

FISCAL OPTIONS FOR ALBERTA OIL SANDS

May 30, 2007
Pedro van Meurs

Important note:

This report is being provided to the Department of Energy under a consulting contract with Pedro Van Meurs.

The report provides an evaluation of various fiscal options for changing the regime for the Alberta oil sands. The report represents the findings, analysis and interpretation of the author and does not necessarily reflect the views of the Minister of Energy or Department of Energy.

It is intended to provide additional information for consideration by the Royalty Review Panel.

The Department of Energy welcomes comments on this report by third parties.

EXECUTIVE SUMMARY

This report deals with a review of the fiscal system for Alberta oil sands.

The central objective of the royalty review is to ensure that Alberta receives its fair share from the oil sands developments. The fair share is the maximum that can be obtained from the oil sands operations based on certain assumptions about minimum levels of profitability on the part of the investors.

This fair share depends on a number of factors, such as:

- **The relationship between costs and revenues**
- **The minimum level of profitability and structure of profitability, and**
- **The timing of the cash flow**

For oil sands developments, the relationship between the fair share and the ratio between costs and revenues is unfortunately very strong. This is because of the relatively long payout time of the investments. For instance, if an investor would need a 13% IRR at a US \$ 40 per barrel WTI for an oil sands scenario, and costs are US \$ 22 per barrel or 55% of the price, the fair share would have to be 0%. The investor would need the entire \$ 18 per barrel margin to achieve his objective of a 13% IRR. However, if costs are only US \$ 13.3 per barrel or 33% of the price, the payout time is now fast and the margin required to achieve 13% IRR is low. Therefore, the fair share could be more than 80% of the pre-tax profits.

The core strategy in achieving a fair share for Albertans is therefore to concentrate on the lower cost oil sands first and to bring costs down over time. The strong local cost escalation that occurred in Alberta over the last few years has created an environment in which the fair share based on today's costs is relatively low. The high local cost escalation has "robbed" Albertans of the opportunity to obtain a significantly higher fair share in the near future.

In order to obtain a higher fair share over time, the core strategy would have to be to bring cost down by lowering or reversing the strong Alberta cost escalation. This can be done by lowering the rate of development modestly, through discouraging the investments in excessively costly upstream projects.

Another important strategy that has been identified for Alberta is to stimulate upgrading. Given the fact, that the core strategy is to bring the rate of development down, it would be counterproductive to lower the overall level of government take in order to stimulate upgrading. Therefore, upgrading should be stimulated without loss of overall government revenues from the oil sands sector.

This means that fiscal stimulus for upgrading can only be recommended as part of an overall package where Alberta obtains a higher fair share on the upstream activities.

A policy aimed at providing fiscal incentives for upgrading could result in a very low share for Alberta from upgrading operations. As a result, most of the share for Albertans would come from the upstream in this case. This in turn creates a situation where Albertans will receive their fair share from resource development irrespective of whether the bitumen are actually upgraded in Alberta or not.

In this report new concepts are developed for an Alberta fiscal regime for oil sands based on the premise of four policy objectives:

- Stimulate upgrading of bitumen without lowering overall Alberta revenues from oil sands
- Discourage excessively high cost upstream projects as part of a policy to modestly reduce the overall level of activity
- Create a higher share for Alberta under high oil price conditions, and
- Increase government take over time as government policy is successful in creating more divisible income by helping to reduce costs through a modest reduction of activity and fiscal features that encourage cost reduction.

In order to implement the above policies three “Base Packages” and three “Fiscal Options” were designed and evaluated. The three Base Packages provide for different scenarios on upstream base royalties and credits for upgrading. The three “Fiscal Options” are for different concepts to achieve a higher share for Alberta under high price conditions.

The Base Packages and Fiscal Options all contain base royalties and NPS features that are based on bitumen values. An important pre-condition for adopting a royalty and NPS system based on bitumen values is that a transparent and effective methodology is created to determine bitumen prices. Also a more elaborate accounting procedure needs to be implemented in order to properly allocate, review and audit cost for NPS calculations.

In order to achieve the above objectives, it is recommended that the base royalty would become deductible for NPS purposes and the LTBR for NPS calculations would be eliminated.

The three Base Packages (“BP”) are as follows:

- BP-1: No stimulus for upgrading
- BP-2: Modest stimulus of upgrading
- BP-3: Strong stimulus for upgrading

Under BP-2 and BP-3 the stimulus for upgrading is achieved through a royalty credit on upgrading capital expenditures. At the same time the base royalty is increased in order to achieve the same level of overall profitability and maintain overall government revenues.

Three Fiscal Options were designed and evaluated. They have as their objective to create a system that is progressive with price, while discouraging investment in excessively costly upstream projects.

The three concepts for the Fiscal Options (“FO”) are as follows:

- **FO-1: Create a new tax that is price sensitive and linked to WTI prices in order to reduce the risk exposure for Alberta of low bitumen prices.**
- **FO-2: Create a sliding scale for the NPS rate based on profitability expressed as the ratio of cumulative revenues over cumulative expenditures and add a new tax to discourage excessively costly upstream projects.**
- **FOP-3: Create a sliding scale for the NPS rate based on price levels and increase rentals significantly on oil sands.**

Any of the nine combinations of a Base Package and a Fiscal Option would be a recommendable new core fiscal system for Alberta oil sands and would result in achieving the first three objectives that were identified above.

A number of variations can be recommended for consideration with respect to each of the nine core fiscal packages. These variations are the following:

- **Higher rentals can be added to FO-1 and FO-2.**
- **Lower the provincial corporate income tax rate and increase the NPS rate correspondingly.**
- **Instead of a new tax to discourage excessively costly upstream projects under FO-2 one could levy a provincial property tax on oil sands on a per barrel basis.**

In general higher rentals can be recommended in order to ensure that Alberta is reasonably compensated for the apparent high external costs related to oil sands developments.

In addition to the above fiscal systems it can be recommended that the objectives of stimulating upgrading and reducing the level of development are achieved by basing bids for leases on the best work program proposal rather than a bonus bid. Also the rate at which acreage is made available should no longer be market driven but should be a rate determined by the Alberta government based on permitting only a limited number of projects over time. These projects can also be selected based on the best work program proposal.

It is recommended to introduce a modest increase in government take immediately for all existing projects and projects under development, possible in combination with an increasing base royalty over time for existing projects.

In addition, a stronger sliding scale can be established that increases the base royalty tied to specific calendar years. However, this scale would apply to new projects only. The rate applicable to the project would then be determined by the date of approval of the development plan and would be fixed for the duration of such projects or could also further increase over time.

This report is aimed at fiscal issues. However, it should be noted that it is possible to slow down the rate of development through regulatory means and through changes to the bid system for oil sands leases.

Table of Contents

| | |
|--|-----|
| EXECUTIVE SUMMARY | 2 |
| 1. INTRODUCTION | 8 |
| 1.1. Preliminary Comments | 8 |
| 1.2. Policy Objectives | 8 |
| 2. ECONOMIC FRAME WORK AND PROJECT SELECTION..... | 10 |
| 2.1. Economic framework and project selection..... | 10 |
| 2.2. Economic Fiscal Parameters..... | 11 |
| 2.3. Divisible Income of the Upgrading operation | 12 |
| 3. DISCUSSION OF POSSIBLE NEW FISCAL FEATURES | 19 |
| 3.1. Bonuses and regulatory process..... | 19 |
| 3.2. Rentals..... | 21 |
| 3.2.1. Rental amounts..... | 21 |
| 3.2.2. Rental distribution..... | 26 |
| 3.3. Base Royalty | 26 |
| 3.3.1. Making the base royalty deductible for NPS purposes..... | 26 |
| 3.3.2. A higher flat base royalty..... | 27 |
| 3.3.3. A price sensitive royalty | 31 |
| 3.3.4. A base royalty based on SCO or WTI prices..... | 36 |
| 3.3.5. Upgrading credits..... | 37 |
| 3.4. Net Profit Sharing Royalty (“NPS”)..... | 37 |
| 3.4.1. Remove the LTBR | 37 |
| 3.4.2. Base NPS on R/C ratio..... | 41 |
| 3.4.3. Base NPS on R/C ratio and cost limit..... | 46 |
| 3.4.4. Base NPS on IRR based scale..... | 51 |
| 3.4.5. Base Upstream NPS on SCO or WTI prices..... | 56 |
| 3.5. Provincial Corporate Income Tax (“CIT”) | 57 |
| 3.5.1. Lower Provincial CIT rate | 57 |
| 3.5.2. A tax credit..... | 63 |
| 3.6. Supplemental Oil Sands Tax (“SOST”)..... | 70 |
| 3.7. Provincial Property Tax | 70 |
| 3.8. Oil Sands Impact Tax (“OSIT”) | 75 |
| 3.9. Provincial Participation..... | 80 |
| 3.10. Summary of preliminary fiscal recommendations..... | 86 |
| 4. FISCAL OPTIONS | 87 |
| 4.1. Three Base Packages for increasing the upstream share and providing incentives for upgrading. | 87 |
| 4.2. Three Fiscal Options | 114 |
| 4.2.1. Calibration of the options..... | 114 |
| 4.2.2. Description of the three options..... | 115 |
| 4.2.3. Analysis of the three fiscal options..... | 116 |
| 4.2.4. Nine combinations of three Base Packages and three Fiscal Options | 138 |
| 4.3. Variations to the three fiscal options | 138 |
| 4.3.1. Description of variations..... | 138 |
| 4.3.2. Analysis of variations | 140 |

| | | |
|--------|--|-----|
| 4.4. | Increasing government take over time..... | 159 |
| 4.4.1. | Methods to increase government take over time and specific example based on Variation-1..... | 159 |
| 4.4.2. | Analysis of example of government take increase over time. | 161 |
| 4.4.3. | Alternative methods for increasing government take over time..... | 176 |
| 4.5. | Analysis of Cold Lake and Athabasca SAGD..... | 178 |
| 5. | CONCLUSIONS AND RECOMMENDATIONS | 179 |

MAIN REPORT

1. INTRODUCTION

1.1. Preliminary Comments

This report is provided at the request of the Department of Energy of the province of Alberta. The work is done under a consulting contract with Alberta.

The report contains an analysis of fiscal options for the Alberta oil sands. The purpose of the report is to serve as back ground to an evaluation of fiscal alternatives for the Royalty Review Panel.

This report is a follow up to two earlier reports entitled “Preliminary fiscal evaluation of Alberta oil sand terms (April 12, 2007) and “Comparative analysis of fiscal terms for Alberta oil sands and international heavy and conventional oils (May 17,2007)”

The economic analysis is based on information provided by the Department of Energy and from sources available to the consultant. The cost and revenue data for Alberta are similar to the ones published in Technical Royalty Report # 1 of the Department of Energy entitled “*Alberta’s Oil Sands Fiscal System - Historical Context and System Performance*”.

In view of the wide range of possible cost and price scenarios, the “fiscal map” methodology will be used. This approach was also followed by the Department to produce cost-price “maps” of the various results.

The “maps” are contained in an electronic data base provided to the Department. In this report certain tables were “picked” from this data base in order to illustrate the various fiscal issues. Table numbers in this report are therefore not sequential.

1.2. Policy Objectives

The previous report entitled “Comparative analysis of fiscal terms for Alberta oil sands and international heavy and conventional oils (May 17,2007)” reached the following overall conclusion:

“From the evidence of this report it can be concluded that a desirable new fiscal system for Alberta would be a system whereby the government take would increase with higher prices, but also with higher costs. A modest immediate increase in government take is possible. It would also be possible to increase the government take over time if the Alberta fiscal strategy would be successful in lowering costs.

In order to achieve these objectives new special taxes should be considered in addition to changes to the royalty system.”

Furthermore the government of Alberta has expressed the desire to enhance the upgrading of bitumen in Alberta.

Therefore the underlying premise of this report is that the Government of Alberta would have the following four policy objectives with respect to oil sands development:

- **Stimulate upgrading of bitumen**
- **Discourage excessively high cost upstream projects as part of a policy to modestly reduce the overall level of activity**
- **Create a higher share for Alberta under high oil price conditions, and**
- **Increase government take over time as government is successful in bringing costs down through the modest reduction of activity.**

The objective to stimulate upgrading of bitumen is from a fiscal perspective interpreted in this report as an objective that needs to be achieved **without loss of overall government revenues from the oil sands sector.** The reason for this interpretation is that there is also concern that the provincial economy is overheated. Therefore, providing additional overall fiscal stimulus, in general, would be rather counter-productive.

This means that a stimulus for upgrading can only be considered in the context of increasing the fair share for Alberta from the upstream operations.

The discussion of fiscal concepts will take place in two separate steps:

- The discussion of individual fiscal features in Chapter 3, and
- The discussion of specific fiscal packages representing different concepts in Chapter 4.

2. ECONOMIC FRAME WORK AND PROJECT SELECTION

2.1. Economic framework and project selection.

The economic framework is based on the same costs and revenue data as provided in the two earlier reports entitled “Preliminary fiscal evaluation of Alberta oil sand terms (April 12, 2007) and “Comparative analysis of fiscal terms for Alberta oil sands and international heavy and conventional oils (May 17,2007)”.

For purposes of the evaluation of the various fiscal options a single case “Mine+Upgrader” as defined in the earlier reports will be used.

The earlier reports concluded that the economics of the “SAGD+Upgrader” are very similar and therefore it does not seem necessary to evaluate both for this scoping study.

In order to be able to evaluate the effect of certain policies to stimulate upgrading in the province, the project was evaluated as follows:

- Mine only
- Upgrader only, and
- Mine+Upgrader jointly.

For the Mine project the revenues are based on the bitumen price and the bitumen production, which is cumulatively 2200 million barrels.

The Upgrader purchases 2200 million barrels of bitumen over the life time of the project and would produce 1870 million barrels of synthetic crude oil (“SCO”). The purchase costs of the bitumen are treated as variable operating costs in the model for the Upgrader cash flow.

In the joint Mine+Upgrader project the revenues are the sales of the SCO. The sales of the bitumen to the Upgrader are offset by the purchases of the bitumen by the Upgrader.

All cash flows are done on a fully consolidated basis for tax purposes. Certain restrictions on use of ACCA were not taken into account. Therefore, the total NPV10 of the integrated project is identical to the sum of the Mine project plus the Upgrading project.

The cost structure is identical to two previous reports. All costs were escalated with 2% per year. All fiscal calculations were done based on nominal dollars. Subsequently, **all results were represented in 2007 real Canadian dollars** by discounting for an assumed 2% inflation rate.

US and Canadian corporate income tax is calculated on an incremental basis assuming that the tax payer has sufficient taxable income to take deductions against.

2.2. Economic Fiscal Parameters

Profitability indicators

The same profitability indicators will be used as in the two earlier reports. For this analysis the following indicators were selected:

- Internal Rate of Return (IRR)
- Profitability Ratio discounted at 10% (PFR @ 10% or PFR10)
- Net Present Value @ 10% per barrel equivalent (NPV10/BOE)

The tables will be color coded in the same manner as in the previous report as follows:

| | |
|-----------------|---|
| Black | - the project has an IRR of less than 5% in real terms. |
| Red | - the project is typically unacceptable to the investor |
| Green | - the project is typically acceptable to the investor |
| Blue | - the project is attractive to the investor |
| Yellow (“Gold”) | - the project is very attractive to the investor |

It should be noted that “acceptable” or “attractive” are used here in an overall context relative to any other investment opportunity.

For instance, the following assessment was made for the IRR:

IRR assessment

| | |
|-------|--------|
| < 5% | Black |
| < 13% | Red |
| < 20% | Green |
| < 30% | Blue |
| > 30% | Yellow |

| | | |
|-----------------------|---------|-------------------|
| IRR < 5% | - black | |
| IRR < 13% | - red | - unacceptable |
| IRR < 20% | - green | - acceptable |
| IRR < 30% | - blue | - attractive |
| IRR of 30% and higher | - gold | - very attractive |

Attractiveness Indicators.

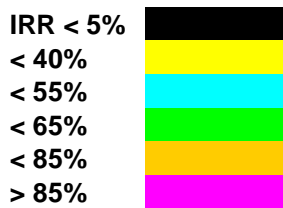
For this international comparison, three attractiveness indicators will be used that were also used in the earlier reports:

- Undiscounted government take
- Discounted government take @ 5%
- Government revenues (income + participation) per barrel.

General comment

The color coding of the maps will be done from an investor perspective. In general, the concept will be used that “gold” represents a low government take from an international perspective, “green” an average government take from an international perspective and “magenta” a high government take from an international perspective. For instance, the following assessment was made for the government take:

Gov Take assessment



| | | | |
|-----------------|----------|-----------|-------------|
| IRR | < 5% | - black | |
| Government Take | < 40% | - gold | - very low |
| Government Take | < 55% | - blue | - low |
| Government Take | < 65% | - green | - average |
| Government Take | < 85% | - brown | - high |
| Government Take | over 85% | - magenta | - very high |

2.3. Divisible Income of the Upgrading operation

In the April 12, 2007 report the economics of the Mine only and the Mine+Upgrader were discussed. However, the economics of the Upgrader itself were not provided.

The details of the Upgrader economics for the Current Terms are provided in Sections 3.5 and 4.1 of this report. Following is an overview of the split of the Divisible Income between Mine and Upgrader.

Gross Revenues

The following tables illustrate the gross revenue base on a per barrel basis.

For the Mine the values are displayed on a per barrel bitumen and a per barrel SCO.

Table 2.01

MINE

Gross Revenues (\$ Cdn) per barrel of bitumen

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$10.23 | \$10.23 |
| 30 | | | \$15.34 | \$15.34 | \$15.34 | \$15.34 | \$15.34 |
| 40 | \$20.45 | \$20.45 | \$20.45 | \$20.45 | \$20.45 | \$20.45 | \$20.45 |
| 50 | \$25.57 | \$25.57 | \$25.57 | \$25.57 | \$25.57 | \$25.57 | \$25.57 |
| 60 | \$30.68 | \$30.68 | \$30.68 | \$30.68 | \$30.68 | \$30.68 | \$30.68 |
| 70 | \$35.80 | \$35.80 | \$35.80 | \$35.80 | \$35.80 | \$35.80 | \$35.80 |
| 80 | \$40.91 | \$40.91 | \$40.91 | \$40.91 | \$40.91 | \$40.91 | \$40.91 |
| 90 | \$46.02 | \$46.02 | \$46.02 | \$46.02 | \$46.02 | \$46.02 | \$46.02 |
| 100 | \$51.14 | \$51.14 | \$51.14 | \$51.14 | \$51.14 | \$51.14 | \$51.14 |

Table 2.01B

MINE

Gross Revenues (\$ Cdn) per SCO barrel

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$12.03 | \$12.03 |
| 30 | | | \$18.05 | \$18.05 | \$18.05 | \$18.05 | \$18.05 |
| 40 | \$24.06 | \$24.06 | \$24.06 | \$24.06 | \$24.06 | \$24.06 | \$24.06 |
| 50 | \$30.08 | \$30.08 | \$30.08 | \$30.08 | \$30.08 | \$30.08 | \$30.08 |
| 60 | \$36.10 | \$36.10 | \$36.10 | \$36.10 | \$36.10 | \$36.10 | \$36.10 |
| 70 | \$42.11 | \$42.11 | \$42.11 | \$42.11 | \$42.11 | \$42.11 | \$42.11 |
| 80 | \$48.13 | \$48.13 | \$48.13 | \$48.13 | \$48.13 | \$48.13 | \$48.13 |
| 90 | \$54.14 | \$54.14 | \$54.14 | \$54.14 | \$54.14 | \$54.14 | \$54.14 |
| 100 | \$60.16 | \$60.16 | \$60.16 | \$60.16 | \$60.16 | \$60.16 | \$60.16 |

Table 2.11

UPGRADER

Gross Revenues per SCO barrel (\$ Cdn)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|----------|----------|----------|----------|----------|----------|----------|
| 20 | | | | | | \$22.73 | \$22.73 |
| 30 | | \$34.09 | \$34.09 | \$34.09 | \$34.09 | \$34.09 | \$34.09 |
| 40 | \$45.45 | \$45.45 | \$45.45 | \$45.45 | \$45.45 | \$45.45 | \$45.45 |
| 50 | \$56.82 | \$56.82 | \$56.82 | \$56.82 | \$56.82 | \$56.82 | \$56.82 |
| 60 | \$68.18 | \$68.18 | \$68.18 | \$68.18 | \$68.18 | \$68.18 | \$68.18 |
| 70 | \$79.55 | \$79.55 | \$79.55 | \$79.55 | \$79.55 | \$79.55 | \$79.55 |
| 80 | \$90.91 | \$90.91 | \$90.91 | \$90.91 | \$90.91 | \$90.91 | \$90.91 |
| 90 | \$102.27 | \$102.27 | \$102.27 | \$102.27 | \$102.27 | \$102.27 | \$102.27 |
| 100 | \$113.64 | \$113.64 | \$113.64 | \$113.64 | \$113.64 | \$113.64 | \$113.64 |

Table 2.21
MINE+UPGRADER
Gross Revenues per SCO barrel (\$ Cdn)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|----------|----------|----------|----------|----------|----------|----------|
| 20 | | | | | | \$22.73 | \$22.73 |
| 30 | | | \$34.09 | \$34.09 | \$34.09 | \$34.09 | \$34.09 |
| 40 | \$45.45 | \$45.45 | \$45.45 | \$45.45 | \$45.45 | \$45.45 | \$45.45 |
| 50 | \$56.82 | \$56.82 | \$56.82 | \$56.82 | \$56.82 | \$56.82 | \$56.82 |
| 60 | \$68.18 | \$68.18 | \$68.18 | \$68.18 | \$68.18 | \$68.18 | \$68.18 |
| 70 | \$79.55 | \$79.55 | \$79.55 | \$79.55 | \$79.55 | \$79.55 | \$79.55 |
| 80 | \$90.91 | \$90.91 | \$90.91 | \$90.91 | \$90.91 | \$90.91 | \$90.91 |
| 90 | \$102.27 | \$102.27 | \$102.27 | \$102.27 | \$102.27 | \$102.27 | \$102.27 |
| 100 | \$113.64 | \$113.64 | \$113.64 | \$113.64 | \$113.64 | \$113.64 | \$113.64 |

Capital and Operating Expenditures

Following tables provide the total of the capital and operating expenditures per barrel.

For the Mine the values are displayed on a per barrel bitumen and a per barrel SCO.

For the Upgrading case the total costs are displayed with and without the cost of the acquisition of the bitumen. The gross revenues per barrel for the Mine on an SCO basis plus the capital and operating costs of Upgrading provide for the total in Table 2.12B.

Table 2.02
MINE
Total expenditures (\$ Cdn) per barrel of bitumen
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|--------|--------|--------|
| 20 | | | | | | \$7.55 | \$6.27 |
| 30 | | | \$11.53 | \$10.25 | \$8.97 | \$7.69 | \$6.41 |
| 40 | \$14.23 | \$12.95 | \$11.67 | \$10.39 | \$9.11 | \$7.83 | \$6.55 |
| 50 | \$14.38 | \$13.10 | \$11.82 | \$10.54 | \$9.26 | \$7.97 | \$6.69 |
| 60 | \$14.52 | \$13.24 | \$11.96 | \$10.68 | \$9.40 | \$8.12 | \$6.84 |
| 70 | \$14.66 | \$13.38 | \$12.10 | \$10.82 | \$9.54 | \$8.26 | \$6.98 |
| 80 | \$14.80 | \$13.52 | \$12.24 | \$10.96 | \$9.68 | \$8.40 | \$7.12 |
| 90 | \$14.95 | \$13.66 | \$12.38 | \$11.10 | \$9.82 | \$8.54 | \$7.26 |
| 100 | \$15.09 | \$13.81 | \$12.53 | \$11.25 | \$9.97 | \$8.69 | \$7.40 |

Table 2.02B

MINE

Total expenditures (\$ Cdn) per SCO barrel

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|--------|
| 20 | | | | | | \$8.88 | \$7.37 |
| 30 | | | \$13.57 | \$12.06 | \$10.55 | \$9.05 | \$7.54 |
| 40 | \$16.75 | \$15.24 | \$13.73 | \$12.23 | \$10.72 | \$9.22 | \$7.71 |
| 50 | \$16.91 | \$15.41 | \$13.90 | \$12.39 | \$10.89 | \$9.38 | \$7.88 |
| 60 | \$17.08 | \$15.57 | \$14.07 | \$12.56 | \$11.06 | \$9.55 | \$8.04 |
| 70 | \$17.25 | \$15.74 | \$14.24 | \$12.73 | \$11.22 | \$9.72 | \$8.21 |
| 80 | \$17.42 | \$15.91 | \$14.40 | \$12.90 | \$11.39 | \$9.88 | \$8.38 |
| 90 | \$17.58 | \$16.08 | \$14.57 | \$13.06 | \$11.56 | \$10.05 | \$8.54 |
| 100 | \$17.75 | \$16.24 | \$14.74 | \$13.23 | \$11.72 | \$10.22 | \$8.71 |

Table 2.12

UPGRADER

Total expenditures (\$ Cdn) per barrel of SCO

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$6.71 | \$5.80 |
| 30 | | \$11.22 | \$10.31 | \$9.39 | \$8.48 | \$7.57 | \$6.65 |
| 40 | \$12.99 | \$12.07 | \$11.16 | \$10.25 | \$9.33 | \$8.42 | \$7.50 |
| 50 | \$13.84 | \$12.93 | \$12.01 | \$11.10 | \$10.18 | \$9.27 | \$8.36 |
| 60 | \$14.69 | \$13.78 | \$12.86 | \$11.95 | \$11.04 | \$10.12 | \$9.21 |
| 70 | \$15.55 | \$14.63 | \$13.72 | \$12.80 | \$11.89 | \$10.97 | \$10.06 |
| 80 | \$16.40 | \$15.48 | \$14.57 | \$13.66 | \$12.74 | \$11.83 | \$10.91 |
| 90 | \$17.25 | \$16.34 | \$15.42 | \$14.51 | \$13.59 | \$12.68 | \$11.76 |
| 100 | \$18.10 | \$17.19 | \$16.27 | \$15.36 | \$14.45 | \$13.53 | \$12.62 |

Table 2.12B

UPGRADER

Total expenditures (\$ Cdn) per barrel of SCO as well as purchase of bitumen

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$18.75 | \$17.83 |
| 30 | | \$29.27 | \$28.36 | \$27.44 | \$26.53 | \$25.61 | \$24.70 |
| 40 | \$37.05 | \$36.14 | \$35.22 | \$34.31 | \$33.40 | \$32.48 | \$31.57 |
| 50 | \$43.92 | \$43.01 | \$42.09 | \$41.18 | \$40.26 | \$39.35 | \$38.44 |
| 60 | \$50.79 | \$49.88 | \$48.96 | \$48.05 | \$47.13 | \$46.22 | \$45.30 |
| 70 | \$57.66 | \$56.74 | \$55.83 | \$54.92 | \$54.00 | \$53.09 | \$52.17 |
| 80 | \$64.53 | \$63.61 | \$62.70 | \$61.78 | \$60.87 | \$59.96 | \$59.04 |
| 90 | \$71.39 | \$70.48 | \$69.57 | \$68.65 | \$67.74 | \$66.82 | \$65.91 |
| 100 | \$78.26 | \$77.35 | \$76.43 | \$75.52 | \$74.61 | \$73.69 | \$72.78 |

Table 2.22
MINE+UPGRADER
Total expenditures (\$ Cdn) per barrel of SCO
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$15.59 | \$13.17 |
| 30 | | | \$23.87 | \$21.45 | \$19.03 | \$16.61 | \$14.19 |
| 40 | \$29.74 | \$27.31 | \$24.89 | \$22.47 | \$20.05 | \$17.63 | \$15.21 |
| 50 | \$30.75 | \$28.33 | \$25.91 | \$23.49 | \$21.07 | \$18.65 | \$16.23 |
| 60 | \$31.77 | \$29.35 | \$26.93 | \$24.51 | \$22.09 | \$19.67 | \$17.25 |
| 70 | \$32.79 | \$30.37 | \$27.95 | \$25.53 | \$23.11 | \$20.69 | \$18.27 |
| 80 | \$33.81 | \$31.39 | \$28.97 | \$26.55 | \$24.13 | \$21.71 | \$19.29 |
| 90 | \$34.83 | \$32.41 | \$29.99 | \$27.57 | \$25.15 | \$22.73 | \$20.31 |
| 100 | \$35.85 | \$33.43 | \$31.01 | \$28.59 | \$26.17 | \$23.75 | \$21.33 |

Divisible Income

The following tables illustrate the divisible income on a per barrel basis.

For the Mine the values are displayed on a per barrel bitumen and a per barrel SCO.

The divisible income for the Mine plus the Upgrader on an SCO basis total the divisible income for the integrated project.

Table 2.03
MINE
Divisible Income (\$ Cdn) per barrel of bitumen
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$2.68 | \$3.96 |
| 30 | | | \$3.81 | \$5.09 | \$6.37 | \$7.65 | \$8.93 |
| 40 | \$6.22 | \$7.50 | \$8.78 | \$10.06 | \$11.34 | \$12.62 | \$13.90 |
| 50 | \$11.19 | \$12.47 | \$13.75 | \$15.03 | \$16.31 | \$17.59 | \$18.87 |
| 60 | \$16.16 | \$17.44 | \$18.72 | \$20.00 | \$21.28 | \$22.56 | \$23.85 |
| 70 | \$21.13 | \$22.41 | \$23.70 | \$24.98 | \$26.26 | \$27.54 | \$28.82 |
| 80 | \$26.11 | \$27.39 | \$28.67 | \$29.95 | \$31.23 | \$32.51 | \$33.79 |
| 90 | \$31.08 | \$32.36 | \$33.64 | \$34.92 | \$36.20 | \$37.48 | \$38.76 |
| 100 | \$36.05 | \$37.33 | \$38.61 | \$39.89 | \$41.17 | \$42.45 | \$43.73 |

Table 2.03B

MINE

Divisible Income (\$ Cdn) per SCO barrel

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$3.15 | \$4.66 |
| 30 | | | \$4.48 | \$5.99 | \$7.49 | \$9.00 | \$10.51 |
| 40 | \$7.32 | \$8.82 | \$10.33 | \$11.84 | \$13.34 | \$14.85 | \$16.36 |
| 50 | \$13.17 | \$14.67 | \$16.18 | \$17.69 | \$19.19 | \$20.70 | \$22.20 |
| 60 | \$19.02 | \$20.52 | \$22.03 | \$23.53 | \$25.04 | \$26.55 | \$28.05 |
| 70 | \$24.86 | \$26.37 | \$27.88 | \$29.38 | \$30.89 | \$32.40 | \$33.90 |
| 80 | \$30.71 | \$32.22 | \$33.73 | \$35.23 | \$36.74 | \$38.24 | \$39.75 |
| 90 | \$36.56 | \$38.07 | \$39.57 | \$41.08 | \$42.59 | \$44.09 | \$45.60 |
| 100 | \$42.41 | \$43.92 | \$45.42 | \$46.93 | \$48.44 | \$49.94 | \$51.45 |

Table 2.13

UPGRADER

Divisible Income (\$ Cdn) per barrel of bitumen

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$3.98 | \$4.90 |
| 30 | | \$4.82 | \$5.73 | \$6.65 | \$7.56 | \$8.48 | \$9.39 |
| 40 | \$8.40 | \$9.32 | \$10.23 | \$11.14 | \$12.06 | \$12.97 | \$13.89 |
| 50 | \$12.90 | \$13.81 | \$14.73 | \$15.64 | \$16.55 | \$17.47 | \$18.38 |
| 60 | \$17.39 | \$18.31 | \$19.22 | \$20.14 | \$21.05 | \$21.96 | \$22.88 |
| 70 | \$21.89 | \$22.80 | \$23.72 | \$24.63 | \$25.54 | \$26.46 | \$27.37 |
| 80 | \$26.38 | \$27.30 | \$28.21 | \$29.13 | \$30.04 | \$30.95 | \$31.87 |
| 90 | \$30.88 | \$31.79 | \$32.71 | \$33.62 | \$34.54 | \$35.45 | \$36.36 |
| 100 | \$35.37 | \$36.29 | \$37.20 | \$38.12 | \$39.03 | \$39.94 | \$40.86 |

Table 2.23

MINE+UPGRADER

Divisible Income (\$ Cdn) per barrel of SCO

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$7.13 | \$9.55 |
| 30 | | | \$10.22 | \$12.64 | \$15.06 | \$17.48 | \$19.90 |
| 40 | \$15.72 | \$18.14 | \$20.56 | \$22.98 | \$25.40 | \$27.82 | \$30.24 |
| 50 | \$26.06 | \$28.48 | \$30.90 | \$33.33 | \$35.75 | \$38.17 | \$40.59 |
| 60 | \$36.41 | \$38.83 | \$41.25 | \$43.67 | \$46.09 | \$48.51 | \$50.93 |
| 70 | \$46.75 | \$49.17 | \$51.59 | \$54.01 | \$56.43 | \$58.85 | \$61.28 |
| 80 | \$57.10 | \$59.52 | \$61.94 | \$64.36 | \$66.78 | \$69.20 | \$71.62 |
| 90 | \$67.44 | \$69.86 | \$72.28 | \$74.70 | \$77.12 | \$79.54 | \$81.96 |
| 100 | \$77.78 | \$80.21 | \$82.63 | \$85.05 | \$87.47 | \$89.89 | \$92.31 |

It is important to note that the share of the divisible income originating from the Upgrader is higher under Cost Level 7 than Cost Level 1 at low prices. This creates an “in built” cost progressivity for the integrated project. The government take on the upgrader is less than on the upstream. Therefore, the weighted average government take for the integrated project is assisted by the higher share of the divisible income for the upgrader under Cost Level 7.

At high prices the share of the upstream becomes more important. This creates an “in built” price progressivity for the integrated project.

3. DISCUSSION OF POSSIBLE NEW FISCAL FEATURES

In this chapter the impact of individual fiscal features will be discussed. They will be discussed from the perspective of the objectives set in Chapter 1.

There is, of course, a wide variety of fiscal concepts around the world. However, only those that seem to have particular applicability to Alberta will be discussed. In summary, the following features will be reviewed:

- Bonuses and regulatory process
- Rentals
- Base Royalty
- Net Profit Sharing Royalty (“NPS”)
- Provincial Corporate Income Tax
- Supplemental Oil Sands Tax (“SOST”)
- Provincial Property Tax
- Oil Sands Impact Tax
- Provincial Participation

3.1. Bonuses and regulatory process

Currently, the province is using a bonus bid system for selecting the best bid for oil sands leases. This system has worked well for Alberta. It is a transparent method of allocating acreage and provides for a market mechanism to extract some extra share of the divisible income for Alberta. Bids are organized after nomination of acreage by project proponents.

The basic objective of this report is to consider fiscal issues.

However, it should be noted that certain objectives can also be reached through changes in procedures and regulatory change.

For instance, in the North Sea, the UK and Norway grant licenses on the basis of program proposals and such programs would be judged under a variety of criteria.

It would be possible to do the same in Alberta.

Companies could still nominate areas. However, leases would only be granted at specific points in time. The rate at which new leases would be granted would be controlled. In order to bring down the rate of development, Alberta could follow the same policy as Norway and only grant new oil sands leases at particular times and limited to a particular amount of acreage. This would eventually slow down development and create a rate of development that is commensurate with broader provincial objectives.

It seems, however, that a large amount of acreage has already been granted and that therefore the land bank is amply sufficient for many more projects for the next decade.

The bid system could be entirely based on the quality of the project proposals. A committee would award the lease based on the best project proposal. The quality of the project could be based on a number of variables, such as:

- Whether or not the project involves upgrading
- The degree of upgrading
- The level of CO2 emissions per barrel produced
- The volume of water use per barrel produced
- Whether or not gasification is used to produce gas for energy purposes
- The anticipated recovery factor from the proposed production methodology
- The financial capabilities and technical experience of the proponent

Such a bid system would force the oil industry to take the above factors more seriously than they may already be doing today. Without scoring high on all the above factors companies simply would have no longer access to new oil sands acreage. Rather than incurring the expenditures for bonus bids, companies would increase R&D activities in order to enhance their chances for winning leases.

If such a change in bonus bidding would be proposed by the Royalty Review Panel, it would be essential to recommend a temporary moratorium on the granting of new oil sands leases in order to avoid a “land grab” just before new procedures are in place.

Also as a consequence of a change to a work program proposal concept, it would be necessary to grant oil sands leases on the basis of a corresponding crown agreement. This agreement would guarantee that the proponent would carry out its promises and this agreement would spell out the commitments made by the proponent.

The change in the bonus bid system may be relatively ineffective in the near term in view of the fact that the land bank for new projects is already very extensive.

In this context, one could follow another policy of Norway, and limit the number of new oil sands projects that will be approved per year from now onwards. For instance, one might approve an additional 200,000 bopd every two years, this would permit a further increase of oil sands production of one million barrels per decade. Investors can then propose projects for development and the best project will go forward, based on the same conditions as discussed above for accepting bids for leases.

This regulatory system could be implemented instead of the revision of the bid system or in addition to it. The most effective would be to have both the work program bonus bid system and the regulatory system to limit development projects.

If the Royalty Review Panel would be interested in exploring these types of procedural and regulatory change, a separate more in-depth report could be prepared about these issues.

3.2. Rentals

3.2.1. Rental amounts

Rentals are usually a minor amount per hectare around the world. Nevertheless, it is a fiscal instrument that can be effectively used to discourage excessively high cost projects. Rentals are by their very nature cost regressive. Since they are a constant amount per year, this amount becomes relatively more important if the divisible income declines.

It should be noted that by their very nature rentals are also price regressive and therefore put a much higher burden on the project under low oil price conditions. They therefore increase the downside price risk.

In the case of Alberta the rentals are only \$ 3.50 per hectare for oil sands leases. A typical oil sands mining project may involve 5000 hectare, so this would be Can \$ 17,500 per year.

Given the enormous environmental, social, economic and infrastructural impacts of large oil sands operations, it seems appropriate to make the rentals more reflective of the very high external costs of these projects.

From this perspective rentals of \$ 100 per hectare during the exploration or evaluation phase and \$ 1000 per hectare once a project development plan is approved seems a far more reasonable level.

Also for projects of a long duration such as oil sands, it would make sense to adjust the much higher rentals also for inflation, so the value does not erode over time.

Another issue is the matter of whether the rentals should be deductible for NPS purposes or not. If the rentals are meant to cover the external costs of the project, than it seems reasonable not to make these rentals deductible for NPS purposes.

In order to assess the order of magnitude of increasing rentals, the following tables provide an overview of rentals of \$ 1000 per ha for a 5000 hectare project, or \$ 5 million per year. The rentals would be adjusted year by year with inflation with the CPI. Also the rentals would not be deductible for NPS purposes.

(Note: Table numbers are not sequential. Tables are selected from the complete data base of tables, which displays all results of the analysis done for this report)

Government Revenues per barrel

The following two tables 3.04 and 3.14 show the difference in government revenues per barrel.

Table 3.04

MINE+UPGRADER CURRENT TERMS

Government Income + Participation per SCO barrel (\$ Cdn)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$2.64 | \$3.68 |
| 30 | | | \$3.74 | \$4.80 | \$5.82 | \$6.83 | \$7.82 |
| 40 | \$5.92 | \$6.96 | \$7.97 | \$8.98 | \$9.97 | \$10.96 | \$11.95 |
| 50 | \$10.12 | \$11.12 | \$12.12 | \$13.11 | \$14.11 | \$15.09 | \$16.08 |
| 60 | \$14.27 | \$15.26 | \$16.25 | \$17.24 | \$18.24 | \$19.22 | \$20.21 |
| 70 | \$18.41 | \$19.40 | \$20.38 | \$21.38 | \$22.36 | \$23.35 | \$24.34 |
| 80 | \$22.54 | \$23.52 | \$24.52 | \$25.50 | \$26.49 | \$27.48 | \$28.47 |
| 90 | \$26.67 | \$27.66 | \$28.65 | \$29.64 | \$30.63 | \$31.61 | \$32.59 |
| 100 | \$30.80 | \$31.80 | \$32.78 | \$33.77 | \$34.75 | \$35.74 | \$36.72 |

Table 3.14

MINE+UPGRADER RENTALS

Government Income + Participation per SCO barrel (\$ Cdn)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$2.71 | \$3.75 |
| 30 | | | \$3.81 | \$4.88 | \$5.90 | \$6.90 | \$7.89 |
| 40 | \$5.99 | \$7.03 | \$8.05 | \$9.05 | \$10.04 | \$11.04 | \$12.03 |
| 50 | \$10.19 | \$11.19 | \$12.19 | \$13.19 | \$14.18 | \$15.17 | \$16.15 |
| 60 | \$14.34 | \$15.34 | \$16.33 | \$17.31 | \$18.31 | \$19.30 | \$20.29 |
| 70 | \$18.48 | \$19.47 | \$20.46 | \$21.45 | \$22.44 | \$23.43 | \$24.41 |
| 80 | \$22.61 | \$23.60 | \$24.59 | \$25.58 | \$26.57 | \$27.56 | \$28.54 |
| 90 | \$26.74 | \$27.73 | \$28.73 | \$29.71 | \$30.70 | \$31.68 | \$32.66 |
| 100 | \$30.88 | \$31.87 | \$32.85 | \$33.84 | \$34.82 | \$35.81 | \$36.79 |

Despite, the enormous increase in the rentals, the increase in government revenues per barrel is only about \$ 0.07 per barrel. By any standard this would still be well below the external costs of oil sands operations.

Undiscounted Government Take

The following two tables show the difference in undiscounted real government take.

Table 3.06
MINE+UPGRADER CURRENT TERMS
Undiscounted Government Take (Income only)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 36.97% | 38.49% |
| 30 | | | 36.60% | 38.01% | 38.68% | 39.05% | 39.30% |
| 40 | 37.63% | 38.35% | 38.77% | 39.06% | 39.25% | 39.40% | 39.52% |
| 50 | 38.83% | 39.05% | 39.22% | 39.35% | 39.46% | 39.55% | 39.62% |
| 60 | 39.19% | 39.31% | 39.40% | 39.48% | 39.57% | 39.62% | 39.69% |
| 70 | 39.38% | 39.45% | 39.51% | 39.58% | 39.63% | 39.68% | 39.72% |
| 80 | 39.48% | 39.53% | 39.59% | 39.63% | 39.68% | 39.72% | 39.75% |
| 90 | 39.54% | 39.59% | 39.64% | 39.67% | 39.71% | 39.74% | 39.76% |
| 100 | 39.60% | 39.64% | 39.67% | 39.70% | 39.73% | 39.76% | 39.78% |

Table 3.16
MINE+UPGRADER RENTALS
Undiscounted Government Take (Income only)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 37.99% | 39.25% |
| 30 | | | 37.31% | 38.59% | 39.16% | 39.47% | 39.66% |
| 40 | 38.10% | 38.75% | 39.13% | 39.38% | 39.54% | 39.67% | 39.76% |
| 50 | 39.11% | 39.30% | 39.46% | 39.57% | 39.67% | 39.74% | 39.80% |
| 60 | 39.39% | 39.50% | 39.58% | 39.65% | 39.72% | 39.78% | 39.83% |
| 70 | 39.53% | 39.60% | 39.65% | 39.71% | 39.76% | 39.80% | 39.84% |
| 80 | 39.61% | 39.65% | 39.70% | 39.74% | 39.78% | 39.82% | 39.85% |
| 90 | 39.65% | 39.70% | 39.74% | 39.77% | 39.81% | 39.83% | 39.85% |
| 100 | 39.69% | 39.73% | 39.76% | 39.79% | 39.81% | 39.84% | 39.86% |

The tables illustrate how the rentals are indeed cost regressive. At US \$ 40 per barrel and Cost Level 7 the increase in undiscounted government take is 0.47%, while for Cost Level 1 it is only 0.24%. Therefore rentals are discouraging expensive projects. However, this is only effective under relatively low prices, such as US \$ 40 per barrel. The effect under higher prices becomes much less important.

The tables also illustrate how the rentals increase the downside price risk with a higher government takes at low prices.

Despite the high rentals the overall system remains very slightly progressive on an undiscounted basis for all levels of price and also for all cost levels except Cost Level 1. This is due to the 6% LTBR and the “inherent” price progressivity due to the increase in the share of the divisible upstream income in the total.

5% Discounted Government Take

The following two tables illustrate the difference in terms of 5% discounted government take.

Table 3.07
MINE+UPGRADER CURRENT TERMS
5% Discounted Government Take (Income only)

| WTI US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|--------------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 50.32% | 43.01% |
| 30 | | | 55.40% | 45.78% | 42.88% | 41.58% | 40.86% |
| 40 | 48.25% | 44.60% | 42.84% | 41.85% | 41.20% | 40.78% | 40.47% |
| 50 | 42.83% | 42.00% | 41.45% | 41.03% | 40.73% | 40.48% | 40.29% |
| 60 | 41.61% | 41.22% | 40.92% | 40.67% | 40.50% | 40.33% | 40.21% |
| 70 | 41.11% | 40.86% | 40.65% | 40.51% | 40.35% | 40.25% | 40.14% |
| 80 | 40.82% | 40.64% | 40.51% | 40.38% | 40.28% | 40.19% | 40.10% |
| 90 | 40.63% | 40.52% | 40.42% | 40.31% | 40.23% | 40.14% | 40.06% |
| 100 | 40.52% | 40.43% | 40.33% | 40.25% | 40.17% | 40.11% | 40.04% |

Table 3.17
MINE+UPGRADER RENTALS
5% Discounted Government Take (Income only)

| WTI US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|--------------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 53.64% | 44.48% |
| 30 | | | 58.30% | 47.16% | 43.78% | 42.25% | 41.40% |
| 40 | 49.56% | 45.47% | 43.50% | 42.38% | 41.64% | 41.15% | 40.79% |
| 50 | 43.34% | 42.43% | 41.82% | 41.36% | 41.02% | 40.74% | 40.53% |
| 60 | 41.93% | 41.51% | 41.18% | 40.90% | 40.71% | 40.53% | 40.39% |
| 70 | 41.34% | 41.07% | 40.85% | 40.69% | 40.53% | 40.41% | 40.29% |
| 80 | 41.00% | 40.81% | 40.67% | 40.53% | 40.42% | 40.32% | 40.23% |
| 90 | 40.78% | 40.66% | 40.55% | 40.43% | 40.35% | 40.26% | 40.17% |
| 100 | 40.65% | 40.55% | 40.44% | 40.37% | 40.28% | 40.22% | 40.14% |

On a discounted government take basis the effect of the rental is much stronger. This is because the rental is front end loaded. The rental needs to be paid as soon as the lease is granted.

At US \$ 40 and Cost Level 7 the increase in 5% discounted government take is 1.31% compared to only 0.47% for the undiscounted government take.

Profitability

The following two tables provide the impact on the IRR.

Table 3.08

MINE+UPGRADER CURRENT TERMS

IRR (real, 2007 Cdn \$)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 6.60% | 9.80% |
| 30 | | | 6.04% | 7.91% | 10.17% | 12.99% | 16.74% |
| 40 | 7.10% | 8.60% | 10.34% | 12.40% | 14.91% | 18.10% | 22.37% |
| 50 | 10.45% | 12.07% | 13.96% | 16.21% | 18.98% | 22.51% | 27.26% |
| 60 | 13.37% | 15.11% | 17.15% | 19.61% | 22.61% | 26.46% | 31.59% |
| 70 | 16.00% | 17.86% | 20.06% | 22.67% | 25.92% | 30.02% | 35.52% |
| 80 | 18.42% | 20.41% | 22.72% | 25.53% | 28.95% | 33.32% | 39.11% |
| 90 | 20.68% | 22.76% | 25.22% | 28.16% | 31.77% | 36.36% | 42.46% |
| 100 | 22.79% | 24.99% | 27.57% | 30.64% | 34.43% | 39.21% | 45.54% |

Table 3.18

MINE+UPGRADER RENTALS

IRR (real, 2007 Cdn \$)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 6.49% | 9.67% |
| 30 | | | 5.97% | 7.83% | 10.07% | 12.88% | 16.58% |
| 40 | 7.05% | 8.54% | 10.27% | 12.32% | 14.81% | 17.97% | 22.19% |
| 50 | 10.39% | 12.01% | 13.88% | 16.12% | 18.87% | 22.37% | 27.05% |
| 60 | 13.31% | 15.04% | 17.07% | 19.51% | 22.49% | 26.30% | 31.36% |
| 70 | 15.94% | 17.79% | 19.97% | 22.57% | 25.79% | 29.85% | 35.27% |
| 80 | 18.35% | 20.33% | 22.63% | 25.42% | 28.81% | 33.13% | 38.84% |
| 90 | 20.61% | 22.68% | 25.12% | 28.04% | 31.62% | 36.16% | 42.17% |
| 100 | 22.72% | 24.90% | 27.46% | 30.51% | 34.27% | 38.99% | 45.23% |

As can be expected the rentals lower the IRR, but from an overall project point of view the effect is relatively modest.

Therefore, even very high rentals have only a modest effect on discouraging excessively high cost projects.

High rentals per hectare are costly if an investor does not intend to work a lease in the near term. Therefore, high rentals will discourage speculative holding of acreage. In fact it may result in the relinquishment of certain leases. This will ensure that oil companies would only nominate a lease for bidding if they are actually planning to work the lease in the near term.

It can be recommended to increase oil sands acreage rentals very significantly. Such an increase can be combined with any type of fiscal package. A distinction could be made between leases (or permits) that are actually under development and leases in evaluation or exploration. For instance, rentals could be Can \$ 100 per hectare during the exploration phase, but \$ 1000 per hectare during the development and production phase.

3.2.2. Rental distribution

It merits review whether higher oil sands rentals could be allocated to a fund that would be dedicated to the improvement in provincial and municipal infrastructure. It would enhance municipal budgets for this purpose. In this way some of the resource wealth will be directly distributed back to the communities.

This would permit the affected communities and the province to be more aggressive in creating the required public infrastructure in terms of roads, schools, buildings, etc. Also special water projects could be undertaken that would support the supply of water to oil sands without harming agricultural and other needs. This may be an important factor in mitigating in the long run the negative side effects on municipalities and the province.

It is probably not a good budgetary practice to specifically dedicate all rentals to these purposes. Nevertheless, to notionally allocate rentals to the needs of the province and municipalities for these activities would be a good policy. It would ensure that the external costs of oil sands developments would be taken into account.

3.3. Base Royalty

There is a very large number of possible changes that can be made to the base royalties. This report will concentrate on the most important possible concepts.

3.3.1. Making the base royalty deductible for NPS purposes

The current concept of comparing the base royalty with the NPS and only paying an NPS in excess of the Base Royalty is an unusual system that is only applied in Canada. Normally royalties would be considered a deductible item for net profit sharing purposes.

The current system finds its origin in the fact that the focus of the royalties was the NPS. The base royalty was only introduced to ensure a very small payment to government as long as payout was not achieved.

One set of options is to evaluate whether the base royalty should become a more substantive fiscal element in itself. Higher base royalties or royalties based on sliding

scales could be considered. In this environment it is more logical to consider the base royalty a deductible item for NPS purposes.

This is structurally more desirable since it permits an easier design and prevents unexpected side effects on the NPS calculations and possible frequent interactions whereby NPS is paid/not paid depending on prices and re-investment.

For these reasons, it can be recommended to make the base royalty deductible for NPS purposes.

3.3.2. A higher flat base royalty

An important option to consider is simply a higher flat base royalty.

Following is an analysis of a 10% base royalty which is deductible for NPS purposes.

Government Revenues per barrel

The following two tables 3.04 and 3.24 show the difference in government revenues per barrel.

Table 3.04

MINE+UPGRADER CURRENT TERMS

Government Income + Participation per SCO barrel (\$ Cdn)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$2.64 | \$3.68 |
| 30 | | | \$3.74 | \$4.80 | \$5.82 | \$6.83 | \$7.82 |
| 40 | \$5.92 | \$6.96 | \$7.97 | \$8.98 | \$9.97 | \$10.96 | \$11.95 |
| 50 | \$10.12 | \$11.12 | \$12.12 | \$13.11 | \$14.11 | \$15.09 | \$16.08 |
| 60 | \$14.27 | \$15.26 | \$16.25 | \$17.24 | \$18.24 | \$19.22 | \$20.21 |
| 70 | \$18.41 | \$19.40 | \$20.38 | \$21.38 | \$22.36 | \$23.35 | \$24.34 |
| 80 | \$22.54 | \$23.52 | \$24.52 | \$25.50 | \$26.49 | \$27.48 | \$28.47 |
| 90 | \$26.67 | \$27.66 | \$28.65 | \$29.64 | \$30.63 | \$31.61 | \$32.59 |
| 100 | \$30.80 | \$31.80 | \$32.78 | \$33.77 | \$34.75 | \$35.74 | \$36.72 |

Table 3.24
MINE+UPGRADER BASE ROYALTY 10%
Government Income + Participation per SCO barrel (\$ Cdn)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$3.14 | \$4.26 |
| 30 | | | \$4.45 | \$5.63 | \$6.71 | \$7.74 | \$8.75 |
| 40 | \$6.98 | \$8.10 | \$9.16 | \$10.19 | \$11.20 | \$12.21 | \$13.20 |
| 50 | \$11.61 | \$12.64 | \$13.65 | \$14.66 | \$15.66 | \$16.66 | \$17.65 |
| 60 | \$16.10 | \$17.11 | \$18.12 | \$19.11 | \$20.11 | \$21.10 | \$22.10 |
| 70 | \$20.57 | \$21.57 | \$22.57 | \$23.56 | \$24.56 | \$25.55 | \$26.54 |
| 80 | \$25.03 | \$26.02 | \$27.02 | \$28.01 | \$29.01 | \$30.00 | \$30.99 |
| 90 | \$29.48 | \$30.47 | \$31.47 | \$32.46 | \$33.45 | \$34.44 | \$35.43 |
| 100 | \$33.93 | \$34.92 | \$35.91 | \$36.91 | \$37.90 | \$38.88 | \$39.87 |

The increase in government revenues per barrel is very substantial and as can be expected the increase in absolute amounts is more in case of higher prices. For any particular cost level the increase is about the same for a given price.

Undiscounted Government Take

The following two tables show the difference in undiscounted real government take.

