



*Impact of Oil Sands Royalty
Regime on Capital Efficiency and
Degree of Upgrading in Alberta*

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Alberta Government Priority

"The Alberta Government will develop policy to ensure that the raw bitumen from our oil sands is processed right here in Alberta."

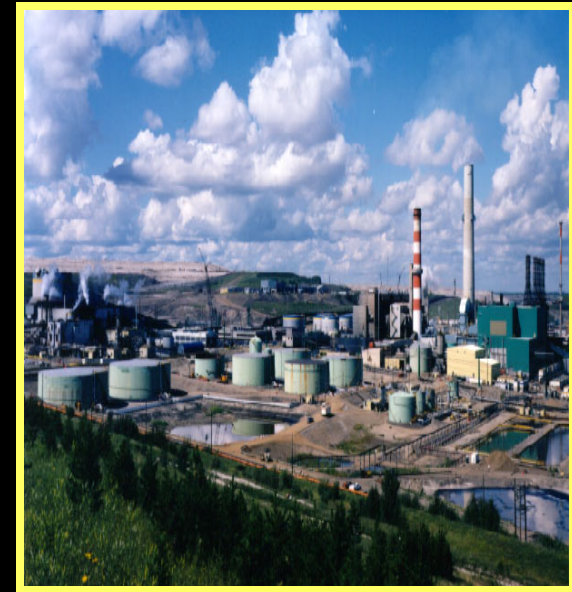
Premier Stelmach



Hydrocarbon Upgrading Vision 2020

“Alberta will achieve a competitive hydrocarbon upgrading industry through refining and petrochemical plants that expand the market for Alberta’s bitumen resource and produce higher value products in the province.”

- 3.6 MBD bitumen output by 2020
 - 1 MBD upgraded to refined products
- 5 MBD bitumen output by 2030
 - 2 MBD upgraded to refined products
- Urgent to capture “window of opportunity” for exporting refined products



Generic oil sands royalty regime (1997)

- Alberta's oil sands were considered an “infant” industry.
- Special fiscal terms were proposed to “catalyze accelerated development.”
- The Task Force “... concluded that, at oil prices in the range of CAD \$25.00, the Canadian oil sands industry can grow to reach sales of 800,000 to 1.2 million barrels per day of crude oil and bitumen in the next quarter century [by 2020] ... with a direct investment of \$20 to \$25 billion.”

Current Royalty Regime



- Extremely successful in encouraging project investment when price of oil was low
- Cited as a model for rest of the world

Royalty Regime

What share is appropriate?

- Royalties that are too high will result in underinvestment
- Royalties that are too low can result in inflation and reduced competitiveness.
- “a share that is too low can result in inflation and other pressures related to the economy’s ability to efficiently deliver the necessary inputs. These consequences can threaten an economy’s overall competitiveness, including the competitiveness of the energy sector. “

Impact of Current Regime

- Existing regime in current market conditions fosters a corporate culture that promotes inefficient capital spending on resource extraction:
 - Economic rent pays for cost overruns
 - Alberta has become one of highest cost locations
- Drives upgraders to minimize upgrading investment in Alberta's high cost environment
- Refineries in US utilize capital much more efficiently than Alberta
- Upgrading tends to migrate from Alberta to lower cost US locations

Western Canada Investment Challenges

- Tight labor market (out of control)
- Low labor productivity
- Shortages of skilled labor and resulting high turnover
- Rapid inflation
- High material cost escalation
- High extraction costs relative to other sources of crude

Projects in Western Canada

- Investment in Western Canada remains high
- Labor and infrastructure remain stretched
- Environmental concerns create a less predictable project environment
- Introduction of new technology is creating an added challenge for project teams
- Projects in Western Canada are out of control, with no signs of gaining control
 - Costs are high and growing
 - Predictability around cost and schedule is poor

