BUDGET 2015

SUPPORTING JOBS, SUPPORTING FAMILIES. The Alberta Way.

2015-18 STRATEGIC PLAN

Alberta

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KEY OUTCOMES

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2. Alberta's education system enables all Albertans with the necessary skills to participate in a diversified, 21st century economy.
3. Alberta supports and preserves a natural environment for Albertans that has clean air, water, and protected wilderness areas.
4. A health care system that is sustainable, patient-focused and meets the needs of a growing province.
5. A system of supports for seniors that will assist them in remaining independent and participating in their communities.
6. An integrated approach to improving the socio-economic well-being of all Albertans.
7. Indigenous communities and people participate as equal partners in Alberta's economy and society.
8. Increased gender equality in Alberta.

Strategic Plan Overview

Alberta is home to an abundance of resources and natural beauty. It is home to a hard-working and innovative people who are optimistic, entrepreneurial and enterprising. While we have enjoyed tremendous wealth over the last decade, not all Albertans have had the same opportunities to share in this prosperity. The Government of Alberta is committed to restoring economic growth so that all Albertans share in our future prosperity.

The government will drive economic recovery by making targeted investments that encourage innovation and diversification. By attracting and supporting entrepreneurs and job creators we'll enhance our overall competitiveness. The government will promote Alberta's energy interests, working with industry, our federal and provincial counterparts and others to position Alberta as a global supplier of safe, reliable and environmentally responsible energy products. Finally, by investing in infrastructure, public transit, roads and bridges, the government will get Albertans working again and build a strong foundation for our future.

All of this can be accomplished while stabilizing public services that support our communities and protect our most vulnerable. Supporting stable, long-term funding for health care, education and social services will help to build up the next generation of Alberta's leaders and innovators.

We will restore a respectful relationship with this province's First Nations, Metis and Inuit peoples, forging partnerships that recognize the unique and invaluable contribution that Alberta's Aboriginal peoples make to the life of this province. Finally, we will begin to take the steps necessary to ensure that women are afforded no less opportunity, feel no less security, and encounter no greater barriers to success than men in our society.

These changes will be made in a responsible manner, being mindful of our economic circumstances and after consulting widely. Change is only successful when there is openness and transparency. That is the Alberta way.

Together, we will develop a new path as we focus on the following strategic principles:

- **Stabilizing key public services**
- **Returning to fiscal balance**
- **Supporting jobs, economic growth and diversification**

The government will assess 2015-16 performance in relation to the following eight key strategic outcomes:

1. Alberta has an open, sustainable and increasingly diversified economy that attracts investment, facilitates diversification and expands market access.
2. Alberta's education system enables all Albertans with the necessary skills to participate in a diversified, 21st century economy.
3. Alberta supports and preserves a natural environment for Albertans that has clean air, water and protected wilderness areas.
4. A health care system that is sustainable, patient-focused and meets the needs of a growing province.
5. A system of supports for seniors that will assist them in remaining independent and participating in their communities.
6. An integrated approach to improving the socio-economic well-being of all Albertans.
7. Indigenous communities and people participate as equal partners in Alberta's economy and society.
8. Increased gender equality in Alberta.

The outcomes described throughout this strategic plan align with the new government's priorities. However, the metrics, while aligned with the priorities, do not yet reflect the reality of the new government's planned initiatives. The government aims to update these metrics and targets in the 2016 Budget to better reflect its long-term goals and commitments to Albertans.

Outcome 1: Alberta has an open, sustainable and increasingly diversified economy that attracts investment and facilitates diversification and market access.

The government recognizes the importance of taking decisive action to diversify Alberta's economy to proportionately reduce our economic reliance on oil, by building on our strengths to increase economic activity in other key sectors. The government is committed to increasing the economic value of oil and gas activity and creating more in value-added downstream oil and gas, including manufacturing and refining. The province will also support innovation that reduces greenhouse gas emissions and fresh water use and enhances reclamation in the entire petroleum production chain.

New diversification efforts are being launched from the base of the province's existing strengths, including a skilled workforce and low-cost business environment, as well as expertise in agriculture, energy, petrochemicals and tourism. Diversification creates opportunities in other sectors such as alternative energy, high tech, advanced research, film and television production, small brewing, wind power, forestry, value-added agriculture, food processing and tourism.

Ensuring a full and fair return to the people of Alberta for their energy resources is also a priority for the government and supports the vision of Alberta's Heritage Savings Trust Fund. Albertans deserve a royalty system they can trust to optimize returns to Albertans from the natural resources they collectively own. The government will engage with industry and Albertans in open discussions about how Alberta's royalty system can better serve the province for generations to come.

Other top priorities for the government are working with partners and stakeholders to coordinate resources and develop long-term strategies that encourage innovation and diversification; promoting higher-value production; building a modern transportation system and infrastructure; and, improving socio-economic outcomes for all Albertans. Following on the advice of former Bank of Canada governor and leading economist, David Dodge, the government is increasing the Capital Plan by 15% and is taking a counter-cyclical approach to investing in needed infrastructure to take advantage of available industry capacity and low interest rates. The report produced by Mr. David Dodge is attached at Appendix A.

Finally, the government will actively promote Alberta's energy interests by: supporting sector expansion; making investments in value-added processing and refining; gaining access to new markets; and, creating a stable, open and welcoming investment environment that promotes development of the province's energy resources in an environmentally responsible and sustainable manner.

1. Performance Measures

	Last Actual		Target		
Tourism Expenditures	Results	Year	2015–16	2016–17	2017–18
Total tourism expenditures in Alberta ($ billions)	7.4	2012	7.7	7.9	8.3

	Last Actual		Target		
Agri-food Exports by Market	Results	Year	2015-16	2016-17	2017-18
Alberta's agri-food exports by market ($ millions):					
• United States	3,080	2013	3,144	3,357	3,619
• China	1,511	2013	1,481	1,596	1,719
• India	39	2013	45	50	54
• CETA member countries[1]	248	2013	329	355	382
• TPP member countries (excluding USA)	2,062	2013	2,292	2,470	2,663
• Rest of the world	1,807	2013	2,169	2,338	2,520

	Last Actual		Target		
Agri-food Exports by Sector	Results	Year	2015-16	2016-17	2017-18
Alberta's agri-food exports by sector ($ millions):					
• Primary commodities	5,103	2013	5,483	5,911	6,372
• Processed/manufactured products	3,645	2013	3,947	4,254	4,586

Note 1: CETA: the Canada-EU Comprehensive Economic and Trade Agreement

1. Performance Indicator

	Actual			
Alternative and Renewable Generation Capacity in Alberta (megawatts)	2010	2011	2012	2013
	5,678	5,805	6,461	6,573
• Wind	805	895	1,113	1,113
• Hydro	900	900	900	900
• Biomass	340	359	414	417
• Gas cogeneration	3,633	3,651	4,034	4,143

Outcome 2: Alberta's education system enables all Albertans with the necessary skills to participate in a diversified, 21st century economy.

Albertans are on the front lines of economic growth, international competitiveness and responsible government every day in their workplaces. The government contributes to this thriving workforce by: ensuring that workplaces are safe, fair and healthy; ensuring that workers having the necessary skills and resources to do their jobs; and, by assisting employers to understand and adhere to their statutory obligations. Safe, fair and healthy workplaces improve labour productivity and the well-being of Albertans. They also make Alberta a more attractive place to live and work.

Investing in an accessible high-quality education system that provides relevant skills and key competencies is the single best investment our province can make to ensure our future prosperity. By helping Albertans develop the right skills, and helping employers to find and retain the workers they need, our economy will continue to expand and grow. Stable funding and support for our education system allows the government to equip Albertans with the relevant skills and key competencies they need to participate and contribute to this growth.

The government is committed to ensuring that students graduating from high school have the knowledge and skills to succeed in the economy now and in the future. In a competitive global environment, there needs to be close alignment between the K-12 education system and post-secondary institutions, the apprenticeship and industry training system, as well as business and industry.

Priorities in the area of education include keeping class sizes low while responding to growing enrollment in the K-12 system, and ensuring that schools have the people and resources to respond to the complexity of Alberta's classrooms. New schools will continue to be built and modernized in order to decrease class sizes and to improve learning conditions for children.

Further, by freezing tuition for two years, the government is making education more accessible to more students. Long-term, stable funding for post-secondary institutions will support expanding our educated workforce for the challenges that lie ahead.

The government is committed to working with industry stakeholders to refine and develop programs and services that attract workers and will continue to work with industry and the Government of Canada to shape Alberta's labour market policy. Working with partners and stakeholders, the government is committed to policy and program development and delivery in areas such as: increasing the participation of all Albertans in the workforce; improving productivity; governance and licensing of professions; facilitating foreign qualification recognition; and, supporting labour attraction.

2. Performance Measures

	Last Actual		Target		
Labour Force Participation – Interprovincial Rank[1]	Results	Year	2015–16	2016–17	2017–18
Interprovincial rank of Alberta's labour force participation rate (#1 is the highest)	#1	2013	#1	#1	#1

	Last Actual		Target		
	Results	Year	2015–16	2016–17	2017–18
Post-secondary Education					
Percentage of Albertans age 18-34 participating in post-secondary education	17%	2014	18%	18%	19%
Lost-time Claim Rate					
Number of lost-time claims per 100 person-years worked	1.35	2013	1.35	1.33	1.31
High School Completion					
High school completion rate of students within five years of entering grade 10	82.1%	2013-14	82.5%	82.7%	83.0%
Post-secondary Transition					
Percentage of students entering post-secondary programs (including apprenticeship) within six years of entering grade 10	59.8%	2013-14	60.0%	60.2%	60.2%
Literacy[2]	Results A | E	Year	2015–16 A | E	2016–17 A | E	2017–18 A | E
Percentages of students who achieved standards on Language Arts diploma examinations	87.6% | 11.4%	2014-15	88.0% | 11.8%	88.2% | 12.0%	88.4% | 12.1%

Note 1: Labour force participation rate represents the percentage of Albertans aged 15 to 64 who are either employed or actively seeking employment.

Note 2: A | E: Acceptable | Excellence – the acceptable standard results include the standard of excellence results. Performance measure targets are considered met if the result is not significantly different from the target value using statistical tests.

2. Performance Indicators

	Actual			
Labour Force Participation Rate	2010	2011	2012	2013
Rate of:				
• All Albertans	73.0%	73.6%	73.6%	73.1%
• Aboriginal Albertans living off-reserve	70.4%	67.5%	71.0%	71.9%
• Alberta's immigrant population	68.9%	70.2%	70.1%	68.4%
• Alberta youth (age 15–24)	69.1%	69.9%	68.2%	67.9%

	Actual			
Alberta Immigrant Nominee Program (AINP)	2009	2010	2011	2012
Percentage of AINP nominees who report that they are still residing and working in Alberta one year after obtaining permanent residency	90.4%	87.8%	82.4%	88.5%

Outcome 3: Alberta supports and preserves a natural environment for Albertans that has clean air, water and protected wilderness areas.

Environmental impacts must be considered in the government's decisions and decision-making processes in order to reconcile competing demands on the landscape. The government acknowledges that Albertans and our economic partners demand that Alberta take significant and effective action to promote clean air, water, land and biodiversity conditions that contribute to a sustainable, healthy environment. Coal-fired electricity generation will be phased out to reduce smog and greenhouse gas emissions. Cleaner, greener sources of electricity, including wind, solar and more industrial cogeneration in the oil sands will be encouraged. Attention will be given to a green retrofitting loan program that will assist Alberta families, farms and small businesses to reduce their energy usage affordably. This will reduce negative environmental impacts and create jobs in the construction industry.

The government is committed to being part of the solution on climate change and will improve environmental standards, inspection, monitoring and enforcement to protect Alberta's water, land and air. Standards will be based on independent science and international best practices, designed in consultation with Albertans.

3. Performance Measures

	Last Actual		Target		
	Results	Year	2015-16	2016-17	2017-18
Total Greenhouse Gas Emissions[1]					
Measured in million tonnes of CO_2 equivalent as outlined in *Alberta's 2008 Climate Change Strategy*	267	2013	263	264	265
Municipal Solid Waste[2]					
Kilograms of municipal solid waste per capita disposed of in landfills	911	2013	666	654	632

Note 1: Targets and data are measured on a calendar year and there is a reporting lag period.

Note 2: The 2013 actual is not reflective of historical trends due to the Southern Alberta floods; therefore targets are based on the 2012 actual of 691 kg/capita.

3. Performance Indicators

	Actual			
	2010	2011	2012	2013
Air Quality Index[1]				
Quality of Alberta's air based on five major pollutants: carbon monoxide, nitrogen dioxide, ozone, sulphur dioxide, and fine particulate matter	93%	95%	97%	96%
		Good air quality days		
Visitor Satisfaction				
Visitor satisfaction with quality of services and facilities at provincial parks			85.6% (2013)	86.4% (2014)

Note 1: In 2011-13 five out of six air zones in Alberta achieved the new Canadian Ambient Air Quality Standards, which focuses on a three-year average of the highest occurring concentration levels of two major pollutants; fine particulate matter and ozone. Management action is being taken in the Red Deer region to achieve the standard.

Outcome 4: A health-care system that is sustainable, patient-focused and meets the needs of a growing province.

Universal public health care is one of Canada's proudest accomplishments. This government is committed to ensuring that Albertans have access to a health care system that is accessible, relevant and high-quality—a system that is capable of providing Albertans with the support they need, when they need it. Universal access to high-quality public health care plays a vital role in promoting and protecting the health of Albertans. Timely access to quality health care leads to improved health outcomes and mitigates lost productivity due to illness. It also reduces individual suffering and leads to lower long-term health care costs.

The health-care system must be sustainable to meet the needs of a growing province and to ensure a quality system exists for the benefit of future generations. Also, Albertans expect their health system to be accessible and empower them to take more responsibility for their health.

The government is committed to working with partners and community service providers and agencies to ensure that Albertans have the supports they need to lead healthy lives. A new model for public homecare will enhance and stabilize the health-care system by directing care to where individuals need it. Finally, a mental health strategy is being developed to meet the need for mental health services to Albertans.