Table 3.06
MINE+UPGRADER CURRENT TERMS
Undiscounted Government Take (Income only)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 36.97% | 38.49% |
| 30 | | | 36.60% | 38.01% | 38.68% | 39.05% | 39.30% |
| 40 | 37.63% | 38.35% | 38.77% | 39.06% | 39.25% | 39.40% | 39.52% |
| 50 | 38.83% | 39.05% | 39.22% | 39.35% | 39.46% | 39.55% | 39.62% |
| 60 | 39.19% | 39.31% | 39.40% | 39.48% | 39.57% | 39.62% | 39.69% |
| 70 | 39.38% | 39.45% | 39.51% | 39.58% | 39.63% | 39.68% | 39.72% |
| 80 | 39.48% | 39.53% | 39.59% | 39.63% | 39.68% | 39.72% | 39.75% |
| 90 | 39.54% | 39.59% | 39.64% | 39.67% | 39.71% | 39.74% | 39.76% |
| 100 | 39.60% | 39.64% | 39.67% | 39.70% | 39.73% | 39.76% | 39.78% |

Table 3.26
MINE+UPGRADER BASE ROYALTY 10%
Undiscounted Government Take (Income only)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 44.03% | 44.61% |
| 30 | | | 43.56% | 44.58% | 44.58% | 44.29% | 43.97% |
| 40 | 44.40% | 44.63% | 44.55% | 44.34% | 44.10% | 43.87% | 43.65% |
| 50 | 44.54% | 44.37% | 44.18% | 43.99% | 43.81% | 43.64% | 43.49% |
| 60 | 44.23% | 44.07% | 43.92% | 43.77% | 43.63% | 43.50% | 43.38% |
| 70 | 44.00% | 43.87% | 43.74% | 43.63% | 43.52% | 43.41% | 43.31% |
| 80 | 43.83% | 43.72% | 43.62% | 43.53% | 43.43% | 43.35% | 43.26% |
| 90 | 43.71% | 43.62% | 43.53% | 43.45% | 43.37% | 43.30% | 43.23% |
| 100 | 43.62% | 43.54% | 43.47% | 43.39% | 43.33% | 43.26% | 43.19% |

As can be expected, a higher flat base royalty makes the entire fiscal system regressive for price and costs. If costs go down the government take goes down. If prices go up the government take also goes down. This discourages high cost projects. However, it also increases the downside price risk.

5% Discounted Government Take

The following two tables illustrate the difference in terms of 5% discounted government take.

Table 3.07
MINE+UPGRADER CURRENT TERMS
5% Discounted Government Take (Income only)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 50.32% | 43.01% |
| 30 | | | 55.40% | 45.78% | 42.88% | 41.58% | 40.86% |
| 40 | 48.25% | 44.60% | 42.84% | 41.85% | 41.20% | 40.78% | 40.47% |
| 50 | 42.83% | 42.00% | 41.45% | 41.03% | 40.73% | 40.48% | 40.29% |
| 60 | 41.61% | 41.22% | 40.92% | 40.67% | 40.50% | 40.33% | 40.21% |
| 70 | 41.11% | 40.86% | 40.65% | 40.51% | 40.35% | 40.25% | 40.14% |
| 80 | 40.82% | 40.64% | 40.51% | 40.38% | 40.28% | 40.19% | 40.10% |
| 90 | 40.63% | 40.52% | 40.42% | 40.31% | 40.23% | 40.14% | 40.06% |
| 100 | 40.52% | 40.43% | 40.33% | 40.25% | 40.17% | 40.11% | 40.04% |

Table 3.27
MINE+UPGRADER BASE ROYALTY 10%
5% Discounted Government Take (Income only)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 72.72% | 53.09% |
| 30 | | | 84.69% | 59.80% | 52.23% | 48.63% | 46.55% |
| 40 | 65.83% | 56.47% | 51.85% | 49.13% | 47.34% | 46.07% | 45.13% |
| 50 | 51.64% | 49.44% | 47.88% | 46.72% | 45.82% | 45.10% | 44.52% |
| 60 | 48.28% | 47.21% | 46.36% | 45.66% | 45.08% | 44.59% | 44.17% |
| 70 | 46.80% | 46.12% | 45.55% | 45.07% | 44.64% | 44.27% | 43.95% |
| 80 | 45.96% | 45.48% | 45.06% | 44.68% | 44.35% | 44.06% | 43.80% |
| 90 | 45.42% | 45.05% | 44.72% | 44.42% | 44.15% | 43.91% | 43.68% |
| 100 | 45.04% | 44.74% | 44.47% | 44.22% | 44.00% | 43.79% | 43.60% |

On a discounted government take basis the effect of a 10% base royalty is much stronger. The base royalty is also front end loaded and needs to be paid as soon as production starts.

On the basis of a 5% discounted government take, the system is now rather regressive for price and costs.

Profitability

The following two tables provide the impact on the IRR.

Table 3.08
MINE+UPGRADER CURRENT TERMS
IRR (real, 2007 Cdn \$)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 6.60% | 9.80% |
| 30 | | | 6.04% | 7.91% | 10.17% | 12.99% | 16.74% |
| 40 | 7.10% | 8.60% | 10.34% | 12.40% | 14.91% | 18.10% | 22.37% |
| 50 | 10.45% | 12.07% | 13.96% | 16.21% | 18.98% | 22.51% | 27.26% |
| 60 | 13.37% | 15.11% | 17.15% | 19.61% | 22.61% | 26.46% | 31.59% |
| 70 | 16.00% | 17.86% | 20.06% | 22.67% | 25.92% | 30.02% | 35.52% |
| 80 | 18.42% | 20.41% | 22.72% | 25.53% | 28.95% | 33.32% | 39.11% |
| 90 | 20.68% | 22.76% | 25.22% | 28.16% | 31.77% | 36.36% | 42.46% |
| 100 | 22.79% | 24.99% | 27.57% | 30.64% | 34.43% | 39.21% | 45.54% |

Table 3.28
MINE+UPGRADER BASE ROYALTY 10%
IRR (real, 2007 Cdn \$)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 5.88% | 9.02% |
| 30 | | | 5.36% | 7.18% | 9.39% | 12.16% | 15.82% |
| 40 | 6.40% | 7.87% | 9.57% | 11.59% | 14.05% | 17.16% | 21.33% |
| 50 | 9.68% | 11.27% | 13.12% | 15.32% | 18.03% | 21.48% | 26.10% |
| 60 | 12.55% | 14.25% | 16.25% | 18.63% | 21.57% | 25.32% | 30.34% |
| 70 | 15.12% | 16.94% | 19.08% | 21.64% | 24.80% | 28.82% | 34.20% |
| 80 | 17.49% | 19.42% | 21.69% | 24.42% | 27.77% | 32.04% | 37.72% |
| 90 | 19.70% | 21.73% | 24.13% | 27.01% | 30.53% | 35.03% | 40.98% |
| 100 | 21.76% | 23.90% | 26.42% | 29.43% | 33.13% | 37.81% | 44.02% |

A much higher base royalty will have a significant effect on the lowering of the IRR for every price-cost combination. In particular, for high cost projects it will now be more difficult to achieve minimum hurdle rate requirements.

A higher base royalty will therefore result in lowering the level of activity.

A much higher base royalty also makes the PFR10 and NPV10/barrel much less attractive.

Conclusion

A higher base royalty is an effective mechanism to discourage high cost projects and generally increase government revenues. However, a high flat base royalty creates strong price regressivity and therefore is not an appropriate mechanism to extract resource wealth for Alberta under high prices. It also may have a discouraging effect on lower cost projects due to the increased downside price risk.

3.3.3. A price sensitive royalty

An obvious solution to the matter of price regressivity of a flat base royalty is to make the royalty price sensitive. California implemented this solution with respect to its royalties as was mentioned in the previous report entitled “Comparative analysis of fiscal terms for Alberta oil sands and international heavy and conventional oils (May 17, 2007)”

Following is an analysis of a price sensitive base royalty. The royalty would be based on bitumen prices. The base price would be Can \$ 20 per bitumen barrel. At that price or below the base royalty rate would be 3%. The price would be prices in Can 2007 dollars adjusted for CPI and PPI.

Over Can \$ 20 per barrel the price would increase by 0.5% for every dollar bitumen price increase. The maximum royalty rate would be 30%. This rate would be reached at a bitumen price of Can \$ 77 per barrel.

Following is the economic analysis of this concept.

Government Revenues per barrel

The following two tables 3.04 and 3.34 show the difference in government revenues per barrel.

Table 3.04

MINE+UPGRADER CURRENT TERMS

Government Income + Participation per SCO barrel (\$ Cdn)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$2.64 | \$3.68 |
| 30 | | | \$3.74 | \$4.80 | \$5.82 | \$6.83 | \$7.82 |
| 40 | \$5.92 | \$6.96 | \$7.97 | \$8.98 | \$9.97 | \$10.96 | \$11.95 |
| 50 | \$10.12 | \$11.12 | \$12.12 | \$13.11 | \$14.11 | \$15.09 | \$16.08 |
| 60 | \$14.27 | \$15.26 | \$16.25 | \$17.24 | \$18.24 | \$19.22 | \$20.21 |
| 70 | \$18.41 | \$19.40 | \$20.38 | \$21.38 | \$22.36 | \$23.35 | \$24.34 |
| 80 | \$22.54 | \$23.52 | \$24.52 | \$25.50 | \$26.49 | \$27.48 | \$28.47 |
| 90 | \$26.67 | \$27.66 | \$28.65 | \$29.64 | \$30.63 | \$31.61 | \$32.59 |
| 100 | \$30.80 | \$31.80 | \$32.78 | \$33.77 | \$34.75 | \$35.74 | \$36.72 |

Table 3.34

MINE+UPGRADER PRICE SENSITIVE BASE ROYALTY

Government Income + Participation per SCO barrel (\$ Cdn)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$3.09 | \$4.07 |
| 30 | | | \$4.45 | \$5.43 | \$6.42 | \$7.41 | \$8.40 |
| 40 | \$6.85 | \$7.83 | \$8.82 | \$9.81 | \$10.81 | \$11.80 | \$12.80 |
| 50 | \$12.08 | \$13.07 | \$14.06 | \$15.06 | \$16.05 | \$17.05 | \$18.05 |
| 60 | \$17.68 | \$18.67 | \$19.67 | \$20.67 | \$21.66 | \$22.66 | \$23.66 |
| 70 | \$23.65 | \$24.64 | \$25.64 | \$26.63 | \$27.63 | \$28.63 | \$29.63 |
| 80 | \$29.97 | \$30.97 | \$31.96 | \$32.96 | \$33.96 | \$34.95 | \$35.95 |
| 90 | \$36.66 | \$37.65 | \$38.65 | \$39.64 | \$40.64 | \$41.64 | \$42.64 |
| 100 | \$43.70 | \$44.70 | \$45.69 | \$46.69 | \$47.69 | \$48.69 | \$49.68 |

As can be expected this comparison shows that under low prices the increase in government revenues per barrel would be modest because of the base royalty of 3% instead of 1%.

However, the government revenues increase dramatically with higher prices. Alberta would strongly increase its revenues under such conditions.

Undiscounted Government Take

The following two tables show the difference in undiscounted real government take.

Table 3.06
MINE+UPGRADER CURRENT TERMS
Undiscounted Government Take (Income only)

| WTI US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|--------------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 36.97% | 38.49% |
| 30 | | | 36.60% | 38.01% | 38.68% | 39.05% | 39.30% |
| 40 | 37.63% | 38.35% | 38.77% | 39.06% | 39.25% | 39.40% | 39.52% |
| 50 | 38.83% | 39.05% | 39.22% | 39.35% | 39.46% | 39.55% | 39.62% |
| 60 | 39.19% | 39.31% | 39.40% | 39.48% | 39.57% | 39.62% | 39.69% |
| 70 | 39.38% | 39.45% | 39.51% | 39.58% | 39.63% | 39.68% | 39.72% |
| 80 | 39.48% | 39.53% | 39.59% | 39.63% | 39.68% | 39.72% | 39.75% |
| 90 | 39.54% | 39.59% | 39.64% | 39.67% | 39.71% | 39.74% | 39.76% |
| 100 | 39.60% | 39.64% | 39.67% | 39.70% | 39.73% | 39.76% | 39.78% |

Table 3.36
MINE+UPGRADER PRICE SENSITIVE BASE ROYALTY
Undiscounted Government Take (Income only)

| WTI US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|--------------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 43.34% | 42.64% |
| 30 | | | 43.58% | 42.96% | 42.60% | 42.38% | 42.22% |
| 40 | 43.59% | 43.18% | 42.90% | 42.70% | 42.54% | 42.42% | 42.33% |
| 50 | 46.35% | 45.89% | 45.51% | 45.19% | 44.91% | 44.68% | 44.47% |
| 60 | 48.57% | 48.10% | 47.68% | 47.32% | 47.00% | 46.71% | 46.45% |
| 70 | 50.58% | 50.11% | 49.69% | 49.31% | 48.96% | 48.64% | 48.35% |
| 80 | 52.49% | 52.03% | 51.60% | 51.21% | 50.85% | 50.51% | 50.20% |
| 90 | 54.35% | 53.89% | 53.47% | 53.07% | 52.70% | 52.35% | 52.02% |
| 100 | 56.18% | 55.73% | 55.30% | 54.90% | 54.52% | 54.16% | 53.82% |

This table now shows how this feature would create a fiscal system that is regressive with costs, but strongly progressive with price.

5% Discounted Government Take

The following two tables illustrate the difference in terms of 5% discounted government take.

Table 3.07
MINE+UPGRADER CURRENT TERMS
5% Discounted Government Take (Income only)

| WTI | | | | | | | |
|-------|--------|--------|--------|--------|--------|--------|--------|
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | 50.32% | 43.01% |
| 30 | | | 55.40% | 45.78% | 42.88% | 41.58% | 40.86% |
| 40 | 48.25% | 44.60% | 42.84% | 41.85% | 41.20% | 40.78% | 40.47% |
| 50 | 42.83% | 42.00% | 41.45% | 41.03% | 40.73% | 40.48% | 40.29% |
| 60 | 41.61% | 41.22% | 40.92% | 40.67% | 40.50% | 40.33% | 40.21% |
| 70 | 41.11% | 40.86% | 40.65% | 40.51% | 40.35% | 40.25% | 40.14% |
| 80 | 40.82% | 40.64% | 40.51% | 40.38% | 40.28% | 40.19% | 40.10% |
| 90 | 40.63% | 40.52% | 40.42% | 40.31% | 40.23% | 40.14% | 40.06% |
| 100 | 40.52% | 40.43% | 40.33% | 40.25% | 40.17% | 40.11% | 40.04% |

Table 3.37
MINE+UPGRADER PRICE SENSITIVE BASE ROYALTY
5% Discounted Government Take (Income only)

| WTI | | | | | | | |
|-------|--------|--------|--------|--------|--------|--------|--------|
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | 63.12% | 48.46% |
| 30 | | | 72.34% | 53.43% | 47.90% | 45.39% | 44.01% |
| 40 | 59.01% | 51.66% | 48.14% | 46.14% | 44.87% | 44.00% | 43.37% |
| 50 | 53.42% | 50.88% | 49.10% | 47.80% | 46.81% | 46.04% | 45.41% |
| 60 | 53.56% | 51.90% | 50.59% | 49.54% | 48.67% | 47.94% | 47.33% |
| 70 | 54.62% | 53.32% | 52.22% | 51.29% | 50.49% | 49.79% | 49.18% |
| 80 | 56.00% | 54.87% | 53.90% | 53.04% | 52.28% | 51.60% | 51.00% |
| 90 | 57.52% | 56.50% | 55.60% | 54.79% | 54.06% | 53.40% | 52.80% |
| 100 | 59.11% | 58.16% | 57.31% | 56.54% | 55.83% | 55.18% | 54.58% |

On a discounted government take basis the effect of a price sensitive base royalty is much stronger. This is again because the base royalty is also front end loaded and needs to be paid as soon as production starts. If the price is high when production starts, the base royalty will be high.

On the basis of a 5% discounted government take, the system is now rather regressive for costs but strongly progressive for price from US \$ 40 per barrel onwards. Of course, below US \$ 40 per barrel, the system becomes price regressive because we have a flat royalty below Can \$ 20 per bitumen barrel of 3%.

Profitability

The following two tables provide the impact on the IRR.

Table 3.08

MINE+UPGRADER CURRENT TERMS

IRR (real, 2007 Cdn \$)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 6.60% | 9.80% |
| 30 | | | 6.04% | 7.91% | 10.17% | 12.99% | 16.74% |
| 40 | 7.10% | 8.60% | 10.34% | 12.40% | 14.91% | 18.10% | 22.37% |
| 50 | 10.45% | 12.07% | 13.96% | 16.21% | 18.98% | 22.51% | 27.26% |
| 60 | 13.37% | 15.11% | 17.15% | 19.61% | 22.61% | 26.46% | 31.59% |
| 70 | 16.00% | 17.86% | 20.06% | 22.67% | 25.92% | 30.02% | 35.52% |
| 80 | 18.42% | 20.41% | 22.72% | 25.53% | 28.95% | 33.32% | 39.11% |
| 90 | 20.68% | 22.76% | 25.22% | 28.16% | 31.77% | 36.36% | 42.46% |
| 100 | 22.79% | 24.99% | 27.57% | 30.64% | 34.43% | 39.21% | 45.54% |

Table 3.38

MINE+UPGRADER PRICE SENSITIVE BASE ROYALTY

IRR (real, 2007 Cdn \$)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 6.25% | 9.53% |
| 30 | | | 5.68% | 7.61% | 9.91% | 12.77% | 16.54% |
| 40 | 6.75% | 8.29% | 10.05% | 12.13% | 14.67% | 17.87% | 22.16% |
| 50 | 9.67% | 11.29% | 13.18% | 15.42% | 18.17% | 21.66% | 26.35% |
| 60 | 12.06% | 13.78% | 15.78% | 18.17% | 21.11% | 24.86% | 29.87% |
| 70 | 14.08% | 15.88% | 17.99% | 20.52% | 23.62% | 27.58% | 32.86% |
| 80 | 15.81% | 17.69% | 19.89% | 22.53% | 25.78% | 29.91% | 35.43% |
| 90 | 17.29% | 19.24% | 21.53% | 24.26% | 27.64% | 31.92% | 37.63% |
| 100 | 18.56% | 20.57% | 22.93% | 25.75% | 29.23% | 33.64% | 39.52% |

The price sensitive base royalty creates a modest reduction of IRR up to US \$ 40.

Thereafter, the effect becomes gradually stronger as can be expected. The effect is particularly important on the high cost projects.

A higher price sensitive base royalty will therefore result in lowering the level of activity.

A much higher base royalty also makes the PFR10 and NPV10/barrel much less attractive.

Conclusion

A price sensitive base royalty does have desirable features for Alberta. It captures a significantly better share of the divisible income under high prices. It also lowers the attractiveness of high cost projects. This is therefore a feature that can be recommended as one of the options for consideration.

An alternative would be a Supplemental Oil Sands Tax which would be similarly price sensitive but would have the character of a tax rather than a royalty. This will be discussed below in this Chapter.

3.3.4. A base royalty based on SCO or WTI prices.

A major issue is the matter of bitumen price determination. Based on the previous report it appears possible to have a Venezuelan style bitumen price formula which is entirely based on published international prices. Nevertheless this remains an issue to be resolved.

If this matter cannot be resolved, or if Alberta otherwise wants to be protected from undesirable bitumen price fluctuations one could opt for having base royalty based on SCO prices or WTI prices, or a percentage of these prices. For instance, the royalty could be based on 85% of the WTI price in order to account of the volume loss due to upgrading.

The economic effect of a base royalty on higher prices can be easily evaluated on the basis of the assumption that bitumen prices would be 45% of the WTI price. A base royalty of 10% on the bitumen price and bitumen volumes as studied in Section 3.3.2. above would have exactly the same impact as a base royalty of 4.5% on WTI prices but bitumen volumes.

The only economic difference would be in price fluctuations of bitumen prices relative to WTI.

3.3.5. Upgrading credits

It is possible to have credits against the base royalty, NPS, SOST or provincial corporate income tax. These credits have as purpose to make upgrading in Alberta more attractive to investors. The impact on upgrading and on the total projects will be evaluated in the Base Packages to be discussed in Section 4.1 of this report.

3.4. Net Profit Sharing Royalty (“NPS”)

3.4.1. Remove the LTBR

An obvious feature that would help in making the fiscal system somewhat more cost regressive is to remove the LTBR. The LTBR primarily facilitates high cost projects with long payout times.

Following is an analysis of the economics of the same current terms but without a 6% yearly LTBR.

Government Revenues per barrel

The following two tables 3.04 and 3.44 show the difference in government revenues per barrel.

Table 3.04

MINE+UPGRADER CURRENT TERMS

Government Income + Participation per SCO barrel (\$ Cdn)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$2.64 | \$3.68 |
| 30 | | | \$3.74 | \$4.80 | \$5.82 | \$6.83 | \$7.82 |
| 40 | \$5.92 | \$6.96 | \$7.97 | \$8.98 | \$9.97 | \$10.96 | \$11.95 |
| 50 | \$10.12 | \$11.12 | \$12.12 | \$13.11 | \$14.11 | \$15.09 | \$16.08 |
| 60 | \$14.27 | \$15.26 | \$16.25 | \$17.24 | \$18.24 | \$19.22 | \$20.21 |
| 70 | \$18.41 | \$19.40 | \$20.38 | \$21.38 | \$22.36 | \$23.35 | \$24.34 |
| 80 | \$22.54 | \$23.52 | \$24.52 | \$25.50 | \$26.49 | \$27.48 | \$28.47 |
| 90 | \$26.67 | \$27.66 | \$28.65 | \$29.64 | \$30.63 | \$31.61 | \$32.59 |
| 100 | \$30.80 | \$31.80 | \$32.78 | \$33.77 | \$34.75 | \$35.74 | \$36.72 |

Table 3.44
MINE+UPGRADER NO LTBR
Government Income + Participation per SCO barrel (\$ Cdn)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$2.80 | \$3.75 |
| 30 | | | \$4.02 | \$4.97 | \$5.93 | \$6.89 | \$7.86 |
| 40 | \$6.20 | \$7.14 | \$8.11 | \$9.07 | \$10.04 | \$11.01 | \$11.99 |
| 50 | \$10.28 | \$11.25 | \$12.22 | \$13.19 | \$14.16 | \$15.14 | \$16.11 |
| 60 | \$14.40 | \$15.37 | \$16.33 | \$17.31 | \$18.29 | \$19.26 | \$20.23 |
| 70 | \$18.52 | \$19.48 | \$20.46 | \$21.44 | \$22.41 | \$23.39 | \$24.36 |
| 80 | \$22.63 | \$23.61 | \$24.59 | \$25.56 | \$26.53 | \$27.51 | \$28.48 |
| 90 | \$26.76 | \$27.74 | \$28.71 | \$29.68 | \$30.66 | \$31.64 | \$32.61 |
| 100 | \$30.89 | \$31.85 | \$32.83 | \$33.81 | \$34.78 | \$35.76 | \$36.74 |

As can be expected the removal of the LTBR has its maximum effect in Cost Level 7 under relatively low prices of US \$ 40 per barrel. In this case the government collects Can \$ 6.20 per barrel instead of the original Can \$ 5.92 per barrel or Can \$ 0.28 per barrel more. Under Cost Level 1 and US \$ 40 per barrel the government collects only Can \$ 0.04 more.

In other words, the removal of the LTBR is clearly a disincentive for high cost projects.

Undiscounted Government Take

The following two tables show the difference in undiscounted real government take.

Table 3.06
MINE+UPGRADER CURRENT TERMS
Undiscounted Government Take (Income only)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 36.97% | 38.49% |
| 30 | | | 36.60% | 38.01% | 38.68% | 39.05% | 39.30% |
| 40 | 37.63% | 38.35% | 38.77% | 39.06% | 39.25% | 39.40% | 39.52% |
| 50 | 38.83% | 39.05% | 39.22% | 39.35% | 39.46% | 39.55% | 39.62% |
| 60 | 39.19% | 39.31% | 39.40% | 39.48% | 39.57% | 39.62% | 39.69% |
| 70 | 39.38% | 39.45% | 39.51% | 39.58% | 39.63% | 39.68% | 39.72% |
| 80 | 39.48% | 39.53% | 39.59% | 39.63% | 39.68% | 39.72% | 39.75% |
| 90 | 39.54% | 39.59% | 39.64% | 39.67% | 39.71% | 39.74% | 39.76% |
| 100 | 39.60% | 39.64% | 39.67% | 39.70% | 39.73% | 39.76% | 39.78% |

Table 3.46
MINE+UPGRADER NO LTBR
Undiscounted Government Take (Income only)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 39.21% | 39.24% |
| 30 | | | 39.39% | 39.32% | 39.38% | 39.44% | 39.52% |
| 40 | 39.42% | 39.39% | 39.44% | 39.47% | 39.52% | 39.57% | 39.64% |
| 50 | 39.45% | 39.49% | 39.53% | 39.58% | 39.61% | 39.66% | 39.69% |
| 60 | 39.55% | 39.57% | 39.60% | 39.64% | 39.68% | 39.70% | 39.73% |
| 70 | 39.61% | 39.62% | 39.66% | 39.69% | 39.71% | 39.73% | 39.75% |
| 80 | 39.64% | 39.67% | 39.70% | 39.71% | 39.74% | 39.75% | 39.77% |
| 90 | 39.68% | 39.70% | 39.71% | 39.74% | 39.75% | 39.77% | 39.78% |
| 100 | 39.71% | 39.72% | 39.74% | 39.76% | 39.77% | 39.78% | 39.80% |

This table shows how the undiscounted government take specifically increases under high cost-low price conditions relative to the current terms.

Remarkably the overall government take still seems to be very slightly cost and price progressive. This is due to the changing mix of upstream and upgrader as was already discussed in Chapter 2.

5% Discounted Government Take

The following two tables illustrate the difference in terms of 5% discounted government take.

Table 3.07
MINE+UPGRADER CURRENT TERMS
5% Discounted Government Take (Income only)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 50.32% | 43.01% |
| 30 | | | 55.40% | 45.78% | 42.88% | 41.58% | 40.86% |
| 40 | 48.25% | 44.60% | 42.84% | 41.85% | 41.20% | 40.78% | 40.47% |
| 50 | 42.83% | 42.00% | 41.45% | 41.03% | 40.73% | 40.48% | 40.29% |
| 60 | 41.61% | 41.22% | 40.92% | 40.67% | 40.50% | 40.33% | 40.21% |
| 70 | 41.11% | 40.86% | 40.65% | 40.51% | 40.35% | 40.25% | 40.14% |
| 80 | 40.82% | 40.64% | 40.51% | 40.38% | 40.28% | 40.19% | 40.10% |
| 90 | 40.63% | 40.52% | 40.42% | 40.31% | 40.23% | 40.14% | 40.06% |
| 100 | 40.52% | 40.43% | 40.33% | 40.25% | 40.17% | 40.11% | 40.04% |

Table 3.47
MINE+UPGRADER NO LTBR
5% Discounted Government Take (Income only)

| WTI | | | | | | | | |
|-------|--------|--------|--------|--------|--------|--------|--------|--|
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 | |
| 20 | | | | | | 55.95% | 44.57% | |
| 30 | | | 63.65% | 48.63% | 44.32% | 42.36% | 41.31% | |
| 40 | 52.44% | 46.81% | 44.21% | 42.68% | 41.75% | 41.11% | 40.69% | |
| 50 | 44.10% | 42.89% | 42.06% | 41.49% | 41.03% | 40.70% | 40.43% | |
| 60 | 42.33% | 41.75% | 41.30% | 40.98% | 40.71% | 40.47% | 40.28% | |
| 70 | 41.56% | 41.20% | 40.94% | 40.72% | 40.51% | 40.35% | 40.21% | |
| 80 | 41.14% | 40.92% | 40.72% | 40.54% | 40.40% | 40.26% | 40.14% | |
| 90 | 40.90% | 40.73% | 40.56% | 40.43% | 40.30% | 40.21% | 40.11% | |
| 100 | 40.73% | 40.57% | 40.46% | 40.35% | 40.25% | 40.15% | 40.08% | |

On a discounted government take basis the effect of removing the LTBR is much stronger.

On the basis of a 5% discounted government take, the system is now rather regressive for costs and slightly regressive for price.

Profitability

The following two tables provide the impact on the IRR.

Table 3.08
MINE+UPGRADER CURRENT TERMS
IRR (real, 2007 Cdn \$)

| WTI | | | | | | | | |
|-------|--------|--------|--------|--------|--------|--------|--------|--|
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 | |
| 20 | | | | | | 6.60% | 9.80% | |
| 30 | | | 6.04% | 7.91% | 10.17% | 12.99% | 16.74% | |
| 40 | 7.10% | 8.60% | 10.34% | 12.40% | 14.91% | 18.10% | 22.37% | |
| 50 | 10.45% | 12.07% | 13.96% | 16.21% | 18.98% | 22.51% | 27.26% | |
| 60 | 13.37% | 15.11% | 17.15% | 19.61% | 22.61% | 26.46% | 31.59% | |
| 70 | 16.00% | 17.86% | 20.06% | 22.67% | 25.92% | 30.02% | 35.52% | |
| 80 | 18.42% | 20.41% | 22.72% | 25.53% | 28.95% | 33.32% | 39.11% | |
| 90 | 20.68% | 22.76% | 25.22% | 28.16% | 31.77% | 36.36% | 42.46% | |
| 100 | 22.79% | 24.99% | 27.57% | 30.64% | 34.43% | 39.21% | 45.54% | |

Table 3.48

MINE+UPGRADER NO LTBR

IRR (real, 2007 Cdn \$)

WTI

US \$

| | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-----|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 6.43% | 9.68% |
| 30 | | | 5.86% | 7.77% | 10.04% | 12.87% | 16.62% |
| 40 | 6.95% | 8.47% | 10.22% | 12.29% | 14.80% | 18.00% | 22.27% |
| 50 | 10.33% | 11.95% | 13.85% | 16.10% | 18.88% | 22.42% | 27.16% |
| 60 | 13.25% | 15.00% | 17.05% | 19.49% | 22.51% | 26.36% | 31.52% |
| 70 | 15.89% | 17.76% | 19.95% | 22.58% | 25.82% | 29.94% | 35.43% |
| 80 | 18.32% | 20.30% | 22.63% | 25.43% | 28.86% | 33.24% | 39.05% |
| 90 | 20.57% | 22.67% | 25.13% | 28.07% | 31.71% | 36.28% | 42.35% |
| 100 | 22.70% | 24.90% | 27.47% | 30.56% | 34.34% | 39.14% | 45.44% |

The removal of the LTBR creates a modest reduction of IRR as can be expected.

It also makes the PFR10 and NPV10/barrel slightly less attractive.

Conclusion

The removal of the LTBR can be recommended. This increases government revenues for all new projects somewhat. However, it would specifically result in higher payments to government on high cost developments while affecting lower cost developments only very modestly. This will discourage excessively high cost developments and be an effective tool in bringing the level of development down slightly.

3.4.2. Base NPS on R/C ratio

During the last decade jurisdictions are increasingly using the R-factor concept to create progressive and back end loaded systems with respect to cost and price.

R-factor systems have the advantage that they do not often cause gold plating problems, provided the marginal tax rates are not too high.

Following is an evaluation of the fiscal system whereby the LTBR is removed and the base royalty of 1% is made deductible for NPS purposes. The NPS rate is determined on the basis of an R-factor. In this case the factor is defined as cumulative gross revenues over cumulative costs. The cumulative costs include prior base royalties paid.

The system is based on the concept that the NPS rate would increase to 50% once the ratio exceeds 2.00. This ratio is determined on a nominal basis.

Government Revenues per barrel

The following two tables 3.04 and 3.54 show the difference in government revenues per barrel.

Table 3.04

MINE+UPGRADER CURRENT TERMS

Government Income + Participation per SCO barrel (\$ Cdn)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$2.64 | \$3.68 |
| 30 | | | \$3.74 | \$4.80 | \$5.82 | \$6.83 | \$7.82 |
| 40 | \$5.92 | \$6.96 | \$7.97 | \$8.98 | \$9.97 | \$10.96 | \$11.95 |
| 50 | \$10.12 | \$11.12 | \$12.12 | \$13.11 | \$14.11 | \$15.09 | \$16.08 |
| 60 | \$14.27 | \$15.26 | \$16.25 | \$17.24 | \$18.24 | \$19.22 | \$20.21 |
| 70 | \$18.41 | \$19.40 | \$20.38 | \$21.38 | \$22.36 | \$23.35 | \$24.34 |
| 80 | \$22.54 | \$23.52 | \$24.52 | \$25.50 | \$26.49 | \$27.48 | \$28.47 |
| 90 | \$26.67 | \$27.66 | \$28.65 | \$29.64 | \$30.63 | \$31.61 | \$32.59 |
| 100 | \$30.80 | \$31.80 | \$32.78 | \$33.77 | \$34.75 | \$35.74 | \$36.72 |

Table 3.54

MINE+UPGRADER R/C NPS

Government Income + Participation per SCO barrel (\$ Cdn)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$2.83 | \$3.79 |
| 30 | | | \$4.07 | \$5.03 | \$5.99 | \$7.24 | \$8.96 |
| 40 | \$6.26 | \$7.23 | \$8.20 | \$9.45 | \$11.19 | \$12.78 | \$14.42 |
| 50 | \$10.41 | \$11.66 | \$13.44 | \$15.05 | \$16.65 | \$18.25 | \$19.68 |
| 60 | \$15.64 | \$17.30 | \$18.90 | \$20.50 | \$22.08 | \$23.51 | \$24.92 |
| 70 | \$21.14 | \$22.70 | \$24.35 | \$25.91 | \$27.34 | \$28.75 | \$30.10 |
| 80 | \$26.57 | \$28.18 | \$29.74 | \$31.16 | \$32.57 | \$33.95 | \$35.30 |
| 90 | \$32.02 | \$33.57 | \$34.98 | \$36.39 | \$37.80 | \$39.13 | \$40.46 |
| 100 | \$37.39 | \$38.81 | \$40.21 | \$41.63 | \$42.97 | \$44.32 | \$45.63 |

The R-factor system results in an increase in government revenues across the board for US \$ 30 and higher. For a project with a very long life time, it is inevitable that eventually the ratio exceeds 2.00 under these price conditions.

The system also creates higher government revenues under US \$ 20 per barrel, this is due to the fact that the LTBR is removed and the 1% royalty is now deductible.

As can be expected, the increased in government revenues is stronger with higher prices and lower costs.

Undiscounted Government Take

The following two tables show the difference in undiscounted real government take.

Table 3.06

MINE+UPGRADER CURRENT TERMS

Undiscounted Government Take (Income only)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 36.97% | 38.49% |
| 30 | | | 36.60% | 38.01% | 38.68% | 39.05% | 39.30% |
| 40 | 37.63% | 38.35% | 38.77% | 39.06% | 39.25% | 39.40% | 39.52% |
| 50 | 38.83% | 39.05% | 39.22% | 39.35% | 39.46% | 39.55% | 39.62% |
| 60 | 39.19% | 39.31% | 39.40% | 39.48% | 39.57% | 39.62% | 39.69% |
| 70 | 39.38% | 39.45% | 39.51% | 39.58% | 39.63% | 39.68% | 39.72% |
| 80 | 39.48% | 39.53% | 39.59% | 39.63% | 39.68% | 39.72% | 39.75% |
| 90 | 39.54% | 39.59% | 39.64% | 39.67% | 39.71% | 39.74% | 39.76% |
| 100 | 39.60% | 39.64% | 39.67% | 39.70% | 39.73% | 39.76% | 39.78% |

Table 3.56

MINE+UPGRADER R/C NPS

Undiscounted Government Take (Income only)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 39.64% | 39.68% |
| 30 | | | 39.83% | 39.81% | 39.78% | 41.41% | 45.02% |
| 40 | 39.82% | 39.85% | 39.86% | 41.10% | 44.05% | 45.95% | 47.67% |
| 50 | 39.92% | 40.94% | 43.48% | 45.16% | 46.58% | 47.82% | 48.50% |
| 60 | 42.97% | 44.54% | 45.82% | 46.95% | 47.91% | 48.46% | 48.94% |
| 70 | 45.22% | 46.17% | 47.19% | 47.97% | 48.44% | 48.85% | 49.13% |
| 80 | 46.54% | 47.36% | 48.01% | 48.42% | 48.77% | 49.06% | 49.29% |
| 90 | 47.48% | 48.05% | 48.40% | 48.72% | 49.01% | 49.20% | 49.37% |
| 100 | 48.07% | 48.39% | 48.67% | 48.95% | 49.13% | 49.31% | 49.43% |

The R-factor system creates a strongly progressive system for prices as well as costs.

5% Discounted Government Take

The following two tables illustrate the difference in terms of 5% discounted government take.

Table 3.07
MINE+UPGRADER CURRENT TERMS
5% Discounted Government Take (Income only)

| WTI US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|--------------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 50.32% | 43.01% |
| 30 | | | 55.40% | 45.78% | 42.88% | 41.58% | 40.86% |
| 40 | 48.25% | 44.60% | 42.84% | 41.85% | 41.20% | 40.78% | 40.47% |
| 50 | 42.83% | 42.00% | 41.45% | 41.03% | 40.73% | 40.48% | 40.29% |
| 60 | 41.61% | 41.22% | 40.92% | 40.67% | 40.50% | 40.33% | 40.21% |
| 70 | 41.11% | 40.86% | 40.65% | 40.51% | 40.35% | 40.25% | 40.14% |
| 80 | 40.82% | 40.64% | 40.51% | 40.38% | 40.28% | 40.19% | 40.10% |
| 90 | 40.63% | 40.52% | 40.42% | 40.31% | 40.23% | 40.14% | 40.06% |
| 100 | 40.52% | 40.43% | 40.33% | 40.25% | 40.17% | 40.11% | 40.04% |

Table 3.57
MINE+UPGRADER R/C NPS
5% Discounted Government Take (Income only)

| WTI US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|--------------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 56.66% | 45.07% |
| 30 | | | 64.57% | 49.33% | 44.76% | 43.73% | 45.61% |
| 40 | 53.01% | 47.43% | 44.70% | 43.88% | 45.16% | 46.31% | 47.92% |
| 50 | 44.69% | 44.03% | 45.08% | 45.89% | 46.88% | 48.10% | 48.70% |
| 60 | 44.84% | 45.57% | 46.41% | 47.26% | 48.21% | 48.68% | 49.15% |
| 70 | 46.01% | 46.62% | 47.50% | 48.29% | 48.68% | 49.07% | 49.29% |
| 80 | 46.94% | 47.67% | 48.35% | 48.68% | 49.00% | 49.25% | 49.43% |
| 90 | 47.80% | 48.39% | 48.67% | 48.95% | 49.23% | 49.36% | 49.47% |
| 100 | 48.42% | 48.67% | 48.91% | 49.19% | 49.31% | 49.46% | 49.51% |

Also on a discounted basis the system is progressive.

Profitability

The following two tables provide the impact on the IRR.

Table 3.08

MINE+UPGRADER CURRENT TERMS

IRR (real, 2007 Cdn \$)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 6.60% | 9.80% |
| 30 | | | 6.04% | 7.91% | 10.17% | 12.99% | 16.74% |
| 40 | 7.10% | 8.60% | 10.34% | 12.40% | 14.91% | 18.10% | 22.37% |
| 50 | 10.45% | 12.07% | 13.96% | 16.21% | 18.98% | 22.51% | 27.26% |
| 60 | 13.37% | 15.11% | 17.15% | 19.61% | 22.61% | 26.46% | 31.59% |
| 70 | 16.00% | 17.86% | 20.06% | 22.67% | 25.92% | 30.02% | 35.52% |
| 80 | 18.42% | 20.41% | 22.72% | 25.53% | 28.95% | 33.32% | 39.11% |
| 90 | 20.68% | 22.76% | 25.22% | 28.16% | 31.77% | 36.36% | 42.46% |
| 100 | 22.79% | 24.99% | 27.57% | 30.64% | 34.43% | 39.21% | 45.54% |

Table 3.58

MINE+UPGRADER R/C NPS

IRR (real, 2007 Cdn \$)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 6.41% | 9.65% |
| 30 | | | 5.84% | 7.74% | 10.02% | 12.83% | 16.43% |
| 40 | 6.93% | 8.44% | 10.19% | 12.24% | 14.67% | 17.74% | 21.70% |
| 50 | 10.29% | 11.90% | 13.71% | 15.91% | 18.57% | 21.80% | 26.25% |
| 60 | 13.16% | 14.84% | 16.78% | 19.13% | 21.87% | 25.49% | 30.20% |
| 70 | 15.69% | 17.48% | 19.54% | 21.92% | 24.97% | 28.75% | 33.90% |
| 80 | 18.01% | 19.85% | 21.95% | 24.59% | 27.77% | 31.83% | 37.24% |
| 90 | 20.10% | 21.98% | 24.31% | 27.04% | 30.36% | 34.67% | 40.45% |
| 100 | 22.00% | 24.08% | 26.48% | 29.29% | 32.87% | 37.33% | 43.40% |

Despite the strong increases in government revenues per barrel and undiscounted and discounted government take, the IRR is only modestly affected by this system. This is due to the strong back end loading of the system. The higher NPS rate of 50% only clicks in later in the cash flow. This reduces the possible negative impact on the IRR. As a result the R-factor system combines a strong increase in government take with a modest reduction of profitability.

This is also true for the PFR10 and NPV10/barrel.

Conclusion

The R/C system is a desirable system to significantly increase government take with a modest impact on profitability. However, the fact that the system is progressive with costs means that high cost projects are supported.

If Alberta wants to create the benefit of an increased government take, but with a reduction of attractiveness of high cost projects, other elements would have to be introduced to achieve this objective in addition to the R/C system.

3.4.3. Base NPS on R/C ratio and cost limit

A rather brutal but very effective method of controlling projects with excessively high costs is to establish a cost limit. This concept is extensively used in international production sharing contracts, but is typically not used in net profit sharing systems.

Nevertheless it is an effective way of combining a generally progressive system with providing a disincentive for projects with excessively high cost.

For instance, it is possible to put a limit on costs in such a way that costs deductions for NPS purposes can never exceed 50% of gross bitumen revenues. The consequence of this concept is that NPS is paid from the first month of production, since by definition the NPS is based on at least 50% of the gross bitumen revenues. This creates a system that is more front end loaded. Also the system becomes cost regressive under low and average bitumen prices.

Following is a comparison of an R/C system with and without a cost limit.

Government Revenues per barrel

The following two tables 3.54 and 3.64 show the difference in government revenues per barrel for the system without and with the cost limit.

Table 3.54

MINE+UPGRADER R/C NPS

Government Income + Participation per SCO barrel (\$ Cdn)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$2.83 | \$3.79 |
| 30 | | | \$4.07 | \$5.03 | \$5.99 | \$7.24 | \$8.96 |
| 40 | \$6.26 | \$7.23 | \$8.20 | \$9.45 | \$11.19 | \$12.78 | \$14.42 |
| 50 | \$10.41 | \$11.66 | \$13.44 | \$15.05 | \$16.65 | \$18.25 | \$19.68 |
| 60 | \$15.64 | \$17.30 | \$18.90 | \$20.50 | \$22.08 | \$23.51 | \$24.92 |
| 70 | \$21.14 | \$22.70 | \$24.35 | \$25.91 | \$27.34 | \$28.75 | \$30.10 |
| 80 | \$26.57 | \$28.18 | \$29.74 | \$31.16 | \$32.57 | \$33.95 | \$35.30 |
| 90 | \$32.02 | \$33.57 | \$34.98 | \$36.39 | \$37.80 | \$39.13 | \$40.46 |
| 100 | \$37.39 | \$38.81 | \$40.21 | \$41.63 | \$42.97 | \$44.32 | \$45.63 |

Table 3.64

MINE+UPGRADER R/C NPS WITH COST LIMIT

Government Income + Participation per SCO barrel (\$ Cdn)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$3.29 | \$4.01 |
| 30 | | | \$4.80 | \$5.52 | \$6.24 | \$7.31 | \$8.99 |
| 40 | \$7.02 | \$7.74 | \$8.46 | \$9.55 | \$11.26 | \$12.82 | \$14.44 |
| 50 | \$10.69 | \$11.79 | \$13.52 | \$15.11 | \$16.70 | \$18.27 | \$19.71 |
| 60 | \$15.77 | \$17.39 | \$18.94 | \$20.57 | \$22.10 | \$23.54 | \$24.92 |
| 70 | \$21.24 | \$22.77 | \$24.42 | \$25.93 | \$27.38 | \$28.76 | \$30.11 |
| 80 | \$26.65 | \$28.26 | \$29.76 | \$31.21 | \$32.60 | \$33.97 | \$35.30 |
| 90 | \$32.10 | \$33.59 | \$35.04 | \$36.44 | \$37.80 | \$39.13 | \$40.48 |
| 100 | \$37.42 | \$38.86 | \$40.26 | \$41.63 | \$42.98 | \$44.32 | \$45.65 |

The cost limit results in a strong increase in government revenues for projects with a Cost Limit 7 or 6 under relatively low prices of say US \$ 40 per barrel.

Under high prices and low costs the cost limit has very little impact on undiscounted revenues.

Undiscounted Government Take

The following two tables show the difference in undiscounted real government take.

Table 3.56
MINE+UPGRADER R/C NPS
Undiscounted Government Take (Income only)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 39.64% | 39.68% |
| 30 | | | 39.83% | 39.81% | 39.78% | 41.41% | 45.02% |
| 40 | 39.82% | 39.85% | 39.86% | 41.10% | 44.05% | 45.95% | 47.67% |
| 50 | 39.92% | 40.94% | 43.48% | 45.16% | 46.58% | 47.82% | 48.50% |
| 60 | 42.97% | 44.54% | 45.82% | 46.95% | 47.91% | 48.46% | 48.94% |
| 70 | 45.22% | 46.17% | 47.19% | 47.97% | 48.44% | 48.85% | 49.13% |
| 80 | 46.54% | 47.36% | 48.01% | 48.42% | 48.77% | 49.06% | 49.29% |
| 90 | 47.48% | 48.05% | 48.40% | 48.72% | 49.01% | 49.20% | 49.37% |
| 100 | 48.07% | 48.39% | 48.67% | 48.95% | 49.13% | 49.31% | 49.43% |

Table 3.66
MINE+UPGRADER R/C NPS WITH COST LIMIT
Undiscounted Government Take (Income only)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 46.18% | 42.00% |
| 30 | | | 46.99% | 43.67% | 41.42% | 41.85% | 45.18% |
| 40 | 44.69% | 42.68% | 41.15% | 41.57% | 44.32% | 46.09% | 47.74% |
| 50 | 41.00% | 41.40% | 43.73% | 45.35% | 46.73% | 47.88% | 48.56% |
| 60 | 43.31% | 44.80% | 45.93% | 47.10% | 47.96% | 48.53% | 48.94% |
| 70 | 45.42% | 46.30% | 47.33% | 48.01% | 48.51% | 48.86% | 49.14% |
| 80 | 46.68% | 47.48% | 48.05% | 48.49% | 48.82% | 49.09% | 49.28% |
| 90 | 47.60% | 48.08% | 48.47% | 48.78% | 49.02% | 49.20% | 49.39% |
| 100 | 48.10% | 48.45% | 48.73% | 48.95% | 49.14% | 49.31% | 49.45% |

The cost limit creates an interesting pattern. The government take goes up strongly for instance in the Cost Level 7 – US \$ 40 per barrel combination. However, for low costs and high prices the impact is very modest. Therefore, for US \$ 40 per barrel the system is cost regressive between Cost Level 7 and Cost Level 5. However, between Cost Level 5 and Cost Level 1 the system becomes cost progressive. The reason is that in this last range the impact of the cost limit diminishes and the impact of the progressive R/C feature takes over.

Under high prices the entire system becomes again cost progressive.

In other words, high cost projects are discouraged under low prices. The cost limit is therefore only effective under low prices.

5% Discounted Government Take

The following two tables illustrate the difference in terms of 5% discounted government take.

Table 3.57
MINE+UPGRADER R/C NPS
5% Discounted Government Take (Income only)

| WTI | | | | | | | | |
|-------|--|--------|--------|--------|--------|--------|--------|--------|
| US \$ | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | 56.66% | 45.07% |
| 30 | | | | 64.57% | 49.33% | 44.76% | 43.73% | 45.61% |
| 40 | | 53.01% | 47.43% | 44.70% | 43.88% | 45.16% | 46.31% | 47.92% |
| 50 | | 44.69% | 44.03% | 45.08% | 45.89% | 46.88% | 48.10% | 48.70% |
| 60 | | 44.84% | 45.57% | 46.41% | 47.26% | 48.21% | 48.68% | 49.15% |
| 70 | | 46.01% | 46.62% | 47.50% | 48.29% | 48.68% | 49.07% | 49.29% |
| 80 | | 46.94% | 47.67% | 48.35% | 48.68% | 49.00% | 49.25% | 49.43% |
| 90 | | 47.80% | 48.39% | 48.67% | 48.95% | 49.23% | 49.36% | 49.47% |
| 100 | | 48.42% | 48.67% | 48.91% | 49.19% | 49.31% | 49.46% | 49.51% |

Table 3.67
MINE+UPGRADER R/C NPS WITH COST LIMIT
5% Discounted Government Take (Income only)

| WTI | | | | | | | | |
|-------|--|--------|--------|--------|--------|--------|--------|--------|
| US \$ | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | 80.92% | 51.78% |
| 30 | | | | 97.41% | 61.40% | 50.14% | 45.96% | 46.47% |
| 40 | | 69.93% | 56.28% | 49.41% | 46.31% | 46.47% | 46.96% | 48.22% |
| 50 | | 49.00% | 46.55% | 46.55% | 46.82% | 47.47% | 48.38% | 48.91% |
| 60 | | 46.63% | 46.79% | 47.06% | 47.80% | 48.47% | 48.91% | 49.21% |
| 70 | | 46.97% | 47.24% | 48.00% | 48.53% | 48.93% | 49.17% | 49.35% |
| 80 | | 47.54% | 48.13% | 48.57% | 48.93% | 49.17% | 49.36% | 49.46% |
| 90 | | 48.25% | 48.61% | 48.92% | 49.16% | 49.31% | 49.40% | 49.54% |
| 100 | | 48.64% | 48.91% | 49.11% | 49.26% | 49.39% | 49.49% | 49.57% |

The government take behavior described above for the undiscounted government take also applies to the 5% discounted government take, although in this case the levels of government take are higher.

Profitability

The following two tables provide the impact on the IRR.

Table 3.58

MINE+UPGRADER R/C NPS

IRR (real, 2007 Cdn \$)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 6.41% | 9.65% |
| 30 | | | 5.84% | 7.74% | 10.02% | 12.83% | 16.43% |
| 40 | 6.93% | 8.44% | 10.19% | 12.24% | 14.67% | 17.74% | 21.70% |
| 50 | 10.29% | 11.90% | 13.71% | 15.91% | 18.57% | 21.80% | 26.25% |
| 60 | 13.16% | 14.84% | 16.78% | 19.13% | 21.87% | 25.49% | 30.20% |
| 70 | 15.69% | 17.48% | 19.54% | 21.92% | 24.97% | 28.75% | 33.90% |
| 80 | 18.01% | 19.85% | 21.95% | 24.59% | 27.77% | 31.83% | 37.24% |
| 90 | 20.10% | 21.98% | 24.31% | 27.04% | 30.36% | 34.67% | 40.45% |
| 100 | 22.00% | 24.08% | 26.48% | 29.29% | 32.87% | 37.33% | 43.40% |

Table 3.68

MINE+UPGRADER R/C NPS WITH COST LIMIT

IRR (real, 2007 Cdn \$)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 5.61% | 8.97% |
| 30 | | | 5.06% | 7.04% | 9.39% | 12.27% | 15.96% |
| 40 | 6.21% | 7.79% | 9.60% | 11.70% | 14.17% | 17.29% | 21.30% |
| 50 | 9.72% | 11.37% | 13.23% | 15.44% | 18.12% | 21.41% | 25.82% |
| 60 | 12.65% | 14.36% | 16.36% | 18.69% | 21.49% | 25.06% | 29.84% |
| 70 | 15.23% | 17.05% | 19.10% | 21.55% | 24.54% | 28.38% | 33.52% |
| 80 | 17.57% | 19.42% | 21.59% | 24.17% | 27.36% | 31.42% | 36.89% |
| 90 | 19.68% | 21.62% | 23.89% | 26.62% | 29.99% | 34.30% | 40.02% |
| 100 | 21.65% | 23.68% | 26.07% | 28.94% | 32.47% | 36.96% | 42.97% |

As can be expected the cost limit has a strongly negative impact on the high cost projects under low prices. Otherwise, the impact is modest.

This is also true for the PFR10 and NPV10/barrel.

Conclusion

A cost limit is one of the features that could be combined with an R/C system in order to avoid that the otherwise progressive system encourages excessive high cost developments.

3.4.4. Base NPS on IRR based scale

Rather than creating a sliding scale based on the R/C system, it is possible to create a sliding scale based on the IRR. For instance, over 6% IRR (approximately the LTBR) the rate would be 25% and over 18% IRR the rate would be 50%. Royalties would be offset. The 6% and 18% benchmarks are calculated on a before corporate tax basis.

Following is a comparison of Current Terms and an NPS based on an IRR sliding scale.

Government Revenues per barrel

The following two tables 3.04 and 3.54 show the difference in government revenues per barrel.

Table 3.04

MINE+UPGRADER CURRENT TERMS

Government Income + Participation per SCO barrel (\$ Cdn)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$2.64 | \$3.68 |
| 30 | | | \$3.74 | \$4.80 | \$5.82 | \$6.83 | \$7.82 |
| 40 | \$5.92 | \$6.96 | \$7.97 | \$8.98 | \$9.97 | \$10.96 | \$11.95 |
| 50 | \$10.12 | \$11.12 | \$12.12 | \$13.11 | \$14.11 | \$15.09 | \$16.08 |
| 60 | \$14.27 | \$15.26 | \$16.25 | \$17.24 | \$18.24 | \$19.22 | \$20.21 |
| 70 | \$18.41 | \$19.40 | \$20.38 | \$21.38 | \$22.36 | \$23.35 | \$24.34 |
| 80 | \$22.54 | \$23.52 | \$24.52 | \$25.50 | \$26.49 | \$27.48 | \$28.47 |
| 90 | \$26.67 | \$27.66 | \$28.65 | \$29.64 | \$30.63 | \$31.61 | \$32.59 |
| 100 | \$30.80 | \$31.80 | \$32.78 | \$33.77 | \$34.75 | \$35.74 | \$36.72 |

Table 3.134

MINE+UPGRADER IRR BASED NPS

Government Income + Participation per SCO barrel (\$ Cdn)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$2.64 | \$3.68 |
| 30 | | | \$3.74 | \$4.80 | \$5.82 | \$6.83 | \$9.30 |
| 40 | \$5.92 | \$6.96 | \$7.97 | \$8.98 | \$11.48 | \$13.20 | \$14.62 |
| 50 | \$10.12 | \$11.12 | \$13.26 | \$15.53 | \$17.07 | \$18.48 | \$19.82 |
| 60 | \$14.27 | \$17.72 | \$19.45 | \$20.93 | \$22.33 | \$23.68 | \$25.00 |
| 70 | \$21.76 | \$23.35 | \$24.79 | \$26.19 | \$27.54 | \$28.86 | \$30.17 |
| 80 | \$27.23 | \$28.65 | \$30.04 | \$31.39 | \$32.72 | \$34.04 | \$35.34 |
| 90 | \$32.51 | \$33.90 | \$35.26 | \$36.58 | \$37.90 | \$39.20 | \$40.49 |
| 100 | \$37.75 | \$39.11 | \$40.44 | \$41.76 | \$43.07 | \$44.37 | \$45.65 |

By comparing the two tables it can be seen sometimes the government revenues are not increased relative to the current system. This is for instance the case for Cost Level 7 and a price of US \$ 50 per barrel WTI. This is due to the fact that under these conditions, the system does not reach the benchmark of 18% and therefore the current system of an LTBR of 6% and a 1% royalty offset apply.

