LEGISLATIVE ASSEMBLY OF ALBERTA

COMMITTEES
OF THE LEGISLATIVE ASSEMBLY

Standing Committee on Alberta's Economic Future

Review of the BRIK (Bitumen Royalty-in-Kind) Program

Twenty-Eighth Legislature
First Session
May 2013

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STANDING COMMITTEE ON ALBERTA'S ECONOMIC FUTURE

May 2013

To the Honourable Gene Zwozdesky
Speaker of the Legislative Assembly
of the Province of Alberta

I have the honour of submitting, on behalf of the Standing Committee on Alberta's Economic Future, its final report pursuant to standing order 52.07(2) on the **Review of the BRIK (Bitumen Royalty-in-Kind) Program.**

Sincerely,

[original signed by Chair]

Moe Amery, MLA
Chair, Standing Committee
on Alberta's Economic Future

c. Dr. David McNeil
Clerk of the Legislative Assembly

CONTENTS

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28th Legislature, First Session

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* Committee member and Deputy Chair to March 5, 2013.
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* Substitution for Dr. Richard Starke, October 31, 2012, and Everett McDonald, November 21, 2012.
† Substitution for Steve Young, November 21, 2012.
‡ Substitution for Jacquie Fenske, November 21, 2012.
§ Substitution for David Eggen, December 11, 2012.
** Substitution for Peter Sandhu, December 11, 2012.
†† Substitution for Danielle Smith, February 26, 2013.
‡‡ Substitution for Rick Strankman, February 26, 2013.
§§ October 31, 2012.

1.0 INTRODUCTION

The Standing Committee on Alberta's Economic Future is one of three Legislative Policy Committees appointed by the Legislative Assembly of Alberta. Standing Order 52.01(1)(b) indicates that the Committee's mandate is related to the areas of Agriculture and Rural Development; International and Intergovernmental Relations; Enterprise and Advanced Education; Tourism, Parks and Recreation; and Infrastructure. Under Standing Order 52.07 the Committee has the ability to initiate a review of any matter of public policy within its mandate and, having initiated any such review, must conclude the inquiry and issue a substantive report to the Assembly within six months.

At the direction of the Committee a working group consisting of representatives from each caucus was established to help determine a topic for study by the Committee. The original members of the working group were Moe Amery (PC), Gary Bikman (W), Kent Hehr (AL), and David Eggen (ND). Members of the Committee were asked to submit topics for consideration by the working group. Seven Members made submissions ranging from examining red tape burdens to studying the merits of establishing a wildlife provincial park. The working group concluded that some of the proposed topics for review fell within the purview of other Legislative Policy Committees while some of the topics could be incorporated into a broader topic of review. Ultimately the working group agreed to study the Bitumen Royalty-in-kind (BRIK) program, as it is an incentive program that was recently established and is in the early stages of implementation and therefore ready for review.

On October 31, 2012, the Standing Committee on Alberta's Economic Future passed the following motion to undertake a study of the BRIK (Bitumen Royalty-in-kind) program:

> MOVED by Ms Olesen that in the interest of encouraging economic development in the province, the Standing Committee on Alberta's Economic Future undertake a study of the BRIK, Bitumen Royalty-in-kind program, and that the scope of the study shall include the following:
>
> - risks and rewards and the effectiveness of the BRIK program;
> - barriers to increased bitumen upgrading;
> - economic costs and benefits of increased bitumen upgrading in Alberta as compared to other jurisdictions;
> - amount of bitumen that can be safely and profitably upgraded in Alberta over the next 20 years given the limitations of infrastructure and water supply and labour availability;
> - environmental advantages and disadvantages of increased bitumen upgrading in Alberta;
> - possible regulatory measures that could be introduced to encourage bitumen upgrading capacity in Alberta; and
> - economic trade-off of increased investment in bitumen upgrading in Alberta compared to investment in other sectors
>
> but shall seek to avoid the study of incentives to encourage increased bitumen upgrading in Alberta and those issues within the mandate of the Royalty Review Panel and the Standing Committee on Resource Stewardship in order to avoid a duplication of efforts.

As part of the BRIK study the Committee held meetings on October 31, 2012; November 21 and 28, 2012; December 11, 2012; February 13 and 26, 2013; and April 24, 2013. The Committee received six written submissions from identified stakeholders (Appendix C), and during the Committee's meeting of February 26, 2013, heard nine oral presentations (Appendix C).

After completing the information-gathering process and discussing the issues raised throughout the review process, the Committee added Cathy Olesen (PC) to the working group as the representative from the Progressive Conservative caucus, which allowed Moe Amery (PC) to maintain neutrality as the chair within the working group. The Committee directed the group to prepare a draft report on the BRIK program for review by the Committee. In accordance with the instructions of the Committee the working group met to determine the content of the Committee's report on the BRIK program. A copy of the draft

report was distributed to all Committee members for consideration, and on April 24, 2013, the Committee met to review and approve the final report for submission to the Legislative Assembly.

This report contains the recommendations, the background to, and the rationale for these recommendations of the Standing Committee on Alberta's Economic Future following its deliberations on the BRIK program. This report is not intended to be a comprehensive record of the Committee's proceedings. For a complete record reference should be made to *Alberta Hansard* transcripts of the Committee proceedings, the written submissions and oral presentations made to the Committee, the summary of written submissions, the research reports that were prepared by the Legislative Assembly Office's Research Services, and other related documents that were submitted to the Committee (Appendix D).

2.0 SUMMARY OF COMMITTEE RECOMMENDATIONS

The Standing Committee on Alberta's Economic Future makes the following recommendations with respect to its review of the Bitumen Royalty-in-kind program.

The Committee recommends that

1. **the Government of Alberta implement additional appropriate BRIK programs without delay in an ongoing effort to sustain and enhance the diversification of Alberta's petroleum product portfolio; that the programs, where feasible, include a carbon capture and storage (CCS) component to take advantage of the environmental and economic benefits which CCS offers; and that such future projects be located, where possible, in close proximity to planned CCS infrastructure;**

2. **the Government of Alberta ensure that future BRIK initiatives are implemented and operational over the long term and that future regulations are predictably streamlined under the *Responsible Energy Development Act* and the current regulatory enhancement project in an effort to enable proponents to achieve as much certainty and reliability as possible, thereby enhancing opportunities for economic viability;**

3. **the Government of Alberta immediately proceed with additional BRIK programs in order that the proposed facilities be operational as soon as feasible, with the objective being to provide value-added petroleum products to compete with competitors from other jurisdictions.**

3.0 DEFINITIONS

Bitumen/Crude Bitumen	Similar in appearance to molasses or tar, bitumen is a solid or semisolid mixture of hydrocarbons containing high levels of sulphur and nitrogen compounds. It must be processed extensively before it can be used to produce gasoline and other petroleum products. "Crude bitumen" is defined throughout Alberta's legislation as a naturally occurring viscous mixture, mainly composed of hydrocarbons heavier than pentane, that may contain sulphur compounds and that, in its naturally occurring viscous state, will not flow well. Note: The terms "bitumen," "crude bitumen," and "heavy oil" are often used interchangeably. This report will use the terms "bitumen" for the oil sands product and "Western Canadian Select (WCS)" for the bitumen blend that is transported to market.
Condensate	Condensate, the liquid recovered during the production of natural gas, is a light oil that is liquid at normal temperatures and pressures. It is mixed with bitumen to reduce viscosity to allow for pipeline transportation.
Dilbit	Bitumen that has been diluted with a diluent. More specifically, the *Bitumen Valuation Methodology (Ministerial) Regulation* defines dilbit as a blend of heavy crude oil or cleaned crude bitumen mixed with diluent in order to meet pipeline viscosity and density specifications, where the density of the diluents included in the blend is fewer than 800 kg/m^3.
Diluent	Diluents are lighter viscosity products used to dilute bitumen for transportation in pipelines.
Heavy Oil/Heavy Crude Oil	Oil with a gravity below 22 degrees API (a gravity scale to measure the viscosity of petroleum liquids – the higher the number, the lighter the oil). Must be heated or blended with diluents to be transported by pipeline.
Light/Heavy Differential	In general terms the profit gap between light oil and heavy oil prices. With reference to the oil sands it generally refers to the benchmark price difference, expressed in US$, between Western Canadian Select and West Texas Intermediate. Western Canadian Select is heavier and sells at a discounted price in comparison to lighter oils.
Light Oil/Light Crude Oil	Oil with a gravity of 28 degrees API or higher. A liquid petroleum that flows freely at room temperature.
Naphtha	A multipurpose solvent that can be used in laundry soaps and cleaning fluids. It is also used to make varnish and to fuel camping cook stoves and lamps.
Refining	Crude oil contains a mixture of hydrocarbons which, if separated, can be used to create a variety of products. Refining is a process which uses heat and/or chemicals to separate the hydrocarbons in oil and produce other products such as gasoline, plastics, and jet fuel.
Synthetic Crude Oil (SCO)	Synthetic crude oil is derived by upgrading bitumen. Synthetic crude oil is a mixture, mainly composed of pentanes and heavier hydrocarbons that may contain sulphur compounds, which is derived from crude bitumen and that is liquid at conditions under which

	its volume is measured or estimated and includes all other hydrocarbon mixtures so derived.
Upgrading	The process of converting heavy oil or bitumen into a synthetic crude oil through the removal of carbon or the addition of hydrogen, creating a product with a viscosity similar to light crude oil.
Value Chain	Refers to a progression of activities or steps that are performed to bring a valuable product to the market. A value chain follows the steps from input (raw materials) to output (valuable, finished products for consumers). A product gains value as it passes through each step of the chain. In the oil and gas industry terms often heard through the value chain process are upstream (exploration and production), midstream (transportation), and downstream (refining and marketing).
Western Canadian Select (WCS)	Western Canadian Select (WCS) is defined by the *Bitumen Valuation Methodology (Ministerial) Regulation* as a blended crude oil comprised mostly of cleaned crude bitumen and diluents.
West Texas Intermediate (WTI)	A light crude oil produced in the United States which is the benchmark grade against which light and medium crude is measured.

4.0 BACKGROUND

4.1 Overview of the Bitumen Royalty-in-kind (BRIK) Program

4.1.1 Impetus for the Bitumen Royalty-in-kind (BRIK) Program

In Alberta royalties are a share of production from resources the Government owns on behalf of Albertans. Under the *Mines and Minerals Act*, RSA 2000, c. M-17, the Government has the authority to take royalties in kind in lieu of cash for any of its resources, including bitumen. Currently the Government takes its share of conventional crude oil production in kind and then markets it in order to realize the maximum value for its royalty share. The Government collects royalties for other resources in dollars.

In 2007 the Government of Alberta established the Alberta Royalty Review Panel (the "Panel") "to review whether Albertans are receiving a fair share from energy development through royalties, taxes and fees." Based on many of the Panel's recommendations the Government created a new royalty rate structure that took effect in 2009. Apart from increasing royalty rates for conventional oil, natural gas, and bitumen, the Government made a decision to take its bitumen royalty payments in kind rather than cash and to endeavour to have its royalty bitumen processed in Alberta. As outlined in The New Royalty Framework, the Government "recognizes that in order to build a stable and prosperous future, the province must get the best economic return on the development of its energy resources." The Government needs to "add value [to] its exports and expand its economy by upgrading resources here in Alberta" in order to secure jobs and economic growth. In view of the Government's recognition of the importance of adding value to its resource exports, the Government proposed to implement a royalty-in-kind program for bitumen (BRIK). Rather than receiving cash royalties for raw bitumen, which yields a lower price than upgraded bitumen, the Government decided to take its bitumen royalty payment in product and supply the bitumen to potential Alberta upgraders and refineries for processing and sale. The decision to take bitumen royalties in kind adds value to the Government's royalty bitumen by facilitating economic activity at Alberta upgraders and by receiving a higher cash royalty when the more valuable processed bitumen (diesel fuel, et cetera) is sold on the open market.

4.1.2 Objectives of the BRIK Program

The BRIK program aims to achieve the following three objectives:

1. Foster value-added oil sands development (the Government can use its royalty bitumen to stimulate economic growth by facilitating the development of upgrading facilities in Alberta, which has a positive impact on economic sustainability in the province and allows the Government to hedge its bitumen commodity risk).

