an area-by-area business case analysis of 20 transportation corridors, looking at the costs and benefits of various highway investments. Finally, the different highway corridor investments were prioritized for near-term and long-term improvements.

The Wisconsin Department of Transportation (WisDOT) estimated economic growth and industry projections of nearby areas to identify high projected trucking demand on Wisconsin highway corridors. This approach was used by WisDOT in their analysis of the 1991 Intermodal Surface Transportation Efficiency Act and its 1998 reauthorization (Wisconsin Department of Transportation 2002). WisDOT used an economic forecasting and simulation model to analyze the economic influence of adjacent Minnesota and Illinois counties on Wisconsin's land use planning and transportation. The model forecasted the fastest growing districts and high growth industries in addition to industries with high projected trucking demand to assess potential needed improvements on the Wisconsin highway system.

A 2000 Connecticut General Assembly report links economic growth to targeted investments in transportation infrastructure (Connecticut Legislative Program Review and Investigations

Committee 2000). The study asserts that economic development and transportation are closely related, as growth in economic activity acts to stimulate transportation demand by increasing the number of commuters (both workers and consumers) as well as products being shipped across the region. Improvements that decrease transportation costs may, in turn, decrease production costs and stimulate economic development. The study concludes that a number of factors reinforce the linkage between transportation and economic development including the dependence on just-in-time (JIT) inventory practices. This is especially relevant as many businesses currently utilize JIT in order to reduce inventory costs.

2.2.2 Highway Improvements and Economic Development

There is a rich literature of studies and analyses regarding the economic development effects of highway improvements, including studies that examine the effects of completed highways (ex post) and prospective studies of future impacts. In general, the findings suggest that highways can result in higher levels of economic activity but that this can vary greatly depending on local and regional conditions of traffic patterns, accessibility, and economic geography. This literature is well-summarized in existing reports such as the Federal Highway Administration's study of empirical results (EDR Group & Cambridge Systematics 2001) and a National Cooperative Highway Research Program (NCHRP) study on the economic development effects of transportation (Weisbrod 2000). The remainder of this sub-section highlights a few studies relevant to the current ICED research study.

The impact of highway projects on regional economic development was investigated by HDR in a 2003 study for the Federal Highway Administration focusing on the Imperial Valley of California (HDR 2003). Two projects, namely, the Brawley Bypass and the I-8/Imperial Avenue Interchange near the Calexico border crossing in California and along a transportation corridor between San Diego and other major cities in the southwest such as Phoenix, Tucson, and Yuma, were evaluated. The Brawley Bypass was identified as an opportunity to relieve congestion and improve travel time through the city of Brawley by re-routing traffic around the outside of the city on an expressway. The bypass was expected to reduce truck traffic within the city and accommodate increased trade due to NAFTA. Additionally, the I-8/Imperial Avenue Interchange project was expected to improve existing infrastructure and provide better access to the city of El Centro.

Major economic development factors for the region were determined through a Risk Analysis Process (RAP). The process identified engineering, planning and policy factors used to forecast incremental direct full-time equivalent jobs, incremental indirect and induced full-time equivalent jobs, and the monetary value of incremental economic activity (economic output, income and tax revenues). Other key variables were also identified during the development of the forecasting model and were subjected to the scrutiny of the RAP panel. These variables included employment density, employment, output, income, and tax revenue multipliers in addition to social impact on residents and businesses. Finally, probabilistic projections for land development, jobs created, economic output, and income and tax revenue were created by the model.

In a 2003 study for the Missouri Department of Transportation (MoDOT) economic development indicators such as changes in population, average wages and real estate valuations, to name a

few, were analyzed over a 10-year period (1990-2000) in 105 Missouri rural counties and mapped against highway improvement indicators during the same period (University of Missouri 2003). The study defined highway improvement as the widening of a two-lane to a four-lane road and data were compiled on the number of road miles of four-lane roads in each county in 1990 and 2000. The study concluded that at the county level, the effect highway improvement on rural economies is small.

A modern and efficient transportation system is important for the movement of goods and as a result a crucial component in facilitating trade activities. According to a 2002 Jack Faucett Associates study (Lem 2002), case studies show that transportation infrastructure affects four aspects of economic development; namely, production costs, industrial location, regional productivity and cost of interregional trade. In addition transportation infrastructure impacts economic factors at the industry, regional and national levels, while highways in particular affect regional economic development the most.

Literature on the relationship between highway transportation and economic development offers significant implications for freight movement and trade. For one thing, there appears to be a positive correlation between improving the road network and regional productivity suggesting that such improvements should play an important role in any economic development strategy. In a border region, this also implies adequate port facilities that are able to handle the increase in traffic flows. These are particularly important where highway infrastructure and port facilities differ across regions, thereby influencing trade patterns. Consequently, highway and port improvements to accommodate larger trucks and increased traffic flows leads to improved efficiency in the movements of goods across the border.

2.3 Transportation and Economic Studies of Border Crossings

This section highlights a number of studies that explicitly examine border crossings between the U.S. and Canada, as well as between the U.S. and Mexico. The studies emphasize cross-border trade volumes, transportation infrastructure, and economic conditions under constrained and unconstrained border crossing scenarios.

A recent study for the Government of Canada examined the emergence of cross-border regions between the U.S. and Canada (Policy Research Initiative [PRI] 2008). The significance of this study stems from the increasingly strong and multidimensional linkages at the regional level across neighboring communities along the U.S.-Canadian border. Historically, research on economic integration as a result of NAFTA has focused on the national economic dimension, with respect to overall trade flows and industrial structures. Little attention, however, has been paid to the sub-national impact of NAFTA and the emergence of cross-border regions. According to data published by PRI in Canada, correlation in economic activity among neighboring provinces and states has increased significantly following the introduction of NAFTA.

According to PRI data, the economic growth correlation between Alberta and neighboring states has increased from 0.388 during the period 1979-1988 to 0.954 in the period 1989-2004, suggesting higher integration along bordering states and provinces. This increased integration suggests increased attention to regional development policies. As the economies of neighboring

states and provinces become more interdependent, national, regional and local governments on both sides of the border should address joint problems more effectively, including transportation.

2.3.1 Recent Studies of the Montana-Canada Border Crossings

The most recently studied border crossing between Montana and Canada is Wild Horse. This sub-section details two trade and economic analyses of current and potential future conditions at Wild Horse.

Economic growth and border transportation improvement in southeastern Alberta was the subject of a 2007 GTS Group International study, "An Analysis of the Economic Impacts & Opportunities on Alberta's Eastern Corridor Resulting from Upgrading Port of Entry – Wild Horse", which analyzed the economic impacts and opportunities in that region as a result of upgrading the Wild Horse port of entry (GTS Group International 2007). The majority of commercial traffic flowing between Alberta and Montana use the Coutts/Sweet Grass port of entry (POE), which is the only 24-hour Designated Commercial Office in Alberta and provides access to Interstate 15. The study highlights that fact that Alberta, being Canada's economic driver and fastest growing economy, has only one 24-hour POE with the United States that is capable of handling large volumes of commercial activity. The study contends that Alberta's unprecedented economic growth in recent years, especially growth driven by investments in oil sands; requires the ability to efficiently transport machinery and equipment across the border. The report notes that 60 to 70 percent of investment spending for mining of oil sands is spent on purchasing machinery and equipment, most of which is imported from the United States by truck.

With Texas being Alberta's largest trading partner, and with most truck flows into Alberta moving north towards the city of Edmonton, the study argues that a second 24-hour commercial port of entry at Wild Horse (also known as Alberta's Eastern Corridor) would represent the most efficient direct link between Edmonton and Texas. Additionally, with the expected increase in truck traffic over the CANAMEX north-south corridor, which crosses at Coutts/Sweet Grass, a second 24-hour port of entry that is able to handle high truck traffic flows would be required.

Furthermore, according to study estimates, and based on 2007 oil sands projects, an additional $4 billion worth of machinery and equipment would have to be imported from the United States to Alberta annually over a 10-year period. The study estimates that such a rise in investment needs would translate into an additional 40,000 truckloads flowing into Alberta annually. Not only would the new port of entry reduce delays and waiting times at the Coutts/Sweet Grass crossing, but would also allow trucks heading up to Edmonton to avoid the congested corridor between Calgary and Edmonton. Additional benefits include potential economic development along this eastern corridor through Wild Horse as the area becomes more developed.

A similar study was conducted in 2008 on the Montana side of the border, also investigating the benefits of upgrading the Wild Horse border crossing into a 24-hour one (Barkey 2008). This study also cites and examines the rapid growth in Alberta, which is resulting in larger cargo shipment flows through the only 24-hour crossing between Alberta and Montana (Coutts/Sweet Grass). The study attempts to quantify the impact of upgrading the Wild Horse crossing on the five-county region in northern central Montana. Of the three 24-hour ports along the Montana

border, only Sweet Grass crosses into Alberta and accounted for 72 percent of all southbound truck crossings in 2006. At the same time, all three 24-hour ports of entry accounted for 95.2 percent of all truck volume entering Montana through Canada in 2006.

With that in mind, the study explores recent economic development and growth in Alberta, which was mainly driven by oil sands and energy sector investments. The report then draws implications on trade between Alberta and the United States given recent industry trends, as most, if not all, of the physical investment needs in Alberta would flow through Montana. Additionally, while U.S. exports to Alberta represented only 5.7 percent of overall exports to Canada, they grew rapidly by 31.1 percent between 2003 and 2007, compared to 8.1 percent growth for exports to Canada overall. Consequently, with an upward trend in U.S. exports to Alberta, the report argues for the benefits of a second 24-hour commercial crossing at Wild Horse, and estimates potential economic impacts, for the year 2035, of 265 jobs and $12.6 million of after-tax income to northern Montana residents.

2.3.2 The Binational Border Study (U.S. and Mexico)

The Binational Border Transportation Infrastructure Needs Assessment Study (BINS) published in July 2004 (Source Point 2004) identified major transportation corridors in the southern border region and developed a quantitative procedure to evaluate the needs of these corridors in order to identify transportation projects that meet their needs. The BINS project developed a systematic approach for assessing transportation infrastructure needs along the United States-Mexico border, identifying 42 multimodal transportation corridors within ten border states. The study also established a border-wide database and an evaluation tool to prioritize each state's transportation corridors. The study identified 311 significant transportation projects, of which 258 are in the United States corresponding to $10.5 billion in highway projects (in 2003 constant dollars).

When the study was conducted, a decade had passed since the signing of the North American Free Trade Agreement (NAFTA) in 1994. As a result, trade between the United States and Mexico has increased significantly, of which most moves across the border on trucks, with a smaller portion of goods exchanged by rail, water and air. This increase in trade introduced new infrastructure-related challenges necessitating facility and highway expansion to handle the increased demand. While the BINS methodology followed a multimodal approach for gathering quantitative data for highway, rail, maritime, airport, port of entry and intermodal facilities, the lack of available current or projected traffic and trade data for corridors identified posed a problem for the analysis. The study noted the lack of complete data sets as well as inconsistent data on long-term infrastructure planning. The BINS study, however, stopped short of looking at the connection between the transportation corridors identified and connections with adjoining states.

Among the many issues identified in the study is that along with the increased trade, the existing transportation corridors and ports of entry (POEs) were not designed to handle the amount of traffic generated following the passing of the NAFTA agreement. This is particularly relevant in the context of this study, given that only one port entry operates 24 hours a day and is able to handle significant commercial traffic flows between Montana and Canada.

The southern border infrastructure needs were evaluated by examining trade patterns between the United States and Mexico in order to forecast anticipated growth in bilateral trade, which would result in additional travel demand for the existing highway network. This assessment found that cross-border truck travel was likely to outpace estimated population growth, indicating that truck traffic will continue to impose a burden on local communities.

The study used three indicators to analyze current and projected performance of the transportation system along the border region. These indicators were: average annual daily traffic (AADT), congestion measured by the level of service (LOS) and highway capacity at peak hours. POEs were evaluated using the number of passenger vehicles and buses, and number of trucks, in addition to the volume and value of goods transported by truck. Railroad indicators included the number of rail cars and number of twenty-foot equivalent containers (TEUs), as well as the volume and value of goods that cross the border by rail. Projections through 2020 for these three indicators showed that AADT will increase, congestion will worsen, and highway capacity at peak hours would increase at a slower rate than the growth in traffic.

In determining which corridors are included in the assessment, the BINS study established two minimum criteria for a transportation facility to be part of a corridor. First, all facilities must lie within 60 miles of the border and second highways and railroads must serve an international POE. The evaluation ranked the data by POE from highest to lowest to determine need. Higher values for indicators represent more traffic (AADT), more congestion (LOS), more trade (dollar value across POEs), as well as more vehicles of all classes crossing the border. The evaluation results were then summed by mode and an overall score for each corridor was calculated by summing the five modal scores.

2.3.3 Latin America Trade & Transportation Study

A 2001 Wilbur Smith Associates study aimed at assessing the infrastructure development needs of the states making up the Southeastern Transportation Alliance in order to capitalize on international trade stimulated by increased trade with Latin America (Wilbur Smith Associates 2001). This was accomplished by investigating trade opportunities between the United States and Latin America and how the Southeastern Alliance states could benefit from that and consequently evaluate existing transportation infrastructure and its ability to meet the increased demand.

The Southeastern Alliance states represented an advantageous geographical location for trade with Latin America (similar to that of Alberta and Saskatchewan with Montana). One major difference is that trade with Latin America entering through the Alliance states is made of 60 percent seaborne trade (in value terms) and 38 percent (in value terms) through land crossings. A base case scenario was developed for forecasted growth in trade in addition to a high case given certain conditions and a no trade growth case. The study resulted in the identification of a series of basic strategies including the efficient utilization of existing infrastructure, prudent investments in new physical infrastructure and improved clearance processing at gateways in addition to 11 other strategy recommendations.

The report utilized the Bureau of Transportation Statistics' Transborder Surface Freight database to account for international cross-border trade along the United Sates-Mexico border. The data

provides information about the nature of the shipment as well as the international origin/destination. For trade volume measures, the infrastructure investment measures developed were based on anticipated volumes of future trade as it is the most useful measure in terms of identifying capital facilities and equipment needs associated with accommodating such trade. The same database is used in identifying trade flow patterns between Canada and the United States across the Montana border.

Given that Latin America offers tremendous opportunity as a source of new inbound and outbound trade growth for the Alliance states and the rest of the country, the objective of the trade forecast analyses was to characterize the size and composition of these trade flows and to give some indication of how much bigger they could become over the forecast period. These forecasts were for trade flowing through the gateways of the Southeastern Alliance region between the United States and Latin America.

Additionally, the study included sensitivity analysis to come up with a high case, which illustrates the impact of more favorable trade conditions. A brief economic rationale was developed to support each of the scenarios generated by this sensitivity analysis. These rationales included weak growth in Latin American economies, slower trade liberalization, as well as slower transportation infrastructure improvement. Meanwhile, the specific highways which comprise the strategic highway system were identified through an interactive process in consultation with experts in order to develop criteria for their selection. A total of 22,859 miles of mainline strategic highways were identified and grouped into 25 trade corridors using principal origins/destinations and assigning each highway to only one corridor.

Finally, the study developed estimates for required public sector investments over a 20-year period, including those in seaports, railways and highways. Investment requirements for the highway system represented the largest component at 72 percent of the total. However, only 8 percent of highway investment was directly linked to trade with Latin America, while 92 percent was attributed to traffic flows which are not directly associated with Latin American trade flows. The process used to identify highway investment needs included compiling a network database utilizing the Highway Performance Monitoring System (HPMS) in addition to forecasting truck traffic flows. Other factors included quantifying highway investment needs categories such as level of service and geometric needs in order to perform capacity and pavement analysis.

2.3.4 La Entrada Al Pacifico Feasibility Study

More recently, a 2008 HDR study for the Texas Department of Transportation (TxDOT) investigated the feasibility of developing a corridor serving traffic coming through the Presidio POE into western Texas (HDR 2008). A freight diversion analysis was a primary element of the feasibility study to estimate the likely freight effects of a potential trade corridor enhancement in West Texas. This study was intended to reflect future sources of growth and diversion that would potentially serve the La Entrada al Pacifico (LEAP) Corridor connecting into Mexico all the way to the port of Topolobampo on the west coast.

The study employed a four step Risk Analysis Process to produce projections of growth and diversion that would use the LEAP Corridor. First, the structure and logic of freight diversion to Presidio and the corridor were defined. Estimates and ranges were assigned as probability

distributions to each key factor and forecasting coefficient in the structure and logic model. Local experts and the Technical Advisory Committee were also engaged in the assessment of the model and assumptions' risks. These assumptions were then used to produce forecasted freight diversion results that were documented and reported. There were five primary areas that made up the total freight diversion potential to Presidio. These included: 1) diversion from the Port of Los Angeles/Port of Long Beach, 2) diversion from Gulf Coast ports, 3) diversion from other US-Mexico Ports of Entry, 4) freight growth originating in and/or traversing through Mexico, and 5) the impact of Mexican infrastructure improvements.

Factoring in those key items that directly or indirectly influence the overall freight forecast anticipated at the Presidio POE, three scenarios were developed over the 20-year forecast period. A baseline scenario assumed no freight diversion from any areas, while a 2020 scenario assumed that the infrastructure from Topolobampo to Chihuahua would be completed by 2020 and finally, a 2030 scenario assumed that Mexican infrastructure would not be completed by 2030 and therefore diversion to Topolobampo and onto Presidio was not included in the forecast. For the purposes of this study, the overall freight forecast was converted to an Average Annual Daily Truck Traffic (AADT).

Most of the freight diversion to the Presidio border crossing, and in turn the two largest influences on the growth in freight traffic, were estimated to be either freight diverting from El Paso Presidio or diversion of shipments to the Port of Topolobampo that would then use the LEAP corridor. Finally, the study estimated that the factors most likely to influence diversion are the travel time and reliability of a route; infrastructure availability and barriers to diversion such as: experience, costs and contractual obligations committed to a particular route; and the profitability of travel along each route and POE.

2.3.5 Ports of Entry (POE), Traffic & Security

Inadequate POE facilities can have a negative impact on cross border trade due to delays and congestion. In 2006 HDR conducted a financial feasibility study on the S.R. 11 toll road and the East Otay Mesa (EOM) Port of Entry in Southern California (HDR 2006a). Long processing and wait times at the port prompted the study, which evaluated the existing conditions, potential investment scenarios, and investment criteria. The report investigated whether the necessary conditions for a "successful" toll facility were met; evaluated the facility in light of standard credit rating criteria for toll facilities; analyzed the impact of potential revenue and cost scenarios; and assessed the investor market.

An expert panel thoroughly reviewed the models, verified data accuracy, assessed reasonability of assumptions and suggested revisions, as necessary. In all cases, key assumptions on the drivers of traffic and revenue were characterized with a risk profile and uncertainty. In addition, analytical models incorporated these uncertainties to ultimately provide a probability of achieving the necessary debt service coverage levels over time.

Additionally, a 2007 report by the Conference Board of Canada points to the fact that risk-based border security programs under the Canada-U.S. Smart Border Accord have not fully realized their efficiency benefits due in part to infrastructure limitations (Goldfarb 2007). Meanwhile, statistical analysis performed as part of the same study, did not find evidence that tighter security

measures along the U.S.-Canadian border have had an impact on the volume of Canadian exports to the United States. Similar studies have also found that post-9/11 security policies have not had any negative impact on Canadian import volumes from the United States. At the same time, increased border security has resulted in higher direct costs to companies and shippers trading across the U.S.-Canadian border as a result of compliance with new border security polices.

Furthermore, delays at ports and the associated unreliability mainly due to inadequate facilities have also imposed additional indirect costs to companies trading across the border. In a recently unclassified Transport Canada study, border delays were found to generate the most cost to cross-border trucking trade (InterVISTAS Consulting 2007). These findings confirmed the conclusions reached in a 2003 study that estimated delay costs as a result of extended transit time and uncertainty along the U.S.-Canadian border (Taylor et al. 2003). These costs were projected to amount to 2.7 percent of merchandise trade between the two countries, and as high as 4 percent of total truck trade. Recent evidence, however, points to reduced crossing delays at major POEs along the U.S.-Canadian border. While, some experts attribute these reductions in wait times to improvements in physical infrastructures at major crossings, others point to strong statistical evidence showing that trucks have shifted to different border crossings and different delay times as a result.

2.3.6 Expansion of Ports of Entry (POE) Hours of Service

There are currently 15 Ports of Entry (POE) that link Montana with Canada, three of which are designated as 24-hour crossings: Roosville which serves traffic via British Columbia; Sweet Grass which is Alberta's only 24-hour link with the United States; and Raymond which connects Montana with Saskatchewan. Two research studies, discussed earlier, have investigated upgrading the Wild Horse POE to a 24-hour commercial border crossing based on potential economic/community benefits as well as another corridor for commercial traffic between the United States and Edmonton, Alberta (in particular).

In a move to enhance border efficiency, the U.S. Customs and Border Protection (U.S. CBP) announced in October 2008 that it had selected four U.S.-Mexico POEs to participate in a 6-month pilot that would extend the hours of operation for each participating border crossing (U.S. CBP 2008a, CBP Announces Expanded Hours of Service). The program is intended to accommodate increased trade across the U.S.-Mexico border and to help decrease the growing border delays at these POEs. Meanwhile, Southern California's seaport of Los Angeles and Long Beach, the largest in the country, have expanded their hours of operations through the PierPASS program in order to provide an incentive for cargo shippers and truckers to use off-peak operations. The program was recently evaluated in a study by BST Associates to determine if the program has met its objectives (BST Associates 2008). According to the report, the PierPASS program succeeded in shifting 17 to 21 percent of cargo movements to off-peak hours, thereby reducing daytime traffic and congestion. The study concluded that the off-peak program has resulted in reducing daytime peak traffic in addition to increasing truck trips from 10 percent in 2004 (prior to the inception of the program) to 32% in 2007.

2.4 Recent Montana Transportation and Economic Development Studies

This section draws on two recently published studies that have explored Montana's transportation system and its impact on the state and regional economies.

2.4.1 Montana Highway Reconfiguration Study

A 2005 Montana Highway Reconfiguration Study investigated the economic benefits of improving Montana's highways, with particular focus on adding capacity to the state's two-lane highways (Cambridge Systematics 2005). To accomplish this goal, the study developed the Highway Economic Analysis Tool (HEAT) which provides a more detailed understanding of the relationship between changes in highway capacity and economic development.

The HEAT toolbox utilized an integrated economic policy approach to transportation, first by taking the structure of the economy into account, including the type of industries and the number of households in a specific region. Given the economic structure and industry mix, HEAT then applies goods movement data and forecasts to the transportation system to estimate shipping patterns and the importance of transportation to the economy. Finally, while taking the current transportation infrastructure into account, the model applies the observed and forecast commodity flows and all traffic-related data in order to provide stakeholders with a thorough understanding of the forces affecting economic development.

The HEAT framework was designed to measure economic development benefits as an outcome of specific highway corridor projects. To do so, HEAT assembled a broad and deep database of economic, commodity flow, industry growth and travel data. In particular, the industry profiles could be instructive in terms of the transportation needs by industry.

The unique technique used in that study was the creation of an Opportunity Matrix that predicted (through RAP panelist input) the probability and impact (in number of daily trucks or auto traffic) that specific planned or possible economic development projects in the area (such as an ethanol plant to be built) would have on traffic under different roadway alternatives.

2.4.2 TRED Study

In 2006, HDR conducted a study for the Montana Department of Transportation aimed at identifying economic, regulatory, or operational changes that would result in traffic and safety conditions which in its turn would warrant building a four-lane highway on the Montana portion of the Theodore Roosevelt Expressway (TRE) (HDR 2006b). The corridor, which functions both as a freight corridor and as a local roadway, was assessed based on current and future economic development potential at the local, regional, and national levels. In doing so, quantitative and qualitative assessments of future conditions, traffic volumes, and safety performance along the study corridor were performed in order to assist Federal and State transportation planners in their decisions about future highway improvements. Similar to the Montana Highway Reconfiguration Study, an Opportunity Matrix was created that predicted (through RAP panelist input) the probability and impact that specific planned or potential economic development projects in the area would have on traffic under different roadway alternatives.

In order to provide a comprehensive assessment of the regional economy and the implications on the corridor, the study relied on a number of variables including a detailed analysis of various demographic, socioeconomic, sectors level and trade data. These analyses were complemented with interviews of representatives of over 120 key agencies, corporations, and institutions in the region as well as key transportation planning agencies. The study utilized a methodology that considers growth incrementally by estimating the growth under existing infrastructure conditions and then assessing additional growth that can be attributable to capacity expansion. Based on the results of the study, a number of key elements were identified that demonstrated the need for improving highways US 2 and MT 16, including system continuity with adjoining highways and the importance of the corridor as part of the TRE system including its impact on the local and regional economy.

2.4.3 Canadian Tourism

Tourism represents a major source of economic activity for the state of Montana. Receipts from nonresident visitors to Montana amounted to $3.08 billion in 2007. Meanwhile, of the state's 10.68 million nonresident visitors in 2007, an estimated seven percent (747,600 visitors) were from Canada. This percentage is based on the 2005 Montana Nonresident Travel Survey (The Institute for Tourism and Recreation Research 2008). While the numbers of Canadians visiting Montana (and other U.S. destinations) has reportedly increased in 2008 due to the strengthening of the Canadian dollar, further study is required to estimate more current Canadian visitor activity and determine whether this raised level of Canadian visitors to Montana is sustainable.

3 EXISTING CONDITIONS OF HIGHWAYS AND PORTS

3.1 Introduction

The objective of this chapter is to assess the existing conditions of northern Montana highways and the nine border crossings within the study area. Emphasis is on:

- Traffic conditions – average annual daily traffic (AADT), level of service, commercial truck traffic volumes;
- Infrastructure conditions – lane and shoulder widths, pavement quality, hours of operation at each border crossing; and
- Border crossing policies and programs – commercial truck and passenger travel programs related to security, efficiency, and use.

3.2 Study Area

The study area for the ICED Study highways and border crossing facilities in northern Montana stretches from Interstate 15 east to the Montana-North Dakota border and from US Highway 2 to the Canadian border. The map below (Figure 2) shows the study area and major highway facilities. This study includes nine north/south corridors and POEs between US 2 and the Canadian border. The highways are I-15, S-232, S-233, S-241, US 191, MT-24, MT-13, S-251/S-511, and MT-16. The relevant POEs are: Sweet Grass, Wild Horse, Willow Creek, Turner, Morgan, Opheim, Scobey, Whitetail, and Raymond.

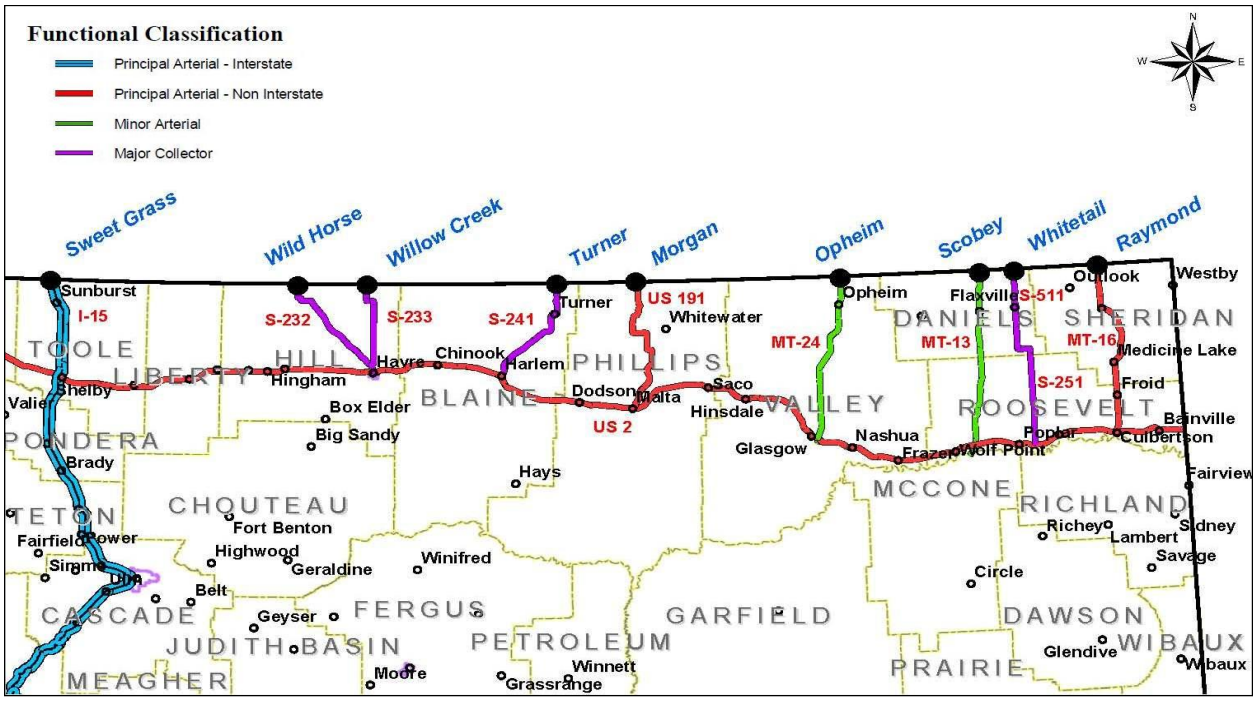


Figure 2: Study Area Highways and Border Crossings in Northern Montana
Source: MDT 2008b

3.3 Traffic and Infrastructure Conditions

This section covers traffic and infrastructure conditions at the points of entry (POEs) as well as the connecting north-south highways in Montana. The analysis first covers an overview of all facilities within the study area followed by POE specific profiles covering infrastructure and traffic conditions, as well as connecting highways in Canada.

3.3.1 Overview of Study Area Traffic and Infrastructure Conditions

3.3.1.1 Montana Connecting Highways

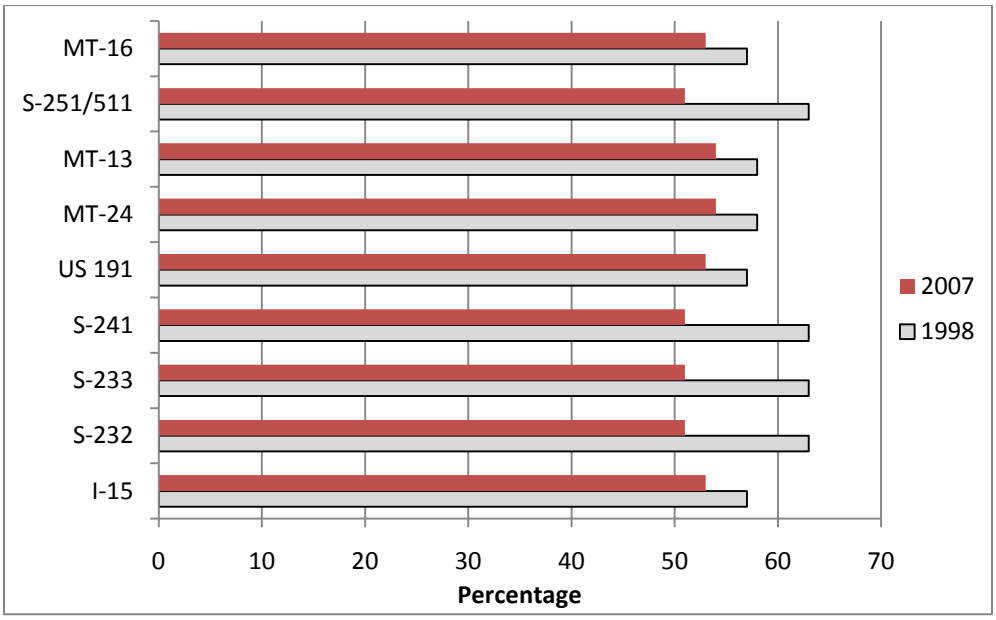
With the exception of Interstate 15, the highways within the study area are rural, two-lane highways. Shoulder widths on the two-lane highways vary from 0 feet to 4 feet, and pavement conditions are generally good on all of the corridors. Table 1 shows average annual daily traffic (AADT), provided by MDT (2009a), with truck percentages for the study corridors over the ten years from 1998–2007. Traffic growth over the ten-year period varied throughout the study area, and some corridors experienced strong growth while others experienced modest declines (albeit from relatively small numbers of trips).

Table 1: Traffic Growth on North-South Corridors

Route	From	To	1998		2007		Rate of Growth	
			AADT	% Trucks	AADT	% Trucks	AADT	Truck AADT
I-15	Shelby	Sweet Grass	2,136	34.0%	2,332	31.1%	8.7%	-0.8%
S-232	Havre	Wild Horse	990	9.5%	1,083	6.9%	9.4%	-20.6%
S-233	Havre	Willow Creek	922	7.4%	1,063	7.1%	15.3%	11.5%
S-241	Harlem	Turner	484	10.1%	382	12.7%	-21.1%	-0.74%
US 191	Malta	Morgan	277	12.2%	273	8.4%	-1.2%	-31.7%
MT-24	Glasgow	Opheim	382	11.2%	359	15.7%	-6.0%	31.8%
MT-13	Macon	Scobey	756	5.5%	723	8.5%	-4.3%	46.5%
S-251	Sprote	Flaxville	135	26.7%	165	23.6%	22.2%	8.3%
S-511	Flaxville	Whitetail	171	5.3%	122	4.9%	-28.6%	-33.3%
MT-16	Culbertson	Plentywood	727	11.5%	981	13.7%	34.9%	60.8%
MT-16	Plentywood	Raymond	374	22.9%	484	23.7%	29.4%	33.9%

Source: MDT 2009a

The existing traffic on these highway corridors is fairly balanced between southbound and northbound traffic. There is slightly more southbound traffic on all corridors than northbound. The percentage, known as a directional split, has moved closer to 50% in the past few years. Figure 3 depicts the southbound percentage of the directional split for each corridor in both 1998 and 2007, as provided by MDT (2009a).



Source: MDT 2009a

Figure 3: Percentage of Southbound Traffic

One basic metric of highway performance is vehicle capacity on highway segments in relation to traffic volumes. Level of Service (LOS) is one common method of measurement. When the capacity of a roadway is exceeded, this results in congestion and a poor LOS. Six levels of service, ranging from A to F, are used to define congestion and operating conditions on roadways, with LOS A representing the best operating conditions (free-flowing traffic) and LOS F the worst operating conditions (fully congested, stop-and-go traffic). LOS for two-lane, Class I highways (primary arterials connecting major traffic generators, daily commuter routes, primary links to state or national highway networks) is illustrated in Table 2, according to highway capacity standards (Transportation Research Board 2000, Ch.2).

Levels of Service in the study area are generally good. All the north-south corridors in this study operate at LOS A over the entire corridor. Only the MT-16 corridor experiences worse than LOS B and that only occurs within the urban boundary of Plentywood. US 2 exhibits some level of congestion in the Havre area with a segment of LOS C on Havre's western edge and LOS D on its eastern side. There are also LOS C segments of US 2 in the vicinity of Glasgow and Poplar, though the entire US 2 from Shelby to North Dakota operates at LOS A/B. Maps, depicting the current LOS on all of the study area corridors, are found in Appendix B.

Table 2: Level of Service Criteria for Two-Lane Highways in Class I

Level of Service (LOS)	Level of Service Definition	Percent of Time Spent Following Other Vehicles	Average Vehicle Speed (mph)
A	Motorists can travel at their desired speed. No more than 35% of the time is spent following other vehicles.	35%	55
B	Average speed of 50–55 mph. Demand for passing is high. 50% of the time is spent following other vehicles.	35–50%	50–55
C	Average speed of 45–50 mph. Noticeable increase in following traffic with reduction in passing opportunities.	50–65%	45–50
D	Unstable traffic flow. Passing demand is high but passing opportunities approach zero. Vehicles following length of 5 to 10 vehicles and average speeds of 40–45 mph.	65–80%	40–45
E	Average speed below 40 mph. 80% of the time is spent following other vehicles. Passing is virtually impossible	80%	40
LOS F applies whenever the number of vehicles traveling on the highway exceeds the roadway capacity.			

Source: Transportation Research Board 2000

MDT uses the Congestion Index (CI) as a performance measure on its rural highway system (see Table 3). The CI is a measure of travel delay where a higher CI means travelers experience less congestion and greater mobility. CI values range from 0 to 100 and are a numerical representation of the LOS of the highway corridor.

Table 3: Congestion Index (CI) and Corresponding Level of Service

Congestion Index	LOS
85–100	A
70–84	B
55–69	C
40–54	D
25–39	E
0–24	F

Source: MDT 2008a

MDT (2008a) considers any Interstate segment with a LOS below B to be congested, and for other highway classes a LOS below C is considered congested. The level of congestion experienced on the north-south corridors within the study is very low and the CI for each of these corridors is 85 or higher (consistent with LOS A).

Another metric employed by MDT to provide a single index describing the current general health of a particular highway route or system is the Overall Performance Index (OPI). OPI is determined by combining and applying various weights to MDT's four performance measures in its Pavement Management System. These four measures are Ride Index, Rut Index, Alligator Crack Index, and Miscellaneous Cracking Index. The resulting OPI depicts roadway health condition as Good, Fair, or Poor. Table 4 provides the percentage of statewide highway lane

miles in each OPI class by functional class (MDT 2008b). All of the north-south highway corridors within the study area have an OPI in the Good category.

Table 4: 2007 Statewide OPI by Functional Class

Functional Class	Good	Fair	Poor
Interstate	91%	7%	2%
NHS Primary	66%	30%	4%
STP Primary	66%	29%	5%
Secondary	67%	28%	5%

Source: MDT 2008b

3.3.1.2 Ports of Entry

The existing conditions for the nine ports of entry within the study area are described below. The following tables provide an overview of the border crossings, show total vehicle AADT during the ten-year period, and truck AADT for the ten-year period. Table 5 is focused on traffic-related indicators while Table 6 provides details for connecting infrastructure at each POE (2008b, Locate A Port of Entry – Air, Land, or Sea and MDT 2008b).

Table 5: Port of Entry Overview – Traffic and Operating Conditions

Border Crossing	Operating Hours	2008 AADT	% Trucks
Sweet Grass	24 HR	1890	35
Wild Horse	8 AM–9 PM (05/15–09/30) 8 AM–5 PM (10/01–05/14)	130	13
Willow Creek	9 AM–5 PM	40	0.5
Turner	8 AM–9 PM (06/01–09/15) 9 AM–6 PM (09/16–05/31)	60	5
Morgan	8 AM–9 PM (06/01–09/15) 9 AM–6 PM (09/16–05/31)	50	8
Opheim	8 AM–9 PM (06/01–09/15) 9 AM–6 PM (09/16–05/31)	50	11
Scobey	8 AM–9 PM (06/01–09/15) 9 AM–6 PM (09/16–05/31)	60	9
Whitetail	8 AM–9 PM (06/01–09/15) 9 AM–6 PM (09/16–05/31)	30	7
Raymond	24 HR	250	44

Sources: U.S. CBP 2008b, Locate a Port of Entry – Air, Land, or Sea and MDT 2009a

Table 6: Port of Entry Overview – Infrastructure Conditions

Border Crossing	Highway Route	Functional Class	# Lanes	Avg. Paved Width (ft)
Sweet Grass	I-15	Principal Arterial	4	76.0
Wild Horse	S-232	Major Collector	2	23.5
Willow Creek	S-233	Major Collector	2	28.8
Turner	S-241	Major Collector	2	28.3
Morgan	US 191	Principal Arterial	2	28.8
Opheim	MT-24	Minor Arterial	2	27.8
Scobey	MT-13	Minor Arterial	2	25.9
Whitetail	S-511/S-251	Major Collector	2	26.5
Raymond	MT-16	Principal Arterial	2	30.9

Source: U.S. CBP 2008b, Locate A Port of Entry – Air, Land, or Sea and MDT 2008b

The distribution of the total number of trucks, inbound from Canada, among the Montana POEs in 2007 is shown in Table 7 (Federal Motor Carrier Safety Statistics [FMCSA] 2009). The majority of inbound trucks enter through the Sweet Grass POE, and the Raymond POE accepts the second highest volume of inbound trucks of all the Montana POEs. The volumes for the four border crossings not included in this study combined account for 11 percent of the total volume. Additionally, Table 7 shows that the seven POEs within the study area between Sweet Grass and Raymond account for small percentages of the total volume.

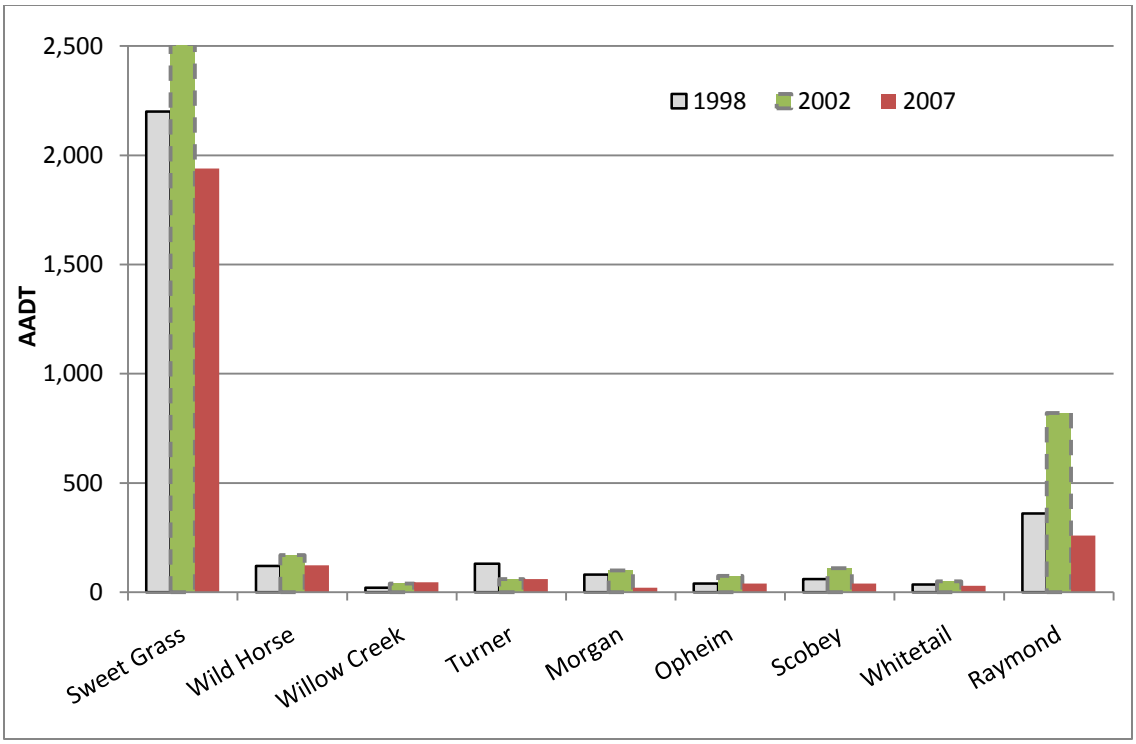
Table 7: Total Incoming Trucks by POE, 2007

Border Crossing	Percent Incoming Trucks[3]
Sweet Grass	75.0%
Wild Horse	1.5%
Willow Creek	<0.1%
Turner	0.2%
Morgan	0.3%
Opheim	0.3%
Scobey	0.3%
Whitetail	0.1%
Raymond	11.1%
Outside Study Area	11.4%

Source: FMCSA 2009

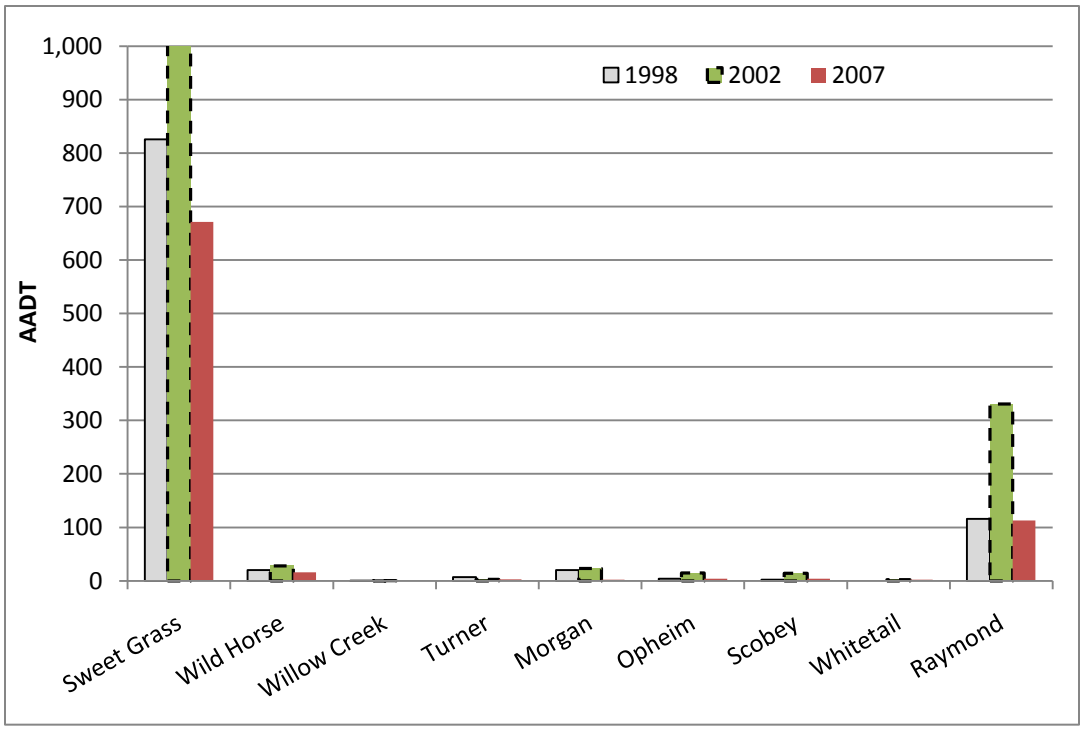
Figure 4 and Figure 5 provide traffic volume growth trend information (MDT 2009a), for all nine ports for the years 1998, 2002, and 2007. The first graph depicts all traffic while the second is only for commercial truck volumes. As shown, traffic volumes at Sweet Grass are the dominant POE for border crossings in the study area, with volumes at Raymond the next highest in the region. Volumes in 2008 were generally back in line with 1998 volumes after a surge in the years around 2002. Chapter 4 analyses of economic, industry, and trade trends more closely tracks the relationship between economic factors and traffic volumes at the Montana POEs.

[3] Exceeds 100 percent due to rounding



Source: MDT 2009a

Figure 4: Total Vehicle AADT at Ports of Entry

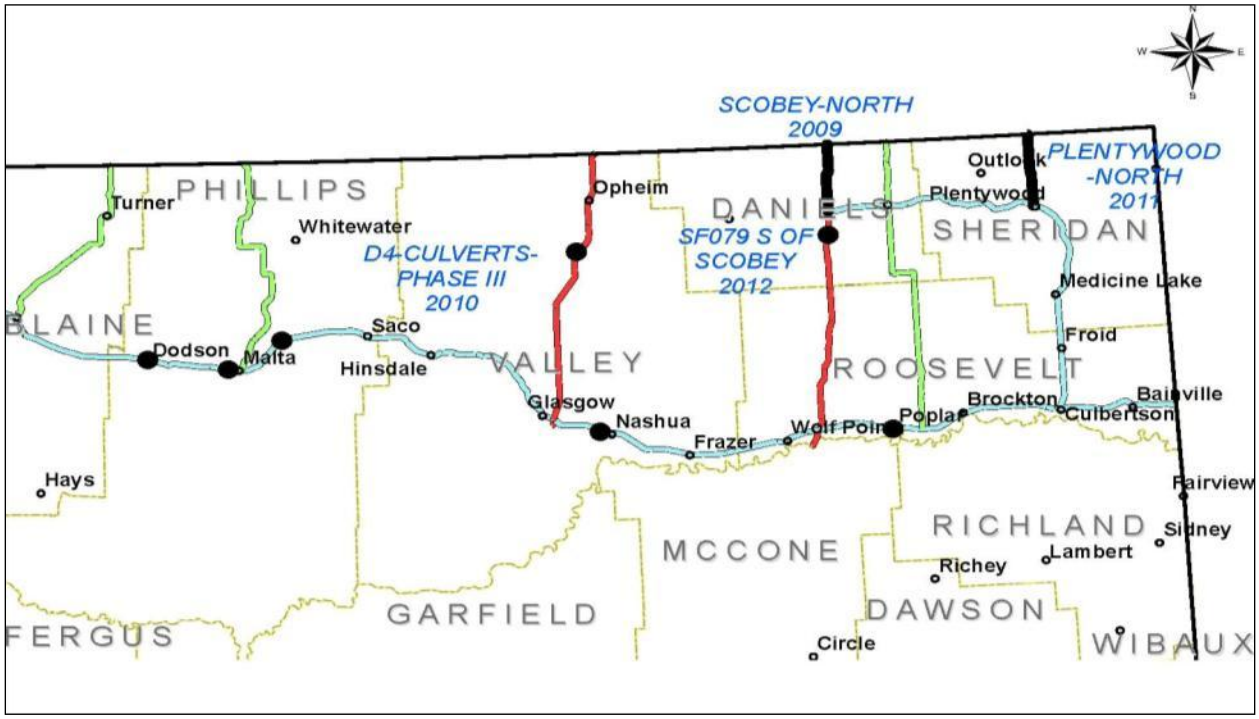


Source: MDT 2009a

Figure 5: Truck AADT at Ports of Entry

3.3.1.3 Planned Infrastructure Improvements

Figure 6 shows MDT's proposed highway improvement projects (2009b) within the research study area. The D4-Culverts-Phase III project will remove and replace culverts at various locations on US 2 and on MT-24 south of Opheim. SF079 S of Scobey is a roadside safety improvement project. Included in MDT's project list for the American Recovery Investment Act are Scobey-North (Phase II), a chip seal project on MT-13, and Plentywood-North, an overlay project on MT-16.



Source: MDT 2009b

Figure 6: Planned Infrastructure Improvements for Northern Montana Highways

3.3.2 Profiles of Study Area POEs

This section provides a brief profile for each of the nine POEs in the ICED study area in terms of hours of operation, infrastructure capacity, level of service, and traffic volumes. Table 8 summarizes the infrastructure at each POE (MDT 2008a). Unless otherwise noted data in the remaining section was provided by MDT.

Table 8: Infrastructure Summary by POE

Route Name	Begin	End	County 1	Miles	County 2	Miles	Congestion LOS	Congestion CI
I-15	Shelby	Sweet Grass POE	Toole	35			A	98
S-232	Havre	Wild Horse POE	Hill	44			A	93
S-233	Havre	Willow Creek POE	Hill	33			A	97
S-241	Harlem	Turner POE	Blaine	43			A	93
US 191	Malta	Morgan POE	Phillips	54			A	96
MT-24	Glasgow	Opheim POE	Valley	60			A	90
MT-13	Macon	Scobey POE	Roosevelt	31	Daniels	31	A	89
S-251	Sprote	Flaxville	Roosevelt	32	Daniels	20	A	97
S-511	Flaxville	Whitetail POE	Daniels	14			A	96
MT-16	Culbertson	Plentywood	Roosevelt	17	Sheridan	30	A/C	85
MT-16	Plentywood	Raymond POE	Sheridan	16			A	89

Source: MDT 2008a

3.3.2.1 Sweet Grass

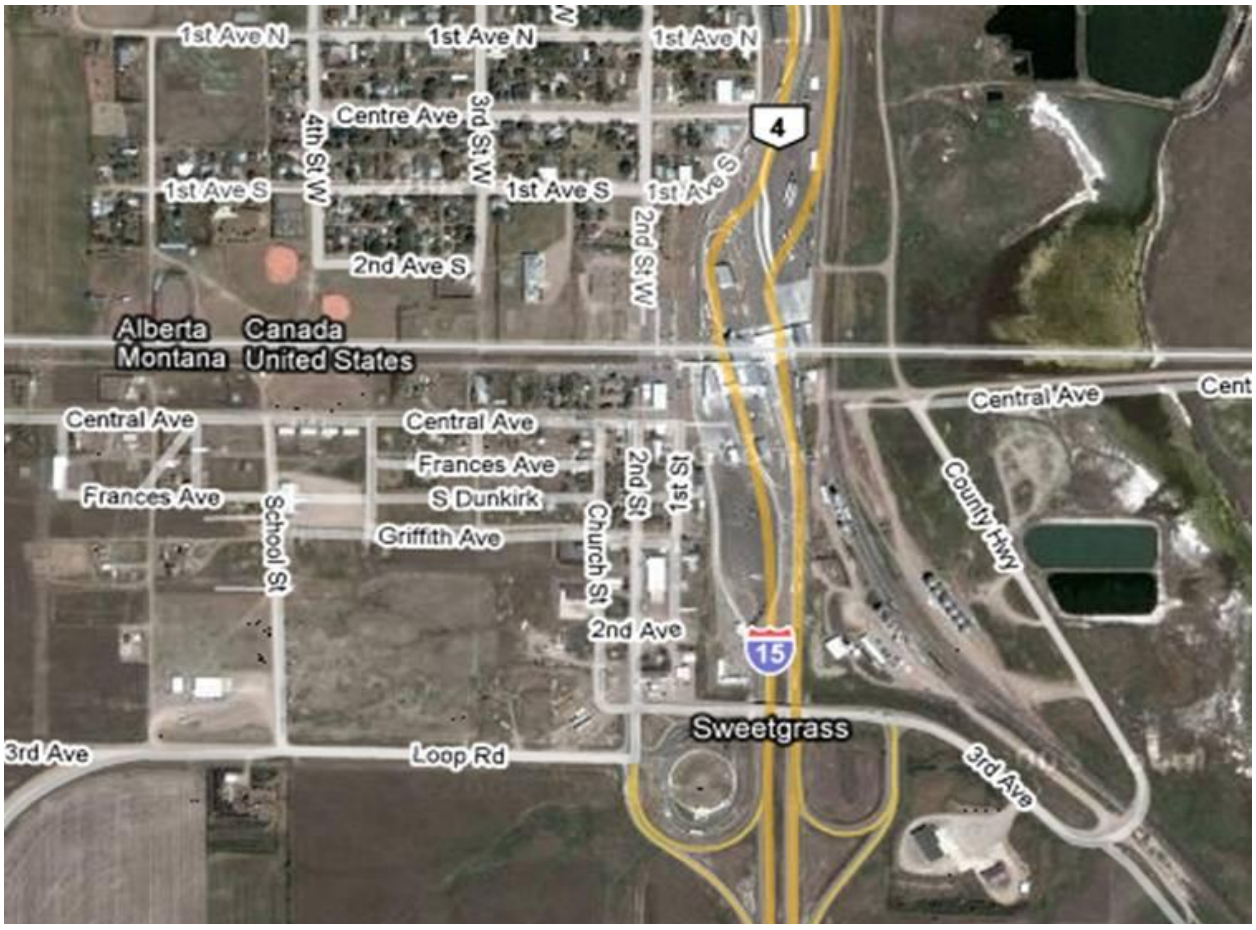
Photo 1: Sweet Grass POE

The Port of Coutts/Sweet Grass is the largest and most heavily used border crossing point between Montana and Canada (Photo 1), accounting for more than 80 percent of the border crossings within the study area (BTS 2009). It is located on Interstate 15 about 35 miles north of US 2 in Shelby, MT and on Primary Highway 4 about 195 miles south of Trans-Canada Highway 1 in Calgary, AB. Sweet Grass is one of three Montana border crossings with 24-hour operations and has two commercial-vehicle lanes and three passenger-vehicle lanes. Serving the port in Alberta is Highway 4, classified as a Principal Arterial (Level 1), a rural, divided, and four-lane highway with approximately eight foot shoulders. I-15 in Montana, classified as a Principal Arterial-Interstate, is also a rural, divided, and four-lane interstate highway with approximately eight foot shoulders; see Figure 7 (Google 2009d). I-15 currently operates with low congestion and at Level of Service A within the study area, as seen in Table 9 (MDT 2008a). The Average Annual Daily Traffic (AADT) on I-15 in 2007 was 2,332 vehicles, and 31 percent of the traffic was commercial trucks (MDT 2009a). Total traffic growth over the ten years from 1998 to 2007 was 8.7 percent (-0.8 percent for trucks).

Table 9: Sweet Grass Infrastructure

Route Name	Begin	End	County 1	Miles	County 2	Miles	Congestion	
							LOS	CI
I-15	Shelby	Sweet Grass POE	Toole	35			A	98

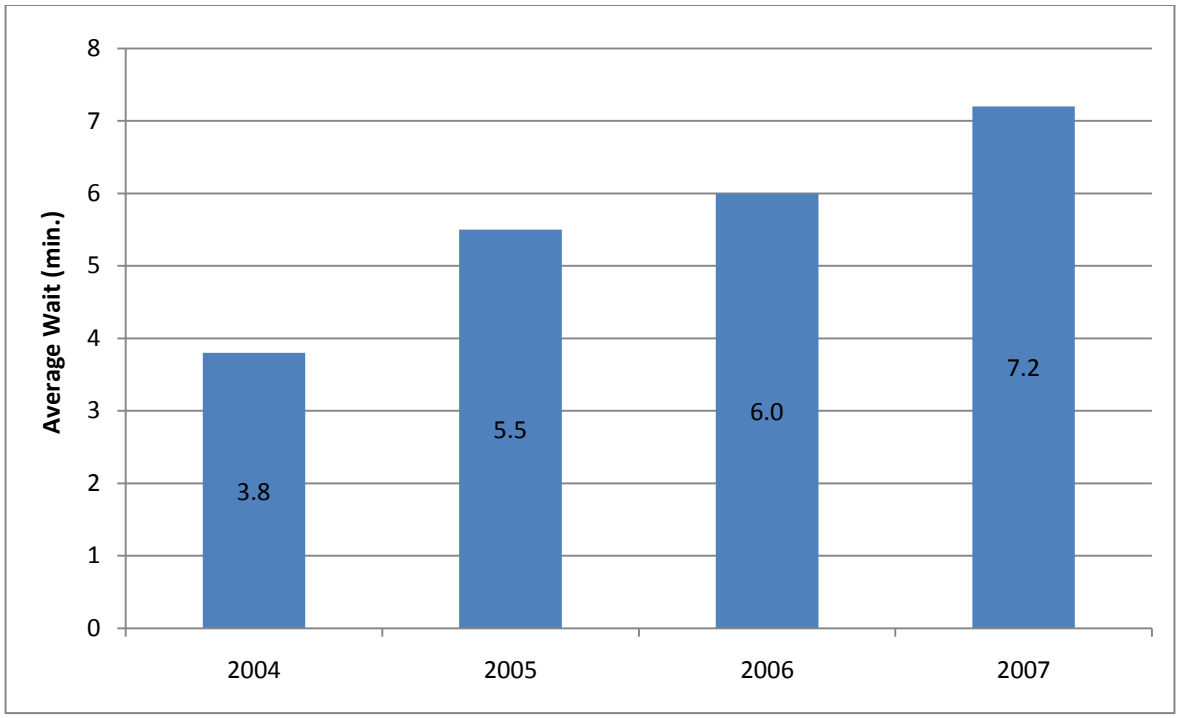
Source: MDT 2008a



Source: Google 2009d

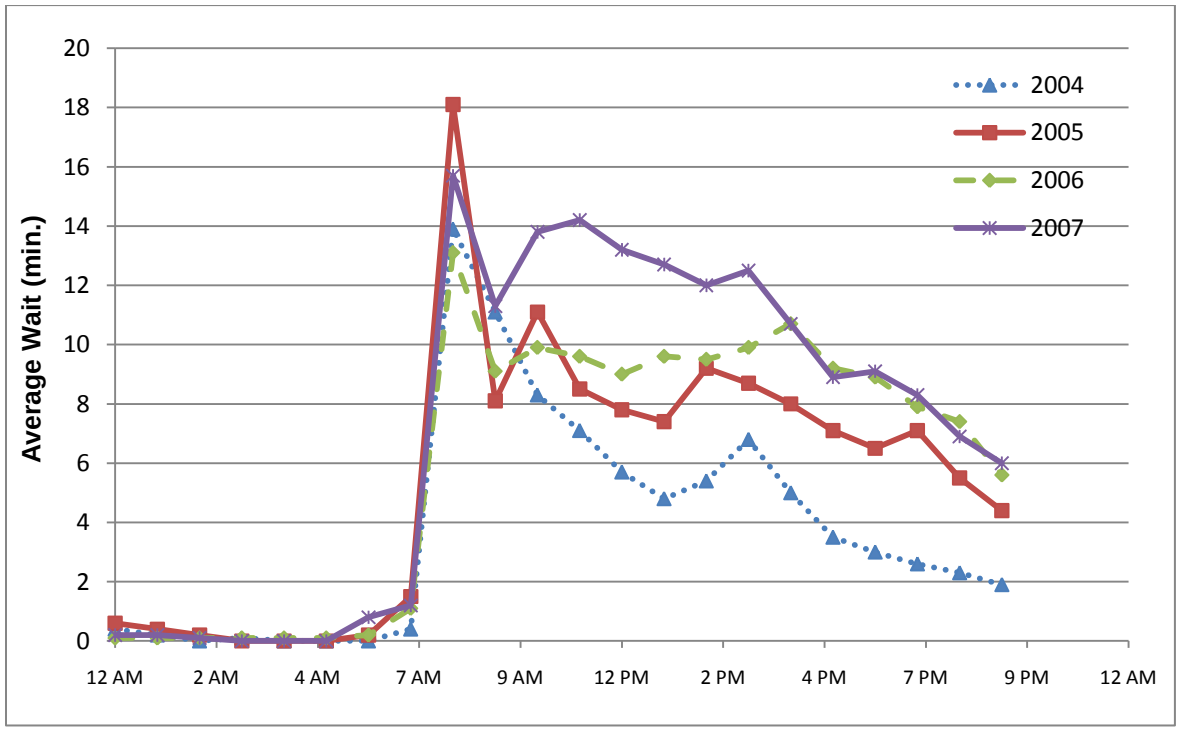
Figure 7: Sweet Grass Border Region

Sweet Grass is the only POE in Montana for which the U.S. CBP reports border crossing wait times. The average wait time for commercial vehicles has increased each year from 2004 to 2007 as the graph in Figure 8 shows. Figure 9 shows the hourly average wait time, in minutes, from 2004 to 2007 (U.S. CBP 2009). The longest wait time consistently occurs at 8:00 AM and then trends down through the remainder of the day. As expected, the overnight wait times are near zero.



Source: U.S. CBP 2009

Figure 8: Average Wait Time at Sweet Grass POE 2004-2007



Source: U.S. CBP 2009

Figure 9: Average Hourly Wait Time at Sweet Grass POE

3.3.2.2 Wild Horse

Photo 2: Wild Horse POE

The Port of Wild Horse is the third-most heavily used border crossing in the study area and accounts for more than 4 percent of vehicle crossings between Montana and Canada (Photo 2). It is located on Montana Secondary Highway 232 about 44 miles northwest of US 2 in Havre, MT and about 70 miles south of Highway 1 near Medicine Hat, AB. Wild Horse is a two-lane port and is open from 8 a.m. to 9 p.m. from March 1 through October 31 on the American side and between May 15 and October 31 in Canada. The remainder of the year the port is open between 8 a.m. and 5 p.m. The Port of Wild Horse is served by S-232, a Major Collector, in Montana and Highway 41, an Arterial (Level 2), in Alberta, see Figure 10 (Google 2009g). These are rural, two-lane highways with limited or no shoulders and good pavement conditions. S-232 currently operates with low congestion and at Level of Service A within the study area, as seen in Table 10 (MDT 2008a). The AADT on S-232 in 2007 was 1,083 vehicles, and 7 percent of the traffic was commercial trucks (MDT 2009a). Total traffic growth over the ten years from 1998 to 2007 was 9.4 percent (-20.6 percent for trucks).

Table 10: Wild Horse Infrastructure

Route Name	Begin	End	County 1	Miles	County 2	Miles	Congestion	
							LOS	CI
S-232	Havre	Wild Horse POE	Hill	44			A	93

Source: MDT 2008a

Source: Google 2009g

Figure 10: Wild Horse Border Region

3.3.2.3 Willow Creek

The Port of Willow Creek is located on S-233 about 33 miles north of US 2 in Havre, MT and about 85 miles south of Highway 1 north of Maple Creek, SK. It is a two-lane facility (Photo 3) that operates between the hours of 9 a.m. and 5 p.m. year round. The Port of Willow Creek is served by S-233, a Major Collector, in Montana and Highway 21, a Collector (Class 4) in Saskatchewan, see Figure 11 (Google 2009h). These are rural, two-lane highways with about 2 to 3 foot shoulders and good pavement conditions. Table 11 shows S-233 currently operates with low congestion and at Level of Service A within the study area (MDT 2008a). The AADT on S-233 in 2007 was 1,063 vehicles, and 7 percent of the traffic was commercial trucks (MDT 2009a). Total traffic growth over the ten years from 1998 to 2007 was 15.3 percent (11.5 percent for trucks).

Photo 3: Willow Creek POE

Table 11: Willow Creek Infrastructure

Route Name	Begin	End	County 1	Miles	County 2	Miles	Congestion	
							LOS	CI
S-233	Havre	Willow Creek POE	Hill	33			A	97

Source: MDT 2008a

Source: Google 2009h

Figure 11: Willow Creek Border Region

3.3.2.4 Turner

Photo 4: Turner POE

The Port of Turner is located on S-241 about 43 miles northeast of US-2 in Harlem, MT and about 80 miles south of Highway 1 in Gull Lake, SK. It is a two-lane facility that operates between the hours of 8 a.m. and 9 p.m. from June 1 through September 15, see Photo 4. The remainder of the year the port is open from 9 a.m. until 6 p.m. The Port of Turner is served by S-241, a Major Collector, in Montana and Highway 37, a Collector (Class 3), in Saskatchewan, see Figure 12 (Google 2009e). These are rural, two-lane highways with about 2 to 3 foot shoulders and good pavement conditions. S-241 currently operates with low congestion and at Level of Service A within the study area, as shown in Table 12 (MDT 2008a). The AADT on S-241 in 2007 was 382 vehicles, and 8.9 percent of the traffic was commercial trucks (MDT 2009a). Total traffic declined over the ten years from 1998 to 2007 by 21.0 percent (-0.7 percent for trucks).

Table 12: Turner Infrastructure

Route Name	Begin	End	County 1	Miles	County 2	Miles	Congestion	
							LOS	CI
S-241	Harlem	Turner POE	Blaine	43			A	93

Source: MDT 2008a

Source: Google 2009e

Figure 12: Turner Border Region

3.3.2.5 Morgan

The Port of Morgan is located on US 191 about 54 miles north of US 2 in Malta, MT and about 95 miles south of Highway 1 in Swift Current, SK. It is a two-lane facility that operates between the hours of 8 a.m. and 9 p.m. from June 1 through September 15, see Photo 5. The remainder of the year the port is open from 9 a.m. until 6 p.m. The Port of Morgan is served by US 191, a Principal Arterial, in Montana and Highway 4, an Arterial (Class 2), in Saskatchewan, as shown in Figure 13 (Google 2009a). These are rural, two-lane highways with about 2 to 3 foot shoulders and good pavement conditions. US 191 currently operates with low congestion and at Level of Service A within the study area, as seen in Table 13 (MDT 2008a). The AADT on US 191 in 2007 was 273 vehicles, and 15.7 percent of the traffic was commercial trucks (MDT 2009a). Total traffic declined over the ten years from 1998 to 2007 by 1.2 percent (31.8 percent for trucks).

Photo 5: Morgan POE

Table 13: Morgan Infrastructure

Route Name	Begin	End	County 1	Miles	County 2	Miles	Congestion	
							LOS	CI
US 191	Malta	Morgan POE	Phillips	54			A	96

Source: MDT 2008a

Source: Google 2009a

Figure 13: Morgan Border Region

3.3.2.6 Opheim

The Port of Opheim is located on MT-24 about 60 miles north of US 2 in Glasgow, MT and about 120 miles south of Highway 1 in Chaplin, SK. It is a two-lane facility (Photo 6) that operates between the hours of 8 a.m. and 9 p.m. from June 1 through September 15. The remainder of the year the port is open from 9 a.m. until 6 p.m. The Port of Opheim is served by MT-24, a Minor Arterial, in Montana and Highway 2, a Collector (Class 4), in Saskatchewan, see Figure 14 (Google 2009b). These are rural, two-lane highways with about 2 foot shoulders and good pavement conditions. MT-24 currently operates with low congestion and

Photo 6: Opheim POE

Table 14 shows a Level of Service A within the study area (MDT 2008a). The AADT on MT-24 in 2007 was 359 vehicles, and 15.7 percent of the traffic was commercial trucks (MDT 2009a). Total traffic declined over the ten years from 1998 to 2007 by 6.0 percent, while commercial traffic grew by 31.2 percent.

Table 14: Opheim Infrastructure

Route Name	Begin	End	County 1	Miles	County 2	Miles	Congestion	
							LOS	CI
MT-24	Glasgow	Opheim POE	Valley	60			A	90

Source: MDT 2008a

Source: Google 2009b

Figure 14: Opheim Border Region

3.3.2.7 Scobey

The Port of Scobey is located on MT-13 about 62 miles north of US 2 in Macon, MT and about 110 miles south of Highway 1 in Moose Jaw, SK. It is a two-lane facility (Photo 7) that operates between the hours of 8 a.m. and 9 p.m. from June 1 through September 15. The remainder of the year the port is open from 8 a.m. until 6 p.m. The Port of Scobey is served by MT-13, a Minor Arterial, in Montana and Highway 36, a Collector (Class 3), in Saskatchewan, see Figure 15 (Google 2009c). These are rural, two-lane highways with about 1 foot shoulders and good pavement conditions. Table 15 shows MT-13 currently operates with low congestion and at Level of Service A within the study area (MDT 2008a). The AADT on MT-13 in 2007 was 723 vehicles, and 8.5 percent of the traffic was commercial trucks. Total traffic declined over the ten years from 1998 to 2007 by 4.3 percent, while commercial traffic grew by 46.5 percent (MDT 2009a).

Photo 7: Scobey POE

Table 15: Scobey Infrastructure

Route Name	Begin	End	County 1	Miles	County 2	Miles	Congestion	
							LOS	CI
MT-13	Macon	Scobey POE	Roosevelt	31	Daniels	31	A	89

Source: MDT 2008a

Source: Google 2009c

Figure 15: Scobey Border Region

3.3.2.8 Whitetail

The Port of Whitetail is located on S-511 about 66 miles north of US 2 in Sprole, MT and about 110 miles south of Highway 1 east of Moose Jaw, SK. It is a two-lane facility (Photo 8) that operates between the hours of 8 a.m. and 9 p.m. from June 1 through September 15. The remainder of the year the port is open from 9 a.m. until 6 p.m. The Port of Whitetail is served by S-511 and S-251, both Major Collectors, in Montana and Highway 34, a Collector (Class 4), in Saskatchewan, see Figure 16 (Google 2009f). These are rural, two-lane highways with about 1 to 2 foot shoulders and good pavement conditions. S-251 and S-511 currently operate with low congestion and at Level of Service A within the study area, as shown in Table 16 (MDT 2008a). The AADT on S-251/S-511 in 2007 was 145 vehicles, and 16.5 percent of the traffic was commercial trucks (MDT 2009a). Total traffic declined over the ten years from 1998 to 2007 by 3.9 percent, while commercial traffic grew by 1.2 percent.

Photo 8: Whitetail POE

Table 16: Whitetail Infrastructure

Route Name	Begin	End	County 1	Miles	County 2	Miles	Congestion	
							LOS	CI
S-251	Sprote	Flaxville	Roosevelt	32	Daniels	20	A	97
S-511	Flaxville	Whitetail POE	Daniels	14			A	96

Source: MDT 2008a

Source: Google 2009f

Figure 16: Whitetail Border Region

3.3.2.9 Raymond

Photo 9: Raymond POE

The Port of Regway/Raymond (Photo 9) is the second largest and second most heavily used border crossing point between Montana and Canada, accounting for about 9 percent of the border crossings within the study area. It is located on Montana Highway 16 about 63 miles north of US 2 in Culbertson, MT and on Highway 6 about 95 miles south of Highway 1 in Regina, SK. Raymond is one of three Montana border crossings with 24-hour operations and has two commercial-vehicle lanes and two passenger-vehicle lanes. The Port of Raymond is served by MT-16, a Principal Arterial-Non Interstate, in Montana and Highway 6, an Arterial (Class 2), in Saskatchewan. These are rural, two-lane highways with about 3 to 4 foot shoulders and good pavement conditions. MT-16 currently operates with low congestion and at Level of Service A within the study area, as shown in Table 17 (MDT 2008a). The only exception to this is within Plentywood, where it operates at Level of Service C. In 2007 AADT on MT-16 (between Culbertson and Plentywood) was 981 vehicles, and 13.7 percent of the traffic was commercial trucks. Total traffic growth on this segment of MT-16 over the ten years from 1998 to 2007 was 35 percent (61 percent for trucks). The AADT on MT-16 (between Plentywood and the Port of Raymond) in 2007 was 484 vehicles, and 23.7 percent of the traffic was commercial trucks (MDT 2009a). Total traffic growth on this segment of MT-16 over the ten years from 1998 to 2007 was 29 percent (34 percent for trucks).

Table 17: Raymond Infrastructure

Route Name	Begin	End	County 1	Miles	County 2	Miles	Congestion	
							LOS	CI
MT-16	Culbertson	Plentywood	Roosevelt	17	Sheridan	30	A/C	85
MT-16	Plentywood	Raymond POE	Sheridan	16			A	89

Source: MDT 2008a

[Note that the aerial photo at Raymond from Google does not show any detail on the Canadian side of the border and that is why it is not included.]

3.4 Port Service, Border Security Policies and Programs

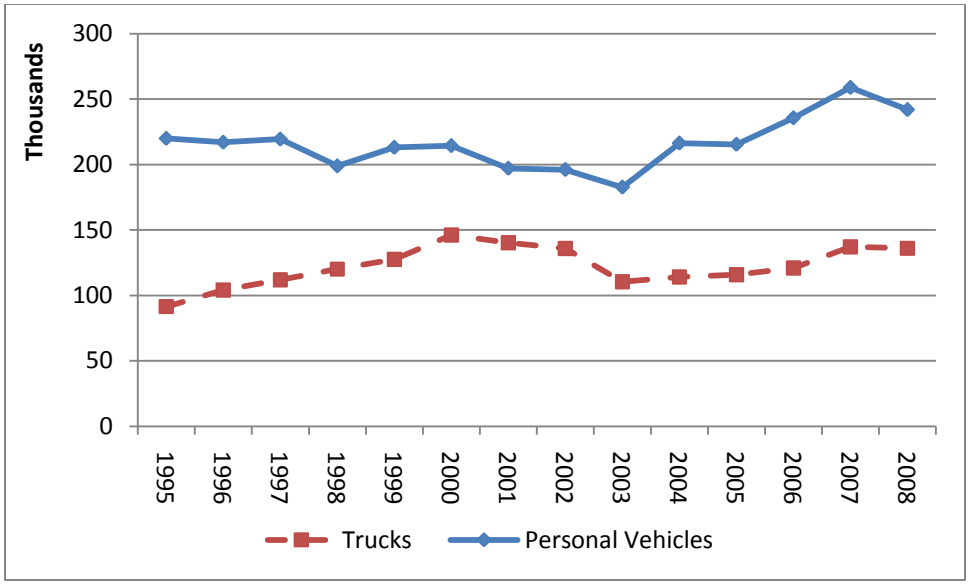
3.4.1 Background

The United States has over 7,000 miles of land border and 327 POEs into the US patrolled by the U.S. CBP. The U.S. and Canada land border spans 5,525 miles (Congressional Research Service 2004) and there are over 75 POEs for both passengers and freight, with 10 in Montana. The U.S. CBP enforces import and export laws and regulations and implements immigration policies.

POEs conduct the daily, port-specific operations like clearing cargo, collecting duties and other monies associated with imports, and processing passengers arriving from abroad.

In 2008, U.S. CBP processed 396.7 million travelers and over 122 million vehicles (BTS 2009) and vessels (cars, trucks, buses, ships, trains, and airplanes). However, the majority of NAFTA trade policy is concentrated around a few border crossings, with the Sweet Grass POE the dominant crossing between Montana and Canada.

U.S. trade with Canada is predominantly transported by truck[4]. Figure 17 (BTS 2009) shows the number of passenger vehicles and trucks crossing at the Sweet Grass POE. Since 1995 there have been more than 100,000 trucks crossing at Sweet Grass each year, which is about 30% of all traffic at this border crossing.



Source: BTS 2009

Figure 17: Vehicles Crossing at Sweet Grass, MT

3.4.2 Imports and Exports

The U.S. CBP is responsible for ensuring that all goods entering and exiting the United States are in accordance with all applicable U.S. laws and regulations. Therefore, U.S. CBP enforces import regulations and licensing requirements for other government agencies. For example, a large component of import and export responsibilities is the enforcement of economic sanctions and import restrictions. There are a wide variety of imports that are either restricted or not allowed within the U.S. These restrictions are generally on products such as: textiles, agricultural products, and conservation items such as ivory. Security plays a major role in the import policy as measures are taken to prevent terrorism, money laundering, false securities, and counterfeiting. These policies are put in place to safeguard public health and safety while still maintaining the flow of trade.

[4] Between 1997 and 2000, an average of 66% of all trade with Canada is transported by truck according to the Bureau of Transportation Statistics.

3.4.2.1 Customs Inspections & Security

Generally, imported goods may not legally enter the commerce of the United States until U.S. CBP has authorized delivery of the goods. The commercial import process can be described as a series of steps: entry, inspection, appraisement, and classification and liquidation (Congressional Research Service 2004). As part of the shipment inspection process, it must be determined whether:

- The shipment is properly marked to denote country of origin or other special designations required by law;
- The shipment contains prohibited articles;
- The shipment is properly described on the invoice;
- An excess or shortage of invoiced merchandise or goods exists; and
- If a duty is owed on the imported merchandise or goods.

Most policies are aimed at security and antiterrorism by interdicting the export of unreported currency from illicit activities; preventing international terrorist groups and rogue nations from obtaining sensitive and controlled commodities; and interdicting stolen vehicles and other stolen property. The physical inspection of cargo can be targeted or randomly selected for secondary inspection. This secondary inspection could involve a more detailed document check, passing the container through a radiation portal monitor, taking an x-ray or gamma ray image of the contents of the container, and/or the physical unloading and examination of the cargo itself.

3.4.2.2 24-Hour Borders

Not all major U.S. – Canada border crossings are open 24 hours. Major non-24 hour crossings can create routing or delay problems for passengers and freight as detours to the next 24 hour crossing could be very far away – 335 miles of straight-line distance between Sweet Grass and Raymond (432 miles by highway). The Canadian Chamber of Commerce (February 2008, pp. 35) recommends converting all major non-24 hour border crossings to 24 hour crossings, with facilities capable of conducting around the clock secondary searches.

3.4.2.3 Weight Restrictions

A governing Gross Vehicle Weight (GVW) limit of 131,060 pounds applies in Montana except for the special provision (Clayton and Blow, 1995) for a GVW of 137,500 pounds between Shelby, Montana and the Montana-Alberta border. This special provision under ISTEA (Clayton and Blow, 1995) allows vehicles operating at full weight limits, under the Roads and Transportation Association of Canada (RTAC), to access the intermodal facility in Shelby. Split tandem semi-trailers are allowed where permitted with a GVW of 86,000 pounds.

3.4.2.4 Licensing

Although the U.S. CBP enforces export regulations for various other government agencies, specific commodity licensing requirements are maintained by the lead agency. Other agencies issuing export licenses include, but are not limited to: U.S. Department of Commerce; Department of State; Bureau of Alcohol, Tobacco, Firearms and Explosives; Drug Enforcement Administration; Nuclear Regulatory Commission; and the Office of Foreign Assets Control.

3.4.2.5 Programs & Policies

- **Hazardous Material Endorsement (HME).** The HME is a security requirement for all drivers transporting hazardous material entering the U.S. Any placarded truck requires the driver to have an HME certification on their Commercial Drivers License (CDL); otherwise they will not be permitted to enter the U.S. (U.S. CBP November 2006).

- **Free and Secure Trade (FAST).** This bilateral program allows U.S., Canada, and Mexico approved partnering importers expedited release for qualifying commercial shipments. FAST lanes at border crossings allow for quick passage for approved drivers and shipments (U.S. CBP March 2005).

- **Shipper's Export Declaration (SED).** Exports of a single commodity with a value exceeding $2,500 must file a SED. The SED system has been automated and only electronic filings are acceptable through the Automated Export System (AES). SED filings, however, are not necessary for trade with Canada (U.S. CBP November 2006).

- **Automated Broker Interface (ABI).** ABI is a part of the Automated Commercial System (ACS) used by Customs to track, control, and process all commercial goods imported into the U.S. ABI is a voluntary program that allows qualified participants to file import data electronically with the U.S. CBP. Over 96% of all entries are filed through ABI (U.S. CBP 2008c, Trusted Traveler Programs).

3.4.2.6 Intelligent Transportation Systems at Border Crossings

The implementation of Intelligent Transportation Systems (ITS)[5] at border crossings is intended to improve safety and security while mitigating the effects of increased congestion. The opportunities for ITS include: enforcement of regulations, safety, data collection, and traffic management. The barriers to deployment are high costs, staffing needs to implement and operate, and a lack of regional-national strategies.

ITS is designed to aid commercial vehicle operations for improved safety and efficiency through monitoring truck compliance and movements. Through ITS applications, border crossings could integrate: preclearance, Vehicle Inspection Stations (VIS), Weigh-in- Motion (WIM), automatic data exchange, and administer commercial vehicle permits and licenses. In addition to security and congestion benefits, there are also environmental benefits through automatic vehicle identification at inspection stations which could reduce the number of commercial vehicle stops,

[5] Or Intelligent Transportation Border Crossing System (ITBCS)

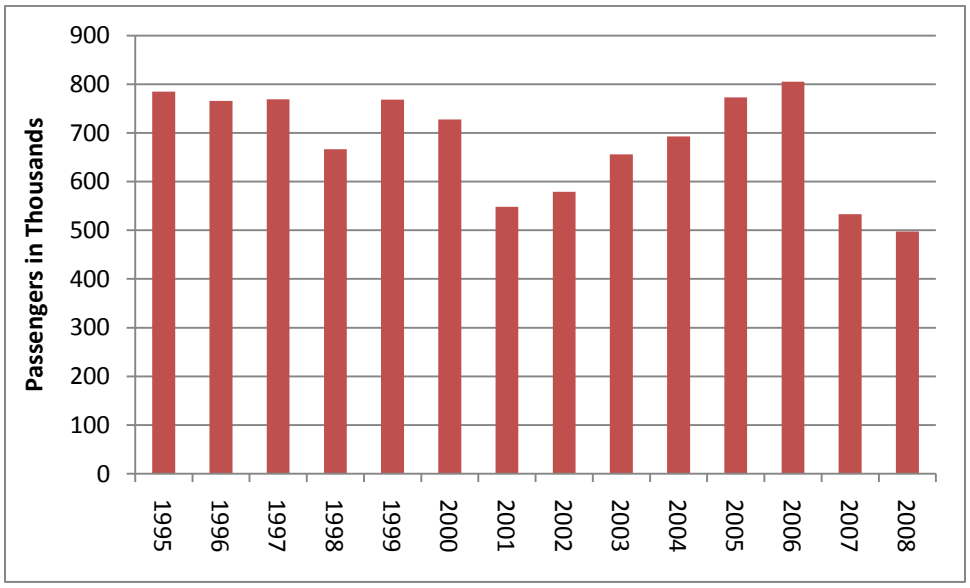
starts, and idling. The following are ITS pilot projects with Canada to increase border crossing efficiency and security:

- The Peace Bridge between Buffalo, NY and Fort Erie, Ontario. The ITBCS is a transponder based system that identifies common carriers, autos, etc. that cross the bridge.

- The Ambassador Bridge international border crossing between Detroit, Michigan and Windsor, Ontario. This project was formulated to develop and demonstrate a system that would allow pre-processed vehicles, trade goods, and commuters to pass through the border checkpoints with expedited processing. The system is designed to identify trucks, crews, cargo, and commuter vehicles, and quickly process them using electronic toll payment systems.

3.4.3 Passenger Traffic

On a typical day, the U.S. CBP welcomes and processes more than 1.1 million international travelers into the United States at land, air and sea ports. Figure 18 (BTS 2009) shows the total annual passengers at the Sweet Grass border crossing. Train and bus passengers represent less than 4% of the total passenger travel across Sweet Grass. Considering the volume of passengers at this crossing alone, U.S. CBP's objective is to efficiently maintain the flow of passengers while still maintaining security and safety.



Source: BTS 2009

Figure 18: Total Annual Passengers at Sweet Grass POE

Passenger processing policies include: (a) enforcing travel control of citizens and aliens: qualifying admission, apprehension, and detention of aliens; and (b) recording aliens and citizens

arriving or departing. Passengers are required to declare certain items when crossing the border including[6]:

- Items purchased in another country and returning to the U.S.;
- Items received as gifts or inherited;
- Items bought in duty-free shops;
- Items brought home for someone else;
- Items intended for sale or use for business purposes; and
- Over $10,000 in U.S. or Canadian currency.

3.4.3.1 Recent Policy Changes to Passenger Traveler Documents

U.S. and Canadian citizens ages 19 and older traveling across the U.S.-Canada border are asked to present documents to prove their identity and citizenship. An oral declaration is no longer sufficient and passengers could be delayed as Customs and Border Protection officers attempt to verify their identity and citizenship. Instead, travelers are asked to present documents from one of the options below when entering the United States at land or sea ports of entry. U.S. and Canadian Citizens have two acceptable options for identification (U.S. CBP 2008c)[7]:

- **A single document option** such as a U.S. or Canadian Passport, Trusted Traveler Cards, U.S. Passport Card, Enhanced Driver's License (EDL), or U.S. Military Identification with Military Orders.
- **Nexus Program option,** under the Western Hemisphere Travel Initiative (WHTI), is an alternative inspection program to expedite prescreened travelers through border crossings:
    - Approved applicants are issued a photo-identification, proximity Radio Frequency Identification (RFID) card.
    - Originally intended for air travel, participants will either present their NEXUS card or have their iris scanned and make a declaration.
    - The Nexus Program has been extended and incorporated land travel on June 1, 2009.
- **U.S. and Canadian citizen children** ages 16 and under may also present a Citizenship Card, Naturalization Certificate, or birth certificate issued by a Federal, state, provincial, county or municipal authority. U.S. and Canadian citizens under age 19 traveling with a school group, religious group, social or cultural organization, or sports team may also

[6] See www.cbp.gov for complete list of items that must be declared
[7] See www.cbp.gov for complete list of acceptable identification options

present a Citizenship Card, Naturalization Certificate, or birth certificate issued by a Federal, state, provincial, county or municipal authority.

U.S. and Canadian citizen children ages 18 and under will be expected to present a birth certificate issued by a Federal, state, provincial, county or municipal authority.

4 EXISTING AND FUTURE ECONOMIC CONDITIONS AND TRENDS

4.1 Introduction

The western Canadian provinces have been experiencing significant growth over the past decade, especially in light of high commodity prices, including oil. The sources of growth for each of Canada's western provinces are different, however, with Alberta benefiting from the steady rise in oil prices, resulting in an oil-induced boom in most sectors of the economy. In Saskatchewan, on the other hand, about 95% of all goods produced in the province directly depend on its basic resources, including grains, oil and gas, potash, uranium and wood, in addition to their refined products. Higher commodity prices have facilitated the province's economic development.

Montana, which borders three Canadian provinces, represents a vital surface link between the United Sates and a number of these growing markets, especially the provinces of Alberta and to a lesser extent Saskatchewan and British Columbia. Consequently, with economic growth comes increased demand for goods movement and transportation services. With that in mind, this chapter assesses key economic indicators and industrial sectors in addition to trade conditions in Alberta, Saskatchewan, and (to a lesser extent) British Columbia, as well as Montana.

As documented in TranPlan 21's Economic Development Policy Paper (MDT 2007, 28), challenges for the Montana economy include distance to markets and the relatively low population and economies of Montana and its neighboring U.S. states. This is in contrast to the larger provinces and cities in Western Canada including Calgary and Edmonton. This suggests the importance of enhancing the connectivity and mobility between Montana and Canada.

Section 4.2 of this chapter assesses regional economic trends in the three western Canadian provinces in addition to those in the state of Montana in order to identify historical patterns of growth and emerging trends. The evaluation includes demographic trends across the region, including population growth and population centers. Economic trends such as labor force and employment patterns across the region as well as employment by industry are also examined to determine each industry's relative importance. Growth in income and wages is also investigated including provincial GDP growth and shares by industry.

Section 4.3 provides a detailed analysis of key industry sectors, including mining, agriculture, construction, manufacturing, tourism and trade. Critical statistics for each sector, such as employment, earnings as well as major projects, are used to understand emerging trends and their impact on transportation requirements. Section 4.4 focuses on trade flows by commodity, value and mode. Trade flows analysis uses Bureau of Transportation Statistics (BTS) data, and examines patterns of trade between the United States and Canada across the Montana border to investigate the types, sources, destinations and modes of commodity flows across the Montana border. Of major interest to this study are truck-generated commodity flows, which have a direct impact on northern Montana's ports and road infrastructure.

The aim of this chapter is to determine whether recent economic growth is sustainable and would require improvements to existing border crossing infrastructure or operational capacity, along with the corresponding North-South highway corridors. Finally, the outcome of this chapter will

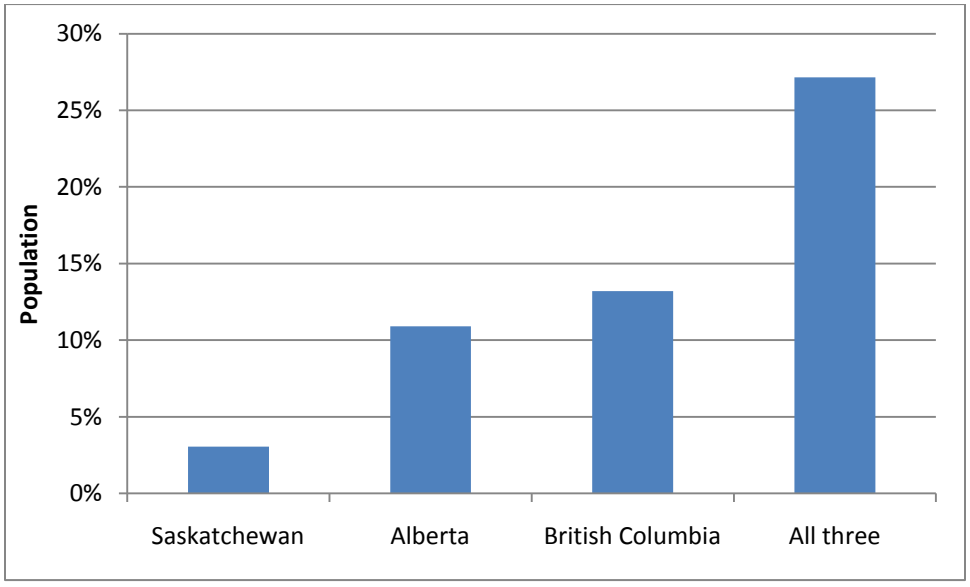
facilitate the estimation of demand for transportation services and its impact on existing point of entries and highways across northern Montana.

4.2 Overview of the Regional Economy

This section provides an overview of the regional economy in terms of demographic and economic development related to employment, income, and industry trends. The analysis covers the three relevant Canadian provinces – Alberta, Saskatchewan, and British Columbia in addition to the state of Montana.

