

INFRASTRUCTURE OPPORTUNITIES THROUGH CO-PRODUCTION IN THE RAILWAYS

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ABSTRACT

During the past twenty five years the freight railways of North America have been rationalizing their rail networks by discontinuing redundant track and transferring secondary lines to create a new shortline railway sector. More recently with ongoing economic growth, and a significant increase in international trade, the capacity of the remaining main line routes is becoming congested. Forecasts of future demand indicate that the problem will only get worse.

In order to address this issue, railways have taken action on a number of fronts. Capital investment in rail infrastructure is increasing to create more capacity through double and triple tracking, siding extensions, and more advanced signaling. The rail operations themselves are also being adapted to create increases in capacity, through improvements in service design and the use of more productive equipment. One further development has been cooperation between railways to share infrastructure to optimize its utilization – a process referred to as co-production.

This paper will illustrate a number of co-production initiatives undertaken by Canadian Pacific (CP) during the past few years that have made a significant contribution to increasing the handling capacity of the railway. The paper will also identify some new policy approaches that can lead to an increase in rail infrastructure capacity, above and beyond the actions currently undertaken by the railways themselves.

KEYWORDS

Railways – co-production – infrastructure – capacity – gateways – expansion

INTRODUCTION

A very significant increase in demand for rail transport has arisen over the past several years from the economic revival of China – both a demand for the outbound movement of resource products, especially from western Canada, as well as a demand for the inbound movement of manufactured goods in containers through the west coast of North America. This increase in demand follows a long period in which the railways of North America

have rationalized their excess railway infrastructure following the deregulation of the industry in the 1980s and 90s¹.

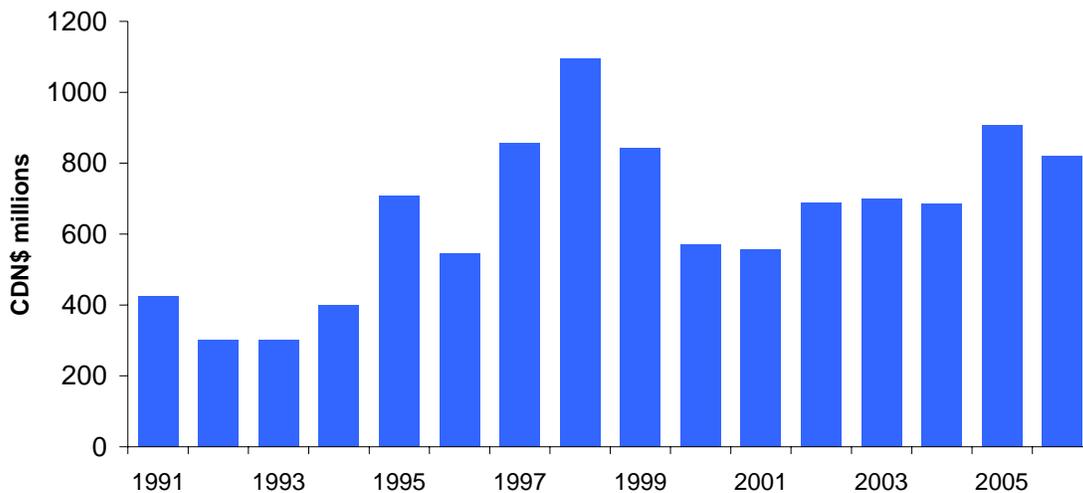
The combination of the above two developments implies that the freight railways of North America find themselves with the need to increase rail infrastructure capacity significantly in key corridors, to meet the future anticipated demands. This paper outlines the approaches by which CP is overcoming its rail infrastructure capacity constraints – through increased direct capital investment, improvements in service design and the use of more productive equipment, and, in particular, through co-production agreements with CN and other railways.

The paper will also identify some new policy approaches that can lead to an increase in rail infrastructure capacity, above and beyond the actions currently undertaken by the railways themselves.

DIRECT CAPITAL INVESTMENT IN RAIL INFRASTRUCTURE

The railway industry is the most capital-intensive industry in North America spending on average some 18% of revenues on capital projects annual. In this respect, CP is no exception and total capital expenditures over the past 15 years have averaged \$640 million per year.

