

THE WAY WE MOVE

# ROADSIDE TRUCK SURVEY

FINAL REPORT

FEBRUARY 2013

TRANSFORMING | **EDMONTON**

BRINGING OUR CITY VISION TO LIFE





# Executive Summary

In September and October 2012, the City of Edmonton conducted a roadside truck survey. The survey was conducted by Transportation Services in cooperation with Edmonton Police Service with an aim to better understand the movement of goods in Edmonton and provide input to the Edmonton Goods Movement Strategy. Drivers of trucks with a gross vehicle weight of 4,500 kg or more were asked to enter a safe waiting area where they were voluntarily interviewed by survey staff regarding:

- Trip origins and destinations
- Routes taken while travelling in the city and the regional highways
- Commodities carried
- Experiences while travelling on the Edmonton transportation network

In total, 2,294 surveys were completed over 14 days. Major findings are:

- Within the city, the largest movement of trucks is between the Northwest and Southeast quadrants – consistent with results of the *1996 Truck Study* and the *2001 Commodity Flow Survey*.
- 74% of trucks began and ended their day at the same location, their 'home-base' - a trip pattern that is consistent with the results from the *2001 Commodity Flow Survey*.
- Between the region and the city, the highest volume of movement occurred between the East, West and South Regions; previous studies have found similar trends although the West and East Regions have become more important as generators of trips to and from the city.
- Yellowhead Trail is the most used facility with 67% of truck drivers indicating using the roadway and 60% using Anthony Henday Drive.
- 60% of trucks using Yellowhead Trail and Anthony Henday Drive had as part of their trip an origin or a destination in the City of Edmonton while nearly a quarter of all trucks using of Yellowhead Trail and Anthony Henday Drive had an origin or destination in the region.
- 81% of truck drivers surveyed indicated they chose their routes because they were the most direct.
- Edmonton's roads are important to the oil, gas and construction industries – 54% of trucks carry materials such as chemicals, fuel petroleum and construction materials.
- Truck drivers reported a high level of overall satisfaction (62%) with Edmonton's truck routes and roadways - much higher than other jurisdictions in Canada and the United States.
- Most frequent suggestions from truck drivers about the roadway network included improvements to pavement condition, opening 75 Street to trucks and improvements to signage and truck route information.

## Table of Contents

1.	Introduction .....	1
2.	Background .....	1
2.1	1996 Truck Route Study.....	1
2.2	2001 Commodity Flow Study.....	2
2.3	Where We Are Today.....	2
2.3.1	Transportation Industry Trends.....	2
2.3.2	Truck Volume Trends.....	3
2.3.3	Direction from City Council.....	3
3.	2012 Edmonton Roadside Truck Survey .....	5
3.1	Purpose and Methodology .....	5
3.2	Study Area and Timeframes.....	5
3.3	Consultation and Communication .....	7
4.	Survey Results .....	8
4.1	Scaling the Survey Sample Results.....	8
4.2	Vehicle Characteristics.....	8
4.2.1	Truck Types .....	9
4.2.2	Vehicle Weight.....	11
4.2.3	Vehicle Ownership .....	11
4.3	Trip Characteristics .....	12
4.3.1	Trip Origins and Destinations.....	12
4.3.2	Inner Ring Road and Anthony Henday.....	15
4.3.3	Route Choice.....	16
4.3.4	Provincial Highways .....	17
4.3.5	Connections to Airports.....	17
4.4	Load Characteristics.....	18
4.4.1	Load Efficiency and Diversity .....	18
4.4.2	Goods Profile.....	19
4.4.3	Dangerous Goods.....	20
4.5	Driver Satisfaction.....	21
5.0	Discussion of Findings.....	22
5.1	Driver Comments .....	22
5.2	Key Goods Movement Corridors .....	24
5.2.1	Importance of Yellowhead Trail & Anthony Henday Drive .....	24
6.0	Conclusions .....	25
6.1	Key Findings .....	25
6.2	Next Steps .....	26
	References .....	27
	Acknowledgements.....	28
	Appendix A. Edmonton Roadside Truck Survey Locations .....	29
	Appendix B. Sample Survey .....	30
	Appendix C. Map of Anthony Henday Drive .....	32

## List of Figures

Figure 1 - Roadside Truck Survey Locations .....	6
Figure 2 - Sample of Truck Types Surveyed .....	9
Figure 3 - Sample of Truck Types Not Surveyed .....	10
Figure 4 – Truck Types on Edmonton Road .....	10
Figure 5 - Distribution of Truck Gross Vehicle Weight.....	11
Figure 6 - Vehicle Ownership .....	11
Figure 7 - Daily Origins and Destinations at Start and End of Day (All Trucks).....	13
Figure 8 - Daily Truck Trip Patterns.....	14
Figure 9 - Percentages of All Trucks Using Inner Ring Road Corridors .....	15
Figure 10 - Route Choice Rationale Distribution .....	16
Figure 11 - Percentages of Trucks Using Provincial Highways.....	17
Figure 12 - Load Efficiency .....	18
Figure 13 - Commodities Carried by Trucks.....	19
Figure 14 - Types of Dangerous Goods Carried .....	20
Figure 15 - Driver Satisfaction.....	21
Figure 16 - Word Cloud of Driver Comment Themes .....	22
Figure 17 - Most Used Roadway Facilities by Trucks.....	24

# 1. Introduction

*The Way We Move*, Edmonton's Transportation Master Plan, identifies the City's commitment to support safe, efficient and effective goods movement in order to support economic development and the competitiveness of businesses within the Capital Region. The transportation of commodities throughout the city is largely carried out by trucks and is critical for an efficient and productive economy.

The purpose of this report is to present the results of the City of Edmonton Roadside Truck Survey which is a component in the development of the Edmonton Goods Movement Strategy.

## 2. Background

Edmonton plays an important role in Alberta's economy and has undergone significant growth over the past decade. The city's transportation and warehousing sector is a major contributor to this growth and that is expected to continue into the future. In keeping with this growth, major transportation infrastructure developments have occurred including large investments by the Province of Alberta in Edmonton's Anthony Henday Drive ring road, scheduled for completion in 2016.

Two key studies were conducted over the past two decades in order to gain a better understanding of the impacts, characteristics and requirements for efficient goods movement in Edmonton: the 1996 *Truck Route Study* and the 2001 *Commodity Flow Study*. However, growth and infrastructure developments over the past decade have necessitated an update to these studies. In April 2012, Edmonton City Council passed a motion to review and update the understanding of goods movement within Edmonton and the region. The 2012 *City of Edmonton Roadside Truck Survey* is one component that will help to advance the understanding of goods movement and will inform a larger Goods Movement Strategy.

### 2.1 1996 Truck Route Study

In 1995, in preparation for the development of the City of Edmonton Transportation Master Plan (TMP), the City commissioned a study of the truck route system as a technical component of the TMP process. The intent of the study was to identify a means of resolving and minimizing current problems associated with the truck route system at the time, "including regulations pertaining to restrictions by time, by types of goods and by vehicle weight, and establishing criteria to assist in the rationalization of future truck route system changes"<sup>1</sup>.

The data collection phase of the project included a literature review, a review of the City's previous truck route changes, a public involvement component and a detailed survey of trucking activity.

Key findings of the 1996 *City of Edmonton Truck Route Study* included:

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<sup>1</sup> Morrison Hershfield, *City of Edmonton Truck Route Study*, 1996

- Trucks are estimated to make 145,000 trips travelling over 2.16 million km on a daily basis
- The heaviest concentration of truck travel occurred internally between the northwest and southeast sectors of the city due to the industrial nature of these areas
- Most trucks serviced local regional needs, whereas few (1-2%) were destined to, or originated from, outside the region

## 2.2 2001 Commodity Flow Study

During 2001 and 2002, the City of Edmonton and Alberta Transportation undertook a study of truck and commodity movements in both the city and the region<sup>2</sup>. There were two components to the study: a commodity flow survey and an Edmonton region roadside survey. The study provided the data needed to “assist in the assessment of regional transportation needs, and in particular truck and service vehicle needs, and to include these needs in the development of short-term and long-term transportation plans.”<sup>3</sup>

Key findings of the 2001 *Commodity Flow Survey* included:

- 3.16 million vehicle-kilometers or 11% of all vehicle-kilometers travelled on a daily basis are for the delivery of goods and services (compared to 2.16 million vehicle-kilometres in 1995)
- The majority of daily truck trips originate in the southeast and northwest suburbs of the city (a similar trend was identified in the 1996 study)
- The highest number of vehicle trips occurring between the SE Suburb-NW Suburb, the SE Suburb-SE Inner and the NW Suburb-NE Inner zones
- The highest regional truck trips took place between Edmonton-Leduc and Spruce Grove/Stony Plain-Edmonton

## 2.3 Where We Are Today

### 2.3.1 Transportation Industry Trends

In Alberta, the transportation and logistics industry is an important aspect of the competitive advantage of the province. According to the Government of Alberta, trucks are “moving over 60% of all freight within the province” and are responsible for “about \$7 billion or 29% of Alberta’s non-pipeline international exports.”<sup>4</sup> In addition, the transportation and warehousing sector contributes \$10.2 billion annually to the Alberta economy and employs more than 98,000 people.<sup>5</sup> As Alberta’s economy grows it has a direct impact on transportation and logistics. Between 1991 and 2011, Alberta’s gross domestic product (GDP) grew at an average annual rate

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<sup>2</sup> International Results Group, Commodity Flow Survey, 2002

<sup>3</sup> Edmonton Region Commodity Flow Study Project Report, November 2003

<sup>4</sup> *Transportation and international logistics - Industry Sector Profile*. Alberta Enterprise and Advanced Education, Government of Alberta. <http://albertacanada.com/business/industries/transportation-and-logistics.aspx>

<sup>5</sup> *ibid.*

of 3.4%<sup>6</sup> while over the past 10 years alone, the registration of heavy trucks in the province increased by 46%.<sup>7</sup>

Over the past 10 years, trends in GDP growth in the Edmonton census metropolitan area (CMA) have followed those of the province. In the Edmonton CMA, the overall GDP grew by 43% while GDP growth in the transportation and warehousing sector grew by 39% during that period<sup>8</sup>.

In terms of employment, the transportation and warehousing sector grew by a marked 12% between 2011 and 2012<sup>9</sup>. Employment growth in this sector in the coming 10 years is forecasted to be much more modest at between 1% to 2% per year<sup>10</sup>. However, GDP growth in the transportation and warehousing sector is expected to continue to grow steady at an annual rate of 3%, amounting to an overall increase in the sector of 32% over the next ten years<sup>11</sup>.