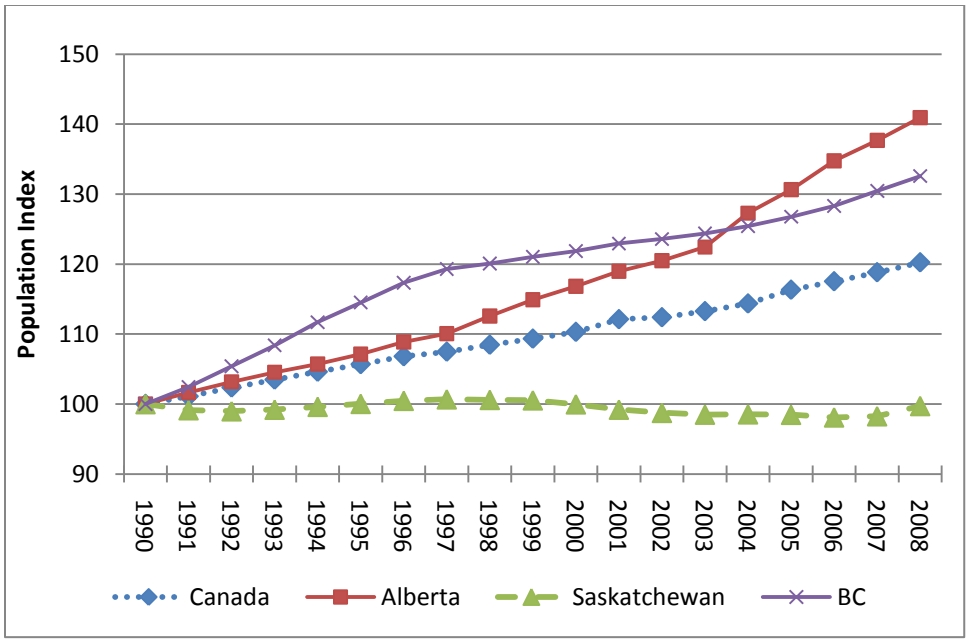
4.2.1 Demographic Trends

The three western Canadian provinces bordering the state of Montana have a total population of over 9 million residents (2008), representing some 27 percent of the population of Canada, as seen in Figure 19 (Statistics Canada 2008b, Annual Demographic Statistics: 2008). While Canada's total population has increased by 20 percent over the past 18 years (1990-2008), Alberta's population rose by double that amount, increasing by 41 percent. Meanwhile Figure 20 shows British Columbia's population grew by 33 percent, while that of Saskatchewan remained mainly flat since 1990 (Statistics Canada 2008b, Annual Demographic Statistics: 2008).



Source: Statistics Canada 2008b, Annual Demographic Statistics: 2008

Figure 19: Share of Canada's Population (2009)

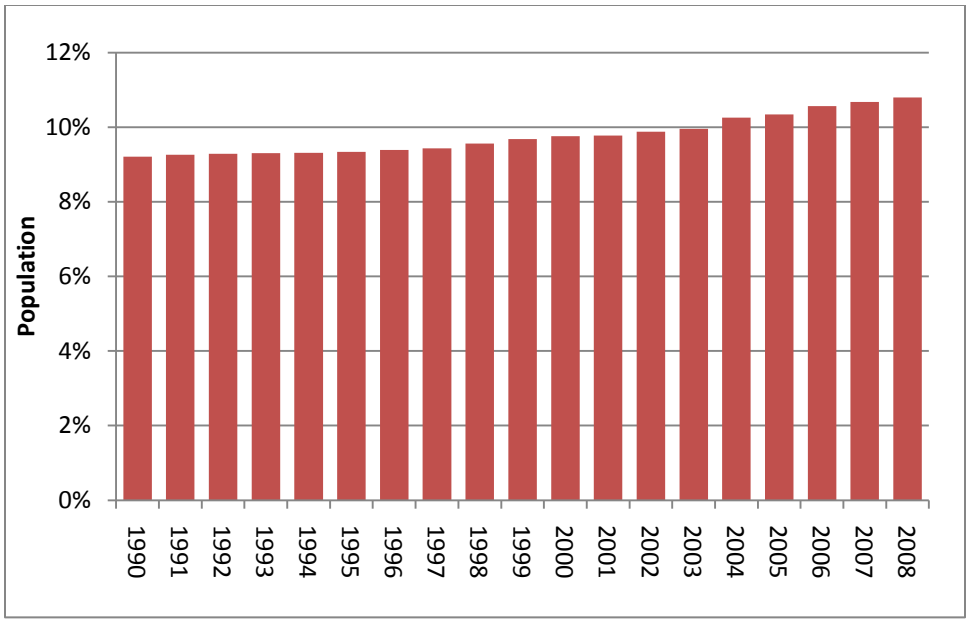


Source: Statistics Canada 2008b, Annual Demographic Statistics: 2008

Figure 20: Index of Canadian Population Growth

The dynamics of population growth among the three provinces vary significantly and are affected by local conditions pertaining to each province. In British Columbia, population growth averaged 2.6 percent annually during the early 1990s, reflecting an influx of immigrants, as Vancouver reasserted itself as Canada's gateway to Asia. During the same period, Canada's overall population grew at an annual 1 percent rate (Statistics Canada 2008b, Annual Demographic Statistics: 2008), while Alberta's population growth was slightly higher at 1.4 percent (see Figure 20). Over the past 18 years, British Columbia's population has expanded to over 13 percent of Canada's total population from 12 percent in 1990.

Alberta's population growth picked up in 1998 as the oil and gas industry expanded, resulting in an influx of migrants from across Canada and around the world. During the 10 year period (1998-2008) Alberta's population expanded at an annual average of 2.3 percent compared to Canada's and British Columbia's 1.0 percent average annual growth rate during the same period. Additionally, Alberta's population growth accelerated further over the past four years (2004-2008) to average at 2.9 percent annually as migrant workers flocked to Alberta to fill positions across the province created by the increased investment in oil sands on the back of rising oil prices. As a result, Alberta's population now represents 10.8 percent of Canada's total population, compared to 9.2 percent 18 years ago, as seen in Figure 21 (Statistics Canada 2008b, Annual Demographic Statistics: 2008).

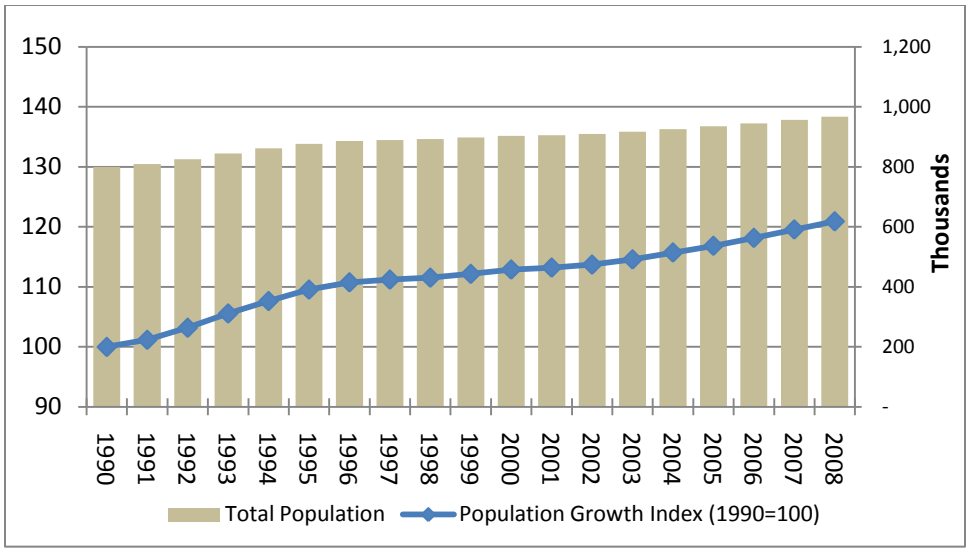


Source: Statistics Canada 2008b, Annual Demographic Statistics: 2008

Figure 21: Alberta's Share of Canada's Population

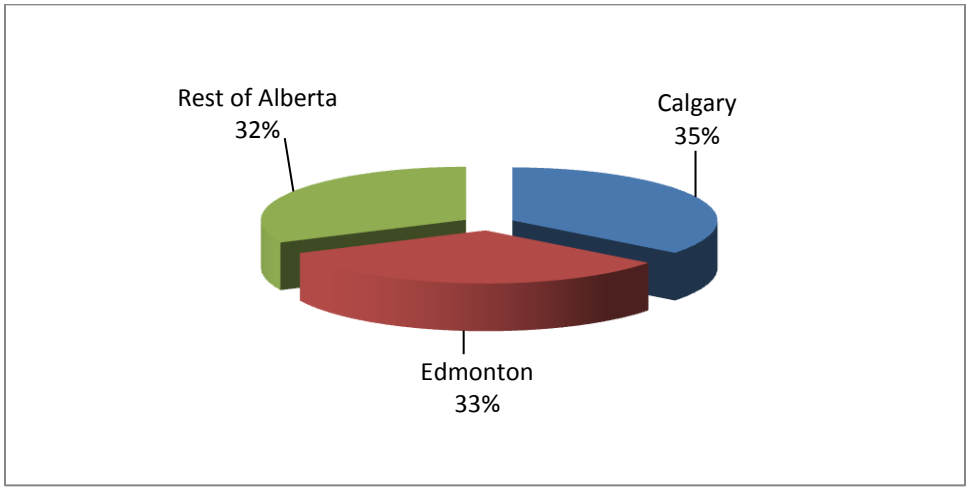
Meanwhile across the border, as shown in Figure 22 (U.S. Census Bureau 2008), Montana's population grew at an annual average of 1.06 percent between 1990 and 2008, on par with the annual average growth rate for the U.S. at 1.1 percent during the same period. As a result, Montana's share of the U.S. population remained at 0.3 percent of total for much of the past 18 years.

Alberta's population is concentrated in two main metropolitan areas, namely Calgary and Edmonton, which together represent 68 percent of the province's population, see Figure 23 (Statistics Canada 2007). Both regions are within a six-hour drive to the Montana border, Alberta's direct land link with the U.S. In British Columbia, the southwest region including metropolitan Vancouver represents the province's major population center. British Columbia is most directly and frequently linked to the U.S. by land through Washington State with a border crossing into Montana at Roosville. Saskatchewan's major population centers include Saskatoon and Regina, which account for 48 percent of the province's total population.



Source: U.S. Census Bureau 2008

Figure 22: Montana's Population Growth



Source: Statistics Canada 2007

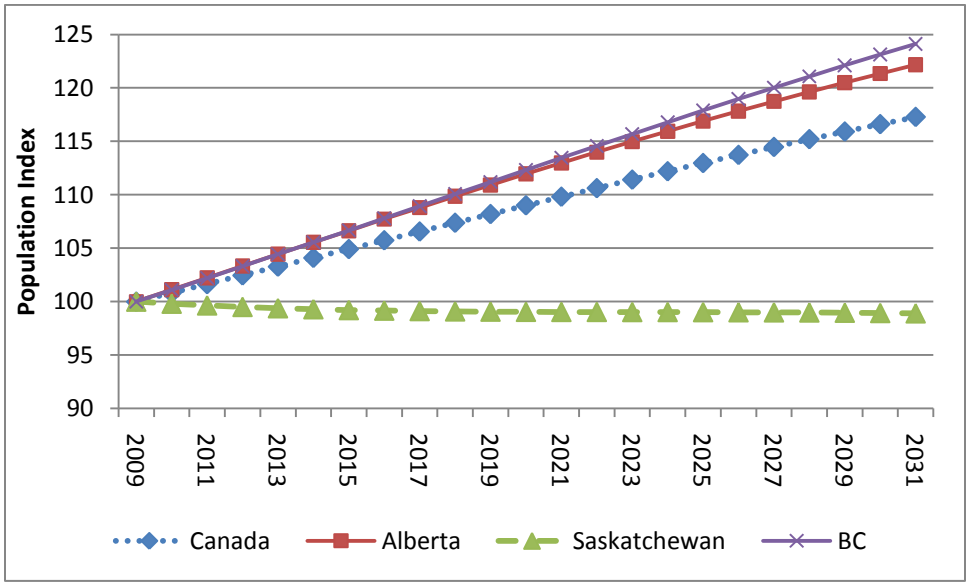
Figure 23: Alberta's Population Centers (2006)

Population data for Western Canada's population centers from 2006 is shown in Table 18 (Statistics Canada 2007). Statistics Canada (2005) projections estimate that between 2009 and 2031, the population of Alberta will grow by 22.2 percent while Canada's overall population will grow by 17.3 percent, as shown in Figure 24. Similarly, British Columbia's population is expected to grow by 24.1 percent between 2009 and 2031, while Saskatchewan's population growth will decline by 1.1 percent. These forecasts are consistent with historical levels and are based on mid-range assumptions for natural rate of population growth and immigration trends. On an annual basis, Alberta's population is forecast to grow on average by 1.1 percent through 2014, compared to Canada's forecast national average of 0.8 percent during the same period.

Table 18: Western Canada Population Centers

2006 Census Data	Population	Percent Share
Alberta	**3,290,350**	**100**
Calgary	1,079,310	33
Edmonton	1,034,945	31
Rest	1,176,095	36
Saskatchewan	**985,386**	**100**
Regina	194,971	20
Saskatoon	233,923	24
Rest	556,492	56
British Columbia	**4,113,487**	**100**
Vancouver	2,116,581	51
Victoria	330,088	8
Rest	1,666,818	41

Source: Statistics Canada 2007



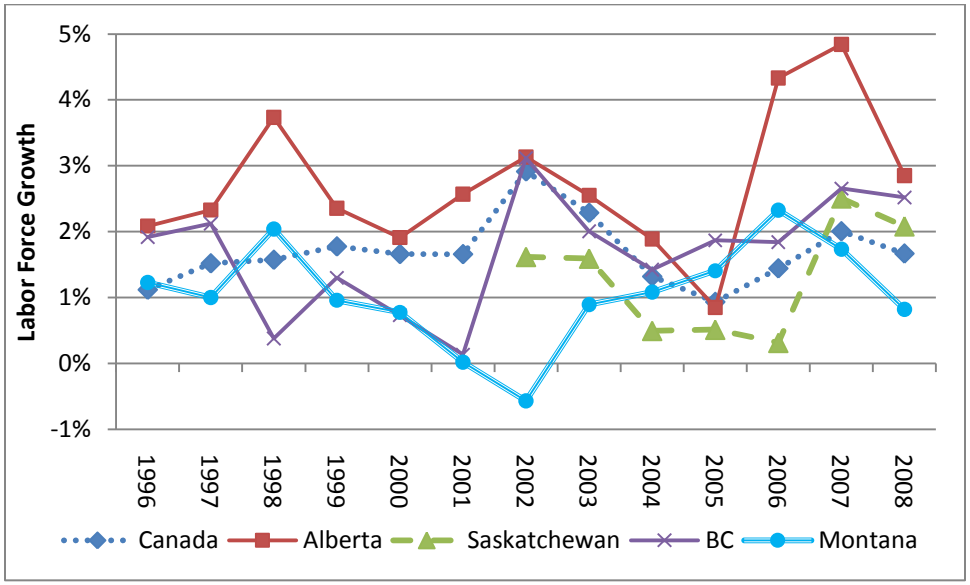
Source: Statistics Canada 2005

Figure 24: Canadian Population Growth Projections Index

4.2.2 Economic Trends

4.2.2.1 Labor Force & Employment

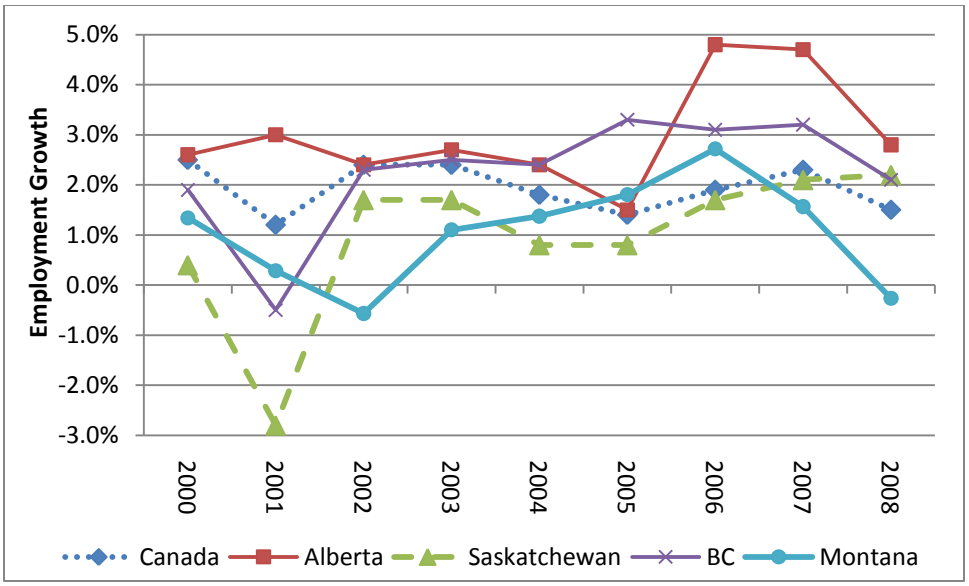
In 2008, the three western Canadian provinces accounted for 28 percent of Canada's labor force, with British Columbia making up 13.3 percent of the total while Alberta stood at 11.4 percent and Saskatchewan made up 2.9 percent of Canada's labor force (Statistics Canada 2008c, Labour Force Survey [LFS]). Over the ten year period ending in 2008, Canada's labor force has expanded by 19.2 percent, yielding an annual average of 1.7 percent growth. Alberta's labor force grew by 30.8 percent between 1998 and 2008, resulting in an average annual growth rate of 2.8 percent. Owing to high oil prices and the resulting surge in oil-related investments, 2006 and 2007 witnessed the most significant increases in Alberta's labor force, rising by 4.3 and 4.8 percent, respectively. In the 10-year period ending 2008, Montana's labor force has increased by 9.8 percent for an annual average of 1.0 percent, as seen in Figure 25 (BLS 2008b, Current Population Survey [CPS]).



Source: Statistics Canada 2008c, LFS, & BLS 2008b, CPS

Figure 25: Labor Force Growth

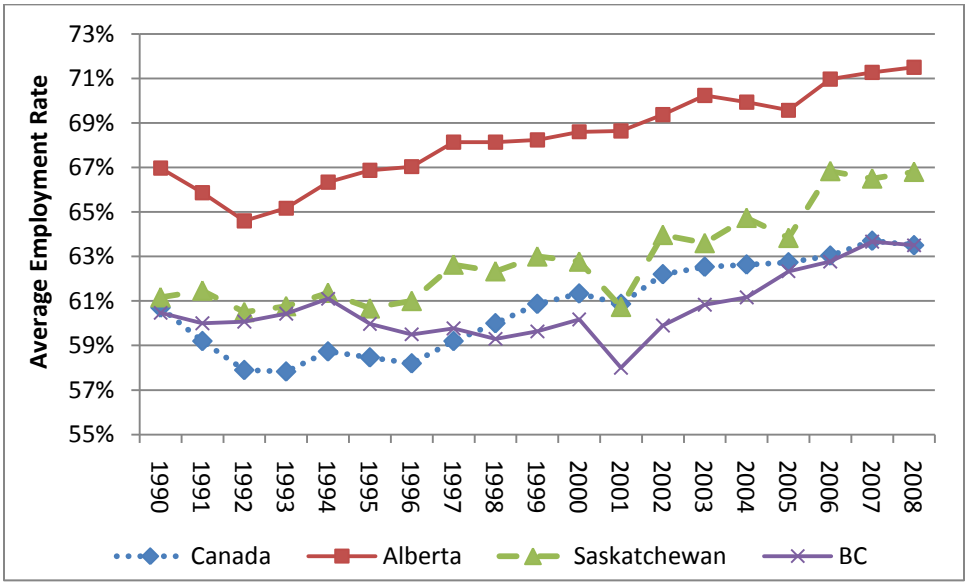
Following the economic slowdown in 2001, Canada's employment growth averaged around 2 percent annually during the 2002-2008 period, while British Columbia's was higher at 2.7 percent and Alberta's employment growth was the highest in Canada averaging 3 percent annual growth during the same period. Consistent with the labor force trend, Alberta's employment growth was particularly robust in 2006 and 2007 (Statistics Canada 2008c, LFS), see Figure 26. With declining oil prices and the global economic slowdown in 2008, employment growth in Alberta slowed down to roughly its long-term trend of 2.8 percent annual growth. Employment growth in Montana averaged at 1.1 percent annually during the 2000-2008 period (BLS 2008b, CPS).



Source: Statistics Canada 2008c, LFS, & BLS 2008b, CPS

Figure 26: Employment Growth

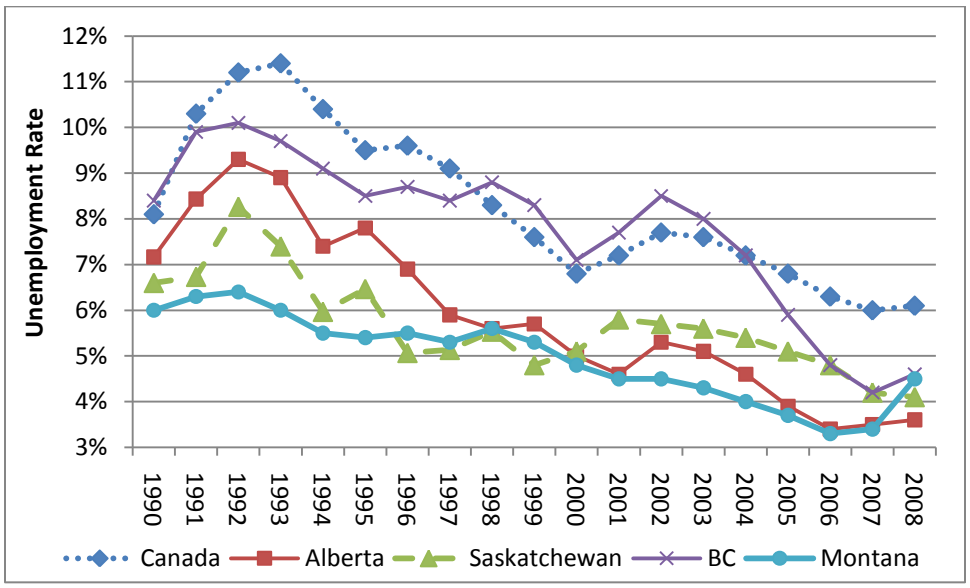
Alberta has consistently enjoyed the highest employment rates in Canada over the past three decades, as seen in Figure 27 (Statistics Canada 2008c, LFS). Alberta's employment rate (defined as the number of persons employed expressed as a percentage of the population 15 years of age and over) hit a record high of 71.5 percent in 2008. This record high came on the heels of strong job growth, which has averaged a healthy 3 percent per year since 1993, when the most recent upward trend in employment started. From 1990 to 2008, Alberta's employment rate averaged 68.3 percent annually, while Canada's national annual average stood at 60.7 percent over the same 18-year period. At the same time, British Columbia's employment rate was similar to that of the national average, while Saskatchewan's annual average stood at 62.9 percent.



Source: Statistics Canada 2008c, LFS

Figure 27: Average Employment Rate

Owing to high employment growth, Alberta's unemployment rate has remained lower than the Canadian national average over the past three decades (Figure 28). With Canada's national unemployment rate steadily declining since the early 1990s, Alberta's unemployment followed suit, reaching a low of 3.6 percent in 2008, compared to the 6.1 percent national average (Statistics Canada 2008c, LFS). Similarly, Saskatchewan has also enjoyed a lower unemployment rate than the national average. Saskatchewan benefits from an abundant and diversified array of resources including uranium, gold and base metals in the north; oil and gas, potash, coal and diamonds in the south; as well as timber throughout the province and agri-products including wheat. Meanwhile, Montana's unemployment rate has declined from 6 percent in 1990 to as low as 3.3 percent in 2006. More recently, however, the unemployment rate in Montana has increased as the U.S. economy fell into recession (BLS 2008c, Local Area Unemployment Statistics [LAUS]). Still, Montana's unemployment rate was below those in western Canada for most of the 18-year period.



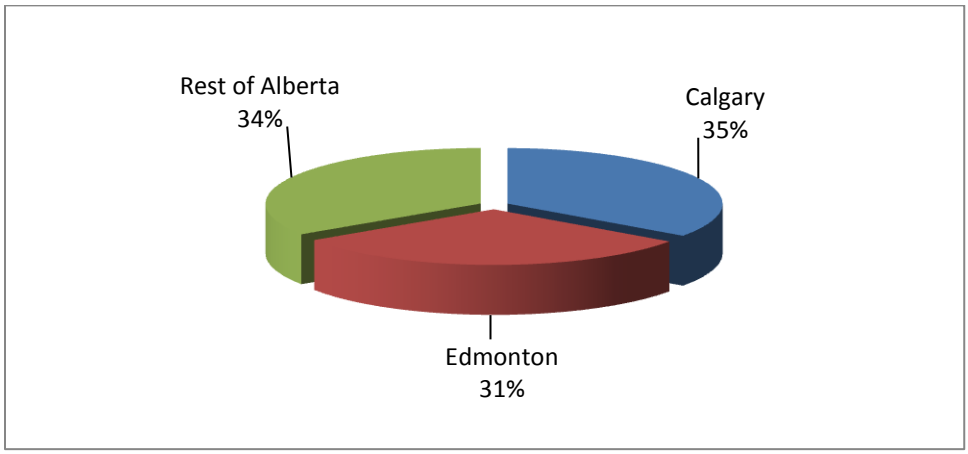
Source: Canada 2008c, LFS, & BLS 2008c, LAUS

Figure 28: Unemployment Rates

Similar to the centers of population, Alberta's economic centers are concentrated within the two major metropolitan regions of Calgary and Edmonton, which account for 66 percent of the province's total employment, see Figure 29 (Statistics Canada 2007). While Alberta's economic activity growth over the past two decades has been natural resources-driven, the resulting employment expansion was much broader. With the majority of resource-driven activities taking place in remote parts of the province, associated economic development in a wide range of sectors led to employment growth in Alberta's two major metropolitan regions.

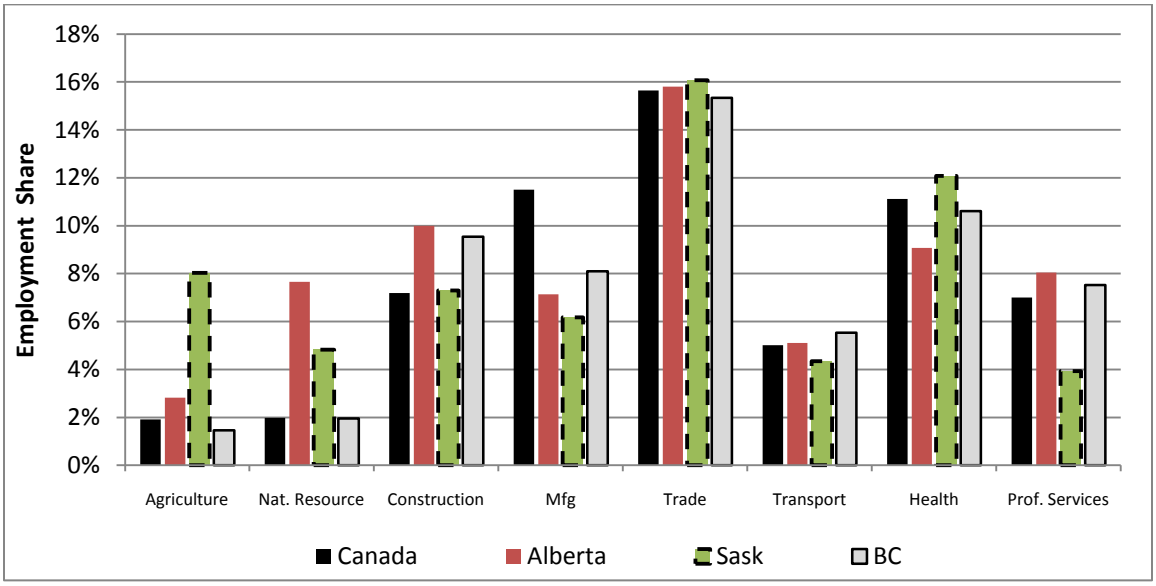
In terms of employment by industry across Canada, as shown in Figure 30 (Statistics Canada 2008c, LFS), trade-related jobs represent the highest source of employment, followed by manufacturing, health services and construction. There are, however, marked differences among the three western provinces in terms of employment by industry reflecting a differing economic base. For example, Alberta's natural resources employment represents 7.7 percent of total employment compared to Canada's national average of 2 percent. On the other hand, agriculture

employment accounts for 8 percent of Saskatchewan's employment compared to 1.9 percent across Canada. Additionally, while Canada's economy is being transformed into a service-sector oriented economy, manufacturing employment accounts for 11.5 percent of jobs nationwide. Across the western provinces, however, manufacturing is less prominent with employment in that sector accounting for 6.2, 7.1 and 8.1 percent in Saskatchewan, Alberta and British Columbia, respectively. Similarly, Figure 31 shows in Montana, the manufacturing sector represents 4.1 percent of total employment in the state, while trade, transportation and utilities account for over 19 percent of employment (BLS 2008a, Current Employment Statistics [CES]).



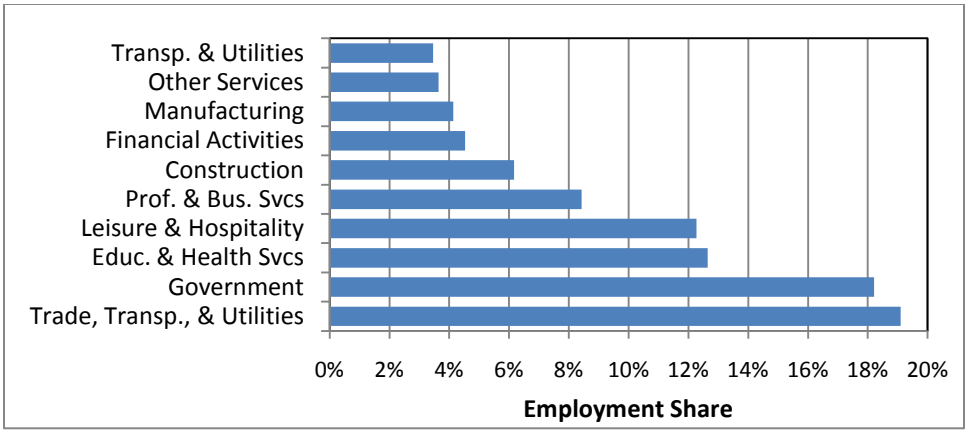
Source: Statistics Canada 2007

Figure 29: Alberta Employment Centers (2008)



Source: Statistics Canada 2008c, LFS

Figure 30: Canadian Employment Share by Industry (2008)



Source: BLS2008a, CES

Figure 31: Montana Employment Share by Industry (2008)

Location quotients measure the relative concentration of an industry in an area compared to the country as a whole. If the location quotient is above 1, the industry is more concentrated in the region than in the country as a whole (and vice versa). The greater the number is, the more relatively concentrated the industry. Table 19 uses data from Statistics Canada's LFS (2008c) to show how the industry concentrations vary among the three provinces. Numbers in bold represent industries with higher concentrations. For example, Alberta and Saskatchewan have a higher concentration of good-producing industries, while British Columbia has a higher concentration of services-producing industries. The agricultural sector is much more highly concentrated in Saskatchewan, while the forestry, fishing, mining, oil and gas sectors have a higher concentration in Alberta.

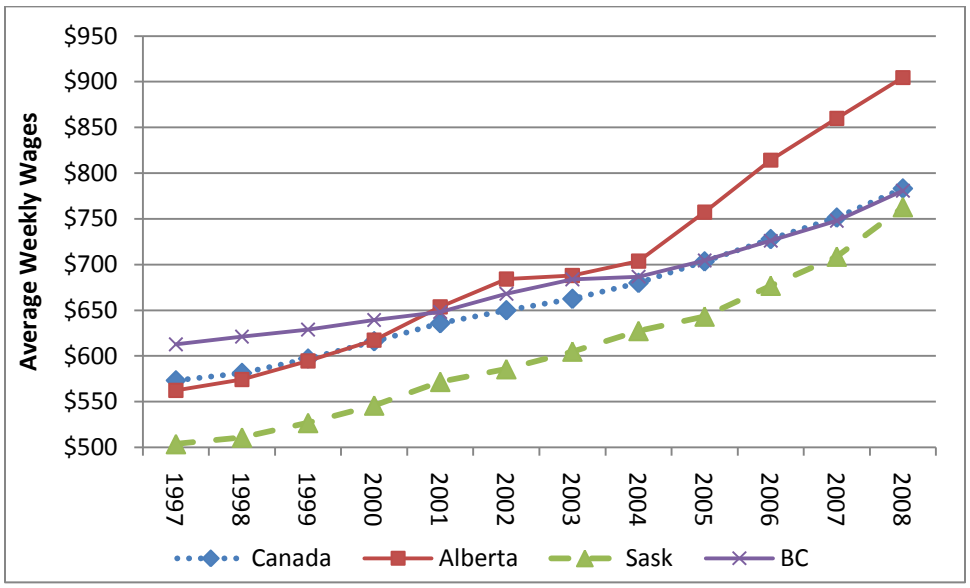
Table 19: Industry Location Quotients by Province (2008)

	Alberta	Saskatchewan	BC
Goods-producing sector	**1.21**	**1.16**	0.92
Agriculture	**1.48**	**4.20**	0.76
Forestry, fishing, mining, oil and gas	**3.86**	**2.43**	0.99
Utilities	0.93	**1.12**	0.69
Construction	**1.39**	**1.01**	**1.33**
Manufacturing	0.62	0.54	0.70
Services-producing sector	0.94	0.95	**1.02**
Trade	**1.01**	**1.03**	0.98
Transportation and warehousing	**1.02**	0.87	**1.10**
Finance, insurance, real estate and leasing	0.90	0.94	**1.01**
Professional, scientific and technical services	**1.15**	0.56	**1.07**
Business, building and other support services	0.78	0.60	**1.09**
Educational services	0.97	**1.10**	**1.00**
Health care and social assistance	0.82	**1.09**	0.95
Information, culture and recreation	0.82	0.91	**1.15**
Accommodation and food services	0.96	0.94	**1.23**
Other services	0.98	**1.06**	**1.00**
Public administration	0.76	**1.06**	0.82

Source: HDR Calculations from Statistics Canada 2008c, LFS
Numbers in bold represent Industries with higher concentrations.

4.2.2.2 Income & Wages

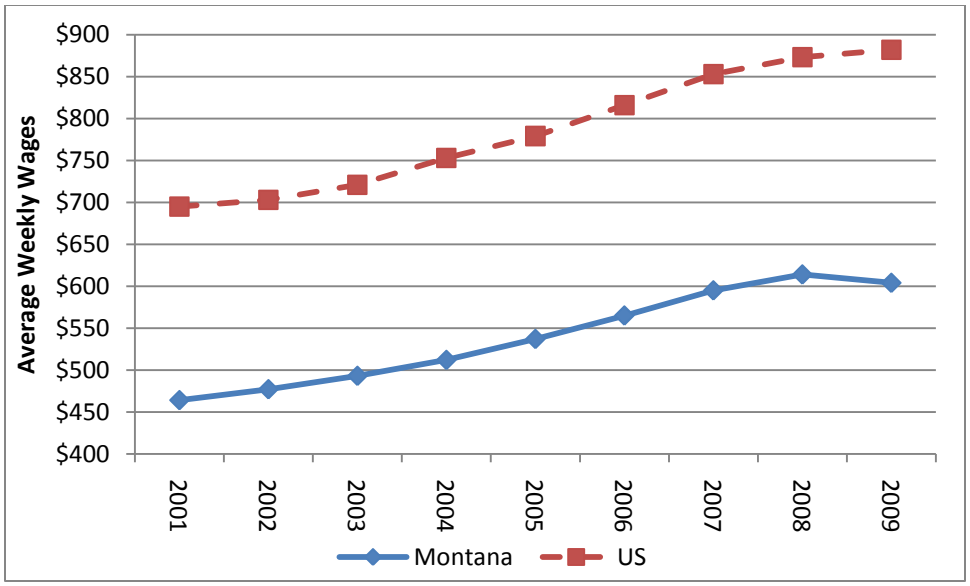
Personal income and wages directly impact the regional demand for goods and services and thus influence the volume of trade in northern Montana and western Canada, particularly in consumer goods. Canadian average weekly wages have increased an annual average rate of 2.9 percent over the past ten years, while those of Alberta rose at a much higher 4.3 percent annual average during the same period to outpace the Canadian national average, as seen in Figure 32 (Statistics Canada 2008c, LFS). Saskatchewan has also experienced a significant growth in wages especially over the past three years.



Source: Statistics Canada 2008c, LFS

Figure 32: Canadian Average Weekly Wage Rates

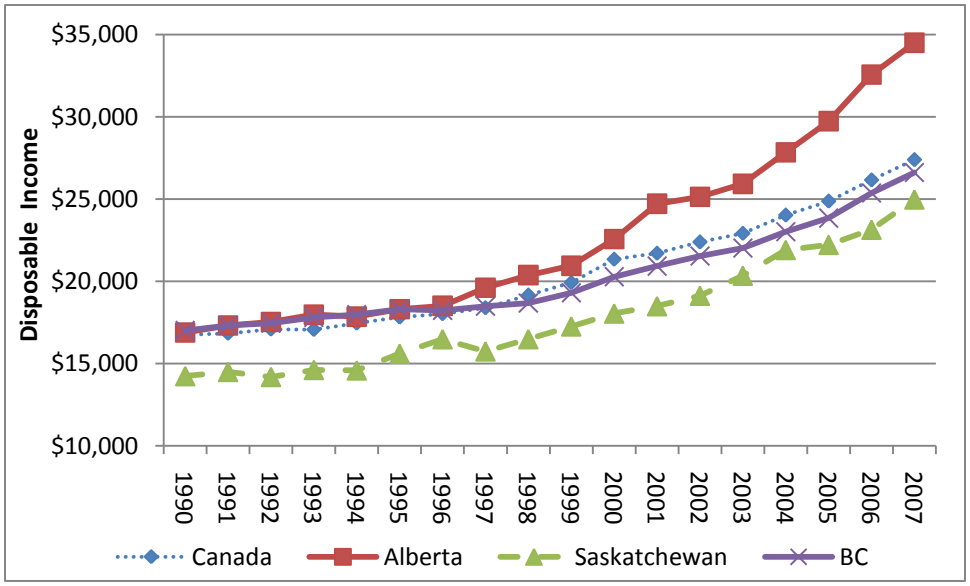
Meanwhile, Figure 33 shows Montana's average weekly wage rate grew at an average annual rate of 2.9 percent during the period 2002-2008, below that of the U.S. national average, which stood at 4 percent during the same period (BLS 2008b, CPS).



Source: BLS2008b, CPS

Figure 33: U.S. and Montana Average Weekly Wages

The rise in weekly wages is also reflected in the growth of personal disposable income per person (after-tax per capita income), which expanded by an annual average of 3 percent nationally over the past 18 years. Alberta, on the other hand, has experienced a much higher rate of income growth amounting to an annual average of 4.3 percent since 1990, consistent with wage growth, as shown in Figure 34 (Statistics Canada 2008c, LFS).

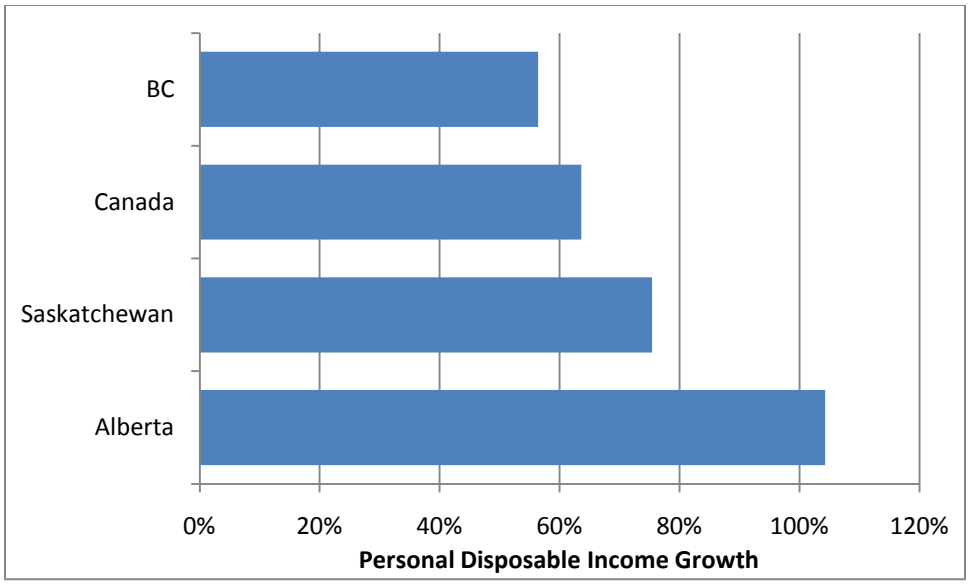


Source: Statistics Canada 2008c, LFS

Figure 34: Personal Disposable Income per Person

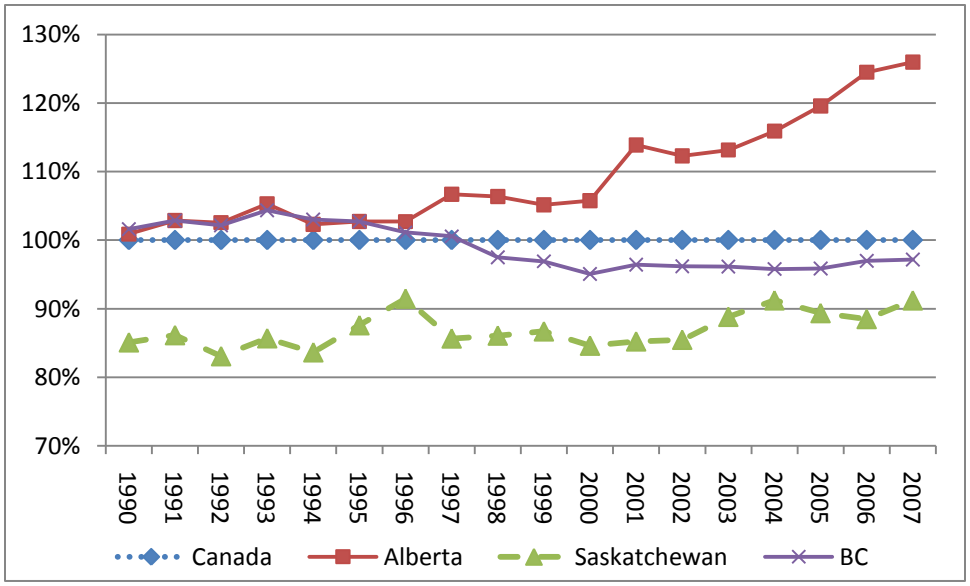
From 1990 to 2007, Alberta's per capita disposable income has more than doubled, followed by Saskatchewan at 75 percent increase, both of which are higher than the 65 percent increase in Canada's national per capita disposable income (Figure 35). As a result of these varying growth

rates, Alberta's per capita disposable income has increased from 100 percent to 126 percent of the Canadian national average over the past 18-year period (Statistics Canada 2008c, LFS). On the other hand, British Columbia's per capita disposable income as a percent of the Canadian national average fell to 96 percent, while Saskatchewan's per capita income grew slightly to 91 percent of Canada's national per capita disposable income average (Figure 36).



Source: Statistics Canada 2008c, LFS

Figure 35: Growth in Personal Disposable Income per Person (1990-2007)

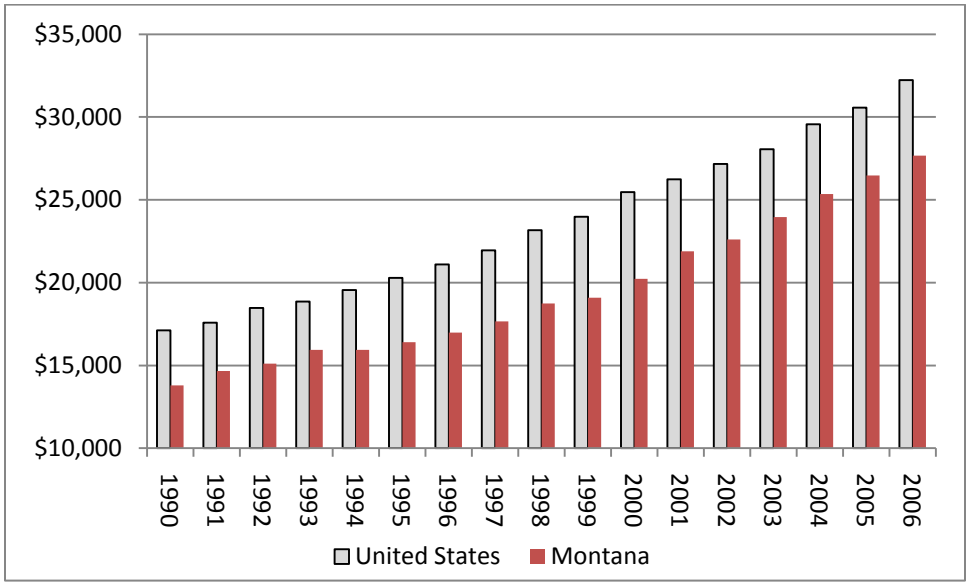


Source: Statistics Canada 2008c, LFS

Figure 36: Personal Disposable Income per Person as a Percent of Canadian Average

Montana's per capita disposable income, while still below the U.S. national average, has increased at an annual average of 4.5 percent from 1990 to 2006, above the U.S.'s annual average of 4.0 percent during the same period (BEA 2009b, Regional Economic Accounts). The

gap between the U.S. and Montana's personal disposable income per person can be seen in Figure 37.

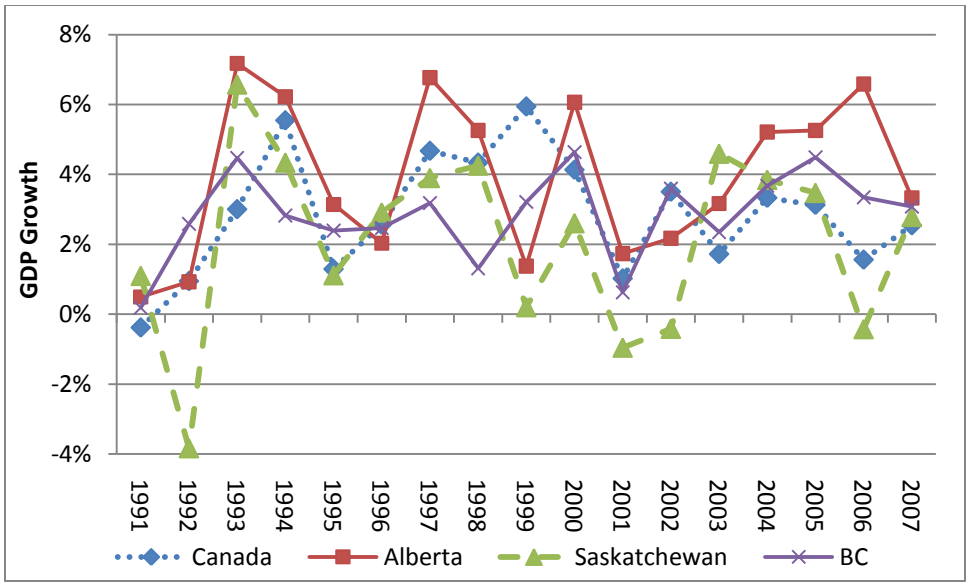


Source: BEA 2009b, Regional Economic Accounts

Figure 37: Personal Disposable Income per Person in the U.S. and Montana

4.2.2.3 Gross Domestic Product (GDP) Trends

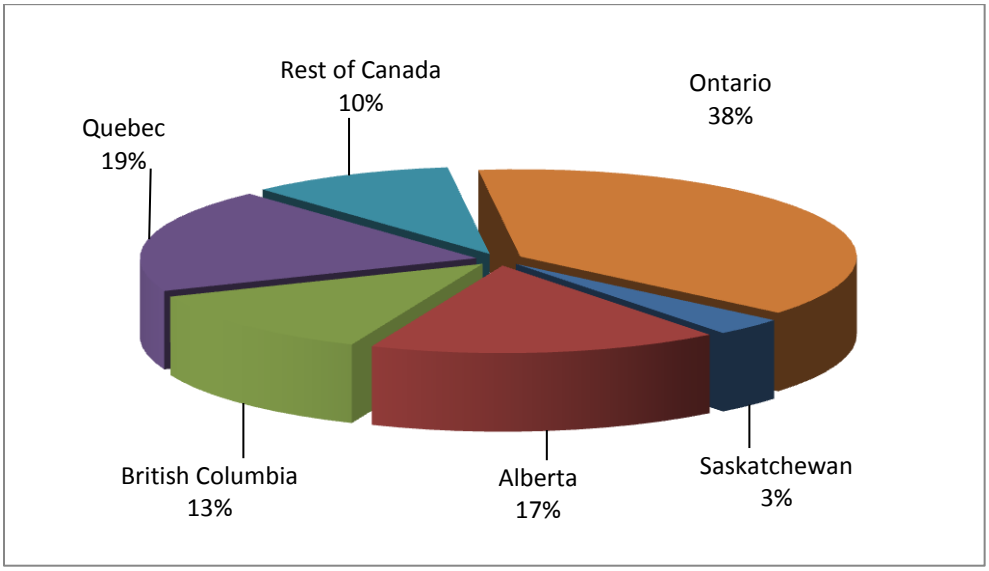
Provincial Gross Domestic Product (GDP) is similar in concept to national level GDP and is considered the most accurate indicator of total economic production (value-added). Historical GDP trends (overall and by industry) are directly used in the Chapter 5 forecasting methodology and thus represent a critical element of the data used in this research. While Canada's GDP has expanded an annual average rate of 2.9 percent (in real terms) during the period 1991-2007, that of Alberta experienced a higher growth level amounting to 3.9 percent annually during the same period (Figure 38). British Columbia's GDP expanded at the same average annual level as Canada's growth rate, while Saskatchewan's GDP growth averaged 2.1 percent per year over the last 17 years (Statistics Canada 2008d, National Economic Accounts). Alberta's GDP growth is partly attributable to the province's high labor productivity, measured as real GDP per hours worked in constant 2002 dollars. Alberta's labor productivity stood at $48.20 in 2007, compared to Canada's national average of $41.07 and the highest among Canadian provinces.



Source: Statistics Canada 2008d, National Economic Accounts

Figure 38: Canadian Annual Real GDP Growth Rates

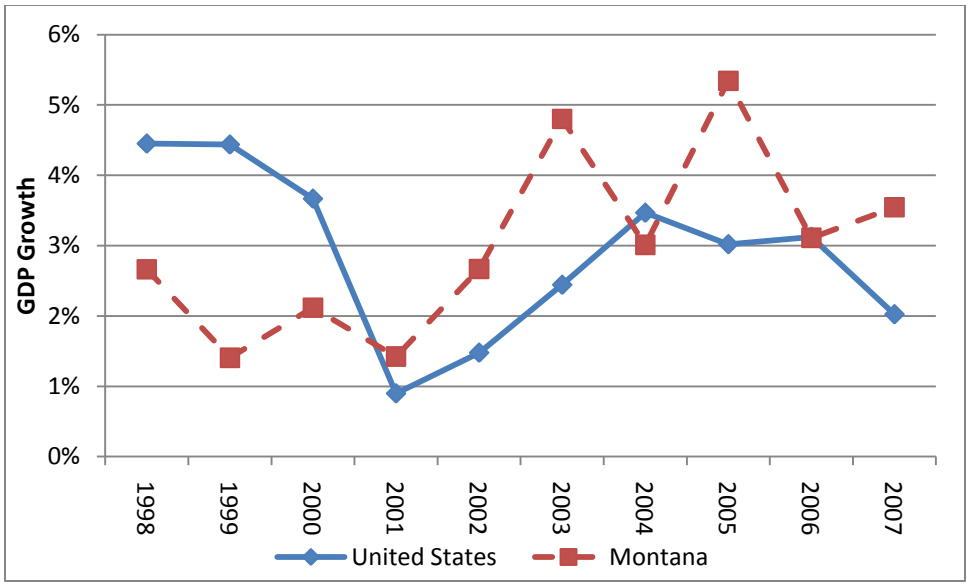
Alberta's share of Canada's GDP stood at 17 percent in 2007, up from 12 percent in 1990, indicating an expansion in economic activity as illustrated by earlier economic indicators. Meanwhile British Columbia's share has increased marginally to 13 percent in 2007 from 12 percent in 1990. Saskatchewan's share on the other hand has remained at 3 percent of Canada's overall GDP during the same period (Figure 39).



Source: Statistics Canada 2008d, National Economic Accounts

Figure 39: Share of GDP by Province

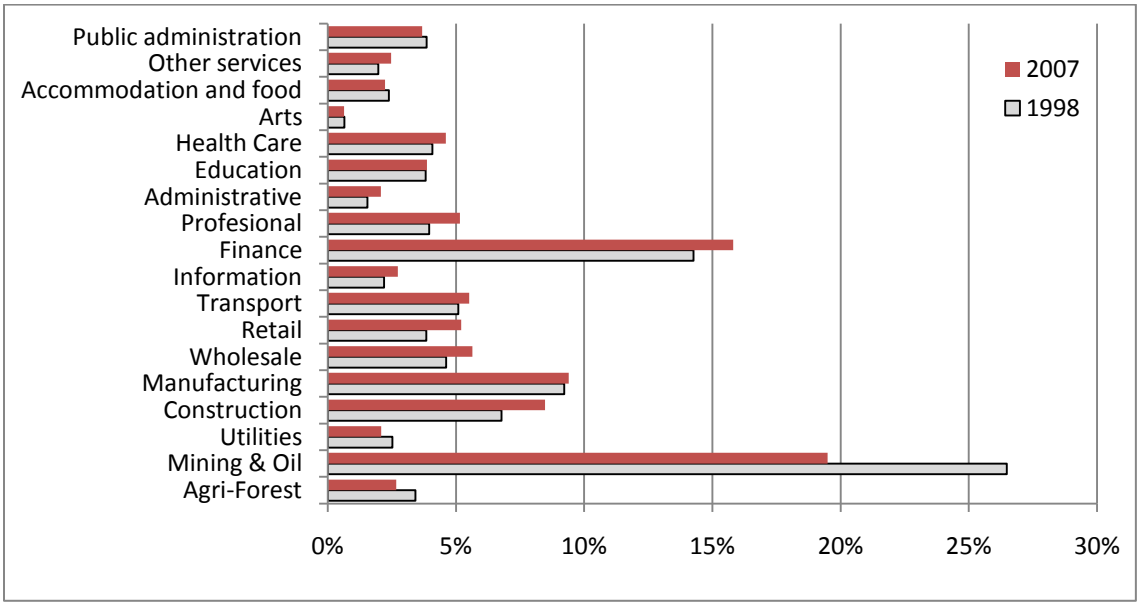
Across the border, Montana's GDP, which represents 0.23 percent of the United States total, has been growing at an annual average rate of 3.0 percent over the past decade (BEA 2009a, National Economic Accounts), slightly above that of the U.S. which averaged at 2.9 percent (Figure 40).



Source: BEA 2009a, National Economic Accounts

Figure 40: U.S. and Montana's Annual Real GDP Growth Rates

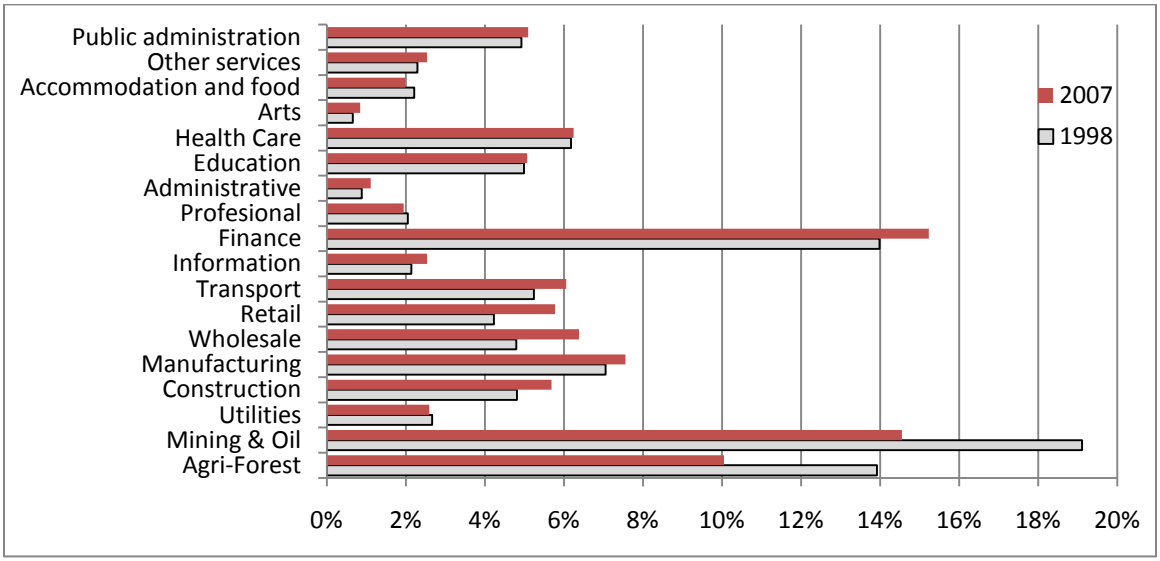
In terms of share of GDP by industry, all three western provinces have reduced their natural resources shares of GDP as they diversified their economies towards service-oriented industries. In Alberta for example, economic growth over the past nine years has been mainly fueled by rising oil prices and investments in oil sands facilities across the province. However, the share of the mining and oil industry of Alberta's GDP has actually declined from 26.5 percent of GDP in 1998 to 19.5 percent in 2007 (Figure 41). On the other hand, industries such as construction, wholesale and retail trade have gained larger shares of the Alberta economy, providing for a more balanced economic base (Statistics Canada 2008d, National Economic Accounts).



Source: Statistics Canada 2008d, National Economic Accounts

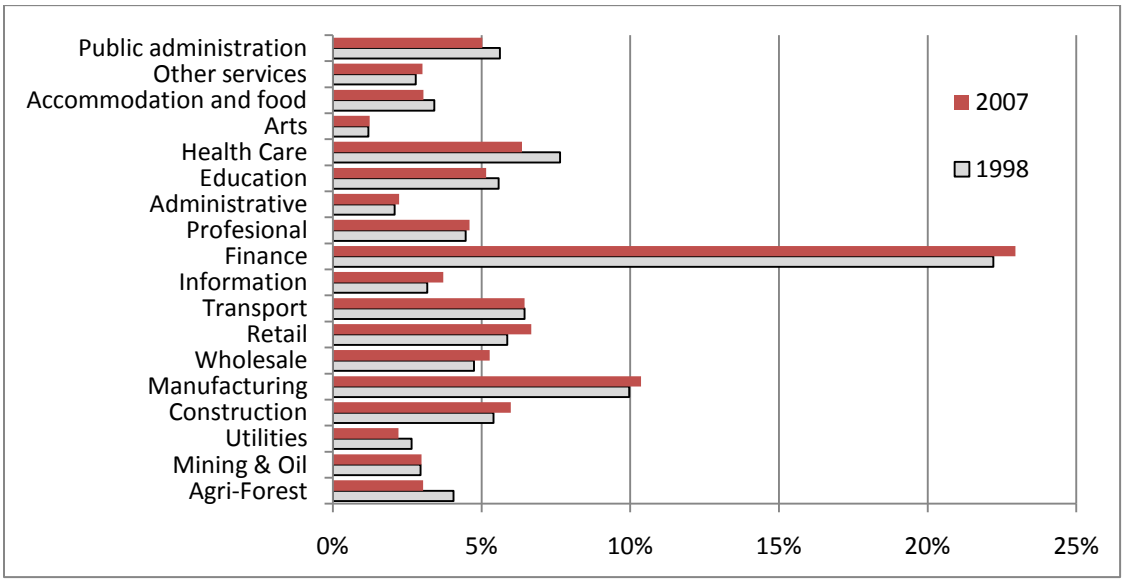
Figure 41: Alberta GDP Share by Industry

Saskatchewan's GDP industry shares are still dominated by agriculture, mining and oil, but finance was the largest sector by value-added in 2007 (Figure 42). Finance was also the largest sector in British Columbia (Figure 43). In contrast to Alberta and Saskatchewan, Montana's natural resources sector has a smaller contribution to the state's GDP, with the agriculture, forestry, fishing and hunting sector contributing 3.7 percent to GDP, while the mining sector's share of Montana's GDP was at 4.0 percent in 2007 (Figure 44). Health care services, real estate, and retail trade were the largest private sector contributors to Montana's GDP (BEA 2009b, Regional Economic Accounts).



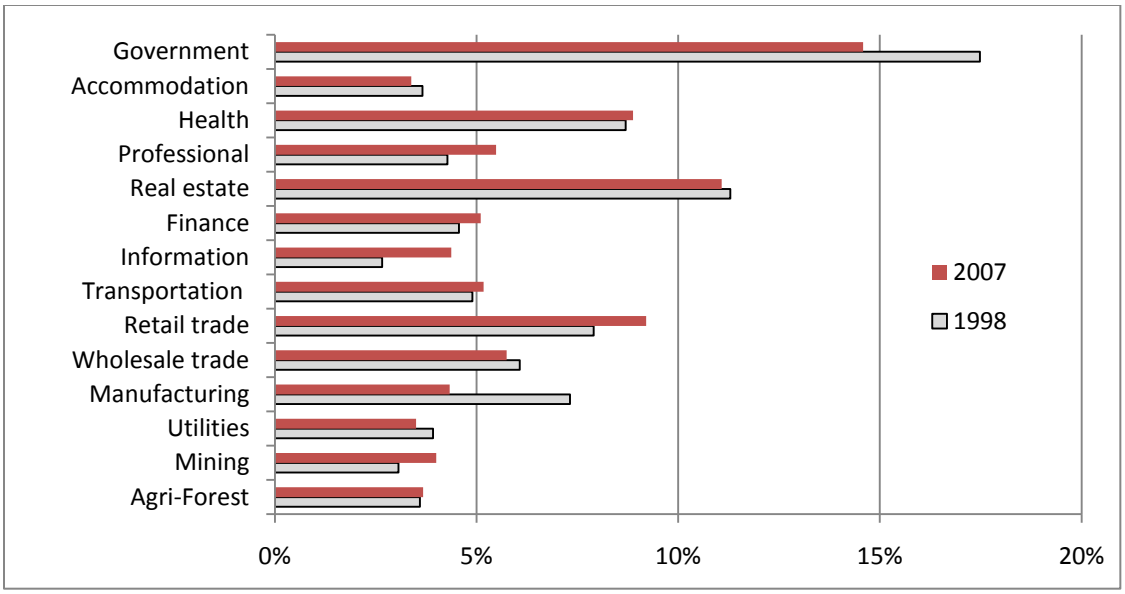
Source: Statistics Canada 2008d, National Economic Accounts

Figure 42: Saskatchewan GDP Share by Industry



Source: Statistics Canada 2008d, National Economic Accounts

Figure 43: British Columbia GDP Share by Industry



Source: BEA 2009b, Regional Economic Accounts

Figure 44: Montana GDP Share by Industry

Similar to the employment-based Location Quotient concept discussed above (section 4.2.2.1), the "industry specialization index" (ISI) is a measure of the degree to which provinces are more or less specialized in an industry. The more specialized a province is in an industry, the higher the ISI will be. The ISI is computed as the share of an industry within a province divided by the share of that industry within all Canada, using national and provincial GDP data (Statistics Canada 2008d, National Economic Accounts) at current prices and the resulting quotient multiplied by 100. If an industry is "specialized" within the province, than its ISI will be greater than 100; if an industry is less concentrated in the province compared to Canada the ISI will be less than 100.

Table 20 shows how the industry concentrations vary among the three provinces, with ISI's above 100 in bold, representing a relative industry concentration. From the table below it is apparent that the three western Canadian provinces have different mixes of industry concentrations. Saskatchewan, for example, enjoys a larger concentration in the agricultural sector among the three provinces. In fact, Saskatchewan's crop and animal production concentration is the highest among Canada's 13 provinces and territories. Saskatchewan is a commodity-based economy, not only in the agricultural sector but also in non-metallic mineral mining and quarrying, with a much higher level of concentration than Alberta and British Columbia. Saskatchewan also has high (over 100) ISI's in the transportation sector – particularly pipeline transportation, and warehousing and storage. These industry strengths correspond to the relationship between energy, distribution, and regional trade flows and freight traffic.

Alberta, on the other hand, enjoys a higher industry concentration in oil and gas production and other related industries, including oil and gas support activities, distribution and construction. The concentration extends further to the manufacturing of oil and gas related products such as petrochemicals, rubber, pesticides and fertilizers. British Columbia's forestry-related industry concentration is the highest in Canada and as a result, industries such as wood product manufacturing and pulp and paper mills have a higher concentration than in neighboring

provinces. In general, however, British Columbia has a higher concentration of service-related industries than Alberta and Saskatchewan.

Table 20: Industry Specialization Index (ISI) by Province (2005)

North American Industry Classification System (NAICS)	Saskatchewan	Alberta	BC
Agriculture, forestry, fishing and hunting [11]	**359**	90	**161**
Crop and animal production(2)	**537**	**120**	62
Forestry and logging [113]	35	40	**383**
Fishing, hunting and trapping [114]	5	2	**104**
Support activities for agriculture and forestry [115]	**204**	76	**255**
Mining and oil and gas extraction [21]	**284**	**383**	81
Oil and gas extraction [211]	**272**	**485**	76
Coal mining [2121]	-	-	**824**
Metal ore mining [2122]	-	-	**192**
Non-metallic mineral mining and quarrying [2123]	**1,237**	-	31
Support activities for mining and oil and gas extraction [213]	**208**	**484**	42
Utilities [22]	76	71	77
Electric power generation, transmission and distribution [2211]	73	63	72
Natural gas distribution [2212]	-	**204**	-
Water, sewage and other systems [2213]	-	**177**	-
Construction [23]	91	**131**	**106**
Residential building construction(3)	52	77	**115**
Non-residential building construction(3)	81	71	93
Transportation engineering construction(3)	**104**	85	**123**
Oil and gas engineering construction(3)	**124**	**466**	**129**
Electric power engineering construction(3)	**197**	50	36
Communication engineering construction(3)	-	**104**	64
Other engineering construction(3)	-	92	**140**
Repair construction(3)	**104**	82	**110**
Other activities of the construction industry(3)	64	**138**	66
Manufacturing [31-33]	46	50	66
Animal food manufacturing [3111]	90	86	71
Sugar and confectionery product manufacturing [3113]	0	-	-
Fruit and vegetable preserving and specialty food manufacturing [3114]	1	57	-
Dairy product manufacturing [3115]	-	-	88
Meat product manufacturing [3116]	**152**	**102**	71
Seafood product preparation and packaging [3117]	-	1	**179**
Miscellaneous food manufacturing(4)	99	80	69
Soft drink and ice manufacturing [31211]	43	54	75
Breweries [31212]	-	-	72
Wineries [31213]	-	-	-
Distilleries [31214]	-	-	-
Tobacco manufacturing [3122]	-	-	-
Te0tile and textile product mills(5)	-	11	-
Clothing manufacturing [315]	-	-	-
Leather and allied product manufacturing [316]	-	25	-
Wood product manufacturing [321]	84	69	**276**

Table 20: Industry Specialization Index (ISI) by Province (2005) - continued

North American Industry Classification System (NAICS)	Saskatchewan	Alberta	BC
Pulp, paper and paperboard mills [3221]	-	42	**214**
Converted paper product manufacturing [3222]	-	16	36
Printing and related support activities [323]	30	43	63
Petroleum and coal products manufacturing [324]	-	**150**	-
Basic chemical manufacturing [3251]	-	**220**	50
Resin, synthetic rubber, and artificial and synthetic fibres and filaments manufacturing [3252]	-	**190**	15
Pesticide, fertilizer and other agricultural chemical manufacturing [3253]	-	**387**	-
Pharmaceutical and medicine manufacturing [3254]	-	3	6
Miscellaneous chemical product manufacturing(6)	7	40	-
Plastic product manufacturing [3261]	-	-	-
Rubber product manufacturing [3262]	-	-	-
Cement and concrete product manufacturing [3273]	35	**113**	92
Miscellaneous non-metallic mineral product manufacturing(7)	-	61	75
Primary and fabricated metal product manufacturing(8)	-	-	62
Machinery manufacturing [333]	84	100	58
Computer and peripheral equipment manufacturing [3341]	-	-	**178**
Electronic product manufacturing(9)	-	-	51
Household appliance manufacturing [3352]	-	1	-
Electrical equipment and component manufacturing(10)	-	40	-
Motor vehicle manufacturing [3361]	-	-	-
Motor vehicle body and trailer manufacturing [3362]	**153**	53	63
Motor vehicle parts manufacturing [3363]	-	-	-
Aerospace product and parts manufacturing [3364]	-	-	17
Railroad rolling stock manufacturing [3365]	-	-	1
Ship and boat building [3366]	-	11	**680**
Other transportation equipment manufacturing [3369]	68	**583**	-
Furniture and related product manufacturing [337]	18	39	53
Miscellaneous manufacturing [339]	33	46	91
Wholesale trade [41]	**103**	80	87
Retail trade [44-45]	85	68	**112**
Transportation and warehousing [48-49]	**124**	**103**	**136**
Truck transportation [484]	**115**	**126**	92
Transit and ground passenger transportation [485]	-	65	**142**
Pipeline transportation [486]	**405**	**248**	**128**
Air, rail, water, scenic and sightseeing, and other support activities for transportation(11)	81	76	**186**
Postal service and couriers and messengers(12)	-	-	-
Warehousing and storage [493]	**644**	-	-
Information and cultural industries [51]	65	65	**105**
Motion picture and sound recording industries [512]	-	-	-
Broadcasting and telecommunications(27)	-	93	-
Publishing industries, information services and data processing services(28)	94	-	**296**
Broadcasting and telecommunications [513]	-	-	-
Publishing industries, information services and data processing services(13)	-	-	-

Table 20: Industry Specialization Index (ISI) by Province (2005) - continued

North American Industry Classification System (NAICS)	Saskatchewan	Alberta	BC
Finance and insurance, real estate and renting and leasing and management of companies and enterprises(24)	73	68	**117**
Monetary authorities and depository credit intermediation(14)	60	59	92
Insurance carriers [5241]	70	37	68
Lessors of real estate(15)	72	64	**124**
Owner-occupied dwellings(16)	90	73	**138**
Rental and leasing services and lessors of non-financial intangible assets (except copyrighted works)(17)	38	**102**	99
Other finance, insurance and real estate, and management of companies and enterprises(18)	58	70	**112**
Professional, scientific and technical services [54]	39	94	96
Administrative and support, waste management and remediation services [56]	41	70	89
Administrative and support services [561]	39	67	89
Waste management and remediation services [562]	60	**101**	86
Educational services [61]	**102**	69	**102**
Universities [6113]	**122**	62	**118**
Educational services (except universities)(19)	**101**	75	**103**
Health care and social assistance [62]	96	61	**103**
Hospitals [622]	91	60	95
Health care services (excluding hospitals) and social assistance(20)	98	61	**108**
Arts, entertainment and recreation [71]	81	61	**126**
Accommodation and food services [72]	81	85	**134**
Other services (except public administration) [81]	93	82	**117**
Repair and maintenance [811]	89	**123**	**128**
Religious organizations [8131]	**105**	64	**114**
Grant-making and giving services, civic, and professional and similar organizations(21)	**117**	57	**114**
Personal and laundry services and private households(22)	69	68	**110**
Public administration [91]	86	57	90
Defense services [9111]	29	58	81
Federal government public administration (except defense)(23)	94	36	84
Provincial and territorial public administration [912]	**104**	64	85
Local, municipal and regional public administration [913]	81	76	**106**

Source: HDR Calculations from Statistics Canada 2008d, National Economic Accounts
Numbers in bold represent Industries with higher concentrations.

4.3 Regional Economic Activity by Sector

Montana and Alberta are both known for their agriculture and natural resource based economies. Their close proximity to one another has allowed for a history of a strong trade relationship and profitable tourism industries. Despite the fact that Montana's border with Saskatchewan is longer than that with the province of Alberta, 91 percent of the estimated trade value between Canada and the United States that transited through Montana POEs in 2008 was directly linked with Alberta. Additionally, over 50 percent of the value of trade through Montana POEs is transported by truck across the border. Of total truck trade, 95 percent crosses the border through the Sweet Grass POE along the Montana/Alberta border. Consequently, the focus of this industry sector analysis is on economic activity in the province of Alberta and the state of Montana. That said, it

is worth noting that additional detail is provided for Saskatchewan for their key industry sectors of agriculture and mining, and that Saskatchewan GDP growth forecasts across all industries are used in the traffic forecasting model.

Key industries to Montana (BLS 2008d, Quarterly Census of Employment and Wages [QCEW]) and Alberta (Statistics Canada 2008c, LFS) are also evident through examination of location quotients. Table 21 compares the location quotients of Montana and Alberta. Both Montana and Alberta have highly concentrated natural resources industries. Agriculture and construction are also highly concentrated sectors in both these regions.

Table 21: Location Quotients

Montana Industries	LQ, 2006	Alberta Industries	LQ, 2008
All industries	1.00	Goods-producing sector	**1.21**
Agriculture, forestry, fishing and hunting	**1.24**	Agriculture	**1.48**
Mining, quarrying, and oil and gas extraction	**3.85**	Forestry, fishing, mining, oil and gas	**3.86**
Utilities	**1.77**	Utilities	0.93
Construction	**1.29**	Construction	**1.39**
Manufacturing	0.47	Manufacturing	0.62
Wholesale trade	0.91	Services-producing sector	0.94
Retail trade	**1.19**	Trade	**1.01**
Transportation and warehousing	0.84	Transportation and warehousing	**1.02**
Information	0.83	Finance, insurance, real estate and leasing	0.90
Finance and insurance	0.86	Professional, scientific and technical services	**1.15**
Real estate and rental and leasing	0.91	Business, building and other support services	0.78
Professional and technical services	0.82	Educational services	0.97
Management of companies and enterprises	0.22	Health care and social assistance	0.82
Administrative and waste services	0.72	Information, culture and recreation	0.82
Educational services	0.60	Accommodation and food services	0.96
Health care and social assistance	**1.17**	Other services	0.98
Arts, entertainment, and recreation	**1.85**	Public administration	0.76
Accommodation and food services	**1.34**		
Other services, except public administration	**1.18**		
Unclassified	0.35		

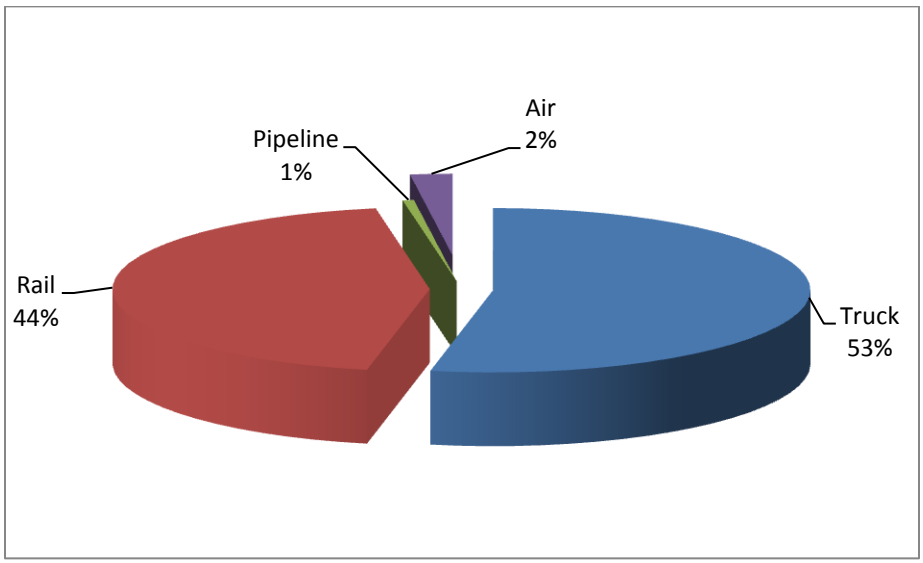
Source: HDR Calculations from: (1) Statistics Canada 2008c, LFS (2) BLS 2008d, QCEW

As discussed previously, if location quotient is greater than or equal to one, then regional production is relatively well-concentrated and is theoretically able to meet all regional demand. If this ratio is less than one then the industry's output is relatively less concentrated and not sufficient to meet regional demand and thus imports from outside the region are needed to satisfy demand. Imports result in leakages because money is being spent outside the region rather than being re-spent within the region. These leakages reduce the size of the multiplier associated with that industry.

Industries with location quotients greater than one are known as export industries while those with location quotients less than one rely on imports to meet demand. Goods-producing industries with location quotients much greater (export industries) or lower (import industries) than one are likely to be associated with a higher degree of cross-border movement. Cross-border movement and trade between Canada and the U.S. are vital to both countries. The largest export

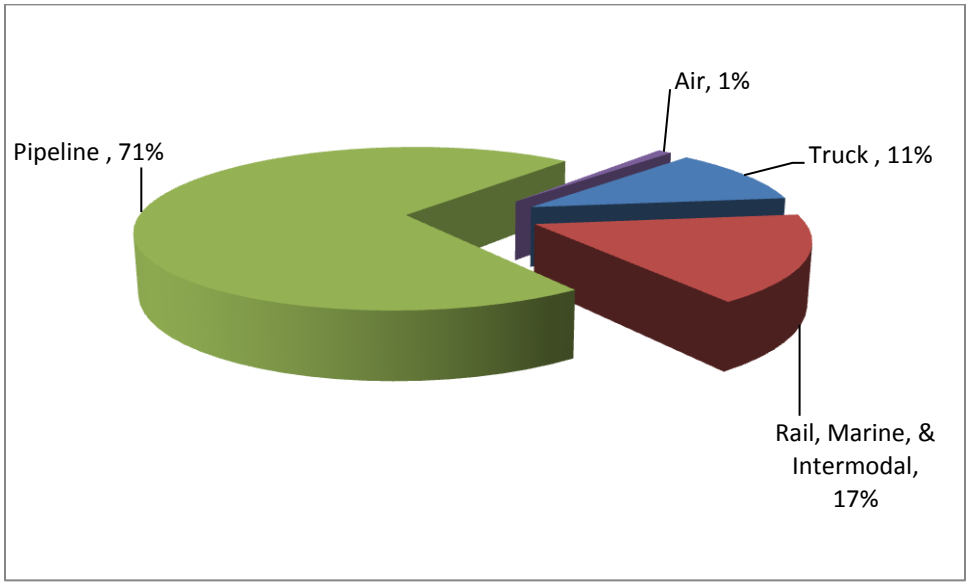
market for Montana is Canada while the largest export market for Alberta is the U.S. The modal share of these exports is presented in Figure 45 and Figure 46 (Industry Canada 2008b). These figures show that, given its economic activity in the oil and gas sector, Alberta largely exported by pipeline to the U.S. Montana relied more on truck and rail transportation to ship its agriculture and manufacturing exports (BTS 2008).

Detailed analysis of the key industries in both Montana and Alberta is presented below for the following key industry sectors: 1) mining and oil and gas extraction; 2) agriculture; 3) construction; 4) manufacturing; 5) tourism; and 6) wholesale and retail trade.



Source: BTS 2008

Figure 45: Montana Exports to Canada by Tonnage, 2008



Source: Industry Canada 2008b

Figure 46: Alberta Exports to U.S. by Tonnage, 2004

4.3.1 Mining and Oil and Gas Extraction

4.3.1.1 Sector and Sub-Sector Employment

Employment in the mining and oil and gas extraction sector in both Montana and Alberta has increased significantly in recent years. The mining and oil and gas industry represents a single industry category under NAICS, and is part of the natural resources and mining super sector. This is the most highly concentrated industry in both Montana and Alberta with location quotients of 3.85 and 3.86 respectively. The mining and oil and gas industry is the largest goods-producing sector of the Saskatchewan economy.

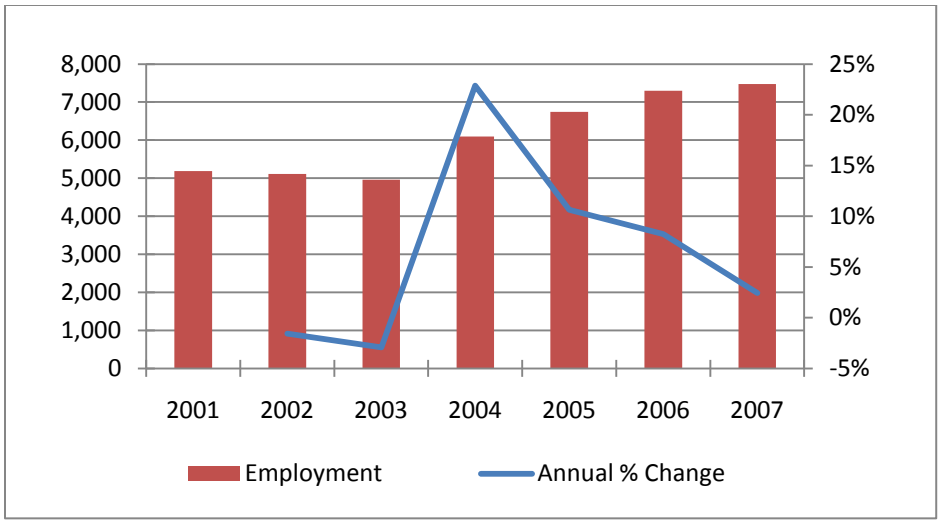
The majority of mining and oil and gas extraction activity in Alberta takes place in Calgary (35 percent), Edmonton (17 percent), Red Deer (9 percent) and Fort McMurray (8 percent). In Saskatchewan, this industry is mainly concentrated in Saskatoon (18 percent), Estevan (13 percent) and Lloydminster (12 percent) with the rest of industry activity spread throughout the rest of the province (Statistics Canada 2008a, Census of Population). Meanwhile Table 22 shows Montana's mining activity is more evenly distributed than in Alberta and Saskatchewan, with Yellowstone County having the highest number of jobs at 10 percent of the statewide total (BEA 2009c, Regional Economic Information System [REIS]).

Table 22: Employment Centers in the Mining Sector

Alberta		Saskatchewan		Montana	
Calgary	35%	Saskatoon	18%	Yellowstone County	10%
Edmonton	17%	Estevan	13%	Richland County	8%
Red Deer	9%	Lloydminster	12%	Rosebud County	6%
Fort McMurry	8%	Melville	8%	Big Horn County	6%
Rest of Province	32%	Rest of Province	48%	Rest of State	69%

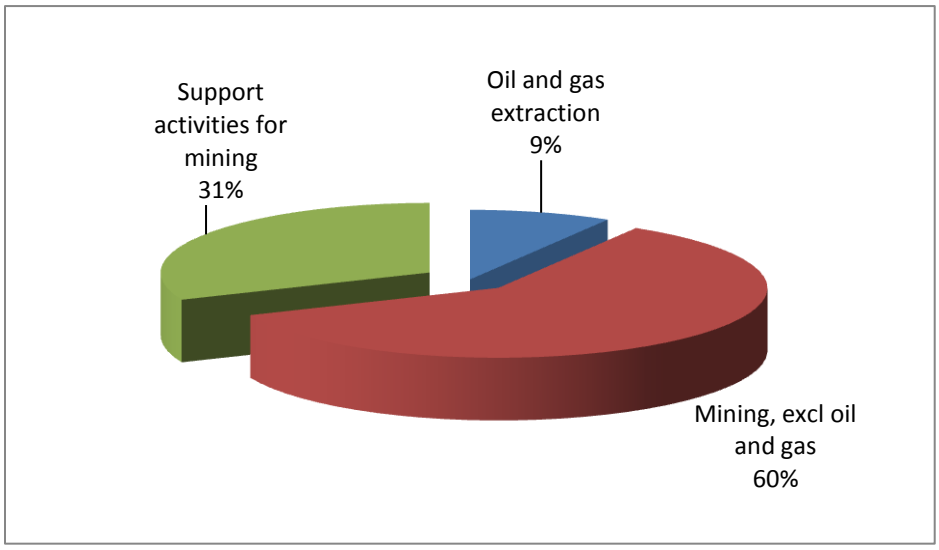
Source: Statistics Canada 2008a, Census of Population & BEA 2009c, REIS

Since 2001, both Montana and Alberta employment in this industry increased by 44 percent and Saskatchewan employment has increased by 41 percent. The mining and oil and gas extraction industry is composed of three sub-sectors: mining (excluding oil and gas), oil and gas extractions, and support activities for mining (Figure 48). Employment growth trends for this sector and sub-sectors are presented in Figure 47 (BLS 2008a, Current Employment Statistics [CES]).



Source: BLS 2008a, CES

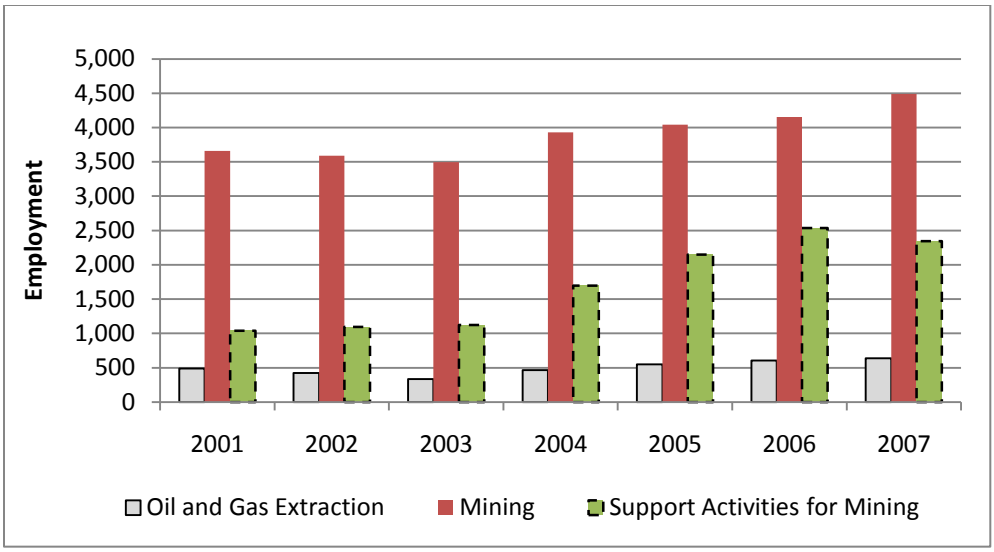
Figure 47: Montana Mining and Oil and Gas Extraction Employment



Source: BLS 2008a, CES

Figure 48: Mining and Oil and Gas Extraction Employment in Montana, 2007

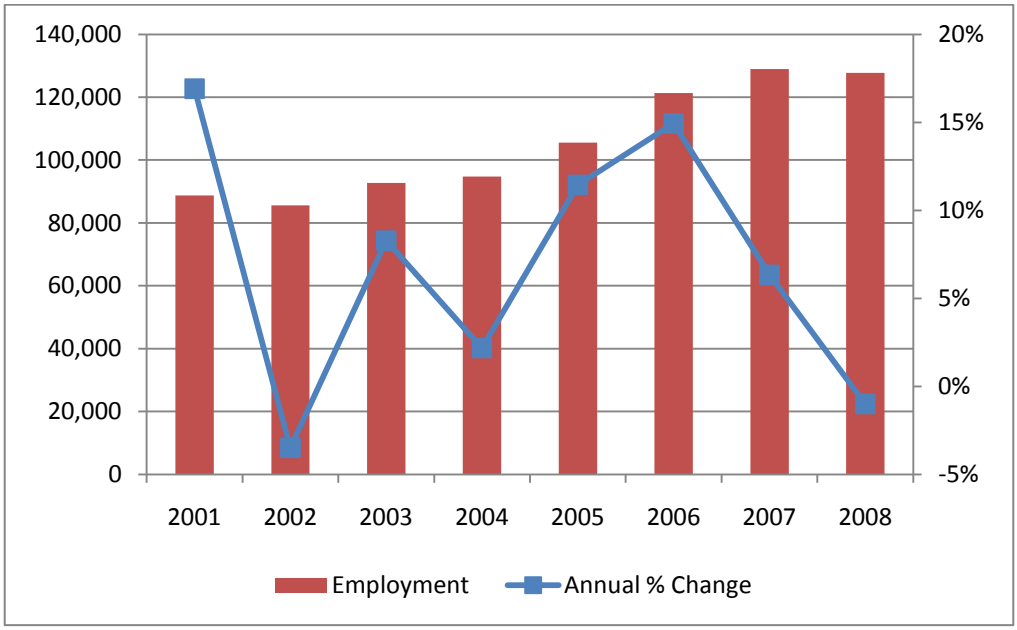
With the exception of a slight decrease in employment within the support activities for mining sub-sector, employment within all mining and oil and gas extraction sub-sectors increased in Montana from 2001 to 2007, as seen in Figure 49 (BLS 2008a, CES).



Source: BLS 2008a, CES

Figure 49: Montana Mining and Oil and Gas Extraction Sub-Sector Employment

Alberta's oil and gas related mining activities have increased since 2001 (Statistics Canada, 2008c, LFS). Oil and gas extraction increased the most, at 47 percent growth from 2001 to 2006 (Figure 50 and Table 23). This industry accounts for half of total employment (Figure 151).



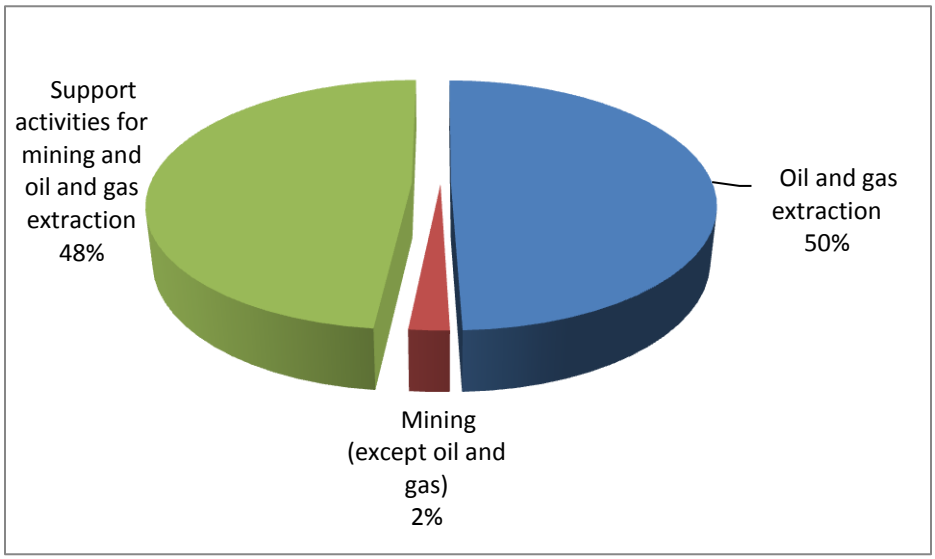
Source: Statistics Canada 2008c, LFS

Figure 50: Alberta Mining and Oil and Gas Extraction Employment

Table 23: Alberta Mining and Oil and Gas Extraction Sub-Sector Employment

Sub-Sector Industry Employment	2001	2006	% Change
Oil and gas extraction	40,942	60,071	47%
Mining (excl oil and gas)	3,104	2,568	-17%
Support activities for mining and oil and gas extraction	44,661	58,665	31%

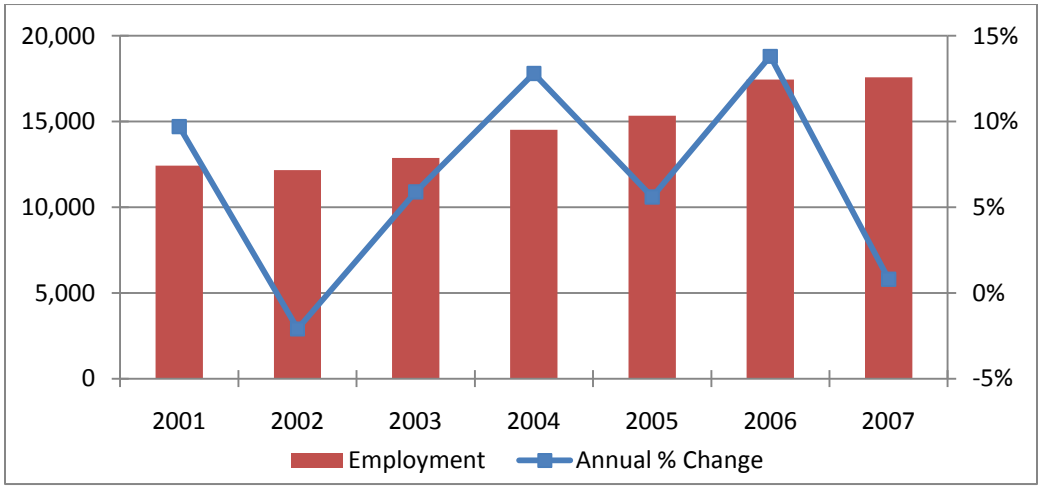
Source: Statistics Canada 2008c, LFS



Source: Statistics Canada 2008c, LFS

Figure 51: Mining and Oil and Gas Extraction Employment in Alberta, 2006

Similar to Alberta, Saskatchewan employment in all industry sub-sectors increased from 2001 to 2006, as shown in Figure 52 and Table 24 (Statistics Canada 2008c, LFS).