2. Enhance the transparency and liquidity in the bitumen market. (Bitumen is difficult to market. Product quality varies depending on where it is produced, and diluents need to be added to it before it can be transported in a pipeline. Currently most bitumen is upgraded by the same company that produces it or an affiliate, making the market for bitumen quite small. The BRIK program is designed to make available more buyers and sellers of bitumen and produce a more transparent and liquid market which will assist the Government in getting better value for its royalties.)

3. Share in the differential gains and risks between synthetic crude oil and bitumen. (Bitumen normally sells for less than synthetic crude oil. The Government assumes some of the risk and cost associated with processing bitumen but should benefit from being able to sell the upgraded bitumen for a higher price than it would if it sold the nonupgraded bitumen.)

4.1.3 Transportation of BRIK Bitumen

Two of the components necessary for the operation of the BRIK program are the available infrastructure to transport BRIK bitumen to the refinery and the available BRIK bitumen volumes to supply the refinery over the term of the program. The Department of Energy submitted a Government of Alberta BRIK Infrastructure and Bitumen Supply Availability discussion paper to the oil and gas industry in November 2009. In the discussion paper the Department of Energy asserts that both the pipelines to Edmonton and Hardisty have sufficient unused capacity to meet BRIK obligations until 2018. Based on oil industry forecasts and Energy Resources Conservation Board (ERCB) approved upcoming projects the existing pipeline infrastructure is sufficient to meet bitumen production volumes from the Cold Lake and Peace River regions until 2030. However, the pipeline infrastructure to meet bitumen production volumes from the Athabasca region will need to be upgraded by 2018 because the bitumen production from this area is expected to double by 2018.

4.1.4 BRIK Bitumen Supply

With regard to the BRIK bitumen supply, the Government is expected to supply 75,000 barrels per day (bbl/d) to the upgrader. According to the above-noted discussion paper, the oil industry has confirmed that there "do not appear to be any material, infrastructure or commitment constraints [to] prevent the [Government] from meeting its supply commitment to the upgrader." Apart from oil industry production estimates, part of determining if the Government will have the required amount of bitumen supply for the upgrader is forecasting price scenarios because the price of oil is the main determinant in calculating royalty rates. In the discussion paper a base case of West Texas Intermediate (WTI) US$80/bbl to US$128/bbl and a low price case of WTI US$58/bbl to US$83/bbl were used to forecast BRIK bitumen supply until 2030. Preliminary analysis indicates that under the base case scenario the Government appears to have enough BRIK bitumen to meet its requirement of 75,000 bbl/d but that under the low price case scenario there is more likely to be insufficient volume, particularly in the first few years, meaning the Government would have to purchase bitumen from third parties to make up the shortfall.

The other element to the bitumen supply issue is whether producers will have enough bitumen to meet their royalty obligations by delivering BRIK volumes to the Government. Integrated oil sands projects and projects that have both a production and upgrading component are currently exempt from the BRIK program and are therefore not affected by BRIK volume requirements. Other producers that are unable to meet their BRIK royalty obligations will have the option of purchasing bitumen from third parties in order to attain their BRIK volumes. According to the information presented in the discussion paper, there will be a sufficient supply of bitumen available for purchase by the Government or producers if need be. In order to make this determination, the forecasted net supply of bitumen available for purchase from third parties has been calculated by taking the total non-integrated bitumen production minus BRIK volumes from non-integrated projects minus physically undeliverable volumes.* The forecasted net supply is considered sufficient for any third-party transactions that may be necessary to meet BRIK requirements by the Government or producers.

4.1.5 Agreement to Process BRIK Bitumen

In 2008, following the release of The New Royalty Framework, the Premier asked the Minister of Energy to implement strategies to increase upgrading and refining capacity in Alberta, including the implementation of the BRIK program. In May 2008 Executive Council recommended that a business case be made for developing a BRIK policy, and in August 2008 requests for expressions of interest in the BRIK program were issued. After reviewing the expressions of interest received regarding the proposed BRIK program, the Government decided to go forward with the program. The Government issued a request for proposal (RFP) in July 2009 and a final amended RFP in October 2009 "soliciting applications in using Bitumen Royalty-in-Kind" at a "value-added facility located preferably in the Industrial Heartland

* Physically undeliverable volumes are "volumes that have a supply commitment and would not be available in the market under any price as well as those volumes that are trucked to an Alberta upgrader and therefore cannot physically be delivered using a pipeline to a market hub."

Area of Alberta." The RFP closed in January 2010, and the successful applicant was announced in May 2010. The Government, through its agent, the Alberta Petroleum Marketing Commission (APMC), entered into an Agreement to Process Crown Royalty Bitumen (the "Agreement") in February 2011* with the North West Redwater Partnership, which comprises North West Upgrading Inc. (NWU) and Canadian Natural Upgrading Limited. The Agreement states that the North West Redwater Partnership will construct and operate the Sturgeon Refinery, a bitumen refinery northeast of Edmonton, and will upgrade, refine, and market royalty bitumen supplied by the Government.

The agreement was established in the form of a cost-of-service contract with a 30-year term. Under the terms of the contract, the North West Redwater Partnership (the "Processor") will finance and construct the refinery. Once operational, the Processor will provide a service for a fee. APMC (the "Producer") will provide the feedstock and retain all of the profits after paying the processing fee. Although a typical cost-of-service contract flows through all of the capital costs, under the terms of this contract the Processor cannot flow through costs above $6.5 billion. In addition, the Processor is liable for all of the costs of building the refinery up to the point when the processor seeks to sanction the project, which in this case is $800 million. If the Processor does not sanction the project, the processor would lose the $800 million.†

Construction of the Sturgeon Refinery will be done in three phases and is scheduled to take three years, beginning in the spring of 2013. The North West Redwater Partnership will own the Sturgeon Refinery and is responsible for designing, constructing, and operating the facility. Once all three phases are completed, the refinery will be able to process 150,000 bbl/d of bitumen. When the first phase of the project is complete, the refinery will be able to process 50,000 bbl/d of bitumen, of which 37,500 barrels will come from Government royalties and the balance will be supplied from Canadian Natural Resources Limited (CNRL). The processed bitumen will become ultra low sulfur diesel, naphtha, and diluent, which will be marketed by the refinery. It is anticipated that during phase I of the project approximately 5.5 million litres of diesel fuel will be produced each day.

4.1.6 Summary of Significant Terms from the Agreement to Process Crown Royalty Bitumen

1. The APMC will supply the Sturgeon Refinery with a minimum of 37,500 bbl/d and a maximum of 75,000 bbl/d of bitumen for a 30-year period.‡

2. The APMC will pay a monthly cost of service toll to the Processor to upgrade the bitumen and market the refined product and will collect a portion of the revenue from the sale of the refined product.

3. The revenue payable to APMC each month (or owing to the Processor, as the case may be) is calculated based on the Processor's monthly aggregate revenues, of which the APMC's share is 75 per cent, minus several costs and charges owing by the APMC. CNRL's share will be the remaining 25 per cent.§

4. Both the Government and CNRL are obligated to deliver a specified supply of bitumen to the Processor. The parties to the Agreement will account for the difference in value of the base Crown supply and the value of the CNRL supply through a monthly equalization amount, which shall be determined by taking the value of the Crown stream of bitumen for a particular month and subtracting 75 per cent of the aggregate equalized stream value (which is the sum of the Crown stream and the CNRL stream) for the same month. APMC will own 75 per cent of the equalized stream for that month, and CNRL will own the remaining 25 per cent.

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* The Agreement to Process Crown Royalty Bitumen was amended and restated on November 7, 2012.

† Phase 1 of the project was sanctioned on November 8, 2012.

‡ The provisions regarding termination of the agreement by either party are outlined in section 23 of the agreement.

§ The Processor is not entitled to any of the proceeds from the sale of the base Crown supply once it is refined. However, according to sections 12.1, 12.4, and 12.5 of the Agreement if the Government supplies more than the base supply required in the Agreement, called the "excess capacity," the Processor is entitled to a share of the proceeds from the sale of the excess capacity of bitumen once it is refined.

5. The APMC is responsible for ensuring that all BRIK bitumen meets the quality requirements set out in the Agreement.* Bitumen that does not meet the quality requirements will be sold by the Processor, and any losses or costs associated with the BRIK bitumen not meeting the quality requirements will be assumed by the APMC.

6. If in any month the APMC does not meet the minimum BRIK bitumen supply requirements of 37,500 bbl/d multiplied by the number of days in the month, the Processor may purchase, on behalf of the APMC, an amount of bitumen required to make up the shortfall. All costs associated with the purchase and transfer of the additional bitumen will be borne by the APMC.

7. Once the bitumen is refined, the Processor will market the product with a goal of "optimizing the profitable operation of the Facility."

8. Financing of the project "exclusive of amounts for reserves, for working capital and for Debt Service Costs accruing or payable prior to the Toll Commencement Date" will be premised on approximately 20 per cent equity and 80 per cent debt financing (for facility capital costs not exceeding $6.5 billion) and will be supported by the CNRL Backstop Commitment.†

4.1.7 Carbon Capture and Storage Program

In addition to the agreement with the North West Redwater Partnership, the Government negotiated a second agreement with Enhance Energy, under its carbon capture and storage program, to build the Alberta Carbon Trunk Line (ACTL), a pipeline that will transport captured carbon dioxide produced at the Sturgeon Refinery to be used for enhanced oil recovery in existing conventional oil fields in central Alberta. During the first phase of the Sturgeon Refinery project it is anticipated that approximately 3,000 tonnes of carbon dioxide will be captured daily and delivered through the ACTL to conventional oil recovery projects. The carbon dioxide will be injected into the oil reservoirs, thus allowing oil that is difficult to extract to flow more freely.

4.2 Background – Supply and Demand

4.2.1 Supply

Extracted from the oil sands, bitumen is an extra-heavy crude oil that needs significant processing to transform it into a refined product. This processing typically occurs in either a one- or two-step process. In the two-step process bitumen in its raw form is transported to an upgrader for a process called upgrading, where either carbon is removed (coking) or hydrogen is added (hydrocracking). Upgrading reduces the product's resistance to flow (viscosity) and creates a higher quality synthetic crude oil (SCO), which can be more easily transported and refined into petroleum products such as diesel. In the one-step process bitumen is transported to a refinery, where it is processed into a finished product. If the bitumen is to be transported through a pipeline, it must first be diluted (often using a substance called diluent) in order to enable it to flow through the pipeline as raw bitumen has a very high viscosity. The resulting product, a combination of bitumen and diluent, is called dilbit. Bitumen can also be transported on heated rail cars, in which case little to no diluent is needed.

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* Apart from complying with the quality requirements set out in the Agreement, the APMC is not obligated to ensure that the Crown supply is "suitable or optimal for processing at the facility." According to sections 9.3 and 9.5 of the Agreement the Processor is authorized to sell or exchange the base Crown supply for other feedstock in order to obtain optimized feedstock to be processed at the facility with a view to optimizing the profitable operation of the facility. In order to account for the optimization of feedstock a monthly optimization amount is calculated by subtracting the feedstock sales proceeds from the feedstock acquisition costs for the month. If the monthly amount is positive, 75 per cent of the amount is for the account of the Processor, and if the amount is negative, 75 per cent of the absolute value of the amount is for the account of APMC.