4. Performance Measures

	Last Actual		Target		
	Results	Year	2015–16	2016–17	2017–18
Satisfaction with Health Care Services Received					
Percentage of Albertans satisfied or very satisfied with health care services personally received in Alberta within the past year	66%	2013-14	68%	70%	70%
Healthy Alberta Risk Trend Index (HARTI)[1]					
Average number of health risk factors per person aged 20 to 64 years	2.12	2013	2.06	2.00	1.94

	Last Actual (Year)	Target 2015-16	Target 2016-17	Target 2017-18
Influenza immunization				
• Percentage of Albertans who have received the recommended annual influenza immunization:				
• Seniors aged 65 and over	64%	75%	75%	75%
• Children aged 6 to 23 months	34%	75%	75%	75%
• Residents of long-term care facilities	88% (2013-14)	95%	95%	95%
Childhood immunization rates (by age two)				
• Diphtheria, tetanus, pertussis, polio, Hib	74%	97%	97%	97%
• Measles, mumps, rubella	85% (2013)	98%	98%	98%

	Last Actual		Target		
	Results	Year	2015–16	2016–17	2017–18
Access to Primary Care through Primary Care Networks					
Percentage of Albertans enrolled in a Primary Care Network	75%	2013-14	76%	77%	78%
Access to Continuing Care Spaces					
Percentage of clients placed in continuing care within 30 days of being assessed	69%	2013-14	70%	70%	70%

Note 1: This measure is calculated using six self-reported indicators of health behaviours known to be risk factors for health, including life stress, body mass index, fruit and vegetable consumption, physical activity, smoking status and frequency of binge drinking.

4. Performance Indicators

	Actual				
	2010	2011	2012	2013	2014
Life expectancy at birth:					
• First Nations	72.14	70.79	72.16	72.53	
• Non-First Nations	81.78	82.00	82.02	82.07	
Life Expectancy at Birth[1]					
Provincial		81.59	81.68	81.71	81.80

Note 1: Adjusted population estimates are used for the denominators of the mortality rates used in the life expectancy calculations. The newly recalculated life expectancy figures will differ slightly from previously reported life expectancy figures released in the Health Business Plan 2014-17.

Outcome 5: A system of supports for seniors that will assist them in remaining independent and participating in their communities.

Albertans have indicated their preference to live in their own residences and communities throughout their senior years. It is essential that progress be made on the continuing care system to provide the health care, personal care and accommodations needed to meet the increasing demand for seniors' independence and participation in family and community life.

The government will finalize plans to create 2,000 public long-term and high-acuity spaces over the next four years, which will contribute to shortening waiting times, easing overcrowding in hospitals and reducing the number of patients being treated in hallways. Repairing hospitals and seniors' facilities and constructing new facilities will also be a priority.

5. Performance Measures

	Last Actual		Target		
	Results	Year	2015–16	2016–17	2017-18
Access to Continuing Care Spaces					
Percentage of clients placed in continuing care within 30 days of being assessed	69%	2013-14	70%	70%	70%
Housing Facilities Condition Rating Index					
Percentage of housing facilities in:					
• Good Condition	33%	2013-14	34%	35%	36%
• Fair Condition	62%	2013-14	62%	62%	62%
• Poor Condition	5%	2013-14	4%	3%	2%

Outcome 6: An integrated approach to improving the socio-economic well-being of all Albertans.

The Government of Alberta will work collaboratively with community partners and other levels of government to improve quality of life for Albertans. An integrated service delivery approach that focuses on the individual's unique needs and circumstances will make the system of supports both easier to navigate for clients and more efficient to deliver.

Improving the socio-economic well-being of individuals, families and the community through benefits, skills training, community and entrepreneur supports, workplace and education supports, and preventative supports that foster social, cultural and economic well-being in the community is a critical component of achieving the best quality of life for all Albertans. The government will increase the emphasis on preventative programs and services and will continue to work with communities to reduce poverty, family violence, bullying and homelessness.

The government also recognizes the importance that Albertans place on their safety, security and protection. Engaging Albertans in addressing legal issues and ensuring vulnerable Albertans are protected and supported leads to increased confidence in the province's justice system through decisions and determinations that are transparent, defensible, timely and fair.

6. Performance Measures

	Last Actual		Target		
	Results	Year	2015–16	2016–17	2017–18
Support for Albertans with Low Incomes Who Need Temporary Help					
Percentage of participants employed after leaving Income Support[1,2]	57%	2013-14	60%	60%	61%

Note 1: Starting in 2015, this measure will be based on a sample of clients surveyed between January and December each year rather than a sample surveyed between September and January.

Note 2: Those that stopped receiving Income Support without obtaining employment could have transitioned to training programs, entered new partnerships (e.g., change in marital status) or received support from other sources (e.g., Canada Pension Plan, Employment Insurance and Assured Income for the Severely Handicapped).

	Last Actual		Target		
	Results	Year	2015–16	2016–17	2017–18
Family Enhancement and Child Protection Services					
Percentage of children and youth with a new child intervention file who did not have a file closure in the previous 12 months[1]	84%	2013-14	87%	87%	87%
Family Support for Children with Disabilities					
Percentage of families accessing the Family Support for Children with Disabilities program who indicate the services provided had a positive impact on their family[2]	91%	2012-13	n/a	92%	n/a

Note 1: Includes children and youth that are in care and in care.

Note 2: Biennial survey – conducted every two years.

	Last Actual		Target		
	Results	Year	2015–16	2016–17	2017–18
Assured Income for the Severely Handicapped					
AISH client quality-of-life index[1]	78%	2013-14	79%	80%	81%

Note 1: The index is made up of four equally weighted components based on questions from the annual AISH client survey related to meeting basic needs, the ability to live independently, manage health issues and get involved in the community.

	Last Actual		Target		
	Results	Year	2015–16	2016–17	2017–18
Satisfaction with Policing					
Percentage of Albertans satisfied with policing in Alberta over the past 12 months[1]	83%	2013-14	n/a	87%	n/a
Maintenance Enforcement Program					
Maintenance Enforcement Program's compliance rate on cases enrolled, by regular monthly payments	73%	2013-14	74%	74%	75%
Percentage of Victims Satisfied with Services					
Percentage of victims satisfied with services provided by employees and volunteers within the criminal justice system	85%	2013-14	86%	86%	87%

Note 1: Beginning in 2015-16, this measure is based on a biennial survey with targets and results available every other year.

Outcome 7: Indigenous communities and people participate as equal partners in Alberta's economy and society.

The government will strengthen economic and social opportunities for Indigenous peoples in Alberta by transforming relationships with Indigenous communities and organizations, industry, government and other partners in a respectful way. This means enhancing collaboration and ongoing dialogue with First Nations to achieve progress in mutually identified priority areas through quarterly meetings and regional tables that recognize the diverse regional issues of First Nations and allow the government and First Nations to engage on a government-to-government basis.

The government will work with Indigenous communities and organizations to support the transfer of knowledge, skills and tools to support effective relationships, policies and initiatives as well as healthy, vibrant Indigenous communities and peoples. Educational attainment, health and well-being, community safety and economic opportunity are just some of the areas where Indigenous peoples and communities can be more engaged. The government will devote new energy to addressing the unacceptable gaps in educational achievement between Indigenous and non-Indigenous students by building partnerships and support for First Nations, Metis and Inuit people to use their skills, knowledge and perspective in the workforce.

7. Performance Measures

	Last Actual		Target		
	Results	Year	2015–16	2016–17	2017–18
Economic Initiatives					
Number of Indigenous strategic economic development initiatives, partnerships and capacity building projects	51	2013-14	37	40	43
Tribal Council Engagement					
Percentage of tribal councils that are engaged through a formal relationship to support land and resource management	44% (4 of 9)	2013-14	67% (6 of 9)	78% (7 of 9)	89% (8 of 9)
High School Completion					
High school completion rate of self-identified FNMI students within five years of entering grade 10	53.2%	2013-14	53.5%	54.0%	54.5%

7. Performance Indicators

	Actual			
	2010	2011	2012	2013
Average Employment Income				
Average employment income of Alberta's population 15 years and over who worked full-year, full time				
• Aboriginal Albertans	n/a	$55,668	n/a	n/a
– First Nations	n/a	$50,033	n/a	n/a
– Métis	n/a	$60,296	n/a	n/a
• Non-Aboriginal Albertans	n/a	$70,042 (2010)	n/a	n/a
Post-secondary Achievement				
Percentage of Alberta's employed off-reserve Aboriginal population that has a university degree compared to that of the non-Aboriginal population	15	13	12	16
		Percentage points lower		

Outcome 8: Increased gender equality in Alberta.

Building a better Alberta includes ensuring the necessary policies, programs and services are in place to increase gender equality. The World Economic Forum has acknowledged numerous studies that confirm greater levels of gender equality enhance productivity and economic growth. Of equal importance to economic arguments for gender equality is the normative recognition that it is a social good to ensure that girls and women feel no less valued and have no less opportunity to live their lives with the same social and economic security as males. Empowering Alberta women and removing social barriers to their equal participation in our society will play an important part in continuing to build a stronger and more prosperous province. As it takes steps to reduce inequality, the government will also engage in a province-wide dialogue on the status of women. The government is committed to increasing support for organizations taking initiatives to end violence against women and within families.

Performance measures related to the participation of women will be reflected in the 2016 budget.

Appendix A:

Report to the Government of Alberta on the Development, Renewal and Financing of the Government's plan for Spending on Capital Projects to 2019

Bennett Jones LLP

Report to the Government of Alberta on the Development, Renewal and Financing of the Government's plan for Spending on Capital Projects to 2019

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INTRODUCTION

The purpose of this report is to set out the principles that should guide the Government of Alberta "on matters broadly relating to the development, reconsideration and renewal of the Government's plan for prioritization of and spending on capital projects, including without limitation of the financing of the capital projects".[1] The capital plan has three basic objectives:

1) to enhance long run growth, thus raising the real incomes of Albertans by improving the allocation of real resources, including raising private sector productivity;
2) to support the delivery of major social programs (education, healthcare, etc…) and,
3) to enhance stability, jobs and growth by making greater investment during periods of weak private investment and vice versa.

Specifically, the report will focus on the following areas:

- The overall size of the capital plan, with consideration to spending already underway or planned, as well as the availability of labour and the potential impact on prices and costs;
- The appropriate mix of capital investment to support both the delivery of education and healthcare services to Albertans and long-term growth of output and productivity, through better infrastructure and;
- Approaches to financing the capital plan in the current economic climate.

[1] Ministerial Order No1,2015

The paper is set out in five parts. In light of the basic principles for the overall expenditure plan to achieve growth and stability, the principles to guide the establishment of the capital component of the plan are discussed in the first section of Part I.[2]

But because private investment and government revenues in Alberta are highly dependent on very uncertain future north American oil and gas prices over which the Alberta government has no control, the Alberta government faces particular challenges in the application of these principles to its overall economic plan and in particular to its capital plan. This is discussed in a second section of Part I.

Part II looks at the capital plan in aggregate. A first section makes interprovincial comparisons to get some idea of the adequacy of infrastructure capital in Alberta and briefly assess the current fiscal room to accommodate capital spending. A second section provides an assessment of the implications of different possible oil price scenarios over the next decade for the appropriate size of the capital plan over 2015-2019. This assessment is based on analysis of the way in which "needs", affordability, and cost pressure are expected to evolve under the different oil price scenarios, and guides the recommendations related to the overall size of the capital plan.

Part III provides guidance on the quantum, financing and allocation of the capital budget for investment in infrastructure required as inputs for the provision of education, health, and general services by the government (schools, hospitals, public buildings and structures).

Guidance for allocation of investment in public use infrastructure (roads, water, sewers, etc) is set out in Part IV along with guidance for financing this investment. This section covers the appropriate mix of capital investment and the approaches to financing the capital plan.

Summary recommendations are presented in Part V.

[2] These principles are applicable in general to any provincial jurisdiction.

PART I – GUIDING PRINCIPLES

A. PRINCIPLES RELATED TO THE CAPITAL PLAN

The capital plan as part of the overall budget plan has three basic objectives:

1) enhance long run economic growth by improving the allocation of real economic resources, including raising productivity in the private sector;

2) support the delivery of major social programs; and,

3) mitigate cycles of boom and bust in the economy, thereby enhancing stability, jobs and growth.[3]

Growth

Growth is enhanced through: (a) the establishment of the legal and regulatory framework which guides private investment in infrastructure over time, most importantly with respect to railroads, electricity, telecom and pipelines, and (b) the direct provision and/or financing of infrastructure related to the provision of public services, such as those associated with schools, hospitals, roads, water, etc. While the main focus of this paper is on provincial government spending on the capital component of the direct provision of public services, the economic principles that should determine the allocation of that spending are similar to those that should determine the allocation of business spending on the provision of private services as guided by the government's legal and regulatory framework.

Just as a private enterprise should allocate its resources to the provision of services which yield the highest net revenues and to investments which yield the highest rate of return, so governments should allocate their resources to services which are judged to be most important for citizens and businesses and to investments which are judged to yield the highest rate of return. In both the private and public sectors, the allocation problem is the same – resources should be devoted to the service or investment which exceeds the next best use of those

[3] As a corollary, the capital plan should preserve or enhance fairness without jeopardizing the growth objective of improving the allocation of real resources.

resources, i.e. the "opportunity cost" of those resources. In both sectors, the allocation of spending between current operations and capital investment depends on the analysis of the mix that will yield the lowest ongoing cost of provision of the relevant service.

In both sectors, the total costs of provision of a service (operating, capital and financing charges) must **over time** be covered by revenues.[4] For services provided by private enterprise, in most cases the revenue comes from the customer who purchases the service because most of the benefit from consuming that service (or good) accrues to the customer exclusively.[5] On the other hand, for many public services, much of the revenue comes from general taxation for two reasons: a) because the benefit of the service is deemed in large part to accrue to the public at large (large externalities) and not exclusively to the user of the service, and b) in most cases because one person's consumption of the service does not usually preclude others from benefiting from the service, although congestion, waiting time and overcrowding can certainly reduce the value of the service.

In general private investment must **over time** be supported by revenues from sales of the service (or good) for which the capital is employed; government investment in public capital is generally supported from general tax revenues except to the extent that a fee or charge is levied for the use of that capital or a particular tax is "dedicated" to the provision of that service. But whatever the source of the revenue, **over time** the revenue must cover:

i. the associated operating and maintenance costs and

ii. the associated interest charges (cost of capital).

In making allocation decisions on any capital investment project, a government must take into account the total costs of the investment and decide on the appropriate revenue source (general taxation, specific dedicated tax and/or user charge) to cover these costs over time.

[4] At the aggregate level, however, total expenditures must over time be covered at least to an extent sufficient to maintain any net debt at a manageable level relative to GDP.

[5] The consumption of that service (or good) by the purchaser excludes others from benefiting from that service (exclusion principle).