### **2.3.2 Truck Volume Trends**

One-day truck volume counts have been collected annually at various locations around the city since 2004. Some data collection units are set up around the city such that they can effectively provide a cordon count between the city and the region. From these units we are able to gain an idea about the volume of trucks travelling between the city and the region on a given day. Data collected between 2004 and 2012 indicates that city-region truck travel is increasing with volumes between the city and the West Region nearly doubling. Data collected from a unit on Calgary Trail south of Ellerslie Road show truck volumes entering and leaving from the South Region increased by over 75% in the 8-year period. According to the counts, city-region truck travel has increased by nearly 40% between 2004 and 2012. This data is representative of the interaction between the city and the immediate surrounding region as well as the city and areas outside of the region.

Truck travel on the Inner Ring Road is also captured and provides a view into the travel internal to the city. According to truck volumes collected between 2004 and 2012 on these facilities, volumes have remained effectively unchanged. Volumes collected from Anthony Henday Drive however have shown a three-fold increase in the same time period indicating that some of the growth in truck travel demand is being absorbed by Anthony Henday Drive.

### **2.3.3 Direction from City Council**

In April 2012, at a meeting of the Transportation and Infrastructure Committee of Edmonton's City Council, a number of questions were raised by councilors in relation to goods movement. They expressed the need for a better understanding of truck movements in the city, in particular with regards to volumes, origins and destinations and routes taken for goods movement. This need was identified in light of the many infrastructure changes that had occurred over the past decade in Edmonton, including Anthony Henday Drive. There was also a need to investigate

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<sup>6</sup> *Alberta Economic Quick Facts*, October 2012. Alberta Enterprise and Advanced Education, Government of Alberta.

<sup>7</sup> *Transportation and international logistics - Industry Sector Profile*. Alberta Enterprise and Advanced Education, Government of Alberta. <http://albertacanada.com/business/industries/transportation-and-logistics.aspx>

<sup>8</sup> Calculated from data provided by John Rose, Chief Economist, City of Edmonton, 2012.

<sup>9</sup> *ibid.*

<sup>10</sup> *ibid.*

<sup>11</sup> *ibid.*



possible changes in the movement of truck traffic between the city and the region, and the types of loads carried.

Direction was given to update the information presented in the 1996 Truck Route Study. This updated truck survey report will serve as an important input to the development of an Edmonton Goods Movement Strategy and implementation plan which will provide strategic direction for enabling safe and efficient goods movement in Edmonton.

### 3. 2012 Edmonton Roadside Truck Survey

#### 3.1 Purpose and Methodology

To better understand the movement of goods in Edmonton and provide input to the Edmonton Goods Movement Strategy, a truck survey was commissioned by the City. A roadside survey was chosen as it is both cost-effective and yields higher response rates than a mail-out survey. The survey was conducted by Transportation Services in cooperation with Edmonton Police Service in September and October of 2012. Police officers directed trucks with a gross vehicle weight of 4,500 kilograms or more into a safe waiting area where they were voluntarily interviewed by survey staff regarding:



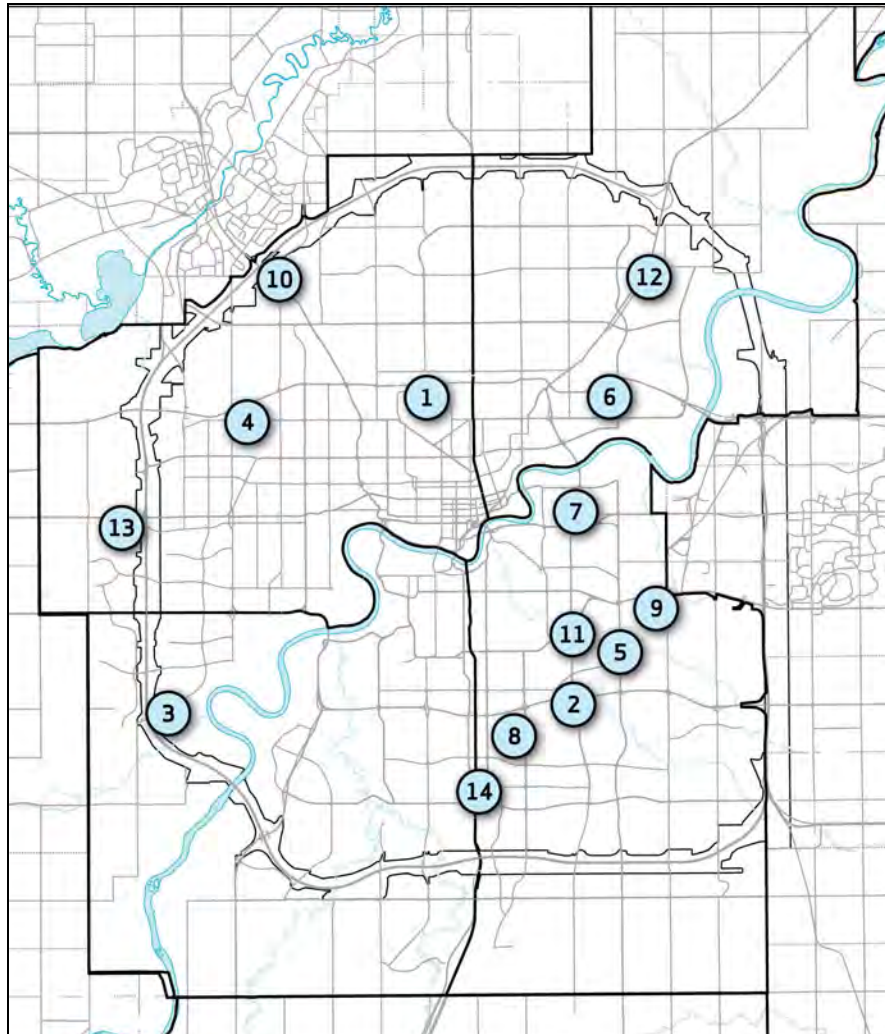
- Trip origins and destinations
- Routes taken while travelling in the city and the regional highways
- Commodities carried
- Experiences while travelling on the Edmonton transportation network

In the City of Edmonton, any vehicle weighing more than 8,000 kg or having a length greater than 12.5 metres is considered to be a *heavy vehicle* and is subject to Bylaw 5590. However, for the purposes of this survey, the focus was on vehicles weighing more than 4,500 kg in order to remain consistent with the methodology of the 2001 Edmonton Region roadside survey. In addition, under federal legislation, trucks registered with a weight of more than 4,500 kg must comply with National Safety Code standards on regional highways.

#### 3.2 Study Area and Timeframes

The survey was conducted at fourteen separate locations around the city over 14 days. The locations were selected based on the following criteria: high volume truck routes, ability for trucks to stop safely, survey staff safety and sufficient road capacity to minimize impacts on motorists. A map of the survey locations and dates is provided in Figure 1. Appendix A provides a map with more detailed information on the survey locations. Initially the survey was to be conducted in both the city and in the Edmonton region, however after consulting with Alberta Transportation, resource limitations prevented the participation of Alberta Transportation in the survey and so the study was limited to locations within the city.

Figure 1 - Roadside Truck Survey Locations



Site Map Legend

SITE	LOCATION	DATE	SITE	LOCATION	DATE
1	Yellowhead Trail west of 121 Street	Sept. 18	8	99 Street south of 39 Avenue	Oct. 12
2	Whitemud Drive at 75 Street	Sept. 19	9	Sherwood Park Freeway west of 34 Street	Oct. 19
3	Anthony Henday Drive north of Lessard Road	Sept. 20	10	Anthony Henday Drive near St. Albert Trail	Oct. 24
4	170 Street north of Yellowhead Trail	Sept. 25	11	75 Street north of McIntyre Road	Oct. 25
5	50 Street north of Eleniak Road	Sept. 26	12	Manning Drive north of 153 Avenue	Oct. 26
6	Yellowhead Trail west of 50 Street	Sept. 27	13	Highway 16A at Winterburn Road	Oct. 30
7	Wayne Gretzky Drive at 101 Avenue (northbound only) and 116 Avenue (southbound only)	Oct. 5	14	Gateway Boulevard north of 23 Avenue (northbound) and Calgary Trail south of 42 Avenue (southbound)	Oct. 23

The survey was conducted on fourteen different days between Tuesday to Friday and between 9 a.m. and 3 p.m., as previous studies have shown this is peak period for trucks. It also has the added benefit of reducing impacts on motorists. The days selected to conduct the survey were based on two factors:

- The first three survey days were selected in order to coincide with the Edmonton Police Service and Provincial fall check program
- Truck volumes are typically higher Tuesday through Friday and during the off-peak periods.<sup>12</sup> This is also consistent with experiences in other Canadian jurisdictions.

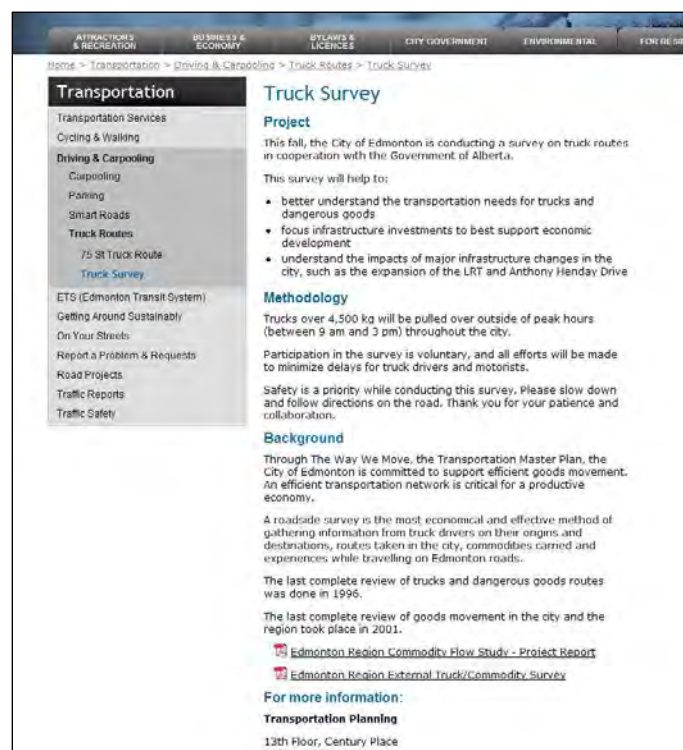
### 3.3 Consultation and Communication



The survey was designed to gather qualitative and quantitative information on the movement of trucks in Edmonton by way of a two- to three-minute interview. A survey questionnaire was developed after a literature review, internal consultation and review by an expert advisor. Drivers were informed that the survey was voluntary and were offered a thank-you card with a coffee voucher as a gesture of appreciation. A detailed

description of the development of the survey tool and techniques used are provided in the *Roadside Truck Survey Techniques Report*. The types of questions asked included the origins and destinations of the truck, types of commodities carried, routes used and the quality of the driving experience. A sample of the survey tool is provided in Appendix B. The questions were broadly similar to those asked in the *2001 Commodity Flow Study* with the main differences being that in 2001 a comprehensive trip diary was used, no driver satisfaction questions were asked and information on the value of the goods carried was gathered. The budget for the 2001 survey was ten times larger than the 2012 roadside survey, which allowed for greater detail to be obtained on trips made over a 24-hour period.

