

Grain Transportation and Logistics in Western Canada:

Evolving Allocation Processes



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Grain Transportation and Logistics in Western Canada: Evolving Allocation Processes

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Table of Contents

Introduction	4
1.0 Major Shifts in Transportation and Logistics	5
2.0 Car Allocation in Canada	8
2.1 Background Developments	9
2.2 Recent Reforms: Tendering & Advance Car Awards	10
2.3 Stakeholder Positions	12
2.4 Performance of Tendering System and ACA Program	13
2.5 Moving Canadian Grain	21
3.0 International Context	27
3.1 United States	27
3.2 Australia	29
4.0 Literature Summary	32
5.0 Literature Review	34
Electronic Resources	39

Figures and Tables

Figure A: CWB Shipments.....	12
Figure B: CWB Tendering Activity 2000-2004.....	13
Figure C: Total, Tendered, and Advance Award Tonnage.....	14
Figure D: Provincial Origin of Tendered Grain.....	15
Figure E: Provincial Origin of ACA Grain (2003-2004).....	15
Figure F: Port of Destination for Tendered Shipments.....	16
Figure G: Port of Destination for ACA Shipments (2003-2004).....	17
Figure H: Contrasting Tendered and Total Tonnage at Western Canadian Ports...	18
Table A: Logistical Responsibilities.....	19
Table B: CN Advance Booking Systems.....	21
Table C: CP Advance Booking Systems.....	22
Table D: Loading Schedule for Board and Non-Board Grains.....	24
Table E: U.S. Grain Transportation by Mode.....	27

Introduction

This document provides a review of the evolving characteristics of the Canadian grain transportation system. Further to the overview of the current car allocation process in Canada, this document also compares the Canadian grain transportation system to those of the United States and Australia.

During the last ten years, industry changes and government reforms have directly affected the Canadian grain transportation system. The disbanding of third-party organizations such as the Grain Transportation Agency and the Car Allocation Policy Group has created opportunities for more direct shipper-carrier arrangements to develop.

Following a major disruption in the movement of grain across Western Canada, the Federal Government ordered a review of the grain transportation system which was to be led by the Honourable Willard Estey. Estey's review of the system called for an increasingly commercial transportation environment, including the tendering of CWB administered grain shipments. Through the tendering process, grain companies have the opportunity to bid on CWB shipments in advance of a given shipping week, enhancing the coordination of logistics strategies.

In 2000, the government directed the Canadian Wheat Board to tender a share of grain movements over a five-year period. During the first two years of the Program, the CWB was to tender a minimum of 25% of its grain transport to the ports of Vancouver, Prince Rupert and Thunder Bay. In the Program's third year, the CWB was to tender a minimum of 50% of its shipments.

After an industry review of the tendering system in the Program's third year, the tendering figure changed to a maximum of 20% of CWB grain shipments. The review also produced the Advance Car Awards Program, giving shippers and carriers another tool for planning grain shipments in advance of a given shipping week.

1.0 Major Shifts in Transportation and Logistics

The Canadian grain industry is a dynamic, multi-faceted component of the Canadian economy. Transportation plays a central role in the political and operational ties binding grain industry stakeholders. In this context, historical, structural and geographic issues have routinely complicated the movement of grain through the Canadian supply chain.

Over the past decade, the Canadian grain industry has experienced a number of reforms intended to create an efficient supply chain and to help maintain the industry's place as a global leader.

For years, the Canadian grain industry has been described as an over-built system, with a surplus of small-scale elevator operations relative to the demands of grain producers. However, the number of licensed country elevators in western Canada has declined to 384 (with less than 300 delivery points), a drop of more than 60%. As the two dominant players in the grain industry, Saskatchewan Wheat Pool (SWP) and Agricore United (AU) have accounted for 92% of the net reduction.

While the overall number of elevators in the grain handling and transportation system (GHTS) has significantly decreased, storage capacity has not. In the same five-year period, storage capacity fell by only 19%, declining from 7.0m tonnes to 5.8m tonnes. This is directly related to the construction of more efficient storage and handling systems. In place of many of the smaller-scale operations that once dotted the Prairie landscape, grain companies have focused on developing large-scale, high-throughput elevators (HTEs). Most HTEs have been constructed at strategic locations, and allow elevator managers to transfer grain more quickly, and to load larger trains (up to 100 railcars) than the older elevators.

Railway operations have also changed to complement the new elevator facilities. Rather than spotting 25 cars or less at a number of elevator locations, CN and CPR have made trains between 50-100 cars the industry norm in the last five years. This, in tandem with the capacity of Prairie HTEs, has contributed to greater industry efficiencies.

Unlike the shipping of Board and non-Board grains in 50-100 car blocks, specialty crops (which are a part of the commercial industry) are often transported in 2-3 car blocks. Also, specialty crops do not require hopper cars, and are increasingly moved with container cars. Although such a low number runs against the current railway trend, the flexibility (in terms of not necessarily relying on hopper cars) involved in moving specialty crops helps to facilitate the process.

Within the industry, debates regarding the impact of rail rationalization on rural and small scale producers continue to persist. Although route abandonments and the growing dependence on truck movements have affected rural and small scale producers, there remain a number of branch-lines and service providers to meet the needs of the remote elevators that have continued to operate.

In 1995, the Government of Canada announced that it planned to sell its fleet of hopper cars. Originally, the hopper car fleet was likely to be purchased by a grain industry consortium. However, in November, 2005, the Government reached an agreement-in-principle to transfer its fleet of over 12,000 hopper cars to the Farmer Rail Car Coalition (FRCC). Following a five-year lease period, the cars will be permanently transferred to the FRCC. The transfer price of \$205 million will be paid through yearly payments of \$65 million (over five years). The deal also included a \$35 million credit for car refurbishment, and a final payment of \$105 million over an eight-year period.

Although truck transportation as a means of shipping grain between storage facilities and to points of export has grown in scale internationally (including the United States), it has not seen the same growth in Canada. While some producers will hire trucking services to move their grain from farms to centralized HTEs, it is uncommon to see trucking companies moving grain beyond short distances. Economic and geographic factors have favoured the continuing predominance of rail in the grain industry. Most Canadian elevator and port grain facilities are more accessible for railways than for trucks.

Along with these systematic developments, structural changes have directly affected the process of grain transportation. These include such developments as the repeal of the Western Grain Transportation Act (WGTA), and the disbanding of the Grain Transportation Agency (GTA) and the Car Allocation Policy Group (CAPG). The Canadian Wheat Board has, however, maintained its role in both the marketing and transportation of specific grains.

Following a major disruption in grain movement during the winter of 1996-97, the Federal Government ordered a review of the GHTS and its performance. The review (held in 1998) was to identify inefficiencies in the system, and to propose a set of solutions. The Minister of Transport, the Hon. David Collenette, asked Mr. Justice Willard Estey to perform the initial review, and subsequently appointed Mr. Arthur Kroeger to chair an independent committee to implement Estey's recommendations.

In December 1998, Justice Estey finalized the Grain Review Commission's study of the GHTS in Canada, identifying a number of potential areas for reform. With opinion divided as to whether or not the CWB should maintain its control over the movement of grain, Estey's review concluded that efficiency would best be obtained by moving toward commercial and market-oriented transportation relations. The Kroeger report echoed these sentiments.

Recent reforms such as the introduction of the tendering system, the Advance Car Awards (ACA) Program, and the rationalization of inefficient rail routes represent steps toward the long-term sustainability of the Canadian grain industry. With increasing global demand from countries that include China, Japan and South Korea, and competition from markets in the United States, Brazil and Argentina, industry stakeholders must adapt their conventional positions to create an adequate, efficient GHTS in which all participants are held accountable for their respective roles and responsibilities. This includes a system where:

- railways provide cars on time and at the right locations, while reducing turn-around times;
- grain companies provide the appropriate supply and grade of ordered grain, at locations that create the most efficient logistics scenario;
- producers respond to grain companies' supply requirements in a timely manner, providing the correct volume and grade of the grain requested; and
- the CWB develops strategies for clearly communicating its requirements to other actors, facilitating efficient logistics practices.

2.0 Car Allocation in Canada

The Canadian grain industry comprises a collection of public agencies, private organizations, and individual producers, whose actions respond to local and global demand. Divisions between marketing systems (one administered and one commercial) and the status of shippers (in accordance with the Train Run Administration Memorandum of Understanding) have added to the complexity of the grain industry.

As a single desk operation, the Canadian Wheat Board (CWB) is responsible for the marketing and transportation of wheat, durum wheat, and barley. Grain companies may not transport these grains without the consent of the Board (through a shipping order). Commercial grains such as lentils, peas, flax, and canola are traded through the private market, and transported according to a more direct shipper-carrier arrangement.¹ The division between the administered and commercial systems has contributed to a number of logistics management concerns, and led industry stakeholders to question the methods of, and responsibilities for allocating railcars to grain shippers.

Just as the market for Canadian grain is divided between commercial and administered systems, grain shippers are categorized within one of two distinct groups: Train Run Plan (TRP) parties and non-TRP parties. TRP parties include 26 CWB agents, and 9 representatives of the Western Grain Elevator Association (WGEA). This group of shippers is responsible for the transportation of both CWB and non-CWB grains. Non-TRP parties include shippers involved in the marketing and transportation of specialty crops and processed products. This group is not party to the guidelines, or scheduling procedures as TRP parties.

The transportation of special crops is affected by the generally lower volumes of exports, the availability of hopper cars following general and other allocation processes, and the availability of containers as an alternative to hopper cars. Groups targeting the markets of special crops such as lentils, peas, mustard seeds, and beans do not have (or often require) the same transportation capacities as those shipping grains such as wheat and barley. As a result, rather than arranging for bulk transport services in advance of shipping weeks, special crops producers often receive the cars that remain after prior arrangements have been met. While this does not leave producers with a large volume of available cars, containers may be used (in most cases) as a viable alternative. However, using containers for shipping purposes is not a simple solution, as ocean freight rates, intermodal capacities, loading capabilities, and general availability of containers for spotting pose significant concerns.

While shippers of non-Board (commercial) grains arrange their transportation demands directly with railways, arranging transportation for CWB (administered) grain shipments occurs through a more complicated process. Although grain companies are provided with opportunities to pre-book cars with CN and CP, CWB restrictions limit the freedom use of privately booked cars for Board grain shipments.

¹ This is also the case for various specialty crops.

Currently, railcars are allocated for CWB shipments through one of three systems: general allocation, tendering, and Advance Car Awards (ACA). As the most recent reforms to the transportation of Board grains, the tendering system and ACA Program were expected to offer the type of commercial, flexible transportation environment that could remedy industry inefficiencies.

The following sections will:

- describe the recent reforms to the car allocation system;
- assess the roles and responsibilities of industry stakeholders; and
- examine the nuances of Board and non-Board grain shipping.

2.1 Background Developments

In the past decade, restructuring, privatization, and a renewed concern for transportation planning techniques have directly impacted the Canadian grain industry. In this context, railcar allocation has received a great deal of attention.

The concept of allocating railcars dates back to the 1950s when thousands of elevators dotted the Prairie landscape. The allocation of railcars refers to the process of delivering empty hopper cars to elevators for shipping Board and non-Board orders. In other words, car allocation is a response to changes in demand for grain. This process takes into account three main considerations:

- the number of cars the railways have made available for a given loading week;
- the volume of Board and non-Board grains to be loaded for that week; and
- the location of car placements.

Past car allocation systems had a number of problems that hindered the efficiency and effectiveness of grain transportation and logistics. These included:

- a lack of transparency and accountability among industry stakeholders;
- limited shipping options;
- constraints on railway competition; and
- restrictions on transportation planning and risk management.