Source: Statistics Canada 2008c, LFS

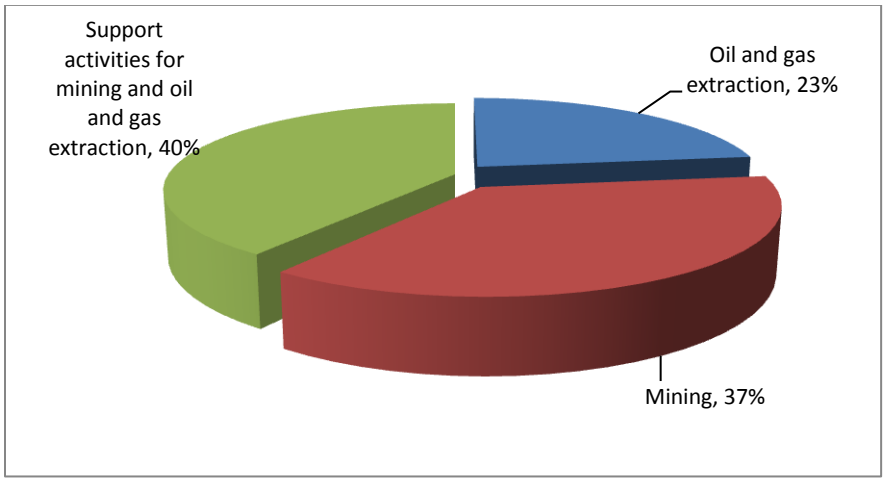
Figure 52: Saskatchewan Mining and Oil and Gas Extraction Employment

Table 24: Saskatchewan Mining and Oil and Gas Extraction Sub-Sector Employment

Sub-Sector Industry Employment	2001	2006	% Change
Oil and gas extraction	2,285	4,010	75%
Mining (excl oil and gas)	5,137	6,397	25%
Support activities for mining and oil and gas extraction	5,007	7,036	41%

Source: Statistics Canada 2008c, LFS

Employment in the mining sub-sector in Saskatchewan is significantly larger than that in Alberta, composing 37 percent of total employment in the energy industry (Figure 53). It can be seen from these employment numbers that the Alberta energy sector is focused on oil and gas while the Saskatchewan energy sector is more focused on mining. While employment in the oil and gas extraction sub-sector increased the most since 2001, it is also the smallest sub-sector in Saskatchewan's energy sector.



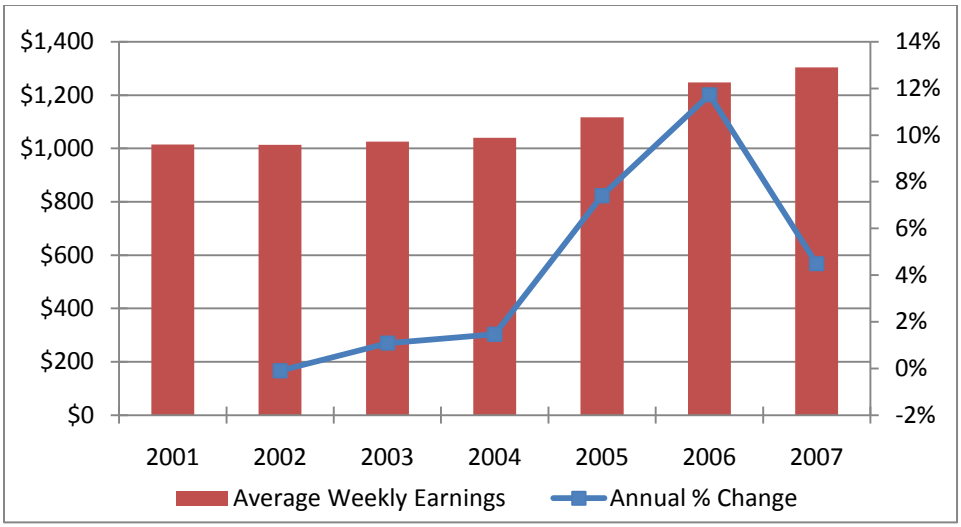
Source: Statistics Canada 2008c, LFS

Figure 53: Mining and Oil and Gas Extraction Employment in Saskatchewan, 2006

It can be seen that, similar to the overall sector employment, all sub-sector employment in Montana, Alberta and Saskatchewan increased since 2001. In Montana and Saskatchewan, mining employment composes a bigger share of this sector's overall employment while in Alberta employment is more focused on oil and gas extraction and related support services for mining and oil and gas extraction.

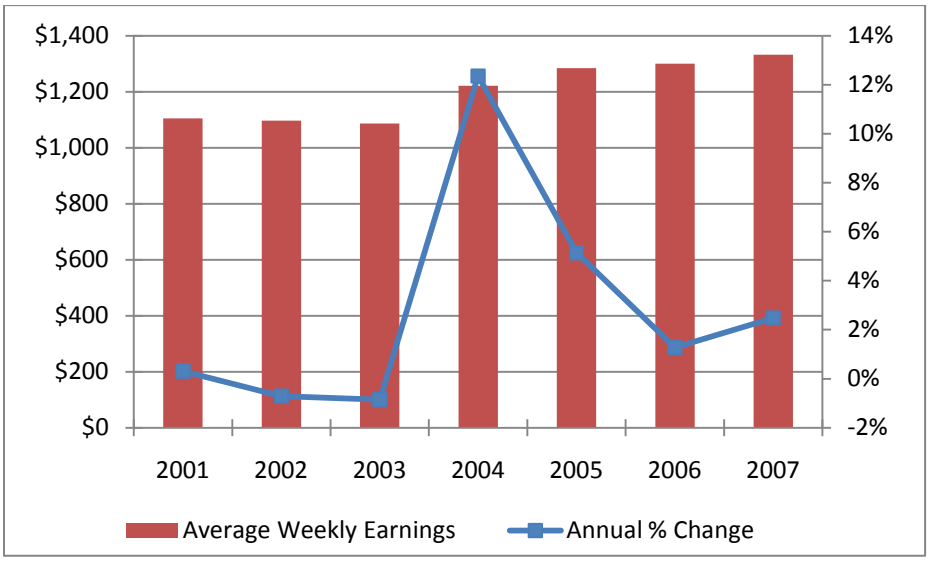
4.3.1.2 Earnings

Mining and oil and gas extraction earnings, measured as average weekly earnings, experienced overall positive growth since 2001 in Montana (28 percent), Alberta (21 percent) and Saskatchewan (15 percent). In 2006, this rapid growth was felt in Montana (BLS 2008a, CES) with a similar rate of just under 12 percent (Figure 54). Since then, earnings have continued to grow, but at a lower rate. The growth in Alberta's average weekly earnings peaked in 2004 (Statistics Canada 2008c, LFS) at a rate of approximately 12 percent (Figure 55), which was also a strong year for Saskatchewan at 9 percent growth (Figure 56).



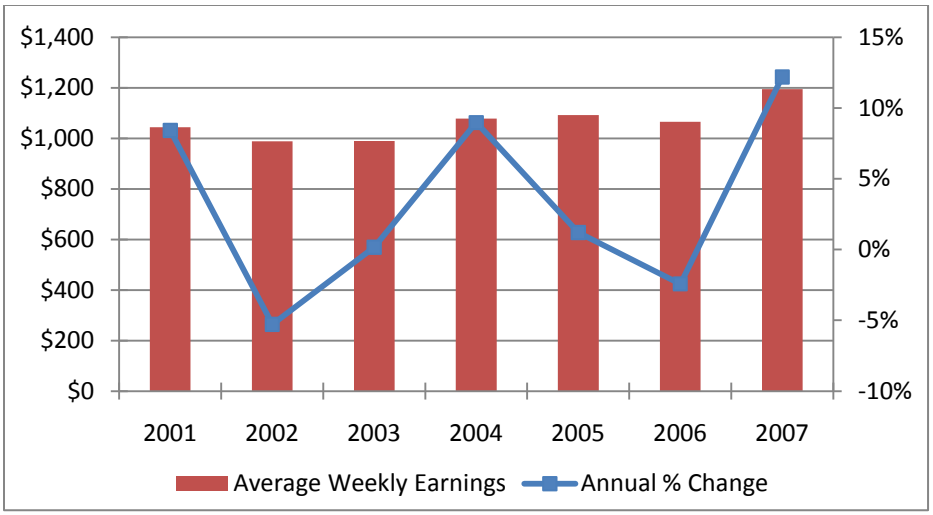
Source: BLS 2008a, CES

Figure 54: Montana Mining and Oil and Gas Extraction Earnings



Source: Statistics Canada 2008c, LFS

Figure 55: Alberta Mining and Oil and Gas Extraction Earnings

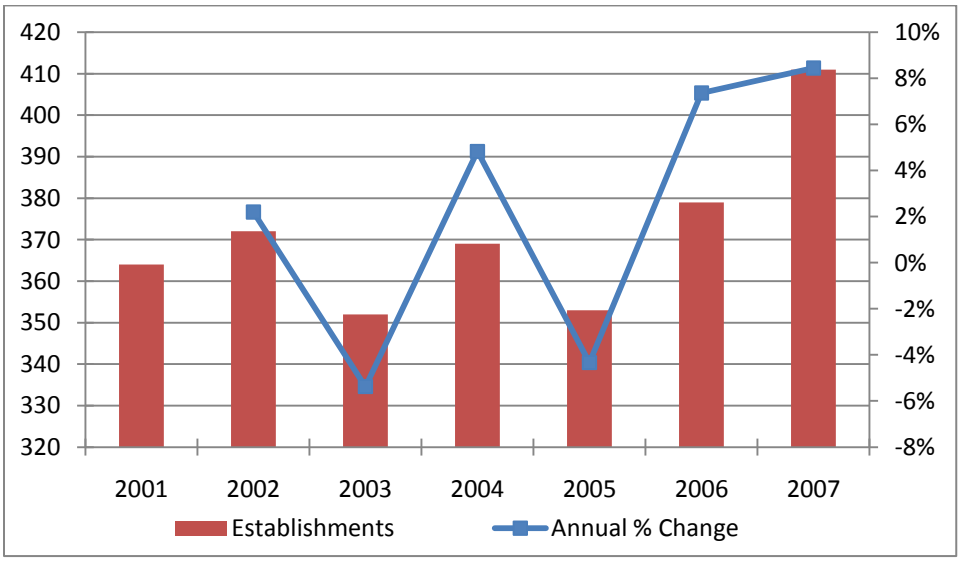


Source: Statistics Canada 2008c, LFS

Figure 56: Saskatchewan Mining and Oil and Gas Extraction Earnings

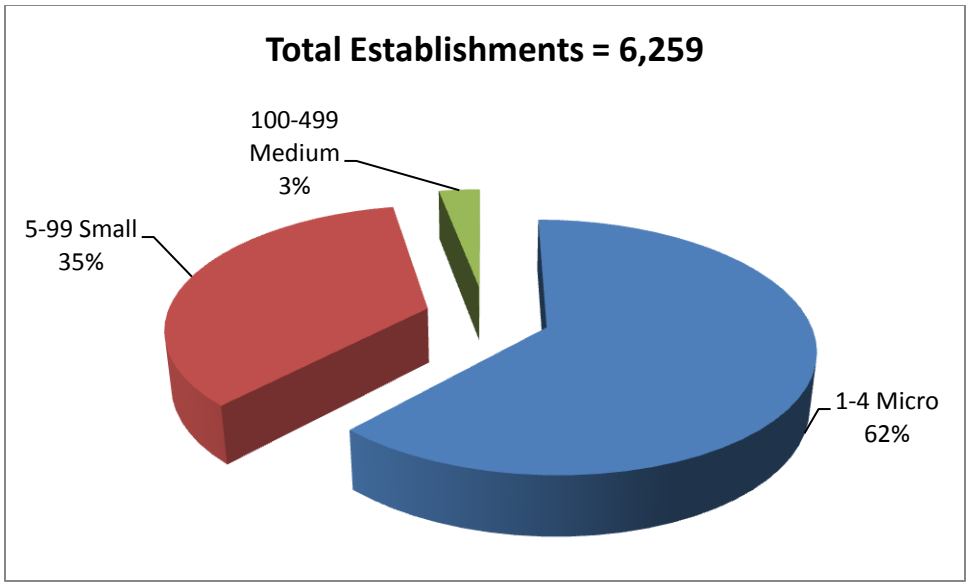
4.3.1.3 Businesses: Number, Size and Output

The number of mining and oil and gas extraction establishments in Montana is available across all business sizes from 2001 to 2007. For Alberta and Saskatchewan, this data is only available for 2008 with detail by establishment size. The number of mining and oil and gas establishments in Montana has experienced ups and downs since 2001 but has increased greatly since 2005, with 411 establishments in 2007, see Figure 57 (BLS 2008d, QCEW). This industry is much larger in Alberta, with 6,259 establishments in 2008. The majority of these businesses are classified as "micro", meaning they are composed of less than 5 employees (Figure 58). These energy-related activities contributed approximately 27 percent to Alberta's 2007 GDP and generated over $79 billion in energy revenue in 2007 (Industry Canada 2008a).



Source: BLS 2008d, QCEW

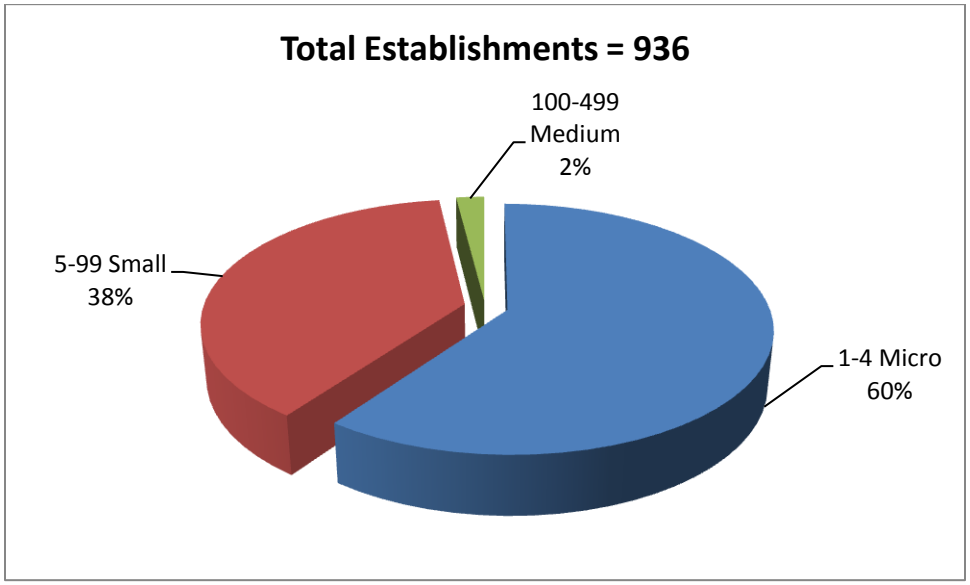
Figure 57: Montana Mining and Oil and Gas Extraction Establishments



Source: Industry Canada 2008a

Figure 58: Alberta Mining Establishments by Number of Employees, 2008

The mining and oil and gas industry in Saskatchewan is also relatively small compared to Alberta. The 936 establishments in 2008 (Industry Canada 2008a) were primarily made up of "micro" businesses with less than 5 employees (Figure 59). The energy sector is the largest goods-producing sector in Saskatchewan, contributing approximately 15 percent to the province's 2007 GDP (Statistics Canada 2008d, National Economic Accounts).



Source: Industry Canada 2008a

Figure 59: Saskatchewan Mining Establishments by Number of Employees, 2008

4.3.1.4 Major Projects

Table 25 presents the summary of the major energy projects in Alberta as of February 2009 (Alberta Finance and Enterprise 2009a). A detailed list of 2008-09 major projects is presented in Appendix C.

Table 25: Inventory of Major Alberta Energy Projects

Project Sector	Number Of Projects				
	2003-04	2004-05	2005-06	2007-08	2008-09
Mining	6	6	6	7	6
Oil & Gas	20	25	17	15	10
Oil Sands	45	48	54	52	44
Project Sector	**Value Of Projects ($ million)**				
	2003-04	2004-05	2005-06	2007-08	2008-09
Mining	$323	$320	$445	$1,985	$2,848
Oil & Gas	$4,147	$5,031	$2,246	$4,195	$7,882
Oil Sands	$64,261	$73,805	$98,357	$155,596	$156,725

Source: Alberta Finance and Enterprise 2009a

It can be seen that oil sands have been the largest source of energy sector projects in recent years, with a significantly higher number of projects and value than the mining or oil and gas sectors. It is important to keep in mind that these proposed projects are highly dependant on current oil, labor and material prices. According to the most recent issue of Oil and Gas Journal (McColl, 2009), expectations about the once booming Alberta oil industry are beginning to fall. Currently, Shell, Total, Syncrude, StatoilHydro and SunCor have all stopped or delayed a total of 23 projects in Alberta. The delay of the Shell second expansion project of oil sands is an estimated loss of about $11 billion of investment. The delay of SunCor's expansion of its Voyageur oil sands upgrader unit is a loss of another $17 billion of investment. In total, more than $60 billion worth of oil sand projects has been delayed in Alberta since the fall of 2008.

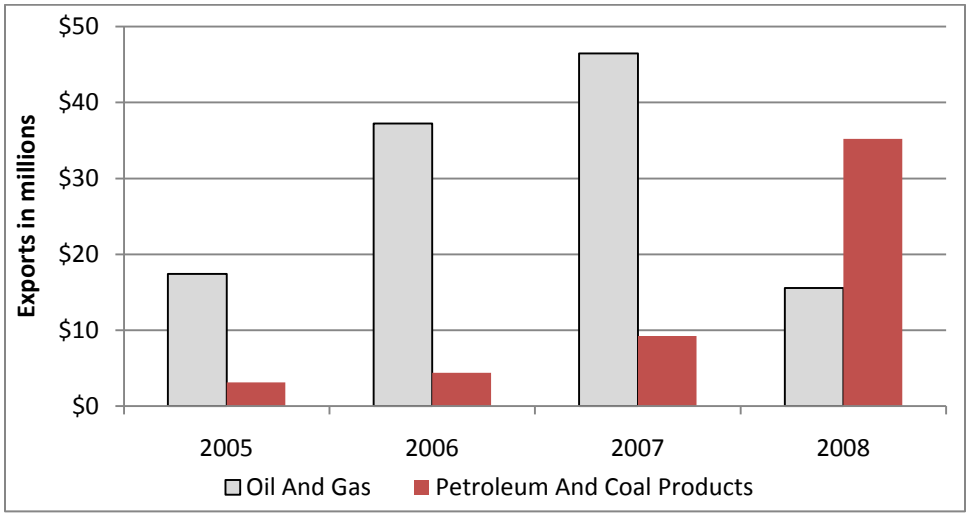
At current oil prices of $40-$50 per barrel[8], investment in Alberta is simply not an economically sound decision. A study conducted by The Canadian Energy Research Institute estimated that a world oil price of $70 per barrel would be needed to restart these projects. Other analysts estimated this price to be anywhere from $75 to $100. According to the Energy Information Administration (EIA), the world price of oil is expected to average $42 per barrel in 2009 and $53 in 2010 (EIA 2008). These forecasted prices are nowhere close the estimated break even price of $70 per barrel to bring delayed projects back into action, though the EIA expects oil prices to rise again in the future.

Optimism in Alberta, however, is emerging as it was announced on March 23, 2009 that two of the largest players in the oil and gas sector, SunCor and Petro-Canada, will be merging and plan to expand their refining networks rather than shut down operations. The merged company will operate the top three refineries in Canada. In addition, the merger will allow the two companies to cut $1.3 billion in annual costs. This will allow the larger, merged company to move ahead with some of the more viable projects that have been placed on hold.

[8] March 2009 EIA

4.3.1.5 Trade

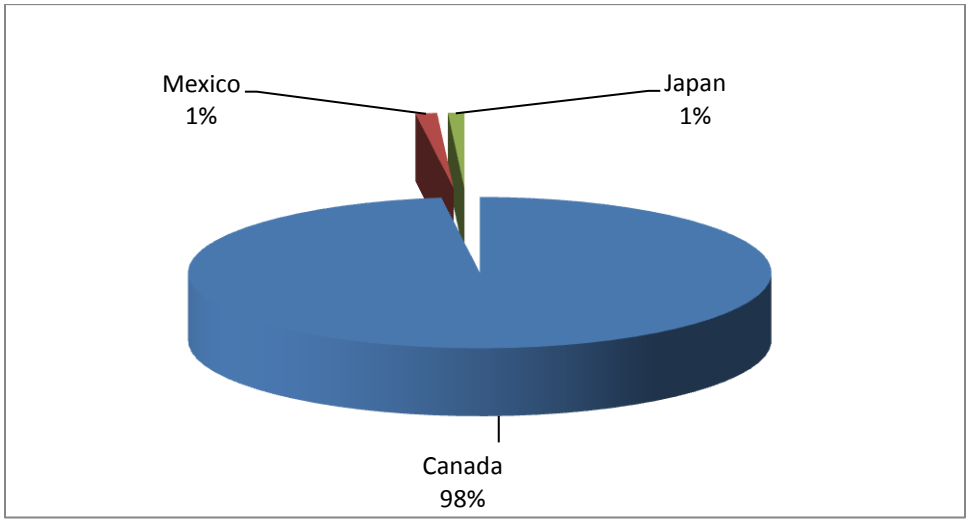
As mentioned above, the U.S. and Canada have a very strong trade relationship. The majority of Montana products are exported to Canada and the majority of Alberta products are exported to the U.S. The energy sector is much smaller in Montana than Alberta, which is evident in the value of their relative exports. Montana's petroleum and coal exports have been growing steadily through 2008, as seen in Figure 60 (WISERTrade 2008).



Source: WISERTrade 2008

Figure 60: Montana Mining and Oil and Gas Exports ($millions)

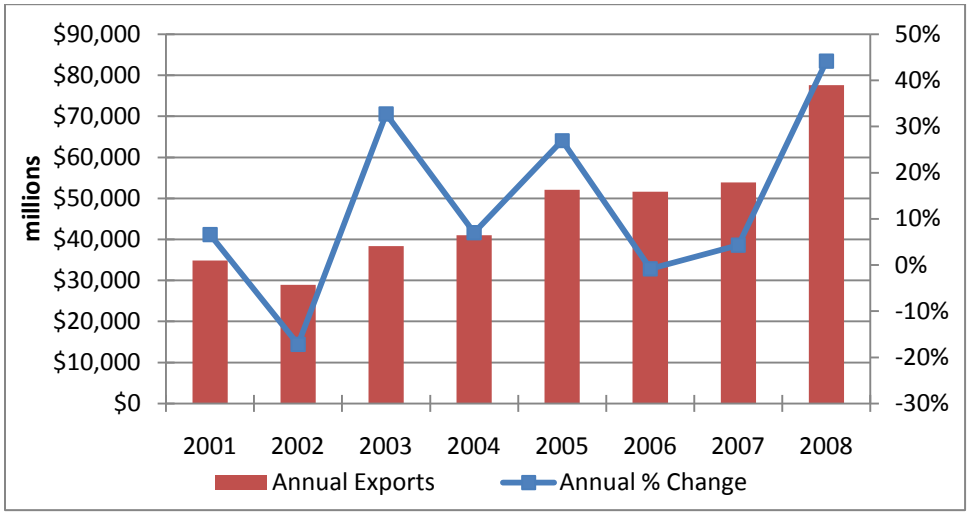
While the overall value of Montana mining and oil and gas extraction exports fell by approximately 9 percent from 2007 to 2008 (due to the significant drop in oil and gas exports), the export value of petroleum and coal products almost tripled. Figure 61 shows almost all of these exports were shipped to Canada (WISERTrade 2008).



Source: WISERTrade 2008

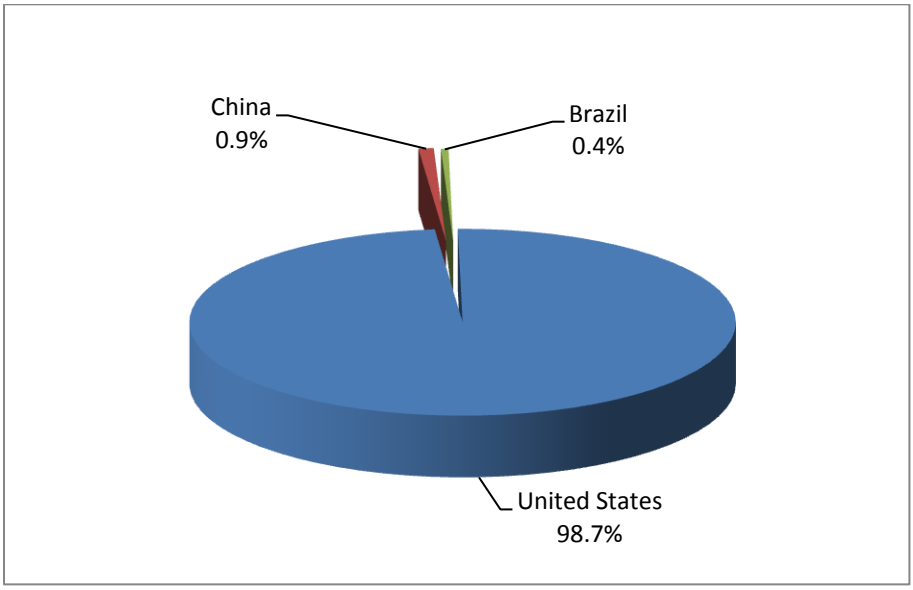
Figure 61: Montana Mining and Oil and Gas Exports by Country, 2008

Energy has been a significant industry for Alberta's economy which is evident through the value of this industry's exports. From 2007 to 2008 alone, export value from mining and oil and gas extraction increased by 44 percent and were valued at over $80 billion, as show in Figure 62 (Industry Canada 2008b). Almost all of these exports were shipped to the U.S (Figure 63).



Source: Industry Canada 2008b

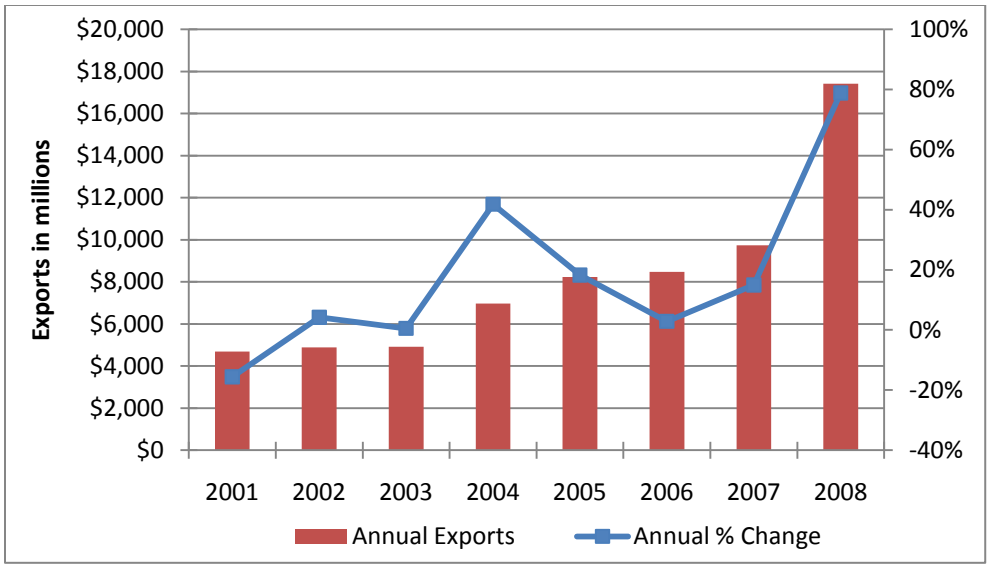
Figure 62: Alberta Mining and Oil and Gas Exports



Source: Industry Canada 2008b

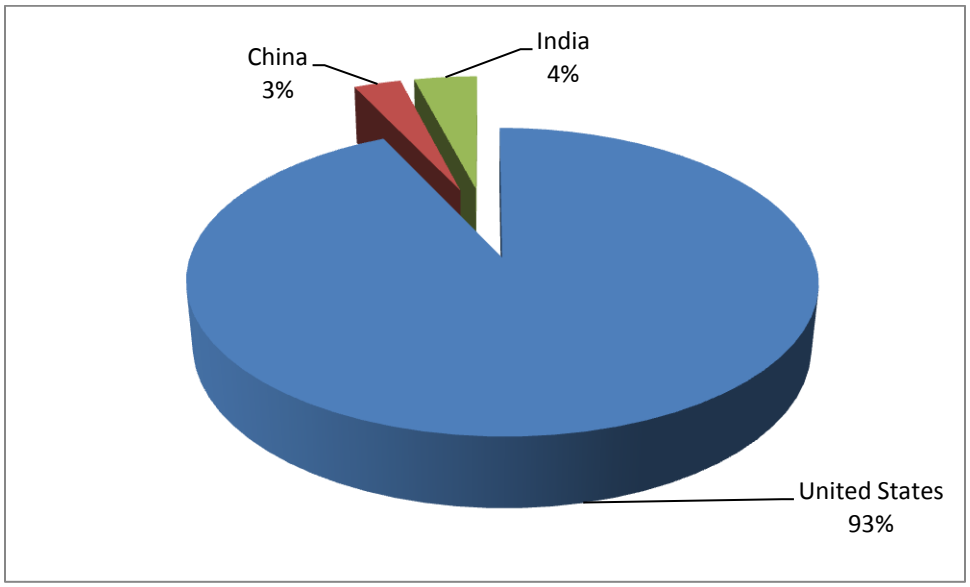
Figure 63: Alberta Mining and Oil and Gas Exports by Country, 2008

The energy sector is also of great importance to the province of Saskatchewan, which is not only shown through the sector's contribution to employment and GDP but also though export value (Figure 64 and Figure 65). Though not as high as Alberta, Saskatchewan's energy export value is significant, especially with a drastic increase in value from 2007 to 2008 of approximately 80 percent to a value of almost $18 billion, as seen in Figure 64 (Industry Canada 2008b).



Source: Industry Canada 2008b

Figure 64: Saskatchewan Mining and Oil and Gas Exports in Millions of Dollars



Source: Industry Canada 2008b

Figure 65: Saskatchewan Mining and Oil and Gas Exports by Country, 2008

4.3.1.6 Comparison

While the energy sector is a key component of the Montana, Alberta and Saskatchewan economies, the mining and oil and gas extraction industry is significantly larger in Alberta. Employment in the mining and oil and gas extraction industry in Alberta was 17 times higher than that in Montana in 2007 and 7 times higher than that in Saskatchewan (Statistics Canada, 2008c, LFS). Similarly, the number of mining and oil and gas establishments in Alberta was approximately 15 times higher than that in Montana and 9 times higher than that in Saskatchewan. The greatest difference in industry size is found when comparing mining and oil

and gas export value. In 2008, Alberta's mining and oil and gas export value was over 1500 times higher than that in Montana. This difference was much smaller between the provinces, with the Alberta export value approximately 4 times greater than Saskatchewan's in 2008.

Aside from size, another difference between the Montana, Alberta and Saskatchewan energy sectors is that the focus of this industry in Montana and Saskatchewan is mining while Alberta is mainly dedicated to the extraction of oil and gas.

4.3.1.7 Industry Outlook

The recent drop in oil prices and delayed projects has caused significant concern regarding this industry's outlook. Recent developments in Alberta, however, such as the SunCor-Petro-Canada merger, provide a promising outlook for the industry. The Alberta oil and gas industry is expected to remain relatively strong, but to become increasingly dependent on non-conventional oil sands to maintain production and employment. This will result in a shift in the type of skilled labor demanded but is also expected to increase production (Conference Board of Canada 2009). Output of marketable oil sands production in Alberta was just over one million barrels per day in 2006. This is expected to increase to 3 million barrels per day by 2015 and possibly even 5 million barrels per day by 2030 (Alberta Employment, Immigration and Industry 2007b). This degree of energy activity would not only support this industry, but also several other sectors within the province.

An increased focus on oil sands and higher production also means higher material and labor costs. Despite these costs, employment in the Alberta oil and gas industry is expected to increase by an average of 2.5 percent per year until 2012. These forecasts should be examined with caution, however, due to their reliance on the highly volatile oil price. The recent fall in oil prices has made new investment in Alberta uneconomical and has resulted in delays in several large projects in the area. Some of these projects are expected to commence following the Suncor-Petro-Canada merger, and higher longer-term oil prices forecast by most energy experts suggest sustained economic activity. For Saskatchewan, short-term industry performance will show little or no growth through 2011. Following 2012 growth is anticipated to pick up with an annual growth between 1 and 2 percent.

The impact of environmental restrictions and regulations is also a concern for the oil and gas sector and can drive up both capital and operating costs within this industry. This could result in the energy sector experiencing a slowdown.

Coal mining in Alberta is expected to remain relatively strong due to the additional energy required by Alberta's fast growing economy. At the same time, focus needs to be placed on the reduction of this industry's environmental footprint and efforts to reduce carbon emissions. The pressure on the industry to become "greener" creates uncertainty regarding the long-term future of the industry. Employment within the Alberta mining industry is forecasted to waver a bit until 2012, with an average annual growth rate of negative 2 percent (Conference Board of Canada 2009).

Employment within the mining and oil and gas industry in Montana is the reverse of that in Alberta. This is not surprising given that Montana's energy sector is more concentrated within

the mining sector than the oil and gas sector. Until 2016, Montana oil and gas employment is forecasted to decrease at an average annual rate of 0.5 percent while mining employment is forecasted to increase at an average annual rate of 3.6 percent (Montana Business Quarterly 2007).

4.3.2 Agriculture Sector

4.3.2.1 Sector and Sub-Sector Employment

Agriculture is a key component of Montana's economy and provides a significant number of jobs in Alberta. Both Montana and Alberta have highly concentrated agricultural industries as measured by their location quotients of 1.24 and 1.48 respectively. Agriculture is the second largest goods-producing sector in Saskatchewan, contributing 10 percent to the province's 2007 GDP and high location quotient of 4.2.

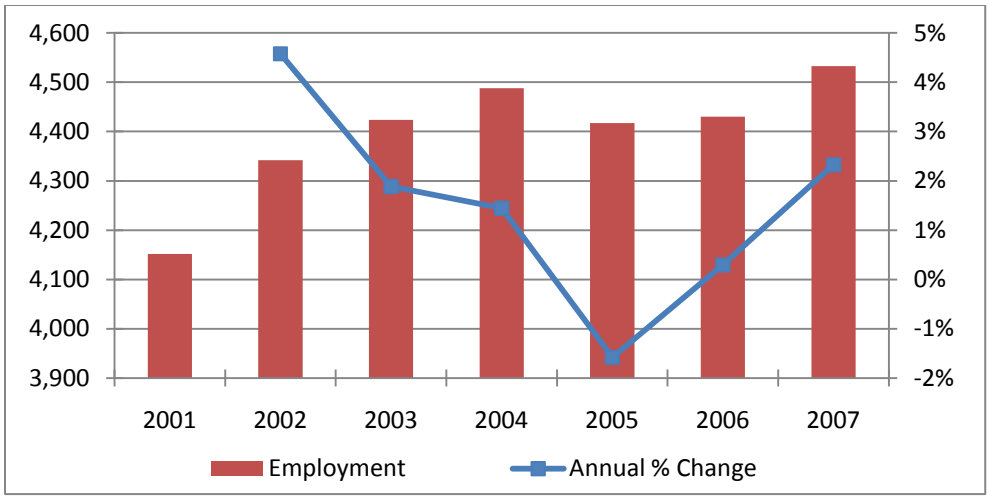
Agriculture activity in Alberta is mainly concentrated in Edmonton (11 percent), Calgary (10 percent) and Lethbridge (10 percent). Much of the remaining employment in this sector is dispersed through the southern part of the province, as seen in Table 26 (Statistics Canada 2008a, 2006 Census of Population). Agriculture in Saskatchewan is much more dispersed with the exception of Saskatoon (9 percent), but the remainder of agriculture in Saskatchewan is much more evenly distributed throughout the smaller population centers. In Montana, the farming sector is more evenly distributed across the State, with Yellowstone County attracting 5 percent of total farm jobs, followed by Flathead and Cascade counties, each at 4 percent (BEA 2009c, REIS).

Table 26: Employment Centers in the Agricultural Sector

Alberta		Saskatchewan		Montana	
Edmonton	11%	Saskatoon	9%	Yellowstone County	5%
Calgary	10%	Regina	8%	Flathead County	4%
Lethbridge	10%	Weyburn	4%	Cascade County	4%
Camrose-Llyodminster	9%	Estevan	4%	Lake County	4%
Rest of Province	60%	Rest of Province	74%	Rest of State	84%

Source: Statistics Canada 2008a, Census of Population & BEA 2009c, REIS

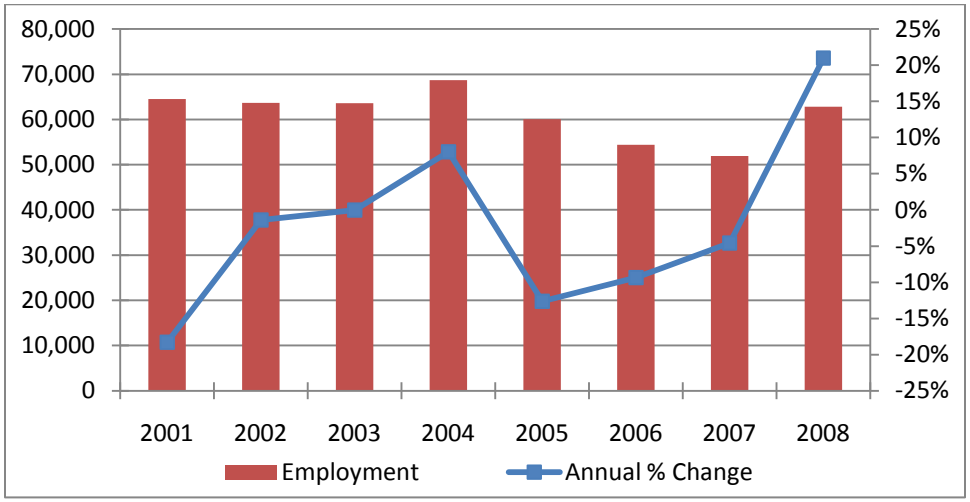
Agricultural employment Montana dipped in 2005, but it has since rebounded as seen in Figure 66 (BLS 2008a, CES). Overall, agriculture employment in Montana increased 9 percent from 2001 to 2005.



Source: BLS 2008a, CES

Figure 66: Montana Agriculture, Forestry, Fishing and Hunting Employment

Agriculture employment in Alberta decreased about 20 percent from 2001 to 2007, likely due to the surge in employment demand in the oil and gas industry. Figure 67 shows agriculture employment in Alberta has also experienced a more recent rebound, increasing 21 percent from 2007 to 2008 with over 60,000 jobs in 2008 (Statistics Canada 2008c, LFS), and detailed sub-sector employment is provided in Table 27.



Source: Statistics Canada 2008c, LFS

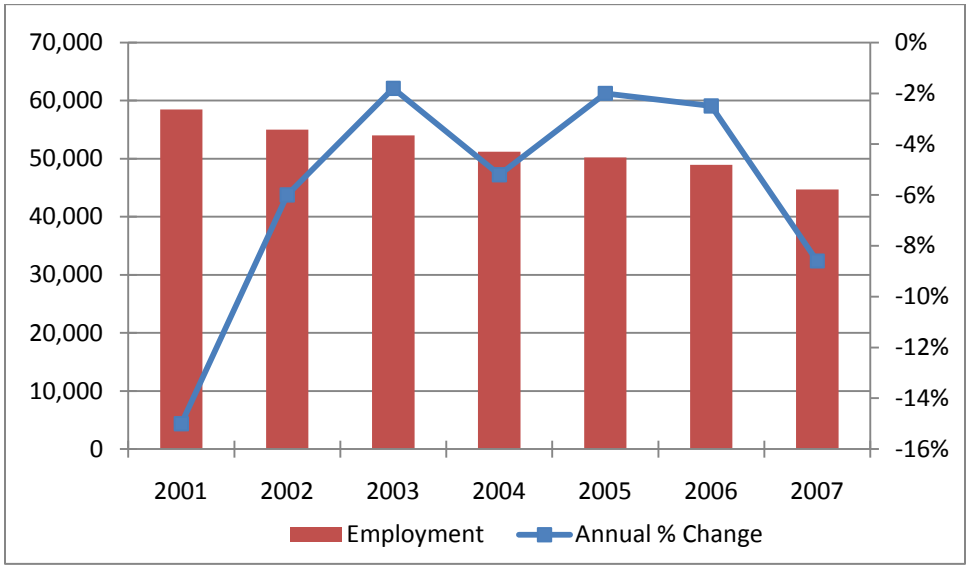
Figure 67: Alberta Agriculture, Forestry, Fishing and Hunting Employment

Table 27: Alberta Agriculture, Forestry, Fishing and Hunting Sub-Sector Employment

Sub-Sector Industry Employment	2001	2006	% Change
Crops and animal production	58,071	46,669	-20%
Forestry and logging	3,056	2,897	-5%
Fishing, hunting and trapping	70	91	30%
Support activities for agriculture and forestry	3,347	4,760	42%

Source: Statistics Canada 2008c, LFS

Agriculture employment in Saskatchewan fell by 24 percent from 2001 to 2007 (Statistics Canada 2008c, LFS). Unlike Alberta and Montana, Saskatchewan has not experienced any recent increase in employment in this sector. Instead, agriculture employment in this province has experienced continued decline, now with fewer than 50,000 jobs (Figure 68 and Table 28).



Source: Statistics Canada 2008c, LFS

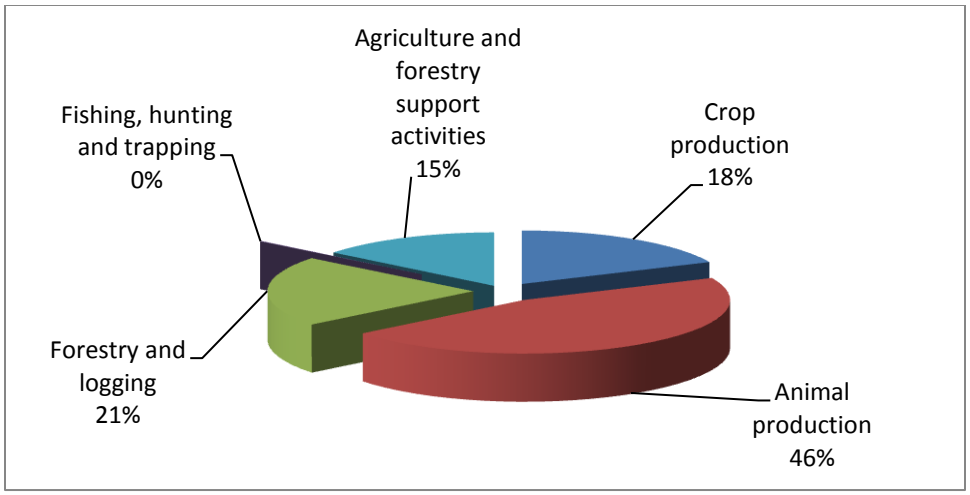
Figure 68: Saskatchewan Agriculture, Forestry, Fishing and Hunting Employment

Table 28: Saskatchewan Agriculture, Forestry, Fishing and Hunting Employment

Sub-Sector Industry Employment	2001	2006	% Change
Farms	54,842	45,543	-17%
Forestry and logging	1,024	741	-28%
Fishing, hunting and trapping	89	108	21%
Support activities for agriculture and forestry	2,536	2,522	-1%

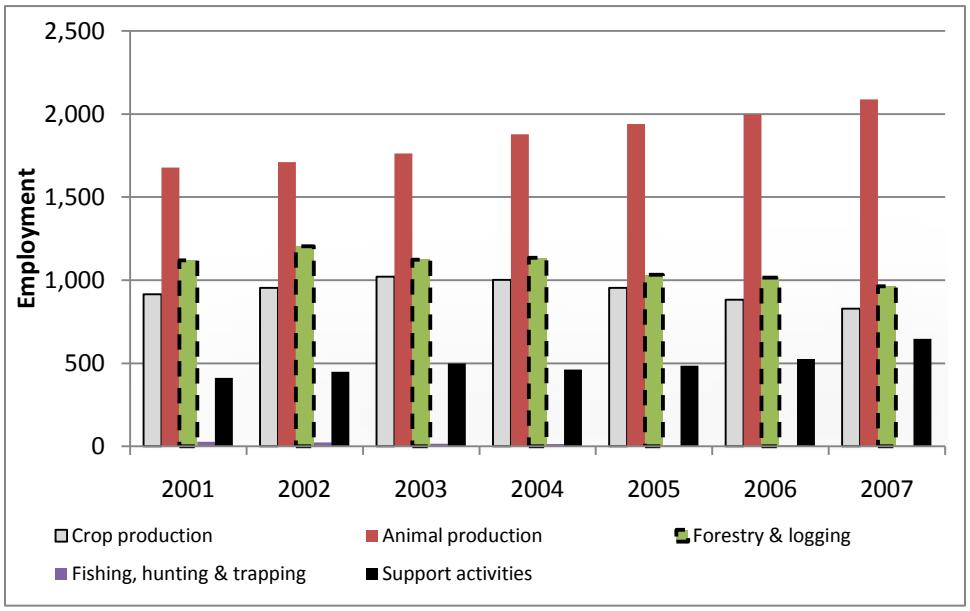
Source: Statistics Canada 2008c, LFS

The agriculture, forestry, fishing and hunting sector is composed of a handful of sub-sectors: agriculture and forestry support activities, crop production and animal production (these are combined into the farms sub-sector for Alberta and Saskatchewan), forestry and logging, and fishing, hunting and trapping. Farm employment in Alberta and Saskatchewan, which is divided into crop and animal production in Montana (Figure 69 and Figure 70), make up the largest share of agriculture employment in all three regions (BLS 2008a, CES).



Source: BLS 2008a, CES

Figure 69: Montana Agriculture, Forestry, Fishing and Hunting Employment, 2007



Source: BLS 2008a, CES

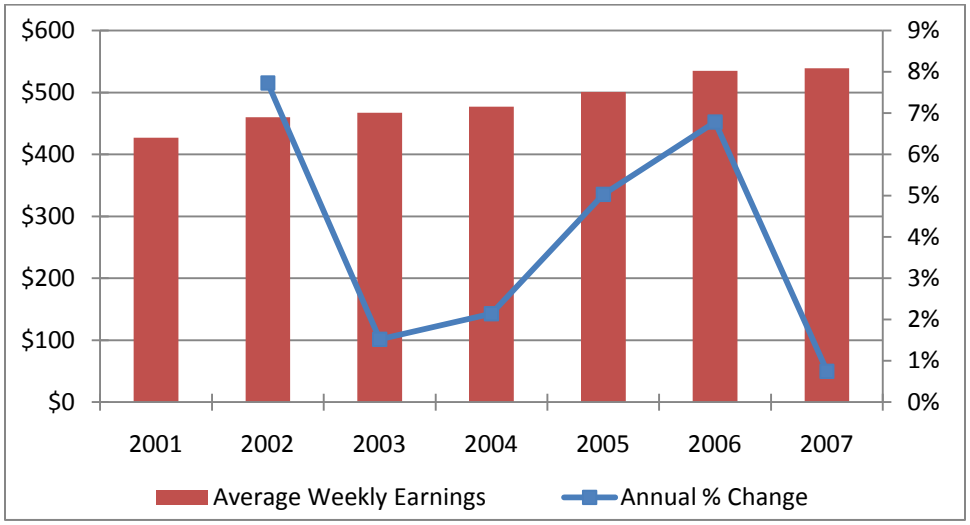
Figure 70: Montana Agriculture, Forestry, Fishing and Hunting Sub-Sector Employment

Employment in the forestry and logging sub-sector decreased over time in Montana, Alberta and Saskatchewan. The increase in employment in the animal production sub-sector in Montana offset the decrease in employment within the crop production sub-sector. This was not the case in Alberta and Saskatchewan, where employment within the farm sub-sector, which includes both crop and animal, declined from 2001 to 2006.

4.3.2.2 Earnings

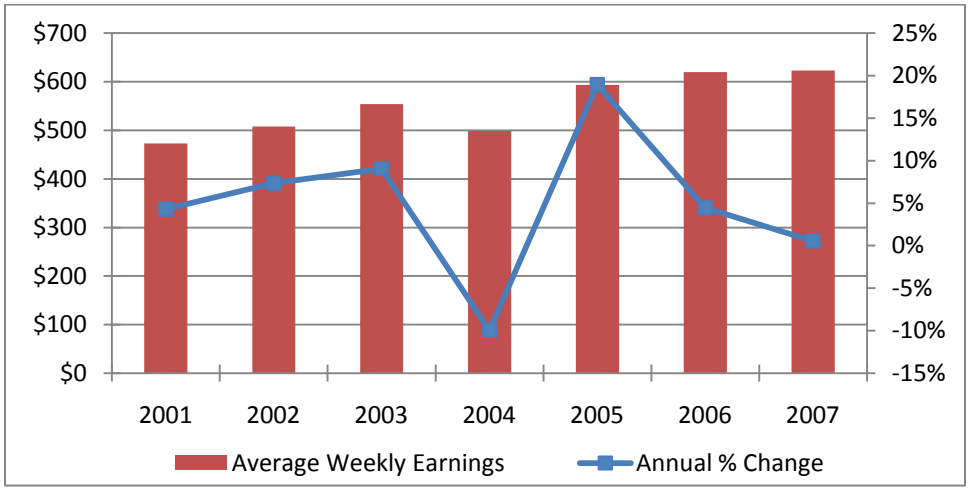
The average weekly earnings of those in the agriculture, forestry, fishing and hunting industry seemed to have leveled off in the past couple of years in both Montana (BLS 2008a, CES) and

Alberta (Statistics Canada 2008c, LFS), experiencing close to zero percent growth (Figure 71 and Figure 72).



Source: BLS 2008a, CES

Figure 71: Montana Agriculture, Forestry, Fishing and Hunting Earnings

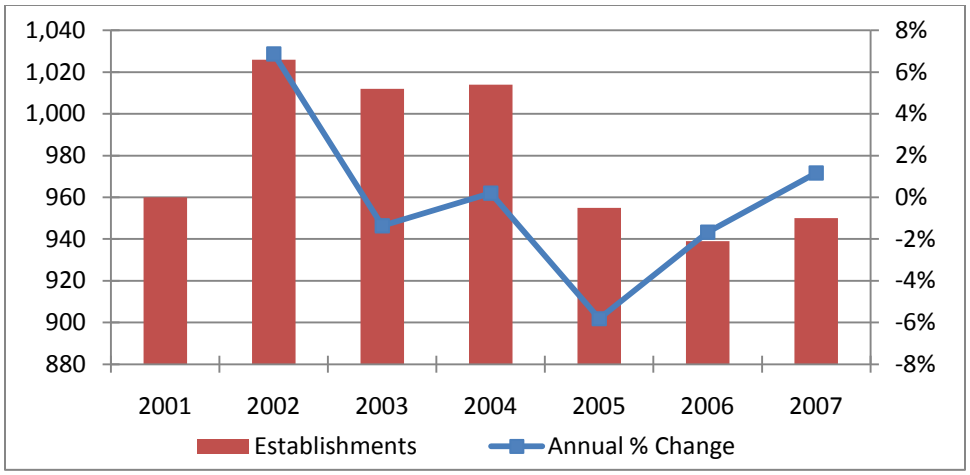


Source: Statistics Canada 2008c, LFS

Figure 72: Alberta Agriculture, Forestry, Fishing and Hunting Earnings

4.3.2.3 Businesses: Number, Size and Output

The number of agriculture establishments in Montana (Figure 73) has been declining since 2001, experiencing a negative growth rate in more recent years (BLS 2008d, QCEW). Only in 2007 did the number of agriculture establishments start to increase after two years of significant decline. The agriculture, forestry, fishing and hunting industry is still a vital component of Montana's economy, contributing 11 percent to the state's 2007 GDP.



Source: BLS 2008d, QCEW

Figure 73: Montana Agriculture, Forestry, Fishing and Hunting Establishments

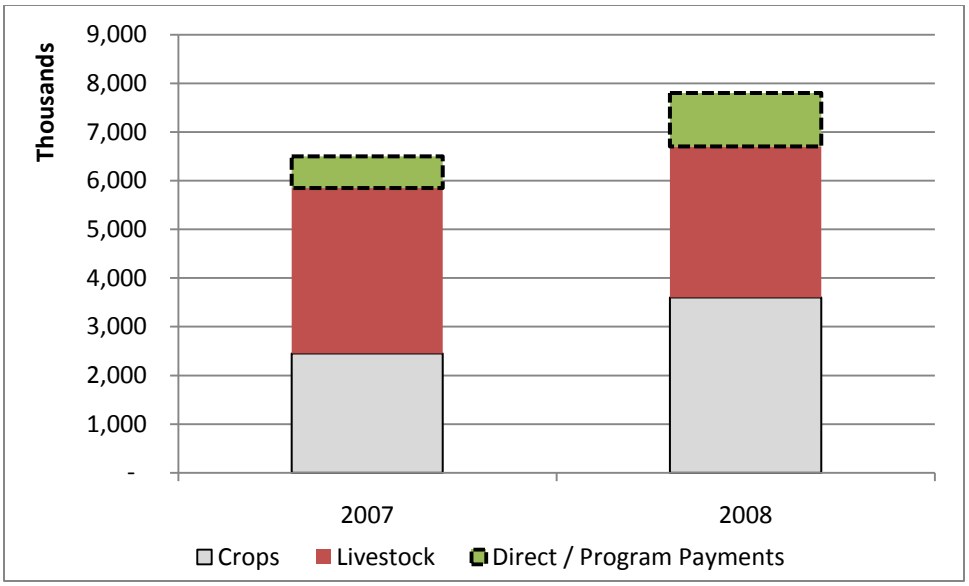
In 2008, there were approximately 5,711 agriculture, forestry, fishing and hunting establishments in Alberta (Table 29), the majority of which were composed of less than five employees (Industry Canada 2008a).

Table 29: Alberta Agri-Forestry, Establishments by Number of Employees, 2008

Establishment Size	Percentage
Micro (1-4 Employees)	78%
Small (5-99 Employees)	22%
Medium (100-499 Employees)	<0.1%
Large (500+ Employees)	<0.1%
Total Establishments	**5,711**

Source: Industry Canada 2008a

Total farm cash receipts in Alberta increased by 18 percent from 2007 to 2008 (Figure 74). This was due to a 41 percent increase in receipts from crop production and a 36 percent increase in direct/program payments (Alberta Finance and Enterprise 2009b).



Source: Alberta Finance and Enterprise 2009b

Figure 74: Alberta Farm Cash Receipts ($ thousands)

There were almost 4,600 agriculture establishments in Saskatchewan in 2008 (Table 30) and like Alberta, the majority of these were "micro" businesses with less than five employees. The agriculture industry is the second largest sector for the Saskatchewan economy, contributing 10 percent to the province's 2007 GDP (Industry Canada 2008a).

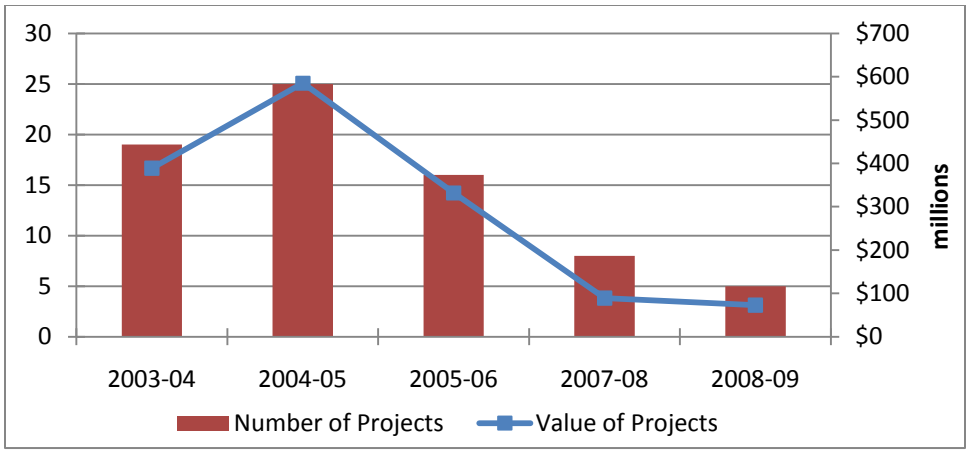
Table 30: Saskatchewan Agri-Forestry Establishments by Number of Employees, 2008

Establishment Size	Percentage
Micro (1-4 Employees)	87%
Small (5-99 Employees)	13%
Medium (100-499 Employees)	<0.1%
Large (500+ Employees)	<0.1%
Total Establishments	**4,598**

Source: Industry Canada 2008a

4.3.2.4 Major Projects

Figure 75 presents the recent decline in the number of agriculture and related projects in Alberta. As the number of projects declines, so does the value of these projects. A detailed list of 2008-09 major agriculture projects in Alberta is presented in Table 31 (Alberta Finance and Enterprise 2009a).



Source: Alberta Finance and Enterprise 2009a

Figure 75: Major Agriculture and Related Projects, Alberta

This decline in agriculture projects could reflect the increased focus on the oil and gas industry in recent years. Oil and gas projects, and associated value, began increasing in 2004-05, just as oil prices began to soar. It is at this point when agriculture projects began to steadily decline in number and value.

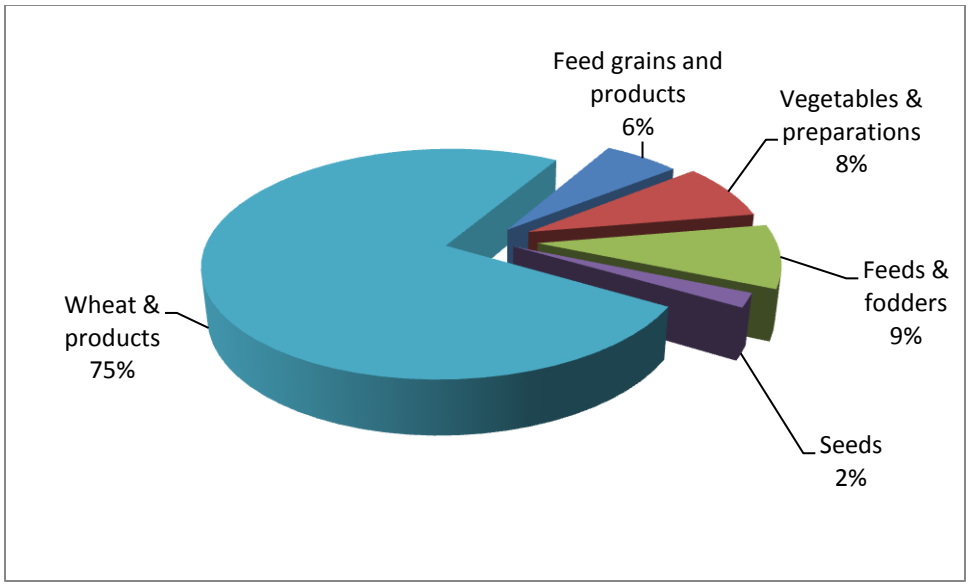
Table 31: Major Agriculture and Related Projects, Alberta 2008-09

Company Name	Project Description	Project Location	Cost (Mil $)	Construction Schedule	Remarks
Alberta Agriculture, Food and Rural Development	New Greenhouses at Crop Diversification Centre	Brooks	$16.40	2008-2009	Under Construction. Chandos Construction
Alberta Processing Company	Processing Plan	Calgary	$9.00	2007-2009	Under Construction. Clark Builders.
Hole's Greenhouses	Greenhouse Relocation / Expansion	St. Albert	$15.00	2009-2010	Announced. Planned Construction Spring 2009
Ponoka Ag - Event Centre Society(PAECS)	New Ag - Event Centre	Ponoka	$8.50		Proposed
Viterra Inc.	High Throughput Grain Terminal	County of Grande Prairie	$24.00	2009-2010	Announced. FWS Construction. Site work fall 2008, construction start spring 2009.

Source: Alberta Finance and Enterprise 2009a

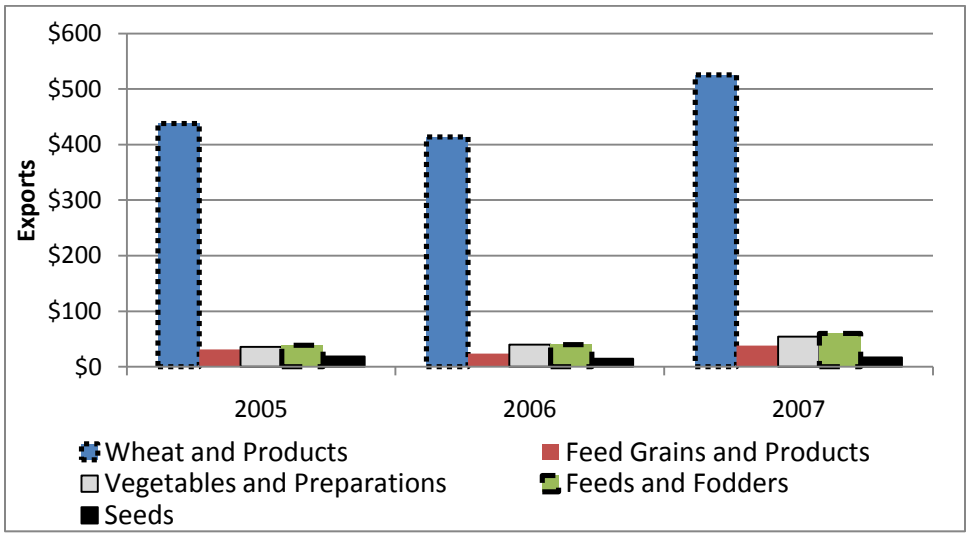
4.3.2.5 Trade

The export of agriculture products is critical to the state of Montana and was valued at over half a billion dollars in 2007. Wheat and wheat products is the top agricultural commodity for Montana (Figure 76), making up three quarters of all agricultural exports. The composition and value of Montana's agricultural exports is shown in Figure 77 (WISERTrade 2008).



Source: WISERTrade 2008

Figure 76: Composition of Agriculture Export Products, Montana 2007

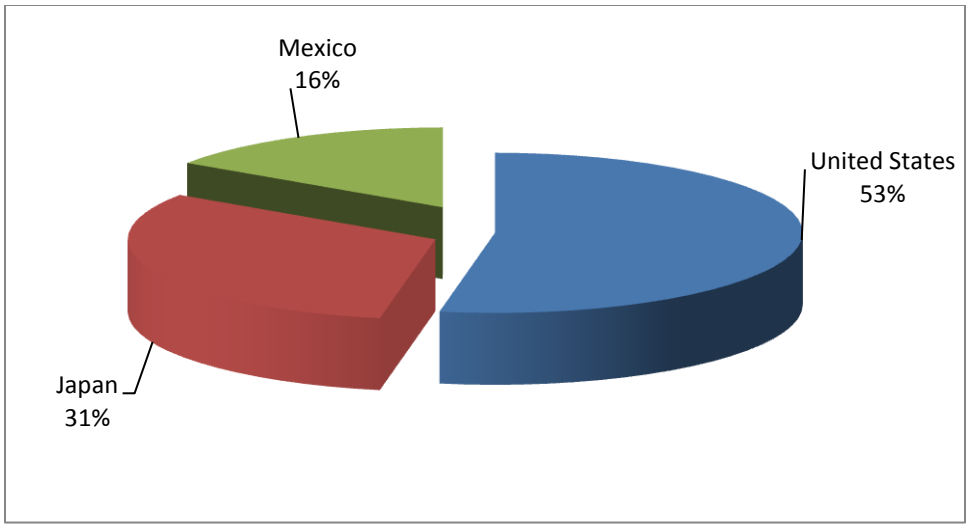


Source: WISERTrade 2008

Figure 77: Montana Agriculture Export Value ($millions)

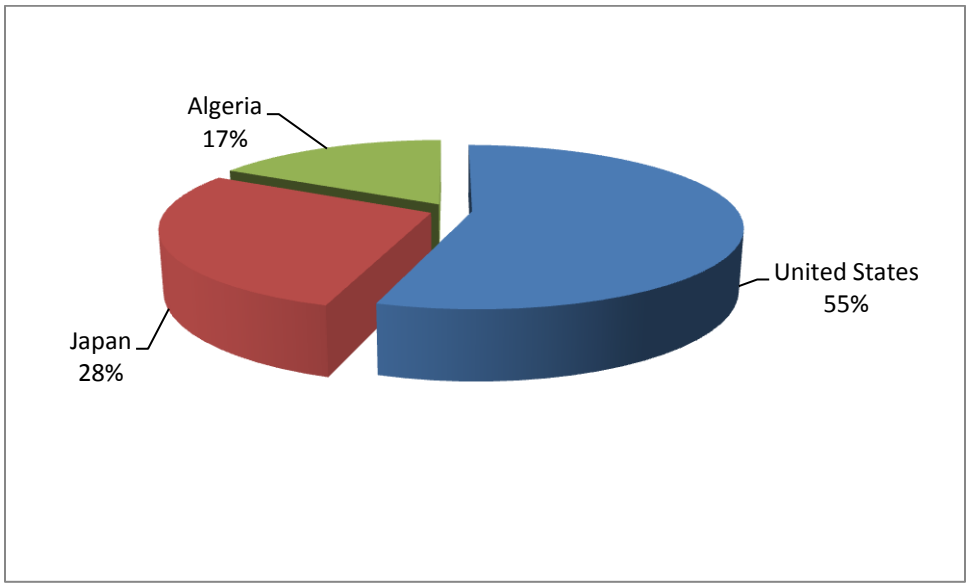
The value of all agriculture export products increased from 2005 to 2007, with the exception of seeds, which declined by approximately 9 percent. Overall, Montana agriculture exports increased in value by 24 percent. The largest export market for Montana agricultural products is Canada.

Similarly, the largest market for Alberta and Saskatchewan's agriculture exports is the U.S. Alberta and Saskatchewan's top three export markets for agriculture products in 2008 are shown in Figure 78 and Figure 79 (Industry Canada 2008b). While the U.S. and Japan are the top two export markets for both Alberta and Saskatchewan agricultural products, the third largest markets vary, with Alberta exporting to Mexico while Saskatchewan's third largest export market is Algeria.



Source: Industry Canada 2008b

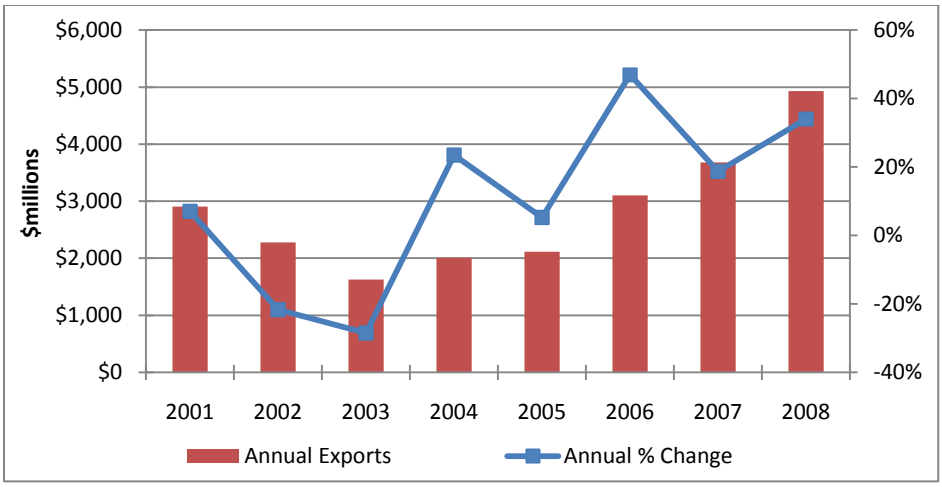
Figure 78: Alberta Agriculture Exports by Country, 2008



Source: Industry Canada 2008b

Figure 79: Saskatchewan Agriculture Exports by Country, 2008

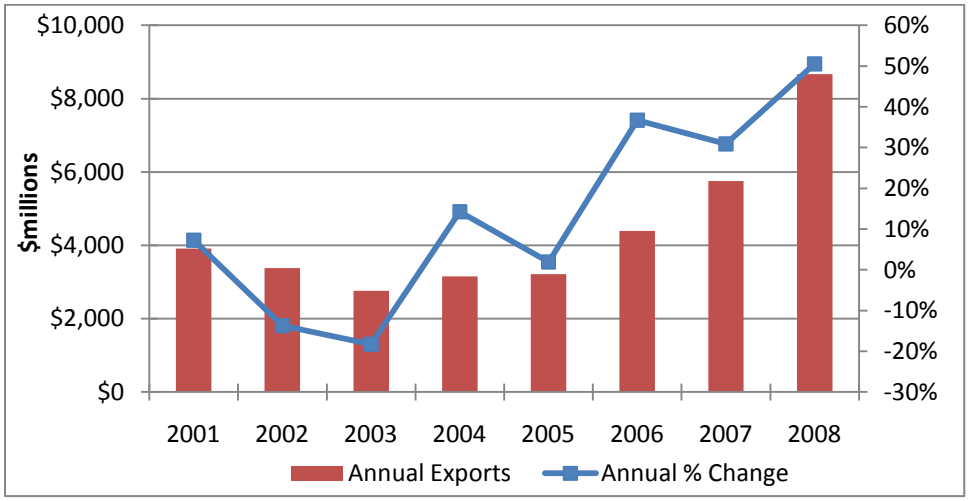
The value of Alberta's agriculture exports has been growing rapidly (Figure 80) since 2003 as commodity prices have increased, reaching growth rates as high as 47 percent in 2006 (Industry Canada 2008b). In the last year, export value increased by 34 percent alone.



Source: Industry Canada 2008b

Figure 80: Alberta Agriculture Export Value ($millions)

Saskatchewan's export value has followed the same trend as Alberta, decreasing to a low in 2003 followed by large increases in following years (Figure 81). Like Alberta, Saskatchewan's export value has experienced high growth rates since 2003, with rates between 30 and 50 percent in the last few years (Industry Canada 2008b).



Source: Industry Canada 2008b

Figure 81: Saskatchewan Agriculture Export Value ($millions)

4.3.2.6 Comparison

Like the energy sector, the differences between the agriculture industries in Montana, and Alberta and Saskatchewan are significant. The number of those employed in Alberta was over 11 times higher than those in Montana in 2007, and Saskatchewan agriculture employment is also significantly higher than in Montana (about 45,000 employees compared to just over 4,500). Another difference, however, is that Montana's agriculture activity has held fairly steady or grown in recent years while agriculture employment in Saskatchewan and Alberta has decreased since 2001. The number of agriculture establishments in Alberta outnumbered those in Montana

(BLS 2008a, CES) 6 to 1, while the number of establishments in Saskatchewan is much more comparable to the number in Alberta (Industry Canada 2008a).

Agriculture products contribute more significantly to Montana's export value (BTS 2008) than Alberta agriculture products contribute to the province's total export value (Industry Canada 2008b). Despite this, Alberta's agriculture export value was approximately 5 times that of Montana. Even more of a gap is present when comparing Saskatchewan's export value to Alberta and Montana figures. Saskatchewan's agriculture export value was over 12 times that in Montana and almost twice as large as Alberta's export value in 2008.

4.3.2.7 Industry Outlook

Montana, Saskatchewan, and Alberta's agriculture industry has many challenges to face in the coming years. Farming sectors are struggling under volatile commodity prices, production costs and economies of scale. At the same time, the downturn in the housing market has had detrimental effects on the forestry sector due to a significant decrease in the demand for lumber. There is opportunity to turn this potentially dire situation into something positive if farm and forestry products in Alberta are used as a bio-platform, creating electricity and gas from animal waste and finding uses for the sugars and starches present in trees and farm crops. While this would not only mitigate some of the negative impacts of the economic slowdown, it would also be a step towards a "greener" provincial economy by generating alternative, green energy. This shift in focus would require new and different skill sets from employees within the agriculture industry and would take time to become effective. Employment within the Alberta agriculture industry is forecasted to grow at an average annual growth rate of 0.5 percent per year until 2012. Saskatchewan's agriculture industry is expected to show slow growth through 2011, and after 2012 is forecasted to grow at 2 percent (Conference Board of Canada 2009). Although forecasts for Saskatchewan show positive growth, there will likely be significant variability from year to year, similar to historical trends. The negative impacts of current and forecasted economic conditions are expected to hit the Montana agriculture industry harder than in Alberta, with employment in this sector expected to decrease by an average annual rate of 0.2 percent per year until 2016.

4.3.3 Construction Sector

4.3.3.1 Sector and Sub-Sector Employment

Employment in the construction industry has increased significantly in both Montana and Alberta. Since 2001, Montana construction employment has increased by 53 percent (BLS 2008b, CES) while Alberta construction employment increased by 52 percent from 2001 to 2008 (Statistics Canada 2008c, LFS). This is a relatively well-concentrated industry in both Montana and Alberta, with location quotients of 1.29 and 1.39 respectively.

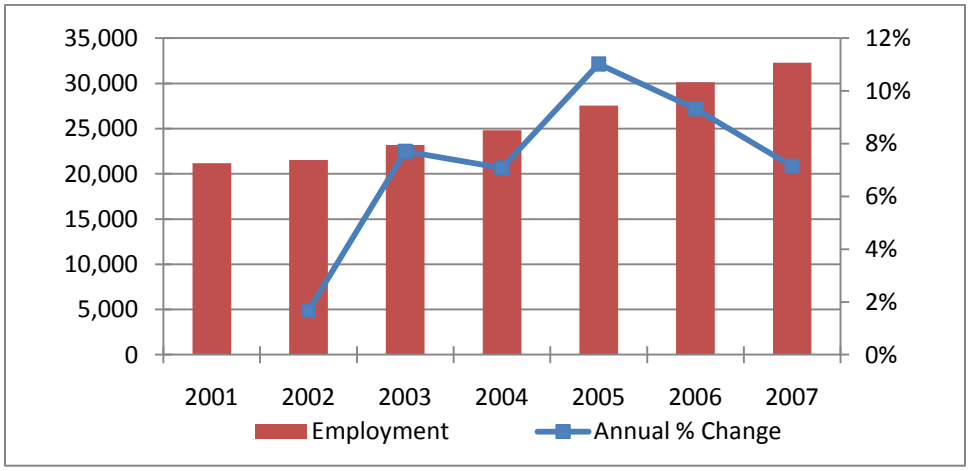
The majority of construction activity takes place in the larger metro areas of Alberta, with Calgary and Edmonton accounting for 35 and 34 percent of employment (Statistics Canada 2008a, 2006 Census of Population), respectively (Table 32). Meanwhile, Montana's construction activity is primarily concentrated in Gallatin County, followed by Yellowstone and Flathead counties (BEA 2009c, REIS).

Table 32: Employment Centers in the Construction Sector

Alberta		Montana	
Calgary	35%	Gallatin County	17%
Edmonton	34%	Yellowstone County	15%
Red Deer	6%	Flathead County	14%
Rest of Province	25%	Rest of State	54%

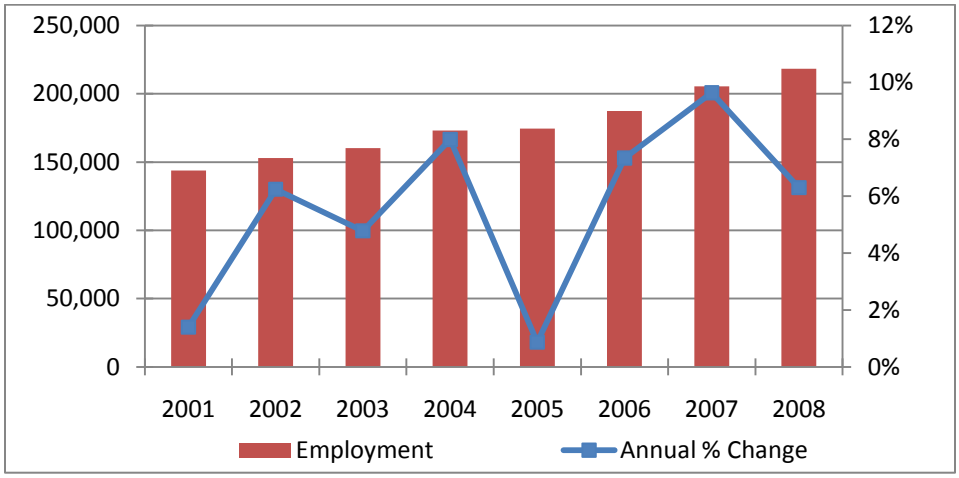
Source: Statistics Canada 2008a, 2006 Census of Population & BEA 2009c, REIS

As indicated, both Alberta and Montana's construction industries have shown significant growth, as seen in Figure 82 and Figure 83. However, recent economic conditions have impacted the construction industry, where in 2008 statewide construction employment dropped 8 percent from 2007 for Montana (BLS 2008a, CES), and 4 percent for Alberta (Statistics Canada 2008c, LFS). Preliminary estimates for the first quarter of 2009 suggest that employment may have dropped as much as 20 percent since the last quarter of 2008. Although short-term drop in employment is expected, long term projections are likely to hold.



Source: BLS 2008a, CES

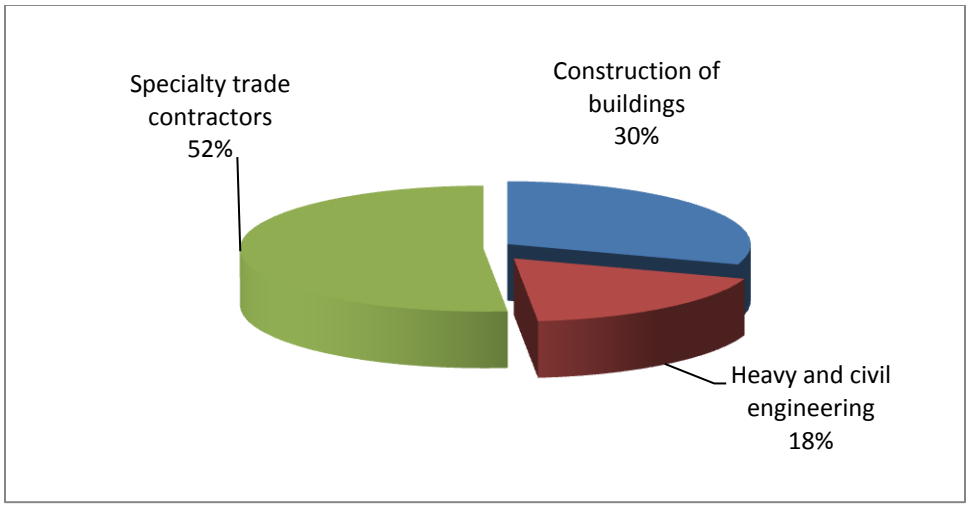
Figure 82: Montana Construction Employment



Source: Statistics Canada 2008c, LFS

Figure 83: Alberta Construction Employment

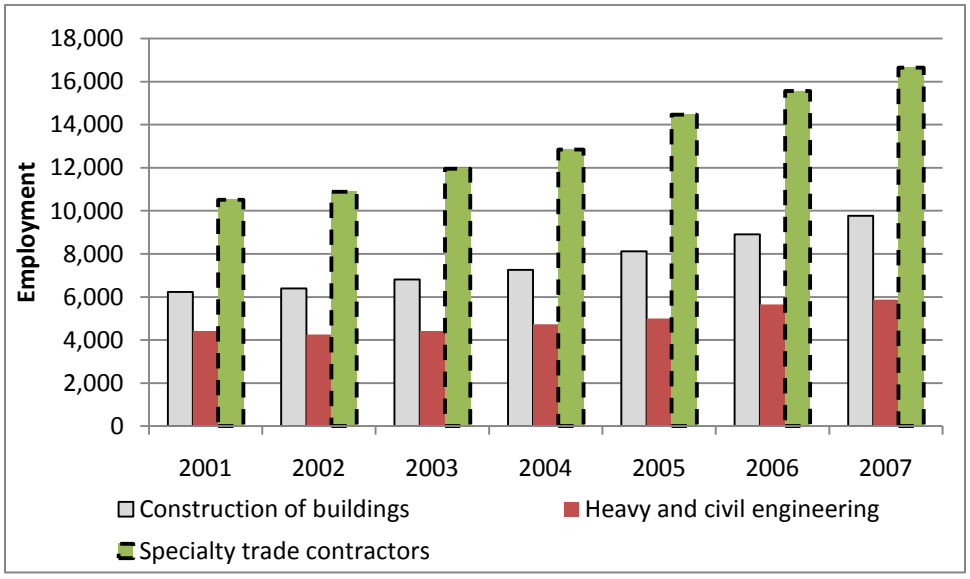
Sub-sectors within the construction industry are defined differently for Montana and Alberta. The Montana construction industry can be broken down into the construction of buildings, heavy and civil engineering construction and specialty trade contractors. It can be seen from Figure 84 that in 2007, the largest proportion of construction employment was in specialty trade contractors, followed by the construction of buildings (BLS 2008a, CES).



Source: BLS 2008a, CES

Figure 84: Composition of Construction Sub-Sector Employment, Montana 2007

Similar to the overall construction employment in the state, employment in each sub-sector experienced steady growth from 2001 to 2007, as shown in Figure 85 (BLS 2008a, CES).



Source: BLS 2008a, CES

Figure 85: Montana Construction Sub-Sector Employment

Table 33 shows employment for two of Alberta's construction industry sub-sectors, where construction excluding land subdivision and development is the largest share of Alberta's

construction employment. Employment in both of these sub-sectors also experienced significant growth from 2001 to 2006 (Statistics Canada 2008c, LFS).

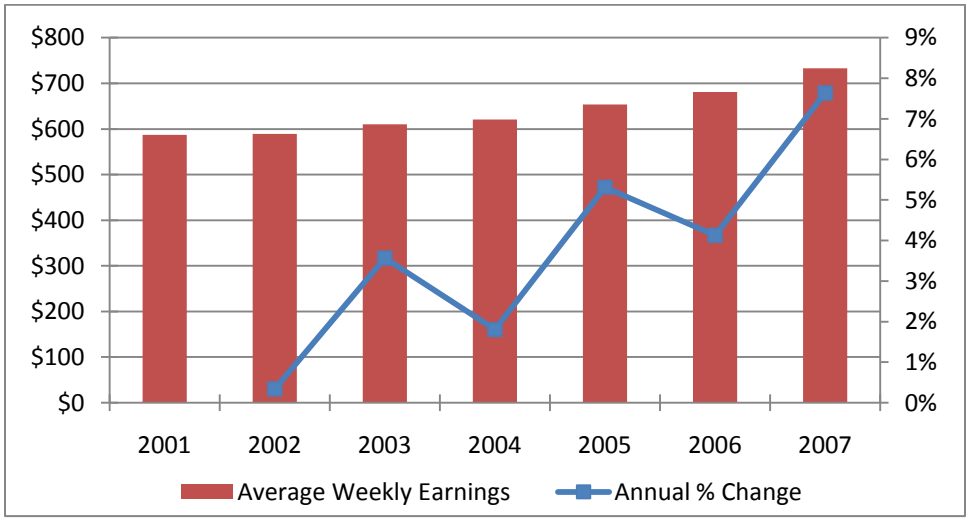
Table 33: Alberta Construction Sub-Sector Employment

Sub-Sector Industry Employment	2001	2006	% Change
Construction (excl land subdivision and land development)	128,535	167,250	30%
Land subdivision and land development	1,480	2,170	47%

Source: Statistics Canada 2008c, LFS

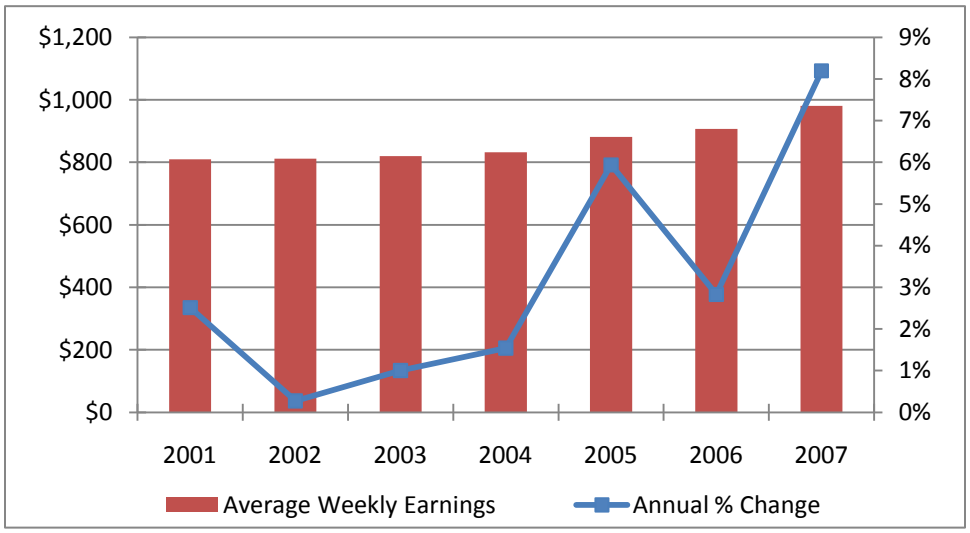
4.3.3.2 Earnings

Average weekly earnings in the construction industry, in both Montana and Alberta, have experienced positive annual growth since 2001 (Figure 86 and Figure 87). From 2001 to 2007, this industry's wage rate has increased by 25 percent in Montana (BLS 2008a, CES) and 21 percent in Alberta (Statistics Canada 2008c, LFS).



Source: BLS 2008a, CES

Figure 86: Montana Construction Earnings

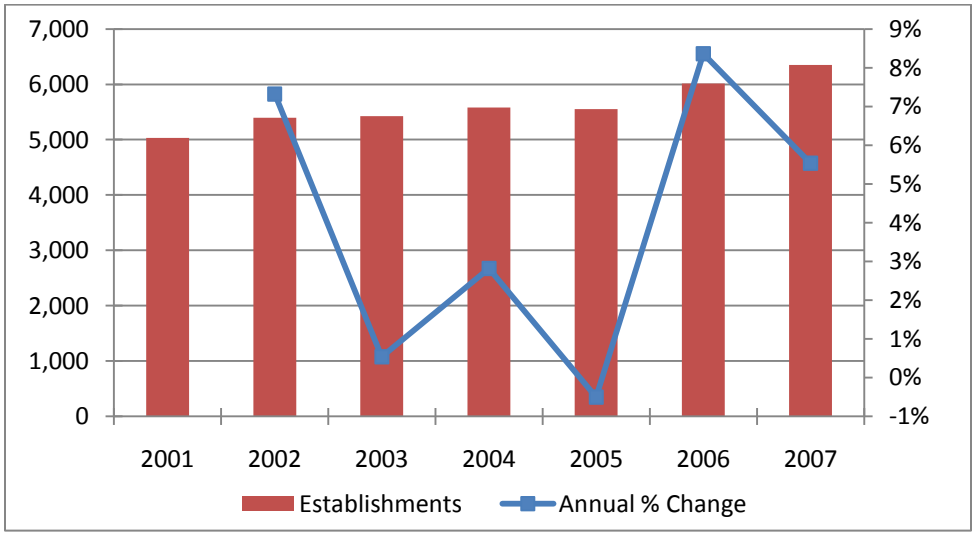


Source: Statistics Canada 2008c, LFS

Figure 87: Alberta Construction Earnings

4.3.3.3 Businesses: Number, Size and Output

While the number of construction establishments in Montana has increased in recent years, it has done so at highly varied annual growth rates. Figure 88 shows that the growth rate of the number of construction establishments has ranged from approximately negative one percent in 2005 to over 8 percent the next year, with an overall increase of over 1,000 establishments from 2001 to 2007 (BLS 2008d, QCEW).

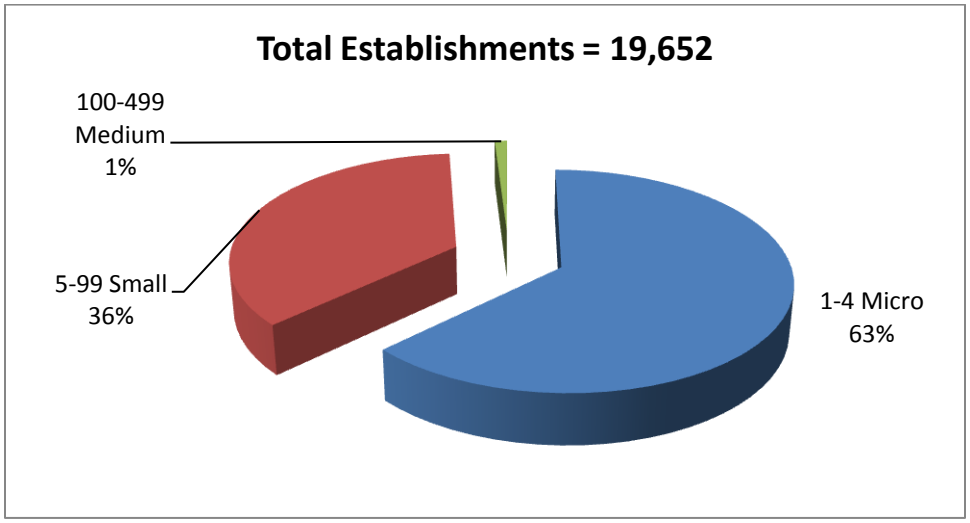


Source: BLS 2008d, QCEW

Figure 88: Montana Construction Establishments

In 2008, there were 19,652 construction businesses established in Alberta (Industry Canada 2008a). Just under two thirds of these were "micro" businesses, composed of less than five

employees (Figure 89). The remaining establishments were "small" businesses, employing anywhere from 5 to 99 employees.



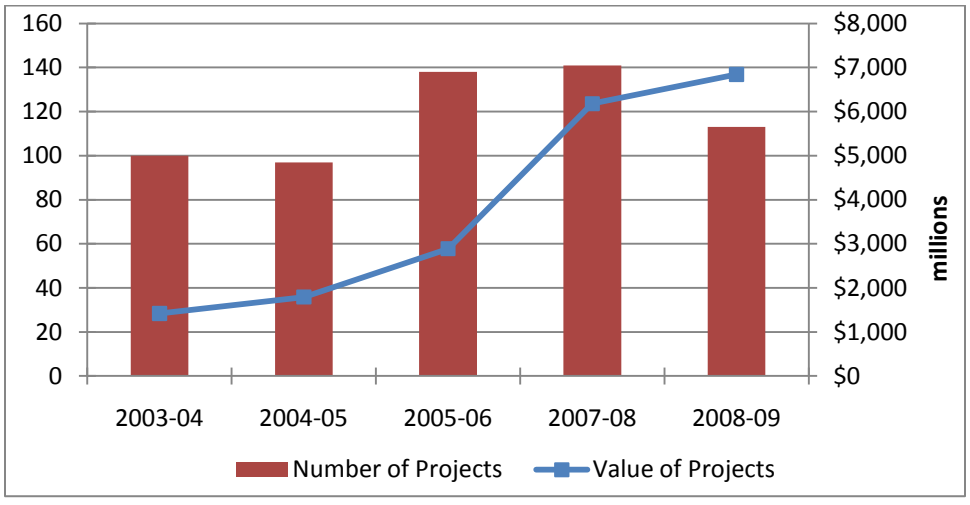
Source: Industry Canada 2008a

Figure 89: Alberta Construction Establishments by Number of Employees, 2008

The construction industry contributed 6 percent to Montana's 2007 GDP while in Alberta this industry accounted for 9 percent of the province's 2007 GDP.

