

***Railway Car Order and Car Supply
Processes***

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Rail Freight Service Review

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1. Purpose of the Project

On May 30, 2007, the Government of Canada announced the introduction of a Bill, which contained changes to the shipper protection provisions of the *Canada Transportation Act*. The announcement also indicated that the government would undertake a review of rail freight service.

The overall objectives of this review are to:

- Conduct a review of the rail-based logistics chain (including shippers, terminal operators, ports, and vessels), with a focus on service provided to Canadian shippers and customers by Canadian National Railways (CN) and Canadian Pacific Railway (CP) within Canada, including to and from ports and border crossings;
- Identify problems and issues with respect to railway service including those stemming from other elements of the logistics chain;
- For shippers located on shortlines and experiencing problems with rail service, examine the relationship between shortlines and the main line carriers to determine whether such problems are attributable to service, operating, or marketing practices of the main line carriers;
- Identify best practices and how these can be expanded to address service issues; and
- Make recommendations on how to address these problems and issues, including both commercial and, if necessary, regulatory solutions.

The review is being conducted in two stages. The first stage consists of quantitative and analytical work. In the second stage, draft recommendations are being developed by a Panel of three eminent persons based on the results of the analytical phase and any other relevant information that is available. The Panel will consult stakeholders on the draft recommendations and submit a final report to the Minister of Transport, Infrastructure and Communities.

On July 24, 2008 Transport Canada released the terms of reference for the quantitative and analytical stage of the rail freight service review. This report has been prepared in response to the requirements of the Request for Proposals (RFP) covering the “Analysis of Order Fulfillment and Transit Times”. An important component of this analysis includes the assessment of any significant variations between empty rail cars ordered by shippers and those provided for loading by railways.

As part of this analysis, the objective of this report is to provide a description of railway car ordering, allocation and supply processes. In response to the terms of the RFP, this report describes the different types of car ordering/allocation systems and explains how the different types of systems affect the quantitative analysis described above.

2. Methodology and Scope of Analysis

The railway car ordering, allocation and distribution processes described in this report are based on extensive interviews with CN and CP subject matter experts directly involved in and responsible for car ordering and distribution activities. QGI has also relied on publicly available railway tariffs that outline the terms of the railways' car ordering programs, documents provided by CN and CP describing their respective processes and the experience and background of the team members that participated in the interviews and prepared this report.

During December 2008 and January 2009 QGI met individually with CN and CP representatives responsible for managing the car ordering and car distribution activities for the various railway business segments including grain, merchandise, automotive and unit train operations. These discussions confirmed QGI expectations that the systems and processes for car order and distribution were different for each of these business segments and as such this report is segregated along those lines.

Key areas of investigation during the course of railway consultations included:

- the differences in the processes and systems used for these activities across major business lines;
- the differences in car order and allocation processes for guaranteed car order products versus general car allocation;
- the processes and systems by which railway shippers communicate car demand and how the railway in turn communicates car commitments or allocations back to customers;
- the type of penalty programs in place that are applicable to both railways and shippers;
- how car supply shortfalls are identified, managed, and communicated with customers and the impacts on customers with respect to their role in car order processes; and
- how and what data is captured in railway information systems with respect to customer car orders and railway allocations or commitments.

QGI also reviewed the railway tariffs published by CN and CP that outline the terms of the various car order products offered by CN and CP including penalty provisions associated with these processes.

- List of railway documents obtained:
 - Tariffs
 - CN 9000 Optional Services - Carload
 - CN 9004 Optional Unit Train Services
 - CP Tariff 1 Basic Freight
 - CP Tariff 2 Supplemental Services
 - CP Tariff 4311
 - CP Tariff 4312
 - Other Railway Documents
 - Overview of CN's Car Ordering Processes (CN document)
 - Canadian Grain 2008-09 Products and Services, Product Summaries (CP document)

This report examines car order and car supply processes for a number of different types of railway customers. In general, Canadian railway car order processes are established by the railways and managed to suit the differences in the types of customers and transportation markets they serve. At a high level, there are four distinctly different types of processes at each railway. These are the car order and car supply processes associated with:

- Carload shippers
- Western grain shippers
- Bulk shippers
- Intermodal shippers¹

Carload shippers' traffic moves in either individual rail car lots or in small blocks of generally less than twenty cars. A wide variety of products are shipped by carload shippers including: petroleum and chemicals, forest products, mine and mineral products, construction materials, fertilizers and food products. Carload traffic will generally be handled on trains with a wide mix of products and rail car types. Depending on the characteristics of the shippers whose traffic is on a carload train, it may be composed of many very small lots of traffic from many customers or may be composed of the traffic of only a few shippers each with large blocks of a small number of commodities. Car orders for carload shippers are specific as to car type and the day of the week for which cars are required.

Western grain shippers utilize CN's and CP's covered hopper cars to ship grain products from origins in Western Canada to domestic and export customers. Grain car orders designate the number of cars a shipper requires placed at a loading point during a particular week. These car orders can be for single cars or for up to full trainload quantities of as many as 112 cars. Grain traffic may be handled on mixed trains or it may move in full unit train² configuration.

Bulk shippers of products such as coal, potash, dry sulphur and fertilizers ship most of their traffic in unit train volumes. In addition, due to the ability to store these bulk products in large inventories at destination points (and sometimes at origin points) the rail car ordering and rail logistics management processes are very specific to the needs of the industry commodity segments.

Intermodal customers ship commodities domestically using railway, shipper, or 3rd party owned and supplied Intermodal containers or for export using international marine containers owned and supplied by shipping lines. The type of movement, whether export or domestic, and the railway Intermodal service offering selected by shippers play an important role in how containers are ordered and supplied. The equipment order and supply processes for each of these four groups are described separately in the following sections of the report.³

¹ For Intermodal shippers this report describes the container order and supply processes used by CN and CP for domestic and export shipments.

² A unit train is a train made up of a single car type carrying a single commodity from one origin to one destination.

³ For a detailed discussion of the railways' annual forecasting and service planning processes that are used to establish the railways' demand projections and the fleet sizes necessary to support anticipated traffic levels see QGI's report *Railway Demand Forecasting and Service Planning Processes*, March 2010.

3. Carload Services

Carload shippers use a wide variety of car types that can be used to transport multiple products, or be designed to handle only a single type of product. Examples of car types that handle multiple commodities are box cars and some gondola cars. However, increasingly over the years, rail car design has evolved so that rail cars have become more specialized and each rail car type is generally used for very few different commodities. While this provides increased efficiency in the loading and transportation of the individual commodities it comes at the expense of any efficiency that might be available through sharing of car types across customers.

Automotive Industry

One area which is very specialized is the movement of finished vehicles. The North American automotive industry in conjunction with the railway industry has developed both very specialized rail cars and specialized car management processes to meet the needs of the automotive industry. Because of their susceptibility to damage and their high value, cars and light trucks move in fully enclosed rail cars with either two or three levels within the cars. These so-called bi-level and tri-level fleets of rail cars are used exclusively for the movement of both domestic and imported or exported cars and trucks. The North American network of loading and unloading points of automotive shippers is extensive including over 130 loading points and 17 different manufacturers. Due to the nature of this network, the industry recognized that opportunities existed for the shippers and the railways to pool their rail car fleets and manage the movement of rail cars cooperatively to take advantage of re-load opportunities for cars that are rendered empty close to locations of demand (loading points). By acting together, the industry is able to minimize the number of miles that cars are moved empty and thereby lower operating costs for the industry as a whole. The operation of this industry wide rail car fleet is managed by the Reload division of the TTX Company, which is in turn wholly owned by the largest North American railways, including CN and CP. The railways contribute rail cars to the industry automotive pool proportionate to their volume of automotive traffic.

Under the Reload model, the automotive industry provides their loading demand requirements directly to the automotive fleet managers at Reload who can then analyse the disposition of the fleet on an on-going basis to determine how to balance the current and forecast empty rail car supply across the various loading points. These fleet managers have access to near real time data on the current location and destination of all empty and loaded rail cars in the Reload fleets⁴. Using both railway provided data and distribution models that they have developed based on

⁴ All major North American railways provide electronic car location messages (CLM's) in a standardized format to shippers, receivers and fleet owners. These messages provide the latest reported location and status of railcars. For reporting of individual railcars shippers and receivers may receive this information directly from the railways through their Internet based information services for shippers. Large fleet owners such as TTX

their long experience in managing these fleets, Reload then provides on a weekly basis the primary distribution instructions to the railways on the movement of the empty fleets to meet anticipated demand for loading. Demand requirements and fleet performance are also the subject of ongoing daily communication amongst the railways automotive fleet managers and Reload representatives. The railways also have direct contact with the automotive shippers and receivers who provide them with their detailed daily empty equipment requirements.

Issues and Challenges – Automotive multi-level fleets

While Reload provides the primary distribution instructions to the railways on the disposition of empty multi-levels, the individual railways control the actual movement of the cars on their own lines and may not always respect the directions given by Reload with respect to final distribution to loading sites. In addition, some railways by virtue of the balance of loading and unloading of cars on their networks may be either surplus empties to support their own loading requirements or deficit empties on an ongoing basis. Railways with a high concentration of automotive production on their networks like CN and CP are generally in a deficit position for empty cars on an on-going basis and require those railways who are surplus to respect the distribution instructions of Reload managers in order to have available sufficient empty multi-level cars. In the short term, Reload has limited leverage over individual railways to ensure that they abide by the Reload empty distribution plan and in times of service disruption or shortage an individual railway may choose to satisfy its own customers before meeting the needs of other roads. This can create shortages on railways like CN and CP which are deficit empties on an ongoing basis (i.e. they originate more automotive traffic than is terminated on their lines).