Under past car allocation arrangements, such as the CWB's Block Shipping System, grain (including, at times, non-Board commodities) could not be transported without a CWB shipping order or authorization from the Grain Transportation Agency (GTA). In effect, the CWB determined where, when, and how grain flowed from Canadian producers to port facilities. Periodically, grain movement was not correctly matched with market demand, resulting in grain terminals being congested with the wrong products, while grain required for waiting vessels was unable to move forward.

The GTA (later called the Western Grain Transportation Office- WGTO) was established in response to the inherent conflict of interest of having the CWB controlling the

movement of non-Board grains. However, the addition of a further layer to the process of allocating railcars did little to reduce the complexity of the system.

In 1996, the responsibilities of the WGTO were passed to a new industry agency, the Car Allocation Policy Group (CAPG). The development of the CAPG was a temporary measure, allowing industry representatives to assume car allocation responsibilities that the Government was no longer providing. The CAPG included representatives of grain companies, the CWB, the railways and producers. As a non-profit association, CAPG's role was to:

- oversee railcar allocation through a formal, non-legislative, consultative process that avoided gridlock;
- foster greater accountability between shippers and carriers;
- move toward a commercial logistics environment;
- set car allocation policy for regulated western Canadian grain traffic; and
- operate in an impartial and transparent manner.

Once the industry was in a position to assume full responsibility for car allocation, the CAPG was disbanded. Following the disbanding of the CAPG, the railways assumed responsibility for allocating railcars to the CWB and to grain companies.

In the winter of 1996-97, a major disruption in the flow of Canadian grain led the Government of Canada to call for a review of the GHTS. The review was headed by retired Supreme Court Justice, the Hon. Willard Estey, and was completed in 1998. Former Deputy Minister, Arthur Kroeger, conducted subsequent discussions with industry participants to attempt to implement Justice Estey's recommendations.

Following the recommendations of the Estey and Kroeger Reports, the government proposed a set of reforms to the car allocation process. A Memorandum of Understanding (MOU) between the CWB and the Minister responsible for the CWB specified that a minimum of 25% of Board shipments be allocated under tendering arrangements. By tendering a portion of the CWB grain supply, government officials and industry stakeholders hoped to create a more commercial environment for grain transportation, reducing the scale of regulation that had been a part of the industry for decades. The competition fostered through the tendering process was seen as a step toward commercial arrangements that apply to non-Board grain transportation.

2.2 Recent Reforms: Tendering & Advance Car Awards

Through the 2000/2001-crop year, representatives of the Western Grain Elevator Association (WGEA) were unable to come to an agreement on how to implement the tendering program. The CWB, the WGEA, and the Inland Terminal Association of Canada (ITAC) finally established the groundwork for the new process in August 2001.

For the first two crop-years of the tendering system, the CWB was directed to tender a minimum of 25% of its total shipments to the Ports of Vancouver, Prince Rupert,

Churchill, and Thunder Bay. In the third year, this figure was to increase to a minimum of 50% of total CWB shipments.

To enhance the competitive intentions of the tendering system, a grain company's bid may specify whether or not they have access to pre-booked, guaranteed car supplies. Although the tendering system provides grain companies with the opportunity to use privately booked railcars for moving tendered Board shipments, the CWB has retained the right to deny this privilege.

The following provides a description of the process of tendering CWB grain:

- All tendering activity takes place during the first week of a three-week shipping schedule.
- Tender calls (for particular specifications, volumes and corridors) are issued by the CWB on Monday (week one).
- Grain companies bid on tendered shipments using a discount or premium to the in-store initial price. Wednesday (week one) is the final day to submit bids.
As "price-takers", it is in the CWB's best commercial interest to award the tender to the lowest bidder.
- After reviewing the bids that have been submitted for specific shipments, the CWB awards contracts on Thursdays.
Grain companies and the CWB receive penalties if they do not respect their contractual obligations.
- The successful bidder assumes full responsibility for the logistical arrangements to move grain from country elevators to port facilities. This includes sourcing grain; securing rail services; making arrangements with ports; and meeting all stipulations under the tendered contract.
- Although winning bids are held confidential, the CWB discloses the range of bids received for each available tender.
- For the most part, tenders that go unfulfilled are due to an unacceptable bid price, a lack of bids, or a bidders' failure to comply with the contractual obligations of the tender.

Following a review of the first three years, the tendering system was adjusted. An industry committee representing the CWB, a number of grain companies, and producers met to discuss and vote on changes to the tendering system, as outlined in a document produced by the CWB. The two main recommendations of the CWB's paper were to reduce the volume of tendered shipments from a minimum of 50% to a maximum of 20%, and to introduce an Advance Car Awards (ACA) Program that would help facilitate more efficient logistics practices.

The committee voted 26 to 2 in favour of reducing the percentage of tendered shipments from a minimum of 50% of shipments to a maximum of 20% of shipments. This reflected a shift away from the intended commercialization of grain transportation. The two parties that voted against the regression of tendered shipments were Agricore United

(AU) and Saskatchewan Wheat Pool (SWP), which together represent more than 75% of the Board's shipping activity.

According to the CWB, this shift was necessary to account for consecutively poor crops, and winter conditions along the west coast that made it a challenge to transport grain from the Prairies to port facilities. Although the decision was reached through a collaborative process, larger grain companies (AU and SWP) have continued to express their dissatisfaction with the CWB's influence on grain transportation and logistics.

Like the tendering process, the ACA Program was designed to enhance the efficiency of the grain transportation system. Under the guidelines of the ACA Program, the Board awards railcars to grain companies based on a 50-50 weighting of 18 weeks of CWB receipts and the forecast accessibility of grain supplies (reflected through producer contracts). In this context, the CWB is committed to providing grain companies with advance notice of the grains and grades that it requires, as well as any ancillary restrictions such as the shipping week by which cars must be used.

Unlike the general allocation process, which is zone-specific, cars awarded through the advance system are catchment/corridor specific. Thus, ACA railcars are linked to the major grain corridors, rather than the specific geographic zones serviced by CN and CP. Two weeks prior to the first Monday of the three-week shipping schedule, the CWB informs grain companies of the total number of cars, by corridor, they have been awarded. Grain companies must advise the CWB of their acceptance or deferral of the ACA's to a future week by the start of the following week. Grain companies may deploy the cars they receive to any facility, and in any quantity they deem necessary along the specified corridor. If carriers or shippers do not live up to their responsibilities, as outlined in advance award contracts, each is liable to be financially penalized by the CWB. Grain companies that wish to spot ACA cars they receive to a corridor other than that to which they were originally designated must receive permission from the CWB.

Grain shipments arranged through tendering and/or the ACA system only apply to CWB grains. The movement of all non-Board commodities is negotiated directly between shippers and carriers.

2.3 Stakeholder Positions

Despite their initial intent, the tendering and advance awards strategies have not drastically changed the typical concerns raised by industry stakeholders.

Rather than helping to establish a system based on a more direct shipper-carrier arrangement, grain companies charge that they have had to continue planning logistics schedules around the agenda of the Board. Grain companies have also claimed that depleting supplies of grain cars at a time of heightened demand, and the lack of regulatory devices for holding railways accountable for grain car deliveries have negatively impacted the overall supply chain.

Climate variations, topographic conditions, economic shifts, and policy developments combine to create a high degree of uncertainty in the grain industry. To reduce the potential of railcar surpluses in the grain supply chain, railways have called for greater shipper accountability in the movement of grain. Although shippers currently pay financial penalties for not meeting the requirements of loading contracts, efficiency disruptions are often more costly than the assessed penalties. Despite the rationalization of country elevators that has occurred over the last decade, railways argue that there is an excessive number of elevators within the current network.

Throughout the recent period of reform, the CWB has maintained a logistical responsibility for the movement of administered grains. This level of involvement is said to enhance the CWB's control of the cost, sale, and marketing of administered grains. This, in turn, is believed to aid in protecting producers' interests from those of grain companies and railways. Beyond the reforms that have occurred to date, the Board has expressed a desire to see greater accountability on behalf of railways as a means of ensuring that grain deliveries reach port facilities in a timely and effective manner.

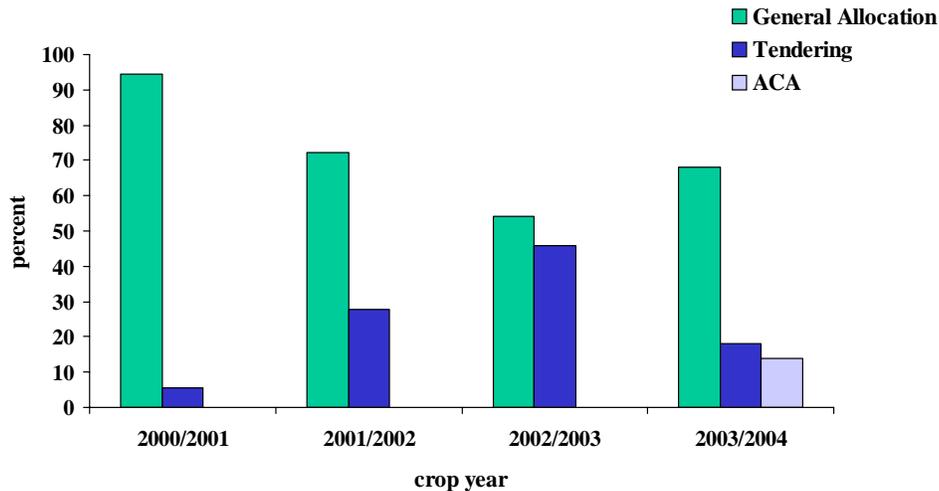
As the grain industry has evolved, an increased degree of emphasis has been placed on the logistics and supply chain management aspects of shipping grain from rural locations to port facilities. While the tendering system and ACA Program mark steps toward, rather than a panacea to, the logistical concerns within the GHTS. The move from a minimum of 50% of Board shipments to a maximum of 20% of Board shipments was an indication that the system would not reach the level of commercialization that industry representatives had desired. Thus, despite the recent changes to the car allocation process, the divide between administered and commercial grain markets continues to impact transportation planning and logistical management.

2.4 Performance of Tendering System and ACA Program

The following charts provide statistics concerning the tendering process, the ACA Program, and the general allocation process. The data have been collected from the Quorum Corporation's 2003/04 Annual Report, designed to monitor the reforms to the car allocation process.

Figure A compares the percentage of CWB grain shipments arranged through general allocation, tendering, and ACA over the last four crop years. While tendering percentages are available for each of the four years, ACA shipments occurred only in the 2003/04-cropyear.

Figure A : C W B S h i p m e n t s



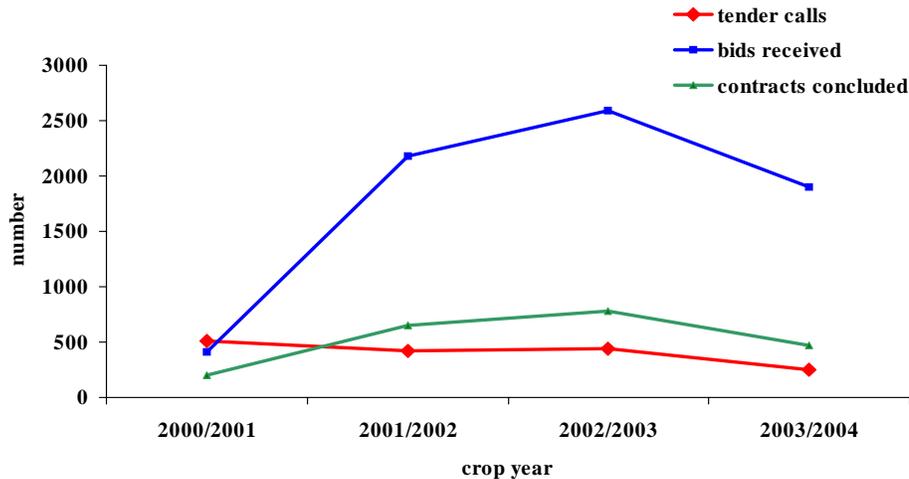
Source: Quorum Corporation, Monitoring the Canadian Grain Handling and Transportation System, Annual Report 2003-04 Crop Year.