Net Cash Flow per barrel

In this particular case it is interesting to study also the Net Cash Flow per barrel.

Table 3.05
MINE+UPGRADER CURRENT TERMS
Net Cash (\$ Cdn) per barrel of SCO
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$4.50 | \$5.88 |
| 30 | | | \$6.48 | \$7.83 | \$9.23 | \$10.65 | \$12.08 |
| 40 | \$9.80 | \$11.18 | \$12.59 | \$14.00 | \$15.43 | \$16.86 | \$18.29 |
| 50 | \$15.94 | \$17.36 | \$18.78 | \$20.21 | \$21.64 | \$23.07 | \$24.51 |
| 60 | \$22.14 | \$23.57 | \$25.00 | \$26.43 | \$27.85 | \$29.29 | \$30.72 |
| 70 | \$28.34 | \$29.78 | \$31.21 | \$32.64 | \$34.07 | \$35.50 | \$36.94 |
| 80 | \$34.56 | \$35.99 | \$37.42 | \$38.85 | \$40.28 | \$41.72 | \$43.15 |
| 90 | \$40.77 | \$42.20 | \$43.63 | \$45.07 | \$46.50 | \$47.93 | \$49.37 |
| 100 | \$46.98 | \$48.41 | \$49.85 | \$51.28 | \$52.72 | \$54.15 | \$55.59 |

Table 3.135
MINE+UPGRADER IRR BASED NPS
Net Cash (\$ Cdn) per barrel of SCO
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$4.50 | \$5.88 |
| 30 | | | \$6.48 | \$7.83 | \$9.23 | \$10.65 | \$10.60 |
| 40 | \$9.80 | \$11.18 | \$12.59 | \$14.00 | \$13.92 | \$14.62 | \$15.62 |
| 50 | \$15.94 | \$17.36 | \$17.64 | \$17.79 | \$18.67 | \$19.69 | \$20.77 |
| 60 | \$22.14 | \$21.11 | \$21.80 | \$22.74 | \$23.76 | \$24.83 | \$25.93 |
| 70 | \$24.99 | \$25.83 | \$26.80 | \$27.83 | \$28.90 | \$29.99 | \$31.11 |
| 80 | \$29.87 | \$30.86 | \$31.89 | \$32.97 | \$34.06 | \$35.16 | \$36.28 |
| 90 | \$34.93 | \$35.96 | \$37.03 | \$38.12 | \$39.22 | \$40.34 | \$41.47 |
| 100 | \$40.03 | \$41.09 | \$42.19 | \$43.28 | \$44.40 | \$45.52 | \$46.66 |

As can be seen for price level US \$ 60 and from Cost Level 6 to Cost Level 7, the Net Cash Flow per barrel actually goes **up** as costs increase. This is an indication of so-called “gold plating”. The government over-compensates increase in costs with a government revenue reduction. This increases the net cash flow to the investor if costs are higher.

Similarly conditions of “near gold plating” occur at US \$ 50 per barrel between Cost Level 4 and 6. Here it can be seen how the Net Cash Flow barely declines as a result of higher costs. In other words the government absorbs almost the entire cost increase through lower government revenues.

These conditions, of course, do not make sense and is an un-attractive feature from a fiscal design.

Undiscounted Government Take

The following two tables show the difference in undiscounted real government take.

Table 3.06
MINE+UPGRADER CURRENT TERMS
Undiscounted Government Take (Income only)

| WTI | | | | | | | | |
|-------|--------|--------|--------|--------|--------|--------|--------|--|
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 | |
| 20 | | | | | | 36.97% | 38.49% | |
| 30 | | | 36.60% | 38.01% | 38.68% | 39.05% | 39.30% | |
| 40 | 37.63% | 38.35% | 38.77% | 39.06% | 39.25% | 39.40% | 39.52% | |
| 50 | 38.83% | 39.05% | 39.22% | 39.35% | 39.46% | 39.55% | 39.62% | |
| 60 | 39.19% | 39.31% | 39.40% | 39.48% | 39.57% | 39.62% | 39.69% | |
| 70 | 39.38% | 39.45% | 39.51% | 39.58% | 39.63% | 39.68% | 39.72% | |
| 80 | 39.48% | 39.53% | 39.59% | 39.63% | 39.68% | 39.72% | 39.75% | |
| 90 | 39.54% | 39.59% | 39.64% | 39.67% | 39.71% | 39.74% | 39.76% | |
| 100 | 39.60% | 39.64% | 39.67% | 39.70% | 39.73% | 39.76% | 39.78% | |

Table 3.136
MINE+UPGRADER IRR BASED NPS
Undiscounted Government Take (Income only)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 36.97% | 38.49% |
| 30 | | | 36.60% | 38.01% | 38.68% | 39.05% | 46.74% |
| 40 | 37.63% | 38.35% | 38.77% | 39.06% | 45.20% | 47.44% | 48.34% |
| 50 | 38.83% | 39.05% | 42.92% | 46.61% | 47.77% | 48.41% | 48.83% |
| 60 | 39.19% | 45.63% | 47.16% | 47.93% | 48.45% | 48.81% | 49.10% |
| 70 | 46.54% | 47.48% | 48.06% | 48.48% | 48.79% | 49.04% | 49.24% |
| 80 | 47.68% | 48.15% | 48.51% | 48.78% | 49.00% | 49.19% | 49.34% |
| 90 | 48.21% | 48.52% | 48.77% | 48.97% | 49.15% | 49.28% | 49.40% |
| 100 | 48.54% | 48.76% | 48.94% | 49.11% | 49.24% | 49.36% | 49.45% |

The IRR based system creates a strongly progressive system for prices as well as costs.

5% Discounted Government Take

The following two tables illustrate the difference in terms of 5% discounted government take.

Table 3.07
MINE+UPGRADER CURRENT TERMS
5% Discounted Government Take (Income only)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 50.32% | 43.01% |
| 30 | | | 55.40% | 45.78% | 42.88% | 41.58% | 40.86% |
| 40 | 48.25% | 44.60% | 42.84% | 41.85% | 41.20% | 40.78% | 40.47% |
| 50 | 42.83% | 42.00% | 41.45% | 41.03% | 40.73% | 40.48% | 40.29% |
| 60 | 41.61% | 41.22% | 40.92% | 40.67% | 40.50% | 40.33% | 40.21% |
| 70 | 41.11% | 40.86% | 40.65% | 40.51% | 40.35% | 40.25% | 40.14% |
| 80 | 40.82% | 40.64% | 40.51% | 40.38% | 40.28% | 40.19% | 40.10% |
| 90 | 40.63% | 40.52% | 40.42% | 40.31% | 40.23% | 40.14% | 40.06% |
| 100 | 40.52% | 40.43% | 40.33% | 40.25% | 40.17% | 40.11% | 40.04% |

Table 3.137
MINE+UPGRADER IRR BASED NPS
5% Discounted Government Take (Income only)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 50.32% | 43.01% |
| 30 | | | 55.40% | 45.78% | 42.88% | 41.58% | 47.69% |
| 40 | 48.25% | 44.60% | 42.84% | 41.85% | 46.19% | 48.39% | 49.13% |
| 50 | 42.83% | 42.00% | 44.13% | 47.61% | 48.70% | 49.20% | 49.45% |
| 60 | 41.61% | 46.64% | 48.15% | 48.83% | 49.24% | 49.46% | 49.61% |
| 70 | 47.56% | 48.46% | 48.94% | 49.27% | 49.46% | 49.59% | 49.67% |
| 80 | 48.65% | 49.02% | 49.30% | 49.46% | 49.58% | 49.66% | 49.71% |
| 90 | 49.08% | 49.31% | 49.48% | 49.57% | 49.66% | 49.70% | 49.72% |
| 100 | 49.33% | 49.48% | 49.56% | 49.65% | 49.69% | 49.74% | 49.74% |

Also on a discounted basis the system is progressive.

Profitability

The following two tables provide the impact on the IRR.

Table 3.08
MINE+UPGRADER CURRENT TERMS
IRR (real, 2007 Cdn \$)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 6.60% | 9.80% |
| 30 | | | 6.04% | 7.91% | 10.17% | 12.99% | 16.74% |
| 40 | 7.10% | 8.60% | 10.34% | 12.40% | 14.91% | 18.10% | 22.37% |
| 50 | 10.45% | 12.07% | 13.96% | 16.21% | 18.98% | 22.51% | 27.26% |
| 60 | 13.37% | 15.11% | 17.15% | 19.61% | 22.61% | 26.46% | 31.59% |
| 70 | 16.00% | 17.86% | 20.06% | 22.67% | 25.92% | 30.02% | 35.52% |
| 80 | 18.42% | 20.41% | 22.72% | 25.53% | 28.95% | 33.32% | 39.11% |
| 90 | 20.68% | 22.76% | 25.22% | 28.16% | 31.77% | 36.36% | 42.46% |
| 100 | 22.79% | 24.99% | 27.57% | 30.64% | 34.43% | 39.21% | 45.54% |

Table 3.138
MINE+UPGRADER IRR BASED NPS
IRR (real, 2007 Cdn \$)
WTI
US \$

| | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-----|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 6.60% | 9.80% |
| 30 | | | 6.04% | 7.91% | 10.17% | 12.99% | 16.27% |
| 40 | 7.10% | 8.60% | 10.34% | 12.40% | 14.67% | 17.47% | 21.33% |
| 50 | 10.45% | 12.07% | 13.86% | 15.79% | 18.25% | 21.45% | 25.79% |
| 60 | 13.37% | 14.82% | 16.61% | 18.81% | 21.53% | 25.05% | 29.77% |
| 70 | 15.59% | 17.24% | 19.22% | 21.59% | 24.56% | 28.32% | 33.41% |
| 80 | 17.74% | 19.53% | 21.63% | 24.20% | 27.33% | 31.36% | 36.74% |
| 90 | 19.78% | 21.67% | 23.91% | 26.61% | 29.94% | 34.18% | 39.84% |
| 100 | 21.69% | 23.69% | 26.06% | 28.89% | 32.39% | 36.82% | 42.71% |

For the price-cost combinations where there is a significant increase in government take, the IRR is only modestly effected. This is again due to the back end loaded nature of the system.

This is also true for the PFR10 and NPV10/barrel.

Conclusion

The IRR based system is an undesirable system because under a variety of conditions it could lead to “gold plating”.

3.4.5. Base Upstream NPS on SCO or WTI prices

It is possible to base the upstream NPS on SCO or WTI prices or percentages of these prices. However, base the cost deductions on upstream capital and operating costs only.

Assuming a flat NPS rate, the overall effect of this would be to create a more front end loaded system, because payout is now reached much earlier under a higher price but with the same costs. At the same time the system becomes now more regressive.

This option will be explored in more detail under Variation-2 in Section 4.3 of this report.

3.5. Provincial Corporate Income Tax (“CIT”)

A way to stimulate upgrading and other economic activities in the province of Alberta is to lower the provincial corporate income tax rate. Upgrading can furthermore be encouraged through tax credits.

These issues will be evaluated in this section.

3.5.1. Lower Provincial CIT rate

The lower corporate income tax will have a positive impact on upgrading. This will be the focus of the analysis. Therefore, upgrading economics will be compared before and after the introduction of the lower CIT rate.

The effects of a 5% provincial rate, or a 25% total rate will be explored.

Government Revenues per barrel

The following two tables 3.74 and 3.84 show the difference in government revenues per barrel.

Table 3.74

UPGRADER

CURRENT TERMS

Government Income + Participation per bitumen barrel (\$ Cdn)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|--------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| 20 | | | | | | \$1.21 | \$1.48 |
| 30 | | \$1.48 | \$1.75 | \$2.02 | \$2.29 | \$2.56 | \$2.83 |
| 40 | \$2.55 | \$2.83 | \$3.10 | \$3.37 | \$3.64 | \$3.91 | \$4.18 |
| 50 | \$3.90 | \$4.17 | \$4.44 | \$4.72 | \$4.99 | \$5.26 | \$5.53 |
| 60 | \$5.25 | \$5.52 | \$5.79 | \$6.06 | \$6.34 | \$6.61 | \$6.88 |
| 70 | \$6.60 | \$6.87 | \$7.14 | \$7.41 | \$7.68 | \$7.95 | \$8.23 |
| 80 | \$7.95 | \$8.22 | \$8.49 | \$8.76 | \$9.03 | \$9.30 | \$9.57 |
| 90 | \$9.30 | \$9.57 | \$9.84 | \$10.11 | \$10.38 | \$10.65 | \$10.92 |
| 100 | \$10.65 | \$10.92 | \$11.19 | \$11.46 | \$11.73 | \$12.00 | \$12.27 |

Table 3.84
UPGRADER **CIT-25%**
Government Income + Participation per bitumen barrel (\$ Cdn)

| WTI US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|--------------|--------|--------|--------|--------|--------|---------|---------|
| 20 | | | | | | \$1.01 | \$1.24 |
| 30 | | \$1.23 | \$1.46 | \$1.68 | \$1.91 | \$2.13 | \$2.36 |
| 40 | \$2.13 | \$2.35 | \$2.58 | \$2.81 | \$3.03 | \$3.26 | \$3.48 |
| 50 | \$3.25 | \$3.48 | \$3.70 | \$3.93 | \$4.16 | \$4.38 | \$4.61 |
| 60 | \$4.38 | \$4.60 | \$4.83 | \$5.05 | \$5.28 | \$5.51 | \$5.73 |
| 70 | \$5.50 | \$5.73 | \$5.95 | \$6.18 | \$6.40 | \$6.63 | \$6.85 |
| 80 | \$6.62 | \$6.85 | \$7.08 | \$7.30 | \$7.53 | \$7.75 | \$7.98 |
| 90 | \$7.75 | \$7.97 | \$8.20 | \$8.43 | \$8.65 | \$8.88 | \$9.10 |
| 100 | \$8.87 | \$9.10 | \$9.32 | \$9.55 | \$9.77 | \$10.00 | \$10.23 |

The only government revenues related to the Upgrader are the corporate income taxes for the Federal Government of Canada and for Alberta.

Therefore a reduction of the combined tax rate by 1/6 would result in 1/6 less overall government revenue. Of course, Alberta would now only receive half the government revenue based on the provincial tax rate.

Undiscounted Government Take

The following two tables show the difference in undiscounted real government take.

Table 3.76
UPGRADER **CURRENT TERMS**
Undiscounted Government Take (Income only)

| WTI US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|--------------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 30.43% | 30.28% |
| 30 | | 30.63% | 30.47% | 30.36% | 30.27% | 30.20% | 30.14% |
| 40 | 30.40% | 30.33% | 30.27% | 30.21% | 30.17% | 30.13% | 30.10% |
| 50 | 30.26% | 30.22% | 30.18% | 30.15% | 30.12% | 30.10% | 30.07% |
| 60 | 30.20% | 30.17% | 30.14% | 30.12% | 30.10% | 30.08% | 30.06% |
| 70 | 30.16% | 30.13% | 30.11% | 30.10% | 30.08% | 30.06% | 30.05% |
| 80 | 30.13% | 30.11% | 30.10% | 30.08% | 30.07% | 30.05% | 30.04% |
| 90 | 30.11% | 30.10% | 30.08% | 30.07% | 30.06% | 30.05% | 30.04% |
| 100 | 30.10% | 30.08% | 30.07% | 30.06% | 30.05% | 30.04% | 30.03% |

Table 3.86
UPGRADER **CIT-25%**
Undiscounted Government Take (Income only)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 25.36% | 25.23% |
| 30 | | 25.53% | 25.39% | 25.30% | 25.22% | 25.17% | 25.12% |
| 40 | 25.34% | 25.27% | 25.22% | 25.18% | 25.14% | 25.11% | 25.08% |
| 50 | 25.22% | 25.18% | 25.15% | 25.13% | 25.10% | 25.08% | 25.06% |
| 60 | 25.16% | 25.14% | 25.12% | 25.10% | 25.08% | 25.06% | 25.05% |
| 70 | 25.13% | 25.11% | 25.10% | 25.08% | 25.07% | 25.05% | 25.04% |
| 80 | 25.11% | 25.09% | 25.08% | 25.07% | 25.06% | 25.05% | 25.04% |
| 90 | 25.09% | 25.08% | 25.07% | 25.06% | 25.05% | 25.04% | 25.03% |
| 100 | 25.08% | 25.07% | 25.06% | 25.05% | 25.04% | 25.04% | 25.03% |

As can be expected the government take reduces from a very slightly regressive 30% to 25%. The rates are slightly regressive because these are real dollars and there is a slight time value loss due to depreciation provisions.

5% Discounted Government Take

The following two tables illustrate the difference in terms of 5% discounted government take.

Table 3.77
UPGRADER **CURRENT TERMS**
5% Discounted Government Take (Income only)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 37.26% | 33.05% |
| 30 | | 75.93% | 39.77% | 34.86% | 32.91% | 31.86% | 31.21% |
| 40 | 36.36% | 34.10% | 32.84% | 32.03% | 31.48% | 31.07% | 30.75% |
| 50 | 32.80% | 32.15% | 31.66% | 31.29% | 30.99% | 30.75% | 30.55% |
| 60 | 31.80% | 31.45% | 31.17% | 30.94% | 30.74% | 30.58% | 30.43% |
| 70 | 31.32% | 31.10% | 30.91% | 30.74% | 30.60% | 30.47% | 30.35% |
| 80 | 31.05% | 30.88% | 30.74% | 30.61% | 30.50% | 30.39% | 30.30% |
| 90 | 30.86% | 30.74% | 30.62% | 30.52% | 30.43% | 30.34% | 30.26% |
| 100 | 30.74% | 30.63% | 30.54% | 30.45% | 30.37% | 30.30% | 30.23% |

Table 3.87
UPGRADER **CIT-25%**
5% Discounted Government Take (Income only)

| WTI | | | | | | | |
|-------|--------|--------|--------|--------|--------|--------|--------|
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | 31.05% | 27.54% |
| 30 | | 63.28% | 33.14% | 29.05% | 27.42% | 26.55% | 26.01% |
| 40 | 30.30% | 28.42% | 27.37% | 26.70% | 26.23% | 25.89% | 25.63% |
| 50 | 27.33% | 26.79% | 26.38% | 26.07% | 25.82% | 25.62% | 25.46% |
| 60 | 26.50% | 26.21% | 25.98% | 25.78% | 25.62% | 25.48% | 25.36% |
| 70 | 26.10% | 25.92% | 25.76% | 25.62% | 25.50% | 25.39% | 25.29% |
| 80 | 25.87% | 25.74% | 25.62% | 25.51% | 25.41% | 25.33% | 25.25% |
| 90 | 25.72% | 25.62% | 25.52% | 25.43% | 25.36% | 25.28% | 25.22% |
| 100 | 25.61% | 25.53% | 25.45% | 25.38% | 25.31% | 25.25% | 25.19% |

The same government take loss also occurs on a 5% discounted basis, although here the time value loss is slightly higher as a result of the discounting in addition to calculating real dollars.

Profitability

The following two tables provide the impact on the IRR.

Table 3.78
UPGRADER **CURRENT TERMS**
IRR (real, 2007 Cdn \$)

| WTI | | | | | | | |
|-------|--------|--------|--------|--------|--------|--------|--------|
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | 7.06% | 9.81% |
| 30 | | 5.13% | 6.49% | 8.09% | 10.02% | 12.47% | 15.75% |
| 40 | 7.36% | 8.64% | 10.13% | 11.91% | 14.10% | 16.90% | 20.68% |
| 50 | 10.20% | 11.60% | 13.23% | 15.20% | 17.64% | 20.76% | 24.99% |
| 60 | 12.70% | 14.22% | 16.01% | 18.16% | 20.82% | 24.25% | 28.87% |
| 70 | 14.98% | 16.62% | 18.54% | 20.87% | 23.74% | 27.44% | 32.42% |
| 80 | 17.09% | 18.84% | 20.90% | 23.38% | 26.46% | 30.40% | 35.70% |
| 90 | 19.07% | 20.92% | 23.11% | 25.74% | 28.99% | 33.16% | 38.76% |
| 100 | 20.94% | 22.89% | 25.19% | 27.96% | 31.38% | 35.76% | 41.63% |

Table 3.88
UPGRADER **CIT-25%**
IRR (real, 2007 Cdn \$)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 7.14% | 9.93% |
| 30 | | 5.19% | 6.57% | 8.18% | 10.15% | 12.63% | 15.97% |
| 40 | 7.44% | 8.74% | 10.26% | 12.06% | 14.29% | 17.14% | 21.00% |
| 50 | 10.32% | 11.74% | 13.41% | 15.41% | 17.90% | 21.09% | 25.42% |
| 60 | 12.87% | 14.41% | 16.23% | 18.43% | 21.15% | 24.66% | 29.41% |
| 70 | 15.19% | 16.85% | 18.82% | 21.20% | 24.14% | 27.93% | 33.05% |
| 80 | 17.34% | 19.12% | 21.23% | 23.77% | 26.92% | 30.97% | 36.42% |
| 90 | 19.36% | 21.25% | 23.49% | 26.19% | 29.53% | 33.81% | 39.57% |
| 100 | 21.27% | 23.27% | 25.63% | 28.47% | 31.98% | 36.48% | 42.52% |

The improvement in terms of IRR is only very modest as a result of the much lower taxes. This is due to the fact the project is calculated on a consolidated basis. This means that both the tax reductions during the investment phase as well as the lower tax during the production phase are included. The lower tax reductions countervail the effect of the lower taxes during the production phase.

The following tables provide the PFR10 comparison.

Table 3.79
UPGRADER **CURRENT TERMS**
PFR10 (real, 2007 Cdn \$)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 0.80 | 0.99 |
| 30 | | 0.69 | 0.77 | 0.87 | 1.00 | 1.19 | 1.46 |
| 40 | 0.82 | 0.91 | 1.01 | 1.14 | 1.32 | 1.57 | 1.94 |
| 50 | 1.01 | 1.12 | 1.25 | 1.42 | 1.64 | 1.95 | 2.42 |
| 60 | 1.21 | 1.33 | 1.49 | 1.69 | 1.96 | 2.34 | 2.90 |
| 70 | 1.40 | 1.54 | 1.73 | 1.96 | 2.28 | 2.72 | 3.38 |
| 80 | 1.59 | 1.76 | 1.97 | 2.24 | 2.60 | 3.10 | 3.86 |
| 90 | 1.78 | 1.97 | 2.21 | 2.51 | 2.92 | 3.48 | 4.34 |
| 100 | 1.97 | 2.18 | 2.45 | 2.78 | 3.24 | 3.87 | 4.82 |

Table 3.89
UPGRADER **CIT-25%**
PFR10 (real, 2007 Cdn \$)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 0.80 | 0.99 |
| 30 | | 0.68 | 0.76 | 0.87 | 1.01 | 1.21 | 1.51 |
| 40 | 0.82 | 0.91 | 1.02 | 1.16 | 1.35 | 1.62 | 2.02 |
| 50 | 1.02 | 1.14 | 1.28 | 1.46 | 1.69 | 2.03 | 2.53 |
| 60 | 1.23 | 1.36 | 1.53 | 1.75 | 2.04 | 2.44 | 3.05 |
| 70 | 1.43 | 1.59 | 1.79 | 2.04 | 2.38 | 2.85 | 3.56 |
| 80 | 1.64 | 1.82 | 2.05 | 2.33 | 2.72 | 3.26 | 4.07 |
| 90 | 1.84 | 2.05 | 2.30 | 2.63 | 3.06 | 3.67 | 4.58 |
| 100 | 2.05 | 2.28 | 2.56 | 2.92 | 3.40 | 4.08 | 5.10 |

Also for the PFR10 the positive impact of the tax reduction is modest for low prices. The effect is more significant under higher prices. In other words the main positive impact on the project economics is the higher price upside.

The following tables provide the results for the NPV10/barrel.

Table 3.80
UPGRADER **CURRENT TERMS**
NPV10/SCO bbl
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|--------|---------|---------|
| 20 | | | | | | -\$0.29 | -\$0.02 |
| 30 | | -\$0.81 | -\$0.54 | -\$0.27 | \$0.00 | \$0.27 | \$0.55 |
| 40 | -\$0.52 | -\$0.25 | \$0.02 | \$0.29 | \$0.56 | \$0.84 | \$1.11 |
| 50 | \$0.04 | \$0.31 | \$0.58 | \$0.86 | \$1.13 | \$1.40 | \$1.67 |
| 60 | \$0.60 | \$0.87 | \$1.15 | \$1.42 | \$1.69 | \$1.96 | \$2.23 |
| 70 | \$1.17 | \$1.44 | \$1.71 | \$1.98 | \$2.25 | \$2.52 | \$2.79 |
| 80 | \$1.73 | \$2.00 | \$2.27 | \$2.54 | \$2.81 | \$3.08 | \$3.35 |
| 90 | \$2.29 | \$2.56 | \$2.83 | \$3.10 | \$3.37 | \$3.65 | \$3.92 |
| 100 | \$2.85 | \$3.12 | \$3.39 | \$3.66 | \$3.94 | \$4.21 | \$4.48 |

Table 3.90
UPGRADER
NPV10/SCO bbl
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|--------|---------|---------|
| 20 | | | | | | -\$0.29 | -\$0.01 |
| 30 | | -\$0.84 | -\$0.56 | -\$0.27 | \$0.02 | \$0.31 | \$0.60 |
| 40 | -\$0.53 | -\$0.24 | \$0.05 | \$0.33 | \$0.62 | \$0.91 | \$1.20 |
| 50 | \$0.07 | \$0.36 | \$0.65 | \$0.94 | \$1.22 | \$1.51 | \$1.80 |
| 60 | \$0.67 | \$0.96 | \$1.25 | \$1.54 | \$1.83 | \$2.11 | \$2.40 |
| 70 | \$1.28 | \$1.56 | \$1.85 | \$2.14 | \$2.43 | \$2.71 | \$3.00 |
| 80 | \$1.88 | \$2.17 | \$2.45 | \$2.74 | \$3.03 | \$3.32 | \$3.60 |
| 90 | \$2.48 | \$2.77 | \$3.05 | \$3.34 | \$3.63 | \$3.92 | \$4.21 |
| 100 | \$3.08 | \$3.37 | \$3.66 | \$3.94 | \$4.23 | \$4.52 | \$4.81 |

The effects for the NPV10/barrel are similar. Again the benefit to the investor increases with the price level.

Conclusion

A strong reduction of the corporate income tax from 30% to 25% in total would have a modest impact on upgrader economics. The main reason is that the tax is being determined on a consolidated basis.

It should be noted, however, that a corporate income tax reduction could be combined with an increase in NPS. This may have a desirable overall impact on the economy of Alberta. This matter will be explored in more detail under Variation-1 in Section 4.3 of this report.

3.5.2. A tax credit

A tax credit is the traditional way of promoting certain activities. For analytical purposes it is assumed here that the tax credit would apply to the total tax payments (Federal and Provincial).

The effect of a 5% tax credit is being evaluated. The 5% would apply to upgrading assets that currently qualify for ACCA.

Government Revenues per barrel

The following two tables 3.74 and 3.94 show the difference in government revenues per barrel.

Table 3.74
UPGRADER **CURRENT TERMS**
Government Income + Participation per bitumen barrel (\$ Cdn)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$1.21 | \$1.48 |
| 30 | | \$1.48 | \$1.75 | \$2.02 | \$2.29 | \$2.56 | \$2.83 |
| 40 | \$2.55 | \$2.83 | \$3.10 | \$3.37 | \$3.64 | \$3.91 | \$4.18 |
| 50 | \$3.90 | \$4.17 | \$4.44 | \$4.72 | \$4.99 | \$5.26 | \$5.53 |
| 60 | \$5.25 | \$5.52 | \$5.79 | \$6.06 | \$6.34 | \$6.61 | \$6.88 |
| 70 | \$6.60 | \$6.87 | \$7.14 | \$7.41 | \$7.68 | \$7.95 | \$8.23 |
| 80 | \$7.95 | \$8.22 | \$8.49 | \$8.76 | \$9.03 | \$9.30 | \$9.57 |
| 90 | \$9.30 | \$9.57 | \$9.84 | \$10.11 | \$10.38 | \$10.65 | \$10.92 |
| 100 | \$10.65 | \$10.92 | \$11.19 | \$11.46 | \$11.73 | \$12.00 | \$12.27 |

Table 3.94
UPGRADER **5% TAX CREDIT**
Government Income + Participation per bitumen barrel (\$ Cdn)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$1.11 | \$1.40 |
| 30 | | \$1.29 | \$1.58 | \$1.87 | \$2.17 | \$2.46 | \$2.75 |
| 40 | \$2.35 | \$2.64 | \$2.93 | \$3.22 | \$3.51 | \$3.81 | \$4.10 |
| 50 | \$3.70 | \$3.99 | \$4.28 | \$4.57 | \$4.86 | \$5.15 | \$5.45 |
| 60 | \$5.05 | \$5.34 | \$5.63 | \$5.92 | \$6.21 | \$6.50 | \$6.79 |
| 70 | \$6.39 | \$6.69 | \$6.98 | \$7.27 | \$7.56 | \$7.85 | \$8.14 |
| 80 | \$7.74 | \$8.03 | \$8.33 | \$8.62 | \$8.91 | \$9.20 | \$9.49 |
| 90 | \$9.09 | \$9.38 | \$9.67 | \$9.97 | \$10.26 | \$10.55 | \$10.84 |
| 100 | \$10.44 | \$10.73 | \$11.02 | \$11.31 | \$11.61 | \$11.90 | \$12.19 |

Compared to the corporate income tax reduction, the 5% tax credit results in only a modest loss in government revenues per barrel.

Undiscounted Government Take

The following two tables show the difference in undiscounted real government take.

Table 3.76
UPGRADER **CURRENT TERMS**
Undiscounted Government Take (Income only)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 30.43% | 30.28% |
| 30 | | 30.63% | 30.47% | 30.36% | 30.27% | 30.20% | 30.14% |
| 40 | 30.40% | 30.33% | 30.27% | 30.21% | 30.17% | 30.13% | 30.10% |
| 50 | 30.26% | 30.22% | 30.18% | 30.15% | 30.12% | 30.10% | 30.07% |
| 60 | 30.20% | 30.17% | 30.14% | 30.12% | 30.10% | 30.08% | 30.06% |
| 70 | 30.16% | 30.13% | 30.11% | 30.10% | 30.08% | 30.06% | 30.05% |
| 80 | 30.13% | 30.11% | 30.10% | 30.08% | 30.07% | 30.05% | 30.04% |
| 90 | 30.11% | 30.10% | 30.08% | 30.07% | 30.06% | 30.05% | 30.04% |
| 100 | 30.10% | 30.08% | 30.07% | 30.06% | 30.05% | 30.04% | 30.03% |

Table 3.96
UPGRADER **5% TAX CREDIT**
Undiscounted Government Take (Income only)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 27.84% | 28.59% |
| 30 | | 26.78% | 27.60% | 28.19% | 28.63% | 28.98% | 29.27% |
| 40 | 27.95% | 28.34% | 28.65% | 28.92% | 29.14% | 29.34% | 29.50% |
| 50 | 28.66% | 28.88% | 29.06% | 29.23% | 29.38% | 29.51% | 29.63% |
| 60 | 29.01% | 29.15% | 29.28% | 29.40% | 29.51% | 29.61% | 29.70% |
| 70 | 29.21% | 29.32% | 29.42% | 29.51% | 29.60% | 29.67% | 29.75% |
| 80 | 29.35% | 29.43% | 29.51% | 29.59% | 29.66% | 29.72% | 29.78% |
| 90 | 29.44% | 29.51% | 29.58% | 29.64% | 29.70% | 29.76% | 29.81% |
| 100 | 29.51% | 29.57% | 29.63% | 29.68% | 29.74% | 29.78% | 29.83% |

The government take reduces from a very slightly regressive 30% to a slightly progressive 29%. The system becomes slightly progressive with price and costs.

5% Discounted Government Take

The following two tables illustrate the difference in terms of 5% discounted government take.

Table 3.77
UPGRADER **CURRENT TERMS**
5% Discounted Government Take (Income only)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 37.26% | 33.05% |
| 30 | | 75.93% | 39.77% | 34.86% | 32.91% | 31.86% | 31.21% |
| 40 | 36.36% | 34.10% | 32.84% | 32.03% | 31.48% | 31.07% | 30.75% |
| 50 | 32.80% | 32.15% | 31.66% | 31.29% | 30.99% | 30.75% | 30.55% |
| 60 | 31.80% | 31.45% | 31.17% | 30.94% | 30.74% | 30.58% | 30.43% |
| 70 | 31.32% | 31.10% | 30.91% | 30.74% | 30.60% | 30.47% | 30.35% |
| 80 | 31.05% | 30.88% | 30.74% | 30.61% | 30.50% | 30.39% | 30.30% |
| 90 | 30.86% | 30.74% | 30.62% | 30.52% | 30.43% | 30.34% | 30.26% |
| 100 | 30.74% | 30.63% | 30.54% | 30.45% | 30.37% | 30.30% | 30.23% |

Table 3.97
UPGRADER **5% TAX CREDIT**
5% Discounted Government Take (Income only)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|---------|--------|--------|--------|--------|--------|
| 20 | | | | | | 23.22% | 27.15% |
| 30 | | -12.90% | 20.87% | 25.46% | 27.29% | 28.26% | 28.87% |
| 40 | 24.06% | 26.17% | 27.35% | 28.10% | 28.62% | 29.00% | 29.30% |
| 50 | 27.38% | 28.00% | 28.45% | 28.80% | 29.08% | 29.30% | 29.49% |
| 60 | 28.32% | 28.64% | 28.90% | 29.12% | 29.30% | 29.46% | 29.60% |
| 70 | 28.77% | 28.97% | 29.15% | 29.31% | 29.44% | 29.56% | 29.67% |
| 80 | 29.02% | 29.17% | 29.31% | 29.43% | 29.54% | 29.63% | 29.72% |
| 90 | 29.19% | 29.31% | 29.42% | 29.51% | 29.60% | 29.68% | 29.76% |
| 100 | 29.31% | 29.41% | 29.50% | 29.58% | 29.65% | 29.72% | 29.78% |

The government take loss is somewhat more significant on a discounted basis, because the tax credit comes very early in the cash flow, as investments in the upgrader occur.

Profitability

The following two tables provide the impact on the IRR.

Table 3.78
UPGRADER **CURRENT TERMS**

IRR (real, 2007 Cdn \$)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 7.06% | 9.81% |
| 30 | | 5.13% | 6.49% | 8.09% | 10.02% | 12.47% | 15.75% |
| 40 | 7.36% | 8.64% | 10.13% | 11.91% | 14.10% | 16.90% | 20.68% |
| 50 | 10.20% | 11.60% | 13.23% | 15.20% | 17.64% | 20.76% | 24.99% |
| 60 | 12.70% | 14.22% | 16.01% | 18.16% | 20.82% | 24.25% | 28.87% |
| 70 | 14.98% | 16.62% | 18.54% | 20.87% | 23.74% | 27.44% | 32.42% |
| 80 | 17.09% | 18.84% | 20.90% | 23.38% | 26.46% | 30.40% | 35.70% |
| 90 | 19.07% | 20.92% | 23.11% | 25.74% | 28.99% | 33.16% | 38.76% |
| 100 | 20.94% | 22.89% | 25.19% | 27.96% | 31.38% | 35.76% | 41.63% |

Table 3.98
UPGRADER **5% TAX CREDIT**

IRR (real, 2007 Cdn \$)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 7.64% | 10.48% |
| 30 | | 5.65% | 7.06% | 8.71% | 10.71% | 13.24% | 16.63% |
| 40 | 7.95% | 9.27% | 10.82% | 12.66% | 14.92% | 17.82% | 21.73% |
| 50 | 10.88% | 12.33% | 14.03% | 16.07% | 18.59% | 21.82% | 26.18% |
| 60 | 13.48% | 15.05% | 16.90% | 19.12% | 21.88% | 25.42% | 30.18% |
| 70 | 15.84% | 17.53% | 19.52% | 21.92% | 24.90% | 28.71% | 33.83% |
| 80 | 18.02% | 19.83% | 21.96% | 24.52% | 27.69% | 31.75% | 37.20% |
| 90 | 20.07% | 21.98% | 24.24% | 26.95% | 30.31% | 34.59% | 40.33% |
| 100 | 22.00% | 24.02% | 26.39% | 29.24% | 32.77% | 37.26% | 43.28% |

The improvement in IRR is rather significant since the tax credit lowers the negative cash flow in the early years. For US \$ 40 per barrel WTI and Cost Level 4 the IRR improves from 11.91% to 12.66%. This is very significant. It also compares favorably with the improvement as a result of lowering corporate income tax. This resulted only in an IRR of 12.06% (see Table 3.88).

The following tables provide the PFR10 comparison.

Table 3.79
UPGRADER **CURRENT TERMS**
PFR10 (real, 2007 Cdn \$)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 0.80 | 0.99 |
| 30 | | 0.69 | 0.77 | 0.87 | 1.00 | 1.19 | 1.46 |
| 40 | 0.82 | 0.91 | 1.01 | 1.14 | 1.32 | 1.57 | 1.94 |
| 50 | 1.01 | 1.12 | 1.25 | 1.42 | 1.64 | 1.95 | 2.42 |
| 60 | 1.21 | 1.33 | 1.49 | 1.69 | 1.96 | 2.34 | 2.90 |
| 70 | 1.40 | 1.54 | 1.73 | 1.96 | 2.28 | 2.72 | 3.38 |
| 80 | 1.59 | 1.76 | 1.97 | 2.24 | 2.60 | 3.10 | 3.86 |
| 90 | 1.78 | 1.97 | 2.21 | 2.51 | 2.92 | 3.48 | 4.34 |
| 100 | 1.97 | 2.18 | 2.45 | 2.78 | 3.24 | 3.87 | 4.82 |

Table 3.99
UPGRADER **5% TAX CREDIT**
PFR10 (real, 2007 Cdn \$)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 0.85 | 1.03 |
| 30 | | 0.74 | 0.82 | 0.92 | 1.05 | 1.23 | 1.51 |
| 40 | 0.87 | 0.95 | 1.06 | 1.19 | 1.37 | 1.62 | 1.99 |
| 50 | 1.06 | 1.16 | 1.30 | 1.46 | 1.69 | 2.00 | 2.47 |
| 60 | 1.25 | 1.38 | 1.53 | 1.74 | 2.01 | 2.38 | 2.95 |
| 70 | 1.44 | 1.59 | 1.77 | 2.01 | 2.32 | 2.77 | 3.43 |
| 80 | 1.64 | 1.80 | 2.01 | 2.28 | 2.64 | 3.15 | 3.90 |
| 90 | 1.83 | 2.02 | 2.25 | 2.56 | 2.96 | 3.53 | 4.38 |
| 100 | 2.02 | 2.23 | 2.49 | 2.83 | 3.28 | 3.91 | 4.86 |

For the PFR10 the positive impact of the tax credit is modest. The effect is similar under all price levels. This is because the tax credit creates an improvement in NPV10 in constant terms, only related to the level of costs and not related to the level of price. The impact is similar to a reduction in corporate income tax for low prices.

The following tables provide the results for the NPV10/barrel.

Table 3.80
UPGRADER
NPV10/SCO bbl
WTI

CURRENT TERMS

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|--------|---------|---------|
| 20 | | | | | | -\$0.29 | -\$0.02 |
| 30 | | -\$0.81 | -\$0.54 | -\$0.27 | \$0.00 | \$0.27 | \$0.55 |
| 40 | -\$0.52 | -\$0.25 | \$0.02 | \$0.29 | \$0.56 | \$0.84 | \$1.11 |
| 50 | \$0.04 | \$0.31 | \$0.58 | \$0.86 | \$1.13 | \$1.40 | \$1.67 |
| 60 | \$0.60 | \$0.87 | \$1.15 | \$1.42 | \$1.69 | \$1.96 | \$2.23 |
| 70 | \$1.17 | \$1.44 | \$1.71 | \$1.98 | \$2.25 | \$2.52 | \$2.79 |
| 80 | \$1.73 | \$2.00 | \$2.27 | \$2.54 | \$2.81 | \$3.08 | \$3.35 |
| 90 | \$2.29 | \$2.56 | \$2.83 | \$3.10 | \$3.37 | \$3.65 | \$3.92 |
| 100 | \$2.85 | \$3.12 | \$3.39 | \$3.66 | \$3.94 | \$4.21 | \$4.48 |

Table 3.100
UPGRADER
NPV10/SCO bbl
WTI

5% TAX CREDIT

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|--------|---------|--------|
| 20 | | | | | | -\$0.22 | \$0.04 |
| 30 | | -\$0.69 | -\$0.43 | -\$0.17 | \$0.08 | \$0.34 | \$0.60 |
| 40 | -\$0.38 | -\$0.13 | \$0.13 | \$0.39 | \$0.65 | \$0.90 | \$1.16 |
| 50 | \$0.18 | \$0.44 | \$0.69 | \$0.95 | \$1.21 | \$1.47 | \$1.72 |
| 60 | \$0.74 | \$1.00 | \$1.25 | \$1.51 | \$1.77 | \$2.03 | \$2.29 |
| 70 | \$1.30 | \$1.56 | \$1.82 | \$2.07 | \$2.33 | \$2.59 | \$2.85 |
| 80 | \$1.86 | \$2.12 | \$2.38 | \$2.64 | \$2.89 | \$3.15 | \$3.41 |
| 90 | \$2.42 | \$2.68 | \$2.94 | \$3.20 | \$3.46 | \$3.71 | \$3.97 |
| 100 | \$2.99 | \$3.24 | \$3.50 | \$3.76 | \$4.02 | \$4.27 | \$4.53 |

The effects for the NPV10/barrel are similar. Again the benefit to the investor is similar for different price levels.

Conclusion

A tax credit is an efficient way to encourage upgrading. It provides for a profitability improvement which is stronger in IRR terms than for a large corporate income tax reduction, and similar in PFR10 and NPV10/barrel terms for low prices. Therefore, the same profit incentive can be provided for a much lower loss of government take.

It should be noted that it is unlikely that the Federal Government will agree to a tax credit. Therefore it is advisable to create a similar credit as a royalty credit against royalties or a tax credit against another provincial tax that might be implemented.

3.6. Supplemental Oil Sands Tax (“SOST”)

A Supplemental Oil Sands Tax is a new tax that would be in addition to the royalty and tax system already existing. The Supplemental Oil Sands Tax would be patterned after the Supplemental Petroleum Tax in Trinidad and Tobago.

The concept is very simple. Over a particular base price level the tax would be an increasing share of upstream gross revenues.

It is possible to have certain deductions for certain specific costs against this tax. For instance, if Alberta wants to promote gasification installations in order to reduce the use of natural gas, such costs could be deductible. Also increased environmental costs could be deductible.

Also it would be possible to have tax credits against the SOST. For instance, the upgrader tax credits discussed in section 3.5 could be a credit against the SOST.

The tax would be consolidated for all interests in oil sands projects of a tax payer.

The share of the gross revenues can be determined in different ways. It could be based on the price of bitumen, SCO or WTI.

The economic effect of a SOST is identical to that of a price sensitive base royalty as was already discussed in Section 3.3.3. if in both cases the rate is applied to gross revenues only (without deductions for certain costs).

It is therefore not necessary do separate computer examples of this tax. Option Fiscal Option-1 in Section 4.2 will review a comprehensive example of how such a tax can be included in a total package.

3.7. Provincial Property Tax

Property tax is a fiscal feature which results in strong cost regressivity. Therefore, the introduction of a provincial property tax on oil sands assets would be a mechanism to provide a strong disincentive for high cost projects.

Alberta has already such a property tax in this case the educations property tax.

Typically the property tax is determined on the depreciated value of the assets. The assets would typically be depreciated on a straight line basis over the life of the asset. In the case of oil sands projects, the life would be rather long and therefore the amount of property tax would be high over time.

Following is an evaluation of a 20 mill or 2% property tax.

The calculation assumes that the property tax would be a deductible item for NPS purposes.

Of course, the effect of the property tax can be strengthened by making it non-deductible for NPS purposes.

Government Revenues per barrel

The following two tables 3.04 and 3.104 show the difference in government revenues per barrel.

Table 3.04

MINE CURRENT TERMS
Government Income + Participation per bitumen barrel (\$ Cdn)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$1.21 | \$1.87 |
| 30 | | | \$1.69 | \$2.37 | \$3.00 | \$3.63 | \$4.24 |
| 40 | \$2.86 | \$3.51 | \$4.14 | \$4.77 | \$5.38 | \$6.00 | \$6.61 |
| 50 | \$5.29 | \$5.91 | \$6.53 | \$7.14 | \$7.75 | \$8.36 | \$8.97 |
| 60 | \$7.66 | \$8.28 | \$8.89 | \$9.50 | \$10.12 | \$10.72 | \$11.34 |
| 70 | \$10.04 | \$10.65 | \$11.26 | \$11.87 | \$12.48 | \$13.09 | \$13.70 |
| 80 | \$12.40 | \$13.01 | \$13.62 | \$14.23 | \$14.84 | \$15.45 | \$16.06 |
| 90 | \$14.76 | \$15.38 | \$15.99 | \$16.60 | \$17.21 | \$17.81 | \$18.42 |
| 100 | \$17.13 | \$17.75 | \$18.35 | \$18.96 | \$19.57 | \$20.18 | \$20.78 |

Table 3.104

| Mine | | PROPERTY TAX | | | | | |
|--|---------------|---------------------|---------------|---------------|---------------|---------------|---------------|
| Government Income + Participation per bitumen barrel (\$ Cdn) | | | | | | | |
| WTI | | | | | | | |
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | \$2.03 |
| 30 | | | | \$2.64 | \$3.25 | \$3.84 | \$4.41 |
| 40 | \$3.23 | \$3.87 | \$4.48 | \$5.06 | \$5.64 | \$6.21 | \$6.78 |
| 50 | \$5.70 | \$6.28 | \$6.86 | \$7.43 | \$8.01 | \$8.57 | \$9.14 |
| 60 | \$8.09 | \$8.66 | \$9.24 | \$9.80 | \$10.37 | \$10.94 | \$11.51 |
| 70 | \$10.46 | \$11.03 | \$11.60 | \$12.17 | \$12.74 | \$13.30 | \$13.87 |
| 80 | \$12.83 | \$13.40 | \$13.96 | \$14.54 | \$15.10 | \$15.67 | \$16.23 |
| 90 | \$15.19 | \$15.76 | \$16.33 | \$16.90 | \$17.46 | \$18.03 | \$18.59 |
| 100 | \$17.56 | \$18.13 | \$18.69 | \$19.26 | \$19.83 | \$20.39 | \$20.95 |

The property tax results in increased government revenues per barrel across the board. However, the impact is much stronger under Cost Level 7 than for Cost Level 1, as can be expected. Under Cost Level 7 the capital costs are much higher than under Cost Level 1 and property taxes are proportionate to costs.

Undiscounted Government Take

The following two tables show the difference in undiscounted real government take.

Table 3.06

| MINE | | CURRENT TERMS | | | | | |
|---|---------------|----------------------|---------------|---------------|---------------|---------------|---------------|
| Undiscounted Government Take (Income only) | | | | | | | |
| WTI | | | | | | | |
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | 45.24% | 47.11% |
| 30 | | | 44.43% | 46.51% | 47.16% | 47.39% | 47.48% |
| 40 | 45.93% | 46.82% | 47.20% | 47.39% | 47.45% | 47.51% | 47.52% |
| 50 | 47.23% | 47.35% | 47.45% | 47.49% | 47.52% | 47.52% | 47.53% |
| 60 | 47.41% | 47.46% | 47.48% | 47.49% | 47.52% | 47.52% | 47.54% |
| 70 | 47.49% | 47.50% | 47.50% | 47.52% | 47.52% | 47.53% | 47.53% |
| 80 | 47.51% | 47.50% | 47.53% | 47.52% | 47.53% | 47.54% | 47.53% |
| 90 | 47.51% | 47.53% | 47.54% | 47.53% | 47.54% | 47.53% | 47.52% |
| 100 | 47.53% | 47.54% | 47.53% | 47.54% | 47.53% | 47.53% | 47.52% |

Table 3.106

| Mine | | PROPERTY TAX | | | | | | |
|---|--|---------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Undiscounted Government Take (Income only) | | | | | | | | |
| WTI | | | | | | | | |
| US \$ | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | | 51.25% |
| 30 | | | | | 51.85% | 51.05% | 50.15% | 49.40% |
| 40 | | 51.91% | 51.61% | 50.98% | 50.31% | 49.71% | 49.18% | 48.75% |
| 50 | | 50.95% | 50.38% | 49.88% | 49.46% | 49.08% | 48.73% | 48.43% |
| 60 | | 50.03% | 49.67% | 49.33% | 49.01% | 48.72% | 48.49% | 48.25% |
| 70 | | 49.48% | 49.20% | 48.97% | 48.72% | 48.52% | 48.31% | 48.12% |
| 80 | | 49.13% | 48.93% | 48.71% | 48.54% | 48.35% | 48.20% | 48.04% |
| 90 | | 48.89% | 48.71% | 48.55% | 48.38% | 48.25% | 48.10% | 47.96% |
| 100 | | 48.70% | 48.57% | 48.41% | 48.28% | 48.17% | 48.03% | 47.91% |

The government take changes from a system that is slightly progressive for costs and prices to a system that is regressive for costs and prices.

5% Discounted Government Take

The following two tables illustrate the difference in terms of 5% discounted government take.

Table 3.07

| MINE | | CURRENT TERMS | | | | | | |
|--|--|----------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| 5% Discounted Government Take (Income only) | | | | | | | | |
| WTI | | | | | | | | |
| US \$ | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | 68.92% | 52.79% |
| 30 | | | | 79.80% | 57.20% | 52.10% | 50.05% | 48.98% |
| 40 | | 61.43% | 54.74% | 51.87% | 50.34% | 49.38% | 48.78% | 48.35% |
| 50 | | 51.73% | 50.48% | 49.69% | 49.09% | 48.68% | 48.34% | 48.08% |
| 60 | | 49.86% | 49.32% | 48.89% | 48.55% | 48.33% | 48.11% | 47.96% |
| 70 | | 49.14% | 48.80% | 48.51% | 48.33% | 48.13% | 48.00% | 47.85% |
| 80 | | 48.73% | 48.48% | 48.32% | 48.14% | 48.02% | 47.91% | 47.80% |
| 90 | | 48.46% | 48.32% | 48.19% | 48.05% | 47.95% | 47.84% | 47.74% |
| 100 | | 48.32% | 48.21% | 48.07% | 47.98% | 47.87% | 47.80% | 47.71% |

Table 3.107
Mine **PROPERTY TAX**
5% Discounted Government Take (Income only)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | | 62.50% |
| 30 | | | | 73.89% | 60.83% | 55.23% | 52.23% |
| 40 | 84.63% | 67.73% | 60.16% | 55.97% | 53.35% | 51.53% | 50.26% |
| 50 | 59.79% | 56.38% | 54.07% | 52.45% | 51.21% | 50.22% | 49.44% |
| 60 | 54.69% | 53.17% | 51.97% | 51.00% | 50.20% | 49.58% | 49.02% |
| 70 | 52.54% | 51.59% | 50.86% | 50.18% | 49.65% | 49.15% | 48.72% |
| 80 | 51.38% | 50.76% | 50.17% | 49.70% | 49.25% | 48.89% | 48.54% |
| 90 | 50.65% | 50.16% | 49.75% | 49.33% | 49.00% | 48.67% | 48.39% |
| 100 | 50.15% | 49.78% | 49.40% | 49.09% | 48.81% | 48.53% | 48.27% |

The regressivity is enhanced under the 5% discounted government take. The reason is that the property tax is a front end loaded feature. The tax commences as soon as the investments have been made. In several jurisdictions the property tax is levied already during construction. This is also assumed here.

Profitability

The following two tables provide the impact on the IRR.

Table 3.08
MINE **CURRENT TERMS**
IRR (real, 2007 Cdn \$)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 5.97% | 9.80% |
| 30 | | | 5.43% | 7.66% | 10.36% | 13.72% | 18.12% |
| 40 | 6.75% | 8.55% | 10.64% | 13.08% | 16.05% | 19.77% | 24.70% |
| 50 | 10.80% | 12.73% | 14.96% | 17.61% | 20.83% | 24.90% | 30.31% |
| 60 | 14.29% | 16.34% | 18.74% | 21.60% | 25.04% | 29.45% | 35.19% |
| 70 | 17.40% | 19.58% | 22.14% | 25.14% | 28.86% | 33.47% | 39.60% |
| 80 | 20.25% | 22.56% | 25.22% | 28.44% | 32.28% | 37.18% | 43.54% |
| 90 | 22.89% | 25.27% | 28.08% | 31.42% | 35.46% | 40.55% | 47.22% |
| 100 | 25.32% | 27.83% | 30.76% | 34.21% | 38.45% | 43.67% | 50.52% |

Table 3.108

| Mine | PROPERTY TAX | | | | | | |
|-------------------------|--------------|--------|--------|--------|--------|--------|--------|
| IRR (real, 2007 Cdn \$) | | | | | | | |
| WTI | | | | | | | |
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | 8.65% |
| 30 | | | | 6.54% | 9.20% | 12.53% | 16.89% |
| 40 | 5.66% | 7.41% | 9.47% | 11.90% | 14.84% | 18.56% | 23.46% |
| 50 | 9.63% | 11.55% | 13.78% | 16.40% | 19.61% | 23.67% | 29.07% |
| 60 | 13.10% | 15.14% | 17.52% | 20.35% | 23.81% | 28.17% | 33.93% |
| 70 | 16.21% | 18.38% | 20.89% | 23.91% | 27.57% | 32.21% | 38.35% |
| 80 | 19.03% | 21.31% | 23.98% | 27.15% | 31.03% | 35.89% | 42.28% |
| 90 | 21.66% | 24.04% | 26.82% | 30.17% | 34.20% | 39.30% | 45.96% |
| 100 | 24.08% | 26.57% | 29.51% | 32.95% | 37.16% | 42.41% | 49.28% |

The property tax results in a reduction of IRR for all cases. It strongly impacts on the possible economics of high cost projects. The IRR effect is rather strong since the property tax is a front end loaded feature.

Conclusion

In principle, a property tax would be a very appropriate tax to discourage high cost projects. In practice, property taxes require quite an administration since assets are typically revalued on a yearly or occasional basis. These revaluations often result in disputes.

Nevertheless, Alberta has already such a property tax and the expansion of the property tax to other areas may be easier than establishing a completely new similar tax.