Stabilization

Stability of the economy is enhanced by government restraining from spending during periods when private sector spending (consumption and investment) is very strong and inflationary pressures are rising. During these periods, governments should be a net lender[6] and take advantage of the relatively high interest rates which normally prevail during periods of excess demand. Conversely, stability of the economy is enhanced during periods when private consumption and investment are weak by government increasing public investment, consumption or transfers[7] and/or reducing taxes. During these periods, government should be a net borrower and take advantage of the relatively low interest rates and reduced construction costs that normally accompany periods of weak private sector demand. By following this policy of countercyclical budgeting, public debt can be sustained at a manageable level over long periods of time – rising somewhat during periods of weak private sector demand (unemployed resources) and falling during periods of excess demand (inflationary pressures).

Thus to promote sustained growth, government spending on capital should vary in a clearly countercyclical fashion. It should be curtailed during periods of strong private sector expansion and increased during periods of weak private sector investment. But getting the timing of actual investment under a counter-cyclical capital plan exactly right is very difficult to achieve in practice for two reasons. Because capital investment takes time to plan and then longer to execute, projects planned and commissioned when the private sector is weak often are finally executed in times of private sector strength. Second, it is very difficult to forecast how strong (or weak) the economy will be several years into the future. Thus, it is important to plan and prepare for a stream of investments many years into the future, the execution of which can be speeded up or slowed down in a countercyclical way as economic conditions warrant, not as current revenue availability dictates.

With a counter-cyclical policy in place, tax revenues will automatically increase quickly in periods of strong growth and much more slowly (or decline) during periods of weak growth or recession. The implication of this policy is that governments should be net borrowers to finance

[6] Their total revenues should exceed their operating and capital expenditures.

[7] The transfer component of operating expenditures will generally increase faster during slow growth periods so that there is some small "automatic" counter-cyclical pattern to operating expenditures providing a mild stabilizing impact on the economy.

capital spending during periods of slow growth and net lenders (savers) during periods of economic expansion. **Attempting to maintain a balanced budget each and every year will exaggerate cyclical economic volatility and have a perverse impact on long run growth**.

While it is desirable that governments borrow to finance capital spending in times of slow growth, such borrowing increases government debt and hence future debt service charges. Future interest payments must be sustainable under very pessimistic growth and interest rate assumptions. Consequently, capital expenditure plans must take into account the risk of adverse economic outcomes in the future.

Both the capital and operating components of the Budget plan should be designed to meet the same objectives as set out above, but what distinguishes the capital element of the plan from the operating component is the **time horizon** under consideration. While the operating component of the budget is planned and financed to meet the growth and stability objectives in the short run (usually one but at most three years), the capital component should be planned in such a way as to meet these objectives over the long run. This difference in time perspective creates a tension in the budget planning process. There is a natural incentive for both capital and maintenance expenditures to be deferred during periods of slow revenue growth in order to maximize current services that can be provided with limited current revenues, even though over the longer run the lack of capital will create inefficiencies which will limit both future private investment and government services that can be provided from future revenues.[8] In addition, there is a natural incentive for governments to keep general taxation below the level that is necessary to provide revenues necessary to finance the appropriate "efficient" level of capital spending.[9] These natural incentives have generally resulted in under-investment in public capital, in particular growth enhancing infrastructure, in many Canadian provinces and cities (including Alberta) with the result that future growth is constrained and unit cost of future operations is increased.

[8] And when revenues are robust during periods of strong growth, there is a natural tendency to undertake the government investment that has been deferred during periods of weak growth. This results in procyclical pattern of capital investment that drives up the costs of investment and construction for both the private sector and governments during cyclical peaks.

[9] Governments do not like to tax today's taxpayers to pay for capital expenditures which deliver only a small or even a negative benefit today, but will be important to future taxpayers.

To offset these natural incentives to under-invest both in maintenance and infrastructure, government should adopt the following **administrative** principles in planning their capital budget:

1) Departments and agencies need to go through a process to determine the optimal (lowest cost) mix of capital, labour and other inputs that is required to deliver their programs efficiently and assess their capital requirements against this optimal mix. From this analysis they then can produce an estimate of the "backlog" or "excess" of assets optimally needed to deliver current public services.

2) On the basis of macroeconomic projections provided by Treasury Board and Finance, departments and agencies need to plan for capital investment over a five to ten year horizon) to meet current needs and accommodate (and facilitate) future growth.

3) These "bottom up" requests for both operating and capital budgets are then rolled up and prioritized by Treasury Board and Cabinet.

4) Capital **expansion** spending should be financed from a planned excess of current revenue over operating expense (over the business cycle), from asset sales and (especially during periods of excess supply) by prudent borrowing.

5) Budgets for planned capital expansion should be based on prudent projections of future needs with both upside and downside assessment of risks. The degree of prudence should be greater the higher existing debt/GDP ratio.

B. PRINCIPLES AND OUTCOME RELATED TO THE CAPITAL PLAN: THE SPECIAL CASE OF ALBERTA

All of the above principles apply in Alberta but with some difference in emphasis because of the importance of the oil and gas industry to the economy and of non-renewable resource revenues to the government. The exploitation of hydrocarbon resources has been a powerful generator of rapid economic and population growth in Alberta. Because the requirement for infrastructure to support this rapid economic and demographic growth is very high, the requirement for capital spending (investment) by the Alberta government has been high relative to that in slower-growing provinces.

As set out in the general principles above, Alberta government capital expenditures on infrastructure should be planned to meet these high current and future requirements, but executed at a time when private sector investment is relatively weak both to minimize costs to government and to avoid putting additional cost pressures on private sector investment activity. This implies that relatively low levels of government capital spending should take place during the periods when resource activity and prices are high, and hence when revenues are high. Conversely relatively high levels of government capital spending should take place at the very time when resource revenue flows are relatively low, and private sector activity weak. In these circumstances, it is appropriate for the government to borrow to finance capital expenditures to meet the current and future needs of a growing population and expanding economy, whether it borrows from itself (by drawing down financial assets) or from the market.

Over the past two decades, successive Alberta governments have not adhered very closely to the principles set out above concerning the capital plan. Government capital spending has tended to be pro-cyclical in nature, generally rising as a share of GDP during years of strengthening resource revenues and falling after 2010 during a period of generally weakening resource revenues relative to GDP, although in this case the decline may have been warranted to some degree in view of the high level of business investment in the years to 2014.

PART II – THE CAPITAL PLAN IN AGGREGATE

A. THE CAPITAL PLAN IN CONTEXT

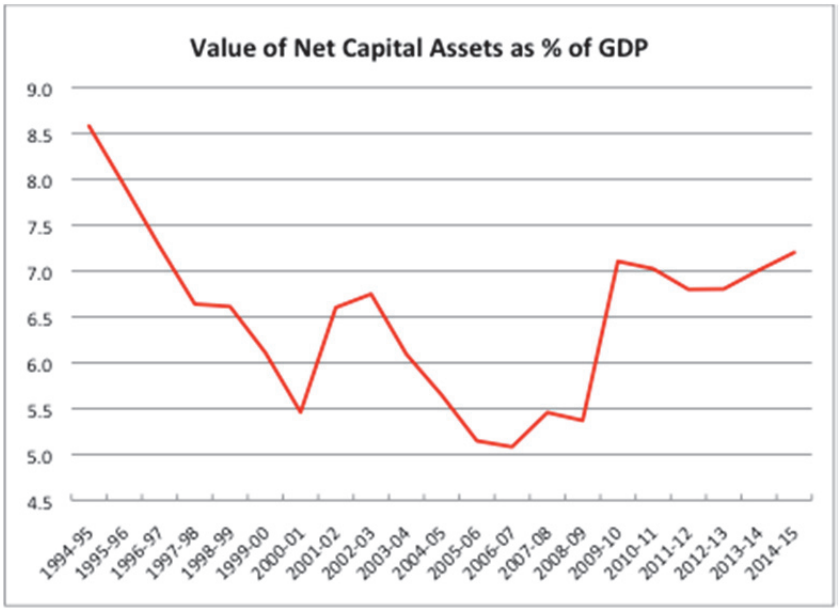
This sub-section aims to shed light on two issues:

- the adequacy of current infrastructure capital relative to needs;
- the current fiscal room to accommodate capital spending.

Adequacy of Infrastructure Capital Relative to Needs

Based on government accounting (fiscal plan basis), the ratio of the value of government capital assets (net of depreciation) to nominal GDP fell in the decade to the mid-2000s, but has since caught up partially to end up at 7.2 percent of GDP in 2014-2015, somewhat above the average for the whole period (Chart 1). Is this high or low in comparison to the needs related to population and economic activity in Alberta? More information is needed to have a judgment on this question.

Chart 1:



Sources: Government of Alberta, *2014-15 Annual Report*, June 30, 2015, and Statistics Canada, Cansim matrix 384-0038.

There is no universally established benchmark to determine what level of government capital is adequate to support economic growth and the provision of public services.[10] But at the

[10] The following publication is worth consulting to have a informative discussion of many issues related to government capital spending adequacy: Drummond, D., E. Capeluk and M. Calver. 2015. "The Key Challenge for Canadian Public Policy: Generating Inclusive and Sustainable Economic Growth", Centre for the Study of Living Standards, CSLS Research Report 2015-11, pp. 26-51.

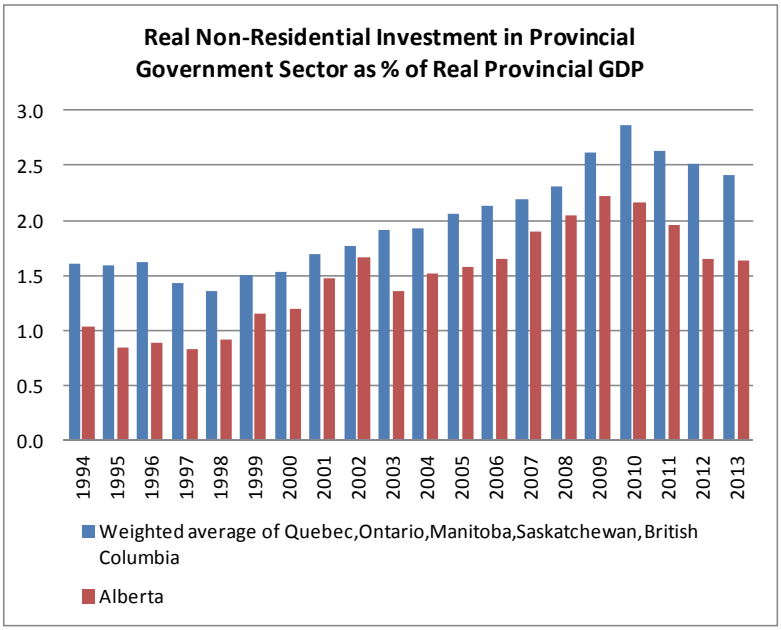
Canadian level, what other Canadian provinces spent on public capital relative to GDP compared to Alberta is relevant.

In trying to gauge how well is Alberta faring relative to other provinces, it makes sense to compare "real" measures of capital investment and capital stock to real GDP as this eliminates the impact of differences in relative price and cost levels across provinces. While it could also be useful to scale real investment and capital stock by population as some of the needs for public capital are demographically related (schools and hospitals for example), capital/population ratios are largely influenced by total population itself in the jurisdiction. (See Chart 3 below). For this reason, real investment and capital stock are best scaled by real GDP, as **real GDP encapsulates the needs to accommodate both population and real economic activity per capita**. I understand that GDP is rather loosely related to the needs for the capital assets that support well-being, but this is the best measure we have to do the job at a macroeconomic level.[11]

[11] There are some "microeconomic" indicators of underinvestment in public capital, such as long commuting time and congestion, for which very incomplete data exist. In this report, I do not rely on such indicators to assess the needs for public capital in Alberta at the aggregate level. For more on these microeconomic indicators, see for example Drummond, Capeluk and Calver (2015), ibid.

Considering now how Alberta fares in comparison with other provinces with respect to real net public capital[12] in relation to real GDP, the first thing to note is that real non-residential investment in the provincial government sector[13] in relation to real provincial GDP has been systematically lower in Alberta than in the other five largest provinces over 1994-2013, with the gap particularly large in the mid-1990s and after 2009 (Chart 2).

Chart 2:



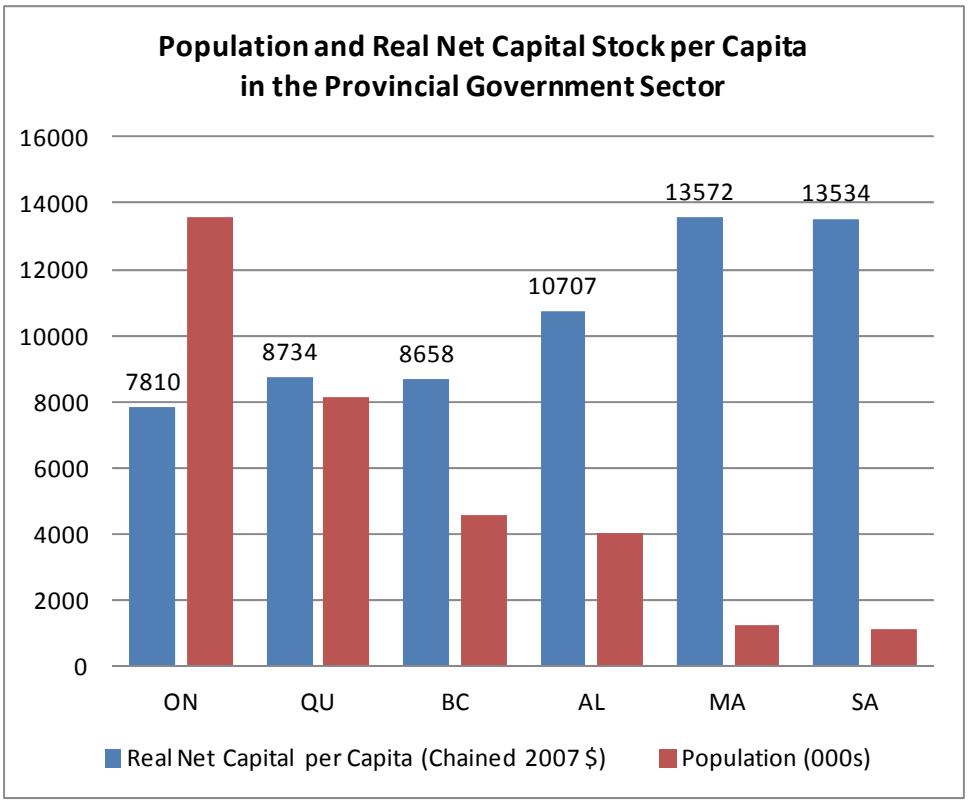
Source: Statistics Canada, Cansim matrices 031-0005 and 384-0038.