4.3.3.4 Major Projects

The number and total value of residential construction projects in Alberta are shown in Figure 90 (Alberta Finance and Enterprise 2009b). Over time, not only has the total value of projects increased but so has the value per project. The number of current and proposed projects for 2008-09 decreased (Figure 90), yet the total value of these projects increased. This resulted in a 38 percent increase per project value for 2008-09.



Source: Alberta Finance and Enterprise 2009b

Figure 90: Major Residential Construction Projects, Alberta

A detailed list of 2008-09 residential construction projects in Alberta can be found in Appendix C.

4.3.3.5 Comparison

While construction is a critical industry to both Montana and Alberta, this industry made up a greater proportion of Alberta's 2007 GDP, 9 percent, (Statistics Canada 2008b, National Economic Accounts) compared to Montana's 2007 GDP, 6 percent (BEA 2009b, Regional Economic Accounts). Construction employment in both regions has experienced significant increases in recent years. In 2007, construction employment in Alberta was over 6 times (Statistics Canada 2008c, LFS) the size in Montana (BLS 2008a, CES). Similarly, the number of construction establishments in Alberta was approximately three times the number in Montana. Despite these differences, earnings in the construction industry were fairly similar for both Montana and Alberta, with Alberta earnings just slightly higher than Montana earnings. Average weekly earnings in both regions followed the same growth pattern in recent years, increasing by around 8 percent in 2007.

4.3.3.6 Industry Outlook

Significant increases in construction cost indices, driven by high fuel and material prices, are having negative impacts on construction industries. In 2008 in Alberta, the number of housing starts fell, the value of building permits declined and the number of residential, industrial and commercial building permits declined. This downturn in the industry is anticipated to continue, and be reflected in Alberta construction employment for several years. From 2009 to 2012, Alberta construction employment is expected to decrease at an average of 3 percent per year (Conference Board of Canada 2009).

Despite the economic downturn and increase in construction costs, Montana's construction industry is expected to remain relatively steady. This is mainly due to the two-year state building program totaling over $300 million for university and correction facilities, highway work and other construction projects. From 2008 to 2009, Montana construction employment is expected to increase by less than one percent (Pacific Builder & Engineer's Construction Forecast, 2009). Over the long term however, construction employment is expected to increase by an average of almost 3 percent per year until 2016.

4.3.4 Manufacturing

4.3.4.1 Sector and Sub-Sector Employment

The manufacturing industry, while a main source of employment for both Montana and Alberta, has experienced slower growth than many of the other key industries in both regions. Manufacturing is one of the few goods-producing industries with location quotients less than 1 in both Montana (0.47) and Alberta (0.62).

Like the construction industry, the majority of manufacturing activity is concentrated in the two largest cities of Alberta (Statistics Canada 2008a, 2006 Census of Population). Calgary and Edmonton account for 38 and 37 percent of industry activity, respectively (Table 34). In Montana, manufacturing activity is most prominent in Flathead and Yellowstone counties at 17

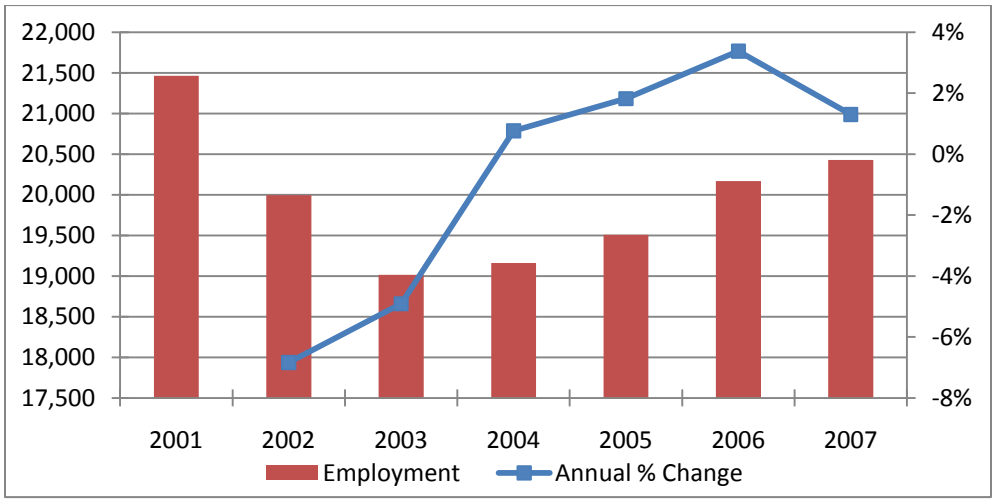
and 16 percent, respectively, followed by Gallatin and Missoula counties at 13 and 12 percent (BLS 2008a, CES). It is worth noting that in this sector (and others), industry clusters are much more focused in Calgary and Edmonton in Alberta, and much more dispersed in Montana (as indicated by the 41% share of industry activity in the rest of state).

Table 34: Employment Centers in the Manufacturing Sector

Alberta		Montana	
Calgary	38%	Flathead County	17%
Edmonton	37%	Yellowstone County	16%
Lethbridge	6%	Gallatin County	13%
Red Deer	5%	Missoula County	12%
Rest of Province	15%	Rest of State	41%

Source: Statistics Canada 2008a, 2006 Census of Population & BLS 2008a, CES

Despite growth in Montana manufacturing employment in recent years (Figure 91), overall, employment in this industry has dropped by 5 percent from 2001 to 2007 (BLS 2008a, CES).



Source: BLS 2008a, CES

Figure 91: Montana Manufacturing Employment

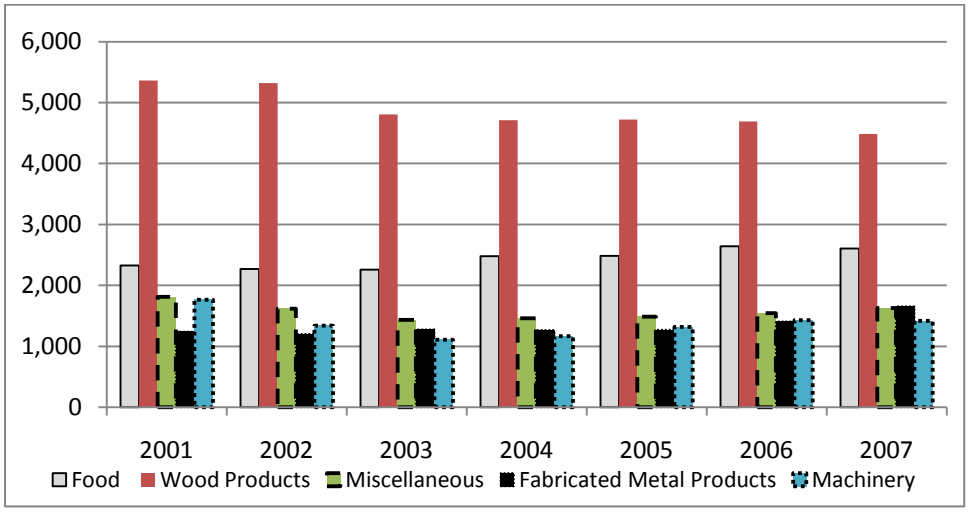
The manufacturing sector is composed of several sub-sectors, presented in Table 35 (BLS 2008a, CES). The largest component of the manufacturing industry is employment in the wood products sub-sector followed by food manufacturing, fabricated metal products, miscellaneous manufacturing, and machinery manufacturing.

Table 35: Composition of Manufacturing Sub-Sector Employment, Montana 2007

Manufacturing Sub-Sector Employment	2007	Percent
Food	2,607	13%
Beverage and Tobacco Products	716	4%
Textile Product Mills	209	1%
Apparel	129	1%
Leather and Allied Products	62	0%
Wood Products	4,486	23%
Printing and Related Support Activities	1,151	6%
Petroleum and Coal Products	975	5%
Chemicals	806	4%
Transportation Equipment	572	3%
Furniture and Related Products	936	5%
Miscellaneous	1,627	8%
Plastics and Rubber Products	315	2%
Nonmetallic Mineral Products	1,060	5%
Primary Metals	464	2%
Fabricated Metal Products	1,652	8%
Machinery	1,419	7%
Computer and Electronic Products	538	3%
Electrical Equipment and Appliances	194	1%
Total	**19,918**	

Source: BLS 2008a, CES

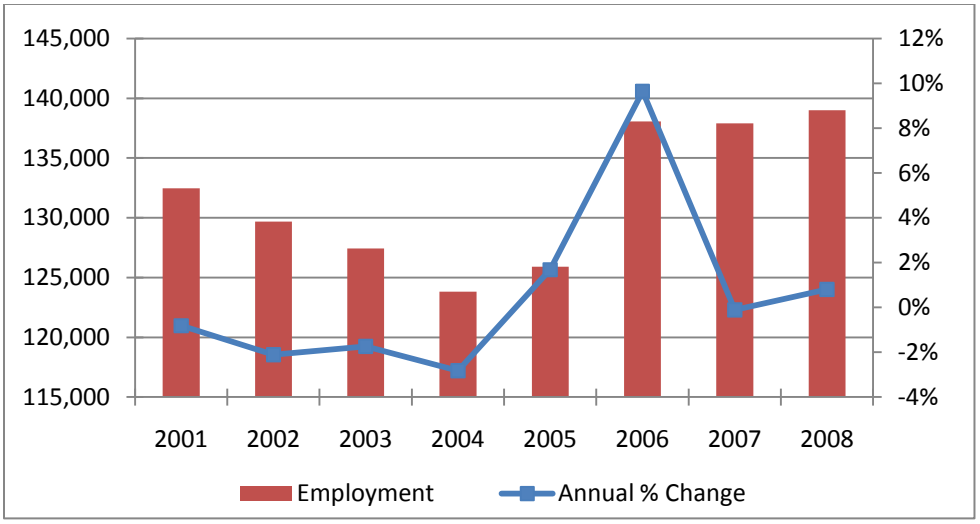
The decline in wood products manufacturing employment (Figure 92) contributed greatly to the overall decline in manufacturing employment. With the exception of slight increases in employment in the food and fabricated metal products sub-sectors, the remaining top 5 sub-sectors all experienced drops in employment since 2001 (BLS 2008a, CES).



Source: BLS 2008a, CES

Figure 92: Montana Manufacturing Sub-Sector Employment

A similar pattern is discovered when examining manufacturing employment in Alberta. Manufacturing employment in Alberta experienced a period of decline from 2001 to 2004, before beginning to increase. As shown in Figure 93, overall manufacturing employment increased by 5 percent from 2001 to 2008, with a peak growth rate of about 10 percent in 2006 (Statistics Canada 2008c, LFS).



Source: Statistics Canada2008c, LFS

Figure 93: Alberta Manufacturing Employment

Fabricated metal product manufacturing was the largest component of the overall Alberta manufacturing employment and the increase in this sub-sector is a strong driver behind the increase in overall manufacturing employment (Table 36 and Table 37). Like Montana, employment within the fabricated metal product sub-sector experienced growth from 2001 to 2006, as did employment within the machinery manufacturing sub-sector, however, employment in the remaining top 5 sub-sectors all decreased (Statistics Canada 2008c, LFS).

Table 36: Alberta's Top 5 Manufacturing Sub-Sector Industry Employment

Top 5 Sub-Sector Industry Employment	2001	2006	% Change
Food manufacturing	20,480	19,930	-3%
Wood product manufacturing	11,725	11,415	-3%
Chemical manufacturing	9,475	8,635	-9%
Fabricated metal product manufacturing	17,080	20,730	21%
Machinery manufacturing	12,390	14,120	14%

Source: Statistics Canada 2008c. LFS

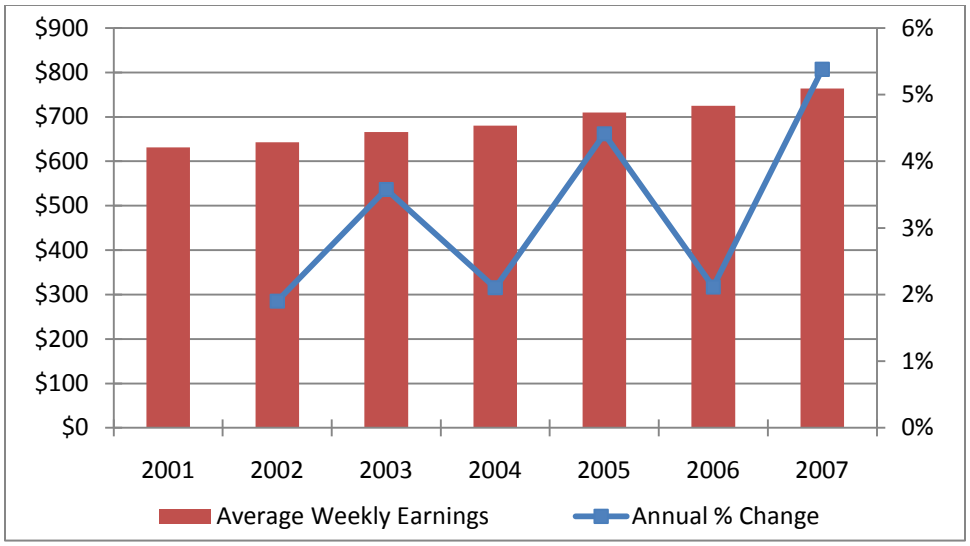
Table 37: Composition of Manufacturing Sub-Sector Employment, Alberta 2006

Manufacturing Sub-Sector Employment	2006	Percent
Food manufacturing	19,930	14%
Beverage and tobacco product manufacturing	2,185	2%
Textile product mills	825	1%
Clothing manufacturing	1,610	1%
Leather and allied product manufacturing	270	0%
Wood product manufacturing	11,415	8%
Paper manufacturing	3,725	3%
Printing and related support activities	7,040	5%
Petroleum and coal products manufacturing	3,765	3%
Chemical manufacturing	8,635	6%
Plastics and rubber products manufacturing	6,470	5%
Non-metallic mineral product manufacturing	6,935	5%
Primary metal manufacturing	3,825	3%
Fabricated metal product manufacturing	20,730	15%
Machinery manufacturing	14,120	10%
Computer and electronic product manufacturing	5,020	4%
Electrical equipment, appliance and component manufacturing	2,540	2%
Transportation equipment manufacturing	5,345	4%
Furniture and related product manufacturing	7,895	6%
Miscellaneous manufacturing	5,625	4%
Total	**137,905**	

Source: Statistics Canada 2008c, LFS

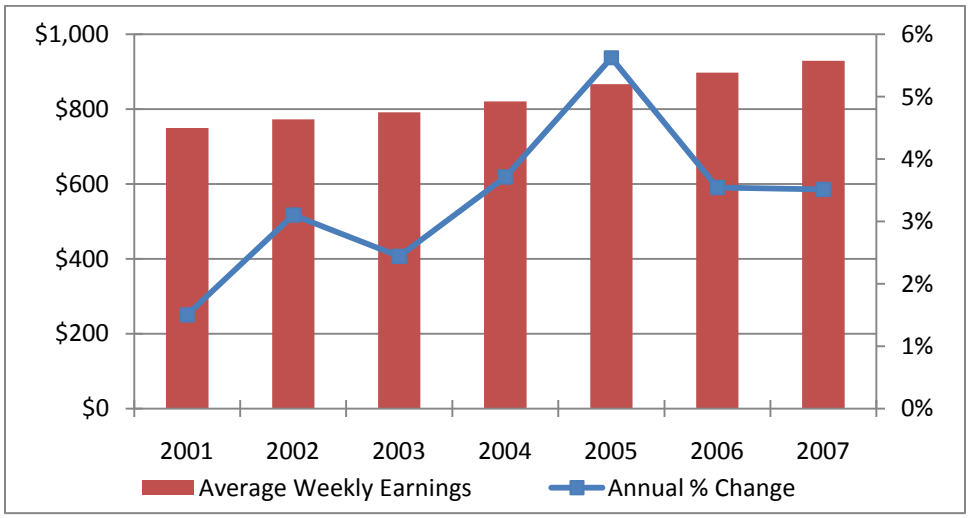
4.3.4.2 Earnings

Average weekly earnings in the manufacturing industry have experienced relatively steady growth since 2001 in both Montana and Alberta, each experiencing annual growth rates between approximately 2 to 5 percent, as seen in Figure 94 and Figure 95. From 2001 to 2007, the average weekly earnings of the manufacturing industry in Montana increased by 21 percent (BLS 2008a, CES) while Alberta experienced an increase in manufacturing earnings of 24 percent (Statistics Canada 2008c, LFS).



Source: BLS 2008a, CES

Figure 94: Montana Manufacturing Earnings

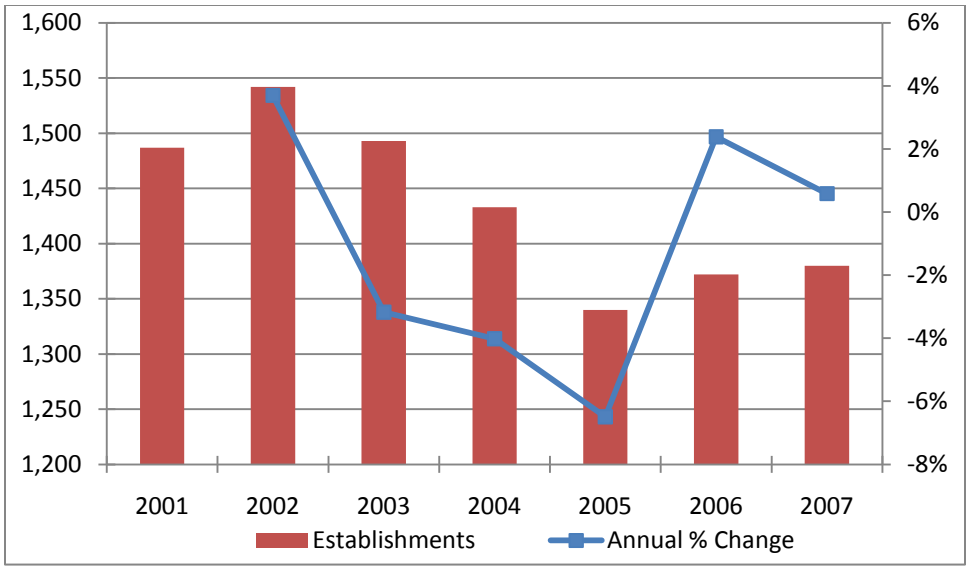


Source: Statistics Canada 2008c, LFS

Figure 95: Alberta Manufacturing Earnings

4.3.4.3 Businesses: Number, Size and Output

Figure 96 shows that the number of manufacturing establishments in Montana has also declined since a recent peak in 2002 (BLS 2008d, QCEW), consistent with the longer-term drop in employment.

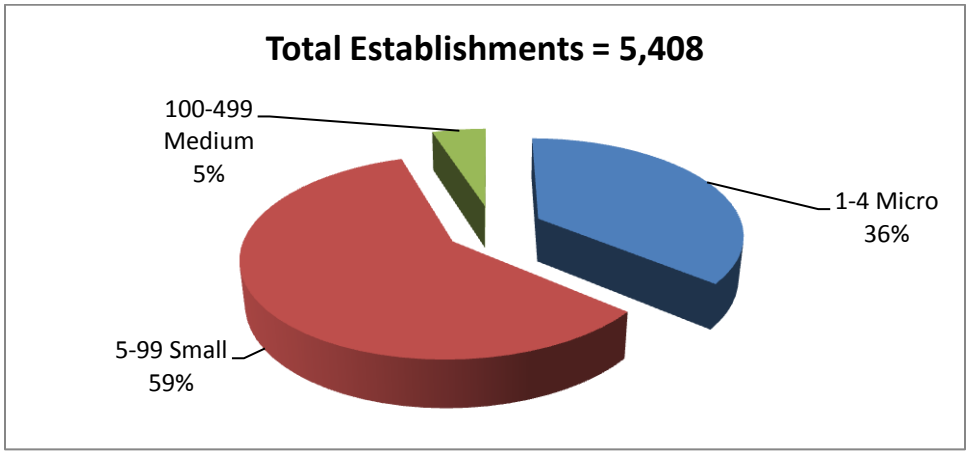


Source: BLS 2008d, QCEW

Figure 96: Montana Manufacturing Establishments

The number of establishments in Montana experienced a negative annual growth rate from 2003 to 2005 related to the weak U.S. economy and unfavorable global conditions such as increased commodity and oil prices. Overall, the number of manufacturing establishments in Montana decreased by 7 percent from 2001 to 2007, however, the number of establishments grew slightly in 2006 and 2007.The Montana manufacturing industry produced sales of approximately $8 billion, measured as the value of shipped products, in 2007, contributing 4 percent of Montana's 2007 GDP.

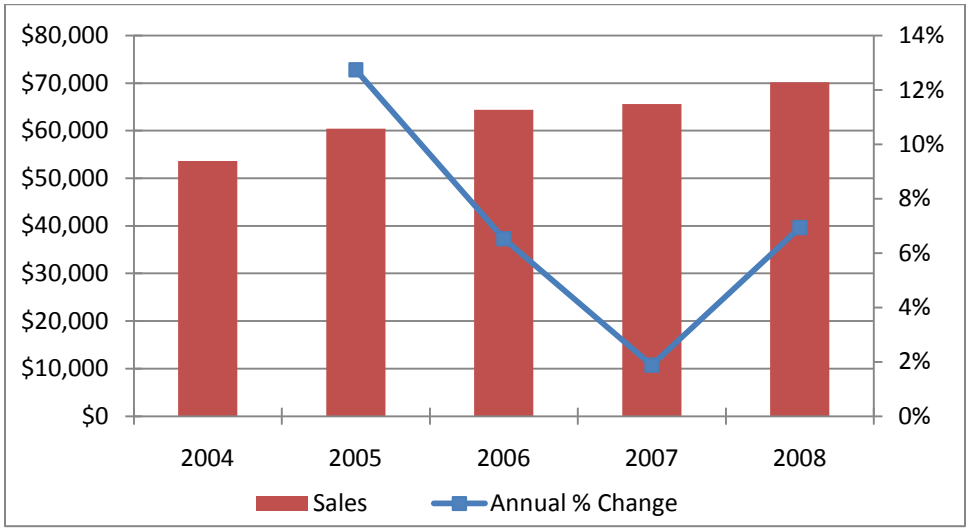
In 2008, the Alberta manufacturing industry was composed of just over 5,400 establishments (Figure 97). The majority of these were "small" businesses meaning they employed 5 to 99 employees. Just over one third were "micro" businesses with less than 5 employees and approximately 5 percent were classified as "medium" businesses with 100 to 499 employees (Industry Canada 2008a).



Source: Industry Canada 2008a

Figure 97: Alberta Manufacturing Establishments by Number of Employees, 2008

Alberta manufacturing sales experienced a positive, but declining, growth rate until 2008 when the growth rate began to climb (Figure 98). Manufacturing sales, measured as the value of shipped goods, in 2008 were just over $70 billion and in 2007 this industry contributed approximately 8 percent to the province's GDP (Industry Canada 2008a).

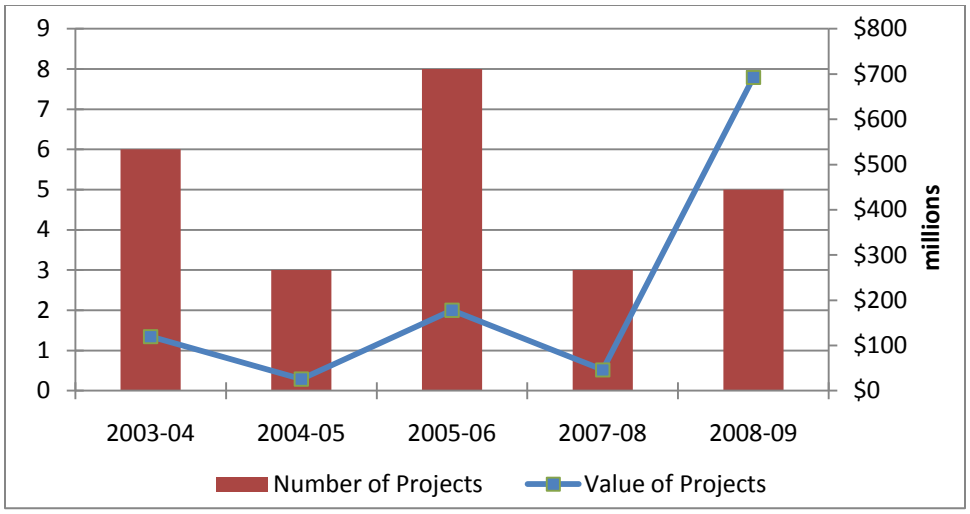


Source: Industry Canada 2008a

Figure 98: Alberta Manufacturing Sales ($millions)

4.3.4.4 Major Projects

The number of manufacturing projects in Alberta has risen and fallen over the years, ranging from 3 to 8 projects (Alberta Finance and Enterprise 2009a). The total value of these projects has intuitively followed the movement of the number of projects, decreasing in years where the number of projects drops and increasing in years with a higher number of projects. Along with the increases in manufacturing employment and establishments in Alberta, there has also been an increase in the number and value of manufacturing projects in the last year. However, the project value increase has been significantly greater than the modest increases in employment and business. The value of the 5 planned projects in 2008-2009 soared to almost $700 million (Figure 99), approximately 15 times higher than the value of manufacturing projects the previous year.



Source: Alberta Finance and Enterprise 2009a

Figure 99: Major Manufacturing Projects, Alberta

A detailed list of the 5 manufacturing projects in progress/planned for 2008-09 is presented in Table 38.

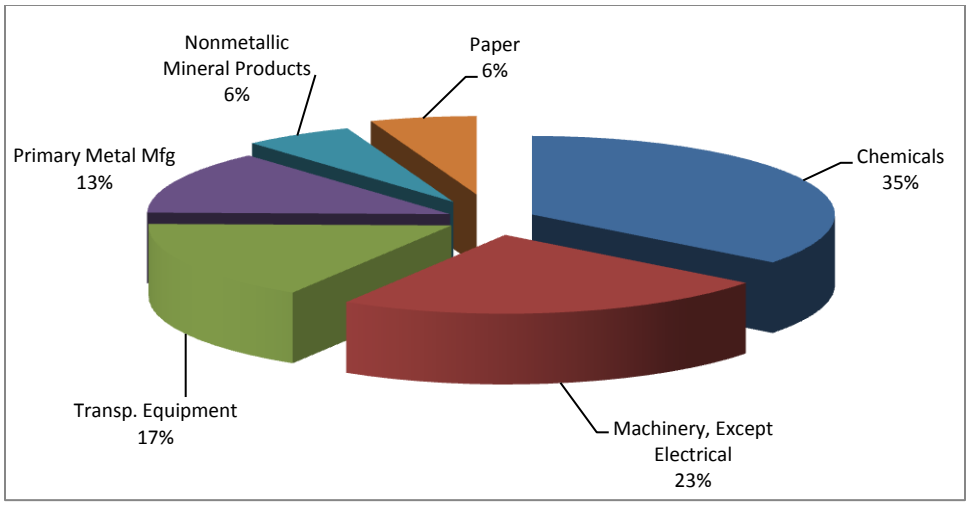
Table 38: Major Manufacturing Projects, Alberta 2008-09

Company Name	Project Description	Project Location	Cost (Mil $)	Construction Schedule	Remarks
Fiberex Glass Corp.	Manufacturing Plan	Leduc	$30		Proposed
Hi - Tech Canada Development	Construction Panel Manufacturing Facility	Ponoka	$30		Proposed
Lafarge Canada	Plant Modernization	MD of Bighorn	$600		Proposed
McLevin Industries Inc.	Fabrication Facility	Lacombe County	$7.50		Proposed
Weldco Beals Manufacturing	Fabrication and Repair Facility	RM of Wood Buffalo	$25	2008-2009	Near Completion

Source: Alberta Finance and Enterprise 2009a

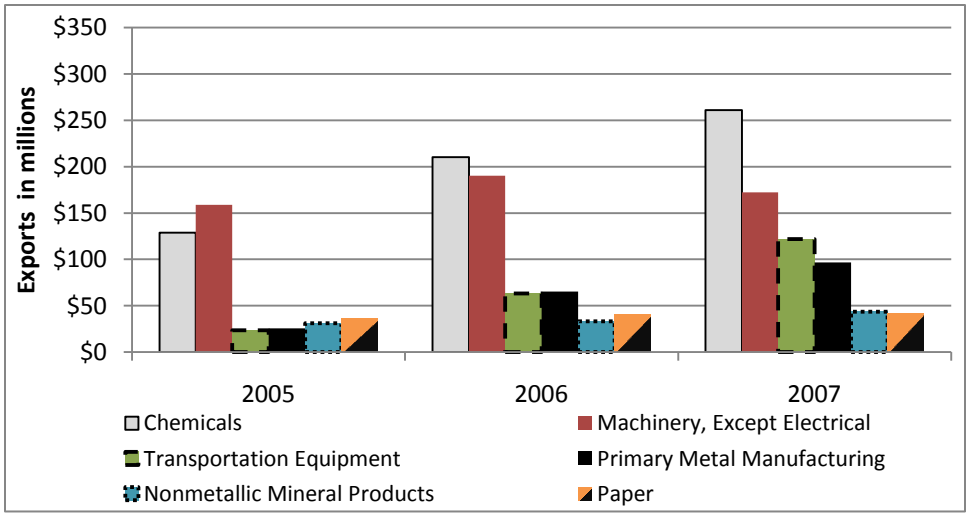
4.3.4.5 Trade

The value of Montana manufacturing exports increased by approximately 72 percent from 2005 to 2007, mainly due to the doubling in the value of chemical exports, Montana's top manufacturing export product (Figure 100). This is likely due to higher commodity prices, led by the surge in oil prices. The composition and export value for Montana's top 6 exports are shown in Figure 100 and Figure 101 (WISERTrade 2008).



Source: WISERTrade 2008

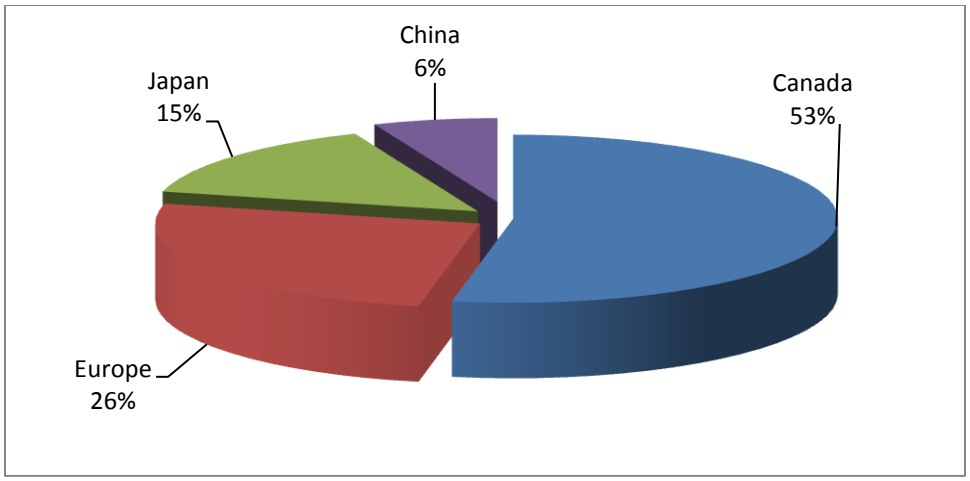
Figure 100: Composition of Top 6 Manufacturing Export Products, Montana 2007



Source: WISERTrade 2008

Figure 101: Export Value of Top 6 Manufacturing Products, Montana ($millions)

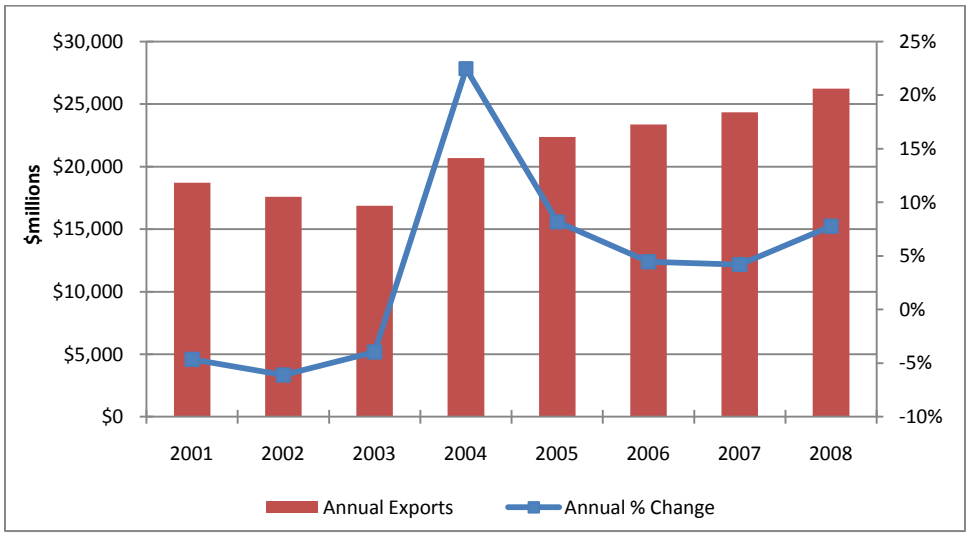
Just over half of these exports were shipped to Canada in 2007 and just over a quarter went to Europe (Figure 102). Japan and China were also major markets for Montana's manufacturing exports.



Source: WISERTrade 2008

Figure 102: Manufacturing Exports by Country, Montana 2007

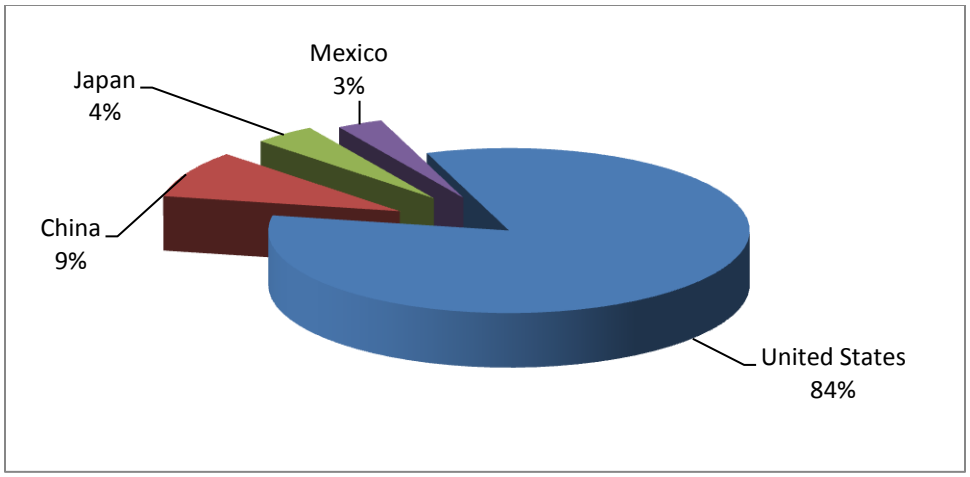
The value of Alberta's manufacturing exports experienced significant growth of over 20 percent in 2004 and continued to experience relatively steady growth to 2008 (Industry Canada 2008b). In 2008, manufacturing exports totaled over $26 billion (Figure 103).



Source: Industry Canada 2008b

Figure 103: Alberta Manufacturing Export Value ($millions)

The majority of these exports were shipped to the U.S (Figure 104). Trailing far behind U.S. exports, China, Japan and Mexico were the next largest markets for Alberta manufacturing products (Industry Canada 2008b).



Source: Industry Canada 2008b

Figure 104: Manufacturing Exports by Country, Alberta 2008

4.3.4.6 Comparison

In 2007 the manufacturing industry accounts for a higher proportion of Alberta's GDP at 8 percent (Statistics Canada 2008b, National Economic Accounts), compared to Montana's 4 percent (BEA 2009b, Regional Economic Accounts). Manufacturing employment in both Montana and Alberta followed the same growth pattern, decreasing until about 2004 before beginning to rebound. The growth rate increase in Alberta manufacturing employment after 2004 was large enough to lead to an overall increase in manufacturing employment in Alberta (Statistics Canada 2008c, LFS), while the longer-term manufacturing employment trend in Montana is still falling (BLS 2008a, CES).

The larger manufacturing industry in Alberta is not only evident in the contribution to GDP but also through employment, establishments and exports. In 2007, manufacturing employment in Alberta was over 6 times larger than in Montana. The largest manufacturing sub-sector in Montana was wood product manufacturing while the largest sub-sector in Alberta was fabricated metal product manufacturing. In addition, the export value of manufacturing products from Alberta (Industry Canada 2008b) in 2007 was approximately 28 times higher than the export value of Montana manufacturing products (BTS 2008).

4.3.4.7 Industry Outlook

The continued slowdown of the U.S. economy and high commodity prices will continue to challenge both the Montana and Alberta manufacturing industries. However, while the slowdown is expected to continue in the U.S., stronger economic activity overseas, such as in China, Russian and India, is expected to help sustain demand for Montana manufacturing products. Employment growth in both the Montana and Alberta manufacturing industries is forecasted to be positive, but small. Montana is expected to experience an average annual employment growth rate of less than one percent within the manufacturing industry until 2016 (Keegan 2008).

The expanding economy, and oil and gas industry in Alberta is fueling the manufacturing industry. In order to support the oil sands development in the province, over $30 billion of manufacturing projects are set to take place over the next 20 years. The manufacturing industry is particularly sensitive to the world price for oil. Any changes in this price could have dramatic effects on the manufacturing industry. Petrochemical, and food and beverage manufacturing are expected to remain strong in coming years, however, a shift in focus to organic food, in the wake of increasing health awareness, is expected to take place. Alberta is expected to experience an average annual growth rate of approximately 1 percent within the manufacturing industry until 2012 (Conference Board of Canada 2009).

4.3.5 Tourism

To assess the tourism industry, data for the arts, entertainment and recreation industry as well as for the accommodation and food services industry is used to measure the size and performance of this key source of economic activity which is inherently composed of multiple, related industries.

4.3.5.1 Sector and Sub-Sector Employment

The Montana location quotients for the arts, entertainment and recreation, and accommodation and food service industries were both above one at 1.85 and 1.34, respectively. The location quotients for these industries in Alberta were both less than one at 0.82 and 0.96, respectively.

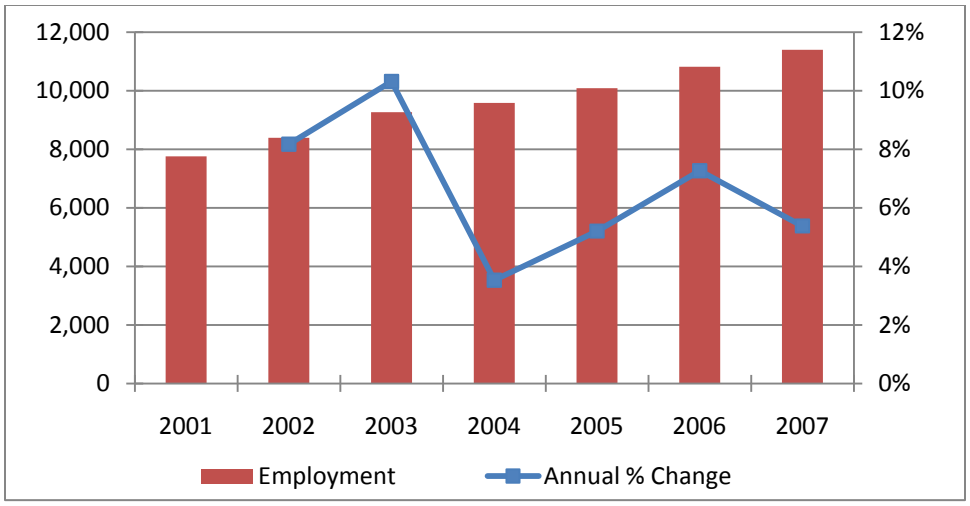
The tourism sector in Alberta is highly concentrated in Calgary and Edmonton. Forty-three percent of arts, entertainment and recreation activity is centered in Calgary while 36 percent of accommodation and food services activity is concentrated in this city (Statistics Canada 2008a, 2006 Census of Population). Edmonton accounts for 32 percent of activity in both of these tourism sectors (Table 39). In Montana, Yellowstone County represents the largest tourist hub of Montana, with 14 percent of jobs in arts and entertainment in addition to 16 percent of jobs in accommodation and food services (BLS 2008a, CES). Missoula, Gallatin, and Flathead counties also have significant tourism-related activity.

Table 39: Employment Centers in the Tourism Sector

Alberta			Montana		
	A&E	A&F		A&E	A&F
Calgary	43%	36%	Yellowstone County	14%	16%
Edmonton	32%	32%	Missoula County	14%	13%
Rest of Province	26%	32%	Gallatin County	13%	12%
			Flathead County	11%	11%
			Rest of State	48%	49%

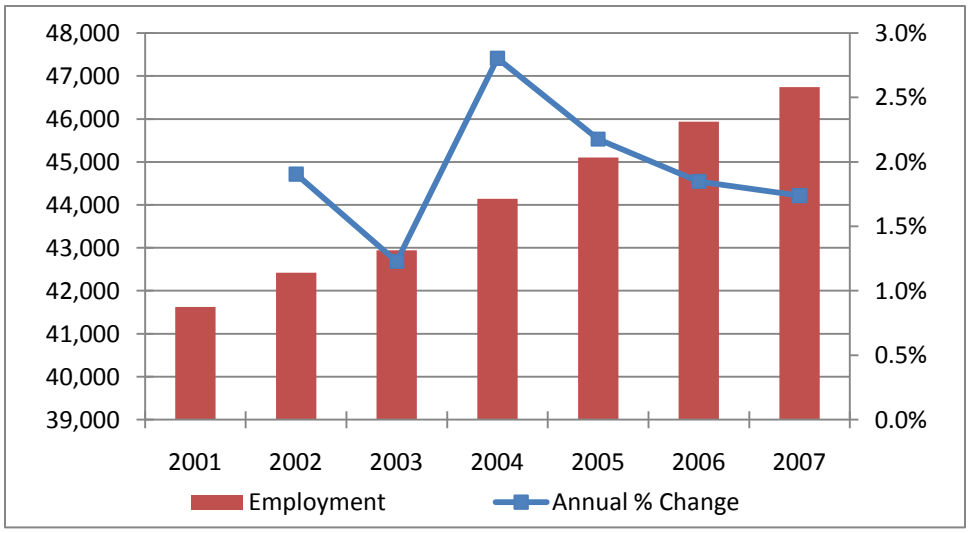
Source: Statistics Canada 2008a, 2006 Census of Population & BLS 2008a, CES

Employment within the arts, entertainment and recreation industry has experienced positive growth, increasing approximately 47 percent from 2001 to 2007 in Montana, as shown in Figure 105 (BLS 2008a, CES). This is mainly driven by the increase in amusements, gambling and recreation employment, the industry's largest sub-sector (88 percent). Employment within Montana's accommodation and food services industry also grew since 2001, increasing 12 percent (Figure 106).



Source: BLS 2008a, CES

Figure 105: Montana Arts, Entertainment and Recreation Employment

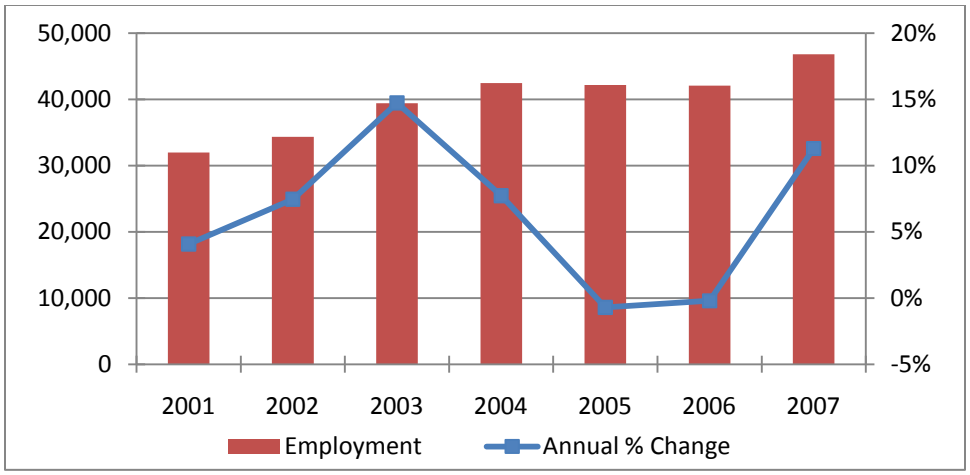


Source: BLS 2008a, CES

Figure 106: Montana Accommodation and Food Services Employment

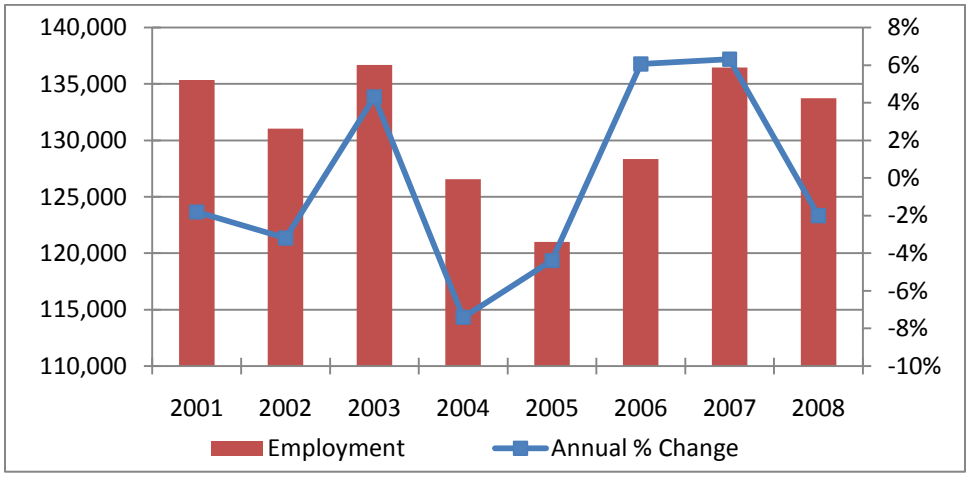
Three quarters of this industry is composed of food services employment while the remaining quarter is attributed to accommodation employment. Both sub-sectors increased by approximately 12 percent from 2001 to 2007.

The following figures and tables (Statistics Canada 2008c, LFS) show employment growth and composition within the tourism industry for Alberta. Figure 107 shows employment in the arts, entertainment and recreations industry increased by 46 percent from 2001 to 2007. Employment within the accommodation and food services industry has been fairly volatile with large increases and decreases in recent years – growth rates have varied from -8 percent to 6 percent in recent years. From 2001 to 2008, employment for accommodation and food services in Alberta decreased by 1 percent as seen in Figure 108.



Source: Statistics Canada 2008c, LFS

Figure 107: Alberta Arts, Entertainment and Recreation Employment



Source: Statistics Canada 2008c, LFS

Figure 108: Alberta Accommodation and Food Services Employment

Similar to Montana, amusement, gambling and recreation is the largest sub-sector of the arts, entertainment and recreation industry, accounting for 63 percent of 2006 employment. Table 40 and Table 41 show the detailed sub-sector employment for Alberta's arts, entertainment, and recreation; and accommodation and food services industries (Statistics Canada 2008a, 2006 Census of Population).

Table 40: Alberta Arts, Entertainment and Recreation Sub-Sector Employment

Sub-Sector Industry Employment	2001	2006	% Change
Performing arts, spectator sports and related industries	8,847	12,158	37%
Heritage institutions	2,400	3,363	40%
Amusement, gambling and recreation industries	20,723	26,549	28%

Source: Statistics Canada 2008a, 2006 Census of Population

Table 41: Alberta Accommodation and Food Services Sub-Sector Employment

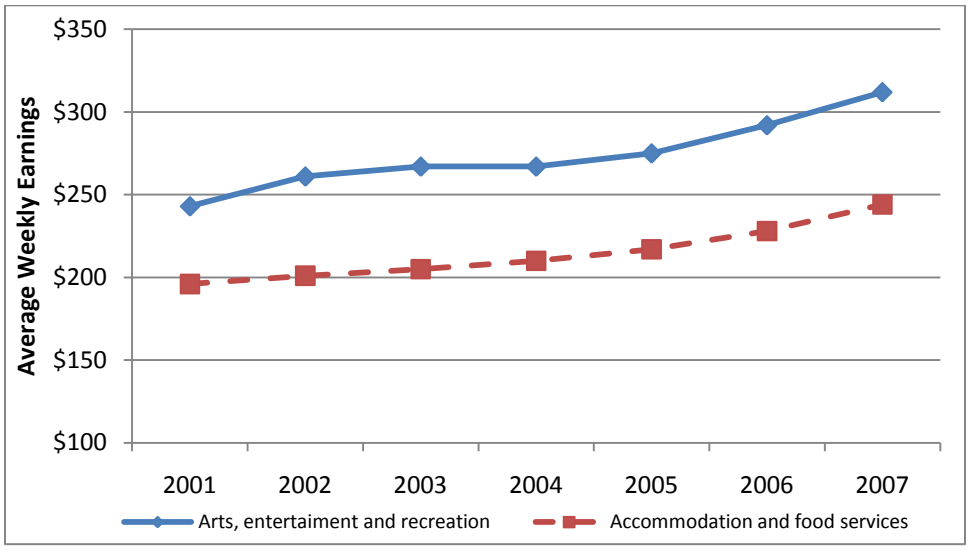
Sub-Sector Industry Employment	2001	2006	% Change
Accommodation services	28,391	25,794	-9%
Food services and drinking places	106,975	102,553	-4%

Source: Statistics Canada 2008a, 2006 Census of Population

The food services accounted for 80 percent of accommodation and food services employment in Alberta, growing by six percent from 2001 to 2006 and contributing over 102,000 jobs.

4.3.5.2 Earnings

Average weekly earnings in both tourism industries have increased since 2001 in Montana. From 2001 to 2007, earnings in the arts, entertainment and recreation industry increased by 28 percent while earning increased by 24 percent in the accommodation and food services industry (Figure 109). On average, employees in the arts, entertainment and recreation industry earned about 28 percent more in average weekly earnings, than those in the accommodation and food services industry (BLS 2008a, CES).

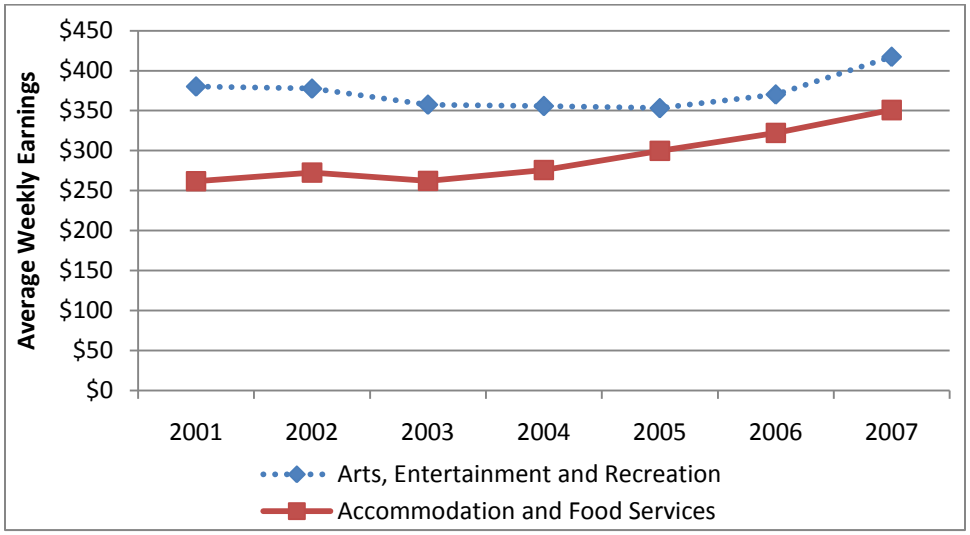


Source: BLS 2008a, CES

Figure 109: Montana Tourism Industry Average Weekly Earnings

Average weekly earnings in Alberta's tourism industry experienced slight negative growth in 2003 but have experienced growth in recent years. Similar to Montana's tourism industry, employees in the arts, entertainment and recreation industry earn higher average weekly wages

(on average 28 percent higher) than those in the accommodation and food services industry. This gap has narrowed over time, as seen in Figure 110 (Statistics Canada 2008c, LFS).

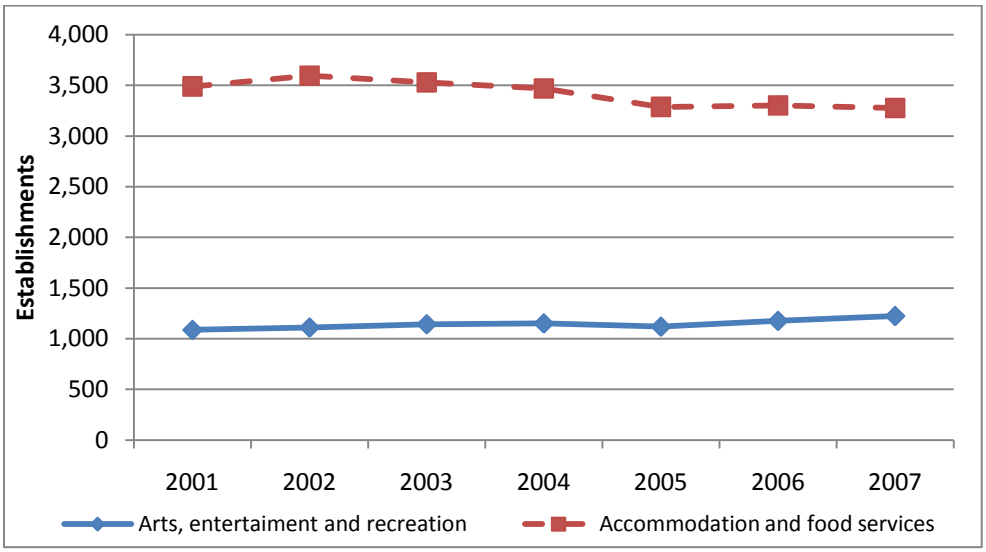


Source: Statistics Canada 2008c, LFS

Figure 110: Alberta Tourism Industry Average Weekly Earnings

4.3.5.3 Businesses: Number, Size and Output

Employment in the accommodation and food services industry far outweighs that in the arts, entertainment and recreation industry in Montana, as does the number of establishments for these industries. From 2001 to 2007, the number of accommodation and food service establishments decreased by 6 percent while the number of arts, entertainment and recreation establishments increased by 13 percent. Figure 111 shows in 2007, there were 1,224 arts, entertainment and recreation establishments compared to 3,278 accommodation and food service establishments (BLS 2008d, QCEW).

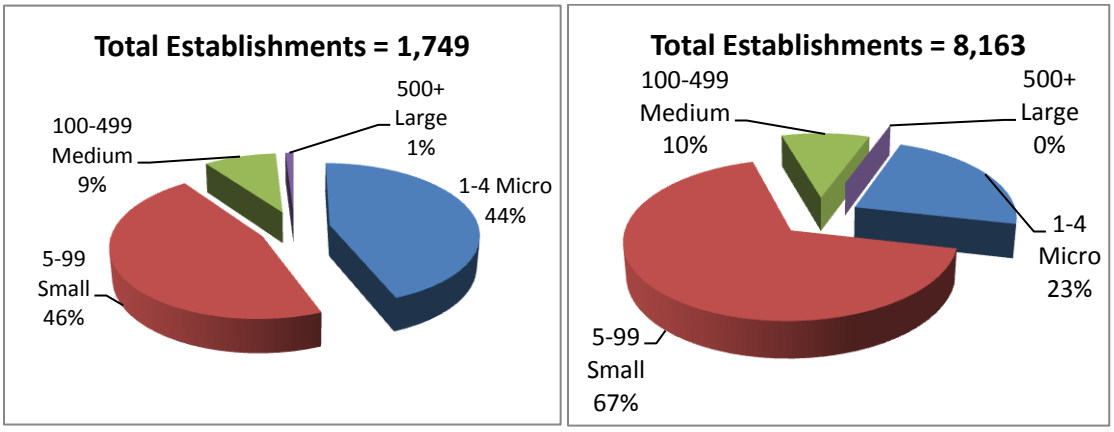


Source: BLS 2008d, QCEW

Figure 111: Montana Tourism Establishments

The tourism industry contributed approximately 5 percent to Montana's 2007 GDP. In 2007, non-residential tourism generated direct expenditures of just under $3 billion, indirect expenditures of approximately $723 million and induced expenditures of $596 million.

The composition of tourism establishments in Alberta is very similar to that in Montana. In 2008, there were 1,749 arts, entertainment and recreation establishments in Alberta compared to 8,163 accommodation and food services establishments (Figure 112). Most of these establishments in the tourism industry are classified as "small" businesses with anywhere from 5 to 99 employees (Industry Canada 2008a).



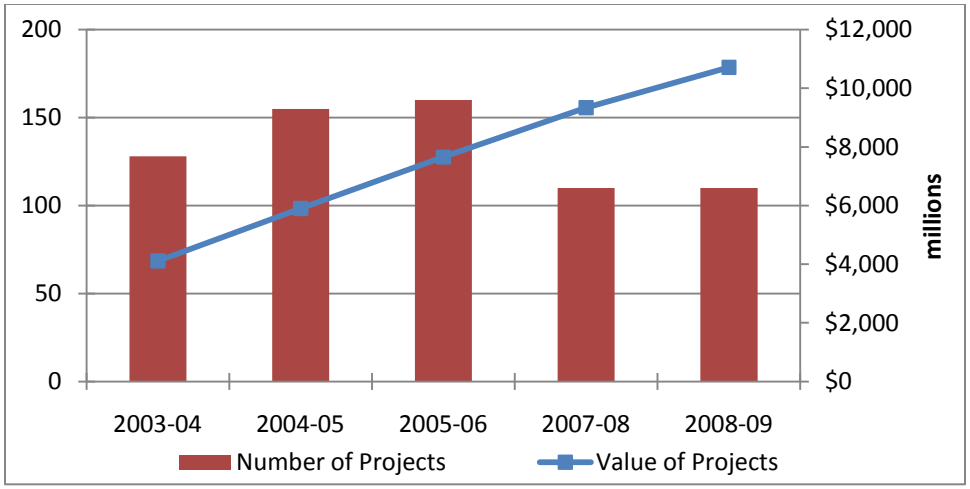
Source: Industry Canada 2008a

Figure 112: Composition of Alberta Tourism Establishments by Number of Employees, 2008

Tourism contributed 5 percent to Alberta's 2007 GDP and generated over $5 billion in revenues in 2006. Tourism revenues were estimated at $5.6 billion in 2007 and targeted at $5.9 billion for 2008.

4.3.5.4 Major Projects

Alberta's major tourism/recreation projects in number and total value are presented in the figure below. Despite a recent drop in the number of projects, the total value of tourism/recreation projects continued to climb. This leads to an increase in the value per project. The number of projects remained unchanged at 110 from 2007-08 to 2008-09 (Figure 113) yet the total value of these projects, and thus value per project increased by 15 percent (Alberta Finance and Enterprise 2009a). A detailed list of these 2008-09 projects is presented in Appendix C.



Source: Alberta Finance and Enterprise 2009a

Figure 113: Major Tourism/Recreation Projects, Alberta

4.3.5.5 Comparison

Tourism contributed 5 percent of both Montana's (BEA 2009b, Regional Economic Accounts) and Alberta's (Statistics Canada 2008b, National Economic Accounts) 2007 GDP. This industry is more concentrated in Montana than in Alberta, as evident from the regional location quotients for this industry. The main source of tourism employment is within the accommodation and food services industry for both regions, however, employment growth trends within this industry have been very different for Montana and Alberta. Montana employment within the accommodation and food services industry experienced relatively steady and positive growth from 2001 to 2007 (BLS 2008a, CES). Alberta accommodation and food services employment on the other hand was fairly volatile, experiencing several ups and downs over the same time period. Overall, from 2001 to 2007/08, accommodation and food services employment increased in Montana but decreased in Alberta. The number of people employed within this industry in Alberta is almost triple that in Montana (Statistics Canada 2008c, LFS).

Growth patterns in arts, entertainment and recreation employment are much more similar for Montana and Alberta, both experiencing significant positive growth from 2001 to 2007. The main source of employment within this industry, for both regions, was the amusement, gambling

and recreation sub-industry. Alberta employment in this industry was almost quadruple that in Montana in 2007.

The number of accommodation and food services establishments in both Montana (BLS 2008a, CES) and Alberta (Statistics Canada 2008c, LFS) far outweigh the number of arts, entertainment and recreation establishments. The number of Alberta arts, entertainment and recreation establishments was approximately one and a half times the number in Montana. Similarly, the number of accommodation and food services establishments in Alberta was about two and a half times that in Montana.

4.3.5.6 Industry Outlook

Tourism is a key contributor to Montana's economy; however, climate change is already having visible effects on the state and is introducing uncertainty regarding the future of this industry. Hunting, fishing, skiing, snowmobiling and lake rafting are some of the main activities that attract visitors to Montana. According to the Montana Bureau of Business and Economic Research (MBBER), temperature changes have already had an impact on all of these activities, negatively impacting the tourism industry. In 2007, the Montana Department of Fish, Wildlife & Parks closed several fishing streams due to decreased flows and warmer water temperatures due to climate change. Decreased river and stream flows also limit the amount of rafting available to tourists. Climate change has also lead to shorter skiing seasons with less snow cover. Finally, several forestry and recreation areas have been closed in recent seasons due to higher risk of wildfires. It is clear that Montana's tourism industry is particularly vulnerable to climate change. Despite these negative impacts, tourism employment in Montana is expected to increase. An average annual growth rate of almost 3 percent is forecasted for the arts, entertainment and recreation industry while a rate of almost 2 percent per year is forecasted for the accommodation and food services industry until 2016 (Montana Business Quarterly 2007).

While recent economic conditions and high fuel prices have had negative impacts on Alberta tourism, demographic changes in the population are expected to positively influence the industry. The aging baby boomer generation is expected to have more time for travel as retirement is reached, increasing the number of day and over-night trips to Alberta.

The new identification requirements for cross-border travel between Canada and the United States, coupled with the high dollar, have caused some concern regarding the number of travelers to Alberta from the U.S. Despite this, employment in the Alberta accommodation and food services industry is expected to increase by an average annual growth rate of 2.7 percent until 2012 (Alberta Employment, Immigration and Industry 2008).

4.3.6 Wholesale and Retail Trade

4.3.6.1 Sector and Sub-Sector Employment

The location quotients of the wholesale and retail trades in Montana are 0.91 and 1.19 respectively while the location quotient for the trade industry as a whole is 1.01 in Alberta. Montana wholesale and retail trade employment have followed the same trend, increasing since 2001, with a peak in the growth rates in 2004. From 2001 to 2007, wholesale trade employment

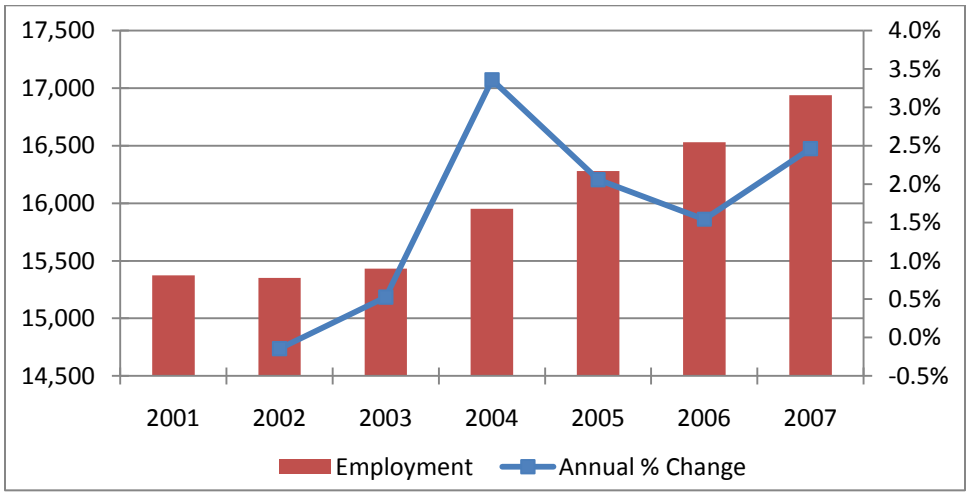
increased by 10 percent while retail trade employment increased by 9 percent. On average, retail employment is approximately 3.5 times higher than wholesale employment.

The majority of wholesale trade activity in Alberta takes place in Calgary (39 percent) and Edmonton (38 percent), as seen in Table 42 (Statistics Canada 2008a, 2006 Census of Population). Similarly, retail trade activity is highly concentrated in these two cities, with Calgary accounting for 35 percent of activity and Edmonton accounting for 34 percent of retail trade activity. In Montana, wholesale activity is highly concentrated in Yellowstone County with 32 percent of the state total. Meanwhile, retail trade is more evenly split across the state, with Yellowstone attracting 17 percent of jobs, followed by Missoula at 14 percent. The employment growth trend for Montana's wholesale and retail trade industries can be seen in Figure 114 and Figure 115 (BLS 2008a, CES).

Table 42: Employment Centers in the Wholesale and Retail Trade Sector

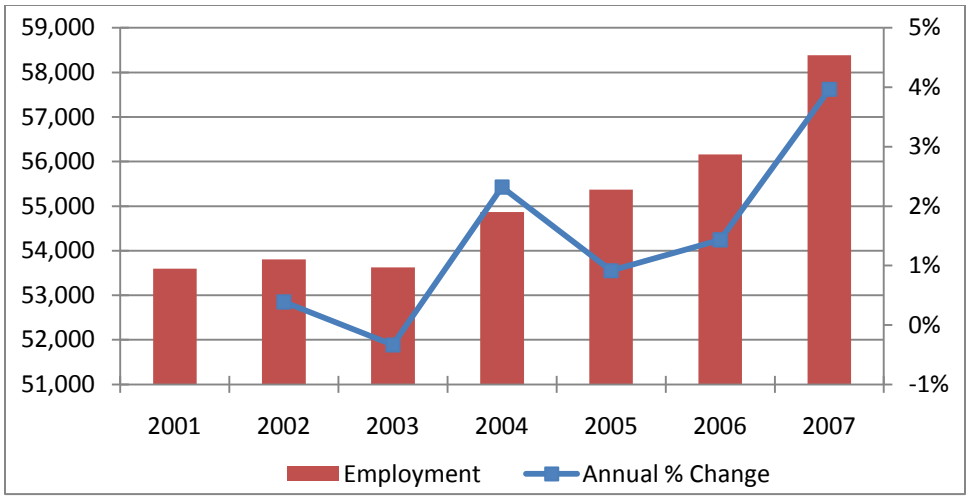
Alberta			Montana		
	Wholesale	Retail		Wholesale	Retail
Calgary	39%	35%	Yellowstone County	32%	17%
Edmonton	38%	34%	Missoula County	13%	14%
Rest of Province	23%	31%	Gallatin County	9%	11%
			Flathead County	7%	10%
			Rest of State	38%	48%

Source: Statistics Canada 2008a, 2006 Census of Population & BLS 2008a, CES



Source: BLS 2008a, CES

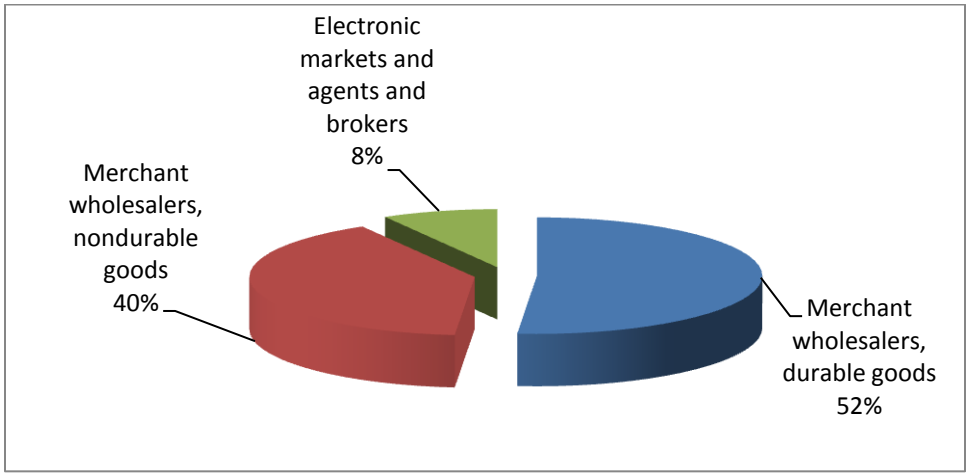
Figure 114: Montana Wholesale Trade Employment



Source: BLS 2008a, CES

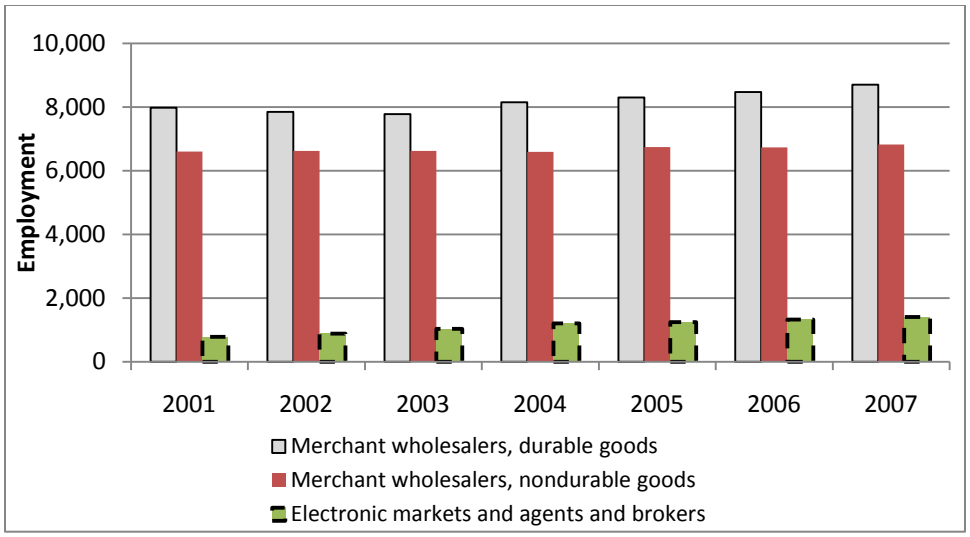
Figure 115: Montana Retail Trade Employment

The wholesale trade industry is largely composed of businesses that trade and distribute durable and non-durable goods. It is these two sub-sectors that drive employment in the wholesale trade industry (BLS 2008a, CES). Figure 116 and Figure 117 show a much smaller portion of this industry is composed of electronic markets and agents and brokers.



Source: BLS 2008a, CES

Figure 116: Composition of Wholesale Trade, Montana 2007



Source: BLS 2008a, CES

Figure 117: Montana Wholesale Trade Sub-Sector Employment

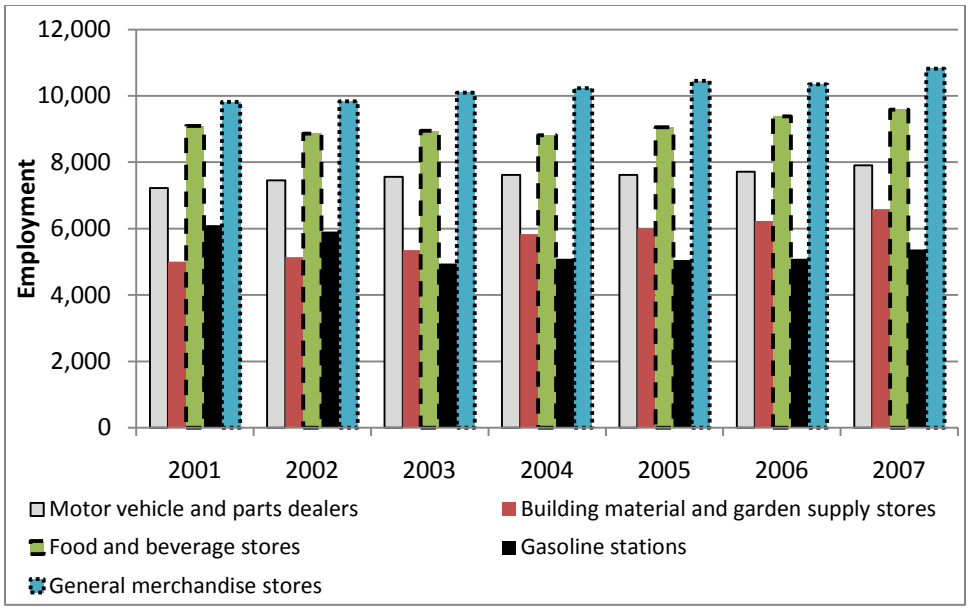
The retail market, on the other hand, is composed of several sub-sectors, shown in Table 43 (BLS 2008a, CES).

Table 43: Composition of Retail Trade, Montana 2007

Retail Sub-Sector Employment	2007	Percent
Motor vehicle and parts dealers	7,910	14%
Furniture and home furnishings stores	2,356	4%
Electronics and appliance stores	1,641	3%
Building material and garden supply stores	6,584	11%
Food and beverage stores	9,585	16%
Health and personal care stores	2,072	4%
Gasoline stations	5,371	9%
Clothing and clothing accessories stores	3,450	6%
Sporting goods, hobby, book and music stores	3,754	6%
General merchandise stores	10,817	19%
Miscellaneous store retailers	3,868	7%
Non-store retailers	979	2%
Total	**58,387**	**100%**

Source: BLS 2008a, CES

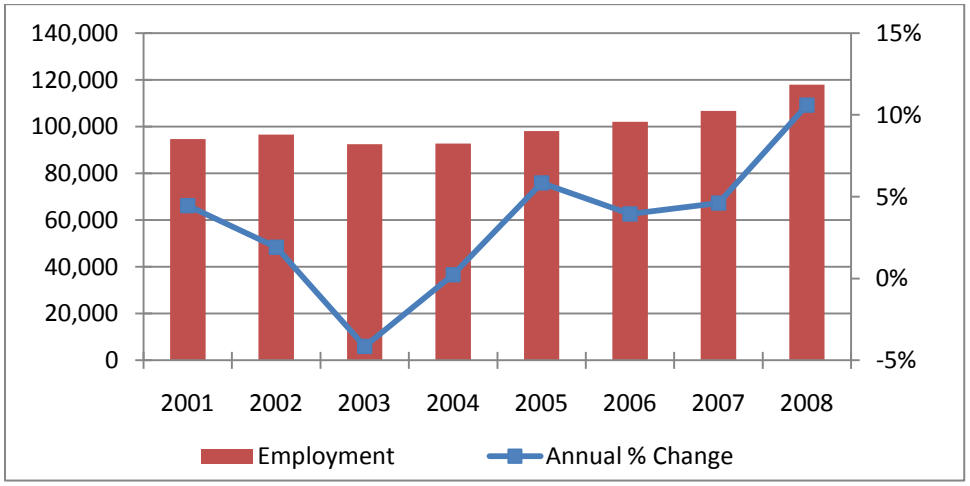
The top 5 retail trade sub-sectors that drive overall employment in this industry are shown in Figure 118 (BLS 2008a, CES).



Source: BLS 2008a, CES

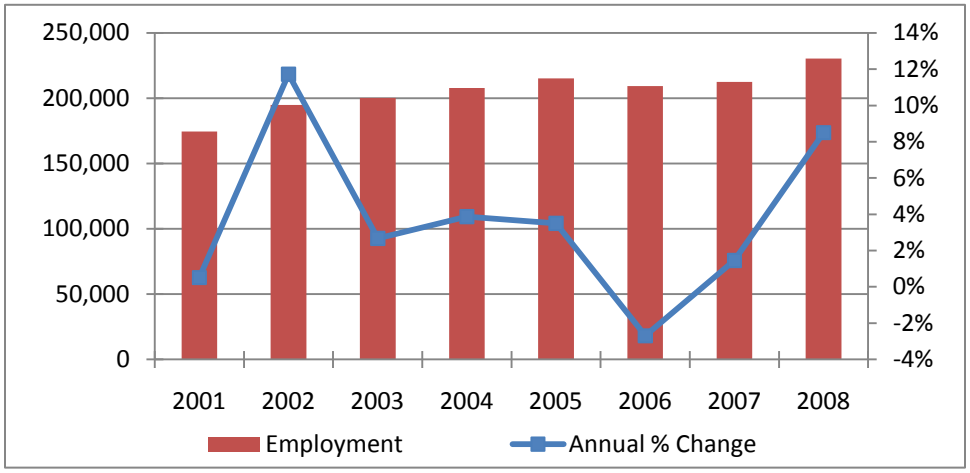
Figure 118: Montana Retail Trade Sub-Sector Employment

With the exception of gasoline stations, employment in all of the Montana's trade industry's top 5 sub-sectors increased from 2001 to 2007. From 2001 to 2008, Alberta employment in the trade industry increased by 25 percent in the wholesale industry and 32 percent in the retail industry. The composition and growth of Alberta wholesale and retail trade employment are presented in Figure 119, Figure 120, and Table 44 through Table 47 (Statistics Canada 2008c, LFS).



Source: Statistics Canada 2008c, LFS

Figure 119: Alberta Wholesale Trade Employment



Source: Statistics Canada 2008c, LFS

Figure 120: Alberta Retail Trade Employment

Table 44: Alberta Top 5 Wholesale Trade Sub-Sector Industry Employment

Top 5 Sub-Sector Industry Employment	2001	2006	% Change
Food, beverage and tobacco wholesaler-distributors	7,840	9,525	21%
Motor vehicle and parts wholesaler-distributors	6,450	6,550	2%
Building material and supplies wholesaler-distributors	11,945	13,245	11%
Machinery, equipment and supplies wholesaler-distributors	26,655	31,350	18%
Miscellaneous wholesaler-distributors	8,710	10,955	26%

Source: Statistics Canada 2008c, LFS

Table 45: Composition of Select Alberta Wholesale Trade Employment, 2006

Wholesale Sub-Sector Employment	2006	Percent
Farm product wholesaler-distributors	1,079	1%
Petroleum product wholesaler-distributors	5,295	5%
Food, beverage and tobacco wholesaler-distributors	11,360	11%
Personal and household goods wholesaler-distributors	6,977	7%
Motor vehicle and parts wholesaler-distributors	7,812	8%
Building material and supplies wholesaler-distributors	15,796	15%
Machinery, equipment and supplies wholesaler-distributors	37,389	37%
Miscellaneous wholesaler-distributors	13,065	13%
Wholesale agents and brokers	3,202	3%
Total	**101,976**	**100%**

Source: Statistics Canada 2008c, LFS

Table 46: Alberta Top 5 Retail Trade Sub-Sector Industry Employment

Top 5 Sub-Sector Industry Employment	2001	2006	% Change
Motor vehicle and parts dealers	19,815	24,795	25%
Food and beverage stores	43,835	50,125	14%
Health and personal care stores	13,745	14,890	8%
Clothing and clothing accessories stores	17,925	20,795	16%
General merchandise stores	21,585	25,085	16%

Source: Statistics Canada 2008c, LFS

Employment in the top 5 sub-sectors of both wholesale and retail trade industries increased from 2001 to 2006 (Table 46). As of 2006, food and beverage stores were the largest sub-sector retail employer in Alberta at 24 percent (Table 47).

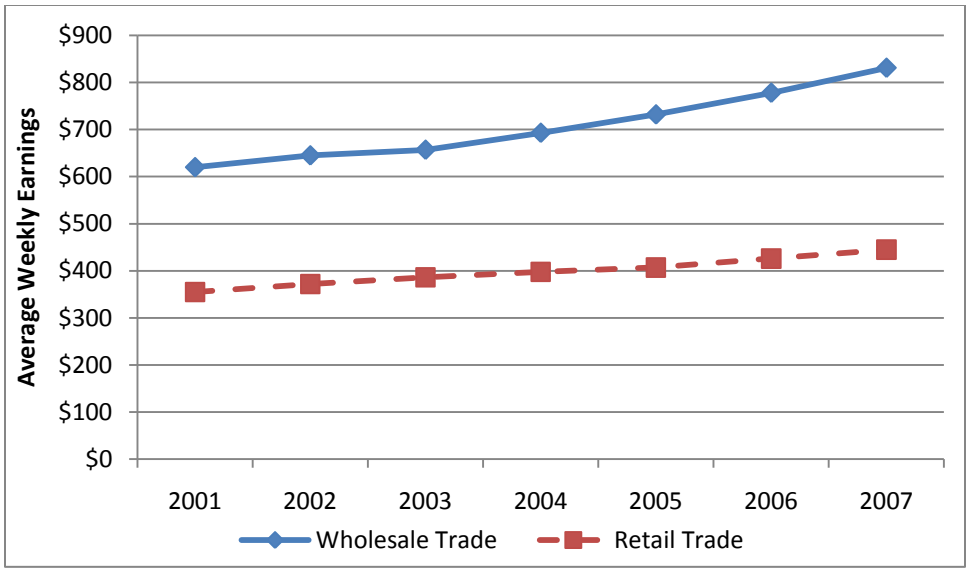
Table 47: Composition of Alberta Retail Trade Employment, 2006

Retail Sub-Sector Employment	2006	Percent
Motor vehicle and parts dealers	24,795	12%
Furniture and home furnishings stores	8,850	4%
Electronics and appliance stores	8,875	4%
Building material and garden equipment and supplies dealers	13,610	7%
Food and beverage stores	50,125	24%
Health and personal care stores	14,890	7%
Gasoline stations	9,920	5%
Clothing and clothing accessories stores	20,795	10%
Sporting goods, hobby, book and music stores	10,700	5%
General merchandise stores	25,085	12%
Miscellaneous store retailers	13,735	7%
Non-store retailers	5,285	3%
Total	**206,665**	100%

Source: Statistics Canada 2008c, LFS

4.3.6.2 Earnings

The average weekly earnings for Montana wholesale trade employees were 77 percent higher than the earnings for those in the retail trade industry (BLS 2008a, CES). Earnings in both industries increased from 2001 to 2007, by 34 percent in the wholesale trade industry and 25 percent in the retail trade industry (Figure 121).



Source: BLS 2008a, CES

Figure 121: Montana Trade Average Weekly Earnings

Similar to the Montana trade industry, the average weekly earnings of those employed in the Alberta wholesale trade industry earned on average 74 percent more than those in the retail trade industry. From 2001 to 2007, wholesale trade earnings increased by 20 percent while retail trade earnings increased by 18 percent (Statistics Canada 2008c, LFS). Although the average weekly earnings in Montana have grown at a faster rate than Alberta, Alberta's average weekly wages were slightly higher in 2007 as seen in Figure 121 and Figure 122.

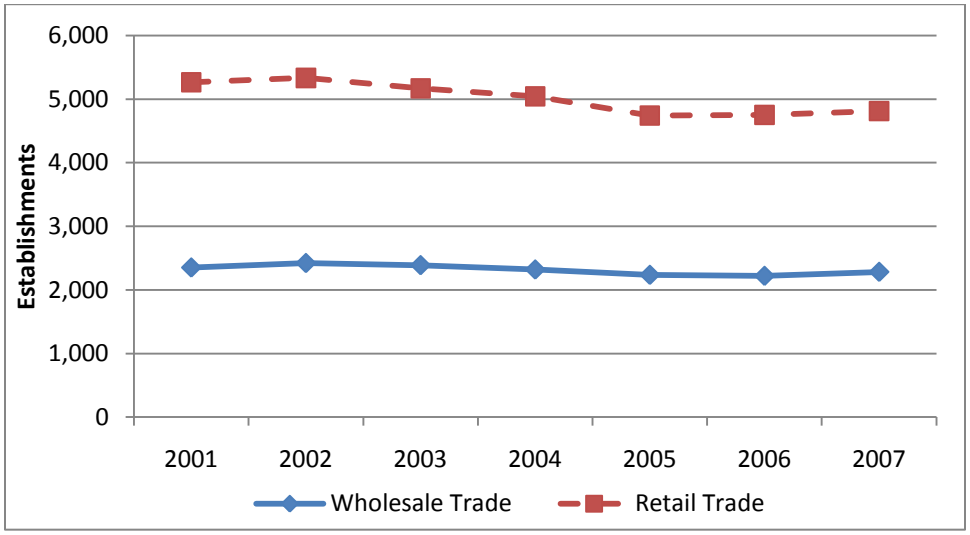
Source: Statistics Canada 2008c, LFS

Figure 122: Alberta Trade Average Weekly Earnings

4.3.6.3 Businesses: Number, Size and Output

It is not surprising given the number of employees in the retail trade industry that the number of retail trade establishments is consistently double the number of wholesale trade establishments. Despite the increase in employment in both wholesale and retail trade, the number of

establishments decreased slightly in both industries from 2001 to 2007. The number of wholesale establishments decreased by 3 percent while the number of retail establishments declined by 9 percent, Figure 123 (BLS 2008d, QCEW) shows the number of retail and wholesale trade establishments from 2001 through 2007.

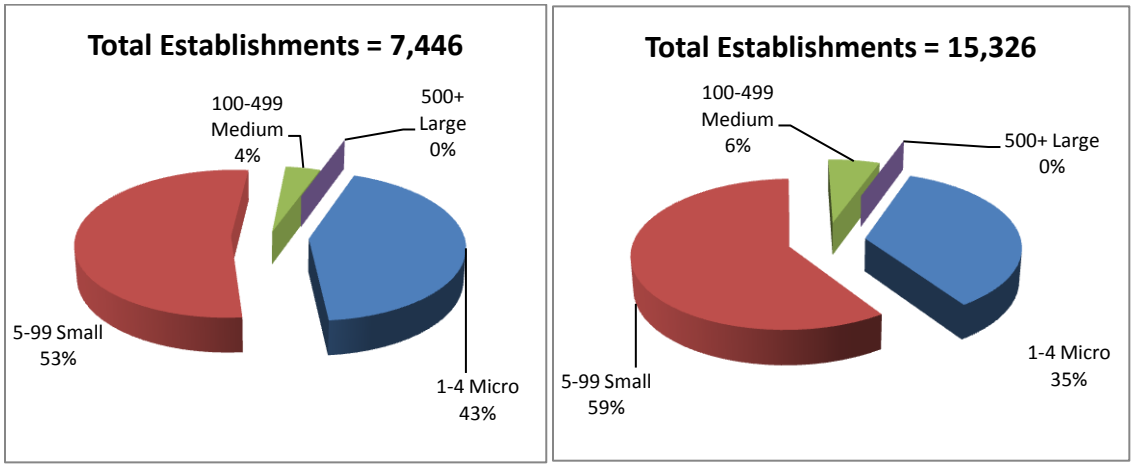


Source: BLS 2008d, QCEW

Figure 123: Montana Trade Establishments

In 2007, the trade industry, when grouped together with transportation and utilities, contributed 21 percent to Montana's GDP. According to the U.S. 2002 Census, wholesale trade generated over $7 billion while retail trade had sales of over $10 billion.

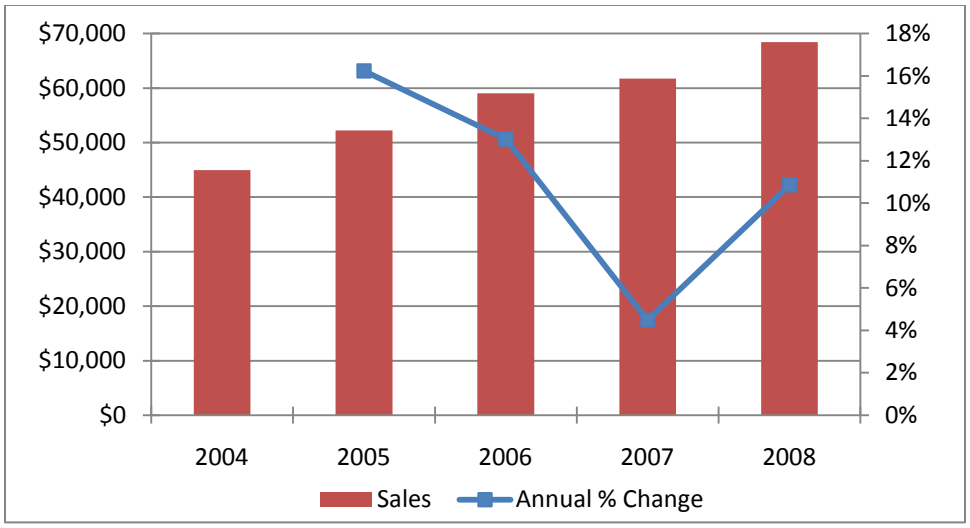
In 2008, there were 7,446 wholesale trade establishments in Alberta and 15,236 retail trade establishments (Figure 124). The majority of these were classified as "small" businesses, closely followed by "micro" businesses. (Industry Canada 2008a)



Source: Industry Canada 2008a

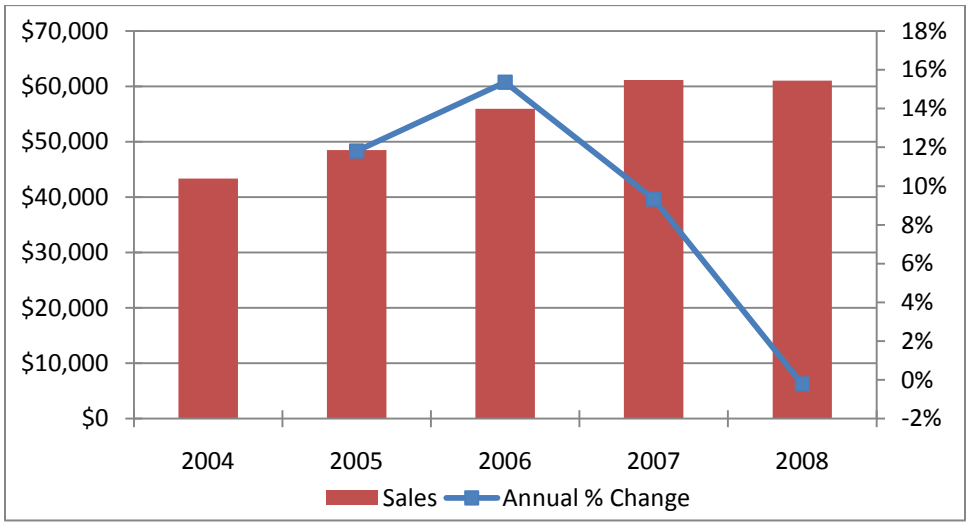
Figure 124: Alberta Trade Establishments by Number of Employees, 2008

Despite the difference in retail and wholesale employment and establishments, sales for these two industries are very similar. Both have experienced positive growth in recent years and in 2008 wholesale trade sales reached over $68 billion while retail trade sales were just over $61 billion (Figure 125 and Figure 126). In total, the trade industry contributed 9 percent to Alberta's 2007 GDP (Industry Canada 2008a).



Source: Industry Canada 2008a

Figure 125: Alberta Wholesale Trade Sales



Source: Industry Canada 2008a

Figure 126: Alberta Retail Trade Sales

4.3.6.4 Comparison

Similar to national industry trends and emphasized by the border locations of both Montana and Alberta, trade is naturally a vital industry to both regions. Montana employment (BLS 2008a, CES) within both the wholesale and retail trade industries increased from 2001 to 2007. Alberta trade employment (Statistics Canada 2008c, LFS) experienced more volatility than in Montana.

While Alberta experienced increases in wholesale and retail trade employment, growth rates varied from negative 4 percent to over 10 percent.

In both Montana and Alberta retail employment far outweighs wholesale employment. Similarly, the number of retail establishments in both regions was more than double the number of wholesale establishments. Also, in both Montana and Alberta the average weekly earnings of those employed within the wholesale trade industry were over 70 percent higher than those in the retail trade industry.

