

Grain Handling and Transportation System

P R O F I L E



Prepared by

WESTAC 

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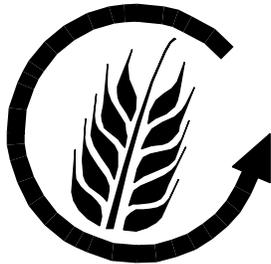
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This Report...



...is being provided to the Grain Review Secretariat. It has been completed for the Senior Executive Officers (SEO) group of western Canadian producers, grain companies, pools, Canadian Wheat Board (CWB), railways, Prince Rupert Grain Limited, and the Canadian Grain Commission (CGC).

This is the first report in the logistics project being carried out by WESTAC with SEO support and guidance. The content reflects WESTAC's independent corporate mandate of using a neutral and balanced approach to improve the transportation system.

Before we debate changing the present system, we must have a common understanding of how it functions. This report draws largely on existing research to describe a very complex grain handling and transportation system in a simple, easy-to-understand way. It is intended as a primer for the workshops where more detailed information may be used. These workshops, which will occur in the second part of the logistics project, will identify problems with the existing system and options for change, based on comprehensive consultations with system participants.

Please note:

The term "grain" refers to the six major grains (wheat including durum, barley, rye, oats, flax, canola), the specialty grains such as peas and lentils, and grain products.

The statistical information in this report is based on the most recent information available. In many cases, multi-year averages are used to smooth out short term fluctuations. In some instances, representative figures are used to illustrate a point rather than provide a detailed statistical account of the grain industry.

The report contains several supply chain examples using West Coast movements because they are typical of the majority of shipments in recent years.

The Canadian Logistics Challenge

The need for an efficient, low cost grain logistics system is not in dispute—less clear are the compromises needed to achieve this goal and still benefit all, especially the producer.

Customers are the foundation of our business, and our farmers produce for them. Logistics ties them together.

Logistics is a total system process encompassing all aspects of order processing, storage and transport. However, it must be remembered that the most important factor in any logistics system is people—from those who are our customers to those who grow grain, and all along the logistics pipeline, the workers and managers and regulators who make the system work.

What is needed?

Producers need an excellent logistics system:

- to maintain and improve their success in the global marketplace
- because logistics costs are the largest input cost for grain producers (Chart 1).

At the same time, grain companies and transportation service providers must earn competitive returns on their assets which are an incentive to invest in the facilities needed to provide reliable and efficient services.

How are we different?

As other countries do, we meet our own needs first. What makes us unique is the large proportion of grain that we export, some two-thirds of each year's harvest. Worldwide, we rank third as a grain supplier, behind the US and European Union. For several products (rye, canola, flaxseed, mustard seed) we are the world's principal exporter. In the process, 130,000 farmers in the western provinces generate over \$11 billion annually for the Canadian economy. The delivery system must respond to these challenges.

What is the grain transportation environment?

Large volumes (30 million tonnes) are being exported each year, originating at many production points across the prairies, and destined for numerous customers. Domestic use is also significant (16 million tonnes), half used on farm as livestock feed or seed and the other half delivered to domestic flour mills, feed mills, oil processing plants, brewers, maltsters and distillers.

The St. Lawrence Seaway route through Thunder Bay was once the main grain export route. Rising Pacific Rim markets have made the West Coast the major outlet (61% of export volume). However, grain remains vital to the St. Lawrence system (40% of total eastbound Seaway traffic). It is also important to the economics of Lake shipping because it helps balance cargo flows (i.e., eastbound grain and westbound iron ore destined to US/Canadian steel mills).

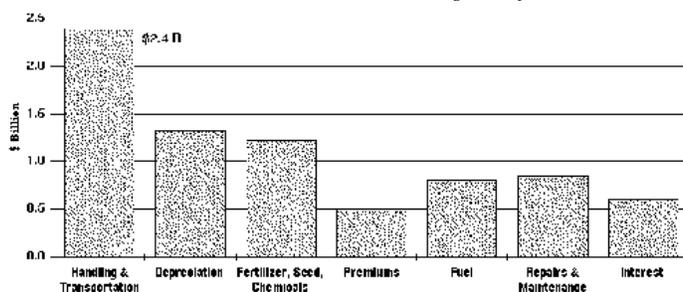
Several factors affect western Canadian system capacity:

- grain purchases are spread throughout the year, but demand and prices are seasonal, tending to be higher between October and March
- the rail and port systems serve different needs (many segregations of grains, large volumes of other commodities, intermodal traffic)
- St. Lawrence Seaway is closed for the winter months.

The CWB, as a single-desk marketer of wheat and barley, ships over 60% of the grain in the logistics system. As the CWB does not own elevator assets, it relies

Chart 1—Farm Input Costs

Logistics costs are typically in the range of \$60 per tonne.

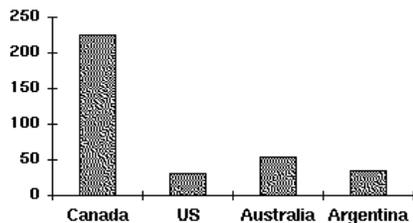


Source: Government of Saskatchewan

on the competitive, privately owned grain companies and pools to fill its orders. These centrally marketed grains must share the same facilities with open market grains, such as canola or rye.

Most storage is located on farms, not part of the commercial supply channel. Commercial storage in the country (primary elevators) and at export terminals is very limited compared to that of our competitors (Chart 2). Efficient use of this capacity depends on both the absolute capacity and the turnover rate. It is vital to bring the right grain into and through the system when it is needed. Clogging the system with “unnecessary” grains can quickly impede product flows.