[12] Real investment, depreciation and net capital stocks are measured in chained 2007 dollars. Depreciation is linear. I am aware that taking the ratio of quantities measured in chained dollars is not strictly valid, but the distortion should be quite small. Moreover, the comparison of such ratios across provinces should be unaffected for all intents and purposes.

[13] There are no direct measures of real investment and capital stock for the provincial government sector. "Provincial government sector" was approximated by subtracting from "government sector" the following categories: "Other federal government services", "Other municipal government services", and "Other aboriginal government services". Data for "Defense services" were not available for subtracting, but would have been quite small in any event judging by the Canada totals, which are quite small (around 4% of total government sector).

As a ratio to total population, real net capital in the provincial government sector has been higher in Alberta than in a weighted average of the other five largest provinces from 1994 to 2013, the last year for which data on capital stocks by province and industry are available. The data shows a strong negative correlation between the size of the population of a province and the amount of real net public capital per capita (Chart 3). This suggests that there may be strong economies of scale to population in accommodating needs for public capital. As an extreme example, there are less kilometers of provincial highway in Ontario than in Alberta. To that extent, the relatively high level of real net capital per capita in the Alberta provincial government sector would not imply that public capital in this sector is more adequate in Alberta than elsewhere to serve population needs.

Chart 3:

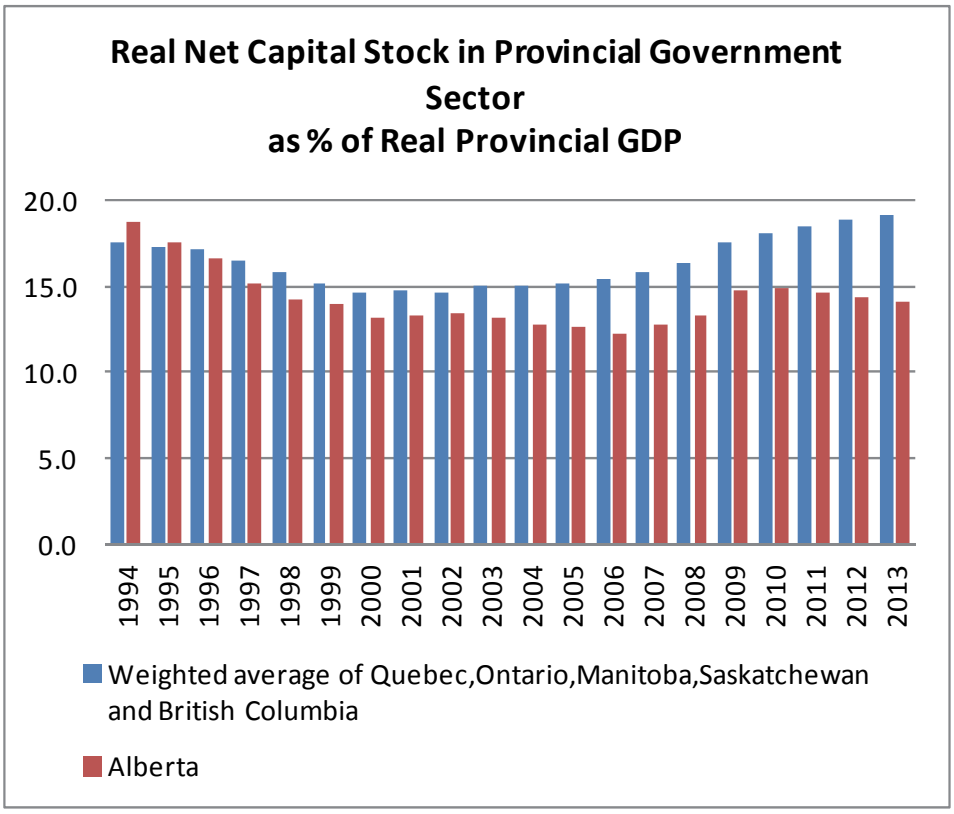


Sources: Statistics Canada Cansim matrices 031-0005 and 051-0001.

The end result is that the real net capital stock in the provincial government sector in relation to real provincial GDP, which was higher in Alberta than in the other five largest

provinces in the mid-1990s, has increasingly fallen below that in the other provinces since then (Chart 4).

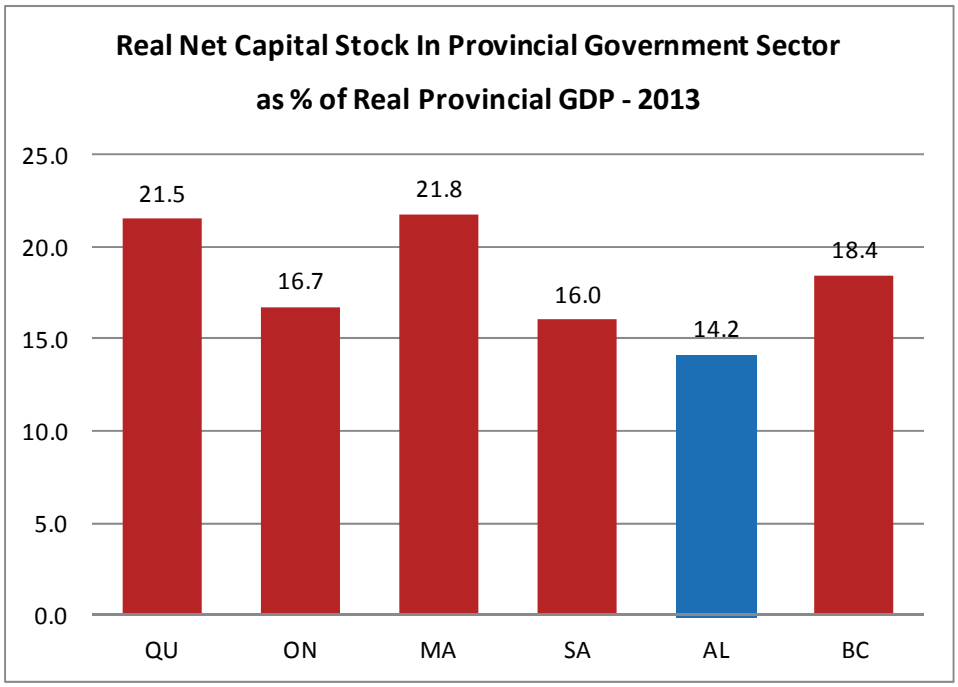
Chart 4:



Source: Statistics Canada, Cansim matrices 031-005 and 384-0038.

By the end of 2013, real net capital stock in the provincial government sector in relation to real GDP was 14 percent in Alberta, lower than in each of the other large 5 provinces (Chart 5). Why is Alberta lower than the other provinces by this measure and higher on average than the other provinces in terms of real net capital per capita? The answer is that real GDP per capita is much higher in Alberta than in the other provinces, reflecting more hours worked per capita in the Alberta economy and more capital used per worker in the business sector. In other words, real **economic activity per capita** is far more intense in Alberta than in the other provinces and public capital has not kept pace with this activity to the same extent as in the other provinces over the last 20 years.

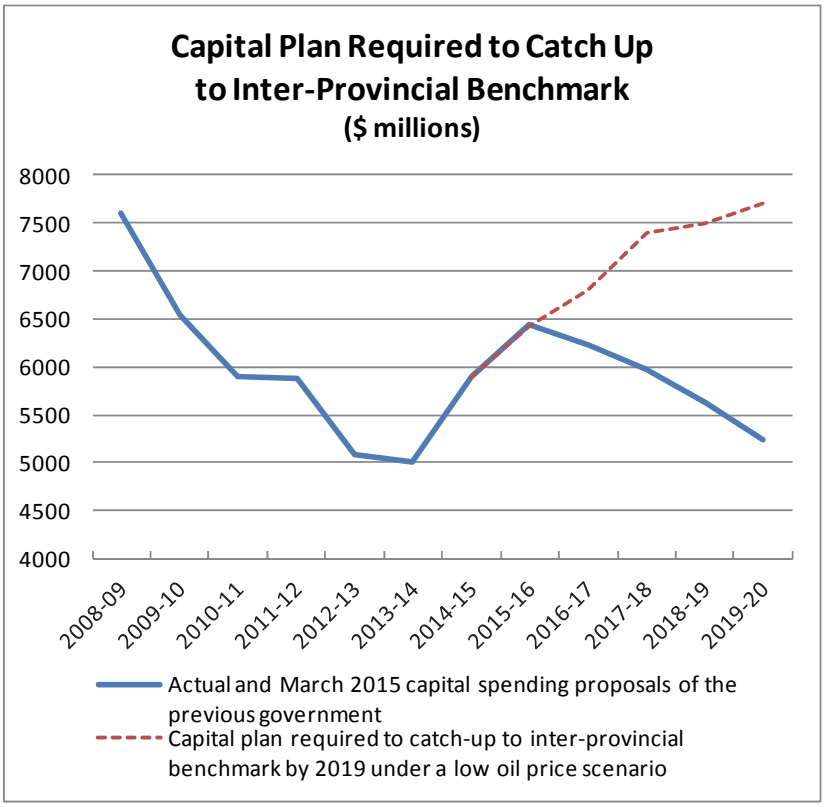
Chart 5:



Source: Statistics Canada, Cansim matrices 031-005 and 384-0038.

Over 1994 to 2013 the weighted mean ratio of real capital stock to real GDP in the other five largest provinces averaged 16 percent. This long-run average of 16 percent can be taken as a provincial benchmark against which to gauge the adequacy of Alberta's capital plan. This benchmark cannot be considered a precise indicator of what the "required" ratio for Alberta should be by any stretch of the imagination, if only because all provinces have underinvested in public infrastructure to a greater or lesser degree. Nevertheless the gap above Alberta that this ratio implies suggests that Alberta may have under-invested in public capital in the past and now has some catch-up to do to ensure an adequate level of public capital to meet current needs, let alone meet future needs. How much catch-up? There is no clear-cut answer to this question, at least at the macroeconomic level. Nevertheless, on the assumption that the backlog of unmet needs in Alberta has some relationship to Alberta's gap relative to the provincial benchmark, then it can be estimated that **to meet the 16 percent benchmark by 2019-2020, the Alberta government would need to add an average $1.6 billion per year from 2016 to 2019 to the March 2015 capital plan put forward by the previous government** (Chart 6).

Chart 6:



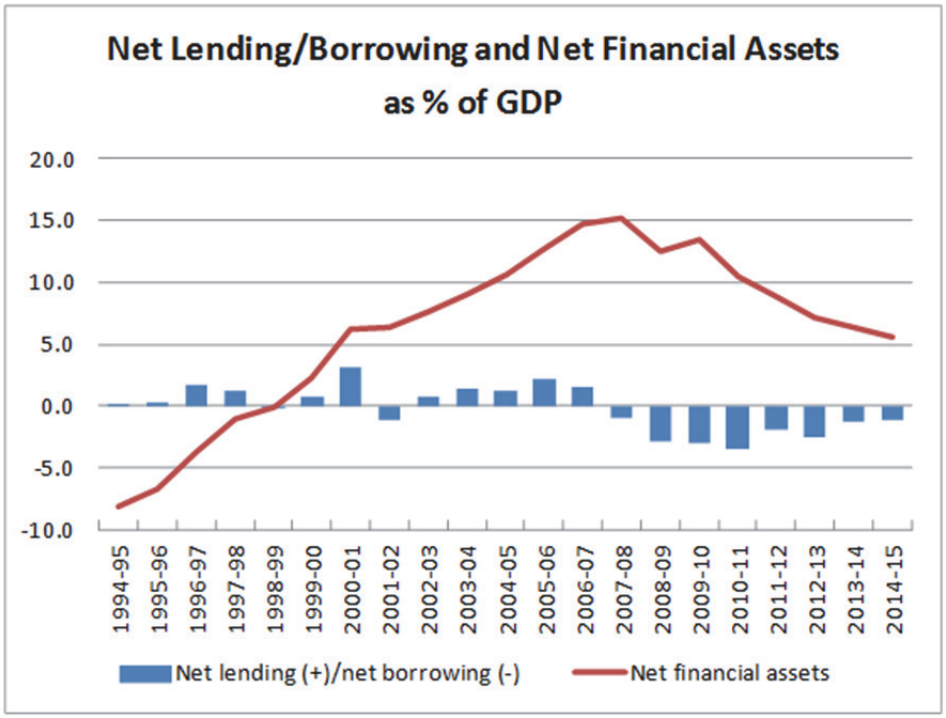
Sources: Calculations based on data from Government of Alberta, *2014-2015 Annual Report*, June 30, 2015,

Statistics Canada, Cansim matrix 384-0038, Government of Alberta, *Budget 2015*, March 2015, and real GDP projections provided by Alberta Treasury Board and Finance.

Fiscal Room to Accommodate Capital Spending

On an overall cash basis – total revenues less total expenditures – the government of Alberta was a net lender from 1994 to 2006 and a net borrower after 2006.While the net lending position from 1994 to 2006 led to a build-up in net financial assets, the net borrowing position after 2006 has resulted in a substantial reduction in net financial assets (Chart 7)

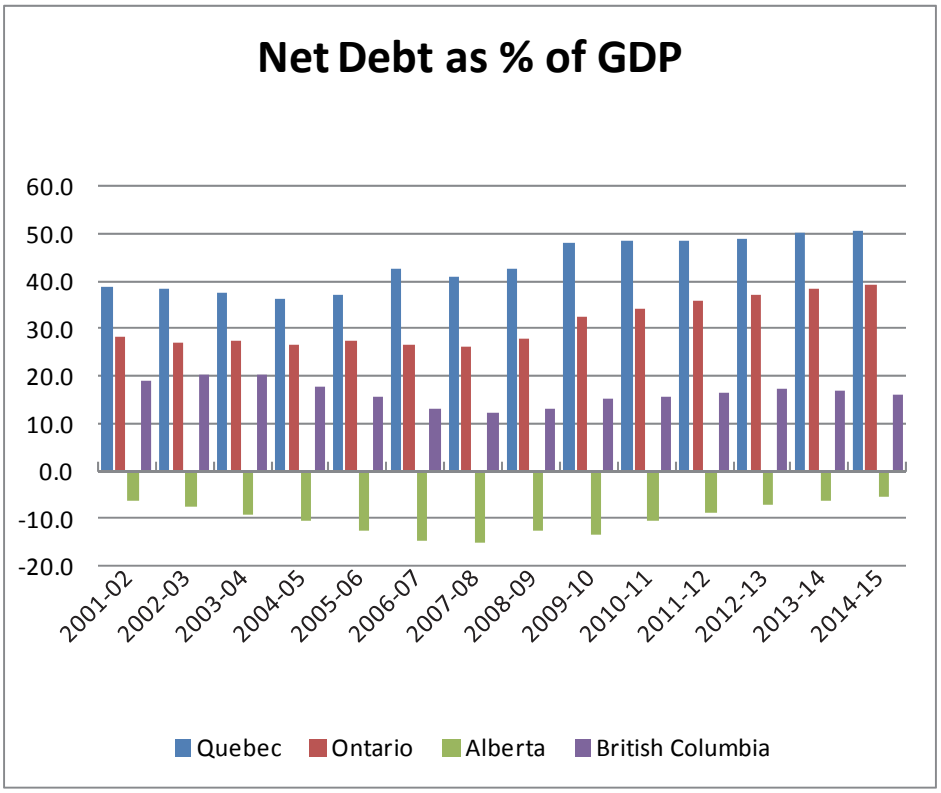
Chart 7:



Sources: Government of Alberta, *2014-15 Annual Report*, June 30, 2015 and Statistics Canada, Cansim matrix 384-0038.