It merits investigation to consider the introduction of a new property tax aimed at oil sands facilities.

It can be recommended in this case to consider the simplification that the North Slope of Alaska introduced and determine the property tax simply on an amount per barrel (the North Slope uses US \$ 0.50 per barrel).

3.8. Oil Sands Impact Tax (“OSIT”)

A simpler method to achieve discouragement of very high cost projects would be to levy an Oil Sands Impact Tax (“OSIT”).

This would simply be a percentage on all upstream capital expenditures.

Administratively this is much simpler since it is only a one time levy on any capital expenditures. Also it could be a tax targeted on oil sands “impacts”, which are by their nature indeed unique.

Following is an analysis of an OSIT of 15% on all upstream capital expenditures.

As for the property tax analysis, it is assumed that the OSIT is deductible for purposes of the NPS.

Government Revenues per barrel

The following two tables 3.04 and 3.114 show the difference in government revenues per barrel.

Table 3.04

MINE

CURRENT TERMS

Government Income + Participation per bitumen barrel (\$ Cdn)

WTI

US \$

| | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| 20 | | | | | | \$1.21 | \$1.87 |
| 30 | | | \$1.69 | \$2.37 | \$3.00 | \$3.63 | \$4.24 |
| 40 | \$2.86 | \$3.51 | \$4.14 | \$4.77 | \$5.38 | \$6.00 | \$6.61 |
| 50 | \$5.29 | \$5.91 | \$6.53 | \$7.14 | \$7.75 | \$8.36 | \$8.97 |
| 60 | \$7.66 | \$8.28 | \$8.89 | \$9.50 | \$10.12 | \$10.72 | \$11.34 |
| 70 | \$10.04 | \$10.65 | \$11.26 | \$11.87 | \$12.48 | \$13.09 | \$13.70 |
| 80 | \$12.40 | \$13.01 | \$13.62 | \$14.23 | \$14.84 | \$15.45 | \$16.06 |
| 90 | \$14.76 | \$15.38 | \$15.99 | \$16.60 | \$17.21 | \$17.81 | \$18.42 |
| 100 | \$17.13 | \$17.75 | \$18.35 | \$18.96 | \$19.57 | \$20.18 | \$20.78 |

Table 3.114

| Mine | | OSIT | | | | | |
|---|---------|---------|---------|---------|---------|---------|---------|
| Government Income + Participation per bitumen barrel (\$ Cdn) | | | | | | | |
| WTI | | | | | | | |
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | \$1.98 |
| 30 | | | | \$2.55 | \$3.18 | \$3.78 | \$4.37 |
| 40 | \$3.10 | \$3.76 | \$4.38 | \$4.98 | \$5.57 | \$6.16 | \$6.73 |
| 50 | \$5.58 | \$6.18 | \$6.77 | \$7.36 | \$7.94 | \$8.52 | \$9.10 |
| 60 | \$7.97 | \$8.56 | \$9.15 | \$9.73 | \$10.30 | \$10.89 | \$11.46 |
| 70 | \$10.35 | \$10.94 | \$11.51 | \$12.09 | \$12.67 | \$13.25 | \$13.83 |
| 80 | \$12.72 | \$13.30 | \$13.88 | \$14.46 | \$15.03 | \$15.61 | \$16.19 |
| 90 | \$15.09 | \$15.66 | \$16.25 | \$16.82 | \$17.40 | \$17.98 | \$18.55 |
| 100 | \$17.45 | \$18.03 | \$18.61 | \$19.19 | \$19.77 | \$20.34 | \$20.91 |

The increased undiscounted government revenues per barrel from the OSIT of 15% are less than from the property tax of 2%. The reason is that the 2% is a yearly amount for 35 years or more, while the OSIT is a one time amount.

Undiscounted Government Take

The following two tables show the difference in undiscounted real government take.

Table 3.06

| MINE | | CURRENT TERMS | | | | | |
|--|--------|---------------|--------|--------|--------|--------|--------|
| Undiscounted Government Take (Income only) | | | | | | | |
| WTI | | | | | | | |
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | 45.24% | 47.11% |
| 30 | | | 44.43% | 46.51% | 47.16% | 47.39% | 47.48% |
| 40 | 45.93% | 46.82% | 47.20% | 47.39% | 47.45% | 47.51% | 47.52% |
| 50 | 47.23% | 47.35% | 47.45% | 47.49% | 47.52% | 47.52% | 47.53% |
| 60 | 47.41% | 47.46% | 47.48% | 47.49% | 47.52% | 47.52% | 47.54% |
| 70 | 47.49% | 47.50% | 47.50% | 47.52% | 47.52% | 47.53% | 47.53% |
| 80 | 47.51% | 47.50% | 47.53% | 47.52% | 47.53% | 47.54% | 47.53% |
| 90 | 47.51% | 47.53% | 47.54% | 47.53% | 47.54% | 47.53% | 47.52% |
| 100 | 47.53% | 47.54% | 47.53% | 47.54% | 47.53% | 47.53% | 47.52% |

Table 3.116

| Mine | | OSIT | | | | | |
|---|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Undiscounted Government Take (Income only) | | | | | | | |
| WTI | | | | | | | |
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | 50.10% |
| 30 | | | | 50.15% | 49.99% | 49.44% | 48.90% |
| 40 | 49.92% | 50.15% | 49.91% | 49.51% | 49.11% | 48.77% | 48.43% |
| 50 | 49.89% | 49.58% | 49.26% | 48.94% | 48.67% | 48.42% | 48.22% |
| 60 | 49.33% | 49.08% | 48.85% | 48.62% | 48.41% | 48.25% | 48.07% |
| 70 | 48.95% | 48.79% | 48.59% | 48.41% | 48.27% | 48.11% | 47.99% |
| 80 | 48.71% | 48.57% | 48.41% | 48.28% | 48.14% | 48.03% | 47.91% |
| 90 | 48.55% | 48.40% | 48.29% | 48.17% | 48.07% | 47.97% | 47.86% |
| 100 | 48.40% | 48.30% | 48.21% | 48.10% | 48.01% | 47.91% | 47.81% |

The government take changes from the current system that is slightly progressive for costs and prices to a system that is regressive for costs and prices. Overall the undiscounted government take is less than for the property tax case.

5% Discounted Government Take

The following two tables illustrate the difference in terms of 5% discounted government take.

Table 3.07

| MINE | | CURRENT TERMS | | | | | |
|--|---------------|----------------------|---------------|---------------|---------------|---------------|---------------|
| 5% Discounted Government Take (Income only) | | | | | | | |
| WTI | | | | | | | |
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | 68.92% | 52.79% |
| 30 | | | 79.80% | 57.20% | 52.10% | 50.05% | 48.98% |
| 40 | 61.43% | 54.74% | 51.87% | 50.34% | 49.38% | 48.78% | 48.35% |
| 50 | 51.73% | 50.48% | 49.69% | 49.09% | 48.68% | 48.34% | 48.08% |
| 60 | 49.86% | 49.32% | 48.89% | 48.55% | 48.33% | 48.11% | 47.96% |
| 70 | 49.14% | 48.80% | 48.51% | 48.33% | 48.13% | 48.00% | 47.85% |
| 80 | 48.73% | 48.48% | 48.32% | 48.14% | 48.02% | 47.91% | 47.80% |
| 90 | 48.46% | 48.32% | 48.19% | 48.05% | 47.95% | 47.84% | 47.74% |
| 100 | 48.32% | 48.21% | 48.07% | 47.98% | 47.87% | 47.80% | 47.71% |

Table 3.117

| Mine | | OSIT | | | | | |
|--|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| 5% Discounted Government Take (Income only) | | | | | | | |
| WTI | | | | | | | |
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | 62.91% |
| 30 | | | | 74.43% | 61.19% | 55.46% | 52.32% |
| 40 | 85.39% | 68.15% | 60.42% | 56.13% | 53.46% | 51.67% | 50.31% |
| 50 | 60.04% | 56.62% | 54.28% | 52.54% | 51.27% | 50.27% | 49.52% |
| 60 | 54.83% | 53.28% | 52.06% | 51.07% | 50.25% | 49.62% | 49.05% |
| 70 | 52.63% | 51.74% | 50.93% | 50.23% | 49.69% | 49.18% | 48.77% |
| 80 | 51.45% | 50.82% | 50.22% | 49.74% | 49.28% | 48.91% | 48.56% |
| 90 | 50.75% | 50.21% | 49.79% | 49.36% | 49.03% | 48.72% | 48.42% |
| 100 | 50.20% | 49.82% | 49.47% | 49.12% | 48.84% | 48.55% | 48.29% |

The regressivity is enhanced under the 5% discounted government take. The OSIT is more front end loaded than the property tax. Therefore the discounted effect is rather strong. In fact the 5% discounted government take now exceeds the government take for the property tax case.

Profitability

The following two tables provide the impact on the IRR.

Table 3.08

| MINE | | CURRENT TERMS | | | | | |
|--------------------------------|---------------|----------------------|---------------|---------------|---------------|---------------|---------------|
| IRR (real, 2007 Cdn \$) | | | | | | | |
| WTI | | | | | | | |
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | 5.97% | 9.80% |
| 30 | | | 5.43% | 7.66% | 10.36% | 13.72% | 18.12% |
| 40 | 6.75% | 8.55% | 10.64% | 13.08% | 16.05% | 19.77% | 24.70% |
| 50 | 10.80% | 12.73% | 14.96% | 17.61% | 20.83% | 24.90% | 30.31% |
| 60 | 14.29% | 16.34% | 18.74% | 21.60% | 25.04% | 29.45% | 35.19% |
| 70 | 17.40% | 19.58% | 22.14% | 25.14% | 28.86% | 33.47% | 39.60% |
| 80 | 20.25% | 22.56% | 25.22% | 28.44% | 32.28% | 37.18% | 43.54% |
| 90 | 22.89% | 25.27% | 28.08% | 31.42% | 35.46% | 40.55% | 47.22% |
| 100 | 25.32% | 27.83% | 30.76% | 34.21% | 38.45% | 43.67% | 50.52% |

Table 3.118

| Mine | OSIT | | | | | | |
|-------------------------|--------|--------|--------|--------|--------|--------|--------|
| IRR (real, 2007 Cdn \$) | | | | | | | |
| WTI | | | | | | | |
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | 8.40% |
| 30 | | | | 6.42% | 8.92% | 12.05% | 16.18% |
| 40 | 5.59% | 7.24% | 9.18% | 11.47% | 14.24% | 17.73% | 22.39% |
| 50 | 9.33% | 11.13% | 13.22% | 15.71% | 18.74% | 22.58% | 27.66% |
| 60 | 12.60% | 14.52% | 16.76% | 19.43% | 22.71% | 26.83% | 32.33% |
| 70 | 15.53% | 17.55% | 19.94% | 22.81% | 26.27% | 30.70% | 36.51% |
| 80 | 18.20% | 20.34% | 22.87% | 25.87% | 29.58% | 34.19% | 40.33% |
| 90 | 20.65% | 22.93% | 25.56% | 28.76% | 32.58% | 37.45% | 43.81% |
| 100 | 22.97% | 25.32% | 28.09% | 31.39% | 35.40% | 40.46% | 47.09% |

The OSIT of 15% would have a strong negative impact on the IRR across the board. However, the effect on high cost projects is very severe. Cost Level 7 projects at US \$ 60 that were acceptable are now unacceptable.

Conclusion

The OSIT is a very effective mechanism to discourage high cost projects. However, it creates a system that is regressive for costs as well as prices. If price progressivity one of the goals, another feature needs to be included in order to achieve this.

3.9. Provincial Participation

A mechanism that a number of exporting jurisdictions are using to increase their share of the divisible income is to participate in the investments. This can be done on a carried basis or directly from the start of the venture. Since there is no exploratory risk associated with oil sands, participation from the start would be logical. In this case Alberta would contribute its share of all capital and operating costs and obtain the same share of all revenues. It would be a participation on the basis of a joint operating agreement.

The following is an analysis of a 30% working interest participation for Alberta.

Government Revenues per barrel

The following two tables 3.04 and 3.124 show the difference in government revenues per barrel.

Table 3.04

| MINE | | CURRENT TERMS | | | | | |
|--|---------------|----------------------|---------------|---------------|---------------|---------------|---------------|
| Government Income + Participation per bitumen barrel (\$ Cdn) | | | | | | | |
| WTI | | | | | | | |
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | \$1.21 | \$1.87 |
| 30 | | | \$1.69 | \$2.37 | \$3.00 | \$3.63 | \$4.24 |
| 40 | \$2.86 | \$3.51 | \$4.14 | \$4.77 | \$5.38 | \$6.00 | \$6.61 |
| 50 | \$5.29 | \$5.91 | \$6.53 | \$7.14 | \$7.75 | \$8.36 | \$8.97 |
| 60 | \$7.66 | \$8.28 | \$8.89 | \$9.50 | \$10.12 | \$10.72 | \$11.34 |
| 70 | \$10.04 | \$10.65 | \$11.26 | \$11.87 | \$12.48 | \$13.09 | \$13.70 |
| 80 | \$12.40 | \$13.01 | \$13.62 | \$14.23 | \$14.84 | \$15.45 | \$16.06 |
| 90 | \$14.76 | \$15.38 | \$15.99 | \$16.60 | \$17.21 | \$17.81 | \$18.42 |
| 100 | \$17.13 | \$17.75 | \$18.35 | \$18.96 | \$19.57 | \$20.18 | \$20.78 |

Table 3.124

| Mine | | PARTICIPATION | | | | | |
|--|---------------|----------------------|---------------|---------------|---------------|---------------|---------------|
| Government Income + Participation per bitumen barrel (\$ Cdn) | | | | | | | |
| WTI | | | | | | | |
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | \$2.49 |
| 30 | | | | \$3.18 | \$4.01 | \$4.83 | \$5.65 |
| 40 | | \$4.71 | \$5.54 | \$6.36 | \$7.17 | \$7.98 | \$8.80 |
| 50 | \$7.06 | \$7.88 | \$8.69 | \$9.51 | \$10.32 | \$11.13 | \$11.94 |
| 60 | \$10.21 | \$11.03 | \$11.84 | \$12.65 | \$13.47 | \$14.28 | \$15.09 |
| 70 | \$13.37 | \$14.18 | \$14.99 | \$15.80 | \$16.61 | \$17.42 | \$18.23 |
| 80 | \$16.51 | \$17.32 | \$18.14 | \$18.95 | \$19.76 | \$20.57 | \$21.38 |
| 90 | \$19.66 | \$20.47 | \$21.29 | \$22.09 | \$22.91 | \$23.71 | \$24.52 |
| 100 | \$22.81 | \$23.62 | \$24.43 | \$25.24 | \$26.05 | \$26.86 | \$27.67 |

The two tables show how the working interest revenues of the Alberta participation in the project are added to the government revenues. Of course, the revenues will increase correspondingly.

Undiscounted Government Take

The following two tables show the difference in undiscounted real government take.

Table 3.06

| MINE | | CURRENT TERMS | | | | | | |
|---|--|----------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Undiscounted Government Take (Income only) | | | | | | | | |
| WTI | | | | | | | | |
| US \$ | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | 45.24% | 47.11% |
| 30 | | | | 44.43% | 46.51% | 47.16% | 47.39% | 47.48% |
| 40 | | 45.93% | 46.82% | 47.20% | 47.39% | 47.45% | 47.51% | 47.52% |
| 50 | | 47.23% | 47.35% | 47.45% | 47.49% | 47.52% | 47.52% | 47.53% |
| 60 | | 47.41% | 47.46% | 47.48% | 47.49% | 47.52% | 47.52% | 47.54% |
| 70 | | 47.49% | 47.50% | 47.50% | 47.52% | 47.52% | 47.53% | 47.53% |
| 80 | | 47.51% | 47.50% | 47.53% | 47.52% | 47.53% | 47.54% | 47.53% |
| 90 | | 47.51% | 47.53% | 47.54% | 47.53% | 47.54% | 47.53% | 47.52% |
| 100 | | 47.53% | 47.54% | 47.53% | 47.54% | 47.53% | 47.53% | 47.52% |

Table 3.126

| Mine | | PARTICIPATION | | | | | | |
|--|--|----------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Undiscounted Government Take (with participation) | | | | | | | | |
| WTI | | | | | | | | |
| US \$ | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | | 62.98% |
| 30 | | | | | 62.56% | 63.01% | 63.17% | 63.23% |
| 40 | | | 62.77% | 63.04% | 63.17% | 63.22% | 63.25% | 63.27% |
| 50 | | 63.06% | 63.15% | 63.22% | 63.24% | 63.26% | 63.27% | 63.27% |
| 60 | | 63.19% | 63.22% | 63.24% | 63.25% | 63.27% | 63.27% | 63.28% |
| 70 | | 63.25% | 63.25% | 63.25% | 63.27% | 63.27% | 63.27% | 63.27% |
| 80 | | 63.26% | 63.25% | 63.27% | 63.27% | 63.27% | 63.27% | 63.27% |
| 90 | | 63.25% | 63.27% | 63.28% | 63.27% | 63.28% | 63.27% | 63.26% |
| 100 | | 63.27% | 63.28% | 63.27% | 63.28% | 63.27% | 63.27% | 63.26% |

The government take, including the participation, will be higher than the government take on the basis of government income alone. It should be noted, however, that this is an additional government take that Alberta needs to invest for in order to obtain these revenues.

5% Discounted Government Take

The following two tables illustrate the difference in terms of 5% discounted government take.

Table 3.07

| MINE | | CURRENT TERMS | | | | | | |
|---|--------|---------------|--------|--------|--------|--------|--------|--------|
| 5% Discounted Government Take (Income only) | | | | | | | | |
| WTI | | | | | | | | |
| US \$ | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | 68.92% | 52.79% |
| 30 | | | | 79.80% | 57.20% | 52.10% | 50.05% | 48.98% |
| 40 | 61.43% | 54.74% | 51.87% | 50.34% | 49.38% | 48.78% | 48.35% | 48.35% |
| 50 | 51.73% | 50.48% | 49.69% | 49.09% | 48.68% | 48.34% | 48.08% | 48.08% |
| 60 | 49.86% | 49.32% | 48.89% | 48.55% | 48.33% | 48.11% | 47.96% | 47.96% |
| 70 | 49.14% | 48.80% | 48.51% | 48.33% | 48.13% | 48.00% | 47.85% | 47.85% |
| 80 | 48.73% | 48.48% | 48.32% | 48.14% | 48.02% | 47.91% | 47.80% | 47.80% |
| 90 | 48.46% | 48.32% | 48.19% | 48.05% | 47.95% | 47.84% | 47.74% | 47.74% |
| 100 | 48.32% | 48.21% | 48.07% | 47.98% | 47.87% | 47.80% | 47.71% | 47.71% |

Table 3.127

| Mine | | PARTICIPATION | | | | | | |
|---|--------|---------------|--------|--------|--------|--------|--------|--------|
| 5% Discounted Government Take (Income only) | | | | | | | | |
| WTI | | | | | | | | |
| US \$ | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | | 66.95% |
| 30 | | | | | 70.04% | 66.47% | 65.03% | 64.29% |
| 40 | | | 68.32% | 66.31% | 65.24% | 64.57% | 64.15% | 63.85% |
| 50 | 66.21% | 65.33% | 64.78% | 64.36% | 64.08% | 63.84% | 63.66% | 63.66% |
| 60 | 64.90% | 64.52% | 64.23% | 63.99% | 63.83% | 63.67% | 63.57% | 63.57% |
| 70 | 64.40% | 64.16% | 63.96% | 63.83% | 63.69% | 63.60% | 63.50% | 63.50% |
| 80 | 64.11% | 63.94% | 63.83% | 63.70% | 63.62% | 63.54% | 63.46% | 63.46% |
| 90 | 63.92% | 63.82% | 63.74% | 63.63% | 63.57% | 63.49% | 63.42% | 63.42% |
| 100 | 63.82% | 63.74% | 63.65% | 63.58% | 63.51% | 63.46% | 63.40% | 63.40% |

The same is true for the 5% discounted government take.

Profitability

The following two tables provide the impact on the IRR.

Table 3.08

| MINE | | CURRENT TERMS | | | | | | |
|--------------------------------|--------|----------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| IRR (real, 2007 Cdn \$) | | | | | | | | |
| WTI | | | | | | | | |
| US \$ | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | 5.97% | 9.80% |
| 30 | | | | 5.43% | 7.66% | 10.36% | 13.72% | 18.12% |
| 40 | 6.75% | 8.55% | 10.64% | 13.08% | 16.05% | 19.77% | 24.70% | |
| 50 | 10.80% | 12.73% | 14.96% | 17.61% | 20.83% | 24.90% | 30.31% | |
| 60 | 14.29% | 16.34% | 18.74% | 21.60% | 25.04% | 29.45% | 35.19% | |
| 70 | 17.40% | 19.58% | 22.14% | 25.14% | 28.86% | 33.47% | 39.60% | |
| 80 | 20.25% | 22.56% | 25.22% | 28.44% | 32.28% | 37.18% | 43.54% | |
| 90 | 22.89% | 25.27% | 28.08% | 31.42% | 35.46% | 40.55% | 47.22% | |
| 100 | 25.32% | 27.83% | 30.76% | 34.21% | 38.45% | 43.67% | 50.52% | |

Table 3.128

| Mine | | PARTICIPATION | | | | | | |
|--------------------------------|--------|----------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| IRR (real, 2007 Cdn \$) | | | | | | | | |
| WTI | | | | | | | | |
| US \$ | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | | 9.80% |
| 30 | | | | | 7.66% | 10.36% | 13.72% | 18.12% |
| 40 | | | 8.55% | 10.64% | 13.08% | 16.05% | 19.77% | 24.70% |
| 50 | 10.80% | 12.73% | 14.96% | 17.61% | 20.83% | 24.90% | 30.31% | |
| 60 | 14.29% | 16.34% | 18.74% | 21.60% | 25.04% | 29.45% | 35.19% | |
| 70 | 17.40% | 19.58% | 22.14% | 25.14% | 28.86% | 33.47% | 39.60% | |
| 80 | 20.25% | 22.56% | 25.22% | 28.44% | 32.28% | 37.18% | 43.54% | |
| 90 | 22.89% | 25.27% | 28.08% | 31.42% | 35.46% | 40.55% | 47.22% | |
| 100 | 25.32% | 27.83% | 30.76% | 34.21% | 38.45% | 43.67% | 50.52% | |

As can be seen with a 30% normal working interest by the province of Alberta the IRR does not change. The IRR for the private party and for Alberta will be identical.

This is also true for the profitability ratio. Also the NPV10/working interest barrel will remain unchanged.

If the NPV10/barrel is based on the barrels produced by the total project, the private investor will have a lower level of NPV10/project barrel as is demonstrated in the following two tables.

Table 3.10
MINE
NPV10/SCO bbl
WTI

| | | CURRENT TERMS | | | | | | |
|-------|--|---------------|---------|---------|---------|--------|---------|---------|
| US \$ | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | -\$0.29 | -\$0.01 |
| 30 | | | | -\$0.52 | -\$0.24 | \$0.03 | \$0.30 | \$0.55 |
| 40 | | -\$0.47 | -\$0.19 | \$0.08 | \$0.34 | \$0.60 | \$0.86 | \$1.11 |
| 50 | | \$0.12 | \$0.39 | \$0.64 | \$0.90 | \$1.16 | \$1.41 | \$1.66 |
| 60 | | \$0.69 | \$0.95 | \$1.21 | \$1.46 | \$1.71 | \$1.96 | \$2.21 |
| 70 | | \$1.25 | \$1.51 | \$1.76 | \$2.01 | \$2.26 | \$2.51 | \$2.76 |
| 80 | | \$1.81 | \$2.06 | \$2.31 | \$2.57 | \$2.81 | \$3.06 | \$3.31 |
| 90 | | \$2.36 | \$2.61 | \$2.86 | \$3.12 | \$3.36 | \$3.61 | \$3.86 |
| 100 | | \$2.91 | \$3.16 | \$3.42 | \$3.67 | \$3.92 | \$4.16 | \$4.41 |

Table 3.130
Mine
NPV10/SCO total project bbl
WTI

| | | PARTICIPATION | | | | | | |
|-------|--|---------------|---------|---------|---------|---------|--------|---------|
| US \$ | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | | -\$0.13 |
| 30 | | | | | -\$0.43 | -\$0.14 | \$0.14 | \$0.38 |
| 40 | | | -\$0.43 | -\$0.15 | \$0.13 | \$0.38 | \$0.59 | \$0.75 |
| 50 | | -\$0.16 | \$0.12 | \$0.38 | \$0.60 | \$0.80 | \$0.95 | \$1.09 |
| 60 | | \$0.38 | \$0.60 | \$0.81 | \$1.01 | \$1.14 | \$1.29 | \$1.42 |
| 70 | | \$0.83 | \$1.02 | \$1.21 | \$1.34 | \$1.48 | \$1.62 | \$1.77 |
| 80 | | \$1.23 | \$1.41 | \$1.54 | \$1.68 | \$1.83 | \$1.96 | \$2.11 |
| 90 | | \$1.61 | \$1.73 | \$1.88 | \$2.03 | \$2.16 | \$2.31 | \$2.47 |
| 100 | | \$1.93 | \$2.07 | \$2.22 | \$2.36 | \$2.51 | \$2.66 | \$2.82 |

Conclusion

Alberta participation on a working interest basis is an effective way of increasing the share for Alberta of the oil sands wealth. However, in this case Alberta would also incur the associated risks.

It does not seem that at this time Alberta Participation on a working interest basis is a focus of the government or Albertans. Therefore, this method may not be politically attractive.

3.10. Summary of preliminary fiscal recommendations

Based on the analysis in this Chapter 3 a number of recommendations can be made:

- 1. Surface rentals for oil sands should be significantly increased on all leases, or where this is not possible on new leases only. The income from oil sands surface rentals may be allocated to a special fund to cover external costs of the projects, including adding to the budgets of Alberta municipalities where such rentals are collected in order to assist in covering infrastructure costs.**
- 2. Base royalties should not be offset from the NPS, but should instead become a deduction.**
- 3. Delete the LTBR and obtain the NPS on the basis of normal nominal payout.**
- 4. A modest flat immediate increase in the base royalty can be recommended since this improves government take and discourages excessively high cost projects, but a strong increase would create too much downside price risk.**
- 5. A price sensitive base royalty or SOST, based either on bitumen prices or SCO or WTI prices is an excellent concept to capture a fair share for Albertans under high price conditions.**
- 6. An NPS based on an R/C ratio can be recommended provided it is combined with a strong cost regressive feature, such as a cost limit or an OSIT.**
- 7. An NPS based on different benchmarks based on the LTBR plus IRR cannot be recommended, since this will create gold plating.**
- 8. A provincial corporate income tax reduction could be considered in conjunction with an increase in the NPS rate.**
- 9. A royalty credit based on a percentage of the capital expenditures related to upgrading is the most effective way to encourage upgrading.**
- 10. Introduction of a provincial property tax on upstream oil sand installations merits consideration as one of the options to create a cost regressive system.**
- 11. An OSIT in combination with a price progressive feature merits consideration as well.**
- 12. Introduction of provincial equity participation in upstream and/or upgrader is an effective way to increase the provincial share. However, it is not recommended in view of the fact that this is deemed to be politically unacceptable to Albertans.**

In addition, other procedural and regulatory means could be explored to slow down the rate of resources development.

4. FISCAL OPTIONS

In Chapter 1 the policy objectives were discussed.

To respond to these objectives new concepts will be developed following three separate steps:

- First it will be evaluated how upgrading could be enhanced. The enhancing of upgrading will be evaluated on the basis of three alternative levels of support for upgrading. Three alternative “Base Packages” will be developed to define these alternatives.
- Then it will be reviewed how systems can be developed that would be price progressive but cost regressive. Three “Fiscal Options” will be evaluated for the creation of a system that is price progressive and cost regressive. Also variations on the basis of these three Fiscal Options will be evaluated.
- Finally it will be evaluated how these systems can be adjusted over time to achieve a higher level of government take for Alberta.

4.1. Three Base Packages for increasing the upstream share and providing incentives for upgrading.

Alberta could increase its fair share on the upstream and at the same time stimulate upgrading.

In this section three Base Packages with respect to upstream fair share - upgrading will be evaluated.

One of the concepts, of course, is not to provide for an incentive for upgrading. Furthermore, two levels of upstream fair share - upgrading will be evaluated.

Three Base Packages were developed which all result in an IRR on integrated development of between 16.0% and 16.3% in real terms for Cost Level 4 and an oil price of US \$ 50 WTI.

In chapter 3 it was concluded that royalty credits related to the capital expenditures for upgrading were the most efficient way to promote upgrading without losing considerable government take.

In order to evaluate the upstream-upgrading balance, the three Base-Packages provide for different combinations of base royalties and upgrading credits.

The credits for upgrading would then be tradable credits against the base royalty.

Tradable credits means that investors would receive certificates from the Government of Alberta upon incurring capital expenditures for upgrading. These certificates can be traded and can be used by oil companies producing oil sands and paying base royalties. Such producing companies can use the certificates to lower their royalty payments.

It also means that merchant upgraders will be able to trade their credits to companies which have already production. In other words it is not necessary to be in the upstream business to benefit from the credits.

A person investing in an integrated project would receive upgrading royalty credits during the development of the upgrader, even if such investor is not producing bitumen from another operation. Once production starts, the investor would have higher base royalties. In total the IRR would be about the same as the current situation for an integrated project.

It was also recommended in Chapter 3 to remove the LTBR for the NPS calculation and make royalties deductible from NPS rather than offsets against NPS.

All three Base Packages have the LTBR eliminated and have made the royalty deductible and an NPS of 25%.

Furthermore the three Base Packages are:

- **Base Package-1: No upgrading credit and base royalty at 1%.**
- **Base Package-2: A 5% royalty credit against the base royalty for upgrading assets which are currently covered by ACCA for upgrading. A flat base royalty of 5%.**
- **Base Package-3: A 10% royalty credit against the base royalty for all upgrading capital expenditures. A flat base royalty of 10%.**

Following is an analysis for the Mine, the Upgrader and the Mine+Upgrader for the three Base Packages.

(Note: As under Chapter 3, the table numbers are not sequential. They are selected from a more comprehensive data base.)

Government Revenues per barrel

Following are the revenues from the Mining operation under the current terms and the three Base Packages.

Table 4.04

MINE

CURRENT TERMS

Government Income + Participation per bitumen barrel (\$ Cdn)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$1.21 | \$1.87 |
| 30 | | | \$1.69 | \$2.37 | \$3.00 | \$3.63 | \$4.24 |
| 40 | \$2.86 | \$3.51 | \$4.14 | \$4.77 | \$5.38 | \$6.00 | \$6.61 |
| 50 | \$5.29 | \$5.91 | \$6.53 | \$7.14 | \$7.75 | \$8.36 | \$8.97 |
| 60 | \$7.66 | \$8.28 | \$8.89 | \$9.50 | \$10.12 | \$10.72 | \$11.34 |
| 70 | \$10.04 | \$10.65 | \$11.26 | \$11.87 | \$12.48 | \$13.09 | \$13.70 |
| 80 | \$12.40 | \$13.01 | \$13.62 | \$14.23 | \$14.84 | \$15.45 | \$16.06 |
| 90 | \$14.76 | \$15.38 | \$15.99 | \$16.60 | \$17.21 | \$17.81 | \$18.42 |
| 100 | \$17.13 | \$17.75 | \$18.35 | \$18.96 | \$19.57 | \$20.18 | \$20.78 |

Table 4.14

Mine

BASE-PACKAGE-1

Government Income + Participation per bitumen barrel (\$ Cdn)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$1.38 | \$1.97 |
| 30 | | | | \$2.56 | \$3.15 | \$3.75 | \$4.35 |
| 40 | \$3.16 | \$3.75 | \$4.34 | \$4.94 | \$5.53 | \$6.13 | \$6.73 |
| 50 | \$5.53 | \$6.12 | \$6.72 | \$7.32 | \$7.92 | \$8.52 | \$9.12 |
| 60 | \$7.91 | \$8.51 | \$9.11 | \$9.71 | \$10.31 | \$10.91 | \$11.51 |
| 70 | \$10.29 | \$10.89 | \$11.49 | \$12.09 | \$12.69 | \$13.29 | \$13.90 |
| 80 | \$12.68 | \$13.28 | \$13.88 | \$14.48 | \$15.08 | \$15.68 | \$16.28 |
| 90 | \$15.06 | \$15.66 | \$16.26 | \$16.87 | \$17.47 | \$18.07 | \$18.67 |
| 100 | \$17.45 | \$18.05 | \$18.65 | \$19.25 | \$19.85 | \$20.46 | \$21.06 |

Table 4.24

Mine

BASE-PACKAGE-2

Government Income + Participation per bitumen barrel (\$ Cdn)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | | \$2.18 |
| 30 | | | | \$2.89 | \$3.48 | \$4.07 | \$4.67 |
| 40 | \$3.59 | \$4.18 | \$4.77 | \$5.37 | \$5.96 | \$6.56 | \$7.16 |
| 50 | \$6.07 | \$6.66 | \$7.26 | \$7.86 | \$8.46 | \$9.06 | \$9.66 |
| 60 | \$8.55 | \$9.15 | \$9.75 | \$10.35 | \$10.95 | \$11.55 | \$12.15 |
| 70 | \$11.04 | \$11.64 | \$12.24 | \$12.84 | \$13.44 | \$14.05 | \$14.65 |
| 80 | \$13.54 | \$14.14 | \$14.74 | \$15.34 | \$15.94 | \$16.54 | \$17.14 |
| 90 | \$16.03 | \$16.63 | \$17.23 | \$17.83 | \$18.43 | \$19.04 | \$19.64 |
| 100 | \$18.52 | \$19.12 | \$19.73 | \$20.33 | \$20.93 | \$21.53 | \$22.13 |

Table 4.34

| Mine | | BASE-PACKAGE-3 | | | | | |
|---|---------|----------------|---------|---------|---------|---------|---------|
| Government Income + Participation per bitumen barrel (\$ Cdn) | | | | | | | |
| WTI | | | | | | | |
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | \$2.45 |
| 30 | | | | \$3.29 | \$3.88 | \$4.48 | \$5.07 |
| 40 | | \$4.72 | \$5.31 | \$5.91 | \$6.50 | \$7.10 | \$7.70 |
| 50 | \$6.74 | \$7.34 | \$7.93 | \$8.53 | \$9.13 | \$9.73 | \$10.33 |
| 60 | \$9.36 | \$9.96 | \$10.56 | \$11.16 | \$11.76 | \$12.36 | \$12.96 |
| 70 | \$11.99 | \$12.58 | \$13.18 | \$13.78 | \$14.38 | \$14.99 | \$15.59 |
| 80 | \$14.61 | \$15.21 | \$15.81 | \$16.41 | \$17.01 | \$17.62 | \$18.22 |
| 90 | \$17.24 | \$17.84 | \$18.44 | \$19.04 | \$19.64 | \$20.24 | \$20.85 |
| 100 | \$19.87 | \$20.47 | \$21.07 | \$21.67 | \$22.27 | \$22.87 | \$23.48 |

Following are the results for the Upgrader. Of course, in this case there is no difference between the Current Terms and Base Package-1.

Table 4.44

| UPGRADER | | CURRENT TERMS | | | | | |
|---|---------|---------------|---------|---------|---------|---------|---------|
| Government Income + Participation per bitumen barrel (\$ Cdn) | | | | | | | |
| WTI | | | | | | | |
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | \$1.21 | \$1.48 |
| 30 | | \$1.48 | \$1.75 | \$2.02 | \$2.29 | \$2.56 | \$2.83 |
| 40 | \$2.55 | \$2.83 | \$3.10 | \$3.37 | \$3.64 | \$3.91 | \$4.18 |
| 50 | \$3.90 | \$4.17 | \$4.44 | \$4.72 | \$4.99 | \$5.26 | \$5.53 |
| 60 | \$5.25 | \$5.52 | \$5.79 | \$6.06 | \$6.34 | \$6.61 | \$6.88 |
| 70 | \$6.60 | \$6.87 | \$7.14 | \$7.41 | \$7.68 | \$7.95 | \$8.23 |
| 80 | \$7.95 | \$8.22 | \$8.49 | \$8.76 | \$9.03 | \$9.30 | \$9.57 |
| 90 | \$9.30 | \$9.57 | \$9.84 | \$10.11 | \$10.38 | \$10.65 | \$10.92 |
| 100 | \$10.65 | \$10.92 | \$11.19 | \$11.46 | \$11.73 | \$12.00 | \$12.27 |

Table 4.54

| UPGRADER | | BASE-PACKAGE-1 | | | | | |
|---|---------|----------------|---------|---------|---------|---------|---------|
| Government Income + Participation per bitumen barrel (\$ Cdn) | | | | | | | |
| WTI | | | | | | | |
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | \$1.21 | \$1.48 |
| 30 | | \$1.48 | \$1.75 | \$2.02 | \$2.29 | \$2.56 | \$2.83 |
| 40 | \$2.55 | \$2.83 | \$3.10 | \$3.37 | \$3.64 | \$3.91 | \$4.18 |
| 50 | \$3.90 | \$4.17 | \$4.44 | \$4.72 | \$4.99 | \$5.26 | \$5.53 |
| 60 | \$5.25 | \$5.52 | \$5.79 | \$6.06 | \$6.34 | \$6.61 | \$6.88 |
| 70 | \$6.60 | \$6.87 | \$7.14 | \$7.41 | \$7.68 | \$7.95 | \$8.23 |
| 80 | \$7.95 | \$8.22 | \$8.49 | \$8.76 | \$9.03 | \$9.30 | \$9.57 |
| 90 | \$9.30 | \$9.57 | \$9.84 | \$10.11 | \$10.38 | \$10.65 | \$10.92 |
| 100 | \$10.65 | \$10.92 | \$11.19 | \$11.46 | \$11.73 | \$12.00 | \$12.27 |

Table 4.64
UPGRADER BASE-PACKAGE-2
Government Income + Participation per bitumen barrel (\$ Cdn)

| WTI US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|--------------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$1.11 | \$1.40 |
| 30 | | \$1.29 | \$1.58 | \$1.87 | \$2.17 | \$2.46 | \$2.75 |
| 40 | \$2.35 | \$2.64 | \$2.93 | \$3.22 | \$3.51 | \$3.81 | \$4.10 |
| 50 | \$3.70 | \$3.99 | \$4.28 | \$4.57 | \$4.86 | \$5.15 | \$5.45 |
| 60 | \$5.05 | \$5.34 | \$5.63 | \$5.92 | \$6.21 | \$6.50 | \$6.79 |
| 70 | \$6.39 | \$6.69 | \$6.98 | \$7.27 | \$7.56 | \$7.85 | \$8.14 |
| 80 | \$7.74 | \$8.03 | \$8.33 | \$8.62 | \$8.91 | \$9.20 | \$9.49 |
| 90 | \$9.09 | \$9.38 | \$9.67 | \$9.97 | \$10.26 | \$10.55 | \$10.84 |
| 100 | \$10.44 | \$10.73 | \$11.02 | \$11.31 | \$11.61 | \$11.90 | \$12.19 |

Table 4.74
UPGRADER BASE-PACKAGE-3
Government Income + Participation per bitumen barrel (\$ Cdn)

| WTI US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|--------------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$0.97 | \$1.29 |
| 30 | | \$1.05 | \$1.37 | \$1.68 | \$2.00 | \$2.32 | \$2.64 |
| 40 | \$2.08 | \$2.40 | \$2.71 | \$3.03 | \$3.35 | \$3.67 | \$3.99 |
| 50 | \$3.43 | \$3.74 | \$4.06 | \$4.38 | \$4.70 | \$5.02 | \$5.34 |
| 60 | \$4.78 | \$5.09 | \$5.41 | \$5.73 | \$6.05 | \$6.37 | \$6.69 |
| 70 | \$6.12 | \$6.44 | \$6.76 | \$7.08 | \$7.40 | \$7.72 | \$8.03 |
| 80 | \$7.47 | \$7.79 | \$8.11 | \$8.43 | \$8.75 | \$9.06 | \$9.38 |
| 90 | \$8.82 | \$9.14 | \$9.46 | \$9.78 | \$10.09 | \$10.41 | \$10.73 |
| 100 | \$10.17 | \$10.49 | \$10.81 | \$11.12 | \$11.44 | \$11.76 | \$12.08 |

Following are the results for the Mine+Upgrader.

Table 4.84
MINE+UPGRADER CURRENT TERMS
Government Income + Participation per SCO barrel (\$ Cdn)

| WTI US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|--------------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$2.64 | \$3.68 |
| 30 | | | \$3.74 | \$4.80 | \$5.82 | \$6.83 | \$7.82 |
| 40 | \$5.92 | \$6.96 | \$7.97 | \$8.98 | \$9.97 | \$10.96 | \$11.95 |
| 50 | \$10.12 | \$11.12 | \$12.12 | \$13.11 | \$14.11 | \$15.09 | \$16.08 |
| 60 | \$14.27 | \$15.26 | \$16.25 | \$17.24 | \$18.24 | \$19.22 | \$20.21 |
| 70 | \$18.41 | \$19.40 | \$20.38 | \$21.38 | \$22.36 | \$23.35 | \$24.34 |
| 80 | \$22.54 | \$23.52 | \$24.52 | \$25.50 | \$26.49 | \$27.48 | \$28.47 |
| 90 | \$26.67 | \$27.66 | \$28.65 | \$29.64 | \$30.63 | \$31.61 | \$32.59 |
| 100 | \$30.80 | \$31.80 | \$32.78 | \$33.77 | \$34.75 | \$35.74 | \$36.72 |

Table 4.94

MINE+UPGR

BASE-PACKAGE-1

Government Income + Participation per SCO barrel (\$ Cdn)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$2.83 | \$3.80 |
| 30 | | | \$4.07 | \$5.03 | \$6.00 | \$6.97 | \$7.95 |
| 40 | \$6.27 | \$7.23 | \$8.20 | \$9.17 | \$10.15 | \$11.13 | \$12.10 |
| 50 | \$10.41 | \$11.38 | \$12.35 | \$13.33 | \$14.30 | \$15.28 | \$16.26 |
| 60 | \$14.56 | \$15.53 | \$16.51 | \$17.48 | \$18.46 | \$19.44 | \$20.42 |
| 70 | \$18.71 | \$19.68 | \$20.66 | \$21.64 | \$22.62 | \$23.59 | \$24.57 |
| 80 | \$22.86 | \$23.84 | \$24.82 | \$25.80 | \$26.77 | \$27.75 | \$28.73 |
| 90 | \$27.02 | \$28.00 | \$28.97 | \$29.95 | \$30.93 | \$31.91 | \$32.89 |
| 100 | \$31.17 | \$32.15 | \$33.13 | \$34.11 | \$35.09 | \$36.07 | \$37.05 |

Table 4.104

MINE+UPGRADER

BASE-PACKAGE-2

Government Income + Participation per SCO barrel (\$ Cdn)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$2.98 | \$3.97 |
| 30 | | | \$4.29 | \$5.27 | \$6.26 | \$7.25 | \$8.24 |
| 40 | \$6.57 | \$7.56 | \$8.55 | \$9.54 | \$10.53 | \$11.53 | \$12.53 |
| 50 | \$10.83 | \$11.83 | \$12.82 | \$13.82 | \$14.81 | \$15.81 | \$16.81 |
| 60 | \$15.11 | \$16.10 | \$17.10 | \$18.10 | \$19.09 | \$20.09 | \$21.09 |
| 70 | \$19.39 | \$20.38 | \$21.38 | \$22.38 | \$23.38 | \$24.38 | \$25.38 |
| 80 | \$23.67 | \$24.67 | \$25.66 | \$26.66 | \$27.66 | \$28.66 | \$29.66 |
| 90 | \$27.95 | \$28.95 | \$29.95 | \$30.95 | \$31.94 | \$32.94 | \$33.94 |
| 100 | \$32.23 | \$33.23 | \$34.23 | \$35.23 | \$36.23 | \$37.23 | \$38.23 |

Table 4.114

MINE+UPGRADER

BASE-PACKAGE-3

Government Income + Participation per SCO barrel (\$ Cdn)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$3.17 | \$4.18 |
| 30 | | | \$4.56 | \$5.56 | \$6.57 | \$7.59 | \$8.61 |
| 40 | \$6.94 | \$7.95 | \$8.96 | \$9.98 | \$11.00 | \$12.03 | \$13.05 |
| 50 | \$11.36 | \$12.38 | \$13.40 | \$14.42 | \$15.44 | \$16.47 | \$17.49 |
| 60 | \$15.79 | \$16.81 | \$17.83 | \$18.86 | \$19.88 | \$20.91 | \$21.93 |
| 70 | \$20.22 | \$21.25 | \$22.27 | \$23.30 | \$24.32 | \$25.35 | \$26.37 |
| 80 | \$24.66 | \$25.69 | \$26.71 | \$27.74 | \$28.76 | \$29.79 | \$30.82 |
| 90 | \$29.10 | \$30.13 | \$31.15 | \$32.18 | \$33.20 | \$34.23 | \$35.26 |
| 100 | \$33.54 | \$34.57 | \$35.59 | \$36.62 | \$37.65 | \$38.67 | \$39.70 |

As is very obvious from this sequence of tables, the increased government revenues per barrel on the basis of the extra base royalties received exceed the lower government revenues per barrel as a result of royalty credits. Therefore, the Mine+Upgrader government revenues per barrel increase from the Current Terms to Base Package-3.

The fact that the IRR is similar for the Mine+Upgrader cases, is because the royalty credits early in the cash flow are compensated by a higher stream of revenues from royalties starting from production. In other words, the overall system has become more back end loaded.

For Cost Level 4 at US \$ 50 WTI per barrel the following overview of the undiscounted real government revenues per barrel illustrates this matter. *Please note how the Mine revenues in the tables are per bitumen barrel and in this overview per SCO barrel assuming 85% efficiency:*

Government Revenues per SCO barrel

| | Mine | Upgrader | Mine+Upgrader |
|----------------|----------|----------|---------------|
| Current terms | \$ 8.39 | \$ 4.72 | \$ 13.11 |
| Base Package-1 | \$ 8.61 | \$ 4.72 | \$ 13.33 |
| Base Package-2 | \$ 9.25 | \$ 4.57 | \$ 13.82 |
| Base Package-3 | \$ 10.04 | \$ 4.38 | \$ 14.42 |

Of course, the overall increase in government revenues, only accrues to Alberta, not to the Federal Government of Canada. In fact Alberta the higher base royalties, which are now deductible for federal purposes, will result in a slight reduction of income to the Federal Government of Canada.

Undiscounted Government Take

Following are the corresponding tables for the Undiscounted Government Take.

First, the tables for the mining operation.

Table 4.06

| MINE | | CURRENT TERMS | | | | | |
|---|---------------|----------------------|---------------|---------------|---------------|---------------|---------------|
| Undiscounted Government Take (Income only) | | | | | | | |
| WTI | | | | | | | |
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | 45.24% | 47.11% |
| 30 | | | 44.43% | 46.51% | 47.16% | 47.39% | 47.48% |
| 40 | 45.93% | 46.82% | 47.20% | 47.39% | 47.45% | 47.51% | 47.52% |
| 50 | 47.23% | 47.35% | 47.45% | 47.49% | 47.52% | 47.52% | 47.53% |
| 60 | 47.41% | 47.46% | 47.48% | 47.49% | 47.52% | 47.52% | 47.54% |
| 70 | 47.49% | 47.50% | 47.50% | 47.52% | 47.52% | 47.53% | 47.53% |
| 80 | 47.51% | 47.50% | 47.53% | 47.52% | 47.53% | 47.54% | 47.53% |
| 90 | 47.51% | 47.53% | 47.54% | 47.53% | 47.54% | 47.53% | 47.52% |
| 100 | 47.53% | 47.54% | 47.53% | 47.54% | 47.53% | 47.53% | 47.52% |

Table 4.16

| Mine | | BASE-PACKAGE-1 | | | | | |
|---|---------------|-----------------------|---------------|---------------|---------------|---------------|---------------|
| Undiscounted Government Take (Income only) | | | | | | | |
| WTI | | | | | | | |
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | 51.38% | 49.67% |
| 30 | | | | 50.31% | 49.50% | 49.02% | 48.69% |
| 40 | 50.75% | 49.95% | 49.43% | 49.07% | 48.80% | 48.60% | 48.44% |
| 50 | 49.39% | 49.10% | 48.87% | 48.70% | 48.55% | 48.43% | 48.33% |
| 60 | 48.93% | 48.77% | 48.63% | 48.52% | 48.42% | 48.34% | 48.26% |
| 70 | 48.70% | 48.59% | 48.50% | 48.41% | 48.34% | 48.28% | 48.22% |
| 80 | 48.56% | 48.48% | 48.41% | 48.35% | 48.29% | 48.24% | 48.19% |
| 90 | 48.47% | 48.41% | 48.35% | 48.30% | 48.25% | 48.21% | 48.17% |
| 100 | 48.40% | 48.35% | 48.31% | 48.26% | 48.23% | 48.19% | 48.16% |

Table 4.26

| Mine | | BASE-PACKAGE-2 | | | | | |
|---|---------------|-----------------------|---------------|---------------|---------------|---------------|---------------|
| Undiscounted Government Take (Income only) | | | | | | | |
| WTI | | | | | | | |
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | 55.12% |
| 30 | | | | 56.70% | 54.59% | 53.24% | 52.30% |
| 40 | 57.74% | 55.72% | 54.35% | 53.35% | 52.59% | 52.00% | 51.53% |
| 50 | 54.21% | 53.42% | 52.79% | 52.27% | 51.84% | 51.48% | 51.17% |
| 60 | 52.92% | 52.47% | 52.08% | 51.74% | 51.45% | 51.19% | 50.97% |
| 70 | 52.26% | 51.95% | 51.67% | 51.43% | 51.21% | 51.01% | 50.83% |
| 80 | 51.85% | 51.62% | 51.41% | 51.22% | 51.04% | 50.88% | 50.74% |
| 90 | 51.58% | 51.40% | 51.23% | 51.07% | 50.92% | 50.79% | 50.67% |
| 100 | 51.39% | 51.23% | 51.09% | 50.96% | 50.83% | 50.72% | 50.61% |

Table 4.36
Mine
Undiscounted Government Take (Income only)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | | 61.95% |
| 30 | | | | 64.71% | 60.95% | 58.52% | 56.82% |
| 40 | | 62.95% | 60.50% | 58.70% | 57.34% | 56.27% | 55.40% |
| 50 | 60.24% | 58.82% | 57.68% | 56.74% | 55.96% | 55.30% | 54.73% |
| 60 | 57.92% | 57.09% | 56.39% | 55.77% | 55.24% | 54.76% | 54.34% |
| 70 | 56.71% | 56.15% | 55.64% | 55.19% | 54.79% | 54.42% | 54.09% |
| 80 | 55.97% | 55.55% | 55.16% | 54.80% | 54.48% | 54.19% | 53.92% |
| 90 | 55.47% | 55.13% | 54.82% | 54.53% | 54.26% | 54.01% | 53.78% |
| 100 | 55.11% | 54.83% | 54.57% | 54.32% | 54.10% | 53.88% | 53.68% |

Following are the tables for the upgrader.