Chart 2—Exports as a Percent of Commercial Storage



Source: Canadian Wheat Board

No one party controls the supply of products or the logistics system. Unlike other commodities, in grain there is no overall authority or responsibility for all logistics functions.

Most producers are located a thousand miles or more from export terminals with practical access to only one railway. The country elevators are widely dispersed and often in remote locations. Rail is the only viable mode of inland transportation. A large fleet (up to 27,000 rail cars) is needed to move products. Nearly three-quarters of this fleet has been purchased or leased by federal/provincial governments, the CWB or the pools.

Historically, the Canadian grain system has been shaped by several common views:

- all farmers should have equal access to the market and the transport system
- all farmers should receive the same price for the same type and grade of grain
- all farmers should pay equal per mile rail costs regardless of where they are located or the type of grain they ship.

The logistics environment has also been strongly influenced by rail rate regulation dating back a century (Crow Rate) and centralized, government-controlled marketing.

We ship our grain into highly competitive world markets that have been heavily influenced by competitors’ export subsidies. Canada is often a price taker: international events dictate local grain

prices. Also, our own support programs have been reduced or eliminated in recent years, leaving Canadian producers more dependent on market returns.

A core CWB strategy in responding to international markets and to build market share has been to sell grains which are of premium quality and that have a high degree of uniformity and consistency. This has resulted in the marketing of a large number of narrowly defined classes and grades.

The ability to differentiate products to meet the specific end-use needs of buyers gives a distinct marketing advantage and opportunity to extract price premiums in some markets. Other grains and oilseeds are sold using strategies less concerned with meeting very narrow specifications.

Although segregation confers certain advantages, it comes with a trade-off: greater demands on the logistics system and added costs because different types and qualities of grain must be kept physically separated during handling and transport.

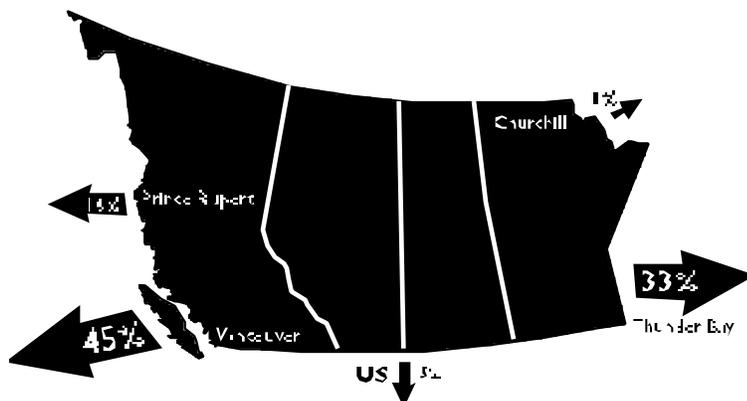
What changes are needed?

A few years ago, the grain industry articulated its vision:

“In the year 2005, Canada will have the world’s most efficient, viable and competitive production, marketing, transportation and handling structure. We commit to deliver to customers what they want, where they want it, when they want it...”

Canada has long endorsed equity and fairness. The vision statement expresses the need to be efficient, viable and competitive. What must be determined is the desired balance between efficiency and equity.

Western Canadian Grain Exports



Questions and *Issues*



How can accountability be achieved?

As sellers of grain, we must be accountable to our customers. The existing logistics system relies on a mix of commercial contracts, regulation and agreed (but not binding) practices. Some feel these arrangements need more “teeth” to enhance commercial discipline.

One school of thought is that reliability and efficiency would be improved if agreements specifying obligations of farmers (delivery off farms), railways (transport), grain companies (handling) and others were in place. Contractual obligations offer several potential benefits—clarifying the responsibilities of different players; increasing the control to carry out these responsibilities; and can be negotiated to inject financial incentives by rewarding good performance and penalizing poor performance.

Few dispute the need to improve accountability. Less clear is how to achieve this—how to structure contracts to promote efficiencies. A related concern is the fairness of commercial contracting in cases where the market power between parties is in question.



Should competition be injected into the system?

The traditional approach in the grain transportation and handling system has been to ensure equal opportunity of access to markets and the delivery system, at rates which reflect transport distance rather than the underlying cost of providing the service. This approach has led to an equitable system, but not necessarily an efficient one.

There are calls for greater competition in the system. For a producer, this means more rail service and rate options, with handling companies and railways actively competing for his products. For a railway, it means having a more market driven system which would allow freedom to allocate resources based on demand. For a grain company, more competition means having the freedom to build market share and benefit fully from its investments.

What needs to be determined is how to achieve competition in all parts of the grain logistics system, even in those parts where little direct competition exists.



What should be the CWB's logistics role?

No other commodity is able to successfully compete without having the control of logistics tied directly into marketing. This control usually involves ownership of assets in the logistics system, unlike grain where the CWB uses the facilities of other parties which are transporting their own grain.

The CWB has extensive statutory powers related to grain marketing, handling and transportation. This has led to a strong CWB role in transportation planning, ensuring vessel requirements are met, coordinating the weekly rail shipping program, and ensuring fair delivery access for western producers.

Some think the CWB's role should be restricted to buying and marketing grain. In this case, the CWB would buy grain at port position through a bidding process among competing grain company suppliers. Grain companies would

negotiate directly with carriers to meet their obligation to supply grain to the CWB at port.

Proponents argue that removing the CWB from logistics would foster competition and more efficiently match sales with deliveries into the logistics system. Others fear that this would end the fair opportunity for all producers to access the delivery system.

The challenge is to determine how control over logistics should be structured so that the transportation system best serves marketing requirements.



Are different logistics practices needed?

The grain industry is being shaped by a number of fundamental changes: elevator/rail consolidation, more diversity in what is being shipped, and shifts in customers and their requirements. These changes put pressure on the grain logistics system to respond.

