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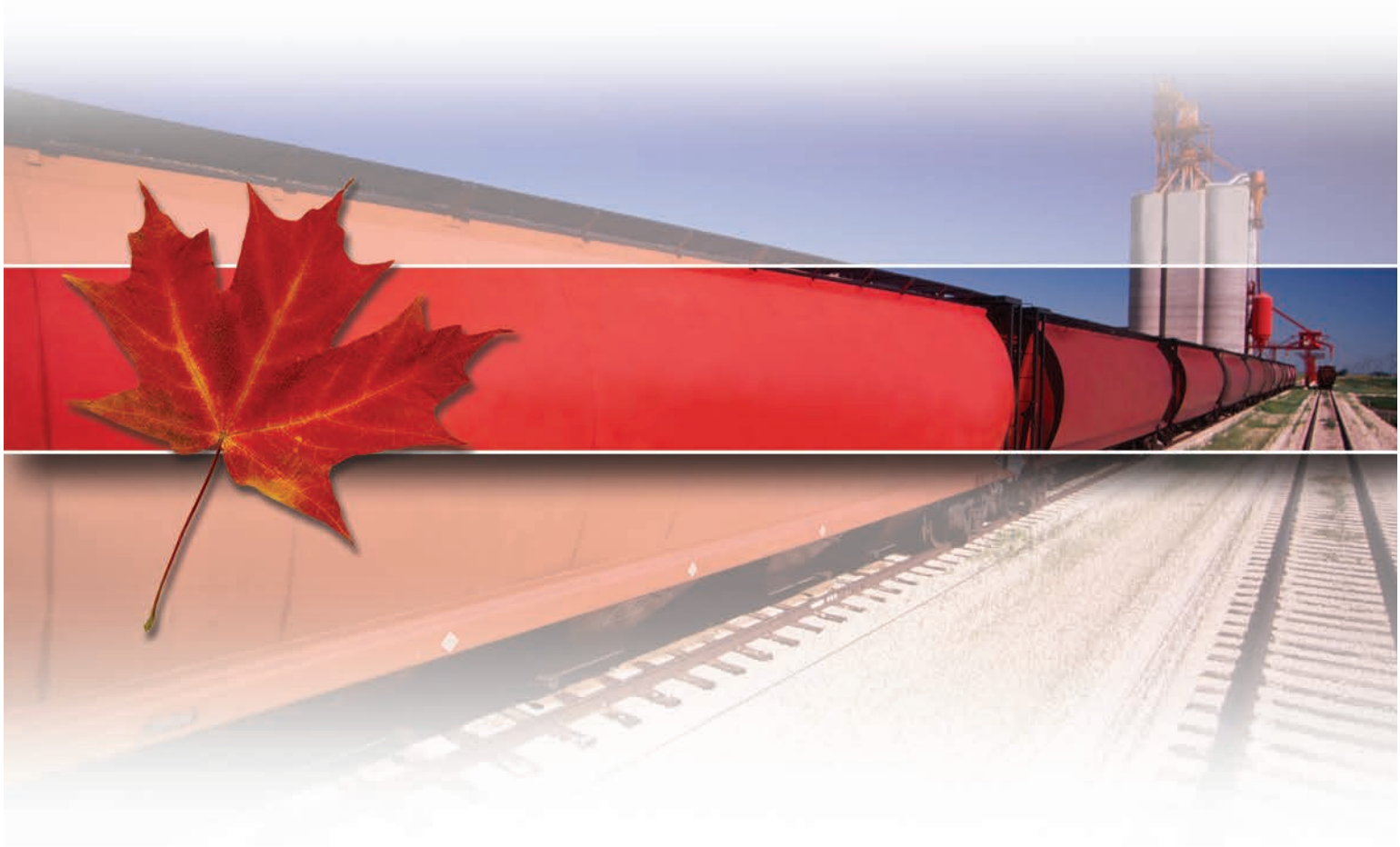

Crop Logistics Working Group

Final Report

2014

Canada

Crop Logistics Working Group - Final Report

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INTRODUCTION

The Crop Logistics Working Group (CLWG) was established in 2011 to provide a forum for the agriculture sector to exchange views and information on issues arising from the transition to marketing freedom, and to provide input into the Rail Freight Service Review implementation process. Since its inception, it has brought together industry representatives from the agriculture sector to work on finding efficiencies and driving costs out of the entire value chain.

As part of the Government's long-term strategy to strengthen and modernize the grain industry, the CLWG was given a renewed mandate in 2012 to focus on improving the performance of the supply chain for all crops, with a focus on performance measurement, supply chain innovation, and building industry capacity. Sub-committees were formed for each of these priority areas and over the past 12 months these sub-committees have been meeting to deliver on their individual mandates. The result has been the identification of common interests, challenges and opportunities facing the crop logistics system, as well as potential follow-up activities that could be undertaken to support continued improvements to the supply chain.

Organization of This Report

Section 1 of this report provides an overview of the findings and recommendations from the Sub-Committee on Performance Measurement. Section 2 summarizes the work of the Sub-Committee on Building Capacity. Section 3 outlines the challenges and opportunities identified by the Sub-Committee on Supply Chain Innovation. Section 4 summarizes the conclusions and recommendations from the Crop Logistics Working Group, to drive further improvements to the grain supply chain over the short, medium and long-term.

1. PERFORMANCE MEASUREMENT

The objectives of the Performance Measurement Sub-Committee were to:

- Identify performance measurement gaps within the crop logistics system and develop a performance measurement framework; and to
- Identify common interests and exchange views about issues in support of the Transport Canada Commodity Supply Chain Table, following from the Rail Freight Service Review.

The Sub-Committee recognized the need to view measures in terms of the total supply chain. In doing so, they looked to industry representatives to identify areas within the logistics chain where bottlenecks and process challenges existed where measurement initiatives could aid in improving the effectiveness and efficiency of the chain. A complete list of CLWG members, including members of the Sub-Committee on Performance Measurement, is attached as Annex A. Perspectives were obtained from a cross-section of stakeholders including the Western Grain Elevator Association, Canadian Pacific Railway, Canadian National Railway, and organizations who measure the performance of the system, represented by Quorum Corporation (the Grain Monitor), Pulse Canada and Port Metro Vancouver.

The work completed by the previous Performance Measurement Sub-Committee established under the first CLWG mandate served as the foundation for the renewed committee.

Performance Measurement Gaps

Performance measures for the grain supply chain were initially established as part of the Grain Monitoring Program (GMP) in 2001. The GMP was intended to provide independent continuous monitoring, measurement and reporting on the overall performance of the Grain Handling and Transportation System (GHTS).

