Improving Saskatchewan's Highways through Federal-Provincial Partnerships

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Paper prepared for presentation at the Economics of Road Safety Investments Session of the 2007 Annual Conference of the Transportation Association of Canada

Saskatoon, Saskatchewan

Abstract

The National Highway System (NHS) provides the foundation of our entire transportation network and supports economic activity on a national, regional and provincial basis by tying together major population centres, essential inter-modal facilities, and international border crossings. For many Canadian businesses, the NHS has become the principal transportation channel used to obtain imports and access export markets. The development and maintenance of the NHS's infrastructure is a crucial component of a competitive economy. The NHS in Saskatchewan supports a wide range of economic activities including agriculture and food processing, manufacturing, gas and oil, mining, tourism and many service industries.

Through the Strategic Highway Infrastructure Program (SHIP) and the Canada Strategic Infrastructure Fund (CSIF), the federal government and the Province of Saskatchewan are cost-sharing highway improvement infrastructure projects worth over $200 million on the NHS. Upon completion of these projects, Saskatchewan will have a four-lane divided Trans-Canada Highway through the province from the Manitoba border to the Alberta border and a four-lane divided Yellowhead Highway 16 from Saskatoon to the Alberta border. These infrastructure projects will improve the safety and mobility of major transportation corridors; thereby, facilitating continued growth in Saskatchewan as well as Canada.

This paper describes partnerships made between the federal government and the Province of Saskatchewan to commit to improving the NHS in Saskatchewan, the highway infrastructure projects currently underway in the province through the SHIP and CSIF Contribution Agreements, and the expected safety and operational benefits resulting from the completion of these projects.

Background

According to Census 2006, Saskatchewan is home to 968,157 people, making it Canada's sixth largest province in terms of population. With a total area of 651,036 square kilometres, Saskatchewan ranks as Canada's fifth largest province. Agriculture was the backbone of Saskatchewan's economy from the beginning and is still a prominent feature of a diversified economy, however other industries have emerged and continue to emerge. The natural resources sector is booming in Saskatchewan, with gas and oil industries active in southern and western regions. Coupled with the lumber industry in the north and a variety of mining operations throughout the province, natural resources are helping to drive Saskatchewan's economy at a rate higher than the Canadian average. (1)

As the heartland of the prairies, Saskatchewan requires significant infrastructure investment to ensure that the products grown or developed in province are able to access a range of markets, whether they are east or west, north or south. As an exporter of a variety of crops, natural resources and livestock, Saskatchewan is faced with the challenge of exporting a range of products in an efficient and cost-effective manner. International and interprovincial exports were valued at $20.7 billion in 2003, with Saskatchewan recognized as the world leader in the production and export of potash, durum, flax, peas, lentils, mustard, and canary seeds. International and interprovincial imports were valued at $21.8 billion in 2003 (1). Saskatchewan is a net exporter internationally, yet is a net importer with regard to interprovincial trade. Strong oil-prices, as well as continued exports of uranium, potash, wood and metal products helped propel Saskatchewan's Gross Domestic Product to 3.2%, compared to a Canadian average of 2.9% (2). Saskatchewan boasts one of Canada's lowest unemployment rates, hovering at 3.8% (March 2007), surpassed only by Alberta. (2)

The primary international destination for Saskatchewan's products, as with other Canadian provinces, is the United States, with 64% of international exports destined for south of the border. Indicative of the diversity of markets served by Saskatchewan's products, Saskatchewan has the lowest share of export trade with the United States of any of Canada's provinces. Other export destinations include Japan, China, Belgium, Mexico, Italy, Brazil, Algeria, India, and South Korea. These countries, along with the United States, account for 85% of Saskatchewan's exports (1). On top of its own substantial exports, Saskatchewan serves as the export point for resources from out of province, primarily Alberta. The North Portal border crossing was Canada's fifteenth busiest crossing for truck traffic (3).

Resources require a means of reaching export markets. The transportation mode is often by truck. However, the significant weight of trucks can prove beyond the capacity of some roads. Saskatchewan has invested heavily in a 9,400-km system of higher strength primary weight highways, allowing trucks to carry 20 to 25 percent more freight. Truck travel through the province has increased by 47 percent in the ten-year period between 1995 and 2005, with specific stretches of some highways seeing much greater increases. (4) There is a need for further investment to ensure that trucks will be able to transport a variety of products to a variety of destinations.