Table 4.46
UPGRADER
Undiscounted Government Take (Income only)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 30.43% | 30.28% |
| 30 | | 30.63% | 30.47% | 30.36% | 30.27% | 30.20% | 30.14% |
| 40 | 30.40% | 30.33% | 30.27% | 30.21% | 30.17% | 30.13% | 30.10% |
| 50 | 30.26% | 30.22% | 30.18% | 30.15% | 30.12% | 30.10% | 30.07% |
| 60 | 30.20% | 30.17% | 30.14% | 30.12% | 30.10% | 30.08% | 30.06% |
| 70 | 30.16% | 30.13% | 30.11% | 30.10% | 30.08% | 30.06% | 30.05% |
| 80 | 30.13% | 30.11% | 30.10% | 30.08% | 30.07% | 30.05% | 30.04% |
| 90 | 30.11% | 30.10% | 30.08% | 30.07% | 30.06% | 30.05% | 30.04% |
| 100 | 30.10% | 30.08% | 30.07% | 30.06% | 30.05% | 30.04% | 30.03% |

Table 4.56
UPGRADER
Undiscounted Government Take (Income only)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 30.43% | 30.28% |
| 30 | | 30.63% | 30.47% | 30.36% | 30.27% | 30.20% | 30.14% |
| 40 | 30.40% | 30.33% | 30.27% | 30.21% | 30.17% | 30.13% | 30.10% |
| 50 | 30.26% | 30.22% | 30.18% | 30.15% | 30.12% | 30.10% | 30.07% |
| 60 | 30.20% | 30.17% | 30.14% | 30.12% | 30.10% | 30.08% | 30.06% |
| 70 | 30.16% | 30.13% | 30.11% | 30.10% | 30.08% | 30.06% | 30.05% |
| 80 | 30.13% | 30.11% | 30.10% | 30.08% | 30.07% | 30.05% | 30.04% |
| 90 | 30.11% | 30.10% | 30.08% | 30.07% | 30.06% | 30.05% | 30.04% |
| 100 | 30.10% | 30.08% | 30.07% | 30.06% | 30.05% | 30.04% | 30.03% |

Table 4.66
UPGRADER **BASE-PACKAGE-2**
Undiscounted Government Take (Income only)

| WTI | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--|--------|--------|--------|--------|--------|--------|--------|
| US \$ | | | | | | | | |
| 20 | | | | | | | 27.84% | 28.59% |
| 30 | | | 26.78% | 27.60% | 28.19% | 28.63% | 28.98% | 29.27% |
| 40 | | 27.95% | 28.34% | 28.65% | 28.92% | 29.14% | 29.34% | 29.50% |
| 50 | | 28.66% | 28.88% | 29.06% | 29.23% | 29.38% | 29.51% | 29.63% |
| 60 | | 29.01% | 29.15% | 29.28% | 29.40% | 29.51% | 29.61% | 29.70% |
| 70 | | 29.21% | 29.32% | 29.42% | 29.51% | 29.60% | 29.67% | 29.75% |
| 80 | | 29.35% | 29.43% | 29.51% | 29.59% | 29.66% | 29.72% | 29.78% |
| 90 | | 29.44% | 29.51% | 29.58% | 29.64% | 29.70% | 29.76% | 29.81% |
| 100 | | 29.51% | 29.57% | 29.63% | 29.68% | 29.74% | 29.78% | 29.83% |

Table 4.76
UPGRADER **BASE-PACKAGE-3**
Undiscounted Government Take (Income only)

| WTI | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--|--------|--------|--------|--------|--------|--------|--------|
| US \$ | | | | | | | | |
| 20 | | | | | | | 24.44% | 26.38% |
| 30 | | | 21.73% | 23.82% | 25.34% | 26.49% | 27.39% | 28.11% |
| 40 | | 24.73% | 25.72% | 26.54% | 27.22% | 27.80% | 28.29% | 28.72% |
| 50 | | 26.57% | 27.12% | 27.59% | 28.02% | 28.40% | 28.73% | 29.04% |
| 60 | | 27.45% | 27.82% | 28.16% | 28.46% | 28.74% | 28.99% | 29.23% |
| 70 | | 27.98% | 28.25% | 28.51% | 28.74% | 28.96% | 29.16% | 29.35% |
| 80 | | 28.32% | 28.54% | 28.74% | 28.94% | 29.12% | 29.28% | 29.44% |
| 90 | | 28.57% | 28.75% | 28.92% | 29.08% | 29.23% | 29.38% | 29.51% |
| 100 | | 28.75% | 28.90% | 29.05% | 29.19% | 29.32% | 29.45% | 29.57% |

Following are the Mine+Upgrader results:

Table 4.86
MINE+UPGRADER CURRENT TERMS
Undiscounted Government Take (Income only)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 36.97% | 38.49% |
| 30 | | | 36.60% | 38.01% | 38.68% | 39.05% | 39.30% |
| 40 | 37.63% | 38.35% | 38.77% | 39.06% | 39.25% | 39.40% | 39.52% |
| 50 | 38.83% | 39.05% | 39.22% | 39.35% | 39.46% | 39.55% | 39.62% |
| 60 | 39.19% | 39.31% | 39.40% | 39.48% | 39.57% | 39.62% | 39.69% |
| 70 | 39.38% | 39.45% | 39.51% | 39.58% | 39.63% | 39.68% | 39.72% |
| 80 | 39.48% | 39.53% | 39.59% | 39.63% | 39.68% | 39.72% | 39.75% |
| 90 | 39.54% | 39.59% | 39.64% | 39.67% | 39.71% | 39.74% | 39.76% |
| 100 | 39.60% | 39.64% | 39.67% | 39.70% | 39.73% | 39.76% | 39.78% |

Table 4.96
MINE+UPGR BASE-PACKAGE-1
Undiscounted Government Take (Income only)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 39.68% | 39.73% |
| 30 | | | 39.84% | 39.81% | 39.84% | 39.89% | 39.94% |
| 40 | 39.87% | 39.87% | 39.89% | 39.92% | 39.96% | 39.99% | 40.02% |
| 50 | 39.92% | 39.95% | 39.97% | 39.99% | 40.02% | 40.04% | 40.06% |
| 60 | 39.98% | 40.00% | 40.02% | 40.03% | 40.05% | 40.07% | 40.09% |
| 70 | 40.02% | 40.03% | 40.05% | 40.06% | 40.08% | 40.09% | 40.10% |
| 80 | 40.04% | 40.06% | 40.07% | 40.08% | 40.09% | 40.10% | 40.12% |
| 90 | 40.06% | 40.07% | 40.08% | 40.10% | 40.11% | 40.12% | 40.13% |
| 100 | 40.08% | 40.09% | 40.10% | 40.11% | 40.12% | 40.13% | 40.14% |

Table 4.106
MINE+UPGRADER BASE-PACKAGE-2
Undiscounted Government Take (Income only)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 41.84% | 41.53% |
| 30 | | | 42.00% | 41.70% | 41.55% | 41.47% | 41.43% |
| 40 | 41.82% | 41.66% | 41.56% | 41.50% | 41.46% | 41.43% | 41.42% |
| 50 | 41.57% | 41.52% | 41.48% | 41.46% | 41.44% | 41.42% | 41.41% |
| 60 | 41.50% | 41.47% | 41.46% | 41.44% | 41.43% | 41.42% | 41.41% |
| 70 | 41.47% | 41.45% | 41.44% | 41.43% | 41.42% | 41.42% | 41.41% |
| 80 | 41.45% | 41.44% | 41.44% | 41.43% | 41.42% | 41.42% | 41.41% |
| 90 | 41.45% | 41.44% | 41.43% | 41.43% | 41.42% | 41.42% | 41.41% |
| 100 | 41.44% | 41.43% | 41.43% | 41.42% | 41.42% | 41.42% | 41.41% |

Table 4.116
MINE+UPGRADER BASE-PACKAGE-3
Undiscounted Government Take (Income only)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 44.46% | 43.72% |
| 30 | | | 44.63% | 43.99% | 43.64% | 43.42% | 43.27% |
| 40 | 44.18% | 43.83% | 43.60% | 43.44% | 43.32% | 43.22% | 43.15% |
| 50 | 43.58% | 43.45% | 43.34% | 43.26% | 43.20% | 43.14% | 43.09% |
| 60 | 43.37% | 43.29% | 43.23% | 43.18% | 43.13% | 43.10% | 43.06% |
| 70 | 43.26% | 43.21% | 43.17% | 43.13% | 43.10% | 43.07% | 43.04% |
| 80 | 43.20% | 43.16% | 43.13% | 43.10% | 43.07% | 43.05% | 43.03% |
| 90 | 43.15% | 43.13% | 43.10% | 43.08% | 43.05% | 43.03% | 43.02% |
| 100 | 43.12% | 43.10% | 43.08% | 43.06% | 43.04% | 43.02% | 43.01% |

As can be seen on an undiscounted basis the government take for the Mine+Upgrader is higher the stronger the base royalty provisions. The higher royalties more than offset the royalty credit on an undiscounted basis.

For Cost Level 4 at US \$ 50 WTI per barrel the following overview of the undiscounted government take illustrates this matter:

Undiscounted Government Take

| | Mine | Upgrader | Mine+Upgrader |
|----------------|-------|----------|---------------|
| Current terms | 47.5% | 30.2% | 39.4% |
| Base Package-1 | 48.7% | 30.2% | 40.0% |
| Base Package-2 | 52.3% | 29.1% | 41.5% |
| Base Package-3 | 56.7% | 28.0% | 43.3% |

5% Discounted Government Take (real)

Following is the overview of the 5% Discounted Government Take.

First the mining operations will be reviewed.

Table 4.07

MINE **CURRENT TERMS**
5% Discounted Government Take (Income only)
WTI
US \$

| | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-----|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 68.92% | 52.79% |
| 30 | | | 79.80% | 57.20% | 52.10% | 50.05% | 48.98% |
| 40 | 61.43% | 54.74% | 51.87% | 50.34% | 49.38% | 48.78% | 48.35% |
| 50 | 51.73% | 50.48% | 49.69% | 49.09% | 48.68% | 48.34% | 48.08% |
| 60 | 49.86% | 49.32% | 48.89% | 48.55% | 48.33% | 48.11% | 47.96% |
| 70 | 49.14% | 48.80% | 48.51% | 48.33% | 48.13% | 48.00% | 47.85% |
| 80 | 48.73% | 48.48% | 48.32% | 48.14% | 48.02% | 47.91% | 47.80% |
| 90 | 48.46% | 48.32% | 48.19% | 48.05% | 47.95% | 47.84% | 47.74% |
| 100 | 48.32% | 48.21% | 48.07% | 47.98% | 47.87% | 47.80% | 47.71% |

Table 4.17

Mine **BASE-PACKAGE-1**
5% Discounted Government Take (Income only)
WTI
US \$

| | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-----|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 84.54% | 57.09% |
| 30 | | | | 64.50% | 55.99% | 52.47% | 50.62% |
| 40 | 71.77% | 60.40% | 55.51% | 52.88% | 51.28% | 50.22% | 49.47% |
| 50 | 55.25% | 53.15% | 51.73% | 50.74% | 50.01% | 49.44% | 49.01% |
| 60 | 52.08% | 51.15% | 50.43% | 49.88% | 49.42% | 49.06% | 48.76% |
| 70 | 50.79% | 50.24% | 49.79% | 49.41% | 49.10% | 48.83% | 48.62% |
| 80 | 50.10% | 49.73% | 49.40% | 49.13% | 48.89% | 48.69% | 48.52% |
| 90 | 49.68% | 49.39% | 49.15% | 48.94% | 48.75% | 48.59% | 48.45% |
| 100 | 49.38% | 49.17% | 48.97% | 48.79% | 48.65% | 48.51% | 48.40% |

Table 4.27

Mine **BASE-PACKAGE-2**
5% Discounted Government Take (Income only)
WTI
US \$

| | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-----|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | | 65.74% |
| 30 | | | | 77.31% | 63.73% | 58.01% | 54.94% |
| 40 | 88.55% | 70.67% | 62.89% | 58.62% | 55.97% | 54.19% | 52.93% |
| 50 | 62.42% | 59.02% | 56.71% | 55.05% | 53.81% | 52.85% | 52.10% |
| 60 | 57.24% | 55.70% | 54.51% | 53.57% | 52.80% | 52.17% | 51.64% |
| 70 | 55.09% | 54.16% | 53.41% | 52.76% | 52.22% | 51.76% | 51.36% |
| 80 | 53.93% | 53.29% | 52.74% | 52.26% | 51.85% | 51.49% | 51.17% |
| 90 | 53.20% | 52.72% | 52.29% | 51.92% | 51.59% | 51.30% | 51.04% |
| 100 | 52.70% | 52.32% | 51.98% | 51.67% | 51.40% | 51.15% | 50.94% |

Table 4.37
Mine
5% Discounted Government Take (Income only)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | | 76.62% |
| 30 | | | | 93.50% | 73.47% | 64.96% | 60.34% |
| 40 | | 83.61% | 72.14% | 65.82% | 61.86% | 59.18% | 57.25% |
| 50 | 71.40% | 66.36% | 62.92% | 60.43% | 58.56% | 57.11% | 55.95% |
| 60 | 63.70% | 61.41% | 59.62% | 58.19% | 57.02% | 56.05% | 55.24% |
| 70 | 60.47% | 59.09% | 57.93% | 56.96% | 56.12% | 55.41% | 54.80% |
| 80 | 58.71% | 57.75% | 56.91% | 56.18% | 55.55% | 54.98% | 54.49% |
| 90 | 57.61% | 56.88% | 56.22% | 55.65% | 55.14% | 54.68% | 54.28% |
| 100 | 56.85% | 56.26% | 55.74% | 55.27% | 54.84% | 54.46% | 54.11% |

With respect to Upgrading we get the following results:

Table 4.47
UPGRADER
5% Discounted Government Take (Income only)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 37.26% | 33.05% |
| 30 | | 75.93% | 39.77% | 34.86% | 32.91% | 31.86% | 31.21% |
| 40 | 36.36% | 34.10% | 32.84% | 32.03% | 31.48% | 31.07% | 30.75% |
| 50 | 32.80% | 32.15% | 31.66% | 31.29% | 30.99% | 30.75% | 30.55% |
| 60 | 31.80% | 31.45% | 31.17% | 30.94% | 30.74% | 30.58% | 30.43% |
| 70 | 31.32% | 31.10% | 30.91% | 30.74% | 30.60% | 30.47% | 30.35% |
| 80 | 31.05% | 30.88% | 30.74% | 30.61% | 30.50% | 30.39% | 30.30% |
| 90 | 30.86% | 30.74% | 30.62% | 30.52% | 30.43% | 30.34% | 30.26% |
| 100 | 30.74% | 30.63% | 30.54% | 30.45% | 30.37% | 30.30% | 30.23% |

Table 4.57
UPGRADER
5% Discounted Government Take (Income only)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 37.26% | 33.05% |
| 30 | | 75.93% | 39.77% | 34.86% | 32.91% | 31.86% | 31.21% |
| 40 | 36.36% | 34.10% | 32.84% | 32.03% | 31.48% | 31.07% | 30.75% |
| 50 | 32.80% | 32.15% | 31.66% | 31.29% | 30.99% | 30.75% | 30.55% |
| 60 | 31.80% | 31.45% | 31.17% | 30.94% | 30.74% | 30.58% | 30.43% |
| 70 | 31.32% | 31.10% | 30.91% | 30.74% | 30.60% | 30.47% | 30.35% |
| 80 | 31.05% | 30.88% | 30.74% | 30.61% | 30.50% | 30.39% | 30.30% |
| 90 | 30.86% | 30.74% | 30.62% | 30.52% | 30.43% | 30.34% | 30.26% |
| 100 | 30.74% | 30.63% | 30.54% | 30.45% | 30.37% | 30.30% | 30.23% |

Table 4.67
UPGRADER **BASE-PACKAGE-2**
5% Discounted Government Take (Income only)

| WTI | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|---------|--------|--------|--------|--------|--------|
| US \$ | | | | | | | | |
| 20 | | | | | | | 23.22% | 27.15% |
| 30 | | | -12.90% | 20.87% | 25.46% | 27.29% | 28.26% | 28.87% |
| 40 | 24.06% | 26.17% | 27.35% | 28.10% | 28.62% | 29.00% | 29.30% | 29.30% |
| 50 | 27.38% | 28.00% | 28.45% | 28.80% | 29.08% | 29.30% | 29.49% | 29.49% |
| 60 | 28.32% | 28.64% | 28.90% | 29.12% | 29.30% | 29.46% | 29.60% | 29.60% |
| 70 | 28.77% | 28.97% | 29.15% | 29.31% | 29.44% | 29.56% | 29.67% | 29.67% |
| 80 | 29.02% | 29.17% | 29.31% | 29.43% | 29.54% | 29.63% | 29.72% | 29.72% |
| 90 | 29.19% | 29.31% | 29.42% | 29.51% | 29.60% | 29.68% | 29.76% | 29.76% |
| 100 | 29.31% | 29.41% | 29.50% | 29.58% | 29.65% | 29.72% | 29.78% | 29.78% |

Table 4.77
UPGRADER **BASE-PACKAGE-3**
5% Discounted Government Take (Income only)

| WTI | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|----------|--------|--------|--------|--------|--------|
| US \$ | | | | | | | | |
| 20 | | | | | | | 6.16% | 19.99% |
| 30 | | | -120.81% | -2.08% | 14.06% | 20.46% | 23.89% | 26.03% |
| 40 | 9.11% | 16.54% | 20.68% | 23.32% | 25.15% | 26.50% | 27.53% | 27.53% |
| 50 | 20.80% | 22.95% | 24.55% | 25.77% | 26.75% | 27.54% | 28.20% | 28.20% |
| 60 | 24.10% | 25.23% | 26.15% | 26.91% | 27.56% | 28.11% | 28.59% | 28.59% |
| 70 | 25.66% | 26.39% | 27.02% | 27.56% | 28.04% | 28.46% | 28.84% | 28.84% |
| 80 | 26.57% | 27.10% | 27.57% | 27.99% | 28.37% | 28.71% | 29.01% | 29.01% |
| 90 | 27.16% | 27.58% | 27.95% | 28.29% | 28.60% | 28.88% | 29.14% | 29.14% |
| 100 | 27.58% | 27.92% | 28.23% | 28.51% | 28.77% | 29.02% | 29.24% | 29.24% |

With respect to the Upgrader it can be noted how the 5% Discounted Government take is lower than the Undiscounted Government take. This is due to the fact that the royalty credit comes early in the cash flow and therefore on a discounted basis, the overall value of the cash flow becomes less. Under low prices and high costs the 5% Discounted Government Take could even be negative. This means that the value of the early royalty credit is more than the discounted value of the low tax payments that follow subsequently.

It should be noted here that Base Package-3 would result in a very low 5% discounted take for Alberta. Under the Current Terms the Federal Take would be 2/3 of the total government take. For instance, for Cost Level 4 and US \$ 50 per barrel WTI, the federal take would be 20.86%. This take remains the same for all fiscal options if the credit would be a royalty credit and therefore under the 5% discounted Alberta government take for Cost Level 4 and US \$ 50 per barrel WTI for Base Package-3 would be only 4.91%

A policy aimed at stimulating upgrading would therefore result in a situation where the great majority of the overall Alberta share is taken from the upstream.

For the Mine+Upgrader the following results are being obtained:

Table 4.87

MINE+UPGRADER CURRENT TERMS

5% Discounted Government Take (Income only)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 50.32% | 43.01% |
| 30 | | | 55.40% | 45.78% | 42.88% | 41.58% | 40.86% |
| 40 | 48.25% | 44.60% | 42.84% | 41.85% | 41.20% | 40.78% | 40.47% |
| 50 | 42.83% | 42.00% | 41.45% | 41.03% | 40.73% | 40.48% | 40.29% |
| 60 | 41.61% | 41.22% | 40.92% | 40.67% | 40.50% | 40.33% | 40.21% |
| 70 | 41.11% | 40.86% | 40.65% | 40.51% | 40.35% | 40.25% | 40.14% |
| 80 | 40.82% | 40.64% | 40.51% | 40.38% | 40.28% | 40.19% | 40.10% |
| 90 | 40.63% | 40.52% | 40.42% | 40.31% | 40.23% | 40.14% | 40.06% |
| 100 | 40.52% | 40.43% | 40.33% | 40.25% | 40.17% | 40.11% | 40.04% |

Table 4.107

MINE+UPGRADER BASE-PACKAGE-2

5% Discounted Government Take (Income only)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 58.81% | 46.63% |
| 30 | | | 66.65% | 50.80% | 46.21% | 44.16% | 43.04% |
| 40 | 54.65% | 48.80% | 46.04% | 44.47% | 43.48% | 42.81% | 42.34% |
| 50 | 45.94% | 44.67% | 43.80% | 43.17% | 42.70% | 42.33% | 42.05% |
| 60 | 44.03% | 43.44% | 42.99% | 42.63% | 42.33% | 42.09% | 41.89% |
| 70 | 43.23% | 42.87% | 42.58% | 42.33% | 42.12% | 41.95% | 41.80% |
| 80 | 42.79% | 42.54% | 42.33% | 42.15% | 41.99% | 41.85% | 41.74% |
| 90 | 42.52% | 42.33% | 42.17% | 42.02% | 41.90% | 41.79% | 41.69% |
| 100 | 42.33% | 42.18% | 42.05% | 41.93% | 41.83% | 41.74% | 41.66% |

Table 4.117
MINE+UPGRADER BASE-PACKAGE-3
5% Discounted Government Take (Income only)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 61.79% | 48.58% |
| 30 | | | 69.80% | 52.88% | 47.99% | 45.84% | 44.67% |
| 40 | 56.88% | 50.65% | 47.74% | 46.11% | 45.09% | 44.41% | 43.93% |
| 50 | 47.60% | 46.28% | 45.39% | 44.75% | 44.27% | 43.91% | 43.62% |
| 60 | 45.61% | 45.01% | 44.55% | 44.19% | 43.90% | 43.65% | 43.46% |
| 70 | 44.78% | 44.42% | 44.13% | 43.89% | 43.68% | 43.50% | 43.35% |
| 80 | 44.33% | 44.09% | 43.88% | 43.69% | 43.54% | 43.40% | 43.29% |
| 90 | 44.06% | 43.87% | 43.71% | 43.57% | 43.44% | 43.33% | 43.24% |
| 100 | 43.87% | 43.72% | 43.59% | 43.48% | 43.37% | 43.28% | 43.20% |

Base Package-3 provides the highest 5% Discounted Government Take. If we assume a 5% real discount rate reflects the value of the cash flow reasonably for Alberta, the conclusion would be that Base Package-3 is the most favorable for Alberta, followed by Base-Package 2 and Base Package 1.

What is also important is that the mine and integrated operations are clearly regressive with respect to costs and prices. Therefore any of the Base Packages would achieve the result that excessively high cost projects would be discouraged.

Following is an overview of the 5% Discounted Government Take for Cost Level 4 and a price US \$ 50 per barrel WTI.

5% Discounted Government Take

| | Mine | Upgrader | Mine+Upgrader |
|----------------|-------|----------|---------------|
| Current terms | 49.1% | 31.3% | 41.0% |
| Base Package-1 | 50.7% | 31.3% | 41.9% |
| Base Package-2 | 55.0% | 28.8% | 43.2% |
| Base Package-3 | 60.4% | 25.8% | 44.8% |

IRR

Following is a review of the IRR. The first four tables are for the mining operations.

Table 4.08

| MINE | | CURRENT TERMS | | | | | | |
|-------------------------|--|---------------|--------|--------|--------|--------|--------|--------|
| IRR (real, 2007 Cdn \$) | | | | | | | | |
| WTI | | | | | | | | |
| US \$ | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | 5.97% | 9.80% |
| 30 | | | | 5.43% | 7.66% | 10.36% | 13.72% | 18.12% |
| 40 | | 6.75% | 8.55% | 10.64% | 13.08% | 16.05% | 19.77% | 24.70% |
| 50 | | 10.80% | 12.73% | 14.96% | 17.61% | 20.83% | 24.90% | 30.31% |
| 60 | | 14.29% | 16.34% | 18.74% | 21.60% | 25.04% | 29.45% | 35.19% |
| 70 | | 17.40% | 19.58% | 22.14% | 25.14% | 28.86% | 33.47% | 39.60% |
| 80 | | 20.25% | 22.56% | 25.22% | 28.44% | 32.28% | 37.18% | 43.54% |
| 90 | | 22.89% | 25.27% | 28.08% | 31.42% | 35.46% | 40.55% | 47.22% |
| 100 | | 25.32% | 27.83% | 30.76% | 34.21% | 38.45% | 43.67% | 50.52% |

Table 4.18

| Mine | | BASE-PACKAGE-1 | | | | | | |
|-------------------------|--|----------------|--------|--------|--------|--------|--------|--------|
| IRR (real, 2007 Cdn \$) | | | | | | | | |
| WTI | | | | | | | | |
| US \$ | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | 5.50% | 9.41% |
| 30 | | | | | 7.25% | 9.98% | 13.33% | 17.73% |
| 40 | | 6.32% | 8.16% | 10.26% | 12.71% | 15.67% | 19.39% | 24.33% |
| 50 | | 10.42% | 12.35% | 14.59% | 17.23% | 20.46% | 24.55% | 29.92% |
| 60 | | 13.92% | 15.97% | 18.37% | 21.20% | 24.69% | 29.06% | 34.85% |
| 70 | | 17.03% | 19.21% | 21.75% | 24.79% | 28.47% | 33.12% | 39.20% |
| 80 | | 19.87% | 22.17% | 24.86% | 28.04% | 31.92% | 36.80% | 43.15% |
| 90 | | 22.50% | 24.92% | 27.72% | 31.05% | 35.12% | 40.17% | 46.71% |
| 100 | | 24.97% | 27.46% | 30.38% | 33.87% | 38.05% | 43.28% | 50.03% |

Table 4.28

| Mine | | BASE-PACKAGE-2 | | | | | | |
|-------------------------|--|----------------|--------|--------|--------|--------|--------|--------|
| IRR (real, 2007 Cdn \$) | | | | | | | | |
| WTI | | | | | | | | |
| US \$ | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | | 8.59% |
| 30 | | | | | 6.46% | 9.17% | 12.49% | 16.81% |
| 40 | | 5.54% | 7.38% | 9.46% | 11.88% | 14.80% | 18.47% | 23.31% |
| 50 | | 9.63% | 11.54% | 13.74% | 16.34% | 19.52% | 23.53% | 28.83% |
| 60 | | 13.09% | 15.11% | 17.46% | 20.25% | 23.67% | 27.98% | 33.68% |
| 70 | | 16.16% | 18.31% | 20.79% | 23.77% | 27.40% | 31.98% | 37.98% |
| 80 | | 18.96% | 21.21% | 23.85% | 26.99% | 30.80% | 35.62% | 41.89% |
| 90 | | 21.54% | 23.91% | 26.68% | 29.95% | 33.96% | 38.94% | 45.41% |
| 100 | | 23.96% | 26.43% | 29.29% | 32.72% | 36.85% | 42.03% | 48.68% |

Table 4.38

| Mine | | BASE-PACKAGE-3 | | | | | |
|--------------------------------|---------------|-----------------------|---------------|---------------|---------------|---------------|---------------|
| IRR (real, 2007 Cdn \$) | | | | | | | |
| WTI | | | | | | | |
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | 7.51% |
| 30 | | | | 5.43% | 8.12% | 11.39% | 15.62% |
| 40 | | 6.36% | 8.42% | 10.81% | 13.67% | 17.26% | 21.99% |
| 50 | 8.60% | 10.48% | 12.65% | 15.20% | 18.31% | 22.22% | 27.41% |
| 60 | 12.01% | 13.99% | 16.30% | 19.03% | 22.37% | 26.59% | 32.16% |
| 70 | 15.03% | 17.12% | 19.57% | 22.47% | 26.04% | 30.50% | 36.40% |
| 80 | 17.78% | 19.98% | 22.55% | 25.64% | 29.36% | 34.09% | 40.23% |
| 90 | 20.30% | 22.61% | 25.34% | 28.53% | 32.45% | 37.35% | 43.73% |
| 100 | 22.66% | 25.09% | 27.89% | 31.24% | 35.32% | 40.38% | 46.94% |

As can be observed, the higher royalties under Base Package 1, 2 and 3 reduce the IRR for the mining operation. In particular the impact on the high cost projects is considerable. In general mining operations will become less attractive under any of the Base Package proposals.

The IRR for the Upgrader are as follows:

Table 4.48

| UPGRADER | | CURRENT TERMS | | | | | |
|--------------------------------|---------------|----------------------|---------------|---------------|---------------|---------------|---------------|
| IRR (real, 2007 Cdn \$) | | | | | | | |
| WTI | | | | | | | |
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | 7.06% | 9.81% |
| 30 | | 5.13% | 6.49% | 8.09% | 10.02% | 12.47% | 15.75% |
| 40 | 7.36% | 8.64% | 10.13% | 11.91% | 14.10% | 16.90% | 20.68% |
| 50 | 10.20% | 11.60% | 13.23% | 15.20% | 17.64% | 20.76% | 24.99% |
| 60 | 12.70% | 14.22% | 16.01% | 18.16% | 20.82% | 24.25% | 28.87% |
| 70 | 14.98% | 16.62% | 18.54% | 20.87% | 23.74% | 27.44% | 32.42% |
| 80 | 17.09% | 18.84% | 20.90% | 23.38% | 26.46% | 30.40% | 35.70% |
| 90 | 19.07% | 20.92% | 23.11% | 25.74% | 28.99% | 33.16% | 38.76% |
| 100 | 20.94% | 22.89% | 25.19% | 27.96% | 31.38% | 35.76% | 41.63% |

Table 4.58
UPGRADER **BASE-PACKAGE-1**
IRR (real, 2007 Cdn \$)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 7.06% | 9.81% |
| 30 | | 5.13% | 6.49% | 8.09% | 10.02% | 12.47% | 15.75% |
| 40 | 7.36% | 8.64% | 10.13% | 11.91% | 14.10% | 16.90% | 20.68% |
| 50 | 10.20% | 11.60% | 13.23% | 15.20% | 17.64% | 20.76% | 24.99% |
| 60 | 12.70% | 14.22% | 16.01% | 18.16% | 20.82% | 24.25% | 28.87% |
| 70 | 14.98% | 16.62% | 18.54% | 20.87% | 23.74% | 27.44% | 32.42% |
| 80 | 17.09% | 18.84% | 20.90% | 23.38% | 26.46% | 30.40% | 35.70% |
| 90 | 19.07% | 20.92% | 23.11% | 25.74% | 28.99% | 33.16% | 38.76% |
| 100 | 20.94% | 22.89% | 25.19% | 27.96% | 31.38% | 35.76% | 41.63% |

Table 4.68
UPGRADER **BASE-PACKAGE-2**
IRR (real, 2007 Cdn \$)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 7.64% | 10.48% |
| 30 | | 5.65% | 7.06% | 8.71% | 10.71% | 13.24% | 16.63% |
| 40 | 7.95% | 9.27% | 10.82% | 12.66% | 14.92% | 17.82% | 21.73% |
| 50 | 10.88% | 12.33% | 14.03% | 16.07% | 18.59% | 21.82% | 26.18% |
| 60 | 13.48% | 15.05% | 16.90% | 19.12% | 21.88% | 25.42% | 30.18% |
| 70 | 15.84% | 17.53% | 19.52% | 21.92% | 24.90% | 28.71% | 33.83% |
| 80 | 18.02% | 19.83% | 21.96% | 24.52% | 27.69% | 31.75% | 37.20% |
| 90 | 20.07% | 21.98% | 24.24% | 26.95% | 30.31% | 34.59% | 40.33% |
| 100 | 22.00% | 24.02% | 26.39% | 29.24% | 32.77% | 37.26% | 43.28% |

Table 4.78
UPGRADER **BASE-PACKAGE-3**
IRR (real, 2007 Cdn \$)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 8.40% | 11.34% |
| 30 | | 6.35% | 7.80% | 9.50% | 11.57% | 14.20% | 17.71% |
| 40 | 8.72% | 10.09% | 11.69% | 13.60% | 15.94% | 18.94% | 22.99% |
| 50 | 11.76% | 13.26% | 15.02% | 17.13% | 19.74% | 23.08% | 27.59% |
| 60 | 14.45% | 16.07% | 17.99% | 20.29% | 23.14% | 26.80% | 31.70% |
| 70 | 16.89% | 18.64% | 20.71% | 23.19% | 26.26% | 30.18% | 35.45% |
| 80 | 19.16% | 21.02% | 23.22% | 25.87% | 29.14% | 33.32% | 38.91% |
| 90 | 21.27% | 23.25% | 25.58% | 28.38% | 31.83% | 36.24% | 42.13% |
| 100 | 23.27% | 25.35% | 27.80% | 30.74% | 34.36% | 38.97% | 45.14% |

The royalty credit has a strong positive impact on the IRR. The higher the royalty credit, the higher the IRR.

For the total Mine+Upgrader project the IRR's are the following

Table 4.88

MINE+UPGRADER CURRENT TERMS

IRR (real, 2007 Cdn \$)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 6.60% | 9.80% |
| 30 | | | 6.04% | 7.91% | 10.17% | 12.99% | 16.74% |
| 40 | 7.10% | 8.60% | 10.34% | 12.40% | 14.91% | 18.10% | 22.37% |
| 50 | 10.45% | 12.07% | 13.96% | 16.21% | 18.98% | 22.51% | 27.26% |
| 60 | 13.37% | 15.11% | 17.15% | 19.61% | 22.61% | 26.46% | 31.59% |
| 70 | 16.00% | 17.86% | 20.06% | 22.67% | 25.92% | 30.02% | 35.52% |
| 80 | 18.42% | 20.41% | 22.72% | 25.53% | 28.95% | 33.32% | 39.11% |
| 90 | 20.68% | 22.76% | 25.22% | 28.16% | 31.77% | 36.36% | 42.46% |
| 100 | 22.79% | 24.99% | 27.57% | 30.64% | 34.43% | 39.21% | 45.54% |

Table 4.98

MINE+UPGR BASE-PACKAGE-1

IRR (real, 2007 Cdn \$)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 6.41% | 9.64% |
| 30 | | | 5.84% | 7.74% | 10.01% | 12.83% | 16.58% |
| 40 | 6.92% | 8.44% | 10.18% | 12.24% | 14.75% | 17.94% | 22.21% |
| 50 | 10.29% | 11.91% | 13.80% | 16.05% | 18.82% | 22.36% | 27.09% |
| 60 | 13.21% | 14.95% | 16.99% | 19.43% | 22.45% | 26.29% | 31.43% |
| 70 | 15.84% | 17.70% | 19.89% | 22.52% | 25.75% | 29.87% | 35.35% |
| 80 | 18.26% | 20.24% | 22.57% | 25.36% | 28.79% | 33.15% | 38.93% |
| 90 | 20.51% | 22.61% | 25.06% | 28.00% | 31.62% | 36.19% | 42.23% |
| 100 | 22.64% | 24.83% | 27.40% | 30.49% | 34.25% | 39.03% | 45.32% |

Table 4.108

MINE+UPGRADER BASE-PACKAGE-2

IRR (real, 2007 Cdn \$)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 6.39% | 9.68% |
| 30 | | | 5.82% | 7.75% | 10.05% | 12.92% | 16.71% |
| 40 | 6.93% | 8.47% | 10.24% | 12.33% | 14.87% | 18.10% | 22.41% |
| 50 | 10.35% | 11.99% | 13.91% | 16.19% | 18.99% | 22.55% | 27.33% |
| 60 | 13.31% | 15.07% | 17.14% | 19.61% | 22.65% | 26.53% | 31.71% |
| 70 | 15.97% | 17.86% | 20.07% | 22.72% | 25.98% | 30.13% | 35.65% |
| 80 | 18.42% | 20.42% | 22.77% | 25.59% | 29.04% | 33.44% | 39.27% |
| 90 | 20.70% | 22.81% | 25.29% | 28.25% | 31.90% | 36.50% | 42.59% |
| 100 | 22.85% | 25.06% | 27.65% | 30.76% | 34.56% | 39.37% | 45.68% |

Table 4.118

MINE+UPGRADER BASE-PACKAGE-3

IRR (real, 2007 Cdn \$)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 6.34% | 9.68% |
| 30 | | | 5.77% | 7.74% | 10.08% | 12.98% | 16.80% |
| 40 | 6.90% | 8.47% | 10.27% | 12.38% | 14.95% | 18.21% | 22.55% |
| 50 | 10.38% | 12.05% | 13.98% | 16.29% | 19.12% | 22.70% | 27.51% |
| 60 | 13.39% | 15.17% | 17.25% | 19.74% | 22.80% | 26.71% | 31.91% |
| 70 | 16.08% | 17.98% | 20.21% | 22.88% | 26.16% | 30.33% | 35.88% |
| 80 | 18.55% | 20.56% | 22.93% | 25.77% | 29.24% | 33.66% | 39.50% |
| 90 | 20.85% | 22.97% | 25.47% | 28.44% | 32.10% | 36.73% | 42.85% |
| 100 | 23.00% | 25.24% | 27.84% | 30.96% | 34.78% | 39.60% | 45.95% |

The IRR for every price-cost combination is highly similar. This indicates that from an IRR perspective an integrated project base on Base Package 2 or 3 will be equally attractive to the Current Terms. Base Package-1 is slightly less attractive, of course, because royalty terms are slightly increased without a corresponding royalty credit.

Following is the overview of the IRR's for the various cases for Cost Level 4 and US \$ 50 per barrel WTI:

IRR comparison

| | Mine | Upgrader | Mine+Upgrader |
|----------------|-------|----------|---------------|
| Current terms | 17.6% | 15.2% | 16.2% |
| Base Package-1 | 17.2% | 15.2% | 16.1% |
| Base Package-2 | 16.3% | 16.1% | 16.2% |
| Base Package-3 | 15.2% | 17.1% | 16.3% |

The fact that the IRR stays similar for integrated projects does not mean that the projects are equally profitable under the four cases. Other profitability indicators show different results. This will be reviewed for the PFR10.

PFR10

Following is a review of the PFR10, with the mining operation first.

Table 4.09

| MINE | | CURRENT TERMS | | | | | | |
|---------------------------|------|---------------|--------|--------|--------|--------|--------|--------|
| PFR10 (real, 2007 Cdn \$) | | | | | | | | |
| WTI | | | | | | | | |
| US \$ | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | 0.78 | 0.99 |
| 30 | | | | 0.75 | 0.87 | 1.02 | 1.23 | 1.54 |
| 40 | 0.82 | 0.92 | 1.04 | 1.19 | 1.39 | 1.66 | 2.07 | |
| 50 | 1.05 | 1.17 | 1.31 | 1.50 | 1.75 | 2.09 | 2.61 | |
| 60 | 1.27 | 1.41 | 1.58 | 1.81 | 2.10 | 2.52 | 3.14 | |
| 70 | 1.48 | 1.65 | 1.85 | 2.11 | 2.46 | 2.94 | 3.67 | |
| 80 | 1.70 | 1.89 | 2.12 | 2.42 | 2.82 | 3.37 | 4.20 | |
| 90 | 1.91 | 2.12 | 2.39 | 2.72 | 3.17 | 3.80 | 4.74 | |
| 100 | 2.13 | 2.36 | 2.65 | 3.03 | 3.53 | 4.22 | 5.27 | |

Table 4.19

| Mine | | BASE-PACKAGE-1 | | | | | | |
|---------------------------|------|----------------|--------|--------|--------|--------|--------|--------|
| PFR10 (real, 2007 Cdn \$) | | | | | | | | |
| WTI | | | | | | | | |
| US \$ | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | | 0.97 |
| 30 | | | | | 0.85 | 1.00 | 1.20 | 1.51 |
| 40 | 0.80 | 0.90 | 1.01 | 1.16 | 1.36 | 1.63 | 2.04 | |
| 50 | 1.02 | 1.14 | 1.29 | 1.47 | 1.72 | 2.06 | 2.57 | |
| 60 | 1.24 | 1.38 | 1.56 | 1.78 | 2.07 | 2.48 | 3.10 | |
| 70 | 1.46 | 1.62 | 1.82 | 2.08 | 2.43 | 2.91 | 3.63 | |
| 80 | 1.67 | 1.86 | 2.09 | 2.38 | 2.78 | 3.33 | 4.15 | |
| 90 | 1.88 | 2.09 | 2.35 | 2.69 | 3.13 | 3.75 | 4.68 | |
| 100 | 2.10 | 2.33 | 2.62 | 2.99 | 3.48 | 4.17 | 5.21 | |

Table 4.29

| Mine | | BASE-PACKAGE-2 | | | | | | |
|---------------------------|------|----------------|--------|--------|--------|--------|--------|--------|
| PFR10 (real, 2007 Cdn \$) | | | | | | | | |
| WTI | | | | | | | | |
| US \$ | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | | 0.92 |
| 30 | | | | | 0.81 | 0.95 | 1.15 | 1.44 |
| 40 | 0.76 | 0.85 | 0.97 | 1.11 | 1.30 | 1.56 | 1.95 | |
| 50 | 0.98 | 1.09 | 1.23 | 1.41 | 1.64 | 1.97 | 2.46 | |
| 60 | 1.19 | 1.32 | 1.49 | 1.70 | 1.98 | 2.38 | 2.97 | |
| 70 | 1.40 | 1.55 | 1.74 | 1.99 | 2.32 | 2.78 | 3.47 | |
| 80 | 1.60 | 1.78 | 2.00 | 2.28 | 2.66 | 3.19 | 3.98 | |
| 90 | 1.80 | 2.00 | 2.25 | 2.57 | 3.00 | 3.59 | 4.48 | |
| 100 | 2.01 | 2.23 | 2.51 | 2.86 | 3.34 | 4.00 | 4.99 | |

Table 4.39

| Mine | | BASE-PACKAGE-3 | | | | | | |
|---------------------------|------|----------------|--------|--------|--------|--------|--------|--------|
| PFR10 (real, 2007 Cdn \$) | | | | | | | | |
| WTI | | | | | | | | |
| US \$ | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | | 0.86 |
| 30 | | | | | 0.75 | 0.89 | 1.08 | 1.36 |
| 40 | | | 0.80 | 0.91 | 1.05 | 1.23 | 1.47 | 1.84 |
| 50 | 0.92 | 1.03 | 1.16 | 1.33 | 1.55 | 1.86 | 2.32 | 2.80 |
| 60 | 1.12 | 1.25 | 1.41 | 1.61 | 1.87 | 2.25 | 2.80 | 3.28 |
| 70 | 1.32 | 1.46 | 1.65 | 1.88 | 2.19 | 2.63 | 3.28 | 3.76 |
| 80 | 1.51 | 1.68 | 1.89 | 2.16 | 2.51 | 3.01 | 3.76 | 4.24 |
| 90 | 1.71 | 1.89 | 2.13 | 2.43 | 2.83 | 3.40 | 4.24 | 4.71 |
| 100 | 1.90 | 2.11 | 2.37 | 2.71 | 3.15 | 3.78 | 4.71 | |

For the Upgrader the results are as follows:

Table 4.49

| UPGRADER | | CURRENT TERMS | | | | | | |
|---------------------------|------|---------------|--------|--------|--------|--------|--------|--------|
| PFR10 (real, 2007 Cdn \$) | | | | | | | | |
| WTI | | | | | | | | |
| US \$ | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | 0.80 | 0.99 |
| 30 | | | 0.69 | 0.77 | 0.87 | 1.00 | 1.19 | 1.46 |
| 40 | 0.82 | 0.91 | 1.01 | 1.14 | 1.32 | 1.57 | 1.94 | 2.42 |
| 50 | 1.01 | 1.12 | 1.25 | 1.42 | 1.64 | 1.95 | 2.42 | 2.90 |
| 60 | 1.21 | 1.33 | 1.49 | 1.69 | 1.96 | 2.34 | 2.90 | 3.38 |
| 70 | 1.40 | 1.54 | 1.73 | 1.96 | 2.28 | 2.72 | 3.38 | 3.86 |
| 80 | 1.59 | 1.76 | 1.97 | 2.24 | 2.60 | 3.10 | 3.86 | 4.34 |
| 90 | 1.78 | 1.97 | 2.21 | 2.51 | 2.92 | 3.48 | 4.34 | 4.82 |
| 100 | 1.97 | 2.18 | 2.45 | 2.78 | 3.24 | 3.87 | 4.82 | |

Table 4.59

| UPGRADER | | BASE-PACKAGE-1 | | | | | | |
|---------------------------|------|----------------|--------|--------|--------|--------|--------|--------|
| PFR10 (real, 2007 Cdn \$) | | | | | | | | |
| WTI | | | | | | | | |
| US \$ | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | 0.80 | 0.99 |
| 30 | | | 0.69 | 0.77 | 0.87 | 1.00 | 1.19 | 1.46 |
| 40 | 0.82 | 0.91 | 1.01 | 1.14 | 1.32 | 1.57 | 1.94 | 2.42 |
| 50 | 1.01 | 1.12 | 1.25 | 1.42 | 1.64 | 1.95 | 2.42 | 2.90 |
| 60 | 1.21 | 1.33 | 1.49 | 1.69 | 1.96 | 2.34 | 2.90 | 3.38 |
| 70 | 1.40 | 1.54 | 1.73 | 1.96 | 2.28 | 2.72 | 3.38 | 3.86 |
| 80 | 1.59 | 1.76 | 1.97 | 2.24 | 2.60 | 3.10 | 3.86 | 4.34 |
| 90 | 1.78 | 1.97 | 2.21 | 2.51 | 2.92 | 3.48 | 4.34 | 4.82 |
| 100 | 1.97 | 2.18 | 2.45 | 2.78 | 3.24 | 3.87 | 4.82 | |

Table 4.69
UPGRADER **BASE-PACKAGE-2**
PFR10 (real, 2007 Cdn \$)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 0.85 | 1.03 |
| 30 | | 0.74 | 0.82 | 0.92 | 1.05 | 1.23 | 1.51 |
| 40 | 0.87 | 0.95 | 1.06 | 1.19 | 1.37 | 1.62 | 1.99 |
| 50 | 1.06 | 1.16 | 1.30 | 1.46 | 1.69 | 2.00 | 2.47 |
| 60 | 1.25 | 1.38 | 1.53 | 1.74 | 2.01 | 2.38 | 2.95 |
| 70 | 1.44 | 1.59 | 1.77 | 2.01 | 2.32 | 2.77 | 3.43 |
| 80 | 1.64 | 1.80 | 2.01 | 2.28 | 2.64 | 3.15 | 3.90 |
| 90 | 1.83 | 2.02 | 2.25 | 2.56 | 2.96 | 3.53 | 4.38 |
| 100 | 2.02 | 2.23 | 2.49 | 2.83 | 3.28 | 3.91 | 4.86 |

Table 4.79
UPGRADER **BASE-PACKAGE-3**
PFR10 (real, 2007 Cdn \$)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 0.90 | 1.09 |
| 30 | | 0.79 | 0.87 | 0.97 | 1.10 | 1.29 | 1.56 |
| 40 | 0.92 | 1.01 | 1.11 | 1.24 | 1.42 | 1.67 | 2.04 |
| 50 | 1.11 | 1.22 | 1.35 | 1.52 | 1.74 | 2.05 | 2.52 |
| 60 | 1.31 | 1.43 | 1.59 | 1.79 | 2.06 | 2.44 | 3.00 |
| 70 | 1.50 | 1.64 | 1.83 | 2.06 | 2.38 | 2.82 | 3.48 |
| 80 | 1.69 | 1.86 | 2.07 | 2.34 | 2.70 | 3.20 | 3.96 |
| 90 | 1.88 | 2.07 | 2.31 | 2.61 | 3.02 | 3.58 | 4.44 |
| 100 | 2.07 | 2.28 | 2.55 | 2.88 | 3.34 | 3.97 | 4.92 |

For the Mine+Upgrader the results are the following:

Table 4.89
MINE+UPGRADER **CURRENT TERMS**
PFR10 (real, 2007 Cdn \$)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 0.79 | 0.99 |
| 30 | | | 0.76 | 0.87 | 1.01 | 1.21 | 1.50 |
| 40 | 0.82 | 0.91 | 1.02 | 1.16 | 1.35 | 1.61 | 2.00 |
| 50 | 1.03 | 1.14 | 1.28 | 1.46 | 1.69 | 2.02 | 2.51 |
| 60 | 1.23 | 1.37 | 1.53 | 1.75 | 2.03 | 2.42 | 3.01 |
| 70 | 1.44 | 1.59 | 1.79 | 2.03 | 2.36 | 2.82 | 3.52 |
| 80 | 1.64 | 1.82 | 2.04 | 2.32 | 2.70 | 3.23 | 4.02 |
| 90 | 1.84 | 2.04 | 2.29 | 2.61 | 3.04 | 3.63 | 4.52 |
| 100 | 2.04 | 2.27 | 2.54 | 2.90 | 3.37 | 4.03 | 5.03 |

Table 4.99

| | | MINE+UPGR BASE-PACKAGE-1 | | | | | | |
|-------|------|---------------------------|--------|--------|--------|--------|--------|--------|
| | | PFR10 (real, 2007 Cdn \$) | | | | | | |
| WTI | | | | | | | | |
| US \$ | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | 0.78 | 0.98 |
| 30 | | | | 0.75 | 0.86 | 1.00 | 1.20 | 1.49 |
| 40 | 0.81 | 0.90 | 1.01 | 1.15 | 1.34 | 1.60 | 1.99 | |
| 50 | 1.02 | 1.13 | 1.27 | 1.44 | 1.68 | 2.00 | 2.49 | |
| 60 | 1.22 | 1.36 | 1.52 | 1.73 | 2.01 | 2.41 | 2.99 | |
| 70 | 1.43 | 1.58 | 1.77 | 2.02 | 2.35 | 2.81 | 3.50 | |
| 80 | 1.63 | 1.80 | 2.02 | 2.31 | 2.68 | 3.21 | 4.00 | |
| 90 | 1.83 | 2.03 | 2.28 | 2.59 | 3.02 | 3.61 | 4.50 | |
| 100 | 2.03 | 2.25 | 2.53 | 2.88 | 3.35 | 4.01 | 5.00 | |

Table 4.109

| | | MINE+UPGRADER BASE-PACKAGE-2 | | | | | | |
|-------|------|------------------------------|--------|--------|--------|--------|--------|--------|
| | | PFR10 (real, 2007 Cdn \$) | | | | | | |
| WTI | | | | | | | | |
| US \$ | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | 0.79 | 0.98 |
| 30 | | | | 0.76 | 0.86 | 1.00 | 1.19 | 1.48 |
| 40 | 0.82 | 0.91 | 1.02 | 1.15 | 1.34 | 1.59 | 1.97 | |
| 50 | 1.02 | 1.13 | 1.27 | 1.44 | 1.67 | 1.99 | 2.47 | |
| 60 | 1.22 | 1.35 | 1.51 | 1.72 | 2.00 | 2.38 | 2.96 | |
| 70 | 1.42 | 1.57 | 1.76 | 2.00 | 2.32 | 2.77 | 3.45 | |
| 80 | 1.62 | 1.79 | 2.01 | 2.28 | 2.65 | 3.17 | 3.94 | |
| 90 | 1.82 | 2.01 | 2.25 | 2.56 | 2.98 | 3.56 | 4.43 | |
| 100 | 2.01 | 2.23 | 2.50 | 2.85 | 3.31 | 3.95 | 4.92 | |

Table 4.119

| | | MINE+UPGRADER BASE-PACKAGE-3 | | | | | | |
|-------|------|------------------------------|--------|--------|--------|--------|--------|--------|
| | | PFR10 (real, 2007 Cdn \$) | | | | | | |
| WTI | | | | | | | | |
| US \$ | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | 0.79 | 0.98 |
| 30 | | | | 0.76 | 0.87 | 1.00 | 1.19 | 1.47 |
| 40 | 0.82 | 0.91 | 1.02 | 1.15 | 1.33 | 1.58 | 1.95 | |
| 50 | 1.02 | 1.13 | 1.26 | 1.43 | 1.65 | 1.96 | 2.43 | |
| 60 | 1.22 | 1.35 | 1.50 | 1.70 | 1.97 | 2.35 | 2.91 | |
| 70 | 1.41 | 1.56 | 1.74 | 1.98 | 2.29 | 2.73 | 3.39 | |
| 80 | 1.61 | 1.77 | 1.98 | 2.25 | 2.61 | 3.11 | 3.87 | |
| 90 | 1.80 | 1.99 | 2.22 | 2.53 | 2.93 | 3.50 | 4.34 | |
| 100 | 1.99 | 2.20 | 2.46 | 2.80 | 3.25 | 3.88 | 4.82 | |

The PFR10 overview for Cost Level 4 and US \$ 50 per barrel WTI is as follows:

PFR10 comparison

| | Mine | Upgrader | Mine+Upgrader |
|----------------|------|----------|---------------|
| Current terms | 1.50 | 1.42 | 1.46 |
| Base Package-1 | 1.47 | 1.42 | 1.44 |
| Base Package-2 | 1.41 | 1.46 | 1.44 |
| Base Package-3 | 1.33 | 1.52 | 1.43 |

As can be seen the PFR10 is slightly less attractive for the joint integrated project, for the Base Packages.

A similar result would be obtained for the NPV10/SCO barrel.

Conclusion

Investors in integrated projects will consider Base Package 1 slightly less attractive than the Current Terms, similarly Base Package 2 and Base Package 3 will be considered increasingly less attractive. This is because the profitability would be slightly less. At the same time the Base Packages are more regressive for costs and for prices. This makes these packages higher risk for such investors. Nevertheless, from a general perspective the differences are not major and therefore the impact on resource development will be very modest.

Investors in upstream Athabasca projects (Mine or SAGD) will consider these terms from Base Package 1 through 3 increasingly and strongly less attractive.

Merchant Upgraders will consider the terms of Base Package 2 and 3 more attractive.

The economic effects of introducing either Base Package 2 or 3 will be that overall development will slow down somewhat, in particular as it relates to independent upstream projects. There will be increased interest in upgrading as part of a package. High cost upstream projects will be considerably less attractive and therefore excessively high cost upstream projects will be discouraged.

Base Package 2 and 3 therefore accomplish two of the four objectives defined in the introduction of this chapter.

In the process of stimulating upgrading the result would be that the Alberta government take on upgrading would become minimal and that the vast majority of the Alberta share would be taken from the upstream.

In other words such a policy aimed at upgrading would in effect result in a situation where Alberta receives its fair share from the resources regardless of whether the bitumen is actually upgraded or not. This is conditioned on the fact that bitumen prices can be determined transparently and costs can be allocated appropriately.

4.2. Three Fiscal Options

Three different fiscal options were selected. All three options create price progressivity in a different way.

These different fiscal options can be implemented as “add on” to one of the Base Packages.

The three options represent rather different choices for Alberta. In principle the three Base Package plus the three Fiscal Options create 9 different possibilities.

The discussion of the three fiscal options will be based on the assumption that Base Package-2 would be selected.

In section 4.2.4 of this report the results of combining the three Fiscal Options with other Base Packages will be discussed.

4.2.1. Calibration of the options

All options were calibrated on the IRR of the Mine+Upgrader for Cost Level 4 and a price level of US \$ 50 per barrel.

The target IRR for the mining operation was less than the current level. The target IRR for upgrading was more than the current level. Overall for the Mining+Upgrading case there would be a small reduction. The following table illustrates the target IRR's that all three options were calibrated on:

| | Current | Base-2 | Target |
|---------------|---------|--------|--------|
| Mine | 17.6% | 16.3% | 15.3% |
| Upgrader | 15.2% | 16.1% | 16.1% |
| Mine+Upgrader | 16.2% | 16.2% | 15.7% |

These target IRR levels are not necessarily recommendations. The fiscal package could have lower or higher target IRR's. The final calibration would be subject to a further report. However, the targets permit a direct comparison for each of the three fiscal options.

4.2.2. Description of the three options

All three Fiscal Options are in addition to Base Package-2. Following is a description of the three options:

Option-1. Option-1 consists of Base Package-2 plus:

- NPS: no change at 25%. Based on bitumen values, no LTBR and royalties and SOST deductible.
- Introduce a Supplemental Oil Sands Tax ("SOST") based on the bitumen production priced at the WTI price. The minimum SOST rate would be 0%. Over Can \$ 46 WTI per barrel the rate would increase with 0.20% per dollar up to a maximum of 25%. The price scale would be based on 2007 Canadian dollars and would be corrected back to 2007 with the CPI or PPI.

The main focus of this option is to create a strongly price progressive and front end loaded feature that is at the same time cost regressive. The SOST is independent of the bitumen pricing and therefore Alberta would be protected from poor bitumen prices.

Option-2. Option-2 consists of the Base Package-2 plus:

- NPS: Based on bitumen values. The NPS rate would be based on a R-factor consisting of Cumulative Revenues over Cumulative Expenditures (including base royalties). The NPS would jump from 25% to 50% at an R-factor of 2.00. Royalty deductible for NPS purposes and no LTBR.
- There would be an Oil Sands Impact Tax ("OSIT") equal to 6% of all upstream capital expenditures. The OSIT would not be included in determining the R-factor and would not be deductible for purposes of the NPS.

The main focus of this option would be to create a progressive and back end loaded fiscal system. The OSIT is introduced to provide more regressivity with respect to costs in order to counterbalance the effect of the R/C concept, which otherwise would encourage excessively high cost projects as already analyzed in Chapter 3.

Option-3. Option-3 consists of the Base Package-2 plus:

- Rentals: 5 million per year per oil sands lease (\$ 1000 per hectare) adjusted for CPI and not deductible from NPS as discussed earlier in Chapter 3.
- NPS: Based on bitumen values. The NPS rate is price sensitive and increases with would be based on the minimum rate of 25%. Over Can \$ 40 WTI per barrel the rate would increase with 0.50% per dollar up to a maximum of 50% (to be reached at Can \$ 90 per SCO barrel). The price scale would be based on 2007 Canadian dollars and would be corrected back to 2007 with the CPI or PPI.

The main focus is to create a price sensitive NPS, which is complemented with cost regressive high rentals. Also in this option, the risk of low bitumen prices is mitigated somewhat by fixing the sliding scale on WTI. However, the low bitumen price risk is not as strongly mitigated as under Option-1.

4.2.3. Analysis of the three fiscal options

None of the three fiscal options contemplate changes to the Upgrader economics. Therefore, in this sections the three options will only be compared for Mining and for the Mine+Upgrader.

(Note: As under Chapter 3, the table numbers are not sequential. They are selected from a more comprehensive data base.)

In order to study the results under higher prices, the summary comparison will be done at US \$ 70 per barrel WTI.

Government Revenues per barrel

Following are the revenues from the Mining operation under the current terms and the three Fiscal Options.