The GMP measures supply chain performance from farm gate to port based on multiple sources of data including Statistics Canada, the Canadian Grain Commission, individual grain companies, railways and ports. The GMP provides a cross section of statistical and performance data on the grain supply chain, presenting it in terms of volume and production, infrastructure, commercial relations, system efficiency, and performance and producer impact.

Grain supply chain stakeholders have identified a number of areas where they believe a greater amount of system transparency is required. In addition, they have pointed to the need for more frequent reporting to enable producers and grain companies to proactively identify potential or current bottlenecks in the system and to adjust their sales and shipping plans accordingly.

Sub-Committee members agreed that certain factors should be considered in developing the performance measurement framework for supply chain measures, namely:

- An appropriate level of aggregation should be used that provides information that is meaningful while protecting individuals' commercial intelligence.
- A methodology that uses a full data set should be used and a statistical sampling approach should be avoided wherever possible. Sampling is most often subject to intense scrutiny and as such its credibility is diluted and validity refuted. Full data sets from data providers would allow for robust measures that carry a high degree of credibility, allowing discussions to focus on challenges and solutions, rather than on whether the statistic is correct or not.
- The need for consistent performance measures across the supply chain to support benchmarking and more robust reporting.

It was noted that current railway metrics focus on car velocity and capacity over all sectors of the supply chain. In terms of port performance, Port Metro Vancouver (PMV) compiles a monthly report on grain movements (based on its Gateway Grain Supply Chain Scorecard). The report is based on data provided on a voluntary monthly basis by PMV's five grain terminals: Alliance, Pacific, Cascadia, Cargill and Richardson. The measures presented include: total tonnes moved; empty railcar supply in the country (as provided by the railways); gateway cycle time; gateway car spotting performance; total cars spotted; terminal unload capacity; out of car time; weather delays; inclement weather loading; terminal utilization; average days at anchor and average days at berth.

The Sub-Committee discussed the shortfall in the supply of empty cars to the country elevator network, and the congestion at port positions as vessels wait to load grain. Sub-Committee members agreed that these challenges point to the need to better align railway capacity with market signals from the grain industry. It was agreed that an expanded range of metrics on railway volume and traffic data (including containerized traffic), as well as measures on order fulfillment, terminal unloading performance and car fleet size, would support better planning and management across the supply chain.

Supply Chain Challenges and Opportunities

The Sub-Committee identified a number of areas that should be brought forward for discussion to the Transport Canada Commodity Supply Chain Table, including:

- The overall consistency of rail service and the railways' capacity to recover from disruptions and surges in volume.
- Lengthy transit times and cycle times to the US, in addition to the Canadian corridors.
- The need for better alignment between railway operations and the grain marketing system, which is characterized by seasonal peaks and valleys.
- The need for more balanced accountability between grain companies and the railways to incent better levels of service and overall supply chain efficiency.

Key Findings and Recommendation

The Sub-Committee reinforced the need for the Government of Canada to maintain a grain monitoring program to examine the performance of the Grain Handling and Transportation System in Canada. Accordingly, the Sub-Committee endorsed the current and proposed suite of measures contained in the Grain Monitoring Program, which constitute the Proposed Performance Measures Table for the grain supply chain (attached as Annex B to this report).

The Sub-Committee work highlighted gaps related to the frequency of reporting, limited reporting of movements beyond Canadian export ports and limits to reporting on supply chain capacity, reliability and performance. The Sub-Committee called for specific measures related to car order fulfillment, railway fleet size, transit time origin to destination, grain vessel demurrage, and dwell time at origin and destination. Sub-Committee members also noted that expanded measures should include movements to the USA and Eastern Canada in order to better understand systems capacity and potential constraints in service for shippers.

The Sub-Committee also recognized the need for both systems and company specific measures on supply chain performance. It was agreed that enhanced reporting would facilitate better communication between supply chain participants, improve predictability through a better understanding of supply chain variability, and support improved planning, thereby reducing overall costs to the supply chain. It was noted that having access to an expanded range of data would help in setting benchmarks for service level agreements.

The Sub-Committee on Performance Measurement made the following recommendation:

- The Government of Canada should examine ways to enhance existing measures and to address gaps in the current performance measurement framework for the Grain Handling and Transportation System.

2. BUILDING CAPACITY

The mandate of the Building Capacity Sub-Committee was to identify the requisite tools, knowledge, and expertise needed to build capacity to enhance competitiveness within the crop logistics system. The Sub-Committee recognized that it was vital for agricultural shippers to be prepared to manage their relationships with the railways. Amendments to the *Canada Transportation Act* resulting from the *Fair Rail Freight Service Act* were intended to remedy the imbalance of negotiating leverage between railways and shippers through the creation of a statutory right for agricultural shippers to establish Service Level Agreements (SLAs) with the railways.

The work completed on the development of an SLA template under the CLWG's first mandate served as the foundation for the renewed Sub-Committee. A range of perspectives were represented on the Sub-Committee including the Canadian Special Crops Association, the Western Grain Elevators Association, the Canadian Soybean Export Association, the Canadian Forage and Grassland Association, and the Inland Terminal Association of Canada.

Overview of Service Level Agreement Template

Rail service is vital to the agriculture sector as over 90% of all export grain products move via railway, and logistics costs can make up to 25% or more of the total value of grain at point of export. The *Fair Rail Freight Service Act* (which received Royal Assent in June 2013) gives rail freight shippers the right to enter into service agreements with railway companies and to establish an arbitration process in the event of disputes. The Act also allows the Canadian Transportation Agency to impose administrative monetary penalties of up to $100,000 per day on railway companies that do not follow an arbitrator's decision with regard to a SLA.

The Sub-Committee reviewed and confirmed the following key elements of service that should be included in SLAs. These key elements correspond with the elements of service identified by the Rail Freight Service Review Panel in 2011.

- Services and Obligations of the Railways and of the other Party;
- Communication Protocols and Escalation;
- Key Performance Metrics;
- Performance Standards;
- Consequences of Non-Performance;
- Dispute Resolution; and
- Force Majeure Language.

Sub-Committee members agreed that further industry discussions are required to finalize the text for these key elements of the SLA template.

Development of Supporting Materials for Agricultural industry SLAs

Recognizing the imbalance in resources and access to information between railways and shippers, the Sub-Committee noted that further support is needed for the development of tools and resources to assist shippers in negotiating effective SLAs. In addition to the development of SLA templates, the Sub-committee highlighted a range of tools that could be developed to guide shippers in SLA negotiations. These included guidance documents (such as FAQs), technical support and on-line resources, which could be developed in consultation with the Canadian Transportation Agency. The Sub-Committee noted that the development of such tools would balance the capabilities of shippers and railways to enter into negotiations on SLAs to increase the likelihood that shippers would be successful in negotiating agreements that improved their services, as intended by the recommendations of the Rail Freight Service Review Panel and the Government of Canada in its response to the Panel's recommendations.