The National Highway System

The National Highway System (NHS) stretches for 38,020 km, accounts for 2.7% of Canada's highway network and is comprised of three categories of routes. Core routes account for the majority of the system (27,608 km) and are key interprovincial or international corridors. Feeder routes (4,490 km) link significant economic and population centres to the core routes. The final category of remote or northern routes (5,922 km) covers routes that are the primary means of access to northern and remote areas. Approximately 26% of all vehicle travel in Canada takes place on the NHS which carries the majority of intercity, interprovincial and international vehicle travel in Canada.(5)

While accounting for only 3% of Canada's population, Saskatchewan accounts for 21.9% of Canada's roads (including provincial highways and rural municipal roads), the largest percentage of any province or territory. The majority (87% or 198,700 km) of the roads are unpaved. Overall, Saskatchewan has 29,500 km of paved roads stretching through the province. (3)

Saskatchewan's two major interprovincial highways, the Trans-Canada Highway (Highway 1) and the Yellowhead Highway (Highway 16), have been identified as core routes and are part of the NHS. Saskatchewan has 2,450 km of designated core routes, a further 238 km of designated remote or northern routes, and is the only province with no designated feeder routes. Saskatchewan's provincial highway network (excluding rural municipal roads) is comprised of about 14,142 km of structural paved roads, 5,872 km of Thin Membrane Surfaced roads - mud & dust free, 5,591 km of gravel roads, 131 km winter roads, and 280 km of tourist facility roads for a total of 26,016 km.

The Western Provincial Transportation Ministers Council was formed in November 2002, with provincial transport ministers from all four western provinces participating. The Council was designed with the intention of creating a consistent regional approach to transportation policy, regulations and planning. The Council identifies 2,348 km in Saskatchewan as part of the Western Strategic Road Network (WSRN). The WSRN was created with an aim of helping prioritize investment in Western Canadian roads. Roads forming part of the WSRN would be higher priority for funding. Highways identified under the WSRN in Saskatchewan include Highway 1 from the Manitoba to Alberta border, Highway 16 from the Manitoba to the Alberta Border, Highway 6 from Regina to the U.S border, Highway 7 from Saskatoon to the Alberta border, Highway 39 from south of Regina to the U.S border, and Highway 11 & 2 from Regina to Prince Albert. Please refer to Figure 1. The highways identified are, for the most part, covered off as designated core routes under the NHS. The only differences being that the entirety of Highway 6 from Regina to the U.S border is considered part of the WSRN, whereas Highway 6 is only considered a core route until it reaches Highway 39. Highway 10, between Yorkton and east of Regina and Highway 2, north of Prince Albert are incorporated under the NHS but are not part of the WSRN. Provincial and federal authorities are substantially in agreement as to the importance of these routes, whether they form part of the NHS or are part of the provincially identified WSRN.

Figure 1 - Project Map of Saskatchewan

Federal Programs

In 1997, the province of Saskatchewan committed to complete twinning of Trans Canada Highway 1 in its entirety, as well as twinning Yellowhead Highway 16 from North Battleford to Lloydminster in a fifteen-year time span, with all projects being completed by 2012. Federal funding made available through both the Strategic Highway Infrastructure Program (SHIP) and the Canada Strategic Infrastructure Fund (CSIF) allowed the province to move these timelines ahead. The work is now expected to be complete a full five years earlier than originally envisioned (6).

Both the SHIP and the CSIF are designed to focus on highway improvements on the core routes of the NHS. The SHIP emerged out of funding allocated in Budget 2000 and provided funding of $600 million over five years for highway construction ($500 million) and national system integration initiatives ($100M) to provinces and territories. The highway construction component was apportioned with a minimum allocation of $4 million for each jurisdiction and the remainder of the funds divided per-capita. In order for a project to be considered eligible for federal funding under SHIP, a number of conditions needed to be met, specifically that the proposed projects:

- be on the NHS or, at the Minister's discretion, projects could be the construction or improvements made to links between segments of the NHS;
- represent major capital projects involving rehabilitation or the addition of new capacity;
- form part of major east-west or north-south highway trade routes
- be supported with a detailed justification;
- meet all federal and provincial/territorial environmental requirements;
- adhere, at a minimum, to the Transportation Association of Canada (TAC) engineering guidelines; and,
- adhere to the Strategic Framework Governing Public-Private Partnerships and Tolling Schemes under the SHIP.

The program was designed to be a cost-sharing program with participating provinces and territories, with a maximum federal contribution of 50% to eligible costs for a project. Saskatchewan's allocation from the highway construction aspect of SHIP was $18.5 million.