As seen with all other industries examined, the number of employees and establishments within the trade industry in Alberta is far higher than in Montana. Wholesale employment in Alberta was approximately 6 times that in Montana while retail employment in Alberta was about four times the size of that in Montana in 2007.

4.3.6.5 Industry Outlook

Employment in Alberta's retail trade industry, while expected to increase through 2012, is projected to do so at a declining rate. Retail employment is expected to increase by over 2 percent in 2009 but by 2012 employment is forecasted to increase by less than one percent (Alberta Employment, Immigration and Industry 2008). Increasing wage rates, as a result of the strong provincial economy and tightening labor markets, coupled with increasing commercial rent costs, are leading many retailers to invest in computerized check-out kiosks. These kiosks allow customers to self-check out and bag their purchases rather than hiring someone to do it. This will have a negative impact on retail employment.

Domestic and international investment in Alberta as a result of energy projects is expected to spur the wholesale trade industry. Employment within this sector is expected to increase at an average annual rate of approximately 1.4 percent until 2012 (Alberta Employment, Immigration and Industry 2007a).

Montana wholesale and retail trade employment is expected to grow in coming years, increasing by average annual rates of 2.1 and 1.8 percent respectively until 2016 (Montana Business Quarterly 2007). The current national and global economic downturn, however, is significantly lowering near-term retail sales and most measures of trade. It could also have an impact on both the level and growth of future retail trade activity as overall consumption may lower if personal savings rates in the U.S. increase to more historical levels.

4.4 Freight Movement and Trade

Canada represents the United States' largest trading partner with merchandise trade by surface modes of transportation amounting to $537 billion in 2008, with $301 billion worth of imports and $236 billion in exports. Of that total, $24.7 billion worth of trade (or 4.6 percent of total) took place across the Montana border with Canada (BTS 2008). This section analyzes bi-directional trade flows between the United States and Canada with emphasis on trade through Montana's ports of entry.

4.4.1 Commodity Flows from Canada via Montana Ports

The value of U.S. imports from Canada across the Montana border has increased almost four fold over the 10-year period to reach $16.6 billion in 2008, resulting in an annual average growth rate of 15.1 percent over the same period (BTS 2008). Some of this growth in value is related to increasing commodity prices. Meanwhile, 91 percent of these imports ($15.3 billion) originated in Alberta during 2008, compared to 74 percent ($2.5 billion) in 1995, mainly reflecting Alberta's growing energy sector. Of the remaining 9 percent worth of imports, 2.4 percent originated in Saskatchewan, 0.6 percent from British Columbia and the remaining 5.5 percent came from the rest of Canada (Table 48).

Table 48: Imports from Canada through Montana POEs ($ millions)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Alberta	$3,513	$4,437	$6,425	$6,980	$5,898	$7,360	$9,076	$11,058	$11,966	$12,921	$15,287
Saskatchewan	$235	$275	$316	$343	$305	$346	$441	$392	$363	$456	$395
British Columbia	$157	$185	$151	$152	$157	$141	$180	$142	$130	$108	$105
Rest of Canada	$448	$532	$660	$753	$1,004	$603	$608	$616	$683	$761	$927

Source: BTS 2008

In terms of tonnage, imports from Canada across the Montana border have increased by 29 percent from 11.8 millions tons in 1998 to 14.5 million tons in 2008. Alberta's share of import volumes by weight using Montana ports has increased from 89.1 percent in 1998 to 92.1 percent in 2008. At the same time, the share of import volumes from Saskatchewan has declined to 4.3 percent in 2008 from 5.2 percent in 1998 and a high of 10.9 percent in reached in 2004. British Columbia's share has declined to 1.2 percent in 2008 from as high as 3.9 percent in 1998. Other Canadian provinces' share of import volumes through Montana POEs was at 2.5 percent (BTS 2008) in 2008 (Table 49). The marked difference in growth of imports by dollar terms versus weight reflects the increased share of high-value products being shipped across the Montana border. This is mainly attributed to the rise in oil imports from Canada in combination with increasing oil prices.

Table 49: Imports from Canada through Montana POEs (thousands of tons)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Alberta	10,540	11,148	11,633	11,654	12,225	11,047	13,015	13,096	13,844	14,606	13,374
Saskatchewan	622	783	550	1,161	1,102	1,374	1,706	1,107	919	1,052	624
British Columbia	465	494	382	415	477	412	694	329	285	237	178
Rest of Canada	200	187	187	239	243	251	281	313	248	314	341

Source: BTS 2008

4.4.2 Commodity Flows from US to Canada via Montana

The value of U.S. exports to Canada through Montana has increased by 168 percent from $3.1 billion in 1998 to $8.3 billion in 2008, resulting in an average annual growth rate of 11.1 percent over the 10-year period (BTS 2008). Almost 92 percent of these exports are destined for the province of Alberta, 5.3 percent to British Columbia, 3.0 percent to Saskatchewan, and 3.4 percent to other provinces (Table 50).

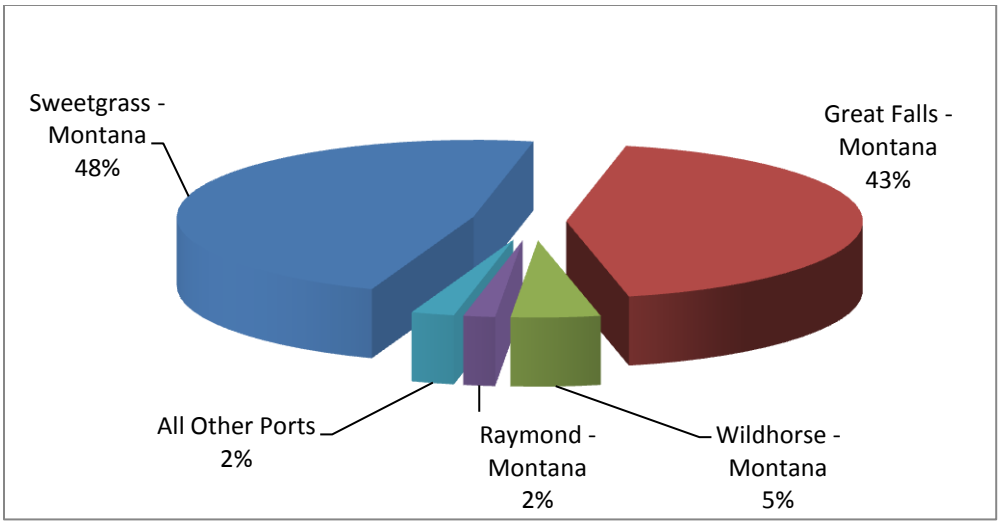
Table 50: Exports to Canada through Montana POEs ($ millions)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Alberta	$2,822	$2,675	$3,223	$3,656	$3,146	$3,429	$4,012	$4,918	$6,015	$6,499	$7,591
Saskatchewan	$108	$69	$85	$106	$90	$69	$71	$90	$131	$161	$246
British Columbia	$77	$55	$68	$83	$61	$63	$64	$73	$55	$109	$145
Rest of Canada	$76	$71	$90	$95	$78	$136	$146	$209	$293	$281	$283

Source: BTS 2008

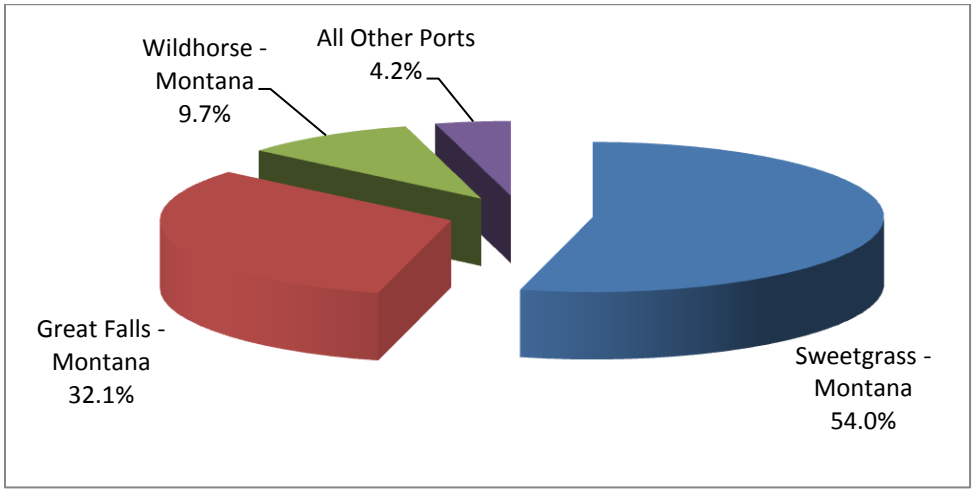
4.4.3 Commodity Flows by Montana Ports

In 2007, the Port of Entry (POE) at Sweet Grass handled 48.6 percent of the value of Canadian imports and 51.6 percent of imports volumes (weight). Meanwhile, Great Falls Service Port handles 41.7 percent of imports (in value terms) and 31.7 percent of import volumes. Great Falls, while not along the Montana-Canada border is a service port that handles 75 percent of the value of pipeline imports and 50 percent of the pipelines imports' volumes. Meanwhile, Figure 127 and Figure 128 show imports through the Port of Wild Horse accounted for 5.3 percent of total value and 11.2 percent of imports by weight (BTS 2008). While Figure 129 shows 96 percent of exports to Canada along the Montana border are handled through Sweet Grass, while the other 4 percent are spread across Montana's other ports (BTS 2008).



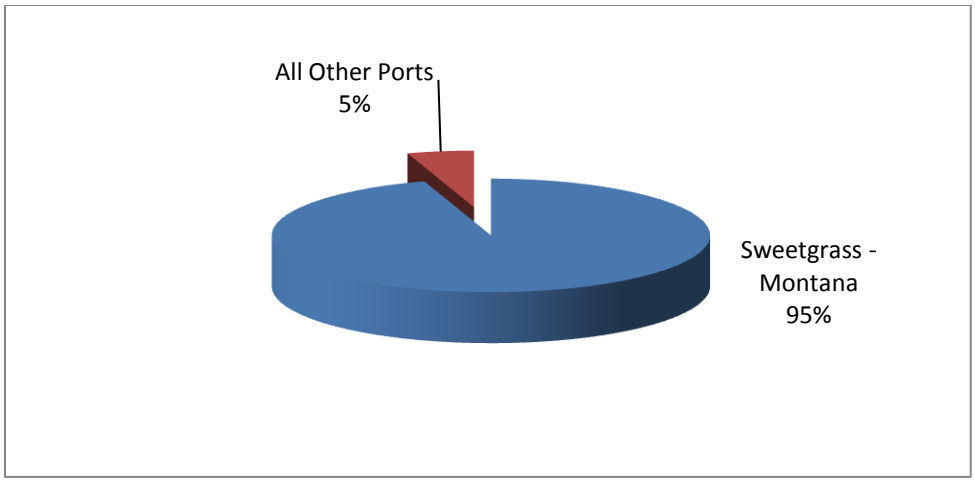
Source: BTS 2008

Figure 127: Imports from Canada by Value through Montana by POE (2008 - dollars)



Source: BTS 2008

Figure 128: Imports from Canada by Tonnage through Montana by POE (2007 - tons)

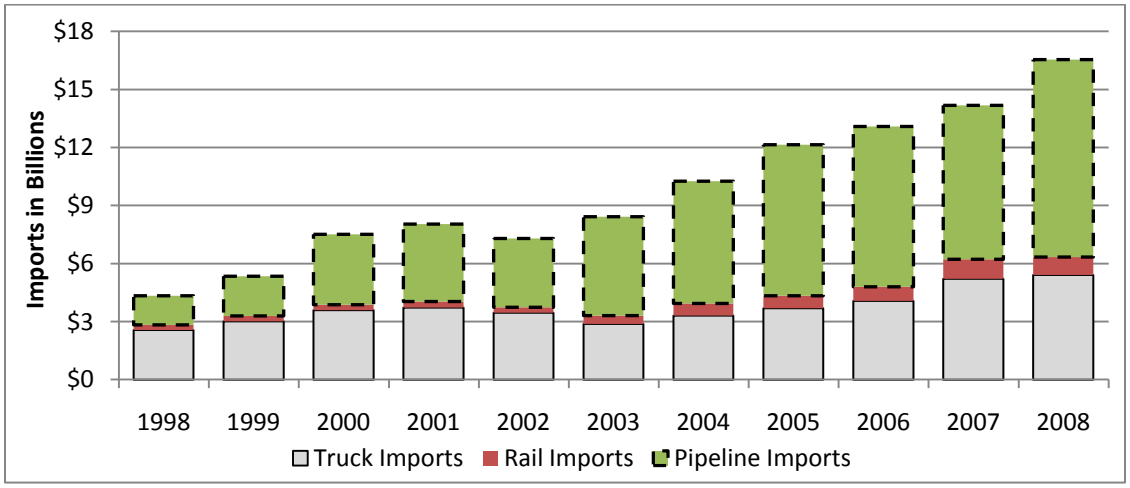


Source: BTS 2008

Figure 129: Exports to Canada through Montana by POE (2007 - dollars)

4.4.4 Commodity Flows by Mode

Pipeline imports represent almost 62 percent of the value of total imports through Montana ports in 2008. Commodity imports by truck are second highest with 33 percent of the total value of imports (Figure 130). While the total value of imports has increased from $4.3 billion in 1998 to $16.6 billion in 2008, the share of these imports transported by truck has declined from 59 percent to 33 percent during the same period as oil prices and the value of pipeline activity increases. However, in absolute terms, truck imports have increased from $2.6 billion in 1998 to $5.4 billion in 2008 (BTS 2008).



Source: BTS 2008

Figure 130: Imports from Canada by Mode ($ billion)

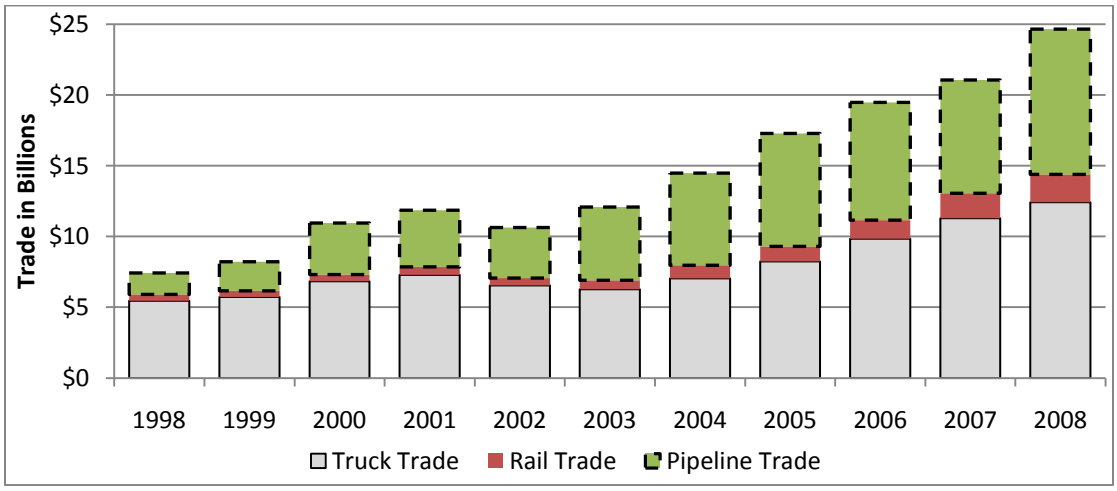
Exports to Canada through Montana are dominated by truck transport, which account for over 85 percent of total value of exports (Table 51). This actually represents a decline in percentage terms compared to their share of 94 percent back in 1998 (BTS 2008). The decline in share came on the back of expanding exports by rail, which now account for almost 13 percent of total exports compared to 6 percent in 1998.

Table 51: Exports to Canada by Mode ($ billion)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Truck Exports	$2.9	$2.7	$3.2	$3.6	$3.1	$3.4	$3.7	$4.6	$5.8	$6.1	$7.0
Rail Exports	$0.2	$0.1	$0.2	$0.3	$0.2	$0.2	$0.3	$0.4	$0.6	$0.7	$1.0
Pipeline Exports	$0.0	$0.0	$0.0	$0.0	$0.0	$0.1	$0.2	$0.2	$0.0	$0.1	$0.1

Source: BTS 2008

Despite that, exports by truck to Canada through Montana ports have expanded significantly from $2.9 billion in 1998 to over $7 billion in 2008. Overall, truck trade between the U.S. and Canada through Montana ports has increased from $5.5 billion in 1998 to $12.4 billion in 2008. With growth in pipeline and rail, its modal share of total trade has declined to 50 percent from 73 percent during the same period (BTS 2008). At the same time, with the expansion of the Alberta oil industry, pipeline trade across Montana POEs has increased from $1.5 billion in 1995 to $10.3 billion in 2008 (Figure 131).

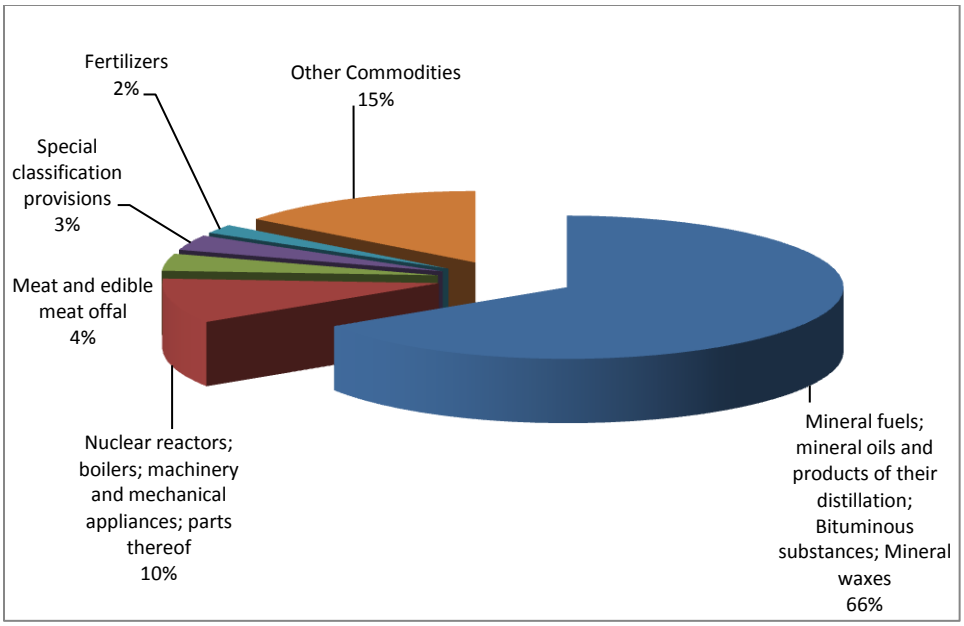


Source: BTS 2008

Figure 131: Trade with Canada by Mode ($ billion)

4.4.5 Type of Commodities

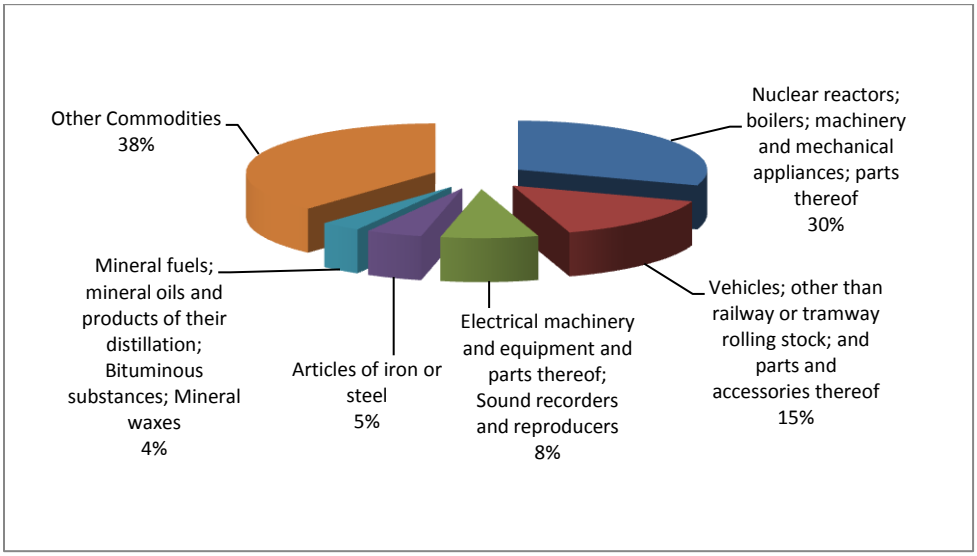
Oil and related mineral products represent 66 percent of the total value of imports from Canada through Montana ports, amounting to $8.7 billion in 2007 (BTS 2008). The value of imports of machinery and equipment represent the second largest component at 10 percent of the total, while other commodities represent 15 percent of total (Figure 132). By weight, oil and related mineral products account for 74 percent of imports, while fertilizers are second largest accounting for 8.3 percent of imports.



Source: BTS 2008

Figure 132: Imports from Canada by Commodity (2008 - dollars)

The machinery and equipment commodity accounts for 30 percent of U.S. exports to Canada through Montana POEs (Figure 133), with vehicles and parts representing 15 percent of exports, and electrical machinery and equipment 8 percent of the total (BTS 2008). Over 50 percent of exports to Canada through Montana are vehicles, machinery and equipment transported mostly by truck from the U.S. Midwest and Southwest.

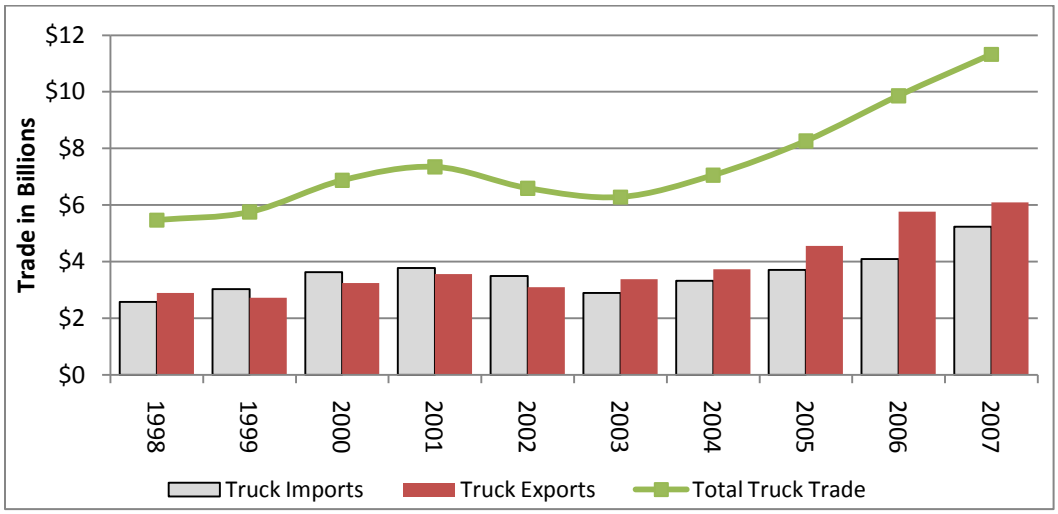


Source: BTS 2008

Figure 133: Exports to Canada by Commodity (2007 - dollars)

4.4.6 Truck Traffic via Montana Ports

Of the estimated $24.7 billion worth of trade taking place in 2008 between the U.S. and Canada through Montana ports, over 50 percent of that, or $12.4 billion dollars, is truck trade. Over the past 10 years, truck trade across the Montana border has expanded significantly, mainly due to the economic expansion in the province of Alberta. As a result, total truck trade has increased from $5.5 billion in 1998 to $12.4 billion in 2008 (BTS 2008). Thus, truck trade has witnessed an annual average growth rate of 8.9 percent during the 10 year period (Figure 134).



Source: BTS 2008

Figure 134: Truck Trade through Montana Ports ($ billions)

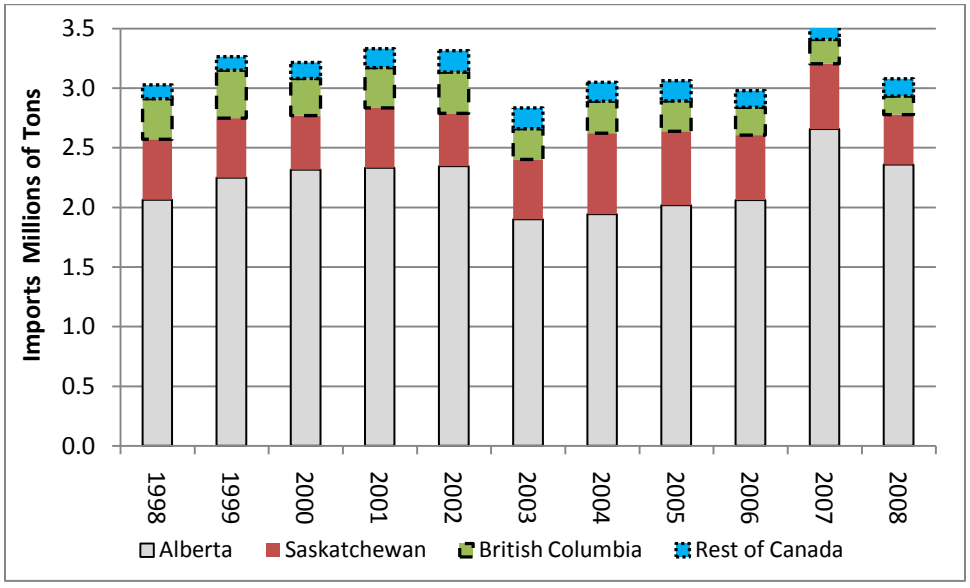
Of total truck trade across the Montana-Canada border, 95 percent is conducted through the Sweet Grass port (Table 52). This reflects the fact that this POE is: a) the only interstate highway connection into Montana, and b) the only 24-hour commercial link between the United States and Alberta (which represents over 90 percent of commodity flows across the Montana-Canada border). The port of Raymond, which connects Montana with the province of Saskatchewan accounts for 4.0 percent of truck trade, while the port of Roosville, which connects Montana with the province of British Columbia accounts for 1.0 percent of truck trade (Federal Motor Carrier Safety Administration [FMCSA] 2009).

Table 52: Truck Trade by Montana POE (2007 dollars)

Montana POE	Percentage[9]
Raymond	6%
Turner	0.1%
Scobey	<0.1%
Sweet Grass	91%
Piegan	0.4%
Opheim	<0.1%
Roosville	2%
Morgan	<0.1%
Whitlash	<0.1%
Del Bonita	0.1%
Wild Horse	0.5%
Great Falls	0.3%

Source: FMCSA 2009

Truck imports from Canada by tonnage that use Montana ports largely originate in Alberta (77 percent) and to a lesser degree Saskatchewan (14 percent) in 2008 with volumes from other provinces amounting to less than ten percent of the total. These truck imports from Alberta and Saskatchewan represent the actual freight volumes originating in these provinces that enter into Montana, and do not include freight passing through Alberta and Saskatchewan from other provinces to Montana. Figure 135 shows truck imports by tonnage demonstrate a clear growth trend from 1998 through 2002, and a decline in 2003 followed moderate recovery until another drop in 2008 (BTS 2008).



Source: BTS 2008

Figure 135: Truck Imports from Canada through Montana Ports (Million Tons)

[9] Exceeds 100 percent due to rounding

5 TRAFFIC GROWTH MODELING & FORECASTING

5.1 Introduction

This chapter describes the traffic growth forecasting methodology utilized in this analysis and presents the commercial traffic volume forecast results. As demonstrated in previous chapters, the research team studied economic conditions and cross border traffic in northern Montana, Alberta and Saskatchewan. Recognizing the range of factors that will determine future traffic volumes and the inherent uncertainty in forecasting, the research team employed a risk analysis approach to understand the key determinants of traffic growth and provide probability ranges of the forecast traffic volumes.

An overview of the forecasting approach is provided in Figure 136 and can be summarized by the following work steps:

1. Researching and analyzing regional economic trends and projections;

2. Reviewing data and reports from various sources, including MDT traffic data and official Canadian industry data (see Appendix D for more detailed traffic and trade data);

3. Developing a commercial traffic forecasting model, with risk analysis capabilities (see Appendix E for determinants of traffic growth);

4. Conducting a Risk Analysis Process (RAP) session; and

5. Updating risk analysis assumptions and running Monte Carlo simulations to estimate future traffic flows across Montana's POEs and northern highways identified above.

A key element of the approach is the participatory component in Step 4, wherein we gathered inputs from the technical panel, and regional experts. A Risk Analysis Process workbook was developed for the participants briefing them on background information, historical data, and the baseline forecasts of key socioeconomic indicators used in modeling cross border traffic flows. The format was designed to guide and solicit input from knowledgeable and independent stakeholders. A workshop was held in Helena on July 23, 2009 with the technical panel and other regional development experts. Relevant information collected from the workshop, Risk Analysis Process workbook, and the revisions by the technical panel are included in this chapter. Appendix F provides greater detail on the risk analysis modeling framework in terms of the conceptual approach, the use of statistical probability, and modeling steps used in risk analysis.

A number of key data sources were used to generate this draft modeling framework and the data variables presented in this document. They include:

- Traffic count data for Montana highways provided by the State of Montana's Department of Transportation (MDT);

- Canadian Provincial GDP and industry data provided by Statistics Canada (StatCan) as well as provincial governmental agencies;
- Montana Gross State Product data from the Bureau of Economic Analysis (BEA);
- Border crossing traffic data from the U.S. Department of Transportation's NAFTA Safety Statistics database; and
- Commodity flows across the Montana border from the U.S. Department of Transportation, Bureau of Transportation Statistics (BTS) Transborder Database.

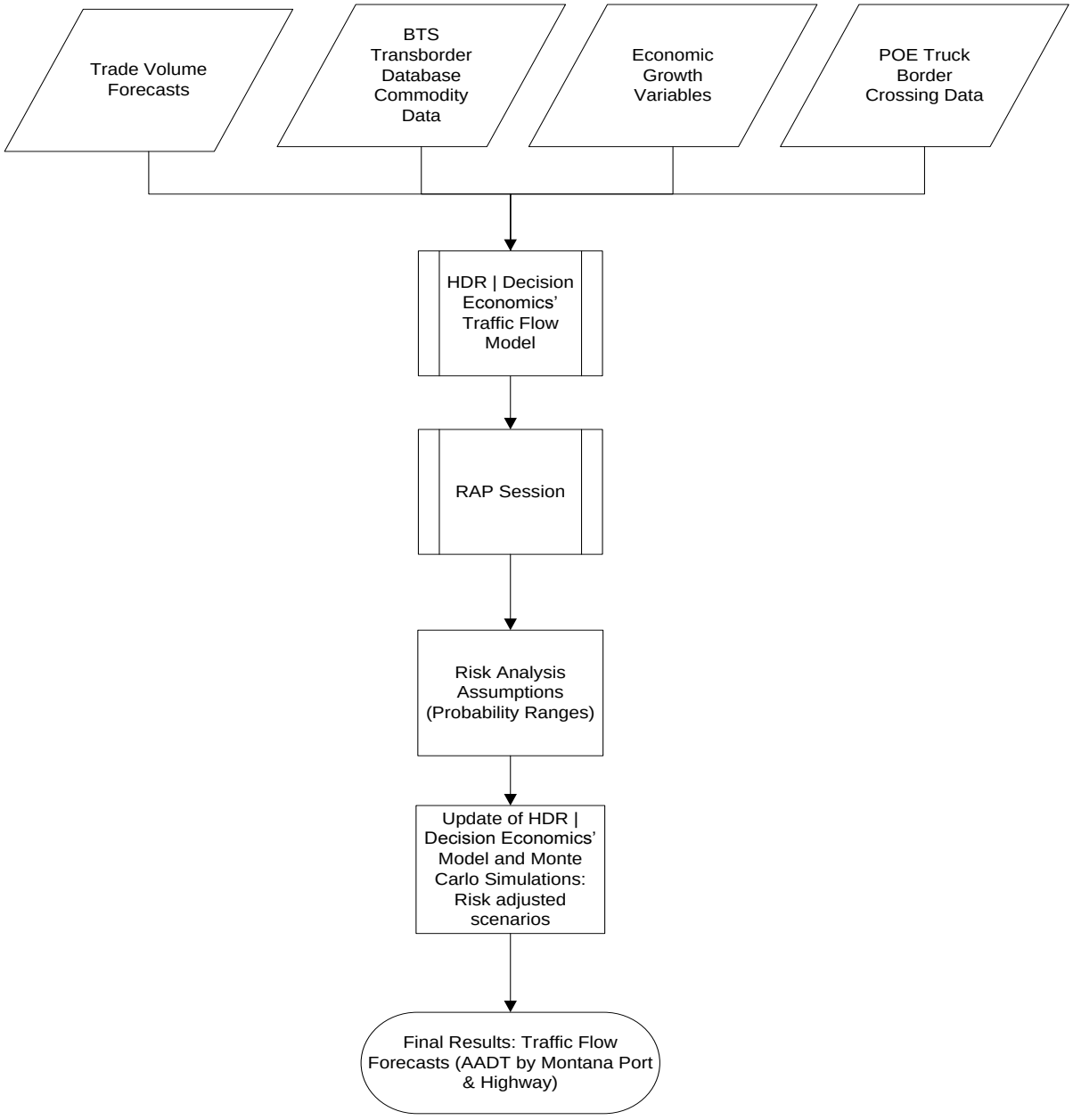


Figure 136: Risk Analysis Process Structure & Logic Diagram

5.2 Overview of Forecasting Approach

The objective of this analysis was to establish forecasts of future traffic volumes that take into account current traffic flows, industry trends, regional economic opportunities, future freight movements, international trade, and regulatory policies. The modeling approach generates forecasts of Average Annual Daily Traffic (AADT) for trucks, commercial auto traffic, and total traffic traveling along Montana's northern highways and ports for a 20 year planning horizon.

The forecasting methodology first creates base-year estimates for 2007 to relate economic/industry activity to traffic volumes, thus "validating" the model relationships to actual AADT. Once the economic, trade and traffic relationships are established for 2007, those relationships are applied to future projections of economic/industry activity to estimate future traffic flows. The forecast is generated for every year from 2009 through 2029. Key inputs and data to the forecasting process include:

- AADT counts for each of the 11 highway segments and 9 border crossings;
- Percent of traffic that is truck and percent of freight shipments that are carried by truck;
- Border crossing operating hours;
- Economic production by industry (value-added), along with industry outlook growth rates for Alberta and Saskatchewan;
- Trade flow and commodity data from the Bureau of Transportation Statistics (BTS) Transborder Database;
- Findings from the primary research/stakeholder interviews (Appendix A);
- Projections of oil prices; and
- Other key parameters such as the value of goods per ton and tonnage per truck.

5.2.1 Structure of Forecasting Method

The forecasting approach first estimates the relationship between economic and trade data to truck and commercial auto traffic counts for the 2007 base year. Variances between estimated and actual AADT counts generate adjustment factors so that the relationship between industry production and traffic volumes can be "validated". The commodity flow data from BTS provides the dollar value and tonnage of commodity movement for truck trade using Montana ports. In particular, the estimates of 2007 truck volumes are compared with actual truck counts with adjustments made to the tonnage per truck. Forecasts of traffic are then estimated using risk-based economic/industry forecasts and other key factors such as oil prices and productivity.

Thus, the key forecasting concepts are: a) economic value-added by industry; b) trade value using Montana ports; c) volume of trade tonnage; and d) number of trucks and autos. Risk variables are then used to adjust these relationships, accounting for likely future trends. These

include oil prices and production, tonnage per truck, trade per dollar of industry production, and the share of trade with Alberta and Saskatchewan that uses Montana POEs.

Base Year Economic/Trade Data

The economic data from Chapter 4 is used to establish the total dollar output for the major industries (agriculture, energy, manufacturing, retail/wholesale trade, construction, and tourism) for Alberta and Saskatchewan. The BTS Transborder database provides value and tonnage estimates for trade between regions, key commodities, and modal shares. In addition, Federal Highway Administration's (FHWA) Freight Analysis Framework (FAF2) provides supplemental historical (and future) volumes by mode (FHWA 2007).

Allocating Traffic Volumes in Base Year

For the base year, truck and auto flows are allocated by taking the share of traffic by border crossing and highway from the existing 2007 MDT traffic data. Thus, current and historic traffic patterns (differentiated by truck and auto) are used as a starting point for determining port-specific volumes.

Future Industry and Economic Growth

Forecasts of future economic (GDP) and industry growth are estimated within a risk range based on the following sources:

- Historical GDP growth rates by industry for Alberta and Saskatchewan from *Statistics Canada*;
- Industry outlook estimates provided in Chapter 4;
- Findings from stakeholder interviews; and
- FAF commodity forecasts.

This data was compiled by HDR, and represented as a range for growth for each key industry and overall GDP. Each range was characterized by a low, a high, and a most likely estimate. These growth rate forecasts were then reviewed as part of the RAP workshop and refined based on input from the technical panel (see tables below in Section 5.3 for industry growth rates).

Allocating AADT in Forecast Years

Truck and non-truck traffic volumes were allocated to Montana ports based on:

- Current/historic shares of traffic by Montana port;
- Findings from the stakeholder interviews;
- Industry growth trends and outlook (by geography);

- Constrained and unconstrained operational assumptions; and
- RAP workshop feedback.

Congestion/Operational Assumptions

The level of congestion experienced on the north-south corridors within the study is very low and consistent with a Level of Service (LOS) A. Consequently, the forecasts do not explicitly measure changes in travel time or delay. In terms of operations, forecast results were first estimated based on current hours of operations for each POE. As discussed below in the model input assumptions section (5.3), induced traffic growth was estimated for future scenarios based on expanded port operational hours.

North-South Directional Traffic

Based on the highway traffic findings, the volume of traffic from Canada to the U.S. is consistently about 52 to 60% of total traffic using Montana ports, suggesting that even as total traffic volumes vary, the share of traffic by direction holds fairly constant. In addition, it was found that 77% of freight truck tonnage from Canada is from Alberta with another 14% originating in Saskatchewan. Thus, the forecasting methodology is focused on economic and industry growth trends from those two provinces.

POE and Connecting Highway Volumes

As required, this research study includes estimates of future traffic volumes for both POEs and the relevant connecting highways in northern Montana. It is worth noting the conceptual and practical differences between them. POEs represent a facility and specific border crossing, most similar to a terminal or potential bottleneck (depending on traffic levels) and/or constraint (impacted by hours of operations). Connecting highways represent a network effect as part of larger trade and travel corridors. As stated at the beginning of the report, with the exception of Sweet Grass where the POE traffic volume is 84% of the connecting highway volume, the POE traffic volumes at the border crossing are less than 40% of the connecting highway and typically less than 20%. Consequently, future growth trends directly at the POE do not significantly impact the overall connecting highway volumes.

Historical Growth Trend Comparison

Forecasted truck and auto traffic volume growth was compared to historical trends to ensure that the range of low to high forecasts is credible. For each POE and each connecting highway, historical growth rates were determined based on traffic growth over the past 10 years. The historical trend growth rates eliminated the outlier (highest and lowest) growth years to develop a long-term growth trend. The estimated historical growth trend was then compared with the economic growth-based estimates. They are presented in the results section (5.4).

5.2.2 Traffic Forecasting Model

The objective of this research study is to establish forecasts of future commercial traffic volumes that take into account current traffic flows, industry trends, regional economic opportunities,

international trade, and regulatory policies. Commercial highway traffic volumes include both truck trips and auto trips. Truck trips are primarily freight and trade oriented, but also account for empty trucks. Commercial auto trips include a variety of tourism, on-the-clock business travel, and other retail and visitor trips (as opposed to "personal" trips such as visiting family).

As discussed above, the forecasting model is focused on projections of economic and industry activity in Canada and the resulting traffic volumes generated from industry-specific growth opportunities, which are then allocated to Montana ports and highways. These forecasts are then compared to a historical trend-based forecast of each POE and connecting highway to ensure that the results are within a reasonable range from historical experiences.

A structure and logic diagram of the traffic forecasting model is presented in Figure 137. The diagram represents the assumptions and data used in the estimation of traffic flows by Montana port and highway. The forecasting model builds from historically estimated relationships of economic growth and traffic volumes, and then adds risk-based forecast assumptions about industry growth, truck modal shares, oil prices, and other key factors. The truck estimation is largely based on growth and trade in key industries such as oil and gas, agriculture, construction, metal fabrication, and warehousing and distribution. These commodities represent the majority of freight truck travel. The model also accounts for empty trucks, which are approximately 10-12% of all truck trips. Estimation of commercial auto volumes is driven by tourism-related industries such as retail trade, amusement and recreation, and accommodations.

The structure and logic diagram presented in Figure 138 is a forecasting validation step. This approach is utilized to verify the robustness of forecast results by comparing to an alternative forecast of traffic developed from historical trends. It is built up from individual POE and connecting highway historical traffic counts from MDT.

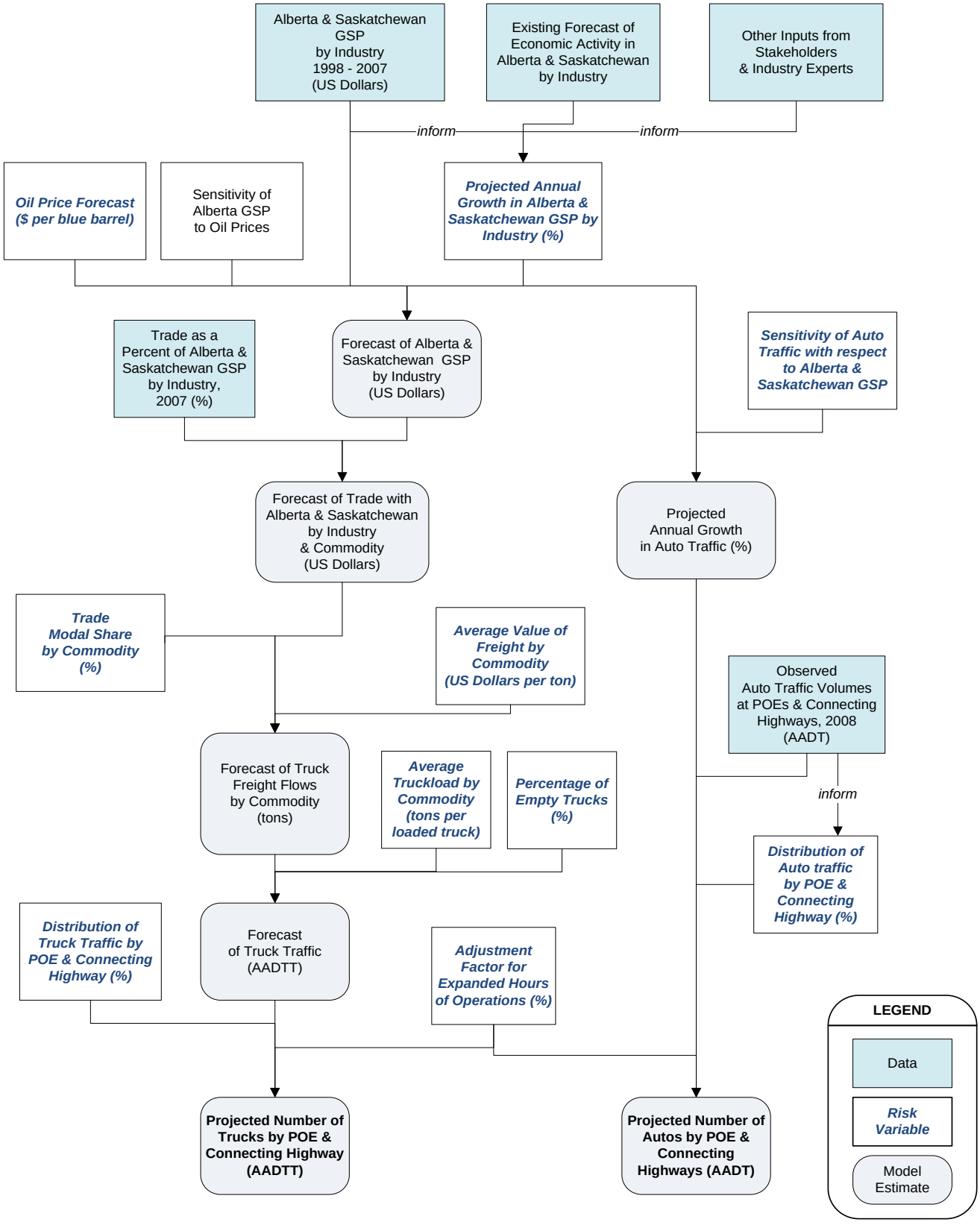


Figure 137: Structure and Logic Diagram for the Commercial Traffic Forecasting Model

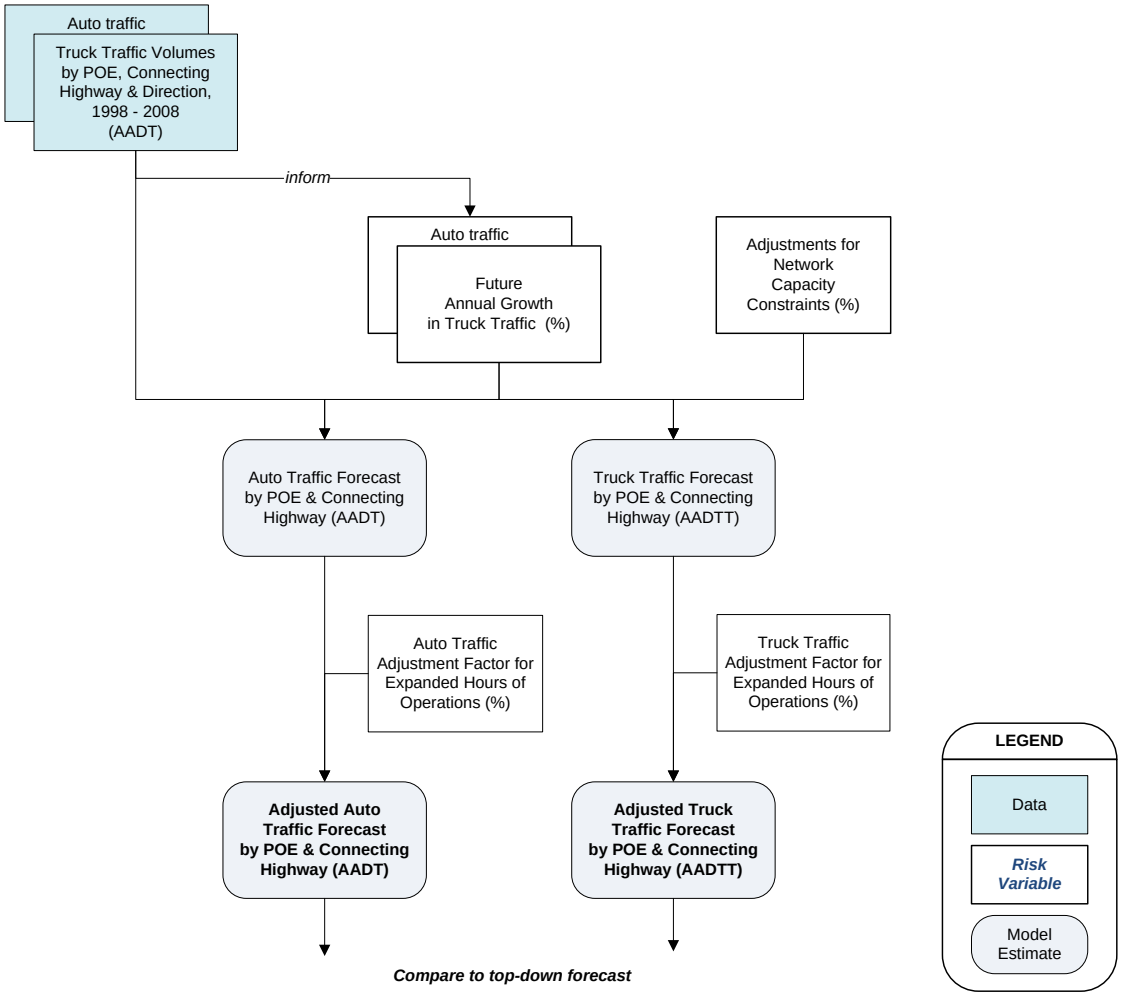


Figure 138: Forecast Validation Process Structure and Logic Diagram

5.3 Model Inputs and Assumptions

This section discusses the rationale for the model inputs and assumptions implemented to estimate the growth in truck and commercial auto traffic volumes at Montana's POEs and connecting highways. Descriptions of these variables along with historical data and the risk range used for forecasting are presented below in this section. The risk ranges reflect input from the RAP workshop based on stakeholder and expert input. The inputs and assumptions are broken into two major groups below: economic growth related (Table 53 and Table 54) and transportation related (Table 55). Appendix E provides additional information on traffic determinants and historical traffic growth.

5.3.1 Economic and Industry Growth

The growth in Alberta and Saskatchewan's industrial sectors will directly impact Canadian-U.S. trade which determines traffic volumes along Montana's POEs and connecting highways in terms of truck and commercial auto traffic volumes. In 2007, Alberta's exports to Montana via truck accounted for 2.6 million tons, or 75% of all truck tons from Canada, while exports from Saskatchewan represented 15% of all truck tons from Canada[10]. These exports represent goods originating in Alberta or Saskatchewan crossing into Montana, and are net of any freight originating in other provinces traveling through Alberta and Saskatchewan. Estimating the growth in Alberta and Saskatchewan's industrial sectors provide a basis for estimating future trade flows into Montana. The economic growth was estimated on a per industry basis as industry growth rates for Alberta and Saskatchewan have demonstrated a high level of variation from 1999 to 2007 (see Section 4.3). The growth rates for Alberta and Saskatchewan (Table 53) are based on the information accumulated from:

- Provincial Outlook Executive Summary; Long –Term Forecast;
- Conference Board of Canada, 2009 Long Term Forecast;
- Statistics Canada (Statcan);
- Alberta Modified Canadian Occupational Projection System (COPS) publication: Outlook 2008-2012; and
- Feedback from panelists at the RAP workshop session.

Two sets of growth rates were used in the economic forecasts for Alberta and Saskatchewan: a short-term forecast (2009 through 2011), and a long-term forecast (2012 through 2029). The short-term forecast ranges capture the recent downward economic pressure of the recession and short-term economic recovery through the year 2011 with minimal variation. The long-term forecast range input assumptions (Table 54) provide growth rates with a greater degree of uncertainty, as historical economic trends demonstrated a high degree of variation.

[10] BTS TransBorder Freight Data

Table 53: Probability Range for Alberta and Saskatchewan Economic Growth by Industry (2009 through 2011)

		Alberta			Saskatchewan		
Variable	Year	Most Likely	Low	High	Most Likely	Low	High
Province GDP	2009	0.50%	-0.90%	0.80%	1.20%	0.00%	2.90%
	2010	1.50%	0.20%	2.80%			
	2011	2.40%	1.30%	4.90%			
Agriculture	2009	0.50%	0.00%	0.80%	0.50%	0.00%	2.50%
	2010	1.60%	0.80%	2.40%			
	2011	2.40%	1.10%	4.80%			
Energy Related	2009	-1.00%	-3.00%	-0.20%	0.60%	0.00%	2.00%
	2010	1.10%	0.00%	2.20%			
	2011	2.30%	0.40%	4.00%			
Manufacturing	2009	0.00%	-1.00%	0.30%	0.50%	0.00%	2.10%
	2010	0.20%	-0.20%	1.20%			
	2011	1.70%	-0.20%	4.60%			
Remainder	2009	0.50%	-0.50%	0.70%	1.30%	0.00%	3.20%
	2010	1.80%	1.00%	2.60%			
	2011	3.50%	2.50%	4.50%			

Table 54: Probability Ranges for Alberta and Saskatchewan Economic Growth by Industry (2012 through 2029)

	Alberta			Saskatchewan		
Variable	Most Likely	Low	High	Most Likely	Low	High
Province	2.50%	-0.60%	5.70%	2.90%	-1.60%	5.20%
Agriculture	0.10%	-4.00%	6.50%	2.50%	-4.00%	6.00%
Energy Related	2.40%	-1.50%	5.30%	1.90%	-4.00%	2.30%
Manufacturing	1.10%	-0.10%	4.80%	2.00%	-1.30%	4.50%
Remainder	2.30%	1.20%	4.80%	2.50%	1.80%	3.20%

5.3.2 Determinants of Future Traffic Volumes

The dollars per ton of trade was calculated for each major industry in order to estimate trade tonnage from future year dollar estimates of trade by industry. These ratios were calculated using Bureau of Transportation Statistics (BTS) estimates for trade by tonnage and the dollar value for 99 different commodities. The detailed commodities were then paired up with the appropriate producing industry (e.g., fabricated metal products to manufacturing) to provide tonnage and value in dollars by industry. Service based industries not producing physical goods were generally excluded from the tonnage calculation, but are captured in the commercial auto flows.

The average tonnage per truck is applied to the total tonnage estimates to derive the number of trucks crossing the Montana POEs. The ton per truck value was "calibrated" such that the

estimate of trucks matches the actual truck counts, and then applied to future years. It is based on historical BTS Transborder truck tonnage data, MDT truck volumes, FHWA's (FAF2) database, and the approximate weight that will put a truck's gross vehicle weight at the maximum allowed on US roads without requiring special overweight permits. Input from the RAP workshop helped to refine these estimates, as panelists agreed that freight trucks crossing the border tend to carry relatively full and heavy loads.

Oil imports represent 28% of all tons imported from Alberta. It is assumed that oil prices will have an impact on mining and oil extraction industries in Montana and Canadian regions. Historically, traffic volumes have fluctuated significantly largely due to oil rig activity in Montana as well as production of oil from Alberta and Saskatchewan, creating both truck and commercial auto trips. Higher oil prices will increase oil and gas production and create additional opportunities for extraction. These activities will increase truck and auto traffic in Northern Montana and Canada. The oil price estimates per blue barrel (bbl) are from the EIA which provides low, most likely and high estimates of future oil prices (EIA 2009). In the revised model, after the RAP workshop, oil price impacts were assumed to be captured within the oil and gas energy sectors.

Table 55: Probability Ranges for Key Transportation Input Variables

Variable	Most Likely	Low	High
Oil Prices per Blue Barrel (bbl)			
2010	$79.80	$58.30	$90.60
2020	$115.40	$50.00	$183.30
2029	$128.40	$50.00	$198.50
Dollars per Ton Ratio by Industry for Imports from Alberta			
Agriculture	$1,589	$1,281	$1,886
Construction	$1,786	$1,440	$2,120
Manufacturing	$1,784	$1,438	$2,118
Mining and Oil Extraction	$378	$305	$449
Wholesale and Retail Trade	$5,537	$4,463	$6,572
Remainder	$9,370	$7,552	$11,122
Truck Traffic			
Tons per truck	20	16	30
Percent of Empty Trucks	12%	9%	14%
Share of Truck Volumes Across Montana POEs			
Sweet Grass	66.0%	56.0%	74.0%
Wild Horse	2.0%	1.0%	3.0%
Willow Creek	0.4%	0.0%	1.0%
Turner	2.0%	0.3%	3.0%
Morgan	1.0%	0.4%	2.0%
Opheim	1.0%	0.2%	2.0%
Scobey	2.0%	0.5%	3.0%
Whitetail	0.6%	0.2%	1.0%
Raymond	9.0%	6.0%	12.0%
Share of Auto Volumes Across Montana POEs			
Sweet Grass	65.0%	59.0%	60.0%
Wild Horse	5.0%	4.0%	6.0%
Willow Creek	2.0%	1.0%	2.0%
Turner	2.0%	1.0%	2.0%
Morgan	2.0%	0.3%	3.0%
Opheim	2.0%	1.0%	3.0%
Scobey	2.0%	0.3%	3.0%
Whitetail	1.0%	0.5%	2.0%
Raymond	17.0%	9.0%	20.0%
Expanding Port Operations to 24 Hours			
Anticipated Traffic Growth	15%	5%	30%

The percentage of empty trucks estimates the number of empty trucks at Montana POEs and connecting highways to obtain an estimate of all trucks, empty or carrying freight, on northern Montana roadways. The risk range values represent the historical NAFTA Safety Statistics truck data specific to Montana POEs from 1996 to 2003.

The number of trucks and autos entering Montana from Alberta and Saskatchewan then are distributed among each POE based upon the historical truck and auto volumes across Montana POEs. Since the study area does not cover all Montana POEs the shares do not add up to 100% for the low and most likely categories. These variables distribute the commercial auto and truck traffic from Canada to each Montana POE.

Expanding port operations was considered in the scenario analysis for POEs that have limited operating hours. Based on the industry and economic development stakeholder interviews, expanded port operating hours could either be a full 24-hour port, or expanded hours to have more available time in the morning and evening. As discussed at the RAP workshop, expanding port operations could have multiple effects, including: a) shifting the time-of-day for trips to the expanded hours (but not increasing the number of trips); b) inducing new travel; or c) diverting border crossing trips from a 24-hour port to a port with expanded hours. The RAP workshop discussions lead to the testing and estimate of increased traffic volumes at the 5% (low), 15% (median), and 30% (high) levels as shown below.

5.3.3 Traffic Forecast Results

This section presents the traffic forecast for Montana POEs and the connecting highways. As requested in the original research statement, the results are focused on commercial traffic volumes related to Canadian economic development. Commercial traffic is further broken down by truck traffic and commercial auto, where commercial auto is defined as visitor/tourism traffic as well as on-the-clock auto trips. The forecasts are presented in terms of:

- Type of traffic – total, truck and commercial auto;
- Forecast year –from 2009 to 2029;
- Connecting highways and POEs – while closely related, the volumes and growth patterns vary between POEs and their connecting highways as POE volumes are typically a fraction of traffic volumes for connecting highways; and
- Range of forecast estimates – based on the risk analysis, there is a “most likely” forecast, as well as low and high forecasts that represent an 80% confidence interval. The most likely forecast is represented by the 50% risk analysis value, with the 10% as the low (only a 10% chance that the value will be lower), and the 90% as the high (90% chance that the value will be no greater). For comparison, a historical trend analysis was performed estimating future traffic at POEs and connecting highways, as a validation step.

5.4 Summary of Forecast Results

Figure 139 to Figure 142 present commercial traffic volume forecasts across all of the study area POEs and connecting highways. For most POEs, preliminary traffic count data for 2009 was available from MDT (excluding only Wild Horse) so the forecast time period is from 2010 to 2029. For the connecting highways, forecasts are from 2009 to 2029 (with historical data available and graphed from 1998 to 2008). The POE traffic volumes are most directly impacted by trade and economic growth in Canada, and thus the continuation of a slow economic recovery in 2010 keeps the "most likely" 50% growth forecast at a modest level in the near-term with more steady growth in the future. The most likely (50%) forecast indicates that commercial traffic volumes are likely to equal the peak volumes experienced between 2003 and 2005 but even with fairly consistent growth, it may take 15 to 20 years to reach that level.

For the connecting highways which are impacted by trade but also local economic and traffic activity, the estimated commercial traffic volumes in the study area are expected to have flat growth in 2009, consistent with the current economic recession, and then recover gradually over the next twenty years. The most likely (50%) forecast for connecting highways closely follows the historical trend line.

Since 2004, traffic volumes across all POEs and connecting highways have either dropped dramatically or demonstrated low to zero growth. The historical trend analysis therefore shows the declining traffic volumes through 2009, by taking into account the downward economic industry growth trend the traffic volumes continue to decline through 2010. After 2010, economic growth is anticipated to be positive, albeit low, resulting in positive traffic growth. The low (10%) and high (90%) forecast trend lines provide a range of likely traffic growth. Figure 139 and Figure 140 show the daily traffic volumes for truck and commercial auto at the study area POEs, while Figure 141 and Figure 142 show daily traffic volumes for truck and commercial auto for the relevant connecting highways.

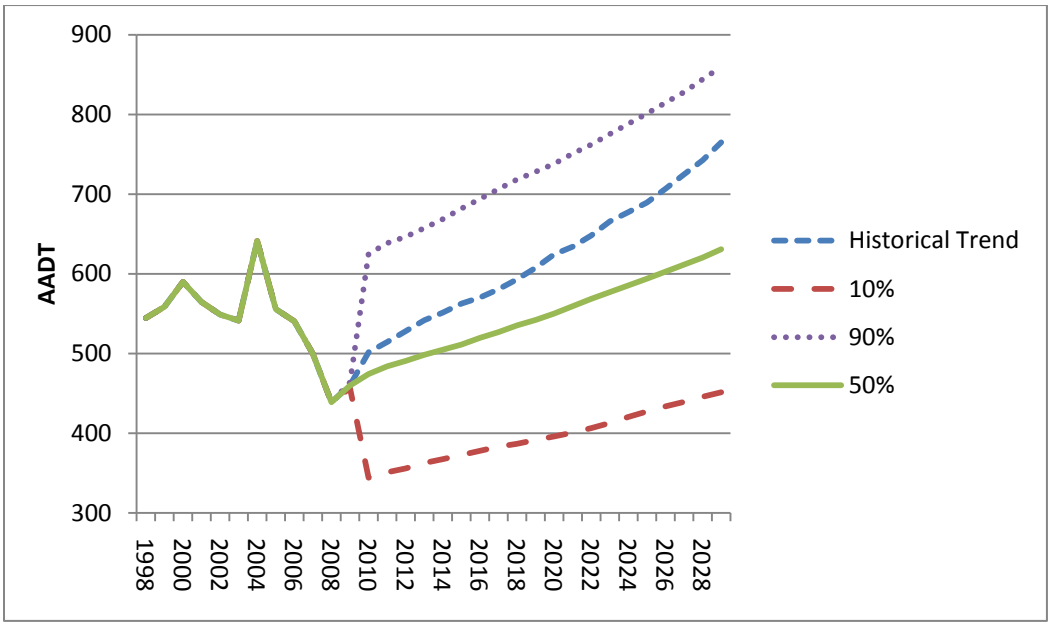


Figure 139: Daily Truck Traffic Volumes at POEs

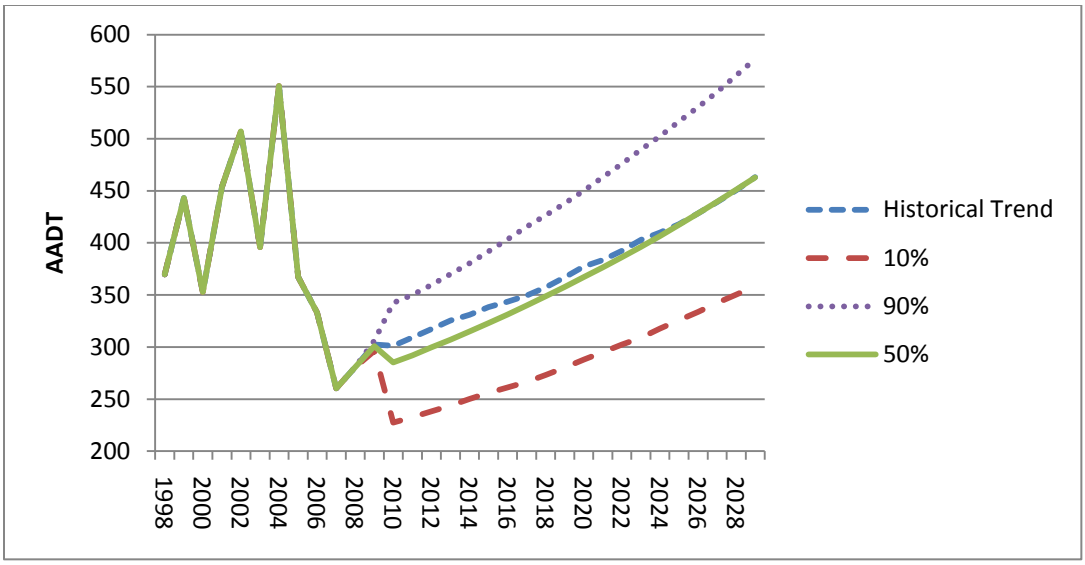


Figure 140: Daily Commercial Auto Traffic Volumes at POEs

For daily truck volumes at Montana POEs, current activity levels are at roughly 460 trucks per day compared to a peak of almost 650 in 2004. For the most likely (50%) forecast, truck volumes are estimated to be over 600/day by 2029 and up to 865/day in the high (90%) forecast. Future commercial auto volumes track closely to the forecast trend line from historical data, growing from 300 autos/day in 2009 to over 450/day in 2029, with a high forecast (90%) reaching almost 600/day.

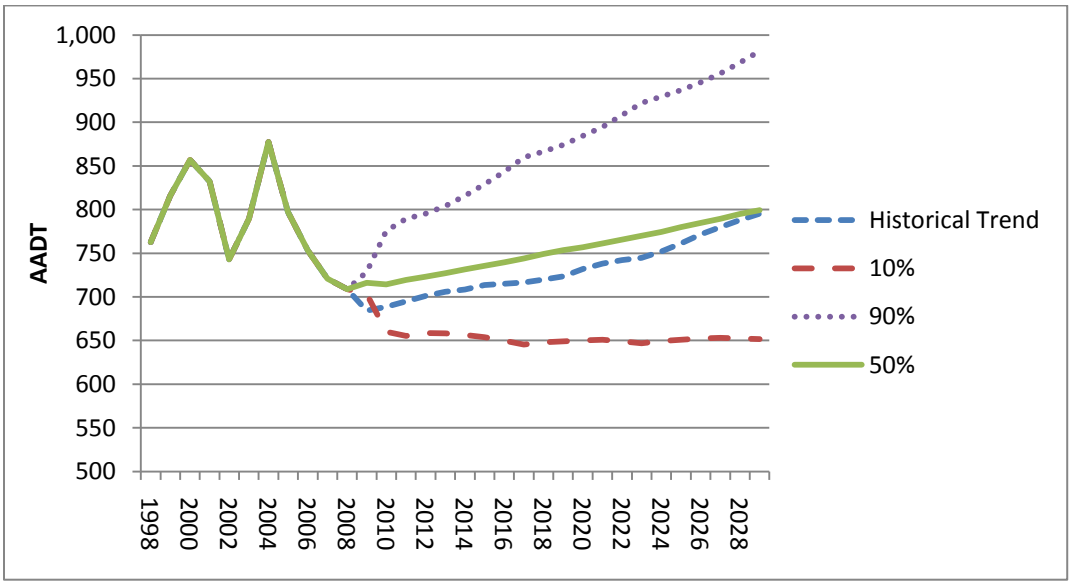


Figure 141: Daily Truck Traffic Volumes at Connecting Highways

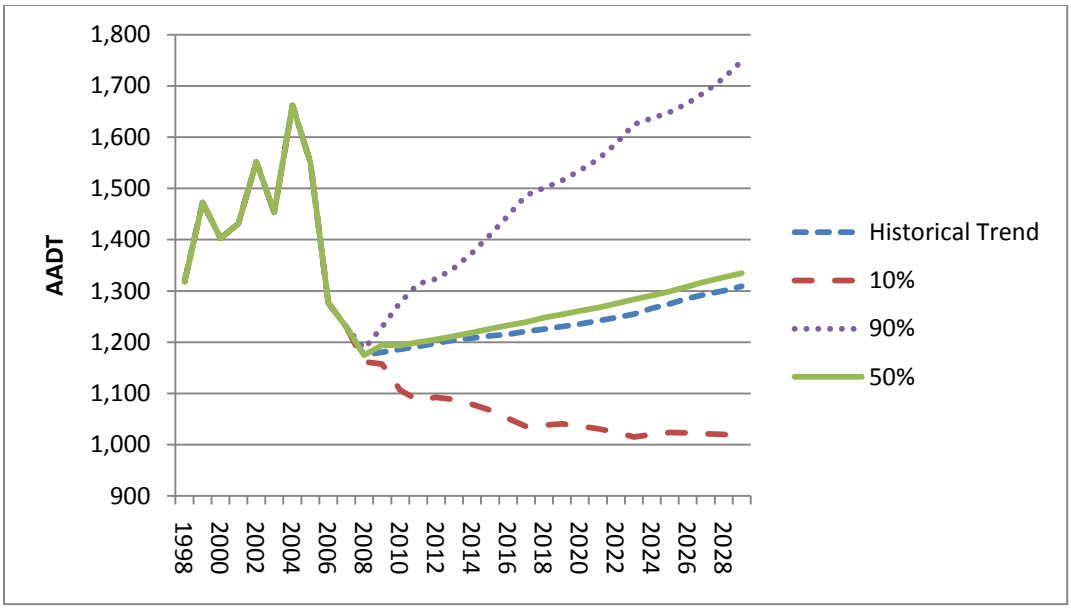


Figure 142: Daily Commercial Auto Traffic Volumes at Connecting Highways

Based on the relatively modest share of POE traffic at connecting highways, and thus the strong influence of local traffic (with the exception of Sweet Grass), the most likely connecting highway forecast tends to follow historical trends closely with steady but limited growth. However, the risk analysis range is fairly wide reflecting the potential for economic and traffic growth. For example, daily truck traffic on connecting highways is expected to grow from about 720 trucks per day in 2008 to 800 trucks per day in 2029 with a low-to-high range of 650 to 980.

5.5 Forecast Results by Montana POE and Connecting Highway

This section provides results for all POEs and the related connecting highways. It is worth repeating the 2008 traffic volumes by POE as the traffic volumes at study area POEs varies greatly with clear distinctions between the POEs. Sweet Grass is by far the largest POE with 1890 AADT in 2008 and Raymond is the next closest at 250 AADT. The remaining POEs all have less than 24-hour operations and less than 150 AADT with Wild Horse the next largest at 130 and all others less than 60 AADT according to MDT traffic counts and typically less than 15% of traffic is for trucks.

Forecasted annual average growth rates for each connecting highway and POE are presented in Table 56 and Table 57. The first set of tables is focused on the 9 study area POEs for all traffic, truck traffic and commercial auto traffic with the annual rates shown for the low, most likely, and high ranges with the historical trend based growth rate for comparison purposes. The historical trend evaluated was from the period 1998 through 2008. The second set of tables is for the 11 connecting highways.

Most POEs are expected to grow by 1 to 3 percent per year with higher growth projected at Raymond. The Historical Trend forecast shows lower growth than the "low" results for Raymond and Turner POEs.

Table 56: Average Annual Growth Rates for All Traffic at POEs: 2010 to 2029

	Low	Most Likely	High	Historical Trend
Sweet Grass	1.4%	2.1%	2.7%	2.4%
Wild Horse	0.7%	2.2%	3.5%	2.4%
Willow Creek	0.1%	2.4%	4.1%	4.4%
Turner	-1.0%	0.7%	2.3%	-1.6%
Morgan	-0.8%	2.2%	4.0%	4.1%
Opheim	-1.4%	2.1%	4.4%	1.0%
Scobey	-1.2%	2.5%	4.7%	3.2%
Whitetail	-0.9%	1.3%	3.0%	3.1%
Raymond	2.5%	4.6%	6.1%	0.6%

Table 57: Average Annual Growth Rates for Trucks at POEs: 2010 to 2029

	Low	Most Likely	High	Historical Trend
Sweet Grass	0.3%	1.7%	3.2%	2.4%
Wild Horse	-0.8%	0.7%	2.2%	2.4%
Willow Creek	1.5%	3.1%	4.6%	5.6%
Turner	3.1%	8.9%	11.7%	-1.6%
Morgan	-2.6%	2.8%	5.6%	0.6%
Opheim	6.8%	13.5%	17.1%	7.8%
Scobey	4.3%	10.6%	13.4%	13.3%
Whitetail	-0.3%	2.2%	4.2%	6.8%
Raymond	-0.7%	0.9%	2.6%	2.1%

The results for commercial auto traffic at Montana POEs are presented in Table 58. These forecasts more closely follow total traffic forecasts from the previous table.

Table 58: Average Annual Growth Rates for Commercial Auto at POEs: 2010 to 2029

	Low	Most Likely	High	Historical Trend
Sweet Grass	1.5%	2.2%	2.9%	2.4%
Wild Horse	0.7%	2.5%	4.1%	2.4%
Willow Creek	-0.4%	2.3%	4.1%	4.3%
Turner	-2.9%	-0.8%	0.8%	-1.6%
Morgan	-1.6%	2.0%	4.1%	5.5%
Opheim	-3.2%	1.1%	3.9%	0.2%
Scobey	-5.0%	0.8%	3.8%	-0.1%
Whitetail	-2.0%	1.0%	3.2%	2.5%
Raymond	3.6%	6.4%	8.1%	-0.3%

As shown in Table 59, the most likely forecast average annual growth rates for traffic at connecting highways fall within a fairly narrow range of -2.1% to 1.7%, which is consistent with historical growth trends. The relatively small share of POE traffic compared to connecting highway traffic (less than 20% other than Raymond and Sweet Grass) means that the larger determinant will be local traffic and economic conditions in northern Montana.

Table 59: Average Annual Growth Rates for All Traffic at Connecting Highways: 2010 to 2029

	Low	Most Likely	High	Historical Trend
Sweet Grass (I-15)	0.4%	0.9%	1.4%	1.1%
Wild Horse (S-231) S-232	-0.4%	1.2%	2.6%	1.2%
Willow Creek (S-233)	-0.7%	0.7%	2.0%	0.6%
Turner (S-241)	-3.8%	-1.7%	0.6%	-1.9%
Morgan (N-99) US 191	0.3%	1.7%	2.9%	1.7%
Opheim (P-31) MT-24	0.0%	1.2%	2.3%	1.8%
Scobey (P-32) MT-13	-1.4%	0.6%	2.4%	0.5%
Whitetail (S-511)	-5.9%	-2.1%	1.2%	-2.5%
Whitetail (S-251)	-1.1%	0.6%	2.1%	-2.5%
Raymond (N-34) MT-16	-1.0%	1.1%	3.0%	-0.8%
Raymond (N-22) MT-16	-1.5%	0.0%	1.6%	0.0%

The truck traffic volume projections by connecting highway are presented in Table 60. It's worth noting that these truck counts reflect not just freight trucks carrying long-distance trade but also reflect a wide variety of local truck traffic in northern Montana.

Table 60: Average Annual Growth Rates for Trucks at Connecting Highways: 2010 to 2029

	Low	Most Likely	High	Historical Trend
Sweet Grass (I-15)	0.2%	0.8%	1.5%	1.1%
Wild Horse (S-231) S-232	-0.4%	1.1%	2.6%	1.2%
Willow Creek (S-233)	-0.7%	0.7%	2.0%	0.6%
Turner (S-241)	-3.3%	-1.1%	1.2%	-1.9%
Morgan (N-99) US 191	0.4%	1.8%	3.0%	1.7%
Opheim (P-31) MT-24	-0.7%	0.3%	1.3%	1.8%
Scobey (P-32) MT-13	-1.5%	0.5%	2.4%	0.4%
Whitetail (S-511)	-6.2%	-2.6%	0.6%	-2.5%
Whitetail (S-251)	-1.2%	0.6%	1.9%	-2.5%
Raymond (N-34) MT-16	-1.9%	-0.1%	1.7%	-0.8%
Raymond (N-22) MT-16	-1.5%	0.0%	1.4%	0.0%

In Table 61, the average annual growth rates for commercial auto traffic on connecting highways is more positive, whereas the most likely forecast, demonstrates the positive growth between 0.7% and 2.7%. Commercial traffic volume forecast (truck and commercial auto) at 10 year intervals for each connecting highway and POE are presented in Table 62 and Table 63. Interestingly, while Sweet Grass remains the dominant POE, the connecting roads to/from Raymond, Wild Horse, and Scobey are also significant in terms of future traffic volumes[11].

Table 61: Average Annual Growth Rates for Commercial Auto at Connecting Highways: 2010 to 2029

	Low	Most Likely	High	Historical Trend
Sweet Grass (I-15)	0.6%	1.0%	1.4%	1.1%
Wild Horse (S-231) S-232	-0.4%	1.2%	2.6%	1.2%
Willow Creek (S-233)	-0.7%	0.6%	2.0%	0.6%
Turner (S-241)	-3.8%	-1.7%	0.5%	-1.9%
Morgan (N-99) US 191	0.4%	1.8%	2.9%	1.7%
Opheim (P-31) MT-24	0.0%	1.2%	2.3%	1.8%
Scobey (P-32) MT-13	-1.5%	0.5%	2.3%	0.5%
Whitetail (S-511)	-5.8%	-2.0%	1.3%	-2.5%
Whitetail (S-251)	-1.1%	0.6%	2.1%	-2.5%
Raymond (N-34) MT-16	-0.8%	1.2%	3.1%	-0.8%
Raymond (N-22) MT-16	-1.5%	0.0%	1.6%	0.0%

[11] Traffic volumes at connecting highways are based upon MDT historical traffic counts

Table 62: Commercial Traffic (Truck and Commercial Auto) Volumes at Connecting Highways: 10 year intervals

	2009	2019	2029
Sweet Grass (I-15)	652	689	753
Wild Horse (S-231) S-232	199	222	249
Willow Creek (S-233)	190	202	214
Turner (S-241)	70	56	52
Morgan (N-99) US 191	67	80	94
Opheim (P-31) MT-24	61	67	74
Scobey (P-32) MT-13	134	139	147
Whitetail (S-511)	20	16	13
Whitetail (S-251)	40	41	43
Raymond (N-34) MT-16	140	160	161
Raymond (N-22) MT-16	338	334	335

Commercial traffic at Montana POEs is expected to increase over the next two decades but as depicted in Table 63, there is a tremendous disparity in activity between Sweet Grass, Raymond and the remaining POEs. Supported by the stakeholder interviews, barring major infrastructure and operational improvements, it is very challenging to predict substantial "game-changing" growth at a specific POE based on this research study's comprehensive evaluation of historical trends, commodity flows, and economic growth. Thus, "most likely" forecasts tend to represent a somewhat similar future distribution of traffic across Montana POEs.

Table 63: Commercial Traffic (Truck and Commercial Auto) Volumes at POEs: 10 year intervals

	2009	2019	2029
Morgan	12	15	18
Opheim	7	14	17
Raymond	76	120	147
Scobey	10	22	27
Sweet Grass	603	661	800
Turner	11	15	19
Wild Horse	28	35	43
Willow Creek	9	10	13
Whitetail	4	8	9

5.5.1 Traffic Implications of Expanded Port Operations

The only 24-hour POEs in the study area are Sweet Grass and Raymond, which are at the extreme western and eastern ends of the study area, respectively. However, there is significant interest by communities in northern Montana to have expanded port operating hours at their nearest POE. Based on the traffic and infrastructure conditions analysis, there is limited demand for significantly upgrading capacity or operations as each connecting highway is at LOS A and the majority of trade will continue to use the Sweet Grass POE with its connection to I-15. Nevertheless, the straight distance between Sweet Grass and Raymond is 335 miles or 432 miles

by highway connections. So, the lack of 24-hour operations between these two facilities can be a significant constraint for border crossing traffic flows (or the timing of traffic flows) for much of northern Montana.

According to most stakeholders, and confirmed at the RAP workshop, there is a strong desire to have at least one and possibly two additional POEs with expanded port operating hours, but it is unlikely that demand would justify more than that. Stakeholders also stressed the importance of synergistic highway infrastructure improvements to take advantage and leverage expanded operations.

To model the potential traffic growth implications of expanded port operations (which could mean a full 24-hour operation or something closer to 12-18 hours[12]), the research team tested a range of likely induced growth effects of 5% (low) to 15% (most likely) to 30% (high)[13] to each non-24 hour POE. As mentioned in the methodology section, these growth effects are based on experiences of other facilities that have expanded operations throughout the country and take into account the potential for time-shifting (i.e., some trips are diverted to hours previously unavailable) as well as the potential for trips to divert from other POEs based on the expanded travel flexibility.

Table 64 presents the 2019 traffic volumes for the most likely, high and expanded port operations scenarios. The expanded operations could increase traffic volumes and the high end range of expanded operations tends to be consistent with the "high" forecast of current port operations. Unless there are major infrastructure improvements corresponding to expanded port operations (not currently envisioned based on traffic needs), it is unlikely to have increases beyond the values shown below.

Table 64: Total Traffic in 2019 due to Expanding Port Operations

	Current Port Operations			Expanded Port Operations		
Variable	Most Likely	High		Low	Most Likely	High
Wild Horse	80	102		84	93	105
Willow Creek	25	35		27	29	33
Turner	28	38		30	33	37
Morgan	32	45		34	37	42
Opheim	32	51		33	37	41
Scobey	42	65		44	48	55
Whitetail	16	22		16	18	20

Note: Sweet Grass and Raymond were excluded from this table as each POE currently operates 24 hours.

5.5.2 Traffic Forecasts for the 3 Largest POEs

Figure 143 through Figure 145 present detailed traffic volumes in 5 year intervals of total traffic, truck traffic and commercial auto traffic volumes for the three largest POEs in the study area: Raymond, Sweet Grass, and Wild Horse. The charts focus on the POE traffic volumes which are

[12] Stakeholder interviews frequently revealed that in many cases it would be helpful to simply expand port operating hours but that it might not be necessary to have 24-hour operations (at least not at all POEs).
[13] "Accounting for Induced Travel in Evaluation of Urban Highway Expansion" FHWA, Adjusted by panelist during RAP Session.

most closely connected to trade and economic growth in Canada. For more detailed results for all connecting highways and POEs, please refer to Appendix G. Figure 143 shows commercial auto traffic from 2008 to 2013 is expected to double at Raymond returning to 2006 levels by 2020, while truck traffic is anticipated to grow at a relatively flat rate over the entire forecast period reaching peak 2006 levels by 2025.

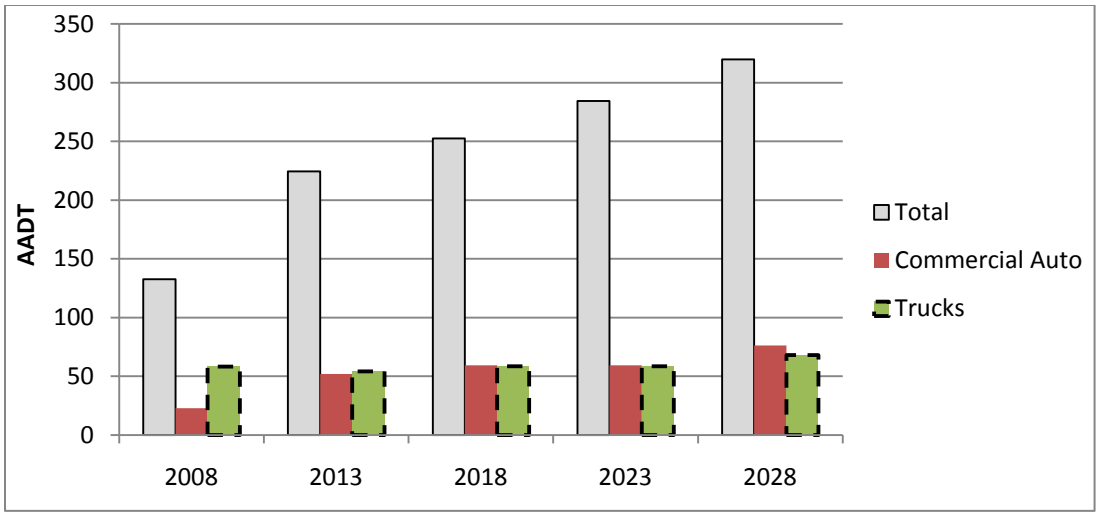


Figure 143: Raymond AADT at POE: 5 year intervals

Growth at Sweet Grass POE is relatively flat from 2008 through 2013. By the end of the forecast period truck and commercial auto AADT increase beyond peak 2005 levels, as seen in Figure 144.

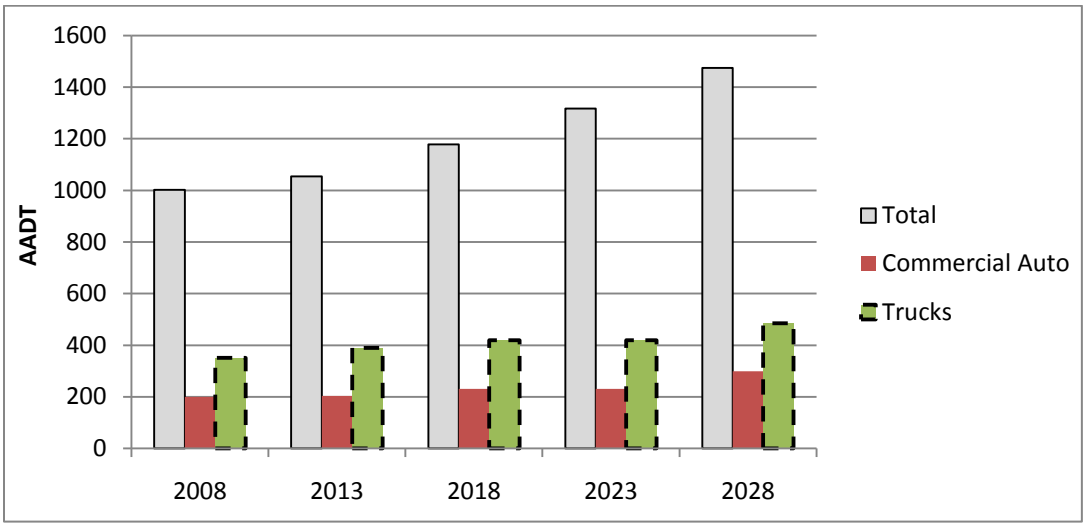


Figure 144: Sweet Grass AADT at POE: 5 year intervals

The Wild Horse POE (Figure 145) shows commercial auto and truck traffic volumes in 2008 at similar levels; however, over the forecast period commercial auto grows a greater rate suggesting growth in industries utilizing a larger proportion of commercial auto to truck.

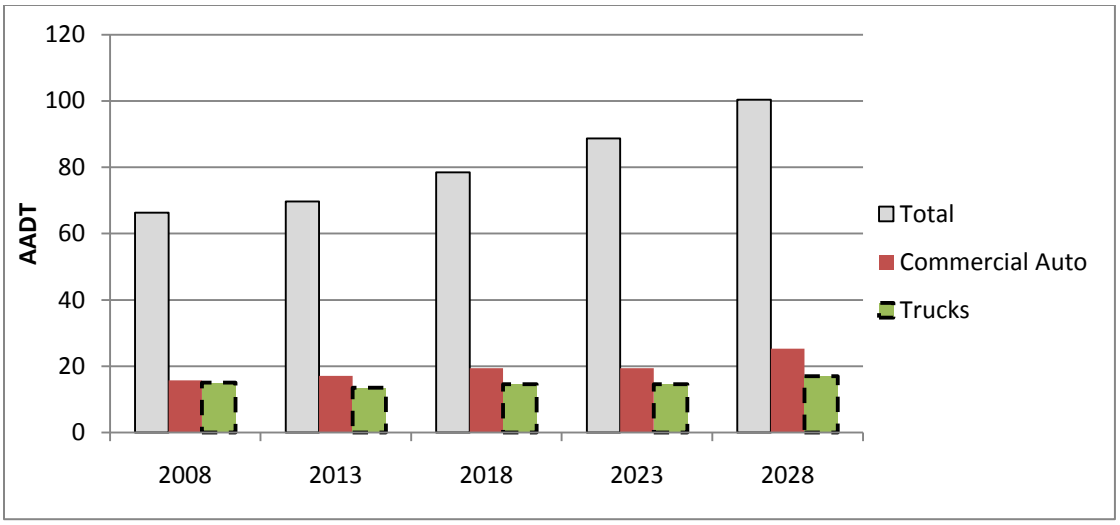


Figure 145: Wild Horse AADT at POE: 5 year intervals

6 CONCLUSIONS

The objectives of this MDT research study were to:

- Assess current and future conditions of the Canadian economy, with particular focus on Alberta and Saskatchewan;
- Assess current traffic, infrastructure, and border crossing conditions in the study area;
- Identify the major freight and passenger routes, origins, destinations, commodities, and trends across northern Montana;
- Estimate the relationships between economic growth and commercial traffic volumes; and
- Forecast future commercial traffic volumes at northern Montana POEs and connecting highways within a risk analysis framework that accounts for uncertainty and includes input from industry and development experts.

This study forecasts commercial traffic through the ports and the relevant connecting highway corridors. The assessment is based on economic conditions that consider multi-state and multi-provincial areas that capture the relevant freight flows onto the Montana highway system. This study is not a standard cost-benefit analysis, nor an economic impact study but, rather, a detailed analysis of: a) existing and future regional economic conditions; and b) traffic and infrastructure conditions, to estimate future commercial traffic volumes through northern Montana's ports and connecting highways.

The research employs Risk Analysis, which measures the probability or "odds" that an outcome will actually materialize. This is accomplished by attaching ranges (probability distributions) to the forecasts of each input variable. The approach allows all inputs to be varied simultaneously within their distributions, thus avoiding the problems inherent in conventional sensitivity analysis. The approach also recognizes interrelationships between variables and their associated probability distributions.

Consequently, the commercial traffic volume forecast was derived from multiple sources of information and a risk analysis modeling approach that: 1) explicitly accounted for uncertainty and risk factors; 2) incorporated refinements and review by regional stakeholders and experts; and 3) generated "most likely" forecasts along with confidence interval-based ranges of low to high traffic volumes. These results can be used by MDT and other stakeholders to assess the demand for border crossing and connecting highway improvements in northern Montana. In addition, the extensive regional economic conditions profile developed in this study provides a rich database of information for Montana, Alberta, and Saskatchewan economic and industry activity.

6.1 Trends in Trade, Economic and Traffic Conditions

Trade in goods and services in the U.S. as a percentage of Gross Domestic Product (GDP) increased from 10% to 30% during the last 40 years. Growth in the past 30 years was fueled by cost reductions and efficiencies in technology, transportation, and communications. As the global economies become increasingly inter-dependent, this trend is expected to continue.

Canada is the number one trading partner for the U.S., and trade has been and is expected to continue to be a growing part of the economy. While the economic recession of 2008-2009 is expected to continue well into 2010, this research study provides an opportunity to examine longer-term trade and traffic volume trends and forecasts. As the economic recovery is sustained and trade volumes return to an overall pattern of growth, state planning agencies should be prepared to seize the opportunities and consider the infrastructure and operational enhancements that will serve longer-term needs. The Point of Entries (POEs) and their connections to corridors within the state provide vital linkage between the provinces of Alberta and Saskatchewan and the United States. This is consistent with the highly correlated trend of Montana's economic growth with trade growth through its borders.

A summary of key findings includes:

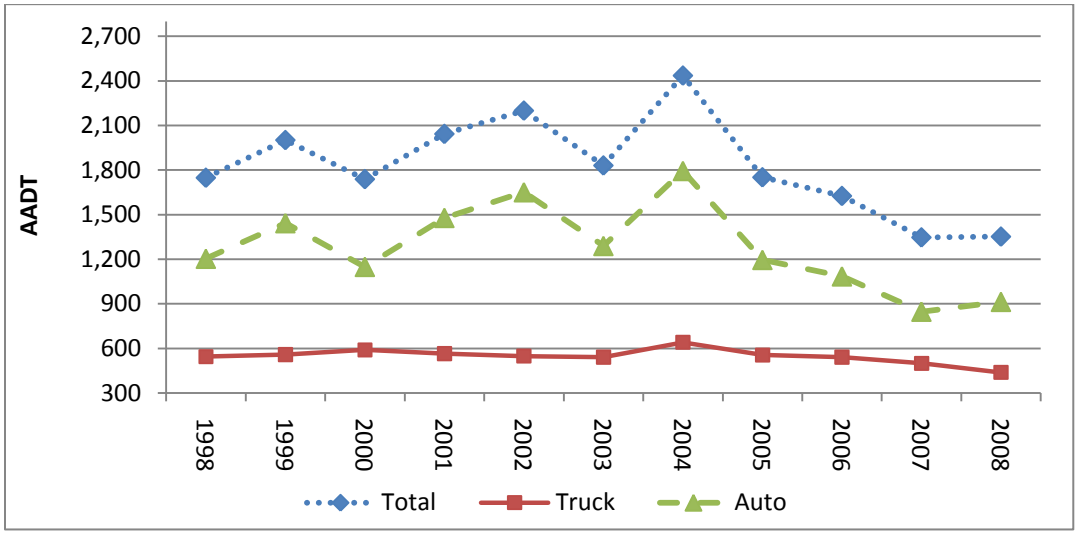
- Montana's GDP has been growing at an average annual rate of 3.0 percent over the last decade, with growth exceeding the U.S. average since 2001. Meanwhile, Alberta and Saskatchewan have been growing at 3.5 percent and at 2.3 percent respectively over the last decade. Especially since 2002 and consistent with rising energy prices and regional oil production, Alberta's GDP has been growing at a much higher rate than the rest of Canada. In 2006 alone, Alberta's GDP grew 5 percentage-points more than the rest of Canada.