Despite being in a net borrowing position since 2006, until the end of 2014-15 Alberta was unique among the four largest provinces in having a net financial asset (NFA) position rather than a net debt. On a fiscal plan basis, Alberta government's net financial assets reached a peak of 15.2 percent of GDP in 2007-2008 and gradually fell thereafter to 5.5 percent of GDP by 2014-2015 (Chart 8).[14] At the same time, the net debts of the governments of Quebec, Ontario and British Columbia rose to 51 percent, 39 percent and 16 percent of their respective provincial GDP by 2014-2015. **Thus, Alberta has prudent room for net borrowing before its debt/GDP reaches even the relatively low ratio of British Columbia.**

Chart 8:



Sources: Public Accounts and 2015 budgets of the governments and Statistics Canada Cansim matrix 384-0038.

[14] On a consolidated financial statements basis. NFA was forecast to be about 2.4% of GDP at the end of 2014-15 in *Budget 2015*.

B. THE CAPITAL PLAN FOR 2015-2019

In drawing a public capital plan for the next five years, three factors must be taken into account: (1) the current and future needs for public capital to support long-term growth and the provision of adequate public services, (2) the large uncertainty about the economic outlook for Alberta in view of the hard-to-predict large movements in the price of oil, and (3) the degree of pressure on costs over the next five years. Indeed, these three factors are at the root of the answers to the following three questions:

- Is the capital plan consistent with achieving some target level of real public capital, account taken of the projected growth of population and real activity per capita?
- What is the range of capital spending growth that the government can afford to accommodate while keeping public finances on a sustainable path, assuming no discretionary change in the generation of revenues?
- Are the timing and size of the capital plan consistent with the degree of cost pressure in the Alberta economy?

This section will try to answer these three questions. In a first part the economic and fiscal context which any sensible capital planning must take into account will be defined. The risks that arise from uncertainty about future oil prices will be addressed through a range of economic and fiscal scenarios that derive from different oil price assumptions not only over 2015-2019 but also 2020-2024. All three factors conditioning capital planning, i.e. needs, affordability and cost pressure, depend on the economic scenario that is expected to prevail. In a second part, an analysis of how the three factors evolve in the context of the various oil price scenarios will underpin conclusions about the appropriate size of the capital plan over the period 2015 to 2019.

Oil Price Scenarios and Fiscal Implications

To address economic uncertainty, a range of economic scenarios driven by different assumptions about oil prices are considered. Oil price is key because it has a great deal of direct and indirect influence on the Alberta economy, and hence on government revenues, public capital needs and cost pressure. As first benchmark case, a low WTI oil price is assumed to prevail over the next five years, starting at U.S. $51/bbl in 2015 and edging up to U.S. $58/bbl in 2019. But this is not the end of it. In order to properly assess the risks implied by a public capital plan with respect to needs and affordability, one must take account of the outlook for the oil price and the Alberta economy over the following five years, i.e. 2020 to 2024. A scenario of rising real oil prices over 2020-2024 would boost the need for, and make financial room available to cover the cost of borrowing, for more capital spending over 2015-2020 than a scenario of flat, low real oil price from 2020 to 2024. Therefore, the first benchmark scenario, and the one that I consider the base case, is one in which low oil prices prevail over 2015-2019, as specified above, followed by a rise in the WTI oil price to the equivalent of U.S. $82/bbl (at 2020 U.S. prices) by 2024. A "low-low" variant aims at capturing downside risks to this first benchmark scenario by keeping the WTI oil price at the equivalent of U.S. $63/bbl (at 2020 U.S. prices from) from 2020 to 2024. A second benchmark scenario is also considered: one in which WTI oil price strengthens to U.S. $80/bbl by 2019 and is kept at the equivalent of U.S. $82/bbl at 2020 U.S. prices from 2020 to 2024. In a "mid-to-high" variant of this second benchmark, the oil price again rises to U.S. $80/bbl by 2019 but then escalates to the equivalent of U.S. $94/bbl at 2020 prices by 2024. This last scenario aims at capturing the upside risks to oil price expectations. Table 2.1 provides an overview of these oil price assumptions.

Table 2.1:

WTI Oil Price Assumptions				
	At current U.S. prices		**At 2020 U.S. prices**	
	2015	2019	2020	2024
Low oil price scenarios:				
1. Low-low oil price (low variant)	51	58	63	63
2. Low-to-mid oil price (first benchmark)	51	58	63	82
Medium oil price scenarios:				
3. Mid-mid oil price (second benchmark)	54	80	82	82
4. Mid-to-high oil price (high variant)	54	80	83	94

Each of these scenarios generates different profiles for the Canadian dollar exchange rate, real and nominal GDP growth rates, population growth, CPI inflation, and growth in government resource revenues and other economic variables. For these profiles over 2015 to 2019, I rely on simulations provided by Alberta Treasury Board and Finance, the results of which I find reasonable. For the same profiles over 2020 to 2024 I use "rules of thumb" that are consistent with economic relationships (and Finance assumptions) imbedded in current economic models of the Albertan economy.[15] In order to illustrate fiscal outcomes under these four scenarios, illustrative operating and capital expenditures numbers are necessary. The assumptions used to construct numbers with respect to growth in government expenditures and non-resource revenues across the four oil price scenarios are summarized in Table 2.2. It is worth noting that from 2015-16 to 2019-20 operating expenses grow on average by 3.7 percent per year in the low oil price scenarios and by 4.6 percent per year in the medium oil price scenarios. This compares with an average growth rate of 5.6 percent per year from 1995-96 to 2014-15.

Table 2.2:

Working Assumptions about Expenditures and Non-Resource Revenues		
	2015 - 2019	**2020-2024**
Operating expenses	Population growth + CPI inflation + 1%	Population growth + CPI inflation
Capital spending	As per March 2015 plan by the	Population growth + CPI inflation
	previous government	
Non-resource revenues	As per Finance simulations based	Fixed proportion of nominal GDP
	on status quo for taxation and fees	

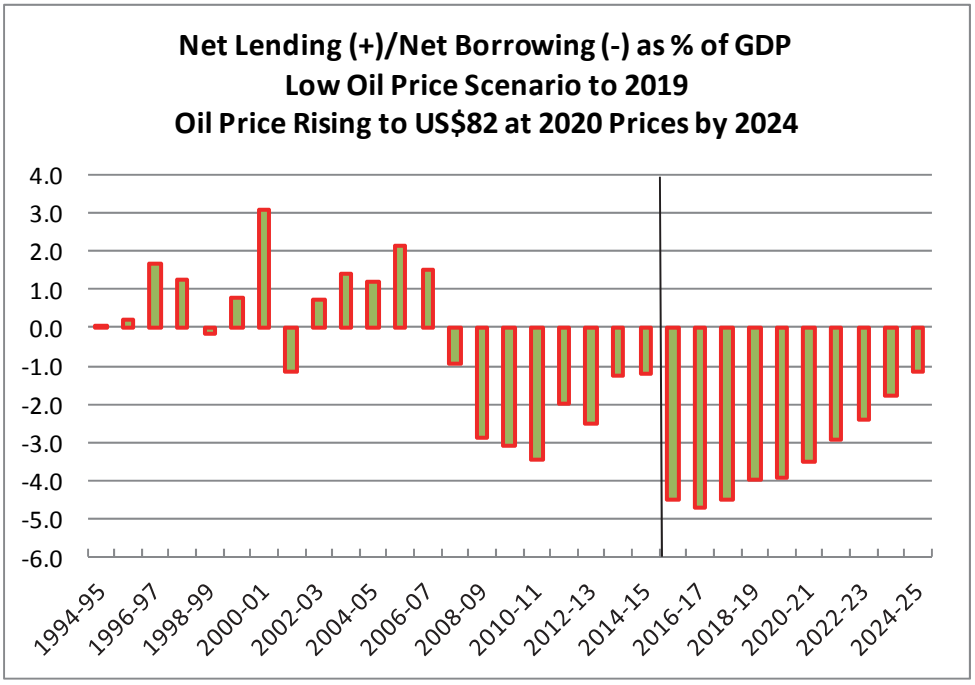
It is worth noting that the assumption regarding capital spending over 2015-2019 does not reflect any view that the March 2015 plan was most appropriate but rather the fact that this was the latest and only actual plan available this summer to serve as a basis for my analysis. At the moment, actual capital spending commitments amount to 94 percent of the March 2015 total capital plan.

[15] See Table 2.6 in the annex for projections of real GDP and population growth in Alberta under various oil price assumptions.

It is important to realize that the rules defined in Table 2.2 are **not recommendations** to the government but simply **working assumptions** that are necessary to calculate fiscal balances going forward. When the government has decided on the pace of spending growth and changes in taxation or fees, the precise fiscal balances will have to be recalculated. They will differ in detail from those based on the above working assumptions. Nevertheless, the simulated balances shown in Table 2.3 below give a good general picture of the outlook under the four oil price scenarios.

The **low-to-mid** oil price scenario is probably the one that best balances the risks. Under this scenario, net borrowing is at its peak in relation to GDP in 2016-2017 and gradually diminishes to 1.2 percent of GDP by 2024-2025 as both the operating deficit contracts and the surplus of resource revenues over capital spending expands in relation to GDP (Chart 9). Net financial assets turn to net debt in 2016-2017. Net debt stabilizes at 20.5 percent of GDP in 2023-2024 (Chart 10, low-to-mid case).

Chart 9:

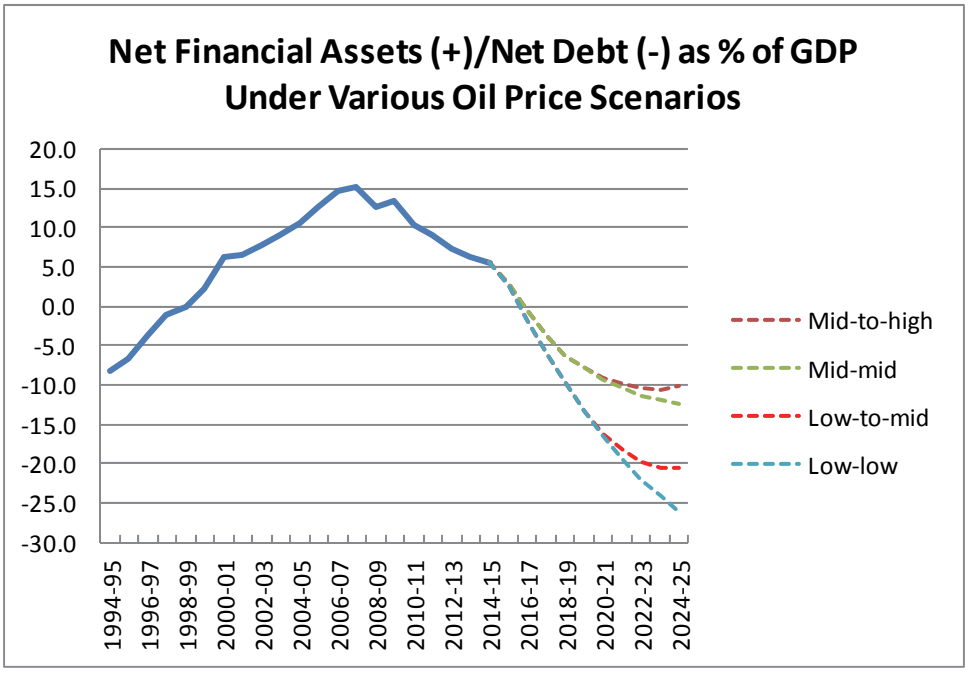


In the **low-low** oil price scenario, in contrast, net debt never stabilizes in relation to GDP. It grows rapidly to reach 26 percent of GDP by 2024-2025 and would likely continue to grow thereafter. Net borrowing averages 3.8 percent of GDP over the next decade with resource

revenues continuously falling short of capital spending. This is a high risk scenario under which the credit worthiness of the Alberta government could be seriously compromised, especially if there was slippage on the revenue side or the expenditure side relative to the illustrative levels assumed.

With the more optimistic second benchmark price scenario (**mid-mid**), net financial assets turn to net debt in 2016-17. Net debt subsequently progresses at an increasingly slower pace to reach 12 percent of GDP by 2024-2025. The illustrative expenditure and revenue assumptions in Table 2.2 would be sustainable under this benchmark scenario in the sense that Alberta would have a low and stable level of net debt in relation to GDP.[16] In the **mid-high** oil price variant, the net debt ratio stabilizes at 10.5 percent by 2023-24, then begins slowly to diminish.

Chart 10



[16] The net debt/GDP ratio in all likelihood would stabilize at a level not exceeding 15 percent in the second half of the 2020's.

Table 2.3:

Fiscal Balance and Net Financial Assets Under Different Oil Price Scenarios					
	As % of GDP				
	2014-15	**2015-16**	**2019-20**	**2022-23**	**2024-25**
1. LOW-LOW OIL PRICE: (LOW VARIANT)					
Net lending (+)/borrowing (-)	-1.2	-4.5	-3.9	-3.3	-2.9
Net financial assets (+)/net debt (-)	5.5	2.4	-13.4	-22.0	**-26.1**
2. LOW-TO-MID OIL PRICE: (FIRST BENCHMARK)					
Net lending (+)/borrowing (-)	-1.2	-4.5	-3.9	-2.4	-1.2
Net financial assets (+)/net debt (-)	5.5	2.4	-13.4	-19.7	**-20.5**
3. MID-MID OIL PRICE: (SECOND BENCHMARK)					
Net lending (+)/borrowing (-)	-1.2	-4.0	-2.0	-1.5	-0.9
Net financial assets (+)/net debt (-)	5.5	2.9	-7.8	-11.4	**-12.3**
4. MID-TO-HIGH OIL PRICE: (HIGH VARIANT)					
Net lending (+)/borrowing (-)	-1.2	-4.0	-2.0	-1.1	-0.2
Net financial assets (+)/net debt (-)	5.5	2.9	-7.8	-10.5	**-10.2**

Capital Planning for 2015-2019

The first conclusion that emerges from all the simulation results in Table 2.3 is that in all likelihood the Alberta government will not face financial constraints over the next four years in accommodating or even significantly expanding the capital plan put forward by the previous government in March 2015. Net borrowing will need to increase considerably and the net financial asset position of the government will switch to a growing net debt position.[17] But **affordability** over the remainder of this decade is highly unlikely to be an issue at current tax rates as long as growth in operating expenditures does not greatly exceed the assumptions in Table 2.2.[18]

However if there were to be no significant recovery in oil prices between 2020 and 2024, the debt situation would become more worrying. The one case that raises very real concern from an affordability standpoint is the low-low scenario, in which continuously low real oil prices over the full period to 2025 creates an unsustainable debt dynamics for the provincial government.