CPR Capital Expenditures 1991 - 2006



Not all of the capital expenditure is on rail infrastructure, and much of the capital expenditure that is made on rail infrastructure is for maintenance and rehabilitation of the

¹ CN is perhaps unique in this regard having been in public ownership for so many decades without the pressure or opportunity to rationalize, and now finding itself in the enviable position of having less infrastructure capacity constraints than the other private Class 1 freight railways.

existing system. What is at issue now is the capital expenditure on the creation of increased system capacity. Following the expectation of regulatory stability implied by the federal government, with the tabling of Bill C-44 amendments to the Canada Transportation Act in March 2005, CP began a major expansion of its track network in its western corridor extending from the Port of Vancouver to the Prairie region. The expansion completed in the fall of 2005 involved 25 projects:

- 12 projects between the Port of Vancouver and Calgary, and 10 projects between Calgary and Moose Jaw, to extend sidings and lay sections of double track;
- 3 projects between Edmonton and Calgary to extend sidings and build a new siding.



The private investment made by CP was \$75 million in British Columbia, \$67 million in Alberta, and \$18 million in Saskatchewan and will result in a 12% increase in rail capacity in the western corridor, or more than 400 freight cars per day. This \$160 million expansion program was in addition to capital investment of approximately \$760 million in 2005 across the CP system as a whole.

A further potential multi-million capital expansion program is planned for western Canada for the period 2007-2009. The majority of this investment would be concentrated on the CP mainline between Vancouver and Moose Jaw, and involve siding extensions, new sidings and sections of double track. The impact of such investments would be to accommodate longer trains and to increase the number of trains per day on selected CP-network segments, and serve the shippers of grain, potash, coal and marine containers.

It should be noted that this rail investment in capacity expansion is increasingly being coordinated with port and terminal partners in Vancouver, as well as with highway authorities in the western Provinces, all with a view to optimizing the overall surface freight transportation capabilities and to reduce overall costs.

CAPACITY CREATION THROUGH CHANGES IN OPERATIONS

Over the past decade, CP has acquired a significant quantity of new more productive equipment that increases traffic handling capacity. More than 300 new AC traction locomotives have been purchased which have many advanced and productive features, but importantly have enabled CP to move longer and heavier trains across the mountains in western Canada. CP has also acquired some of the new generation of freight cars to be used in bulk service. These cars are lighter with higher volume contents, and with more cars per train this results in a significant increase in annual carrying capacity.

More recently CP has created capacity through changes in service design and the implementation of critical execution principles. New service designs seek to maintain a balance in traffic flows and to smooth the peak demands. Operations are scheduled wherever possible around the clock, with the intent to maintain the velocity of the assets and to minimize handling. Overall, CP is creating an internal culture of operational discipline, accountability and execution excellence, which reduces waste, avoids the creation of bottlenecks, and minimizes operational variability whenever possible.

As a result of these operational changes between 2003 and 2005 there has been a 9% increase in gross-ton-miles, a 3% increase in train-weight, and a 12% increase in car-miles per day – all of which serve to create increased handling capacity.

CO-PRODUCTION WITH OTHER RAILWAYS

Co-production is a form of commercial access in the North American rail industry that has existed for many years. It covers various types of commercially-negotiated agreements between railways to expand rail infrastructure capacity and improve system efficiency without impacting rail labour. Agreements include components such as:

- Directional running: When two railways have parallel routes each being used in both directions, an agreement can be negotiated to run the trains of both railways in one direction on one route and in the other direction on the other route.
- Haulage rights, overhead operating rights, or running rights in Canada; trackage rights in the US: The use of a rail line of one railway by another railway for a fee.
- Rationalization of duplicate, underutilized yard facilities and rationalization of duplicate, underutilized rail lines.
- Reciprocal access to two different bottleneck locations: Such arrangements are also imposed by interswitching regulations in Canada, up to a distance of 20 miles.
- Yard-to-Yard interchange: This involves interchanging traffic within yards rather than at intermediate and more inconvenient locations.

- Reciprocal access over line-haul segments on a corridor: This refers to joint use of segments of line over a given corridor when there is more than one route.

The overall impact of co-production agreements is increased rail infrastructure capacity and improved service to shippers. While the details vary from one agreement to another, each is meant to achieve a combination of purposes related to better service to shipper, including:

- Increased line capacity;
- Elimination of redundant infrastructure or facilities; and,
- Provision for alternative operations at times of accidents or weather incidents.