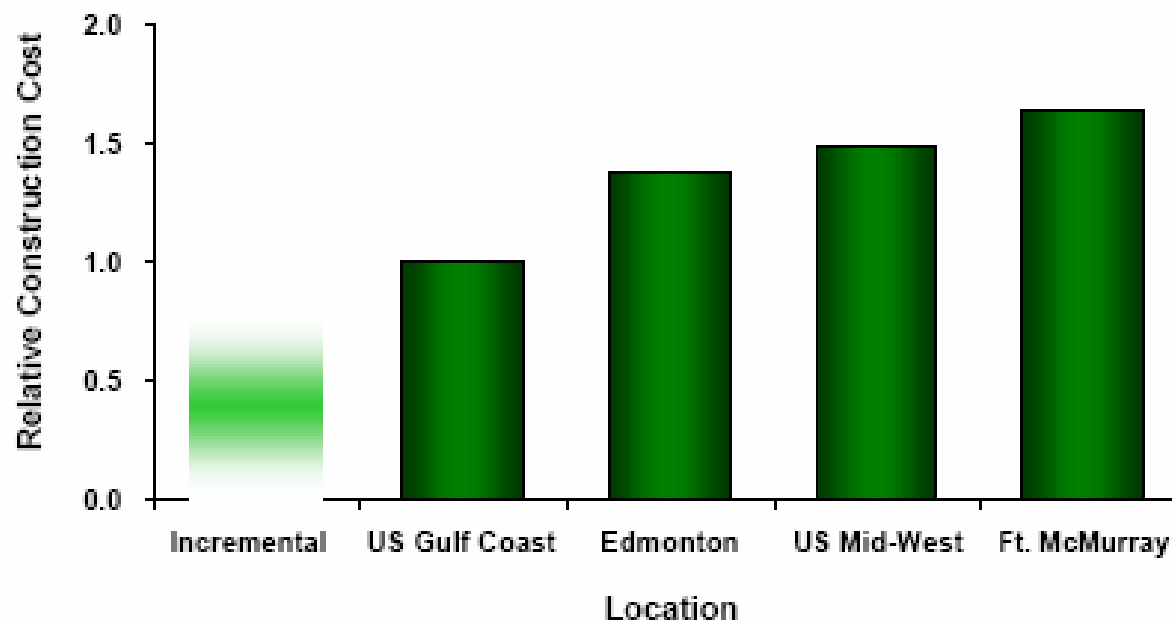
Relative Capital Cost

$$\text{Capital Cost} = \text{USGC} \times \text{GLF} \times \text{CEI}$$

- USGC – Cost in US Gulf Coast Location
- GLF – How efficient a geographic area spends capital
- CEI – How efficiently a company spends capital

Kearl Oil Sands Project

Grass roots upgrading construction cost higher in Fort McMurray



IPA Cost Effectiveness Index

CEI

- IPA has developed a cost effectiveness index which evaluates how efficiently a given project installs major equipment
- The IPA Cost Effectiveness Index Model generates an industry average Lang Factor (total installed cost divided by the major equipment cost) based on known project characteristics. .
- The method assumes that all companies are equally efficient in specifying and procuring equipment.

IMPACT OF OWNER ORGANIZATION ON CEI

- Companies with a well developed project delivery system and a strong project organization tend to have a lower CEI
- Companies that attempt to buy project development from contractors tend to have a higher CEI
- The difference can be as high as 30%
- Owner project organizations and contractors do not sell the same product

Being Cheap is Very Expensive



- Once dismantled, project organizations are difficult to rebuild
- The demographics for project professionals are terrible
- The market is seriously short of qualified owner project professionals (most are retired)
- Companies that have tried to rebuild depleted resources are having difficulty

Empirical Data

- Enbridge, Exxon plan Alberta-Texas oilsands pipeline
- Husky Energy Inc. to pay \$1.9 billion for Valero Energy Corp. plant in Ohio
- TransCanada Corp. may extend Keystone from Cushing to the Gulf Coast
- Syncrude MSA agreement with Imperial Oil (rebuilding owner capability)
- Role of owners eclipsed by contractors
- BP and EnCana bitumen exports to US refineries

Calgary Corporate Culture

- Upstream corporate culture where attention and technology development is focused on exploration
- Facility management outsourced to engineering firms (Lord Browne syndrome)
- With weak owner supervision, engineering companies do not have any incentive to spend capital efficiently
- Why did Worley Parsons pay \$1 billion for Colt Engineering?
 - Market advantage shifting from owners to contractors
- Current Royalty regime and high oil prices do not penalize owners – “money for free” (economic rent)

Proposal for New Royalty Regime



- Link royalty relief eligibility to value of end products, e.g., API of material going down the export pipeline
- Raw bitumen to pipeline gets zero relief
- Bitumen to petrochemical end products gets maximum relief