- The value of U.S. imports from Canada across the Montana border in 2008 for all modes was $16.6 billion, and has been growing at an average annual rate of 13.9 percent since 1995. The growth rates of trade *value* reflect the impacts of inflation such as the relatively high increases in oil prices. Of the total trade value, 33% of trade was carried via truck through Montana POEs, while 62 percent was carried via pipeline. Truck imports have increased from $1.7 billion in 1995 to $5.4 billion in 2008.

- Trade imports from Canada using Montana ports (by value) largely originate in Alberta (91 percent) and to a lesser degree Saskatchewan (2.4 percent) in 2008. For truck only imports via Montana ports, the Alberta share of tonnage is 77 percent with 14 percent of the truck volumes from Saskatchewan. Meanwhile, a growing share of Canada-U.S. trade by value is shipped by pipeline rather than truck such that energy-related economic expansion typically results in growth of shipments across multiple modes (truck, rail, and pipeline).

- Total traffic crossing at Montana POEs has been growing at an average annual rate of 5 percent over the period 1997 through 2004. Since 2004, the level of traffic has been falling at an annual rate of 4 percent. The average annual rates of change can be misleading as it tends to "wash out" the year-to-year variations in traffic volumes at the

POEs, which have fluctuated as much as 28 percent from year-to-year. Figure 146 shows average annual daily traffic (AADT) for autos, trucks and total traffic (MDT 2009a). It is worth noting that the scale of the graphic downplays the variation in truck volumes over this period which has ranged from a peak of about 650 per day in 2004 to about 450 per day in 2008. Border crossing traffic is dominated by the two 24 hour POEs: Sweet Grass and Raymond. Sweet Grass has the largest traffic volumes with 1,890 daily trips and 720 trucks, followed by Raymond with 250 daily trips and 88 trucks. The remaining seven study area POEs account for 17%, or 430 daily trips, according to the latest MDT traffic counts.



Source: MDT 2009a

Figure 146: Southbound Traffic Volumes at Montana POEs 1997-2008

- Directional traffic volumes are very consistent over time with between 50 to 60 percent of all traffic headed north-south, and the remaining traffic traveling south-north for the study area highways and POEs. This relationship holds during economic booms, recessions, oil price changes, and exchange rate fluctuations. Thus, thorough estimates of north-south traffic volumes are a good proxy for south-north volumes.

- Sweet Grass and I-15 are the dominant border crossing facilities and infrastructure in the study area, and are forecast to continue to facilitate over 67 percent of all traffic volumes crossing the U.S.-Canada border in the study area.

6.2 Factors Impacting Future Commercial Traffic Volumes

- Infrastructure capacity and expanded port operating hours at the POEs between Sweet Grass and Raymond addresses one potential constraint for commercial traffic in the region, but it is also critical to examine the connecting highways on either side of the border. In most cases, the connecting highways are two-lane roads with relatively long-distance connections to major highway corridors typically preferred by freight trucks.

- The level of service (LOS) on the connecting highways, however, is virtually all at a LOS A, meaning that there are no major traffic or congestion issues on those roadways.

Typical for more rural roads, this presents a "chicken or the egg" challenge as current traffic volumes do not justify highway expansion but local proponents argue that improved roadways are needed to boost demand and attract more economic and trade activity.

- Trade corridors between Canada, the U.S., and Mexico typically include a range of freight and trade-related services such as warehouses, distribution centers, intermodal facilities, free-trade zones and other supporting activities. These types of facilities, which contribute to the network connectivity and flexibility of modern trade, are generally lacking on most Montana-Canada border connections. This type of private and public/private investment in supporting facilities and services is critical to the viability of any new or emerging trade corridor.

- Current economic conditions have placed a significant dampening effect on border crossing volumes in recent years. For example daily truck volumes on the study area connecting north-south highways has fallen from approximately 880 trucks a day in 2005 to 710 trucks a day in 2008 and anecdotal evidence suggests that traffic volumes are even lower in 2009 given the current economic recession. Similarly, commercial auto volumes have decreased from a peak in 2004 of approximately 1,660 autos per day to 1,175 in 2008. Based on regional economic and traffic conditions, findings from stakeholder interviews, the RAP workshop, and economic outlooks for the area, key driving factors for near-term and longer-term traffic volumes include:

    - Oil prices and their impact on the oil tar sands production in Alberta is one of the largest determinants of commercial traffic flows. New oil production facilities in Alberta grew rapidly in the middle part of this decade consistent with high oil prices. This led to both north-south and south-north shipments of large-scale equipment, finished products and raw materials, and labor. The relatively lower prices of 2008 and 2009 have stalled some of the planned investment and will likely moderate growth until 2010 or 2011. However, experts consistently predict that planned investment will pick-up in the coming years.

    - Near-term recovery of traffic volumes is also dependent on the pace of economic recovery worldwide. Even though Alberta and Saskatchewan's economies have fared reasonably well during this economic recession, as their industry mix is less concentrated in the hardest-hit manufacturing sector, lower U.S. and Canadian incomes have lowered consumption, cross-border visitation and trade. The relatively modest economic recovery that is predicted for the next few years implies a moderate recovery of traffic volumes.

    - Border crossing volumes are expected to either decrease or experience flat growth in 2009 with a slow, gradual recovery starting in 2010. Contributing factors to the flat or reduced growth include the worldwide recession of 2008-2009, lower oil prices, less favorable exchange rates (for Canadians), and decreased oil and gas production activity.

- Natural gas activity in Saskatchewan and Montana remains an industry opportunity for the region and has shown historically to produce a mix of related cross-border truck and auto traffic, even though much of the natural gas production is actually shipped by pipeline.

- Industrial growth patterns in Alberta and Saskatchewan have relied more on natural resources and agriculture than manufacturing (compared to their eastern provinces). This has helped the region avoid the depths of economic recession and also means that production will continue to involve a range of heavy bulk products that travel by truck, rail, and pipeline across the borders.

- Changes in logistics trends, such as shifts towards higher productivity manufacturing, and diversified modal use (e.g., growth in trade value between Canada and the U.S.) has been dominated by growth in pipeline shipments.

- Historical variation in traffic counts, especially at the POEs, increases the difficulty in predicting future traffic volumes at specific facilities. Future border crossing security policies, operational expansions, and connecting highway improvements contribute to the level of uncertainty, and reinforce the need to consider the future traffic forecast ranges presented in this research study.

- Expanding port operating hours has support in the region. Research and stakeholder interview findings conclude that:

  - Experiences from other areas that have expanded port operating hours have often seen more of a time-of-day shift in traffic rather than a large increase in total volumes;

  - A 15% to 30% increase in forecasted traffic volumes (induced traffic) would still be within the "high" 90% forecast range for each POE; and

  - Regional stakeholders, including economic development officials, trucking companies, and manufacturing firms agree that: a) expanding port operations must be accompanied with improved connecting highways to fully leverage the benefits of expanded hours and develop feasible attractive highway corridors; and b) given the relatively low volumes at most POEs, traffic demand is likely to support and justify one to two (at most) expanded ports between Sweet Grass and Raymond.

6.3 Economic, Trade and Commercial Traffic Forecasts

- Montana's major Canadian trading partners are expected to experience positive economic growth over the next 20 years. Alberta's median GDP forecast is to increase from $228 billion in 2008 to $285 billion by 2020 (in real 2009 dollars), an average annual growth rate of 2 percent. Similarly, Saskatchewan's median GDP forecast is to grow from $48 billion in 2008 to $60 billion in 2020, an average annual growth rate of 1.9 percent.

- The estimated combined imports carried by truck through Montana's POEs from Saskatchewan and Alberta are projected to be $5.8 billion in 2020, an increase of 1.4 percent annually compared to 2008 volumes. This is expected to translate into an increase of 565,300 tons of freight shipped across Montana POEs over the next 20 years.

- The total traffic crossing at Montana POEs is anticipated to grow at an average annual rate of 2.0 percent. Annual average traffic volume growth rates are projected to be between 0.7% to 4.6% across all Montana POEs, with potential ranges of small negative growth to 6.1% annual growth rates in a high (90%) forecast scenario. Truck volume growth at Montana POEs is projected to have greater growth and variation based on more direct influence from Canadian trade.

- The current economic recession and gradual recovery means that commercial traffic volumes may not reach the recent peak volumes of 2003-2005 for another 15 to 20 years. This finding is consistent with feedback from area stakeholders, trucking companies, and other industries that recognizes that the peak years of traffic volume were somewhat unusually high given:

    - High oil and natural gas activity and the related equipment, oil rigs, labor, and other travel necessary to support oil and gas production; and

    - The BNSF rail intermodal facility in Shelby that led to a large number of truck to rail shipments to and from the facility for agriculture and other products. As shown in Chapter 5, the forecast results are generally consistent with historical trend analysis.

- That said, the forecast also reflects the possibility that oil prices could recover quickly (as they have in the past) and oil production facility investment rebounds, thus leading to a stronger volume of commercial traffic growth. For example, in the "high" traffic growth scenario (90% confidence interval), truck traffic volumes at Montana POEs recover to the peak volumes from earlier this decade by about 2012 and grow to about 860 daily trucks by 2029 compared to 470 daily trucks in 2009.

6.4 Research Conclusions and Next Steps

Traffic at Montana borders and the connecting corridors have been very sensitive to Western Canada's economic conditions and the fluctuations in energy prices. While traffic increased significantly from 2002 to 2004, it has slowed down notably in the past few years due to the economic recession. The current economic conditions have placed a significant dampening effect on border crossing volumes as truck traffic volumes have decreased significantly.

While the forecasts did not identify significant capacity constraint at any of the POEs or connecting corridors over the next ten years, the results are not, by any means, conclusive. This study recognizes the fact that truck traffic is and will still remain very sensitive to various trade drivers. And stakeholder interviews confirmed the constraints and limitations of not having any 24-hour operating POEs between Sweet Grass and Raymond. Fluctuations in commodity prices, debate over environmental policies, and the prospect of changes in trade agreements, add a high

level of uncertainty to the freight traffic forecast. Another area of uncertainty is the private sector market for developing significant alternative trade corridors and the necessary trade-supporting services.

Still, longer term growth trends in trade and anticipated expansion of key commodity markets in the region (namely energy) are projected to result in long-term positive growth in commercial traffic volumes at Montana POEs and the connecting highways. Based on this research and the forecasts, two specific improvements to consider for more detailed planning are:

- Expanded port operations between Sweet Grass and Raymond – this would include 1-2 POEs with 18 to 24 hour operations to facilitate regional connectivity and economic opportunities. As specified by many stakeholders, this should be coordinated with improved connecting highway corridors.

- Tracking potential highway corridor capacity needs – the current economic recession has slowed the need for general capacity enhancements at connecting highways but the speed of the economic recovery, especially related to the energy industry, should be tracked as the upper (90%) forecasts indicate the potential for significant growth at Montana POEs.

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APPENDIX A: PRIMARY RESEARCH FINDINGS

This section presents findings from a series of interviews with development and industry experts in northern Montana and the provinces of Alberta and Saskatchewan. Findings are organized by the interview questions posed to regional experts in industry, trucking and economic development.

For Industry Stakeholders (e.g., the Agriculture, Energy, Tourism and Other Sectors):

a. Can you provide me with a brief overview of the nature of your industry in general and of your business in particular?

- Petroleum Engineer for the Bureau of Land Management, approves permits to drill on Federally managed mineral lands, monitor oil and gas production and drilling. Involved in all facets of production, management, etc in determining which areas should be permitted and leased.

- Bureau of Land Management also does a bit of planning, on Resource Management Plans, currently working on the HiLine area, extending from the Fort Peck Indian Reservation on the east to Glacier National Park on the west, and the Canadian line at the North and the Missouri River at the south. They are looking at planning and resource management of the area for the next 20 years in terms of areas that could be targeted for drilling or other development.

- Sanjel is an Oilfield Specialties company providing services such as cementing, fracturing, acidizing, coil tubing, and nitrogen. The "parent" company – Sanjel Corporation – is a Canadian based operation, therefore border crossing is an everyday occurrence for the US and Canadian workers.

- Ethanol Producers and Consumers (EPAC) is a non-profit that promotes education about biodiesel, ethanol and other forms of renewable energy from producers in Montana and around the US and Canada. The primary goal is to educate people about and promote the industry. They host conferences and workshops for promotion of the industry.

- Berry Y&V is in the fabrication and manufacturing of large industrial infrastructure components serving the energy industry. Berry Y&V Industrial Fabricators, LLC was formed in October 2007 for the primary purpose of pursuing pipe, modular and pressure vessel fabrication in support of major ongoing projects in the Alberta Tar Sands Region, and to support the local Montana industrial market. They are planning for a facility in Billings, MT that will deliver products and large-scale machinery to Alberta.

- Tourism Saskatchewan is in the tourism industry. They are located in the center of the province. Key markets include Alberta, and the American Midwest,

Pennsylvania, Southeastern States and Texas/Colorado. The tourism industry tends to center around woods and water - there are 100,000 lakes in Saskatchewan, and about half of the 250,000 square mile land mass is forest. The biggest drivers of tourism are camping, fishing (northern pike, lake trout, and walleye) and hunting (waterfowl and some deer/moose).

b. Can you tell me a little about key trends in your business and about regional trends in your industry over the past 5 to 10 years? (emphasis on trade and cross-border activities, shipping by mode)

- HiLine has pretty steady development. Though it is not as pronounced as other fields, development is still steady. There are about 50-60 wells drilled annually. Partially contributing to the slower development is the finite number of available drilling rigs in Northern Montana. In order to drill in a new area, they must move the rigs. Since the deposits tend to be rather shallow, they are typically drilled for about 3 days to 1 week before they pack up and move to a new location. Depending on the area and the contract, they could move the rigs somewhere near by or they could move across the state. Oil and gas companies contract both by area and for the rigs. The highway used to move the rigs is primarily Highway 2 as well as the county road network. When the rigs are moved, it creates a great deal of traffic because not only are the rigs moved, but there are many other trucks that are involved in the process.

- The trend for Sanjel USA has been strong growth, primarily due to elevated prices in oil and related commodities. While this has changed drastically with the price reduction, border crossing activities have slowed very little for Sanjel.

- The ethanol and bio-fuel industry has been growing for the past 5-10 years, particularly with the Federal requirements for clean and sustainable fuels. Also impacting the industry is the negative ad campaign by the oil and grocery industries. There is currently no ethanol production in Montana due to lack of corn, but biodiesel is starting in the HiLine area.

- Berry Y&V's growth took off about three years ago when activity picked up in the Alberta Tar Sands. They recently bought a facility in Montana, but before then they built everything in Canada.

c. Where are your major suppliers located for key commodity inputs? What routes and transportation modes are used for shipment deliveries?

- For Sanjel, the consumable commodities, such as chemicals, frac sand, and cement, comes from a variety of suppliers. The Sanjel special blend comes from companies in Calgary and is shipped by Sanjel vehicles to the U.S. Frac sand and cement are purchased in the US and are either trucked or brought to storage facilities by rail.

- Berry Y&V's major commodity inputs are steel plate, pipe and structural steel components, process equipment, welding equipment and supplies, valves, wire,

etc. For inbound inventory and supplies, they use rail, air, and highway. For outbound shipments, they use pre-approved highway routes due to weight restrictions, since most of the products they build are too large for transportation by any other modes.

- While it sounds cliché, Saskatchewan's tourism industry has almost been set up in the "perfect storm" in terms of cross-border activities. Cross border traffic has decreased 50% since 2000. There are several significant factors impacting this, including new passport regulations, changes in sentiment toward Canada after 9/11, the strength of the Canadian dollar, and the SARS crisis in Toronto are just a few deterrents to Canadian tourism from the American perspective. The new passport regulations were just put into effect on June 1, 2009, and are expected to have an additional negative impact since only about 1/3 of Americans have passports. Nearly 2/3 of citizens in Saskatchewan have passports already, which is beneficial in the other direction. Initially after 9/11, people went to Canada because it was considered safe. After a while, when Canada declined to participate in the Iraq war, Saskatchewan received several letters expressing distaste at this (in)action from hunters/fishermen who refused to return. Overall in Canada, the new passport regulations for the US/Canada borders went into effect yesterday and will likely have a large impact. Much of the traffic is via air as the population in Montana and North Dakota is rather sparse, so daily cross-border traffic is not a large share due to the population. There are many crossings on farm machinery of people getting to their land on either side of the border. The less open border may cause some issues in the future.

d. Where are your major customers located? What routes and transportation modes are used for shipment deliveries?

- Customers are in any major oilfield in the US or Canada. In the US, operations are currently in Montana, North Dakota, Wyoming, Colorado, Idaho, Utah and New Mexico with expansion soon in Kansas and Nebraska.

- For Berry Y & V, customers are located in Billings, MT (Conoco-Phillips, Exxon-Mobil, and CENEX) and in Alberta, Canada (Suncor, Syncrude, PetroCanada, Shell Oil, Canadian Natural Resources (CNRL), Devon, Conoco-Phillips, Statoil-Hydro, Total, Husky Oil, Imperial, Nexen, etc). The major shipments will move from Billings, MT to Fort McMurray in Alberta. The prime border crossing is Sweet Grass/Coutts, and the document "Billings to Fort McMurray Map – Berry Y & V" provides a detailed route.

- For Tourism Saskatchewan, the major draws are from Alberta and the American Midwest, Pennsylvania, Texas/Colorado and some of the Southeast. While many of the key routes are actually via air, in terms of road traffic, the biggest route is actually Portal/N. Portal in North Dakota (as it is a 24 hour facility). In Montana, the most trafficked port is Regway/Redmond, which saw 10,200 Americans cross into Canada in 2008, and 34,350 Canadians go down to Montana. None of the ports were balanced; the closest was about half as many Americans at

Monchy/Morgan. The least utilized was Big Beaver/Whitetail with 313 Americans crossing and 1500 Canadians for the year 2008.

e. Please outline the growth trends and challenges to growth in recent years for your industry?

- The current economy and the price of oil and gas dropping has caused problems for drilling in Montana as it tends to be more expensive. He does not hear much about the transportation network being a problem or a hindrance to development.

- Sanjel's greatest challenge has been finding qualified personnel in the US and Canada for both field and office/management positions.

- For the bio-fuel industries, transportation is a problem as there are no interstates in the northeast of Montana. While the industry has been growing, the current economy is causing many of the smaller companies to struggle to remain in business. Additionally, financing is a problem: there is no corn in Montana and the corn growers have taken a large hold on the ethanol market though barley and wheat can be converted but banks have more difficulty financing ventures of which they are unsure of and there are very few venture capitalists in Montana. The mission of the EPAC is to educate and introduce the possibilities to the public and if they can do that successfully, more opportunities will be open to Montana. Recently, a barley ethanol plant just located in North Dakota over Montana because the company had experience with dealing with the paperwork and process and did not know and understand the process in Montana.

- The energy infrastructure has been relatively dormant in the region (no new refineries in the last approximately 30 years), which has led to very little growth for the industry, but with the development of the Alberta Oil Sands, growth has started and will continue for much of the foreseeable future (out 20-30 years).

- Challenges to tourism in Saskatchewan include some things discussed above, such as the new passport regulations, 9/11, the SARS outbreak, and the strength of the Canadian dollar. However, due to the strong economy in the region, there are actually additional airline routes being added from the United States to Saskatchewan. They are the only jurisdiction in Canada that is seeing new routes added (from Denver and Chicago). They are trying to take advantage of this from a tourism perspective.

f. How do you see the growth in your business/industry, based on your existing plans and industry trends over the next 5 to 10 years?

- Currently many of the areas are off limits for drilling while the planning process is going on. There is the potential that once the RMP is completed in 2011 there will be an increase in land leasing, but drilling is very unlikely to increase due to the fixed number of rigs.

- Sanjel expects to show very little "growth" compared to the last 10 years in the US, and while their will likely be opportunities, the amount of growth and expansion depends on available "capital".

- Berry Y&V anticipates that the industry requirements will continue to expand over the next ten to twenty years as the oil companies in the Athabasca Region gear up for and expand their capacity. They desire to position the organization to fabricate pipe, modules and pressure vessels in an area that is readily accessible to support that growth, but far enough outside of the Region to be able to attract and maintain a stable and qualified work force. They expect continuous double-digit growth in the industry niche for the next 5-10 years.

- In Saskatchewan, the major growth trend is coming from Alberta, with the oil and natural gas base in that Province they are seeing more Albertans that want to venture over to Saskatchewan. There has been a decline in visitation from the United States, they are working with a lot of operators in the north of the province to try to find alternate markets or alternate uses for the lodges as the demographic that typically visits is aging, and there is really no replacement market. People are not hunting and fishing as much as they used to, so they need to shift to take advantage of other aspects of Saskatchewan. They need to fall back on the growth from Alberta and to come up with more products in Saskatchewan that can serve those markets. Possibly develop some of the key lakes (there is one with about 800km of shoreline and only 500 cabins on the entire lake). They have some initiatives to develop other aspects, for example the Old Forts Trail, which follows some of the forts from the 1800's old west that people used to use on both sides of the border. Additionally, they are doing a lot of work trying to capture some of the RV market that is passing through to get to the Alaska Highway. As the baby boomer market ages, they are hoping to be able to capture some more of their interests. They are also trying to work on a way to improve the products for history buffs in the area near Scobey/Whitetail in the western part, Cypress Hills where Sitting Bull escaped to Saskatchewan.

g. What do you see as major challenges in your business and industry in the future?

- Sanjel's major challenges include the same amount of "specialty" companies like them bidding for fewer and fewer available jobs in the oilfield due to decreased oil production. It will be a challenge to stay "profitable" while bidding for these jobs.

- Challenges for bio-fuel in the future include financing, education, and innovation and efficiencies to improve the industry and help lead toward success in Montana. There are currently many innovations in processing grain (barley and wheat) in areas such as extracting the germ and protein for sale and other use which leaves the starch leftover to be turned into ethanol. Getting these innovations into practice and in an area with good transportation are essential to success and growth in Montana. It is currently difficult to transport ethanol by truck because of the transportation infrastructure.

- Berry Y&V sees the availability of skilled labor, raw material/commodity supplies, transportation costs, and duties/taxes as major challenges to the industry in the future.

- The passport change will be an issue for Saskatchewan. Pretty much everything that has been mentioned in the recent history of tourism is not going to change (strength of dollar, passport, etc). Canada has lost some of its appeal as a destination because people view it as a place that will always be there, and younger travelers tend to go to more emerging destinations. They have risen recently in terms of attractiveness, but still have a ways to go. The big challenge is the demographic challenge in the states, and they will likely have to shift markets and what the focus of marketing efforts and activities are in the next 5-10 years.

h. Was transportation, including border crossings, an issue or constraint to your growth or to importing/exporting goods in the region?

    - Sanjel has always had a very good relationship with border crossing personnel and brokerages on both sides of the border, so they do not have very many problems with border crossing. Sweet Grass/Coutts and Portal/N. Portal (between N. Dakota and Saskatchewan) are the two most used Ports of Entry.

    - For tourism Saskatchewan, border crossings are a constraint, but not as significant as some other things. However, going forward they will not help. The hours of operation are weak, not being open into the evenings hinders day trips, and gravel border crossings could be upgraded. Southwest Saskatchewan is interested upgrading some of the ports to either expanded hours, or a commercial port from a business perspective.

i. What role will transportation/border crossings (highway, rail, pipeline, air, and other) play in your future plans?

    - The Bureau of Land Management has noted that there are some operators out of Canada, crossing the border can sometimes be problematic due to the presence of explosives on the rigs. However, the delay is not usually significant.

    - Sanjel does not expect any changes due to border crossings as long as the US/Canadian relationship remains as it has been in the past.

    - Transportation and border crossings will play a very large role in the future operations of Berry Y&V. Their modules will have maximum dimensions of 100'L x 24'W x 24'H with a maximum weight of 150 tons. They have already worked out the "transportation envelope" for these movements and will be working with the MDT and Canadian transportation authorities.

    - The key focus for Tourism Saskatchewan is trying to capture new air markets more than border crossings in order to bring key markets across. Highway and border crossing improvements are always welcome. If there was a better highway system

on both sides of the border, those coming from Southwestern Montana may go to Saskatchewan more. Currently they tend to go through Alberta because the highways are better, and Sweet Grass is a 24 hour POE, and also partly because there are more activities in Alberta. If there were improved crossings near Saskatchewan centers of activity, there is possibility that there could be increased benefit, but it is most likely that the crossings that would be upgraded would be on the ND side.

j. What role, if any, would improved border crossings and highway connections play in the growth of your business/industry beyond your existing plans? Please describe this effect (ideally as a percentage or volume of trade).

- For Sanjel, they currently use Sweet Grass and Portal as their primary POEs mainly because the brokerage firms are open until 10:00 or 11:00 at night. If the "smaller" ports (Wild Horse, Turner, Morgan, Raymond/Regway), were to become more automated, the trucks could eliminate a lot of "doubling back" to get to job locations in Canada or vice-versa. However, this would only amount to about 15-20% of the crossings that they are currently involved in.

- The Bureau of Land Management is looking at the transportation system as part of the planning process. They assign priorities to different areas of land and will do transportation studies in areas that are most sensitive to development based on resources and other criteria. They primarily will look into travel management where there are environmental concerns. Areas will be prioritized for study based on resources and development potential.

- For Berry Y&V they will play a very large role, as the majority (80-90%) of their production will be exported into Canada, so the border crossings and highway infrastructure will be a factor in their success.

For Truckers and Transportation Stakeholders:

a. Can you provide me with a brief overview of the nature of your industry in general and of your business in particular within Northern Montana?

- Major Montana-based trucking firm with 100 units operating in the western US with owner/operators in Edmonton and other Canadian locations. 95% of miles are in Montana, and Alberta and adjoining states and provinces. Mostly ship dry bulk products, fertilizer, agriculture products, mining, and serving the oil and construction industries.

b. Can you tell me a little about your business/industry trends in Northern Montana over the past 5 to 10 years?

- Peak of activity was around 2003 to 2005 as gas prices were rising, oil rig activity was high in the Williston Basin, and the intermodal facility for BNSF in Shelby was active. Their trucks covered 10 million miles in 2005. The intermodal facility closed in 2005 and that had a big impact on truck and freight activity.

Now at approximately 7.5 million miles per year with no growth over the past couple of years.

c. Please explain whether the existing roadways and border crossings in Northern Montana were an issue or a barrier to growth in these past years?

- For the most part, the roadways and crossings are not a constraint to trucking activity in the region. And the lack of 24 hour border crossing facilities between Sweet Grass and Raymond is not a constraint. Bigger issue is the connecting secondary roads and load limits to/from the ports. Growth trends, however, were determined much more by the overall economy, the oil and gas industries in particular, and the loss of the intermodal facility.

- When oil and gas related activity is high, there are not only increases in truck activity but also commuters and business trips via auto that increase. Those volumes do not seem to be constrained by the highways or border crossings.

d. Can you provide me with the magnitude of the potential impact on your business/industry, if any, that you attribute to a lack of access to/from border crossings?

- Fairly minimal. They do use the Wild Horse POE for shipments between Medicine Hat and central and eastern Montana. They could see some value in expanding port operations at one or two ports between Sweet Grass and Raymond but no need to have them all at 24 hour. Key is to also improve the connecting highways to the north and south so that they are truly conducive to freight truck activity.

e. How do you see the growth in your industry, based on your existing plans over the next 5 to 10 years?

- Based on the current economic recession and recent trends, they see no growth and possibly a reduction in truck miles. A major forecast factor is the growth and implementation of the potential oil activity in the Alberta oil sands. A fair amount of activity is already underway but much has been delayed. The speed at which that recovers, and the ability of the industry to be profitable and expand at various oil prices will impact overall industrial activity and demand for trucking.

f. What do you see as major challenges in your industry in the future?

- Maintaining, let alone growing, current truck volumes.

- The limitations on truckers to pick-up loads in other countries. In other words, a US trucker is not allowed to create complex shipment and delivery logistics with multiple pick-ups in Canada, which limits most trips to simple round-trips.

g. What role do you think border crossings and the related highways will play in your future plans?

- Fairly minimal. Sees the benefit of at least one more 24 hour port with improved connecting highways.

h. What role, if any, can improved transportation/border crossings play in the growth of your business/industry beyond your existing plans?

- Key is to grow industrial activity in the region and increase overall demand for trucking. One potential is growth in energy industries such as biodiesel and ethanol, or value-added agriculture.

i. How much additional volume would you expect to transport (%, trucks or tonnage) if border crossings were improved?

- Unknown.

For Economic Development Officials/Other Experts:

a. Can you provide me with a brief overview of recent economic development, industry, and trade trends in your region?

- North Toole County Economic Development Group – Sunburst is a homeland security town that has grown in the past few years since Homeland Security has been increased. The new 50 person border station in Sweet Grass that is due to open has increased the demand at that Port of Entry. Given the new border crossing facility and the increase in traffic, there is great potential for growth in the area. Additionally, there is a wind farm slated for the area that will be the largest wind farm in Montana. In general, the area around Sunburst is growing.

- Blaine County and the Northeastern Montana region note that there has been a great deal of trade on both sides of the border in the areas of agriculture. Landowners on both sides of the border do a great deal of business with each other. There has been a great deal of increased activity in the tar sands in eastern Montana, particularly with Canadian firms trying to get supplies up to Alberta and Saskatchewan. There are two main types of tourism activity, both mainly from traffic coming down from Canada, daily trips to the smaller towns and extended weekend trips to Great Falls and Billings. This is a big deal for the tourism industry. In the opposite direction, the greatest attractors of American tourism are Medicine Hat, Regina and Swift Current, as well as to Calgary and Edmonton for the malls, but that has been replaced to an extent by the mall in Minneapolis. Oil and natural gas has been growing, and the commercial trucking firms talk about needing a schedule so that they may take advantage of when the border crossings are open in order to get the equipment back and forth across the border. Because of the limited hours of operation at the border crossings, and the operations of the trucking/logistics companies it is often difficult for the agriculture/manufacturing companies to have access to trucks and make it to the borders at appropriate times and in economical ways. These people have expressed an interest in using the border crossings more if they were available for more time, and it would possibly

be easier to get access to trucks to transport their goods across the border. There has also been a great increase in "absentee home and land ownership" in eastern Montana, with western Montanans buying places solely for hunting and fishing purposes.

- Enterprise Saskatchewan is the central economic development agency in the Province. Saskatchewan is coming off of some significant growth in the last year or two, with 4.5% GDP growth last year, leading Canada. They are projecting about 0.5-0.6% growth this year, which still leads the country. Even with the impact of the current state of the economy, Saskatchewan still expects to see some strength and growth. Main growth industries are agriculture and resources (oil, minerals, and gas), the manufacturing sector, agricultural machinery and expertise growing around mineral and energy equipment manufacturing. In terms of trade, there was a $10 million increase last year, and while the trade market remains strong, there will be impacts felt this year due to the current economy. The province exports about 70% of the GDP and a significant portion of this goes to the US, a significant portion of which goes to Montana. The dollar exchange rate has impacted the trade balance; they did not have the numbers off-hand but may be able to find them. They believe that more goods flow to the US from Canada than the other way around. There are some significant pipeline projects underway to move goods to the US.

- Blackfeet Planning is a planning organization on behalf of the Blackfeet Indian Nation. The Blackfeet reservation is an Indian Reservation that is very impacted by the current economic conditions, experiencing a 79% unemployment rate. There has been little to no recent economic development, industry or trade trends in the past ten years. There are projects involving industry in the works, but they cannot be spoken of yet. Agriculture and Tourism are the two economic sectors that consistently provide for the area, as the reservation is adjacent to Glacier National Park on the Rocky Mountain Front.

- The region of South East Alberta is much like North Eastern Montana. Traditionally, the area is agriculture (farming and ranching) with a good deal of hydrocarbon resources as well (oil and gas). The Economic Development Activities have been focused on these industries with a decline in rural and small community populations. Trade trends are towards larger centers which contribute to the elimination of local machinery and implement dealers along with the related parts and repair operations. Centralized warehousing of parts, etc, along with the "big box" major chains who can offer discounts and more variety means that consumer choice has moved to these larger centers. In addition, the oil sands projects in more northern Alberta provide manufacturing and related opportunities throughout the province. They expect that the delayed oil projects (over $25 billion in investment) will be implemented over time as oil prices rise again after the economic recession.

b. What do you think are the best opportunities for economic growth? Which industries do you expect will provide the most growth?

- In eastern Montana, clean energy is a huge area for growth, particularly wind energy. Eastern Montana does not have very much tourism, and while it is different than Western Montana, if they could figure out a way to market the calm, peaceful atmosphere and sunsets, there is potential that they could increase tourism. Opportunities include enhanced agricultural ability, with this greater use of the border crossings (highway and rail) could come about. Farmers/small businesses tend to do comparison pricing on everything, and make a purchase based on the best deal between areas and prices in the US and Canada, and Canadians talk about lower prices in the US so perhaps something can be done about the tariff prices and the best way to go about selling goods. Oil and gas has booms and busts, so it is important to take advantage when possible, and the tar sands are showing promise for 10-20 years down the road. The current Keystone II Pipeline project is providing short-term stimulus activity in construction and truck volumes.

- The largest opportunities for growth are in lodging and merchants. The North Toole Economic Development group gets calls every day from people who are desperately looking for housing. Additionally, there is a small restaurant getting ready to open in the area and interest in a truck stop in the Sunburst area because the fuel pump 26 miles down the road in Shelby is having difficulty keeping up with demand. There is more traffic coming south from Canada, with about 1.6 million people coming down through the area last year. Schools will have to grow if the population continues to grow.

- In Saskatchewan, there are several growth industries – on the mining side, opportunities abound in uranium and pot ash, each of which are at or near the top of deposits worldwide. Each of those industries has about 2-3 mines proposed in the next 5-10 years, as there is a lot of growth in the minerals sector as well as oil and gas in the future. Three of four of the pot ash mines are currently undergoing major expansions to significantly expand capacity, an investment of about $2.5 billion over the next few years. The Alberta oil sands are right on the Saskatchewan border which is a growing opportunity. In terms of oil, they rival Alberta, which creates opportunities for development. The research infrastructure is also looking into carbon-capture activity to draw out more oil and increase efficiency. This area has a great deal of interest.

- In the Blackfeet Nation, tourism needs to be more heavily cultivated as they should try to capture over 2.1 million visitors to Glacier National Park each year. Since the reservation is struggling, capturing tourism is an easy way to increase vitality in the Nation. They can take advantage of things such as hospitality, hotels and motels. One segment of the tourism industry that is consistent is the visitation and earnings from people interested in the Blackfeet history and culture.

- Agriculture and oil and gas industries are the biggest growth opportunities for South East Alberta. Along with service related companies, they will continue to expand, subject to the fluctuating commodity prices. Taking advantage of the location, geography and climate can help companies decide whether or not to locate in this region. An opportunity for Unmanned Vehicle Systems, highlighted by the location of the Canadian Centre for Unmanned Vehicle Systems in Medicine Hat, provides an opportunity for research and development and eventually the commercialization of these platforms from military defense to civilian applications. Given that Canadian Forces Base Suffield (the largest training base in Canada) is also located in the region, a military presence and all the required related service industry will continue to expand as well. Great Britain has signed a 50 year contract to train here as a final step before shipping the troops to Afghanistan.

- Another opportunity is related to alternative energy production such as solar panel manufacturing (new business is bringing 40 to 100 jobs to the region), wind farms, and the full range of energy production.

c. What do you see as major challenges to economic growth in your region?

- In the Sunburst/Northern Toole County area, challenges include the lack of available housing. The population would be constantly growing if there was available housing. One of the problems contributing to the housing shortage is the reclamation that will last a few more years. There is a big clean-up from a gasoline spill in the 1950's that puts limits on where building can take place. Once this reclamation is done, there should be more available land for development.

- Eastern Montana is trying to preserve that Montana feel. While they want to attract tourism, it is important to many of the residents that the lifestyle be maintained and they are of the "come visit but do not stay" mentality for tourists. Much of western Montana is becoming more like California which is why it is important for that preservation. This mentality tends to inhibit growth. Another potential inhibitor is the vastness of the region and the lack of services. While there are plenty of things to offer, it is a different lifestyle.

- The major challenges to growth in Saskatchewan are labor access (both skilled and unskilled), capital access for project funding, and market access for movement of goods. Part of the problem with market access is the cost of shipping, since they are so far away from many of the main markets of the United States which poses problems when it comes to growth.

- Major challenges are that the Blackfeet Reservation is a poor tribe and heavily dependent on Federal funding for economic development, job creation and growth as well as subsidy for their services. They do not have the advantage of retaining tax dollars.

- For South East Alberta, within the existing industries, the economy and commodity prices provide challenges. The other clear challenge is the remoteness of the region. The major cities (Calgary and Edmonton) are along another corridor and the related trade (exports and imports) with the largest trading partner (United States) flows through the only commercial 24 hour port of entry at Coutts/Sweet Grass, which is outside the South East Region.

- Natural gas industries are another opportunity, especially in Phillips, Blaine, and Hill counties in northern Montana. That activity, even if shipped via pipeline, creates border crossing activity for commuters from Canada and other service trucks.

d. To what extent do current border crossing infrastructure and services impact business activity?

    - There would be more impact in the Sunburst area if they had more to offer. The border crossing is a great opportunity that they need to capitalize on. It seems as though slightly further down the road in Shelby is capitalizing on the improvements of the Sweet Grass border crossing, but Sunburst has yet to realize much of the benefit.

    - In Eastern Montana, there is a group pushing for the expansion of the Turner port of entry. Many people are trying to figure out why there is so much difficulty crossing the border from Canada into Montana. It is necessary to find the balance between homeland security/border protection and hysteria and overreaction to any possible situation in order to prevent in order to prevent impediment to businesses due to great difficulty crossing the border. Hospitality and positive attitudes in the border towns where people stop (on both sides of the border) would go a long way.

    - In Saskatchewan, the lack of 24 hour commercial border services has been an impediment to business activity in terms of reducing expansion potential and business growth due to accessibility issues. In Saskatchewan, 92% of goods are moved by truck, and 74% of exports are moved by truck, so without 24 hour access to the borders, the impact is great. Not only does it impact the truckers, but also the manufacturing companies, as this is what the truckers are hauling, it impacts the manufacturing and resource industries as well.

    - Blackfeet has three tribes that live in Canada. There are many commerce activities and trade impediments that also hurt the nations culturally. Montana is undertaking the task of determining what those barriers are and the Blackfeet Nation is anxiously awaiting this data.

    - There have to be clear economic advantages for companies to want to locate or relocate to South East Alberta. Given that, importing needed goods and machinery for the existing resource industry and exporting value-added products

through the existing port only adds a great deal of cost and time in both human resources and transportation.

- The availability of 24- hour ports is a limiting factor for some types of activities (e.g., grain shipments) but generally not a need for multiple new 24-hour ports. In fact, simply expanding port operations (e.g., 14-18 hours of operations) might be sufficient. Even more important to ensure that if a port is expanded, that Canada and the U.S. make cooperative and consistent highway improvements on both sides of the border.

- A big factor is the exchange rate in terms of fluctuating border crossing volumes. When the exchange rate is favorable (strong Canadian dollar), then Canadians make significantly more trips to northern Montana to shop for a variety of goods.

e. What role will transportation and border crossings play in future economic development opportunities?

- The border crossing and transportation network improvements in Sweet Grass should contribute to further growth in the Sunburst area provided they can take advantage of the increased southbound traffic.

- In eastern Montana, the border crossings and transportation will play a huge role in growth, especially if they can follow a more European model with the trans-Canada and Mexican corridors. Improved infrastructure through eastern Montana would provide incredible opportunities at relatively low cost compared to blasting through the mountains in the western part of the state. In economic development, the goal is to make sure that they are building a system that accounts for potential future needs and not just assessing and solving the problems of today, though it is difficult for many to take that step.

- Without enhanced border services, Saskatchewan's growth will be negatively impacted. The infrastructure on both sides is necessary to move goods, the border can either be an enabler or a stopper, and with 24 hour access, it would be more of an enabler than a stopper.

- For the Blackfeet, transportation and border crossings have long been a discussion among their people. The most accessible border is Piegan, and sits at the edge of the reservation. Piegan closes at 11pm during the winter months and is not extended much later than that during the summer when trade and tourism are the highest. Prescription drugs and other health and construction necessities are less costly in Canada, but many Blackfeet and local citizens must make the 224 mile journey to Great Falls or Kalispell to fill medications or purchase other construction materials. There are many other issues involving the border, including taxes and free trade, which impact the reservation as well. Homeland security problems are about to begin because they now need passports to travel to ceremonies in Canada. Many of the elders will be forced to stay at home and miss

the ceremonies, but this is a problem of which the magnitude is currently unknown.

- Transportation and border crossings will play a very important part in future economic development for the South East Alberta region. As more and more goods are moved by truck, the need for better access to streamline this activity is essential. Having a $40 billion trade "funneled" through one port of entry makes little sense for either country or for the customers and sellers and the trucking industry. Another 24 hour commercial port of entry connected to South East Alberta will provide better access to markets in both countries and also provide an opportunity for the connected regions in Montana and Alberta to capitalize on the increased activity by having transportation related service industry located there and also provide an opportunity for value adding to the primary products prior to shipping to either country. This will then again, provide additional opportunities for more companies to locate in the respective regions.

- Canadians are increasingly attending technical and community colleges in northern Montana and thus crossing the Montana border. Expanded port operations at Wild Horse, for example, would help facilitate this kind of activity as students would have more flexibility in terms of staying longer in Montana and being able to get back into Canada via their preferred POE.

f. Are there significant economic development initiatives in your region that we should be aware of as we prepare economic and industry outlooks?

- Saskatchewan has recently completed a major project inventory of all projects more than $2 million.[14] In Regina, they are building a major intermodal hub to enhance intermodal services outside of the town proper. In this expanded facility, a grocer is going to open a $350M distribution center. This will lead to significant road and rail developments with the potential to further expand the intermodal center. Carbon capture activity is also an initiative that could be very important.

- Blackfeet Planning has many significant economic development initiatives in the region to be aware of. Blackfeet Indians should not need passports, as the tribal identification should prevail. Too many families are impacted by the passport issues at the border where siblings, parents, grandparents and parents live and work. There are many members who work in Canada but live on the reservation.

- The Keystone II Pipeline is being constructed in 2009, with major segments crossing from Canada through Montana, bringing construction activity and freight deliveries.

- Alberta recently joined the Ports-to-Plains Trade Corridor Coalition. The Ports-2-Plains Coalition is a coalition of more than 90 members representing cities,

[14] Inventory compiled by Enterprise Saskatchewan (2009)

counties, chambers of commerce, economic development corporations, others, and now also Alberta with a common goal of improving transportation infrastructure by default, improving the movement of goods and services through the Midwestern States and Alberta. The Regional Economic Development Alliances along the eastern side of the province from the Montana/Alberta border through to Ft. McMurray and Edmonton are now also working together to take advantage of the initiative initiated by the province and become direct members and a part of this coalition – perhaps Ports-2-Plains-North. As everyone becomes more familiar with each other and develops increased trading relationships, the economic activity within the entire region will grow as well.

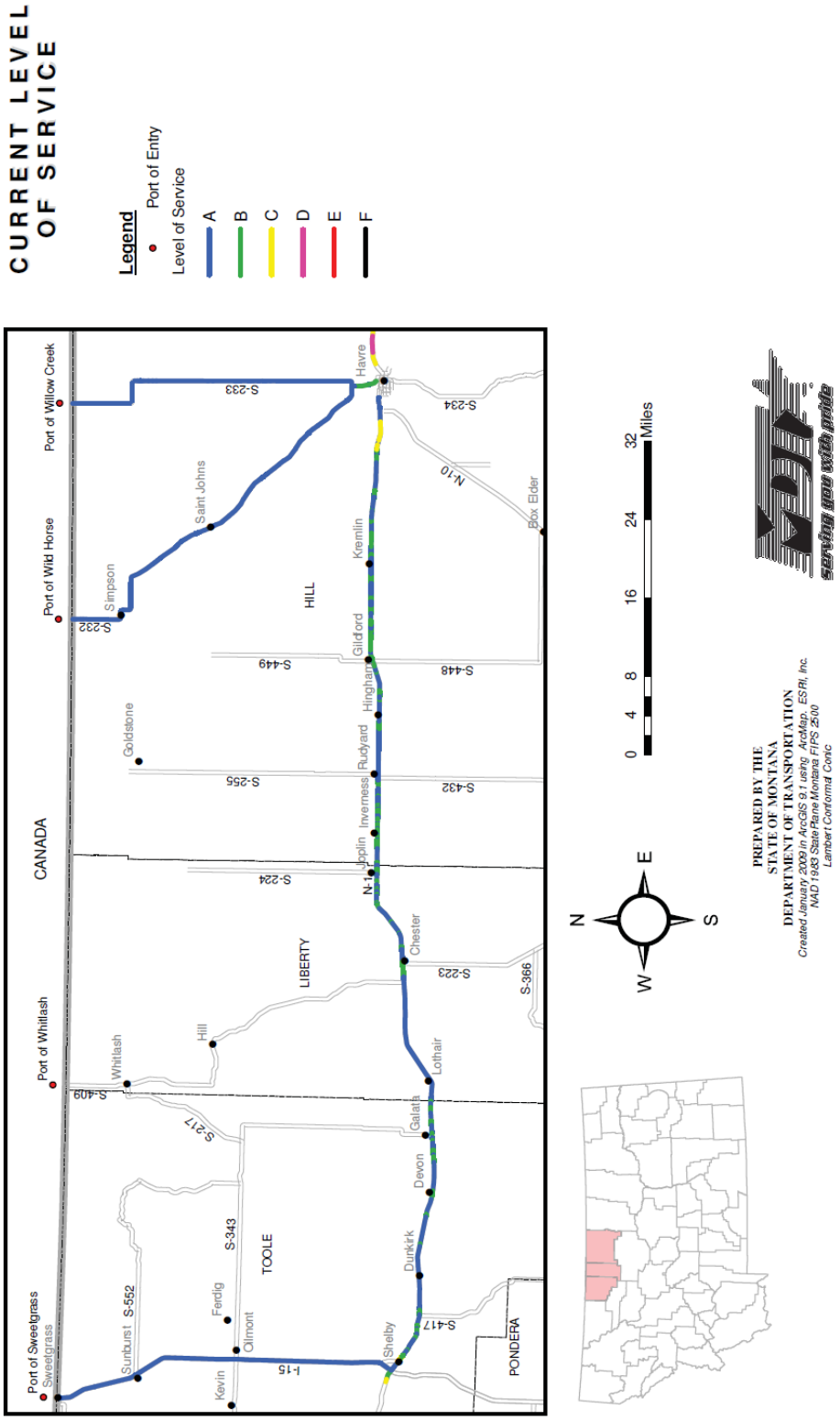
Projects/Opportunities

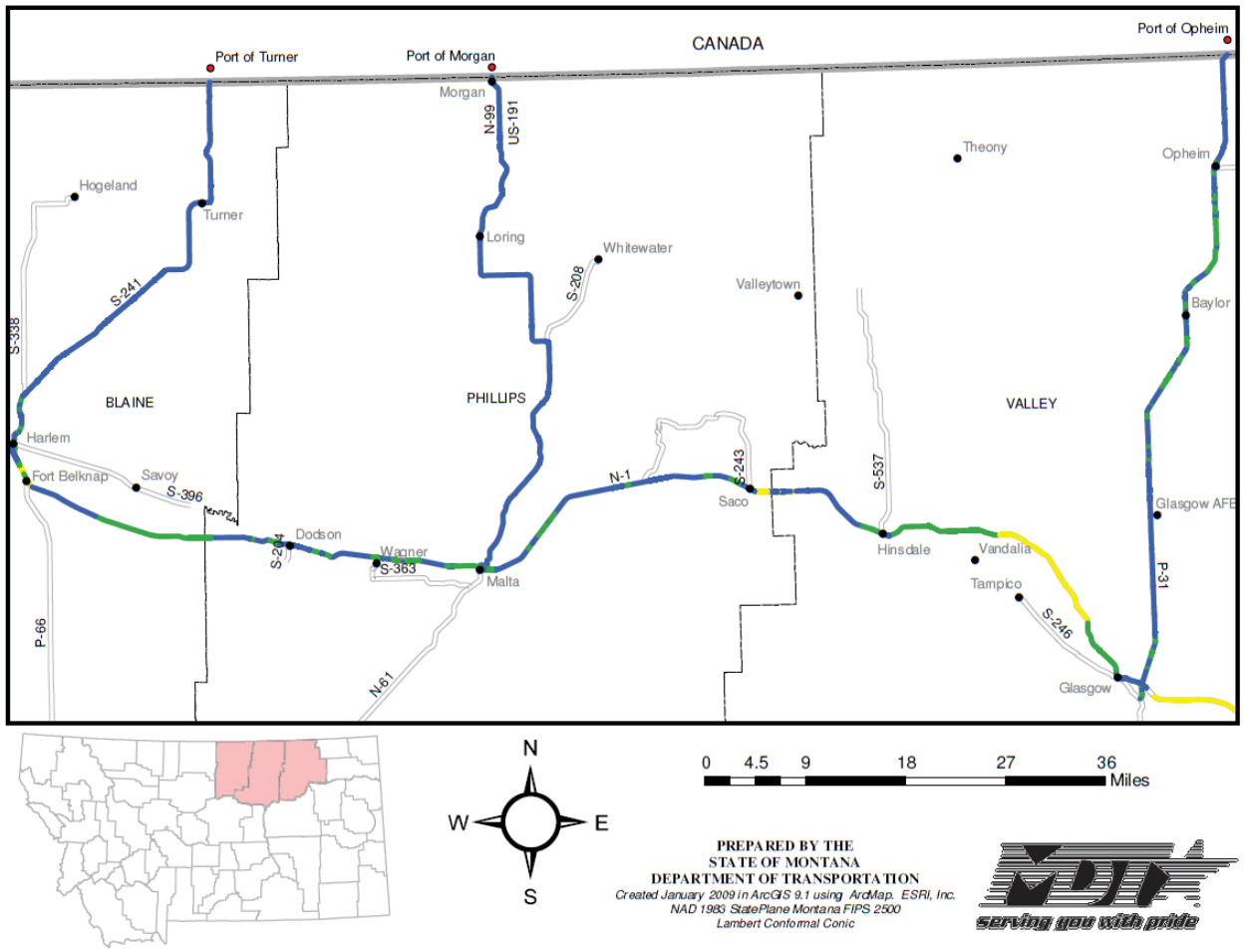
- There are about 50-60 wells drilled annually in the Hi-Line area as well as the beginnings of a bio-fuel growth in that area.
    - There is the potential for additional drilling depending on the price of oil.
- Montana recently lost a barley-ethanol plant to North Dakota due to the paperwork and process of locating in Montana.
- The development of the Alberta Oil Sands has started and is projected to continue growing in the future.
- There is potential for increased land leasing for drilling in Montana once the RMP is completed in 2011.
- The improved border station at Sweet Grass provides the potential for growth in that area due to increased demand at the crossing.
- There is a wind farm slated for Sunburst, which will be the largest wind farm in Montana.
- There are lodging and merchant opportunities in and around Sunburst and a small restaurant is opening.
- Saskatchewan has some of the largest uranium and pot ash deposits in the world, and there are 2-3 new mines in each of those proposed over the next 5-10 years.
- There are capacity expansions in 3 of the 4 major pot ash mines in Saskatchewan, totaling about $2.5 billion.
- There is an opportunity for Unmanned Vehicle Systems in Southeast Alberta which provides the opportunity for Research and Development as well as eventual commercialization.
- Great Britain has signed a 50 year contract with the Canadian Forces Base Suffield to train troops as a final step before shipping them to Afghanistan.

- There is an Intermodal Hub being built at Regina to increase intermodal transportation in the city. There is also a $350 million grocery distribution center that will be locating there.

APPENDIX B: LEVEL OF SERVICE MAPS

The following pages contain maps depicting the LOS for the highway corridors within the ICED study area.





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DEPARTMENT OF TRANSPORTATION
Created January 2009 in ArcGIS 9.1 using ArcMap. ESRI, Inc.
NAD 1983 StatePlane Montana FIPS 2500
Lambert Conformal Conic

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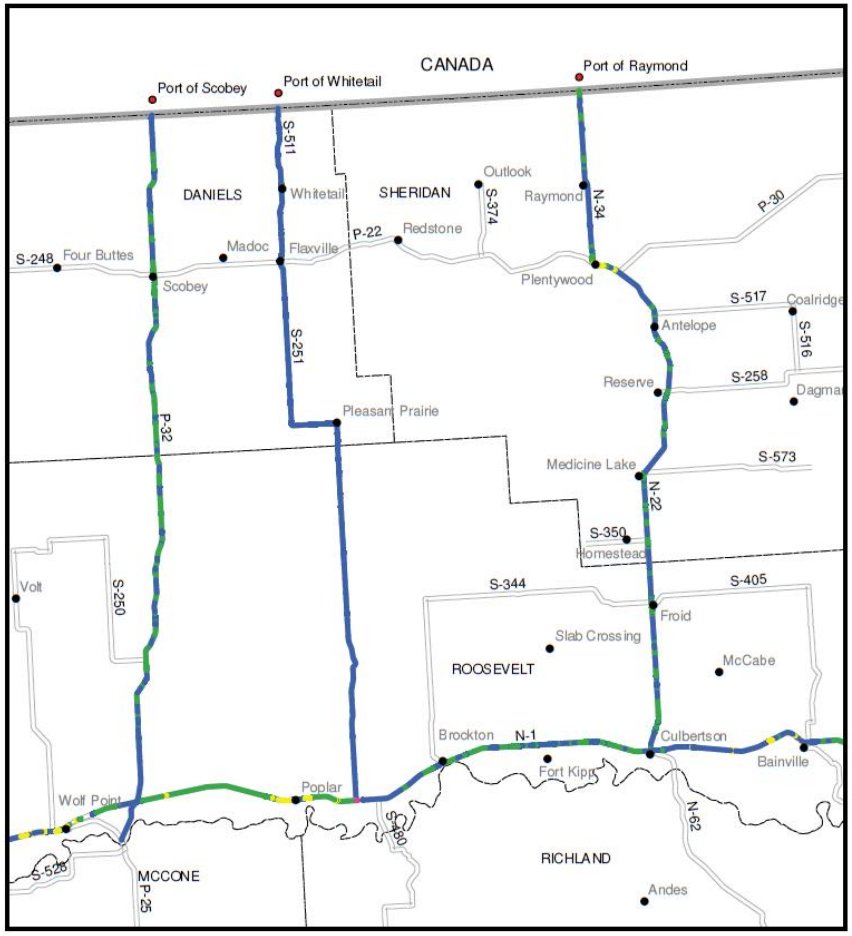
CURRENT LEVEL OF SERVICE

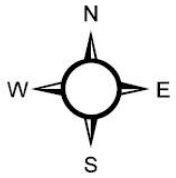
Legend

Port of Entry

Level of Service

- A
- B
- C
- D
- E
- F





CURRENT LEVEL OF SERVICE

Legend

Port of Entry

Level of Service

- A
- B
- C
- D
- E
- F

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APPENDIX C: MAJOR PROJECTS

Table 65: Major Mining Projects, Alberta 2008-09

Project Sector / Company Name	Project Description	Project Location	Cost in $ Millions	Construction Schedule	Remarks
Mining					
Birch Mountain Resources Ltd.	Muskeg Valley Hammerstone Project Phase 2 (Quicklime Plant)	RM of Wood Buffalo (E of Fort Mackay)	75.6		Proposed. Application filed. Pending approval, planned production start in 2009.
Carbon Development Partnership (Sherritt International Corp. / Ontario Teachers Pension Plan)	Dodds - Roundhill Coal Gasification Project	Beaver County (near Ryley)	1,500.0		Proposed for 2011 - 2014.
EPCOR Utilities Ltd.	Power Plant (380MW), Water / Wastewater Treatment Facilities and Water Transmission, Dodds Roundhill Project	Beaver County (near Ryley)	1,000.0		Proposed. Deferred.
Graymont Western Canada Inc. / Inland Aggregates Ltd.	'Parsons Creek' Limestone Quarry	RM of Wood Buffalo (N of Fort McMurray)	10.0		Proposed for 2008 - 2009.
Sherritt International	Facility Expansion Phases 1 and 2	Fort Saskatchewan	250.0	2006-2009	Under construction
Sherritt International Corp. / Ontario Teachers' Pension Fund	Obed Mountain Coal Mine Restoration / Rehabilitation	Yellowhead County	12.0	2008-2009	Under construction

Table 66: Major Oil and Gas Projects, Alberta 2008-09

Project Sector / Company Name	Project Description	Project Location	Cost in $ Millions	Construction Schedule	Remarks
Oil & Gas					
AltaGas Income Trust	Harmattan Co - Stream Project	Mountain View County (Harmattan complex)	70.0		Proposed. Application on hold. Cost range $70M to $90M.
Alter NRG Corp.	Fox Creek Coal Gasification Project	MD of Greenview (near Fox Creek)	4,500.0		Proposed. Looking for strategic partner.
Enbridge Midstream Inc.	Crude Oil Terminal (16 Tanks)	Hardisty	400.0	2006-2009	Under construction. TIW Steel Platework.
Inter Pipeline Fund	Cochrane Ethane Recovery Project	Cochrane	80.0		Proposed. Applications filed. EUB approval June 2007.
Inter Pipeline Fund	Empress Deep Cut 5 Ethane Extraction	Special Area 2 (near Empress)	36.0	2007-2009	Nearing completion
Keyera Facilities Income Fund	Storage Capacity Expansion Phase 1	Fort Saskatchewan	18.0	2008-2010	Under construction. First of four storage caverns. Total cost for four caverns and new brine pond $70M to $80M.
Keyera Facilities Income Fund	Ethane Extraction Project (Plant Modifications and Pipeline)	Ponoka County (near Rimbey)	28.0	2008-2009	Under construction
Kinder Morgan Canada Inc.	Trans Mountain Pipeline Edmonton Terminal Expansion (13 Tanks)	Strathcona County	245.0	2008-2010	Announced
Peace River Oil (PRO) Upgrading Inc.	'Bluesky' Diesel Refinery and Heavy Crude Oil Upgrader Phase 1	MD of Smoky River (S of McLennan)	2,500.0	2010-2012	Announced. Pending approvals. Application to be filed by late 2008.
Rotex Energy Ltd.	Oilfield Waste Management Facility	Lamont County (SE of Bruderheim)	5.0		Proposed for 2009

Table 67: Major Oil Sands Projects, Alberta 2008-09

Project Sector / Company Name	Project Description	Project Location	Cost in $ Millions	Construction Schedule	Remarks
Oilsands					
Albian Sands Energy Ltd. (Royal Dutch Shell / Chevron Canada / Marathon Oil Corp.)	Muskeg River Mine Expansion (part of Alberta Oil Sands Project (AOSP))	RM of Wood Buffalo	5,000.0	2007-2010	Under construction. Approved December 2006. Corporate approval Nov 2006.
Albian Sands Energy Ltd. (Royal Dutch Shell / Chevron Canada / Marathon Oil Corp.)	'Jackpine' Mine Mining and Extraction Facility phase 1	RM of Wood Buffalo (near Fort MacKay)	2,000.0	2007-2009	Under construction. Approved Feb 2004. Includes 170MW power plant.
Albian Sands Energy Ltd. (Royal Dutch Shell / Chevron Canada / Marathon Oil Corp.)	Scotford Upgrader Expansion (De-bottleneck and Addition of Third Bitumen Processing Train) for Alberta Oil Sands Project (AOSP)	Strathcona County (Scotford)	5,600.0	2006-2010	Under construction. Approved August 2006. Corporate approval Nov 2006.
Canadian Natural Resources Ltd. (CNRL)	'Kirby' In - Situ Oilsands Project	RM of Wood Buffalo	620.0		Proposed (phase 1). Application filed September 2007.
Canadian Natural Resources Ltd. (CNRL)	'Project Horizon' Mining and Drilling Project phases 2 and 3	RM of Wood Buffalo	3,100.0	2007-2013	Under construction. Approved Jan 2004.
Connacher Oil & Gas Ltd.	'Algar' SAGD Project (Pod 2)	RM of Wood Buffalo (SW of Fort McMurray)	363.0	2008-2009	Announced. On hold.
Devon Canada Corp.	'Jackfish' SAGD Oilsands Project Phase 2 (J2)	RM of Wood Buffalo (SE of Conklin)	1,060.0	2008-2011	Under construction. Application approved.
EnCana Corp.	'Borealis' SAGD Project	RM of Wood Buffalo (N of Fort McMurray)	1,000.0		Proposed. Preliminary application filed.
EnCana Corporation	SAGD Bitumen Production	RM of Wood Buffalo (Christina Lake)	575.0	2000-2009	Under construction. AMEC / Titan Projects JV(EP & CM). Three phases.
E-T Energy Ltd.	Bitumen Extraction Project	RM of Wood Buffalo	100.0		Proposed
Fort Hills Energy Corp. (Petro - Canada Oil Sands / UTS Energy Corp)	Sturgeon Upgrader (Bitumen) phase 2 / 3	Sturgeon County	12,100.0		Proposed. Phase 1 on hold.
Fort Hills Energy Corp. (Petro - Canada Oil Sands / UTS Energy Corp. / Teck Cominco)	'Fort Hills' Oilsands Project and Sturgeon Upgrader Phase 1	RM of Wood Buffalo / Sturgeon County	24,000.0		Proposed. Decision on mine deferred to 2009. Upgrader on hold. ERCB upgrader approval January 2009. EPC Lockerbie & Hole.
Husky Energy Inc. / BP PLC	'Sunrise Thermal Project' SAGD Oilsands Project Phase 1	RM of Wood Buffalo (N of Fort McMurray)	3,000.0		Proposed. FEED completed. Application approved. Site work underway. Corporate decision by mid - 2010.
Husky Energy Inc. / BP Plc.	'Sunrise Thermal Project' Phase 2	RM of Wood Buffalo	1,900.0		Proposed
Imperial Oil Resources / ExxonMobil Canada	'Kearl Lake' Oilsands Mine Phase 1	RM of Wood Buffalo	2,300.0		Proposed. Three production trains / phases in total. Application approved (all phases). Corporate decision first quarter 2009. AMEC (EPC).
Ivanhoe Energy	Bitumen Project on Lease 10	RM of Wood Buffalo (near Fort McMurray)	1,800.0		Proposed. Lease purchased from Talisman Energy.
Japan Canada Oil Sands Limited (JACOS) / Nexen Inc.	Hangingstone SAGD Commercial Production Project	RM of Wood Buffalo (S of Fort McMurray)	750.0		Proposed. Proposed application filing first quarter 2010.
MEG Energy Corp.	In Situ Oilsands Project Phase 2B	RM of Wood Buffalo (Christina Lake)	1,200.0		Proposed. Possible start of site preparation work winter 2008 pending approvals.
North American Oil Sands Corp. (NAOSC) (now owned by Statoil ASA)	'Kai Kos Dehseh' Bitumen (SAGD) Project Phase 1	RM of Wood Buffalo (near Conklin)	850.0		Proposed. Application filed March 2008.
North West Upgrading Inc.	Bitumen Upgrader Phase 1	Sturgeon County	4,200.0		Proposed. Approved. On hold. EPC SNC-Lavalin, PCL Industrial Management. Site preparation completed.
North West Upgrading Inc.	Bitumen Upgrader Phases 2 and 3	Sturgeon County (near Redwater)	3,200.0		Proposed. Approved August 2007. On hold.
N-Solv Corp.	Pilot Plant	RM of Wood Buffalo	50.0	2008-2009	Under construction
OPTI Canada / Nexen Inc.	'Long Lake' SAGD Project Phase 2 (Kinosis)	RM of Wood Buffalo	2,790.0		Proposed. Cost estimates are preliminary. Corporate approval deferred til mid 2010.
OPTI Canada Inc / Nexen Inc.	Ash Processing Pit (part of Long Lake project)	RM of Wood Buffalo	175.0	2008-2010	Under construction.
Petro - Canada Oil and Gas	MacKay River SAGD Expansion	RM of Wood Buffalo (NW of Fort McMurray)	1,000.0		Proposed. Application filed Dec 2005. Corporate decision expected in first quarter 2009.

Petro - Canada Oil and Gas / Nexen Inc.	'Meadow Creek' SAGD Bitumen Production	RM of Wood Buffalo (S of Ft McMurray)	800.0		Proposed. Application under review. Project includes 330MW co-gen plant.
Petrobank Energy and Resources	'May River' Commercial Bitumen Project Phase 1	RM of Wood Buffalo	225.0		Proposed. Application filed December 2008.
Royal Dutch Shell	'Orion' Heavy Oil SAGD Facility (Phases 1 and 2)	MD of Bonnyville (Hilda Lake)	340.0	2005-2010	Under construction. Phase 1 completed. Approved Oct 2004. Phased development, building to 20,000 bpd.
Shell Canada Energy	Scotford Upgrader 2 (SU2)	Strathcona County (Scotford)	22,000.0		Proposed for 2009 - 2012 (phase 1). Four additional upgrading trains. Application filed July 2007. Estimated cost range $22B to $27B.
Suncor Energy Inc.	'Voyageur South' Oilsands Mining Operation	RM of Wood Buffalo	4,400.0		Proposed. Application filed July 2007. Corporate approval January 2008.
Suncor Energy Inc.	'Firebag' Oilsands Project Stages 3 to 6	RM of Wood Buffalo	9,000.0	2006-2012	Under construction. Stage 3 approved Mar 2004. FEED co-gen plant Washington Group Northern / Canonbie Contracting. On hold once stage 3 is completed.
Suncor Energy Inc.	'Voyageur' Oil Sands Third Upgrader (U3)	RM of Wood Buffalo	11,600.0	2007-2013	Under construction. Approved November 2006. Corporate approval January 2008. Project does not include bitumen feed to upgrader. On hold.
Suncor Energy Inc.	North Steepbank Mine Extension	RM of Wood Buffalo	400.0	2008-2009	Announced. Application approved November 2006.
Suncor Energy Services	'Voyageur Village' Administration and Support Buildings	RM of Wood Buffalo	234.0	2007-2010	Under construction. EllisDon Construction.
Suncor Energy Services	'Firebag' Administration Complex and Village Camp Core	RM of Wood Buffalo (N of Fort McMurray)	177.0	2007-2009	Under construction. Bird Construction.
Sunshine Oilsands	'West Ells' OILSANDS PROJECT	MD of Opportunity	385.0		Proposed FOR 2010 - 2011. Application to be filed first quarter 2009.
Sunshine Oilsands	'Muskwa' HEAVY OIL PROJECT PHASE 1	MD of Opportunity	31.0		Proposed. Five phases in total.
Syncrude Canada Ltd.	Phase 4: Upgrader Expansion Phase 2 / Aurora Mine Train 3	RM of Wood Buffalo (Fort McMurray)	2,300.0		Proposed. Pre-engineering study underway (AMEC). Expansion SNC-Lavalin, Fluor Daniel. Train 3 AMEC.
Syncrude Canada Ltd.	Sulphur Emission Reduction Program (SERP)	RM of Wood Buffalo (Mildred Lake)	1,600.0	2005-2011	Underway. Application approved.
Total E&P Canada Ltd.	'Joslyn Creek' SAGD Project Phase 3 and North Mine Development	RM of Wood Buffalo	2,900.0		Proposed for 2009 - 2014. Application for phase 3A filed. Application for mine filed early 2006. Corporate approval expected 2009.
Total E&P Canada Ltd.	Bitumen Upgrader Phase 1	Strathcona County	6,000.0	2009-2015	Announced. Pending approvals and corporate sanction. Application filed December 2007. Construction cost range is $4.6 to $6 billion.
UTS Energy / Teck Cominco	'Frontier' Oil Sands Mine	RM of Wood Buffalo	9,600.0		Proposed construction start in 2012, with production between 2014 and 2017
UTS Energy / Teck Cominco	'Equinox' Oil Sands Mine (Lease 14)	RM of Wood Buffalo	2,500.0		Proposed construction start in 2011 with production between 2014 and 2017
Value Creation Inc.	'Terre de Grace' SAGD Oilsands Project	RM of Wood Buffalo	3,500.0		Proposed

Table 68: Major Residential Construction Projects, Alberta

Project Sector / Company Name	Project Description	Project Location	Cost in $ Millions	Construction Schedule	Remarks
Residential					
Abby Lane Homes	'Victory Point' Apartment Building	Edmonton	6.2	2008	Under construction
Alberta Ronald Macdonald House	Ronald Macdonald House	Red Deer	5.0		Proposed for 2010.
Amacon	Condo Towers and Urban Village on Grandin Park Plaza Site	St. Albert	450.0		Proposed. Approved by city council May 2008. Possible construction start spring 2009.
Anthem Riverfront Land Holdings	'Waterfront' Condominiums (Eight Towers) plus Townhouses	Calgary	750.0	2008-2012	Under construction. EllisDon Construction. Occupancy in first building in 2009.
Arcus Developments	"Astoria' Ccondominiums Phase 2 Parking Garage	Calgary	7.7		Proposed
Arcus Developments	'Astoria on 10th' Condominium Tower	Calgary	60.0	2007-2010	Under construction. Ledcor Construction.
Assured Developments	'AKOYA' Apartment Building	Calgary	40.1		Proposed
BCM Developments Ltd.	'Fuzion' Condominiums	Edmonton	30.0		Proposed
Bigstone Cree Nation / Opasikoniwew Housing Authority	Affordable Housing Projects	across Alberta	5.6		Proposed
Bond Street Properties	'Bond Street Towers' Condominiums	RM of Wood Buffalo (Fort McMurray)	160.0		Proposed
Brenda Strafford Foundation Ltd.	Affordable Housing Project (Apartment Building)	Calgary	29.0	2008-2010	Under construction. Golden Triangle Construction Management.
Bridgecreek Development Corporation	'River Run' Residential and Commercial Development	Crowsnest Pass (Blairmore)	400.0	2009-2014	Announced (Phase 1). Radisson Hotel.
Bucci Group	'Xenex on 12th' Apartment Building	Calgary	29.8	2006-2009	Nearing completion
Calgary Drop - In Centre	'Sun Dial' AFFORDABLE HOUSING COMPLEX	Calgary	15.0		Proposed
Calgary Homeless Foundation / Horizon Housing Sociery / Calgary Home Builders Foundation	'Inglewood Residence' Affordable Housing Development	Calgary	19.6	2007-2009	Nearing completion. Summa Management.
Calgary Housing Company	Affordable Housing Complex, Springbank Hill	Calgary	39.0		Proposed
Calvanna Developments	Calvanna Village Okotoks Phase 3	Okotoks	12.0		Proposed

Canmore Community Housing Corp. / Classic Construction Ltd.	'Palliser' Affordable Housing Project	Canmore	32.5	2008-2009	Under construction. Classic Construction. Sixty perpetually affordable units and seventy - four attainable housing units.
Capital Region Housing Corporation	'124 Street' Affordable Housing Project	Edmonton	8.2	2008-2009	Under construction
Cardel Lifestyles	'Ranchview Vistas' Apartment Building	Calgary	6.7	2008-2009	Under construction
Carma Developers / Urban Landmarks Master Builder	'Aurora' Phase 1: Mira Condominium Tower plus Townhouses	Edmonton	325.0	2007-2010	Under construction
Century Group Lands Corp.	'Liberty Junction' Apartments and Town House Complex	Red Deer County	41.5	2009-2011	Announced. Planned construction start summer 2009.
Christenson Developments / Western Asset Management Group (WAM)	'Centre in the Park' Housing / Retail / Commercial Development	Strathcona County (Sherwood Park)	230.0	2006-2011	Under construction. Can-Der Construction.
City of Airdrie / Sustainable Housing Working Group	Affordable Housing Project	Airdrie	5.1		Proposed
City of Brooks	'Prairie Village Phase II' Affordable Housing Project	Brooks	8.3		Proposed.
City of Calgary	The Bridges Phase 2 Affordable Housing Project	Calgary	13.5		Proposed. Proposed construction start spring 2009.
City of Camrose	Wild Rose Arena Site Affordable Housing Project	Camrose	11.3		Proposed
City of Edmonton and partners	Boyle Renaissance Supportive Housing Project	Edmonton	186.0		Proposed. Includes inner city HS listed under Institutional and Transitional housing listed under Edmonton YMCA.
City of Edmonton Non-Profit Housing Corporation	'Fraser II' Affordable Housing Project	Edmonton	6.2		Proposed
City of Edmonton Non-Profit Housing Corporation	'Fraser I' Affordable Housing Project	Edmonton	7.5		Proposed
City of Grande Prairie	'Urban Village' Affordable Housing Project	Grande Prairie	11.9		Proposed
City of Medicine Hat and partners	'Southlands Development' Affordable Housing Project	Medicine Hat	10.4		Proposed. Planned construction start spring 2008.
Clanswest Development Ltd.	'Ironstone Lookout' Condominium Development	Crowsnest Pass	35.0	2006-2009	Under construction
Cold Lake Affordable Housing Society (CLAHS)	Apartment Complex	Cold Lake	5.1		Proposed
Concord Pacific Inc.	Condominium Apartment Building and Townhouses, Eau Claire	Calgary	30.0		Proposed start in 2009.
Cove Properties	Condominium Apartment Building	Calgary	25.0		Proposed
Cove Properties Ltd.	'Vetro' Apartment Building	Calgary	35.0	2005-2008	Under construction. Part of Stampede Station.
Cove Properties Ltd.	'Nuera Towers' Condominium Towers (2)	Calgary	61.2	2007-2010	Under construction
Devonian Properties	'Longboat Landing' Townhouses and Apartments	RM of Wood Buffalo (Fort McMurray)	560.0	-2006	Under construction. Phase2 and phases 4 and onwards on hold.
Diamond Trust Development (previously listed under Rockwell Development Group)	'Sky Tower' Apartment Building	Calgary	47.8	2007-2009	On hold. ITC Construction Group.
Edmonton Buddhist Research Institute	Tuoi Hac Manor Affordable Housing	Edmonton	20.4	2007-2008	Under construction. Graham Construction.
Edmonton Housing Trust Fund	Transitional / Supportive Housing Units	Edmonton	5.3		Proposed
Edmonton YMCA	'Welcome Village' Transitional Housing (Low - Rise Apartments)	Edmonton	0.0		Proposed for 2009 - 2011. Estimated cost $35 million. Boyle Renaissance projec phase 1. RFP for project manager closes March 11.
Giaconno Holdings Ltd.	'Baranow Villa' Affordable Housing Project	Edmonton	6.1	2008-2010	Under construction
Hawthorne Homes	Apartment Building	Calgary	8.4		Proposed
Homburg - Centron Teamworks	Kai Mortenson Towers (Two Residential Towers)	Calgary	130.0	2007-2009	Under construction (tower 1 Oslo). Centron Construction.
IBI Group	Apartment Building	Calgary	24.3		Proposed
Intergulf-Cidex Development	Westgate Park Condominiums Phase 3 (Ovation)	Calgary	26.0	2007-2009	Under construction
Jarvis Bay Developments	'The Savanna' Condominium Complex	Sylvan Lake	20.0		Proposed. Pending financing.
Keystone Real Estate Investment Corp.	'The Lake House Resort and Spa' Luxury Condo Complex (three buildings)	Sylvan Lake	75.0		Proposed. Possible construction start phases 1 (and possibly phase 2) spring 2009.
Kopernik Polish Heritage Society / Good Samaritan Society	Kopernik Seniors Centre (Seniors Complex and Community Centre) (formerly described as affordable housing)	Edmonton	55.0		Proposed. Planned construction start summer 2009.

Laebon Developments Ltd.	'The Views at St. Joseph' Condominiums	Red Deer	16.0	2007-2009	Under construction
Lake Placid Developments	'Centuria on the Park' Condo Apartments	Calgary	27.0		Proposed. Planned completion in 2009.
Langham Properties Ltd.	'Icon' Apartment Towers 1 and 2	Edmonton	100.0	2006-2010	Under construction. Tower 1 nearing completion
LBD Group	'The Q' Apartment Building	Edmonton	11.0	2008-2009	Announced. Pagnotta Industries.
Leaside Development Corp.	'Cornerstone Village' Residential Development (Apartment Buildings, Townhouses and Duplexes)	Olds	35.0	2008-2010	Under construction (phase 1). Four phases.
Leduc Foundation (previously listed under City of Leduc / Town of Devon / Town of Beaumont)	Affordable Housing Project	Beaumont	7.0	2008-2009	Under construction. Binder Construction.
Luxe Developments	Condominium Apartment Building	Calgary	32.0		Proposed for 2009 - 2010. On hold.
Luxe Developments	'Gala in Applewood' Apartment Building	Calgary	14.3		Proposed
Medican Developments	'Sanderson Ridge' Condominium Development near Fish Creek Park (Phases 1 and 2)	Calgary	50.0	2007-2010	Under construction. Four phases in total.
Medican Developments	Condominium Complex	Red Deer	30.0		Proposed. To be connected to Extendicare facility, Michener Hill.
Medican Developments	'Axxess' and 'Reflections' Condo Complexes, Beacon Hill	Sylvan Lake	8.1	2008-2009	Under construction
Metropolitan Calgary Foundation	Bow Valley Supportive Apartments	Calgary	35.0	2008-2010	Under construction
Monolithic Domes Canada	Sixty Dome Units	Bruderheim	6.0		Proposed. Pending approvals.
Mustard Seed Ministry	Affordable Housing Tower	Calgary	60.0		Proposed for 2009 - 2012.
Nearctic Group / Rockwell Investments	Residential Development, Strathearn Heights	Edmonton	650.0		Proposed. Possible construction start mid - 2009, pending approvals.
Niklas Group	'Casel' Condo Apartment Building	Calgary	17.0	2008-2009	Under construction
Northern Alberta Cooperative Housing Association	'Baturyn' Affordable Housing Project	Edmonton	11.8	2008-2010	Under construction. ResCom Inc.
Onion Lake Business Development Corp.	Affordable Housing Project	Lloydminster	5.4		Proposed
Osiris Management	'Panatella Landing' Townhouse Complex	Calgary	8.4		Proposed
Pacer Signature Homes	'West 17th Lofts' Townhouses Building 'A'	Calgary	6.8		Proposed. Seven buildings in total.
Pacer Signature Homes	'West 17 Lofts' Townhouse Buildings 'D' and 'E'	Calgary	6.7		Proposed
Peiera Shawnee Ltd.	Apartment Building	Calgary	40.3		Proposed
Perara Development Group	Highbury Tower Residences	Calgary	57.5		Proposed
Perera Development Group	'Highbury2' Condominium Development	Calgary	25.0	2007-2008	Under construction
Pointe of View Developments	'Panorama Pointe' Apartment Building Complex	Calgary	20.0		Proposed
Pointe of View Developments	'Riverfront Pointe' Highrise Towers (4)	Calgary	200.0	2006-2010	Under construction. To be developed in four phases.
Prism Developments	'Bella Casa' Condo Building	Calgary	27.0	2008-2009	Under construction
ProCura Real Estate	'Mayfair Village' HIGHRISE APARTMENT COMPLEX	Edmonton	175.0		Proposed for 2009 - 2011. Planned construction start spring 2009.
Qualex - Landmark Group	'Luna' Condominium Apartment Building	Calgary	50.0		Proposed for 2009 - 2011. Intertech Construction Group. On hold.
Renascence Developments Corp.	'The Edge' Apartment Complex	Airdrie	30.0	2008-2010	Nearing completion
Renoir Developments	'Kingstreet on the Park' Condominium Building	Spruce Grove	30.0	2007-2009	Nearing completion
Ronald Macdonald House Edmonton	Facility Expansion	Edmonton	11.0	2007-2009	Under construction. Fundraising underway.
Source Development Corp.	'Manchester Station' Condo Apartments	Calgary	25.0		Proposed. Planned construction start early 2009.
St. Albert Housing Society	Affordable Housing Development (Apartment Building)	St. Albert	19.0		Proposed. Pending funding.
Statesman Group of Companies	'Varsity Landings' Condo Apartments Phase 2	Calgary	15.0		Proposed
Statesman Group of Companies	'Riverside Quays' Condomimium Complex	Calgary	150.0	2007-2011	Under construction (phases 1 and 2). Phased development (six phases). Planned construction start phase 3 December 2009, phase 4 mid 2010, phase 5 by end of 2010, phase 6 mid 2011.
Sweetgrass Non - Profit Housing Corporation (SNPHC)	AFFORDABLE HOUSING PROJECT	Jasper	6.0		Proposed
The Courtnay Group	'Havenworth' Apartment Building	Calgary	5.5	2008-2009	Under construction
The Tarjan Group	Two Apartment Buildings	Airdrie	25.5	2008-2009	Under construction

Today's Communities / WestCreek Developments	'Valmont at Aspen Stone' Apartment Condo Complex (Four Buildings) phase 1	Calgary	9.6	2006-2009	Nearing completion
Torode Residential	'Viva' Condominiums (Two Towers)	Calgary	32.0		Proposed
Torode Residential	'ArriVa Forty Two' Condominium Tower	Calgary	85.3	2007-2010	Under construction. ITC Construction Group.
Town of Hinton	'Happy Creek Estates' Affordable Housing Project	Hinton	7.0		Proposed
Town of Vegreville	'Northwood Estates' Affordable Housing Project	Vegreville	5.7		Proposed
Town of Westlock	Affordable Housing Complex	Westlock	5.1	2008-2009	Under construction. AJ Hendriks Construction.
Urban Landmarks Inc.	Condominium Development	Fort Saskatchewan	15.1	2008-2009	Under construction
Urbia Developments	Condominium Complex	Leduc	35.0		Proposed
Wapiti Community Dorm Society	New Facility (Rotary House)	Grande Prairie	12.5	2008-2009	Under construction. Jen - Col Construction.
Westcorp Inc.	'London at Heritage Station' Condominium Towers	Calgary	200.0	2006-2008	Under construction (phase 1). To be built in four stages.
Wimco Properties Ltd.	'Elk Island View - Swan Place' Condominium Apartment Building	Lamont	6.0		Proposed for 2009 - 2010. Project on hold pending market conditions.
Wimco Properties Ltd.	'Elk Island View - Bison Place' Assisted Living Facility	Lamont	6.0		Proposed. On hold pending market conditions.
Wood Buffalo Housing and Development Corp.	'Cascades at Meadow Creek Village' Apartment Buildings	RM of Wood Buffalo (Fort McMurray)	12.0	2008-2009	Announced. Planned construction start fall 2008.
Wood Buffalo Housing and Development Corporation	'Cascades at Meadow Creek Village' Apartments	RM of Wood Buffalo	12.0	2008-2009	Announced. Planned construction start fall 2008.
Wood Buffalo Housing and Development Corporation	The Shores at Meadow Creek Village' Apartments	RM of Wood Buffalo	14.0	2008-2009	Under construction. Casman Building (stage 8).
Wood Buffalo Housing and Development Corporation	'Sandpiper Cove in Timberlea (formerly Parcel D) Stage 1' Apartments and Townhouses	RM of Wood Buffalo	36.0	2008-2010	Under construction
Wood Buffalo Housing and Development Corporation	'Sandpiper Cove in Timberlea (formerly Parcel D) Stage 2' Townhouses	RM of Wood Buffalo	11.0	2008-2010	Under construction
Wood Buffalo Housing and Development Corporation	Affordable Housing Units	RM of Wood Buffalo (Anzac,Conklin, FtChip,Janvier)	5.7		Proposed. In planning stage.
Wood Buffalo Housing and Development Corporation	Seniors Facility	RM of Wood Buffalo (Fort Chipewyan)	5.0		Proposed. In planning stage.
Wood Buffalo Housing and Development Corporation	'Sand Piper Cove at Eagle Ridge' Townhouses and Apartments	RM of Wood Buffalo (Fort McMurray)	45.0	2008-2009	Under construction (apartment building). Casman Building.
Wood Buffalo Housing and Development Corporation	'Palisades at Prospect Pointe' Townhouse Complex	RM of Wood Buffalo (Fort McMurray)	10.0	2008-2009	Announced
Wood Buffalo Housing and Development Corporation	'Hawthorne Heights at Eagle Ridge' Townhouses and Apartment Condos	RM of Wood Buffalo (Fort McMurray)	45.0	2008-2010	Announced. Planned construction start fall 2008.
Woodfine Developments	'Fusion Plaza' Apartments Phase 1	Grande Prairie	45.0		Proposed. On hold.

Table 69: Major Tourism/Recreation Projects, Alberta

Project Sector / Company Name	Project Description	Project Location	Cost in $ Millions	Construction Schedule	Remarks
Tourism/Recreation					
Alexis First Nation / Paragon Gaming	Marriott Fairfield Hotel at Eagle River Casino / Travel Plaza	Lac Ste Anne County (Alexis First Nation)	9.5		Proposed for 2009.
Argyll Velodrome Association	Indoor Velodrome and Multi-Use Sports Facility	Edmonton	32.0		Proposed
Bear Development Corp.	Hotel	Sylvan Lake	5.0		Proposed for 2009 - 2010
Bridgecreek Development Corp.	'Bridgegate at Crowsnest Lake' Resort and Condominium Project	Crowsnest Pass (near Sentinel)	1,800.0	2008-2013	Announced. On hold.
Calgary Exhibition and Stampede	Roundup Centre Expansion (new exhibition hall)	Calgary	55.0	2007-2009	Under construction. Part of $600M Stampede expansion.
Calgary Exhibition and Stampede	Western Legacy Project	Calgary	53.0	2009-2010	Announced. Reclamation of brownfield to create inner - city park, interpretive centre, relocation of traditional "Indian village". Part of $600M Stampede expansion.
Calgary Exhibition and Stampede	New Agriculture Building	Calgary	65.0	2009-2011	Announced. Part of $600M Stampede expansion. Construction to start following 2009 Calgary Stampede
Calgary Municipal Land Corp. / Cantos Music Foundation	King Edward Hotel Redevelopment	Calgary	25.0		Proposed. Museum, recording studio and music hall. Pending funding.
Calgary Municipal Land Corporation	Environmental Remediation and Deferred Maintenance -- Hillier Block, St. Louise Hotel and King Edward Hotel	Calgary	15.0		Proposed. Approved by city council June 2008.
Calgary Olympic Development Association (CODA)	Canada Olympic Park Facility Expansion and Upgrade	Calgary	322.0	2007-2011	Under construction. Cana Construction. Freestyle ski area completed. Athletic and ice complex.
Calgary Science Centre	New 'Telus World of Science Calgary' Science Centre	Calgary	160.0	2008-2011	Under construction. Cana Construction. Location near Calgary Zoo.
Calgary Zoo	North Parking Lot Expansion	Calgary	5.0	2009	Announced. Planned construction start April 2009.
Calgary Zoo / ENMAX Energy	ENMAX Conservatory Upgrades	Calgary	25.0	2008-2009	Under construction. Ledcor Construction.
Canadian Hostelling Association	New Hostel	Jasper	5.0		Proposed. Planned completion by 2013 pending approvals.
Citadel Theatre	Renovations	Edmonton	6.0		Proposed
City of Airdrie	Genesis Place (formerly East Lake Recreation and Wellness Centre (ELRWC)) Phase 2	Airdrie	28.2	2008-2009	Under construction. Bird Construction. Phase 2 adds indoor soccer fields, fitness centre, running track and gymnastics centre.
City of Brooks	Lakeside Leisure Centre Phase 3 (New Arena)	Newell County	19.9	2008-2009	Under construction. Scott Builders.
City of Calgary	Devonian Gardens Upgrades	Calgary	40.0		Proposed. Gardens closed end of August 2008 for approximately 18 months.
City of Calgary	Recreation Facility Southwest	Calgary	70.0		Proposed. Possible locations Quarry Park, Seton and Shepherd.
City of Calgary	New Regional Recreation Centres in City's Northeast (Saddleridge), Southeast and Northwest	Calgary	210.0		Proposed. Part of city's ten - year infrastructure plan.
City of Calgary	Addition of One Ice Sheet to Centennial Arena	Calgary	17.0		Proposed for 2009 - 2010. Planned construction start early 2009.
City of Calgary	Brighton Athletic Park (four soccer fields)	Calgary	8.0		Proposed. Part of city's ten - year infrastructure plan (2008 - 2017)
City of Calgary	Nose Hill Park Upgrades	Calgary	6.8	2007-2009	Under construction
City of Calgary	Central Memorial Park Restoration	Calgary	36.5	-2008	Under construction (phase 1)
City of Calgary	New Roof for Talisman Centre	Calgary	39.4	2008-2009	Nearing completion. Dominion Construction.
City of Calgary	Ralph Klein Park Restoration	Calgary	32.0	2008-2009	Announced. Tender call for educational building early in 2009. Planned building construction start spring 2009.
City of Calgary	Memorial Drive Landscape of Memory Project	Calgary	31.5	2008-2009	Under construction
City of Calgary	One Ice Surface, Trico Centre for Family Wellness (formerly Family Leisure Centre)	Calgary	19.5	2008-2009	Under construction. Ledcor Construction.
City of Calgary	Westside Recreation Centre Expansion	Calgary	32.0	2008-2010	Under construction. Devitt & Forand.
City of Calgary / Calgary Olympic Development Association	Quad Ice Arena (Four Surfaces)	Calgary	20.0		Proposed. Part of city's ten - year infrastructure plan (2008 - 2017)
City of Calgary / Calgary Soccer Federation	FIVE ARTIFICIAL TURF SOCCER FIELDS	Calgary	11.0		Proposed
City of Calgary / Imperial Oil	Development of Lynnview Ridge as Parkland, Golf Course	Calgary	22.0		Proposed. Possible start 2009.
City of Calgary / South Fish Creek Recreation Association	Two Ice Surfaces	Calgary	14.0		Proposed. Part of city's ten - year infrastructure plan (2008 - 2017)

City of Calgary / YMCA / Martindale Community Association / United Way / Genesis Land Development Corp.	Genesis Centre of Community Wellness	Calgary	120.0	Proposed for 2009 - 2011.
City of Edmonton	Attached Arena for Southwest Community Rec Centre	Edmonton	53.7	Proposed. Stuart Olson.
City of Edmonton	Recreation Centre, Commonwealth Stadium	Edmonton	68.0	Proposed for 2009 - 2011. Part of the project ($40M fieldhouse) approved by city council July 2008.
City of Edmonton	Art Gallery of Alberta Re-development	Edmonton	88.0 2007-2009	Under construction. Ledcor Construction.
City of Edmonton	Fred Broadstock Pool Renovations	Edmonton	7.4 2008-2009	Under construction. Jen - Col Construction.
City of Edmonton	Fieldhouse, St. Francis Xavier School	Edmonton	17.6 2008-2009	Under construction. Jen - Col Construction.
City of Edmonton	Outdoor Pool, Kinsmen Park (Replacement for Queen Elizabeth Pool)	Edmonton	5.5 2008-2009	Under construction. Jen - Col Construction.
City of Edmonton	Southwest Community Recreation Centre, Terwilligar	Edmonton	160.1 2008-2010	Under construction. Stuart Olsen.
City of Edmonton	Multisport Tournament and Recreation Site	Edmonton	7.0 2009	Announced
City of Fort Saskatchewan	WEST END CAMPGROUND	Fort Saskatchewan	5.2	Proposed
City of Grande Prairie	LEISURE CENTRE RENOVATIONS	Grande Prairie	10.0	Proposed
City of Grande Prairie	PRAIRIE ART GALLERY RESTORATION	Grande Prairie	5.0	Proposed
City of Grande Prairie	Dave Barr Arena Expansion	Grande Prairie	7.0	Proposed for 2011
City of Grande Prairie	Canada Games Arena Expansion	Grande Prairie	27.0	Proposed in three - year budget plan (2008 - 2010)
City of Grande Prairie	Aquatics and Wellness Multiplex	Grande Prairie	98.1 2009-2011	Announced. Wright Construction western Inc. Part of the Community Knowledge Campus.
City of Leduc	Enhanced Recreation Facility	Leduc	47.5 2008-2009	Under construction. PCL Construction. Twin ice arena, indoor walking track, fieldhouse and recreation amenities.
City of Lethbridge	Community Arts Centre	Lethbridge	9.2	Proposed
City of Lethbridge	ENMAX Centre Renovations / Expansion	Lethbridge	33.7 2009-2011	Announced. Possible construction start April 2009.
City of Medicine Hat	Replacement Facility for Medicine Hat Arena (New Event Centre / Arena Complex), Box Springs Business Park	Medicine Hat	108.0	Proposed
City of Red Deer	Red Deer Museum and Art Gallery / Archives Storage	Red Deer	17.2	Proposed in five year capital plan (2007 - 2011)
City of Red Deer	Red Deer Museum and Art Gallery / Archives Renovations	Red Deer	13.3 -2008	Announced
City of Red Deer	GH Dawe Community Centre Upgrades and Renovations	Red Deer	28.0 2008-2010	Under construction. Timcon Construction.
City of St. Albert	Redevelopment Red Willow Park West	St. Albert	11.0	Proposed
City of St. Albert	Riel Park Reclamation	St. Albert	10.2 2008-2011	Announced. Phase 1 nearing completion.
City of Wetaskiwin / County of Wetaskiwin	MULTI - USE FACILITY	Wetaskiwin / County of Wetaskiwin	9.0	Proposed
Coast Hotels and Resorts	Renovations to Coast Lethbridge Hotel and Conference Centre (formerly El Rancho Hotel)	Lethbridge	5.5 2008-2009	Announced
Cranston Residents Association	Recreation Facility	Calgary	5.2	Proposed
Dolemo Developments	'Edworthy Club' Health Club	Calgary	1,000.0	Proposed. Spa, squash courts, hockey rinks, movie theatre and condo hotel.
Eagle Ridge Resort Group	Eagle Ridge at Cougar Rock Resort	Yellowhead County (W of Hinton)	2,000.0 -2008	Under construction (golf course).
Edmonton Korean Community Foundation	Recreation and Community Cultural Centre	Edmonton	8.0	Proposed
Edmonton Volleyball Centre / Edmonton Grads Basketball Centre / Ortona Gymnastics Club	GO Community Centre Court Sports Complex	Edmonton	36.0	Proposed for U of A south campus. Fundraising underway.
Focus Hotels	Travelodge Hotel	Airdrie	6.5 2008	Under construction
Fort Calgary Preservation Society	Fort Calgary Restoration and Expansion	Calgary	33.0	Proposed. Fundraising underway.
Kinosoo Ridge Snow Resort	New Chalet (Ski Lodge)	MD of Bonnyville	6.6 2009-2010	Announced. On hold til January 2009.
Lac la Biche County	MULTIPLEX	Lac la Biche County (Lac la Biche)	57.0	Proposed. Clark Builders. Four options under consideration, ranging from $57M to $68M. Plebiscite to be held March 2.