The CSIF, initially established in Budget 2001, provided $2.0 billion for infrastructure projects. An additional $2.0 billion was provided in Budget 2003. CSIF operates under a broader infrastructure umbrella than SHIP. Funding provided covered a variety of infrastructure investment categories, including highways, local transportation and transit projects, sewage treatment, water infrastructure, and investment in broadband technology.

The key outcomes of CSIF were safer and faster movement of goods and people; reduced production of greenhouse gases; increased effectiveness of urban development; the promotion of increased economic activity, including tourism; and, the use of innovative technologies and innovations to reduce greenhouse gases. Business cases aimed at highway improvements were required to provide evidence as to how the proposed project would lead to the achievement of these goals.

CSIF funds were allocated on a merit basis, as opposed to the previous per-capita model used under SHIP. Regional equity was taken into consideration to ensure that no one jurisdiction or region benefited overly under CSIF. Projects were required to meet a minimum cost threshold. The minimums established were based on the provincial or territorial populations. Provincial or territorial populations (Yukon, Nunavut, Northwest Territories, Prince Edward Island, Newfoundland and Labrador) under 750,000 were subject to a minimum of $10 million in eligible project costs. Provinces or territories with populations between 750,000 and 1,500,000 (Manitoba, Saskatchewan, Nova Scotia, New Brunswick) were subject to a minimum of $25 million in eligible costs. Provinces and territories with populations in excess of 1,500,000 (British Columbia, Alberta, Ontario, and Quebec) were subject to a minimum threshold of $75 million in eligible costs. The minimums served to ensure that projects undertaken under CSIF were of national or regional significance.

On top of the $55 million allocated to a number of community and water infrastructure projects in Saskatchewan, CSIF provided $65 million in federal funding for highway improvements.

Other federal programs providing funding highway infrastructure funding in Saskatchewan are the Prairie Grain Roads Program (PGRP) and the Border Infrastructure Fund (BIF). The recently completed PGRP, managed by the Department of Agriculture and Agri-food, provided Saskatchewan with $106.8 million over five years for improvements to secondary highways and municipal roads. Projects in Saskatchewan being funded under BIF include rehabilitation to approximately 56 km of Highway 39 including two overpasses and a segment through the City of Estevan as well as the installation of Intelligent Transportation Systems to ensure the efficient flow of goods to Saskatchewan's main border crossing at North Portal. In total, the project is expected to cost about $12 million with Canada contributing $5 million, Saskatchewan contributing $6 million and the City of Estevan contributing $1 million. Project completion is expected by 2008.

Description of Projects and Their Associated/Expected Safety and Operational Outcomes

Twinning a highway entails converting a two-lane undivided highway into a four-lane divided highway where opposing traffic lanes are separated by a depressed grass median, a raised median strip, or a barrier. Based on a study completed by Hamilton Associates in association with Montufar and Associates for Transport Canada in 2003, entitled Roadway Safety Benchmarks Over Time, divided highway were ranked as the most effective roadway engineering safety countermeasure and replacing an undivided highway with a divided highway has the potential of reducing collision rates by up to 60 percent (7). The most obvious benefit of divided highways is that it has the potential to eliminate dangerous head-on collisions that often result in a fatality. Also, drivers are not faced with the risky manoeuvre of using the opposing lane of traffic to overtake other vehicles.

SHIP and CSIF are funding or have funded three main highway projects in the province of Saskatchewan, which include the Yellowhead Highway 16 Project, the Trans-Canada Highway 1 East Project, and the Trans-Canada Highway 1 West Project. All SHIP project components have

been completed as of March 31, 2007. CSIF project components are still underway and are expected to all be completed by March 31, 2009. This section describes the projects and their associated and expected benefits based on retrospective and perspective analyses. Tables and Figures were extracted from the draft retrospective SHIP evaluation (which has now been finalized) and the CSIF perspective evaluations (8, 9, and 10). Please refer to Figure 1 for the locations of the projects and project components described in this section.

The **Yellowhead Highway 16 Project** involves the twinning of approximately 75 km of Yellowhead Highway 16 to complete a four-lane divided highway from North Battleford to the Alberta border. The total estimated project cost is $76 million. The federal government is contributing $24 million and Saskatchewan is funding the remaining amount. The project was initiated in 2003 and has an expected completion date of fall 2008.

Within the Yellowhead Highway 16 Project there were a number of project components. Perspective and/or retrospective evaluations have been completed for these project components as described below:

Twinning through Lashburn (SHIP)

Project Description:

- Twinning of Yellowhead Highway 16 for a total of 3.72 km through the town of Lashburn
- Construction of two new intersections (east and west) to provide for town access
- Construction of a 2.6 km north service road located north of Yellowhead Highway 16 with 0.7 km of tie-in to connect to the north service road and the west intersection
- Construction of a 1.6 km south service road located south of Yellowhead Highway 16.