The 2001/02-crop year was the only year in which the CWB awarded more tendered contracts than its target figure. The low percentage of tenders awarded in the first year of the program was due to the inability of industry actors to decide on how the program would be organized and implemented. As a result, the first tenders were not offered until late in the season, giving little opportunity to reach the first year’s target of 25%. In the first year that railcars were awarded through the ACA Program, the CWB again did not meet its commitment (20% of the Board’s total shipments). This has also been linked to a delay in implementing the Program.

In the 2002/03-crop year, the CWB awarded the greatest percentage (46% of total shipments) of tenders in the four years that the program has been recorded. In the 2003/04-crop year, the CWB tendered 18.1% of its total shipments. This was slightly below the target maximum of 20%.

Figure B shows the tendering of CWB grains by relating the number of tenders the CWB issued in each of the program's four crop years to the number of bids received. The chart also depicts the number of contracts concluded as a result of in-coming bids.

Figure B: CWB Tendering Activity 2000-2004



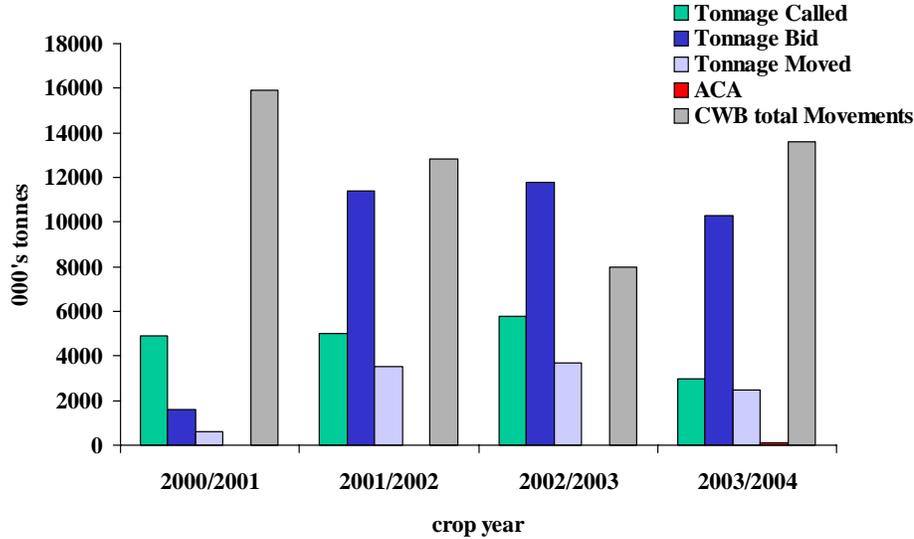
Source: Quorum Corporation, Monitoring the Canadian Grain Handling and Transportation System, Annual Report 2003-04 Crop Year.

In the most recent crop year, tender calls, bids, and shipments awarded through tendering decreased from the previous crop year. Since the beginning of the tendering program, the number of tenders called by the CWB has decreased by over 50%, dropping from a high of 509 calls in 2000/01 to a low of 251 calls in the 2003/04-crop season. Conversely, the number of bids that grain companies have placed on tenders has increased dramatically over four seasons, growing from 408 to 1,898.

As the number of bids for tenders has increased, the number of contracts that the CWB has signed for tendered-based movements has increased. During the first year of the program, the Board concluded 204 contracts for tendered shipments. For the 2003/04-crop season, the Board concluded a total of 466 contracts for tendered grain shipments.

Figure C represents the tonnage of CWB grain called, bid upon and shipped through tendered contracts between the 2000/01- and 2003/04-crop years.

Figure C: Total, Tendered, & Advance Awarded Tonnage



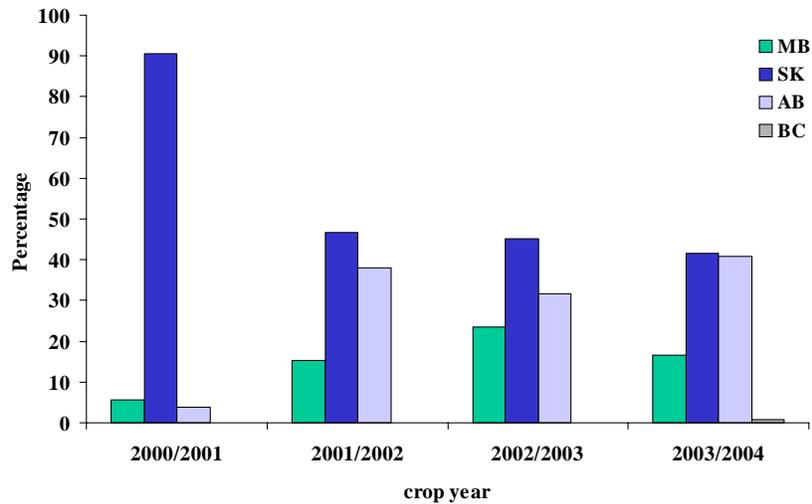
Source: Quorum Corporation, Monitoring the Canadian Grain Handling and Transportation System, Annual Report 2003-04 Crop Year.

In 2000/01, 578,000 tonnes of Board grains were shipped through tendered contracts. This represented approximately 12% of the tonnage originally tendered by the CWB. By the 2003/04-crop year, 2.5 million tonnes of Board grains were shipped through tendered contracts. This represented approximately 80% of the tonnage originally tendered by the CWB.

Grain companies that received railcars through the ACA Program in the 2003/04-crop year shipped 0.1 million tonnes of CWB grain.

Figure D shows the provinces of origin for tendered bids and shipments. Saskatchewan has contributed the greatest percentage of tendered shipments for each of the program's four years, while British Columbia has contributed the lowest percentage of all Western provinces. Between the 2001/02- and 2003/04-crop years, Manitoba and Alberta's contribution to the pool of CWB tendered shipments have been relatively stable.

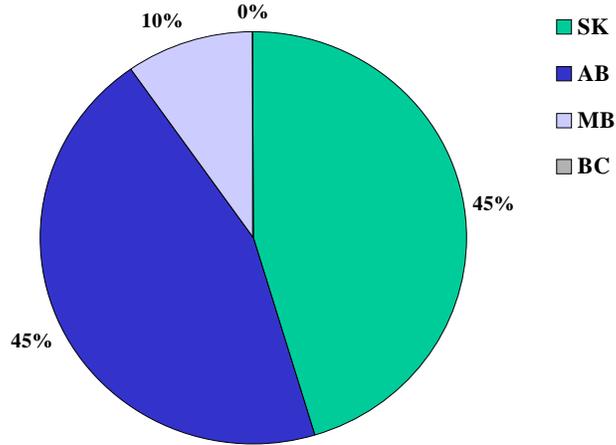
Figure D: Provincial Origin of Tendered Grain



Source: Quorum Corporation, Monitoring the Canadian Grain Handling and Transportation System, Annual Report 2003-04 Crop Year.

Figure E shows the provincial origin of grain shipped with railcars allocated through the ACA Program in the 2003/2004-crop year. Saskatchewan and Alberta contributed the greatest percentage of ACA shipments with a combined total of more than 90% of all ACA shipments.

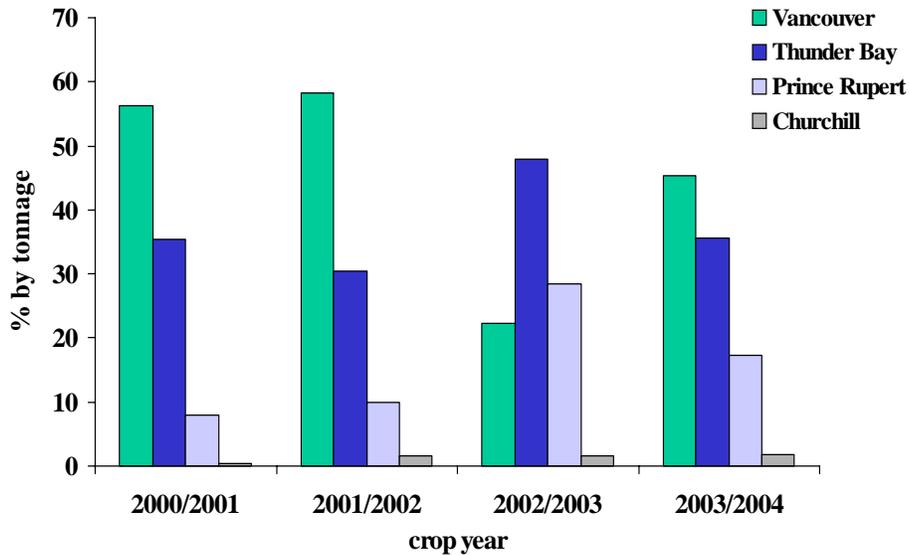
Figure E: Provincial Origin of ACA Grain (2003/2004)



Source: Quorum Corporation, Monitoring the Canadian Grain Handling and Transportation System, Annual Report 2003-04 Crop Year.

Figure F shows the break down of tendered grain shipments by port destination. These figures do not take into account tendered shipments that may be destined for domestic or U.S. markets.

Figure F: Port of Destination for Tendered Shipments

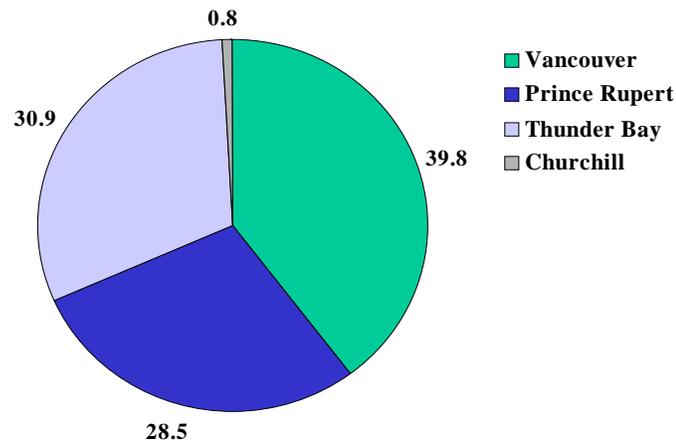


Source: Quorum Corporation, Monitoring the Canadian Grain Handling and Transportation System, Annual Report 2003-04 Crop Year

In the most recent two crop years, the Port of Prince Rupert handled an increased amount of grain shipments as a result of a labour dispute at the Port of Vancouver. Despite the strategic positions of west coast ports relative to the current stream of global demand, the Ports of Churchill and Thunder Bay accounted for almost 40% of the CWB's tendered shipments in 2003/2004.

Figure G represents the percentage of CWB grain shipped to Western Canadian ports with ACA railcars.