Marmot Basin Ski Resort	NEW CHAIRLIFT	Jasper National Park	8.0 2009	Announced
Marmot Basin Ski Resort	New Chairlift	Jasper National Park	8.0 2009	Announced
Mayfield Hospitality	Hotel and Convention Centre	Medicine Hat	25.0	Proposed
MD of Rocky View	Recreation Facility, Bow North Recreation District	MD of Rocky View (Langdon)	20.0	Proposed. Two phases. To be built in conjunction with proposed high school.
MD of Rocky View / Bow Valley Agricultural Society	Additional Ice Surface, Indus Recreation Centre	MD of Rocky View	5.0	Proposed for 2008 - 2009
Non Contact Hockey League	QPLEX Hockey Arena	MD of Foothills (Shepard)	16.0	Proposed. In initial planning stages.
Northern Properties Corp.	Sandman Hotel and Suites Calgary South, Deerfoot Meadows	Calgary	8.8 2008-2009	Under construction.
Northlands Park	Facility Re-Development (Project Evolution .09)	Edmonton	146.0 2007-2009	Under construction. Clark Builders. New exposition centre.
Olds Agricultural Society	'Gateway Centre' Multi - Phase Facility Expansion	Olds	16.0	Proposed. Plans include a community convention centre and two agricultural facilities.
Pipestone Creek Dinosaur Bed Project Committee	River of Death and Discovery Dinosaur Centre (previously listed as Pipestone Creek Dinosaur Interpretive Centre)	County of Grande Prairie	37.2	Proposed. Planned opening in 2010.
Ramada Conference Centre Edmonton	Renovations	Edmonton	8.0 2008-2009	Under construction. Phase 1 finished.
Regional Municipality of Wood Buffalo	JUBILEE CENTRE RENOVATIONS	RM of Wood Buffalo (Fort McMurray)	23.0	Proposed for 2009
Regional Municipality of Wood Buffalo	Birchwood Trail Rehabilitation between Thickwood and Timberlea	RM of Wood Buffalo (Fort McMurray)	5.3	Proposed
Regional Municipality of Wood Buffalo	MacDonald Island C.A. Knight Park Recreation Complex	RM of Wood Buffalo (Fort MCMurray)	170.0 2006-2009	Under construction. Stuart Olsen. Will include ice surfaces, aquatics centre, playing fields and library.
River Valley Alliance	Capital Region River Valley Park	Leduc County to Fort Saskatchewan	605.0	Proposed
RM of Wood Buffalo	Redevelopment of Archie Simpson Arena	RM of Wood Buffalo (Fort Chipewyan)	17.6 2008-2009	Under construction
Rocky Mountain Turf Club	'Alberta Downs' Racing Entertainment Centre	Lacombe County	8.0 2007-2009	Under construction
Rotary Club of Fort McMurray	Recreation Centre, Saline Creek	RM of Wood Buffalo (Fort McMurray)	30.0	Proposed. Estimated cost $30M to $40M.
Royal Glenora Club	Aquatic Centre Redevelopment	Edmonton	16.0 2008-2011	Under construction. Clark Builders.
Service Plus Inns and Suites	Hotel / Motel	Calgary	8.7 2008-2009	Under construction
Spray Lake Sawmill Recreation Park Society	Phase 3 of Sports Centre Development	Cochrane	12.5 2008-2009	Under construction. Scott Builders. Addition includes two new ice arenas and expanded indoor soccer pitch.
Springbank Hill Community Association / Paddle Association of Canada	Multi - Use Recreation Facility / Community Centre	Calgary	18.0	Proposed. Feasibility assessment underway.
Stone Creek Properties Inc.	'Village at Stone Creek' Ccommercial and Residential Development	Canmore	1,500.0	Proposed. Phase 1 planned for 2009 - 2012. Completion of all phases over 10 to 20 years.
Stoney Nakoda First Nation / Mini Thni Casino Corp.	Nakoda Entertainment Resort (Casino and Hotel Development)	Stoney Indian Reserve	65.0 2006-2009	Nearing completion. PCL Construction.
Telus World of Science	New Theatre (Digital Visualization Theatre)	Edmonton	20.0	Proposed. Pending funding. Planned completion in 2009.
Temple REIT	Refurbishment Capri Centre as Sheraton	Red Deer	8.0 2009	Announced
The Friends of Medalta Society	Medalta Site Restoration, Historic Clay District	Medicine Hat	7.5	Proposed. Completion in 2010.
The Titan Entertainment Group Inc.	'The Titan Project' Entertainment Venue	MD of Rocky View	40.0	Proposed for 2009 - 2010.
Town of Banff	Joint Recreation and Community Centre	Banff	44.0	Proposed for 2009 - 2011. Estimated cost range from $44M to $82M.
Town of Beaumont	New Community Centre	Beaumont	7.0	Proposed
Town of Beaumont	S & D International Group Aquatic and Fitness Complex	Beaumont	14.8 2008-2009	Under construction.
Town of Canmore	Multiplex Facility	Canmore	45.0	Proposed. Option A could include library, daycare, aquatics facility and community space. Option B similar to A, provides additional funding to the Lamphouse. Option C multiplex includes Lamphouse and replaces the aquatics centre at the rec centre.

APPENDIX D: BORDER CROSSING & AADT HISTORICAL DATA

Table 70: AADT at Border Crossings

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Raymond	500	360	450	320	430	820	360	550	555	560	260	250
Whitetail	10	35	60	50	40	50	40	33	27	20	30	30
Scobey	60	60	60	60	150	110	100	170	110	50	40	60
Opheim	40	40	30	100	50	75	100	80	55	30	40	50
Morgan	50	80	80	110	105	100	80	70	80	80	20	50
Turner	0	130	60	100	90	60	50	60	60	60	60	60
Willow Creek	30	20	20	30	40	40	45	50	50	50	50	40
Wild Horse	90	120	150	90	120	170	205	240	110	110	110	130
Whitlash	30	0	30	50	50	0	50	50	40	0	0	10
Sweet Grass	1830	2200	2570	2160	2630	2510	2340	3010	2070	2120	1940	1890
Total	2640	3045	3510	3070	3705	3935	3370	4313	3157	3080	2550	2570

Source: MDT 2009a

Table 71: Truck AADT at Border Crossings

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Raymond	93	85	73	80	80	80	92	106	106	128	108	110
Whitetail	0	9	9	9	9	9	9	9	9	9	6	2
Scobey	39	39	39	24	31	35	35	35	35	35	35	5
Opheim	8	8	4	13	7	17	10	11	11	11	2	6
Morgan	27	27	27	17	17	17	20	16	15	15	15	4
Turner	0	24	24	24	24	24	24	24	24	24	24	3
Willow Creek	0	6	6	6	6	6	6	6	6	6	6	0
Wild Horse	0	25	0	0	0	25	25	25	25	25	25	17
Whitlash	0	0	0	0	0	0	0	0	0	0	0	0
Sweet Grass	0	727	793	857	844	771	771	898	771	771	721	662
Total	167	950	975	1030	1018	984	992	1130	1002	1024	942	809

Source: MDT 2009a

Table 72: AADT at Connecting Route

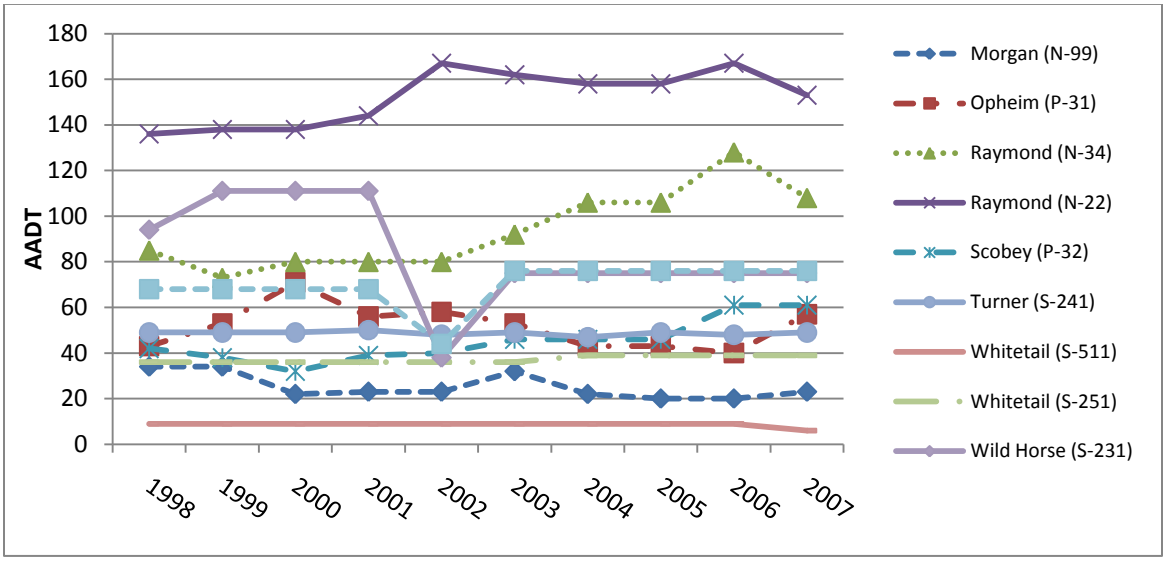
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Morgan (N-99)	277	242	250	246	245	252	245	273	273	273
Opheim (P-31)	382	368	432	355	445	371	330	331	332	359
Raymond (N-34)	565	653	533	640	863	643	845	845	845	740
Raymond (N-22)	1858	1985	1841	1751	1901	1627	2098	2094	1864	1774
Scobey (P-32)	756	890	625	778	826	825	864	772	653	723
Sweet Grass (I-15)	2136	2276	2334	2577	2410	2613	3057	2418	2472	2322
Turner (S-241)	484	380	485	512	452	386	411	396	396	382
Whitetail (S-511)	171	236	186	172	212	186	192	198	204	122
Whitetail (S-251)	135	157	158	173	213	199	169	169	170	165
Wild Horse (S-231)	990	1192	1181	1117	1208	1200	1261	1261	1114	1083
Willow Creek (S-233)	922	1124	1144	1076	1134	1109	1153	1090	1094	1063
Total	8674	9502	9170	9397	9908	9410	10624	9848	9417	9007

Source: MDT 2009a

Table 73: Truck AADT at Connecting Route

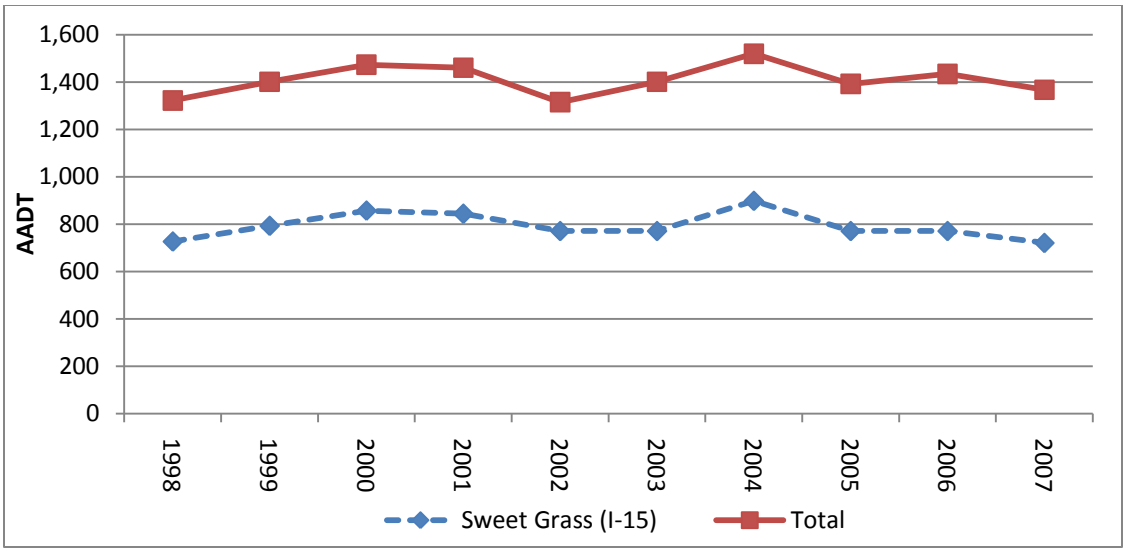
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Morgan (N-99)	34	34	22	23	23	32	22	20	20	23
Opheim (P-31)	43	53	71	56	58	53	43	43	40	57
Raymond (N-34)	85	73	80	80	80	92	106	106	128	108
Raymond (N-22)	136	138	138	144	167	162	158	158	167	153
Scobey (P-32)	42	38	32	39	40	46	46	46	61	61
Sweet Grass (I-15)	727	793	857	844	771	771	898	771	771	721
Turner (S-241)	49	49	49	50	48	49	47	49	48	49
Whitetail (S-511)	9	9	9	9	9	9	9	9	9	6
Whitetail (S-251)	36	36	36	36	36	36	39	39	39	39
Wild Horse (S-231)	94	111	111	111	38	75	75	75	75	75
Willow Creek (S-233)	68	68	68	68	44	76	76	76	76	76
Total	1322	1401	1473	1460	1315	1401	1519	1392	1434	1367

Source: MDT 2009a



Source: MDT 2009a

Figure 147: Truck AADT by Connecting Highway (excluding Sweet Grass)



Source: MDT 2009a

Figure 148: Truck AADT by Connecting Highway: Sweet Grass and Total

Table 74: Export Value by All Modes 2007, in thousands of dollars

	Canada		Alberta		Saskatchewan		British Columbia	
Port/District Description	Value	Volume	Value	Volume	Value	Volume	Value	Volume
Raymond - MT	$88,642		$10,335		$75,083		$1,635	
Great Falls - MT	$11,570		$6,261		$633		$3,811	
Butte - MT	$559		$207		$0		$219	
Turner - MT	$2,261		$403		$1,849		$9	
Scobey - MT	$3,328		$0		$1,223		$2,105	
Sweet Grass - MT	$6,765,930		$6,360,102		$76,276		$82,699	
Whitetail - MT	$795		$429		$298		$67	
Piegan - MT	$4,026		$3,983		$0		$10	
Opheim - MT	$3,125		$245		$2,880		$0	
Roosville - MT	$11,835		$314		$0		$11,401	
Morgan - MT	$34,968		$33,375		$1,591		$3	
Whitlash - MT	$36		$28		$0		$0	
Del Bonita - MT	$5,672		$5,631		$0		$27	
GREAT FALLS - MT	$117,314		$78,096		$768		$6,836	
Exports	$7,050,060		$6,499,409		$160,601		$108,822	

Source: BTS 2008

Table 75: Import Value by All Modes 2007, in thousands of dollars

	Canada		Alberta		Saskatchewan		British Columbia	
Port/District Description	Value	Volume	Value	Volume	Value	Volume	Value	Volume
Raymond - MT	$313,339	461,226	$35,784	32,653	$254,077	398,214	$757	773
Great Falls - MT	$5,946,916	5,134,266	$5,938,231	5,134,202	$8,652	0	$20	62
Butte - MT	$0	0	$0	0	$0	0	$0	0
Turner - MT	$4,463	3,142	$151	427	$3,964	2,273	$115	0
Scobey - MT	$1,046	2,652	$578	1,651	$468	1,001	$0	0
Sweet Grass - MT	$6,927,346	8,370,184	$6,000,716	7,378,704	$186,604	3,679	$41,071	423
Piegan - MT	$107,115	198,216	$106,996	198,140	$0	0	$6	0
Opheim - MT	$729	2,151	$206	727	$406	7,112	$10	0
Roosville - MT	$81,640	209,609	$16,118	41,710	$599	0	$64,358	0
Morgan - MT	$1,506	7,357	$161	245	$1,344	0	$0	0
Whitlash - MT	$60,084	3,350	$60,068	3,349	$0	0	$0	0
Del Bonita - MT	$5,434	2,631	$2,062	2,318	$0	0	$0	0
Wild Horse - MT	$758,311	1,814,025	$757,038	1,811,710	$314	1,883	$0	0
Kalispell Airport - MT	$23	5	$0	0	$0	0	$0	0
GREAT FALLS - MT	$38,248	63	$2,740	5	$1	0	$1,777	1
Imports	**$14,246,199**	**16,208,877**	**$12,920,850**	**14,605,841**	**$456,429**	**414,162**	**$108,113**	**1259**

Source: BTS 2008

Table 76: Imports from Alberta in Truck Tons

Port/District Description	2000	2001	2002	2003	2004	2005	2006	2007
Raymond - MT	10,179	6,077	4,861	8,442	13,417	10,103	10,723	32,653
Great Falls - MT	178	645	5	0	16	186	1	12,523
Butte - MT	0	0	9	0	0	0	1	0
Turner - MT	380	148	268	329	0	5	569	427
Scobey - MT	72	607	196	1,675	651	2,020	1,434	1,651
Sweet Grass - MT	1,980,493	2,088,466	2,136,100	1,694,130	1,630,832	1,727,328	1,887,036	2,449,931
Piegan - MT	81,022	56,503	19,328	22,485	120,547	37,253	26,658	42,240
Opheim - MT	760	551	521	970	854	2,407	759	727
Roosville - MT	224,283	115,423	108,362	97,979	115,301	63,792	49,328	41,710
Morgan - MT	4,607	3,172	4,245	1,628	687	804	260	245
Whitlash - MT	5,447	5,815	5,481	4,433	3,875	3,088	2,242	3,349
Del Bonita - MT	9,140	10,656	7,444	4,892	2,032	533	9,489	2,318
Wild Horse - MT	0	45,028	57,298	61,687	55,246	171,373	71,099	68,726
Total	**2,316,561**	**2,333,091**	**2,344,118**	**1,898,650**	**1,943,458**	**2,018,892**	**2,059,599**	**2,656,500**

Source: BTS 2008

Table 77: Imports from Alberta in Truck Value (thousands of dollars)

Port/District Description	2000	2001	2002	2003	2004	2005	2006	2007
Raymond - MT	3,391	6,981	5,208	3,262	7,530	13,441	15,464	6,186
Great Falls - MT	2,401	2,382	1,600	771	1,226	3,070	4,638	4,110
Butte - MT	2,449	272	4	174	-	90	88	88
Turner - MT	32	11	10	6	-	54	60	226
Scobey - MT	-	117	-	-	25	353	-	-
Sweet Grass - MT	3,004,464	3,301,712	2,891,309	3,144,559	3,535,017	4,295,040	5,356,997	5,642,904
Whitetail - MT	-	49	191	848	83	1,837	55	429
Piegan - MT	3,739	1,140	1,067	1,240	1,761	2,771	2,568	3,906
Opheim - MT	52	20	-	-	-	7	-	219
Roosville - MT	215	428	429	38	40	27	71	314
Morgan - MT	313	29	44	110	6	100	81	113
Whitlash - MT	220	49	59	152	8	302	5	6
Del Bonita - MT	3,682	1,327	649	800	840	1,201	5,185	5,631
Total	**3,020,957**	**3,314,516**	**2,900,568**	**3,151,959**	**3,546,535**	**4,318,294**	**5,385,211**	**5,664,133**

Source: BTS 2008

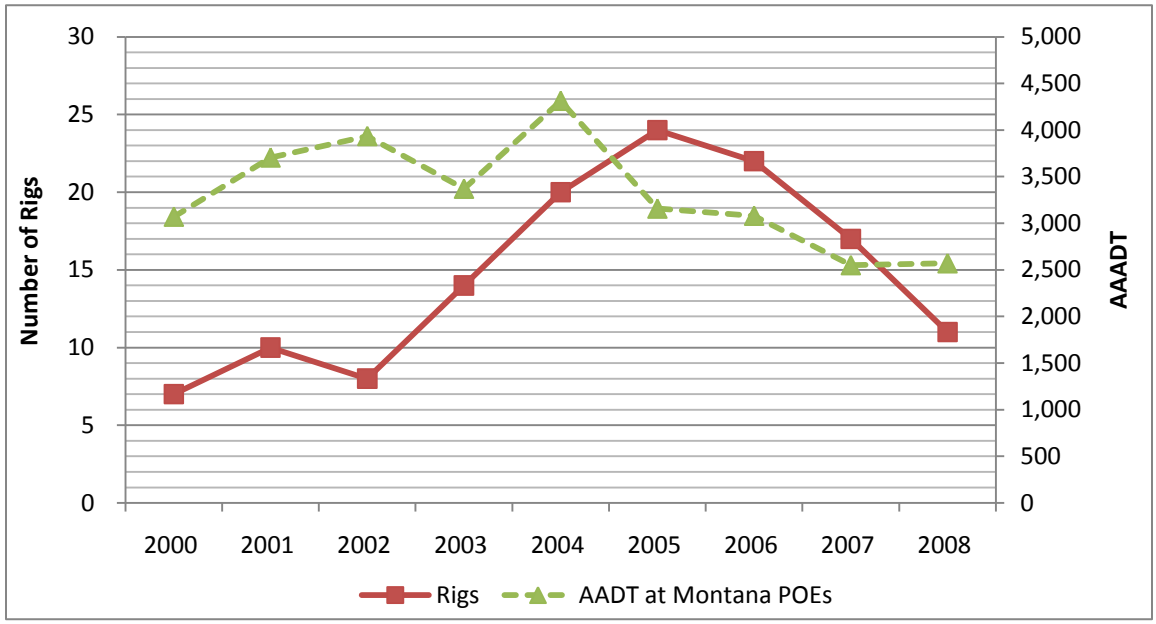
Table 78: Annual Traffic Growth (AADT) at Connecting Highways

Border	Signed Route	1999	2000	2001	2002	2003	2004	2005	2006	2007
Morgan	US 191	-13%	3%	-2%	0%	3%	-3%	12%	0%	0%
Opheim	MT-24	-4%	17%	-18%	25%	-17%	-11%	0%	0%	8%
Raymond	MT-16	15%	-18%	20%	35%	-26%	32%	0%	0%	-12%
Raymond	MT-16	7%	-7%	-5%	9%	-14%	29%	0%	-11%	-5%
Scobey	MT-13	18%	-30%	24%	6%	0%	5%	-11%	-15%	11%
Sweet Grass	I-15	7%	3%	10%	-6%	8%	17%	-21%	2%	-6%
Turner	S-241	-21%	28%	5%	-12%	-14%	6%	-4%	0%	-4%
Whitetail	S-511	38%	-21%	-8%	23%	-12%	3%	3%	3%	-40%
Wild Horse	S-232	20%	-1%	-5%	8%	-1%	5%	0%	-12%	-3%
Willow Creek	S-233	22%	2%	-6%	5%	-2%	4%	-5%	0%	-3%

Source: MDT 2009a

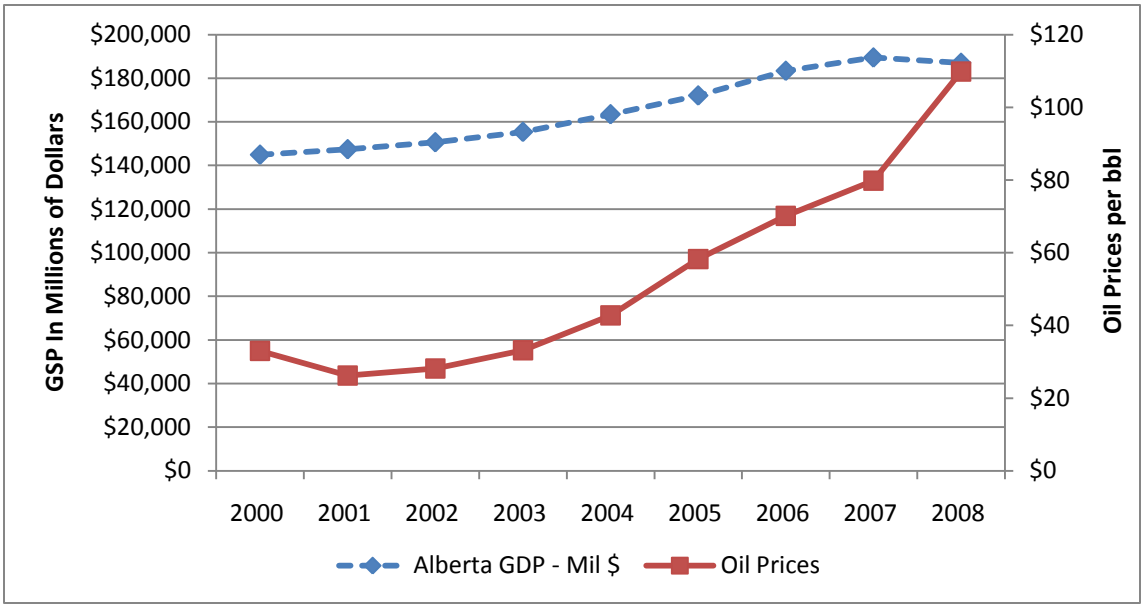
APPENDIX E: DETERMINANTS OF TRAFFIC GROWTH

A number of factors contribute to traffic growth along Northern Montana's highways and Points of Entry (POEs) including oil & gasoline prices as well as the number of active oil rigs generating oil from Montana. A trend analysis of these variables indicates a positive relationship between the number of oil rigs under active production and traffic volumes at Northern Montana's border crossing and roadways (Figure 149). For example, the number of oil rigs peaked at 20 or more rigs from 2004 to 2006, while the highest border crossing volumes was in 2004 and has decreased since then consistent with the drop in oil rigs from 2005 to 2008. Additionally, the connection between oil prices and the Alberta economy can be seen in Figure 150. This relationship can also be seen in the modal share of traffic from Alberta (Table 79), as pipeline has the largest modal share, followed by truck and then rail (BTS 2008).



Source: MDT 2009a & Baker Hughes 2009

Figure 149: Number of Active Montana Oil Rigs and Traffic Volumes at Montana POEs



Source: EIA 2008 & BEA 2009c, Regional Economic Accounts

Figure 150: Oil Prices per barrel (bbl) vs Alberta GDP – All 2002 Real Dollars

Table 79: Modal Share of Traffic from Alberta

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Rail	11%	10%	10%	11%	12%	13%	11%	11%	11%	10%
Truck	20%	20%	20%	19%	17%	15%	15%	15%	18%	18%
Pipeline	69%	70%	70%	70%	71%	72%	73%	74%	70%	72%

Source: BTS 2008

APPENDIX F: RISK ANALYSIS FRAMEWORK

Economic forecasts traditionally take the form of a single "expected outcome" supplemented with alternative scenarios. The limitation of a forecast with a single expected outcome is clear – while it may provide the single best statistical estimate, it offers no information about the range of other possible outcomes and their associated probabilities. The problem becomes acute when uncertainty surrounding the forecast's underlying assumptions is material.

A common approach is to create "high case" and "low case" scenarios to bracket the central estimate. This scenario approach can exacerbate the problem of dealing with risk because it gives no indication of likelihood associated with the alternative outcomes. The commonly reported "high case" may assume that most underlying assumptions deviate in the same direction from their expected value, and likewise for the "low case." In reality, the likelihood that all underlying factors shift in the same direction simultaneously is just as remote as that of everything turning out as expected.

Another common approach to providing added perspective on reality is "sensitivity analysis." Key forecast assumptions are varied one at a time in order to assess their relative impact on the expected outcome. A problem here is that the assumptions are often varied by arbitrary amounts. A more serious concern with this approach is that, in the real world, assumptions do not veer from actual outcomes one at a time. It is the impact of simultaneous differences between assumptions and actual outcomes that is needed to provide a realistic perspective on the riskiness of a forecast.

Risk Analysis provides a way around the problems outlined above. It helps avoid the lack of perspective in "high" and "low" cases by measuring the probability or "odds" that an outcome will actually materialize. This is accomplished by attaching ranges (probability distributions) to the forecasts of each input variable. The approach allows all inputs to be varied simultaneously within their distributions, thus avoiding the problems inherent in conventional sensitivity analysis. The approach also recognizes interrelationships between variables and their associated probability distributions.

The Risk Analysis Process involves four parts:

Part 1. Define the structure and logic of the forecasting problem;

Part 2. Assign estimates and ranges (probability distributions) to each variable and forecasting coefficient in the forecasting structure and logic;

Part 3. Engage experts and stakeholders in assessment of model and assumption risks (the "RAP Session"); and

Part 4. Issue forecast risk analysis results.

Part 1: Define Structure and Logic of the Forecasting Problem

A "structure and logic model" depicts the variables and cause and effect relationships that underpin the forecasting problem at-hand (Figure 151). Although the structure and logic model is written down mathematically to facilitate analysis, it is also depicted graphically in order to permit stakeholder scrutiny and modification in Part 3 of the process.

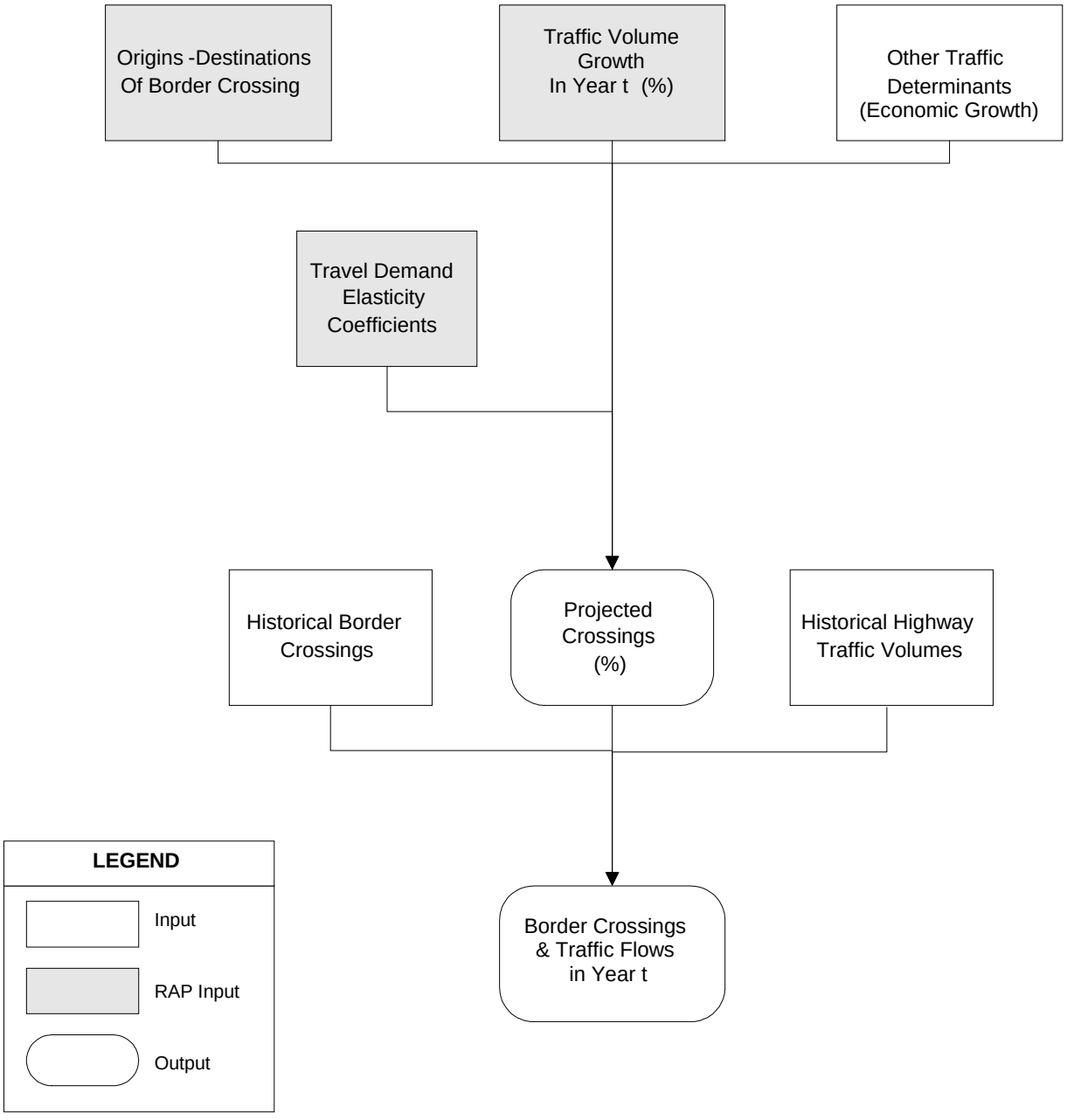


Figure 151: Example of a Structure and Logic Model

Part 2: Assign Central Estimates and Conduct Probability Analysis

Each variable is assigned a central estimate and a range (a probability distribution) to represent the degree of uncertainty. Special data sheets are used (see Table 80) to record input from panelists. The first column gives an initial median (most likely) estimate while the second and third columns define an uncertainty range representing an 80 percent confidence interval. This is the range within which there exists an 80 percent probability of finding the actual outcome. The greater the uncertainty associated with a forecast variable the wider the range.

Table 80: Example of Data Sheet for GDP Growth

Year	Median	10% Lower Limit	10% Higher Limit
2005-2010	2.5	1.7	3.4
2011-2020	2.0	1.5	4.1
2021-2028	1.8	1.0	4.7

Probability ranges are established on the basis of both statistical analysis and subjective probability. Probability ranges need not be normal or symmetrical – that is, there is no need to assume the bell shaped normal probability curve. The bell curve assumes an equal likelihood of being too low and being too high in forecasting a particular value. It might well be, for example, that if a projected growth rate deviates from expectations; circumstances are such that it is more likely to be higher than the median expected outcome than lower.

The RAP model transforms the ranges as depicted above into formal probability distributions (or "probability density functions"). This liberates the non-statistician from the need to appreciate the abstract statistical depiction of probability and thus enables stakeholders to understand and participate in the process whether or not they possess statistical training.

There are two sources for central estimates and probability ranges for each assumption in the forecasting structure and logic framework. The first is an historical analysis of statistical uncertainty in all variables and an error analysis of the forecasting "coefficients." Coefficients are numbers that represent the measured impact of one variable (say, income) on another (such as industrial production). While these coefficients can only be known with uncertainty, statistical methods help uncover the magnitude of such error (using diagnostic statistics such as "standard deviation," "standard error," "confidence intervals" and so on).

The uncertainty analysis outlined above is known in the textbooks as "frequentist" probability. The second line of uncertainty analysis employed in risk analysis is called "subjective probability" (also called "Bayesian" statistics, for the mathematician Bayes who developed it). Whereas a frequentist probability represents the measured frequency with which different outcomes occur (i.e., the number of heads and tails after thousands of tosses) the Bayesian probability of an event occurring is the degree of belief held by an informed person or group that it will occur. Obtaining subjective probabilities is the subject of Part 3.

Part 3: Conduct Expert Evaluation: The RAP Session

Part 3 involves the formation of an informed panel and the use of facilitation techniques to elicit risk and probability beliefs about:

A. The structure of the forecasting framework; and

B. Uncertainty attaching to each variable and forecasting coefficient within the framework.

In (A), the panel is invited to add variables and hypothesized causal relationships that may be material, yet missing from the model. In (B), panelists are engaged in a discursive protocol during which the frequentist-based central estimates and ranges, provided to panelists in advance of the session, are modified according to panelists' beliefs. For the meeting on July 23 in Helena, we covered both the structure and logic of the forecasting methods as well as evaluated the values of key forecast variables and the estimated ranges for each variable.

Part 4: Issue Risk Analysis

The final probability distributions are formulated by the risk analyst and represent a combination of "frequentist" and subjective probability information drawn from Part 3. These are combined using a statistical simulation technique (commonly known as Monte Carlo analysis) that allows each variable and forecasting coefficient to vary simultaneously according to its associated probability distribution (see Figure 152).

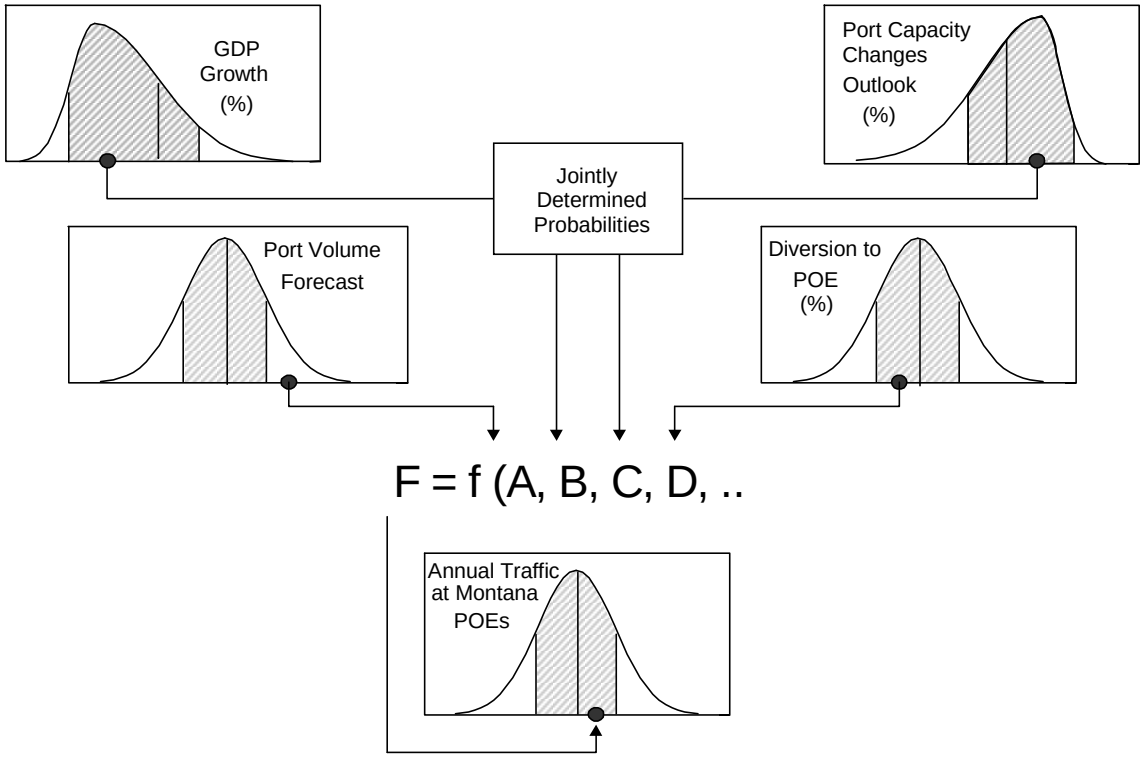


Figure 152: Combining Probability Distributions

The end result is a central forecast, together with estimates of the probability of achieving alternative outcomes given uncertainties in underlying variables and coefficients (see Figure 153 & Table 81).

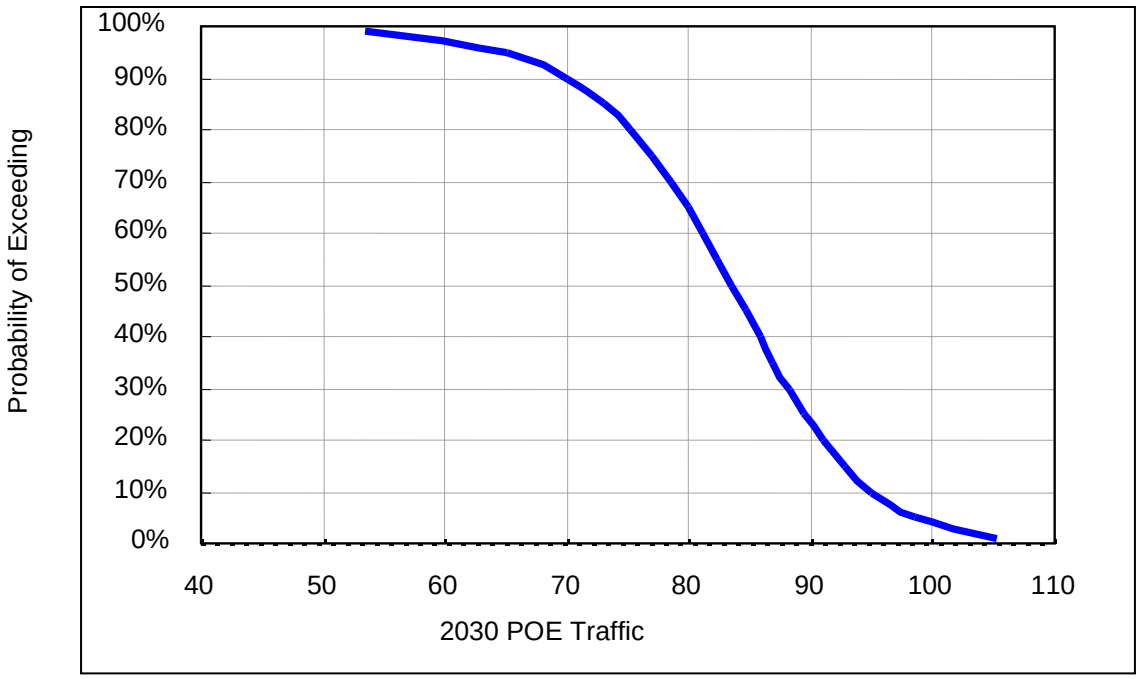


Figure 153: Example of Risk Analysis of Annual Average Daily Truck Traffic

Table 81: Example of Risk Analysis of Annual Average Daily Truck Traffic

Projected Traffic	Probability of Exceeding Value Shown at Left
105.3	0.01
98.4	0.05
94.9	0.10
91.0	0.20
88.2	0.30
85.8	0.40
83.5	0.50
81.2	0.60
78.5	0.70
75.2	0.80
71.3	0.90
65.0	0.95
53.5	0.99
82.9	Mean Expected Outcome

APPENDIX G: AADT FIGURES BY POE AND CONNECTING HIGHWAY

This section provides the average annual daily traffic projections at each of the nine POEs in the study area, as well as on the connecting highways to each.

6.5 Sweet Grass

Sweet Grass is a major POE, but has seen significant reduction in traffic since 2004. The forecasts for Sweet Grass indicate that a reasonable growth in traffic is expected over the next 20 years (Figure 154). Figure 155 and Figure 156 show the historical and forecast for truck and commercial auto traffic at Sweet Grass POE.

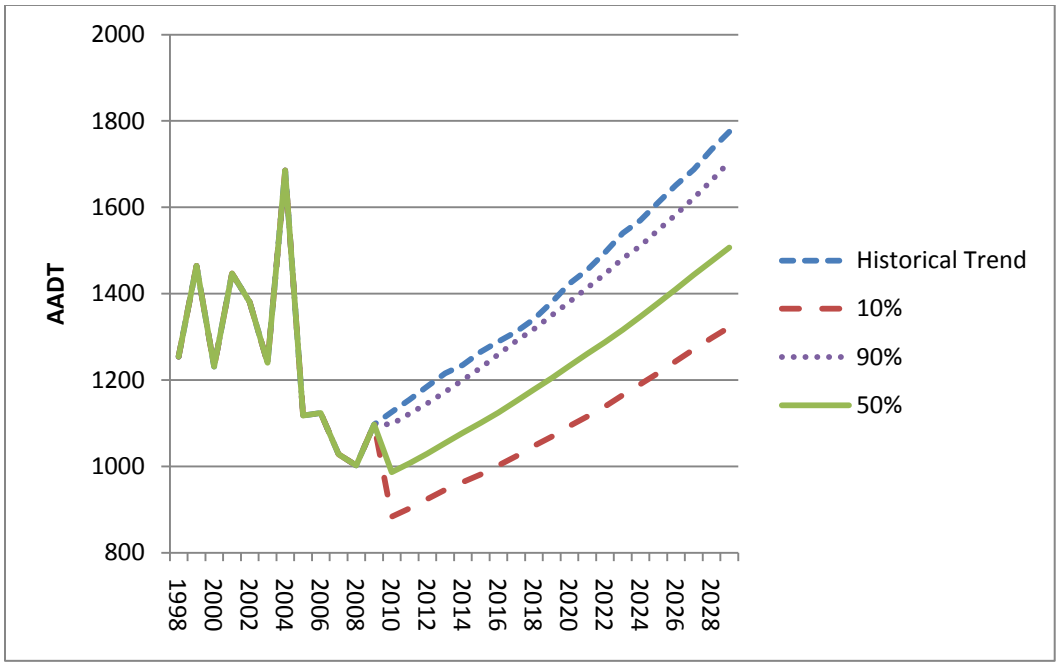


Figure 154: All AADT at Sweet Grass POE

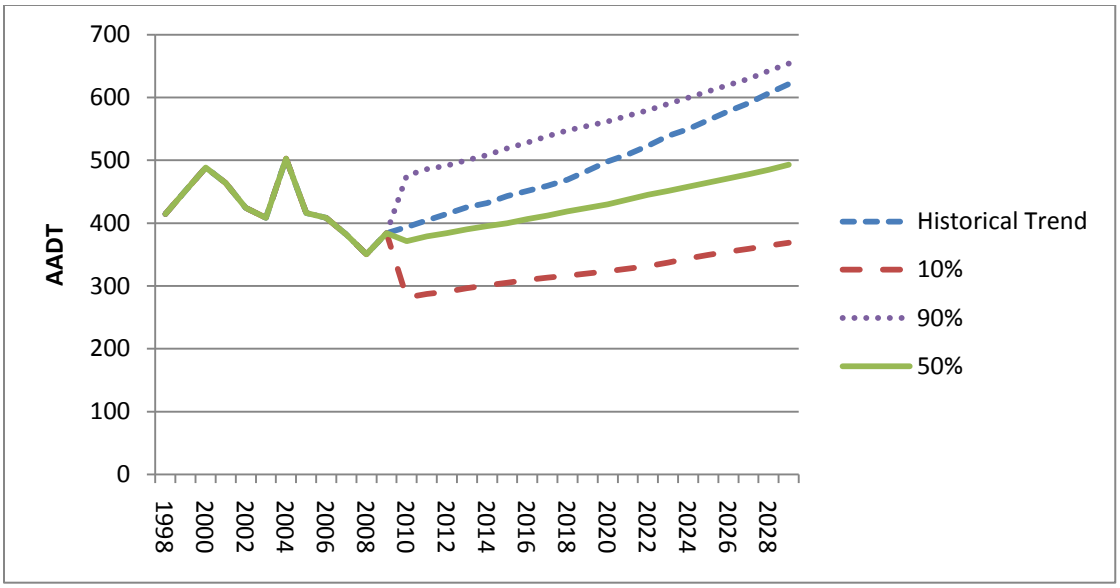


Figure 155: Truck AADT at Sweet Grass POE

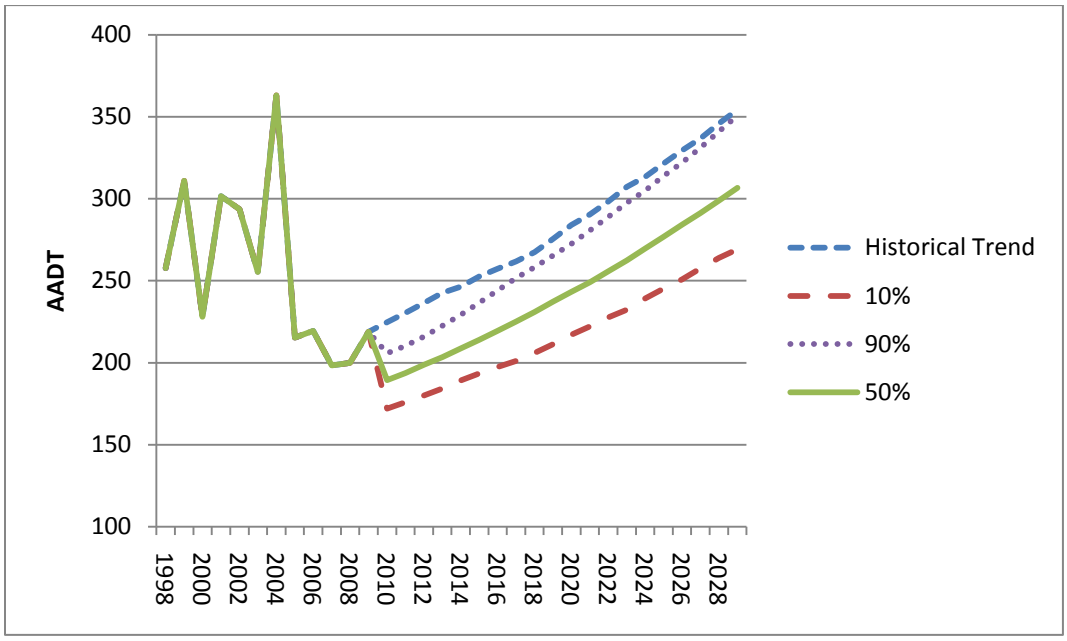


Figure 156: Commercial Auto AADT at Sweet Grass POE

Total traffic on highway I-15 corridor that connects to Sweet Grass is likely to remain steady over the next 20 years (Figure 157). Figure 158 and Figure 159 show that commercial auto and truck traffic are also expected to grow over the period.

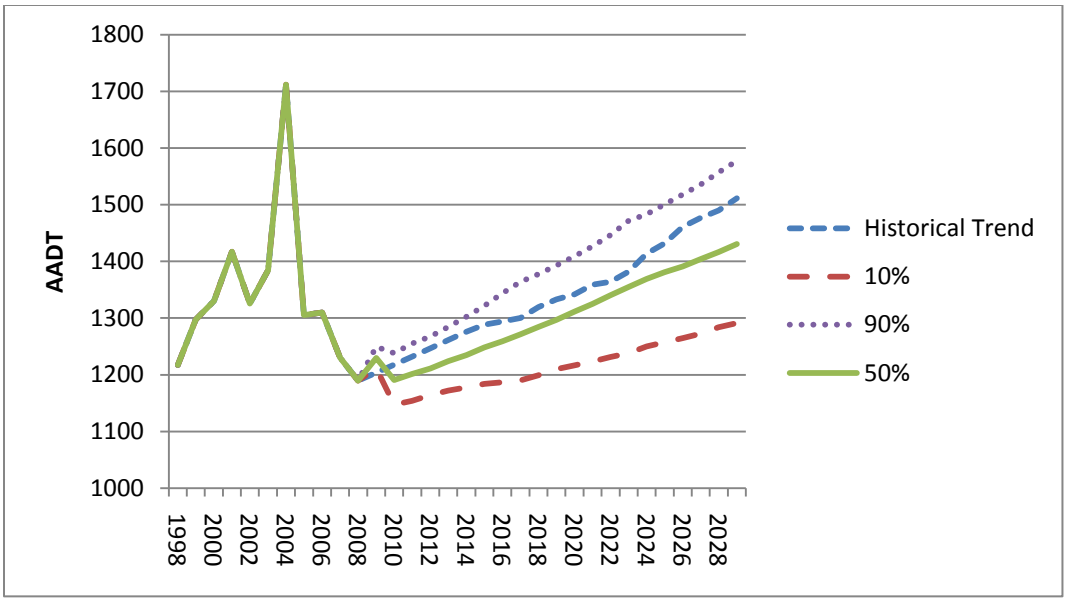


Figure 157: All AADT at Sweet Grass Connecting Highway: I-15

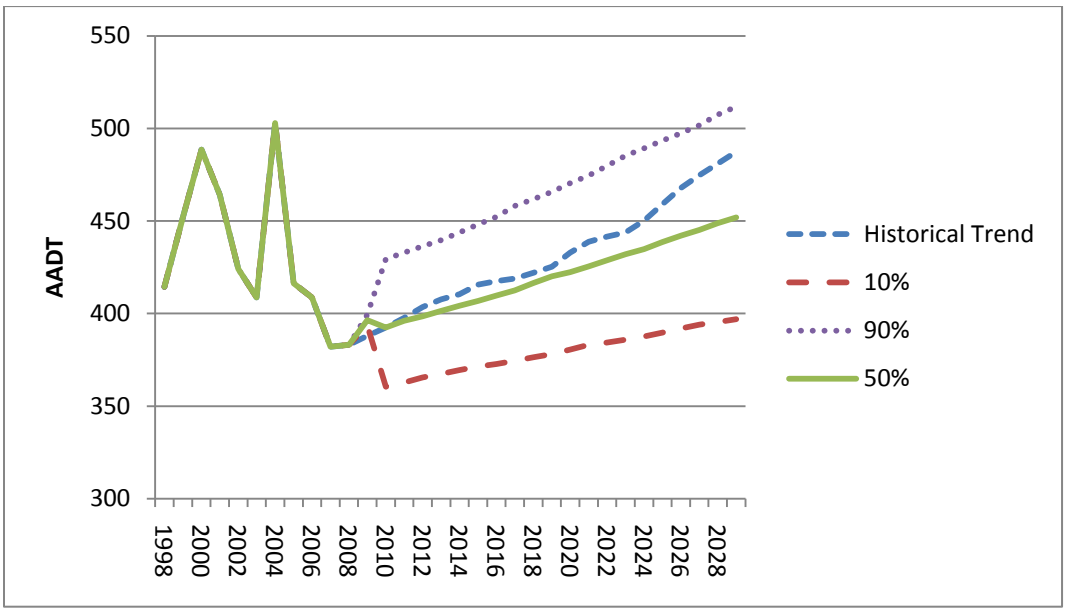


Figure 158: Truck AADT at Sweet Grass Connecting Highway: I-15

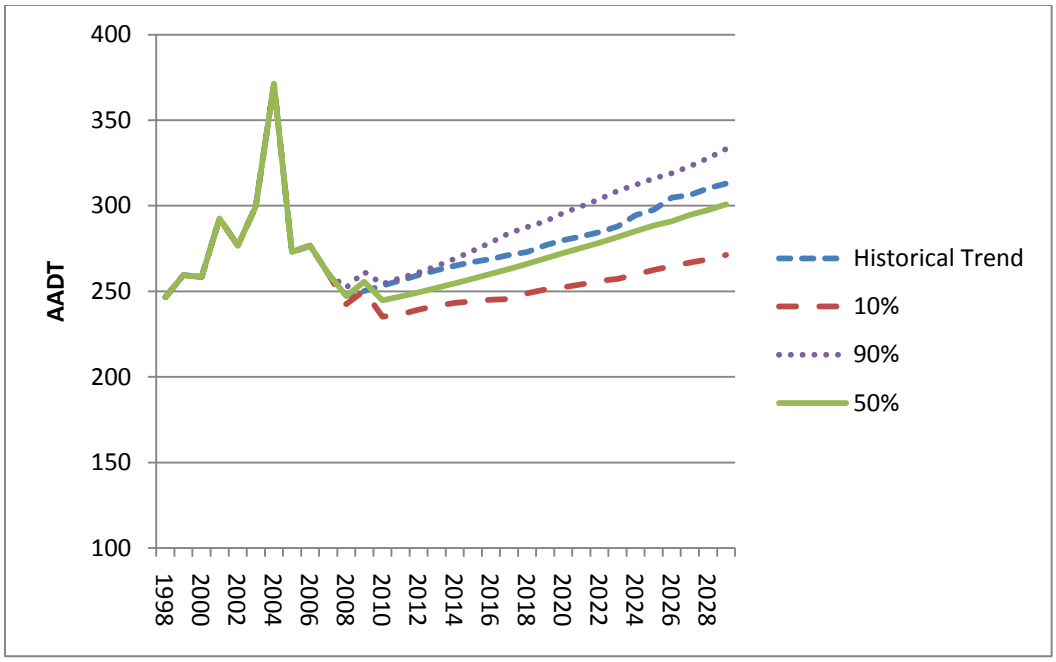


Figure 159: Commercial Auto AADT at Sweet Grass Connecting Highway: I-15

6.6 Wild Horse

Total traffic at Wild Horse POE has fluctuated significantly over the last 8 years (Figure 160). While the truck traffic at Wild Horse POE has remained fairly stable over the last 3 to 4 years (Figure 161), while the commercial auto has plunged, as seen in Figure 162.

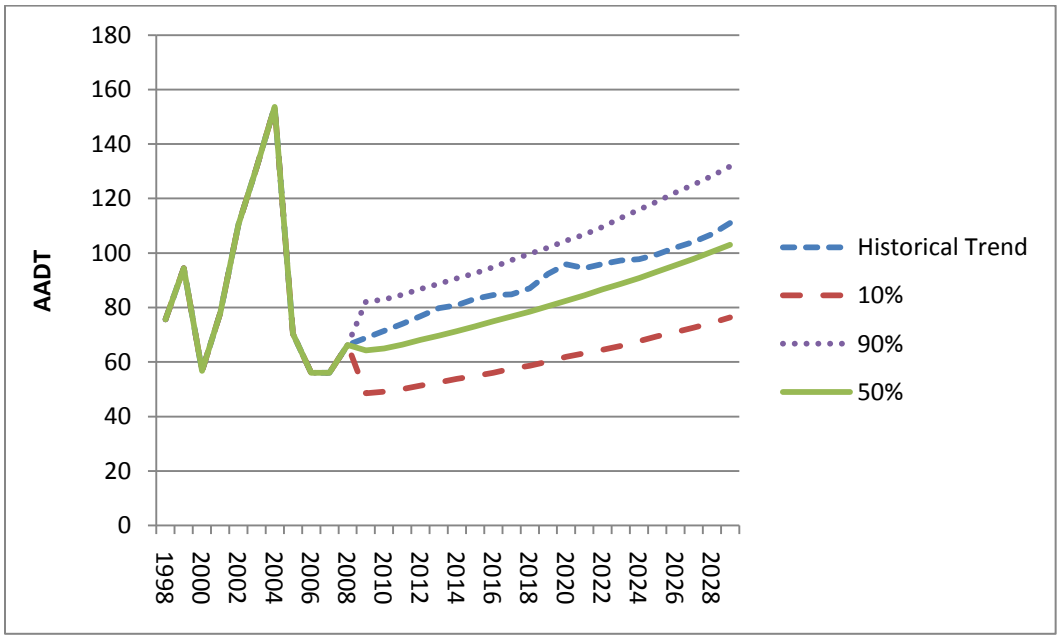


Figure 160: All AADT at Wild Horse POE

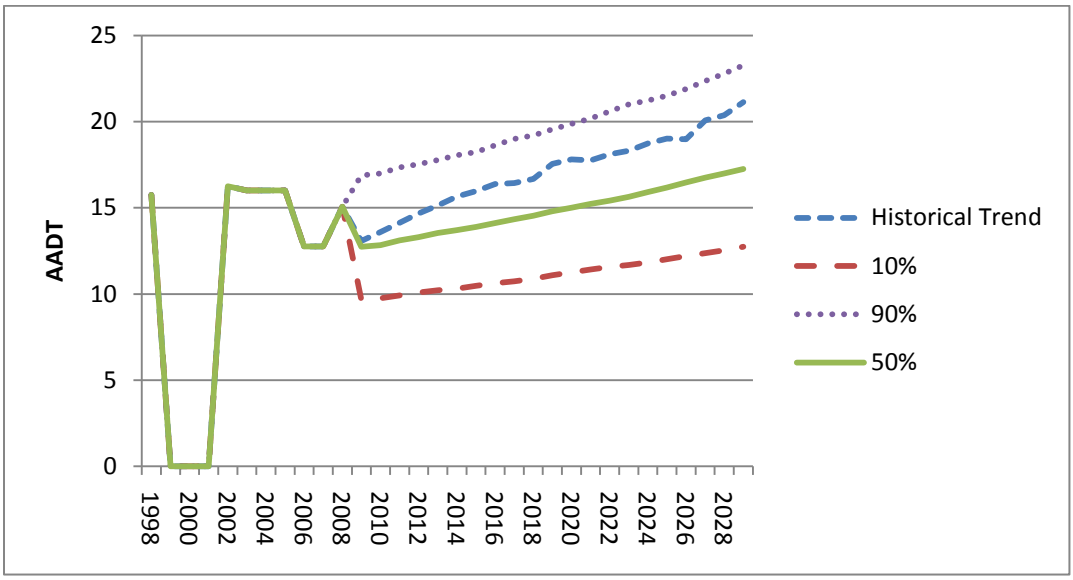


Figure 161: Truck AADT at Wild Horse POE

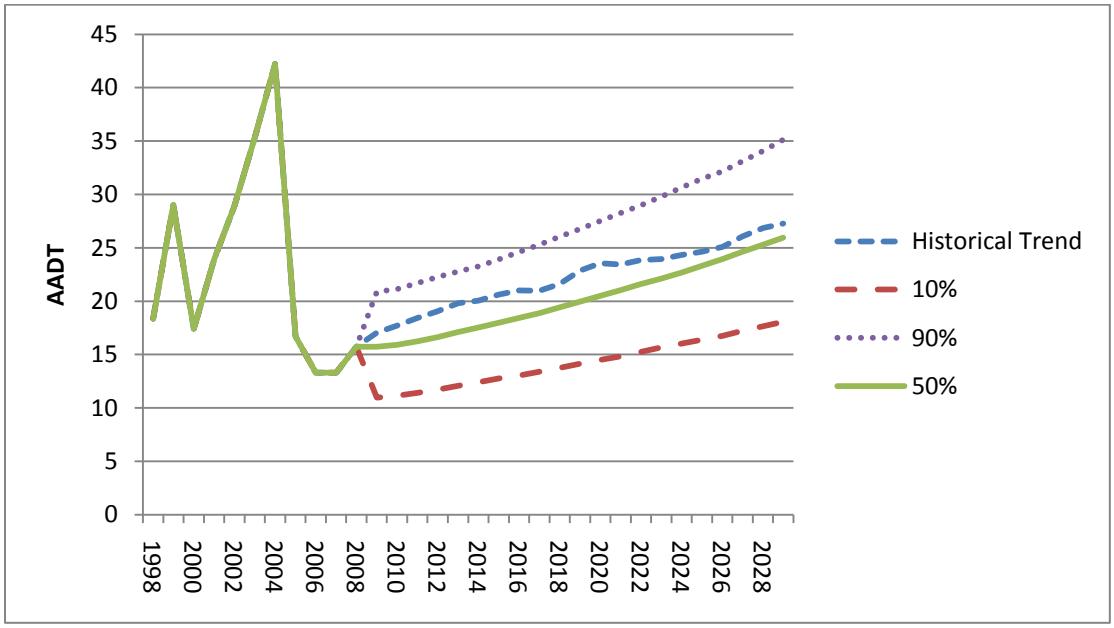


Figure 162: Commercial Auto AADT at Wild Horse POE

Wild Horse POE's connecting highway, S-232, is expected to have modest growth over the next 20 years (Figure 163). Forecasts for truck traffic (Figure 164) show traffic levels will return to 2005 levels within the next two decades. While only the 90th percentile forecast for commercial auto will reach 2005 traffic levels (Figure 165).

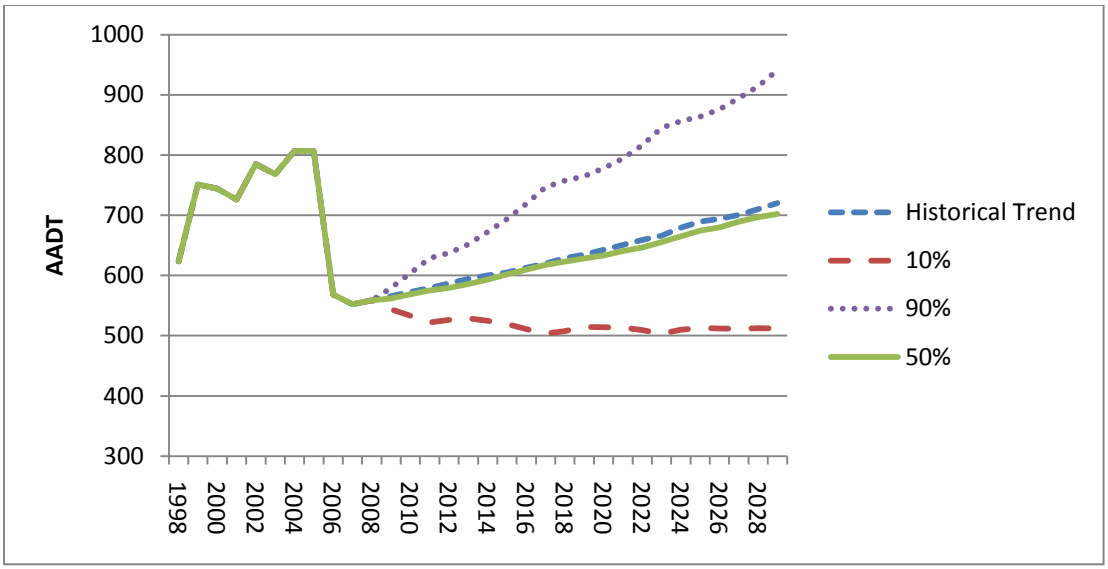


Figure 163: All AADT at Wild Horse Connecting Highway: S-232

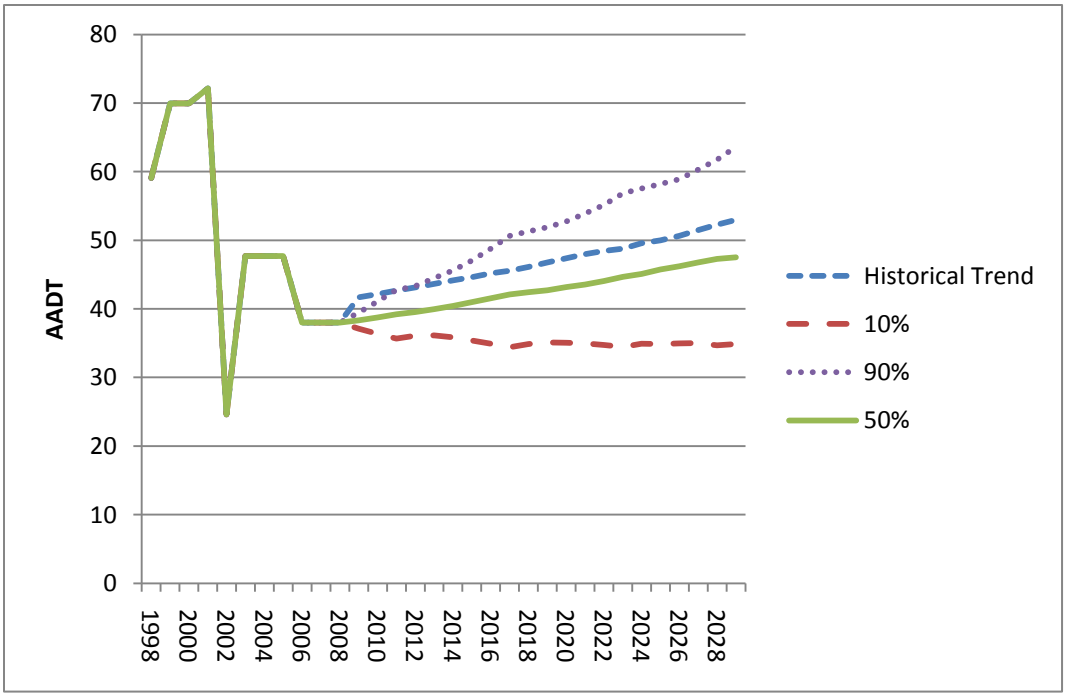


Figure 164: Truck AADT at Wild Horse Connecting Highway: S-232

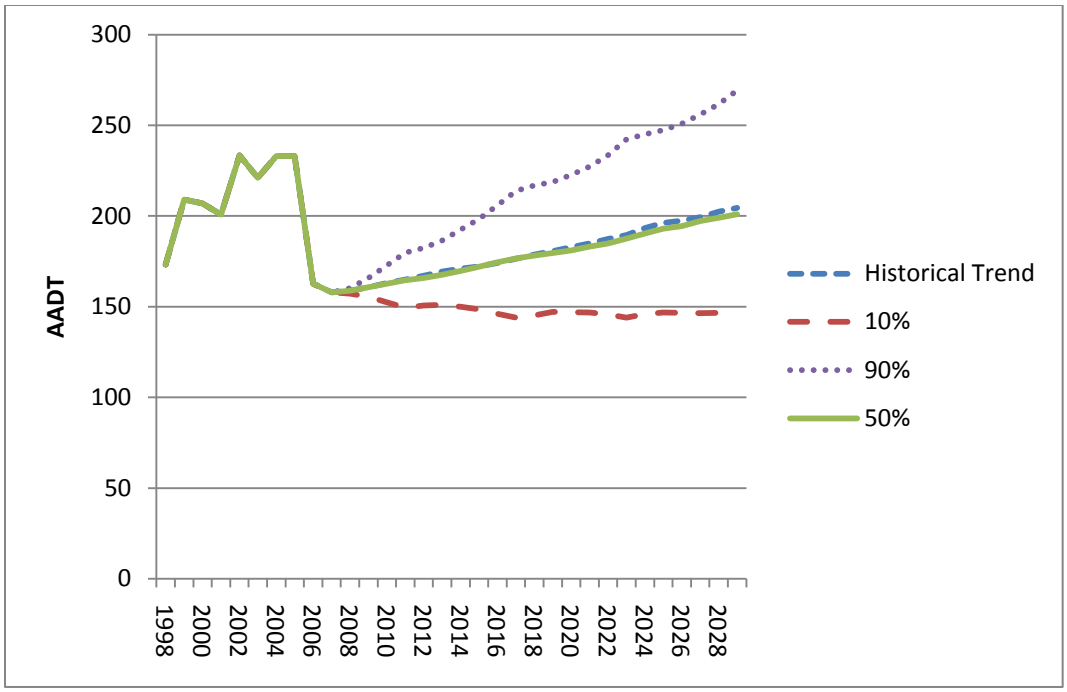


Figure 165: Commercial Auto AADT at Wild Horse Connecting Highway: S-232

6.7 Willow Creek

Willow Creek POE has had the smallest drop in traffic over the last few years. The historical trends indicate an aggressive growth level (Figure 166, Figure 167, and Figure 168). The forecasts for Willow Creek POE are more conservative despite positive growth. Future traffic volumes are not expected to reach the peak traffic volumes of 2002.

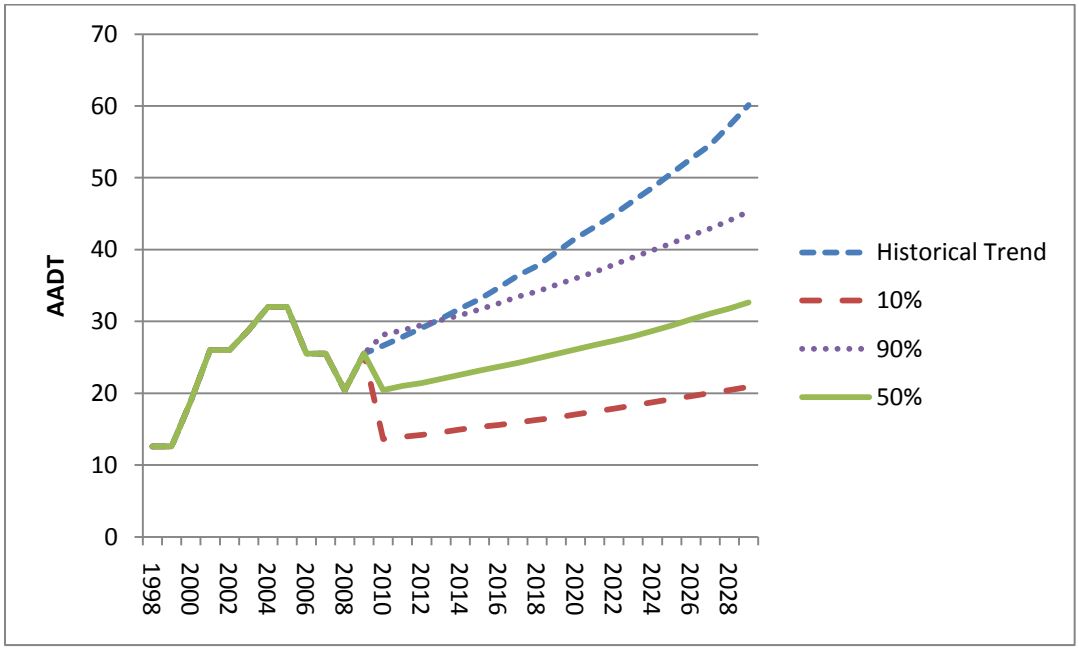


Figure 166: All AADT at Willow Creek POE

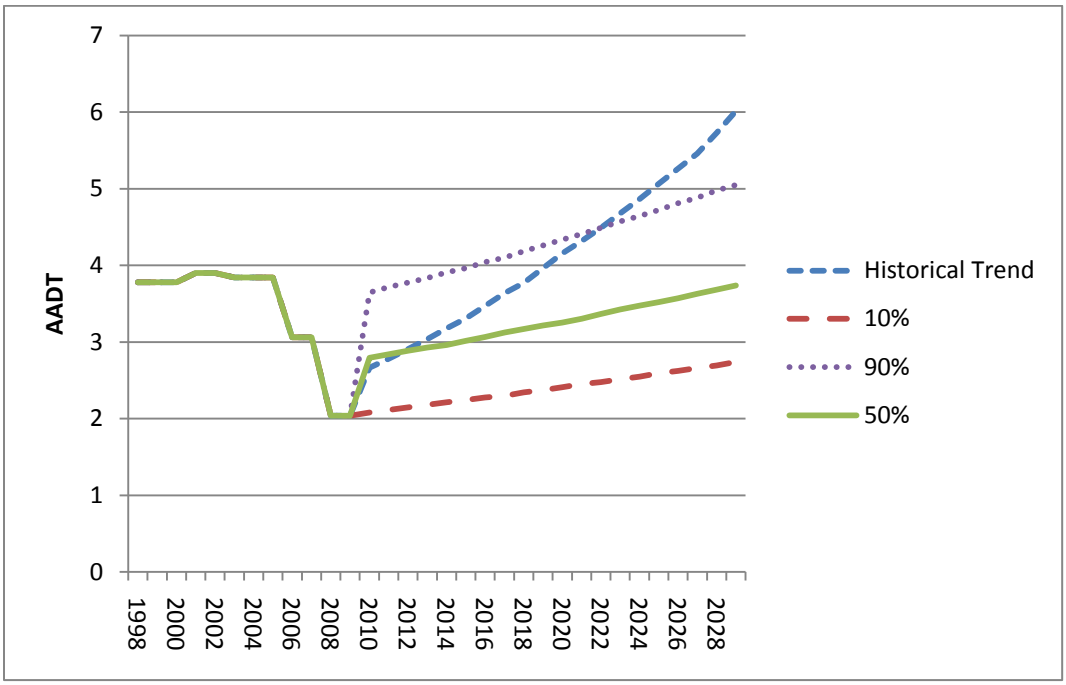


Figure 167: Truck AADT at Willow Creek POE

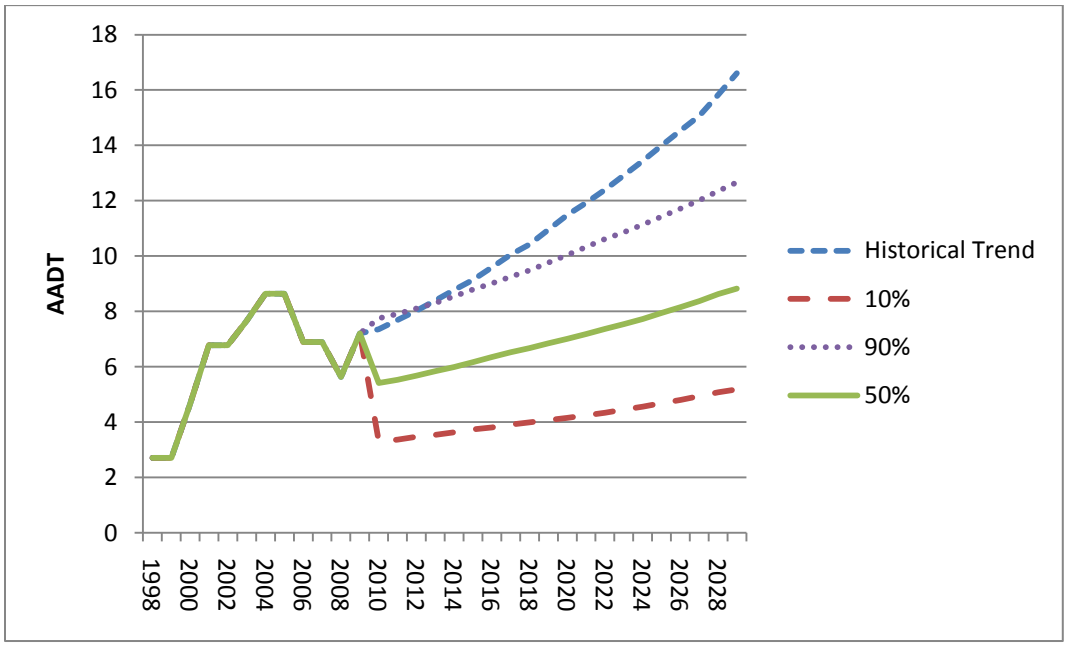


Figure 168: Commercial Auto AADT at Willow Creek POE

Traffic at the Willow Creek Connecting Highway (S-231) has declined dramatically since 2004 (Figure 169). Forecasts for the 50th percentile and historical trends show relatively flat growth for truck (Figure 170) and commercial auto (Figure 171). Only the 90th percentile forecasts return to 2004 traffic levels by 2022.

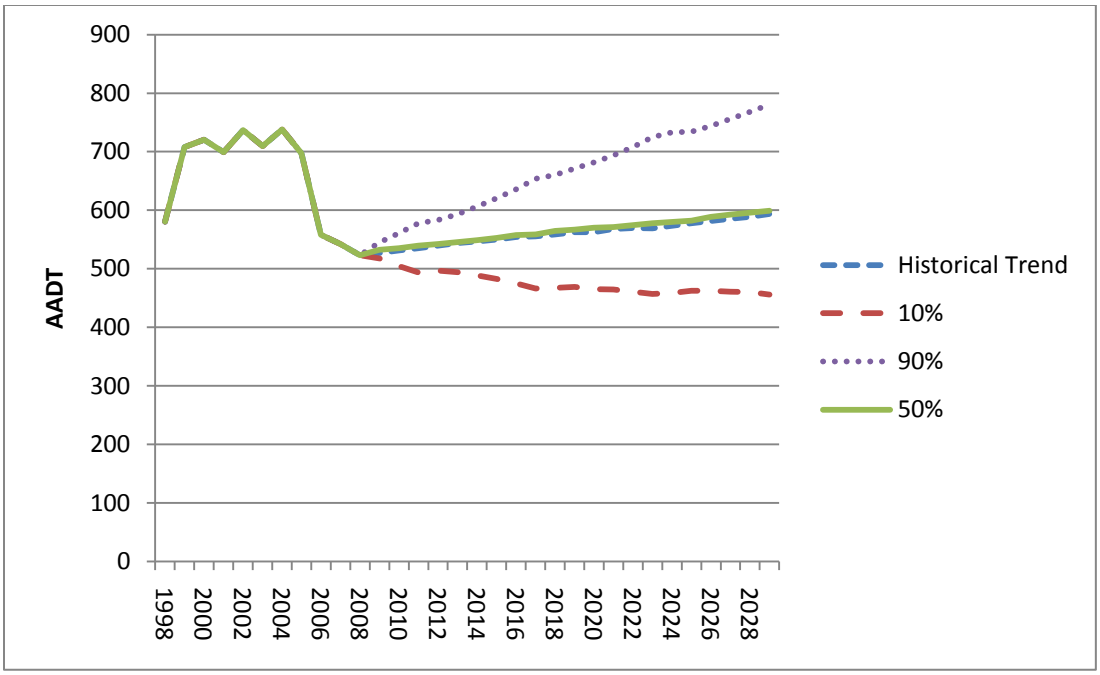


Figure 169: All AADT at Willow Creek Connecting Highway: S-231

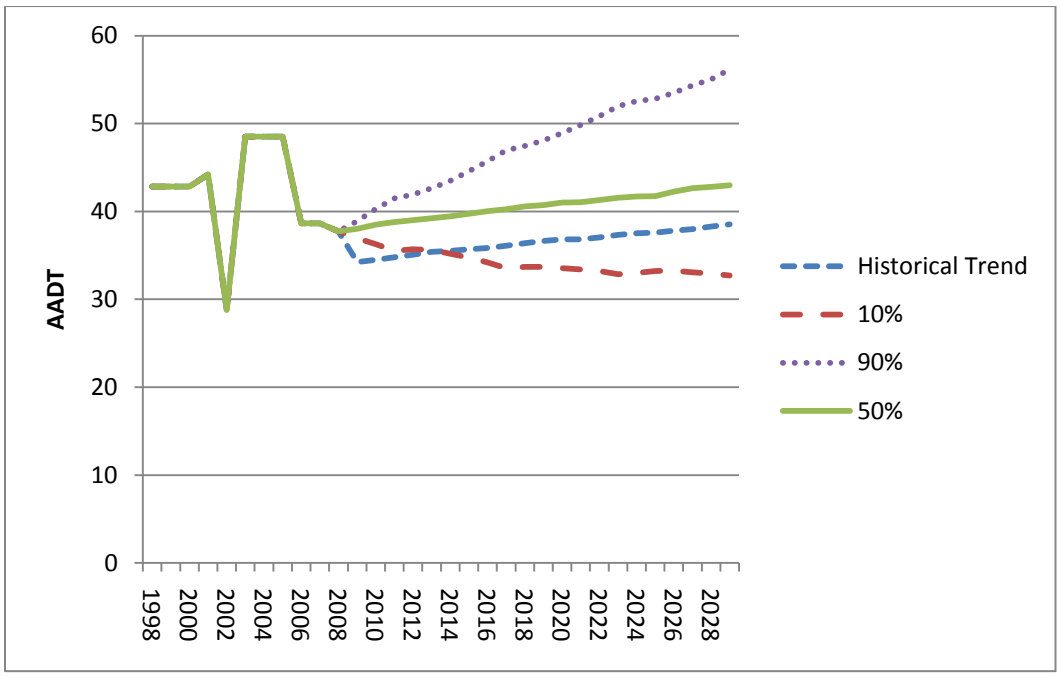


Figure 170: Truck AADT at Willow Creek Connecting Highway: S-231

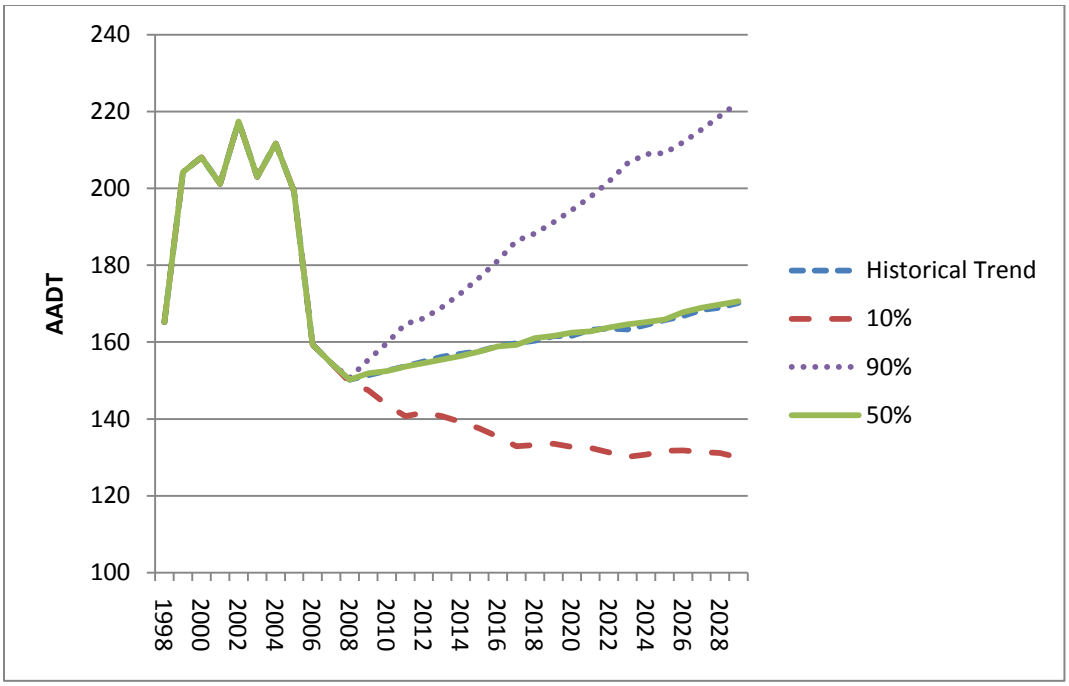


Figure 171: Commercial Auto AADT at Willow Creek Connecting Highway: S-231

6.8 Turner

Turner POE has perhaps experienced the most dramatic drop in traffic (Figure 172). The historical trends also envision little growth. The forecasting model shows reasonable growth in truck traffic over current levels (Figure 173), while commercial auto growth will likely remain flat (Figure 174).

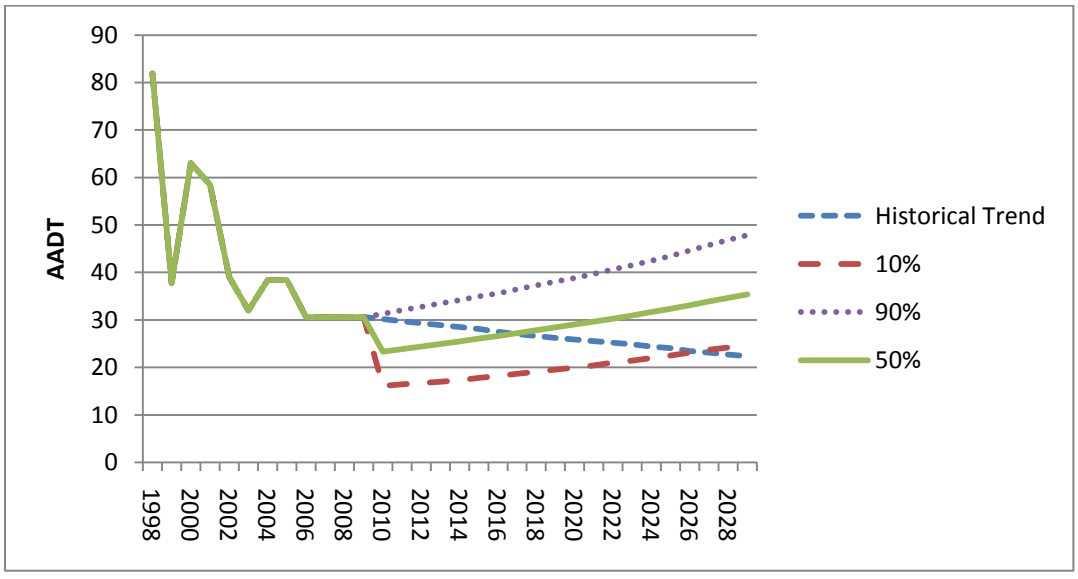


Figure 172: All AADT at Turner POE

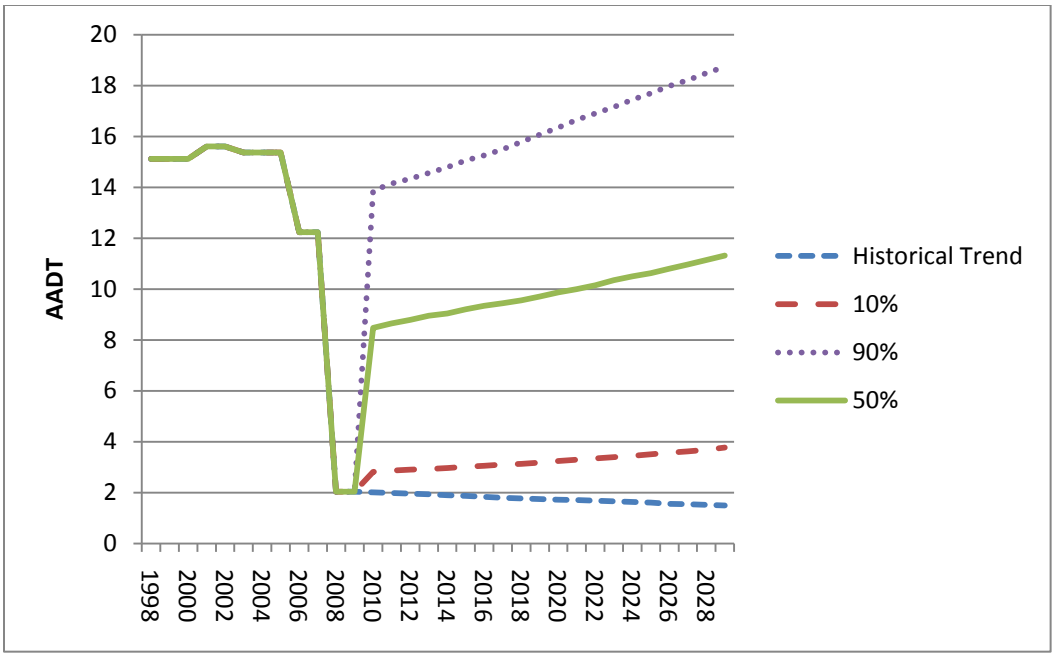


Figure 173: Truck AADT at Turner POE

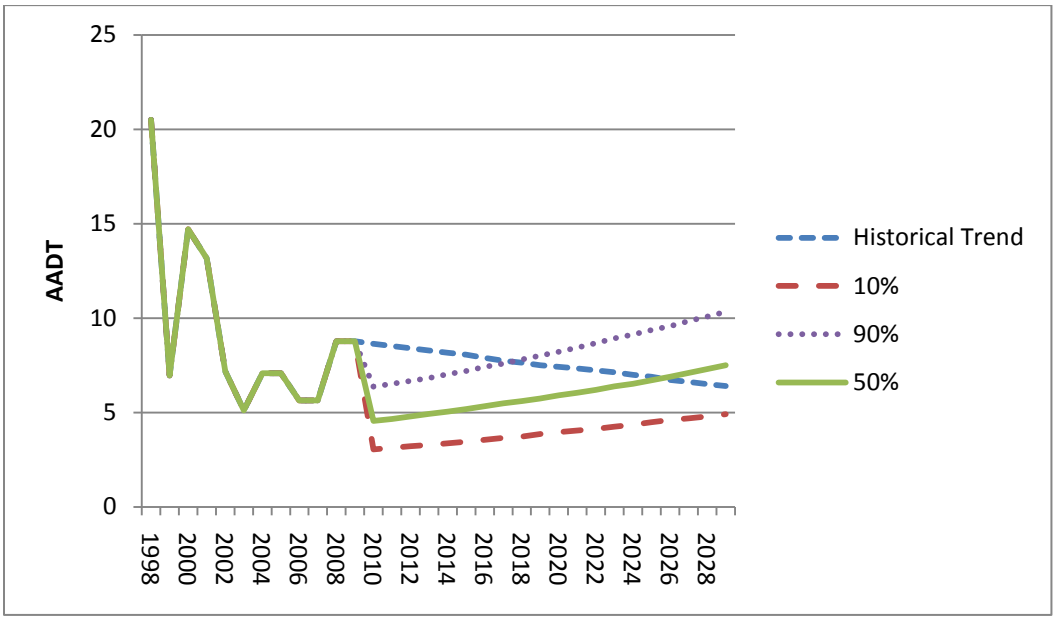


Figure 174: Commercial Auto AADT at Turner POE

While S-241's overall declining traffic volumes are anticipated to continue over the coming years and eventually leveling off, as seen in Figure 175, Figure 176, and Figure 177.