In addition, while TTX manages the disposition of fleets for automotive traffic produced in North America, it does not forecast demand for automotive imports. For CN and CP this makes up from 10-25% of their total automotive business. Balancing the needs of import shippers (and a few smaller shippers who are not part of the Reload process) with domestic shippers and planning the redistribution of empties to import loading points (primarily in the Vancouver area) is done by CN and CP. As both carriers rely on their Reload partners to supply their domestic loading needs, all empty car supply for import auto loading must be done using empties that are available from domestic auto traffic unloaded on their lines, or they must set up bi-lateral relationships with other roads outside of the Reload process to ensure a sufficient supply of empty cars for import customers.

General Merchandise Fleets – Carload

Outside of the specialized needs of the automotive industry as described above, both CN and CP manage empty car distribution for most of their carload customers in a similar manner. Most of the supply of rail cars for the movement of carload traffic is provided by the railways from fleets that they own or lease. Both CN and CP have rail car order

can obtain access to these car location messages for all major North American railroads through Railinc. Railinc is a wholly owned subsidiary of the Association of American Railroads of which CN and CP are members. Railinc provides a number of information technology services including rail car tracing and tracking information.

processes that require customers to order empty rail cars by day of the week and specific car type. Both railways have Internet based systems that allow customers to enter their rail car orders weeks in advance to assist the railway in planning their empty car distribution. CN requires that customers utilize this system while CP also allows some customers to submit their car orders through CP service representatives, who then enter the car orders into CP's systems. In both cases, customers can view their car orders via the Internet. While most customers order their rail cars using CN and CP's general carload car order processes, there are certain customers for whom these general car order and supply processes are not used. These special situations are described below.

Customer and commodity pools

Some customers of both railways use specialized equipment where fleets are sized and placed in exclusive pools for the use of these individual customers. These customers generally either require rail cars with very specific configurations or fixtures, or there is a risk of product contamination due to the commodities shipped in the cars. Examples of the first type of customer are shippers of automotive parts. These customers utilize very large box cars with specialized racks and fixtures inside the cars that may be designed to accommodate the parts of a particular manufacturer.

Examples of shippers where product contamination may be an issue would be shippers of products such as road salt that may be shipped in covered hopper cars that are also used for the movement of grain products. In cases such as this, depending on the nature of its network, shipping patterns and customer base, a railway may decide to set up a customer specific pool for a shipper of such products to ensure that the cars used do not get distributed to grain customers.

Alternatively, the railway could set up a pool of cars that would be used exclusively for a group of shippers of a commodity where issues of product contamination are of concern. These so-called commodity pools are used for shippers in multiple locations, of a single commodity. In the case of commodity pools, railways will use their normal car order and car supply processes to log customers' empty car demand and supply.

However, for customer pools, car supply is determined through an examination of the customers' expected demand and the average time that cars will take to cycle between loading and unloading points. In addition the railways will consider the overall availability of the car type required and its expected commercial return on the movement of the commodity. Once the fleet is sized and assigned to the service, railways may not record daily car orders for the customer as the assigned fleet simply cycles back to the origin loading points when made available after unloading.

Use of private or foreign Railroad fleets

In addition to railway supplied rail cars that are either owned or leased by railways, some shippers use privately owned cars or cars in fleets that the shippers have leased from a foreign railway.⁵ Privately owned cars are identified by a four letter prefix that ends in 'X' and their customary numeric identification (ex UNPX 123456).⁶ Railway owned cars have a prefix that identifies the owning railway (example CN, CP, UP, BNSF, etc.). Under the terms of railway tariffs and AAR agreements, railways do not have to accept either private railway cars or foreign marked railway cars for loading, if the railway has cars from its own fleets that it can use.

However, there are business sectors on all North American railways that are primarily served by private fleets. The most prominent of these are the Petroleum and Chemical industries – where the bulk of the traffic moves in tank cars. For these railway shippers it has been customary for many decades for the shippers to provide their own fleets of tank cars. While these shippers still must have railway permission to assign these private fleets to service on either CN or CP, the process of requesting permission to load these cars is primarily directed at ensuring that the cars meet the appropriate safety and regulatory standards.⁷ Other major users of private fleets in North America include coal utilities in the United States, agricultural products shippers in Canada and the USA, the Canadian Wheat Board,⁸ specialized shippers of heavy machinery and equipment, fertilizer shippers in Canada and the USA and dry sulphur shippers in Canada. Approximately 30% of CN's and a somewhat smaller percentage of CP's total Non-Intermodal business are moved in shipper supplied private rail cars.

In addition to private cars, customers can directly lease foreign railway owned cars and request of their originating rail carrier that they agree to allow the shipper to utilize these cars for loading and shipping the customer's products.

For most users of private or foreign railroad cars, the railways' car order and car supply systems will not be used to determine shipper car demand as the shippers have taken on the responsibility for car supply from the railways and, with the railways' cooperation, they determine the overall car fleet size required to satisfy their demand.

Issues and Challenges – Private and customer leased foreign fleets

When a customer takes responsibility for their own car supply they also become responsible for any charges associated with the storage or handling of the rail cars when they are surplus to requirements. Thus, shippers will in

⁵ In this case, the use of the term "foreign railway" simply indicates a railway other than the railway that directly serves the shipper.

⁶ Reporting marks for all rail cars used in interchange service in North America are assigned by the Association of American Railroads (AAR). The AAR administers various standardized agreements between the railways that govern the conditions and processes associated with the interchange of rail cars and locomotives between the member railroads. These agreements include mechanical standards, electronic information exchange standards and processes, and interchange rules. AAR agreements also govern the general rules and process for the use of and return routing to the home railway of foreign rail cars that are received loaded in interchange and unloaded and made empty on a member rail carrier (Car Service Rules).

⁷ The process of obtaining a railway's permission to load private cars on its lines is governed by the AAR's Circular OT-5 process. This process has recently been streamlined and can be applied for and approved electronically through Railinc (a wholly owned subsidiary of the AAR).

⁸ The Canadian Wheat Board (CWB) fleet of covered hoppers is used for the transportation of Western Canadian grain products. These cars are used by CN and CP under operating agreements with the CWB.

general require a higher level of on-site rail trackage to handle surplus equipment during times of operating or market related disruption, or they will need to pay their originating railway for track storage of surplus equipment.

Where railways have fleets of identical or similar cars, the separation of these shipper specific fleets from the general flow of rail traffic in order to return the cars to specific origins may introduce additional terminal switching costs. In addition, the requirement for specific cars to be used at specific shipper origins can increase the empty miles that such cars must move to return to their next potential loading point, in comparison to the empty miles incurred if general railway fleets were used. This is because railway fleets may be available from unloading points closer to the shipper's origin. If railways believe that their own fleets will be sufficient to serve the shippers' needs, they will be very reluctant to bring on additional equipment – which introduces additional operating and car hire costs.⁹

Basic structure of car order

For carload traffic that is subject to the railways' car order and car supply processes, car order patterns will be established in railway systems to assist shippers in recording their car demand and railways in managing and recording supply performance. These car orders patterns will include the following elements:

- Shipper Name
- Origin Station
- Railway Track designation – for placement of empty cars
- Normal switch time (may or may not be included)
- List of preferred equipment types for a specific car order pattern
- List of acceptable substitute equipment types

Both CN and CP have rail car order processes that require customers to order empty rail cars by day of the week. Both railways have Internet based systems that allow customers to enter their rail car orders weeks in advance to assist the railway in planning their empty car distribution. CN requires that customers utilize this system while CP also allows some customers to submit their car orders through CP service representatives, who then enter the car orders into CP's systems. In both cases, customers can view their car orders via the Internet.

⁹ AAR agreements govern the processes and standards for payment of rail car user fees know as Car Hire between owners and users of rail cars. These fees, which are subject to negotiation between railway car owners and host railways (users) may be mileage based, hourly, or a combination of the two.

3.1 CN's Guaranteed Car Order System (GCO)

CN's Guaranteed Car Order program is the system used by the railway to receive orders for rail cars from its carload (merchandise) customers and to allocate rail cars to customers in response to those orders. The GCO program applies only to railroad-marked railcars – i.e. excludes privately owned cars - and is not applicable for all traffic types. Excluded from the GCO program are certain bulk traffic (coal, coke, potash, fertilizers, western Canada grain in covered hoppers), U.S. grain, automotive traffic, heavy-duty railcars and cars in customer assigned pools. Principal users of this program are shippers of forest products, industrial products, and agricultural commodities moving in box cars, flat cars, gondola cars and open hopper cars.

Shippers can enter orders for rail cars into CN's Internet based car ordering system up to four weeks in advance of the week for which they are required. Each customer order identifies the number of cars required by car type (including acceptable substitutes where applicable), the specific day of the week the cars are required (Want Date) and the loading location.

The deadline or cut-off for customers to enter their orders is Wednesday at 1400 ET preceding the week for which the cars are to be guaranteed (Want Week). Within 24 hours of receipt of the order CN will confirm either that it can fulfill the order for the day requested or will indicate the number of cars that can be guaranteed.¹⁰

Customers are able to increase their orders after the cut-off date although CN reserves the right to not guarantee the supply of these cars. The decision to guarantee cars ordered after the cut-off is made by individual fleet managers based on their analysis of CN's fleet situation at the time. If CN chooses not to provide a guarantee for these additional cars it may still attempt to supply them within the Want Week but a failure to supply the cars does not result in penalties against CN. The GCO program rules only allow shippers to cancel or reduce their non-grain orders without penalty if done prior to the cut-off time. Any cancellations or reductions to orders by shippers after cut-off result in per car penalties to the shipper. Grain car orders made through the GCO program can only be reduced or cancelled without penalty if done prior to CN confirming the order.