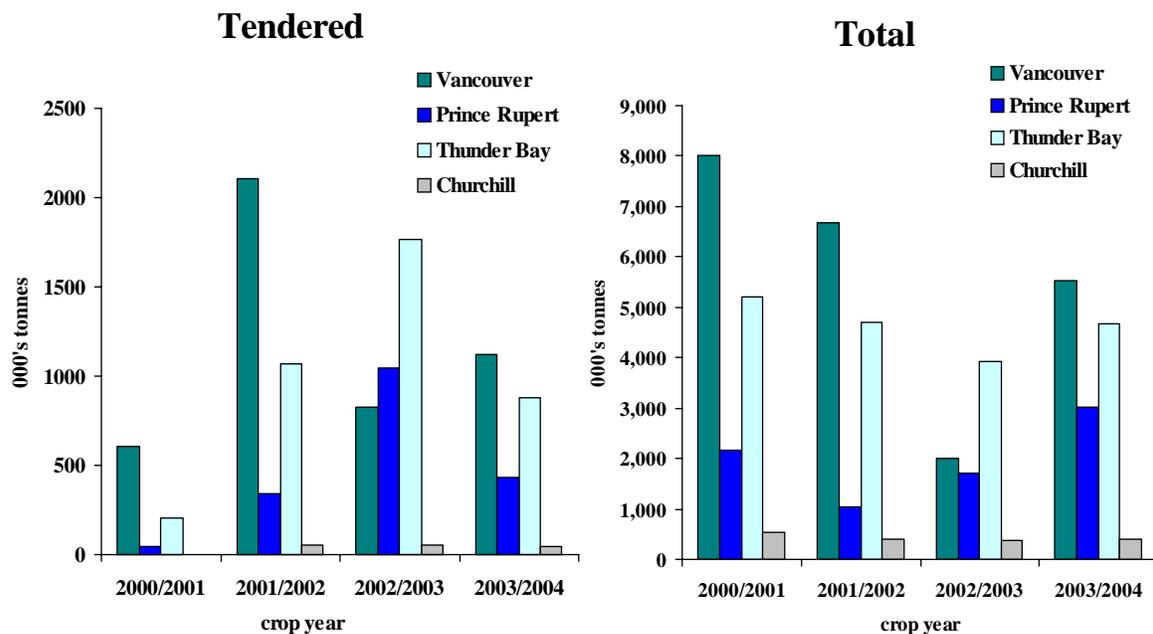
Figure G: Port of Destination for ACA Shipments (2003/2004)



Source: Quorum Corporation, Monitoring the Canadian Grain Handling and Transportation System, Annual Report 2003-04 Crop Year.

Figure H compares the tonnages of tendered shipments of Board grain with the total shipments of Board grain to Western Canadian ports. Both tendered and total grain shipments to the Port of Vancouver significantly decreased between the 2001/2002 and 2002/2003-crop years. At the same time, shipments to the Port of Prince Rupert increased. Poor weather conditions in the southern region of B.C., as well as the growing backlog of traffic at the Port of Vancouver (as a result of a labour dispute and capacity constraints) contributed to this change of circumstance.

Figure H: Contrasting Tendered & Total Tonnage at Western Canadian Ports (000's tonnes)



Source: Quorum Corporation, Monitoring the Canadian Grain Handling and Transportation System, Annual Report 2003-04 Crop Year.

Unlike the patterns experienced by B.C. ports, the Ports of Churchill and Thunder Bay maintained relatively stable handlings of total Board shipments over the four-season period. As Figure H shows, the volume of tendered shipments to the Port of Thunder Bay peaked during the 2002/2003-crop year. Much like the growth in volume at Prince Rupert, this has been directly linked to the environmental and logistical conditions that hit southern B.C.

With the cutback to the tendering process, the original motives of increasing efficiencies and enhancing commercialization were dampened. Although the ACA Program has provided another option for shippers and carriers to deal directly with one another, the split of administered and commercial grain markets continues to be a concern for logistics planners.

2.5 Moving Canadian Grain

Transportation is vital to the logistical and economic efficiency of the Canadian grain industry. While there are considerable differences governing the movement of administered and commercial grains, railways provide the main source of transport in both instances.

The following table provides a summary of the roles that railways, grain companies, and the CWB assumed following the most recent period of industry reform. The points identified take into consideration Board and non-Board shipping activities.

Table A: Logistical Responsibilities

Railways:	Establish annual (projected) and weekly (adjusted) fleet capacities by zone (15 zones between two railways) and corridor (four corridors)
	Provide grain companies and CWB with advance-booking options
	Divide cars between the CWB and grain companies
	Spot cars at pre-determined locations (origins) and times
Grain Companies:	Arrange advance car orders to ensure adequate railcar access
	Receive CWB order and railcar allocation information
	Locate Board and non-Board supplies and coordinate availabilities and loading times with elevator managers
	Communicate with terminals to gain authorization for spotting cars
	Coordinate logistical planning, matching appropriate supplies (volume, grade, location, time) with adequate transport
CWB:	Arrange advance car orders to ensure adequate railcar access
	Coordinate and communicate orders to grain companies
	Allocate railcars to grain companies through one of three systems

The shipping schedules for Board and non-Board grains are arranged over three and four week periods.

During the first week of the Board grain shipping schedule and the second week of the non-Board schedule, car orders are placed, and the railways release preliminary distribution figures. Although grain shipping orders are determined by corridor, cars returning from port facilities do not have to be re-assigned to the same corridor. This aids the overall logistics process.

The number of requests that railways receive for Board and non-Board shipments is central in determining how cars will be allocated. Railways re-assess their capacities (by total supply and zone location) on a weekly basis in response to the car demands (advance booked allocation and general order allocation) of the CWB and grain companies.

By the first Friday of a shipping schedule (ten days prior to the loading week), railways provide the CWB and grain companies with a figure of how many cars they should expect to receive. However, the railways have the option to adjust this initial count should logistical conditions change over the next five days.

Once the CWB has a projected car supply for the loading week, it informs grain companies of the volume and type of orders (and corresponding number of cars provided through CWB allocation) they can expect to receive. The CWB determines the number of cars that it will allocate to each grain company based on a company's past performance and its supply of the type and grade of grain that is in demand for that specific week.

By the following Wednesday (week two of a shipping schedule), railways inform the CWB and grain companies of how they intend to arrange their fleets. At this point, the CWB finalizes its car allocation, and arranges to have cars spotted at primary elevators on Monday to begin the loading process. As in the past, Board grains can not be moved without permission from the CWB. Furthermore, only tendered grain shipments can be transported using privately arranged railcar supplies (if this arrangement has been stipulated in the grain company's bid). Thus, grain companies do not have the same power to negotiate car allocation and spotting with the railways for Board grains as they do with non-Board commodities. Despite reforms to the CWB car allocation system (tendering and ACA), the allocation of railcars for CWB grains is managed by the CWB.

For non-Board, commercial grains, grain companies assume all responsibility for negotiating sales, arranging transportation, and determining the locations at which specific orders can be filled. Rather than having a centralized institution managing the sale and flow of grain along the supply chain, the shipment of non-Board grains involves:

- accessing railways' advance booking systems to ensure access to an adequate car supply;
- finalizing sales and forwarding order requests to elevator managers;
- transporting grain from farms to primary elevators;
- ordering railcars and receiving preliminary allocation figures from railways; and
- confirming railcar supply, placing railcars at designated locations, and starting to load cars.

Grain companies repeat this process on a weekly basis. As sales are made in a given week, grain companies are simultaneously loading orders at specific elevators in response to sales made four weeks prior. While this type of process helps grain companies maintain efficient loading patterns, it also allows elevator managers to know what their supply availabilities must be up to three weeks in advance.

Following the disbanding of the CAPG, the railways assumed control of railcar allocation. Railways divide grain cars into two categories: advance car order requests (advance-booked) and car order requests (general tariff). Cars are distributed to the CWB and grain companies based on weekly and advance demand.

Both of Canada’s Class I railways have developed systems that allow grain companies and the CWB to reserve blocks of cars in advance of the shipping week. At the beginning of each week, railways inform the CWB and grain companies of the number of cars that will be available for advance booking by week, corridor, and program. The maximum number of units offered through advance request systems (for one origin, and in one week) is limited to the total car spot capacity at specific origins, unless otherwise agreed to by railway officials. These cars are often awarded through an internal process that may include the number of weeks in advance that the bid has been placed, the value of the bid, or a shippers past performance (following through on contract obligations).

These systems guarantee shippers that a block of cars will be available every week, over a given period of weeks. Railcars provided through advance ordering systems must be used every week. If they are not loaded by the end of each shipping week, the shipper receives a financial penalty based on the number of cars in the block.

The different advance booking systems CN and CP provide shippers with a number of options in terms of the number of cars (blocks) provided, and the number of consecutive weeks that car access will be assured. In most cases, blocks of cars can be reserved months in advance, but no later than 10 (CP) or 11 (CN) days prior to the start of a shipping week.

Table B describes the different advance booking systems that CN offers.

Table B: CN Advance Booking Systems²

GT 100	Shippers may reserve a block of 100 empty hopper car units for a specified number of consecutive grain weeks
	The contract period is different for each corridor that CN serves (between a minimum of 10-30 grain weeks)
GT Secure Export	Shippers may reserve a block of 50 empty hopper car units for a specified number of consecutive grain weeks
	The contract period is different for each corridor that CN serves (between a minimum of 10-35 grain weeks)
GT Pro Export	Shippers may reserve a block of 50 empty hopper car units for a specified number of Contracted Allocation weeks
	If demand exceeds the number of units CN has made available through GT Pro, the highest bidders receive the units they request. If there is a tie in the bidding process, CN reserves the right to select among the valid offers

In addition to these systems, CN provides advance offerings in smaller, 10-car blocks through its GT Pro Domestic and GT Pro Transload systems. These offerings only concern shipments within the Vancouver corridor.

² CN Railway, http://www.cn.ca/productsservices/grain/en_Grain.shtml

Shippers must meet certain requirements under each system to be qualified registrants. As registrants, shippers have the option of being the sole shipper for the allotted block of cars received each week, or may agree to appoint another registered shipper as the sole shipper for each week.

CN reserves the right to reject offers, and to limit units awarded during the initial round of bidding to no more than 50% of the original contracts offered. However, shippers may exceed 50% of the contracts offered by bidding on subsequent offerings for the same corridor. If there is an excessive demand for units within a particular corridor, CN may allocate cars to shippers for a specified (rather than consecutive) period of weeks. Although advance offerings are corridor-specific, shippers may request route changes.

CP has also developed a number of advance booking systems. Table C outlines the different systems CP has created as branches of its MaxTrax program.

Table C: CP Advance Booking Systems³

MaxTrax: BaseMax	Shippers may reserve a block of 25 empty hopper car units for a period of five to 42 weeks.
	BaseMax bookings can only be made twice yearly, and is designed for shippers with predictable weekly movements
MaxTrax: ShuttleMax	Shippers may reserve a block of 100-112 empty hopper car units for shipment to the Ports of Vancouver and Thunder Bay
	Shippers have the option of selecting a 4-trip, 8-trip, or 12-trip shipping pattern, and can nominate the origin and destination of the four, eight, or 12 trips.
MaxTrax: AdvanceMax	Shippers may reserve blocks of 25, 50, or 100 empty hopper cars two to 14 weeks in advance of the required shipping week
	Shippers may select a specific corridor depending on the number of cars that have been allotted for the shipping week in question
MaxTrax: ReadyMax	Shippers may reserve a desired number of hopper car units 10 days in advance of the shipping week.
	Cars are allocated on a week-by-week basis, and are awarded based on previous performance (order utilization and pipeline management)

These programs divide car offerings between the Vancouver and Thunder Bay corridors. In addition to these programs, CP offers three services (SplitTrax, StageTrax, and ShuttleTrax) that are designed to provide additional flexibility for shippers. SplitTrax lets shippers split 50- and 100-car blocks between two terminals at one port. StageTrax is a handling service that allows customers to apply for en route storage of specialty crops, grain and grain products. ShuttleTrax is a service that rewards prior commitments and efficiencies by allowing customers to consolidate allocated blocks of cars into a scheduled and/or repetitive unit-train.