A communication plan was also developed and information distributed to City Council, the media, industry representatives, government agencies and the public. A website was created to convey the information.



<sup>12</sup> Based on weigh-in-motion data provided by the Province of Alberta.

## **4. Survey Results**

### **4.1 *Scaling the Survey Sample Results***

Over the course of the 2012 Edmonton Roadside Truck Survey, 2,294 trucks were surveyed at fourteen locations around the City of Edmonton on various days. As the data represents only a sample of all the truck movements in Edmonton, the data had to be expanded to represent the overall truck movements on a given day. All analysis was conducted on the expanded data set. In combining the data from fourteen different sites a representative day was created.



### **4.2 *Vehicle Characteristics***

The data collected on vehicle characteristics, including truck type, weight and information on dangerous goods loads, helps us to better understand the types of vehicles transporting goods on Edmonton roadways. These characteristics also help to determine whether the vehicle is subject to the sections of the City of Edmonton's Bylaw 5590 pertaining to truck routes and movement of dangerous goods. Drivers were also asked about the type of vehicle ownership of the truck. Details on the data expansion methodology can be found in the *Roadside Truck Survey Data Expansion Report*.

#### 4.2.1 Truck Types

Trucks travelling on Edmonton roadways take many forms. Figure 2 provides examples of the types of trucks that were interviewed for the roadside truck survey. Some of these trucks may not have fallen under the category of a 'heavy vehicle' as defined by the City of Edmonton Bylaw 5590 and so would not be subject to heavy vehicle regulations.



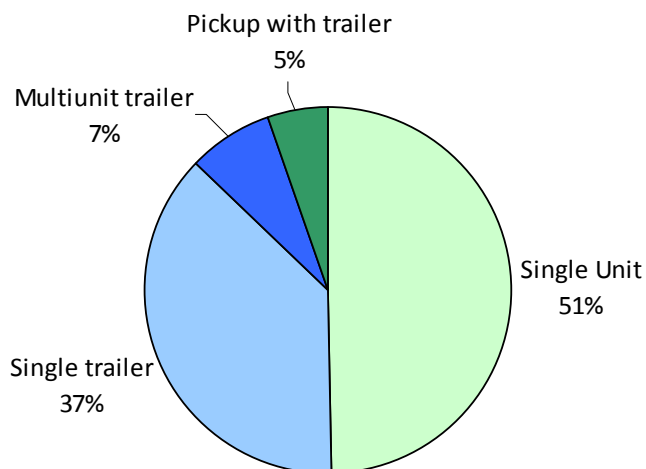
Figure 2 - Sample of Truck Types Surveyed



The focus of this survey was to gather information on trucks having a gross vehicle weight of 4,500 kg or more which was consistent with the methodology used in the 2001 Edmonton Region roadside survey. Examples of vehicles that were not interviewed for the survey are shown in Figure 3.



Figure 3 - Sample of Truck Types Not Surveyed



The data presented in Figure 4 indicates that 56% of trucks travelling on Edmonton road consist of single-unit trucks and a small number of pickups with trailers. The remaining 44% include the larger tractor-trailers with either single or multiple trailers.

Figure 4 - Truck Types on Edmonton Road

#### 4.2.2 Vehicle Weight

The tare (empty) weights and gross vehicle weights of all trucks were collected when available if printed on the truck or provided by the driver. The distribution of gross vehicle weight is shown in Figure 5. The weight distribution of the vehicles indicates that the majority of trucks fell within the 20,000 kg to 70,000 kg gross weight range.

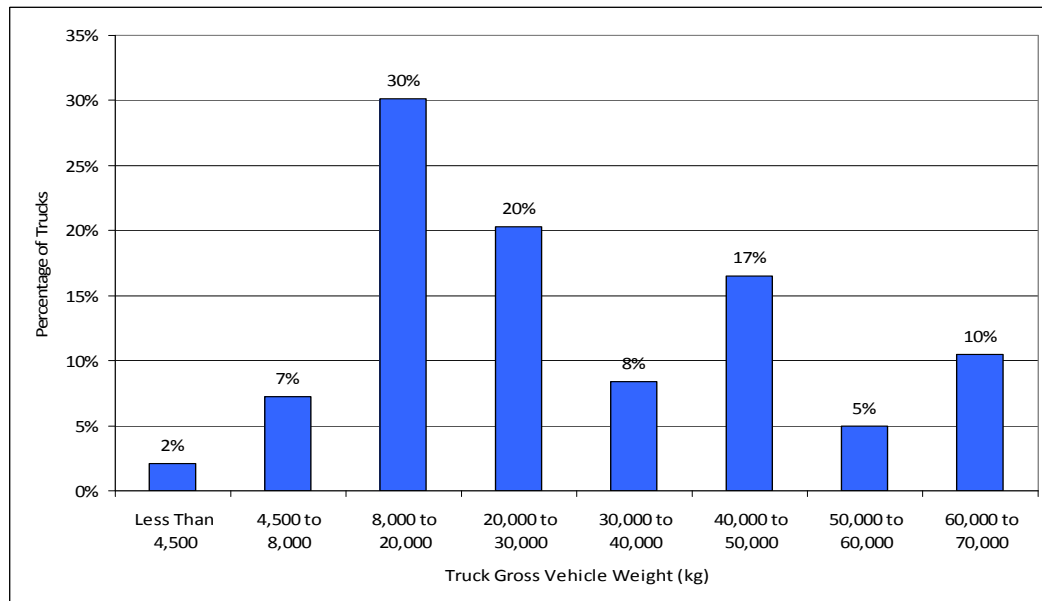
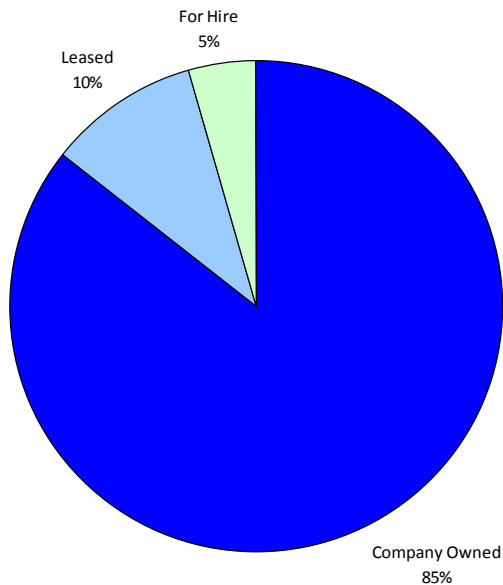


Figure 5 - Distribution of Truck Gross Vehicle Weight

#### 4.2.3 Vehicle Ownership



The information collected on vehicle ownership presented in Figure 6 shows that the vast majority of the trucks, 85%, are company-owned and the remainder are leased or for-hire vehicles.

Figure 6 - Vehicle Ownership



## **4.3 Trip Characteristics**

To gain insight into truck trip patterns, origin-destination and route choice information was collected. In addition, drivers were asked to provide the reasons for their route choices and whether they made a connection to an airport.

### **4.3.1 Trip Origins and Destinations**

#### **Overall Trip Patterns**

Drivers were asked to provide the address at which they began and ended their trip on the day of the survey as well as the most recent stop before and after the survey. Figure 7 provides the origin and destination data for the start and end of day. Data was also aggregated for all truck trips in and around Edmonton with the most predominant truck movement patterns shown visually in Figure 8.

The results show that within the city, the origin-destination pair with the highest movement of trucks occurs between the Northwest and Southeast quadrants. This is consistent with the results of the *2001 Commodity Flow Survey* as well as the *1996 Truck Study*. This also aligns with the land use characteristics of these two quadrants as they have high industrial land use. Also significant was truck movements between the Northwest and Northeast as well as the Northeast and Southeast quadrants of the city.

#### **'Home base' Movements**

Of the trucks surveyed over 40,000, or 74%, began and ended their day at the same location, or what drivers often referred to as their 'home base'. These trucks are typically company-owned, single-unit vehicles that make many daily stops. Notably, of all the trucks surveyed, 84% planned to or had made a stop in the City of Edmonton during their day. These trucks are an important part of the Edmonton economy as they are likely to be used for local goods movement. The survey identified the Northwest industrial area as the largest 'home base' in Edmonton, with nearly 13,000 trucks reporting starting and ending their day in this area.

#### **City-Region Truck Movements**

Between the City and the Region the highest volume of trips were generated to and from the East, West and South Regions. The substantial movement of goods to and from the South Region is consistent with previous studies while the growth of movement to and from the West and East Regions is a new development. Overall, the most significant origins and destinations were between Edmonton and Sherwood Park, St. Albert, Spruce Grove, Stony Plain, Acheson, Nisku, Leduc and Fort Saskatchewan. Outside of the region, important origins and destinations were Calgary, Fort McMurray and Wetaskiwin. Outside of Alberta, a frequent origin-destination was Saskatoon.