Commercially negotiated access agreements using co-production have existed in the Canadian and US railway industries for many years. Co-production agreements are also sometimes imposed by the Surface Transportation Board (STB) in the US as a condition of approval of a merger². Examples include trackage rights given to BNSF over the lines of UP as a condition for approval of the UP-SP merger, and the joint service areas accessed by CSX and NS as part of the break-up of Conrail. The following is a list of recent CP co-production Agreements in Canada and the US.

FRASER CANYON DIRECTIONAL RUNNING ZONE

In Canada, one of the most prominent co-production agreements was negotiated between CP and CN in 2000 that includes the highly successful directional running zone through the Fraser Canyon in British Columbia.

In effect this agreement has created a system of double track for a significant stretch of infrastructure in the interior of BC through which both CP and CN have single tracked rail. CP and CN negotiated an arrangement whereby a portion of CN's track would be used along the Fraser Canyon for running both CN and CP freight traffic headed west to the Port of Vancouver. In exchange, CP's track in the same area along the Fraser Canyon is used to transport freight headed east. Essentially, both railways have eliminated the need to accommodate two-way traffic on their single lines in this area of the Fraser Canyon without building new double-track infrastructure that would have added significant cost to the system. As a consequence, this section of combined infrastructure has been able to accommodate an increased number of trains at faster speeds.

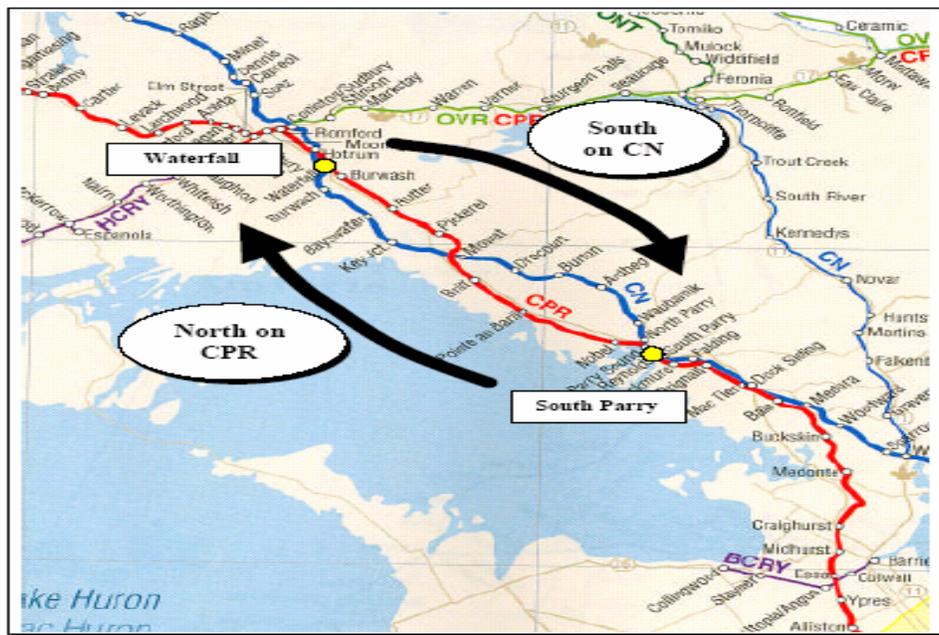
Since the agreement was struck, traffic has increased significantly in the interior of BC leading to new capacity constraints on CP's system. While new capacity is being created by CP elsewhere in its western corridor, this agreement with CN is an

² The term co-production is not used in the US but the concepts are identical.

excellent example of railway innovation to maximize capacity in advance of having to add the significant cost associated with building altogether new rail infrastructure.

GEORGIAN BAY DIRECTIONAL RUNNING ZONE

More recently, CP and CN have negotiated a directional running agreement over about 100 miles of parallel CP and CN track in Ontario between Waterfall, near Sudbury, and Parry Sound. The two railways operate eastbound trains over the CN line and westbound trains over CP's line, improving network fluidity in this corridor.