Allocation and Guarantee Process

Each week following the order cut-off CN downloads the order data from the GCO system. Car demand is reviewed by CN's Car Management personnel by car type by geographic region to determine if demand is expected to exceed projected supply and whether or not supply needs to be allocated on a customer specific basis.

The process of projecting near term supply of rail cars can be very difficult for certain fleets. Except in times of equipment surplus when cars may be pulled from storage locations, empty equipment is only made available for reloading after being unloaded and returned empty to the railway. Some fleets spend a high proportion of their

¹⁰ For grain car orders made through the GCO program, orders are confirmed by Friday 0800 CT of the week prior to the week they will be supplied.

mileage off CN lines and CN's ability to predict the exact timing of return of these cars is made more difficult when cars are not under their direct control. Some fleets, such as centre-beam lumber flat cars and gondola cars used to carry metal products can spend over 50% of the time off CN lines. In addition, disruptions to rail network performance either on CN or connecting carrier lines can significantly change the projected supply of a car type in a particular area between the time of the allocation and guarantee and the actual want date for the cars.

In situations where CN's Car Management group determines that projected supply will not meet demand and allocation of cars is required, the decisions regarding individual customer allocations are made by Market Managers within the railway's business units. CN representatives indicated that allocation decisions are primarily based on historical shipping volumes by customer location and do not reflect the timing of entry of car orders, prior to cut-off. Once allocation decisions have been finalized CN communicates to customers through the GCO customer web interface the orders it guarantees relative to the demand. In addition, on a weekly basis, CN communicates directly with many of its largest customers in the carload businesses through conference calls to review the weekly supply and demand outlook for rail cars.

CN's guarantee under the GCO program is to provide the railcars it has allocated in response to an order on or before the specified Want Date. It is important to note that CN's measure of success with respect to the provision of guaranteed cars by the Want Date is based on the total number of empty cars available for placement at the customer's facility. In determining the number of cars available to fulfill the specific customer order CN considers cars already placed for loading that have not been released loaded and empty cars constructively placed awaiting placement at the customer's facility. As stated in its tariff CN 9000-L CN reserves *"the right to reduce or cancel the supply of railcars for a Guaranteed Car Order when the railcars actually or constructively placed for the order exceed the railcars required for loading. This does not constitute a failure to supply, and the \$100 service credit does not apply unless CN fails to notify the order party and the loader (by fax or email) of the order reduction or cancellation 24 hours or more before the want date."*

Cars that are ordered and not supplied by CN within the Want Week are not carried forward to subsequent weeks in CN's system. All unfulfilled orders for a week are deleted from CN's GCO system at 0001 on Sunday each week. If shippers still require these cars they must re-order the cars for a subsequent week.

Penalty Programs

The GCO program operates under the principle of reciprocal accountability between CN and its customers. Generally speaking the railway is subject to penalties when it fails to provide the number of cars guaranteed to the customer on or before the Want Date specified. The customer is penalized for cancelling or reducing orders after the railway has committed to provide the cars or for not loading cars the railway does provide. Figure 1 below provides a summary of the circumstances under which penalties are assessed to CN and its customers under the GCO program.

Figure 1 GCO Penalty Structure¹¹

| Description | Penalty | Party Responsible |
|---|--|---|
| <u>Order cancellation or reduction</u> <ul style="list-style-type: none"> • For non grain car orders cancelled after cut-off • For grain car orders (via GCO) cancelled after order confirmation | <ul style="list-style-type: none"> • \$ 100 debit per rail car • \$ 100 debit per rail car | <ul style="list-style-type: none"> • Shipper • Shipper |
| <u>Rail cars ordered and not used</u> <ul style="list-style-type: none"> • Rail cars not able to be accepted by the shipper on the specified Want Date or during the Want Week • Rail cars ordered and not placed at the customer’s request and subsequently released empty • Rail cars ordered and placed or constructively placed before the Want Date or grain week that are not used and subsequently released empty | <ul style="list-style-type: none"> • Applicable asset use fee • \$ 100 debit per rail car • \$ 100 debit per rail car + \$ 150 switch fee per car + Applicable asset use fees | <ul style="list-style-type: none"> • Shipper • Shipper • Shipper |
| <ul style="list-style-type: none"> • Rail cars not supplied by CN on or before the Want Date | <ul style="list-style-type: none"> • \$ 100 debit per rail car | <ul style="list-style-type: none"> • CN |
| <u>Rail cars unsuitable for loading</u> <ul style="list-style-type: none"> • Rejected by shipper within 24 hours of placement and confirmed as unsuitable through CN inspection • Rejected by shipper within 24 hours of placement and confirmed as suitable for loading through CN inspection | <ul style="list-style-type: none"> • \$ 100 credit per rail car • \$ 100 debit per rail car + \$150 fee per rail car | <ul style="list-style-type: none"> • CN • Shipper |

The penalty system for the GCO program operates on the basis of debits and credits accumulated by the railway and the shipper. The GCO program is invoiced or paid out by CN monthly based on the net debits and/or credits accumulated by the order party.

3.1.1 CN Car Distribution Operations

The main objective of all railway car distribution operations is to direct available empty cars to shipper loading points while minimizing operating costs and meeting customer demand by day of the week. The main costs to be avoided are unnecessary empty car miles and any extra switching in rail yards that may be required to segregate cars for individual customers or loading locations. Reducing the distances cars must travel before re-loading and minimizing the number of times each car is handled in yards can have very large impacts on railway operating costs. As a result, rather than empty cars simply returning to their original loading locations for a subsequent use by a customer, railway

¹¹ Source: CN Optional Services – Carload, Supplement 1 to CN 9000-L, Effective January 2, 2010

processes evaluate the optimal routing for each empty car that becomes available to deliver it via the lowest cost to the nearest potential point of use, where demand is not already satisfied.

The CN system contains a series of control features that are managed by fleet distribution staff. These controls can be set to direct specified numbers of cars, as they become available on CN lines through customer unloading or interchange receipts, directly towards customer loading points. The decision as to where to send an available empty car is based on factors such as the location of receipt, the status of unfilled demand, and the type of car. They can also be set to direct cars to redistribution points, and then automatically redirect cars from those redistribution points to final demand locations. While some railways have developed computerized optimization logic to make these fleet allocation decisions and automatically direct empty cars to loading points, CN systems require managers to determine the optimal routing and distribution patterns. In both cases however, once the logic is established it operates 24 hours per day without the need for direct intervention by car distribution staff – except to change the distribution patterns to take account of shifts in demand and supply.

Once empty cars have been directed by CN fleet management systems towards a customer car order, an estimated time of arrival (ETA) of the car at the loading location is automatically created based on the active operating plans and schedules in CN's computer systems. This ETA information is used to create short term expected empty car supply lists to customers in both tabular and calendar formats in CN's web based customer information systems. This ETA information can be used by both customers and fleet managers to track expected car supply.

3.2 CP's Delta Car Order System

CP's Internet based Delta car ordering system is used primarily by forest products and industrial products shippers using box cars, flat cars, gondola cars and open hopper cars. The system is also used on a more limited basis by dry fertilizer and single car potash shippers.¹² Shippers can order rail cars one to three weeks in advance although cars can only be ordered for days on which the customer would be scheduled to receive rail service. Orders for a specific week must be confirmed by shippers in the Delta system by the Monday preceding the week for which the cars are required. Shippers confirm their orders by activating a "check box" in the Delta system against each day's orders.¹³ It is common practice for CP Car Management personnel when planning weekly supply to contact individual shippers to verify orders where the confirmation has not been made in the system.

¹² Use of the Delta system by fertilizer and potash shippers is limited to those customers who use exclusively railway supplied equipment. This represents approximately 35-40% of orders for this customer group. A separate manual process is used for shippers that use a mix of railway supplied and privately owned cars.

¹³ The system allows the shipper to confirm the order at the time the initial order is entered but does not require it to be done at this time.

Shippers are not able to make any changes to their car orders following the Monday cut-off date. Effective January 15, 2010 CP has implemented a 7 day blackout period for Delta demand entry. Previously CP customers were able to make changes to their orders in the Delta system up to four days before the scheduled service day, including changes to confirmed orders.

Allocation and Guarantee Process

Although shippers enter their rail car orders for specific days of the week (Ordered for Date) CP manages its car supply process on a weekly basis and does not guarantee the supply of cars to a customer for a specific day or within a specific week. CP does not communicate electronically any confirmation to shippers of their ability to meet specific orders nor do they make any commitment through the Delta system of the expected proportion of car orders that will be fulfilled. CP Customer Service representatives are able to provide customers with notifications of inbound cars to their locations that are generated through CP's Vista system.¹⁴ While the Vista system does provide shippers with advance notice of empty cars destined to them it only does so as actual cars are distributed to the shipping location.

CP's Car Management personnel review orders against projected supply by car type each week following the order cut-off time. In situations where CP identifies shortfalls in supply relative to demand, allocation of cars is done across customers with active car orders. Allocation decisions for individual customers are made by marketing representatives in the individual business units.

Cars that are ordered and not supplied by CP within the order week are not carried forward to subsequent weeks in the Delta system. All unfulfilled orders for a week are deleted from CP's system at 0001 on Monday each week. If shippers still require these cars they must re-order the cars for a subsequent week

CP Car Management representatives indicated that a major challenge in planning car distribution is the railway's uncertainty as to the accuracy of the empty car demand provided by shippers through the Delta system. CP recognizes the importance of a collaborative relationship with customers but suspects that too often customers anticipate car shortages and artificially inflate their demand to obtain as much as possible of a car fleet that they believe will need to be rationed.

Penalty Programs

Unlike CN's GCO program CP is not subject to any penalties for failure to supply empty rail cars to its customers in response to Delta orders. Shippers however are subject to penalties in cases where CP supplies a rail car against a confirmed order and the shipper does not use the car.