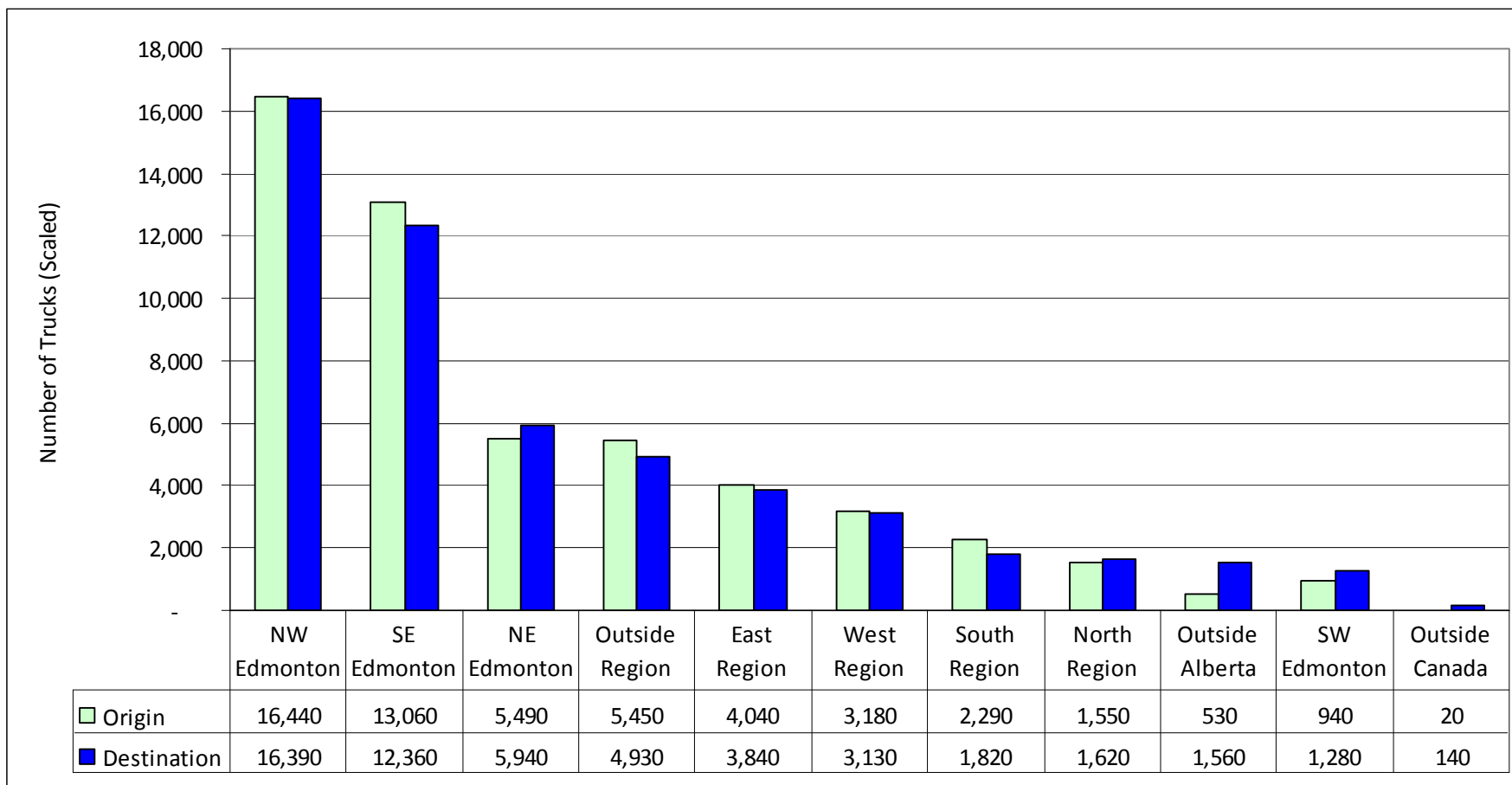


Figure 7 - Daily Origins and Destinations at Start and End of Day (All Trucks)

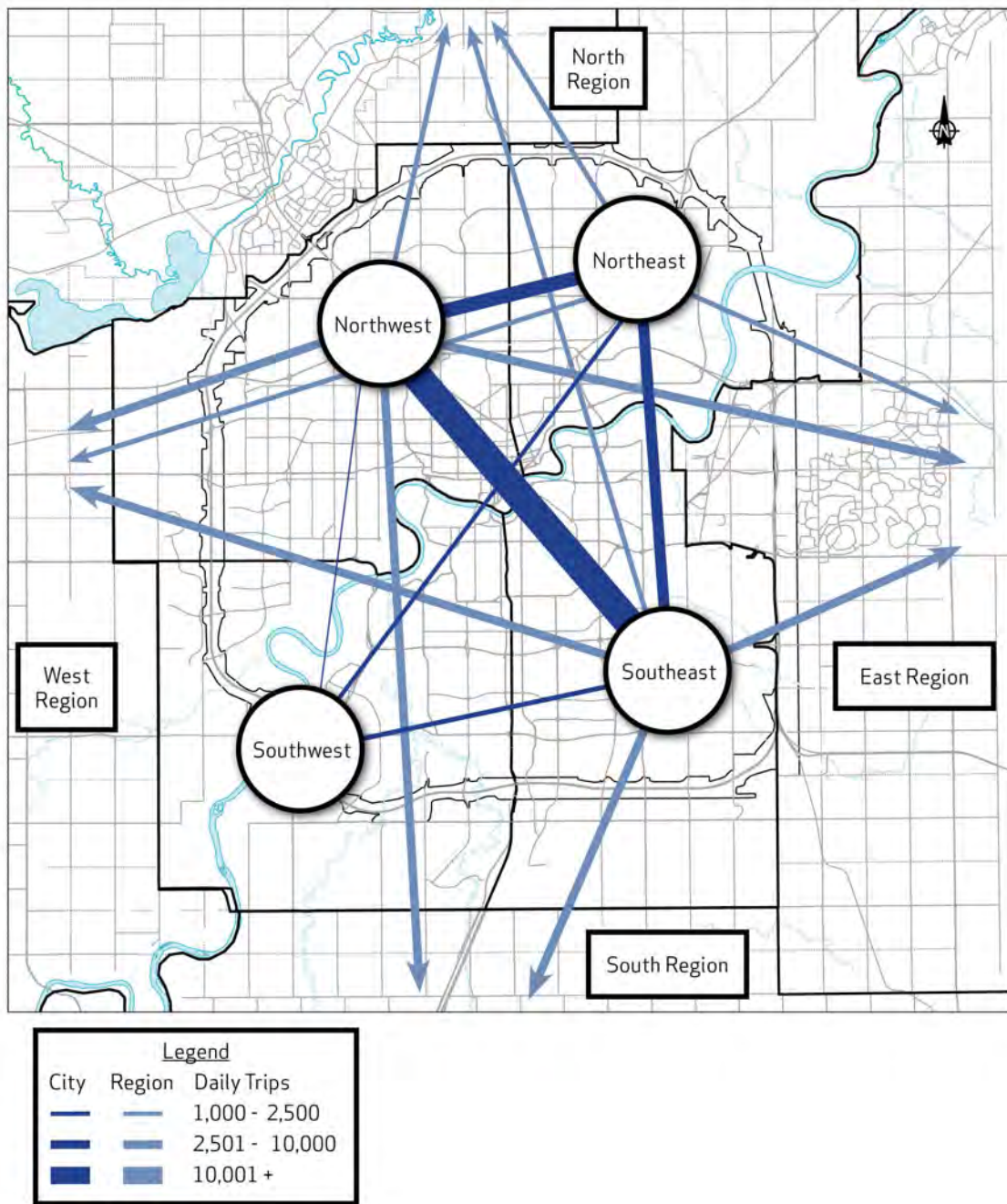


Figure 8 - Daily Truck Trip Patterns

#### 4.3.2 Inner Ring Road and Anthony Henday

To better understand the routes that were used to complete the trips, drivers were asked whether they used the Inner Ring Road or Anthony Henday Drive (map in Appendix 3) to complete their journey that day. For the Inner Ring Road corridors, the results show that Yellowhead Trail was used the most at 67% while 75 Street was used the least at 21%. Results are shown in Figure 9. Anthony Henday Drive was nearly as popular as Yellowhead Trail with 60% of drivers indicating that they would be or had used Anthony Henday Drive for their trips that day.

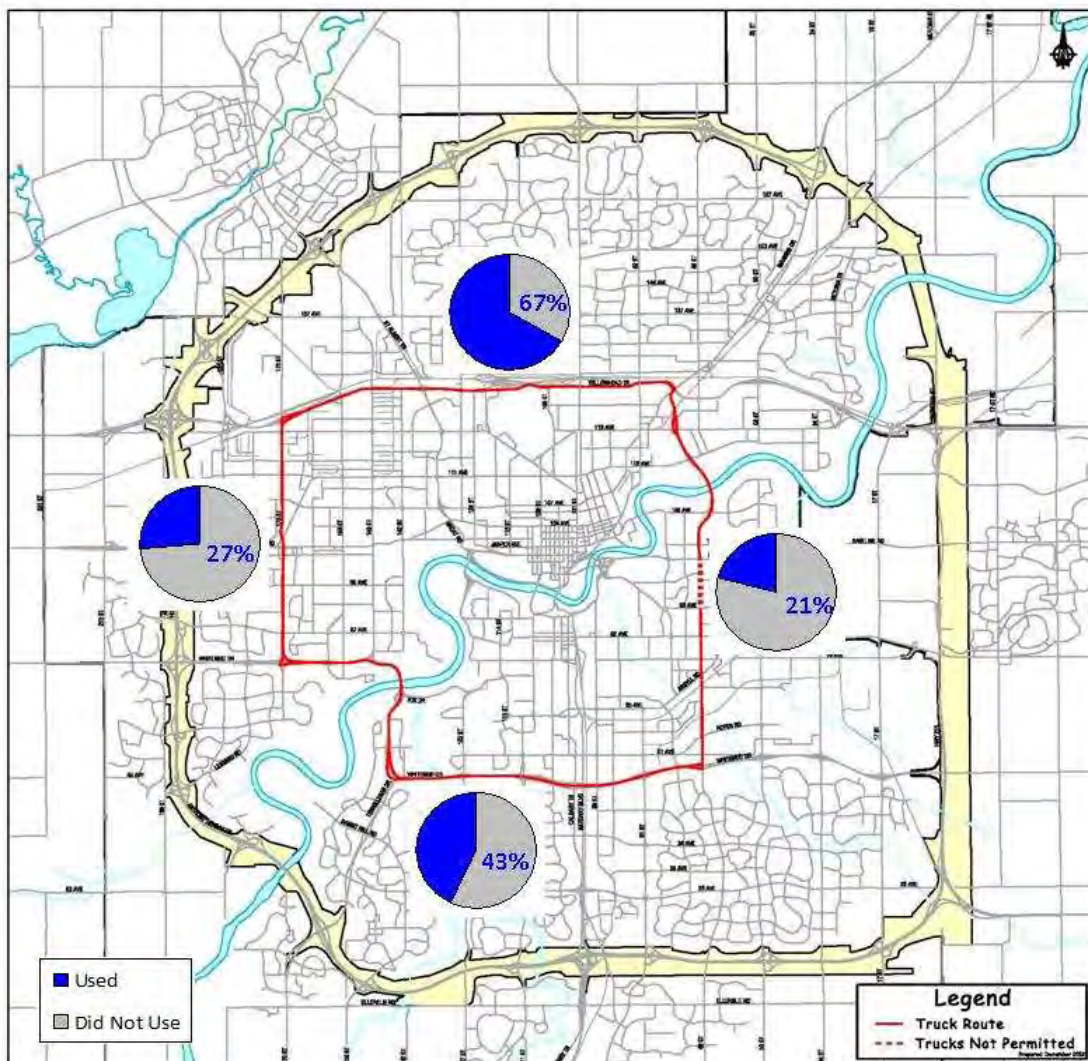


Figure 9 - Percentages of All Trucks Using Inner Ring Road Corridors

### 4.3.3 Route Choice

To gain a better understanding of the factors influencing route choices, drivers were asked to select from a list of reasons of why they chose the routes they did or to provide a reason of their own<sup>13</sup>. The results are provided in Figure 10 and indicate that by far the factor that most influenced the drivers' route choice was that it was the most direct to their destination.