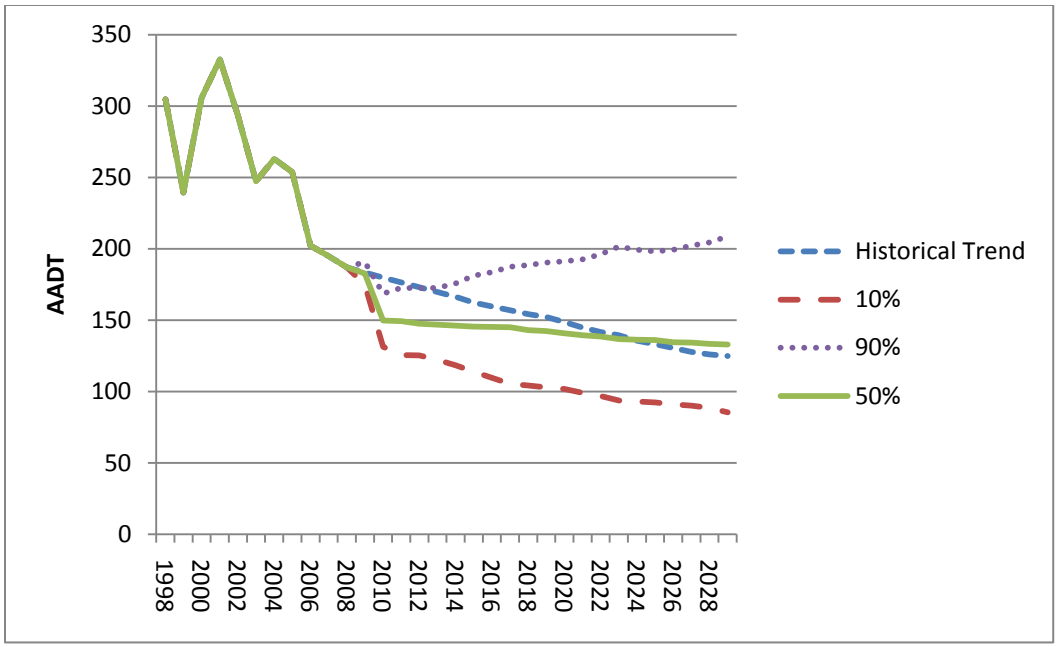


Figure 175: All AADT at Turner Connecting Highway: S-241

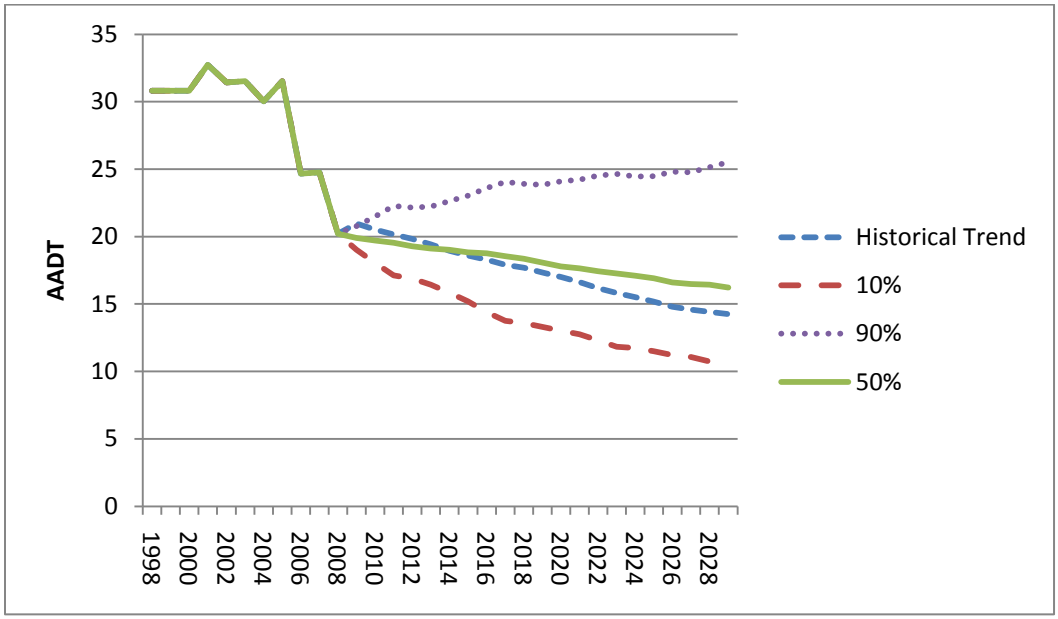


Figure 176: Truck AADT at Turner Connecting Highway: S-241

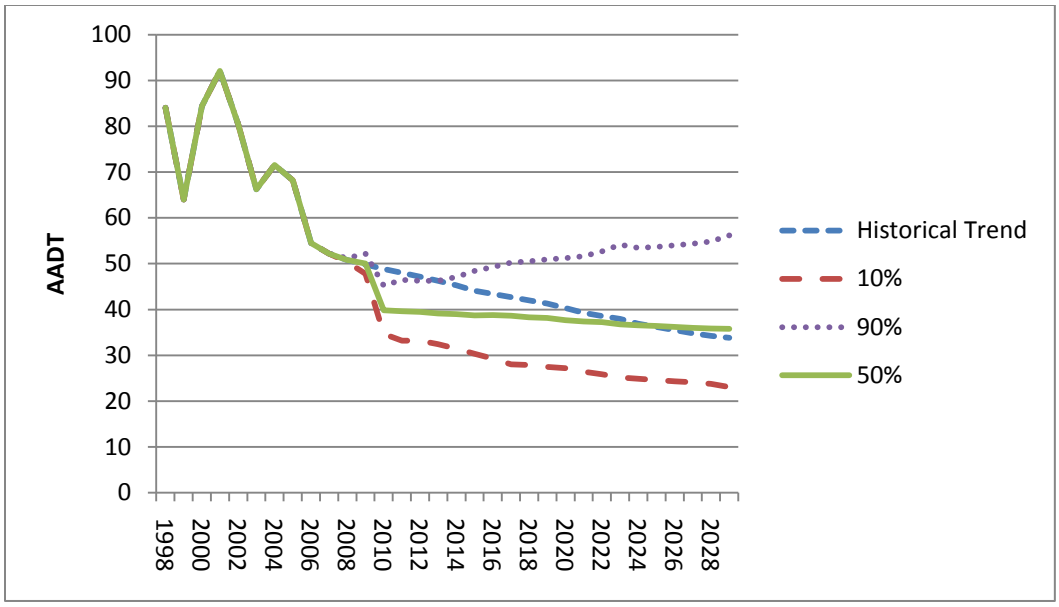


Figure 177: Commercial AADT at Turner Connecting Highway: S-241

6.9 Morgan

The total daily traffic dropped from 60 to about 10 in 2006 at Morgan POE (Figure 178). Over the last two years some recovery has been observed. The anticipated economic recovery will continue to increase traffic volumes over the next 20 years. However, even under the most aggressive assumptions, the traffic levels are unlikely to return to the peak level. These trends are true of both truck and commercial auto traffic as seen in Figure 179 and Figure 180.

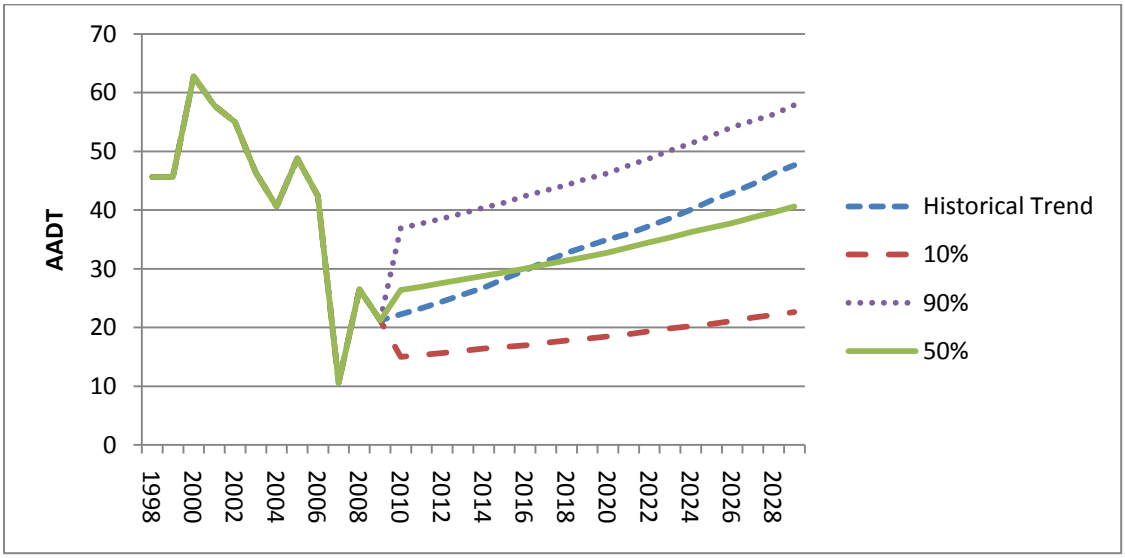


Figure 178: All AADT at Morgan POE

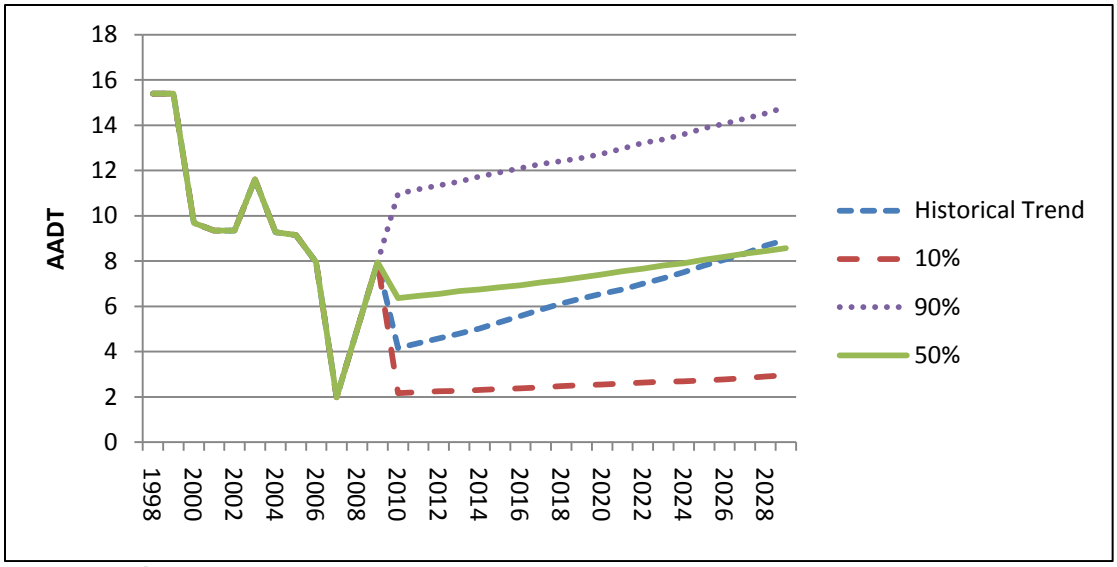


Figure 179: Truck AADT at Morgan POE

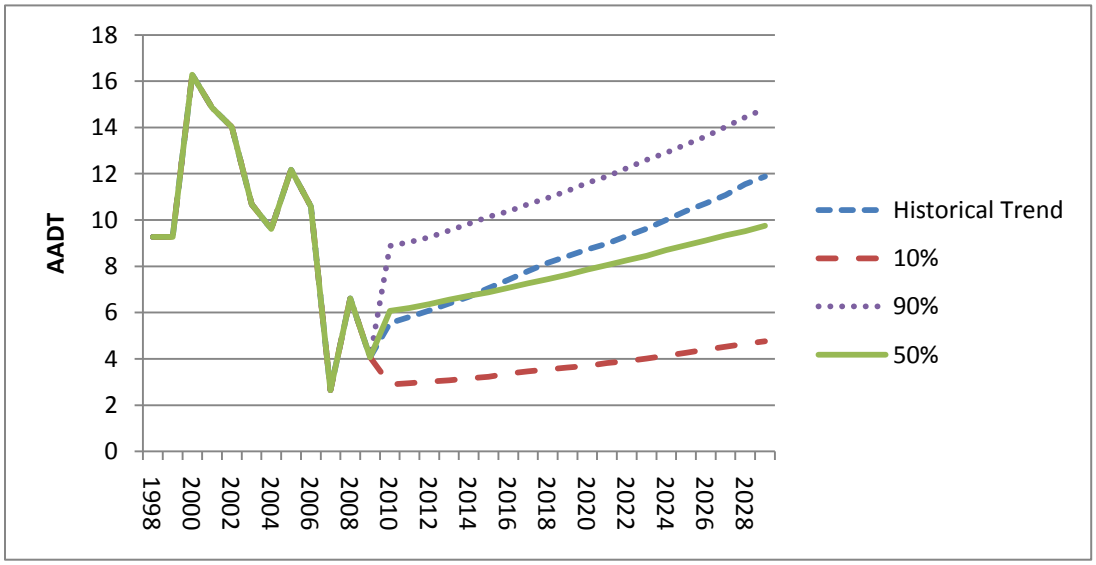


Figure 180: Commercial Auto AADT at Morgan POE

The connecting highway N-99 is a corridor with traffic volumes above 150 vehicles per day (Figure 181). Although the truck traffic on the corridor reflects the POE levels (Figure 182), because of the steady growth in commercial auto traffic (Figure 183), this corridor is expected to grow steadily and double by 2028. Even at these levels, it is expected that the highway LOS will remain at A.

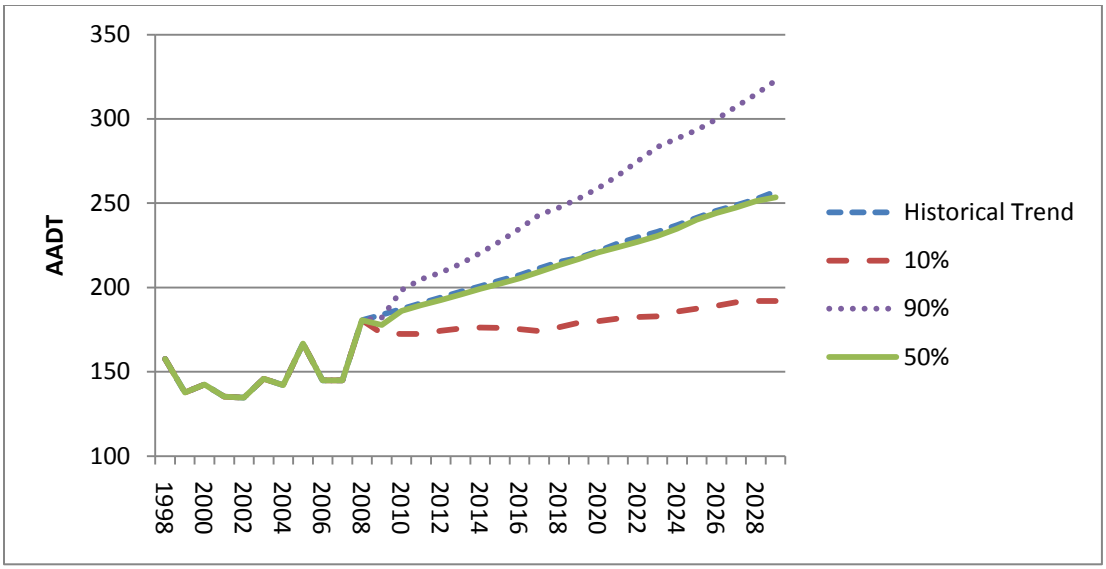


Figure 181: All AADT at Morgan Connecting Highway: N-99

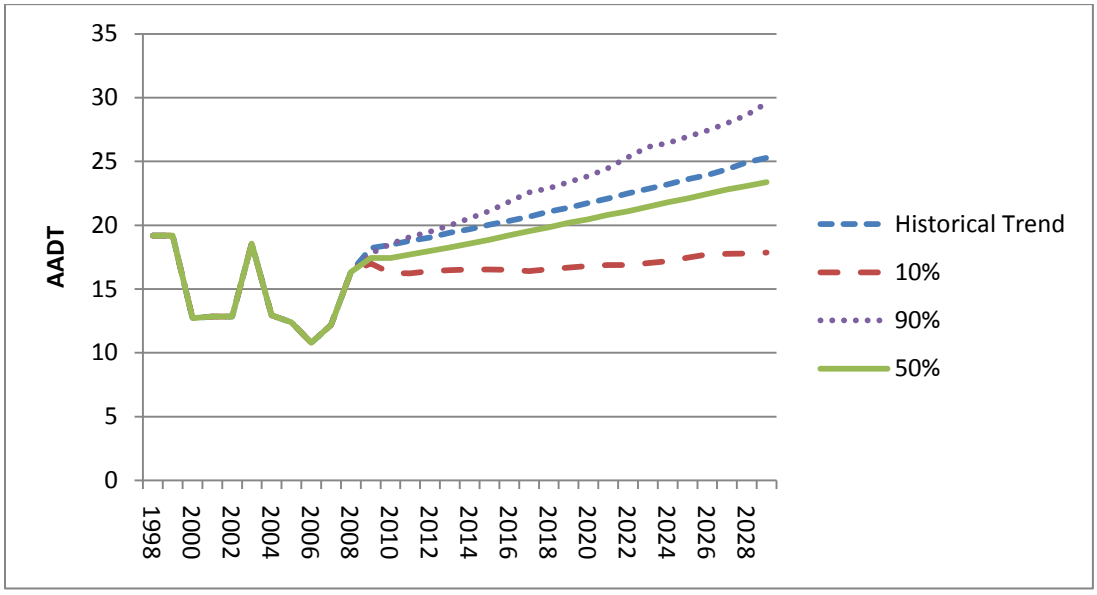


Figure 182: Truck AADT at Morgan Connecting Highway: N-99

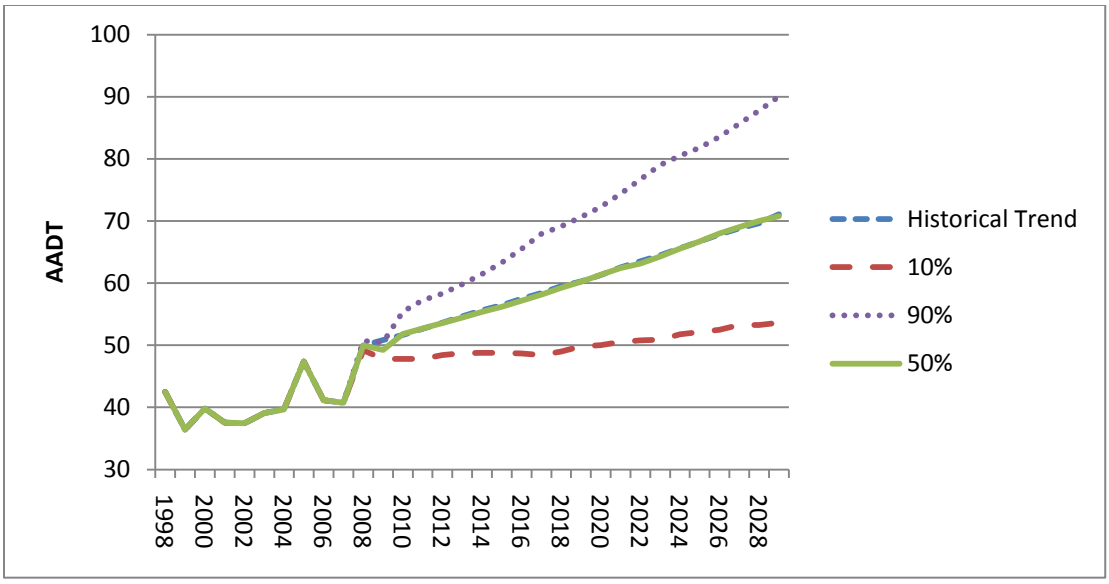


Figure 183: Commercial Auto AADT at Morgan Connecting Highway: N-99

6.10 Opheim

Figure 184 shows the historical and forecasted traffic trends across Opheim POE for all traffic. As shown, the traffic across the POE has been steadily declining since the peak in 2002. The truck traffic forecasts indicate a modest recovery in traffic counts over the next 20 years (Figure 185). Even at the 90% likelihood level, commercial auto traffic counts are unlikely to come to the same levels as in 2002 (Figure 186). The historical trend, in fact, appears to match the low end forecasts more than the high end for all traffic.

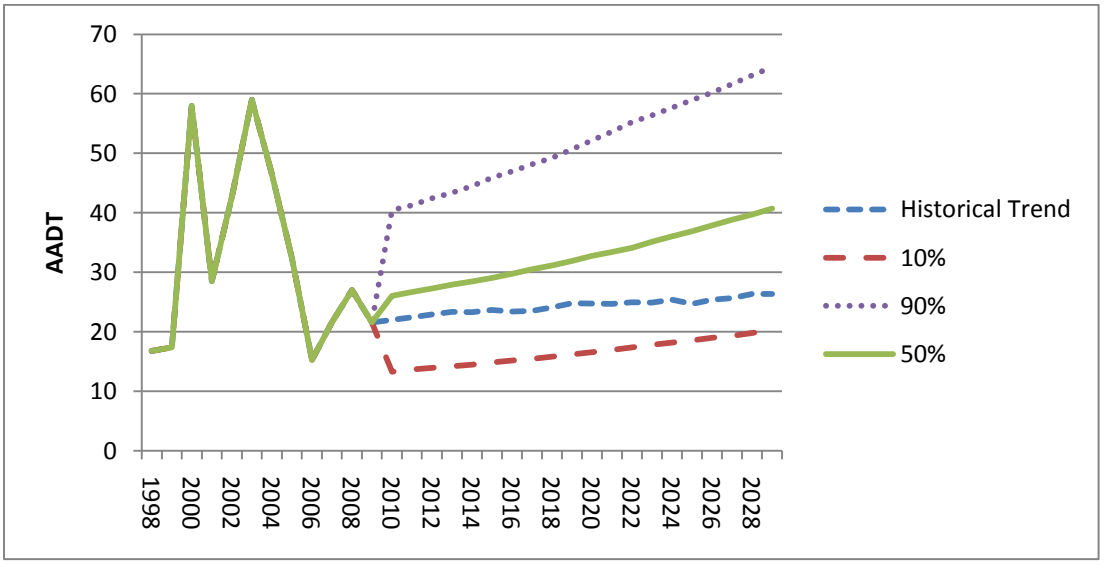


Figure 184: All AADT at Opheim POE

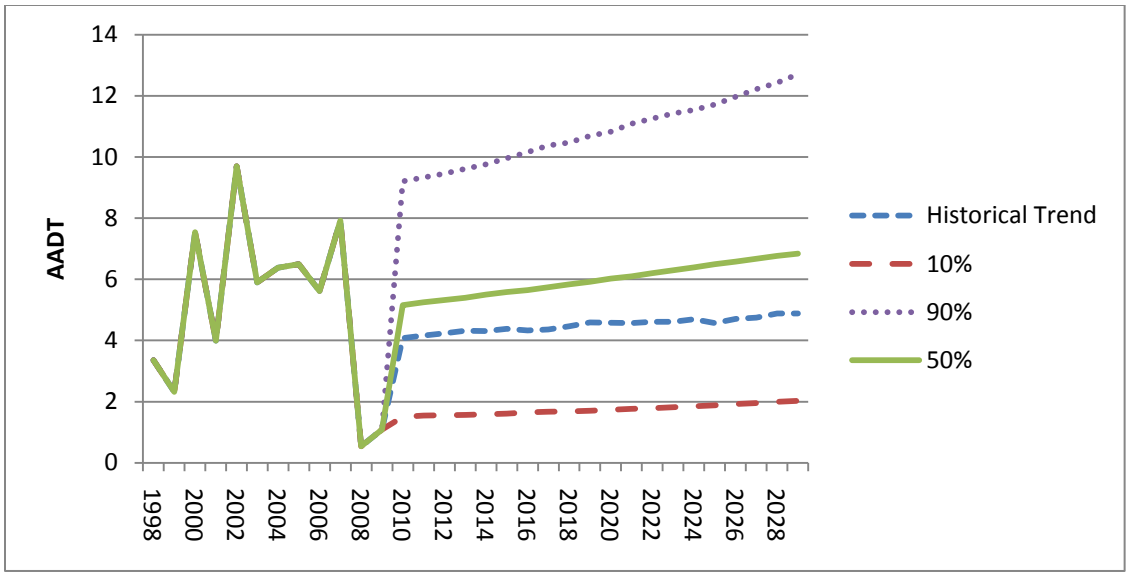


Figure 185: Truck AADT at Opheim POE

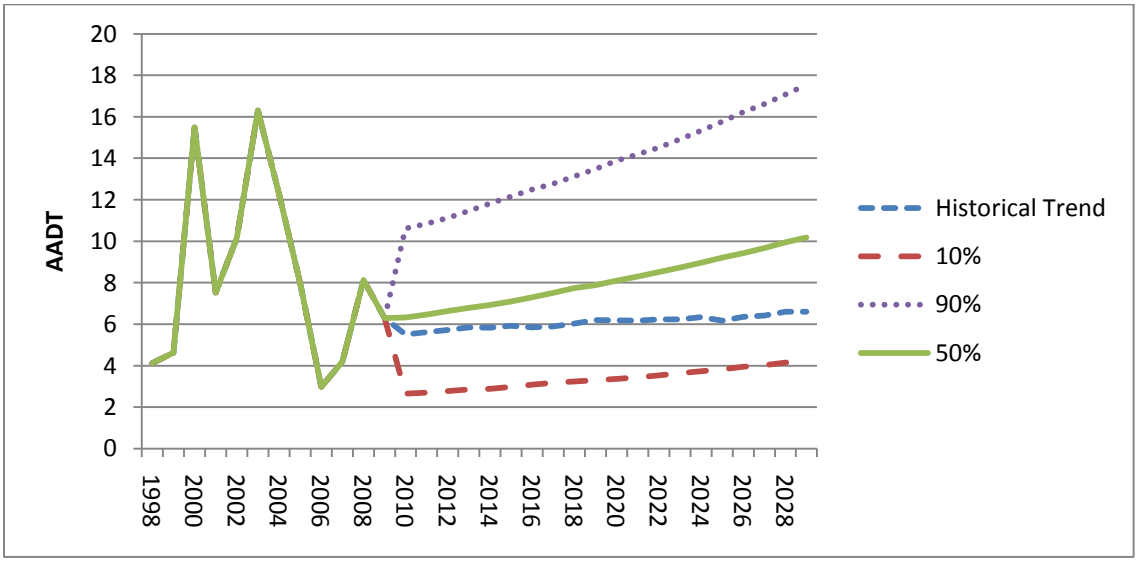


Figure 186: Commercial Auto AADT at Opheim POE

On the MT-24 corridor, the connecting highway to Opheim, the trends and forecasts follow similar patterns as at the POE (Figure 187). However, unlike the POE, the historical trends on the highway appear to align closer to the high end (90%), especially for truck (Figure 188). Commercial auto forecast shows growth for MT-24 will return to 2006 traffic levels by 2028 (Figure 189).

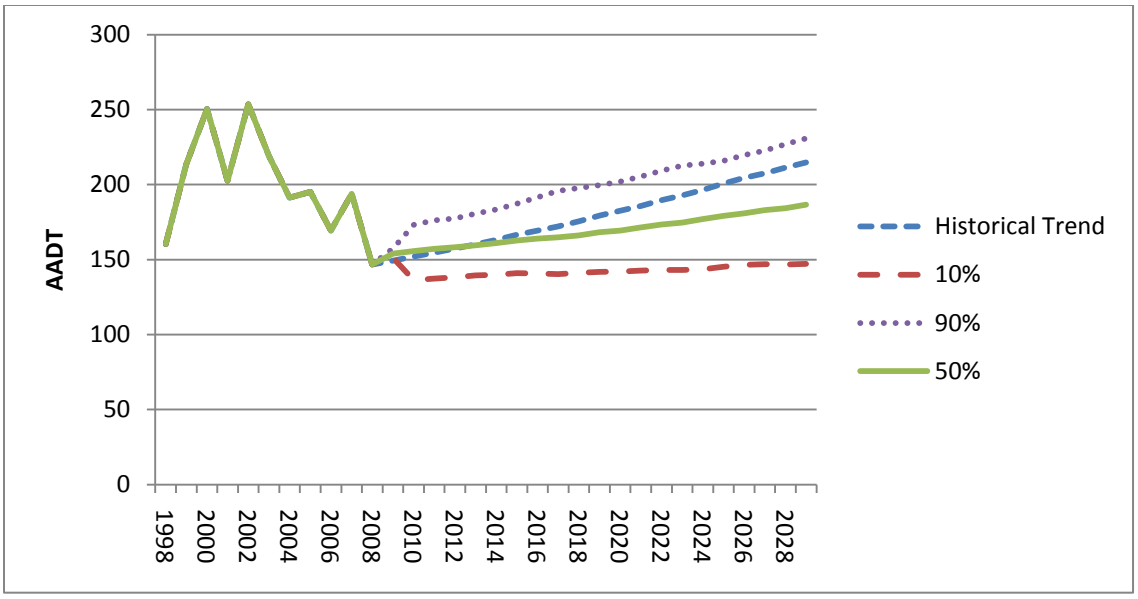


Figure 187: All AADT at Opheim Connecting Highway: MT-24

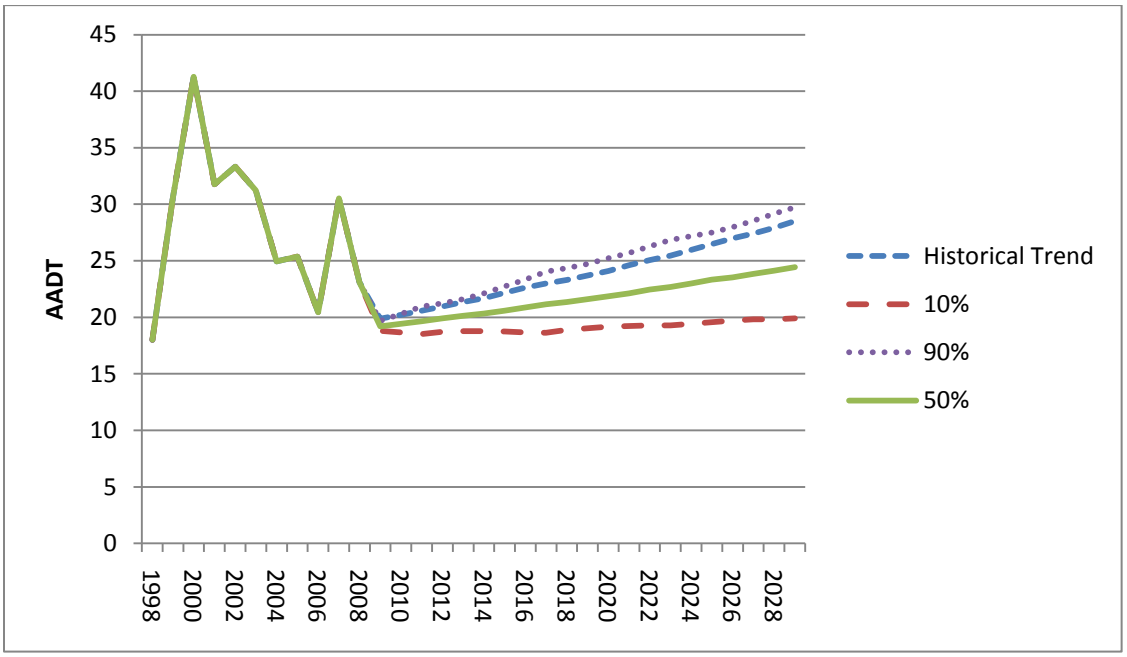


Figure 188: Truck AADT at Opheim Connecting Highway: MT-24

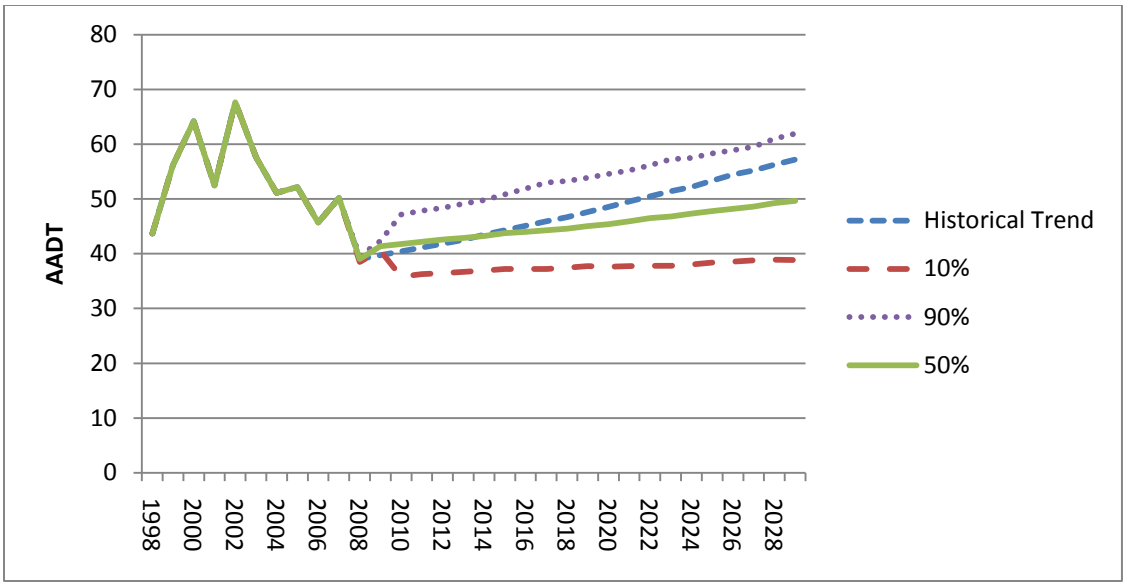


Figure 189: Commercial Auto AADT at Opheim Connecting Highway: MT-24

6.11 Scobey

Scobey POE experienced massive drops in traffic volumes between 2004 and 2006 (Figure 190). Truck traffic is expected to recover, almost reaching peak levels (Figure 191). While the forecasts for commercial auto traffic show modest recovery, however, even at the 90th percentile traffic volumes are unlikely to return to peak 2004 levels. (Figure 192).

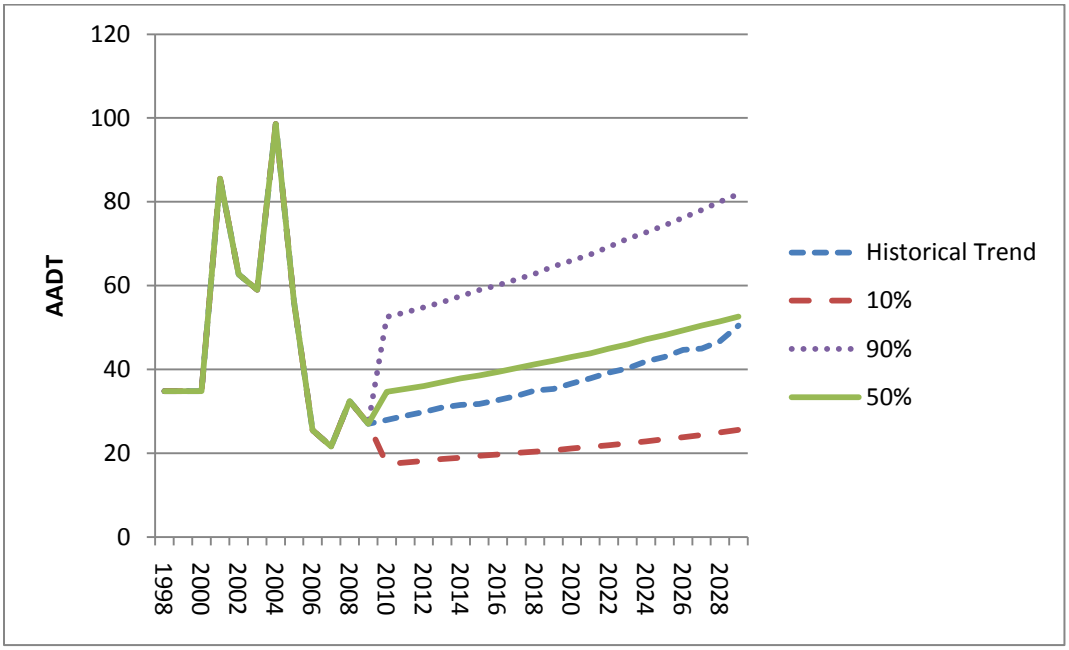


Figure 190: All AADT at Scobey POE

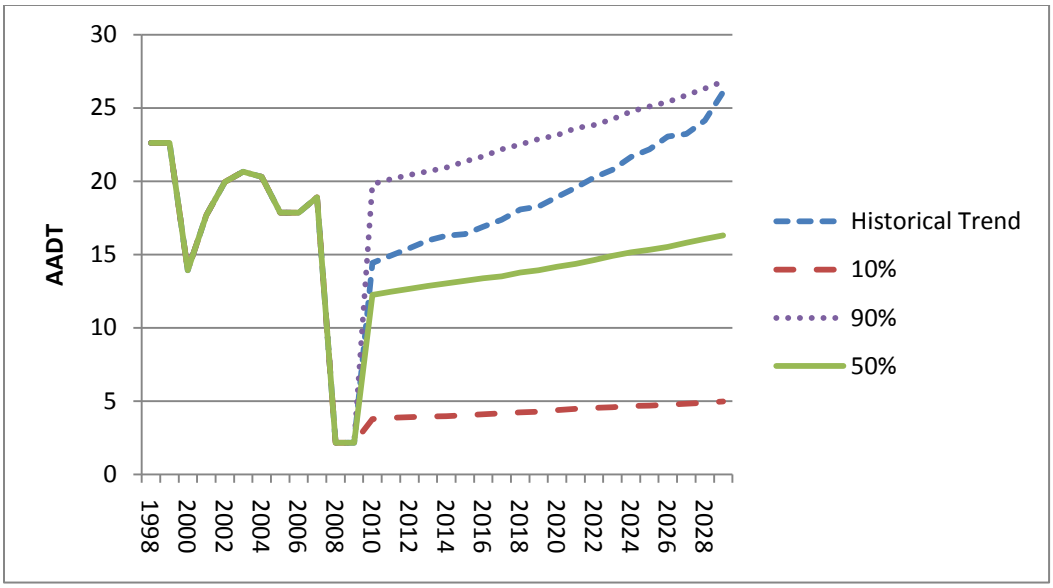


Figure 191: Truck AADT at Scobey POE

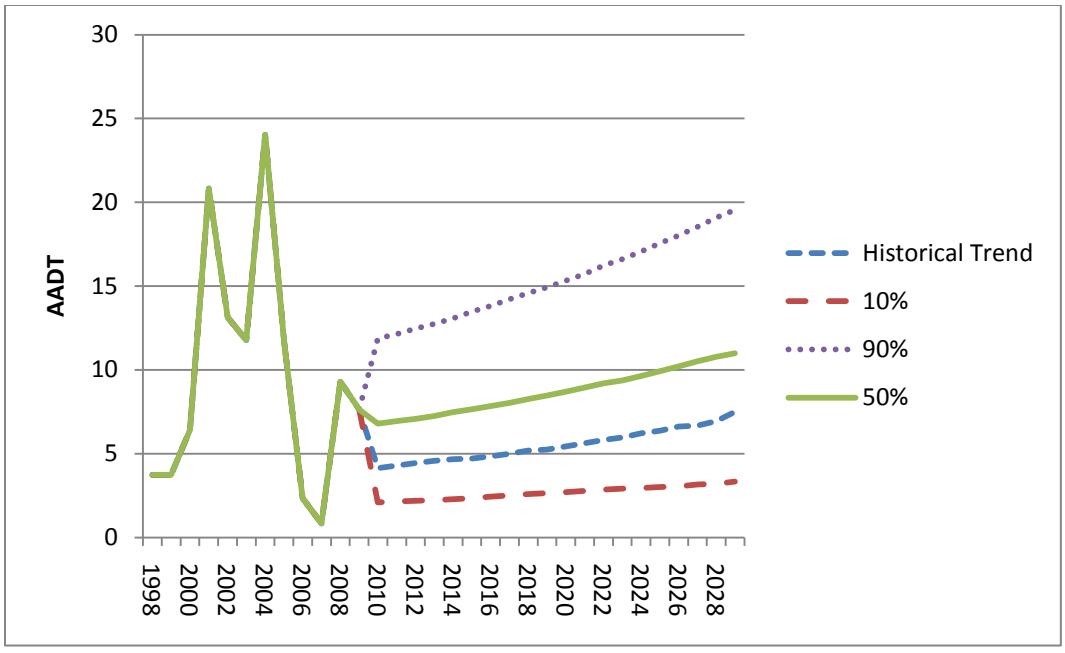


Figure 192: Commercial AADT at Scobey POE

The traffic on the connecting highway P-32 also saw major drop over the last few years, and the forecasting model predicts a flat growth pattern over the next two decades for all traffic, see Figure 193, Figure 194, and Figure 195.

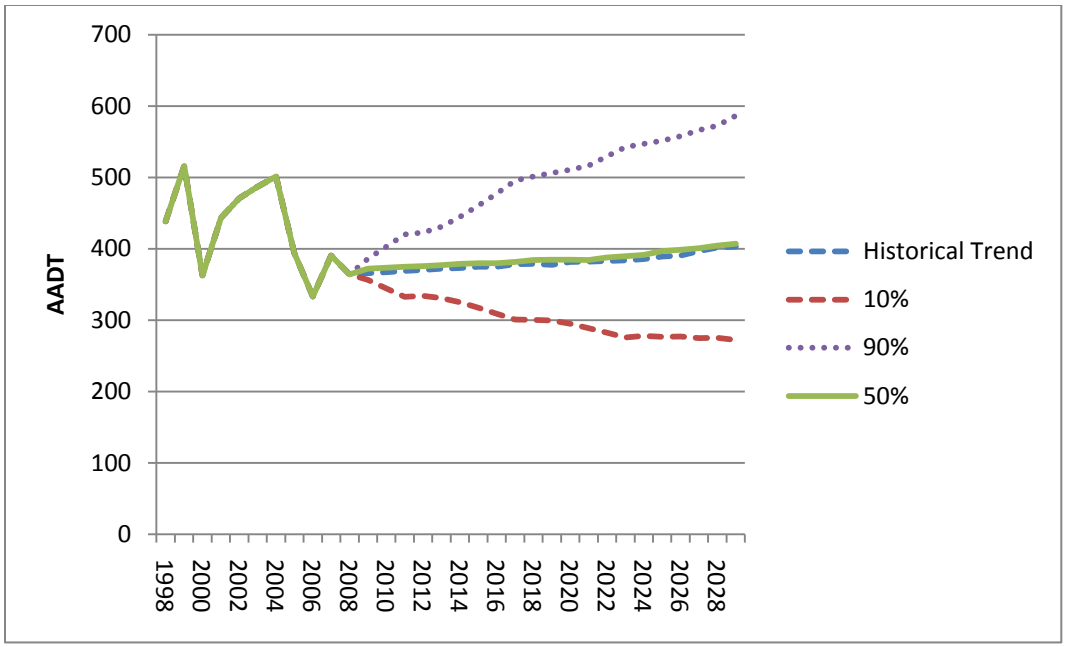


Figure 193: All AADT at Scobey Connecting Highway: P-32

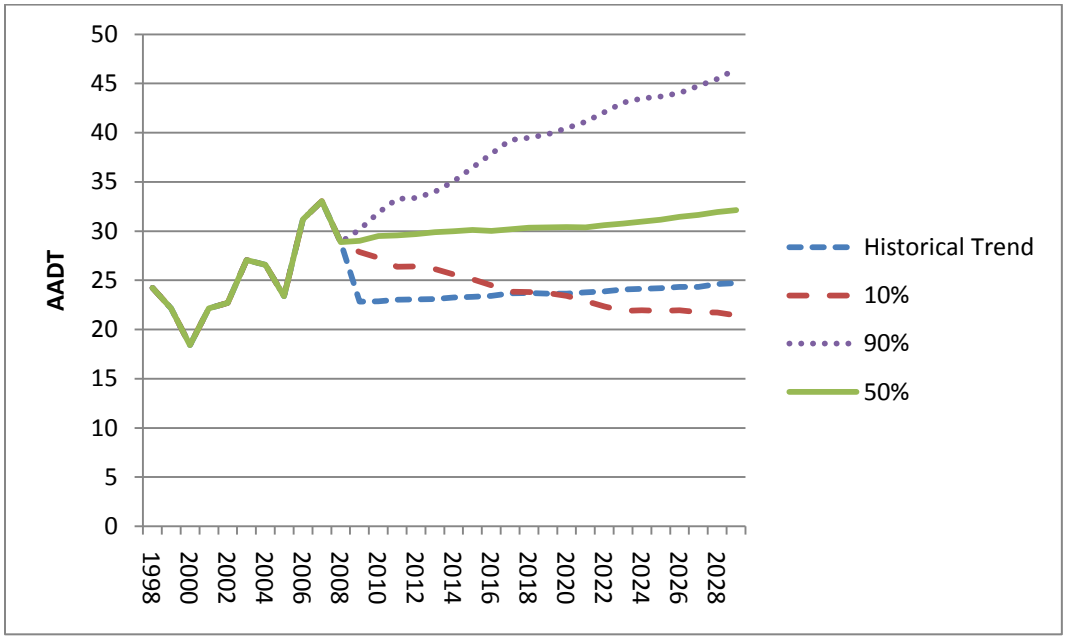


Figure 194: Truck AADT at Scobey Connecting Highway: P-32

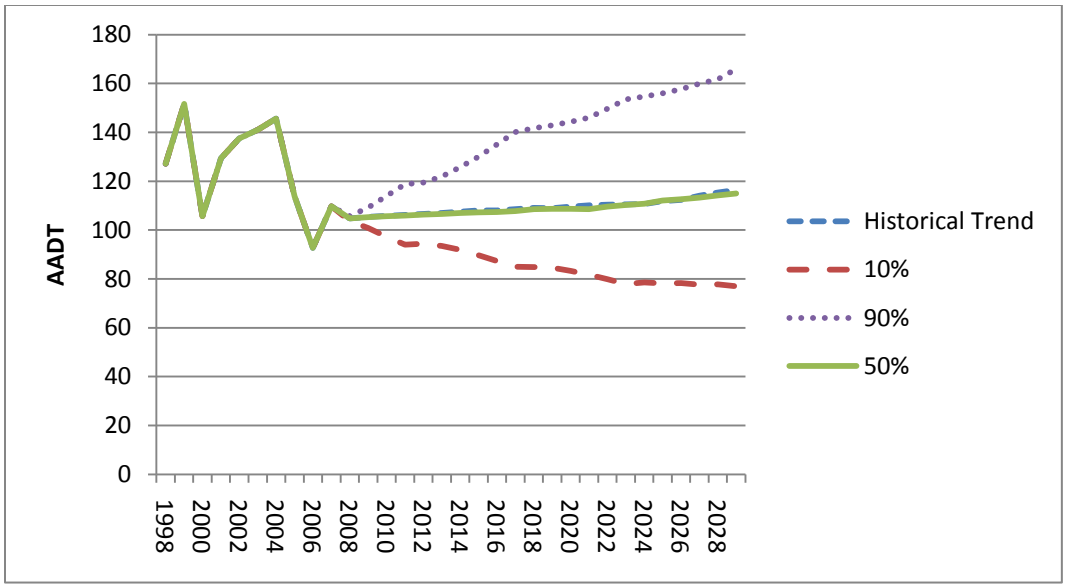


Figure 195: Commercial Auto AADT at Scobey Connecting Highway: P-32

6.12 Whitetail

The White Tail POE also has seen significant drop in traffic levels over the last few years (Figure 196). The total AADT currently is about a third of the peak levels in 2000 for trucks (Figure 197 and Figure 198), and commercial auto traffic. The 50th percentile forecasts are somewhat in line with the historical trends. Even the aggressive forecast estimates do not show future traffic volumes reaching the peak volumes.

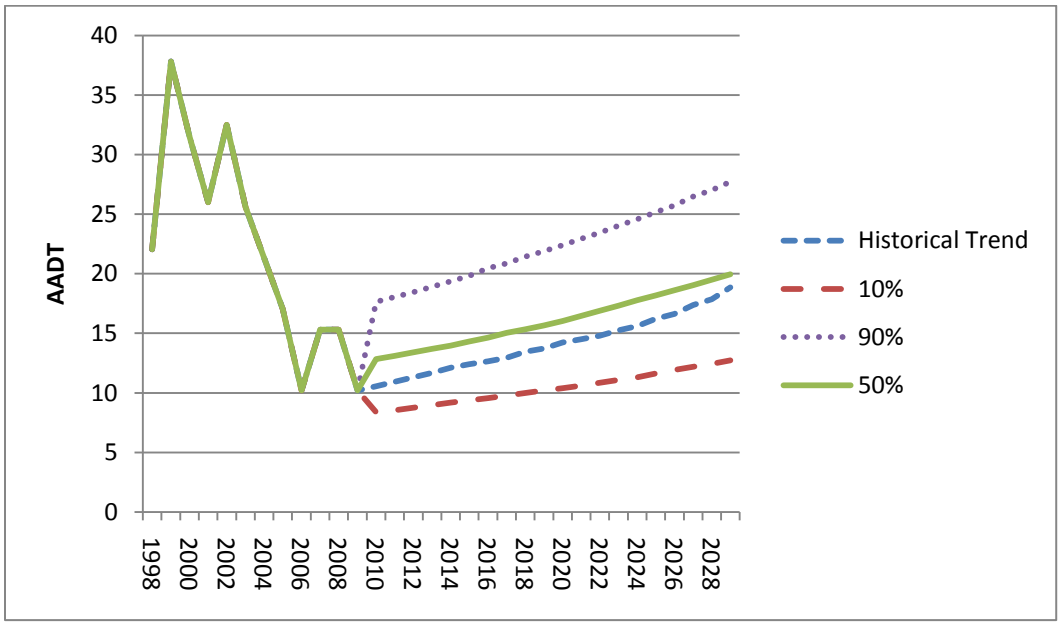


Figure 196: All AADT at Whitetail POE

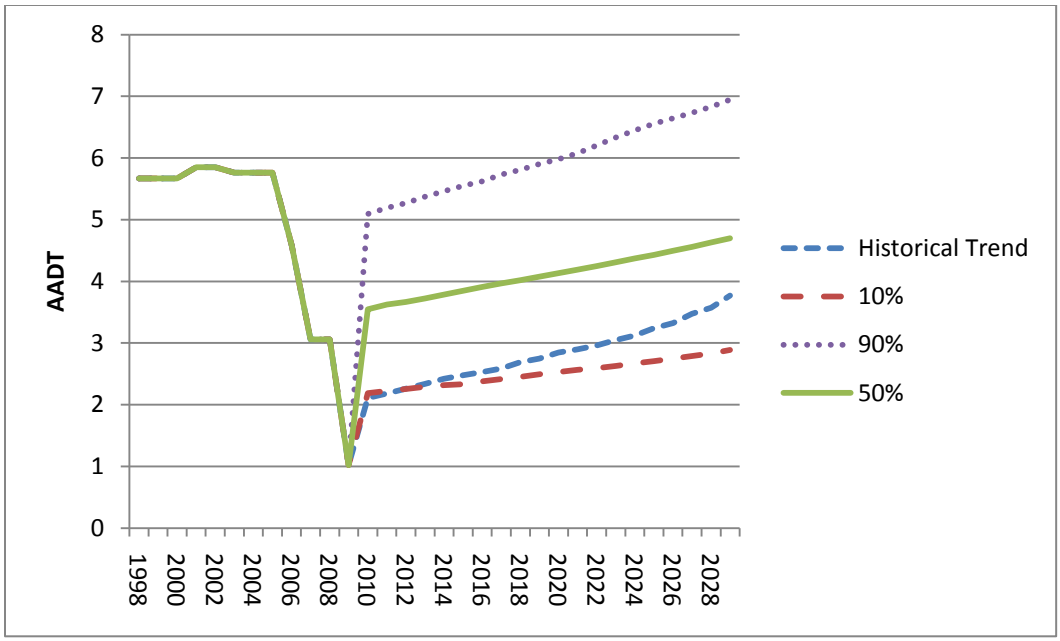


Figure 197: Truck AADT at Whitetail POE

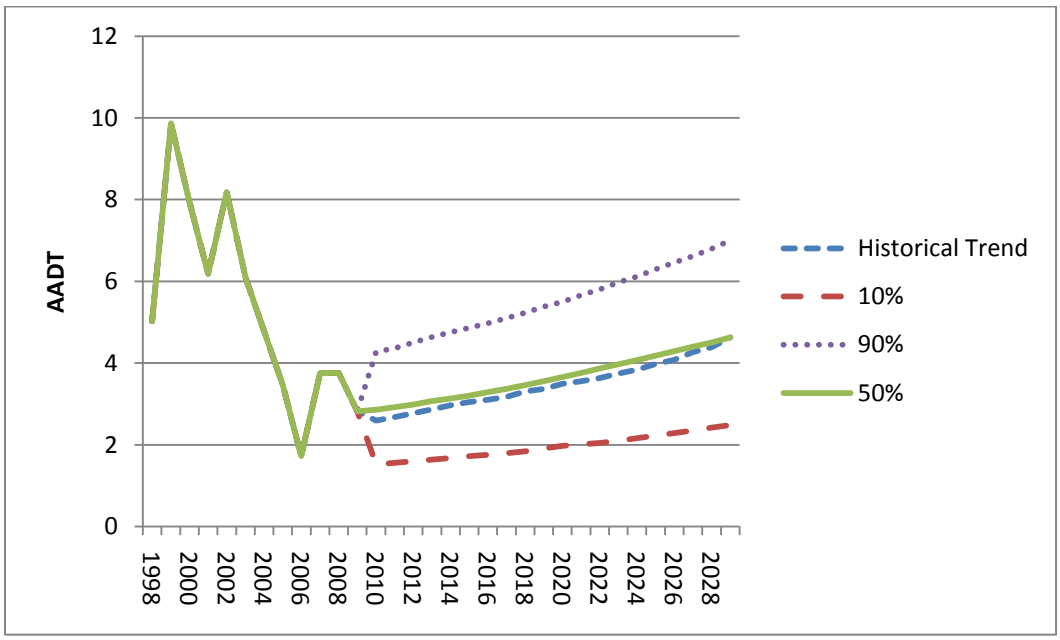


Figure 198: Commercial Auto AADT at Whitetail POE

White Tail POE has two connecting highways, S-511 and S-251. The forecasts for S-511 indicate very modest growth or drop in traffic volumes over the next 20 years (Figure 199). Figure 200 and Figure 201 show the majority of traffic volumes on S-511 are primarily commercial auto with very few trucks.

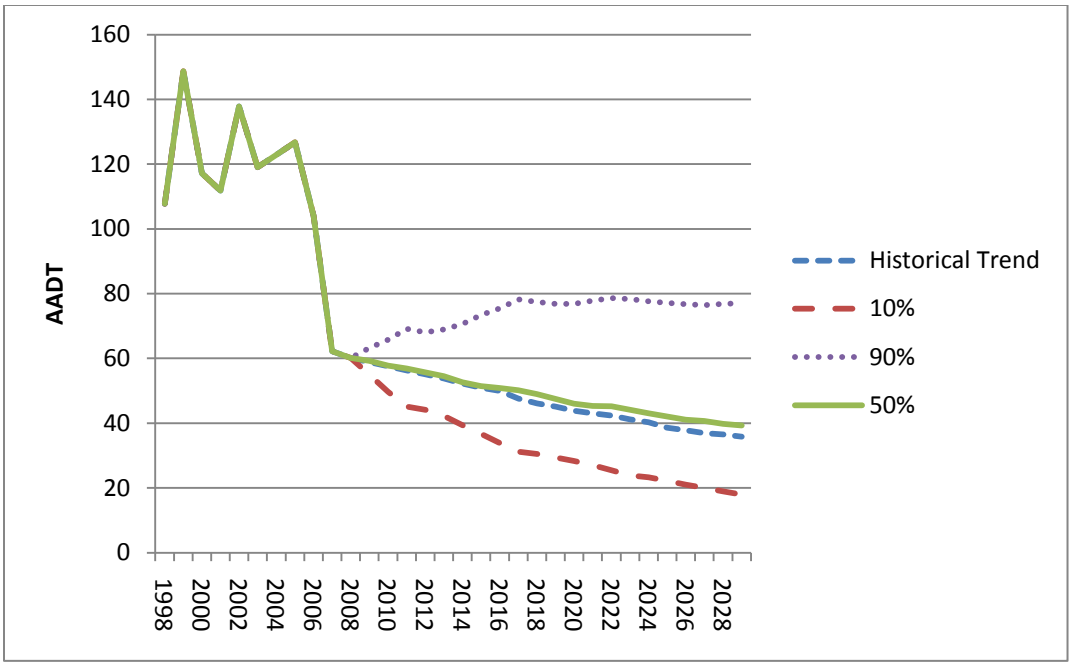


Figure 199: All AADT at Whitetail Connecting Highway: S-511

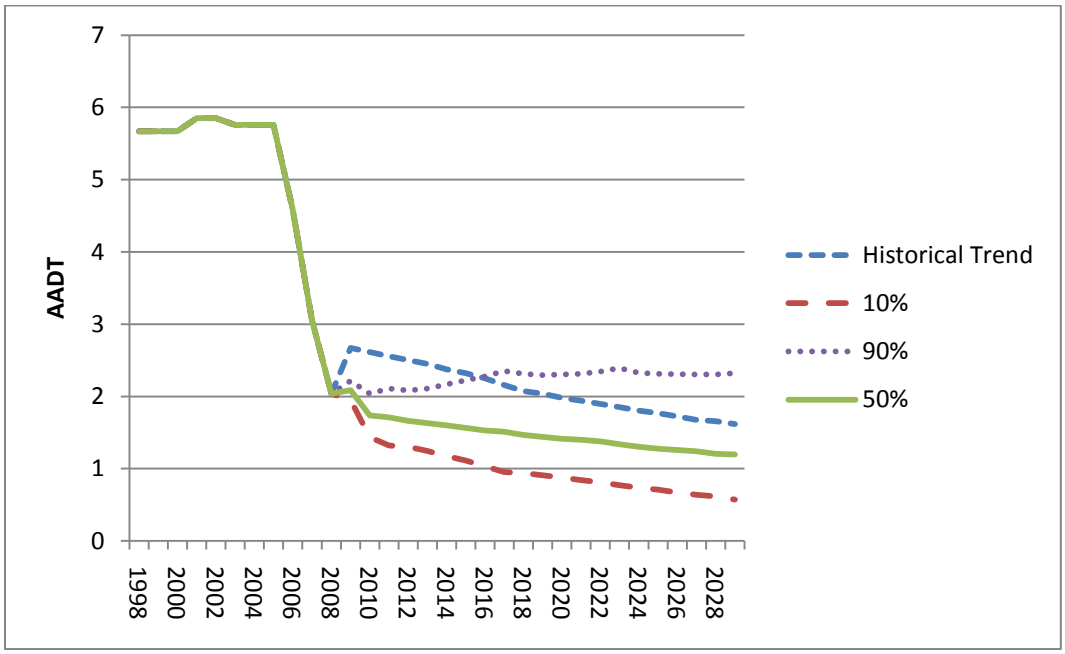


Figure 200: Truck AADT at Whitetail Connecting Highway: S-511

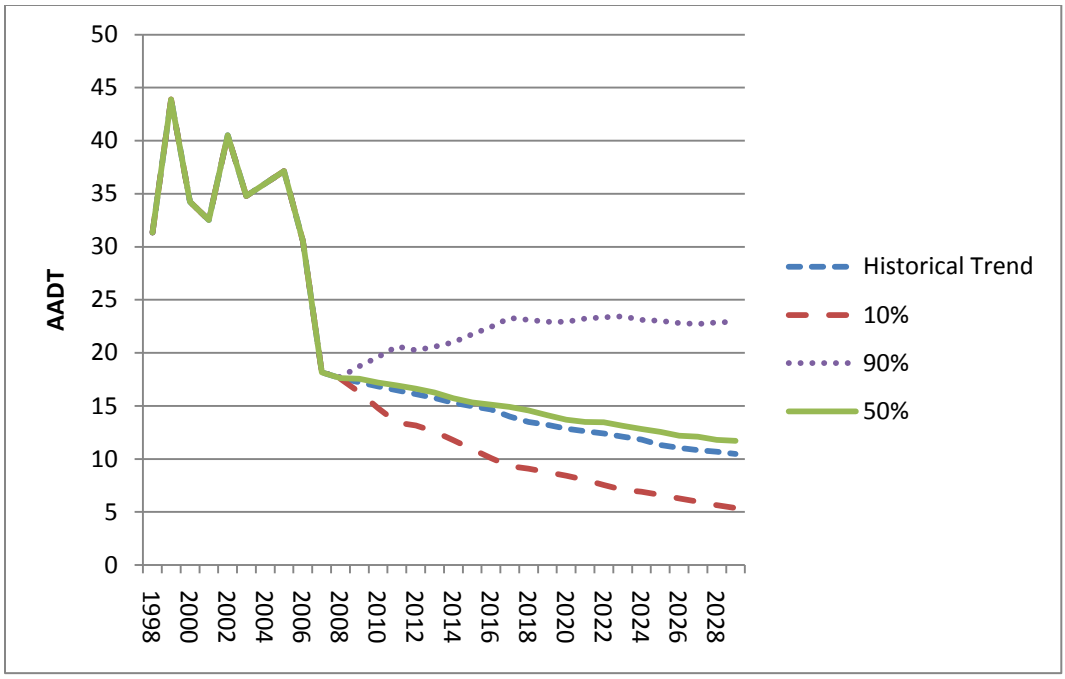


Figure 201: Commercial Auto AADT at Whitetail Connecting Highway: S-511

Conversely, the traffic forecast for S-251show traffic levels remaining at 2006 levels (Figure 202), above the historical trends. Both truck and commercial auto traffic volumes will follow similar trends throughout the forecast (Figure 203 and Figure 204).

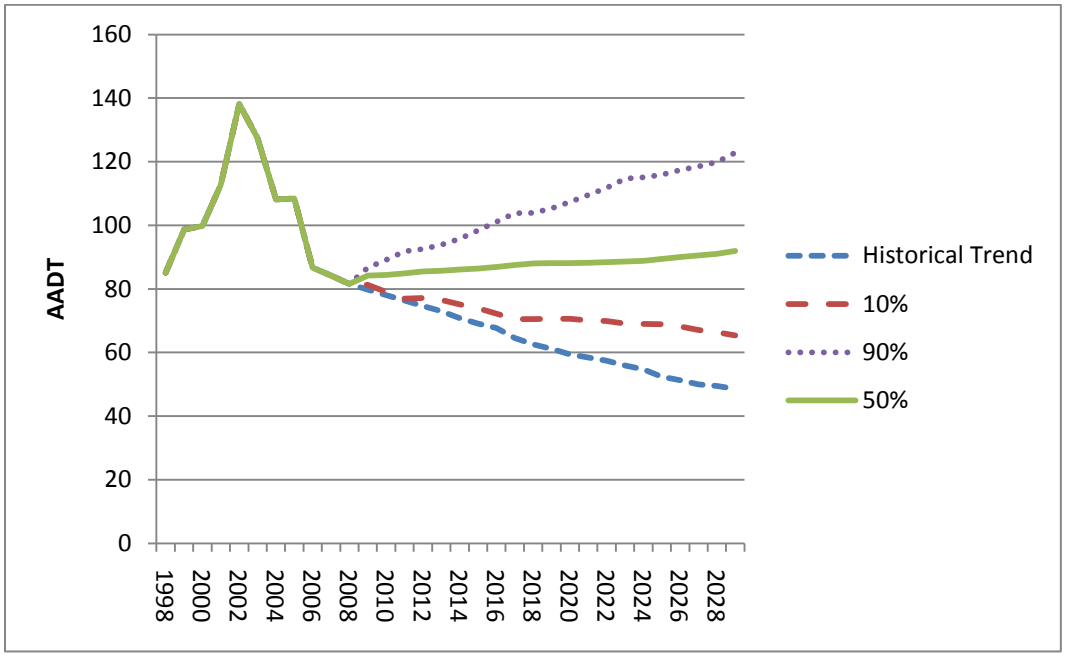


Figure 202: All AADT at Whitetail Connecting Highway: S-251

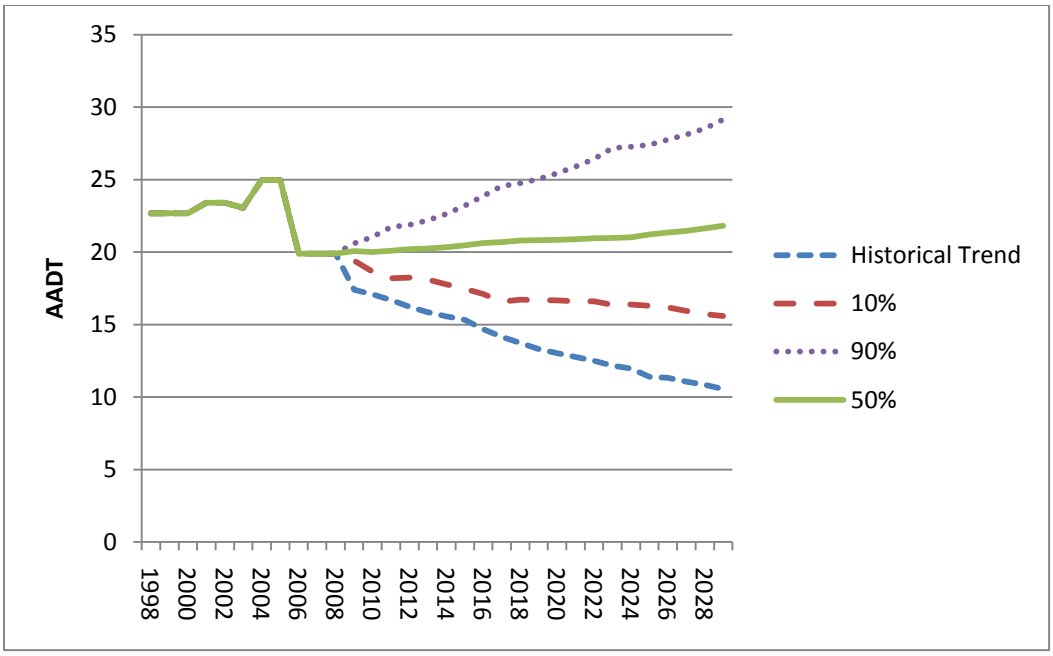


Figure 203: Truck AADT at Whitetail Connecting Highway: S-251

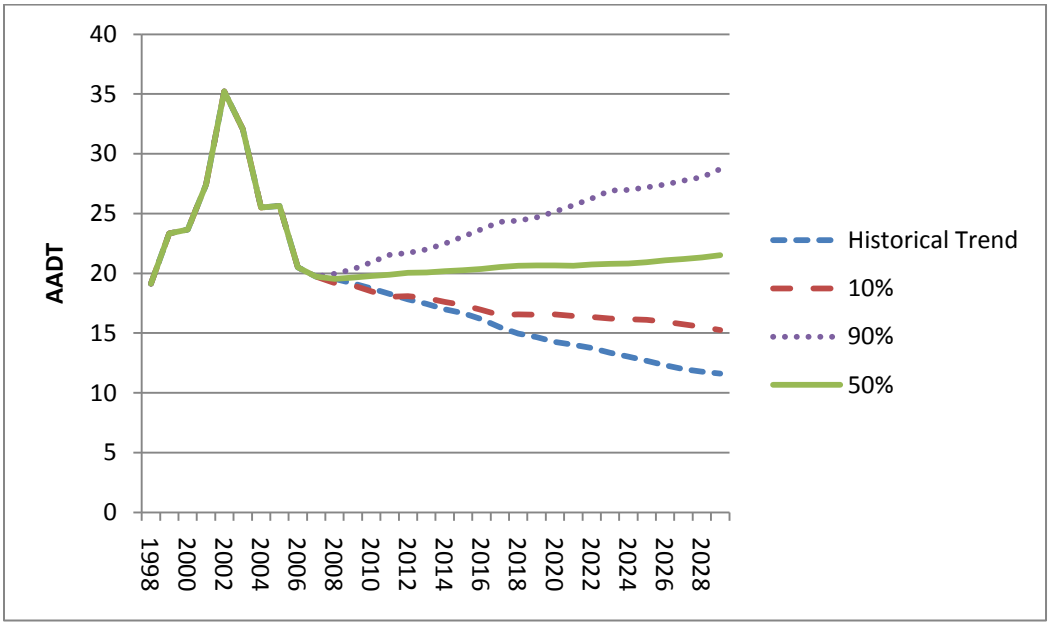


Figure 204: Commercial AADT at Whitetail Connecting Highway: S-251

6.13 Raymond

The traffic trends and forecasts for Raymond POE are given in Figure 205. Truck traffic across the Raymond POE (Figure 206) has remained fairly steady compared to the commercial auto traffic (Figure 207), which has seen dramatic reductions in traffic volumes since the peak in 2002. The forecasts at Raymond show a steady growth through 2028, but traffic volumes do not surpass the peak in 2002.

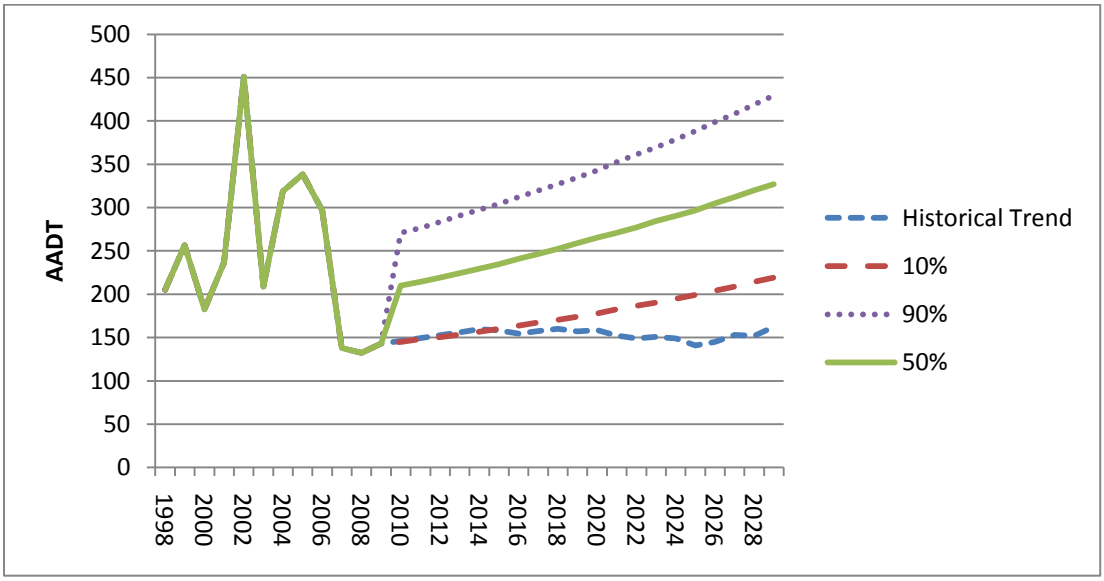


Figure 205: All AADT at Raymond POE

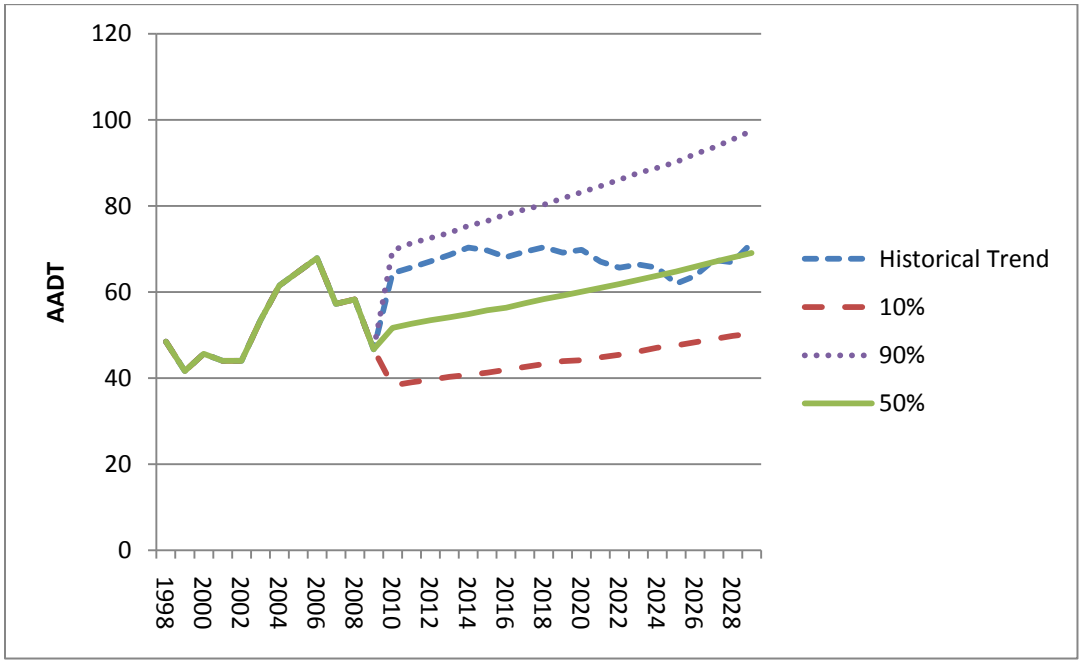


Figure 206: Truck AADT at Raymond POE

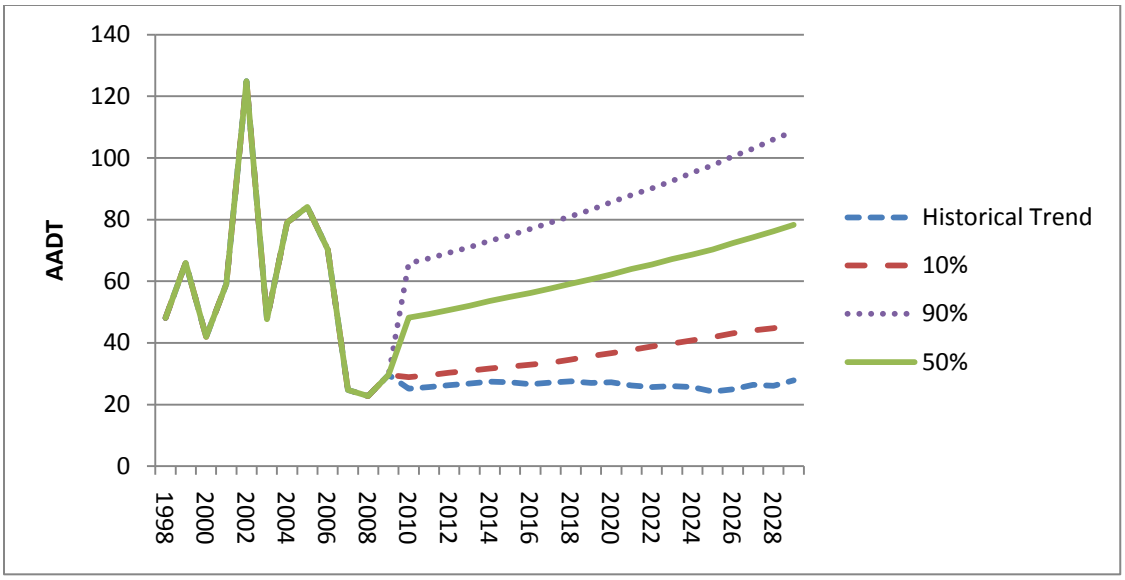


Figure 207: Commercial Auto AADT at Raymond POE

There are two major connecting highways servicing Raymond POE, N-34 and N-22. The traffic pattern on the connecting highway N-34 also followed a similar pattern as the Raymond POE over the last few years (Figure 208). The forecasts show a flat traffic trend for truck and commercial auto (Figure 209 and Figure 210).

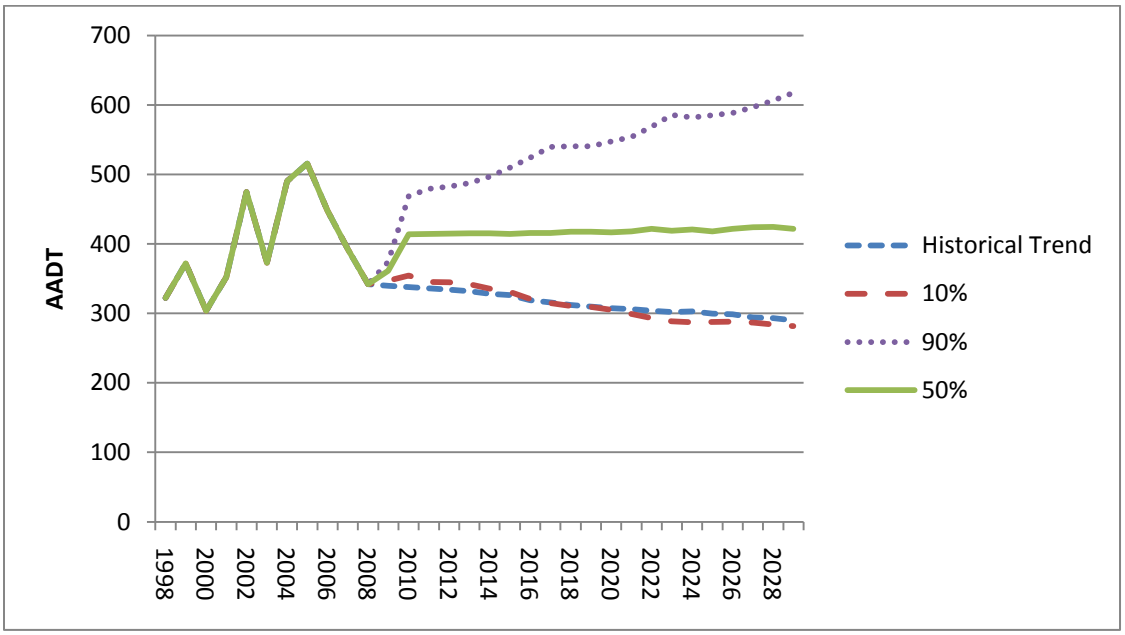


Figure 208: All AADT at Raymond Connecting Highway: N-34

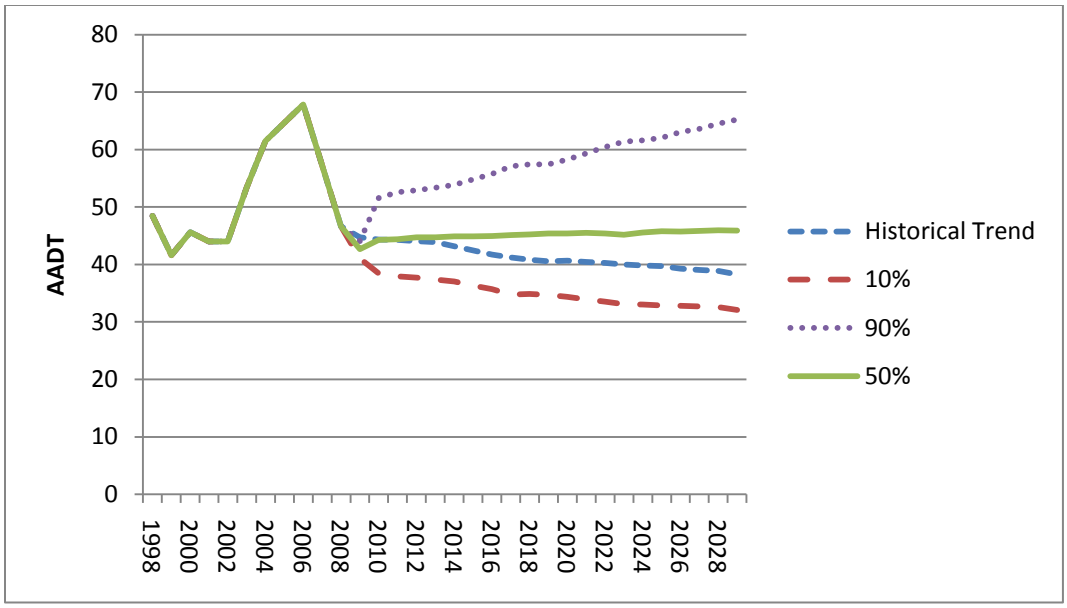


Figure 209: Truck AADT at Raymond Connecting Highway: N-34

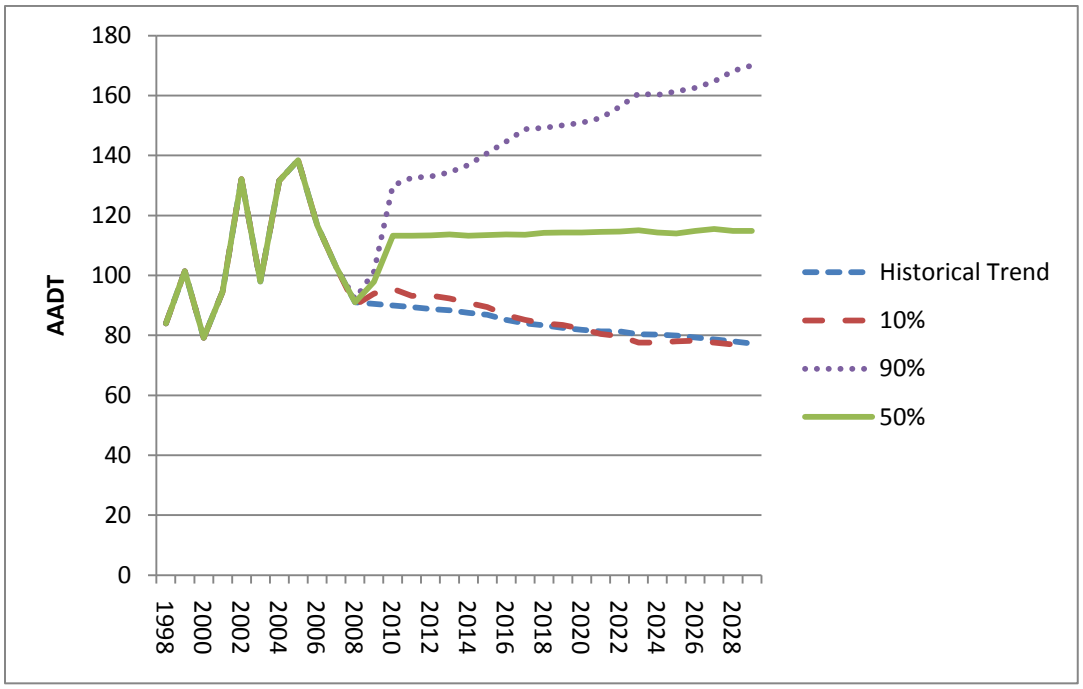


Figure 210: Commercial Auto AADT at Raymond Connecting Highway: N-34

At the higher end (90%), there is a modest growth, and lower end (10%) matches the decline corresponding to the historical trend. N-22, also shows similar patterns with a fairly flat forecast (Figure 211). The 50th percentile forecast for trucks on N-22 exceed the historical trend (Figure 212), while the commercial auto 50th percentile falls in line with the historical trend (Figure 213).

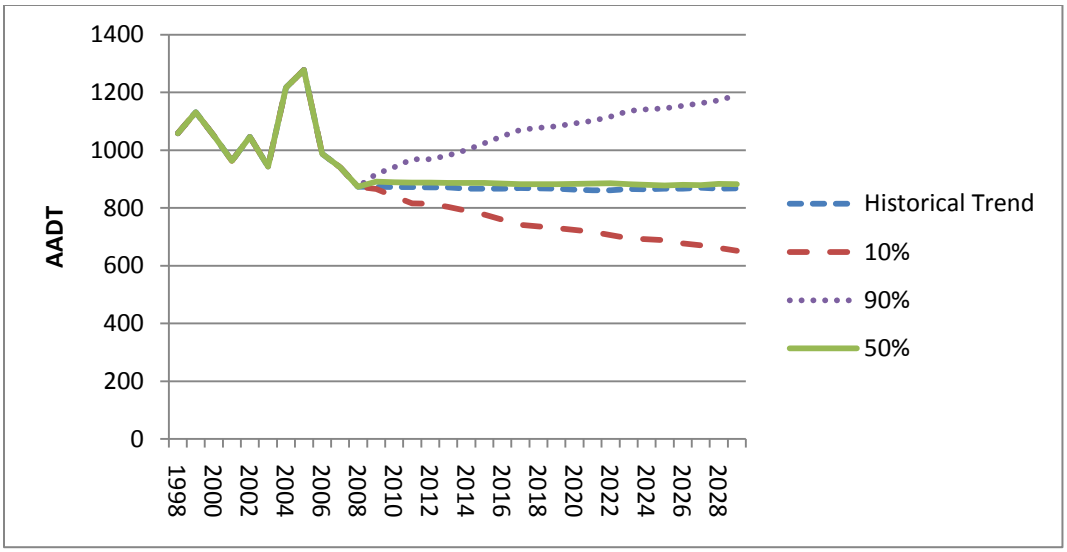


Figure 211: All AADT at Raymond Connecting Highway: N-22

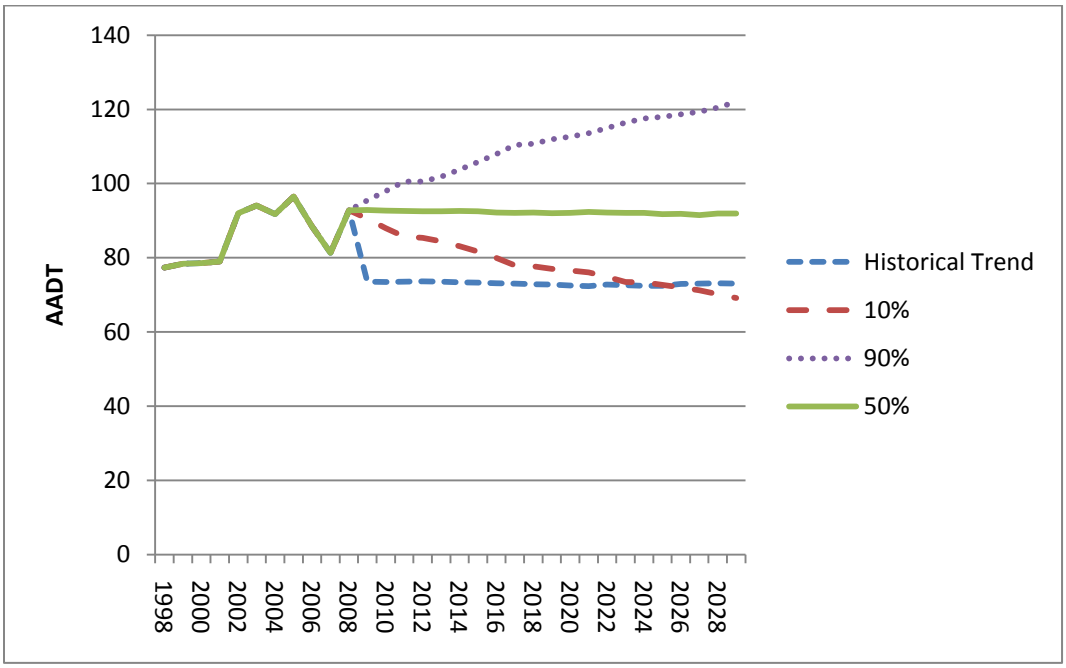


Figure 212: Truck AADT at Raymond Connecting Highway: N-22

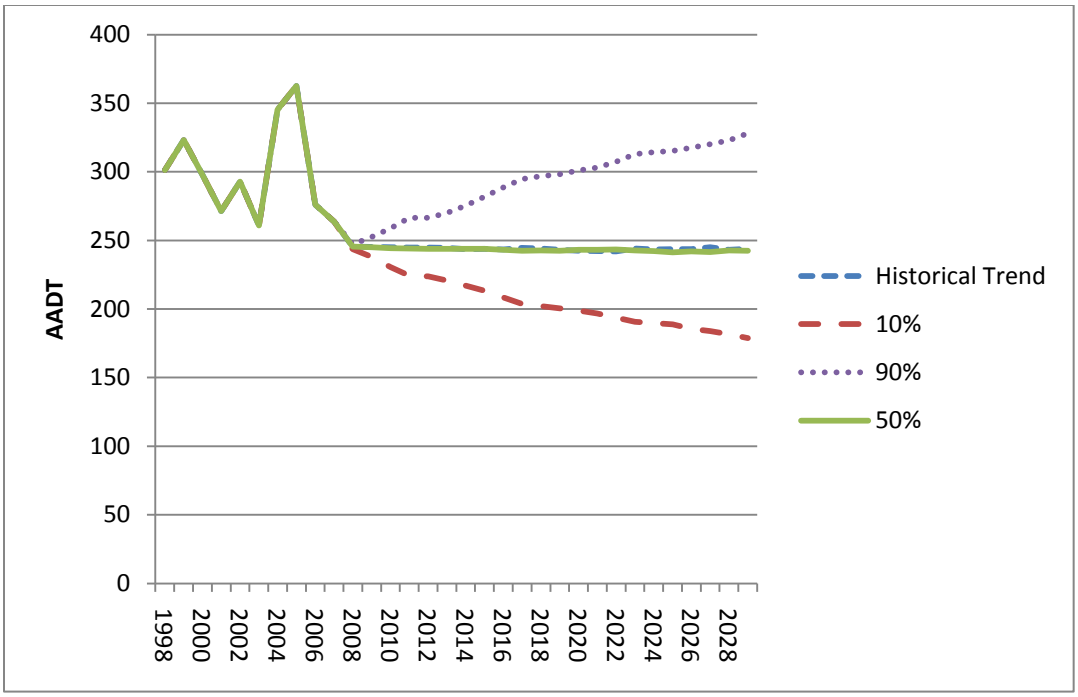


Figure 213: Commercial Auto AADT at Raymond Connecting Highway: N-22

Summary

The traffic volumes at all of the nine POEs and their connecting highways have seen fairly significant drops from the peak levels during the early part of the decade. The forecasts show growth in most cases, but not enough to catch up to return to peak traffic volumes. This suggests that the infrastructure at the POE and the highways will not be major constraints to support the traffic levels over the next 20 years.