¹⁴ Vista is CP's shipment management system which produces trip plans for individual cars, both loaded and empty, and provides customers and inter-line partners with estimate time of arrival (ETA) information.

Figure 2 CP Penalty Provisions for Delta Car Orders¹⁵

| Description | Penalty | Party Responsible |
|---|--|---|
| <ul style="list-style-type: none"> Moving a car between a CP served facility and a CP yard where an empty car has been ordered and released without being used | <ul style="list-style-type: none"> \$ 457 per car up to \$ 5,027 per block of cars + Applicable demurrage fees at \$87 per day | <ul style="list-style-type: none"> Shipper |

3.2.1 CP Car Distribution Operations

All railways' car distribution staff have a mandate to satisfy customers' empty car demand at the lowest total cost possible by minimizing empty mileage and reducing car switching requirements wherever possible. At CP they have chosen to manage car distribution decision making using a highly automated system that uses computer algorithms to evaluate each empty car and provide the distribution instructions for the car without intervention from car distribution staff. The computer programming can be adjusted by CP car distribution managers to reflect changing market and operating decisions but for the most part, the process is automated and seeks to distribute cars to existing customer orders and secondary re-distribution points, based on the lowest total cost of movement. Where cars are distributed to local re-distribution points for use by customers served from a particular rail yard, manual intervention by CP employees can be used to apply specific cars to individual shipper locations.

¹⁵ Source: CP Railcar Supplemental – Tariff 2, Effective January 1, 2010

4. Car Orders for Western Grain

4.1 CN Western Grain Car Orders

On February 1, 2008, CN implemented an “open order book” system for Western Canadian grain shippers to order covered hopper cars. The order book system allows shippers to order cars for up to 16 weeks in the future. Prior to this date, CN had offered a number of so-called “advance products” which allowed grain shippers to reserve empty grain car capacity on various timelines up to one year in the future. Using previous grain car order systems and advance ordering products, CN generally only received 10-15% of the total empty car orders any more than one week ahead. As a result, the majority of empty grain car orders were received on a week to week basis and therefore advance planning, particularly at the operating origin hub level, was limited. The movement to the 16 week order period with no special advance products was done to provide CN with a simpler and hopefully more forward looking view of demand by origin station to enable better resource and service planning. The order book system places no constraints on customer demand other than that the number of cars ordered per want date¹⁶ cannot exceed the car spot capacity of each loading facility.

4.1.1 CN Grain Car Ordering, Allocation and Train Planning Processes

Most of CN’s customers order cars through CN’s EBusiness Internet systems however some customers place grain car orders through direct electronic data interchange (EDI). The cut-off for grain car orders is Tuesday 1400 ET preceding the week for which the cars are ordered. Unlike with merchandise car orders, grain customers often order in large car blocks of 50 or 100 cars to take advantage of special incentive freight rates on shipments of that size. Also, unlike car orders for carload traffic, the car orders for grain must specify the destination corridor of the traffic in addition to the origin location.

Figure 3 Summary of CN Grain Car Order Information Requirements

| Request Window | Minimum Information Required from Shippers at Time of Request | Additional Information that may be Provided by Weekly Cut-off |
|---|---|--|
| <ul style="list-style-type: none"> Up to 16 weeks in advance Tuesday 14:00 ET cut-off the week prior to want date Car order weeks begin on Sundays | <p><u>By destination corridor</u></p> <ul style="list-style-type: none"> Origin loading facility Want date for which cars are requested Number of cars requested | <ul style="list-style-type: none"> Market class of grain <ul style="list-style-type: none"> Canadian Wheat Board (CWB) Non-board CWB Trade Contract or Lot Number Destination Terminal Platform ID |

¹⁶ Want date refers to the specific date for which a customer orders a car.

All grain car orders received by CN are consolidated in CN's Grain Logistics System (GLS). After the cut-off date, car demand is organized by major operating area so that the operating resources required to establish plans for trains with the required locomotives and crews can be assessed. In addition, the expected car supply is then evaluated using forecast and planned unloading targets at the ports, the current disposition of empty car flows in the system and expectations about operating performance in the coming days. When CN determines that demand for grain cars will exceed supply, it uses one or a combination of the following factors as allocation guidelines.¹⁷

- Pipeline management
 - Whether the terminal or receiving facility is capable of accepting and unloading the railcars requested by a shipper
- Historic shipping percentage
 - Cars are first allocated between groups of similar customers that reflects past share of shipments for the customer group within a corridor, then among customers based on their respective historic shipping percentage within the customer group
- Off-the-top
 - Available to smaller shippers with minimal historic shipping percentages
- Pro-rata basis
 - In proportion to demand among all customers
- Order utilization
 - Whether the shipper has used cars allocated for previous car orders
- Want date
 - Age of want date within a specific corridor

Following discussions between CN operating managers and commercial managers in the grain business unit an intended operating plan is agreed upon with respect to the empty car spotting plans. In determining how and where to run trains to serve grain customers in a given week, the railway will need to take a number of factors into consideration:

- How does grain shipping demand affect already scheduled operations on different parts of the network?
 - What proportion of grain car supply can be delivered from already scheduled carload services?
 - Will grain transportation demand create possible capacity constraints on mainline corridors
- What crew and locomotive resources can be made available for grain dependent services for mixed customer trains and unit trains required?
- What is the overall level of demand for grain shipping on a grain dependent line and can train services be economically justified for the volume level offered?

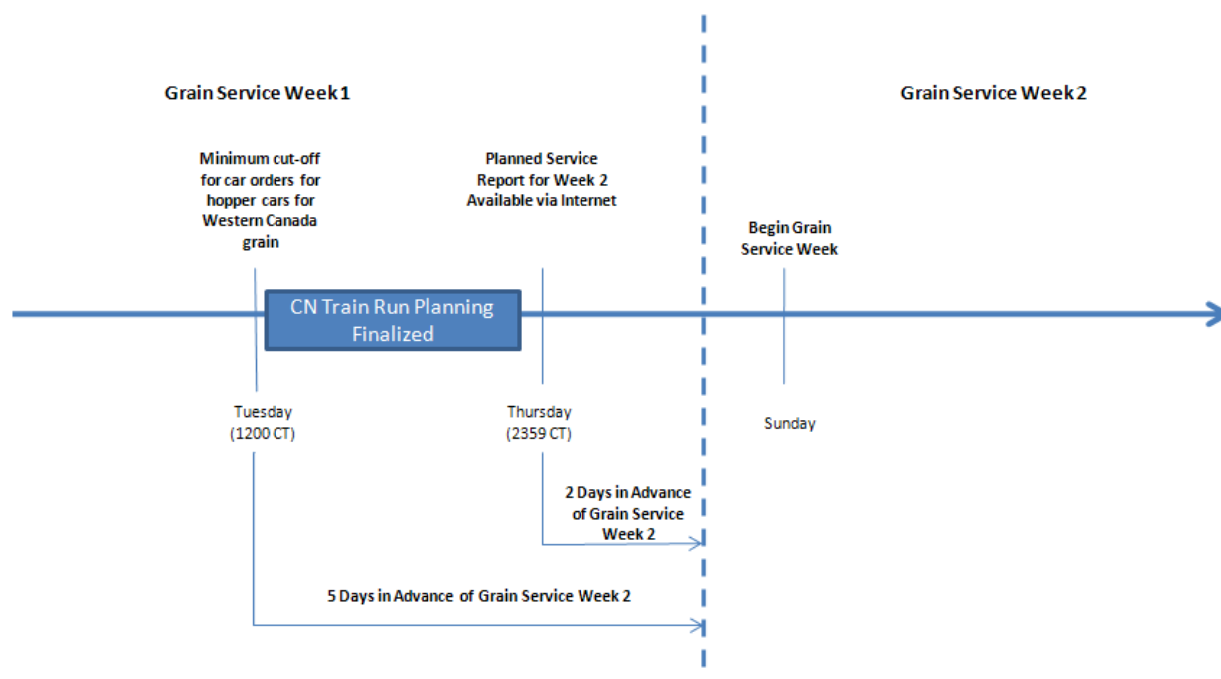
Once the overall expected car supply and the above factors have been analyzed a final service plan to deliver empty grain cars and pick up loaded cars will be established. Through CN's operating systems the required train schedules including start times and work plans are activated so that the distribution of locomotives can take place and crew assignments for grain dependent train runs can be communicated. Empty car distribution instructions are also

¹⁷ These guidelines are published on CN's website at www.cn.ca

managed on an ongoing basis in the railway operating systems to ensure that empty car supply is available in each of the key operating areas to support the planned distribution of cars to shipper loading points.

Grain car orders are then confirmed including any reduction in the expected supply by the railway, by Friday morning, for the following week's orders. Through a "Planned Service Report" (PSR), which is available via the Internet late Thursday and distributed electronically by CN every Friday, shippers are advised of the planned service days for the following week's empty grain car spotting. The PSR includes information on planned car supply by shipping location, destination corridor and will also include any order reference and shipper tracking numbers that apply to the grain car orders.¹⁸

Figure 4 CN Grain Car Order Process



¹⁸ In 2009 CN implemented scheduled day of week service for grain shippers. Under this operating plan each grain loading facility is assigned a set service day and for each week that orders are accepted for a loading facility the railway plans to deliver the empty cars on the scheduled day which does not change week to week.

4.1.2 Performance and Penalty Provisions for CN Grain Car Orders

As CN’s 16 week advance order structure for western grain customers is relatively simple, so is the penalty and incentive structure. The details of the key items from tariff CN 9000 covering charges and incentives associated with rail car ordering for western grain are listed in the table below.