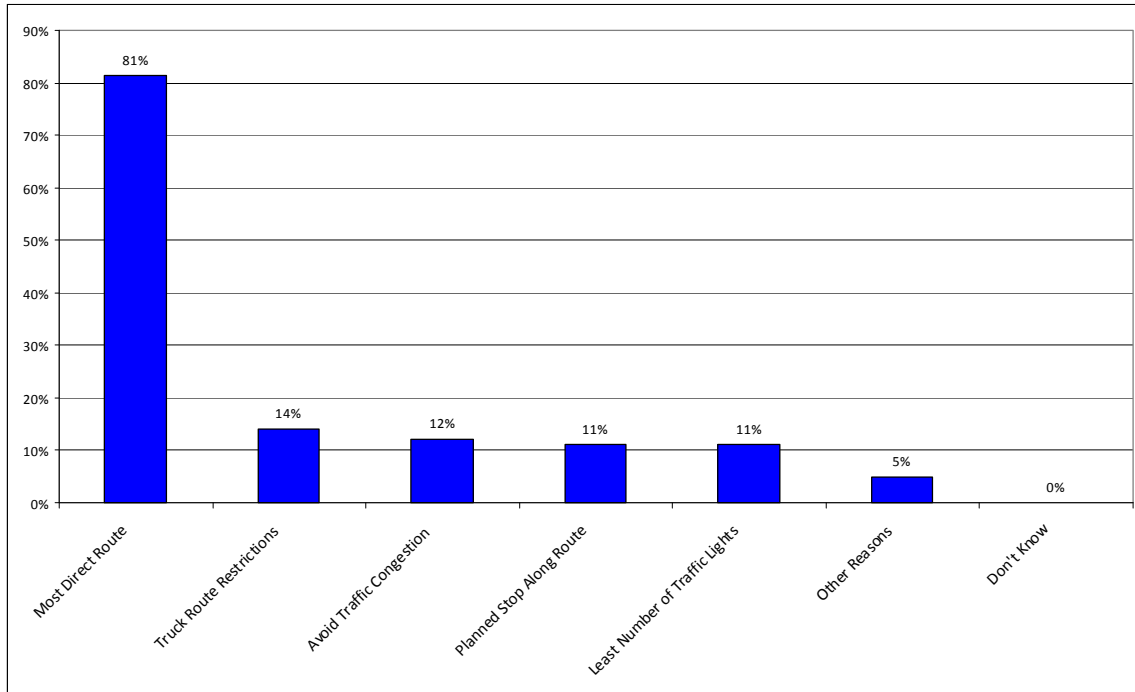


Figure 10 - Route Choice Rationale Distribution

<sup>13</sup> Drivers were allowed to select more than one rationale for their route choice.



#### 4.3.4 Provincial Highways

After consulting with Alberta Transportation, a question on which provincial highways were used by drivers was included in the survey. The results are presented in Figure 11 and show that Highway 16 was the most used of the provincial highways which aligns with the findings from the trip origins and destinations showing that most trips between the City and the Region took place between Northwest sector of the city and the East and West Regions.

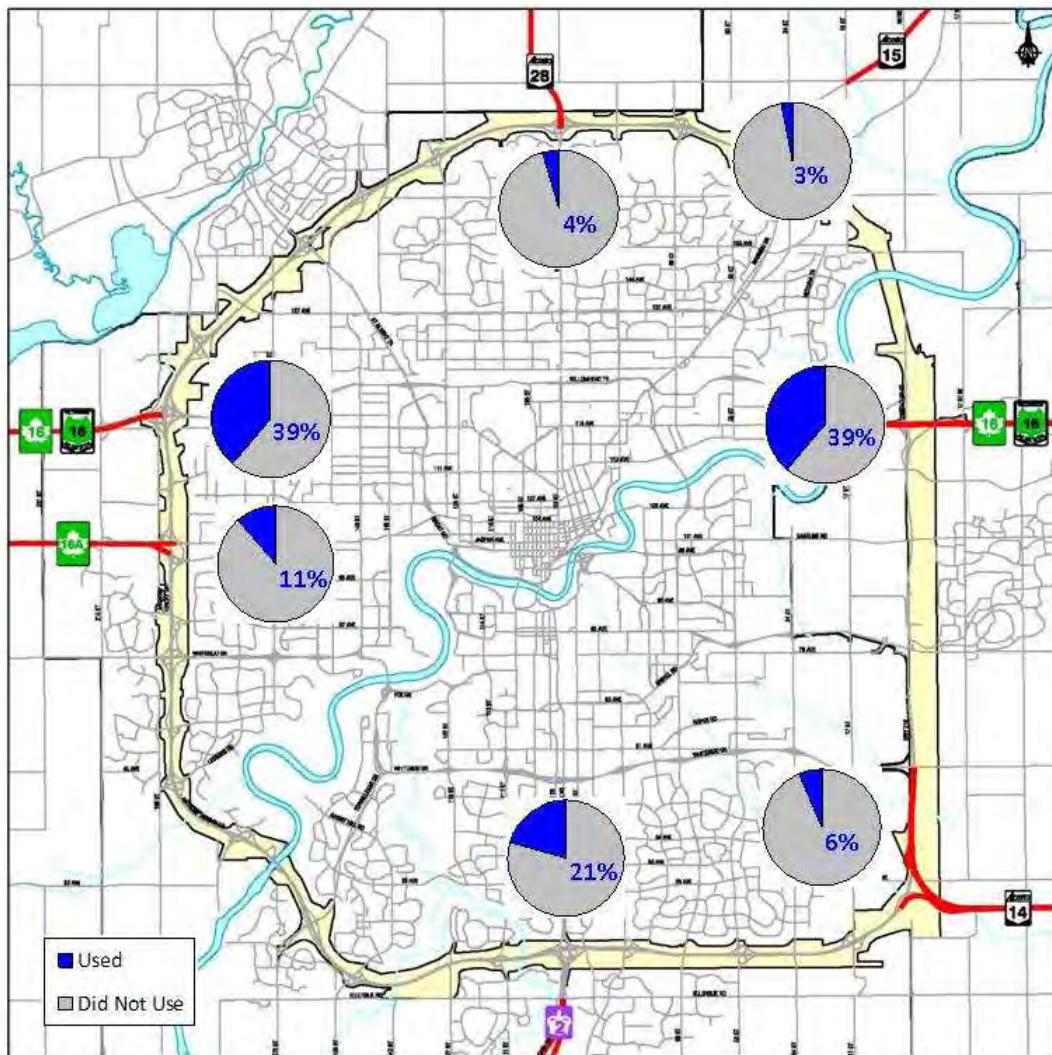


Figure 11 - Percentages of Trucks Using Provincial Highways

#### 4.3.5 Connections to Airports

After consultation with the Edmonton International Airport, a question was developed asking drivers if they made or planned to make a connection to an airport. The results indicate that very few trucks connected to an airport with 3.7% connecting to the Edmonton International Airport and 0.5% to the Calgary International Airport.

## 4.4 Load Characteristics

In this section of the survey truck drivers were asked to provide information on the type of load being carried and on the load efficiency, i.e. whether the truck was full, partially full, empty or whether the truck was a service vehicle. Examples of service vehicles include vehicles used for towing, landscaping, snow removal and electrical and plumbing services.

### 4.4.1 Load Efficiency and Diversity

Drivers were asked to provide information on how much load they were carrying in terms of having a full, partially full or empty truck. Figure 12 provides the distribution of load efficiency. In examining the travel patterns of load-carrying trucks, full trucks are more likely to have an origin or destination outside of the region as compared to those staying within the city and region. Just over a third of trucks reported travelling empty or “dead-heading” which indicates some inefficiency. Drivers were also given the option of identifying their truck as a service vehicle and as such were not carrying a goods load. Of the service vehicles surveyed, 79% were city-based with less than 1% traveling outside of the region. In terms of the diversity of their load, the results indicate that the majority, 82% of trucks, are carrying single commodities while the remaining 18% were carrying multiple commodities<sup>14</sup>.

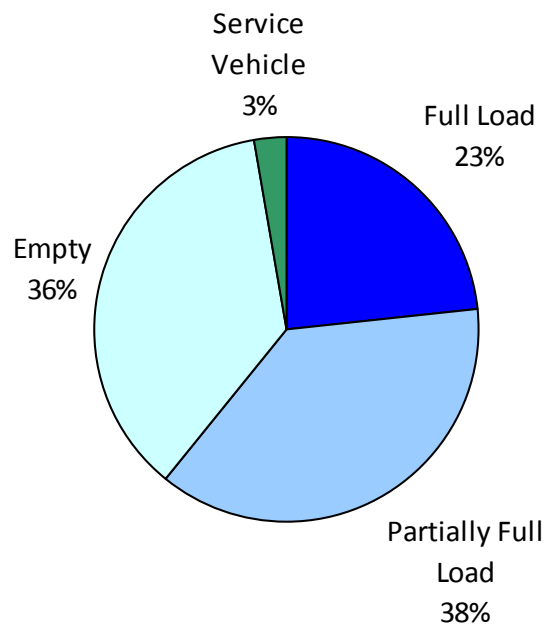


Figure 12 - Load Efficiency

<sup>14</sup> A commodity category contains several types of goods, so although the truck is carrying a single type of commodity there may be many different types of goods on board.

#### 4.4.2 Goods Profile

Of the trucks that were full or partially full, the goods carried were aggregated into eleven categories by truck type in Figure 13. Results indicate the most frequently transported good was non-metallic minerals such as gravel, soil and glass, followed by fabricated metal products such as metal pipes and beams. This is consistent with Edmonton's position as a transportation hub for construction and heavy industry.