One of the most complex and important areas of the logistics system is rail car allocation. There are many other critical aspects, for example, bringing the right grain into the system, expediting the flow of grain through the system, and the manner in which the sometimes competing needs of Board and non-Board grain shipments are met. Uncertainty in any part of the supply chain hurts the industry by adding costs.

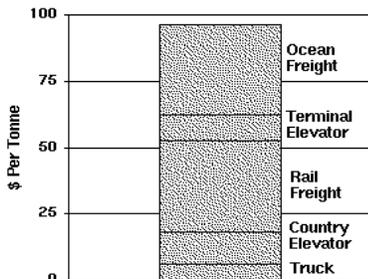
Timely management information is just as important as efficient operations. Some believe a centralized information data base would improve logistics coordination. Others are concerned that the centralized sharing of data could compromise sensitive competitive information and be less responsive to market needs.

How the Present System Works

Price Signals

A critical factor for any buyer is the price of getting grain to final destination. Handling and transport costs are a significant part of this price (Chart 3). Getting grain to port, before ocean freight costs, may account for 30% of the value of grain.

Chart 3—Sample Logistics Costs for Wheat to Asian Market



Source: Grain Companies, CWB

Capacity Planning

Grain is marketed for delivery from one to six months into the future. Capacity planning is crucial—virtually every sale is based on capacity that is anticipated to exist for these forward shipping positions. A key factor in capacity is the availability of rail cars. The capacity planning process begins in summer, before the size of the crop that must be moved is known, and then is revised regularly. The railways lease cars six months out if needed.

Within this six month horizon, capacity planning must consider:

- **projected and actual sales**— which determines overall demands on the logistics system
- **terminal working capacity**— expressed as rail car unload capacity, which affects timeliness of vessel loading

- **rail car availability**— affected by the projected car cycle times and number of cars in service.

Long Lead Time

Grain spends an average of 68 days in the logistics pipeline from the farmer’s bin to port position (40 days in storage at the country elevator, 12 days in transit to the port, and 16 days in terminal elevator storage). This long lead time often results in grain supplies already having entered into the logistics system before a vessel has begun its journey to Canada for loading.

There is considerable variation about this 68 day average, particularly in the lead time from ordering cars for loading and having them unloaded at port. Uncertainty in lead times makes planning and management difficult. Uncertainty also affects the customer's actual service and perceptions about the reliability of the Canadian system.

Vessel Coordination

The Canadian logistics system strives to operate on a “just-in-time” basis. This requires: close cooperation among buyers, suppliers and transport providers; reliable rail service; efficient stock management at terminals; and timely vessel arrivals. The smooth interaction of these factors is critical.

The sale triggers a vessel charter, usually specifying a 30-day arrival “window”. For most CWB sales, the buyer (or its agent) arranges the ocean transport (i.e., the sale is FOB port). For non-Board shipments, the seller (grain company) usually chartered the vessel and deals directly with the customer to tailor transportation

to final destination. For both Board and non-Board sales, the logistics process is geared to meeting the vessel’s scheduled arrival date.

Rail Rates

Rail freight charges are the producer’s largest single logistics cost item, and therefore have a major influence on returns, whether to produce grain or non-grain products, and delivery.

Regulated rail rates provide an equal rate for equal distance, regardless of whether a particular delivery point is located on a high cost branch line or a lower cost main line. These regulated rates are based on eligible railway costs of moving grain and therefore exclude the ownership cost of cars which have been provided by governments or the CWB.

The railways offer rate discount incentives to encourage multiple car loading at points which can handle them.

Equal rate for equal distance serves the equity objective, but does not encourage an economically efficient system. Since the freight rate for serving a specific point does not directly reflect the cost of serving that point, resources may be allocated to a high cost delivery point when economics would dictate that this point should either not be served, or be served in other ways. In some cases, short line rail or truck may be able to serve the point at a lower cost.

When considering alternatives, it must be remembered that cost savings realized by one party (such as a railway or grain company from consolidation) may add to costs in other parts of the system, such as road maintenance and environmental costs.

System Processes

System capacity and the CWB's role set the stage for understanding the three basic logistics processes.

Capacity—Western Canada's grain logistics system has limited commercial elevator storage relative to the export volume. This underscores the need to draw the right grain at the right time from farms into the commercial system. It also creates the potential for rationing elevator and rail car capacity, particularly when demand (and prices) are higher between October and March.

Operating, weather and other difficulties can cause capacity constraints and problems in one part of the supply chain which could spread to other parts of the system. The ability to respond rapidly to disruptions is critical because once capacity is lost, it is difficult to restore.

System performance and the ability to meet unexpected short term delivery needs is also affected by:

- the need to keep the many different types and grades of grain separated;
- the many collection points compared to non-grain commodities;
- long inland transport distances, increasing the importance of railway efficiency and car turnaround time (a one day savings in car cycle time means up to 1,000 fewer cars would be needed each month);
- the flow of two-thirds of exports through the West Coast, placing pressure on system capacity;
- the condition of the crop (e.g., damp grain requiring drying);
- timely adherence to the loading plan by all system participants.

CWB Role—Overall system performance is heavily influenced by CWB grains which dominate the system (over 60% of shipments) and which share facilities with open market shipments. The CWB acts as a single-desk grain marketer; it also plays a key role in getting products to port position. The CWB is legally responsible for marketing all exported wheat and barley and that for domestic human consumption. All other grains and grain products are marketed by grain companies, cooperatives and producers. The CWB and other sellers contract with the end customer to deliver specific quantities and qualities of grain.