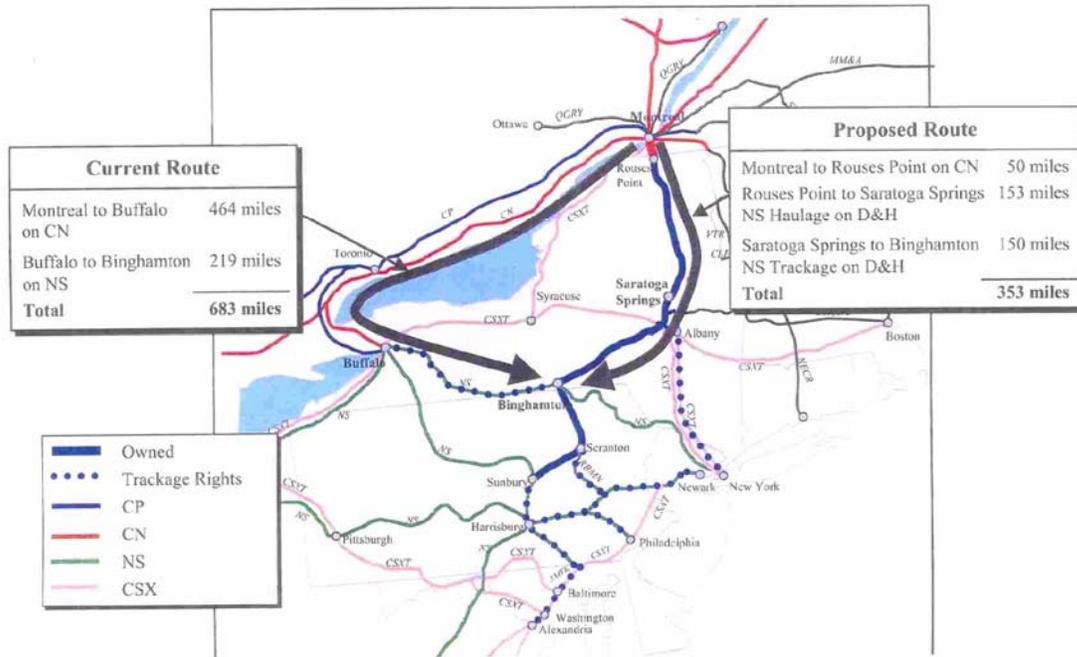


HAULAGE RIGHTS, TRackage RIGHTS AND YARD RATIONALIZATION IN THE US NORTH-EAST

In June 2004, CP and Norfolk Southern (NS) reached commercial agreements – components of which were subject to regulatory approval – that permit an exchange of haulage and trackage rights, specifically:

- CP is able to move NS freight traffic between Rouses Point and Saratoga Springs, NY, under a haulage arrangement. NS operates its own trains over CP's line between Saratoga Springs and Binghamton, NY, under a trackage rights arrangement. The arrangements generate higher revenue for CP and provide NS with a substantially shorter route to Quebec and the Maritime provinces;
- CP's freight traffic between Binghamton and Buffalo, NY, moves in NS trains under a haulage arrangement, replacing a trackage rights agreement under which CP operated its

own trains between the two cities. The arrangement reduces CP's operating costs and generates additional revenue for NS;



In addition, the agreements permit yard consolidation and rationalization:

- CP has ceased yard operations in Buffalo, shifting all freight marshalling to the NS yard there;
- Similarly, NS has shifted its yard operations in Binghamton to CP's East Binghamton yard.

In November 2004, the earlier agreement between CP and NS was extended to a third-party agreement including CN. Under this agreement, CN-NS traffic destined for the eastern US moves in CP trains on CP's line between Rouses Point, NY, and Saratoga Springs, under a freight haulage arrangement between CP and NS. This CN-NSR traffic then moves in NS trains over CP's line between Saratoga Springs and the NS connection near Harrisburg, Pennsylvania, under a trackage rights agreement between CP and NS.

The new agreement cuts 330 miles off the earlier routing used by CN and NS, which saw freight traffic handled more circuitously through the Buffalo, NY gateway. The three-party arrangement gives CN and NS a seamless, direct north-south routing over CP's lines south of Montreal that shortens transit time by as much as two days for

some 20,000 annual shipments. It also increases freight traffic density and revenues on CP's wholly owned subsidiary, the Delaware and Hudson Railway.

TRACKAGE RIGHTS BETWEEN DETROIT AND CHICAGO

In an Agreement between CP and NS implemented on August 10, 2005, CP operates over a new NS route using existing rail lines between Detroit and Chicago under a trackage rights agreement. It is the shortest rail route between the two cities and provides CPR with a faster, lower-cost lane.



The Agreement allows CP to consolidate all its volumes on one route, has resulted in a 33% increase in maximum allowable train lengths, has seen a 15-25% reduction in transit times, and has reduced marshalling requirements.

