

# BETTER WAYS TO BUILD



A Policy Discussion Paper

January, 2018





# BETTER WAYS TO BUILD

## EXECUTIVE SUMMARY

The **Saskatchewan Heavy Construction Association** has prepared a policy paper outlining the significance for the economic development of Saskatchewan. The paper points out that the sector in good years and bad has been one of the largest employers in the province, creating major economic impacts and fiscal benefits to governments.

All provincial residents use the works of the construction industry every day in going to work or traveling to neighbours. Less understood is the critical and central role construction plays in building the infrastructure platforms that allow our industries to access global markets and earn the income that creates wealth for residents and governments. Much Saskatchewan wealth is founded on the agricultural and natural resources of the province and this will also still be the case for the foreseeable future.



Internationally competitive trade infrastructure will be a continuing requirement to sustain provincial growth and has been identified in the Provincial Economic Growth Plan. Investing in this infrastructure future has been challenged in recent years by a combination of administrative, fiscal and procedural practices that are weakening the ability of the construction industry to fully participate in, and support, sustained provincial economic growth. Future, provincial growth requires a continuing focus on new infrastructure platforms to:

- -transport goods and people into domestic and global destinations;
- -provide for intermodal scale transfers into more efficient movements;
- -provide for reduced congestion for daily commutes to work;
- -rebuild and expand utility networks for electricity, oil, gas and water; and,
- -support growing urban and rural populations with infrastructure for living and recreation.

Infrastructure requirements are not limited to roads and highways, but also include the critical needs for water, fuel, container and air facilities.

Global warming suggests both opportunities and issues will arise for infrastructure development and financing in the future.

In addition, issues identified by industry in infrastructure management included a lack of long term capital planning, overlapping and often conflicting jurisdictions for infrastructure decision making, unrealistic timing calls for proposals, extreme volatility in capital spending, the need for live cycle capital management planning, funding deficiencies based in part on the dependence on government funding and a need for capacity development for the construction industry.

The policy challenge for both the industry and the government is to identify:

- Infrastructure financing sources and approaches to increase and stabilize funding for infrastructure beyond the traditional government contribution levels from the public and private sectors;
- Institutional and infrastructure management and development approaches to accommodate a wider base of funding for infrastructure; and,
- Administrative Frameworks to provide for the long term planning of the sector.



One approach considered is a Saskatchewan Infrastructure Development Trust (SIDT) established as a public – private partnership and financial trust designed to:

- Develop and implement a rolling fifty year Infrastructure plan for implementation and financing;
- Expand the basis for infrastructure beyond the existing provincial base to include federal and municipal governments, the public, industries and a known share of resource existing program revenues;
- Work with the public and private sectors to secure trade competitive infrastructure for the next generation of economic growth in Saskatchewan.



The issues raised in this paper are important to not only the SHCA members but to all to the people and economy of the Province. Saskatchewan is in the midst of significant growth and change. With these changes have come new approaches to managing the construction and infrastructure portfolio of the province where large sums of public monies may be spent.

There are better ways to build and handle Construction in Saskatchewan based on:

- Effective long term planning to sustain the trade and exports based on a natural resource economy;
- The simplification and streamlining of Provincial infrastructure decision-making;
- Stable and regular annual management planning cycles;
- New approaches to public financing through a third party non-government agency;
- Structuring infrastructure finance to accommodate increased sources of infrastructure financing;
- Establishing procedures that are not tied to annual fiscal and political cycles in government; and
- A recognition of the sectors importance to economic and social growth, competitiveness and improving Saskatchewan's access to the rest of Canada and the World – the origin of most of our markets and income.



Earlier Saskatchewan leaders acted on their visions for the province. Walter Scott, the first Premier of Saskatchewan took decisions on the future without the human or financial resources of later governments. Later, after the devastation of the Dirty Thirties Douglas, Gardiner, Diefenbaker and Hamilton created a water vision for Saskatchewan following provincial economic and environmental collapse and limited funding.

It is time to supplement the Provincial Plan for Growth with its long term Infrastructure Plan in support of a stronger, more diversified Saskatchewan economy. Over time this will create the infrastructure platforms for growth that meet the vision for growth held by past, current and future Saskatchewan leaders.

The **Saskatchewan Heavy Construction Association** welcomes the opportunity to open this dialogue to improve infrastructure planning and management in the Province. The benefits of adopting this new approach will be seen in efficiency gains and benefits for the economy and society and that are shared between the public, the government and SCHA members. Please contact us at one of the points of communications listed below to discuss the issues raised in this paper further.



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## SCHCA Mission

The Saskatchewan Heavy Construction Association is committed to the heavy construction industry by actively promoting quality, cost-effective, socially responsible services for the public and its members.





For nearly a century the Saskatchewan Heavy Construction Association and its predecessor organisations have built the province, investing in the people and machinery to construct our network of rural roads, railway rights of way and highways, bury pipelines and transmission lines, create dams and canals and, in the past half-century, build mines and cities.

The work of the Association does not end with the built project. Heavy construction projects last many years and require monitoring, maintaining and regular renewal. Without this essential work dams will spill, highways crumble and congestion plague our movements for both work and play.

This paper examines our recent experience in developing and managing the built infrastructure for our modern Saskatchewan economy and society. It outlines issues with the current approaches towards infrastructure planning and financing suggesting new approaches for projects that are the very foundation for our future growth, employment, incomes and competitiveness in the world.

Periodically, the Saskatchewan economy and society changes in response to market opportunities around the world; developments in new technologies of movement, energy, industrial and food production; the educational and training requirements of Saskatchewan people; and the social interests of the population to live, work and travel in different ways with access to social services.

Many of these changes start with the construction of new infrastructure platforms where Saskatchewan creates employment and opportunity for many future rounds of economic growth, seen in the shift from horse to steam power on and around the farm, from steam to the internal combustion engine for movement, in the replacement of the wooden grain elevators with inland terminals, the growth in oilseed and lentil production and the mining and extraction of natural resources for global markets. The Saskatchewan construction industry leads the way in preparing the economy and society for all of these changes.



Heavy construction involves thousands of highly trained, skilled employees who must first complete the appropriate courses and training to

## SHCA Mission

The Saskatchewan Heavy Construction Association is committed to the heavy construction industry by actively promoting quality, cost-effective, socially responsible services for the public and its members.

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*If something big is happening, that's where you'll find our members working. If the Earth moved, it was us.*

<http://www.saskheavy.ca/index.php/about-shca>



SCHA Members Building for Road and Rail



## I. THE SHCA (Continued)



INLET WALK, JOHANNESBURG

Definitions of the heavy construction industry vary somewhat across Canada but most include the following work within the sector:

- highways and roads;
- bridges, bridge abutments, overpasses and clover leaves;
- railway rights of way;
- pipeline rights of way;
- airports and airline runways;
- parking lots;
- urban residential and commercial subdivisions;
- sidewalks, curbs and gutters;
- site preparation and excavation for commercial, industrial and institutional sites;
- water drainage, irrigation canals and related structures;
- dams, canals, reservoirs and water works;
- hydro electric and water diversion tunnels;
- water and sewer lines; and,
- large industrial sites including as mines, refineries and manufacturing facilities.

The Saskatchewan Heavy Construction Association was originally a local chapter of the Canadian Construction Association. SHCA (formerly the Roadbuilders' Association), was started in 1919 to be a voice for members of the heavy construction industry, as well as a service centre to stay current with tenders, technology, regulations and other changes in the industry.

The SHCA represents heavy construction across Saskatchewan. It has over 200 members and is growing. SHCA members regularly complete projects in all sectors of the Saskatchewan economy. They include rural and urban roads, big city by-passes, mines, sports stadiums, dams and bridges, airports, railways, suburban subdivisions, and large industrial facilities.

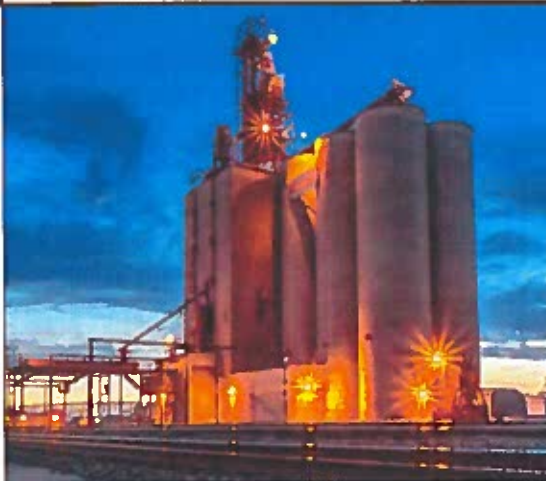
When the economy grows, it is SHCA members who build the infrastructure to last a century. The "Heavy" in SHCA is the type of work our members do, which always involves heavy equipment.

If earth needs to be moved, if a road is being built, or as Saskatchewan grows so too does, the need for heavy construction. Many of the most memorable landmarks in our cities and landscapes are the result of the work of Association members.



Laying the Foundations for Growth

**Construction is always at the start of a rapidly changing and diversifying economy and society.**



Inland Grain Terminals



Wascana Lake, Regina

The ongoing work of SHCA members can be seen in many of the most remarkable sights in our landscapes  
And will be the first foundations for new rounds of economic growth and development.



## II. CONSTRUCTION & INFRASTRUCTURE IN SASKATCHEWAN TRADE & ECONOMIC ACTIVITY

Construction and infrastructure are a major and continuing part of the Saskatchewan economy. The level of activity in the sector may vary with booms and busts in the wider global economy, but it is always a large, growing and recurring part of provincial economic activity (Figure 1). In 2016 construction employed 51,300 people in the province and was the largest goods producing employer in the economy. (Figure 2). This level of construction employment had nearly doubled since 2005.

Average weekly earnings in construction (including overtime) at \$1,243 were the highest paying goods producing sector after mining and utilities. (Figure 3) Significantly, construction incomes rose by 50% to 2012, then fell by 4% by 2016, but still remains xx% above the industrial aggregate for the province of \$988.

The contribution of the construction sector, however, is not fully reflected in its sector statistics. Investment approached \$12.0 billion in 2015 (Figure 4), down 24% from the previous year in response to the changed fiscal positions of governments and weakness in the resource sectors. A closer examination of private and public investment in Saskatchewan by contributing sector shows that public and private investment on new construction and repair construction more than doubled in most sectors over the decade led by Transportation and Warehousing (392%), Government & Utilities (124%) and Mining, Oil and Gas (120%). (Figure 5.)

While statistics categorize construction as a separate sector, it is important to note how its levels of activity are closely based on the performance of the whole economy. When the natural resource sectors or the cities grow, it is the construction sector that moves the dirt to build the highways, create the building sites and urban subdivisions to build the required infrastructure. This level of integration is seen in the public and private investment originating from the economy and government.

Construction and infrastructure activity in Saskatchewan has for many years experienced a volatile level of spending from both the economy and governments. In many years fiscal constraint by governments faced with declining natural resource revenues and low commodity prices has aggravated the swings in the marketplace. Figure 6 shows the annual level of change in real construction activity since 2000.

Over the fifteen year period the annual average change in growth or decline can be plus 7.3% or minus 6.5% with changes in some years as high as minus 19% and plus 16.2%. Significantly, these swings in real gross domestic product are exaggerated when government fiscal cutbacks or election spending are factored into the equation.

Figure 6 Saskatchewan Construction Real GDP Year over Year % Change, 2000 – 2015.



Figure 1. Growth in Saskatchewan Construction Employment 2005 – 2016

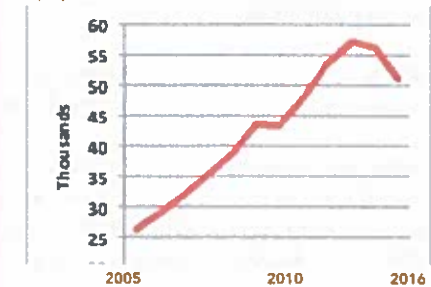


Figure 2. Saskatchewan Goods Producing Employment by Major Sector, 2016.

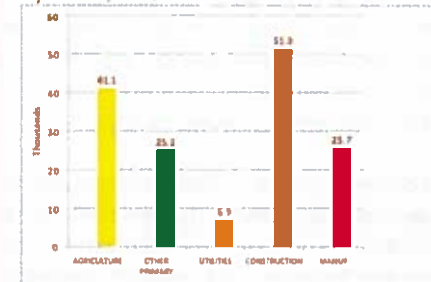


Figure 3 Average Weekly Earnings (Inc. Overtime), All Employees, Highest Paying Sectors, Saskatchewan, 2016.

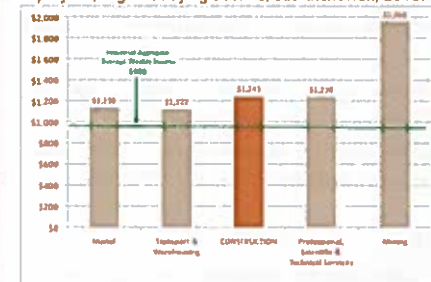


Figure 4 Sources of New Saskatchewan Construction Investment 2005, 2016

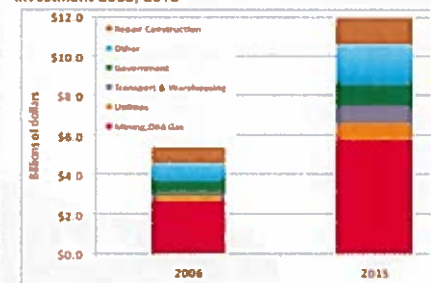
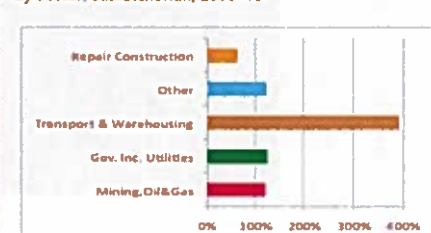


Figure 5 Percent Change Public and Private Investment by Sector, Saskatchewan, 2000 -15



Sources:

Saskatchewan Economic Review, Saskatchewan Bureau of Statistics, Tables 8, 12 and 21

Construction infrastructure has been the foundation for the Saskatchewan economy based largely on natural resource production and exports into a global market. As a land locked province, Saskatchewan has had to build a network of railways, roads and air connections to get its goods and services to market.

Between 2006 and 2015 the provincial GDP grew by 72% to over \$80 billion only to decline on weak commodity prices in 2015 (Figure 7).

Today the economy remains heavily resource dependent, but is far more diversified than in the past (Figure 8). In most years Saskatchewan's natural resource production of agriculture, minerals, oil & gas amounts to about 40% of the Provincial economy. Construction approaches ten percent of the economy in many years about the same size as agriculture, forestry, hunting and fishing. Services, public administration and education account for a little over a third of the economy. Significantly the trade, transportation and warehousing sectors account for only thirteen percent of the economy, but are essential for the competitive position of the exporting natural resource sectors.

Economic growth in Saskatchewan and many of the service sectors of the economy is based on growing natural resource exports into international markets. Figure 9 shows the rapid growth trend in exports from these sectors between 2006 and 2015 preceded and accompanied by the steady growth in demand for construction services building mines, roads and railways in support of these activities. However, the growth has not been continuous with major short term reductions in growth in 2009 and 2015.

Three major natural resource sectors dominate growth in the export economy - agriculture, oil and gas, uranium and potash mining. The trade infrastructure requirements are for export movements into both domestic and international markets. (Figures 10 and 11).

When essential infrastructure capacity is in place, it provides a competitive Saskatchewan environment to attract international investment. Without the appropriate investments in place Saskatchewan loses international investment and the related economic benefits.

Figure 11. Domestic and International Export Trade, Saskatchewan, 2006 – 2015

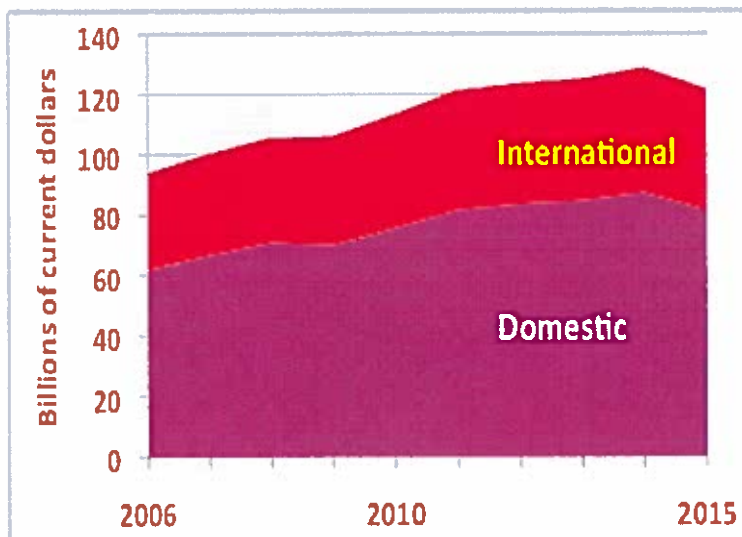


Figure 7  
Saskatchewan Gross Domestic Product 2006 – 2015



Figure 8  
Distribution of Saskatchewan Gross Domestic Product at Factor Cost By Industry 2015

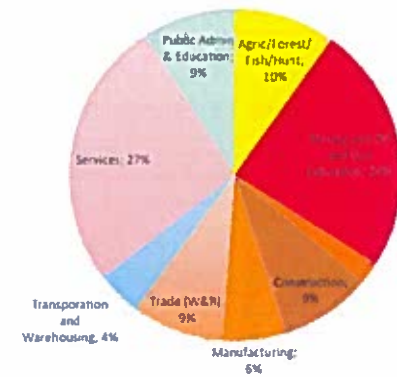


Figure 9 Major Saskatchewan Natural Resource Export 2006 – 2015

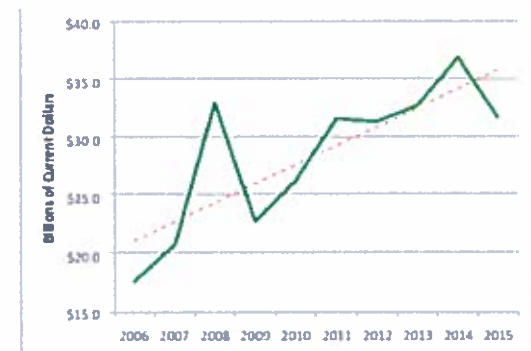
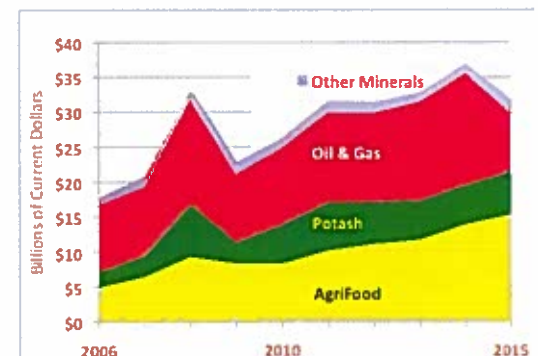


Figure 10 Saskatchewan Major Exports 2006 – 2015



## SOME ECONOMIC IMPACTS OF THE SASKATCHEWAN CONSTRUCTION INDUSTRY

The economic impact of heavy construction in Saskatchewan was estimated in 2013 by McNair Business Development Inc. for 2012 using Statistics Canada Provincial input-output tables. Updating the information to 2016 suggests Saskatchewan Construction creates over \$5 billion in gross domestic product, 51,300 person years of employment (direct, indirect and induced) and \$2.3 Billion in Labour income. The heavy construction sector is estimated to create some \$1.3 billion in revenues to federal and provincial governments of which 44% accrue to Saskatchewan. (Figure 12). These 2016 estimates are 16% lower than 2015 when GDP effects were \$1 billion higher at \$6.1B, labour income \$400 million higher and fiscal returns \$243 million higher. Similarly, employment was 9% lower in 2016 a loss of 5,000, in part as a result of changes in provincial spending on Saskatchewan construction. Since 2012 construction has added nearly \$30 billion to GDP, creating over a quarter of a million person years of employment.

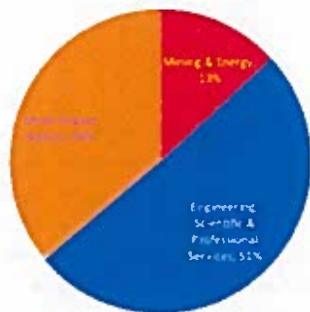
Figure 12

Economic & Fiscal Impacts of Heavy Construction in Saskatchewan, 2016.

Impact Area	Impact	Amount
<b>Gross Domestic Product at Basic Prices</b>	Direct	\$2.3B
	Indirect	\$1.5B
	Induced	\$1.3B
	<b>Total</b>	<b>\$5.1B</b>
<b>Labour Income</b>	Direct	\$1.3B
	Indirect	\$0.5B
	Induced	\$0.5B
	<b>Total</b>	<b>\$2.3B</b>
<b>Fiscal Income to Government</b>	Federal	\$0.735B
	Provincial	\$0.575B
	<b>Total</b>	<b>\$1.311B</b>
<b>Employment (#)</b>	Direct	25,319
	Indirect	10,421
	Induced	15,560
	<b>Total</b>	<b>51,300</b>

Source: McNair Business Development Inc, 2013 and Saskatchewan Bureau of Statistics, Annual Economic Review and Saskatchewan Economic Accounts, 2016.

Figure 13 Impacts of Heavy Construction on GDP



Since 2015 SHCA Companies have undertaken transportation work for Saskatchewan Highways & Infrastructure of over half a billion dollars!

The construction industry has major impacts on Saskatchewan's job market, accounting for one in ten jobs in construction and one in five in heavy construction. Employment levels, however, can show large swings in a single year as they did between 2015 and 2016 when construction employment dropped by nearly ten percent, well above the changes provincial employment.

Figure 14

Construction and Heavy Construction in Saskatchewan's Job Market.