Since the CWB does not own or operate any elevators, it relies on grain companies and cooperatives as agents to accept CWB grains, as authorized under CWB contract calls, into their elevator networks. CWB grains may account for 60-80% of the tonnage handled by grain companies and cooperatives.

Not surprisingly, CWB policies have strongly influenced the culture and design of the grain delivery system. The Board seeks to ensure fair delivery access for western Canadian producers and to maximize producer returns. Equity is maintained among producers by price pooling to ensure that farmers receive the same overall payment for the same product. Pooling also reduces the farmer's financial risk by protecting from seasonal price fluctuations.

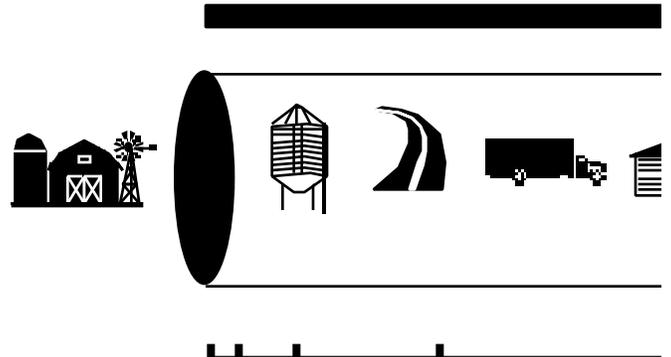
1. Calling Grain into the System

The production-delivery cycle (from seeding to final customer) can take six months or more. Marketers must work closely with producers early in the process so that supplies are matched with market demand.

The sales contract with the customer triggers the movement of grain out of farm storage and into the commercial supply chain. Once grain is accepted at prairie facilities, it is considered to have entered the logistics system:

- **CWB contract calls:** the CWB signs binding delivery contracts with producers to meet firm and anticipated sales. The contracts commit farmers to deliver the agreed volumes to the CWB within the contract period. In turn, the CWB commits to taking delivery of that grain by the end of the crop year (July 31) even though the grain may not actually be sold within the same crop year. The CWB apportions a proportion of its contracts into the delivery system as required to meet firm sales commitments. The CWB has the flexibility to coordinate deliveries by—train run level, region, specific railway, and product requirements.
- **non-Board deliveries:** grain companies bring non-Board production into country elevators either by straight cash sale (where purchases are made in the competitive marketplace) or through Deferred Delivery Contracts that specify volume, delivery period and price.

Physical Elements of the Logistics System



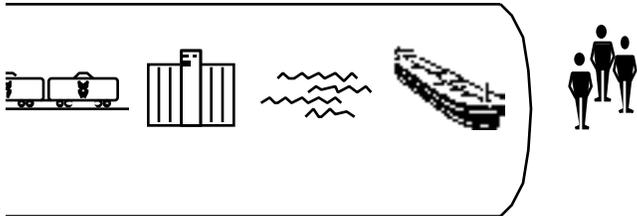
3. Port Coordination & Clearance

Problems at port can quickly congest the system. Therefore, clearing grain through the port system in a timely manner is critical to the efficient operation of the entire supply chain. Due to limited elevator buffer capacity, delays in transferring grain from port elevators to vessels may slow the unloading of rail cars. This, in turn, means that empty rail cars become available to cycle back to the prairies.

Port coordination involves scheduling of terminal and vessel operations so that rail car unloading is efficient and products are made available to meet export requirements. The B.C. Grain Shippers Clearance Association and the Lake Shippers Clearance Association play a major role. These associations receive vessel information (arrival date, tonnage needed, grade, etc.) from the CWB and grain companies (which normally charter vessels themselves), as well as information about stocks by terminal (on-hand and incoming). Based on this information, the clearance association assigns berths.

the delivery window is one to two months, compared to two to three months for Board grains. All producers of Board grains are paid the same price for the same grade. Purchase prices for non-Board grains vary according to the market price and grain companies sometimes use price incentives to draw products into the system. Trucking incentives are used by grain companies for both Board and non-Board grains to influence the timing of deliveries by reducing the producer's trucking cost.

Typically, there are sufficient calls in the system to meet 2-3 months of port contracts. The elevator manager plays a critical role in managing the flow of grain from farms to country elevators to meet sales commitments. The Canada Grain Act gives farmers the right to deliver grain into the elevator system at their discretion (where permitted). In practice, deliveries of Board and non-Board grains are controlled by the elevator manager who closely monitors shippable stocks already in the elevators, stocks held by shippers and contract calls. This requires timely sales information and close business relationships with farmers. In general, the elevator manager has more information about orders for non-Board grains compared to Board grains because he works for the company that sells the grain. Producers are not obligated to respond to any one particular call (with the exception of non-Board delivery contracts).



Source: Canadian Wheat Board

2. Moving Grain from Prairie to Port

The ability to meet planned sales depends heavily on "rail car allocation" (supply) which determines how rail car equipment is distributed to various shippers. This is particularly important when capacity is limited relative to demand. In the US, rail car supply and price is determined through a number of alternatives (e.g., direct shipper-carrier negotiation, published tariffs, bid cars, guaranteed car pool allocation, first-come first-served). In the absence of a commercial system, some administrative process is needed.

This role has been performed by CAPG since August, 1996. It provides a non-legislative, formal approach which was intended as a transitional mechanism until the introduction of a commercial system. CAPG is a voluntary industry association with four representatives (producer, shipper, CWB and railway). It is responsible for setting high level car allocation policies for rate-regulated western Canadian grain traffic only.

CAPG is responsible for establishing guidelines for corridor priorities during periods of rationing as well as the guidelines for dividing car supply between CWB, non-Board and non-administered (rye, flax and specialty crop) segments. The car allocation process uses a 4-month planning framework based on each shipper's firm and anticipated sales projections, plus rail and terminal capacity.