Table 4.04

MINE

CURRENT TERMS

Government Income + Participation per bitumen barrel (\$ Cdn)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$1.21 | \$1.87 |
| 30 | | | \$1.69 | \$2.37 | \$3.00 | \$3.63 | \$4.24 |
| 40 | \$2.86 | \$3.51 | \$4.14 | \$4.77 | \$5.38 | \$6.00 | \$6.61 |
| 50 | \$5.29 | \$5.91 | \$6.53 | \$7.14 | \$7.75 | \$8.36 | \$8.97 |
| 60 | \$7.66 | \$8.28 | \$8.89 | \$9.50 | \$10.12 | \$10.72 | \$11.34 |
| 70 | \$10.04 | \$10.65 | \$11.26 | \$11.87 | \$12.48 | \$13.09 | \$13.70 |
| 80 | \$12.40 | \$13.01 | \$13.62 | \$14.23 | \$14.84 | \$15.45 | \$16.06 |
| 90 | \$14.76 | \$15.38 | \$15.99 | \$16.60 | \$17.21 | \$17.81 | \$18.42 |
| 100 | \$17.13 | \$17.75 | \$18.35 | \$18.96 | \$19.57 | \$20.18 | \$20.78 |

Table 4.124

Mine

OPTION-1

Government Income + Participation per bitumen barrel (\$ Cdn)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | | \$2.18 |
| 30 | | | | \$2.89 | \$3.48 | \$4.07 | \$4.67 |
| 40 | \$3.59 | \$4.18 | \$4.77 | \$5.37 | \$5.96 | \$6.56 | \$7.16 |
| 50 | \$6.72 | \$7.31 | \$7.91 | \$8.50 | \$9.10 | \$9.70 | \$10.30 |
| 60 | \$10.15 | \$10.74 | \$11.34 | \$11.94 | \$12.54 | \$13.14 | \$13.74 |
| 70 | \$13.85 | \$14.45 | \$15.05 | \$15.65 | \$16.25 | \$16.85 | \$17.45 |
| 80 | \$17.83 | \$18.43 | \$19.03 | \$19.63 | \$20.23 | \$20.83 | \$21.43 |
| 90 | \$22.08 | \$22.68 | \$23.28 | \$23.88 | \$24.48 | \$25.08 | \$25.68 |
| 100 | \$26.60 | \$27.20 | \$27.80 | \$28.40 | \$29.00 | \$29.60 | \$30.21 |

Table 4.134

Mine

OPTION-2

Government Income + Participation per bitumen barrel (\$ Cdn)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | | \$2.25 |
| 30 | | | | \$3.01 | \$3.58 | \$4.16 | \$5.35 |
| 40 | | \$4.33 | \$4.90 | \$5.49 | \$6.59 | \$7.80 | \$8.96 |
| 50 | \$6.23 | \$6.81 | \$7.79 | \$9.05 | \$10.20 | \$11.38 | \$12.42 |
| 60 | \$8.98 | \$10.31 | \$11.50 | \$12.59 | \$13.79 | \$14.83 | \$15.82 |
| 70 | \$12.75 | \$13.92 | \$15.03 | \$16.21 | \$17.25 | \$18.23 | \$19.16 |
| 80 | \$16.31 | \$17.46 | \$18.62 | \$19.66 | \$20.63 | \$21.59 | \$22.50 |
| 90 | \$19.89 | \$21.04 | \$22.08 | \$23.04 | \$24.02 | \$24.93 | \$25.82 |
| 100 | \$23.45 | \$24.49 | \$25.46 | \$26.43 | \$27.37 | \$28.27 | \$29.14 |

Table 4.144

| Mine | | OPTION-3 | | | | | | |
|---|--|----------|---------|---------|---------|---------|---------|---------|
| Government Income + Participation per bitumen barrel (\$ Cdn) | | | | | | | | |
| WTI | | | | | | | | |
| US \$ | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | | \$2.24 |
| 30 | | | | | \$2.95 | \$3.54 | \$4.13 | \$4.73 |
| 40 | | \$3.76 | \$4.37 | \$4.99 | \$5.60 | \$6.23 | \$6.85 | \$7.47 |
| 50 | | \$6.73 | \$7.39 | \$8.06 | \$8.74 | \$9.41 | \$10.08 | \$10.76 |
| 60 | | \$10.08 | \$10.80 | \$11.52 | \$12.24 | \$12.97 | \$13.69 | \$14.42 |
| 70 | | \$13.81 | \$14.58 | \$15.35 | \$16.13 | \$16.90 | \$17.68 | \$18.46 |
| 80 | | \$17.84 | \$18.66 | \$19.48 | \$20.30 | \$21.12 | \$21.94 | \$22.77 |
| 90 | | \$21.15 | \$21.97 | \$22.79 | \$23.62 | \$24.44 | \$25.26 | \$26.09 |
| 100 | | \$24.47 | \$25.29 | \$26.11 | \$26.93 | \$27.76 | \$28.58 | \$29.41 |

Following are the results for the Mine+Upgrader.

Table 4.84

| MINE+UPGRADER | | CURRENT TERMS | | | | | | |
|---|--|---------------|---------|---------|---------|---------|---------|---------|
| Government Income + Participation per SCO barrel (\$ Cdn) | | | | | | | | |
| WTI | | | | | | | | |
| US \$ | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | \$2.64 | \$3.68 |
| 30 | | | | \$3.74 | \$4.80 | \$5.82 | \$6.83 | \$7.82 |
| 40 | | \$5.92 | \$6.96 | \$7.97 | \$8.98 | \$9.97 | \$10.96 | \$11.95 |
| 50 | | \$10.12 | \$11.12 | \$12.12 | \$13.11 | \$14.11 | \$15.09 | \$16.08 |
| 60 | | \$14.27 | \$15.26 | \$16.25 | \$17.24 | \$18.24 | \$19.22 | \$20.21 |
| 70 | | \$18.41 | \$19.40 | \$20.38 | \$21.38 | \$22.36 | \$23.35 | \$24.34 |
| 80 | | \$22.54 | \$23.52 | \$24.52 | \$25.50 | \$26.49 | \$27.48 | \$28.47 |
| 90 | | \$26.67 | \$27.66 | \$28.65 | \$29.64 | \$30.63 | \$31.61 | \$32.59 |
| 100 | | \$30.80 | \$31.80 | \$32.78 | \$33.77 | \$34.75 | \$35.74 | \$36.72 |

Table 4.154

MINE+UPGR

OPTION-1

Government Income + Participation per SCO barrel (\$ Cdn)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$2.98 | \$3.97 |
| 30 | | | \$4.29 | \$5.27 | \$6.26 | \$7.25 | \$8.24 |
| 40 | \$6.57 | \$7.56 | \$8.55 | \$9.54 | \$10.53 | \$11.53 | \$12.53 |
| 50 | \$11.60 | \$12.59 | \$13.58 | \$14.58 | \$15.57 | \$16.57 | \$17.57 |
| 60 | \$16.98 | \$17.98 | \$18.97 | \$19.97 | \$20.96 | \$21.96 | \$22.96 |
| 70 | \$22.69 | \$23.69 | \$24.68 | \$25.68 | \$26.68 | \$27.67 | \$28.67 |
| 80 | \$28.72 | \$29.72 | \$30.71 | \$31.71 | \$32.71 | \$33.71 | \$34.70 |
| 90 | \$35.07 | \$36.06 | \$37.06 | \$38.06 | \$39.06 | \$40.06 | \$41.05 |
| 100 | \$41.74 | \$42.73 | \$43.73 | \$44.73 | \$45.73 | \$46.73 | \$47.72 |

Table 4.164

MINE+UPGRADER

OPTION-2

Government Income + Participation per SCO barrel (\$ Cdn)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$3.08 | \$4.05 |
| 30 | | | \$4.46 | \$5.41 | \$6.38 | \$7.35 | \$9.04 |
| 40 | \$6.77 | \$7.74 | \$8.70 | \$9.68 | \$11.26 | \$12.98 | \$14.64 |
| 50 | \$11.03 | \$12.00 | \$13.44 | \$15.22 | \$16.86 | \$18.54 | \$20.06 |
| 60 | \$15.61 | \$17.46 | \$19.15 | \$20.73 | \$22.44 | \$23.95 | \$25.40 |
| 70 | \$21.40 | \$23.06 | \$24.66 | \$26.34 | \$27.85 | \$29.29 | \$30.68 |
| 80 | \$26.93 | \$28.58 | \$30.24 | \$31.75 | \$33.18 | \$34.60 | \$35.96 |
| 90 | \$32.49 | \$34.13 | \$35.65 | \$37.08 | \$38.52 | \$39.87 | \$41.22 |
| 100 | \$38.03 | \$39.54 | \$40.98 | \$42.41 | \$43.80 | \$45.16 | \$46.47 |

Table 4.174

MINE+UPGRADER

OPTION-3

Government Income + Participation per SCO barrel (\$ Cdn)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$3.06 | \$4.04 |
| 30 | | | \$4.36 | \$5.34 | \$6.33 | \$7.32 | \$8.32 |
| 40 | \$6.77 | \$7.78 | \$8.80 | \$9.82 | \$10.84 | \$11.86 | \$12.89 |
| 50 | \$11.61 | \$12.69 | \$13.77 | \$14.85 | \$15.93 | \$17.02 | \$18.10 |
| 60 | \$16.90 | \$18.04 | \$19.18 | \$20.33 | \$21.47 | \$22.61 | \$23.76 |
| 70 | \$22.64 | \$23.84 | \$25.04 | \$26.24 | \$27.45 | \$28.65 | \$29.86 |
| 80 | \$28.73 | \$29.98 | \$31.24 | \$32.50 | \$33.75 | \$35.01 | \$36.27 |
| 90 | \$33.98 | \$35.23 | \$36.49 | \$37.75 | \$39.01 | \$40.27 | \$41.53 |
| 100 | \$39.23 | \$40.48 | \$41.74 | \$43.00 | \$44.26 | \$45.52 | \$46.79 |

As is very obvious from this sequence of tables, under all options there are considerably higher government revenues under higher prices.

Table 4.126

| Mine | | OPTION-1 | | | | | |
|--|--------|----------|--------|--------|--------|--------|--------|
| Undiscounted Government Take (Income only) | | | | | | | |
| WTI | | | | | | | |
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | 55.12% |
| 30 | | | | 56.70% | 54.59% | 53.24% | 52.30% |
| 40 | 57.74% | 55.72% | 54.35% | 53.35% | 52.59% | 52.00% | 51.53% |
| 50 | 60.01% | 58.61% | 57.49% | 56.57% | 55.80% | 55.15% | 54.59% |
| 60 | 62.78% | 61.59% | 60.57% | 59.69% | 58.92% | 58.23% | 57.63% |
| 70 | 65.54% | 64.47% | 63.51% | 62.65% | 61.89% | 61.19% | 60.56% |
| 80 | 68.30% | 67.29% | 66.38% | 65.54% | 64.78% | 64.07% | 63.43% |
| 90 | 71.05% | 70.09% | 69.20% | 68.39% | 67.63% | 66.92% | 66.26% |
| 100 | 73.80% | 72.87% | 72.01% | 71.20% | 70.44% | 69.74% | 69.07% |

Table 4.136

| Mine | | OPTION-2 | | | | | |
|--|--------|----------|--------|--------|--------|--------|--------|
| Undiscounted Government Take (Income only) | | | | | | | |
| WTI | | | | | | | |
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | 56.80% |
| 30 | | | | 59.11% | 56.23% | 54.33% | 59.91% |
| 40 | | 57.76% | 55.86% | 54.54% | 58.07% | 61.78% | 64.47% |
| 50 | 55.67% | 54.60% | 56.62% | 60.22% | 62.50% | 64.68% | 65.81% |
| 60 | 55.55% | 59.09% | 61.40% | 62.95% | 64.81% | 65.73% | 66.32% |
| 70 | 60.34% | 62.11% | 63.44% | 64.90% | 65.68% | 66.19% | 66.48% |
| 80 | 62.49% | 63.77% | 64.97% | 65.65% | 66.07% | 66.42% | 66.59% |
| 90 | 64.00% | 65.01% | 65.63% | 66.00% | 66.36% | 66.51% | 66.62% |
| 100 | 65.04% | 65.60% | 65.94% | 66.27% | 66.47% | 66.59% | 66.63% |

Table 4.146

| Mine | | OPTION-3 | | | | | |
|--|--------|----------|--------|--------|--------|--------|--------|
| Undiscounted Government Take (Income only) | | | | | | | |
| WTI | | | | | | | |
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | 56.69% |
| 30 | | | | 57.92% | 55.56% | 54.05% | 53.00% |
| 40 | 60.44% | 58.27% | 56.78% | 55.71% | 54.90% | 54.26% | 53.75% |
| 50 | 60.11% | 59.29% | 58.64% | 58.12% | 57.68% | 57.32% | 57.00% |
| 60 | 62.36% | 61.91% | 61.53% | 61.21% | 60.93% | 60.68% | 60.47% |
| 70 | 65.34% | 65.05% | 64.80% | 64.57% | 64.38% | 64.20% | 64.04% |
| 80 | 68.32% | 68.12% | 67.94% | 67.78% | 67.63% | 67.50% | 67.38% |
| 90 | 68.07% | 67.91% | 67.76% | 67.63% | 67.51% | 67.40% | 67.30% |
| 100 | 67.88% | 67.75% | 67.63% | 67.52% | 67.42% | 67.33% | 67.24% |

Following are the Mine+Upgrader results:

Table 4.86

MINE+UPGRADER CURRENT TERMS

Undiscounted Government Take (Income only)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 36.97% | 38.49% |
| 30 | | | 36.60% | 38.01% | 38.68% | 39.05% | 39.30% |
| 40 | 37.63% | 38.35% | 38.77% | 39.06% | 39.25% | 39.40% | 39.52% |
| 50 | 38.83% | 39.05% | 39.22% | 39.35% | 39.46% | 39.55% | 39.62% |
| 60 | 39.19% | 39.31% | 39.40% | 39.48% | 39.57% | 39.62% | 39.69% |
| 70 | 39.38% | 39.45% | 39.51% | 39.58% | 39.63% | 39.68% | 39.72% |
| 80 | 39.48% | 39.53% | 39.59% | 39.63% | 39.68% | 39.72% | 39.75% |
| 90 | 39.54% | 39.59% | 39.64% | 39.67% | 39.71% | 39.74% | 39.76% |
| 100 | 39.60% | 39.64% | 39.67% | 39.70% | 39.73% | 39.76% | 39.78% |

Table 4.156

MINE+UPGR OPTION-1

Undiscounted Government Take (Income only)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 41.84% | 41.53% |
| 30 | | | 42.00% | 41.70% | 41.55% | 41.47% | 41.43% |
| 40 | 41.82% | 41.66% | 41.56% | 41.50% | 41.46% | 41.43% | 41.42% |
| 50 | 44.50% | 44.19% | 43.95% | 43.74% | 43.56% | 43.42% | 43.29% |
| 60 | 46.65% | 46.30% | 45.99% | 45.72% | 45.49% | 45.27% | 45.08% |
| 70 | 48.53% | 48.17% | 47.84% | 47.54% | 47.27% | 47.02% | 46.79% |
| 80 | 50.30% | 49.93% | 49.59% | 49.27% | 48.98% | 48.71% | 48.46% |
| 90 | 52.00% | 51.62% | 51.27% | 50.95% | 50.64% | 50.36% | 50.09% |
| 100 | 53.66% | 53.28% | 52.93% | 52.59% | 52.28% | 51.98% | 51.70% |

Table 4.166

MINE+UPGRADER OPTION-2

Undiscounted Government Take (Income only)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 43.22% | 42.34% |
| 30 | | | 43.61% | 42.84% | 42.37% | 42.04% | 45.44% |
| 40 | 43.09% | 42.65% | 42.32% | 42.12% | 44.34% | 46.65% | 48.41% |
| 50 | 42.31% | 42.13% | 43.49% | 45.67% | 47.16% | 48.58% | 49.42% |
| 60 | 42.87% | 44.97% | 46.43% | 47.48% | 48.69% | 49.37% | 49.87% |
| 70 | 45.77% | 46.90% | 47.80% | 48.76% | 49.35% | 49.77% | 50.07% |
| 80 | 47.17% | 48.02% | 48.82% | 49.33% | 49.69% | 50.00% | 50.21% |
| 90 | 48.17% | 48.86% | 49.31% | 49.63% | 49.95% | 50.13% | 50.29% |
| 100 | 48.89% | 49.30% | 49.59% | 49.87% | 50.08% | 50.24% | 50.34% |

Table 4.176
MINE+UPGRADER OPTION-3
Undiscounted Government Take (Income only)

| WTI US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|--------------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 42.86% | 42.29% |
| 30 | | | 42.72% | 42.27% | 42.03% | 41.89% | 41.80% |
| 40 | 43.08% | 42.89% | 42.79% | 42.72% | 42.67% | 42.64% | 42.62% |
| 50 | 44.55% | 44.54% | 44.55% | 44.56% | 44.57% | 44.59% | 44.60% |
| 60 | 46.43% | 46.47% | 46.51% | 46.54% | 46.58% | 46.61% | 46.65% |
| 70 | 48.42% | 48.48% | 48.53% | 48.58% | 48.63% | 48.68% | 48.72% |
| 80 | 50.31% | 50.38% | 50.44% | 50.49% | 50.55% | 50.60% | 50.65% |
| 90 | 50.38% | 50.43% | 50.48% | 50.53% | 50.58% | 50.62% | 50.67% |
| 100 | 50.43% | 50.48% | 50.52% | 50.56% | 50.60% | 50.64% | 50.68% |

As can be seen on an undiscounted basis the government take for the Mine and Mine+Upgrader is much higher under higher prices than under the Current Terms.

For Cost Level 4 at US \$ 70 WTI per barrel the following overview of the undiscounted government take illustrates this matter:

Undiscounted Government Take for Cost Level 4 and US \$ 70 WTI

| | Mine | Upgrader | Mine+Upgrader |
|-----------------|-------|----------|---------------|
| Current terms | 47.5% | 30.1% | 39.6% |
| Fiscal Option-1 | 62.7% | 29.5% | 47.5% |
| Fiscal Option-2 | 64.9% | 29.5% | 48.8% |
| Fiscal Option-3 | 64.6% | 29.5% | 48.6% |

Consistent with the results for the undiscounted government revenues per barrel, the undiscounted government take shows how Options 2 and 3 deliver the highest government take.

What is important to note is that the government take structure is rather different for the three options as follows:

- **Option 1 is clearly price progressive, but maintains and enhances the cost regressivity. Option 1 is more strongly cost regressive than Base Package-2**
- **Option 2 is also clearly price progressive, but the R/C factor converts Base Package-2 from a cost regressive to a cost progressive system.**

- **Option 3 is clearly price progressive and is slightly cost regressive for the mining operation and very slightly cost progressive for the integrated operation.**

To highlight the above conclusion following is a comparison of the undiscounted government take of Cost Level 7, 4 and 1 at US \$ 50 per barrel WTI

Undiscounted Government Take on a Mine for US \$ 50 WTI

| | Cost Level-7 | Cost Level-4 | Cost Level-1 |
|-----------------|--------------|--------------|--------------|
| Current terms | 47.2% | 47.5% | 47.5% |
| Fiscal Option-1 | 60.0% | 56.6% | 54.6% |
| Fiscal Option-2 | 55.7% | 60.2% | 65.8% |
| Fiscal Option-3 | 60.1% | 58.1% | 57.0% |

5% Discounted Government Take (real)

Following is the overview of the 5% Discounted Government Take.

First the mining operations will be reviewed.

Table 4.07
MINE
CURRENT TERMS
5% Discounted Government Take (Income only)
WTI
US \$

| | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-----|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 68.92% | 52.79% |
| 30 | | | 79.80% | 57.20% | 52.10% | 50.05% | 48.98% |
| 40 | 61.43% | 54.74% | 51.87% | 50.34% | 49.38% | 48.78% | 48.35% |
| 50 | 51.73% | 50.48% | 49.69% | 49.09% | 48.68% | 48.34% | 48.08% |
| 60 | 49.86% | 49.32% | 48.89% | 48.55% | 48.33% | 48.11% | 47.96% |
| 70 | 49.14% | 48.80% | 48.51% | 48.33% | 48.13% | 48.00% | 47.85% |
| 80 | 48.73% | 48.48% | 48.32% | 48.14% | 48.02% | 47.91% | 47.80% |
| 90 | 48.46% | 48.32% | 48.19% | 48.05% | 47.95% | 47.84% | 47.74% |
| 100 | 48.32% | 48.21% | 48.07% | 47.98% | 47.87% | 47.80% | 47.71% |

Table 4.127

Mine **OPTION-1**
 5% Discounted Government Take (Income only)
 WTI
 US \$

| | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-----|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | | 65.74% |
| 30 | | | | 77.31% | 63.73% | 58.01% | 54.94% |
| 40 | 88.55% | 70.67% | 62.89% | 58.62% | 55.97% | 54.19% | 52.93% |
| 50 | 71.06% | 66.08% | 62.68% | 60.23% | 58.38% | 56.95% | 55.80% |
| 60 | 70.00% | 66.96% | 64.58% | 62.68% | 61.13% | 59.82% | 58.74% |
| 70 | 71.18% | 68.85% | 66.91% | 65.28% | 63.87% | 62.66% | 61.60% |
| 80 | 73.07% | 71.11% | 69.41% | 67.93% | 66.62% | 65.46% | 64.43% |
| 90 | 75.28% | 73.54% | 71.99% | 70.61% | 69.37% | 68.25% | 67.23% |
| 100 | 77.67% | 76.07% | 74.62% | 73.31% | 72.11% | 71.02% | 70.02% |

Table 4.137

Mine **OPTION-2**
 5% Discounted Government Take (Income only)
 WTI
 US \$

| | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-----|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | | 70.60% |
| 30 | | | | 85.89% | 68.24% | 60.64% | 61.16% |
| 40 | | 77.22% | 67.03% | 61.54% | 60.90% | 62.32% | 64.29% |
| 50 | 66.41% | 61.96% | 60.62% | 61.62% | 62.68% | 64.56% | 65.70% |
| 60 | 60.51% | 61.42% | 62.28% | 62.97% | 64.73% | 65.64% | 66.33% |
| 70 | 61.83% | 62.73% | 63.42% | 64.85% | 65.62% | 66.17% | 66.47% |
| 80 | 62.86% | 63.74% | 64.94% | 65.61% | 66.04% | 66.43% | 66.59% |
| 90 | 63.96% | 65.00% | 65.61% | 65.96% | 66.40% | 66.50% | 66.58% |
| 100 | 65.05% | 65.60% | 65.91% | 66.29% | 66.48% | 66.60% | 66.57% |

Table 4.147

Mine **OPTION-3**
 5% Discounted Government Take (Income only)
 WTI
 US \$

| | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-----|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | | 68.65% |
| 30 | | | | 80.13% | 65.48% | 59.27% | 55.93% |
| 40 | 94.02% | 74.58% | 66.13% | 61.50% | 58.63% | 56.70% | 55.33% |
| 50 | 69.52% | 65.71% | 63.14% | 61.31% | 59.95% | 58.90% | 58.08% |
| 60 | 67.54% | 65.78% | 64.44% | 63.39% | 62.54% | 61.85% | 61.28% |
| 70 | 68.87% | 67.80% | 66.95% | 66.22% | 65.62% | 65.12% | 64.69% |
| 80 | 70.98% | 70.26% | 69.63% | 69.09% | 68.64% | 68.24% | 67.92% |
| 90 | 70.13% | 69.57% | 69.10% | 68.69% | 68.32% | 68.02% | 67.76% |
| 100 | 69.53% | 69.10% | 68.74% | 68.40% | 68.11% | 67.86% | 67.64% |

For the Mine+Upgrader the following results are being obtained:

Table 4.87

MINE+UPGRADER CURRENT TERMS
5% Discounted Government Take (Income only)

| WTI | | | | | | | | |
|-------|--------|--------|--------|--------|--------|--------|--------|--|
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 | |
| 20 | | | | | | 50.32% | 43.01% | |
| 30 | | | 55.40% | 45.78% | 42.88% | 41.58% | 40.86% | |
| 40 | 48.25% | 44.60% | 42.84% | 41.85% | 41.20% | 40.78% | 40.47% | |
| 50 | 42.83% | 42.00% | 41.45% | 41.03% | 40.73% | 40.48% | 40.29% | |
| 60 | 41.61% | 41.22% | 40.92% | 40.67% | 40.50% | 40.33% | 40.21% | |
| 70 | 41.11% | 40.86% | 40.65% | 40.51% | 40.35% | 40.25% | 40.14% | |
| 80 | 40.82% | 40.64% | 40.51% | 40.38% | 40.28% | 40.19% | 40.10% | |
| 90 | 40.63% | 40.52% | 40.42% | 40.31% | 40.23% | 40.14% | 40.06% | |
| 100 | 40.52% | 40.43% | 40.33% | 40.25% | 40.17% | 40.11% | 40.04% | |

Table 4.157

MINE+UPGR OPTION-1
5% Discounted Government Take (Income only)

| WTI | | | | | | | | |
|-------|--------|--------|--------|--------|--------|--------|--------|--|
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 | |
| 20 | | | | | | 58.81% | 46.63% | |
| 30 | | | 66.65% | 50.80% | 46.21% | 44.16% | 43.04% | |
| 40 | 54.65% | 48.80% | 46.04% | 44.47% | 43.48% | 42.81% | 42.34% | |
| 50 | 50.51% | 48.46% | 47.04% | 46.00% | 45.21% | 44.60% | 44.11% | |
| 60 | 50.96% | 49.60% | 48.52% | 47.66% | 46.95% | 46.35% | 45.85% | |
| 70 | 52.06% | 50.97% | 50.05% | 49.28% | 48.61% | 48.03% | 47.53% | |
| 80 | 53.37% | 52.42% | 51.59% | 50.88% | 50.23% | 49.67% | 49.16% | |
| 90 | 54.77% | 53.91% | 53.14% | 52.46% | 51.84% | 51.28% | 50.77% | |
| 100 | 56.22% | 55.42% | 54.70% | 54.03% | 53.43% | 52.88% | 52.37% | |

Table 4.167

MINE+UPGRADER OPTION-2
5% Discounted Government Take (Income only)

| WTI | | | | | | | | |
|-------|--------|--------|--------|--------|--------|--------|--------|--|
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 | |
| 20 | | | | | | 65.84% | 49.08% | |
| 30 | | | 76.69% | 54.99% | 48.56% | 45.56% | 46.41% | |
| 40 | 60.21% | 52.13% | 48.22% | 46.03% | 46.15% | 47.27% | 48.61% | |
| 50 | 48.05% | 46.25% | 45.92% | 46.77% | 47.58% | 48.82% | 49.61% | |
| 60 | 45.80% | 46.57% | 47.26% | 47.82% | 48.95% | 49.59% | 50.09% | |
| 70 | 46.92% | 47.59% | 48.12% | 49.04% | 49.58% | 49.99% | 50.25% | |
| 80 | 47.73% | 48.33% | 49.11% | 49.59% | 49.91% | 50.21% | 50.37% | |
| 90 | 48.49% | 49.16% | 49.59% | 49.86% | 50.18% | 50.30% | 50.41% | |
| 100 | 49.20% | 49.58% | 49.83% | 50.11% | 50.28% | 50.40% | 50.43% | |

Table 4.177
MINE+UPGRADER OPTION-3
5% Discounted Government Take (Income only)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 62.13% | 48.10% |
| 30 | | | 69.54% | 52.18% | 47.12% | 44.83% | 43.57% |
| 40 | 57.24% | 50.79% | 47.74% | 46.01% | 44.92% | 44.19% | 43.66% |
| 50 | 49.70% | 48.27% | 47.29% | 46.60% | 46.08% | 45.68% | 45.38% |
| 60 | 49.62% | 48.95% | 48.45% | 48.05% | 47.73% | 47.48% | 47.27% |
| 70 | 50.79% | 50.39% | 50.07% | 49.80% | 49.58% | 49.40% | 49.25% |
| 80 | 52.22% | 51.95% | 51.72% | 51.52% | 51.36% | 51.22% | 51.11% |
| 90 | 51.91% | 51.70% | 51.53% | 51.39% | 51.26% | 51.15% | 51.07% |
| 100 | 51.70% | 51.54% | 51.41% | 51.29% | 51.19% | 51.10% | 51.04% |

Following is an overview of the 5% Discounted Government Take for Cost Level 4 and a price US \$ 70 per barrel WTI.

5% Discounted Government Take

| | Mine | Upgrader | Mine+Upgrader |
|-----------------|-------|----------|---------------|
| Current terms | 48.3% | 30.7% | 40.5% |
| Fiscal Option-1 | 65.3% | 29.3% | 49.3% |
| Fiscal Option-2 | 64.8% | 29.3% | 49.0% |
| Fiscal Option-3 | 66.2% | 29.3% | 49.8% |

As can be seen from the overview table, three options provide on a 5% discounted basis a rather similar level of higher government take.

The Government Take behavior is the same as for the undiscounted government take. However, under Options 1 and 3 the cost regressivity is now much more pronounced.

Following is an overview of the 5% Discounted Government Take for various Cost Levels at US \$ 50 per barrel WTI.

5% Discounted Government Take on a Mine for US \$ 50 WTI

| | Cost Level-7 | Cost Level-4 | Cost Level-1 |
|-----------------|--------------|--------------|--------------|
| Current terms | 51.7% | 49.1% | 48.1% |
| Fiscal Option-1 | 71.1% | 60.2% | 55.8% |
| Fiscal Option-2 | 66.4% | 61.6% | 65.7% |
| Fiscal Option-3 | 67.3% | 58.8% | 55.4% |

The three Fiscal Options give rather different results. Option-1 is the most effective in discouraging excessively high cost upstream operations. Option 1 and Option 2 provide the government with the best overall government take on upstream under Cost Level 4. However, under lower cost operations, Option 2 is far more effective in capturing additional benefits for Alberta than Options 1 and 3.

IRR

Following is a review of the IRR. The first four tables are for the mining operations.

Table 4.08

| MINE | | CURRENT TERMS | | | | | | |
|--------------------------------|--|----------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| IRR (real, 2007 Cdn \$) | | | | | | | | |
| WTI | | | | | | | | |
| US \$ | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | 5.97% | 9.80% |
| 30 | | | | 5.43% | 7.66% | 10.36% | 13.72% | 18.12% |
| 40 | | 6.75% | 8.55% | 10.64% | 13.08% | 16.05% | 19.77% | 24.70% |
| 50 | | 10.80% | 12.73% | 14.96% | 17.61% | 20.83% | 24.90% | 30.31% |
| 60 | | 14.29% | 16.34% | 18.74% | 21.60% | 25.04% | 29.45% | 35.19% |
| 70 | | 17.40% | 19.58% | 22.14% | 25.14% | 28.86% | 33.47% | 39.60% |
| 80 | | 20.25% | 22.56% | 25.22% | 28.44% | 32.28% | 37.18% | 43.54% |
| 90 | | 22.89% | 25.27% | 28.08% | 31.42% | 35.46% | 40.55% | 47.22% |
| 100 | | 25.32% | 27.83% | 30.76% | 34.21% | 38.45% | 43.67% | 50.52% |

Table 4.128

| Mine | | OPTION-1 | | | | | | |
|--------------------------------|--|-----------------|---------------|---------------|---------------|---------------|---------------|---------------|
| IRR (real, 2007 Cdn \$) | | | | | | | | |
| WTI | | | | | | | | |
| US \$ | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | | 8.59% |
| 30 | | | | | 6.46% | 9.17% | 12.49% | 16.81% |
| 40 | | 5.54% | 7.38% | 9.46% | 11.88% | 14.80% | 18.47% | 23.31% |
| 50 | | 8.64% | 10.52% | 12.69% | 15.25% | 18.36% | 22.27% | 27.47% |
| 60 | | 10.92% | 12.87% | 15.13% | 17.80% | 21.06% | 25.20% | 30.63% |
| 70 | | 12.66% | 14.67% | 16.99% | 19.76% | 23.15% | 27.42% | 33.07% |
| 80 | | 13.94% | 16.00% | 18.40% | 21.23% | 24.72% | 29.09% | 34.89% |
| 90 | | 14.85% | 16.93% | 19.37% | 22.26% | 25.81% | 30.26% | 36.14% |
| 100 | | 15.39% | 17.50% | 19.96% | 22.89% | 26.48% | 30.97% | 36.91% |

Table 4.138

| Mine | | OPTION-2 | | | | | | |
|-------------------------|--------|----------|--------|--------|--------|--------|--------|--------|
| IRR (real, 2007 Cdn \$) | | | | | | | | |
| WTI | | | | | | | | |
| US \$ | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | | 7.95% |
| 30 | | | | | 5.87% | 8.51% | 11.74% | 15.77% |
| 40 | | | 6.77% | 8.80% | 11.14% | 13.86% | 17.18% | 21.47% |
| 50 | 8.97% | 10.83% | 12.91% | 15.30% | 18.19% | 21.58% | 26.06% | |
| 60 | 12.31% | 14.13% | 16.25% | 18.86% | 21.66% | 25.31% | 29.92% | |
| 70 | 15.10% | 16.97% | 19.31% | 21.72% | 24.78% | 28.57% | 33.66% | |
| 80 | 17.60% | 19.64% | 21.76% | 24.40% | 27.62% | 31.58% | 36.89% | |
| 90 | 19.90% | 21.79% | 24.11% | 26.91% | 30.09% | 34.44% | 40.18% | |
| 100 | 21.82% | 23.88% | 26.35% | 29.11% | 32.64% | 36.98% | 43.15% | |

Table 4.148

| Mine | | OPTION-3 | | | | | | |
|-------------------------|--------|----------|--------|--------|--------|--------|--------|--------|
| IRR (real, 2007 Cdn \$) | | | | | | | | |
| WTI | | | | | | | | |
| US \$ | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | | 8.26% |
| 30 | | | | | 6.28% | 8.95% | 12.21% | 16.43% |
| 40 | 5.29% | 7.09% | 9.12% | 11.49% | 14.32% | 17.87% | 22.51% | |
| 50 | 8.95% | 10.77% | 12.85% | 15.31% | 18.29% | 22.04% | 26.98% | |
| 60 | 11.77% | 13.62% | 15.77% | 18.31% | 21.42% | 25.33% | 30.49% | |
| 70 | 13.97% | 15.88% | 18.05% | 20.68% | 23.87% | 27.88% | 33.12% | |
| 80 | 15.76% | 17.66% | 19.91% | 22.58% | 25.82% | 29.92% | 35.19% | |
| 90 | 17.96% | 19.99% | 22.34% | 25.12% | 28.57% | 32.76% | 38.15% | |
| 100 | 20.05% | 22.16% | 24.59% | 27.53% | 31.06% | 35.44% | 40.89% | |

For the total Mine+Upgrader project the IRR's are the following

Table 4.88
MINE+UPGRADER CURRENT TERMS
IRR (real, 2007 Cdn \$)

| WTI | | | | | | | | |
|-------|--------|--------|--------|--------|--------|--------|--------|--|
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 | |
| 20 | | | | | | 6.60% | 9.80% | |
| 30 | | | 6.04% | 7.91% | 10.17% | 12.99% | 16.74% | |
| 40 | 7.10% | 8.60% | 10.34% | 12.40% | 14.91% | 18.10% | 22.37% | |
| 50 | 10.45% | 12.07% | 13.96% | 16.21% | 18.98% | 22.51% | 27.26% | |
| 60 | 13.37% | 15.11% | 17.15% | 19.61% | 22.61% | 26.46% | 31.59% | |
| 70 | 16.00% | 17.86% | 20.06% | 22.67% | 25.92% | 30.02% | 35.52% | |
| 80 | 18.42% | 20.41% | 22.72% | 25.53% | 28.95% | 33.32% | 39.11% | |
| 90 | 20.68% | 22.76% | 25.22% | 28.16% | 31.77% | 36.36% | 42.46% | |
| 100 | 22.79% | 24.99% | 27.57% | 30.64% | 34.43% | 39.21% | 45.54% | |

Table 4.158
MINE+UPGR OPTION-1
IRR (real, 2007 Cdn \$)

| WTI | | | | | | | | |
|-------|--------|--------|--------|--------|--------|--------|--------|--|
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 | |
| 20 | | | | | | 6.39% | 9.68% | |
| 30 | | | 5.82% | 7.75% | 10.05% | 12.92% | 16.71% | |
| 40 | 6.93% | 8.47% | 10.24% | 12.33% | 14.87% | 18.10% | 22.41% | |
| 50 | 9.94% | 11.57% | 13.46% | 15.72% | 18.49% | 22.01% | 26.73% | |
| 60 | 12.41% | 14.14% | 16.15% | 18.57% | 21.53% | 25.32% | 30.37% | |
| 70 | 14.52% | 16.34% | 18.47% | 21.02% | 24.16% | 28.17% | 33.51% | |
| 80 | 16.35% | 18.25% | 20.49% | 23.16% | 26.46% | 30.64% | 36.23% | |
| 90 | 17.94% | 19.92% | 22.24% | 25.02% | 28.45% | 32.80% | 38.59% | |
| 100 | 19.34% | 21.38% | 23.78% | 26.66% | 30.20% | 34.68% | 40.65% | |

Table 4.168
MINE+UPGRADER OPTION-2
IRR (real, 2007 Cdn \$)

| WTI | | | | | | | | |
|-------|--------|--------|--------|--------|--------|--------|--------|--|
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 | |
| 20 | | | | | | 6.13% | 9.38% | |
| 30 | | | 5.56% | 7.47% | 9.75% | 12.59% | 16.26% | |
| 40 | 6.66% | 8.19% | 9.94% | 12.00% | 14.46% | 17.55% | 21.62% | |
| 50 | 10.05% | 11.67% | 13.54% | 15.74% | 18.42% | 21.72% | 26.13% | |
| 60 | 12.97% | 14.65% | 16.62% | 19.01% | 21.79% | 25.37% | 30.07% | |
| 70 | 15.52% | 17.29% | 19.43% | 21.84% | 24.85% | 28.65% | 33.76% | |
| 80 | 17.85% | 19.75% | 21.88% | 24.47% | 27.66% | 31.68% | 37.07% | |
| 90 | 20.00% | 21.90% | 24.18% | 26.93% | 30.21% | 34.53% | 40.27% | |
| 100 | 21.93% | 23.96% | 26.37% | 29.19% | 32.71% | 37.15% | 43.22% | |

Table 4.178
MINE+UPGRADER OPTION-3
IRR (real, 2007 Cdn \$)
WTI
US \$

| | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-----|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 6.28% | 9.53% |
| 30 | | | 5.75% | 7.67% | 9.96% | 12.80% | 16.54% |
| 40 | 6.82% | 8.35% | 10.10% | 12.16% | 14.67% | 17.84% | 22.07% |
| 50 | 10.08% | 11.68% | 13.54% | 15.75% | 18.46% | 21.91% | 26.52% |
| 60 | 12.78% | 14.46% | 16.43% | 18.79% | 21.69% | 25.38% | 30.31% |
| 70 | 15.09% | 16.86% | 18.93% | 21.42% | 24.48% | 28.37% | 33.54% |
| 80 | 17.13% | 18.97% | 21.14% | 23.75% | 26.94% | 31.01% | 36.38% |
| 90 | 19.23% | 21.19% | 23.48% | 26.22% | 29.61% | 33.85% | 39.43% |
| 100 | 21.23% | 23.28% | 25.67% | 28.56% | 32.07% | 36.52% | 42.29% |

Following is the overview of the IRR's for the various cases for Cost Level 4 and US \$ 70 per barrel WTI:

IRR comparison Cost Level 4 and US \$ 70 per barrel

| | Mine | Upgrader | Mine+Upgrader |
|-----------------|-------|----------|---------------|
| Current terms | 25.1% | 20.9% | 22.7% |
| Fiscal Option-1 | 19.8% | 21.9% | 21.0% |
| Fiscal Option-2 | 21.7% | 21.9% | 21.8% |
| Fiscal Option-3 | 20.7% | 21.9% | 21.4% |

It is remarkable how the much higher government takes for each of the options result in only a modest drop in overall integrated IRR for the three options. This is, of course, due to the improved conditions for the Upgrader, which constitutes half the investment.

Nevertheless for Mining only the IRR would drop significantly under higher prices compared to the Current Situation. It should be noted though that an IRR in the 20-22% range on a real basis under US \$ 70 is not unreasonable for such large projects.

It is also important to analyze how effective the various Fiscal Options would be in discouraging excessively high cost operations. Following provides the IRR overview for Cost Level 7 and US \$ 50 per barrel

IRR comparison Cost Level 7 and US \$ 50 per barrel

| | Mine | Upgrader | Mine+Upgrader |
|-----------------|-------|----------|---------------|
| Current terms | 10.8% | 10.2% | 10.5% |
| Fiscal Option-1 | 8.6% | 10.9% | 9.9% |
| Fiscal Option-2 | 9.0% | 10.9% | 10.0% |
| Fiscal Option-3 | 9.0% | 10.9% | 10.1% |

It can be seen how Fiscal Option 1 would be slightly more effective in discouraging excessively high cost mining projects and therefore integrated projects. However, the differences are not enough to be important. Small adjustments to the OSIT, the rentals or base royalty rate could create equal results. Therefore, all three Fiscal Options are effective in preventing excessively costly upstream operations.

It should be noted that with respect to integrated operations consisting of high cost upstream and high cost upgrader operations, the Upgrader operations are significantly more attractive, since the royalty credit is stronger under higher capital expenditures. The Fiscal Options would therefore only impact high cost integrated operations slightly. A half percentage point difference in IRR is not strong enough to have a significant impact on the rate of integrated project development development.

It is also interesting to study how the three Fiscal Options would encourage low cost operations. Following table provides the overview.

IRR comparison Cost Level 2 and US \$ 50 per barrel

| | Mine | Upgrader | Mine+Upgrader |
|-----------------|-------|----------|---------------|
| Current terms | 24.9% | 20.8% | 22.5% |
| Fiscal Option-1 | 22.3% | 21.8% | 22.0% |
| Fiscal Option-2 | 21.6% | 21.8% | 21.7% |
| Fiscal Option-3 | 22.0% | 21.8% | 21.9% |

Due to the higher government take, all three Fiscal Options would provide a lower IRR for low cost operations than the current terms.

From an IRR point of view Fiscal Option-1 provides a slightly better incentive for low cost operations, because it is strongest cost regressive. However, the differences are not large.

PFR10

Following is a review of the PFR10, with the mining operation first.

Table 4.09

| MINE | | CURRENT TERMS | | | | | | |
|----------------------------------|---------------|----------------------|---------------|---------------|---------------|---------------|---------------|--|
| PFR10 (real, 2007 Cdn \$) | | | | | | | | |
| WTI | | | | | | | | |
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 | |
| 20 | | | | | | 0.78 | 0.99 | |
| 30 | | | 0.75 | 0.87 | 1.02 | 1.23 | 1.54 | |
| 40 | 0.82 | 0.92 | 1.04 | 1.19 | 1.39 | 1.66 | 2.07 | |
| 50 | 1.05 | 1.17 | 1.31 | 1.50 | 1.75 | 2.09 | 2.61 | |
| 60 | 1.27 | 1.41 | 1.58 | 1.81 | 2.10 | 2.52 | 3.14 | |
| 70 | 1.48 | 1.65 | 1.85 | 2.11 | 2.46 | 2.94 | 3.67 | |
| 80 | 1.70 | 1.89 | 2.12 | 2.42 | 2.82 | 3.37 | 4.20 | |
| 90 | 1.91 | 2.12 | 2.39 | 2.72 | 3.17 | 3.80 | 4.74 | |
| 100 | 2.13 | 2.36 | 2.65 | 3.03 | 3.53 | 4.22 | 5.27 | |

Table 4.129

| Mine | | OPTION-1 | | | | | | |
|----------------------------------|---------------|-----------------|---------------|---------------|---------------|---------------|---------------|--|
| PFR10 (real, 2007 Cdn \$) | | | | | | | | |
| WTI | | | | | | | | |
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 | |
| 20 | | | | | | | 0.92 | |
| 30 | | | | 0.81 | 0.95 | 1.15 | 1.44 | |
| 40 | 0.76 | 0.85 | 0.97 | 1.11 | 1.30 | 1.56 | 1.95 | |
| 50 | 0.92 | 1.03 | 1.16 | 1.33 | 1.56 | 1.87 | 2.33 | |
| 60 | 1.05 | 1.17 | 1.32 | 1.51 | 1.77 | 2.12 | 2.64 | |
| 70 | 1.16 | 1.29 | 1.46 | 1.66 | 1.94 | 2.33 | 2.90 | |
| 80 | 1.24 | 1.38 | 1.56 | 1.78 | 2.08 | 2.49 | 3.10 | |
| 90 | 1.30 | 1.45 | 1.63 | 1.86 | 2.17 | 2.61 | 3.25 | |
| 100 | 1.34 | 1.49 | 1.68 | 1.92 | 2.24 | 2.68 | 3.34 | |

Table 4.139

| Mine | | OPTION-2 | | | | | | |
|---------------------------|------|----------|--------|--------|--------|--------|--------|--------|
| PFR10 (real, 2007 Cdn \$) | | | | | | | | |
| WTI | | | | | | | | |
| US \$ | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | | 0.88 |
| 30 | | | | | 0.76 | 0.91 | 1.11 | 1.37 |
| 40 | | | 0.81 | 0.93 | 1.07 | 1.24 | 1.45 | 1.73 |
| 50 | 0.94 | 1.05 | 1.18 | 1.33 | 1.52 | 1.73 | | 2.05 |
| 60 | 1.15 | 1.26 | 1.39 | 1.56 | 1.74 | 2.00 | | 2.38 |
| 70 | 1.32 | 1.44 | 1.59 | 1.74 | 1.96 | 2.26 | | 2.71 |
| 80 | 1.48 | 1.61 | 1.74 | 1.93 | 2.18 | 2.52 | | 3.05 |
| 90 | 1.62 | 1.75 | 1.91 | 2.12 | 2.39 | 2.79 | | 3.39 |
| 100 | 1.75 | 1.89 | 2.08 | 2.30 | 2.62 | 3.06 | | 3.73 |

Table 4.149

| Mine | | OPTION-3 | | | | | | |
|---------------------------|------|----------|--------|--------|--------|--------|--------|--------|
| PFR10 (real, 2007 Cdn \$) | | | | | | | | |
| WTI | | | | | | | | |
| US \$ | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | | 0.90 |
| 30 | | | | | 0.80 | 0.94 | 1.14 | 1.42 |
| 40 | 0.75 | 0.84 | 0.95 | 1.09 | 1.27 | 1.52 | | 1.89 |
| 50 | 0.94 | 1.04 | 1.17 | 1.33 | 1.54 | 1.83 | | 2.26 |
| 60 | 1.10 | 1.21 | 1.35 | 1.52 | 1.75 | 2.07 | | 2.55 |
| 70 | 1.23 | 1.34 | 1.49 | 1.67 | 1.92 | 2.26 | | 2.77 |
| 80 | 1.32 | 1.45 | 1.60 | 1.79 | 2.04 | 2.40 | | 2.92 |
| 90 | 1.46 | 1.60 | 1.77 | 1.98 | 2.27 | 2.67 | | 3.26 |
| 100 | 1.60 | 1.76 | 1.94 | 2.18 | 2.50 | 2.94 | | 3.60 |

For the Mine+Upgrader the results are the following:

Table 4.89

| MINE+UPGRADER | | CURRENT TERMS | | | | | | |
|---------------------------|------|---------------|--------|--------|--------|--------|--------|--------|
| PFR10 (real, 2007 Cdn \$) | | | | | | | | |
| WTI | | | | | | | | |
| US \$ | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | 0.79 | 0.99 |
| 30 | | | | 0.76 | 0.87 | 1.01 | 1.21 | 1.50 |
| 40 | 0.82 | 0.91 | 1.02 | 1.16 | 1.35 | 1.61 | | 2.00 |
| 50 | 1.03 | 1.14 | 1.28 | 1.46 | 1.69 | 2.02 | | 2.51 |
| 60 | 1.23 | 1.37 | 1.53 | 1.75 | 2.03 | 2.42 | | 3.01 |
| 70 | 1.44 | 1.59 | 1.79 | 2.03 | 2.36 | 2.82 | | 3.52 |
| 80 | 1.64 | 1.82 | 2.04 | 2.32 | 2.70 | 3.23 | | 4.02 |
| 90 | 1.84 | 2.04 | 2.29 | 2.61 | 3.04 | 3.63 | | 4.52 |
| 100 | 2.04 | 2.27 | 2.54 | 2.90 | 3.37 | 4.03 | | 5.03 |

Table 4.159

MINE+UPGR OPTION-1
PFR10 (real, 2007 Cdn \$)

| WTI | | | | | | | | |
|-------|--------|--------|--------|--------|--------|--------|--------|--|
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 | |
| 20 | | | | | | 0.79 | 0.98 | |
| 30 | | | 0.76 | 0.86 | 1.00 | 1.19 | 1.48 | |
| 40 | 0.82 | 0.91 | 1.02 | 1.15 | 1.34 | 1.59 | 1.97 | |
| 50 | 1.00 | 1.10 | 1.23 | 1.40 | 1.63 | 1.94 | 2.40 | |
| 60 | 1.16 | 1.28 | 1.44 | 1.63 | 1.89 | 2.26 | 2.81 | |
| 70 | 1.31 | 1.45 | 1.62 | 1.85 | 2.14 | 2.56 | 3.18 | |
| 80 | 1.45 | 1.61 | 1.80 | 2.05 | 2.38 | 2.84 | 3.53 | |
| 90 | 1.58 | 1.75 | 1.96 | 2.23 | 2.59 | 3.10 | 3.85 | |
| 100 | 1.70 | 1.88 | 2.11 | 2.40 | 2.79 | 3.34 | 4.15 | |

Table 4.169

MINE+UPGRADER OPTION-2
PFR10 (real, 2007 Cdn \$)

| WTI | | | | | | | | |
|-------|--------|--------|--------|--------|--------|--------|--------|--|
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 | |
| 20 | | | | | | 0.77 | 0.96 | |
| 30 | | | 0.74 | 0.85 | 0.98 | 1.18 | 1.44 | |
| 40 | 0.80 | 0.89 | 1.00 | 1.13 | 1.31 | 1.54 | 1.87 | |
| 50 | 1.00 | 1.11 | 1.24 | 1.40 | 1.61 | 1.88 | 2.27 | |
| 60 | 1.20 | 1.32 | 1.47 | 1.65 | 1.88 | 2.20 | 2.68 | |
| 70 | 1.39 | 1.52 | 1.69 | 1.88 | 2.15 | 2.53 | 3.09 | |
| 80 | 1.56 | 1.71 | 1.89 | 2.12 | 2.43 | 2.85 | 3.50 | |
| 90 | 1.73 | 1.89 | 2.09 | 2.35 | 2.70 | 3.18 | 3.92 | |
| 100 | 1.89 | 2.07 | 2.30 | 2.58 | 2.97 | 3.51 | 4.33 | |

Table 4.179

MINE+UPGRADER OPTION-3
PFR10 (real, 2007 Cdn \$)

| WTI | | | | | | | | |
|-------|--------|--------|--------|--------|--------|--------|--------|--|
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 | |
| 20 | | | | | | 0.78 | 0.97 | |
| 30 | | | 0.75 | 0.86 | 1.00 | 1.19 | 1.47 | |
| 40 | 0.81 | 0.90 | 1.01 | 1.14 | 1.32 | 1.57 | 1.94 | |
| 50 | 1.01 | 1.11 | 1.24 | 1.40 | 1.62 | 1.92 | 2.37 | |
| 60 | 1.18 | 1.30 | 1.45 | 1.64 | 1.89 | 2.24 | 2.76 | |
| 70 | 1.34 | 1.47 | 1.64 | 1.85 | 2.13 | 2.53 | 3.12 | |
| 80 | 1.49 | 1.64 | 1.82 | 2.05 | 2.36 | 2.80 | 3.45 | |
| 90 | 1.66 | 1.82 | 2.03 | 2.29 | 2.64 | 3.13 | 3.86 | |
| 100 | 1.82 | 2.01 | 2.23 | 2.53 | 2.92 | 3.46 | 4.27 | |

The PFR10 overview for Cost Level 4 and US \$ 70 per barrel WTI is as follows:

PFR10 comparison

| | Mine | Upgrader | Mine+Upgrader |
|-----------------|------|----------|---------------|
| Current terms | 2.11 | 1.96 | 2.03 |
| Fiscal Option-1 | 1.66 | 2.01 | 1.85 |
| Fiscal Option-2 | 1.74 | 2.01 | 1.88 |
| Fiscal Option-3 | 1.67 | 2.01 | 1.85 |

For the Mine operation there would be a significant drop in PFR10. In this case Option 2 is the most attractive to the investors, due to the back end loading.

The Upgrading investment compensates for the Mine and therefore on an integrated basis in all cases the loss in PFR10 is modest.

A similar result would be obtained for the NPV10/SCO barrel.

Again it is important to analyze the effectiveness in discouraging excessively high cost operations. Following provides the PFR10 overview for Cost Level 7 and US \$ 50 per barrel

PFR10 comparison Cost Level 7 and US \$ 50 per barrel

| | Mine | Upgrader | Mine+Upgrader |
|-----------------|------|----------|---------------|
| Current terms | 1.05 | 1.01 | 1.03 |
| Fiscal Option-1 | 0.92 | 1.06 | 1.00 |
| Fiscal Option-2 | 0.94 | 1.06 | 1.00 |
| Fiscal Option-3 | 0.94 | 1.06 | 1.01 |

The PFR10 overview for high cost operations provides the same overall conclusions as the IRR overview. The three Fiscal Options are effective at discouraging high cost upstream operations but impact high cost overall integrated projects only slightly.

PFR10 comparison Cost Level 2 and US \$ 50 per barrel

| | Mine | Upgrader | Mine+Upgrader |
|-----------------|------|----------|---------------|
| Current terms | 2.09 | 1.95 | 2.02 |
| Fiscal Option-1 | 1.87 | 2.00 | 1.94 |
| Fiscal Option-2 | 1.73 | 2.00 | 1.88 |
| Fiscal Option-3 | 1.83 | 2.00 | 1.92 |

Due to the cost progressivity of Option 2 it is clear that the PFR10 is less attractive for the Mining operation and the integrated operations and therefore Option 2 would not be as strong an incentive to pursue the lowest possible costs.

Conclusion

All three options produce clear progressivity with price.

All three options also seem equally effective at preventing excessively costly upstream operations. In the case of Option-2 this is primarily due to the introduction of the OSIT.

Due to the progressive R/C mechanism Option-2 is not as effective in promoting low cost operations.

However, due to the considerable back end loading Option-2 is able to combine a similar IRR and PFR10 with a much higher share of overall government take at a 5% discount rate for Cost Levels 4 or less for average prices in the range of US \$ 409 – US \$ 60 per barrel WTI.