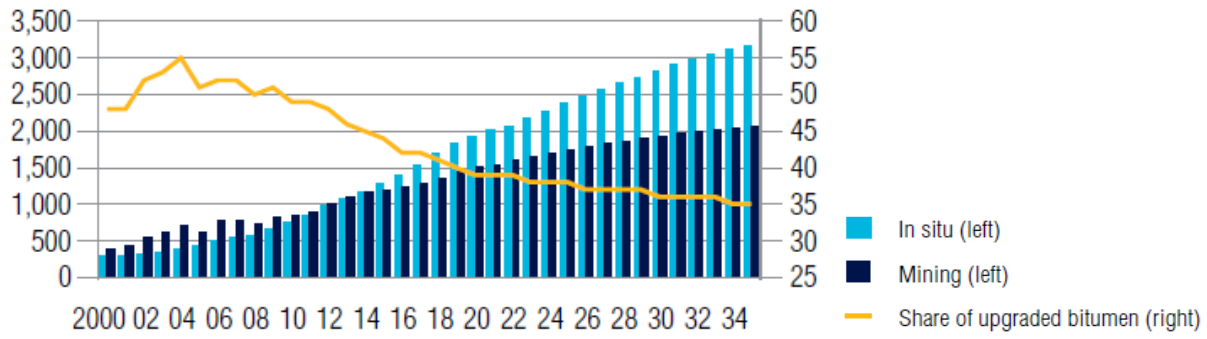
† The CNRL Backstop Commitment, as defined in section 1.1 of the Agreement, is "the commitment, as represented by the Processor to APMC and on terms reflected in documentation provided by the Processor to APMC for review prior to the Execution Date, of CNRL to provide NWU with a bridge credit facility in the amount of $120 million and an overrun credit facility in respect of NWU's share of cost overruns for the Project."

Stakeholders presenting to the Committee agreed that because of increasing bitumen production, an oversupply of bitumen exists on the market. The ERCB estimates that Alberta's proven bitumen reserve* is approximately 168.6 billion barrels while the Government of Alberta reports that there are an estimated 1.84 trillion barrels of crude bitumen in the total oil sands area. The ERCB reports that in 2011 Alberta produced 637 million barrels of raw crude bitumen from the oil sands, or approximately 1.7 million bbl/d, an increase of 8.2 per cent from 2010. The Canadian Association of Petroleum Producers (CAPP) forecasts that raw bitumen production will increase to 5.33 million bbl/d from current production levels by 2030.

While bitumen production is increasing, bitumen upgrading has stagnated, and therefore the ratio of bitumen extraction to bitumen upgrading is expected to decline in the near future. According to the Alberta Federation of Labour (AFL) in its presentation to the Committee, this decline is not due to closures of upgrading facilities within Alberta but, rather, is due to the fact that with the exception of the Sturgeon Refinery no new upgrading capacity is being added to the province as the pace of bitumen extraction accelerates. Furthermore, because Alberta does not currently have the capacity to upgrade all the raw bitumen that is being extracted, bitumen producers are instead exporting bitumen to other regions for upgrading and/or refining. In 2011, 863,000 bbl/d of bitumen were upgraded in Alberta, approximately 56 per cent of total raw crude bitumen production. The ERCB predicts that by 2017 Alberta will only upgrade 50 per cent of the bitumen it produces, and the AFL predicts that by 2025 only 26 per cent of Alberta's bitumen will be upgraded locally.

Figure A below displays the projected increasing trend of bitumen extraction and the projected decreasing trend of bitumen upgrading.

Figure A: Outlook for Bitumen Extraction Compared to Upgrading in Alberta, 2000 to 2034 (in thousands bbl/d)



Sources: Alberta's Industrial Heartland Association, Standing Committee on Alberta's Economic Future, presentation to the Committee; Energy Resources Conservation Board; National Energy Board; Conference Board of Canada.

The increasing supply of bitumen combined with the inability to get all bitumen products, whether dilbit or SCO, to market has driven down the price of bitumen. This reality is reflected in an increase in the light/heavy oil differential, which is the gap between the price of light oil and the price of heavy oil. (See section 4.3.1 for a further discussion of the impact of light/heavy oil price differentials.)

The issue of the increasing supply of bitumen along with the difficulty of getting bitumen products to market, which in turn contributes to a widening light/heavy oil differential, necessitates an examination of the market demand for heavy oil and upgraded and/or refined products, which is put forth below.

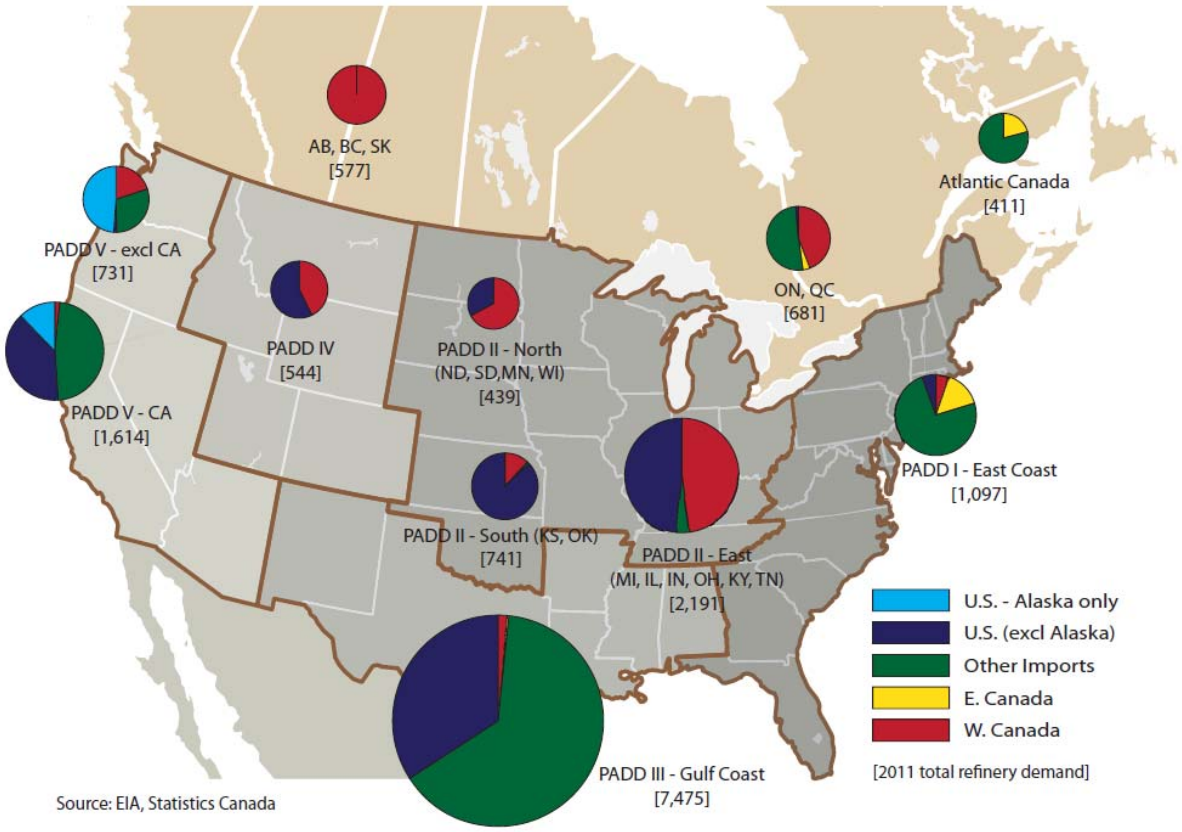
4.2.2 World Demand

In its October 2011 report, Canada's Petroleum Refining Sector, the Conference Board of Canada projected a decline in oil demand in developed nations given the relative maturity of their markets and the

* Proven reserves are the amount of bitumen that can be recovered using current technology.

increasing prevalence of policy measures to reduce oil consumption (such as the promotion of alternative fuel sources and more stringent carbon fuel standards). However, the Conference Board noted a trend to 2035 of increasing world oil consumption, which will be concentrated in developing nations. The on-road transportation sector is expected to be a strong source of growth in developing countries as oil demand in this sector is projected to increase 32 per cent over the outlook period and as the global vehicle fleet doubles in size by 2035. The result will be a growing demand for petroleum products.
In its presentation to the Committee CAPP emphasized that one of the highest priority issues for government and industry is to facilitate market access to ensure that Albertans receive maximum value for their oil sands resource. Stakeholders identified eastern and western Canada, the United States Gulf Coast, and Asia as potential markets for Alberta's crude oil. The map below displays the crude oil demand in Canada and the United States and the sources from which each region receives crude oil.*

Figure B: 2011 Canada and U.S. Crude Demand by Market Region, in thousand bbl/d.



4.2.3 Canada

According to CAPP, only approximately 60 per cent of the crude oil processed in Canada is sourced from domestic production. Due to the lack of west-east pipelines in Canada, refineries in eastern Canada have limited access to western Canadian crude oil supplies. As shown in the map above, there is demand for crude oil in eastern Canada; however, this demand is currently being met mostly by imports rather than western Canadian suppliers. Refineries located in Ontario, Quebec, and Atlantic Canada currently import over half of their crude oil from foreign suppliers (e.g., OPEC countries). According to CAPP, with the

* PADD is an abbreviation for Petroleum Administration for Defense District. During the Second World War the United States was divided into five geographic regions for the purpose of oil administration and gasoline rationing. Today these regions, known as PADDs, are used to collect data on oil supply and demand and to monitor regional patterns and flows. PADD I encompasses the East Coast and Atlantic Seaboard, PADD II refers to the American Midwest, PADD III covers the Gulf Coast region, PADD IV refers to the Rocky Mountain region, and PADD V includes the West Coast, Hawaii, and Alaska.

refinery expansions and transportation infrastructure developments that have been planned, the overall Canadian demand for western Canadian crude oil is expected to increase from 878,000 bbl/d to 978,000 bbl/d by 2020.

According to the Conference Board of Canada, parts of Canada are net exporters while other parts are net importers of refined products such as gasoline and diesel. This suggests that "industry imports in regions of the country where importing costs less than does shipping refined products from elsewhere in Canada." The Alberta's Industrial Heartland Association (AIHA) suggests that this is occurring in western Canada, which is importing refined products from regions such as California and Washington, and thus there is potential demand in western Canada for Alberta's refined products. NWU supports this argument by stating that remote communities in British Columbia run on diesel and are therefore a potential market for Alberta-produced diesel. Similarly, eastern Canada imports refined products from the United States, and Alberta could potentially meet the demand in this market. Presenters to the Committee such as the AFL and the University of Alberta suggest that sending Alberta-refined products east will improve Canada's energy self-sufficiency. Both AIHA and NWU also view developing countries as potential consumers of diesel as they use the fuel for their growing transportation and construction industries. Access to deepwater on the west coast will be central to accessing these markets. NWU also states that there is a local shortage of diesel in Alberta, which could be addressed by the construction of refineries within the province.

4.2.4 United States

The United States is the world's largest oil market with a total refining capacity of almost 18 million bbl/d. Canada is the largest exporter of crude oil to the U.S., ahead of Saudi Arabia, Mexico, and Venezuela. Currently Alberta's primary market for its diluted bitumen, known as Western Canadian Select (WCS), is the United States Midwest, in particular the region known as PADD II. The Canadian Energy Research Institute (CERI) reported that the United States Midwest refinery region, traditionally the largest market for Canadian bitumen and synthetic crude oil, has "limited capacity to absorb incremental volumes unless refineries there increase upgrading and catalytic cracking capacity." In short, this market has become saturated with both bitumen and synthetic crude oil, as evidenced by the large buildup of inventories at the Cushing, Oklahoma, hub. The In Situ Oil Sands Alliance (ISOSA) contends that the market congestion, caused by an increased supply of light unconventional oil and heavy oil sands production, has led to discounts of light sweet and synthetic oil in addition to heavy oil. This is among the reasons why both Teedrum Inc. and NWU have proposed producing high-value finished fuel products such as diesel rather than SCO, which are always priced at a premium to WCS (see section 4.3.1 below).