³ CP Railway,
<http://www8.cpr.ca/cms/English/Customers/New+Customers/What+We+Ship/Grain/MaxTrax.htm>

Cars that are not booked in advance are allotted to the general allocation process (for weekly train run programming). The processes of general car allocation are not the same between CN and CP. CN provides shippers with an initial estimate of the number of cars they can expect to receive on the first Thursday of a three-week shipping schedule. CP provides an initial figure to shippers on the first Wednesday of a three-week shipping schedule.

Cars allocated through the general process are released on a weekly basis, and are allocated to the CWB and grain companies based on their historical performance in specific corridors (i.e. car utilization, loading and transport efficiency, turn-around time).

Grain companies and the CWB submit origin-specific, general car requests on the second Monday of a three-week shipping schedule. These requests are reviewed by the railways in conjunction with the car blocks that have already been allocated through advance systems. Between Monday and Wednesday of the second week, railways set their train run program for the following week (the shipping week). At the end of the second week, railways release their service plans that include both advance and general allocation units.

2.6 Scheduling Summary

Table D (developed through consultation with stakeholders representing CN, CP, the CWB, and grain companies) provides an outline of the various events that occur during the shipping schedules for Board and non-Board grains. The table combines the responsibilities of the railways, grain companies, and the CWB for shipping Board and non-Board grains. It is divided into a five-week period in order to include the Board's ACA system.

The information provided in Table D was accurate at the time this document was printed.

Although hopper cars are allocated to serve two parallel markets (administered and commercial), the logistical processes of each system converge on the Friday prior to the loading week. At this point, the railways establish the location (spotting) and volumes (reflected in the number of cars allocated) for Board and non-Board shipments, and communicate these figures to the CWB and grain companies through a train service plan.

Table D: Loading Schedule for Board & Non-Board Grains

	Monday	Tuesday	Wednesday	Thursday	Friday
Week One	*CWB gives Gcos notification of ACA's by number of units, grain, and catchment				
Week Two	*Gcos must accept or defer ACA by end of today				
	*Gcos forward non-Board requests to primary elevator managers				
Shipping Schedule Week One (Three)	*Tenders Issued *Gcos determine locations of non -Board grain supplies	*Gcos submit initial car/spot requests for non-Board grains	*Final bids submitted for tenders *CP informs CWB and Gcos of car supplies each likely to receive	*CN informs CWB and Gcos of car supplies each likely to receive *Deadline for advance car requests with CN *CWB completes sales assessments and awards tenders (max. 20% of total shipments)	*Preliminary alloc. of cars from CWB to Gcos *Deadline for advance car requests with CP
Shipping Schedule Week Two (Four)	*Gcos and CWB submit origin-specific, general car requests to railways *Between today and Wednesday CN and CP develop train service plan *Initial assessment of Board/non-Board requirements and locations		*CN and CP set final CWB and grain company car totals *CWB sets final car alloc. (total of general, tendering, and ACA systems) *Board/non-Board grain orders combined into train service plan		*CN and CP release train service plan to CWB and Gcos for the following week
Shipping Schedule Week Three (Five)	*Spotting & loading begins continuing throughout the week				

3.0 International Context

3.1 United States

The United States is the world's largest producer and exporter of grain, including products such as corn, wheat, soybeans and barley. Much like the Canadian context, U.S. grain producing regions are located among the interior states of the Midwest and Central Plains. Thus, moving grain to points of export requires a fluid, efficient transportation network.

Over two decades ago, the condition of the U.S. rail network had reached a point that left the government with two options:

- nationalize the country's rail network through massive subsidies and an organizational structure based on public management; or
- privatize rail services and create a system that relied on the free market.

In 1980 the government passed the Staggers Rail Act, leading to the de-regulation of the U.S. rail industry (with the exception of certain non-rate areas), and the enhancement of competition between railways. Prior to the Staggers Rail Act, cars were allocated based on a first-come-first-served basis. The rationalization efforts that occurred following the Staggers Act required railways and the grain industry to establish new measures to compensate for the loss of routes. The de-regulation of the railways allowed carriers to introduce car allocation innovations such as confidential contracts for service guarantees and auctions as a means of bidding on railcars.

Without a central organization such as the Canadian or Australian Wheat Boards regulating the sale and flow of certain grains, U.S. grain producers have developed cooperative systems for storing and shipping their harvests. The cooperative arrangement helps producers to manage their costs as individual actors, and to conduct business with larger scale grain companies, and makes it easier to negotiate freight contracts with the major railways.

Through railcar auctions, shippers submit simultaneous, sealed bids for guaranteed freight service. Bidding typically occurs on a weekly basis, with different numbers of railcars allocated to different corridors (determined by past productivity). Much like the tendering and advance award programs in the Canadian setting, shippers and carriers suffer penalties for not fulfilling the contractual obligations.

Different U.S. railways have developed their own programs for allocating railcars through a bidding process. Prior to its merger, Burlington Northern (now BNSF) developed a Certificate of Transport (COT) program that allowed shippers the opportunity to pay a premium for guaranteed access to railcars. CP/Soo, Union Pacific, CSX and Illinois Central have also devised auction-style bidding processes as a mechanism for allocating railcars. Although some have viewed the process as an inequitable means for transporting grain, federal regulators have indicated that the bidding process constitutes an efficient service mechanism that includes incentives for maintaining an optimally-sized grain car fleet.

Just as BNSF's COTs program provides shippers with guaranteed access to railcars, Union Pacific has developed a grain car allocation system to distribute covered hopper cars. The UP program is divided into three supply methods: car supply vouchers, general distribution and guaranteed freight.

Car Supply Vouchers

- A number of cars made available for auctioning within three zones.
- Vouchers are based on half-month (1st through 15th, and 16th through last day) shipping periods, and weekly shipping periods.
- Half month: cars offered individually, as well as units of 25, 50, 75 and 100.
- Weekly: cars offered as units of 75, 90 and 100.
- Winning bidders pay a premium that includes a \$300 deposit per car. Cars must be placed within four days of the shipping period. If cars are not placed, or if cars are not used, penalties such as the forfeit of the premium and deposit apply.
- Empties can be ordered for any shipping location along UP's line haul network.

Guaranteed Freight

- Under a partnership agreement between UP and a group of grain shippers (that UP refers to as a Guaranteed Freight Pool of pool operators), UP will sub-lease owned or leased hopper cars.
- UP guarantees the delivery of 1.4 times the number of cars leased by pool operators.
- This system functions according to a half-month shipping schedule (1st through 15th, and 16th through last day) during which pool operators must allocate their resources in approximately even increments (as determined by a contract between UP and pool operators).
- Cars must be placed at least 10 days prior to shipping period, with transfers being at the discretion of the railway.
- UP reserves the right to place cars at any time during the half. Demurrage charges may be applied.

General Distribution

- Customers may order hopper cars through UP's customer service centres.
- UP does not guarantee a date of delivery under the general distribution system.

The diversity of these systems is designed to meet the varying needs of grain producers and shippers across the country.

As in Canada, U.S. railways are increasingly moving toward 50 car trains or larger. This has improved efficiencies for railways and allowed them to charge lower freight rates than if they continued to maintain shorter train consists. The U.S. has also experienced a greater rationalization of rural routes than has been witnessed in Canada. As a result, there has not been the same level of short-line development in the U.S. leading to an increasing reliance on road and water-based networks in the U.S. Unlike the Canadian industry's heavy reliance on rail freight services, the Mississippi and Missouri river systems provide U.S. shippers with a competitive alternative to railways. The barge systems help to create a fluid transportation process, allowing grain shippers to strategically arrange the transport of grains to domestic markets and port facilities.

More recently, trucking services have provided a competitive alternative to rail freight. Table E shows the modal split in transporting U.S. grain.

Table E: U.S. Grain Transportation by Mode⁴

	Rail (000 tons)	Rail (%)	Barge (000 tons)	Barge (%)	Truck (000 tons)	Truck (%)
Domestic (1990)	92,698	43.4	9,500	4.5	111,194	52.1
Domestic (2000)	83,517	29.9	4,906	1.8	191,284	68.4
Export (1990)	42,301	37.9	62,501	56	6,880	6.2
Export (2000)	46,069	37.7	67,712	55.4	8,543	7
Total (1990)	134,999	41.5	72,001	22.1	118,074	36.3
Total (2000)	129,586	32.2	72,619	18.1	199,827	49.7

In the case of domestic and total transportation, this table shows that between 1990 and 2000, there was a significant increase in the movement of grain by truck. By 2000, close to half of all grain movements in the U.S. were completed through the motor carrier industry. The sharp increase in domestic demand for processed grain products is one of the major reasons for the growth in demand for trucking services.

Recently, the level of demand for identity-preserved grains has increased. In order to preserve the integrity of such shipments while in transit, alternatives to bulk rail systems such as trucking have assumed a new role.

However, despite the increased movement of grains such as corn and soybeans by truck, traditional bulk grains such as wheat have continued to rely on rail as a main service provider. In the case of bulk grain movements, railways and barges continue to be the most economical mode of transport.

3.2 Australia

Until recently, the Australian grain industry operated as a network of state-level, publicly managed systems. State Governments assumed responsibility for financing infrastructure development and maintenance, as well as logistical and operational management. Australian National's freight service (now controlled by the National Rail Corporation) was the only company to offer interstate rail freight service in the country. Like the CWB, the Australian Wheat Board (AWB) has maintained its role as a single desk marketer of grain (primarily export wheat). Although the grain and rail industries in Australia have become less regulated over the past decade, the AWB retains its single desk license until 2010. However, aside from export wheat, most states have deregulated the marketing of other grains, effectively broadening the base of freight customers.

In Australia, the AWB is responsible for the marketing, trading and financing of all Australian bulk wheat exports, as well as grains like barley, sorghum and oilseeds. However, the AWB

⁴ Nick Marathon, Tamara VanWechel and Kimberly Vachal, 2004. Transportation of U.S. Grains A Modal Share Analysis, 1978-2000. United States Department of Agriculture, Transportation Services Branch.

At the time this document was produced, these figures were being updated by the USDA's Transportation Services Branch.

does not control the allocation of railcars for these grains in the same way as the CWB. Unlike the Canadian context, Australian grain companies negotiate the spotting of railcars directly with public and private railways. From a regulatory standpoint, managing the primarily state-based rail industries through a centralized institution like the AWB would be very challenging. This is a sharp contrast to Canada's vertically integrated, nationally organized rail/grain industry relationship.

Much like the Canadian grain industry, the Australian grain industry is divided between Board and Non-Board commodities. Appendix 4 describes the flow of grain through the Australian supply chain.

In terms of the grain supply controlled by the AWB, the AWB's National Pool (export-bound accumulated crops) is representative of approximately 80% of AWB grains, while about 20% of AWB grain is sold locally. Although the AWB is the principal seller of major grain products in Australia, it does not manage transportation services.

The transport of grain through the Australian supply chain moves according to the following set of developments:

- The AWB releases a call for grain in response to orders it has received.
- Grain companies and individual producers respond to these calls based upon their supply holdings and their capacity to ship orders to the designated point of export.
- Grain companies and/or producers are awarded contracts by the AWB to provide a determined supply of grain at a specific time and location (point of export).
- Grain companies and/or producers establish contracts with railways or trucking companies to ship grain from storage facilities to ports.

As the primary transportation service provider to the grain industry, reforms to the structure of the rail industry had a direct impact on the flow of the country's grain supply. Prior to the late 1990's, Australia's railways were publicly operated, with the exception of a few private service providers. By 2000, the number of privately-operated rail freight companies had more than doubled. Although the AWB has continued to be the primary grain marketer, producers gained a significant level of influence with the growth of private rail services and the level of competition developing between rail and road-based transport providers.