Results:

Table 1 – Benefit Cost Results for Twinning through the Town of Lashburn

Result	Total
Total Discounted User Benefits (Mill. $)	**7.516**
Discounted Construction Cost (Mill. $)	6.096
Discounted Salvage Value (Mill. $)	2.354
Discounted Increase in Maintenance and Rehab. (Mill. $)	0.034
Discounted Total Agency Costs (Mill. $)	**3.776**
Fuel Consumption Savings (Mill. l.)	1.543
Carbon Monoxide Emission Reduction (Mill. Kg.)	0.01
Net Present Value (Mill. $)	3.74
Gross Benefit-Cost Ratio	1.99
Netted Benefit-Cost Ratio	**1.613**
Internal Rate of Return (Percent)	**9.674**

Table 2 - User Benefits for Twinning through the Town of Lashburn

User Benefit	Total
Delay Savings (Thou. $)	1872.12
Reduced Vehicle Operating Costs (Thou. $)	5606.63
Reduced Collision Costs (Thou. $)	36.96
Total Benefits (Thou. $)	7515.72

Summary:

The project proved to be economically sound based on the netted benefit-cost ratio. The majority of the user benefits are a combination of reduced vehicle operating costs ($5.61 million) and delay savings ($1.87 million). The project resulted in an increase in safety with reduced collision costs of about $37,000.

Approach roads to the Battlefords Bridge (SHIP)

Project Description:

- Twinning 3.2 km of Yellowhead Highway 16 starting west of the Highway 16/Highway 4 junction and connecting to the new bridge over the North Saskatchewan River in North Battleford
- Construction of north and south access roads to the new highway

Results:

Table 3 – Benefit Cost Results for Approach Roads to the Battlefords Bridge

Result	Total
Total Discounted User Benefits (Mill. $)	**6.266**
Discounted Construction Cost (Mill. $)	7.503
Discounted Salvage Value (Mill. $)	2.799
Discounted Increase in Maintenance and Rehab. (Mill. $)	0.062
Discounted Total Agency Costs (Mill. $)	**4.766**
Fuel Consumption Savings (Mill. l.)	1.911
Carbon Monoxide Emission Reduction (Mill. Kg.)	0.016
Net Present Value (Mill. $)	1.5
Gross Benefit-Cost Ratio	1.315
Netted Benefit-Cost Ratio	**1.200**
Internal Rate of Return (Percent)	**5.573**

Table 4 – User Benefits for Approach Roads to the Battlefords Bridge

User Benefit	Total
Delay Savings (Thou. $)	3315.63
Reduced Vehicle Operating Costs (Thou. $)	4397.2
Reduced Collision Costs (Thou. $)	-1446.6
Total Benefits (Thou. $)	6266.24

Summary:

The project proved to be economically sound based on the netted benefit-cost ratio. The majority of the user benefits are a combination of reduced vehicle operating costs ($4.40 million) and delay savings ($3.32 million). Collision costs were found to increase by $1.45 million.

Highway 16 (CSIF)

Since not all of the CSIF projects on Highway 16 are completed, a retrospective evaluation of the program has not been conducted yet. However a perspective evaluation of the projects were initially completed in order to estimate the expected outcomes.

Project Description:

- Twinning of 75 km of Yellowhead Highway 16 from North Battleford to Maidstone
- Twinning of Highway 16 through Lloydminster

Expected Outcomes:

The proposed twinning project was assessed over a 20-year time period at a discount rate of 10 percent. The analysis for the corridor determined the following results:

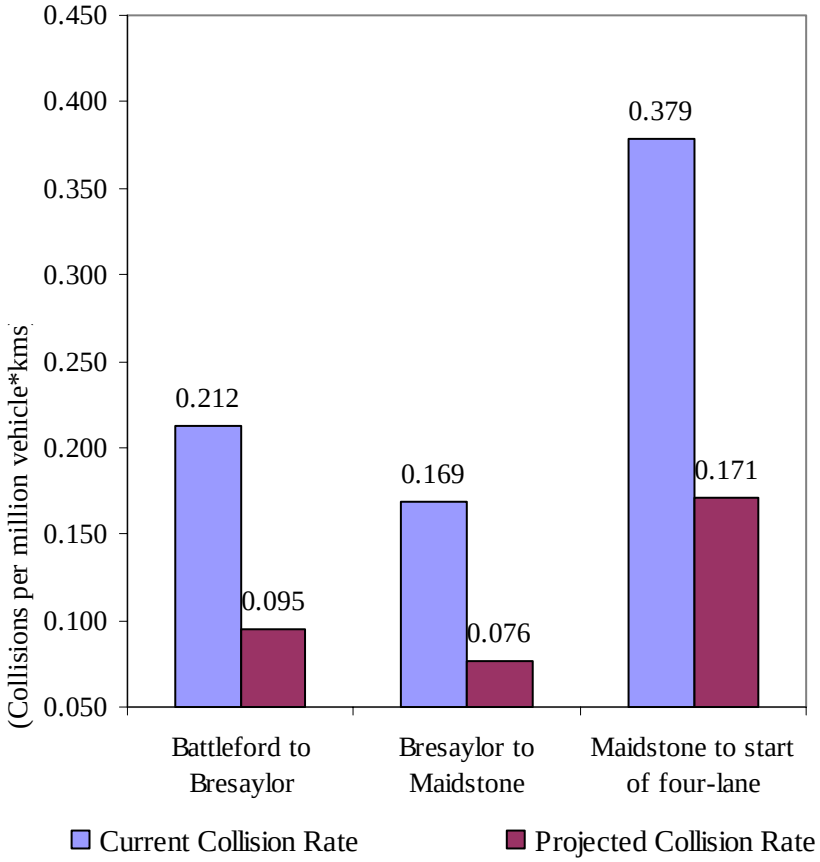
The 29.7 km section of the Yellowhead Highway 16 between Battleford and Bresaylor has a five-year collision rate of 0.212 collisions per million vehicle kilometres. It is anticipated that when this segment of roadway is twinned the collision rate will be reduced by 55 percent to approximately 0.095 collisions per million vehicle kilometres.

The 38.9 km section of the Yellowhead Highway 16 between Bresaylor and Maidstone has a five-year collision rate of 0.169 collisions per million vehicle kilometres. It is anticipated that twinning will reduce the collision rate by 55 percent to approximately 0.076 collisions per million vehicle kilometres.

The 4.8 km section of the Yellowhead Highway 16 near Maidstone has a five-year collision rate of 0.379 collisions per million vehicle kilometres. It is anticipated that twinning will reduce the collision rate by 55 percent to approximately 0.171 collisions per million vehicle kilometres.

Please refer to Figure 2 for an illustration of the expected decreases in collision rates for these segments of highway. No preliminary detailed safety benefit information was available specifically for the Lloydminster twinning segment.

Figure 2 -Collision Rate Projections for Twinning between North Battleford and Maidstone



The MicroBENCOST analysis indicated a total discounted reduced collision cost of $10.4 million for the Lloydminster section, and $12.8 million for the rural North Battleford to Maidstone section. In total, twinning will reduce collision costs by $23.2 million.

Table 5 - Benefit Cost Results for Twinning in Lloydminster and between North Battleford and Maidstone

Highway Segment	Net Present Value ($ Million)	Net Benefit-Cost Ratio	Internal Rate of Return (%)
Lloydminster	10.8	6.3:1	137
North Battleford to Maidstone	-5.7	0.9:1	8.9

Also, the proposed twinning project is expected to generate a reduction of both fuel consumption and carbon monoxide production by 10.6 million litres and 82,000 kg respectively. These reductions may be attributed to time delay savings and reduced operating costs.

The **Trans-Canada Highway 1 East Project** involves the twinning of approximately 135 km of Trans-Canada Highway 1 East to complete a four-lane divided highway from east of Regina to the Manitoba border. The total estimated project cost is $129 million. The federal government is contributing $50 million and Saskatchewan is funding the remaining amount. The project was initiated in 2003 and has an expected completion date of fall 2008.

Within the Trans-Canada Highway 1 East Project there were a number of project components. Perspective and/or retrospective evaluations have been completed for these project components with results shown below:

Grading West of Whitewood to east of Broadview (SHIP)

Project Description:

- Grading 18.94 km of Highway 1 East from west of Whitewood to east of Broadview

Results:

Table 6 – Benefit Cost Results for Grading West of Whitewood to East of Broadview

Result	Total
Total Discounted User Benefits (Mill. $)	**22.689**
Discounted Construction Cost (Mill. $)	5.098
Discounted Salvage Value (Mill. $)	1.969
Discounted Increase in Maintenance and Rehab. (Mill. $)	0.173
Discounted Total Agency Costs (Mill. $)	**3.302**
Fuel Consumption Savings (Mill. l.)	6.055
Carbon Monoxide Emission Reduction (Mill. Kg.)	0.019
Net Present Value (Mill. $)	19.387
Gross Benefit-Cost Ratio	6.871
Netted Benefit-Cost Ratio	**4.803**
Internal Rate of Return (Percent)	**31.284**