From a "needs" perspective, two considerations come into play. First, as discussed earlier, there is presumption from inter-provincial comparisons that capital spending needs to increase faster than GDP over the next five years just to bring the public capital stock more in line with the needs of both population and economic activity per capita over this period (Table 2.4). Second, these needs will grow at varying rates during 2020-2024 depending on the oil price scenario that will prevail. The growth in capital spending "needs" has a relationship to the growth in GDP, and therefore should be strongest in the mid-to-high scenario, lowest in the low-low scenario and in-between in the low-to-mid and mid-mid scenarios. Given that public capital projects typically have relatively long periods of gestation, additional capital spending must start being incurred well before 2020 if these future needs are to be at least partially met.

[17] This ignores possible reevaluation effects on net financial assets, for example the possibility of increases in the market value of net financial assets.

[18] I want to stress that the operating expenditures assumed in Table 2.2 are very restrictive over the next two years and could be very difficult to achieve in light of the very low oil prices, drought conditions and slow growth likely to prevail in 2015 and 2016.

Table 2.4:

Planning for Capital Spending over 2015-2019				
		Capital needs		Pressure on
		2020-2024:		costs
	Affordability	Nominal GDP growth	Case for upgrade	2015-2019
1. Low-low oil price	Risky	4.3	moderate	Very low
2. Low-to-mid oil price	Yes	5.5	strong	Low
3. Mid-mid oil price	Yes	5.6	strong	Low
4. Mid-to-high oil price	certainly	6.1	very strong	Low to moderate

In light of this analysis, it is **recommended** that the government not only accommodate the capital plan proposed in March 2015 by the previous government but also **upgrade** it by an amount sufficient to bring the ratio of net public capital stock to GDP in real terms closer to the 16 percent provincial benchmark by 2019. As an illustration, suppose that 16 percent were to be targeted by 2019, the Alberta government would need to add an average $1.6 billion per year from 2016 to 2019 to the March 2015 capital plan put forward by the previous government, assuming that plan for 2015 -2016 is realized. A possible profile for the upgraded capital plan would be as in Table 2.5 (see also Chart 6):

Table 2.5 – RECOMMENDED CAPITAL PLAN AGGREGATE TARGETS

	March 2015 Capital Plan Proposal		Upgraded Capital Plan	
		Implied real (1)		Implied real (1)
	$ Millions	capital/GDP in %	$ Millions	capital/GDP in %
2015-16	6431	14.6	6431	14.6
2016-17	6235	15.0	6800	15.2
2017-18	5979	15.2	7400	15.6
2018-19	5624	15.3	7500	15.8
2019-20	5233	15.3	7700	16.0

(1): Based on real GDP from low oil price scenario.

It is worth noting that out of the cumulative $35.8 billion upgraded capital plan to 2019, some $27.6 billion (77%) are already committed in some way to projects that are under construction or have contractual obligations for planning and design work. Thus the un-committed capital budget to 2019-2020 implied by the fully **upgraded** plan would be $8 billion.

It must be stressed that any capital plan must only incorporate projects that generate positive net social rates of return. In other words, the projects must pass the test of benefit-cost analysis for inclusion in the capital plan. In practice, the capital plan must rest on a bottom-up approach, as outlined in Part I and actually followed by the Alberta government. Priority projects that meet certain criteria that are consistent with the notion of social rate of return are submitted by ministries and then prioritized and approved by Treasury Board and Cabinet.

The economic context in which an upgraded plan such as illustrated above would unfold over the next five years would naturally depend on the evolution of oil prices. In the first benchmark scenario (low-to-mid oil price), this context is one in which: there is significant catch-up to do with respect to public capital; there would be little cost pressure at least up to 2019-2020 in the Alberta economy; capital needs for 2020-2024 would build up rapidly; there would be no market constraints on government borrowing as net debt with the upgraded plan would be at 15 percent of GDP by 2019-2020 (Chart 11), still less in relation to GDP than British

Columbia's net debt as at 2014-15; and interest costs on borrowing would be low.[19] As Chart 11 shows, net debt would stabilize about to 25 percent of GDP by the mid-2020s, a moderate level by provincial standards but one that would point to the need for the government to start taking measures to reduce net borrowing by the end of this decade.[20] Even in the low-low oil price scenario, some upgraded capital plan is warranted in view of the current capital needs and probably still warranted in light of the even somewhat reduced requirement to facilitate growth in the 2020-2024 time frame. In any event, the government needs to monitor closely oil developments and prospects and make adjustments to the capital plan if needed. For instance, if the government comes to firmly believe that oil prices will remain low over a full decade ahead, then it should take measures to reduce net borrowing, otherwise the debt dynamics would become unsustainable as net debt would not stabilize in relation to GDP. This might imply trimming the upgraded capital plan starting in 2018-19.

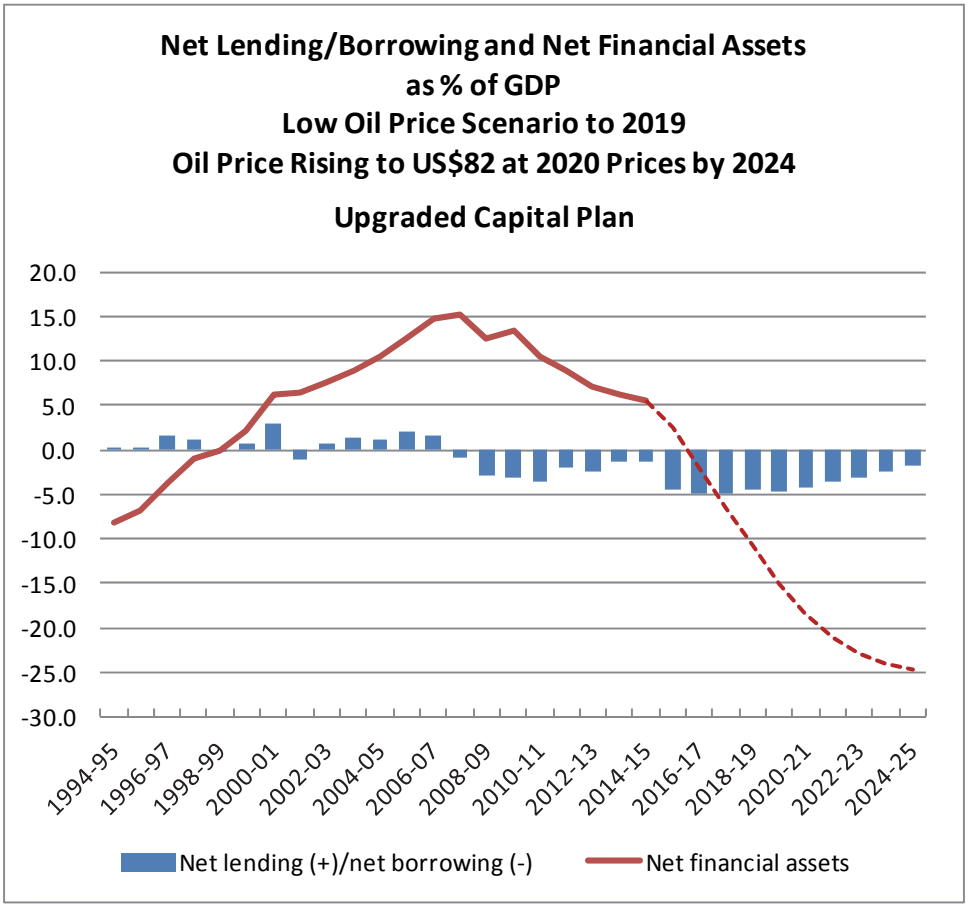
There is a case for upgrading the capital plan even further if either of the two higher oil price scenarios were to prevail because capital needs over the next 10 years would be even larger than in the low oil price scenarios.[21] While it is true that the higher capital expenditures might begin to exert some additional cost pressures in the Alberta economy by 2018 or 2019, the risk of this causing serious damage to private investment in those years is low. In any event, the amount and time profile of the upgrading would need to be carefully assessed in light of the evolving cost pressures in the economy as the end of the decade approaches.

[19] Consistent with a rather constrained growth profile for global demand through to 2019, interest rates are expected to remain "low for long" and therefore long-term interest rates on Alberta bonds should be low over the next several years.

[20] This 25% debt/GDP ratio reflects larger capital spending not only during 2015-2019 but also during 2020-2024 (the 2019 base level to which population growth and CPI inflation would apply during 2020-2014 is much higher in the upgraded plan). In fact, capital spending would rise from $7.7 billion in 2019-20 to $9.4 billion by 2024-25.

[21] Under the higher oil price scenarios the upgraded capital plan would bring the real capital/GDP ratio to only 15.3% by 2019-20.

Chart 11:



In setting the capital plan, it is necessary to balance the economic risk of having inadequate infrastructure to facilitate future output and population growth with the financial risk of incurring unsustainable amounts of debt to build unwarranted amounts of infrastructure. In my view, the expanded capital plan is warranted under both the first and second benchmark scenarios and the risks are evenly balanced. The financial risk of the expanded capital plan is clearly greater under the low-low variant price scenario (and the future growth constraint risk clearly lower). Nevertheless, even if one judges the low-low scenario highly likely, the expanded capital plan is warranted at least through 2017-2018 when cost pressures are lowest. (See Annex 2.1). Capital spending can always be slowed somewhat in 2018 and 2019 if the outlook for population growth and private investment weakens. The risk of constraining growth

through inadequate investment in public capital far outweighs the financial risk under the mid-to-high oil price variant. Thus, if one judges that this variant is most likely, even the upgraded capital plan may be insufficient, especially in the period to 2016-2018 when cost pressures are lowest. Considering the balance of risks, it would be wise for the government to adopt an upgraded capital plan similar to the one set out in Table 2.5, with the proviso that adjustments may be needed after 2017-18.

As of the end of August 2015, it now appears that oil prices in the near term (2015 and 2016) may well undershoot the prices in the first benchmark scenario. In this case, economic activity in Alberta for the remainder of this year, 2016 and the first half of 2017 may well be very weak and discretionary fiscal action may be warranted. In this case, accelerating the timing of the upgraded capital plan would be the best vehicle to deliver that discretionary fiscal action – especially if it were supported by federal support for investment in provincial and municipal infrastructure in Alberta. Among all the categories of government expenditures and revenues, additional infrastructure spending is the one with the highest fiscal multiplier, that is, the one which boosts real GDP the most per dollar spent or foregone by the government. Moreover, not only would additional infrastructure spending boost current real economic growth, it would have a positive impact in reducing constraints on future economic growth.

ANNEX 2.1

Table 2.6:

Working Assumptions about Real GDP and Population in Alberta				
	Average % Growth			
	2015-2017	2018-2019	2020-2024	
Low-low oil price				
Real GDP	0.1	1.9	1.8	
Population	1.6	1.3	1.5	
Low-mid oil price				
Real GDP	0.1	1.9	2.5	
Population	1.6	1.3	2.0	
Mid-mid oil price				
Real GDP	1.0	2.9	2.7	
Population	1.8	1.9	1.9	
Mid-high oil price				
Real GDP	1.0	2.9	3.0	
Population	1.8	1.9	2.2	

Sources: Alberta Treasury Board and Finance (2015-2017 and 2018-2019) and own assumptions (2020-2024)

PART III: CAPITAL COMPONENT OF GOVERNMENT PROGRAMS

General principles: Allocation

This section examines the practices for establishing capital budgets for infrastructure which supports the delivery of major public social programs (education, health care, security, etc.), programs which are financed through general revenues rather than specific user charges or fees. The capital to support these programs – schools, hospitals, flood and drainage infrastructure, etc – is thus generally financed from general revenues allocated to specific projects which best support the efficient delivery of those programs. For example the appropriate capital budget for schools must be determined in the context of the total budget allocation for delivery of educational services.

In principle, the allocation of a capital budget between projects should be based on cost-benefit analyses, the projects with the highest ratio of discounted benefits to costs being given priority over those with lower ratios. In practice, the difficulty of quantifying future social benefits largely rules out recourse to formal cost-benefit analyses for projects involving hospitals, schools, parks and flood control. The allocation mechanism must largely rest by necessity on an evaluation of infrastructure "needs" with regard to achieving particular goals and on a set of criteria to prioritize those needs. This is the way it currently works for schools and hospitals.

Currently infrastructure needs are twofold: (1) need for new expanded infrastructure to increase capacity to deal with a growing population or eliminate obsolescence in regards to functionality, and (2) the need for maintenance, repair and replacement of existing infrastructure. Because of implicit or explicit budget constraints in the past, there appears to be a considerable backlog of unmet capital needs in addition to the capital requirements to facilitate future growth and improvements. Thus, the 2015-2019 capital plan with respect to infrastructure to support services to the population needs to make provision for:

1) projects to deal with accumulated deferred maintenance, i.e. maintenance and normal replacement with respect to schools, hospitals and post-secondary institutions in Alberta which has inappropriately not been carried out in the past,

2) projects to address the need to accommodate past population growth and changes in the structure by age and location of population, projects which were appropriately deferred during the period of high private investment, and

3) projects to accommodate projected population growth and changes in the structure by age and location of population over the next five to ten years.

Infrastructure needs must be evaluated with a view to achieving the least-cost delivery of the services that they are designed to support. Total costs include not only capital costs (land, building and equipment) but also the operating costs and maintenance costs to be incurred during the life of a project. While the operating and maintenance costs should not normally be included in the capital plan, they should be part of the decision process in determining which design of an infrastructure project minimizes the total costs of delivering the services it would support. Thus, a first step in the evaluation should be to assess the substitutability of capital and current inputs (labour, energy, etc) in the delivery of the services needed and whether substitution of current inputs for capital would save total costs on a properly discounted basis. In some instances, it may be more cost effective to increase the hours of utilization of a facility than to expand this facility or undergo renovation rather than build a new facility. Likewise, an energy-efficient building may lower operating and maintenance costs to an extent that would more than compensate for higher capital costs. Thus, capital costs and the associated operating costs and maintenance costs should be jointly estimated with a view to choose a combination of capital, labour, and energy that minimizes total costs over the foreseeable future. To be sure, the range of technologies that can adequately meet specific service needs may be limited, but nevertheless it is important to take advantage of cost savings where possible.