Issues related to SLAs for Intermodal traffic

With respect to intermodal traffic, the Sub-committee noted that further discussion was required to determine the best application of SLA provisions for the shipment of source loaded agricultural products.

Key Findings and Recommendation

Sub-Committee members noted that the lack of meaningful consequences for railways when they fail to provide adequate service is an ongoing concern. They highlighted the fact that the negative impact of unreliable service is borne almost exclusively by farmers and shippers. Sub-Committee members agreed that it is in the industry's best interest to establish common templates and common approaches to agreements so that the result is a 'raising of the bar' for service for all classes of shippers. Common agreements and guidance for all shippers on how to prepare for discussions (e.g., what kind of information is needed, what types of commitments are necessary/desirable etc.) will contribute to the implementation and execution of meaningful supply chain agreements that result in greater predictability and reliability across the supply chain. Predictable and reliable interactions with supply chain partners should result in less unplanned variability and thus lower costs associated with mitigating variability risk. Furthermore, predictable and reliable supply chain performance should also contribute to more predictable and reliable service in terms of customer order fulfillment.

Sub-Committee members encouraged agricultural stakeholders to consider investing in the creation of the tools and technical support services needed to assist shippers in negotiating effective service level agreements. They also highlighted the importance of sharing CLWG outcomes more broadly to support continuous supply chain improvement, through forums such as the Grains Industry Round Table. They also noted the importance of improved performance measurement as a method of determining a reasonable service standard for agriculture shippers.

The Sub-Committee on Building Capacity recommended that:

- The Government should provide continued support to the agricultural sector to develop common approaches to service level agreements ensuring that the industry is focused on the elements of service that will enhance the competitiveness of Canada's agricultural supply chain.

3. CONTINUOUS IMPROVEMENT THROUGH SUPPLY CHAIN INNOVATION

The mandate of the Continuous Improvement through Supply Chain Innovation (Innovation) Sub-Committee was to identify issues, challenges and opportunities facing the crop logistics system in Canada, and to collaborate to identify potential process improvements and best practices in logistics systems.

A range of perspectives were represented on the Sub-Committee including Legumex Walker, the Canadian Special Crops Association, the Western Grain Elevators Association, the Canadian Soybean Export Association, the Canadian Forage and Grassland Association, the Inland Terminal Association of Canada, the Canadian Canola Growers Association, and the Prairie Oat Growers Association.

The Sub-Committee surveyed industry stakeholders to seek input on the areas of supply chain performance that are of greatest importance to their organizations. The survey was supplemented by one-on-one discussions to prioritize the challenges identified, and to seek further input on how the challenges could be addressed, for example through the provision of better performance information.

Grain Supply Chain Challenges

A supply chain is a network of businesses that jointly deliver goods and services to customers. As supply chain management crosses organizational boundaries, supply chain partners must share their operational and planning information in a timely and accurate manner. Planning joint operations in a supply chain always involves looking to the future and the future is always uncertain. In the grain industry, markets are dynamic and railway operations are subject to the effects of weather and the need for railways to accommodate the needs of many different commodity groups beyond the grain industry.

Grain shipments are characterized by significant seasonality as grain companies attempt to take advantage of the generally higher seasonal pricing for sales made in the post-harvest months of October to December. As global markets have evolved over recent decades, there has been an increase in ocean shipments moving to markets via the west coast. This has put pressure upon the operation of railways, port terminal elevators and container handling facilities in the Pacific region, with a corresponding focus on the need to improve the fluidity of traffic moving via the west coast. As seen in the past, these trends change constantly, and in order to maintain the focus on continuous improvement it is necessary to know the trends.

Having an accurate view of grain demand and of available capacity in the major grain shipping corridors is important to railways and grain shippers alike. Railways use this information to plan the management of

their crew and rolling stock resources and grain companies rely on forecasts of railway capacity to plan and execute their marketing campaigns and inland processing and logistics activities.

In addition to planning information, grain supply chain partners need week-to-week and day-to-day information on the operation of the supply chain to plan their joint activities. This information includes inland and port terminal elevator and processor activities, rail car demand, intermodal equipment demand, information about railway car supply, and rail shipment performance information.

The Innovation Sub-Committee identified supply chain challenges in the following five key areas: predictability; communications; port congestion; capacity; and equipment quality. From a stakeholder perspective, the greatest improvements are required in container vessel and terminal operations (including transloader operations), and bulk rail shipments. In both of these areas, shippers identified a need for improvements in the timeliness and accuracy of operational communication. Table 1 below provides a high level summary of the areas of concern identified by sub-committee members.

Table 1: Summary of Stakeholder Concerns

Transloaded and Source Loaded Containerized Grain	Bulk Grain
Predictability • Need to track rail performance by day compared to the grain service plan • Need to track volatility of changes to grain service plan	Predictability • Need to track rail performance by day compared to the grain service plan • Need to track volatility of changes to grain service plan • Need to track winter performance variability • Need to track origin dwell time, overall transit time
Communication • Need better communication of changes to weekly grain service plans • Need better CP reporting accuracy vis-à-vis demurrage	Communication • Need better communication of changes to weekly grain service plans • Need better terminal communication of loading capacity to railways
Port congestion • Need better understanding of reasons for Vancouver congestion • Need to track access to reservations at Vancouver container terminals • Need better understanding of the competitiveness of Vancouver vs. Montreal	Port congestion • Need better bulk terminal communication of loading capacity to railways

Capacity • Need better access to reservations for CN in Greater Toronto Area • Need to track % containers made available vs. bookings	Capacity • Need to track hopper car and boxcar supply shortfalls
Equipment Quality • Need more food grade containers • Need to track % containers made available vs. bookings	Equipment quality • Need to improve rejection rates of 3-5%

Parameters for Future Supply Chain Innovation Projects

Throughout its consultation process, the Sub-Committee discussed the need for any future projects to improve supply chain performance to be seen as steps within a process of continuous improvement. The group had extensive discussions on the potential criteria for future pilot projects and they agreed that any initiatives should meet the following criteria:

- Address priority concerns;
- Have low practical and commercial barriers to success;
- Provide a "win" for multiple types of stakeholders (including railways);
- Demonstrate measurable improvements.