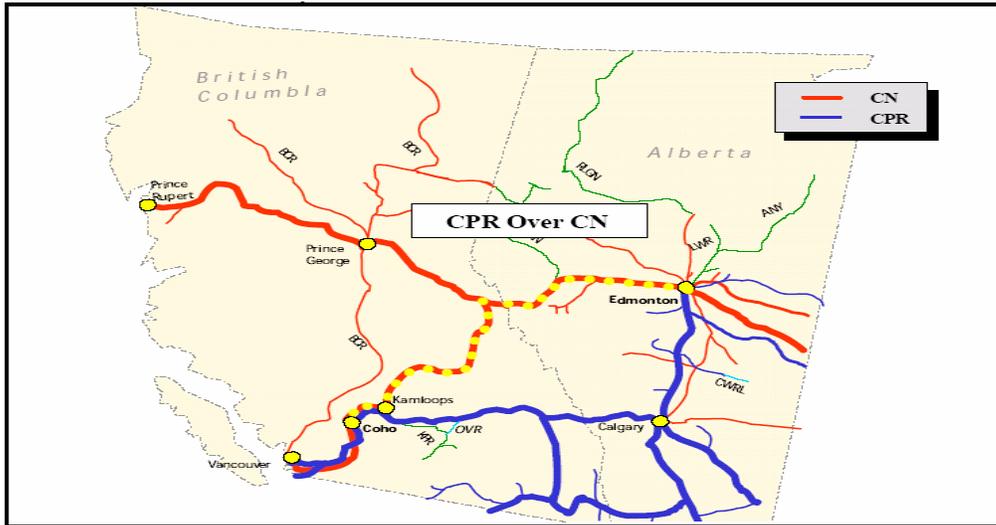
OPERATING AND HAULAGE RIGHTS BETWEEN COHO, BC AND EDMONTON, ALBERTA

On November 12, 2004 CP and CN negotiated a commercial access agreement in which CN agreed to grant CP overhead operating rights over their Ashcroft subdivision between Coho and Kamloops, and to provide haulage of CP trains over their line from Kamloops to Edmonton.

This slot-sharing arrangement allowed CP to move eight trains a week of bulk commodities over CN's line between Edmonton and Coho, a distance of about 560 miles. Under the arrangement, trains were equipped with CP locomotives and cars, and operated by CP crews or CN crews depending upon the line segment. At Coho, CP trains entered the already-established directional running trackage that sees all westbound trains of both

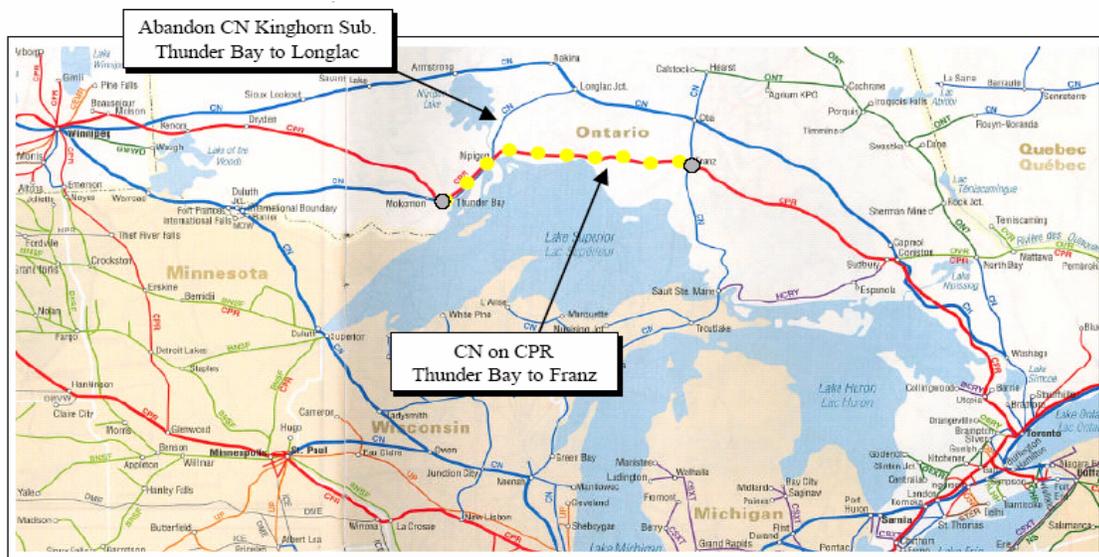
railways move through the Fraser Valley on CN's line and all eastbound trains move on CP's line.