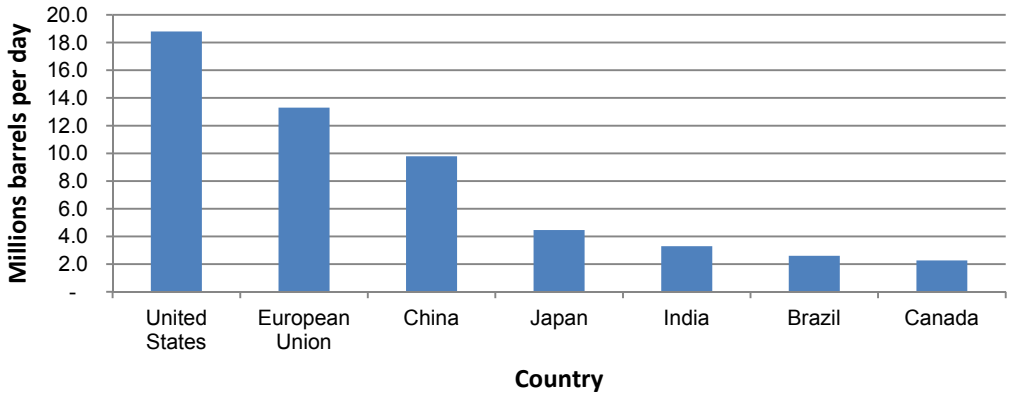
The United States is among several countries that are implementing low-carbon fuel standards to reduce greenhouse gas (GHG) emissions. The Low-Carbon Fuel Standard (LCFS) was enacted in California in 2007 (and proposed in several other states) and requires refiners and fuel sellers to track the GHG life cycle intensity of all the fuels that they sell to ensure that the average intensity is in compliance with the declining GHG emissions targets each year. For this reason, purchasers are dissuaded from procuring oil from such sources as Alberta's oil sands unless the oil sands can decrease emissions. As production is projected to grow in Alberta's oil sands, aggregate GHG emissions from extraction are projected to grow as well, making California a difficult market for Alberta to penetrate. The Government of Alberta is attempting to address this issue through the funding of carbon capture and storage (CCS) projects such as the one currently proposed to operate in conjunction with the BRIK project at the Sturgeon Refinery. As a part of Alberta's 2008 Climate Change Strategy CCS aims to capture carbon dioxide (CO_2) emissions from large industrial facilities before the CO_2 is released into the atmosphere. The CO_2 is then transported through a pipeline and injected deep into the underground rock formations such as depleted oil and gas reservoirs, where it is stored permanently. According to NWU a benefit of refining bitumen is that it produces pure CO_2, which can be used at existing oil fields for enhanced oil recovery, where the CO_2 is injected underground to push previously unrecoverable oil toward production wells (see section 5.1.3 for an additional discussion on the environmental and economic merits of CCS).

4.2.5 China

According to the Conference Board of Canada, demand for energy from the developed world is stabilizing. It is developing economies – particularly China, India, and Brazil – which will see rapid growth in demand for energy in line with increasing per capita production and income. Presenters to the Committee agreed that Asia, particularly China, is an emerging market and a potential consumer for Alberta's petroleum production. According to the U.S. Energy Information Administration (EIA), China's oil demand growth, particularly for petroleum products, depends on several factors such as domestic economic growth and trade, power generation, transportation sector shifts, and refining capabilities. The Conference Board of Canada reports that China will account for more than half of the increase in oil consumption in the transportation sector between 2011 and 2035 as rising incomes will expand the demand for transportation fuels. It is projected that demand for oil in China will increase from 8.1 million bbl/d in 2009 to 15.3 million bbl/d by 2035. Although China is a large oil producer, it has also been a net importer since 1993. In 2011 China imported 5 million bbl/d of crude oil, over 50 per cent of which came from the Middle East.

China continues to expand its heavy oil refining capacity and is becoming one of the largest refining markets in the world. Furthermore, it is experiencing a significant demand for energy to meet the needs of its growing population and the country's sustained economic growth. Figure C shows that China is one of the largest consumers of refined petroleum products, consuming approximately 9.8 million bbl/d, behind only the United States and the European Union. By comparison, Canada has significantly less total consumption.

Figure C: Total Consumption of Refined Petroleum Products by Country, 2011 (in millions bbl/d)



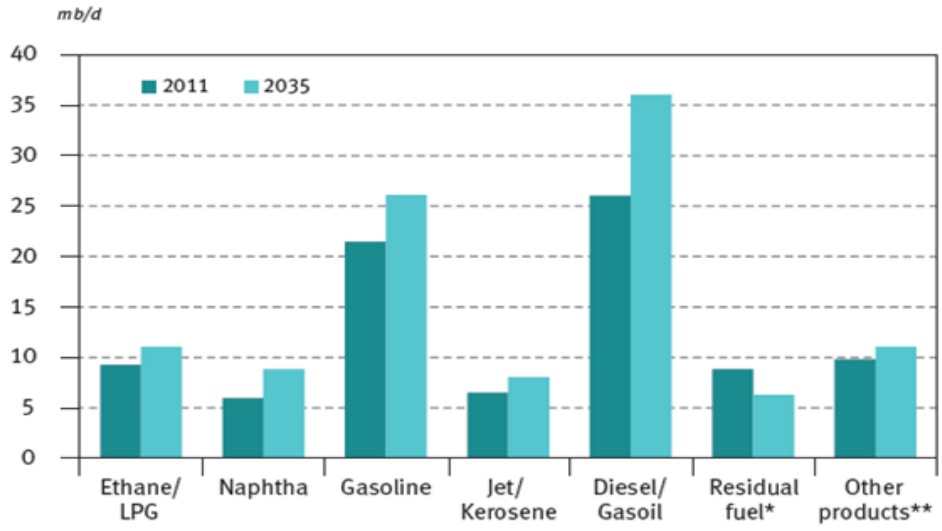
Source: CIA World Factbook, "Country Comparison: Refined petroleum products – consumption," available at https://www.cia.gov/library/publications/the-world-factbook/rankorder/2246rank.html (accessed March 26, 2013).

4.2.6 Demand for Petroleum Products

As stated above, growth in the road transport sector has created a demand for gasoline and diesel. Although growth in gasoline has leveled off, particularly in developed countries, diesel consumption continues to grow. The International Energy Agency's (IEA) Medium-Term Oil Market Report 2012 reported that diesel/gasoil leads global oil use, with consumption projected to rise 1.7 per cent annually to 28.8 million bbl/d by 2017, an increase from 26.1 million bbl/d in 2011. The EIA predicted that U.S. demand for diesel fuel will grow about four times faster than that of gasoline through 2015 and that toward 2030, diesel demand will increase about 14 times faster than gasoline.

Figure D below shows global demand projected by OPEC for petroleum products in 2035. It illustrates that demand for diesel/gas oil products is expected to increase more in comparison to other products such as gasoline, which is also expected to increase though not as significantly.

Figure D: Global Product Demand, 2011 and 2035



* *Includes refinery fuel oil.*
** *Includes bitumen, lubricants, waxes, still gas, coke, sulphur, direct use of crude oil, etc.*

Source: Organization of Petroleum Exporting Countries, *World Oil Outlook, 2011*, (Vienna, Austria: OPEC, 2012), p. 157.

4.2.7 Pipelines

Several of the stakeholders who presented to the committee referred to Alberta as a land-locked province, indicating that it does not have easy access to bodies of water. This raises two main issues. Firstly, the cost of construction is increased due to the relative difficulty of transporting materials via land methods rather than on ships, which is less expensive. Secondly, there are limited methods of bringing the product (whether bitumen, SCO, or refined products) to market as pipeline and rail capacity accessing deepwater shipping – and therefore overseas markets – is currently constrained. Market access was identified by stakeholders as one of the most important considerations with regard to upgrading. According to CAPP, due to growing conventional and oil sands production there is an increasing need for additional transportation infrastructure.

There are two main modes of transportation with regard to heavy and light oil. Pipelines are the most commonly used and the least expensive land transportation method; however, raw bitumen is extremely viscous and cannot flow through a pipeline. Therefore, the bitumen, as indicated above, needs to be diluted by adding a diluent of naphtha or condensate, creating dilbit. Dilbit can flow through pipelines to upgrading or refining facilities; however, the need to dilute the bitumen decreases the total amount of bitumen that is actually transported through the pipeline at a given time. For example, dilbit may be composed of 25 per cent diluent, leaving the remaining 75 per cent as actual bitumen that is transported through the pipeline. Furthermore, condensate as a diluent is a commodity, and producers that use it to dilute bitumen for pipeline transport will incur an additional cost. Alternatively, if the bitumen is upgraded prior to transportation through the pipeline, the resulting SCO can flow on its own through the pipeline. This is also the case with refined petroleum products. Therefore, if a product is upgraded or refined, diluents are not needed, and the full capacity of the pipeline can be used for delivery.

According to CAPP, the main source of diluent is condensate that is recovered from processing natural gas in western Canada. CAPP reports that an increase in bitumen production has increased the production of condensate; however, increased bitumen production has begun to exceed the available supply of condensate. As a result, diluent pipelines have been constructed in order to transport diluent to meet the needs of the growing bitumen production. CAPP contends that alternative methods of transporting bitumen such as rail (discussed below) may reduce the estimated demand of diluent.

4.2.8 Rail

Transportation by rail can serve as an alternative to pipelines. Rail is currently being used to transport light crude and condensate. According to CAPP, for the transportation of bitumen rail cars can be heated, and the bitumen can be blended to specifications at terminals near the destination refineries. Furthermore, whereas pipelines take years to obtain permits and to build, railways can be constructed in about a year. Rail also has a network that currently extends to a number of markets that are currently not connected through the pipeline network. The existing rail network has access to the eastern Canada and the Pacific, Atlantic, and Gulf coasts.

Despite the advantages, rail shipment still represents only a small portion of the total volumes of bitumen being moved, primarily because transporting crude oil by rail is more expensive than using pipelines. According to CAPP, transporting crude by rail requires capital investment in new loading facilities as well as corresponding unloading terminals at the destination centre. Furthermore, NWU argues that rail would not be able to transport the full potential of bitumen that industry in Alberta produces.

The amount of crude oil produced in western Canada that is transported by rail is growing but is comparatively small, at around 20,000 bbl/d in 2011. Rail is, however, starting to capture a larger proportion of the crude oil transportation market. According to Statistics Canada, about 8,823 rail cars transported crude oil and fuel products (approximately 5.2 million barrels) in March 2012 compared to 5,602 rail cars (approximately 3.4 million barrels) in March 2011. By NWU's estimates transportation by rail to B.C.'s lower mainland from Alberta's Industrial Heartland, for example, can cost anywhere between $8 to $11 per barrel whereas transporting oil by pipeline can cost between $3 and $4 per barrel. Stakeholders agreed that transportation by pipeline was generally less expensive compared to rail and is therefore the more preferred mode of transportation for oil.

4.3 The Economics of Bitumen Upgrading and Refining

"The economics of bitumen upgrading," as CAPP indicated to the Committee, "is determined by the costs of upgrading compared to the additional value earned by upgrading bitumen to light oil or synthetic crude oil." By extension, this same basic principle applies to the refining of fuels such as gasoline, diesel and jet fuel, value-added products which are at the end of the petroleum value chain. The key determinants of profitability are led by such factors as

- light (including value-added)/heavy oil price differentials
- capital costs
- labour costs
- operating costs and capacity utilization
- transportation costs

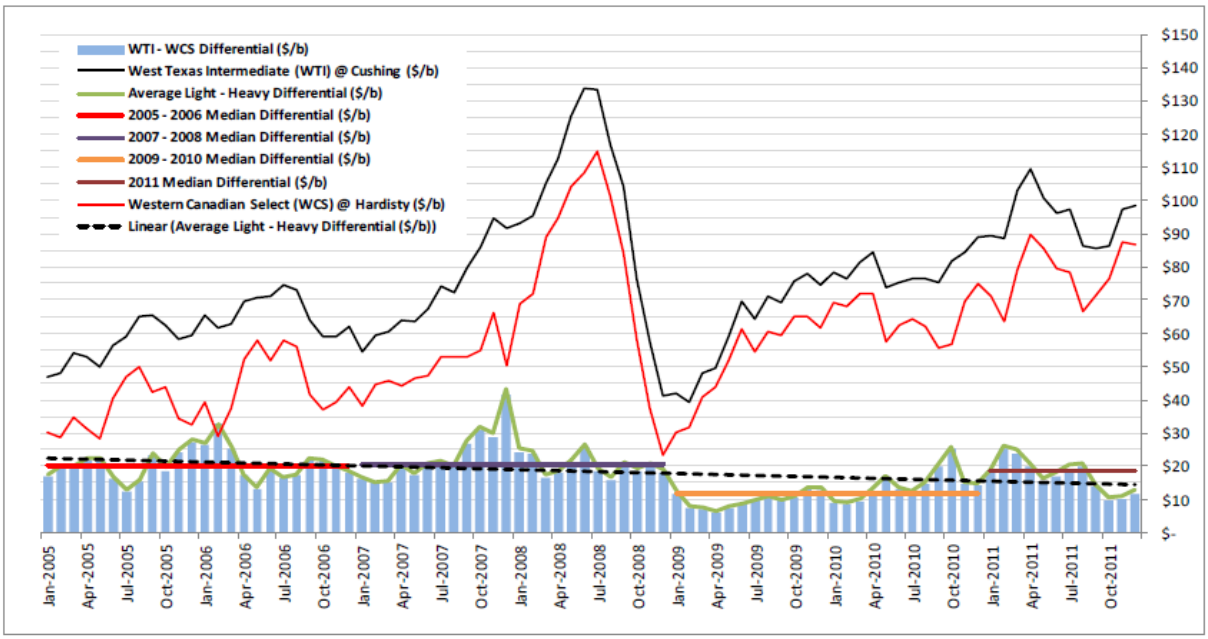
4.3.1 Light (and Value-Added)/Heavy Oil Price Differentials

Stakeholders who presented to the Committee are in agreement that a key cost consideration in determining the economics of upgrading/refining is the difference between the cost of bitumen and the product that is produced, whether that is SCO or other value-added products such as diesel. CAPP submitted that the economics of upgrading "are driven by long-term price differentials between heavy and synthetic crude oil"; the AFL indicated that "a wider differential dramatically improves the economics of upgrading"; and Shell Canada stated that "[w]hen you look at your upgrading economics ... one of the things you have to consider is what's generating the differential between light and heavy crudes, because your upgrading margin is going to be earned based on that differential."