Figure 1: Conventional Production Cash Flow

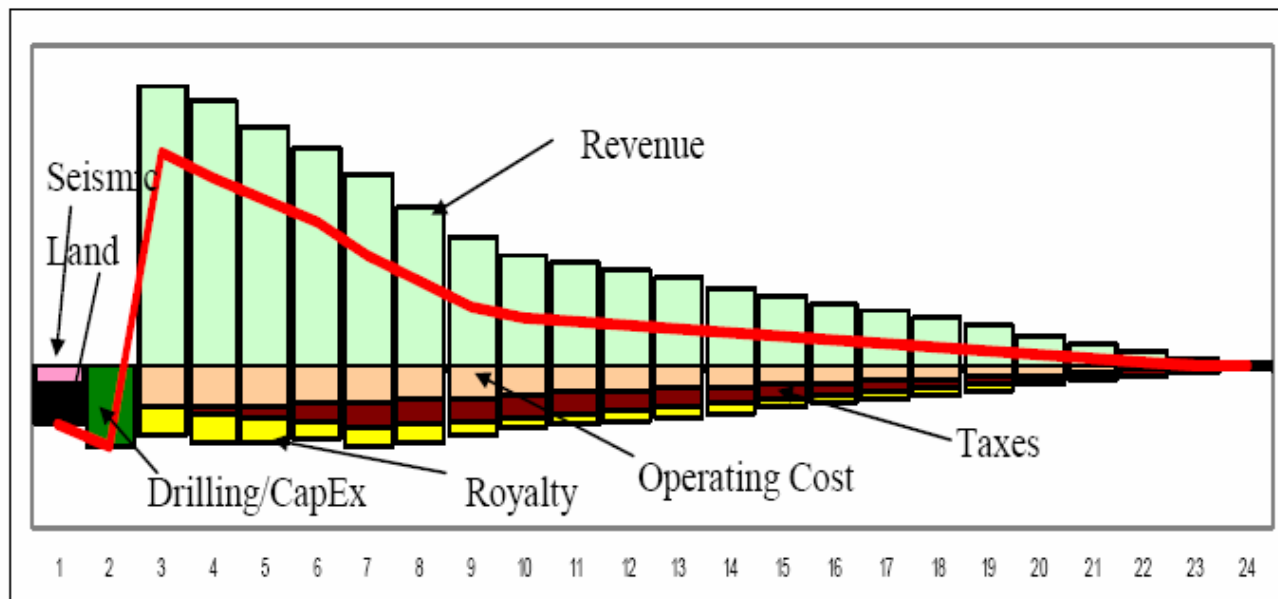


Figure 2: Oil Sands Production Cash Flow

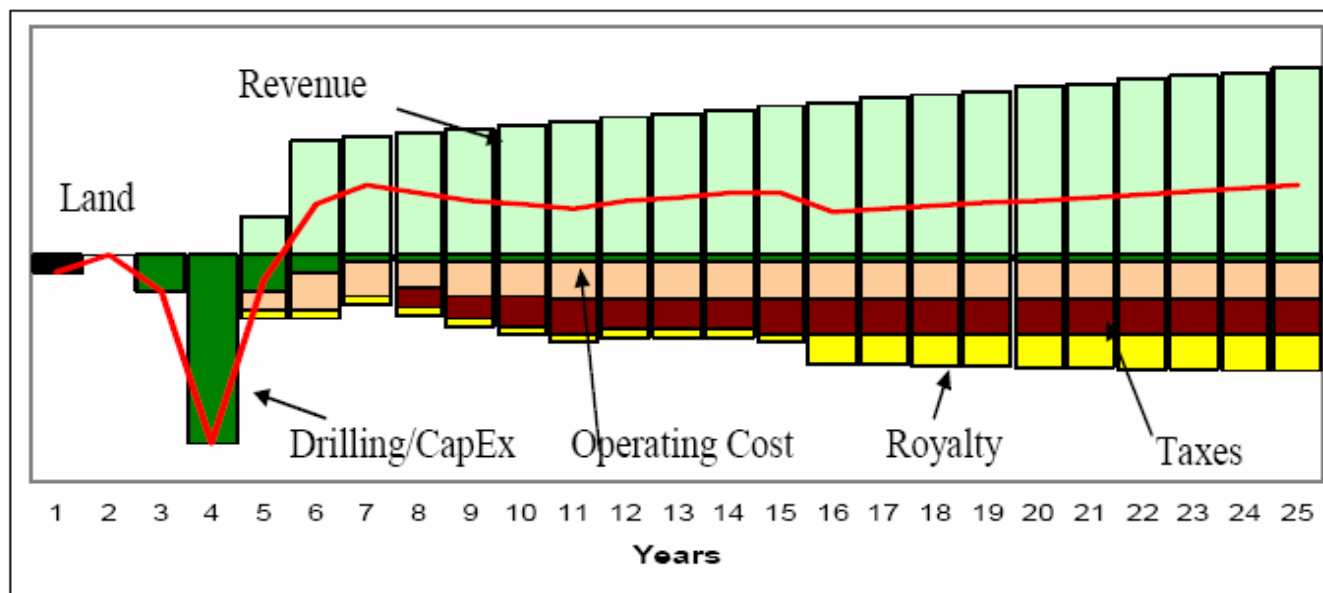
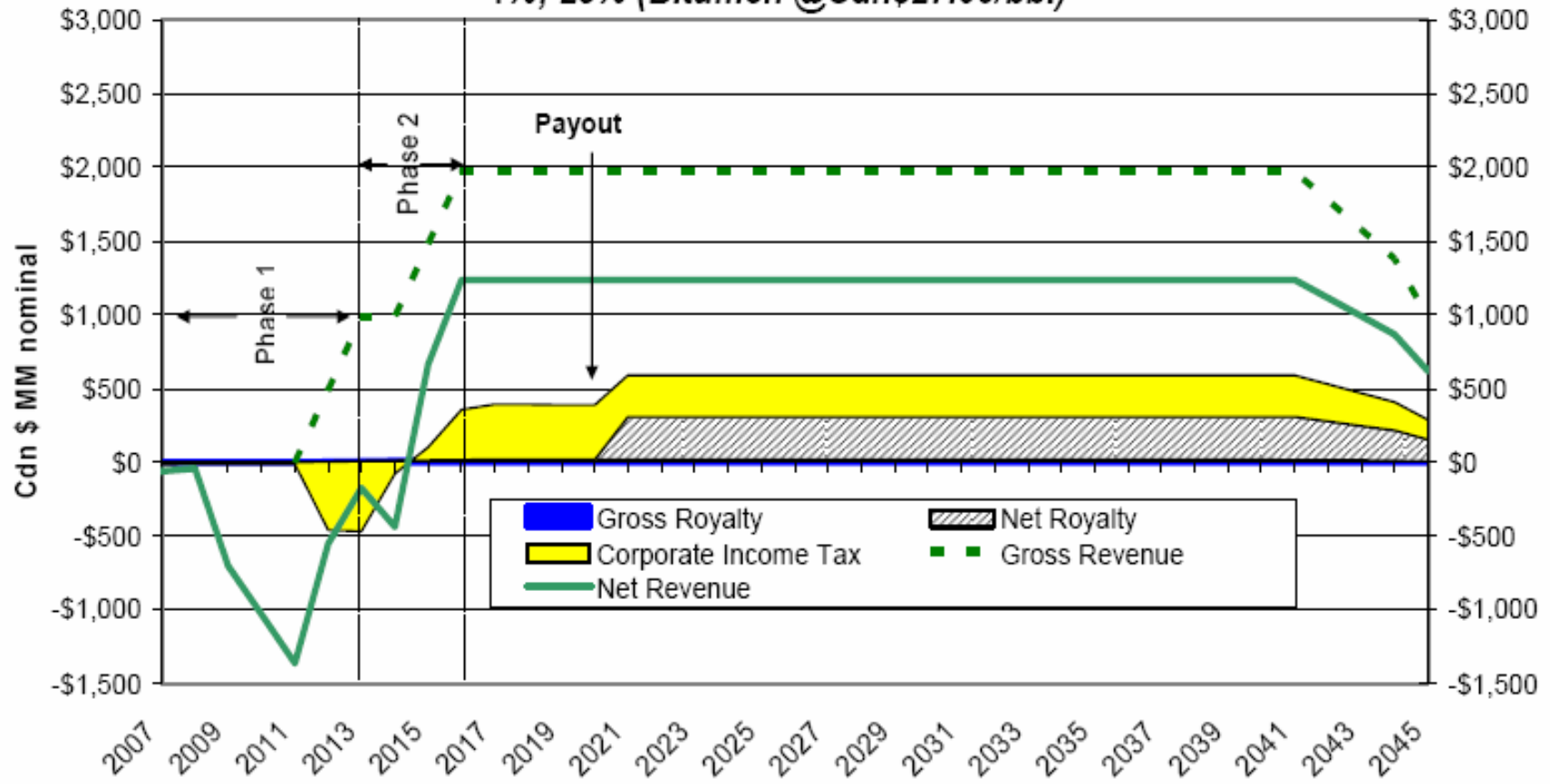


Illustration: Alberta Royalty Components - Oil Sands (Mining) 1%; 25% (Bitumen @Cdn\$27.00/bbl)



Potential Impact

- May marginally slow down current pace of development but oil sands will remain highly attractive source of supply
- Will encourage change in corporate investment behaviour (more upgrading and less bitumen exports)
- Will foster more efficient use of capital spending and more rigorous project management:
 - No access to economic rent for cost overrun coverage