Sub-Committee members agreed that clear benchmarks and performance measures should also be established as part of any future pilot projects to improve supply chain performance. In this way, it will be possible to assess the impact of initiatives on overall supply chain performance. In terms of areas for future pilot or demonstration projects Sub-Committee members identified the following areas:

- Railway performance versus weekly grain service plans;
- Port transload congestion issues;
- Railway car distribution versus port terminal capacity/prioritization;
- Rail car and container quality issues.

Key Findings and Recommendation

Sub-Committee members noted that the establishment of effective Service Level Agreements (SLAs) between shippers and railways may be a means for shippers to seek improvements in service, noting that communication standards, meaningful commitments and accountability are important to all members of the supply chain. Incorporating these elements in SLAs may go a long way to improving the reliability and efficiency of the Grain Handling Transportation System.

Sub-Committee members commented on the fact that stakeholders that are seeking change within the supply chain must come together prepared to commit human and financial resources to achieving measurable improvements. Experience in a range of discussion forums, task forces and working groups suggests that any effort to improve a commercial practice requires complete buy in to the entire process, from provision of and evaluation of data and intelligence, through to the consideration of options and testing of process improvements. Without this level of commitment, it will be very difficult to influence change. The Sub-Committee identified the need for an ongoing forum to promote discussion and build buy-in across the supply chain. It was also noted that the opportunity for stakeholders to report back to their constituencies should be improved, to address the need for timely feedback on potential emerging challenges.

The Sub-Committee on Innovation recommended that:

- The Government should provide an ongoing forum for grain sector stakeholders to help determine what concrete actions would lead to measurable improvements in the short, medium and long term.

4. CONCLUSION

The CLWG Sub-Committee reports confirm the key grain supply chain challenges related to bulk, container vessel and terminal operations. They also point to the need for improved performance measures across the supply chain. CLWG members agree that an efficient, well-functioning crop logistics system is necessary to ensure the competitiveness of the sector. With this in mind, CLWG discussions focused on identifying practical solutions that could be implemented to improve supply chain performance over the short, medium and long term.

Canada is only one supplier in a dynamic global market for commodities. Canadians must be competitive in price, quality and service reliability. Maintaining an efficient, well-functioning grain supply chain is critical to supporting Canada's economic interests. CLWG members noted that the current challenges with grain transportation serve to highlight this fact. They noted the considerable financial risk faced by producers and shippers given the difficulty in moving this year's record crop. Sub-Committee members also signalled that the financial pressures resulting from current weaknesses in the grain supply chain could trigger the need for other federal and provincial assistance.

CLWG members concluded that improved communication and planning between shippers and railways is required to support more predictable, reliable and ultimately more efficient supply chain operations. They also commented on the need for more balanced accountability to ensure that risks and opportunities associated with supply chain performance are borne equally by all participants.

Going forward, CLWG members remarked on the value of maintaining an ongoing forum to discuss crop logistics issues. They pointed to AAFC's Grains Round Table and the Transport Canada Commodity Supply Chain Table as possible venues to support ongoing discussions on crop logistics issues. The upcoming review of the *Canada Transportation Act* was also identified as a significant opportunity to drive further improvements in the grain supply chain.

In conclusion, as the CLWG has identified, there are opportunities to improve the effectiveness and reliability of Canada's grain supply chain for all crops. The implementation of improved processes and best practices will require the ongoing collaboration of all participants within the supply chain.

Based on the work of the three Sub-Committees, the CLWG recommends that:

- The Government of Canada should examine ways to enhance existing measures and to address gaps in the current performance measurement framework for the Grain Handling and Transportation System.
- The Government should provide continued support to the agricultural sector to develop common approaches to service level agreements ensuring that the industry is focused on the elements of service that will enhance the competitiveness of Canada's agricultural supply chain.
- The Government should provide an ongoing forum for grain sector stakeholders to help determine what concrete actions would lead to measurable improvements in the short, medium and long term.

ANNEX A: CROP LOGISTICS WORKING GROUP MEMBERS

(Updated as of January 2014)

CLWG Members
Ms. Suzanne Vinet (Federal Co-Chair) Deputy Minister, Agriculture and Agri-Food Canada, Ottawa, ON
Mr. Gordon Bacon (Industry Co-Chair) Chief Executive Officer Pulse Canada
Mr. Greg Meredith Assistant Deputy Minister Agriculture and Agri-Food Canada, Ottawa, ON
Mr. Wade Sobkowich Executive Director Western Grain Elevator Association
Mr. Kevin Hursh Inland Terminal Association of Canada
Mr. Conrad Johnson Chairman of Board
Mr. Greg Cherewyk Chief Operating Officer Pulse Canada
Mr. Dave Buttenham Secretary-Manager Canadian Soybean Exporters' Association
Mr. Ron Pidskalny (replacement for Mr. Wayne Digby) Executive Director Canadian Forage & Grassland Association

Mr. Richard Phillips Executive Director Grain Growers of Canada
Mr. Rick White General Manager Canadian Canola Growers Association
Ms. Lisa Skierka General Manager Barley Council of Canada
Mr. Matt Sawyer Chair Alberta Barley Commission
Mr. Rick Istead Cereals Canada (Forrmerly for Alberta Wheat Commission)
Mr. David Marit President Saskatchewan Association of Rural Municipalities
Mr. Doug Chorney President Keystone Agricultural Producers

Sub-Committee on Performance Measurement
Mr. Murdoch MacKay (Industry Chair) Commissioner, Canadian Grain Commission
Mr. Keith Bruch Paterson Global Foods
Mr. Doug Chorney Keystone Agricultural Producers
Mr. Rick Istead Cereals Canada

Mr. Dave Marit Saskatchewan Association of Rural Municipalities
Mr. Rob Davies Weyburn Inland Terminal
Mr. Lawrence Yakielashek Toepfer

Sub-Committee on Building Industry Capacity and Adaptability
Ms. Joan Hardy (Chair) Richardson International
Mr. Perry Pellerin GNP Transportation
Mr. Edward Shaw Chairman, Canadian Forage & Grassland Association
Mr. Brad Borland Hensell Global Logistics
Mr. Keith Bruch Paterson Grain
Mr. Lawrence Yakielashek Toepfer

Sub-Committee on Continuous Improvement Through Supply Chain Innovation
Ms. Jen Ritthaler (Chair) Legumex Walker Canada Inc.
Ms. Linda Dawson Western Grain Elevators Association
Mr. David Nobbs Canadian Special Crops Association

Mr. Tim Bergen Canadian Special Crops Association
Mr. Greg Simpson Canadian Special Crops Association
Mr. Jason Gerard Canadian Soybean Exporters Association
Mr. Marc Lavoie Canadian Forage and Grassland Association
Mr. Steve Pratte Canadian Canola Growers Association
Ms. Robynne Anderson Prairie Oat Growers Association
Mr. Perry Pellerin Inland Terminals Association of Canada