Figure 5 CN Penalty and Incentive Structure for Grain Car Orders

| Shippers | | CN | |
|--|--|--|---|
| Condition | Penalty | Condition | Penalty |
| <ul style="list-style-type: none"> Order cancelled¹⁹ <ul style="list-style-type: none"> If car order reduced or cancelled prior to railcar placement If a change is made to destination corridor or origin after car order is confirmed If cars are billed to a destination corridor different from the order. | <ul style="list-style-type: none"> \$ 100/car | <ul style="list-style-type: none"> Failure to supply equipment for 100% of confirmed orders by 2359 Tuesday following grain week²⁰ | <ul style="list-style-type: none"> \$100/car |
| Condition | Incentive | | |
| <ul style="list-style-type: none"> Railcars placed, loaded and released on weekends <ul style="list-style-type: none"> When empty railcars placed after 1700 local time Friday are released loaded with complete bills of Lading on Saturday, Sunday (or Monday if a statutory holiday) | <ul style="list-style-type: none"> \$30 / car | | |

4.2 CP Western Grain Car Orders

4.2.1 CP Grain Service Products

MaxTrax is CP’s integrated product and service offering for Western Canadian grain shippers for the shipment of grain in hoppers cars to all export and commercial corridors²¹. The MaxTrax program includes the definition of CP’s available grain capacity on a weekly basis (capacity outline), procedures for shipper car ordering, allocation of capacity on a weekly basis and a menu of seven different product lines designed to meet the needs of different segments of the

¹⁹ No fees apply to cancellations made between 14-28 days after the requested want date, or for changes made prior to order confirmation.

²⁰ As per item 5700 of their tariff CN 9000-L, CN reserves the right to “delay the supply of railcars to confirmed orders when cars ordered are not accepted or cars in the destination pipeline have not been or will not be unloaded on arrival, or in events outside of CN’s control. This does not constitute a failure to supply, and the service credit does not apply.”

²¹ Export shipping corridors include Vancouver and Thunder Bay while commercial corridors include the United States, Mexico, Eastern Canada and domestic Western Canada destinations.

shipper community (i.e. large versus small shippers, export versus domestic corridors). These products are differentiated based on a number of characteristics including: applicable shipper reservation or commitment periods, how far in advance cars can be ordered, minimum order sizes, and applicable penalties in the event of shipper or railway non-performance.

Three of CP's MaxTrax product lines - BaseMax, TransMax and MarketMax - allow CP's customers to reserve empty grain car capacity for up to forty-six weeks during the crop year. Capacity reservation processes are initiated with the release by CP of their available annual capacity for each program during the first week of August each year. Customers have less than one week to submit their written requests for advance car supply to CP who then allocates the available capacity based on the shippers' past shipping performance and the number of weeks that they have requested capacity be guaranteed. In addition to this initial request and allocation process CP, recognizing that new business opportunities may arise during the course of the year, provide a weekly request window for shippers to submit BaseMax and MarketMax requests. CP does not guarantee the acceptance of any or all such requests.

A number of CP's advance ordering products operate on bid systems. Three different bid approaches are used including:

Penalty/positive bid Requires a shipper to bid a dollar amount (within minimum and maximum bid rules) that they are prepared to pay as a penalty in the event they are provided the cars ordered and do not use them. In situations where bids exceed the maximum penalty bid the difference between the maximum penalty bid and the shipper bid becomes a positive bid. If the shipper is awarded the cars on the basis of their bid the positive bid amount is invoiced to the shipper in advance of shipment and payable within 15 days.

For example if the maximum penalty bid is \$500 per car and in order to secure car supply a shipper bids \$550 per car the \$50 bid over the maximum penalty bid becomes a positive bid and the shipper is invoiced for this amount for each car awarded.

Pure Positive Bid The bid has no penalty component rather all bids are positive dollar bids with the shipper being invoiced an amount equal to its bid multiplied by the number of cars awarded.

Volume commitment bid Non-monetary bid process used only for grain service weeks 6-22 of CP's AdvanceMax program. Bids are based on the number of cars that shippers commit to ship between grain service week 37 of the current crop year and week 5 of the following crop year.

A brief description of CP's grain service product lines is provided below.

BaseMax

This program allows shippers to book advance grain car supply for a minimum of 5 up to a maximum of 46 consecutive weeks of a given crop year depending on the shipping corridor²². Empty car demand must be made in blocks of 25 cars

²² Export shipping corridors including Vancouver and Thunder Bay require a minimum booking commitment of 20 consecutive weeks. Commercial corridors including the United States, Mexico, Eastern Canada and all other Western Canada destinations require a minimum booking commitment of 5 consecutive weeks.

for all commercial corridors other than Eastern Canada (28 cars) and the export destinations of Thunder Bay and Vancouver where cars are allocated in 56 car blocks²³.

Both the customer and CP are entitled to “waive” their demand for cars or ability to supply cars a prescribed number of times depending on the corridor and booking period. In export corridors shippers that have booked cars for the maximum allowable number of weeks, 46 for Vancouver and 32 for Thunder Bay²⁴, are entitled to not ship their BaseMax commitment for two individual weeks and the railway is entitled to not supply cars for two individual weeks. In commercial corridors both shipper and railway are entitled to a one week waiver for each 5 consecutive week period that cars are booked. In order to use eligible waivers under BaseMax without penalty both the shipper and the railway must provide notification to the other party twelve days in advance of the grain week for which the waiver is to be used.

AdvanceMax

AdvanceMax allows shippers to order cars from 2 to 8 weeks in advance of the week they are required. In the export corridors of Vancouver and Thunder Bay customers can book minimum 56 car blocks and in commercial corridors minimum 25 car blocks with the exception of Eastern Canadian destinations where cars are allocated in 28 car blocks.

For export shipments the AdvanceMax program is divided into two shipping periods that operate under different bid systems for cars. For grain service weeks 6-22 the bid system is non-monetary but rather bids are based on the number of cars that shippers commit to ship between GSW 37 of the current crop year and GSW 5 of the next crop year. For grain service weeks 24-52 capacity is awarded based on the penalty/positive bid system. Penalty bids range from a minimum of \$50 per car to a maximum of \$3,000 per car. For all commercial corridors the AdvanceMax program uses the penalty/positive bid system for the entire crop year.

Train AdvanceMax - Mexico and USA

CP’s Train AdvanceMax programs provide shippers with the opportunity to reserve rail car capacity in 100 car blocks from 2 to 8 weeks in advance of the week they are required. While cars must be reserved in 100 car blocks each of these programs allows shippers to split the 100 car blocks and take advantage of co-loading at two different origin stations. Both programs operate under the penalty/positive bid system with penalty bids ranging from a minimum of \$50 per car to a maximum of \$500 per car.

The US and Mexico programs differ somewhat based on program availability and restrictions on shipping destinations.

²³ During specified periods during the year CP permits the splitting of 56 car blocks in export corridors into two 28 car blocks or greater that can be shipped from two origins.

²⁴ Orders for Thunder Bay are limited to 32 consecutive weeks and exclude grain service weeks 20 to 34 reflecting the annual Thunder Bay port closure.

For traffic to Mexico the program is only available every second GSW beginning in week 2 whereas no such restriction is placed on traffic to the United States. In addition, whether traffic is loaded at a single origin or co-loaded the full 100 car block must be shipped to a single destination in Mexico. For US destined traffic the full 100 car block is required to be shipped to one of six specific CP destinations²⁵.

TransMax

CP's TransMax program is designed to meet the needs of smaller grain shippers providing them with the ability to order cars for a minimum of 20 weeks up to a maximum of 46 consecutive weeks between grain service weeks 6 and 52 of each crop year. Eligible destination corridors include Vancouver (stuffing facilities only) and Eastern Canada (stations east of Thunder Bay, ON). Cars for the Vancouver corridor must be ordered in 3 car blocks and for Eastern Canada in 6 car blocks.

TransMax operates on the penalty/positive bid system with terms similar to the AdvanceMax program with penalty bids ranging from a minimum of \$50 per car to a maximum of \$3,000 per car. However, for TransMax the bid amounts must remain constant for all weeks. The TransMax program is not available to customers who have reserved capacity in the BaseMax or MarketMax programs.

FlexMax

The FlexMax program allows shippers to order 25 car blocks from 2-8 weeks in advance of the grain service week for which the cars are required. Eligible destination corridors include Eastern Canada, US and Western Canada domestic points (excluding ports). Unlike CP's other bid products FlexMax operates on a pure positive bid system with minimum bids of \$1 and no defined maximum bid.

MarketMax

Using CP's MarketMax program shippers can book advance grain car supply for the Vancouver export (ports only) and Thunder Bay corridors for a minimum of 20 to a maximum of 46 consecutive weeks. Orders must be placed in blocks of 56 cars for both Vancouver and Thunder Bay and are limited to loading and receiving facilities that have a minimum 56 car spot. This program is not available to customers who hold advance booked products in the same corridor – i.e. BaseMax and TransMax products for the Vancouver and Thunder Bay corridors. Subject to CP's discretion shippers may be permitted to "roll" (delay or advance) a MarketMax order by one week in order to facilitate the building of orders in the required car block sizes.

²⁵ Per CP Tariff Item 19000 eligible destinations for CP's Train AdvanceMax US program include – Archer Daniels Midland at Enderlin, ND, Voltaire, ND and Red Wing, MN as well as to CP terminals in Minneapolis, MN, Chicago, IL and Kansas City, KS for furtherance to final destinations in the United States in minimum 25 car blocks.

ReadyMax

The CP ReadyMax program provides general grain car supply and is available for all CP grain traffic. Car orders are corridor specific and must be made through the DemandTrax system. Cars are requested for shipping two weeks in advance of the intended shipping week.