Throughout the 1990s, remote branch lines were cross-subsidized by state governments to ensure a degree of service equity between lower and higher density regions. However, as competition between grain industry stakeholders intensified, the subsidies were removed, giving producers that were closer to port locations a strategic advantage. This led to a rising number of producers seeking road transport as an option over the traditionally used rail freight services. As a result, a more competitive environment has developed. Given the proximity of farm regions to export destinations in some states, transporting grain by road is more economical than employing rail freight providers. The average length of haul from the point at which grain is received to points of export is approximately 350 km. This is a considerable difference from the Canadian context.

The competition that has evolved between the rail and road industries in Australia is a direct reflection of the location of most grain producing regions. For the most part, grain production

in Australia is concentrated around the country's borders, close to port destinations. While rail infrastructure in most of Australia's dense regions stretches to port locations, road transport service providers enjoy the benefits of greater accessibility and better quality infrastructure to operate upon. Despite the increasingly present option of road-based transportation services, bulk capacities and lower infrastructure costs have positioned railways as the primary shipper of Australian grain.

4.0 Literature Summary

Grain transportation is a vital component of the Western Canadian grain industry. As one of Canada's more prominent exports, the movement of grain from the Prairies to various export points requires an efficient transportation system. In 2000, the Federal Ministers of Transport, Agriculture and Agri-Food, and the Minister responsible for the Canadian Wheat Board (CWB) announced changes to the grain handling and transportation system (GHTS). Following the recommendations of the Estey and Kroeger Reports, the reforms were to provide the foundation for a more commercialized environment, helping to create efficiencies and better serve the needs of grain producers and shippers.

One of the central issues of the 2000 reforms dealt with the process and policy of allocating railcars for transporting CWB grains. Through the legislation, it was established that a minimum of 25% of the CWB's annual grain movements had to be arranged through a tendering process. The original intention of the legislation was to increase the tendered percentage to a point at which 100% of CWB grains would move by tendered arrangements. However, following a performance review of the tendering process, industry leaders re-established the parameters for CWB tendered shipments to a maximum of 20% of total Board movements.

Notwithstanding the shift away from the original intention of the reforms to the car allocation process, the 2000 reforms are a driving catalyst in the reconstruction of the GHTS. The studies and reports listed in the literature review indicate that the process of allocating railcars in Canada has been a contentious issue for a number of years. The reports that have been produced by the Quorum Corporation have tracked the performance of the car allocation system since the 2000 reforms, and provide the most comprehensive set of reports on the current system. However, the set of academic studies produced both prior to and following the 2000 legislation offer insight toward the political, economic, and logistical challenges of inherent to the grain industry in Canada.

Reports investigating the grain transportation and logistics systems in the United States and Australia provide an intriguing contrast against the Canadian GHTS. The historical and contemporary debates about car allocation in Canada do not directly reflect the American or Australian contexts. As indicated by the reports that have been mentioned, the United States employs an auctioning process for distributing railcars, while grain transportation in Australia is highly segmented by state rather than managed at the national scale. Although the processes of managing grain transportation in the three countries have a number of explicit differences, the contrasts between the three systems display the complexity and nuances involved in the coordination of grain industry supply chains.

Recent changes to the car allocation equation have created an air of uncertainty over whether or not the intended 'commercialization' of grain transportation will materialize in the near future. As the scale of the international market for Western Canadian grain expands, it is essential that stakeholders at all levels work to support an efficient and effective transportation mechanism. Many of the studies listed in the literature review pre-date the legislative reforms that occurred in 2000. Just as it is essential for industry stakeholders to create the most efficient and effective environment for the grain industry to flourish, it is equally important to

promote on-going research that explores and investigates the role of transportation, logistics and car allocation within the GHTS.

5.0 Literature Review

William Wilson and Bruce Dahl, 2005. "Railcar Auctions for Grain Shipments: A Strategic Analysis," Journal of Agricultural and Food Industrial Organization (3).

- Deregulation of the U.S. rail industry allowed railways to introduce a number of new pricing and allocation mechanisms. In most cases these mechanisms have involved some form of bidding process. This paper considers the strategic implications of the bidding and/or auction process for allocating railcars across the grain industry.

Nick Marathon, Tamera VanWechel, and Kimberly Vachal, 2004. Transportation of U.S. Grains A Modal Share Analysis, 1978-2000. United States Department of Agriculture, Transportation Services Branch.

- This document is an update to a similar report developed in 1998. It provides relevant data and analyses on changes in the competitiveness and efficiencies between modes serving the grain industry in the United States. The report also provides detailed analyses of the movement of specific grains including corn, wheat, barley and soybeans.

Quorum Corporation, 2003-2004 Crop Year. Annual Report: Monitoring the Canadian Grain Handling and Transportation System. Prepared for the Government of Canada.

- Following the implementation of Estey/Kroeger recommendations for the grain handling and transportation system (GHTS), the Quorum Corporation was hired to provide an annual review of the performance of the GHTS. This report includes statistics and commentary on commercial relations, system efficiency, service reliability, and producer impacts in the grain supply chain.

Quorum Corporation, 2002-2003 Crop Year. Annual Report: Monitoring the Canadian Grain Handling and Transportation System. Prepared for the Government of Canada.

Government of South Australia- Transport SA, October 2002. Eyre Peninsula Grain Transport.

- This paper was developed to provide clarification of the problems and concerns related to grain transportation across the Eyre Peninsula in South Australia (SA). Stakeholders including Local and State Governments, railways, grain handlers, and farmers contributed to the substance of this report.

Kronos Corporate Pty Ltd, September 2002. A Review of Structural Issues in the Australian Grain Market.

- This report was commissioned as an independent review of the structure of the Australian grain industry, and includes a set of recommendations for improving efficiencies. Activities within each Australian grain-producing state are described. The report offers a detailed presentation of the historical and structural aspects of the Australian grain industry such as the evolving role of the Australian Wheat Board and its subsidiaries, as well as sections covering transportation and logistics.

Larry Martin, et al, 2002. Benefits and Costs of a Voluntary Wheat Board for the Province of Alberta. Produced by the George Morris Centre.

- This paper examines some of the structural, regulatory and policy implications of maintaining the CWB's role in grain transportation. Although largely concerned with grain marketing, the authors do pay credence to the topic of transportation in the latter half of the paper. The evolution of the GHTS since 1995 is discussed.

Quorum Corporation, 2001-2002 Crop Year. Annual Report: Monitoring the Canadian Grain Handling and Transportation System. Prepared for the Government of Canada.

Quorum Corporation, 2000-2001 Crop Year. Annual Report: Monitoring the Canadian Grain Handling and Transportation System. Prepared for the Government of Canada.

Barry E. Prentice and Tamara Thomson, 2001. "Grain Car Canada: Electronic Railcar Market Allocation System," CTRF Proceedings (36).

- Access to railcars is essential for an industry that is captive to a monopolist sales body, a duopoly of rail transport services, and an oligopoly of grain handling and storage parties. Rather than proposing open access between the railways, this paper forwards the potential of a new institutional relation for ownership of hopper cars, and stresses the cost reductions that may occur through the application of electronic scheduling/allocating practices in the GHTS.

J. Caceres and D. Richards, 2000. "Update on Grain Transportation in a Continental Perspective," CTRF Proceedings (35).

- This paper examines how the grain system has been affected as a result of events that occurred between 1995 and 2000. It also considers the impact that the increased integration of the North American economies may have with regard to a possible continental rail network.

Marvin Prater and Keith Klindworth, November 2000. Long-Term Trends in Railroad Service and Capacity for U.S. Agriculture. United States Department of Agriculture, Agricultural Marketing Service.

- This paper discusses how the U.S. rail system has evolved over time and how the role of railways has changed with regard to U.S. agriculture. Statistics show that railways' share of grain and oilseed transportation has declined since the 1990s relative to trucking and barge services.

Transmode Consultants Inc., 2000. Design of a Continuous Monitoring Program: Prairie Grain Handling and Transportation System. Prepared for Transport Canada and Agriculture and Agri-Food Canada.

- In 2000, the Government of Canada announced reforms to the Grain Handling and Transportation System. These reforms were designed to create a more commercial environment for the transport of Canadian grain from farm to market. This report outlines the dynamics and reasoning behind creating a system for monitoring legislated changes to the GHTS (currently carried out by Quorum Corporation).

Kimberly Vachal and John Bitzan, June 2000. The Long-Term Availability of Railroads Services for U.S. Agriculture. United States Department of Agriculture.

- Derived from a survey-based methodology, this paper presents several expectations about the future of the U.S. grain industry. Topics discussed include the consolidation of the grain rail and elevator industries, rail rates, the efficiency of rail service programs, and the potential of containerization for grain transport.

Canadian Wheat Board, March 1999. Linking Farmers to Customers: Action Plan to Strengthen the Grain Supply Chain. Industry Working Paper.

- At the same time that the Federal Government ordered an examination of the GHTS, the Canadian Wheat Board (CWB) set out its vision for a more competitive, lower-cost grain transportation system. This report focuses on the need to protect shippers' interests in a reformed grain transportation system.

W. Drew and P. Rosher, 1999. "U.S.-Canadian System Comparison: A Grain Shipper's Perspective," CTRF Proceedings (34).

- Drew and Rosher examine the paradoxical demands of shippers in the Canadian and American grain industries in the late 1990s, focusing specifically on the rail systems within the grain supply chains. This includes a discussion about the development of railcar allocation procedures in the U.S. and the debate over railcar allocation in Canada.

Rory Hart, 1999. "Merging CN and CP: A Proposal for the Improvement in Grain Movement," CTRF Proceedings (34).

- Addressing both the cost and benefit of combining the services of CN and CP in the grain industry, this paper proposes that one main line be used to ship grain to the West coast, and another be used for sending empty cars back to pick-up terminals across the prairies.

Arthur Kroeger, September 1999. Stakeholder's Report: Consultations on the Implementation of Grain Handling and Transportation Reform. Submitted to the Minister of Transport, Transport Canada.

- Arthur Kroeger was appointed by the Minister of Transport to facilitate the development of an implementation plan for the recommendations of Justice Estey. This report sets out the findings of consultations with Western stakeholders. It includes chapters that provide background to the Estey Review and an overview of the Grain Handling and Transportation System. In addition to the stakeholder's report, three appendices provide a deeper look at rates and revenues, commercial relations, and competition and safeguards.

Graham Parsons and William Wilson, 1999. Grain Handling and Transportation Systems: A Canada/United States Comparison. Paper prepared for the Organization for Western Economic Cooperation, and presented to the Western Canadian Wheat growers Annual Conference, January 8, 1999.

- Although Canada and the U.S. share quite similar geographies, climates, cropping patterns and markets, they have developed very different systems for handling and

transporting grain. This paper explores the contrasts that exist between the two nations.

Baylis, Brooks, Fulton and Gray, 1998. "The Public Policy Problem of Grain Transportation," CTRF Proceedings (33).

- This paper analyses the likely impact of deregulation on the Canadian grain industry. It reviews the role of government in the development of the rail industry, the history of regulating railways in Canada, and the impact of deregulation on freight rates and rail transport services in the grain industry.

The Hon. Willard Z. Estey, December 1998. Grain Handling and Transportation Review-Final Report. Submitted to Transport Canada.

- This document provides a comprehensive review of the grain handling and transportation system in Canada. Justice Estey's report asks what alterations, additions, reductions or other organic changes may be required to the administrative and commercial regulation of the grain industry. Following a review by Arthur Kroeger, two of Justice Estey's recommendations were developed, including a tendering process for the allocation of railcars.