	2012	2015	2016	% change 2016/15
Employment (000s)				
Saskatchewan	548.4	573.7	568.5	-1%
Construction	48.1	56.2	51.3	-9%
Heavy Construction	24.8	28.9	26.4	-9%
Construction (% Share of Sask)	9%	10%	9%	
Heavy Construction (% Share of Sask)	4.5%	5.0%	4.6%	

Sources: Sask Bureau of Statistics, McNair2012 adjusted for SBS statistics

Construction economic benefits are distributed throughout the economy with the main impacts on Gross Domestic Product occurring in the Engineering, Professional, Scientific & Technical Services (51%) accounting for half of the impacts and a further 13% experienced by Mining & Energy, with the remaining third (36%) distributed across other sectors of the economy. (Figure 13). Changes in the level of construction activity therefore have broadly based effects on the employment, labour incomes and profitability of the economy at large and have a major effect on government fiscal returns.

### Top Five Supplying Industries To Heavy Construction

- 1. Professional, scientific and technical services.** The heavy construction industry purchased \$352 million in services from this sector in 2012 which, in turn supported 3,031 jobs. Included in this industry are engineering services, which comprised the bulk of the services but also included lawyers, accountants, and other professional and technical services.
- 2. Finance, insurance, real estate, rental and leasing and holding companies** supplied \$272 million in services to heavy construction in 2012, supporting 1,034 jobs. The bulk of this activity was banking and insurance services.
- 3. Mining, quarrying, and oil and gas extraction** sold \$993 million to heavy construction in 2012, the bulk of which was gravel and aggregate. This supported 851 jobs in the sector.
- 4. Wholesale trade** comprised \$148 million in heavy construction industry purchases, supporting almost 800 jobs. This industry represents the margins on wholesale sales to the industry from a variety of sources.
- 5. Manufacturing** supplied \$285 million in goods to heavy construction, supporting 630 manufacturing jobs. The bulk of sales would be asphalt, other manufactured construction materials as well as parts, fuel, and metal fabrication.

Source: McNair 2013.



The economic impact of the SHCA members in construction, however, is not simply limited to their large economic impacts that continue year after year. In addition, the impact of the sector is seen in the continued high levels of training and development of Saskatchewan workers and the opportunities they provide in local communities and for aboriginal peoples.

For example, a 2017 survey of SHCA members across the province shows that nearly one third of SHCA member employment was accounted for from First Nation and local communities – a growing local source of employment, particularly in Northern Saskatchewan.

The \$1.3 billion of labour income generated by the construction sector is therefore increasingly benefiting the lower income First Nation's populations and communities. The large safety and training budgets of the sector support this expansion of the employment base of the sector and is one of the largest programs of technical training in Saskatchewan, including those provided by governments.

The industry economic benefits extend into many local communities throughout Saskatchewan. SHCA members annually make high levels of community purchases of machinery, equipment, fuel, and services that commonly exceed \$2 billion annually. When levels of procurement from governments are curtailed or rapidly decline the effects are immediately experienced in local employment and purchasing in urban and rural communities throughout Saskatchewan.



## ECONOMIC BENEFITS ARE THREATENED BY GOVERNMENT PROCUREMENT PRACTICES

All SHCA members rely heavily on Provincial and Municipal Government procurement as the financial foundation of their operations and the largest single source of income for the multi billion dollar industry. However, the benefits for Saskatchewan's economy and community economic growth are clearly being threatened by Government procurement practices. Current and continuing SHCA member surveys identify the following priority challenges for the industry over the next five years and the related issues for procurement and industry performance reform. Significantly, government procurement practices are at the centre of industry concerns and also the actions that would improve the situation.

CHALLENGES TO CONSTRUCTION INDUSTRY NEXT 5 YEARS	ACTIONS TO REFORM INDUSTRY PERFORMANCE
<b>Procurement</b>	<b>Procurement</b>
Inconsistent Provincial Spending	Consistent Provincial Spending
Capital Programs	Consistent Prov/Municipal Systems
Government Rules & Regulations	Timely Tender Calls/Advertizing
Complexity of Contracts	Timely Tender Results
Economic Slowdown	Simplified Contracts-Too Complex
Competent Qualified Staff	Education/Training
Inexperienced Contractors	Saskatchewan Corporate Development
Multi-National Competition	Attract Younger Staff

*The procurement issues, however, are more than simply a loss of operating revenues to Saskatchewan companies. Since the industry is so closely integrated into the community and economic structure of Saskatchewan, the adverse effects of an efficient procurement system extend quickly into other sectors of the economy and the employment and community structure of Saskatchewan.*

Procurement issues are supplemented with a continuing concern by the industry over its age structure and the need for the training and development of qualified staff. Ironically, insofar as the provincial procurement practices have limited and reduced growth in the sector, they have also weakened the levels of safety, training, development and investment that companies can provide to grow its employment base and create larger scale, competitive companies capable of competing with the growing international and out of province competition. To better understand the origins of these issues it is useful to examine the processes involved in developing construction infrastructure in Saskatchewan.



### III. BUILDING & MANAGING CONSTRUCTION INFRASTRUCTURE

#### Infrastructure construction is a complex process with seven steps over many years.

Getting all of these steps right is an essential pre-requisite for efficiency in capital and construction management, extending the life of a project and reducing the costs of the work to the owner. Effective capital and construction management requires attention to all of the administrative, logistic, construction, maintenance elements of management at each stage of the process.

Figure 16 Seven Steps in Capital & Construction Planning

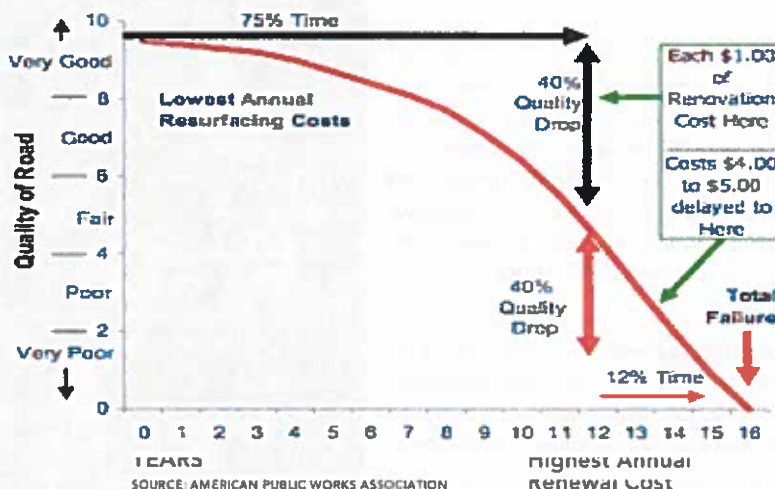
1	Planning and Design
2	Project Approval
3	Development Financing
4	Competitive Contracting
5	Project Management & Construction
6	Project Maintenance
7	Project Renewal Planning & Design

Too often the planning and approval procedures do not align with the realities of either the construction project or seasonal windows for undertaking the work. Administrative decision making is not related to the reality of project implementation. Funding can be uncertain when it does not always carry through for multi-year projects due to annual budget cycles, particularly from funds originating in governments.

Each of the steps in the process can involve multiple companies and levels of government, further complicating and extending decision-making procedures for infrastructure in the both public and private sectors. All of these complexities can combine to increase the cost of infrastructure projects, often by large amounts with direct effects on the provincial economy and society.

The simple illustration below of the timing of maintenance and capital renewal costs for a new road shows the significance of timing for the cost and life of the project. Maintenance costs may increase five times as a result of delays in decisions on the work. Without timely maintenance and renewal, end of life renewal and replacement costs rise. The timing of contract administration and procurement too often delays construction creating inefficiencies for project management and decision-making. Highway asset deterioration cannot be ignored. Life Cycle Infrastructure planning is required, saving extending asset life.

Figure 17 Road Maintenance & Renewal Costs Related To The Age And Quality Of A New Road.



The effects of deferral and delay on Saskatchewan roads are evident throughout the province. As maintenance is deferred, the capital costs of both maintenance and renewal increases. Roads left beyond 75% of their life, result in a four to five fold increase in renovation and renewal costs. Timely long term planning reduces both the maintenance and the renewal costs and saves money for both government and the driving public.



Saskatchewan Highway #7  
Approaching the End of Life as Roads Degrade and Increase Costs to the  
Traveling Public and the Economy.



When roads approach the end of their life, the costs of bad roads are not only a cost to government. The driving public and commercial activity pays extra costs for operating their vehicles seen most frequently in broken windshields from loose road chips, damaged shocks and struts and increased fuel consumption. Accidents may increase. In addition, roads in poor repair or networks without good connectivity increase the time spent traveling for the public and the economy.



Delayed and deferred construction has direct effects on many other areas of the economy and society, beyond highways. For example, deferring decisions on a dam or a canal in Saskatchewan holds consequences for reliable water supplies for communities, industry, irrigated acres, higher value added crops and food processing investments. Similarly, potash mines in the Qu'Appelle Valley deferred investments when water licenses could not be issued due to a lack of water supply infrastructure. Together these constraints on development in industrial and agricultural areas limit employment growth and financial returns to individuals and governments reducing future economic growth.

Infrastructure construction creates new, more efficient platforms for economic growth and social advancement. It enables transformational changes in the quality of life and sustainable long-term economic and social opportunity for Saskatchewan residents.

Construction infrastructure is far more than moving dirt, setting rebar, pouring concrete and paving roads. It is the transformational platform for the next generation of economic growth in Saskatchewan. Today's construction investments improve the competitive position of the province and introduce new industries and technologies for long-term growth.



## Sources of Construction Infrastructure

Infrastructure development in Saskatchewan originates from many locations in the public and private sectors. The long history of public ownership of new infrastructure has meant that multiple agents of the provincial government have been responsible for planning, financing and managing the projects, including Crown Corporations and Government Ministries such as the Highways & Infrastructure, Municipal Affairs, Agriculture, Economic Development and others. Five years ago SaskBuilds was created to improve the process of major infrastructure projects by providing advice and support to various ministries and agencies to meet their respective goals in this area and with a mandate to create an Integrated Infrastructure Plan to be updated annually.

In addition, large private companies and Crown Corporations periodically undertake large construction projects including new mine developments and expansions, power plants, railway lines, commercial developments and energy companies. Municipalities, urban and rural across the province continually upgrading their infrastructure as they grow and change.

In 2015, investment in new construction by government amounted to a little over one billion dollars or ten percent of all public and private investment in new construction of \$10.6 billion. Government spending on roads and infrastructure grew by 108% between 2006 and 2015. The work involves a diverse set of projects including urban ring roads, rural gravel roads, bridges, canals and large industrial projects such as the Global Transportation Hub. Private investment projects extend the scope of the work to include heavy industrial projects such as oil refineries, pipelines, mines and manufacturing plants.

Strong relationships exist between the provision of government transportation, water and power infrastructure that is often a prerequisite for many subsequent private sector investments. Where this infrastructure is not in place, or cannot be rapidly developed, the competitive advantage of the province to attract investment is lost or reduced. In a land locked province the existence of export competitive trade infrastructure is essential to allow the province to increase its agricultural and natural resource production.

***The construction work of the SHCA to build public and private infrastructure effectively creates platforms for economic development at each stage of Saskatchewan's provincial economic development.***

## Saskatchewan Integrated Infrastructure Plan

*"SaskBuilds is responsible for providing a central focus within the provincial government to coordinate infrastructure planning and delivery.*

*This will include the development of an Integrated Infrastructure Plan, which will be updated annually to inform the budget development process.*

*Through this process, SaskBuilds will ensure that ministries work toward strategically aligning infrastructure investments to the province's economic growth, population growth and quality of life priorities."*

SaskBuilds.ca 2017.



## IV. INFRASTRUCTURE PLATFORMS IN SASKATCHEWAN HISTORY

**Saskatchewan's modern economic history has been founded on a growing base of new physical infrastructure.**

Waves of European settlers came to Saskatchewan with the construction of the newly built Canadian Pacific Trans Continental Railway in the 19<sup>th</sup> Century. Villages and towns grew up along the path of the railways, first in the south and later through central parklands with the building of the National Railway. Settlers then traveled across the Prairie to their homesteads in settlers' wagons and carts.



Building the CPR in Saskatchewan

CPR Historical Archives

These cart trails evolved into dirt and gravel roads. Wooden grain elevators on the railways and their growing network of branch lines on an eight-mile haul became part of the early community infrastructure network. The steam technology of the day powered the trains on the railway and the tractors on the farms, while horses and carts were the primary mode of personal and commercial local transportation. The journey to work was around the farm or into the nearest town or village to deliver the grain, buy supplies or go to Church.

The energy revolution of the day saw the gradual replacement of steam with the internal combustion engine with cars and trucks requiring first gravel and then paved roads. Stronger bridges and sidewalks replaced boardwalks in town. Grain elevators were modified to take larger truckloads of grain. Diesel locomotives were introduced on the railways and on the lakes and oceans to carry goods to market. The shift in energy technology provided the growing population with needs for improved water supplies and distribution systems.

The droughts and global recession of the 1930s showed the vulnerability of the province to water scarcity, blowing soils and domestic fiscal significance of lost grain markets. People left the province and many municipalities went bankrupt. By the 1940s local, provincial and federal leaders and governments were committed to developing infrastructure to allow Saskatchewan to adapt to the rigors of the droughts. The South Saskatchewan River Project to build the Gardiner and Qu'Appelle dams and create the 200 km long Lake Diefenbaker led to a construction focus on water infrastructure whose benefits transformed much of the agriculture of central Saskatchewan and provided water supplies for new potash mines around Saskatoon through the M1 Canal.



Gardiner Dam Construction, South Sask River Project  
Saskatchewan Archives.

Each stage of Saskatchewan's economic history has been accompanied by the introduction of new technologies and their related infrastructure construction requirements. They included water for potash mines and expanded irrigation acres with high value added crops and drought protection; roads to northern mineral resources; inland terminals to replace wooden grain elevators, ring roads and bridges to keep traffic flowing through growing cities taking people to work while allowing trade flows to grow.



Saskatchewan Power Corporation Boundary Dam Power Station with Carbon Capture and Storage

New infrastructure platforms are the foundation for the next generation of economic development and employment. We often see glimpses of the new infrastructure platforms for the next Saskatchewan economy. Diversification in crop production and irrigation requires improved trade export routes on land, sea and air with reliable water supplies. Global warming opens up delivery routes through the north and challenges water supplies in the south. Energy transformation with increased electricity production is creating new generating and transmission requirements for construction.

**A strong sustained and growing provincial construction sector is always the start of the next generation of growth and prosperity for Saskatchewan. It was in the past! Still is today!**

## V. CONSTRUCTION & INFRASTRUCTURE IN SASKATCHEWAN'S FUTURE



The Provincial Government's approach towards the future of the economy is outlined in Premier Wall's Saskatchewan Plan for Growth as:

*"Growth will be a result of continued investments in a competitive economy, infrastructure and a skilled workforce. Building on our agricultural and natural resource advantage, Saskatchewan will be a global leader in export and trade by 2020 and will invest in knowledge and innovation in the development of Saskatchewan's future economy. Capital investments in new projects and expansions will grow our economy, and Saskatchewan will continue to welcome newcomers from across Canada and throughout the world to live and work in our province."*

The Plan identifies infrastructure as a critical foundation in the Province's economic future. Of the six core growth activities identified as foundations for the Plan five have significant infrastructure and construction implications. The sixth growth objective provides for innovative and fiscally responsible approaches to achieving the first five.

Modern competitive infrastructure is a pre-requisite for sustained economic growth. Just as in the past when new infrastructure platforms were required to increase the exports of grains with railways and grain handling facilities, the export production of uranium, potash and other minerals with heavy haul roads, more railways and storage facilities, and oil development requiring pipelines and refineries. Looking ahead the province cannot achieve its full economic potential without infrastructure suitable for the future development of Saskatchewan's human and natural resources.

### ELEMENTS IN THE SASKATCHEWAN GROWTH PLAN

- 1 Investing in the infrastructure required for growth.
- 2 Educating, training and developing a skilled workforce.
- 3 Ensuring the ongoing competitiveness of Saskatchewan's economy.
- 4 Supporting increased trade, investment and exports through international engagement.
- 5 Advancing Saskatchewan's natural resource strengths, particularly through innovation, to build the next economy.
- 6 Ensuring fiscal responsibility through balanced budgets, lower debt and smaller, more effective government.

Looking forward, therefore, requires an understanding of the growing infrastructure requirements of an expanding economy. As the provincial government sets targets for future economic growth, there is a continuing need for new and expanded infrastructure in the form of water supplies and storage, new roads and bridges, urban subdivisions, pipelines and more. However, these future requirements are not alone sufficient to meet Saskatchewan's growing infrastructure demands. For many years a lack of investment in essential public and private infrastructure led to an infrastructure deficit that will not easily be removed in any one year of the provincial budget cycle.

In 2016 the Canadian Chamber of Commerce noted in its **Top 10 Barriers to Competitiveness** the connection between infrastructure and the economy noting: "Canadian resources cannot get to world markets." Furthermore: "Canada's trade and foreign investment flows depend on natural resources and its future economic prosperity depends upon its ability to provide reliable infrastructure to allow Canadian energy resources to fuel Asian economic growth at world market prices. Yet, Canadian energy products are exported nearly exclusively to the United States because Canada lacks the infrastructure to get these products to markets abroad. Governments need to support pipelines and other infrastructure that will allow Canadians to trade with the world. (p.4)"

The Government of Saskatchewan recognized these considerations in its Plan for Growth stating: "Past failures to adequately maintain and replace infrastructure in Saskatchewan are contributing to mounting infrastructure demands today, most notably on Saskatchewan's highways".(p.16) Proactively addressing these considerations is central to provincial economic competitiveness. "At a time when the quality of Canada's own trade infrastructure is showing signs of increased strain, competitors are raising the bar by aggressively investing financial resources and political capital to improve their own trade infrastructure". Clearly, most agree that competitive infrastructure is the foundation for future growth and that our competitors in the world do not stand still.



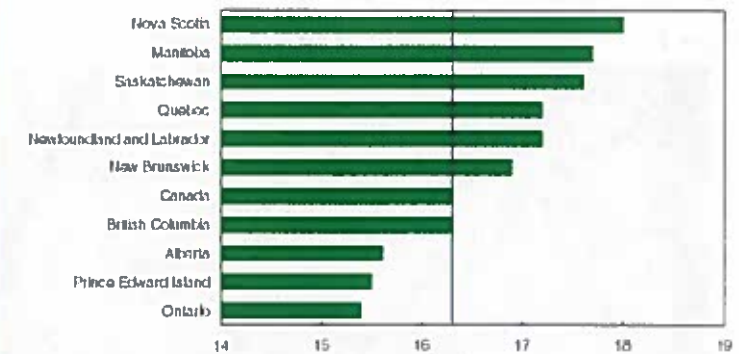
For a country that trades as much as Canada does, the competitiveness of its trade infrastructure is one of the most significant determinants of the quality of life that Canadians have come to expect. This is because Canada's export-based economy relies upon its roads, ports, waterways, railways, airports and pipelines to move Canadian products and services to the markets of its trading partners around the world. Together, these transportation and logistics assets that we call trade infrastructure combine with information systems and Canadian ingenuity to form the backbone of a trade network that, today, accounts for more than 60% of the country's collective income.

With this much of Canada's annual gross domestic product tied to trade, the relative health of its trade infrastructure network directly affects the availability of jobs and whether or not Canadians can get to them. Maintaining the competitiveness of Canada's trade infrastructure also pays real dividends because it directly generates more new revenue than other forms of infrastructure and in so doing, helps pay for the country's social and economic priorities.

Canadian Chamber of Commerce, *The Infrastructure that Matters Most: The Need for Investment in Canada's Trade Infrastructure*, Ottawa, 2016

The lack of attention by many past governments on the state of infrastructure in the province led to Saskatchewan having some of the oldest public infrastructure in Canada by 2007. While some progress has been made to improve the infrastructure base much remains to be done.

**Figure 18 Age of Public Infrastructure in Canada, 2007**

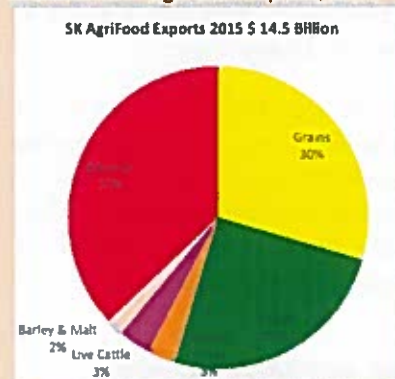


Source: Statistics Canada Special Tabulation, Investment and Capital Stock Division, Ottawa.

Much of Saskatchewan's infrastructure is old. The Province has been above the national average share (%) of estimated useful life since 1993. In 2007, highways and roads in the province had passed 59% of their estimated life, compared to the national average of 53%, the second largest gap among all provinces.

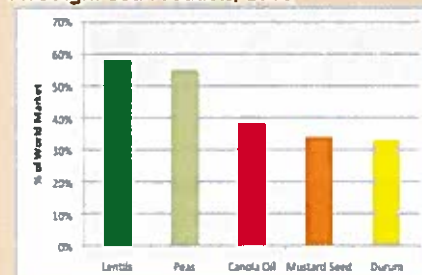
Saskatchewan's economic wealth is founded on its extraction and processing of natural agriculture, mineral and energy resources that together account for 65% of real provincial output. All of these goods must be exported out of the province, 60% of them to international destinations in the United States and around the world often involving transshipment on land, air and sea.

**Figure 19 Saskatchewan Agri-food Exports, 2015**



Source: Government of Saskatchewan, 2016

**Figure 20 Saskatchewan Share of Global markets in Five AgriFood Products, 2015**



Source: Saskatchewan Plan for Growth, 2015

Most recognize that Saskatchewan's future growth is tied to growing international demands for food and energy products. As the world population grows from today's 7.4 billion by an additional one to two billion people, there will be a growing demand for the foods, minerals and fuels that Saskatchewan produces. This development is apparent in the growth of Saskatchewan agrifood production that was \$14.5 billion in 2015 (Figure 19) and dominant in many global markets (Figure 20).

These agricultural exports did not always have the same product distribution they have today. Historically grains, dominated production and had its own bulk transportation and handling system of country elevators, branch line railways and provincial grain companies. However, a changing world population has now led to oilseeds, pulses and special crops to account for two thirds of export production. This requires new export infrastructure on road and rail. This led to the demise of the wooden grain elevator and the construction of inland grain terminals with longer rail sidings capable of loading unit trains.