Options 1 and 3 are far more effective in capturing a fair share for Alberta under very high prices of US \$ 70 per barrel WTI and higher.

It should be noted that the government is more risk exposed under Option-2 in case of possible future price declines. If prices five years from now would go back to US \$ 40 per barrel, the second step in the R/C system would not click in or click in at a rather late date. Under Options 1 and 3, the government would have at least for the five years that prices were high enjoyed a higher government take.

Under Option 1 the government is much less risk exposed with respect to poor bitumen prices.

4.2.4. Nine combinations of three Base Packages and three Fiscal Options

The Three Base Packages were all calibrated to result in approximately the same IRR for Cost Level 4 and at a price of US \$ 50 per barrel WTI.

All three Fiscal Options were also calibrated to result in approximately the same IRR for Cost Level 4 and a price of US \$ 50 per barrel WTI.

Therefore, it is logical that any of the nine combinations would also provide similar results.

Following is the IRR for each of the nine combinations:

IRR for all Base Package – Fiscal Option Combinations Cost Level 4 and US \$ 50 per barrel WTI

| | Base-Package-1 | Base-Package-2 | Base-Package-3 |
|-----------------|----------------|----------------|----------------|
| Fiscal Option-1 | 15.6% | 15.7% | 15.8% |
| Fiscal Option-2 | 15.5% | 15.7% | 15.9% |
| Fiscal Option-3 | 15.6% | 15.8% | 15.9% |

All IRR's are very similar for the nine combinations.

Therefore, it is not difficult to calibrate any of the nine combinations more in detail for a final package. Small modifications to any of the variables will produce acceptable results. All nine combinations are therefore possibilities for a final fiscal package.

4.3. Variations to the three fiscal options

4.3.1. Description of variations

It is, of course, possible to have a wide range of possible variations on the basis of the above discussion.

In order to provide a wider scope to the evaluation of alternative fiscal systems, two specific variations will be evaluated:

- Variation-1: Lower Provincial Corporate Income Tax and higher NPS based on the concept of Fiscal Option-1.
- Variation-2: Simpler overall system based on WTI values rather than bitumen values.

Variation-1 is progressive with price, while Variation-2 is regressive with price.

Variation-1

In Chapter 3 it was concluded that lowering the Provincial Corporate Income Tax was not the most effective mechanism to stimulate investment in Upgraders. However, a switch between a lower corporate income tax rate and a higher NPS rate would achieve a variety of objectives. It would further stimulate upgrader investment. The suppliers of the oil industry would have a lower corporate income tax rate and would therefore be able to offer more competitive prices. A reduction in corporate income tax would stimulate the economy in more broader terms, while discouraging excessively high cost upstream operations. Therefore, this is a variation that is worth exploring.

Following is a description of Variation-1:

- Rentals: \$ 10 million per year for a typical oil sands project on a nominal basis without escalation.
- Base royalty: 4%
- NPS: 32% and based on bitumen production. No LTBR. Rentals, royalty and SOST deductible for NPS purposes.
- Provincial corporate income tax 5%, for a total tax rate of 25%.
- Royalty credit against the base royalty and the SOST of 5% of all capital expenditures for upgrading.
- Supplemental Oil Sands Tax based on price sensitive scale. Starts at Can \$ 50 per barrel. 0.25% tax for every Can \$ 1 increase in price over Can \$ 50. Maximum rate 25%. Prices based on 2007 Can \$ corrected with PPI or CPI. Environmental costs deductible from the tax base.

Variation-1 is designed to achieve a number of objectives, however, the main concepts in this case is increasing the share for Alberta with higher prices, making excessively high cost projects less attractive and stimulating upgrading.

Variation-2

Variation-2 is completely aimed at making the overall fiscal system as easy as possible to administer.

Variation-2 consists of the following package:

- Rentals: no change
- Base royalty: 0%
- NPS: Based on 85% of WTI based on bitumen production. The NPS rate is fixed at 14%. Only upstream expenditures deductible.
- For upgrading there would be a tradable credit against the NPS royalty equal 2.5% of the gross value of the SCO barrel.

The main focus of Variation-2 is to create a relatively simple royalty system that is entirely independent of the bitumen values. Also upgrading is stimulated with a broader overall gross value feature rather than a feature based on capital expenditures.

4.3.2. Analysis of variations

Government Revenues per barrel

Following are the revenues from the Mining operation under the current terms and the two Variations.

Table 4.04

| MINE | | CURRENT TERMS | | | | | | |
|--|--|----------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Government Income + Participation per bitumen barrel (\$ Cdn) | | | | | | | | |
| WTI | | | | | | | | |
| US \$ | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | \$1.21 | \$1.87 |
| 30 | | | | \$1.69 | \$2.37 | \$3.00 | \$3.63 | \$4.24 |
| 40 | | \$2.86 | \$3.51 | \$4.14 | \$4.77 | \$5.38 | \$6.00 | \$6.61 |
| 50 | | \$5.29 | \$5.91 | \$6.53 | \$7.14 | \$7.75 | \$8.36 | \$8.97 |
| 60 | | \$7.66 | \$8.28 | \$8.89 | \$9.50 | \$10.12 | \$10.72 | \$11.34 |
| 70 | | \$10.04 | \$10.65 | \$11.26 | \$11.87 | \$12.48 | \$13.09 | \$13.70 |
| 80 | | \$12.40 | \$13.01 | \$13.62 | \$14.23 | \$14.84 | \$15.45 | \$16.06 |
| 90 | | \$14.76 | \$15.38 | \$15.99 | \$16.60 | \$17.21 | \$17.81 | \$18.42 |
| 100 | | \$17.13 | \$17.75 | \$18.35 | \$18.96 | \$19.57 | \$20.18 | \$20.78 |

Table 4.184

| Mine | | VARIATION-1 | | | | | | |
|--|--|--------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Government Income + Participation per bitumen barrel (\$ Cdn) | | | | | | | | |
| WTI | | | | | | | | |
| US \$ | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | | \$2.25 |
| 30 | | | | | \$2.95 | \$3.55 | \$4.17 | \$4.78 |
| 40 | | \$3.65 | \$4.25 | \$4.86 | \$5.47 | \$6.08 | \$6.70 | \$7.32 |
| 50 | | \$6.65 | \$7.26 | \$7.88 | \$8.49 | \$9.11 | \$9.73 | \$10.35 |
| 60 | | \$10.26 | \$10.88 | \$11.49 | \$12.11 | \$12.73 | \$13.35 | \$13.96 |
| 70 | | \$14.21 | \$14.82 | \$15.44 | \$16.06 | \$16.67 | \$17.29 | \$17.91 |
| 80 | | \$18.48 | \$19.10 | \$19.72 | \$20.33 | \$20.95 | \$21.57 | \$22.19 |
| 90 | | \$23.09 | \$23.71 | \$24.32 | \$24.94 | \$25.56 | \$26.18 | \$26.80 |
| 100 | | \$28.03 | \$28.64 | \$29.26 | \$29.88 | \$30.50 | \$31.11 | \$31.73 |

Table 4.214

Mine

VARIATION-2

Government Income + Participation per bitumen barrel (\$ Cdn)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | | \$2.51 |
| 30 | | | | \$3.43 | \$3.94 | \$4.44 | \$4.95 |
| 40 | | \$4.86 | \$5.36 | \$5.87 | \$6.38 | \$6.88 | \$7.39 |
| 50 | \$6.79 | \$7.30 | \$7.80 | \$8.31 | \$8.81 | \$9.32 | \$9.83 |
| 60 | \$9.23 | \$9.73 | \$10.24 | \$10.75 | \$11.26 | \$11.76 | \$12.27 |
| 70 | \$11.67 | \$12.17 | \$12.68 | \$13.19 | \$13.70 | \$14.20 | \$14.71 |
| 80 | \$14.11 | \$14.61 | \$15.12 | \$15.63 | \$16.14 | \$16.64 | \$17.15 |
| 90 | \$16.55 | \$17.05 | \$17.56 | \$18.07 | \$18.58 | \$19.08 | \$19.59 |
| 100 | \$18.99 | \$19.50 | \$20.00 | \$20.51 | \$21.02 | \$21.52 | \$22.03 |

Following are the results for the Upgrader.

Table 4.44

UPGRADER

Government Income + Participation per bitumen barrel (\$ Cdn)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$1.21 | \$1.48 |
| 30 | | \$1.48 | \$1.75 | \$2.02 | \$2.29 | \$2.56 | \$2.83 |
| 40 | \$2.55 | \$2.83 | \$3.10 | \$3.37 | \$3.64 | \$3.91 | \$4.18 |
| 50 | \$3.90 | \$4.17 | \$4.44 | \$4.72 | \$4.99 | \$5.26 | \$5.53 |
| 60 | \$5.25 | \$5.52 | \$5.79 | \$6.06 | \$6.34 | \$6.61 | \$6.88 |
| 70 | \$6.60 | \$6.87 | \$7.14 | \$7.41 | \$7.68 | \$7.95 | \$8.23 |
| 80 | \$7.95 | \$8.22 | \$8.49 | \$8.76 | \$9.03 | \$9.30 | \$9.57 |
| 90 | \$9.30 | \$9.57 | \$9.84 | \$10.11 | \$10.38 | \$10.65 | \$10.92 |
| 100 | \$10.65 | \$10.92 | \$11.19 | \$11.46 | \$11.73 | \$12.00 | \$12.27 |

Table 4.194

UPGRADER

VARIATION-1

Government Income + Participation per bitumen barrel (\$ Cdn)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|---------|
| 20 | | | | | | \$0.89 | \$1.14 |
| 30 | | \$1.02 | \$1.27 | \$1.52 | \$1.76 | \$2.01 | \$2.26 |
| 40 | \$1.89 | \$2.14 | \$2.39 | \$2.64 | \$2.89 | \$3.14 | \$3.39 |
| 50 | \$3.01 | \$3.26 | \$3.51 | \$3.76 | \$4.01 | \$4.26 | \$4.51 |
| 60 | \$4.14 | \$4.39 | \$4.64 | \$4.89 | \$5.14 | \$5.39 | \$5.64 |
| 70 | \$5.26 | \$5.51 | \$5.76 | \$6.01 | \$6.26 | \$6.51 | \$6.76 |
| 80 | \$6.39 | \$6.64 | \$6.88 | \$7.13 | \$7.38 | \$7.63 | \$7.88 |
| 90 | \$7.51 | \$7.76 | \$8.01 | \$8.26 | \$8.51 | \$8.76 | \$9.01 |
| 100 | \$8.63 | \$8.88 | \$9.13 | \$9.38 | \$9.63 | \$9.88 | \$10.13 |

Table 4.224
UPGRADER VARIATION-2
Government Income + Participation per bitumen barrel (\$ Cdn)

| WTI | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-----|--------|--------|--------|--------|--------|---------|---------|
| 20 | | | | | | \$0.81 | \$1.08 |
| 30 | | \$0.88 | \$1.15 | \$1.42 | \$1.69 | \$1.96 | \$2.23 |
| 40 | \$1.76 | \$2.03 | \$2.30 | \$2.57 | \$2.84 | \$3.11 | \$3.38 |
| 50 | \$2.91 | \$3.18 | \$3.45 | \$3.72 | \$3.99 | \$4.26 | \$4.53 |
| 60 | \$4.06 | \$4.33 | \$4.60 | \$4.87 | \$5.14 | \$5.41 | \$5.68 |
| 70 | \$5.21 | \$5.48 | \$5.75 | \$6.02 | \$6.29 | \$6.56 | \$6.83 |
| 80 | \$6.36 | \$6.63 | \$6.90 | \$7.17 | \$7.44 | \$7.71 | \$7.98 |
| 90 | \$7.51 | \$7.78 | \$8.05 | \$8.32 | \$8.59 | \$8.86 | \$9.13 |
| 100 | \$8.66 | \$8.93 | \$9.20 | \$9.47 | \$9.74 | \$10.01 | \$10.28 |

Following are the results for the Mine+Upgrader.

Table 4.84
MINE+UPGRADER CURRENT TERMS
Government Income + Participation per SCO barrel (\$ Cdn)

| WTI | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-----|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$2.64 | \$3.68 |
| 30 | | | \$3.74 | \$4.80 | \$5.82 | \$6.83 | \$7.82 |
| 40 | \$5.92 | \$6.96 | \$7.97 | \$8.98 | \$9.97 | \$10.96 | \$11.95 |
| 50 | \$10.12 | \$11.12 | \$12.12 | \$13.11 | \$14.11 | \$15.09 | \$16.08 |
| 60 | \$14.27 | \$15.26 | \$16.25 | \$17.24 | \$18.24 | \$19.22 | \$20.21 |
| 70 | \$18.41 | \$19.40 | \$20.38 | \$21.38 | \$22.36 | \$23.35 | \$24.34 |
| 80 | \$22.54 | \$23.52 | \$24.52 | \$25.50 | \$26.49 | \$27.48 | \$28.47 |
| 90 | \$26.67 | \$27.66 | \$28.65 | \$29.64 | \$30.63 | \$31.61 | \$32.59 |
| 100 | \$30.80 | \$31.80 | \$32.78 | \$33.77 | \$34.75 | \$35.74 | \$36.72 |

Table 4.204
MINE+UPGR VARIATION-1
Government Income + Participation per SCO barrel (\$ Cdn)

| WTI | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-----|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$2.83 | \$3.79 |
| 30 | | | \$4.03 | \$4.98 | \$5.95 | \$6.92 | \$7.89 |
| 40 | \$6.18 | \$7.14 | \$8.10 | \$9.07 | \$10.05 | \$11.02 | \$12.00 |
| 50 | \$10.84 | \$11.81 | \$12.78 | \$13.75 | \$14.73 | \$15.71 | \$16.68 |
| 60 | \$16.21 | \$17.18 | \$18.16 | \$19.13 | \$20.11 | \$21.09 | \$22.06 |
| 70 | \$21.98 | \$22.95 | \$23.92 | \$24.90 | \$25.88 | \$26.85 | \$27.83 |
| 80 | \$28.13 | \$29.10 | \$30.08 | \$31.06 | \$32.03 | \$33.01 | \$33.99 |
| 90 | \$34.67 | \$35.65 | \$36.62 | \$37.60 | \$38.58 | \$39.56 | \$40.53 |
| 100 | \$41.61 | \$42.58 | \$43.55 | \$44.53 | \$45.51 | \$46.49 | \$47.47 |

Table 4.234

MINE+UPGRADER VARIATION-2

Government Income + Participation per SCO barrel (\$ Cdn)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$3.17 | \$4.04 |
| 30 | | | \$4.59 | \$5.46 | \$6.32 | \$7.19 | \$8.06 |
| 40 | \$6.88 | \$7.74 | \$8.61 | \$9.48 | \$10.34 | \$11.21 | \$12.08 |
| 50 | \$10.90 | \$11.76 | \$12.63 | \$13.50 | \$14.36 | \$15.23 | \$16.10 |
| 60 | \$14.92 | \$15.78 | \$16.65 | \$17.52 | \$18.38 | \$19.25 | \$20.12 |
| 70 | \$18.94 | \$19.80 | \$20.67 | \$21.54 | \$22.40 | \$23.27 | \$24.14 |
| 80 | \$22.96 | \$23.82 | \$24.69 | \$25.56 | \$26.43 | \$27.29 | \$28.16 |
| 90 | \$26.98 | \$27.84 | \$28.71 | \$29.58 | \$30.45 | \$31.31 | \$32.18 |
| 100 | \$31.00 | \$31.86 | \$32.73 | \$33.60 | \$34.47 | \$35.34 | \$36.20 |

For Cost Level 4 at US \$ 50 WTI per barrel the following overview of the undiscounted real government revenues per barrel illustrates this matter. *Please note how the Mine revenues in the tables are per bitumen barrel and in this overview per SCO barrel assuming 85% efficiency:*

Government Revenues per SCO barrel

| | Mine | Upgrader | Mine+Upgrader |
|---------------|---------|----------|---------------|
| Current terms | \$ 8.39 | \$ 4.72 | \$ 13.11 |
| Variation-1 | \$ 9.99 | \$ 3.76 | \$ 13.75 |
| Variation-2 | \$ 9.78 | \$ 3.72 | \$ 13.50 |

For the particular cost and price level the two variations give rather similar results. However, as can be easily seen from the tables, Variation-1 results in less revenues at lower prices and much higher revenues at higher prices than Variation-2.

Undiscounted Government Take

Following are the corresponding tables for the Undiscounted Government Take.

First, the tables for the mining operation.

Table 4.06

| MINE | | CURRENT TERMS | | | | | |
|--|--------|---------------|--------|--------|--------|--------|--------|
| Undiscounted Government Take (Income only) | | | | | | | |
| WTI | | | | | | | |
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | 45.24% | 47.11% |
| 30 | | | 44.43% | 46.51% | 47.16% | 47.39% | 47.48% |
| 40 | 45.93% | 46.82% | 47.20% | 47.39% | 47.45% | 47.51% | 47.52% |
| 50 | 47.23% | 47.35% | 47.45% | 47.49% | 47.52% | 47.52% | 47.53% |
| 60 | 47.41% | 47.46% | 47.48% | 47.49% | 47.52% | 47.52% | 47.54% |
| 70 | 47.49% | 47.50% | 47.50% | 47.52% | 47.52% | 47.53% | 47.53% |
| 80 | 47.51% | 47.50% | 47.53% | 47.52% | 47.53% | 47.54% | 47.53% |
| 90 | 47.51% | 47.53% | 47.54% | 47.53% | 47.54% | 47.53% | 47.52% |
| 100 | 47.53% | 47.54% | 47.53% | 47.54% | 47.53% | 47.53% | 47.52% |

Table 4.186

| Mine | | VARIATION-1 | | | | | |
|--|--------|-------------|--------|--------|--------|--------|--------|
| Undiscounted Government Take (Income only) | | | | | | | |
| WTI | | | | | | | |
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | 56.87% |
| 30 | | | | 57.92% | 55.79% | 54.46% | 53.54% |
| 40 | 58.64% | 56.65% | 55.31% | 54.36% | 53.64% | 53.08% | 52.64% |
| 50 | 59.44% | 58.24% | 57.28% | 56.49% | 55.84% | 55.29% | 54.82% |
| 60 | 63.50% | 62.36% | 61.38% | 60.53% | 59.79% | 59.14% | 58.56% |
| 70 | 67.22% | 66.13% | 65.16% | 64.29% | 63.51% | 62.80% | 62.16% |
| 80 | 70.80% | 69.74% | 68.77% | 67.90% | 67.09% | 66.36% | 65.68% |
| 90 | 74.30% | 73.26% | 72.30% | 71.42% | 70.61% | 69.85% | 69.14% |
| 100 | 77.74% | 76.73% | 75.78% | 74.90% | 74.07% | 73.30% | 72.57% |

Table 4.216

| Mine | | VARIATION-2 | | | | | |
|--|--------|-------------|--------|--------|--------|--------|--------|
| Undiscounted Government Take (Income only) | | | | | | | |
| WTI | | | | | | | |
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | 63.38% |
| 30 | | | | 67.40% | 61.79% | 58.06% | 55.41% |
| 40 | | 64.76% | 61.08% | 58.33% | 56.21% | 54.52% | 53.15% |
| 50 | 60.67% | 58.50% | 56.73% | 55.27% | 54.04% | 52.98% | 52.08% |
| 60 | 57.10% | 55.81% | 54.70% | 53.73% | 52.88% | 52.13% | 51.46% |
| 70 | 55.21% | 54.31% | 53.52% | 52.80% | 52.16% | 51.58% | 51.05% |
| 80 | 54.04% | 53.36% | 52.75% | 52.19% | 51.67% | 51.20% | 50.76% |
| 90 | 53.25% | 52.71% | 52.21% | 51.75% | 51.32% | 50.92% | 50.55% |
| 100 | 52.67% | 52.23% | 51.81% | 51.42% | 51.05% | 50.71% | 50.38% |

Following are the tables for the upgrader.

Table 4.46

UPGRADER

Undiscounted Government Take (Income only)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 30.43% | 30.28% |
| 30 | | 30.63% | 30.47% | 30.36% | 30.27% | 30.20% | 30.14% |
| 40 | 30.40% | 30.33% | 30.27% | 30.21% | 30.17% | 30.13% | 30.10% |
| 50 | 30.26% | 30.22% | 30.18% | 30.15% | 30.12% | 30.10% | 30.07% |
| 60 | 30.20% | 30.17% | 30.14% | 30.12% | 30.10% | 30.08% | 30.06% |
| 70 | 30.16% | 30.13% | 30.11% | 30.10% | 30.08% | 30.06% | 30.05% |
| 80 | 30.13% | 30.11% | 30.10% | 30.08% | 30.07% | 30.05% | 30.04% |
| 90 | 30.11% | 30.10% | 30.08% | 30.07% | 30.06% | 30.05% | 30.04% |
| 100 | 30.10% | 30.08% | 30.07% | 30.06% | 30.05% | 30.04% | 30.03% |

Table 4.196

UPGRADER

VARIATION-1

Undiscounted Government Take (Income only)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 22.36% | 23.28% |
| 30 | | 21.08% | 22.07% | 22.79% | 23.33% | 23.76% | 24.11% |
| 40 | 22.50% | 22.97% | 23.36% | 23.68% | 23.95% | 24.19% | 24.40% |
| 50 | 23.37% | 23.63% | 23.86% | 24.06% | 24.24% | 24.40% | 24.54% |
| 60 | 23.79% | 23.97% | 24.13% | 24.27% | 24.40% | 24.52% | 24.63% |
| 70 | 24.04% | 24.17% | 24.29% | 24.40% | 24.51% | 24.60% | 24.69% |
| 80 | 24.20% | 24.31% | 24.40% | 24.50% | 24.58% | 24.66% | 24.74% |
| 90 | 24.32% | 24.41% | 24.49% | 24.56% | 24.64% | 24.70% | 24.77% |
| 100 | 24.41% | 24.48% | 24.55% | 24.61% | 24.68% | 24.74% | 24.79% |

Table 4.226

UPGRADER

VARIATION-2

Undiscounted Government Take (Income only)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 20.44% | 22.15% |
| 30 | | 18.26% | 20.07% | 21.39% | 22.38% | 23.16% | 23.79% |
| 40 | 20.94% | 21.79% | 22.49% | 23.08% | 23.57% | 24.00% | 24.37% |
| 50 | 22.55% | 23.02% | 23.43% | 23.79% | 24.12% | 24.41% | 24.66% |
| 60 | 23.33% | 23.65% | 23.93% | 24.19% | 24.43% | 24.64% | 24.84% |
| 70 | 23.80% | 24.03% | 24.24% | 24.44% | 24.63% | 24.80% | 24.96% |
| 80 | 24.10% | 24.28% | 24.46% | 24.62% | 24.77% | 24.92% | 25.05% |
| 90 | 24.31% | 24.47% | 24.61% | 24.75% | 24.88% | 25.00% | 25.12% |
| 100 | 24.47% | 24.60% | 24.73% | 24.85% | 24.96% | 25.06% | 25.17% |

Following are the Mine+Upgrader results:

Table 4.86

MINE+UPGRADER CURRENT TERMS
Undiscounted Government Take (Income only)

| WTI US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|--------------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 36.97% | 38.49% |
| 30 | | | 36.60% | 38.01% | 38.68% | 39.05% | 39.30% |
| 40 | 37.63% | 38.35% | 38.77% | 39.06% | 39.25% | 39.40% | 39.52% |
| 50 | 38.83% | 39.05% | 39.22% | 39.35% | 39.46% | 39.55% | 39.62% |
| 60 | 39.19% | 39.31% | 39.40% | 39.48% | 39.57% | 39.62% | 39.69% |
| 70 | 39.38% | 39.45% | 39.51% | 39.58% | 39.63% | 39.68% | 39.72% |
| 80 | 39.48% | 39.53% | 39.59% | 39.63% | 39.68% | 39.72% | 39.75% |
| 90 | 39.54% | 39.59% | 39.64% | 39.67% | 39.71% | 39.74% | 39.76% |
| 100 | 39.60% | 39.64% | 39.67% | 39.70% | 39.73% | 39.76% | 39.78% |

Table 4.206

MINE+UPGR VARIATION-1
Undiscounted Government Take (Income only)

| WTI US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|--------------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 39.71% | 39.66% |
| 30 | | | 39.48% | 39.44% | 39.49% | 39.57% | 39.65% |
| 40 | 39.32% | 39.35% | 39.41% | 39.48% | 39.55% | 39.61% | 39.67% |
| 50 | 41.59% | 41.46% | 41.35% | 41.27% | 41.20% | 41.15% | 41.11% |
| 60 | 44.53% | 44.26% | 44.02% | 43.81% | 43.63% | 43.47% | 43.32% |
| 70 | 47.01% | 46.67% | 46.37% | 46.10% | 45.85% | 45.63% | 45.42% |
| 80 | 49.27% | 48.90% | 48.56% | 48.26% | 47.97% | 47.70% | 47.46% |
| 90 | 51.41% | 51.03% | 50.67% | 50.33% | 50.02% | 49.73% | 49.45% |
| 100 | 53.49% | 53.09% | 52.71% | 52.36% | 52.03% | 51.72% | 51.42% |

Table 4.236

MINE+UPGRADER VARIATION-2
Undiscounted Government Take (Income only)

| WTI US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|--------------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 44.45% | 42.25% |
| 30 | | | 44.95% | 43.19% | 41.99% | 41.14% | 40.49% |
| 40 | 43.76% | 42.69% | 41.88% | 41.23% | 40.72% | 40.29% | 39.93% |
| 50 | 41.81% | 41.30% | 40.87% | 40.50% | 40.18% | 39.90% | 39.66% |
| 60 | 40.97% | 40.65% | 40.36% | 40.11% | 39.89% | 39.68% | 39.50% |
| 70 | 40.50% | 40.27% | 40.06% | 39.87% | 39.70% | 39.54% | 39.40% |
| 80 | 40.20% | 40.03% | 39.86% | 39.71% | 39.57% | 39.44% | 39.32% |
| 90 | 40.00% | 39.86% | 39.72% | 39.60% | 39.48% | 39.37% | 39.26% |
| 100 | 39.85% | 39.73% | 39.61% | 39.51% | 39.41% | 39.31% | 39.22% |

For Cost Level 4 at US \$ 50 WTI per barrel the following overview of the undiscounted government take is provided:

Undiscounted Government Take

| | Mine | Upgrader | Mine+Upgrader |
|---------------|-------|----------|---------------|
| Current terms | 47.5% | 30.2% | 39.4% |
| Variation-1 | 56.5% | 24.1% | 41.2% |
| Variation-2 | 55.3% | 23.8% | 40.5% |

As can be seen the overall government take for the integrated project is similar for the Current Terms and the two variations at US \$ 50 per barrel WTI. The two variations are both oriented at stimulating upgrading and obtaining a higher government take from the upstream.

Both variations would discourage excessive high cost operations through a cost regressive system. However, Variation-1 is price progressive and Variation-2 is price regressive.

5% Discounted Government Take (real)

Following is the overview of the 5% Discounted Government Take.

First the mining operations will be reviewed.

Table 4.07

| MINE | | CURRENT TERMS | | | | | |
|--|---------------|----------------------|---------------|---------------|---------------|---------------|---------------|
| 5% Discounted Government Take (Income only) | | | | | | | |
| WTI | | | | | | | |
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | 68.92% | 52.79% |
| 30 | | | 79.80% | 57.20% | 52.10% | 50.05% | 48.98% |
| 40 | 61.43% | 54.74% | 51.87% | 50.34% | 49.38% | 48.78% | 48.35% |
| 50 | 51.73% | 50.48% | 49.69% | 49.09% | 48.68% | 48.34% | 48.08% |
| 60 | 49.86% | 49.32% | 48.89% | 48.55% | 48.33% | 48.11% | 47.96% |
| 70 | 49.14% | 48.80% | 48.51% | 48.33% | 48.13% | 48.00% | 47.85% |
| 80 | 48.73% | 48.48% | 48.32% | 48.14% | 48.02% | 47.91% | 47.80% |
| 90 | 48.46% | 48.32% | 48.19% | 48.05% | 47.95% | 47.84% | 47.74% |
| 100 | 48.32% | 48.21% | 48.07% | 47.98% | 47.87% | 47.80% | 47.71% |

Table 4.187

Mine **VARIATION-1**
 5% Discounted Government Take (Income only)
 WTI
 US \$

| | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-----|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | | 69.82% |
| 30 | | | | 81.57% | 66.35% | 60.02% | 56.68% |
| 40 | 93.05% | 73.38% | 64.89% | 60.30% | 57.47% | 55.59% | 54.28% |
| 50 | 70.70% | 65.87% | 62.60% | 60.26% | 58.51% | 57.17% | 56.10% |
| 60 | 71.14% | 68.04% | 65.63% | 63.71% | 62.15% | 60.85% | 59.77% |
| 70 | 73.32% | 70.87% | 68.84% | 67.13% | 65.67% | 64.41% | 63.32% |
| 80 | 76.06% | 73.94% | 72.11% | 70.53% | 69.13% | 67.89% | 66.80% |
| 90 | 79.03% | 77.11% | 75.41% | 73.91% | 72.55% | 71.33% | 70.23% |
| 100 | 82.12% | 80.33% | 78.72% | 77.28% | 75.95% | 74.75% | 73.64% |

Table 4.217

Mine **VARIATION-2**
 5% Discounted Government Take (Income only)
 WTI
 US \$

| | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-----|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | | 79.91% |
| 30 | | | | 99.45% | 75.85% | 65.35% | 59.42% |
| 40 | | 87.77% | 74.12% | 66.35% | 61.34% | 57.84% | 55.28% |
| 50 | 73.16% | 66.98% | 62.66% | 59.46% | 57.01% | 55.07% | 53.51% |
| 60 | 63.62% | 60.69% | 58.37% | 56.49% | 54.94% | 53.64% | 52.53% |
| 70 | 59.47% | 57.66% | 56.14% | 54.84% | 53.73% | 52.76% | 51.90% |
| 80 | 57.16% | 55.88% | 54.77% | 53.80% | 52.93% | 52.16% | 51.47% |
| 90 | 55.69% | 54.71% | 53.85% | 53.07% | 52.37% | 51.73% | 51.15% |
| 100 | 54.67% | 53.89% | 53.19% | 52.54% | 51.95% | 51.41% | 50.91% |

With respect to Upgrading we get the following results:

Table 4.47

UPGRADER
 5% Discounted Government Take (Income only)
 WTI
 US \$

| | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-----|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 37.26% | 33.05% |
| 30 | | 75.93% | 39.77% | 34.86% | 32.91% | 31.86% | 31.21% |
| 40 | 36.36% | 34.10% | 32.84% | 32.03% | 31.48% | 31.07% | 30.75% |
| 50 | 32.80% | 32.15% | 31.66% | 31.29% | 30.99% | 30.75% | 30.55% |
| 60 | 31.80% | 31.45% | 31.17% | 30.94% | 30.74% | 30.58% | 30.43% |
| 70 | 31.32% | 31.10% | 30.91% | 30.74% | 30.60% | 30.47% | 30.35% |
| 80 | 31.05% | 30.88% | 30.74% | 30.61% | 30.50% | 30.39% | 30.30% |
| 90 | 30.86% | 30.74% | 30.62% | 30.52% | 30.43% | 30.34% | 30.26% |
| 100 | 30.74% | 30.63% | 30.54% | 30.45% | 30.37% | 30.30% | 30.23% |

Table 4.197
UPGRADER VARIATION-1
5% Discounted Government Take (Income only)

| WTI | | | | | | | | |
|-------|--------|---------|--------|--------|--------|--------|--------|--|
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 | |
| 20 | | | | | | 15.50% | 21.01% | |
| 30 | | -35.10% | 12.22% | 18.65% | 21.20% | 22.57% | 23.42% | |
| 40 | 16.68% | 19.63% | 21.29% | 22.34% | 23.07% | 23.60% | 24.01% | |
| 50 | 21.34% | 22.19% | 22.83% | 23.32% | 23.71% | 24.02% | 24.28% | |
| 60 | 22.65% | 23.10% | 23.46% | 23.77% | 24.03% | 24.25% | 24.44% | |
| 70 | 23.27% | 23.56% | 23.81% | 24.03% | 24.22% | 24.39% | 24.54% | |
| 80 | 23.63% | 23.84% | 24.03% | 24.20% | 24.35% | 24.48% | 24.61% | |
| 90 | 23.87% | 24.03% | 24.18% | 24.32% | 24.44% | 24.55% | 24.66% | |
| 100 | 24.04% | 24.17% | 24.29% | 24.41% | 24.51% | 24.61% | 24.70% | |

Table 4.227
UPGRADER VARIATION-2
5% Discounted Government Take (Income only)

| WTI | | | | | | | | |
|-------|--------|---------|--------|--------|--------|--------|--------|--|
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 | |
| 20 | | | | | | 11.58% | 19.57% | |
| 30 | | -59.45% | 7.37% | 16.46% | 20.06% | 21.99% | 23.20% | |
| 40 | 13.86% | 17.99% | 20.29% | 21.75% | 22.77% | 23.52% | 24.09% | |
| 50 | 20.42% | 21.60% | 22.48% | 23.16% | 23.70% | 24.13% | 24.50% | |
| 60 | 22.27% | 22.89% | 23.39% | 23.81% | 24.16% | 24.47% | 24.73% | |
| 70 | 23.14% | 23.54% | 23.89% | 24.18% | 24.44% | 24.67% | 24.88% | |
| 80 | 23.65% | 23.94% | 24.20% | 24.43% | 24.63% | 24.82% | 24.98% | |
| 90 | 23.98% | 24.21% | 24.41% | 24.60% | 24.77% | 24.92% | 25.06% | |
| 100 | 24.22% | 24.40% | 24.57% | 24.72% | 24.87% | 25.00% | 25.12% | |

For the Mine+Upgrader the following results are being obtained:

Table 4.87
MINE+UPGRADER CURRENT TERMS
5% Discounted Government Take (Income only)

| WTI | | | | | | | | |
|-------|--------|--------|--------|--------|--------|--------|--------|--|
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 | |
| 20 | | | | | | 50.32% | 43.01% | |
| 30 | | | 55.40% | 45.78% | 42.88% | 41.58% | 40.86% | |
| 40 | 48.25% | 44.60% | 42.84% | 41.85% | 41.20% | 40.78% | 40.47% | |
| 50 | 42.83% | 42.00% | 41.45% | 41.03% | 40.73% | 40.48% | 40.29% | |
| 60 | 41.61% | 41.22% | 40.92% | 40.67% | 40.50% | 40.33% | 40.21% | |
| 70 | 41.11% | 40.86% | 40.65% | 40.51% | 40.35% | 40.25% | 40.14% | |
| 80 | 40.82% | 40.64% | 40.51% | 40.38% | 40.28% | 40.19% | 40.10% | |
| 90 | 40.63% | 40.52% | 40.42% | 40.31% | 40.23% | 40.14% | 40.06% | |
| 100 | 40.52% | 40.43% | 40.33% | 40.25% | 40.17% | 40.11% | 40.04% | |

Table 4.207
MINE+UPGR **VARIATION-1**
5% Discounted Government Take (Income only)

| WTI | | | | | | | | |
|-------|--------|--------|--------|--------|--------|--------|--------|--|
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 | |
| 20 | | | | | | 59.27% | 45.65% | |
| 30 | | | 66.18% | 49.40% | 44.65% | 42.58% | 41.49% | |
| 40 | 52.90% | 46.97% | 44.22% | 42.69% | 41.75% | 41.14% | 40.72% | |
| 50 | 47.47% | 45.66% | 44.43% | 43.54% | 42.87% | 42.37% | 41.96% | |
| 60 | 48.99% | 47.68% | 46.65% | 45.83% | 45.17% | 44.61% | 44.15% | |
| 70 | 50.76% | 49.65% | 48.74% | 47.96% | 47.30% | 46.72% | 46.22% | |
| 80 | 52.61% | 51.61% | 50.75% | 50.01% | 49.34% | 48.76% | 48.24% | |
| 90 | 54.48% | 53.55% | 52.73% | 52.00% | 51.34% | 50.75% | 50.22% | |
| 100 | 56.36% | 55.48% | 54.69% | 53.97% | 53.32% | 52.72% | 52.17% | |

Table 4.237
MINE+UPGRADER **VARIATION-2**
5% Discounted Government Take (Income only)

| WTI | | | | | | | | |
|-------|--------|--------|--------|--------|--------|--------|--------|--|
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 | |
| 20 | | | | | | 70.45% | 50.03% | |
| 30 | | | 82.55% | 57.01% | 49.04% | 45.16% | 42.88% | |
| 40 | 63.19% | 53.48% | 48.60% | 45.67% | 43.72% | 42.33% | 41.30% | |
| 50 | 48.35% | 45.99% | 44.30% | 43.03% | 42.04% | 41.26% | 40.62% | |
| 60 | 44.73% | 43.56% | 42.62% | 41.86% | 41.23% | 40.69% | 40.24% | |
| 70 | 43.09% | 42.36% | 41.74% | 41.20% | 40.75% | 40.35% | 39.99% | |
| 80 | 42.17% | 41.65% | 41.19% | 40.79% | 40.43% | 40.11% | 39.82% | |
| 90 | 41.58% | 41.18% | 40.82% | 40.50% | 40.20% | 39.94% | 39.69% | |
| 100 | 41.17% | 40.84% | 40.55% | 40.28% | 40.03% | 39.81% | 39.60% | |

Following is an overview of the 5% Discounted Government Take for Cost Level 4 and a price US \$ 50 per barrel WTI.

5% Discounted Government Take

| | Mine | Upgrader | Mine+Upgrader |
|---------------|-------|----------|---------------|
| Current terms | 49.1% | 31.3% | 41.0% |
| Variation-1 | 60.3% | 23.3% | 43.5% |
| Variation -2 | 59.5% | 23.2% | 43.0% |

At the US \$ 50 price level and Cost Level 4 the two variations are again not very different. Also, both variations are cost regressive. However, Variation-1 is strongly price progressive and Variation-2 is strongly price regressive.

IRR

Following is a review of the IRR. The first four tables are for the mining operations.

Table 4.08

MINE CURRENT TERMS
IRR (real, 2007 Cdn \$)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 5.97% | 9.80% |
| 30 | | | 5.43% | 7.66% | 10.36% | 13.72% | 18.12% |
| 40 | 6.75% | 8.55% | 10.64% | 13.08% | 16.05% | 19.77% | 24.70% |
| 50 | 10.80% | 12.73% | 14.96% | 17.61% | 20.83% | 24.90% | 30.31% |
| 60 | 14.29% | 16.34% | 18.74% | 21.60% | 25.04% | 29.45% | 35.19% |
| 70 | 17.40% | 19.58% | 22.14% | 25.14% | 28.86% | 33.47% | 39.60% |
| 80 | 20.25% | 22.56% | 25.22% | 28.44% | 32.28% | 37.18% | 43.54% |
| 90 | 22.89% | 25.27% | 28.08% | 31.42% | 35.46% | 40.55% | 47.22% |
| 100 | 25.32% | 27.83% | 30.76% | 34.21% | 38.45% | 43.67% | 50.52% |

Table 4.188

Mine VARIATION-1
IRR (real, 2007 Cdn \$)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | | 8.05% |
| 30 | | | | 6.15% | 8.76% | 11.93% | 16.01% |
| 40 | 5.32% | 7.11% | 9.12% | 11.45% | 14.25% | 17.73% | 22.28% |
| 50 | 8.59% | 10.42% | 12.51% | 14.98% | 17.97% | 21.70% | 26.62% |
| 60 | 10.59% | 12.47% | 14.65% | 17.22% | 20.33% | 24.26% | 29.36% |
| 70 | 12.00% | 13.93% | 16.16% | 18.81% | 22.02% | 26.07% | 31.33% |
| 80 | 12.92% | 14.88% | 17.16% | 19.85% | 23.14% | 27.25% | 32.63% |
| 90 | 13.39% | 15.37% | 17.68% | 20.39% | 23.72% | 27.86% | 33.30% |
| 100 | 13.44% | 15.42% | 17.73% | 20.44% | 23.78% | 27.92% | 33.38% |

Table 4.218

Mine **VARIATION-2**
 IRR (real, 2007 Cdn \$)
 WTI
 US \$

| | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-----|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | | 7.16% |
| 30 | | | | 5.04% | 7.83% | 11.22% | 15.63% |
| 40 | | 6.02% | 8.16% | 10.64% | 13.62% | 17.35% | 22.25% |
| 50 | 8.36% | 10.31% | 12.56% | 15.22% | 18.44% | 22.49% | 27.79% |
| 60 | 11.91% | 13.97% | 16.37% | 19.20% | 22.65% | 26.96% | 32.63% |
| 70 | 15.05% | 17.23% | 19.76% | 22.77% | 26.40% | 30.95% | 36.96% |
| 80 | 17.90% | 20.19% | 22.85% | 25.99% | 29.80% | 34.59% | 40.89% |
| 90 | 20.53% | 22.92% | 25.68% | 28.95% | 32.93% | 37.94% | 44.51% |
| 100 | 22.97% | 25.44% | 28.31% | 31.71% | 35.85% | 41.04% | 47.84% |

The IRR for the Upgrader are as follows:

Table 4.48

UPGRADER
 IRR (real, 2007 Cdn \$)
 WTI
 US \$

| | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-----|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 7.06% | 9.81% |
| 30 | | 5.13% | 6.49% | 8.09% | 10.02% | 12.47% | 15.75% |
| 40 | 7.36% | 8.64% | 10.13% | 11.91% | 14.10% | 16.90% | 20.68% |
| 50 | 10.20% | 11.60% | 13.23% | 15.20% | 17.64% | 20.76% | 24.99% |
| 60 | 12.70% | 14.22% | 16.01% | 18.16% | 20.82% | 24.25% | 28.87% |
| 70 | 14.98% | 16.62% | 18.54% | 20.87% | 23.74% | 27.44% | 32.42% |
| 80 | 17.09% | 18.84% | 20.90% | 23.38% | 26.46% | 30.40% | 35.70% |
| 90 | 19.07% | 20.92% | 23.11% | 25.74% | 28.99% | 33.16% | 38.76% |
| 100 | 20.94% | 22.89% | 25.19% | 27.96% | 31.38% | 35.76% | 41.63% |

Table 4.198

UPGRADER **VARIATION-1**
 IRR (real, 2007 Cdn \$)
 WTI
 US \$

| | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-----|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 7.74% | 10.62% |
| 30 | | 5.74% | 7.16% | 8.82% | 10.85% | 13.42% | 16.87% |
| 40 | 8.06% | 9.40% | 10.96% | 12.83% | 15.13% | 18.08% | 22.07% |
| 50 | 11.03% | 12.50% | 14.22% | 16.29% | 18.86% | 22.16% | 26.63% |
| 60 | 13.66% | 15.26% | 17.14% | 19.41% | 22.23% | 25.84% | 30.73% |
| 70 | 16.06% | 17.78% | 19.82% | 22.27% | 25.31% | 29.22% | 34.48% |
| 80 | 18.29% | 20.13% | 22.30% | 24.93% | 28.18% | 32.34% | 37.94% |
| 90 | 20.38% | 22.33% | 24.64% | 27.42% | 30.86% | 35.26% | 41.16% |
| 100 | 22.35% | 24.41% | 26.84% | 29.77% | 33.38% | 38.00% | 44.19% |

Table 4.228
UPGRADER VARIATION-2
IRR (real, 2007 Cdn \$)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 7.83% | 10.64% |
| 30 | | 5.86% | 7.24% | 8.87% | 10.85% | 13.37% | 16.74% |
| 40 | 8.12% | 9.43% | 10.96% | 12.78% | 15.03% | 17.92% | 21.81% |
| 50 | 11.02% | 12.45% | 14.14% | 16.17% | 18.68% | 21.90% | 26.26% |
| 60 | 13.59% | 15.15% | 16.99% | 19.21% | 21.96% | 25.49% | 30.25% |
| 70 | 15.94% | 17.62% | 19.60% | 22.00% | 24.97% | 28.77% | 33.90% |
| 80 | 18.11% | 19.91% | 22.03% | 24.59% | 27.76% | 31.82% | 37.27% |
| 90 | 20.15% | 22.05% | 24.30% | 27.02% | 30.37% | 34.66% | 40.41% |
| 100 | 22.07% | 24.08% | 26.45% | 29.30% | 32.83% | 37.33% | 43.36% |

For the total Mine+Upgrader project the IRR's are the following

Table 4.88
MINE+UPGRADER CURRENT TERMS
IRR (real, 2007 Cdn \$)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 6.60% | 9.80% |
| 30 | | | 6.04% | 7.91% | 10.17% | 12.99% | 16.74% |
| 40 | 7.10% | 8.60% | 10.34% | 12.40% | 14.91% | 18.10% | 22.37% |
| 50 | 10.45% | 12.07% | 13.96% | 16.21% | 18.98% | 22.51% | 27.26% |
| 60 | 13.37% | 15.11% | 17.15% | 19.61% | 22.61% | 26.46% | 31.59% |
| 70 | 16.00% | 17.86% | 20.06% | 22.67% | 25.92% | 30.02% | 35.52% |
| 80 | 18.42% | 20.41% | 22.72% | 25.53% | 28.95% | 33.32% | 39.11% |
| 90 | 20.68% | 22.76% | 25.22% | 28.16% | 31.77% | 36.36% | 42.46% |
| 100 | 22.79% | 24.99% | 27.57% | 30.64% | 34.43% | 39.21% | 45.54% |

Table 4.208

MINE+UPGR

VARIATION-1

IRR (real, 2007 Cdn \$)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 6.30% | 9.53% |
| 30 | | | 5.79% | 7.70% | 9.97% | 12.79% | 16.50% |
| 40 | 6.91% | 8.44% | 10.19% | 12.25% | 14.76% | 17.93% | 22.16% |
| 50 | 10.01% | 11.63% | 13.51% | 15.74% | 18.49% | 21.97% | 26.62% |
| 60 | 12.39% | 14.10% | 16.10% | 18.50% | 21.43% | 25.17% | 30.14% |
| 70 | 14.40% | 16.20% | 18.31% | 20.84% | 23.94% | 27.89% | 33.14% |
| 80 | 16.11% | 18.00% | 20.21% | 22.84% | 26.10% | 30.22% | 35.70% |
| 90 | 17.58% | 19.53% | 21.83% | 24.57% | 27.94% | 32.21% | 37.88% |
| 100 | 18.83% | 20.85% | 23.22% | 26.04% | 29.52% | 33.91% | 39.74% |

Table 4.238

MINE+UPGRADER

VARIATION-2

IRR (real, 2007 Cdn \$)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 5.98% | 9.25% |
| 30 | | | 5.42% | 7.35% | 9.64% | 12.50% | 16.29% |
| 40 | 6.53% | 8.06% | 9.83% | 11.91% | 14.46% | 17.68% | 21.99% |
| 50 | 9.94% | 11.59% | 13.50% | 15.78% | 18.58% | 22.15% | 26.90% |
| 60 | 12.90% | 14.67% | 16.74% | 19.21% | 22.25% | 26.10% | 31.25% |
| 70 | 15.57% | 17.46% | 19.67% | 22.32% | 25.56% | 29.69% | 35.20% |
| 80 | 18.03% | 20.02% | 22.37% | 25.17% | 28.61% | 32.99% | 38.82% |
| 90 | 20.30% | 22.41% | 24.88% | 27.83% | 31.45% | 36.05% | 42.17% |
| 100 | 22.45% | 24.65% | 27.23% | 30.32% | 34.11% | 38.92% | 45.30% |

Following is the overview of the IRR's for the various cases for Cost Level 4 and US \$ 50 per barrel WTI:

IRR comparison

| | Mine | Upgrader | Mine+Upgrader |
|---------------|-------|----------|---------------|
| Current terms | 17.6% | 15.2% | 16.2% |
| Variation-1 | 15.0% | 16.3% | 15.7% |
| Variation-2 | 15.2% | 16.2% | 15.8% |

As can be seen the two Variations are very similar in IRR at US \$ 50 per barrel WTI. However, Variation-2 will be perceived as far more risk to the investor, because of the price downside. However, Variation-2 offers also as reward a much higher price upside.

PFR10

Following is a review of the PFR10, with the mining operation first.

Table 4.09

| MINE | | CURRENT TERMS | | | | | | |
|----------------------------------|---------------|----------------------|---------------|---------------|---------------|---------------|---------------|--|
| PFR10 (real, 2007 Cdn \$) | | | | | | | | |
| WTI | | | | | | | | |
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 | |
| 20 | | | | | | 0.78 | 0.99 | |
| 30 | | | 0.75 | 0.87 | 1.02 | 1.23 | 1.54 | |
| 40 | 0.82 | 0.92 | 1.04 | 1.19 | 1.39 | 1.66 | 2.07 | |
| 50 | 1.05 | 1.17 | 1.31 | 1.50 | 1.75 | 2.09 | 2.61 | |
| 60 | 1.27 | 1.41 | 1.58 | 1.81 | 2.10 | 2.52 | 3.14 | |
| 70 | 1.48 | 1.65 | 1.85 | 2.11 | 2.46 | 2.94 | 3.67 | |
| 80 | 1.70 | 1.89 | 2.12 | 2.42 | 2.82 | 3.37 | 4.20 | |
| 90 | 1.91 | 2.12 | 2.39 | 2.72 | 3.17 | 3.80 | 4.74 | |
| 100 | 2.13 | 2.36 | 2.65 | 3.03 | 3.53 | 4.22 | 5.27 | |

Table 4.189

| Mine | | VARIATION-1 | | | | | | |
|----------------------------------|---------------|--------------------|---------------|---------------|---------------|---------------|---------------|--|
| PFR10 (real, 2007 Cdn \$) | | | | | | | | |
| WTI | | | | | | | | |
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 | |
| 20 | | | | | | | 0.88 | |
| 30 | | | | 0.78 | 0.93 | 1.12 | 1.41 | |
| 40 | 0.74 | 0.83 | 0.95 | 1.09 | 1.28 | 1.53 | 1.91 | |
| 50 | 0.92 | 1.03 | 1.16 | 1.33 | 1.55 | 1.85 | 2.31 | |
| 60 | 1.04 | 1.15 | 1.30 | 1.49 | 1.73 | 2.08 | 2.59 | |
| 70 | 1.12 | 1.25 | 1.41 | 1.61 | 1.88 | 2.25 | 2.80 | |
| 80 | 1.18 | 1.32 | 1.48 | 1.69 | 1.97 | 2.36 | 2.94 | |
| 90 | 1.21 | 1.35 | 1.52 | 1.74 | 2.02 | 2.42 | 3.02 | |
| 100 | 1.22 | 1.35 | 1.52 | 1.74 | 2.03 | 2.43 | 3.03 | |

Table 4.219

Mine VARIATION-2

PFR10 (real, 2007 Cdn \$)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | | 0.84 |
| 30 | | | | 0.74 | 0.88 | 1.07 | 1.36 |
| 40 | | 0.79 | 0.90 | 1.04 | 1.23 | 1.49 | 1.88 |
| 50 | 0.91 | 1.02 | 1.16 | 1.33 | 1.57 | 1.90 | 2.39 |
| 60 | 1.12 | 1.25 | 1.42 | 1.63 | 1.92 | 2.31 | 2.91 |
| 70 | 1.32 | 1.48 | 1.67 | 1.93 | 2.26 | 2.72 | 3.42 |
| 80 | 1.53 | 1.71 | 1.93 | 2.22 | 2.60 | 3.14 | 3.94 |
| 90 | 1.74 | 1.94 | 2.19 | 2.51 | 2.94 | 3.55 | 4.45 |
| 100 | 1.94 | 2.17 | 2.45 | 2.81 | 3.29 | 3.96 | 4.97 |

For the Upgrader the results are as follows:

Table 4.49

UPGRADER

PFR10 (real, 2007 Cdn \$)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 0.80 | 0.99 |
| 30 | | 0.69 | 0.77 | 0.87 | 1.00 | 1.19 | 1.46 |
| 40 | 0.82 | 0.91 | 1.01 | 1.14 | 1.32 | 1.57 | 1.94 |
| 50 | 1.01 | 1.12 | 1.25 | 1.42 | 1.64 | 1.95 | 2.42 |
| 60 | 1.21 | 1.33 | 1.49 | 1.69 | 1.96 | 2.34 | 2.90 |
| 70 | 1.40 | 1.54 | 1.73 | 1.96 | 2.28 | 2.72 | 3.38 |
| 80 | 1.59 | 1.76 | 1.97 | 2.24 | 2.60 | 3.10 | 3.86 |
| 90 | 1.78 | 1.97 | 2.21 | 2.51 | 2.92 | 3.48 | 4.34 |
| 100 | 1.97 | 2.18 | 2.45 | 2.78 | 3.24 | 3.87 | 4.82 |

Table 4.199
UPGRADER **VARIATION-1**
PFR10 (real, 2007 Cdn \$)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 0.85 | 1.04 |
| 30 | | 0.73 | 0.81 | 0.92 | 1.06 | 1.26 | 1.56 |
| 40 | 0.87 | 0.96 | 1.07 | 1.21 | 1.40 | 1.67 | 2.07 |
| 50 | 1.07 | 1.19 | 1.33 | 1.51 | 1.74 | 2.08 | 2.58 |
| 60 | 1.28 | 1.41 | 1.58 | 1.80 | 2.09 | 2.49 | 3.10 |
| 70 | 1.48 | 1.64 | 1.84 | 2.09 | 2.43 | 2.90 | 3.61 |
| 80 | 1.69 | 1.87 | 2.10 | 2.38 | 2.77 | 3.31 | 4.12 |
| 90 | 1.89 | 2.10 | 2.35 | 2.68 | 3.11 | 3.72 | 4.63 |
| 100 | 2.10 | 2.33 | 2.61 | 2.97 | 3.45 | 4.13 | 5.15 |

Table 4.229
UPGRADER **VARIATION-2**
PFR10 (real, 2007 Cdn \$)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 0.85 | 1.05 |
| 30 | | 0.73 | 0.82 | 0.92 | 1.06 | 1.26 | 1.56 |
| 40 | 0.87 | 0.96 | 1.07 | 1.21 | 1.40 | 1.67 | 2.06 |
| 50 | 1.07 | 1.19 | 1.32 | 1.50 | 1.74 | 2.07 | 2.57 |
| 60 | 1.28 | 1.41 | 1.58 | 1.79 | 2.08 | 2.48 | 3.08 |
| 70 | 1.48 | 1.64 | 1.83 | 2.08 | 2.42 | 2.89 | 3.59 |
| 80 | 1.69 | 1.86 | 2.09 | 2.38 | 2.76 | 3.30 | 4.10 |
| 90 | 1.89 | 2.09 | 2.34 | 2.67 | 3.10 | 3.70 | 4.61 |
| 100 | 2.09 | 2.32 | 2.60 | 2.96 | 3.44 | 4.11 | 5.12 |

For the Mine+Upgrader the results are the following:

Table 4.89
MINE+UPGRADER CURRENT TERMS
PFR10 (real, 2007 Cdn \$)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 0.79 | 0.99 |
| 30 | | | 0.76 | 0.87 | 1.01 | 1.21 | 1.50 |
| 40 | 0.82 | 0.91 | 1.02 | 1.16 | 1.35 | 1.61 | 2.00 |
| 50 | 1.03 | 1.14 | 1.28 | 1.46 | 1.69 | 2.02 | 2.51 |
| 60 | 1.23 | 1.37 | 1.53 | 1.75 | 2.03 | 2.42 | 3.01 |
| 70 | 1.44 | 1.59 | 1.79 | 2.03 | 2.36 | 2.82 | 3.52 |
| 80 | 1.64 | 1.82 | 2.04 | 2.32 | 2.70 | 3.23 | 4.02 |
| 90 | 1.84 | 2.04 | 2.29 | 2.61 | 3.04 | 3.63 | 4.52 |
| 100 | 2.04 | 2.27 | 2.54 | 2.90 | 3.37 | 4.03 | 5.03 |

Table 4.209
MINE+UPGR VARIATION-1
PFR10 (real, 2007 Cdn \$)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 0.77 | 0.97 |
| 30 | | | 0.74 | 0.85 | 1.00 | 1.19 | 1.49 |
| 40 | 0.81 | 0.90 | 1.01 | 1.15 | 1.34 | 1.60 | 2.00 |
| 50 | 1.00 | 1.11 | 1.25 | 1.42 | 1.65 | 1.97 | 2.46 |
| 60 | 1.17 | 1.29 | 1.45 | 1.65 | 1.92 | 2.30 | 2.86 |
| 70 | 1.32 | 1.46 | 1.64 | 1.87 | 2.17 | 2.59 | 3.23 |
| 80 | 1.45 | 1.61 | 1.81 | 2.06 | 2.40 | 2.87 | 3.57 |
| 90 | 1.58 | 1.75 | 1.96 | 2.24 | 2.60 | 3.11 | 3.88 |
| 100 | 1.69 | 1.87 | 2.10 | 2.39 | 2.79 | 3.33 | 4.15 |

Table 4.239
MINE+UPGRADER VARIATION-2
PFR10 (real, 2007 Cdn \$)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 0.76 | 0.95 |
| 30 | | | 0.73 | 0.84 | 0.98 | 1.17 | 1.47 |
| 40 | 0.79 | 0.88 | 0.99 | 1.13 | 1.32 | 1.58 | 1.98 |
| 50 | 1.00 | 1.11 | 1.25 | 1.42 | 1.66 | 1.99 | 2.49 |
| 60 | 1.20 | 1.34 | 1.50 | 1.72 | 2.00 | 2.40 | 3.00 |
| 70 | 1.41 | 1.56 | 1.76 | 2.01 | 2.34 | 2.81 | 3.51 |
| 80 | 1.61 | 1.79 | 2.02 | 2.30 | 2.69 | 3.22 | 4.03 |
| 90 | 1.82 | 2.02 | 2.27 | 2.59 | 3.03 | 3.63 | 4.54 |
| 100 | 2.02 | 2.25 | 2.53 | 2.89 | 3.37 | 4.04 | 5.05 |

The PFR10 overview for Cost Level 4 and US \$ 50 per barrel WTI is as follows:

PFR10 comparison

| | Mine | Upgrader | Mine+Upgrader |
|---------------|------|----------|---------------|
| Current terms | 1.50 | 1.42 | 1.46 |
| Variation-1 | 1.33 | 1.51 | 1.42 |
| Variation-2 | 1.33 | 1.50 | 1.42 |

The PFR10 is almost identical for the two variations. Yet, under high prices Variation-2 is much more attractive to investors.