4.2.2 CP Grain Car Ordering and Allocation and Train Planning Processes

CP’s individual grain service products operate on the basis of shipper requests for cars submitted within the designated timeframes defined for each product which CP then converts into confirmed orders through its allocation process. The “request windows” are different across individual programs as is the minimum information required to be provided by a shipper at the time the initial request is submitted. Furthermore some products then provide shippers with a second window during which they must provide additional information, if not submitted at the time of the initial request, for each confirmed shipment by a prescribed deadline that is between 9 and 12 days in advance of the actual grain shipping week for which the cars are requested.

For CP’s three capacity reservation programs – BaseMax, MarketMax and TransMax – shippers have approximately three days from August 11 – 14, after CP publishes its annual capacity outline, to submit their requests for cars. For each corridor that cars are being requested shippers must identify the number of weekly cars and the specific consecutive grain service weeks for which the cars are being requested. For the remaining programs shippers can submit their requests up to 8 weeks in advance, but no later than the Tuesday 12 days in advance of the grain service week for which the cars are being requested. For these programs shippers must provide more specific information at the time of request as shown in the table below.

Figure 6 Summary of CP Request Windows and Information Requirements

| Product | Request Window | Minimum Information Required from Shippers at Time of Request | Information Required to be Provided by Weekly Cut-off |
|--|--|---|--|
| <ul style="list-style-type: none"> • BaseMax • MarketMax | <ul style="list-style-type: none"> • Initial Annual Request Period <ul style="list-style-type: none"> • August 11 – 14 • Further BaseMax MarketMax booking opportunities <ul style="list-style-type: none"> • Weekly 3 weeks in advance of shipping week • Tuesday 12:00 CT | <u>By destination corridor</u> <ul style="list-style-type: none"> • # cars requested weekly • weeks for which cars are required | <u>Weekly by Friday at 1600 CT</u> <ul style="list-style-type: none"> • 9 days prior to grain service week cars are required <ul style="list-style-type: none"> • Shipment origin • destination terminal |
| <ul style="list-style-type: none"> • TransMax | <ul style="list-style-type: none"> • Initial Annual Request Period <ul style="list-style-type: none"> • August 11 – 14 | <u>By destination corridor</u> <ul style="list-style-type: none"> • # cars requested weekly • weeks for which cars are required | <u>Weekly by Friday at 1600 CT</u> <ul style="list-style-type: none"> • 9 days prior to grain service week cars are required <ul style="list-style-type: none"> • Shipment origin • destination terminal |

| | | | |
|---|---|--|--|
| <ul style="list-style-type: none"> • ReadyMax | <ul style="list-style-type: none"> • 2 – 8 weeks in advance of shipping week <ul style="list-style-type: none"> • Wednesday 10:00 CT cut-off weekly | <ul style="list-style-type: none"> • Origin facility owner • # cars requested • weeks for which cars are required • export <ul style="list-style-type: none"> • destination corridor • commercial <ul style="list-style-type: none"> • destination corridor • destination station • receiver name | Required information provided with initial request. |
| <ul style="list-style-type: none"> • AdvanceMax • Train Advance Max | <ul style="list-style-type: none"> • 2 – 8 weeks in advance of shipping week <ul style="list-style-type: none"> • Tuesday 12:00 CT cut-off weekly | <ul style="list-style-type: none"> • # cars requested • weeks for which cars are required • AdvanceMax bid amount • export <ul style="list-style-type: none"> • destination corridor/terminal • commercial <ul style="list-style-type: none"> • destination corridor • destination station • receiver name (excl. Mexico) | <u>Weekly by Friday at 1600 CT</u> <ul style="list-style-type: none"> • 9 days prior to grain service week cars are required <ul style="list-style-type: none"> • Shipment origin • destination terminal |
| <ul style="list-style-type: none"> • FlexMax | <ul style="list-style-type: none"> • 2 -8 weeks in advance of grain shipping week <ul style="list-style-type: none"> • Tuesday 12:00 CT cut-off weekly | <u>By destination corridor</u> <ul style="list-style-type: none"> • # cars requested weekly • weeks for which cars are required • FlexMax bid amount | <u>Weekly by Friday at 1600 CT</u> <ul style="list-style-type: none"> • 9 days prior to grain service week cars are required <ul style="list-style-type: none"> • Shipment origin |

Following the cut-off for submission of shipper requests for cars CP assesses its ability to meet the demand for cars in each corridor for each week for each service product individually. For any given product line/corridor if total requests do not exceed defined capacity then all requests are accepted and confirmed to shippers. Where requests exceed capacity CP will use allocation rules to determine which requests are accepted. The table below summarizes the allocation rules used by CP as published in their Tariff CP 4311.

Figure 7 CP Grain Car Request Allocation Criteria

| Product | Allocation Basis |
|---|--|
| BaseMax MarketMax | <ul style="list-style-type: none"> • At CP discretion based on: <ul style="list-style-type: none"> • length of commitment (number of consecutive shipping weeks cars requested) • shipping performance by corridor |
| ReadyMax | <ul style="list-style-type: none"> • pipeline management • order utilization • vessel line ups • market forces • proportion of total requests |
| AdvanceMax Train AdvanceMax TransMax FlexMax | <ul style="list-style-type: none"> • preference given to highest bid |

Figure 9 below provides an illustration of the various grain car ordering and communication processes that occur on a weekly basis between CP and its customers. The schematic presents these various activities using a four week time period in order to illustrate how the various activities relate to one another as they pertain to the ordering of cars and planning of service for a given grain service week. In the example below all the processes shown are related to shipments in grain service week 4. While shown using the four week timeline it is important to understand that each of these activities takes place each week. The key customer ordering and railway planning activities are shown in the following table.

Figure 8 Key customer and railway planning activities for CP western grain hopper car orders

| | |
|---|---|
| Weekly cut-off for BaseMax and MarketMax Requests | Each week until Tuesday at 1200 CT CP will accept shipper requests for cars for BaseMax and MarketMax shipment three weeks out. |
| Weekly cut-off for FlexMax, AdvanceMax and Train AdvanceMax | Each week until Tuesday at 1200 CT, 12 days in advance of the grain week for which cars are being requested, CP accepts shipper requests for cars for these programs. Shippers can place these requests as early as eight weeks. |
| Weekly cut-off for ReadyMax | Each week until Wednesday at 1000 CT, 11 days in advance of the grain week for which cars are being requested, CP accepts shipper requests for cars for this programs. Shippers can place these requests as early as eight weeks. |
| Weekly cut-off for origin and destination designation on confirmed orders | Shippers that have confirmed orders for all CP product lines, other than ReadyMax, must submit to CP the specific origins and destinations for each confirmed order by Friday at 1600 CT 9 days in advance of the grain week for which cars are required. |
| CP Train Run Planning | Between Wednesday at 1600 CT and Wednesday of the following week CP plans individual grain train operations for the spotting of empty cars at customer facilities to meet confirmed orders. |
| CP Final Service Plan | On Wednesday each week, 4 days prior to the start of the grain service week, CP communicates it service plan to its customers. |

CP Train Run Planning

In a process that is similar to the one already described for CN, grain car orders received by CP are consolidated in CP’s Grain Car Reservation System (GCRS). Car orders for grain are reviewed for future weeks on an on-going basis. However, CP’s more formal train run planning for grain begins on Wednesdays, 11 days in advance of the grain service week starting on the second subsequent Sunday. After this cut-off date, CP’s grain operations planners assess car demand by origin hub region and by empty car supply pipelines from major port grain terminals and from domestic and US destinations.

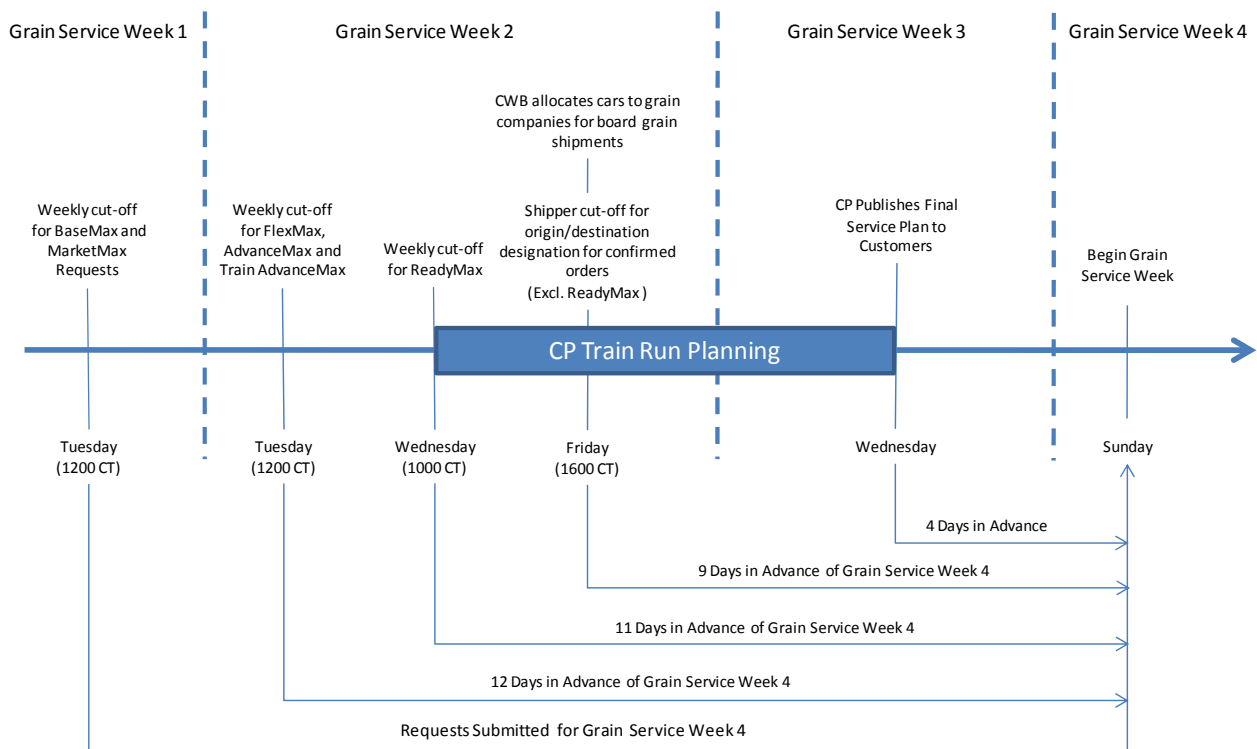
As was described in the section above on CN grain operations planning, the expected car supply is then evaluated using forecast and planned unloading targets at the ports, the current disposition of empty car flows in the system and

expectations about operating performance in the coming days. CP's grain operations planning group is focused on trying to match empty flows to shipping demand while ensuring that capacity limitations of the railway, ports and loading points are taken into account. In particular CP tries to match empty grain car planning to expected unload performance at the ports so as to avoid creating congestion either on-line or at port facilities.