Apart from the high level allocation, other conventions are used to assign cars to shippers and to specific elevators, varying by commodity (see page 12). The CWB administers the weekly allocation of cars to shippers moving Board grains through the Industry Rail Car Allocation Policy, (IRCAP) which:

- allots cars to a grain company to move CWB grains based on its 52-week historical share of grain moved, with one-quarter of CWB rail cars allotted based on the company's effectiveness in managing its assigned cars (for example, debits are charged against the company's car allocation entitlement if loading instruction orders issued by the CWB are cancelled or empty cars are pulled from an elevator)
- may change with a new proposal to adopt a zone allocation system to assign cars to areas rather than specific train runs, designed to give grain companies more flexibility in how rail cars are deployed.

The CWB also administers train run programming (coordination of cars to/from individual train runs); responsibility for this is to transfer to the railways in the 1998/99 crop year.

priorities which determine when and where to load a vessel.

A wide range of different types and grades of grain loaded into rail cars across the prairies means there are seldom large homogeneous blocks of cars carrying the same product. Therefore, unless more sorting is done by the railways at intermediate hub points or at port area rail terminals, the cars received by the terminal/transfer elevators contribute to inefficiencies in terminal operations. This is particularly critical for smaller terminals which do not have the storage or processing capacity to handle blocks of cars containing many different grains.

Potentially large number of cars with different grains require switching in order to get the right products to the right terminals. Added handling is costly and increases car cycle times. This is an issue at Prince Rupert and Churchill which handle mainly 3 grains.

Pooling helps reduce switching and the time rail cars are at port. A common convention requires that most CWB grains (wheat, barley) be

pooled at port position (canola is also pooled, but only at Vancouver). A company loading a car in the country will not necessarily unload the same car at its own terminal in the port, although it will unload the same total number of cars. Pooling creates a common or shared buffer inventory on wheels and can increase rail capacity. One factor that can reduce the effectiveness of pooling is that direct responsibility for unloading the car is more removed compared to non-pooled grains that are assigned to specific terminals at destination.

Another strategy for reducing switching requirements is direct shipments of uniform product destined for specific terminals. This occurs in a relatively small proportion of overall shipments.

Terminal performance is also affected when country loadings do not closely match vessel requirements, and when there is a large number of segregations and specialty products which are not pooled.

A Sale is made to a *Japanese Buyer...*

No. 1 CWRS (Board grain)

Canola (Non-Board grain)

<ul style="list-style-type: none"> Canadian Wheat Board (CWB) sells wheat on an FOB basis to be available for vessel loading in Vancouver in 80-95 days 	<ul style="list-style-type: none"> United Grain Growers (UGG) sells canola on a CIF basis to be available for vessel loading in Vancouver in 80-95 days the vessel arrival schedule, volume and grade information is communicated to country operations management 	Sale & Vessel Charter
<ul style="list-style-type: none"> the Japanese buyer charts a vessel and stipulates a 30-day "window" for the ship to call in Vancouver; thirty days prior to the call period, the buyer narrows the call period to 20 days 	<ul style="list-style-type: none"> UGG charts a vessel for arrival within 80-95 days 	
<ul style="list-style-type: none"> CWB calls a percentage of contracts to get the wheat it will need to meet its sales commitments the delivery window on the call to the elevator is often 2-3 months a producer does not have to respond to the call although delivery of contracted tonnage must be made by the end of the contract period 	<ul style="list-style-type: none"> UGG offers a price to producers to bring canola into its elevator the delivery window to deliver to the elevator is up to 2 months a producer does not have to sell his grain at the price offered 	Calling Process
<ul style="list-style-type: none"> UGG elevator manager accepts contract delivery on behalf of CWB and pays the producer \$160/tonne (initial payment amount)* less rail freight and elevator handling charges CWB provides information to the elevator companies about the shipping program through the 4-week and 8-week plans 	<ul style="list-style-type: none"> UGG pays the producer \$350/tonne (sale price net of rail freight and elevator handling charges and including profit margin) UGG provides the elevator manager with specific information about the shipping program 	
<ul style="list-style-type: none"> CWB gives UGG (as agent of CWB) loading orders which indicate volume and grade needed by train run UGG allocates the orders among its elevators on the train run 1 week notice given to elevator manager 	<ul style="list-style-type: none"> UGG allocates the volume of canola being sourced among its elevators on a train run 4-6 weeks notice given to elevator manager 	Rail Logistics
<ul style="list-style-type: none"> CWB gets its rail cars based on 82% of the total rail cars available for Board and non-Board movements to Vancouver** CWB allocates these rail cars to UGG and other companies based on their previous loading performance and market share car supply is known 1 week in advance 	<ul style="list-style-type: none"> those shipping non-Board grains share the remaining 18% of rail cars** UGG submits a position statement every week to the Non-Board Allocator (NBA) to show vessel arrival date; and stocks in Vancouver and enroute the NBA allocates cars to UGG based on immediate sales requirements car supply is known 1 week in advance 	
<ul style="list-style-type: none"> the rail car containing the wheat is pooled in Vancouver with other Board grains for unloading at any terminal any demurrage costs (or despatch earnings) are assigned against the pool account for wheat and are shared among producers at a later date 	<ul style="list-style-type: none"> the rail car containing the canola is pooled in Vancouver with other canola for unloading at any terminal (other non-Board grains, such as rye or flaxseed, are assigned a specific terminal destination before arrival at port) any demurrage costs (or despatch earnings) are directly assigned against the movement and settled by UGG 	Port Coordination

* The final price that the producer receives is \$254/tonne based on the final price received by the CWB for No. 1 CWRS less pooled costs incurred by the CWB.