Table 7 – User Benefits for Grading West of Whitewood to East of Broadview

User Benefit	Total
Delay Savings (Thou. $)	5978.72
Reduced Vehicle Operating Costs (Thou. $)	16709.97
Reduced Collision Costs (Thou. $)	0
Total Benefits (Thou. $)	22688.69

Summary:

The project proved to be economically sound based on the netted benefit-cost ratio. The majority of the user benefits are a combination of reduced vehicle operating costs ($16.71 million) and delay savings ($5.98 million). The results show no gain or loss in collision savings.

Grading East of Broadview to West of Broadview (SHIP)

Project Description:

- Grading 6.264 km of Highway 1 East from east of Broadview to west of Broadview

Results:

Table 8 – Benefit Costs Results for Grading East of Broadview to West of Broadview

Result	Total
Total Discounted User Benefits (Mill. $)	**40.079**
Discounted Construction Cost (Mill. $)	5.292
Discounted Salvage Value (Mill. $)	1.974
Discounted Increase in Maintenance and Rehab. (Mill. $)	0.057
Discounted Total Agency Costs (Mill. $)	**3.375**
Fuel Consumption Savings (Mill. l.)	3.945
Carbon Monoxide Emission Reduction (Mill. Kg.)	0.007
Net Present Value (Mill. $)	36.704
Gross Benefit-Cost Ratio	11.876
Netted Benefit-Cost Ratio	**7.935**
Internal Rate of Return (Percent)	**73.767**

Table 9 – User Benefits for Grading East of Broadview to West of Broadview

User Benefit	Total
Delay Savings (Thou. $)	2272.62
Reduced Vehicle Operating Costs (Thou. $)	20969.44
Reduced Collision Costs (Thou. $)	16836.53
Total Benefits (Thou. $)	40078.57

Summary:

The project proved to be economically sound based on the netted benefit-cost ratio. The majority of the user benefits are a combination of reduced vehicle operating costs ($20.97 million) and reduced collision costs ($16.84 million). The project also experienced delay savings of $2.27 million.

Grading West of Wapella (SHIP)

Project Description:

- Grading 5.625 km west of Wapella on Highway 1 East

Results:

Table 10 – Benefit Cost Results for Grading West of Wapella

Result	Total
Total Discounted User Benefits (Mill. $)	**17.522**
Discounted Construction Cost (Mill. $)	1.542
Discounted Salvage Value (Mill. $)	0.573
Discounted Increase in Maintenance and Rehab. (Mill. $)	0.049
Discounted Total Agency Costs (Mill. $)	**1.108**
Fuel Consumption Savings (Mill. l.)	1.938
Carbon Monoxide Emission Reduction (Mill. Kg.)	0.006
Net Present Value (Mill. $)	16.504
Gross Benefit-Cost Ratio	17.206
Netted Benefit-Cost Ratio	**11.703**
Internal Rate of Return (Percent)	**69.344**

Table 11 – User Benefits for Grading West of Wapella

User Benefit	Total
Delay Savings (Thou. $)	2106.96
Reduced Vehicle Operating Costs (Thou. $)	4925.47
Reduced Collision Costs (Thou. $)	10489.98
Total Benefits (Thou. $)	17522.41

Summary:

The project proved to be economically sound based on the netted benefit-cost ratio. The majority of user benefits are a combination of reduced collision costs ($10.49 million), reduced vehicle operating costs ($4.9 million) and delay savings ($2.1 million).

Highway 1 East (CSIF)

Since not all of the CSIF projects on Highway 1 East have been completed, a retrospective evaluation of the program has not been conducted yet. However a perspective evaluation of the projects were initially completed in order to estimate the expected outcomes.

Project Description:

The project entails the twinning of 135 km of Trans-Canada Highway 1 East from Wolseley to the Manitoba border.