Following discussions between CP grain operations planners and CP grain business commercial managers, an empty supply plan is agreed upon, and subsequently communicated through CP's Final Service Plan (FSP), on the Wednesday 4 days in advance of the shipping week beginning the following Sunday. This FSP must then be implemented through changes made to CP's operating system (NEXUS) to schedule trains and ensure appropriate locomotive and crew resources are made available to support the plan. At CP, key considerations in the establishment of this plan include the factors above regarding the balance between loading and unloading capabilities and a desire by CP to maintain a balanced flow of empty and loaded grain cars on a daily basis in their heavily utilized rail corridors in Western Canada.

Once the empty supply plan is established, CP has an additional group of shipment planners who support the planning activities associated with the movement of loaded grain cars to Canadian ports and domestic and US destinations.

Figure 9 CP Grain Car Order Process



4.2.3 Performance and Penalty Provisions for CP Grain Car Orders

CP will assess penalties to shippers for cancellation of confirmed orders and will in turn pay penalties in cases where it does not meet its commitment to supply cars to meet confirmed orders within the time periods defined for each of its service products. CP’s equipment supply commitment and the applicable penalties to both railway and shipper vary somewhat depending on the specific grain service product.

The table below provides a summary of the penalties applicable to both shippers and CP for each of the grain service products.

Figure 10 CP Penalty and Incentive Structure for Grain Car Orders

| Program | Shippers | | CP ²⁶ | |
|--|---|--|---|---|
| | Condition | Penalty | Condition | Penalty |
| BaseMax | <ul style="list-style-type: none"> Order cancelled⁽¹⁾ | <ul style="list-style-type: none"> \$ 250 per car | <ul style="list-style-type: none"> Failure to supply equipment for 100% of confirmed orders by 2359 Tuesday following grain week | <ul style="list-style-type: none"> \$250 per car for each late car |
| ReadyMax | <ul style="list-style-type: none"> Order cancelled after cut-off⁽²⁾ Cars refused at time of placement or released empty | <ul style="list-style-type: none"> \$ 150 per car \$300 per car | <ul style="list-style-type: none"> Failure to supply equipment for 100% of confirmed orders by end of following grain week | <ul style="list-style-type: none"> N/A |
| AdvanceMax ⁽³⁾ | <ul style="list-style-type: none"> Failure to use confirmed order <p><u>Exceptions:</u></p> <ul style="list-style-type: none"> Export corridor GSW 6-22 | <ul style="list-style-type: none"> Penalty bid to max. of \$3,000 per car \$ 250 per car | <ul style="list-style-type: none"> Failure to supply equipment for 100% of confirmed orders by 2359 Tuesday following grain week | <ul style="list-style-type: none"> Penalty bid to max. of \$250 per car + refund of positive bid if applicable |
| Train AdvanceMax ⁽³⁾ Mexico/USA | <ul style="list-style-type: none"> Failure to use confirmed order | <ul style="list-style-type: none"> Penalty bid to max. of \$500 per car | <ul style="list-style-type: none"> Failure to supply equipment for 100% of confirmed orders by 2359 Tuesday following grain week | <ul style="list-style-type: none"> Penalty bid to max. of \$250 per car + refund of positive bid if applicable |
| FlexMax ⁽³⁾ TransMax ⁽³⁾ | <ul style="list-style-type: none"> Failure to use confirmed order | <ul style="list-style-type: none"> \$ 250 per car | <ul style="list-style-type: none"> Failure to supply equipment for 100% of confirmed orders by 2359 Tuesday following grain week | <ul style="list-style-type: none"> Higher of \$250 per car or shipper penalty bid |

²⁶ As per tariff CP 4312 CP has the following caveats on its payment of penalty claims:

- Shippers are required to submit separate penalty claims and invoices for each claimable event no later than the end of the month following the month the claimable event occurred.
- In cases where CP supplies a bad order car to fulfill an order the car is considered placed and is not subject to penalty.
- Provisions for payment of CP penalties only apply “...when port unloads support the grain shipping week’s car offering made through MaxTrax. CP shall not be responsible for failures or delays if port unloads do not support the grain shipping week’s car offering made through MaxTrax.”

| | Shippers | | CP ²⁶ | |
|-----------|---|--|---|---|
| MarketMax | <ul style="list-style-type: none"> • Failure to use confirmed order | <ul style="list-style-type: none"> • \$ 250 per car | <ul style="list-style-type: none"> • Failure to supply equipment for 100% of confirmed orders by 2359 Tuesday following grain week | <ul style="list-style-type: none"> • \$250 per car for each late car |
| | Condition | Incentive | | |
| | <ul style="list-style-type: none"> • Railcars placed, loaded and released on weekends <ul style="list-style-type: none"> • Applicable on blocks of 25 cars more • Blocks of 56 and 112 cars to be loaded within prescribed time windows of 10 and 24 hours respectively | <ul style="list-style-type: none"> • 25-49 cars \$625 • 50-99 cars \$1250 • 100 + cars \$2500 | | |

- (1) Includes cars refused at time of offer and cars placed and released empty
- (2) Cut-off for cancellation of ReadyMax orders is 12:00 CT Tuesday 5 days prior to start of grain week
- (3) Partial loading of a block is considered a default on the entire block and penalty will be calculated against all orders regardless of whether they are filled

Short Spotting Provisions

A “short spot” arises when CP does not deliver the correct number of cars to a customer’s siding based on the final service plan. For a short spot situation to be recognized by CP shippers are required to notify CP of the number of cars short spotted within 48 hours of the actual spot date. If a customer fails to notify CP within 48 hours their claim of short spotting will be considered invalid by CP.²⁷

Depending on the size of the short spot CP provides shippers with two options. If the short spot represents 10% or less of a customer’s allocation CP will place the number of short spotted cars into a “short spot allocation bank” available for the customer to draw on in future weeks to have cars placed at any origin of their choosing. In cases where the short spot is more than 10% of the shipper’s allocation CP provides two options. First, the shipper may take advantage of the allocation bank option described above. Alternatively the shipper can choose to have the orders filled at the original loading location on the condition that CP will do so in an operationally efficient manner.

In order to draw on the short spot allocation bank customers must submit a request to CP’s MaxTrax coordinator a minimum of 9 days prior to the grain service week in which they wish to use them. If approved by CP then customers are required to submit these as new orders through CP’s order system. Unused short spot allocations are zeroed out at the end of each grain crop year and cannot be carried forward from year to year.

²⁷ Tariff CPRS 4311 Item 20025

4.3 Car Ordering Process for Producer Cars

Under the Canada Grain Act grain producers are entitled to order producer cars²⁸ from the Canadian Grain Commission (CGC) directly. The CGC is responsible for administering applications for producer cars and when it approves a producer car order it authorizes the railway to deliver a rail car for loading by the producer. The CGC is also responsible for placing rail car orders with CN and CP on behalf of individual producers. Upon allocation of the railcar, the CGC will provide an authorization number and a railway order reference number. CN producer car loaders can view their order status using the order reference number on CN's web based customer interface.

4.4 Role of the Canadian Wheat Board (CWB)

The CWB has a very significant role in Western Canadian grain logistics. While the car order and car supply processes above apply to all of the railways' Western grain customers – including the CWB – the impact of the CWB on western grain logistics is considerable.

The CWB is the sole marketer for exports of wheat, durum and barley from Western Canada. This accounts for over 60% of the movement of all grains by rail from the Prairie Provinces. In the management of grain logistics the grain companies act as agents of the Board. However, the Board has an important role in determining the timing and general location from which grains will be drawn from farms into the prairie grain elevators enroute to the ports or for export to the USA. The CWB does this through the timing and geographic locations of the contracts that they make available for individual farmers to sell their grain and make deliveries to the Prairie elevator network. Individual grain companies compete for market share for CWB grain from farmers within a general area and the physical radius of competition for an individual farmer's grain can be quite broad - as much as 50 miles or more from farm to elevator. However, CWB grains that are drawn into the country elevator network in Western Canada remain the property of the CWB and the CWB determines the exact timing for the movement of most of these grains to support their export sales programs.

At the same time, individual grain companies use their elevator networks on the prairies and at port locations to support the movement of non-CWB (non-board) grain, which makes up the other approximately 35-40% of the railways' Western Canada grain volumes. As such, the CWB participates in the car order and car supply process as an independent shipper, using the facilities of the grain companies to manage their own logistics processes. Grain companies must therefore coordinate the placement of hopper car orders for the movement of non-board grains with

²⁸ Under the Canada Grain Act, grain producers are entitled to order rail cars for shipping grain from the Canadian Grain Commission. These so-called "producer cars" are not loaded at major grain elevators but at points on the rail network that railways and producers have identified where such relatively low volume loading can be accomplished.