** The 82%-18% split is the sharing of rail cars to move Board and non-Board grains through Vancouver and is negotiated annually.

part 3 Quick Facts

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- **Rail System (pg 12)**
- **System Participants (pg 13-14)**
- **Glossary (pg 15)**

Recent Trends & Developments

Production...

- increase in high value, low volume products such as peas/lentils/canary seed (\$300-\$600/tonne)
- driven by economics—relatively low non-durum wheat prices \$150-200/tonne; potentially higher returns for other agricultural activities (e.g., livestock production); loss of WGTA rail freight subsidy
- Board grains still account for 75% of the total seeded acreage in western Canada
- end to centralized buying in some countries, leading to more customers demanding numerous quality segregations; selling to more countries in smaller volumes

Elevator/Rail System Consolidation...

- number of licensed primary elevators down 35% in the last 10 years; capacity down 13%

- fewer grain delivery points means longer truck haul from farm to primary elevator
- number of high capacity inland elevators increasing; per tonne handling costs declining
- 5 Thunder Bay terminals closed in the past 10 years
- reduced grain dependent branch line miles (5,355 miles in 1998 compared to 1984/85 peak of 6,998)

Institutional and Regulatory Framework...

- WGTA eliminated (August 1, 1995)—shippers responsible for 100% of rail freight rates; Maximum Rate Scale (rate cap) replaces WGTA Annual Rate Scale
- CAPG established (August, 1996)—prescribes and monitors car allocation policy
- Canada Transportation Act commences July 1, 1996—streamlines rail line abandonment; Branch Line Abandonment Prohibition Orders repealed.

Western Grain Storage

On Farm Storage 62 million tonnes



Primary (Country) Elevators—Who Owns Them?

(August 1, 1997)

Company	Number	Storage capacity (tonnes)	% of total (tonnes)
Saskatchewan Wheat Pool	374	1,717,970	26.0
Alberta Wheat Pool	179	1,018,190	15.4
United Grain Growers	170	931,760	14.1
Other (includes AgPro)	35	788,260	11.9
Pioneer Grain	135	674,660	10.2
Cargill	66	521,300	7.9
Manitoba Pool Elevators	120	504,260	7.6
Parrish & Heimbecker	27	239,780	3.6
N.M. Paterson & Sons	47	208,510	3.2
Total	1,153	6,604,690	100

Process (On-Prairie) & Transfer (Seaway) Elevators

(August 1, 1997)

Elevator type	Number	Capacity (tonnes)
Process	24	603,670
Transfer	14	2,366,610

Source: Canada Grains Council

Terminal Elevators—Who Runs Them?

(August 1, 1997)



	Capacity (tonnes)	% of total (tonnes)
WEST COAST		
Vancouver ^a		
AWP ^b	282,830	11.1
Saskatchewan Wheat Pool	237,240	9.3
Pacific Elevators ^c	199,150	7.8
James Richardson (Pioneer Grain)	108,000	4.2
United Grain Growers	102,070	4.0
Vancouver Total	929,290	36.3
Prince Rupert: Prince Rupert Grain ^d	209,510	8.2
THUNDER BAY		
Saskatchewan Wheat Pool	362,650	14.2
United Grain Growers (2 facilities)	322,040	12.6
Richardson Terminals	210,030	8.2
Cargill Limited	176,020	6.9
Manitoba Pool Elevators	167,000	6.5
Parrish & Heimbecker	40,800	1.6
Thunder Bay total	1,278,540	50.0
CHURCHILL: Canada Ports Corporation ^e	140,020	5.5
TOTAL	2,557,360	100

^a Other facilities handling grain (non-Board only) are Neptune Terminals and Vancouver Wharves (which recently announced a new specialty agri-products terminal scheduled for completion in mid-1999).

^b AWP recently sold a 50% stake in the terminal to Cargill.

^c Owned by AWP (60%), SWP (30%) and MPE (10%)

^d A consortium of 6 grain companies

^e Now owned by Hudson Bay Port Corporation, a subsidiary of OmniTrax.

RAIL SYSTEM



1997	Stations (number)	Elevators (number)	Capacity (tonnes)	% of total (tonnes)
CP Rail	427	616	3,689,910	55.9
Canadian National	375	525	2,851,250	43.2
BC Rail	2	5	35,880	0.5
Other	7	7	27,650	0.4
	811	1,153	6,604,690	100

TRACK (1998):		FLEET (1998):	
Miles in western Canada	19,600	CWB & government owned/leased cars	18,350
Grain dependent branch line miles	5,355	Railway owned/leased cars	8,580
		Total cars	26,930
		(needs fluctuate from 18,000 to 27,000)	

Proportion of CN, CP revenues from grain (past 3 years): 15-25%

Source: Railways, Canada Grains Council

Rail Car Allocation

The rail car allocation process distributes to all grain shippers the entire fleet of rail cars available in a particular week to move grain. The coordination of a large number of rail cars and collection points is needed to meet customer requirements in a timely manner. When movement demand exceeds capacity, car allocation takes on the added objective of rationing access to the logistics system.