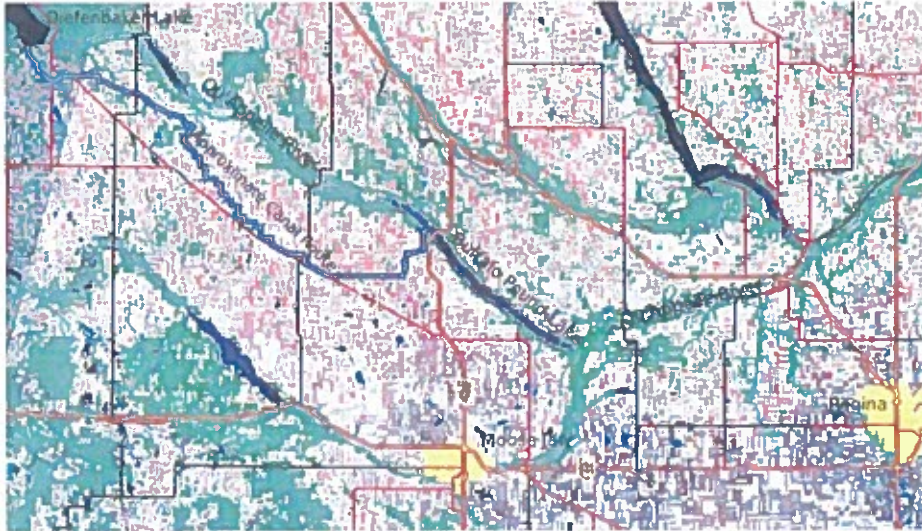
Different crops with different market geographies and handling requirements need crop specific handling systems that is not always bulk and movements may increasingly be containerized.

In time, the addition of irrigated acreage may further change the crop mix, the export destinations and also the requirement for crop specific transportation and handling infrastructures. Success in export cannot be achieved without modern, competitive agricultural handling systems.



Agricultural diversification in Saskatchewan can mean an increase of as much as two million acres of irrigated lands, large increases in crop yields on irrigated acres and higher value added crops. Irrigated acres would also bring reliability to the annual production and establish the basis for food processing investments. At a time of global warming with increased risk of drought for dryland agriculture, increasing irrigation becomes a sensible long term climate change adaptation response. These investments are typical of the foundation construction infrastructure required to facilitate an expansion in agriculture, mining and population growth. Some projects can be seen as new infrastructure foundations for these types of development and there will be more with different approaches to infrastructure management.

**Figure 21 Upper Qu'Appelle South Conveyance Project**



Source: Upper Qu'Appelle Water Supply Project, Economic Impact & Sensitivity Analysis, 2012

The proposed Lake Diefenbaker – Buffalo Pound irrigation canal or conveyance would not only open up 100,000 acres of irrigable lands for agriculture, but also secure a reliable water supply for the Qu'Appelle Valley communities and industries. The total cost of developing the water supply canal was estimated in 2012 at \$1.15 billion. However, other agriculturally related investments would be about \$819 million, for a total cost of almost \$2 billion. On the top of these investments come industrial building blocks for mining, livestock and food

processing of almost \$17 billion that would proceed secure water supplies. As a result the project has a very high investment multiplier - a one billion dollars investment in the conveyance attracting seventeen times that amount in private investment transforming much of southern Saskatchewan to another era of sustainable development.

Further west in the driest part of Saskatchewan there have been proposals for dams like the Meridian on the South Saskatchewan River and Highgate on the North Saskatchewan to create water reservoirs for distribution to drought prone areas, to generate hydro power and create the foundation for a water distribution network throughout the Province. A start at this foundational infrastructure was made in the 1950s with the South Saskatchewan River project that built the earth filled Gardiner and Qu'Appelle dams and created the 200 km long Lake Diefenbaker. Today and in the future there are clear opportunities to do more starting with investments, public and private, in construction and infrastructure.

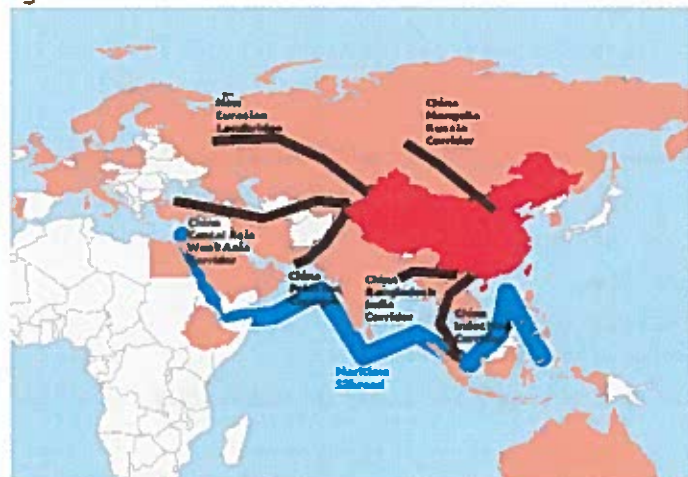
**Figure 22 Saskatchewan Water Infrastructure Investments**



SCHA members would be the foundational start to any of these projects in water supply or transportation from which economic growth in minerals, agriculture and population growth can develop. Establishing this domestic provincial capacity within Saskatchewan to construct infrastructure is, therefore, an important base for sustainable future growth.

The Western Transportation Advisory Council (2015) has noted: "Transportation needs are changing. The shipper community wants to ensure that the transportation community understands its changing needs for transportation services in the future. Agriculture is a good example. Producers will further diversify crop production, reducing acreages of wheat and increasing production of oilseeds and special crops, therefore the demand for containers rises. Greater domestic processing will change the outputs – ethanol, distiller grains, biodiesel, etc. – these products require different equipment to transport the goods within Canada and throughout North America. Although the overall volumes of grain exports will be steady, transportation networks and systems will be required to adapt. Trucking will increase, with more shorter hauls of products from farm to processing plant and less bulk grain moved by rail. There will also be more north-south moves." Similarly, forecasts of long-term potash demand are tied to the application of fertilizers to increase food production around the world. None of these increases in exports of foods or fertilizers can be achieved without improvements in the efficiency and capacity of the transportation systems in Saskatchewan and along the supply chains to major transshipment points like Vancouver and U.S. border points.

**Figure 23 Asia's Belt and Road Initiative**



**Including:**

Eurasian Land Bridge, running from Western China to Western Russia  
 China-Mongolia-Russia Corridor, running from Northern China to Eastern Russia  
 China-Central Asia-West Asia Corridor, running from Western China to Turkey  
 China-Indochina Peninsula Corridor, running from Southern China to Singapore  
 China-Myanmar-Bangladesh-India Corridor, running from Southern China to Myanmar  
 China-Pakistan Corridor, running from South-Western China to Pakistan  
 Maritime Silk Road, running from the Chinese Coast through Singapore to the Mediterranean

Such long-term commitments to expanded transportation corridors are underway around the world with large scale, long distance, transportation trade infrastructure plans. These include the Russian expansion of infrastructure for the northwest passage to link Asia and Europe, long distance road, rail, water and air corridors in Europe and now joining Asia, Europe and Russia the Belt and Road initiative geographically structured along six corridors and a maritime silk road. (Figure 23)

The highly conservative provincial plan for growth would double the value of Saskatchewan's exports by 2020; increase crop production by 10 million tonnes by 2020; and, Increase exports of agricultural and food products from \$10 billion in 2011 to \$15 billion. Longer term freight forecast estimates for west coast ports suggest much higher export levels could be possible for both container and bulk movements. However, in many cases the constraints on growth in exports lies in the absence of modern, competitive trade infrastructure in Canada.

Saskatchewan has long understood the importance of the Lakehead and west coast ports. Saskatchewan's private sector invests in storage and handling facilities at ports and railway movement capacity of hopper cars and containers. Far less attention, however, has been paid to the interprovincial travel connections to the U.S. in the south, east to the Lakehead, northwest to Churchill and to the west coast ports. Strategic transportation links have been a talking point for Western Premiers, but rarely converted into high volume commodity highways for road, rail or air or equally important, the transshipment points to create lower cost, higher volume, movements.

Transportation networks in Saskatchewan must grow and expand capacity to make strategic links to new markets. Such connections could include twinning highways to the south to access additional rail export capacity on the Burlington Northern & Santa Fe Railroad providing new export corridors into U.S. and global markets. Opening of the Northwest Passage may allow for northern export links to complement west coast and Lakehead routes to Asia and Europe.

Saskatchewan needs to consider its own strategic gateways and corridors to its growing global marketplace. Increased container traffic for manufactured and bulk goods is in the future for provincial export and import traffic. West coast container traffic forecasts suggest this could grow by as much as 60% by 2025. In the two decades to 2016 exports through Vancouver of special crops, many from Saskatchewan, grew by 563%. Further development of inland multi-modal container ports like the Global Transportation Hub in Regina will be required to meet the anticipated future growth.



In 2014 New West Partnership Premiers met with industry leaders to explore ways to improve the long-term efficiency, reliability, and competitiveness of western Canada's transportation system noting: "The current transportation system has served us well but is nearing its limit." NWP Provinces and industry committed to build capacity for long-term growth with enhancements in Saskatchewan including twinning major highways and building perimeter roads in Saskatchewan to increase the flow of goods to key markets. They noted international competitors will not wait and that Canada needs a world class supply chain, coordinated across all modes of transportation, to capture the full benefit of global market opportunities. Exports and inbound container traffic are expected to double in the next 10 years. It is necessary to develop a long term plan for infrastructure to meet the doubling of demand. Accordingly, the Pacific Gateway Alliance was to lead the work and report back to Premiers in six months – May 2015.

It is clear that Saskatchewan has a number of construction intensive infrastructure development and expansion requirements for nearly all of the future outlook scenarios of growth for the province based upon:

**Expanded agricultural and natural resource production (energy, food and fertilizers) to increase global exports comprised of:**

- agricultural commodity bulk and special crop exports
- food processing exports
- fertilizer exports – potash, nitrogen
- energy exports (uranium, oil, gas, electricity)

**A growing population, increasing located in major centres requiring urban subdivisions, development and recreational infrastructure.**

**An expanded transportation networks on the land, sea and in the air to:**

- transport goods and people into global destinations;
- provide for reduced congestion for daily commutes to work, and,
- provide for intermodal scale transfers into more efficient movements.

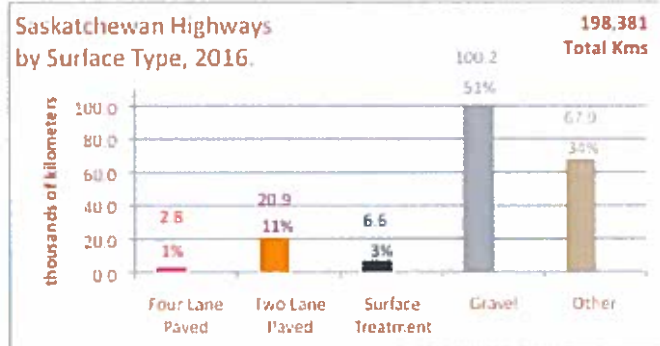
**A rebuilding and expansion of utility networks for electricity, gas and water to accommodate all of the increased economic and social activity.**

The scope of Saskatchewan's infrastructure challenge related to this economic future is clearly visible by considering the distribution of provincial roads shown in Figure 24. This shows that not only is the provincial network aging as previously demonstrated earlier (Fig. 17, page 11) but that even today only 12% of the network is paved and capable of carrying heavy hauls year round. The 3% that has had the surface treated is too often a thin membrane only suitable for higher vehicle weights in the winter cold, that may itself be shortened with global warming.

The gravel network that accounts for half of the network, and first built for the "eight mile haul horse and cart" era remains the primary access network for a major growth sector for the province. While created for perhaps a one or two ton movement with horse and cart, today it is used for a 42 tonne Super B tractor trailing working seventy to hundred kilometer movements to inland grain terminals and a highly competitive country handling marketplace with increasing benefits for farmers.

Heavy haul routes in a modern, long distance grain handling system are founded in a highway network with higher vehicle weights and upgraded for current and future conditions. Improved highway infrastructure therefore generates immediate income benefits for farmers that continue for years to come. Yet, in spite of having an agricultural development priority for the Saskatchewan economy, in too many cases, the gravel roads that account for over half of the provincial highway network have not been upgraded, for vehicle weights in excess of the 54,000 kg necessary for farmers to realize the full freight and storage economies associated with their rapidly changing industry.

**Figure 24**



Source: Saskatchewan Bureau of Statistics



## FARMER BENEFITS FROM IMPROVED ROAD AND FREIGHT INFRASTRUCTURE, NOW AND THEN

### Grain & The Eight Mile Haul

"For years I hauled with a wagon box that held sixty-two or sixty three bushels, and then I was able to buy one that held seventy-eight bushels to eighty bushels. Well, it gave me a twenty five percent increase in volume. It made you work harder to get your load on twice a day, but with a twenty-five percent increase in volume, two trips a day with that, I was hauling 150 bushels to town instead of 120. And that was my first step, you might say to modernization.

I had a little over eight miles to haul one way. Our trouble was that, from our house, you went down through a coulee and then up, and that brought you onto the highway, and then you had to go up a steep hill.

Well, once I got the seventy five (2 tonnes) bushel box, that was a tough lug for a team to take up that hill and up onto the level. So we used to do what we called "put a snatch team on" ahead, and take it up the hill with four horses, and then take the snatch team off and head for town with the two horses.

Some people in our area had longer hauls than we did. From Balcarres to Ituna is thirty miles. So people at the halfway mark had fifteen miles to haul to market, and the people who were off to the side had maybe another five or six miles. Hauling a load of grain fifteen miles is pushing five hours on the road with a team. So it would take a full day to haul one wagon load to market for those people. "

Extract from Earl, Paul, D., Mac Runciman: A Life in the Grain Trade, University of Manitoba Press, 2000.



Source: Saskatchewan Archives.

### Today's Farmer Benefits Built From Higher Weight Roads

For the farm community commercial vehicle weight gravel roads allow increased income opportunities. In the new inland terminal grain handling system farm trucking is more than the old eight mile haul to the local wooden elevator and captive to the spatial monopoly of the local grain elevator.

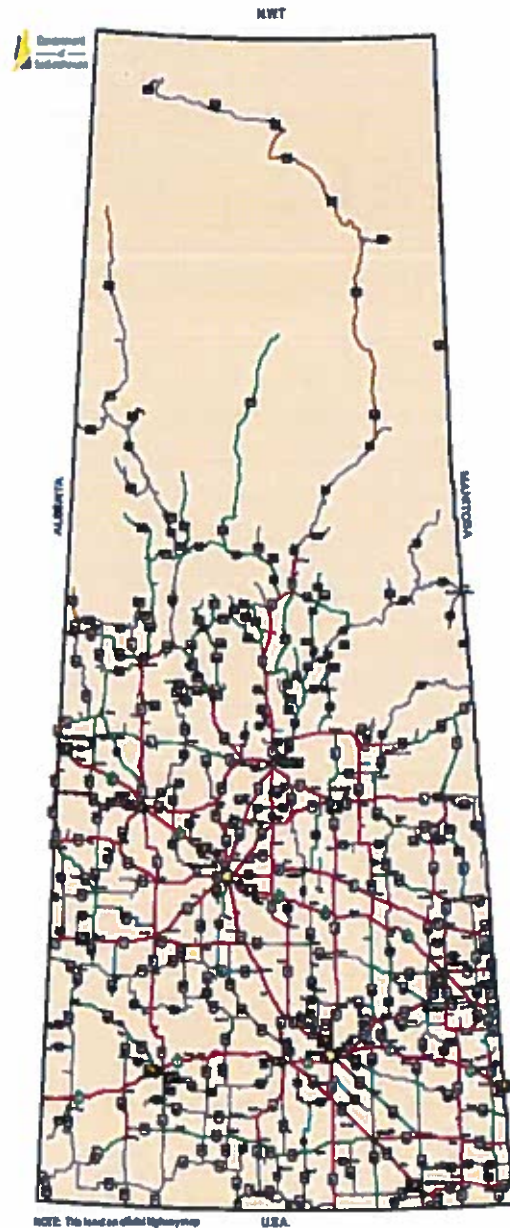
A 42 tonne super B tractor trailer with a registered gross vehicle weight of 54,000 kilograms or more can increase farmer marketing options. Traveling a little farther for a better price becomes a feasible alternative when you're hauling more grain. Grain companies compete for the business over a larger area. Grain company trucking premiums increased the return on each tonne of grain. Larger trucks operate as additional storage at harvest holding several combine loads and allowing the combine to keep working for longer hours.

In addition, larger truck ownership also allows farmers to deliver their own grain, but also to generate some additional income in the off season. These are all critical benefits when harvest help is not available. Improved gravel road networks therefore benefit farmer incomes under the paradigm of the more efficient grain handling and transportation network of which the rural provincial road system is the starting point. Accessing a higher vehicle weight road network is the first step in a more competitive, higher income generating country grain market.



# VEHICLE WEIGHTS ON THE SASKATCHEWAN HIGHWAY NETWORK

Primary Vehicle Weights in Saskatchewan are only available on the major highways and determine the allowable vehicle sizes and weights that can be used in different seasons to protect roads and bridges throughout the year and during the spring break-up.



**Map Legend Weight Classifications**  
 Primary Weight  
 9 Month Primary Weight (Secondary)  
 Secondary Weight

- The highways and Transport Act (1970) sets maximum vehicle weight and dimensions for the following reasons:
1. Maximum Gross Vehicle weights protect bridges.
  2. Maximum truck axles or axle groups weights protect bridges and pavements.
  3. Maximum tire weights protect pavements and roadbeds.
  4. Maximum vehicle dimensions protect bridges, overpasses, etc. and other highway users allowing safe travel by the public.
  5. Maximum internal dimension limits ensure vehicles are designed to achieve desired levels of stability.

For weight enforcement purposes only, all public highways are classified as:

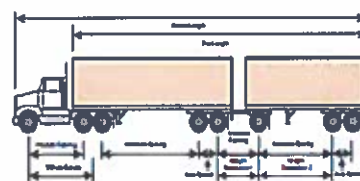
**Primary Highways** (red on the map) most allow primary weights year round. Primary weights extend down the first 15 km along a secondary provincial highway or combination of secondary highways and provincial roads (Community Access Roads) from the intersection with a primary highway.

**9 Month Primary Highways** (green on the map) only allow primary weights for 9 months of the year and have weight limitations from April through June.

**Secondary Highways** include all provincial highways and provincial roads shown on the Official Road Map other than those designated as primary. This includes public highways other than provincial highways and provincial roads, but excludes public highways within urban limits. Generally, this includes all roads maintained by Saskatchewan's rural municipalities including the 600 and 700 series roads shown on the Official Road Map.

**Year Round Weight Restricted Highways:** Certain highways have maximum gross weights regardless of their classification, the vehicle configuration or the time of year. Weight restricted secondary highways are limited to 41 500 kg, unless otherwise noted.