Expected Outcomes:

The proposed twinning project was assessed over a 20-year time period at a discount rate of 10 percent. The corridor was separated into two segments, Manitoba to Whitewood and Whitewood to Wolseley. The analysis for the corridor determined the following results:

Table 12 – Benefit Cost Results for Twinning between Manitoba Border and Wolseley

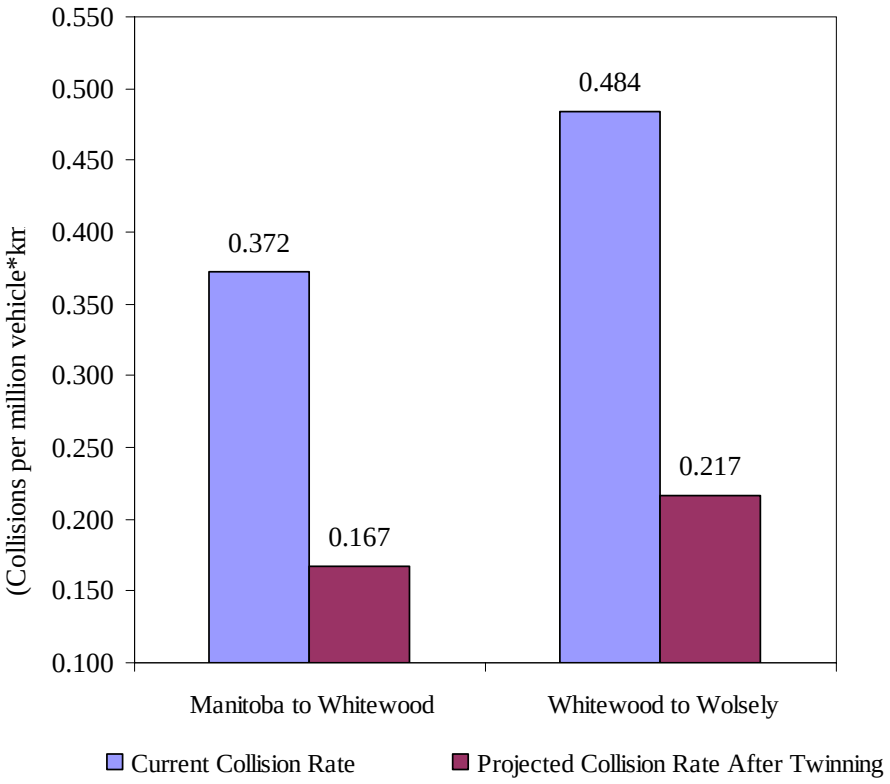
Highway Segment	**Net Present Value ($ Million)**	**Net Benefit-Cost Ratio**	**Internal Rate of Return (%)**
Manitoba to Whitewood	1.469	1.04:1	10.4
Whitewood to Wolseley	13.963	1.362:1	13.5

These values indicate that this twinning project is an economically feasible project, where benefits exceed costs, and the internal rate of return is desirable.

The 67 km section of the Trans-Canada Highway 1 east between the Manitoba border and Whitewood has a five-year collision rate of 0.372 collisions per million vehicle kilometres. It is anticipated that when this segment of roadway is twinned the collision rate will be reduced by 55 percent to approximately 0.167 collisions per million vehicle kilometres.

The 73 km section of Trans-Canada Highway 1 east between Whitewood and Wolseley has a five-year collision rate of 0.484 collisions per million vehicle kilometres. It is anticipated that twinning will reduce the collision rate by 55 percent to approximately 0.217 collisions per million vehicle kilometres.

Figure 3 - Collision Rate Projections for Twinning between Manitoba Border and Wolseley



The MicroBENCOST analysis indicated a total discounted reduced collision cost of $11,098,530 for the Manitoba border to Whitewood section and a $21,780,070 discounted collision cost reduction for the Whitewood to Wolseley section. In total, twinning will reduce collision costs by approximately $32.9 million over 20 years.

The proposed twinning project would generate a reduction of both fuel consumption and carbon monoxide production by 19 173 000 litres and 161 000 kg respectively. These reductions can be attributed to time delay savings and reduced operating costs.

The **SHIP Trans-Canada Highway 1 West Project** involved the twinning of 38 km of Trans-Canada Highway 1 West between Maple Creek and Tompkins to complete a four-lane divided

highway from Regina to the Alberta border. The total project cost was $20 million. The federal government contributed $9 million and Saskatchewan provided the remaining amount. The project was initiated in 2003 and was completed in 2004.