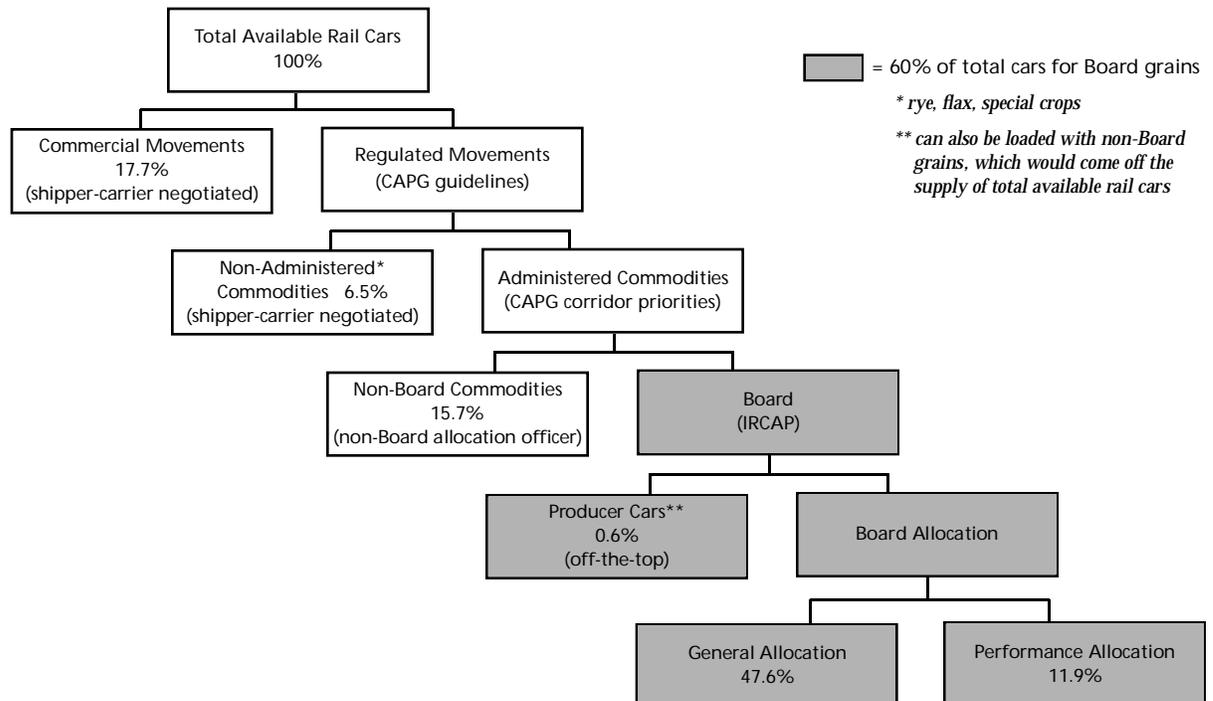
1. The high level car allocation policy is prescribed by CAPG, which provides a macro distribution of cars for rate regulated movements using predetermined, consensus-based priorities. CAPG also sets guidelines for the allocation of cars by corridor (e.g., West Coast, Thunder Bay) and between Board and non-Board grains.

2. Responsibilities and procedures to allocate cars to shippers (grain companies) vary:

- Board grains—CWB uses Industry Rail Car Allocation Policy (IRCAP) guidelines
- non-Board grains—Non-Board Allocator uses CAPG guidelines
- commercial and non-administered movements—shipper/carrier negotiation.

3. Grain companies distribute allotted cars among their elevators. This results in a tactical deployment of the cars to elevators and some 217 train runs. Overall coordination at the train run level, called train run programming, is performed by the CWB (to be transferred to the railways in the 1998/99 crop year).

(Sample Week)



System Participants: Roles & Responsibilities

The ultimate role of all system participants is (directly and indirectly) serving customers both in Canada and in some 100 countries around the world.

Producers



110,000 CWB grain permit book holders,
130,000 western Canadian farmers

- produce 31.0–54.7 million tonnes/year (10 year low-high)
- decide what grain to grow for what market and when to deliver
- deliver grain, at own cost, from on-farm storage to primary/process elevator using farm or commercial trucks
- load producer cars (<1% of car loadings), which bypass the country elevator network

Canadian Wheat Board



single desk marketing agency, mainly to
Asia (51% of sales), Eastern Europe
(16%), and Latin America (14%)

- markets wheat, durum and barley (export and that for domestic human consumption)
- contracts with producer, setting quotas and calling for grain to be delivered from farm into the commercial delivery system; ensures equal delivery opportunities for producers
- purchases grain from farmers through agents (in effect, the CWB owns the grain from the time it is accepted into the elevator until ownership is transferred to the customer)
- plans/coordinates allocation of rail cars for Board grains
- owns hopper cars
- administers train run programming (coordination of rail cars to/from individual elevator stations)

Pools/Grain Companies



8 major companies: farmer-owned (MPE, AWP); shareholder-owned (SWP, UGG); privately owned (James Richardson/Pioneer, Cargill, N. M. Paterson & Sons, Parrish & Heimbecker)

- own/operate primary elevators, terminal elevators
- lease a portion of the rail car fleet
- purchase, accept deliveries, clean, condition, store and ship Board grains (as agents) and non-Board grains
- load rail cars and trucks

Processors

- receive, process and ship grain and grain products

Transfer Elevator Operators



14 elevators owned mostly by port
corporations (e.g., Montreal, Quebec)
or private interests (e.g., Bunge)

- unload lake vessels or railcars of grain which has been officially inspected and weighed at another elevator (generally in Thunder Bay)
- clean grain transferred by the winter rail movement (Quebec)
- store and condition
- load grain into ocean-going vessels

Railways



2 major railways (CP Rail, Canadian National), BC Rail, 3 short line operators and US railways for forwarded traffic

- return and spot empty cars at prairie elevators
- pick up loaded cars and assemble into trains at hubs, transport to destinations (or interchange point)
- sort cars for delivery and spot for unloading
- own/lease rail cars and locomotives
- maintain rail cars
- own and maintain track

Other Carriers



truck, vessel operators



- several commercial truck operators haul grain from farm to elevators or processors
- lake carriers operate fleet of about 35 bulk vessels to transport grain from Thunder Bay to St. Lawrence transfer elevators for forwarding on ocean vessels
- ocean carriers transport grain from St. Lawrence ports (and some directly from Thunder Bay) to overseas markets