Source: Saskatchewan Ministry of Highways and Infrastructure, A Guide to Saskatchewan Weight and Dimension Regulations



Configuration	Maximum GVW Allowed
Primary	41 500
Secondary	36 000
Winter Primary	41 500
Winter (S, W)	41 500

Configuration	Maximum GVW Allowed
Primary	41 500
Secondary	36 000
Winter Primary	41 500
Winter (S, W)	41 500

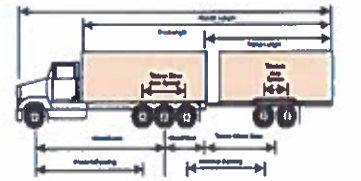
Configuration	Maximum GVW Allowed
Primary	41 500
Secondary	36 000
Winter Primary	41 500
Winter (S, W)	41 500

Configuration	Maximum GVW Allowed
Primary	41 500
Secondary	36 000
Winter Primary	41 500
Winter (S, W)	41 500

Configuration	Maximum GVW Allowed
Primary	41 500
Secondary	36 000
Winter Primary	41 500
Winter (S, W)	41 500

Configuration	Maximum GVW Allowed
Primary	41 500
Secondary	36 000
Winter Primary	41 500
Winter (S, W)	41 500

Configuration	Maximum GVW Allowed
Primary	41 500
Secondary	36 000
Winter Primary	41 500
Winter (S, W)	41 500



Configuration	Maximum GVW Allowed
Primary	41 500
Secondary	36 000
Winter Primary	41 500
Winter (S, W)	41 500

Configuration	Maximum GVW Allowed
Primary	41 500
Secondary	36 000
Winter Primary	41 500
Winter (S, W)	41 500

Configuration	Maximum GVW Allowed
Primary	41 500
Secondary	36 000
Winter Primary	41 500
Winter (S, W)	41 500

Configuration	Maximum GVW Allowed
Primary	41 500
Secondary	36 000
Winter Primary	41 500
Winter (S, W)	41 500

Configuration	Maximum GVW Allowed
Primary	41 500
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Winter (S, W)	41 500

Configuration	Maximum GVW Allowed
Primary	41 500
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Winter (S, W)	41 500

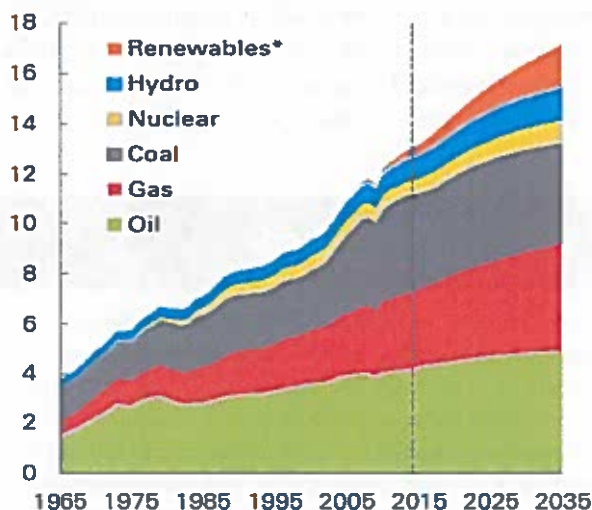
Configuration	Maximum GVW Allowed
Primary	41 500
Secondary	36 000
Winter Primary	41 500
Winter (S, W)	41 500



## ENERGY INFRASTRUCTURE REQUIREMENTS IN SASKATCHEWAN'S FUTURE

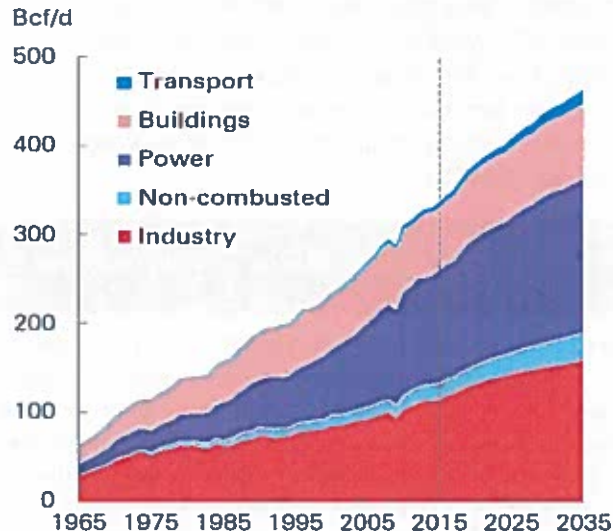
Saskatchewan is rich in energy resources (coal, uranium, oil, gas, wind, solar and hydro) all of which could contribute to the economic future of the province and the world. Most energy products are sold into U.S. and global markets that change rapidly. By 2020 BP's Global Energy Outlook to 2035 shows world output (GDP) almost doubling, driven by fast-growing emerging economies, as more than 2 billion people are lifted from low incomes. This rising prosperity drives an increase in global energy demand, although the extent of this growth is substantially offset by rapid gains in energy efficiency with energy demand increasing by only about 30%. Fuel mixes continue to adjust, although coal, oil and gas, remain the dominant sources of energy. Renewables, with nuclear and hydroelectric power, provide half of the additional energy required out to 2035. Gas grows more quickly than oil and coal, led by US shale gas. North America increases its share of world energy markets accounting for 30% of the world's natural gas, 74% of the world's shale gas, 23% of global liquids and 85% of tight oil supplies. By 2035 North America is expected to account for one fifth of global oil production. A rapid expansion of LNG is likely to lead to a globally integrated gas market. North America will be energy self sufficient and a world leader in natural gas production. (Figures 25 and 26)

**Figure 25 Global Primary Energy Consumption By Fuel**  
Billion toe



Source: BP Energy Outlook, 2017

**Figure 26 Global Gas Consumption By Sector to 2035**  
Bcf/d



As a major energy producer in Canada, Saskatchewan will live with the changes underway in the global and North American energy markets. The sector has developed important production infrastructure but only limited infrastructure for the emerging realities of the global energy markets of which it is a part. Oil pipeline capacity has been limited and replaced with rail movements south of the border, often from new multi-modal rail loading facilities. Natural gas is increasingly replacing coal in power generation and industry both in North America and Asia and will again challenge the export capacity by pipeline in the years ahead. Many power stations, existing and new, will be powered by the lower cost natural gas. Uranium demand is expected to grow between 1 and 2% a year as nuclear demand continues and will soon require investment in long term storage. Wind and solar continues to expand. For Saskatchewan expected growth in energy production in a more competitive marketplace will require access to more transportation, distribution and refining markets. Much of the outlook for these activities continues to grow, although perhaps at rates that are lower than the boom in the first decade of the century.

Significantly, realizing these future energy production and export opportunities has been conditional on access to transportation and processing infrastructure. Thus much of the Asian export LNG opportunity to Western Canada was lost when essential energy infrastructure could not obtain regulatory approval and investment on the West Coast.

Figure 27 Canadian Oil Export Pipeline Capacity and Oil Exports to 2040.

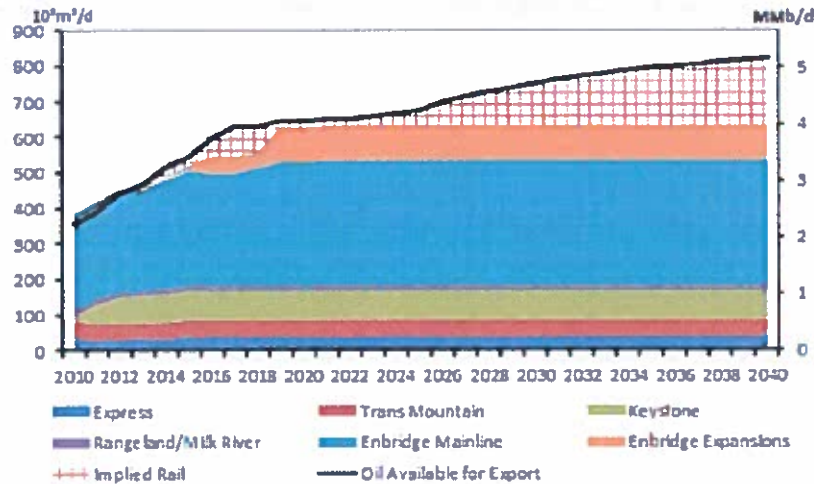


Figure 28 New Electrical Transmission Infrastructure Platforms



Canada's National Energy Board highlights the anticipated growth in the requirement for pipeline capacity for oil exports to 2040. (Figure 27). While the Keystone pipeline to the U.S. now proceeds, there remains a lack of pipeline capacity for future growth. The rebuilding and expansion of utility networks, however is not limited to oil and gas. Electricity demand has grown with the expansion of the provincial economy and population and requires modernization. New gas fired power stations will be complemented with new high voltage transmission lines. There is again consideration of a Western Canadian Energy Grid.

## WATER & INFRASTRUCTURE IN SASKATCHEWAN'S FUTURE

Water demands are increasing with the growth of solution mining in the south and the concentration of the population into major cities. Any growth in irrigated acreage, agricultural livestock and food processing will increase water demands in a province often challenged in its water supply with either too little (drought) or too much (flood) water. Water planning in Saskatchewan is in its infancy and a long term plan to better harness the provincial water supplies in an era of global warming will add another layer of infrastructure necessary to support the next generation of economic development. The Qu'Appelle Conveyance from Lake Diefenbaker to Buffalo Pound could be the start of a Saskatchewan Water Management Network designed to adapt the province to some of the extremes of global warming where drought already comes two years in ten, provide water security for agriculture, industry and cities and provide for the more efficient utilization of the waters of the Saskatchewan Nelson River Basin. The starting point for any Saskatchewan Water Management Network is to found in a pipeline and canal system built around Lake Diefenbaker to provide water security throughout the southern half of the province.

This concept is not new. Following the droughts and environmental degradation of the Dirty Thirties Saskatchewan political leaders with foresight proceeded with the South Saskatchewan River Project that led in the 1960s to the construction of the Gardiner and Qu'Appelle Dams on the South Saskatchewan and Qu'Appelle Rivers, the downstream regulation of the Qu'Appelle River and the formation of the 225 kilometer Lake Diefenbaker.

At the time the Gardiner Dam was the largest earth filled dam in the world.



Figure 29 Lake Diefenbaker

(Max depth: 66 m; Length: 225 km; Area: 430 km<sup>2</sup>;  
Catchment: 135,500 km<sup>2</sup>; Width: 6 km; Shore length: 800 kilometres)

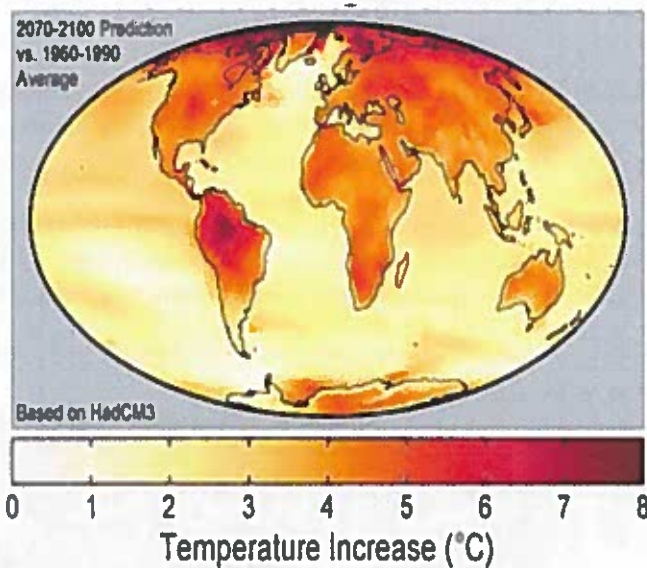


## INFRASTRUCTURE FOR SASKATCHEWAN WATER SECURITY IN THE ERA OF GLOBAL WARMING

Global warming has become a reality through much of the world with specific implications for Prairie Canada and the Saskatchewan's climate and vulnerability to water supplies. Notably, global temperature increases are highest in the high northern latitudes that include the Canadian Prairies. (Figure 30) Saskatchewan already experienced the effect of massive environmental change in the 1930s (Dirty Thirties), when protracted droughts led to loss of soils, the devastation of the community structure, municipal bankruptcy and massive poverty and out migration. Today the effects of a warming planet are seen in an increasing number of extreme weather events (floods and droughts). In 2017 much of southern Saskatchewan experienced well below the average level of precipitation through the growing season with implications for agriculture, industry and municipalities. (Figure 31)

In the 1930s extreme drought led to a visionary plan to create Lake Diefenbaker and distribute the waters from the South Saskatchewan River to the four points of the compass - to the north east towards Saskatoon through Blackstrap and the M1 Canal, down the Qu'Appelle River to the south east, to the south west into the Swift Current Creek and to the northwest towards the North Saskatchewan River and North Battleford on the west side of Lake Diefenbaker. (Figure 32)

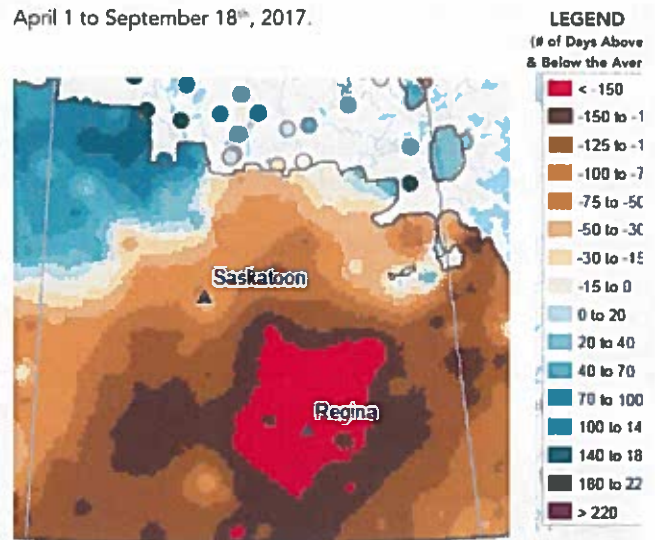
Figure 30 Global Warming Predictions to 2070-2100



Source: UK Meteorological Service, 2017.

Figure 31 Departure from Average Precipitation (mm)

April 1 to September 18<sup>th</sup>, 2017.



Source: Agriculture and AgriFood Canada

Figure 32 Saskatchewan's Visionary Water Plan for the South Saskatchewan River Project



Source: SIPA, Time to Irrigate, 2008, Agrivision, Water Wealth, 2005

Today, the political vision from an earlier era can provide the starting point for a provincial regional distribution water utility to both store and distribute water within the south of the province with the security of the North and South Saskatchewan river systems and a network of pipelines and canals, like the Qu'Appelle South Conveyance from Lake Diefenbaker to Buffalo Pound. A Saskatchewan Water Management Network would distribute and provide water security for agriculture, industry and municipalities.

Such long term projects would represent another future infrastructure platform that in time could further expand to include the Meridian Dam and a regional network extending to the west and south west of the Province. Saskatchewan will need to adapt to the harsh realities of global warming whether from flood or drought. With agriculture growth and diversification at the centre of future outlooks future water security through irrigation, for industry, people and recreation becomes a competitive advantage for the future economy.

## Climate Change Expectations, Adaptation, Water Security Infrastructure & Investment.

Saskatchewan has one of the most volatile climates in the world. Droughts have been a recurrent feature of the 20<sup>th</sup> Century and are expected to increase in frequency in a more variable climate. Climate changes are affecting average temperatures on the prairies, particularly in the northern part of the region, the hydrologic cycle with more uncertainty in precipitation, reduced stream flows, and an increased frequency of extreme events. When these changes occur they can devastate dryland agricultural production, the mainstay of agricultural exports. Without supplemental use of water for irrigation in agriculture the production potential of the province will be threatened in the years ahead as it has been in 2017. Periodically these changes already have, and in the future could have further devastating impacts on dryland agricultural production. Without supplemental use of water as irrigation the agricultural production potential of the region is threatened.

Some elements of climate change will be particularly important for the future of Saskatchewan agriculture. These are: higher growing degree days, and extreme events, particularly droughts. Various studies for the Prairie provinces suggest an increase in the production of small grains and forages by up to 18% of current yields and increasing returns for irrigation. The frequency of droughts is also forecast to increase from the current frequency of 8% to 13% by 2040 and 18% by 2060.

Water security is, therefore, a critical to adaptation to climate change and the essential infrastructure for sustainable investment and development. Water management and storage will new water storage and distribution infrastructure, therefore, becomes a rational adaptation strategy to address the water issues that the province faces.

Irrigated agriculture is also the foundation for a value chain extending from increased agricultural yields and production, to higher value added crops, to processing, distribution and exports. Industries with large water requirements for processing, cooling or washing require certainty of water quality and water quantity before investment decisions are made.

### Water Infrastructure and Some of the Value Added it Supports



Water Utility  
Irrigation Canal



Irrigated Ag Value Added



Potash Mining



Livestock



Food Processing

New industrial, urban and suburban developments in the rapidly growing economy all require water security of supply. In these circumstances the water license availability may become as important as the supply of raw materials, the cost of energy or the availability of labour. When in 2012 Western Potash obtained a license from the City of Regina for sewage water, a signal was sent throughout the valley that water was no longer a secure resource for future investments.

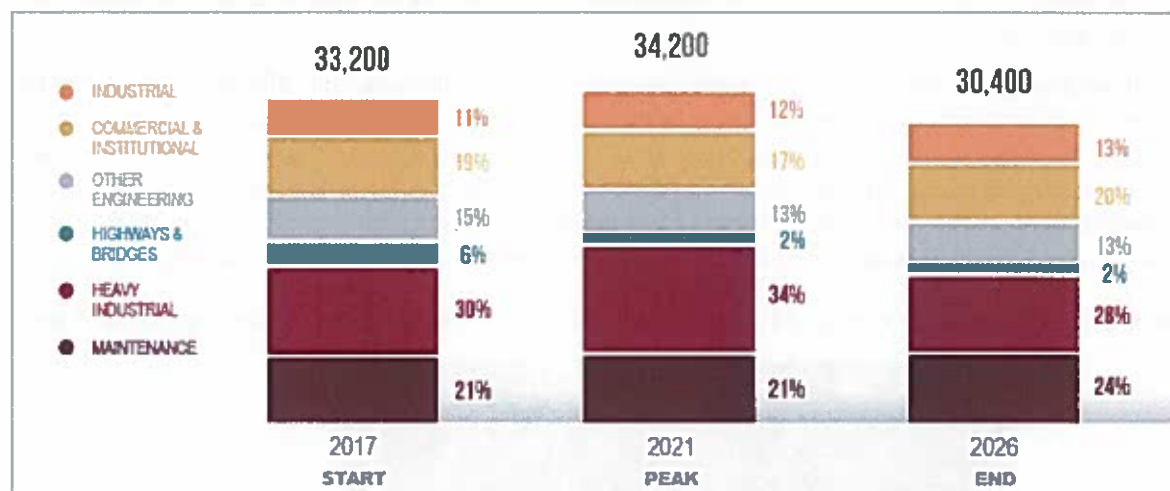
Investment capital is mobile between regions. Investment decisions consider many locational attributes before investments are made. When water supplies are not secure then investing companies must consider whether the economics of their operations and the competitive margins in their industry can accommodate a sole investment in water supply infrastructure. The more secure water supply available from a regional water utility effects both the immediate opportunity, but also the longer term investment and value added climate for the region. In this case, building the water infrastructure platform enables many rounds of value added production in the economy for years to come. These issues have been known for years, but have not been addressed in the context of current planning and financing procedures.



## INVESTING IN PEOPLE AND COMPANIES TO BUILD THE INFRASTRUCTURE PLATFORMS

Construction workers are at the core of infrastructure development. Whether planning and designing the next project, managing the finances, capital and crews, investing in the next round of capital equipment or moving the dirt. As seen earlier construction is a major employer in the provincial economy. Looking ahead Saskatchewan's labour market is aging as a result of many years of past out-migration. The recent resource boom stimulated the growth of labour markets, but now, the commodity recession is creating major labour and corporate challenges to the continued development of the sector. Construction markets were expected to have peaked in 2012 and then show an 11% decline by 2026 (Figure 33). The current ten-year outlook for the sector calls for 9,100 retirements and 10,400 new entrants.

Figure 33 Non-Residential Construction Employment Distribution by Sector, Saskatchewan, 2017, 2012 & 2026



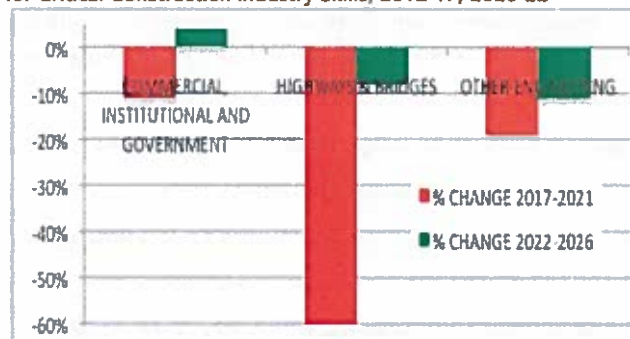
Source: BuildForce Canada, 2017

Figure 34 Change in Non Residential Employment By Major Construction Industry Sectors

Sector	% Change 2017-2021	% Change 2022-2026
Commercial, Industrial & Government	-11%	4%
Highways & Bridges	-62%	-8%
Heavy Industrial Engineering	+14%	-29%
Other Engineering	-19%	-11%

Source: Statistics Canada, BuildForce Canada

Figure 35 % Changes in Labour Demand for Critical Construction Industry Skills, 2012-17; 2026-22



Source: Statistics Canada

Leading the change in construction labour demand has been government policy and a withdrawal of Government demand with a 62% reduction for highways and bridges to 2022 and further 8% reduction through to 2026. (Figures 34, 35). These changes may be understandable responses to ballooning public deficits. Yet they are also major corporate, investment and staffing challenges for SHCA members and the industry. A strong construction sector, capital-companies-workers, is needed to build new infrastructure platforms. Declines in labour demand undermine the development of a stronger Saskatchewan construction sector with capacity to build future infrastructure requirements. Construction demands in Saskatchewan softened in 2017, yet, employment can be sustained at high levels and will return as commodity markets rise and major projects proceed. Construction's capacity to meet growing requirements is predicated on its ability to compete, invest and continue to attract and train workers in a period of both lower growth and future boom.

## INFRASTRUCTURE'S CONTRIBUTION TO GROWTH IN SASKATCHEWAN'S FUTURE

All of these considerations suggest Saskatchewan infrastructure networks in transportation, energy, water and other utilities, requires structural reform to better fit the current and emerging economies and opportunities of the future. Without such change Saskatchewan, already landlocked and distant from transshipment locations, is at an economic disadvantage for accessing its highly efficient rail networks or providing the competitive freight option on roads suitable for long distance heavy hauls to the distant transshipment points in the U.S. the Great Lakes or on the West Coast.

The public policy position outlined by the Government of Saskatchewan in the Plan for Growth, commits to the continued development of the province's agricultural and natural resources but may be limited by constraints that already exist in both the state of infrastructure and the methods of managing the sector. However, the approach adopted towards growth and infrastructure is strongly supported by global findings that have examined the relationship between growth and infrastructure.

Economists view infrastructure as a key element for productivity and growth. Infrastructure affects output by directly increasing infrastructure services, including construction, as a production input. Also, infrastructure improvements raise total factor productivity by reducing transaction and other costs allowing a more efficient use of existing and future productive inputs. In realizing these benefits the critical public policy decision lies in the contribution of infrastructure improvements to the level and growth rate of gross domestic product (GDP). Understanding this relationship determines whether fiscal interventions such as increased infrastructure spending are warranted or can be self financing.

### SASKATCHEWAN HEAVY CONSTRUCTION ASSOCIATION MEMBERS BUILDING THE NEXT GENERATION OF ROAD INFRASTRUCTURE



Calderón and Servén (2004) studied a large cross-country data set that is applicable to Saskatchewan conditions and found positive and significant output contributions from different types of infrastructure assets – telecommunications, transport, water and power. Similarly, Easterly and Rebelo (1993) found that public expenditure on transport and communications significantly raises growth. Sanchez-Robles (1998) found summary measures of physical infrastructure are positively and significantly related to growth in GDP per capita. López (2003) found infrastructure both raises growth and reduces income inequality.

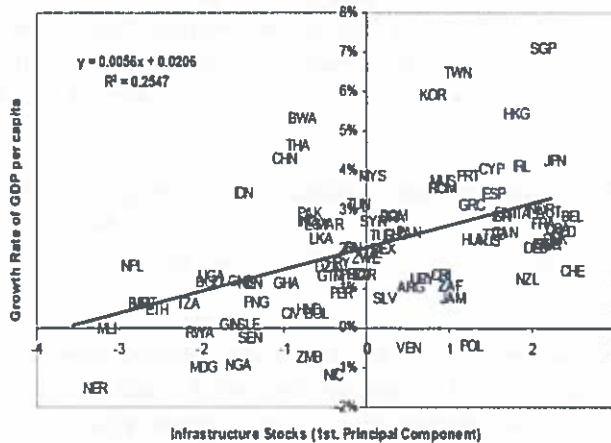
Calderón and Servén (2004) measured the impact of infrastructure development from stocks of infrastructure assets and improved quality of their services on economic growth and the distribution of income for a sample of 121 countries over the 1960-2000 period. Their main results are:

1. The volume of infrastructure stocks has a significant positive effect on long-run economic growth.
2. Infrastructure quantity and quality have a robust negative impact on income inequality.
3. These results, following a variety of statistical tests results reflect causal, and not merely coincidental, effects of infrastructure on growth and inequality.
4. The empirical country findings are significant not only statistically but also economically showing gains in long term per capita growth ranging 1.1% and 4.8%
5. Infrastructure both raises growth and lowers income inequality helps raise the income of the poor more than proportionately.