ANNEX B: PROPOSED PERFORMANCE MEASURES TABLE

A = Annual
Q = Quarterly
M = Monthly

New Measure
Measure recommended to end
Measure under review for methodology change

	Frequency	Definition	Use	Data Sources
1. Production and Supply				
1A Western Canada Production				
1A-1 Western Canadian Crop Production for Major Grains (thousands of tonnes)	A	Tonnage, by grain and province	Defines volumes in a disaggregated manner	Stats Canada
1A-2 Western Canadian Carry Forward Stock	A	Tonnage, by grain and province	Defines volumes in a disaggregated manner	Stats Canada and CGC
1A-3 Western Canadian Crop Production for Special Crops (thousands of tonnes)	A	Tonnage, by commodity and province	Defines volumes in a disaggregated manner	Stats Canada
2. Traffic and Movement				
2A Country Elevator				
2A-1 Western Canada - Total Tonnage Throughput (Shipments from Primary Elevators) for Major Grains (thousands of tonnes)	A, Q, M	Tonnage, by grain and province	Defines throughput in primary elevator system	CGC Grain Statistics Weekly
2B Rail				
2B-1 Western Canada Canadian Railway Grain Volumes (thousands of tonnes) - Summarized by Destination Port, Origin Province and Car Type	A, Q, M	Volume handled by rail (all volumes all modes)	Defines the volumes moved by rail to port in all modes	CN, CP, HBR
2B-2 Western Canadian Railway Grain Volumes (thousands of tonnes) - Detailed Breakdown of Special Crop Movements by Destination Port and Car Type	A, Q, M	Volume of special crops only handled by rail (all volumes all modes)	- various disaggregation for analytical purposes	CN, CP, HBR
2B-3 Western Canadian Railway Grain Volumes Moving in Covered Hopper Cars (thousands of tonnes) - Summarized by Destination Port and Origin Province	A, Q	Volume handled by rail (all volumes in hopper cars only) by Port and Origin Prov	- various disaggregation for analytical purposes	CN, CP, HBR

2B-4	Western Canadian Railway Grain Volumes Moving in Covered Hopper Cars (thousands of tonnes) - Summarized by Destination Port and Primary Commodities	A, Q	Volumes in hoppers by Destination Port and Primary Commodities	- various disaggregation for analytical purposes	CN, CP, HBR
2B-5	Western Canadian Railway Grain Volumes Moving in Covered Hopper Cars (thousands of tonnes) - Detailed Breakdown of Primary Commodities by Destination Port and Origin Province	A, Q	Volumes in Hoppers by Destination Port and Origin Province	- various disaggregation for analytical purposes	CN, CP, HBR
B-6	Western Canadian Railway Grain Volumes Moving in Covered Hopper Cars (thousands of tonnes) - Summarized by Railway Line Classification	A, Q	Volumes in Hoppers by Railway Line Classification	- various disaggregation for analytical purposes	CN, CP, HBR
2B-7	Western Canadian Railway Grain Volumes Moving in Covered Hopper Cars (thousands of tonnes) - Summarized by Railway Class	A, Q	Volumes Hoppers by Railway Class	- various disaggregation for analytical purposes	CN, CP, HBR
2B-8	Western Canada Canadian Railway Grain Volumes (thousands of tonnes) - To US Destinations	A, Q, M	Volume handled by rail (all volumes all modes)	Defines the volumes moved by rail to port in all modes	CN, CP
2B-9	Western Canada Canadian Railway Grain Volumes (thousands of tonnes) - From US Origins	A, Q, M	Volume handled by rail (all volumes all modes)	Defines the volumes moved by rail to port in all modes	CN, CP
2B-10	Western Canada Canadian Railway Grain Volumes (thousands of tonnes) - To Eastern Canadian Destinations	A, Q, M	Volume handled by rail (all volumes all modes)	Defines the volumes moved by rail to port in all modes	CN, CP
2B-11	Western Canada Canadian Grain Volumes (thousands of tonnes) by Container - To Canadian Ports	A, Q, M	Volume handled by rail (all volumes in Containers)	Defines the volumes moved by rail to port in all modes	CN, CP
2C	**Terminal Elevators**				
2C-1	Annual Port Volume Throughput (Shipments from Terminal Elevators) for Major Grains (thousands of tonnes)	A, Q, M	Tonnage, by grain, by port	Defining the volume throughput at port	CGC, GMP Shipment Data Warehouse
2C-2	Traffic Volume by Port (number of cars)	A, Q	Railcar unloads, by port, by railway	Understanding market share and seasonal workload by port	CGC, GMP Unloads Data Warehouse

3. Infrastructure					
3A	**Country Elevator Infrastructure**				
3A-1	Total Canadian Primary and Process Grain Elevators - Summarized by Province	A, Q, M	Inventory count and capacity of country facilities by province and type	Track the changes in the infrastructure landscape	CGC reports
3A-2	Total Canadian Primary and Process Grain Elevators - Summarized by Railway Class	A, Q	Inventory count and capacity of country facilities by Railway class	Track the changes in the infrastructure landscape	CGC reports
3A-3	Total Canadian Primary and Process Grain Elevators - Summarized by Principal Grain Company	A, Q	Inventory count and capacity of country facilities by Grain Company	Track the changes in the infrastructure landscape	CGC reports
3A-4	Western Canadian Primary and Process Grain Elevators Capable of Multiple-Car Block Incentive Loading - Summarized by Province	A, Q	Inventory count and capacity of country facilities by class and capability of facility by Province	Track the changes in the infrastructure landscape	CGC reports, Grain companies, CN, CP
3A-5	Western Canadian Primary and Process Grain Elevators Capable of Multiple-Car Block Incentive Loading - Summarized by Railway Class	A, Q	Inventory count and capacity of country facilities by class and capability of facility by Railway Class	Track the changes in the infrastructure landscape	CGC reports, Grain companies, CN, CP
3A-6	Western Canadian Primary and Process Grain Elevators Capable of Multiple-Car Block Incentive Loading - Summarized by Railway Line Classification	A, Q	Inventory count and capacity of country facilities by class and capability of facility by line capability	Track the changes in the infrastructure landscape	CGC reports, Grain companies, CN, CP
3A-7	Total Canadian Primary and Process Grain Elevators - Summary of Closures	A, Q	Inventory count and capacity of country facilities opened and closed	Track the changes in the infrastructure landscape	CGC reports, Grain companies, CN, CP
3A-8	Total Canadian Primary and Process Grain Elevators - Summary of Openings	A, Q	Inventory count and capacity of country facilities opened and closed	Track the changes in the infrastructure landscape	CGC reports, Grain companies, CN, CP
3A-9	Number of Locations Accounting for 80% of Producer Deliveries	A	The number of stations that accept 80% of the deliveries	Depicts the utilization of the country elevator system	CGC Grain Deliveries at Prairie Points
3B	**Railway Infrastructure**				
3B-1	Western Canadian Railway Infrastructure (Route-Miles) - Summarized by Province and Railway Class	A, Q	Total number of track miles in Western Canada by province and railway class	Track the changes in the inventory landscape	CN, CP, BCR, OMNITrax, Transport Canada, CTA