CWB car orders for the movement of board grains from these same facilities. The forward planning capability of the individual grain companies is limited by the degree to which these companies can foresee the CWB's intentions with respect to future car orders at individual elevator locations.

The CWB has a number of formal processes for coordinating with grain companies the movement of board grains to port. This includes "tendered" and "advance car" awards programs under which the CWB identifies from two to four weeks in advance, the type of grain and number of cars that it wishes to ship by grain company, and by export corridor. The CWB will subsequently review and adjust the awards on a weekly basis and then coordinate the allocation of car orders to grain companies and to individual elevators and destination corridors. Throughout this iterative process, grain companies must coordinate the movement of the CWB grains with their own non-Board traffic.

This dynamic process of marketing, allocation and logistics management can create challenges for railways and grain companies in planning the use of their own assets for the movement of Western Grain products.

5. Bulk Products Fleet Management

As noted in the introductory section of this report, Canadian shippers of bulk products do not generally use the same formal car order and car supply processes as shippers of carload and grain products. These very large shippers of products such as coal, potash, and dry sulphur and fertilizers ship much of their traffic in unit train volumes. These products may be stockpiled at origins and are almost always stockpiled at destinations (generally port terminals) for transshipment into vessels for ocean transport. Even where products move to domestic or USA export locations, inventory management is generally handled through bulk storage which provides some buffer between rail shipments and transshipment or industrial use of the products.

The car fleets for these products are provided by a mix of railway and shipper supplied rail cars. For coal shipments in Canada, rail cars are provided primarily by railway provided fleets with a smaller percentage of shipper-owned or leased rail cars. Export dry sulphur shipments and potash shipments are moved almost exclusively in shipper supplied rail car fleets. North American movements of potash and dry fertilizer are shipped in a combination of shipper and railway supplied cars.²⁹

Once fleet sizes have been established by railways and shippers for the movement of these commodities for each of their largest shippers, the process of determining shipper empty car demand on a day to day basis is not done through the railways' carload car order systems.

Both railways have staff dedicated to direct communication with their largest bulk shippers to coordinate the movement of both loaded and empty rail cars to meet shipper demand. These processes generally operate on a monthly basis with each customer providing a detailed monthly demand outlook to each railway at the origin destination commodity level. The railways then track shipping performance against these monthly performance outlooks on a daily basis.

The level of precision and variability in week to week and day to day demand outlooks varies by commodity type, shipper and time of year. For example, export potash demand projections are provided to railways at a highly precise level allowing for train schedule activation in railway systems up to 10 days prior to shipping with a high level of accuracy. Potash export shipments (to destinations outside North America) move almost exclusively in unit trains which cycle between origin mines and ports. However, for dry fertilizer shipments, particularly in the peak Spring shipping season, demand projections may be more volatile and the availability of empty fleet more difficult to project

²⁹ For small lot or single car shipments of potash and fertilizers in railway supplied cars, the railways carload systems for car order and car supply will be used by these shippers. This makes up a small percentage of the movement of these products.

for both railway and shipper. This is due to the fact that dry fertilizer shipments move in a combination of unit train and car block movements in mixed carload trains. Small block and carload car cycles between origin and destination will be more variable than unit train movements and therefore make planning of future empty car supply more difficult to predict.

Particularly where traffic moves primarily in unit train movements – export potash, coal and dry sulphur – both railways have dedicated staff who coordinate with these shippers the disposition of loaded and empty trains. The shippers and railways jointly determine the movement of unit trains between unloading locations and their next loading point through daily email and telephone communication. Dedicated personnel within the railways also manage the activation of train schedules in the railways’ operating systems to allow for the advance planning of locomotive and crew availability. Bulk unit train operations must be coordinated to fit into the line capacity “windows” that are available on railways’ networks and must share capacity with the more rigidly scheduled carload, Intermodal and passenger operations.

6. Intermodal

CN and CP segregate their Intermodal business into two distinct categories – domestic Intermodal where shipments originate and terminate within Canada and import – export traffic that moves between the railways’ inland intermodal terminals and container terminals located at the major ports. At a high level domestic Intermodal can be further segregated into retail and wholesale business lines. Generally speaking retail services are characterized by the railway providing local pickup, delivery, or full door-to-door service in addition to the rail movement. For wholesale shipments the railway service offering is limited to terminal to terminal rail movement with pickup and delivery services at either end managed by the shipper and or receiver typically utilizing contract trucking services.

CN and CP offer shippers a variety of service plan options based on these two basic service models. These service plans provide shippers with flexibility with respect to the railway services used including the selection of the equipment – whether it is supplied by the railway, the shipper or a 3rd part service provider.³⁰

While there are some differences in the operational and transactional processes for container movements depending on the type of Intermodal shipment and the railway service plan selected by the shipper the basic business processes employed are much the same and include: order and supply of equipment, shipment booking, pickup of loaded containers and delivery to railway intermodal terminals and loading of containers on to intermodal rail cars for movement to destination.

Equipment Order and Supply

For domestic Intermodal movements shippers will either supply their own container, contract with 3rd party trucking or logistics companies, or use a railway supplied container. Shippers place their orders for containers with CN and CP via email or fax through the railways’ respective centralized Intermodal operations groups.³¹ Equipment orders are required to be placed by a specified cut-off time³² the day prior to when the equipment is required and CN and CP will confirm the acceptance of equipment orders to the shipper by providing an order reference number for each container ordered.

Whether or not the railway physically delivers the empty container to the shipper’s location and picks up the loaded container for delivery to the railway’s intermodal terminal will depend on the railway service plan selected by the

³⁰ A more detailed discussion of CN and CP Intermodal service offerings can be found in QGI’s report prepared for the Rail Freight Service Review – Description of Canada’s Rail Based Freight Logistics System

³¹ CN’s Intermodal Retail Operations Centre and CP’s Central Operations Group (COG)

³² For CP shippers must request their equipment through the submission of load tenders to CP’s centralized operations group no later than 1600 local time the day before the equipment is required. CN shippers are required to request equipment by 1500 local time the day prior to loading.

shipper. Options available to shippers in this regard range from full door to door service provided by the railway to all highway services being controlled by the shipper. If the shipper opts to provide his own trucking services he is required to pick up the empty container at the railway intermodal terminal within a specified time period. Gaining access to the terminal requires the driver to present the order reference numbers provided by the railway at the terminal gate.

Marine containers for export movements are supplied by the steamship line with which the shipper is booking ocean passage. Ordering international marine containers requires a shipper, or their agent, to first make an ocean booking with a shipping line for a container shipment. The ocean carrier confirms acceptance of the order by issuing a booking confirmation to the shipper confirming the details of the shipment including the pickup location for the empty container and drop off location for the loaded container.

As with domestic Intermodal shipments the physical supply of the ocean container to the shipper's facility and its return to the intermodal terminal for rail movement to the port can be done using railway or shipper supplied trucking services. Depending on the location of the shipper and the practice of the particular shipping line the empty container will be sourced either from the railway's intermodal terminal or from a 3rd party container storage and distribution facility operated on behalf of the steamship line. When accessing either railway terminals or 3rd party storage facilities to retrieve empty containers shippers or their agents are required to provide the shipping line booking confirmation number. Much as they do for their rail car customers the railways will penalize shippers if confirmed container orders are cancelled after prescribed cut-off times.³³

³³ See QGI's report *Dual Railway-Shipper Accountability for Poor Performance*, March 2010.

7. Summary and Observations

In general, the challenges faced by both railways in ensuring satisfactory car supply to shippers on a day to day basis are the same. Supply of equipment is based on the planning and performance of each railway's network as well as the performance of their connecting rail partners, their shippers, receivers, and port and terminal partners.

Railways' weekly car order and car supply processes operate with relatively fixed car fleets that are established based largely on their annual planning processes.³⁴ Unplanned variability in any partners' performance can affect the railways' ability to supply sufficient cars to meet customers' demand. The reasons for this variability will include:

- Unanticipated and forecast increases or decreases in shipper demand;
- Operational disruptions of railways, customers, ports or terminals due to mechanical or labour issues; and
- Weather related disruption.

While CN's and CP's processes for car order and car supply are similar, there are some notable differences as well. In particular, CN's GCO process for carload customers provides direct feedback to shippers on the expected supply of empty cars on a daily basis. In addition, this program provides for reciprocal performance penalties for shippers and railways. CP's Delta program however provides neither a direct formal feedback to customers on expected empty supply nor does CP's program provide for reciprocal performance penalties to railway and shipper.

For grain customers, CP provides a number of options for shippers to guarantee future grain car supply through their "advance products." However, CN's 16 week order book process does not provide for guarantee of car orders beyond the 16 week order window.

For bulk customers on both railways, the processes of coordinating empty train operations are integrated with their joint railway/customer processes to coordinate the flow of bulk products – primarily via unit trains – between origins and destinations. These customers have organizations within both railways with responsibility to monitor and coordinate the operations of these bulk unit trains on a day to day basis between the railways, shippers and their port and terminal partners.

Equipment ordering processes for the railways' Intermodal customers are similar for CN and CP. Container orders for domestic shipments are placed through the railways' centralized Intermodal operations groups with physical supply to the shipper's facility determined by the Intermodal service plan selected. Export shippers order marine containers through shipping lines with the supply of such equipment linked to the booking and acceptance of ocean passage.

³⁴ For a more complete description of railway demand planning see QGI's report, *Railway Demand Forecasting and Service Planning*. March 2010