A similar result would be obtained for the NPV10/SCO barrel.

Conclusion

It is possible to create a wide range of variations to the three Base Packages and the three Fiscal Options. It is also possible to go in a different direction and concentrate on a fiscal system that is much simpler to administer and protects the province under downside price conditions.

Variation-1 and Variation-2 both would discourage excessively costly upstream projects and would both encourage upgrading. However, with respect to prices, Variation-1 is aimed at providing the province with a fair share for every price level and Variation-2 is aimed at creating a much simpler fiscal system.

In general, efforts to simplify the price determination of the base royalty and NPS by using a higher WTI or SCO based price level, while only deducting upstream costs for NPS purposes, would result in rather regressive systems, which make it difficult to gain a fair share for Alberta under higher prices.

Therefore, the three Fiscal Options or variations to the three Fiscal Options seem the best way to achieve the Alberta objectives.

4.4. Increasing government take over time

4.4.1. Methods to increase government take over time and specific example based on Variation-1.

There are various methodologies to increase government take over time. One of the methodologies is to fix the increases directly in the fiscal package based on a fiscal feature that will increase over time or is likely to increase over time.

Any one of the fiscal features could be formulated in the legislation or regulations in such a way that certain amounts increase over time. This could be the base royalty rate, the NPS rate, the amount of rentals per hectare, etc.

Time in this case is formulated in an absolute sense, not in a relative sense compared to the start of the leases. This means the fiscal terms are directly tied to particular calendar years.

Following is a table of base royalty rates that could be applied instead of the fixed 4% rate provided for in Variation-1:

| | OIL | | | OIL |
|-------------|----------------|--|-------------|----------------|
| | Base | | | Base |
| | Royalty | | | Royalty |
| YEAR | | | YEAR | |
| 2007 | 1.00% | | 2027 | 7.00% |
| 2008 | 1.00% | | 2028 | 8.00% |
| 2009 | 1.00% | | 2029 | 8.00% |
| 2010 | 1.00% | | 2030 | 9.00% |
| 2011 | 1.00% | | 2031 | 9.00% |
| 2012 | 1.00% | | 2032 | 10.00% |
| 2013 | 1.00% | | 2033 | 10.00% |
| 2014 | 1.00% | | 2034 | 11.00% |
| 2015 | 1.00% | | 2035 | 11.00% |
| 2016 | 2.00% | | 2036 | 12.00% |
| 2017 | 2.00% | | 2037 | 12.00% |
| 2018 | 3.00% | | 2038 | 13.00% |
| 2019 | 3.00% | | 2039 | 13.00% |
| 2020 | 4.00% | | 2040 | 14.00% |
| 2021 | 4.00% | | 2041 | 14.00% |
| 2022 | 5.00% | | 2042 | 15.00% |
| 2023 | 5.00% | | 2043 | 15.00% |
| 2024 | 6.00% | | 2044 | 15.00% |
| 2025 | 6.00% | | 2045 | 15.00% |
| 2026 | 7.00% | | 2046 | 15.00% |

As can be seen, the royalty would go up from 1% in 2007 to 15% in 2046. The first 9 years the royalty is at 1%, so new mines from leases that would have been acquired in the last few years would start the production at a relatively low rate.

It is also possible to make use of the concept that there is typically gradual inflation and escalation. Therefore in the SOST, the base price can be formulated in nominal terms. If oil prices would increase in nominal terms, the SOST would automatically go up over time despite the fact that in real terms the price would stay the same.

For instance, rather than basing the SOST on a **real** price of Can \$ 50 per WTI barrel one could base the SOST on a **nominal** price of Can \$ 60 per WTI barrel. Also the escalation rate could be lowered from 0.25% per dollar increase to 0.15% per dollar increase. Over a long period of time, this would gradually benefit Alberta.

Following is an analysis of this example. Both the increasing royalty rate and the nominal SOST rate are applied in this case.

4.4.2. Analysis of example of government take increase over time.

Government Revenues per barrel

Following are the revenues from the Mining operation under the current terms and Variation-1 and the “time increase” version of Variation 1:

Table 4.04

| MINE | | CURRENT TERMS | | | | | | |
|--|--|----------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Government Income + Participation per bitumen barrel (\$ Cdn) | | | | | | | | |
| WTI | | | | | | | | |
| US \$ | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | \$1.21 | \$1.87 |
| 30 | | | | \$1.69 | \$2.37 | \$3.00 | \$3.63 | \$4.24 |
| 40 | | \$2.86 | \$3.51 | \$4.14 | \$4.77 | \$5.38 | \$6.00 | \$6.61 |
| 50 | | \$5.29 | \$5.91 | \$6.53 | \$7.14 | \$7.75 | \$8.36 | \$8.97 |
| 60 | | \$7.66 | \$8.28 | \$8.89 | \$9.50 | \$10.12 | \$10.72 | \$11.34 |
| 70 | | \$10.04 | \$10.65 | \$11.26 | \$11.87 | \$12.48 | \$13.09 | \$13.70 |
| 80 | | \$12.40 | \$13.01 | \$13.62 | \$14.23 | \$14.84 | \$15.45 | \$16.06 |
| 90 | | \$14.76 | \$15.38 | \$15.99 | \$16.60 | \$17.21 | \$17.81 | \$18.42 |
| 100 | | \$17.13 | \$17.75 | \$18.35 | \$18.96 | \$19.57 | \$20.18 | \$20.78 |

Table 4.184

| Mine | | VARIATION-1 | | | | | | |
|--|--|--------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Government Income + Participation per bitumen barrel (\$ Cdn) | | | | | | | | |
| WTI | | | | | | | | |
| US \$ | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | | \$2.25 |
| 30 | | | | | \$2.95 | \$3.55 | \$4.17 | \$4.78 |
| 40 | | \$3.65 | \$4.25 | \$4.86 | \$5.47 | \$6.08 | \$6.70 | \$7.32 |
| 50 | | \$6.65 | \$7.26 | \$7.88 | \$8.49 | \$9.11 | \$9.73 | \$10.35 |
| 60 | | \$10.26 | \$10.88 | \$11.49 | \$12.11 | \$12.73 | \$13.35 | \$13.96 |
| 70 | | \$14.21 | \$14.82 | \$15.44 | \$16.06 | \$16.67 | \$17.29 | \$17.91 |
| 80 | | \$18.48 | \$19.10 | \$19.72 | \$20.33 | \$20.95 | \$21.57 | \$22.19 |
| 90 | | \$23.09 | \$23.71 | \$24.32 | \$24.94 | \$25.56 | \$26.18 | \$26.80 |
| 100 | | \$28.03 | \$28.64 | \$29.26 | \$29.88 | \$30.50 | \$31.11 | \$31.73 |

Table 4.244

| Mine | | TIME-INCREASE-1 | | | | | | |
|---|---------|-----------------|---------|---------|---------|---------|---------|--------|
| Government Income + Participation per bitumen barrel (\$ Cdn) | | | | | | | | |
| WTI | | | | | | | | |
| US \$ | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | | \$2.46 |
| 30 | | | | | \$3.30 | \$3.91 | \$4.52 | \$5.14 |
| 40 | | | \$5.08 | \$5.69 | \$6.30 | \$6.92 | \$7.53 | \$8.15 |
| 50 | \$7.92 | \$8.53 | \$9.14 | \$9.76 | \$10.38 | \$11.00 | \$11.62 | |
| 60 | \$11.72 | \$12.34 | \$12.95 | \$13.57 | \$14.19 | \$14.81 | \$15.43 | |
| 70 | \$15.83 | \$16.45 | \$17.07 | \$17.69 | \$18.30 | \$18.92 | \$19.54 | |
| 80 | \$20.26 | \$20.88 | \$21.49 | \$22.11 | \$22.73 | \$23.35 | \$23.97 | |
| 90 | \$24.99 | \$25.61 | \$26.23 | \$26.85 | \$27.47 | \$28.09 | \$28.71 | |
| 100 | \$29.98 | \$30.60 | \$31.22 | \$31.84 | \$32.46 | \$33.08 | \$33.70 | |

Following are the results for the Mine+Upgrader.

Table 4.84

| MINE+UPGRADER | | CURRENT TERMS | | | | | | |
|---|---------|---------------|---------|---------|---------|---------|---------|--------|
| Government Income + Participation per SCO barrel (\$ Cdn) | | | | | | | | |
| WTI | | | | | | | | |
| US \$ | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | \$2.64 | \$3.68 |
| 30 | | | | \$3.74 | \$4.80 | \$5.82 | \$6.83 | \$7.82 |
| 40 | \$5.92 | \$6.96 | \$7.97 | \$8.98 | \$9.97 | \$10.96 | \$11.95 | |
| 50 | \$10.12 | \$11.12 | \$12.12 | \$13.11 | \$14.11 | \$15.09 | \$16.08 | |
| 60 | \$14.27 | \$15.26 | \$16.25 | \$17.24 | \$18.24 | \$19.22 | \$20.21 | |
| 70 | \$18.41 | \$19.40 | \$20.38 | \$21.38 | \$22.36 | \$23.35 | \$24.34 | |
| 80 | \$22.54 | \$23.52 | \$24.52 | \$25.50 | \$26.49 | \$27.48 | \$28.47 | |
| 90 | \$26.67 | \$27.66 | \$28.65 | \$29.64 | \$30.63 | \$31.61 | \$32.59 | |
| 100 | \$30.80 | \$31.80 | \$32.78 | \$33.77 | \$34.75 | \$35.74 | \$36.72 | |

Table 4.204

MINE+UPGR

VARIATION-1

Government Income + Participation per SCO barrel (\$ Cdn)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$2.83 | \$3.79 |
| 30 | | | \$4.03 | \$4.98 | \$5.95 | \$6.92 | \$7.89 |
| 40 | \$6.18 | \$7.14 | \$8.10 | \$9.07 | \$10.05 | \$11.02 | \$12.00 |
| 50 | \$10.84 | \$11.81 | \$12.78 | \$13.75 | \$14.73 | \$15.71 | \$16.68 |
| 60 | \$16.21 | \$17.18 | \$18.16 | \$19.13 | \$20.11 | \$21.09 | \$22.06 |
| 70 | \$21.98 | \$22.95 | \$23.92 | \$24.90 | \$25.88 | \$26.85 | \$27.83 |
| 80 | \$28.13 | \$29.10 | \$30.08 | \$31.06 | \$32.03 | \$33.01 | \$33.99 |
| 90 | \$34.67 | \$35.65 | \$36.62 | \$37.60 | \$38.58 | \$39.56 | \$40.53 |
| 100 | \$41.61 | \$42.58 | \$43.55 | \$44.53 | \$45.51 | \$46.49 | \$47.47 |

Table 4.254

MINE+UPGR

TIME-INCREASE-1

Government Income + Participation per SCO barrel (\$ Cdn)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|---------|---------|---------|---------|---------|---------|---------|
| 20 | | | | | | \$3.08 | \$4.04 |
| 30 | | | \$4.45 | \$5.40 | \$6.36 | \$7.33 | \$8.31 |
| 40 | \$7.16 | \$8.12 | \$9.08 | \$10.05 | \$11.03 | \$12.00 | \$12.98 |
| 50 | \$12.33 | \$13.30 | \$14.27 | \$15.25 | \$16.22 | \$17.20 | \$18.18 |
| 60 | \$17.93 | \$18.90 | \$19.87 | \$20.85 | \$21.83 | \$22.80 | \$23.78 |
| 70 | \$23.89 | \$24.87 | \$25.84 | \$26.82 | \$27.79 | \$28.77 | \$29.75 |
| 80 | \$30.22 | \$31.19 | \$32.17 | \$33.15 | \$34.13 | \$35.10 | \$36.08 |
| 90 | \$36.91 | \$37.89 | \$38.86 | \$39.84 | \$40.82 | \$41.80 | \$42.78 |
| 100 | \$43.91 | \$44.88 | \$45.86 | \$46.84 | \$47.82 | \$48.80 | \$49.78 |

For Cost Level 4 at US \$ 50 WTI per barrel the following overview of the undiscounted real government revenues per barrel illustrates this matter. *Please note how the Mine revenues in the tables are per bitumen barrel and in this overview per SCO barrel assuming 85% efficiency:*

Government Revenues per SCO barrel

| | Mine | Upgrader | Mine+Upgrader |
|---------------|----------|----------|---------------|
| Current terms | \$ 8.39 | \$ 4.72 | \$ 13.11 |
| Variation-1 | \$ 9.99 | \$ 3.76 | \$ 13.75 |
| Time Increase | \$ 11.49 | \$ 3.76 | \$ 15.25 |

As is clear the time increases of the base royalty and the SOST result in an undiscounted basis in significantly more revenues.

Undiscounted Government Take

Following are the corresponding tables for the Undiscounted Government Take.

First, the tables for the mining operation.

Table 4.06

| MINE | | CURRENT TERMS | | | | | | |
|---|--|----------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Undiscounted Government Take (Income only) | | | | | | | | |
| WTI | | | | | | | | |
| US \$ | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | 45.24% | 47.11% |
| 30 | | | | 44.43% | 46.51% | 47.16% | 47.39% | 47.48% |
| 40 | | 45.93% | 46.82% | 47.20% | 47.39% | 47.45% | 47.51% | 47.52% |
| 50 | | 47.23% | 47.35% | 47.45% | 47.49% | 47.52% | 47.52% | 47.53% |
| 60 | | 47.41% | 47.46% | 47.48% | 47.49% | 47.52% | 47.52% | 47.54% |
| 70 | | 47.49% | 47.50% | 47.50% | 47.52% | 47.52% | 47.53% | 47.53% |
| 80 | | 47.51% | 47.50% | 47.53% | 47.52% | 47.53% | 47.54% | 47.53% |
| 90 | | 47.51% | 47.53% | 47.54% | 47.53% | 47.54% | 47.53% | 47.52% |
| 100 | | 47.53% | 47.54% | 47.53% | 47.54% | 47.53% | 47.53% | 47.52% |

Table 4.186

| Mine | | VARIATION-1 | | | | | | |
|---|--|--------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Undiscounted Government Take (Income only) | | | | | | | | |
| WTI | | | | | | | | |
| US \$ | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | | 56.87% |
| 30 | | | | | 57.92% | 55.79% | 54.46% | 53.54% |
| 40 | | 58.64% | 56.65% | 55.31% | 54.36% | 53.64% | 53.08% | 52.64% |
| 50 | | 59.44% | 58.24% | 57.28% | 56.49% | 55.84% | 55.29% | 54.82% |
| 60 | | 63.50% | 62.36% | 61.38% | 60.53% | 59.79% | 59.14% | 58.56% |
| 70 | | 67.22% | 66.13% | 65.16% | 64.29% | 63.51% | 62.80% | 62.16% |
| 80 | | 70.80% | 69.74% | 68.77% | 67.90% | 67.09% | 66.36% | 65.68% |
| 90 | | 74.30% | 73.26% | 72.30% | 71.42% | 70.61% | 69.85% | 69.14% |
| 100 | | 77.74% | 76.73% | 75.78% | 74.90% | 74.07% | 73.30% | 72.57% |

Table 4.246

| Mine | | TIME-INCREASE-1 | | | | | |
|--|--------|-----------------|--------|--------|--------|--------|--------|
| Undiscounted Government Take (Income only) | | | | | | | |
| WTI | | | | | | | |
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | 62.18% |
| 30 | | | | 64.86% | 61.35% | 59.09% | 57.51% |
| 40 | | 67.74% | 64.79% | 62.63% | 60.99% | 59.69% | 58.64% |
| 50 | 70.76% | 68.40% | 66.50% | 64.93% | 63.62% | 62.50% | 61.54% |
| 60 | 72.52% | 70.72% | 69.17% | 67.83% | 66.66% | 65.62% | 64.69% |
| 70 | 74.92% | 73.39% | 72.03% | 70.81% | 69.72% | 68.72% | 67.82% |
| 80 | 77.60% | 76.23% | 74.98% | 73.84% | 72.79% | 71.83% | 70.94% |
| 90 | 80.42% | 79.14% | 77.97% | 76.88% | 75.87% | 74.93% | 74.06% |
| 100 | 83.17% | 81.98% | 80.86% | 79.82% | 78.84% | 77.92% | 77.06% |

Following are the Mine+Upgrader results:

Table 4.86

| MINE+UPGRADER | | CURRENT TERMS | | | | | |
|--|--------|---------------|--------|--------|--------|--------|--------|
| Undiscounted Government Take (Income only) | | | | | | | |
| WTI | | | | | | | |
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | 36.97% | 38.49% |
| 30 | | | 36.60% | 38.01% | 38.68% | 39.05% | 39.30% |
| 40 | 37.63% | 38.35% | 38.77% | 39.06% | 39.25% | 39.40% | 39.52% |
| 50 | 38.83% | 39.05% | 39.22% | 39.35% | 39.46% | 39.55% | 39.62% |
| 60 | 39.19% | 39.31% | 39.40% | 39.48% | 39.57% | 39.62% | 39.69% |
| 70 | 39.38% | 39.45% | 39.51% | 39.58% | 39.63% | 39.68% | 39.72% |
| 80 | 39.48% | 39.53% | 39.59% | 39.63% | 39.68% | 39.72% | 39.75% |
| 90 | 39.54% | 39.59% | 39.64% | 39.67% | 39.71% | 39.74% | 39.76% |
| 100 | 39.60% | 39.64% | 39.67% | 39.70% | 39.73% | 39.76% | 39.78% |

Table 4.206

| MINE+UPGR | | VARIATION-1 | | | | | |
|--|--------|-------------|--------|--------|--------|--------|--------|
| Undiscounted Government Take (Income only) | | | | | | | |
| WTI | | | | | | | |
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | 39.71% | 39.66% |
| 30 | | | 39.48% | 39.44% | 39.49% | 39.57% | 39.65% |
| 40 | 39.32% | 39.35% | 39.41% | 39.48% | 39.55% | 39.61% | 39.67% |
| 50 | 41.59% | 41.46% | 41.35% | 41.27% | 41.20% | 41.15% | 41.11% |
| 60 | 44.53% | 44.26% | 44.02% | 43.81% | 43.63% | 43.47% | 43.32% |
| 70 | 47.01% | 46.67% | 46.37% | 46.10% | 45.85% | 45.63% | 45.42% |
| 80 | 49.27% | 48.90% | 48.56% | 48.26% | 47.97% | 47.70% | 47.46% |
| 90 | 51.41% | 51.03% | 50.67% | 50.33% | 50.02% | 49.73% | 49.45% |
| 100 | 53.49% | 53.09% | 52.71% | 52.36% | 52.03% | 51.72% | 51.42% |

Table 4.256
MINE+UPGR **TIME-INCREASE-1**
Undiscounted Government Take (Income only)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 43.17% | 42.25% |
| 30 | | | 43.54% | 42.72% | 42.26% | 41.95% | 41.75% |
| 40 | 45.54% | 44.75% | 44.17% | 43.74% | 43.41% | 43.14% | 42.91% |
| 50 | 47.31% | 46.69% | 46.18% | 45.75% | 45.38% | 45.06% | 44.79% |
| 60 | 49.24% | 48.68% | 48.18% | 47.75% | 47.36% | 47.01% | 46.70% |
| 70 | 51.10% | 50.57% | 50.09% | 49.65% | 49.25% | 48.89% | 48.56% |
| 80 | 52.93% | 52.41% | 51.94% | 51.51% | 51.10% | 50.73% | 50.38% |
| 90 | 54.73% | 54.23% | 53.77% | 53.33% | 52.93% | 52.55% | 52.19% |
| 100 | 56.45% | 55.96% | 55.51% | 55.08% | 54.67% | 54.29% | 53.93% |

For Cost Level 4 at US \$ 50 WTI per barrel the following overview of the undiscounted government take illustrates this matter:

Undiscounted Government Take

| | Mine | Upgrader | Mine+Upgrader |
|---------------|-------|----------|---------------|
| Current terms | 47.5% | 30.2% | 39.4% |
| Variation-1 | 56.5% | 24.1% | 41.2% |
| Time Increase | 64.9% | 24.1% | 45.8% |

As can be seen the government take on the Mining and the Integrated operation increase significantly as a result of the back end loaded with the time distribution of the royalties and the SOST, despite the lower starting point.

5% Discounted Government Take (real)

Following is the overview of the 5% Discounted Government Take.

First the mining operations will be reviewed.

Table 4.07

| MINE | | CURRENT TERMS | | | | | |
|---|--------|---------------|--------|--------|--------|--------|--------|
| 5% Discounted Government Take (Income only) | | | | | | | |
| WTI | | | | | | | |
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | 68.92% | 52.79% |
| 30 | | | 79.80% | 57.20% | 52.10% | 50.05% | 48.98% |
| 40 | 61.43% | 54.74% | 51.87% | 50.34% | 49.38% | 48.78% | 48.35% |
| 50 | 51.73% | 50.48% | 49.69% | 49.09% | 48.68% | 48.34% | 48.08% |
| 60 | 49.86% | 49.32% | 48.89% | 48.55% | 48.33% | 48.11% | 47.96% |
| 70 | 49.14% | 48.80% | 48.51% | 48.33% | 48.13% | 48.00% | 47.85% |
| 80 | 48.73% | 48.48% | 48.32% | 48.14% | 48.02% | 47.91% | 47.80% |
| 90 | 48.46% | 48.32% | 48.19% | 48.05% | 47.95% | 47.84% | 47.74% |
| 100 | 48.32% | 48.21% | 48.07% | 47.98% | 47.87% | 47.80% | 47.71% |

Table 4.187

| Mine | | VARIATION-1 | | | | | |
|---|--------|-------------|--------|--------|--------|--------|--------|
| 5% Discounted Government Take (Income only) | | | | | | | |
| WTI | | | | | | | |
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | 69.82% |
| 30 | | | | 81.57% | 66.35% | 60.02% | 56.68% |
| 40 | 93.05% | 73.38% | 64.89% | 60.30% | 57.47% | 55.59% | 54.28% |
| 50 | 70.70% | 65.87% | 62.60% | 60.26% | 58.51% | 57.17% | 56.10% |
| 60 | 71.14% | 68.04% | 65.63% | 63.71% | 62.15% | 60.85% | 59.77% |
| 70 | 73.32% | 70.87% | 68.84% | 67.13% | 65.67% | 64.41% | 63.32% |
| 80 | 76.06% | 73.94% | 72.11% | 70.53% | 69.13% | 67.89% | 66.80% |
| 90 | 79.03% | 77.11% | 75.41% | 73.91% | 72.55% | 71.33% | 70.23% |
| 100 | 82.12% | 80.33% | 78.72% | 77.28% | 75.95% | 74.75% | 73.64% |

Table 4.247

| Mine | | TIME-INCREASE-1 | | | | | |
|---|--------|-----------------|--------|--------|--------|--------|--------|
| 5% Discounted Government Take (Income only) | | | | | | | |
| WTI | | | | | | | |
| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | 74.16% |
| 30 | | | | 88.49% | 70.71% | 63.22% | 59.21% |
| 40 | | 84.48% | 73.02% | 66.71% | 62.78% | 60.12% | 58.22% |
| 50 | 80.28% | 73.82% | 69.40% | 66.20% | 63.79% | 61.91% | 60.41% |
| 60 | 77.09% | 73.35% | 70.43% | 68.08% | 66.16% | 64.56% | 63.22% |
| 70 | 77.45% | 74.68% | 72.37% | 70.43% | 68.75% | 67.31% | 66.05% |
| 80 | 78.96% | 76.67% | 74.70% | 72.97% | 71.45% | 70.11% | 68.91% |
| 90 | 80.98% | 78.99% | 77.22% | 75.62% | 74.21% | 72.93% | 71.77% |
| 100 | 83.21% | 81.41% | 79.78% | 78.29% | 76.95% | 75.71% | 74.59% |

For the Mine+Upgrader the following results are being obtained:

Table 4.87

MINE+UPGRADER CURRENT TERMS

5% Discounted Government Take (Income only)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 50.32% | 43.01% |
| 30 | | | 55.40% | 45.78% | 42.88% | 41.58% | 40.86% |
| 40 | 48.25% | 44.60% | 42.84% | 41.85% | 41.20% | 40.78% | 40.47% |
| 50 | 42.83% | 42.00% | 41.45% | 41.03% | 40.73% | 40.48% | 40.29% |
| 60 | 41.61% | 41.22% | 40.92% | 40.67% | 40.50% | 40.33% | 40.21% |
| 70 | 41.11% | 40.86% | 40.65% | 40.51% | 40.35% | 40.25% | 40.14% |
| 80 | 40.82% | 40.64% | 40.51% | 40.38% | 40.28% | 40.19% | 40.10% |
| 90 | 40.63% | 40.52% | 40.42% | 40.31% | 40.23% | 40.14% | 40.06% |
| 100 | 40.52% | 40.43% | 40.33% | 40.25% | 40.17% | 40.11% | 40.04% |

Table 4.207

MINE+UPGR VARIATION-1

5% Discounted Government Take (Income only)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 59.27% | 45.65% |
| 30 | | | 66.18% | 49.40% | 44.65% | 42.58% | 41.49% |
| 40 | 52.90% | 46.97% | 44.22% | 42.69% | 41.75% | 41.14% | 40.72% |
| 50 | 47.47% | 45.66% | 44.43% | 43.54% | 42.87% | 42.37% | 41.96% |
| 60 | 48.99% | 47.68% | 46.65% | 45.83% | 45.17% | 44.61% | 44.15% |
| 70 | 50.76% | 49.65% | 48.74% | 47.96% | 47.30% | 46.72% | 46.22% |
| 80 | 52.61% | 51.61% | 50.75% | 50.01% | 49.34% | 48.76% | 48.24% |
| 90 | 54.48% | 53.55% | 52.73% | 52.00% | 51.34% | 50.75% | 50.22% |
| 100 | 56.36% | 55.48% | 54.69% | 53.97% | 53.32% | 52.72% | 52.17% |

Table 4.257

MINE+UPGR TIME-INCREASE-1

5% Discounted Government Take (Income only)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 64.10% | 47.84% |
| 30 | | | 73.23% | 52.78% | 46.92% | 44.29% | 42.86% |
| 40 | 61.29% | 52.62% | 48.49% | 46.13% | 44.64% | 43.62% | 42.89% |
| 50 | 52.55% | 49.94% | 48.12% | 46.79% | 45.78% | 44.99% | 44.36% |
| 60 | 52.21% | 50.58% | 49.29% | 48.24% | 47.39% | 46.67% | 46.07% |
| 70 | 53.02% | 51.76% | 50.69% | 49.79% | 49.01% | 48.34% | 47.75% |
| 80 | 54.21% | 53.13% | 52.19% | 51.37% | 50.64% | 50.00% | 49.42% |
| 90 | 55.56% | 54.60% | 53.74% | 52.96% | 52.27% | 51.65% | 51.08% |
| 100 | 56.97% | 56.08% | 55.28% | 54.54% | 53.88% | 53.26% | 52.71% |

Following is an overview of the 5% Discounted Government Take for Cost Level 4 and a price US \$ 50 per barrel WTI.

5% Discounted Government Take

| | Mine | Upgrader | Mine+Upgrader |
|---------------|-------|----------|---------------|
| Current terms | 49.1% | 31.3% | 41.0% |
| Variation-1 | 60.3% | 23.3% | 43.5% |
| Time Increase | 64.9% | 23.3% | 45.8% |

Also on a 5% discounted basis the government take would go up. This means that from Alberta's perspective this would be a more attractive fiscal package.

IRR

Following is a review of the IRR. The first four tables are for the mining operations.

Table 4.08

MINE CURRENT TERMS

IRR (real, 2007 Cdn \$)

WTI

US \$

| | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-----|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 5.97% | 9.80% |
| 30 | | | 5.43% | 7.66% | 10.36% | 13.72% | 18.12% |
| 40 | 6.75% | 8.55% | 10.64% | 13.08% | 16.05% | 19.77% | 24.70% |
| 50 | 10.80% | 12.73% | 14.96% | 17.61% | 20.83% | 24.90% | 30.31% |
| 60 | 14.29% | 16.34% | 18.74% | 21.60% | 25.04% | 29.45% | 35.19% |
| 70 | 17.40% | 19.58% | 22.14% | 25.14% | 28.86% | 33.47% | 39.60% |
| 80 | 20.25% | 22.56% | 25.22% | 28.44% | 32.28% | 37.18% | 43.54% |
| 90 | 22.89% | 25.27% | 28.08% | 31.42% | 35.46% | 40.55% | 47.22% |
| 100 | 25.32% | 27.83% | 30.76% | 34.21% | 38.45% | 43.67% | 50.52% |

Table 4.188

| Mine | | VARIATION-1 | | | | | | |
|-------------------------|--|-------------|--------|--------|--------|--------|--------|--------|
| IRR (real, 2007 Cdn \$) | | | | | | | | |
| WTI | | | | | | | | |
| US \$ | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | | 8.05% |
| 30 | | | | | 6.15% | 8.76% | 11.93% | 16.01% |
| 40 | | 5.32% | 7.11% | 9.12% | 11.45% | 14.25% | 17.73% | 22.28% |
| 50 | | 8.59% | 10.42% | 12.51% | 14.98% | 17.97% | 21.70% | 26.62% |
| 60 | | 10.59% | 12.47% | 14.65% | 17.22% | 20.33% | 24.26% | 29.36% |
| 70 | | 12.00% | 13.93% | 16.16% | 18.81% | 22.02% | 26.07% | 31.33% |
| 80 | | 12.92% | 14.88% | 17.16% | 19.85% | 23.14% | 27.25% | 32.63% |
| 90 | | 13.39% | 15.37% | 17.68% | 20.39% | 23.72% | 27.86% | 33.30% |
| 100 | | 13.44% | 15.42% | 17.73% | 20.44% | 23.78% | 27.92% | 33.38% |

Table 4.248

| Mine | | TIME-INCREASE-1 | | | | | | |
|-------------------------|--|-----------------|--------|--------|--------|--------|--------|--------|
| IRR (real, 2007 Cdn \$) | | | | | | | | |
| WTI | | | | | | | | |
| US \$ | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | | 7.82% |
| 30 | | | | | 5.79% | 8.55% | 11.87% | 16.12% |
| 40 | | | 6.41% | 8.61% | 11.13% | 14.09% | 17.76% | 22.50% |
| 50 | | 7.89% | 9.92% | 12.23% | 14.90% | 18.10% | 22.07% | 27.22% |
| 60 | | 10.38% | 12.49% | 14.89% | 17.70% | 21.06% | 25.26% | 30.69% |
| 70 | | 12.32% | 14.50% | 17.00% | 19.92% | 23.47% | 27.80% | 33.46% |
| 80 | | 13.80% | 16.07% | 18.65% | 21.69% | 25.33% | 29.84% | 35.64% |
| 90 | | 14.92% | 17.25% | 19.91% | 23.06% | 26.78% | 31.43% | 37.34% |
| 100 | | 15.69% | 18.07% | 20.82% | 24.03% | 27.85% | 32.61% | 38.62% |

For the total Mine+Upgrader project the IRR's are the following

Table 4.88

MINE+UPGRADER CURRENT TERMS

IRR (real, 2007 Cdn \$)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 6.60% | 9.80% |
| 30 | | | 6.04% | 7.91% | 10.17% | 12.99% | 16.74% |
| 40 | 7.10% | 8.60% | 10.34% | 12.40% | 14.91% | 18.10% | 22.37% |
| 50 | 10.45% | 12.07% | 13.96% | 16.21% | 18.98% | 22.51% | 27.26% |
| 60 | 13.37% | 15.11% | 17.15% | 19.61% | 22.61% | 26.46% | 31.59% |
| 70 | 16.00% | 17.86% | 20.06% | 22.67% | 25.92% | 30.02% | 35.52% |
| 80 | 18.42% | 20.41% | 22.72% | 25.53% | 28.95% | 33.32% | 39.11% |
| 90 | 20.68% | 22.76% | 25.22% | 28.16% | 31.77% | 36.36% | 42.46% |
| 100 | 22.79% | 24.99% | 27.57% | 30.64% | 34.43% | 39.21% | 45.54% |

Table 4.208

MINE+UPGR VARIATION-1

IRR (real, 2007 Cdn \$)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 6.30% | 9.53% |
| 30 | | | 5.79% | 7.70% | 9.97% | 12.79% | 16.50% |
| 40 | 6.91% | 8.44% | 10.19% | 12.25% | 14.76% | 17.93% | 22.16% |
| 50 | 10.01% | 11.63% | 13.51% | 15.74% | 18.49% | 21.97% | 26.62% |
| 60 | 12.39% | 14.10% | 16.10% | 18.50% | 21.43% | 25.17% | 30.14% |
| 70 | 14.40% | 16.20% | 18.31% | 20.84% | 23.94% | 27.89% | 33.14% |
| 80 | 16.11% | 18.00% | 20.21% | 22.84% | 26.10% | 30.22% | 35.70% |
| 90 | 17.58% | 19.53% | 21.83% | 24.57% | 27.94% | 32.21% | 37.88% |
| 100 | 18.83% | 20.85% | 23.22% | 26.04% | 29.52% | 33.91% | 39.74% |

Table 4.258

MINE+UPGR TIME-INCREASE-1

IRR (real, 2007 Cdn \$)

WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 6.19% | 9.48% |
| 30 | | | 5.65% | 7.60% | 9.92% | 12.78% | 16.56% |
| 40 | 6.65% | 8.23% | 10.03% | 12.14% | 14.71% | 17.94% | 22.25% |
| 50 | 9.82% | 11.49% | 13.43% | 15.73% | 18.55% | 22.13% | 26.88% |
| 60 | 12.40% | 14.18% | 16.25% | 18.72% | 21.75% | 25.60% | 30.71% |
| 70 | 14.63% | 16.51% | 18.71% | 21.33% | 24.56% | 28.63% | 34.05% |
| 80 | 16.59% | 18.57% | 20.87% | 23.64% | 27.02% | 31.31% | 36.97% |
| 90 | 18.33% | 20.39% | 22.80% | 25.70% | 29.22% | 33.69% | 39.56% |
| 100 | 19.88% | 22.02% | 24.52% | 27.52% | 31.18% | 35.81% | 41.87% |

Following is the overview of the IRR's for the various cases for Cost Level 4 and US \$ 50 per barrel WTI:

IRR comparison

| | Mine | Upgrader | Mine+Upgrader |
|---------------|-------|----------|---------------|
| Current terms | 17.6% | 15.2% | 16.2% |
| Variation-1 | 15.0% | 16.3% | 15.7% |
| Time-Increase | 14.9% | 16.3% | 15.7% |

Despite the considerable increase in undiscounted government take and even the 5% discounted government take, the IRR is the same for Variation-1 and the Time-Increase.

This is a “classical” case where back end loading improves the government take from the government’s perspective without affecting the IRR.

PFR10

Following is a review of the PFR10, with the mining operation first.

Table 4.09

MINE

CURRENT TERMS

PFR10 (real, 2007 Cdn \$)

WTI

US \$

| | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-----|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 0.78 | 0.99 |
| 30 | | | 0.75 | 0.87 | 1.02 | 1.23 | 1.54 |
| 40 | 0.82 | 0.92 | 1.04 | 1.19 | 1.39 | 1.66 | 2.07 |
| 50 | 1.05 | 1.17 | 1.31 | 1.50 | 1.75 | 2.09 | 2.61 |
| 60 | 1.27 | 1.41 | 1.58 | 1.81 | 2.10 | 2.52 | 3.14 |
| 70 | 1.48 | 1.65 | 1.85 | 2.11 | 2.46 | 2.94 | 3.67 |
| 80 | 1.70 | 1.89 | 2.12 | 2.42 | 2.82 | 3.37 | 4.20 |
| 90 | 1.91 | 2.12 | 2.39 | 2.72 | 3.17 | 3.80 | 4.74 |
| 100 | 2.13 | 2.36 | 2.65 | 3.03 | 3.53 | 4.22 | 5.27 |

Table 4.189

| Mine | | VARIATION-1 | | | | | | |
|---------------------------|------|-------------|--------|--------|--------|--------|--------|--------|
| PFR10 (real, 2007 Cdn \$) | | | | | | | | |
| WTI | | | | | | | | |
| US \$ | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | | 0.88 |
| 30 | | | | | 0.78 | 0.93 | 1.12 | 1.41 |
| 40 | 0.74 | 0.83 | 0.95 | 1.09 | 1.28 | 1.53 | 1.91 | |
| 50 | 0.92 | 1.03 | 1.16 | 1.33 | 1.55 | 1.85 | 2.31 | |
| 60 | 1.04 | 1.15 | 1.30 | 1.49 | 1.73 | 2.08 | 2.59 | |
| 70 | 1.12 | 1.25 | 1.41 | 1.61 | 1.88 | 2.25 | 2.80 | |
| 80 | 1.18 | 1.32 | 1.48 | 1.69 | 1.97 | 2.36 | 2.94 | |
| 90 | 1.21 | 1.35 | 1.52 | 1.74 | 2.02 | 2.42 | 3.02 | |
| 100 | 1.22 | 1.35 | 1.52 | 1.74 | 2.03 | 2.43 | 3.03 | |

Table 4.249

| Mine | | TIME-INCREASE-1 | | | | | | |
|---------------------------|------|-----------------|--------|--------|--------|--------|--------|--------|
| PFR10 (real, 2007 Cdn \$) | | | | | | | | |
| WTI | | | | | | | | |
| US \$ | | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
| 20 | | | | | | | | 0.88 |
| 30 | | | | | 0.78 | 0.92 | 1.11 | 1.39 |
| 40 | 0.72 | 0.81 | 0.93 | 1.06 | 1.24 | 1.49 | 1.86 | |
| 50 | 0.89 | 1.00 | 1.12 | 1.29 | 1.50 | 1.80 | 2.24 | |
| 60 | 1.02 | 1.14 | 1.28 | 1.46 | 1.70 | 2.04 | 2.54 | |
| 70 | 1.12 | 1.25 | 1.40 | 1.60 | 1.87 | 2.24 | 2.79 | |
| 80 | 1.20 | 1.34 | 1.50 | 1.71 | 2.00 | 2.39 | 2.98 | |
| 90 | 1.26 | 1.40 | 1.57 | 1.79 | 2.09 | 2.50 | 3.11 | |
| 100 | 1.29 | 1.44 | 1.61 | 1.84 | 2.14 | 2.56 | 3.19 | |

For the Mine+Upgrader the results are the following:

Table 4.89
MINE+UPGRADER CURRENT TERMS
PFR10 (real, 2007 Cdn \$)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 0.79 | 0.99 |
| 30 | | | 0.76 | 0.87 | 1.01 | 1.21 | 1.50 |
| 40 | 0.82 | 0.91 | 1.02 | 1.16 | 1.35 | 1.61 | 2.00 |
| 50 | 1.03 | 1.14 | 1.28 | 1.46 | 1.69 | 2.02 | 2.51 |
| 60 | 1.23 | 1.37 | 1.53 | 1.75 | 2.03 | 2.42 | 3.01 |
| 70 | 1.44 | 1.59 | 1.79 | 2.03 | 2.36 | 2.82 | 3.52 |
| 80 | 1.64 | 1.82 | 2.04 | 2.32 | 2.70 | 3.23 | 4.02 |
| 90 | 1.84 | 2.04 | 2.29 | 2.61 | 3.04 | 3.63 | 4.52 |
| 100 | 2.04 | 2.27 | 2.54 | 2.90 | 3.37 | 4.03 | 5.03 |

Table 4.209
MINE+UPGR VARIATION-1
PFR10 (real, 2007 Cdn \$)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 0.77 | 0.97 |
| 30 | | | 0.74 | 0.85 | 1.00 | 1.19 | 1.49 |
| 40 | 0.81 | 0.90 | 1.01 | 1.15 | 1.34 | 1.60 | 2.00 |
| 50 | 1.00 | 1.11 | 1.25 | 1.42 | 1.65 | 1.97 | 2.46 |
| 60 | 1.17 | 1.29 | 1.45 | 1.65 | 1.92 | 2.30 | 2.86 |
| 70 | 1.32 | 1.46 | 1.64 | 1.87 | 2.17 | 2.59 | 3.23 |
| 80 | 1.45 | 1.61 | 1.81 | 2.06 | 2.40 | 2.87 | 3.57 |
| 90 | 1.58 | 1.75 | 1.96 | 2.24 | 2.60 | 3.11 | 3.88 |
| 100 | 1.69 | 1.87 | 2.10 | 2.39 | 2.79 | 3.33 | 4.15 |

Table 4.259
MINE+UPGR TIME-INCREASE-1
PFR10 (real, 2007 Cdn \$)
WTI

| US \$ | COST-7 | COST-6 | COST-5 | COST-4 | COST-3 | COST-2 | COST-1 |
|-------|--------|--------|--------|--------|--------|--------|--------|
| 20 | | | | | | 0.77 | 0.97 |
| 30 | | | 0.74 | 0.85 | 0.99 | 1.19 | 1.48 |
| 40 | 0.80 | 0.89 | 1.00 | 1.14 | 1.33 | 1.59 | 1.97 |
| 50 | 0.99 | 1.10 | 1.23 | 1.40 | 1.63 | 1.95 | 2.42 |
| 60 | 1.16 | 1.28 | 1.44 | 1.64 | 1.91 | 2.28 | 2.84 |
| 70 | 1.32 | 1.46 | 1.64 | 1.86 | 2.17 | 2.59 | 3.22 |
| 80 | 1.46 | 1.62 | 1.82 | 2.07 | 2.41 | 2.88 | 3.59 |
| 90 | 1.60 | 1.77 | 1.99 | 2.26 | 2.63 | 3.15 | 3.92 |
| 100 | 1.72 | 1.91 | 2.14 | 2.44 | 2.84 | 3.40 | 4.23 |

The PFR10 overview for Cost Level 4 and US \$ 50 per barrel WTI is as follows:

PFR10 comparison

| | Mine | Upgrader | Mine+Upgrader |
|---------------|------|----------|---------------|
| Current terms | 1.50 | 1.42 | 1.46 |
| Variation-1 | 1.33 | 1.51 | 1.42 |
| Time Increase | 1.29 | 1.51 | 1.40 |

The PFR10 is also almost identical for the two cases. Again a significant increase in 5% discounted government take is obtained while maintaining the PFR10 very similar.

A similar result would be obtained for the NPV10/SCO barrel.

Conclusion

It is possible to introduce back end loading in the fiscal terms based on absolute time values, which means increasing royalty rates for specific years or based on nominal base prices for price sensitive features.

For current investments such terms may be identical in terms of profitability to alternative packages.

However, each year the terms will gradually increase for new investments in new projects or incremental investments in existing projects. Therefore, this is an attractive way for government to gradually improve fiscal terms for Alberta.

However, the consequence is that for the level of profitability that was used for calibration, it would not be possible to create a system that would provide for a modest immediate increases in government take.

In other words the choice is between:

- **Immediate average increases in government take, or**
- **No significant immediate increases and more strong increases later in time.**

Obviously, the government would be rather risk exposed in the second option.

It should be remembered that fiscal terms can be changed in the future. Therefore, the time increase option in this manner would create the risk that in the near terms no or only modest increases in government take are accepted, while in the long term oil companies may pressure the government to prevent increases in base royalties

when these increases are supposed to start. In other words: no extra government take in the short term and not in the long term either.

This risk of possible erosion of the government take in the future is a concern. It is the principle of “a bird in the hand is better than ten in the bush”.

Given this situation, some other options will be discussed in the next section.

4.4.3. Alternative methods for increasing government take over time.

There are alternative methods of increasing government take over time as costs seem to moderate or even decline.

The methods are:

- Prescribe increases for new leases or new approved development projects, but leave the terms of existing leases or projects that have already been approved unchanged. This creates a set of “tier’s” of fiscal systems over time.
- Providing for an immediate adjustment and leave later adjustments to new governments and do not enter into any fiscal stability agreements.
- Provide for a specific pre-determined review period in the legislation.

Increases apply to new leases or new projects only

It is possible to prescribe in the legislation/regulations specific royalty rates applicable to new leases or projects.

For instance the legislation/regulations could prescribe that the base royalty rate for new projects based on the date of approval of the development plan will be as follows:

| | Base Royalty Rate |
|-------------|----------------------------------|
| 2008 | 5% |
| 2009 | 6% |
| 2010 | 7% |
| 2011 | 8% |
| 2012 | 9% |
| 2013 | 10% |
| 2014 | 11% |
| 2015 | 12% |
| 2016 | 13% |
| 2017 | 14% |
| 2018 | 15% |

For instance, an oil sands project with a development plan approved in year 2014 would have for the duration of the project a base royalty rate of 11%. From 2018 onwards all new projects would have a base royalty rate of 15%.

Knowing that royalties will increase year by year for new projects, may in fact be an incentive to launch projects early. In other words it might interfere with the objective of slowing down development. It is for this reason that the scale would have to be defined gradually with small steps for each year. If there would be large steps in the scale companies might launch projects prior to such large increase.

Leave increases for future governments to decide.

One of the great advantages of the Alberta system (other than for the Crown Agreements with Suncor and Syncrude) is that the system can be changed unilaterally by government at any time. It would therefore not be unusual if Alberta would introduce a further adjustment in fiscal terms a decade from now or so.

This would not provide a guarantee for a higher government take for Albertans in the future. However, it would also permit the Alberta government to introduce changes to royalties and taxes that are not prescribed in advance.

Pre-determined review periods

A concern is often expressed with this option that oil industry pressure may prevent future governments to make such adjustments.

This concern could be alleviated by prescribing in the legislation pre-determined review periods, for instance every 5 years or so. During such periods the Minister would have to report to the Legislature about the fairness of the fiscal terms to Albertans.

As part of this process there would also be an ongoing monitoring of all important factors with annual reports being produced with all information that Albertans require to judge the fairness of fiscal terms.

Conclusion

It seems that it is good to benefit immediately from the current high prices by introducing a modest increase in government take now for all existing projects. This would largely prevent a pre-determined time based increase for such projects later on.

Therefore, it may be good to make a sliding scale with increasing base royalties (or other features) tied to specific calendar years. However, this scale would apply to new projects only. The rate applicable to the project would then be determined by the date of approval of the development plan and would be fixed for such projects.

However, it is also worth while to investigate in some more depth to do both: having a predetermined increase for existing projects and having in addition a stronger increasing start of the base royalty for new projects.

4.5. Analysis of Cold Lake and Athabasca SAGD.

The style of impact on Cold Lake SAGD, Athabasca SAGD or Athabasca SAGD+ Upgrader will be similar to the Mine or Mine+Upgrader project. Of course the profitability levels will be different.

The previous reports identified that the ability of Cold Lake to absorb a higher government take is stronger than the Athabasca projects with or without upgrading. This was because in Cold Lake the value of the bitumen is higher.

For this reason, Cold Lake will be able to absorb better Base Package 2 or 3 conditions. The higher burden on the upstream will add to the Alberta total revenues.

During the final phase of calibration for a fiscal system, the impact on all types of operations needs to be assessed.

However, this is best done when the selected fiscal packages and options have been narrowed. This will enable such a final analysis to be more focused.

5. CONCLUSIONS AND RECOMMENDATIONS

The underlying premise of this report is that the Government of Alberta has the following four policy objectives with respect to oil sands development:

- Stimulate upgrading of bitumen
- Discourage excessively high cost upstream projects and reward investors for creating low cost projects as part of a policy to modestly reduce the overall level of activity
- Create a higher share for Alberta under high price conditions, and
- Increase government take over time as government policy is successful in creating more divisible income by helping to reduce costs through a modest reduction of activity and fiscal features that encourage cost reduction.

In order to implement the above policies three Base Packages and three Fiscal Options were designed and evaluated.

The Base Packages and Fiscal Options all contain base royalties and/or NPS features that are based on bitumen values. An important pre-condition for adopting a royalty system based on bitumen values is that an transparent and effective methodology is created to determine bitumen prices. Also a sophisticated accounting procedure needs to exist in order to properly allocate, review and audit cost for NPS calculations.

All three Base Packages assumed that the base royalty would become deductible and the LTBR would be eliminated as recommended in Chapter 3.

The three Base Packages are as follows:

- BP-1: *No stimulus for upgrading* - 1% base royalty.
- BP-2: *Modest stimulus of upgrading* - 5% base royalty and 5% royalty credit on upgrading assets which current qualify for ACCA
- BP-3: *Strong stimulus for upgrading* - 10% base royalty and 10% royalty credit on all upgrading capital expenditures.

As can be seen BP-1 involves no stimulus of upgrading if this would be the decision.

Three Fiscal Options were designed and evaluated. They have all as their objective to create a system that is progressive with price, while maintaining a degree of cost regressivity in order to avoid stimulating excessively costly projects.

The three Fiscal Options are as follows:

- FO-1: Introduce a Supplemental Oil Sands Tax (“SOST”) based on the bitumen production priced at the WTI price. The minimum SOST rate would be 0%. Over Can \$ 46 WTI per barrel the rate would increase with 0.20% per dollar up to a maximum of 25%. The price scale would be based on real 2007 Canadian dollars.

- **FO-2:** The NPS rate would be based on a R-factor consisting of Cumulative Revenues over Cumulative Expenditures (including base royalties). The NPS would jump from 25% to 50% at an R-factor of 2.00. There would be an Oil Sands Impact Tax (“OSIT”) equal to 6% of all upstream capital expenditures. The OSIT would not be included in determining the R-factor and would not be deductible for purposes of the NPS.
- **FOP-3:** Introduce high rentals of \$ 1000 per hectare during development and production of oil sands leases and permits adjusted for CPI and not deductible from NPS. The NPS rate is price sensitive and increases with would be based on the minimum rate of 25%. Over Can \$ 40 WTI per barrel the rate would increase with 0.50% per dollar up to a maximum of 50% (to be reached at Can \$ 90 per SCO barrel). The price scale would be based on real 2007 Canadian dollars.

Any of the nine combinations of a Base Package and a Fiscal Option would be a recommendable new core fiscal system for Alberta oil sands.

There are slight differences between the various fiscal options as follows:

- Due to the progressive R/C mechanism, FO-2 is not as effective in promoting low cost operations but captures better a share for Alberta under low cost conditions. FO-2 is also better at capturing a fair share for Alberta under average price conditions.
- FO-1 and FO-3 are more effective in capturing a fair share for Alberta under high prices of US \$ 70 per barrel WTI and higher.

It should be noted that the government is more risk exposed under FO-2 in case of possible future price declines. If prices five years from now would go back to US \$ 40 per barrel, the second step in the R/C system would not click in or click in at a rather late date. Under FO-1 and FO-3, the government would have at least for the five years that prices were high enjoyed a higher government take.

If FO-2 is selected one should take special care maintaining a modest level of cost regressivity. This can be achieved through the OSIT, higher rentals or a percentage cost limit on deductible costs for NPS purposes.

Under FO-1 the government is least risk exposed to low bitumen prices.

A number of variations can be recommended for consideration with respect to each of the nine core fiscal packages. These variations are the following:

- Higher rentals can be added to FO-1 and FO2.
- Lower the provincial corporate income tax rate and increase the NPS rate correspondingly. The lowering of the provincial corporate income tax rate, of course, would be part of a wider design that would also include conventional oil and gas.

- **Instead of the OSIT one could levy a provincial property tax on oil sands and use the per barrel concept that the North Slope of Alaska is using.**

It can be recommended to set a scale in the legislation/regulations whereby the base royalties increase year by year for new projects on existing leases or new leases, although providing in addition a scale for all projects is also an option.

In addition to the fiscal recommendations in this report, it should be noted that it is possible to slow down the rate of development with changes in procedures on the bid process and the regulatory process. A more detailed evaluation of such concepts could be made if this is of interest.