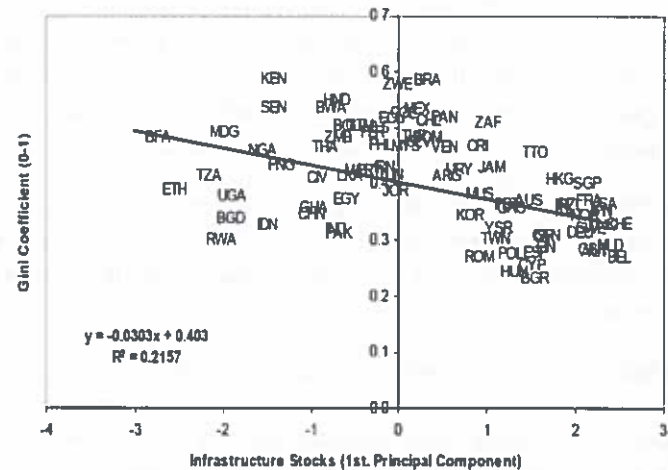
This economic analysis of the relationship between infrastructure and growth shows clearly that as infrastructure quantity and quality improves then the growth rate in per capita Gross Domestic Product - the sum of all economic activity in society - increases. That is the linear relationship shown in Figure 36 risings with the growth in stock of infrastructure. Equally significant, as the stock of infrastructure grows then inequality in society is reduced. The linear relationship shown in Figure 37 for income inequality (the Gini Coefficient) declines as infrastructure stocks increase.

**Figure 36**  
Infrastructure Stocks VS Economic Growth Rate (GDP Per Capita)



Source: Calderon and Servén (2004)

**Figure 37**  
Infrastructure Stocks VS Income Inequality



These findings have direct application to Saskatchewan in so far as there are many small countries in the study base with sizes and natural resource economies not dissimilar to Saskatchewan and, like the province, have developed significant infrastructure deficits. Building for the future requires a long-term commitment to infrastructure investment, that the empirical research from the World Bank and many others suggest would *improve economic growth and reduce income inequalities*. However, the commitment to infrastructure development does not fit neatly into the four-year political cycle, the one year budget cycle, or the vagaries of natural resource booms and busts in the marketplace. New approaches are required to the long term planning of development infrastructure based upon the realities of new and emerging opportunities in the marketplace. For Saskatchewan there is widespread agreement on directions for economic growth through the next decades.

Realizing them within the constraints of annual budget cycles, traditional funding administrative approaches and periodic election and leadership changes becomes a challenge for governments and industry.

#### BUILDING WEALTH FOUNDATIONS WITH THE NEXT GENERATION OF URBAN AND RURAL INFRASTRUCTURE PLATFORMS



## A STRONG FUTURE FOR THE ECONOMY AND ITS INFRASTRUCTURE REQUIREMENTS

Unlike many parts of the world, Saskatchewan has a strong future based on the existing and emerging strengths of its people and natural resources. It is based on innovative and new approaches to its agriculture, fertilizers, food and energy resources. Value chains in each of these areas have only been partially developed in the province. Prospects for further growth and expansion can be good, if the province can have the vision to develop the infrastructure platforms in support of each sector.

In the past the province too often moved slowly to implement its global market opportunities through infrastructure development. Decades passed before Lake Diefenbaker was developed and today its value added potential has never been fully realized. Grain handling reform to increase incomes for farmers through competition, inland grain terminals, unit grain trains and increased trucking waited for decades, while Saskatchewan farmers lost millions of dollars of income compared to their neighbours south of the border.

Saskatchewan future market opportunities for investment are mainly based in global markets that are highly competitive and where trade infrastructure has become an essential pre-requisite for just-in-time delivery, safe, secure delivery with limited transshipment. Higher value added products better cover the cost of freight to distant markets than bulk deliveries.

Modern competitive trade infrastructure is still a foundation for the next rounds of provincial economic growth and global competitive advantage. It includes the modernization and expansion of not simply road systems, but also energy pipelines and transmission systems, regional water utilities, air cargo and container transshipment centres for road, rail and air movements. Increasingly, trade infrastructure must interconnect with wider continental networks to reduce provincial barriers to long distance exports that will remain the generator of provincial economic growth. With stable and sustainable economic growth based on expanded exports and value added products into diverse domestic and international markets, the provincial population will grow and require its own improvements for journey to work, the mass movements of people, and the new subdivisions for urban and rural work, home and play.

In practice, these are the new infrastructure platforms on land, water and air will:

- *transport goods and people into domestic and global destinations;*
- *provide for intermodal scale transfers into more efficient movements;*
- *provide for reduced congestion for daily commutes to work;*
- *rebuild and expand utility networks for electricity, gas and water; and,*
- *support a growing urban and rural populations with infrastructure for living and recreation.*

### INFRASTRUCTURE LEADERSHIP FOR THE 21<sup>ST</sup> CENTURY



Infrastructure development is often large scale requiring continuity of planning, financing and investment over periods that often extend well beyond annual budget cycles and changes in political leadership and party. Realizing a new infrastructure vision for Saskatchewan will require reform of many of the procedures and practices for infrastructure planning in government and are discussed in more detail in the following section of this paper.



## VI. ISSUES IN SASKATCHEWAN INFRASTRUCTURE PLANNING

Seven major issues are identified by the SHCA and other industry interests in the current planning, institutional frameworks and annual management of public expenditures on construction in Saskatchewan.

They are:

### 1. No Long Term Capital Plan

For many years governments of all political persuasions have committed to creating long term capital and infrastructure plans, only to have them disappear with electoral change, fiscal crises, or changing policy priorities. As recently as 2017, SaskBuilds committed to develop “an **integrated infrastructure plan**, to be updated annually to inform the budget development process.” and “ensure that ministries work toward strategically aligning infrastructure investments to the province’s economic growth, population growth and quality of life priorities.”

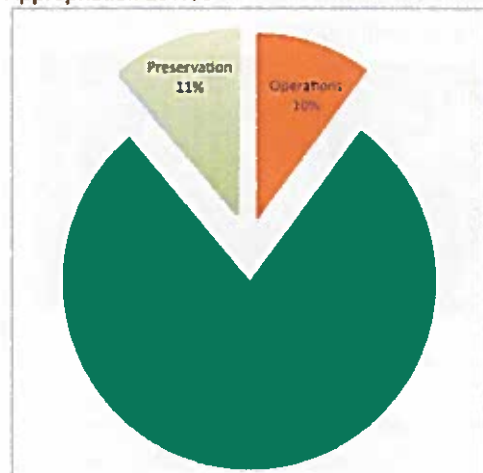
(<http://www.saskbuilds.ca/infrastructure-planning/>, 28-07-2017).

In practice no long term capital plan has been published except for the Ministry of Highways and Infrastructure Plan for the 2017/18 provincial budget for a \$1.1 billion appropriation of which 78.7% was for capital upgrades, 11.1% for network preservation and 10.2% for Ministry and network operations. Most of this spending fell within the existing fiscal budget cycle and was not a part of a long term vision.

### ISSUES IN SASKATCHEWAN CONSTRUCTION PLANNING AND IMPLEMENTATION

1. No Long Term Capital Plan
2. Overlapping and Often Conflicting Jurisdictions for Decision Making
3. Unrealistic Timing For Calls for Proposals Based on Artificial Budget Cycles Rather than Construction Management Priorities.
4. Extreme Annual Volatility In Capital Spending
5. No Life Cycle Capital Management Planning to Reduce Long Term Costs
6. Too Much Reliance On Public Financing for Infrastructure Capital
7. Capacity Development for Saskatchewan Construction Companies.

Figure 38  
Distribution of Infrastructure and Highways Budget Appropriation 2017/8



Source: Ministry of Highways and Infrastructure Plan for 2017/8, Saskatchewan Budget, 2017.

Longer term capital plans are difficult to prepare and implement within the annual budget cycle and four year terms, the basis for provincial government operations. In practice, much infrastructure has a life of perhaps 30 to 50 years, and with appropriate maintenance and renewal can last for a century or more. Over these longer time periods provincial infrastructure platforms must accommodate major changes in markets and technologies and new economic sectors.

A major challenge for long-term capital planning for infrastructure is uncertainty and lack of effective forecasting of the needs of the future economy. Yet, taking the longer view and looking at history, it is clear the Province has been through a number of dramatic evolutions of its economy and society. These changes can clearly be seen in Saskatchewan with the shift in energy sources from first horse and steam on the farm and for long distance movement to gasoline fueled trucks and cars, in the moves from the farm into towns and in each of the mining booms whether for uranium and potash, in the north and the south. These changes will continue.

Review of the integrated infrastructure plan completed by SaskBuilds shows a document that falls well short of the future needs for the

economy and society but simply assembles a backlog of existing available projects as the basis for the plan. In this sense the plan is retrospective and gives no clear direction for future needs and opportunities. Effective long term plans set out the long term (50 Year Plus) requirements and options moving forward to establish an integrated set of infrastructure projects and their financial requirements and sourcing that together can grow the economy - equivalent to a reserve fund study for condominium long term finances over fifty years to address the capital maintenance and replacement costs of existing and proposed capital assets. In addition, for governments with a province wide mandate, it is necessary to address the future requirements for capital to extend and increase the capacity of highway networks and meet the growing capital needs of a growing population in support the continued economic development of the province.

The notion of an Integrated, long term set of planning options is important. Individually any one project like a single road can be useful, but when integrated into the economy and society it serves the possibility of the road enabling opportunities beyond the road. These can include for example, the time saving from commuter congestion, attracting a new mine, or creating the additional capacity for a new external trade connection, all equally important as the investment in the road. Indeed, a complete understanding of the context of the infrastructure will also outline potential financial partners in the investment and many other financing and long-term management and infrastructure development options.

Thus long term infrastructure plans cannot be seen alone in the context of the short term context of the annual budget cycle and as a series of individual projects, but rather as elements in the infrastructure and development platform for the next generation of provincial economic growth. The importance of such infrastructure platforms can be seen at Lake Diefenbaker. This initiative in the 1960s was not only a drought response to the climatic and economic hardships of the dirty 1930s, but were also a major advance in the Province's water infrastructure, seen at the time as the water heart to provide "water arteries" throughout the dry south and centre of Saskatchewan. Over time only some of these arteries were built. Thus the incomplete water infrastructures of the past has limited the full social and economic benefits of the original infrastructure investment that have been well documented as a reduction in rural outmigration, increased value added from irrigation investments on the farm, food processing investments, tourism benefits with increased income and economic output (GDP).

Public investments in infrastructure often create much larger private sector investments in the natural resource, industrial, commercial and residential sectors of the economy with significant implications for job creation, value added production, exports and trade. Thus in the north road access may be a precondition for mineral exploration, mine development and mineral export options. Similarly, studies of a proposed Qu'Appelle Canal with an estimated capital cost of over a billion dollars would lead to five times that amount in private sector investments generating cost benefit ratios for society in the order of 17:1.

#### SOME VALUE CHAINS ASSOCIATED WITH A WATER INFRASTRUCTURE PLATFORM



Many have identified a competitive infrastructure framework as a pre-requisite for economic growth that generates the benefits and value for the wider society. First movers in infrastructure development can often obtain an economic advantage in the competitive frameworks for future growth. Conversely, deferring, delaying or ignoring the need for expanded infrastructure capacity can lose market opportunities and potentially generations of economic growth. For example, the absence of pipeline capacity in western Canada over the past decade resulted in the loss of billion dollar investment opportunities for the export of natural gas to Asia as foreign investors developed the same resource in the United States and other parts of the world.

Effective long term capital plans are the foundation of a vision for public policy towards the future of the province. They are also instructive in developing the public and private capital to bring forward the skilled people, corporate capital and equipment required to implement the vision and to provide the continuity of work to build and expand a construction sector required to implement the vision.



## LONG TERM PLANS & VISION

### THE CASE OF ROTTERDAM AFTER THE SECOND WORLD WAR

Long term capital plans are based on a vision of the future to realize the opportunities that could become available. They require a commitment to the planning process, a periodic renewal of the plan to take into account changes in the marketplace, the development of new technologies, the financial realities of the day and the requirement for new and expanded infrastructure. They commonly involve an ongoing partnership between governments, industry, the public and other stakeholders in the development and management of the plan. The planning process is not always led by government to maintain the continuity of development.

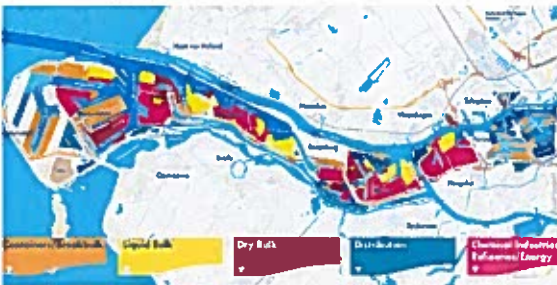
The Port of Rotterdam in the Netherlands first developed as a fishing village. In 1340 the town dug canal to the Schie, a tributary of the New Meuse River and became a port. The 17th century discovery of a sea route to the Indies expanded Dutch commerce and shipping and Rotterdam expanded its harbours and accommodations along the Meuse River. Between 1906 and 1930 Rotterdam's Waal Harbour was built and became the largest dredged harbour in the world.

**ROTTERDAM  
WWII PORT BOMBING DEVASTATION**



During World War II Rotterdam's city centre and more than one-third of the port's facilities were destroyed. Neither the country nor the region had infrastructure, finance or organization to rebuild the Port. As a result the Chamber of Commerce, outside of government, working with national, state and local governments, industries and shipping companies and the ports led a long term planning process to create a vision and plan for a future global port region. Specialized port cargo areas were defined, including a vision for a new port on the North Sea (Europoort). Over time the existence of the Plan led to the staged implementation of a long term plan for the port that included containers, not present after the war, water based industries including oil refineries, the construction of utility and transport corridors and the attraction of related value added activities. Today the Rotterdam economy is still almost completely based

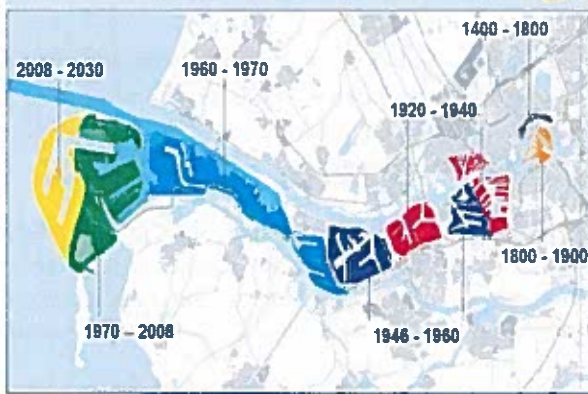
**ROTTERDAM LONG TERM PORT PLAN**



on shipping. The amount of sea-transported goods that pass through Rotterdam's harbours and that of its outport, Europoort, is the largest in the world in terms of capacity, with much of its cargoes consisting of crude oil or petroleum products. Rotterdam is also one of the largest grain and general-cargo harbours on the continent. It is a major transshipment port for inland Europe, with tens of thousands of Rhine River barges using its facilities.

Long term vision, planning and infrastructure were a foundation for sustainable global economic development in Rotterdam.

**ROTTERDAM – STAGED DEVELOPMENT OVER MANY YEARS**



Areas shown from 1800 to 1946 Lost to War Bombing and Rebuilt

**21<sup>ST</sup> CENTURY ROTTERDAM – THRIVING GLOBAL PORT**



## 2. Overlapping and Often Conflicting Jurisdictions For Decision Making

In the interests of system efficiencies governments, have created a multiplicity of responsibility centres for infrastructure planning, related to construction and infrastructure spending. The intended intent of these processes is to improve the efficiency of government decision making has been admirable, but the results do not met the intent. As Milton Friedman noted "One of the great mistakes is to judge public policies and progress by their intention rather than their results."

Today, the result for decision making at all stages of the government capital planning and management process has created overlapping and, too often, competing and conflicting jurisdictions. As a result decision making has become increasingly unresponsive to the needs of the society, economy and market opportunities, significantly increasing the cost of projects for government, denying the economy and society the benefits of the investments and creating external diseconomies to be paid by the public.

For example, with the Government of Saskatchewan each Ministry with construction and infrastructure spending requests is now also under the decision making framework of at least four other central and political institutions that include SaskBuilds, Priority Saskatchewan, Department of Finance and Treasury Board and Cabinet. As a result, decision making for construction and infrastructure projects by individual Ministries such as Highways and Infrastructure, Agriculture, Education, Environment, Municipal Affairs, Water Security Agency and others, has become far more complicated, time consuming and expensive to complete with an increased level of uncertainty for industry, the public and the economy.

Figure 39, Increasing Procurement Complexity

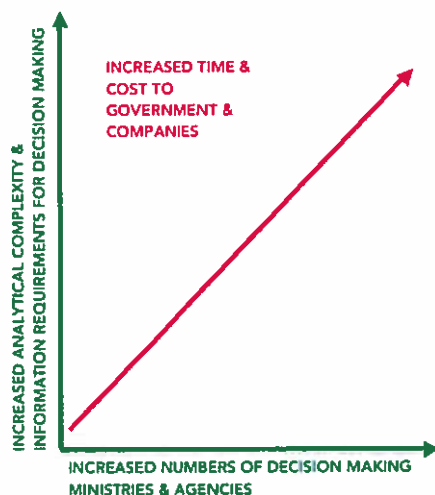


Figure 40 on the next page illustrates the growing complexity of decision making for a Best Value Capital Procurement Process. To these complexities have now also been added new analytical requirements for Codes of Conduct documentation, Multi-Stage Projects and Pre-Qualifications, all of which add to the time and cost of the competitive bidding process. When also considered in the context of the growing number of assessment and decision making Ministries and Agencies before awards are made the complexity of efficient competitive bidding is being lost.

Saskatchewan is a small Province of a little over one million people and does not require the administrative tendering complexity that is built into national and international government systems.

Introducing a range of complex analytical procedures listed in the "Accountable Best Value Procurement" list of requirements is far removed from the decision making information to determine ability to complete the work on time and on budget. Increasing complexity in tendering has also led to the repetition of information provided on corporate capacity that has already been provided.

Such corporate capacity information could reasonably be provided once, but should thereafter be accessible for all proposals by the company. While cost efficiency and streamlining of procedures in companies has been the harsh reality of a competitive marketplace for corporate supply it would seem that it is a concept little understood within the corridors of government, with its multiple layer upon layer of administrative and political decision making.

It is clear that the increasing number of decision making points that have now been introduced into major infrastructure approvals are also adding to the information requirements for both large and small projects. There is a growing divergence in the essential analytical requirements for project decisions and the reality of infrastructure construction in the field. The "Best Value" illustration is multiplied each time a new policy priority is introduced into the decision making framework.



**Figure 40**  
**Statement by the Government of Saskatchewan on:**  
**Open – Fair – Accountable Best Value Procurement**  
**October 14, 2015 Achieving Best Value**

Best value is achieved through analyzing the needs of a particular procurement. In determining best value, public entities should consider matters such as:

**Assessing the Problem:**

- analyzing the nature of the problem to be addressed through the procurement;
- assessing market capacity and readiness (e.g., through market sounding); and
- considering the degree of latitude possible for vendor innovation and creativity in proposing solutions.

**Framing the Solution:**

There are many factors to consider in framing a solution to the problem. While not an exhaustive list, some of these may include:

- o the quality required in the goods and services;
- o budget, timing and resource considerations;
- o potential use of outcome and performance based requirements over prescriptive technical specifications;
- o deliverables and performance commitments;
- o delivery;
- o vendor experience, performance history and demonstrated ability to successfully perform the contract, including service, response time, and support capacity;
- o team and individuals required;
- o risk and compliance management, including safety practices and history;
- o demonstrated knowledge of local conditions such as geotechnical, environmental, local laws, codes and requirements, etc.;
- o environmental impact of the goods and services;
- o commercial or technical risks assumed by the vendor;
- o public policy objectives as relevant to the problem and solution sought;
- o policy, legal and trade obligations;
- o total cost of ownership, which may consider factors such as:
  - purchase or contract price;
  - costs of delays or performance failures;
  - administration and contract management costs;
  - extensions, change orders, price change and cost escalation;
  - price of additional features, enhancements, upgrades, etc.;
  - limitations associated with proprietary or patent rights or constraints;
  - cost to exit the contract if necessary;
  - legal or technical costs;
- o shipping and packaging;
- o transition and training costs;
- o licensing costs;
- o knowledge transfer;
- o regular and ongoing maintenance, asset performance, and life cycle costs; o warranty, parts, and repair; and
- o disposal and remediation costs.

Once a solution to the problem has been framed, evaluation criteria and methodology should be developed that appropriately reflect the relevant factors that have been identified for measuring, and ultimately achieving, best value.

**Other Considerations in Achieving Best Value**

The Government of Saskatchewan encourages the joint procurement of goods and services used by various levels of the public sector when the arrangement results in best overall value or other advantages. Crown corporations and organizations in the municipalities, academic, schools and health (MASH) sector are encouraged to participate when such an arrangement will benefit both their organization and the government. Public entities may, from time to time, enter into a joint procurement activity with other

### 3. Unrealistic Timing For Calls For Proposals Based On Artificial Budget Cycles, Complicated Government Procedures Rather Than Construction Management and Seasonal Construction Priorities

Decision making for procurement is increasingly centralized around a series of analytical issues that are now required for every project and company. While the intent of the process has merit, the results are now undermining the ability of the Saskatchewan industry to respond and resulting in increased costs to government and the public.