Figure E presents the light/heavy oil differential from 2005 to 2011. The blue bars in the graph display the monthly price spread between West Texas Intermediate (WTI) and Western Canadian Select (WCS) (i.e., the light/heavy differential) while the green line indicates the average light/heavy differential, each of the measures being expressed in US dollars per barrel (US$/bbl). The graph shows that over time the differential has fluctuated between a high of just over US$40/bbl and a low of approximately US$10/bbl.

The longer term average (i.e., over the entire period) light/heavy oil differential ranges from approximately US$15/bbl to US$22/bbl.

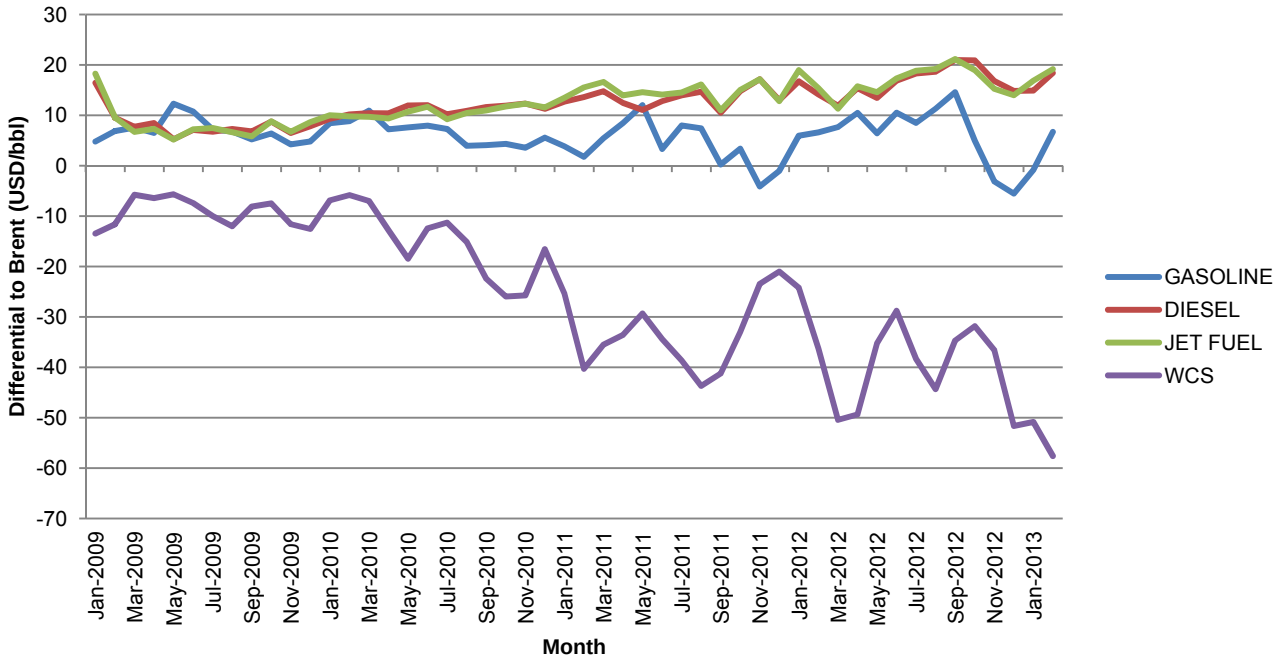
Figure E: Light-Heavy Differential (US$/bbl), 2005-2011



Source: EIA, Cenovus, CERI

Figure F displays differentials between WCS and other petroleum products such as diesel, jet fuel, and gasoline as compared to Brent crude, which is considered the world oil price standard.

Figure F: Differential to Brent Crude, Various Value-Added Refined Products, 2009-2013



Source: EIA, Baytex Energy Corp.

The graph shows, predictably, that the price of WCS is considerably lower than that of Brent crude, with great fluctuations over the period but with an overall trend towards a greater differential between WCS and Brent crude as time moves forward. Also predictably, the value-added products exceed the value of Brent oil. Notably, diesel and jet fuel exceed the value of Brent crude by a considerable amount; that is, by between approximately US$10/bbl and US$20/bbl over most of the January 2009 to January 2013 period. The average differentials between the value-added products and Brent crude for the period 2009-2013 are as follows: gasoline, US$5.91/bbl; diesel, US$12.49/bbl; jet fuel, US$12.75/bbl. Significantly, the differential between both diesel and jet fuel, which have very similar price profiles, and Alberta WCS increases from approximately US$30/bbl in January 2009 to approximately US$80/bbl by January 2013, with an average spread of US$38/bbl between the value-added products and WCS over the entire four-year period. One other phenomenon, as noted by NWU, is that while prices for WCS have fluctuated considerably over the short-term past, which is due in large measure to the supply bottleneck that has resulted from inadequate pipeline capacity to get the bitumen blend to market, the price of diesel (and jet fuel, for that matter) is comparatively stable relative to Brent crude, making price projections for this value-added product much more reliable than for WCS.

The basic economic principle at play concerning price differentials is that the greater the differential between the chief input cost (i.e., the feedstock) and the end product (e.g., synthetic crude oil, diesel or jet fuel), the greater the opportunity to increase the gross margin, which ultimately contributes to profitability. The question now arises: what is the minimum differential required to enable an upgrader and/or refinery to be profitable?

This is a difficult question to answer because, aside from the light/heavy price differential, there are a number of other factors, many of which are discussed below, which contribute to an upgrader's or refiner's net margin (or profitability). CAPP in its submission to the Committee indicated that typically, in the case of upgrading bitumen to SCO, "the cost of upgrading requires a long-term price differential [on] the order of $25." That is to say that the spread between bitumen (in the case of an integrated upgrader) and WTI, or WCS and WTI (for a standalone upgrader), would need to be $25/bbl over the long term.

Price spreads are also critically important to an economic analysis when refining bitumen into a value-added product. As Figure F shows, the price differential (using Brent crude as a baseline) between WCS and diesel at the end of 2012 was approximately US$65/bbl and averaged US$37.74/bbl throughout the year. It is not known exactly what the price differential would need to be for profitability to occur. Nevertheless, it is clear that there are greater margins at play when refined products are under consideration. Indeed, Ian MacGregor, chairman of NWU, commenting on the hypothetical profitability of the BRIK program had it been in operation in 2012, indicated that "the government [of Alberta] would have made approximately $500 million more than they did by selling raw bitumen."

4.3.2 Capital and Labour Costs

The refining and upgrading industries are very capital and labour intensive. Modern facilities require sophisticated engineering and typically have a replacement cost of over US$7 billion (not including land-acquisition costs). By way of comparison, as was noted by NWU, the total estimated cost to construct the first phase of the Sturgeon Refinery is C$6.5 billion. This cost includes the capital and labour expenditures, estimated to be C$5.7 billion, and C$800 million for planning and engineering work. The cost of labour is particularly significant when assessing overall development costs because much high-cost labour is required to construct and operate an upgrader and, especially, a refinery. NWU indicated that there are "1,300 engineers and accountants" currently working on the project and an additional "350 people on our staff" with "tight expertise." The Government estimates that 8,000 construction workers will be employed when project construction begins.

Additionally, expenditures on capital and labour have been increasing in the past several years in the oil industry generally and are expected to continue to grow over the short to medium term. The cost of steel, for instance, which is a primary input in the construction of an oil processing facility, is expected to escalate over the next several years. Labour costs in Alberta have been cited as being high relative to other jurisdictions. Such costs are estimated to continue to increase by approximately five per cent per

annum until 2015. The petroleum industry is particularly concerned with labour costs as labour shortages and associated growing labour expenditures are the chief drivers of increasing construction expenditures. As the presenters representing the University of Alberta and AIHA, among others, have stated, high labour costs may result in higher overall costs to get a facility up and running and, due to labour cost inflation, may result in construction cost overruns.

It should be noted that NWU acknowledged the risks associated with cost overruns. The company's chairman noted that to be financially successful, cost overruns must be avoided:

> We plan to build it for $5.7 billion, and our fee structure runs out at $6.5 billion. I get a lot of questions about: what happens if this costs more than $6.5 billion? My answer is: "It's not going to. We meant $5.7 billion when we said it, and here's the planning and the amount of work." We spent $800 million proving that we can do it for that. I mean, those are the things you have to meet.

The chief financial officer for Teedrum cited cost overruns (during project construction), a key component of which is labour costs, as an even greater risk factor to a project's viability than securing project financing.

4.3.3 Operating Costs and Capacity Utilization

Once an upgrader or a refinery has been constructed and is operational, revenue is generated through the sale of the finished product, but additional expenses, called operating costs, are also incurred. A chief input cost, already discussed, is the expense incurred on the purchase of the feedstock. However, the BRIK program essentially provides that the Government of Alberta maintain ownership of the feedstock as it is processed in the facility into a value-added product. Therefore, the processing company (North West Redwater Partnership) does not incur a cost for its feedstock.

The processing facility does have to bear other operating costs, including electricity, chemicals, water, and labour. The management of such costs, especially labour costs, which, as indicated above, are trending upwards, is vitally important if the operator wishes to run an efficient and therefore profitable operation.

The effective utilization of plant capacity is essential to the efficiency of the operation and ultimately contributes considerably to plant profitability. The optimal capacity utilization is between 90 and 95 per cent, with utilization at 95 per cent considered to be full capacity. Capacity utilization below 90 per cent is suboptimal because economies of scale may be lost and higher per-unit costs and lower profitability may result.

4.3.4 Transportation Costs

Once the value-added product is produced, the product must still be transported to market, where end users consume it. Transportation of the product implies both time and cost to get the product to market. Alberta is, of course, a land-locked jurisdiction, meaning that overland methods of transportation, mainly pipelines and rail but also trucking, must be used to transport products to market. If the end user is overseas, then shipping must also be utilized.

According to NWU's presentation to the Committee and as referenced above, in section 4.2.8, the cost of transporting a barrel of diesel to the lower mainland in British Columbia from the Industrial Heartland northeast of Edmonton would cost between C$3 and C$4 per barrel by pipeline and between C$8 and C$11 per barrel by rail. The additional cost of shipping a barrel of diesel from Vancouver to a port in Asia would be an added C$2.25/bbl.

It is not known what the pipeline or rail tolls might be when the first BRIK barrels have been refined into diesel and are transported to market for sale. Transportation tolls are the difference between the price where the vendor produces the product and the price where the purchaser receives the product. These

tolls depend, in turn, on whether the transportation of the product is by pipeline or rail or an additional mode of transportation such as shipping. It should also be noted ~~that,~~ under the BRIK program that whether the purchaser or the vendor (i.e., the marketing agent in the case of BRIK) assumes the cost of transportation is dependent on the specifics of the contract between vendor and purchaser.

In general, limiting the cost of transporting the bitumen to the plant and the finished product from the facility is also central to increasing profitability.