3B-2	Fleet Size for Mainline Carriers	A, Q, M	Total number of cars used in the movement of grain, by class of service (Bad Order etc)	Track the changes in the inventory landscape	CN, CP
3B-3	Western Canadian Primary and Process Grain Elevators - Summarized by Railway Line Classification	A, Q	Inventory count and capacity of country facilities by Railway line classification	Track the changes in the inventory landscape	CGC reports, Grain companies, CN, CP
3C	**Terminal Elevator Infrastructure**				
3C-1	Total Canadian Terminal Elevators - Summarized by Port and Facility Class	A, Q	Inventory count and capacity of country facilities by province and type	Track the changes in the inventory landscape	track the changes in the inventory landscape
4. Commercial Relations					
4A	**Trucking**				
4A-1	Western Canadian Composite Freight Rates and length of haul - Short-Haul Trucking	A, Q, M	Truck rate per tonne in increasing mileage levels	To determine the changes in the truck rates over time	Based on Bi-Annual survey
4B	**Country Elevator**				
4B-1	Average Handling Charges Based on Posted Rates at Country Delivery Points for Major Grains	A, M	Posted elevation tariffs for elevating and loading out; removal of dockage; and storage	To document the changes in primary grain elevator charges over time	CGC Licensed Primary Elevator Tariffs
4C	**Rail**				
4C-1	Western Canadian Composite Freight Rates - Rail (dollars per tonne)	A, Q, M	A composite single car rail rate (per tonne) by origin province/ dest port by quarter	To determine the average rate in each corridor and to track changes in the rates over time	CN, CP
4C-2	Western Canadian Multiple-Car Shipment Incentives - Rail (dollars per tonne)	A, Q, M	A composite incentive rate (per tonne) by block size, by port corridor	To determine the average rate in each corridor and to track changes in the rates over time	CN, CP
4C-3	Effective Freight Rates under the CTA Revenue Cap - Summarized by Carrier	A	Summary of CTA Revenue Cap results by year	To track the changes in the results of the revenue cap calculations and metrics over time	CTA

4D	**Terminal Elevator**				
4D-1	Average Handling Charges by Port Based on Posted Rates for each Terminal for Major Grains	A, M	Posted elevation tariffs for elevating and loading out; and storage	To document the changes in terminal elevator charges over time	CGC Licensed Terminal Elevator Tariffs
5. System Efficiency and Performance					
5A	**Country Elevator**				
5A-1	Annual Elevator Capacity Turnover Ratio	A, Q	Ratio of volume shipped from primary elevators to total licensed capacity	Track the changes in capacity utilization over time	CGC (Grain Stats Weekly and Grain Elevators in Canada)
5A-2	Average Weekly Primary Elevator Stock Levels (thousands of tonnes)	A, Q, M	Average of Weekly stock levels in the country network	Track the changes in capacity utilization over time	CGC (Grain Stats Weekly)
5A-3	Average Days in Store	A, Q, M	Total shipments divided by weekly stock level) divided by number of days in quarter and crop year to date	Track the changes in capacity utilization over time	CGC (Grain Stats Weekly)
5A-4	Average Weekly Stock-to-Shipment Ratios for Major Grains	A, Q	The Weekly primary elevator stock levels by shipments, aggregated to determine an annual (or quarterly) average	Track the changes in capacity utilization over time	CGC (Weeklies and Grain Elevators)
5B	**Rail Operations**				
5B-1	Western Canadian Railway Car Cycles (days) - Summarized by Destination Corridor	A, Q, M	Detailed metrics on the time it takes for railcars to move from origin loading to the return of the car to the country elevator for its next loading - detailed by segment/ component with mean and STD by port corridor	Track the changes in railway performance (time of movement and consistency)	CN, CP, GMP Rail inventory
5B-2	Western Canadian Railway Car Cycles - Non-Special Crops	A, Q, M			

5B-3	Western Canadian Railway Car Cycles - Special Crops	A, Q, M			
5B-4	Western Canadian Railway Loaded Transit Times - Summarized by Destination Corridor and Origin District	A, Q, M	Detailed metrics on the time it takes for railcars to move from origin loading to the return of the car to the country elevator for its next loading - detailed by segment/ component with mean and STD by origin district and port corridor (US and Eastern Canada included)	Track the changes in railway performance (transit time and consistency of transit)	CN, CP, GMP Rail inventory
5B-5	Western Canadian Grain Volumes Moving in Covered Hopper Cars (thousands of tonnes) - Summarized by Car Block Size	A, Q, M	The utilization of MCB incentive rates as shown by the volume in each block size	Tracks the changes in the utilization of MCB rates	CN, CP, GMP Rail inventory
5B-6	Western Canadian Grain Volumes Moving in Covered Hopper Cars (thousands of tonnes) - Estimate of Incentive Discount Value	A, Q, M	Calculates an estimate of the actual incentive rates paid	Tracks the changes in the utilization of MCB rates	CN, CP, GMP Rail inventory
5B-7	Western Canadian Railway Traffic Density (tonnes per route-mile) - Summarized by Railway Class and Line Classification	A, Q, M	Calculates an estimate of the track density by railway type and rail line category	Tracks the changes in rail line utilization over time	CN, CP, GMP Rail inventory
5B-8	Railway Car Supply - Cars ordered by shippers (by province, by corridor)	A, Q, M	Order fulfillment - Number of cars ordered by shippers	Track the changes in railway performance (time of movement and consistency)	CN, CP
5B-9	Railway Car Supply - Cars committed by railways (by province, by corridor)	A, Q, M	Order fulfillment - Number of cars ordered by shippers		CN, CP
5B-10	Railway Car Supply - Cars placed by railways (by province, by corridor)	A, Q, M	Order fulfillment - Number of cars supplied and placed by railways		CN, CP
5B-11	Railway Car Supply - Cars order cancelled by shippers (less that 14 days out)	A, Q, M	Order fulfillment - Number of cars ordered by shippers	Track the changes in railway performance (transit time and consistency of transit)	CN, CP
5B-12	Railway Car Supply - Metrics of four measures above (by province, by corridor)	A, Q, M	Cars committed vs. cars ordered (shortfall) ; cars supplied vs. cars committed	Tracks the changes in the utilization of MCB rates	As calculated
5B-13	Railway Performance - Avg Weekly loads on Wheels by Corridor (include High, Low and Std Dev	A, Q, M	Cars committed by railway to each corridor	Identifies the variability in traffic movement within corridors	CN, CP