Graham Parsons, 1998. "Regulation, Logistics and Efficiency: Introducing Competition and Market Pricing to Western Canada's Grain Handling and Transportation System," CTRF Proceedings (33).

- In light of the 1998 Estey Grain Commission Review, this article outlines the structure of the GHTS, describing the prominent roles afforded to regulatory bodies over the sale, marketing and transportation of Canadian grain. The author provides a pre-Estey summary of the car allocation procedure in Canada and the continual debate surrounding the most efficient roles and responsibilities of industry stakeholders.

Barry E. Prentice and Douglas E. Campbell, 1998. "Allocation System Incentives to Improve Grain Loading and Unloading Performance in Western Canada," CTRF Proceedings (33).

- This paper looks at the logistical characteristics of the Canadian grain handling system, and examines the allocation incentive program that the Canadian Wheat Board created following the removal of the WGTA subsidy. Efficiency and accountability within the GHTS are two fundamental principles that the paper explores.

Ed Tyrchniewicz, et al, 1998. A Study of the Canadian Wheat Board's Role in Grain Transportation. Prepared for Agriculture and Agri-Food Canada, and Transport Canada.

- Through its role in car allocation and train-run programming, the Canadian Wheat Board (CWB) is a major participant in Canada's grain handling and transportation system. This study provides a preliminary evaluation and balanced discussion of operational alternatives to the CWB's role in grain transportation.

United States Department of Agriculture, 1998. Agricultural Transportation Challenges for the 21st Century. A report prepared for the National Agricultural Transportation Summit, July 27-28, 1998.

- This study examines the major transportation and infrastructure challenges that will impact U.S. agriculture in the 21st century. In the document, Jerry Norton describes how attrition of the U.S. grain car fleet and capacity constraints linked to a pricing/demand mismatch pose a concern for the U.S. grain industry in the 21st century.

Western Canadian Wheat Growers Association, September 1998. The Implementation of a Contractual System to Control Grain Movement. A Submission to the Estey Review.

- The Western Canadian Wheat Growers Association (WCWGA) is a non-profit, voluntary farm organization representing approximately 6000 members from across Western Canada. This document represents the views of WCWGA members that a commercial and contractual grain transport system is the most effective way to assure accountability within the system.

William Wilson and Bruce L. Dahl, January 1998. Reciprocal Access in U.S./Canadian Grain Trade: Background Issues for the U.S. Grain Trade. Staff Paper Series, North Dakota State University- Department of Agricultural Economics.

- This paper reviews past trade relations in the grain industry between Canada and the United States, documenting trade barriers and the potential for reciprocal access to the grain market. The paper includes a section that discusses the role of car allocation and grain transportation in Canada.

William Wilson and Bruce Dahl, May 1997. Bidding on Railcars for Grain: A Strategic Analysis. Agricultural Economics Report No. 376, Department of Agricultural Economics, North Dakota State University.

- Two important functions that are provided through the bidding process are pricing and allocation. In this paper, the authors discuss the value of guaranteed forward car service to the grain industry. The paper is divided between two focal points. The first considers the relevance of efficient rationing (allocation) to the grain and rail industries, while the second provides an analysis of critical variables.

Javier Caceres and Darrell Richards, 1996. "Grain Transportation in a Continental Perspective," CTRF Proceedings (31).

- This paper examines the impact that global political economic restructuring is likely to have on the regulated Canadian grain system. It discusses the export-driven nature of the Canadian grain industry, and gives consideration to the important role that changes and trends in the rail industry have on the Canadian grain supply chain.

The Car Allocation Policy Group, August 1996. Car Allocations- Policies and Procedures.

- In conjunction with input from the railways, grain handling companies, the Canadian Wheat Board and producers, the Car Allocation Policy Group (CAPG) released this comprehensive package of information relating to car allocation policies and procedures that were effective in 1996.

Eric L. Jessup, John L. Ellis and Ken L. Casavant, 1996. "Estimating the Value of Rail Car Accessibility for Grain Shipments: A GIS Approach," CTRF Proceedings (31).

- The demand for grain cars is not evenly distributed throughout the year, increasing the logistical challenge of coordinating the placement and movement of railcars. This considers the potential of applying GIS technologies for managing the accessibility of railcars to grain producers in the American Northwest.

Daniel C. Bortko, Michael W. Babcock, and Andrew P. Barkley, 1995. "Where Have All the Jumbo Covered Hopper Cars Gone? An Investment Analysis of the U.S. Rail Grain Car Fleet," Journal of the Transportation Research Forum (35:1).

- An examination of the depleting stock of U.S. grain cars and the impact on grain industry stakeholders and supply chains.

Jerry Norton, September 1995. Assessing the Impact of Railcar Availability on Grain Prices. United States Department of Agriculture.

- This study uses empirical data to evaluate the effect of railcar availability on grain prices and markets. Despite the deregulation that followed the Staggers Act, the issue of railcar supply has continued to threaten the efficiency of grain transportation in the U.S.

Jerry D. Norton and Keith A. Klindworth, July 1989. Rail for Grain: Future Need and Availability. United States Department of Agriculture, Office of Transportation.

- This study is of historical value for its estimate of the likely need for grain railcars by 2001. The authors consider historical trends in grain movement, rail grain movement, and grain car utilization. Major topics include the demand for transportation services, the depreciation of railcar fleets, and analyses of past and future supply chain demands.

Paul D. Earl, 1983. Logistics of Grain Movement. Canadian Transport Commission Research Seminar Series, volume 10.

- This paper was presented before the Western Grain Transportation Act (WGTA) became law. It provides one of the earlier, comprehensive reviews of the car allocation process in Canada. The paper provides some indication of the physical parameters and logistics of grain movement.

Electronic Resources

Canadian Wheat Board
<http://www.cwb.ca>

Australian Wheat Board
<http://www.awb.com.au>

United States Wheat Associates
<http://www.uswheat.org>

Government of Canada, Agriculture and Agri-Food Canada
<http://www.agr.gc.ca>

Canadian Grain Commission
<http://www.grainscanada.gc.ca>

Saskatchewan Wheat Pool

<http://www.swp.ca>

Agricore United

<http://www.agricoreunited.com>

Upper Great Plains Transportation Institute, University of North Dakota State (publications)

<http://www.ugpti.org/pubs>

Australian Government Department of Agriculture, Fisheries and Forestry

<http://www.affa.gov.au>

Ministry of Transport, New South Wales (news releases)

<http://www.transport.nsw.gov.au/news/media>

Australian Grain Growers Association

<http://www.graingrowers.com.au>

Australian Bureau of Statistics

<http://www.abs.gov.au>

Australasian Railway Association

<http://www.ara.net.au/main.php>

Canadian Association of Railways

<http://www.railcan.ca>

Association of American Railroads

<http://www.aar.com>

Cargill Canada

<http://www.cargill.ca/business/grain.htm>

National Grain and Feed Association

<http://www.ngfa.org>

Canadian National Railway

<http://www.cn.ca/productservices/grain>

Canadian Pacific Railway

<http://www8.cpr.ca/cms/English/Customers/New+Customers/What+We+Ship/Grain.htm>

Burlington North Santa Fe Railway

<http://www.bnsf.com/markets/agricultural/index.html>

Union Pacific Railway

<http://www.uprr.com/customers/ag-prod/index.shtml>

Grains Council of Australia
<http://www.grainscouncil.com/default.htm>

The Grains Research and Development Corporation
<http://www.grdc.com.au>

United States Department of Agriculture
<http://www.usda.gov/wps/portal/usdahome>

United States Department of Transportation, Bureau of Transportation Statistics
<http://www.bts.gov/>

Government of Canada, Transport Canada (GHTS)
<http://www.tc.gc.ca/pol/en/Report/KroegerCTAReport/menu.htm>

Government of Canada, Transport Canada (Monitoring the GHTS)
http://www.tc.gc.ca/pol/en/Report/grainMonitoringProgram/ghts_executive_summary.htm#Introduction

Australian Railroad Group
<http://www.arg.net.au/index.asp>

Department of Agriculture, Western Australia
<http://www.agric.wa.gov.au>

QR National (Queensland)
http://www.freight.qr.com.au/freight_services/agriculture/agriculture.asp

Pacific National Railway
<http://www.pacificnational.com.au/index.asp>

Farm Rail Car Coalition (FRCC)
<http://www.farmerrailcarcoalition.com/>

Quorum Corporation (reports)
<http://www.quorumcorp.net/papers.html>

Australian Barley Board
<http://www.abb.com.au/site/splash.cfm>

Grains Pool of Western Australia
<http://www.gpwa.com.au/gpplindex.html>

Grain Growers Association (Australia)
<http://www.graingrowers.com.au/>

Archer Daniels Midland Company (ADM)
<http://www.admworld.com/>

Canadian Transportation Research Forum

<http://www.ctrf.ca>

Transportation Research Forum

<http://www.trforum.org/>

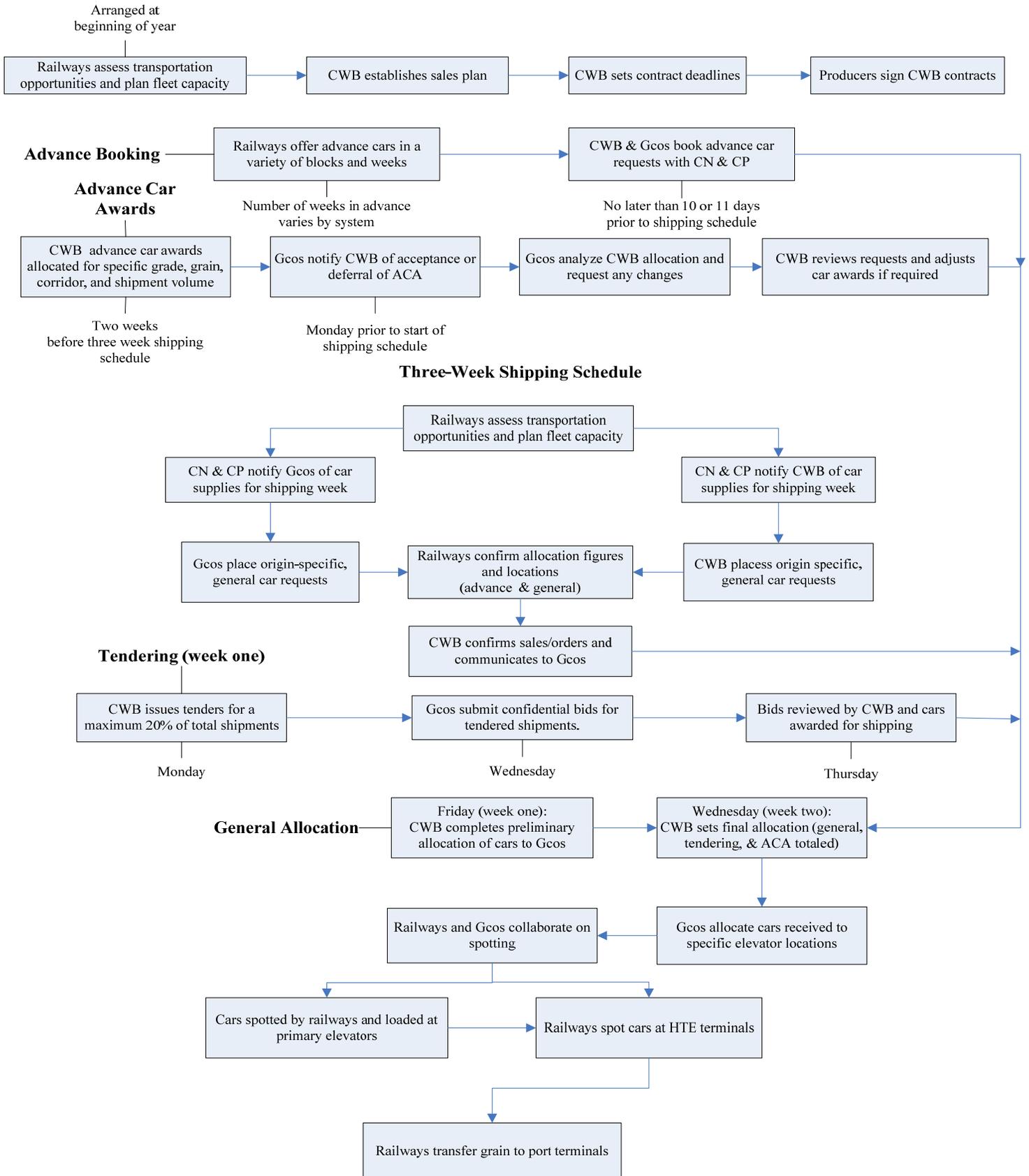
The Center for Transportation Research, University of Texas (research)