In Alberta as in most provinces, individual ministries evaluate infrastructure needs and select projects deemed a priority for inclusion in the provincial capital plan. In principle, this selection should apply to projects that have been designed to support delivery of final services at the lowest costs after taking into account possible alternative combination of capital, labour and

energy in delivering the same services. It is therefore important that Alberta Infrastructure (AI), which has technical and cost expertise, provides technical advice and/or preliminary cost estimates on alternative choices before the design of a delivery system is finalized. Otherwise there is a risk that opportunities to deliver services at lower total costs to Albertans be ignored in the process.

It is also important that individual ministries consult with others and municipalities in the planning of projects. Often the most efficient and lowest overall cost projects are those designed to deliver multiple services. For example community health care, recreation, and education services can be efficiently and most effectively delivered from a multipurpose facility which efficiently utilizes other municipal infrastructure. Interagency and interdepartmental coordination is never easy but the benefits in the form of most efficient use of capital and maximum services to the public are large. In this regard, the infrastructure ministry can play a very useful role in facilitating interagency and provincial/municipal coordination.

Taking account of operating costs and maintenance costs matters not only for the optimal design of individual infrastructure projects but also for the selection of priority projects for the capital plan. It is important that the government have a clear picture of the total costs of the various infrastructure projects, including associated operating and maintenance costs, in order to make enlightened choices between the infrastructure projects themselves and between infrastructure projects and spending on non-capital programs within an overall expenditure constraint.

General principles: Financing

The total "costs" of infrastructure projects to be financed from current and future general revenues, from drawing down net financial assets (NFA) or from market borrowing at any given time should reflect:

- Expansion of infrastructure capital stock to meet currently unmet needs (lack of capacity or obsolescence of capital in view of new, different needs), upgrade technology and accommodate growth in future requirements for services. Such expenditures create net new capital assets which provide services over long periods of time.

- Future operating costs associated with making use of the infrastructure capital to provide services, mainly in the form of current spending on labour, energy, materials and on interest on debt; such spending does not increase capital assets.

- Future maintenance costs, which correspond to the costs associated with offsetting the depreciation or deterioration of capital and which involve replacement investment; spending on maintenance at best preserves capital assets but do not add to them on a net basis

Both lenders and the public can accept the rationale for governments to borrow to expand the quantity and technological quality of public infrastructure to facilitate future growth of output and revenues. Both lenders and the public can view borrowing for capital investment as "acceptable" (as long as "returns" on projects exceed the costs). Deficits incurred to finance growth-enhancing public capital are generally acceptable to financial markets and economic analysts as long as debt/GDP ratio remains reasonably low.

Because the public and market acceptability of deficits and debt depends on the perception of the purpose for which borrowing was undertaken, it is essential that government be clear and transparent that its "capital plan", which needs to be financed by borrowing, normally includes only those expenditures which are truly for capital expansion and exclude those expenditures which are for operating, repair, maintenance and normal replacement. However, past governments have provided insufficient funding to cover repair, maintenance and normal replacement. Thus, at the moment there is a very substantial volume of deferred repair, maintenance and replacement that needs to be done.[22] The government should quantify the backlog and attempt to work it down very substantially over the next three years when bid costs should be significantly lower than in the recent past. It would be appropriate to include borrowing for this accumulated deferred maintenance in the capital plan for the next three years while ensuring that newly accruing maintenance expenses for infrastructure are included in future operating budgets.

[22] In particular, transport, health, advanced education and education departments have indicated that there is substantial work to be done. I have not attempted to quantify this amount.

Because the distinction between capital and operating expenditures has not always been observed in the past in Alberta,[23] in my view the credibility of this distinction in official statements is, at the moment, probably weaker than it ought to be. Going forward, I thus recommend that Alberta rigorously adhere to the distinction in order to maintain credibility in financial markets and preserve the trust of Albertans.

Borrowing to Finance the Capital Plan

When borrowing in the market to finance the capital plan, it is appropriate for the government to issue long bonds (30 or even 50 years duration). First, this long-term financing matches the expected life of most schools, hospitals and other infrastructure facilities. Second, the term premium at the moment is very low so the current extra interest cost of extending duration is low by historic standards. And third, long duration financing greatly reduces refinancing risk, a factor which may be important if oil prices stay low for long.

In a situation of slack in the economy pending an eventual return of oil prices to levels that support solid growth in oil production and investment, as implied by the low-to-mid, mid-mid and mid-to-high oil price scenarios, it may be appropriate to rely on borrowing in the market to finance not only a strong program of new capital expenditures, but also a portion of immediate operating expenditures.[24] This would generate a "net borrowing" position larger than otherwise for the government of Alberta but this strategy would have two merits: it would help to meet the solid expansion of demand for services that has occurred and is to be expected in the future, and it would refurbish and modernize infrastructure when costs are cyclically lower and long-term borrowing costs at an all-time low. In a scenario of persistently low real oil prices over the next decade (low-low scenario), it would be appropriate to rely on bond borrowing to finance a strong program of capital expenditures, but only if the government recognizes that it would eventually have to put in place measures to reduce total net borrowing.

[23] And in other jurisdictions as well.
[24] See section on stabilization on page 6.

Schools

The procedure for selecting priority projects regarding schools rests in part on the community expertise of local school boards, but also most importantly, on rational criteria for gauging infrastructure needs, and on oversight and final selection by the Education ministry. Local school boards determine and prioritize lists of capital projects based on a set of criteria, including health and safety, building condition, utilization rate, enrolment projections, education program delivery and impact, and additional criteria. The lists are submitted to the Education ministry annually through the Capital Planning Initiative. The ministry reviews the projects to ensure that they truly meet the criteria that should be applied to schools and set priorities among them for the province as a whole. Alberta Infrastructure (AI) should provide detailed costing advice during this review process at the board and ministry levels. In the end, AI does currently provide cost estimates for these priority projects before the final set is submitted to the Treasury Board. This selection procedure, especially if AI provides advice at the earlier stage, is appropriate to ensure that the community needs are rationally assessed.

Infrastructure needs for the school sector are substantial as investments in the past have not kept pace with the growth in requirements set by the rapid expansion of population. The result has been a pent-up demand for new schools and modernization. At the same time deferred maintenance for schools has built up. It is important that the needs for both infrastructure and maintenance be evaluated on the basis of common criteria for meeting the future needs for education services, account taken of the fact that delaying maintenance increasingly raises the costs of rehabilitating facilities.

Going forward, three considerations should come into play. First, new configurations of schools are required to respond to the functional needs of education in the twenty-first century. Replacement facilities should not simply replicate the design and functionality of old schools. Second, the construction of new schools should take advantage of modularization inasmuch as standard components could be built more rapidly and at lower costs in manufacturing plants and assembled easily on site.[25] Third, multi-task facilities, grouping together school, recreational facility, healthcare clinic, etc., should be considered when land is scarce and community needs

[25] The importance of modularization/standardization to reducing cost of school buildings was made to me several times in my consultations. A.I. and the Ministry of Education are in a position to enforce standardization on local boards and should do so.

are multiple. Planning would have to be done by school boards in collaboration with municipalities and overseen by the Education ministry in collaboration with the ministry in charge of the Municipal Sustainability Initiative.

Post-Secondary Education

In the PSE sector in Alberta, infrastructure is needed to support continued enrolment growth and continued research growth requiring laboratories and equipment. Not only is capital spending required for capacity expansion and functional renewal of existing facilities, but so are expenditures for adequate infrastructure maintenance. In addition, deferred maintenance for the PSE sector is significant and needs to be addressed before the risks to the quality of teaching and research and to the health, safety and well-being of staff and students get too high. As far as I can judge, the large PSE institutions have sensible plans towards meeting infrastructure needs and addressing deferred maintenance.

Hospitals

The procedure for selecting priority projects regarding hospitals before they reach Treasury Board for submission in the provincial capital plan is fairly elaborate and well conceived. Alberta Health Services (AHS) produces an annual Multi-Year Facility Infrastructure Capital Submission to the Ministry of Health, which identifies all unfunded priority health capital needs. In making its selection of priority needs, AHS takes account of the quality of the patient/client experience to be derived from particular infrastructure (acceptable, accessible, etc.), strategic demand as it relates to the projected needs of patients/clients and care givers (population growth, changes in best practice, utilization rates, etc.), and risks to future delivery stemming from physical deficiency and functional obsolescence existing facilities. The highest priority projects are those involving both high strategic demand and high risk, then those involving high (low) strategic demand and low (high) risk. The Ministry of Health reviews the AHS submission, get cost estimates for priority projects from AI and submit a final list of priority projects to the Treasury Board for possible inclusion in the provincial capital plan. At

least on paper, the whole process for identifying and selecting health facility projects seems appropriate.

The problem in Alberta, as in other provinces, is that hospitals take on iconic stature in their local communities. From all sides there are political pressures in communities to have their own facility and that the facility be the biggest, best and most prestigious one possible. In smaller centres, acute care facilities are seen as "essential to the economic viability of the community" and resistance to closing inefficient acute care facilities is fierce. Thus, local pressure has led in the past to over-promising to build very expensive tertiary and quaternary care facilities while neglecting the provision of local clinical and chronic facilities. It has also led to the commitment to build a facility before planning has been fully completed and well before any detailed costing has been assessed. The result has been a large underestimation of costs and the eventual crowding of other valuable projects out of the capital plan.

If Albertans are to get quality health care facilities at a reasonable cost, the total process for planning and selecting health infrastructure projects must be rigorously adhered to. While some increase in capital expenditures for health care facilities is warranted in my view at the present time, much more rigorous adherence to the process of analyzing needs, planning, costing and finally committing funds to projects is even more important. While the final selection of competing projects for the provincial capital plan is of course a political prerogative, such prerogative should not be exercised until projects have been properly scoped and their capital and operating costs properly estimated.

Like schools, some hospitals have accumulated a large amount of deferred maintenance. It is important that the needs for both infrastructure and maintenance be evaluated on the basis of common criteria for meeting the future needs for services by patients/clients, account taken of the fact that delaying maintenance increasingly raises **the costs of rehabilitation.**

Water Control

Investment in infrastructure to capture the benefits of one of Alberta's most important resources – water – and to control its destructive power should be an important

element in the Government's capital plan. Some elements are relatively cheap and effective such as the building of a real-time water monitoring system or the funding of watershed protection and planning through Watershed Planning and Advisory Councils (WPAC) and the optimizing of existing reservoirs in the Bow, Oldman and other river basins. Others are more expensive such as the building of appropriate flood control facilities for Calgary and storm drainage systems for Edmonton. It is appropriate to consider the costs of establishing these systems and facilities as a capital expenditure. It is also appropriate to make these capital investments now while engineering services and construction capacity are available.

The selection of flood control projects must be based on an evaluation of their benefits in terms of the public and private costs that could be avoided by appropriate drainage or flood control relative to the costs of building, operating, maintaining and financing the required infrastructure. The benefits would be partly related to the size of the population, the value of the property and the amount of production at risk. They would also depend on the frequency and severity with which floods might occur during the life of the infrastructure, if this infrastructure was not in place. This may be very hard to predict with confidence. In any case, prioritization of projects for flood control should not be based solely on assessment of risks for specific areas, but also on some evaluation of the benefits from flood control for these areas, however imperfect such an evaluation may be.

A related issue stemming from the uncertainty regarding the severity of future floods is the degree of insurance against damages that flood control projects should provide. Presumably the higher the level of protection the higher the **actual** costs of flood control but also the higher the **potential** benefits of flood control as the time horizon lengthens. One level of protection that is currently considered a North American standard is the "100-year" level of flood protection, which could handle a flood whose severity occurs only once every one hundred years. Given recent global experience the traditional "100-year" event is now likely to be experienced more frequently and hence the premium to buy protection against such an event has markedly increased. If this is the level of protection that flood control projects aim at, then the costs of such protection for a given area over the life of the projects must be gauged against the potential benefits of flood control based on current probability distributions of flood frequency and severity (up to once-in-100-years severity) over the life of the projects.

There is now a greater awareness of the tail risks related to weather or climate, which is indeed reflected in higher property insurance costs. Reducing such risks would support growth in property values and economic prosperity more generally. Because the cost of such protection (in Calgary and Edmonton in particular) is much greater than was traditionally assumed, the Government of Alberta should consider partnering with local authorities to finance at least the engineering and cost/benefit studies as part of the current capital plan. Upgraded protection increases the attraction of Alberta as a location for business and hence contributes to future economic growth and diversification for the province as a whole.

PART IV: PUBLIC USE INFRASTRUCTURE

Unlike schools and hospitals which constitute only an indirect component of government provided services (education and health care), public use infrastructure – roads, sewers, airports, etc – is the direct service provided to the public by governments. Thus, the decision about proceeding on any given project (or on a regional transportation or water plan) can be made using conventional benefit – cost analysis. The direct "beneficiaries" of the investment in a project can generally be identified and the value of the improved road or water service from the project inputted. While the imputation of value is always subject to a fairly wide margin of error, rather good sophisticated techniques to estimate benefits have been widely used around the world. The future values of the enhanced services from the project can then be discounted at an appropriate rate to compare with today's cost of undertaking the project and a benefit-cost ratio calculated. When benefits significantly exceed the costs, there is at least a prima facie case for government to undertake the project.

The prioritization of **highway** projects currently proceeds from a ranking of their benefit/cost ratios. The benefits of a project correspond to the reductions in collision cost, travel delay and vehicle operating costs that are made possible by implementing the project whereas the costs correspond to the related construction and maintenance expenditures. This is a sensible approach although not necessarily an easy one to apply, at least in the estimation of the benefits. The Ministry of Transportation plans to make use of a spatial economic model to estimate the economic impacts of highway investments for Alberta and relevant regions over a horizon of several years, with a view to gaining assistance in priority setting, programming and delivery of highway infrastructure. This seems to be a sensible way to go forward, not least because the planning of a highway project could then take account of the feedback of the economic development resulting from the implementation of this project on the need for additional transportation infrastructure.