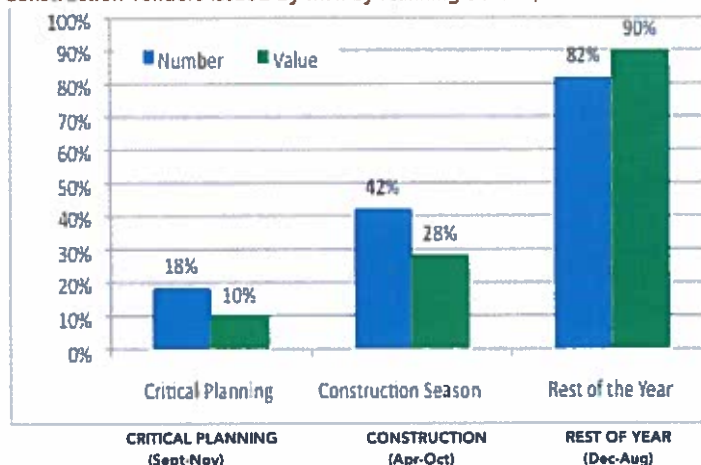
For example, the complexity of the decision making process by the Ministry of Highways and Infrastructure does not take into account the realities of a construction season in Saskatchewan. When tenders for highway work are not ready for decision over the winter, the construction companies are delayed and the effective working period is shortened. While a budget cycle may start in November leading to a budget in March or April, procurement calls for proposal must be fully completed in the winter for the investment in machinery and people to be ready for the construction season after the spring melt. A preferred annual construction schedule would be for Government calls for proposals to industry to be completed through the critical industry planning period between September and November.

Recent experience of the tendering process is far removed from an efficient timetable for construction planning. A detailed review of the provincial Ministry of Highways and Infrastructure for the 2015-16 period shows a distribution of tender offerings that concentrates most of its tender offerings in the rest of the year outside of the critical construction season.

In 2015-16, of the 285 tenders issued, only 18% of them were issued through the Critical Planning Season accounting for only 10% of the nearly \$360 million of tender value. (Figure 41) 42% of the tenders issued were offered in the busy construction season worth only 28% of the value. In summary most of the work occurred outside of the critical construction planning season. Evaluation of the annual trends in tender issuing from 2015 through August 2017 there is a steady downward trend in awarding contracts trend through each quarter of the year, essentially ignoring construction planning realities. (Figure 42)

Figure 43 on the next page outlines a more workable decision making framework identified and confirmed by SCHA members. The approach for both consultants and contractors recognizes the need for government contracting agencies to conclude their deliberations through the summer to be ready to tender in the critical September through November period in the year prior to construction. The approach outlined takes into account the operational realities of the work in Saskatchewan's climate. It provides planning time in the critical period for contractors and consultants to manage staff and equipment, use winter weights to move equipment, respond to tender calls and reduce financial risks for operators. Significantly, it is proposed that 80% of the annual Ministry of Highways and Infrastructure annual budget be allocated in this critical planning period – that is, \$800 million of a \$ Billion budget and four times the size of the notice in September 2017 for tenders to be issued in November for \$200 Million of work.

**Figure 41 Average Annual % Distribution of # (285) & Value (\$359M) Construction Tenders Issued by MHI by Planning Season, 2015 2016**



Source: Special Tabulation, Ministry of Highways and Infrastructure, 2017

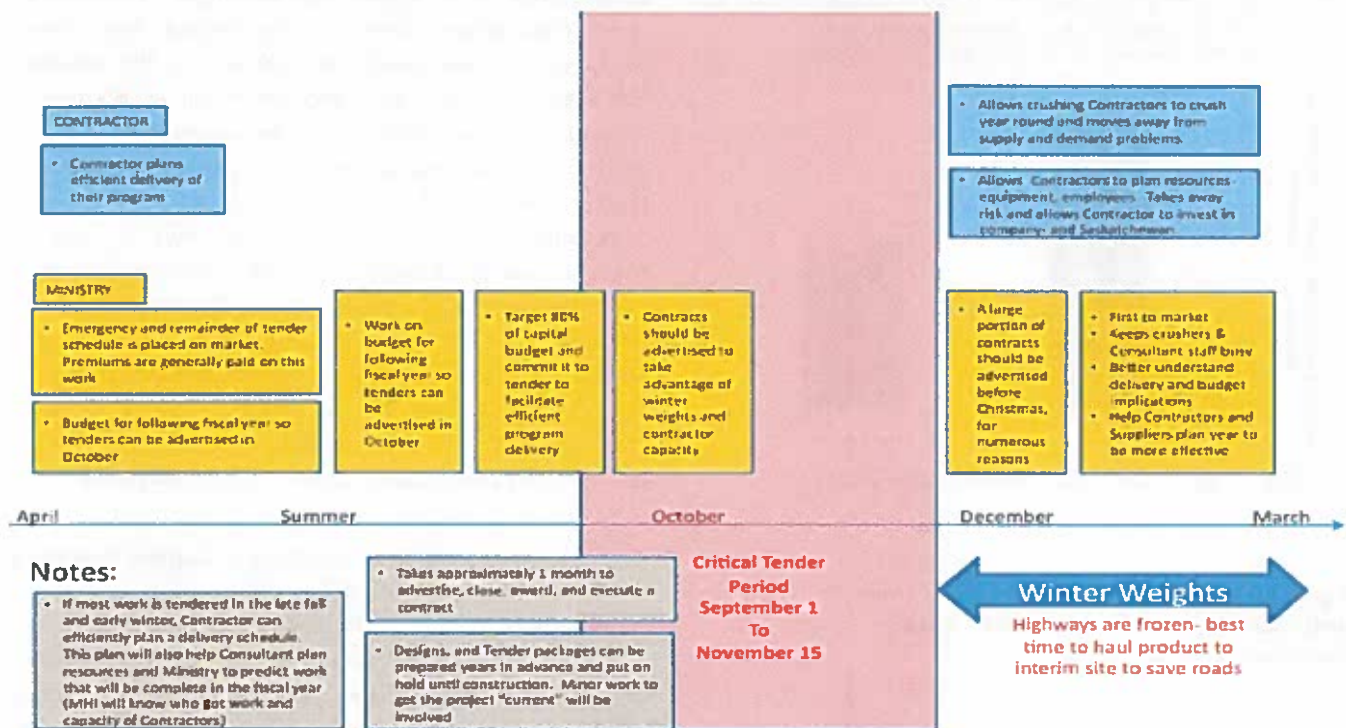
**Figure 42 Linear Trend in Tenders Q1-Q4, 2015-Aug 2017**



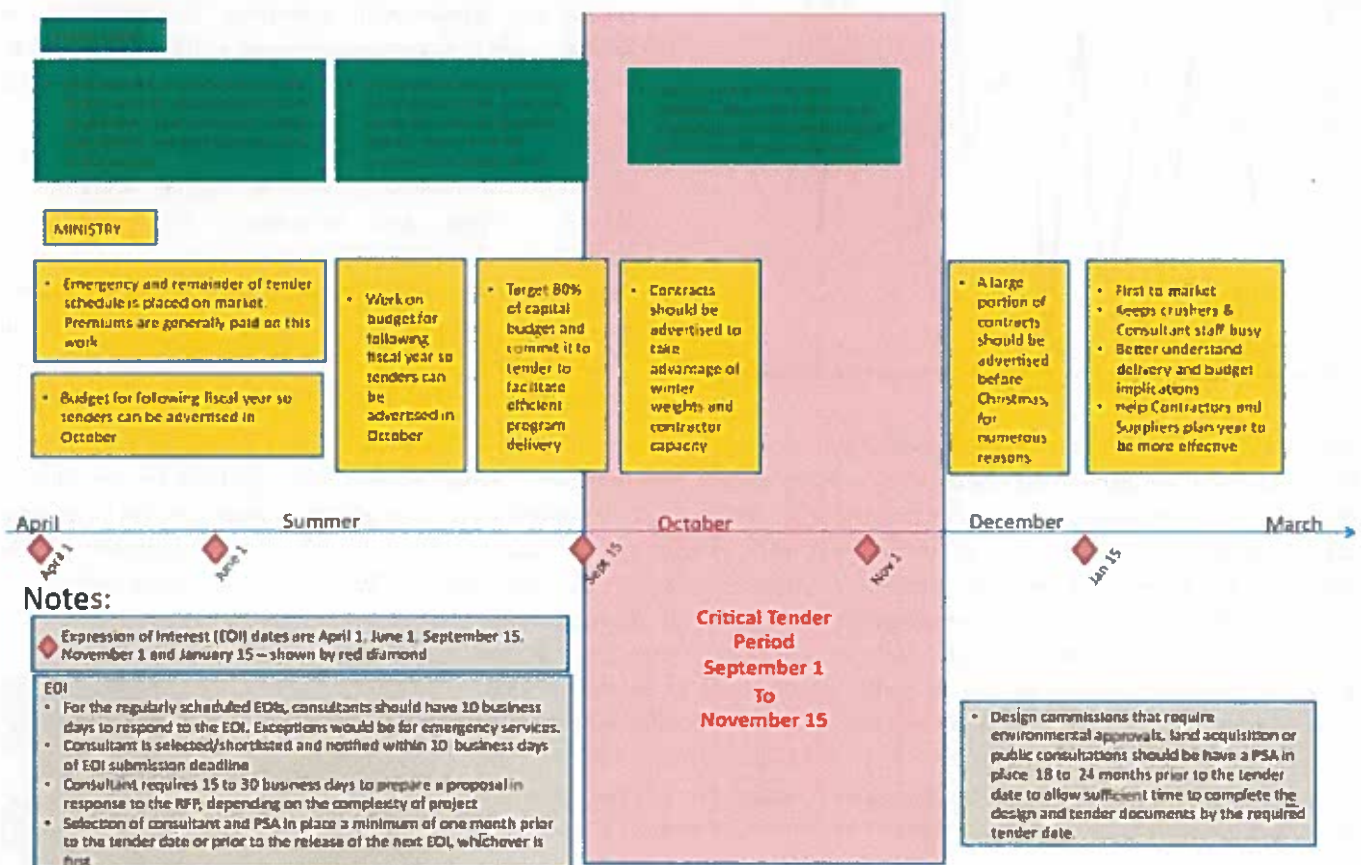
Source: Special Tabulation, Ministry of Highways and Infrastructure, 2017



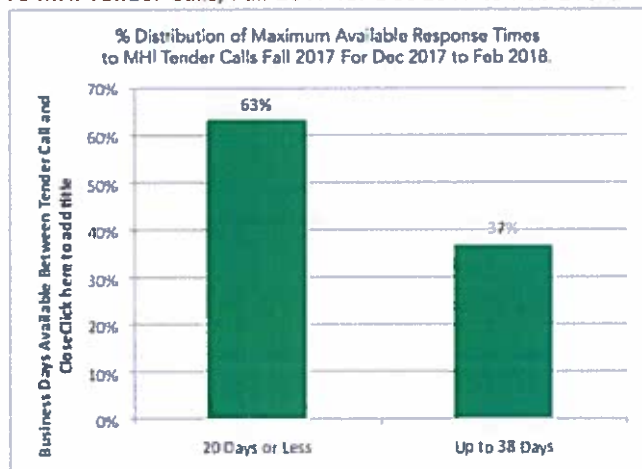
**Figure 43**  
**Effective Capital Program Delivery From a Contractor Perspective**



**Effective Capital Program Delivery from a Consultant Perspective**

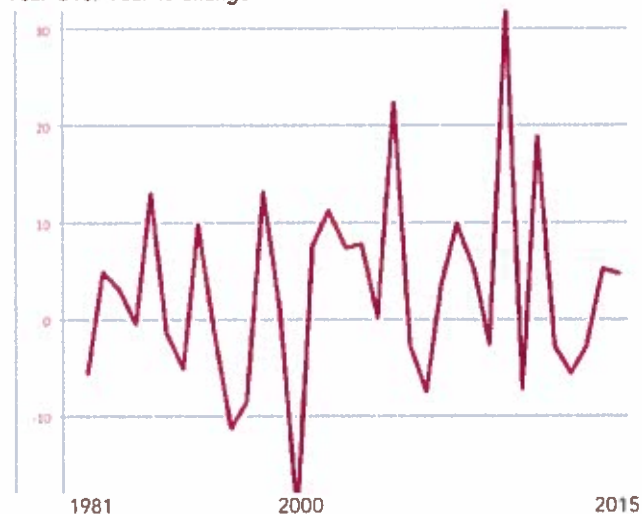


**Figure 44 Distribution of Maximum Available Response Times To MHI Tender Calls, Fall 2017 for Dec 2017 to Feb 2018.**



Source: Ministry of Highways and Infrastructure, Fall Tender Call, September 2017.

**Figure 45 Volatility In Saskatchewan Government Real Gross Capital Formation 1981 – 2015**  
Year Over Year % Change



Source: Saskatchewan Economic Accounts, Saskatchewan Bureau of Statistics, Regina, 2017

Construction bidding on infrastructure projects is further complicated and costly to provincial construction companies when there is only limited time made available to meet deadlines imposed by the Ministry. For example, Figure 44 shows the maximum number of working days available from the announcement of a tender to the date of closing. Nearly two thirds (63%) of the anticipated \$200 million of tender calls announced in September 2017 will have twenty days or less to respond over the Christmas period. The remaining 37% could have up to 38 working days available. While these times may fit in with the convenience of the public service and the fiscal cycles of government they limit the time available for the provincial industry, already stretched with provincial work, to prepare its now more complicated and detailed bids for continuing work.

#### 4. Extreme Year to Year Volatility in Capital Spending by Government. (Figure 45)

In spite of the increased stability of the economy and society, it would seem that Governments are less able to manage their capital flows. In Saskatchewan between 1981 and 2015, a period of multiple feasts and famines for the economy based on droughts, international commodity booms and busts and several global recessions, Government spending fluctuated on an annual basis on average between +10% in good years and -6% in bad years, with the largest increase in 2008 of +32% and the largest decline in 1995 of -20%.

Such large swings in Government capital spending have the effect of stranding available capital, undermining labour markets and weakening the fabric and profitability of the Saskatchewan industry.

Massive growth may bring in outside suppliers who leave when the next bust arrives, which is too often all too soon. Significantly, the rationale for these swings is rarely related to the needs of society or the economy.

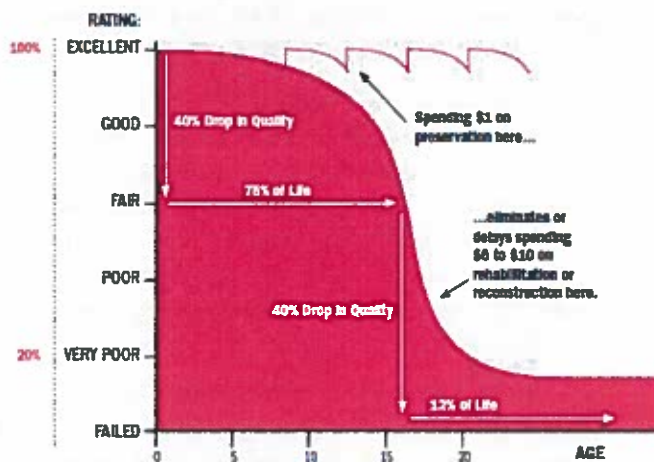
High levels of volatility in GDP and government spending create challenges for local contractors to build the capacity at home to meet the expanding needs of a growing society and economy. When government cuts back on spending in response to a market decline then construction spending is none of the first to feel the effects. Expensive machinery may stand idle and increase the cost of undertaking work, investments in state of the art road building equipment may be deferred. For example, a new road removal and repaving machine may cost well over \$5 million to purchase and can cut costs by 20% per kilometer, reduce congestion costs for the traveling public while extending the life of the road. However, during cutbacks the machine may not have the amount of use to justify its purchase in an earlier year. Returns on the contractor investment are reduced and less efficient means of replacing the road may be adopted. From a longer term perspective, the common practice of fiscal cutbacks increases investor risk and weakens the development provincial capacity to support the provincial growth plan.





## 5. No Life Cycle Capital Management Planning to Reduce Long Term Costs

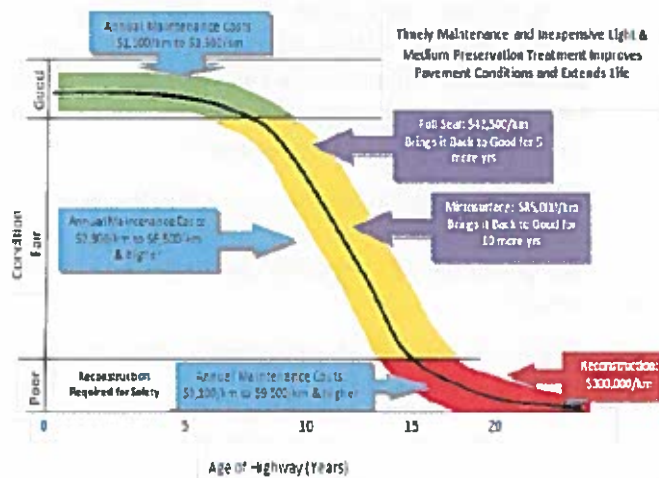
**Figure 46**  
Typical Road Asset Deterioration Curve



Government capital assets are valuable, but do not last forever. The typical road deterioration curve shown in Figure 46 reveals the importance of renewal and preservation investments. The lesson from the curve is clear. Early years in the life of a road require some minimal expenditures in order to dramatically save later in the life of a road. Specifically one dollar spent on road preservation in the first 15 years of the life of the road will save between \$6 and \$10 dollars at the end of the life of the road.

Detailed evaluation of these costs related specifically to Saskatchewan road conditions by the Saskatchewan Ministry of Highways and Infrastructure shows that timely maintenance and inexpensive light and medium preservation treatment improves pavement conditions and extends the life of the road by as much as ten years. (Figure 47)

**Figure 47**  
Saskatchewan Highway Costs at 3 Stages of Deterioration



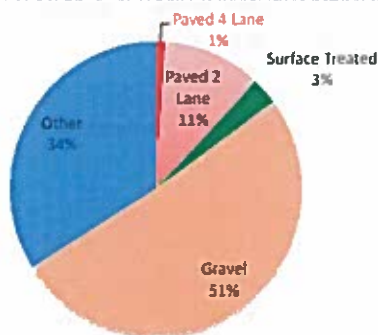
Source: Saskatchewan Highways and Infrastructure

Saskatchewan has nearly 200,000 kms of roads, most of which (88%) have weight restrictions that are constraints on economic movements. (Figure 48) (Gravel 51%, Other 34%, Surface Treated 3%). All weight, all season two and four lane paved roads account for about 23 thousand kms or 12% of the highway network.

Many of these roads are reaching their design end of life and will require renewal or replacement to support the continued growth of the economy. In addition, many of the inter provincial connections to international export terminals will require upgrading.

Sustainable capital planning, therefore, requires attention to the long term preservation, renewal and replacement costs of both the existing networks and the expansions to the network.

**Figure 48**  
Saskatchewan Roads by Surface Type



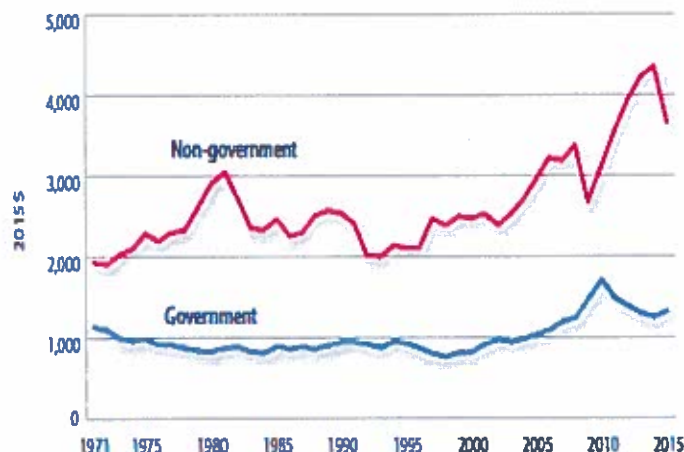
Foreknowledge of the longer-term requirements will also provide the foundation for the existing provincial construction industry to invest in the capacity to supply these services provincially, rather than importing the work.

This is also a public policy approach that also creates a faster and most sustained growth in the economy than building capacity outside of Saskatchewan.

## 6. Too Much Reliance On The Public Financing Of Infrastructure Capital

Many believe that Canada's infrastructure is largely provided and owned by governments. For over 40 years, the net stock of infrastructure per person from non-government organizations, including business, charities and the private sector has exceeded that of the government. In 2015, the net stock of non-government infrastructure represented 72.6% of Canada's total infrastructure stock, up from 63.4% in 1971, while government accounted for 27.4%, or a little over one quarter of all infrastructure capital stock. (Figure 49).

**Figure 49 Government and Non-Governmental spending on infrastructure in Canada per Person 1971 -2015 (\$2015)**



Source: Statistics Canada

An obvious consequence of this fact is that the private and charitable sectors also provide the financing for infrastructure. It is also apparent that business who finances infrastructure also have an interest in both the public and the private infrastructure that they use. It is this rationale in part that provides the multiple funding sources for infrastructure.

In Saskatchewan these financial realities have long been seen in the cost sharing with government of heavy haul roads for exports from mines, in contributions to railway access lines for new inland grain terminals and for roads and bridges at select locations.

Many infrastructure projects can be structured to provide returns on their investment. When this is possible, such infrastructure can also provide a safe, long term investment vehicles for sources of government outside of government.

Water projects, for example, structured to provide water for communities, mines and agriculture can price the water for sale and generate investment returns and allow the project to attract outside investment. Similarly, many large infrastructure benefits provide benefits to both federal and provincial governments. Accordingly, both can become partners in both financing the project and benefiting from its financial returns.