4.3.5 Summary and the Economics of BRIK

Simply put, the economics of upgrading and refining are closely related to the value extracted from the sale of the upgraded or refined product minus all the costs, outlined above, incurred by the upgrading or refining process. Michael Ekelund, who presented to the Committee on behalf of Alberta Energy, summarized:

> If you're looking at upgrading, it's a question about whether the costs of the facility are greater than the bitumen and synthetic crude oil differentials. Similarly with refining: are the refined product differences compared to the feedstock costs greater than the costs? Similarly with a pipeline: are the differences between where you deliver and where you pick up the bitumen greater than the tolls? Similarly, if you've got something on rail, is the price at what you deliver versus where you pick it up greater than what you pay in terms of the railcars to get there?

He added that "[t]he economics are unique to each business situation and would require economic and feasibility analysis" and noted that "[t]here is no bitumen royalty in kind general economics."

However, the economics of BRIK can be examined in general terms by assessing the differential in price between the Crown-owned BRIK bitumen and the Government of Alberta's share of proceeds of the sale of the end product, which, in the case of BRIK, is diesel as well as naphtha and diluent, minus the cost of the monthly service toll. As Alberta Energy noted in its presentation to the Committee,

> the question is whether or not the price difference between diesel fuel and diluent within Alberta, the western Canadian market, and potentially what might be exported into the northwest U.S. is higher than the bitumen used as feedstock and whether that is more than what those costs would be in terms of the costs of building the facility and operating the facility [such costs being reflected in the monthly service toll].

As noted above in Figure F, the differential between WCS and value-added products such as diesel or jet fuel has fluctuated over the past four years. However, the price spread between the raw material and diesel and jet fuel has remained on average approximately US$38/bbl. Under the BRIK agreement the Crown would receive the cost differential but would have to factor in the monthly cost of service toll it must pay in order to get its bitumen processed into diesel.

The monthly cost of service toll involves a complex set of formulae included in the BRIK agreement between the Government and the North West Redwater Partnership and is used to calculate the Crown's payment obligations in terms of having its royalty bitumen processed. Expressed in a simple way, this processing service fee, of which APMC pays 75 per cent and CNRL 25 per cent, is calculated on a monthly basis using the following components:

a) Equity return – on approximately 20 per cent of the total capital cost of constructing the plant (currently estimated at C$5.7 billion) up to a cost cap (C$6.5 billion), a return of equity over 30 years and up to 10 per cent return per annum on the remaining equity each month;
b) Debt costs – on approximately 80 per cent of the total capital cost up to a cost cap (C$6.5 billion), repayment of principal and interest on the outstanding balance each month;
c) Operating costs – actual cost of utilities and similar items and actual other operating costs to a cost cap indexed for inflation;

d) Incentive fee – generally 15 per cent of the net profit to incentivize profit-maximizing behaviour by the operator.

Since the Sturgeon Refinery is currently under construction and still several years away from processing its first BRIK barrel, it is unknown what the monthly cost of service toll might work out to be. Furthermore, there is no way of knowing what the price of bitumen and diesel might be a few years into the future. Nevertheless, when asked to discuss the profitability of the BRIK venture, Alberta Energy reported to the Committee:

> When we did the estimate in the technical backgrounder that I presented to the press at the signing of the agreement, we estimated that there would be a discounted cash-flow return over the life of the project somewhere in the area of $200 million to $700 million at a reasonable industry discount rate. So we expect it to be profitable.
>
> The chair of North West [Upgrading Inc.] has publicly stated that it would have made about $500 million this year [2012]. That's because of the wide difference between product prices, which are essentially tied to Brent product pricing and the low price that we're getting for west Texas intermediate, which affects western Canadian select. We've got a double discount going on, Brent to WTI and also WTI to WCS. It would have been, in Ian MacGregor's words, very profitable this year. We look more at what the long-term outcomes would be, and we think that in the long term, with increases and decreases over time, it would be profitable in that [$200 million to $700 million] range.

5.0 BENEFITS AND RISKS OF ADDITIONAL BITUMEN ROYALTY-IN-KIND PROGRAM(S)

This section of the Committee's report will evaluate the benefits and risks to Albertans of additional BRIK programs and will cover the advantages and disadvantages of additional bitumen upgrading/refining in the province in terms of economic issues, including the impact on employment and the pool of skilled labour in the oil and gas sector, the environmental limitations, including water usage issues, and other factors such as the regulatory issues.

5.1 Key Benefits

5.1.1 Greater Diversification of Energy Portfolio

With an increasing amount of bitumen expected to be produced from Alberta's oil sands and the number of upgraders in the province remaining stagnant save for the construction of the Sturgeon Refinery, the percentage of bitumen being upgraded and refined in Alberta is diminishing and will continue to diminish into the medium-term future. As a result, a greater amount of bitumen, in the form of WCS, is expected to be transported to upgraders and refineries out of province.

An issue associated with this increase in bitumen exports, as identified by a number of presenters to the Committee, is that Alberta will become increasingly susceptible to low prices for WCS. The remedy for this problem, as suggested by Shell, the In Situ Oil Sands Alliance, and several other presenters, is to increase transportation capacity in the form of pipelines and in rail cars in order to get Alberta WCS to deepwater ports where producers can take advantage of world oil prices. Additionally, a number of presenters also advocated for a growth in bitumen processing within the province in order to diversify the petroleum industry and to enable Alberta to establish a hedge against low bitumen prices. As Teedrum explained,

> the rewards ... for the Alberta government and as an Albertan and certainly from the natural hedge standpoint: simply put, when bitumen is low, these particular projects are very profitable; when bitumen is high, these projects aren't very profitable and potentially could have a loss. But Alberta being in the business of 2, 2 and a half, 3 million barrels per day certainly should be hedging something, and we believe the BRIK program and policy is a natural hedge for the Alberta government, the Alberta people.

The AIHA also advocated for greater market diversification, asserting that

> something to consider when we're looking at market diversification is that raw bitumen is a very hard crude to refine, and there are only a small handful of refineries that are capable of utilizing bitumen as a feedstock. By upgrading, you open up the market for refineries in various parts of the world that could accept bitumen, and this allows for more competition and leaves the door open for changes to marketing strategies.

5.1.2 Capturing More of the Petroleum Value Chain and Generating Jobs

Every industry requires that activities take place to transform inputs such as raw materials, knowledge, labour, and capital into value. The "value chain" is a construct that helps identify the economically viable components of an industry. In the petroleum industry there are so-called upstream (close to the raw material inputs), midstream, and downstream (closer to the customer) elements. Each element assigns a value to products, which are in turn marketed to and purchased by customers.

Presenters to the Committee argued that by increasing bitumen upgrading and/or refining, a greater portion of the value chain is captured for Albertans. The AFL explained that

> when you export bitumen in raw or diluted form, you capture about 35 per cent of the value chain, but if you upgrade that same bitumen to synthetic crude and export that product, you capture 70 per cent of the value chain. If you move even higher up the chain to products like gasoline, diesel, jet fuel, and petrochemicals, you can essentially capture a hundred per cent of the value chain.

The corollaries of capturing more of the value chain for Albertans by increasing value-added petroleum production are that high-paying jobs are created and increased royalties and taxes for the Government can be collected. As the Conference Board pointed out in a recent report, the refining industry "pays above-average wages and salaries. In 2009, average weekly earnings in the sector ... were $1,371. That compares with $824 for all industries." Moreover, should the spread between WCS and value-added products continue to be robust, the Crown stands to substantially enhance its royalty revenues, ranging from $200 million to $700 million, as noted above. Furthermore, new industrial plants such as the Sturgeon Refinery create thousands of excellent jobs and generate billions of dollars in economic activity. With respect to the Sturgeon Refinery project, the Government estimates that the approximately 8,000 high-paying construction jobs and the hundreds of jobs for engineers, accountants and other skilled workers "will contribute $4.6 billion to Alberta's economy" during the development and construction phase of the project and generate "an additional $408 million in tax revenue for the Alberta government." Lastly, the federal government will receive $922 million in tax revenue during this period while local governments are estimated to realize $53 million in revenues.

5.1.3 Environmental and Additional Economic Advantages

Negative environmental impacts are usually associated with industrial plants such as upgraders and refineries. Clearly, new facilities will pose economic challenges, which will be discussed below in the risks section. However, it is important to point out that a considerable environmental advantage is presented by the current BRIK project, carbon capture and storage (CCS).

Refineries produce CO_2 emissions. The current BRIK program involves a CCS component, which will capture approximately 3,500 tonnes of CO_2 per day (1.27 million tonnes per year) during the first phase of the Sturgeon Refinery's operations. The CO_2 will be sold in order that companies may use it to inject into oil wells in central Alberta to enhance oil recovery in this region. As NWU indicated to the Committee, "[w]e think that in central Alberta you can put a billion tons of CO_2 in the ground, and it will stay there."

In addition to capturing over 1 million tonnes of CO_2 per year which would otherwise escape into the environment, there are considerable economic benefits to be reaped from CCS. The development of a

pipeline system to transport the CO_2 will be paid for through payment received by selling CO_2 for enhanced oil recovery elsewhere in Alberta. As NWU explained,

> the recovered oil that we get out of the ground pays the cost of doing this, so it's not something where we have to write cheques to get the CO_2 in the ground. Everybody else in the world has to pay to manage their CO_2. Here we get oil out that pays the cost [for the pipelines required to move the CO_2 from the refinery site to wells in central Alberta].

Furthermore, more conventional crude oil produced through enhanced oil recovery equates to increased Government royalties on the crude produced.

An additional economic benefit concerns the marketability of relatively low-carbon fuels produced in refineries with CCS capabilities as compared with the marketability of value-added products produced in a conventional refinery or of WCS. As indicated in section 4.2.4 above, the low-carbon fuel standard (LCFS) was enacted in California and proposed by other states in the American northeast. The LCFS requires refiners and fuel sellers to track the GHG life-cycle intensity of all the fuels they sell to ensure that the average intensity is in compliance with the declining GHG emissions targets each year. For this reason, purchasers are dissuaded from procuring oil from high carbon producing oil sands unless the oil sands can demonstrate lower emissions. The diesel produced from the Sturgeon Refinery will be ultra-low sulphur, "a clean-burning diesel fuel ... defined by Environment Canada to have a maximum sulphur content of 15 parts per million." This product will also address concerns about high-carbon emission because all of the CO_2 produced at the refinery stage will be captured and sequestered. NWU explained:

> What happens if we refine SAGD production and make it into diesel ... [Y]ou can drive and emit a ton of CO_2 3,200 kilometres if you just make SAGD into diesel fuel. If you do what we're doing [and capture the CO_2] ... you can go 4,100 kilometres before you emit a ton of CO_2. So we go from being the worst diesel in terms of embedded CO_2 content in the world to the best. We think that's a pretty significant proprietary advantage, and we make money when we do it.

5.1.4 Markets for Alberta Bitumen

Another key benefit that can be derived from additional refining and/or upgrading of royalty bitumen in Alberta is that more processing facilities will provide an additional market for raw bitumen. This is important because bitumen production, as noted, is set to increase considerably over the next 10 to 15 years. Furthermore, currently there is an oversupply of Alberta bitumen, in the form of WCS, in the American Midwest, which cannot expeditiously get to market. Added processing facilities will provide an outlet for this bitumen, taking supply off the market and therefore improving prices for WCS. Working in tandem with the strategy of increasing pipeline capacity for delivery of WCS to deepwater ports, increased upgrading/refining capacity in the province would assist in finding additional markets for Alberta bitumen.