Results:

Table 13 – Benefit Cost Results for Twinning between Maple Creek and Tompkins

Result	Total
Total Discounted User Benefits (Mill. $)	**52.288**
Discounted Construction Cost (Mill. $)	19.673
Discounted Salvage Value (Mill. $)	7.338
Discounted Increase in Maintenance and Rehab. (Mill. $)	0.345
Discounted Total Agency Costs (Mill. $)	**12.679**
Fuel Consumption Savings (Mill. l.)	15.757
Carbon Monoxide Emission Reduction (Mill. Kg.)	0.123
Net Present Value (Mill. $)	39.609
Gross Benefit-Cost Ratio	4.124
Netted Benefit-Cost Ratio	**3.013**
Internal Rate of Return (Percent)	**19.178**

Table 14 – User Benefits for Twinning between Maple Creek and Tompkins

User Benefit	Total
Delay Savings (Thou. $)	29799.97
Reduced Vehicle Operating Costs (Thou. $)	20898.36
Reduced Collision Costs (Thou. $)	1589.84
Total Benefits (Thou. $)	52288.18

Summary:

The project proved to be economically sound based on the netted benefit-cost ratio. The majority of the user benefits are a combination of reduced vehicle operating costs ($29.80 million) and delay savings ($20.90 million). The project resulted in an increase in safety with reduced collision costs of about $1.59 million.

Future Direction

Budget 2006 provided a series of funding initiatives totalling $5.5 billion over four years. These funds, made available through a variety of programs including the Public Transit Capital Trust, the Highways and Borders Infrastructure Fund, renewal of CSIF, the Municipal Rural Infrastructure Fund and the Asia Pacific Gateway and Corridor Initiative, represented a significant federal investment in infrastructure.

Budget 2007 provided further funding, building upon commitments in Budget 2006, to the variety of federal infrastructure programs. The Gas Tax Fund was extended through until 2013-2014, resulting in a further $8 billion in federal funding available to municipalities. The federal contribution to the Asia Pacific Gateway and Corridors Initiative was increased by $410 million, resulting in a total federal contribution in excess of $1.0 billion. A Borders and Gateways Fund has been proposed, with a further federal contribution of $1.0 billion, bringing the total up to $2.1 billion. The Borders and Gateways Fund will provide funding to approved projects on a merit basis. The establishment of Public-Private Partnership (P3) fund was reinforced to a total of $1.26 billion in federal funding. The federal contribution under the P3 fund provides a maximum federal contribution of 25 percent of eligible costs to eligible projects. An equal per jurisdiction allocation of $25 million per year per province or territory has also been earmarked in Budget 2007. This investment will provide significant access to federal funding, especially for smaller jurisdictions.

The cornerstone of the federal government's approach to road infrastructure is the Building Canada Fund (BCF). BCF builds on existing funding of $4.6 billion taken from the Municipal Rural Infrastructure Fund, the Canada Strategic Infrastructure Fund and the Highways and Borders Infrastructure Fund and provides an additional $4.2 billion, for a total of $8.8 billion over seven years. BCF is aimed at providing federal support for transportation and public transit programs, as well as support for community-based projects, divided roughly with three quarters of funding for the former and one quarter for the latter. Funds are to be provided to provinces and territories on a strictly per capita basis.

The Government of Canada has committed $25 million per year for the next seven years to go towards infrastructure in the province of Saskatchewan from the equal per jurisdiction funding for a total of $175 million. Also, a significant amount of funds will be available for infrastructure from the BCF. In addition, Saskatchewan will be free to apply for further funding through both the P3 Fund and the Borders and Gateways Fund. The Asia Pacific Gateway and Corridor Initiative, while primarily supporting infrastructure projects in British Columbia, is providing funding for the completion of projects throughout Western Canada. As announced on May 24, 2007, the Government of Canada has committed $20 million of funding for the completion of freeway grade separations in south Saskatoon.

Conclusions

Effective infrastructure is a key aspect of insuring efficient transport of goods across Canada and internationally. Highway projects completed in Saskatchewan have resulted in demonstrable

improvements to safety and have improved the capacity of the highway system in Saskatchewan to move products throughout Canada, to the key Canadian ports and into the United States of America. Federal and provincial/territorial goals for highway projects overlap. Both levels of government share concern for improving the safety of Canadians on Canada's roads, reducing delays and idling times to minimize environmental impacts, and ensuring the demands of Canada's export economy are met through the provision of the infrastructure required for the effective and efficient movement of goods both within and out of Canada. The funding announced as part of Budget 2007 ensures that the federal government will continue to engage with its provincial and territorial counterparts in an effort to meet the infrastructure needs of Canada's population and economy.

Through a successful partnership between the Government of Canada and the province of Saskatchewan the Trans-Canada Highway 1 will be a four-lane divided highway across Saskatchewan from the Manitoba border to the Alberta border, the Yellowhead Highway 16 will be twinned from Saskatoon to the Alberta Border, and there will be improved efficiency of travel on Highway 39 leading to the border crossing at North Portal.

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