Most of these benefits cannot be obtained with a sole reliance on public financing through government. New structures are therefore required to qualify for the larger investment pools that already exist outside of government. Since most large government water or road projects are extremely stable

## 7. Capacity Development For Saskatchewan Construction Companies.

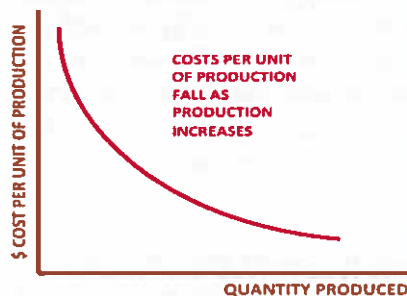
Many of the above issues are also limiting the development of capacity in Saskatchewan to meet the expanding infrastructure requirements of a growing economy and society. The volatility and delays in year to year tender calls and decisions limits the degree to which companies can hire and invest in equipment. Capital investments in machinery requires a longer term commitment from the marketplace to warrant the investment. When public decisions on investments are no longer reliable, investment does not proceed and provincial capacity is weakened.

Similarly, there is a continuing need to develop and train staff, particularly as First Nations assume a growing share of the labour force. Commitments to training by the industry are high with SHCA members having spent thousands in 2015 and 2016, in spite of cutbacks in the level of government spending.

A critical element in building Saskatchewan capacity for provincial infrastructure projects is in their share of provincial spending from the Ministry of Highways and Infrastructure. The review of tenders offered by the Ministry in 2015, 2016 and 2017 revealed significant increases in out of province procurement for construction work. As provincial construction companies obtain a larger share of the Saskatchewan construction marketplace they develop the machinery, equipment, labour force and capacity to maximize their economies of scale and reduce the per unit costs of their services. (Figure 50).



**Figure 50**  
**Economies of Scale**



Such efficiencies in construction are achieved from reliable, sustainable work at increasing levels of production that warrant investing in highly efficient capital equipment. The new large surface removal and repaving machines that can cost in the region of \$500,000 to \$1 million are illustrative of this occurring in construction.

However, the ability of local companies to grow to meet the national and international standards of performance depends in no small part on the steady and growing source of demand so that work can proceed with the efficiencies gained from economies of scales.

Recent experience between 2015 and 2017, however, with Highways and infrastructure tenders, however, clearly illustrates a contract and tendering process that works against the development of Saskatchewan construction

capacity. In 2015 fully 23% of the tenders issued went to out of province firms. Although these tenders probably took nearly a quarter of the time to prepare and bid on, they only accounted for less than ten percent of the nearly \$200 million dollars put out to tender that year. A full \$20 million was not available for local industry development and related indirect benefits to the Saskatchewan economy.

The situation deteriorated further in 2016 and 2017 when the out of province share of tenders rose to 27% of the number of tenders and 22% of the value – or \$43 million lost to Saskatchewan capacity development. Whilst there were modest improvements in 2017, the end result remains that Government tendering processes have led to roughly a fifth of the tender numbers and value not available for Saskatchewan economic development.

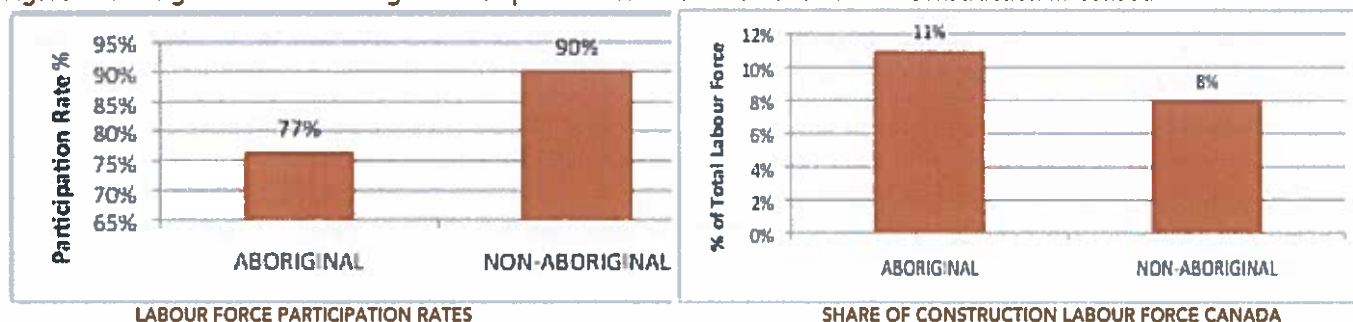
**Figure 51 Saskatchewan and Out-of-Province Distribution of Highways and Infrastructure Tenders in 2015, 2016 and 2017**



Source: Special tabulation Highways and Infrastructure, 2017. \* Data for 2017 only available for January through August

Building corporate capacity for construction industry growth in Saskatchewan will also require a stronger focus on employee training and development. While labour markets may be currently depressed it is clear from forecasts that labour shortages will soon reappear. New generations of construction workers will be required from all sources and including, local supply, aboriginal sources and foreign immigrants. Labour Force participation rates for Aboriginal peoples are some 15% below those of non-aboriginals. Increasing the aboriginal rate to non-aboriginal rates could add an additional over 10,000 people to the provincial labour pool. It is significant that in 2015 Aboriginal Employment in Construction at 11% was higher than the 8% level achieved by non-aboriginal peoples.

**Figure 52 Aboriginal and Non Aboriginal Participation Rates in Saskatchewan and In Construction in Canada**



Provincial goals for economic growth through natural resource development can become a challenge with a small and aging labour force. Labour shortages can create a negative investment climate with an inability to hire labour, increased labour costs, reducing rates of return on investment and limiting GDP growth. Natural resource and energy projects are often large with limited windows for entry into global marketplaces. As such they create additional demands on the economy and labour market. Where labour supply growth is insufficient to keep pace with labour demand, it becomes difficult to support new resource development without crowding out investment in other sectors of the economy. Long term infrastructure development and financing can be seen, therefore, as a means by which the construction industry growth can lead into the continued development of the natural resource sector.

Emery from the University of Calgary reviewed Saskatchewan's labour market in 2013 and suggested that: "Infrastructure planning can be a policy instrument for developing skilled labour supply and giving employers some short-run relief". He notes that: "Compared to other provincial labour markets for construction trades, employment in Saskatchewan shows greater volatility, which creates headaches for employers in the peak periods and discourages workers from choosing Saskatchewan as a place to live and work. To the extent that public sector capital spending in Saskatchewan has been adding fuel to this fire, infrastructure planning to shift the timing of projects to the inevitable transitory periods of lower private sector labour demand would be an instrument for smoothing cyclical/transitory changes in employment".

## VII. FINANCING CONSTRUCTION INFRASTRUCTURE

### APPROACHES TO PRICING AND FINANCING

Implementing a long-term vision for infrastructure development in Saskatchewan in support of long term sustainable economic growth will require financing. Past traditions of financing all provincial infrastructure requirements through government within annual cycles of borrowing and spending are probably not appropriate looking forward. Much "public" infrastructure has a capacity for self-financing or can develop revenue streams related to the cost and operation of the project. While roads have always been seen as free goods in Saskatchewan, roads and bridges have at times carried fees that contribute to their maintenance and operation. Some infrastructure can be completely private and integrated at a later stage into a wider infrastructure network.

Financing approaches towards a multi billion dollar continuing requirement will vary depending on the type of infrastructure, the capacity for self financing, the administrative structures in place for ownership, operation and maintenance and the financing instruments available in the marketplace.

For example, tolls are considered an acceptable financing practice to develop and upgrade necessary infrastructure in many parts of the world. They are seen on bridges, freeways and ring roads. Some other areas of "public infrastructure" like water utilities have traditionally raised monies from users to pay for operations and at time capital. Thus the new water treatment facility at Buffalo Pound was financed from current and future tax streams from the Cities of Moose Jaw and Regina as well as federal and provincial funds.

It is unlikely that Saskatchewan's infrastructure needs can be met from a highly volatile fiscal cycle in which available capital funds are rationed on short term political priorities to balance budgets, rather than commit to long term financing and development. To meet the needs of a visionary long term plan for Saskatchewan infrastructure will require a reconsideration of past approaches towards project planning, management and financing. The challenge for government is to shift from the ad hoc, project financing approach to a commitment to long term, integrated infrastructure management, development and financing.

Infrastructure financing can come in many forms and the preferred option will be largely dependent on the objectives of the project, the length of time that financing is required, the profitability of the business model and its contribution to the overall long term provincial infrastructure plan. Accordingly, at least five financing elements or approaches can be considered for implementing a longer-term provincial infrastructure plan with different levels of public and private participation.



These are summarized below with a brief summary of the advantages and disadvantages of each element:\*

**Element 1. Government Capital Grant and Budget Financing** as the highly traditional sources of funding in which federal, provincial and/or municipal governments allocate funding from the current year's capital budget.

**Figure 53 Summary of Government Capital Grant and Budget Financing**

<b>Definition</b>	Governments provide direct funding from annual capital budgets to finance the design and construction of infrastructure.
<b>Advantages</b>	<ul style="list-style-type: none"> <li>• Direct government control over a project's financing since no institutional or external debt is used.</li> <li>• Funding is typically allocated from general revenues therefore no debt or interest carrying charges are incurred.</li> <li>• If capital is fully granted by government, the users of the conveyance are only required to pay for the operating costs which delivers an overall lower cost of use.</li> </ul>
<b>Disadvantages</b>	<ul style="list-style-type: none"> <li>• Capital grant financing front-end loads the capital investment and cost for taxpayers versus matching the financing cost to the useful life of the infrastructure which may have an operating life of 30, 40, 50 or more years.</li> <li>• As a high growth jurisdiction, Saskatchewan does not have the sufficient required capital in the annual budgets of the province and municipalities to finance all of the infrastructure required to meet the challenges of growth and the needs of citizens.</li> <li>• Capital grants lead to a subsidization by all citizens and taxpayers to those who use the publicly funded infrastructure.</li> </ul>
<b>Where the Financing Tool is Commonly Used</b>	<ul style="list-style-type: none"> <li>• Capital grants are widely used by governments at all levels.</li> <li>• Increasingly, larger capital projects are being financed through alternative options to allow governments to manage the tax burden and existing debt levels.</li> <li>• Capital grants continue to be commonly used for infrastructure maintenance and small sized infrastructure projects.</li> </ul>
<b>Interdependent Financing Tools</b>	<ul style="list-style-type: none"> <li>• Capital grant financing is not dependent on any of the other financing alternatives identified</li> <li>• In most cases, capital grant financing will be connected to a utility model to fund on-going operations and maintenance of the infrastructure.</li> </ul>

**Element 2. Debt Financing** through a new or existing provincial infrastructure institution – outside of government specializing in infrastructure project management, tendering and financing. Debt financing could originate from provincial, national or international sources and be guaranteed by the Province of Saskatchewan providing early security to investors. A wide number of financing options exist with the element including government debt issues, public bond offerings and industry and municipal participation through bonds.

**Figure 54 Summary of Debt Financing**

<b>Definition</b>	Debt financing is another traditional model for financing long-term infrastructure. Governments may issue debt directly or securitize the debt of a government related entity. Debt financing can take a number of different forms based on the length, interest rate and terms of the debt issue.
<b>Advantages</b>	<ul style="list-style-type: none"> <li>• Debt financing provides an immediate source of funds from a single source due to the credit rating of the provincial government</li> <li>• Debt borrowing is well established and relatively simple to employ</li> <li>• Cost of borrowing is low when backed by the provincial government due to its strong credit rating</li> <li>• Ability to finance large infrastructure projects in a single debt issue</li> <li>• Debt financing can be easily managed in a transparent and accountable manner</li> </ul>
<b>Disadvantages</b>	<ul style="list-style-type: none"> <li>• Debt guarantees by the provincial government may affect future credit rating adjustments (up, down or no change) depending on the amount of debt advanced</li> <li>• A billion dollar plus project could limit the provincial government's options to finance or securitize other infrastructure projects</li> </ul>
<b>Where the Financing Tool is Commonly Used</b>	<ul style="list-style-type: none"> <li>• Debt financing is widely used by governments at all levels</li> <li>• Increasingly, larger capital projects are being financed through alternative options to allow governments to manage their credit ratings and existing debt levels</li> </ul>
<b>Interdependent Financing Tools</b>	<ul style="list-style-type: none"> <li>• Debt financing can also be a collaborative financing tool for two other options: utility model and public-private partnerships models</li> </ul>

\* These summaries are derived from Clifton Associates Ltd (2013), pp.87 – 96

**Element 3. Utility Models** of financing are typically financed through debt, depending on the operating structure of the infrastructure project using a business model based on user pay through utility fees. The users of the system would pay either a cost recovery or market rate for use of the infrastructure.

**Figure 52 Summary of Utility Financing**

<b>Definition</b>	A utility model is a user pay system in which usage rates pay for the capital and operating costs of an infrastructure system in whole or in part.
<b>Advantages</b>	<ul style="list-style-type: none"> <li>• User pay models are highly equitably since those who benefit from the infrastructure pay for its cost</li> <li>• Utility model approaches allow for life cycle asset management to be more easily implemented due to long term, predictable and reliable funding.</li> <li>• Balances supply and demand with the ability to be self-financing.</li> <li>• Can also be tailored to encourage certain user behaviours through the rate structure which, in effect, can reduce the overall costs of services.</li> <li>• Proven management systems for public transparency and accountability exist.</li> </ul>
<b>Disadvantages</b>	<ul style="list-style-type: none"> <li>• Major limitation is public acceptance in areas where services are being delivered at rates subsidized by the general tax base, or by overall deterioration of capital asset value.</li> <li>• The fee for service should ideally be sufficient to fund the needs of the original capital costs, overhead, operations and capital replacement. Total costs from the utility fees may exclude certain users from accessing the system.</li> </ul>
<b>Where the Financing Tool is Commonly Used</b>	<ul style="list-style-type: none"> <li>• Commonly used approach in most jurisdictions for funding a variety of infrastructure projects</li> <li>• Ideal for funding services provided by physical infrastructure where beneficiaries can be identified and non-payers can be excluded. For example, potable water and sewage treatment systems.</li> <li>• Should not be applied to services which have "public good" characteristics. Should not be used for fully funding services that, by their nature, redistribute income.</li> <li>• Intended for financing current operations and life-cycle renewal costs of existing infrastructure, rather than for funding the upfront construction of new infrastructure or infrastructure extensions which require a complimentary funding option.</li> </ul>
<b>Interdependent Financing Tools</b>	<ul style="list-style-type: none"> <li>• A utility model is a dependent funding tool that requires one of the other four options identified to fund design and construction costs</li> </ul>

**Element 4. Public-Private Partnership and Ownership Models (3Ps)** are emerging financing tools that provide the opportunity for financial and operational risk to be shared between the public and private sectors. Private sector partners have the ability to assume some or all of the roles traditionally fulfilled by the public sector under contract with a government lead including design, build, finance, maintain, operate or own. The Canadian Council for Public Private-Partnerships identifies eight common types of public private partnerships including:

**Design-Build:** The private sector designs and builds infrastructure to meet public sector performance specifications, often for a fixed price, so the risk of cost overruns is transferred to the private sector.

**Finance Only:** A private entity, usually a financial services company, funds a project directly or uses various mechanisms such as a long-term lease or bond issue.

**Operation & Maintenance Contract (O&M):** A private operator, under contract, operates a publicly-owned asset for a specified term. Ownership of the asset remains with the public entity.

**Build-Finance:** Private sector constructs an asset and finances capital cost during the construction period.

**Design-Build-Finance-Maintain:** The private sector designs, builds and finances an asset and provides hard facility management or maintenance services under a long-term agreement.

**Design-Build-Finance-Maintain-Operate:** The private sector designs, builds and finances an asset, provides hard and/or soft facility management services as well as operations under a long-term agreement.

**Build-Own-Operate:** The private sector finances, builds, owns and operates a facility or service in perpetuity. The public constraints are stated in the original agreement and through on-going regulatory authority.

**Concession:** A private sector concessionaire undertakes investments and operates the facility for a fixed period of time after which the ownership reverts back to the public sector.



**Figure 55 Summary of Public-Private Partnerships**

<b>Definition</b>	A public-private partnership is a long-term performance based approach to financing and operating structures that distribute roles, responsibilities and risks between the public and private sectors.
<b>Advantages</b>	<ul style="list-style-type: none"> <li>• Alleviates a certain risks from the public sector in project design, start up and operations.</li> <li>• Typically allows the public sector to avoid an increased debt load (moves financing off balance sheet for government), accelerate project completion, capitalize on private sector expertise and identifies innovative solutions.</li> <li>• Development of key projects may be expedited and facilitated through the mitigation of the public sector's encumbrance.</li> </ul>
<b>Disadvantages</b>	<ul style="list-style-type: none"> <li>• Public and political opposition to public-private partnerships exists across Canada.</li> <li>• Each specific model transfers various levels of risk and reward.</li> <li>• May be regarded unrealistically as a single panacea to resolve infrastructure problems.</li> <li>• Legal agreements need to be carefully worded to anticipate known considerations and provide flexibility to adapt to unknown considerations. Government should set terms and conditions for service delivery, funding, quality of service, and set performance standards.</li> <li>• Management of services is less transparent in the private sector.</li> </ul>
<b>Where the Financing Tool is Commonly Used</b>	<ul style="list-style-type: none"> <li>• Numerous international examples, with more isolated use in Canada although a growing number of projects are occurring.</li> <li>• Netherlands, United Kingdom, New Zealand, United States and Australia have commonly used public-private partnerships.</li> <li>• Water projects in Moncton, New Brunswick and Hamilton have undertaken water P3s.</li> <li>• Edmonton and York have partnered with developers for sewer systems. Winnipeg used a P3 to finance a new bridge and provide operation and maintenance services for a 30-year lease.</li> </ul>
<b>Interdependent Financing Tools</b>	<ul style="list-style-type: none"> <li>• A public-private partnership model is a dependent funding tool that requires one of the other four options identified to fund design and construction costs. Which option is used depends on the form of public-private partnership selected.</li> </ul>

**Element 5. Private Ownership** for the project with a private utility company financing, owning and operating the infrastructure within a provincial regulatory framework and a known contribution to the wider provincial infrastructure network plan.

**Figure 56 Summary of Private Ownership Financing**

<b>Definition</b>	Private and public ownership through a variety of ownership structures including; a privately held company, owned either by non-governmental organizations or by a relatively small number of shareholders; public companies traded to the general public on stock market exchanges with widespread ownership; and private stock companies owned and traded or exchanged privately.
<b>Advantages</b>	<ul style="list-style-type: none"> <li>• Widespread access to private banking and financial instruments.</li> <li>• For publically traded companies access to large national and international equity markets to provide for long term financing.</li> <li>• High levels of regulation and disclosure.</li> </ul>
<b>Disadvantages</b>	<ul style="list-style-type: none"> <li>• Limited access to capital markets for privately held smaller corporations.</li> </ul>
<b>Where the Financing Tool is Commonly Used</b>	<ul style="list-style-type: none"> <li>• Financing of expansions and major new capital projects including infrastructure such as roads to mines, water utilities.</li> <li>• Potash expansion in Saskatchewan expanded with access to international capital markets.</li> </ul>
<b>Interdependent Financing Tools</b>	<ul style="list-style-type: none"> <li>• Can work with all other financing elements in the public and private sectors creating institutions and joint ventures suitable for the requirements and returns on the infrastructure.</li> </ul>

It is important to note that these financing approaches are not entirely independent of one another. Some elements rely on others as enabling financing tools.

## VIII. BETTER WAYS TO BUILD - ADDRESSING THE ISSUES

Heavy construction in Saskatchewan has long been relied upon to build the necessary infrastructure at each stage of Saskatchewan's growth. As the province grows, often following the completion of required infrastructure investments, there is also a requirement for the heavy construction industry to expand to meet the continually expanding needs for construction services.

This assessment of the role of infrastructure in the Saskatchewan economy, past, present and future has identified the continuing need for attention to the sector. However, this paper has also shown clearly that there are now substantial barriers to the growth in both the construction sector and the wider economy at large. Seven major issues are identified as constraining the ongoing evolution of infrastructure development in Saskatchewan and limiting the benefits for government, the province and its people. They are:

1. No Long Term Capital Plan
2. Overlapping and Often Conflicting Jurisdictions For Decision Making
3. Unrealistic Timing For Calls For Proposals Based On Artificial Budget Cycles, Complicated Government Procedures Rather Than Construction Management and Seasonal Construction Priorities
4. Extreme Year-to-Year Volatility in Capital Spending by Government.
5. No Life Cycle Capital Management Planning to Reduce Long Term Costs
6. Too Much Reliance On The Public Financing Of Infrastructure Capital
7. Capacity Development For Saskatchewan Construction Companies.

In short form these seven issues can be reduced to two broad themes of:

1. Improved Capital Management Planning and Implementation; and,
2. Infrastructure Financing Reform.

*The Status Quo on many of these issues is not working and will not work going into the next round of infrastructure and economic development.* The economic potential of the province requires a stronger level of administrative support and management, free from the vagaries of the market, the fiscal ups and downs, the growing complexity of the tendering process and the uncertainties in the political climate to provide the administrative and financial security for the construction industry and the long term economic development of the Province.

Too many provincial institutions are not working in concert with the construction industry to advance the infrastructure development the province needs. It is the view of the Saskatchewan Heavy Construction Association that there are improved alternatives that warrant consideration that will create efficiencies and improved levels of investment for the sector, the government and the people of Saskatchewan. In short, there is a Better Way to Build!

There is a widespread understanding in Canada that trade infrastructure requires upgrading to maintain our competitive advantage in the world. Yet new and improved infrastructure requires a broader financing base than just government always preoccupied with one project at a time and not moving forward on a broader infrastructure agenda. New more innovative approaches are required to increase the size of the financial flows to the sector. Alternative approaches are available.

Saskatchewan has not been the only resource based jurisdiction to live with volatility in its agricultural, natural resource and commodity markets. Heritage Funds in Norway have been able to create infrastructure platforms second to none in the world. A small, oil based economy, with a financial buffer and ongoing income derived from global investments from its Heritage Fund now with over US\$1 trillion in assets.

The objectives for SaskBuilds established in 2012 were laudable, but as yet there is no comprehensive, long term infrastructure development plan for Saskatchewan based on a provincial vision for economic growth, in spite of the release of the Premier's economic vision for the Province was also released in 2012.