This Agreement has now been discontinued with the capacity expansion of the CP mainline in 2005.



HAULAGE RIGHTS BETWEEN THUNDER BAY AND FRANZ, ONTARIO AND ASSOCIATED LINE RATIONALIZATION

Again on November 12, 2004 CP and CN negotiated a haulage arrangement, with CN freight moving over about 300 miles of CP track in Ontario between Thunder Bay and a junction with CN at Franz using CP's route north of Lake Superior. This arrangement has also permitted the rationalization of about 200 miles of CN secondary track in Ontario between Thunder Bay and Longlac, but CN maintains transportation service to affected shippers.



VANCOUVER GATEWAY

In October, 2004, CP and CN announced a series of co-production agreements to improve rail operations for Port of Vancouver freight traffic. The agreements jointly increase capacity on key sections of track in the Vancouver area to improve the fluidity of rail operations over existing infrastructure. They will improve service to shippers using Canada's largest, busiest and most diversified port. The co-production agreements provide:

- Improved access for CP to intermodal facilities at Fraser Surrey Docks using a shorter route over CN's main line;
- Reciprocal access to the North and South shores, with CP potash trains having direct access to Neptune Terminals and CN sulphur trains having direct access to Pacific Coast Terminals;



- The option for CP to operate longer, heavier trains to Vancouver's North Shore under existing access agreements;
- A reciprocal interchange at CN's Thornton Yard and CP's Coquitlam Yard; and
- Further interchange enhancements for North Shore freight traffic that include former BC Rail traffic.

The recent agreements at the Vancouver Gateway demonstrate the commitment by CP and CN to provide the level of service and efficiency that will help shippers take advantage of the significant growth in trade with Pacific Rim nations, strengthen

Canada's vital import-export economy, and bolster the competitiveness of this key British Columbia port. By working cooperatively to make rail service more efficient, both railways also improve network and equipment utilization and increase productivity on existing infrastructure.

IMPLICATIONS OF DIRECT INVESTMENT, OPERATIONAL CHANGES AND CO-PRODUCTION

Direct capital investment in CP rail infrastructure, and operational changes, enable CP to serve its existing shippers better and to handle “organic growth” in traffic volumes – “organic growth” represents the increase in volumes of existing CP shippers, and is the result of the success of such shippers in their markets and not simply a redistribution of market share between competing railways. As such there are no competition concerns related to direct investment or operational changes identified here.

Co-production agreements do not reduce the choice of shippers to alternative rail carriers, nor do they have any impact on the level of competition between the parties to the agreements. Nevertheless, they do represent collaboration among competitors, or what are sometimes referred to as alliances or “strategic alliances”, and as such they do need to conform to the Canadian Competition Act and/or the appropriate antitrust legislation in the US. An in depth analysis reported elsewhere³ has shown that there are no valid competition concerns with co-production agreements between railways – either in Canada or the US.

REQUIREMENTS FOR NEW POLICY APPROACHES

All of the above initiatives have been undertaken by CP and other North American railways to increase freight handling capacity. However, any discussion of these developments would be incomplete without the identification of new policy approaches that are needed from governments.

First and foremost there is a need for regulatory stability. Both in Canada and the US, there are continual pressures to re-regulate the railways from one source or another. When these pressures are perceived as potentially real threats to the economic regulatory regimes in either country, it sends a chill through the industry that among other things reduces the propensity to make capital expenditures – particularly in capacity expansion. Railway assets are long-lived and require an ability for the railways to earn a sufficient return on such assets – a return that is threatened by the potential for freight rate regulation in particular.

One new approach has been the development of a Commercial Dispute Resolution (CDR) mechanism to settle disputes between railways and shippers in Canada, as a means of developing a more effective and cooperative relationship between railways and shippers

³ “Overcoming Rail Infrastructure Capacity Constraints: Implications for Competition”, Proceedings of the 41st Annual Conference of the Canadian Transportation Research Forum, May, 2006.

over the long term. There has been a general shift in legislative circles towards alternative dispute resolution mechanisms such as mediation and arbitration as a means to avoid costly and lengthy legal cases. It is hoped that the new CDR mechanism, which combines mandatory mediation with an option for binding arbitration, but without shippers having to give up existing legislative remedies, will eventually reduce the continual pressures for re-regulation.