Port Clearance Agencies

B.C. Grain Shippers Clearance Association and Lake Shippers Clearance Association

- facilitate vessel loading by assigning vessel seniority

Canadian Grain Commission

- licenses grain elevators
- inspects, weighs and grades grain
- regulates grain quality, grain companies
- allocates producer cars
- is responsible for certification of the final specifications of the grain shipped

Governments



- provincial/municipal—build and maintain road network; own some rail cars
- federal/CTA:
 - regulates the CWB, railways and producers
 - establishes Maximum Rate Scale
 - owns majority of railcars
 - ensures shipper protection through CTA provisions

Labour Groups



The logistics system could not operate without the thousands of people employed in the various facilities and with carriers along the logistics chain. Many belong to one of several labour groups (this list is not intended to be exhaustive)...

- Grain Services Union has a total membership of 3,000 and represents about half of the workforce at prairie elevators (Alberta Wheat Pool, Manitoba Pool Elevators, Saskatchewan Wheat Pool and its subsidiary AgPro Grain). The remaining workers are employed with non-unionized companies.
- Rail unions include: Brotherhood of Locomotive Engineers; United Transportation Union; Brotherhood of Maintenance of Way Employees; and National Automobile, Aerospace, Transportation & General Workers Union. These represent workers in three groups: the running trades (marshall/operate trains, perform switching); non-operating personnel (maintain lines, signal/communication systems, schedule/dispatch trains); and shopcraft personnel (maintain rolling stock).
- Grain Workers Union Local 333 represents grain handlers at West Coast terminal elevators and has 1,000 members.
- Transportation—Communications Union Canadian Division represents the 500 grain handlers at Thunder Bay terminal elevators.
- International Longshore and Warehouse Union represents workers who load the grain vessels at West Coast ports.
- International Longshoremen's Association represents workers who load grain vessels at Thunder Bay.
- Public Service Alliance of Canada represents workers of the Canadian Grain Commission who inspect, grade and weigh grain at primary, terminal and transfer elevators.
- Canadian Merchant Service Guild and Canadian Maritime Officers' Union represent officers, and Seafarers International Union represents seamen employed on the lakers carrying grain from Thunder Bay to St. Lawrence transfer elevators.

Glossary

Board and Non-Board Grains

Board grains are marketed exclusively by the CWB and include wheat, durum, barley and designated barley (for export and that for domestic human consumption).

Non-Board grains are those not marketed by the CWB. They include canola, oats and non-Board feed wheat (export and domestic).

Non-Administered Grains

These are the grains which do not have an administered rail car allocation process; they are shipper-carrier negotiated. They include all other grains and grain products not defined as Board or non-Board grains (e.g. rye, flax, specialty crops).

CAPG/IRCAP

The Car Allocation Policy Group (CAPG) which arose out of SEO recommendations in 1995 is a voluntary, industry-led group that develops high level car allocation policies for rate-regulated rail movements of western Canadian grain traffic. CAPG does not actually perform the day-to-day allocation, which is administered by the CWB, the non-Board allocator, grain companies and railways.

The Industry Rail Car Allocation Policy (IRCAP) is an industry agreement for distributing the CWB car supply to individual grain companies.

CIF/FOB

Non-Board sales usually occur on a CIF (cost, insurance and freight) basis, which means the seller arranges all transportation and handling from prairie origin to final destination. About 10% of CWB sales occur on a CIF basis.

Board grains are typically sold FOB (free-on-board), where the seller arranges transportation from the prairies to terminal elevator, and is responsible for paying the costs to put the grain onto the vessel. The buyer is responsible for the balance of the movement from port to final destination.

“In-store” sales are also made by the CWB. This is where the customer takes ownership of the grain while it is in the terminal, and thus pays for putting the grain on the vessel.

Commercial Traffic

Grain traffic that is not for export from a Canadian port and is moved under non-regulated rates is commercial traffic; this grain is moved to Canadian and US destinations.

Logistics

The goal of logistics is to get the right goods to the right place at the right time and in the right condition at lowest overall cost. Logistics involves four key activities—determining customer service standards (order cycle time, reliability of delivery, etc.); transportation; inventory management; and order processing. Supporting activities of importance to grain are purchasing, warehousing, and information processing and communication.

Rate Cap

Under the WGTA, rail freight rates were established each year in a schedule called the Annual Rate Scale. This provided rail rates for different mileage blocks or shipping distances. With elimination of the WGTA, western grain transportation came under the CTA which established the Maximum Rate Scale which has become known as the “rate cap”. The rate cap sets the maximum rate that the railways can charge. The railways may offer rates below those specified under the rate cap.

Train run

The network of rail lines in western Canada consists of 217 train runs, the size and shape of each being a function of railway operations, crewing arrangements, and railway—grain company negotiation. Train runs were designed to provide a manageable unit for the railway to operate.

WESTAC *Defined*

The Western Transportation Advisory Council is a non-profit association of major organizations in the western Canadian transportation system. Since 1973, WESTAC has been a unique and powerful forum dedicated to the advancement of the western Canadian economy through the continued improvement of the region's transportation system.

WESTAC's strength is its active and diverse membership of business, labour and government leaders, supported by a focused, professional secretariat. Members include carriers, shippers, ports and terminals, labour unions, and the three levels of government. Member organizations are represented by their senior people—executives, labour leaders, and ministers.

The Council is not a lobby group; rather, it aims to focus attention on and provide impartial information about critical transportation issues. It is founded on the view that issues are best resolved through a non-confrontational, non-adversarial approach.



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