The benefit of a particular highway or road network project clearly accrues to individual users in terms of time and fuel cost savings to get from A to B and to commercial users in terms of savings on cost of moving goods. There are also some harder-to-estimate spillover benefits to non-users (network benefits) in terms a more vibrant economic climate, cleaner air, higher

property values, etc. While these general spillover benefits are significant and in a diffused way make an important contribution to overall economic growth in Alberta, the most visible and important benefits from an improved road transportation and public transit network accrue to the direct users. However, the costs of building and maintaining road and highway networks are not paid for by the direct users. These costs are generally paid for out of general revenues which are unrelated to the value to the users. The use of municipal roads and provincial highways is provided "free of charge" to the users while competing forms of transportation (rail, air, and in part municipal transit) must be paid for by the passengers or shippers.[26] This misalignment of taxation for and benefits from road and highway infrastructure causes two problems:

1) both the operating and capital budgets of provincial and municipal governments for roads are under pressure (and will be under even more pressure as shown in Part II) with the result that highways and municipal transit networks are insufficiently funded relative to their contribution to value to users, productivity, and

2) funding is allocated somewhat inefficiently as excess capacity is created in order to meet peak demand needs.

Appropriate direct pricing of the use of highways and roads to users to cover at least part of the operating and capital costs could mitigate both of these problems by raising additional revenue and by incenting a more rational use of roads.

Road tolls (especially if the charge was higher during rush hours) would reduce congestion costs through a financial incentive to use other modes of transport and avoid periods of high tolls. Congestion costs refer to the value of the time lost on the road (and increased direct costs) because of congested infrastructure. Each trucker or driver caught in a congested infrastructure incurs congestion costs and at the same time imposes congestion costs to other truckers/travelers by his/her very presence on the road. Road tolls would also raise the cost of driving in major cities, thus encouraging people to use public transit and making it feasible for transit authorities to charge higher fares.

[26] This is not strictly true as motive fuel taxes and license fees are borne by the users of roads and the cost of municipal transit is only partially covered by revenues from the farebox.

User fees could have two components: an "entry" component that helps cover the fixed costs of building the transportation infrastructure and a variable component that would be related to the distance traveled and the time of day in reflection of the usage and congestion costs associated with any specific trucker/traveler.[27] Electronic toll collection technology exists to program such structured fees and charge commuters/travelers accordingly with a minimum of fuss. This technology requires equipping vehicles with transponders which trigger electronic toll metering. Charges incurred are then automatically billed periodically just like charges for electricity or gas. This technology has been applied successfully elsewhere and could be applied in Alberta.

As suggested by Bazel and Mintz (2014), the adjustment costs to truckers/travelers arising from new user fees could be minimized by initially imposing user fees only with respect to new or upgraded infrastructure, while exempting older networks. Thus, the Alberta government should give serious consideration to setting user fees for the Calgary and Edmonton ring roads and the Northeast Alberta Strategic Project when they are completed. Cities could begin by imposing tolls only on major upgrades. Charging for the use of critical infrastructure would have two important advantages: it would free financial resources for investment in other socially desirable capital projects and would result in a more efficient use of infrastructure.

Other advantages of introducing an electronic toll system for new controlled access highways is that it would provide an opportunity to raise revenues to finance municipal construction of connector roads to maximize the value to users of new provincial controlled access highways and would improve the ability of governments to finance new or upgraded roads. Finally, an overriding advantage of introducing user charges for new or upgraded highways is that by forcing highway planners to make estimates of both revenue potential as well as construction costs, Cabinet can make an assessment of the strength of the economic rationale for a new project.

[27] For a useful discussion of user fees for urban infrastructure, see Bazel P. and J. Mintz, "The Free Ride is Over: Why Cities, and Citizens, Must Start Paying For Much-Needed Infrastructure", University of Calgary School of Public Policy, Vol. 7, Issue 14, May 2014. This is only one of many excellent articles and books on the usefulness of charges (including congestion charges) to pay for infrastructure.

Alternative modes of financing of public use infrastructure

In discussing the capital plan in Part II and Part III, it was implicitly assumed that the financing of public capital spending would come from government revenues, government market borrowing or drawdown of government net financial assets. There is of course a fourth mode of financing for public use infrastructure: special investment vehicles that would build and manage such infrastructure, borrow to finance it and charge user fees to generate revenues. The potential advantage for the government to farm out infrastructure building and financing to the private sector is not to shift public capital spending off budget, but rather to have infrastructure services being offered more efficiently and at lower costs to users than the government could do. Borrowing costs would be higher for the private infrastructure owners than for the government, but **if** this differential is more than compensated by lower operating costs with the private owners, then there is a case for relying on the private sector to supply public use infrastructure, at least on one condition. This condition is that risks are truly assumed by the private operators along with ownership of the infrastructure.

PART V: SUMMARY AND RECOMMENDATIONS

This paper has examined the factors which bear on the establishment of the capital plan for the Government of Alberta for the period from 2016 to 2019. The main emphasis has been placed on the factors that should determine the overall size of the plan over these four years in the context of the economic and fiscal outlook to 2024-2025 (Part II), the mix of capital investment to support delivering services to Albertans and the methods of financing the capital investment.

The basic principles that should guide the capital plan as set out in Part I of the paper relate to the overall objective of achieving growth and economic stability consistent with distributive fairness. While these principles apply to all provincial jurisdictions, Alberta is close to unique as it faces a particular challenge in stabilizing the economy because of the volatility imparted to both economic output and government revenues by the volatile North American price of oil and gas, volatility over which the Government of Alberta has absolutely no control.

This feature has implications for the application of the principles of good capital budgeting to the province of Alberta over the next two years: (1) capital plan should take into account the risk of exceptionally large volatility in the medium and long term economic outlook and hence volatility in the public infrastructure needed to facilitate future growth; (2) government spending on capital should be greatest when government resource revenues are lowest in order to take advantage of lower bids for projects and should be lowest when revenues are strong to avoid putting upward pressure on costs of private sector investment; and (3) the Government of Alberta should be drawing down net financial assets or borrowing from the market to finance capital investment when resource prices are low and when interest rates are at cyclical lows.

At the same time, as in other jurisdictions, operating expenditures should normally be financed by general tax revenues over the course of the cycle – revenues generally exceeding expenditures at the top of the cycle (surplus) and falling below operating expenditures at the bottom of the cycle (deficit).

There is no universally accepted benchmark for the appropriate level of infrastructure capital to support economic growth and the provision of public services. However, I think that a public capital to GDP ratio (in real terms) of 16% (the interprovincial average) is a reasonable benchmark to judge the adequacy of the Alberta capital plan over the period to 2019. To meet the 16 percent benchmark by 2019-2020, the Alberta government would need to add an average of $1.6 billion per year from 2016 to 2019 to the March 2015 capital plan proposed by the previous government. But in drawing up the capital plan to achieve this 16 percent target, the government must take into account the uncertainty about the outlook for economic and population growth over the decade to 2025 and consequently the revenue outlook in view of hard-to-predict movements in the price of oil.

To deal with this uncertainty, in Part II four scenarios for the evolution of oil prices were developed (Table 2.1) which bracket the reasonable range of possible outcomes. On the basis of these four scenarios, working assumptions about real GDP and population growth (Annex table 2.6) were developed based on the Government of Alberta's simulations and parameters imbedded in current economic models of the Alberta economy. Using Alberta Treasury Board and Finance revenue simulations based on these assumptions, assumed rates of growth of operating expenditures to 2024-2025 (Table 2.2) and the March 2015 capital plan put forward by the previous government (extended to 2024 at the growth of population and CPI), fiscal balances to 2024-2025 were simulated (Table 2.3). On the basis of the economic and financial simulations for the four oil price scenarios, I developed a judgement concerning the advisability of proceeding with the previously planned capital spending and/or upgrading the plan to meet the 16 percent capital/GDP benchmark by 2019-2020 (Table 2.4).

Under the low-low oil price scenario, the March 2015 plan would (as in all scenarios) allow a catch up to past needs and probably accommodate projected future growth. It would put no pressure on costs to 2019, BUT presents financial risks in the future. The March 2015 plan is probably "affordable", but quite risky as net debt would reach 26% of GDP by 2025 and would not stabilize (Table 2.3). Under this scenario fully upgraded capital plan would probably not be absolutely necessary to meet future requirements and would increase future financial risks.

Under the benchmark low-mid oil price scenario, the March 2015 plan would probably barely accommodate future growth. It would put no pressure on costs to 2019. While it presents some future financial risks, it is "affordable" as net debt would only reach 20.5% of GDP in 2023-2024 and be stable thereafter. Under this scenario, an upgraded capital plan (or something close to it) is recommended, as long as the government makes clear that future fiscal adjustments might be needed to mitigate financial risks as net debt would rise to about 25% of GDP (but stabilize there) (Chart 11).

Under the benchmark mid-mid oil price scenario, the March 2015 plan would not be fully adequate to accommodate future growth and an upgraded plan is clearly warranted. The upgraded plan would put some pressures on costs by the end of the period, but these are likely to be fairly moderate. The March 2015 plan is clearly "affordable" as net debt/GDP would only rise to about 12% by 2025 and would have stabilized. The upgraded plan under this scenario is also "affordable" although the government would be wise to signal that some fiscal adjustments might be required in the future to mitigate financial risks.

Under the mid-high oil price scenario, the March 2015 plan is very unlikely to be adequate to accommodate future growth and, at a minimum, the upgraded plan is definitely required. This upgraded plan is clearly "affordable" as the debt GDP ratio peaks at 10.5% in 2022-2023 and falls thereafter.

In light of this overall assessment, it is recommended that the government upgrade the Capital Plan by an amount sufficient to bring the ratio of real net public capital stock to real GDP closer to the 16 percent provincial benchmark ratio by 2019-20 as set out under the low oil price scenarios in Table 2.5. This upgraded plan clearly entails some financial risks, especially if the low oil price scenarios materialize. For this reason, it is also recommended that the government only commit to the upgraded capital expenditure plan of about $6.8 billion in 2016-17 and $7.4 billion in 2017-18. It should make any further increases contingent on the future evolution of economic growth.

Borrowing will be required to support the existing or upgraded capital plan. This is entirely appropriate. It is recommended that such borrowing be in the form of long term debt (30

year or even longer) to take advantage of historically low long term interest rates and match closely the useful life of public capital.

Finally, I would note that the assumed increases in operating expenditures assumed in this assessment (population growth and CPI and 1%) are at the low end of what the government can reasonably expect to achieve especially if growth is as weak as implied by the low oil price scenario. If this constrained operating expenditure growth is not achieved, some further increase in general taxation may be required or net debt may set on an unsustainable path.

In this report, I have concentrated on assessing the overall adequacy of the capital plan, the overall financing requirements for the plan, and the financial risks these requirements imply. I have put less emphasis on a detailed assessment of individual components of the plan in Parts III and IV, in part because in almost all areas there appears to be a significant backlog of unmet capital requirements. What I have tried to do in Part III is to set out some principles and procedures for prioritizing projects in the capital budgets for infrastructure which supports the delivery of education and health and flood protection services – all services which are financed out of general taxation revenues. In Part IV, I have put most emphasis on the potential for the use of user charges to finance and promote the optimal allocation of capital expenditures on transportation infrastructure.

What is clearly evident is that the Government of Alberta has had a strong bias to under-provide for maintenance, refurbishment and normal replacement of capital. This has led to a backlog of deferred needs and a continued call on the capital budget to meet what are really operating expenditures which should be included in operating budgets and financed by general tax revenues or user charges. This biased procedure leads to an inefficient allocation of resources and, over time, higher costs to the taxpayer. In my view, it also seriously undermines the credibility of the "capital plan" and thus the credibility to lenders of the government as a prudent fiscal manager. Thus, my recommendation is that procedures be put in place over the next few years to ensure that in the future departments and agencies include these expenditures in their annual operating budget submissions. However, on a "one-time" basis, the government should include funds to clear at least part of the backlog in its new four-year capital plan.

It is also evident that some decisions to proceed with capital projects have not always taken into account the ongoing requirements to support and maintain capital. Therefore, there has been a bias (perhaps most evidentially in the hospital sector) to build "iconic projects" which do not necessarily meet the overall service requirements. In section III, I have made very modest suggestions in this regard about how procedures might be improved to achieve greater allocative efficiency and effectiveness of capital investment.

In Part IV, I briefly examined the case for increased user charges for the use of roads and highways to improve allocative efficiency. There is a strong case for the use of electronic tolling mechanisms for roads and highways not only to improve allocative efficiency but also to generate revenues to support the expansion and improvement of the highway (and transit) system to facilitate future growth.

ANNEX: LIST OF CALLS, MEETINGS AND MATERIALS CONSULTED IN PREPARATION OF THIS REPORT

Meetings and calls

June 2015

- Meeting with the Premier and Minister Mason
- Meetings with Richard Dicerni, Brian Topp, and officials at Infrastructure and Treasury Board
- Calls to John Simpson (Cana), David Livingston (Ontario)

July 2015

- Meetings with Minister Mason and Minister Ceci
- Meetings with Glen Hodgson (Conference Board), Ken Uebelein (AIMCo), Paul Verhesen (Clark Builders), Mayor Nenshi and staff (City of Calgary), Jeff Lehrman (Chevron), John Simpson (Cana), Nancy Southern (ATCO)
- Meetings with officials of various departments: Transport, Treasury Board, Infrastructure, Education, Municipal Grants, Advanced Education, Executive Council, AHS
- Calls to Greg Stringham (CAPP), Chris Ragan (Ecofiscal Commission), Mayor Iveson (City of Edmonton), Kim Sturgess (Water smart), Jim Dinning (CWB) and Minister Phillips (Environment)

August 2015

- Meetings with Ministers Ceci, Mason and the Premier
- Meetings with officials from Treasury Board, Finance, Infrastructure, Health, and Executive Council

- Meetings with: Mayor Iveson and staff (City of Edmonton), Don Mazankowski, David Turpin (University of Alberta)

September / October 2015

- Further calls with officials at Infrastructure, Treasury Board and Executive Council

Papers/Submissions Received

Ecofiscal Commission: The Case for Congestion Pricing

CAPP: Crude Oil Forecast, Markets and Transportation

Alberta Construction Association: Infrastructure Investment

ARHCA: White Paper on Transportation: Infrastructure Debt in Alberta

Energy Services Association of Canada: Submission

Watersmart: Discussion Brief on Critical Water Infrastructure for Alberta

Other Recent Papers Consulted

IOSCO: Market Based Long Term Financing Solutions for SMEs and Infrastructure (September 2014)

B. Dahlby and M. Smart: The Structure and Presentation of Provincial Budgets

McKinsey and Company Infrastructure Index (June 2015)

CSLS: Generating Inclusive and Sustainable Economic Growth, Chapter 2 (September 2015)