However, even with regulatory stability, private railway initiatives to increase freight handling capacity, such as outlined in this paper, are likely to be insufficient to meet the growing demand. In 2003 the American Association of State Highway and Transportation Officials (AASHTO) published a report⁴ – recently updated – that found that the rail industry was stable, productive and competitive, with enough business and profit to operate but not to replenish its infrastructure quickly or grow rapidly. In particular:

“The report estimated that the total cost to achieve the base case scenario, maintain current market share and handle its “fair share” of growth, was estimated at \$175 to \$195 billion over 20 years. It anticipated that the railroads should be able to provide the majority of the funding needed (up to \$142 billion dollars) from revenue and borrowing, but the remainder (up to \$53 billion, or \$2.65 billion annually) would have to come from other sources – including but not limited to loans, tax credits, sale of assets, and other forms of public-sector participation.

The report concluded that relatively small additional investments in the nation’s freight rail system could be leveraged to provide relatively large public benefits.”

Since the issuance of that report the US railroads have proposed that capacity expansion could be accelerated through the mechanism of an Infrastructure Tax Credit. This is under consideration by the US Senate as the Capacity Expansion Act – it would see any business receive a 25% infrastructure tax credit for capital investment in new freight rail infrastructure:

- New track, including double-tracking and new or extended sidings;
- New intermodal facilities; and
- New locomotives that increase fleet horsepower, and thereby carrying capacity.

Whether this proposal is passed into law remains to be seen.

Another approach that governments can take to address the issue of under investment by rail, is to recognize the public benefits that arise from private investment, through a public financial contribution. A financial contribution from government to rail, commensurate with the recognition of benefits such as reduced highway congestion, greater energy

⁴ AASHTO Rail Freight Bottom Line Report, 2003 and updated 2006.

efficiency, and lower expenditures on highways, can create private investment in rail that would not otherwise be made because the public benefits cannot be internalized by a private railway. Some such private-public partnerships do exist in the US – the Federal Railroad Administration administers the Railroad Rehabilitation and Investment Financing Program, while the Federal Highway Administration administers the Transportation Infrastructure Finance and Innovation Act Program which is available for some rail projects. However, no such general programs exist in Canada, except for a cost-sharing arrangement for road-rail grade separations.

Canada has most recently taken a different *ad hoc* approach to funding capacity expansion through its Asia-Pacific Gateway and Corridor Initiative. Its mission is to establish Canada's Asia-Pacific Gateway and Corridor as the best transportation network facilitating global supply chains between North America and Asia. Specifically, the Initiative seeks to:

- boost Canada's commerce with the Asia-Pacific region;
- increase the Gateway's share of North America bound container imports from Asia;
- improve the efficiency and reliability of the Gateway for Canadian and North American exports.

The Asia-Pacific Gateway and Corridor is a network of transportation infrastructure including B.C. Lower Mainland and Prince Rupert ports, their principal road and rail connections stretching across western Canada and south to the United States, key border crossings, and major Canadian airports. The network serves all of Canada, and is focused on trade with the Asia-Pacific region. The Initiative is an integrated package of investment and policy measures that will advance the capacity and efficiency of the Asia-Pacific Gateway and Corridor and Canada's ability to take advantage of it. It reflects the Government of Canada's commitment to work in partnership with provincial governments, private sector leaders and other stakeholders.

While this Initiative is most welcome, it is by no means exclusively devoted to rail infrastructure expansion – indeed most of the new rail investment will still need to be made by the private railways. One concern in this regard, is that the new public investment be made in such a way that it does not disturb the competitive balance between the private rail and private truck carriers. The issue of a level playing field between rail and truck has long been a concern for rail, and it will be important that new highway investment in the Asia-Pacific Gateway and Corridor not exacerbate that concern.

CONCLUSION

Overall, North American railways, and CP in particular, are beginning to address the need for rail capacity expansion to meet the forecasted increases in demand. This is being addressed through direct capital expenditure on infrastructure expansion, operational

improvements, as well as co-production agreements between railways which expand the capacity of existing rail infrastructure.

These developments require regulatory stability, but even with such stability, the pace of expansion by private railways alone may be insufficient. Governments also have a role to play in accelerating rail capacity expansion through policy and financial approaches. Such approaches can include infrastructure tax credits, direct financial contributions in recognition of the public benefits of specific rail expansion projects, or more general coordinated public investment to increase the capacity of gateways and corridors.