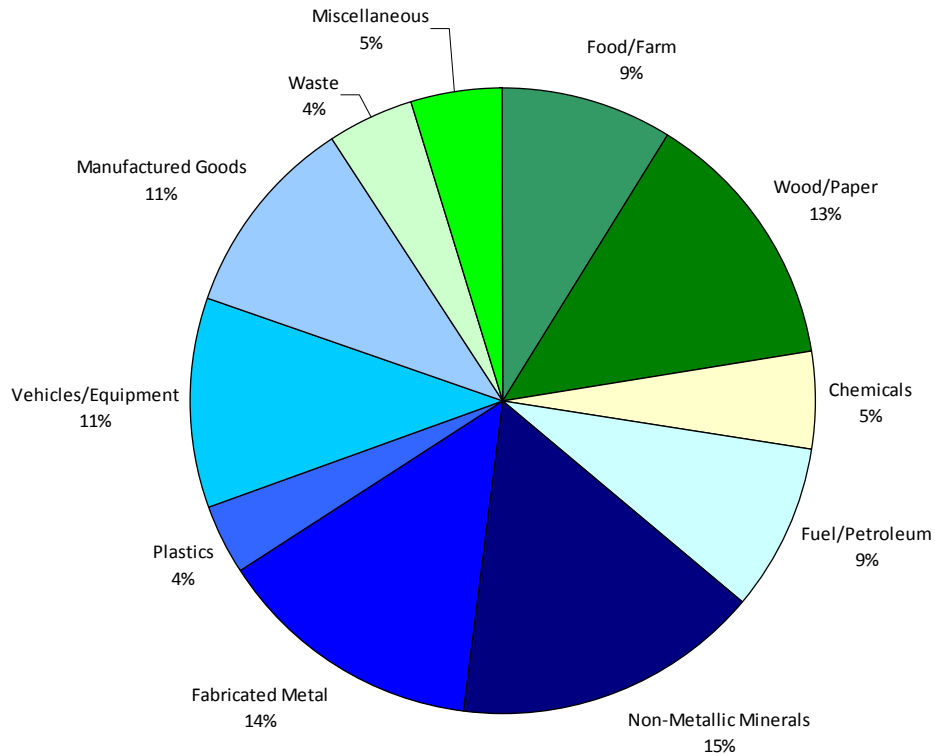


Figure 13 - Commodities Carried by Trucks



#### 4.4.3 Dangerous Goods

Dangerous goods being carried by trucks were reported in the survey by recording the United Nations number of the dangerous good as indicated on a placard on the truck. Only 92 trucks representing 4.3% of those surveyed were transporting one or more dangerous good. The types and distribution of dangerous goods being transported are illustrated in Figure 14. As shown in the figure, 72% of the trucks carrying dangerous goods were hauling petroleum fuels, liquefied petroleum gases, petroleum distillates or crude oil. Of the remaining 28%, half were carrying industrial chemicals including acids, solvents, alcohols, ketones, peroxides and sulphur.

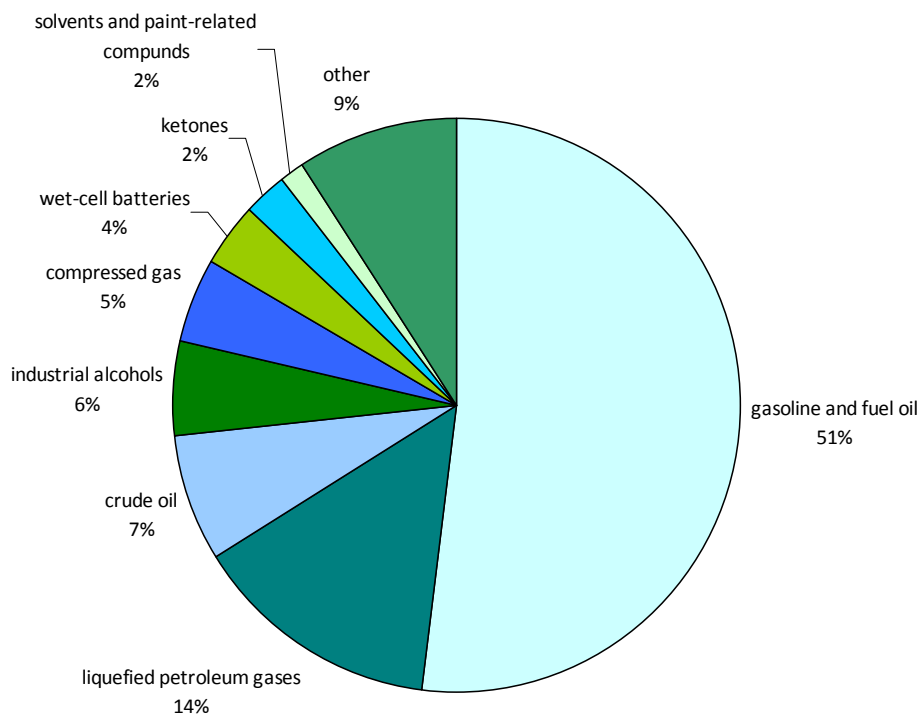


Figure 14 - Types of Dangerous Goods Carried

## 4.5 Driver Satisfaction

To gauge the quality of the driving experience for truck drivers on Edmonton road, three qualitative questions were asked on the survey. For each of the questions, drivers were asked to rate their level of satisfaction on a scale of one to five, with 1 being 'Do not agree at all' and 5 being 'Completely agree'. Figure 15 summarizes the findings. Although overall the majority of truck drivers interviewed are satisfied with their driving experience, drivers were most satisfied with ability to understand the truck routes in Edmonton but were least satisfied with their ability to keep to their schedules. This last finding is consistent with verbal comments from drivers (summarized in Section 5.1) in which congestion and bottlenecks are highlighted as issues. By comparison, these satisfaction rates are significantly more favourable than those seen in other jurisdictions such as Toronto and the United States.

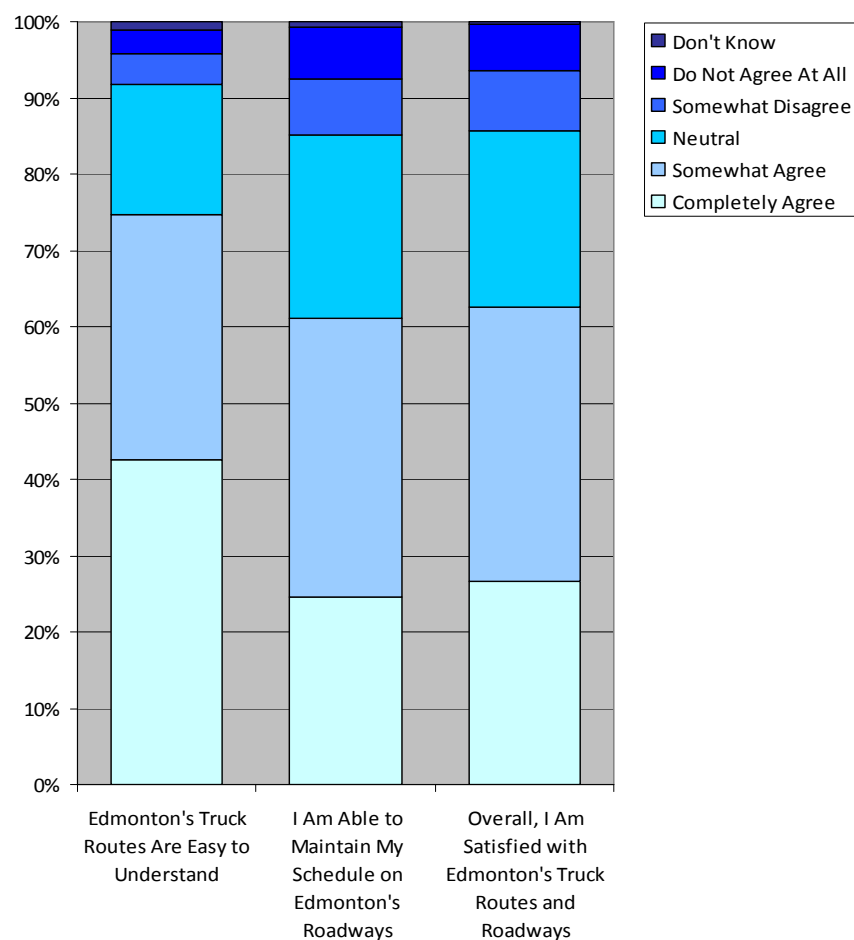


Figure 15 - Driver Satisfaction

## 5.0 Discussion of Findings

Data collected from the roadside truck survey offers the ability to better understand the movement of trucks as well as the motivations for selected particular routes and corridors. The data helps us to validate trends that were observed in previous goods studies and offers insight into new or changing trends.

### 5.1 Driver Comments

Along with answering the survey questions, drivers also offered their own personal comments regarding truck routes and their experiences in travelling on Edmonton roadways. The word cloud in Figure 16 provides a quick visual of the most commonly mentioned words and related issues such as traffic, construction and potholes. This was one way of understanding the common ideas conveyed by truck drivers during the survey.

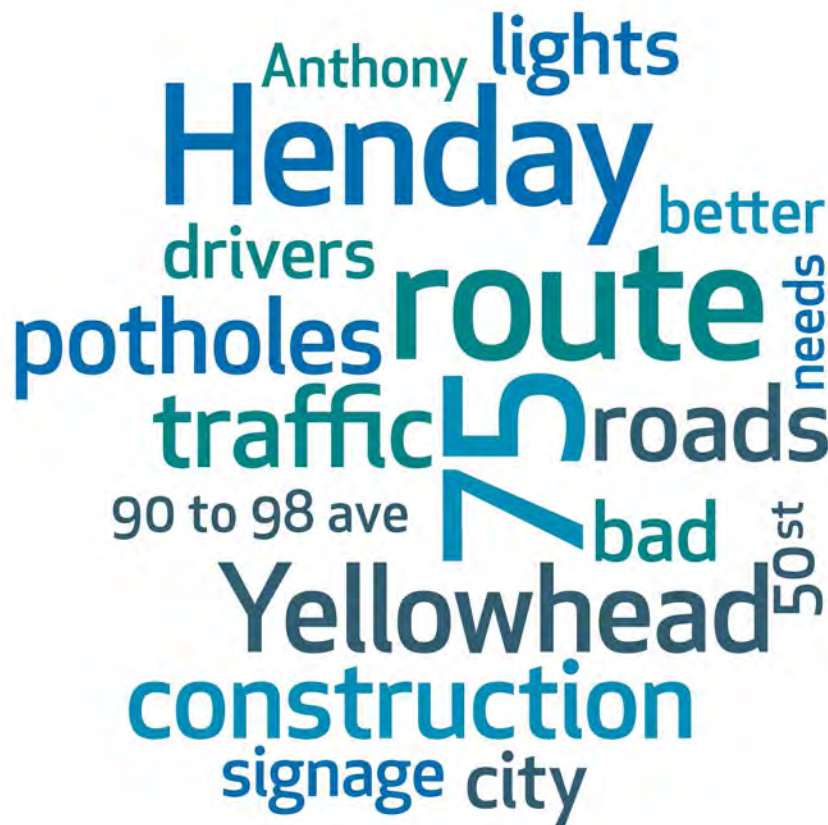


Figure 16 - Word Cloud of Driver Comment Themes

The most frequent comments from truck drivers were in relation to improvements to roadway maintenance. In particular, potholes, rutting and raised manholes which contribute to vehicle damage and driver discomfort were concerns. Comments included:

*"Smoother road - pot holes. Man holes [need to be] covered better on road or they damage truck suspension."*

*"Whitemud 99st-91st [needs to be] fixed. It's too wavy, it affects driver's head and neck, the tires loose traction and it loosens loads."*

Route directness was also important to drivers. The opening of 75 Street between 90 Avenue and 98 Avenue is noted as one of the main themes to achieve this. Improvements to truck route signage size, locations and ease of understanding were also important to drivers.