Financing is always a major consideration for decisions on long-lived infrastructure projects. For Government in Saskatchewan traditional approaches for many years led to large and growing infrastructure deficits. Looking forward it is clear that Saskatchewan must reconsider its long-term requirements for infrastructure preservation, renewal and expansion in support of the continued growth of the economy. Methods of identifying financing options for infrastructure development, management and renewal are required.

Conceptually, Government contributes a portion of a growing provincial demand for infrastructure. (Figure 57). Both the provincial contribution and the total demand grows as new markets, technologies and infrastructure platforms are introduced into the economy. Not to do so would leave the province at a competitive disadvantage and undermine the provincial economy.

While total demand for infrastructure continues to grow with the economy, provincial contributions can be highly variable. (Figure 58). Government contributions can rise and fall with variations in natural resource prices, climatic variation, competition in the marketplace or political priorities of the day. However, infrastructure demands continue and there remain needs to retain an industry to continue to build the coming market opportunities.

A major challenge for past infrastructure funding has been the volatility of government funding reflecting the continuing volatility in the Saskatchewan, national and global marketplaces.

The policy challenge for both industry and government is to identify:

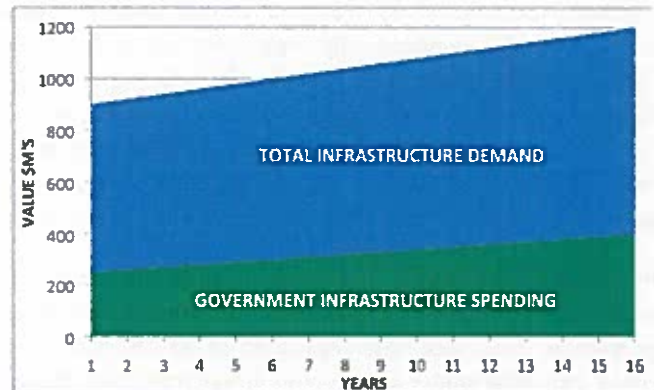
1. Infrastructure financing sources and approaches to increase and stabilize funding for infrastructure beyond the traditional government contribution levels from the public and private sectors;
2. Institutional and infrastructure management and development approaches to accommodate a wider base of funding for infrastructure; and,
3. Administrative Frameworks that can provide for the long term planning and development of the sector.

Clearly, past approaches to infrastructure development have for many years suffered from the funding, administrative and management constraints. The policy and implementation issues raised in this paper have developed over a number of years, and attempts by Government for new government institutions such as SaskBuilds to address these issues have yet to see success, in spite of years of implementation. It is time to consider new approaches and institutional frameworks.

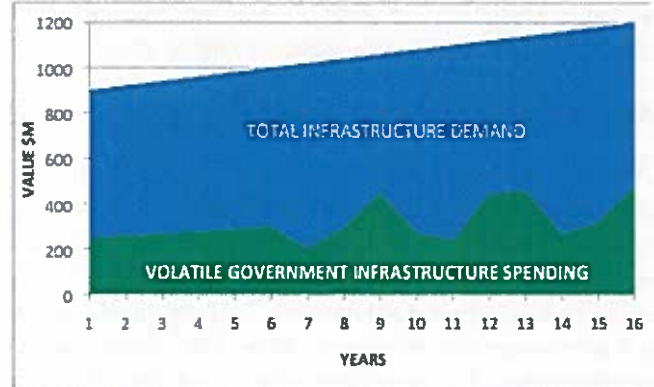
One approach that could be considered is a Saskatchewan Infrastructure Development Trust (SIDT) established as a public – private partnership and financial trust designed to:

1. Develop and implement a rolling fifty year Infrastructure plan for implementation and financing;
2. Expand the basis for infrastructure beyond the existing provincial base to include federal and municipal governments, the public, industries and a known share of resource existing program revenues;
3. Work with the public and private sectors to secure trade competitive infrastructure for the next generation of economic growth in Saskatchewan.

**Figure 57 Conceptual Government Contributions to Provincial Infrastructure Demand**



**Figure 58 Conceptual Government Contributions to Provincial Infrastructure Demand with Market Volatility**



The conceptual framework for an SIDT is shown in Figure 59 on the next page and includes three main elements:

1. **Multiple Funding Sources** to expand the basis of funding for infrastructure
2. **Administrative Functions** for long term infrastructure planning and its related operational, ownership and financing requirements; and,
3. **Project implementation, construction and operation.**

Together these three elements are discussed separately below and can provide a sustainable stream of new and expanded infrastructure platforms in support of provincial trade, economic development and expansion.

### **Multiple Funding Sources for Infrastructure**

Around the world there are multiple sources of financing for infrastructure, in many cases public infrastructure. Thus limiting Saskatchewan to provincial annual budgetary expenditures, supplemented at times by federal annual budgetary expenditures is unnecessarily restricting the pool of capital available for infrastructure development in the province. Existing public instruments have been used in the past to raise funds in support of public objectives. Thus Community Bonds legislation mobilized provincial private funds with the use of a government guarantee. Where infrastructure projects, or a significant part of them, can be structured as cost recovery or for profit infrastructure, possibly as a utility, then again private equity markets can support the development. In some cases, like water utilities that once in place or extremely stable investments, the public and private investment from home and abroad can safely invest in such projects.

In the case of the SIDT it is suggested that a broader base of reliable funding be developed for infrastructure. This expanded base could include: Existing annual budgetary commitments from federal and provincial governments, federal, provincial, municipal special program funds, dedicated taxes or a portion of those taxes. Thus sales taxes raised from roads could be returned to roads rather than subsidizing other government services; natural resource royalties could be directed in part towards infrastructure, industry and public participation or community bonds could be issued for the organization or for individual projects, widespread equity issues could also be offered on specific larger projects as well as the organization. In addition, with sufficient activity underway appropriately structured infrastructure projects would qualify for debt financing to advance capital development.

### **Administrative Functions for Long Term Infrastructure Planning**

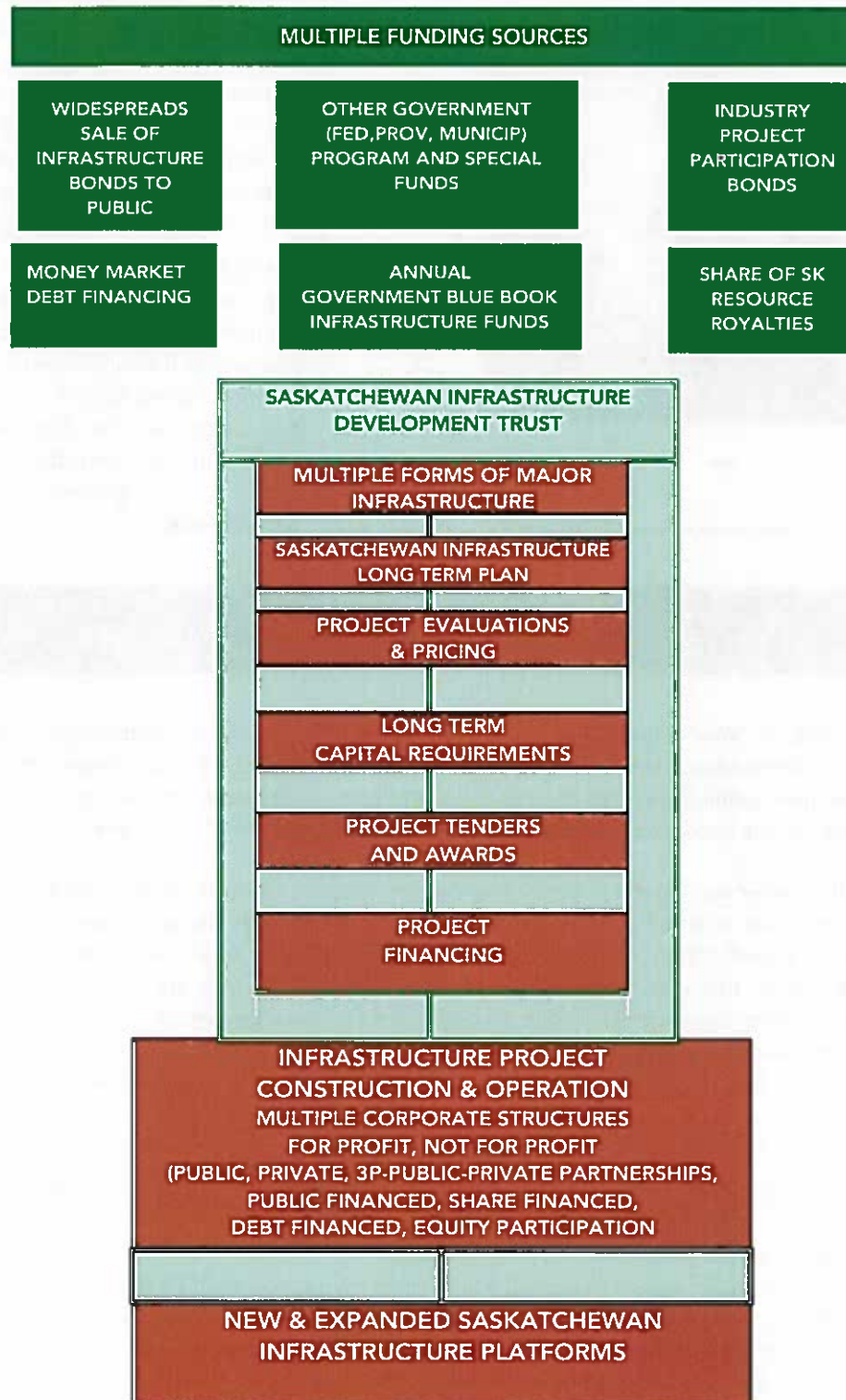
The SIDT would undertake the administrative functions around the capital development process on schedules related to the marketplace opportunities and the construction realities of Saskatchewan. This would result in a rescheduling of tender calls and awards into the construction industry timetables. Projects would be developed around a 50 Year infrastructure plan that would be revised each five years on a rolling forward basis, integrating public and private infrastructure into a comprehensive provincial network. The organizational ethic for the organization would be "Can Do to meet the needs of the people and the economy" rather than "Please wait until we have finished studying it again." As a non-governmental organization with government participation, the SIDT would contract out much of its activity into the marketplace to meet operational deadlines. Infrastructure would be considered in all of its sectors including roads, highways, trade, water, road, air, rail, energy, and others as they may evolve such as airships, air cargo and water movement. Projects that matter to Saskatchewan inside and outside the province would be considered. There would be a knowledge of practical marketplace solutions and financing extending well beyond the current government delivery focused model for infrastructure development.

### **Infrastructure Project Implementation, Construction and Operation**

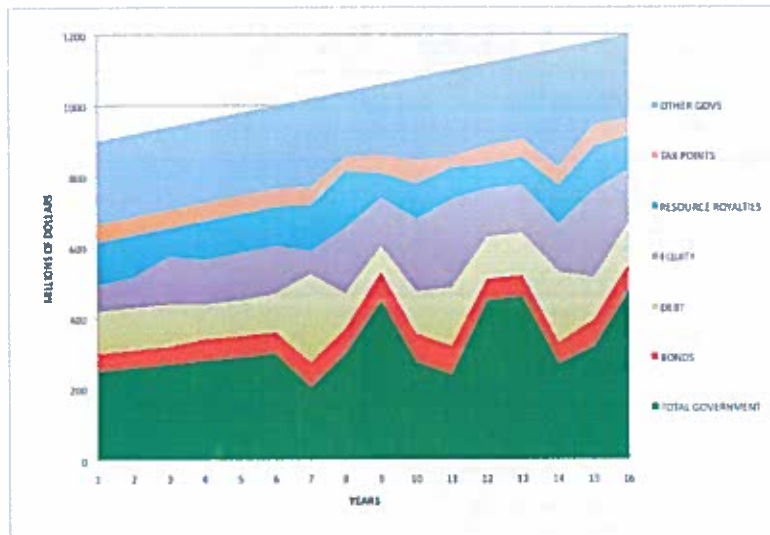
The SIDT would work on timetables that ensure Saskatchewan has developed the necessary infrastructure for its present and emerging market opportunities. For too long Saskatchewan deferred major infrastructure for political and/or short term financial crises. Thus irrigation development in Saskatchewan waited at least fifty years while other priorities intervened. Limited water supplies through into the Qu'Appelle and southern Saskatchewan limited suburban development in Regina and potash development into the valley.



**Figure 59 CONCEPTUAL FRAMEWORK - SASKATCHEWAN INFRASTRUCTURE DEVELOPMENT TRUST**  
**An Administrative and Financing Framework for Saskatchewan Infrastructure Development**



**FIGURE 60 CONCEPTUAL LONG TERM INFRASTRUCTURE SPENDING WITH MULTIPLE FUNDING SOURCES**



In summary, the SIDT framework would provide a means to address the major issues raised the SHCA, provide a framework to expand the financing base for provincial infrastructure requirements and introduce efficiencies in infrastructure development throughout the system. The approach is best summarized in Figure 60 in which the base of funding is conceptually expanded beyond the annual program grants from government to include a much wider range of financing sources.

Combined with the administrative improvements in long term infrastructure planning, improved tender call procedures and addressing the fundamental requirements for a growing skilled labour force this policy paper has concluded that there are better ways to build that can help the economy grow and support the growth of construction in Saskatchewan.

## IX. MOVING AHEAD

This paper is called "A Better Way to Build" recognizing the critical role that SHCA members play in the efficiency of our economy and society. While Association members employ a growing number of Saskatchewan staff and invest millions of dollars each year in new technologies that can lower the unit cost of their work their ability to continue these benefits to society and the economy is becoming limited by the administrative practices of government.

The issues raised in this paper are important to not only the SHCA but to all to the people and economy of the Province. Saskatchewan is in the midst of significant growth and change. With these changes have come new approaches to managing the construction and infrastructure portfolio of the province where large sums of public monies may be spent. While it is right and proper that improved public sector management controls are put in place for the competitive assignment of projects, when those administrative procedures themselves become a constraint to the development of the efficiency of the infrastructure platforms that we all use for work and play, then it is important to discuss these issues. Particularly, when there are better ways to undertake the work with economic and fiscal benefits for all involved.

And, there are better ways to handle this sector based on:

- More effective long term planning to sustain the trade and exports based on a natural resource economy;
- The simplification and streamlining of Provincial decision making for infrastructure and construction;
- Stable and regular annual management planning cycles;
- New approaches to public financing through a third party non-government agency;
- Structuring infrastructure finance to accommodate increased sources of infrastructure financing;
- Establishing procedures that are not tied to annual fiscal and political cycles in government; and
- A recognition of the sectors importance to economic and social growth, competitiveness and improving Saskatchewan's access to the rest of Canada and the World – the origin of most of our markets and income.



Moving ahead the SHCA invites the leadership of the Provincial Government to consider new approaches to their decision making, procurement and financing of the infrastructure and construction sector of the province based on the principles and issues outlined in this paper. The benefits of adopting this new approach will be seen in efficiency gains and benefits for the economy and society and that are shared between the public, the government and SCHA members.

For several years now changes underway in provincial procurement and management of the sector has been deteriorating. While this may be an acceptable administrative approach inside of government it has not served the industry, the economy or we believe the government well. It is time to consider reform and new approaches better suited to the long-term requirements of the Saskatchewan.

The state of Saskatchewan infrastructure is the foundation for its natural resource economy, its trade, commerce and income stream that funds most government activities. Looking ahead, many see a strong future for natural resource development in the world and Saskatchewan based on food, fertilizers, energy and innovation. Saskatchewan has been blessed with abundance in all of these areas. However, technologies for agricultural and natural resource development are changing for both production and markets. The scale of Saskatchewan can grow given access to markets, water and energy. It is time to establish new and expanded infrastructure platforms in support of a longer term vision for sustainable provincial growth. Climate change and global warming will bring both increased opportunity and new challenges to the province, many of which can be addressed with comprehensive long-term water infrastructure suitable to provide water security for all regions of Saskatchewan. As a land locked province distant from markets Saskatchewan will always need improving and cost competitive road, rail and air links to the world.

Earlier Saskatchewan leaders acted on their visions for the province. Walter Scott, the first Premier of Saskatchewan took decisions on the future without the human or financial resources of later governments. Later, after the devastation of the Dirty Thirties Douglas, Gardiner, Diefenbaker and Hamilton created a water vision for Saskatchewan following provincial economic and environmental collapse and limited funding.

It is time to supplement the Provincial Plan for Growth with its long term Infrastructure Plan in support of a stronger, more diversified Saskatchewan economy. Over time this will create the infrastructure platforms for growth that meet the vision for growth held by earlier Saskatchewan leaders. The Saskatchewan Heavy Construction Association would welcome the opportunity to open this dialogue with the next generation of Saskatchewan leaders to strengthen Saskatchewan's competitive advantage in the world well into the Twenty First Century. The SHCA has a real stake in this future, is already investing in it and looks forward to concluding a dialogue of benefit to government, the industry and the people of the province with the next generation of Leadership in Saskatchewan.

**"Just as sure as the sun shines there will be within this Province alone some day a population running into the tens of millions...." and "This is a great country. It needs big men with large ideas."**

**VISION, INNOVATION & ACTION BY SASKATCHEWAN'S FIRST PREMIER WALTER SCOTT (1905-1916)**

- o 1906 Established Regina as the Capital of Saskatchewan  
Legislature Building in the new Wascana Park, the largest urban park in the world.
- o 1905-13 Number of public schools jump from 405 to 2,747.  
Normal schools opened in Regina and Saskatoon.
- o 1906 \$100,000 (\$2.2M (2017)) for highway construction.
- o 1906-1908 \$1Million (\$22M (2017))
- o 1907 University Act creates a university for the province.
- o 1908 Rural residents form mutual or co-operative companies for local phone service.
- o 1908 Children's Protection Act to care for neglected and dependent children.
- o 1908-9 Rural Municipality Act, created nearly 300 Rural Municipalities.
- o 1909 University of Saskatchewan created in Saskatoon with plans to develop  
the east side of the South Saskatchewan River on land suited for agricultural research.
- o 1909 Backs railway construction bonds to \$13,000/mile to encourage the railway construction.
- o 1909-14 Creates more than 1,000 miles (1,600 km) of new rail track in the province.
- o 1910 Rejects government-owned elevators.  
Supports farmer owned and operated cooperative elevators.
- o 1916 Women obtain the Vote.



## READINGS

- Agrivision Corporation, Water Wealth, Saskatoon, 2005.
- Aschauer, D., "Is Public Expenditure Productive?" *Journal of Monetary Economics* 23, 177-200, 1989.
- Barnhart, G., Scott, Thomas Walter, *Dictionary of Canadian Biography*, vol. 16, University of Toronto, 2013
- BP Energy Global Outlook, London, 2017.
- BP p.l.c., BP Energy Outlook, Statistical Review of World Energy, London, United Kingdom, 2017
- BuildForce Canada, Construction and Maintenance Looking Forward, Highlights 2017-2026.
- Canada West Foundation, (2013), At the Intersection, The Case for Sustained and Strategic Public Infrastructure Investment, Calgary.
- Canada West Foundation (2015), Strategic Trade Infrastructure Roundtable Summary, Calgary.
- Canada Infrastructure, Canadian Infrastructure Report Card, ( 2015 ),
- Canadian Chamber of Commerce, Canada's Top 10 Barriers to Competitiveness in 2016, Ottawa, 2016.
- Canadian Chamber of Commerce, The Infrastructure that Matters Most: The Need for Investment in Canada's Trade Infrastructure, Ottawa, 2016.
- Calderón, C. & Servén, L., Effects of Infrastructure Development on Growth & Income Distribution, World Bank, Washington, 2004.
- Clifton Associates Ltd., Upper Qu'Appelle Water Supply Project, Economic Impact & Sensitivity Analysis, 2012, Regina.
- Easterly, W. & Rebelo, S., "Fiscal Policy & Economic Growth: An Empirical Investigation." *J. of Monetary Economics* 32, 417-58, 1993.
- Friedman, Milton, (<https://www.facebook.com/FriedmanMilton>, Open Mind (7 December 1975).
- Fraser Institute, Myths of Infrastructure Spending in Canada, Charles Lammam and Hugh MacIntyre, Vancouver, 2017.
- Government of Saskatchewan, Saskatchewan Plan for Growth, Regina, 2012.
- Government of Saskatchewan, Industrial Labour Demand Outlook 2016-2020, Regina, 2017
- Gramlich, E., "Infrastructure Investment: A Review Essay." *Journal of Economic Literature* 32, 1176-96, 1994.
- Emery, J.C.E., Labour Shortages in Saskatchewan, Department of Economics, University of Calgary, Volume 6 • Issue 4 • January 2013
- Kulshreshtha, S., Nagy, C., Present and Future Water Use in the Qu'Appelle River Basin, University of Saskatchewan, prepared for the South Central Enterprise Region and the Saskatchewan Watershed Authority, Moose Jaw, 2012.
- López, H., Macroeconomics & Inequality." , Macroeconomic Challenges in Low Income Countries, World Bank, Washington, 2004.
- Saskatchewan Economic Review, (Various Years), Saskatchewan Bureau of Statistics, Regina.
- Saskatchewan Economic Accounts, (Various Years), Saskatchewan Bureau of Statistics, Regina.
- Saskatchewan Irrigation Projects Association, Time to Irrigate, volumes I and II, Outlook, 2008.
- Saskatchewan Provincial Budgets, (2006/7 – 2016/17), Department of Finance, Regina.
- Sanchez-Robles, B., Infrastructure Investment & Growth: Some Empirical Evidence." *Contemporary Economic Policy* 16, 98-108, 1998.
- Parsons, G., Doubling Saskatchewan's Population, University of Saskatchewan and Saskatchewan Agrivision Corporation Inc.; Saskatoon, 2003.
- Parsons, G., This Year Country, Prairie Policy Centre, Saskatoon, 2003.
- Parsons, G., Saskatchewan Rising, Prairie Policy Centre, Saskatoon, 2005.
- Report of the Standing Senate Committee on National Finance, Smarter Planning, Smarter Spending, February, 2017, Ottawa.
- Saskatchewan Irrigation Projects Association (2005), Time to Irrigate Volumes I and II.
- WESTAC & Transport Canada, Freight Demand Outlook: Is Western Canada's Transportation System Up To It? Vancouver, 2009.



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