<http://www.utexas.edu/research/ctr/search/>

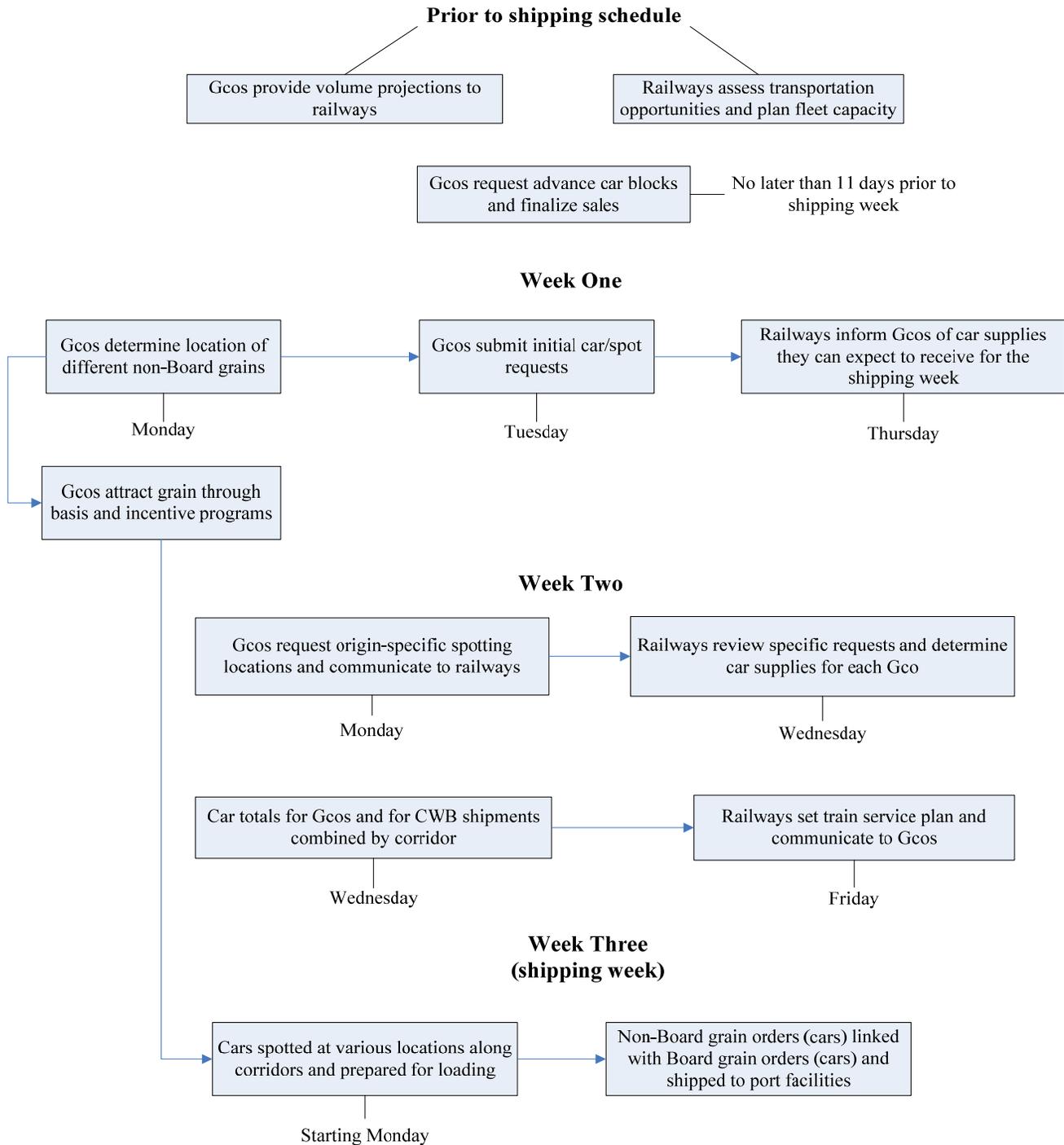
Transport Institute, University of Manitoba (research publications)

<http://www.umti.ca/index.asp?sec=80>

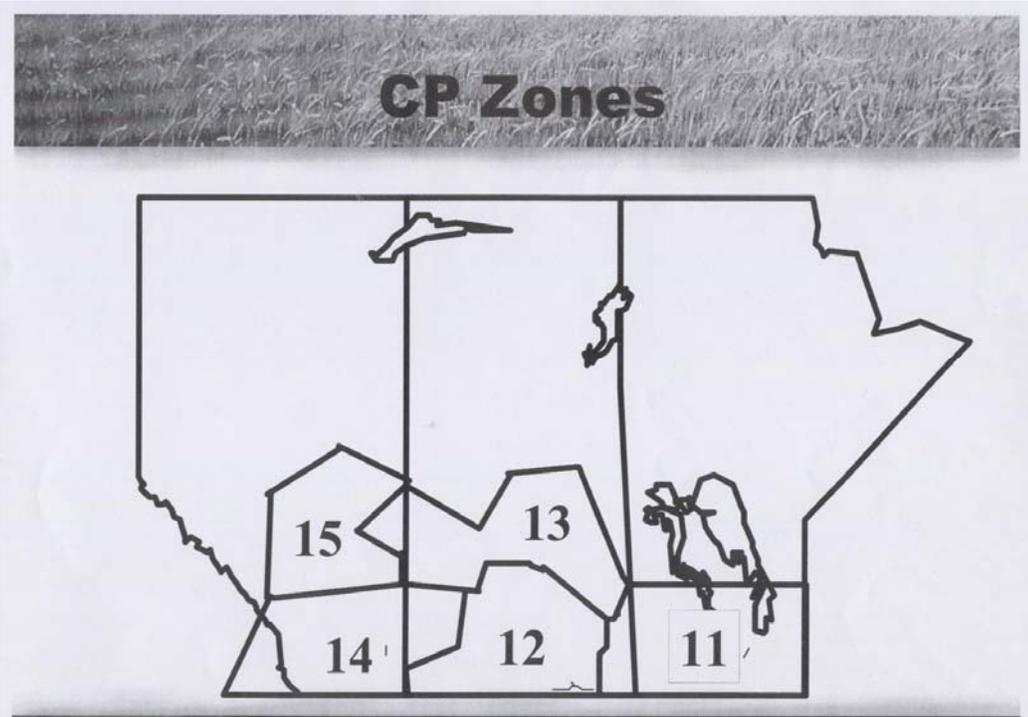
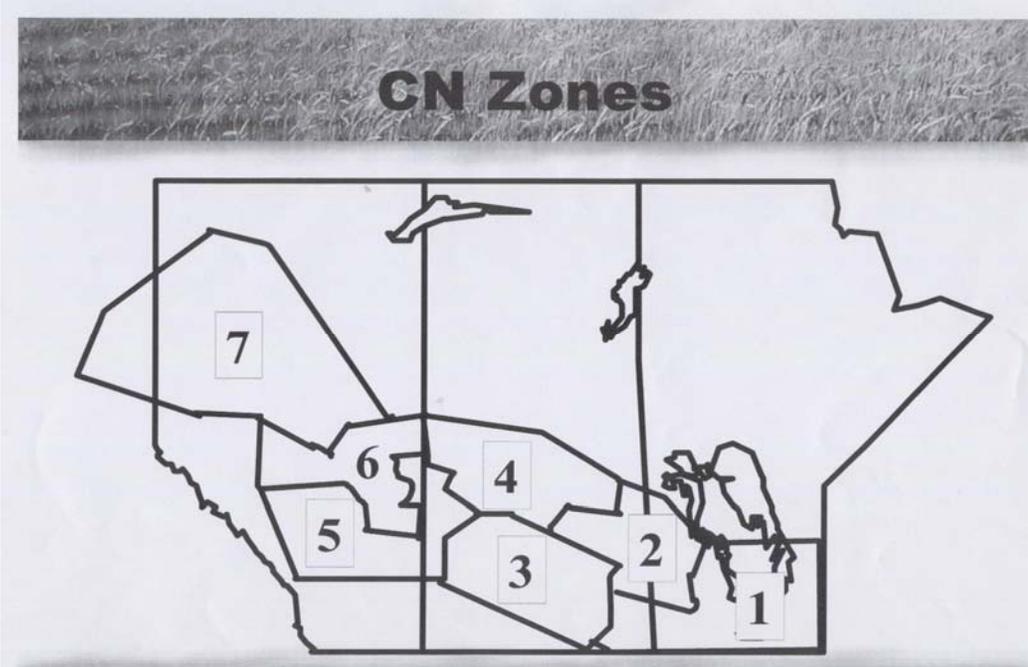
Appendix One: Transporting Board Grains



Appendix Two: Transporting Non-Board Grains



Appendix Three: Car Allocation Zones (CN and CP)



Appendix Four: Tables

Table 1: CWB Shipments

	2000/2001	2001/2002	2002/2003	2003/2004
Total Tendered	5.4	27.9	46	18.1
Minimum Target	25	25	50	0
Maximum Target	0	0	0	20

Table 2: CWB Tendering Activity 2000-2004

	2000/2001	2001/2002	2002/2003	2003/2004
Tender Calls	509	416	445	251
Bids Received	408	2,177	2,587	1,898
Contracts Concluded	204	654	784	466

Table 3: Total, Tendered, and Advance Award Tonnage (000's tonnes)

	2000/2001	2001/2002	2002/2003	2003/2004
Tonnage Called	4,900	5,000	5,800	3,000
Tonnage Bid	1,600	11,400	11,800	10,300
Tonnage Moved	859	3,500	3,700	2,500
CWB Total Movements	15,900	12,800	8,000	13,600

Table 4: Provincial Origin of Tendered Grain (Percent)

	2000/2001	2001/2002	2002/2003	2003/2004
MB	6	15	23	17
SK	91	47	45	42
AB	3.9	38	32	41
BC	0	0	0	0.7

Table 5: Port of Destination for Tendered Shipments (Percent)

	2000/2001	2001/2002	2002/2003	2003/2004
Vancouver	56	58	22	45
Thunder Bay	35	31	48	36
Prince Rupert	8	10	28	17
Churchill	0.4	1.5	1.5	1.7

**Table 6: Contrasting Tendered and Total Tonnage at Western Canadian Ports
(000's tonnes)**

	2000/2001		2001/2002		2002/2003		2003/2004	
	Total	Tendered	Total	Tendered	Total	Tendered	Total	Tendered
Vancouver	8,008	606	6,666	2,104	2,007	822	5,532	1,120
Prince Rupert	2,163	46	1,029	344	1,699	1,046	3,017	430
Thunder Bay	5,198	205	4,694	1,069	3,919	1,764	4,670	877
Churchill	524	2	398	53	376	54	398	43