5C	**Terminal Elevator**				
5C-1	Average Terminal Elevator Capacity Turnover Ratio	A, Q	Ratio of volume shipped from port terminals to licensed capacity	Track the changes in capacity utilization over time	CGC (Grain Elevators in Canada); GMP Shipment Data Warehouse
5C-2	Weekly Elevator Stock Level (000 tonnes) – Destination Port / Grain	A, Q, M	Average of Weekly stock levels in the port terminal network	Track the changes in capacity utilization over time	CGC (Grain Stats Weekly)
5C-3	Days-in-Store: Operating Season – Destination Port / Grain	A, Q, M	Total shipments divided by average weekly stock level divided by number of days in the period (month, quarter and crop year to date)	Track the changes in capacity utilization and efficiency of operations over time	CGC (Grain Stats Weekly); GMP Shipment Data Warehouse
5C-4	Average Weekly Stock-to-Shipment Ratio – Destination Port / Grain	A, Q	Weekly ratio of terminal elevator stock levels to outbound shipments	Track the changes in efficiency of operations over time	CGC (Grain Stats Weekly); GMP Shipment Data Warehouse
5C-5	Weekly Stock-to-Shipment Ratio – Destination Port / Grain / Grade	-	Weekly ratio of terminal elevator stock levels to outbound shipments	Track the changes in capacity utilization over time	CGC (Grain Stats Weekly); GMP Shipment Data Warehouse
5C-6	Terminal Unload Performance - Weekly Unloads by Port by Railway	A, Q, M	Total unloads by railway at each port for each week in the month.	To compare to the historical patterns and the industry expectations for total unloads	CGC Unloads; GMP Data Warehouse
5C-7	Terminal Railcar Placement Performance - Constructive Placement time	A, Q, M	Measure the length of time cars are held in the terminal but not called into the Port Terminal (Destination dwell)	To track the amount of time cars are held out of service and not unloaded at port	CN, CP
5C-8	Terminal Railcar Unload Performance - Unloading time at Terminal	A, Q, M	Measure the length of time cars take to unload at the Port Terminals	To track the time from spot to release empty	CN, CP
5D	**Port Performance**				
5D-1	Average Vessel Time in Port (days) – Destination Port	A, Q, M	Days waiting, loading and total time in port	Measures efficiency of vessel performance at port	Thunder Bay Port Authority, Prince Rupert Port Authority, Chamber of Shipping of BC, Transport Canada Port Warden
5D-2	Vessel Time in Port (frequency) – Destination Port	A, Q, M	Frequency of days waiting, loading and total time in port	Measures efficiency of vessel performance at port	Thunder Bay Port Authority, Prince Rupert Port Authority, Chamber of Shipping of BC, Transport Canada Port Warden

5D-3	Distribution of Number of Berths per Vessel by Port	A, Q, M	Frequency of the number of berths by each vessel when calling at the ports of Vancouver and Thunder Bay	Measures efficiency of vessel performance at port	Thunder Bay Port Authority, Prince Rupert Port Authority, Chamber of Shipping of BC, Transport Canada Port Warden
5D-4	Annual Demurrage Costs and Dispatch Earnings ($ millions) – Gateway	A	Total of demurrage and dispatch costs by gateway	Annual accounting of demurrage costs and dispatch earnings providing an indication of port productivity	Exporters/Grain companies
5D-5	Average Weekly Stock-to-Vessel Requirement Ratios for Major Grains at Vancouver and Thunder Bay	A, Q	Ratio of vessel requirements to stock in terminal position at end of previous week for all major grains	Provides an indication of port productivity	CGC (Grain Stats Weekly); GMP Shipment DW; CPCA Vessel Line up
5D-6	Average Weekly Stock-to-Vessel Requirement Ratios for Major Grains and Grades by Port	A, Q	Ratio of vessel requirements to stock in terminal position at end of previous week for all grains - by grain AND Grade	Provides an indication of port productivity	CGC (Grain Stats Weekly); GMP Shipment DW; CPCA Vessel Line up
5D-7	Average Weekly Stock-to-Shipment Ratios for wheat, durum, barley and other grains by port	A, Q	Weekly ratio of terminal elevator stock levels to outbound shipments	Track the changes in efficiency of operations over time	CGC (Grain Stats Weekly); GMP Shipment Data Warehouse
5D-8	Annual Terminal Storage and Handling Revenue at Vancouver and Thunder Bay	A	Handling revenue from various terminal operations	Provides an indication of port productivity	Grain companies
5E	**System Performance**				
5E-1	Total time in Supply Chain	A, Q, M	Total of country, port terminal and railway transit times for each quarter and averaged annually	Shows the total time grain takes from farm to vessel departure at port. Provides a indicator of total system performance over time	measures above

6. Producer Impact					
6A	**Export Basis and Netback Calculation**				
6A-1	*Manitoba East*	A			
6A-1A	1CWRS Wheat	A	A calculation of the net revenue and costs for the movement of grain from the farm to the port terminal from the vantage point of the producer, broken down by cost component and showing the net revenue to the producer	Provides a view over time of the changes in producer costs relative to logistics	To Be Determined, Grain Companies, Canadian Grain Commission
6A-1B	1CWA Durum	A			To Be Determined, Grain Companies, Canadian Grain Commission
6A-1C	1Canada Canola	A			ICE Futures Canada, Grain Companies, Canadian Grain Commission
6A-1D	Canadian Large Yellow Peas – No. 2 or Better	A			Stat Publishing, Grain Companies, Canadian Grain Commission
6A-2	*Manitoba East*	A			
6A-2A	1CWRS Wheat	A	A calculation of the net revenue and costs for the movement of grain from the farm to the port terminal from the vantage point of the producer, broken down by cost component and showing the net revenue to the producer	Provides a view over time of the changes in producer costs relative to logistics	To Be Determined, Grain Companies, Canadian Grain Commission
6A-2B	1CWA Durum	A			To Be Determined, Grain Companies, Canadian Grain Commission
6A-2C	1Canada Canola	A			ICE Futures Canada, Grain Companies, Canadian Grain Commission
6A-2D	Canadian Large Yellow Peas – No. 2 or Better	A			Stat Publishing, Grain Companies, Canadian Grain Commission