5.2 Key Risks

5.2.1 Economic Risks

a) Narrowing Price Spread between Bitumen and Value-added Products

Given that the differential between the price achieved for a barrel of bitumen and a barrel of a value-added product (whether diesel, jet fuel or synthetic crude oil) is a major consideration in the economics of BRIK, an increase in the price of bitumen presents a risk to the economic viability of a BRIK program. On the other hand, when bitumen prices are relatively high, the Government stands to earn more bitumen revenue on the sale of its "non-BRIK" bitumen on the open market. The risk of rising bitumen prices is a reminder that while additional BRIK programs assist in diversifying Alberta's petroleum portfolio, there is a downside to upgrading or refining too much bitumen through the BRIK program as this may result in forgone revenue in terms of the sale of relatively high-priced bitumen on the open market.

b) Labour Cost Overruns

Rising labour costs also present a real risk to additional BRIK programs. As is well known and as mentioned by a number of presenters to the Committee,* Alberta has faced labour shortages of highly skilled workers in the recent past, especially in the petroleum industry. While labour shortages abated during the global recession of 2007-2008 and labour costs correspondingly declined, costs have again been on the rise since 2009 because of growing investment in the oil and gas sector and the resulting increased labour demands. As noted above, labour costs are expected to increase five per cent per year until 2015. Over a longer period, from 2013 to 2017, with so many new projects under way or expected to commence, 15,000 jobs are expected to be added in the Canadian oil and gas sector, with the majority of these jobs being created in Alberta, where the labour market is already very tight. Wage increases for the industry are estimated to expand at an annual rate of 3.6 per cent over the period.

In North America, according to IHS CERA, construction labour "typically makes up to 30 per cent of a project's total cost." With a tight supply of labour and high wages, that are projected to increase considerably over the near term, proponents of additional projects in the sector run the risk of cost overruns, which could greatly hinder the economic viability of the projects themselves and potentially contribute to wage inflation elsewhere in the province. Hence, it is imperative that proponents of new projects undertake a strategy to mitigate the risk of wage inflation by planning to ensure that cost overruns are avoided, much like what NWU has spent the last number of years and $800 million doing. Furthermore, it is incumbent on the Government of Alberta to stage future BRIK projects so that the labour supply is not further impinged upon within the industry, exacerbating labour shortages and cost inflation.

c) Regulatory Environment and the Timeliness of the Next BRIK Project

Currently there are risks associated with the time it takes to achieve regulatory clearance so that an upgrader or refinery project may be approved for construction and operation. Regulatory delays are of significance because they extend construction timelines, delaying the already considerable time it takes before a refinery or upgrader is ready to produce its products and achieve a return on investment. The North West Redwater Partnership sought regulatory approvals for its project in 2004 and received approvals for all three phases in 2007. The issue is that Alberta companies are selling their products in a competitive world in which other jurisdictions are prepared to give regulatory approval in a considerably shorter period. As a result, Alberta companies may be put in a disadvantageous position. As a representative of the AIHA explained,

> when we're competing with regions like Louisiana and Texas, companies are telling us that they can get their full environmental approvals done in six months down there. Here it takes a minimum of one and a half to two years. In the case of Total, that went through a full EIA [environmental impact assessment], it took almost three and a half years to get that.

In addition to delaying the time it takes before a company can start to achieve a return on its investment, regulatory delays also put projects at greater risk of cost overruns because not only do current labour costs continue during the period of delay but also the project, especially in the Alberta context, becomes more susceptible to labour cost inflation and capital cost inflation and therefore to cost overruns. The economics of the project may be negatively affected as a result.

Stakeholders agreed that improving regulatory effectiveness and efficiency is of great importance. CAPP asserted that it fully supports

* Teedrum, as noted above, submitted to the Committee that financing an upgrader or refinery is not the greatest challenge faced in getting a plant operational. Rather, having "the proper mitigation for cost overruns" is the most salient cost issue during a project's development phase.

ongoing efforts with the current regulatory enhancement program, otherwise known as a single regulator, and development of the joint environmental monitoring program between Alberta and the federal government. Both of these regulatory enhancements plus other measures support the industry's licence to operate in a well-regulated environment.

There is a related risk associated with delays in the development process. It has to do with the need for Alberta value-added producers to come online as soon as possible in order to compete with other jurisdictions that are vying with Alberta to supply markets with petroleum products. While market demand is increasing for some finished petroleum products in North America and for a diverse range of petroleum products in Asia (especially in India and China and especially for diesel), heavy oil refining capacity is beginning to increase in jurisdictions outside of Alberta. The implication is that if heavy oil refining capacity is developed in refining centres in the United States and Asia before it can be further developed in Alberta, through BRIK or otherwise, then Alberta may not be able to secure markets in these areas for its value-added products. A representative of the University of Alberta discussed, in the University's presentation to the Committee, the issue associated with excess capacity in heavy oil refining. Dr. Emilson Silva argued that "the Midwest is building up some refining capacity for heavy oil. Also, in California and Washington they have some capacity for heavy oil. ... Then, most importantly, is China. China already has a lot of capacity and is also planning to expand their capacity quite a bit in the next few years."

d) Opportunity Costs and Financing other Projects

The motion that the Standing Committee on Alberta's Economic Future passed to commence its review of the effectiveness of the BRIK program and the opportunities for another like program included, within the Committee's scope of review, the "economic trade-off of increased investment in bitumen upgrading in Alberta compared to investment in other sectors." Put in another way, the question is whether there is enough capital investment funding to support both additional upgrading/refining in the province and continued financing of oil and gas extraction.

When asked this question, stakeholders who presented to the Committee did not venture a specific or detailed response, quite possibly because of the speculative, even counterfactual nature of the question. The presenters from the University of Alberta did mention that "capital investment shortages" are likely to exist in the future, implying that there will be limited financing for a number of capital projects in the oil and gas and other sectors in Alberta. More specifically, a University of Alberta presenter, concluding that more study on the issue is required, stated:

> In terms of increased bitumen upgrading versus other public investments in Alberta currently there are some investments in education in green R and D programs, and these types of programs may in fact yield higher social returns than the BRIK program or increasing the BRIK program, so one would have to take those into account in computing. Of course, you know, that requires an analysis in which one would look at: what are the potential returns from those investments compared with the potential returns from the BRIK program?

5.2.2 Environmental Risks

The Committee also undertook to assess the environmental risks of increased bitumen upgrading in the province. The environmental benefits of CCS have already been discussed above, but additional environmental considerations must also be assessed.

The process of refining releases various chemicals into the air, including "higher emissions of air pollutants like SO_2, NOx," as a University of Alberta presenter pointed out, notwithstanding the creation of pure CO_2, which, in the case of the Sturgeon Refinery, will be disposed of in what is understood to be an environmentally sustainable way. Moreover, refining uses large amounts of water, and the refining of heavy oil, and especially bitumen, means the need for increased volumes of water for processing, and thus more water that needs to be treated at the end of the industrial process. Heavy oils and bitumen

contain higher levels of harmful metals such as nickel and vanadium, which must be disposed of by the operator through the use of catalysts.

Other environmental considerations include the land-use footprint; that is, how much land is disturbed in order to construct and operate an upgrader or refinery. In addition, with increased production of oil products, the risk of a spill increases. NWU indicated that cleaning up a spill of diesel or other light fuel is much easier than cleaning up a heavier oil spill such as a bitumen spill, a contention which seemed to be confirmed by the University of Alberta: "The spilling of bitumen is different than the spilling of the refined product because of the way it reacts after it is spilled. Those issues need to be assessed."

6.0 RECOMMENDATIONS

In evaluating all the factors that went into the Committee's study, the Standing Committee on Alberta's Economic Future concludes that even though the economics are unique to each business situation in the BRIK program and that this should be taken into consideration before moving forward with government action, there is a case to be made for an increase in the quantity of bitumen to be upgraded or refined in Alberta. The Committee submits that a measured and strategic increase in the amount of Crown royalty bitumen upgraded or refined in Alberta should occur in order to continue to achieve the goals associated with the BRIK program, which are as follows:

1. Foster value-added oil sands development (the Government can use its royalty bitumen to stimulate economic growth by facilitating the development of upgrading facilities in Alberta, which has a positive impact on economic sustainability in the province and allows the Government to hedge its bitumen commodity risk).

2. Enhance the transparency and liquidity in the bitumen market. (Bitumen is difficult to market. Product quality varies depending on where it is produced, and diluents need to be added to it before it can be transported in a pipeline. Currently most bitumen is upgraded by the same company that produces it or an affiliate, making the market for bitumen quite small. The BRIK program is designed to make available more buyers and sellers of bitumen and produce a more transparent and liquid market, which will assist the Government in getting better value for its royalties.)

3. Share in the differential gains, and risks, between synthetic crude oil and bitumen. (Bitumen normally sells for less than synthetic crude oil. The Government assumes some of the risk and cost associated with processing bitumen but should benefit from being able to sell the upgraded bitumen for a higher price than it would if it sold the nonupgraded bitumen.)

Accordingly, the Standing Committee on Alberta's Economic Future recommends that

1. **the Government of Alberta implement additional appropriate BRIK programs without delay in an ongoing effort to sustain and enhance the diversification of Alberta's petroleum product portfolio; that the programs, where feasible, include a carbon capture and storage (CCS) component to take advantage of the environmental and economic benefits which CCS offers; and that such future projects be located, where possible, in close proximity to planned CCS infrastructure;**

2. **the Government of Alberta ensure that future BRIK initiatives are implemented and operational over the long term and that future regulations are predictably streamlined under the *Responsible Energy Development Act* and the current regulatory enhancement project in an effort to enable proponents to achieve as much certainty and reliability as possible, thereby enhancing opportunities for economic viability;**

3. **the Government of Alberta immediately proceed with additional BRIK programs in order that the proposed facilities be operational as soon as feasible, with the objective being to provide value-added petroleum products to compete with competitors from other jurisdictions.**

7.0 ACKNOWLEDGEMENTS

The Committee wishes to acknowledge the valuable contribution of the many Albertans and others who submitted written briefs and/or who appeared before the Committee.

The Committee also wishes to acknowledge the valuable assistance of Legislative Assembly Office support staff.

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8.0 STAKEHOLDER CONSULTATION

As part of the study of the BRIK program the Standing Committee on Alberta's Economic Future identified potential stakeholders and invited these organizations to make submissions to the Committee. A total of six written submissions and nine oral presentations on the BRIK program were received by the Committee. A list of presenters is provided in Appendix C to this report.

A number of issues were raised in the presentations to the Committee with respect to the BRIK program, including

- the challenges and opportunities of increasing bitumen upgrading in Alberta;
- better access to markets in order to maximize the price obtained for petroleum resources;
- price differential for light and heavy oil and the role that the differential should play in decisions regarding increased bitumen upgrading in Alberta;
- environmental concerns and the Alberta climate change policy, including carbon capture and storage; and
- the need for increased efficiency in the regulatory review process for oil sands and upgrader developments.

APPENDICES

APPENDIX A: MINORITY REPORT – KENT HEHR, MLA

Kent Hehr, MLA
Calgary-Buffalo

As the Alberta Liberal Caucus representative on the Standing Committee on Alberta's Economic Future, I very much appreciated the opportunity to participate in the examination of the province's Bitumen Royalty in-Kind (BRIK) program. Given the ongoing debate surrounding the economics of bitumen upgrading in Alberta and government incentivizing of same, this is a discussion that was sorely needed and long overdue. I found the presentations to the committee extremely useful in helping to paint a clearer picture of the challenges, missed opportunities and potential for future provincial government involvement in the energy sector.

Above all else, the BRIK program review solidified in my mind that there are no easy answers when it comes to upgrading in Alberta; there are undoubtedly benefits and risks in both using public policy to try to encourage new upgrader construction here and in having the province remain on the sidelines while our bitumen is shipped to other jurisdictions. Be that as it may, I have come to the conclusion after reviewing all the presentation materials that a moderate, balanced and targeted approach to government involvement in bitumen upgrading and potentially elsewhere in the energy sector offers the best way for Alberta to reach its full economic potential.

Since selling the last of its remaining shares in the Alberta Energy Company over two decades ago, the Alberta government has been content to largely sit back and collect royalties from resource development. This is a needlessly passive approach to the energy sector that many would agree runs counter to the province's entrepreneurial spirit – a spirit that the Alberta Liberals believe government is just as capable of embodying as private industry under the right circumstances and environment. As former premier Peter Lougheed said, "Albertans must think like owners when it comes to the development of our resources." Sitting idly by does not embody this sentiment.

Albertans know and appreciate that the oil and gas industry, despite its inherent risks and volatility, is still largely a profitable enterprise that offers the potential for a high return on investment. It's time for Albertans to start benefitting more substantially from the province's leading industry by having their government get back into the energy game. While the BRIK program is a start, Alberta should be exploring other strategies and incentives to encourage further upgrader development and consider pursuing an even greater equity stake in the energy industry beyond its involvement in the North West upgrader.