*"75 St / Capilano bad for commercial truckers because they need it and can't use it."*

*"75 St should be straight through. Too circuitous right now."*

*"Bad signage - not enough notice or trees are covering the signs."*

*"More signage needed along routes, i.e. not enough warning, sign appears and that's it. You are supposed to obey [but] not enough time to obey."*

An additional sub-theme that emerged from the driver comments was the frustration with construction and congestion along key goods movement routes, particularly along Yellowhead Trail and Anthony Henday Drive. Also, some drivers felt that a public awareness effort was required regarding safety, courtesy and awareness in sharing the roadway with trucks.

*"Rush hour traffic is bad especially on Yellowhead Trail west end. Money wasted and the time wasted to get into Cloverbar Landfill"*

*"Terrible traffic especially on Yellowhead Trail"*

*"Yellowhead morning rush hour - motorists need to be educated about big trucks"*

*"More advertisements for courtesy to truck drivers, don't cut off – let them in when the lane ends"*

## 5.2 Key Goods Movement Corridors

A more detailed analysis of the survey data found the facilities most used by trucks in the city and region were Yellowhead Trail, Anthony Henday and Whitemud Drive (Figure 17) pointing to the importance of these corridors for the movement of goods in Edmonton and the region.

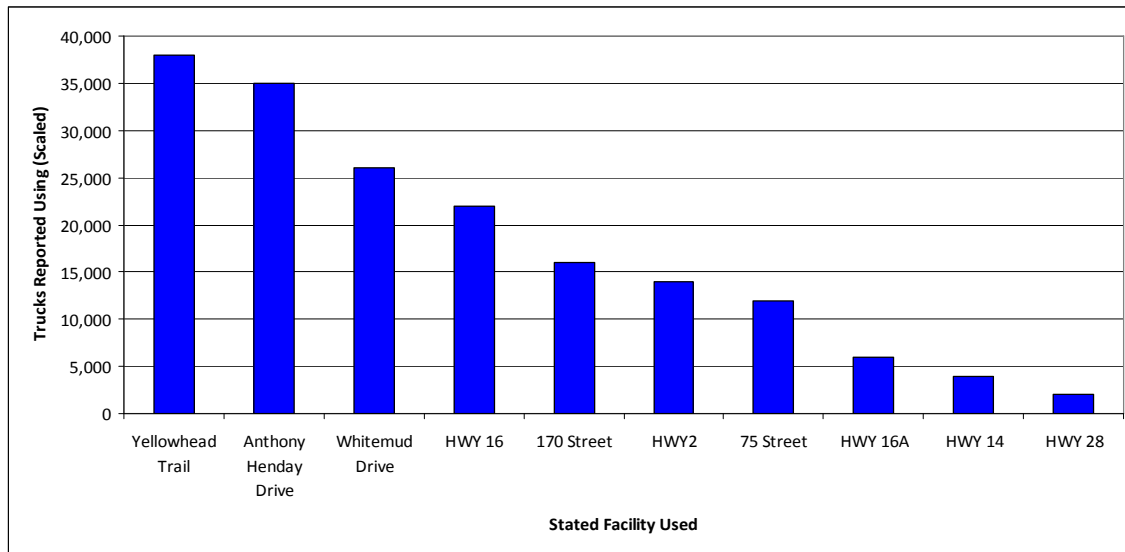


Figure 17 - Most Used Roadway Facilities by Trucks

### 5.2.1 Importance of Yellowhead Trail & Anthony Henday Drive

Information obtained from the truck survey has confirmed the importance of Yellowhead Trail and Anthony Henday Drive to the Edmonton goods movement network. Approximately 60% of trucks using Yellowhead Trail and Anthony Henday Drive had as part of their trip an origin or a destination in the City of Edmonton. As such, the degree of efficiency offered by these two facilities has a direct impact on the quality of daily goods movement within the city.

The region is also highly impacted by the efficiency of goods movement on these facilities as nearly a quarter of all trucks using of Yellowhead Trail and Anthony Henday Drive had an origin or destination in the region.

## 6.0 Conclusions

The Edmonton Roadside Truck Survey conducted in the fall of 2012 was successful in validating patterns in truck and goods movements identified in previous studies and revealing some new trends as well. In total, information was collected on 2,294 trucks and was expanded to represent a typical weekday in Edmonton.

### 6.1 Key Findings

#### *Land Use and Economic Trends*

Over the past decade the Edmonton CMA has experienced a large growth in both its gross domestic product and the transportation and warehousing sector. These growth trends are expected to continue with forecasted GDP growth of 32% over the next 10 years in the Transportation and Warehousing sector<sup>15</sup>.

The southeast and northwest zones of the city continue to be characterized by their high industrial land use, a trend likely to continue based on planned industrial developments.

#### *Truck and Goods Movement Patterns*

Within the city, the survey showed that the dominant movement of trucks is between the Northwest and Southeast quadrants, consistent with results of the *1996 Truck Study* and the *2001 Commodity Flow Survey*. Also, the majority of trucks began and ended day at the same location or their 'home-base'.

Between the region and the city, the largest truck movements occurred between the West and South and East Regions and the city. Previous studies also showed the largest city-region truck movement to be between the South Region and the city however the West and East Regions are emerging as significant generators of truck movement to and from the city.

A look at the commodities being carried by the trucks indicates that Edmonton's roads are important to the oil, gas and construction industries with 54% of trucks carrying materials such as chemicals, fuel petroleum and construction materials. This represents a continued growth in this sector as compared to previous studies.

#### *Yellowhead Trail and Anthony Henday Drive*

Yellowhead Trail and Anthony Henday Drive are key facilities for truck movements for the city and the region. Yellowhead Trail is the most used facility as indicated by 67% of truck drivers, followed by Anthony Henday Drive at 60%. Directness was identified by an overwhelming number of drivers (81%) as the primary determinant of route choice.

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<sup>15</sup> Calculated from data provided by John Rose, Chief Economist, City of Edmonton, 2012

Approximately 60% of trucks using Yellowhead Trail and Anthony Henday Drive had as part of their trip an origin or a destination in the City of Edmonton. As such, the degree of efficiency offered by these two facilities has a direct impact on the quality of daily goods movement within the city. The region is also highly impacted by the efficiency of goods movement on these facilities as nearly a quarter of all trucks using of Yellowhead Trail and Anthony Henday Drive had an origin or destination in the region.

These findings point to the importance of improvements to Yellowhead Trail and the completion of Anthony Henday Drive as they are key facilities in providing the direct access to Edmonton's industrial zones and well as the South, West and East Regions.

#### *Driver Satisfaction and Feedback*

Overall, truck drivers reported a high level of satisfaction (62%) with Edmonton's truck routes and roadways - much higher than other in Canada and the United States. Top suggestions from truck drivers about the roadway network included improvements to pavement condition, opening 75 Street to truck traffic and improvements to signage and truck route information.

## **6.2 Next Steps**

Several stakeholders were informed and/or consulted in the development of the Edmonton Roadside Truck Survey and many have expressed interest in the results. This report will be shared with City departments, government agencies, industry and industry representatives.

The survey results will also be an important input in the development of the Edmonton Goods Movement Strategy, to be presented to Edmonton City Council in the fall of 2013.

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## Acknowledgements

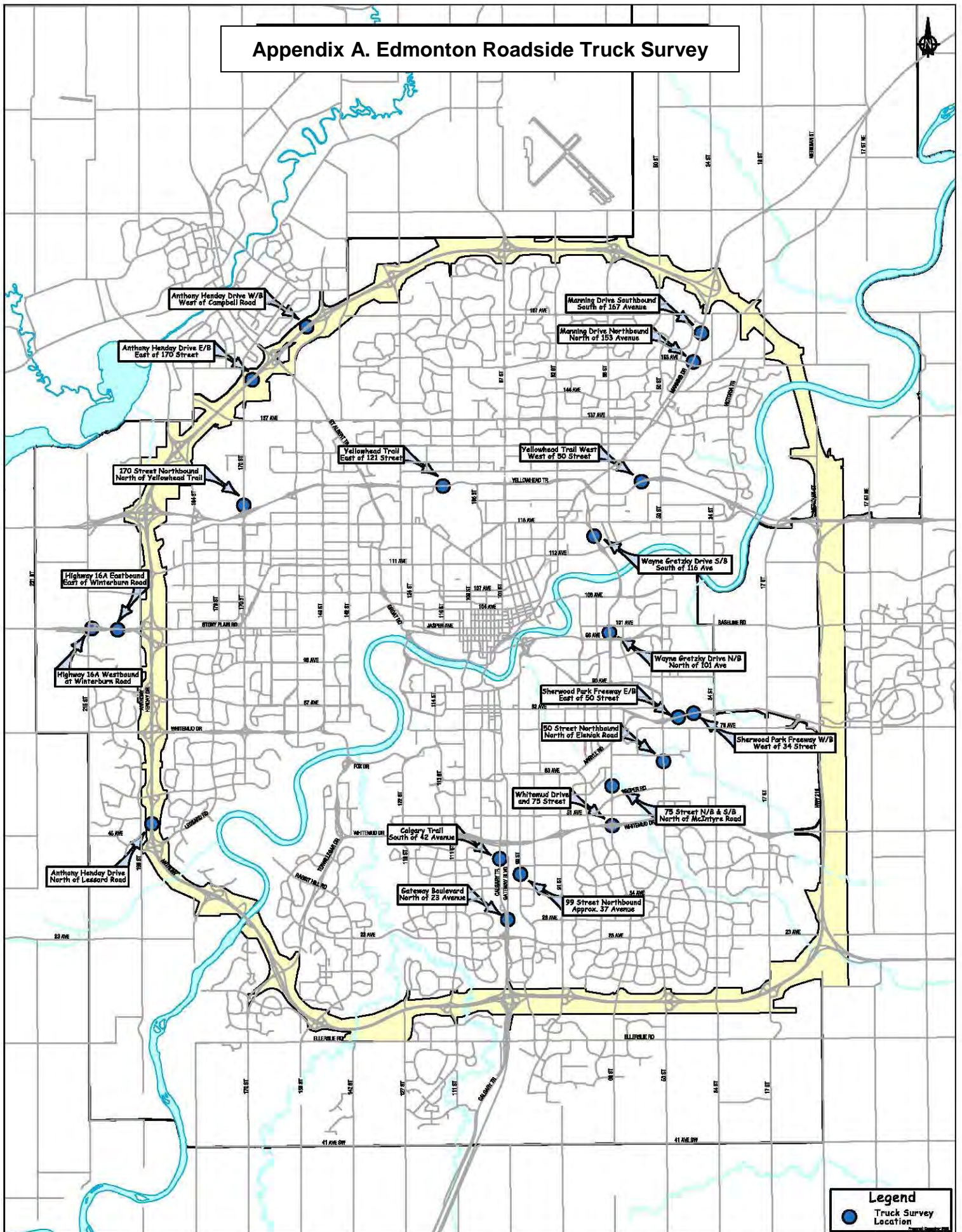
We would like to acknowledge the help of the Edmonton Police Service and the City of Edmonton Transportation Operations branch for helping us to conduct the survey in a manner that was safe both to staff and motorists. We would like to express our thanks to the survey collection field staff for their professional and courteous manner while surveying the truck drivers.