6A-3	*Saskatchewan Northeast*	A			
6A-3A	1CWRS Wheat	A	A calculation of the net revenue and costs for the movement of grain from the farm to the port terminal from the vantage point of the producer, broken down by cost component and showing the net revenue to the producer	Provides a view over time of the changes in producer costs relative to logistics	To Be Determined, Grain Companies, Canadian Grain Commission
6A-3B	1CWA Durum	A			To Be Determined, Grain Companies, Canadian Grain Commission
6A-3C	1Canada Canola	A			ICE Futures Canada, Grain Companies, Canadian Grain Commission
6A-3D	Canadian Large Yellow Peas – No. 2 or Better	A			Stat Publishing, Grain Companies, Canadian Grain Commission
6A-4	*Saskatchewan Northwest*	A			
6A-4A	1CWRS Wheat	A	A calculation of the net revenue and costs for the movement of grain from the farm to the port terminal from the vantage point of the producer, broken down by cost component and showing the net revenue to the producer	Provides a view over time of the changes in producer costs relative to logistics	To Be Determined, Grain Companies, Canadian Grain Commission
6A-4B	1CWA Durum	A			To Be Determined, Grain Companies, Canadian Grain Commission
6A-4C	1Canada Canola	A			ICE Futures Canada, Grain Companies, Canadian Grain Commission
6A-4D	Canadian Large Yellow Peas – No. 2 or Better	A			Stat Publishing, Grain Companies, Canadian Grain Commission

6A-5	*Saskatchewan Southeast*	A			
6A-5A	1CWRS Wheat	A	A calculation of the net revenue and costs for the movement of grain from the farm to the port terminal from the vantage point of the producer, broken down by cost component and showing the net revenue to the producer	Provides a view over time of the changes in producer costs relative to logistics	To Be Determined, Grain Companies, Canadian Grain Commission
6A-5B	1CWA Durum	A			To Be Determined, Grain Companies, Canadian Grain Commission
6A-5C	1Canada Canola	A			ICE Futures Canada, Grain Companies, Canadian Grain Commission
6A-5D	Canadian Large Yellow Peas – No. 2 or Better	A			Stat Publishing, Grain Companies, Canadian Grain Commission
6A-6	*Saskatchewan Southeast*	A			
6A-6A	1CWRS Wheat	A	A calculation of the net revenue and costs for the movement of grain from the farm to the port terminal from the vantage point of the producer, broken down by cost component and showing the net revenue to the producer	Provides a view over time of the changes in producer costs relative to logistics	To Be Determined, Grain Companies, Canadian Grain Commission
6A-6B	1CWA Durum	A			To Be Determined, Grain Companies, Canadian Grain Commission
6A-6C	1Canada Canola	A			ICE Futures Canada, Grain Companies, Canadian Grain Commission
6A-6D	Canadian Large Yellow Peas – No. 2 or Better	A			Stat Publishing, Grain Companies, Canadian Grain Commission

6A-7	*Alberta North*	A			
6A-7A	1CWRS Wheat	A	A calculation of the net revenue and costs for the movement of grain from the farm to the port terminal from the vantage point of the producer, broken down by cost component and showing the net revenue to the producer	Provides a view over time of the changes in producer costs relative to logistics	To Be Determined, Grain Companies, Canadian Grain Commission
6A-7B	1CWA Durum	A			To Be Determined, Grain Companies, Canadian Grain Commission
6A-7C	1Canada Canola	A			ICE Futures Canada, Grain Companies, Canadian Grain Commission
6A-7D	Canadian Large Yellow Peas – No. 2 or Better	A			Stat Publishing, Grain Companies, Canadian Grain Commission
6A-8	*Alberta South*	A			
6A-8A	1CWRS Wheat	A	A calculation of the net revenue and costs for the movement of grain from the farm to the port terminal from the vantage point of the producer, broken down by cost component and showing the net revenue to the producer	Provides a view over time of the changes in producer costs relative to logistics	To Be Determined, Grain Companies, Canadian Grain Commission
6A-8B	1CWA Durum	A			To Be Determined, Grain Companies, Canadian Grain Commission
6A-8C	1Canada Canola	A			ICE Futures Canada, Grain Companies, Canadian Grain Commission
6A-8D	Canadian Large Yellow Peas – No. 2 or Better	A			Stat Publishing, Grain Companies, Canadian Grain Commission

6A-9 *Peace River*	A			
6A-9A 1CWRS Wheat	A	A calculation of the net revenue and costs for the movement of grain from the farm to the port terminal from the vantage point of the producer, broken down by cost component and showing the net revenue to the producer	Provides a view over time of the changes in producer costs relative to logistics	To Be Determined, Grain Companies, Canadian Grain Commission
6A-9B 1CWA Durum	A			To Be Determined, Grain Companies, Canadian Grain Commission
6A-9C 1Canada Canola	A			ICE Futures Canada, Grain Companies, Canadian Grain Commission
6A-9D Canadian Large Yellow Peas – No. 2 or Better	A			Stat Publishing, Grain Companies, Canadian Grain Commission
6A-10 *Western Canada*	A			
6A-10A 1CWRS Wheat	A	A calculation of the net revenue and costs for the movement of grain from the farm to the port terminal from the vantage point of the producer, broken down by cost component and showing the net revenue to the producer	Provides a view over time of the changes in producer costs relative to logistics	To Be Determined, Grain Companies, Canadian Grain Commission
6A-10B 1CWA Durum	A			To Be Determined, Grain Companies, Canadian Grain Commission
6A-10C 1Canada Canola	A			ICE Futures Canada, Grain Companies, Canadian Grain Commission
6A-10D Canadian Large Yellow Peas – No. 2 or Better	A			Stat Publishing, Grain Companies, Canadian Grain Commission

6B	Producer Cars				
6B-1	Producer Car Loading Sites – Summarized by Province and Railway Class	A, Q	Total number of producer loading sites by province and railway types	Tracks the changes in producer loading capacity (in terms of sites) over time	CN, CP, Shortline Railways
6B-2	Total Producer Car Shipments – Summarized by Province and Grain	A, Q	Total shipments (carloads) by province and grain	Tracks the utilization of the producer car option over time	CGC
6C	Weekly Street Price				
6C-1	Average Weekly Street Price for major grains by GMP District	A, Q, M	Average weekly basis as paid at the elevator	To see the changes over time of the average basis paid by grain companies to producers at the elevator driveway	Reporting of country prices and basis levels at selected elevators for wheat, durum canola and large yellow peas