If proof is required as to why the province should be seriously considering this, we need look no further than the fourteen state-owned or government backed multinational oil companies that are already active in Alberta. Companies such as PetroChina and Statoil have investments or operations here precisely because the world needs our oil, we are politically stable and the rewards ultimately outweigh the risks. They know that, after paying their royalties to the Alberta government, there are still substantial profits to be made that can be used for the further benefit of their citizens.

The corollary of this is that Alberta citizens are being shortchanged by their government's refusal to be anything more than a minor and increasingly reluctant participant in the province's most important and dynamic industry. Ideology alone is not a good enough reason to preclude our government from seeking out further strategic opportunities in the energy sector.

Admittedly, the government's political messaging over the course of the last twenty years has been: "were out of the business of being in business." And while this may have contributed to the Tories' electoral success, it has not been in the best interests of the long-term development of our province.

I was troubled to learn that, just a few short years ago, no fewer than eight upgrader projects were planned for Alberta's Industrial Heartland area northeast of Edmonton – which has been dubbed "upgrader alley" by some. That moniker proved to be a bit premature, however, as one by one those projects were shelved until only one remained. On top of that, we recently learned of the cancellation of Suncor Energy's Voyageur upgrader, a project that the government had been extolling as an example of why it does not need to take any special measures to encourage upgrading here. And while Voyageur did not have a BRIK component, it nonetheless speaks to what might have been had the Alberta government incentivized its construction in some manner. The bottom line is that all Albertans are affected in some way – either through lost royalties, jobs or economic spinoffs – as a result of those upgraders not being built.

It is not my contention that government should have blindly intervened to save all those projects from cancellation, as clearly many were not economic. Rather, I am suggesting that as a province we need to acknowledge that it would have been beneficial, desirable and in the public interest for at least some of those projects to proceed and, rather than sitting idly by, the government should have been willing to employ reasonable and targeted measures to try to encourage the survival of the most viable projects. In other words, government can and should sometimes be the great equalizer when the fate of something as important as an upgrader project is balanced on a razor's edge.

In my estimation, the province seriously erred in not seeing at least three of those cancelled projects make it to completion. Since it didn't then, it should now champion their construction by offering incentives or promoting itself as a possible equity partner. If the government is unable to broker deals with the private sector to get these built, it should investigate the feasibility of doing this either jointly with one or more provinces or on its own through the creation of a provincial bitumen Crown corporation.

In summary, the BRIK program, being the primary focus of this report, is one that I believe should be continued, expanded and supplemented to try to encourage new upgrader construction in Alberta's Industrial Heartland area. We should also task Alberta Energy with the mandate of seeking out new strategic partnerships and opportunities to enable taxpayers to benefit even more substantially from our oil and gas industry. Wielded in the correct manner, public policy instruments such as BRIK can be an extremely useful and effective tool to help the province reach its full economic potential. We should not be afraid to use government resources to help fuel growth when the private sector either can't or won't.

Governments have the unique ability to look past quarter to quarter financial results and plan for the long term. In my view, we have not done this over the last twenty-five years, and it is time that we start taking a more active approach in developing our resource sector to benefit Alberta citizens.

APPENDIX B: MINORITY REPORT – DAVID EGGEN, MLA

David Eggen, MLA
Edmonton-Calder (ND)

1. Introduction

The NDP Opposition caucus agrees with the Standing Committee on Alberta's Economic Future regarding the need to review the BRIK (Bitumen Royalty-in-Kind) Program, within the broader scope of examining potential opportunities and challenges facing all future bitumen upgrading in Alberta.

However, the report fails to expand the scope of its investigation to include possible government incentives to encourage increased bitumen upgrading. This prevents it from examining how royalties could be used to build the economic case for upgrading and refining. The report also fails to analyse how the government's unmitigated support for unsustainable levels of oil sands extraction could pose a threat to the future expansion of refining capacity in our province. Finally, the report fails to sufficiently examine the environmental factors which could, when considering the public interest, pose risks to any future expansion of refining and upgrading in Alberta.

The Alberta NDP believes that over the long-term, a sufficient royalty regime coupled with effective public policy to promote bitumen upgrading and refining in the province could render the bitumen-in-kind program obsolete in the long-term. Consequently, it provides qualified support for all of the recommendations found in the report.

2. Failure to Examine Government Incentives to Encourage Increased Bitumen Upgrading

From the outset of this study, the PC dominated committee chose to exclude the examination of government incentives to encourage increased bitumen upgrading in Alberta. This is particularly disappointing given the fact that incentives are a widely used and often effective mechanism for encouraging industrial behaviour in developed countries.

The exclusion of this important aspect of government policy from the scope of this study allowed the majority of members to sideline any discussion of Alberta's royalty system in encouraging bitumen upgrading and refining. This was likely done for political reasons as the PC government has committed itself to an agenda that refuses to examine this topic despite the fact that recent polling information shows that a majority of Albertans are in favour of raising royalties. This is a significant limitation of this report.

The Alberta NDP Opposition believes that the government should examine how a differential royalty system on bitumen and upgraded petroleum products could be implemented in order to encourage value added upgrading in Alberta. Such a measure would create clear financial incentives for producers to upgrade and refine products in Alberta. These measures should be considered within the context of a need for the Alberta government to re-examine its policy of maintaining extremely low bitumen royalties in order to promote rapid expansion of oil sands extraction. The Alberta NDP Opposition believes that the oil sands industry in Alberta has reached a level of maturity whereby such low royalties are no longer needed and are in fact detrimental to the public interest.

Increasing bitumen royalties would increase government revenues which could be directed towards public policy objectives rather than private interests. It would also help achieve the committee's recommendation that the Government of Alberta consider implementing additional BRIK programs, given that increased royalties would augment the amount of bitumen-in-kind the government receives on a yearly basis. Moreover, this would be achieved without necessarily putting pressure on industry to increase production, which could have a negative impact on labour cost inflation, among other construction cost increases economy wide.

The Alberta NDP believes that over the long-term, a sufficient royalty regime coupled with effective public policy to promote bitumen upgrading and refining in the province could render the bitumen-in-kind program obsolete in the long-term.

3. Examining All Economic Influences on the Bitumen Upgrading Industry

One of the areas of concern for the committee was that the expansion of oil sands upgrading and refining should not have an undue negative impact on inflation within the labour and other materials markets in Alberta. To these ends, the committee recommended that "the Government of Alberta stage the implementation of future BRIK programs in the interest of avoiding the negative impacts of labour cost inflation, among other costs increases". They also recommended that ""the Government of Alberta ensure that future BRIK programs are implemented and operational over the course of the long-term future and that a stable, predictable, and efficient regulatory process be put in place, all in an effort to enable proponents to achieve as much certainty and reliability as possible, thereby enhancing opportunities for economic viability". The Alberta NDP Opposition agrees with these recommendations with the caveat that they must also be applied to the oil sand extraction industry as well.

By neglecting to look at how the current government's failure to moderate the growth of the oil sands to a sustainable level has influenced such things as the previously harmful levels of inflation in the economy and the present oversupply of bitumen on the market, this report is unable to identify any steps to mitigate similar circumstances from occurring in the future. Failure to address these issues could negatively impact the economic viability of further upgrading and refining efforts. This inconvenient truth was likely overlooked by the committee for political reasons given that they do not wish to have their record of unfettered support for massive booms in oil sands expansion scrutinized. Similarly, the impact that raw bitumen pipelines exporting to other markets may have on the economics of upgrading in Alberta were also ignored.

The Alberta NDP Opposition believes that a balanced approach between oil sands extraction and upgrading / refining is needed to ensure long-term prosperity for Alberta. Managing growth in both of these sectors is necessary. Only by moderating the pace of oil sands extraction to a sustainable level can the government ensure that all other industries in Alberta, including the refining and upgrading industry, has "as much certainty and reliability as possible, thereby enhancing opportunities for economic viability", as the committee desires for the upgrading and refining sector. We believe it is simply wrongheaded for a government to wish to manage the growth of the refining sector in order to prevent undue economic and social impacts while it encourages the extraction sector - with a history of boom-and-bust growth having harmful effects on the environment, society and the economy – to grow as quickly as possible. At the same time, ensuring sustainable development in all areas of the economy will likely result in a case where everyone benefits from economic prosperity, including those on fixed incomes - who have been hurt by previous economic booms. Such efforts would also go a long way to reverse the trend of increasing economic inequality in Alberta.

4. Ending Subsidies for Carbon Capture and Storage

The report's first recommendation supports the growth of the BRIK program while at the same time asking that it contain an element of carbon capture and storage (CCS). While the Alberta NDP Opposition is not opposed to the use of CCS technology in principal, with the caveat that it is still as of yet an unproven technology, it is opposed to the Government of Alberta's insistence on providing billions of taxpayer's dollars to private industry in order for it to be develop. We believe that industry should be responsible for developing this technology on its own. The applicable recommendation is thus given qualified support.

5. Other Barriers and Risks to Increased Bitumen Upgrading

As many reader of this report will quickly recognize – while the report touches on a number of significant topics, it does not delve sufficiently deep into any one of them to provide much in the way of substantially new information towards the public debate on how to encourage more bitumen upgrading in the province.

While there are certainly many topics the report touched on that are of public interest, the following are of particular interest to the NDP Opposition Caucus given that they are unlikely to be addressed by a PC dominated committee who may be interested in trying to glaze over the environmental record of the government:

a) Mention was given to the fact that the high carbon footprint of bitumen is a hindrance to its marketability in places such as California. The only examination of methods in which the carbon footprint of bitumen could be reduced focused on CCS - in which the PC government is heavily invested in terms of both political and financial capital. Other possible methods for reducing the carbon footprint of bitumen where conveniently overlooked. These include:
    i. Moving to the use of renewable electricity for processing and upgrading - such as importing hydro from Manitoba or northern Alberta or using other green technologies
    ii. Drastically reducing the Province's reliance on coal fired electricity generation
    iii. Strengthening Alberta's greenhouse gas emissions targets and mandating the use of the best available technologies for air quality management as standard practice – Alberta has recently admitted that it will not meet even its own modest targets
    iv. Strengthening Alberta's carbon tax or implement a cap-and-trade system – Alberta's GHG regulations have not been strengthened since they were first introduced in 2007

b) The report makes mention of the fact that new refineries would require massive amounts of water, and that this could be a limiting factor in any new project. What the report fails to assess is whether or not sufficient quantities of water exists in the two areas most likely to see new refineries built. With regards to the Ft. McMurray region, the report fails to note that the Government of Alberta has yet to update phase I of the Water Management Framework for the Lower Athabasca River, which was due by the end of 2012. Phase two of the framework is meant to include legally binding Ecological Base Flow, which would prevent water from being withdrawn from the river if it reaches a certain depth. Without this measure in place it is not possible to identify whether or not any new water withdrawals would be in the public interest. Delay on this measure suggests that the government is either unable or unwilling to implement such regulations.

Without a more committed approach by the Alberta Government to issues of environmental stewardship we cannot expect to mitigate the environmental risks that are posed by the expansion of bitumen refining in our province. Similarly, without concerted action we cannot convince the world to trust that we both walk the walk and talk the talk when it comes to environmental stewardship. The decimated caribou population in Northern Alberta and industry's failed water monitoring program (RAMP) are but two example of this government's abysmal record on the environment. It is this record that, when compared with the government's rhetoric about environmental leadership, is reducing the trust that potential and current customers have in the sustainable production of our products. It is this issue of trust that should also be identified as a risk to the development of our bitumen upgrading industry when we consider, as the report did, that many of our customers expect much more stringent performance when it comes to the carbon footprint and environmental costs of bitumen production.

APPENDIX C: SUBMISSIONS TO THE COMMITTEE

The following organizations made written submissions and oral presentations as part of the Committee's review of the BRIK program.

Written Submissions

NAME	ORGANIZATION
Ken Horn, President	Teedrum Inc.
Dr. Columba Yeung, Chairman and CEO	Value Creation Inc.
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These transcripts provide a substantially verbatim account of the stakeholder presentations to the Committee between November 28, 2012, and February 26, 2013.