We would also like thank David Kriger of *David Kriger Consultants Inc.* for his advice and guidance offered throughout the development and analysis of the survey.

Thank you to the University of Alberta's Academic Information and Communication Technologies unit for providing the Optical Mark Recognition technology in processing the surveys.

Thank you to all of the truck drivers who took the time to participate in our survey and to provide us with the information to help us improve truck facilities.

# Appendix A. Edmonton Roadside Truck Survey





## Appendix B. Sample Survey

### 2012 EDMONTON ROADSIDE TRUCK SURVEY

#### IDENTIFICATION INFORMATION

<input type="text"/>	/	<input type="text"/>	:	<input type="text"/>	<input type="text"/>	<input type="radio"/> am <input type="radio"/> pm
Interviewer Name	Month/Day		Time			
<input type="text"/>	Vehicle Type		Transporting dangerous goods?		<input type="text"/>	
<input type="radio"/> Single Unit Truck	<input type="radio"/> Yes <input type="radio"/> No				Vehicle Tare	
<input type="radio"/> Single Trailer	<input type="text"/>				<input type="text"/>	
<input type="radio"/> Multiple Trailer	TDG ID Number				Gross Vehicle Weight (GVW)	
<input type="radio"/> Pickup w/ Trailer					<input type="text"/>	

#### TRIP INFORMATION

1) Where did you START your trip TODAY?

<input type="text"/>	START
City, Province/State	<input type="radio"/> NW Edmonton <input type="radio"/> South Region
<input type="text"/>	<input type="radio"/> NE Edmonton <input type="radio"/> West Region
Address or nearest intersection (if within Edmonton)	<input type="radio"/> SW Edmonton <input type="radio"/> Outside Region
	<input type="radio"/> SE Edmonton <input type="radio"/> Outside Alberta
	<input type="radio"/> North Region <input type="radio"/> Outside Canada
	<input type="radio"/> East Region <input type="radio"/> Did not disclose

2) Where will you END your trip TODAY?

<input type="text"/>	END
City, Province/State	<input type="radio"/> NW Edmonton <input type="radio"/> South Region
<input type="text"/>	<input type="radio"/> NE Edmonton <input type="radio"/> West Region
Address or nearest intersection (if within Edmonton)	<input type="radio"/> SW Edmonton <input type="radio"/> Outside Region
	<input type="radio"/> SE Edmonton <input type="radio"/> Outside Alberta
	<input type="radio"/> North Region <input type="radio"/> Outside Canada
	<input type="radio"/> East Region <input type="radio"/> Did not disclose

3) Are you STOPPING in the City of Edmonton? ☐ Yes ☐ No ☐ Don't Know

4) Did you use or are you planning to use any provincial HIGHWAYS?

☐ 02 ☐ 14 ☐ 15 ☐ 16 ☐ 16A ☐ 28 ☐ Other ☐ No ☐ Don't Know

5) Did you use or are you planning to use Anthony HENDAY Drive? ☐ Yes ☐ No ☐ Don't Know

6) Did you use or are you planning to use any of the following ROADS in the City of Edmonton?

☐ Whitemud Drive ☐ 75 Street ☐ Yellowhead Trail ☐ 170 Street ☐ Don't know

7) Did you or are you connecting to an AIRPORT?

☐ Edmonton ☐ Calgary ☐ Other ☐ No ☐ Don't Know

8) Why did you choose the ROUTE you used or will use today in the City of Edmonton?

☐ Most direct route ☐ Avoid traffic congestion ☐ Least number of traffic lights

☐ Truck route restrictions ☐ Planned stop along route ☐ Other Reasons ☐ Don't know

#### LOAD INFORMATION

PLEASE RECORD ADDITIONAL INFORMATION ON BACK

9) Do you have ☐ a full load ☐ partially full ☐ empty ☐ or are you a service vehicle?

10) What type of load are you carrying?

<input type="text"/>	<input type="radio"/> Food/Farm Products <input type="radio"/> Plastic/Rubber Goods <input type="radio"/> Wood/Paper/Print <input type="radio"/> Vehicles/Equipment <input type="radio"/> Chemicals or related <input type="radio"/> Manufactured Goods <input type="radio"/> Petroleum/Fuels <input type="radio"/> Waste <input type="radio"/> Non metallic minerals <input type="radio"/> Miscellaneous <input type="radio"/> Fabricated Metal/Parts <input type="radio"/> Did not disclose
Brief description	

11) Multiple commodities? ☐ Yes ☐ No

12) Is your vehicle ☐ company owned ☐ leased ☐ or for hire? ☐ Did not disclose

#### DRIVER SATISFACTION

PLEASE RECORD ADDITIONAL COMMENTS ON BACK

13) Please answer the following questions on a scale from 1 to 5

	Do not agree at all	1	2	3	4	5	Completely agree	Don't know
Edmonton's truck routes and restrictions are easy to understand	①	②	③	④	⑤	⑥		⑦
I am able to maintain schedule on Edmonton's roadways	①	②	③	④	⑤	⑥		⑦
Overall, I am satisfied with Edmonton's truck routes and roadways	①	②	③	④	⑤	⑥		⑦

Driver accepted thank you card? ☐ Yes ☐ No  Tracking Number

[illegible][illegible]

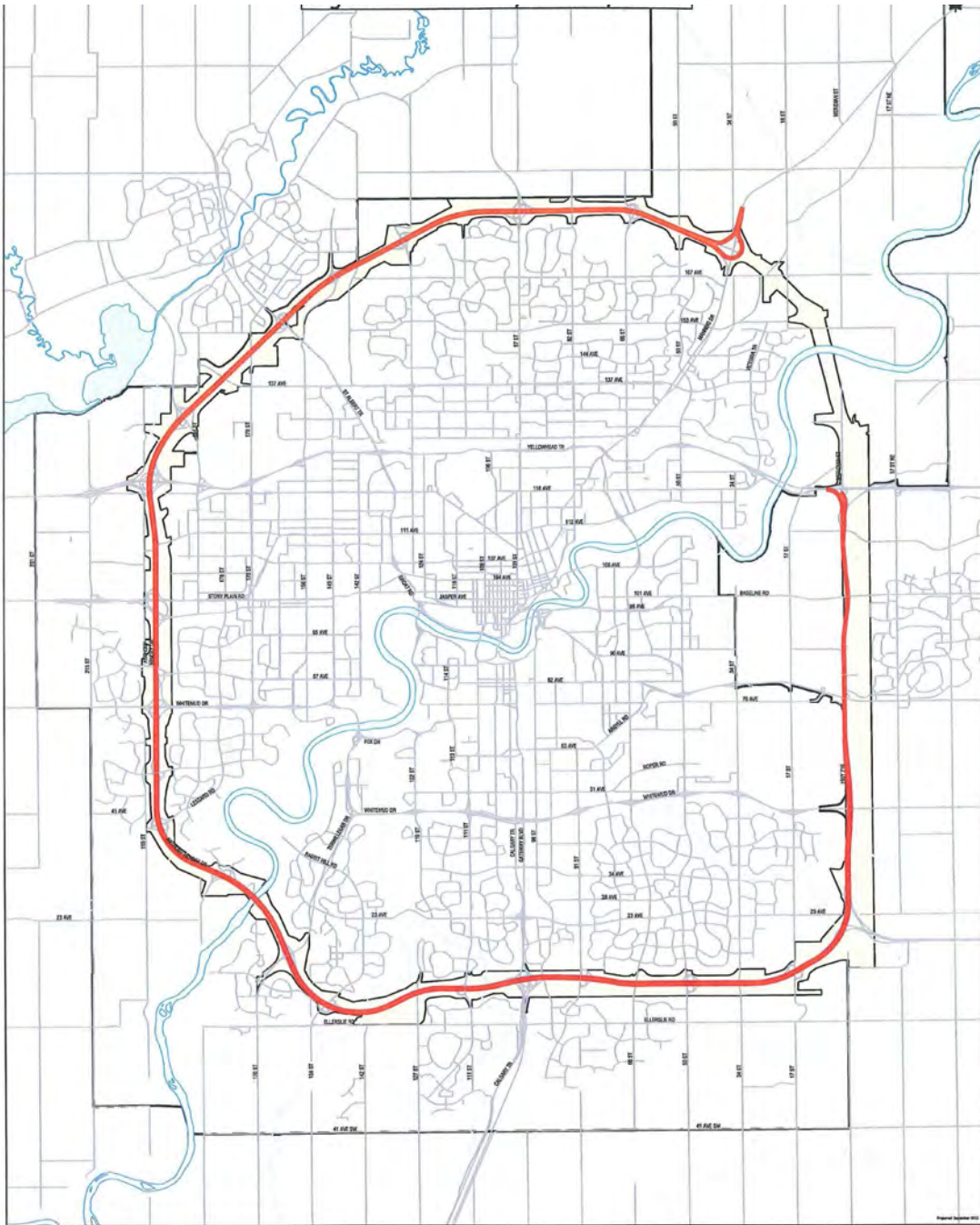
☐ NW Edmonton  
☐ NE Edmonton  
☐ SW Edmonton  
☐ SE Edmonton  
☐ North Region  
☐ East Region

[illegible][illegible]

- ☐ NW Edmonton
- ☐ NE Edmonton
- ☐ SW Edmonton
- ☐ SE Edmonton
- ☐ North Region
- ☐ East Region

☐ South Region  
☐ West Region  
☐ Outside Region  
☐ Outside Alberta  
☐ Outside Canada  
☐ Did not disclose

## Appendix C. Map of Anthony Henday Drive



City of Edmonton, Transportation Planning  
13th Floor, Century Place  
9803 - 102A Avenue  
Edmonton, Alberta, Canada T5J 3A3  
780-496-1795

**[www.edmonton.ca](http://www.edmonton.ca)**

